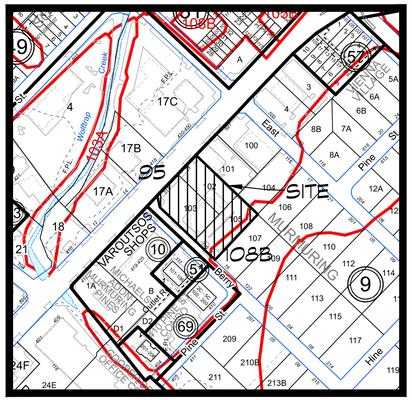
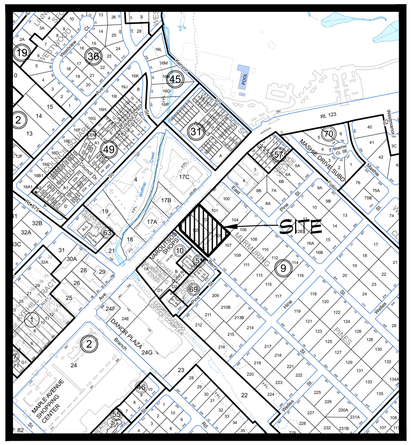
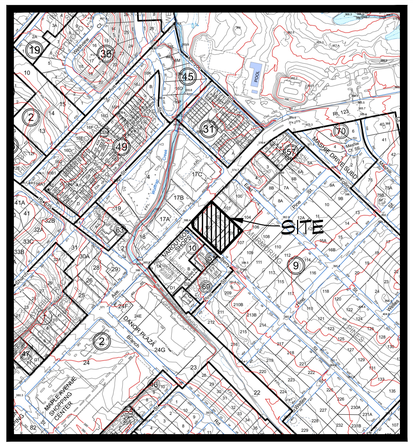






NOTES

1. THE PROPERTIES DELINEATED ON THIS PLAN ARE LOCATED ON FAIRFAX COUNTY CADASTRAL MAP No. 0382 09 0102, 0382 09 0103 & 0382 09 0105, AND ARE CURRENTLY ZONED AE.
2. THE PROPERTY SHOWN HEREON IS CURRENTLY IN THE NAME OF CADENCE ON APEX DEVELOPER, LLC, BY DEED RECORDED IN DEED BOOK 27501 AT PAGE 1753, AMONG THE LAND RECORDS OF FAIRFAX COUNTY, VIRGINIA.
3. THE PROPERTY LINES SHOWN HEREON ARE BASED ON FIELD SURVEY PERFORMED BY THIS FIRM IN APRIL 2025.
4. THE PLAT OF THE PROPERTY SHOWN HEREON IS REFERENCED TO THE VIRGINIA COORDINATE SYSTEM (VCS83), NORTH ZONE, US SURVEY FOOT UNITS AS COMPUTED FROM A FIELD SURVEY WHICH TIES THIS BOUNDARY TO NATIONAL GEODETIC SURVEY (NGS) PID HV6501, DESIGNATION JADES. THE COMBINED GRID AND ELEVATION FACTOR IS 0.99994110197633.
5. THE PROPERTY SHOWN HEREON LIES WITHIN A ZONE 'X', AN AREA DETERMINED TO BE OUTSIDE THE 0.2% ANNUAL CHANCE FLOODPLAIN, AS DELINEATED ON FLOOD INSURANCE RATE MAP No. 51059C0145E, PANEL 145 OF 450, WITH AN EFFECTIVE DATE OF SEPTEMBER 17, 2010.
6. THERE ARE NO RESOURCE PROTECTION AREAS ON THIS SITE AS SHOWN ON THE TOWN OF VIENNA CHESAPEAKE BAY PRESERVATION MAP (HOWEVER, THIS PARCEL LIES ADJACENT TO A RESOURCE MANAGEMENT AREA (RMA) PER THE TOWN OF VIENNA CHESAPEAKE BAY PRESERVATION AREAS MAP).
7. UNLESS OTHERWISE NOTED, LOCATIONS AND CONNECTIONS OF STORM AND/OR SANITARY SEWER FACILITIES, IF SHOWN HEREON, ARE BASED ON OBSERVED FIELD EVIDENCE, AS-BUILT INFORMATION OF ACCESSIBLE STORM STRUCTURES HAVE BEEN PROVIDED, IF OBTAINABLE. SANITARY SEWER AS-BUILTS HAVE NOT BEEN PROVIDED.
8. WHILE REASONABLE CARE HAS BEEN TAKEN IN IDENTIFYING UNDERGROUND UTILITIES AND CONNECTIONS, THEY ARE APPROXIMATE BASED UPON OBSERVABLE ABOVE GROUND FIELD FACILITIES AND/OR SUBSURFACE UTILITY PAINT MARKINGS OR PIN FLAGS ONLY. THEREFORE, ACCURACY OF CONNECTIONS CANNOT BE GUARANTEED.
9. UTILITY PLANS WERE NOT PROVIDED DURING THE PERFORMANCE OF THIS SURVEY. ADDITIONAL UTILITY FACILITIES AND/OR UNDERGROUND LINES MAY EXIST THAT WERE NOT EVIDENT OR IDENTIFIED. UTILITY PLANS NEED TO BE ACQUIRED AND COMPARED WITH THIS SURVEY PRIOR TO COMMENCING SITE DESIGN.
10. DEVELOPER
    JOHN SEKAS
    SEKAS HOMES, LTD.
    407L CHURCH STREET, N.E.
    VIENNA, VA 22180
    EMAIL: JOHN@SEKASHOMES.COM
11. ALL CONSTRUCTION SHALL CONFORM TO THE PROVISIONS OF ALL APPLICABLE ORDINANCES, REGULATIONS AND ADOPTED STANDARDS OF THE TOWN OF VIENNA EXCEPT AS REQUESTED HEREIN. THE APPLICANT RESERVES THE RIGHT TO APPLY FOR ANY FUTURE WAIVER OR MODIFICATION AT THE TIME OF SITE PLAN PREPARATION/SUBMISSION.
12. EROSION AND SEDIMENTATION CONTROL SHALL BE INSTALLED PRIOR TO ANY CLEARING, GRADING OR CONSTRUCTION AS PER THE REQUIREMENTS OF THE STATE OF VIRGINIA AND THE TOWN OF VIENNA.
13. THE SITE SHALL BE SERVED BY PUBLIC WATER AND SANITARY SEWER.
14. NO HAZARDOUS OR TOXIC SUBSTANCES ARE TO BE GENERATED, UTILIZED, STORED, TREATED, AND/OR DISPOSED OF ON THE SUBJECT PROPERTY.
15. LDC IS NOT AWARE OF ANY BURIAL SITES LOCATED ON THE SUBJECT PROPERTY.
16. ALL PROPOSED UTILITIES SHALL BE UNDERGROUND. ALL UTILITY LOCATIONS ARE TO BE VERIFIED PRIOR TO CONSTRUCTION TO AVOID POTENTIAL CONFLICTS. THE CONTRACTOR WILL CONTACT THE ENGINEER OF RECORD AT LAND DESIGN CONSULTANTS IF ANY CONFLICTS ARISE. THE ENGINEER CAN BE CONTACTED AT 703-680-4585. IF NEEDED BE, THE TOWN ENGINEER CAN BE CONTACTED AT 703-255-6387.
17. ALL EXISTING STRUCTURES TO BE REMOVED/RAZED BY SEPARATE PERMIT AS NOTED HEREIN.
18. A PRE-CONSTRUCTION MEETING MUST BE HELD PRIOR TO THE START OF CONSTRUCTION. CALL 703-255-6384 TO SCHEDULE THE PRE-CONSTRUCTION MEETING.
19. ALL CONSTRUCTION GENERATED DEBRIS MUST BE HAULED AWAY BY THE CONTRACTOR OR OWNER.
20. PRIOR TO THE REMOVAL OF ANY TOWN TREES (TREES WITHIN THE RIGHT OF WAY), THE APPLICANT OR THEIR REPRESENTATIVE SHALL CONTACT THE TOWN OF VIENNA ARBORIST AT 703-255-6360 TO COORDINATE HAVING THE TOWN ARBORIST ONSITE DURING ALL TOWN TREE REMOVAL.
21. TREE PROTECTION FOR ANY TOWN TREE, AS SHOWN ON PLAN, MUST BE INSTALLED PRIOR TO ANY SITE WORK.
22. IT IS UNLAWFUL TO PERFORM ANY CONSTRUCTION ABOVE FOUNDATION CORNERS PRIOR TO APPROVAL OF SETBACKS. WORK COMPLETED IN VIOLATION OF THIS REQUIREMENT IS SUBJECT TO DEMOLITION.
23. ALL DUMPSTERS/PODS ARE TO BE PLACED ON PRIVATE PROPERTY.
24. FRONT ELEVATION CHECKS ARE REQUIRED.
25. WALL CHECK SURVEYS ARE REQUIRED AND MUST BE SUBMITTED PRIOR TO CONSTRUCTION ABOVE FOUNDATION CORNERS.
26. A CERTIFICATE OF OCCUPANCY IS REQUIRED PRIOR TO OCCUPANCY. ALL REQUIRED DOCUMENTATION AND INSPECTIONS MUST BE SUBMITTED/COMPLETED BEFORE THE TOWN OF VIENNA WILL ISSUE A CERTIFICATE OF OCCUPANCY.
27. EXISTING SANITARY SEWER LATERALS ARE TYPICALLY CAPPED AT OR NEAR THE PROPERTY LINE. THE REUSE OF THE PORTION OF THE EXISTING SANITARY SEWER LATERAL BETWEEN THE TOWN OWNED SEWER MAIN AND THE CAPPED END MAY BE ALLOWED PROVIDING THAT A LICENSED PLUMBER CERTIFIES THAT THE EXISTING PIECE OF PIPE IS GRADED PROPERLY AND IN LIKE NEW CONDITION. THE REUSE OF A PORTION OF THE EXISTING LATERAL DOES NOT IMPLY THAT THE TOWN IS WARRANTING THE CONDITION IN ANY WAY.

SOIL INFORMATION

SOIL #	SOIL NAME	PROBLEM CLASS	FOUNDATION SUPPORT	DRAINAGE	EROSION POTENTIAL	HYDROLOGIC SOIL GROUP
95	URBAN LAND	IVB	N/A	N/A	N/A	D
108B	WHEATON - SUMERDUCK COMPLEX	IVB	MARGINAL	POOR	MEDIUM	D

NO IVB SOILS, THEREFORE NO SOILS REPORT REQUIRED

WETLANDS PERMITS CERTIFICATION

I HEREBY CERTIFY THAT ALL WETLANDS PERMITS REQUIRED BY LAW WILL BE OBTAINED PRIOR TO COMMENCING WITH LAND DISTURBING ACTIVITIES.

SIGNATURE John P. Sekas

OWNER/DEVELOPER JOHN SEKAS (NAME) PRESIDENT (TITLE)

NOTE: PERMITS MUST BE PRESENTED TO THE COUNTY INSPECTOR PRIOR TO LAND DISTURBANCE.

SANITARY SEWER INFORMATION

WASTEWATER TREATMENT PLANT BLUE PLAINS

___ THIS SITE IS SUBJECT TO _____ SANITARY SEWER REIMBURSEMENT CHARGES.

___ THIS SITE IS SERVED BY ONSITE SEWAGE TREATMENT SYSTEM(S).

☑ TRASH AND RECYCLING COLLECTION WILL BE CONDUCTED BY A PRIVATE COMPANY.

SITE TABULATIONS	
SITE AREA:	70,084 SF (1.61 AC.)
EXISTING ZONE:	AE
PROPOSED ZONE:	AE
EXISTING USE:	COMMERCIAL
PROPOSED USE:	MIXED-USE
MINIMUM SETBACKS REQUIRED**:	
FRONT YARD	18' MIN.
SIDE YARD	10' MIN.
REAR YARD	30' MIN.
CORNER SIDE YARD	18' MIN.
MINIMUM LOT SIZE:	N/A
MINIMUM LOT WIDTH:	N/A

** ALL MINIMUM SETBACKS WERE CONFIRMED BY THE TOWN AS DEPICTED ON SHEET 7 HEREIN ON FEBRUARY 28, 2025.

ZONING TABULATIONS	
TOTAL FLOOR AREA (S.F.)	117,638
RESIDENTIAL AREA (S.F.)	64,735
COMMERCIAL AREA (S.F.)	9,071
GARAGE AREA (S.F.)	43,832
NUMBER OF STORIES	3
NUMBER OF RESIDENTIAL UNITS	44
MIN. FIRST FLOOR AREA PER ZO 18-350	9,378
PROP. FIRST FLOOR AREA PER ZO 18-350	9,378
MAXIMUM BUILDING HEIGHT	35' MAX.
PROPOSED BUILDING HEIGHT*	34.75'
COMPUTED A.F.G.*	373.66'
BUILDING WALL PLANE	60' MAX.
REQUIRED GROUND FLOOR HEIGHT	16' MIN.
PROPOSED GROUND FLOOR HEIGHT*	16'

*SEE PLAN SHEET 3 FOR BUILDING HEIGHT SECTION.

WATERSHED

THE PROPERTY IS LOCATED IN THE ACCOTINK CREEK WATERSHED.

DISTURBED AREA

73,180 SF (104.0% OF SITE)
(1.68 x 0.6 x 6.77 = 6.82 CFS)

PROJECT NARRATIVE

THE PROPOSED SITE PLAN, APPROX. 1.61 ACRES, SHALL PROVIDE FOR THE CONSTRUCTION OF A 3-STORY MIXED-USE BUILDING INCLUDING A COMMERCIAL SPACE, A PARKING GARAGE AND MULTI-FAMILY UNITS, WITH THE UPPER STORY HAVING ACCESS TO THE ROOF FOR MECHANICAL EQUIPMENT. ALL EXISTING ON-SITE STRUCTURES SHALL BE RAZED. THE SCOPE OF THIS PROJECT SHALL INCLUDE CONSTRUCTION OF THE BUILDING, DRIVEWAYS, PARKING LOT AND NEW SIDEWALK ALONG BERRY STREET, SE. THE TOTAL DISTURBED AREA APPROXIMATELY 1.68 ACRES.

SITE ADDRESS

515 MAPLE AVE EAST, VIENNA, VA 22180

SHEET INDEX

Sheet Number	Sheet Title
1	COVER SHEET
2	SITE DETAILS
3	BUILDING HEIGHT EXHIBIT
4	PARKING PLAN
5	OPEN SPACE EXHIBIT
6	EXISTING CONDITIONS & DEMOLITION PLAN
7	SITE PLAN
8	GRADING PLAN
9	OVERLAND RELIEF MAP & COMPUTATIONS
10	EROSION & SEDIMENT CONTROL – PHASE I
11	EROSION & SEDIMENT CONTROL – PHASE II
12	EROSION & SEDIMENT CONTROL NARRATIVE
13	EROSION & SEDIMENT CONTROL DETAILS
14	UTILITY PROFILES & COMPUTATIONS
15	STORM SEWER PROFILES
16	STORM SEWER COMPUTATIONS
17	VRRM SPREADSHEET
18	BMP MAP & COMPUTATIONS
19	SWM OUTFALL NARRATIVE
20	PRE & POST DEVELOPMENT MAP
21	TR-55 SWM COMPUTATIONS
22	UGD DETAILS & COMPUTATIONS
23	UGD 1-YR ROUTING
24	UGD 2-YR ROUTING
25	UGD 10-YR ROUTING
26	UGD STAGE-DIS. & STAGE-STORAGE TABLES
27	SWM DETAILS 1
28	SWM DETAILS 2
29	SIGHT DISTANCE PROFILE – MAPLE AVE
30	SIGHT DISTANCE PROFILE – BERRY ST
31	FIRELANE PLAN
32	LANDSCAPE PLAN
33	LANDSCAPE DETAILS
34	TREE PRESERVATION PLAN
35	TREE PRESERVATION DETAILS & NARRATIVE
36	DRY UTILITY PLAN
37	DRY UTILITY PLAN
38	DRY UTILITY PLAN
39	DRY UTILITY PLAN
40	PHOTOMETRIC PLAN
41	PHOTOMETRIC PLAN

APPROVAL

LDC
4585 DAISY REID AVENUE, SUITE 201, WOODBRIDGE, VIRGINIA 22192
WWW.LDCVA.COM

COVER SHEET

515 MAPLE AVENUE EAST
TOWN OF VIENNA, VIRGINIA

	DATE	APPROVED	REVIEW BY	DESCRIPTION	NO.	DESIGN DATE	ENGINEER

REVISION APPROVED BY:

I HEREBY CERTIFY THAT OTHER THAN THE REVISIONS SHOWN HEREON, NO OTHER CHANGES HAVE BEEN MADE.

COMMONWEALTH OF VIRGINIA
MATTHEW T. MARSHALL
Lic. No. 1335-B
07/02/25
DATE
LAND SURVEYOR

SCALE: AS SHOWN

SHEET: 1 OF 41

DATE: JULY 2025

DRAFT: ZG/SB | CHECK: MTM

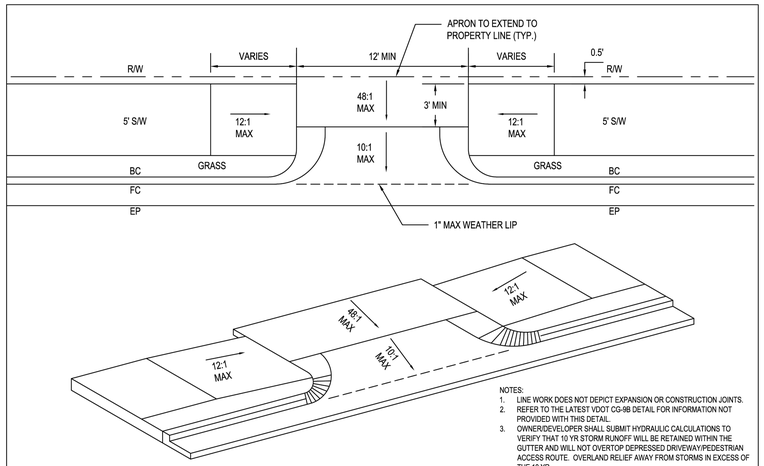
FILE NUMBER: 25021-1-1

PARKING LOT LIGHTING NOTES:

1. PARKING LOT LIGHTS SHALL BE A MAXIMUM HEIGHT OF 10 FEET.

2. PARKING LOT LIGHTS MAY BE LOCATED IN ANY YARD.

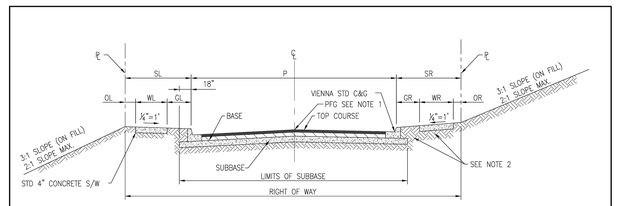
3. FIXTURES SHALL BE MOUNTED IN SUCH A MANNER THAT THE CONE OF LIGHT IS CONTAINED ON-SITE AND DOES NOT CROSS ANY PROPERTY LINE.



NOTES:
1. LINE WORK DOES NOT DEPICT EXPANSION OR CONSTRUCTION JOINTS.
2. REFER TO THE LATEST VDOT CG-9B DETAIL FOR INFORMATION NOT PROVIDED WITH THIS DETAIL.
3. OWNER/DEVELOPER SHALL SUBMIT HYDRAULIC CALCULATIONS TO VERIFY THAT 10 YR STORM RUNOFF WILL BE RETAINED WITHIN THE GUTTER AND WILL NOT OVERTOP DEPRESSED DRIVEWAY/PEDESTRIAN ACCESS ROUTE. OVERLAND RELIEF AWAY FROM STORMS IN EXCESS OF THE 10 YR.
4. PROVIDE 6" MIN. AGGREGATE BASE UNDER DRIVEWAY APRON.
5. A MINIMUM 1" ASPHALT CUT FRONTING ALL CURB AND GUTTER CONSTRUCTION TO ENSURE PROPER FORMING OF GUTTER PAN.

MODIFIED VDOT CG-9B APRON
TOWN OF VIENNA, VIRGINIA
DEPARTMENT OF PUBLIC WORKS

DRAWING NO.	N/A
SCALE	N.T.S
SHEET	1 of 1
DATE/REVISION	2014-12-30



TYPICAL SECTIONS

	R.O.W	SL	OL	WL	GL	P	GR	WR	OR	SR
BERRY STREET	50'	10.5	0.5'	5'	5'	29'	5'	5'	0.5'	10.5'
MAPLE AVENUE	60'	12'	0.5'	5'	6.5'	36'	6.5'	5'	0.5'	12'
	70'	17'	0.5'	5'	11.5'	36'	11.5'	5'	0.5'	17'

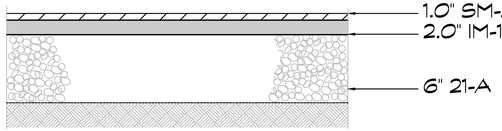
KEY
O –OFFSET (SIDEWALK OFFSET FROM PROPERTY LINE)
W –SIDEWALK (S/W)
G –GRASS STRIP
S –SHOULDER
P –PAVEMENT WIDTH
PL –PROPERTY LINE

NOTES:
1. SLOPE OF PAVEMENT FROM CENTERLINE TO GUTTER SHALL BE 1/4"=1'
2. SUBGRADE TO BE PREPARED IN ACCORDANCE WITH VDHAT ROAD AND BRIDGE SPECIFICATIONS.
3. FINAL PAVEMENT SECTION WILL BE PREDICATED ON APPROVAL OF DESIGN BASE ON THE LATES VDOT PAVEMENT DESIGN GUIDE.

STREET SECTION

TOWN OF VIENNA, VIRGINIA
DEPARTMENT OF PUBLIC WORKS

DRAWING NO.	N/A
SCALE	N.T.S
SHEET	1 of 1
DATE/REVISION	2015/1/08
	2016/1/13



ON-SITE PAVING DETAIL
N.T.S.

TREE PRESERVATION DEVIATION REQUEST LETTER

July 8, 2025

Mr. David Levy, Director of Planning and Zoning
127 Center St S
Vienna, VA 22180

Re: #515 Maple Avenue East
Fairfax County Tax Map #38-2 ((9)) 102, 103, & 105
Currently Zoned AE, 70,084 SF
LDC Project #25021-1-1

Dear Mr. Levy,

Land Design Consultants, Inc. (LDC) has submitted a site plan for the subject property for the construction of a 3-story mixed-use building.

The Applicant has retained TNT Environmental, Inc. to complete an Existing Vegetation Map, Tree Inventory and Condition Analysis for the above referenced property in accordance with Section 17 of the Vienna Code of Ordinances. Copies of this information are provided herein.

In accordance with PFM Section 17-2004.C, LDC is respectfully requesting permission to deviate from the Tree Preservation Target requirements. Currently, the subject lot is approximately 11.8% covered by existing tree canopy. Upon development, 10% of the subject property shall be required as tree canopy. Of the required 10%, 0.0% (0 SF) of the tree canopy requirement will be met by tree preservation. The existing vegetation on-site to be removed consists of two numbered on-site trees. The Tree Preservation Target of 828 SF cannot be met and therefore the following serves as our justification for this request:

> In accordance with Section 17-2004.A (1)(3), meeting the Tree Preservation Target would preclude the development of uses or densities otherwise allowed by the Zoning Ordinance. Per Section 17-2004.A(3), Construction activities could be reasonably expected to impact existing trees or forested areas used to meet the tree preservation target to the extent they would not likely survive in a healthy and structurally sound manner for a minimum of 20 years in accordance with the post-development standards for trees and forested areas. Trees T-520 to T-557, T-559, T-562, T-564, and T-567 have critical root zones within the BRL and near the existing foundation to be demolished. The trees will not survive demolition activities due to 10' wide work zone requirements and therefore would preclude redevelopment of the subject property.
>
> In accordance with Section 17-2004.A(2), meeting the Tree Preservation Target would require the preservation of trees that do not meet standards for health and structural condition and other vegetation and risk management requirements. Multiple trees are in poor condition. Trees T-537 and T-545 are Loniceras and are in fair condition. They are invasive and have several dead limbs.
>
> In accordance with Section 17-2004.A (1)(2)(3), deviations from the Tree Preservation Target are permitted if site meets the criteria specified.

1. In order to meet Tree Canopy requirements, the Applicant will plant 9,800 SF of quality vegetation on the site as shown on the landscape plan plant schedule (site plan sheets 32-33). This will result in meeting/exceeding the 10% Tree Canopy Requirements as required by Section 17-2001.

For the reasons stated above, we respectfully request your approval of a deviation from the Tree Preservation Target for the subject property.

Sincerely,

Shane Butler, P.E.
Project Manager

APPROVAL

LDC
4585 DAISY REID AVENUE, SUITE 201 WOODBRIDGE, VIRGINIA 22192
WWW.LDCVA.COM

SITE DETAILS

515 MAPLE AVENUE EAST
TOWN OF VIENNA, VIRGINIA

NO	DESCRIPTION	REVIEW BY	APPROVED	DATE

REVISION APPROVED BY:

DESIGN	DATE

ENGINEER

I HEREBY CERTIFY THAT OTHER THAN THE REVISIONS SHOWN HEREON, NO OTHER CHANGES HAVE BEEN MADE.

COMMONWEALTH OF VIRGINIA
MATTHEW T. MARSHALL
Lic. No. 1935-B
07/09/25
DATE
LAND SURVEYOR

SCALE: AS SHOWN

SHEET: 2 OF 41

DATE: JULY 2025

DRAFT: ZG/SB | CHECK: MTM

FILE NUMBER: 25021-1-1

B

BERRY ST ELEVATION

3/32"=1'-0"

A

MAPLE AVE ELEVATION

3/32"=1'-0"

APPROVAL

LDC

4585 DAISY REID AVENUE, SUITE 201 WOODBRIDGE, VIRGINIA 22192
WWW.LDCVA.COM

BUILDING HEIGHT EXHIBIT

515 MAPLE AVENUE EAST

TOWN OF VIENNA, VIRGINIA

NO.	DESCRIPTION	REVIEW BY	APPROVED	DATE

REVISION APPROVED BY:

DESIGN	DATE

ENGINEER

I HEREBY CERTIFY THAT OTHER THAN THE REVISIONS SHOWN HEREON, NO OTHER CHANGES HAVE BEEN MADE.

COMMONWEALTH OF VIRGINIA
MATTHEW T. MARSHALL
Lic. No. 1535-B
07/09/25
DATE
LAND SURVEYOR

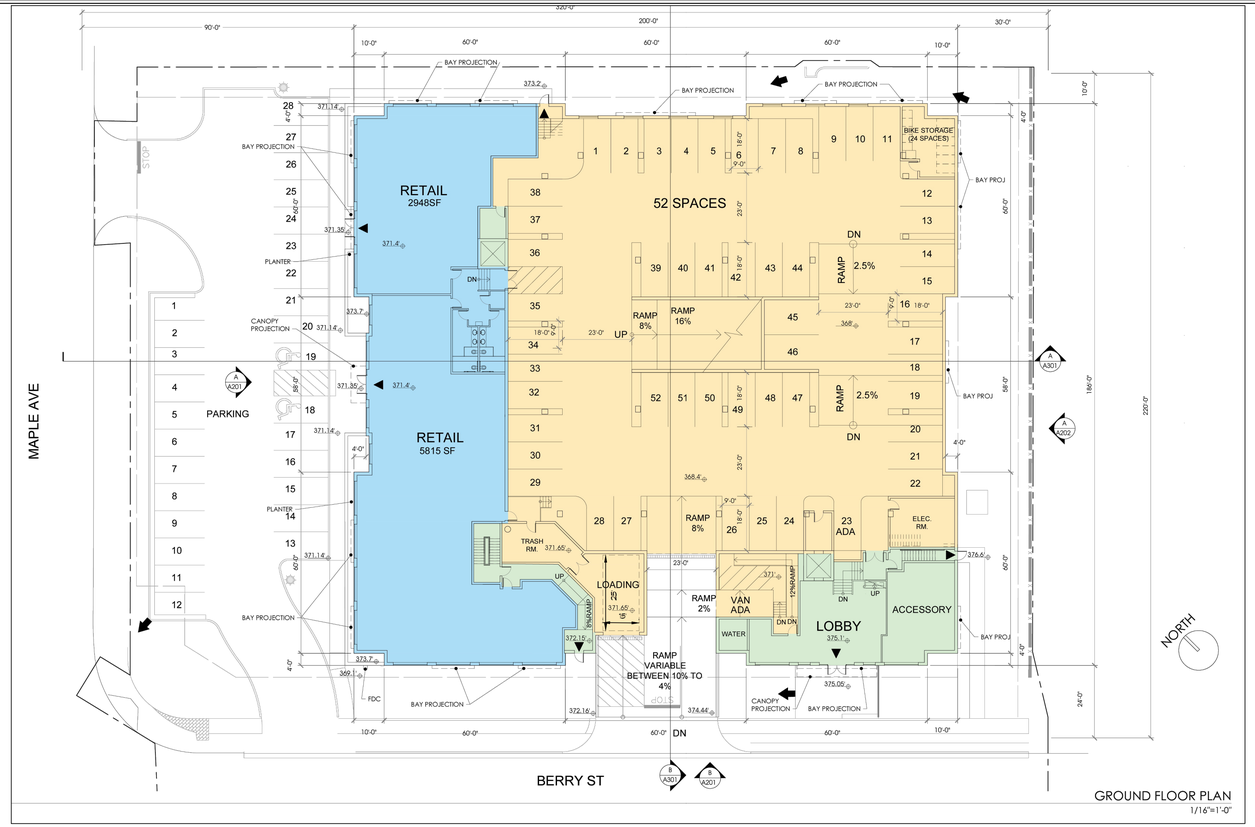
SCALE:
AS SHOWN

SHEET: 3 OF 41

DATE: JULY 2025

DRAFT: ZG/SB | CHECK: MTM

FILE NUMBER: 25021-1-1



GROUND FLOOR PLAN
1/16"=1'-0"

2ND FLOOR PLAN
1"=20'

PARKING TABULATIONS

USE	USE	TOTAL No. OF UNITS/S.F.	PARKING RATIO	PARKING REQUIRED (1)	PARKING PROVIDED (1)	HANDICAP PARKING REQUIRED/PROVIDED (2)	VAN ACCESSIBLE HANDICAP PARKING REQUIRED/PROVIDED	LOADING REQUIRED/ PROPOSED	BICYCLE PARKING REQUIREMENT	BICYCLE PARKING REQUIRED	BICYCLE PARKING PROVIDED
RESIDENTIAL	1 BEDROOM	14	1.5 SPACES PER UNIT	21	135	5	1	2	1 SPACE PER 2 UNITS	22	22
	2/3 BEDROOM	30	2 SPACES PER UNIT	60							
	VISITOR PARKING		1 SPACE PER 5 UNITS	9							
COMMERCIAL	COMMERCIAL	9,014	1 SPACE PER 200 SF	45					1 SPACE PER 5,000 S.F.	2	2
			TOTAL:	**135**	**135**	**5**	**1**	**2**		**24**	**24**

NOTES:
1. INCLUSIVE OF HANDICAP PARKING SPACES, LOADING SPACE, AND EXTERIOR PARKING SPACES.
2. INCLUSIVE OF VAN ACCESSIBLE ADA SPACE.

PARKING LOCATION	TOTAL SPACES (1)	HANDICAP SPACES (2)	VAN ACCESSIBLE HANDICAP SPACES	LOADING SPACES	STANDARD PARKING SPACES
GARAGE/BUILDING	107	3	1	1	103
EXTERIOR	28	2	0	1	26
TOTAL:	**135**	**5**	**1**	**2**	**129**

NOTES:
1. INCLUSIVE OF HANDICAP PARKING SPACES AND LOADING SPACE.
2. INCLUSIVE OF VAN ACCESSIBLE ADA SPACE.

APPROVAL

LDC
4665 DAISY REED AVENUE, SUITE 201 WOODBRIDGE, VIRGINIA 22192
WWW.LDCVA.COM

PARKING PLAN

515 MAPLE AVENUE EAST

TOWN OF VIENNA, VIRGINIA

DATE	DESCRIPTION	NO.	DESIGN	DATE

REVISION APPROVED BY:
REVIEW BY:
APPROVED
DATE
ENGINEER

I HEREBY CERTIFY THAT OTHER THAN THE REVISIONS SHOWN HEREON, NO OTHER CHANGES HAVE BEEN MADE.

COMMONWEALTH OF VIRGINIA
MATTHEW T. MARSHALL
Lic. No. 1535-B
07/09/25
DATE
LAND SURVEYOR

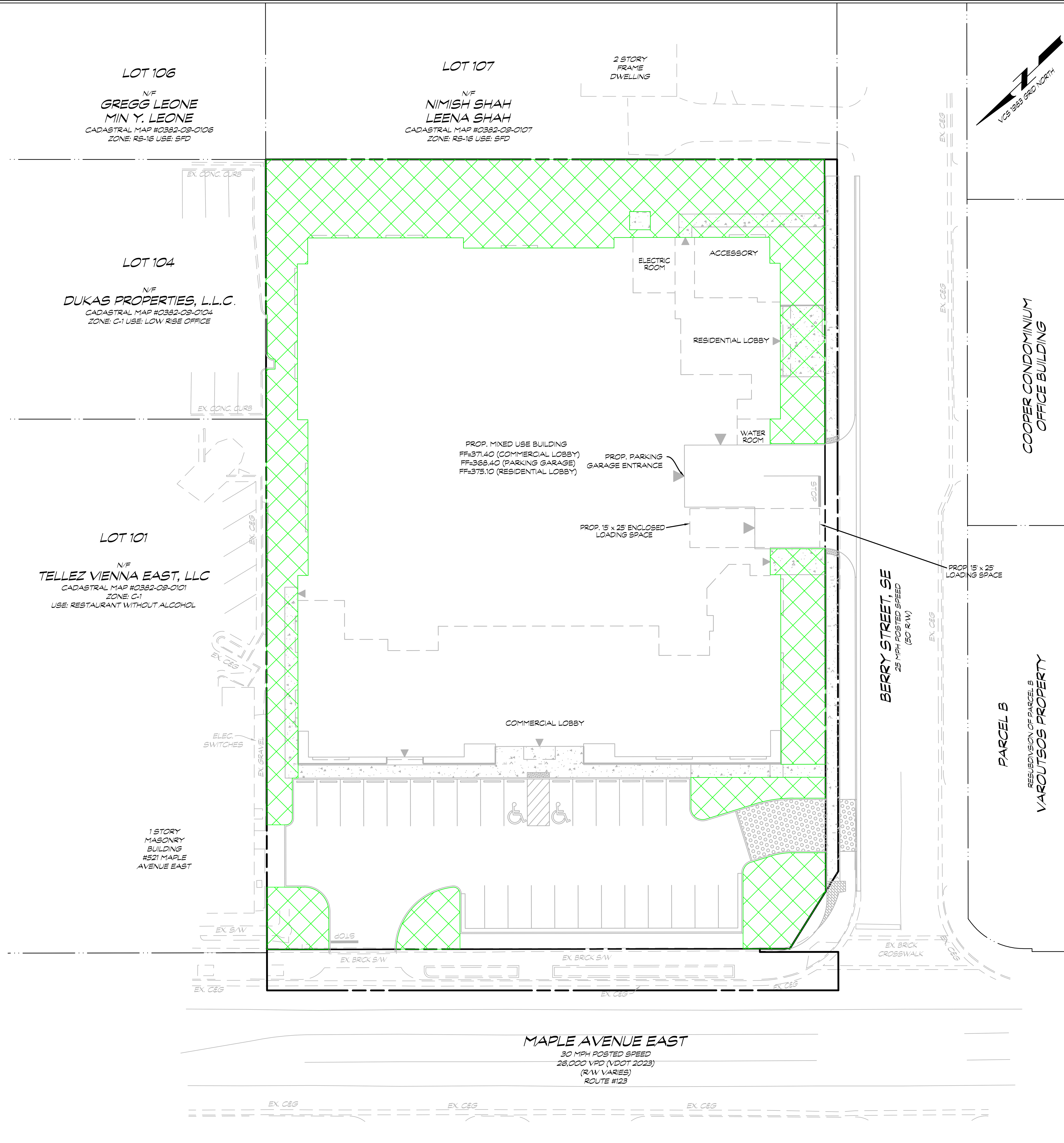
SCALE: AS SHOWN

SHEET: 4 OF 41

DATE: JULY 2025

DRAFT: ZG/SB | CHECK: MTM

FILE NUMBER: 25021-1-1



OPEN SPACE TABULATIONS			
SITE AREA:	70,084.00 SF	1.61 AC	
OPEN SPACE REQUIRED:	10,512.60 SF	0.24 AC	15%
OPEN SPACE PROVIDED:	15,128.00 SF	0.35 AC	22%

LEGEND

PROPOSED OPEN SPACE

OPEN SPACE HAS BEEN IDENTIFIED PER THE FOLLOWING REQUIREMENTS:

1. A PORTION OF A LOT AT GROUND LEVEL THAT IS EIGHT (8) FEET OR MORE IN WIDTH.
2. A PORTION OF A LOT AT GROUND LEVEL THAT IS ONE HUNDRED AND TWENTY (120) SQUARE FEET OR MORE IN CONTAGIOUS AREA.
3. A PORTION OF A LOT AT GROUND LEVEL THAT IS UNOCCUPIED BY PRINCIPAL OR ACCESSORY ENCLOSED STRUCTURES.
4. A PORTION OF A LOT AT GROUND LEVEL THAT IS NOT USED IN WHOLE OR IN PART AS ROADS, ALLEYS, EMERGENCY VEHICLE EASEMENT AREAS, DRIVEWAYS, MANEUVERING AISLES OR OFF-STREET PARKING OR LOADING BERTHS.

GRAPHICAL SCALE

20 10 0 20 40

1" = 20'

APPROVAL

LDC
4585 DAISY REID AVENUE, SUITE 201 WOODBRIDGE, VIRGINIA 22192
WWW.LDC-VA.COM

OPEN SPACE EXHIBIT

515 MAPLE AVENUE EAST

TOWN OF VIENNA, VIRGINIA

DATE	DESIGN	NO.	DESCRIPTION	REVIEW BY	APPROVED	DATE

ENGINEER

REVISION APPROVED BY:

I HEREBY CERTIFY THAT OTHER THAN THE REVISIONS SHOWN HEREON, NO OTHER CHANGES HAVE BEEN MADE.

COMMONWEALTH OF VIRGINIA
MATTHEW T. MARSHALL
Lic. No. 1525-B
07/09/25
DATE
LAND SURVEYOR

SCALE: AS SHOWN

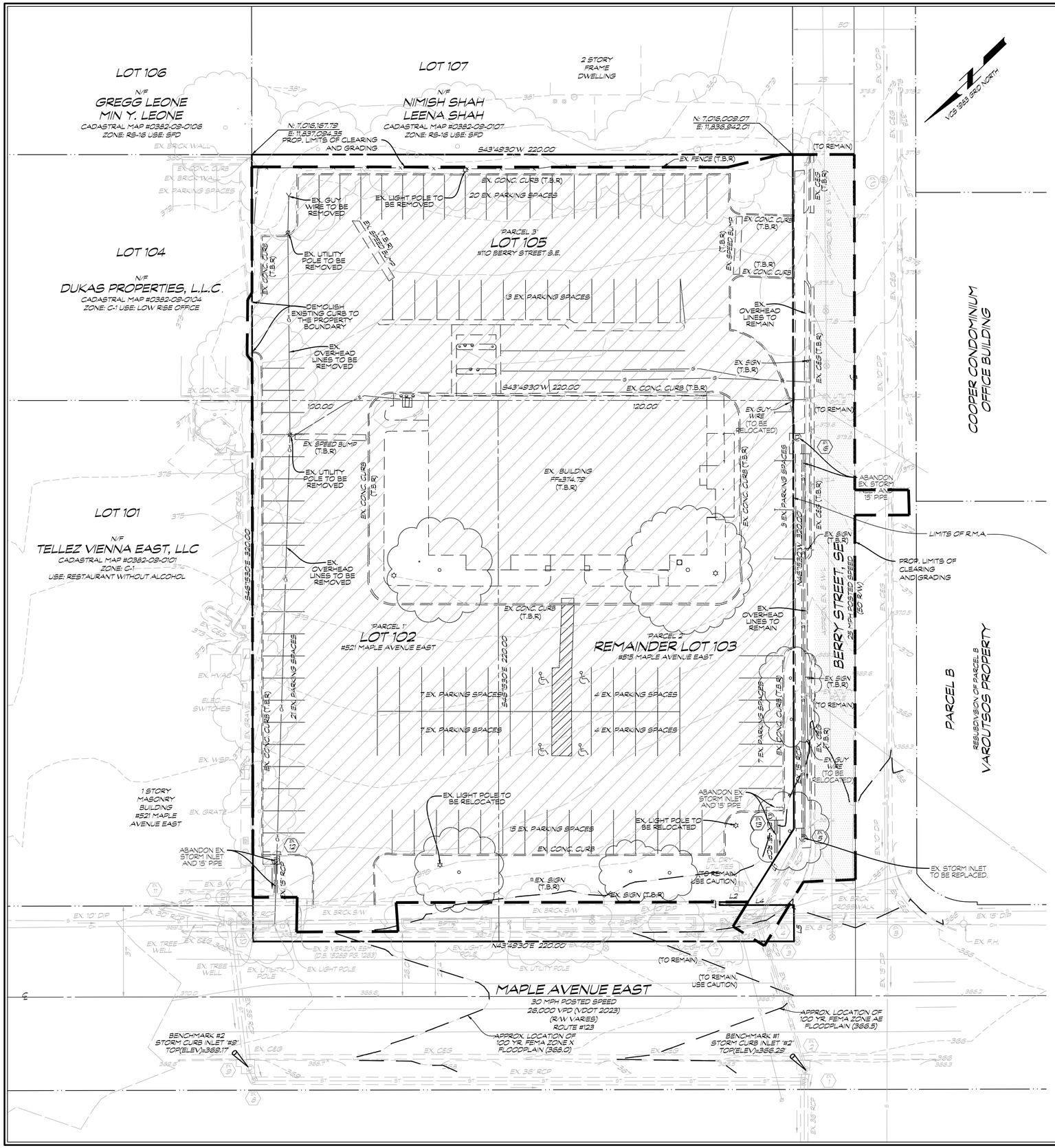
SHEET: 5 OF 41

DATE: JULY 2025

DRAFT: ZG/SB

CHECK: MTM

FILE NUMBER: 25021-1-1



AS-BUILT INFORMATION

SANITARY SEWER

- SS A: EX. TOP = 364.77' EX. INV. = 354.53' (IN FROM B) EX. INV. = 354.46' (OUT TO NORTH)
- SS B: EX. TOP = 366.64' EX. INV. = 355.66' (IN FROM C) EX. INV. = 355.77' (IN FROM E) EX. INV. = 355.44' (IN FROM G) EX. INV. = 355.39' (OUT TO A)
- SS C: EX. TOP = 377.16' EX. INV. = 370.86' (IN FROM D) EX. INV. = 370.73' (OUT TO B)
- SS D: EX. TOP = 380.91' EX. INV. = 374.51' (IN FROM SOUTHEAST) EX. INV. = 374.46' (OUT TO C)
- SS E: EX. TOP = 369.18' EX. INV. = 362.29' (IN FROM F) EX. INV. = 362.18' (OUT TO B)
- SS F: EX. TOP = 375.28' EX. INV. = 366.51' (IN FROM SOUTHEAST) EX. INV. = 366.50' (IN FROM NORTHEAST) EX. INV. = 366.10' (OUT TO E)
- SS G: EX. TOP = 365.83' EX. INV. = 357.27' (IN FROM SOUTHEAST) EX. INV. = 356.90' (OUT TO B)

SS A → SS B	224.14' - 15" DIP @ 0.38%
SS B → SS C	297.92' - 10" DIP @ 5.06%
SS C → SS D	311.44' - 10" DIP @ 1.16%
SS B → SS E	261.36' - 10" DIP @ 2.45%
SS E → SS F	255.08' - 10" DIP @ 1.49%
SS B → SS G	346.11' - 15" DIP @ 0.42%

STORM SEWER

- SS 1: EX. MANHOLE TOP = 366.34' EX. INV. = 360.87' (IN FROM 2) EX. INV. = 360.80' (IN FROM 8) EX. INV. = 360.44' (OUT TO NORTHWEST)
- SS 2: EX. CURB INLET TOP = 366.29' EX. INV. = 360.68' (IN FROM 3) EX. INV. = 360.58' (OUT TO 1)
- SS 3: EX. MANHOLE TOP = 366.52' (STRUCTURE IS INACCESSIBLE)
- SS 4: EX. MANHOLE TOP = 366.83' EX. INV. = 362.84' (IN FROM 5) EX. INV. = 363.15' (IN FROM 7) EX. INV. = 362.73' (OUT TO 3)
- SS 5: EX. CURB INLET TOP = 367.34' EX. INV. = 364.90' (IN FROM 6) EX. INV. = 364.35' (OUT TO 4)
- SS 6: EX. CURB INLET TOP = 373.68' EX. INV. = 368.98' (OUT TO 5)
- SS 7: EX. CURB INLET TOP = 366.56' EX. INV. = 363.90' (OUT TO 4)
- SS 8: EX. MANHOLE TOP = 369.30' EX. INV. = 363.03' (IN FROM 9) EX. INV. = 362.83' (OUT TO 1)
- SS 9: EX. CURB INLET TOP = 369.17' EX. INV. = 363.09' (IN FROM 10) EX. INV. = 363.06' (OUT TO 8)
- SS 10: EX. CURB INLET TOP = 369.17' EX. INV. = 364.95' (IN FROM SOUTHWEST) EX. INV. = 363.70' (IN FROM 11) EX. INV. = 363.66' (OUT TO 9)
- SS 11: EX. MANHOLE TOP = 369.74' EX. INV. = 364.03' (IN FROM NORTHEAST) EX. INV. = 365.37' (IN FROM SOUTHEAST) EX. INV. = 363.86' (OUT TO 10)
- SS 12: EX. CURB INLET TOP = 370.06' EX. INV. = 367.14' (OUT TO NORTHWEST)
- SS 13: EX. CURB INLET TOP = 368.18' EX. INV. = 364.21' (OUT TO NORTHWEST)

SS 1 → SS 2	4.50' - 36" RCP @ 0.22%
SS 2 → SS 3	50.15' - 18" RCP @ (STR 3 INACCESSIBLE)
SS 3 → SS 4	13.85' - 18" RCP @ (STR 3 INACCESSIBLE)
SS 4 → SS 3	38.15' - 15" RCP @ 3.96%
SS 5 → SS 6	160.15' - 15" RCP @ 2.55%
SS 4 → SS 7	16.87' - 15" RCP @ 3.98%
SS 1 → SS 8	223.89' - 36" RCP @ 0.86%
SS 8 → SS 9	6.51' - 36" RCP @ 0.46%
SS 9 → SS 12	59.03' - 36" RCP @ 0.97%
SS 12 → SS 11	27.92' - 30" RCP @ 0.57%

NOTES:

1. DENOTES EXISTING PHYSICAL IMPROVEMENTS TO BE REMOVED
   DENOTES EXISTING PHYSICAL IMPROVEMENTS TO BE REMOVED
   DENOTES PORTIONS OF EXISTING ROADS TO BE MILLED & OVERLAID
   DENOTES TEST PIT REQUIRED
   T.B.R. TO BE REMOVED
2. ALL EXISTING STRUCTURES TO BE RAZED UNLESS OTHERWISE NOTED.
3. SEE THE TREE PRESERVATION PLAN ON SHEETS 34-35 FOR TREES TO BE REMOVED.
4. CONTRACTOR TO COORDINATE WITH RESPECTIVE UTILITY COMPANIES FOR REMOVAL OR RELOCATION OF EXISTING OVERHEAD OR UNDERGROUND UTILITIES IN ORDER TO FACILITATE CONSTRUCTION.

LINE TABLE		
LINE	BEARING	LENGTH
L1	N4°06'30"W	35.16'
L2	N43°49'30"E	11.51'
L3	N46°10'30"W	1.25'
L4	S43°49'30"W	30.22'
L5	N46°15'30"W	14.82'

GRAPHICAL SCALE
20 10 0 20 40
1" = 20

APPROVAL

LDC
4585 DAISY REED AVENUE, SUITE 201 WOODBRIDGE, VIRGINIA 22192
WWW.LDCVA.COM

515 MAPLE AVENUE EAST

TOWN OF VIENNA, VIRGINIA

EXISTING CONDITIONS & DEMOLITION PLAN

NO.	DESCRIPTION	REVIEW BY:	APPROVED	DATE
	REVISION APPROVED BY:			

ENGINEER

I HEREBY CERTIFY THAT OTHER THAN THE REVISIONS SHOWN HEREON, NO OTHER CHANGES HAVE BEEN MADE.

COMMONWEALTH OF VIRGINIA
MATTHEW T. MAISHALL
Lic. No. 1325-B
07/09/25
DATE
LAND SURVEYOR

SCALE: AS SHOWN

SHEET: 6 OF 41

DATE: JULY 2025

DRAFT: ZG/BB | CHECK: MTM

FILE NUMBER: 25021-1-1

LOT 106
N/F
GREGG LEONE
MIN Y. LEONE
CADASTRAL MAP #0382-09-0106
ZONE: RS-16 USE: SFD

LOT 107
N/F
NIMISH SHAH
LEENA SHAH
CADASTRAL MAP #0382-09-0107
ZONE: RS-16 USE: SFD

2 STORY FRAME DWELLING

LOT 104
N/F
DUKAS PROPERTIES, L.L.C.
CADASTRAL MAP #0382-09-0104
ZONE: C-1 USE: LOW RISE OFFICE

LOT 101
N/F
TELLEZ VIENNA EAST, LLC
CADASTRAL MAP #0382-09-0101
ZONE: C-1
USE: RESTAURANT WITHOUT ALCOHOL

1 STORY MASONRY BUILDING #521 MAPLE AVENUE EAST

COOPER CONDOMINIUM OFFICE BUILDING

PARCEL B
RESUBDIVISION OF PARCEL B
VAROUTSOS PROPERTY

BERRY STREET, SE
25' MPSD (VDOT 2023)
(50' R/W)

MAPLE AVENUE EAST
30 MPH POSTED SPEED
26,000 VPD (VDOT 2023)
(R/W VARIES)
ROUTE #123

PROP. LIMITS OF CLEARING AND GRADING
PROP. 10' BUFFER (Z.O. 18-512)
PROP. 6' MASONRY WALL (Z.O. 18-512)
EX. PARKING SPACES
PROP. TRANSFORMER PAD
30' B.R.L.
ELECTRIC ROOM
ACCESSORY
PROP. SEATING WALL (SEPARATE PERMIT NOT REQUIRED)
PROP. BIKERACK (SEE ARCH. PLAN)
RESIDENTIAL LOBBY
PROP. CANOPY (TYP.)
PROP. 5' BRICK BANDED S/W
APPROX. EX. 8' W/L
EX. 10' DIP
PROP. NO PARKING SIGN
PROP. FDC
PROP. 2" WATER METER
PROP. 3" COPPER DOMESTIC SERVICE LINE
PROP. 6" D.I.P. FIRE LINE
WATER ROOM
PROP. MIXED USE BUILDING
FF=371.40 (COMMERCIAL LOBBY)
FF=368.40 (PARKING GARAGE)
FF=375.10 (RESIDENTIAL LOBBY)
PROP. PARKING GARAGE ENTRANCE
PROP. TRENCH DRAIN (SEE ARCH. PLAN)
256 V.P.D.
PROP. CG-13 ENTRANCE
PROP. F.H. (TYP.)
PROP. 6" D.I.P. W/L
PROP. 15' x 25' ENCLOSED LOADING SPACE
PROP. FLUSH/ RIBBON CURB
LIMITS OF R.M.A.
PROP. 15' x 25' LOADING SPACE
PROP. DETECTABLE WARNING SURFACE (TYP.)
PROP. R/W DEDICATION
PROP. LIMITS OF CLEARING AND GRADING
60' BUILDING WALL PLANE (60' MAX. IN CONFORMANCE WITH ZONE AE REQUIREMENTS)
10' B.R.L.
18' B.R.L.
PROP. CANOPY (TYP.)
PROP. CANTILEVERED BAY WINDOW/MINOR PROJECTION (TYP.)
PROP. BIKERACK (SEE ARCH. PLAN)
COMMERCIAL LOBBY
PROP. PLANTER/WALL
PROP. 5'X5' LANDING
PROP. 5' CONC. S/W
PROP. RAIN LEADER (SEE ARCH. PLAN)
PROP. HANDICAP PARKING SIGN
PROP. LIGHT (SEE DETAIL ON SHEET 2)
PROP. WHEEL STOP
PROP. 8" DR-25 C-900 SAN. LAT.
PROP. DEPRESSED CURB
PROP. R/W DEDICATION
100 V.P.D.
PROP. EMERGENCY ACCESS GEOPAVE OR EQUIV.
PROP. FIRE MARSHAL APPROVED GATE OR BOLLARDS
EXPAND EX. MASONRY S/W PER TOWN STDS.
EX. COMMERCIAL ENTRANCE TO REMAIN
EX. 3 VEHICLE EASEMENT (D.B. 5223 PG. 1423)
EX. 36" RCP
EX. 8" DIP
EX. 15" DIP
EX. F.H.
BENCHMARK #2
STORM CURB INLET "#3"
TOP(ELEV.)=369.17'
APPROX. LOCATION OF 100 YR. FEMA ZONE X FLOODPLAIN (368.0')
BENCHMARK #1
STORM CURB INLET "#2
TOP(ELEV.)=366.23'
APPROX. LOCATION OF 100 YR. FEMA ZONE AE FLOODPLAIN (366.5')

VCS 1985 GRID NORTH

LEGEND
- PROPOSED STORM SEWER STRUCTURE LABEL
- PROPOSED STREET LIGHT
- DENOTES BUILDING ENTRANCE (PEDESTRIAN)
- DENOTES BUILDING ENTRANCE (VEHICULAR)
- DENOTES TEST PIT REQUIRED
- DENOTES EMERGENCY ACCESS GEOPAVE SURFACE

GRAPHICAL SCALE
20 10 0 20 40
1" = 20'

APPROVAL

LDC
4585 DAISY REID AVENUE, SUITE 201 WOODBRIDGE, VIRGINIA 22192
WWW.LDCVA.COM

SITE PLAN

515 MAPLE AVENUE EAST

TOWN OF VIENNA, VIRGINIA

NO.	DESCRIPTION	REVIEW BY:	APPROVED	DATE
	REVISION APPROVED BY:			

DESIGN	DATE	ENGINEER

I HEREBY CERTIFY THAT OTHER THAN THE REVISIONS SHOWN HEREON, NO OTHER CHANGES HAVE BEEN MADE.

COMMONWEALTH OF VIRGINIA
MATTHEW T. MARSHALL
Lic. No. 1935-B
07/02/25
DATE
LAND SURVEYOR

SCALE: AS SHOWN

SHEET: 7 OF 41

DATE: JULY 2025

DRAFT: ZG/SB | CHECK: MTM

FILE NUMBER: 25021-1-1

LOT 106
N/F
GREGG LEONE
MIN Y. LEONE
CADASTRAL MAP #0382-03-0106
ZONE: RS-16 USE: SFD

LOT 107
2 STORY FRAME DWELLING
N/F
NIMISH SHAH
LEENA SHAH
CADASTRAL MAP #0382-03-0107
ZONE: RS-16 USE: SFD

LOT 104
N/F
DUKAS PROPERTIES, L.L.C.
CADASTRAL MAP #0382-03-0104
ZONE: C-1 USE: LOW RISE OFFICE

LOT 101
N/F
TELLEZ VIENNA EAST, LLC
CADASTRAL MAP #0382-03-0101
ZONE: C-1
USE: RESTAURANT WITHOUT ALCOHOL

1 STORY MASONRY BUILDING #521 MAPLE AVENUE EAST

COOPER CONDOMINIUM OFFICE BUILDING

PARCEL B
RESUBDIVISION OF PARCEL B
VAROUTSOS PROPERTY

BERRY STREET, SE
25 MPH POSTED SPEED
(50' R/W)

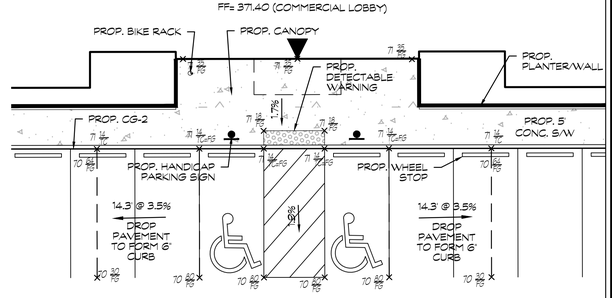
MAPLE AVENUE EAST
30 MPH POSTED SPEED
26,000 VPD (VDOT 2023)
(R/W VARIES)
ROUTE #123

VCS 1929 GRID NORTH

PROP. LIMITS OF CLEARING AND GRADING
PROP. 10' BUFFER (Z.O. 18-512)
PROP. 6' MASONRY WALL (Z.O. 18-512)
EX. PARKING SPACES
PROP. 2:1 SLOPE (PROVIDE SPECIAL GROUND COVER PER PFM 6-1503)
PROP. TRANSFORMER PAD
30' B.R.L.
10YR WSE=374.86
ELECTRIC ROOM
ACCESSORY
PROP. SEATING WALL (SEPARATE PERMIT NOT REQUIRED)
PROP. BIKERACK (SEE ARCH. PLAN)
10YR WSE=374.92
RESIDENTIAL LOBBY
PROP. CANOPY (TYP.)
10YR WSE=374.92
PROP. 5 BRICK BANDED S/W
PROP. NO PARKING SIGN
PROP. FDC
PROP. 2" WATER METER
PROP. 3" COPPER DOMESTIC SERVICE LINE
PROP. 6" D.I.P. FIRE LINE
WATER ROOM
PROP. MIXED USE BUILDING
FF=371.40 (COMMERCIAL LOBBY)
FF=368.40 (PARKING GARAGE)
FF=375.10 (RESIDENTIAL LOBBY)
PROP. PARKING GARAGE ENTRANCE
PROP. TRENCH DRAIN (SEE ARCH. PLAN)
25G V.P.D.
PROP. C6-13 ENTRANCE
PROP. F.H. (TYP.)
PROP. 6" D.I.P. W/L
PROP. 15' x 25' ENCLOSED LOADING SPACE
PROP. FLUSH/ RIBBON CURB
PROP. 15' x 25' LOADING SPACE
LIMITS OF R.M.A.
PROP. LIMITS OF CLEARING AND GRADING
PROP. DETECTABLE WARNING SURFACE (TYP.)
PROP. R/W DEDICATION
10' B.R.L.
60' BUILDING WALL PLANE (60' MAX. IN CONFORMANCE WITH ZONE AE REQUIREMENTS)
PROP. CANOPY (TYP.)
PROP. CANTILEVERED BAY WINDOW/MINOR PROJECTION (TYP.)
PROP. BIKERACK (SEE ARCH. PLAN)
COMMERCIAL LOBBY
PROP. PLANTER/WALL
PROP. 5X5 LANDING
PROP. NO PARKING SIGN
PROP. 5 CONC. S/W
ELEC. SWITCHES
PROP. LIGHT (SEE DETAIL ON SHEET 2)
PROP. RAIN LEADER (SEE ARCH. PLAN)
PROP. HANDICAP PARKING SIGN
PROP. WHEEL STOP
PROP. DEPRESSED CURB
PROP. EMERGENCY ACCESS GEOPAVE OR EQUIV.
PROP. FIRE MARSHAL APPROVED GATE OR BOLLARDS
EXPAND EX. MASONRY S/W PER TOWN STDS.
PROP. R/W DEDICATION
18' B.R.L.
PROP. 6" CG6 CURB & GUTTER
10' V.P.D.
EX. COMMERCIAL ENTRANCE TO REMAIN
EX. F.H.
BENCHMARK #2
STORM CURB INLET "B"
TOP(ELEV.)=369.17'
APPROX. LOCATION OF 100 YR. FEMA ZONE X FLOODPLAIN (368.0)
BENCHMARK #1
STORM CURB INLET "A"
TOP(ELEV.)=366.29'
APPROX. LOCATION OF 100 YR. FEMA ZONE AE FLOODPLAIN (366.5)

GRAPHICAL SCALE
20 10 0 20 40
1" = 20'

HANDICAP GRADING DETAIL
SCALE: 1" = 10'



GRAPHICAL SCALE
10 5 0 10 20
1" = 10'

LEGEND
- DENOTES OVERLAND RELIEF
- PROPOSED LIMITS OF 10-YR W.S.E.
- DENOTES TEST PIT REQUIRED
- DENOTES BUILDING ENTRANCE (PEDESTRIAN)
- DENOTES BUILDING ENTRANCE (VEHICULAR)

APPROVAL

LDC
4585 DAISY REID AVENUE, SUITE 210 WOODBRIDGE, VIRGINIA 22192
WWW.LDCVA.COM

515 MAPLE AVENUE EAST
TOWN OF VIENNA, VIRGINIA

GRADING PLAN

NO	DESCRIPTION	REVISION APPROVED BY: DESIGN	DATE	APPROVED	DATE

I HEREBY CERTIFY THAT OTHER THAN THE REVISIONS SHOWN HEREON, NO OTHER CHANGES HAVE BEEN MADE.

ENGINEER

COMMONWEALTH OF VIRGINIA
MATTHEW T. MARSHALL
Lic. No. 1935-B
07/09/25
DATE
LAND SURVEYOR

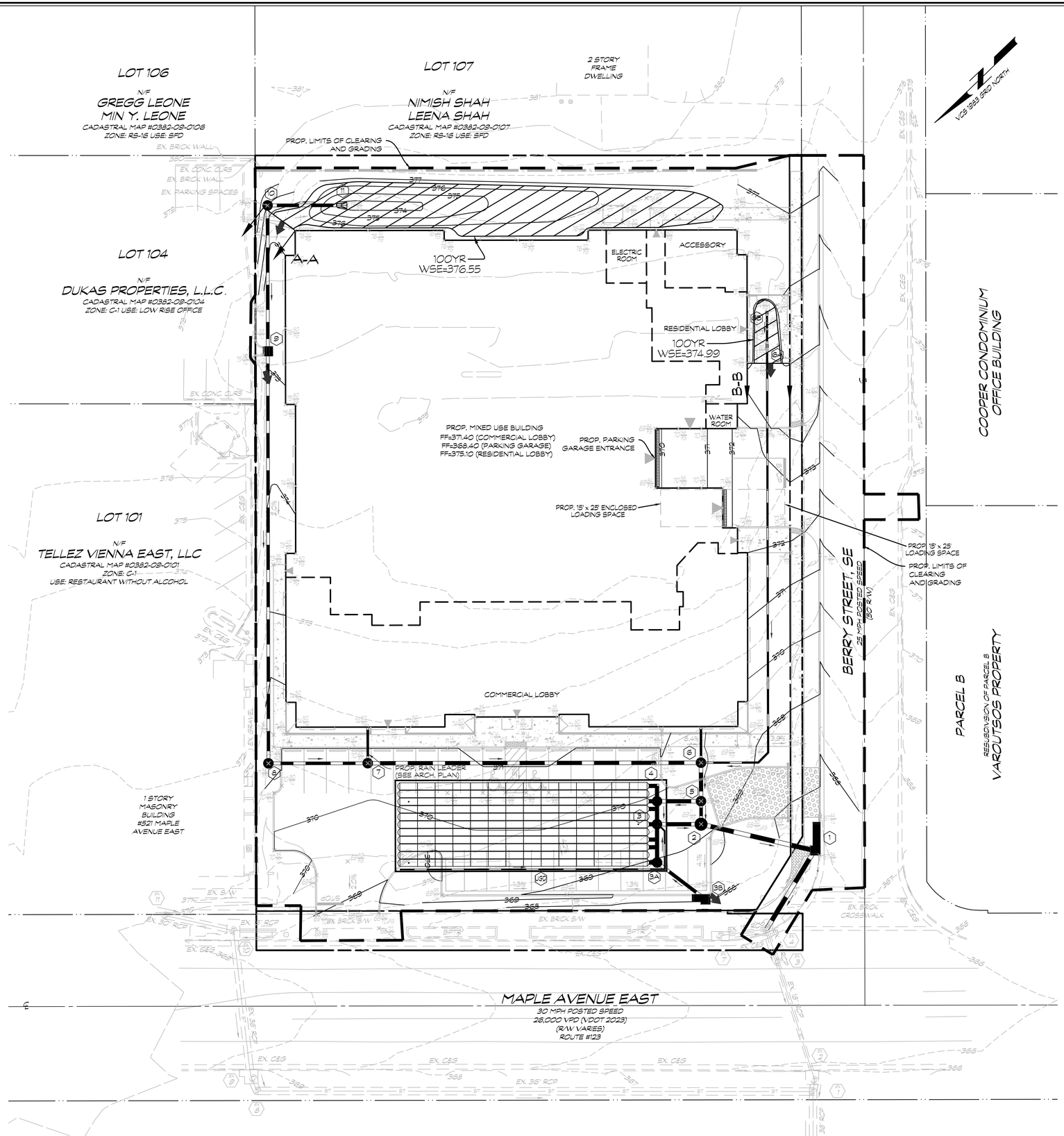
SCALE: AS SHOWN

SHEET: 8 OF 41

DATE: JULY 2025

DRAFT: ZG/SB | CHECK: MTM

FILE NUMBER: 25021-1-1



CROSS-SECTION A-A

100 YEAR OVERLAND RELIEF EVENT:
STORM SEWER STRUCTURE 11
(SEE DRAINAGE AREA MAP, SHEETS 11; GRADING PLAN, SHEETS 8)
A=1.70 AC., C=0.47, Cf=1.25(100 YR), I100=9.10 IN/HR
$Q_{100}=CfCI_{100}A=1.25(0.47)(9.10)(1.70)= 9.08$ CFS

Input Data	
Channel Slope	0.020 ft/ft
Discharge	9.08 cfs

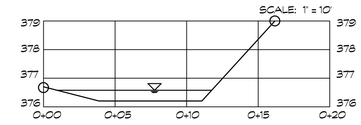
Section Definitions

Station (ft)	Elevation (ft)
0+00.00	376.70
0+04.00	376.20
0+11.00	376.20
0+12.00	377.00
0+14.00	378.00
0+16.00	379.00

Roughness Segment Definitions

Start Station	Ending Station	Roughness Coefficient
(0+00.00, 376.70)	(0+16.00, 379.00)	0.030

Results	
Normal Depth	4.2 in
Elevation Range	376.20 to 379.00 ft
Flow Area	3.0 ft²
Wetted Perimeter	10.34 ft
Hydraulic Radius	3.5 in
Top Width	10.20 ft
Normal Depth	4.2 in
Critical Depth	4.1 in
Critical Slope	0.020 ft/ft
Velocity	3.05 ft/s
Velocity Head	0.14 ft
Specific Energy	0.49 ft
Froude Number	0.997
Flow Type	Subcritical



CROSS-SECTION B-B

100 YEAR OVERLAND RELIEF EVENT:
STORM SEWER STRUCTURES 6A & 6B
(SEE DRAINAGE AREA MAP, SHEETS 11; GRADING PLAN, SHEETS 8)
A=0.02 AC., C=0.90, Cf=1.25(100 YR), I100=9.10 IN/HR
$Q_{100}=CfCI_{100}A=1.25(0.90)(9.10)(0.02)= 0.20$ CFS

Input Data	
Channel Slope	0.010 ft/ft
Discharge	0.20 cfs

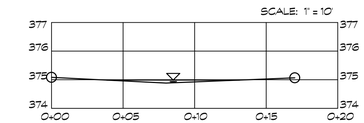
Section Definitions

Station (ft)	Elevation (ft)
0+00.00	375.05
0+08.00	374.95
0+17.06	375.00

Roughness Segment Definitions

Start Station	Ending Station	Roughness Coefficient
(0+00.00, 375.05)	(0+17.06, 375.00)	0.013

Results	
Normal Depth	0.5 in
Elevation Range	374.95 to 375.05 ft
Flow Area	0.2 ft²
Wetted Perimeter	10.93 ft
Hydraulic Radius	0.3 in
Top Width	10.93 ft
Normal Depth	0.5 in
Critical Depth	0.5 in
Critical Slope	0.009 ft/ft
Velocity	0.87 ft/s
Velocity Head	0.01 ft
Specific Energy	0.05 ft
Froude Number	1.065
Flow Type	Supercritical



APPROVAL

LDC
4585 DAISY REID AVENUE, SUITE 201 WOODBRIDGE, VIRGINIA 22192
WWW.LDCVA.COM

OVERLAND RELIEF MAP & COMPUTATIONS

515 MAPLE AVENUE EAST

TOWN OF VIENNA, VIRGINIA

NO.	DESCRIPTION	REVIEW BY	APPROVED	DATE
	REVISION APPROVED BY:			

DESIGN	DATE
ENGINEER	

I HEREBY CERTIFY THAT OTHER THAN THE REVISIONS SHOWN HEREON, NO OTHER CHANGES HAVE BEEN MADE.

COMMONWEALTH OF VIRGINIA
MATTHEW T. MARSHALL
Lic. No. 1335-B
07/09/25
DATE
LAND SURVEYOR

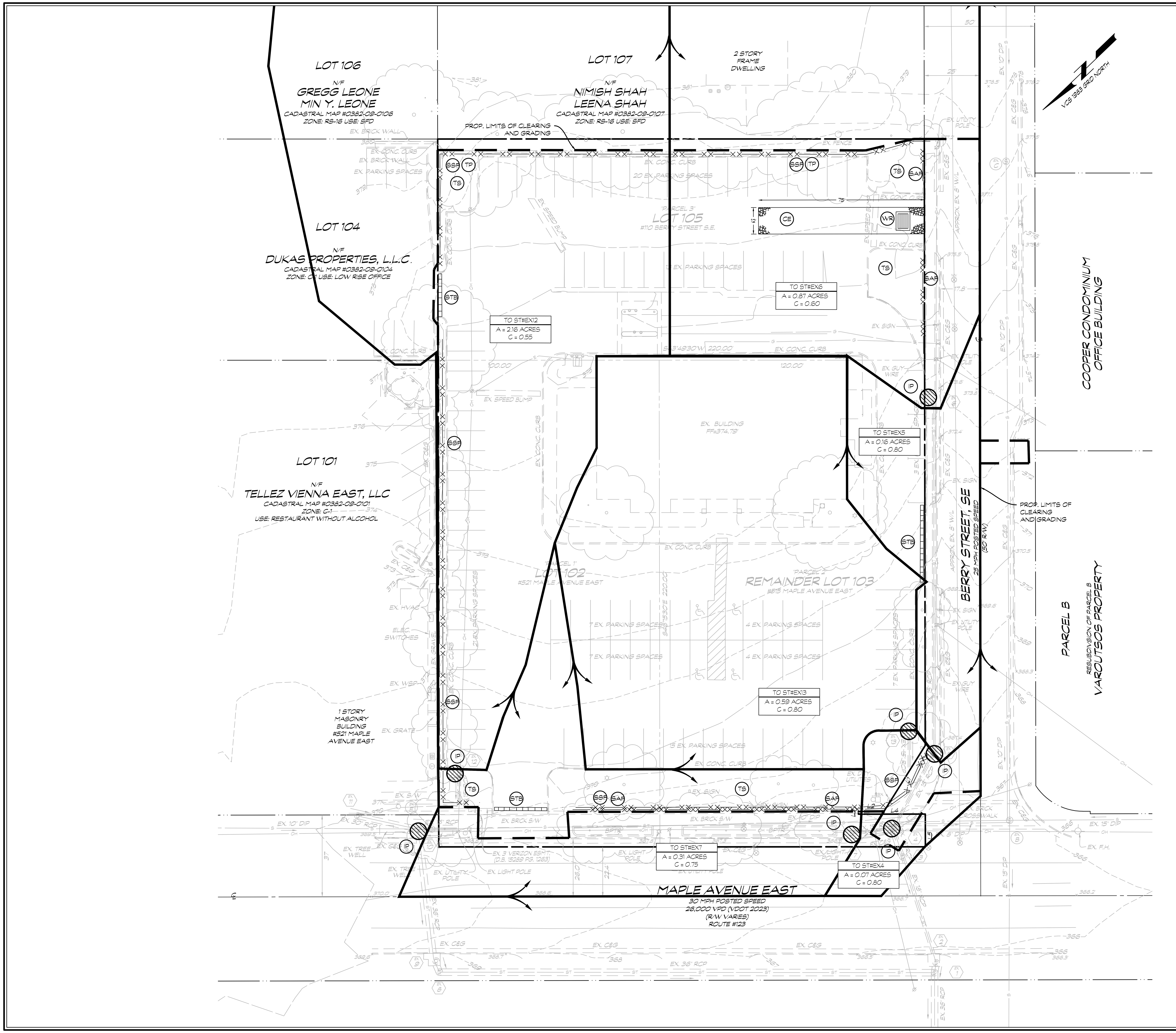
SCALE: AS SHOWN

SHEET: 9 OF 41

DATE: JULY 2025

DRAFT: ZG/SB | CHECK: MTM

FILE NUMBER: 25021-1-1



VIRGINIA UNIFORM CODING SYSTEM

for Erosion and Sediment Control Practices

NO.	TITLE	KEY	SYMBOL
C-PCM-01	SAFETY FENCE	SAF	
C-SCM-03	TEMPORARY STONE CONSTRUCTION ENTRANCE	CE	
C-SCM-03	WASH RACK	WR	
C-PCM-04	SUPER SILT FENCE	SSF	
C-SCM-04	INLET PROTECTION	IP	
C-SSM-09	TEMPORARY SEEDING	TS	TS
C-SSM-01	SUPER SILT FENCE ACTING AS TREE PROTECTION	TP SSF	
C-PCM-02	STRAW BALE BARRIER	STB	
	DRAINAGE DIVIDE		

NOTE:
THIS SHEET IS FOR EROSION & SEDIMENT CONTROL PURPOSES ONLY!

GRAPHICAL SCALE

20 10 0 20 40

1" = 20'

APPROVAL

LDC
4585 DAISY REID AVENUE, SUITE 201 WOODBRIDGE, VIRGINIA 22192
WWW.LDC-VA.COM

EROSION & SEDIMENT CONTROL - PHASE I

515 MAPLE AVENUE EAST

TOWN OF VIENNA, VIRGINIA

DATE	DESIGN	NO.	DESCRIPTION	REVIEW BY	APPROVED	DATE
ENGINEER			REVISION APPROVED BY:			

I HEREBY CERTIFY THAT OTHER THAN THE REVISIONS SHOWN HEREON, NO OTHER CHANGES HAVE BEEN MADE.

COMMONWEALTH OF VIRGINIA
MATTHEW T. MARSHALL
Lic. No. 1525-B
07/09/25
DATE
LAND SURVEYOR

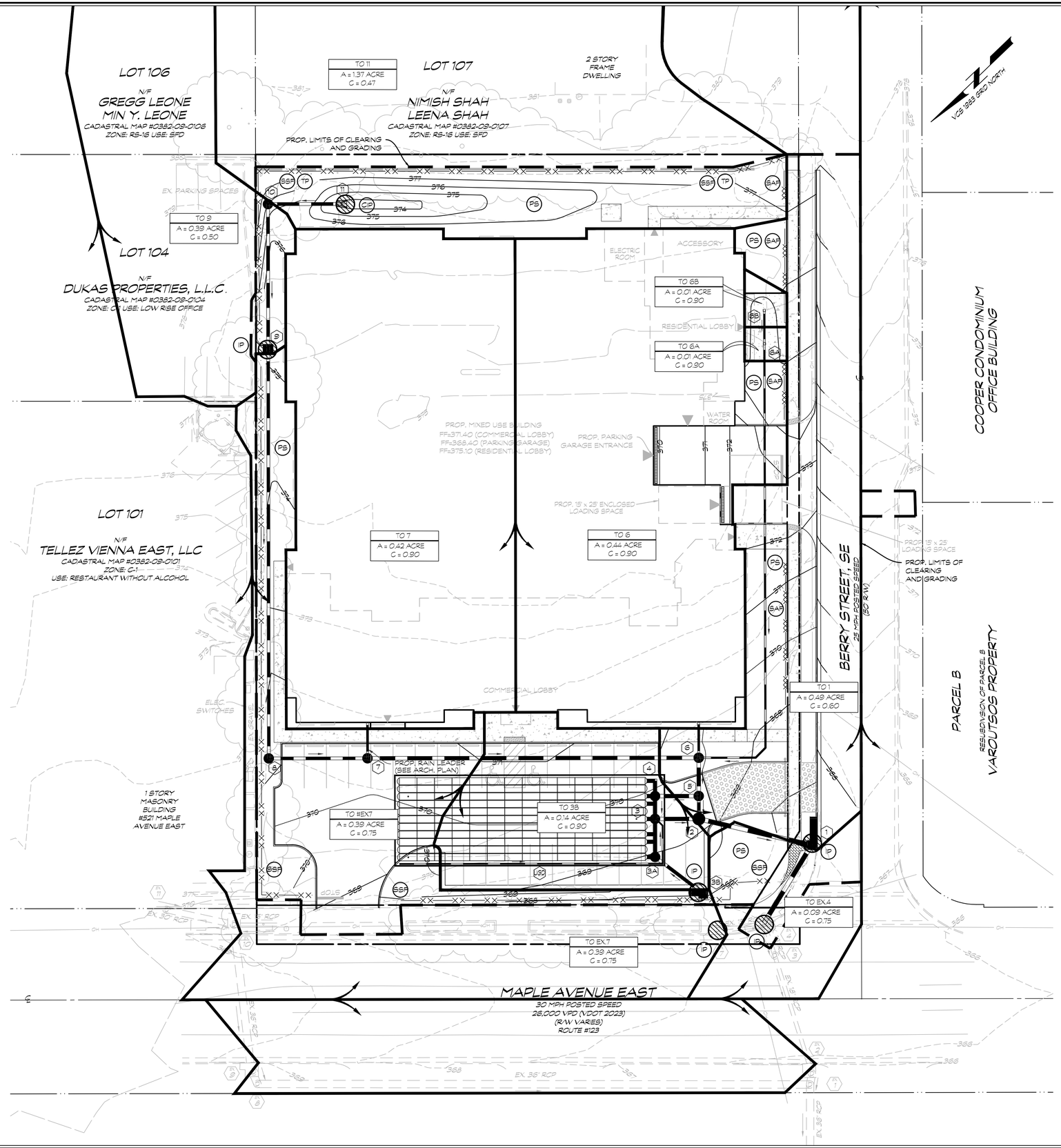
SCALE:
AS SHOWN

SHEET: 10 OF 41

DATE:
JULY 2025

DRAFT: ZG/SB
CHECK: MTM

FILE NUMBER:
25021-1-1



VIRGINIA UNIFORM CODING SYSTEM

for Erosion and Sediment Control Practices

NO.	TITLE	KEY	SYMBOL
C-PCM-01	SAFETY FENCE	SAF	XXX XXX
C-SCM-03	TEMPORARY STONE CONSTRUCTION ENTRANCE	CE	
C-SCM-03	WASH RACK	WR	
C-PCM-04	SUPER SILT FENCE	SSF	XX XX
C-SCM-04	INLET PROTECTION	IP	
C-SCM-05	CULVERT INLET PROTECTION	CIP	
C-SSM-10	PERMANENT SEEDING	PS	PS
C-SSM-01	SUPER SILT FENCE ACTING AS TREE PROTECTION	TP SSF	XX XX
	DRAINAGE DIVIDE		

NOTES:

1. THIS SHEET IS FOR EROSION & SEDIMENT CONTROL PURPOSES ONLY!
2. THE CONSTRUCTION ENTRANCE SHALL BE COORDINATED WITH THE TOWN OF VIENNA FOR THIS PHASE OF CONSTRUCTION.

GRAPHICAL SCALE

20 10 0 20 40

1" = 20'

APPROVAL

LDC
4585 DAISY REID AVENUE, SUITE 201 WOODBRIDGE, VIRGINIA 22192
WWW.LDCVA.COM

EROSION & SEDIMENT CONTROL - PHASE II

515 MAPLE AVENUE EAST

TOWN OF VIENNA, VIRGINIA

NO.	DESCRIPTION	BY	APPROVED	DATE

REVISION APPROVED BY:

DESIGN	DRAWN	CHECKED	DATE
ENGINEER			

I HEREBY CERTIFY THAT OTHER THAN THE REVISIONS SHOWN HEREON, NO OTHER CHANGES HAVE BEEN MADE.

COMMONWEALTH OF VIRGINIA
MATTHEW T. MARSHALL
Lic. No. 1935-B
07/09/25
DATE
LAND SURVEYOR

SCALE: AS SHOWN

SHEET: 11 OF 41

DATE: JULY 2025

DRAFT: ZG/SB | CHECK: MTM

FILE NUMBER: 25021-1-1

EROSION AND SEDIMENT CONTROL NARRATIVE

PROJECT DESCRIPTION:
THIS PROJECT PROPOSES THE CONSTRUCTION OF A 3-STORY MIXED-USE BUILDING INCLUDING COMMERCIAL SPACES, A PARKING GARAGE AND MULTI-FAMILY UNITS AND ASSOCIATED INFRASTRUCTURES. APPROXIMATELY 1.68 AC OF LAND WILL BE DISTURBED IN CONJUNCTION WITH THIS APPLICATION.

EXISTING SITE CONDITIONS:

THIS SITE IS LOCATED EAST OF THE INTERSECTION OF MAPLE AVENUE EAST AND BERRY STREET. THE EXISTING SITE CONTAINS A COMMERCIAL BUILDING AND PARKING LOTS.

ADJACENT AREAS

NORTHERN BOUNDARY: A RESTAURANT IS ADJACENT TO THE NORTHERN BOUNDARY OF THE PROPERTY.

EASTERN BOUNDARY: SINGLE FAMILY DETACHED RESIDENTIAL DWELLINGS ARE ADJACENT TO THE EASTERN BOUNDARY OF THE PROPERTY.

SOUTHERN BOUNDARY: A COMMERCIAL PLAZA IS ADJACENT TO THE SOUTHERN BOUNDARY OF THE PROPERTY.

WESTERN BOUNDARY: A COMMERCIAL PLAZA IS ADJACENT TO THE WESTERN BOUNDARY OF THE PROPERTY.

SOILS
THE SOILS BEING DISTURBED ARE DESCRIBED AS WHEATON - SUMERDUCK COMPLEX AND URBAN LAND, PROBLEM CLASS IVB. PERIMETER CONTROLS MUST BE MONITORED AND MAINTAINED FREQUENTLY. A SOILS MAP WITH THE CHARACTERISTICS OF THE SOIL IS PROVIDED ON THE COVER SHEET.

EROSION CONTROL PROGRAM:
THE AREAS TO BE CLEARED SHALL BE DESIGNATED IN ACCORDANCE WITH THE APPROVED PLAN. PRIOR TO THE COMMENCEMENT OF THE ASSOCIATED CLEARING AND GRADING, THE SITE INSPECTOR MUST BE NOTIFIED AT LEAST TWO DAYS IN ADVANCE. PERMANENT OR TEMPORARY SOIL STABILIZATION SHALL BE APPLIED TO DENUDED AREAS WITHIN SEVEN DAYS AFTER THE FINAL GRADE IS ESTABLISHED ON ANY PORTION OF THE SITE. TEMPORARY SOIL STABILIZATION SHALL BE APPLIED WITHIN SEVEN DAYS FOR AREAS THAT WILL REMAIN DENUDED FOR SEVEN DAYS OR GREATER. PERMANENT STABILIZATION SHALL BE APPLIED TO AREAS THAT WILL BE DORMANT FOR GREATER THAN SEVEN DAYS ONCE FINAL GRADE IS ESTABLISHED. ALL REVEGETATION SHALL BE ACCOMPLISHED IMMEDIATELY. MAXIMUM SLOPES OF 2:1 SHALL BE USED FOR GRADING PURPOSES.

CRITICAL EROSION AREAS
NO CRITICAL AREAS ON THIS SITE.

EROSION AND SEDIMENT CONTROL MEASURES

UNLESS OTHERWISE INDICATED, ALL VEGETATIVE AND STRUCTURAL EROSION AND SEDIMENT CONTROL PRACTICES SHALL BE CONSTRUCTED AND MAINTAINED ACCORDING TO MINIMUM STANDARDS AND SPECIFICATIONS OF THE VIRGINIA STORMWATER MANAGEMENT HANDBOOK. THE MINIMUM STANDARDS OF THE VIRGINIA STORMWATER MANAGEMENT HANDBOOK SHALL BE ADHERED TO UNLESS OTHERWISE WAIVED OR APPROVED BY A VARIANCE.

THE CONTROL PROGRAM ESTABLISHED HEREIN SHALL BE COMPLETED IN TWO PHASES.

OFFSITE AREAS
OFF-SITE DISTURBANCE AS PART OF THIS APPLICATION WILL BE LIMITED TO INSTALLATION AND TRENCHING FOR THE PURPOSES OF UTILITY CONNECTION AND INSTALLATION ONLY.

STRUCTURAL PRACTICES

1. SAFETY FENCE - C-PCM-01
   SILT FENCE SEDIMENT BARRIERS WILL BE INSTALLED AROUND SEDIMENT TRAPS AND BASINS AS A SAFETY MEASURE.
2. TEMPORARY CONSTRUCTION ENTRANCE - C-SCM-03
   TEMPORARY CONSTRUCTION ENTRANCES WITH WASH RACKS SHALL BE INSTALLED AS SHOWN ON THIS PLAN. DURING MUDDY CONDITIONS, DRIVERS OF CONSTRUCTION VEHICLES WILL BE REQUIRED TO WASH THEIR WHEELS BEFORE ENTERING THE HIGHWAY.
3. WASH RACK - C-SCM-03
   A METAL GRATE LOCATED IN THE CONSTRUCTION ENTRANCE TO MAKE WASHING TRUCKS LEAVING THE SITE MORE CONVENIENT AND EFFECTIVE.
4. SILT FENCE BARRIER - C-PCM-04
   SILT FENCE SEDIMENT BARRIERS WILL BE INSTALLED DOWNSLOPE OF AREAS WITH MINIMAL GRADES TO FILTER SEDIMENT-LADEN RUNOFF FROM SHEET FLOW.
5. SUPER SILT FENCE BARRIER - C-PCM-04
   A TEMPORARY SEDIMENT BARRIER CONSISTING OF A SYNTHETIC FILTER FABRIC STRETCHED ACROSS A WIRE SUPPORT AND ATTACHED TO SUPPORTING POSTS AND ENTRENCHED.
6. STORM DRAIN INLET PROTECTION - C-SCM-04
   ALL STORM SEWER INLETS SHALL BE PROTECTED DURING CONSTRUCTION. SEDIMENT-LADEN WATER SHALL BE FILTERED BEFORE ENTERING THE STORM SEWER INLETS.
7. CULVERT INLET PROTECTION - C-SCM-05
   SEDIMENT FILTER LOCATED AT THE INLETS OF CULVERTS.
8. TEMPORARY DIVERSION DIKE - C-ECM-04
   A TEMPORARY RIDGE OF COMPACTED SOIL CONSTRUCTED AT THE TOP OR BASE OF A SLOPING DISTURBED AREA.
9. TEMPORARY SEDIMENT TRAP - C-SCM-11
   A TEMPORARY SEDIMENT TRAP SHALL BE UTILIZED TO CAPTURE AND FILTER SEDIMENT-LADEN WATER FROM DRAINAGE AREAS OF LESS THAN 3 ACRES.
10. TEMPORARY SEEDING - C-SSM-09
    THE ESTABLISHMENT OF A TEMPORARY VEGETATIVE COVER ON DISTURBED AREAS BY SEEDING WITH APPROPRIATE RAPIDLY GROWING ANNUAL PLANTS.
11. PERMANENT SEEDING - C-SSM-10
    THE ESTABLISHMENT OF PERENNIAL VEGETATIVE COVER ON DISTURBED AREAS BY PLANTING SEED.
12. DUST CONTROL - C-SCM-01
    DUST CONTROL SHALL BE PROVIDED IN PHASE 1 PER C-SCM-01.
13. STRAW BALE BARRIER - C-PCM-02
    STRAW BALE BARRIERS WILL BE INSTALLED DOWNSLOPE OF AREAS WITH MINIMAL GRADES TO FILTER SEDIMENT-LADEN RUNOFF FROM SHEET FLOW.

GENERAL LAND CONSERVATION NOTES

1. NO DISTURBED AREA WHICH IS NOT ACTIVELY BEING WORKED SHALL REMAIN DENUDED FOR MORE THAN SEVEN CALENDAR DAYS UNLESS OTHERWISE AUTHORIZED BY THE DIRECTOR.
2. ALL E&S CONTROL MEASURES APPROVED WITH THE PHASE I E&S CONTROL PLAN SHALL BE PLACED AS THE FIRST STEP IN GRADING.
3. ALL STORM AND SANITARY SEWER LINES NOT IN STREETS SHALL BE SEEDED AND MULCHED WITHIN SEVEN DAYS AFTER BACKFILL. NO MORE THAN 500 SHALL BE OPEN AT ANY TIME.
4. ELECTRIC POWER, TELEPHONE AND GAS SUPPLY TRENCHES SHALL BE COMPACTED, SEEDED AND MULCHED WITHIN SEVEN DAYS AFTER BACKFILL.
5. ALL TEMPORARY EARTH BERMS, DIVERSIONS AND SEDIMENT CONTROL DAMS SHALL BE SEEDED AND MULCHED FOR TEMPORARY VEGETATIVE COVER IMMEDIATELY(AS SOON AS POSSIBLE BUT NO LATER THAN 48 HR.) AFTER COMPLETION OF GRADING. STRAW OR HAY MULCH IS REQUIRED. ALL SOIL STOCKPILES SHALL BE SEEDED AND MULCHED WITHIN SEVEN DAYS AFTER GRADING.
6. DURING CONSTRUCTION, ALL STORM SEWER INLETS MUST BE PROTECTED BY SEDIMENT TRAPS, MAINTAINED AND MODIFIED DURING CONSTRUCTION PROGRESS AS REQUIRED.
7. ANY DISTURBED AREA NOT COVERED BY #1 AND NOT PAVED, SODDED OR BUILT UPON BY NOVEMBER 1, OR DISTURBED AFTER THAT DATE, SHALL BE MULCHED IMMEDIATELY WITH HAY OR STRAW MULCH AT THE RATE OF 2 TONS/ACRE AND OVERSEEDED BY APRIL 15.
8. AT THE COMPLETION OF ANY PROJECT CONSTRUCTION AND PRIOR TO BOND RELEASE, ALL TEMPORARY SEDIMENT CONTROLS SHALL BE REMOVED AND ALL DENUDED AREAS SHALL BE STABILIZED.

NOTE:
THIS SHEET IS FOR EROSION & SEDIMENT CONTROL PURPOSES ONLY!

NARRATIVE:
THE CONTROL PROGRAM ESTABLISHED HEREIN SHALL BE COMPLETED IN TWO PHASES. THE FIRST PHASE SHALL INSTALL THE PERIMETER CONTROLS INCLUDING SUPER SILT FENCE , SAFETY FENCE, AND TEMPORARY DIVERSION DIKE. A CONSTRUCTION ENTRANCE SHALL BE INSTALLED BESIDE THE EXISTING ASPHALT DRIVEWAY. THE PHASE I LIMITS OF CLEARING SHALL BE MAINTAINED UNTIL THE END OF PHASE I AND INSTALLATION OF PERIMETER CONTROLS.

THE PROPOSED PERIMETER CONTROLS MAY BE UTILIZED DURING ALL PHASES OF CONSTRUCTION. THE CONTRACTOR, APPLICANT, AND INSPECTOR SHALL COORDINATE ANY MINOR DEVIATIONS FROM THIS PLAN WHICH MAY OCCUR AS A RESULT OF THE CONSTRUCTION. THE PERIMETER CONTROLS SHALL REMAIN THROUGH PHASE 2 TO THE GREATEST EXTENT FEASIBLE. CONSIDERATION SHALL BE GIVEN TO THE LOW LYING AREAS TO PREVENT ANY BREACH IN THESE CONTROLS. THE WASH RACK SHALL BE SUPPLIED BY A WATER TRUCK IF AN EXISTING HYDRANT IS NOT AVAILABLE.

DUST CONTROL:
DUST CONTROL SHALL BE PROVIDED PER C-SCM-01 (VIRGINIA STORMWATER MANAGEMENT HANDBOOK).

PHASE I
THE FIRST PHASE SHALL COMMENCE WITH THE INSTALLATION OF A CONSTRUCTION ENTRANCE AT THE EXISTING ASPHALT DRIVEWAY ENTRANCE ALONG NUTLEY ST. THE CONSTRUCTION ENTRANCE SHALL BE LOCATED AS DEEMED APPROPRIATE BY THE CONTRACTOR AND SITE INSPECTOR TO PROVIDE SAFE ACCESS TO THE SITE. THE WASH RACK SHALL BE SUPPLIED BY A WATER TRUCK IN THE EVENT THAT AN EXISTING HYDRANT IS NOT AVAILABLE WITHIN 150' OF THE WASH RACK.

ALL PERIMETER CONTROLS SHALL BE MAINTAINED AND UTILIZED DURING ALL PHASES OF CONSTRUCTION TO THE GREATEST EXTENT FEASIBLE. THE CONTRACTOR MAY COMMENCE ROUGH GRADING OF THE SITE.

PLEASE NOTE THAT THE E&S PLAN PROVIDED HEREIN IS ONLY A GUIDE AND SHOULD BE UTILIZED AT SUCH. SHOULD DIFFERENT SITE CONDITIONS, WEATHER CONDITIONS OR OTHER UNFORESEEN CIRCUMSTANCES EXIST AT THE TIME OF CONSTRUCTION A MORE APPROPRIATE PLAN SHOULD BE IMPLEMENTED PROVIDED THE DEVIATIONS FROM THE ATTACHED PLAN ARE ACCEPTABLE TO THE SITE INSPECTOR. UPON COMPLETION AND INSTALLATION OF THE CONTROLS DEEMED APPROPRIATE FOR THE SITE CONDITIONS, PHASE II OF THE PROGRAM SHOULD COMMENCE.

PHASE II
UTILIZATION OF EXISTING PERIMETER CONTROLS AND THE APPROVAL BY THE SITE INSPECTOR SHALL PERMIT THE PHASE II PROGRAM TO COMMENCE. ALL PERIMETER CONTROLS SHALL REMAIN THROUGH PHASE II. CONSTRUCTION ENTRANCE SHALL BE MOVED TO PROPOSED ENTRANCE ALONG WINDOVER AVE. EXTEND THE LIMITS OF CLEARING AND GRADING AS SHOWN FOR PHASE II (SEE SHEET 11).

THE SITE CLEARING SHALL COMMENCE AND SLOPES SHALL BE STABILIZED AS NECESSARY. ALL FILL SLOPES SHALL REMAIN IN A ROUGHENED CONDITION TO REDUCE SHEET FLOWS AND THE RILL EROSION OF THE SLOPE.

ALL CRITICAL SLOPES SHALL BE STABILIZED WITH PERMANENT SEEDING IMMEDIATELY UPON THE ESTABLISHMENT OF THE FINAL GRADE. IF NECESSARY, EROSION CONTROL BLANKETS WILL BE INSTALLED AT FINAL GRADE AND SEEDED TO PROTECT THE SLOPES FROM RILL AND GULLY EROSION TO ALLOW THE GRASS SEED TO GERMINATE PROPERLY. SEEDED AREAS MUST BE CHECKED REGULARLY TO ENSURE THAT A GOOD STAND IS MAINTAINED. AREAS MUST BE FERTILIZED AND RESEEDED AS NECESSARY.

ALL PERIMETER CONTROLS SHALL REMAIN UNTIL ALL ON-SITE MATERIALS ARE STABILIZED.

VEGETATIVE PRACTICES

1. TOPSOILING (STOCKPILE) - C-SSM-02
TOPSOIL WILL BE STRIPPED FROM AREAS TO BE GRADED AND STOCKPILED FOR LATER USE. STOCKPILE LOCATIONS SHALL BE LOCATED ON-SITE AND ARE TO BE STABILIZED WITH TEMPORARY VEGETATION.

2. TEMPORARY SEEDING - C-SSM-09
ALL DENUDED AREAS WHICH WILL BE LEFT DORMANT FOR EXTENDED PERIODS OF TIME SHALL BE SEEDED WITH FAST GERMINATING TEMPORARY VEGETATION IMMEDIATELY FOLLOWING GRADING. SELECTION OF THE SEED MIXTURE WILL DEPEND ON THE TIME OF YEAR IT IS APPLIED. SEE TABLES C-SSM-09-3 & C-SSM-09-4 ON SHEET 13.

3. EROSION CONTROL BLANKETS - C-SSM-05 OR MULCH - C-SSM-11
EROSION CONTROL BLANKETS WILL BE INSTALLED OVER FILL SLOPES WHICH HAVE BEEN BROUGHT TO FINAL GRADE AND HAVE BEEN SEEDED TO PROTECT THE SLOPES FROM RILL AND GULLY EROSION AND TO ALLOW SEED TO GERMINATE PROPERLY. MULCH (STRAW OR FIBER) WILL BE USED ON RELATIVELY FLAT AREAS AND WILL BE APPLIED AS A SECOND STEP IN THE SEEDING OPERATION.

MANAGEMENT STRATEGIES

1. CONSTRUCTION WILL BE SEQUENCED SO THAT GRADING OPERATIONS CAN BEGIN AND END AS QUICKLY AS POSSIBLE.
2. SEDIMENT TRAPPING MEASURES WILL BE INSTALLED AS A FIRST STEP IN GRADING AND WILL BE SEEDED AND MULCHED IMMEDIATELY FOLLOWING INSTALLATION.
3. MANUFACTURED BMPs SHALL BE INSTALLED AFTER THE DRAINAGE AREA TO THE FACILITY IS COMPLETELY STABILIZED. EROSION & SEDIMENT CONTROLS FOR CONSTRUCTION OF THE FACILITY SHALL BE INSTALLED AS SPECIFIED IN THE EROSION & SEDIMENT CONTROL PLANS.
4. STORMWATER MANAGEMENT FACILITY CHAMBERS MAY BE INSTALLED WITH THE OTHER ELEMENTS OF THE STORM DRAINAGE COLLECTION SYSTEM PROVIDED THAT THEY ARE FLUSHED OFF ANY ACCUMULATED SEDIMENTS PRIOR TO INSTALLATION OF THE INTERNAL COMPONENTS.
5. TEMPORARY SEEDING AND OTHER STABILIZATION WILL FOLLOW IMMEDIATELY AFTER GRADING.
6. AREAS WHICH ARE NOT TO BE DISTURBED WILL BE CLEARLY MARKED BY FLAGS, SIGNS, ETC.
7. THE JOB SUPERINTENDENT SHALL BE RESPONSIBLE FOR THE INSTALLATION AND MAINTENANCE OF ALL EROSION AND SEDIMENT CONTROL PRACTICES.
8. AFTER ACHIEVING ADEQUATE STABILIZATION, THE TEMPORARY E&S CONTROLS WILL BE CLEANED UP AND REMOVED.

SEDIMENT CONTROL PROGRAM:

ALL CONTROL DEVICES, AS DEPICTED ON THE ATTACHED EROSION AND SEDIMENT CONTROL PLANS, SUCH AS SUPER SILT FENCE, CONSTRUCTION ENTRANCE, DIVERSION DIKE, SEDIMENT TRAP, AND INLET PROTECTION SHALL BE CONSTRUCTED AND MAINTAINED IN ACCORDANCE WITH THE APPROVED PLAN AND APPLICABLE STATE AND LOCAL ORDINANCES.

PERMANENT STABILIZATION

ALL AREAS DISTURBED BY CONSTRUCTION SHALL BE STABILIZED WITH PERMANENT SEEDING IMMEDIATELY FOLLOWING FINISH GRADING. SEEDING SHALL BE DONE WITH KENTUCKY 31 TALL FESCUE ACCORDING TO STD. & SPEC. C-SSM-10, PERMANENT SEEDING, OF THE HANDBOOK. EROSION CONTROL BLANKETS WILL BE INSTALLED OVER FILL SLOPES WHICH HAVE BEEN BROUGHT TO FINAL GRADE AND HAVE BEEN SEEDED TO PROTECT THE SLOPES FROM RILL AND GULLY EROSION AND TO ALLOW SEED TO GERMINATE PROPERLY. MULCH (STRAW OR FIBER) WILL BE USED ON RELATIVELY FLAT AREAS. IN ALL SEEDING OPERATIONS, SEED, FERTILIZER AND LIME WILL BE APPLIED PRIOR TO MULCHING.

STORMWATER MANAGEMENT

SITE RUNOFF WILL BE CAPTURED BY THE PROPOSED STORM SEWER NETWORK AND TREATED BY AN UNDERGROUND SWM FACILITY ON-SITE, THEN OUTFALL TO THE EXISTING STORM SEWER PIPES TO THE SOUTH OF THE SITE. SEE PLAN SHEETS XX-XX FOR SWM INFORMATION.

MAINTENANCE
IN GENERAL, ALL EROSION AND SEDIMENT CONTROL MEASURES WILL BE CHECKED DAILY AND AFTER EACH SIGNIFICANT RAINFALL. THE FOLLOWING ITEMS WILL BE CHECKED IN PARTICULAR:

1. THE GRAVEL OUTLETS WILL BE CHECKED REGULARLY FOR SEDIMENT BUILDUP WHICH WILL PREVENT DRAINAGE. IF THE GRAVEL IS CLOGGED BY SEDIMENT, IT SHALL BE REMOVED AND CLEANED OR REPLACED.
2. THE SUPER SILT FENCE BARRIER WILL BE CHECKED REGULARLY FOR UNDERMINING OR DETERIORATION OF THE FABRIC. SEDIMENT SHALL BE REMOVED WHEN THE LEVEL OF SEDIMENT DEPOSITION REACHES HALF WAY TO THE TOP OF THE BARRIER.
3. THE SEEDED AREAS WILL BE CHECKED REGULARLY TO ENSURE THAT A GOOD STAND IS MAINTAINED. AREAS SHOULD BE FERTILIZED AND RESEEDED AS NECESSARY.
4. THE SEDIMENT TRAPS WILL BE CHECKED REGULARLY FOR SEDIMENT CLEANOUT.

EXCESS MATERIAL HAULING NOTE:
THE GRADING/EXCAVATION CONTRACTOR FOR THE SUBJECT SITE IS REQUIRED TO NOTIFY, IN WRITING, THE ASSIGNED SITE INSPECTOR REGARDING ANY EXCESS MATERIAL PROPOSED TO BE HAULED OFFSITE PRIOR TO HAULING. THE NOTIFICATION MUST INDICATE THE QUANTITY OF MATERIAL TO BE MOVED OFFSITE, IDENTIFICATION OF THE RECEIVING SITE WHERE THE EXCESS WILL BE TAKEN, AND ALL INFORMATION NECESSARY TO SHOW THAT SUCH RECEIVING SITE HAS BEEN PROPERLY PERMITTED AND HAS E&S CONTROLS INSTALLED.

FAIRFAX COUNTY PRIORITY RATING FORM FOR EROSION & SEDIMENT CONTROL

PROJECT NAME: 515 MAPLE AVENUE EAST PROJECT NUMBER: _____

TAX MAP: 0382 09 0102, 0103 & 0105 EVALUATOR: MATT MARSHALL DATE: 06/01/25

A. Percentage of Denuded Area to Total Site Area

		Rating
• > 60%	[X]	5
• 31 to 60%	[ ]	3
• 10 to 30%	[ ]	1

If the denuded area is greater than 10 acres, the project is initially rated a high priority.

B. Watercourse Crossing

		Rating
Yes	[ ]	*
No	[X]	0

*If yes, project is initially rated a high priority.

C. Distance of Denuded Area to Downstream Adjacent Property

		Rating
• < 50-feet	[X]	5
• 50 to 150-feet	[ ]	3
• > 150-feet	[ ]	0

D. Distance of Any Portion of the Denuded Area to a Natural Watercourse

		Rating
• < 50-feet	[ ]	5
• 50 to 150-feet	[ ]	3
• > 150- feet	[X]	0

E. *Minimum Vegetative Buffer (Trees, Shrubs, Grasses and other Plants)

		Rating
• < 50-feet	[X]	0
• 50 to 150-feet	[ ]	-3
• > 150-feet	[ ]	-5

* Vegetation in Resource Protection Areas are not to be included as vegetative buffers for this application.

F. Distance Between the Site Outfall and any Downstream, Wet Pond, Wetland, Parkland or other Land Deemed Environmentally Sensitive by the Director.

		Rating
• < 2,500-feet	[ ]	5
• 2,500 to 5,000-feet	[ ]	3
• > 5,000-feet	[X]	0

G. Critical Slopes Within 50-feet of Adjacent Property

- Are there any slopes of 0 to 7%; greater than or equal to 300-feet in length; or,
- Are there any slopes of 7 to 15%; greater than or equal to 150-feet in length; or,
- Are there any slopes greater than 15% and greater than or equal to 75-feet in length

		Rating
If Yes to any of the above	[ ]	5
Not Applicable if critical slope is > 50-feet from adjacent property	[X]	0

H. Soil Erodibility (Based on Physiographic Setting)

Physiographic Province		Rating
• Triassic Basin	[ ]	5
• Piedmont Upland	[X]	3
• Coastal Plain	[ ]	1

TOTAL/OVERALL RATING: 13

OVERALL RATING

If > 22
If > 14 and < or = to 22
If < or = to 14

PRIORITY (Mark with an "X")

High [ ]
Medium [ ]
Low [X]

PROJECT PRIORITY LEVEL: LOW

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APPROVED BY: _____ DATE: _____
Plan Reviewer

GENERAL EROSION AND SEDIMENT CONTROL NOTES

ES-1: UNLESS OTHERWISE INDICATED, ALL VEGETATIVE AND STRUCTURAL EROSION AND SEDIMENT CONTROL PRACTICES WILL BE CONSTRUCTED AND MAINTAINED ACCORDING TO MINIMUM STANDARDS AND SPECIFICATIONS OF THE VIRGINIA STORMWATER MANAGEMENT HANDBOOK AND VIRGINIA REGULATIONS 4VAC50-30 EROSION AND SEDIMENT CONTROL REGULATIONS.

ES-2: THE PLAN APPROVING AUTHORITY MUST BE NOTIFIED ONE WEEK PRIOR TO THE PRECONSTRUCTION CONFERENCE, ONE WEEK PRIOR TO THE COMMENCEMENT OF LAND DISTURBING ACTIVITIES, AND ONE WEEK PRIOR TO THE FINAL INSPECTION.

ES-3: ALL EROSION AND SEDIMENT CONTROL MEASURES ARE TO BE PLACED PRIOR TO OR AS THE FIRST STEP OF CLEARING.

ES-4: A COPY OF THE APPROVED EROSION AND SEDIMENT CONTROL PLAN SHALL BE MAINTAINED ON THE SITE AT ALL TIMES.

ES-5: PRIOR TO COMMENCING LAND DISTURBING ACTIVITIES IN AREAS OTHER THAN INDICATED ON THESE PLANS (INCLUDING, BUT NOT LIMITED TO, OFF-SITE BORROW OR WASTE AREAS), THE CONTRACTOR SHALL SUBMIT A SUPPLEMENTARY EROSION PLAN TO THE OWNER FOR REVIEW AND APPROVAL BY THE PLAN APPROVING AUTHORITY.

ES-6: THE CONTRACTOR IS RESPONSIBLE FOR INSTALLATION OF ANY ADDITIONAL EROSION CONTROL MEASURES NECESSARY TO PREVENT EROSION AND SEDIMENTATION AS DETERMINED BY THE PLAN APPROVING AUTHORITY.

ES-7: ALL DISTURBED AREAS ARE TO DRAIN TO APPROVED SEDIMENT CONTROL MEASURES AT ALL TIMES DURING LAND DISTURBING ACTIVITIES AND DURING SITE DEVELOPMENT UNTIL FINAL STABILIZATION IS ACHIEVED.

ES-8: DURING DEWATERING OPERATIONS, WATER WILL BE PUMPED INTO AN APPROVED FILTERING DEVICE.

ES-9: THE CONTRACTOR SHALL INSPECT ALL EROSION CONTROL MEASURES PERIODICALLY AND AFTER EACH RUNOFF-PRODUCING RAINFALL EVENT. ANY NECESSARY REPAIRS OR CLEANUP TO MAINTAIN THE EFFECTIVENESS OF THE EROSION CONTROL DEVICES SHALL BE MADE IMMEDIATELY.

APPROVAL

LDC
4885 DAISY REID AVENUE, SUITE 210 WOODBRIDGE, VIRGINIA 22192
WWW.LDCVA.COM

EROSION & SEDIMENT CONTROL NARRATIVE

515 MAPLE AVENUE EAST
TOWN OF VIENNA, VIRGINIA

	DATE
	APPROVED
	REVIEW BY
REVISION APPROVED BY:	DESCRIPTION
	NO.
ENGINEER	DATE

I HEREBY CERTIFY THAT OTHER THAN THE REVISIONS SHOWN HEREON, NO OTHER CHANGES HAVE BEEN MADE.

COMMONWEALTH OF VIRGINIA
MATTHEW T. MARSHALL
Lic. No. 1323-B
07/09/25
DATE
LAND SURVEYOR

SCALE:
AS SHOWN

SHEET: 12 OF 41

DATE:
JULY 2025

DRAFT: ZG/BB | CHECK: MTM

FILE NUMBER:
25021-1-1

Table C-SSM-09-3 Plant Material for Temporary Seeding

Acceptable Temporary Seeding Plant Materials "Quick Reference for all Regions"

Planting Dates	Species	Rate (pounds per acre)
Sept. 1 – Feb. 15	50/50 Mix of annual ryegrass (*Lolium multi-florum*) & cereal (winter) rye (*Secale cereale*)	50 – 100
Feb. 16 – Apr. 30*	Annual ryegrass (*Lolium multi-florum*)	60 – 100
May 1** – Aug. 31	German millet (*Setaria italica*)	50

* The shift date for annual rye to German millet should be April 15 for the Piedmont and Coastal Plain, rather than May 1.

Table C-SSM-09-4 Temporary Seeding Applications

Temporary Seeding Plant Materials, Seeding Rates, and Dates

Species	Seeding Rate lbs./ 1,000 ft²	Seeding Rate lbs./ acre	North[b] 3/1 - 4/30	North[b] 5/1 - 8/15	North[b] 8/15 - 11/1	South[b] 2/15 - 4/30	South[b] 5/1 - 9/1	South[b] 9/1 - 11/15	Plant Characteristics
Oats (*Avena sativa*)	50 – 100	2.0	X	-	--	X	-	-	Use spring varieties (e.g., Noble).
Rye[d] (*Secale cereale*)	50 – 110	2.5	X	-	X	X	-	X	Use for late fall seedings, winter cover. Tolerates cold and low moisture.
German millet (*Setaria italica*)	50	1.0	-	X[e]	-	-	X[e]	-	Warm-season annual. Dies at first frost. May be added to summer mixes.
Annual ryegrass[c] (*Lolium multi-florum*)	60	1.5	X[e]	-	X	X[e]	-	X	May be added in mixes. Will mow out of most stands.
Korean Lespedeza[a] (*Lespedeza stipulacea*)	25	1.5	X	X	-	X	X	-	Warm-season annual legume. Tolerates acid soils. May only be used in a mix with another grass (e.g., annual or cereal rye); it is not suitable as a pure seeding for this purpose.

a. Northern Piedmont and Mountain regions. See Figure C-ENV-01-1 and Figure C-ENV-01-2.
b. Southern Piedmont and Coastal Plain.
c. May be used as a cover crop with spring seeding.
d. May be used as a cover crop with fall seeding.
e. May not be planted between these dates.
f. May be planted between these dates.

* The shift date for annual rye to German millet should be April 15 for the Piedmont and Coastal Plain, rather than May 1.

Table C-SSM-10-7 Site-Specific Seeding Mixtures for Piedmont Area

Site Condition	Seed Mix		Application Rate (pounds per acre)
Minimum-Care Lawn Commercial or Residential	Turf-Type Tall Fescue	95-100%	150 – 200
	Improved Perennial Ryegrass	0-5%	
	Kentucky Bluegrass	0-5%	
High-Maintenance Lawn	Improved (VCIA) Turf-Type Tall Fescue	100%	150 – 200
General Slope (3H:1V or less)	Tall Fescue***		50 – 75
	Red Top or Redl-Hard Fescue		10 – 20
	White Clover and/or Birdsfoot Trefoil**		10 – 20
	Seasonal Nurse Crop*		30 – 40
Low-Maintenance Slope (> 3:1) or Inaccessible Area***	Tall Fescue		50 – 75
	Red Top and/or Hard Fescue		5 – 10
	White Clover and/or Birdsfoot Trefoil**		15 – 20
	Annual Lespedeza**		10 – 15
	Seasonal Nurse/Cover Crop		20-30

* Use seasonal nurse crop in accordance with seeding dates as stated below: February 16 through April annual rye

February 16 through April – annual/cereal rye

May 1 through August 15 – foxtail/German millet

August 16 through February 15 – annual/cereal rye

** Use legume seed that is properly inoculated with specified Rhizobia. Legumes recommended unless periodic N fertilization is intended. Weeping lovegrass may be added to any slope or low-maintenance mix during warmer seeding periods; add 10 to 20 lbs/acre in mixes.

*** Increase seeding rate if KY-31 is used rather than VCIA/VDOT improved varieties.

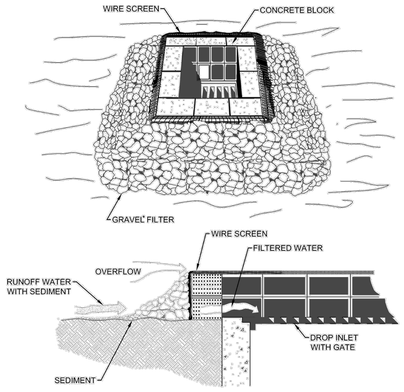
Bermudagrass can be added to substitute for Tall or Hard Fescue in the Low Maintenance mixes for the Southern Piedmont, particularly on sandy soils or hot (S and W) facing slopes. May through October, use hulled seed. All other seeding periods, use un-hulled seed.

Note: Seed mixes are suggested and subject to modification based on site-specific conditions by an agronomist or other qualified revegetation professionals. All seed rates expressed as PLS (Pure Live Seed, see Table C-SSM-10-9).

Table C-SSM-10-5 Characteristics of Legumes Appropriate for Erosion Control

Common Name (Botanical Name)	Life Cycle	Season	pH range	Germ. Time (days)	Optimum Germ. Soil Temp. (°F)	Winter Hardiness	Shade Tolerance	Drought Tolerance	Soil Fertility	Drainage Tolerance	Seeding Rate (pounds PLS)*	Maintenance Requirements	Remarks	Suggested Varieties for Virginia
Flatpea (*Lathyrus sylvestrus*)	P	C	5.0 - 7.0	14 - 28	65 - 75	G	G	L	PD		10-15	Needs lime and high phosphorus. Good shade tolerance.	Tolerates acidic and wetter soils better than most legumes.	Lathco
Birdsfoot trefoil (*Lotus corniculatus*)	P	C	6.0 - 6.5	7	65 - 70	G	F	M	SPD		15-25	Inoculation is essential. Grows in medium, moist, loamy, acid soils.	Grows better on poorly drained soils than most legumes. Moderate heat tolerance.	Audrewsy, Empire, Fergus, Norcen
Annual Lespedezas (*Lespedeza striata*, *L. stipulacea*)	A	W	5.0 - 6.2	14	70 - 85	F	VG	L	MVD		20-30	Will grow on almost any well-drained soil.	Choose Kobe over southeastern VA; needs almost no fertility to survive.	Kobe, Korean
Red clover (*Trifolium pratense*)	P	C	6.0 - 6.5	7 - 14	70	G	F	M	SPD		15-20	Needs high levels of phosphorus and potassium.	Acts as a biennial. Can be added to short maintenance mixes.	Kenstar, Kenland
White clover (*Trifolium repens*)	P	C	6.0 - 6.5	10	70	G	P	M	PD		10-15	Requires favorable moisture, fertile soils, high pH.	Spreads by stolons; tolerates mowing.	Common, Durana, Dutch
Partridge Pea	A	Warm	5.5 - 7.0	10-14	70	G	G	L	MVD		10-15	Good for initial restoration, can establish well in sandy soils	Native; high pollinator value	Lark, Riley, Comanche

Key:
A = Annual
P = Perennial
C = Cool-Season Plant
W = Warm-Season Plant
G = Good
F = Fair
P = Poor
VP = Very Poor
H = High
M = Medium
L = Low
SPD = Somewhat Poorly Drained
MPD = Moderately Poorly Drained
PD = Poorly Drained
VPD = Very Poorly Drained
Note: All legumes must be inoculated with specific Rhizobia immediately before seeding.
* Seeding rates assuming legumes used in a mixed stand with grasses to achieve > 25% legume cover in final perennial stand.



SPECIFIC APPLICATION

THIS METHOD OF INLET PROTECTION IS APPLICABLE WHERE HEAVY FLOWS ARE EXPECTED AND WHERE AN OVERFLOW CAPACITY IS NECESSARY TO PREVENT EXCESSIVE PONDING AROUND THE STRUCTURE.

* GRAVEL SHALL BE VDOT #3, #357 OR #5 COARSE AGGREGATE.

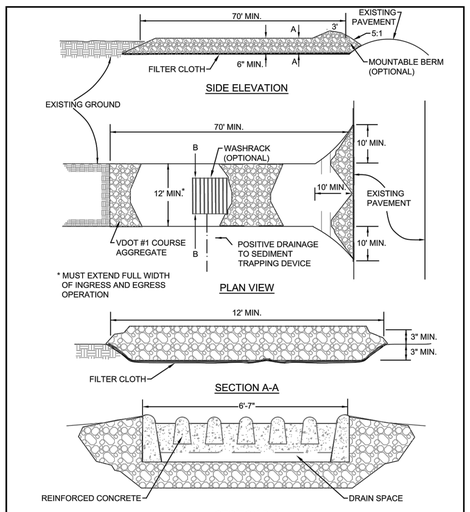
DEQ VIRGINIA DEPARTMENT OF ENVIRONMENTAL QUALITY

v1.1

BLOCK AND GRAVEL DROP INLET SEDIMENT FILTER

SOURCE: VA. DSWC

C-SCM-04-3



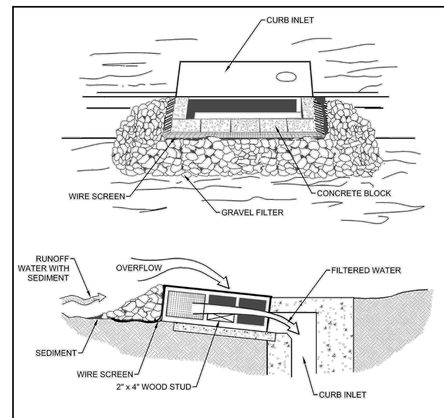
DEQ VIRGINIA DEPARTMENT OF ENVIRONMENTAL QUALITY

v1.1

STONE CONSTRUCTION ENTRANCE

SOURCE: VA. DSWC, MD ESC STDS

C-SCM-03-1



SPECIAL APPLICATION

THIS METHOD OF INLET PROTECTION IS APPLICABLE AT CURB INLETS WHERE AN OVERFLOW CAPABILITY IS NECESSARY TO PREVENT EXCESSIVE PONDING IN FRONT OF THE STRUCTURE.

* GRAVEL SHALL BE VDOT #3, #357 OR #5 COARSE AGGREGATE

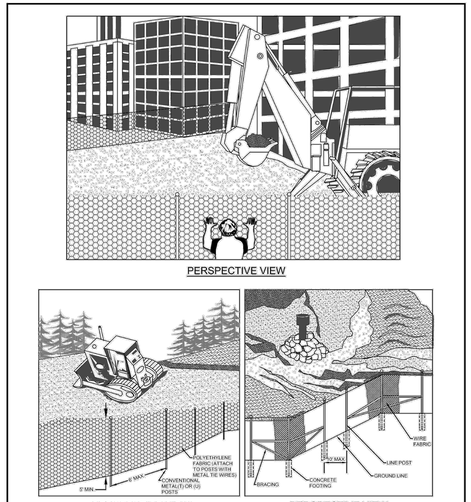
DEQ VIRGINIA DEPARTMENT OF ENVIRONMENTAL QUALITY

v1.1

BLOCK AND GRAVEL CURB INLET SEDIMENT FILTER

SOURCE: VA. DSWC

C-SCM-04-7



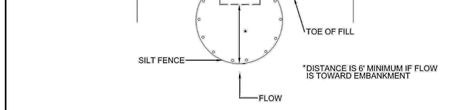
DEQ VIRGINIA DEPARTMENT OF ENVIRONMENTAL QUALITY

v1.1

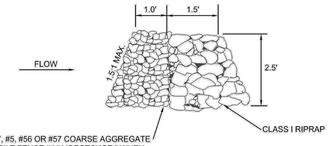
SAFETY FENCE

SOURCE: VDOT STDS., VA DSWC, CONWED PLASTICS

C-PCM-01-1



OPTIONAL STONE COMBINATION **



** VDOT #3, #357, #5, #56 OR #57 COARSE AGGREGATE TO REPLACE SILT FENCE IN " HORSESHOE " WHEN HIGH VELOCITY OF FLOW IS EXPECTED

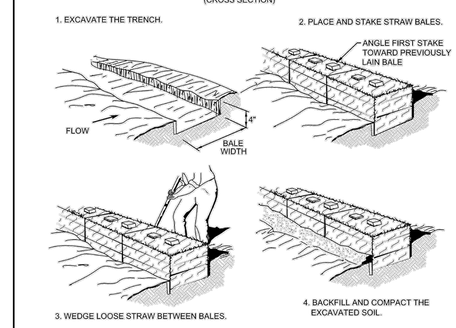
DEQ VIRGINIA DEPARTMENT OF ENVIRONMENTAL QUALITY

v1.1

SILT FENCE CULVERT INLET PROTECTION

SOURCE: VA. DSWC, VDOT

C-SCM-05-1



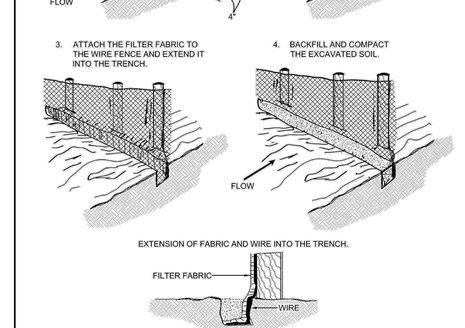
DEQ VIRGINIA DEPARTMENT OF ENVIRONMENTAL QUALITY

v1.1

CONSTRUCTION OF STRAW BALE BARRIER

SOURCE: VA. DSWC

C-PCM-02-1



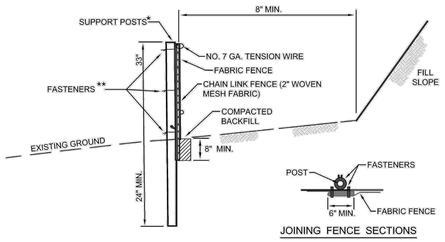
DEQ VIRGINIA DEPARTMENT OF ENVIRONMENTAL QUALITY

v1.1

CONSTRUCTION OF SILT FENCE WITH WIRE SUPPORT INSTALLATION

SOURCE: ADAPTED FROM STRAW & FAB. BARRIERS, SHERWOOD & WYANT

C-PCM-04-2



* POSTS SPACED @ 10' MAX. USE 2 1/2" DIA. HEAVY DUTY GALVANIZED OR ALUMINUM POSTS.

* * CHAIN LINK TO POST FASTENERS SPACED @ 14" MAX. USE NO. 9 GA. ALUMINUM WIRE OR NO. 9 GALVANIZED STEEL PRE-FORMED CLIPS. CHAIN LINK TO TENSION WIRE FASTENERS SPACED @ 60" MAX. USE NO. 13.5 GA. GALVANIZED STEEL WIRE. FABRIC TO CHAIN FASTENERS SPACED @ 24" MAX C. TO C.

DEQ VIRGINIA DEPARTMENT OF ENVIRONMENTAL QUALITY

v1.1

SUPER SILT FENCE INSTALLATION

SOURCE: ADAPTED FROM PA DEP 2012

C-PCM-04-3

APPROVAL

LDC

4585 DAISY REID AVENUE, SUITE 1 WOODBRIDGE, VIRGINIA 22192
WWW.LDCVA.COM

515 MAPLE AVENUE EAST

TOWN OF VIENNA, VIRGINIA

EROSION & SEDIMENT CONTROL DETAILS

	DATE
	APPROVED
	RESUBMISSION
	DESCRIPTION
	NO.
	DESIGN
	DATE

RESUBMISSION APPROVED BY: ENGINEER

I HEREBY CERTIFY THAT OTHER THAN THE REVISIONS SHOWN HEREON, NO OTHER CHANGES HAVE BEEN MADE.

COMMONWEALTH OF VIRGINIA
MATTHEW T. MARSHALL
Lic. No. 1525-B
07/09/25
DATE
LAND SURVEYOR

SCALE: AS SHOWN

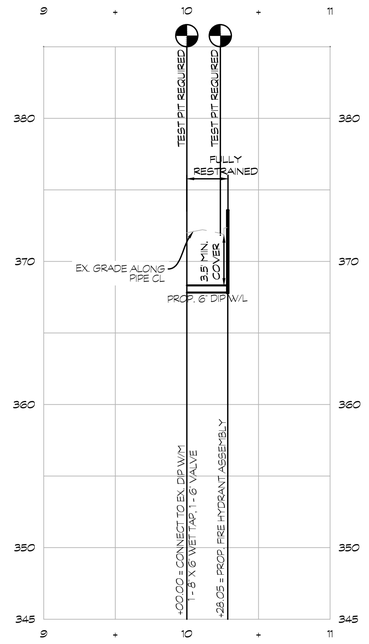
SHEET: 13 OF 41

DATE: JULY 2025

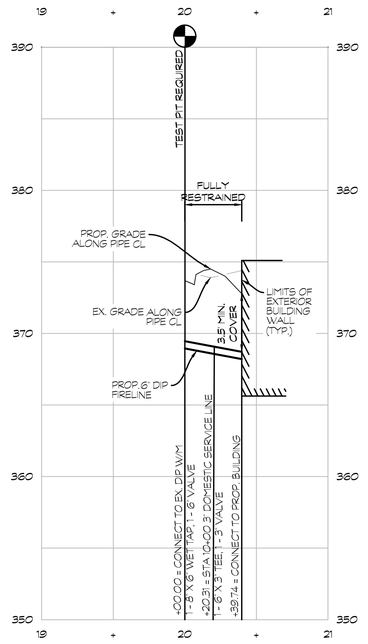
DRAFT: ZG/SB | CHECK: MTM

FILE NUMBER: 25021-1-1

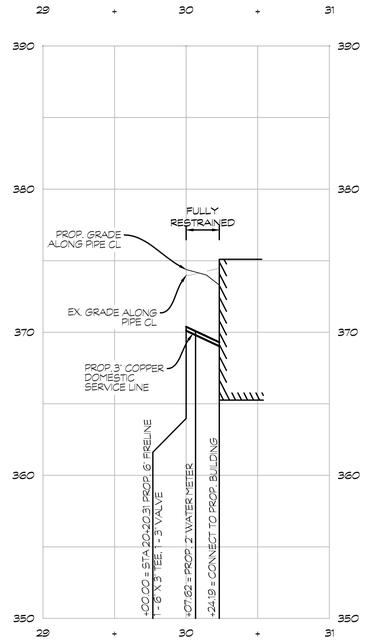
FIRE HYDRANT PROFILE



FIRE LINE PROFILE

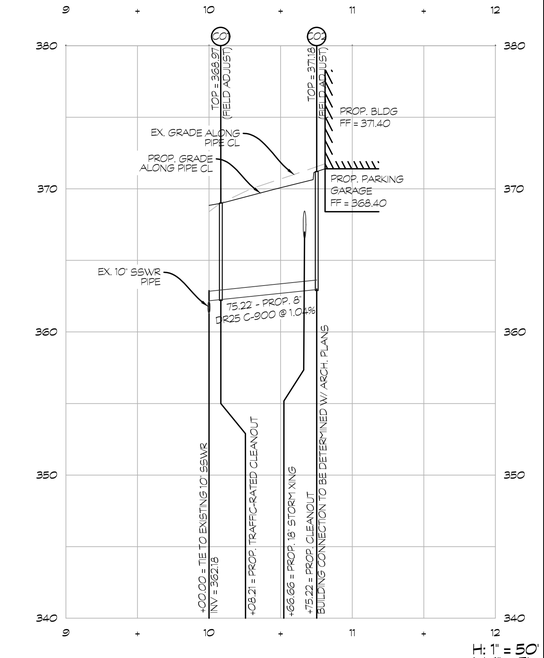


DOMESTIC SERVICE LINE PROFILE



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

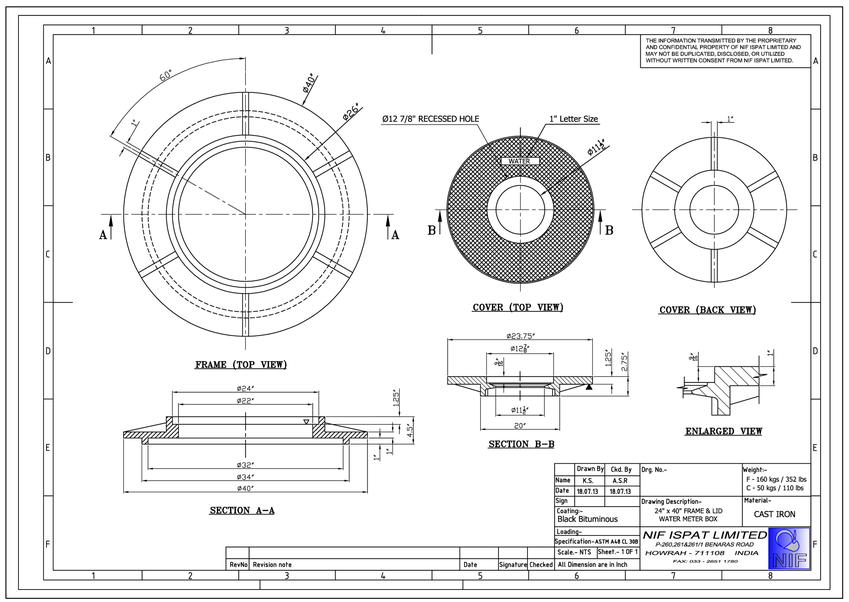
SANITARY SEWER LATERAL PROFILE



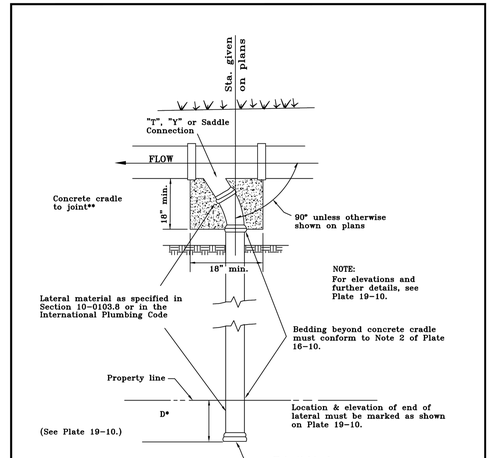
H: 1" = 50'
V: 1" = 5'

SANITARY SEWER LATERAL COMPUTATION

Upper San M.H.				Sewer Main			Lower San M.H.			
EX.E							EX.B			
Top of MH	Depth	INV. OUT	INV. IN	Length	SLOPE	Main Dia. (in.)	INV. OUT	INV. IN	Depth	Top of MH
369.18	7.00	362.18	362.29	261.36	0.0245	10	355.39	355.77	11.25	366.64



FAIRFAX COUNTY PUBLIC FACILITIES MANUAL



5" dia. laterals must connect to 8" dia. sewer mains by way of a manufactured "T" or "Y". 6" dia. laterals must connect to collector sewers in sizes from 8" to 15" by way of a manufactured "Y" only with prior approval from the Department of Public Works and Environmental Services. Lateral connections to sewers greater than 15" in diameter must be made at manholes. Approved saddles may be used for 5" dia. connections for 8" dia. rigid pipe sewer mains.

*Not applicable to Planned Development Districts
**Hand mixing of concrete cradle allowed per VDOT specifications

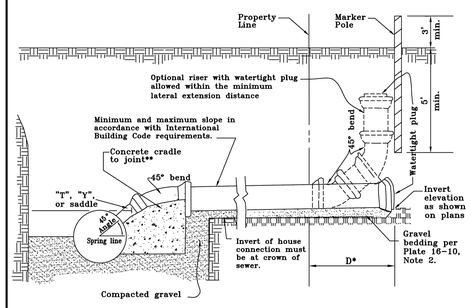
Ref. Sec. 10-0104.5A, Plate 19-10	SERVICE LATERAL (SPUR)	PLATE NO.	STD. NO.
Rev. 1-00, 6-01, 2011 Reprint, 2018 Reprint, 10-20		18-10	DPW-10

FAIRFAX COUNTY PUBLIC FACILITIES MANUAL

TO AVOID CONFLICTS WITH OTHER UNDERGROUND SERVICE UTILITIES, THE MINIMUM LATERAL EXTENSION DISTANCE (D)* MUST BE:

Single-Family Detached	20 ft beyond the property line or within 5 ft of the minimum yard requirement, whichever distance is less.
Single-Family Townhouse	5 ft beyond the property line or sanitary sewer easement, whichever distance is greater.

NOTES:
1. Gravel bedding beyond the concrete cradle must conform to Note 2 of Plate 16-10.
2. Lateral pipe material must be as specified in Section 10-0103.8 or in the International Plumbing Code.
3. CI Saddles must be GENECO™ Sealtite Sewer Pipe Saddle or approved equal. Saddles must incorporate an alignment flange that protrudes into the tapping hole and must clamp to the existing main with a stainless steel band and stainless steel fasteners. When connecting to a CIPP-lined sewer main, use LMT™ saddle or approved equal.
4. A long sweep, 90-degree bend may be used as an alternate to two 45-degree bends.



FOR PLAN VIEW, SEE PLATE 18-10.

*Not applicable to Planned Development Districts
**Hand mixing of concrete cradle allowed per VDOT specifications

Ref. Sec. 10-0104.5A, Plate 18-10	SERVICE LATERAL CONSTRUCTION DETAIL	PLATE NO.
Rev. 1-00, 6-01, 2011 Reprint, 2018 Reprint, 10-20		19-10

GRAPHICAL SCALE
50 25 0 50 100
1" = 50'

APPROVAL

LDC
4585 DAISY REED AVENUE, SUITE 201 WOODBRIDGE, VIRGINIA 22192
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UTILITY PROFILES & COMPUTATIONS

515 MAPLE AVENUE EAST

TOWN OF VIENNA, VIRGINIA

DATE	DESCRIPTION	NO.	DESIGN	DATE	ENGINEER
	REVISED PER TOWN REVIEW COMMENTS				
	APPROVED				

REVISION APPROVED BY:

I HEREBY CERTIFY THAT OTHER THAN THE REVISIONS SHOWN HEREON, NO OTHER CHANGES HAVE BEEN MADE.

COMMONWEALTH OF VIRGINIA
MATTHEW T. MARSHALL
Lic. No. 1935-B
07/09/25
DATE
LAND SURVEYOR

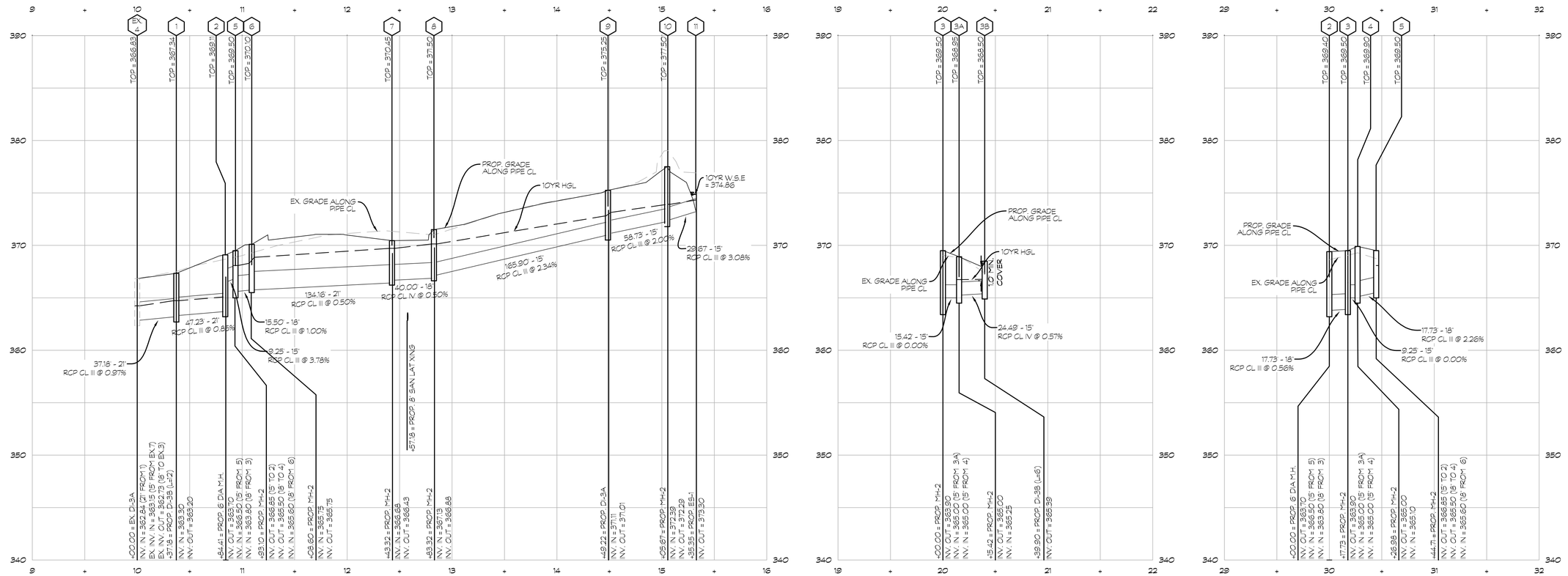
SCALE: AS SHOWN

SHEET: 14 OF 41

DATE: JULY 2025

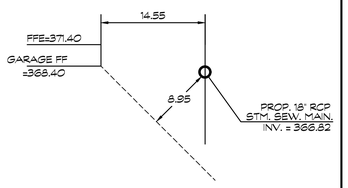
DRAFT: ZG/BB | CHECK: MTM

FILE NUMBER: 25021-1-1



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

LOADING PLANE DIAGRAM (STORM SEWER STRUCTURE 7-8)



SCALE: 1" = 10'

GRAPHICAL SCALE

50 25 0 50 100

1" = 50'

APPROVAL

LDC
4585 DAISY REID AVENUE, SUITE 201 WOODBRIDGE, VIRGINIA 22192
WWW.LDCVA.COM

515 MAPLE AVENUE EAST

TOWN OF VIENNA, VIRGINIA

STORM SEWER PROFILES

NO.	DESCRIPTION	REVIEW BY	APPROVED	DATE

REVISION APPROVED BY:

DATE	DESIGN	ENGINEER

I HEREBY CERTIFY THAT OTHER THAN THE REVISIONS SHOWN HEREON, NO OTHER CHANGES HAVE BEEN MADE.

COMMONWEALTH OF VIRGINIA
MATTHEW T. MARSHALL
Lic. No. 1935-B
07/09/25
DATE
LAND SURVEYOR

SCALE: AS SHOWN

SHEET: 15 OF 41

DATE: JULY 2025

DRAFT: ZG/SB | CHECK: MTM

FILE NUMBER: 25021-1-1

PROJECT: 515 MAPLE AVENUE EAST | **CULVERT:** 15" RCP | **CULVERT DESIGN FORM**
Structure 11 | **SHEET:** 1 OF 1 | **DESIGNER / DATE:** SB - 5/30/25

HYDROLOGICAL DATA

METHOD: RATIONAL
DRAINAGE AREA: 1.70 AC
C FACTOR 0.47
TIME OF CONC. 5 MIN
INTENSITY 6.77 IN/HR

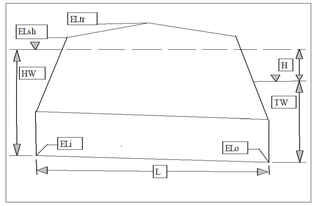
DESIGN FLOWS / TAILWATER

R.I. (YEARS)	FLOW (CFS)	TW (FT)
10	5.41	0.00

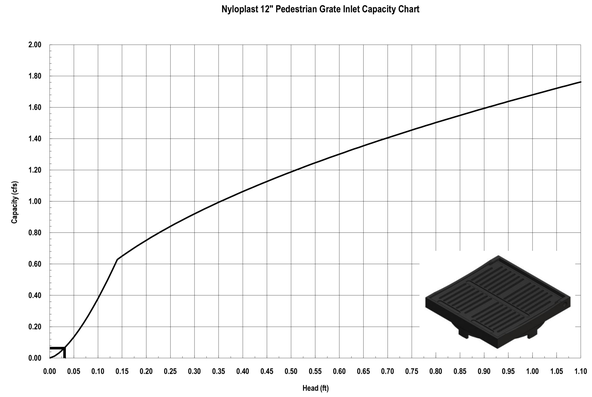
CULVERT TYPE: RCP
ENT. TYPE: PROJ.

NO. OF PIPES = 1
DIAMETER (FT)= 1.250 DIAMETER (IN)= 15

MANNING'S "N" = 0.013
Ke = 0.5
ELi (FT) = 373.30
Elo (FT) = 372.70
ELtr (FT) = 376.20
ELsh (FT) = 376.20
L (FT) = 29.67
S(FT/FT)= 0.0202



CULVERT DESCRIPTION: MATERIAL-SHAPE-SIZE-ENTRANCE	TOTAL FLOW Q (CFS)	FLOW PER BARREL Q/N	HEADWATER CALCULATIONS: INLET CONTROL HWi/D	INLET CONTROL HWi (FT)	INLET CONTROL EL(hi) (FT)	OUTLET CONTROL TW (FT)	OUTLET CONTROL dc (FT)	OUTLET CONTROL (dc+D)/2 (FT)	OUTLET CONTROL ho (FT)	OUTLET CONTROL Ke	OUTLET CONTROL H (FT)	OUTLET CONTROL EL(ho) (FT)	CONTROL HW ELEV. (FT)	APPROX OUTLET VEL. (FPS)	COMMENTS
RCP-CIRCULAR-15"	5.41	5.41	1.25	1.56	374.86	0.00	0.95	1.10	1.10	0.5	0.66	374.46	374.86	5.41	Inlet Control



Nyloplast
3130 Verona Avenue • Buford, GA 30518
(866) 888-8479 / (770) 932-2443 • Fax: (770) 932-2490
© Nyloplast Inlet Capacity Charts June 2012

NYLOPLAST DRAIN BASIN COMPUTATIONS

STRUCTURE #6B
Q_{10}= C*I*A = 0.90*6.770.01 = 0.06 CFS
HEAD = 0.03
GRATE = 374.89
#6B 10-YEAR WSE = 374.89 + 0.03 = 374.92

STRUCTURE #6A
Q_{10}= C*I*A = 0.90*6.770.01 = 0.06 CFS
HEAD = 0.03
GRATE = 374.89
#6A 10-YEAR WSE = 374.89 + 0.03 = 374.92

515 MAPLE AVENUE EAST

STORM SEWER DESIGN COMPUTATIONS - 10 YEAR

FROM POINT	TO POINT	DRAIN. AREA ACRES	RUNOFF COEFF C	CA INCREM	CA ACCUM	INLET TIME MIN	RAINFALL INTENSITY IN/HR	Q RUNOFF CFS	INVERT ELEV UPPER FT	INVERT ELEV LOWER FT	LENGTH FT	SLOPE FT/FT	DIA IN	n	CAPACITY CFS	VELOCITY FPS	FLOW TIME SEC	REMARKS
11	10	1.70	0.47	0.80	0.80	5.00	6.77	5.41	373.30	372.39	29.67	3.08%	15	0.013	**11.36**	9.28	3.2	
10	9	0.00	0.00	0.00	0.80	5.00	6.77	5.41	372.29	371.11	58.72	2.00%	15	0.013	**9.16**	7.91	7.4	
9	8	0.42	0.50	0.21	1.01	5.00	6.77	6.83	371.01	367.13	165.90	2.34%	15	0.013	**9.91**	8.87	18.7	
8	7	0.00	0.00	0.00	1.01	5.00	6.77	6.83	366.88	366.68	40.00	0.50%	18	0.013	**7.45**	4.86	8.2	
7	6	0.42	0.90	0.38	1.39	5.00	6.77	9.39	366.43	365.76	134.16	0.50%	21	0.013	**11.24**	5.31	25.3	D.A. FROM ROOF DRAIN
6	5	0.44	0.90	0.40	1.80	5.00	6.77	12.19	366.00	365.60	15.50	2.58%	18	0.013	**16.92**	10.57	1.5	D.A. FROM ROOF DRAIN
5	4	0.00	0.00	0.00	1.80	5.00	6.77	12.19	365.50	365.10	17.73	2.26%	18	0.013	**15.82**	10.02	1.8	INTO UGD
6B	6A	0.01	0.90	0.01	0.01	5.00	6.77	0.06	367.60	367.50	13.49	0.74%	8	0.013	**1.04**	1.67	8.1	8" HDPE
6A	6	0.01	0.90	0.01	0.02	5.00	6.77	0.12	367.50	366.10	192.44	0.73%	8	0.013	**1.03**	2.04	94.5	8" HDPE
3B	3A	0.14	0.90	0.13	0.13	5.00	6.77	0.85	365.39	365.25	24.49	0.57%	15	0.013	**4.90**	3.06	8.0	
5	2	0.00	0.00	0.00	0.00	5.00	6.77	0.00	366.85	366.50	9.25	3.78%	15	0.013	**12.60**	#N/A	#N/A	BYPASS PIPE
3	2	0.00	0.00	0.00	1.93	5.00	6.77	10.82	363.90	363.80	17.73	0.56%	18	0.013	**7.91**	4.57	3.9	Q10 FROM UGD=10.82 CFS
2	1	0.00	0.00	0.00	1.93	5.00	6.77	10.82	363.70	363.30	47.23	0.85%	21	0.013	**14.62**	6.77	7.0	Q10 FROM UGD=10.82 CFS
1	EX.4	0.49	0.60	0.29	2.22	5.00	6.77	12.81	363.20	362.84	37.18	0.97%	21	0.013	**15.63**	7.36	5.1	
EX.4	EX.3	0.09	0.75	0.07	2.58	5.00	6.77	15.25	362.73	362.29	13.85	3.18%	18	0.013	**18.77**	12.03	1.2	PER AS-BUILT
EX.3	EX.2	0.00	0.00	0.00	2.58	5.00	6.77	15.25	362.28	360.68	50.15	3.19%	18	0.013	**18.81**	12.06	4.2	PER AS-BUILT
EX.2	EX.1	0.19	0.75	0.14	2.72	5.00	6.77	16.21	360.58	360.57	4.50	0.22%	36	0.013	**31.53**	4.55	1.0	PER AS-BUILT
EX.7	EX.4	0.39	0.75	0.29	0.29	5.00	6.77	1.98	363.90	363.15	18.87	3.97%	15	0.013	**12.91**	7.75	2.4	PER AS-BUILT

HYDRAULIC GRADE LINE COMPUTATIONS

PROJECT: 515 MAPLE AVENUE
COUNTY: TOWN OF VIENNA
COMP. BY: SB

MANNING ROUGHNESS COEFFICIENT = 0.013 (RCP)

FROM INLET #	AT INLET #	TO INLET #	OUTLET INVERT ELEV (FT)	OUTLET WATER SURFACE ELEV (FT)	OUTLET PIPE DIAM Do (IN)	OUTLET FLOW-RATE Qo (CFS)	OUTLET PIPE LENGTH Lo (FT)	FRIC-TION SLOPE Sfo (%)	FRIC-TION LOSS Hf (FT)	JUNCTION LOSS: VELOCITY OUTLET PIPE Vo (FPS)	CONTR. LOSS Ho (FT)	DISCHARGE INFLOW PIPE Qi (CFS)	VELOCITY INFLOW PIPE Vi (FPS)	MAX INFLOW PRODUCT Qi * Vi (FT^4/S^2)	INFLOW VELOCITY HEAD (Vi^2)/(2g) (FT)	MAX EXPAN. LOSS Hi (FT)	MAX ANGLE Ai (DEG)	LOSS COEFF K	MAX BEND LOSS Hb (FT)	TOTAL HEAD LOSS Ht (FT)	INLET CORRECT FACTOR 1.3 Ht (FT)	SHAPE CORRECT FACTOR 0.5 Ht (FT)	**FINAL HEAD LOSS** H (FT)	INLET WATER SURFACE ELEV (FT)	INLET RIM ELEV (FT)	HGL BELOW RIM 1' min-FFX (FT)	HGL ABOVE CROWN (5' max) (FT)
	(1)			(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)		(13)	(14)		(15)	(16)	(17)	(18)	(19)	(20)	(21)		
6	**5**	**4**	365.10	366.74	18	12.19	17.73	1.30%	**0.230**	10.02	**0.390**	12.19	10.57	128.88	1.7348	**0.607**	90	0.70	1.214	2.211	2.21	1.106	**1.336**	368.08	369.50	1.42	1.08
7	**6**	**5**	365.60	368.08	18	12.19	15.50	1.30%	**0.202**	10.57	**0.434**	9.39	5.31	49.84	0.4374	**0.153**	90	0.70	0.306	0.893	1.16	0.580	**0.782**	368.86	370.10	1.24	1.36
8	**7**	**6**	365.76	368.86	21	9.39	134.16	0.40%	**0.537**	5.31	**0.109**	6.83	4.86	33.21	0.3670	**0.128**	90	0.70	0.257	0.495	0.64	0.322	**0.858**	369.72	370.45	0.73	1.54
9	**8**	**7**	366.68	369.72	18	6.83	40.00	0.40%	**0.160**	4.86	**0.092**	6.83	8.87	60.60	1.2223	**0.428**	0	0.00	0.000	0.520	0.52	0.260	**0.420**	370.14	371.50	1.36	1.76
10	**9**	**8**	367.13	370.14	15	6.83	165.90	1.10%	**1.825**	8.87	**0.306**	5.41	7.91	42.78	0.9713	**0.340**	90	0.70	0.680	1.325	1.72	0.862	**2.686**	372.82	375.25	2.43	0.56
11	**10**	**9**	371.11	372.82	15	5.41	58.72	0.70%	**0.411**	7.91	**0.243**	5.41	9.28	50.21	1.3378	**0.468**	0	0.00	0.000	0.711	0.71	0.356	**0.767**	373.59	378.00	4.41	0.05
-	**11**	**10**	372.39	373.59	15	5.41	29.67	0.70%	**0.208**	9.28	**0.334**	0.00	0.00	0.00	0.0000	**0.000**	90	0.70	0.000	0.334	0.43	0.217	**0.425**	374.01	374.30	0.29	-0.54
-	**3B**	**3A**	365.25	366.74	15	0.85	24.49	0.00%	**0.000**	3.06	**0.036**	0.00	0.00	0.00	0.0000	**0.000**	75	0.64	0.000	0.036	0.05	0.024	**0.024**	366.76	368.50	1.74	0.12
2	**1**	**EX.4**	362.84	364.24	21	12.81	37.18	0.70%	**0.260**	7.36	**0.210**	10.82	6.77	73.30	0.7126	**0.249**	0	0.00	0.000	0.460	0.46	0.230	**0.490**	364.73	367.34	2.61	-0.22
-	**2**	**1**	363.30	364.73	21	10.82	47.23	0.50%	**0.236**	6.77	**0.178**	0.00	0.00	0.00	0.0000	**0.000**	90	0.70	0.000	0.178	0.23	0.116	**0.352**	365.08	369.11	4.03	-0.37

STORM SEWER INLET DESIGN COMPUTATIONS: 515 MAPLE AVENUE EAST — **DESIGN STORM: 2 YR**

INLET NO.	INLET TYPE	INLET LENGTH (FT)	DRAINAGE AREA (A)	C	CA INC.	CA CUM.	I (IN/HR)	Q INCR (CFS)	Qb CARRYOVER (CFS)	Q, GUTTER FLOW (CFS)	S, GUTTER SLOPE (FT/FT)	Sx, CROSS SLOPE (FT/FT)	T, SPREAD (FT)	W (FT)	W/T	Sw (FT/FT)	Sw/Sx	Eo	a = 12W(Sw-Sx) + Local Depression	Sw =a/(12W)	Se=Sx+Sw(Eo) (FT/FT)	COMPUTED LENGTH, Lt (FT)	L/LT	E, EFFICIENCY	Qi, INTERCEPTED (CFS)	Qb, CARRYOVER (CFS)	Sag Inlets Only: d (FT)	h (FT)	d/h	T, SPREAD @ SAG
EX.7	DI-3B	6	0.39	0.75	0.29	0.29	4.00	1.17	0.25	1.42	0.0380	0.0160	4.39	1.50	0.34	0.0833	5.21	1.00	3.21	0.178	0.194	9.43	0.64	0.84	1.19	0.23				
1	DI-3B	12	0.49	0.60	0.29	0.29	4.00	1.18	0.00	1.18	0.0260	0.0200	4.20	1.50	0.36	0.0200	1.00	0.88	2.00	0.111	0.117	10.52	1.14	1.00	1.18	0.00				
3B	DI-3B	6	0.14	0.90	0.13	0.13	6.77	0.85	0.00	0.85	0.0130	0.0410	3.31	1.50	0.45	0.0833	2.03	1.00	2.76	0.153	0.194	5.52	1.09	1.00	0.85	0.00				
9	DI-3A	2.5	0.42	0.50	0.21	0.21	6.77	1.42	0.00	1.42	0.0300	0.0300	3.78	1.50	0.40	0.0300	1.00	0.86	2.00	0.111	0.126	11.40	0.22	0.36	0.51	0.91				

APPROVAL

LDC
4585 DAISY REID AVENUE, SUITE 201 WOODBRIDGE, VIRGINIA 22192
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STORM SEWER COMPUTATIONS

515 MAPLE AVENUE EAST
TOWN OF VIENNA, VIRGINIA

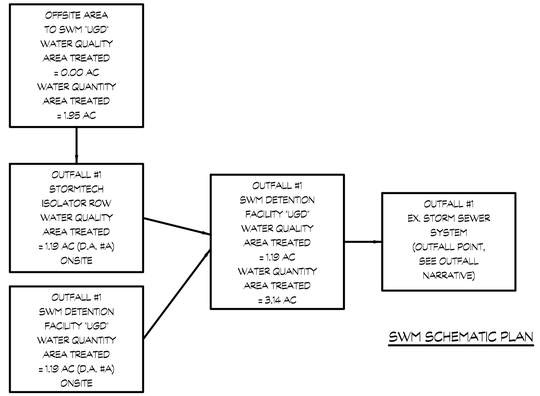
DATE	DESCRIPTION	NO.	DESIGN BY	APPROVED BY

I HEREBY CERTIFY THAT OTHER THAN THE REVISIONS SHOWN HEREON, NO OTHER CHANGES HAVE BEEN MADE.

COMMONWEALTH OF VIRGINIA
MATTHEW T. MARSHALL
Lic. No. 1535-B
07/02/25
DATE
LAND SURVEYOR

SCALE: AS SHOWN

SHEET: 16 OF 41
DATE: JULY 2025
DRAFT: ZG/SB | CHECK: MTM
FILE NUMBER: 25021-1-1



SWM SCHEMATIC PLAN

Site Results (Water Quality Compliance) VRRM 4.1, 2024

Area Checks	D.A. A	D.A. B	D.A. C	D.A. D	D.A. E	AREA CHECK
FOREST (ac)	0.00	0.00	0.00	0.00	0.00	OK.
MIXED OPEN (ac)	0.00	0.00	0.00	0.00	0.00	OK.
MIXED OPEN AREA TREATED(ac)	0.00	0.00	0.00	0.00	0.00	OK.
MANAGED TURF AREA (ac)	0.34	0.00	0.00	0.00	0.00	OK.
MANAGED TURF AREA TREATED (ac)	0.18	0.00	0.00	0.00	0.00	OK.
IMPERVIOUS COVER (ac)	1.16	0.00	0.00	0.00	0.00	OK.
IMPERVIOUS COVER TREATED (ac)	1.01	0.00	0.00	0.00	0.00	OK.
AREA CHECK	OK.	OK.	OK.	OK.	OK.	

Site Treatment Volume (ft^3): 4,309

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)	1.28	0.00	0.00	0.00	0.00	1.28
TP LOAD REDUCTION ACHIEVED (lb/yr)	0.41	0.00	0.00	0.00	0.00	0.41
TP LOAD REMAINING (lb/yr)	0.88	0.00	0.00	0.00	0.00	0.88
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)	1.28
TP LOAD REDUCTION REQUIRED (lb/yr)	0.76
TP LOAD REDUCTION ACHIEVED (lb/yr)	0.41
TP LOAD REMAINING (lb/yr)	0.88
REMAINING TP LOAD REDUCTION REQUIRED (lb/yr)	0.00 **

** TARGET TP REDUCTION EXCEEDED BY 0.15 LB/YEAR **

Total Nitrogen (For Information Purposes)

POST-DEVELOPMENT LOAD (lb/yr)	17.37
NITROGEN LOAD REDUCTION ACHIEVED (lb/yr)	0.00
REMAINING POST-DEVELOPMENT NITROGEN LOAD (lb/yr)	17.37

DRAINAGE AREA 'A' REMOVES 0.41 LB/YR.
TOTAL REMOVAL = 0.41 LB/YR > 0.26 LB/YR REQUIRED.
THEREFORE, WATER QUALITY REQUIREMENTS FOR THE PROJECT HAVE BEEN MET.
SEE SWM MANAGEMENT NARRATIVE, SHEET 19.

DRAINAGE AREA 'A' INCLUDES PORTION OF DEVELOPMENT AREA TREATED FOR WATER QUALITY (STORMTECH ISOLATOR ROWS, 40%). TOTAL PHOSPHORUS REMOVAL ACHIEVED = 0.41 LB/YR

VRRM 4.1, 2024

Drainage Area A

CLEAR BMP AREAS

Drainage Area A Land Cover (acres)

	A Soils	B Soils	C Soils	D Soils	Totals	Land Cover Rv	Composite Loading P
Forest (acres)					0.00	0.00	0.00
Mixed Open (acres)					0.00	0.00	0.00
Managed Turf (acres)				0.34	0.34	0.25	0.85
Impervious Cover (acres)				1.16	1.16	0.95	0.86
			Total		1.50		

Total Phosphorus Available for Removal in D.A. A (lb/yr): 1.28
Post Development Treatment Volume in D.A. A (ft^3): 4,309

Stormwater Best Management Practices (RR = Runoff Reduction)

--Select from dropdown lists--

Practice	Runoff Reduction Credit (%)	Mixed Open Credit Area (acres)	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
16. Manufactured Treatment Devices (no RR)														
16.a. Manufactured Treatment Device-Hydrodynamic	0				0	0	0	0	20	0.00	0.00	0.00	0.00	
16.b. Manufactured Treatment Device-Filtering	0		0.18	1.01	0	0	3,646	3,646	40	0.00	1.02	0.41	0.61	
16.c. Manufactured Treatment Device-Generic	0				0	0	0	0	20	0.00	0.00	0.00	0.00	

TOTAL IMPERVIOUS COVER TREATED (ac)	1.01	AREA CHECK: OK.
TOTAL MIXED OPEN TREATED (ac)	0.00	AREA CHECK: OK.
TOTAL MANAGED TURF AREA TREATED (ac)	0.18	AREA CHECK: OK.
TOTAL PHOSPHORUS REMOVAL REQUIRED ON SITE (lb/yr)	0.00	
TOTAL PHOSPHORUS AVAILABLE FOR REMOVAL IN D.A. A (lb/yr)	1.28	
TOTAL PHOSPHORUS REMOVED WITHOUT RUNOFF REDUCTION PRACTICES IN D.A. A (lb/yr)	0.41	
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)	0.41	
TOTAL PHOSPHORUS REMAINING AFTER APPLYING BMP LOAD REDUCTIONS IN D.A. A (lb/yr)	0.88	

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	

Runoff Volume and Curve Number Calculations, VRRM 4.1, 2024

Enter design storm rainfall depths (in):

1-year storm	2-year storm	10-year storm
2.62	3.17	4.87

Use NOAA Atlas 14 (http://hdsc.nws.noaa.gov/hdsc/pfds/)

***Notes (see below):**

[1] The curve numbers and runoff volumes computed in this spreadsheet for each drainage area are limited in their applicability for determining and demonstrating compliance with water quantity requirements. See VRRM User's Guide and Documentation for additional information.

[2] Runoff Volume (RV) for pre- and post-development drainage areas must be in volumetric units (e.g., acre-feet or cubic feet) when using the Energy Balance Equation. Runoff measured in watershed-inches and shown in the spreadsheet as RV(watershed-inch) can only be used in the Energy Balance Equation when the pre- and post-development drainage areas are equal. Otherwise RV(watershed-inch) must be multiplied by the drainage area.

[3] Adjusted CNs are based on runoff reduction volumes as calculated in D.A. tabs. An alternative CN adjustment calculation for Vegetated Roofs is included in BMP specification No. 5.

Drainage Area Curve Numbers and Runoff Depths*

Drainage Area A		A Soils	B Soils	C Soils	D Soils
Forest -- undisturbed, protected forest or reforested land	Area (acres)	0.00	0.00	0.00	0.00
	CN	30	55	70	77
Mixed Open -- undisturbed/infrequently maintained grass or shrub land	Area (acres)	0.00	0.00	0.00	0.00
	CN	34	59	72	79
Managed Turf -- disturbed, graded for yards or other turf to be mowed/managed	Area (acres)	0.00	0.00	0.00	0.34
	CN	39	61	74	80
Impervious Cover	Area (acres)	0.00	0.00	0.00	1.16
	CN	98	98	98	98

$CN_{(D.A. A)}$: 94

Total Area (acres):	1.50
Runoff Reduction Volume (ft^3):	0

	1-year storm	2-year storm	10-year storm
$RV_{Developed}$ *(watershed-inch)* with no Runoff Reduction*	1.98	2.51	4.18
$RV_{Developed}$ *(watershed-inch)* with Runoff Reduction*	1.98	2.51	4.18
Adjusted CN*	94	94	94

**See Notes above*

DEQ Virginia Runoff Reduction Method Re-Development Compliance Spreadsheet – Version 4.1

Project Name: 515 Maple Avenue East
Date: 5/20/2025
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)* → 1.50

Maximum reduction required:	20%
The site's net increase in impervious cover (acres) is:	0
Post-Development TP Load Reduction for Site (lb/yr):	0.26

Check:
BMP Design Specifications List: 2024 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 (acres) -- undisturbed, protected forest or reforested land					0.00
Mixed Open (acres) -- undisturbed/infrequently maintained grass or shrub land					0.00
Managed Turf (acres) -- disturbed, graded for yards or other turf to be mowed/managed				0.24	0.24
Impervious Cover (acres)				1.26	1.26
					1.50

Post-Development Land Cover (acres)

	A Soils	B Soils	C Soils	D Soils	Totals
Forest/Open Space (acres) -- undisturbed, protected forest or reforested land					0.00
Mixed Open (acres) -- undisturbed/infrequently maintained grass or shrub land					0.00
Managed Turf (acres) -- disturbed, graded for yards or other turf to be mowed/managed				0.34	0.34
Impervious Cover (acres)				1.16	1.16
Area Check	OK.	OK.	OK.	OK.	1.50

Post-Development Requirement for Site Area

TP Load Reduction Required (lb/yr)	0.26

Nitrogen Loads (Informational Purposes Only)

Pre-ReDevelopment TN Load (lb/yr)	17.70

Final Post-Development TN Load	17.37

LAND COVER SUMMARY – PRE-REDEVELOPMENT

Land Cover Summary-Pre Pre-ReDevelopment	Listed	Adjusted[1]
Forest Cover (acres)	0.00	0.00
Weighted Rv(forest)	0.00	0.00
Weighted Loading Rate(forest)	0.00	0.00
% Forest	0%	0%
Mixed Open Cover (acres)	0.00	0.00
Weighted Rv(mixed)	0.00	0.00
Weighted Loading Rate(mixed)	0.00	0.00
% Mixed Open	0%	0%
Managed Turf Cover (acres)	0.24	0.24
Weighted Rv(turf)	0.25	0.25
Weighted Loading Rate(turf)	0.85	0.85
% Managed Turf	16%	16%
Impervious Cover (acres)	1.26	1.26
Rv(impervious)	0.95	0.95
Weighted Loading Rate(impervious)	0.86	0.86
% Impervious	84%	84%
Total Site Area (acres)	**1.50**	**1.50**
Site Rv	**0.84**	**0.84**
Treatment Volume and Nutrient Load		
Pre-ReDevelopment Treatment Volume (acre-ft)	0.1048	0.1048
Pre-ReDevelopment Treatment Volume (cubic feet)	4,563	4,563
Pre-ReDevelopment TP Load (lb/yr)	**1.28**	**1.28**
Pre-ReDevelopment TP Load per acre (lb/acre/yr)	0.86	0.86
Baseline TP Load (lb/yr) (0.26 lbs/acre/yr applied to pre-redevelopment area excluding pervious land proposed for new impervious cover)	0.39	

[1] *Adjusted Land Cover Summary:*
Pre ReDevelopment land cover minus pervious land cover (forest, mixed open 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, 0.26 lbs/acre/year).

LAND COVER SUMMARY – POST DEVELOPMENT

Land Cover Summary-Post (Final) Post ReDev. & New Impervious	
Forest Cover (acres)	0.00
Weighted Rv(forest)	0.00
Wgt. Ld. Rate(forest)	0.00
% Forest	0%
Mixed Open Cover (acres)	0.00
Weighted Rv(mixed)	0.00
Wgt. Ld. Rate(mixed)	0.00
% Mixed Open	0%
Managed Turf Cover (acres)	0.34
Weighted Rv (turf)	0.25
Wgt. Ld. Rate(turf)	0.85
% Managed Turf	23%
Impervious Cover (acres)	1.16
Rv(impervious)	0.95
Wgt. Ld. Rate(imperv.)	0.86
% Impervious	77%
Final Site Area (acres)	**1.50**
Final Post Dev Site Rv	**0.79**
Treatment Volume and Nutrient Load	
Final Post-Development Treatment Volume (acre-ft)	0.0989
Final Post-Development Treatment Volume (cubic feet)	4,309
Final Post-Development TP Load (lb/yr)	**1.28**
Final Post-Development TP Load per acre (lb/acre/yr)	0.86

Land Cover Summary-Post Post-ReDevelopment	
Forest Cover (acres)	0.00
Weighted Rv(forest)	0.00
Wgt. Ld. Rate(forest)	0.00
% Forest	0%
Mixed Open Cover (acres)	0.00
Weighted Rv(mixed)	0.00
Wgt. Ld. Rate(mixed)	0.00
% Mixed Open	0%
Managed Turf Cover (acres)	0.34
Weighted Rv (turf)	0.25
Wgt. Ld. Rate(turf)	0.85
% Managed Turf	23%
ReDev. Impervious Cover (acres)	1.16
Rv(impervious)	0.95
Wgt. Ld. Rate(imperv.)	0.86
% Impervious	77%
Total ReDev. Site Area (acres)	**1.50**
ReDev Site Rv	**0.79**
Treatment Volume and Nutrient Load	
Post-ReDevelopment Treatment Volume (acre-ft)	0.0989
Post-ReDevelopment Treatment Volume (cubic feet)	4,309
Post-ReDevelopment TP Load (lb/yr)	**1.28**
Post-ReDevelopment TP Load per acre (lb/acre/yr)	0.86
Max. Reduction Required (Below Pre-ReDevelopment Load)	20%
TP Load Reduction Required for Redeveloped Area (lb/yr)	**0.26**

Land Cover Summary-Post Post-Development New Impervious	
New Impervious Cover (acres)	0.00
Rv(impervious)	--
Post-Development Treatment Volume (acre-ft)	--
Post-Development Treatment Volume (cubic feet)	--
Post-Development TP Load (lb/yr)	--
TP Load Reduction Required for New Impervious Area (lb/yr)	**0**

SEE SHEETS 18-26 FOR DRAINAGE AREA MAPS & SWM COMPUTATIONS

APPROVAL

LDC
4585 DAISY REID AVENUE, SUITE 201, WOODBRIDGE, VIRGINIA 22192
WWW.LDCVA.COM

VRRM SPREADSHEET

515 MAPLE AVENUE EAST
TOWN OF VIENNA, VIRGINIA

DATE	APPROVED	REVIEW BY	DESCRIPTION	NO	DESIGN	DATE
			REVISION APPROVED BY:			ENGINEER

I HEREBY CERTIFY THAT OTHER THAN THE REVISIONS SHOWN HEREON, NO OTHER CHANGES HAVE BEEN MADE.

COMMONWEALTH OF VIRGINIA
MATTHEW T. MARSHALL
Lic. No. 1353-B
07/09/25
DATE
LAND SURVEYOR

SCALE: AS SHOWN

SHEET: 17 OF 41

DATE: JULY 2025

DRAFT: ZG/SB | CHECK: MTM

FILE NUMBER: 25021-1-1

		Pre (cfs)				Post (cfs)			
		1	2	10	Ac	1	2	10	Ac
Site/Outfall	Undetained	3.9	4.84	7.68	1.5	0.64	0.83	1.43	0.31
	Detained	---	---	---	---	6.2	8.08	13.93	3.14
	Routed	---	---	---	---	3.70	4.32	10.82	1.19
	Total	3.90	4.84	7.68	1.50	4.34	5.15	12.25	1.5
Combined (Site/Outfall)		3.9	4.84	7.68	1.5	4.34	5.15	12.25	1.50

Note: Site/Outfall Post Total = Undetained + Peak Discharge from SWM system (See SWM Routings)

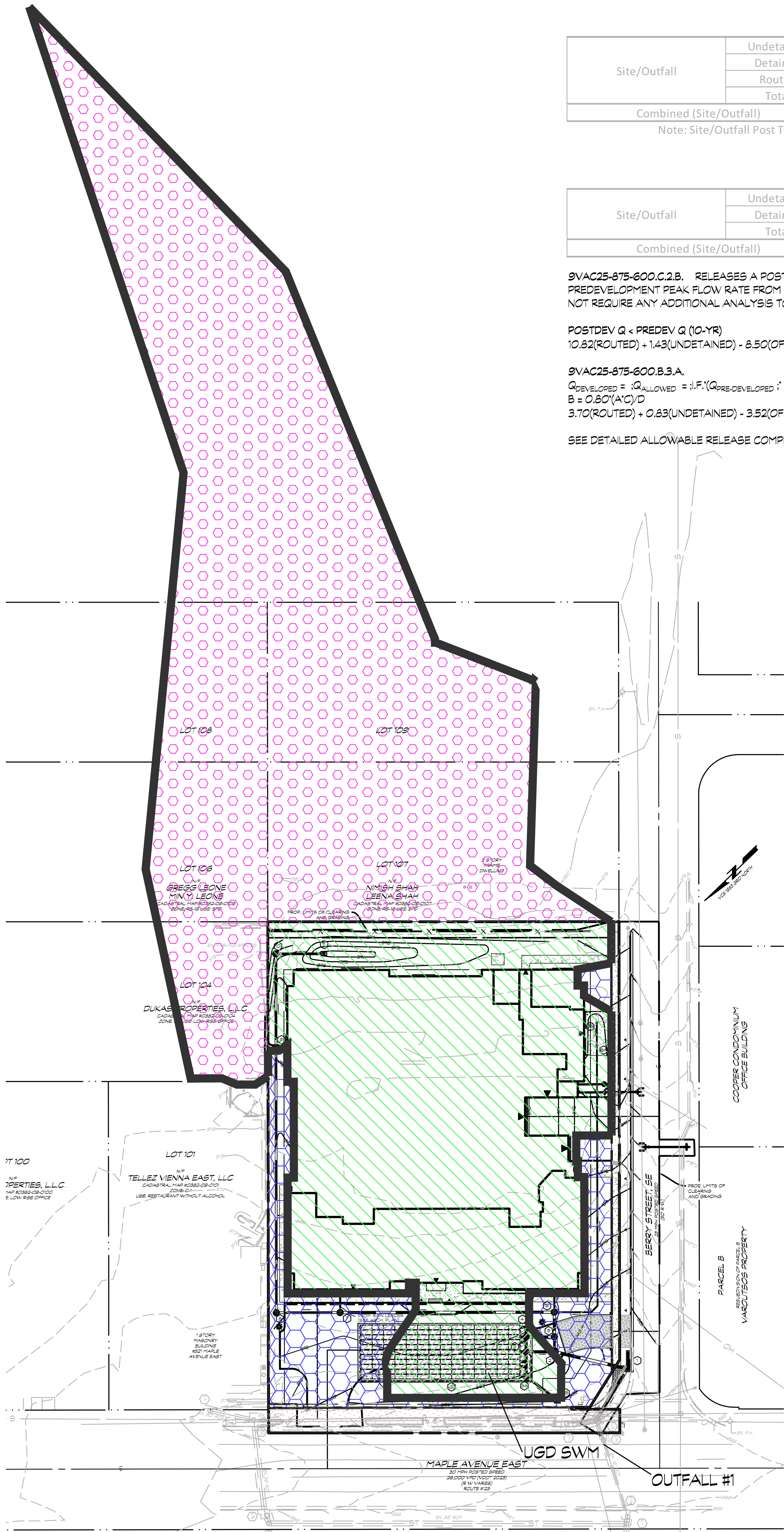
		Pre (Ac-ft)				Post (Ac-ft)			
		1	2	10	Ac	1	2	10	Ac
Site/Outfall	Undetained	0.26	0.327	0.536	1.5	---	---	---	0.31
	Detained	---	---	---	---	---	---	---	1.19
	Total	0.260	0.327	0.536	1.50	0.248	0.314	0.522	1.5
Combined (Site/Outfall)		0.26	0.327	0.536	1.5	0.248	0.314	0.522	1.5

9VAC25-875-600.C.2.B. RELEASES A POSTDEVELOPMENT PEAK FLOW RATE FOR THE 10-YEAR 24-HOUR STORM EVENT THAT IS LESS THAN THE PREDEVELOPMENT PEAK FLOW RATE FROM THE 10-YEAR 24-HOUR STORM EVENT. DOWNSTREAM STORMWATER CONVEYANCE SYSTEMS DO NOT REQUIRE ANY ADDITIONAL ANALYSIS TO SHOW COMPLIANCE WITH FLOOD PROTECTION CRITERIA IF THIS OPTION IS UTILIZED.

POSTDEV Q < PREDEV Q (10-YR)
10.82(ROUTED) + 1.43(UNDETAINED) - 8.50(OFF-SITE DETAINED) = 3.75 CFS < 7.68 CFS (OUTFALL #1 - COMPLIANT)

9VAC25-875-600.B.3.A.
$Q_{DEVELOPED} = ;Q_{ALLOWED} = ;I.F.*(Q_{PRE-DEVELOPED} ;* RV_{PRE-DEVELOPED};)/RV_{DEVELOPED}$; FOR ONE-YEAR 24-HOUR STORM
B = 0.80*(A*C)/D
3.70(ROUTED) + 0.83(UNDETAINED) - 3.52(OFF-SITE DETAINED) = 1.01 CFS < 3.27 CFS = 0.80*(3.90 CFS * 0.260 AC-FT)/0.248 AC-FT (COMPLIANT)

SEE DETAILED ALLOWABLE RELEASE COMPUTATIONS, THIS SHEET.



WATER QUALITY/BMP & POST DEVELOPED AREAS

WATERSHED INFORMATION:

SUBAREA DESIGNATION AND DESCRIPTION	"C"	CN	ACRES	BMP MAP HATCH
DEVELOPED W/CONTROLS (ADS STORMTECH w/ISOLATOR ROWS/UGD) - AREA "A"	0.80	95	1.19	
DEVELOPED W/OUT CONTROLS (DEVELOPED OUTFALL #1) - AREA "A"	0.60	89	0.31	
OFF-SITE AREA TO UGD (NO QUALITY CONTROL)	0.45	86	1.95	
R/W DEDICATION AREA DEDUCTED FROM DEVELOPMENT AREA	-	-	0.11	

TOTAL SITE AREA = 1.61 ACRES
TOTAL DEVELOPMENT AREA = 1.50 ACRES

BMP & POST DEVELOPED AREA MAP 1"=100'

1, 2, & 10 YR. RUNOFF VOLUME COMP. (OUTFALL #1 EX. CONDITION)

PER CHAPTER 5 - VIRGINIA SWM HANDBOOK VOLUME II
1. RAINFALL DEPTH (P) FOR FAIRFAX COUNTY (TOWN OF VIENNA) = 2.62 IN (1 YR)
2. SOILS DRAINING TO OUTFALL ARE HYDROLOGIC SOIL GROUP "D"
   (SEE THIS SHEET FOR SOILS MAP)
3. WEIGHTED CN FOR EXISTING CONDITION FOR SOIL GROUP "D" = 95
4. TOTAL AREA DRAINING TO OUTFALL #1 IN EXISTING CONDITION = 1.50 ACRES
5. S = (1000/CN) -10 = (1000/95) - 10 = 0.53

1 YEAR:
6. RUNOFF Q = ((P-.2S)^2)/(P + .8S) = ((2.62 - .2(0.53))^2)/(2.62 + .8(0.53)) = 2.08 IN
7. RUNOFF VOLUME = RVf = AREA*RUNOFF Q = 1.50 AC * (2.08 IN(1 FT/12 IN)) = 0.260 AC-FT

1, 2, & 10 YR. RUNOFF VOLUME COMP. (OUTFALL #1 DEVELOPED)

PER CHAPTER 5 - VIRGINIA SWM HANDBOOK VOLUME II
1. RAINFALL DEPTH (P) FOR FAIRFAX COUNTY (TOWN OF VIENNA) = 2.62 IN (1 YR)
2. SOILS DRAINING TO OUTFALL ARE HYDROLOGIC SOIL GROUP "D"
   (SEE THIS SHEET FOR SOILS MAP)

1 YEAR:
3. ADJUSTED CN FOR SITE FOR SOIL GROUP "D" = 94
   (SEE VRRM SPREADSHEET)
4. TOTAL DEVELOPMENT AREA DRAINING TO OUTFALL #1 = 1.50 ACRES
5. S = (1000/CN) - 10 = (1000/94) - 10 = 0.64
6. RUNOFF Q = ((P-.2S)^2)/(P + .8S) = ((2.62 - .2(0.64))^2)/(2.62 + .8(0.64)) = 1.98 IN
7. RUNOFF VOLUME = RVd = AREA*RUNOFF Q = 1.50 AC * (1.98 IN(1 FT/12 IN)) = 0.248 AC-FT

REDUCTION REQUIRED FOR CHANNEL PROTECTION PER CODE SECTION 9VAC25-875-600-B(3)(a):
Qallow = Qex * 0.80(RVex/RVd)
SEE DETENTION RELEASE RATE COMPUTATIONS ON THIS SHEET FOR REDUCTIONS.

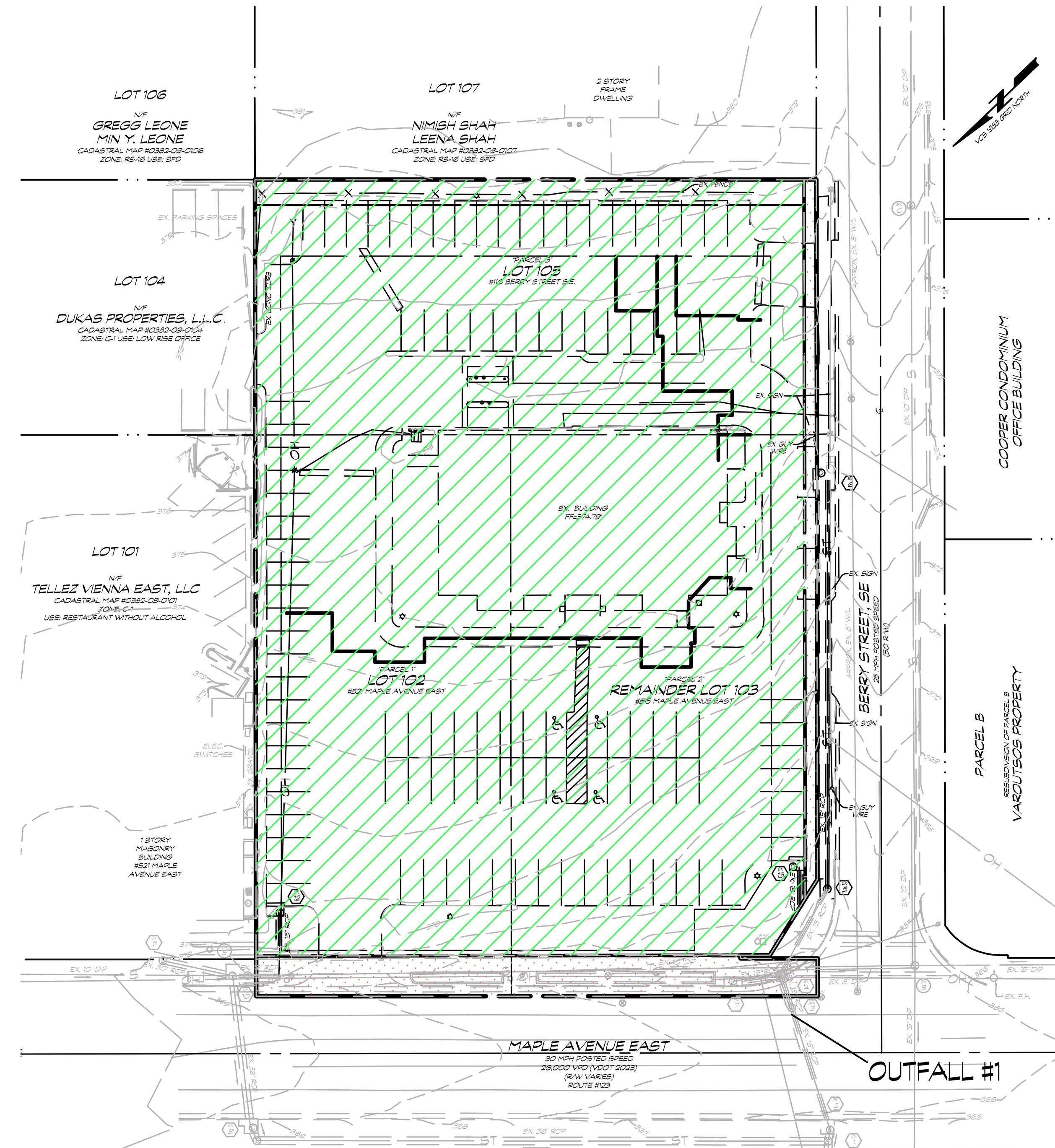
PREDEVELOPED AREAS

WATERSHED INFORMATION:

AREA DESCRIPTION	ACRES	CN	MAP HATCH
PREDEVELOPED SITE AREA TO OUTFALL #1	1.50	95	
R/W DEDICATION AREA DEDUCTED FROM DEVELOPMENT AREA	0.11	-	

TOTAL SITE AREA = 1.61 ACRES
TOTAL DEVELOPMENT AREA = 1.50 ACRES

PREDEVELOPED DRAINAGE AREA MAP 1"=50'



GRAPHICAL SCALE
50 25 0 50 100
1" = 50'

SEE SHEET 17 FOR VRRM SPREADSHEET

SEE SHEETS 11, & 18-26 FOR DRAINAGE AREA MAPS & SWM COMPUTATIONS

SOIL INFORMATION

SOIL #	SOIL NAME	PROBLEM CLASS	FOUNDATION SUPPORT	DRAINAGE	EROSION POTENTIAL	HYDROLOGIC SOIL GROUP
67	KINGSTOWNE-BELTSVILLE COMPLEX	IVB	FAIR	MARGINAL	LOW	D
95	URBAN LAND	IVB	N/A	N/A	N/A	D
108	WHEATON-SUMERDUCK COMPLEX	IVB	MARGINAL	POOR	MEDIUM	D

DETENTION RELEASE RATES - OUTFALL #1:

PREDEVELOPMENT SITE CONDITIONS - DEVELOPMENT AREA:
EXISTING ONSITE DEVELOPMENT AREA
SEE PREDEVELOPMENT DRAINAGE AREA MAP(THIS SHEET)

FOR 1-YEAR CHANNEL PROTECTION PER 9VAC25-875-600-B(3)(a) USE:
AREA= 1.50 AC., Tc = 0.10 HR, CN= 95 (EXISTING CONDITION)

1 YEAR STORM (16% REDUCTION REQUIRED, SEE VOL. COMP., THIS SHEET)
CN= 95, Tc= 0.10 HR, A= 1.50 AC (FROM TR-55 RESULTS)
Qex= 3.90 CFS, Qallow = 3.90*0.80(0.260/0.248) = 3.27 CFS

FOR 2 & 10-YEAR FLOOD PROTECTION PER 9VAC25-875-600-C(2)(b) USE:
AREA= 1.50 AC., Tc = 0.10 HR, CN= 95 (EXISTING CONDITION)

2 YEAR STORM
CN= 95, Tc= 0.10 HR, A= 1.50 AC (FROM TR-55 RESULTS)
Qex= 4.84 CFS

10 YEAR STORM
CN= 95, Tc= 0.10 HR, A= 1.50 AC (FROM TR-55 RESULTS)
Qex= 7.68 CFS

POST DEVELOPMENT SITE CONDITIONS - DEVELOPMENT AREA:
ONSITE DEVELOPMENT AREA DRAINING OFF UNCONTROLLED.
UGD (1.19 AC ON-SITE) WILL PROVIDE DETENTION FOR THE
1, 2, & 10 YEAR STORM EVENTS FOR THE CONTROLLED AREA.
TOTAL POST DRAINAGE ON-SITE AREA = 1.50 AC
SEE POST DEVELOPMENT DRAINAGE AREA MAP(THIS SHEET)
UNCONTROLLED AREA = 0.31 AC, CN= 89, Tc = 0.10 MIN.

1 YEAR STORM
CN= 89, Tc= 0.10 HR, A= 0.31 AC (FROM TR-55 RESULTS)
Q= 0.64 CFS

2 YEAR STORM
CN= 89, Tc= 0.10 HR, A= 0.31 AC (FROM TR-55 RESULTS)
Q= 0.83 CFS

10 YEAR STORM
CN= 89, Tc= 0.10 HR, A= 0.31 AC (FROM TR-55 RESULTS)
Q= 1.43 CFS

OFFSITE CONTROLLED BY SWM SYSTEMS:
!!THIS AREA IS BEING CONTROLLED TO OFFSET THE ON-SITE UNCONTROLLED AREA!!
SEE POST DELEVOPED DRAINAGE AREA MAP(THIS SHEET) FOR AREA DESCRIPTIONS
TOTAL 1, 2, & 10 YEAR OFFSITE CONTROLLED AREA = 1.95 AC, CN=86, Tc = 0.10 HR

1 YEAR STORM
CN= 86, Tc= 0.10 HR. A= 1.95 AC (FROM TR-55 RESULTS) Q=3.52 CFS

2 YEAR STORM
CN= 86, Tc= 0.10 HR. A= 1.95 AC (FROM TR-55 RESULTS) Q=4.71 CFS

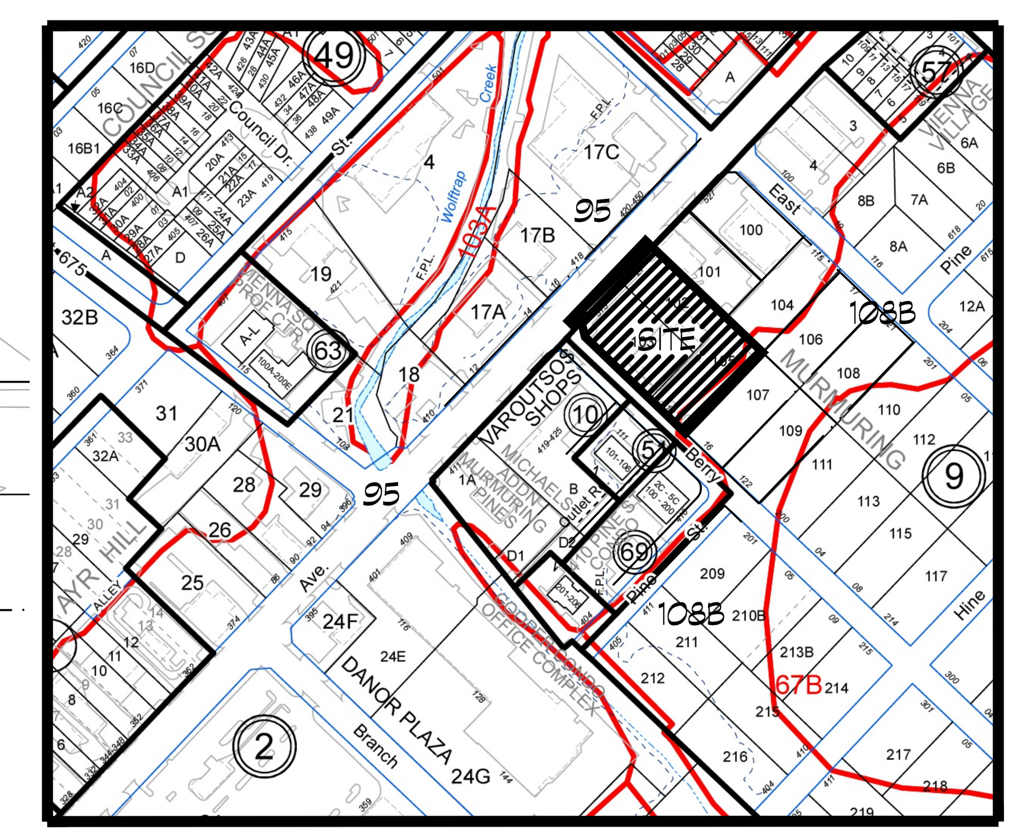
10 YEAR STORM
CN= 86, Tc= 0.10 HR. A= 1.95 AC (FROM TR-55 RESULTS) Q=8.50 CFS

TOTAL ALLOWED RELEASE FROM SWM SYSTEM:
ALLOWABLE DISCHARGE TO OUTFALL - POST DEVELOPMENT UNCONTROLLED +
OFFSITE CONTROLLED BY SWM SYSTEMS = ALLOWABLE RELEASE RATE FROM SWM SYSTEMS

1 YEAR STORM
Q= 3.27 - 0.64 + 3.52 = 6.15 CFS ALLOWABLE RELEASE RATE FROM SWM SYSTEM
1 YEAR RELEASE RATE FROM UGD = 3.70 CFS W.S.E. = 365.21
RESULT:
CHANNEL PROTECTION REQUIREMENTS PROVIDED PER CODE SECTION 9VAC25-875-600-B(3)(a)

2 YEAR STORM
Q= 4.84 - 0.83 + 4.71 = 8.72 CFS ALLOWABLE RELEASE RATE FROM SWM SYSTEM
2 YEAR RELEASE RATE FROM UGD = 4.32 CFS W.S.E. = 365.55
RESULT:
FLOOD PROTECTION REQUIREMENTS PROVIDED PER CODE SECTION 9VAC25-875-600-C(2)(b)

10 YEAR STORM
Q= 7.68 - 1.43 + 8.50 = 14.75 CFS ALLOWABLE RELEASE RATE FROM SWM SYSTEM
10 YEAR RELEASE RATE FROM UGD = 10.82 CFS W.S.E. = 366.74
RESULT:
FLOOD PROTECTION REQUIREMENTS PROVIDED PER CODE SECTION 9VAC25-875-600-C(2)(b)



SOILS MAP
SCALE : 1" = 300'

APPROVAL

LDC
4585 DAISY REID AVENUE, SUITE 201 WOODBRIDGE, VIRGINIA 22192
WWW.LDC-VA.COM

BMP MAP & COMPUTATIONS

515 MAPLE AVENUE EAST
TOWN OF VIENNA, VIRGINIA

DATE	DESIGN	NO.	DESCRIPTION	REVIEW BY	APPROVED	DATE
ENGINEER			REVISION APPROVED BY:			

I HEREBY CERTIFY THAT OTHER THAN THE REVISIONS SHOWN HEREON, NO OTHER CHANGES HAVE BEEN MADE.

COMMONWEALTH OF VIRGINIA
MATTHEW T. MARSHALL
Lic. No. 1525-B
07/09/25
DATE
LAND SURVEYOR

SCALE:
AS SHOWN

SHEET: 18 OF 41

DATE:
JULY 2025

DRAFT: ZG/SB
CHECK: MTM

FILE NUMBER:
25021-1-1

p:\PY 2025\25021-1-1 maple avenue east - 515\ENG\SITEPLAN\25021-1-1-SWM.dwg
SBUTLER on 4/4/2025

OUTFALL NARRATIVE

THE SUBJECT PROPERTY IS LOCATED WITHIN THE DIFFICULT RUN WATERSHED. THE SUBJECT PROPERTY MAINTAINS ONE STORM DRAINAGE OUTFALL. THERE IS A FLOODPLAIN AREA ON THE SUBJECT PROPERTY. AS A RESULT OF THE DEVELOPMENT OF THE SUBJECT PROPERTY AN INCREASE IN RUNOFF WILL BE EXPERIENCED. AN UNDERGROUND DETENTION FACILITY (UGD) IS PROVIDED TO MEET DETENTION REQUIREMENTS AND THE POST DEVELOPED 1, 2, & 10 YEAR 24 HOUR DISCHARGES FROM THE SITE WILL BE CONTROLLED PER CODE SECTION 23-17(A) AND VIRGINIA CODE SECTIONS 9VAC25-875-600(B)(3)ii, & (C)(2)ii (SEE STORMWATER MANAGEMENT NARRATIVE, THIS SHEET). THE LAYOUT OF THE SITE HAS BEEN DESIGNED TO MINIMIZE THE IMPACTS TO DOWNSTREAM PROPERTIES. AS STATED ABOVE, THE POST DEVELOPED DISCHARGES FROM THE SITE WILL BE CONTROLLED BY THE UGD AND THE INTENT SHALL BE TO MAINTAIN THE EXISTING DRAINAGE PATTERNS AND TO NOT HAVE A NEGATIVE IMPACT ON ADJACENT PROPERTIES.

OUTFALL
THE PROPOSED STORM SEWER SYSTEM DISCHARGES INTO AN EXISTING STORM SEWER SYSTEM WITHIN THE MAPLE AVENUE RIGHT-OF-WAY. THIS DISCHARGE POINT IS ALREADY WITHIN THE FEMA FLOODPLAIN LIMITS. THE DOWNSTREAM RECEIVING CHANNEL IS THE EXISTING STORM SEWER SYSTEM. THE DISCHARGE TO THE EXISTING STORM SEWER SYSTEM IS CONVEYED ±270 DOWNSTREAM WITHIN THE EXISTING STORM SEWER SYSTEM ACROSS MAPLE AVENUE AND THEN INTO THE MAIN BRANCH OF WOLFTRAP CREEK. THE TOTAL DRAINAGE AREA WITHIN THE CHANNEL ONCE IT GETS TO WOLFTRAP CREEK IS ±955 ACRES WHICH IS IN EXCESS OF 100 TIMES THE SITE AREA OF 1.50 ACRES.

STORMWATER MANAGEMENT QUANTITY REQUIREMENTS FOR THE SITE ARE PROVIDED BY THE UGD (SEE SHEETS 17-28 FOR SWM DETAILS AND COMPUTATIONS). STORM SEWER COMPUTATIONS AND THE FAIRFAX COUNTY TOPOGRAPHY MAP HAVE BEEN PROVIDED FOR THE FLOWPATH FROM THE OUTFALL TO DEMONSTRATE THAT A DEFINED CHANNEL EXISTS DOWNSTREAM OF THE OUTFALL.

THE OUTFALL CONVEYS 1.50 ACRES OF DRAINAGE FROM THE SUBJECT PROPERTY IN THE PRE AND POST DEVELOPED CONDITION. AS A RESULT OF THE PROPOSED SWM FACILITY, DETENTION OF THE 1, 2, & 10 YEAR 24 HOUR STORM EVENTS WILL BE PROVIDED. REQUIREMENTS FOR CHANNEL & FLOOD PROTECTION WILL BE MET AS OUTLINED IN CODE SECTION 23-17(A) AND VIRGINIA CODE SECTION 9VAC25-875-600(B)(3)ii & (C)(2)ii FOR THE OUTFALL. STORAGE TO DETAIN THE 1, 2, & 10 YEAR 24 HOURS STORM VOLUMES WILL BE PROVIDED IN THE PROPOSED SWM FACILITY AND THE DISCHARGE FROM THE SITE WILL BE REDUCED BY THE REQUIRED ENERGY BALANCE EQUATION OUTLINED IN VIRGINIA CODE SECTION 9VAC25-875-600(B)(3)ii (EX. CONDITION). DEFINED CHANNEL OUTFALL REQUIREMENTS FOR THE OUTFALL HAVE BEEN DEMONSTRATED BY THE EXISTING STORM SEWER SYSTEM AND THE FAIRFAX COUNTY TOPOGRAPHY MAPS OF THE OUTFALL CHANNEL FROM THE OUTFALL OF THE SITE TO THE POINT WHERE THE TOTAL DRAINAGE AREA IS GREATER THAN 100 TIMES THE SITE DEVELOPMENT AREA. THE EXTENT OF REVIEW FOR THIS OUTFALL IS THE DISCHARGE POINT INTO THE EXISTING STORM SEWER SYSTEM AT MAPLE AVENUE WHICH IS WITHIN THE LIMITS OF THE FEMA FLOODPLAIN WHICH HAS A TOTAL DRAINAGE AREA OF ±955 ACRES WHICH IS GREATER THAN 100 TIMES THE SITE AREA AS OUTLINED IN VIRGINIA CODE SECTION 9VAC25-875-600(B)(4)ii & (C)(3)c. A DEFINED CHANNEL EXISTS FROM THE DISCHARGE POINT FROM THE SUBJECT PROPERTY THROUGH THE EXTENT OF REVIEW. SINCE DETENTION OF THE 1, 2, & 10 YEAR 24 HOUR STORMS IS PROVIDED, AND THE ENERGY BALANCE EQUATION FOR THE DISCHARGE FROM THE SITE IS PROVIDED, AND A DEFINED CHANNEL EXISTS THROUGH THE EXTENT OF REVIEW FOR THE SITE, ADEQUATE OUTFALL REQUIREMENTS HAVE BEEN MET FOR THE OUTFALL. THE EXISTING STORM SEWER SYSTEM WAS INVESTIGATED AND FOUND TO BE IN GOOD CONDITION. ADEQUATE OUTFALL REQUIREMENTS FOR THIS OUTFALL HAVE BEEN MET IN ACCORDANCE WITH SECTION 23-17(A) OF THE TOWN OF VIENNA CODE AND SECTION 9VAC25-875-600 OF THE VIRGINIA CODE.

EXTENT OF REVIEW/LIMITS OF FLOODPLAIN = @
FOR OUTFALL
OUTFALL SITE AREA = 1.50 AC
FLOODPLAIN AREA FOR EXTENT OF REVIEW = ±940 AC
SEE THIS SHEET FOR 'OUTFALL NARRATIVE'

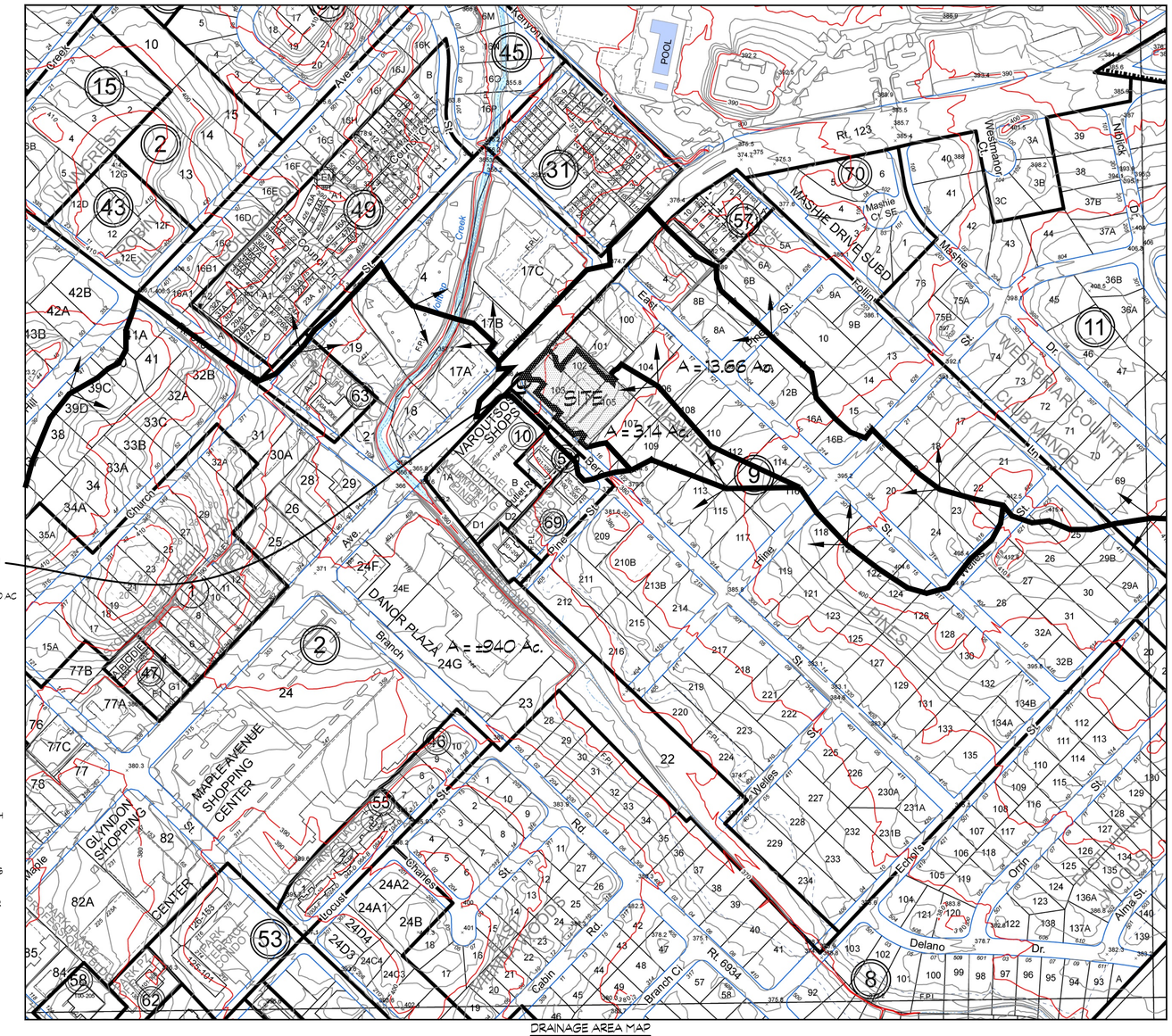
STORMWATER MANAGEMENT NARRATIVE

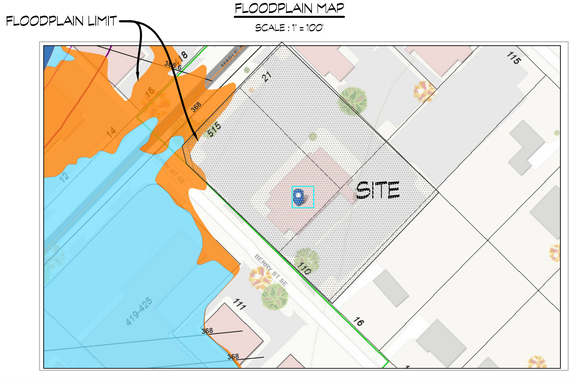
THE STORMWATER MANAGEMENT REQUIREMENTS FOR THE SUBJECT PROPERTY WILL BE SATISFIED VIA A PROPOSED STORMTECH SWM SYSTEM AND ISOLATOR ROWS. THE SYSTEM SHALL BE CONSTRUCTED OF ADS STORMTECH 310 PLASTIC ARCHES WITH STONE. THE STORMTECH SYSTEM AND ISOLATOR ROWS WILL BE SUPPLIED BY ADS (ADVANCED DRAINAGE SYSTEMS, INC.) OR EQUIVALENT. THE STORMTECH SYSTEM AND ISOLATOR ROWS WILL BE MAINTAINED BY THE PROPERTY OWNER.

THE ISOLATOR ROW SYSTEM HAS BEEN SIZED TO TREAT THE DISCHARGE FROM THE SITE AND WILL PROVIDE TREATMENT FOR WATER QUALITY PURPOSES (SEE SHEETS 22, & 27-28 FOR ISOLATOR ROW DETAILS AND COMPUTATIONS AND SHEET 17 FOR VRRM SPREADSHEET).

THE REQUIRED DETENTION VOLUMES FOR THE SITE WERE BASED ON THE ENERGY BALANCE EQUATION FOR CHANNEL AND FLOOD PROTECTION AND RESULTS IN ±5,700 CF OF STORAGE NEEDED TO DETAIN THE 10 YEAR STORM. AN UNDERGROUND DETENTION FACILITY (UGD) IS PROPOSED TO BE CONSTRUCTED OF STORMTECH 310 CHAMBERS AND WILL PROVIDE THE REQUIRED STORAGE TO CONTROL THE 1, 2, & 10 YEAR 24 HOUR STORMS (SEE SHEET 18 FOR CHANNEL & FLOOD PROTECTION AND DETENTION RELEASE RATE COMPUTATIONS, SHEETS 20-21 FOR TR-55 COMPUTATIONS, & SHEETS 22-28 FOR UGD COMPUTATIONS, & DETAILS).

UGD WILL MEET WATER QUANTITY REQUIREMENTS FOR THE SUBJECT PROPERTY AS OUTLINED IN CODE SECTIONS 23-17(A) AND VIRGINIA CODE SECTIONS 9VAC25-875-600(B)(3)ii, & (C)(2)ii. THE SITE CURRENTLY HAS AN EXISTING BUILDING, PAVED SURFACES, LAWN AREAS AND SOME TREES. THE PROPOSED DEVELOPMENT OF THE SITE WILL REPLACE THE EXISTING FEATURES WITH A NEW BUILDING AND PARKING LOT SYSTEM. UGD WILL PROVIDE WATER QUANTITY CONTROL FOR THE SUBJECT PROPERTY VIA INSTALLATION OF THE PROPOSED S.W.M VAULT. THEREFORE, THERE WILL BE NO ADVERSE IMPACTS TO DOWNSTREAM PROPERTIES AND A PROPORTIONAL IMPROVEMENT WILL BE MADE TO THE ENSTING DOWNSTREAM CONDITION AS A RESULT OF THE SUBJECT PROPOSAL.





SWM FACILITIES (PROPOSED ONLY)

FACILITY ID NO.	FACILITY TYPE	PURPOSE	AREA TREATED (ACRES)	LATITUDE (DECIMAL DEGREE)	LONGITUDE (DECIMAL DEGREE)	WATERSHED	RECEIVING WATERS	MAINTENANCE AGREEMENT Y/N	VAHU6 CODE	LENGTH/AREA OF FACILITY	UNIT (FT/SF)	NO. OF BLDG. SERVED (FOR ROOFTOP DISCONNECT)
UGD	STORMTECH ARCH DETENTION SYSTEM W/ISOLATOR ROWS	BOTH	1.19	38.9083 N	77.2563 W	DIFFILCULT RUN	WOLFTRAP CREEK	YES	PL 22	4,003	SF	N/A

DISTURBED AREA (DA) WITHIN WATERSHED(S):
WATERSHED 1 DIFFICULT RUN DA= 1.69 (ACRES) WATERSHED 2 _____ DA= _____ (ACRES) TOTAL DISTURBED AREA= 1.69 (ACRES)

APPROVAL

LDC
4585 DAISY REID AVENUE, SUITE 201 WOODBRIDGE, VIRGINIA 22192
WWW.LDCVA.COM

515 MAPLE AVENUE EAST

TOWN OF VIENNA, VIRGINIA

SWM OUTFALL NARRATIVE

DATE	DESIGN	NO.	DESCRIPTION	REVISION APPROVED BY:	APPROVED	DATE
				REVIEW		

ENGINEER

I HEREBY CERTIFY THAT OTHER THAN THE REVISIONS SHOWN HEREON, NO OTHER CHANGES HAVE BEEN MADE.

COMMONWEALTH OF VIRGINIA
MATTHEW T. MARSHALL
Lic. No. 1323-B
07/09/25
DATE
LAND SURVEYOR

SCALE:
AS SHOWN

SHEET: 19 OF 41

DATE:
JULY 2025

DRAFT: ZG/SB | CHECK: MTM

FILE NUMBER:
2025-1-1

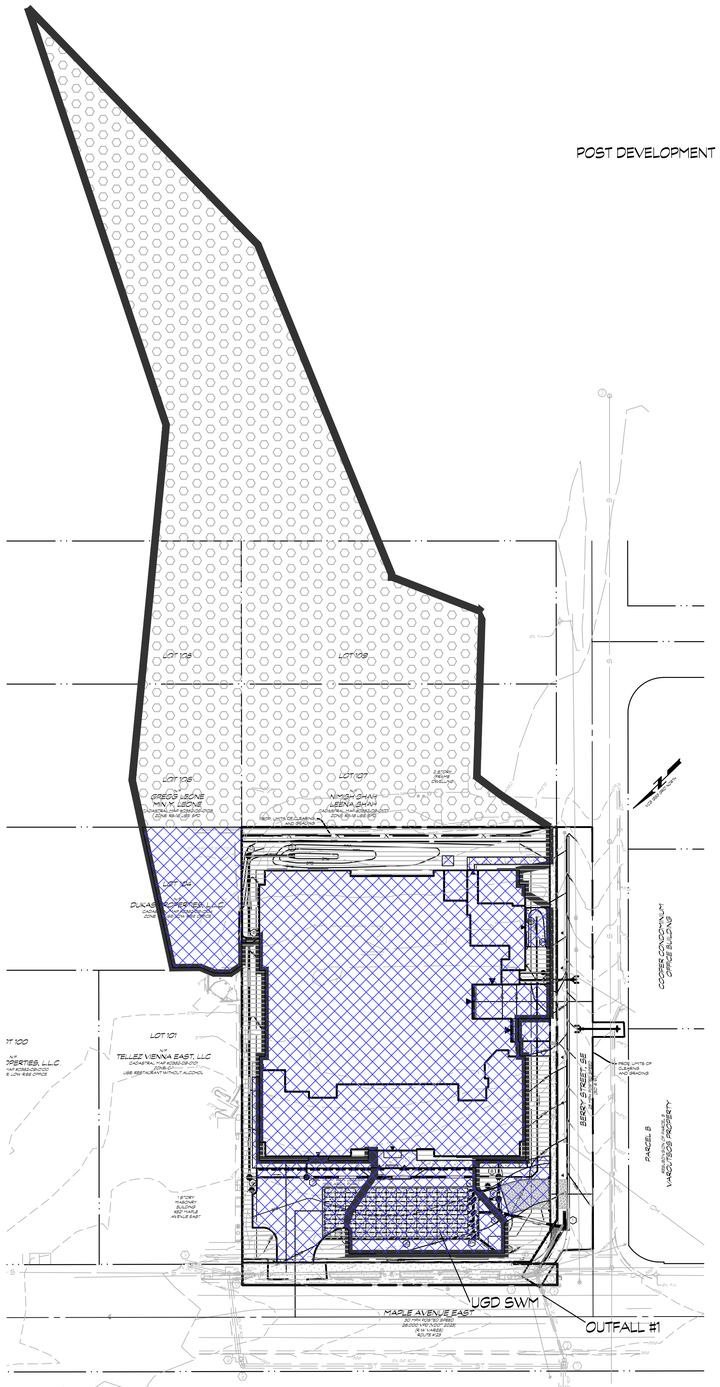
LAND COVER DESCRIPTION	CN	ACRES	MAP HATCH
IMPERVIOUS AREA - SOIL GROUP 'D'	98	1.16 (+ 0.13 OFF-SITE TO UGD)	
LAWN/TURF AREA - SOIL GROUP 'D'	80	0.34	
RESIDENTIAL DISTRICTS (1/2 AC LOTS) AREA - SOIL GROUP 'D'	85	0.00 (+1.82 OFF-SITE TO UGD)	
R/W DEDICATION DEDUCTED FROM DEVELOPMENT AREA	-	0.11	

TOTAL SITE AREA = 1.61 ACRES

TOTAL DEVELOPMENT AREA = 1.50 ACRES (+ 1.95 AC OFF-SITE TO UGD)

POST DEVELOPMENT LAND COVER MAP 1"=50'

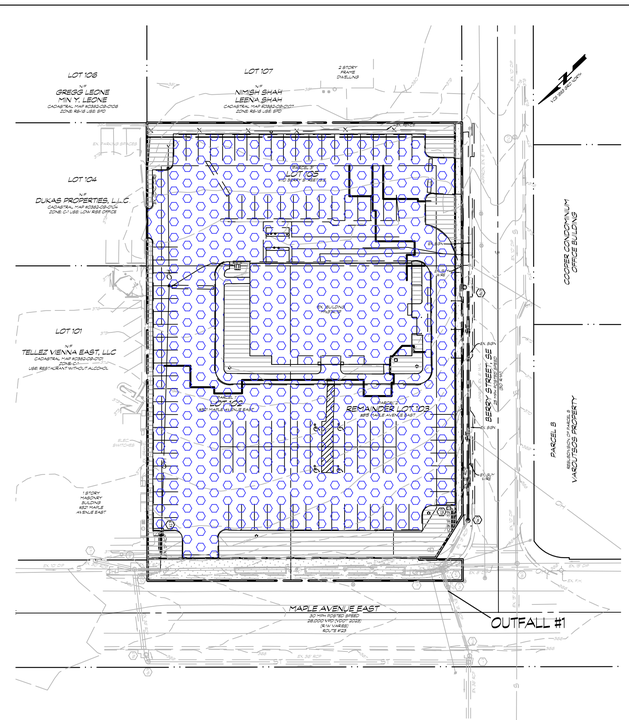
" SEE TR-55 COMPUTATIONS FOR CN COMPUTATIONS, SHEET 21 "



GRAPHICAL SCALE

50 25 0 50 100

1" = 50'



GRAPHICAL SCALE

50 25 0 50 100

1" = 50'

" SEE TR-55 COMPUTATIONS FOR CN COMPUTATIONS, SHEET 21 "

LAND COVER DESCRIPTION	ACRES	CN	MAP HATCH
IMPERVIOUS AREA - SOIL GROUP 'D'	1.28	98	
LAWN/TURF AREA - SOIL GROUP 'D'	0.24	80	
R/W DEDUCTION FROM DEVELOPMENT AREA	0.11	-	

TOTAL SITE AREA = 1.61 ACRES

TOTAL DEVELOPMENT AREA = 1.50 ACRES

PRE-DEVELOPMENT LAND COVER MAP 1"=50'

APPROVAL

LDC
4585 DAISY REED AVENUE, SUITE 201 WOODBRIDGE, VIRGINIA 22192
WWW.LDCVA.COM

PRE & POST DEVELOPMENT MAP

515 MAPLE AVENUE EAST

TOWN OF VIENNA, VIRGINIA

NO.	DESCRIPTION	REVIEW BY:	APPROVED	DATE

REVISION APPROVED BY:

DATE	DESIGN	ENGINEER

I HEREBY CERTIFY THAT OTHER THAN THE REVISIONS SHOWN HEREON, NO OTHER CHANGES HAVE BEEN MADE.

COMMONWEALTH OF VIRGINIA
MATTHEW T. MARSHALL
Lic. No. 1935-B
07/02/25
DATE
LAND SURVEYOR

SCALE: AS SHOWN

SHEET: 20 OF 41

DATE: JULY 2025

DRAFT: ZG/SB | CHECK: MTM

FILE NUMBER: 25021-1-1

STUDY POINT LAND USE, CURVE NUMBERS & HYGROGRAPH PEAK/PEAK TIME TABLES (TR-55)

" SEE CN LAND COVER MAPS, SHEET 20. Tc = 0.10 HRS FOR ALL AREAS "

PRE-DEVELOPMENT

OUTFALL #1
(EXISTING CONDITION)

515 Maple Avenue East
Pre-development Existing Condition
Fairfax NOAA_C County, Virginia

Sub-Area Land Use and Curve Number Details

Sub-Area Identifier	Land Use	Hydrologic Soil Group	Sub-Area Area (ac)	Curve Number
Outfall	Open space; grass cover > 75% (good)	D	.24	80
	Paved parking lots, roofs, driveways	D	1.26	98
Total Area / Weighted Curve Number			1.5	95

Sub-Area Time of Concentration Details

Sub-Area Identifier/	Flow Length (ft)	Slope (ft/ft)	Manning's n	Area (sq ft)	Wetted End Perimeter (ft)	Velocity (ft/sec)	Travel Time (hr)
Outfall							
User-provided							0.100
Time of Concentration							0.100

515 Maple Avenue East
Pre-development Existing Condition
Fairfax NOAA_C County, Virginia

Watershed Peak Table

Sub-Area or Reach Identifier	Peak Flow by Rainfall Return Period 1-Yr (cfs)	2-Yr (cfs)	10-Yr (cfs)	100-Yr (cfs)
SUBAREAS				
Outfall	3.90	4.84	7.68	13.53

515 Maple Avenue East
Pre-development Existing Condition
Fairfax NOAA_C County, Virginia
Storm Data

Rainfall Depth by Rainfall Return Period

1-Yr (in)	2-Yr (in)	5-Yr (in)	10-Yr (in)	25-Yr (in)	50-Yr (in)	100-Yr (in)
2.62	3.17	4.07	4.87	6.09	7.18	8.41

POST-DEVELOPMENT
(UNCONTROLLED BY PROP. DETENTION SYSTEM)

OUTFALL #1 UNDETAINED

515 Maple Avenue East
Post-development Proposed
Fairfax NOAA_C County, Virginia

Sub-Area Land Use and Curve Number Details

Sub-Area Identifier	Land Use	Hydrologic Soil Group	Sub-Area Area (ac)	Curve Number
Uncontr	Open space; grass cover > 75% (good)	D	.16	80
	Paved parking lots, roofs, driveways	D	.15	98
Total Area / Weighted Curve Number			.31	89

Sub-Area Time of Concentration Details

Sub-Area Identifier/	Flow Length (ft)	Slope (ft/ft)	Manning's n	Area (sq ft)	Wetted End Perimeter (ft)	Velocity (ft/sec)	Travel Time (hr)
Outfall							
User-provided							0.100
Time of Concentration							0.100

515 Maple Avenue East
Post-development Proposed
Fairfax NOAA_C County, Virginia

Watershed Peak Table

Sub-Area or Reach Identifier	Peak Flow by Rainfall Return Period 1-Yr (cfs)	2-Yr (cfs)	10-Yr (cfs)	100-Yr (cfs)
SUBAREAS				
Uncontr	0.64	0.83	1.43	2.66

515 Maple Avenue East
Post-development Proposed
Fairfax NOAA_C County, Virginia
Storm Data

Rainfall Depth by Rainfall Return Period

1-Yr (in)	2-Yr (in)	5-Yr (in)	10-Yr (in)	25-Yr (in)	50-Yr (in)	100-Yr (in)
2.62	3.17	4.07	4.87	6.09	7.18	8.41

TOTAL SITE

515 Maple Avenue East
Post-development Proposed
Fairfax NOAA_C County, Virginia

Sub-Area Land Use and Curve Number Details

Sub-Area Identifier	Land Use	Hydrologic Soil Group	Sub-Area Area (ac)	Curve Number
Site	Open space; grass cover > 75% (good)	D	.34	80
	Paved parking lots, roofs, driveways	D	1.16	98
Total Area / Weighted Curve Number			1.5	94

POST-DEVELOPMENT

OFF-SITE TO UGD
(OFF-SITE TO PROP. DETENTION SYSTEM)

515 Maple Avenue East
Post-development Proposed
Fairfax NOAA_C County, Virginia

Sub-Area Land Use and Curve Number Details

Sub-Area Identifier	Land Use	Hydrologic Soil Group	Sub-Area Area (ac)	Curve Number
Off total	Paved parking lots, roofs, driveways	D	.13	98
	Residential districts (1/2 acre)	D	1.82	85
Total Area / Weighted Curve Number			1.95	86

Sub-Area Time of Concentration Details

Sub-Area Identifier/	Flow Length (ft)	Slope (ft/ft)	Manning's n	Area (sq ft)	Wetted End Perimeter (ft)	Velocity (ft/sec)	Travel Time (hr)
Outfall							
User-provided							0.100
Time of Concentration							0.100

515 Maple Avenue East
Post-development Proposed
Fairfax NOAA_C County, Virginia

Watershed Peak Table

Sub-Area or Reach Identifier	Peak Flow by Rainfall Return Period 1-Yr (cfs)	2-Yr (cfs)	10-Yr (cfs)	100-Yr (cfs)
SUBAREAS				
Off total	3.52	4.71	8.50	16.41

515 Maple Avenue East
Post-development Proposed
Fairfax NOAA_C County, Virginia
Storm Data

Rainfall Depth by Rainfall Return Period

1-Yr (in)	2-Yr (in)	5-Yr (in)	10-Yr (in)	25-Yr (in)	50-Yr (in)	100-Yr (in)
2.62	3.17	4.07	4.87	6.09	7.18	8.41

TOTAL TO UGD
(TOTAL DRAINING TO PROP. DET. SYSTEM)

515 Maple Avenue East
Post-development Proposed
Fairfax NOAA_C County, Virginia

Sub-Area Land Use and Curve Number Details

Sub-Area Identifier	Land Use	Hydrologic Soil Group	Sub-Area Area (ac)	Curve Number
SWM Total	Open space; grass cover > 75% (good)	D	.18	80
	Paved parking lots, roofs, driveways	D	1.14	98
	Residential districts (1/2 acre)	D	1.82	85
Total Area / Weighted Curve Number			3.14	89

Sub-Area Time of Concentration Details

Sub-Area Identifier/	Flow Length (ft)	Slope (ft/ft)	Manning's n	Area (sq ft)	Wetted End Perimeter (ft)	Velocity (ft/sec)	Travel Time (hr)
Outfall							
User-provided							0.100
Time of Concentration							0.100

515 Maple Avenue East
Post-development Proposed
Fairfax NOAA_C County, Virginia

Watershed Peak Table

Sub-Area or Reach Identifier	Peak Flow by Rainfall Return Period 1-Yr (cfs)	2-Yr (cfs)	10-Yr (cfs)	100-Yr (cfs)
SUBAREAS				
SWM Total	6.52	8.48	14.62	27.23

515 Maple Avenue East
Post-development Proposed
Fairfax NOAA_C County, Virginia
Storm Data

Rainfall Depth by Rainfall Return Period

1-Yr (in)	2-Yr (in)	5-Yr (in)	10-Yr (in)	25-Yr (in)	50-Yr (in)	100-Yr (in)
2.62	3.17	4.07	4.87	6.09	7.18	8.41

APPROVAL

LDC
4565 DAISY REID AVENUE, SUITE 201 WOODBRIDGE, VIRGINIA 22192
WWW.LDCVA.COM

TR-55 SWM COMPUTATIONS

515 MAPLE AVENUE EAST

TOWN OF VIENNA, VIRGINIA

NO.	DESCRIPTION	REVIEW	APPROVED	DATE

REVISION APPROVED BY:

DESIGN	DATE

ENGINEER

I HEREBY CERTIFY THAT OTHER THAN THE REVISIONS SHOWN HEREON, NO OTHER CHANGES HAVE BEEN MADE.

COMMONWEALTH OF VIRGINIA
MATTHEW T. MARSHALL
Lic. No. 1335-B
07/09/25
DATE
LAND SURVEYOR

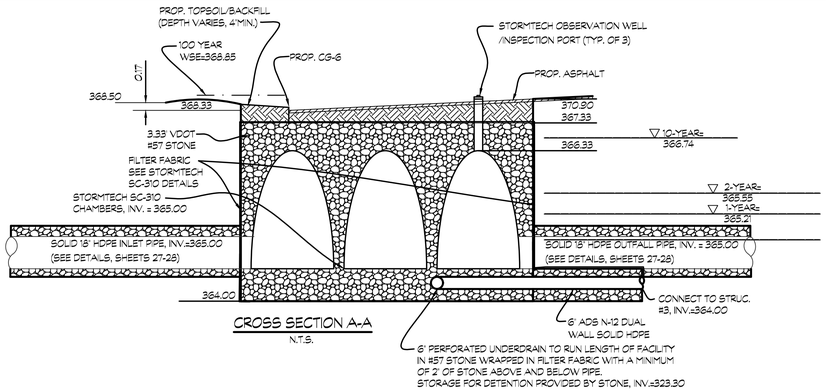
SCALE: AS SHOWN

SHEET: 21 OF 41

DATE: JULY 2025

DRAFT: ZG/BB | CHECK: MTM

FILE NUMBER: 25021-1-1



CROSS SECTION A-A

N.T.S.

SEE SHEETS 27-28 FOR STORMTECH DETAILS & NOTES

UNDERGROUND DETENTION FACILITY DESIGN CALCULATIONS (STORMTECH CHAMBER & STONE STORAGE)

TOTAL DRAINAGE AREA TO UNDERGROUND DETENTION FACILITY = 3.14 AC, CN = 89, Tc = 0.10 HRS
ON-SITE DRAINAGE AREA TO UGD = 1.19 AC, CN = 95
OFF-SITE DRAINAGE AREA TO UGD = 1.95 AC, CN = 86
STRUCTURE #5 ACTS AS A DIVERSION STRUCTURE TO DIRECT THE PROPOSED DISCHARGE TO UGD. AN OVERFLOW BYPASS PIPE IS PROVIDED FROM STRUCTURE #5 TO STRUCTURE #2 FOR DISCHARGE IN EXCESS OF THE CONTROLLED DISCHARGE OR IN THE EVENT UGD IS CLOGGED OR OTHERWISE INOPERABLE. STRUCTURES 3, 3A, & 4 ACT AS PRETREATMENT AND MAINTENANCE ACCESS STRUCTURES (SEE STORM SEWER PROFILES, SHEETS 15-16).
THE UGD IS PROPOSED AS A STORMTECH CHAMBER & STONE DETENTION FACILITY, WITH ISOLATOR ROWS FOR WATER QUALITY CONTROL. DETENTION CONTROL IS PROPOSED FOR THE 1 YR, 2 YR, & 10 YR 24 HOUR STORMS. WATER QUALITY CONTROL WILL BE PROVIDED BY THE STORMTECH ISOLATOR ROWS. (SEE SWM NARRATIVE, SHEET 19).
THE UGD WILL HAVE AN 18" RCP DISCHARGE PIPE TO STRUCTURE #2 WHERE A CONTROL STRUCTURE WITH A WEIR WALL AND CONTROL ORIFICE IS PROPOSED. THIS CONTROL STRUCTURE IS THE CONTROL USED TO ROUTE THE FACILITY.
ROUTING COMPUTATIONS FOR THE UGD ARE PROVIDED ON SHEETS 23-26
ROUTED PEAK DISCHARGES FROM THE UGD, 1 YR = 3.70 CFS, 2 YR = 4.32 CFS, 10 YR = 10.82 CFS (SEE BELOW)
CONTROLLED DETENTION AREA TO THE UGD = 3.14 AC, CN = 89, Tc = 0.10 HRS

UNDERGROUND DETENTION VAULT

6" PVC UNDERDRAIN TO STRUCTURE #3, INV. = 364.00
18" RCP OUTLET PIPE FROM STRUCTURE #3 TO STRUCTURE #2, INV. = 363.90
FOOTPRINT OF FACILITY = 4,003 SF (154 STORMTECH SC-310 CHAMBERS w/22 ENDCAPS, SEE DETAILS, SHEETS 27-28)
STORMTECH SC-310 UNITS PROVIDE 6,701 CF STORAGE ABOVE THE UNDERDRAIN ELEVATION OF 364.00 WITH 3.33 DEPTH AND FOOTPRINT OF 4,003 SF.
VOID RATIO FOR STORMTECH SC-310 SYSTEM = 50%
48 HR TIME FOR FACILITY TO EMPTY BASED ON 12.0" ORIFICE, INV. = 363.75, ORIFICE AREA = 0.7854 SF
TOTAL VOLUME TO DRAIN = 6,701 CF, MAXIMUM HEAD 12.0" ORIFICE = 3.58' - 0.50' = 3.08'
AVERAGE OUTFLOW RATE, Q = 0.6*A*(64.4*.5H)^0.5 = 0.6*0.7854*3.959 = 4.69 CFS (12.0" ORIFICE)
VOLUME DRAINED IN 48 HRS = OUTFLOW RATE*172,800 SEC = 4.69*172,800 = 810,941 CF (12.0" ORIFICE)
TOTAL VOLUME DRAINED IN 48 HRS = 810,941 CF > 6,701 CF MAX STORAGE VOLUME

1-YEAR COMPUTATIONS

1-YEAR ON-SITE DRAINAGE AREA TO UGD = 1.19 AC, CN = 95
1-YEAR OFF-SITE DRAINAGE AREA TO UGD = 1.95 AC, CN = 86
1-YEAR TOTAL DRAINAGE AREA TO UGD = 3.14 AC, CN = 89, Tc = 0.10 HRS
THE 1 YEAR 24 HOUR STORM HAS BEEN ROUTED THROUGH THE UNDERGROUND DETENTION FACILITY WITH A 12.0" CONTROL ORIFICE AT STRUCTURE #2 (INV=363.75) AND AN OVERFLOW WEIR ELEVATION OF 367.00. THE RESULTS OF THIS ROUTING ARE SHOWN ON SHEETS 23-26 AND SHOWS THAT THE PEAK ELEVATION OF THE 1 YEAR 24 HOUR STORM ROUTED THROUGH THE FACILITY IS 365.21 WITH A PEAK STORAGE OF 2,252 CF. THIS RESULTS IN A PEAK 1 YEAR DISCHARGE FROM THE UGD OF 3.70 CFS. THE AVAILABLE STORAGE UP TO ELEVATION 367.33 IS 6,701 CF WHICH IS GREATER THAN THE REQUIRED VOLUME OF 2,252 CF. THIS FACILITY PROVIDES DETENTION OF THE 1 YEAR STORM WITH 3.70 CFS DISCHARGE TO THE STORM SEWER SYSTEM (SEE COMPUTATION ON THIS SHEET AND ALLOWABLE RELEASE COMPUTATIONS ON SHEET 18).*
1-YEAR STORAGE VOLUME REQUIRED = 2,252 CF (SEE ROUTING COMPUTATIONS AND RESULTS, SHEETS 23-26)
STORAGE DEPTH = 3.33 (ELEVATION AT THE UGD UNDERDRAIN INVERT = 364.00)
STORAGE VOLUME PROVIDED = 6,701 CF PROVIDED (SEE ABOVE) > 2,252 CF REQ.
THEREFORE STORAGE FOR 1 YR STORM IS PROVIDED BY THE UNDERGROUND DETENTION FACILITY

2-YEAR COMPUTATIONS

2-YEAR ON-SITE DRAINAGE AREA TO UGD = 1.19 AC, CN = 95
2-YEAR OFF-SITE DRAINAGE AREA TO UGD = 1.95 AC, CN = 86
2-YEAR TOTAL DRAINAGE AREA TO UGD = 3.14 AC, CN = 89, Tc = 0.10 HRS
THE 2 YEAR 24 HOUR STORM HAS BEEN ROUTED THROUGH THE UNDERGROUND DETENTION FACILITY WITH AN 12.0" CONTROL ORIFICE AT STRUCTURE #2 (INV=363.75) AND AN OVERFLOW WEIR ELEVATION OF 367.00. THE RESULTS OF THIS ROUTING ARE SHOWN ON SHEETS 23-26 AND SHOWS THAT THE PEAK ELEVATION OF THE 2 YEAR 24 HOUR STORM ROUTED THROUGH THE FACILITY IS 365.55 WITH A PEAK STORAGE OF 3,286 CF. THIS RESULTS IN A PEAK 2 YEAR DISCHARGE FROM THE UGD OF 4.32 CFS. THE AVAILABLE STORAGE UP TO ELEVATION 367.33 IS 6,701 CF WHICH IS GREATER THAN THE REQUIRED VOLUME OF 3,286 CF. THIS FACILITY PROVIDES DETENTION OF THE 2 YEAR STORM WITH 4.32 CFS DISCHARGE TO THE STORM SEWER SYSTEM (SEE COMPUTATION ON THIS SHEET AND ALLOWABLE RELEASE COMPUTATIONS ON SHEET 18).*
2-YEAR STORAGE VOLUME REQUIRED = 3,286 CF (SEE ROUTING COMPUTATIONS AND RESULTS, SHEETS 23-26)
STORAGE DEPTH = 3.33 (ELEVATION AT THE UGD UNDERDRAIN INVERT = 364.00)
STORAGE VOLUME PROVIDED = 6,701 CF PROVIDED (SEE ABOVE) > 3,286 CF REQ.
THEREFORE STORAGE FOR 2 YR STORM IS PROVIDED BY THE UNDERGROUND DETENTION FACILITY

10-YEAR COMPUTATIONS

10-YEAR ON-SITE DRAINAGE AREA TO UGD = 1.19 AC, CN = 95
10-YEAR OFF-SITE DRAINAGE AREA TO UGD = 1.95 AC, CN = 86
10-YEAR TOTAL DRAINAGE AREA TO UGD = 3.14 AC, CN = 89, Tc = 0.10 HRS
THE 10 YEAR 24 HOUR STORM HAS BEEN ROUTED THROUGH THE UNDERGROUND DETENTION FACILITY WITH AN 12.0" CONTROL HOLE & 2.5' CONTROL WEIR AT STRUCTURE #2 (INV=363.75 & 366.00) AND AN OVERFLOW WEIR ELEVATION OF 367.00. THE RESULTS OF THIS ROUTING ARE SHOWN ON SHEETS 23-26 AND SHOWS THAT THE PEAK ELEVATION OF THE 10 YEAR 24 HOUR STORM ROUTED THROUGH THE FACILITY IS 366.74 WITH A PEAK STORAGE OF 5,731 CF. THIS RESULTS IN A PEAK 10 YEAR DISCHARGE FROM THE UGD OF 10.82 CFS. THE AVAILABLE STORAGE UP TO ELEVATION 367.33 IS 6,701 CF WHICH IS GREATER THAN THE REQUIRED VOLUME OF 5,731 CF. THIS FACILITY PROVIDES DETENTION OF THE 10 YEAR STORM WITH 10.82 CFS DISCHARGE TO THE STORM SEWER SYSTEM (SEE COMPUTATION ON THIS SHEET AND ALLOWABLE RELEASE COMPUTATIONS ON SHEET 18).*
10-YEAR STORAGE VOLUME REQUIRED = 5,731 CF (SEE ROUTING COMPUTATIONS AND RESULTS, SHEETS 23-26)
STORAGE DEPTH = 3.33 (ELEVATION AT THE UGD UNDERDRAIN INVERT = 364.00)
STORAGE VOLUME PROVIDED = 6,701 CF PROVIDED (SEE ABOVE) > 5,731 CF REQ.
THEREFORE STORAGE FOR 10 YR STORM IS PROVIDED BY THE UNDERGROUND DETENTION FACILITY

OVERLAND RELIEF

FOR FULLY CLOGGED TRENCH SYSTEM
RATIONAL FORMULA: Q = CfCIA
T_c = 5 min., I_{100} = 9.10 in/hr., A=3.14 Acres, C=0.65, Cf=1.25
Q_{100} = (1.25)(0.65)(9.10)(3.14) = 12.50 CFS

WEIR EQUATION: $Q = CLH^{3/2}$
12.50 CFS = (3)(20')$H^{3/2}$ H = 0.35' (368.85)
100 YEAR PONDING DEPTH = 0.35', 100 YEAR WSE = 368.85

GEOTECHNICAL NOTE

THE SITE GEOTECHNICAL ENGINEER SHALL CERTIFY THE PROPER INSTALLATION OF THE SWM FACILITY FOUNDATION.

SAFETY NOTE

ALL SWM ACCESS HATTACHES/PORTS/MANHOLES SHALL HAVE LOCKING MECHANISM FOR RESTRICTED ACCESS. VEHICULAR ACCESS FOR INSPECTION AND MAINTENANCE IS PROVIDED AS SHOWN.

CONSTRUCTION NARRATIVE

THE CONSTRUCTION OF THE FACILITY SHALL BE PHASED SUCH THAT SEDIMENT DOES NOT ENTER THE AREA. IF SEDIMENT ENTERS THE FACILITY THE FACILITY SHALL BE WASHED OUT PRIOR TO PUTTING THE FACILITY INTO OPERATION. SEE SHEETS 27-28 FOR STORMTECH NOTES, DETAILS, & SPECIFICATIONS.

MAINTENANCE NARRATIVE

THE MAINTENANCE OF THIS FACILITY IS PRIVATE AND BY THE HOMEOWNERS ASSOCIATION AND IS AS FOLLOWS:
THIS FACILITY SHALL NOT BE PUT INTO USE UNTIL THE CONTRIBUTING DRAINAGE AREA HAS BEEN SATISFACTORILY STABILIZED. UPON CONSTRUCTION AND UTILIZATION OF THIS FACILITY AN INSPECTION SHOULD OCCUR AFTER ANY LARGE STORM DURING ITS FIRST YEAR OF OPERATION TO ENSURE PROPER FUNCTIONING. DURING THESE INSPECTIONS A LOG BOOK SHOULD BE UTILIZED AND THE DEPTH OF WATER IN THE FACILITY AS WELL AS ANY SURFACE DAMAGE SHOULD BE PROPERLY NOTED.

THIS INSPECTION AND UTILIZATION OF THE LOGBOOK SHALL CONTINUE FOR ONE YEAR. SUBSEQUENTLY, INSPECTION OF THE FACILITY SHALL OCCUR ANNUALLY. DURING ALL INSPECTIONS THE SURFACE BODDED AREA MUST BE MONITORED AND IF ANY DENUDED AREAS ARE NOTED ADDITIONAL SOD OR SEED SHOULD BE APPLIED AS NECESSARY.

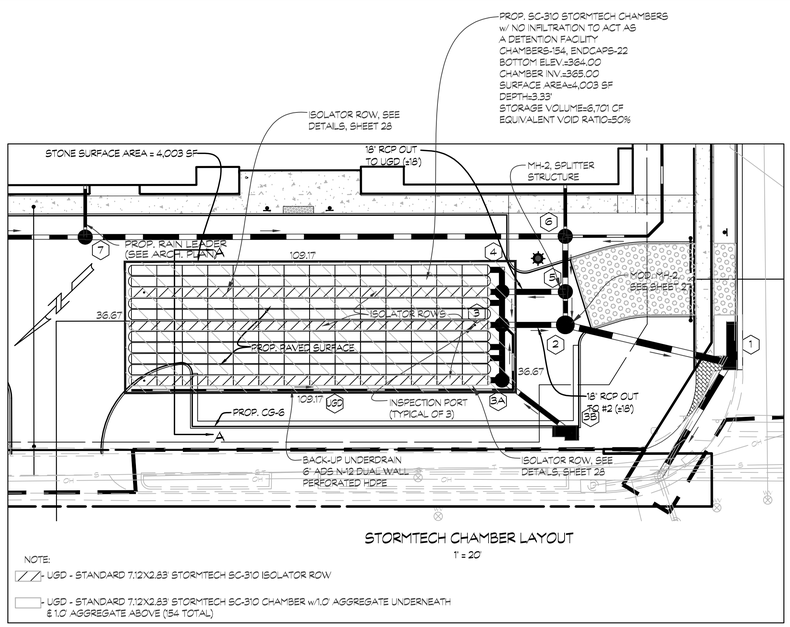
SEE SHEETS 27-28 FOR ADDITIONAL MAINTENANCE AND INSPECTION NOTES AND REQUIREMENTS. SEE SHEETS 27-28 FOR STORMTECH NOTES, DETAILS, & SPECIFICATIONS.

GENERAL NOTES

1. PLEASE SEE THE GEOTECHNICAL REQUIREMENTS FOR ANY PERTINENT SOIL SPECIFICATIONS, ETC.
2. THE PROPOSED FACILITY SHALL COMPLY WITH THE REQUIREMENTS SET FORTH IN THE TOWN OF VIENNA REGULATIONS.
3. IN THE EVENT OF A FAILURE THE RUNOFF WILL NOT ADVERSELY IMPACT ANY DOWNSTREAM STRUCTURES WITHIN THE EXTENT OF REVIEW, SEE OVERLAND RELIEF STUDY, SHEET 9.
4. THE PROPOSED FACILITY SHALL BE MAINTAINED BY THE HOMEOWNERS ASSOCIATION.

SUMMARY

TOTAL CONTROLLED AREA FOR DETENTION = 3.14 AC, CN = 89, Tc = 0.10 HRS
ROUTED CONTROLLED DISCHARGE FROM UGD & STRUC. #2 TO STRUC. #1:
1 YR = 3.70 CFS, 2 YR = 4.32 CFS, 10 YR = 10.82 CFS
SEE TR-55 AND ROUTING COMPUTATIONS, SHEETS 20-21 & 23-26; SEE SWM NARRATIVE & OUTFALL ANALYSIS, SHEET 19;
SEE DETENTION RELEASE RATE AND CHANNEL & FLOOD PROTECTION COMPUTATIONS ON SHEET 18

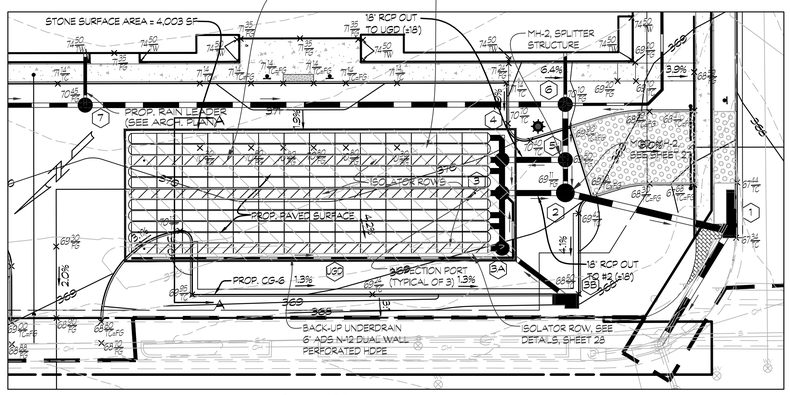


STORMTECH CHAMBER LAYOUT

T = 20'

NOTE:
UGD - STANDARD 7.12'X2.83' STORMTECH SC-310 ISOLATOR ROW
UGD - STANDARD 7.12'X2.83' STORMTECH SC-310 CHAMBER w/1.0' AGGREGATE UNDERNEATH & 1.0' AGGREGATE ABOVE (154 TOTAL)

SEE SHEETS 27-28 FOR STORMTECH CHAMBER DETAILS & NOTES



ALL SWM ACCESS HATCHS/PORTS/MANHOLES SHALL HAVE LOCKING MECHANISM FOR RESTRICTED ACCESS. STANDARD MANHOLE COVERS SHALL BE BOLTED AT A MINIMUM OF 4 POINTS AROUND THE COVER PERIMETER.

PLAN VIEW

1" = 20'

GRAPHIC SCALE

20 10 0 20 40

1" = 20'

APPROVAL

LDC
4585 DAISY REID AVENUE, SUITE 210 WOODBRIDGE, VIRGINIA 22192
WWW.LDCVA.COM

UGD DETAILS & COMPUTATIONS

515 MAPLE AVENUE EAST
TOWN OF VIENNA, VIRGINIA

NO.	DESCRIPTION	REVIEW APPROVED	DATE
		REVISION APPROVED BY:	

DESIGN ENGINEER

I HEREBY CERTIFY THAT OTHER THAN THE REVISIONS SHOWN HEREON, NO OTHER CHANGES HAVE BEEN MADE.

COMMONWEALTH OF VIRGINIA
MATTHEW T. MAISHALL
Lic. No. 1335-B
07/09/25
DATE
LAND SURVEYOR

SCALE: AS SHOWN

SHEET: 22 OF 41

DATE: JULY 2025

DRAFT: ZG/SB | CHECK: MTM

FILE NUMBER: 25021-1-1

UGD ROUTING COMPUTATIONS
1-YR STORM EVENT

25021-1-1-Maple-SWM *NOAA 24-hr C*
Prepared by Land Design Consultants Inc
HydroCAD® 10.20-6a s/n 10699 © 2024 HydroCAD Software Solutions LLC

NOAA 24-hr C 1-Year Rainfall=2.62"

Hydrograph for Pond 4P: UGD

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Primary (cfs)	Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Primary (cfs)
5.00	0.00	0	364.00	0.00	6.80	0.00	0	364.00	0.00
5.05	0.00	0	364.00	0.00	6.85	0.00	0	364.00	0.00
5.10	0.00	0	364.00	0.00	6.90	0.00	0	364.00	0.00
5.15	0.00	0	364.00	0.00	6.95	0.00	0	364.00	0.00
5.20	0.00	0	364.00	0.00	7.00	0.00	0	364.00	0.00
5.25	0.00	0	364.00	0.00	7.05	0.00	0	364.00	0.00
5.30	0.00	0	364.00	0.00	7.10	0.00	0	364.00	0.00
5.35	0.00	0	364.00	0.00	7.15	0.00	0	364.00	0.00
5.40	0.00	0	364.00	0.00	7.20	0.00	0	364.00	0.00
5.45	0.00	0	364.00	0.00	7.25	0.00	0	364.00	0.00
5.50	0.00	0	364.00	0.00	7.30	0.01	0	364.00	0.01
5.55	0.00	0	364.00	0.00	7.35	0.01	0	364.00	0.01
5.60	0.00	0	364.00	0.00	7.40	0.01	0	364.00	0.01
5.65	0.00	0	364.00	0.00	7.45	0.01	0	364.00	0.01
5.70	0.00	0	364.00	0.00	7.50	0.01	0	364.00	0.01
5.75	0.00	0	364.00	0.00	7.55	0.01	0	364.00	0.01
5.80	0.00	0	364.00	0.00	7.60	0.01	0	364.00	0.01
5.85	0.00	0	364.00	0.00	7.65	0.01	0	364.00	0.01
5.90	0.00	0	364.00	0.00	7.70	0.01	0	364.00	0.01
5.95	0.00	0	364.00	0.00	7.75	0.01	0	364.00	0.01
6.00	0.00	0	364.00	0.00	7.80	0.01	0	364.00	0.01
6.05	0.00	0	364.00	0.00	7.85	0.02	0	364.00	0.02
6.10	0.00	0	364.00	0.00	7.90	0.02	0	364.00	0.02
6.15	0.00	0	364.00	0.00	7.95	0.02	0	364.00	0.02
6.20	0.00	0	364.00	0.00	8.00	0.02	0	364.00	0.02
6.25	0.00	0	364.00	0.00	8.05	0.02	0	364.00	0.02
6.30	0.00	0	364.00	0.00	8.10	0.02	0	364.00	0.02
6.35	0.00	0	364.00	0.00	8.15	0.02	0	364.00	0.02
6.40	0.00	0	364.00	0.00	8.20	0.02	0	364.00	0.02
6.45	0.00	0	364.00	0.00	8.25	0.02	0	364.00	0.02
6.50	0.00	0	364.00	0.00	8.30	0.02	0	364.00	0.02
6.55	0.00	0	364.00	0.00	8.35	0.03	0	364.00	0.03
6.60	0.00	0	364.00	0.00	8.40	0.03	0	364.00	0.03
6.65	0.00	0	364.00	0.00	8.45	0.03	0	364.00	0.03
6.70	0.00	0	364.00	0.00	8.50	0.03	0	364.00	0.03
6.75	0.00	0	364.00	0.00	8.55	0.03	0	364.00	0.03
8.60	0.03	0	364.00	0.03	10.40	0.13	0	364.00	0.13
8.65	0.03	0	364.00	0.03	10.45	0.13	0	364.00	0.13
8.70	0.03	0	364.00	0.03	10.50	0.14	0	364.00	0.14
8.75	0.04	0	364.00	0.04	10.55	0.15	0	364.00	0.15
8.80	0.04	0	364.00	0.04	10.60	0.16	0	364.00	0.16
8.85	0.04	0	364.00	0.04	10.65	0.17	0	364.00	0.17
8.90	0.04	0	364.00	0.04	10.70	0.18	0	364.00	0.18
8.95	0.04	0	364.00	0.04	10.75	0.19	0	364.00	0.19
9.00	0.04	0	364.00	0.04	10.80	0.20	0	364.00	0.20
9.05	0.04	0	364.00	0.04	10.85	0.21	0	364.00	0.21
9.10	0.05	0	364.00	0.05	10.90	0.23	0	364.00	0.23
9.15	0.05	0	364.00	0.05	10.95	0.24	0	364.00	0.24
9.20	0.05	0	364.00	0.05	11.00	0.26	1	364.00	0.25
9.25	0.05	0	364.00	0.05	11.05	0.27	2	364.00	0.26
9.30	0.05	0	364.00	0.05	11.10	0.30	6	364.00	0.27
9.35	0.06	0	364.00	0.06	11.15	0.32	12	364.01	0.28
9.40	0.06	0	364.00	0.06	11.20	0.35	21	364.01	0.29
9.45	0.06	0	364.00	0.06	11.25	0.37	33	364.02	0.30
9.50	0.07	0	364.00	0.07	11.30	0.40	46	364.03	0.32
9.55	0.07	0	364.00	0.07	11.35	0.43	61	364.04	0.34
9.60	0.07	0	364.00	0.07	11.40	0.46	78	364.05	0.37
9.65	0.07	0	364.00	0.07	11.45	0.49	95	364.06	0.39
9.70	0.08	0	364.00	0.08	11.50	0.52	113	364.07	0.42
9.75	0.08	0	364.00	0.08	11.55	0.59	134	364.08	0.45
9.80	0.08	0	364.00	0.08	11.60	0.75	168	364.10	0.51
9.85	0.09	0	364.00	0.09	11.65	0.86	214	364.13	0.59
9.90	0.09	0	364.00	0.09	11.70	0.93	261	364.16	0.67
9.95	0.09	0	364.00	0.09	11.75	1.03	308	364.19	0.76
10.00	0.10	0	364.00	0.10	11.80	1.24	365	364.23	0.87
10.05	0.10	0	364.00	0.10	11.85	1.46	437	364.27	1.03
10.10	0.11	0	364.00	0.11	11.90	1.81	529	364.33	1.23
10.15	0.11	0	364.00	0.11	11.95	2.28	651	364.41	1.51
10.20	0.11	0	364.00	0.11	12.00	3.17	831	364.52	1.94
10.25	0.12	0	364.00	0.12	12.05	4.16	1,091	364.68	2.51
10.30	0.12	0	364.00	0.12	12.10	5.80	1,482	364.93	3.11
10.35	0.13	0	364.00	0.13	12.15	**6.05**	1,952	365.11	3.51
12.20	4.18	**2,225**	**365.20**	**3.68**	14.00	0.32	61	364.04	0.34
12.25	2.97	2,206	365.19	3.67	14.05	0.31	57	364.04	0.34
12.30	2.30	2,029	365.14	3.56	14.10	0.31	52	364.03	0.33
12.35	1.94	1,784	365.06	3.40	14.15	0.30	48	364.03	0.32
12.40	1.62	1,515	364.95	3.16	14.20	0.30	44	364.03	0.32
12.45	1.46	1,258	364.79	2.77	14.25	0.29	40	364.02	0.31
12.50	1.39	1,047	364.66	2.42	14.30	0.29	36	364.02	0.31
12.55	1.29	884	364.55	2.06	14.35	0.28	32	364.02	0.30
12.60	1.08	751	364.47	1.75	14.40	0.27	28	364.02	0.30
12.65	0.92	639	364.40	1.48	14.45	0.27	24	364.01	0.29
12.70	0.86	551	364.34	1.28	14.50	0.27	20	364.01	0.29
12.75	0.83	486	364.30	1.13	14.55	0.26	16	364.01	0.28
12.80	0.79	437	364.27	1.03	14.60	0.25	12	364.01	0.28
12.85	0.76	398	364.25	0.94	14.65	0.25	8	364.01	0.27
12.90	0.72	367	364.23	0.88	14.70	0.24	4	364.00	0.27
12.95	0.69	340	364.21	0.82	14.75	0.24	1	364.00	0.26
13.00	0.65	316	364.20	0.78	14.80	0.23	0	364.00	0.23
13.05	0.61	293	364.18	0.73	14.85	0.23	0	364.00	0.24
13.10	0.57	272	364.17	0.69	14.90	0.22	0	364.00	0.22
13.15	0.55	252	364.16	0.65	14.95	0.22	0	364.00	0.22
13.20	0.52	234	364.15	0.62	15.00	0.21	0	364.00	0.21
13.25	0.51	217	364.14	0.59	15.05	0.21	0	364.00	0.21
13.30	0.48	202	364.13	0.57	15.10	0.20	0	364.00	0.20
13.35	0.47	188	364.12	0.54	15.15	0.20	0	364.00	0.21
13.40	0.45	175	364.11	0.52	15.20	0.20	0	364.00	0.19
13.45	0.43	162	364.10	0.50	15.25	0.20	0	364.00	0.20
13.50	0.41	149	364.09	0.48	15.30	0.19	0	364.00	0.19
13.55	0.39	137	364.09	0.46	15.35	0.19	0	364.00	0.20
13.60	0.37	125	364.08	0.44	15.40	0.19	0	364.00	0.19
13.65	0.35	113	364.07	0.42	15.45	0.19	0	364.00	0.20
13.70	0.35	102	364.06	0.40	15.50	0.19	0	364.00	0.18
13.75	0.34	93	364.06	0.39	15.55	0.19	0	364.00	0.19
13.80	0.34	85	364.05	0.38	15.60	0.19	0	364.00	0.18
13.85	0.33	78	364.05	0.37	15.65	0.19	0	364.00	0.19
13.90	0.33	72	364.04	0.36	15.70	0.18	0	364.00	0.18
13.95	0.32	66	364.04	0.35	15.75	0.18	0	364.00	0.19

Hydrograph for Pond 4P: UGD (continued)

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Primary (cfs)	Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Primary (cfs)
15.80	0.18	0	364.00	0.17	17.60	0.13	0	364.00	0.13
15.85	0.18	0	364.00	0.19	17.65	0.13	0	364.00	0.14
15.90	0.18	0	364.00	0.17	17.70	0.13	0	364.00	0.12
15.95	0.18	0	364.00	0.18	17.75	0.13	0	364.00	0.13
16.00	0.18	0	364.00	0.17	17.80	0.13	0	364.00	0.12
16.05	0.17	0	364.00	0.18	17.85	0.12	0	364.00	0.13
16.10	0.17	0	364.00	0.17	17.90	0.12	0	364.00	0.12
16.15	0.17	0	364.00	0.18	17.95	0.12	0	364.00	0.13
16.20	0.17	0	364.00	0.16	18.00	0.12	0	364.00	0.11
16.25	0.17	0	364.00	0.17	18.05	0.12	0	364.00	0.12
16.30	0.17	0	364.00	0.16	18.10	0.12	0	364.00	0.11
16.35	0.17	0	364.00	0.17	18.15	0.12	0	364.00	0.12
16.40	0.16	0	364.00	0.16	18.20	0.12	0	364.00	0.11
16.45	0.16	0	364.00	0.17	18.25	0.12	0	364.00	0.12
16.50	0.16	0	364.00	0.16	18.30	0.11	0	364.00	0.11
16.55	0.16	0	364.00	0.17	18.35	0.11	0	364.00	0.12
16.60	0.16	0	364.00	0.15	18.40	0.11	0	364.00	0.11
16.65	0.16	0	364.00	0.16	18.45	0.11	0	364.00	0.12
16.70	0.16	0	364.00	0.15	18.50	0.11	0	364.00	0.11
16.75	0.16	0	364.00	0.16	18.55	0.11	0	364.00	0.12
16.80	0.15	0	364.00	0.15	18.60	0.11	0	364.00	0.11
16.85	0.15	0	364.00	0.16	18.65	0.11	0	364.00	0.12
16.90	0.15	0	364.00	0.14	18.70	0.11	0	364.00	0.11
16.95	0.15	0	364.00	0.16	18.75	0.11	0	364.00	0.12
17.00	0.15	0	364.00	0.14	18.80	0.11	0	364.00	0.11
17.05	0.15	0	364.00	0.15	18.85	0.11	0	364.00	0.12
17.10	0.15	0	364.00	0.14	18.90	0.11	0	364.00	0.11
17.15	0.14	0	364.00	0.15	18.95	0.11	0	364.00	0.12
17.20	0.14	0	364.00	0.14	19.00	0.11	0	364.00	0.10
17.25	0.14	0	364.00	0.15	19.05	0.11	0	364.00	0.12
17.30	0.14	0	364.00	0.13	19.10	0.11	0	364.00	0.10
17.35	0.14	0	364.00	0.14	19.15	0.11	0	364.00	0.11
17.40	0.14	0	364.00	0.13	19.20	0.11	0	364.00	0.10
17.45	0.14	0	364.00	0.14	19.25	0.11	0	364.00	0.11
17.50	0.13	0	364.00	0.13	19.30	0.11	0	364.00	0.10
17.55	0.13	0	364.00	0.14	19.35	0.11	0	364.00	0.11
19.40	0.11	0	364.00	0.10	21.20	0.09	0	364.00	0.09
19.45	0.11	0	364.00	0.11	21.25	0.09	0	364.00	0.10
19.50	0.11	0	364.00	0.10	21.30	0.09	0	364.00	0.09
19.55	0.11	0	364.00	0.11	21.35	0.09	0	364.00	0.10
19.60	0.11	0	364.00	0.10	21.40	0.09	0	364.00	0.09
19.65	0.11	0	364.00	0.11	21.45	0.09	0	364.00	0.10
19.70	0.11	0	364.00	0.10	21.50	0.09	0	364.00	0.09
19.75	0.11	0	364.00	0.11	21.55	0.09	0	364.00	0.10
19.80	0.11	0	364.00	0.10	21.60	0.09	0	364.00	0.09
19.85	0.10	0	364.00	0.11	21.65	0.09	0	364.00	0.10
19.90	0.10	0	364.00	0.10	21.70	0.09	0	364.00	0.09
19.95	0.10	0	364.00	0.11	21.75	0.09	0	364.00	0.10
20.00	0.10	0	364.00	0.10	21.80	0.09	0	364.00	0.09
20.05	0.10	0	364.00	0.11	21.85	0.09	0	364.00	0.10
20.10	0.10	0	364.00	0.10	21.90	0.09	0	364.00	0.08
20.15	0.10	0	364.00	0.11	21.95	0.09	0	364.00	0.10
20.20	0.10	0	364.00	0.10	22.00	0.09	0	364.00	0.08
20.25	0.10	0	364.00	0.11	22.05	0.09	0	364.00	0.09
20.30	0.10	0	364.00	0.10	22.10	0.09	0	364.00	0.08
20.35	0.10	0	364.00	0.11	22.15	0.09	0	364.00	0.09
20.40	0.10	0	364.00	0.09	22.20	0.09	0	364.00	0.08
20.45	0.10	0	364.00	0.11	22.25	0.09	0	364.00	0.09
20.50	0.10	0	364.00	0.09	22.30	0.09	0	364.00	0.08
20.55	0.10	0	364.00	0.11	22.35	0.09	0	364.00	0.09
20.60	0.10	0	364.00	0.09	22.40	0.09	0	364.00	0.08
20.65	0.10	0	364.00	0.10	22.45	0.09	0	364.00	0.09
20.70	0.10	0	364.00	0.09	22.50	0.09	0	364.00	0.08
20.75	0.10	0	364.00	0.10	22.55	0.09	0	364.00	0.09
20.80	0.10	0	364.00	0.09	22.60	0.09	0	364.00	0.08
20.85	0.10	0	364.00	0.10	22.65	0.09	0	364.00	0.09
20.90	0.10	0	364.00	0.09	22.70	0.08	0	364.00	0.08
20.95	0.10	0	364.00	0.10	22.75	0.08	0	364.00	0.09
21.00	0.10	0	364.00	0.09	22.80	0.08	0	364.00	0.08
21.05	0.10	0	364.00	0.10	22.85	0.08	0	364.00	0.09
21.10	0.10	0	364.00	0.09	22.90	0.08	0	364.00	0.08
21.15	0.10	0	364.00	0.10	22.95	0.08	0	364.00	0.09
23.00	0.08	0	364.00	0.08					
23.05	0.08	0	364.00	0.09					
23.10	0.08	0	364.00	0.08					
23.15	0.08	0	364.00	0.09					
23.20	0.08	0	364.00	0.07					
23.25	0.08	0	364.00	0.09					
23.30	0.08	0	364.00	0.07					
23.35	0.08	0	364.00	0.09					
23.40	0.08	0	364.00	0.07					
23.45	0.08	0	364.00	0.09					
23.50	0.08	0	364.00	0.07					
23.55	0.08	0	364.00	0.08					
23.60	0.08	0	364.00	0.07					
23.65	0.08	0	364.00	0.08					
23.70	0.08	0	364.00	0.07					
23.75	0.08	0	364.00	0.08					
23.80	0.08	0	364.00	0.07					
23.85	0.08	0	364.00	0.08					
23.90	0.08	0	364.00	0.07					
23.95	0.08	0	364.00	0.08					
24.00	0.09	0	364.00	0.08					

Summary for Pond 4P: UGD

Inflow Area = 3.140 ac, 0.00% Impervious, Inflow Depth > 1.56" for 1-Year event
Inflow = 6.20 cfs @ 12.13 hrs, Volume= 0.408 af
Outflow = 3.70 cfs @ 12.22 hrs, Volume= 0.408 af, Atten= 40%, Lag= 5.5 min
Primary = 3.70 cfs @ 12.22 hrs, Volume= 0.408 af

Routing by Dyn-Stor-Ind method, Time Span= 5.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 365.21' @ 12.22 hrs Surf.Area= 3,992 sf Storage= 2,252 cf

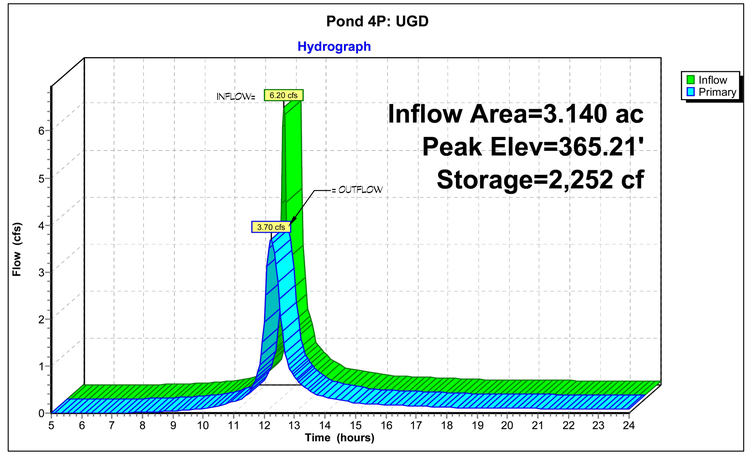
Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 5.0 min (826.7 - 821.7)

Volume	Invert	Avail.Storage	Storage Description
#1A	364.00'	4,415 cf	**36.67'W x 108.88'L x 3.33'H Field A** 13,308 cf Overall - 2,270 cf Embedded = 11,037 cf x 40.0% Voids
#2A	365.00'	2,270 cf	**ADS_StormTech SC-310 +Cap**x 154 Inside #1 Effective Size= 28.9"W x 16.0"H => 2.07 sf x 7.12'L = 14.7 cf Overall Size= 34.0"W x 16.0"H x 7.56'L with 0.44' Overlap 154 Chambers in 11 Rows
		6,685 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	363.70'	**21.0" Round Culvert** L= 10.0' RCP, rounded edge headwall, Ke= 0.100 Inlet / Outlet Invert= 363.70' / 363.60' S= 0.0100 '/' Cc= 0.900 n= 0.013 Concrete pipe, bends & connections, Flow Area= 2.41 sf
#2	Device 1	363.75'	**12.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Device 1	366.00'	**2.5' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)
#4	Device 1	367.00'	**5.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)

Primary OutFlow Max=3.68 cfs @ 12.22 hrs HW=365.20' (Free Discharge)
└**1=Culvert** (Passes 3.68 cfs of 8.14 cfs potential flow)
  └**2=Orifice/Grate** (Orifice Controls 3.68 cfs @ 4.68 fps)
  └**3=Sharp-Crested Rectangular Weir** (Controls 0.00 cfs)
  └**4=Sharp-Crested Rectangular Weir** (Controls 0.00 cfs)



APPROVAL

LDC
4585 DAISY REID AVENUE, SUITE 201 WOODBRIDGE, VIRGINIA 22192
WWW.LDCVA.COM

UGD 1-YR ROUTING

515 MAPLE AVENUE EAST
TOWN OF VIENNA, VIRGINIA

DATE	REVISION APPROVED BY:	DESCRIPTION	REVISION APPROVED	DATE

DESIGN: MTM
DRAFT: ZG/SB
CHECK: MTM
ENGINEER

I HEREBY CERTIFY THAT OTHER THAN THE REVISIONS SHOWN HEREON, NO OTHER CHANGES HAVE BEEN MADE.

COMMONWEALTH OF VIRGINIA
MATTHEW T. MARSHALL
Lic. No. 1935-B
07/09/25
DATE
LAND SURVEYOR

SCALE: AS SHOWN

SHEET: 23 OF 41
DATE: JULY 2025
FILE NUMBER: 25021-1-1

UGD ROUTING COMPUTATIONS
2-YR STORM EVENT

NOAA 24-hr C 2-Year Rainfall=3.17"

25021-1-1-Maple-SWM *NOAA 24-hr C*
Prepared by Land Design Consultants Inc
HydroCAD® 10.20-6a s/n 10699 © 2024 HydroCAD Software Solutions LLC

Hydrograph for Pond 4P: UGD

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Primary (cfs)	Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Primary (cfs)
5.00	0.00	0	364.00	0.00	6.80	0.01	0	364.00	0.01
5.05	0.00	0	364.00	0.00	6.85	0.01	0	364.00	0.01
5.10	0.00	0	364.00	0.00	6.90	0.01	0	364.00	0.01
5.15	0.00	0	364.00	0.00	6.95	0.02	0	364.00	0.02
5.20	0.00	0	364.00	0.00	7.00	0.02	0	364.00	0.02
5.25	0.00	0	364.00	0.00	7.05	0.02	0	364.00	0.02
5.30	0.00	0	364.00	0.00	7.10	0.02	0	364.00	0.02
5.35	0.00	0	364.00	0.00	7.15	0.02	0	364.00	0.02
5.40	0.00	0	364.00	0.00	7.20	0.02	0	364.00	0.02
5.45	0.00	0	364.00	0.00	7.25	0.02	0	364.00	0.02
5.50	0.00	0	364.00	0.00	7.30	0.02	0	364.00	0.02
5.55	0.00	0	364.00	0.00	7.35	0.02	0	364.00	0.02
5.60	0.00	0	364.00	0.00	7.40	0.03	0	364.00	0.03
5.65	0.00	0	364.00	0.00	7.45	0.03	0	364.00	0.03
5.70	0.00	0	364.00	0.00	7.50	0.03	0	364.00	0.03
5.75	0.00	0	364.00	0.00	7.55	0.03	0	364.00	0.03
5.80	0.00	0	364.00	0.00	7.60	0.03	0	364.00	0.03
5.85	0.00	0	364.00	0.00	7.65	0.03	0	364.00	0.03
5.90	0.00	0	364.00	0.00	7.70	0.03	0	364.00	0.03
5.95	0.00	0	364.00	0.00	7.75	0.04	0	364.00	0.04
6.00	0.00	0	364.00	0.00	7.80	0.04	0	364.00	0.04
6.05	0.00	0	364.00	0.00	7.85	0.04	0	364.00	0.04
6.10	0.00	0	364.00	0.00	7.90	0.04	0	364.00	0.04
6.15	0.00	0	364.00	0.00	7.95	0.04	0	364.00	0.04
6.20	0.00	0	364.00	0.00	8.00	0.04	0	364.00	0.04
6.25	0.00	0	364.00	0.00	8.05	0.04	0	364.00	0.04
6.30	0.00	0	364.00	0.00	8.10	0.05	0	364.00	0.05
6.35	0.00	0	364.00	0.00	8.15	0.05	0	364.00	0.05
6.40	0.01	0	364.00	0.01	8.20	0.05	0	364.00	0.05
6.45	0.01	0	364.00	0.01	8.25	0.05	0	364.00	0.05
6.50	0.01	0	364.00	0.01	8.30	0.05	0	364.00	0.05
6.55	0.01	0	364.00	0.01	8.35	0.05	0	364.00	0.05
6.60	0.01	0	364.00	0.01	8.40	0.05	0	364.00	0.05
6.65	0.01	0	364.00	0.01	8.45	0.06	0	364.00	0.06
6.70	0.01	0	364.00	0.01	8.50	0.06	0	364.00	0.06
6.75	0.01	0	364.00	0.01	8.55	0.06	0	364.00	0.06
8.60	0.06	0	364.00	0.06	10.40	0.20	0	364.00	0.20
8.65	0.06	0	364.00	0.06	10.45	0.21	0	364.00	0.21
8.70	0.06	0	364.00	0.06	10.50	0.21	0	364.00	0.21
8.75	0.07	0	364.00	0.07	10.55	0.22	0	364.00	0.22
8.80	0.07	0	364.00	0.07	10.60	0.24	0	364.00	0.24
8.85	0.07	0	364.00	0.07	10.65	0.25	0	364.00	0.25
8.90	0.07	0	364.00	0.07	10.70	0.27	1	364.00	0.26
8.95	0.07	0	364.00	0.07	10.75	0.28	4	364.00	0.27
9.00	0.07	0	364.00	0.07	10.80	0.30	8	364.01	0.27
9.05	0.08	0	364.00	0.08	10.85	0.32	14	364.01	0.28
9.10	0.08	0	364.00	0.08	10.90	0.34	22	364.01	0.29
9.15	0.08	0	364.00	0.08	10.95	0.36	31	364.02	0.30
9.20	0.09	0	364.00	0.09	11.00	0.38	42	364.03	0.32
9.25	0.09	0	364.00	0.09	11.05	0.40	53	364.03	0.33
9.30	0.09	0	364.00	0.09	11.10	0.43	67	364.04	0.35
9.35	0.10	0	364.00	0.10	11.15	0.46	82	364.05	0.37
9.40	0.10	0	364.00	0.10	11.20	0.50	100	364.06	0.40
9.45	0.11	0	364.00	0.11	11.25	0.54	119	364.07	0.43
9.50	0.11	0	364.00	0.11	11.30	0.58	139	364.09	0.46
9.55	0.11	0	364.00	0.11	11.35	0.61	160	364.10	0.49
9.60	0.12	0	364.00	0.12	11.40	0.66	182	364.11	0.53
9.65	0.12	0	364.00	0.12	11.45	0.69	204	364.13	0.57
9.70	0.13	0	364.00	0.13	11.50	0.73	226	364.14	0.61
9.75	0.13	0	364.00	0.13	11.55	0.82	252	364.16	0.66
9.80	0.14	0	364.00	0.14	11.60	1.04	295	364.18	0.74
9.85	0.14	0	364.00	0.14	11.65	1.19	353	364.22	0.85
9.90	0.15	0	364.00	0.15	11.70	1.28	412	364.26	0.97
9.95	0.15	0	364.00	0.15	11.75	1.41	468	364.29	1.09
10.00	0.16	0	364.00	0.16	11.80	1.70	537	364.34	1.25
10.05	0.16	0	364.00	0.16	11.85	1.99	626	364.39	1.45
10.10	0.17	0	364.00	0.17	11.90	2.45	740	364.46	1.72
10.15	0.17	0	364.00	0.17	11.95	3.07	894	364.56	2.09
10.20	0.18	0	364.00	0.18	12.00	4.23	1,130	364.71	2.58
10.25	0.18	0	364.00	0.18	12.05	5.50	1,492	364.93	3.13
10.30	0.19	0	364.00	0.19	12.10	7.60	2,067	365.15	3.58
10.35	0.19	0	364.00	0.19	12.15	**7.86**	2,774	365.38	4.02
12.20	5.42	3,223	365.53	4.28	14.00	0.40	119	364.07	0.43
12.25	3.82	**3,281**	**365.55**	**4.31**	14.05	0.39	114	364.07	0.42
12.30	2.95	3,123	365.50	4.22	14.10	0.39	109	364.07	0.41
12.35	2.49	2,866	365.41	4.07	14.15	0.38	104	364.07	0.41
12.40	2.08	2,561	365.31	3.89	14.20	0.37	100	364.06	0.40
12.45	1.87	2,234	365.20	3.69	14.25	0.37	95	364.06	0.39
12.50	1.77	1,916	365.10	3.49	14.30	0.36	91	364.06	0.39
12.55	1.64	1,613	365.01	3.29	14.35	0.35	86	364.05	0.38
12.60	1.35	1,327	364.83	2.88	14.40	0.35	82	364.05	0.37
12.65	1.18	1,072	364.67	2.47	14.45	0.34	77	364.05	0.37
12.70	1.10	871	364.55	2.03	14.50	0.33	73	364.05	0.36
12.75	1.05	728	364.46	1.70	14.55	0.33	68	364.04	0.35
12.80	1.00	629	364.39	1.46	14.60	0.32	64	364.04	0.35
12.85	0.96	557	364.35	1.29	14.65	0.32	59	364.04	0.34
12.90	0.91	504	364.32	1.17	14.70	0.31	55	364.03	0.33
12.95	0.87	461	364.29	1.08	14.75	0.30	50	364.03	0.33
13.00	0.82	426	364.27	1.00	14.80	0.30	45	364.03	0.32
13.05	0.78	395	364.25	0.94	14.85	0.29	41	364.03	0.31
13.10	0.73	367	364.23	0.88	14.90	0.28	36	364.02	0.31
13.15	0.69	342	364.21	0.83	14.95	0.28	31	364.02	0.30
13.20	0.66	319	364.20	0.78	15.00	0.27	27	364.02	0.30
13.25	0.64	299	364.19	0.74	15.05	0.26	22	364.01	0.29
13.30	0.61	281	364.18	0.71	15.10	0.26	17	364.01	0.28
13.35	0.59	265	364.17	0.68	15.15	0.25	12	364.01	0.28
13.40	0.56	249	364.16	0.65	15.20	0.25	8	364.00	0.27
13.45	0.54	234	364.15	0.62	15.25	0.25	4	364.00	0.27
13.50	0.51	220	364.14	0.60	15.30	0.24	1	364.00	0.26
13.55	0.49	205	364.13	0.57	15.35	0.24	0	364.00	0.24
13.60	0.46	191	364.12	0.55	15.40	0.24	0	364.00	0.24
13.65	0.45	177	364.11	0.52	15.45	0.24	0	364.00	0.24
13.70	0.44	165	364.10	0.50	15.50	0.24	0	364.00	0.24
13.75	0.43	154	364.10	0.48	15.55	0.24	0	364.00	0.23
13.80	0.42	145	364.09	0.47	15.60	0.23	0	364.00	0.24
13.85	0.42	138	364.09	0.46	15.65	0.23	0	364.00	0.23
13.90	0.41	131	364.08	0.45	15.70	0.23	0	364.00	0.23
13.95	0.41	125	364.08	0.44	15.75	0.23	0	364.00	0.23

Hydrograph for Pond 4P: UGD (continued)

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Primary (cfs)	Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Primary (cfs)
15.80	0.23	0	364.00	0.23	17.60	0.16	0	364.00	0.17
15.85	0.23	0	364.00	0.22	17.65	0.16	0	364.00	0.16
15.90	0.22	0	364.00	0.22	17.70	0.16	0	364.00	0.16
15.95	0.22	0	364.00	0.22	17.75	0.16	0	364.00	0.16
16.00	0.22	0	364.00	0.22	17.80	0.16	0	364.00	0.16
16.05	0.22	0	364.00	0.22	17.85	0.16	0	364.00	0.16
16.10	0.22	0	364.00	0.22	17.90	0.15	0	364.00	0.15
16.15	0.22	0	364.00	0.22	17.95	0.15	0	364.00	0.15
16.20	0.21	0	364.00	0.21	18.00	0.15	0	364.00	0.15
16.25	0.21	0	364.00	0.21	18.05	0.15	0	364.00	0.15
16.30	0.21	0	364.00	0.21	18.10	0.15	0	364.00	0.15
16.35	0.21	0	364.00	0.21	18.15	0.15	0	364.00	0.15
16.40	0.21	0	364.00	0.21	18.20	0.15	0	364.00	0.15
16.45	0.21	0	364.00	0.20	18.25	0.14	0	364.00	0.14
16.50	0.20	0	364.00	0.20	18.30	0.14	0	364.00	0.14
16.55	0.20	0	364.00	0.20	18.35	0.14	0	364.00	0.14
16.60	0.20	0	364.00	0.20	18.40	0.14	0	364.00	0.14
16.65	0.20	0	364.00	0.20	18.45	0.14	0	364.00	0.14
16.70	0.20	0	364.00	0.20	18.50	0.14	0	364.00	0.14
16.75	0.19	0	364.00	0.19	18.55	0.14	0	364.00	0.14
16.80	0.19	0	364.00	0.19	18.60	0.14	0	364.00	0.14
16.85	0.19	0	364.00	0.19	18.65	0.14	0	364.00	0.14
16.90	0.19	0	364.00	0.19	18.70	0.14	0	364.00	0.14
16.95	0.19	0	364.00	0.19	18.75	0.14	0	364.00	0.14
17.00	0.19	0	364.00	0.19	18.80	0.14	0	364.00	0.14
17.05	0.18	0	364.00	0.18	18.85	0.14	0	364.00	0.14
17.10	0.18	0	364.00	0.18	18.90	0.14	0	364.00	0.14
17.15	0.18	0	364.00	0.18	18.95	0.14	0	364.00	0.14
17.20	0.18	0	364.00	0.18	19.00	0.14	0	364.00	0.14
17.25	0.18	0	364.00	0.18	19.05	0.14	0	364.00	0.14
17.30	0.17	0	364.00	0.18	19.10	0.14	0	364.00	0.14
17.35	0.17	0	364.00	0.17	19.15	0.14	0	364.00	0.14
17.40	0.17	0	364.00	0.17	19.20	0.14	0	364.00	0.14
17.45	0.17	0	364.00	0.17	19.25	0.14	0	364.00	0.14
17.50	0.17	0	364.00	0.17	19.30	0.14	0	364.00	0.14
17.55	0.17	0	364.00	0.17	19.35	0.14	0	364.00	0.13
19.40	0.13	0	364.00	0.13	21.20	0.12	0	364.00	0.12
19.45	0.13	0	364.00	0.13	21.25	0.12	0	364.00	0.12
19.50	0.13	0	364.00	0.13	21.30	0.12	0	364.00	0.12
19.55	0.13	0	364.00	0.13	21.35	0.12	0	364.00	0.12
19.60	0.13	0	364.00	0.13	21.40	0.12	0	364.00	0.12
19.65	0.13	0	364.00	0.13	21.45	0.12	0	364.00	0.12
19.70	0.13	0	364.00	0.13	21.50	0.12	0	364.00	0.12
19.75	0.13	0	364.00	0.13	21.55	0.12	0	364.00	0.12
19.80	0.13	0	364.00	0.13	21.60	0.12	0	364.00	0.12
19.85	0.13	0	364.00	0.13	21.65	0.11	0	364.00	0.11
19.90	0.13	0	364.00	0.13	21.70	0.11	0	364.00	0.11
19.95	0.13	0	364.00	0.13	21.75	0.11	0	364.00	0.11
20.00	0.13	0	364.00	0.13	21.80	0.11	0	364.00	0.11
20.05	0.13	0	364.00	0.13	21.85	0.11	0	364.00	0.11
20.10	0.13	0	364.00	0.13	21.90	0.11	0	364.00	0.11
20.15	0.13	0	364.00	0.13	21.95	0.11	0	364.00	0.11
20.20	0.13	0	364.00	0.13	22.00	0.11	0	364.00	0.11
20.25	0.13	0	364.00	0.13	22.05	0.11	0	364.00	0.11
20.30	0.13	0	364.00	0.13	22.10	0.11	0	364.00	0.11
20.35	0.13	0	364.00	0.13	22.15	0.11	0	364.00	0.11
20.40	0.13	0	364.00	0.13	22.20	0.11	0	364.00	0.11
20.45	0.13	0	364.00	0.12	22.25	0.11	0	364.00	0.11
20.50	0.12	0	364.00	0.13	22.30	0.11	0	364.00	0.11
20.55	0.12	0	364.00	0.12	22.35	0.11	0	364.00	0.11
20.60	0.12	0	364.00	0.13	22.40	0.11	0	364.00	0.11
20.65	0.12	0	364.00	0.12	22.45	0.11	0	364.00	0.11
20.70	0.12	0	364.00	0.12	22.50	0.11	0	364.00	0.11
20.75	0.12	0	364.00	0.12	22.55	0.11	0	364.00	0.11
20.80	0.12	0	364.00	0.12	22.60	0.11	0	364.00	0.11
20.85	0.12	0	364.00	0.12	22.65	0.11	0	364.00	0.11
20.90	0.12	0	364.00	0.12	22.70	0.11	0	364.00	0.11
20.95	0.12	0	364.00	0.12	22.75	0.11	0	364.00	0.10
21.00	0.12	0	364.00	0.12	22.80	0.10	0	364.00	0.10
21.05	0.12	0	364.00	0.12	22.85	0.10	0	364.00	0.10
21.10	0.12	0	364.00	0.12	22.90	0.10	0	364.00	0.10
21.15	0.12	0	364.00	0.12	22.95	0.10	0	364.00	0.10
23.00	0.10	0	364.00	0.10					
23.05	0.10	0	364.00	0.10					
23.10	0.10	0	364.00	0.10					
23.15	0.10	0	364.00	0.10					
23.20	0.10	0	364.00	0.10					
23.25	0.10	0	364.00	0.10					
23.30	0.10	0	364.00	0.10					
23.35	0.10	0	364.00	0.10					
23.40	0.10	0	364.00	0.10					
23.45	0.10	0	364.00	0.10					
23.50	0.10	0	364.00	0.10					
23.55	0.10	0	364.00	0.10					
23.60	0.10	0	364.00	0.10					
23.65	0.10	0	364.00	0.10					
23.70	0.10	0	364.00	0.10					
23.75	0.10	0	364.00	0.10					
23.80	0.10	0	364.00	0.10					
23.85	0.10	0	364.00	0.09					
23.90	0.09	0	364.00	0.10					
23.95	0.10	0	364.00	0.10					
24.00	0.11	0	364.00	0.11					

Summary for Pond 4P: UGD

Inflow Area = 3.140 ac, 0.00% Impervious, Inflow Depth > 2.05" for 2-Year event
Inflow = 8.08 cfs @ 12.13 hrs, Volume= 0.537 af
Outflow = 4.32 cfs @ 12.24 hrs, Volume= 0.537 af, Atten= 47%, Lag= 6.5 min
Primary = 4.32 cfs @ 12.24 hrs, Volume= 0.537 af

Routing by Dyn-Stor-Ind method, Time Span= 5.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 365.55' @ 12.24 hrs Surf.Area= 3,992 sf Storage= 3,286 cf

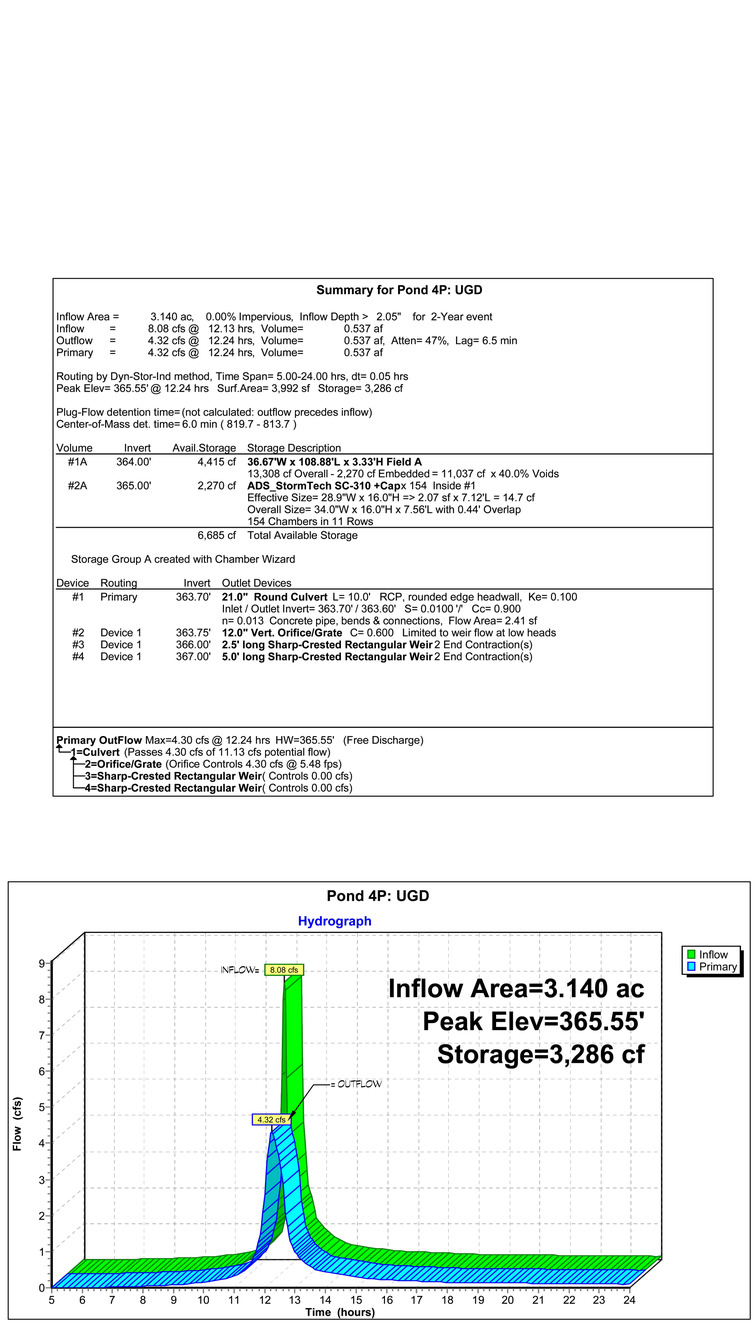
Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 6.0 min (819.7 - 813.7)

Volume	Invert	Avail.Storage	Storage Description
#1A	364.00'	4,415 cf	**36.67'W x 108.88'L x 3.33'H Field A** 13,308 cf Overall - 2,270 cf Embedded = 11,037 cf x 40.0% Voids
#2A	365.00'	2,270 cf	**ADS_StormTech SC-310 +Cap** x 154 Inside #1 Effective Size= 28.9"W x 16.0"H => 2.07 sf x 7.12'L = 14.7 cf Overall Size= 34.0"W x 16.0"H x 7.56'L with 0.44' Overlap 154 Chambers in 11 Rows
		6,685 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	363.70'	**21.0" Round Culvert** L= 10.0' RCP, rounded edge headwall, Ke= 0.100 Inlet / Outlet Invert= 363.70' / 363.60' S= 0.0100 '/' Cc= 0.900 n= 0.013 Concrete pipe, bends & connections, Flow Area= 2.41 sf
#2	Device 1	363.75'	**12.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Device 1	366.00'	**2.5' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)
#4	Device 1	367.00'	**5.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)

Primary OutFlow Max=4.30 cfs @ 12.24 hrs HW=365.55' (Free Discharge)
└**1=Culvert** (Passes 4.30 cfs of 11.13 cfs potential flow)
├**2=Orifice/Grate** (Orifice Controls 4.30 cfs @ 5.48 fps)
├**3=Sharp-Crested Rectangular Weir** (Controls 0.00 cfs)
└**4=Sharp-Crested Rectangular Weir** (Controls 0.00 cfs)



APPROVAL

LDC
4585 DAISY REID AVENUE, SUITE 201 WOODBRIDGE, VIRGINIA 22192
WWW.LDCVA.COM

UGD 2-YR ROUTING

515 MAPLE AVENUE EAST
TOWN OF VIENNA, VIRGINIA

NO.	DESCRIPTION	REVIEW APPROVED BY:	APPROVED	DATE

DESIGN DATE ENGINEER

I HEREBY CERTIFY THAT OTHER THAN THE REVISIONS SHOWN HEREON, NO OTHER CHANGES HAVE BEEN MADE.

COMMONWEALTH OF VIRGINIA
MATTHEW T. MARSHALL
Lic. No. 133-B
07/09/25
DATE
LAND SURVEYOR

SCALE: AS SHOWN

SHEET: 24 OF 41
DATE: JULY 2025
DRAFT: ZG/SB CHECK: MTM
FILE NUMBER: 25021-1-1

UGD ROUTING COMPUTATIONS
10-YR STORM EVENT

NOAA 24-hr C 10-Year Rainfall=4.87"

25021-1-1-Maple-SWM *NOAA 24-hr C*
Prepared by Land Design Consultants Inc
HydroCAD® 10.20-6a s/n 10699 © 2024 HydroCAD Software Solutions LLC

Hydrograph for Pond 4P: UGD

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Primary (cfs)	Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Primary (cfs)
5.00	0.02	0	364.00	0.02	6.80	0.08	0	364.00	0.08
5.05	0.02	0	364.00	0.02	6.85	0.08	0	364.00	0.08
5.10	0.02	0	364.00	0.02	6.90	0.08	0	364.00	0.08
5.15	0.02	0	364.00	0.02	6.95	0.08	0	364.00	0.08
5.20	0.02	0	364.00	0.02	7.00	0.09	0	364.00	0.09
5.25	0.03	0	364.00	0.03	7.05	0.09	0	364.00	0.09
5.30	0.03	0	364.00	0.03	7.10	0.09	0	364.00	0.09
5.35	0.03	0	364.00	0.03	7.15	0.09	0	364.00	0.09
5.40	0.03	0	364.00	0.03	7.20	0.10	0	364.00	0.10
5.45	0.03	0	364.00	0.03	7.25	0.10	0	364.00	0.10
5.50	0.03	0	364.00	0.03	7.30	0.10	0	364.00	0.10
5.55	0.03	0	364.00	0.03	7.35	0.10	0	364.00	0.10
5.60	0.03	0	364.00	0.03	7.40	0.10	0	364.00	0.10
5.65	0.04	0	364.00	0.04	7.45	0.11	0	364.00	0.11
5.70	0.04	0	364.00	0.04	7.50	0.11	0	364.00	0.11
5.75	0.04	0	364.00	0.04	7.55	0.11	0	364.00	0.11
5.80	0.04	0	364.00	0.04	7.60	0.12	0	364.00	0.12
5.85	0.04	0	364.00	0.04	7.65	0.12	0	364.00	0.12
5.90	0.04	0	364.00	0.04	7.70	0.12	0	364.00	0.12
5.95	0.04	0	364.00	0.04	7.75	0.12	0	364.00	0.12
6.00	0.05	0	364.00	0.05	7.80	0.13	0	364.00	0.13
6.05	0.05	0	364.00	0.05	7.85	0.13	0	364.00	0.13
6.10	0.05	0	364.00	0.05	7.90	0.13	0	364.00	0.13
6.15	0.05	0	364.00	0.05	7.95	0.13	0	364.00	0.13
6.20	0.05	0	364.00	0.05	8.00	0.14	0	364.00	0.14
6.25	0.05	0	364.00	0.05	8.05	0.14	0	364.00	0.14
6.30	0.06	0	364.00	0.06	8.10	0.14	0	364.00	0.14
6.35	0.06	0	364.00	0.06	8.15	0.15	0	364.00	0.15
6.40	0.06	0	364.00	0.06	8.20	0.15	0	364.00	0.15
6.45	0.06	0	364.00	0.06	8.25	0.15	0	364.00	0.15
6.50	0.06	0	364.00	0.06	8.30	0.16	0	364.00	0.16
6.55	0.07	0	364.00	0.07	8.35	0.16	0	364.00	0.16
6.60	0.07	0	364.00	0.07	8.40	0.16	0	364.00	0.16
6.65	0.07	0	364.00	0.07	8.45	0.16	0	364.00	0.16
6.70	0.07	0	364.00	0.07	8.50	0.17	0	364.00	0.17
6.75	0.07	0	364.00	0.07	8.55	0.17	0	364.00	0.17
8.60	0.17	0	364.00	0.17	10.40	0.45	105	364.07	0.41
8.65	0.18	0	364.00	0.18	10.45	0.46	112	364.07	0.42
8.70	0.18	0	364.00	0.18	10.50	0.47	119	364.07	0.43
8.75	0.18	0	364.00	0.18	10.55	0.48	126	364.08	0.44
8.80	0.19	0	364.00	0.19	10.60	0.51	136	364.08	0.45
8.85	0.19	0	364.00	0.19	10.65	0.54	147	364.09	0.47
8.90	0.19	0	364.00	0.19	10.70	0.58	161	364.10	0.50
8.95	0.20	0	364.00	0.20	10.75	0.61	176	364.11	0.52
9.00	0.20	0	364.00	0.20	10.80	0.64	192	364.12	0.55
9.05	0.20	0	364.00	0.20	10.85	0.67	210	364.13	0.58
9.10	0.21	0	364.00	0.21	10.90	0.71	228	364.14	0.61
9.15	0.22	0	364.00	0.22	10.95	0.75	246	364.15	0.64
9.20	0.23	0	364.00	0.23	11.00	0.78	265	364.17	0.68
9.25	0.23	0	364.00	0.23	11.05	0.83	284	364.18	0.71
9.30	0.24	0	364.00	0.24	11.10	0.89	306	364.19	0.76
9.35	0.25	0	364.00	0.25	11.15	0.95	331	364.21	0.81
9.40	0.26	1	364.00	0.25	11.20	1.02	359	364.22	0.86
9.45	0.26	1	364.00	0.26	11.25	1.08	387	364.24	0.92
9.50	0.27	3	364.00	0.26	11.30	1.16	417	364.26	0.98
9.55	0.28	5	364.00	0.27	11.35	1.22	448	364.28	1.05
9.60	0.29	8	364.00	0.27	11.40	1.30	480	364.30	1.12
9.65	0.30	12	364.01	0.28	11.45	1.36	511	364.32	1.19
9.70	0.31	16	364.01	0.28	11.50	1.43	542	364.34	1.26
9.75	0.32	21	364.01	0.29	11.55	1.60	580	364.36	1.35
9.80	0.33	27	364.02	0.30	11.60	2.02	649	364.41	1.51
9.85	0.34	32	364.02	0.30	11.65	2.28	744	364.47	1.73
9.90	0.35	38	364.02	0.31	11.70	2.43	836	364.52	1.95
9.95	0.35	45	364.03	0.32	11.75	2.67	925	364.58	2.16
10.00	0.36	51	364.03	0.33	11.80	3.17	1,039	364.65	2.41
10.05	0.37	57	364.04	0.34	11.85	3.68	1,198	364.75	2.67
10.10	0.38	64	364.04	0.35	11.90	4.49	1,421	364.89	3.02
10.15	0.39	71	364.04	0.36	11.95	5.55	1,749	365.05	3.38
10.20	0.40	77	364.05	0.37	12.00	7.56	2,290	365.22	3.72
10.25	0.41	84	364.05	0.38	12.05	9.71	3,128	365.50	4.22
10.30	0.42	91	364.06	0.39	12.10	13.20	4,365	365.96	4.94
10.35	0.43	98	364.06	0.40	12.15	**13.50**	5,489	366.58	9.26
12.20	9.23	**5,729**	**366.73**	**10.80**	14.00	0.65	272	364.17	0.69
12.25	6.47	5,390	366.52	8.66	14.05	0.64	265	364.17	0.68
12.30	4.97	5,035	366.30	6.73	14.10	0.63	259	364.16	0.67
12.35	4.18	4,748	366.14	5.61	14.15	0.62	252	364.16	0.66
12.40	3.47	4,480	366.01	5.02	14.20	0.61	246	364.15	0.64
12.45	3.12	4,186	365.89	4.84	14.25	0.60	240	364.15	0.63
12.50	2.95	3,878	365.77	4.66	14.30	0.59	234	364.15	0.62
12.55	2.73	3,567	365.65	4.48	14.35	0.58	228	364.14	0.61
12.60	2.24	3,226	365.53	4.28	14.40	0.57	222	364.14	0.60
12.65	1.95	2,852	365.40	4.06	14.45	0.56	216	364.14	0.59
12.70	1.82	2,479	365.28	3.84	14.50	0.55	210	364.13	0.58
12.75	1.74	2,128	365.17	3.62	14.55	0.54	204	364.13	0.57
12.80	1.65	1,800	365.06	3.41	14.60	0.52	198	364.12	0.56
12.85	1.59	1,502	364.94	3.14	14.65	0.51	192	364.12	0.55
12.90	1.50	1,249	364.78	2.76	14.70	0.50	186	364.12	0.54
12.95	1.44	1,047	364.66	2.42	14.75	0.49	180	364.11	0.53
13.00	1.35	892	364.56	2.08	14.80	0.48	173	364.11	0.52
13.05	1.28	779	364.49	1.82	14.85	0.47	167	364.10	0.51
13.10	1.20	694	364.43	1.61	14.90	0.46	161	364.10	0.50
13.15	1.14	628	364.39	1.46	14.95	0.45	154	364.10	0.48
13.20	1.09	577	364.36	1.34	15.00	0.44	148	364.09	0.47
13.25	1.05	537	364.34	1.25	15.05	0.43	141	364.09	0.46
13.30	1.01	505	364.32	1.17	15.10	0.42	135	364.08	0.45
13.35	0.97	477	364.30	1.11	15.15	0.41	128	364.08	0.44
13.40	0.93	452	364.28	1.06	15.20	0.40	123	364.08	0.43
13.45	0.89	430	364.27	1.01	15.25	0.40	118	364.07	0.43
13.50	0.84	408	364.26	0.96	15.30	0.40	114	364.07	0.42
13.55	0.81	387	364.24	0.92	15.35	0.40	110	364.07	0.41
13.60	0.76	367	364.23	0.88	15.40	0.39	107	364.07	0.41
13.65	0.74	347	364.22	0.84	15.45	0.39	104	364.07	0.41
13.70	0.72	330	364.21	0.80	15.50	0.39	101	364.06	0.40
13.75	0.71	316	364.20	0.78	15.55	0.38	99	364.06	0.40
13.80	0.69	305	364.19	0.75	15.60	0.38	96	364.06	0.39
13.85	0.69	295	364.18	0.74	15.65	0.38	94	364.06	0.39
13.90	0.67	286	364.18	0.72	15.70	0.38	92	364.06	0.39
13.95	0.66	279	364.17	0.70	15.75	0.37	90	364.06	0.38

Hydrograph for Pond 4P: UGD (continued)

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Primary (cfs)	Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Primary (cfs)
15.80	0.37	88	364.06	0.38	17.60	0.27	14	364.01	0.28
15.85	0.37	86	364.05	0.38	17.65	0.26	12	364.01	0.28
15.90	0.36	84	364.05	0.38	17.70	0.26	10	364.01	0.27
15.95	0.36	82	364.05	0.37	17.75	0.26	7	364.00	0.27
16.00	0.36	80	364.05	0.37	17.80	0.26	5	364.00	0.27
16.05	0.36	78	364.05	0.37	17.85	0.25	3	364.00	0.26
16.10	0.35	76	364.05	0.36	17.90	0.25	1	364.00	0.26
16.15	0.35	74	364.05	0.36	17.95	0.25	0	364.00	0.25
16.20	0.35	72	364.05	0.36	18.00	0.24	0	364.00	0.24
16.25	0.35	70	364.04	0.36	18.05	0.24	0	364.00	0.24
16.30	0.34	68	364.04	0.35	18.10	0.24	0	364.00	0.24
16.35	0.34	66	364.04	0.35	18.15	0.24	0	364.00	0.24
16.40	0.34	64	364.04	0.35	18.20	0.23	0	364.00	0.24
16.45	0.33	62	364.04	0.34	18.25	0.23	0	364.00	0.23
16.50	0.33	60	364.04	0.34	18.30	0.23	0	364.00	0.23
16.55	0.33	58	364.04	0.34	18.35	0.23	0	364.00	0.23
16.60	0.32	56	364.04	0.34	18.40	0.23	0	364.00	0.23
16.65	0.32	54	364.03	0.33	18.45	0.23	0	364.00	0.23
16.70	0.32	52	364.03	0.33	18.50	0.23	0	364.00	0.23
16.75	0.32	50	364.03	0.33	18.55	0.23	0	364.00	0.23
16.80	0.31	48	364.03	0.32	18.60	0.23	0	364.00	0.23
16.85	0.31	46	364.03	0.32	18.65	0.23	0	364.00	0.23
16.90	0.31	44	364.03	0.32	18.70	0.23	0	364.00	0.23
16.95	0.30	42	364.03	0.32	18.75	0.23	0	364.00	0.23
17.00	0.30	40	364.02	0.31	18.80	0.23	0	364.00	0.23
17.05	0.30	38	364.02	0.31	18.85	0.23	0	364.00	0.23
17.10	0.30	36	364.02	0.31	18.90	0.22	0	364.00	0.22
17.15	0.29	34	364.02	0.30	18.95	0.22	0	364.00	0.22
17.20	0.29	31	364.02	0.30	19.00	0.22	0	364.00	0.22
17.25	0.29	29	364.02	0.30	19.05	0.22	0	364.00	0.22
17.30	0.28	27	364.02	0.30	19.10	0.22	0	364.00	0.22
17.35	0.28	25	364.02	0.29	19.15	0.22	0	364.00	0.22
17.40	0.28	23	364.01	0.29	19.20	0.22	0	364.00	0.22
17.45	0.28	20	364.01	0.29	19.25	0.22	0	364.00	0.22
17.50	0.27	18	364.01	0.28	19.30	0.22	0	364.00	0.22
17.55	0.27	16	364.01	0.28	19.35	0.22	0	364.00	0.22
19.40	0.22	0	364.00	0.22	21.20	0.19	0	364.00	0.19
19.45	0.22	0	364.00	0.22	21.25	0.19	0	364.00	0.19
19.50	0.22	0	364.00	0.22	21.30	0.19	0	364.00	0.19
19.55	0.22	0	364.00	0.22	21.35	0.19	0	364.00	0.19
19.60	0.21	0	364.00	0.21	21.40	0.19	0	364.00	0.19
19.65	0.21	0	364.00	0.21	21.45	0.19	0	364.00	0.19
19.70	0.21	0	364.00	0.21	21.50	0.19	0	364.00	0.19
19.75	0.21	0	364.00	0.21	21.55	0.19	0	364.00	0.19
19.80	0.21	0	364.00	0.21	21.60	0.19	0	364.00	0.19
19.85	0.21	0	364.00	0.21	21.65	0.19	0	364.00	0.19
19.90	0.21	0	364.00	0.21	21.70	0.18	0	364.00	0.18
19.95	0.21	0	364.00	0.21	21.75	0.18	0	364.00	0.18
20.00	0.21	0	364.00	0.21	21.80	0.18	0	364.00	0.18
20.05	0.21	0	364.00	0.21	21.85	0.18	0	364.00	0.18
20.10	0.21	0	364.00	0.21	21.90	0.18	0	364.00	0.18
20.15	0.21	0	364.00	0.21	21.95	0.18	0	364.00	0.18
20.20	0.21	0	364.00	0.21	22.00	0.18	0	364.00	0.18
20.25	0.21	0	364.00	0.21	22.05	0.18	0	364.00	0.18
20.30	0.20	0	364.00	0.20	22.10	0.18	0	364.00	0.18
20.35	0.20	0	364.00	0.20	22.15	0.18	0	364.00	0.18
20.40	0.20	0	364.00	0.20	22.20	0.18	0	364.00	0.18
20.45	0.20	0	364.00	0.20	22.25	0.18	0	364.00	0.18
20.50	0.20	0	364.00	0.20	22.30	0.18	0	364.00	0.18
20.55	0.20	0	364.00	0.20	22.35	0.18	0	364.00	0.18
20.60	0.20	0	364.00	0.20	22.40	0.17	0	364.00	0.17
20.65	0.20	0	364.00	0.20	22.45	0.17	0	364.00	0.17
20.70	0.20	0	364.00	0.20	22.50	0.17	0	364.00	0.17
20.75	0.20	0	364.00	0.20	22.55	0.17	0	364.00	0.17
20.80	0.20	0	364.00	0.20	22.60	0.17	0	364.00	0.17
20.85	0.20	0	364.00	0.20	22.65	0.17	0	364.00	0.17
20.90	0.20	0	364.00	0.20	22.70	0.17	0	364.00	0.17
20.95	0.20	0	364.00	0.20	22.75	0.17	0	364.00	0.17
21.00	0.19	0	364.00	0.19	22.80	0.17	0	364.00	0.17
21.05	0.19	0	364.00	0.19	22.85	0.17	0	364.00	0.17
21.10	0.19	0	364.00	0.19	22.90	0.17	0	364.00	0.17
21.15	0.19	0	364.00	0.19	22.95	0.17	0	364.00	0.17
23.00	0.17	0	364.00	0.17					
23.05	0.17	0	364.00	0.17					
23.10	0.16	0	364.00	0.16					
23.15	0.16	0	364.00	0.16					
23.20	0.16	0	364.00	0.16					
23.25	0.16	0	364.00	0.16					
23.30	0.16	0	364.00	0.16					
23.35	0.16	0	364.00	0.16					
23.40	0.16	0	364.00	0.16					
23.45	0.16	0	364.00	0.16					
23.50	0.16	0	364.00	0.16					
23.55	0.16	0	364.00	0.16					
23.60	0.16	0	364.00	0.16					
23.65	0.16	0	364.00	0.16					
23.70	0.16	0	364.00	0.16					
23.75	0.16	0	364.00	0.16					
23.80	0.15	0	364.00	0.15					
23.85	0.15	0	364.00	0.15					
23.90	0.15	0	364.00	0.15					
23.95	0.16	0	364.00	0.16					
24.00	0.17	0	364.00	0.17					

Summary for Pond 4P: UGD

Inflow Area = 3.140 ac, 0.00% Impervious, Inflow Depth > 3.64" for 10-Year event
Inflow = 13.93 cfs @ 12.13 hrs, Volume= 0.953 af
Outflow = 10.82 cfs @ 12.20 hrs, Volume= 0.953 af, Atten= 22%, Lag= 4.1 min
Primary = 10.82 cfs @ 12.20 hrs, Volume= 0.953 af

Routing by Dyn-Stor-Ind method, Time Span= 5.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 366.74' @ 12.20 hrs Surf.Area= 3,992 sf Storage= 5,731 cf

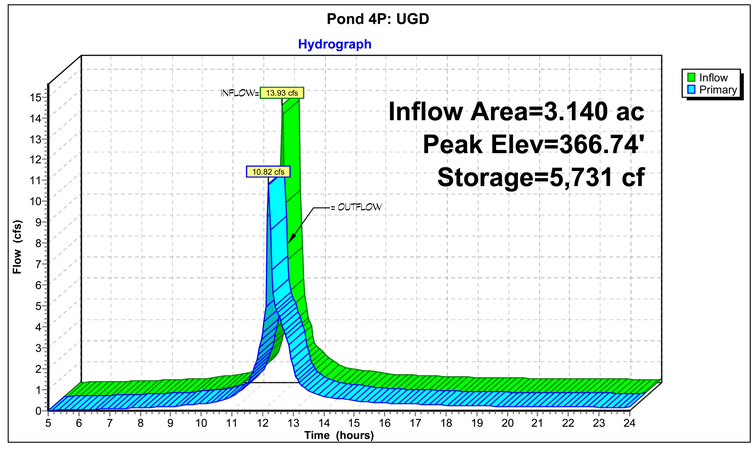
Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 7.4 min (804.9 - 797.5)

Volume	Invert	Avail.Storage	Storage Description
#1A	364.00'	4,415 cf	**36.67'W x 108.88'L x 3.33'H Field A** 13,308 cf Overall - 2,270 cf Embedded = 11,037 cf x 40.0% Voids
#2A	365.00'	2,270 cf	**ADS_StormTech SC-310 +Cap**x 154 Inside #1 Effective Size= 28.9"W x 16.0"H => 2.07 sf x 7.12'L = 14.7 cf Overall Size= 34.0"W x 16.0"H x 7.56'L with 0.44' Overlap 154 Chambers in 11 Rows
		6,685 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	363.70'	**21.0" Round Culvert** L= 10.0' RCP, rounded edge headwall, Ke= 0.100 Inlet / Outlet Invert= 363.70' / 363.60' S= 0.0100 '/' Cc= 0.900 n= 0.013 Concrete pipe, bends & connections, Flow Area= 2.41 sf
#2	Device 1	363.75'	**12.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Device 1	366.00'	**2.5' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)
#4	Device 1	367.00'	**5.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)

Primary OutFlow Max=10.67 cfs @ 12.20 hrs HW=366.72' (Free Discharge)
└**1=Culvert** (Passes 10.67 cfs of 20.23 cfs potential flow)
├**2=Orifice/Grate** (Orifice Controls 5.95 cfs @ 7.57 fps)
├**3=Sharp-Crested Rectangular Weir** (Weir Controls 4.73 cfs @ 2.78 fps)
└**4=Sharp-Crested Rectangular Weir** (Controls 0.00 cfs)



APPROVAL

LDC
4585 DAISY REID AVENUE, SUITE 201 WOODBRIDGE, VIRGINIA 22192
WWW.LDCVA.COM

UGD 10-YR ROUTING

515 MAPLE AVENUE EAST
TOWN OF VIENNA, VIRGINIA

DATE	DESCRIPTION	NO.	DESIGN	DATE
	REVISION		ENGINEER	
	APPROVED			
	REVIEW			

I HEREBY CERTIFY THAT OTHER THAN THE REVISIONS SHOWN HEREON, NO OTHER CHANGES HAVE BEEN MADE.

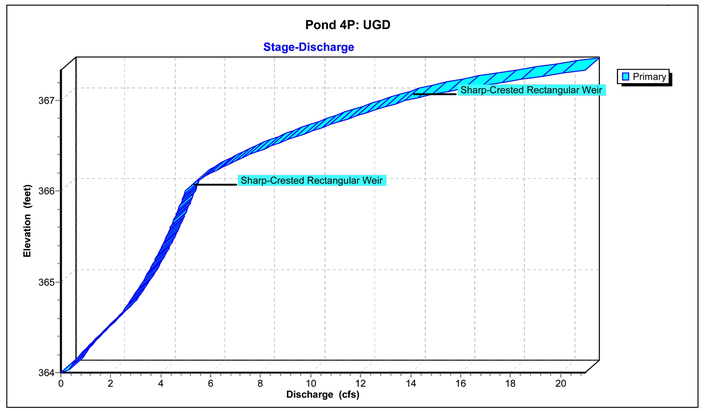
COMMONWEALTH OF VIRGINIA
MATTHEW T. MARSHALL
Lic. No. 1323-B
07/09/25
DATE
LAND SURVEYOR

SCALE: AS SHOWN

SHEET: 25 OF 41
DATE: JULY 2025
DRAFT: ZG/SB CHECK: MTM
FILE NUMBER: 25021-1-1

UGD

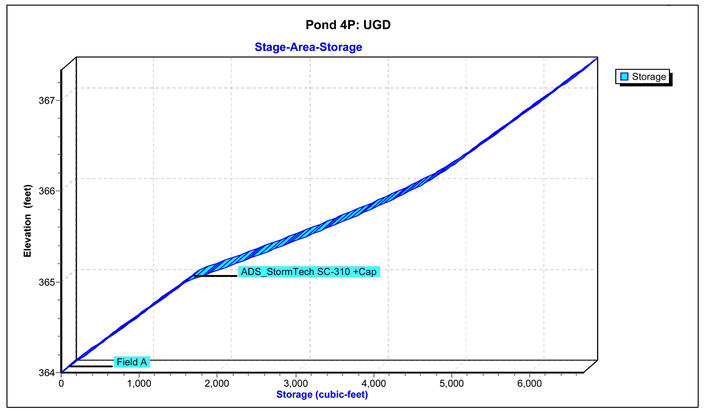
STAGE - DISCHARGE



Stage-Discharge for Pond 4P: UGD

Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)
364.00	0.00	364.36	1.33	364.72	2.61	365.08	3.45	365.44	4.13
364.01	0.28	364.37	1.37	364.73	2.63	365.09	3.47	365.45	4.14
364.02	0.30	364.38	1.41	364.74	2.66	365.10	3.49	365.46	4.16
364.03	0.32	364.39	1.45	364.75	2.67	365.11	3.51	365.47	4.18
364.04	0.35	364.40	1.48	364.76	2.70	365.12	3.53	365.48	4.19
364.05	0.37	364.41	1.52	364.77	2.73	365.13	3.55	365.49	4.21
364.06	0.39	364.42	1.56	364.78	2.75	365.14	3.57	365.50	4.23
364.07	0.42	364.43	1.60	364.79	2.78	365.15	3.59	365.51	4.24
364.08	0.44	364.44	1.63	364.80	2.80	365.16	3.61	365.52	4.26
364.09	0.47	364.45	1.67	364.81	2.83	365.17	3.63	365.53	4.28
364.10	0.49	364.46	1.71	364.82	2.86	365.18	3.65	365.54	4.30
364.11	0.52	364.47	1.75	364.83	2.88	365.19	3.67	365.55	4.31
364.12	0.55	364.48	1.79	364.84	2.90	365.20	3.69	365.56	4.33
364.13	0.57	364.49	1.83	364.85	2.93	365.21	3.71	365.57	4.34
364.14	0.60	364.50	1.86	364.86	2.95	365.22	3.72	365.58	4.36
364.15	0.63	364.51	1.90	364.87	2.98	365.23	3.74	365.59	4.38
364.16	0.66	364.52	1.94	364.88	3.00	365.24	3.76	365.60	4.39
364.17	0.69	364.53	1.98	364.89	3.03	365.25	3.78	365.61	4.41
364.18	0.72	364.54	2.01	364.90	3.05	365.26	3.80	365.62	4.43
364.19	0.75	364.55	2.05	364.91	3.07	365.27	3.82	365.63	4.44
364.20	0.78	364.56	2.09	364.92	3.10	365.28	3.84	365.64	4.46
364.21	0.81	364.57	2.13	364.93	3.12	365.29	3.86	365.65	4.47
364.22	0.85	364.58	2.16	364.94	3.14	365.30	3.88	365.66	4.49
364.23	0.88	364.59	2.20	364.95	3.16	365.31	3.89	365.67	4.51
364.24	0.91	364.60	2.23	364.96	3.19	365.32	3.91	365.68	4.52
364.25	0.95	364.61	2.27	364.97	3.21	365.33	3.93	365.69	4.54
364.26	0.98	364.62	2.30	364.98	3.23	365.34	3.95	365.70	4.55
364.27	1.01	364.63	2.34	364.99	3.25	365.35	3.97	365.71	4.57
364.28	1.05	364.64	2.37	365.00	3.28	365.36	3.98	365.72	4.59
364.29	1.08	364.65	2.40	365.01	3.30	365.37	4.00	365.73	4.60
364.30	1.12	364.66	2.44	365.02	3.32	365.38	4.02	365.74	4.62
364.31	1.15	364.67	2.47	365.03	3.34	365.39	4.04	365.75	4.63
364.32	1.19	364.68	2.50	365.04	3.36	365.40	4.06	365.76	4.65
364.33	1.22	364.69	2.53	365.05	3.38	365.41	4.07	365.77	4.66
364.34	1.26	364.70	2.56	365.06	3.40	365.42	4.09	365.78	4.68
364.35	1.30	364.71	2.58	365.07	3.42	365.43	4.11	365.79	4.69
365.80	4.71	366.16	5.74	366.52	8.64	366.88	12.41	367.24	18.61
365.81	4.72	366.17	5.81	366.53	8.73	366.89	12.52	367.25	18.86
365.82	4.74	366.18	5.87	366.54	8.83	366.90	12.63	367.26	19.10
365.83	4.75	366.19	5.93	366.55	8.92	366.91	12.75	367.27	19.35
365.84	4.77	366.20	6.00	366.56	9.02	366.92	12.86	367.28	19.60
365.85	4.78	366.21	6.07	366.57	9.12	366.93	12.98	367.29	19.86
365.86	4.80	366.22	6.14	366.58	9.22	366.94	13.09	367.30	20.12
365.87	4.81	366.23	6.21	366.59	9.31	366.95	13.21	367.31	20.37
365.88	4.83	366.24	6.28	366.60	9.41	366.96	13.32	367.32	20.64
365.89	4.84	366.25	6.35	366.61	9.51	366.97	13.44	367.33	**20.90**
365.90	4.86	366.26	6.42	366.62	9.61	366.98	13.56		
365.91	4.87	366.27	6.50	366.63	9.72	366.99	13.67		
365.92	4.89	366.28	6.57	366.64	9.82	367.00	13.79		
365.93	4.90	366.29	6.65	366.65	9.92	367.01	13.93		
365.94	4.92	366.30	6.73	366.66	10.02	367.02	14.07		
365.95	4.93	366.31	6.80	366.67	10.13	367.03	14.23		
365.96	4.95	366.32	6.88	366.68	10.23	367.04	14.40		
365.97	4.96	366.33	6.96	366.69	10.33	367.05	14.57		
365.98	4.97	366.34	7.04	366.70	10.44	367.06	14.74		
365.99	4.99	366.35	7.13	366.71	10.54	367.07	14.93		
366.00	5.00	366.36	7.21	366.72	10.65	367.08	15.11		
366.01	5.03	366.37	7.29	366.73	10.76	367.09	15.30		
366.02	5.05	366.38	7.38	366.74	10.86	367.10	15.50		
366.03	5.09	366.39	7.46	366.75	10.97	367.11	15.70		
366.04	5.12	366.40	7.55	366.76	11.08	367.12	15.90		
366.05	5.16	366.41	7.63	366.77	11.19	367.13	16.11		
366.06	5.21	366.42	7.72	366.78	11.30	367.14	16.32		
366.07	5.25	366.43	7.81	366.79	11.40	367.15	16.54		
366.08	5.30	366.44	7.90	366.80	11.51	367.16	16.76		
366.09	5.35	366.45	7.99	366.81	11.62	367.17	16.98		
366.10	5.40	366.46	8.08	366.82	11.73	367.18	17.20		
366.11	5.45	366.47	8.17	366.83	11.85	367.19	17.43		
366.12	5.51	366.48	8.26	366.84	11.96	367.20	17.66		
366.13	5.56	366.49	8.35	366.85	12.07	367.21	17.89		
366.14	5.62	366.50	8.45	366.86	12.18	367.22	18.13		
366.15	5.68	366.51	8.54	366.87	12.29	367.23	18.37		

STAGE - AREA - STORAGE



Stage-Area-Storage for Pond 4P: UGD

Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)
364.00	0	364.36	575	364.72	1,150	365.08	1,851	365.44	2,959
364.01	16	364.37	591	364.73	1,166	365.09	1,883	365.45	2,988
364.02	32	364.38	607	364.74	1,182	365.10	1,914	365.46	3,018
364.03	48	364.39	623	364.75	1,198	365.11	1,946	365.47	3,047
364.04	64	364.40	639	364.76	1,214	365.12	1,977	365.48	3,076
364.05	80	364.41	655	364.77	1,230	365.13	2,009	365.49	3,106
364.06	96	364.42	671	364.78	1,246	365.14	2,040	365.50	3,135
364.07	112	364.43	687	364.79	1,262	365.15	2,072	365.51	3,164
364.08	128	364.44	703	364.80	1,278	365.16	2,103	365.52	3,193
364.09	144	364.45	719	364.81	1,293	365.17	2,135	365.53	3,222
364.10	160	364.46	735	364.82	1,309	365.18	2,166	365.54	3,250
364.11	176	364.47	751	364.83	1,325	365.19	2,197	365.55	3,279
364.12	192	364.48	767	364.84	1,341	365.20	2,228	365.56	3,308
364.13	208	364.49	782	364.85	1,357	365.21	2,259	365.57	3,336
364.14	224	364.50	798	364.86	1,373	365.22	2,290	365.58	3,365
364.15	240	364.51	814	364.87	1,389	365.23	2,321	365.59	3,393
364.16	256	364.52	830	364.88	1,405	365.24	2,352	365.60	3,422
364.17	271	364.53	846	364.89	1,421	365.25	2,383	365.61	3,450
364.18	287	364.54	862	364.90	1,437	365.26	2,414	365.62	3,478
364.19	303	364.55	878	364.91	1,453	365.27	2,445	365.63	3,506
364.20	319	364.56	894	364.92	1,469	365.28	2,476	365.64	3,534
364.21	335	364.57	910	364.93	1,485	365.29	2,506	365.65	3,562
364.22	351	364.58	926	364.94	1,501	365.30	2,537	365.66	3,590
364.23	367	364.59	942	364.95	1,517	365.31	2,568	365.67	3,618
364.24	383	364.60	958	364.96	1,533	365.32	2,598	365.68	3,645
364.25	399	364.61	974	364.97	1,549	365.33	2,628	365.69	3,673
364.26	415	364.62	990	364.98	1,565	365.34	2,659	365.70	3,700
364.27	431	364.63	1,006	364.99	1,581	365.35	2,689	365.71	3,727
364.28	447	364.64	1,022	365.00	1,597	365.36	2,719	365.72	3,754
364.29	463	364.65	1,038	365.01	1,629	365.37	2,749	365.73	3,781
364.30	479	364.66	1,054	365.02	1,661	365.38	2,780	365.74	3,808
364.31	495	364.67	1,070	365.03	1,692	365.39	2,810	365.75	3,835
364.32	511	364.68	1,086	365.04	1,724	365.40	2,840	365.76	3,862
364.33	527	364.69	1,102	365.05	1,756	365.41	2,869	365.77	3,888
364.34	543	364.70	1,118	365.06	1,788	365.42	2,899	365.78	3,915
364.35	559	364.71	1,134	365.07	1,819	365.43	2,929	365.79	3,941
365.80	3,967	366.16	4,790	366.52	5,386	366.88	5,961	367.24	6,536
365.81	3,993	366.17	4,808	366.53	5,402	366.89	5,977	367.25	6,552
365.82	4,019	366.18	4,826	366.54	5,418	366.90	5,993	367.26	6,568
365.83	4,045	366.19	4,845	366.55	5,434	366.91	6,009	367.27	6,584
365.84	4,071	366.20	4,862	366.56	5,450	366.92	6,025	367.28	6,600
365.85	4,096	366.21	4,880	366.57	5,466	366.93	6,041	367.29	6,616
365.86	4,122	366.22	4,898	366.58	5,482	366.94	6,057	367.30	6,632
365.87	4,147	366.23	4,915	366.59	5,498	366.95	6,073	367.31	6,648
365.88	4,172	366.24	4,933	366.60	5,514	366.96	6,089	367.32	6,664
365.89	4,197	366.25	4,950	366.61	5,530	366.97	6,105	367.33	**6,680**
365.90	4,222	366.26	4,967	366.62	5,546	366.98	6,121		
365.91	4,246	366.27	4,984	366.63	5,562	366.99	6,137		
365.92	4,271	366.28	5,001	366.64	5,578	367.00	6,153		
365.93	4,295	366.29	5,017	366.65	5,594	367.01	6,169		
365.94	4,319	366.30	5,034	366.66	5,610	367.02	6,185		
365.95	4,343	366.31	5,050	366.67	5,626	367.03	6,201		
365.96	4,367	366.32	5,067	366.68	5,642	367.04	6,217		
365.97	4,390	366.33	5,083	366.69	5,658	367.05	6,233		
365.98	4,414	366.34	5,099	366.70	5,674	367.06	6,249		
365.99	4,437	366.35	5,115	366.71	5,690	367.07	6,265		
366.00	4,460	366.36	5,131	366.72	5,706	367.08	6,281		
366.01	4,483	366.37	5,147	366.73	5,722	367.09	6,297		
366.02	4,505	366.38	5,163	366.74	5,738	367.10	6,313		
366.03	4,527	366.39	5,179	366.75	5,754	367.11	6,329		
366.04	4,549	366.40	5,195	366.76	5,770	367.12	6,345		
366.05	4,571	366.41	5,211	366.77	5,786	367.13	6,360		
366.06	4,592	366.42	5,227	366.78	5,802	367.14	6,376		
366.07	4,613	366.43	5,243	366.79	5,818	367.15	6,392		
366.08	4,634	366.44	5,259	366.80	5,833	367.16	6,408		
366.09	4,654	366.45	5,275	366.81	5,849	367.17	6,424		
366.10	4,674	366.46	5,291	366.82	5,865	367.18	6,440		
366.11	4,694	366.47	5,307	366.83	5,881	367.19	6,456		
366.12	4,714	366.48	5,322	366.84	5,897	367.20	6,472		
366.13	4,733	366.49	5,338	366.85	5,913	367.21	6,488		
366.14	4,752	366.50	5,354	366.86	5,929	367.22	6,504		
366.15	4,771	366.51	5,370	366.87	5,945	367.23	6,520		

APPROVAL

LDC
4585 DAISY REID AVENUE, SUITE 201 WOODBRIDGE, VIRGINIA 22192
WWW.LDCVA.COM

515 MAPLE AVENUE EAST

TOWN OF VIENNA, VIRGINIA

UGD STAGE-DIS. & STAGE-STORAGE TABLES

	DATE	APPROVED	REVIEW	DESCRIPTION	NO.	DESIGN	DATE

REVISION APPROVED BY:

ENGINEER

I HEREBY CERTIFY THAT OTHER THAN THE REVISIONS SHOWN HEREON, NO OTHER CHANGES HAVE BEEN MADE.

COMMONWEALTH OF VIRGINIA
MATTHEW T. MARSHALL
Lic. No. 1325-B
07/02/25
DATE
LAND SURVEYOR

SCALE: AS SHOWN

SHEET: 26 OF 41

DATE: JULY 2025

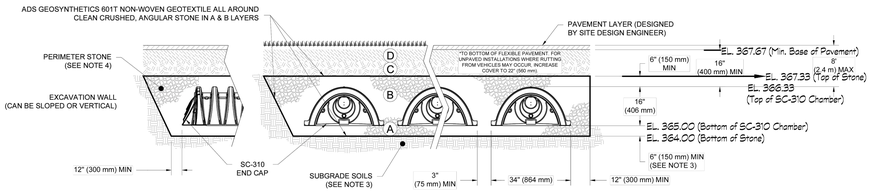
DRAFT: ZG/BB | CHECK: MTM

FILE NUMBER: 25021-1-1

ACCEPTABLE FILL MATERIALS: STORMTECH SC-310 CHAMBER SYSTEMS

	MATERIAL LOCATION	DESCRIPTION	AASHTO MATERIAL CLASSIFICATIONS	COMPACTION / DENSITY REQUIREMENT
D	**FINAL FILL:** FILL MATERIAL FOR LAYER 'D' STARTS FROM THE TOP OF THE 'C' LAYER TO THE BOTTOM OF FLEXIBLE PAVEMENT OR UNPAVED FINISHED GRADE ABOVE. NOTE THAT PAVEMENT SUBBASE MAY BE PART OF THE 'D' LAYER.	ANY SOIL/ROCK MATERIALS, NATIVE SOILS, OR PER ENGINEER'S PLANS. CHECK PLANS FOR PAVEMENT SUBGRADE REQUIREMENTS.	3.25	PREPARE PER SITE DESIGN ENGINEER'S PLANS. PAVED INSTALLATIONS MAY HAVE STRINGENT MATERIAL AND PREPARATION REQUIREMENTS.
C	**INITIAL FILL:** FILL MATERIAL FOR LAYER 'C' STARTS FROM THE TOP OF THE EMBEDMENT STONE ('B' LAYER) TO 16" (400 mm) ABOVE THE TOP OF THE CHAMBER. NOTE THAT PAVEMENT SUBBASE MAY BE A PART OF THE 'C' LAYER.	GRANULAR WELL-GRADED SOIL/AGGREGATE MIXTURES, <35% FINES OR PROCESSED AGGREGATE. MOST PAVEMENT SUBBASE MATERIALS CAN BE USED IN LIEU OF THIS LAYER.	AASHTO M145[1] A-1, A-2-4, A-3 OR AASHTO M43[1] 3, 357, 4, 467, 5, 56, 57, 6, 67, 68, 7, 78, 8, 89, 9, 10	BEGIN COMPACTIONS AFTER 12" (300 mm) OF MATERIAL OVER THE CHAMBERS IS REACHED. COMPACT ADDITIONAL LAYERS IN 6" (150 mm) MAX LIFTS TO A MIN. 95% PROCTOR DENSITY FOR WELL GRADED MATERIAL AND 95% RELATIVE DENSITY FOR PROCESSED AGGREGATE MATERIALS. ROLLER GROSS VEHICLE WEIGHT NOT TO EXCEED 12,000 lbs (53 kN). DYNAMIC FORCE NOT TO EXCEED 20,000 lbs (89 kN).
B	**EMBEDMENT STONE:** FILL SURROUNDING THE CHAMBERS FROM THE FOUNDATION STONE (A' LAYER) TO THE 'C' LAYER ABOVE.	CLEAN, CRUSHED, ANGULAR STONE OR RECYCLED CONCRETE[5]	AASHTO M43[1] 3, 357, 4, 467, 5, 56, 57	NO COMPACTION REQUIRED.
A	**FOUNDATION STONE:** FILL BELOW CHAMBERS FROM THE SUBGRADE UP TO THE FOOT (BOTTOM) OF THE CHAMBER.	CLEAN, CRUSHED, ANGULAR STONE OR RECYCLED CONCRETE[5]	AASHTO M43[1] 3, 357, 4, 467, 5, 56, 57	PLATE COMPACT OR ROLL TO ACHIEVE A FLAT SURFACE.[2,3]

PLEASE NOTE:
1. THE LISTED AASHTO DESIGNATIONS ARE FOR GRADATIONS ONLY. THE STONE MUST ALSO BE CLEAN, CRUSHED, ANGULAR. FOR EXAMPLE, A SPECIFICATION FOR #4 STONE WOULD STATE: "CLEAN, CRUSHED, ANGULAR NO. 4 (AASHTO M43) STONE".
2. STORMTECH COMPACTION REQUIREMENTS ARE MET FOR 'A' LOCATION MATERIALS WHEN PLACED AND COMPACTED IN 6" (150 mm) (MAX) LIFTS USING TWO FULL COVERAGES WITH A VIBRATORY COMPACTOR.
3. WHERE INFILTRATION SURFACES MAY BE COMPROMISED BY COMPACTION, FOR STANDARD DESIGN LOAD CONDITIONS, A FLAT SURFACE MAY BE ACHIEVED BY RAKING OR DRAGGING WITHOUT COMPACTION EQUIPMENT. FOR SPECIAL LOAD DESIGNS, CONTACT STORMTECH FOR COMPACTION REQUIREMENTS.
4. ONCE LAYER 'C' IS PLACED, ANY SOIL/MATERIAL CAN BE PLACED IN LAYER 'D' UP TO THE FINISHED GRADE. MOST PAVEMENT SUBBASE SOILS CAN BE USED TO REPLACE THE MATERIAL REQUIREMENTS OF LAYER 'C' OR 'D' AT THE SITE DESIGN ENGINEER'S DISCRETION.
5. WHERE RECYCLED CONCRETE AGGREGATE IS USED IN LAYERS 'A' OR 'B' THE MATERIAL SHOULD ALSO MEET THE ACCEPTABILITY CRITERIA OUTLINED IN TECHNICAL NOTE 6.20 "RECYCLED CONCRETE STRUCTURAL BACKFILL".



NOTES:

1. CHAMBERS SHALL MEET THE REQUIREMENTS OF ASTM F2922 (POLYETHYLENE) OR ASTM F2418 (POLYPROPYLENE), "STANDARD SPECIFICATION FOR CORRUGATED WALL STORMWATER COLLECTION CHAMBERS".
2. SC-310 CHAMBERS SHALL BE DESIGNED IN ACCORDANCE WITH ASTM F2787 "STANDARD PRACTICE FOR STRUCTURAL DESIGN OF THERMOPLASTIC CORRUGATED WALL STORMWATER COLLECTION CHAMBERS".
3. THE SITE DESIGN ENGINEER IS RESPONSIBLE FOR ASSESSING THE BEARING RESISTANCE (ALLOWABLE BEARING CAPACITY) OF THE SUBGRADE SOILS AND THE DEPTH OF FOUNDATION STONE WITH CONSIDERATION FOR THE RANGE OF EXPECTED SOIL MOISTURE CONDITIONS. REFERENCE STORMTECH DESIGN MANUAL FOR BEARING CAPACITY GUIDANCE.
4. PERIMETER STONE MUST BE EXTENDED HORIZONTALLY TO THE EXCAVATION WALL FOR BOTH VERTICAL AND SLOPED EXCAVATION WALLS.
5. REQUIREMENTS FOR HANDLING AND INSTALLATION:
   - TO MAINTAIN THE WIDTH OF CHAMBERS DURING SHIPPING AND HANDLING, CHAMBERS SHALL HAVE INTEGRAL, INTERLOCKING STACKING LUGS.
   - TO ENSURE A SECURE JOINT DURING INSTALLATION AND BACKFILL, THE HEIGHT OF THE CHAMBER JOINT SHALL NOT BE LESS THAN 2".
   - TO ENSURE THE INTEGRITY OF THE ARCH SHAPE DURING INSTALLATION, a) THE ARCH STIFFNESS CONSTANT AS DEFINED IN SECTION 6.2.8 OF ASTM F2922 SHALL BE GREATER THAN OR EQUAL TO 325 LBS/FT/%, AND b) TO RESIST CHAMBER DEFORMATION DURING INSTALLATION AT ELEVATED TEMPERATURES (ABOVE 73° F / 23° C), CHAMBERS SHALL BE PRODUCED FROM REFLECTIVE GOLD OR YELLOW COLORS.

STANDARD CROSS SECTION
SC-310 CHAMBER
STORMTECH

DATE: 02/17/2025 DRAWN: SMW
PROJECT #: 72-1320 CHECKED: JLM

DATE	DRAWN	CHKD	DESCRIPTION

THIS DRAWING HAS BEEN PREPARED BASED ON INFORMATION PROVIDED TO ADS AND DOES NOT CONSTITUTE A CERTIFICATION BY ADS OF THE DESIGN, SUITABILITY OR PERFORMANCE OF THE PRODUCTS DEPICTED HEREIN. ALL ASSOCIATED DESIGNS ARE THE RESPONSIBILITY OF THE ENGINEER OF RECORD FOR THE PROJECT. PRIOR APPROVAL SHALL BE OBTAINED FROM ADS FOR ANY CHANGES TO THE DESIGNS AND/OR CONSTRUCTION. IF IN THE ULTIMATE DETERMINATION BY ADS OF THE PRODUCTS DEPICTED HEREIN, ADS'S LIABILITY IS LIMITED TO THE REPLACEMENT OF THE DEFECTIVE PRODUCTS. THE DRAWING IS SUBJECT TO ADS'S STANDARD TERMS AND CONDITIONS OF SALE AND LIMITED WARRANTY, WHICH GOVERN ALL PRODUCTS SOLD BY ADS, INCLUDING BUT NOT ALL APPLICABLE LIMITATIONS ON WARRANTIES AND REMEDIES.

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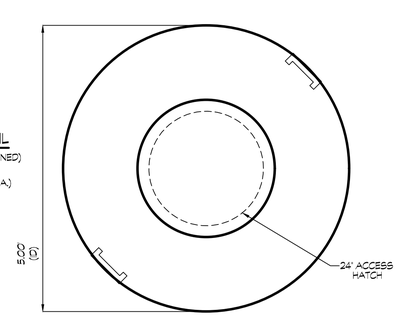
ADS
4640 TRUEMAN BLVD
HILLIARD, OH 43026

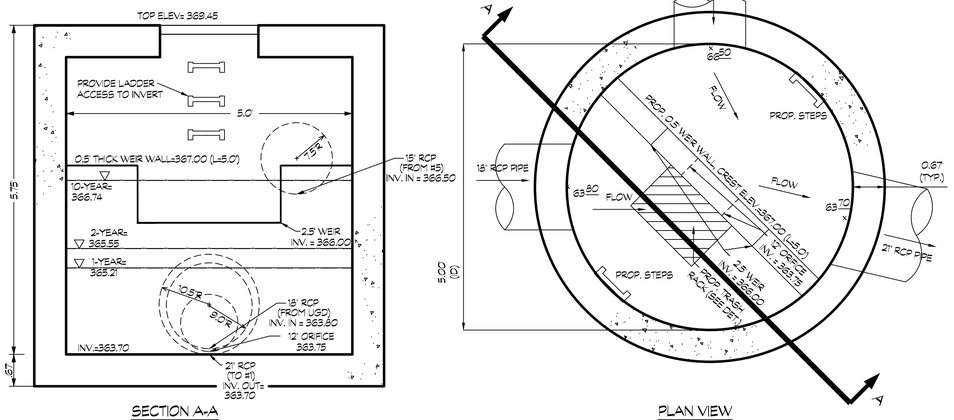
SHEET 1 OF 1

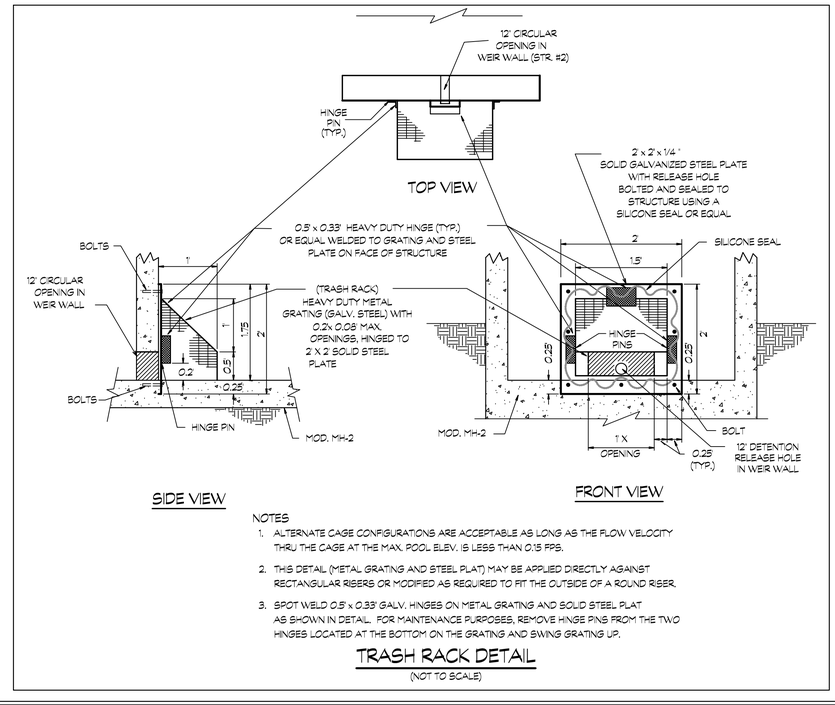
PRECAST
STRUCTURE #2 DETAIL
(PRIVATELY OWNED AND MAINTAINED)
SCALE: N.T.S
PROP. MANHOLE (MOD. MH-2, 5' DIA.)



TOP VIEW

NOTE: SHOP DRAWINGS SHALL BE SUBMITTED BY OTHERS, AND APPROVED, BY STRUCTURAL AND CIVIL ENGINEER OF RECORD PRIOR TO THE CONSTRUCTION OF THE CONTROL STRUCTURE.





NOTES
1. ALTERNATE CAGE CONFIGURATIONS ARE ACCEPTABLE AS LONG AS THE FLOW VELOCITY THRU THE CAGE AT THE MAX. POOL ELEV. IS LESS THAN 0.15 FPS.
2. THIS DETAIL (METAL GRATING AND STEEL PLAT) MAY BE APPLIED DIRECTLY AGAINST RECTANGULAR RISERS OR MODIFED AS REQUIRED TO FIT THE OUTSIDE OF A ROUND RISER.
3. SPOT WELD 0.5' x 0.33' GALV. HINGES ON METAL GRATING AND SOLID STEEL PLAT AS SHOWN IN DETAIL. FOR MAINTENANCE PURPOSES, REMOVE HINGE PINS FROM THE TWO HINGES LOCATED AT THE BOTTOM ON THE GRATING AND SWING GRATING UP.

TRASH RACK DETAIL
(NOT TO SCALE)

APPROVAL

LDC
4585 DAISY REID AVENUE, SUITE 201 WOODBRIDGE, VIRGINIA 22192
WWW.LDCVA.COM

SWM DETAILS 1

515 MAPLE AVENUE EAST
TOWN OF VIENNA, VIRGINIA

DATE	DESCRIPTION	NO.	DESIGN	DATE
	REVISION APPROVED BY:		ENGINEER	
APPROVED				
REVIEW BY				

I HEREBY CERTIFY THAT OTHER THAN THE REVISIONS SHOWN HEREON, NO OTHER CHANGES HAVE BEEN MADE.

COMMONWEALTH OF VIRGINIA
MATTHEW T. MAIRSHALL
Lic. No. 1323-B
07/09/25
DATE
LAND SURVEYOR

SCALE: AS SHOWN

SHEET: 27 OF 41
DATE: JULY 2025
DRAFT: ZG/BB | CHECK: MTM
FILE NUMBER: 25021-1-1

p:\FY 2025\25021-1-1 maple avenue east - SI\ENG\SITEPLAN\25021-1-1-SWM DETAILS.dwg
SBUTLER on 1/13/2025

Advanced Drainage Systems, Inc.

ADS SiteAssist
FOR STORMTECH INSTALLATION INSTRUCTIONS VISIT OUR WEBSITE

SC-310 STORMTECH CHAMBER SPECIFICATIONS

1. CHAMBERS SHALL BE STORMTECH SC-310.
2. CHAMBERS SHALL BE ARCH-SHAPED AND SHALL BE MANUFACTURED FROM VIRGIN, IMPACT-MODIFIED POLYPROPYLENE OR POLYETHYLENE COPOLYMERS.
3. CHAMBERS SHALL MEET THE REQUIREMENTS OF ASTM F2922 (POLETHYLENE) OR ASTM F2418 (POLYPROPYLENE), "STANDARD SPECIFICATION FOR CORRUGATED WALL STORMWATER COLLECTION CHAMBERS".
4. CHAMBER ROWS SHALL PROVIDE CONTINUOUS, UNOBSTRUCTED INTERNAL SPACE WITH NO INTERNAL SUPPORTS THAT WOULD IMPEDE FLOW OR LIMIT ACCESS FOR INSPECTION.
5. THE STRUCTURAL DESIGN OF THE CHAMBERS, THE STRUCTURAL BACKFILL, AND THE INSTALLATION REQUIREMENTS SHALL ENSURE THAT THE LOAD FACTORS SPECIFIED IN THE AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS, SECTION 12.12, ARE MET FOR: 1) LONG-DURATION DEAD LOADS AND 2) SHORT-DURATION LIVE LOADS, BASED ON THE AASHTO DESIGN TRUCK WITH CONSIDERATION FOR IMPACT AND MULTIPLE VEHICLE PRESENCES.
6. CHAMBERS SHALL BE DESIGNED, TESTED AND ALLOWABLE LOAD CONFIGURATIONS DETERMINED IN ACCORDANCE WITH ASTM F2787, "STANDARD PRACTICE FOR STRUCTURAL DESIGN OF THERMOPLASTIC CORRUGATED WALL STORMWATER COLLECTION CHAMBERS". LOAD CONFIGURATIONS SHALL INCLUDE: 1) INSTANTANEOUS (<1 MIN) AASHTO DESIGN TRUCK LIVE LOAD ON MINIMUM COVER 2) MAXIMUM PERMANENT (75-YR) COVER LOAD AND 3) ALLOWABLE COVER WITH PARKED (1-WEEK) AASHTO DESIGN TRUCK.
7. REQUIREMENTS FOR HANDLING AND INSTALLATION:
   - TO MAINTAIN THE WIDTH OF CHAMBERS DURING SHIPPING AND HANDLING, CHAMBERS SHALL HAVE INTEGRAL, INTERLOCKING STACKING LUGS.
   - TO ENSURE A SECURE JOINT DURING INSTALLATION AND BACKFILL, THE HEIGHT OF THE CHAMBER JOINT SHALL NOT BE LESS THAN 2".
   - TO ENSURE THE INTEGRITY OF THE ARCH SHAPE DURING INSTALLATION, a) THE ARCH STIFFNESS CONSTANT SHALL BE GREATER THAN OR EQUAL TO 325 LBS/FT/% . THE ASC IS DEFINED IN SECTION 6.2.8 OF ASTM F2418. AND b) TO RESIST CHAMBER DEFORMATION DURING INSTALLATION AT ELEVATED TEMPERATURES (ABOVE 73° F / 23° C), CHAMBERS SHALL BE PRODUCED FROM REFLECTIVE GOLD OR YELLOW COLORS.
8. ONLY CHAMBERS THAT ARE APPROVED BY THE SITE DESIGN ENGINEER WILL BE ALLOWED. UPON REQUEST BY THE SITE DESIGN ENGINEER OR OWNER, THE CHAMBER MANUFACTURER SHALL SUBMIT A STRUCTURAL EVALUATION FOR APPROVAL BEFORE DELIVERING CHAMBERS TO THE PROJECT SITE AS FOLLOWS:
   - THE STRUCTURAL EVALUATION SHALL BE SEALED BY A REGISTERED PROFESSIONAL ENGINEER.
   - THE STRUCTURAL EVALUATION SHALL DEMONSTRATE THAT THE SAFETY FACTORS ARE GREATER THAN OR EQUAL TO 1.95 FOR DEAD LOAD AND 1.75 FOR LIVE LOAD, THE MINIMUM REQUIRED BY ASTM F2787 AND BY SECTIONS 3 AND 12.12 OF THE AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS FOR THERMOPLASTIC PIPE.
   - THE TEST DERIVED CREEP MODULUS AS SPECIFIED IN ASTM F2922 SHALL BE USED FOR PERMANENT DEAD LOAD DESIGN EXCEPT THAT IT SHALL BE THE 75-YEAR MODULUS USED FOR DESIGN.
9. CHAMBERS AND END CAPS SHALL BE PRODUCED AT AN ISO 9001 CERTIFIED MANUFACTURING FACILITY.
10. MANIFOLD SIZE TO BE DETERMINED BY SITE DESIGN ENGINEER. SEE TECHNICAL NOTE 6.32 FOR MANIFOLD SIZING GUIDANCE. DUE TO THE ADAPTATION OF THIS CHAMBER SYSTEM TO SPECIFIC SITE AND DESIGN CONSTRAINTS, IT MAY BE NECESSARY TO CUT AND COUPLE ADDITIONAL PIPE TO STANDARD MANIFOLD COMPONENTS IN THE FIELD.
11. ADS DOES NOT DESIGN OR PROVIDE MEMBRANE LINER SYSTEMS. TO MINIMIZE THE LEAKAGE POTENTIAL OF LINER SYSTEMS, THE MEMBRANE LINER SYSTEM SHOULD BE DESIGNED BY A KNOWLEDGEABLE GEOTEXTILE PROFESSIONAL AND INSTALLED BY A QUALIFIED CONTRACTOR.

IMPORTANT - NOTES FOR THE BIDDING AND INSTALLATION OF THE SC-310 SYSTEM

1. STORMTECH SC-310 CHAMBERS SHALL NOT BE INSTALLED UNTIL THE MANUFACTURER'S REPRESENTATIVE HAS COMPLETED A PRE-CONSTRUCTION MEETING WITH THE INSTALLERS.
2. STORMTECH SC-310 CHAMBERS SHALL BE INSTALLED IN ACCORDANCE WITH THE "STORMTECH SC-310/SC-740/SC-800/DC-780 CONSTRUCTION GUIDE".
3. CHAMBERS ARE NOT TO BE BACKFILLED WITH A DOZER OR AN EXCAVATOR SITUATED OVER THE CHAMBERS. STORMTECH RECOMMENDS 3 BACKFILL METHODS:
   - STONE/SHOOTER LOCATED OFF THE CHAMBER BED.
   - BACKFILL AS ROWS ARE BUILT USING AN EXCAVATOR ON THE FOUNDATION STONE OR SUBGRADE.
   - BACKFILL FROM OUTSIDE THE EXCAVATION USING A LONG BOOM HOE OR EXCAVATOR.
4. THE FOUNDATION STONE SHALL BE LEVELED AND COMPACTED PRIOR TO PLACING CHAMBERS.
5. JOINTS BETWEEN CHAMBERS SHALL BE PROPERLY SEATED PRIOR TO PLACING STONE.
6. MAINTAIN MINIMUM - 3" (75 mm) SPACING BETWEEN THE CHAMBER ROWS.
7. EMBEDMENT STONE SURROUNDING CHAMBERS MUST BE A CLEAN, CRUSHED, ANGULAR STONE OR RECYCLED CONCRETE; AASHTO M43 #3, 357, 4, 467, 5, 56, OR 57.
8. THE CONTRACTOR MUST REPORT ANY DISCREPANCIES WITH CHAMBER FOUNDATION MATERIALS BEARING CAPACITIES TO THE SITE DESIGN ENGINEER.
9. ADS RECOMMENDS THE USE OF "FLEXSTORM CATCH IT" INSERTS DURING CONSTRUCTION FOR ALL INLETS TO PROTECT THE SUBSURFACE STORMWATER MANAGEMENT SYSTEM FROM CONSTRUCTION SITE RUNOFF.

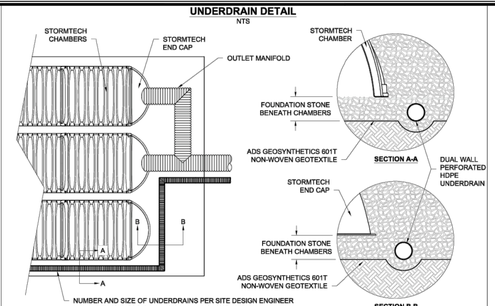
NOTES FOR CONSTRUCTION EQUIPMENT

1. STORMTECH SC-310 CHAMBERS SHALL BE INSTALLED IN ACCORDANCE WITH THE "STORMTECH SC-310/SC-740/SC-800/DC-780 CONSTRUCTION GUIDE".
2. THE USE OF CONSTRUCTION EQUIPMENT OVER SC-310 & SC-740 CHAMBERS IS LIMITED:
   - NO EQUIPMENT IS ALLOWED ON BARE CHAMBERS.
   - NO RUBBER TIRED LOADERS, DUMP TRUCKS, OR EXCAVATORS ARE ALLOWED UNTIL PROPER FILL DEPTHS ARE REACHED IN ACCORDANCE WITH THE "STORMTECH SC-310/SC-740/SC-800/DC-780 CONSTRUCTION GUIDE".
   - WEIGHT LIMITS FOR CONSTRUCTION EQUIPMENT CAN BE FOUND IN THE "STORMTECH SC-310/SC-740/SC-800/DC-780 CONSTRUCTION GUIDE".
3. FULL 36" (900 mm) OF STABILIZED COVER MATERIALS OVER THE CHAMBERS IS REQUIRED FOR DUMP TRUCK TRAVEL OR DUMPING.

USE OF A DOZER TO PUSH EMBEDMENT STONE BETWEEN THE ROWS OF CHAMBERS MAY CAUSE DAMAGE TO THE CHAMBERS AND IS NOT AN ACCEPTABLE BACKFILL METHOD. ANY CHAMBERS DAMAGED BY THE "DUMP AND PUSH" METHOD ARE NOT COVERED UNDER THE STORMTECH STANDARD WARRANTY.

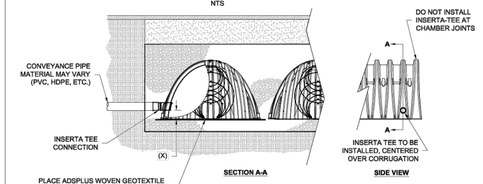
CONTACT STORMTECH AT 1-800-821-6710 WITH ANY QUESTIONS ON INSTALLATION REQUIREMENTS OR WEIGHT LIMITS FOR CONSTRUCTION EQUIPMENT.

UNDERDRAIN DETAIL
NTS



5 UNDERDRAIN DETAIL

INSERTA TEE DETAIL
NTS



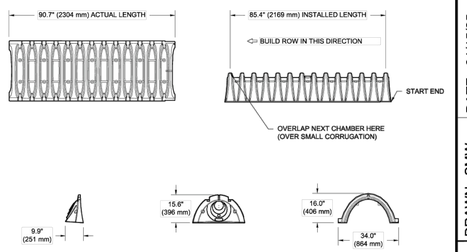
NOTES:
- PART NUMBERS WILL VARY BASED ON INLET PIPE MATERIALS. CONTACT STORMTECH FOR MORE INFORMATION.
- CONTACT ADS ENGINEERING SERVICES IF INSERTA TEE INLET MUST BE RAISED AS NOT ALL INVERTS ARE POSSIBLE.

CHAMBER	MAX DIAMETER OF INSERTA TEE	HEIGHT FROM BASE OF CHAMBER (X)
SC-310	6" (150 mm)	4" (100 mm)
SC-740	10" (250 mm)	4" (100 mm)
SC-800	10" (250 mm)	4" (100 mm)
DC-780	10" (250 mm)	4" (100 mm)
MC-3500	12" (300 mm)	6" (150 mm)
MC-4500	12" (300 mm)	8" (200 mm)
MC-7200	12" (300 mm)	8" (200 mm)

INSERTA TEE FITTINGS AVAILABLE FOR SDR 26, SDR 35, SCH 40 IPS GASKETED & SOLVENT WELD, N-12, HP STORM, C-900 OR DUCTILE IRON

6 INSERTA-TEE SIDE INLET DETAIL

SC-310 TECHNICAL SPECIFICATION
NTS



NOMINAL CHAMBER SPECIFICATIONS

SIZE (W X H X INSTALLED LENGTH)	34.0" X 16.0" X 85.4"	(864 mm X 406 mm X 2169 mm)
CHAMBER STORAGE	14.7 CUBIC FEET	(0.42 m³)
MINIMUM INSTALLED STORAGE*	29.34 CUBIC FEET	(0.83 m³)
WEIGHT	35.0 lbs.	(16.8 kg)

*ASSUMES 6" (150 mm) ABOVE AND BELOW CHAMBER; 3" (75 mm) BETWEEN CHAMBERS

PART #	STUB	B	C
SC310EPE06TPC	6" (150 mm)	5.8" (147 mm)	---
SC310EPE06BPC		---	0.5" (13 mm)
SC310EPE08TPC	8" (200 mm)	3.5" (89 mm)	---
SC310EPE08BPC		---	0.6" (15 mm)
SC310EPE10TPC	10" (250 mm)	1.4" (36 mm)	---
SC310EPE10BPC		---	0.7" (18 mm)
SC310ECEZ*	12" (300 mm)	---	0.9" (23 mm)

ALL STUBS, EXCEPT FOR THE SC310ECEZ ARE PLACED AT BOTTOM OF END CAP SUCH THAT THE OUTSIDE DIAMETER OF THE STUB IS FLUSH WITH THE BOTTOM OF THE END CAP. FOR ADDITIONAL INFORMATION CONTACT STORMTECH AT 1-888-892-2694.

* FOR THE SC310ECEZ THE 12" (300 mm) STUB LIES BELOW THE BOTTOM OF THE END CAP APPROXIMATELY 0.25" (6 mm). BACKFILL MATERIAL SHOULD BE REMOVED FROM BELOW THE N-12 STUB SO THAT THE FITTING SITS LEVEL.

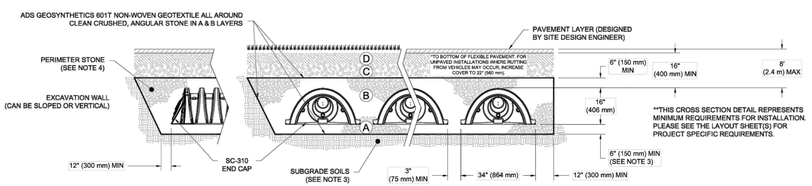
NOTE: ALL DIMENSIONS ARE NOMINAL; PRE-CORED END CAPS END WITH "PC"

2 SC-310 TECHNICAL SPECIFICATIONS

ACCEPTABLE FILL MATERIALS: STORMTECH SC-310 CHAMBER SYSTEMS

	MATERIAL LOCATION	DESCRIPTION	AASHTO MATERIAL CLASSIFICATIONS	COMPACTION / DENSITY REQUIREMENT
D	**FINAL FILL:** FILL MATERIAL FOR LAYER 'D' STARTS FROM THE TOP OF THE 'C' LAYER TO THE BOTTOM OF FLEXIBLE PAVEMENT OR UNPAVED FINISHED GRADE ABOVE. NOTE THAT PAVEMENT SUBBASE MAY BE PART OF THE 'D' LAYER.	ANY SOIL/ROCK MATERIALS, NATIVE SOILS, OR PER ENGINEER'S PLANS. CHECK PLANS FOR PAVEMENT SUBGRADE REQUIREMENTS.	3.25	PREPARE PER SITE DESIGN ENGINEER'S PLANS. PAVED INSTALLATIONS MAY HAVE STRINGENT MATERIAL AND PREPARATION REQUIREMENTS.
C	**INITIAL FILL:** FILL MATERIAL FOR LAYER 'C' STARTS FROM THE TOP OF THE EMBEDMENT STONE ('B' LAYER) TO 16" (400 mm) ABOVE THE TOP OF THE CHAMBER. NOTE THAT PAVEMENT SUBBASE MAY BE A PART OF THE 'C' LAYER.	GRANULAR WELL-GRADED SOIL/AGGREGATE MIXTURES, <35% FINES OR PROCESSED AGGREGATE. MOST PAVEMENT SUBBASE MATERIALS CAN BE USED IN LIEU OF THIS LAYER.	AASHTO M145[1] A-1, A-2-4, A-3 OR AASHTO M43[1] 3, 357, 4, 467, 5, 56, 57, 6, 67, 68, 7, 78, 8, 89, 9, 10	BEGIN COMPACTIONS AFTER 12" (300 mm) OF MATERIAL OVER THE CHAMBERS IS REACHED. COMPACT ADDITIONAL LAYERS IN 6" (150 mm) MAX LIFTS TO A MIN. 95% PROCTOR DENSITY FOR WELL GRADED MATERIAL AND 95% RELATIVE DENSITY FOR PROCESSED AGGREGATE MATERIALS. ROLLER GROSS VEHICLE WEIGHT NOT TO EXCEED 12,000 lbs (53 kN). DYNAMIC FORCE NOT TO EXCEED 20,000 lbs (89 kN).
B	**EMBEDMENT STONE:** FILL SURROUNDING THE CHAMBERS FROM THE FOUNDATION STONE ('A' LAYER) TO THE 'C' LAYER ABOVE.	CLEAN, CRUSHED, ANGULAR STONE OR RECYCLED CONCRETE[3]	AASHTO M43[1] 3, 357, 4, 467, 5, 56, 57	NO COMPACTION REQUIRED.
A	**FOUNDATION STONE:** FILL BELOW CHAMBERS FROM THE SUBGRADE UP TO THE FOOT (BOTTOM) OF THE CHAMBER.	CLEAN, CRUSHED, ANGULAR STONE OR RECYCLED CONCRETE[3]	AASHTO M43[1] 3, 357, 4, 467, 5, 56, 57	PLATE COMPACT OR ROLL TO ACHIEVE A FLAT SURFACE[2,3]

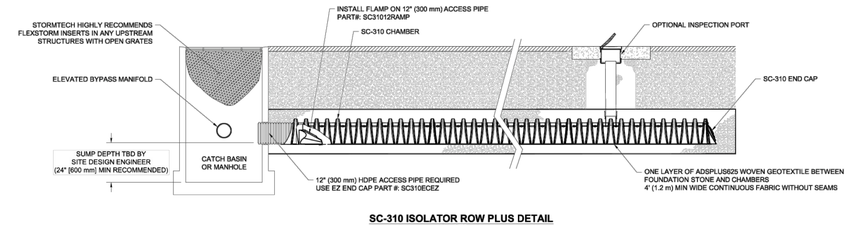
PLEASE NOTE:
1. THE LISTED AASHTO DESIGNATIONS ARE FOR GRADATIONS ONLY. THE STONE MUST ALSO BE CLEAN, CRUSHED, ANGULAR. FOR EXAMPLE, A SPECIFICATION FOR #4 STONE WOULD STATE: "CLEAN, CRUSHED, ANGULAR NO. 4 (AASHTO M43) STONE".
2. STORMTECH COMPACTION REQUIREMENTS ARE MET FOR 'A' LOCATION MATERIALS WHEN PLACED AND COMPACTED IN 6" (150 mm) (MAX) LIFTS USING TWO FULL COVERAGES WITH A VIBRATORY COMPACTOR.
3. WHERE INFILTRATION SURFACES MAY BE COMPROMISED BY COMPACTION, FOR STANDARD DESIGN LOAD CONDITIONS, A FLAT SURFACE MAY BE ACHIEVED BY RAKING OR DRAGGING WITHOUT COMPACTION EQUIPMENT. FOR SPECIAL LOAD DESIGNS, CONTACT STORMTECH FOR COMPACTION REQUIREMENTS.
4. ONCE LAYER 'C' IS PLACED, ANY SOIL/MATERIAL CAN BE PLACED IN LAYER 'D' UP TO THE FINISHED GRADE. MOST PAVEMENT SUBBASE SOILS CAN BE USED TO REPLACE THE MATERIAL REQUIREMENTS OF LAYER 'C' OR 'D' AT THE SITE DESIGN ENGINEER'S DISCRETION.
5. WHERE RECYCLED CONCRETE AGGREGATE IS USED IN LAYERS 'A' OR 'B' THE MATERIAL SHOULD ALSO MEET THE ACCEPTABILITY CRITERIA OUTLINED IN TECHNICAL NOTE 6.20 "RECYCLED CONCRETE STRUCTURAL BACKFILL".



NOTES:

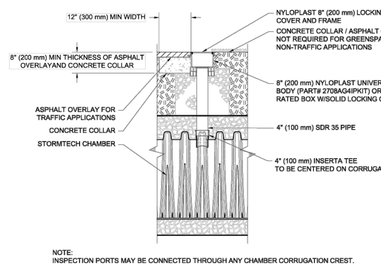
1. CHAMBERS SHALL MEET THE REQUIREMENTS OF ASTM F2922 (POLYETHYLENE) OR ASTM F2418 (POLYPROPYLENE), "STANDARD SPECIFICATION FOR CORRUGATED WALL STORMWATER COLLECTION CHAMBERS".
2. SC-310 CHAMBERS SHALL BE DESIGNED IN ACCORDANCE WITH ASTM F2787 "STANDARD PRACTICE FOR STRUCTURAL DESIGN OF THERMOPLASTIC CORRUGATED WALL STORMWATER COLLECTION CHAMBERS".
3. THE SITE DESIGN ENGINEER IS RESPONSIBLE FOR ASSESSING THE BEARING RESISTANCE (ALLOWABLE BEARING CAPACITY) OF THE SUBGRADE SOILS AND THE DEPTH OF FOUNDATION STONE WITH CONSIDERATION FOR THE RANGE OF EXPECTED SOIL MOISTURE CONDITIONS. REFERENCE STORMTECH DESIGN MANUAL FOR BEARING CAPACITY GUIDANCE.
4. PERIMETER STONE MUST BE EXTENDED HORIZONTALLY TO THE EXCAVATION WALL FOR BOTH VERTICAL AND SLOPED EXCAVATION WALLS.
5. REQUIREMENTS FOR HANDLING AND INSTALLATION:
   - TO MAINTAIN THE WIDTH OF CHAMBERS DURING SHIPPING AND HANDLING, CHAMBERS SHALL HAVE INTEGRAL, INTERLOCKING STACKING LUGS.
   - TO ENSURE A SECURE JOINT DURING INSTALLATION AND BACKFILL, THE HEIGHT OF THE CHAMBER JOINT SHALL NOT BE LESS THAN 2".
   - TO ENSURE THE INTEGRITY OF THE ARCH SHAPE DURING INSTALLATION, a) THE ARCH STIFFNESS CONSTANT AS DEFINED IN SECTION 6.2.8 OF ASTM F2922 SHALL BE GREATER THAN OR EQUAL TO 325 LBS/FT/%, AND b) TO RESIST CHAMBER DEFORMATION DURING INSTALLATION AT ELEVATED TEMPERATURES (ABOVE 73° F / 23° C), CHAMBERS SHALL BE PRODUCED FROM REFLECTIVE GOLD OR YELLOW COLORS.

1 SC-310 CROSS SECTION DETAIL



SC-310 ISOLATOR ROW PLUS DETAIL
NTS

3 SC-310 ISOLATOR ROW PLUS DETAIL



NOTE:
INSPECTION PORTS MAY BE CONNECTED THROUGH ANY CHAMBER CORRUGATION CREST.

4" PVC INSPECTION PORT DETAIL (SC SERIES CHAMBER)
NTS

INSPECTION & MAINTENANCE

STEP 1) INSPECT ISOLATOR ROW PLUS FOR SEDIMENT
- A. INSPECTION PORTS (IF PRESENT)
  - A.1. REMOVE/OPEN LID ON NYLOPLAST INLINE DRAIN
  - A.2. REMOVE AND CLEAN FLEXSTORM FILTER IF INSTALLED
  - A.3. USING A FLASHLIGHT AND STADIA ROD, MEASURE DEPTH OF SEDIMENT AND RECORD ON MAINTENANCE LOG
  - A.4. LOWER A CAMERA INTO ISOLATOR ROW PLUS FOR VISUAL INSPECTION OF SEDIMENT LEVELS (OPTIONAL)
  - A.5. IF SEDIMENT IS AT, OR ABOVE, 3" (80 mm) PROCEED TO STEP 2. IF NOT, PROCEED TO STEP 3.
- B. ALL ISOLATOR PLUS ROWS
  - B.1. REMOVE COVER FROM STRUCTURE AT UPSTREAM END OF ISOLATOR ROW PLUS
  - B.2. USING A FLASHLIGHT, INSPECT DOWN THE ISOLATOR ROW PLUS THROUGH OUTLET PIPE
    - i) MIRRORS ON POLES OR CAMERAS MAY BE USED TO AVOID A CONFINED SPACE ENTRY
    - ii) FOLLOW OSHA REGULATIONS FOR CONFINED SPACE ENTRY IF ENTERING MANHOLE
  - B.3. IF SEDIMENT IS AT, OR ABOVE, 3" (80 mm) PROCEED TO STEP 2. IF NOT, PROCEED TO STEP 3.

STEP 2) CLEAN OUT ISOLATOR ROW PLUS USING THE JETVAC PROCESS
- A. A FIXED CULVERT CLEANING NOZZLE WITH REAR FACING SPREAD OF 45° (1.1 m) OR MORE IS PREFERRED
- B. APPLY MULTIPLE PASSES OF JETVAC UNTIL BACKFLUSH WATER IS CLEAN
- C. VACUUM STRUCTURE SUMP AS REQUIRED

STEP 3) REPLACE ALL COVERS, GRATES, FILTERS, AND LIDS; RECORD OBSERVATIONS AND ACTIONS.

STEP 4) INSPECT AND CLEAN BASINS AND MANHOLES UPSTREAM OF THE STORMTECH SYSTEM.

NOTES

1. INSPECT EVERY 6 MONTHS DURING THE FIRST YEAR OF OPERATION. ADJUST THE INSPECTION INTERVAL BASED ON PREVIOUS OBSERVATIONS OF SEDIMENT ACCUMULATION AND HIGH WATER ELEVATIONS.
2. CONDUCT JETTING AND VACTORING ANNUALLY OR WHEN INSPECTION SHOWS THAT MAINTENANCE IS NECESSARY.

4 4" PVC INSPECTION PORT DETAIL (SC SERIES CHAMBER)

DRAWN: SMW | DATE: 01/15/25
REVIEWED: JLM | PROJECT NO: 721-390
REV: | NOT TO SCALE

SC-310 STANDARD DETAILS

ADVANCED DRAINAGE SYSTEMS, INC. ("ADS") HAS PREPARED THIS DETAIL BASED ON REFERENCED STANDARDS. ADS HAS NOT PERFORMED ANY ENGINEERING OR DESIGN SERVICES FOR THIS PROJECT, NOR HAS ADS INDEPENDENTLY VERIFIED THE INFORMATION SUPPLIED. THE INSTALLATION DETAILS PROVIDED HEREIN ARE GENERAL RECOMMENDATIONS AND ARE NOT SPECIFIC FOR THIS PROJECT. UNLESS THE PLANS ARE SIGNED AND SEALED BY THE SITE DESIGN ENGINEER, THE SITE DESIGN ENGINEER IS RESPONSIBLE TO ENSURE THE DETAILS PROVIDED HEREIN MEET OR EXCEED THE APPLICABLE NATIONAL, STATE, OR LOCAL REQUIREMENTS AND TO ENSURE THAT THE DETAILS PROVIDED HEREIN ARE ACCEPTABLE FOR USE ON THIS PROJECT.

StormTech® Chamber System
888-892-2694 | WWW.STORMTECH.COM

4640 TRUEMAN BLVD
HILLIARD, OH 43026

Advanced Drainage Systems, Inc.

SHEET 1

APPROVAL

NOTE

THE COVERS FOR ALL DIRECT FACILITY ACCESS LOCATIONS MUST BE LOCKED AT ALL TIMES WHEN NOT IN USE. IF A STANDARD MANHOLE IS REQUIRED FOR A RECOMMENDED MAINTENANCE OR INSPECTION POINT, THE COVER MUST BE BOLTED AT FOUR POINTS (MINIMUM) AROUND THE COVER PERIMETER.

LDC
4565 DASHER AVENUE, SUITE 101 WOODBRIDGE, VIRGINIA 22192
WWW.LDCVA.COM

515 MAPLE AVENUE EAST
TOWN OF VIENNA, VIRGINIA

SWM DETAILS 2

NO.	DESCRIPTION	REVIEW BY:	APPROVED	DATE

DESIGN | DRAWN | CHECK | ENGINEER

I HEREBY CERTIFY THAT OTHER THAN THE REVISIONS SHOWN HEREON, NO OTHER CHANGES HAVE BEEN MADE.

COMMONWEALTH OF VIRGINIA
MATTHEW T. MARSHALL
Lic. No. 1535-B
07/09/25
DATE
LAND SURVEYOR

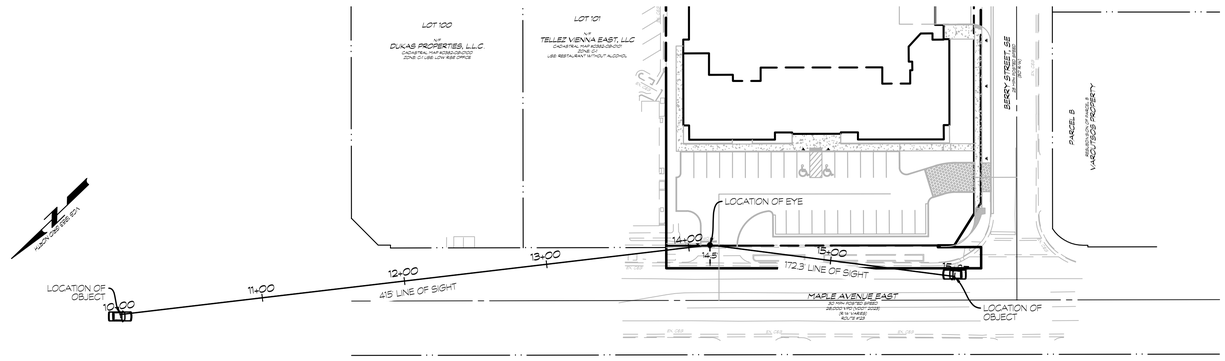
SCALE: AS SHOWN

SHEET: 28 OF 41

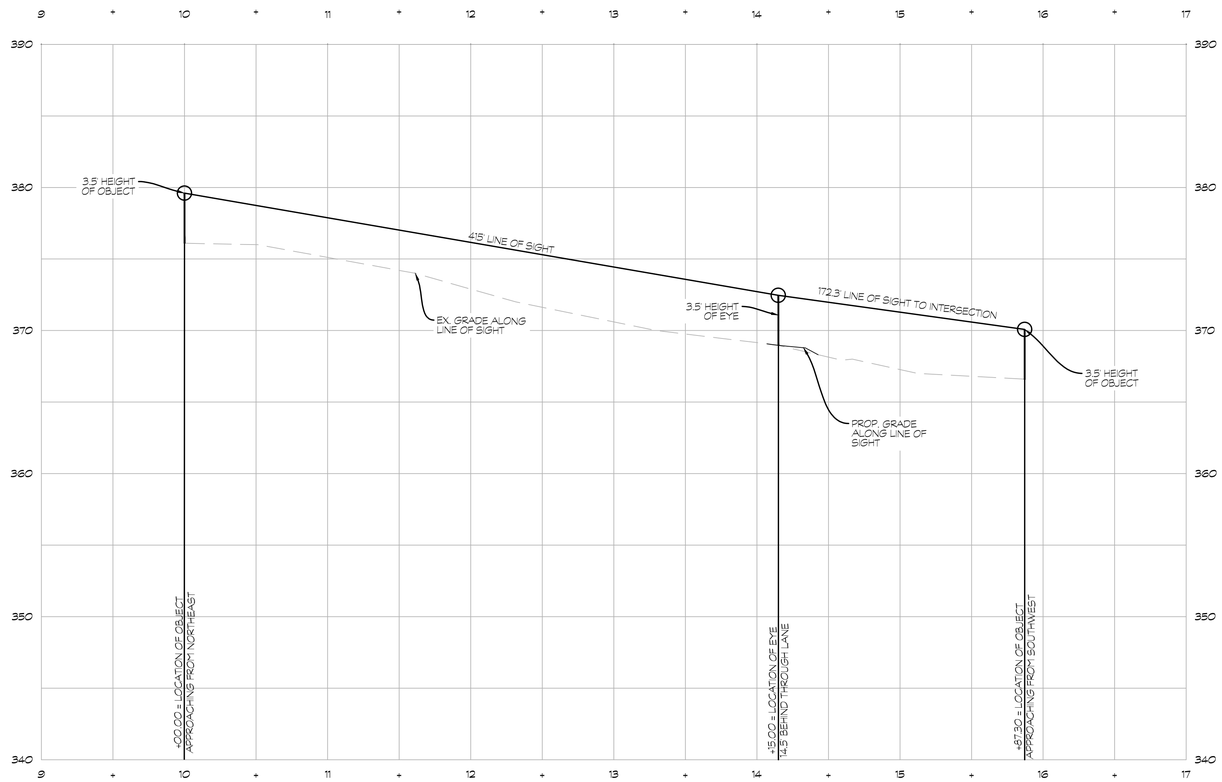
DATE: JULY 2025

DRAFT: ZG/SB | CHECK: MTM

FILE NUMBER: 25021-1-1



LINE OF SIGHT PROFILE - PRIVATE PARKING LOT ENTRANCE ON MAPLE AVENUE EAST (35 MPH DESIGN SPEED)



GRAPHICAL SCALE

50 25 0 50 100

1" = 50'

APPROVAL

LDC
4585 DAISY REID AVENUE, SUITE 201 WOODBRIDGE, VIRGINIA 22192
WWW.LDCVA.COM

SIGHT DISTANCE PROFILE - MAPLE AVE

515 MAPLE AVENUE EAST

TOWN OF VIENNA, VIRGINIA

NO.	DESCRIPTION	REVIEW BY	APPROVED	DATE

REVISION APPROVED BY:

DESIGN	DRAFT	CHECK	ENGINEER

I HEREBY CERTIFY THAT OTHER THAN THE REVISIONS SHOWN HEREON, NO OTHER CHANGES HAVE BEEN MADE.

COMMONWEALTH OF VIRGINIA
MATTHEW T. MARSHALL
Lic. No. 1935-B
07/08/25
DATE
LAND SURVEYOR

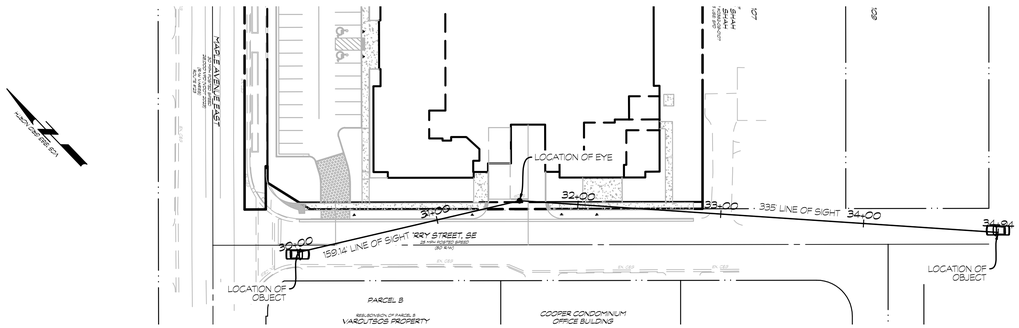
SCALE: AS SHOWN

SHEET: 29 OF 41

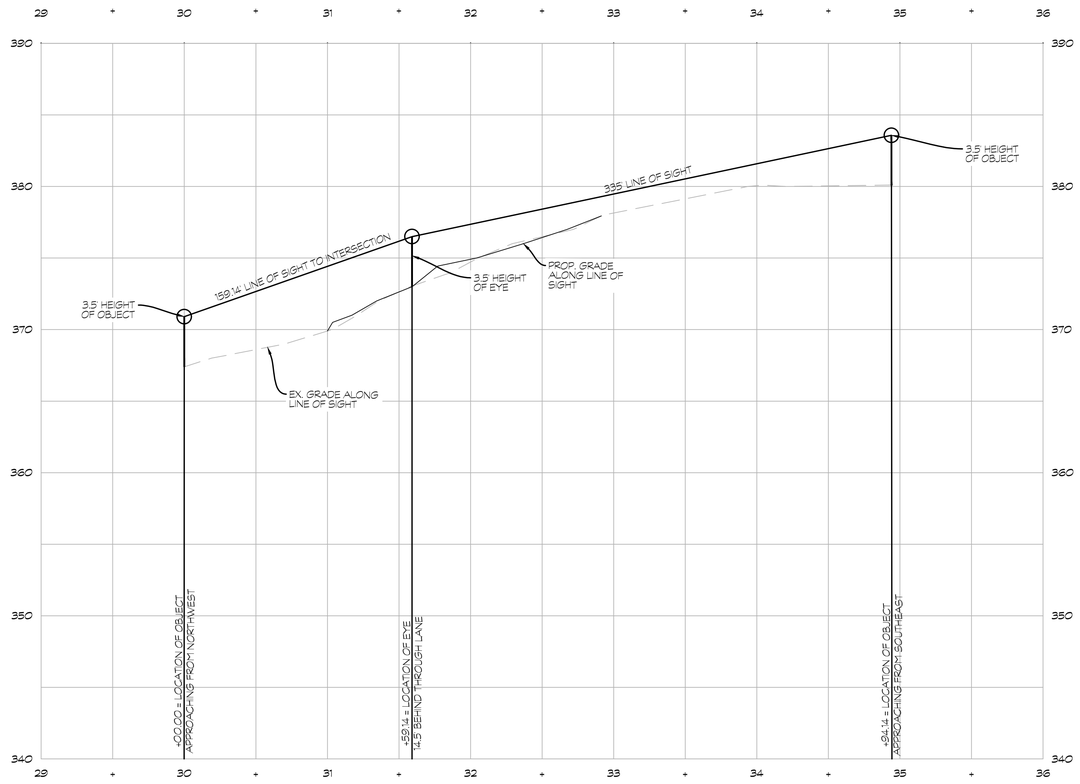
DATE: JULY 2025

DRAFT: ZG/SB | CHECK: MTM

FILE NUMBER: 25021-1-1



LINE OF SIGHT PROFILE - PARKING GARAGE ENTRANCE ON BERRY STREET (30 MPH DESIGN SPEED)



GRAPHICAL SCALE

50 25 0 50 100

1" = 50'

APPROVAL

LDC
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SIGHT DISTANCE PROFILE - BERRY ST

515 MAPLE AVENUE EAST

TOWN OF VIENNA, VIRGINIA

NO.	DESCRIPTION	DATE

REVISION APPROVED BY:
REVIEW BY:
APPROVED
DATE

ENGINEER
DESIGN
DATE

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COMMONWEALTH OF VIRGINIA
MATTHEW T. MARSHALL
Lic. No. 1935-B
07/08/25
DATE
LAND SURVEYOR

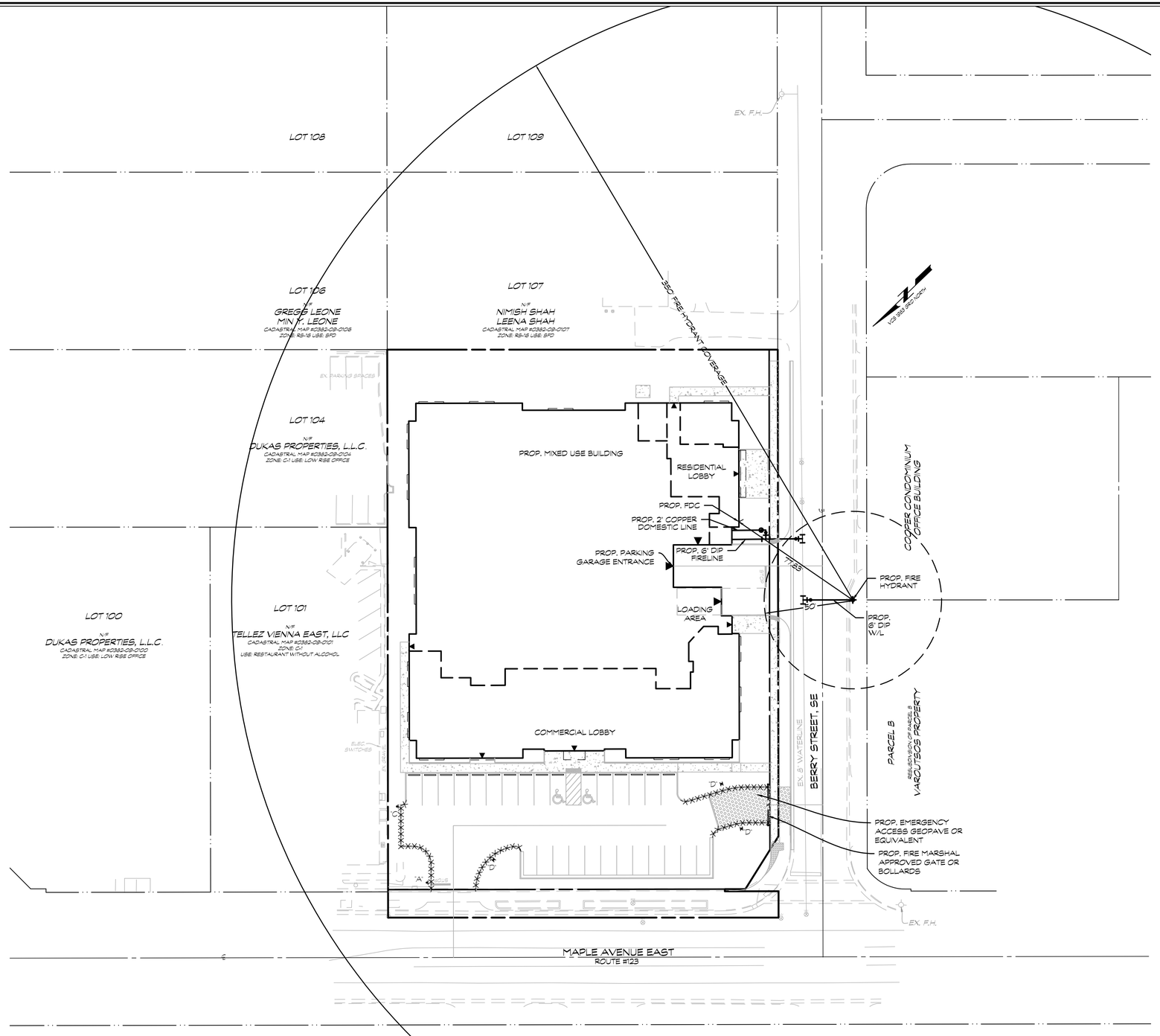
SCALE: AS SHOWN

SHEET: 30 OF 41

DATE: JULY 2025

DRAFT: ZG/SB | CHECK: MTM

FILE NUMBER: 25021-1-1



SIGN TYPE 'A'

STANDARD WORDING WITH AN ARROW AT BOTTOM POINTING TO THE RIGHT. ONE SIGN MOUNTED PARALLEL TO THE LINE OF CURBING OR PAVEMENT EDGE AT END OF PAINTED AREA.

SIGN TYPE 'C'

STANDARD WORDING WITH AN ARROW AT BOTTOM POINTING TO THE LEFT. ONE SIGN MOUNTED PARALLEL TO THE LINE OF CURBING OR PAVEMENT EDGE AT END OF PAINTED AREA.

SIGN TYPE 'D'

STANDARD WORDING TWO SIGNS MOUNTED PERPENDICULAR TO THE LINE OF CURBING OR PAVEMENT EDGE.

SIGN SPECIFICATIONS

A. METAL CONSTRUCTION, 12' X 18'

B. RED LETTERS ON REFLECTIVE WHITE BACKGROUND WITH 3/8' RED TRIM STRIP AROUND ENTIRE OUTER EDGE OF SIGN.

C. LETTERING ON SIGN TO BE: 'NO PARKING OR STANDING FIRE LANE'

D. LETTERING SIZE TO BE AS FOLLOWS: 'NO PARKING' AND 'STANDING' - 2', OR 1, FIRE LANE 2.5'; ARROWS 1' X 6' SOLID SHAFT WITH A SOLID HEAD 1.5' WIDE AND 2' DEEP.

E. SIGNS ARE TO BE MOUNTED 7 FROM THE GROUND TO THE BOTTOM OF THE SIGN UNLESS OTHERWISE DIRECTED BY THE FAIRFAX COUNTY FIRE PREVENTION DIVISION, FIRE LANES SECTION.

F. POSTS FOR SIGNS, WHEN REQUIRED, SHALL BE METAL AND SECURELY MOUNTED, UNLESS WRITTEN PERMISSION FOR ALTERNATIVES IS OBTAINED PRIOR TO INSTALLATION FROM FAIRFAX COUNTY PREVENTION DIVISION, FIRE LANES SECTION.

G. OTHER SPECIAL SIGNS AS APPROVED BY THE FIRE PREVENTION DIVISION.

CURB DESIGNATION

ALL CURBS OR PAVED SPACES DESIGNATED AT FIRE LANES SHALL BE INDICATED BY YELLOW PAINT AS APPROVED BY THE FIRE PREVENTION DIVISION. IN AREAS WITHOUT CURBING, A 6' WIDE YELLOW STRIPE SHOULD BE APPLIED TO THE EDGE OF THE PAVEMENT. PAINT SHALL BE HIGHWAY TRAFFIC GRADE.

CURB DESIGNATION

FIRE LANE NOTE

FIRE MARSHAL FIELD INSPECTION NECESSARY FOR FINAL APPROVAL OF FIRE LANES. FIRE LANES MUST HAVE FINAL APPROVAL PRIOR TO REQUEST FOR OCCUPANCY. OWNER SHALL NOTIFY FIRE PREVENTION DIVISION, FIRE LANE SECTION 12099 GOVERNMENT CENTER PARKWAY, FAIRFAX, VIRGINIA 22035 WHEN FIRE LANES HAVE BEEN INSTALLED. (703)246-4849

LEGEND

- PROPOSED FIRE HYDRANT
- PROPOSED FIRE DEPARTMENT CONNECTION (FDC)
- DENOTES BUILDING ENTRANCE (PEDESTRIAN)
- DENOTES BUILDING ENTRANCE (VEHICULAR)

FIRE MARSHAL NOTES

AVAILABLE FIRE FLOW 6,241 GPM AVAILABLE (GAL/MIN.)
SOURCE OF FIRE FLOW INFO. TOWN OF VIENNA (4/15/25)
TYPE OF CONSTRUCTION - USBC IA & 2B
USE GROUP CLASSIFICATION - USBC B (BUSINESS), S-2 (PARKING), R-2 (MF), A-3 (AMENITY), M (MERCANTILE)
PROPOSED BUILDING HEIGHT 34.75 (35 MAX.) (FT.)
BUILDING TO BE FULLY SPRINKLERED YES ☑ NO ☐
IF YES, CHECK APPROPRIATE STANDARD: NFPA 13 ☑; NFPA 13D ☐; NFPA 13R ☑ COMMERCIAL (NFPA 13) RESIDENTIAL (NFPA 13R)
PROPOSED NUMBER OF FLOORS 3

BUILDING TABULATIONS	
PROPOSED MIXED USE BUILDING	
PROPOSED USE GROUP (BUSINESS)	B
PROPOSED USE GROUP (PARKING)	S-2
PROPOSED USE GROUP (MULTIMFAMILY)	R-2
PROPOSED USE GROUP (AMENITY)	A-3
PROPOSED USE GROUP (MERCANTILE)	M
CONSTRUCTION TYPE (FLOORS 1-2)	IA
CONSTRUCTION TYPE (FLOORS 3-4)	IIB
SPRINKLERED (FLOORS 1-2)	YES (NPFA 13)
SPRINKLERED (FLOORS3-4)	YES (NPFA 13R)

GRAPHICAL SCALE

30 15 0 30 60

1" = 30'

APPROVAL

LDC
4885 DAISY REID AVENUE, SUITE 201 WOODBRIDGE, VIRGINIA 22192
WWW.LDCVA.COM

FIRELANE PLAN

515 MAPLE AVENUE EAST

TOWN OF VIENNA, VIRGINIA

NO.	DESCRIPTION	REVIEW BY	APPROVED	DATE
	REVISION APPROVED BY:			

DESIGN	DATE	ENGINEER

I HEREBY CERTIFY THAT OTHER THAN THE REVISIONS SHOWN HEREON, NO OTHER CHANGES HAVE BEEN MADE.

COMMONWEALTH OF VIRGINIA
MATTHEW T. MAISHALL
Lic. No. 1335-B
07/09/25
DATE
LAND SURVEYOR

SCALE: AS SHOWN

SHEET: 31 OF 41

DATE: JULY 2025

DRAFT: ZG/SB | CHECK: MTM

FILE NUMBER: 25021-1-1

LEGEND:

- LIMITS OF CLEARING & GRADING
- DECIDUOUS CANOPY TREES
- DECIDUOUS UNDERSTORY TREES
- SHRUBS
- ORNAMENTAL GRASS
- PERENNIALS
- PROP. PAVERS OR EQUIVALENT
- INTERIOR LANDSCAPING ISLAND

VCS 933 GRID NORTH

10' BUFFER

DRY UTILITY CORRIDOR

PROP. 6' MASONRY WALL

EX. FENCE

EX. PARKING SPACES

ELECTRIC ROOM

ACCESSORY

PROP. SEATING WALL

PROP. BIKERACK (SEE ARCH. PLAN)

RESIDENTIAL LOBBY

WATER ROOM

PROP. MIXED USE BUILDING
FF=371.40 (COMMERCIAL LOBBY)
FF=368.40 (PARKING GARAGE)
FF=375.10 (RESIDENTIAL LOBBY)

PROP. PARKING GARAGE ENTRANCE

PROP. 15' x 25' ENCLOSED LOADING SPACE

PROP. 15' x 25' LOADING SPACE

PROP. R/W DEDICATION

PROP. 5' CONC. S/W

JERRY STREET, SE
25 MPH POSTED SPEED
(50' R/W)

PROP. BIKERACK (SEE ARCH. PLAN)

COMMERCIAL LOBBY

PROP. 5' CONC. S/W

PROP. RAIN GARDEN (SEE ARCH. PLAN)

UNDERGROUND SWM FACILITY

5' LANDSCAPE STRIP

EXPAND EX. MASONRY S/W PER TOWN STDS.

EX. BRICK CROSSWALK

EX. F.H.

EX. S/W

MAPLE AVENUE EAST
30 MPH POSTED SPEED
28,000 VPD (VDOT 2023)
(R/W VARIES)
ROUTE #123

GRAPHICAL SCALE
20 10 0 20 40
1" = 20'

APPROVAL

LDC
4585 DAISY REID AVENUE, SUITE 201 WOODBRIDGE, VIRGINIA 22192
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LANDSCAPE PLAN

515 MAPLE AVENUE EAST

TOWN OF VIENNA, VIRGINIA

DESCRIPTION	NO.	DESIGN	DATE
REVISION APPROVED BY:		ENGINEER	
REVISION APPROVED BY:		APPROVED	
			DATE

I HEREBY CERTIFY THAT OTHER THAN THE REVISIONS SHOWN HEREON, NO OTHER CHANGES HAVE BEEN MADE.

COMMONWEALTH OF VIRGINIA
MATTHEW T. MARSHALL
Lic. No. 1525-B
07/09/25
DATE
LAND ARCHITECT

SCALE: AS SHOWN

SHEET: 32 OF 41

DATE: JULY 2025

DRAFT: ZG/BB | CHECK: MTM

FILE NUMBER: 25021-1-1

PLANTING STANDARDS

1. NEWLY PLANTED TREES SHALL BE HEALTHY AND VIGOROUS AND MEET ALL ANSI STANDARDS. ALL NEWLY INSTALLED TREES, AS ARE REQUIRED BY THE TREE CONSERVATION PLAN, WHICH IN THE OPINION OF THE TOWN ARBORIST ARE DEAD OR ARE NOT HEALTHY, SHALL BE REPLACED BY THE CONTRACTOR.

2. DEER PROTECTION FENCING SHALL BE INSTALLED AROUND NEWLY PLANTED TREES.

3. A MINIMUM OF TWO DIFFERENT TREE SPECIES IS REQUIRED WHEN PLANTING 3-5 NEW TREES ON SITE. A MINIMUM OF THREE DIFFERENT TREE SPECIES IS REQUIRED FOR 6-9 NEW TREES INSTALLED ON SITE. A MINIMUM OF FOUR DIFFERENT TREE SPECIES IS REQUIRED FOR 10+ NEW TREE PLANTINGS.

4. LARGE SHADE TREES SHALL BE INSTALLED NO CLOSER THAN 30' ON CENTER. MEDIUM SHADE TREES AND MEDIUM EVERGREEN TREES SHALL BE INSTALLED NO CLOSER THAN 20' ON CENTER. SMALL ORNAMENTAL AND SMALL EVERGREEN TREES SHALL BE INSTALLED NO CLOSER THAN 15' ON CENTER.

5. PLANTINGS SHALL BE INSTALLED ONLY IN THE SPRING PLANTING SEASON (MARCH 15-MAY 30) OR THE FALL PLANTING SEASON (SEPTEMBER 15-NOVEMBER 30). ANY TREE PLANTED OUTSIDE OF THESE DATES WILL BE REJECTED BY THE TOWN ARBORIST UPON INSPECTION.

6. A PLANTING SEASON WAIVER IS REQUIRED FOR TREES/SHRUBS THAT MUST BE INSTALLED OUTSIDE OF THE ACCEPTED PLANTING SEASONS TO MEET CANOPY COVERAGE OR OTHER REQUIREMENTS AS SPECIFIED IN THE APPROVED PLANS FOR FINAL OCCUPANCY. CONSIDERATION AND APPROVAL OF A PLANTING SEASON WAIVER SHALL BE AT THE DISCRETION OF THE TOWN ARBORIST OR HIS/HER DESIGNEE.

7. IF A PLANTING SEASON WAIVER IS GRANTED, THE APPLICANT SHALL POST A BOND (CASH OR SURETY) THAT COVERS ANY TREE PLANTINGS REQUIRED FOR CANOPY COVERAGE ON THE SITE.

   7.1. APPLICANT SHALL USE THE CURRENT TOWN OF VIENNA TREE PRESERVATION AND PLANTING SPECIFICATIONS MANUAL TO COMPUTE THE COST FOR PROPOSED TREES FOR CANOPY COVERAGE.

   7.2. IF REQUIRED TREE PLANTINGS ARE NOT PROVIDED WITHIN THE FOLLOWING PLANTING SEASON, THE OWNER/APPLICANT WILL BE NOTIFIED AND THE ENTIRE BOND WILL BE FORFEITED TO THE TOWN OF VIENNA. THE TOWN WILL USE THE BOND MONEY TO COMPLETE REQUIRED TREE PLANTINGS. ANY ADDITIONAL CHARGES FOR COMPLETING THE PLANTINGS SHALL BE BORNE BY THE APPLICANT.

   7.3. BOND WILL BE RELEASED UPON A PASSING INSPECTION BY THE TOWN ARBORIST.

10' BUFFER (215' long)			
Plant Category	Minimum Required per 100'	Total Required	Total Provided
Overstory Canopy Trees	3	7	7
Understory Canopy Trees	3	7	7
Shrubs	4	9	9
Total Trees		23	23

LANDSCAPE STRIP				
Plant Category	Minimum Required per 35'	Minimum Required per 25'	Total Required	Total Provided
Canopy Tree	1		5	5
Shrub		3	7	7
Total Plants			12	12

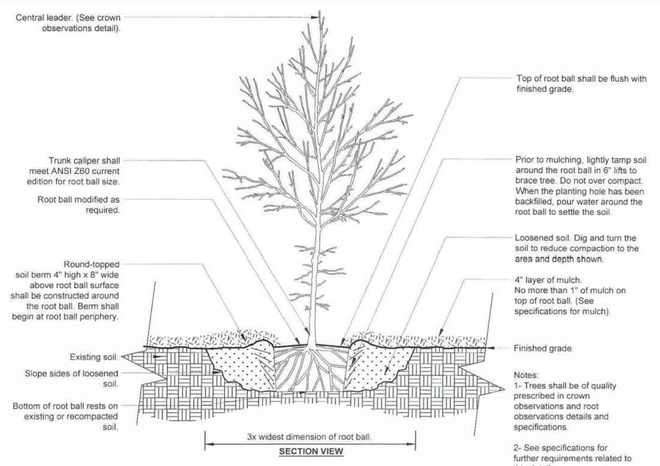
Parking Lot Landscaping Calculations: Front Parking Area	
Parking area (sf)	19,415
Total parking spaces	28
Interior Islands required/provided	3
Shade trees required/provided	3

PLANT SCHEDULE

SYMBOL	SPECIES (COMMON NAME)	QUANTITY	PLANTING SIZE	TYPE	10 YR CANOPY COVERAGE	10 YR CREDIT TOTAL	COMMENTS
	LARGE DECIDUOUS TREES						
AR	*Acer rubrum* (red maple)	5	2" CAL.	CONT.	200 SF	1,000 SF	FULL, SINGLE STEM
QP	*Quercus phellos (willow oak)*	13	2" CAL.	CONT.	200 SF	2,600 SF	FULL, SINGLE STEM
	SMALL DECIDUOUS TREES						
AM	Amelanchier arborea (downey serviceberry)	10	2" CAL.	CONT.	100 SF	1,000 SF	FULL, MULTI-STEM
CC	*Cercis canadensis* (redbud)	11	2" CAL.	CONT.	100 SF	1,100 SF	FULL, MULTI-STEM
MV	Magnolia virginiana (sweetbay magnolia)	6	2" CAL.	CONT.	100 SF	600 SF	FULL, MULTI-STEM
CV	*Chionanthus virginicus (fringe tree)*	35	2" CAL.	CONT.	100 SF	3,500 SF	FULL, MULTI-STEM
	SHRUBS						
AA	*Aronia arbutifolia* (red chokeberry)	32	18-24"H	CONT.			FULL, MULTI-STEM
IG	*Ilex glabra* (inkberry)	19	18-24"H	CONT.			FULL, MULTI-STEM
IVI	*Itea virginica* (Virginia sweetspire)	28	18-24"H	CONT.			FULL, MULTI-STEM
LR	*Leucothoe racemosa (Fetterbush)*	38	18-24"H	CONT.			FULL, MULTI-STEM
MP	*Myrica pensylvanica* (Northern bayberry)	5	18-24"H	CONT.			FULL, MULTI-STEM
RA	*Rhododendron austrinum (Florida flame azalea)*	12	18-24"H				
	ORNAMENTAL GRASSES						
PV	*Panicum virgatum 'Prarie Sky'* (switchgrass)		1 GAL.	CONT.			
CP	*Carex pensylvanica (Pennsylvania sedge)*	37	1 GAL.	CONT.			
SS	*Schizachyrium scoparium (Little Bluestem)*	26	1 GAL.	CONT.			
	PERENNIALS						
PS	*Phlox subulata (moss phlox)*		1 QT.	CONT.	24" O.C.		
EP	*Echinacea purpurea (Coneflower)*	165	1 QT.	CONT.	24" O.C.		
					TOTAL	9,800 SF	

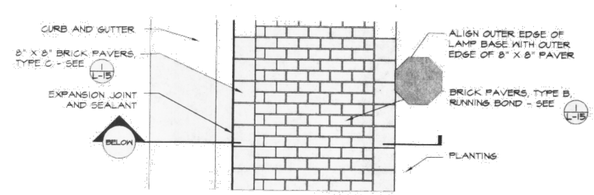
TREE CANOPY COVERAGE						
Tree Category	Quantity	Planting Size	Type	Spacing	20-year projected tree canopy coverage provided per tree (SF)	20-year Credit Total (SF)
Overstory Canopy Trees	18	2"	Container	As Shown	200	3,600
Understory Canopy Trees	62	2"	Container	As Shown	100	6,200
Total Trees	80					9,800
					Site Area	70,084
					Percent Cover Required	10%
					Percent Cover Provided	14%

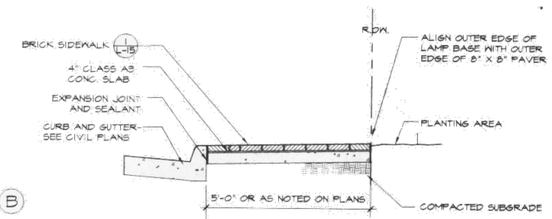
EXISTING BRICK SIDEWALK TO BE EXPANDED (SEE DETAIL #2 THIS SHEET)



1 TREE w/ BERM (EXISTING SOIL NOT MODIFIED)

NTS





2 SIDEWALK SECTION

NTS

APPROVAL

LDC
4855 DAISY REED AVENUE, SUITE 201 WOODBRIDGE, VIRGINIA 22192
WWW.LDCVA.COM

LANDSCAPE DETAILS

515 MAPLE AVENUE EAST
TOWN OF VIENNA, VIRGINIA

NO	DESCRIPTION	DATE
	REVISION APPROVED BY:	
	REVIEW	
	APPROVED	
	DATE	

DESIGN	ENGINEER
DATE	

I HEREBY CERTIFY THAT OTHER THAN THE REVISIONS SHOWN HEREON, NO OTHER CHANGES HAVE BEEN MADE.

COMMONWEALTH OF VIRGINIA
MATTHEW T. MARSHALL
Lic. No. 1525-B
07/09/25
DATE
LAND SURVEYOR

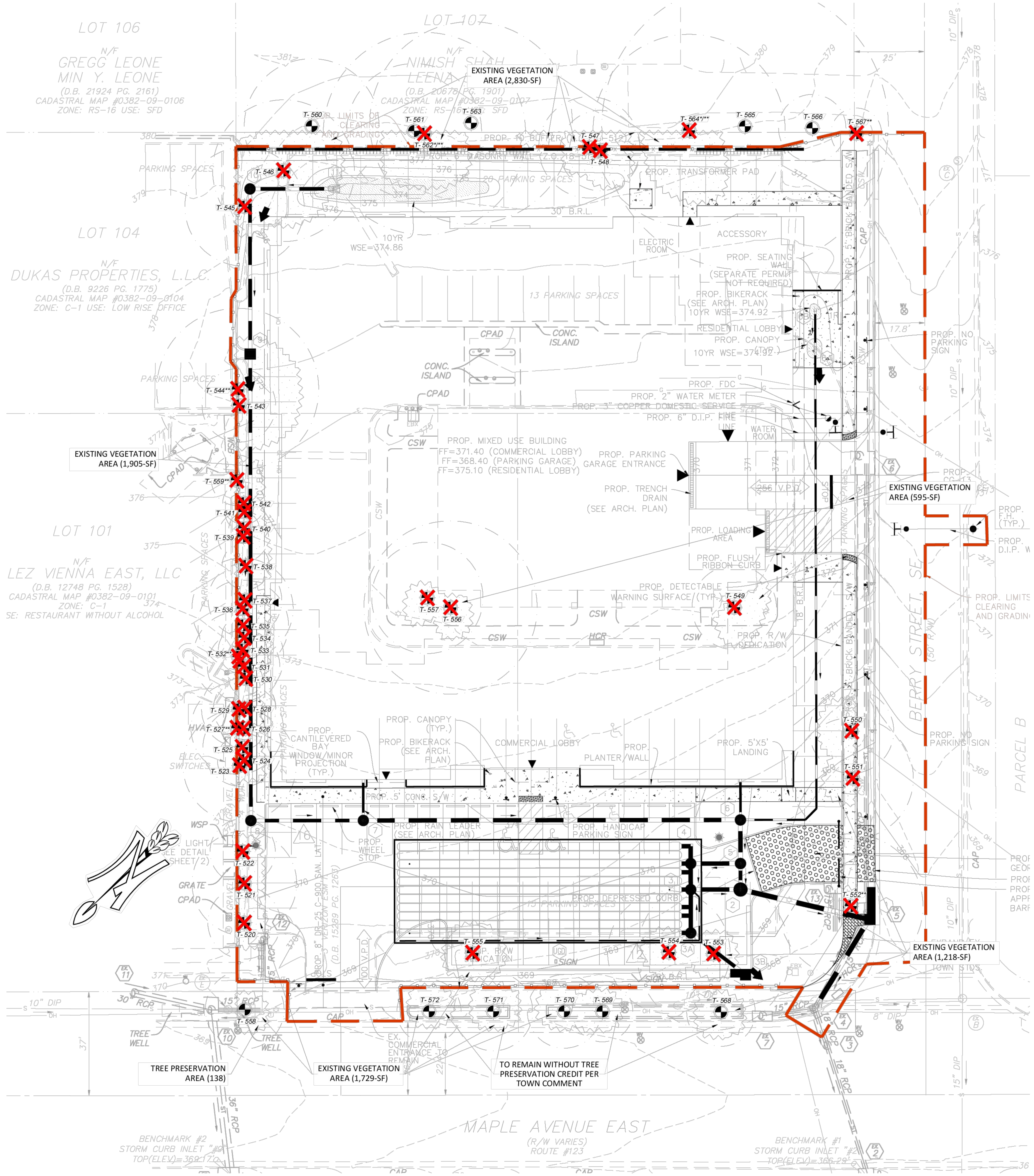
SCALE: AS SHOWN

SHEET: 33 OF 41

DATE: JULY 2025

DRAFT: ZG/SB | CHECK: MTM

FILE NUMBER: 25021-1-1



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WWW.LDC-VA.COM

COMMONWEALTH OF VIRGINIA
MATTHEW T. MARSHALL
Lic. No. 1525-B
07/09/25
DATE
LAND SURVEYOR

LEGEND

- TREELINE
- EXISTING TREE CANOPY (8,277-SF)
- TREE PRESERVATION AREA (0-SF)
- APPROX. LIMITS OF CLEARING
- CRITICAL ROOT ZONE (CRZ)
- TREE LOCATION (T-XXX)
- TREE TO BE REMOVED (T-XXX)
- TREE PROTECTION FENCING
- ROOT PRUNING

Row	Canopy Coverage Analysis	
Row	Project Address and/or Munis #: 515 Maple Avenue East	
A1	Gross site area sq. ft.	70,084
A2	Pre-development canopy coverage sq. ft.	8,277
A3	Percentage of gross site area covered by existing tree canopy (A2/A1)	11.8%
A4	Zone	CS
A5	Percentage of 20-year Tree Canopy required for site (see zoning chart)	10%
A6	Minimum 20-year Tree Canopy required for site sq. ft. (A1xA5)	7,008
A7	Tree Preservation Target (minimum tree canopy area required via tree preservation) sq. ft. (A3xA6)	828
A8	Tree canopy that will be provided through tree preservation sq. ft.	0
A10	Has the Tree Preservation Target minimum been met? (A8> or =A7)	No
A11	If No, then submit a request to deviate from the Tree Preservation Target. Including a site-specific explanation of why the Tree Preservation Target cannot be met. Provide sheet number where deviation request is located.	SHEET 2
B1	Canopy from retained trees that qualify for credit sq. ft. (A8)	0
	Multipliers - if the tree qualifies, may use both tree preservation multipliers. Canopy credits will only be given to trees with trunks that are fully located on the development site.	
B2	Tree Preservation multiplier 1.25 (B1x0.25)	0
B3	Forest Communities multiplier 1.5 (B1x0.5) (see 17-1003(d))	0
B4	Total preserved canopy including multipliers sq. ft. (B1+B2+B3)	0
C1	Canopy area that must be met with tree planting (A6-B4)	7,008
C2	Minimum Tree Canopy area to be met through tree planting with multipliers (See Sheet Planting Plan:N1)	7,008
D1	Total canopy area provided through tree preservation sq. ft. (B4)	0
D2	Minimum canopy area provided through tree planting sq. ft (C2)	9,800
D3	Total 20 year canopy coverage provided (D1+D2)	9,800
D4	Total minimum 20 year canopy coverage required (A6)	7,008
D5	Are canopy coverage requirements met?	Yes
D6	If No, then submit a request to contribute to the Tree Fund to cover the unmet portion of the required minimum tree canopy coverage.	

FOR TREE PRESERVATION PURPOSES ONLY

TREE INVENTORY NOTES:
1. *TREES NOTED FOR REMOVAL WITHIN THE SAVE AREAS SHALL BE DONE SO BY HAND WITHOUT THE USE OF HEAVY MACHINERY.
2. **SHARED/OFFSITE/ROW TREES SHALL NOT BE REMOVED WITHOUT WRITTEN PERMISSION FROM AFFECTED ADJACENT PROPERTY OWNERS.
3. OFFSITE TREES WERE ASSESSED FROM THE SUBJECT PROPERTY SO NOT TO TRESPASS ONTO ADJACENT PROPERTY. DBH MEASUREMENTS AND TREE LOCATIONS ARE APPROXIMATE.
4. TREES LOCATED WITHIN OR ON THE LIMITS OF DISTURBANCE, OR RATED AS BEING "POOR" IN CONDITION, ARE RECOMMENDED FOR REMOVAL BY TNT ARBORISTS DUE TO THE LIKELIHOOD OF TREE FAILURE. HOWEVER, AT THE DISCRETION OF THE APPLICANT, SOME OF THESE MAY BE PRESERVED DURING CONSTRUCTION WITH THE APPROVAL OF THE TOWN ARBORIST.

CERTIFIED ARBORIST ISA
Avinash M. Sareen
Certified Arborist
Certification # MA-4727A

ENVIRONMENTAL
4455 Brookfield Corporate Drive, Suite 100
Chantilly, VA 20151
PH: 703-466-5123 WWW.TNTENVIRONMENTALINC.COM

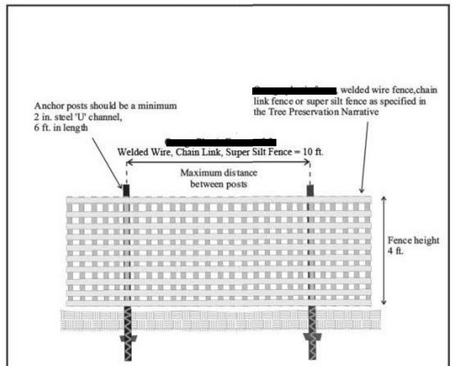
515 MAPLE AVENUE EAST
TOWN OF VIENNA

TREE PRESERVATION PLAN

REVISIONS	
DATE	COMMENTS
07/01/25	REV BY MEB

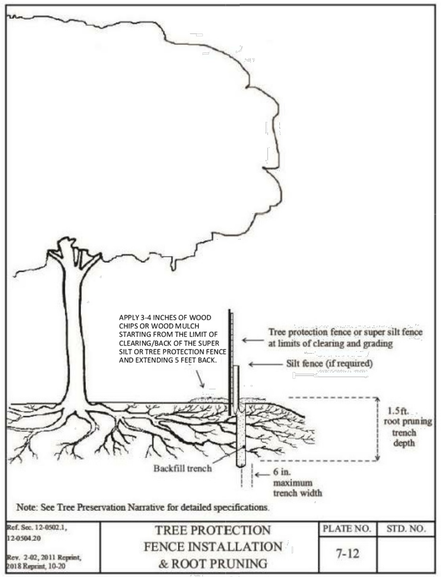
SCALE: 1"=20'
PROJECT DATE: 06/05/25
DRAFT: MEB CHECK: AMS
FILE NUMBER: 3963

FAIRFAX COUNTY PUBLIC FACILITIES MANUAL



Ref. Sec. 12-0305.1B, 12-0503.1B Rev. 2-02, 2011 Reprint, 2018 Reprint, 10-20	TREE PROTECTION FENCE INSTALLATION	PLATE NO. 6-12	STD. NO.

FAIRFAX COUNTY PUBLIC FACILITIES MANUAL



Ref. Sec. 12-0502.1, 12-0504.20 Rev. 2-02, 2011 Reprint, 2018 Reprint, 10-20	TREE PROTECTION FENCE INSTALLATION & ROOT PRUNING	PLATE NO. 7-12	STD. NO.

INVASIVE SPECIES CONTROL NARRATIVE:

1. ANY APPLICATION OF ENVIRONMENTALLY SENSITIVE APPROVED HERBICIDES SHALL BE APPLIED BY A VIRGINIA CERTIFIED APPLICATOR OR REGISTERED TECHNICIAN.

2. ENGLISH IVY: REMOVE FROM TREES AND LANDSCAPE BY CUTTING ALL VINES AT GROUND LEVEL. VINES SHOULD BE CUT AGAIN SEVERAL FEET UP THE TRUNK. PEAL THE CUT SECTIONS OFF BUT CARE SHOULD BE TAKEN NOT TO STRIP THE BARK OFF THE TREE. PULL GROUND COVER BACK A FEW FEET FROM THE BASE OF THE TREE TO SLOW REGROWTH UP THE TREE TRUNK. REMOVE GROUND COVER BY HAND PULLING, CUTTING AND MULCHING OVER TOP, AND/OR APPLYING A GLYPHOSATE HERBICIDE AS A 4-PERCENT SOLUTION (1 PINT PER 3-GALLON MIX) TO LEAVES OR FRESHLY CUT LARGE STEMS, BY THOROUGHLY WETTING THEM. USE A STRING TRIMMER TO REDUCE GROWTH LAYERS AND TO INJURE LEAVES FOR IMPROVED HERBICIDE UPTAKE. RETREATMENT MAY BE NECESSARY FOR COMPLETE ERADICATION. THE REMNANTS SHALL BE BAGGED AND REMOVED FROM THE PROJECT SITE.

3. TATARIAN HONEYSUCKLE: WHERE POSSIBLE, SEEDLINGS INCLUDING ROOT STRUCTURE SHOULD BE EXCAVATED AND REMOVED WITH SHOVEL. ALTERNATIVELY, BRANCHES AND MAIN STEM SHOULD BE CUT BACK TO ONE (1) INCH ABOVE SOIL SURFACE DURING MID TO LATE AUTUMN WHEN TEMPERATURES ARE ABOVE 60 DEGREES FAHRENHEIT. A SOLUTION OF AT LEAST 20% GLYPHOSATE HERBICIDE SHOULD BE APPLIED TO OPEN CUT FACE OF STUMP WITHIN TWO (2) TO THREE (3) MINUTES OF CUT. REFER TO HERBICIDE LABEL FOR APPLICATION INSTRUCTIONS. BRANCHES AND VEGETATION DEBRIS SHOULD BE REMOVED OFFSITE. REAPPLY HERBICIDE IN THE LATE FALL AND AGAIN IN WINTER AS NECESSARY.

4. INVASIVE SPECIES CONTROL SHALL COMMENCE WITH E&S PHASE I AND BE CONDUCTED UNTIL THE PLANTS NOTED ABOVE ARE NO LONGER IN ABUNDANCE OR UNTIL BOND RELEASE, WHICHEVER IS LATER.

LDC
4585 DAISY REID AVENUE, SUITE 201 WOODBRIDGE, VIRGINIA 22192
WWW.LDC-VA.COM

COMMONWEALTH OF VIRGINIA
MATTHEW T. MARSHALL
Lic. No. 1525-B
07/09/25
DATE
LAND SURVEYOR

TREE PROTECTION PLAN NOTES:

1. A PRE-CONSTRUCTIONMEETING SHALL BE HELD ON-SITE TO EXPLAIN PROTECTIONMEASURES TO OPERATORS, CONSTRUCTIONSUPERVISORS, OR CONTRACTOR'S REPRESENTATIVESWITHTHETOWN ARBORIST OR THEIR REPRESENTATIVE.
2. CONTRACTOR ON THE SITE SHALL STAKE CLEARING LIMITS IN ORDER TO FACILITATE LOCATIONFOR TRENCHING AND FENCING INSTALLATION FOR TREE PROTECTION.
3. NO CLEARING OR GRADING SHALL BEGIN IN AREAS WHERE TREE PRESERVATION MEASURES HAVE NOT BEEN COMPLETED.
4. THE USE OF HEAVY EQUIPMENT IS STRICTLY PROHIBITED WITHIN TREE PRESERVATION AREAS TO INCLUDE THE REMOVAL OF UNWANTED TREES. STRUCTURES, PADS ETC. SHALL BE REMOVED BY HAND.
5. THE SEQUENCE OF TREE PRESERVATION MEASURES, IF REQUIRED, SHALL BE AS FOLLOWS:
   A. ROOT PRUNING TRENCHING;
   B. TREE PROTECTION FENCING;
   C. TREE PRUNING AND CHEMICAL TREATMENT;
   D.AERATION SYSTEMS INSTALLED;
6. THE PRECEDING MEASURES SHALL BE DIRECTED INTHE FIELD BY THE CONSTRUCTION SUPERVISOR.
7. TREE PROTECTION FENCING SHALL BEMAINTAINED BYTHE CONTRACTOR FOR THE DURATION OF CONSTRUCTION. NO ALTERATION SHALL OCCURWITHOUT PRIOR APPROVAL BY A TOWN REPRESENTATIVE.
8. CRITICAL ROOT ZONE (CRZ) SHALL BE DEFINED AS 1.5' RADIUS PER 1" OF DBH FOR SINGLE-STEM TREES. DBH (DIAMETER AT BREAST HEIGHT) SHALL BE MEASURED AT A HEIGHT OF 4.5' FROM HIGHEST POINT OF GROUND AT BASE OF TRUNK. TREES THAT SPLIT INTO MULTIPLE STEMS BELOW 4.5' WILL HAVE EACH STEM MEASURED AND REPORTED INDIVIDUALLY, USING THE SUM OF SQUARES METHOD TO DETERMINE CUMULATIVE DBH. CRZ FOR MULTI-STEM TREES WILL BE CALCULATED AT 2' RADIUS PER 1" OF DBH.
9. THE PROTECTION PROVIDED SHALL CONSIST OF FENCING AROUND THE TREE TO THE DRIP LINE AND THE AREAS ENCLOSED KEPT FREE OF ALL SOIL, EQUIPMENT, AND CONSTRUCTION MATERIAL STORAGE, WHICH INCLUDES FINAL GRADING AND LANDSCAPING EFFORTS.
10. ROOT PRUNING REQUIREMENTS: UNLESS OTHERWISE INSTRUCTED BY THE OFFICE OF THE HEAD ARBORIST, ROOT PRUNING MUST BE PERFORMED WHEN THE LIMITS OF DISTURBANCE FALL WITHIN CRITICAL ROOT ZONE OF TREES TO BE SAVED. ROOTS SHALL BE PRUNED TO A MINIMUM DEPTH OF 12" AT OR BEFORE THE LOD.
11. TREES THAT ARE DETERMINED BY THE TOWN ARBORIST TO BE IN "POOR" CONDITION SHALL NOT COUNT TOWARDS CANOPY COVERAGE CALCULATIONS.
12. ALL PRUNING SHALL BE DONE IN ACCORDANCE WITH THE MOST UP TO DATE VERISON OF THE AMERICAN NATIONAL STANDARDS INSTITUTE (ANSI) A300 PRUNING STANDARDS. CLIMBING OR TREE SPIKES SHALL NOT BE USED TO CLIMB LIVE TREES UNLESS THE TREE IS BEING REMOVED.
13. NEWLY PLANTED TREES SHALL BE HEALTHY AND VIGOROUS, AND MEET ALL ANSI Z60.1 STANDARDS. ALL NEWLY INSTALLED TREES THAT ARE REQUIRED BY THE TREE CONSERVATION PLAN, WHICH IN THE OPINION OF THE TOWN ARBORIST ARE DEAD OR ARE NOT HEALTHY, SHALL BE REPLACED BY THE CONTRACTOR.
14. THE USE OF HEAVY EQUIPMENT IS STRICTLY PROHIBITED WITHIN TREE PRESEVATION AREAS, INCLUDING FOR THE PURPOSE OF REMOVING UNWANTED TREES, STRUCTURES, PADS, GRADING, SODDING, ETC. ANY STRUCTURE WITHIN THE TREE PRESERVATION AREA SHALL BE REMOVED BY HAND.
15. ALL AREAS DELINEATED AS TREE PRESERVATION AREAS SHALL BE LEFT IN THEIR ORIGINAL CONDITION THROUGHOUT THE ENTIRE CONSTRUCTION PERIOD. FAILURE TO DO SO COULD RESULT IN DENIAL OF THE OCCUPANCY PERMIT AND REMEDIATION OF THE TREE PRESERVATION AREA WILL BE REQUIRED. REMEDIATION MUST BE DONE AT THE DIRECTION OF A CERTIFIED ARBORIST AND A WRITTEN REPORT COMPLETED BY A CERTIFIED ARBORIST SHALL BE SUBMITTED AND APPROVED BY VIENNA'S URBAN ARBORIST PRIOR TO ANY REMEDIATION ACTIVITIES.
16. ANY PROPOSED GRADE CHANGES WITHIN THE TREE SAVE AREA(S) SHALL BE REVIEWED WITH THE TOWN'S URBAN ARBORIST DURING THE PRE-CONSTRUCTION MEETING.

General Tree Information									Canopy Coverage=			0	Tree Protection			
Tree ID#	Scientfic Name	Common Name	DBH (inches)	CRZ (DBH*1.5) (feet)	Multistem Tree?	ROW Tree?	Condition Rating##	Condition Rating	20 Year Life Expectancy	On Site - Off Site - Shared	To Be Removed?	Canopy Area (Preserved Tree Only)	Root Prune	Fencing	Other Tree Protection	Remarks/ Comments
0	*Genus species*	Name	#	#	Yes/No	Yes/No	0-100	Poor/Fair/Good/Excellent	>/=/<	On/Off/Shared	Yes/No	#	Yes/No	Yes/No	Describe	Describe
520	Arborvitae	Thuja occidentalis	5.7,6.4 (6.5)	12.9	Yes	No	n/a	Fair	<	Onsite	Yes	0	n/a	n/a	n/a	Mostly one-sided, and double trunk
521	Tartarian Honeysuckle	Lonicera tatarica	12.4	18.6	No	No	n/a	Fair	<	Onsite	Yes	0	n/a	n/a	n/a	Several small dead limbs, invasive species
522	Arborvitae	Thuja occidentalis	5.2,5.7 (5.8)	11.55	Yes	No	n/a	Fair	<	Onsite	Yes	0	n/a	n/a	n/a	Double trunk
523	White Mulberry	Morus alba	13.4	20.1	No	No	n/a	Poor	<	Onsite	Yes	0	n/a	n/a	n/a	Topped
524	Arborvitae	Thuja occidentalis	6.3	9.45	No	No	n/a	Fair	<	Onsite	Yes	0	n/a	n/a	n/a	
525	Arborvitae	Thuja occidentalis	9.3	13.95	No	No	n/a	Fair	<	Onsite	Yes	0	n/a	n/a	n/a	
526	Arborvitae	Thuja occidentalis	5	7.5	No	No	n/a	Poor	<	Onsite	Yes	0	n/a	n/a	n/a	Mostly dead
527	Black Locust	Robinia pseudoacacia	10.9	16.35	No	No	n/a	Fair	<	Shared	Yes	0	n/a	n/a	n/a	Mostly one-sided, and some dead limbs
528	Arborvitae	Thuja occidentalis	6.2,4 (5.0)	11.1	Yes	No	n/a	Fair	<	Onsite	Yes	0	n/a	n/a	n/a	Double trunk, and some dead limbs
529	Black Locust	Robinia pseudoacacia	8.8	13.2	No	No	n/a	Fair	<	Onsite	Yes	0	n/a	n/a	n/a	Mostly one-sided, and some dead limbs
530	Arborvitae	Thuja occidentalis	4	6	No	No	n/a	Poor	<	Onsite	Yes	0	n/a	n/a	n/a	Leaning, and poorly pruned
531	Arborvitae/ Black Locust	Thuja occidentalis/ Robinia pseudoacac	6.4,5.7 (6.4)	12.9	Yes	No	n/a	Poor	<	Onsite	Yes	0	n/a	n/a	n/a	Mostly dead, trees intertwined at base
532	Black Locust	Robinia pseudoacacia	10.7	16.05	No	No	n/a	Poor	<	Shared	Yes	0	n/a	n/a	n/a	Deadwood up trunk
533	Black Locust	Robinia pseudoacacia	5.7	8.55	No	No	n/a	Poor	<	Onsite	Yes	0	n/a	n/a	n/a	Mostly dead
534	Black Locust	Robinia pseudoacacia	5.3	7.95	No	No	n/a	Poor	<	Onsite	Yes	0	n/a	n/a	n/a	Mostly dead
535	Black Locust	Robinia pseudoacacia	10.7	16.05	No	No	n/a	Poor	<	Onsite	Yes	0	n/a	n/a	n/a	Mostly dead
536	Black Locust	Robinia pseudoacacia	12	18	No	No	n/a	Poor	<	Onsite	Yes	0	n/a	n/a	n/a	Mostly dead
537	Tartarian Honeysuckle	Lonicera tatarica	8.7	13.05	No	No	n/a	Fair	<	Onsite	Yes	0	n/a	n/a	n/a	Several small dead limbs, invasive species
538	Black Locust	Robinia pseudoacacia	5.6	8.4	No	No	n/a	Poor	<	Onsite	Yes	0	n/a	n/a	n/a	Poorly pruned, and many watersprouts
539	Arborvitae	Thuja occidentalis	6	9	No	No	n/a	Poor	<	Onsite	Yes	0	n/a	n/a	n/a	Mostly dead
540	Arborvitae	Thuja occidentalis	2.4,2.7 (2.7)	5.4	Yes	No	n/a	Poor	<	Onsite	Yes	0	n/a	n/a	n/a	Mostly dead
541	Arborvitae	Thuja occidentalis	4.6	6.9	No	No	n/a	Poor	<	Onsite	Yes	0	n/a	n/a	n/a	Mostly dead
542	Arborvitae	Thuja occidentalis	5	7.5	No	No	n/a	Poor	<	Onsite	Yes	0	n/a	n/a	n/a	Mostly dead
543	Pin Oak	Quercus palustris	8.7	13.05	No	No	n/a	Fair	<	Onsite	Yes	0	n/a	n/a	n/a	Exposed roots
544	Black Locust	Robinia pseudoacacia	19.2	28.8	No	No	n/a	Poor	<	Shared	Yes	0	n/a	n/a	n/a	Mostly dead canopy
545	Tartarian Honeysuckle	Lonicera tatarica	14.1	21.15	No	No	n/a	Fair	<	Onsite	Yes	0	n/a	n/a	n/a	Several dead limbs, invasive species
546	Red Maple	Acer rubrum	16.8	25.2	No	No	n/a	Good	<	Onsite	Yes	0	n/a	n/a	n/a	Some small dead limbs
547	Eastern Redcedar	Juniperus virginiana	12	18	No	No	n/a	Fair	<	Onsite	Yes	0	n/a	n/a	n/a	Several small dead limbs
548	Eastern Redcedar	Juniperus virginiana	9.5	14.25	No	No	n/a	Fair	<	Onsite	Yes	0	n/a	n/a	n/a	Several small dead limbs
549	Red Maple	Acer rubrum	19.9	29.85	No	No	n/a	Fair	<	Onsite	Yes	0	n/a	n/a	n/a	Several small dead limbs, and poorly pruned
550	Kwanzan Cherry	Prunus serrulata 'Kanzan'	10	15	No	No	n/a	Poor	<	Onsite	Yes	0	n/a	n/a	n/a	Deadwood up trunk
551	Kwanzan Cherry	Prunus serrulata 'Kanzan'	14.4	21.6	No	No	n/a	Poor	<	Onsite	Yes	0	n/a	n/a	n/a	Cavity in trunk, and mostly dead canopy
552	Kwanzan Cherry	Prunus serrulata 'Kanzan'	17.1	25.65	No	No	n/a	Poor	<	Shared	Yes	0	n/a	n/a	n/a	Poorly pruned for powerlines, and deadwood up trunk
553	Kwanzan Cherry	Prunus serrulata 'Kanzan'	18.1	27.15	No	No	n/a	Poor	<	Onsite	Yes	0	n/a	n/a	n/a	Mostly dead canopy, and poorly pruned
554	Kwanzan Cherry	Prunus serrulata 'Kanzan'	14.5	21.75	No	No	n/a	Poor	<	Onsite	Yes	0	n/a	n/a	n/a	Mostly dead canopy, and poorly pruned
555	Kwanzan Cherry	Prunus serrulata 'Kanzan'	20.1	30.15	No	No	n/a	Poor	<	Onsite	Yes	0	n/a	n/a	n/a	Failing trunk
556	Red Maple	Acer rubrum	20.5	30.75	No	No	n/a	Fair	<	Onsite	Yes	0	n/a	n/a	n/a	Shallow exposed roots, and poorly pruned
557	American Holly	Ilex opaca	13.2	19.8	No	No	n/a	Fair	<	Onsite	Yes	0	n/a	n/a	n/a	Some small dead limbs
558	Trident Maple	Acer buergerianum	9.3	13.95	No	No	n/a	Good	>	Onsite	No	0	No	Yes	None	
559	Black Locust	Robinia pseudoacacia	6	9	No	No	n/a	Fair	<	Shared	Yes	0	n/a	n/a	n/a	Some dead limbs
560	Red Maple	Acer rubrum	16	24	No	No	n/a	Fair	<	Offsite	No	0	Per plan	Yes	n/a	Some canopy dieback
561	Pin Oak	Quercus palustris	16	24	No	No	n/a	Good	<	Shared	No	0	Per plan	Yes	Treat with growth regulator such as paclobutrazol and water in the summertime during adjacent construction	
562	Virginia Pine	Pinus virginiana	24	36	No	No	n/a	Fair/Poor	<	Shared	Yes	0	n/a	n/a	n/a	Several small dead limbs
563	Red Maple	Acer rubrum	24	36	No	No	n/a	Fair	<	Offsite	No	0	Per plan	Yes	n/a	Some dead limbs
564	Red Maple	Acer rubrum	18,14 (16.1)	34.2	Yes	No	n/a	Fair/Good	<	Shared	Yes	0	n/a	n/a	n/a	Double trunk, and small cavity in trunk
565	Red Maple	Acer rubrum	34	51	No	No	n/a	Fair	<	Offsite	No	0	Per plan	Yes	n/a	Several dead limbs
566	Red Maple	Acer rubrum	8	12	No	No	n/a	Good	<	Offsite	No	0	Per plan	Yes	n/a	
567	Red Maple	Acer rubrum	6	9	No	No	n/a	Poor	<	Shared	Yes	0	n/a	n/a	n/a	Poorly pruned for powerlines
568	Trident Maple	Acer buergerianum	8.1	12.15	No	No	n/a	Good	>	Onsite	No	0	No	Yes	None	
569	Trident Maple	Acer buergerianum	7.2	10.8	No	No	n/a	Good	>	Onsite	No	0	No	Yes	None	
570	Trident Maple	Acer buergerianum	8.7	13.05	No	No	n/a	Good	>	Onsite	No	0	No	Yes	None	
571	Trident Maple	Acer buergerianum	9.3	13.95	No	No	n/a	Good	>	Onsite	No	0	No	Yes	None	
572	Trident Maple	Acer buergerianum	7.6	11.4	No	No	n/a	Good	>	Onsite	No	0	No	Yes	None	

TREE INVENTORY NOTES:

1. *TREES NOTED FOR REMOVAL WITHIN THE SAVE AREAS SHALL BE DONE SO BY HAND WITHOUT THE USE OF HEAVY MACHINERY.
2. **SHARED/OFFSITE/ROW TREES SHALL NOT BE REMOVED WITHOUT WRITTEN PERMISSION FROM AFFECTED ADJACENT PROPERTY OWNERS.
3. OFFSITE TREES WERE ASSESSED FROM THE SUBJECT PROPERTY SO NOT TO TRESPASS ONTO ADJACENT PROPERTY. DBH MEASUREMENTS AND TREE LOCATIONS ARE APPROXIMATE.
4. TREES LOCATED WITHIN OR ON THE LIMITS OF DISTURBANCE, OR RATED AS BEING "POOR" IN CONDITION, ARE RECOMMENDED FOR REMOVAL BY TNT ARBORISTS DUE TO THE LIKELIHOOD OF TREE FAILURE. HOWEVER, AT THE DISCRETION OF THE APPLICANT, SOME OF THESE MAY BE PRESERVED DURING CONSTRUCTION WITH THE APPROVAL OF THE TOWN ARBORIST.

CERTIFIED ARBORIST ISA
Avinash M. Sareen
Certified Arborist
Certification # MA-4727A

FOR TREE PRESERVATION PURPOSES ONLY

TNT ENVIRONMENTAL
4455 Brookfield Corporate Drive, Suite 100
Chantilly, VA 20151
PH: 703-466-5123 WWW.TNTENVIRONMENTALINC.COM

515 MAPLE AVENUE, EAST
TOWN OF VIENNA

TREE PRESERVATION DETAILS & NARRATIVE

REVISIONS

DATE	COMMENTS
07/01/25	REV BY MEB

SHEET: 35 OF 41

SCALE: NTS

PROJECT DATE: 06/05/25

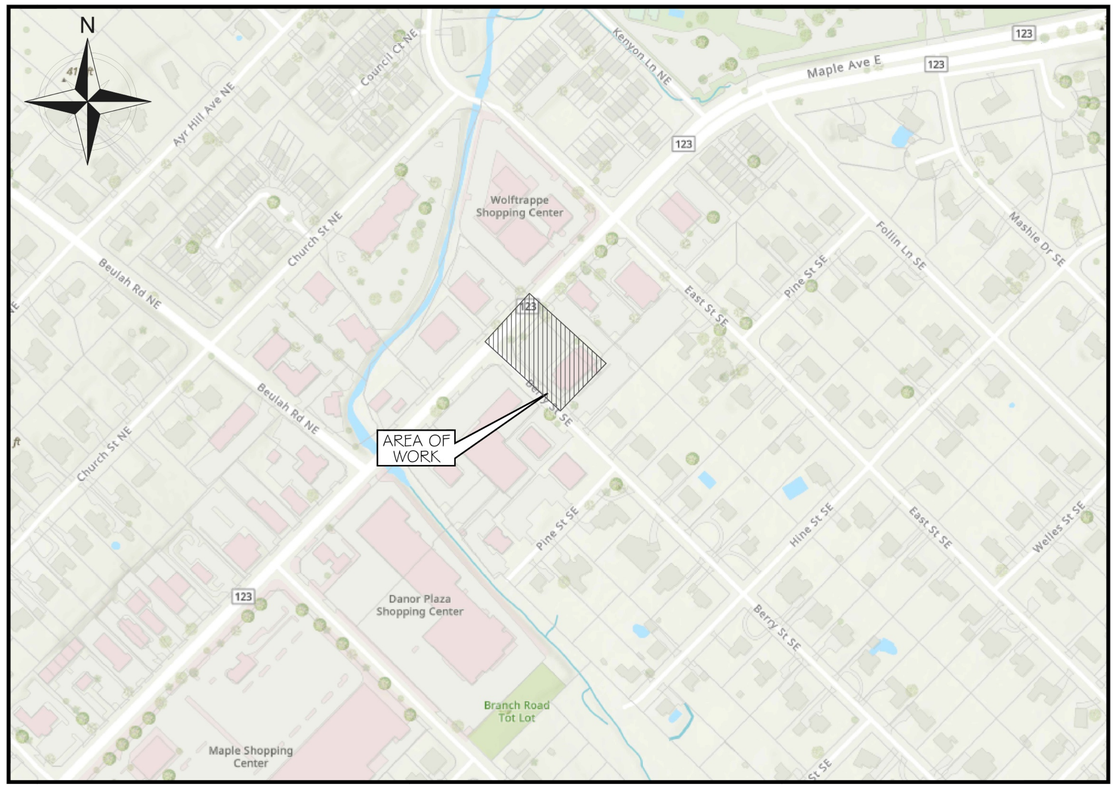
DRAFT: MEB | CHECK: AMS

FILE NUMBER: 3963

GENERAL NOTES:

1.ALL WORK SHALL COMPLY WITH APPLICABLE LOCAL, STATE AND FEDERAL REGULATORY AGENCIES, INCLUDING BUT NOT LIMITED TO OSHA, NESC, DOT, RPA, ETC. GENERAL NOTES WILL APPLY TO ALL DRAWINGS.
2.CONTRACTORS ARE RESPONSIBLE FOR INSTALLING UTILITY INFRASTRUCTURE PER EACH UTILITY COMPANY'S STANDARDS.
3.CONTRACTORS ARE RESPONSIBLE FOR COORDINATING ALL REQUIRED UTILITY COMPANY INSPECTIONS.
4.CONTRACTORS SHALL COORDINATE INSTALLATION WITH UTILITY APPROVED CONDUIT PROFILES SUPPLIED BY CIVIL ENGINEER-OF-RECORDS.
5.CONTRACTORS SHALL NOTIFY DFM DEVELOPMENT SERVICES, LLC CONSTRUCTION SUPERVISOR PRIOR TO ANY DEVIATION FROM PLAN, OR UPON DISCOVERY OF POTENTIAL CONFLICT NOT INDICATED ON PLAN.
6.CONTRACTORS SHALL NOTIFY DFM DEVELOPMENT SERVICES, LLC CONSTRUCTION SUPERVISOR IF ANY DIRECTION IS GIVEN TO DEVIATE FROM THIS PLAN BEFORE PROCEEDING WITH PROPOSED CHANGES, EVEN IF CHANGES ARE DIRECTED BY UTILITY PERSONNEL.
7.CONTRACTOR SHALL INSTALL MULE TAPE WITH FEET MARKINGS IN EACH CONDUIT OR INNERDUCT.
8.CONTRACTOR SHALL MAINTAIN CONSTRUCTION AS-BUILT DRAWINGS AND PRESENT A COMPLETE SET OF RED-LINE DRAWINGS WITHIN 10 DAYS OF COMPLETION OF THE WORK.
9.ANY CONDUITS THAT ARE CAPPED BELOW GRADE SHALL BE MARKED AND NOTED ON RED-LINE DRAWINGS WITH DEPTH INFORMATION INDICATED.
10.DEVICE SIZE AND PLACEMENT ON DRY UTILITY PLAN IS FOR VAULT SIZING AND SPACE PLANNING ONLY. ACTUAL DEVICE SIZE AND/OR VOLTAGE MAY VARY FROM WHAT IS ACTUALLY INSTALLED BY THE UTILITY PROVIDER. FINAL TRANSFORMER ORDER/PLACEMENT SHALL BE DICTATED BY THE UTILITY PROVIDER AND WILL BE SHOWN ON THE DESIGN DRAWINGS DEVELOPED BY THE UTILITY PROVIDER. THE ELECTRICIAN IS RESPONSIBLE FOR VERIFYING WHICH TRANSFORMER SHOULD FEED WHICH TERMINATION WITH THE UTILITY PROVIDER.
11.ALL CONDUIT INFRASTRUCTURE SHALL BE FURNISHED AND INSTALLED BY CONDUIT CONTRACTOR UNLESS OTHERWISE SPECIFIED.
12.ALL CONDUITS SHALL BE INSTALLED WITH 36" MINIMUM RADIUS BENDS UNLESS OTHERWISE SPECIFIED.
13.ALL CONDUITS SHALL BE SCHEDULE 40 PVC UNLESS OTHERWISE SPECIFIED.
14.ALL CONDUITS SHALL BE INSTALLED WITH A MINIMUM OF 36" DEPTH OF COVER UNLESS OTHERWISE SPECIFIED.
15.MANHOLE PENETRATIONS SHOWN IN PLAN VIEW ARE APPROXIMATIONS. UTILITY PROVIDER MANHOLE BUTTERFLY DIAGRAMS SHALL SUPERSEDE MANHOLE PENETRATIONS SHOWN ON THIS DRY UTILITY PLAN.
16.ALL CONDUITS ENTERING NEW ELECTRIC MANHOLES SHALL BE ENCASED FOR THE FIRST 10' FROM THE ELECTRIC MANHOLE.
17.CONTRACTOR IS RESPONSIBLE FOR COORDINATING MATERIAL PICKUP WITH EACH UTILITY PROVIDER.
18.THIS EXHIBIT IS FOR INFORMATION ONLY. ALL VA811/MISSUTILITY LAWS AND PRACTICES SUPERSEDE THIS PLAN. ANY MARKED OR UNMARKED UTILITIES SHOULD BE EXCAVATED UTILIZING NON-MECHANIZED EXCAVATION TECHNIQUES. ALL UTILITIES IN CONFLICT OR OF UNKNOWN ORIGIN SHOULD BE REPORTED TO VA811/MISSUTILITY AND COORDINATED WITH THE APPROPRIATE UTILITY OWNER. NO UTILITY SHOULD BE MOVED, HANDLED, CUT, OR REMOVED WITHOUT THE DIRECT WRITTEN CONSENT OF THE UTILITY OWNER.

DFM DEVELOPMENT SERVICES, LLC
515 MAPLE AVE
VIENNA, VA 22180



LOCATION MAP
SCALE: N/A

SHEET INDEX

1 COVER SHEET
2 OVERVIEW PLAN
3 EXISTING PLAN
4 PROPOSED PLAN

SCOPE OF WORK:

XXXXX

DU PLAN REVIEWED BY:

POWER: _____ DATE: _____

TELECOM: _____ DATE: _____

GAS: _____ DATE: _____

FOR DRY UTILITY PURPOSES ONLY

PRELIMINARY NOT FOR CONSTRUCTION

DFM DEVELOPMENT SERVICES, LLC
▪ Permit Expediting ▪ Bond Release
▪ Dry Utility Design & Coordination ▪ Traffic Control Plans
▪ Environmental Compliance
dfmdevelopment.com | 1910 Association Dr, Reston, VA 20191 | 703-942-8700

DATE: 05/09/2025
SCALE: AS NOTED
DESIGN BY: MF
CHECKED BY: A. KING

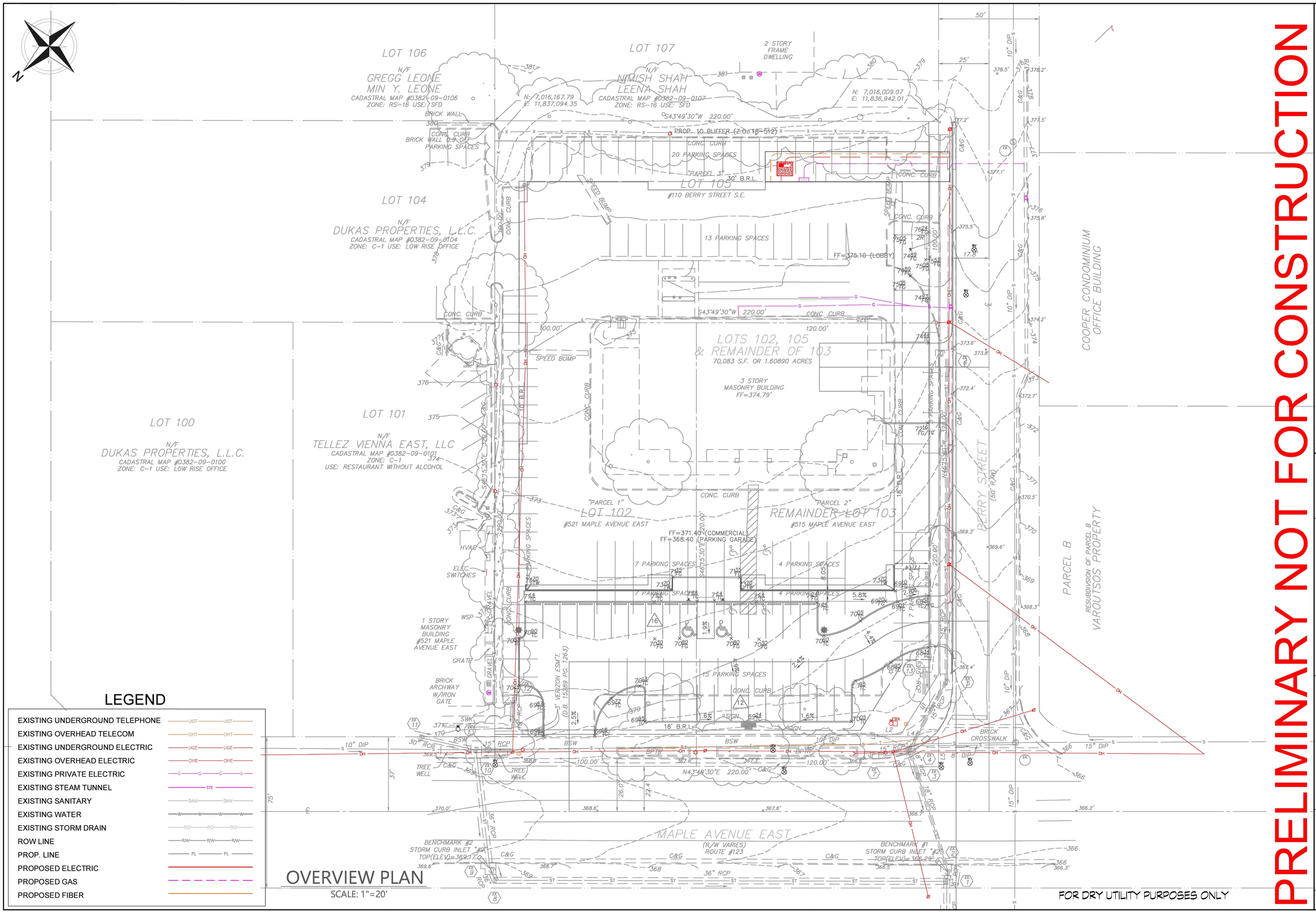
NO.	DATE	DESCRIPTION	BY
1	XX/XX/XX		XX

COVER SHEET
for
SEKA HOMES, LTD.
at
515 MAPLE AVE
VIENNA, VA 22180

SHEET NUMBER

SHEET: 36 OF 41

DFM JOB NO. 110674



LEGEND

- EXISTING UNDERGROUND TELEPHONE — UGT
- EXISTING OVERHEAD TELECOM — OHT
- EXISTING UNDERGROUND ELECTRIC — UGE
- EXISTING OVERHEAD ELECTRIC — OHE
- EXISTING PRIVATE ELECTRIC — G
- EXISTING STEAM TUNNEL — STE
- EXISTING SANITARY — SAN
- EXISTING WATER — W
- EXISTING STORM DRAIN — SD
- ROW LINE — R/W
- PROP. LINE — PL
- PROPOSED ELECTRIC
- PROPOSED GAS
- PROPOSED FIBER

OVERVIEW PLAN

SCALE: 1"=20'

FOR DRY UTILITY PURPOSES ONLY

PRELIMINARY NOT FOR CONSTRUCTION

DFM DEVELOPMENT SERVICES, LLC
▪ Permit Expediting ▪ Bond Release
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▪ Environmental Compliance
dfmdevelopment.com | 1910 Association Dr, Reston, VA 20191 | 703-942-8700

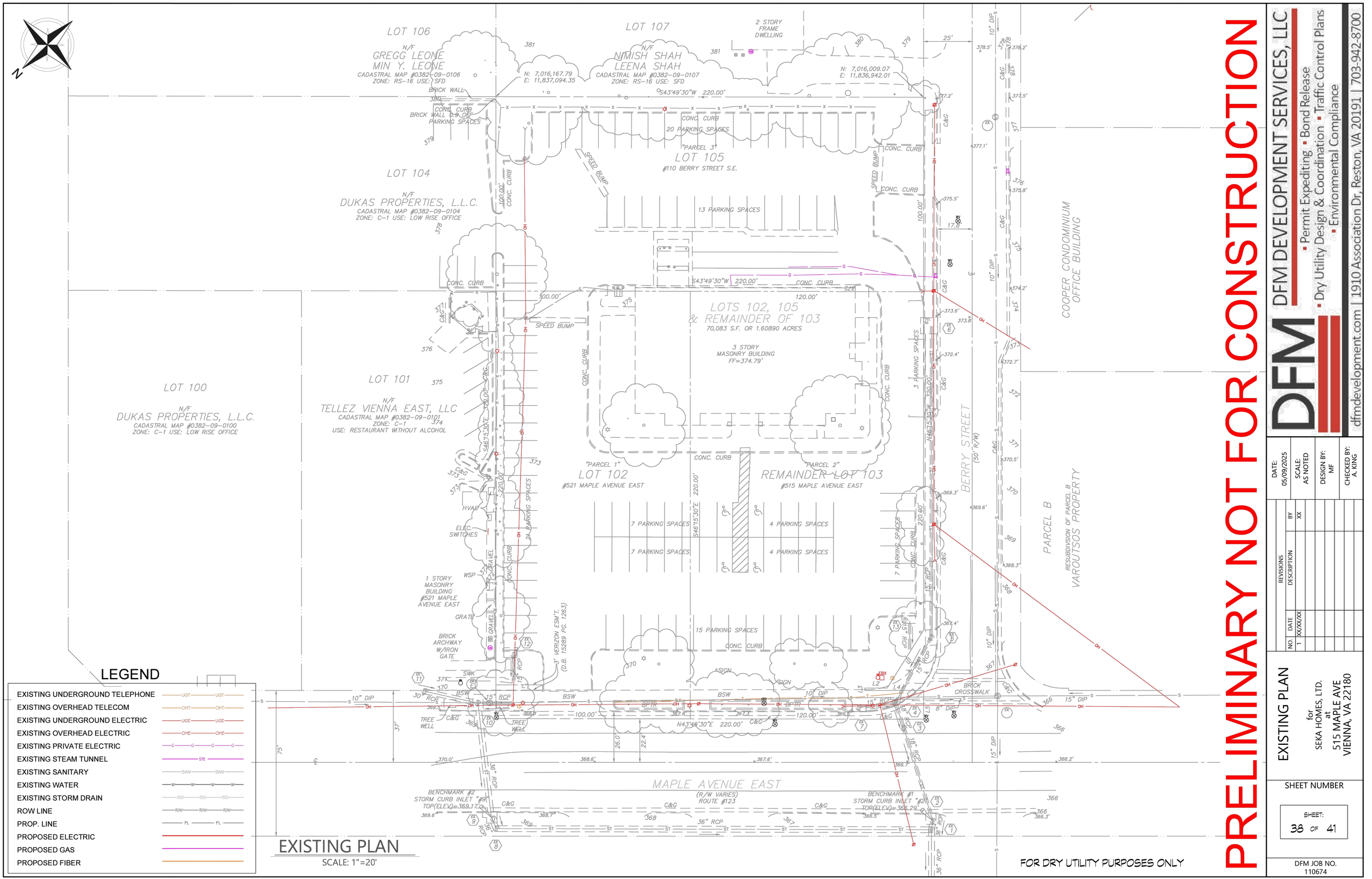
DATE: 05/09/2025
SCALE: AS NOTED
DESIGN BY: MF
CHECKED BY: A. KING

NO.	DATE	REVISIONS DESCRIPTION	BY
1	XX/XX/XX		XX

OVERVIEW PLAN
for
SEKA HOMES, LTD.
at
515 MAPLE AVE
VIENNA, VA 22180

SHEET NUMBER
SHEET: 37 OF 41

DFM JOB NO. 110674



LEGEND

- EXISTING UNDERGROUND TELEPHONE — UGT
- EXISTING OVERHEAD TELECOM — OHT
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- EXISTING SANITARY — SAN
- EXISTING WATER — W
- EXISTING STORM DRAIN — SD
- ROW LINE — R/W
- PROP. LINE — PL
- PROPOSED ELECTRIC
- PROPOSED GAS
- PROPOSED FIBER

EXISTING PLAN

SCALE: 1"=20'

FOR DRY UTILITY PURPOSES ONLY

PRELIMINARY NOT FOR CONSTRUCTION

DFM DEVELOPMENT SERVICES, LLC
▪ Permit Expediting ▪ Bond Release
▪ Dry Utility Design & Coordination ▪ Traffic Control Plans
▪ Environmental Compliance
dfmdevelopment.com | 1910 Association Dr, Reston, VA 20191 | 703-942-8700

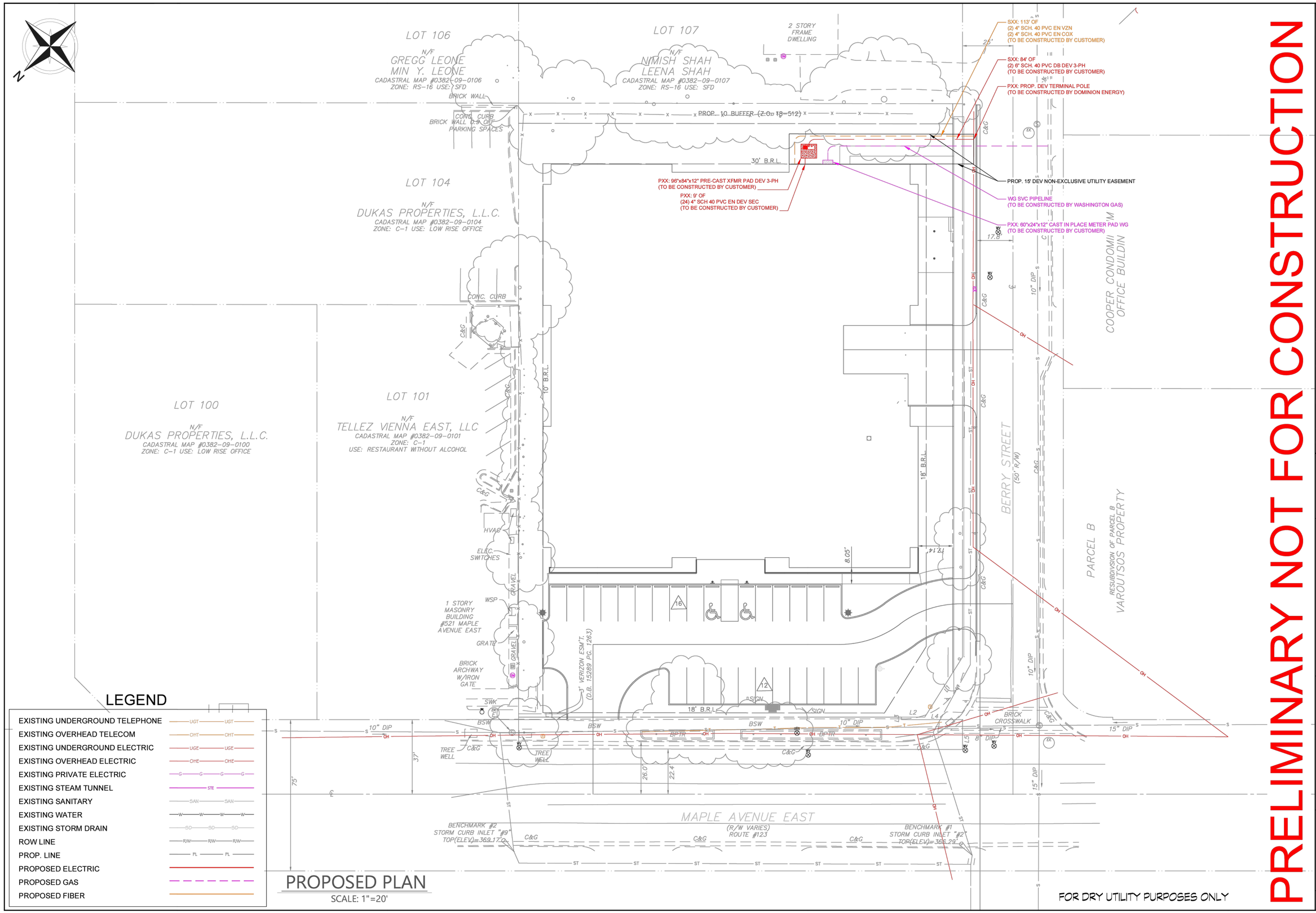
DATE: 05/09/2025
SCALE: AS NOTED
DESIGN BY: MF
CHECKED BY: A. KING

NO.	DATE	REVISIONS DESCRIPTION	BY
1	XX/XX/XX		XX

EXISTING PLAN
for
SEKA HOMES, LTD.
at
515 MAPLE AVE
VIENNA, VA 22180

SHEET NUMBER
SHEET: 38 OF 41

DFM JOB NO. 110674



LEGEND

- EXISTING UNDERGROUND TELEPHONE
- EXISTING OVERHEAD TELECOM
- EXISTING UNDERGROUND ELECTRIC
- EXISTING OVERHEAD ELECTRIC
- EXISTING PRIVATE ELECTRIC
- EXISTING STEAM TUNNEL
- EXISTING SANITARY
- EXISTING WATER
- EXISTING STORM DRAIN
- ROW LINE
- PROP. LINE
- PROPOSED ELECTRIC
- PROPOSED GAS
- PROPOSED FIBER

PROPOSED PLAN

SCALE: 1"=20'

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1	XX/XX/XX		XX

PROPOSED PLAN

for
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at
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SHEET NUMBER

SHEET: 39 OF 41

DFM JOB NO. 110674

Luminaire Schedule

Symbol	Qty	Label	Arrangement	Lum. Lumens	Lum. Watts	LLF	Description	[MANUFAC]	Filename
	43	A	Single	6071	37.52	0.720	LPGC-A03-830-5SQ, Mounted 8ft	SIGNIFY STONCO	LPGC-A03-830-5SQ.ies
	2	C	Single	976	11	0.720	CW2DF2BKBK80511A30606, Wall Mounted 10ft	Lucifer	CW2_DF2_90CRI_11W_3000K_60DEG.ies
	1	D	Single	800	8.8	0.720	OL15400TXB, Mounted 6ft-8in	Philips	LEDBulb_A19_E26_8,8-60W-IES.ies
	5	E	Single	800	8.8	0.720	2RS1-WH-80S15A2-2HB1-TR204, Canopy Mounted 7ft-8in	Philips	LEDBulb_A19_E26_8,8-60W-IES.ies
	2	F	Single	5028	48.5	0.720	VL72-42-G2-5-W-3-N, 10ft Pole	SIGNIFY HADCO	VL72-42-G2-5-W-3-N.ies

Calculation Summary

Label	CalcType	Units	Avg	Max	Min	Avg/Min	Max/Min	Description
Exterior	Illuminance	Fc	0.14	2.7	0.0	N.A.	N.A.	10ft Grid
Garage_Floor	Illuminance	Fc	8.36	12.3	5.0	1.67	2.46	8ft Grid

Scale: 1 inch= 16 Ft.

Quantities provided by Lighting Environments are for informational purposes only.
Verification by others prior to purchasing is strongly advised.
We do not assume responsibility for the accuracy or completeness of these counts

LDC
4585 DAISY REID AVENUE, SUITE 201 WOODBRIDGE, VIRGINIA 22192
WWW.LDC-VA.COM

COMMONWEALTH OF VIRGINIA
MATTHEW T. MARSHALL
Lic. No. 1355-B
07/09/25
DATE
LAND SURVEYOR

SHEET: 40 OF 41

Sales person: Alan Hoff

Calculations Team
D Brownell
DB Lighting Consultation

Date: 7/16/2025

Page Title: CALCULATIONS

Page Number: 1

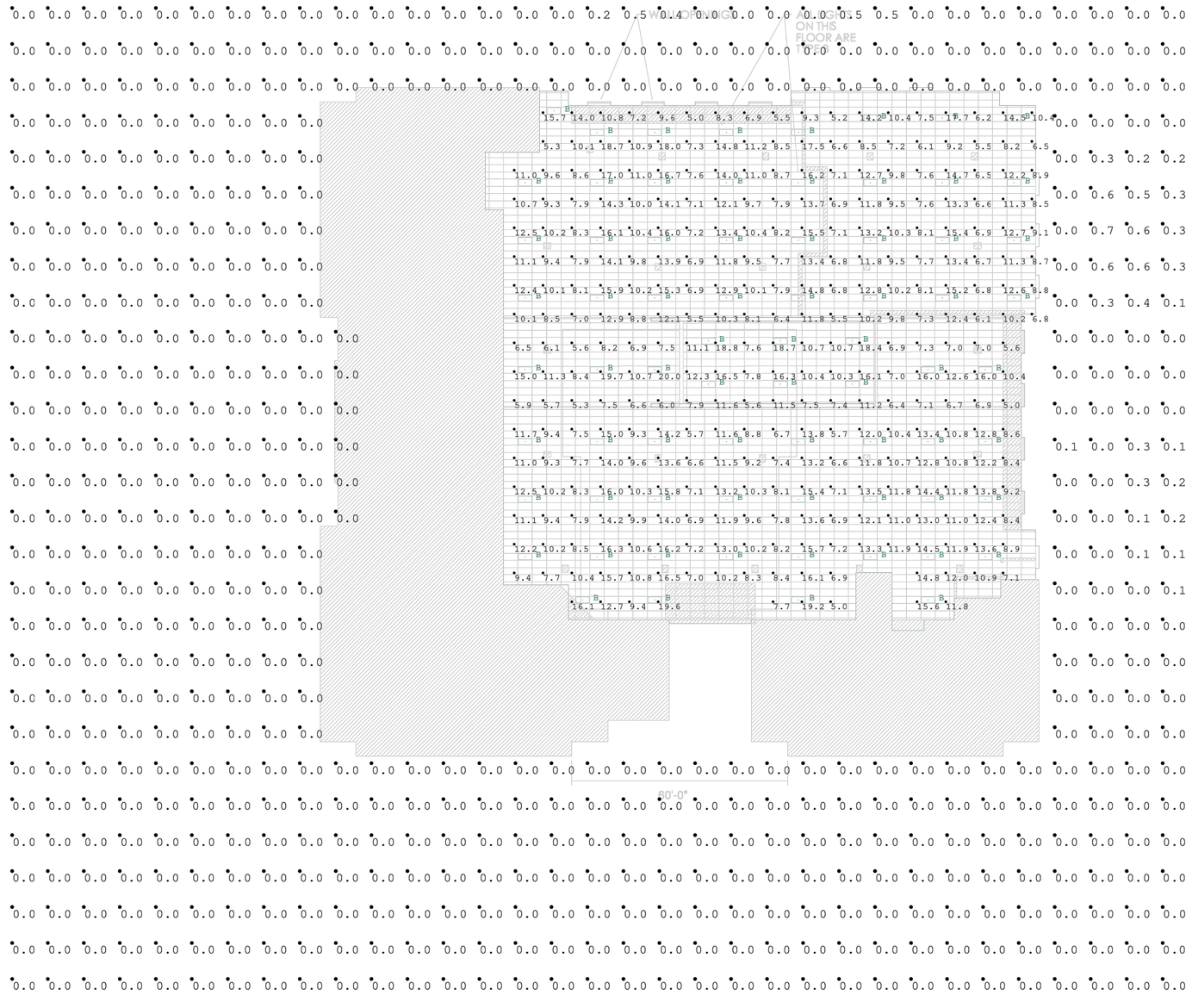
Revision No.: ------

Project: 2025-162
515 Maple Garage LVL 1

Client: Rust Orling

LIGHTING ENVIRONMENTS
3420 West Clay Street, Richmond, VA 23220 phone: 410-712-0239

Lighting Environments assumes no responsibility for any errors in the IES files, background images, or other information provided to be used in these calculations. Actual or measured results may vary due to manufacturer tolerances, component malfunctions, obstructions, varying surface reflectances and field conditions. The owner assumes all responsibility for compliance with federal, state and/or local codes and regulations.



Luminaire Schedule									
Symbol	**Qty**	**Label**	**Arrangement**	**Lum. Lumens**	**Lum. Watts**	**LLF**	**Description**	**[MANUFAC]**	**Filename**
·	71	B	Single	4656	36.5	0.720	2FPZ48L835-4-DS-UNV-DIM, Mounted 8ft	DAY-BRITE	2FPZ48L835-4-DS-UNV-DIM.ies

Calculation Summary								
Label	**CalcType**	**Units**	**Avg**	**Max**	**Min**	**Avg/Min**	**Max/Min**	**Description**
Exterior	Illuminance	Fc	0.02	0.7	0.0	N.A.	N.A.	10ft Grid
Garage_Floor	Illuminance	Fc	10.51	20.0	5.0	2.10	4.00	8ft Grid

Not to Scale

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COMMONWEALTH OF VIRGINIA
MATTHEW T. MARSHALL
Lic. No. 1535-B
07/09/25
DATE
CIVIL SURVEYOR

LDC
4585 DAISY REID AVENUE, SUITE 201 WOODBRIDGE, VIRGINIA 22192
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SHEET: 41 OF 41

Sales person: Alan Hoff

Calculations Team
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Project: 2025-162
515 Maple Garage LVL 2

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