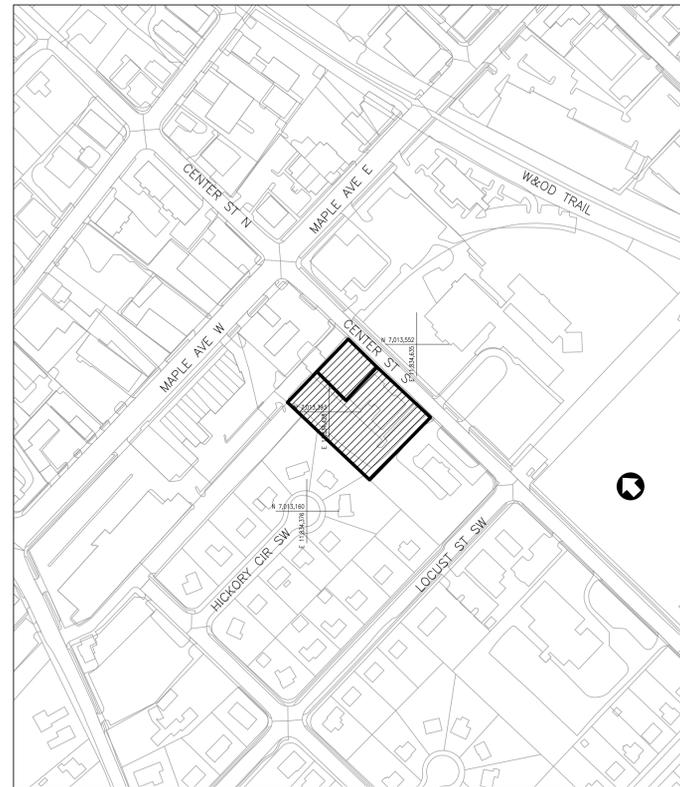


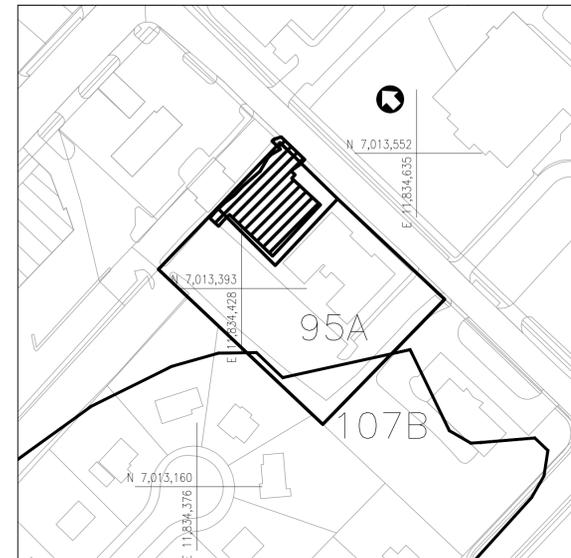
# SITE PLAN VIENNA SUBSTATION EXPANSION

## Town of Vienna, Virginia

**VICINITY MAP**  
SCALE 1"=200'



**SOILS MAP**  
SCALE 1"=100'



SOIL ID NUMBERS	SOIL SERIES NAME	FOUNDATION SUPPORT	SOIL DRAINAGE	EROSION POTENTIAL	PROBLEM CLASS
95A	URBAN LAND	N/A	N/A	N/A	IVB

IS THE SITE LOCATED ON NATURALLY OCCURRING ASBESTOS (NOA) SOIL?  
 YES  NO   
 (SOIL INFORMATION PER FAIRFAX COUNTY MAPPING)

**FIRE MARSHAL NOTES**

AVAILABLE FIRE FLOW       N/A       (GAL./MIN.)  
 SOURCE OF FIRE FLOW INFO.       N/A        
 TYPE OF CONSTRUCTION - USBC       N/A        
 USE GROUP CLASSIFICATION - USBC       N/A       (FT.)  
 BUILDING HEIGHT       N/A        
 BUILDING TO BE FULLY SPRINKLERED YES  NO  (EX BLDG)

IF YES, CHECK APPROPRIATE STANDARD: NFPA 13  ; NFPA 13D  ; NFPA 13R   
 SEE PFM CHAPTER 9, PART 2 FOR FULL INFORMATION REQUIRED. FIRE FLOW REQUIREMENTS TO BE DETERMINED BY THE FIRE PREVENTION DIVISION.

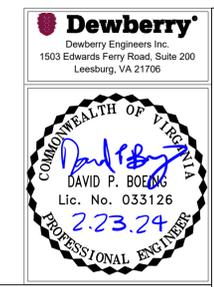
**OWNER INFORMATION:**

TAX MAP #:	0384-02-0145	TAX MAP #:	0384-02-0146
SITE ADDRESS:	125 CENTER ST S VIENNA, VA 22180	SITE ADDRESS:	127 CENTER ST S VIENNA, VA 22180
OWNER:	ELECTRIC AND POWER CO VIRGINIA PO BOX 27007, 12TH FLOOR RICHMOND, VA 23261	OWNER:	THE TOWN OF VIENNA 127 CENTER STREET S VIENNA, VA 22180

Sheet Index	
Sheet #	Sheet Title
C.01.01	COVER SHEET
C.01.02	PROPERTY MAP
C.01.03	EX. CONDITIONS PLAN
C.01.04	DEMOLITION PLAN
C.02.01	LAYOUT PLAN
C.02.02	ZONING COMPLIANCE PLAN
C.02.03	GRADING & DRAINAGE PLAN
C.03.01	E&S PHASE 1
C.03.02	E&S PHASE 2
C.03.03	E&S NOTES & DETAILS
C.04.01	STORMWATER MANAGEMENT PLAN
C.04.02	STORMWATER MANAGEMENT PLAN
C.04.03	STORMWATER MANAGEMENT PLAN
C.04.04	STORMWATER MANAGEMENT PLAN
C.04.05	STORMWATER MANAGEMENT PLAN
C.04.06	STORMWATER MANAGEMENT PLAN
C.04.07	STORMWATER MANAGEMENT PLAN
C.05.01	PCB TEST RESULTS
L.01.01	PLANTING PLAN
L.01.02	TREE CONSERVATION PLAN
L.05.01	PLANTING NOTES AND SCHEDULE
L.05.02	TREE CONSERVATION NOTES

**ZONING REQUIREMENTS**

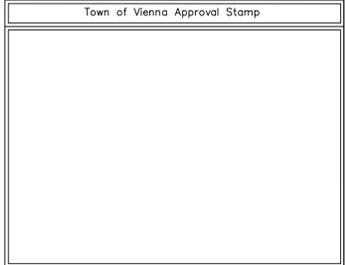
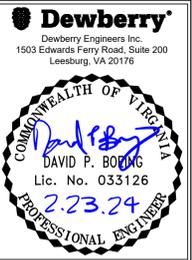
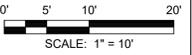
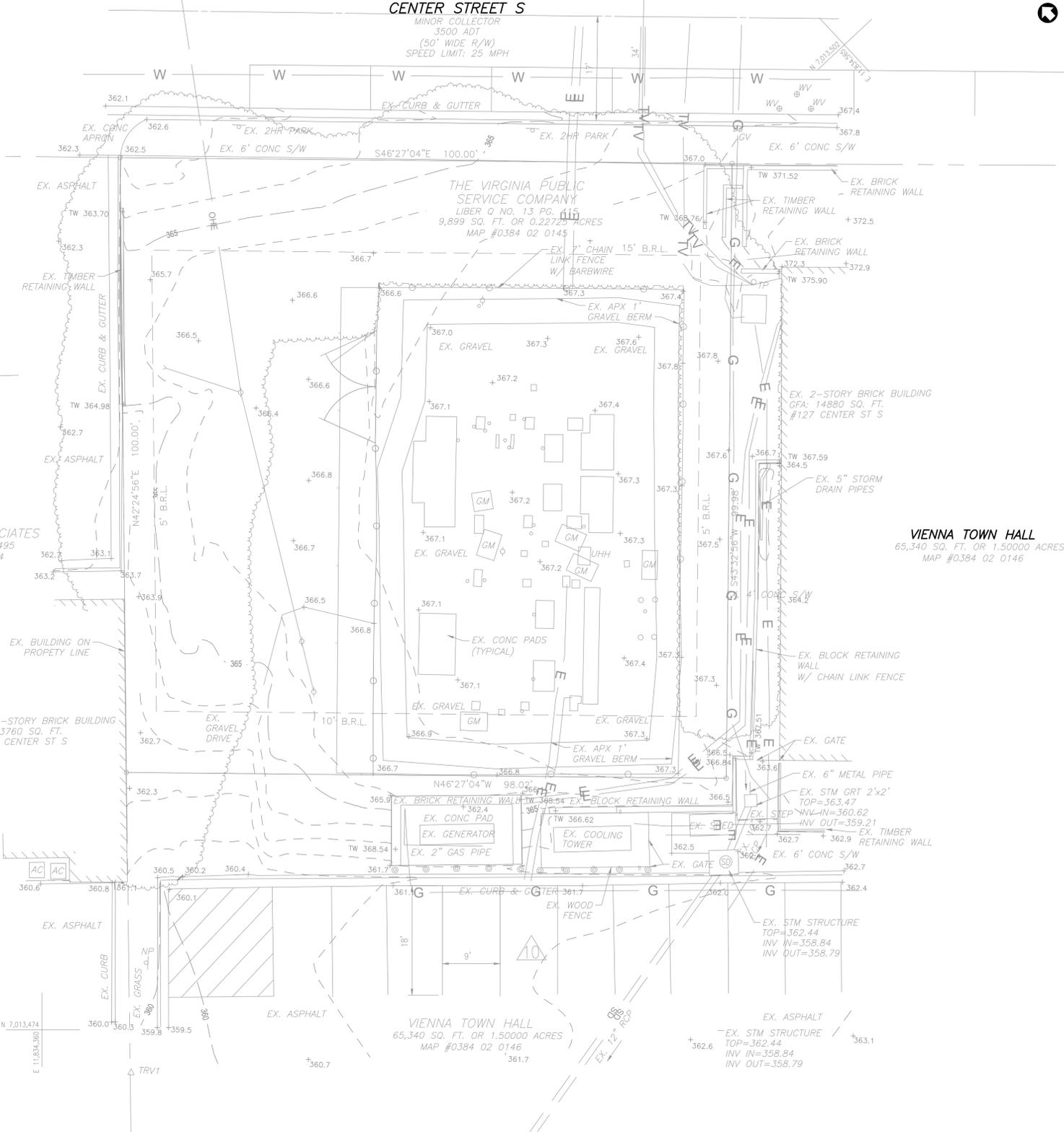
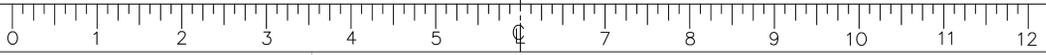
- 1) ZONING       C2; RM2
- 2) AVERAGE LOT AREA       N/A       (SQ. FT.)
- 3) MIN. LOT AREA       N/A; 8,000       (SQ. FT.)
- 4) MIN. LOT WIDTH       N/A; 70       (FT.)
- 5) MAX. BUILDING HEIGHT       35; 35       (FT.)
- 6) NUMBER OF FLOORS       N/A; 3       (Commercial/Industrial ONLY)
- 7) MIN. YARD REQUIREMENTS:  
 FRONT 15; 60 (FT.)    SIDE 5; 15 (FT.)    REAR 10; 35 (FT.)
- 8) MAXIMUM FAR       NONE
- 9) MAXIMUM DENSITY       NONE       (D.U./AC.)
- 10) OPEN SPACE REQUIRED       NONE       % (SQ. FT.)
- 11) ANGLE OF BULK PLANE: FRONT       N/A       SIDE       N/A       REAR       N/A        
 (DETAIL(S) ON SHEET       N/A      )
- 12) OVERLAY DISTRICT(S)       N/A



ELECTION DISTRICT: HUNTER MILL			
<b>COVER SHEET</b>			
TOWN OF VIENNA		VIRGINIA	
Designed by:	AMD	Date	1/2024
Approvals	DPB	Project No.	50151035
Approvals		Scale	
		B/M No.	
		Revisions	
Cad File Name		Drawing No.	
PLOTTED:		C.01.01	

No.	Date	By	Description	Project Number	B/M





**LEGEND**

- EX. INTERMEDIATE CONTOUR --- 582 ---
- EX. INDEX CONTOUR --- 580 ---
- EXISTING EDGE OF PAV'T. --- EX.E.P. ---
- EXISTING FENCE --- X ---
- EXISTING TREE LINE --- [Symbol] ---
- EXISTING STORM SEWER --- [Symbol] ---
- EXISTING ELECTRIC LINE --- E ---
- EXISTING GAS LINE --- G ---
- EXISTING WATERLINE --- W ---
- EXISTING TV LINE --- TV ---
- EXISTING SIGN --- [Symbol] ---

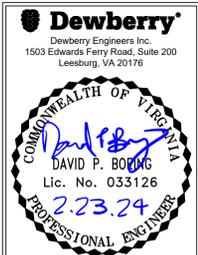
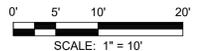
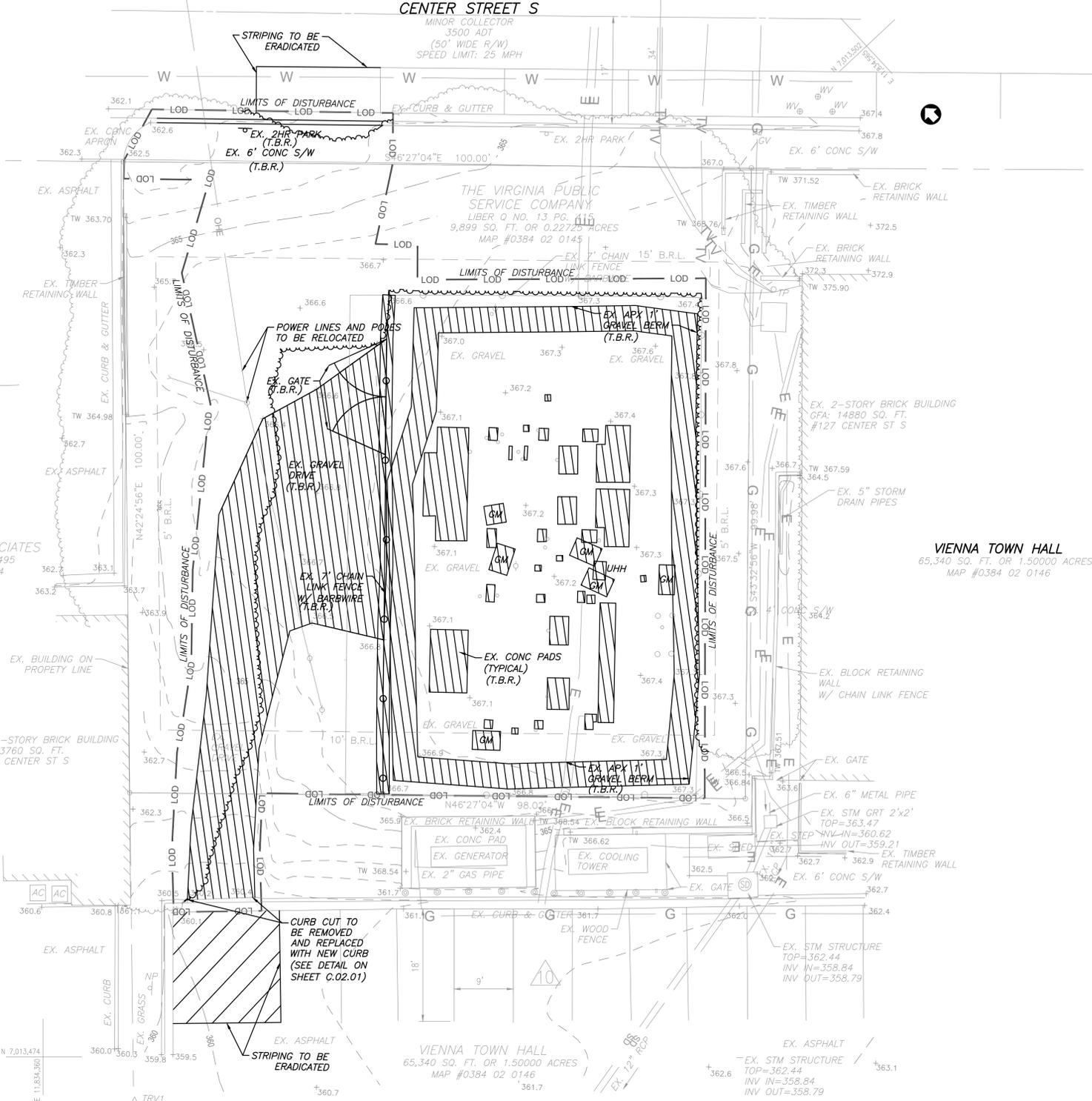


ELECTION DISTRICT: HUNTER HILL				
<b>EX. CONDITIONS PLAN</b>				
TOWN OF VIENNA		VIRGINIA		
Designed by:	Name	Date	Project No.	Sheet No.
Approvals	DB	1/2024	50151035	3 OF 22
Approvals			Scale	
			1"=10'	
B/M No.		Revisions		
Cad File Name		Drawing No.		
PLOTTED:		C.01.03		

NOTE: VIRGINIA NORTH STATE PLANE COORDINATE SYSTEM, ZONE 5551; FIPS ZONE 4501; NAD 83 DATUM USED

No.	Date	By	Description

Revisions



**LEGEND**

- EX. INTERMEDIATE CONTOUR ---582---
- EX. INDEX CONTOUR ---580---
- EXISTING EDGE OF PAV'T. ---EX.EP---
- EXISTING FENCE ---X---
- EXISTING TREE LINE ---[Symbol]---
- EXISTING STORM SEWER ---[Symbol]---
- EXISTING ELECTRIC LINE ---E---
- EXISTING GAS LINE ---G---
- EXISTING WATERLINE ---W---
- EXISTING TV LINE ---TV---
- EXISTING SIGN ---[Symbol]---
- LIMITS OF DISTURBANCE ---LOD---
- ITEM TO BE REMOVED [Hatched Box] (T.B.R.)

ITEMS TO BE REMOVED

NOTE: VIRGINIA NORTH STATE PLANE COORDINATE SYSTEM, ZONE 5551, FIPS ZONE 4501; NAD 83 DATUM USED

No.	Date Checked/By	Description

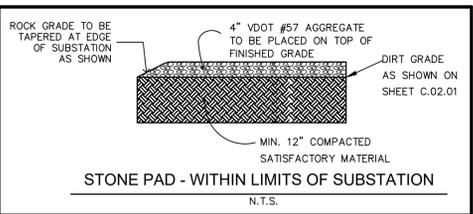
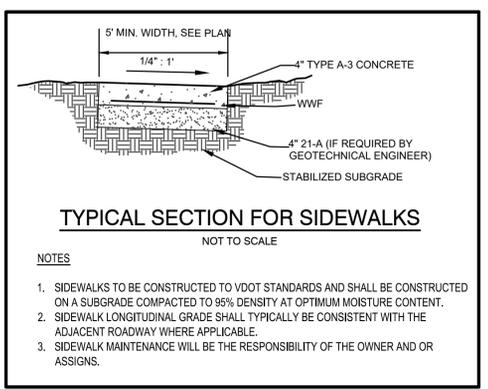
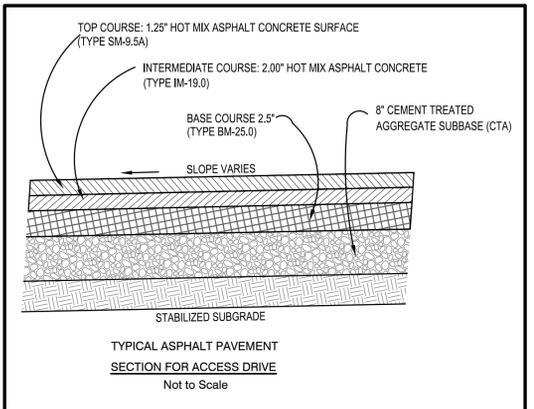
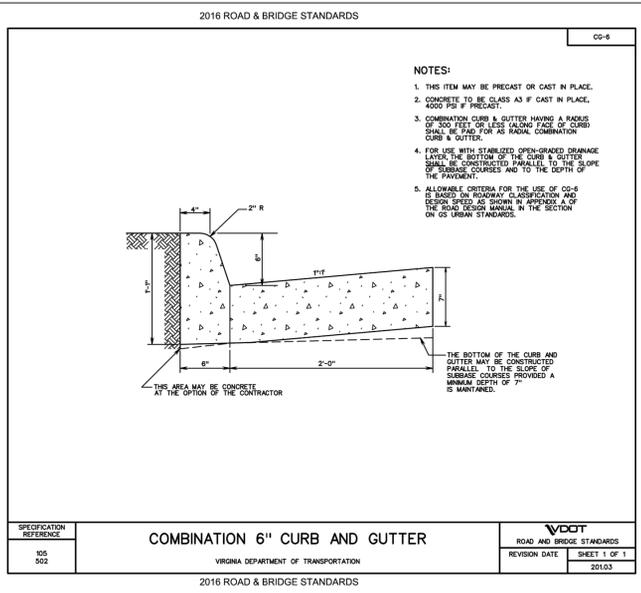
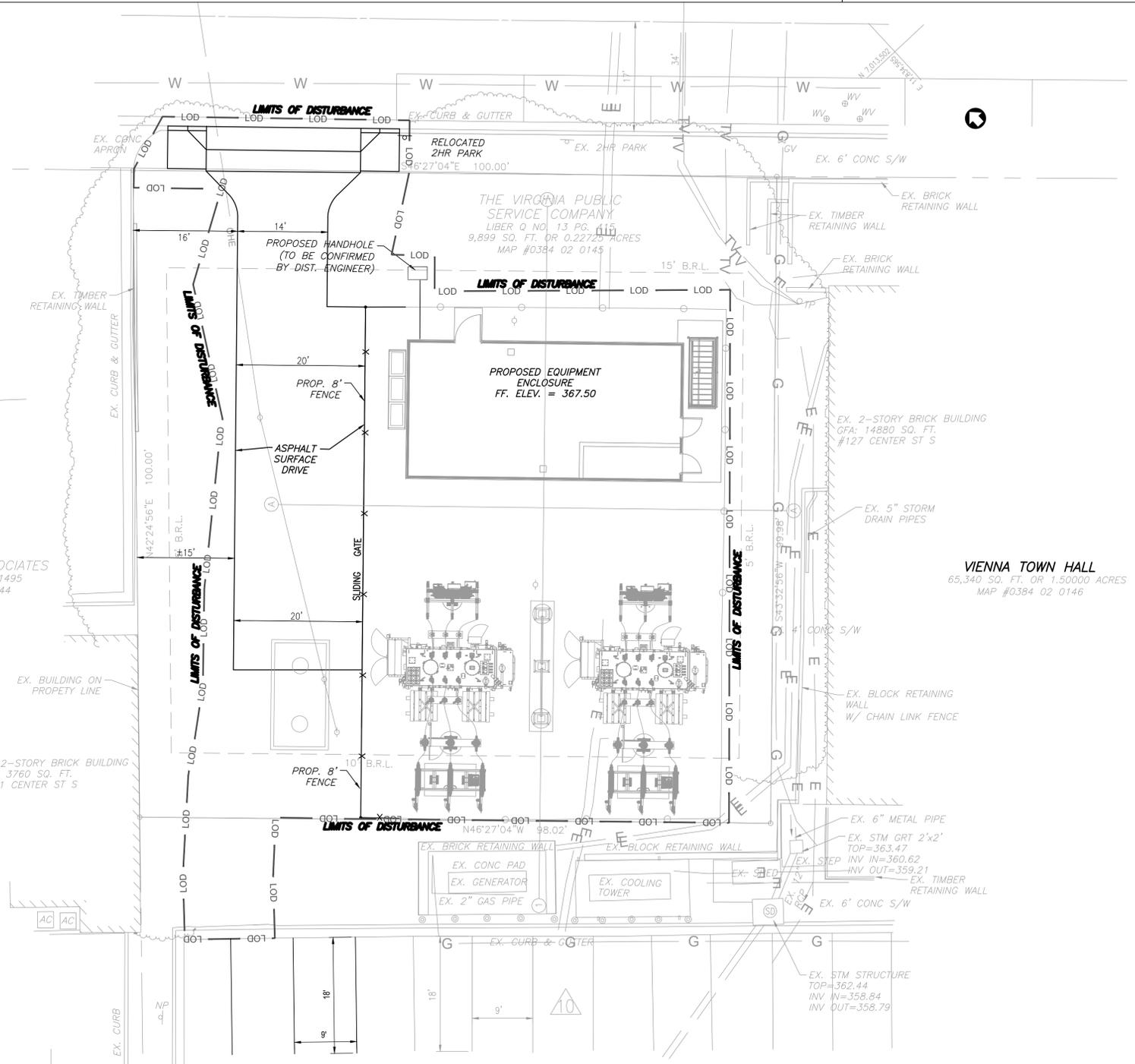
**Dominion Energy**

ELECTION DISTRICT: HUNTER MILL

**DEMOLITION PLAN**

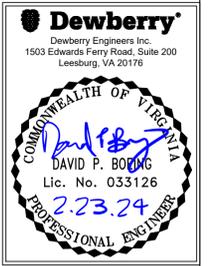
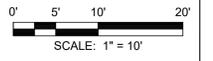
TOWN OF VIENNA VIRGINIA

Designed by:	Name	Date	Project No.	Sheet No.
AD	AD	1/2024	50151035	4 OF 22
Approvals	DB		Scale	
Approvals			1"=10'	
	B/M No.		Revisions	
Cad File Name			Drawing No.	
PLOTTED:			C.01.04	



**LEGEND**

- EXISTING EDGE OF P.W.T.
- EXISTING FENCE
- EXISTING TREE LINE
- EXISTING STORM SEWER
- EXISTING ELECTRIC LINE
- EXISTING GAS LINE
- EXISTING WATERLINE
- EXISTING TV LINE
- EXISTING SIGN
- PROPOSED FENCE



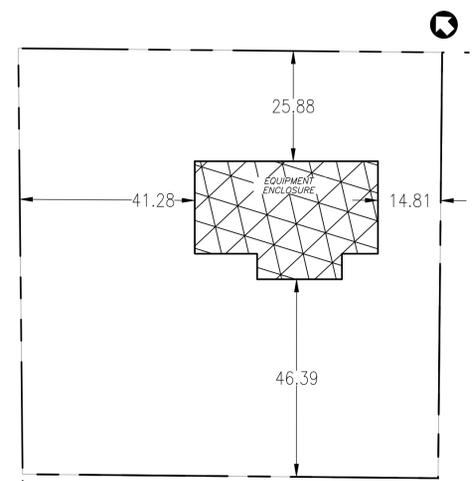
ELECTION DISTRICT: HUNTER MILL		TOWN OF VIENNA, VIRGINIA	
<b>LAYOUT PLAN</b>			
Designed by:	Name	Date	Project No.
AD	DB	1/2024	50151035
Approvals	Scale	Sheet No.	
	1"=10'	5 OF 22	
B/M No.		Revisions	
Cad File Name		Drawing No.	
PLOTTED:		C.02.01	

No.	Date	By	Description

NOTE: VIRGINIA NORTH STATE PLANE COORDINATE SYSTEM, ZONE 5551, FIPS ZONE 4501; NAD 83 DATUM USED



**SETBACK DIAGRAM**



**SITE TABULATION**

TOTAL PROPERTY AREA 9,899 SQ. FT. = 0.23 AC ; 65,340 SQ. FT = 1.50 AC  
 MAP#s 0384-02-0145; 0384-02-0146  
 EXISTING USE UTILITY SUBSTATION; TOWN HALL  
 ZONING C-2; RM-2  
 PROPOSED USE UTILITY SUBSTATION

**LOT REQUIREMENTS (PER ARTICLE 9 & 13 OF THE TOWN OF VIENNA ZONING ORDINANCE)**

YARDS (C-2)	REQUIREMENT	PROVIDED
FRONT*	15 FT	25.88 FT
SIDE	5 FT	14.81 FT, 41.28 FT
REAR	10 FT	46.39 FT

\*AT LEAST 25 PERCENT OF THE FRONT YARD SHALL BE LANDSCAPED

BUILDING HEIGHT 35 ft MAX N/A

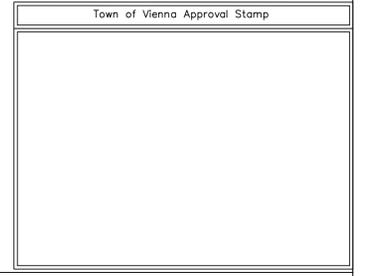
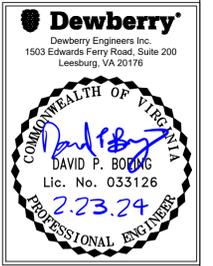
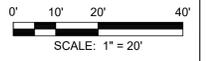
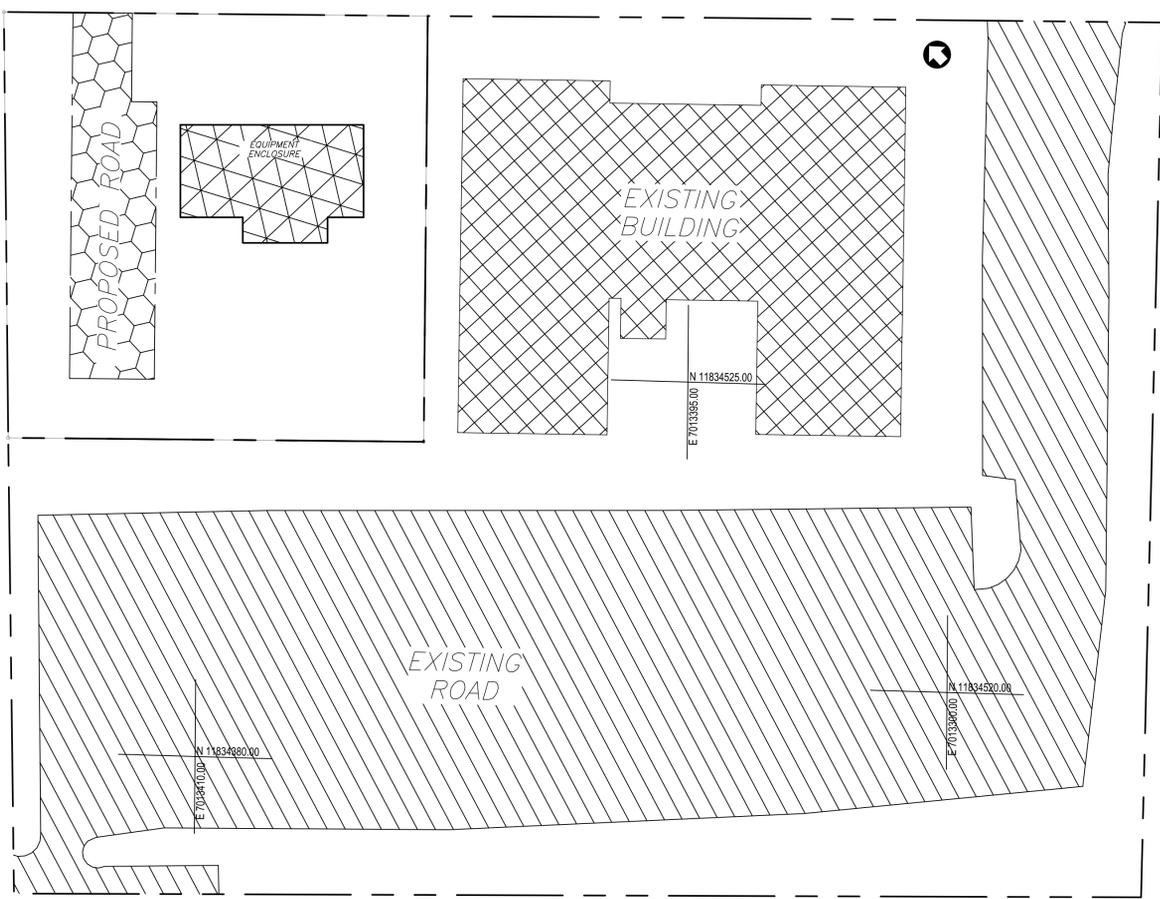
NO PARKING REQUIRED PER CHAPTER 18 OF THE TOWN CODE

**LOT COVERAGE CALCULATIONS**

MAP#: 0384-02-0145  
 BUILDING AREA N/A  
 ROADWAY 1,593 SF  
 TOTAL 1,593 SF  
 SITE AREA 9,899 SF  
 LOT COVERAGE 1,593 / 9,899 = 16.09%

MAP#: 0384-02-0146  
 BUILDING AREA 7,440 SF  
 ROADWAY 21,606 SF  
 TOTAL 29,046 SF  
 SITE AREA 65,340 SF  
 LOT COVERAGE 29,046 / 65,340 = 44.45%

**LOT COVERAGE/ OPEN SPACE DIAGRAM**



Date: June 23, 2023  
 To: Alexa Devlin, Project Engineer, Dewberry  
 From: Amy Staley, Credit Sales Manager, Resource Environmental Solutions  
 Subject: Potomac Watershed - Nutrient Credit Availability

Project Reference: Vienna Substation, 0.08 Credits Requested; HUC 02070008

This letter is to confirm the availability of 0.08 authorized nutrient credits ("Nutrient Credits") from one or more of Resource Environmental Solutions' ("RES") Potomac nutrient bank facilities for use by permit applicants within the Potomac watershed, including HUC 02070008, to compensate for nutrient loadings in excess of state or local regulations, as per Virginia Code § 62.1-44.15:35 and § 62.1-44.19:14 and Virginia Administrative Code 9 VAC 25-820-10 et seq. These Nutrient Credits are generated and managed under the terms of the Banking Instruments known as the Whispering Hills Nutrient Reduction Implementation Plan ("NRIP").

Please feel free to contact me if you have any questions.

Sincerely,

*Amy Staley*

Amy Staley  
 Credit Sales Manager  
 astaley@res.us | 919.209.1055

**TOWN OF VIENNA GENERAL NOTES**

- A PRE-CONSTRUCTION MEETING MUST BE HELD PRIOR TO THE START OF CONSTRUCTION. CALL 703-255-6384 TO SCHEDULE THE PRE-CONSTRUCTION MEETING. ALL CONSTRUCTION GENERATED DEBRIS MUST BE HAULED AWAY BY THE CONTRACTOR OR OWNER.
- 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.
- TREE PROTECTION FOR ANY TOWN TREE, AS SHOWN ON PLAN, MUST BE INSTALLED PRIOR TO ANY SITE WORK.
- 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.
- ALL DUMPSTERS/PODS ARE TO BE PLACED ON PRIVATE PROPERTY.
- FRONT ELEVATION CHECKS ARE REQUIRED.
- WALL CHECK SURVEYS ARE REQUIRED AND MUST BE SUBMITTED PRIOR TO CONSTRUCTION ABOVE FOUNDATION CORNERS.
- 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.
- 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.

**ELECTROMAGNETIC FIELD (EMF) AND ELECTROMAGNETIC RADIATION (EMR) IMPACTS**

THE SCOPE OF WORK AT VIENNA SUBSTATION INVOLVES REPLACING THE LOWER VOLTAGE PORTION OF THE SUBSTATION WITH A GAS INSULATED SWITCHGEAR (GIS) AND THE HIGHER VOLTAGE EQUIPMENT WITH DEVICES OF APPROXIMATELY THE SAME ELECTRICAL CAPACITY AS EXISTING EQUIPMENT. WITH EQUIPMENT REMAINING AT THE SAME ELECTRICAL CAPACITY AND OTHER EQUIPMENT BEING GAS-INSULATED, AS OPPOSED TO TRADITIONAL OPEN-AIR INSULATION, THE ELECTROMAGNETIC FIELDS (EMF) EMITTED BY THE SUBSTATION WOULD BE EXPECTED TO DECREASE WITH THE EXECUTION OF THIS PROJECT. FURTHERMORE, THE USE OF GIS TECHNOLOGY ALLOWS FOR HIGH FIELD CANCELLATION DUE TO THE EXTREMELY CLOSE PHASE SPACING AND METAL ENCLOSURE AROUND THE CONDUCTORS.

NOTE: VIRGINIA NORTH STATE PLANE COORDINATE SYSTEM, ZONE 5551; FIPS ZONE 4501; NAD 83 DATUM USED

No.	Date	By	Description

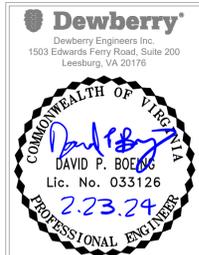
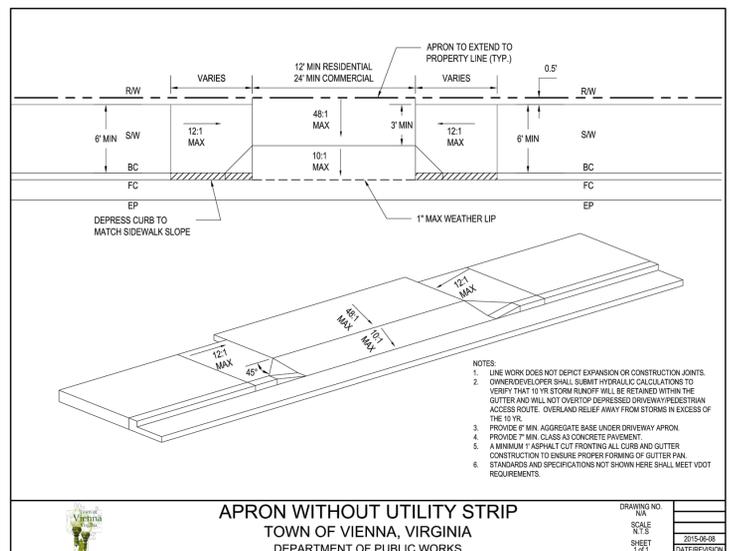
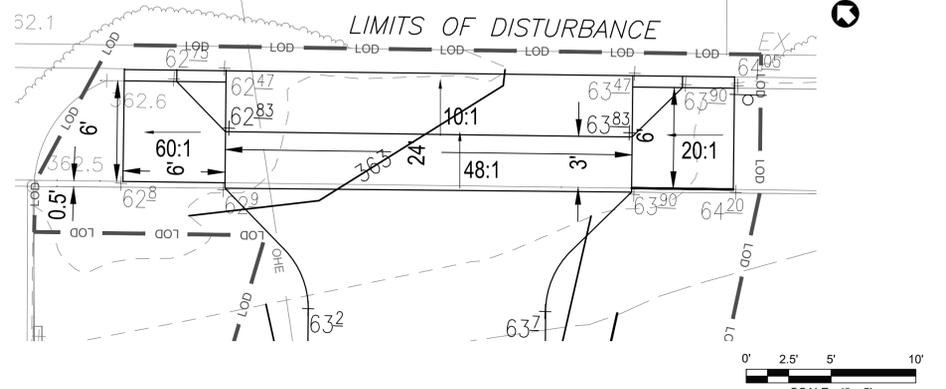
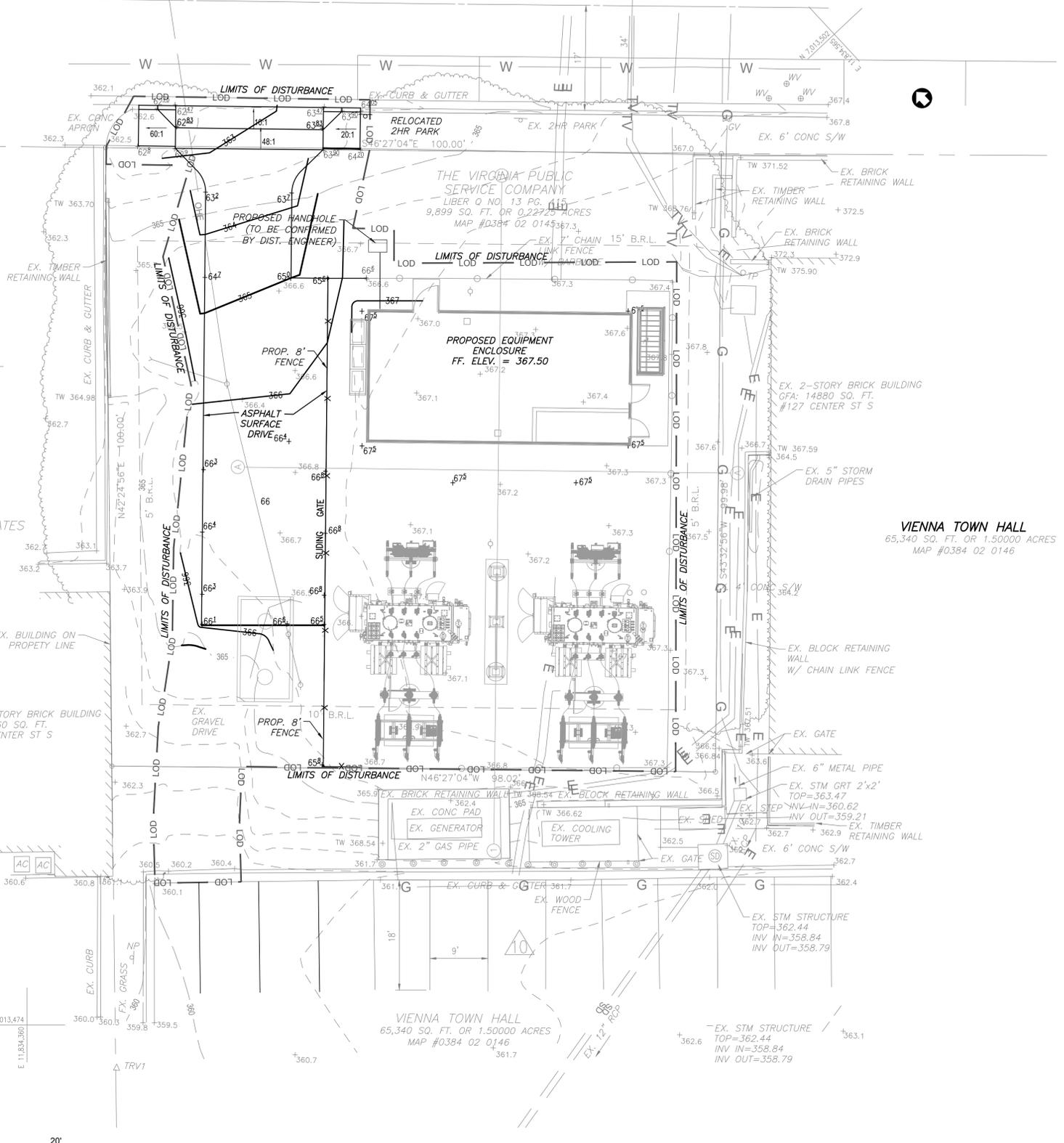
**Dominion Energy**

ELECTION DISTRICT: HUNTER HILL

**ZONING COMPLIANCE PLAN**

TOWN OF VIENNA VIRGINIA

Designed by:	AD	Date	1/2024	Project No.	50151035	Sheet No.	6 OF 22
Approvals	DB	Scale	1"=20'				
Approvals	B/M No.		Revisions				
Cad File Name			Drawing No.				
PLOTTED:			C.02.02				



**LEGEND**

- EX. INTERMEDIATE CONTOUR --- 582 ---
- EX. INDEX CONTOUR --- 580 ---
- EXISTING EDGE OF PAV'T. --- EX. E.P. ---
- EXISTING FENCE ---
- EXISTING TREE LINE ---
- EXISTING STORM SEWER ---
- PROPOSED FENCE ---
- PROP. TREE LINE ---
- PROP. INDEX CONTOUR --- 580 ---
- PROP. INTERMEDIATE CONTOUR --- 582 ---
- PROP. SPOT ELEVATION --- +82.5 ---
- LIMITS OF DISTURBANCE --- LOD ---

NOTE: VIRGINIA NORTH STATE PLANE COORDINATE SYSTEM, ZONE 5551, FIPS ZONE 4501; NAD 83 DATUM USED

No.	Date	By	Description

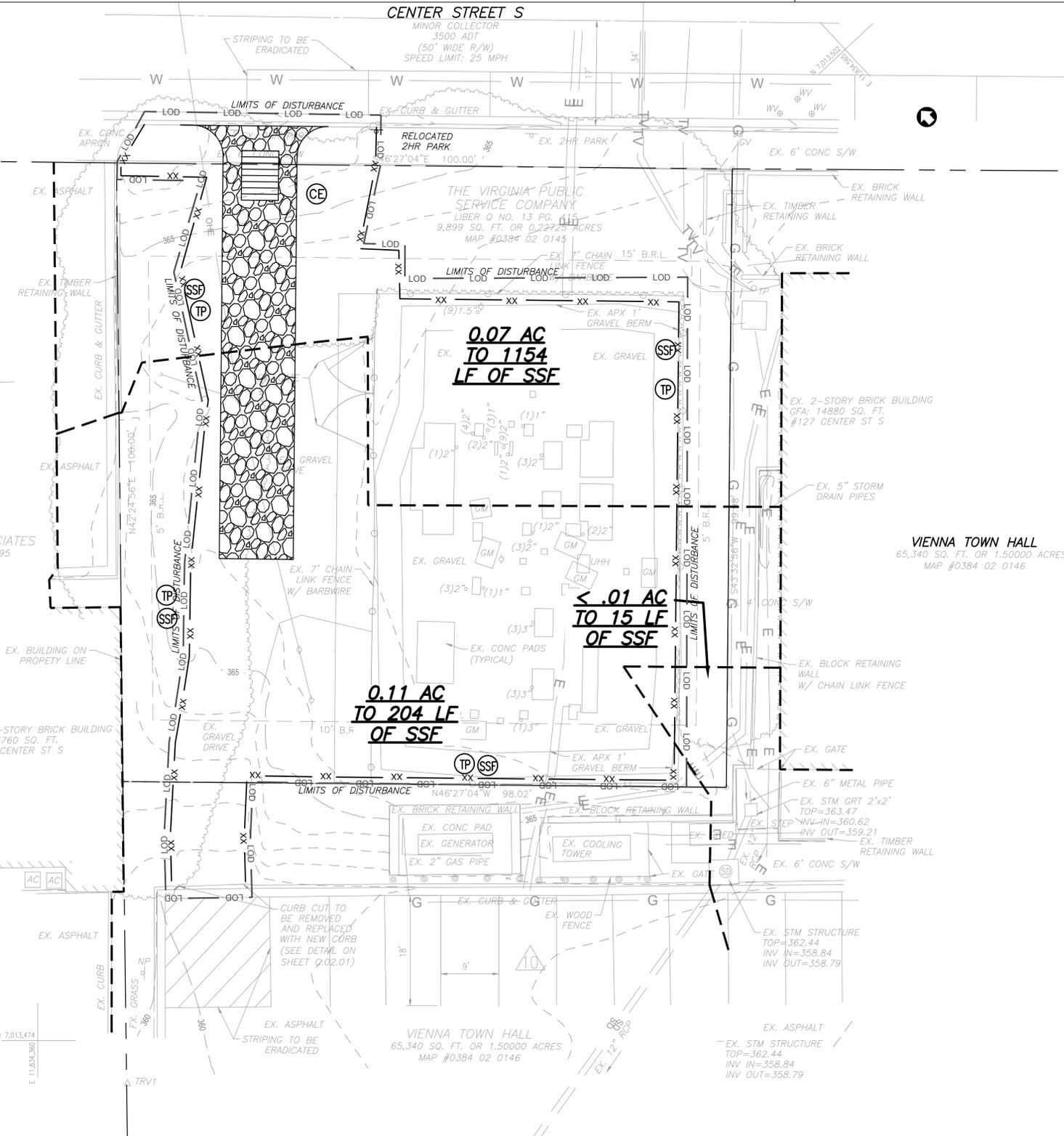
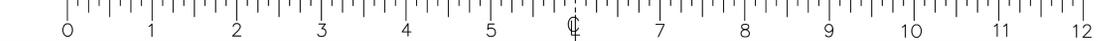
**Dominion Energy**

ELECTION DISTRICT: HUNTER MILL

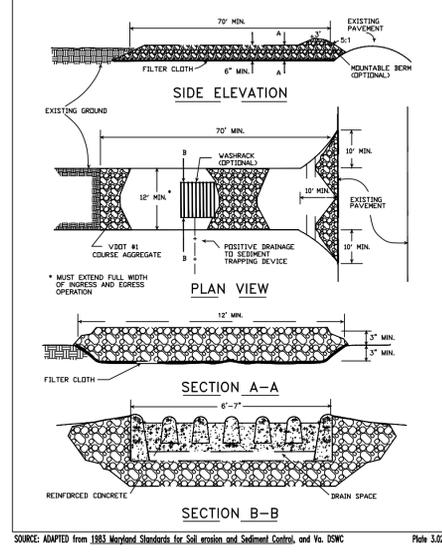
**GRADING & DRAINAGE PLAN**

TOWN OF VIENNA VIRGINIA

Designed by:	Name	Date	Project No.	Sheet No.
AD	AD	1/2024	50151035	7 of 22
Approvals	DB	Scale	7 of 22	
Approvals	AS SHOWN		Revisions	
B/M No.		Revisions		
Cad File Name		Drawing No.		
PLOTTED:		C.02.03		

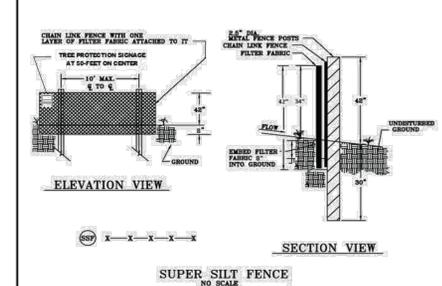


**STONE CONSTRUCTION ENTRANCE**



SOURCE: ADAPTED FROM 1983 Maryland Standards for Soil Erosion and Sediment Control, and Va. DSWC Plate 3.02-1

**Super Silt Fence**

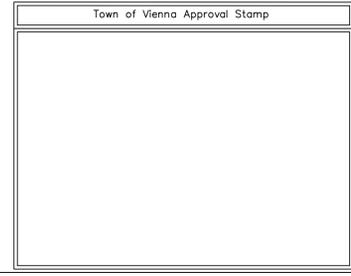
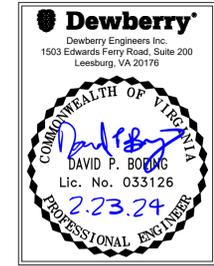
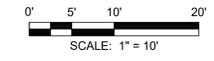


**FENCING**  
Chain link fence shall be 36" above grade with 2" embedded in a total fabric width of 42". The post shall be 42" above grade with 30" spaced below grade (without concrete) for a total length of 72".

**NOTES**  
1. Chain link fence shall be fastened securely to fence posts with wire ties.  
2. Filter fabric shall be fastened securely to chain link fence with ties spaced horizontally 24" at the top and midsection.  
3. Physical properties of the filter fabric shall conform to the latest edition of THE VIRGINIA EROSION & SEDIMENT CONTROL HANDBOOK.  
4. From two points of filter fabric adjoin each other, they shall be overlapped by 6" and sealed.  
5. Maintenance shall be performed as needed and material shall be removed when sediment build-up reaches 50% of the height of the super silt fence.

**LEGEND**

EX. INTERMEDIATE CONTOUR	---	582
EX. INDEX CONTOUR	---	580
EXISTING EDGE OF P.W.T.	---	EX. E.P.
EXISTING FENCE	---	
EXISTING DRAINAGE DIVIDE	---	
LIMITS OF DISTURBANCE	---	LOD
TEMPORARY CONSTRUCTION ENTRANCE WITH WASH RACK SPEC. 3.02	CE	
SUPER SILT FENCE SPEC. 3.05	SSF	
TREE PRESERVATION & PROTECTION SPEC. 3.38 (SEE SHEET L.01.02)	TP	



ELECTION DISTRICT: HUNTER MILL

**E&S PHASE 1**

TOWN OF VIENNA VIRGINIA

No.	Date	By	Description

Designed by:	Name	Date	Project No.	Sheet No.
AD	AD	1/2024	50151035	8 OF 22
Approvals	DB		Scale	
Approvals			1"=10'	
	B/M No.		Revisions	
Cad File Name			Drawing No.	
PLOTTED:			C.03.01	

NOTE: VIRGINIA NORTH STATE PLANE COORDINATE SYSTEM, ZONE 5551, FIPS ZONE 4501; NAD 83 DATUM USED

No.	Date	By	Description





EROSION CONTROL NARRATIVE

PROJECT DESCRIPTION:

THIS PLAN PROPOSES THE EXPANSION OF AN EXISTING GRAVEL PAD AND FENCE FOR A UTILITY SUBSTATION. THERE IS A SITE AREA OF 10.18 ACRES (WITH A 0.02 ACRE DISTURBANCE ON AN OFF-SITE PARCEL WITH AN OVERALL 80.63 ACRES) WITH A TOTAL DISTURBED AREA OF 0.18 ACRES.

EXISTING CONDITIONS:

THE SITE IS CURRENTLY AN EXISTING SUBSTATION WITH ACCESS OFF OF AN EXISTING PARKING LOT THAT SERVES THE TOWN OF VIENNA TOWN HALL BUILDING. THE MAJORITY OF THE EXISTING DRAINAGE FOR THE SITE IS DIRECTED WEST OR SOUTH TOWARD AN EXISTING STORM WATER SEWER SYSTEM.

ADJACENT AREAS:

THIS SITE IS LOCATED NEAR THE INTERSECTION AT MAPLE AVENUE W AND CENTER STREET S IN THE TOWN OF VIENNA. THE SITE IS NORTH OF THE BACK END OF RESIDENTIAL PROPERTIES AS WELL AS A COMMERCIAL PARKING LOT. THE NORTH ADJACENT PROPERTY IS THE VIENNA ELEMENTARY SCHOOL AND PATRICK HEAVY LIBRARY. RESIDENTIAL TOWNHOUSES ARE LOCATED TO THE EAST OF THE PROPERTY AND COMMERCIAL BUILDINGS TO THE WEST.

OFFSITE AREAS:

THERE WILL BE MINOR GRADING IN THE ADJACENT PROPERTY PARCEL 0384-02-0148.

SOILS:

SEE THE SOILS MAP AND SOIL DESCRIPTIONS ON SHEET C.01.01 OF THIS PLAN.

WETLANDS:

THERE ARE NO WETLANDS LOCATED WITHIN THE PROJECT BOUNDARY.

CONSTRUCTION TRAFFIC ACCESS

CONSTRUCTION ACCESS SHALL BE PROVIDED OFF OF EXISTING PARKING LOT LOCATED ON THE ADJACENT PROPERTY.

CRITICAL EROSION AREAS:

THERE ARE NO "CRITICAL EROSION AREAS" ASSOCIATED WITH THIS SITE. GREAT CARE SHOULD BE EXERCISED TO PROTECT ALL EXISTING ROADWAYS & PROPERTIES ADJACENT TO CONSTRUCTION.

LAND CONSERVATION PROGRAM

- 1. NO DISTURBED AREA SHALL BE DENUED FOR MORE THAN 14 DAYS.
2. CUT AND FILL SLOPES SHALL BE GRADED AT A MAXIMUM SLOPE OF 2:1 (3:1 DESIRED).
3. NO MORE THAN 500 FEET OF TRENCH WILL BE OPEN AT ANY ONE TIME.
4. WHERE STREAM CROSSINGS ARE REQUIRED FOR EQUIPMENT, TEMPORARY CULVERTS WILL BE PROVIDED.
5. SILTATION CONTROL WILL BE EXERCISED THROUGH THE INSTALLATION OF TEMPORARY SILT FENCE, TEMPORARY CHECK DAMS, TEMPORARY CULVERT INLET AND OUTLET PROTECTION AND A SEDIMENT BASIN.
6. EARTH DIVERSIONS ARE TO BE PLACED SO AS TO INSURE THE FLOW OF SEDIMENT TO EACH SILT TRAP.
7. WHERE CONSISTENT WITH JOB SAFETY REQUIREMENTS, ALL EXCAVATED MATERIAL IS TO BE PLACED ON THE UPHILL SIDE OF TRENCHES. NO MATERIAL IS TO BE PLACED IN THE STREAM BEDS. WHERE SPRAY IS PLACED ON THE DOWNHILL SIDES OF THE TRENCH, IT IS TO BE BACK SLOPED TO DRAIN TOWARD THE TRENCH. WHEN NECESSARY TO DEWATER THE TRENCH, THE PUMP DISCHARGE HOSE MUST OUTLET IN A STABILIZED AREA OR A SEDIMENT BASIN.
8. DENUED AREAS WILL BE STABILIZED WITHIN SEVEN (7) DAYS AFTER FINAL GRADE.
9. DENUED AREAS WILL BE STABILIZED WITHIN SEVEN (7) DAYS IF THEY ARE TO BE LEFT IDLE FOR MORE THAN FOURTEEN (14) DAYS.

EROSION/SILTATION CONTROL MEASURES: PHASE 1

THE FIRST PHASE OF CONSTRUCTION SHALL BE THE PLACEMENT OF THE CONSTRUCTION ENTRANCE AND THEN THE PERIMETER CONTROLS AS SHOWN ON THE PHASE 1 EROSION/SILTATION CONTROL PLAN. THESE CONTROLS INCLUDE THE CONSTRUCTION ENTRANCE AND SUPER SILT FENCE. THE MINIMUM AMOUNT OF DISTURBANCE POSSIBLE TO PROPERLY CONSTRUCT THESE MEASURES IS TO BE DONE AT THIS TIME. ALL CONSTRUCTION VEHICLES ENTERING AND LEAVING THIS SITE MUST DO SO VIA THE PROPOSED CONSTRUCTION ENTRANCE LOCATED OFF OF THE INTERNAL PARKING LOT. A WASH RACK IS TO BE INSTALLED WITHIN THE CONSTRUCTION ENTRANCE AND WATER IS TO BE PROVIDED SO THAT THE CONTRACTOR CAN WASH MUD AND DEBRIS FROM VEHICLES PRIOR TO EXITING THE SITE.

ONCE THE CONSTRUCTION ENTRANCE, AND PERIMETER CONTROLS HAVE BEEN CONSTRUCTED, STANDARD CLEARING AND GRADING OPERATIONS FOR THE PROPOSED SITE MAY PROCEED.

EROSION/SILTATION CONTROL MEASURES: PHASE 2

ONCE THE PHASE 1 E&S MEASURES ARE IN PLACE, THE SITE MAY BE FINAL GRADED. DURING GRADING, STORMWATER MUST REMAIN DIRECTED TOWARD THE PHASE 1 PERIMETER CONTROLS UNTIL THE LATEST POSSIBLE TIME.

THE PHASE 2 EROSION CONTROL MEASURES INCLUDE THOSE PROPOSED WITH THE PHASE 1 EROSION CONTROLS PLAN.

THE PHASE 2 EROSION CONTROL MEASURES (AS SHOWN ON THE PHASE 2 EROSION/SILTATION CONTROLS PLAN) SHOULD BE INSTALLED AS THE GRADING AND UTILITY CONSTRUCTION PROCEEDS.

MAINTENANCE PROGRAM

ALL MEASURES ARE TO BE INSPECTED DAILY BY THE SITE SUPERINTENDENT OR HIS REPRESENTATIVE. ANY DAMAGED STRUCTURES ARE TO BE REPAIRED BY THE CLOSE OF THE DAY. IN ADDITION, ALL MEASURES ARE TO BE INSPECTED BY THE SITE SUPERINTENDENT FOLLOWING ALL STORM EVENTS. ANY STABILIZED AREA IS TO BE RE-SEEDING AS REQUIRED TO INSURE A FULL, UNIFORM GROUND COVER. IN ADDITION, THE SEEDING AREAS ARE TO BE MOWED, LIMED AND FERTILIZED AS RECOMMENDED FOR THE SPECIFIC TYPE OF COVER PROVIDED. ALL CULVERTS WILL BE CLEARED OF SILT AND DEBRIS. DOWNSTREAM RECEIVING CHANNELS AND SWALES WILL BE INSPECTED WEEKLY FOR EROSION AND SEDIMENTS AND REPAIRED AS NECESSARY. MUD TRAPPED ONTO THE EXISTING ROADWAYS WILL BE REMOVED DAILY. THE CONTRACTOR IS TO SWEEP CLEAN THE ROAD SURFACES AND FOLLOW UP WITH A FLUSH IF NECESSARY.

- a. THE CONSTRUCTION ENTRANCE MUST BE REGULARLY MAINTAINED BY SCARIFYING AND ADDING FRESH STONE AS NEEDED. (VESCH MS-17)
b. CLEAN OUT SILT DEPOSITS FROM SUPER SILT FENCE WHEN LEVELS REACH ONE HALF THE HEIGHT OF THE FENCE. (VESCH STD. & SPEC. 3.05)
c. DUST MITIGATION IS REQUIRED DURING DRY WEATHER TO PREVENT CARRY OVER ON TO ADJACENT PROPERTY. (VESCH STD. & SPEC. 3.39) IN THE EVENT OF A MAJOR STORM EVENT, IT WILL BE IMPERATIVE THAT THE CONTRACTOR SHALL MONITOR THE SITE OVERNIGHT AND DURING WEEKENDS TO ENSURE THAT ADEQUATE PUMPING OF THE TEMPORARY SEDIMENT BASIN FACILITY IS COMPLETED AND THAT ADEQUATE DEWATERING AND FILTERING OF THE PUMPED WATER IS PERFORMED IN ACCORDANCE WITH THE MEASURES ACCEPTABLE TO THE LOUDOUN COUNTY EROSION/SILTATION CONTROL INSPECTOR.

PERMANENT STABILIZATION

ONCE THE CONSTRUCTION IS FINISHED, THE DISTURBED AREA IS TO BE PERMANENTLY SEEDING IN ACCORDANCE WITH SPECIFICATION 3.32 OF THE VIRGINIA EROSION AND SEDIMENT CONTROL HANDBOOK. PRIOR TO THE APPLICATION OF THE PERMANENT SEEDING, ALL SLOPES ARE TO BE "ROUGHENED" IN ACCORDANCE WITH SPECIFICATION 3.29 OF THE VIRGINIA EROSION AND SEDIMENT CONTROL HANDBOOK. THIS SPECIFICATION REQUIRES THAT SHALLOW GROOVES OR STEPS BE CUT INTO THE SLOPE IN ORDER THAT THE PERMANENT STABILIZATION WILL BE BECOME ESTABLISHED.

STORMWATER MANAGEMENT

STORMWATER MANAGEMENT IS PROVIDED BY CALCULATIONS AND NARRATIVE SHOWN ON SHEET C.04.01 - C.04.07.

NOTES

- 1. STABILIZATION MEASURES WILL BE APPLIED TO EARTHEN STRUCTURES SUCH AS DAMS, DIKES AND DIVERSIONS IMMEDIATELY AFTER INSTALLATION.
2. DURING CONSTRUCTION OF THE PROJECT, SOIL STOCKPILES AND BORROW AREAS SHALL BE STABILIZED OR PROTECTED WITH SEDIMENT TRAPPING MEASURES. THE APPLICANT IS RESPONSIBLE FOR THE TEMPORARY PROTECTION AND PERMANENT STABILIZATION OF ALL SOIL STOCKPILES ON SITE AS WELL AS BORROW AREAS AND SOIL INTENTIONALLY TRANSPORTED FROM THE PROJECT SITE.
3. CUT AND FILL SLOPES SHALL BE DESIGNED AND CONSTRUCTED IN A MANNER THAT WILL MINIMIZE EROSION. SLOPES THAT ARE FOUND TO BE ERODING EXCESSIVELY WITHIN ONE YEAR OF PERMANENT STABILIZATION SHALL BE PROVIDED WITH ADDITIONAL SLOPE STABILIZING MEASURES UNTIL THE PROBLEM IS CORRECTED.
4. CONCENTRATED RUNOFF SHALL NOT FLOW DOWN CUT OR FILL SLOPES UNLESS CONTAINED WITHIN AN ADEQUATE TEMPORARY OR PERMANENT CHANNEL, FLUME, OR SLOPE DRAIN STRUCTURE.
5. WHENEVER WATER SEEPS FROM A SLOPE FACE, ADEQUATE DRAINAGE OR OTHER PROTECTION SHALL BE PROVIDED.
6. WHEN WORK IN A LIVE WATERCOURSE IS PERFORMED, PRECAUTIONS SHALL BE TAKEN TO MINIMIZE EROSION, CONTROL SEDIMENT TRANSPORT, AND TO STABILIZE THE WORK AREA TO THE GREATEST EXTENT POSSIBLE DURING CONSTRUCTION. NON-ERODIBLE MATERIAL SHALL BE USED FOR THE CONSTRUCTION OF CAUSEWAYS AND COFFERDAMS. EARTHEN FILL MAY BE USED FOR THESE STRUCTURES IF ARMORED BY NON-ERODIBLE COVER MATERIAL.
7. WHEN A LIVE WATERCOURSE MUST BE CROSSED BY CONSTRUCTION VEHICLES MORE THAN TWICE IN ANY SIX MONTH PERIOD, A TEMPORARY VEHICULAR STREAM CROSSING CONSTRUCTED OF NON-ERODIBLE MATERIAL SHALL BE PROVIDED.
8. ALL APPLICABLE FEDERAL, STATE, AND LOCAL REGULATIONS PERTAINING TO WORKING IN OR CROSSING LIVE WATERCOURSES SHALL BE MET.
9. THE BED AND BANKS OF A WATERCOURSE SHALL BE STABILIZED IMMEDIATELY AFTER WORK IN THE WATERCOURSE IS COMPLETED.
10. UNDERGROUND UTILITY LINES SHALL BE INSTALLED IN ACCORDANCE WITH THE FOLLOWING STANDARDS IN ADDITION TO OTHER APPLICABLE CRITERIA:
a. NO MORE THAN 500 LINEAR FEET OF TRENCH MAY BE OPENED AT ONE TIME.
b. EXCAVATED MATERIAL SHALL BE PLACED ON THE UPHILL SIDE OF TRENCHES.
c. EFFLUENT FROM DEWATERING OPERATIONS SHALL BE FILTERED OR PASSED THROUGH AN APPROVED SEDIMENT TRAPPING DEVICE, OR BOTH, AND DISCHARGED IN A MANNER THAT DOES NOT ADVERSELY AFFECT FLOWING STREAMS OR OFF-SITE PROPERTY.
d. MATERIAL USED FOR BACKFILLING TRENCHES SHALL BE PROPERLY COMPACTED IN ORDER TO MINIMIZE EROSION AND PROMOTE STABILIZATION.
e. RESTABILIZATION SHALL BE ACCOMPLISHED IN ACCORDANCE WITH THESE REGULATIONS.
f. APPLICABLE SAFETY REQUIREMENTS SHALL BE COMPLIED WITH.
11. DUE TO THE LIMITED CONSTRUCTION EASEMENT WIDTHS, THE CONTRACTOR SHOULD USE ALTERNATIVE TRENCHING METHODS OTHER THAN 1:1 TRENCH WALL SIDE SLOPES. METHODS LIKE THE USE OF A TRENCH BOX IS SUGGESTED TO REDUCE THE SIZE OF THE TOP OF THE TRENCH. FUTURE REPAIRS OF THIS SEWER LINE WILL HAVE TO USE SIMILAR PROCEDURES TO MINIMIZE THE LIMITS OF DISTURBANCE.
12. TO POST STREET SIGNS IN SUBDIVISION/COMMERCIAL AREAS DURING CONSTRUCTION. THE REQUIREMENT IS TO HAVE THE APPLICANT PUT UP LEGIBLE STREET SIGNS (AT LEAST TEMPORARY ONES) ON ANY "ROAD" THAT IS BEING USED (COMPLETED, ROUGH GRADE, ETC.).
13. TO PROVIDE ADEQUATE ACCESS TO A BUILDING SITE FOR EMERGENCY RESPONDERS. THE REQUIREMENT IS TO HAVE EMERGENCY ACCESS TO A BUILDING SITE WITHIN 150' OF ALL PORTIONS OF THE FACILITY AND ALL PORTIONS OF THE EXTERIOR WALLS OF THE FIRST FLOOR OF THE BUILDING AS MEASURED BY AN APPROVED ROUTE THROUGH THE EXTERIOR OF THE BUILDING OR FACILITY BEFORE WE CAN RELEASE A BUILDING PERMIT FOR THAT BUILDING OR FACILITY. (SFPD 104.1 AND SFPD 503.1.1)
14. TO PROVIDE ADEQUATE ACCESS TO A BUILDING SITE FOR EMERGENCY RESPONDERS. THE REQUIREMENT IS TO HAVE EMERGENCY ACCESS TO A BUILDING SITE WITHIN 150' OF ALL PORTIONS OF THE FACILITY AND ALL PORTIONS OF THE EXTERIOR WALLS OF THE FIRST FLOOR OF THE BUILDING AS MEASURED BY AN APPROVED ROUTE THROUGH THE EXTERIOR OF THE BUILDING OR FACILITY BEFORE WE CAN RELEASE A BUILDING PERMIT FOR THAT BUILDING OR FACILITY. (SFPD 104.1 AND SFPD 503.1.1)

DESCRIPTIONS OF E&S MEASURES (TAKEN FROM VESCH 3RD ED., 1992)

TEMPORARY STONE CONSTRUCTION ENTRANCE (3.02) - A STABILIZED STONE PAD WITH A FILTER FABRIC UNDERLAYER LOCATED AT POINTS OF VEHICULAR INGRESS AND EGRESS ON A CONSTRUCTION SITE. WITH A PURPOSE TO REDUCE THE AMOUNT OF MUD TRANSPORTED ONTO PAVED PUBLIC ROADS BY MOTOR VEHICLES OR RUNOFF.

SUPER SILT FENCE (3.05) - A TEMPORARY BARRIER OF GEOTEXTILE CLASS F OVER TWO (2) INCH WIRE FABRIC MESH (CHAIN LINK) USED TO CONTROL SEDIMENT-LADEN RUNOFF FROM SMALL DRAINAGE AREAS WHERE THE USE OF TYPICAL SILT FENCE IS QUESTIONABLE DUE TO SLOPE, PROXIMITY TO A STREAM OR OTHER SITE CONDITIONS. SUPER SILT FENCE SHOULD BE USED WHERE THE INSTALLATION OF A DIKE WOULD DESTROY SENSITIVE AREAS SUCH AS WOODS AND WETLANDS.

PERMANENT SEEDING (3.32) - THE ESTABLISHMENT OF PERENNIAL VEGETATIVE COVER ON DISTURBED AREAS BY PLANTING SEED. WITH PURPOSES TO...
1. REDUCE EROSION AND DECREASE SEDIMENT YIELD FROM DISTURBED AREAS.
2. PERMANENTLY STABILIZE DISTURBED AREAS IN A MANNER THAT IS ECONOMICALLY ADAPTABLE TO SITE CONDITIONS, AND ALLOWS SELECTION OF THE MOST APPROPRIATE PLANT MATERIALS.
3. IMPROVE WILDLIFE HABITAT.
4. ENHANCE NATURAL BEAUTY.

TEMPORARY SEEDING (3.31) - THE ESTABLISHMENT OF A TEMPORARY VEGETATIVE COVER ON DISTURBED AREAS BY SEEDING WITH APPROPRIATE RAPIDLY GROWING ANNUAL PLANTS. WITH PURPOSES TO...
1. REDUCE EROSION AND SEDIMENTATION BY STABILIZING DISTURBED AREAS THAT WILL NOT BE BROUGHT TO FINAL GRADE FOR A PERIOD OF MORE THAN 30 DAYS.
2. REDUCE DANGER FROM SEDIMENT AND RUNOFF TO DOWNSTREAM OR OFF-SITE AREAS, AND TO PROVIDE PROTECTION TO BARE SOILS EXPOSED DURING CONSTRUCTION UNTIL PERMANENT VEGETATION OR OTHER EROSION CONTROL MEASURES CAN BE ESTABLISHED.

TABLE 3.32-D SITE SPECIFIC SEEDING MIXTURES FOR PIEDMONT AREA

Table with 2 columns: Minimum Care Lawn, High-Maintenance Lawn, General Slope (3:1 or less), Low-Maintenance Slope (Steeper than 3:1). Rows list seed types like Kentucky 31 or Turf-Type Tall Fescue, Red Top Grass, Seasonal Nurse Crop, etc., with Total Lbs. Per Acre.

\* Use seasonal nurse crop in accordance with seeding dates as stated below: February 16th through April, Annual Rye; May 1st through August 15th, Foxtail Millet; August 16th through October, Annual Rye; November through February 15th, Winter Rye.

\*\* Substitute Sericea lespedeza for Crownvetch east of Farmville, Va. (May through September use hulled Sericea, all other periods, use unhulled Sericea). If Flapjack is used in lieu of Crownvetch, increase rate to 30 lbs./acre. All legume seed must be properly inoculated. Weeping Lovegrass may be added to any slope or low-maintenance mix during warmer seeding periods; add 10-20 lbs./acre in mixes.

9VAC25-840-40. Minimum Standards.

A VESCP must be consistent with the following criteria, techniques and methods:

- 1. Permanent or temporary soil stabilization shall be applied to denuded areas within seven days after final grade is reached on any portion of the site. Temporary soil stabilization shall be applied within seven days to denuded areas that may not be at final grade but will remain dormant for longer than 14 days. Permanent stabilization shall be applied to areas that are to be left dormant for more than one year.
2. During construction of the project, soil stock piles and borrow areas shall be stabilized or protected with sediment trapping measures. The applicant is responsible for the temporary protection and permanent stabilization of all soil stockpiles on site as well as borrow areas and soil intentionally transported from the project site.
3. A permanent vegetative cover shall be established on denuded areas not otherwise permanently stabilized. Permanent vegetation shall not be considered established until a ground cover is achieved that is uniform, mature enough to survive and will inhibit erosion.
4. Sediment basins and traps, perimeter dikes, sediment barriers and other measures intended to trap sediment shall be constructed as a first step in any land-disturbing activity and shall be made functional before upslope land disturbance takes place.
5. Stabilization measures shall be applied to earthen structures such as dams, dikes and diversions immediately after installation.
6. Sediment traps and sediment basins shall be designed and constructed based upon the total drainage area to be served by the trap or basin.

- a. The minimum storage capacity of a sediment trap shall be 134 cubic yards per acre of drainage area and the trap shall only control drainage areas less than three acres.
b. Surface runoff from disturbed areas that is comprised of flow from drainage areas greater than or equal to three acres shall be controlled by a sediment basin. The minimum storage capacity of a sediment basin shall be 134 cubic yards per acre of drainage area. The outfall system shall, at a minimum, maintain the structural integrity of the basin during a 25-year storm of 24-hour duration. Runoff coefficients used in runoff calculations shall correspond to a bare earth condition or those conditions expected to exist while the sediment basin is utilized.
7. Cut and fill slopes shall be designed and constructed in a manner that will minimize erosion. Slopes that are found to be eroding excessively within one year of permanent stabilization shall be provided with additional slope stabilizing measures until the problem is corrected.
8. Concentrated runoff shall not flow down cut or fill slopes unless contained within an adequate temporary or permanent channel, flume or slope drain structure.
9. Whenever water seeps from a slope face, adequate drainage or other protection shall be provided.
10. All storm sewer inlets that are made operable during construction shall be protected so that sediment-laden water cannot enter the conveyance system without first being filtered or otherwise treated to remove sediment.

- 11. Before newly constructed stormwater conveyance channels or pipes are made operational, adequate outlet protection and any required temporary or permanent channel lining shall be installed in both the conveyance channel and receiving channel.
12. When work in a live watercourse is performed, precautions shall be taken to minimize encroachment, control sediment transport and stabilize the work area to the greatest extent possible during construction. Nonerodible material shall be used for the construction of causeways and cofferdams. Earthen fill may be used for these structures if armored by nonerodible cover materials.
13. When a live watercourse must be crossed by construction vehicles more than twice in any six-month period, a temporary vehicular stream crossing constructed of nonerodible material shall be provided.
14. All applicable federal, state and local requirements pertaining to working in or crossing live watercourses shall be met.
15. The bed and banks of a watercourse shall be stabilized immediately after work in the watercourse is completed.
16. Underground utility lines shall be installed in accordance with the following standards in addition to other applicable criteria:

- a. No more than 500 linear feet of trench may be opened at one time.
b. Excavated material shall be placed on the uphill side of trenches.
c. Effluent from dewatering operations shall be filtered or passed through an approved sediment trapping device, or both, and discharged in a manner that does not adversely affect flowing streams or off-site property.
d. Material used for backfilling trenches shall be properly compacted in order to minimize erosion and promote stabilization.
e. Restabilization shall be accomplished in accordance with this chapter.
f. Applicable safety requirements shall be complied with.

- 17. Where construction vehicle access routes intersect paved or public roads, provisions shall be made to minimize the transport of sediment by vehicular tracking onto the paved surface. Where sediment is transported onto a paved or public road surface, the road surface shall be cleaned thoroughly at the end of each day. Sediment shall be removed from the roads by shoveling or sweeping and transported to a sediment control disposal area. Street washing shall be allowed only after sediment is removed in this manner. This provision shall apply to individual development lots as well as to larger land-disturbing activities.
18. All temporary erosion and sediment control measures shall be removed within 30 days after final site stabilization or after the temporary measures are no longer needed, unless otherwise authorized by the VESCP authority. Trapped sediment and the disturbed soil areas resulting from the disposition of temporary measures shall be permanently stabilized to prevent further erosion and sedimentation.

- 19. Properties and waterways downstream from development sites shall be protected from sediment deposition, erosion and damage due to increases in volume, velocity and peak flow rate of stormwater runoff for the stated frequency storm of 24-hour duration in accordance with the following standards and criteria. Stream restoration and relocation projects that incorporate natural channel design concepts are not man-made channels and shall be exempt from any flow rate capacity and velocity requirements for natural or man-made channels:
a. No more than 500 linear feet of trench may be opened at one time.
b. Excavated material shall be placed on the uphill side of trenches.
c. Effluent from dewatering operations shall be filtered or passed through an approved sediment trapping device, or both, and discharged in a manner that does not adversely affect flowing streams or off-site property.
d. Material used for backfilling trenches shall be properly compacted in order to minimize erosion and promote stabilization.
e. Restabilization shall be accomplished in accordance with this chapter.
f. Applicable safety requirements shall be complied with.

- 20. Compliance with the water quantity minimum standards set out in 9VAC25-870-66 of the Virginia Stormwater Management Program (VSMMP) Regulation shall be deemed to satisfy the requirements of this subdivision 19.
21. Properties and waterways downstream from development sites shall be protected from sediment deposition, erosion and damage due to increases in volume, velocity and peak flow rate of stormwater runoff for the stated frequency storm of 24-hour duration in accordance with the following standards and criteria. Stream restoration and relocation projects that incorporate natural channel design concepts are not man-made channels and shall be exempt from any flow rate capacity and velocity requirements for natural or man-made channels:
a. No more than 500 linear feet of trench may be opened at one time.
b. Excavated material shall be placed on the uphill side of trenches.
c. Effluent from dewatering operations shall be filtered or passed through an approved sediment trapping device, or both, and discharged in a manner that does not adversely affect flowing streams or off-site property.
d. Material used for backfilling trenches shall be properly compacted in order to minimize erosion and promote stabilization.
e. Restabilization shall be accomplished in accordance with this chapter.
f. Applicable safety requirements shall be complied with.

Statutory Authority § 62.1-44.15:52 of the Code of Virginia.

Historical Notes Former 9VAC25-80-40, derived from VR625-02-00 § 4; eff. September 13, 1990; amended, Virginia Register Volume 11, Issue 11, eff. March 22, 1995; Volume 29, Issue 4, eff. November 21, 2012; amended and renumbered, Virginia Register Volume 30, Issue 2, eff. October 23, 2015; amended, Virginia Register Volume 31, Issue 24, eff. August 26, 2015; Volume 33, Issue 4, eff. November 17, 2016.

22. Properties and waterways downstream from development sites shall be protected from sediment deposition, erosion and damage due to increases in volume, velocity and peak flow rate of stormwater runoff for the stated frequency storm of 24-hour duration in accordance with the following standards and criteria. Stream restoration and relocation projects that incorporate natural channel design concepts are not man-made channels and shall be exempt from any flow rate capacity and velocity requirements for natural or man-made channels:
a. No more than 500 linear feet of trench may be opened at one time.
b. Excavated material shall be placed on the uphill side of trenches.
c. Effluent from dewatering operations shall be filtered or passed through an approved sediment trapping device, or both, and discharged in a manner that does not adversely affect flowing streams or off-site property.
d. Material used for backfilling trenches shall be properly compacted in order to minimize erosion and promote stabilization.
e. Restabilization shall be accomplished in accordance with this chapter.
f. Applicable safety requirements shall be complied with.

a. Concentrated stormwater runoff leaving a development site shall be discharged directly into an adequate natural or man-made receiving channel, pipe or storm sewer system. For those sites where runoff is discharged into a pipe or pipe system, downstream stability analyses at the outfall of the pipe or pipe system shall be performed.

b. Adequacy of all channels and pipes shall be verified in the following manner:
(1) The applicant shall demonstrate that the total drainage area to the point of analysis within the channel is 100 times greater than the contributing drainage area of the project in question;
(2) (a) Natural channels shall be analyzed by the use of a two-year storm to verify that stormwater will not overtop channel banks nor cause erosion of channel bed or banks.
(b) All previously constructed man-made channels shall be analyzed by the use of a 10-year storm to verify that stormwater will not overtop its banks and by the use of a two-year storm to demonstrate that stormwater will not cause erosion of channel bed or banks; and
(c) Pipes and storm sewer systems shall be analyzed by the use of a 10-year storm to verify that stormwater will be contained within the pipe or system.

c. If existing natural receiving channels or previously constructed man-made channels or pipes are not adequate, the applicant shall:
(1) Improve the channels to a condition where a 10-year storm will not overtop the banks and a two-year storm will not cause erosion to the channel, the bed, or the banks;
(2) Improve the pipe or pipe system to a condition where the 10-year storm is contained within the appurtenances;
(3) Develop a site design that will not cause the pre-development peak runoff rate from a two-year storm to increase when runoff outfalls into a natural channel or will not cause the pre-development peak runoff rate from a 10-year storm to increase when runoff outfalls into a man-made channel; or
(4) Provide a combination of channel improvement, stormwater detention or other measures which is satisfactory to the VESCP authority to prevent downstream erosion.

d. The applicant shall provide evidence of permission to make the improvements.
e. All hydrologic analyses shall be based on the existing watershed characteristics and the ultimate development condition of the subject project.
f. If the applicant chooses an option that includes stormwater detention, he shall obtain approval from the VESCP of a plan for maintenance of the detention facilities. The plan shall set forth the maintenance requirements of the facility and the person responsible for performing the maintenance.
g. Outfall from a detention facility shall be discharged to a receiving channel, and energy dissipators shall be placed at the outfall of all detention facilities as necessary to provide a stabilized transition from the facility to the receiving channel.
h. All on-site channels must be verified to be adequate.
i. Increased volumes of sheet flows that may cause erosion or sedimentation on adjacent property shall be diverted to a stable outlet, adequate channel, pipe or pipe system, or to a detention facility.
j. In applying these stormwater management criteria, individual lots or parcels in a residential, commercial or industrial development shall not be considered to be separate development projects. Instead, the development, as a whole, shall be considered to be a single development project. Hydrologic parameters that reflect the ultimate development condition shall be used in all engineering calculations.

k. All measures used to protect properties and waterways shall be employed in a manner which minimizes impacts on the physical, chemical and biological integrity of rivers, streams and other waters of the state.

l. Any plan approved prior to July 1, 2014, that provides for stormwater management that addresses any flow rate capacity and velocity requirements for natural or man-made channels shall satisfy the flow rate capacity and velocity requirements for natural or man-made channels if the practices are designed to (i) detain the water quality volume and to release it over 48 hours; (ii) detain and release over a 24-hour period the expected rainfall resulting from the one year, 24-hour storm; and (iii) reduce the allowable peak flow rate resulting from the 1.5, 2, and 10-year, 24-hour storms to a level that is less than or equal to the peak flow rate from the site assuming it was in a good forested condition, achieved through multiplication of the forecasted peak flow rate by a reduction factor that is equal to the runoff volume from the site when it was in a good forested condition divided by the runoff volume from the site in its proposed condition, and shall be exempt from any flow rate capacity and velocity requirements for natural or man-made channels as defined in any regulations promulgated pursuant to § 62.1-44.15:54 or 62.1-44.15:65 of the Act.

m. For plans approved on and after July 1, 2014, the flow rate capacity and velocity requirements of § 62.1-44.15:52 A of the Act and this subsection shall be satisfied by compliance with water quantity requirements in the Stormwater Management Act (§ 62.1-44.15:24 et seq. of the Code of Virginia) and attendant regulations, unless such land-disturbing activities (i) are in accordance with provisions for time limits on applicability of approved design criteria in 9VAC25-870-47 or grandfathering in 9VAC25-870-48 of the Virginia Stormwater Management Program (VSMMP) Regulation, in which case the flow rate capacity and velocity requirements of § 62.1-44.15:52 A of the Act shall apply, or (ii) are exempt pursuant to § 62.1-44.15:34 C 7 of the Act.

n. Compliance with the water quantity minimum standards set out in 9VAC25-870-66 of the Virginia Stormwater Management Program (VSMMP) Regulation shall be deemed to satisfy the requirements of this subdivision 19.

Statutory Authority § 62.1-44.15:52 of the Code of Virginia.

Historical Notes Former 9VAC25-80-40, derived from VR625-02-00 § 4; eff. September 13, 1990; amended, Virginia Register Volume 11, Issue 11, eff. March 22, 1995; Volume 29, Issue 4, eff. November 21, 2012; amended and renumbered, Virginia Register Volume 30, Issue 2, eff. October 23, 2015; amended, Virginia Register Volume 31, Issue 24, eff. August 26, 2015; Volume 33, Issue 4, eff. November 17, 2016.

23. Properties and waterways downstream from development sites shall be protected from sediment deposition, erosion and damage due to increases in volume, velocity and peak flow rate of stormwater runoff for the stated frequency storm of 24-hour duration in accordance with the following standards and criteria. Stream restoration and relocation projects that incorporate natural channel design concepts are not man-made channels and shall be exempt from any flow rate capacity and velocity requirements for natural or man-made channels:
a. No more than 500 linear feet of trench may be opened at one time.
b. Excavated material shall be placed on the uphill side of trenches.
c. Effluent from dewatering operations shall be filtered or passed through an approved sediment trapping device, or both, and discharged in a manner that does not adversely affect flowing streams or off-site property.
d. Material used for backfilling trenches shall be properly compacted in order to minimize erosion and promote stabilization.
e. Restabilization shall be accomplished in accordance with this chapter.
f. Applicable safety requirements shall be complied with.

Statutory Authority § 62.1-44.15:52 of the Code of Virginia.

Historical Notes Former 9VAC25-80-40, derived from VR625-02-00 § 4; eff. September 13, 1990; amended, Virginia Register Volume 11, Issue 11, eff. March 22, 1995; Volume 29, Issue 4, eff. November 21, 2012; amended and renumbered, Virginia Register Volume 30, Issue 2, eff. October 23, 2015; amended, Virginia Register Volume 31, Issue 24, eff. August 26, 2015; Volume 33, Issue 4, eff. November 17, 2016.

24. Properties and waterways downstream from development sites shall be protected from sediment deposition, erosion and damage due to increases in volume, velocity and peak flow rate of stormwater runoff for the stated frequency storm of 24-hour duration in accordance with the following standards and criteria. Stream restoration and relocation projects that incorporate natural channel design concepts are not man-made channels and shall be exempt from any flow rate capacity and velocity requirements for natural or man-made channels:
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d. Material used for backfilling trenches shall be properly compacted in order to minimize erosion and promote stabilization.
e. Restabilization shall be accomplished in accordance with this chapter.
f. Applicable safety requirements shall be complied with.

TABLE 3.35-A

ORGANIC MULCH MATERIALS AND APPLICATION RATES

Table with columns: MULCHES, RATES (Per Acre, Per 1000 sq. ft.), NOTES. Rows include Straw or Hay, Fiber Mulch, Corn Stalks, Wood Chips, Bark Chips or Shredded Bark.

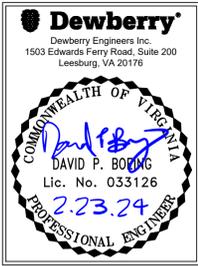
\* When fiber mulch is the only available mulch during periods when straw should be used, apply at a minimum rate of 2000 lbs./ac. or 45 lbs./1000 sq. ft.

TABLE 3.31-B

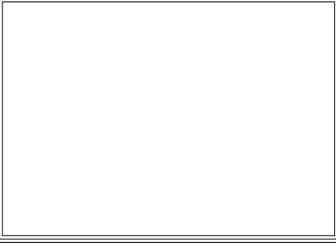
ACCEPTABLE TEMPORARY SEEDING PLANT MATERIALS

"QUICK REFERENCE FOR ALL REGIONS"

Table with columns: Planting Dates, Species, Rate (lbs./acre). Rows include 50/50 Mix of Annual Ryegrass (Lolium multi-florum) & Cereal (Winter) Rye (Secale cereale), Annual Ryegrass (Lolium multi-florum), German Millet (Setaria italica).



Town of Vienna Approval Stamp



ELECTION DISTRICT: HUNTER HILL

E&S NOTES & DETAILS

Table with columns: Name, Date, Project No., Sheet No. Rows include Designed by: AD 1/2024 50151035 10 OF 22, Approvals: DB, Scale: N/A, Revisions, Cad File Name, Drawing No. C.03.03.



**SWM SUMMARY**

THE VIENNA SUBSTATION PROJECT IS A PROJECT IN FAIRFAX COUNTY THAT INVOLVES THE REMOVAL OF THE ACCESS ROAD GOING INTO THE VIENNA SUBSTATION FROM THE ADJACENT PARKING LOT AND THE CONSTRUCTION OF A NEW ACCESS ROAD FROM CENTER STREET SOUTH. THE SITE AREA FOR THE PROJECT IS 0.18 ACRES. ALTHOUGH THE SITE AREA IS LESS THAN ONE ACRE, THE PROJECT IS LOCATED WITHIN THE CHESAPEAKE BAY PRESERVATION AREA AND IS GREATER THAN 1,000 SQ. FT. THUS STORMWATER CRITERIA APPLIES. THE PROJECT IS LOCATED WITHIN THE DIFFICULT RUN HUC6 (PL22) WATERSHED.

**WATER QUALITY**

WATER QUALITY IS MET IN ACCORDANCE WITH SECTIONS 124-4-2 AND 124-4-3 OF THE FAIRFAX COUNTY CODE OF ORDINANCES. THE TREATMENT REQUIREMENT WAS DETERMINED USING THE REDEVELOPMENT VIRGINIA RUNOFF REDUCTION METHOD SPREADSHEET (VRRM 2013 VERSION). THE REQUIRED PHOSPHORUS REMOVAL WAS CALCULATED TO BE 0.06 LBS/YR. THE TREATMENT REQUIREMENT WILL BE MET USING OFFSITE COMPLIANCE IN THE FORM OF NUTRIENT CREDIT PURCHASING.

**WATER QUANTITY**

WATER QUANTITY IS MET IN ACCORDANCE WITH SECTION 124-4 OF THE FAIRFAX COUNTY CODE OF ORDINANCES. THERE ARE TWO OUTFALLS FOR THE PROJECT. BOTH OUTFALLS ARE MANMADE AND WERE ANALYZED TO THE LIMITS OF ANALYSIS WHERE THE CONTRIBUTING DRAINAGE AREA FROM THE SITE EQUALED LESS THAN 1% OF THE TOTAL WATERSHED AREA. THE ASSOCIATED STORM SEWER SYSTEMS FOR THE OUTFALLS WERE ANALYZED FOR CAPACITY DURING THE 10-YEAR STORM EVENT.

**DETENTION**

DETENTION AS DESCRIBED IN SECTION 124-4-4 SUBSECTION D IS MET FOR THE PROJECT SINCE THE POST-DEVELOPMENT PEAK FLOW FOR EACH OUTFALL IS EQUAL TO THE PRE-DEVELOPMENT PEAK FLOW FOR BOTH THE 2- AND 10-YEAR STORM EVENTS.

Project Name: Vienna Substation  
 Site Information: Linear Development Project? No  
 Enter Total Disturbed Area (acres): 0.18  
 Maximum reduction required: 20%  
 The site's net increase in impervious cover (acres): 0.23  
 Post-Development TP Load Reduction for Site (lb/yr): 0.06  
 Check: BMP Design Specifications List: 2013 Draft Sub & Specs  
 Linear project? No  
 Land cover areas entered correctly? Yes  
 Total disturbed area entered? Yes

Pre-Development Land Cover (acres)	A Soils	B Soils	C Soils	D Soils	Total
Forest/Forest (acres)	0.03	0.00	0.00	0.00	0.03
Managed Turf (acres)	0.00	0.00	0.00	0.00	0.00
Impervious Cover (acres)	0.13	0.13	0.13	0.13	0.13

Post-Development Land Cover (acres)	A Soils	B Soils	C Soils	D Soils	Total
Forest/Forest (acres)	0.00	0.00	0.00	0.00	0.00
Managed Turf (acres)	0.04	0.04	0.04	0.04	0.04
Impervious Cover (acres)	0.14	0.14	0.14	0.14	0.14

Runoff Coefficients (Cv)	A Soils	B Soils	C Soils	D Soils
Forest/Forest (Cv)	0.10	0.10	0.10	0.10
Managed Turf (Cv)	0.35	0.35	0.35	0.35
Impervious Cover (Cv)	0.95	0.95	0.95	0.95

LAND COVER SUMMARY - PRE-DEVELOPMENT

Pre-Development	Used	Adjusted
Forest/Forest (acres)	0.03	0.03
Managed Turf (acres)	0.00	0.00
Impervious Cover (acres)	0.13	0.13
Total Site Area (acres)	0.16	0.16

LAND COVER SUMMARY - POST DEVELOPMENT

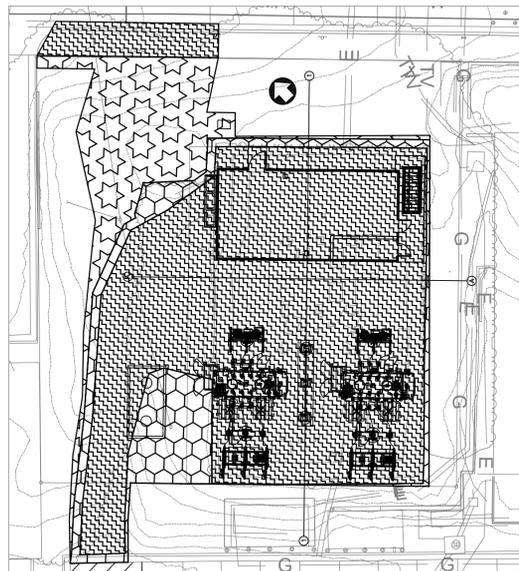
Post-Development	Used	Adjusted
Forest/Forest (acres)	0.00	0.00
Managed Turf (acres)	0.04	0.04
Impervious Cover (acres)	0.14	0.14
Total Site Area (acres)	0.18	0.18

Post-Development Requirement for Site Area: TP Load Reduction Required (lb/yr): 0.06

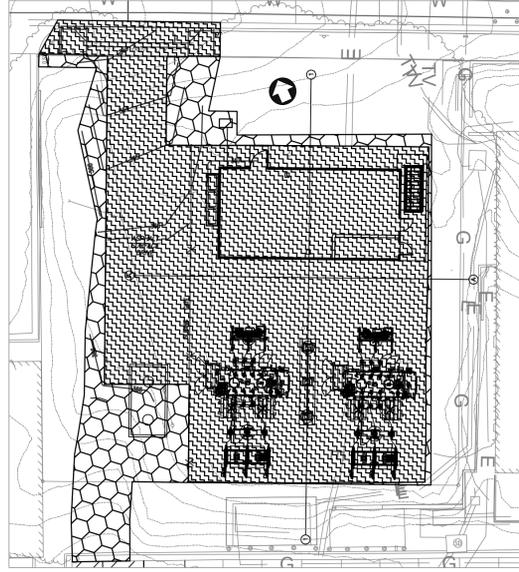
Nitrogen Loads (Informational Purposes Only):  
 Pre-Development % Load (lb/yr): 2.12  
 Post-Development % Load (lb/yr): 2.13

**VRRM SPREADSHEET**

**TREATMENT**  
 TOTAL TREATMENT REQUIREMENT: 0.06 LBS/YR  
 TOTAL TREATMENT ON-SITE: 0.00 LBS/YR  
 NUTRIENT CREDIT PURCHASING: 0.06 LBS/YR



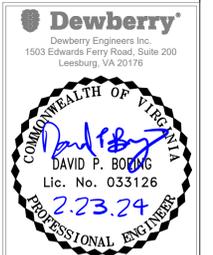
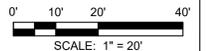
PRE-DEV SITE AREA MAP



POST-DEV SITE AREA MAP

- EXISTING FORESTED AREA = 0.03 AC
- EXISTING TURF AREA = 0.02 AC
- EXISTING IMPERVIOUS AREA = 0.13 AC

- PROPOSED TURF AREA = 0.04 AC
- PROPOSED IMPERVIOUS AREA = 0.14 AC



ELECTION DISTRICT: HUNTER MILL

**STORMWATER MANAGEMENT PLAN**

TOWN OF VIENNA VIRGINIA

Designed by:	Name	Date	Project No.	Sheet No.
AD	AD	1/2024	50151035	11 of 22
Approvals	DB		Scale	
Approvals			1"=20'	
	B/M No.		Revisions	
Cad File Name			Drawing No.	
PLOTTED:			C.04.01	

NOTE: VIRGINIA NORTH STATE PLANE COORDINATE SYSTEM, ZONE 5551, FIPS ZONE 4501; NAD 83 DATUM USED

No.	Date Checked/Appr.	By	Description	Project Number	B/M
Revisions					



### Adequate Outfall Summary

**Outfall Number:** 1  
**Outfall Type:** Storm Sewer System

**Summary:**  
 Outfall 1 is adequate. Outfall 1 is a point in an existing storm sewer system with less than 1% of its total contributing drainage area draining from the project site area. The contributing drainage area is 0.092 square miles (58.84 acres) and the project site area to the outfall is 0.18 acres. The contributing project drainage area is 0.31% of the total drainage area to the point of analysis.

Flow leaves the site and is immediately capture by the curb and gutter system along Center Street South. Flow travels within the curb and gutter system until the point of analysis.

The storm sewer that contains Outfall 1 has been analyzed to the 1% point using the 10-year storm and passes checks for capacity. The storm sewer computations provided are calculated assuming each pipe has full usable capacity based on pipe size and is not blocked by debris.

The detention criteria from Section 124-4-4.D of the Fairfax County Code of Ordinances is met as the post-development flow at the receiving inlet is equal to the pre-development flow for the 2- and 10-year storm events.

**Vienna Substation**  
 Fairfax County  
 1% Outfall Analysis  
 Dewberry Engineers Inc.

Outfall: 1 Exist./Prop.: Proposed Computed By: NA Date: 26-Jun-23  
 Checked By: TP Date: 26-Jun-23

<b>One Percent (1%) Rule</b>			
		<b>Area(A) (ac)</b>	<b>Area(A) (sq.mi)</b>
[A]	<b>Total Drainage Area to Point of Analysis</b>	58.84	0.092
[B]	<b>Contributing Project Drainage Area to Point of Analysis</b>	0.18	0.000

$( [A] / [B] ) \times 100 = 0.31\% < 1\%$

AO 1 1% OUTFALL CALCULATIONS

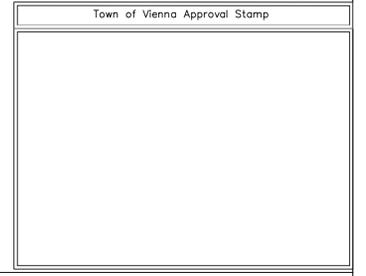
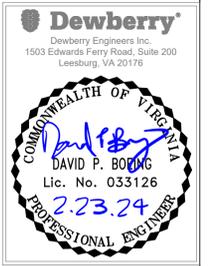
**Vienna Substation**  
 Fairfax County  
 1% Outfall Analysis  
 Dewberry Engineers Inc.

Outfall: 2 Exist./Prop.: Proposed Computed By: NA Date: 26-Jun-23  
 Checked By: TP Date: 26-Jun-23

<b>One Percent (1%) Rule</b>			
		<b>Area(A) (ac)</b>	<b>Area(A) (sq.mi)</b>
[A]	<b>Total Drainage Area to Point of Analysis</b>	34.71	0.054
[B]	<b>Contributing Project Drainage Area to Point of Analysis</b>	0.11	0.000

$( [A] / [B] ) \times 100 = 0.32\% < 1\%$

AO 2 1% OUTFALL CALCULATIONS



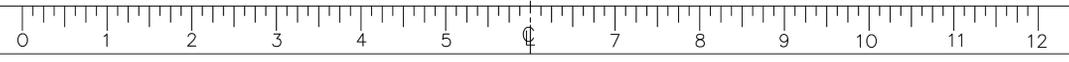
ELECTION DISTRICT: HUNTER MILL				
<b>STORMWATER MANAGEMENT PLAN</b>				
TOWN OF VIENNA			VIRGINIA	
Designed by:	Name	Date	Project No.	Sheet No.
AD	DB	1/2024	50151035	12 of 22
Approvals	Scale			
B/M No.		Revisions		
Cad File Name		Drawing No.		
PLOTTED:		C.04.02		

NOTE: VIRGINIA NORTH STATE PLANE COORDINATE SYSTEM, ZONE 5551, FIPS ZONE 4501; NAD 83 DATUM USED

No.	Date	By	Description







**Dewberry**

PROJECT: Vienna Substation COUNTY: Fairfax County  
 DATE: June, 2023  
 ENGINEER: NA/ Dewberry Engineers Inc.  
 CHECKER: OUTFALL TO STRUCTURE: EX. STR-2

Storm Sewer Design Computations LD-229

FROM INLET	TO INLET	TOTAL AREA "A" (ACRE)	WEIGHTED RUNOFF COEF. "C"	"CA"		INLET TIME (MIN.)	FREQUENCY (YR)	RAINFALL INTENSITY "I" (IN/HR)	SATURATION FACTOR C <sub>s</sub>	FLOW Q (CFS)	INVERT ELEVATIONS (FT)		LENGTH L (FT)	SLOPE (FT/FT)	DIAMETER Do (IN)	MATERIAL COEFFICIENT n	CAPACITY (CFS)	VELOCITY (FPS)	MINIMUM VELOCITY (FPS)	MAXIMUM VELOCITY (FPS)	FLOW TIME (MIN)	REMARK
				INCR.	ACC.*						UPSTREAM	DOWNSTREAM										
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)	(21)	(22)	(23)
EX. STR-1	EX. STR-2	3.94	0.75	2.97	2.97	12.87	10	4.94	1.00	14.64	348.60	348.46	14.2	0.010	30	0.013	41.02	7.67	3.0	10.0	0.03	
End																						

Values are assumed based on minimum structure heights from the 2016 VDOT Road and Bridge Standards with a 1% slope in the pipe. (Source: VDOT Drainage Manual | Appendix 9B-2 | LD-229)

AO 1 STORM SEWER ADEQUACY CALCULATIONS

**Dewberry**

PROJECT: Vienna Substation COUNTY: Fairfax County  
 DATE: June, 2023  
 ENGINEER: NA/ Dewberry Engineers Inc.  
 CHECKER: OUTFALL TO STRUCTURE: EX. STR-2

Hydraulic Grade Line Computations LD-347

Inlet Station	Outlet Water Surface Elevation	D <sub>s</sub>	Q <sub>o</sub>	L <sub>s</sub>	S <sub>o</sub> %	H <sub>i</sub>	JUNCTION LOSS										Final H	Inlet Water Surface Elevation	Rim Elevation	Amount of Flow Entering System Through Drop Inlet (CFS)	S'd IS-1 Inlet Shaping Provided? (Enter Y or N)		
							V <sub>o</sub>	H <sub>o</sub>	Q <sub>o</sub>	V <sub>i</sub>	Q <sub>v</sub>	V <sub>i</sub> <sup>2</sup> /2g	H <sub>i</sub>	Angle	H <sub>o</sub>	H <sub>i</sub>						1.3 H <sub>i</sub>	0.5 H <sub>i</sub>
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)	(21)	(22)	(23)	
EX. STR-1	350.458	30	14.64	14.20	0.128	0.02	7.67	0.27	0.00	0.00	0.00	0.00	0.00	90	0.00	0.27	0.36	0.18	0.20	350.65	354.07	14.64	Y

FINAL  
 H<sub>i</sub> = H<sub>t</sub> + H<sub>f</sub>  
 H<sub>t</sub> = H<sub>o</sub> + H<sub>i</sub> + H<sub>d</sub>

(Source: VDOT Drainage Manual | Appendix 9B-3 | LD-347)

AO 1 STORM SEWER ADEQUACY HGL CALCULATIONS

**Dewberry**

PROJECT: Vienna Substation COUNTY: Fairfax County  
 DATE: June, 2023  
 ENGINEER: NA/ Dewberry Engineers Inc.  
 CHECKER: OUTFALL TO STRUCTURE: EX. STR-6

Storm Sewer Design Computations LD-229

FROM INLET	TO INLET	TOTAL AREA "A" (ACRE)	WEIGHTED RUNOFF COEF. "C"	"CA"		INLET TIME (MIN.)	FREQUENCY (YR)	RAINFALL INTENSITY "I" (IN/HR)	SATURATION FACTOR C <sub>s</sub>	FLOW Q (CFS)	INVERT ELEVATIONS (FT)		LENGTH L (FT)	SLOPE (FT/FT)	DIAMETER Do (IN)	MATERIAL COEFFICIENT n	CAPACITY (CFS)	VELOCITY (FPS)	MINIMUM VELOCITY (FPS)	MAXIMUM VELOCITY (FPS)	FLOW TIME (MIN)	REMARK
				INCR.	ACC.*						UPSTREAM	DOWNSTREAM										
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)	(21)	(22)	(23)
EX. STR-3	EX. STR-5	1.28	0.75	0.96	0.96	6.57	10	6.35	1.00	6.11	358.79	354.47	112.0	0.039	12	0.013	7.00	10.06	3.0	10.0	0.19	
EX. STR-5	EX. STR-6	0.49	0.85	0.42	1.55	8.63	10	5.79	1.00	8.97	354.27	352.80	104.6	0.014	12	0.013	4.22	11.43	3.0	10.0	0.15	
EX. STR-4	EX. STR-5	0.21	0.81	0.17	0.17	5.00	10	6.78	1.00	1.16	355.35	354.27	30.0	0.036	12	0.013	6.76	6.45	3.0	10.0	0.08	
End																						

(Source: VDOT Drainage Manual | Appendix 9B-2 | LD-229)

AO 2 STORM SEWER ADEQUACY CALCULATIONS

**Dewberry**

PROJECT: Vienna Substation COUNTY: Fairfax County  
 DATE: June, 2023  
 ENGINEER: NA/ Dewberry Engineers Inc.  
 CHECKER: OUTFALL TO STRUCTURE: EX. STR-6

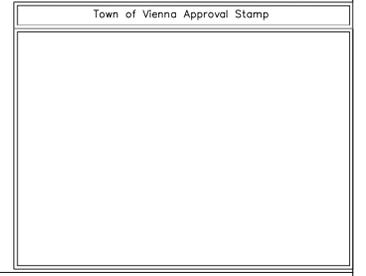
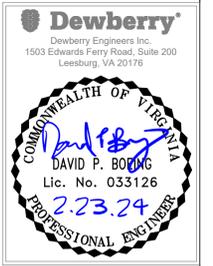
Hydraulic Grade Line Computations LD-347

Inlet Station	Outlet Water Surface Elevation	D <sub>s</sub>	Q <sub>o</sub>	L <sub>s</sub>	S <sub>o</sub> %	H <sub>i</sub>	JUNCTION LOSS										Final H	Inlet Water Surface Elevation	Rim Elevation	Amount of Flow Entering System Through Drop Inlet (CFS)	S'd IS-1 Inlet Shaping Provided? (Enter Y or N)		
							V <sub>o</sub>	H <sub>o</sub>	Q <sub>o</sub>	V <sub>i</sub>	Q <sub>v</sub>	V <sub>i</sub> <sup>2</sup> /2g	H <sub>i</sub>	Angle	H <sub>o</sub>	H <sub>i</sub>						1.3 H <sub>i</sub>	0.5 H <sub>i</sub>
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)	(21)	(22)	(23)	
EX. STR-4	361.270	12	1.16	30.00	0.107	0.03	6.45	0.19	0.00	0.00	0.00	0.00	86	0.00	0.19	0.25	0.13	0.16	361.43	359.27	1.16	Y	
EX. STR-5	353.600	12	8.97	104.60	6.431	6.73	11.43	0.51	6.11	10.06	61.48	1.57	0.55	20	0.39	1.45	1.89	0.94	7.67	361.27	359.54	2.41	Y
EX. STR-3	361.270	12	6.11	112.00	2.981	3.34	10.06	0.47	0.00	0.00	0.00	0.00	0	0.00	0.47	0.61	0.31	3.65	364.92	363.11	6.11	Y	

FINAL  
 H<sub>i</sub> = H<sub>t</sub> + H<sub>f</sub>  
 H<sub>t</sub> = H<sub>o</sub> + H<sub>i</sub> + H<sub>d</sub>

(Source: VDOT Drainage Manual | Appendix 9B-3 | LD-347)

AO 2 STORM SEWER ADEQUACY HGL CALCULATIONS



ELECTION DISTRICT: HUNTER MILL

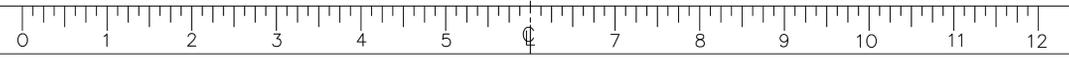
**STORMWATER MANAGEMENT PLAN**

TOWN OF VIENNA VIRGINIA

Designed by:	Name	Date	Project No.	Sheet No.
AD	DB	1/2024	50151035	15 of 22
Approvals	Scale			
Approvals	Revisions			
Cad File Name		Drawing No.		
PLOTTED:		C.04.05		

NOTE: VIRGINIA NORTH STATE PLANE COORDINATE SYSTEM, ZONE 5551, FIPS ZONE 4501; NAD 83 DATUM USED

No.	Date Checked/Appr.	By	Description	Project Number	B/M
Revisions					



**Vienna Substation**  
Fairfax County  
Time of Concentration (Tc) Calculation  
Dewberry Engineers Inc.

Outfall: EX STR-1      Computed By: NA      Date: 15-Jun-23  
Ex/Prop: Proposed      Checked By: TP      Date: 15-Jun-23

Sheet flow (See Note 1)	Segment ID	AB
Surface description		Short Grass
Manning's roughness coeff., n		0.150
Flow length, L		100 (ft)
Two-yr 24-hr rainfall, P2		3.17 (in)
Land slope, s		0.020 (ft/ft)
Tt = [0.007(nL) <sup>0.8</sup> ]/[(P2) <sup>0.5</sup> (s <sup>0.4</sup> )]		0.164 (hr)

Shallow concentrated flow (See Note 1)	Segment ID	BC
Surface description		Unpaved
Flow length, L		81 (ft)
Watercourse slope, s		0.140 (ft/ft)
Average velocity, V		6.2 (ft/s)
Tt = L/(3600*V)		0.004 (hr)

Open Ditch (See Note 2)	Segment ID	CD
Height of Most Remote Point Above Outlet, H		4 (ft)
Maximum Length of Travel		246 (ft)
Time of Concentration, Tc		2.8 (min)
		0.047 (hr)

Pipe (See Note 3)	Segment ID	DE
See Note 3		L = 302 ft
		0.000 (hr)

Watershed time of concentration, Tc = 0.215 (hr)  
12.87 (min)

Lag Tc, Tlag = (0.6\*Tc) = 0.129 (hr)

**Notes:**  
1.) Based on SCS Segmental Approach (TR-55)  
2.) Based on VDOT Drainage Manual, Appendix 6D-5, Small Drainage Basin - Kirpich  
3.) Pipe flow will be assumed to have a travel time of 0 minutes

DA TO EX. STR-1 TIME OF CONCENTRATION CALCS

**Vienna Substation**  
Fairfax County  
Rational Method Peak Flow Calculation  
Dewberry Engineers Inc.

Outfall: EX STR-1      Computed By: NA      Date: 15-Jun-23  
Ex/Prop: Proposed      Checked By: TP      Date: 15-Jun-23

Appendix 6E-1 of the Virginia Department of Transportation Drainage Manual

Rational Method Values for Various Selected Land Uses

Description of Area	C Value Range	C value	Area(A) (ac)	C x A	
<b>Site Land Use</b>					
1. Paved	0.9	0.90	0.05	0.05	
2. Lawns	0.25-0.35	0.30	0.02	0.01	
<b>Outside Site Land Use</b>					
1. Business: Industrial and Commercial	0.80-0.90	0.85	3.19	2.71	
2. Parks, Cemeteries and Unimproved Areas	0.20-0.35	0.30	0.68	0.20	
<b>Totals =</b>			3.94	2.97	
<b>C (Weighted) =</b>	Total Product	=	2.97	=	0.75
	Total Area		3.94		

DA TO EX. STR-1 RATIONAL C-VALUE CALCS

**Vienna Substation**  
Fairfax County  
Time of Concentration (Tc) Calculation  
Dewberry Engineers Inc.

Outfall: EX STR-3      Computed By: NA      Date: 15-Jun-23  
Ex/Prop: Proposed      Checked By: TP      Date: 15-Jun-23

Sheet flow (See Note 1)	Segment ID	AB
Surface description		Short Grass
Manning's roughness coeff., n		0.150
Flow length, L		55 (ft)
Two-yr 24-hr rainfall, P2		3.17 (in)
Land slope, s		0.036 (ft/ft)
Tt = [0.007(nL) <sup>0.8</sup> ]/[(P2) <sup>0.5</sup> (s <sup>0.4</sup> )]		0.080 (hr)

Open Ditch (See Note 2)	Segment ID	BC
Height of Most Remote Point Above Outlet, H		1.5 (ft)
Maximum Length of Travel		117 (ft)
Time of Concentration, Tc		1.8 (min)
		0.029 (hr)

Pipe (See Note 3)	Segment ID	CD
See Note 3		L = 287 ft
		0.000 (hr)

Watershed time of concentration, Tc = 0.109 (hr)  
6.57 (min)

Lag Tc, Tlag = (0.6\*Tc) = 0.066 (hr)

**Notes:**  
1.) Based on SCS Segmental Approach (TR-55)  
2.) Based on VDOT Drainage Manual, Appendix 6D-5, Small Drainage Basin - Kirpich  
3.) Pipe flow will be assumed to have a travel time of 0 minutes

DA TO EX. STR-3 TIME OF CONCENTRATION CALCS

**Vienna Substation**  
Fairfax County  
Rational Method Peak Flow Calculation  
Dewberry Engineers Inc.

Outfall: EX STR-3      Computed By: NA      Date: 15-Jun-23  
Ex/Prop: Proposed      Checked By: TP      Date: 15-Jun-23

Appendix 6E-1 of the Virginia Department of Transportation Drainage Manual

Rational Method Values for Various Selected Land Uses

Description of Area	C Value Range	C value	Area(A) (ac)	C x A	
<b>Site Land Use</b>					
1. Paved	0.9	0.90	0.02	0.02	
<b>Outside Site Land Use</b>					
1. Business: Industrial and Commercial	0.80-0.90	0.85	0.41	0.35	
2. Apartment and Townhomes	0.65-0.75	0.70	0.85	0.60	
<b>Totals =</b>			1.28	0.96	
<b>C (Weighted) =</b>	Total Product	=	0.96	=	0.75
	Total Area		1.28		

DA TO EX. STR-3 RATIONAL C-VALUE CALCS

**Vienna Substation**  
Fairfax County  
Rational Method Peak Flow Calculation  
Dewberry Engineers Inc.

Outfall: EX STR-4      Computed By: NA      Date: 15-Jun-23  
Ex/Prop: Proposed      Checked By: TP      Date: 15-Jun-23

Appendix 6E-1 of the Virginia Department of Transportation Drainage Manual

Rational Method Values for Various Selected Land Uses

Description of Area	C Value Range	C value	Area(A) (ac)	C x A	
<b>Site Land Use</b>					
1. Paved	0.9	0.90	0.07	0.06	
2. Lawns	0.25-0.35	0.30	0.02	0.01	
<b>Outside Site Land Use</b>					
1. Business: Industrial and Commercial	0.80-0.90	0.85	0.12	0.10	
<b>Totals =</b>			0.21	0.17	
<b>C (Weighted) =</b>	Total Product	=	0.17	=	0.81
	Total Area		0.21		

DA TO EX. STR-4 RATIONAL C-VALUE CALCS

**Vienna Substation**  
Fairfax County  
Rational Method Peak Flow Calculation  
Dewberry Engineers Inc.

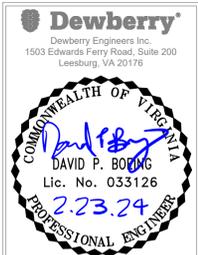
Outfall: EX STR-5      Computed By: NA      Date: 15-Jun-23  
Ex/Prop: Proposed      Checked By: TP      Date: 15-Jun-23

Appendix 6E-1 of the Virginia Department of Transportation Drainage Manual

Rational Method Values for Various Selected Land Uses

Description of Area	C Value Range	C value	Area(A) (ac)	C x A	
<b>Outside Site Land Use</b>					
1. Business: Industrial and Commercial	0.80-0.90	0.85	0.49	0.42	
<b>Totals =</b>			0.49	0.42	
<b>C (Weighted) =</b>	Total Product	=	0.42	=	0.85
	Total Area		0.49		

DA TO EX. STR-5 RATIONAL C-VALUE CALCS



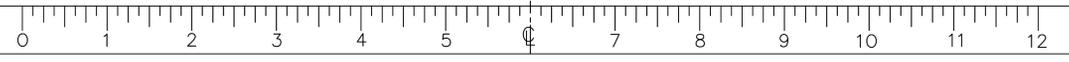
ELECTION DISTRICT: HUNTER HILL

**STORMWATER MANAGEMENT PLAN**

TOWN OF VIENNA VIRGINIA

Designed by:	Name	Date	Project No.	Sheet No.
AD	AD	1/2024	50151035	16 of 22
Approvals	DB		Scale	
B/M No.		Revisions		
Cad File Name		Drawing No.		
PLOTTED:		C.04.06		

No.	Date Checked/Appr.	By	Description	Project Number	B/M
Revisions					



**Vienna Substation**  
Fairfax County  
Rational Method Peak Flow Calculation  
Dewberry Engineers Inc.

Outfall: EX STR-1      Computed By: NA      Date: 15-Jun-23  
 Ex/Prop: Existing      Checked By: TP      Date: 15-Jun-23

Appendix 6E-1 of the Virginia Department of Transportation Drainage Manual  
 Rational Method Values for Various Selected Land Uses

Description of Area	C Value Range	C value	Area(A) (ac)	C x A
<b>Site Land Use</b>				
1. Paved	0.9	0.90	0.04	0.03
2. Lawns	0.25-0.35	0.30	0.01	0.00
3. Forest	0.20-0.30	0.25	0.03	0.01
<b>Outside Site Land Use</b>				
1. Business, Industrial and Commercial	0.80-0.90	0.85	3.19	2.71
2. Parks, Cemeteries and Unimproved Areas	0.20-0.35	0.30	0.68	0.20
<b>Totals =</b>				<b>3.94   2.96</b>
<b>C (Weighted) =</b>	Total Product	=	2.96	=
	Total Area		3.94	<b>0.75</b>
<b>Tc (min)</b>	12.9			
	<b>2-yr</b>	<b>10-yr</b>		
I (in/hr)	3.70	4.94		
Q safety factor	1	1		
<b>Q (cfs)</b>	11.0	14.6		

DA TO EX. STR-1 PRE-DEV DISCHARGE CALCS

**Vienna Substation**  
Fairfax County  
Rational Method Peak Flow Calculation  
Dewberry Engineers Inc.

Outfall: EX STR-1      Computed By: NA      Date: 15-Jun-23  
 Ex/Prop: Proposed      Checked By: TP      Date: 15-Jun-23

Appendix 6E-1 of the Virginia Department of Transportation Drainage Manual  
 Rational Method Values for Various Selected Land Uses

Description of Area	C Value Range	C value	Area(A) (ac)	C x A
<b>Site Land Use</b>				
1. Paved	0.9	0.90	0.05	0.05
2. Lawns	0.25-0.35	0.30	0.02	0.01
<b>Outside Site Land Use</b>				
1. Business, Industrial and Commercial	0.80-0.90	0.85	3.19	2.71
2. Parks, Cemeteries and Unimproved Areas	0.20-0.35	0.30	0.68	0.20
<b>Totals =</b>				<b>3.94   2.97</b>
<b>C (Weighted) =</b>	Total Product	=	2.97	=
	Total Area		3.94	<b>0.75</b>
<b>Tc (min)</b>	12.9			
	<b>2-yr</b>	<b>10-yr</b>		
I (in/hr)	3.70	4.94		
Q safety factor	1	1		
<b>Q (cfs)</b>	11.0	14.6		

DA TO EX. STR-1 POST-DEV DISCHARGE CALCS

**Vienna Substation**  
Fairfax County  
Rational Method Peak Flow Calculation  
Dewberry Engineers Inc.

Outfall: EX STR-3      Computed By: NA      Date: 15-Jun-23  
 Ex/Prop: Existing      Checked By: TP      Date: 15-Jun-23

Appendix 6E-1 of the Virginia Department of Transportation Drainage Manual  
 Rational Method Values for Various Selected Land Uses

Description of Area	C Value Range	C value	Area(A) (ac)	C x A
<b>Site Land Use</b>				
1. Paved	0.9	0.90	0.02	0.02
<b>Outside Site Land Use</b>				
1. Business, Industrial and Commercial	0.80-0.90	0.85	0.41	0.35
2. Apartment and Townhomes	0.65-0.75	0.70	0.85	0.60
<b>Totals =</b>				<b>1.28   0.96</b>
<b>C (Weighted) =</b>	Total Product	=	0.96	=
	Total Area		1.28	<b>0.75</b>
<b>Tc (min)</b>	6.6			
	<b>2-yr</b>	<b>10-yr</b>		
I (in/hr)	4.79	6.35		
Q safety factor	1	1		
<b>Q (cfs)</b>	4.6	6.1		

DA TO EX. STR-3 PRE-DEV DISCHARGE CALCS

**Vienna Substation**  
Fairfax County  
Rational Method Peak Flow Calculation  
Dewberry Engineers Inc.

Outfall: EX STR-3      Computed By: NA      Date: 15-Jun-23  
 Ex/Prop: Proposed      Checked By: TP      Date: 15-Jun-23

Appendix 6E-1 of the Virginia Department of Transportation Drainage Manual  
 Rational Method Values for Various Selected Land Uses

Description of Area	C Value Range	C value	Area(A) (ac)	C x A
<b>Site Land Use</b>				
1. Paved	0.9	0.90	0.02	0.02
<b>Outside Site Land Use</b>				
1. Business, Industrial and Commercial	0.80-0.90	0.85	0.41	0.35
2. Apartment and Townhomes	0.65-0.75	0.70	0.85	0.60
<b>Totals =</b>				<b>1.28   0.96</b>
<b>C (Weighted) =</b>	Total Product	=	0.96	=
	Total Area		1.28	<b>0.75</b>
<b>Tc (min)</b>	6.6			
	<b>2-yr</b>	<b>10-yr</b>		
I (in/hr)	4.79	6.35		
Q safety factor	1	1		
<b>Q (cfs)</b>	4.6	6.1		

DA TO EX. STR-3 POST-DEV DISCHARGE CALCS

**Vienna Substation**  
Fairfax County  
Rational Method Peak Flow Calculation  
Dewberry Engineers Inc.

Outfall: EX STR-4      Computed By: NA      Date: 15-Jun-23  
 Ex/Prop: Existing      Checked By: TP      Date: 15-Jun-23

Appendix 6E-1 of the Virginia Department of Transportation Drainage Manual  
 Rational Method Values for Various Selected Land Uses

Description of Area	C Value Range	C value	Area(A) (ac)	C x A
<b>Site Land Use</b>				
1. Paved	0.9	0.90	0.07	0.06
2. Lawns	0.25-0.35	0.30	0.01	0.00
3. Forest	0.20-0.30	0.25	0.01	0.00
<b>Outside Site Land Use</b>				
1. Business, Industrial and Commercial	0.80-0.90	0.85	0.12	0.10
<b>Totals =</b>				<b>0.21   0.17</b>
<b>C (Weighted) =</b>	Total Product	=	0.17	=
	Total Area		0.21	<b>0.81</b>
<b>Tc (min)</b>	5.0 (Assumed)			
	<b>2-yr</b>	<b>10-yr</b>		
I (in/hr)	5.11	6.78		
Q safety factor	1	1		
<b>Q (cfs)</b>	0.9	1.2		

DA TO EX. STR-4 PRE-DEV DISCHARGE CALCS

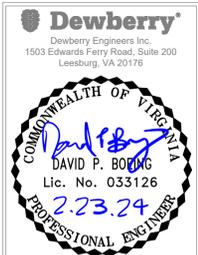
**Vienna Substation**  
Fairfax County  
Rational Method Peak Flow Calculation  
Dewberry Engineers Inc.

Outfall: EX STR-4      Computed By: NA      Date: 15-Jun-23  
 Ex/Prop: Proposed      Checked By: TP      Date: 15-Jun-23

Appendix 6E-1 of the Virginia Department of Transportation Drainage Manual  
 Rational Method Values for Various Selected Land Uses

Description of Area	C Value Range	C value	Area(A) (ac)	C x A
<b>Site Land Use</b>				
1. Paved	0.9	0.90	0.07	0.06
2. Lawns	0.25-0.35	0.30	0.02	0.01
<b>Outside Site Land Use</b>				
1. Business, Industrial and Commercial	0.80-0.90	0.85	0.12	0.10
<b>Totals =</b>				<b>0.21   0.17</b>
<b>C (Weighted) =</b>	Total Product	=	0.17	=
	Total Area		0.21	<b>0.81</b>
<b>Tc (min)</b>	5.0 (Assumed)			
	<b>2-yr</b>	<b>10-yr</b>		
I (in/hr)	5.11	6.78		
Q safety factor	1	1		
<b>Q (cfs)</b>	0.9	1.2		

DA TO EX. STR-4 POST-DEV DISCHARGE CALCS



ELECTION DISTRICT: HUNTER MILL

### STORMWATER MANAGEMENT PLAN

TOWN OF VIENNA VIRGINIA

Designed by:	Name	Date	Project No.	Sheet No.
AD	AD	1/2024	50151035	17 OF 22
Approvals	Scale			
DB				
B/M No.		Revisions		
Cad File Name		Drawing No.		
		C.04.07		

NOTE: VIRGINIA NORTH STATE PLANE COORDINATE SYSTEM, ZONE 5551, FIPS ZONE 4501; NAD 83 DATUM USED

No.	Date	By	Description

Revisions



1941 Reymet Road • Richmond, Virginia 23237 • Tel: (804)-358-8295 Fax: (804)-358-8297

**Certificate of Analysis**

Final Report

Laboratory Order ID 2311198

Client Name: Dominion Energy - Electric Transmission  
 2400 Grayland Avenue  
 Richmond, VA 23220

Date Received: September 22, 2023 12:50  
 Date issued: September 25, 2023 15:37  
 Project Number: [none]  
 Submitted To: Sheila Henley  
 Purchase Order:

Client Site I.D.: Electric Transmission

Enclosed are the results of analyses for samples received by the laboratory on 09/22/2023 12:50. If you have any questions concerning this report, please feel free to contact the laboratory.

Sincerely,

Ted Soyars  
 Technical Director

**End Notes:**

The test results listed in this report relate only to the samples submitted to the laboratory and as received by the Laboratory.

Unless otherwise noted, the test results for solid materials are calculated on a wet weight basis. Analyses for pH, dissolved oxygen, temperature, residual chlorine and sulfite that are performed in the laboratory do not meet NELAC requirements due to extremely short holding times. These analyses should be performed in the field. The results of field analyses performed by the Sampler included in the Certificate of Analysis are done so at the client's request and are not included in the laboratory's fields of certification nor have they been audited for adherence to a reference method or procedure.

The signature on the final report certifies that these results conform to all applicable NELAC standards unless otherwise specified. For a complete list of the Laboratory's NELAC certified parameters please contact customer service.

This report shall not be reproduced except in full without the expressed and written approval of an authorized representative of Enthalpy Analytical.



Enthalpy Analytical  
 1941 Reymet Road  
 Richmond, VA 23237  
 (804)-358-8295 - Telephone  
 (804)-358-8297 - Fax

**Analysis Detects Report**

Client Name: Dominion Energy - Electric Transmission  
 Client Site ID: Electric Transmission  
 Submitted To: Sheila Henley

Date Issued: 9/25/2023 3:37:13PM

Parameter	Samp ID	Reference Method	Sample Results	Qual	LOD	LOQ	Dil. Factor	Units
PCB as Aroclor 1260	01	SW8062A	1.17		0.489	0.489	1	mg/kg

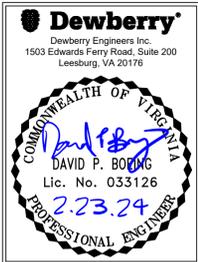
Parameter	Samp ID	Reference Method	Sample Results	Qual	LOD	LOQ	Dil. Factor	Units
PCB as Aroclor 1260	02	SW8062A	0.522		0.494	0.494	1	mg/kg

Note that this report is not the "Certificate of Analysis". This report only lists the target analytes that displayed concentrations that exceeded the detection limit specified for that analyte. For a complete listing of all analytes requested and the results of the analysis see the "Certificate of Analysis".

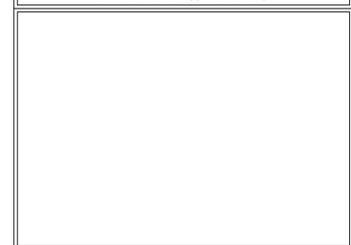
THE ATTACHED REPORT WAS CONDUCTED BY ENTHALPY ANALYTICAL ON 9.25.23 FOR VIENNA SUBSTATION. THE REPORT DOES NOTE THAT THERE IS A VALUE OF 1.17 AND 0.522 50 PPM OF PCB REGISTERED. PCB CONTAMINATION IS NOT CONSIDERED UNTIL THE LEVELS REACH AT LEAST 50 PPM. WITH THIS REPORT, WE FEEL THAT THE PROPOSED DOMINION SUBSTATION IS AND WILL NOT PRODUCE AN AMOUNT OF PCB WORTH NOTING.

No.	Date	By	Description

Revisions



Town of Vienna Approval Stamp

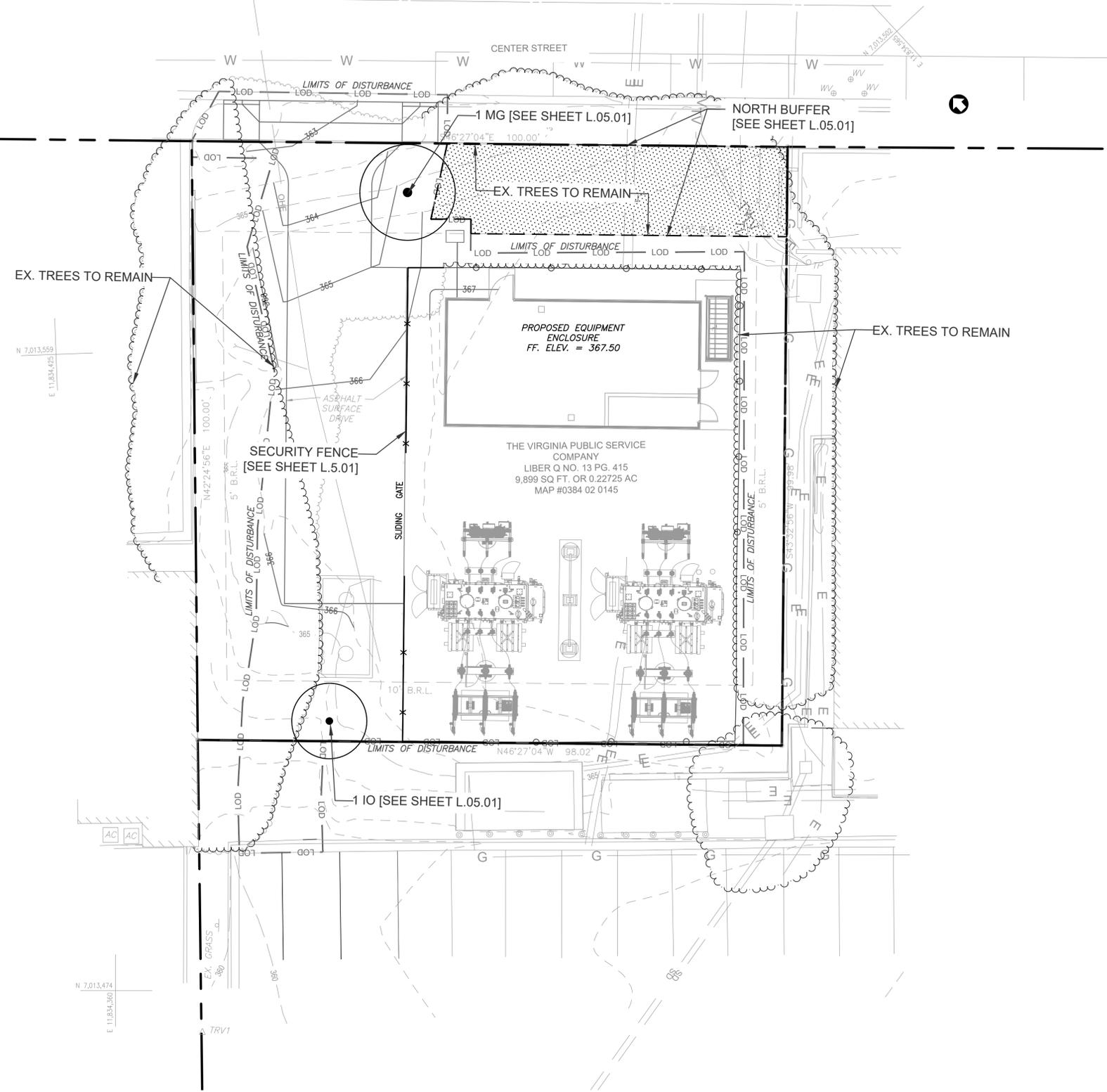
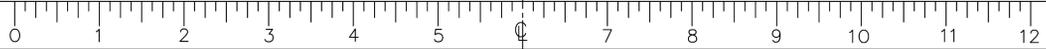


ELECTION DISTRICT: HUNTER MILL

**PCB TEST RESULTS**

TOWN OF VIENNA VIRGINIA

Designed by:	Name	Date	Project No.	Sheet No.
AD	AD	1/2024	50151035	18 OF 22
Approvals	DB		Scale	
Approvals			N/A	
		B/M No.	Revisions	
Cad File Name				Drawing No.
PLOTTED:				C.05.01



**PLANTING KEY**  
[SEE SHEET L.05.01]

SECURITY FENCE

LIMITS OF DISTURBANCE

TREE CONSERVATION AREA [SEE SHEET L.01.02]

EXISTING TREE LINE

PROPOSED TREE LINE

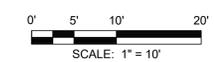
**LEGEND**

ADJACENT PROPERTY LINES

TOPOGRAPHIC CONTOURS

EXISTING TREE CANOPY

- GENERAL NOTES**
1. ANY SHRUBS REMOVED OR DAMAGED DUE TO MAINTENANCE ACTIVITIES WITHIN A RESPECTIVE EASEMENT WILL BE REPLACED IN KIND AND SIZE BY THE PROPERTY OWNER.
  2. TREE PLANTING AND REPLACEMENT SHALL BE SUBJECT TO THE TOWN OF VIENNA ORDINANCE PER SECTION 17-15.1
  3. SEE SHEET L.05.02 FOR CANOPY CALCULATIONS



**Dewberry**  
Dewberry Engineers Inc.  
1503 Edwards Ferry Road, Suite 200  
Leesburg, VA 20176

COMMONWEALTH OF VIRGINIA  
ANDREW R. TULL  
Lic. No. 1989  
1.31.24  
LANDSCAPE ARCHITECT

Town of Vienna Approval Stamp

**Dominion Energy**

ELECTION DISTRICT: HUNTER MILL

**PLANTING PLAN**

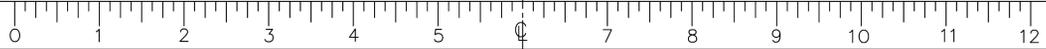
TOWN OF VIENNA VIRGINIA

Designed by:	Name	Date	Project No.	Sheet No.
Approvals			50151035	19 OF 22
Approvals			Scale	
			1"=10'	
	B/M No.		Revisions	
Cad File Name				Drawing No.
PLOTTED:				L.01.01

No.	Date	By	Description

Revisions

NOTE: VIRGINIA NORTH STATE PLANE COORDINATE SYSTEM, ZONE 5551, FIPS ZONE 4501; NAD 83 DATUM USED



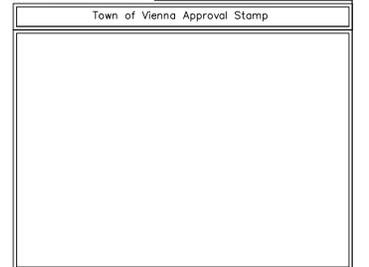
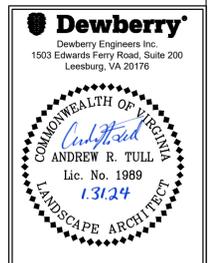
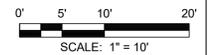
**TREE CONSERVATION KEY**  
[SEE SHEET L.05.03]

- EXISTING TREE LINE
- LIMITS OF CLEARING & GRADING
- SUPER SILT FENCE / TREE PROTECTION FENCE
- TREE TO REMAIN
- TREE TO BE REMOVED
- CRITICAL ROOT ZONE (1.5' R PER 1" DBH)
- 5' WIDE WOODCHIP MULCH
- TREE CONSERVATION AREA SEE NOTE 2. BELOW

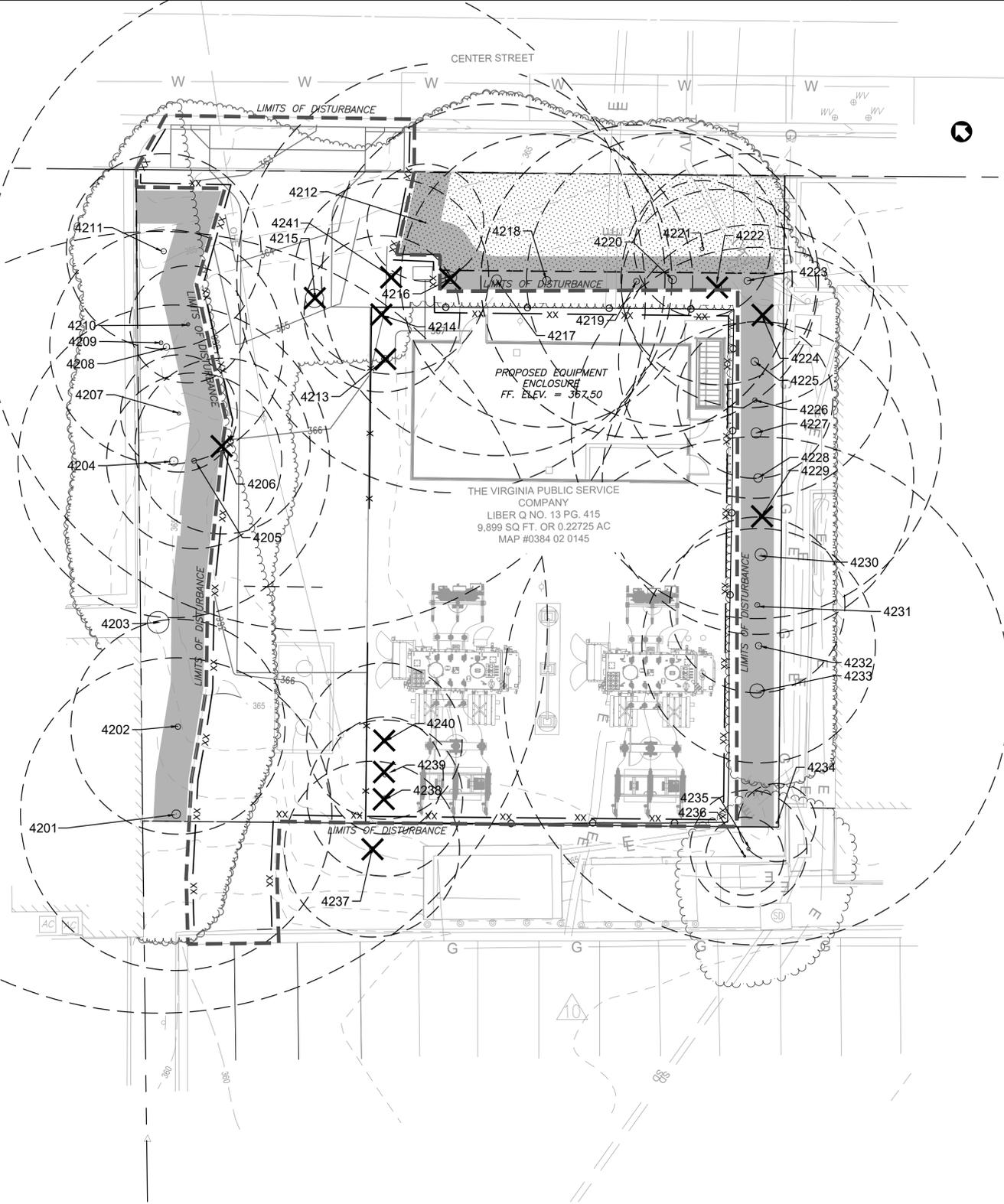
**GENERAL NOTES**

1. WHERE SUPER SILT FENCE HAS BEEN PROVIDED WITH E&S CONTROLS A DEDICATED TREE PROTECTION FENCE IS NOT REQUIRED. SEE C.03.02 FOR E&S CONTROLS.
2. TREE CONSERVATION AREA IS COMPRISED OF A MATURE STAND OF ARBORVITAE IN GOOD CONDITION. THE TREES ARE FULL TO THE GROUND, WITH CANOPIES EXTENDING OUT TO CHURCH STREET AND RANGING IN SIZE FROM APPROXIMATELY 7"-18" DBH. SOME UNDERSTORY OF JUNIPER AND HONEYSUCKLE EXISTS.

PLAN PREPARED BY: JANICE M. CENA, PLA  
ISA CERTIFIED ARBORIST No. MA-4469A



ELECTION DISTRICT: HUNTER MILL			
<b>TREE CONSERVATION PLAN</b>			
TOWN OF VIENNA		VIRGINIA	
Designed by:	Name	Date	Project No.
Approvals			50151035
Approvals			Scale
			1"=10'
		B/M No.	Revisions
Cad File Name		Drawing No.	
PLOTTED:		L.01.02	



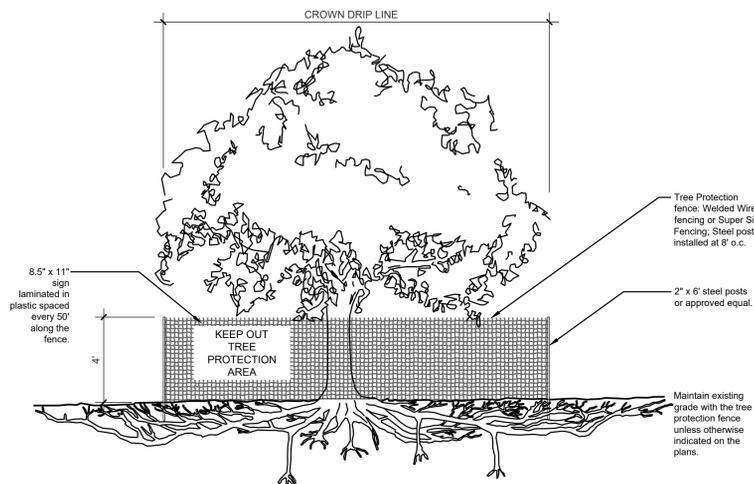
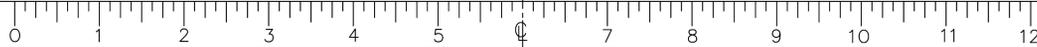
NOTE: VIRGINIA NORTH STATE PLANE COORDINATE SYSTEM, ZONE 5551, FIPS ZONE 4501; NAD 83 DATUM USED

No.	Date	By	Description

Revisions

Project Number	B/M





Tree Protection Notes:

1. Immediately prior to the installation of tree protection and silt fence, all roots impacted by construction shall be root pruned. Trenches made by root pruning equipment shall be back filled with clean topsoil, preferable native. Trees with significant impact or more than 25% of their critical root zone affected by construction activity shall be watered regularly during construction.
2. No pruning shall be performed except by certified arborist. Arborist credentials shall be submitted to the owner for approval.
3. No equipment shall operate inside the protective fencing including during fence installation and removal.

**A4** TREE PROTECTION/SIGN  
NOT TO SCALE

TREE INVENTORY

TREE NUMBER	COMMON NAME	SCIENTIFIC NAME	SIZE (DBH)	CRZ (RAD. FEET)	CONDITION	ACTION	COMMENTS
4201	Honey locust	<i>Gleditsia triacanthos</i>	8/4/4	24	Fair	PRESERVE	triple
4202	Honey locust	<i>Gleditsia triacanthos</i>	4/3/3	15	Fair	PRESERVE	triple, 3 stems from stump
4203	American holly	<i>Ilex opaca</i>	12/16/12	60	Good	PRESERVE	triple
4204	Black locust	<i>Robinia pseudoacacia</i>	16	24	Fair	PRESERVE	
4205	Black walnut	<i>Juglans nigra</i>	1/2/2/3/1	13.5	Good	PRESERVE	multistem
4206	Red maple	<i>Acer rubrum</i>	1/3/2/1/1	12	Good	REMOVE	multistem
4207	Honey locust	<i>Gleditsia triacanthos</i>	5/1	9	Fair	PRESERVE	
4208	Black locust	<i>Robinia pseudoacacia</i>	12	18	Fair	PRESERVE	
4209	Black cherry	<i>Prunus serotina</i>	7	10.5	Fair	PRESERVE	
4210	Black locust	<i>Robinia pseudoacacia</i>	6	9	Fair	PRESERVE	
4211	Black cherry	<i>Prunus serotina</i>	10	15	Fair	PRESERVE	
4212	American elm	<i>Ulmus americana</i>	6	9	Good	PRESERVE	
4213	Eastern arborvitae	<i>Thuja occidentalis</i>	17	NA	Poor/Dead	REMOVE	vines, no top
4214	Eastern arborvitae	<i>Thuja occidentalis</i>	8	12	fair/poor	REMOVE	
4215	Black cherry	<i>Prunus serotina</i>	22/12	51	Poor	REMOVE	
4216	Eastern arborvitae	<i>Thuja occidentalis</i>	12/10	33	Fair	REMOVE	
4217	Eastern arborvitae	<i>Thuja occidentalis</i>	18	27	Good	PRESERVE	
4218	Eastern arborvitae	<i>Thuja occidentalis</i>	15	22.5	Good	PRESERVE	
4219	Eastern arborvitae	<i>Thuja occidentalis</i>	8/8	24	Good	PRESERVE	
4220	Eastern arborvitae	<i>Thuja occidentalis</i>	15	22.5	Good	PRESERVE	
4221	Eastern arborvitae	<i>Thuja occidentalis</i>	7	10.5	Fair	PRESERVE	
4222	Eastern arborvitae	<i>Thuja occidentalis</i>	10	15	Fair	REMOVE	
4223	Eastern arborvitae	<i>Thuja occidentalis</i>	13	19.5	Good	PRESERVE	
4224	Eastern arborvitae	<i>Thuja occidentalis</i>	7	NA	Dead	REMOVE	
4225	Eastern arborvitae	<i>Thuja occidentalis</i>	14	21	Fair	PRESERVE	
4226	Eastern arborvitae	<i>Thuja occidentalis</i>	8	12	Fair	PRESERVE	
4227	Eastern arborvitae	<i>Thuja occidentalis</i>	10/9	28.5	Fair	PRESERVE	
4228	Eastern arborvitae	<i>Thuja occidentalis</i>	9/7	24	Fair	PRESERVE	
4229	Eastern arborvitae	<i>Thuja occidentalis</i>	8	NA	Dead	REMOVE	
4230	Eastern arborvitae	<i>Thuja occidentalis</i>	12/10	33	Fair	PRESERVE	
4231	Eastern arborvitae	<i>Thuja occidentalis</i>	9	13.5	Good	PRESERVE	
4232	Eastern arborvitae	<i>Thuja occidentalis</i>	12	18	Fair	PRESERVE	
4233	Eastern arborvitae	<i>Thuja occidentalis</i>	14/12	39	Good	PRESERVE	
4234	American holly	<i>Ilex opaca</i>	4	6	Good	PRESERVE	
4235	American elm	<i>Ulmus americana</i>	6	9	Good	PRESERVE	
4236	American elm	<i>Ulmus americana</i>	4	6	Good	PRESERVE	
4237	Honey locust	<i>Gleditsia triacanthos</i>	9	13.5	Good	REMOVE	
4238	Eastern arborvitae	<i>Thuja occidentalis</i>	8	12	Fair	REMOVE	
4239	Eastern arborvitae	<i>Thuja occidentalis</i>	6	9	Fair	REMOVE	
4240	Eastern arborvitae	<i>Thuja occidentalis</i>	8	12	Fair	REMOVE	
4241	Eastern arborvitae	<i>Thuja occidentalis</i>	10	15	Fair/Poor	REMOVE	

TREE PRESERVATION NARRATIVE

- PRE-CONSTRUCTION REQUIREMENTS/TREATMENTS:
1. ALL WORK SHALL MEET OR EXCEED INDUSTRY STANDARDS AS MOST RECENTLY PUBLISHED BY THE INTERNATIONAL SOCIETY OF ARBORICULTURE (ISA), THE AMERICAN NATIONAL STANDARDS INSTITUTE (ANSI), OR THE TREE CARE INDUSTRY ASSOCIATION (TCIA). IF THESE STANDARDS DO NOT COVER A PRESCRIBED TREATMENT, THE WORK SHALL MEET THE STANDARDS APPROVED BY URBAN FOREST MANAGEMENT (UFM).
  2. THE INSTALLATION OF ALL TREE PROTECTION FENCING SHALL BE ACCOMPLISHED IN A MANNER THAT DOES NOT HARM EXISTING VEGETATION TO BE PRESERVED.
  3. PRIOR TO ANY DEMOLITION ACTIVITIES, BRANCHES OVERHANGING THE LIMITS OF DISTURBANCE SHALL BE PRUNED TO ELIMINATE DAMAGE FROM CONSTRUCTION ACTIVITY AND/OR TRAFFIC.
  4. WOOD CHIPS SHALL BE PLACED ADJACENT TO TREE PRESERVATION AREAS IN A 5 FOOT STRIP ALONG THE LIMITS OF DISTURBANCE 6 INCHES DEEP. WOOD CHIPS SHALL NOT BE PLACED ANY CLOSER THAN 2 INCHES FROM EXISTING TREE TRUNKS. ANY VARIETY OF HARDWOOD OR PINE MULCH CAN BE USED IN ADDITION TO ANY MULCH THAT HAS BEEN CHIPPED ONSITE FROM UNSAVED TREES OR DEAD LIMBS. ALL MULCH MUST BE PLACED BY HAND.
  5. ALL FENCING SHALL BE MAINTAINED THROUGHOUT CONSTRUCTION OF THE PROPOSED PHASE/PROJECT. FENCING SHALL NOT BE REMOVED OR RELOCATED WITHOUT THE CONSENT OF THE DIRECTOR UPON COMPLETION OF CONSTRUCTION.
  6. "TREE PRESERVATION AREA" SIGNS ARE TO BE SECURED TO THE TREE PROTECTION FENCING NO MORE THAN 50-FEET APART. SIGNS SHALL BE RE-SECURED AS NEEDED THROUGHOUT CONSTRUCTION.
  7. THE TREE PROTECTION SIGNS SHOULD BE POSTED IN ENGLISH AND SPANISH, AND READ "TREE PROTECTION ZONE - KEEP OUT - OFF LIMITS TO CONSTRUCTION EQUIPMENT, MATERIALS AND WORKERS" AND IN SPANISH "ZONA DE PROTECCION DEL ARBOL - PROHIBIDO ENTRAR" (SEE TREE PRESERVATION SIGN DETAIL)
  8. HEAVY EQUIPMENT, VEHICULAR TRAFFIC, AND STOCKPILING OF MATERIALS SHALL NOT BE PERMITTED OUTSIDE THE LOG. ALL TREES TO BE PLANTED OUTSIDE OF THE LIMITS OF CLEARING AND GRADING SHALL BE PLANTED BY HAND AT THE END OF E&S PHASE II. NO MACHINERY IS PERMITTED BEYOND THE LIMITS OF CLEARING AND GRADING. ACCESS TO THESE AREAS SHALL BE FROM INSIDE THE LIMITS OF CLEARING AND GRADING CLOSEST TO THE PROPOSED TREES. CONTRACTOR SHALL COORDINATE WITH THE COUNTY INSPECTOR TO REMOVE ENOUGH TREE PROTECTION FENCE SO THAT THESE AREAS CAN BE ACCESSED FOR PLANTING.

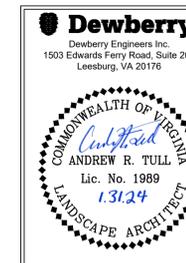
DURING CONSTRUCTION REQUIREMENTS/TREATMENTS

1. UNDER NO CIRCUMSTANCES IS TRESPASS TO OCCUR WITHIN THE TREE PRESERVATION AREA WITHOUT THE CONSENT OF THE TOWN ARBORIST. SHOULD DAMAGE OCCUR, EVERY EFFORT SHALL BE MADE BY THE CONTRACTOR TO HAVE A LICENSED ARBORIST ATTEMPT TO RESOLVE THE PROBLEM AS SOON AS POSSIBLE.
2. SHOULD ENTRY BE AUTHORIZED BY THE TOWN ARBORIST, 3-4" OF MULCH SHALL BE PLACED WITHIN THE WORK AREA PRIOR TO ENTRY AND SHALL REMAIN IN PLACE THROUGHOUT CONSTRUCTION.
3. ALL REQUIRED PRUNING, BRACING, AND/OR CABLING SHALL BE DONE IN ACCORDANCE WITH THE AMERICAN NATIONAL STANDARDS INSTITUTE (ANSI) A300-2000 PRUNING STANDARDS.
4. TREES TO BE REMOVED SHALL NOT BE FELLED, PUSHED, OR PULLED INTO THE TREE PRESERVATION AREA. TREES ON THE EDGE OF THE LIMITS OF CLEARING AND GRADING THAT NEED TO BE REMOVED SHALL BE CUT DOWN BY HAND WITH A CHAIN SAW. REMAINING STUMPS INSIDE THE TREE PRESERVATION AREA SHALL BE LEFT IN PLACE.
5. REMOVAL OF INDIVIDUAL TREES OR TREE PRESERVATION AREAS SHOWN ON THE APPROVED PLAN TO BE PRESERVED MUST BE PRE-APPROVED BY TOWN ARBORIST.
6. NO TOXIC MATERIALS SHALL BE STORED WITHIN 100 FEET OF VEGETATION TO BE RETAINED.

INVASIVE MANAGEMENT PROGRAM

1. UNDESIRABLE PLANT SPECIES WITHIN THE TREE PRESERVATION AREAS SHALL BE IDENTIFIED AND CONTROLLED SUCH THAT THEY ARE NOT DOMINANT SPECIES OR DO NOT CHANGE THE EXISTING VEGETATIVE COMMUNITY. INVASIVE PLANT SPECIES THAT ARE OR MAY BE PRESENT INCLUDE ENGLISH IVY, JAPANESE HONEYSUCKLE, AND MULTIFLORA ROSE. IN ORDER TO PREVENT FUTURE AND CONTROL OR ERADICATE EXISTING INFESTATIONS OF INVASIVE PLANT SPECIES, THE FOLLOWING RECOMMENDATIONS SHALL BE A PART OF THE LONG-TERM MANAGEMENT OF THE TREE PRESERVATION AREAS.
    - 1) PLANT SPECIES KNOWN TO BE INVASIVE SHALL NOT BE USED AS PART OF ANY PROPOSED LANDSCAPING OR RESTORATION PLAN. ONLY THE USE OF NATIVE, NON-INVASIVE SPECIES THAT ARE SUITABLE TO THE SITE CONDITIONS ARE PERMITTED.
    - 2) DISTURBANCE WITHIN THE TREE PRESERVATION AREAS SHALL BE MINIMIZED. HEAVY EQUIPMENT, VEHICULAR TRAFFIC, STOCKPILING OF MATERIALS, AND DEPOSITION OF YARD DEBRIS AND SEDIMENT SHALL NOT BE PERMITTED WITHIN THE TREE PRESERVATION AREAS.
    - 3) INVASIVE PLANTS CAN BE ERADICATED OR CONTROLLED BY MECHANICAL REMOVAL, (HAND PULLING OR USE OF HAND OR POWER TOOLS) OR CHEMICAL TREATMENTS (APPLICATIONS OF HERBICIDES), OR BY A COMBINATION OF BOTH.
- MANUAL REMOVAL IS SLOW, METICULOUS, AND LABOR-INTENSIVE, BUT IT IS RECOMMENDED FOR SMALL INFESTATIONS OR ENVIRONMENTALLY SENSITIVE AREAS. REGULAR MONITORING AND EARLY REMOVAL OF INVASIVE PLANTS CAN MAKE THIS METHOD THE MOST ECONOMICAL. PLANT FRAGMENTS AND FRUITS MUST BE COMPLETELY REMOVED FROM THE AREA AND PROPERLY DISPOSED OF IN A PLASTIC BAG TO ENSURE ROOT REGENERATION WILL NOT ESTABLISH NEW COLONIES.
- CHEMICAL TREATMENT MIGHT BE REQUIRED FOR PERSISTENT CASES, BUT CARE MUST BE EXERCISED TO LIMIT THE CHEMICAL TO ONLY THE AFFECTED AREA AND THE TARGETED SPECIES. HERBICIDE APPLICATION IS STRICTLY REGULATED, AND THE CONTRACTOR MUST ENSURE THAT ALL REGULATIONS ARE FOLLOWED AND THAT THE HERBICIDE APPLICATOR IS CERTIFIED AS EITHER A TECHNICIAN OR AN APPLICATOR BY THE VIRGINIA DEPARTMENT OF AGRICULTURE AND CONSUMER SERVICES.

PLAN PREPARED BY: JANICE M. CENA, PLA  
ISA CERTIFIED ARBORIST No. MA-4469A



ELECTION DISTRICT: HUNTER MILL

**TREE CONSERVATION NOTES**

TOWN OF VIENNA VIRGINIA

Designed by:	Name	Date	Project No.	Sheet No.
Approvals			50151035	22 of 22
Approvals			Scale	
	B/M No.	Revisions		
Cad File Name	Drawing No.			
PLOTTED:	L.05.02			

No.	Date	By	Description