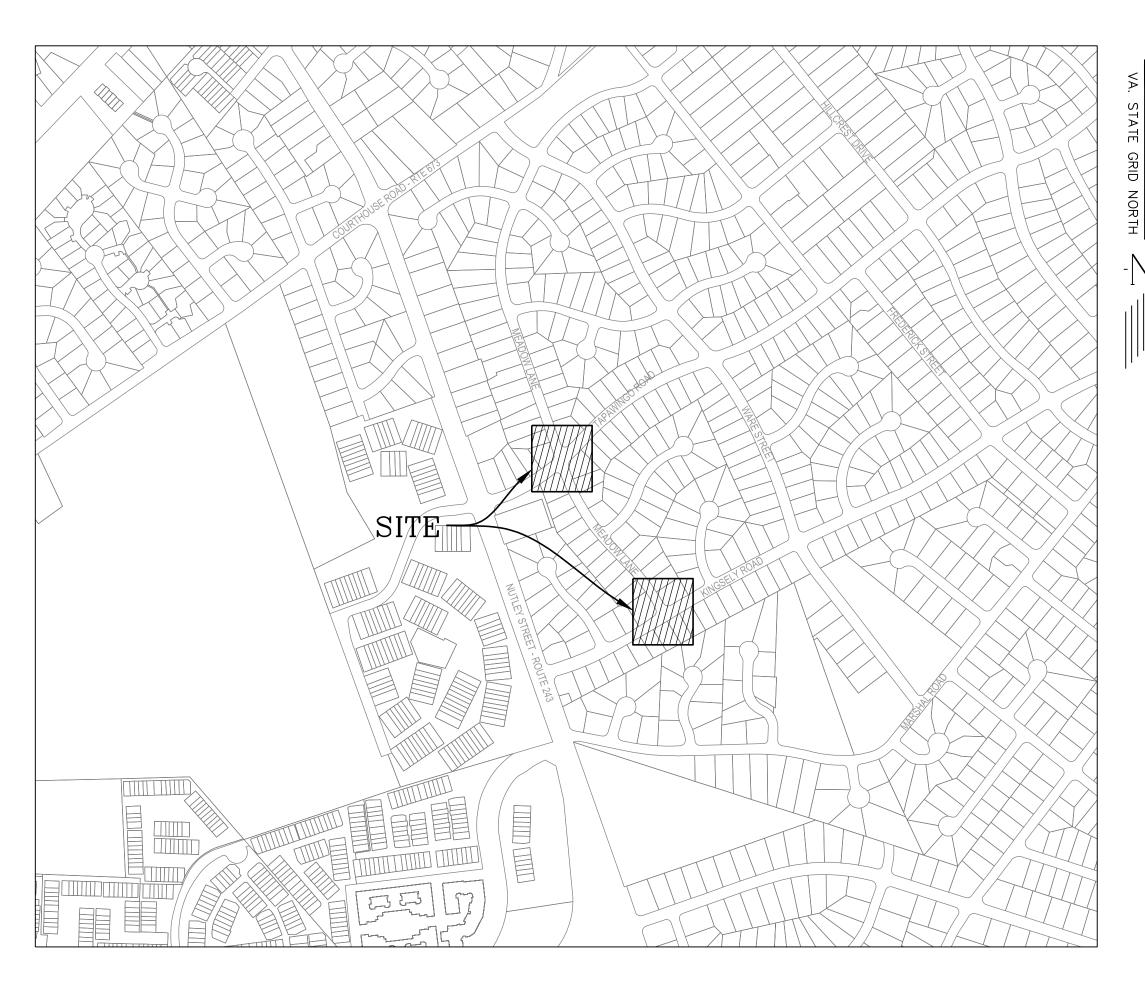
TOWN OF VIENNA DEPARTMENT OF PUBLIC WORKS

FAIRFAX COUNTY, VIRGINIA

TAPAWINGO ROAD & KINGSLEY ROAD ROAD IMPROVEMENT PLAN

100% DESIGN CONSTRUCTION DRAWINGS



TO COMMENCEMENT OF EXCAVATION OR DEMOLITION.

VIRGINIA ELECTRIC & POWER CO.

COLUMBIA GAS TRANSMISSION CO.

CONTINENTAL TELEPHONE OF VIRGINIA

TRI-COUNTY ELEC. CO-OP 1-777-2151

FALLS CHURCH WATER SER. 1-241-5078

FAIRFAX CO. SAN. SEWER DIV.

TRANSCO GAS PIPELINE CO.

COLUMBIA GAS OF VIRGINIA

A.T.& T. CO.

CONTACT "MISS UTILITY" AT

1 - 800 - 552 - 7001

FOR THESE UTILITIES

CONTACT THESE UTILITIES

EMERGENCY DIAL 911

777-1021 777-2222

POLICE - FIRE - RESCUE

COLONIAL PIPELINE CO.

FAIRFAX CO. WATER AUTHORITY

WASHINGTON GAS LIGHT CO.

PLANTATION PIPELINE CO. C & P TELEPHONE CO.

PRINCE WILLIAM ELEC. CO-OP.

LOUDOUN WATER 571-291-7880

FAIRFAX CITY WATER SER. 385-7916

VICINITY MAP SCALE : 1"= 500'

OWNER/DEVELOPER:



DEPARTMENT OF PUBLIC WORKS 127 CENTER ST. S. VIENNA, VA 22180

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COVER SHEET

NOTES AND DETAILS

NOTES AND DETAILS

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EXISTING CONDITIONS AND DEMOLITION PLAN

SITE PLAN

SITE PLAN

DRAINAGE DIVIDES

BMP COMPUTATIONS & DETAILS

BMP COMPUTATIONS & DETAILS

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BMP NOTES AND DETAILS 15. STORM PROFILES

STORM COMPUTATIONS

EROSION & SEDIMENT CONTROL PH I & PH II

EROSION & SEDIMENT CONTROL PH I & PH II

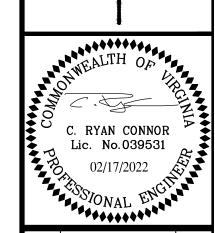
EROSION & SEDIMENT CONTROL NARRATIVE & DETAILS

20. PAVEMENT IMPROVEMENT PLAN

20A. PAVEMENT IMPROVEMENT PLAN

21. BIO-RETENTION LANDSCAPE PLAN





FILE No. PP-2156

GENERAL NOTES

OWNER / DEVELOPER: TOWN OF VIENNA DEPARTMENT OF PUBLIC WORKS 127 CENTER STREET, SOUTH VIENNA, VA 22180

1. THE EXISTING UNDERGROUND UTILITIES SHOWN HEREON ARE BASED UPON AVAILABLE INFORMATION. IF DURING CONSTRUCTION OPERATIONS THE

PLANS, THEY SHOULD IMMEDIATELY NOTIFY THE ENGINEER AND TAKE NECESSARY CEASE WORK IN THE AREA IMMEDIATELY AND NOTIFY THE OWNER AND ENGINEER. AND PROPER STEPS TO PROTECT THE UTILITY AND ASSURE THE CONTINUANCE OF SERVICE. THE ENGINEER DOES NOT CERTIFY TO THE LOCATION OR EXISTENCE 31. ALL CONSTRUCTION INVOLVING PROBLEM SOIL MUST BE PERFORMED UNDER OF ANY UNDERGROUND UTILITY SHOWN ON THIS PLAN. THE CONTRACTOR SHALL CONTACT "MISS UTILITY" AT 811 PRIOR TO COMMENCEMENT OF ANY EXCAVATION.

2. TOPOGRAPHIC INFORMATION SHOWN HEREON IS BASED ON THE FIELD RUN SURVEY PERFORMED BY URBAN, LTD IN FEBRUARY, 2019. HORIZONTAL DATUM IS NAD1983 AND VERTICAL DATUM IS NAVD1988.

3. SUBSURFACE UTILITIES SHOWN PER MISS UTILITY MARK OUT FIELD LOCATION.

4. WATERLINE SHOWN PER TOWN OF VIENNA UTILITY SYSTEMS MAP.

5. NO TITLE REPORT FURNISHED.

6. CLEARING AND GRADING SHALL BE IN ACCORDANCE WITH THE GRADING AND EROSION CONTROL PLANS AND STANDARDS SET FORTH BY THE VIRGINIA EROSION AND SEDIMENTATION CONTROL HANDBOOK. ALL LAND ON OR OFF-SITE WHICH IS DISTURBED BY THIS IMPROVEMENT AND WHICH IS NOT BEING BUILT UPON OR SURFACED SHALL BE ADEQUATELY STABILIZED TO CONTROL EROSION AND SEDIMENTATION.

7. THE CONTRACTOR SHALL PROVIDE ADEQUATE MEANS OF CLEANING TRUCKS AND/OR OTHER EQUIPMENT PRIOR TO ENTERING THE TOWN STREETS. IT IS THE CONTRACTOR'S RESPONSIBILITY TO CLEAN STREETS, ALLAY DUST AND TO TAKE WHATEVER MEASURES NECESSARY TO INSURE THAT THE ROAD IS MAINTAINED IN A CLEAN, MUD AND DUST FREE CONDITION AT ALL TIMES. SEE SILTATION AND EROSION CONTROL PLANS/NARRATIVE FOR ADDITIONAL INFORMATION.

8 . THE CONTRACTOR SHALL PROTECT AND ADJUST, AS REQUIRED, ALL EXISTING MANHOLES AND VALVES WITHIN THE LIMITS OF DISTURBANCE. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ANY DAMAGE THAT MAY OCCUR BY HIS FAILURE TO REPRESENTATIVE SHALL CONTACT THE TOWN OF VIENNA ARBORIST AT PROPERLY PROTECT THE EXISTING MANHOLES AND VALVES.

9. IF APPLICABLE, ANY UTILITIES AND UTILITY POLES TO BE BRACED DUE TO THIS IMPROVEMENT SHALL BE DONE AT THE EXPENSE OF THE CONTRACTOR PURSUANT TO THE TOWN'S PAY ITEM SCHEDULE. THE CONTRACTOR IS RESPONSIBLE FOR COORDINATING AND SCHEDULING ALL UTILITY WORK REQUIRED. THE TOWN WILL COORDINATE WITH DOMINION VIRGINIA POWER IN REGARDS TO RELOCATING ANY POLES DUE TO THIS IMPROVEMENT.

10. ALL STORM SEWER STRUCTURES AND PIPING WITHIN THE AREA OF CONSTRUCTION SHALL BE CLEANED OUT FOLLOWING THE COMPLETION OF CONSTRUCTION.

11. ANY DAMAGE TO EXISTING STREETS, PUBLIC UTILITIES OR PRIVATE UTILITIES, INCLUDING BUT NOT LIMITED TO, VALVE BOXES, WATER METER LIDS, FRAMES OR CROCKS AND WATER LATERALS, DUE TO THIS IMPROVEMENT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR.

12. ALL CONSTRUCTION DUE TO THIS IMPROVEMENT IS TO BE PERFORMED IN ACCORDANCE WITH THE STANDARDS SET FORTH BY THE STATE OF VIRGINIA AND THE TOWN OF VIENNA.

13. THE CONTRACTOR SHALL BE RESPONSIBLE FOR NOTIFYING THE TOWN AND THE ENGINEER/SURVEYOR OF ANY CHANGES OR CONDITIONS ATTACHED TO PERMITS OBTAINED FROM TOWN OF VIENNA, OR ANY OTHER AUTHORITY ISSUING PERMITS.

14. A SMOOTH GRADE SHALL BE MAINTAINED FROM CENTERLINE TO THE CURB AND GUTTER TO PRECLUDE THE FORMING OF FALSE GUTTERS AND/OR PONDING OF WATER ON ANY ROAD OR PARKING AREA.

15. PLANS MAY NOT INCLUDE MINOR SITE FEATURES SUCH AS MAILBOXES, PRIVATE LIGHTING FIXTURES, SIGNS, ETC. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO PERFORM A PRE-CONSTRUCTION SURVEY OF THE PROPOSED STREETS TO LOCATE THESE PRIVATE FEATURES AND RELOCATE THEM AS NECESSARY.

16. THE CONTRACTOR SHALL INSPECT ALL EXISTING UTILITIES FOR NECESSARY REPAIRS PRIOR TO INITIATION OF CONSTRUCTION ACTIVITIES. IF ANY SUCH UTILITY 8. ANY EXISTING C&G AND PAVEMENT TO REMAIN THAT IS DAMAGED DURING REPAIRS ARE REQUIRED, THE CONTRACTOR WILL COORDINATE THESE REPAIRS WITH THE TOWN. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ANY DAMAGE TO SATISFACTION. C&G TO BE SAW CUT, OTHERWISE REMOVE TO THE NEAREST EXISTING OR PROPOSED UTILITIES THAT OCCURS DURING CONSTRUCTION ACTIVITIES. DAMAGED UTILITIES SHALL BE REPAIRED IN A TIMELY FASHION TO LIMIT THE INTERRUPTION OF SERVICE TO THE AFFECTED RESIDENTS.

17. THE CONTRACTOR SHALL NOTIFY THE TOWN AND ENGINEER OF ANY DISCREPANCIES BETWEEN EXISTING FIELD CONDITIONS AND THOSE SHOWN ON THE $\;\;$ ARE SHOWN ON THE PLANS PRIOR TO CONSTRUCTION. CONTRACT DOCUMENTS THAT IMPACT PROPOSED CONSTRUCTION ACTIVITIES.

18. ALL CONCRETE AND PAVEMENT DEMOLITION/REMOVAL SHALL EMPLOY SAW CUT JOINTS.

19. ROOT PRUNING SHALL BE TO THE DEPTH OF EXCAVATION, OR 24 INCHES, WHICHEVER IS LESS. A TRENCHER OR VIBRATORY PLOW SHALL BE USED TO PRUNE ALL ROOTS. ROOTS OVER ONE AND ONE-HALF INCHES (1.5") IN DIAMETER REQUIREMENTS. SHALL BE CLEANLY CUT BY HAND.

20. A ROOT BIOSTIMULANT SHALL BE APPLIED IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS TO ALL TREES THAT ARE ROOT PRUNED.

21. CONCRETE PIPE TO BE CLASS III UNLESS OTHERWISE SPECIFIED.

22. SIGHT DISTANCE TO BE MAINTAINED BY CONTRACTOR DURING CONSTRUCTION.

23. THE CONTRACTOR SHALL PROVIDE A SMOOTH GRADE FROM THE LIMITS OF DISTURBANCE TO THE BACK OF SIDEWALK.

24. VDOT STD. IS-1, INLET SHAPING, TO BE UTILIZED ON ALL PROPOSED OR MODIFIED EXISTING STORM STRUCTURES.

25. AIR QUALITY PERMIT NOT REQUIRED PER STATE AIR POLLUTION CONTROL BOARD REGULATION ACQR VII, SECTION 2.706 (G)(2)(1).

26. ALL FINISHED GRADING, SEEDING, SODDING OR PAVING SHALL BE DONE IN SUCH A MANNER TO PRECLUDE THE PONDING OF WATER ON THE SITE.

27. THE CONTRACTOR SHALL INSURE THAT ALL CONSTRUCTION CONFORMS WITH CURRENT FEDERAL, STATE AND LOCAL LAWS AND REGULATIONS, INCLUDING FEDERAL REGULATIONS CONTAINED WITHIN "THE AMERICANS WITH DISABILITIES ACT," ENACTED ON JULY 26, 1990 (AKA "ADA").

28. ALL EARTHWORK OPERATIONS SHALL CONFORM TO THE GEOTECHNICAL NOTES AND DETAILS IF PROVIDED.

29. PRIOR TO ANY LAND DISTURBANCE ACTIVITY WITHIN THE AREA OF WASHINGTON GAS. AND F.C.W.A. MAJOR TRANSMISSION LINES. THE CONTRACTOR MUST NOTIFY THESE UTILITY COMPANIES IN ADVANCE TO ASSURE THEY CAN INSPECT AND APPROVE THE CONSTRUCTION ACTIVITY.

30. NO VISIBLE EVIDENCE OF ANY PLACE OF BURIAL OR HISTORIC SITE WAS ENCOUNTERED ON THE PROPERTY BY THIS FIRM. IF ANY GRAVE YARD OR CONTRACTOR SHOULD ENCOUNTER UTILITIES OTHER THAN THOSE SHOWN ON THE HISTORIC SITE IS ENCOUNTERED DURING CONSTRUCTION THE CONTRACTOR SHALL

THE FULL-TIME INSPECTION OF THE GEOTECHNICAL ENGINEER.

32. THE GEOTECHNICAL ENGINEER SHALL FURNISH A WRITTEN OPINION TO THE TOWN AS TO WHETHER OR NOT WORK HAS BEEN PERFORMED IN ACCORDANCE WITH THE APPROVED PLANS PRIOR TO THE ISSUANCE OF ANY OCCUPANCY OR

33. ALL CLEARING, GRADING AND ACTUAL CONSTRUCTION ACTIVITY SHALL BE LIMITED TO BETWEEN THE HOURS OF 7:00 A.M. AND 6:00 P.M., MONDAY THROUGH FRIDAY, AND BETWEEN 8:00 A.M. AND 6:00 P.M. SATURDAY. CONSTRUCTION ACTIVITY ON SUNDAY SHALL BE PROHIBITED. CONTRACTOR SHALL CONFIRM HOURS WITH TOWN OF VIENNA PRIOR TO CONSTRUCTION AND ADJUSTMENTS MAY BE MADE DUE TO CLOSE PROXIMITY OF A NEARBY SCHOOL.

TOWN OF VIENNA NOTES

1. NOTIFY THE TOWN OF VIENNA DEPARTMENT OF PUBLIC WORKS AT 703-255-6380 WHEN WORK IS TO BE STARTED.

2. ALL CONTRACTOR GENERATED DEBRIS MUST BE HAULED AWAY BY THE CONTRACTOR OR OWNER.

3. ALL RUNOFF MUST SHEET FLOW ACROSS PROPERTY LINES UNLESS APPROVED OTHERWISE BY THE DIRECTOR OF PUBLIC WORKS.

4. ALL PRIVATE STORM DRAINS (I.E. ROOF DRAINS, SUMP PUMP ETC.) MUST DAYLIGHT AT A MINIMUM OF 10 FEET FROM A PROPERTY LINE.

5. PRIOR TO THE REMOVAL OF ANY TREES, THE APPLICANT OR THEIR 703-255-6360 TO COORDINATE HAVING THE TOWN ARBORIST ONSITE DURING

6. TREE PROTECTION FOR ANY TREE, AS SHOWN ON PLAN, MUST BE INSTALLED PRIOR TO ANY SITE WORK.

ROAD CONSTRUCTION NOTES

1. ALL CONSTRUCTION SHALL CONFORM TO CURRENT TOWN OF VIENNA AND VDOT STANDARDS AND SPECIFICATIONS.

2. THE LOCATIONS OF EXISTING UTILITIES ON THESE DRAWINGS ARE GENERALLY APPROXIMATE. IT IS THE CONTRACTOR WHO IS RESPONSIBLE TO ENSURE THE EXACT HORIZONTAL AND VERTICAL LOCATION OF ALL UTILITIES IN THE AREA OF CONSTRUCTION PRIOR TO COMMENCING WORK. THE CONTRACTOR SHALL NOTIFY THE OWNER AND URBAN ENGINEERING & ASSOC. OF ANY POTENTIAL CONFLICTS PRIOR TO COMMENCING CONSTRUCTION.

3. THE CONTRACTOR SHALL CAREFULLY EXAMINE THE SITE AND MAKE ALL INSPECTIONS NECESSARY IN ORDER TO DETERMINE THE FULL EXTENT OF WORK REQUIRED TO MAKE THE COMPLETED WORK CONFORM TO THE DRAWINGS AND SPECIFICATIONS.

4. WHERE CONFLICTS REQUIRE RELOCATION OF EXISTING UTILITIES (E.G. AT&T, MCI, C&P, VEPCO, MEDIA GENERAL) UTILITY COMPANIES SHALL BE NOTIFIED.

5. ALL EXISTING SIGNS, FENCES, ETC. DISTURBED BY THIS CONSTRUCTION SHALL BE RELOCATED BY THE CONTRACTOR AS NECESSARY PER TOWN OF VIENNA REQUIREMENTS.

6. ALL EXISTING TOWN OF VIENNA TRAFFIC CONTROL EQUIPMENT WILL BE RELOCATED BY THE CONTRACTOR AS NECESSARY PER VDOT REQUIREMENTS.

7. THE CONTRACTOR IS RESPONSIBLE FOR ANY DAMAGE TO EXISTING ROADS AND UTILITIES WHICH OCCUR AS A RESULT OF PROJECT CONSTRUCTION WITHIN OR CONTIGUOUS TO THE SITE.

CONSTRUCTION SHALL BE REPLACED/REPAIRED TO TOWN OF VIENNA

9. THE CONTRACTOR SHALL CONTACT MISS UTILITY COMPANY REPRESENTATIVE, REVIEW TEST PIT DATA AND ANY OTHER OPERATIONS AVAILABLE TO ENSURE ALL EXISTING UTILITIES IN THE AREA OF CONSTRUCTION

10. WHERE MANHOLES ARE TO BE PLACED IN THE ROAD R/W, THE TOPS SHALL BE OFFSET TO ASSURE THAT THEY AREA POSITIONED TO MINIMIZE IMPACT TO VEHICULAR WHEEL PATHS.

11. THE APPROVAL OF THESE PLANS SHALL IN NO WAY RELIEVE THE OWNER OF COMPLYING WITH OTHER APPLICABLE LOCAL, STATE, AND FEDERAL

12. ALL FILL MATERIAL REQUIRED TO RAISE GRADES AND UNDER SLABS, WHICH MAY CONSIST OF APPROVED ONSITE SOILS AND/OR OFFSITE BORROW MATERIAL SHALL BE FREE OF ALL DEBRIS, ORGANIC MATERIAL, AND CLUMPS AND SHALL BE ADJUSTED TO THE PROPER MOISTURE CONTENT BEFORE BEING COMPACTED IN 8" MAXIMUM LAYERS. EACH LAYER TO BE COMPACTED TO 95% DENSITY MODIFIED PROCTOR PER ASTM D1557. BASE AND SUBBASE MATERIAL SHALL BE COMPACTED TO THE REQUIREMENTS OF SECTIONS 308.03, 309.04, AND 309.05 OF VDOT SPECIFICATIONS. SUBGRADE COMPACTION SHALL BE IN ACCORDANCE WITH SECTION 305.03.

13. STANDARD UD-2, UD-3, & UD-4 TO BE UTILIZED IN CONSTRUCTION WITH STANDARD PIPE UNDER DRAIN. UD-2, UD-3, & UD-4 TO BE INSTALLED IN ACCORDANCE WITH VDOT SECTION 108.02, 108.03, AND 108.05.

14. STANDARD GUARDRAILS AND/OR HANDRAILS SHALL BE INSTALLED AT HAZARDOUS LOCATIONS AS DESIGNATED DURING FIELD REVIEW BY THE TOWN OF VIENNA INSPECTOR.

15. THE CONTRACTOR IS RESPONSIBLE FOR ALL TRAFFIC CONTROL. IF REQUIRED, THE DEVELOPER SHALL SUBMIT A SIGNING, STRIPING AND/OR SIGNALIZATION PLAN TO THE VDOT LAND DEVELOPMENT SECTION A MINIMUM OF 30 DAYS PRIOR TO PERMIT APPLICATION. THE DEVELOPER SHALL NOT COMMENCE CONSTRUCTION OF ANY PAVEMENT COURSE WITHOUT AN APPROVED STRIPING PLAN.

16. A 4" (MIN.) LAYER OF STONE IS REQUIRED BENEATH CURB AND GUTTER.

17. ADDITIONAL DITCH LININGS OR SILTATION AND EROSION CONTROL MEASURES SHALL BE PROVIDED, AS DETERMINED NECESSARY BY THE TOWN DURING FIELD REVIEW. ALL COSTS SHALL BE ASSUMED BY THE CONTRACTOR.

18. OVERLAY OF EXISTING PAVEMENT SHALL BE MINIMUM OF 1.25" DEPTH, ANY COSTS ASSOCIATED WITH PAVEMENT OVERLAY, OR THE MILLING OF EXISTING PAVEMENT TO OBTAIN REQUIRED DEPTH, SHALL BE ASSUMED BY THE CONTRACTOR.

TAPAWINGO RD. SW & KINGSLEY RD. SW SURVEY NOTES

TOPOGRAPHICAL SURVEY PERFORMED BY FIELD RUN BY URBAN, LTD.

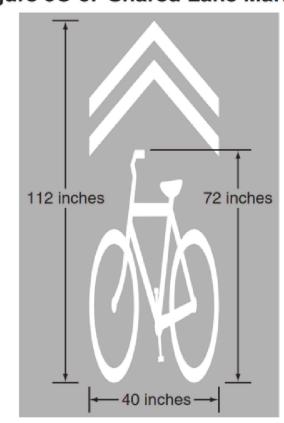
NOTE: ELEVATIONS SHOWN HEREON ARE BASED ON STATIC GPS OBSERVATIONS AS PROCESSED BY THE NATIONAL GEODETIC SURVEY, ONLINE POSITIONING USER SERVICE (OPUS), AND ARE REFERENCED TO NORTH AMERICAN VERTICAL DATUM (NAVD) OF 1988.

HORIZONTAL

NOTE: BEARINGS AND COORDINATES SHOWN HEREON ARE BASED ON STATIC GPS OBSERVATIONS AS PROCESSED BY THE NATIONAL GEODETIC SURVEY, ONLINE POSITIONING USER SERVICE (OPUS), AND ARE REFERENCED TO VIRGINIA STATE GRID NORTH ZONE NAD 83 - US SURVEY FOOT.

UNDERGROUND UTILITIES WERE PAINTED BY UTILITIES SEARCH, INC. AND MAPPED INTO THE BASE BY URBAN, LTD.

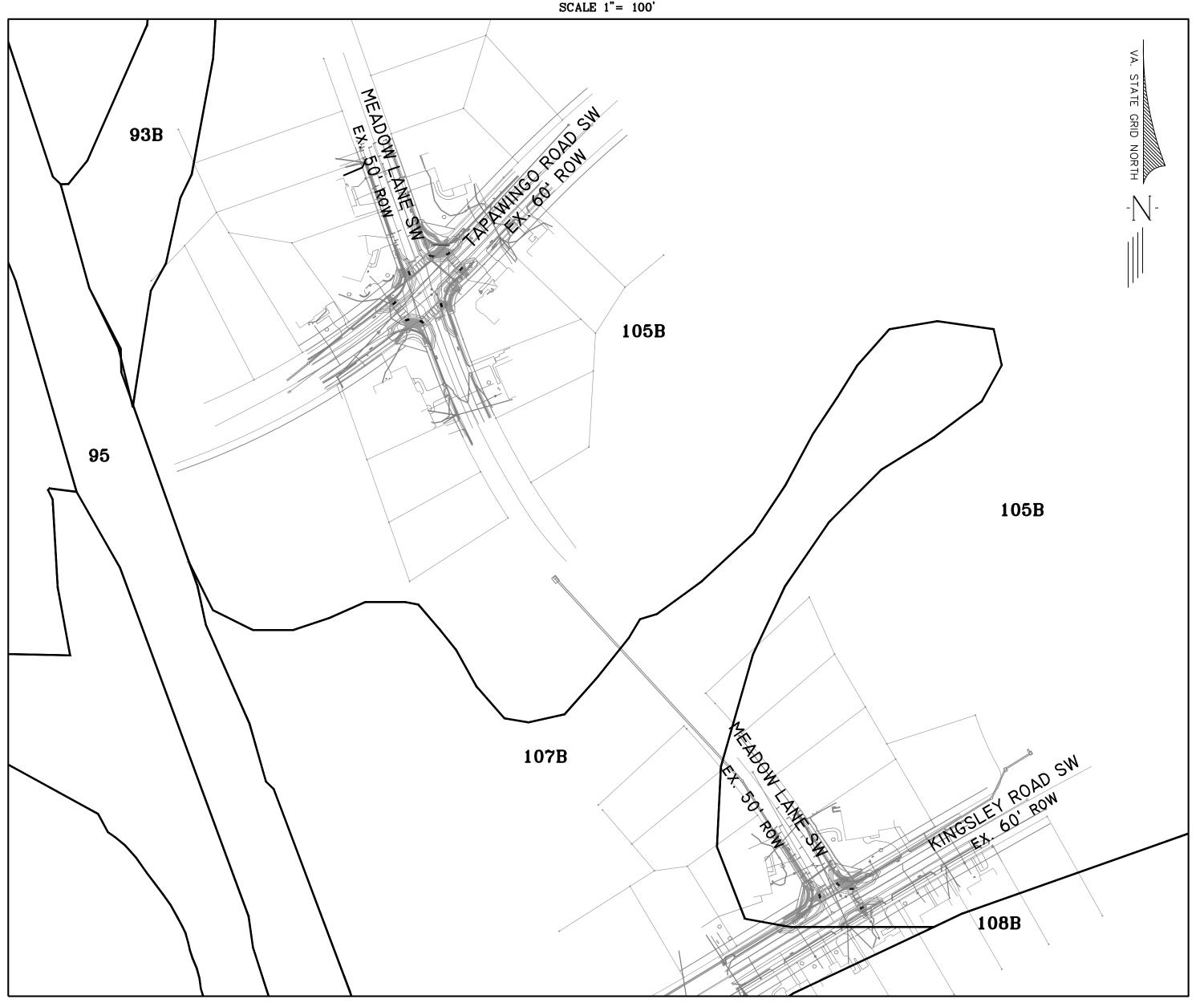
Figure 9C-9. Shared Lane Marking



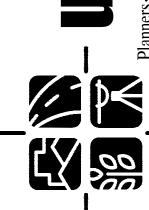
SOIL TYPES

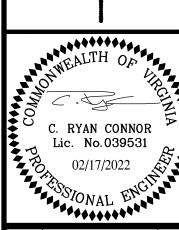
SOIL ID NUMBERS	SOIL SERIES NAME	FOUNDATION SUPPORT	SOIL DRAINAGE	EROSION POTENTIAL	PROBLEM CLASS	HYDROLOGIC SOIL GROU
105B	WHEATON-GLENELG COMPLEX	GOOD	GOOD	HIGH	IVB	D
107B	WHATON-MEADOWVILLE COMPLEX	FAIR	MARGINAL	MEDIUM	IVB	D

SOIL MAP



9

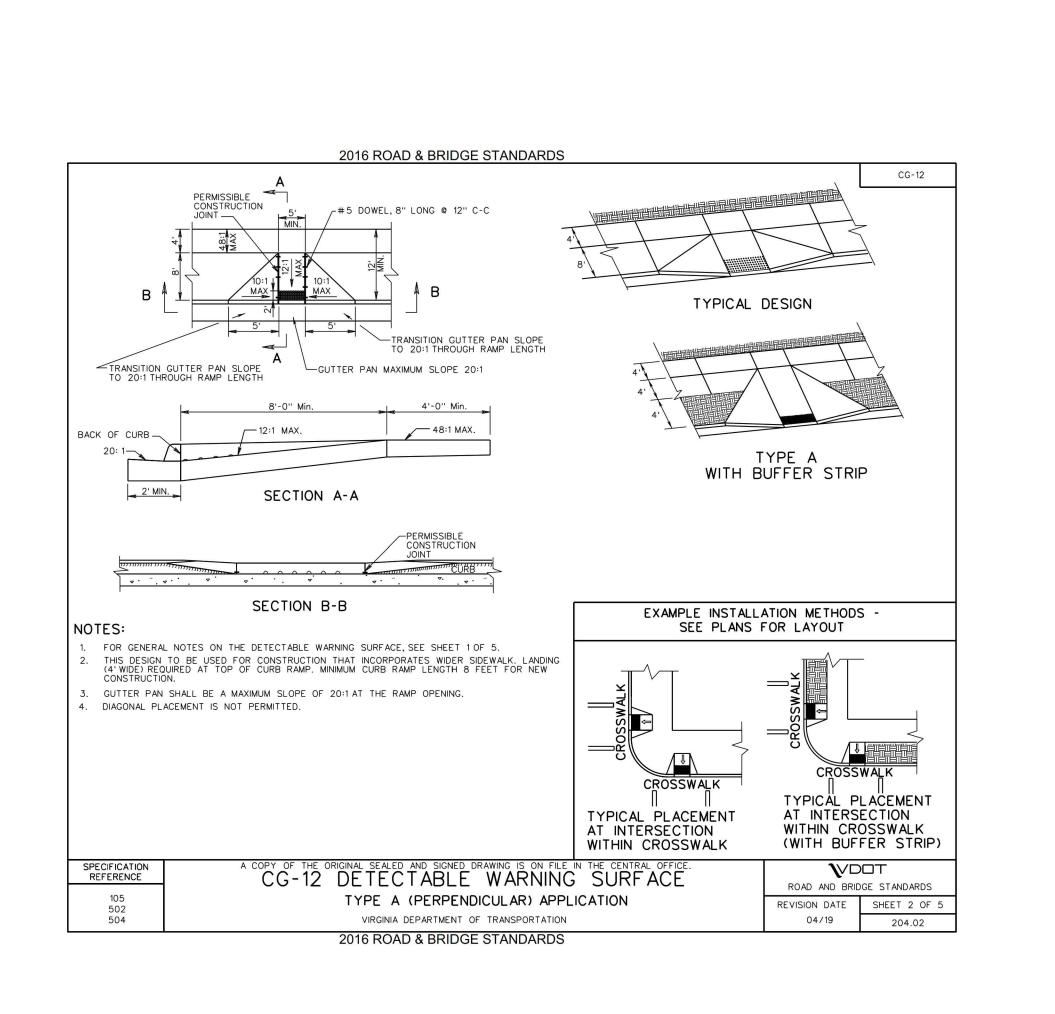


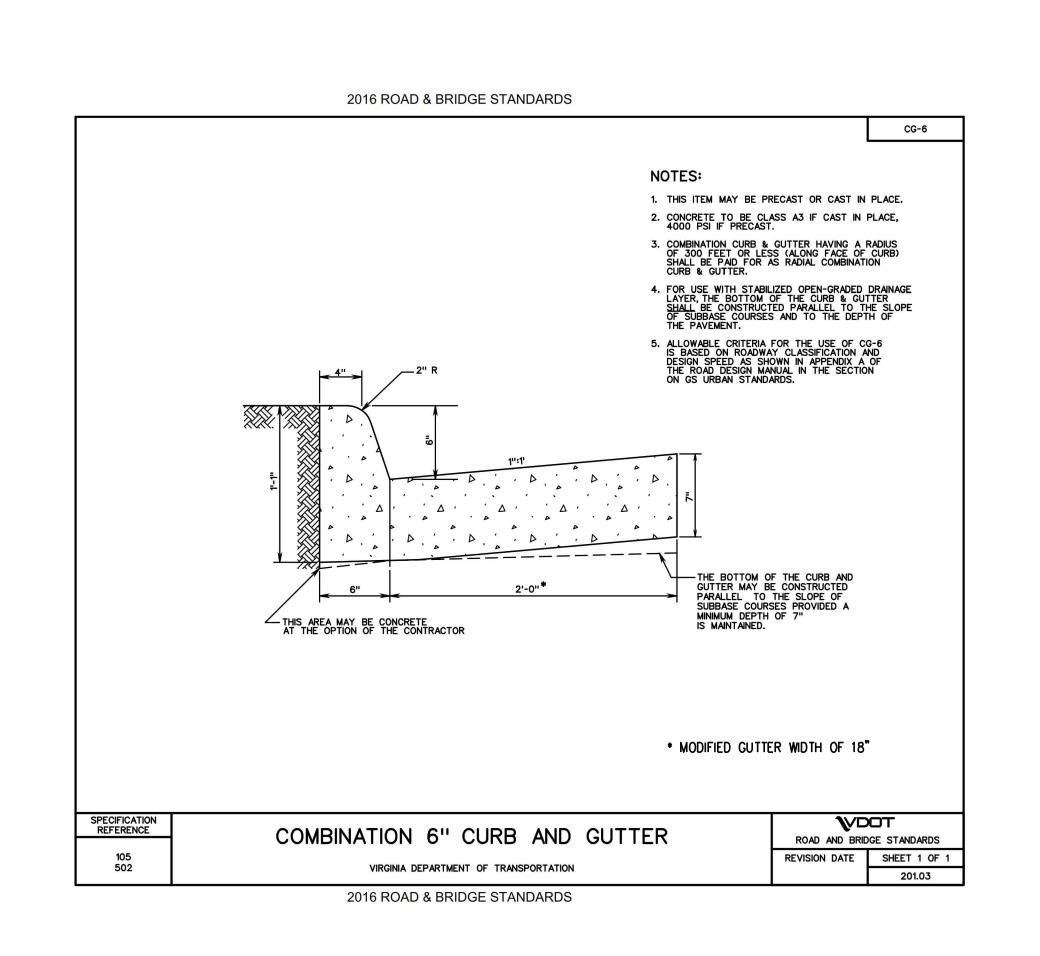


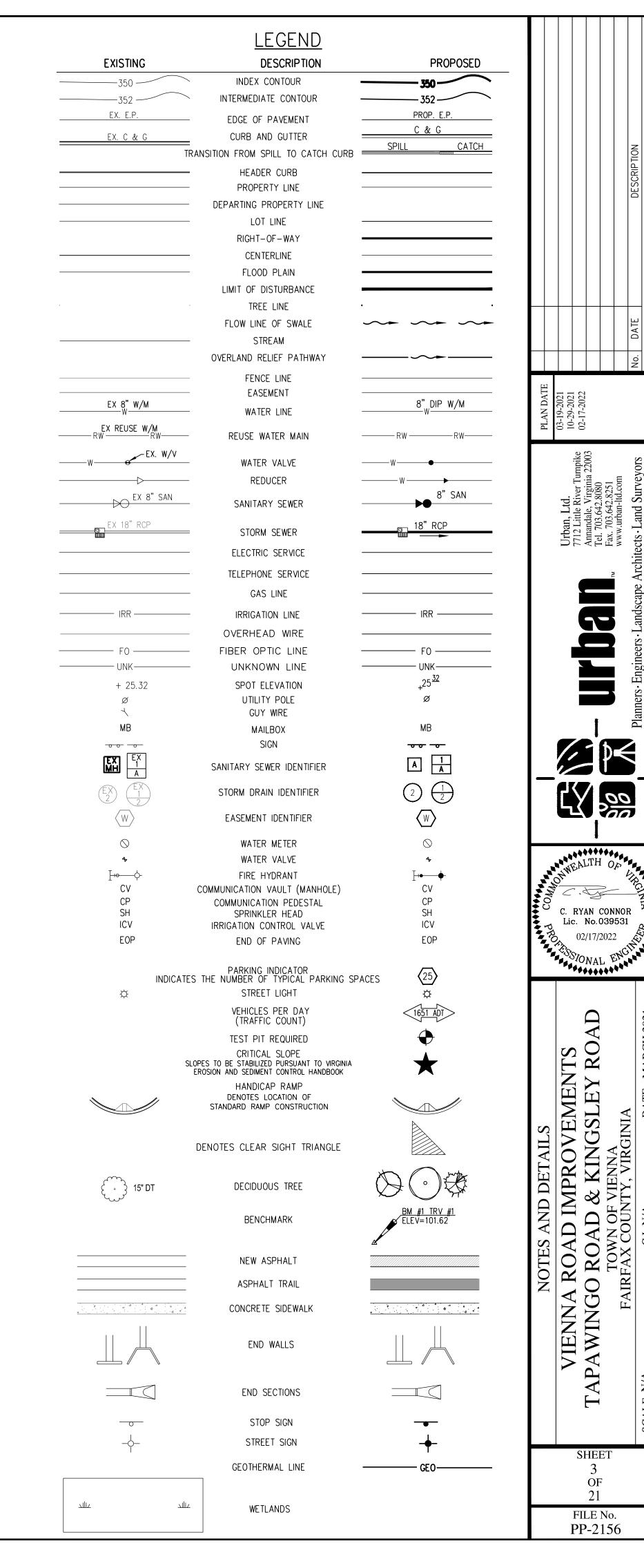
VIENNA ROAD IMPROVEMENTS AWINGO ROAD & KINGSLEY RO

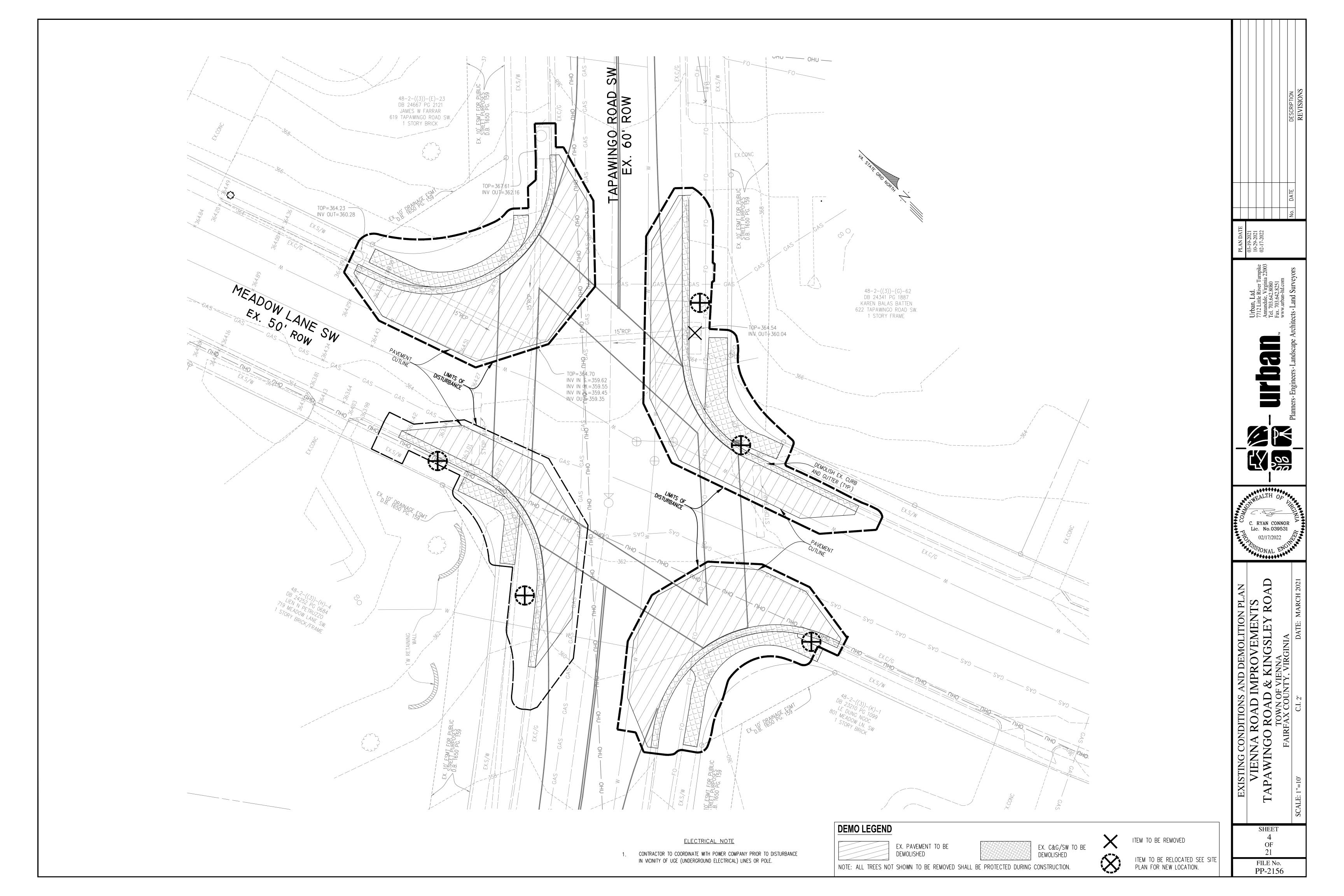
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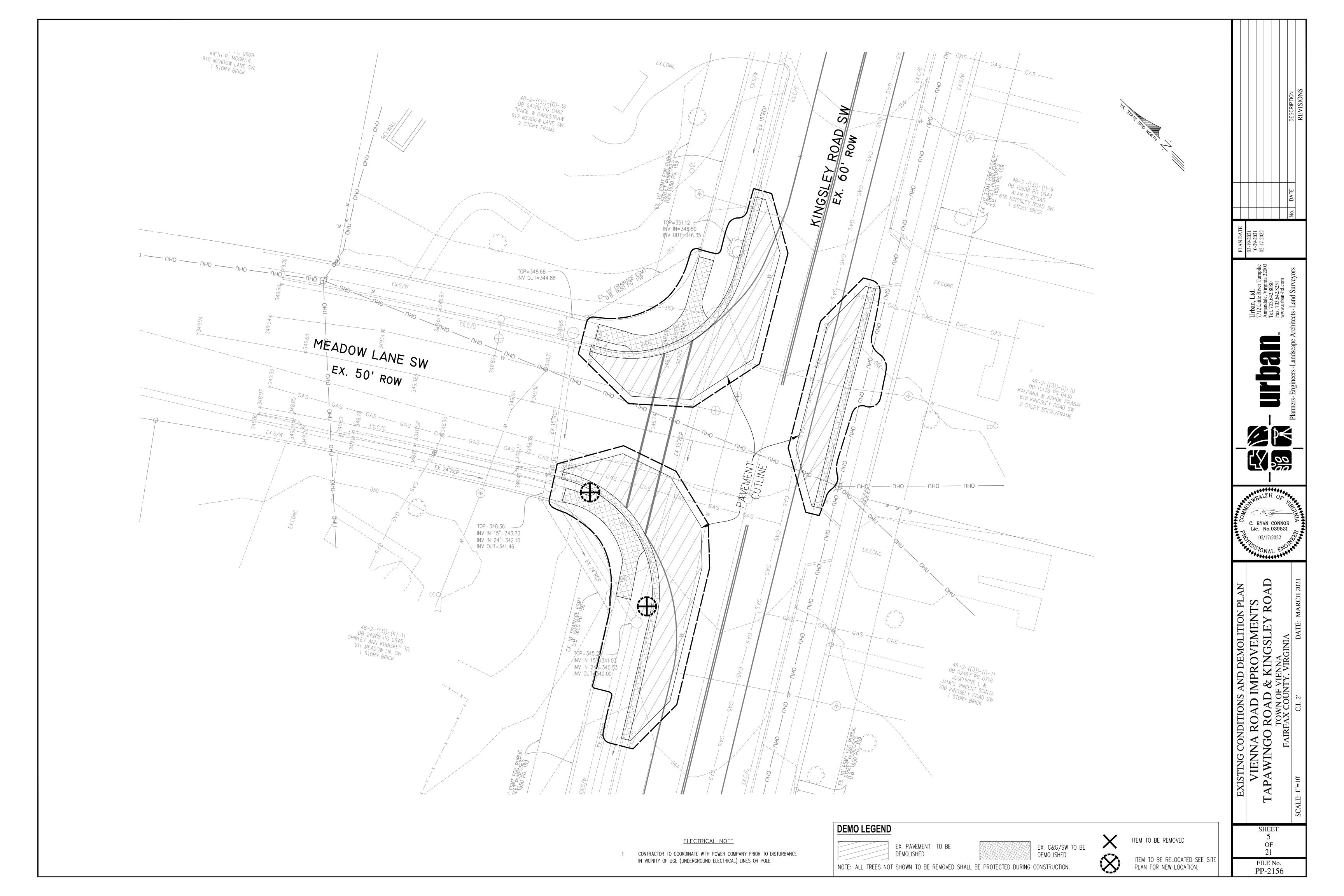
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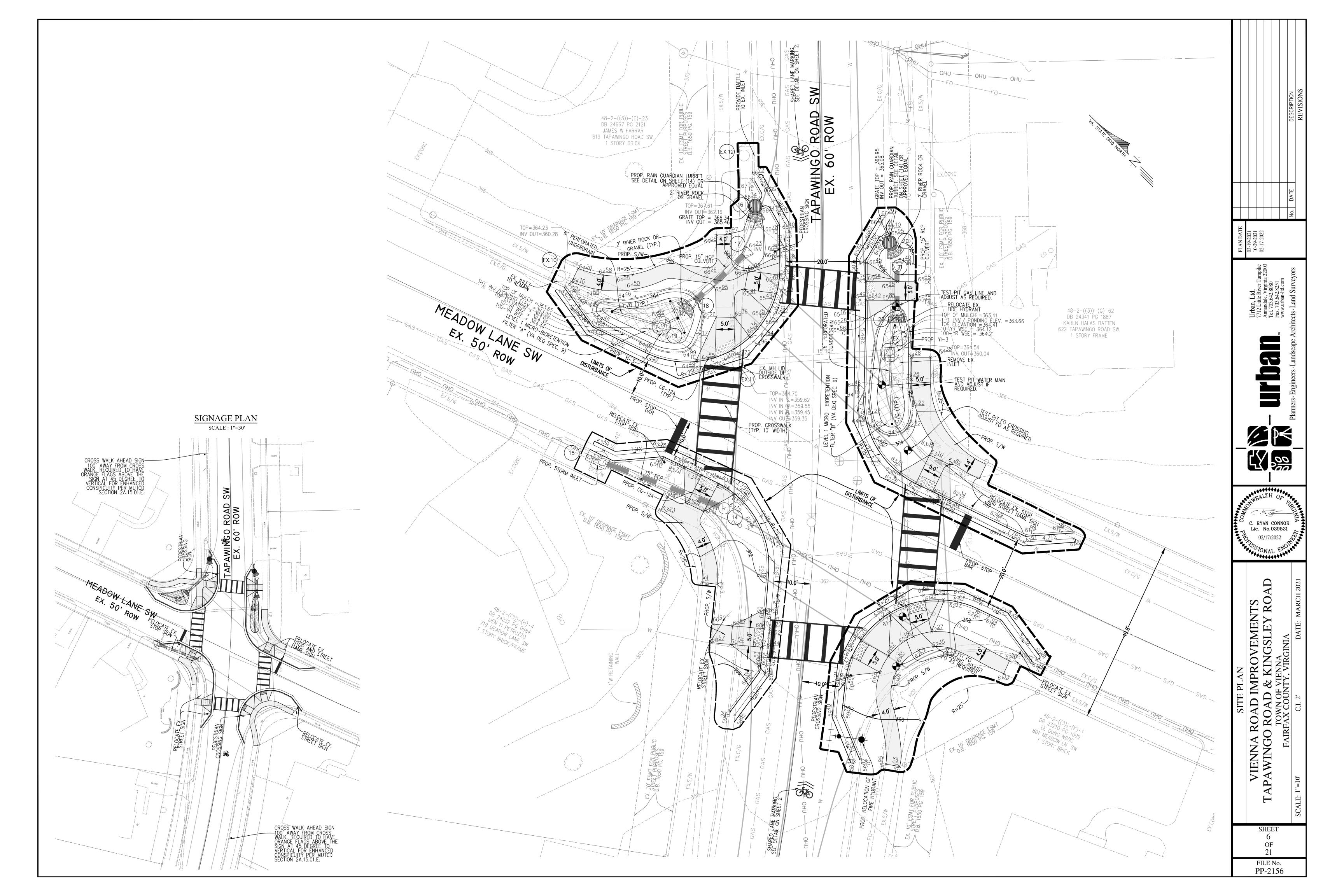




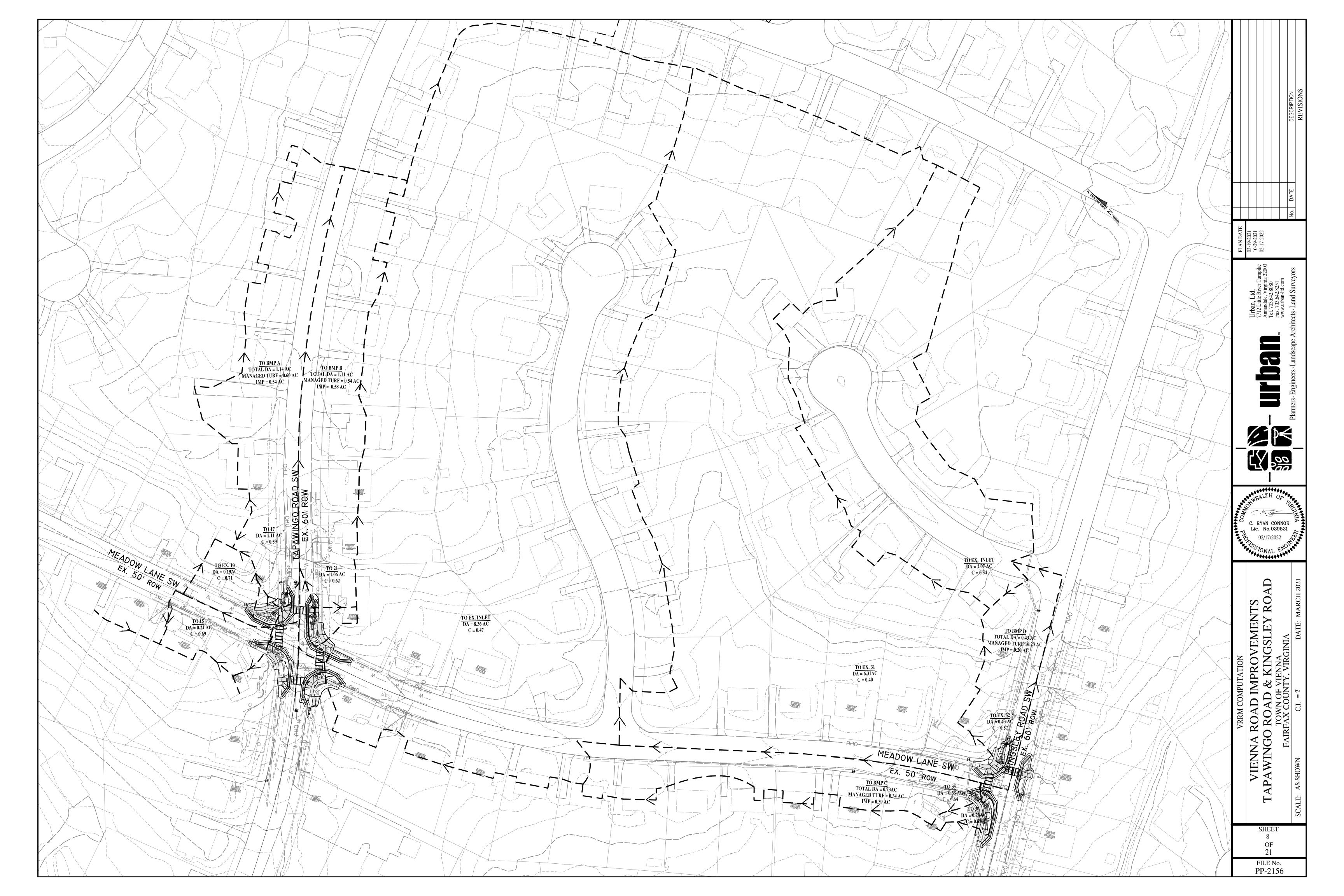












BMP SITE REQUIREMENT COMPUTATIONS

ONSITE AREA ONLY (WITHIN PROPOSED DEVELOPMENT)

DEQ Virginia Runoff Reduction Method Re-Development Compliance Spreadsheet - Version 3.0 2011 BMP Standards and Specifications 2013 Draft BMP Standards and Specifications data input cells **TOV Tapawingo & Kingsley** Project Name: CLEAR ALL constant values 10/29/2021 calculation cells Linear Development Project? No

Site Information

Post-Development Project (Treatment Volume and Loads)

Enter Total Disturbed Area (acres) $ o $	0.29
Maximum reduction required:	10%
The site's net increase in impervious cover (acres) is:	0
Post-Development TP Load Reduction for Site (lb/vr):	-0.06

Pre-ReDevelopment Land Cover (acres) **B Soils** C Soils D Soils **Totals** Forest/Open Space (acres) -- undisturbed 0.00 forest/open space Managed Turf (acres) -- disturbed, graded for 0.06 0.06 yards or other turf to be mowed/managed 0.23 Impervious Cover (acres) 0.23

Post-Development Land Cover (acres)

Constants

Annual Rainfall (inches)

Target Rainfall Event (inches)

Target TP Load (lb/acre/yr)

Pj (unitless correction factor)

Total Phosphorus (TP) EMC (mg/L) Total Nitrogen (TN) EMC (mg/L)

	A Soils	B Soils	C Soils	D Soils	Totals
Forest/Open Space (acres) undisturbed,					0.00
protected forest/open space or reforested land					0.00
Managed Turf (acres) disturbed, graded for					0.12
yards or other turf to be mowed/managed				0.13	0.13
Impervious Cover (acres)				0.16	0.16
Area Check	OK.	OK.	OK.	OK.	0.29

1.00

0.26

1.86

0.41

0.90

Runoff Coefficients (Rv)

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

0.29

LAND COVER SUMMARY PRE-REDEVELOPMENT							
Land Cover Summary-Pre							
Pre-ReDevelopment	Listed	Adjusted ¹					
Forest/Open Space Cover (acres)	0.00	0.00					
Weighted Rv(forest)	0.00	0.00					
% Forest	0%	0%					
Managed Turf Cover (acres)	0.06	0.06					
Weighted Rv(turf)	0.25	0.25					
% Managed Turf	21%	21%					
Impervious Cover (acres)	0.23	0.23					
Rv(impervious)	0.95	0.95					
% Impervious	79%	79%					
Total Site Area (acres)	0.29	0.29					
Site Rv	0.81	0.81					

Site Rv	0.81	0.81				
Treatment Volume and Nutrient Load						
Pre-ReDevelopment Treatment Volume (acre-ft)	0.0195	0.0195				
Pre-ReDevelopment Treatment Volume (cubic feet)	848	848				
Pre-ReDevelopment TP Load (lb/yr)	0.53	0.53				
Pre-ReDevelopment TP Load per acre (lb/acre/yr)	1.84	1.84				
Baseline TP Load (lb/yr) (0.41 lbs/acre/yr applied to pre-redevelopmen pervious land proposed for new impervio	0.12					

¹ Adjusted Land Cover Summary: Pre ReDevelopment land cover minus pervious land cover (forest/open space or

managed turf) acreage proposed for new impervious cover.

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

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

Land Cover Summary	Land Cover Summary-Post (Final)		ary-Post	Land Cover Summary-Post		
Post ReDev. & New Impervious		Post-ReDevelop	Post-ReDevelopment		Post-Development New Impervious	
Forest/Open Space Cover (acres)	0.00	Forest/Open Space Cover (acres)	0.00			
Weighted Rv(forest)	0.00	Weighted Rv(forest)	0.00			
% Forest	0%	% Forest	0%			
Managed Turf Cover (acres)	0.13	Managed Turf Cover (acres)	0.13			
Weighted Rv (turf)	0.25	Weighted Rv (turf)	0.25			
% Managed Turf	45%	% Managed Turf	45%			
mpervious Cover (acres)	0.16	ReDev. Impervious Cover (acres)	0.16	New Impervious Cover (acres)	0.00	
Rv(impervious)	0.95	Rv(impervious)	0.95	Rv(impervious)		
% Impervious	55%	% Impervious	55%			
Final Site Area (acres)	0.29	Total ReDev. Site Area (acres)	0.29			
Final Post Dev Site Rv	0.64	ReDev Site Rv	0.64			

final results

Check: BMP Design Specifications List: 2013 Draft Stds & Specs

Linear project? No

Land cover areas entered correctly?

Total disturbed area entered?

TP LOAD REDUCTION NOT REQUIRED

		Treat	ment Volume and	Nutrient Loa	ad	
Final Post-Development Treatment Volume (acre-ft)	0.0154		Post-ReDevelopment Treatment Volume (acre-ft)	0.0154	Post-Development Treatment Volume (acre-ft)	
Final Post-Development Treatment Volume (cubic feet)	670		Post-ReDevelopment Treatment Volume (cubic feet)	670	Post-Development Treatment Volume (cubic feet)	
Final Post- Development TP Load (lb/yr)	0.42		Post-ReDevelopment Load (TP) (lb/yr)*	0.42	Post-Development TP Load (lb/yr)	
Final Post-Development TP Load per acre (lb/acre/yr)	1.45		Post-ReDevelopment TP Load per acre (lb/acre/yr)	1.45		
			Max. Reduction Required (Below Pre-	10%		

TP Load Reduction Required for Redeveloped Area (lb/yr)
--

TP Load Reduction Required for New

Post-Development Requirement for Site Area

TP Load Reduction Required (lb/yr) TP LOAD REDUCTION NOT REQUIRED

ONSITE (PROP. DEVELOPMENT) + OFFSITE (OFFSITE DA TO EACH BMPS)

	DEQ Virginia Runoff Reduction Method Re-Development C	Compliance Spreadsheet - Version 3.0	
2011 BMP Standards and Specifications	© 2013 Draft BMP Standards and Specifications		
Project Name: Date:	100 100 100 100 100	CLEAR ALL	data input cells constant values
	Linear Development Project? No		calculation cells

Post-Development Land Cover (acres)

Forest/Open Space (acres) -- undisturbed,

Annual Rainfall (inches)

Target Rainfall Event (inches)

Total Phosphorus (TP) EMC (mg/L)

Total Nitrogen (TN) EMC (mg/L)

Pj (unitless correction factor)

Target TP Load (lb/acre/yr)

Site Information

Post-Development Project (Treatment Volume and Loads)

Enter Total Disturbed Area (acres) \rightarrow [0.29	Check:
		BMP Design Specifications List: 2013 Draft Stds & Specs
Maximum reduction required:	10%	Linear project? No
The site's net increase in impervious cover (acres) is:	0	Land cover areas entered correctly?
Post-Development TP Load Reduction for Site (lb/yr):	0.40	Total disturbed area entered?

	A Soils	B Soils	C Soils	D Soils	Totals
Forest/Open Space (acres) undisturbed forest/open space					0.00
Managed Turf (acres) disturbed, graded for yards or other turf to be mowed/managed				1.69	1.69
Impervious Cover (acres)				1.91	1.91

B Soils

C Soils

EACH BMP DEVICES AS DRAINAGE AREA TO EACH BMP 3.60 DEVICE CONSISTS OF BOTH ONSITE AND OFFSITE AREA. Totals

-ONSITE + OFFSITE DRAINAGE AREA IS UTILIZED TO

COMPUTE THE NET TP LOAD REDUCTION ACHIEVED BY

Constants			Runoff Coefficion
Area Check	OK.	OK.	OK.
Impervious Cover (acres)			
Managed Turf (acres) disturbed, graded for yards or other turf to be mowed/managed			
protected forest/open space or reforested land			

0.90

	Runoff Coefficient	ts (Rv)			
43		A Soils	B Soils	C Soils	D Soils
1.00	Forest/Open Space	0.02	0.03	0.04	0.05
0.26	Managed Turf	0.15	0.20	0.22	0.25
1.86	Impervious Cover	0.95	0.95	0.95	0.95
0.41					

TP Load Reduction Required (lb/yr)

D Soils

0.00

1.76

1.84

3.60

Land Cover Summary-Pre									
Pre-ReDevelopment	Listed	Adjusted							
Forest/Open Space Cover (acres)	0.00	0.00							
Weighted Rv(forest)	0.00	0.00							
% Forest	0%	0%							
Managed Turf Cover (acres)	1.69	1.69							
Weighted Rv(turf)	0.25	0.25							
% Managed Turf	47%	47%							
Impervious Cover (acres)	1.91	1.91							
Rv(impervious)	0.95	0.95							
% Impervious	53%	53%							
Total Site Area (acres)	3.60	3.60							
Site Rv	0.62	0.62							

Treatment Volume and Nutrient Load									
Pre-ReDevelopment Treatment Volume (acre-ft)	0.1864	0.1864							
Pre-ReDevelopment Treatment Volume (cubic feet)	8,120	8,120							
Pre-ReDevelopment TP Load (lb/yr)	5.10	5.10							
Pre-ReDevelopment TP Load per acre (lb/acre/yr)	1.42	1.42							
Baseline TP Load (lb/yr) (0.41 lbs/acre/yr applied to pre-redevelopment area excluding pervious land proposed for new impervious cover)									

¹ Adjusted Land Cover Summary: Pre ReDevelopment land cover minus pervious land cover (forest/open space or managed turf) acreage proposed for new impervious cover.

of new impervious cover).

Adjusted total acreage is consistent with Post-ReDevelopment acreage (minus acreage

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

	L	AND COVER SUMMARY PO	ST DEVELO	PMENT			
Land Cover Summo	ary-Post (Final)	Land Cover Sum	mary-Post	Land Cover Summary-Post			
Post ReDev. & Ne	w Impervious	Post-ReDevelo	ppment	Post-Development Ne	w Impervious		
Forest/Open Space Cover (acres)	0.00	Forest/Open Space Cover (acres)	0.00				
Weighted Rv(forest)	0.00	Weighted Rv(forest)	0.00				
% Forest	0%	% Forest	0%				
Managed Turf Cover (acres)	1.76	Managed Turf Cover (acres)	1.76				
Weighted Rv (turf)	0.25	Weighted Rv (turf)	0.25				
% Managed Turf	49%	% Managed Turf	49%				
Impervious Cover (acres)	1.84	ReDev. Impervious Cover (acres)	1.84	New Impervious Cover (acres)	0.00		
Rv(impervious)	0.95	Rv(impervious)	0.95	Rv(impervious)			
% Impervious	51%	% Impervious	51%				
Final Site Area (acres)	3.60	Total ReDev. Site Area (acres)	3.60				
Final Post Dev Site Rv	0.61	ReDev Site Rv	0.61				
Time to St. Dev Site NV	5.01	REDEV SILE IN	5.01				

		Treati	ment Volume and	Nutrient Loa	ad		
inal Post-Development Treatment Volume (acre-ft)	0.1823		Post-ReDevelopment Treatment Volume (acre-ft)	0.1823		Post-Development Treatment Volume (acre-ft)	
inal Post-Development Treatment Volume (cubic feet)	7,942		Post-ReDevelopment Treatment Volume (cubic feet)	7,942		Post-Development Treatment Volume (cubic feet)	
Final Post- Development TP Load (lb/yr)	4.99		Post-ReDevelopment Load (TP) (lb/yr)*	4.99		Post-Development TP Load (lb/yr)	
Final Post-Development TP Load per acre (lb/acre/yr)	1.39		Post-ReDevelopment TP Load per acre (lb/acre/yr)	1.39		,	
			Max. Reduction Required (Below Pre-	10%			

TP Load Reduction Required for Redeveloped Area (lb/yr)	0.40	TP Load Reduction Required for New Impervious Area (lb/y

THIS TP LOAD REDUCTION REQUIREMENT IS FOR THE BOTH ONSITE AND OFFSITE DRAINAGE AREA INCLUDING THE AREA TO EACH BMP DEVICES. HOWEVER, THE

PROPOSED DEVELOPMENT DOES NOT REQUIRE THE TP LOAD REDUCTION. **Post-Development Requirement for Site Area**

FILE No. PP-2156

C. RYAN CONNOR

Drainage Area A

6. Bioretention (RR)

Drainage Area A Land Cover (acres)

Practice

6.a. Bioretention #1 or Micro-Bioretention #1

or Urban Bioretention (Spec #9) 6.b. Bioretention #2 or Micro-Bioretention #2

(Spec #9)

Stormwater Best Management Practices (RR = Runoff Reduction)

Credit (%)

A Soils

Stormwater Best Management Practices (RR = Runoff Reduction)

Reduction

Credit (%)

	A Soils	B Soils	C Soils	D Soils	Totals	Land Cover Rv
Forest/Open Space (acres)					0.00	0.00
Managed Turf (acres)				0.60	0.60	0.25
Impervious Cover (acres)				0.54	0.54	0.95
				Total	1.14	,

0.02*

C Soils

Managed Turf | Impervious | Volume from

0.03

Credit Area | Cover Credit |

B Soils

0.03

D Soils

0.34

0.39

Upstream

Area (acres) Practice (ft³)

Total

Totals

0.00

0.34

0.39

0.73

Land Cover Rv

0.00

0.25

0.95

Area (acres) Practice (ft³)

Credit Area | Cover Credit

(acres)

0.03 *

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

0.03

0.00

AREA CHECK: OK.

AREA CHECK: OK.

Removed By

0.04

0.00

Practices (Ib) to Practice (Ib) Practice (Ib)

0.06

0.00

TOTAL IMPERVIOUS COVER TREATED (ac) 0.02

TOTAL MANAGED TURF AREA TREATED (ac) 0.03

TOTAL RUNOFF REDUCTION IN D.A. A (ft³) 41

0.00

0.00

Efficiency (%)

Volume (ft³)

102

--Select from dropdown lists--

Remaining **Downstream Practice to be Employed**

Drainage Area B

6. Bioretention (RR)

Drainage Area A Land Cover (acres)

Practice

6.a. Bioretention #1 or Micro-Bioretention #1 or Urban Bioretention (Spec #9) 6.b. Bioretention #2 or Micro-Bioretention #2 (Spec #9)

	A Soils	B Soils	C Soils	D Soils	Totals	Land Cover Rv
Forest/Open Space (acres)					0.00	0.00
Managed Turf (acres)				0.53	0.53	0.25
Impervious Cover (acres)				0.58	0.58	0.95
				Total	1.11	

Total Phosphorus Available for Removal in D.A. B (lb/yr) Post Development Treatment Volume in D.A. B (ft³) 2,481

Runoff Reduction Credit (%)	Managed Turf Credit Area (acres)	Impervious Cover Credit Area (acres)	Volume from Upstream Practice (ft ³)	Runoff Reduction (ft³)	Remaining Runoff Volume (ft³)	Total BMP Treatment Volume (ft ³)	Phosphorus Removal Efficiency (%)	Phosphorus Load from Upstream Practices (lb)	Untreated Phosphorus Load to Practice (lb)	Phosphorus Removed By Practice (lb)	Remaining Phosphorus Load (lb)	Downstream Practice to be Employed
40	0.04*	0.04*	0	70	106	176	25	0.00	0.11	0.06	0.05	
80			0	0	0	0	50	0.00	0.00	0.00	0.00	

TOTAL IMPERVIOUS COVER TREATED (ac) 0.04 **AREA CHECK: OK.** TOTAL TURF AREA TREATED (ac) 0.04 **AREA CHECK: OK.** TOTAL RUNOFF REDUCTION IN D.A. B (ft³)

1.56 TOTAL PHOSPHORUS AVAILABLE FOR REMOVAL IN D.A. B (lb/yr) TOTAL PHOSPHORUS REMOVED WITH RUNOFF REDUCTION PRACTICES IN D.A. B (lb/yr) TOTAL PHOSPHORUS REMAINING AFTER APPLYING RUNOFF REDUCTION PRACTICES IN D.A. B (lb/yr) 1.50

Drainage Area C

. Bioretention (RR)

Drainage Area A Land Cover (acres)

Forest/Open Space (acres)

Managed Turf (acres)

Impervious Cover (acres)

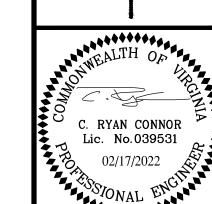
Practice

6.a. Bioretention #1 or Micro-Bioretention #1

or Urban Bioretention (Spec #9) 6.b. Bioretention #2 or Micro-Bioretention #2

(Spec #9)

TOTAL PHOSPHORUS AVAILABLE FOR REMOVAL IN D.A. A (lb/yr) 1.51 TOTAL PHOSPHORUS REMOVED WITH RUNOFF REDUCTION PRACTICES IN D.A. A (lb/yr) 0.04 TOTAL PHOSPHORUS REMAINING AFTER APPLYING RUNOFF REDUCTION PRACTICES IN D.A. A (lb/yr) 1.48



SHEET

10

OF

FILE No. PP-2156

PORTESSIONAL

1,653

Employed

Volume (ft³) Volume (ft³) Efficiency (%)

Total Phosphorus Available for Removal in D.A. C (lb/yr)

Practice (lb)

0.05

0.00

Phosphorus Remaining

Removed By | Phosphorus

Post Development Treatment Volume in D.A. C (ft³) --Select from dropdown lists--

0.04

0.00

* AREA TO EACH BIORETENTION FACILITIES USED HERE IS BASED ON % OF THE TOTAL DRAINAGE AREA EACH FACILITIES IS CAPABLE OF

BIORETENTION FACILITY, TO COMPUTE THE ACTUAL TOTAL

PHOSPHOROUS REDUCTION ACHIEVED ONSITE.

TREATING BASED ON THE PROVIDED SURFACE AREA AND STORAGE OF

Downstream Practice to be VIENNA ROAD IMPROVEMENTS
TAPAWINGO ROAD & KINGSLEY ROAD
TOWN OF VIENNA
FAIRFAX COUNTY, VIRGINIA

Drainage Area D

Drainage Area A Land Cover (acres)

	A Soils	B Soils	C Soils	D Soils	Totals	Land Cover Rv
Forest/Open Space (acres)					0.00	0.00
Managed Turf (acres)				0.23	0.23	0.25
Impervious Cover (acres)				0.20	0.20	0.95
				Total	0.43	

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

--Select from dropdown lists--

Stormwater Best Management Practices (RR = Runoff Reduction)													Select from dropdown lists
Practice	Runoff Reduction Credit (%)	Managed Turf Credit Area (acres)	Impervious Cover Credit Area (acres)	Volume from Upstream Practice (ft ³)	Runoff Reduction (ft³)	Remaining Runoff Volume (ft ³)	Total BMP Treatment Volume (ft ³)	Phosphorus Removal Efficiency (%)	Phosphorus Load from Upstream Practices (lb)	Untreated Phosphorus Load to Practice (lb)	Removed By	Remaining Phosphorus Load (lb)	Downstream Practice to be Employed
6. Bioretention (RR)													
6.a. Bioretention #1 or Micro-Bioretention #1 or Urban Bioretention (Spec #9)	40	0.03*	0.02*	0	41	62	103	25	0.00	0.06	0.04	0.03	
6.b. Bioretention #2 or Micro-Bioretention #2 (Spec #9)	80			0	0	0	0	50	0.00	0.00	0.00	0.00	

TOTAL IMPERVIOUS COVER TREATED (ac) 0.02 **AREA CHECK: OK.** TOTAL MANAGED TURF AREA TREATED (ac) 0.03 **AREA CHECK: OK.** TOTAL RUNOFF REDUCTION IN D.A. D (ft³) 41

TOTAL PHOSPHORUS AVAILABLE FOR REMOVAL IN D.A. D (lb/yr) TOTAL PHOSPHORUS REMOVED WITH RUNOFF REDUCTION PRACTICES IN D.A. D (lb/yr) TOTAL PHOSPHORUS REMAINING AFTER APPLYING RUNOFF REDUCTION PRACTICES IN D.A. D (lb/yr) 0.53

TOTAL IMPERVIOUS COVER TREATED (ac) 0.03 **AREA CHECK: OK.** TOTAL MANAGED TURF AREA TREATED (ac) 0.03 **AREA CHECK: OK.** TOTAL RUNOFF REDUCTION IN D.A. C (ft³) 56

Practices (lb)

0.00

0.00

Practice (lb)

0.09

0.00

1.04 TOTAL PHOSPHORUS AVAILABLE FOR REMOVAL IN D.A. C (lb/yr) 0.05 TOTAL PHOSPHORUS REMOVED WITH RUNOFF REDUCTION PRACTICES IN D.A. C (lb/yr) TOTAL PHOSPHORUS REMAINING AFTER APPLYING RUNOFF REDUCTION PRACTICES IN D.A. C (lb/yr)

	D.A. A	D.A. B	D.A. C	D.A. D	D.A. E	Total
Forest/Open (acres)	0.00	0.00	0.00	0.00	0.00	0.00
Managed Turf (acres)	0.60	0.53	0.34	0.23	0.00	1.70
Impervious Cover (acres)	0.54	0.58	0.39	0.20	0.00	1.71
Total Area (acres)	1.14	1.11	0.73	0.43	0.00	3.41

Drainage Area Compliance Summary

TOTAL TP LOAD REDUCTION ACHIEVED —

	D.A. A	D.A. B	D.A. C	D.A. D	D.A. E	Total
TP Load Reduced (lb/yr)	0.04	0.06	0.05	0.04	0.00	0.18
TN Load Reduced (lb/yr)	0.29	0.51	0.40	0.30	0.00	1.49

Drainage Area Summary

VA DEQ Design Spec #9, Version 2.0 Spec Date March 1, 2013 Facility Name: C Type of Facility: Level 1 A. SIZING CALCULATIONS Variable Value Units Description/Notes Rd = _____1.0 ___ in Per VA DEQ Specs, use 1.0 for water quality storm as a standard $Rv_{MT} = 0.25$ n/a Managed Turf Land Cover Coefficient from VRRM Spreadsheet (typically 0.25) RV_{IC} = 0.95 n/a Impervious Surface Land Cover Coefficient from VRRM Spreadsheet (typically 0.95) $CA_{MT} = 0.34$ ac Managed Turf Drainage Area to facility from VRRM Spreadsheet* CA_{IC} = 0.39 ac Impervious Surface Drainage Area to facility from VRRM Spreadsheet* CA = 0.73 ac Total Drainage Area to facility $Rv_{CA} = 0.62$ n/a Composite Land Cover Coefficient to facility $Tv_{CA} = 1653$ cf Treatment Volume from drainage area to facility $V_{US} = 0$ cf Volume of runoff from upstream facility, if any, (see VRRM Spreadsheet Column E) Tv_{BMP} = 1653 cf Total Treatment Volume to facility (Tv to be used in sizing calcs) *If DA's to multiple facilities are combined on VRRM Spreadsheet, only include the area draining to this specific facility. Porosity (per VA DEQ Design Spec #9 6.1.1): Soil Media $\eta = 0.25$ Gravel $\eta = 0.40$ Surface Storage $\eta = 1.00$ Mulch $\eta = 0.25$ Bioretention Facility Layer Depths: Soil Media = 18 inches Gravel = 9 inches Weighted Average Depth Provided Surface Storage = 3 inches Mulch Storage = 3 inches Design Storage Depth = 0.99 ft Surface Area (SA) Required: Type of Facility: Level 1 $V_{US} = 0$ cf Level 1: $SA = \{Tv_{BMP} - volume reduced by upstream BMP\} / Design Storage Depth$ Level 2: $SA = \{(1.25 \times Tv_{BMP}) - volume reduced by upstream BMP\} / Design Storage Depth$ SA = (1 x 1653 - 0.99 SA = 1666 sf Area Provided (SA) = 139 % of Area treated = 8.34% **B. DESIGN DATA** Value Units Notes Facility Name: C1 Type of Facility: Level 1 Surface Area = 44 Mulch Bed Elev = 345.30 Ponding Depth = 0.25 ft 6" max preferred Max. Ponding Elev = 345.55 ft Top of Berm Elev = 345.82 Berm Width = 1.50 Weir Elev = 345.55 Q10 = 2.49 __ cfs 10-year Depth = 0.21 ft from weir comps 10-year WSEL = 345.76 ft 10-year Freeboard = 0.06 Q100 = 3.33 cfs 100-year Depth = 0.23 ft 100-year WSEL = 345.78 ft Variable Value Units Notes Facility Name: C2 Type of Facility: 0.25 Surface Area = 95 Mulch Bed Elev = 344.57 Ponding Depth = 0.25 ft 6" max preferred Max. Ponding Elev = 344.82 Top of Berm Elev = 345.32 Berm Width = 2.00 Inlet Elev = 344.82 Q10 = 3.10 10-year Depth = 0.41 ft from inlet comps 10-year WSEL = 345.23 10-year Freeboard = 0.09 Q100 = 4.16 cfs 100-year Depth = ______ ft from inlet / weir comps 100-year WSEL = 345.31 ft

VA DEQ Design Spec #9, Version 2.0 Spec Date March 1, 2013 Facility Name: D Type of Facility: Level 1 A. SIZING CALCULATIONS Variable Value Units Description/Notes Rd = 1.0 in Per VA DEQ Specs, use 1.0 for water quality storm as a standard Rv_{MT} = 0.25 n/a Managed Turf Land Cover Coefficient from VRRM Spreadsheet (typically 0.25) RV_{IC} = 0.95 n/a Impervious Surface Land Cover Coefficient from VRRM Spreadsheet (typically 0.95) CA_{MT} = 0.23 ac Managed Turf Drainage Area to facility from VRRM Spreadsheet* CA_{IC} = 0.20 ac Impervious Surface Drainage Area to facility from VRRM Spreadsheet* CA = 0.43 ac Total Drainage Area to facility $Rv_{CA} = 0.58$ n/a Composite Land Cover Coefficient to facility $Tv_{CA} = 898$ cf Treatment Volume from drainage area to facility cf Volume of runoff from upstream facility, if any, (see VRRM Spreadsheet Column E) $Tv_{BMP} = 898$ cf Total Treatment Volume to facility (Tv to be used in sizing calcs) *If DA's to multiple facilities are combined on VRRM Spreadsheet, only include the area draining to this specific facility. Porosity (per VA DEQ Design Spec #9 6.1.1): Soil Media $\eta = 0.25$ Gravel $\eta = 0.40$ Surface Storage η = 1.00 Mulch n = 0.25Bioretention Facility Layer Depths: Soil Media = 18 inches Gravel = 3 inches Surface Storage = 3 inches Mulch Storage = 3 inches Design Storage Depth = 0.79 ft Surface Area (SA) Required: Type of Facility: Level 1 $V_{US} = 0$ cf Level 1: $SA = \{Tv_{BMP} - volume reduced by upstream BMP\} / Design Storage Depth$ Level 2: SA = $\{(1.25 \times Tv_{BMP}) - volume reduced by upstream BMP\} / Design Storage Depth$ SA = (1 x 898 - 0) / 0.79 SA = 1141 sf

MICRO-BIORETENTION CALCULATIONS

Area Provided (SA) = 131

% of Area treated = **11.48**%

Facility Name: D

Type of Facility: Level 1

Surface Area = 163

Max. Ponding Elev = 350.35

Top of Berm Elev = 350.70

Berm Width = 2.00

10-year WSEL = 350.62

10-year Freeboard = 0.08

100-year WSEL = 350.68

Inlet Elev = 350.35

Q10 = 1.66 cfs

Q100 = 2.23 cfs

Mulch Bed Elev = 350.10 ft

Value Units Notes

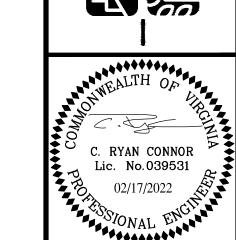
Ponding Depth = <u>0.25</u> ft 6" max preferred

10-year Depth = 0.27 ft from inlet comps

100-year Depth = 0.33 ft from inlet / weir comps

B. DESIGN DATA

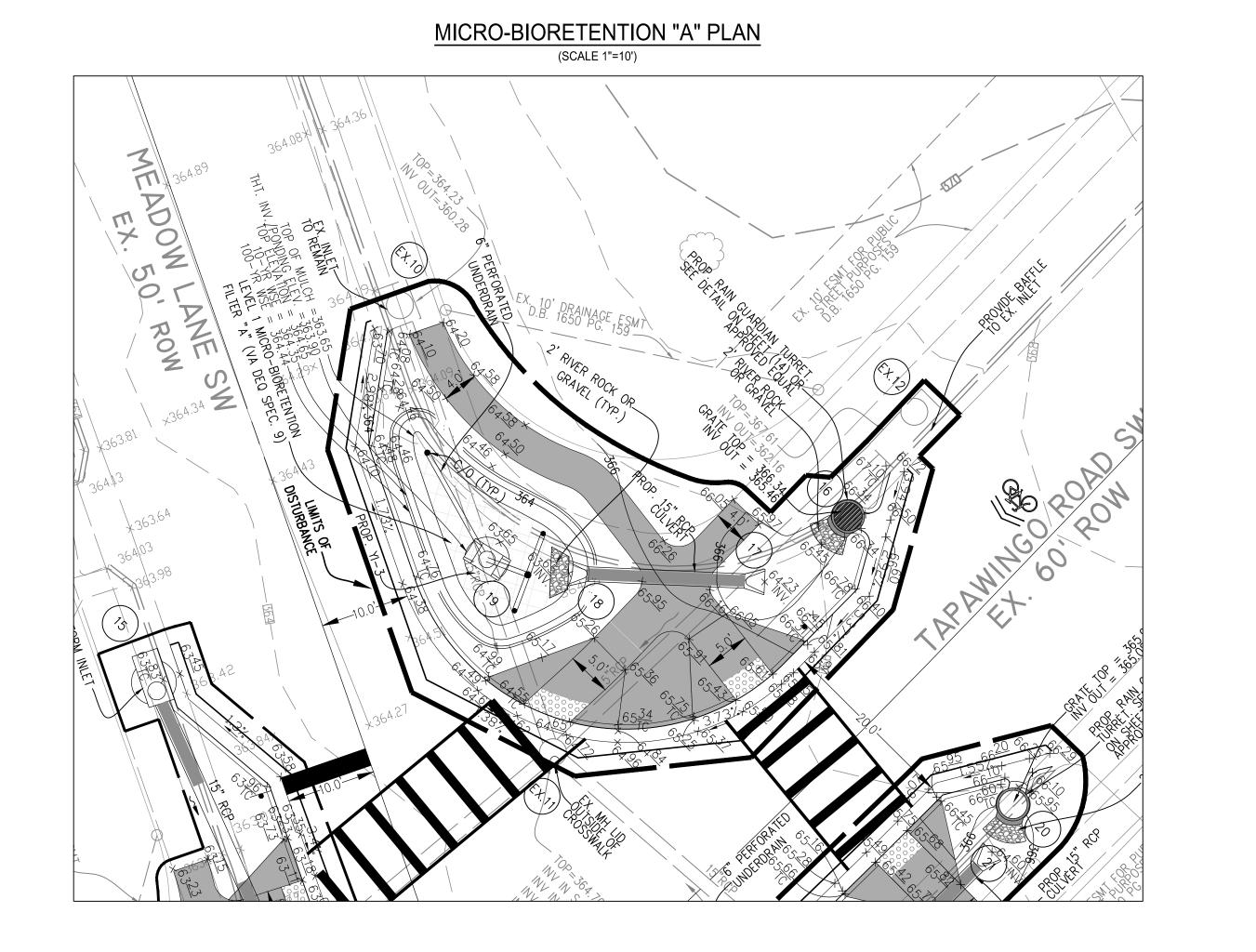
Variable



SONAL

BMP COMPUTATIONS & DETAILS
VIENNA ROAD IMPROVEMENTS
TAPAWINGO ROAD & KINGSLEY ROAI
TOWN OF VIENNA
FAIRFAX COUNTY, VIRGINIA
DATE: MARCH 20

SHEET 11 OF FILE No.

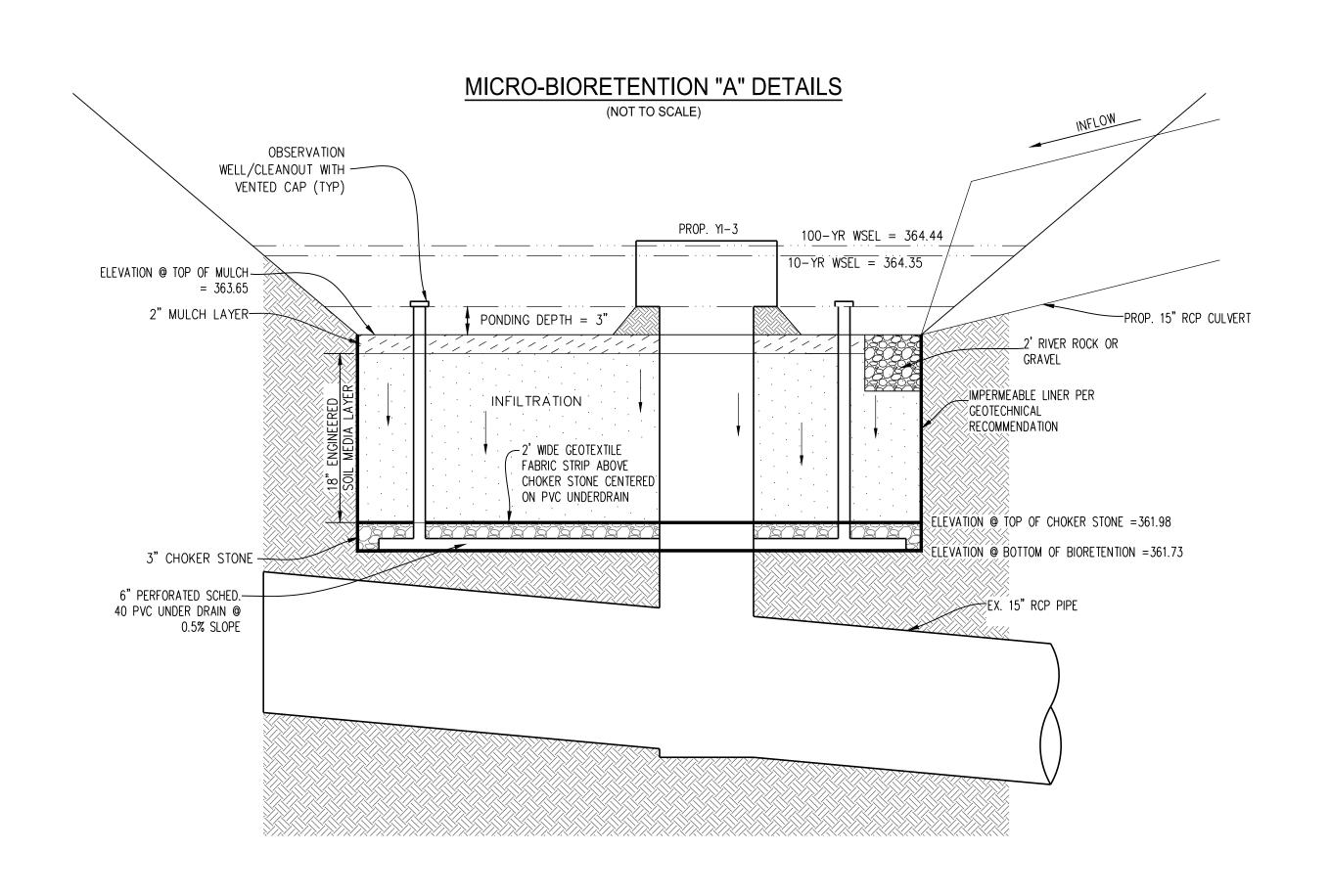


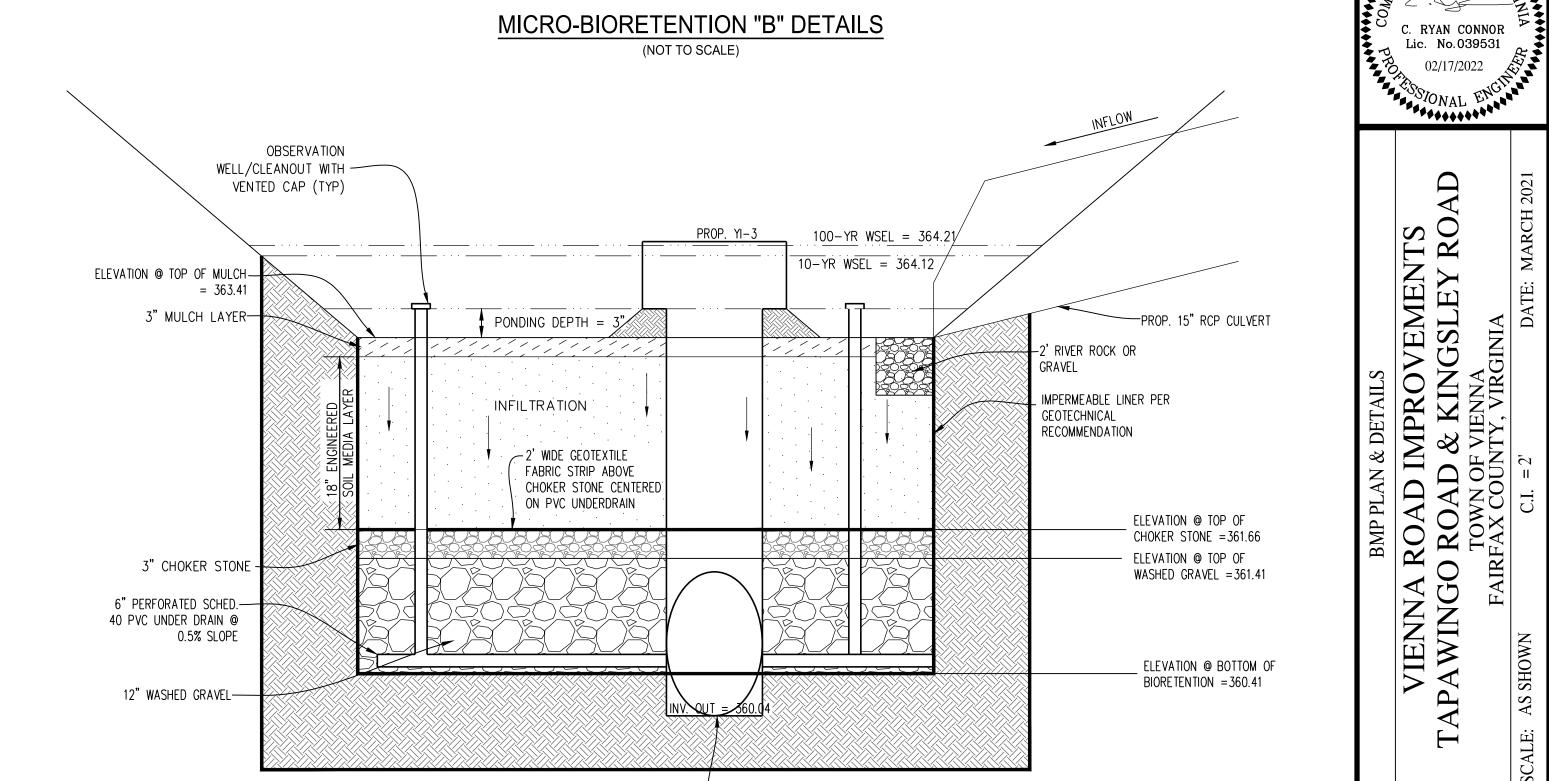


C. RYAN CONNOR Lic. No.039531

SHEET 12 OF

FILE No. PP-2156



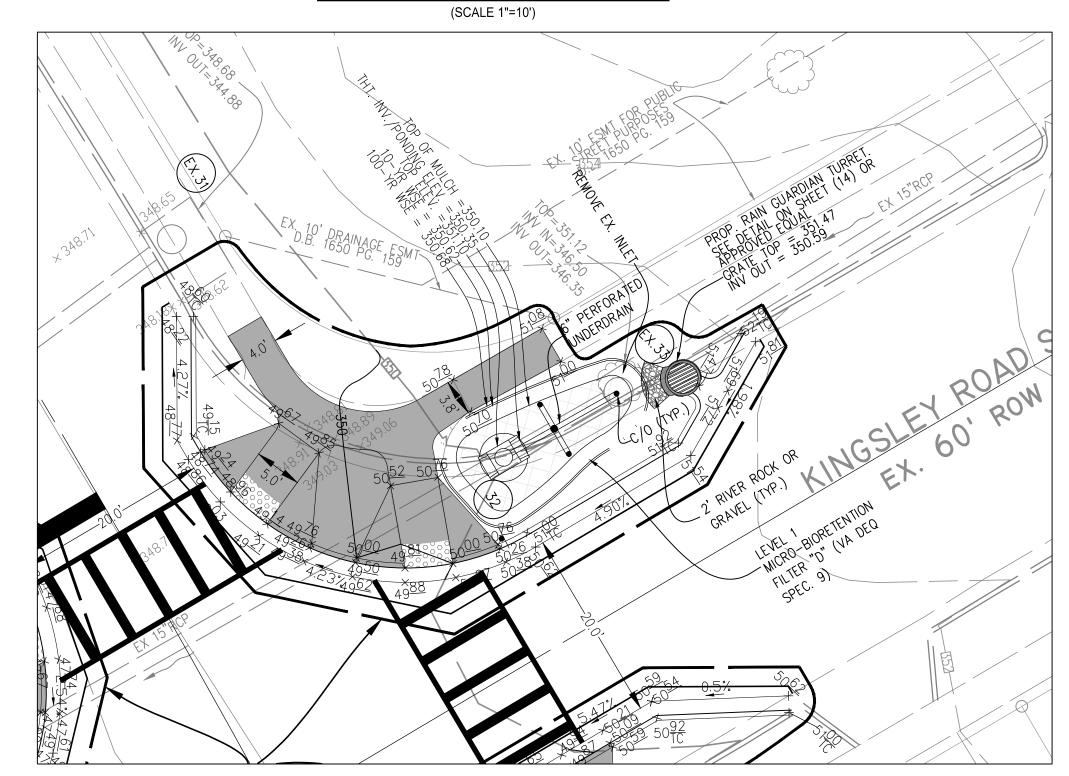


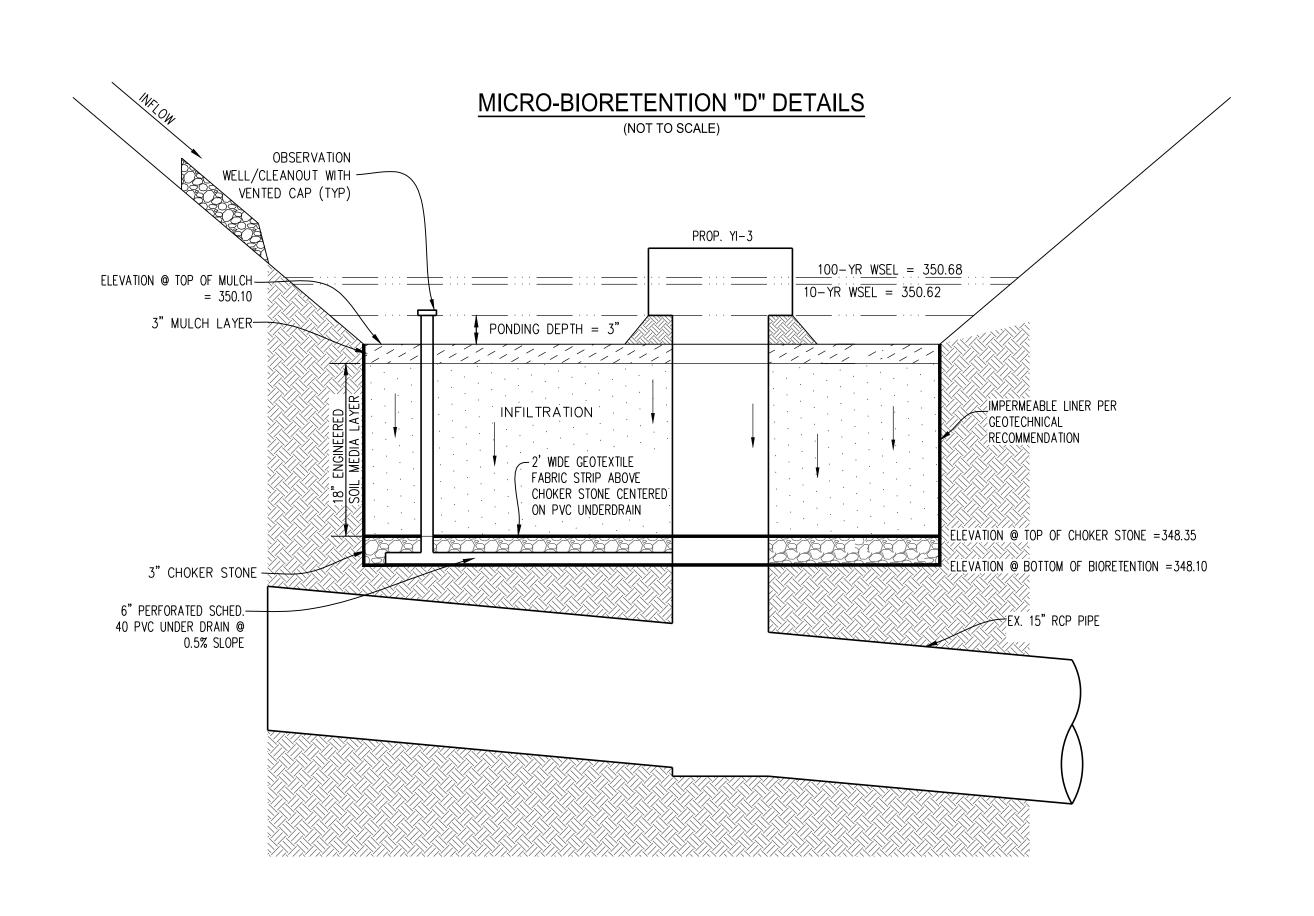
PROP. 15" RCP PIPE

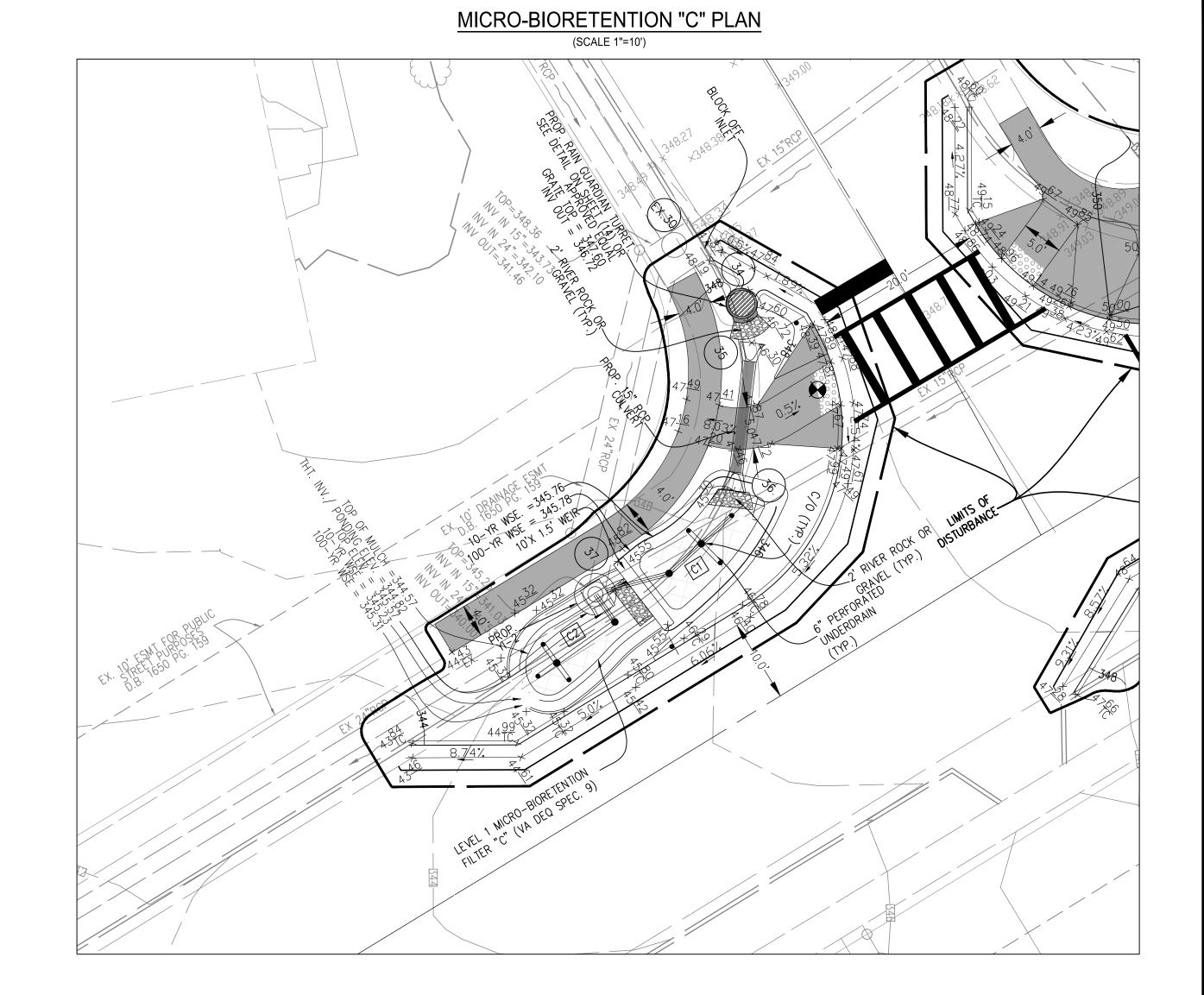
MICRO-BIORETENTION "B" DETAILS

(NOT TO SCALE)

MICRO-BIORETENTION "D" PLAN



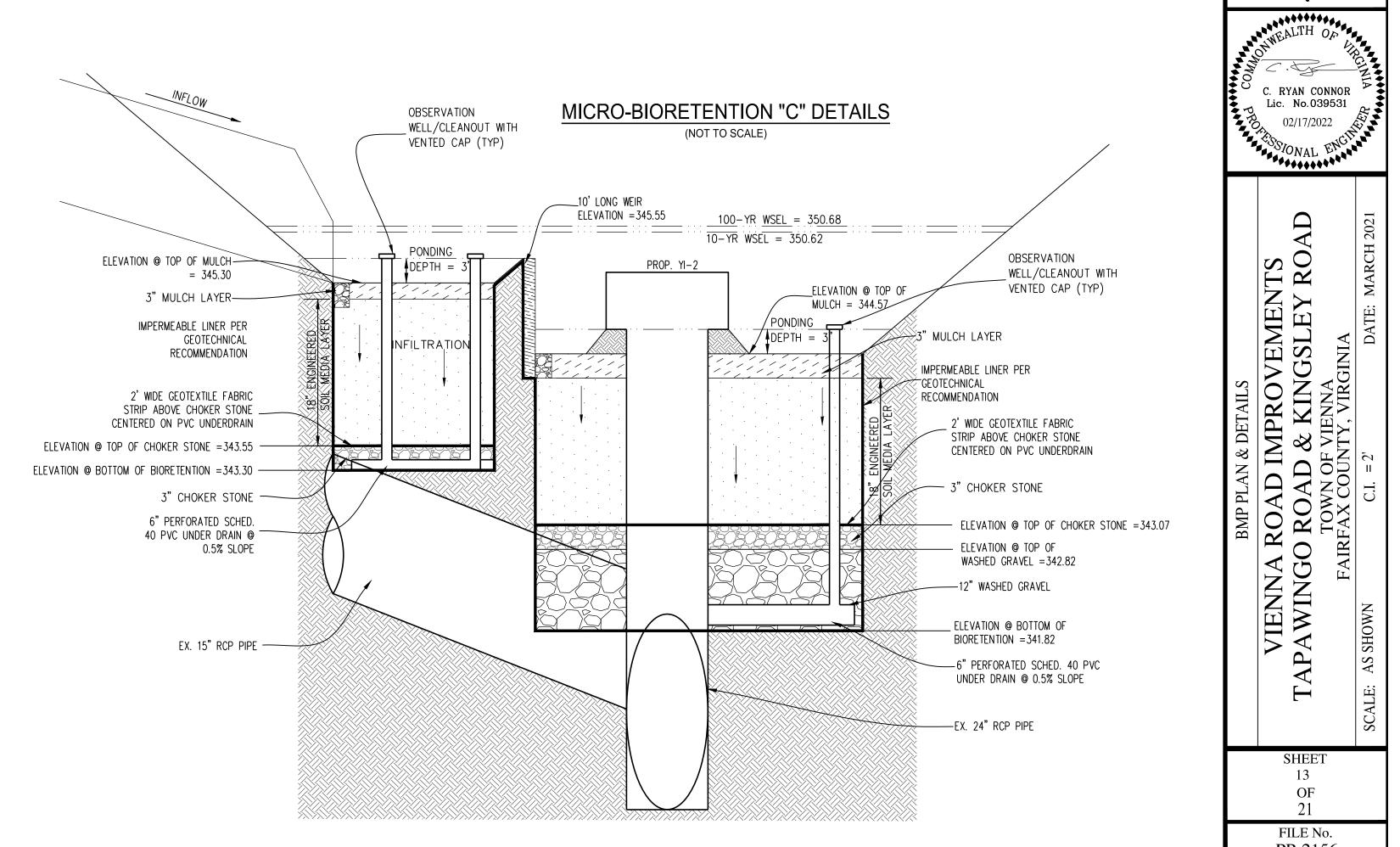




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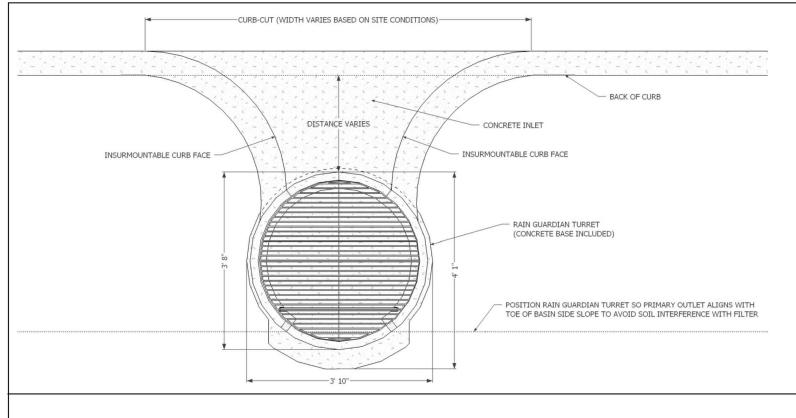
> SHEET 13 OF

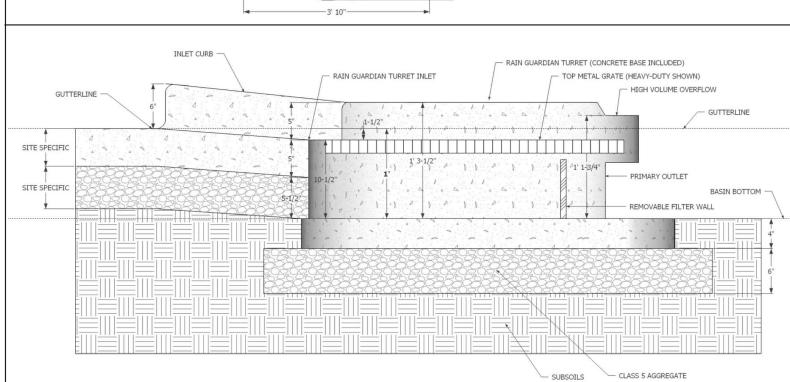
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BMP PRETREATMENT DETAILS

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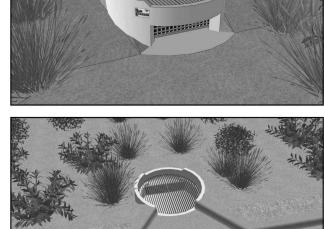




PLAN VIEW NOTES

1. INLET WIDTH AND DISTANCE BETWEEN BACK OF CURB AND RAIN GUARDIAN TURRET MAY VARY WITH SITE CONDITIONS. 2. CONCRETE BASE EXTENDS BEYOND THE FILTER WALL OF THE RAIN GUARDIAN TURRET TO SERVE AS A SPLASH DISSI-

INSTALLED VIEWS



CROSS-SECTION VIEW NOTES

RAIN GUARDIAN TURRET

PRETREATMENT CHAMBER

BIORETENTION PONDING DEPTH: 1'

TYPICAL DETAIL

1. THE TOP OF THE CLASS 5 BASE (COMPACTED TO 95% STANDARD PROCTOR) IS PRECISELY 1' 4" BELOW THE GUT-

SPECIFICATIONS

1. STEEL REINFORCED, COLD JOINT SECURED MONOLITHIC CON-CRETE STRUCTURE (1,030 LBS). CONCRETE SHALL HAVE A MINIMUM COMPRESSIVE STRENGTH OF 4,000 PSI AT 28 DAYS. CONCRETE AIR ENTRAINED (4% TO 8% BY VOLUME). MANUFACTURED AND DESIGNED TO ASTM C858. 2. THREE-POINT PICK USING RECESSED LIFTING POCKETS WITH A

STANDARD HOOK. 3. TWO-PIECE LIGHT-DUTY GALVANIZED GRATE (34.5 LBS/PIECE) FOR 541 LB CONCENTRATED LOAD OR 309 LB/SQ FT UNIFORM LOAD. 4. TWO-PIECE HEAVY-DUTY GALVANIZED GRATE (77.5 LBS/PIECE) FOR 2,456 LB CONCENTRATED LOAD OR 1,404 LB/SQ FT UNIFORM LOAD.

INSTALLATION NOTES

. INSTALL THE CLASS 5 BASE (COMPACTED TO 95% STANDARD PROCTOR). THE DISTANCE FROM THE BACK OF THE CURB MAY VARY BASED ON SITE CONDITIONS, BUT CONSIDERATIONS SHOULD IN-CLUDE SLOPE OF THE INLET AND BASIN SIDE SLOPES ADJACENT TO THE RAIN GUARDIAN TURRET. POSITION RAIN GUARDIAN TURRET SO PRIMARY OUTLET ALIGNS WITH TOE OF BASIN SIDE SLOPE TO AVOID SOIL INTERFERENCE WITH REMOVABLE FILTER WALL. EXCAVATE 1' 10" BELOW THE GUTTERLINE ELEVATION (I.E. THE BIORETENTION OVERFLOW ELEVATION) TO ACCOMMODATE THE 1' PONDING DEPTH, 6" CLASS 5 AGGREGATE, AND 4" RAIN GUARDIAN TURRET BASE (INCLUDED). THEREFORE, THE TOP OF THE CLASS 5 COMPACTED BASE IS PRECISELY 1' 4" BELOW THE GUTTERLINE ELEVATION. THE TOP OF THE RAIN GUARDIAN TURRET METAL GRATE WILL BE 10-1/2" ABOVE THE TOP OF THE CONCRETE BASE AND 1-1/2" BELOW THE GUTTERLINE ELEVATION TO ACCOMMODATE A SLOPED INLET FROM THE GUTTER TO THE RAIN GUARDIAN TURRET.

2. THE RAIN GUARDIAN TURRET SHOULD BE SET ON THE PREPARED CLASS 5 BASE.

. INSTALL FRAMING FOR INLET BETWEEN RAIN GUARDIAN TURRET AND BACK OF CURB. TOP ELEVATIONS OF THE FRAMING SHOULD MATCH THE TOP OF THE CURB ON THE STREET SIDE AND THE TOP OF THE RAIN GUARDIAN TURRET ON THE BIORETENTION SIDE.

. USE EXPANSION JOINT MATERIAL BETWEEN RAIN GUARDIAN TUR-RET AND BIORETENTION INLET.

5. SIDE CURBS OF THE POURED INLET MUST HAVE AN INSURMOUNT-ABLE PROFILE TO PREVENT WATER FLOW FROM OVERTOPPING THE DOWNSTREAM SIDE OF THE INLET.

6. REMOVABLE FILTER WALL SHOULD BE INSTALLED WITH FILTER FABRIC FACING THE RAIN GUARDIAN TURRET INLET.

MANUFACTURED BY:

Cretex Concrete Produ

U.S. PATENT 8,501,016

REV	ISION HIST	ORY	
ВҮ	DATE	DESCRIPTION	ANOKA
MDH	12/1/15	TURRET—1'	ONSERVATION
			ISTRICT
			U~~
			Anoka Conservation District
			1318 McKay Dr. NE, Suite 300
	VARIABLE		Ham Lake, MN 55304
TENT	8.501.016		763-434-2030

BIORETENTION FILTER NOTES:

- 1. THE CONTRACTOR SHALL COMPLY WITH ALL BMP SPECIFICATIONS OUTLINED IN THE VIRGINIA DEQ STORMWATER DESIGN SPECIFICATION NO. 9, DRAFT VERSION 2.0, PUBLISHED JANUARY 1, 2013.
- 2. THE CONTRACTOR SHALL FOLLOW THE BMP CONSTRUCTION SEQUENCE SPECIFIED IN VA DEQ SPEC. NO. 9, DRAFT VERSION 2.0, SECTION 8 (PAGES 37-39).
- 3. A SOIL SCIENTIST CERTIFICATION SHALL BE PROVIDED BY CONTRACTOR WHICH CERTIFIES TO THE CONTENT AND PERFORMANCE OF THE SOIL MEDIA PER VA DEQ SPEC. NO. 9, DRAFT VERSION 2.0, SECTION 6.6 (PAGES 24-29).
- 4. UPON INSTALLATION, A SOIL SCIENTIST CERTIFICATION SHALL BE PROVIDED BY THE CONTRACTOR WHICH CERTIFIES TO THE COMPACTION AND OTHER INSTALLATION FACTORS THAT AFFECT THE SOIL MEDIA PERFORMANCE AS OUTLINED IN VA DEQ SPEC. NO 9, DRAFT VERSION 2.0.
- 5. TO ENSURE PROPER FUNCTIONALITY AND EXTEND THE LONGEVITY OF THE BMP DEVICES, THE BMP DEVICES SHALL BE REGULARLY MAINTAINED PER THE MAINTENANCE SCHEDULES LISTED BELOW. THE OWNER SHALL BE RESPONSIBLE FOR ALL MAINTENANCE ACTIVITIES.
- 6. THE BIORETENTION MATERIAL SPECIFICATIONS (TABLE 9.7) BELOW SHALL BE USED FOR INFORMATION ONLY FOR THE MATERIALS TO BE UTILIZED IN THE CONSTRUCTION OF THE BIORETENTION FILTER. THE CONTRACTOR SHALL ACTUALLY INSTALL ONLY THE MATERIALS CALLED OUT ON THIS PLAN (WHERE PROVIDED) OR OTHERWISE AS INDICATED IN THE VA DEQ SPEC. NO. 9. THE CONTRACTOR SHALL ALSO PROCURE ALL BMP MATERIALS FROM A CERTIFIED MANUFACTURER. SEE PLANTING PLAN FOR PLANTING MATERIALS.

BIORETENTION MATERIAL SPECIFICATIONS

VA DEQ SPEC. 9, DRAFT VERSION 2.0, JANUARY 1, 2013

9/2 N 2 122	Table 9.7. Bioretention Materi	
Material	Specification	Notes
Filter Media Composition	Filter Media to contain: 80% - 90% sand 10%-20% soil fines 3%-5% organic matter	The volume of filter media based on 110% of the plan volume, to account for settling or compaction.
Filter Media Testing	Available P between L+ and M per DCR 2005 Nutrient Management Criteria.	The media should be certified by the supplier.
Mulch Layer	Use aged, shredded hardwood bark mulch or stable coarse compost.	Lay a 2 to 3 inch layer on the surface of the filter bed.
Alternative Surface Cover	Use river stone or pea gravel, coir and jute matting, or turf cover.	Lay a 2 to 3 inch layer of to suppress week growth.
Top Soil For Turf Cover	Loamy sand or sandy loam texture, with less than 5% clay content, pH corrected to between 6 and 7, and an organic matter content of at least 2%.	3 inch surface depth.
Geotextile/Liner	Use a non-woven geotextile fabric with a flow rate of > 110 gal./min./sq. ft. (e.g., Geotex 351 or equivalent)	Apply only to the sides and directly above the underdrain. For hotspots and certain karst sites only, use an appropriate liner of bottom.
Choking Layer	Lay a 2 to 4 inch layer of sand over a #89 washed gravel), which is laid over the	2 inch layer of choker stone (typically #8 one underdrain stone.
Stone Jacket for Underdrain and/or Storage Layer	1 inch stone should be double-washed and clean and free of all fines (e.g., VDOT #57 stone).	12 inches for the underdrain; 12 to 18 inches for the stone storage layer if needed
Underdrains, Cleanouts, and Observation Wells	Use 6 inch rigid schedule 40 PVC pipe (or equivalent corrugated HDPE for micro-bioretention), with 3/8-inch perforations at 6 inches on center; position each underdrain on a 1% or 2% slope located nor more than 20 feet from the next pipe.	Lay the perforated pipe under the length of the bioretention cell, and install non perforated pipe as needed to connect with the storm drain system. Install T's and Y' as needed, depending on the underdrain configuration. Extend cleanout pipes to the surface with vented caps at the Ts and Ys.
Plant Materials	Plant one tree per 250 square feet (15 feet on-center, minimum 1 inch caliper). Shrubs a minimum of 30 inches high planted a minimum of 10 feet on-center. Plant ground cover plugs at 12 to 18 inches on-center; Plant container-grown plants at 18 to 24 inches on-center, depending on the initial plant size and how large it will grow.	Establish plant materials as specified in the landscaping plan and the recommender plant list. In general, plant spacing must be sufficient to ensure the plant material achieves 80% cover in the proposed planting areas within a 3-year period. If seed mixes are used, they should be from a qualified supplier, should be appropriate for stormwater basin applications, and should consist of natives species (unless the seeding is to establish maintained turf).

MAINTENANCE ACTIVITIES AND SCHEDULE

BIORETENTION FILTER (VA DEQ SPEC. 9. DRAFT VERSION 2.0. JANUARY 1, 2013)

	Maintenance Tasks	Frequency
•	Mowing of grass filter strips and bioretention turf cover	At least 4 times a year
•	Spot weeding, erosion repair, trash removal, and mulch raking	Twice during growing season
	Add reinforcement planting to maintain desired the vegetation density Remove invasive plants using recommended control methods Stabilize the contributing drainage area to prevent erosion	As needed
•	Spring inspection and cleanup Supplement mulch to maintain a 3 inch layer Prune trees and shrubs	Annually
•	Remove sediment in pre-treatment cells and inflow points	Once every 2 to 3 years
•	Replace the mulch layer	Every 3 years

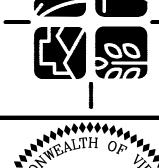
BMP NARRATIVE

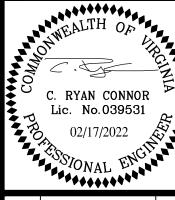
FOR THE WATER QUALITY COMPUTATIONS VRRM REDEVELOPMENT COMPLIANCE SPREADSHEET VERSION 3.0 IS UTILIZED. ONSITE TOTAL TP LOAD REDUCTION REQUIREMENT IS CALCULATED UTILIZING THE ONSITE DRAINAGE AREA. THE TOTAL TP LOAD REDUCTION ACHIEVED IS COMPUTED UTILIZING THE ONSITE AND OFFSITE DRAINAGE AREA TO EACH PROPOSED BMP DEVICES (MICRO-BIORETENTION) AS SHOWN ON SHEET 9 & 10.

DUE TO THE NATURE OF THIS PROJECT, THERE IS NO REDEVELOPMENT REQUIREMENT FOR POLLUTANT REMOVAL. THE TOTAL IMPERVIOUS AREA ON THE SITE AFTER REDEVELOPMENT WILL BE LESS THAN THE IMPERVIOUS AREA ON THE SITE BEFORE REDEVELOPMENT. THEREFORE, A SMALL WATER QUALITY EXCESS OF 0.06 LB/YR IS ACHIEVED BEFORE ACCOUNTING FOR THE WATER QUALITY PROVIDED BY THE PROPOSED BMP DEVICES (SEE SHEET 9). THIS IS INDICATED BY THE POLLUTANT REMOVAL REQUIREMENT SHOWN ON THIS SHEET BEING NEGATIVE.

A TOTAL OF 0.18 LB/YR OF PHOSPHORUS IS REMOVAL IS ACHIEVED BY THE INSTALLATION OF BMP DEVICES (AS SHOWN IN SHEET 10). TAKING INTO ACCOUNT THE NEGATIVE REQUIREMENT FOR THE SITE , THIS SITE PROVIDES A TOTAL WATER QUALITY EXCESS OF 0.24 LB/YR.

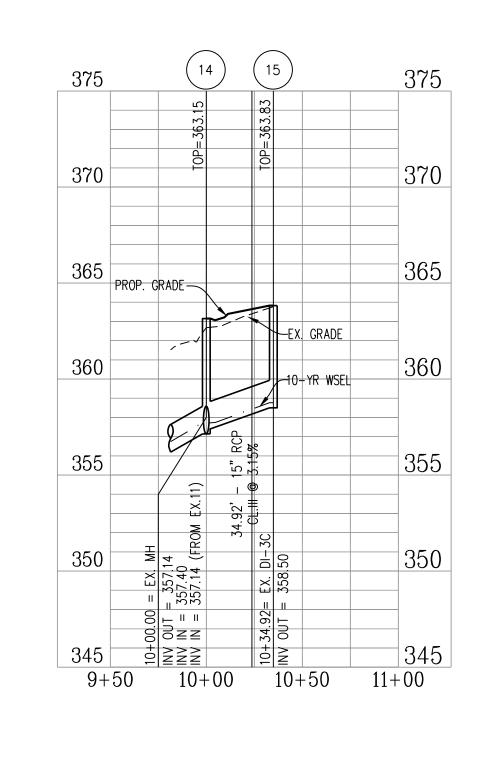


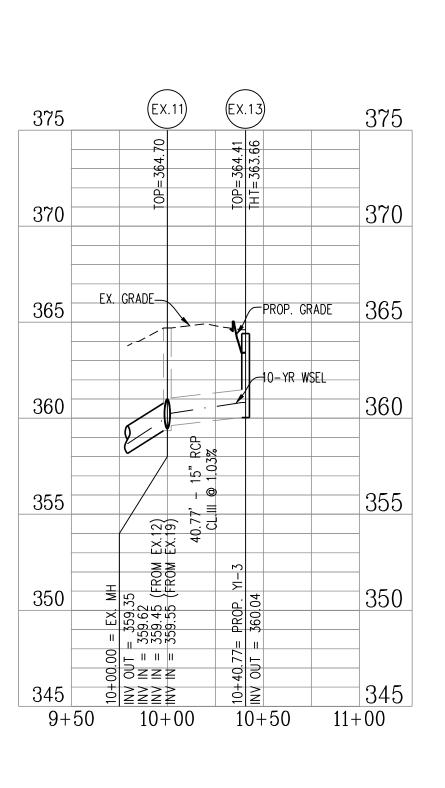


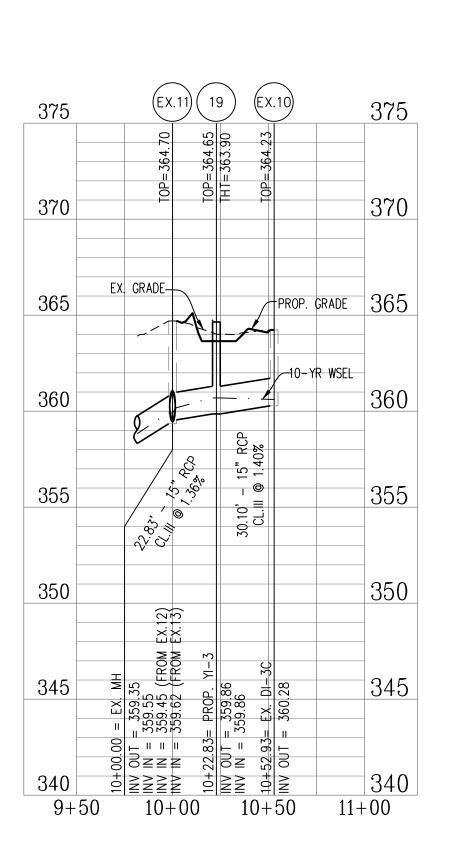


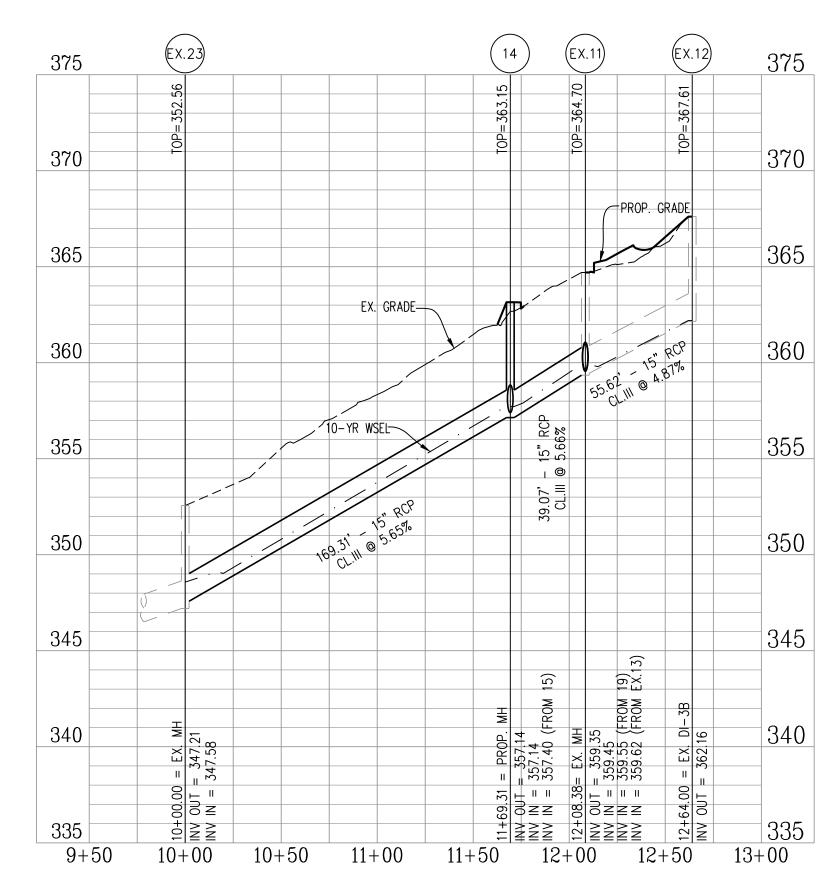
VIENNA ROAD IMPROVEMENTS
APAWINGO ROAD & KINGSLEY RO
TOWN OF VIENNA
FAIRFAX COUNTY, VIRGINIA

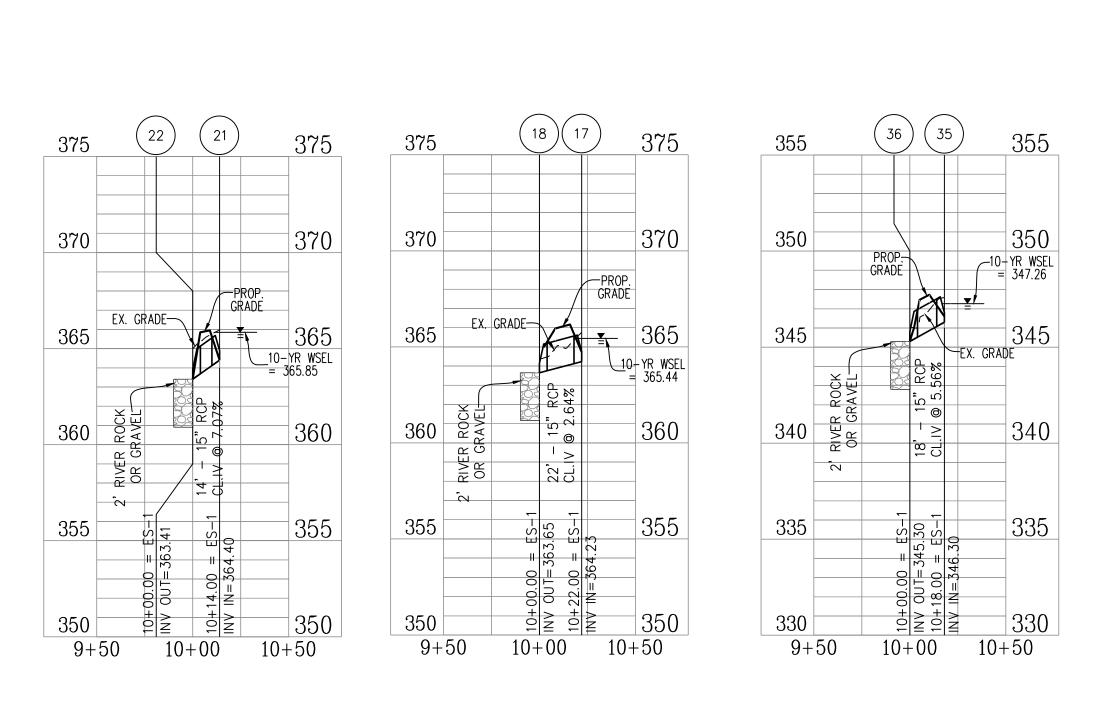
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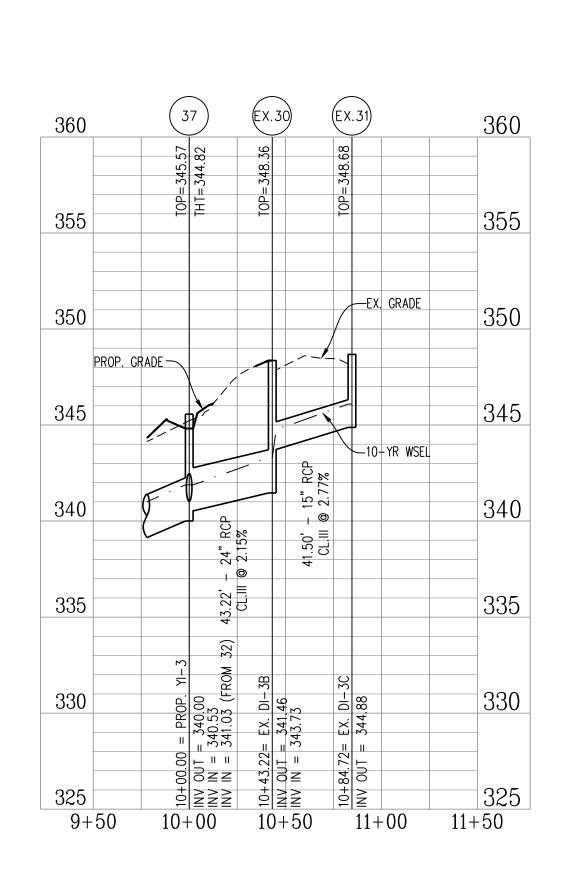


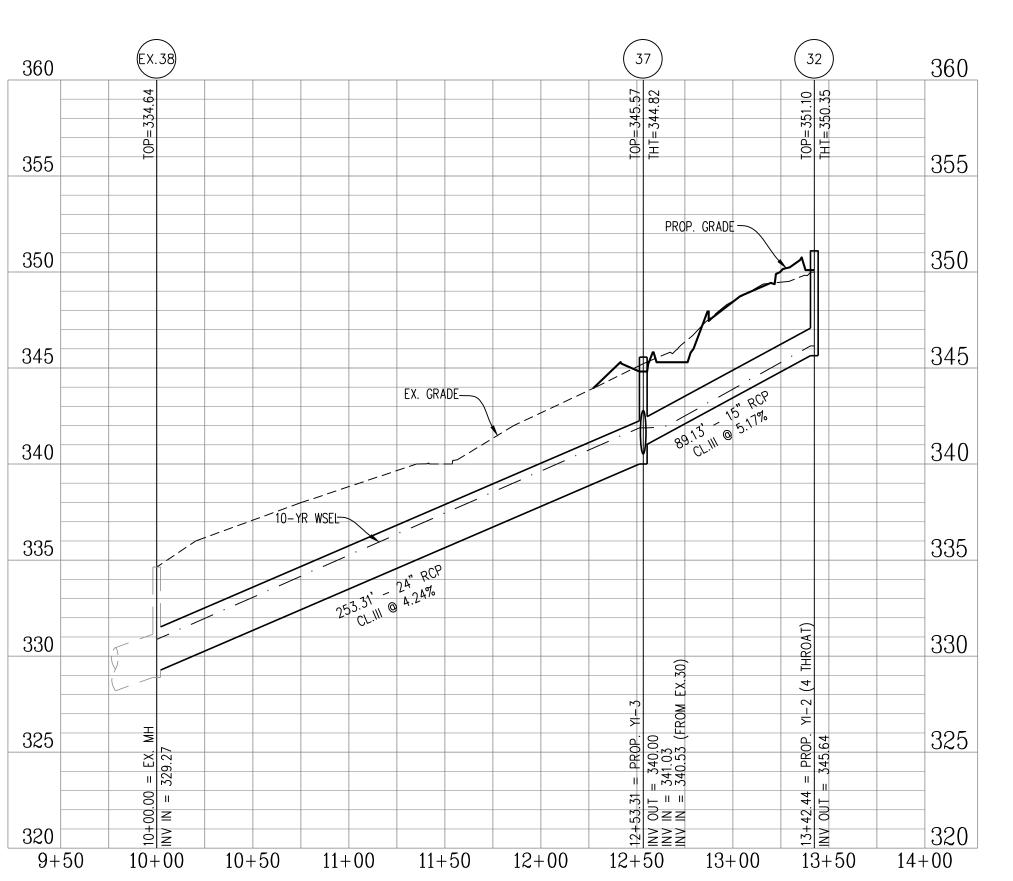














PLAN DATI 03-19-2021 10-29-2021 02-17-2022

Urban, Ltd. 7712 Little River Turnpike Annandale, Virginia 22003 Tel. 703.642.8080 Fax. 703.642.8251 www.urban-ltd.com

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VIENNA ROAD IMPROVEMENTS
TAPAWINGO ROAD & KINGSLEY ROAD
TOWN OF VIENNA
FAIRFAX COUNTY, VIRGINIA

CT. N/A
DATE: MARCH 2021

SHEET 15 OF 21 FILE No.

CULVERT COMPUTATIONS

_																													
		CU	LVE	RT DE	SCRIPTION	ON				HYDF	ROLO	GIC CA	LCULAT	ATIONS Total Flow per				r HEADWATER CALCULATIONS											
																Flow	Barrel	INLET CONTROL			OL	OUTLET CONTROL					ELEVATION	VELOCITY	
		Mater	ia I-S	Shape-	Size-Ent	rance										Q	Q/N (cfs)	HWi/D	HWi	FALL	ELHI	HWo	Dc	Ho	k _E	Н	EL _{HO}	HEADWATER	OUT
	Pipe		N	INVo	INVin	Type	D (in)	С	Tc	1	Α	EL	ELo	s	L _o `	(cfs)	(1)	(2)		(3)	(4)	(5)		(6)		(7)	(8)	CONTROL	
	17-18	1-15" RCP	1	363.65	364.23	RCP	15	0.59	10	5.45	1.11	364.23	363.65	2.64%	22.00	3.57	3.57	0.97	1.21	1.79	365.44	0.53	0.76	0.76	0.50	0.58	364.99	365.44	7.29
	21-22	1-15" RCP	1	363.41	364.40	RCP	15	0.62	10	5.45	1.06	364.40	363.41	7.07%	14.00	3.58	3.58	1.00	1.25	2.24	365.65	0.44	0.76	0.76	0.50	0.99	365.16	365.65	9.17
	35-36	1-15" RCP	1	345.30	346.30	RCP	15	0.64	10	5.45	0.68	346.30	345.30	5.56%	18.00	2.37	2.37	0.77	0.96	1.96	347.26	0.35	0.62	0.62	0.50	1.00	346.92	347.26	8.27

STORM SEWER COMPUTATIONS

LineID	DrainageArea	RunoffCoeff	IncrCxA	TotalCxA	Inlet Time	Тс	Rainfall Intensity	KnownQ	Runoff Q	InvertUp	InvertDn	Length	Slope	Diameter	Capacity	Actual Flow Velocity	Full Flow Vel
	(ac)	(C)			(min)	(min)	(in/hr)	(cfs)	(cfs)	(ft)	(ft)	(ft)	(%)	(in)	(cfs)	(ft/s)	(ft/s)
14-EX.23	0	0	0	1.56	5	123.9	1.34	0	2.1	357.14	347.58	169.31	5.65	15	16.62	2.89	13.54
EX.11-14	0	0	0	1.47	0	123.8	1.34	0	1.98	359.35	357.14	39.07	5.66	15	16.64	3.65	13.56
EX.12-EX.11	0	0	0	0	10	10	0	0.01	0.01	362.16	359.45	55.62	4.87	15	15.44	0.47	12.58
19-EX.11	1.13	0.58	0.66	0.79	10	10.8	5.29	0	4.18	359.86	359.55	22.83	1.36	15	8.15	5.77	6.64
EX.10-19	0.19	0.71	0.13	0.13	10	10	5.45	0	0.74	360.28	359.86	30.1	1.4	15	8.26	1.82	6.73
EX.13-EX.11	1.11	0.61	0.68	0.68	10	10	5.45	0	3.69	360.04	359.62	40.77	1.03	15	7.1	5.23	5.79
15-14	0.21	0.69	0.14	0.14	10	10	5.45	0	0.79	358.5	357.4	34.92	3.15	15	12.42	2.95	10.12
37-EX.38	0.75	0.61	0.46	3.23	5	17.5	4.3	0	37.4	340	329.27	253.31	4.24	24	50.43	12.95	16.05
32-37	0.43	0.57	0.25	0.25	5	10.7	5.32	0	7.39	345.64	341.03	89.13	5.17	15	15.91	7.15	12.96
EX.30-37	0	0	0	2.52	0	17.5	4.31	0	28.32	341.46	340.53	43.22	2.15	24	35.94	10.69	11.44
EX.31-EX.30	6.31	0.4	2.52	2.52	15	15	4.62	0	11.65	344.88	343.73	41.5	2.77	15	11.65	10.2	9.49

*PIPE RUNS WITH AN ASTERISK HAVE BEEN INCLUDED HERE ONLY FOR PIPE CAPACITY COMPUTATIONS IN THE ULTIMATE CONDITION FOR THE DOWNSTREAM RUN. A KNOWN Q WAS INSERTED INTO THESE SEGMENTS TO REPRESENT THE RUNOFF FLOW FROM THE ULTIMATE DRAINAGE AREA. THESE RUNS A

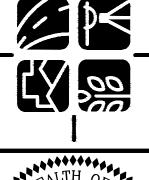
HGL COMPUTATIONS

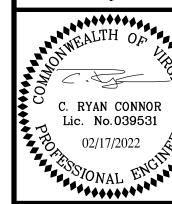
InletID	Outlet WSE	Do	Qo	Lo	Sfo	Vo	Qi	Vi	Hi	Angle	MinorLoss	Final H	HGLJnct	Inlet WSE	Rim Elev
	(ft)	(in)	(cfs)	(ft)	(%)	(ft)	(cfs)	(ft/s)	(ft)	(Deg)	(ft)	(ft)	(ft)	(ft)	(ft)
14	348.58	15.00	2.10	169.31	0.00	0.22	0.00	3.79	0.22	-40.09	n/a	0.58	357.72	357.72	363.15
EX.11	357.72	15.00	1.98	39.07	0.00	0.22	0.00	3.72	0.22	0.39	n/a	0.56	359.91	359.91	364.70
EX.12	359.91	15.00	0.01	55.62	0.00	0.01	0.01	0.91	0.01	-3.61	n/a	0.04	362.20	362.20	367.61
19	360.18	15.00	4.18	22.83	0.00	0.37	3.57	4.85	0.37	-69.00	n/a	0.83	360.69	360.69	364.65
EX.10	360.69	15.00	0.74	30.10	0.00	0.12	0.74	2.78	0.12	0.04	n/a	0.34	360.62	360.62	364.23
EX.13	360.26	15.00	3.69	40.77	0.00	0.33	3.69	4.62	0.33	80.42	n/a	0.78	360.82	360.82	364.41
15	357.73	15.00	0.79	34.92	0.00	0.12	0.79	2.83	0.12	-74.50	n/a	0.35	358.85	358.85	363.83
			•					Ť		•					
37	330.87	24.00	37.40	253.31	0.00	2.25	3.10	12.02	2.25	-31.32	2.54	1.94	341.94	341.94	345.57
32	341.94	15.00	7.39	89.13	0.00	0.67	1.66	6.55	0.67	1.63	n/a	1.08	346.72	346.72	351.10
EX.30	341.94	24.00	28.32	43.22	0.00	1.37	0.00	9.39	1.37	-45.44	1.92	1.83	343.29	343.29	348.36
EX.31	344.76	15.00	11.65	41.50	0.00	1.43	11.65	9.58	1.43	40.17	n/a	1.21	346.09	346.09	348.68

INLET COMPUTATIONS

IIVLLIC	JOIVII OTA	VIIOIVO																		
Inlet ID	Inlet Type	Length	DrainageArea	С	CA	I	Q incr.	QCarryover	QCaptured	QBypass	GutterSlope	CrossSlope, Sx	T (Grade) Spread	T (Sump) Spread	W	Sw	d	E	h	10yr WSEL
		(ft)	(ac)	(C)		(in/hr)	(cfs)	(cfs)	(cfs)	(cfs)	(ft/ft)	(ft/ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft)	(%)	(in)	
14	MH		0	0	0	0	0			****								****	****	357.72
EX.11	MH		0	0	0	0	0			****									****	359.91
EX.12	Curb	8.5	0	0	0	0	0.01	0	0.01	0	0.06	0.05	0.35		1.5	0.083	0.2	100	5.5	367.31
19	YI-3	4	1.13	0.58	0.66	5.45	3.57	0	3.57	0	Sag	0.00					0.45	100	6	364.35
EX.10	DI-3C	4	0.19	0.71	0.13	5.45	0.74	0	0.74	0	Sag	0.05		2.48	1.5	0.083	0.34	100	5.5	364.07
EX.13	YI-3	4	1.11	0.61	0.68	5.45	3.69	0	3.69	0	Sag	0.00		****	****	****	0.46	100	6	364.12
15	DI-3C	6	0.21	0.69	0.14	5.45	0.79	0	0.79	0	Sag	0.08		1.50	1.5	0.083	0.29	100	5.5	363.62
37	YI-3	4	0.75	0.61	0.46	6.77	3.1	0	3.1	0	Sag	0.03	****			****	0.41	100	6	345.23
32	YI-2	4	0.43	0.57	0.25	6.77	1.66	0	1.66	0	Sag	0.02		****	****	****	0.27	100	6	350.62
EX.30	DI-3C	6	0	0	0	0	0	17.45	17.45	0	Sag	0.05			1.5	0.083	0.3	100	5.5	348.16
EX.31	DI-3C	8.5	6.31	0.4	2.52	4.62	11.65	0	11.65	0	Sag	0.03		19.64	1.5	0.083	0.84	100	5.5	349.02



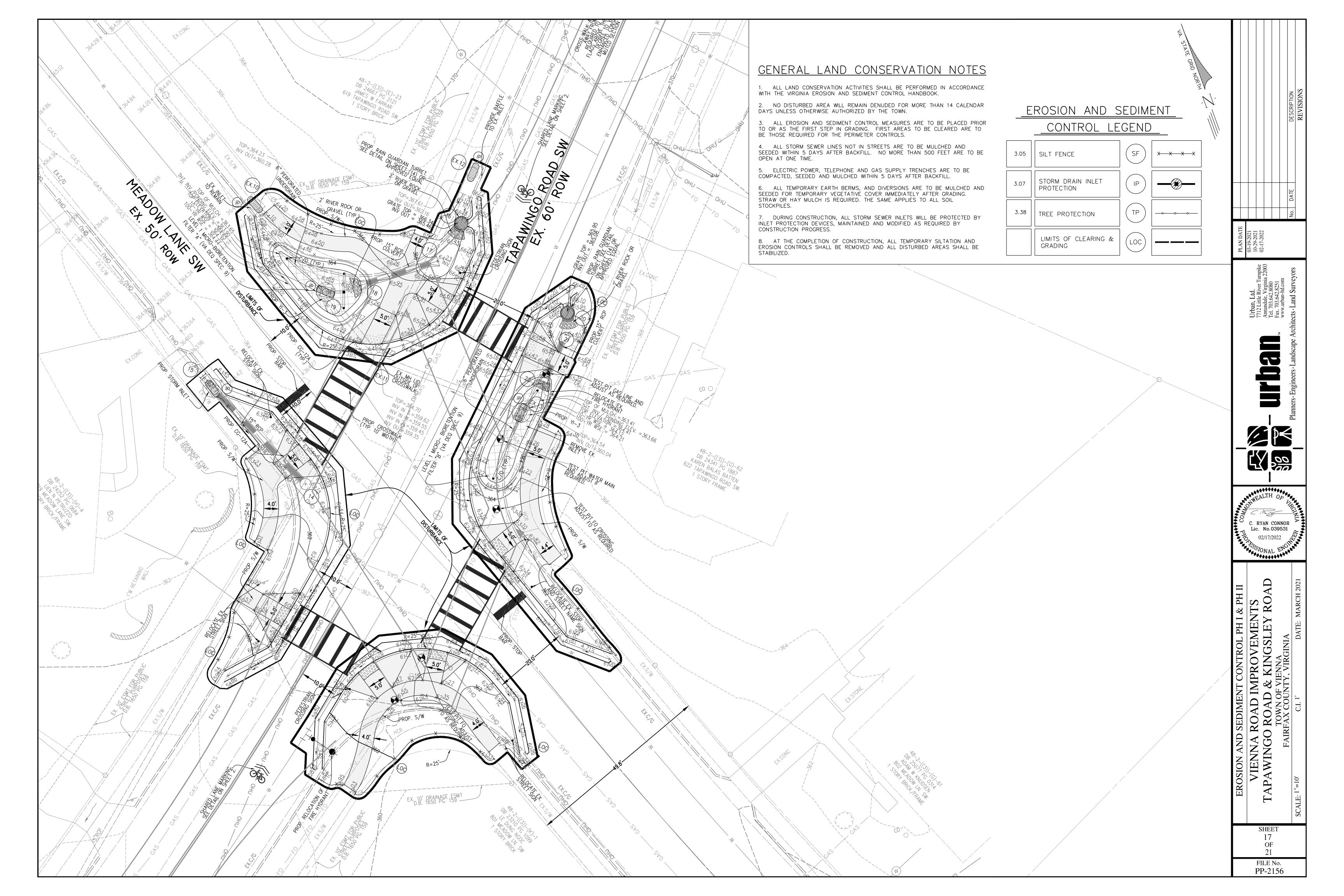


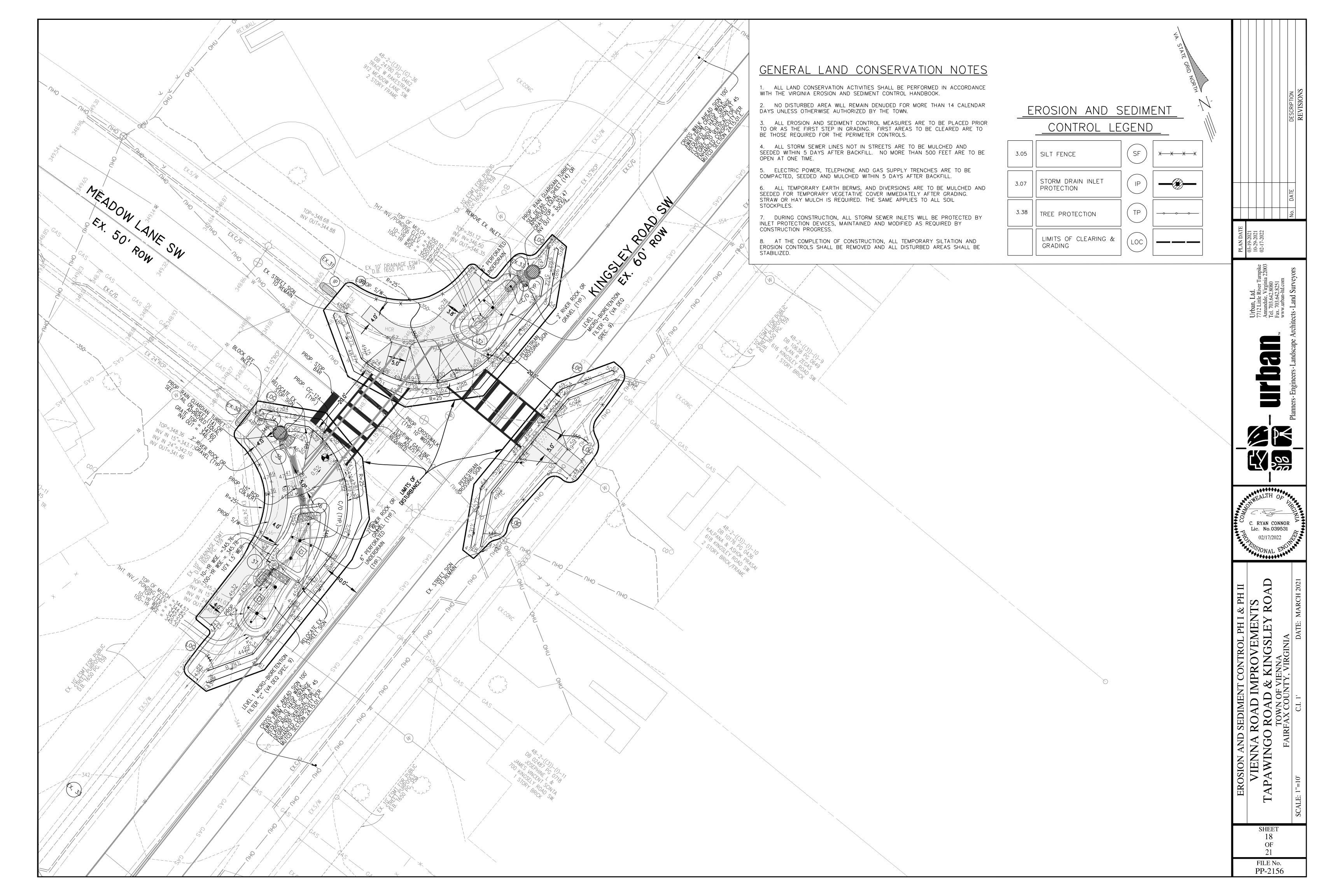


VIENNA ROAD IMPROVEMENTS
TAPAWINGO ROAD & KINGSLEY ROAD
TOWN OF VIENNA
FAIRFAX COUNTY, VIRGINIA
C.I. N/A
DATE: MARCH 2021

SHEET 16 OF 21

FILE No. PP-2156





EROSION AND SEDIMENT CONTROL NARRATIVE

PROJECT DESCRIPTION

THIS PROJECT CONSISTS OF A SIDEWALK IMPROVEMENT PLAN FOR THE EXISTING TAPAWINGO ROAD, SW AND KINGSLEY ROAD SW AT THE INTERSECTION WITH MEADOW LANE SW. IMPROVEMENTS INCLUDE CURB AND GUTTER, SIDEWALK, AND CG-12 DETECTABLE WARNING SURFACE. THE TOTAL DISTURBED ACREAGE FOR THE PROJECT IS 0.29 ACRES.

EXISTING SITE CONDITIONS

THE SITE IS AN EXISTING ROAD, TAPAWINGO RD. SW, KINGSLEY RD. SW, AND MEADOW LN. SW WITH CURB AND GUTTER, CONCRETE SIDEWALKS, AND FRONT YARDS CONTAINING MAILBOXES, WATER METERS, ETC.

ADJACENT PROPERTIES

THE SITE IS SURROUNDED ON ALL SIDES BY SINGLE—FAMILY LOTS.

OFF-SITE AREAS

THERE IS CONSTRUCTION ON OFFSITE AREAS ADJACENT TO ROADWAY. $\,$ EROSION AND SEDIMENT $\,$ CONTROL DEVICES WILL BE PLACED OFFSITE AS SHOWN ON PLAN.

SOILS INFORMATION

SEE SHEET 2 FOR SOIL DATA.

CRITICAL EROSION AREAS

THERE ARE NO CRITICAL AREAS ASSOCIATED WITH THIS PROJECT. NO SLOPES ARE GREATER THAN 20%, AND THERE ARE NO RESOURCE PROTECTION AREAS WITHIN THE PROJECT LIMITS.

EROSION AND SEDIMENT CONTROL MEASURES

THE EROSION AND SEDIMENT CONTROL MEASURES FOR THIS PROJECT AREA ARE DESCRIBED IN DETAIL IN THE EROSION AND SEDIMENT CONTROL PROGRAM ON THIS SHEET.

OVERALL MANAGEMENT STRATEGY

THE OVERALL STRATEGY FOR THIS SITE IS TO TREAT THE ONSITE RUNOFF WITH PERIMETER SILT FENCE AND INLET PROTECTION.

EROSION CONTROL PROGRAM (GENERAL GUIDELINES)

NOT MORE THAN 75% OF THE SITE IS TO BE DENUDED AT ONE TIME. TEMPORARY SEEDING AND MULCHING ARE TO BE APPLIED TO ANY AREA WITHIN THE SITE NOT CONTINUOUSLY WORKED FOR 5 DAYS AFTER CLEARING AND ROUGH GRADING. IN ADDITION, THE CONTRACTOR SHALL TAKE THE FOLLOWING STEPS TO MINIMIZE THE VOLUME OF SILT:

CONTRACTOR SHALL EVALUATE THE SITE TO DETERMINE EXTENSIVE CUT AND FILL AREAS AND SHALL WORK THOSE AREAS TO MINIMIZE THE EXTENT OF HEAVY EQUIPMENT WORK. CONTRACTOR SHALL STRIVE TO BRING AREAS TO GRADE (ROUGH OR FINISH) AND TO STABILIZE, BY TEMPORARY OR PERMANENT VEGETATION, THESE DISTURBED AREAS PRIOR TO BEGINNING WORK IN OTHER

FILL AREAS SHALL BE COMPACTED COMPLETELY PRIOR TO THE END OF EACH WORK DAY. FILL SLOPE SURFACES SHALL BE LEFT ROUGHENED TO REDUCE SHEET EROSION OF THE SLOPES. CONTRACTOR SHALL REDIRECT CONCENTRATED RUNOFF, BY EARTH BERMS OR OTHER DEVICES, AROUND ACTIVELY DISTURBED AREAS TO STABILIZE OUTLETS.

CUT SLOPE, AS NECESSARY, SHALL BE PROTECTED FROM CONCENTRATED FLOW BY BERMS ABOVE THE SLOPE AND DIRECTED AROUND THE DISTURBED AREA TO STABILIZED OUTLETS.

IN NEW PAVEMENT AREAS, PLACE THE AGGREGATE BASE STONE ON THE FINISH SUBGRADE AT THE EARLIEST POSSIBLE TIME.

MATERIALS AND METHODS USED IN CONSTRUCTION AND MAINTENANCE OF THE EROSION AND SEDIMENT CONTROL MEASURES REQUIRED SHALL CONFORM TO THE CONSTRUCTION STANDARDS AND SPECIFICATIONS IN CHAPTER 3 OF THE VIRGINIA EROSION AND SEDIMENT CONTROL HANDBOOK (VESCH), THIRD EDITION, 1992, AS WELL AS ANY OTHER APPLICABLE LOCAL, STATE, AND FEDERAL REGULATIONS.

WHERE APPROPRIATE AND FEASIBLE. AREAS IN WHICH NATURAL GRADES ARE NOT IMPACTED BY ROPOSED GRADING OR STOCKPILE AREAS. SHALL BE LEFT WITH THEIR EXISTING VEGETATION IN PLACE. ALL AREAS SUBJECT TO GRADING SHALL BE SEEDED AND MULCHED AS SOON AS PRACTICAL.

PERMANENT OR SOIL STABILIZATION SHALL BE APPLIED TO DENUDED AREAS WITHIN SEVEN AYS AFTER FINAL GRADE IS REACHED ON ANY PORTION OF THE SITE. TEMPORARY SOIL TABILIZATION SHALL BE APPLIED WITHIN SEVEN DAYS TO DENUDED AREAS THAT MAY NOT BE AT FINAL GRADE BUT WILL REMAIN DORMANT FOR LONGER THAN 30 DAYS. PERMANENT STABILIZATION SHALL BE APPLIED TO AREAS THAT ARE TO BE LEFT DORMANT FOR MORE THAN 1 YEAR.

<u>SEDIMENT CONTROL PROGRAM (PHASE I)</u>

INSTALL PERIMETER CONTROLS AS SHOWN ON THE PHASE I PLAN (SILT FENCE, ETC.) PERIMETER CONTROLS MUST BE APPROVED IN WRITING BY THE TOWN E & S INSPECTOR BEFORE CLEARING OF THE SITE CAN TAKE PLACE

COMMENCE CONSTRUCTION OF ALL UTILITIES AND GRADING OF THE SITE.

<u>SEDIMENT CONTROL PROGRAM (PHASE II)</u>

COMMENCE CONSTRUCTION OF CURB AND GUTTER, PAVEMENT, AND SIDEWALK AS SHOWN ON THE CONSTRUCTION PLANS.

INLET PROTECTION (IP) SHALL BE PROVIDED AT STORM DRAIN INLETS AS THEY ARE CONSTRUCTED.

PERMANENTLY STABILIZE UNPAVED AREAS WITH SOD (PER SEC. 3.33 OF THE VIRGINIA EROSION AND SEDIMENT CONTROL HANDBOOK).

THE CONTROL MEASURES MAY NOT BE REMOVED UNTIL ALL OF THE DISTURBED AREAS HAVE BEEN STABILIZED AND ONLY AS APPROVED AND DIRECTED BY THE INSPECTOR.

MAINTENANCE

THE FOLLOWING IS A PROGRAM OF MAINTENANCE FOR THE MECHANICAL AND PERMANENT CONTROLS SPECIFIED IN THIS NARRATIVE AND ON THE PLAN:

THE SITE SUPERINTENDENT, OR HIS REPRESENTATIVE, SHALL MAKE A VISUAL INSPECTION OF ALL MECHANICAL CONTROLS AND NEWLY STABILIZED AREAS (I.E., SEEDED OR SODDEN AREAS) ON A DAILY BASIS (ESPECIALLY AFTER A HEAVY RAINFALL) TO INSURE THAT ALL CONTROLS ARE IN PLACE AND THAT NONE HAVE BEEN DAMAGED. ANY DAMAGED CONTROL SHALL BE REPAIRED PRIOR TO END OF THE WORK DAY TO INCLUDE RESEEDING OR RESETTING, IF NECESSARY. WHEN IT IS CLEAR THAT PLANTS HAVE NOT GERMINATED ON AN AREA OR HAVE DIED, THESE AREAS MUST BE RE-SEEDED IMMEDIATELY TO PREVENT EROSION DAMAGE.

AFTER ALL CONSTRUCTION OPERATIONS HAVE ENDED AND ALL DISTURBED AREAS ARE STABILIZED, MECHANICAL SEDIMENT CONTROLS SHALL BE REMOVED AND GROUND SHALL BE RESTORED ESTABLISHMENT OF VEGETATION, TO ITS NATURAL OR PROPOSED CONDITION. REMOVAL OF ANY CONTROL IS CONTINGENT UPON APPROVAL BY THE TOWN INSPECTOR.

PERMANENT STABILIZATION

AFTER CONSTRUCTION IS COMPLETE ALL DISTURBED AREAS SHALL BE SEEDED AND MULCHED IN ACCORDANCE WITH SEC. 3.32 AND 3.35 OF THE VIRGINIA EROSION AND SEDIMENT CONTROL HANDBOOK.

<u>STORMWATER MANAGEMENT</u>

<u>ADDITIONAL NOTES</u>

THE TOWN INSPECTOR SHALL HAVE THE AUTHORITY TO DIRECT THE ADDITION OR DELETION OF EROSION AND SEDIMENT CONTROLS AS SITE CONDITIONS WARRANT.

EARTHEN STRUCTURES ARE TO BE STABILIZED IMMEDIATELY UPON COMPLETION.

EROSION AND SEDIMENT CONTROL MEASURES:

UNLESS OTHERWISE INDICATED, ALL VEGETATIVE AND STRUCTURAL EROSION AND SEDIMENT CONTROL PRACTICES SHALL BE CONSTRUCTED AND MAINTAINED ACCORDING TO MINIMUM STANDARDS AND SPECIFICATIONS OF THE VESCH.

THE STRUCTURAL PRACTICES PROPOSED WITH THIS PLAN ARE AS FOLLOWS:

A TEMPORARY SEDIMENT BARRIER CONSISTING OF A SYNTHETIC FILTER FABRIC STRETCHED ACROSS AND ATTACHED TO SUPPORTING POSTS AND ENTRENCHED.

STORM DRAIN INLET PROTECTION - 3.07

A SEDIMENT FILTER OR AN EXCAVATED IMPOUNDING AREA AROUND A STORM DRAIN DROP INLET OR CURB INLET.

PRESERVING AND REUSING THE SURFACE LAYER OF SOIL FROM AREAS TO BE GRADED.

TEMPORARY SEEDING - 3.31 I'HE ESTABLISHMENT OF A TEMPORARY VEGETATIVE COVER ON DISTURBED AREAS BY SEEDING WITH APPROPRIATE RAPIDLY GROWING ANNUAL PLANTS.

STABILIZING FINE-GRADED DISTURBED AREAS BY ESTABLISHING PERMANENT GRASS STANDS WITH SOD

APPLICATION OF PLANT RESIDUES OR OTHER SUITABLE MATERIALS TO THE SOIL SURFACE.

TREE PROTECTION - 3.38
PROTECTION OF DESIRABLE TREES FROM MECHANICAL AND OTHER INJURY DURING LAND DISTURBING AND CONSTRUCTION ACTIVITY.

<u>DUST CONTROL - 3.39</u> REDUCING SURFACE AND AIR MOVEMENT OF DUST DURING LAND DISTURBING, DEMOLITION, AND CONSTRUCTION ACTIVITIES. BY SPRAYING FROM A WATER TRUCK OR OTHER APPROVED METHOD.

EROSION AND SEDIMENT CONTROL NOTES (MINIMUM STANDARDS)

- 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 30 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 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. 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 TWENTY-FIVE 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.

STORM DRAIN

RUNOFF WATER

SEDIMENT

CONCRETE GUTTER -

GRAVEL CURB INLET SEDIMENT FILTER

SPECIFIC APPLICATION

WHERE PONDING IN FRONT OF THE STRUCTURE IS NOT LIKELY TO CAUSE INCONVENIENCE OR DAMAGE TO ADJACENT STRUCTURES AND UNPROTECTED

THIS METHOD OF INLET PROTECTION IS APPLICABLE AT CURB INLETS

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

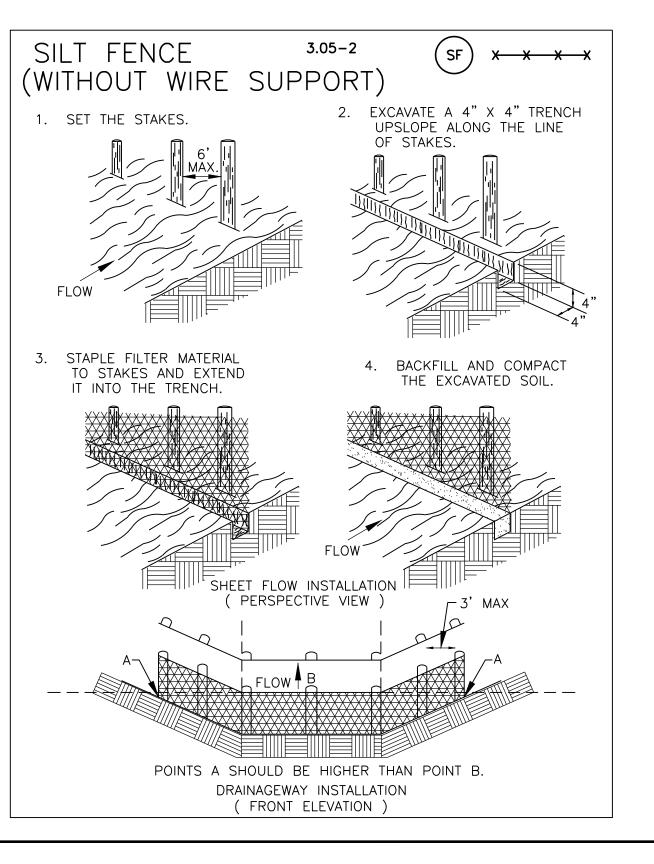
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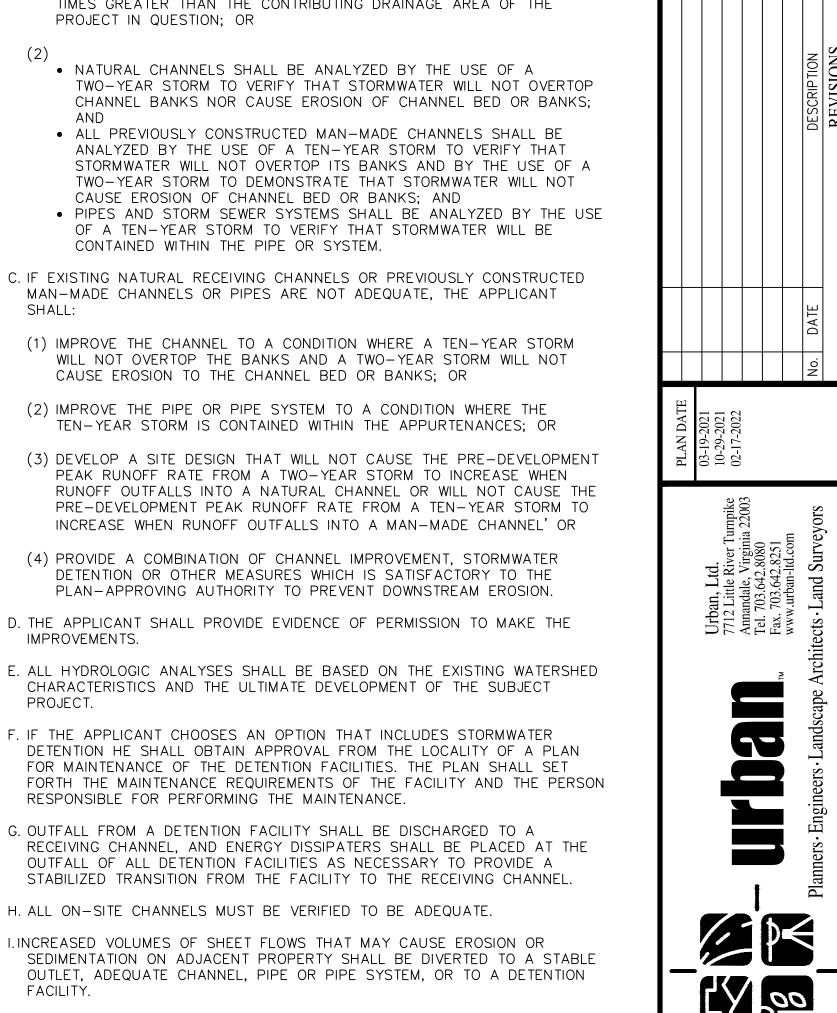
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CURB INLET

- 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
- 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 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 REGULATIONS 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 THESE REGULATIONS.
- F. APPLICABLE SAFETY REGULATIONS 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 LOCAL PROGRAM 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:
- 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 ONE HUNDRED TIMES GREATER THAN THE CONTRIBUTING DRAINAGE AREA OF THE PROJECT IN QUESTION; OR
- 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;
- ALL PREVIOUSLY CONSTRUCTED MAN-MADE CHANNELS SHALL BE ANALYZED BY THE USE OF A TEN-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
- PIPES AND STORM SEWER SYSTEMS SHALL BE ANALYZED BY THE USE OF A TEN-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 CHANNEL TO A CONDITION WHERE A TEN-YEAR STORM WILL NOT OVERTOP THE BANKS AND A TWO-YEAR STORM WILL NOT CAUSE EROSION TO THE CHANNEL BED OR BANKS; OR
- (2) IMPROVE THE PIPE OR PIPE SYSTEM TO A CONDITION WHERE THE TEN-YEAR STORM IS CONTAINED WITHIN THE APPURTENANCES; OR
- (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 TEN-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 PLAN-APPROVING 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 OF THE SUBJECT PROJECT.
- DETENTION HE SHALL OBTAIN APPROVAL FROM THE LOCALITY 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 DISSIPATERS 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
- J. IN APPLYING THESE STORMWATER RUNOFF CRITERIA, INDIVIDUAL JOTS 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.







AND SEDIMENT CONTROL NARRATIVE A
IENNA ROAD IMPROVEMENT
WINGO ROAD & KINGSLEY
TOWN OF VIENNA
TOWN OF VIENNA

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