EXPANSION OF THE W&OD TRAIL
NORTHERN VIRGINIA
REGIONAL PARK AUTHORITY

UPC# 113612, STATE PROJECT EN18-110-208
DRAFT 100% CONSTRUCTION PLANS
MARCH 2020

PROJECT VICINITY MAP
SCALE: 1" = 1,000'

J. KEITH SINCLAIR, JR.
Lic. No. 11195
10/30/2019
COMMONWEALTH OF VIRGINIA
PROFESSIONAL ENGINEER

STEVEN TORGERSON
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10/30/2019

JACK A. GOODE, II
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1/8/20

CITY OF FALLS CHURCH APPROVALS	
PUBLIC WORKS	
DIRECTOR SIGNATURE	DATE
DEVELOPMENT SERVICES	
DIRECTOR SIGNATURE	DATE

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MISS UTILITY

CALL "MISS UTILITY" AT 811 or 1-800-552-7001, 48 HOURS PRIOR TO THE START OF WORK. THE EXCAVATOR MUST NOTIFY ALL PUBLIC UTILITY COMPANIES WITH UNDER GROUND FACILITIES IN THE AREA OF PROPOSED EXCAVATION AND HAVE THOSE FACILITIES LOCATED BY THE UTILITY COMPANIES PRIOR TO COMMENCING EXCAVATION. THE EXCAVATOR IS RESPONSIBLE FOR COMPLIANCE WITH REQUIREMENTS OF THE TOWN OF BRIDGEWATER.

THIS PROJECT IS TO BE CONSTRUCTED IN ACCORDANCE WITH THE DEPARTMENTS 2016 ROAD AND BRIDGE SPECIFICATIONS, 2016 ROAD AND BRIDGE STANDARDS, 2009 MUTCD, 2011 VIRGINIA SUPPLEMENT TO THE MUTCD, 2011 WORK AREA PROTECTION MANUAL AND AS AMENDED BY CONTRACT PROVISIONS AND THE COMPLETE ELECTRONIC PDF VERSION OF THE PLAN ASSEMBLY.

X:\ROCKVILLE\18-0367 - NVRPA W-OD TRAIL EXPANSION\05-CAD\GI1.0-GI0-180367.DWG, 3/20/2020 11:18 AM, KFRITZE

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REGISTRATION STAMP

NOT FOR CONSTRUCTION

PROFESSIONAL CERTIFICATION
"I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED CERTIFIED LANDSCAPE ARCHITECT UNDER THE LAWS OF THE STATE OF VIRGINIA. LICENSE NO. 1542, EXPIRATION DATE 06/30/2021"

PROJECT TITLE
EXPANSION OF THE W&OD TRAIL
FALLS CHURCH, VA
UPC 113612

REVISIONS

MARK	DATE	DESCRIPTION

AMT FILE NO.	18-0367
DATE:	3/18/2020
SCALE:	N.T.S.
DESIGNED BY:	AMT
DRAWN BY:	AMT
CHECKED BY:	AMT

100% DESIGN

SHEET TITLE
COVER SHEET

SHEET
GI1.0

GENERAL CONSTRUCTION NOTES

1. THE CONTRACTOR SHALL COMPLY WITH ALL LOCAL, STATE AND FEDERAL REGULATIONS APPLICABLE TO CONSTRUCTION OF THIS PROJECT.
2. ALL AREAS DISTURBED OUTSIDE OF THE LIMITS OF DISTURBANCE SHOWN ON THE DRAWINGS SHALL BE RESTORED TO THEIR ORIGINAL CONDITIONS AS DIRECTED BY NOVA PARKS CONSTRUCTION MANAGER AT NO ADDITIONAL COST TO THE OWNER.
3. THE TRAIL PATH IS TO BE GENERALLY CONSTRUCTED AT GRADE. GRADING WILL BE REQUIRED IN THE FOLLOWING AREAS:
   - 3.1. WHERE EXISTING ROADSIDE AND TRAIL DITCHES ARE SILTED AND/OR OBSTRUCTED, THEY SHALL BE TRIMMED TO MATCH EXISTING CROSS-SECTION WITH THE SIDE SLOPES NOT STEEPER THAN 3:1 OR DITCH SECTION
   - 3.2. WHEN REQUIRED, EXCAVATE DITCHES, REMOVE ALL UNDERBRUSH, VEGETATION AND REFUSE TO CROSS-SECTIONS SHOWN ON THE CONTRACT DRAWINGS AND MAINTAIN POSITIVE DRAINAGE.
4. LOCATION OF EXISTING UTILITIES AND STRUCTURES SHOWN ON THE DRAWINGS ARE IN ACCORDANCE WITH THE BEST AVAILABLE INFORMATION. IT SHALL BE THE CONTRACTORS RESPONSIBILITY TO VERIFY THEIR LOCATIONS AND PROVIDE FOR THEIR PROTECTION.
5. ALL EXCESS EXCAVATED MATERIAL THAT IS NOT REUSED ON THE TRAIL SHALL BE REMOVED, HAULED AND LEGALLY DISPOSED OFF-SITE.
6. ALL TRASH RESULTING FROM CONSTRUCTION IS TO BE PICKED UP WITHIN THE LIMITS OF DISTURBANCE AND DISPOSED OFF-SITE BY THE CONTRACTOR.
7. CONTRACTOR SHALL NOTIFY "MISS UTILITY" (VA811) AT LEAST 72 HOURS PRIOR TO ANY CONSTRUCTION.
8. ALL SEDIMENT AND EROSION CONTROL MEASURES AND DEVICES INDICATED ON THE DRAWINGS SHALL BE PROVIDED, INSTALLED AND MAINTAINED DURING ALL PHASES OF CONSTRUCTION (SEE DRAWING CE1.0-CE1.11 FOR "SEDIMENT AND EROSION CONTROL").
9. CONTRACTOR TO PROVIDE TRAIL STAKEOUT FOR APPROVAL PRIOR TO CONSTRUCTION.
10. ANY REFERENCE MADE TO THE VIRGINIA DEPARTMENT OF TRANSPORTATION ROAD AND BRIDGE SPECIFICATION REFER TO THE LATEST ADOPTED EDITION AND REVISIONS.
11. UNLESS OTHERWISE NOTED, SPECIFICATIONS WILL BE STANDARD VIRGINIA DEPARTMENT OF TRANSPORTATION ROAD AND BRIDGE SPECIFICATIONS.
12. ALL ROCK, SOIL, AND OTHER MATERIAL THAT OBSTRUCTS THE TRAIL AND IS NOT USED SHALL BE COMPLETELY REMOVED AND DISPOSED OF IN APPROVED AREAS. THE CONTRACTOR IS TO REMOVE ANY ADDITIONAL MATERIAL THAT MAY HAVE ACCUMULATED SINCE THEN AND AT THE COMPLETION OF THE PROJECT. LEAVE THE TRAIL COMPLETELY CLEAR AND ACCESSIBLE.
13. HANDLING, TRANSPORTATION AND DISPOSAL OF THE WASTE MATERIALS CONTAINING HAZARDEOUS SUBSTANCES SHALL BE DONE IN STRICT ACCORDANCE WITH THE APPLICABLE ENVIRONMENTAL REGULATIONS.
14. ANY TREES THAT ARE LOCATED OUTSIDE THE LOD AND HAVE BRANCHES EXTENDING INTO THE LOD WILL NEED TO BE TRIMMED.
15. CONSTRUCTION EQUIPMENT AND DEBRIS MAY NOT BE LEFT ON THE EXISTING TRAIL.
16. THE W&OD TRAIL MUST REMAIN OPEN FOR PEDESTRIAN AND BICYCLE ACCESS EXCEPT WHERE TRAFFIC IS REROUTED.
17. THE SURVEY FOR THE TRAIL ALIGNMENT WAS PROVIDED BY CAP LAND SURVEYING, PLLC AND PROVIDED TO AMT BY NOVA PARKS. SUPPLEMENTAL SURVEY WAS PROVIDED BY AMT.
18. CONTRACTOR SHALL VERIFY ALL GRADES, LOCATIONS, AND SIZES BETWEEN STA 0+41 AND 5+00 AS EXISTING CONDITIONS WERE BASED ON DESIGN DRAWINGS AND NOT AS-BUILTS.
19. W&OD TRAIL IS ZONED R1-A, LOW DENSITY RESIDENTIAL.

DEMOLITION NOTES

1. LOCATION OF ALL UTILITIES SHOWN ARE APPROXIMATE. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO FIELD VERIFY AND DETERMINE THE EXACT LOCATION AND DEPTH OF ALL UTILITIES WITHIN THE LIMIT OF DISTURBANCE PRIOR TO COMMENCING WORK. REPORT ANY DISCREPANCY TO THE NORTHERN VIRGINIA REGIONAL PARK AUTHORITY MANAGER. THE CONTRACTOR SHALL CONTACT MISS UTILITY AT 811 A MINIMUM OF 72 HOURS PRIOR TO ANY EXCAVATION TO DETERMINE THE EXACT LOCATION OF ALL EXISTING UTILITIES AND SHALL BE FULLY RESPONSIBLE FOR ANY AND ALL DAMAGES WHICH MAY BE OCCASIONED BY THE CONTRACTOR'S FAILURE TO EXACTLY LOCATE AND PRESERVE ANY AND ALL EXISTING UTILITIES.
2. THE DEMOLITION PLAN IS A GENERAL GUIDE OF WHAT ITEMS NEED TO DEMOLISHED. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO IDENTIFY ALL ITEMS THAT REQUIRED DEMOLITION TO COMPLETE THE PROPOSED CONSTRUCTION.NO DEMOLITION CAN BEGIN UNTIL ALL EROSION AND SEDIMENT CONTROLS ARE IN PLACE, AND IS APPROVED BY AN EROSION AND SEDIMENT CONTROL INSPECTOR OF THE CLIENT.
3. ALL WORK SHALL BE PERFORMED IN STRICT COMPLIANCE WITH THE MOST CURRENT APPLICABLE FEDERAL, STATE , AND LOCAL LAWS AND REGULATIONS, INCLUDING BUT NOT LIMITED, TO ENVIRONMENTAL PROTECTION AGENCY (EPA), OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION (OSHA), VIRGINIA OCCUPATIONAL AND SAFETY HELATH COMPLIANCE PROGRAM (VOSH ENFORCEMENT), VIRGINIA OVERHEAD HIGH VOLTAGE LINE SAFETY ACT, NATIONAL EMISSIONS STANDARDS FOR HAZARDOUS AIR POLLUTANTS (NESHAPS), AND NATIONAL INSTITUTE OF OCCUPATIONAL SAFETY AND HEALTH (NIOSH).
4. THE AREA WITHIN THE LIMITS OF DISTURBANCE (LOD) SHALL BE CLEARED AND GRUBBED. CLEARING IS THE REMOVAL AND DISPOSAL OF TREES, FALLEN TIMBER AND ROTTEN WOOD, BRUSH, SHRUBS, VEGETATION, RUBBISH, FENCES, AND STRUCTURES NOT SPECIFIED IN THE CONTRACT DOCUMENTS FOR REMOVAL AND DISPOSAL. UNLESS OTHERWISE SPECIFIED, CLEARING OUTSIDE THE LOD INCLUDES THE REMOVAL OF RUBBISH ONLY. GRUBBING BEING AN EARTH-DISTURBING ACTIVITY, WHICH INCLUDES THE REMOVING FROM THE GROUND AND DISPOSING OF ALL STUMPS, ROOTS AND STUBS, BRUSH, AND DEBRIS.
5. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE COORDINATION OF WORK WITH REPRESENTATIVE UTILITY COMPANIES AND FOR THE IMPLEMENTATION OF REQUIRED UTILITY-RELATED WORK.
6. THE CONTRACTOR SHALL IMMEDIATELY NOTIFY THE ENGINEER UPON ENCOUNTERING ANY HAZARDOUS MATERIALS DURING DEMOLITION AND/OR CONSTRUCTION ACTIVITIES. THE CONTRACTOR SHALL DOCUMENT SAME TO THE NOVA PARKS AND OBTAIN DIRECTION AS TO THE APPROPRIATE ACTION(S) TO BE TAKEN.
7. CONTRACTOR SHALL COORDINATE WITH THE NORTHERN VIRGINIA REGIONAL PARK AUTHORITY MANAGER TO IDENTIFY ANY NECESSARY STAGING/STORAGE AREAS. PROPOSED STAGING AND STORAGE AREAS SHALL BE REVIEWED AND APPROVED BY THE NOVA PARKS CONSTRUCTION MANAGER, AND THE LIMITS OF WORK WILL BE ADJUSTED ACCORDINGLY.
8. ANY STOCKPILING, REGARDLESS OF LOCATION ON SITE, SHALL BE STABILIZED IMMEDIATELY AFTER ITS ESTABLISHMENT AND FOR THE DURATION OF THE PROJECT. STOCKPILES SHALL BE CONTAINED BY STRAW BALES OR EROSION CONTROL FENCING AND COVERED WITH PLASTIC OR CANVAS AT THE END OF EACH WORK DAY FOR THE DURATION OF THE PROJECT
9. DISCONNECTION OF SERVICES AND SYSTEMS SUPPLYING UTILITIES TO BE ABANDONED OR DEMOLISHED SHALL BE COMPLETED PRIOR TO OTHER SITE DEMOLITION IN FULL COMPLIANCE WITH APPLICABLE CODES, REGULATIONS, AND THE REQUIREMENTS OF UTILITY PURVEYORS HAVING JURISDICTION. THE CONTRACTOR SHALL BE RESPONSIBLE FOR COORDINATION WITH THE UTILITY PURVEYORS, PAYMENT OF ASSOCIATED FEES AND PROCUREMENT OF ALL NECESSARY PERMITS.
10. PRIOR TO REMOVAL OF MATERIALS OVER EXISTING UTILITY SYSTEMS, THE CONTRACTOR SHALL DOCUMENT EXISTING CONDITIONS AND, IF AT VARIANCE WITH CONDITIONS AS REPRESENTED ON THE PLANS, NOTIFY THE CITY AND OBTAIN DIRECTION(S) TO THE APPROPRIATE ACTION(S) TO BE TAKEN.
11. PRIOR TO COMMENCING NEW WORK, THE CONTRACTOR SHALL PROTECT FROM DAMAGE ALL EXISTING ADJACENT AREAS. ALL ADJACENT AREAS DAMAGED DURING DEMOLITION AND/OR CONSTRUCTION ACTIVITIES SHALL BE RESTORED TO ORIGINAL OR BETTER CONDITION AT NO ADDITIONAL COST TO THE CLIENT.
12. THE CONTRACTOR SHALL BACKFILL EXCAVATED AREAS WITH APPROVED MATERIALS AS PER THE REQUIREMENTS OF OF THE SPECIFICATIONS.
13. THE CONTRACTOR SHALL PROTECT AND PREVENT DAMAGE TO EXISTING ON-SITE UTILITY DISTRIBUTION FACILITIES. ACTIVE UTILITY DISTRIBUTION FACILITIES ENCOUNTERED DURING DEMOLITION AND/OR CONSTRUCTION ACTIVITIES SHALL BE SHUT OFF AT THE SERVICE MAIN.
14. DURING DEMOLITION AND/OR CONSTRUCTION ACTIVITIES, THE CONTRACTOR SHALL IMMEDIATELY NOTIFY THE NOVA PARKS PROJECT MANAGER UPON ENCOUNTERING ANY EXISTING UTILITIES AND/OR UTILITY SYSTEM STRUCTURES NOT SHOWN ON THESE PLANS. THE CONTRACTOR SHALL DOCUMENT SAME TO THE OWNER'S REPRESENTATIVE AND OBTAIN DIRECTION AS TO THE APPROPRIATE ACTION(S) TO BE TAKEN.
15. CONTRACTOR IS RESPONSIBLE FOR REMOVING AND DISPOSING FOR ALL ITEMS AS INDICATED ON THE PLANS AND SPECIFICATIONS
16. ALL MATERIAL FROM DEMOLITION NOT IDENTIFIED FOR REUSE SHALL BE REMOVED FROM THE SITE AND DISPOSED OF IN ACCORDANCE WITH APPROPRIATE REGULATIONS.
17. ALL PAVEMENT REMOVED SHALL BE DONE SUCH THAT REMAINING PAVEMENT IS LEFT WITH CLEAN STRAIGHT EDGE. CONCRETE PAVEMENT/ CURBING SHALL BE REMOVED TO THE NEAREST JOINT.
18. EXISTING PAVEMENT SHALL BE SAW CUT WHEN NEXT TO REMAINING PAVEMENT BEFORE REMOVAL. ALL SAW CUTS SHALL BE STRAIGHT, EVEN CUTS; JAGGED CUTS WILL NOT BE PERMITTED.
19. ASPHALT REMOVAL: SHALL INCLUDE SURFACE, BASE AND SUBBASE MATERIALS.
20. CONTRACTOR SHALL REMOVE AND DISPOSE OF ANY SITE FURNISHINGS WITHIN THE LIMITS OF DISTURBANCE NOT REMOVED FROM SITE PRIOR TO COMMENCEMENT OF CONSTRUCTION (IE SIGNAGE, BENCHES, TRASH RECEPTACLES, ETC).
21. CONTRACTOR SHALL PROVIDE EXISTING DAMAGE PHOTOS PRIOR TO MOBILIZING OR PERFORMING ANY WORK. LOCATIONS OF PICTURES TO BE RECORDED ON SITE PLAN.
22. TO PREVENT DAMAGES OUTSIDE THE LIMITS OF DISTURBANCE, NO PARK AREAS OUTSIDE THE LOD SHALL BE USED FOR STAGING OR STORAGE.
23. UPON COMPLETION OF THE PROJECT, ALL EXCESS SOIL, SAND, MULCH, TEMPORARY FENCING, EROSION CONTROL MEASURES, STABILIZATION MATERIALS, AND OTHER DEBRIS SHALL BE REMOVED FROM THE SITE AND DISPOSED OF LEGALLY. ALL PAVED AREAS, WALLS, ETC. SHALL BE THOROUGHLY WASHED AND CLEANED UPON COMPLETION OF THE PROJECT.
24. REFER TO SITE CLEARING, DEMOLITION, & REMOVALS SPECIFICATION FOR ADDITIONAL REQUIREMENTS.

LAYOUT NOTES:

1. ON-SITE VERIFICATION OF ALL DIMENSIONS AND CONDITIONS SHALL BE THE RESPONSIBILITY OF THE GENERAL CONTRACTOR. NOTED DIMENSIONS TAKE PRECEDENCE OVER SCALE, LARGER SCALE OVER SMALLER SCALE, ADDENDA AND CLARIFICATIONS OVER PREVIOUS DOCUMENTS.
2. CONTRACTOR TO LAY OUT HARDSCAPE ELEMENTS AND VERIFY LAYOUT WITH NORTHERN VIRGINIA REGIONAL PARK AUTHORITY MANAGER PRIOR TO CONSTRUCTION.
3. ANY DISCREPANCIES OR CONFLICTS WITH EXISTING CONDITIONS OR OTHER DRAWINGS SHALL BE REPORTED TO THE PROJECT OFFICER IMMEDIATELY FOR PROPER CLARIFICATION OR ADJUSTMENT.
4. WHERE DIMENSIONS ARE CALLED AS "EQUAL," SPACE REFERENCED ITEMS EQUALLY, MEASURED TO THEIR CENTER LINES.
5. MEASUREMENTS ARE TO FACE OF BUILDING, WALL OR FIXED SITE IMPROVEMENT. DIMENSIONS TO CENTER LINES IS AS INDICATED.
6. INSTALL INTERSECTING ELEMENTS AT 90° ANGLES TO EACH OTHER UNLESS OTHERWISE NOTED.
7. PROVIDE EXPANSION JOINTS WHERE CONCRETE FLATWORK MEETS VERTICAL STRUCTURES SUCH AS WALLS, CURBS, STEPS AND BUILDING ELEMENTS.
8. NEW WORK SHALL MEET AND MATCH ALIGNMENT OF EXISTING FEATURES AND FINISHED GRADES AT LIMITS OF WORK AND AT EXISTING PAVEMENT OR OTHER FACILITIES TO REMAIN.
9. CONTRACTOR SHALL VERIFY THE CORRECT LOCATION OF ALL UTILITIES AND EXISTING TREES TO REMAIN IN THE FIELD PRIOR TO CONSTRUCTION.
10. CONTRACTOR SHALL STAKE ALIGNMENT FOR ALL CURBS, SIGNS, FURNISHINGS, BENCHES, TABLES, TRASH RECEPTACLES, RECYCLING RECEPTACLES, LIGHT POLES, STORMWATER MANAGEMENT FACILITIES, MANHOLES AND UTILITY STATIONS FOR NORTHERN VIRGINIA REGIONAL PARK AUTHORITY MANAGER'S APPROVAL PRIOR TO INSTALLATION.
11. FOR LAYOUT, ALL ANGLES ARE 90° UNLESS OTHERWISE NOTED. WRITTEN DIMENSIONS SHALL PREVAIL. DO NOT SCALE FROM THE PLAN.
12. CONTRACTOR SHALL STAKE-OUT THE LOCATIONS OF BENCHES, BENCH PADS, LIGHT POLES, CHESS TABLES, AND STEP STONES FOR REVIEW AND APPROVAL BY NORTHERN VIRGINIA REGIONAL PARK AUTHORITY CONSTRUCTION MANAGER PRIOR TO CONTRACTOR INSTALLATION.

GRADING AND ADA COMPLIANCE NOTES:

1. THE CONTRACTOR IS RESPONSIBLE FOR ENSURING THAT ALL ELEMENTS ARE CONSTRUCTED IN ACCORDANCE WITH THE DESIGN DOCUMENTS AND CONTRACT CONDITIONS INCLUDING THE 2010 ADA STANDARDS FOR ACCESSIBLE DESIGN (ADA) AND THE VIRGINIA ACCESSIBILITY CODE AND ANY UPDATES. IF THE CONTRACTOR OBSERVES THAT PORTIONS OF THE PROJECT ARE NON-COMPLIANT WITH THE ADA, HE SHALL NOTIFY NORTHERN VIRGINIA REGIONAL PARK AUTHORITY MANAGER SO THAT A FIELD ADJUSTMENT CAN BE MADE TO ENSURE COMPLIANCE. GRADE TOLERANCES SHALL BE MEASURED WITH A 2 FOOT DIGITAL LEVEL.
2. VERIFY ALL EXISTING AND PROPOSED GRADES PRIOR TO FINAL CONSTRUCTION. CONTRACTOR SHALL STAKE OUT GRADES IN THE FIELD FOR REVIEW BY NORTHERN VIRGINIA REGIONAL PARK AUTHORITY MANAGER PRIOR TO FINAL CONSTRUCTION.
3. PROPOSED GRADING SHALL MEET EXISTING GRADE UNIFORMLY TO ENSURE A SMOOTH TRANSITION. NOTIFY NORTHERN VIRGINIA REGIONAL PARK AUTHORITY MANAGER IMMEDIATELY IF THERE ARE ANY EDGE CONDITIONS THAT CREATE AREAS WITHOUT POSITIVE DRAINAGE.
4. ALL LONGITUDINAL SLOPES ALONG THE TRAIL SHALL BE NO STEEPER THAN 4.8% THE CROSS SLOPE SHALL BE MINIMUM 1% AND MAXIMUM 1.8% OR AS NOTED ON THE DRAWINGS. ALL LANDING AND TRANSITION AREAS SHALL BE LESS THAN 1.8% IN ALL DIRECTIONS. THESE LIMITS PROVIDE A 0.2% MARGIN FROM THE D.O.J. ADA REQUIREMENTS TO ALLOW FOR CONSTRUCTION TOLERANCES.
5. ANY HARDSCAPE SURFACE AREAS THAT ARE BUILT WITHOUT COMPLYING WITH THE ABOVE CODE MUST BE CORRECTED BY CONTRACTOR AT NO ADDITIONAL EXPENSE.
6. THE MAXIMUM VERTICAL CHANGE BETWEEN THE FINISH GRADES OF ADJACENT HARDSCAPE SURFACES IS ¼". THE MAXIMUM HORIZONTAL GAP BETWEEN THE EDGES OF ADJACENT HARDSCAPE SURFACES IS ⅜".
7. GRADING IS NOT COMPLETE UNTIL CONTRACTOR ACQUIRES APPROVAL FROM THE NORTHERN VIRGINIA REGIONAL PARK AUTHORITY MANAGER. CONTRACTOR IS RESPONSIBLE FOR COORDINATING WITH THE CONSTRUCTION MANAGER.
8. SEE GRADING PLANS FOR SPOT ELEVATIONS AND NOTES.
9. ADA COMPLIANCE NOTE: THE CONTRACTOR IS RESPONSIBLE FOR ENSURING THAT ALL ELEMENTS ARE CONSTRUCTED IN ACCORDANCE WITH THE LATEST VERSION OF ADA STANDARDS FOR ACCESSIBLE DESIGN, BY THE DEPARTMENT OF JUSTICE. SHOULD ANY QUESTIONS ARISE DURING CONSTRUCTION, INSTALLATION, OR IF ANY CLARIFICATIONS ARE NEEDED, THE CONTRACTOR SHALL CONTACT THE NORTHERN VIRGINIA REGIONAL PARK AUTHORITY CONSTRUCTION MANAGER.

HORIZONTAL CONTROL STANDARDS	
DESIGN SPEED (MPH)	18
MINIMUM RADIUS (FT)	50
DATA FROM "GUIDE FOR THE DEVELOPMENT OF BICYCLE FACILITIES" FROM AASHTO (2012, FOURTH EDITION)	

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COMMONWEALTH OF VIRGINIA
STEVEN TORGERSON
Cert. No. 0406001542
01/05/2020
LANDSCAPE ARCHITECT

REGISTRATION STAMP

NOT FOR CONSTRUCTION

PROFESSIONAL CERTIFICATION
"I, HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED CERTIFIED LANDSCAPE ARCHITECT UNDER THE LAWS OF THE STATE OF VIRGINIA. LICENSE NO. 1542, EXPIRATION DATE 06/30/2021."

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FALLS CHURCH, VA
UPC 113612

REVISIONS

MARK	DATE	DESCRIPTION

AMT FILE NO.	18-0367
DATE:	3/2020
SCALE:	N.T.S.
DESIGNED BY:	AMT
DRAWN BY:	AMT
CHECKED BY:	AMT

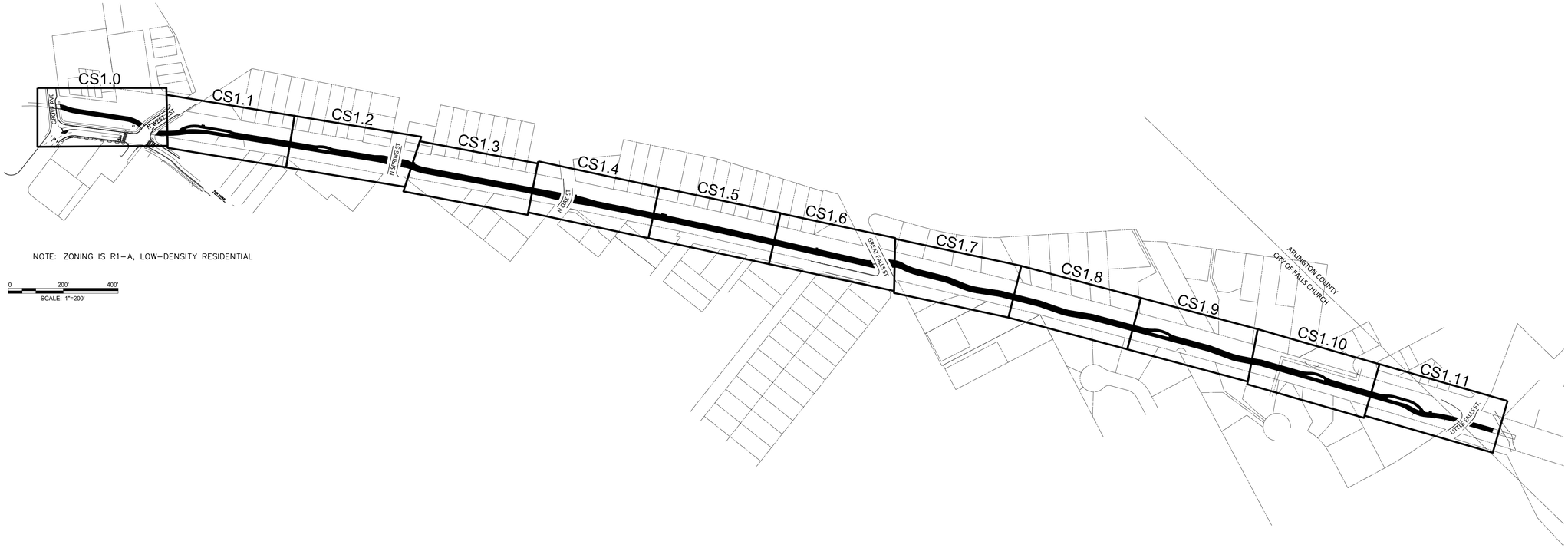
100% DESIGN

SHEET TITLE

PROJECT NOTES

SHEET

GI1.1



NOTE: ZONING IS R1-A, LOW-DENSITY RESIDENTIAL

0 200' 400'
SCALE: 1"=200'

AMT
A. MORTON THOMAS AND ASSOCIATES, INC.
CONSULTING ENGINEERS
800 KING FARM BLVD, FOURTH FLOOR ROCKVILLE, MD 20850
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EMAIL: AMT1@AMTENGINEERING.COM

COMMONWEALTH OF VIRGINIA
STEVEN TORGERSON
Cert. No. 0406001542
01/05/2020
LANDSCAPE ARCHITECT

REGISTRATION STAMP

NOT FOR CONSTRUCTION

PROFESSIONAL CERTIFICATION

"I, HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED CERTIFIED LANDSCAPE ARCHITECT UNDER THE LAWS OF THE STATE OF VIRGINIA. LICENSE NO. 1542 , EXPIRATION DATE 06/30/2021."

PROJECT TITLE

EXPANSION OF THE W&OD TRAIL

FALLS CHURCH, VA
UPC 113612

REVISIONS

MARK	DATE	DESCRIPTION

AMT FILE NO.	18-0367
DATE:	3/2020
SCALE:	1" = 200'
DESIGNED BY:	AMT
DRAWN BY:	AMT
CHECKED BY:	AMT

100% DESIGN

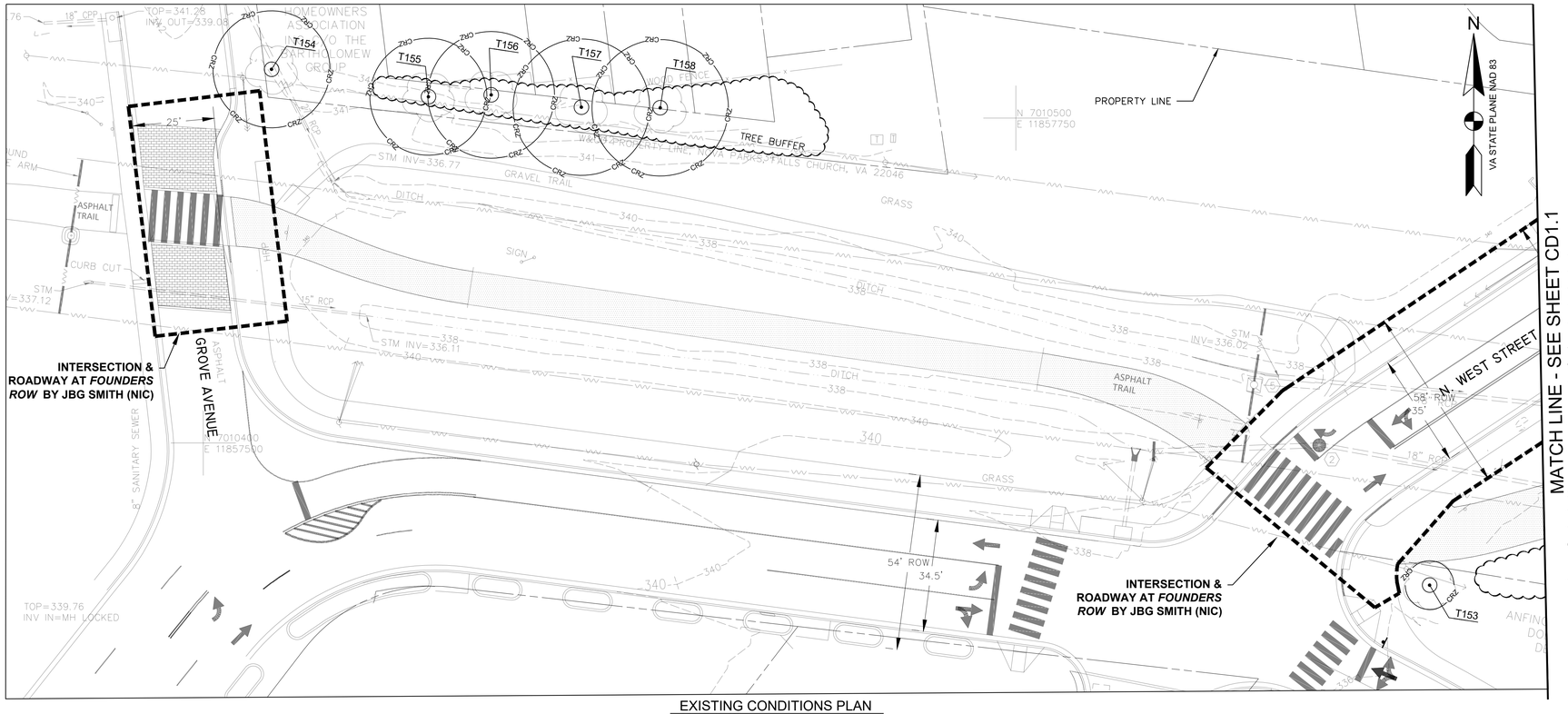
SHEET TITLE

KEY PLAN

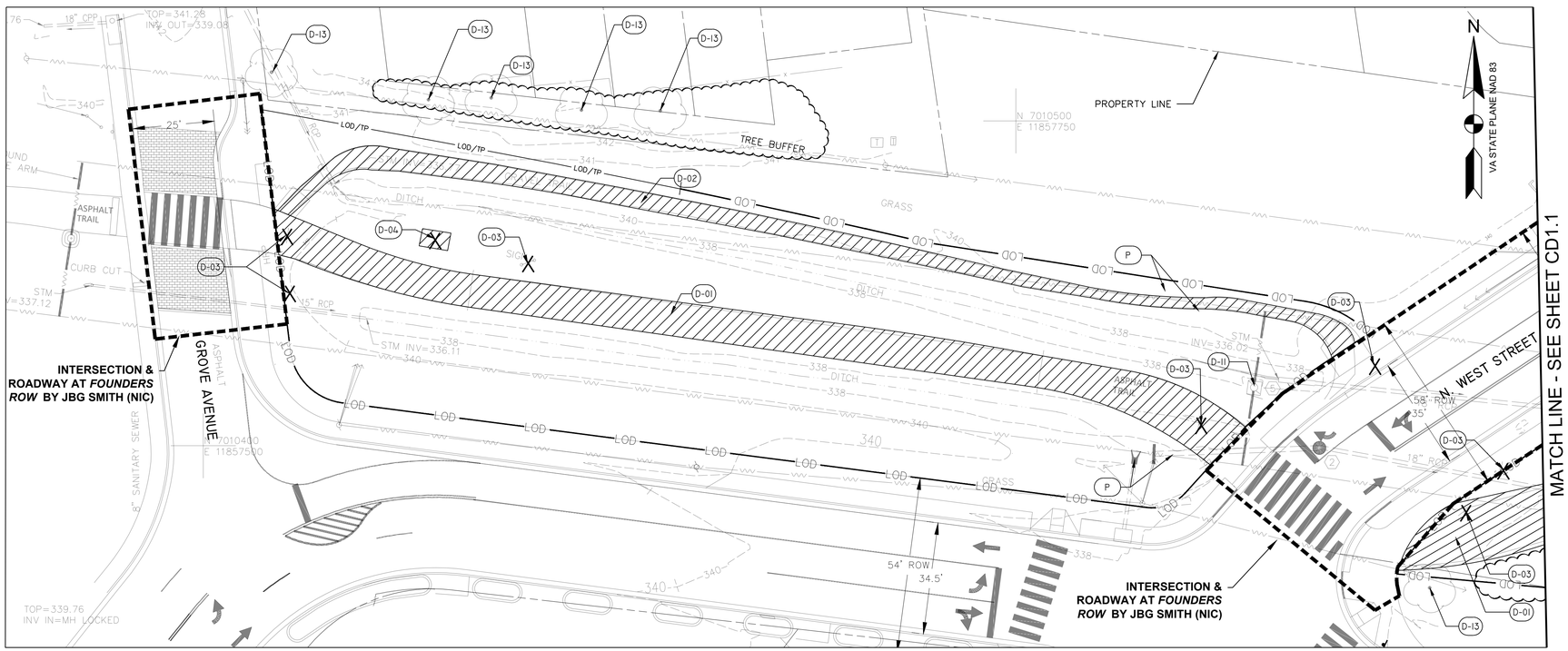
SHEET

GI1.2

03 OF 108



EXISTING CONDITIONS PLAN
SCALE: 1"=20'



DEMOLITION PLAN
SCALE: 1"=20'

LEGEND

CHH	COMMUNICATION HAND-HOLE
EMH	ELECTRICAL MANHOLE
EB	ELECTRICAL BOX
T	ELECTRICAL TRANSFORMER
BN	BENCH
ICV	IRRIGATION CONTROL VALVE
SMH	SANITARY MANHOLE
STM	STORM STRUCTURE/MANHOLE
	SIGN
	WATER VALVE
	WATER METER
CONC	CONCRETE
CSW	CONCRETE SIDEWALK
	BENCH
	TREE
	SHRUB LINE
	PROPERTY LINE
LOD	LIMIT OF DISTRUBANCE
CRZ	CRITICAL ROOT ZONE
TP	TREE PROTECTION FENCING
LOD/TP	TREE PROTECTION FENCING AT LIMIT OF DISTRUBANCE
RP	ROOT PRUNING
RPA	RESOURCE PROTECTION AREA
299	TOPOGRAPHY
E	PAINTED EVIDENCE OF UNDERGROUND ELECTRIC UTILITY
T	PAINTED EVIDENCE OF UNDERGROUND COMMUNICATION UTILITY
W	PAINTED EVIDENCE OF UNDERGROUND WATER UTILITY
	GUY WIRE
	EXISTING UNDERGROUND PIPE
	FENCE
	OVERHEAD WIRE
	ELECTRICAL TOWER
	UTILITY POLE
	SANITARY SEWER LINE
	SANITARY SEWER MANHOLE
CBPED	CABLE PEDESTAL
TMH	TELEPHONE MANHOLE
HRP	HANDICAP RAMP
CPP	CORRUGATED PLASTIC PIPE
	GRID TICK

DEMOLITION SCHEDULE

SYMBOL	DESCRIPTION
D-01	REMOVE AND DISPOSE OF ASPHALT TRAIL AND SUBBASE
D-02	REMOVE AND DISPOSE OF GRAVEL PATH
D-03	REMOVE AND DISPOSE OF SIGNAGE AND FOOTER
D-04	REMOVE AND DISPOSE OF BENCH AND FOOTER
D-05	REMOVE AND SALVAGE EXERCISE EQUIPMENT AND ASSOCIATED PAVING AND FOOTERS
D-06	REMOVE AND DISPOSE OF EXISTING PAVEMENT AND SUBBASE
D-07	REMOVE AND DISPOSE OF WOOD BORDER
D-08	REMOVE AND DISPOSE OF TRASH RECEPTACLE
D-09	REMOVE AND DISPOSE OF RETAINING WALL AND FOOTER
D-10	REMOVE AND DISPOSE OF SHELTER AND FOOTER
D-11	PROTECT EXISTING ELECTRICAL TOWER
D-12	AT&T HANDHOLD TO BE ADJUSTED BY AT&T COORDINATE WITH AT&T
D-13	PROTECT TREE TO REMAIN
D-14	REMOVE AND DISPOSE OF TREE/SHRUB AND GRIND STUMP
D-15	PRESERVE STRUCTURE BASE AND REMOVE/ MODIFY TOP
D-17	REMOVE, PROTECT, REINSTALL MEMORIAL PER NOVA PARKS
D-18	REMOVE AND DISPOSE OF GUY WIRES AND LIGHT
D-19	REMOVE AND DISPOSE OF GARDEN
X	ITEM TO BE DEMOLISHED
	AREA TO BE DEMOLISHED
	AREA TO BE DEMOLISHED BY HAND ONLY
P	ITEM TO BE PROTECTED / PRESERVED DO NOT DISTURB
S	ITEM TO BE SALVAGED AND REINSTALLED
TP-1	TEST PIT LOCATION
B-11	BORING TEST LOCATION
IT-21	INFILTRATION TEST LOCATION

*FOR DEMOLITION NOTES REFER TO PROJECT NOTES GI1.1

*FOR TREE TABLE REFER TO CD5.0

*CONTRACTOR MUST VERIFY ALL GRADES, LOCATIONS, AND SIZES BETWEEN STA 0+41 – 5+00 AS EXISTING CONDITIONS WERE BASED ON DESIGN DRAWINGS AND NOT AS–BUILTS.

0 10' 20' 40'
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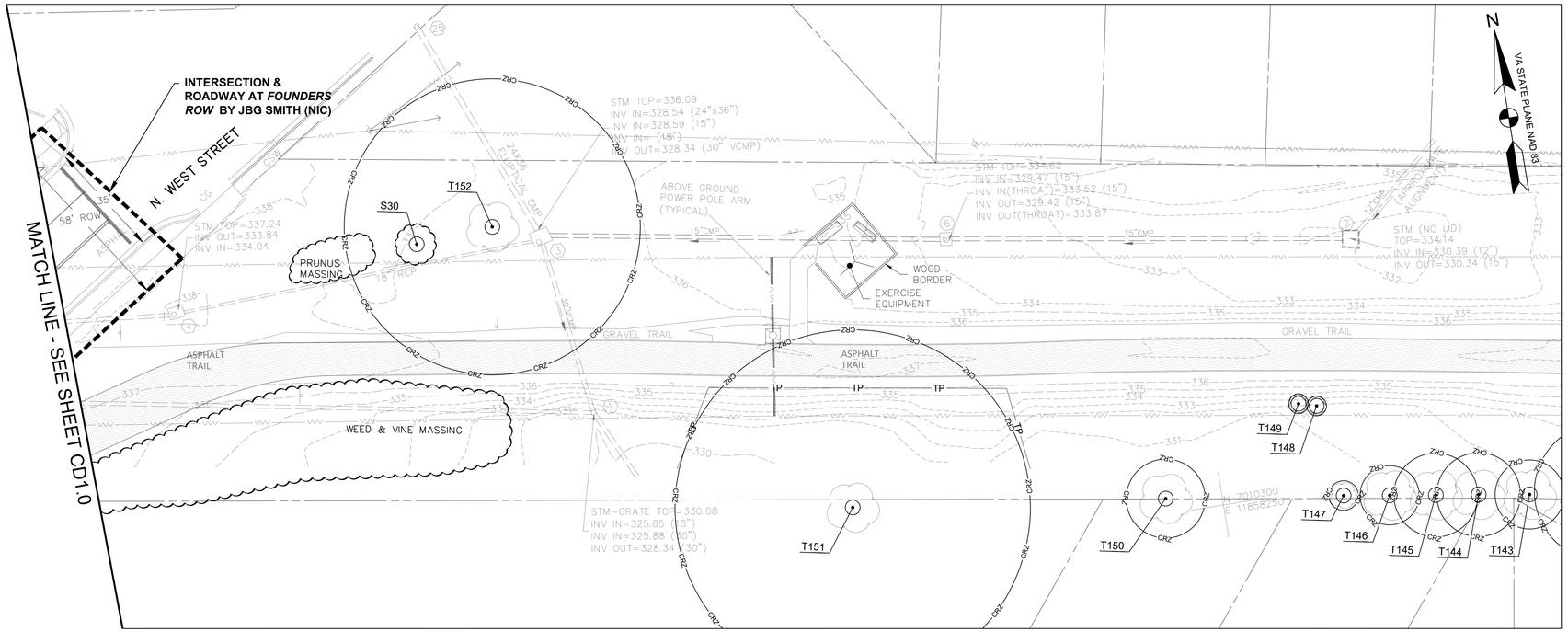
SHEET TITLE
EXISTING CONDITIONS & DEMOLITION PLAN

SHEET
CD1.0



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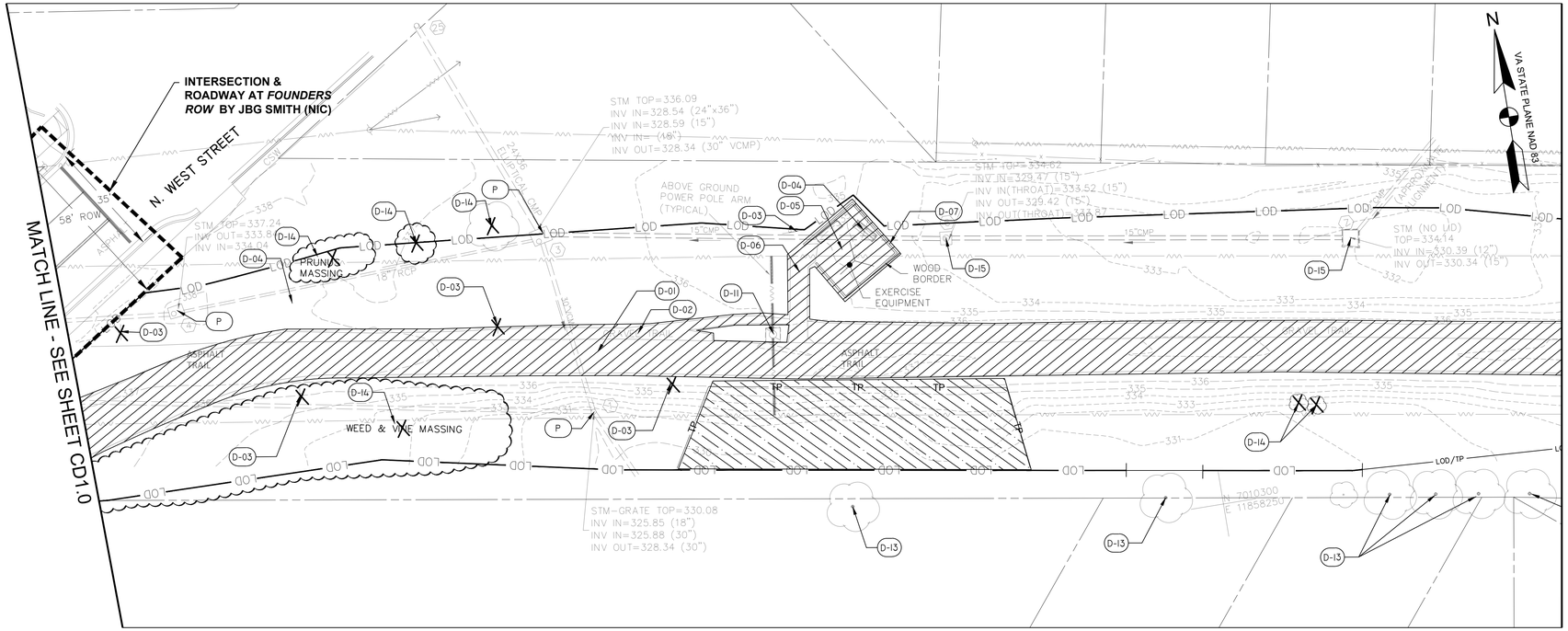

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SHEET TITLE
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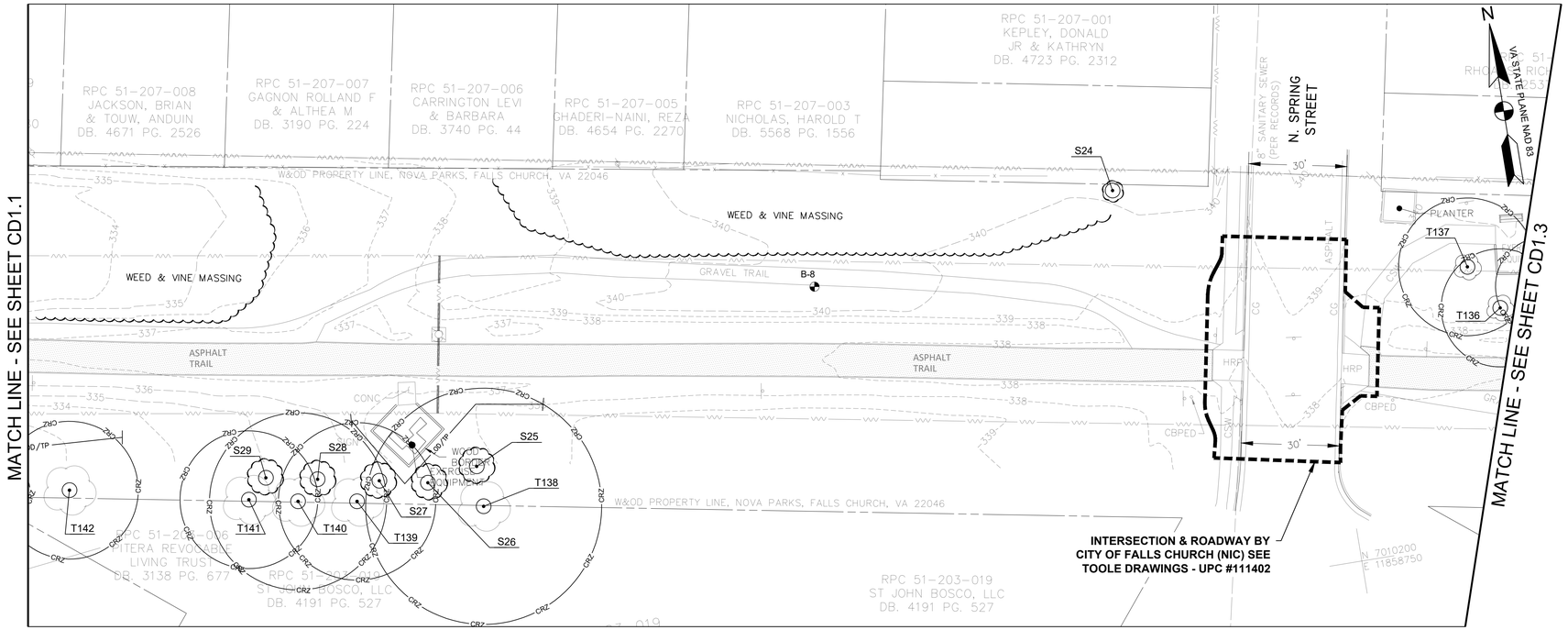
CD1.1



EXISTING CONDITIONS PLAN
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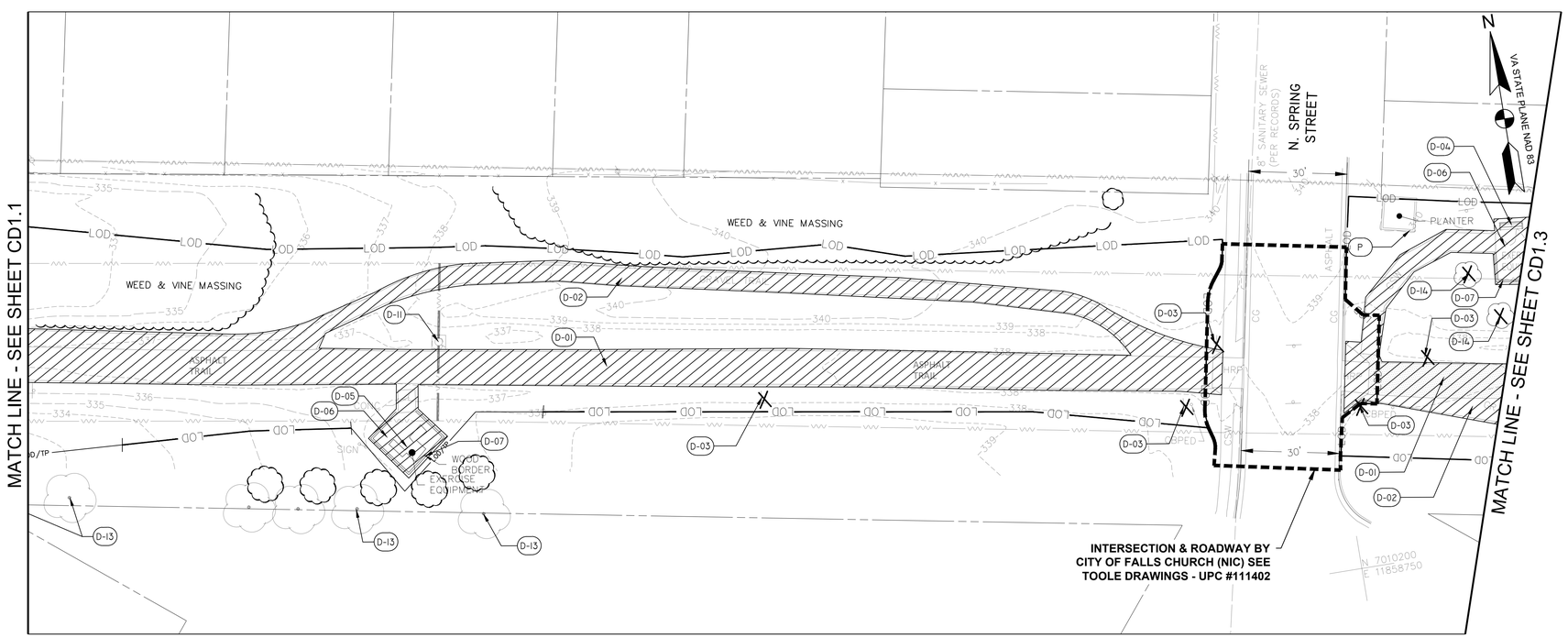

DEMOLITION PLAN
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SHEET TITLE
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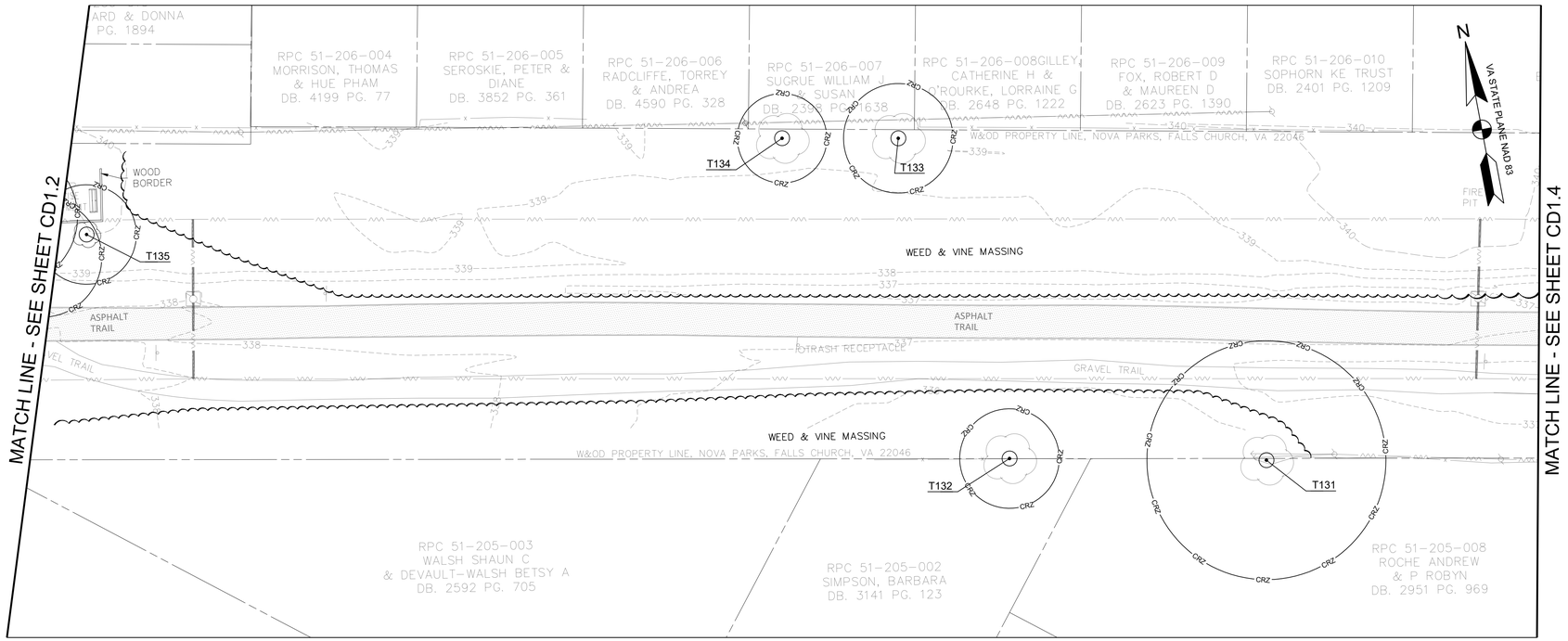

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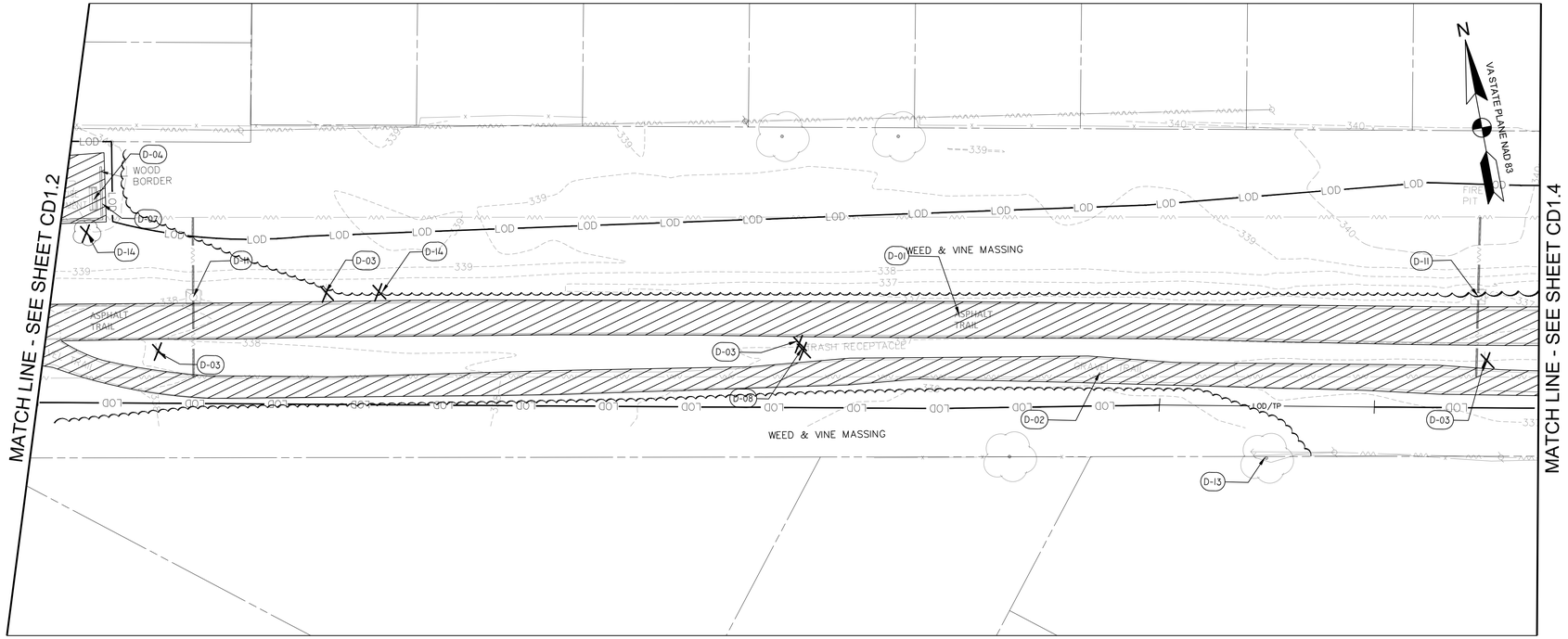

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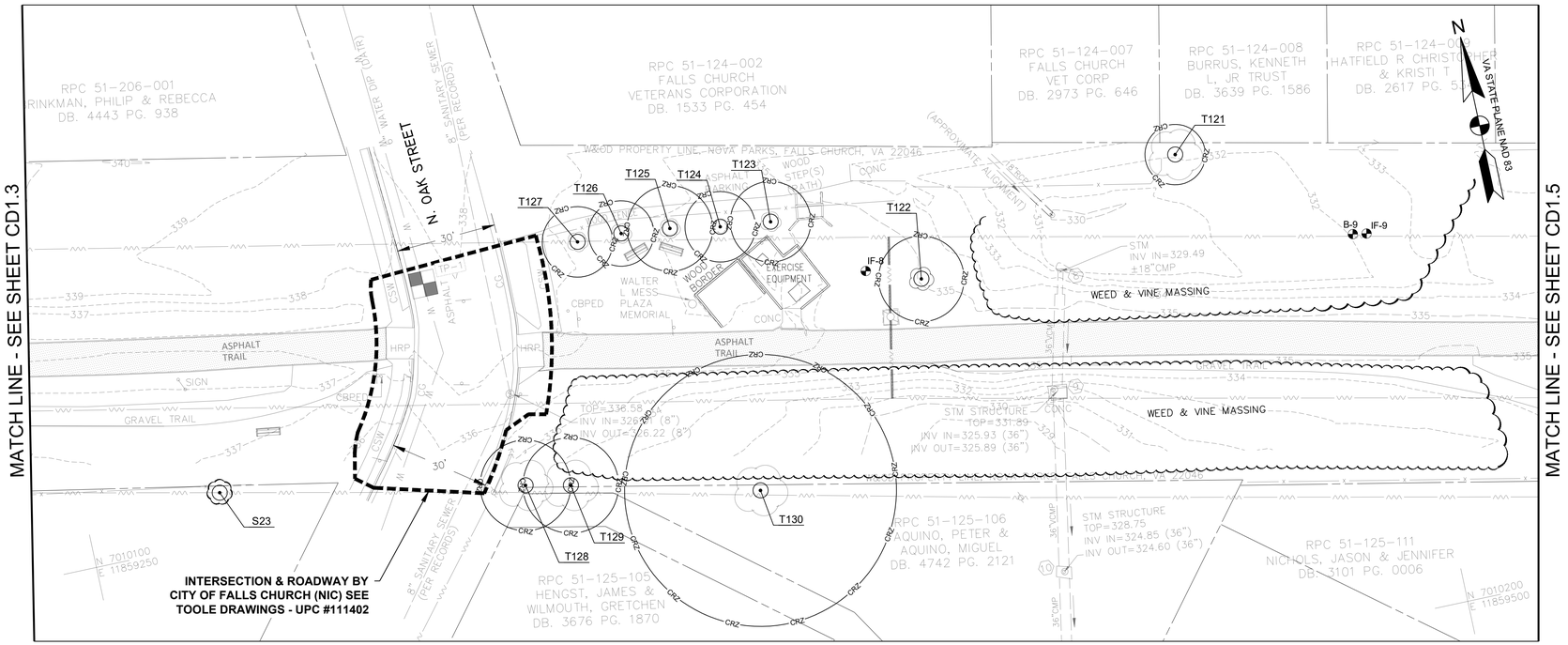
SHEET
CD1.3
07 OF 108



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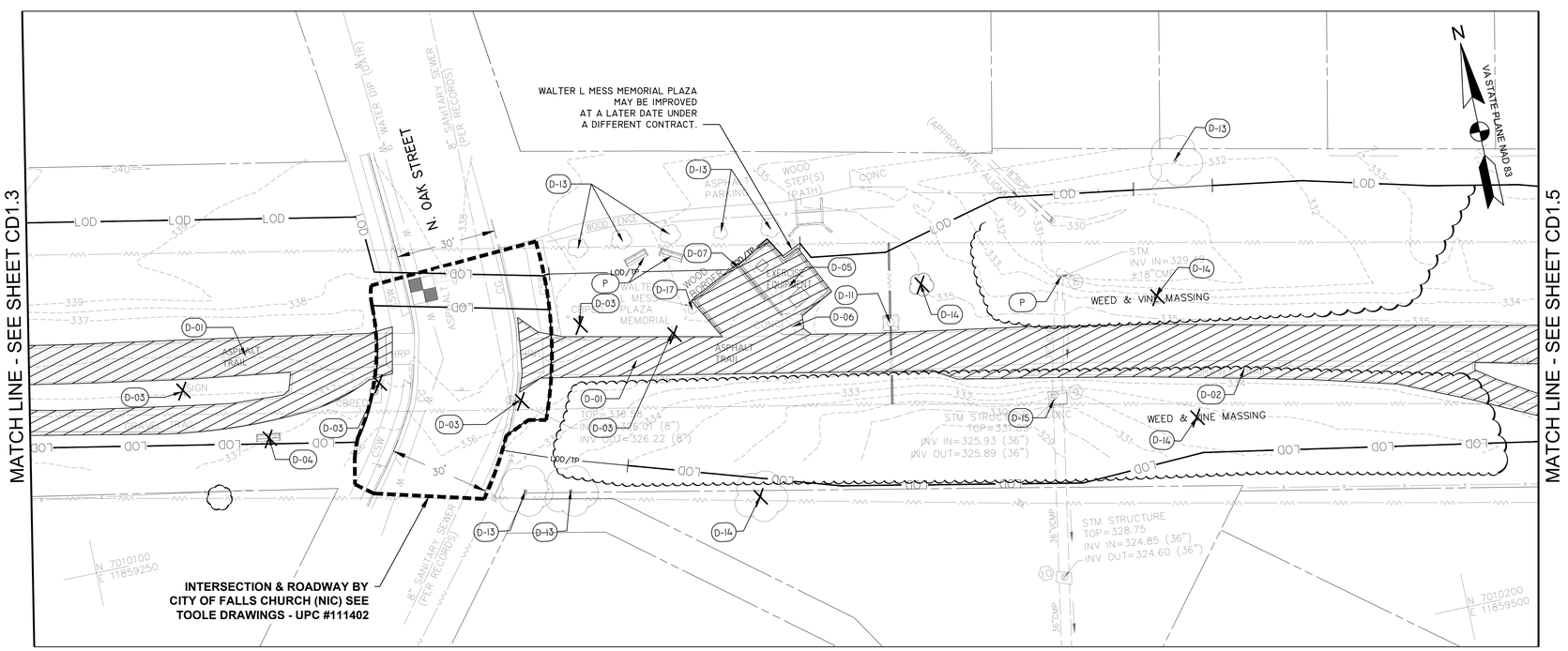

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D-06	REMOVE AND DISPOSE OF EXISTING PAVEMENT AND SUBBASE
D-07	REMOVE AND DISPOSE OF WOOD BORDER
D-08	REMOVE AND DISPOSE OF TRASH RECEPTACLE
D-09	REMOVE AND DISPOSE OF RETAINING WALL AND FOOTER
D-10	REMOVE AND DISPOSE OF SHELTER AND FOOTER
D-11	PROTECT EXISTING ELECTRICAL TOWER
D-12	AT&T HANDHOLD TO BE ADJUSTED BY AT&T COORDINATE WITH AT&T
D-13	PROTECT TREE TO REMAIN
D-14	REMOVE AND DISPOSE OF TREE/SHRUB AND GRIND STUMP
D-15	PRESERVE STRUCTURE BASE AND REMOVE/ MODIFY TOP
D-17	REMOVE, PROTECT, REINSTALL MEMORIAL PER NOVA PARKS
D-18	REMOVE AND DISPOSE OF GUY WIRES AND LIGHT
D-19	REMOVE AND DISPOSE OF GARDEN
X	ITEM TO BE DEMOLISHED
	AREA TO BE DEMOLISHED
	AREA TO BE DEMOLISHED BY HAND ONLY
P	ITEM TO BE PROTECTED / PRESERVED DO NOT DISTURB
S	ITEM TO BE SALVAGED AND REINSTALLED
TP-1	TEST PIT LOCATION
B-11	BORING TEST LOCATION
IT-21	INFILTRATION TEST LOCATION

*FOR DEMOLITION NOTES REFER TO PROJECT NOTES GI1.1
*FOR TREE TABLE REFER TO CD5.0

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

AMT
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COMMONWEALTH OF VIRGINIA
STEVEN TORGERSON
Cert. No. 0606001542
01/05/2020
LANDSCAPE ARCHITECT

REGISTRATION STAMP

NOT FOR CONSTRUCTION

PROFESSIONAL CERTIFICATION
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PROJECT TITLE
EXPANSION OF THE W&OD TRAIL
FALLS CHURCH, VA
UPC 113612

REVISIONS

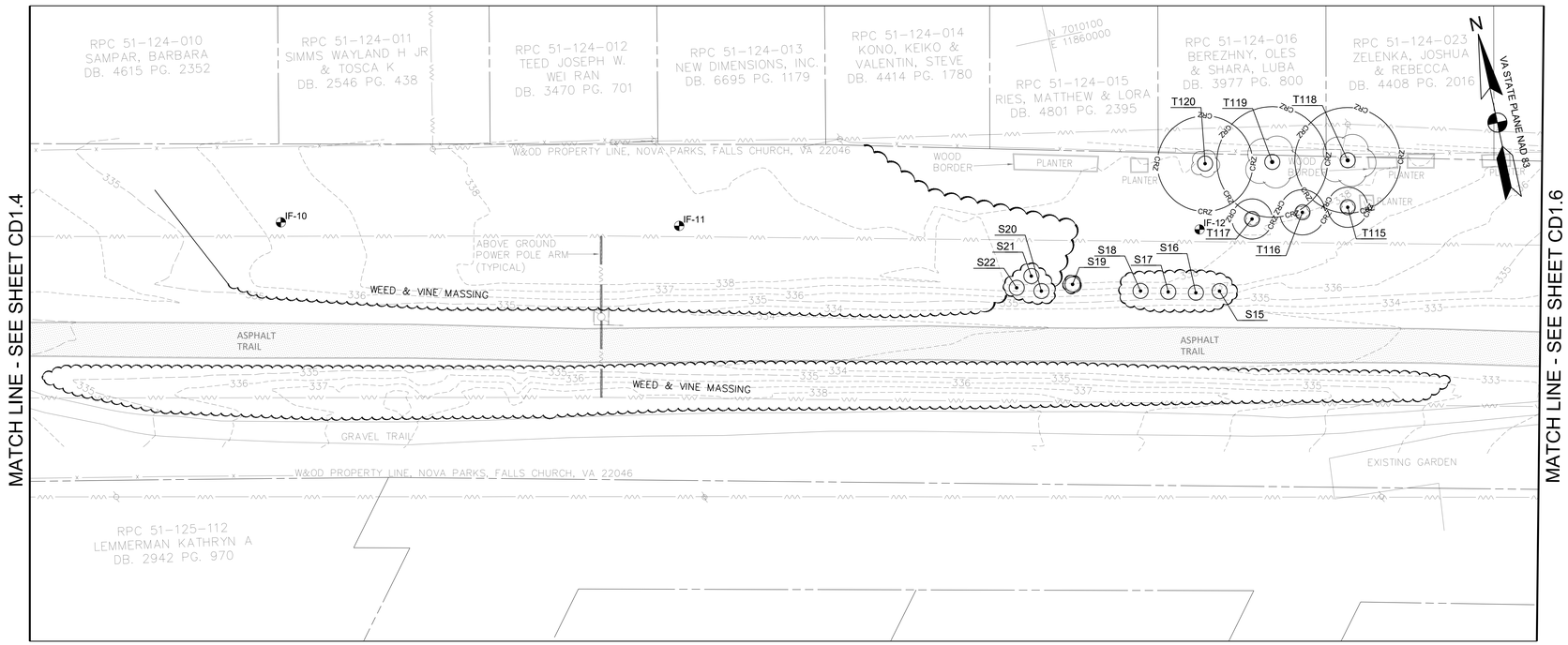
MARK	DATE	DESCRIPTION

AMT FILE NO.	18-0367
DATE:	3/2020
SCALE:	1"=20'
DESIGNED BY:	AMT
DRAWN BY:	AMT
CHECKED BY:	AMT

100% DESIGN

SHEET TITLE
EXISTING CONDITIONS & DEMOLITION PLAN

SHEET
CD1.4
08 OF 108



EXISTING CONDITIONS PLAN
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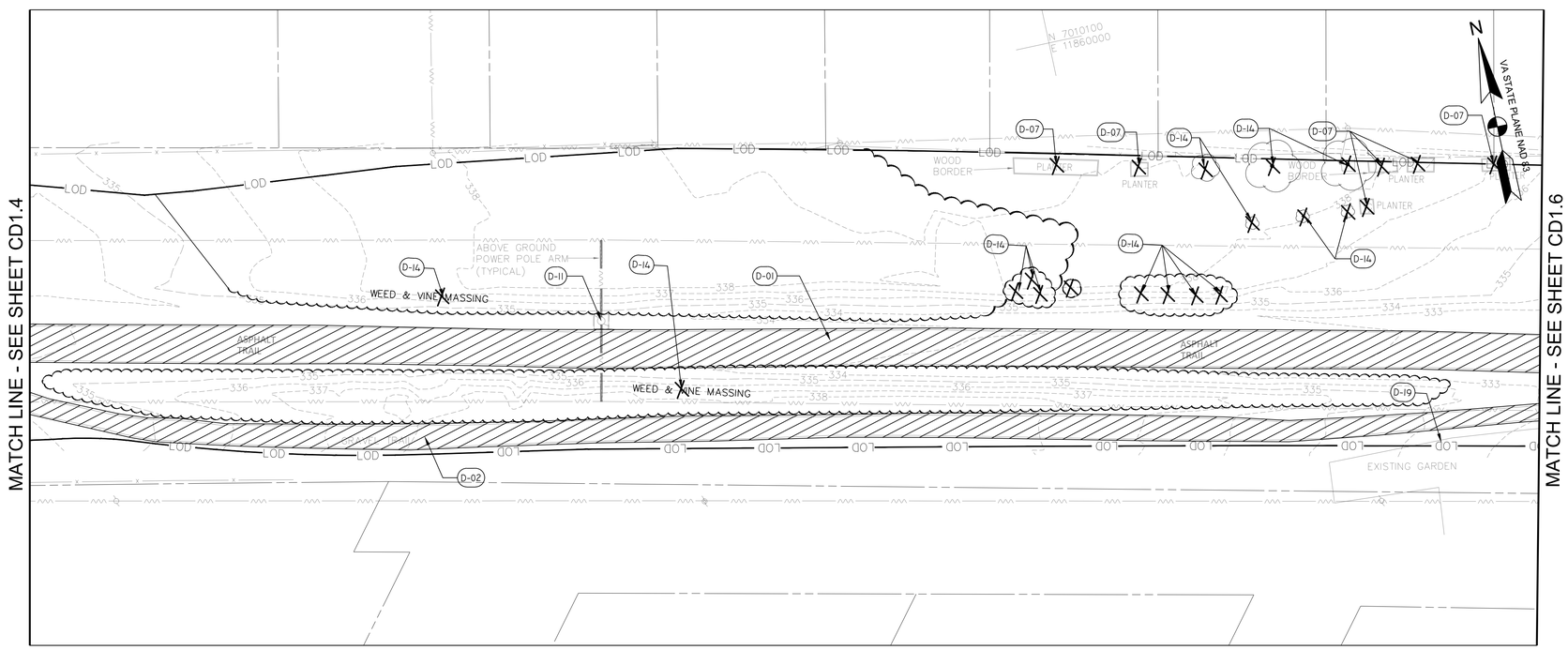

DEMOLITION PLAN
SCALE: 1"=20'

LEGEND

CHH	COMMUNICATION HAND-HOLE
EMH	ELECTRICAL MANHOLE
EB	ELECTRICAL BOX
T	ELECTRICAL TRANSFORMER
BN	BENCH
ICV	IRRIGATION CONTROL VALVE
SMH	SANITARY MANHOLE
STM	STORM STRUCTURE/MANHOLE
	SIGN
	WATER VALVE
	WATER METER
CONC	CONCRETE
CSW	CONCRETE SIDEWALK
	BENCH
	TREE
	SHRUB LINE
	PROPERTY LINE
LOD	LIMIT OF DISTRUBANCE
CRZ	CRITICAL ROOT ZONE
TP	TREE PROTECTION FENCING
LOD/TP	TREE PROTECTION FENCING AT LIMIT OF DISTRUBANCE
RP	ROOT PRUNING
RPA	RESOURCE PROTECTION AREA
299	TOPOGRAPHY
E	PAINTED EVIDENCE OF UNDERGROUND ELECTRIC UTILITY
T	PAINTED EVIDENCE OF UNDERGROUND COMMUNICATION UTILITY
W	PAINTED EVIDENCE OF UNDERGROUND WATER UTILITY
	GUY WIRE
	EXISTING UNDERGROUND PIPE
x x x x	FENCE
	OVERHEAD WIRE
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	UTILITY POLE
	SANITARY SEWER LINE
S	SANITARY SEWER MANHOLE
CBPED	CABLE PEDESTAL
TMH	TELEPHONE MANHOLE
HRP	HANDICAP RAMP
CPP	CORRUGATED PLASTIC PIPE
	GRID TICK

DEMOLITION SCHEDULE

SYMBOL	DESCRIPTION
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PROJECT TITLE

EXPANSION OF THE W&OD TRAIL

FALLS CHURCH, VA
UPC 113612

REVISIONS

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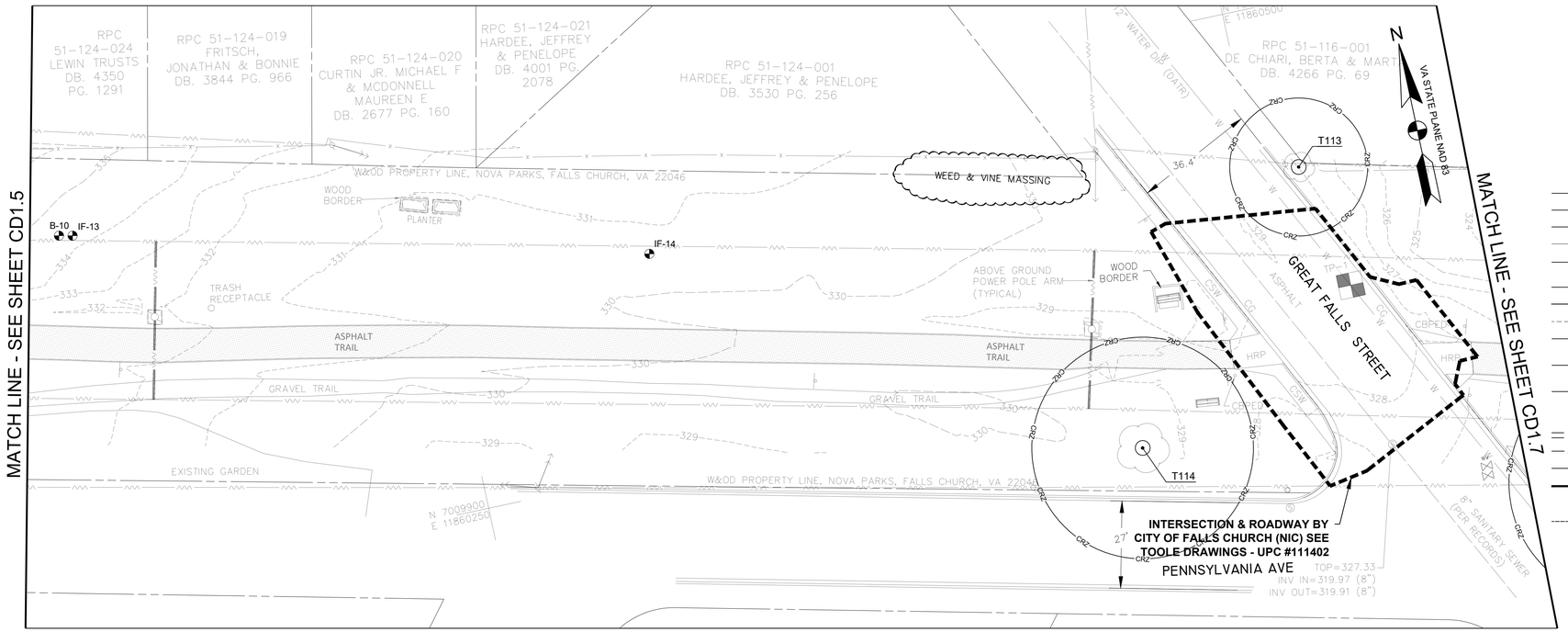
100% DESIGN

SHEET TITLE

EXISTING CONDITIONS & DEMOLITION PLAN

SHEET

CD1.5



EXISTING CONDITIONS PLAN
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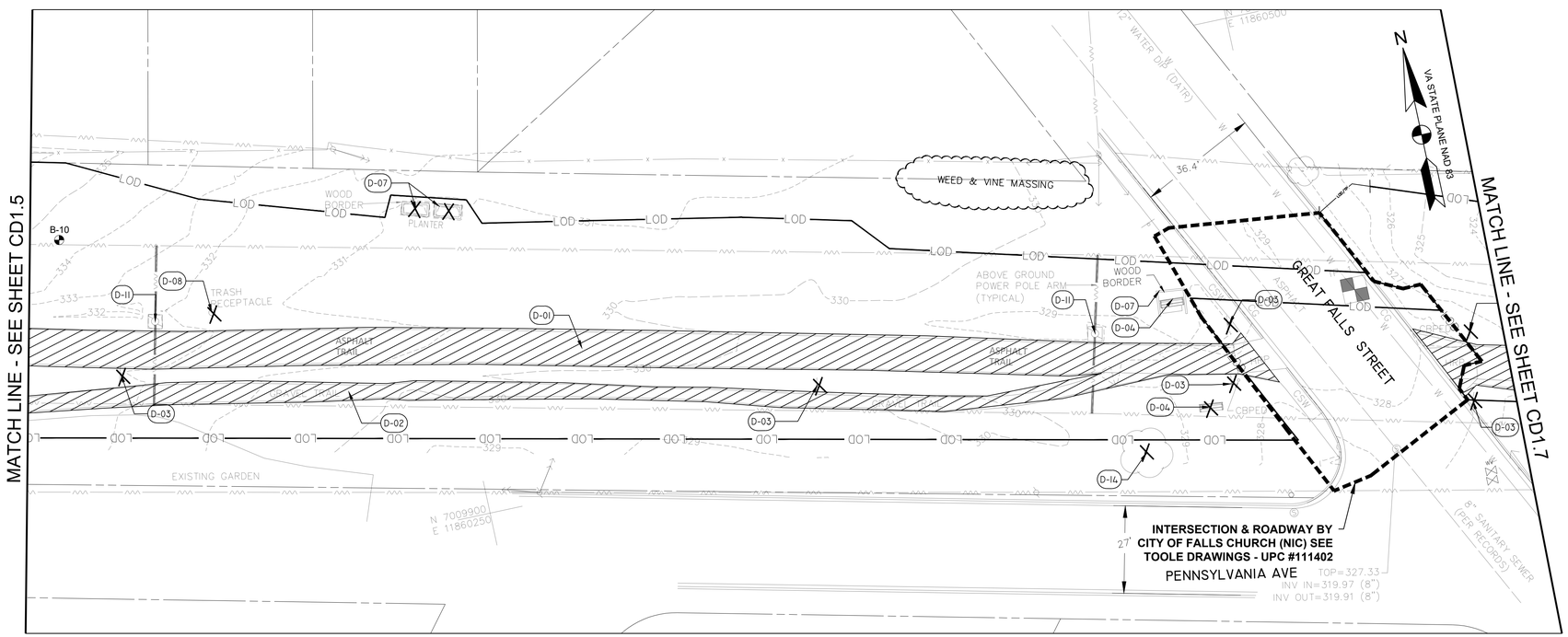

DEMOLITION PLAN
SCALE: 1"=20'

LEGEND

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EB	ELECTRICAL BOX
T	ELECTRICAL TRANSFORMER
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CRZ	CRITICAL ROOT ZONE
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	GUY WIRE
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	UTILITY POLE
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DEMOLITION SCHEDULE

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FALLS CHURCH, VA
UPC 113612

REVISIONS

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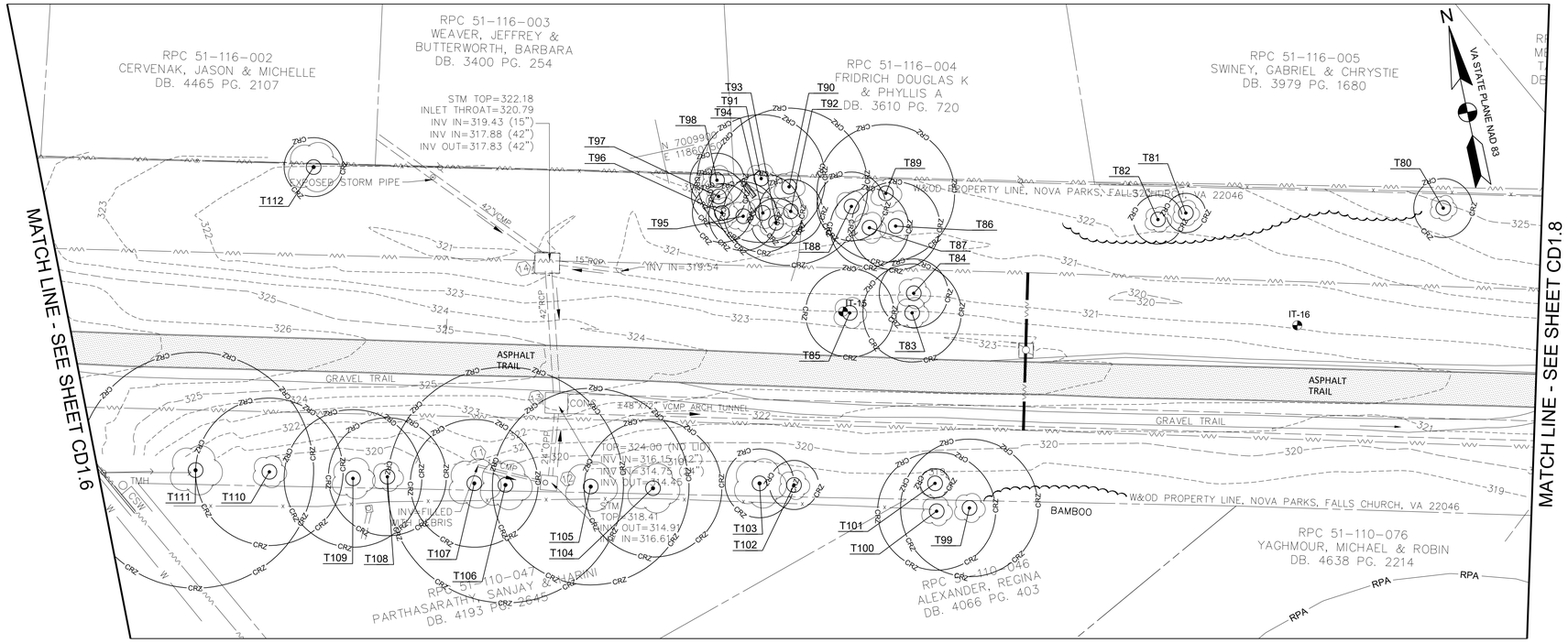
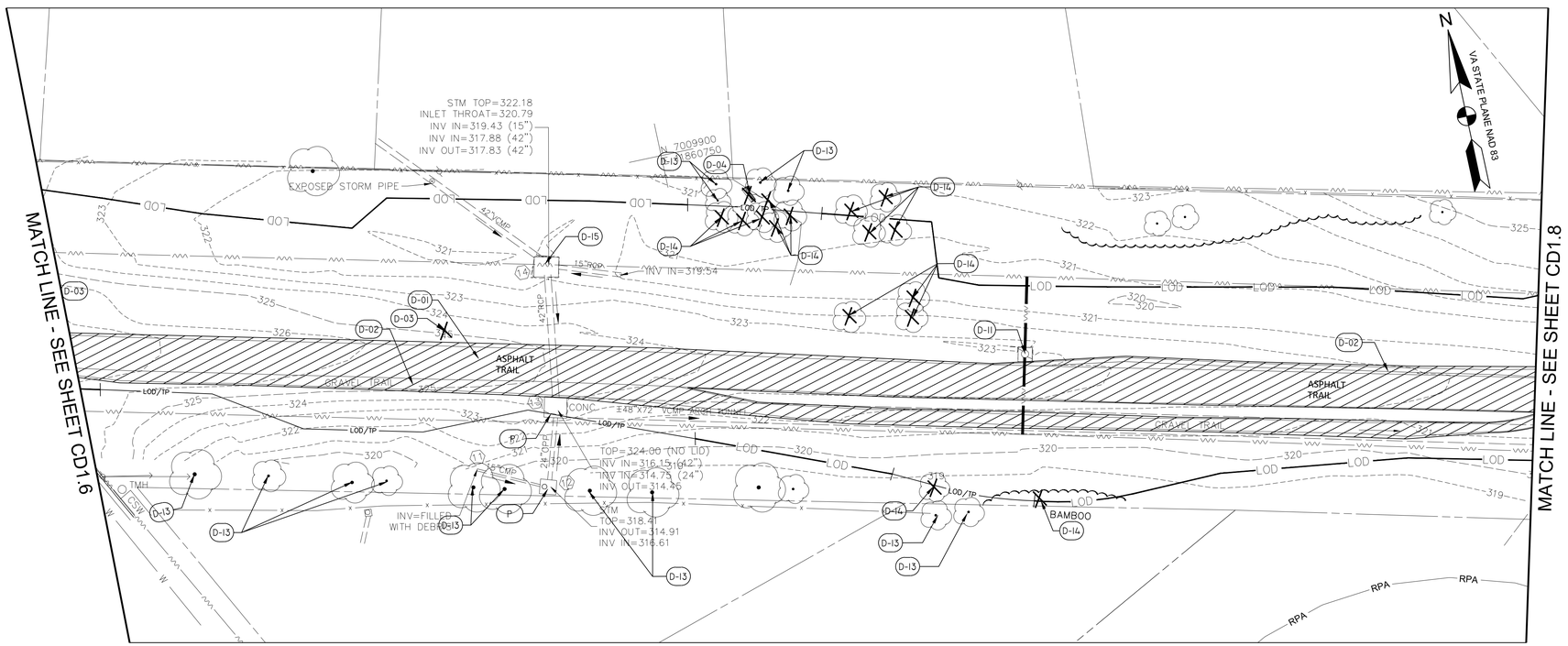
100% DESIGN

SHEET TITLE
EXISTING CONDITIONS & DEMOLITION PLAN

SHEET
CD1.6



EXISTING CONDITIONS PLAN
SCALE: 1"=20'



DEMOLITION PLAN
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LEGEND

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DEMOLITION SCHEDULE

SYMBOL	DESCRIPTION
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*FOR TREE TABLE REFER TO CD5.0

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PROJECT TITLE

EXPANSION OF THE W&OD TRAIL

FALLS CHURCH, VA
UPC 113612

REVISIONS

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AMT FILE NO.	18-0367
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DRAWN BY:	AMT
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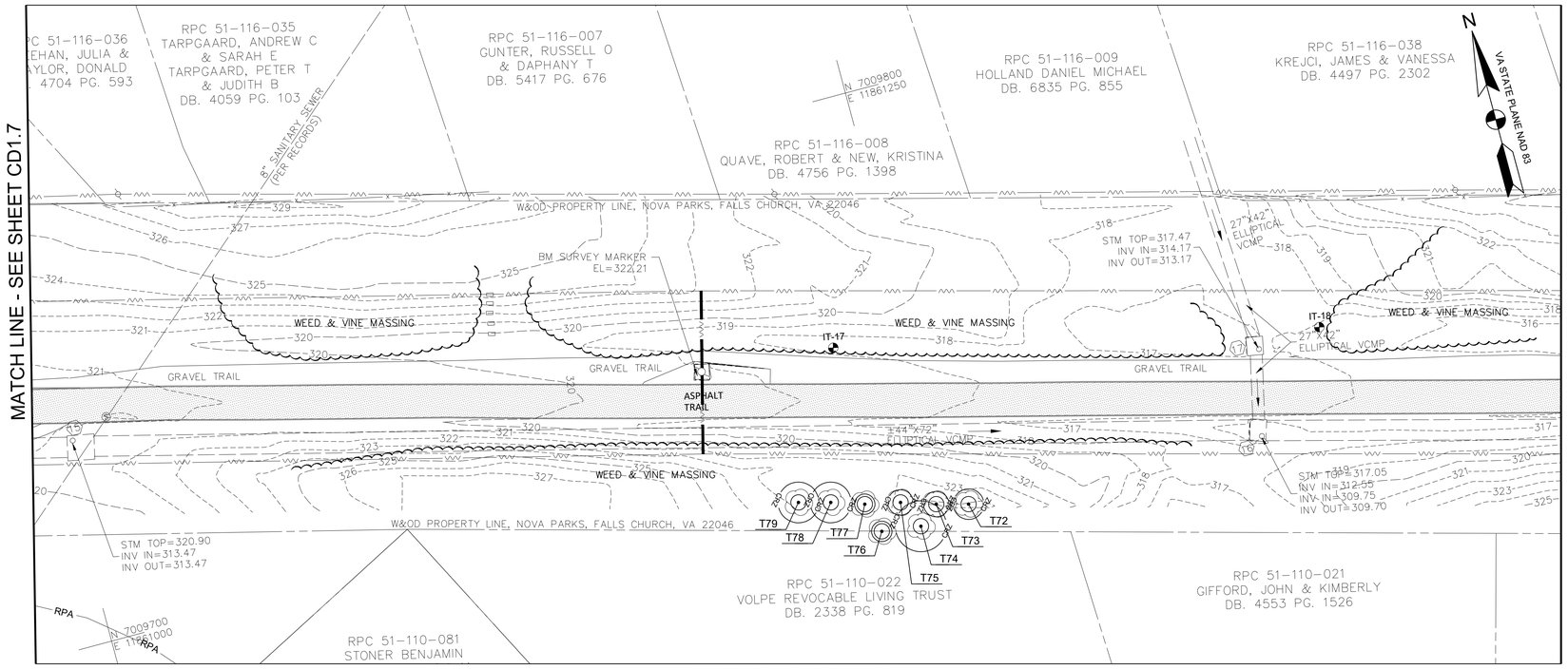
100% DESIGN

SHEET TITLE

EXISTING CONDITIONS & DEMOLITION PLAN

SHEET

CD1.7



EXISTING CONDITIONS PLAN
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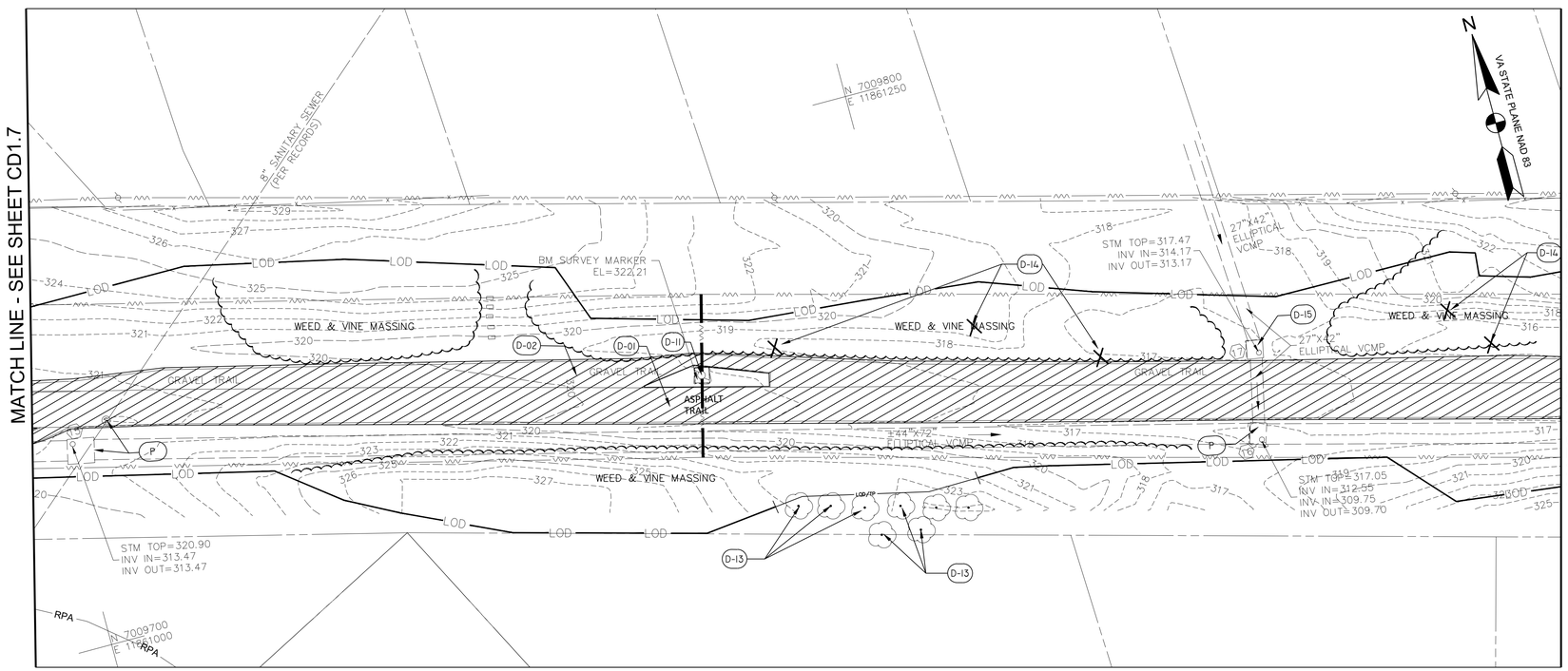

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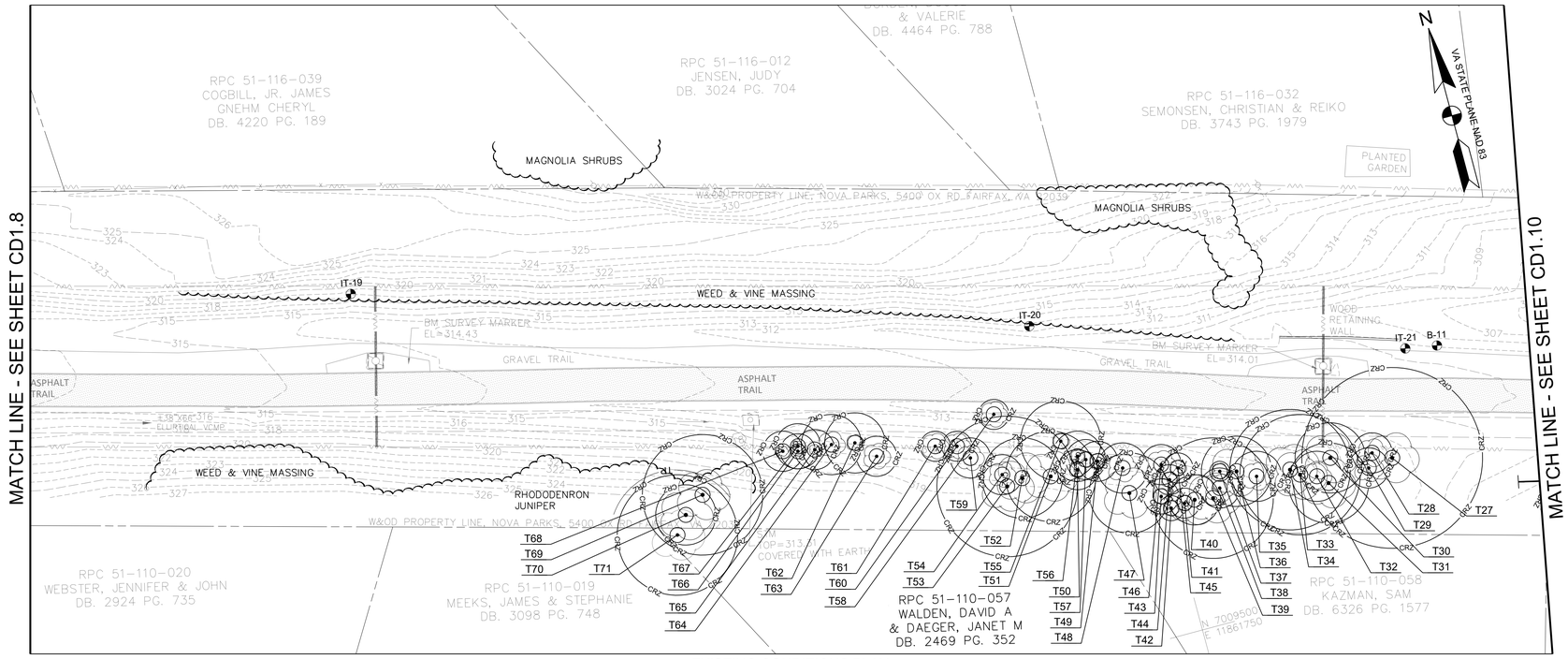
CD1.8



EXISTING CONDITIONS PLAN
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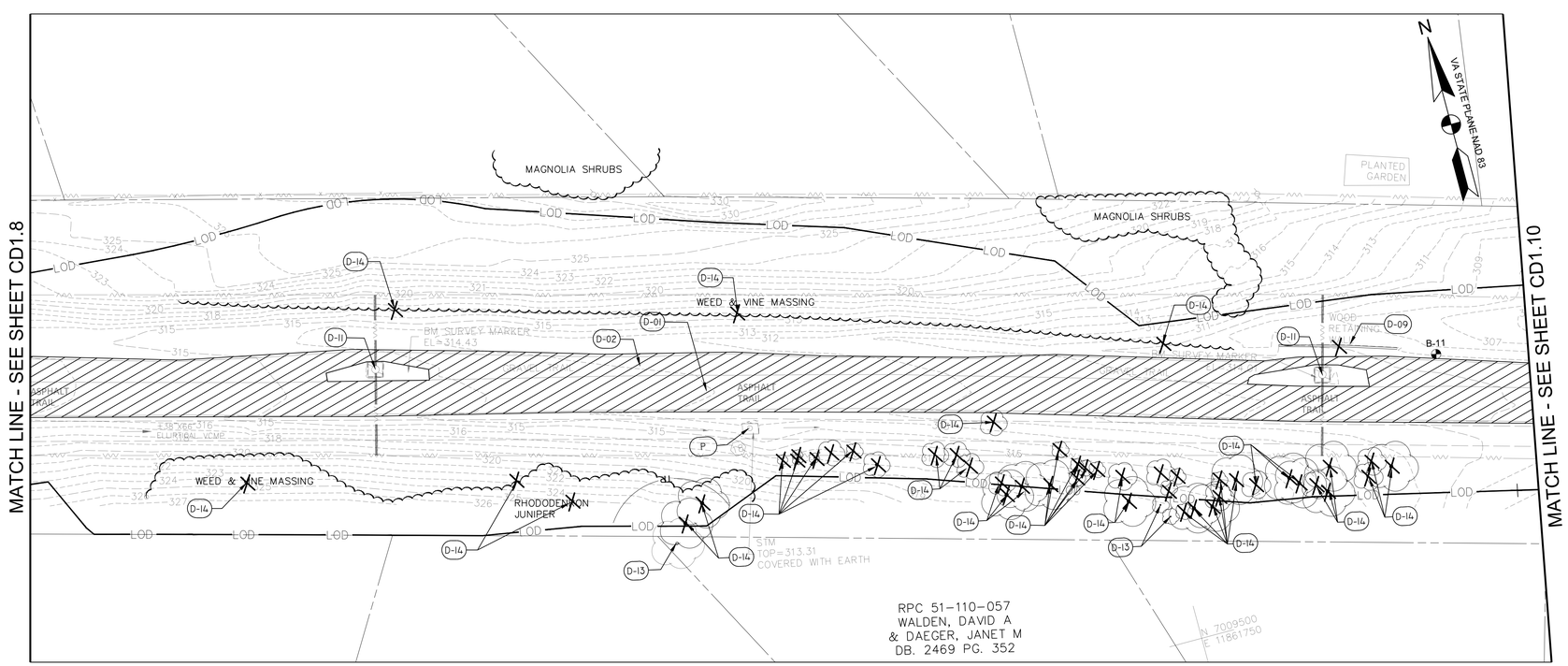

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	SANITARY SEWER LINE
S	SANITARY SEWER MANHOLE
CBPED	CABLE PEDESTAL
TMH	TELEPHONE MANHOLE
HRP	HANDICAP RAMP
CPP	CORRUGATED PLASTIC PIPE
	GRID TICK

DEMOLITION SCHEDULE

SYMBOL	DESCRIPTION
D-01	REMOVE AND DISPOSE OF ASPHALT TRAIL AND SUBBASE
D-02	REMOVE AND DISPOSE OF GRAVEL PATH
D-03	REMOVE AND DISPOSE OF SIGNAGE AND FOOTER
D-04	REMOVE AND DISPOSE OF BENCH AND FOOTER
D-05	REMOVE AND SALVAGE EXERCISE EQUIPMENT AND ASSOCIATED PAVING AND FOOTERS
D-06	REMOVE AND DISPOSE OF EXISTING PAVEMENT AND SUBBASE
D-07	REMOVE AND DISPOSE OF WOOD BORDER
D-08	REMOVE AND DISPOSE OF TRASH RECEPTACLE
D-09	REMOVE AND DISPOSE OF RETAINING WALL AND FOOTER
D-10	REMOVE AND DISPOSE OF SHELTER AND FOOTER
D-11	PROTECT EXISTING ELECTRICAL TOWER
D-12	AT&T HANDHOLD TO BE ADJUSTED BY AT&T COORDINATE WITH AT&T
D-13	PROTECT TREE TO REMAIN
D-14	REMOVE AND DISPOSE OF TREE/SHRUB AND GRIND STUMP
D-15	PRESERVE STRUCTURE BASE AND REMOVE/ MODIFY TOP
D-17	REMOVE, PROTECT, REINSTALL MEMORIAL PER NOVA PARKS
D-18	REMOVE AND DISPOSE OF GUY WIRES AND LIGHT
D-19	REMOVE AND DISPOSE OF GARDEN
X	ITEM TO BE DEMOLISHED
	AREA TO BE DEMOLISHED
	AREA TO BE DEMOLISHED BY HAND ONLY
P	ITEM TO BE PROTECTED / PRESERVED DO NOT DISTURB
S	ITEM TO BE SALVAGED AND REINSTALLED
TP-1	TEST PIT LOCATION
B-11	BORING TEST LOCATION
IT-21	INFILTRATION TEST LOCATION

*FOR DEMOLITION NOTES REFER TO PROJECT NOTES GI1.1
*FOR TREE TABLE REFER TO CD5.0

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

AMT
A. MORTON THOMAS AND ASSOCIATES, INC.
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COMMONWEALTH OF VIRGINIA
STEVEN TORGERSON
CERT. NO. 0406001542
01/05/2020
LANDSCAPE ARCHITECT

REGISTRATION STAMP

NOT FOR CONSTRUCTION

PROFESSIONAL CERTIFICATION
"I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED CERTIFIED LANDSCAPE ARCHITECT UNDER THE LAWS OF THE STATE OF VIRGINIA. LICENSE NO. 1542 , EXPIRATION DATE 04/30/2021."

PROJECT TITLE
EXPANSION OF THE W&OD TRAIL
FALLS CHURCH, VA
UPC 113612

REVISIONS

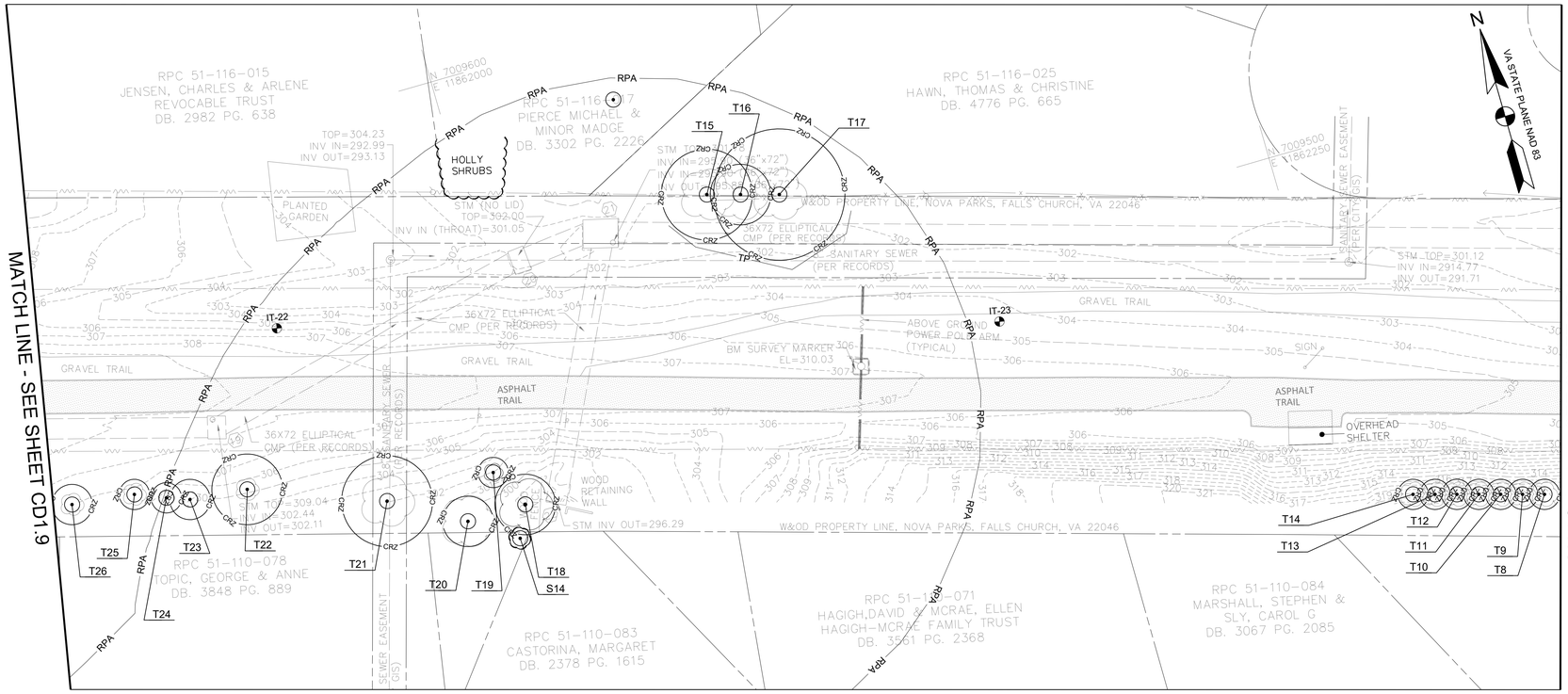
MARK	DATE	DESCRIPTION

AMT FILE NO.	18-0367
DATE:	3/2020
SCALE:	1"=20'
DESIGNED BY:	AMT
DRAWN BY:	AMT
CHECKED BY:	AMT

100% DESIGN

SHEET TITLE
EXISTING CONDITIONS & DEMOLITION PLAN

SHEET
CD1.9



EXISTING CONDITIONS PLAN
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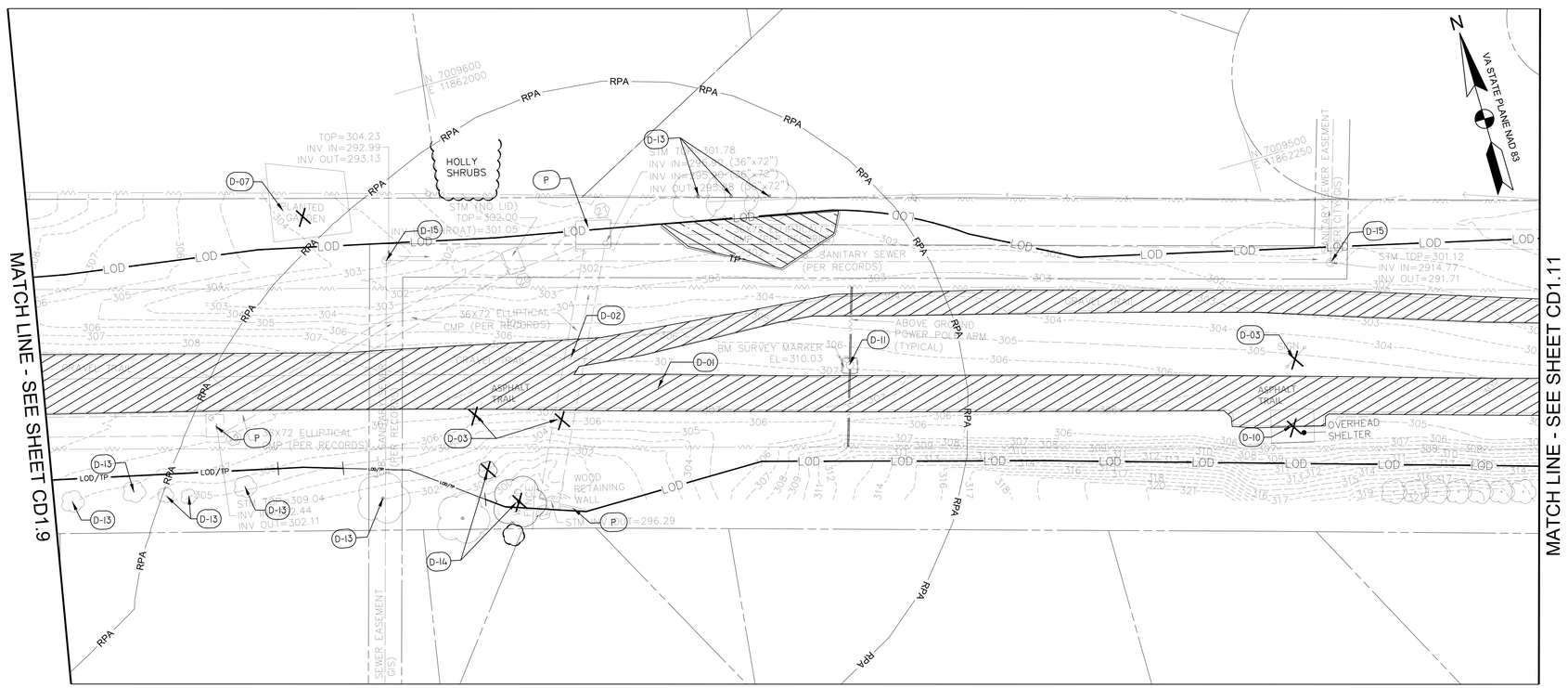

DEMOLITION PLAN
SCALE: 1"=20'

LEGEND

CHH	COMMUNICATION HAND-HOLE
EMH	ELECTRICAL MANHOLE
EB	ELECTRICAL BOX
T	ELECTRICAL TRANSFORMER
BN	BENCH
ICV	IRRIGATION CONTROL VALVE
SMH	SANITARY MANHOLE
STM	STORM STRUCTURE/MANHOLE
	SIGN
	WATER VALVE
	WATER METER
CONC	CONCRETE
CSW	CONCRETE SIDEWALK
	BENCH
	TREE
	SHRUB LINE
	PROPERTY LINE
LOD	LIMIT OF DISTRUBANCE
CRZ	CRITICAL ROOT ZONE
TP	TREE PROTECTION FENCING
LOD/TP	TREE PROTECTION FENCING AT LIMIT OF DISTRUBANCE
RP	ROOT PRUNING
RPA	RESOURCE PROTECTION AREA
299	TOPOGRAPHY
E	PAINTED EVIDENCE OF UNDERGROUND ELECTRIC UTILITY
T	PAINTED EVIDENCE OF UNDERGROUND COMMUNICATION UTILITY
W	PAINTED EVIDENCE OF UNDERGROUND WATER UTILITY
	GUY WIRE
	EXISTING UNDERGROUND PIPE
	FENCE
	OVERHEAD WIRE
	ELECTRICAL TOWER
	UTILITY POLE
	SANITARY SEWER LINE
	SANITARY SEWER MANHOLE
CBPED	CABLE PEDESTAL
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FALLS CHURCH, VA
UPC 113612

REVISIONS

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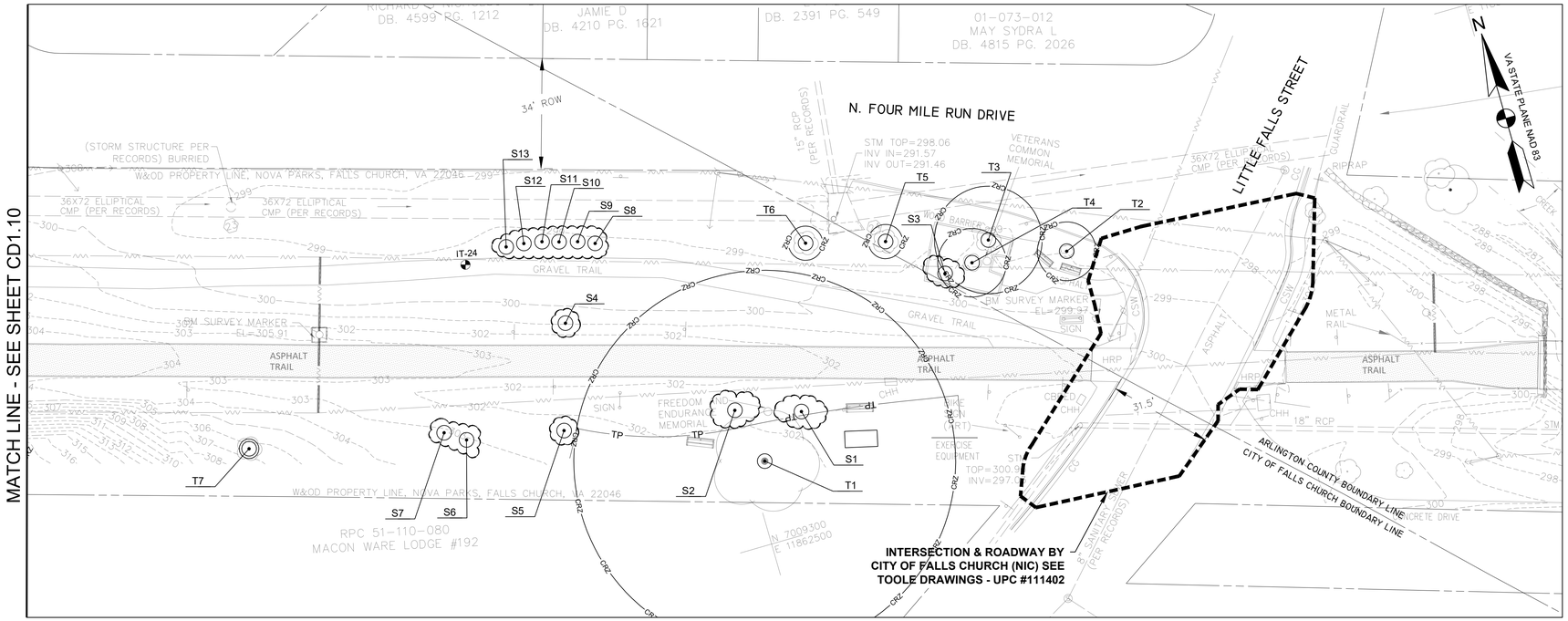
DRAWN BY:	AMT
CHECKED BY:	AMT

100% DESIGN

SHEET TITLE
EXISTING CONDITIONS & DEMOLITION PLAN

SHEET
CD1.10



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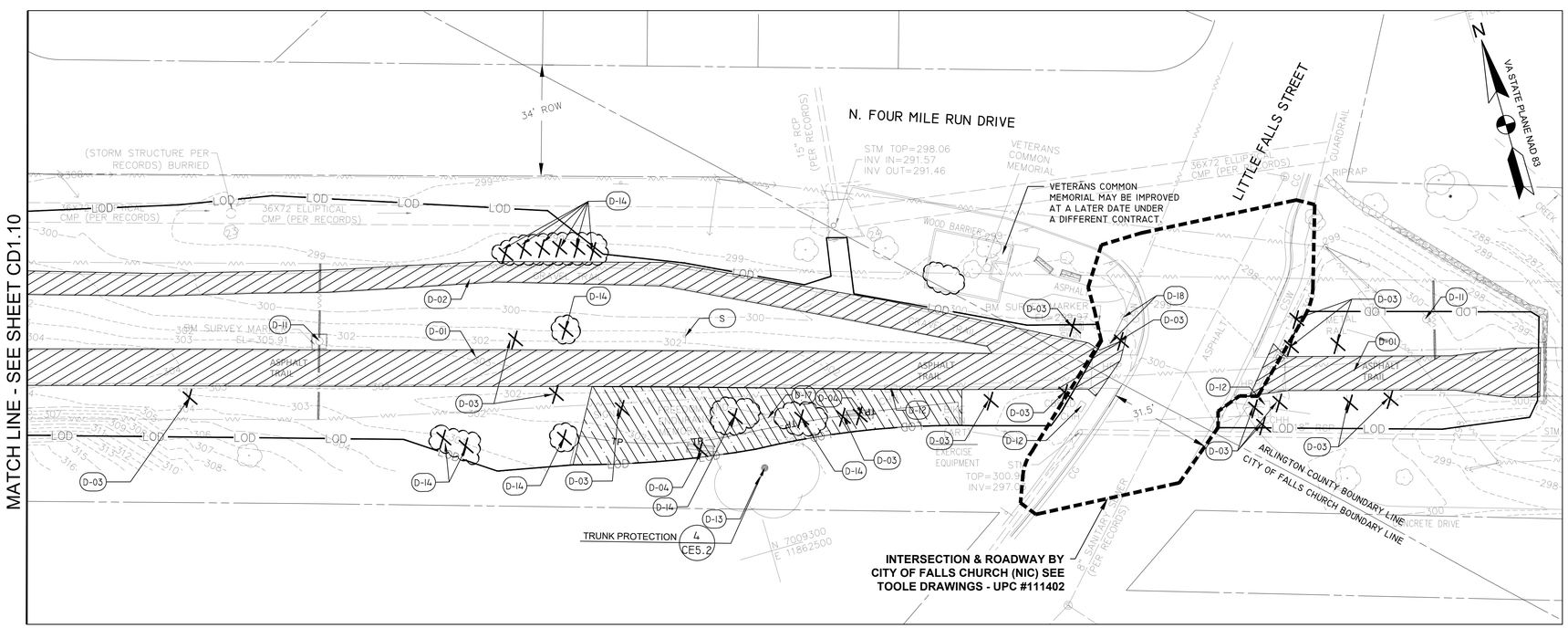

DEMOLITION PLAN
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FALLS CHURCH, VA
UPC 113612

REVISIONS

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CHECKED BY:	AMT

100% DESIGN

SHEET TITLE
EXISTING CONDITIONS & DEMOLITION PLAN

SHEET
CD1.11

SPECIMEN, CHAMPION AND HISTORIC TREE TABLE

NO.	COMMON NAME	SCIENTIFIC NAME	D.B.H (INCHES)	CONSTRUCTION IMPACT	CONDITION RATING	CONDITION COMMENTS
T1	**Deodar cedar**	***Cedrus deodara***	**39**	**Tree Protection Fence / Root Pruning**	**GOOD**	**Multi-trunk, 7", 16", 16", 24", 20".**
T2	Blue spruce	*Picea pungens*	6	No Impact	EXCELLENT	
T3	Japanese flowering cherry	*Prunus serrulata*	11	No Impact	FAIR	Multi-trunk, 5", 7", 7", lichens on trunk
T4	Flowering dogwood	*Cornus florida*	7	No Impact	FAIR	Multi-trunk, 4", 3.5", 4", leaning
T5	Kousa dogwood	*Cornus kousa*	3.5	No Impact	EXCELLENT	
T6	Kousa dogwood	*Cornus kousa*	3.5	No Impact	EXCELLENT	
T7	Redbud	*Cercis canadensis*	2	No Impact	EXCELLENT	
T8	Leyland cypress	*Cupressus x leylandii*	3	No Impact	FAIR	Sparse canopy
T9	Leyland cypress	*Cupressus x leylandii*	3	No Impact	FAIR	Sparse canopy
T10	Leyland cypress	*Cupressus x leylandii*	3	No Impact	FAIR	Sparse canopy
T11	Leyland cypress	*Cupressus x leylandii*	3	No Impact	FAIR	Sparse canopy
T12	Leyland cypress	*Cupressus x leylandii*	3	No Impact	FAIR	Sparse canopy
T13	Leyland cypress	*Cupressus x leylandii*	3	No Impact	FAIR	Sparse canopy
T14	Leyland cypress	*Cupressus x leylandii*	3	No Impact	FAIR	Sparse canopy
T15	Leyland cypress	*Cupressus x leylandii*	9	Tree Protection Fence / Root Pruning	POOR	Vines on trunk
T16	Virginia pine	*Pinus virginiana*	6	Tree Protection Fence / Root Pruning	POOR	Vines on trunk
T17	Sycamore	*Platanus occidentalis*	13	Tree Protection Fence / Root Pruning	FAIR	Vines on trunk
T18	River birch	*Betula nigra*	6	Remove	GOOD	Multi-trunk, 3.5", 3.5", 3.5"
T19	Japanese Black Pine	Pinus thunbergii	3	Remove	GOOD	
T20	White pine	*Pinus strobus*	5	Tree Protection Fence	FAIR	Browning needles
T21	Crapemyrtle	*Lagerstroemia indica*	9	Tree Protection Fence / Root Pruning	GOOD	Multi-trunk, 1.5", 1.5", 4", 4", 4", 3", 3", 3".
T22	Flowering dogwood	*Cornus florida*	7	Tree Protection Fence / Root Pruning	GOOD	
T23	Flowering dogwood	*Cornus florida*	4	Tree Protection Fence	GOOD	
T24	Flowering dogwood	*Cornus florida*	3	Tree Protection Fence	GOOD	
T25	Flowering dogwood	*Cornus florida*	4	Tree Protection Fence	GOOD	
T26	Mockernut hickory	*Carya tomentosa*	8	Tree Protection Fence	GOOD	
T27	Green ash	*Fraxinus pennsylvanica*	18	Remove	FAIR	Missing limbs, ivy on trunk
T28	Black cherry	*Prunus serotina*	4	Remove	FAIR	Covered in vines
T29	Black cherry	*Prunus serotina*	4	Remove	FAIR	Covered in vines
T30	White oak	*Quercus alba*	7	Remove	FAIR	Covered in vines
T31	Tulip poplar	*Liriodendron tulipifera*	8	Remove	FAIR	Covered in vines
T32	Northern red oak	*Quercus rubra*	5	Remove	GOOD	
T33	American beech	*Fagus grandifolia*	12	Remove	GOOD	
T34	Red maple	*Acer rubrum*	12	Remove	FAIR	Leaning
T35	Black cherry	*Prunus serotina*	5	Remove	POOR	Broken leader, ivy on trunk
T36	White oak	*Quercus alba*	7	Remove	GOOD	English ivy on trunk
T37	Paulownia	*Paulownia tomentosa*	2	Remove	GOOD	
T38	Red mulberry	*Morus rubra*	4	Remove	GOOD	English ivy on trunk
T39	Green ash	*Fraxinus pennsylvanica*	12	Remove	GOOD	English ivy on trunk
T40	White oak	*Quercus alba*	5	Remove	GOOD	
T41	American beech	*Fagus grandifolia*	3	Remove	GOOD	
T42	Mockernut hickory	*Carya tomentosa*	2.5	No Impact	GOOD	
T43	American beech	*Fagus grandifolia*	3.5	Remove	GOOD	
T44	Flowering dogwood	*Cornus florida*	3	No Impact	FAIR	English ivy on trunk, leaning
T45	Flowering dogwood	*Cornus florida*	3	Remove	FAIR	English ivy on trunk, leaning
T46	Black locust	*Robinia pseudoacacia*	4	Remove	FAIR	English ivy on trunk, leaning
T47	Black locust	*Robinia pseudoacacia*	8	Remove	FAIR	Leaning, cut limb
T48	Flowering dogwood	*Cornus florida*	5	Remove	FAIR	Multi-trunk, 3", 4". English ivy on trunk
T49	Paulownia	*Paulownia tomentosa*	4	Remove	POOR	Broken leader, leaning
T50	Black cherry	*Prunus serotina*	4	Remove	POOR	Broken leader, ivy on trunk
T51	Flowering dogwood	*Cornus florida*	9	Remove	GOOD	Multi-trunk, 4", 5", 7". Broken limbs
T52	Flowering dogwood	*Cornus florida*	8	Remove	GOOD	
T53	Black cherry	*Prunus serotina*	14	Remove	GOOD	
T54	Flowering dogwood	*Cornus florida*	4	Remove	GOOD	Multi-trunk, 1", 2", 3".
T55	Flowering dogwood	*Cornus florida*	8	Remove	GOOD	Missing some limbs
T56	Eastern red cedar	*Juniperus virginiana*	5	Remove	GOOD	
T57	Flowering dogwood	*Cornus florida*	4	Remove	GOOD	
T58	American holly	*Ilex opaca*	3	Remove	GOOD	
T59	Flowering dogwood	*Cornus florida*	4	Remove	POOR	Leaning, missing limbs
T60	American holly	*Ilex opaca*	3	Remove	GOOD	
T61	Flowering dogwood	*Cornus florida*	3	Remove	POOR	Leaning
T62	American holly	*Ilex opaca*	6	Remove	GOOD	
T63	Flowering dogwood	*Cornus florida*	4	Remove	FAIR	Leaning, english ivy on trunk
T64	Leyland cypress	*Cupressus x leylandii*	6	Remove	FAIR	Enlgish ivy on trunk, broken limbs
T65	Flowering dogwood	*Cornus florida*	4	Remove	FAIR	Missing limbs
T66	Flowering dogwood	*Cornus florida*	3.5	Remove	FAIR	Missing limbs
T67	Flowering dogwood	*Cornus florida*	4.5	Remove	FAIR	Missing limbs
T68	Flowering dogwood	*Cornus florida*	4	Remove	FAIR	Missing limbs
T69	White oak	*Quercus alba*	12	Remove	FAIR	English ivy on trunk
T70	American beech	*Fagus grandifolia*	6	Remove	FAIR	English ivy on trunk, cut limbs
T71	White oak	*Quercus alba*	12	Tree Protection Fence / Root Pruning	FAIR	English ivy on trunk
T72	Leyland cypress	*Cupressus x leylandii*	3	No Impact	FAIR	Some broken limbs
T73	Leyland cypress	*Cupressus x leylandii*	2.5	No Impact	FAIR	
T74	White pine	*Pinus strobus*	5	Tree Protection Fence	FAIR	Vines on trunk, missing limbs
T75	Leyland cypress	*Cupressus x leylandii*	2.5	Tree Protection Fence	FAIR	
T76	American beech	*Fagus grandifolia*	2	Tree Protection Fence	FAIR	Vines on trunk
T77	Leyland cypress	*Cupressus x leylandii*	2	Tree Protection Fence	GOOD	
T78	American holly	*Ilex opaca*	4	Tree Protection Fence / Root Pruning	FAIR	Covered in vines
T79	American holly	*Ilex opaca*	4	Tree Protection Fence / Root Pruning	FAIR	Covered in vines
T80	White pine	*Pinus strobus*	16	No Impact	GOOD	
T81	American holly	*Ilex opaca*	4	No Impact	FAIR	Multi-trunk, 3", 3". Vines on trunk
T82	American holly	*Ilex opaca*	5	No Impact	GOOD	
T83	American holly	*Ilex opaca*	10	Remove	GOOD	Multi-trunk, 5.5", 5.5", 6". Trimmed canopy
T84	American holly	*Ilex opaca*	7	Remove	GOOD	Trimmed canopy
T85	American holly	*Ilex opaca*	9	Remove	GOOD	Trimmed canopy
T86	American holly	*Ilex opaca*	9	Remove	GOOD	Multi-trunk, 7", 6"
T87	American holly	*Ilex opaca*	8	Remove	GOOD	Trimmed canopy
T88	American holly	*Ilex opaca*	7	Remove	GOOD	Trimmed canopy
T89	White pine	*Pinus strobus*	14	Tree Protection Fence / Root Pruning	POOR	Trimmed canopy
T90	White pine	*Pinus strobus*	16	Tree Protection Fence / Root Pruning	GOOD	Trimmed canopy
T91	White pine	*Pinus strobus*	13	Tree Protection Fence / Root Pruning	GOOD	Trimmed canopy
T92	Southern magnolia	*Magnolia grandiflora*	6.5	Remove	GOOD	
T93	American holly	*Ilex opaca*	5	Remove	GOOD	
T94	American holly	*Ilex opaca*	8	Remove	GOOD	
T95	American holly	*Ilex opaca*	7	Remove	GOOD	
T96	American holly	*Ilex opaca*	6	Remove	GOOD	
T97	American holly	*Ilex opaca*	5.5	Remove	GOOD	
T98	American holly	*Ilex opaca*	5.5	Tree Protection Fence / Root Pruning	GOOD	
T99	Green ash	*Fraxinus pennsylvanica*	14	Tree Protection Fence / Root Pruning	FAIR	Vines on trunk
T100	Green ash	*Fraxinus pennsylvanica*	12	Tree Protection Fence / Root Pruning	FAIR	Vines on trunk
T101	American holly	*Ilex opaca*	3	Remove	FAIR	Vines on trunk
T102	Red maple	*Acer rubrum*	5	No Impact	POOR	Leaning, covered in vines
T103	White pine	*Pinus strobus*	7	No Impact	POOR	Covered in vines, missing limbs
T104	Red maple	*Acer rubrum*	14	Tree Protection Fence / Root Pruning	POOR	Cut limbs, covered in vines
T105	Eastern hemlock	*Tsuga canadensis*	20	Tree Protection Fence / Root Pruning	FAIR	Covered in vines
T106	Leyland cypress	*Cupressus x leylandii*	24	Tree Protection Fence / Root Pruning	FAIR	
T107	Leyland cypress	*Cupressus x leylandii*	13	Tree Protection Fence / Root Pruning	FAIR	Multi-trunk, 9", 9".
T108	Red maple	*Acer rubrum*	12	Tree Protection Fence / Root Pruning	FAIR	Covered in vines, cut limbs
T109	Northern red oak	*Quercus rubra*	14	Tree Protection Fence / Root Pruning	FAIR	Covered in vines, cut limbs
T110	Red maple	*Acer rubrum*	15	Tree Protection Fence / Root Pruning	FAIR	Covered in vines, cut limbs
T111	Northern red oak	*Quercus rubra*	24	Tree Protection Fence / Root Pruning	FAIR	Covered in vines, cut limbs
T112	American holly	*Ilex opaca*	6	No Impact	POOR	Covered in vines.
T113	Sycamore	*Platanus occidentalis*	14	Tree Protection Fence / Root Pruning	POOR	Trimmed canopy
T114	Japanese flowering cherry	*Prunus serrulata*	22.5	Tree Protection Fence / Root Pruning	FAIR	Trimmed canopy
T115	Japanese flowering cherry	*Prunus serrulata*	4	Remove	GOOD	
T116	Japanese flowering cherry	*Prunus serrulata*	4.5	Remove	GOOD	Wound in trunk
T117	Japanese flowering cherry	*Prunus serrulata*	4	Remove	GOOD	
T118	Japanese flowering cherry	*Prunus serrulata*	10.5	Remove	GOOD	
T119	Privet	Ligustrum vulgare	11	Remove	FAIR	Suckers
T120	Privet	Ligustrum vulgare	9.5	Remove	GOOD	Suckers
T121	Flowering dogwood	*Cornus florida*	6	Tree Protection Fence	GOOD	English ivy on trunk
T122	Flowering dogwood	*Cornus florida*	8.5	Remove	GOOD	
T123	Redbud	*Cercis canadensis*	8	Tree Protection Fence / Root Pruning	GOOD	
T124	Redbud	*Cercis canadensis*	7	Tree Protection Fence / Root Pruning	GOOD	
T125	Redbud	*Cercis canadensis*	8.5	Tree Protection Fence / Root Pruning	GOOD	
T126	Redbud	*Cercis canadensis*	6.5	Tree Protection Fence / Root Pruning	GOOD	
T127	Redbud	*Cercis canadensis*	7	Tree Protection Fence / Root Pruning	GOOD	
T128	American holly	*Ilex opaca*	9	Tree Protection Fence / Root Pruning	GOOD	Multi-trunk, 5", 8".
T129	American holly	*Ilex opaca*	9.5	Tree Protection Fence / Root Pruning	GOOD	
T130	Black cherry	*Prunus serotina*	27	Tree Protection Fence / Root Pruning	POOR	Multi-trunk, 12", 16", 12", 10", 8", dead leader, vines
T131	Leyland cypress	*Cupressus x leylandii*	24	Tree Protection Fence / Root Pruning	POOR	Leaning on guy wire, english ivy on trunk
T132	Red mulberry	*Morus rubra*	10	No Impact	POOR	Vines, missing limbs
T133	Crapemyrtle	*Lagerstroemia indica*	11	No Impact	GOOD	Multi-trunk, 6", 1.5", 4", 4", 4", 4", 4".
T134	Crapemyrtle	*Lagerstroemia indica*	9	No Impact	GOOD	Multi-trunk, 4", 4", 4", 3", 3", 3", 2".
T135	Kousa dogwood	*Cornus kousa*	10	Remove	GOOD	
T136	Kousa dogwood	*Cornus kousa*	12	Remove	GOOD	
T137	Kousa dogwood	*Cornus kousa*	14	Remove	GOOD	
T138	Red mulberry	*Morus rubra*	24	Tree Protection Fence / Root Pruning	POOR	Covered in vines, cut limbs, epicormic growth
T139	Red mulberry	*Morus rubra*	16	Tree Protection Fence / Root Pruning	POOR	Covered in vines, cut limbs, epicormic growth
T140	Red mulberry	*Morus rubra*	18	No Impact	POOR	Covered in vines, cut limbs, epicormic growth
T141	Red mulberry	*Morus rubra*	14	No Impact	POOR	Covered in vines, cut limbs, epicormic growth
T142	Northern red oak	*Quercus rubra*	14	Tree Protection Fence / Root Pruning	POOR	Covered in vines, cut limbs, epicormic growth
T143	Leyland cypress	*Cupressus x leylandii*	7	Tree Protection Fence / Root Pruning	POOR	Broken limbs, browning
T144	Leyland cypress	*Cupressus x leylandii*	8.5	Tree Protection Fence / Root Pruning	POOR	Broken limbs, browning
T145	Leyland cypress	*Cupressus x leylandii*	8.5	Tree Protection Fence / Root Pruning	POOR	Broken limbs, browning
T146	Leyland cypress	*Cupressus x leylandii*	6	Tree Protection Fence / Root Pruning	POOR	Leaning, broken limbs
T147	Leyland cypress	*Cupressus x leylandii*	3	Tree Protection Fence / Root Pruning	POOR	Multi-trunk, 1", 1", 1", 1", 1", 1", 1", 1".
T148	Japanese flowering cherry	*Prunus serrulata*	2	Remove	FAIR	Vines
T149	Crapemyrtle	*Lagerstroemia indica*	2	Remove	FAIR	Vines
T150	Northern red oak	*Quercus rubra*	8	Tree Protection Fence / Root Pruning	POOR	Broken leader, covered in vines
T151	**Green ash**	***Fraxinus pennsylvanica***	**36**	**Tree Protection Fence / Root Pruning**	**FAIR**	**Covered in vines**
T152	**Deodar cedar**	***Cedrus deodara***	**30**	**Tree Protection Fence / Root Pruning**	**POOR**	**Covered in vines, cut limb**
T153	Japanese flowering cherry	*Prunus serrulata*	5	Tree Protection Fence	POOR	Wound in trunk, covered in vines
T154	American holly	*Ilex opaca*	12	Tree Protection Fence / Root Pruning	EXCELLENT	
T155	Northern red oak	*Quercus rubra*	12	Tree Protection Fence	POOR	Covered in vines, broken limbs
T156	White pine	*Pinus strobus*	13	Tree Protection Fence	POOR	Covered in vines, broken limbs
T157	White pine	*Pinus strobus*	14	Tree Protection Fence	POOR	Covered in vines, broken limbs
T158	White pine	*Pinus strobus*	14	Tree Protection Fence	FAIR	Covered in vines, broken limbs, fungus growth

*** BOLD DENOTES SPECIMEN TREE**

SHRUB TABLE

NO.	COMMON NAME	SCIENTIFIC NAME	CONSTRUCTION IMPACT
S1	Rose	*Rosa spp.*	Remove
S2	Rose	*Rosa spp.*	Remove
S3	Yew	*Taxus baccata*	No Impact
S4	Box Elder	*Acer negundo*	Remove
S5	Holly	*Ilex spp.*	Remove
S6	Viburnum	*Viburnum spp.*	Remove
S7	Viburnum	*Viburnum spp.*	Remove
S8	Chokeberry	*Aronia spp.*	Remove
S9	Chokeberry	*Aronia spp.*	Remove
S10	Chokeberry	*Aronia spp.*	Remove
S11	Chokeberry	*Aronia spp.*	Remove
S12	Chokeberry	*Aronia spp.*	Remove
S13	Chokeberry	*Aronia spp.*	Remove
S14	Chokeberry	*Aronia spp.*	No Impact
S15	Holly	*Ilex spp.*	Remove
S16	Holly	*Ilex spp.*	Remove
S17	Holly	*Ilex spp.*	Remove
S18	Holly	*Ilex spp.*	Remove
S19	Holly	*Ilex spp.*	Remove
S20	Holly	*Ilex spp.*	Remove
S21	Holly	*Ilex spp.*	Remove
S22	Holly	*Ilex spp.*	Remove
S23	Holly	*Ilex spp.*	No Impact
S24	Holly	*Ilex spp.*	No Impact
S25	Serviceberry	*Amelanchier spp.*	No Impact
S26	Serviceberry	*Amelanchier spp.*	No Impact
S27	Serviceberry	*Amelanchier spp.*	No Impact
S28	Serviceberry	*Amelanchier spp.*	No Impact
S29	Serviceberry	*Amelanchier spp.*	No Impact
S30	Holly	*Ilex spp.*	Remove

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COMMONWEALTH OF VIRGINIA
STEVEN TORGERSON
CERT. NO. 0406001542
01/05/2020
LANDSCAPE ARCHITECT

REGISTRATION STAMP

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LICENSE NO. 1542, EXPIRATION DATE 06/30/2021"

PROJECT TITLE

EXPANSION OF THE W&OD TRAIL

FALLS CHURCH, VA
UPC 113612

REVISIONS

MARK	DATE	DESCRIPTION

AMT FILE NO.	18-0367
DATE:	3/2020
SCALE:	1"=20'
DESIGNED BY:	AMT
DRAWN BY:	AMT
CHECKED BY:	AMT

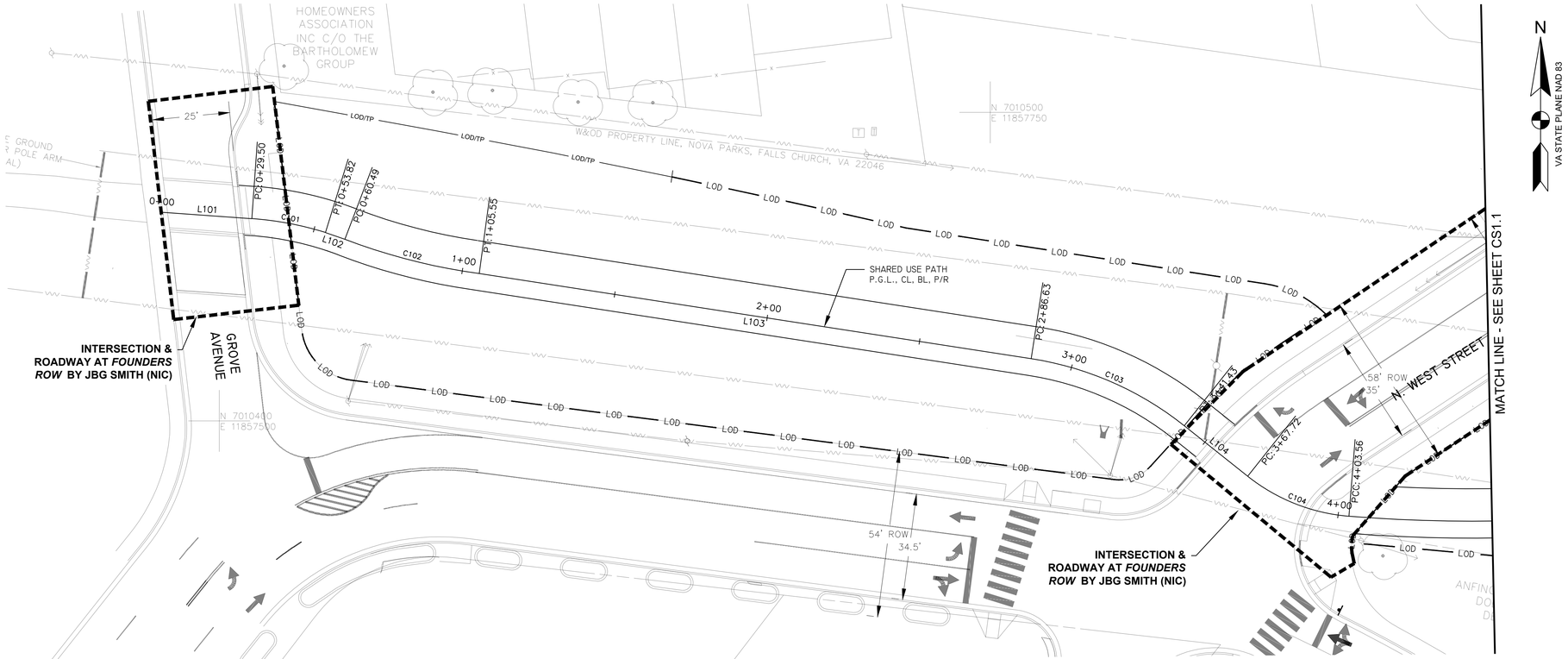
100% DESIGN

SHEET TITLE

EXISTING CONDITIONS TREE SURVEY

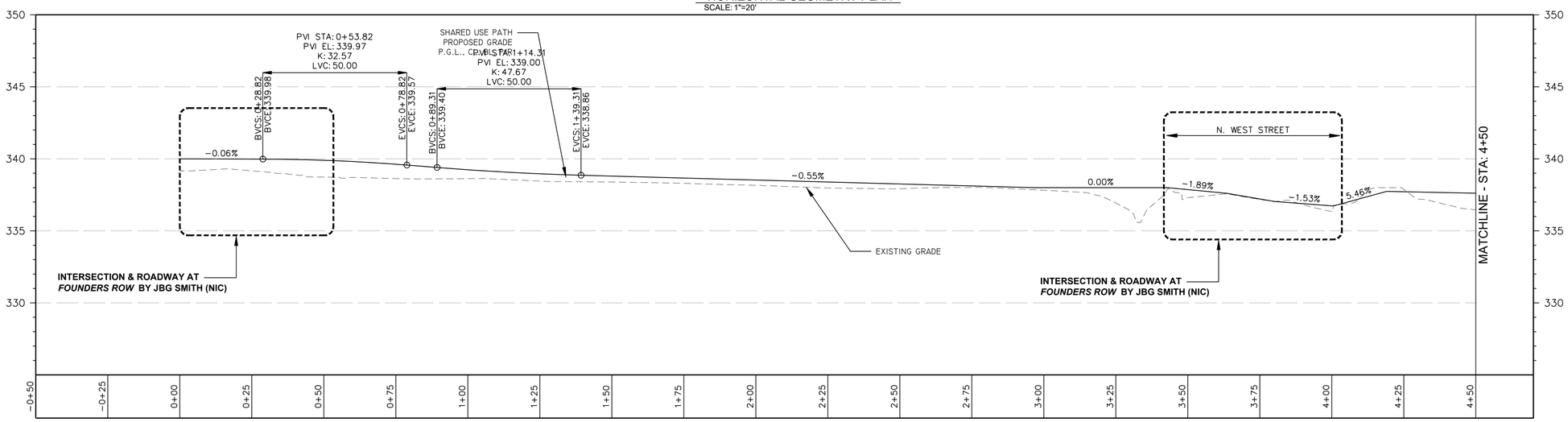
SHEET

CD5.0



HORIZONTAL GEOMETRY PLAN

SCALE: 1"=20'



PROFILE STA. 0+00 TO STA. 4+50 FOR SHARED USE PATH

SCALE: HORZ 1"=20'
VERT 1"=4'

CURVE TABLE

CURVE #	RADIUS	LENGTH	CHORD DIRECTION	START POINT	END POINT
C101	105.50'	24.32'	S79°19'47.01"E	N: 7010465.5392 E: 11857510.5632	N: 7010461.0455 E: 11857534.4133
C102	197.18'	45.06'	S75°41'33.96"E	N: 7010458.8663 E: 11857540.7117	N: 7010447.7550 E: 11857584.2803
C103	105.50'	54.80'	S66°21'32.07"E	N: 7010420.1725 E: 11857763.2480	N: 7010398.4450 E: 11857812.8833
C104	60.50'	35.84'	S68°27'00.03"E	N: 7010382.0717 E: 11857833.4521	N: 7010369.0990 E: 11857866.3011

LINE TABLE

LINE #	LENGTH	DIRECTION	START POINT	END POINT
L101	29.501'	S85°56'04.73"E	N: 7010467.6307 E: 11857481.1361	N: 7010465.5392 E: 11857510.5632
L102	6.665'	S70°54'53.09"E	N: 7010461.0455 E: 11857534.4133	N: 7010458.8663 E: 11857540.7117
L103	181.081'	S81°14'18.75"E	N: 7010447.7550 E: 11857584.2803	N: 7010420.1725 E: 11857763.2480
L104	26.290'	S51°28'45.39"E	N: 7010398.4450 E: 11857812.8833	N: 7010382.0717 E: 11857833.4521

NOTES:

SEE GI 1.1 FOR LAYOUT NOTES.

*CONTRACTOR MUST VERIFY ALL GRADES, LOCATIONS, AND SIZES BETWEEN STA 0+41 – 5+00 AS EXISTING CONDITIONS WERE BASED ON DESIGN DRAWINGS AND NOT AS-BUILTS.

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PROJECT TITLE

EXPANSION OF THE W&OD TRAIL

FALLS CHURCH, VA
UPC 113612

REVISIONS

MARK	DATE	DESCRIPTION

AMT FILE NO.	18-0367
DATE:	3/2020
SCALE:	AS SHOWN
DESIGNED BY:	AMT
DRAWN BY:	AMT
CHECKED BY:	AMT

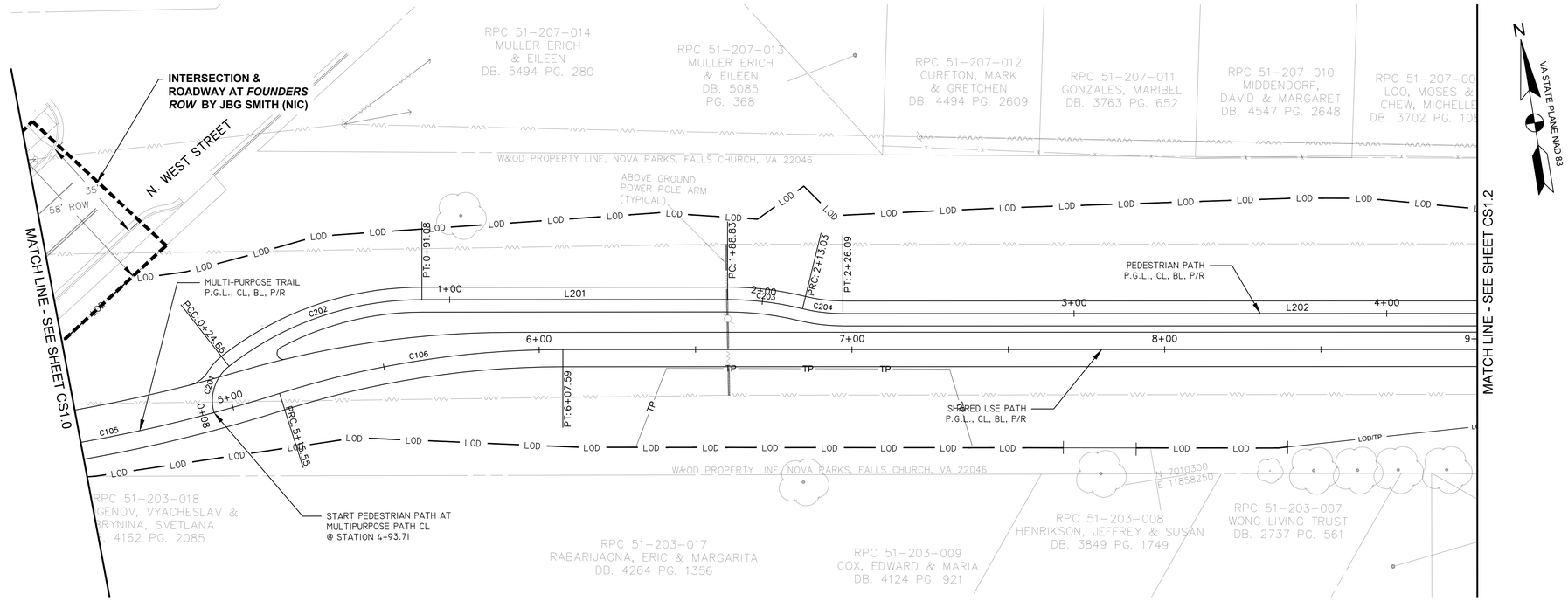
100% DESIGN

SHEET TITLE

HORIZONTAL AND VERTICAL ALIGNMENTS

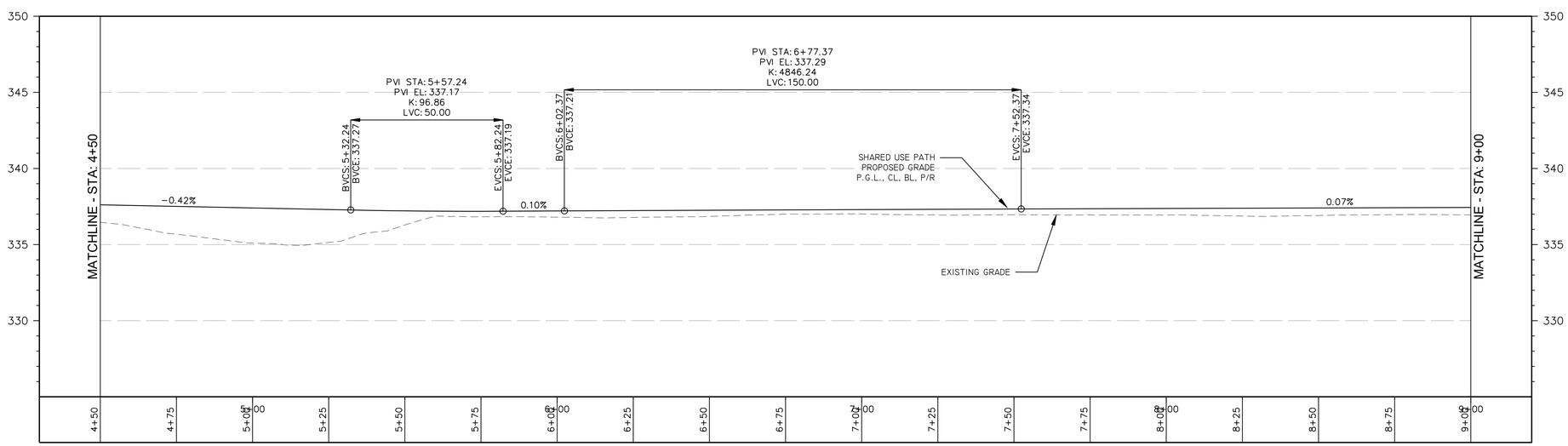
SHEET

CS1.0



HORIZONTAL GEOMETRY PLAN

SCALE: 1"=20'



PROFILE STA. 4+50 TO STA. 9+00 FOR SHARED USE PATH

SCALE: HORZ 1"=20'
VERT 1"=4'

CURVE TABLE

CURVE #	RADIUS	LENGTH	CHORD DIRECTION	START POINT	END POINT
C105	500.00'	111.99'	N88°09'45.22"E	N: 7010369.0990 E: 11857866.3011	N: 7010372.6824 E: 11857978.0022
C106	300.00'	92.04'	S89°27'52.34"E	N: 7010372.6824 E: 11857978.0022	N: 7010371.8256 E: 11858069.6820
C201	14.00'	16.57'	N27°20'48.81"E	N: 7010370.0196 E: 11857956.3232	N: 7010383.8912 E: 11857963.4972
C202	99.86'	66.42'	N80°16'24.81"E	N: 7010383.8912 E: 11857963.4972	N: 7010394.9066 E: 11858027.7614
C203	100.10'	24.20'	S73°44'48.94"E	N: 7010379.0641 E: 11858124.2212	N: 7010372.3072 E: 11858147.3987
C204	54.00'	13.06'	S73°44'48.94"E	N: 7010372.3072 E: 11858147.3987	N: 7010368.6621 E: 11858159.9019

LINE TABLE

LINE #	LENGTH	DIRECTION	START POINT	END POINT
L201	97.752'	S80°40'23.08"E	N: 7010394.9066 E: 11858027.7614	N: 7010379.0641 E: 11858124.2212
L202	290.984'	S80°40'23.08"E	N: 7010368.6621 E: 11858159.9019	N: 7010321.5030 E: 11858447.0393

NOTES:

SEE GI 1.1 FOR LAYOUT NOTES.
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PROJECT TITLE

EXPANSION OF THE W&OD TRAIL
FALLS CHURCH, VA
UPC 113612

REVISIONS

MARK	DATE	DESCRIPTION

AMT FILE NO.	18-0367
DATE:	3/2020
SCALE:	AS SHOWN
DESIGNED BY:	AMT
DRAWN BY:	AMT
CHECKED BY:	AMT

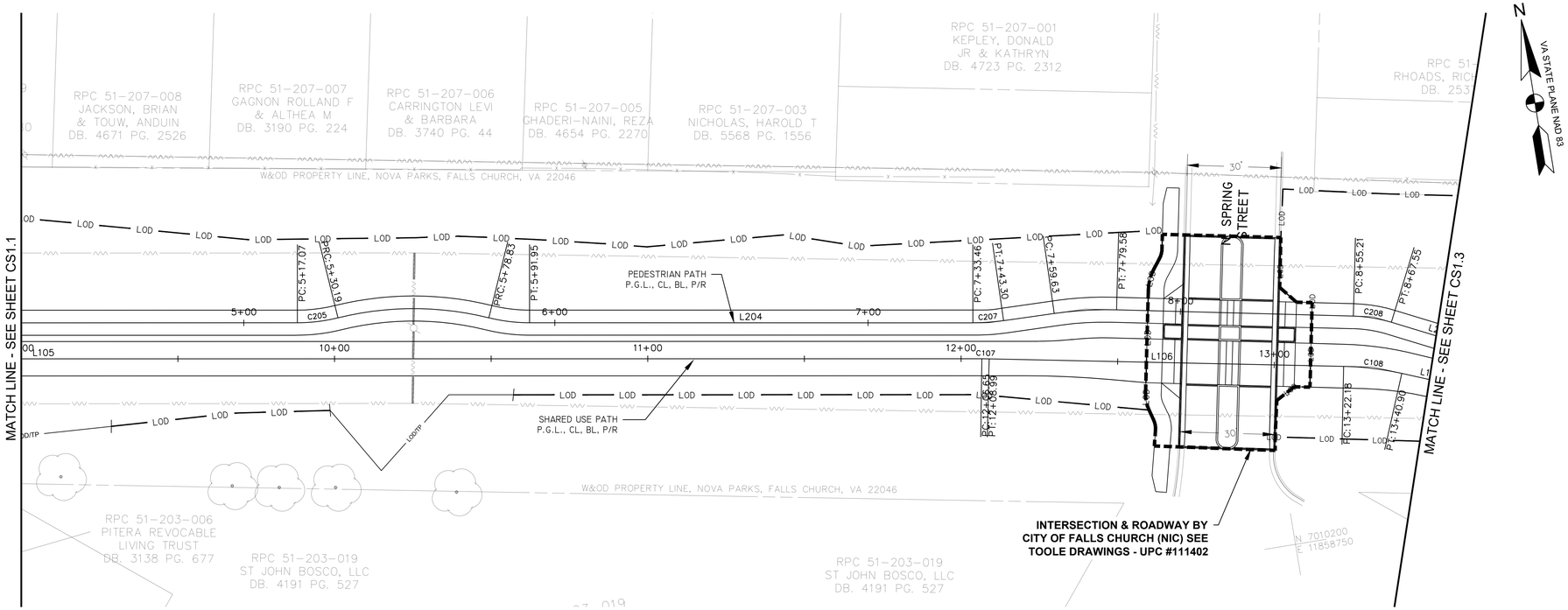
100% DESIGN

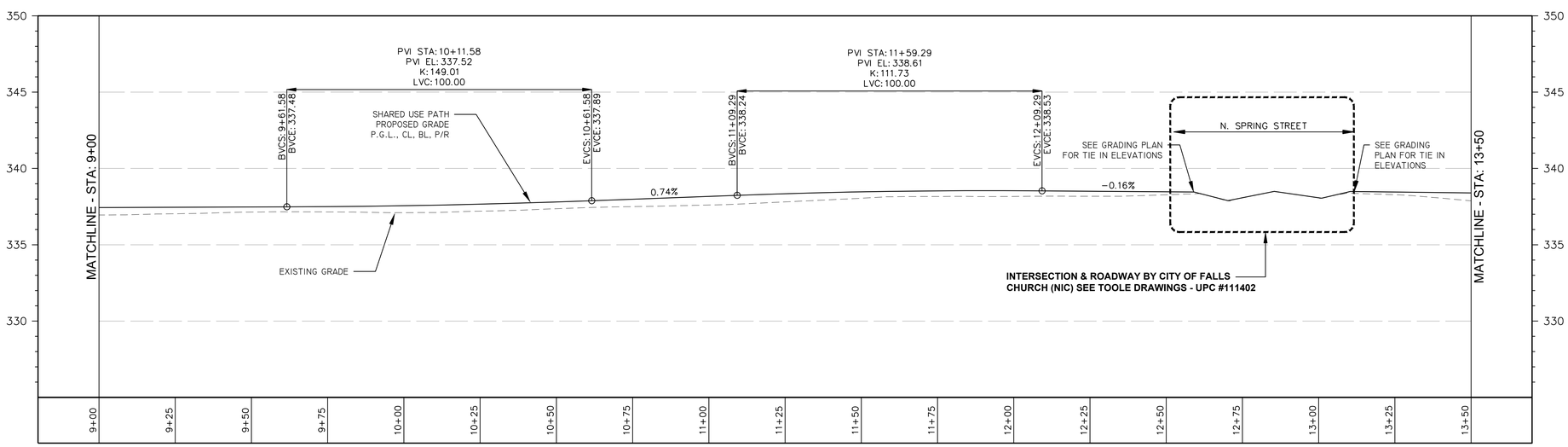
SHEET TITLE

HORIZONTAL AND VERTICAL ALIGNMENTS

SHEET

CS1.1





PROFILE STA. 9+00 TO STA. 13+50 FOR SHARED USE PATH

SCALE: HORZ 1"=20'
VERT 1"=4'

CURVE TABLE					
CURVE #	RADIUS	LENGTH	CHORD DIRECTION	START POINT	END POINT
C107	250.00'	2.34'	S79°33'50.25"E	N: 7010274.7387 E: 11858660.8143	N: 7010274.3145 E: 11858663.1177
C108	94.03'	18.72'	S73°45'09.23"E	N: 7010253.6037 E: 11858774.3955	N: 7010248.3740 E: 11858792.3406
C205	54.00'	13.12'	S87°37'57.84"E	N: 7010321.5030 E: 11858447.0393	N: 7010320.9624 E: 11858460.1146
C207	69.35'	9.84'	S84°43'05.42"E	N: 7010286.5047 E: 11858659.8334	N: 7010285.5997 E: 11858669.6226
C208	46.00'	12.34'	S71°28'05.29"E	N: 7010268.9294 E: 11858780.0407	N: 7010265.0186 E: 11858791.7074

LINE TABLE				
LINE #	LENGTH	DIRECTION	START POINT	END POINT
L105	599.052'	S80°40'23.08"E	N: 7010371.8256 E: 11858069.6820	N: 7010274.7387 E: 11858660.8143
L106	113.189'	S79°27'24.65"E	N: 7010274.3145 E: 11858663.1177	N: 7010253.6037 E: 11858774.3955
L204	141.513'	S80°39'12.33"E	N: 7010309.4873 E: 11858520.1988	N: 7010286.5047 E: 11858659.8334

NOTES:
SEE GI 1.1 FOR LAYOUT NOTES.

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

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PROJECT TITLE
EXPANSION OF THE W&OD TRAIL
FALLS CHURCH, VA
UPC 113612

REVISIONS

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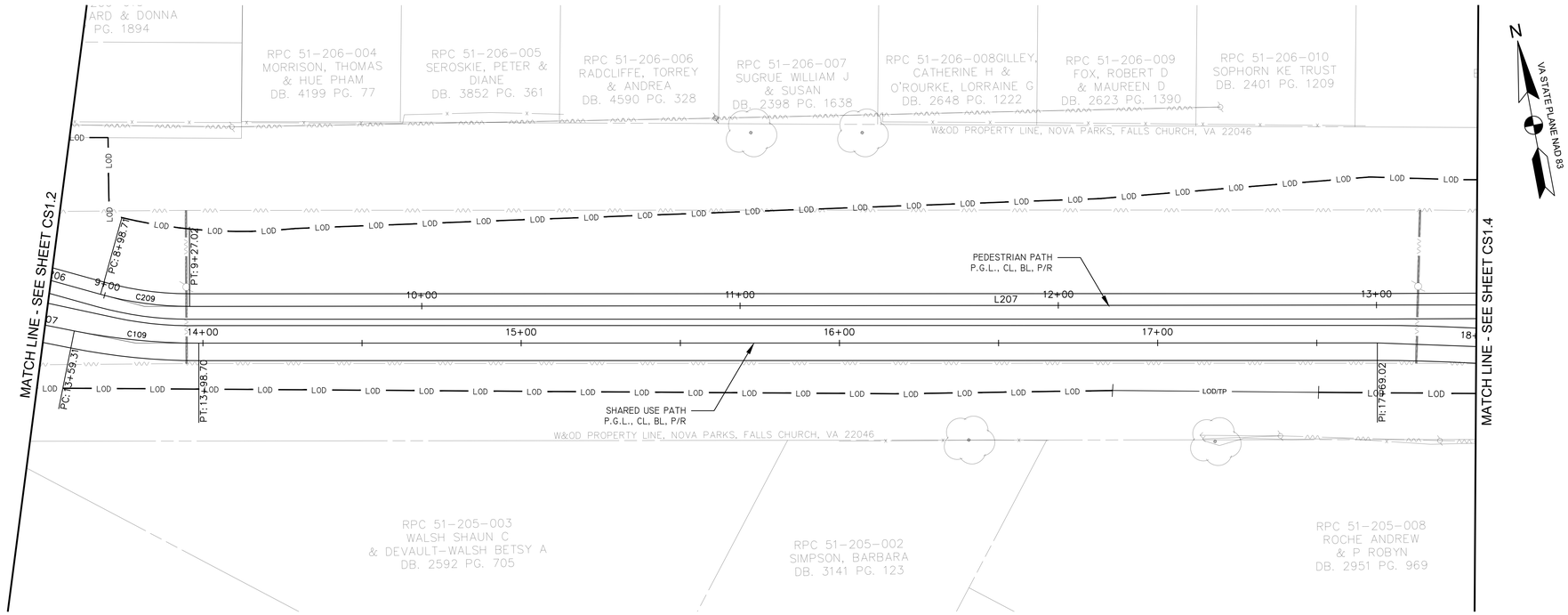
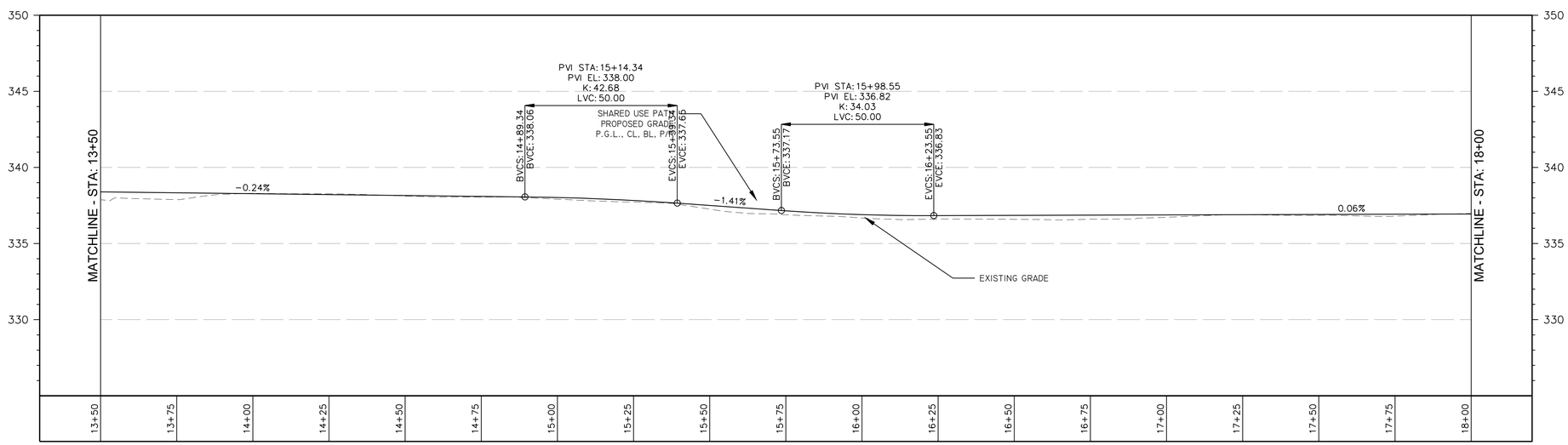
SHEET TITLE
HORIZONTAL AND VERTICAL ALIGNMENTS

SHEET
CS1.2





PROFILE STA. 13+50 TO STA. 18+00 FOR SHARED USE PATH

SCALE: HORZ 1"=20'
VERT 1"=4'

CURVE TABLE					
CURVE #	RADIUS	LENGTH	CHORD DIRECTION	START POINT	END POINT
C109	200.00'	39.39'	S73°41'26.24"E	N: 7010241.4918 E: 11858809.4160	N: 7010230.4478 E: 11858847.1608
C209	103.94'	28.31'	S71°35'01.46"E	N: 7010251.2506 E: 11858819.6655	N: 7010242.3357 E: 11858846.4393

LINE TABLE				
LINE #	LENGTH	DIRECTION	START POINT	END POINT
L107	18.410'	S68°02'53.81"E	N: 7010248.3740 E: 11858792.3406	N: 7010241.4918 E: 11858809.4160
L206	31.164'	S63°46'55.20"E	N: 7010265.0186 E: 11858791.7074	N: 7010251.2506 E: 11858819.6655
L207	513.170'	S79°23'07.71"E	N: 7010242.3357 E: 11858846.4393	N: 7010147.8094 E: 11859350.8287

NOTES:
SEE GI 1.1 FOR LAYOUT NOTES.

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

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PROJECT TITLE
EXPANSION OF THE W&OD TRAIL
FALLS CHURCH, VA
UPC 113612

REVISIONS

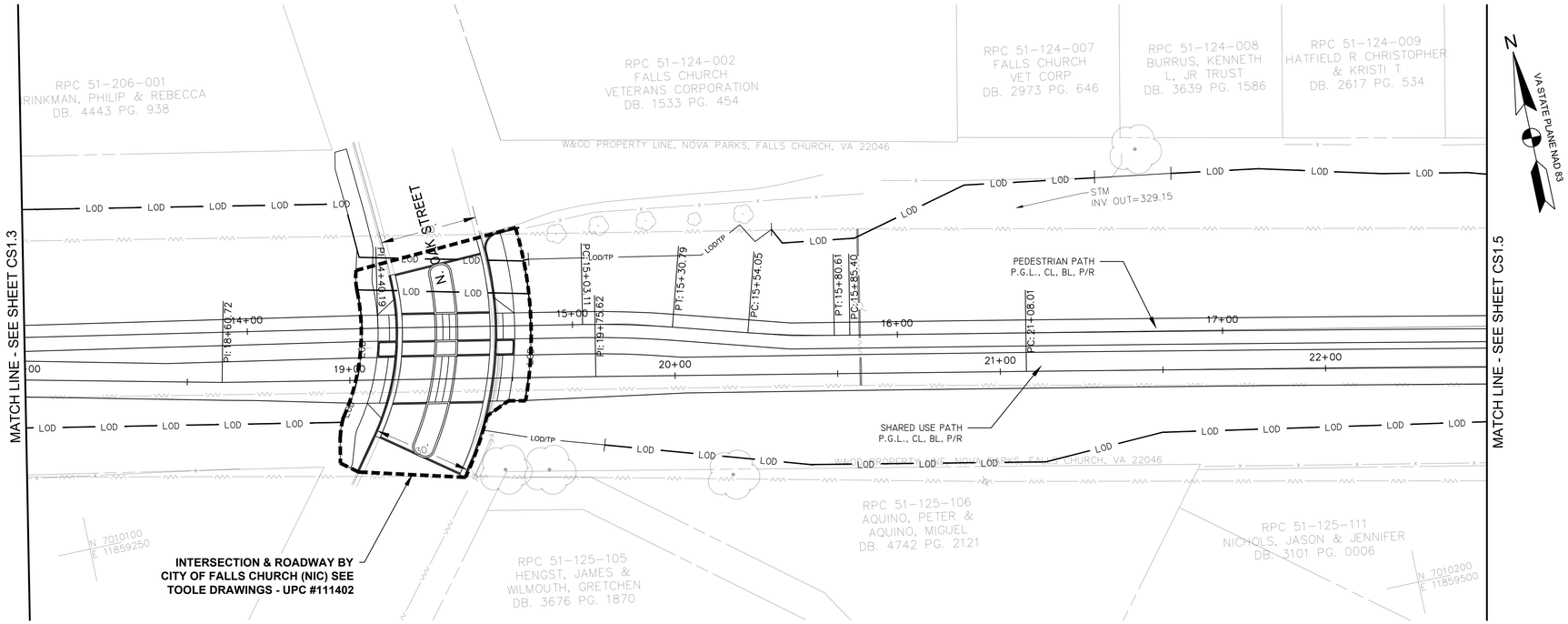
MARK	DATE	DESCRIPTION

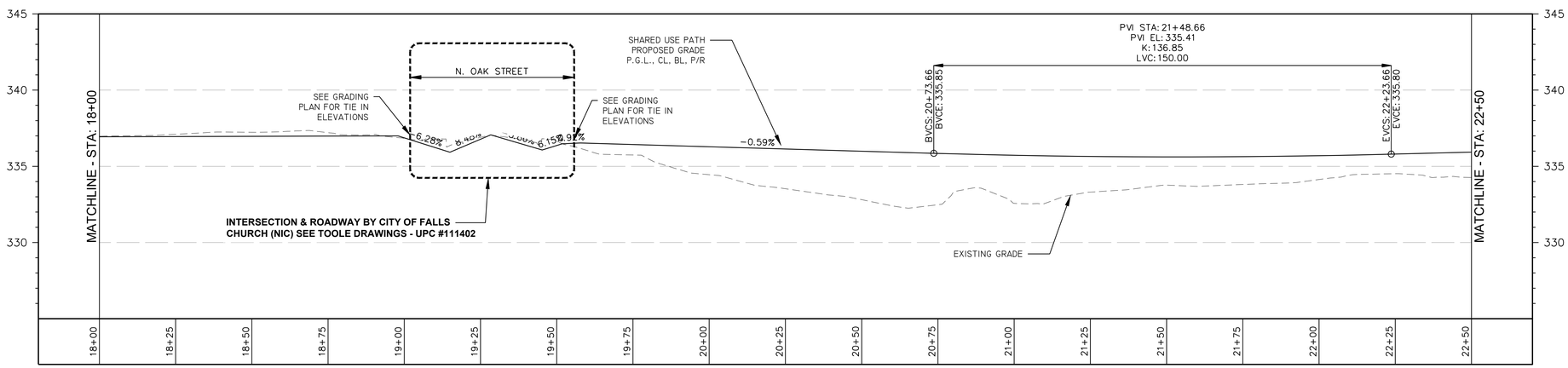
AMT FILE NO.	18-0367
DATE:	3/2020
SCALE:	AS SHOWN
DESIGNED BY:	AMT
DRAWN BY:	AMT
CHECKED BY:	AMT

100% DESIGN

SHEET TITLE
HORIZONTAL AND VERTICAL ALIGNMENTS

SHEET
CS1.3





PROFILE STA. 18+00 TO STA. 22+50 FOR SHARED USE PATH

SCALE: HORZ 1"=20'
VERT 1"=4'

CURVE TABLE					
CURVE #	RADIUS	LENGTH	CHORD DIRECTION	START POINT	END POINT

LINE TABLE				
LINE #	LENGTH	DIRECTION	START POINT	END POINT

NOTES:
SEE GI 1.1 FOR LAYOUT NOTES.

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SCALE: 1"=20'

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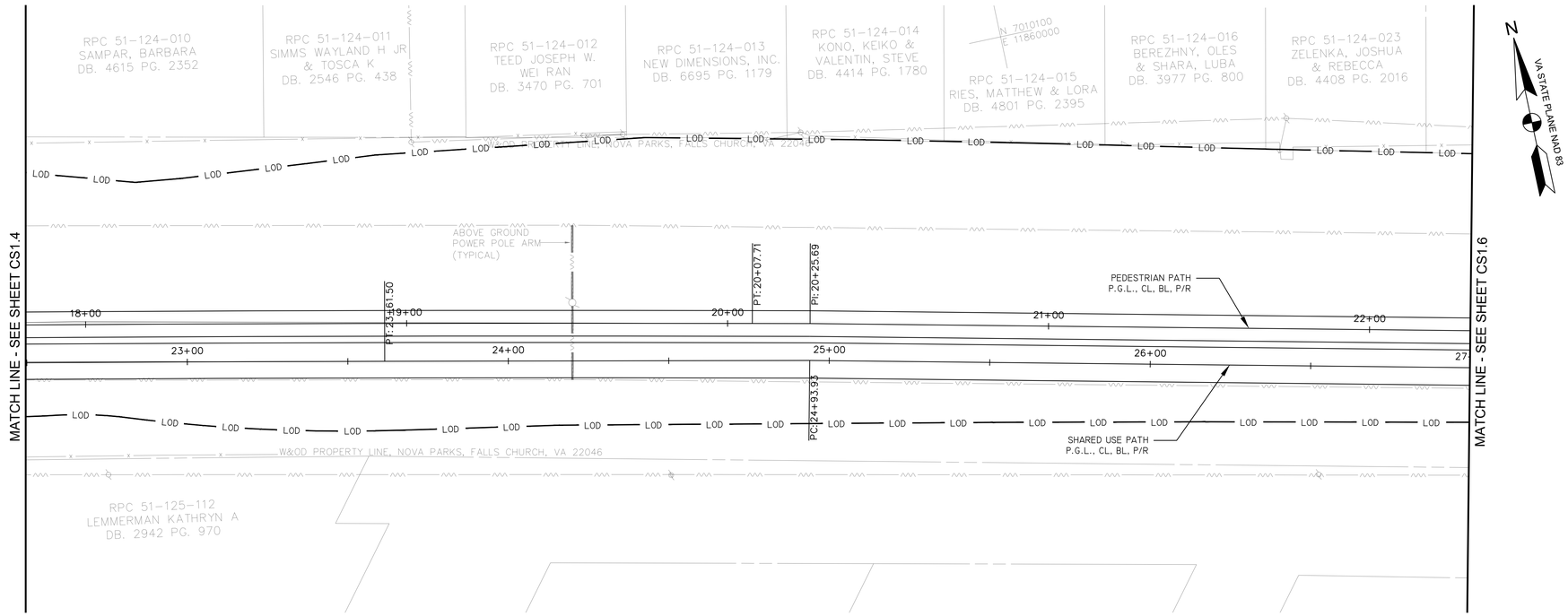
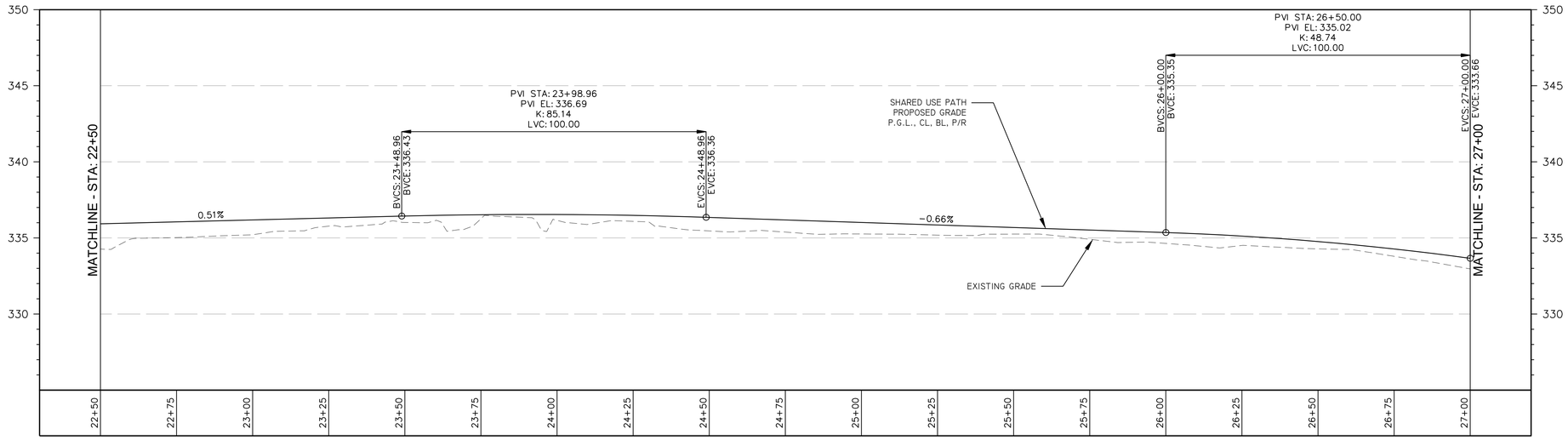
SHEET TITLE
HORIZONTAL AND VERTICAL ALIGNMENTS

SHEET
CS1.4





PROFILE STA. 22+50 TO STA. 27+00 FOR SHARED USE PATH

SCALE: HORZ 1"=20'
VERT 1"=4'

LINE TABLE				
LINE #	LENGTH	DIRECTION	START POINT	END POINT

NOTES:
SEE GI 1.1 FOR LAYOUT NOTES.

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

AMT
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COMMONWEALTH OF VIRGINIA
STEVEN TORGERSON
CERT. NO. 0406001342
01/05/2020
LANDSCAPE ARCHITECT

REGISTRATION STAMP

NOT FOR CONSTRUCTION

PROFESSIONAL CERTIFICATION
"I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED CERTIFIED LANDSCAPE ARCHITECT UNDER THE LAWS OF THE STATE OF VIRGINIA."
LICENSE NO. 3562, EXPIRATION DATE 06/30/2021

PROJECT TITLE
EXPANSION OF THE W&OD TRAIL
FALLS CHURCH, VA
UPC 113612

REVISIONS

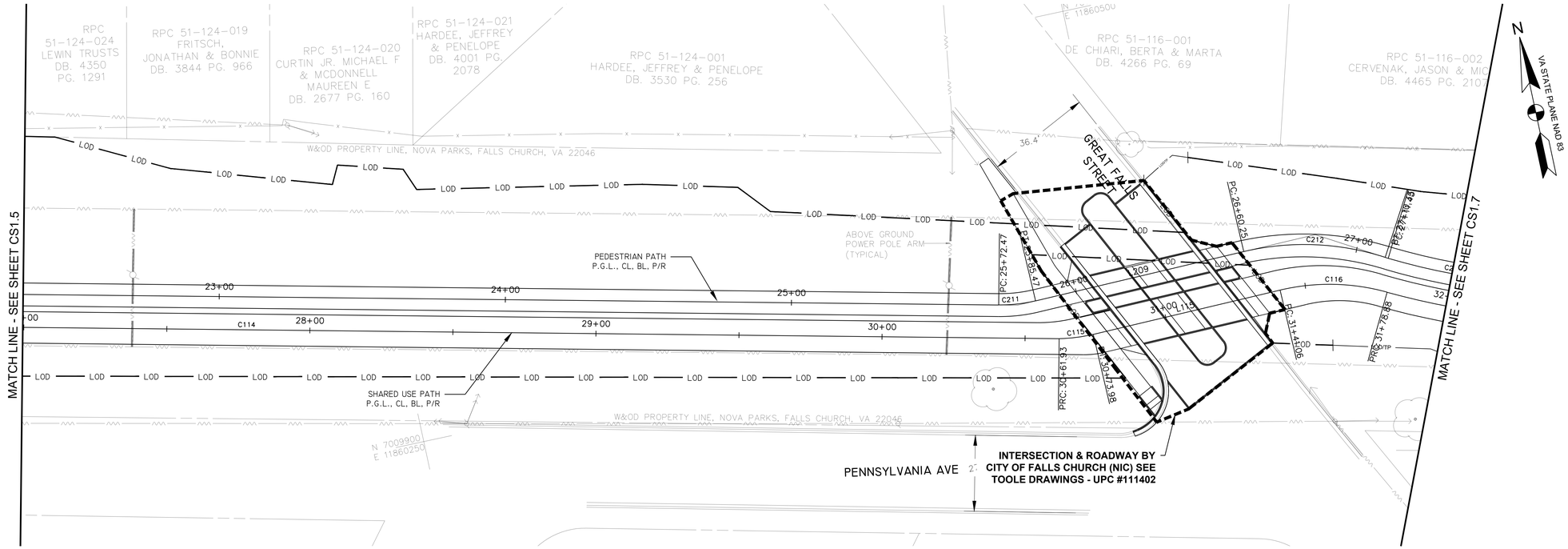
MARK	DATE	DESCRIPTION

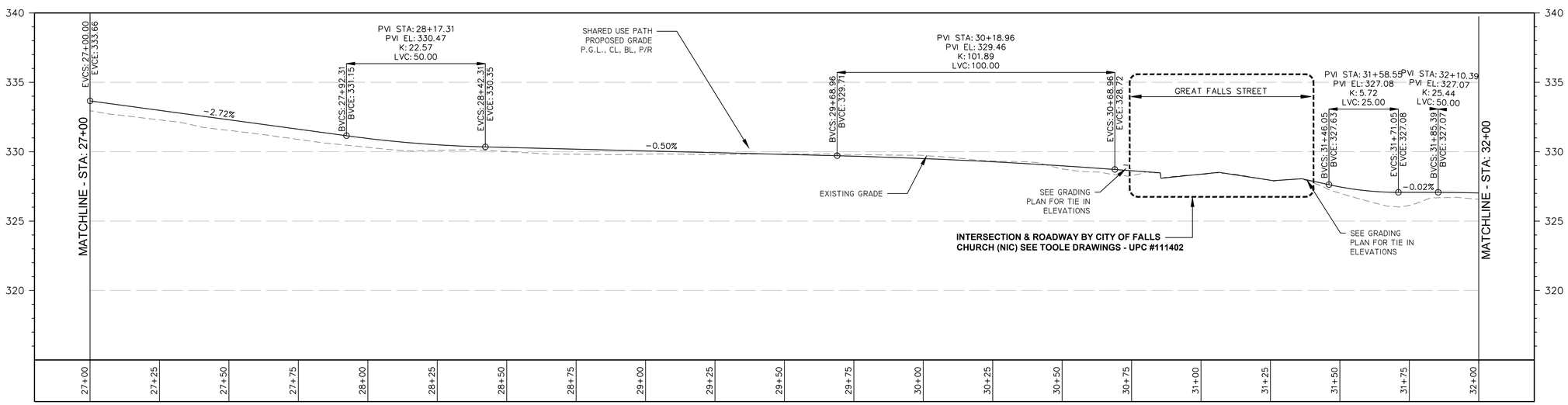
AMT FILE NO.	18-0367
DATE:	3/2020
SCALE:	AS SHOWN
DESIGNED BY:	AMT
DRAWN BY:	AMT
CHECKED BY:	AMT

100% DESIGN

SHEET TITLE
HORIZONTAL AND VERTICAL ALIGNMENTS

SHEET
CS1.5





PROFILE STA. 27+00 TO STA. 31+50 FOR SHARED USE PATH

SCALE: HORZ 1"=20'
VERT 1"=4'

CURVE TABLE					
CURVE #	RADIUS	LENGTH	CHORD DIRECTION	START POINT	END POINT
C114	22256094.47'	568.00'	S77°14'57.10"E	N: 7010013.8360 E: 11859920.6804	N: 7009888.4718 E: 11860474.6743
C115	57.76'	12.05'	S85°04'13.79"E	N: 7009888.4718 E: 11860474.6743	N: 7009887.4380 E: 11860486.6607
C211	53.46'	13.00'	S84°13'10.72"E	N: 7009904.4253 E: 11860456.4941	N: 7009903.1195 E: 11860469.3933

LINE TABLE				
LINE #	LENGTH	DIRECTION	START POINT	END POINT
L115	67.076'	N88°48'53.57"E	N: 7009887.4380 E: 11860486.6607	N: 7009888.8253 E: 11860553.7219
L209	74.783'	N88°48'53.57"E	N: 7009903.1195 E: 11860469.3933	N: 7009904.6662 E: 11860544.1603

NOTES:
SEE GI 1.1 FOR LAYOUT NOTES.

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

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COMMONWEALTH OF VIRGINIA
STEVEN TORGERSON
Cert. No. 0606001542
01/05/2020
LANDSCAPE ARCHITECT

REGISTRATION STAMP

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LICENSE NO. 3562, EXPIRATION DATE 06/30/2021

PROJECT TITLE
EXPANSION OF THE W&OD TRAIL
FALLS CHURCH, VA
UPC 113612

REVISIONS

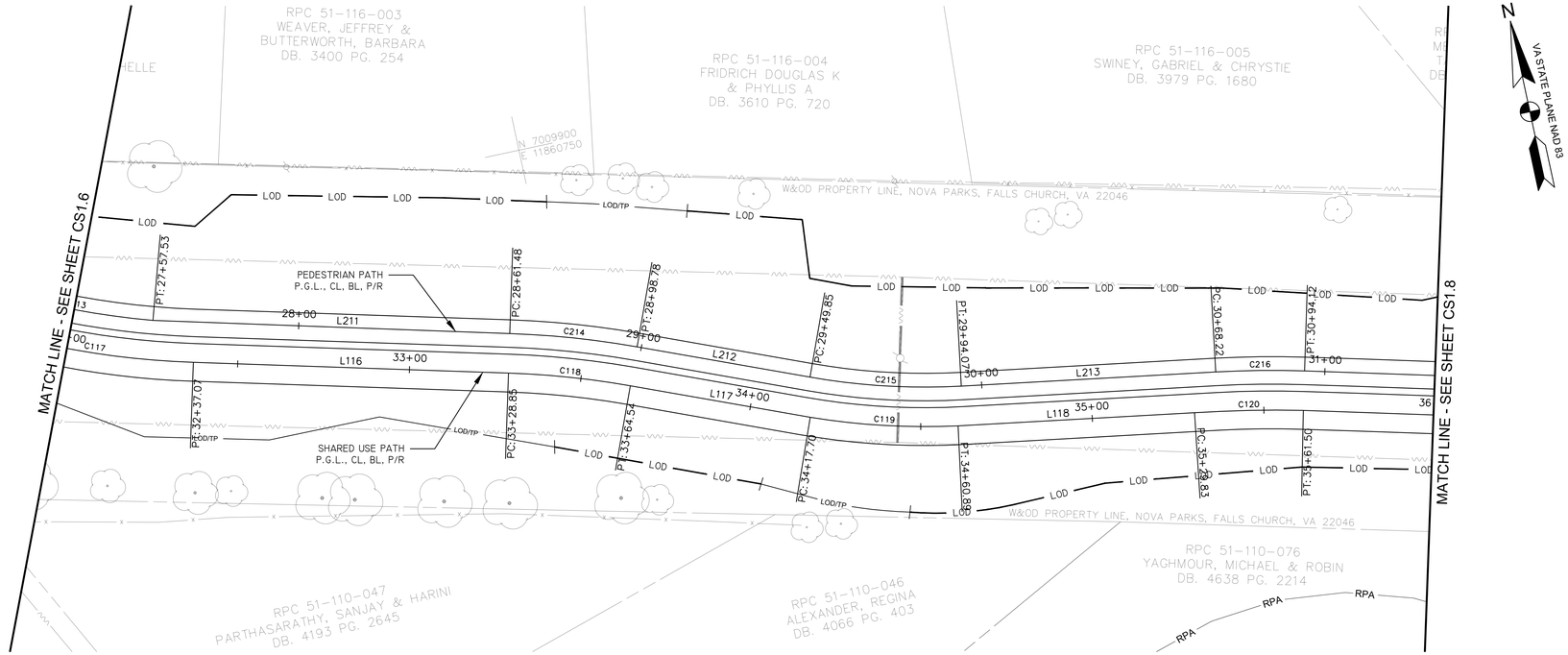
MARK	DATE	DESCRIPTION

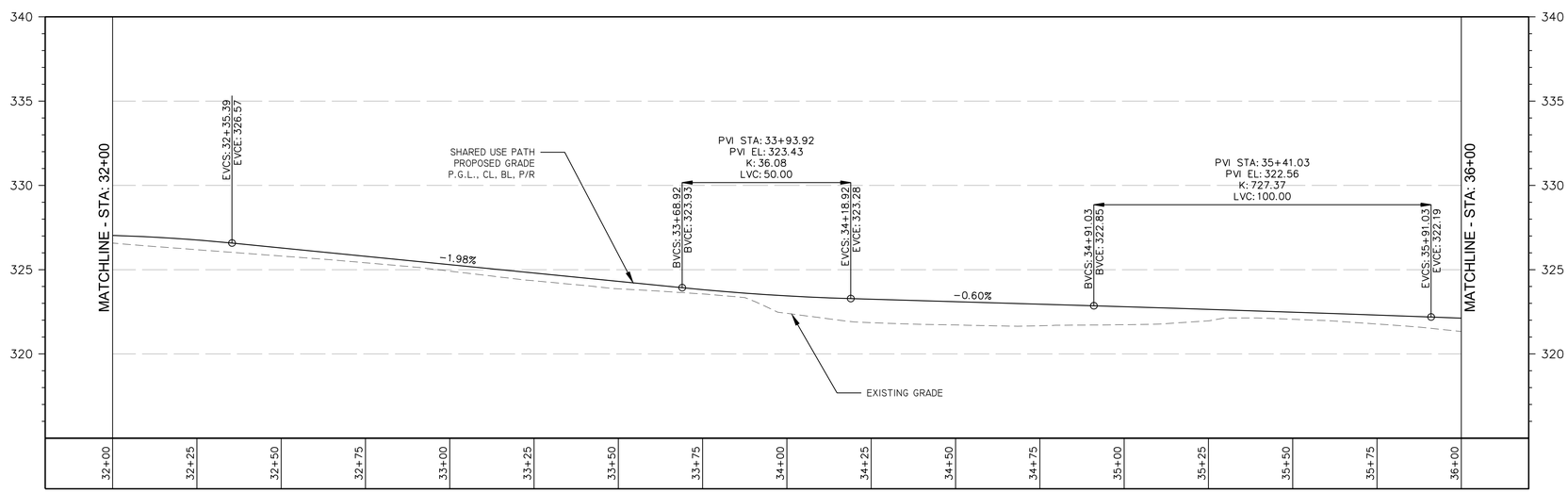
AMT FILE NO.	18-0367
DATE:	3/2020
SCALE:	AS SHOWN
DESIGNED BY:	AMT
DRAWN BY:	AMT
CHECKED BY:	AMT

100% DESIGN

SHEET TITLE
HORIZONTAL AND VERTICAL ALIGNMENTS

SHEET
CS1.6





PROFILE STA. 31+50 TO STA. 36+00 FOR SHARED USE PATH

SCALE: HORZ 1"=20'
VERT 1"=4'

CURVE TABLE

CURVE #	RADIUS	LENGTH	CHORD DIRECTION	START POINT	END POINT
C116	75.00'	37.82'	S76°44'18.25"E	N: 7009888.8253 E: 11860553.7219	N: 7009880.2408 E: 11860590.1459
C117	244.50'	58.19'	S69°06'36.64"E	N: 7009880.2408 E: 11860590.1459	N: 7009859.5396 E: 11860644.3859
C118	255.50'	35.69'	S71°55'37.82"E	N: 7009837.2259 E: 11860733.4091	N: 7009826.1636 E: 11860767.3086
C119	205.18'	43.19'	S74°33'12.30"E	N: 7009806.1956 E: 11860816.5756	N: 7009794.7140 E: 11860858.1272
C120	379.92'	31.68'	S79°04'58.06"E	N: 7009783.9915 E: 11860926.2286	N: 7009777.9940 E: 11860957.3228
C212	91.61'	50.08'	S75°31'27.11"E	N: 7009904.6662 E: 11860544.1603	N: 7009892.3026 E: 11860592.0502
C213	233.00'	46.09'	S67°16'02.22"E	N: 7009891.7437 E: 11860593.0131	N: 7009873.9628 E: 11860635.4516
C214	267.00'	37.29'	S71°55'37.82"E	N: 7009848.3808 E: 11860736.2051	N: 7009836.8206 E: 11860771.6304
C215	193.00'	44.22'	S74°29'20.33"E	N: 7009817.6281 E: 11860818.9566	N: 7009805.8294 E: 11860861.4698
C216	296.00'	25.90'	S78°32'44.50"E	N: 7009794.2958 E: 11860934.7222	N: 7009789.1543 E: 11860960.0973

LINE TABLE

LINE #	LENGTH	DIRECTION	START POINT	END POINT
L116	91.777'	S75°55'43.20"E	N: 7009859.5396 E: 11860644.3859	N: 7009837.2259 E: 11860733.4091
L117	53.160'	S67°56'13.88"E	N: 7009826.1636 E: 11860767.3086	N: 7009806.1956 E: 11860816.5756
L118	68.940'	S81°03'08.23"E	N: 7009794.7140 E: 11860858.1272	N: 7009783.9915 E: 11860926.2286
L211	103.951'	S75°45'11.80"E	N: 7009873.9628 E: 11860635.4516	N: 7009848.3808 E: 11860736.2051
L212	51.070'	S67°55'32.44"E	N: 7009836.8206 E: 11860771.6304	N: 7009817.6281 E: 11860818.9566
L213	74.155'	S81°03'08.23"E	N: 7009805.8294 E: 11860861.4698	N: 7009794.2958 E: 11860934.7222

NOTES:
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COMMONWEALTH OF VIRGINIA
STEVEN TORGERSON
CERT. NO. 0606001342
LANDSCAPE ARCHITECT
01/05/2020

REGISTRATION STAMP

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PROJECT TITLE
EXPANSION OF THE W&OD TRAIL
FALLS CHURCH, VA
UPC 113612

REVISIONS

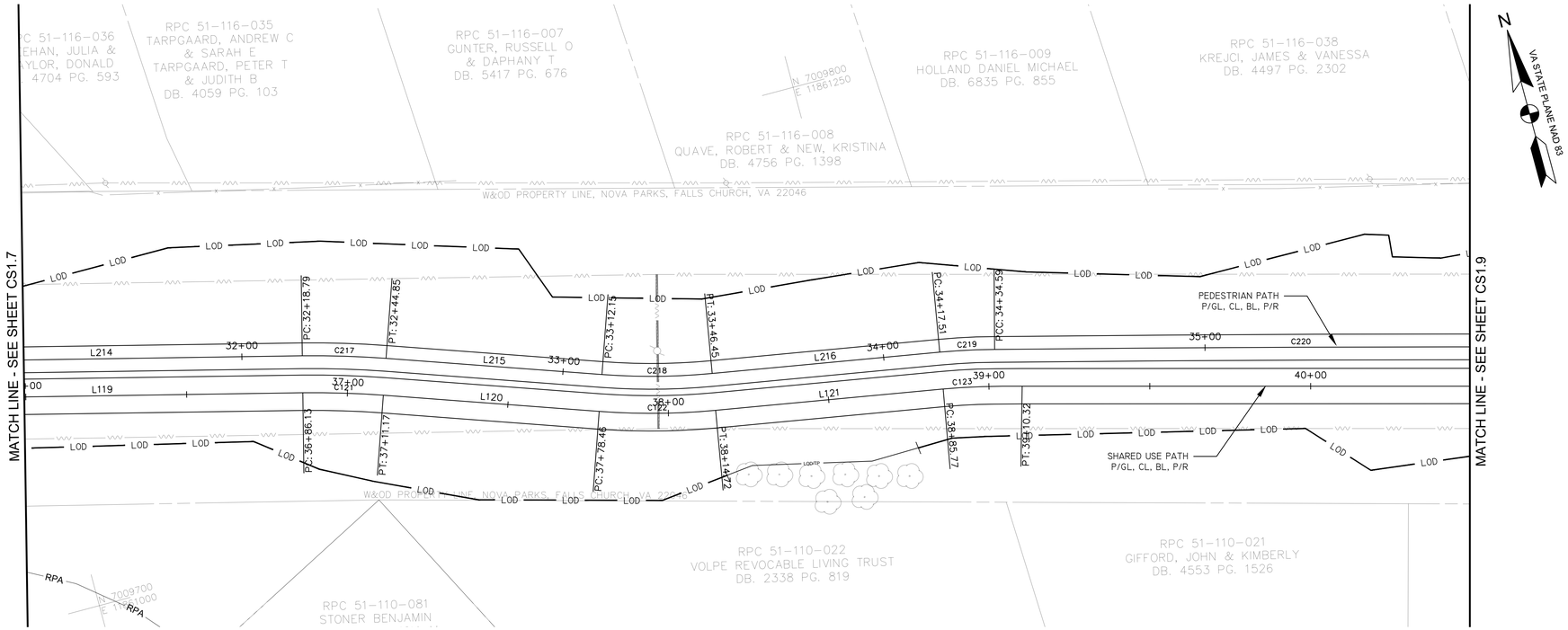
MARK	DATE	DESCRIPTION

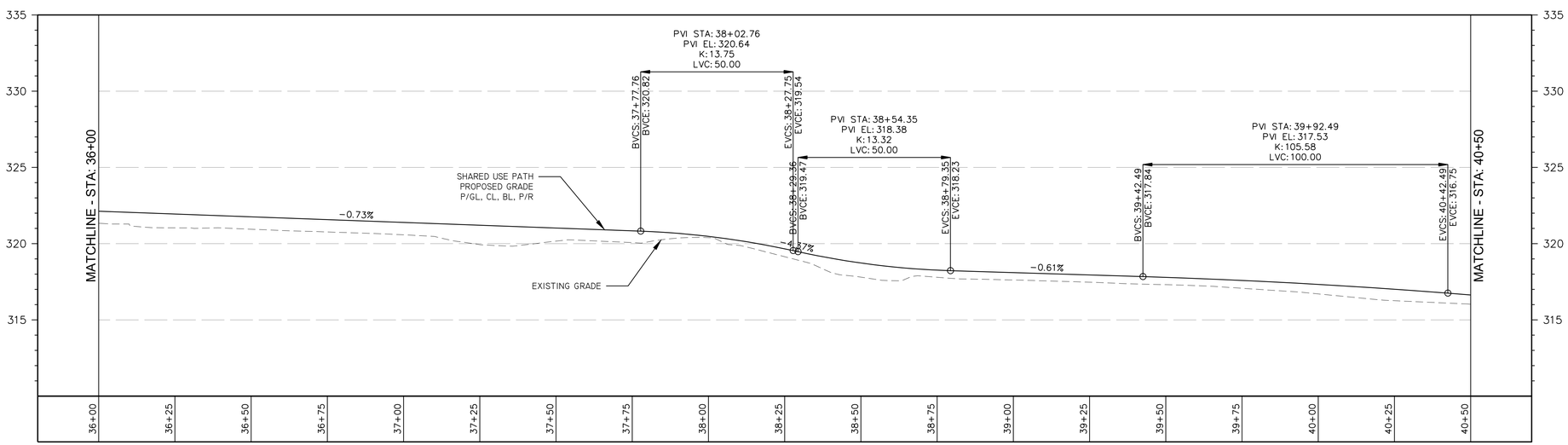
AMT FILE NO.	18-0367
DATE:	3/2020
SCALE:	AS SHOWN
DESIGNED BY:	AMT
DRAWN BY:	AMT
CHECKED BY:	AMT

100% DESIGN

SHEET TITLE
HORIZONTAL AND VERTICAL ALIGNMENTS

SHEET
CS1.7





PROFILE STA. 36+00 TO STA. 40+50 FOR SHARED USE PATH

SCALE: HORZ 1"=20'
VERT 1"=4'

CURVE TABLE

CURVE #	RADIUS	LENGTH	CHORD DIRECTION	START POINT	END POINT
C121	284.50'	25.04'	S73°16'30.73"E	N: 7009747.6000 E: 11861078.1835	N: 7009740.3956 E: 11861102.1596
C122	215.50'	36.26'	S75°34'24.30"E	N: 7009718.2141 E: 11861165.6898	N: 7009709.1916 E: 11861200.7627
C123	241.80'	24.56'	S77°01'54.02"E	N: 7009697.3349 E: 11861270.8146	N: 7009691.8260 E: 11861294.7366
C217	296.00'	26.06'	S73°16'30.73"E	N: 7009758.7485 E: 11861081.0051	N: 7009751.2528 E: 11861105.9504
C218	203.90'	34.31'	S75°34'24.30"E	N: 7009729.0687 E: 11861169.4883	N: 7009720.5317 E: 11861202.6738
C219	196.00'	17.08'	S77°53'46.52"E	N: 7009708.6736 E: 11861272.7337	N: 7009705.0924 E: 11861289.4332
C220	13709.87'	190.45'	S75°15'08.07"E	N: 7009705.0924 E: 11861289.4332	N: 7009656.6104 E: 11861473.6100

LINE TABLE

LINE #	LENGTH	DIRECTION	START POINT	END POINT
L119	124.624'	S75°53'02.46"E	N: 7009777.9940 E: 11860957.3228	N: 7009747.6000 E: 11861078.1835
L120	67.291'	S70°45'12.45"E	N: 7009740.3956 E: 11861102.1596	N: 7009718.2141 E: 11861165.6898
L121	71.048'	S80°23'36.16"E	N: 7009709.1916 E: 11861200.7627	N: 7009697.3349 E: 11861270.8146
L214	124.672'	S75°53'02.51"E	N: 7009789.1543 E: 11860960.0973	N: 7009758.7485 E: 11861081.0051
L215	67.299'	S70°45'12.45"E	N: 7009751.2528 E: 11861105.9504	N: 7009729.0687 E: 11861169.4883
L216	71.056'	S80°23'36.16"E	N: 7009720.5317 E: 11861202.6738	N: 7009708.6736 E: 11861272.7337

NOTES:
SEE GI 1.1 FOR LAYOUT NOTES.

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

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COMMONWEALTH OF VIRGINIA
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LANDSCAPE ARCHITECT

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PROJECT TITLE
EXPANSION OF THE W&OD TRAIL
FALLS CHURCH, VA
UPC 113612

REVISIONS

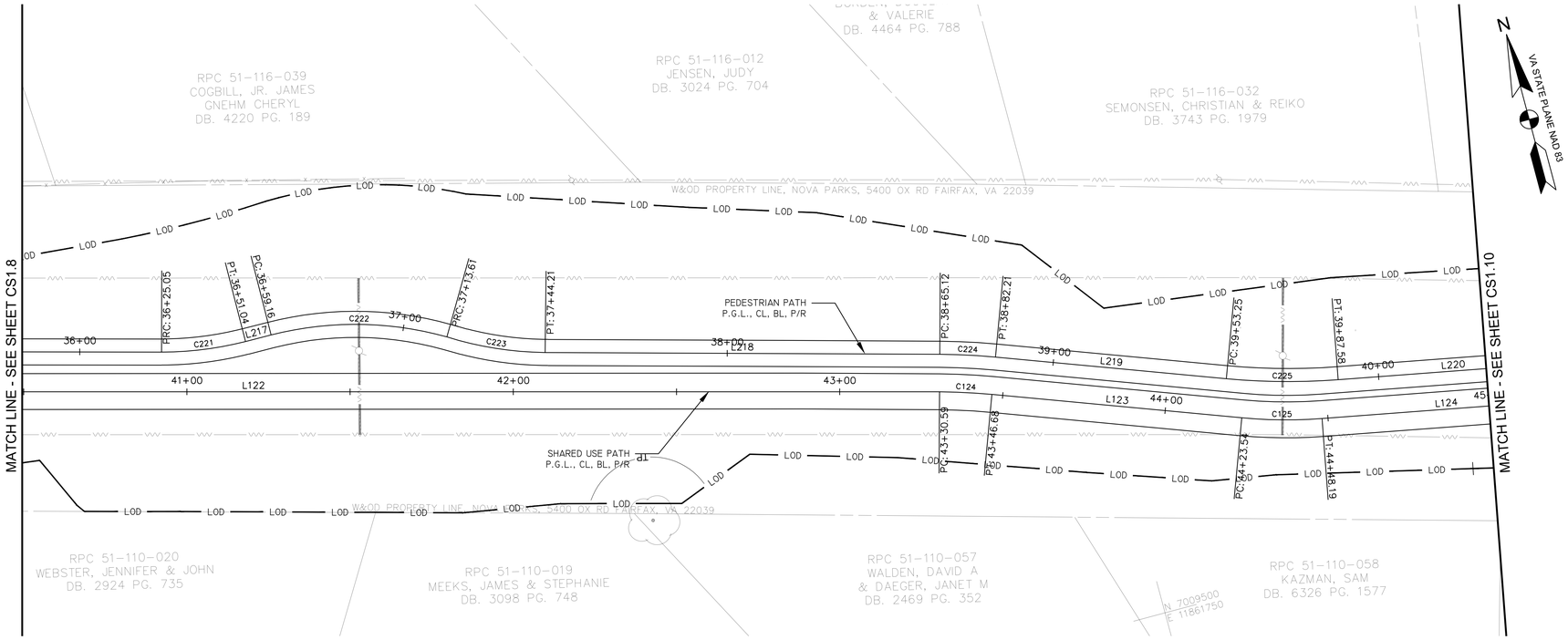
MARK	DATE	DESCRIPTION

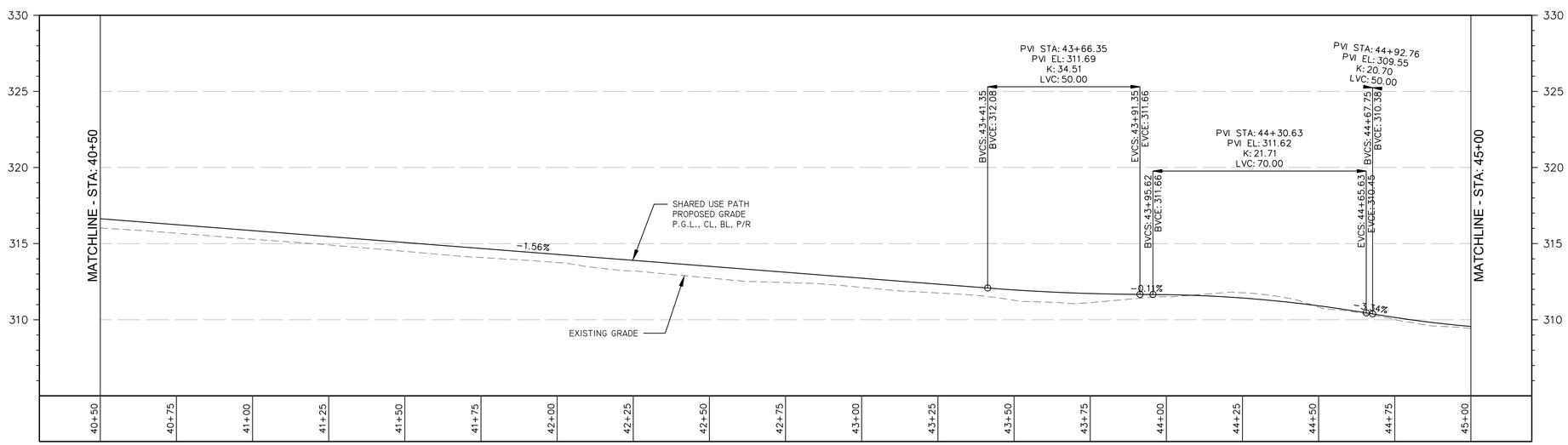
AMT FILE NO.	18-0367
DATE:	3/2020
SCALE:	AS SHOWN
DESIGNED BY:	AMT
DRAWN BY:	AMT
CHECKED BY:	AMT

100% DESIGN

SHEET TITLE
HORIZONTAL AND VERTICAL ALIGNMENTS

SHEET
CS1.8





PROFILE STA. 40+50 TO STA. 45+00 FOR SHARED USE PATH

SCALE: HORZ 1"=20'
VERT 1"=4'

CURVE TABLE

CURVE #	RADIUS	LENGTH	CHORD DIRECTION	START POINT	END POINT
C124	184.50'	16.08'	S72°10'45.21"E	N: 7009583.3008 E: 11861700.7511	N: 7009578.3805 E: 11861716.0567
C125	146.50'	24.65'	S74°30'06.76"E	N: 7009551.6903 E: 11861788.1407	N: 7009545.1121 E: 11861811.8639
C221	104.00'	25.99'	S82°13'55.66"E	N: 7009656.6104 E: 11861473.6100	N: 7009653.1063 E: 11861499.2974
C222	104.00'	54.45'	S74°23'31.40"E	N: 7009653.0202 E: 11861507.4143	N: 7009638.5360 E: 11861559.2632
C223	105.22'	30.60'	S66°00'57.08"E	N: 7009638.5360 E: 11861559.2632	N: 7009626.1398 E: 11861587.1264
C224	196.00'	17.08'	S72°10'45.21"E	N: 7009594.3919 E: 11861703.7902	N: 7009589.1650 E: 11861720.0499
C225	204.00'	34.32'	S74°30'07.42"E	N: 7009564.4950 E: 11861786.6775	N: 7009555.3347 E: 11861819.7132

LINE TABLE

LINE #	LENGTH	DIRECTION	START POINT	END POINT
L122	420.268'	S75°02'06.13"E	N: 7009691.8260 E: 11861294.7366	N: 7009583.3008 E: 11861700.7511
L123	76.867'	S69°40'55.57"E	N: 7009578.3805 E: 11861716.0567	N: 7009551.6903 E: 11861788.1407
L124	76.867'	S79°19'19.27"E	N: 7009545.1121 E: 11861811.8639	N: 7009530.8694 E: 11861887.4003
L217	8.117'	S89°23'31.74"E	N: 7009653.1063 E: 11861499.2974	N: 7009653.0202 E: 11861507.4143
L218	120.906'	S74°46'36.07"E	N: 7009626.1398 E: 11861587.1264	N: 7009594.3919 E: 11861703.7902
L219	71.048'	S69°40'55.57"E	N: 7009589.1650 E: 11861720.0499	N: 7009564.4950 E: 11861786.6775
L220	71.048'	S79°19'19.27"E	N: 7009555.3347 E: 11861819.7132	N: 7009542.1703 E: 11861889.5311

NOTES:
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0 10' 20' 40'
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PROJECT TITLE
EXPANSION OF THE W&OD TRAIL
FALLS CHURCH, VA
UPC 113612

REVISIONS

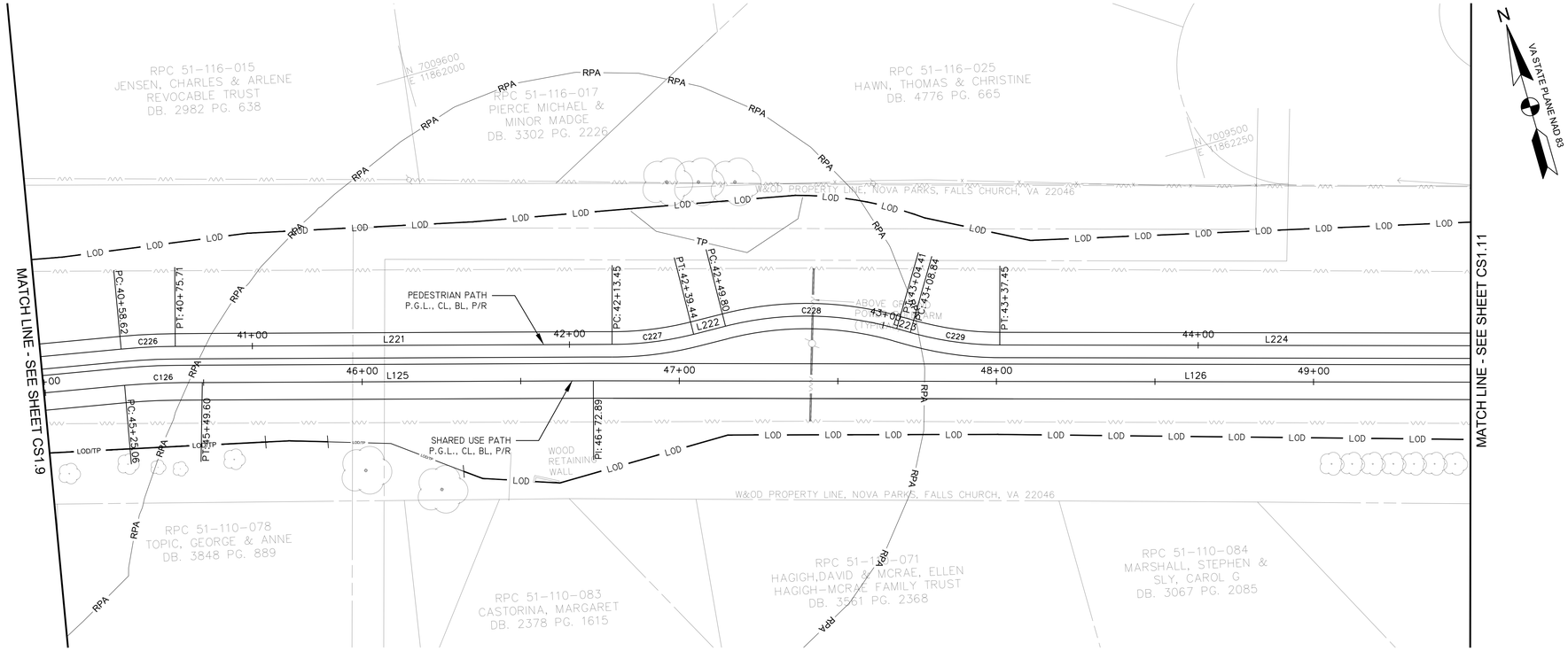
MARK	DATE	DESCRIPTION

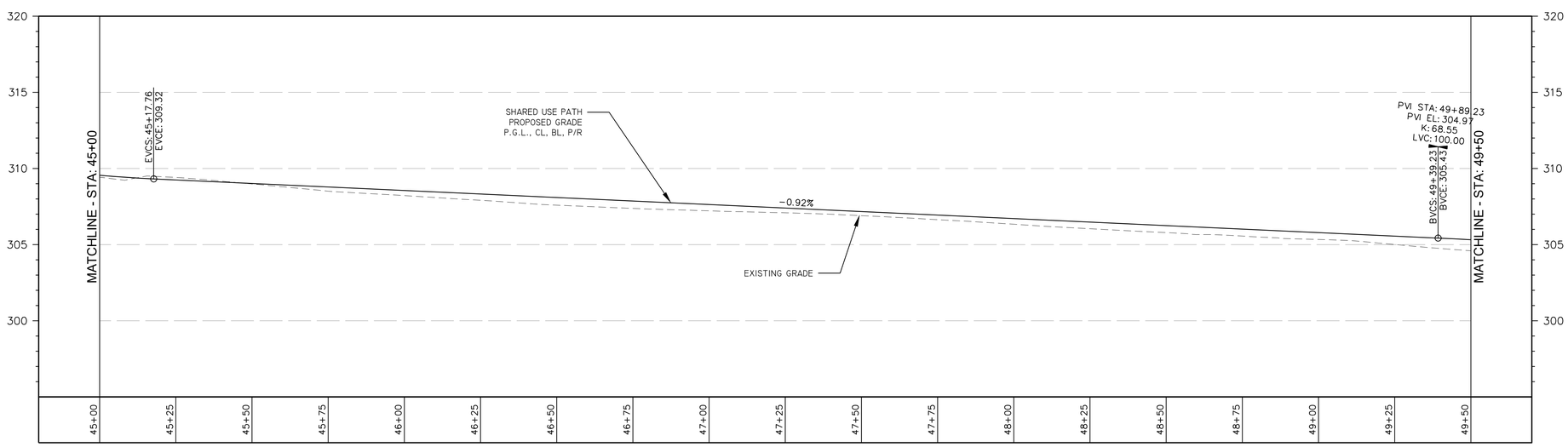
AMT FILE NO.	18-0367
DATE:	3/2020
SCALE:	AS SHOWN
DESIGNED BY:	AMT
DRAWN BY:	AMT
CHECKED BY:	AMT

100% DESIGN

SHEET TITLE
HORIZONTAL AND VERTICAL ALIGNMENTS

SHEET
CS1.9





PROFILE STA. 45+00 TO STA. 49+50 FOR SHARED USE PATH

SCALE: HORZ 1"=20'
VERT 1"=4'

LINE TABLE

LINE #	LENGTH	DIRECTION	START POINT	END POINT
L125	123.291'	S74°12'41.07"E	N: 7009524.9188 E: 11861911.1989	N: 7009491.3727 E: 11862029.8385
L126	379.955'	S73°51'29.94"E	N: 7009491.3727 E: 11862029.8385	N: 7009385.7401 E: 11862394.8144
L221	137.736'	S74°12'10.58"E	N: 7009538.2775 E: 11861906.1607	N: 7009500.7814 E: 11862038.6950
L222	10.360'	S88°10'46.24"E	N: 7009496.7339 E: 11862064.3045	N: 7009496.4048 E: 11862074.6596
L223	4.433'	S58°05'42.83"E	N: 7009480.7457 E: 11862126.3207	N: 7009478.4029 E: 11862130.0839
L224	174.819'	S73°51'29.45"E	N: 7009466.7913 E: 11862156.1355	N: 7009418.1889 E: 11862324.0623

CURVE TABLE

CURVE #	RADIUS	LENGTH	CHORD DIRECTION	START POINT	END POINT
C126	241.63'	24.54'	S75°57'41.67"E	N: 7009530.8694 E: 11861887.4003	N: 7009524.9188 E: 11861911.1989
C226	196.00'	17.08'	S76°49'29.64"E	N: 7009542.1703 E: 11861889.5311	N: 7009538.2775 E: 11861906.1607
C227	104.00'	26.00'	S81°01'08.09"E	N: 7009500.7814 E: 11862038.6950	N: 7009496.7339 E: 11862064.3045
C228	104.00'	54.61'	S73°08'14.54"E	N: 7009496.4048 E: 11862074.6596	N: 7009480.7457 E: 11862126.3207
C229	104.00'	28.61'	S65°58'36.38"E	N: 7009478.4029 E: 11862130.0839	N: 7009466.7913 E: 11862156.1355

NOTES:
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0 10' 20' 40'
SCALE: 1"=20'

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PROJECT TITLE
EXPANSION OF THE W&OD TRAIL
FALLS CHURCH, VA
UPC 113612

REVISIONS

MARK	DATE	DESCRIPTION

AMT FILE NO.	18-0367
DATE:	3/2020
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DRAWN BY:	AMT
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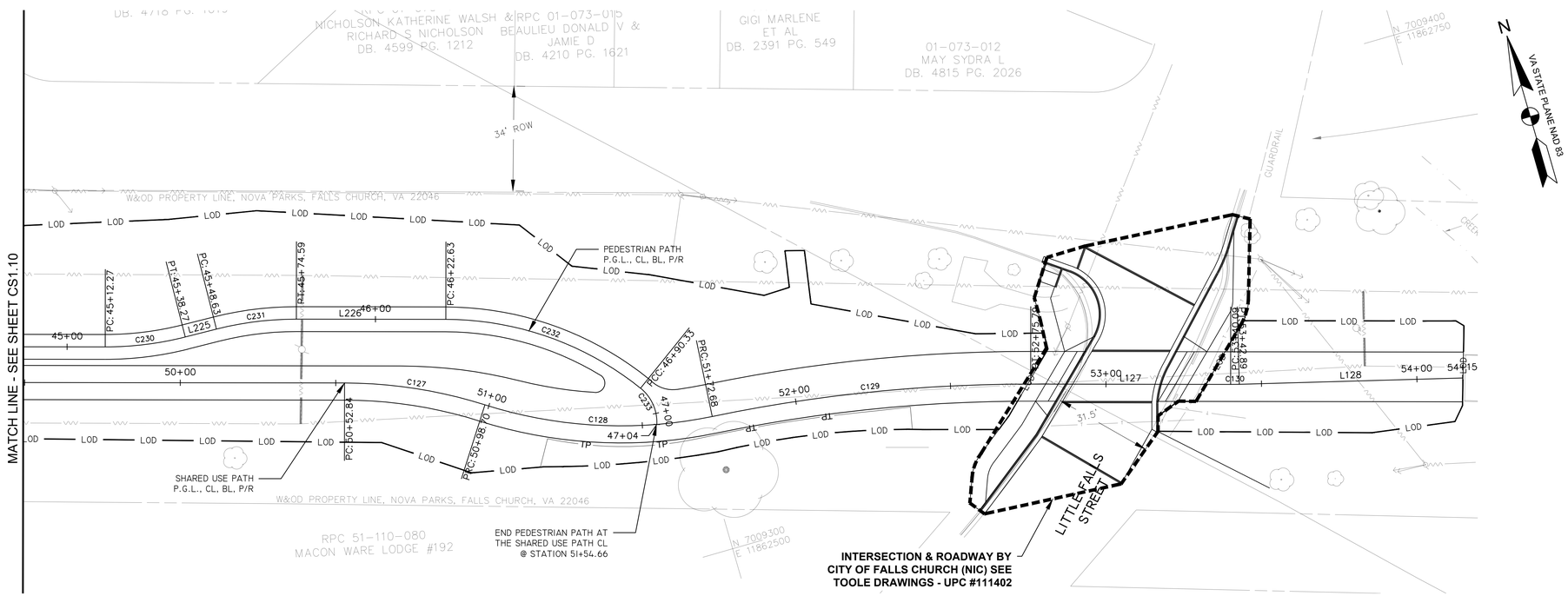
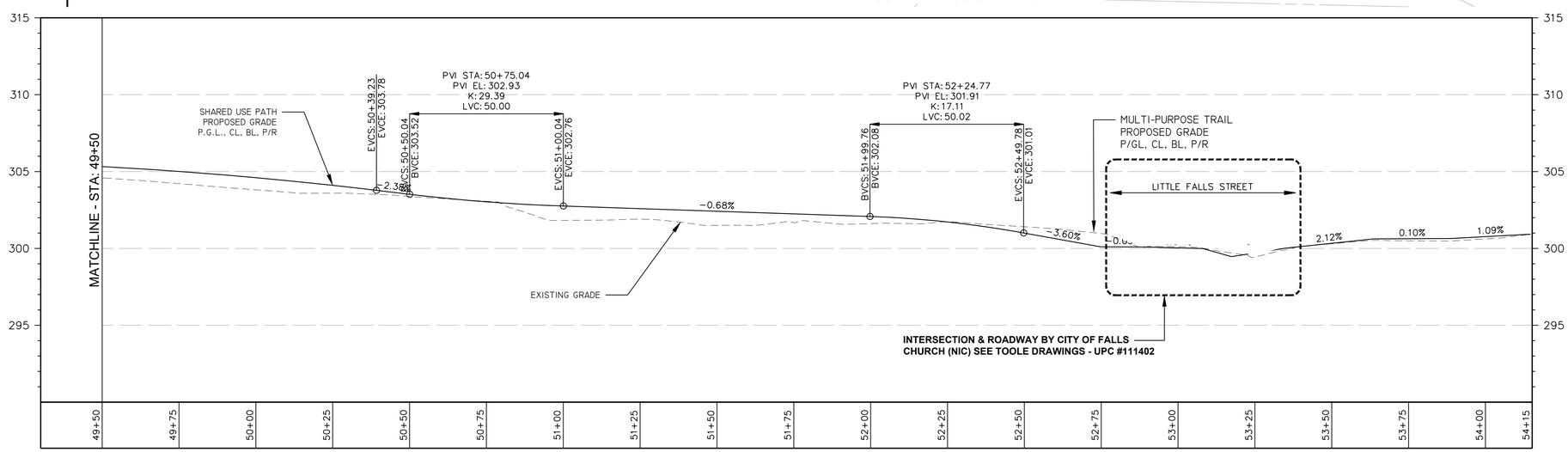
100% DESIGN

SHEET TITLE
HORIZONTAL AND VERTICAL ALIGNMENTS

SHEET
CS1.10





PROFILE STA. 49+50 TO STA. 54+15 FOR SHARED USE PATH

SCALE: HORZ 1"=20'
VERT 1"=4'

CURVE TABLE					
CURVE #	RADIUS	LENGTH	CHORD DIRECTION	START POINT	END POINT
C127	150.00'	45.86'	S65°06'00.02"E	N: 7009385.7401 E: 11862394.8144	N: 7009366.5072 E: 11862436.2482
C128	144.50'	73.98'	S71°00'28.25"E	N: 7009366.5072 E: 11862436.2482	N: 7009342.6945 E: 11862505.4359
C129	500.00'	103.11'	S79°45'58.16"E	N: 7009342.6945 E: 11862505.4359	N: 7009324.4076 E: 11862606.7271
C130	94.50'	2.81'	S74°42'31.91"E	N: 7009306.5318 E: 11862668.4906	N: 7009305.7919 E: 11862671.1968
C230	104.00'	25.99'	S81°01'08.44"E	N: 7009418.1889 E: 11862324.0623	N: 7009414.1416 E: 11862349.6715
C231	104.00'	25.96'	S81°00'35.97"E	N: 7009413.8124 E: 11862360.0267	N: 7009409.7659 E: 11862385.6045
C232	100.00'	67.69'	S54°27'58.78"E	N: 7009396.4089 E: 11862431.7547	N: 7009357.8144 E: 11862485.7950
C233	14.14'	13.25'	S08°07'42.68"E	N: 7009357.8144 E: 11862485.7950	N: 7009345.1687 E: 11862487.6012

LINE TABLE				
LINE #	LENGTH	DIRECTION	START POINT	END POINT
C127	45.858'	S65°06'00.02"E	N: 7009385.7401 E: 11862394.8144	N: 7009366.5072 E: 11862436.2482
C128	73.976'	S71°00'28.25"E	N: 7009366.5072 E: 11862436.2482	N: 7009342.6945 E: 11862505.4359
C129	103.111'	S79°45'58.16"E	N: 7009342.6945 E: 11862505.4359	N: 7009324.4076 E: 11862606.7271
C130	2.806'	S74°42'31.91"E	N: 7009306.5318 E: 11862668.4906	N: 7009305.7919 E: 11862671.1968
C230	25.995'	S81°01'08.44"E	N: 7009418.1889 E: 11862324.0623	N: 7009414.1416 E: 11862349.6715
C231	25.963'	S81°00'35.97"E	N: 7009413.8124 E: 11862360.0267	N: 7009409.7659 E: 11862385.6045
C232	67.692'	S54°27'58.78"E	N: 7009396.4089 E: 11862431.7547	N: 7009357.8144 E: 11862485.7950
C233	13.254'	S16°27'45.62"E	N: 7009357.8144 E: 11862485.7950	N: 7009345.1687 E: 11862487.6012

NOTES:
SEE GI 1.1 FOR LAYOUT NOTES.

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

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COMMONWEALTH OF VIRGINIA
STEVEN TORGERSON
Cert. No. 0606001542
03/05/2020
LANDSCAPE ARCHITECT

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LICENSE NO. 3562, EXPIRATION DATE 06/30/2021"

PROJECT TITLE
EXPANSION OF THE W&OD TRAIL
FALLS CHURCH, VA
UPC 113612

REVISIONS

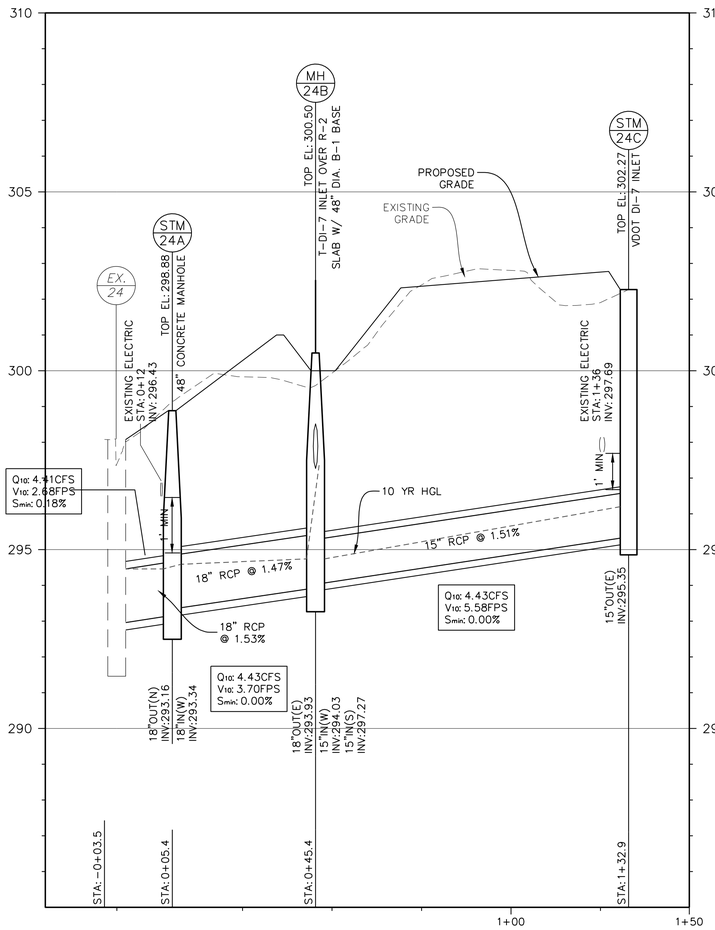
MARK	DATE	DESCRIPTION

AMT FILE NO.	18-0367
DATE:	3/2020
SCALE:	AS SHOWN
DESIGNED BY:	AMT
DRAWN BY:	AMT
CHECKED BY:	AMT

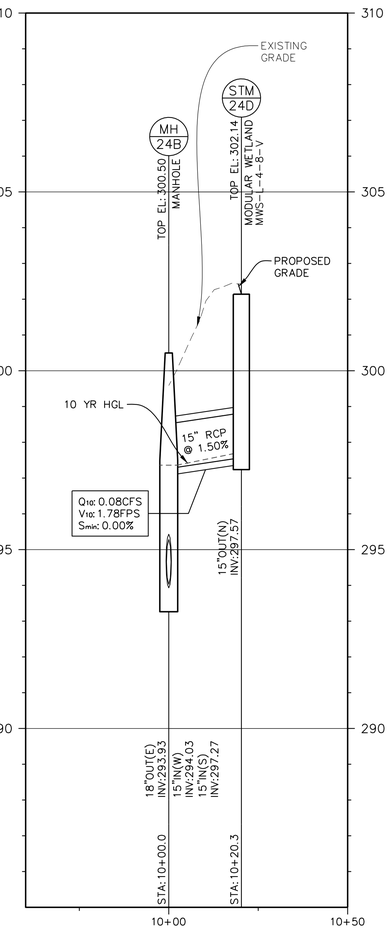
100% DESIGN

SHEET TITLE
HORIZONTAL AND VERTICAL ALIGNMENTS

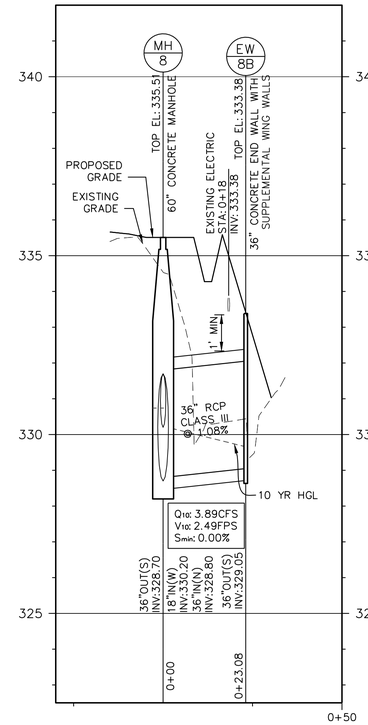
SHEET
CS1.11



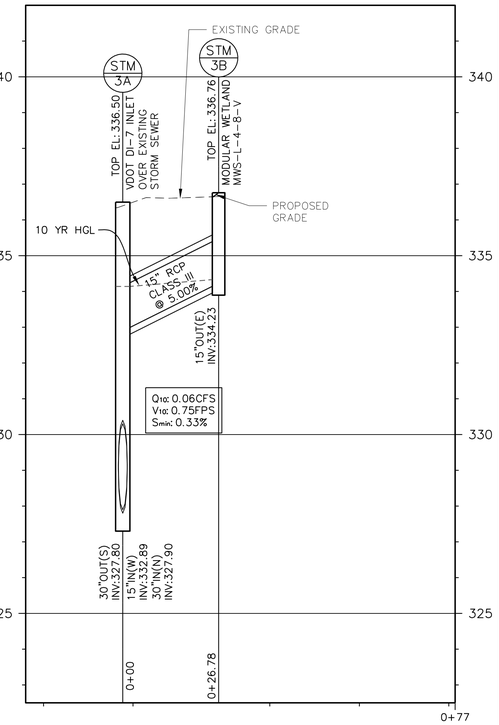
STM 24C TO EX 24
SCALE: HORZ 1"=20'
VERT 1"=2'



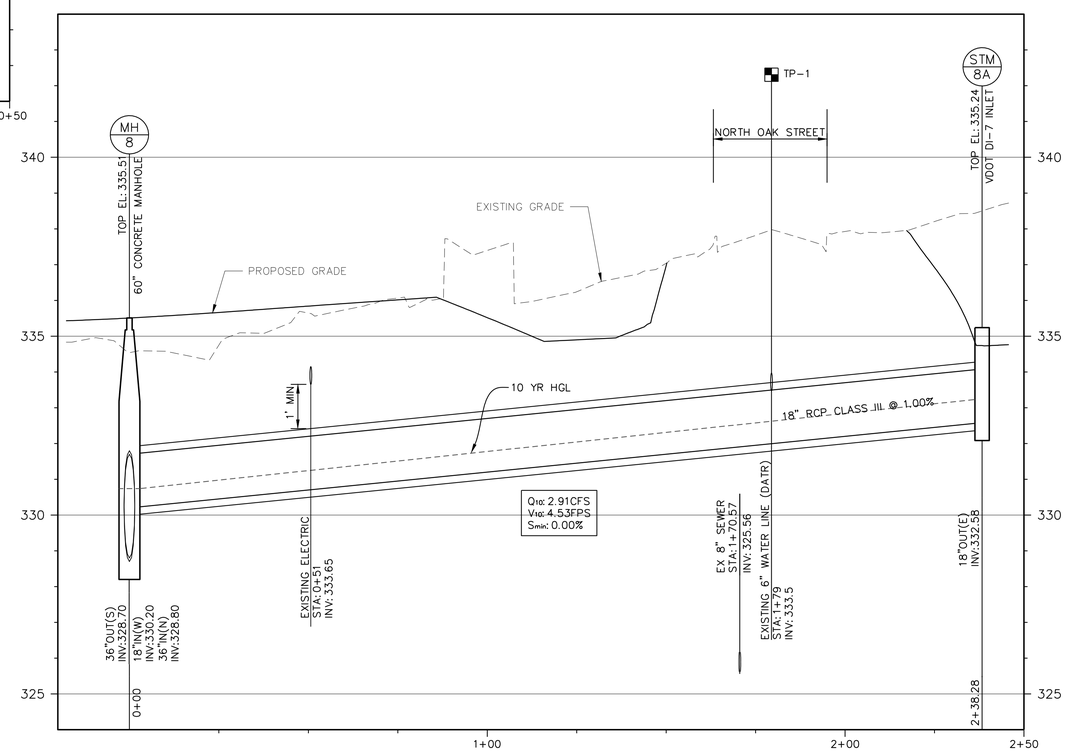
STM 24D TO STM 24B
SCALE: HORZ 1"=20'
VERT 1"=2'



MH8 TO EW8B
SCALE: HORZ 1"=20'
VERT 1"=2'



STM 3A TO STM 3B
SCALE: HORZ 1"=20'
VERT 1"=2'



MH8 TO STM 8A
SCALE: HORZ 1"=20'
VERT 1"=2'

NOTE: SEE SHEET CS2.1 FOR 10-YEAR STORM DRAIN FLOW CHART.

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03/09/2022
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PROJECT TITLE

EXPANSION OF THE W&OD TRAIL
FALLS CHURCH, VA
UPC 113612

REVISIONS

MARK	DATE	DESCRIPTION

AMT FILE NO.	18-0367
DATE:	3/2020
SCALE:	1"=20'
DESIGNED BY:	AMT
DRAWN BY:	AMT
CHECKED BY:	AMT

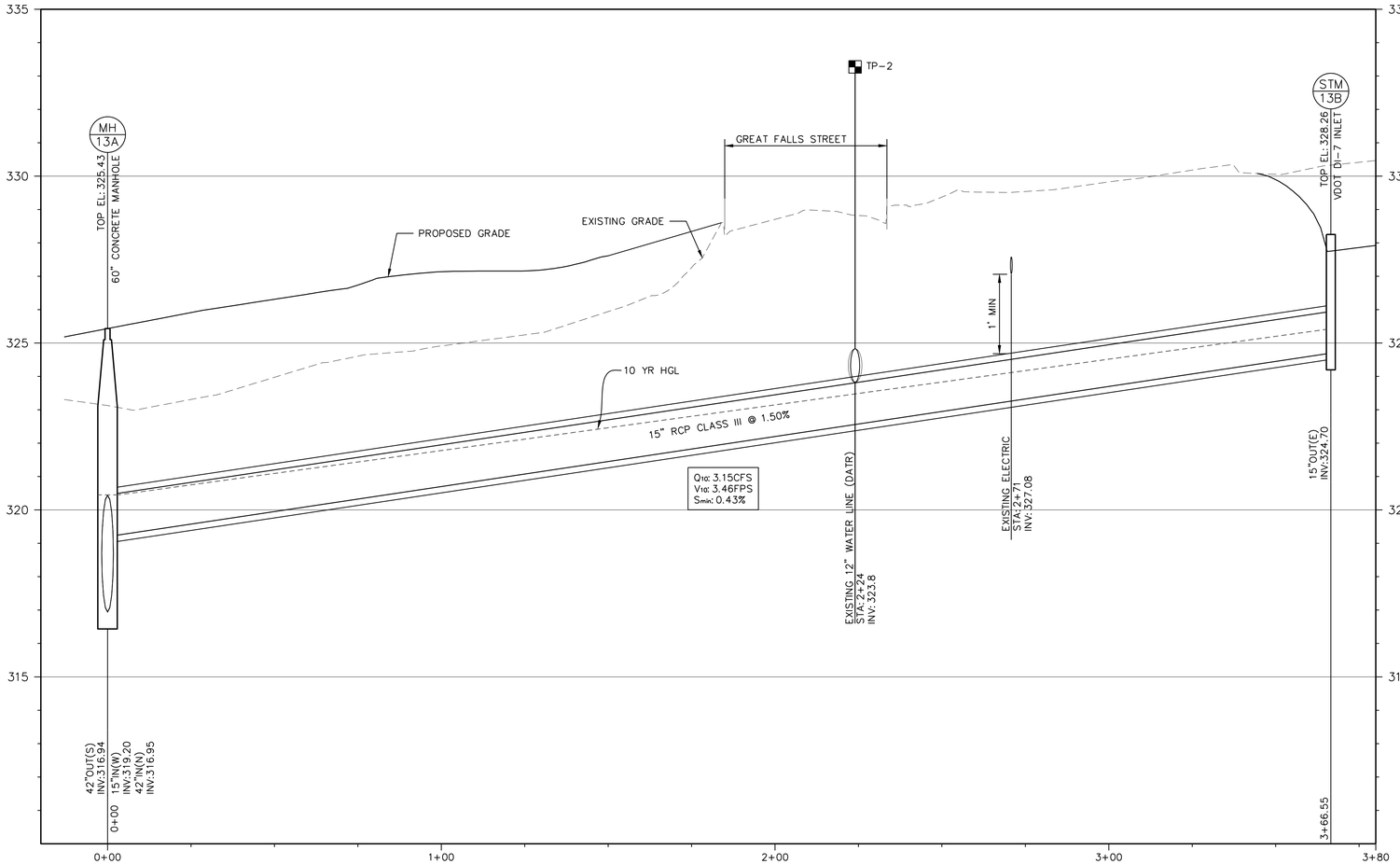
100% DESIGN

SHEET TITLE

PIPE PROFILES

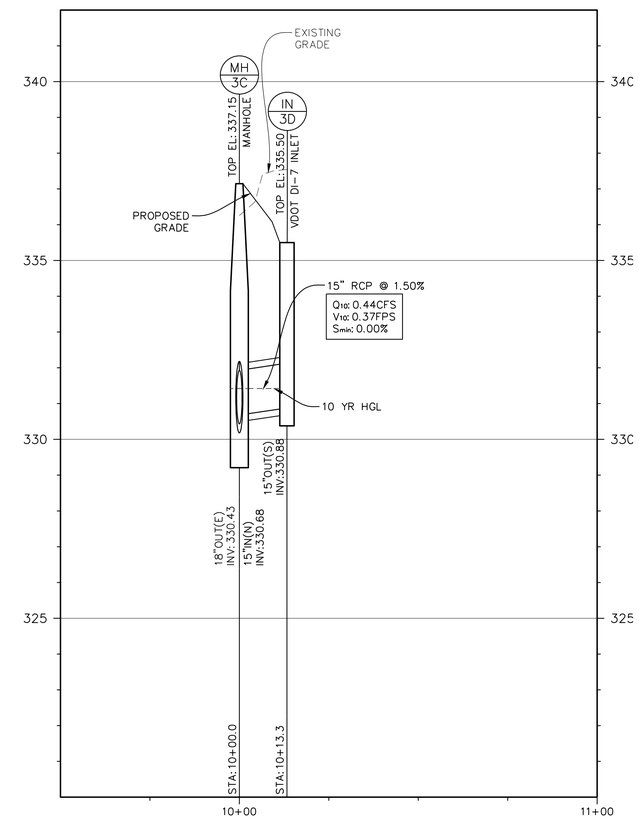
SHEET

CS2.0



STM 13B TO STM 13A

SCALE: HORZ 1"=20'
VERT 1"=2'



STM 3D TO STM 3C

SCALE: HORZ 1"=20'
VERT 1"=2'

10 YR STORM DRAIN FLOW CHART

LineID	Invert Up	Invert Dn	HGL Up	HGL Dn	Flow Rate	Vel	Sf	Line Slope	Drainage Area	Runoff Coeff	Incr CXA	Incr Q	n-value Pipe	Line Size	Total Area	Total CxA
	(ft)	(ft)	(ft)	(ft)	(cfs)	(ft/s)	(%)	(%)	(ac)	(C)		(cfs)		(in)	(ac)	
2A to 2	335.13	334.88	336.39	336.38	2.15	1.29	0.04	1.00	0.53	0.64	0.34	2.15	0.013	18	0.53	0.34
3B to 3A	334.23	332.89	334.33	334.14	0.06	0.75	0.33	5.00	0.01	0.90	0.01	0.06	0.013	15	0.01	0.01
8A to 8	332.58	330.20	333.23	330.74	2.91	4.53	0.00	1.00	2.68	0.40	1.07	2.91	0.013	18	2.68	1.07
8B to 8	329.05	328.80	329.67	330.16	3.89	2.49	0.00	1.08	1.95	0.43	0.84	3.89	0.013	36	1.95	0.84
3D to 3C	330.27	330.17	331.42	331.42	0.44	0.37	0.00	0.77	0.16	0.51	0.08	0.44	0.013	15	0.16	0.08
13B to 13A	324.70	319.20	325.41	320.45	3.15	3.46	0.43	1.50	1.94	0.53	1.03	3.15	0.013	15	1.94	1.03
24A to EX 24	293.24	292.96	294.46	294.46	4.41	2.68	0.18	1.50	0.00	-	-	-	0.013	18	2.51	1.33
24B to 24A	293.93	293.34	294.74	294.59	4.43	3.70	0.00	1.47	0.00	-	-	-	0.013	18	2.51	1.33
24D to 24B	297.57	297.27	297.68	297.36	0.08	1.78	0.00	1.48	0.01	0.90	0.01	0.08	0.013	15	0.01	0.01
24C to 24B	295.35	294.03	296.20	294.74	4.43	5.58	0.00	1.51	2.50	0.53	1.32	4.43	0.013	15	2.50	1.32

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PROJECT TITLE

EXPANSION OF THE W&OD TRAIL

FALLS CHURCH, VA
UPC 113612

REVISIONS

MARK	DATE	DESCRIPTION

AMT FILE NO.	18-0367
DATE:	3/2020
SCALE:	1"=20'
DESIGNED BY:	AMT
DRAWN BY:	AMT
CHECKED BY:	AMT

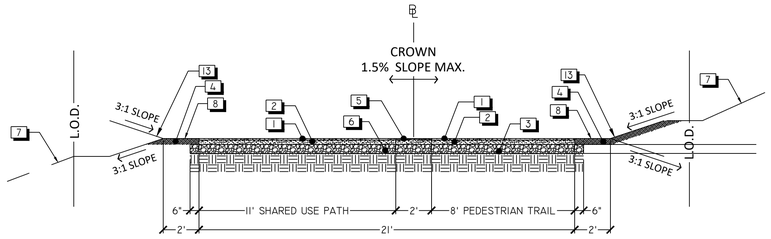
100% DESIGN

SHEET TITLE

PIPE PROFILES

SHEET

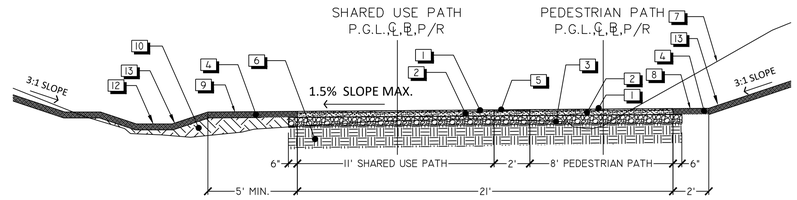
CS2.1



STA. 7+00-9+85, 10+65-12+07, 13+53-18-65, 19+95-30+62, 31+40-39+90, 42+00-46+75, 48+00-49+75

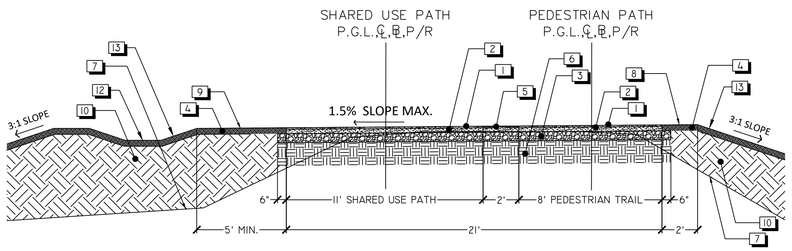
1 W&OD TRAIL TYPICAL SECTION

3" = 1'-0" 3402-27



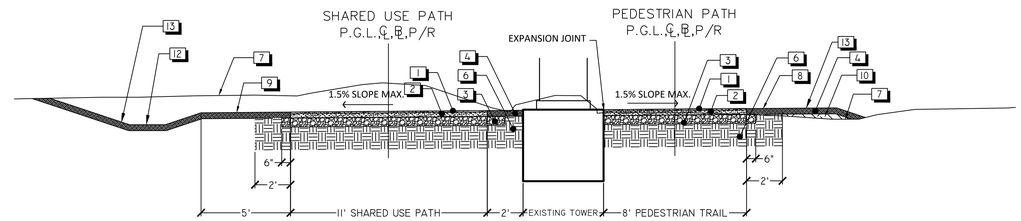
2 W&OD TRAIL TYPICAL CUT SECTION

3" = 1'-0" 3402-26



3 W&OD TRAIL TYPICAL FILL SECTION

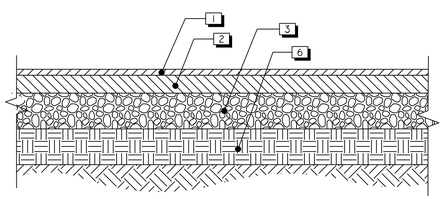
3" = 1'-0" 3402-29



STA. 10+25, 41+53, 47+42, 50+40

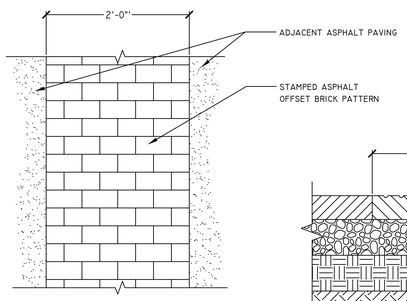
4 W&OD TRAIL TYPICAL AT ELECTRIC TOWER

3" = 1'-0" 3402-30

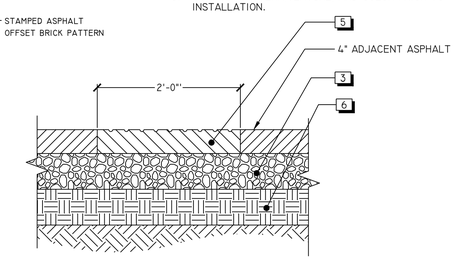


5 W&OD ASPHALT TRAIL

1" = 1'-0" 3402-32



SCHEMATIC PLAN VIEW



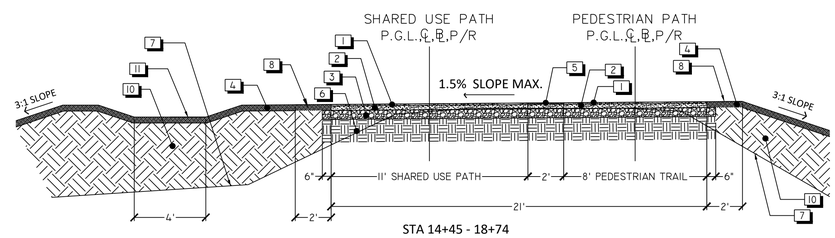
SCHEMATIC SECTION VIEW

6 W&OD STAMPED ASPHALT

1" = 1'-0" 3402-33

NOTES:

1. SEE THE PROJECT SITE PLANS FOR THE SIZE AND SHAPE OF THE AREA TO BE STAMPED. THIS DETAIL IS FOR SCHEMATIC PURPOSES ONLY.
2. INSTALLATION TO BE COMPLETED IN ACCORDANCE WITH MANUFACTURER'S SPECIFICATIONS.
3. CONFIRM PATTERN,TEXTURE, AND COLOR PRIOR TO INSTALLATION.



STA 14+45 - 18+74

7 W&OD TRAIL TYPICAL FILL AND CHANNEL SECTION

3" = 1'-0" 3402-37

REFERENCE NOTES SCHEDULE

SYMBOL	DESCRIPTION
1	1" ASPHALT CONCRETE, TYPE SM-9.0A ESTIMATED AT 115 LBS/SY
2	3" ASPHALT CONCRETE, TYPE IM-19.0A, ESTIMATED AT 363 LBS/SY
3	6" SUBBASE AGGREGATE BASE MATERIAL TYPE 1, SIZE NO. 21B
4	4" TOPSOIL (GRADE TO MATCH EXISTING CONDITIONS)
5	STAMPED ASPHALT
6	95% COMPACTED SUBSOIL
7	EXISTING GRADE, VARIES
8	SHOULDER
9	STORMWATER MANAGEMENT FILTER
10	FILL
11	STORMWATER MANAGEMENT CHANNEL
12	STORMWATER MANAGEMENT SWALE DETAIL 1&2/CW5.1
13	PROPOSED GRADE

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PROJECT TITLE

EXPANSION OF THE W&OD TRAIL

FALLS CHURCH, VA
UPC 113612

REVISIONS

MARK	DATE	DESCRIPTION

AMT FILE NO.	18-0367
DATE:	3/2020
SCALE:	N.T.S.
DESIGNED BY:	AMT
DRAWN BY:	AMT
CHECKED BY:	AMT

100% DESIGN

SHEET TITLE

TYPICAL TRAIL SECTIONS

SHEET

CS3.0

SECTION 321220 - ASPHALT PAVEMENT TEXTURING FOR STREET STAMP

PART 1 - GENERAL

1.1 Related Documents

A. Drawings and general provisions of the Contract, including General and Supplemental Conditions and Division 01 and Division 32 Asphalt Paving Specifications, apply to this Section.

B. Virginia Department of Transportation, Road and Bridge Specifications, 2007.

1.2 DESCRIPTION

A. Asphalt pavement texturing is a highly suitable solution for a wide variety of decorative pavement applications. Paved entranceways, parking lots, residential driveways, sidewalks, plazas, medians, and crosswalks are some examples of successful applications of asphalt pavement texturing.

B. Asphalt pavement texturing is executed by elevating the temperature of an asphalt pavement surface and then pressing a metal template into the surface to replicate, in relief, the grout depressions common to hand-laid brick or cobblestone, or virtually any other design. The imprinted asphalt pavement surface is then coated with a coating or system of coatings specifically formulated for asphalt pavement.

C. Asphalt pavement texturing is a highly specialized process that requires the skill of a qualified applicator working with the proper equipment and applying highly specialized coating(s) de- signed specifically for application to asphalt pavement.

D. This specification will include guidance with respect to the minimum requirements/qualifications of the applicator, equipment and coating in the execution of this Work.

1.3 REFERENCES

A. ASTM D-4541 Standard Test Method for Pull-Off Strength of Coatings Using Portable Adhesion Tester.

B. ASTM D-4060 Test Method for Abrasion Resistance of Organic Coatings by the Taber Abraser.

C. ASTM D-2697 Standard Test Method for Volume of Nonvolatile Matter in Clear or Pigmented Coatings.

D. ASTM D522-93A Standard Test Method for Mandrel Bend Test of Attached Organic Coatings.

E. ASTM D1653 Standard test method for water vapor transmission or organic film coatings.

F. ASTM G-155 Accelerated Weathering Environment. Standard Practice for Operating Xenon Arc Light Apparatus for Exposure of Nonmetallic Materials.

G. ASTM D 2369 Weight Solids Standard test method for Volatile Content of Coatings.

H. ASTM D 1475 Standard Test method for Density of Paint, Varnish, Lacquer, Other related products.

I. ASTM D-2240 (2000) Standard Test Method for Rubber property - Durometer hardness.

J. ASTM D-5895 Standard Test Method of drying or curing during film formation of organic coatings using mechanical recorders.

K. ASTM D-570 Standard Test Method for water absorption of plastics.

1.4 DEFINITIONS

A. "Qualified Applicator" is a contractor or applicator who has completed asphalt pavement texturing work and can provide certification and references upon request.

B. "Textured asphalt Pavement" is asphalt pavement that has been subjected to imprinting or stamping in a specific pattern.

C. "Non-textured asphalt pavement" is asphalt pavement that is unstamped and is sometimes referred to as "flatwork".

D. The "Work" is the asphalt pavement texturing work contemplated in this bid submission and specification.

E. "Scuffing" is a "tear" of the asphalt pavement caused by an external force. Stationary vehicle tires turning on the pavement surface is a typical cause.

1.5 1.4 SUBMITTALS

A. The documents required as part of this bid submission are as follows:
   1. Proof of applicator's ability. A copy of the current year license as provided to the pro- posed applicator issued by a recognized authority in the execution of asphalt pavement texturing work. Failing that, at least 3 reference sites and written references from 3 previous customers for work performed by this applicator.
   2. A list of the major equipment to be used in the execution of the Work. This list will include the asphalt pavement reheat machinery, spray equipment, compactor(s) and templates.
   3. The name of the coating(s) and the coating supplier's name.
   4. Certified performance test results of the coating material(s).
   5. Confirmation of coating colors to be approved by the Owner.
   6. Confirmation of Patterns to be approved by the Owner.

B. The contractor will provide a mock-up of the Asphalt Pavement Texturing that is at least 2' x 10'.

PART 2 - PRODUCTS

2.1 MATERIALS - COATINGS

A. Properly designed asphalt pavement coatings have been scientifically formulated to provide the optimal balance of performance properties for a durable, long lasting color and texture to asphalt pavement surfaces. Some of these key properties include wet wear durability, crack resistance, adhesion, color fastness, and friction properties. These properties must be backed up by a Certificate of Analysis from an independent laboratory or an equal document that certifies these performance properties.

B. The asphalt pavement coating must be environmentally safe and meet EPA requirements for Volatile Organic Compounds (VOC).

C. Only use asphalt pavement coatings from qualified pavement coating suppliers who can provide proof of these required performance properties.

2.2 MINIMUM PERFORMANCE PROPERTIES OF ASPHALT COATING

A. The following table outlines the minimum required performance properties of the asphalt pavement coating. These performance properties must be ascertained by a Certificate of Analysis issued by an approved testing facility.

2.3 EQUIPMENT

A. The following specialized equipment shall be used in the execution of the Work.
   1. Metal wire rope templates are used to create the desired imprint pattern. Only use templates that have been supplied by a manufacturer who has the proven expertise in manufacturing these templates for this type of application.
   2. Asphalt pavement reheat equipment specifically designed for asphalt pavement texturing is to be used in the execution of this work. The primary asphalt pavement re-heat equipment must cycle the heat application and must allow the equipment operator to check the pavement surface temperature during the heating process. These controls are necessary to enable the pavement temperature to be elevated gradually, giving the operator the ability to ensure that the pavement is not overheated or adversely affected. Heaters without these controls are strictly prohibited as the primary re-heat equipment.
   3. Hand-held portable heating devices may be used only for areas where it is difficult to operate the re-heat machine. These may not be used as the primary pavement re-heating device.
   4. Finishing tools that are designed to enable the applicator to complete the imprinting of the asphalt pavement in areas which may be inaccessible to the template such as curbs and manhole covers are permitted.
   5. Vibratory Plate Compactors shall be used for pressing the templates into the heated asphalt pavement to create the specified pattern.
   6. Specialized coating spray equipment must be used in the application of the coating and must be capable of applying the coating to the asphalt pavement surface in a thin, con- trolled film which will optimize the drying and curing time of the coating. More specifically the spray equipment pump must be capable of providing a continuous recirculation of the coating in order to keep the solids within the coating in suspension.

PART 3 - GENERAL

3.1 The pavement texturing system shall be supplied and installed by a Qualified Applicator in accordance with the plans and specifications or as directed by the Owner. Do not begin the Work until confirmation of the Applicator's qualifications is provided.

3.2 PRE-CONDITIONS - ASPHALT PAVEMENT

A. A highly stable asphalt pavement free of defects is a pre-requisite for the installation of a pavement texturing system. Do not install the pavement texturing system over poor quality asphalt pavement.

B. Prerequisites for new asphalt pavement
   1. A durable and stable asphalt pavement mix per Section 321216 - Asphalt Paving

C. Pavement Marking Removal: recommended guidelines
   1. Pavement markings may be removed as approved by the Owner by sandblasting, water-blasting, grinding, or other approved mechanical methods. The removal methods should, to the fullest extent possible, cause no significant damage to the pavement surface. The Owner shall determine if the removal of the markings is satisfactory for the application of the pavement texturing system. Work shall not proceed until this approval is granted.

D. Surface Preparation
   1. The asphalt pavement surface shall be dry and free from all foreign matter, including but not limited to dirt, dust, de-icing materials, and chemical residue.

3.3 LAYOUT

A. Layout of the pattern for imprinting into the surface of the asphalt pavement shall be as per the drawings and specifications.

3.4 HEATING THE ASPHALT PAVEMENT

A. The Applicator shall use asphalt pavement reheat equipment as described in Section 2.2 Equipment. The optimal pavement temperature for imprinting the template is dependent upon mix design, modifiers used in the mix, the age of the pavement and weather. The surface temperature of the pavement should not exceed 325°F as determined by an infra-red thermometer reading taken after the heat is applied to the asphalt pavement.

B. In order to achieve the proper depth of imprint it is important to elevate the asphalt pavement temperature to a minimum depth of 1/2 inch (12.5mm) without burning the pavement surface. This can only be accomplished using asphalt pavement reheat equipment that is specifically designed for this Work.

3.5 SURFACE IMPRINTING

A. The pavement surface shall be dry and free from all foreign matter, including but not limited to dirt, dust, de-icing materials, and chemical residue.

B. Once the asphalt pavement has reached imprinting temperature, the templates shall be placed in position and pressed into the surface using vibratory plate compactors. The top of the template is to be flush with the surrounding asphalt pavement and can then be removed. Areas that have an imprint depth less than the full depth of the template shall be re-heated and re-stamped prior to applying the coatings. Hand tooling is a permitted method to achieve proper imprint depth in areas difficult to get at with the template.

3.6 APPLICATION OF ASPHALT PAVEMENT COATING

A. Application Guidelines.
   1. The qualified applicator shall refer to the asphalt pavement coating supplier's recommendations for methods of application. Special care and attention must be paid to ensure asphalt pavement coatings are applied in environmental conditions that permit proper cure.
   2. The coating application shall proceed as soon as possible upon completion of the imprinting of the asphalt pavement.
   3. The pavement surface shall be completely dry and thoroughly cleaned prior to application of the asphalt pavement coating(s).
   4. The qualified applicator shall use spray equipment specifically designed for the application of the coating(s) as outlined in Section 2.2 above.
   5. Refer to the asphalt pavement coating supplier's recommendations for coating coverage rate, number of recommended passes and recommended film thickness.

3.7 OPENING TO TRAFFIC

A. Minimally, the surface coating must be 100% dry before traffic is permitted. Refer to the asphalt pavement coating supplier's guide.

END OF SECTION 321220

AMT
A. MORTON THOMAS AND ASSOCIATES, INC.
CONSULTING ENGINEERS
800 KING FARM BLVD, FOURTH FLOOR ROCKVILLE, MD 20850
(301) 881-2545 FAX:(301) 881-0814
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COMMONWEALTH OF VIRGINIA
STEVEN TORGERSON
Cert. No. 0906001542
01/05/2020
LANDSCAPE ARCHITECT

REGISTRATION STAMP

NOT FOR CONSTRUCTION

PROFESSIONAL CERTIFICATION
"I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED CERTIFIED LANDSCAPE ARCHITECT UNDER THE LAWS OF THE STATE OF VIRGINIA, LICENSE NO. 1542, EXPIRATION DATE 04/30/2021."

PROJECT TITLE
EXPANSION OF THE W&OD TRAIL
FALLS CHURCH, VA
UPC 113612

REVISIONS

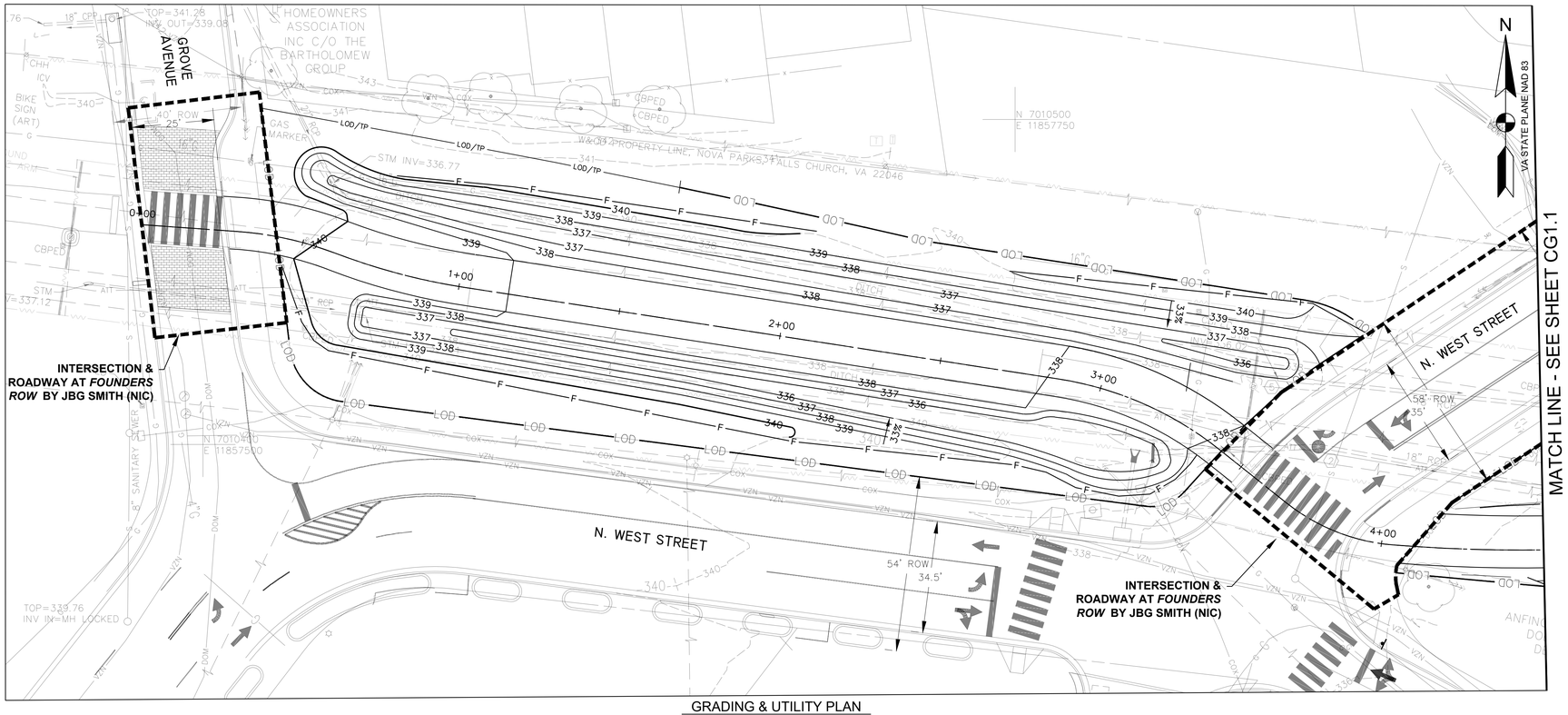
MARK	DATE	DESCRIPTION

AMT FILE NO.	18-0367
DATE:	3/2020
SCALE:	N.T.S.
DESIGNED BY:	AMT
DRAWN BY:	AMT
CHECKED BY:	AMT

100% DESIGN

SHEET TITLE
SPECIFICATIONS

SHEET
CS3.1



GRADING & UTILITY PLAN
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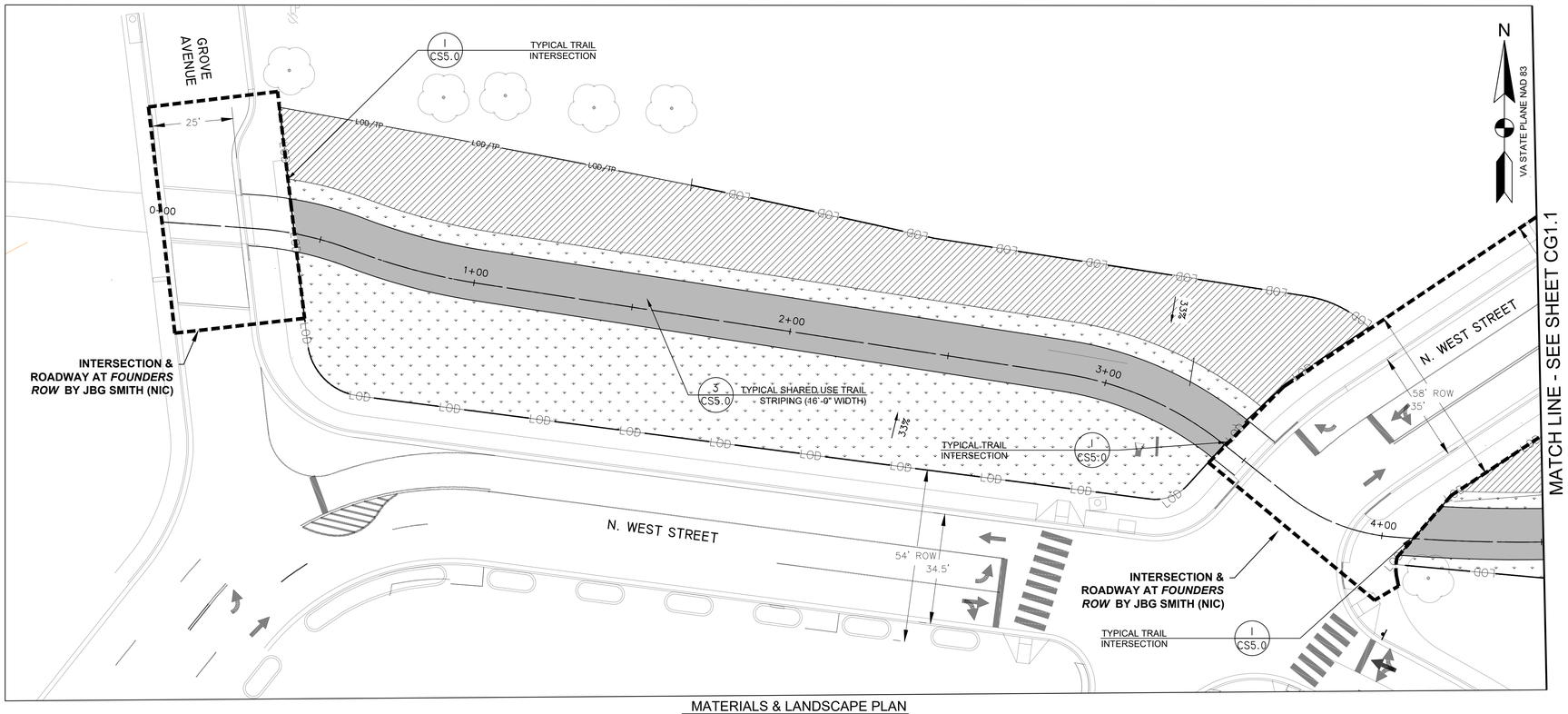

MATERIALS & LANDSCAPE PLAN
SCALE: 1"=20'

LEGEND

- LOD — LIMITS OF DISTURBANCE
- LOD/TP — TREE PROTECTION FENCING AT LIMITS OF DISTURBANCE
- PROPOSED PEDESTRIAN TRAIL
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- 336.0 G — PROPOSED STORMWATER MANAGEMENT - DRY SWALE
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- RP — PROPOSED ROOT PRUNING
- CHECK DAMS
- PROP STORM DRAIN PIPE
- 4" PERF. PVC SCHD 40 PIPE
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- AREA TO BE GRADED BY HAND ONLY

MATERIAL SCHEDULE

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- CONCRETE PAD - REFER TO DETAIL 4/CS5.3
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SYMBOL	DESCRIPTION	QTY
	DUMOR BENCH	6
	TRASH RECEPTACLE - REFER TO DETAIL 8/CS3.0	6

* SEE GI1.1 FOR GRADING AND COMPLIANCE NOTES

*CONTRACTOR MUST VERIFY ALL GRADES, LOCATIONS, AND SIZES BETWEEN STA 0+41 – 5+00 AS EXISTING CONDITIONS WERE BASED ON DESIGN DRAWINGS AND NOT AS-BUILTS.

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SHEET TITLE
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SHEET
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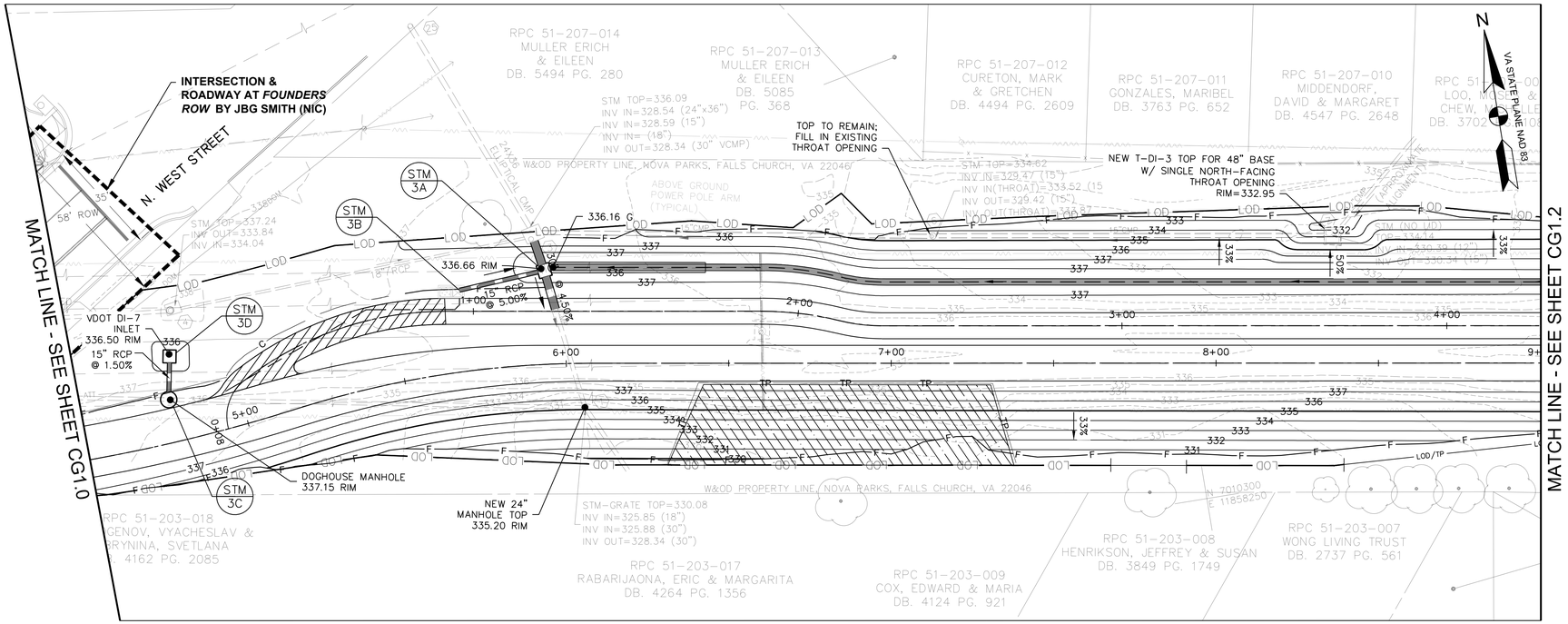

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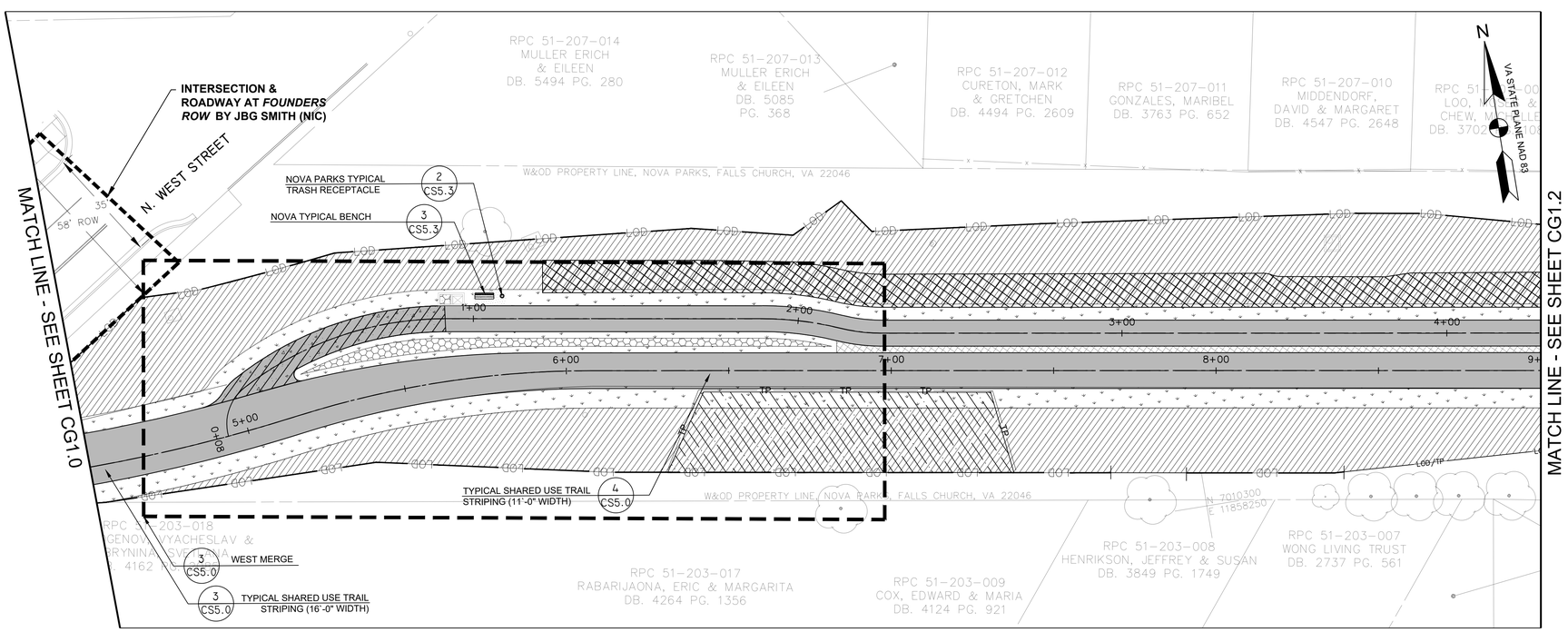

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SHEET
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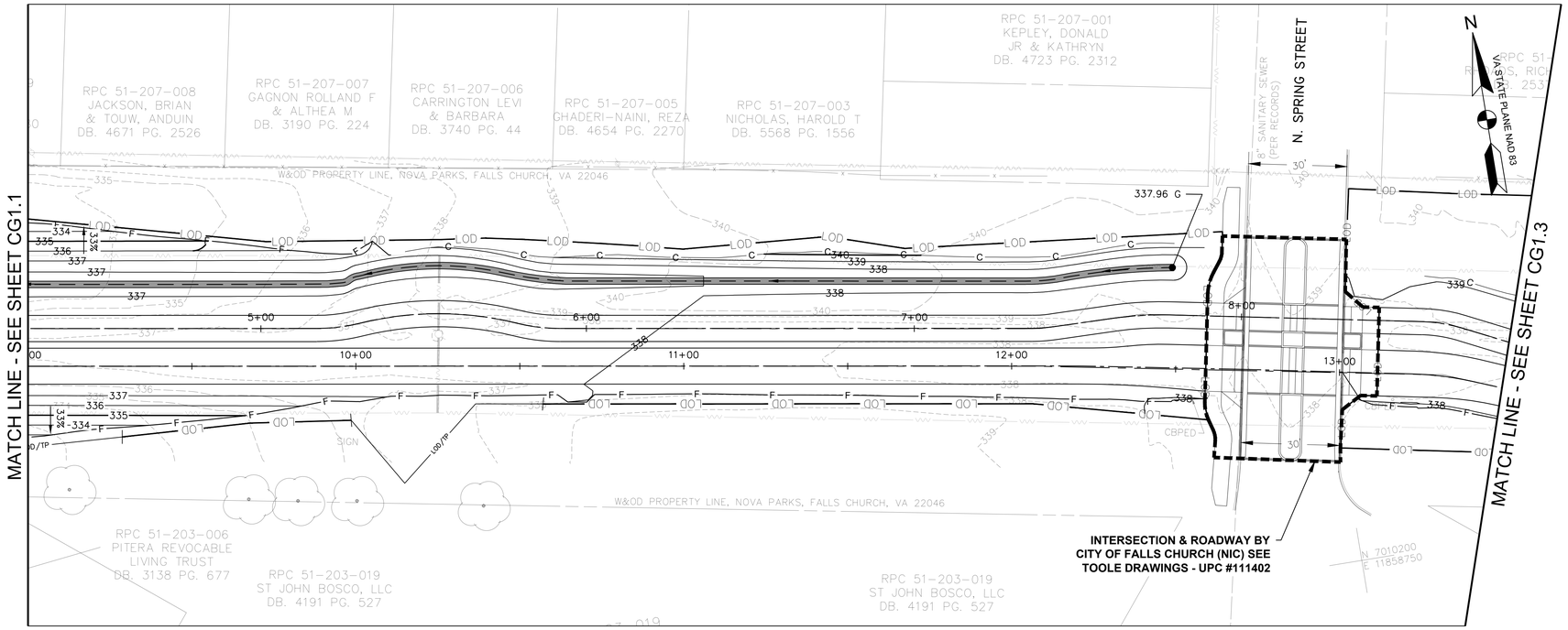

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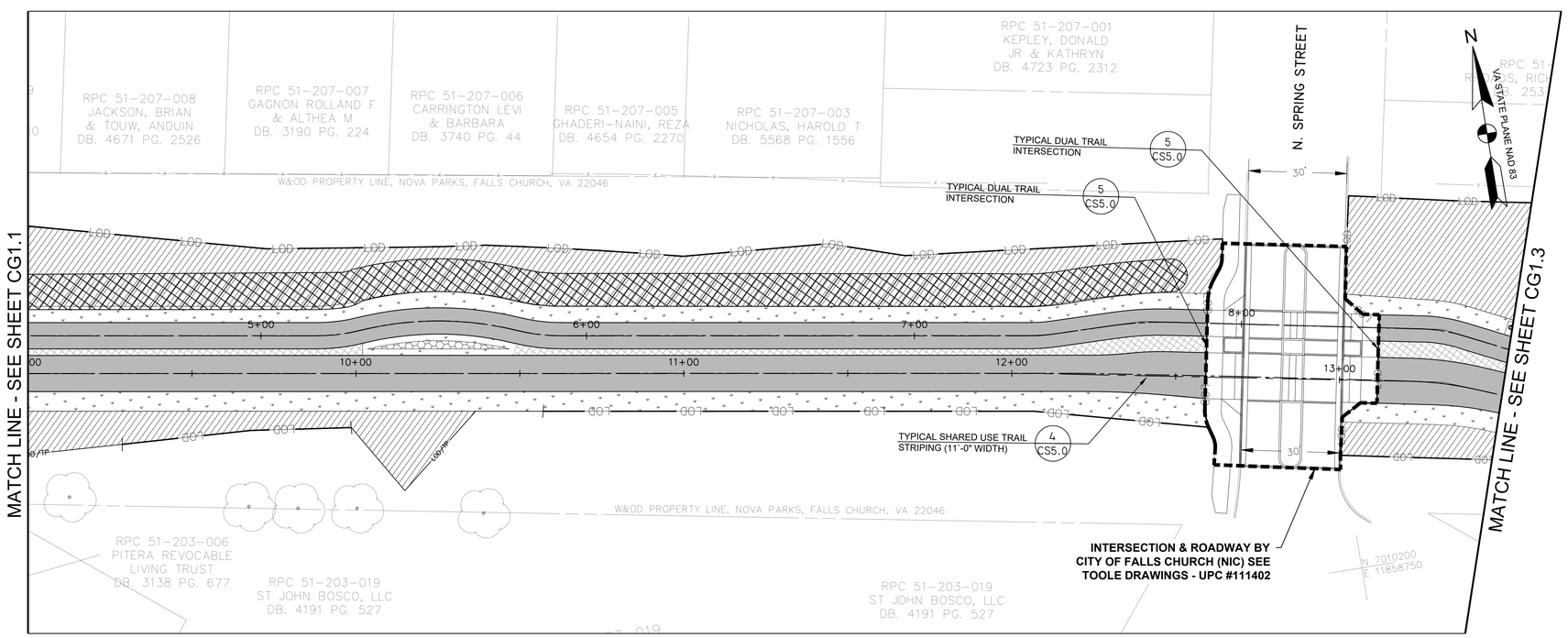

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SYMBOL	DESCRIPTION	QTY
	DUMOR BENCH	6
	TRASH RECEPTACLE - REFER TO DETAIL 8/CS3.0	6

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SHEET TITLE
GRADING - UTILITY PLAN & MATERIALS - LANDSCAPE PLAN

SHEET
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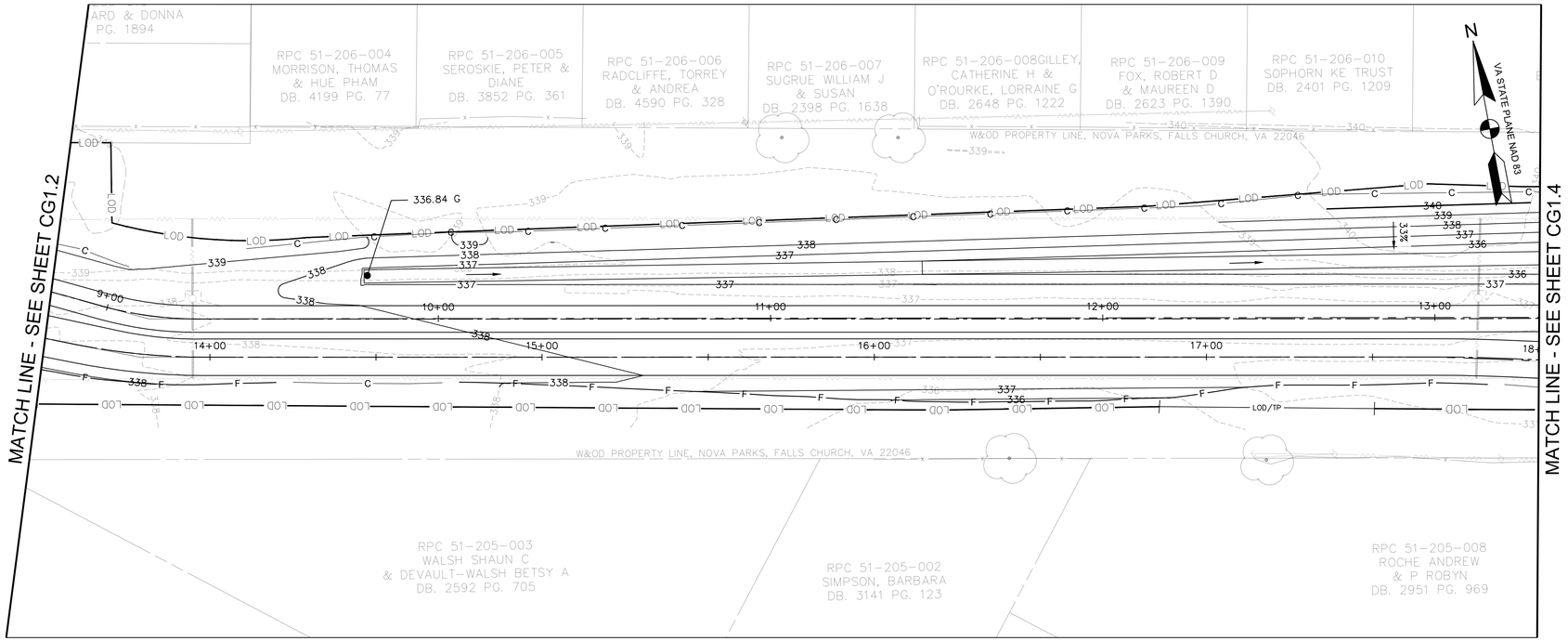

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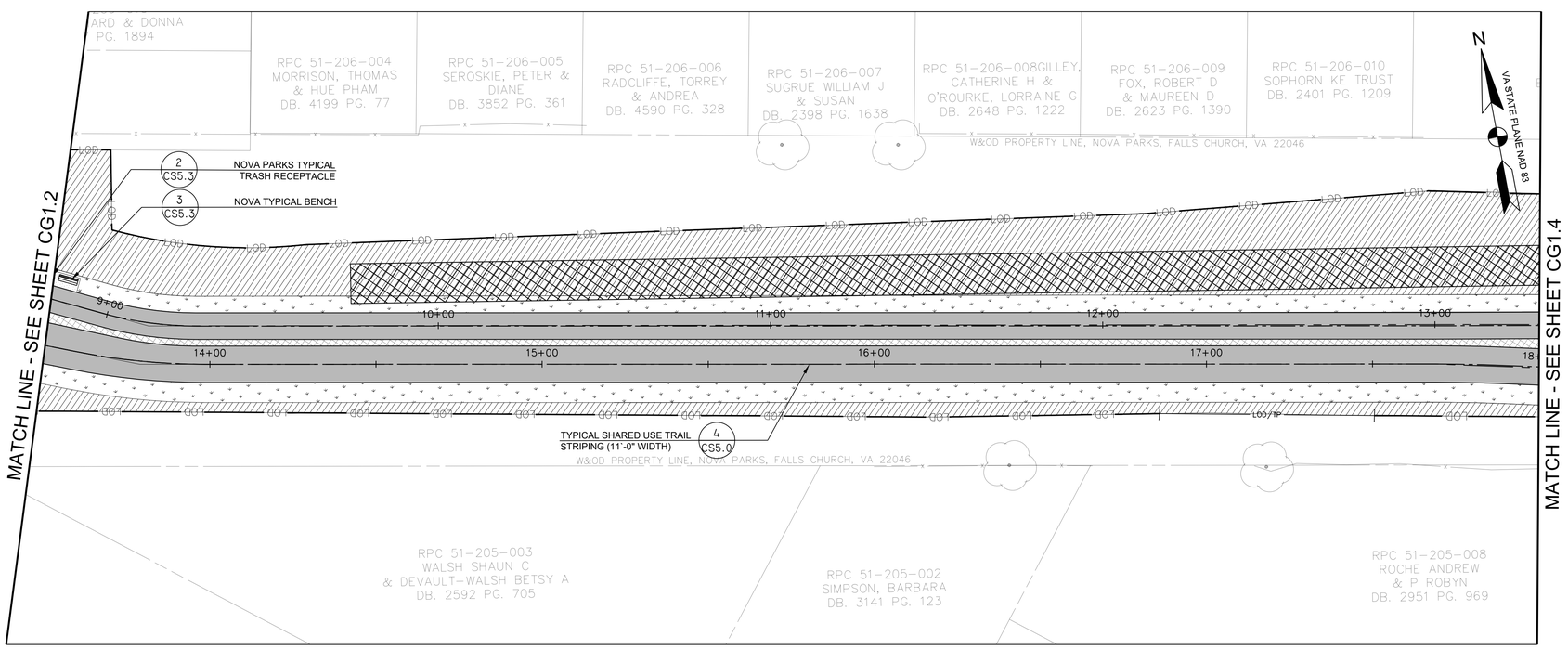

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STEVEN TORGERSON
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03/05/2020
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SHEET TITLE
GRADING - UTILITY PLAN & MATERIALS - LANDSCAPE PLAN

SHEET
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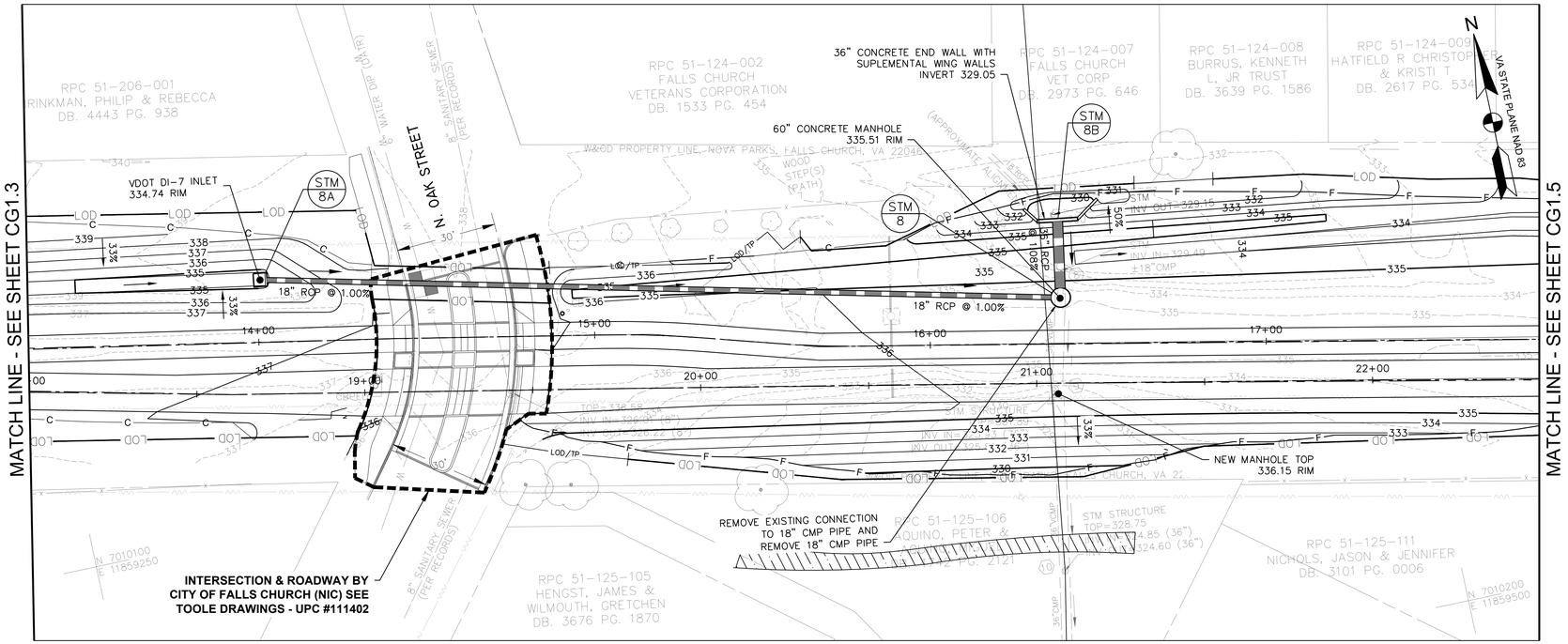

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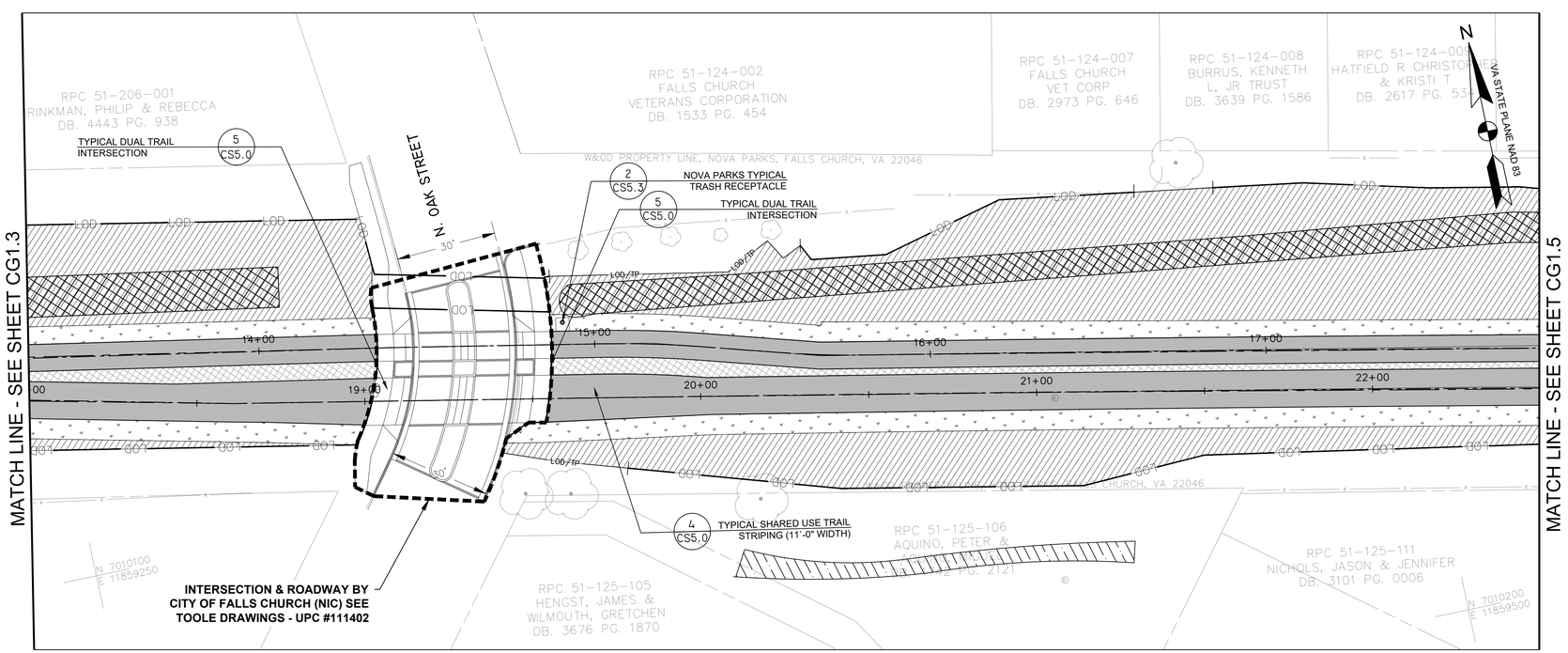

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SYMBOL	DESCRIPTION	QTY
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	TRASH RECEPTACLE - REFER TO DETAIL 8/CS3.0	6

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SHEET TITLE
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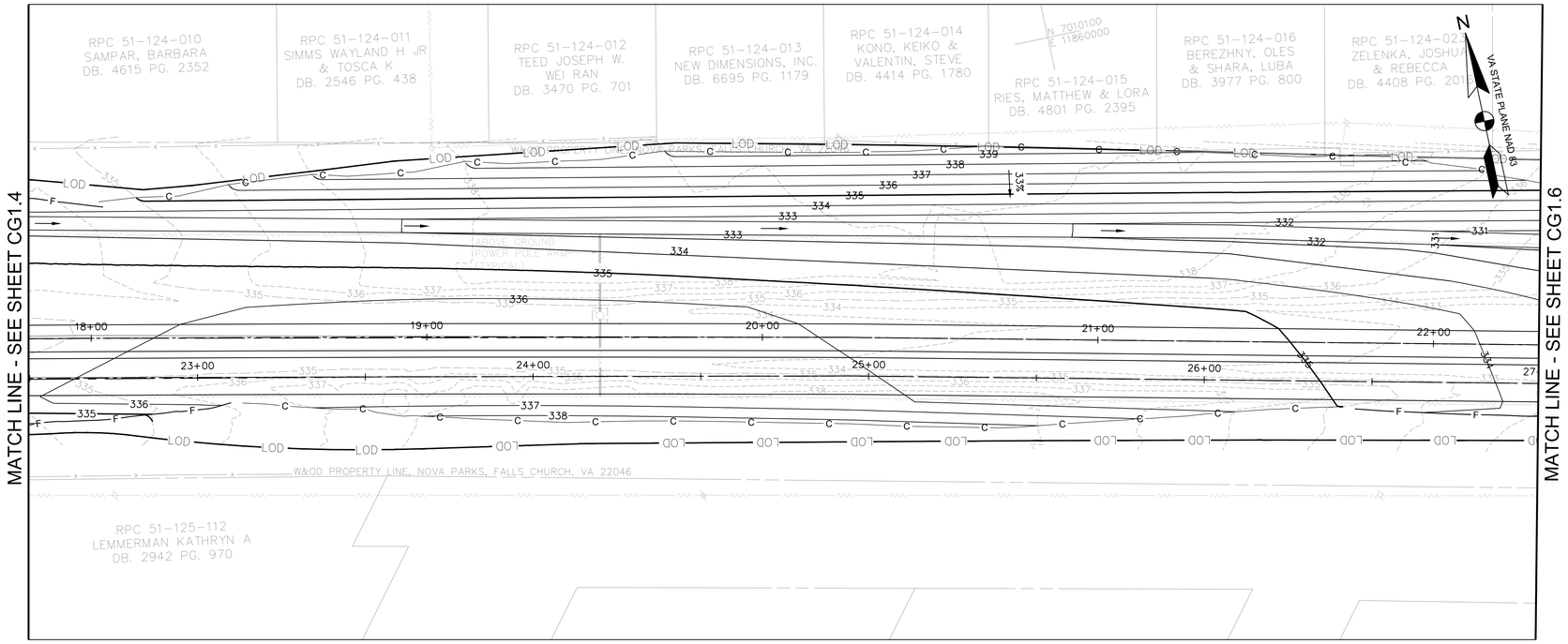

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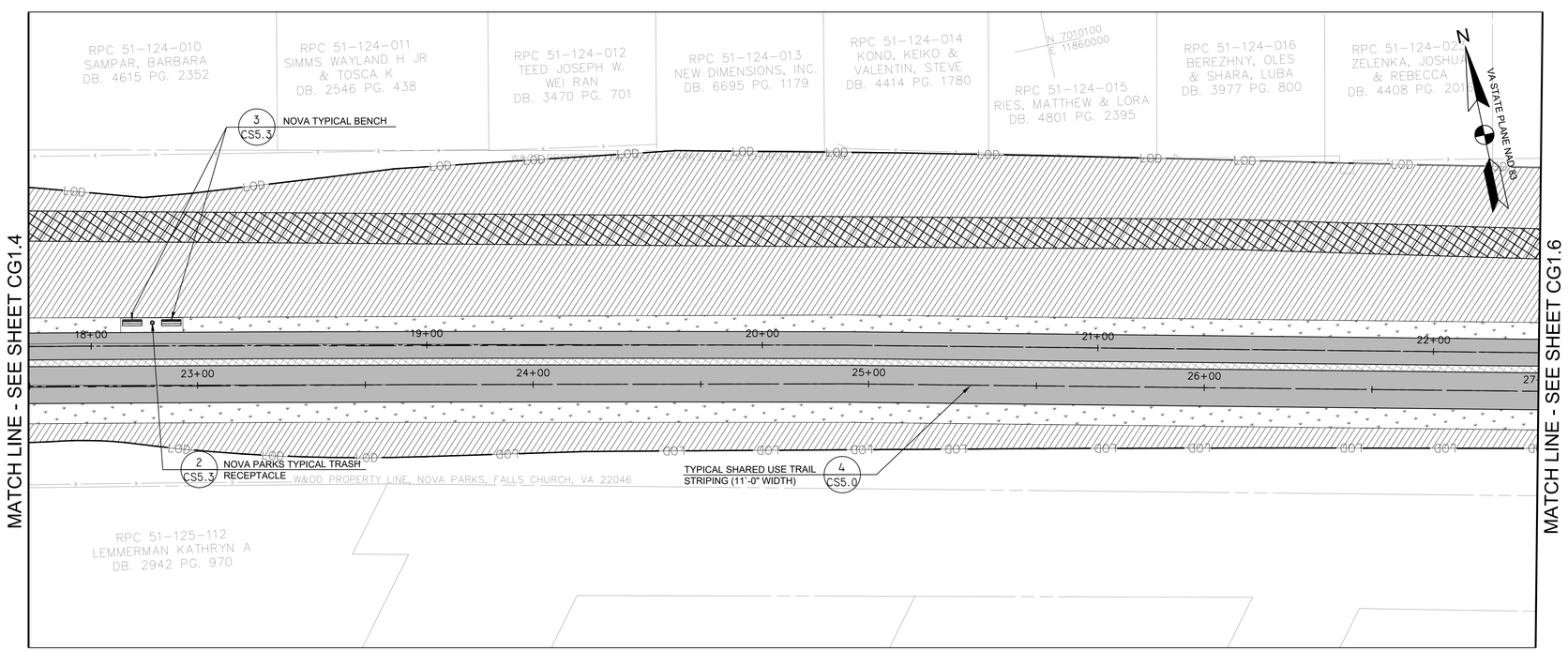

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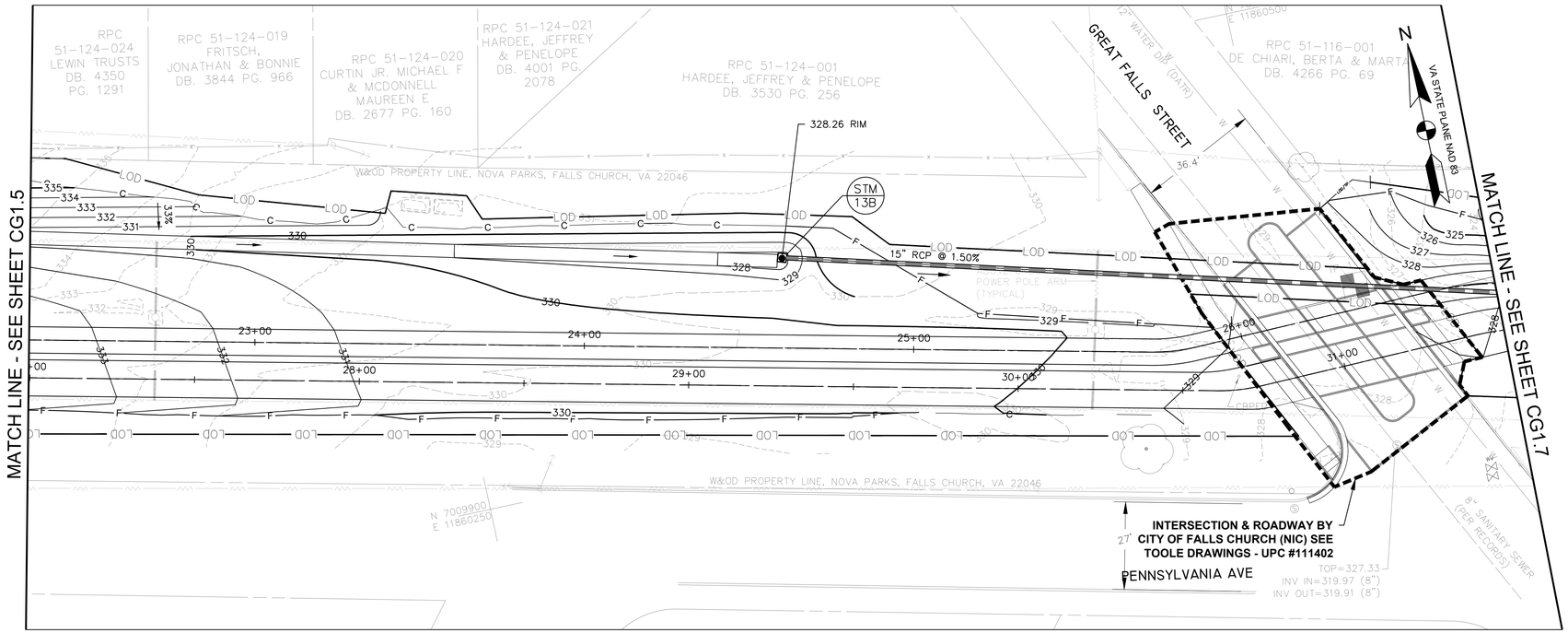
SHEET
CG1.5



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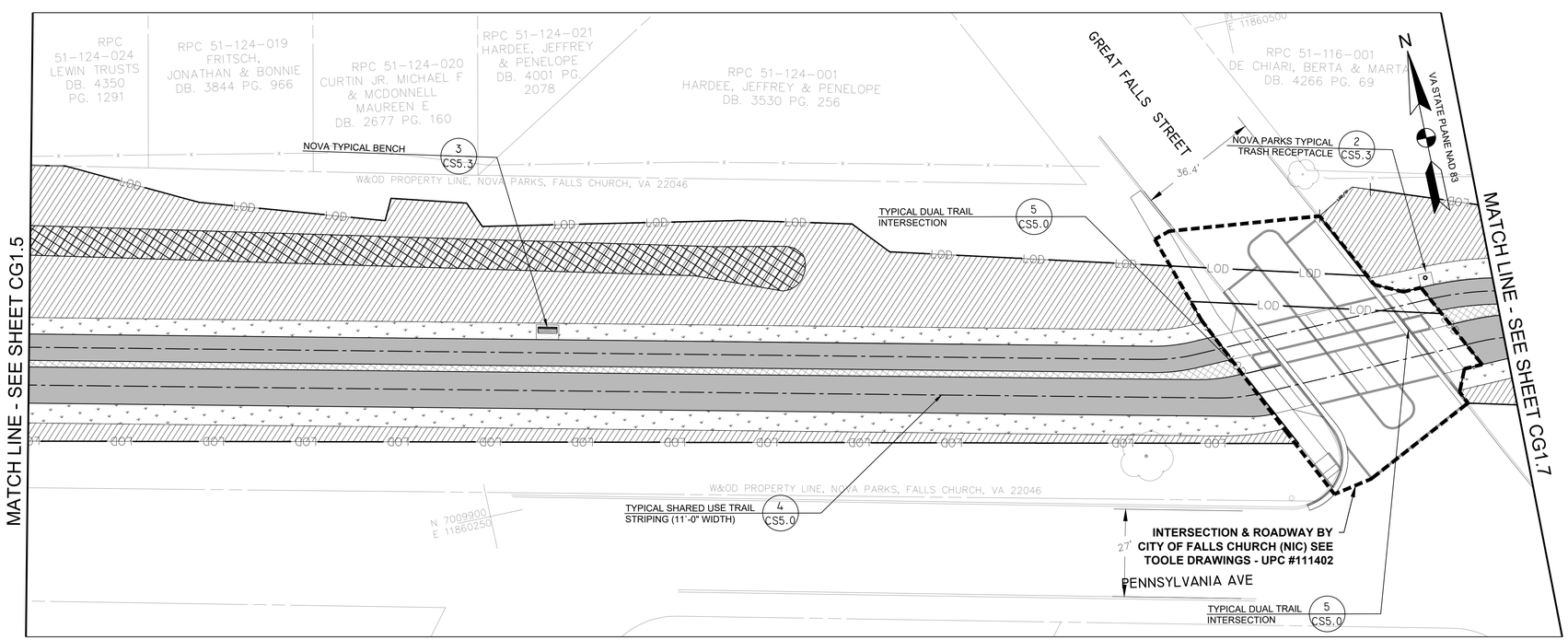

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- PERMEABLE ASPHALT PAVEMENT - REFER TO DETAIL 4/CW5.1
- CONCRETE PAD - REFER TO DETAIL 4/CS5.3
- STREAM BANK STABILIZATION MATTING - REFER TO SHEET CE5.1

SYMBOL	DESCRIPTION	QTY
	DUMOR BENCH	6
	TRASH RECEPTACLE - REFER TO DETAIL 8/CS3.0	6

* SEE GI1.1 FOR GRADING AND COMPLIANCE NOTES

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

AMT

COMMONWEALTH OF VIRGINIA
STEVEN TORGERSON
Cert. No. 0606001342
01/05/2020
LANDSCAPE ARCHITECT

REGISTRATION STAMP

PROJECT TITLE
EXPANSION OF THE W&OD TRAIL
FALLS CHURCH, VA
UPC 113612

REVISIONS

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SHEET TITLE
GRADING - UTILITY PLAN & MATERIALS - LANDSCAPE PLAN

SHEET
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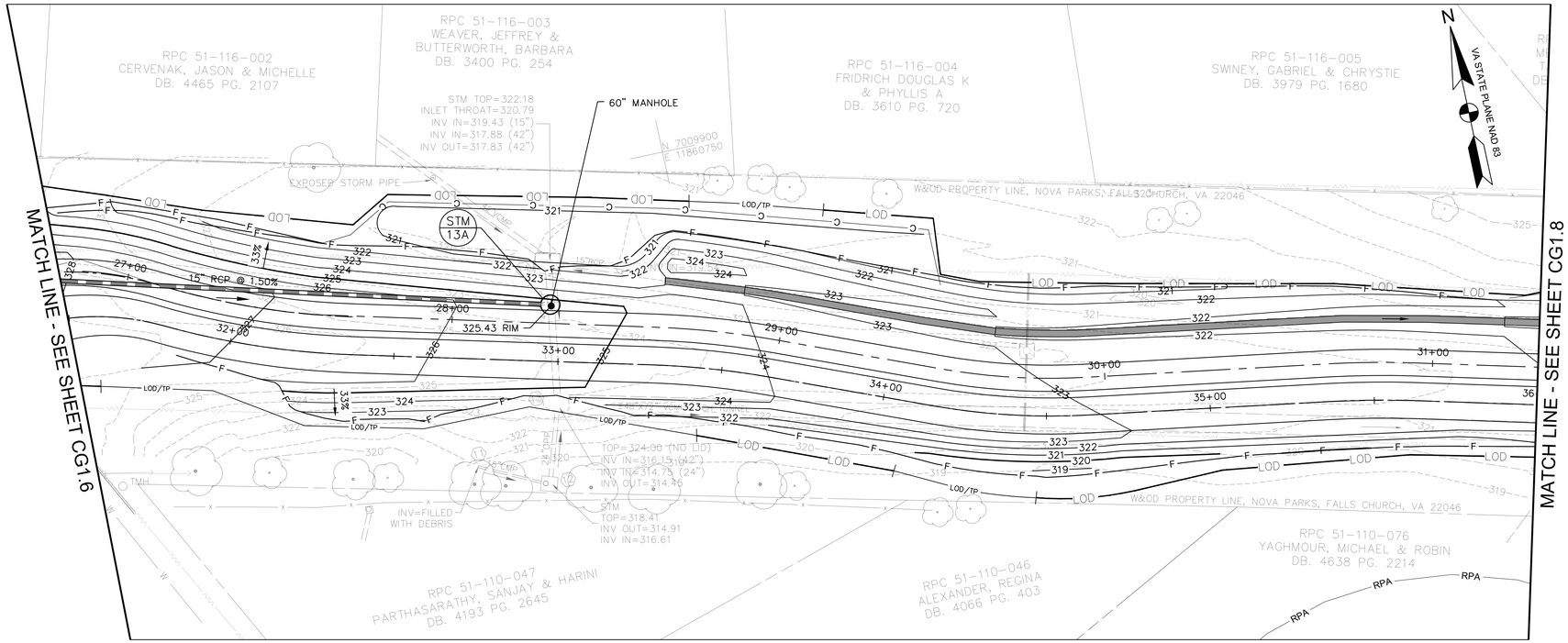

GRADING & UTILITY PLAN
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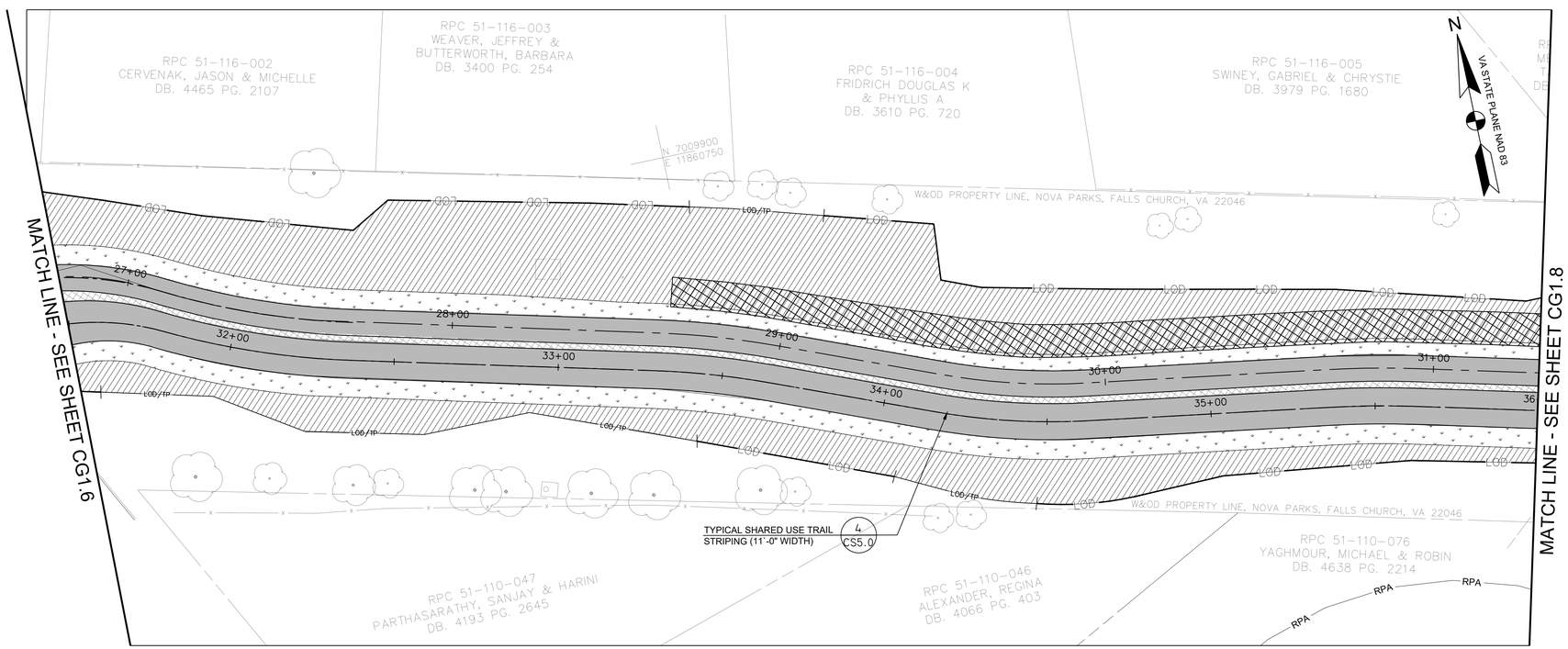

MATERIALS & LANDSCAPE PLAN
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LEGEND

- LOD — LIMITS OF DISTURBANCE
- LOD/TP — TREE PROTECTION FENCING AT LIMITS OF DISTURBANCE
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- SF — PROPOSED SILT FENCE
- RP — PROPOSED ROOT PRUNING
- CHECK DAMS
- PROP STORM DRAIN PIPE
- 4" PERF. PVC SCHD 40 PIPE
- C — CUT LINE
- F — FILL LINE
- AREA TO BE GRADED BY HAND ONLY

MATERIAL SCHEDULE

- TURFGRASS SEEDING - REFER TO CS5.3 FOR SCHEDULE
- MEADOW PLANTING - REFER TO CS5.3 FOR SCHEDULE
- PERENNIAL PLANTING - REFER TO CS5.3 FOR SCHEDULE
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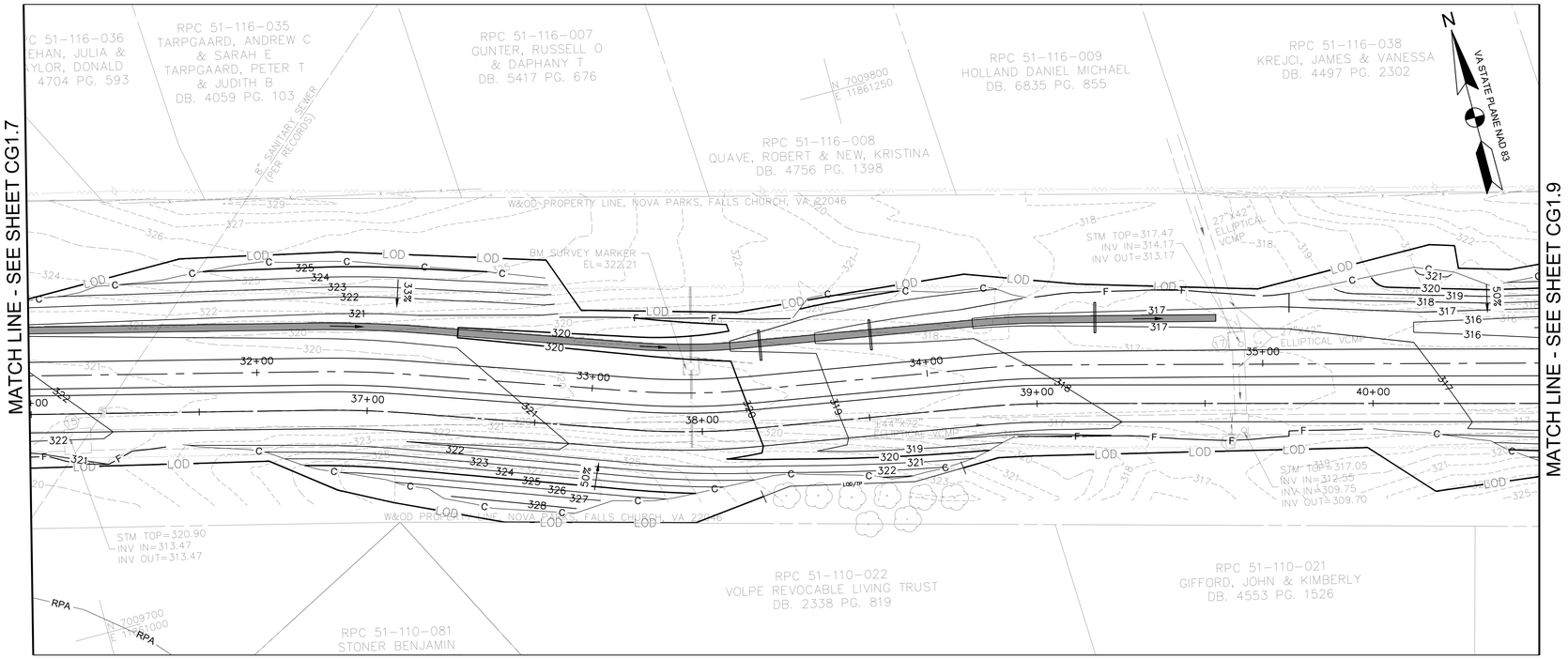

GRADING & UTILITY PLAN
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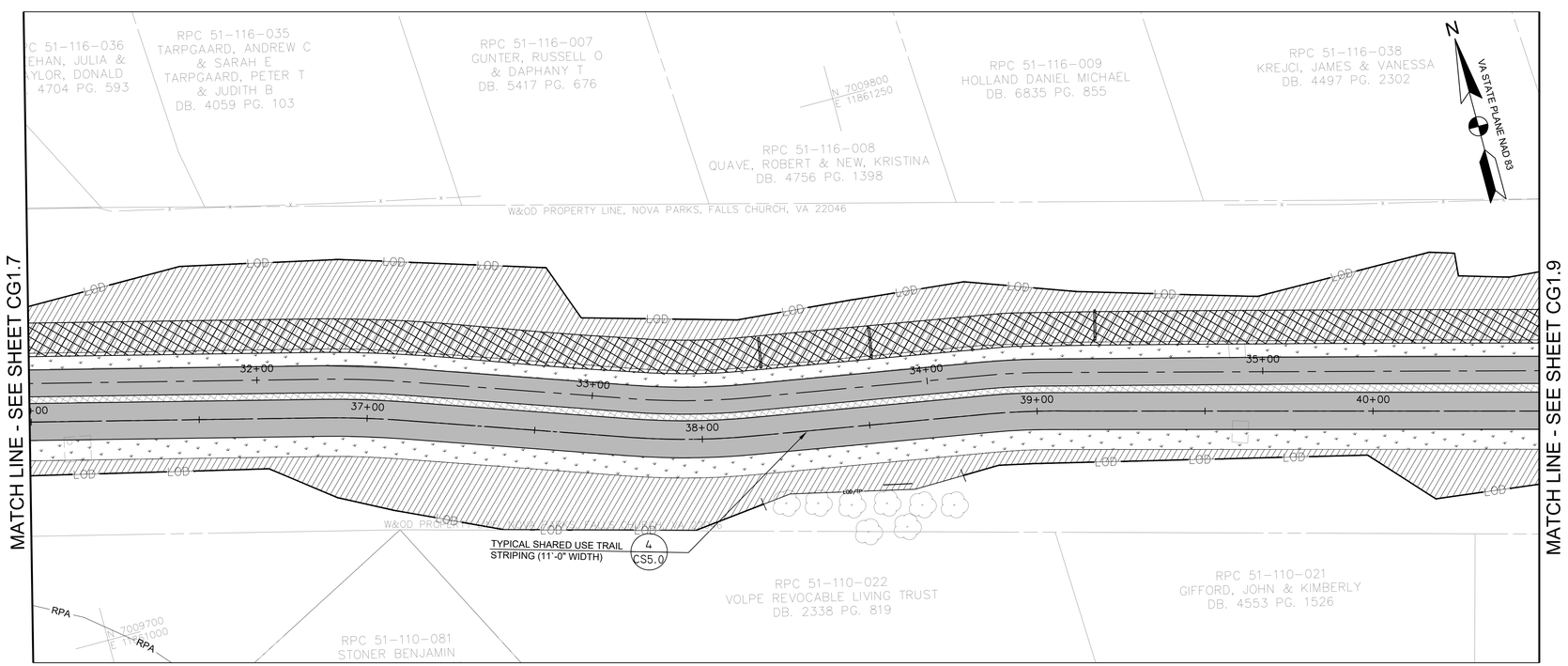

MATERIALS & LANDSCAPE PLAN
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SYMBOL	DESCRIPTION	QTY
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	TRASH RECEPTACLE - REFER TO DETAIL 8/CS3.0	6

* SEE GI1.1 FOR GRADING AND COMPLIANCE NOTES

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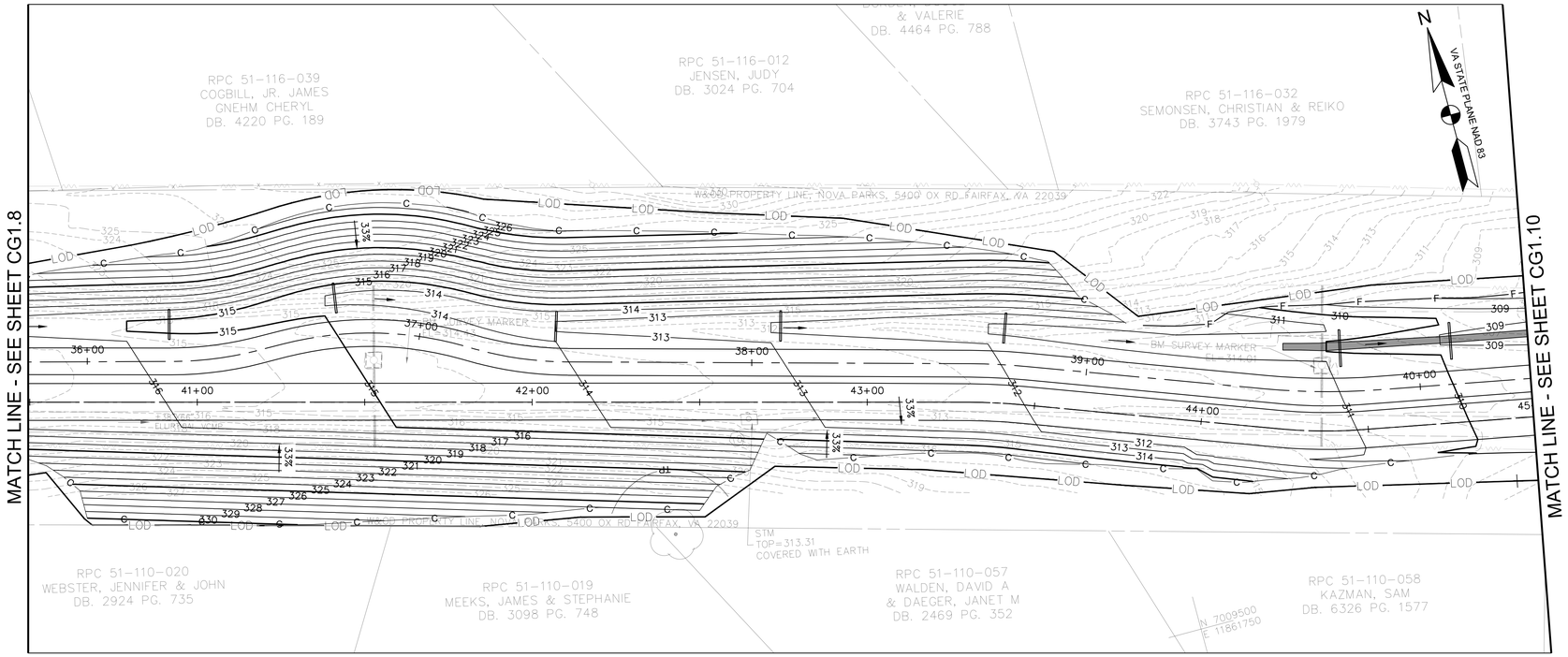

GRADING & UTILITY PLAN
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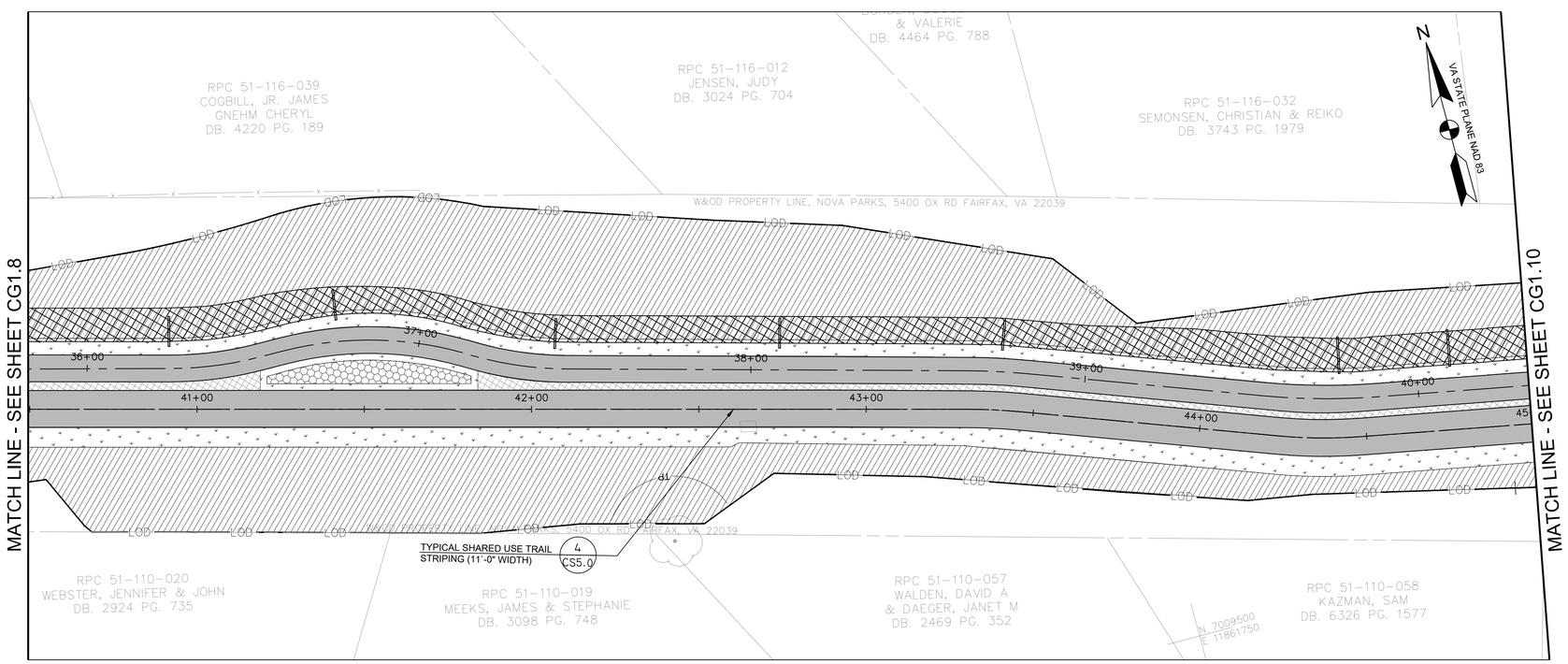

MATERIALS & LANDSCAPE PLAN
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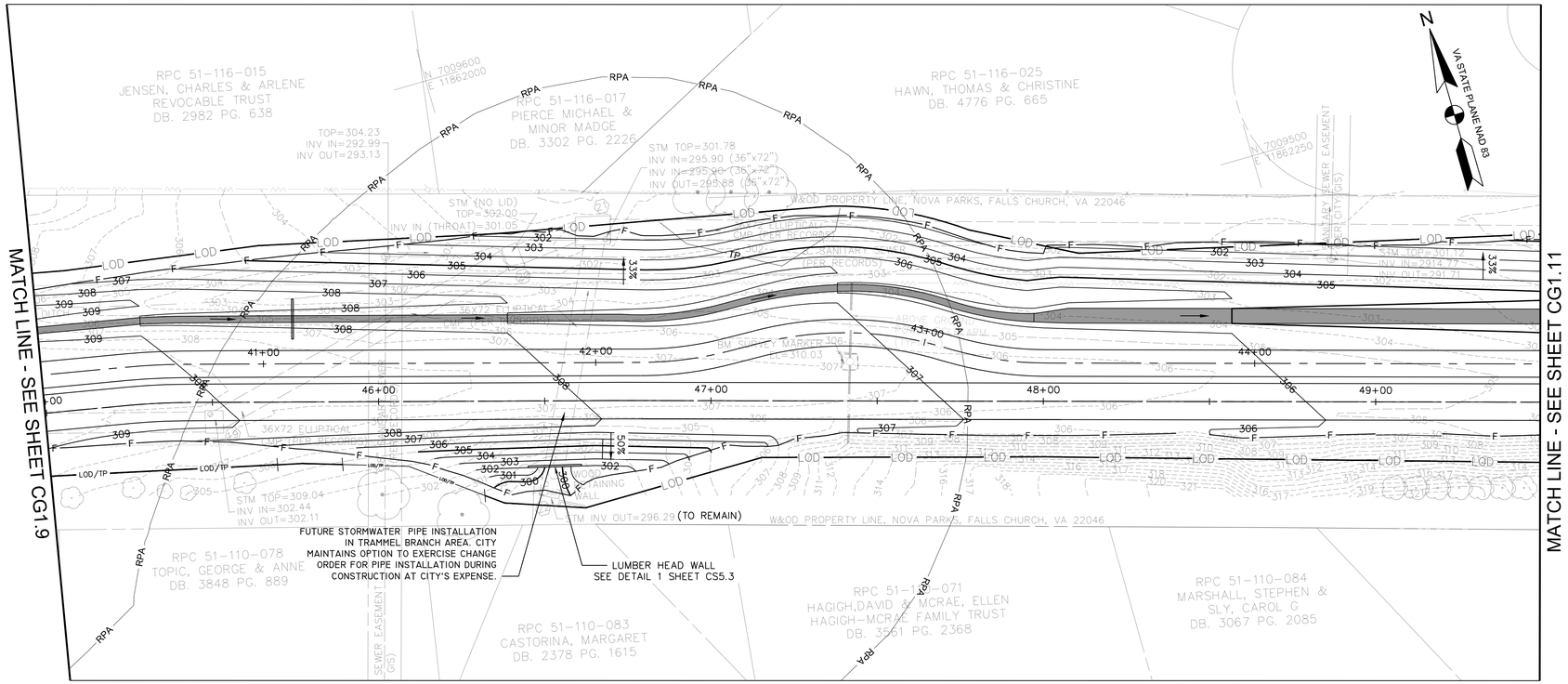

GRADING & UTILITY PLAN
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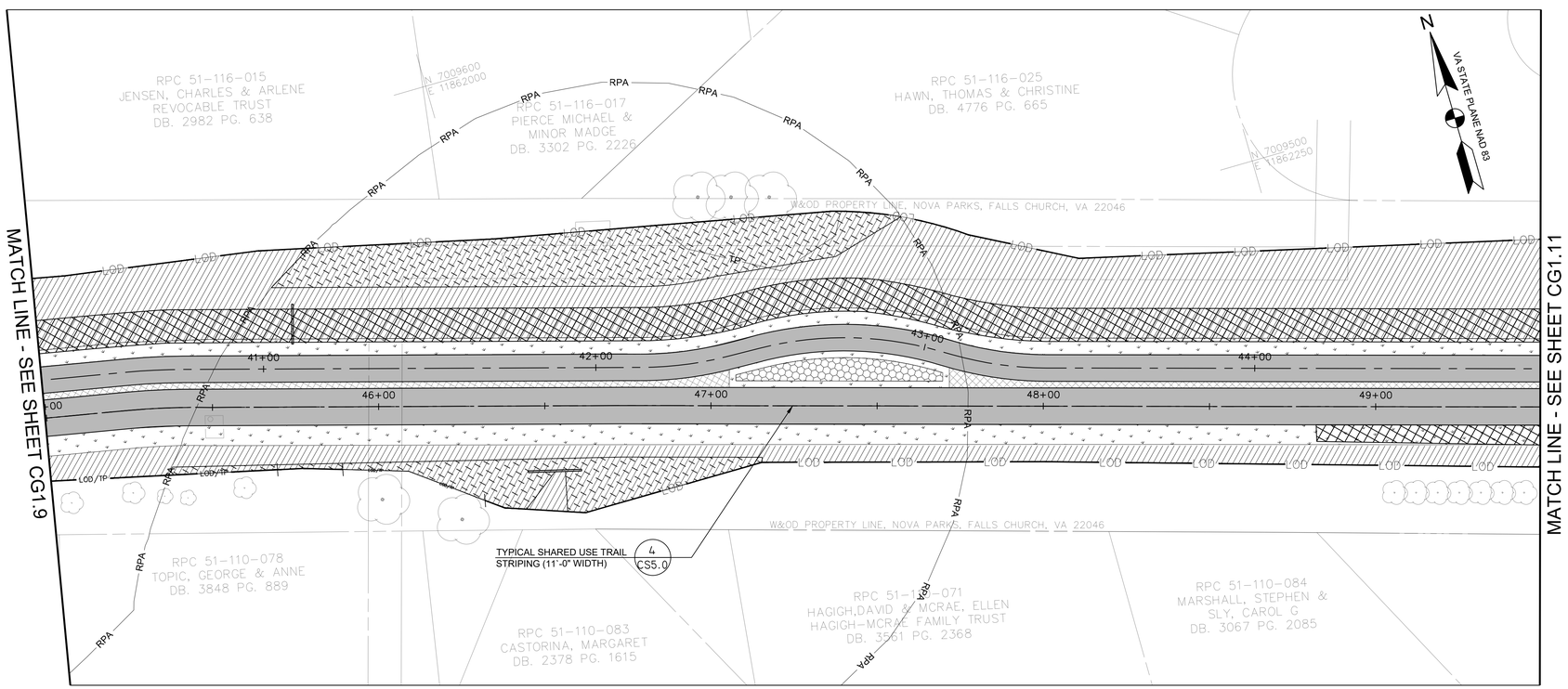

MATERIALS & LANDSCAPE PLAN
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- CONCRETE PAD - REFER TO DETAIL 4/CS5.3
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SYMBOL	DESCRIPTION	QTY
	DUMOR BENCH	6
	TRASH RECEPTACLE - REFER TO DETAIL 8/CS3.0	6

* SEE GI1.1 FOR GRADING AND COMPLIANCE NOTES

NOTE: RPA DISTURBANCE MITIGATION PLANTINGS CANNOT INCLUDE TREES DUE TO THE OVERHEAD POWER LINES. SHRUBS WILL BE PLANTED WHERE RPA LAND IS DISTURBED AS PER THE CHESAPEAKE BAY RPA BUFFER REQUIREMENTS. ADDITIONALLY, THE COMBINATION OF STORMWATER BMP AND NATIVE MEADOW PLANTINGS WILL FURTHER FUNCTION AS BUFFER PLANTINGS. NO STORMWATER WILL DRAIN FROM NEW TRAIL INTO STREAM, REFER TO CW5.4.

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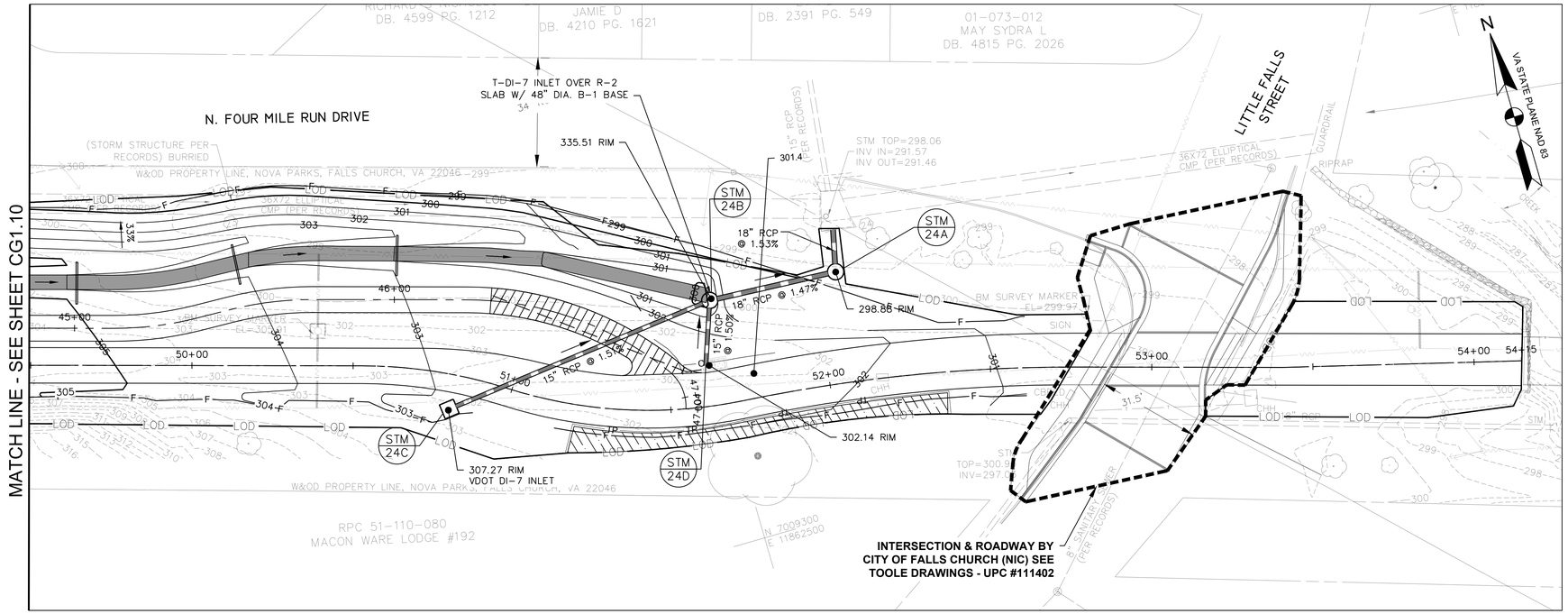

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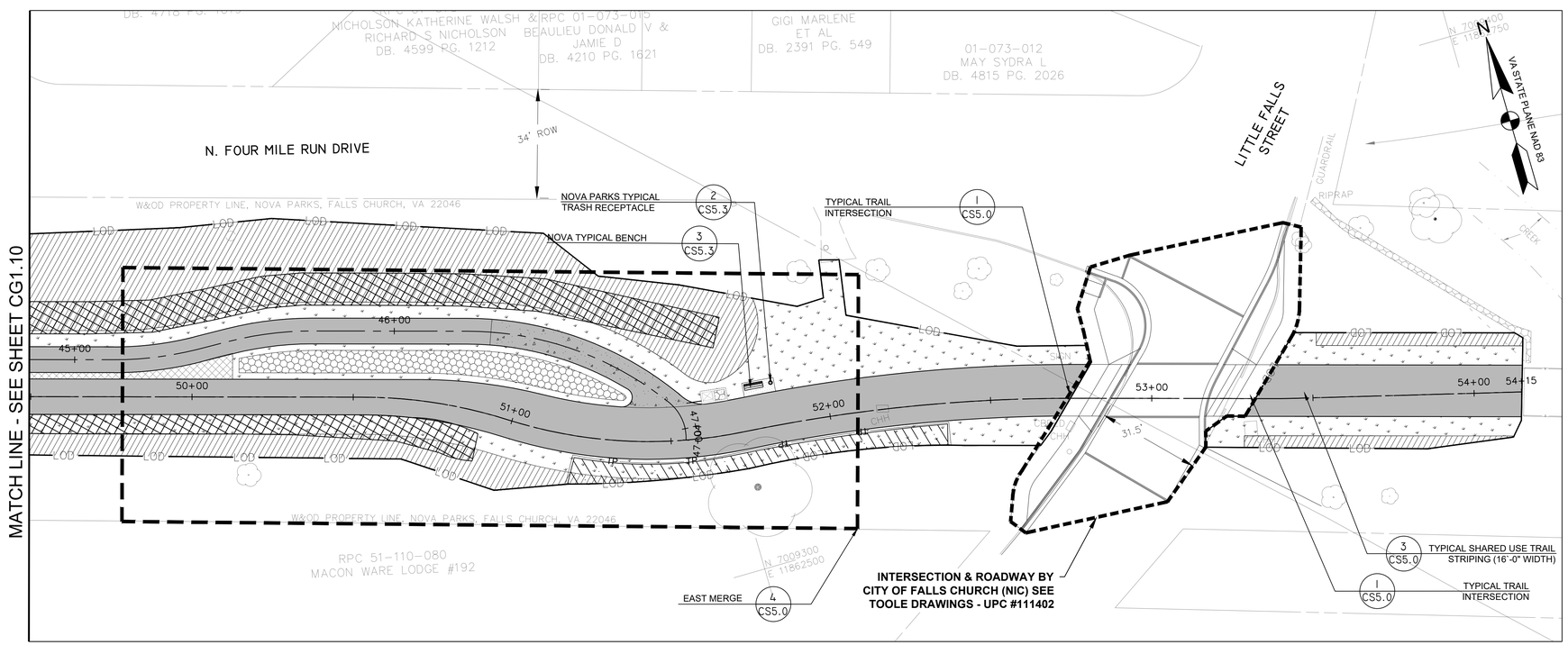

MATERIALS & LANDSCAPE PLAN
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SHEET
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SECTION 321220 - ASPHALT PAVEMENT TEXTURING FOR STREET STAMP

PART 1 - GENERAL

1.1 Related Documents

A. Drawings and general provisions of the Contract, including General and Supplemental Conditions and Division 01 and Division 32 Asphalt Paving Specifications, apply to this Section.

B. Virginia Department of Transportation, Road and Bridge Specifications, 2007.

1.2 DESCRIPTION

A. Asphalt pavement texturing is a highly suitable solution for a wide variety of decorative pavement applications. Paved entranceways, parking lots, residential driveways, sidewalks, plazas, medians, and crosswalks are some examples of successful applications of asphalt pavement texturing.

B. Asphalt pavement texturing is executed by elevating the temperature of an asphalt pavement surface and then pressing a metal template into the surface to replicate, in relief, the grout depressions common to hand-laid brick or cobblestone, or virtually any other design. The imprinted asphalt pavement surface is then coated with a coating or system of coatings specifically formulated for asphalt pavement.

C. Asphalt pavement texturing is a highly specialized process that requires the skill of a qualified applicator working with the proper equipment and applying highly specialized coating(s) de- signed specifically for application to asphalt pavement.

D. This specification will include guidance with respect to the minimum requirements/qualifications of the applicator, equipment and coating in the execution of this Work.

1.3 REFERENCES

A. ASTM D-4541 Standard Test Method for Pull-Off Strength of Coatings Using Portable Adhesion Tester.

B. ASTM D-4060 Test Method for Abrasion Resistance of Organic Coatings by the Taber Abraser.

C. ASTM D-2697 Standard Test Method for Volume of Nonvolatile Matter in Clear or Pigmented Coatings.

D. ASTM D522-93A Standard Test Method for Mandrel Bend Test of Attached Organic Coatings.

E. ASTM D1653 Standard test method for water vapor transmission or organic film coatings.

F. ASTM G-155 Accelerated Weathering Environment. Standard Practice for Operating Xenon Arc Light Apparatus for Exposure of Nonmetallic Materials.

G. ASTM D 2369 Weight Solids Standard test method for Volatile Content of Coatings.

H. ASTM D 1475 Standard Test method for Density of Paint, Varnish, Lacquer, Other related products.

I. ASTM D-2240 (2000) Standard Test Method for Rubber property - Durometer hardness.

J. ASTM D-5895 Standard Test Method of drying or curing during film formation of organic coatings using mechanical recorders.

K. ASTM D-570 Standard Test Method for water absorption of plastics.

1.4 DEFINITIONS

A. "Qualified Applicator" is a contractor or applicator who has completed asphalt pavement texturing work and can provide certification and references upon request.

B. "Textured asphalt Pavement" is asphalt pavement that has been subjected to imprinting or stamping in a specific pattern.

C. "Non-textured asphalt pavement" is asphalt pavement that is unstamped and is sometimes referred to as "flatwork".

D. The "Work" is the asphalt pavement texturing work contemplated in this bid submission and specification.

E. "Scuffing" is a "tear" of the asphalt pavement caused by an external force. Stationary vehicle tires turning on the pavement surface is a typical cause.

1.5 1.4 SUBMITTALS

A. The documents required as part of this bid submission are as follows:

1. Proof of applicator's ability. A copy of the current year license as provided to the pro- posed applicator issued by a recognized authority in the execution of asphalt pavement texturing work. Failing that, at least 3 reference sites and written references from 3 previous customers for work performed by this applicator.
2. A list of the major equipment to be used in the execution of the Work. This list will include the asphalt pavement reheat machinery, spray equipment, compactor(s) and templates.
3. The name of the coating(s) and the coating supplier's name.
4. Certified performance test results of the coating material(s).
5. Confirmation of coating colors to be approved by the Owner.
6. Confirmation of Patterns to be approved by the Owner.

B. The contractor will provide a mock-up of the Asphalt Pavement Texturing that is at least 2' x 10'.

PART 2 - PRODUCTS

2.1 MATERIALS - COATINGS

A. Properly designed asphalt pavement coatings have been scientifically formulated to provide the optimal balance of performance properties for a durable, long lasting color and texture to asphalt pavement surfaces. Some of these key properties include wet wear durability, crack resistance, adhesion, color fastness, and friction properties. These properties must be backed up by a Certificate of Analysis from an independent laboratory or an equal document that certifies these performance properties.

B. The asphalt pavement coating must be environmentally safe and meet EPA requirements for Volatile Organic Compounds (VOC).

C. Only use asphalt pavement coatings from qualified pavement coating suppliers who can provide proof of these required performance properties.

D. Coating material shall be in standard colonial red.

E. Stamped pattern shall be running bond, perpendicular to trail direction.

2.2 MINIMUM PERFORMANCE PROPERTIES OF ASPHALT COATING

A. The following table outlines the minimum required performance properties of the asphalt pavement coating. These performance properties must be ascertained by a Certificate of Analysis issued by an approved testing facility.

2.3 EQUIPMENT

A. The following specialized equipment shall be used in the execution of the Work.

1. Metal wire rope templates are used to create the desired imprint pattern. Only use templates that have been supplied by a manufacturer who has the proven expertise in manufacturing these templates for this type of application.
2. Asphalt pavement reheat equipment specifically designed for asphalt pavement texturing is to be used in the execution of this work. The primary asphalt pavement re-heat equipment must cycle the heat application and must allow the equipment operator to check the pavement surface temperature during the heating process. These controls are necessary to enable the pavement temperature to be elevated gradually, giving the operator the ability to ensure that the pavement is not overheated or adversely affected. Heaters without these controls are strictly prohibited as the primary re-heat equipment.
3. Hand-held portable heating devices may be used only for areas where it is difficult to operate the re-heat machine. These may not be used as the primary pavement re-heating device.
4. Finishing tools that are designed to enable the applicator to complete the imprinting of the asphalt pavement in areas which may be inaccessible to the template such as curbs and manhole covers are permitted.
5. Vibratory Plate Compactors shall be used for pressing the templates into the heated asphalt pavement to create the specified pattern.
6. Specialized coating spray equipment must be used in the application of the coating and must be capable of applying the coating to the asphalt pavement surface in a thin, con- trolled film which will optimize the drying and curing time of the coating. More specifically the spray equipment pump must be capable of providing a continuous recirculation of the coating in order to keep the solids within the coating in suspension.

PART 3 - GENERAL

3.1 The pavement texturing system shall be supplied and installed by a Qualified Applicator in accordance with the plans and specifications or as directed by the Owner. Do not begin the Work until confirmation of the Applicator's qualifications is provided.

3.2 PRE-CONDITIONS - ASPHALT PAVEMENT

A. A highly stable asphalt pavement free of defects is a pre-requisite for the installation of a pavement texturing system. Do not install the pavement texturing system over poor quality asphalt pavement.

B. Prerequisites for new asphalt pavement
1. A durable and stable asphalt pavement mix per Section 321216 - Asphalt Paving

C. Pavement Marking Removal: recommended guidelines
1. Pavement markings may be removed as approved by the Owner by sandblasting, water-blasting, grinding, or other approved mechanical methods. The removal methods should, to the fullest extent possible, cause no significant damage to the pavement surface. The Owner shall determine if the removal of the markings is satisfactory for the application of the pavement texturing system. Work shall not proceed until this approval is granted.

D. Surface Preparation
1. The asphalt pavement surface shall be dry and free from all foreign matter, including but not limited to dirt, dust, de-icing materials, and chemical residue.

3.3 LAYOUT

A. Layout of the pattern for imprinting into the surface of the asphalt pavement shall be as per the drawings and specifications.

3.4 HEATING THE ASPHALT PAVEMENT

A. The Applicator shall use asphalt pavement reheat equipment as described in Section 2.2 Equipment. The optimal pavement temperature for imprinting the template is dependent upon mix design, modifiers used in the mix, the age of the pavement and weather. The surface temperature of the pavement should not exceed 325°F as determined by an infra-red thermometer reading taken after the heat is applied to the asphalt pavement.

B. In order to achieve the proper depth of imprint it is important to elevate the asphalt pavement temperature to a minimum depth of 1/2 inch (12.5mm) without burning the pavement surface. This can only be accomplished using asphalt pavement reheat equipment that is specifically designed for this Work.

3.5 SURFACE IMPRINTING

A. The pavement surface shall be dry and free from all foreign matter, including but not limited to dirt, dust, de-icing materials, and chemical residue.

B. Once the asphalt pavement has reached imprinting temperature, the templates shall be placed in position and pressed into the surface using vibratory plate compactors. The top of the template is to be flush with the surrounding asphalt pavement and can then be removed. Areas that have an imprint depth less than the full depth of the template shall be re-heated and re-stamped prior to applying the coatings. Hand tooling is a permitted method to achieve proper imprint depth in areas difficult to get at with the template.

3.6 APPLICATION OF ASPHALT PAVEMENT COATING

A. Application Guidelines.
1. The qualified applicator shall refer to the asphalt pavement coating supplier's recommendations for methods of application. Special care and attention must be paid to ensure asphalt pavement coatings are applied in environmental conditions that permit proper cure.
2. The coating application shall proceed as soon as possible upon completion of the imprinting of the asphalt pavement.
3. The pavement surface shall be completely dry and thoroughly cleaned prior to application of the asphalt pavement coating(s).
4. The qualified applicator shall use spray equipment specifically designed for the application of the coating(s) as outlined in Section 2.2 above.
5. Refer to the asphalt pavement coating supplier's recommendations for coating coverage rate, number of recommended passes and recommended film thickness.

3.7 OPENING TO TRAFFIC

A. Minimally, the surface coating must be 100% dry before traffic is permitted. Refer to the asphalt pavement coating supplier's guide.

END OF SECTION 321220

AMT
A. MORTON THOMAS AND ASSOCIATES, INC.
CONSULTING ENGINEERS
800 KING FARM BLVD, FOURTH FLOOR ROCKVILLE, MD 20850
(301) 881-2545 FAX:(301) 881-0814
EMAIL: AMT@AMTENGINEERING.COM

COMMONWEALTH OF VIRGINIA
STEVEN TORGERSON
Cert. No. 0906001542
01/05/2020
LANDSCAPE ARCHITECT

REGISTRATION STAMP

NOT FOR CONSTRUCTION

PROFESSIONAL CERTIFICATION
"I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED CERTIFIED LANDSCAPE ARCHITECT UNDER THE LAWS OF THE STATE OF VIRGINIA, LICENSE NO. 1542 , EXPIRATION DATE 06/30/2021"

PROJECT TITLE
EXPANSION OF THE W&OD TRAIL
FALLS CHURCH, VA
UPC 113612

REVISIONS

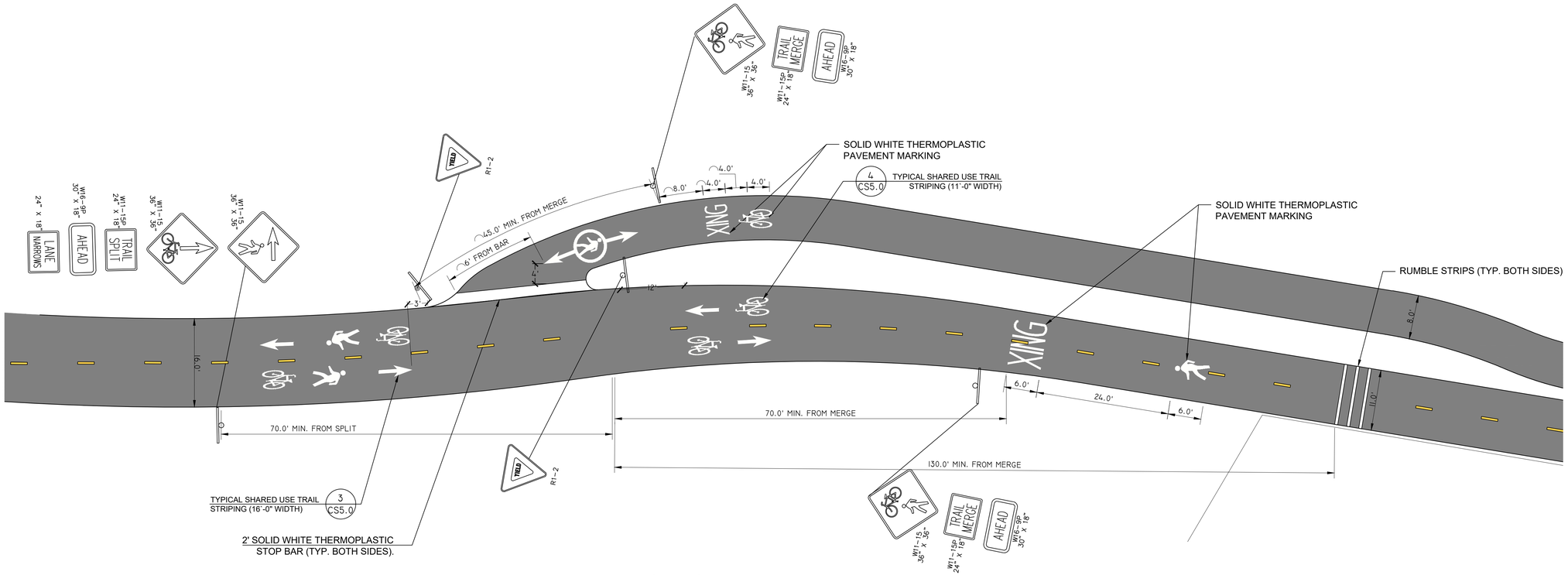
MARK	DATE	DESCRIPTION

AMT FILE NO.	18-0367
DATE:	3/2020
SCALE:	N.T.S.
DESIGNED BY:	AMT
DRAWN BY:	AMT
CHECKED BY:	AMT

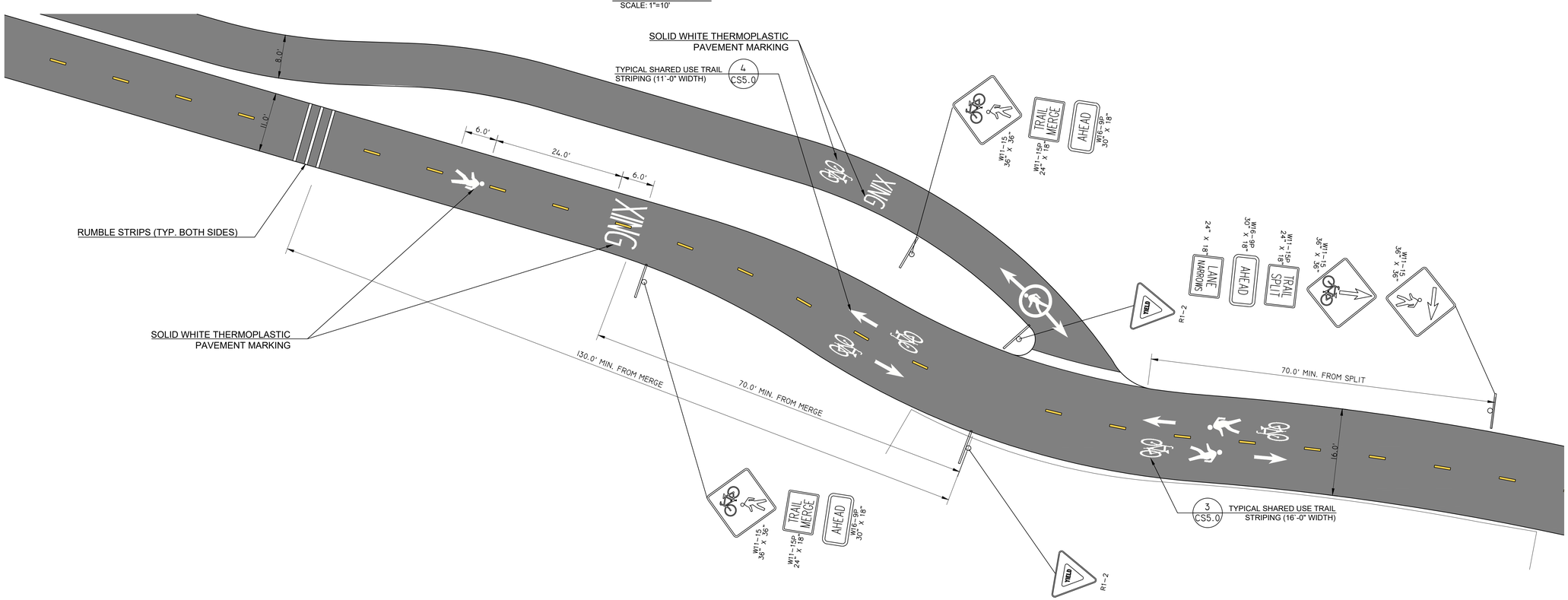
100% DESIGN

SHEET TITLE
SPECIFICATIONS

SHEET
CS3.1



WEST MERGE
SCALE: 1"=10'



EAST MERGE
SCALE: 1"=10'

AMT
A. MORTON THOMAS AND ASSOCIATES, INC.
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FALLS CHURCH, VA
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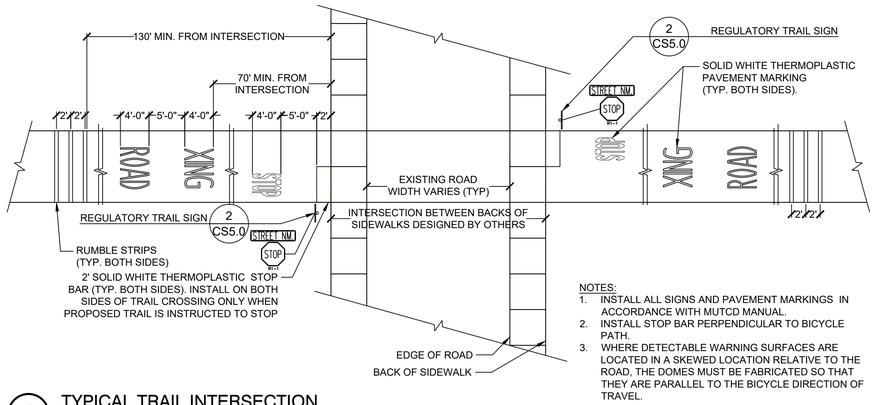
CHECKED BY:	AMT

100% DESIGN

SHEET TITLE
ENLARGEMENT FOR EAST & WEST CONNECTION

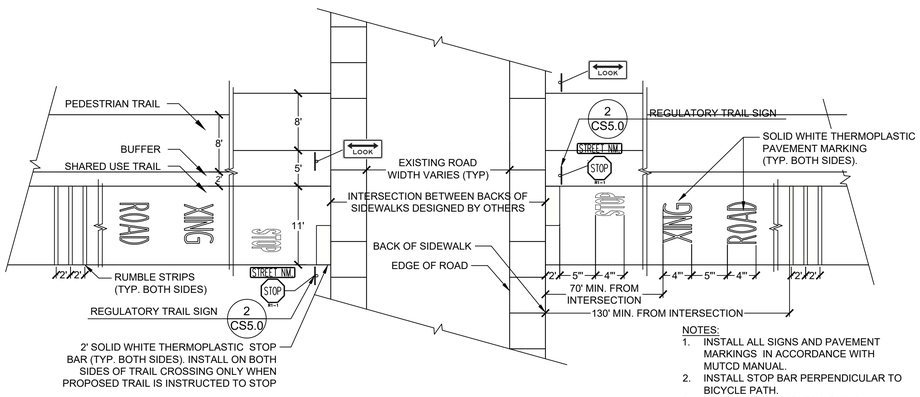
SHEET
CS4.0



NOTES:
1. INSTALL ALL SIGNS AND PAVEMENT MARKINGS IN ACCORDANCE WITH MUTCD MANUAL.
2. INSTALL STOP BAR PERPENDICULAR TO BICYCLE PATH.
3. WHERE DETECTABLE WARNING SURFACES ARE LOCATED IN A SKEWED LOCATION RELATIVE TO THE ROAD, THE DOMES MUST BE FABRICATED SO THAT THEY ARE PARALLEL TO THE BICYCLE DIRECTION OF TRAVEL.

1 TYPICAL TRAIL INTERSECTION

1" = 10' 3402-31

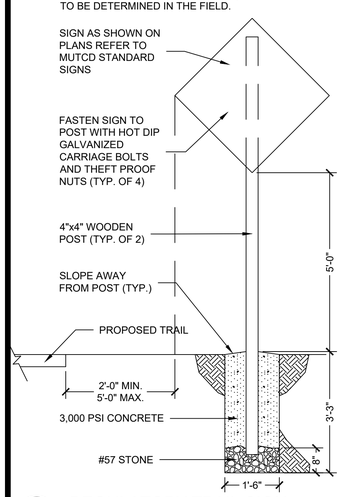


NOTES:
1. INSTALL ALL SIGNS AND PAVEMENT MARKINGS IN ACCORDANCE WITH MUTCD MANUAL.
2. INSTALL STOP BAR PERPENDICULAR TO BICYCLE PATH.
3. WHERE DETECTABLE WARNING SURFACES ARE LOCATED IN A SKEWED LOCATION RELATIVE TO THE ROAD, THE DOMES MUST BE FABRICATED SO THAT THEY ARE PARALLEL TO THE BICYCLE DIRECTION OF TRAVEL.

5 TYPICAL DUAL TRAIL INTERSECTION

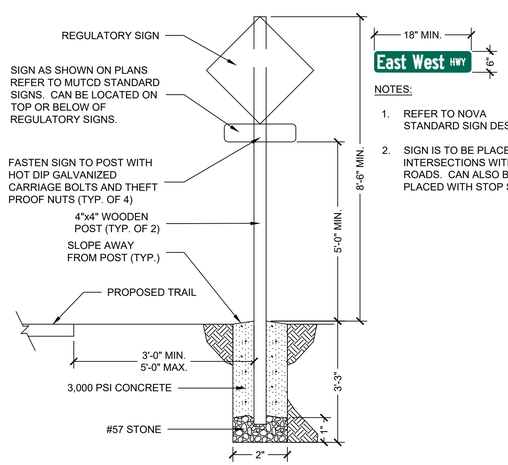
1" = 10' 3402-38

NOTE:
SIGN IS TO BE PLACED TO DESIGNATE TRAIL SECTIONS WITH REDUCED WIDTH (LESS THAN 10 (TEN) FEET AS SHOWN ON THE DRAWINGS PLACEMENT OF ADDITIONAL SIGNS, IF NECESSARY, TO BE DETERMINED IN THE FIELD.



2 REGULATORY TRAIL SIGN

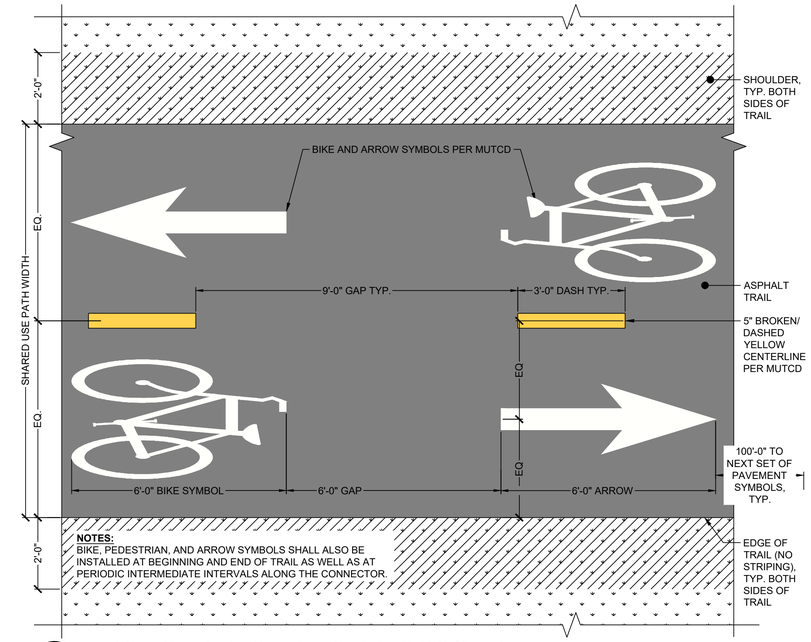
1/2" = 1'-0" 3402-36



NOTES:
1. REFER TO NOVA STANDARD SIGN DESIGN.
2. SIGN IS TO BE PLACED AT INTERSECTIONS WITH ROADS. CAN ALSO BE PLACED WITH STOP SIGN.

6 STREET SIGN

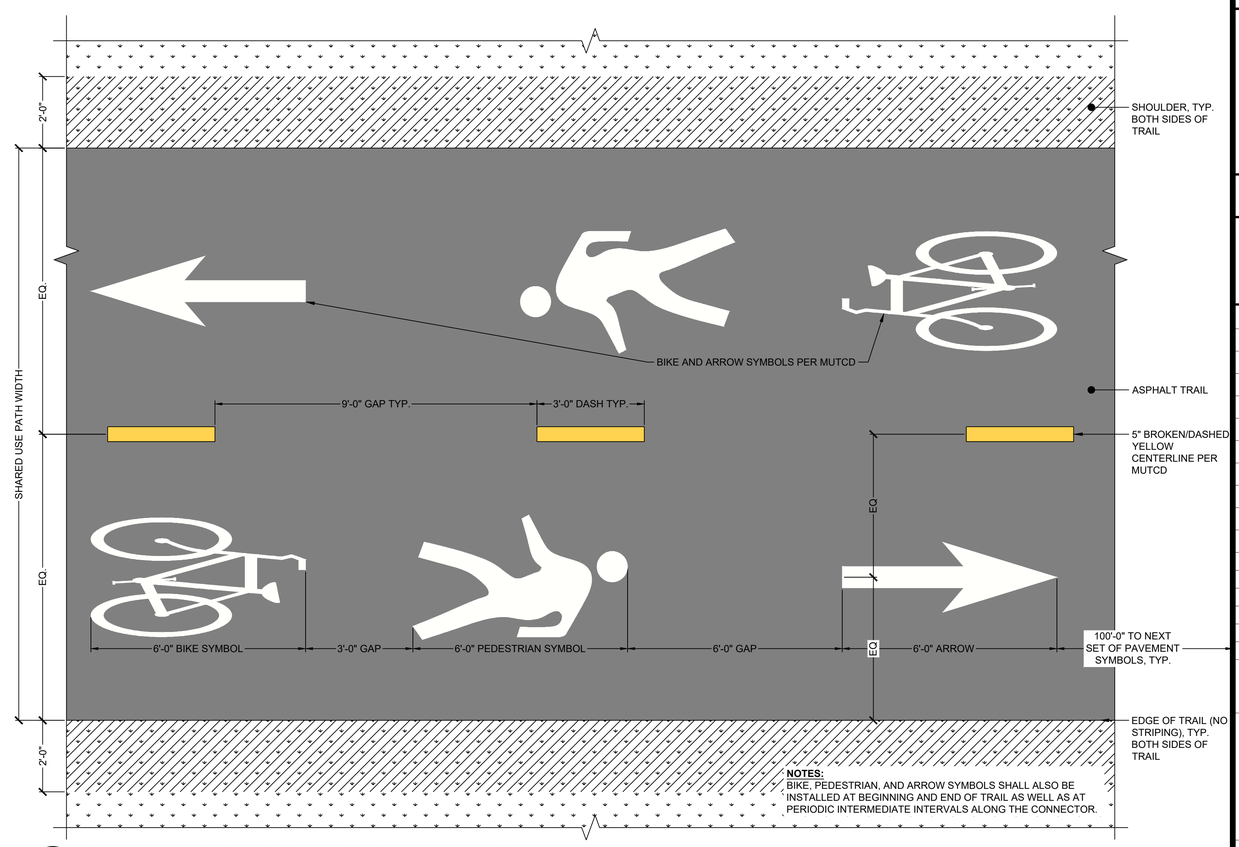
1/2" = 1'-0" 0109-01



NOTES:
BIKE, PEDESTRIAN, AND ARROW SYMBOLS SHALL ALSO BE INSTALLED AT BEGINNING AND END OF TRAIL AS WELL AS AT PERIODIC INTERMEDIATE INTERVALS ALONG THE CONNECTOR.

4 TYPICAL SHARED USE TRAIL STRIPING (11'-0" WIDTH)

1/2" = 1'-0" 34-10



NOTES:
BIKE, PEDESTRIAN, AND ARROW SYMBOLS SHALL ALSO BE INSTALLED AT BEGINNING AND END OF TRAIL AS WELL AS AT PERIODIC INTERMEDIATE INTERVALS ALONG THE CONNECTOR.

3 TYPICAL SHARED USE TRAIL STRIPING (16'-0" WIDTH)

1/2" = 1'-0" 34-09

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04/30/2021

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PROJECT TITLE
EXPANSION OF THE W&OD TRAIL
FALLS CHURCH, VA
UPC 113612

REVISIONS

MARK	DATE	DESCRIPTION

AMT FILE NO.	18-0367
DATE:	3/2020
SCALE:	1"=20'
DESIGNED BY:	AMT
DRAWN BY:	AMT
CHECKED BY:	AMT

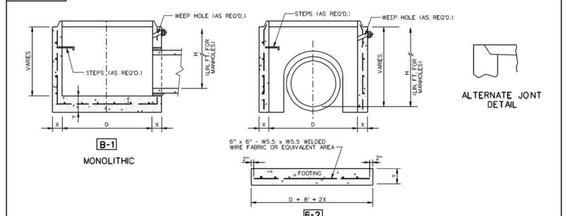
100% DESIGN

SHEET TITLE
TRAIL MARKINGS & DETAILS

SHEET
CS5.0

2016 ROAD & BRIDGE STANDARDS

B-1, B-2



NOTES:

1. SEE GENERAL NOTES FOR ADDITIONAL INFORMATION ON WEEP HOLES, STEP REQUIREMENTS, "H" (LIN. FT. FOR MANHOLES) DIMENSIONS, ETC.
2. ALL BASE UNITS ARE TO BE IN ACCORDANCE WITH THE REQUIREMENTS OF AASHTO M199.
3. CONCRETE SHALL BE 4000 PSI.
4. WHERE OPENINGS ARE REQUIRED FOR PIPE, THEY SHALL BE FORMED, DRILLED, OR NEATLY CUT AS APPROVED BY THE ENGINEER. THE CONTRACTOR SHALL FURNISH THE FABRICATOR WITH THE ANGLES BETWEEN CENTER LINES, THE INVERT ELEVATIONS, AND THE SIZE OF ALL PIPES TO ENTER THE MANHOLE. HOLES ARE TO BE A MINIMUM OF 4" TO A MAXIMUM OF 8" LARGER THAN THE OUTSIDE DIAMETER OF THE PROPOSED PIPE.
5. DIMENSIONS SHOWN ARE MINIMUM. ACTUAL DIMENSIONS MAY VARY WITH MANUFACTURER.
6. "D" IS NOMINAL DIAMETER.
7. IN THE EVENT THE INVERT OF THE OUTFALL PIPE IS HIGHER THAN THE BOTTOM OF THE STRUCTURE, THE INVERT OF THE OUTFALL PIPE SHALL BE SHAPED WITH CEMENT MORTAR TO PREVENT STANDING OR PONDING OF WATER IN THE STRUCTURE.
8. TONGUE AND GROOVE JOINT ARE TO BE OF FABRICATOR'S DESIGN MEETING VDOT APPROVAL. JOINTS ARE TO BE SEALED WITH MORTAR, O-RING GASKETS, OR BUTYL RUBBER.

DIMENSIONS

D	X MINIMUM	Y MINIMUM	SUGGESTED MAX. PIPE SIZE	ABSOLUTE MAXIMUM ☆
36"	4"	6"	18"	24"
48"	5"	6"	24"	27"
60"	5"	8"	36"	42"
72"	6"	8"	48"	54"
84"	7"	8"	60"	66"
96"	8"	8"	66"	72"
108"	9"	8"	78"	84"
120"	10"	8"	90"	96"
126"	10½"	8"	96"	102"
144"	12"	8"	108"	120"

✱ DEPTH "H" OF 36" DIAMETER BASE UNIT RESTRICTED TO 4'-0" MAXIMUM.

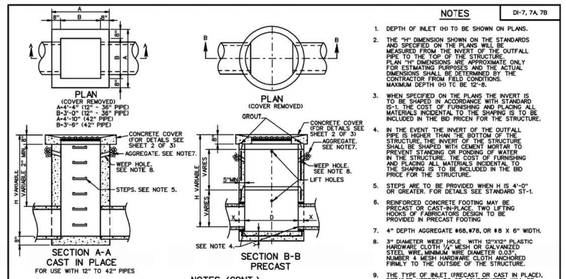
☆ ONE THROUGH PIPE ONLY. (ONE PIPE ENTERING AND ONE PIPE EXITING STRUCTURE)

VDOT ROAD AND BRIDGE STANDARDS	A COPY OF THE ORIGINAL SEALED AND SIGNED DRAWING IS ON FILE IN THE CENTRAL OFFICE. STANDARD PRECAST BASE UNITS VIRGINIA DEPARTMENT OF TRANSPORTATION	SPECIFICATION REFERENCE
SHEET 1 OF 1 / REVISION DATE 08/17		105 302
103.11		

2016 ROAD & BRIDGE STANDARDS

2016 ROAD & BRIDGE STANDARDS

DI-7, 7A, 7B



RECOMMENDED MINIMUM HEIGHT CHART		
PIPE SIZE	H DIMENSION CONC.	H DIMENSION CORR. METAL
12"	2'-6"	2'-5"
15"	2'-9¼"	2'-8"
18"	3'-0½"	2'-11"
21"	3'-3¾"	3'-2"
24"	3'-7"	3'-5"
27"	3'-10¼"	3'-8"
30"	4'-1½"	3'-11"
33"	4'-4¾"	4'-2"
36"	4'-8"	4'-5"
42"	5'-2½"	4'-11"

NOTES

1. DEPTH OF INLET (H) TO BE SHOWN ON PLANS.
2. THE "H" DIMENSION SHOWN ON THE STANDARDS AND SPECIFIED ON THE PLANS WILL BE MEASURED FROM THE INVERT OF THE OUTFALL PIPE TO THE TOP OF THE STRUCTURE. THIS DIMENSION REPRESENTS THE ONLY FOR ESTIMATING PURPOSES AND THE ACTUAL DIMENSIONS SHALL BE DETERMINED BY THE CONTRACTOR FROM FIELD CONDITIONS. MAXIMUM DEPTH (H) TO BE 12'-0.
3. WHEN SPECIFIED ON THE PLANS THE INVERT IS TO BE SHAPED IN ACCORDANCE WITH STANDARD D-1. THE COST OF FURNISHING AND PLACING ALL MATERIALS INCIDENTAL TO THE SHAPING IS TO BE INCLUDED IN THE BID PRICE FOR THE STRUCTURE.
4. IN THE EVENT THE INVERT OF THE OUTFALL PIPE IS HIGHER THAN THE BOTTOM OF THE STRUCTURE, THE INVERT OF THE STRUCTURE SHALL BE SHAPED WITH CEMENT MORTAR TO PREVENT STANDING OR PONDING OF WATER IN THE STRUCTURE. THE COST OF FURNISHING AND PLACING ALL MATERIALS INCIDENTAL TO THE SHAPING IS TO BE INCLUDED IN THE BID PRICE FOR THE STRUCTURE.
5. STEPS ARE TO BE PROVIDED WHEN H IS 4'-0" OR GREATER. FOR DETAILS SEE STANDARD ST-1.
6. REINFORCED CONCRETE FOOTING MAY BE PRECAST OR CAST-IN-PLACE. TWO LIFTING HOOKS OF FABRICATORS DESIGN TO BE PROVIDED IN PRECAST FOOTING.
7. 4" DEPTH AGGREGATE #68, #78, OR #8 X 6" WIDTH.
8. 3" DIAMETER WEEP HOLE WITH 12"x12" PLASTIC HARDWARE CLOTH (¼" MESH OR GALVANIZED STEEL WIRE. MINIMUM WIRE DIAMETER 0.047" (NO. 20 BWG) PLACED VERTICALLY AND FORCED FIRMLY TO THE OUTSIDE OF THE STRUCTURE.
9. THE TYPE OF INLET (PRECAST OR CAST IN PLACE), DETAILED HEREON, TO BE CONSTRUCTED, WILL BE AT THE OPTION OF THE CONTRACTOR.
10. FOR DETAILS OF CONCRETE COVER, COLLAR AND GRATE AND THE METHOD OF PLACING APPROACH GUTTER SEE SHEET 2 OF 3.
11. CAST-IN-PLACE CONCRETE IS TO BE CLASS A3 (3000 PSI). PRECAST CONCRETE IS TO BE 4000 PSI.
12. CONCRETE QUANTITIES SHOWN ARE FOR INDICATED DEPTH (H) WITHOUT PIPES. THE AMOUNT DISPLACED BY PIPES MUST BE DEDUCTED TO OBTAIN TRUE QUANTITIES. FOR INLETS OF DIFFERENT DEPTHS ADD OR SUBTRACT THE FOLLOWING CUBIC YARDS OF CONCRETE FOR EACH FOOT OF DEPTH.
13. PAVED DITCHES ARE TO BE TRANSITIONED TO MEET INLET GUTTER AS SHOWN IN STANDARD PG-2A.
14. PROVIDE SAFETY SLABS WHEN SPECIFIED ON THE PLANS.

NOTES (CONT.)

15. DI-7--------NO GUTTER
    DI-7A--------SINGLE GUTTER WHEN DROP INLET IS ON A GRADE.
    DI-7B--------DOUBLE GUTTER WHEN DROP INLET IS IN A SAG BETWEEN TWO GRADES.
16. FOR DETAILS OF PRECAST DI-7 NOT SHOWN HEREON SEE PRECAST UNIT ASSEMBLY DIAGRAM (PAGE 103.01), FOR PRECAST GENERAL NOTES, PAGE 103.02 AND FOR PRECAST DETAILS AND NOTES, RISER AND TOP DETAILS, PAGES 103.07 THRU 103.12.
17. GRATE BARS TO BE PARALLEL TO DITCH FLOW.

PIPE SIZE	12"	15"	18"	24"	30"	36"	42"
MINIMUM DEPTH H	2'-0"	2'-3½"	2'-6½"	3'-1"	3'-7½"	4'-2"	4'-8½"
CONCRETE CUBIC YARDS	.947	1.045	1.143	1.339	1.535	1.731	1.927

INCREMENT PER FOOT OF ADDITIONAL DEPTH (H) = 0.362 CU. YDS. (12" - 36" PIPE) = 0.410 CU. YDS. (42" PIPE)

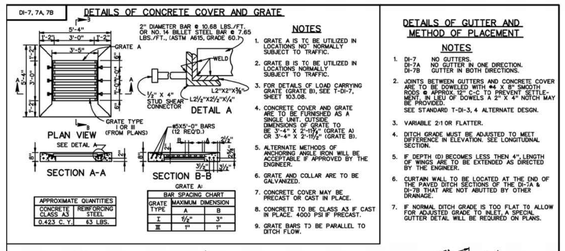
SPECIFICATION REFERENCE	STANDARD MEDIAN DROP INLET 12" TO 42" PIPE VIRGINIA DEPARTMENT OF TRANSPORTATION	VDOT ROAD AND BRIDGE STANDARDS
241 503		REVISION DATE / SHEET 1 OF 3
		104.22

2016 ROAD & BRIDGE STANDARDS

2016 ROAD & BRIDGE STANDARDS

DI-7, 7A, 7B

DETAILS OF CONCRETE COVER AND GRATE



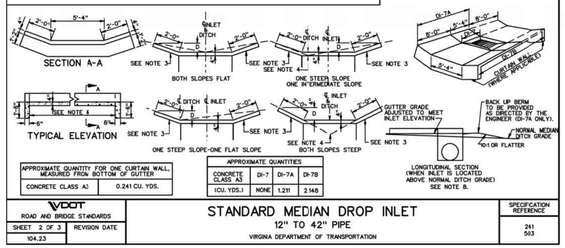
NOTES

1. GRATE A IS TO BE UTILIZED IN LOCATIONS NOT NORMALLY SUBJECT TO TRAFFIC.
2. GRATE B IS TO BE UTILIZED IN LOCATIONS NORMALLY SUBJECT TO TRAFFIC.
3. FOR DETAILS OF LOAD CARRYING GRATE (GRATE B), SEE T-DI-7.
   SHEET 103.08.
4. CONCRETE COVER AND GRATE ARE TO BE FURNISHED AS A SINGLE UNIT. (OUTSIDE DIMENSIONS OF GRATE ARE TO BE 3'-4" X 2'-11½" (GRATE A) OR 3'-4" X 2'-11½" OR 3'-4" X 2'-11½" (GRATE B).
5. ALTERNATE METHODS OF ANCHORING ANGLE IRON WILL BE ACCEPTABLE IF APPROVED BY THE ENGINEER.
6. GRATE AND COLLAR ARE TO BE GALVANIZED.
7. CONCRETE COVER MAY BE PRECAST OR CAST IN PLACE.
8. CONCRETE TO BE CLASS A3 IF CAST IN PLACE. (3000 PSI IF PRECAST).
9. GRATE BARS TO BE PARALLEL TO DITCH FLOW.

DETAILS OF GUTTER AND METHOD OF PLACEMENT

NOTES

1. DI-7 NO GUTTERS.
   DI-7A NO GUTTER IN ONE DIRECTION.
   DI-7B GUTTER IN BOTH DIRECTIONS.
2. JOINTS BETWEEN GUTTERS AND CONCRETE COVER ARE TO BE DOWELED WITH #4 X 8" SMOOTH ROUND & APPROX. 12" C-C TO PREVENT SETTLE. WE PROVIDED OR DOWELS A 2" X 4" NOTCH MAY BE PROVIDED.
   SEE STANDARD T-DI-3, 4 ALTERNATE DESIGN.
3. VARIABLE 21 OR FLATTER.
4. DITCH GRADE MUST BE ADJUSTED TO MEET DIFFERENCE IN ELEVATION. SEE LONGITUDINAL SECTION.
5. IF DEPTH (D) BECOMES LESS THEN 4", LENGTH OF WINGS ARE TO BE EXTENDED AS DIRECTED BY THE ENGINEER.
6. CURTAIN WALL TO BE LOCATED AT THE END OF THE PAVED DITCH SECTIONS OF THE DI-1A & DI-7B THAT ARE NOT ABUTTED BY OTHER DRAINAGE.
7. IF NORMAL DITCH GRADE IS TOO FLAT TO ALLOW FOR ADJUSTED GRADE TO INLET, A SPECIAL GUTTER DETAIL WILL BE REQUIRED ON PLANS.



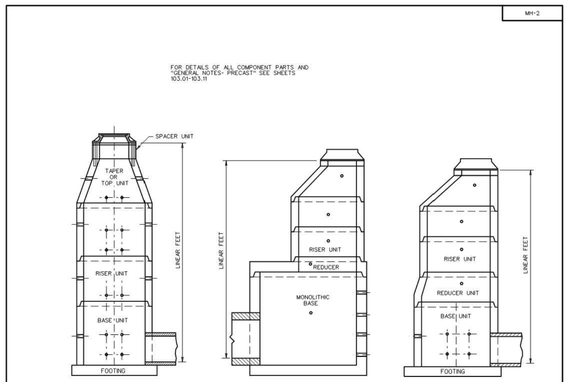
APPROXIMATE QUANTITY FOR ONE CURTAIN WALL. MEASURED FROM BOTTOM OF GUTTER	
CONCRETE CLASS A3	0.241 CU. YDS.

APPROXIMATE QUANTITIES			
CONCRETE CLASS A3	DI-7	DI-7A	DI-7B
(CU. YDS.)	NONE	1.211	2.148

VDOT ROAD AND BRIDGE STANDARDS	STANDARD MEDIAN DROP INLET 12" TO 42" PIPE VIRGINIA DEPARTMENT OF TRANSPORTATION	SPECIFICATION REFERENCE
SHEET 2 OF 3 / REVISION DATE		241 503
104.23		

2016 ROAD & BRIDGE STANDARDS

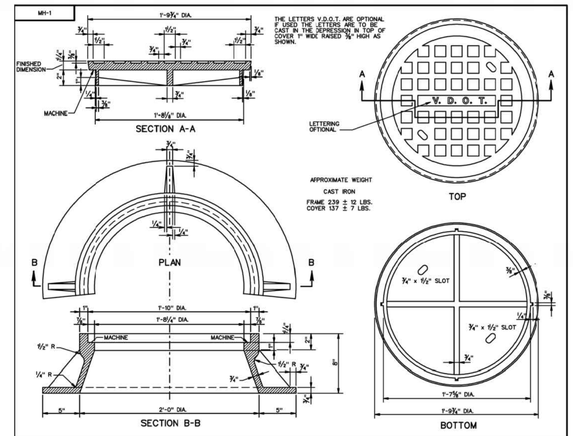
2016 ROAD & BRIDGE STANDARDS



SPECIFICATION REFERENCE	PRECAST MANHOLE VIRGINIA DEPARTMENT OF TRANSPORTATION	VDOT ROAD AND BRIDGE STANDARDS
105 302		REVISION DATE / SHEET 1 OF 1
		106.07

2016 ROAD & BRIDGE STANDARDS

2016 ROAD & BRIDGE STANDARDS

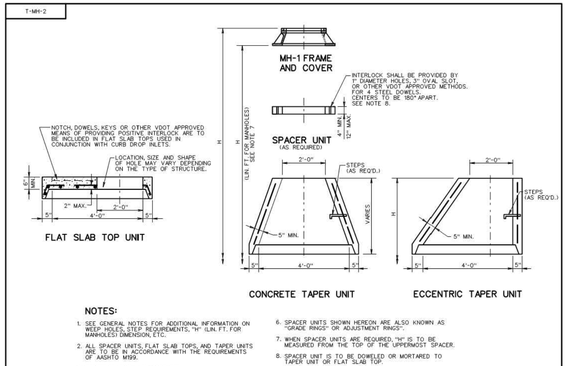


VDOT ROAD AND BRIDGE STANDARDS	STANDARD MANHOLE FRAME AND COVER VIRGINIA DEPARTMENT OF TRANSPORTATION	SPECIFICATION REFERENCE
SHEET 2 OF 5 / REVISION DATE		224 302
106.02		

2016 ROAD & BRIDGE STANDARDS

2016 ROAD & BRIDGE STANDARDS

T-MH-2



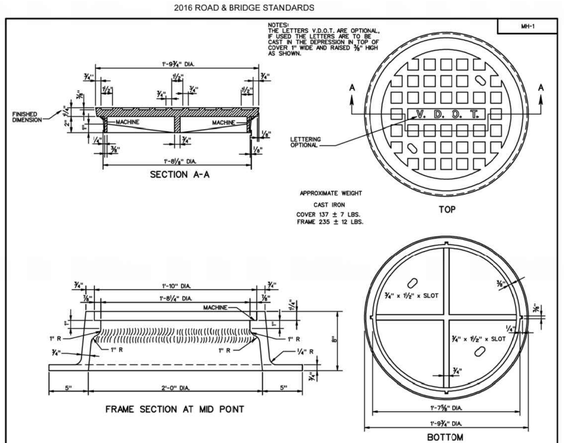
NOTES:

1. SEE GENERAL NOTES FOR ADDITIONAL INFORMATION ON WEEP HOLES, STEP REQUIREMENTS, "H" (LIN. FT. FOR MANHOLES) DIMENSION, ETC.
2. ALL SPACER UNITS, FLAT SLAB TOPS, AND TAPER UNITS TO BE IN ACCORDANCE WITH THE REQUIREMENTS OF AASHTO M199.
3. CONCRETE SHALL BE 4000 PSI.
4. FOR STEP DETAILS SEE STANDARD ST-1.
5. DIMENSIONS SHOWN ARE MINIMUM. ACTUAL DIMENSIONS MAY VARY WITH MANUFACTURER.
6. SPACER UNITS SHOWN HEREON ARE ALSO KNOWN AS "GRADE RINGS" OR ADJUSTMENT RINGS".
7. WHEN SPACER UNITS ARE REQUIRED, "H" IS TO BE MEASURED FROM THE TOP OF THE UPPERMOST SPACER.
8. SPACER UNIT IS TO BE DOWELED OR MORTARED TO TAPER UNIT OR FLAT SLAB TOP.

VDOT ROAD AND BRIDGE STANDARDS	STANDARD PRECAST MANHOLE TOP UNITS VIRGINIA DEPARTMENT OF TRANSPORTATION	SPECIFICATION REFERENCE
SHEET 1 OF 1 / REVISION DATE		105 302
103.09		

2016 ROAD & BRIDGE STANDARDS

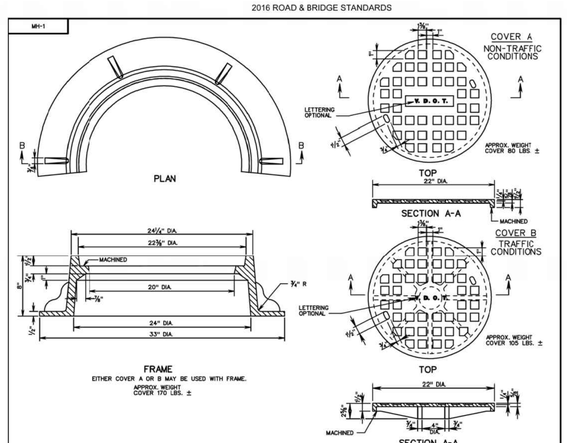
2016 ROAD & BRIDGE STANDARDS



SPECIFICATION REFERENCE	STANDARD MANHOLE FRAME AND COVER VIRGINIA DEPARTMENT OF TRANSPORTATION	VDOT ROAD AND BRIDGE STANDARDS
224 302		REVISION DATE / SHEET 3 OF 5
		106.03

2016 ROAD & BRIDGE STANDARDS

2016 ROAD & BRIDGE STANDARDS

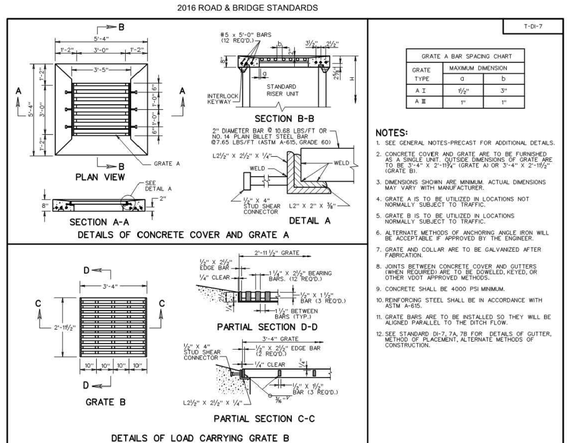


VDOT ROAD AND BRIDGE STANDARDS	STANDARD MANHOLE FRAME AND COVER VIRGINIA DEPARTMENT OF TRANSPORTATION	SPECIFICATION REFERENCE
SHEET 4 OF 5 / REVISION DATE		224 302
106.04		

2016 ROAD & BRIDGE STANDARDS

2016 ROAD & BRIDGE STANDARDS

T-DI-7



GRATE A BAR SPACING CHART		
GRATE TYPE	MAXIMUM DIMENSION a	MAXIMUM DIMENSION b
A I	⅝"	3"
A II	1"	1"

NOTES:

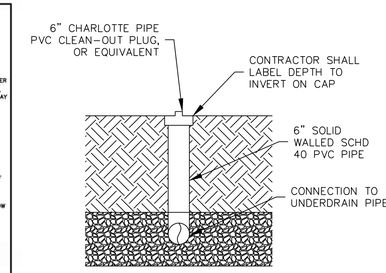
1. SEE GENERAL NOTES-PRECAST FOR ADDITIONAL DETAILS.
2. CONCRETE COVER AND GRATE ARE TO BE FURNISHED AS A SINGLE UNIT. (OUTSIDE DIMENSIONS OF GRATE ARE TO BE 3'-4" X 2'-11½" (GRATE A) OR 3'-4" X 2'-11½" (GRATE B).
3. DIMENSIONS SHOWN ARE MINIMUM. ACTUAL DIMENSIONS MAY VARY WITH MANUFACTURER.
4. GRATE A IS TO BE UTILIZED IN LOCATIONS NOT NORMALLY SUBJECT TO TRAFFIC.
5. GRATE B IS TO BE UTILIZED IN LOCATIONS NORMALLY SUBJECT TO TRAFFIC.
6. ALTERNATE METHODS OF ANCHORING ANGLE IRON WILL BE ACCEPTABLE IF APPROVED BY THE ENGINEER.
7. GRATE AND COLLAR ARE TO BE GALVANIZED AFTER FABRICATION.
8. JOINTS BETWEEN CONCRETE COVER AND GUTTERS (WHEN REQUIRED) ARE TO BE DOWELED, KEYED, OR OTHER VDOT APPROVED METHODS.
9. CONCRETE SHALL BE 4000 PSI MINIMUM.
10. REINFORCING STEEL SHALL BE IN ACCORDANCE WITH ASTM A-615.
11. GRATE BARS ARE TO BE INSTALLED SO THEY WILL BE ALIGNED PARALLEL TO THE DITCH FLOW.
12. SEE STANDARD DI-7, 7A, 7B FOR DETAILS OF GUTTER, METHOD OF PLACEMENT, ALTERNATE METHODS OF CONSTRUCTION.

SPECIFICATION REFERENCE	STANDARD PRECAST TOP UNITS VIRGINIA DEPARTMENT OF TRANSPORTATION	VDOT ROAD AND BRIDGE STANDARDS
105 233 302		REVISION DATE / SHEET 1 OF 1
		103.08

2016 ROAD & BRIDGE STANDARDS

AMT

A. MORTON THOMAS AND ASSOCIATES, INC.
CONSULTING ENGINEERS
800 KING FARM BLVD, FOURTH FLOOR ROCKVILLE, MD 20850
(301) 881-2545 FAX:(301) 881-0814
EMAIL: AMT1@AMTENGINEERING.COM



1 CLEANOUT/OBSERVATION WELL DETAIL
SCALE:NTS

REGISTRATION STAMP

NOT FOR CONSTRUCTION

PROFESSIONAL CERTIFICATION

"I, HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED CERTIFIED LANDSCAPE ARCHITECT UNDER THE LAWS OF THE STATE OF VIRGINIA. LICENSE NO. 1342 EXPIRATION DATE 06/30/2021."

PROJECT TITLE

EXPANSION OF THE W&OD TRAIL

FALLS CHURCH, VA
UPC 113612

REVISIONS

MARK	DATE	DESCRIPTION

AMT FILE NO.	18-0367
DATE:	3/2020
SCALE:	N/A
DESIGNED BY:	AMT
DRAWN BY:	AMT
CHECKED BY:	AMT

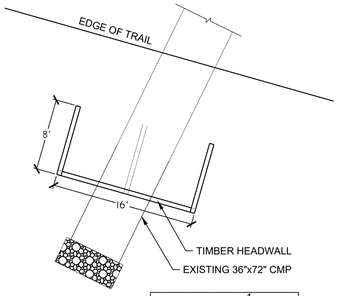
100% DESIGN

SHEET TITLE

UTILITY DETAILS

SHEET

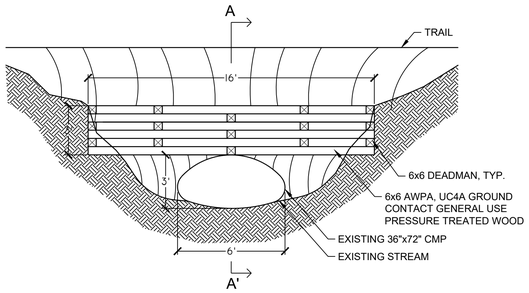
CS5.2



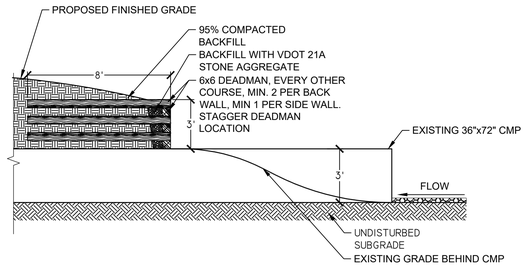
PLAN SCALE $\frac{1}{8}$"=1'-0"

GENERAL NOTES:

1. ALL LUMBER SHALL BE 6X6, PRESSURE TREATED IN ACCORDANCE WITH AMERICAN WOOD- PRESERVERS' ASSOCIATION STANDARDS FOR GROUND CONTACT, SOUTHERN PINE, GRADE #2 OR BETTER.
2. ALL SPIKES SHALL BE 60D OR EQUIVALENT, HOT-DIPPED GALVANIZED OR STAINLESS STEEL, AND DRIVEN INTO PREDRILLED HOLES. SPIKES SHALL BE OF SUFFICIENT LENGTH TO PENETRATE THE BASE MEMBER A MINIMUM OF 2".
3. JOIN TIMBERS W/.276 X 12" GALV. STRUCTURAL TIMBER SCREWS @ 12" OC STAGGERED FROM TIMBER TO TIMBER
4. MEMBER JOINTS SHALL BE STAGGERED A MINIMUM OF 3'-6" FROM JOINTS OF THE COURSE ABOVE AND BELOW.
5. EACH 6X6 MEMBER SHALL BE SECURED AT EACH END WITH 2-60D SPIKES DRIVEN VERTICALLY INTO THE MEMBER BELOW AND CORNERS SHALL BE SECURED WITH 2-60D SPIKES, DRIVEN HORIZONTALLY.



ELEVATION



SECTION A-A'

1 HEADWALL

1/4" = 1'-0"

0630-05

EXISTING INLET EVALUATION COMPUTATIONS

INLET EX. 3

WEIR: Q = 3.1xP(h)^(1.5)
P = 1.15 SF
h = 0.17'
Q = 3.1x1.15x(0.17)^(1.5)
Q = 0.46 CFS

ORIFICE: Q = 0.6xax(2gh)^(0.5)
a = 1.15 SF
h = 0.17'
Q = 0.6x1.15x(2x32.3x0.17)^(0.5)
Q = 2.28 CFS

2.28 CF IS THE CONTROLLING FLOW RATE.
Q10-YR = 10.80 CFS
Q100-YR = 14.26 CFS

INLET EX. 6

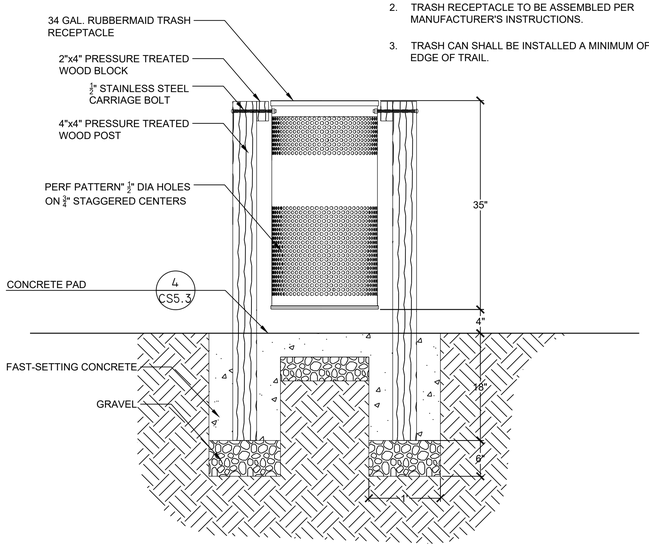
WEIR: Q = 3.1xP(h)^(1.5)
P = 1.15 SF
h = 0.17'
Q = 3.1x1.15x(0.17)^(1.5)
Q = 0.46 CFS

ORIFICE: Q = 0.6xax(2gh)^(0.5)
a = 1.15 SF
h = 0.17'
Q = 0.6x1.15x(2x32.3x0.17)^(0.5)
Q = 2.28 CFS

2.28 CF IS THE CONTROLLING FLOW RATE.
Q10-YR = 10.80 CFS
Q100-YR = 14.26 CFS

NOTES:

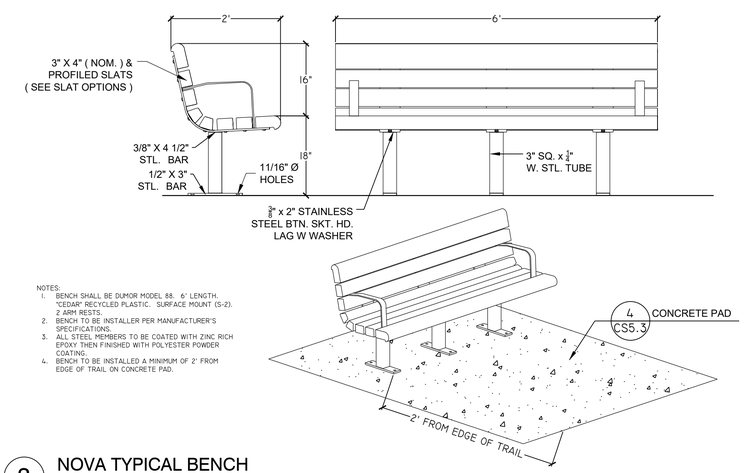
1. RUBBERMAID 34 GAL., ROUND, TRASH CAN, METAL, BLACK. ITEM #2KDK7. MODEL #FGH3BK. CATALOG GROUP #D0207. UNSPSC# 47121702.
2. TRASH RECEPTACLE TO BE ASSEMBLED PER MANUFACTURER'S INSTRUCTIONS.
3. TRASH CAN SHALL BE INSTALLED A MINIMUM OF 2' FROM EDGE OF TRAIL.



2 NOVA PARKS TYPICAL TRASH RECEPTACLE

1" = 1'-0"

1293-06

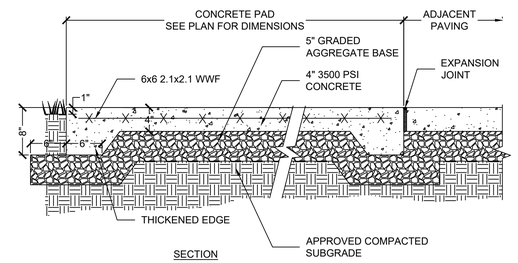


NOTES:
1. BENCH SHALL BE DUMOR MODEL 88. 6' LENGTH. "CEDAR" RECYCLED PLASTIC. SURFACE MOUNT (S-2). 2 ARM RESTS.
2. BENCH TO BE INSTALLER PER MANUFACTURER'S SPECIFICATIONS.
3. ALL STEEL MEMBERS TO BE COATED WITH ZINC RICH EPOXY THEN FINISHED WITH POLYESTER POWDER COATING.
4. BENCH TO BE INSTALLED A MINIMUM OF 2' FROM EDGE OF TRAIL ON CONCRETE PAD.

3 NOVA TYPICAL BENCH

3/4" = 1'-0"

129343.13-56



SECTION

NOTES:
1. ALL CONCRETE PAVEMENT SHALL HAVE A MAXIMUM CROSS SLOPE OF 1.7%.
2. SEE DETAIL OF CONTROL AND EXPANSION JOINTS FOR ADDITIONAL INFORMATION

4 CONCRETE PAD

1" = 1'-0"

033001-06

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COMMONWEALTH OF VIRGINIA
J. KEITH SINCLAIR, JR.
Lic. No. 11195
03/09/2020
PROFESSIONAL ENGINEER

REGISTRATION STAMP

NOT FOR CONSTRUCTION

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PROJECT TITLE

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FALLS CHURCH, VA
UPC 113612

REVISIONS

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AMT FILE NO.	18-0367
DATE:	3/2020
SCALE:	N/A
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DRAWN BY:	AMT
CHECKED BY:	AMT

100% DESIGN

SHEET TITLE

INLET SIZING COMPUTATIONS

SHEET

CS5.3

PLANT SCHEDULE

TURFGRASS SEEDING	101,658 sf	
MEADOW PLANTING	128,176 sf	
PERENNIAL PLANTING	2,009 sf	893 PLANTS

MEADOW PLANTING - SEED MIX

29.6%	Andropogon gerardii, 'Niagara'	Big Bluestem, 'Niagara'
25.0%	Panicum virgatum, 'Shelter'	Switchgrass, 'Shelter'
18.9%	Sorghastrum nutans, NY4 Ecotype	Indiangrass, NY4 Ecotype
17.0%	Elymus virginicus, PA Ecotype	Virginia Wildrye, PA Ecotype
3.0%	Rudbeckia hirta	Blackeyed Susan
2.0%	Chamaecrista fasciculata	Partridge Pea, PA Ecotype
2.0%	Heliopsis helianthoides	Oxeye Sunflower, PA Ecotype
1.7%	Desmodium canadense	Showy Ticktrefoil, PA Ecotype
0.3%	Monarda fistulosa, Fort Indiantown Gap–PA Ecotype	Wild Bergamot, Fort Indiantown Gap–PA Ecotype
0.1%	Desmodium paniculatum	Panicledleaf Ticktrefoil, PA Ecotype
0.1%	Pycnanthemum tenuifolium	Narrowleaf Mountainmint
0.1%	Solidago canadensis, PA Ecotype	Canada Goldenrod, PA Ecotype

*SEEDING RATE: 20LB PER ACRE

PERENNIAL PLANTING

30%	Eragrostis spectabilis	Purple Love Grass
35%	Schizachyrium scoparium 'Carousel'	'Carousel' Little Bluestem
35%	Sporobolus heterolepis	Prairie Dropseed

100% TOTAL
* 1 GALLON CONTAINERS PLANTED AT 18" ON CENTER.
* PLANT EACH SPECIES IN DRIFTS OF 11 TO 23 PLANTS.

1,000 Camassia scilloides / Blue Wild Hyacinth
* UNDERPLANTED

RESOURCE PROTECTION AREA (RPA) IMPACT MITIGATION CALCULATIONS

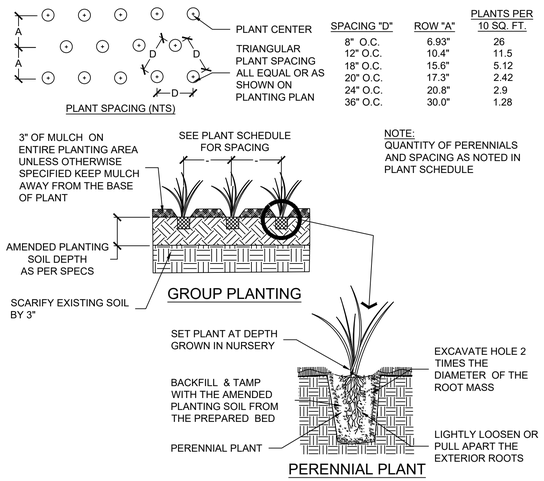
16,283 SF OF DISTURBANCE IN RPA
5 SHRUBS PER 400 SF OF DISTURBANCE
16,283 / 400 = 40.71
40.71 x 5 = 230.54

CONCEPT PLANT SCHEDULE

FLOODPLAIN SHRUB PLANTING	3,759 SF		
ARONIA ARBUTIFOLIA `BRILLIANTISSIMA` / BRILLIANT RED CHOKEBERRY	44	5 GAL	10% @ 36" oc
CLETHRA ALNIFOLIA / SUMMERSWEET CLETHRA	24	5 GAL	15% @ 60" oc
ITEA VIRGINICA `LITTLE HENRY` TM / VIRGINIA SWEETSPIRE	44	5 GAL	10% @ 36" oc
LINDERA BENZOIN / SPICEBUSH	24	5 GAL	15% @ 60" oc
MYRICA PENSYLVANICA / NORTHERN BAYBERRY	17	5 GAL	15% @ 72" oc
SAMBUCUS CANADENSIS / ELDERBERRY	11	5 GAL	10% @ 72" oc
VIBURNUM DENTATUM / VIBURNUM	24	5 GAL	15% @ 60" oc
VIBURNUM TRILOBUM / AMERICAN CRANBERRYBUSH	16	5 GAL	10% @ 60" oc
SHRUB PLANTING TOTAL	204		

GENERAL PLANTING NOTES:

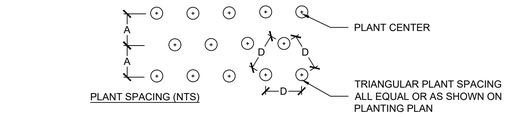
1. THIS PLAN IS FOR PLANTING PURPOSES ONLY, AND ANY OTHER INFORMATION SHOWN IS FOR REFERENCE ONLY. SEE SITE PLAN FOR INFORMATION ABOUT ALL LAYOUT, GRADING AND OTHER SITE IMPROVEMENTS.
2. CALL MISS UTILITY AT 811 OR 1–800–257–7777 TO MARK UTILITIES AT LEAST 48 HOURS BEFORE DIGGING.
3. All materials and planting procedures except as otherwise noted shall conform to the latest edition of "LANDSCAPE SPECIFICATION GUIDELINES" by the Landscape Contractors Association MD–DC–VA.
4. Plants shall conform to the current edition of the American Standard for Nursery Stock. (ANSI z60.1)
5. Plant names shall be those given in the latest edition of Standard Plant Names, American Committee on Horticultural Nomenclature.
6. Topsoil shall meet specifications as per the 2011 MD Standards and Specifications for Soil Erosion and Sediment Control.
7. The Contractor shall submit representative soil samples from both in–situ soils and soils brought in from off–site to a state licensed testing laboratory. The Contractor shall incorporate or apply soil amendments and fertilization based upon results of the soil tests and recommendations by the test lab.
8. The Contractor shall apply grass according to the 2011 MD Standard and Specifications for Soil Erosion and Sediment Control. Do not use Kentucky 31 tall fescue.
9. The Contractor shall stake out all planting beds and tree locations for approval by the Landscape Architect or Owner and representative before digging. It is the Contractor's responsibility to locate and coordinate plantings with all existing utilities. If discrepancies occur because of utility locations or other existing conditions the Contractor shall notify the Landscape Architect and Owner's representative immediately to coordinate any necessary adjustments.
10. All plant material shall be labeled by the nursery and delivered with labels in place for inspection. Substitutions in plant species or size will not be permitted except with the approval of the Landscape Architect and Owner. Do not prune until plant material has been planted but as soon thereafter as is advisable under standard horticultural practices. For tree pruning and care methods please refer to ANSI A–300, latest edition.
11. It is of utmost importance that all plant material be set slightly higher in relation to grade than it was grown in the nursery and with good earth to root contact. Any materials or work may be rejected by the Landscape Architect if it does not meet this or any other requirement of the specifications. Rejected materials shall be removed from the site by the Contractor at Contractor's expense.
12. The Contractor shall mulch and water all plants well on the day they are planted. Individual planting shall be mulched. Acceptable mulch shall be hardwood only. Mulch must be well aged, uniform in color, and free of foreign material including plant material. Well aged mulch is defined as mulch that has been stockpiled or stored for at least twelve (12) months. The Contractor shall apply the mulch uniformly to a 2 to 3 inch depth. Bark shall be kept 3 to 4 inches away from all trunks and woody stems.
13. In case of discrepancies between quantities on the plant list and the plan, the plan shall govern.
14. Sod bare areas as directed by Owner for all disturbed areas to be stabilized that are not landscaped or covered.



SPACING "D"	ROW "A"	PLANTS PER 10 SQ. FT.
8" O.C.	6.93"	26
12" O.C.	10.4"	11.5
18" O.C.	15.6"	5.12
20" O.C.	17.3"	2.42
24" O.C.	20.8"	2.9
36" O.C.	30.0"	1.28

NOTE:
QUANTITY OF PERENNIALS AND SPACING AS NOTED IN PLANT SCHEDULE

1 HERBACEOUS & GRASS PLANTING DETAIL
NOT TO SCALE
DETAIL-FILE



SPACING "D"	ROW "A"	PLANTS PER 10 SQ. FT.
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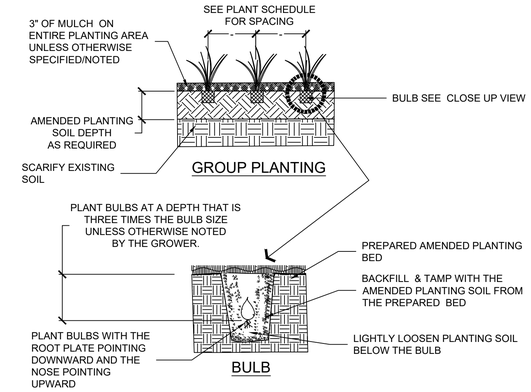
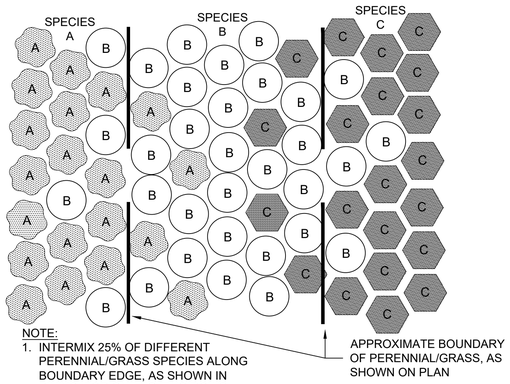
12" O.C.	10.4"	11.5
18" O.C.	15.6"	5.12
24" O.C.	20.8"	2.9
36" O.C.	30.0"	1.28

NOTE:
1. QUANTITY OF BULBS AND SPACING AS NOTED IN PLANT SCHEDULE

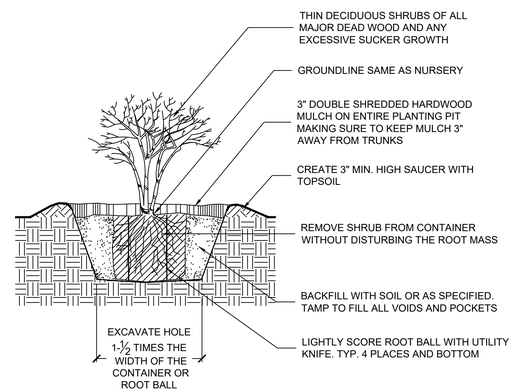


2 BULB PLANTING DETAIL
NOT TO SCALE
329301-03



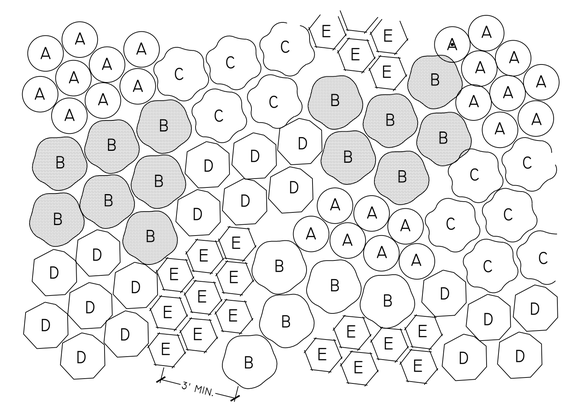
NOTE:
1. INTERMIX 25% OF DIFFERENT PERENNIAL/GRASS SPECIES ALONG BOUNDARY EDGE, AS SHOWN IN PLANS, FOR ONE TO TWO ROWS.

3 PERENNIAL/GRASS INTERMIXING
1" = 1'-0"
329495-12



NOTES:
1. REMOVE ALL NON-ORGANIC MATERIAL FROM THE SOIL PIT AND HAND TAMP LOOSE SOIL AT BOTTOM OF THE PIT
2. PLANT EVERGREEN AND DECIDUOUS SHRUBS USING THE SAME METHOD

4 CONTAINERIZED SHRUB PLANTING DETAIL
NOT TO SCALE
329333-03



NOTES:
1. PLACE SHRUBS IN RANDOM CLUSTERS OF 5-15.
2. PLANT SHRUBS AT A MINIMUM OF 3' ON CENTER. REFER TO PLANT SPACING RECOMMENDATIONS.
3. SEE PLANT SCHEDULE FOR SPECIES REQUIREMENTS.

5 SHRUB AREA PLANTING
1" = 1'-0"
329333-10

AMT
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COMMONWEALTH OF VIRGINIA
STEVEN TORGERSON
Cert. No. 0406001542
03/05/2020
LANDSCAPE ARCHITECT

REGISTRATION STAMP

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PROJECT TITLE
EXPANSION OF THE W&OD TRAIL
FALLS CHURCH, VA
UPC 113612

REVISIONS

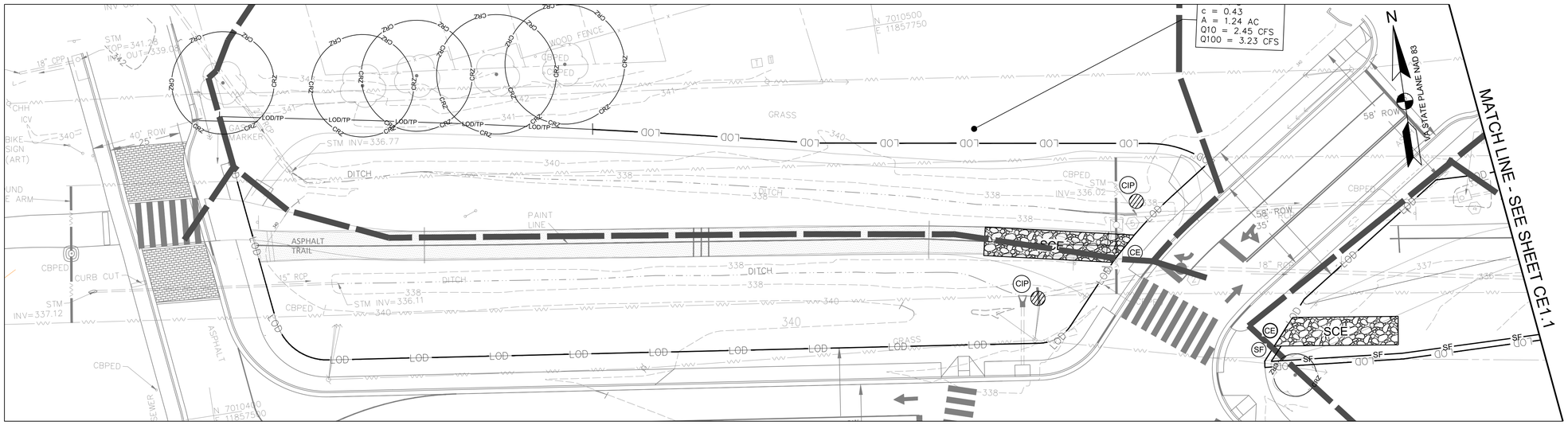
MARK	DATE	DESCRIPTION

AMT FILE NO.	18-0367
DATE:	3/2020
SCALE:	1"=20'
DESIGNED BY:	AMT
DRAWN BY:	AMT
CHECKED BY:	AMT

100% DESIGN

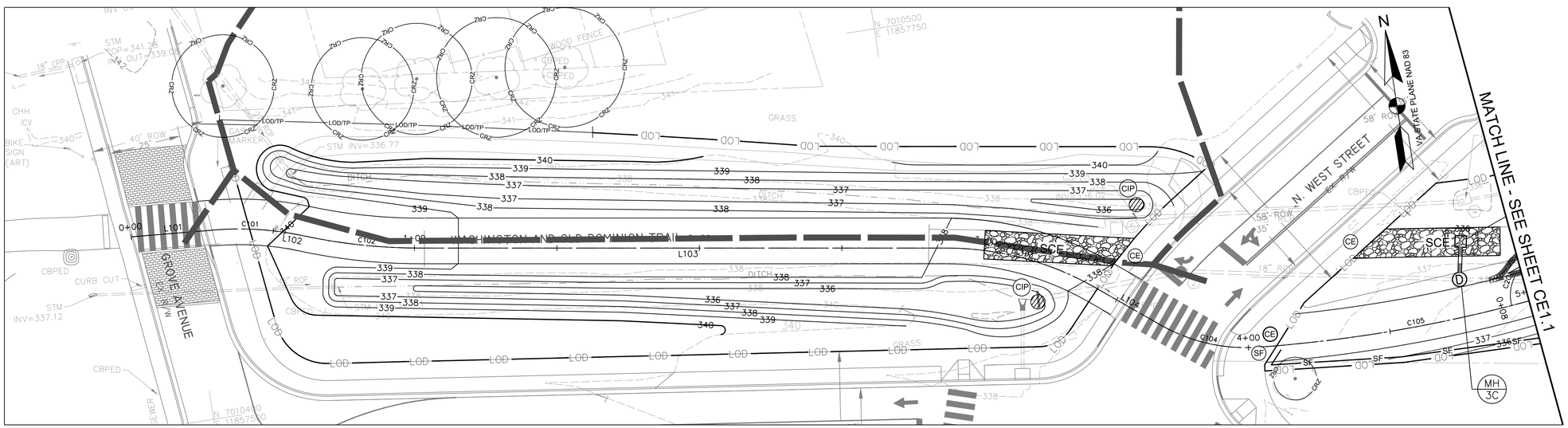
SHEET TITLE
PLANTING DETAILS

SHEET
CS5.4



EROSION AND SEDIMENT CONTROL PLAN- PHASE I

SCALE: 1"=20'



EROSION AND SEDIMENT CONTROL PLAN- PHASE II

SCALE: 1"=20'

EROSION AND SEDIMENT CONTROL LEGEND

NO.	KEY	LINETYPE	DESCRPITION
			PROPERTY LINE
		LOD	LIMIT OF DISTURBANCE
3.05	SF	SF	SILT FENCE
3.38	TP	LOD/TP	TREE PROTECTION FENCE
			DRAINAGE DIVIDE
3.07	IP		INLET PROTECTION
3.08	CIP		CULVERT INLET PROTECTION
3.02	CE	SCE	MODIFIED 40' X 10' STABILIZED CONSTRUCTION ENTRANCE WITH WASH RACK
3.36	B/M		STREAM BANK STABILIZATION

NOTES

1. WHERE SILT FENCE IS SHOWN ADJACENT TO TREE PROTECTION FENCE, ADHERE SILT FABRIC DIRECTLY TO TREE PROTECTION FENCE.
2. REFER TO SHEET CE5.0 FOR DETAILED SEQUENCE OF CONSTRUCTION.
3. CONTRACTOR SHALL USE MINIMUM CLEARING AS NEEDED FOR THE INSTALLATION OF PERIMETER CONTROLS.
4. INDIVIDUAL INLET PROTECTION SHOWN FOR PROPOSED INLETS SHALL BE INSTALLED IN PHASES AS EACH INLET STRUCTRURE IS INSTALLED.
5. CONTRACTOR SHALL MAINTAIN A PAVED OPEN TRAIL PATH A MINIMUM OF 8 FEET WIDE AT ALL TIMES UNLESS AN APPROVED TRAIL DETOUR ROUTE HAS BEEN PROVIDED.

0 10' 20' 40'

SCALE: 1"=20'

AMT

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COMMONWEALTH OF VIRGINIA
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03/09/2022
PROFESSIONAL ENGINEER

REGISTRATION STAMP

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LICENSE NO. 1582 EXPIRATION DATE 04/30/2021

PROJECT TITLE

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FALLS CHURCH, VA
UPC 113612

REVISIONS

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AMT FILE NO.	18-0367
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DESIGNED BY:	AMT
DRAWN BY:	AMT
CHECKED BY:	AMT

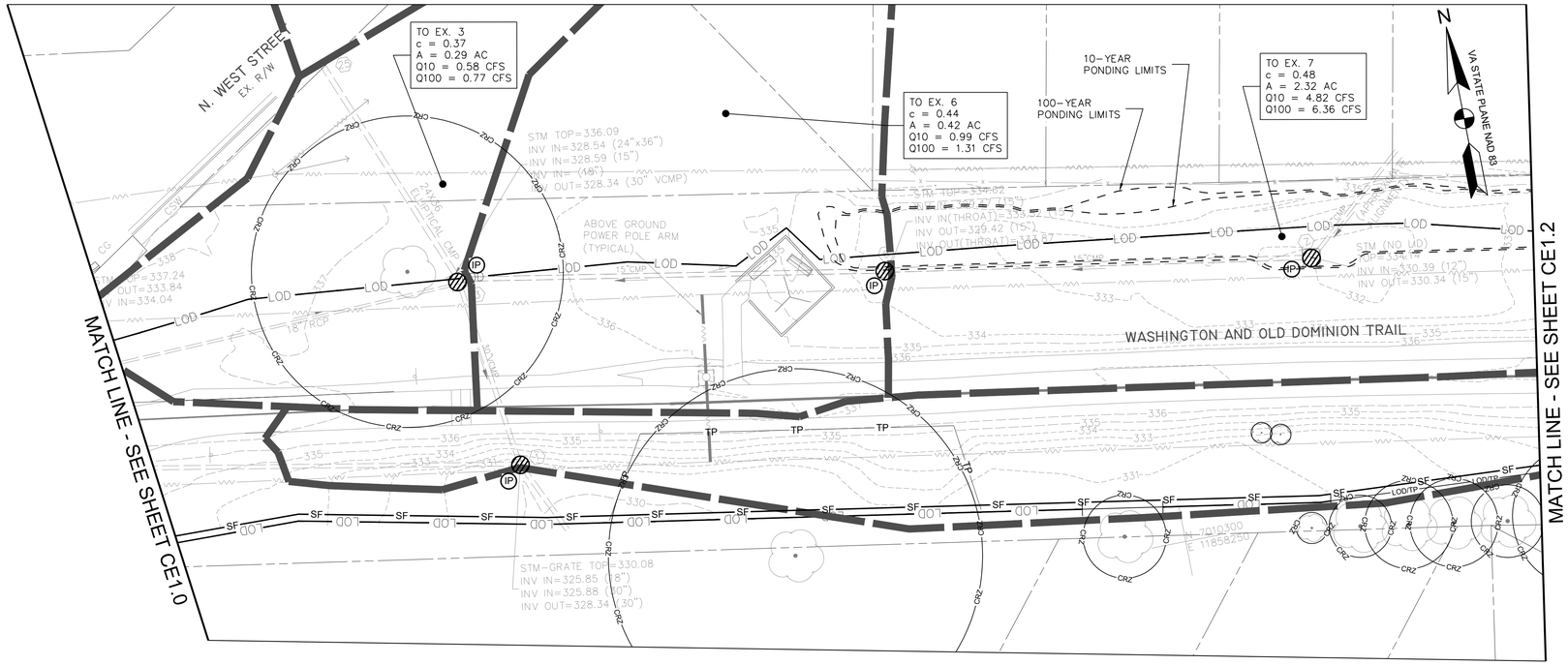
100% DESIGN

SHEET TITLE

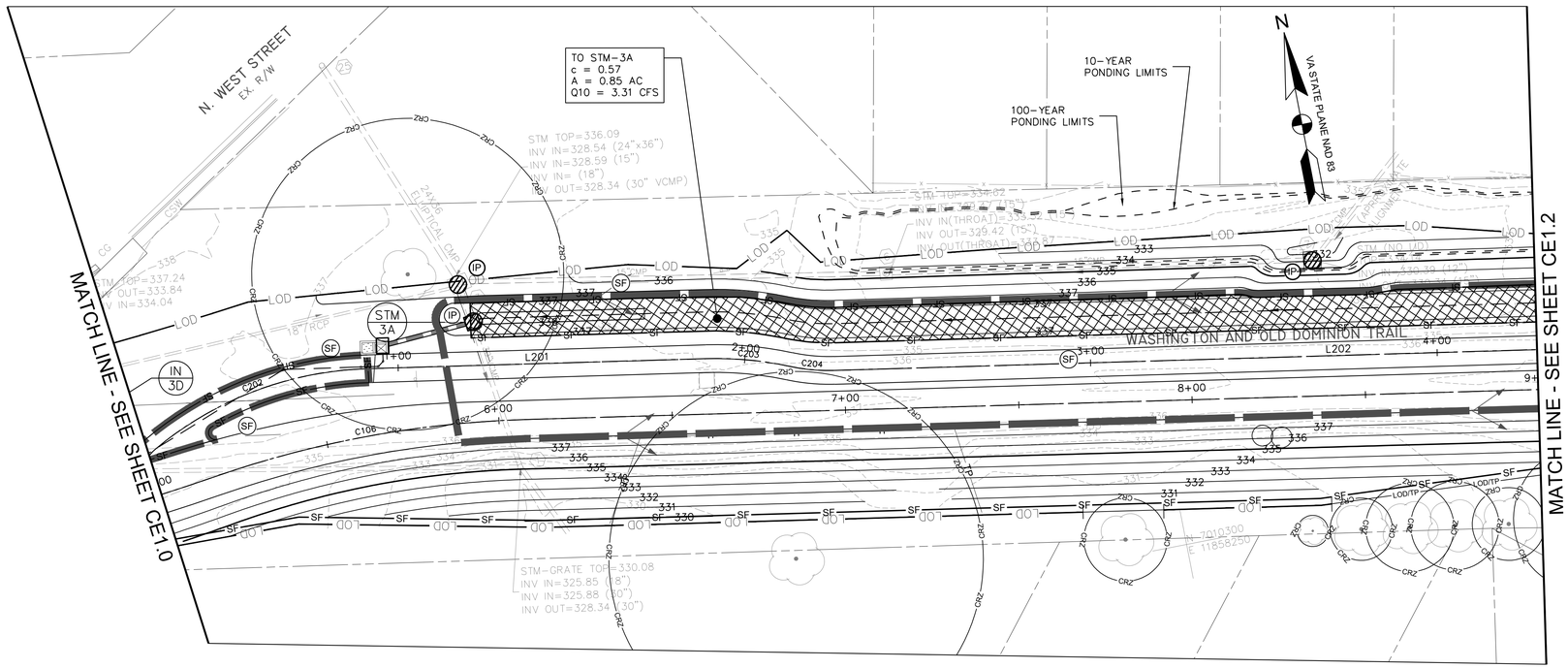
EROSION AND SEDIMENT CONTROL- PHASE I AND PHASE II

SHEET

CE1.0



EROSION AND SEDIMENT CONTROL PLAN- PHASE I
SCALE: 1"=20'



EROSION AND SEDIMENT CONTROL PLAN- PHASE II
SCALE: 1"=20'

EROSION AND SEDIMENT CONTROL LEGEND

NO.	KEY	LINETYPE	DESCRPITION
			PROPERTY LINE
		LOD	LIMIT OF DISTURBANCE
3.05	SF	SF	SILT FENCE
3.38	TP	LOD/TP	TREE PROTECTION FENCE
			DRAINAGE DIVIDE
3.07	IP		INLET PROTECTION
3.08	CIP		CULVERT INLET PROTECTION
3.02	CE	SCE	MODIFIED 40' X 10' STABILIZED CONSTRUCTION ENTRANCE WITH WASH RACK
3.36	B/M		STREAM BANK STABILIZATION

NOTES

1. WHERE SILT FENCE IS SHOWN ADJACENT TO TREE PROTECTION FENCE, ADHERE SILT FABRIC DIRECTLY TO TREE PROTECTION FENCE.
2. REFER TO SHEET CE5.0 FOR DETAILED SEQUENCE OF CONSTRUCTION.
3. CONTRACTOR SHALL USE MINIMUM CLEARING AS NEEDED FOR THE INSTALLATION OF PERIMETER CONTROLS.
4. INDIVIDUAL INLET PROTECTION SHOWN FOR PROPOSED INLETS SHALL BE INSTALLED IN PHASES AS EACH INLET STRUCTRURE IS INSTALLED.
5. CONTRACTOR SHALL MAINTAIN A PAVED OPEN TRAIL PATH A MINIMUM OF 8 FEET WIDE AT ALL TIMES UNLESS AN APPROVED TRAIL DETOUR ROUTE HAS BEEN PROVIDED.

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

AMT
A. MORTON THOMAS AND ASSOCIATES, INC.
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COMMONWEALTH OF VIRGINIA
J. KEITH SINCLAIR, JR.
Lic. No. 11195
03/29/2021
PROFESSIONAL ENGINEER

REGISTRATION STAMP

NOT FOR CONSTRUCTION

PROFESSIONAL CERTIFICATION

"I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED CERTIFIED LANDSCAPE ARCHITECT UNDER THE LAWS OF THE STATE OF VIRGINIA. LICENSE NO. 1542 , EXPIRATION DATE 04/30/2021"

PROJECT TITLE

EXPANSION OF THE W&OD TRAIL
FALLS CHURCH, VA
UPC 113612

REVISIONS

MARK	DATE	DESCRIPTION

AMT FILE NO.	18-0367
DATE:	3/2020
SCALE:	1"=20'
DESIGNED BY:	AMT
DRAWN BY:	AMT
CHECKED BY:	AMT

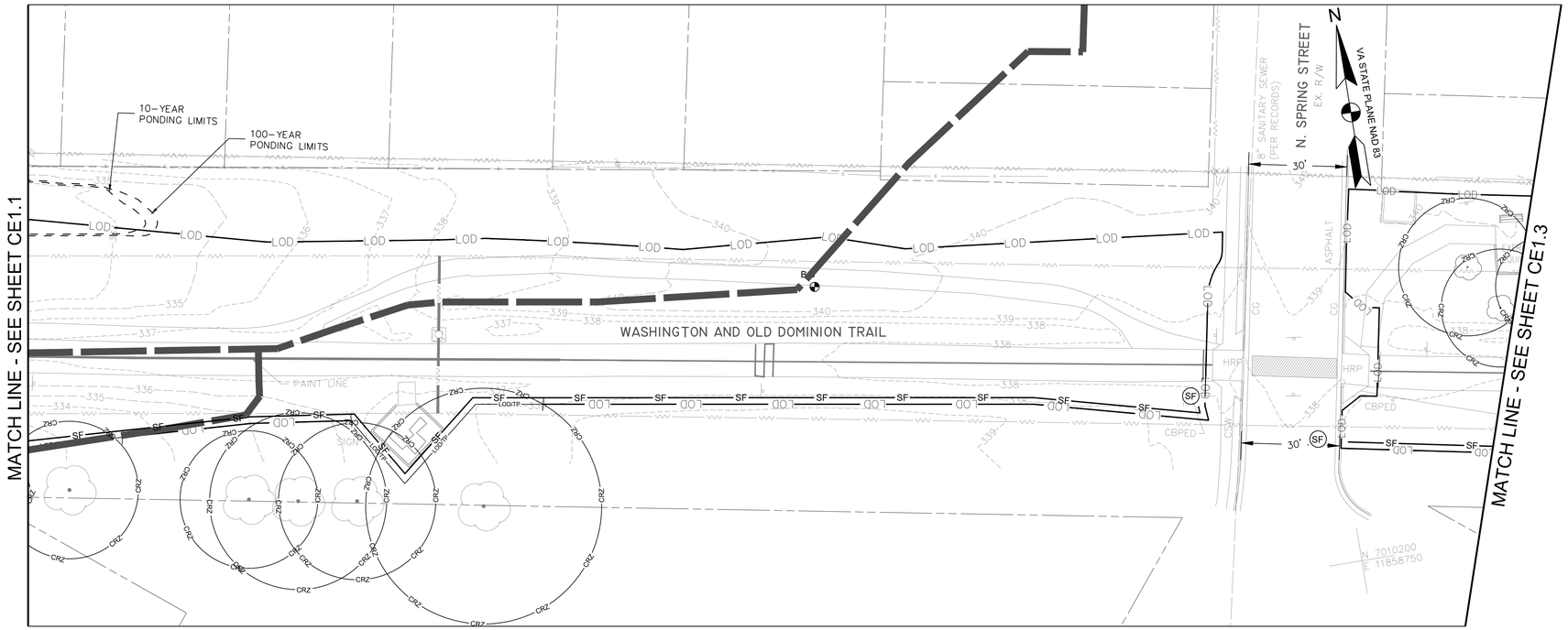
100% DESIGN

SHEET TITLE

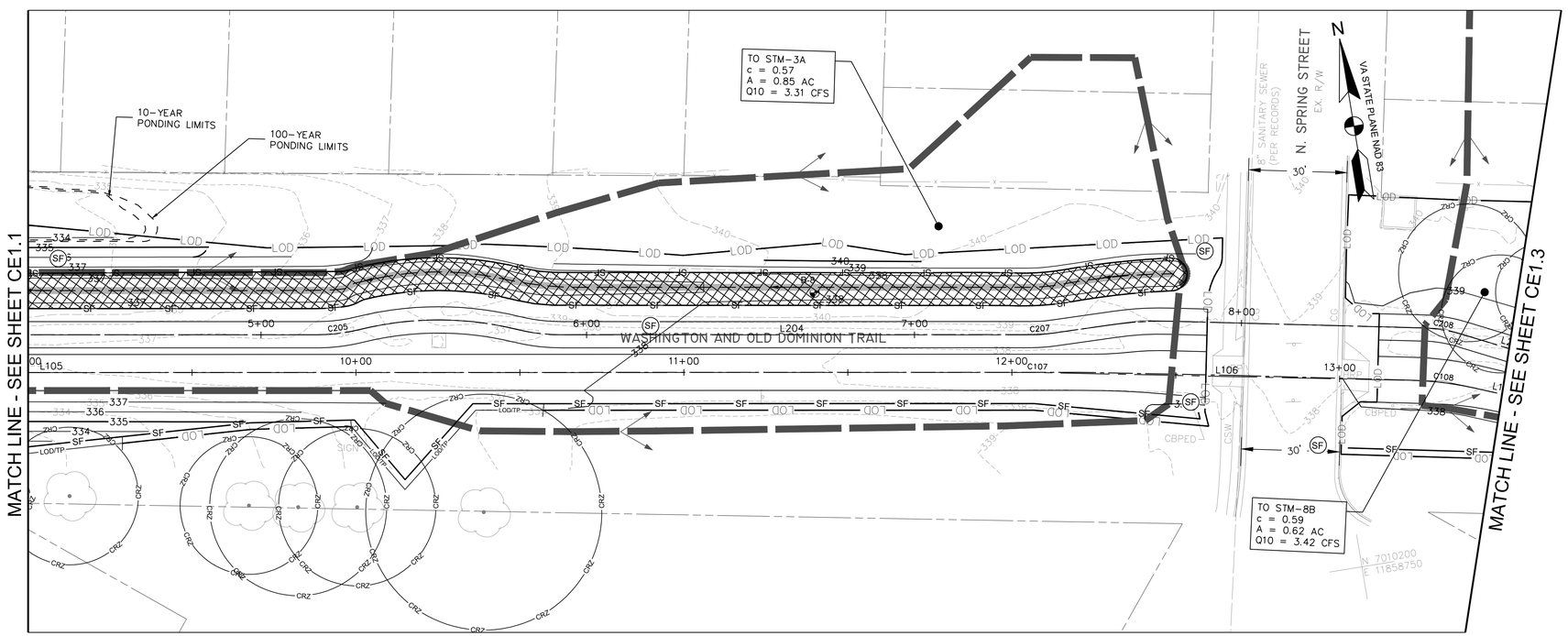
EROSION AND SEDIMENT CONTROL- PHASE I AND PHASE II

SHEET

CE1.1



EROSION AND SEDIMENT CONTROL PLAN- PHASE I
SCALE: 1"=20'



EROSION AND SEDIMENT CONTROL PLAN- PHASE II
SCALE: 1"=20'

EROSION AND SEDIMENT CONTROL LEGEND

NO.	KEY	LINETYPE	DESCRPITION
			PROPERTY LINE
		LOD	LIMIT OF DISTURBANCE
3.05	SF	SF	SILT FENCE
3.38	TP	LOD/TP	TREE PROTECTION FENCE
			DRAINAGE DIVIDE
3.07	IP		INLET PROTECTION
3.08	CIP		CULVERT INLET PROTECTION
3.02	CE	SCE	MODIFIED 40' X 10' STABILIZED CONSTRUCTION ENTRANCE WITH WASH RACK
3.36	B/M		STREAM BANK STABILIZATION

NOTES

1. WHERE SILT FENCE IS SHOWN ADJACENT TO TREE PROTECTION FENCE, ADHERE SILT FABRIC DIRECTLY TO TREE PROTECTION FENCE.
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0 10' 20' 40'
SCALE: 1"=20'

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03/09/2020
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PROJECT TITLE

EXPANSION OF THE W&OD TRAIL

FALLS CHURCH, VA
UPC 113612

REVISIONS

MARK	DATE	DESCRIPTION

AMT FILE NO.	18-0367
DATE:	3/2020
SCALE:	1"=20'
DESIGNED BY:	AMT
DRAWN BY:	AMT
CHECKED BY:	AMT

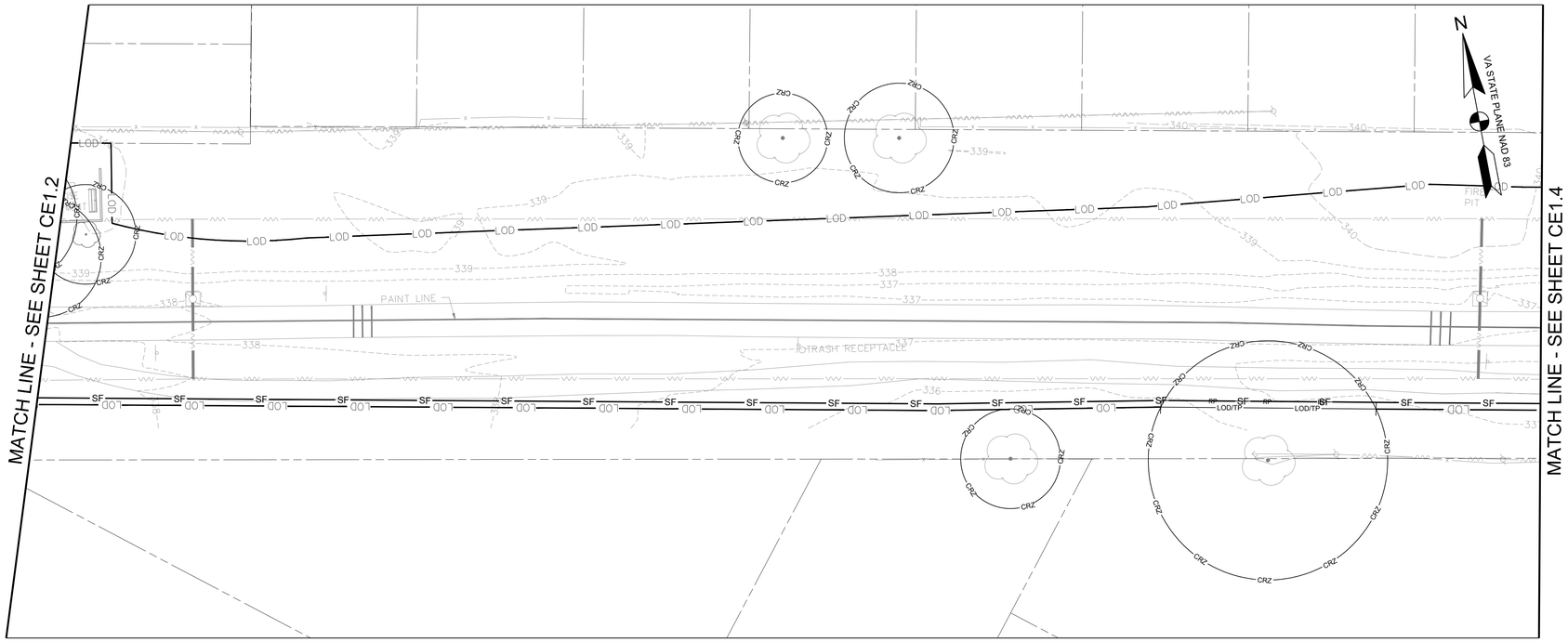
100% DESIGN

SHEET TITLE

EROSION AND SEDIMENT CONTROL- PHASE I AND PHASE II

SHEET

CE1.2



EROSION AND SEDIMENT CONTROL PLAN- PHASE I
SCALE: 1"=20'

EROSION AND SEDIMENT CONTROL LEGEND

NO.	KEY	LINETYPE	DESCRPITION
			PROPERTY LINE
		LOD	LIMIT OF DISTURBANCE
3.05	SF	SF	SILT FENCE
3.38	TP	LOD/TP	TREE PROTECTION FENCE
			DRAINAGE DIVIDE
3.07	IP		INLET PROTECTION
3.08	CIP		CULVERT INLET PROTECTION
3.02	CE	SCE	MODIFIED 40' X 10' STABILIZED CONSTRUCTION ENTRANCE WITH WASH RACK
3.36	B/M		STREAM BANK STABILIZATION

NOTES

1. WHERE SILT FENCE IS SHOWN ADJACENT TO TREE PROTECTION FENCE, ADHERE SILT FABRIC DIRECTLY TO TREE PROTECTION FENCE.
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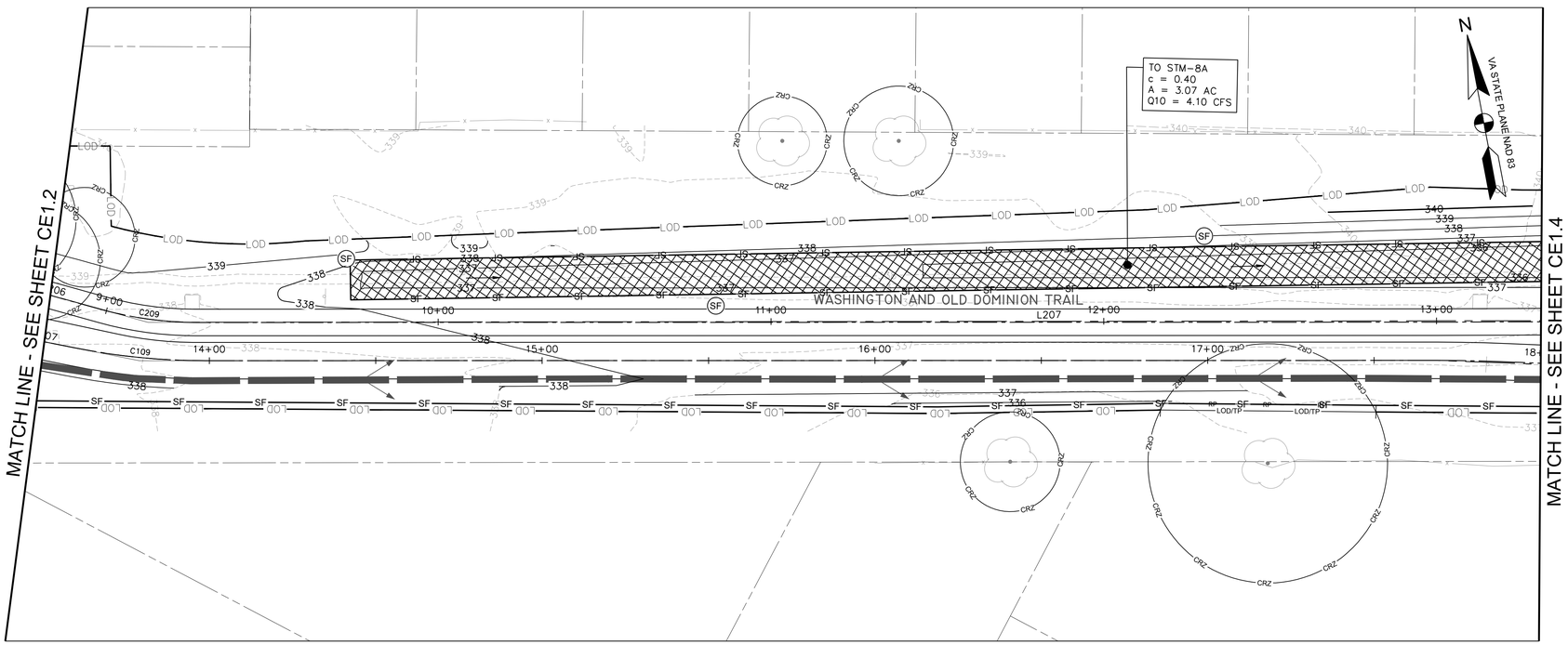

EROSION AND SEDIMENT CONTROL PLAN- PHASE II
SCALE: 1"=20'

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

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PROJECT TITLE
EXPANSION OF THE W&OD TRAIL
FALLS CHURCH, VA
UPC 113612

REVISIONS

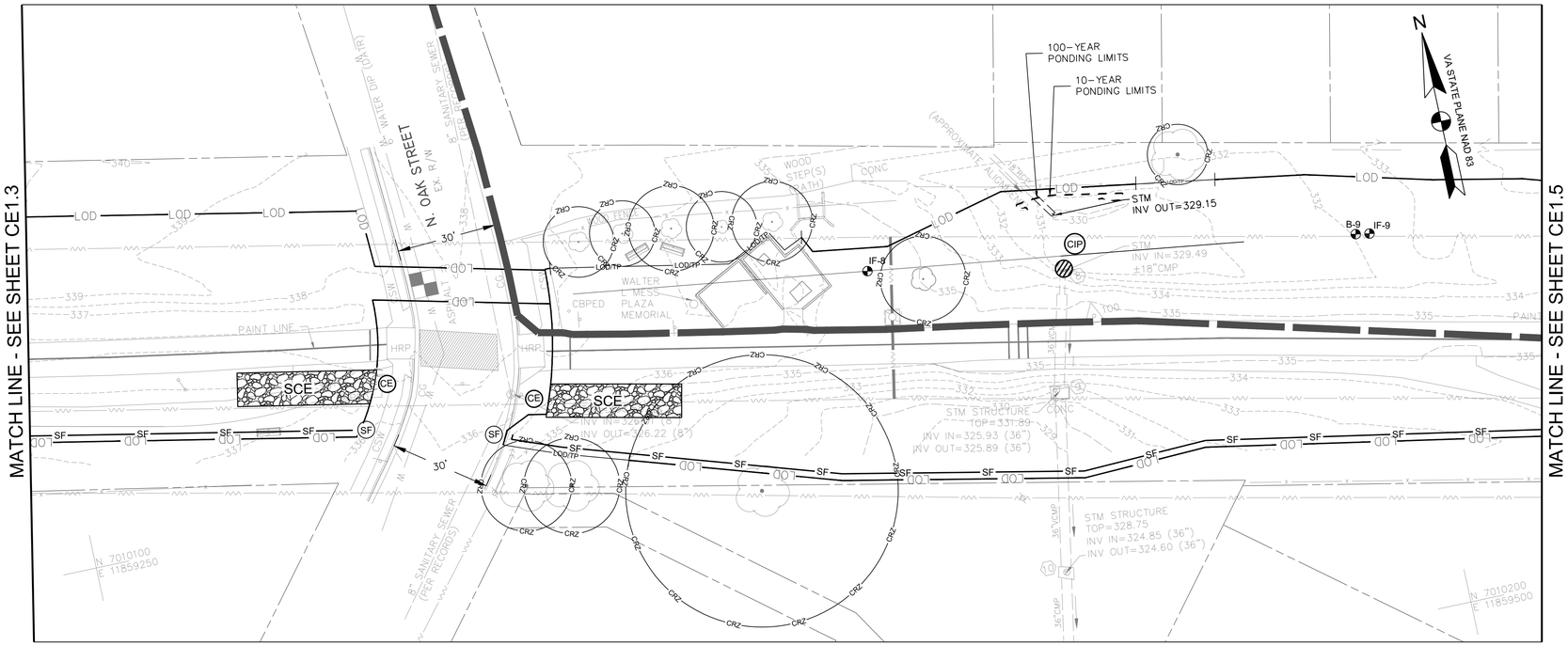
MARK	DATE	DESCRIPTION

AMT FILE NO.	18-0367
DATE:	3/2020
SCALE:	1"=20'
DESIGNED BY:	AMT
DRAWN BY:	AMT
CHECKED BY:	AMT

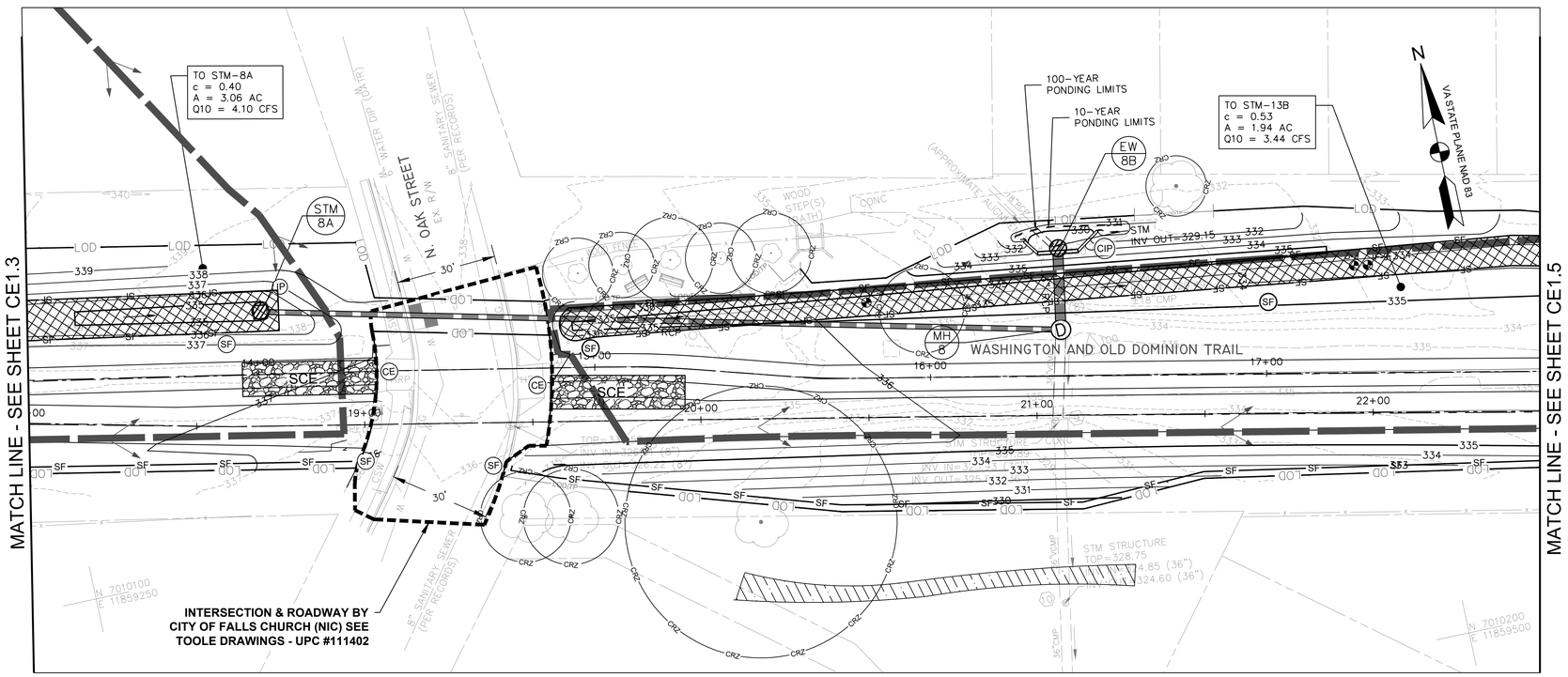
100% DESIGN

SHEET TITLE
EROSION AND SEDIMENT CONTROL- PHASE I AND PHASE II

SHEET
CE1.3



EROSION AND SEDIMENT CONTROL PLAN- PHASE I
SCALE: 1"=20'



EROSION AND SEDIMENT CONTROL PLAN- PHASE II
SCALE: 1"=20'

EROSION AND SEDIMENT CONTROL LEGEND

NO.	KEY	LINETYPE	DESCRPITION
			PROPERTY LINE
		LOD	LIMIT OF DISTURBANCE
3.05	SF	SF	SILT FENCE
3.38	TP	LOD/TP	TREE PROTECTION FENCE
			DRAINAGE DIVIDE
3.07	IP		INLET PROTECTION
3.08	CIP		CULVERT INLET PROTECTION
3.02	CE	SCE	MODIFIED 40' X 10' STABILIZED CONSTRUCTION ENTRANCE WITH WASH RACK
3.36	B/M		STREAM BANK STABILIZATION

NOTES

1. WHERE SILT FENCE IS SHOWN ADJACENT TO TREE PROTECTION FENCE, ADHERE SILT FABRIC DIRECTLY TO TREE PROTECTION FENCE.
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COMMONWEALTH OF VIRGINIA
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PROJECT TITLE
EXPANSION OF THE W&OD TRAIL
FALLS CHURCH, VA
UPC 113612

REVISIONS

MARK	DATE	DESCRIPTION

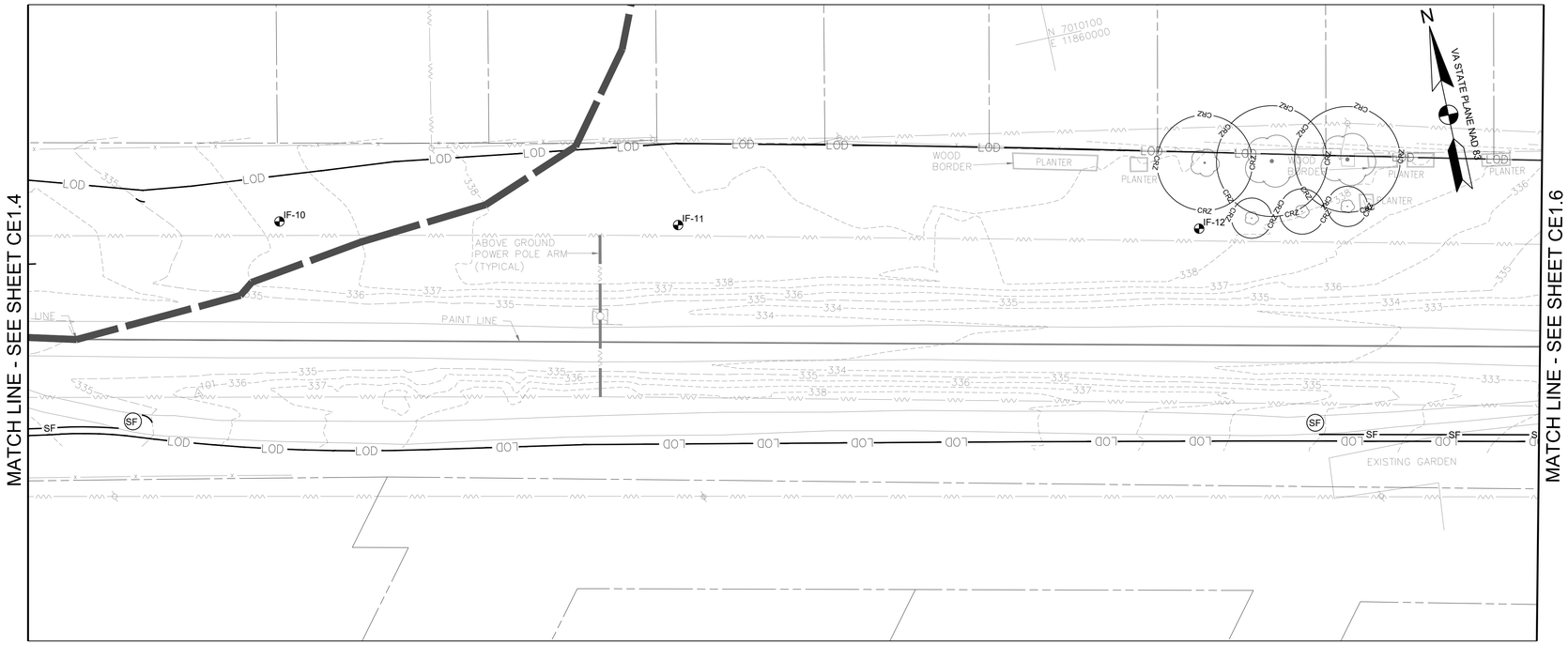
AMT FILE NO.	18-0367
DATE:	3/2020
SCALE:	1"=20'
DESIGNED BY:	AMT
DRAWN BY:	AMT
CHECKED BY:	AMT

100% DESIGN

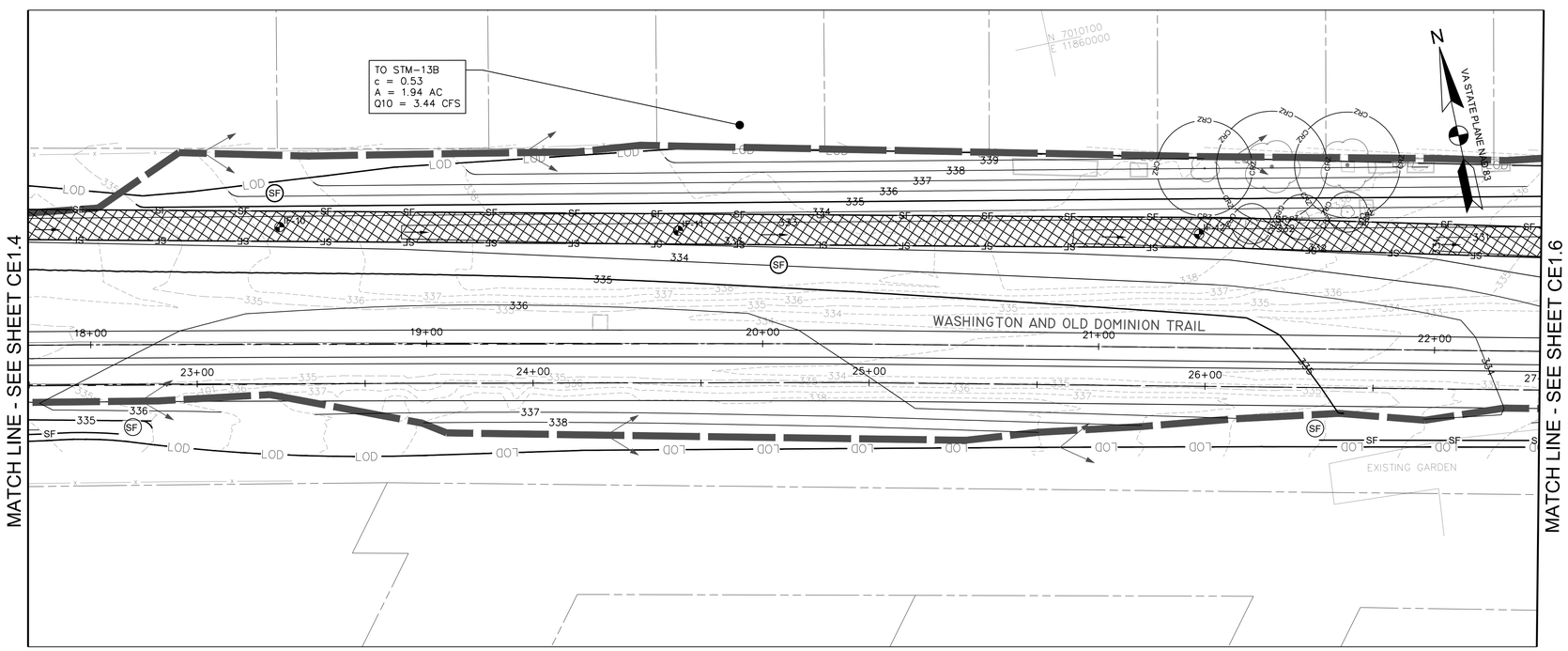
SHEET TITLE
EROSION AND SEDIMENT CONTROL- PHASE I AND PHASE II

SHEET
CE1.4

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



EROSION AND SEDIMENT CONTROL PLAN- PHASE I
SCALE: 1"=20'



EROSION AND SEDIMENT CONTROL PLAN- PHASE II
SCALE: 1"=20'

EROSION AND SEDIMENT CONTROL LEGEND

NO.	KEY	LINETYPE	DESCRPITION
			PROPERTY LINE
		LOD	LIMIT OF DISTURBANCE
3.05	SF	SF	SILT FENCE
3.38	TP	LOD/TP	TREE PROTECTION FENCE
			DRAINAGE DIVIDE
3.07	IP		INLET PROTECTION
3.08	CIP		CULVERT INLET PROTECTION
3.02	CE	SCE	MODIFIED 40' X 10' STABILIZED CONSTRUCTION ENTRANCE WITH WASH RACK
3.36	B/M		STREAM BANK STABILIZATION

NOTES

1. WHERE SILT FENCE IS SHOWN ADJACENT TO TREE PROTECTION FENCE, ADHERE SILT FABRIC DIRECTLY TO TREE PROTECTION FENCE.
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0 10' 20' 40'
SCALE: 1"=20'

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03/03/2021
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PROJECT TITLE
EXPANSION OF THE W&OD TRAIL
FALLS CHURCH, VA
UPC 113612

REVISIONS

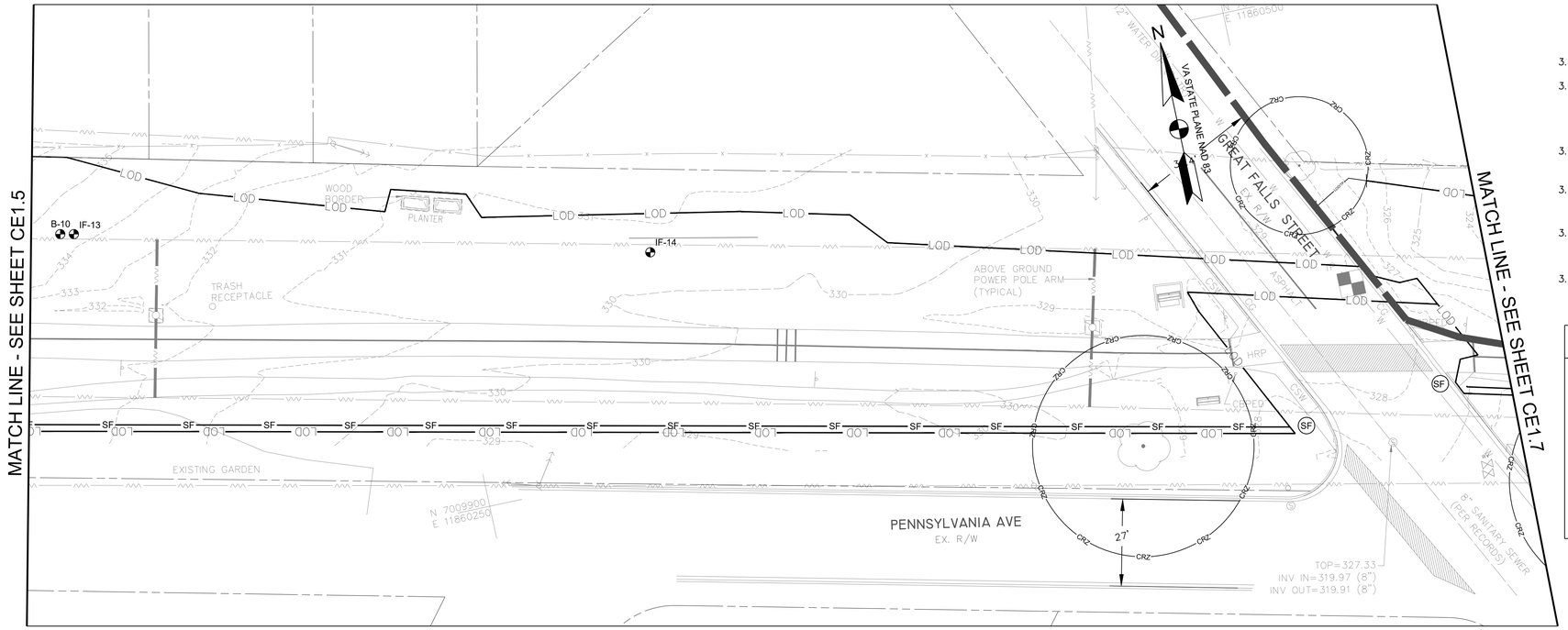
MARK	DATE	DESCRIPTION

AMT FILE NO.	18-0367
DATE:	3/2020
SCALE:	1"=20'
DESIGNED BY:	AMT
DRAWN BY:	AMT
CHECKED BY:	AMT

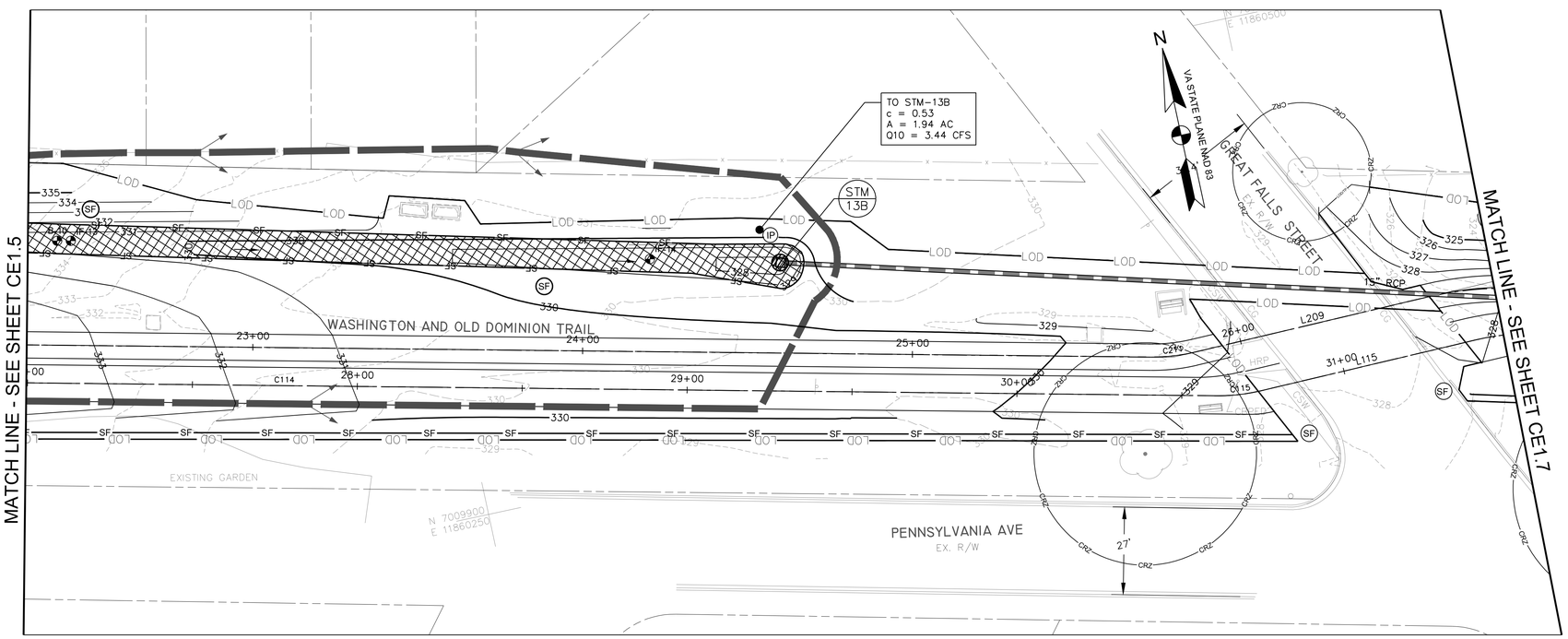
100% DESIGN

SHEET TITLE
EROSION AND SEDIMENT CONTROL- PHASE I AND PHASE II

SHEET
CE1.5



EROSION AND SEDIMENT CONTROL PLAN- PHASE I
SCALE: 1"=20'



EROSION AND SEDIMENT CONTROL PLAN- PHASE II
SCALE: 1"=20'

EROSION AND SEDIMENT CONTROL LEGEND

NO.	KEY	LINETYPE	DESCRPITION
			PROPERTY LINE
		LOD	LIMIT OF DISTURBANCE
3.05	SF	SF	SILT FENCE
3.38	TP	LOD/TP	TREE PROTECTION FENCE
			DRAINAGE DIVIDE
3.07	IP		INLET PROTECTION
3.08	CIP		CULVERT INLET PROTECTION
3.02	CE	SCE	MODIFIED 40' X 10' STABILIZED CONSTRUCTION ENTRANCE WITH WASH RACK
3.36	B/M		STREAM BANK STABILIZATION

NOTES

1. WHERE SILT FENCE IS SHOWN ADJACENT TO TREE PROTECTION FENCE, ADHERE SILT FABRIC DIRECTLY TO TREE PROTECTION FENCE.
2. REFER TO SHEET CE5.0 FOR DETAILED SEQUENCE OF CONSTRUCTION.
3. CONTRACTOR SHALL USE MINIMUM CLEARING AS NEEDED FOR THE INSTALLATION OF PERIMETER CONTROLS.
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PROJECT TITLE

EXPANSION OF THE W&OD TRAIL
FALLS CHURCH, VA
UPC 113612

REVISIONS

MARK	DATE	DESCRIPTION

AMT FILE NO.	18-0367
DATE:	3/2020
SCALE:	1"=20'
DESIGNED BY:	AMT
DRAWN BY:	AMT
CHECKED BY:	AMT

100% DESIGN

SHEET TITLE

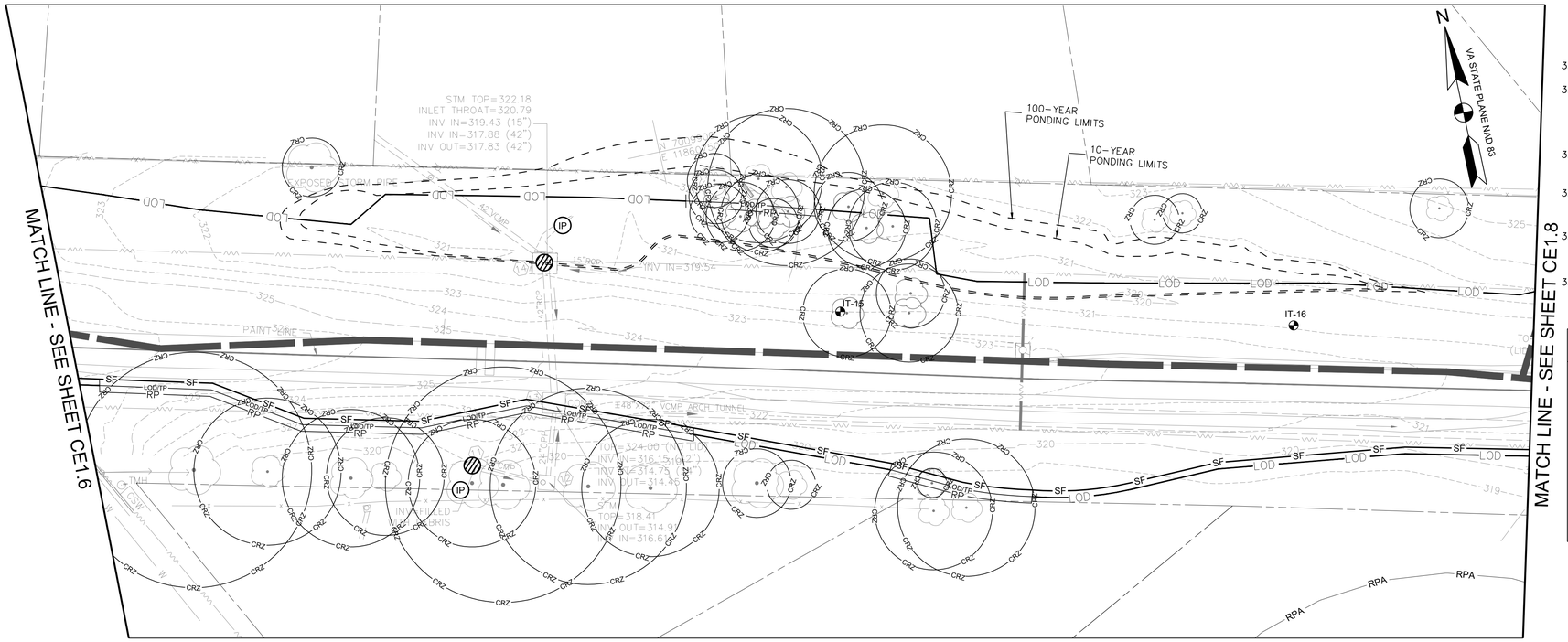
EROSION AND SEDIMENT CONTROL- PHASE I AND PHASE II

SHEET

CE1.6

EROSION AND SEDIMENT CONTROL LEGEND

NO.	KEY	LINETYPE	DESCRPITION
			PROPERTY LINE
		LOD	LIMIT OF DISTURBANCE
3.05	SF	SF	SILT FENCE
3.38	TP	LOD/TP	TREE PROTECTION FENCE
			DRAINAGE DIVIDE
3.07	IP		INLET PROTECTION
3.08	CIP		CULVERT INLET PROTECTION
3.02	CE	SCE	MODIFIED 40' X 10' STABILIZED CONSTRUCTION ENTRANCE WITH WASH RACK
3.36	B/M		STREAM BANK STABILIZATION



EROSION AND SEDIMENT CONTROL PLAN- PHASE I
SCALE: 1"=20'

NOTES

1. WHERE SILT FENCE IS SHOWN ADJACENT TO TREE PROTECTION FENCE, ADHERE SILT FABRIC DIRECTLY TO TREE PROTECTION FENCE.
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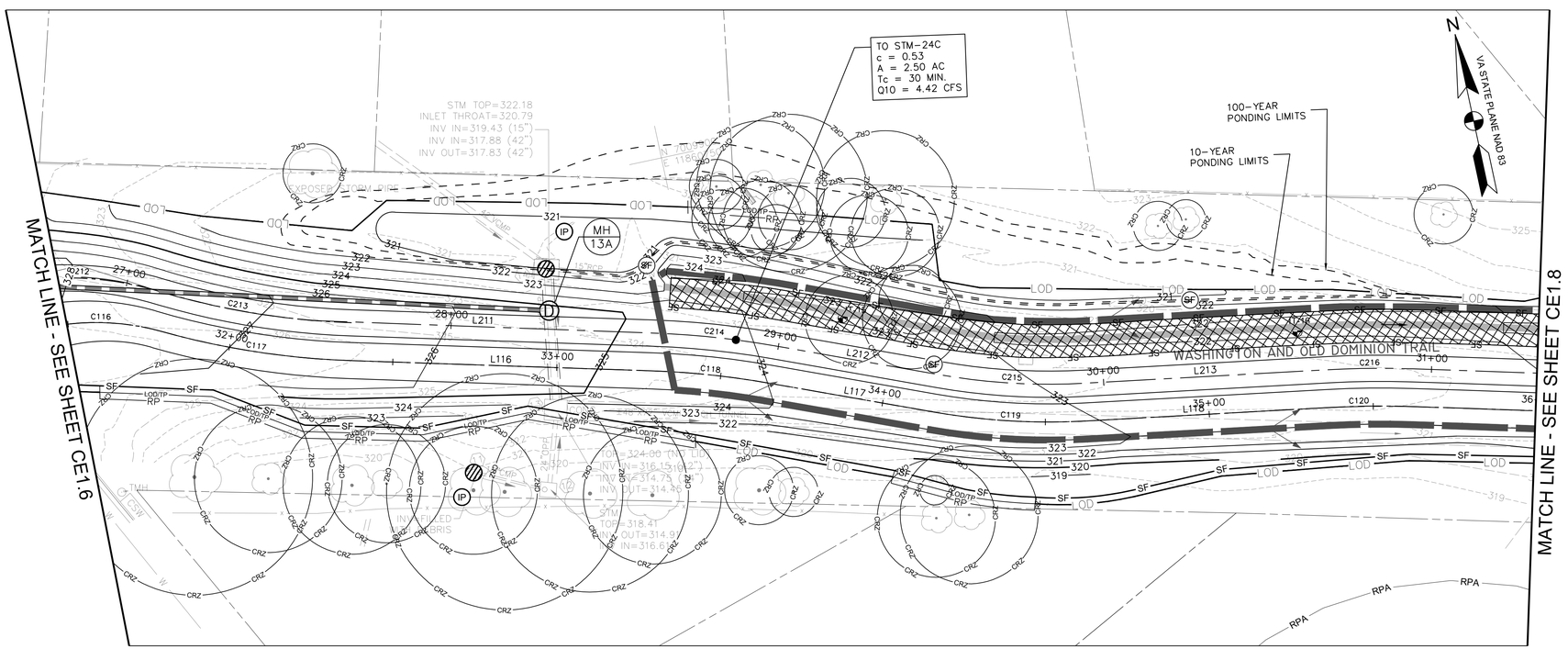

EROSION AND SEDIMENT CONTROL PLAN- PHASE II
SCALE: 1"=20'

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

AMT
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PROJECT TITLE
EXPANSION OF THE W&OD TRAIL
FALLS CHURCH, VA
UPC 113612

REVISIONS

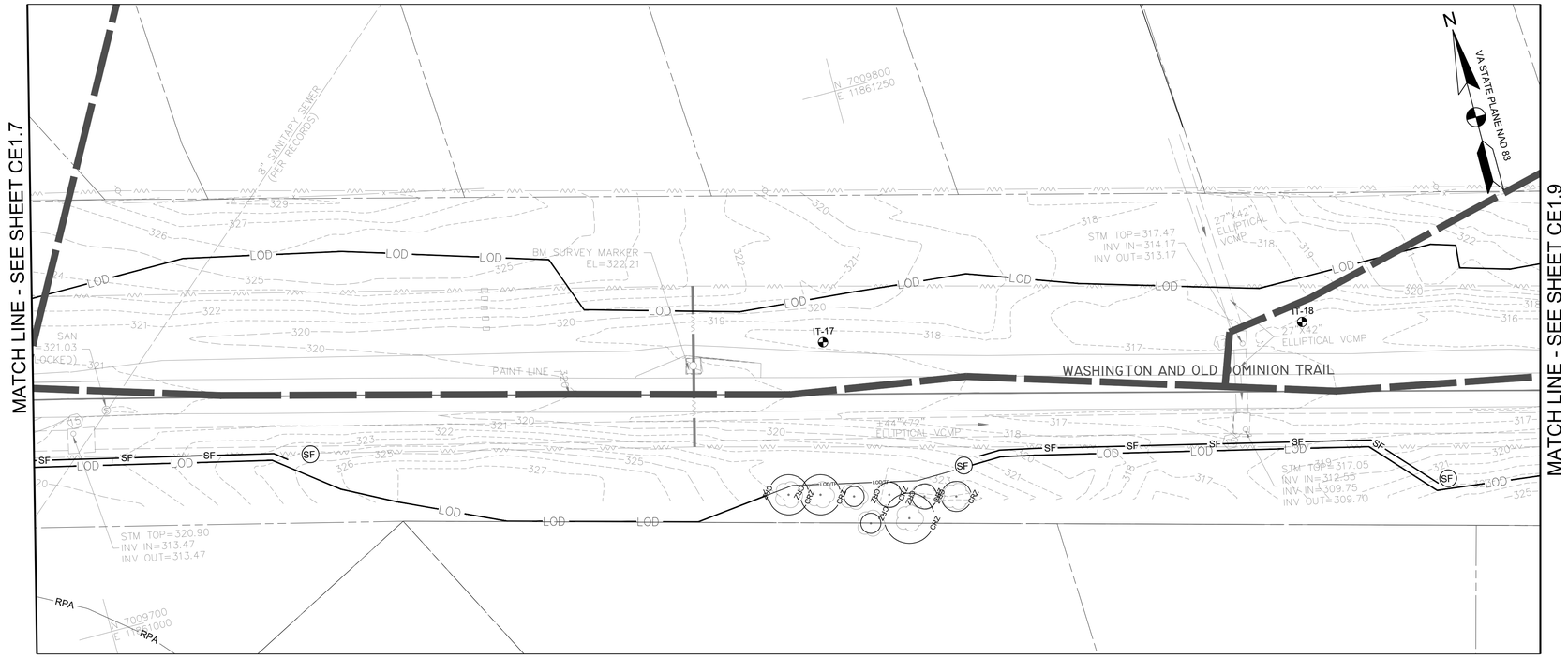
MARK	DATE	DESCRIPTION

AMT FILE NO.	18-0367
DATE:	3/2020
SCALE:	1"=20'
DESIGNED BY:	AMT
DRAWN BY:	AMT
CHECKED BY:	AMT

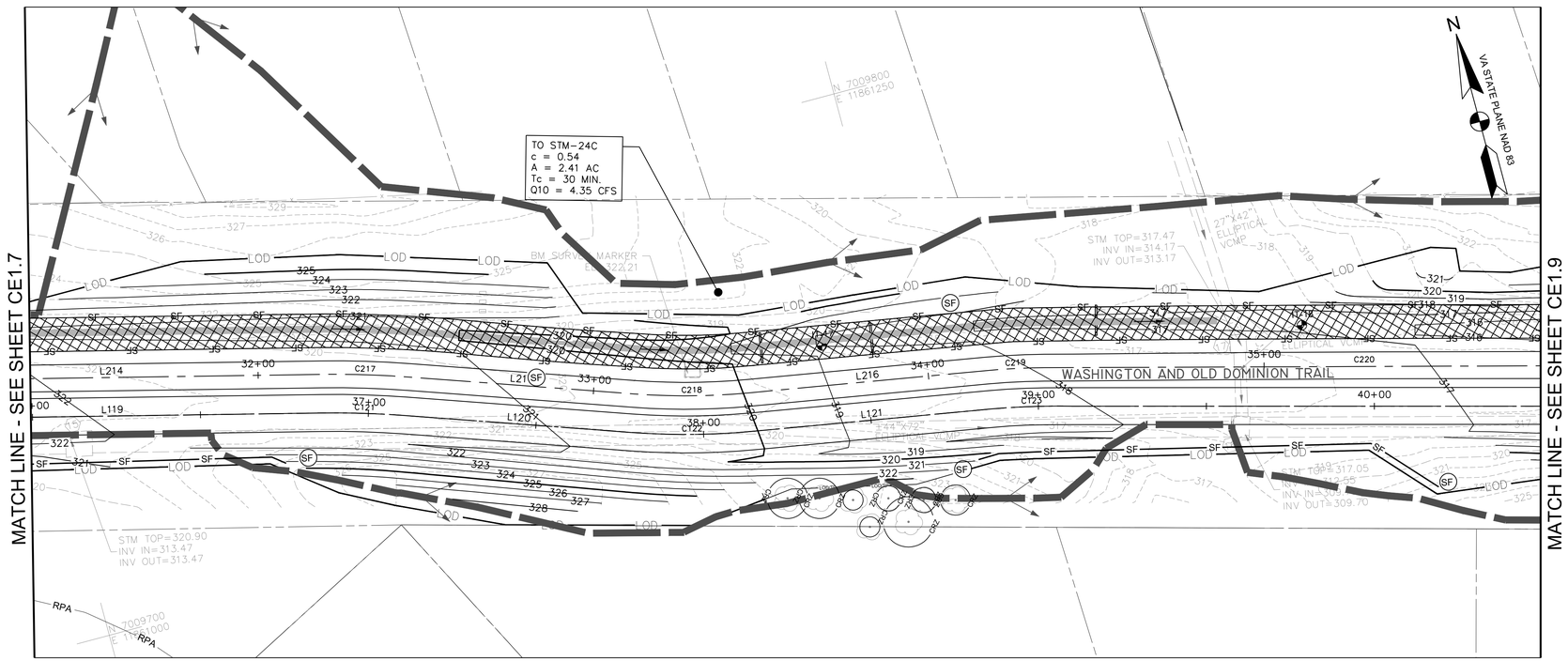
100% DESIGN

SHEET TITLE
EROSION AND SEDIMENT CONTROL- PHASE I AND PHASE II

SHEET
CE1.7



EROSION AND SEDIMENT CONTROL PLAN- PHASE I
SCALE: 1"=20'



EROSION AND SEDIMENT CONTROL PLAN- PHASE II
SCALE: 1"=20'

EROSION AND SEDIMENT CONTROL LEGEND

NO.	KEY	LINETYPE	DESCRPITION
			PROPERTY LINE
		LOD	LIMIT OF DISTURBANCE
3.05	SF	SF	SILT FENCE
3.38	TP	LOD/TP	TREE PROTECTION FENCE
			DRAINAGE DIVIDE
3.07	IP		INLET PROTECTION
3.08	CIP		CULVERT INLET PROTECTION
3.02	CE	SCE	MODIFIED 40' X 10' STABILIZED CONSTRUCTION ENTRANCE WITH WASH RACK
3.36	B/M		STREAM BANK STABILIZATION

NOTES

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2. REFER TO SHEET CE5.0 FOR DETAILED SEQUENCE OF CONSTRUCTION.
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5. CONTRACTOR SHALL MAINTAIN A PAVED OPEN TRAIL PATH A MINIMUM OF 8 FEET WIDE AT ALL TIMES UNLESS AN APPROVED TRAIL DETOUR ROUTE HAS BEEN PROVIDED.

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SCALE: 1"=20'

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CONSULTING ENGINEERS
800 KING FARM BLVD, FOURTH FLOOR ROCKVILLE, MD 20850
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COMMONWEALTH OF VIRGINIA
J. KEITH SINCLAIR, JR.
Lic. No. 11195
03/09/2020
PROFESSIONAL ENGINEER

REGISTRATION STAMP

NOT FOR CONSTRUCTION

PROFESSIONAL CERTIFICATION

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PROJECT TITLE

EXPANSION OF THE W&OD TRAIL
FALLS CHURCH, VA
UPC 113612

REVISIONS

MARK	DATE	DESCRIPTION

AMT FILE NO.	18-0367
DATE:	3/2020
SCALE:	1"=20'
DESIGNED BY:	AMT
DRAWN BY:	AMT
CHECKED BY:	AMT

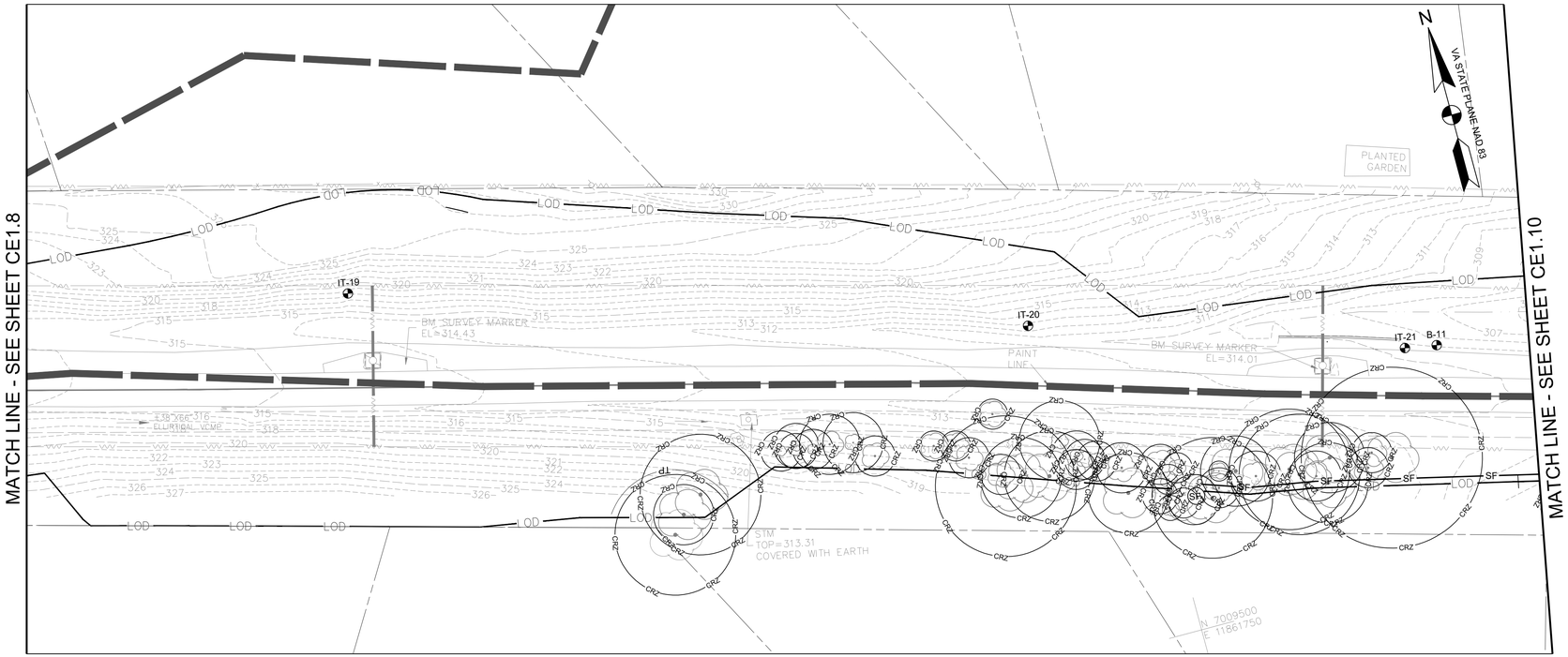
100% DESIGN

SHEET TITLE

EROSION AND SEDIMENT CONTROL- PHASE I AND PHASE II

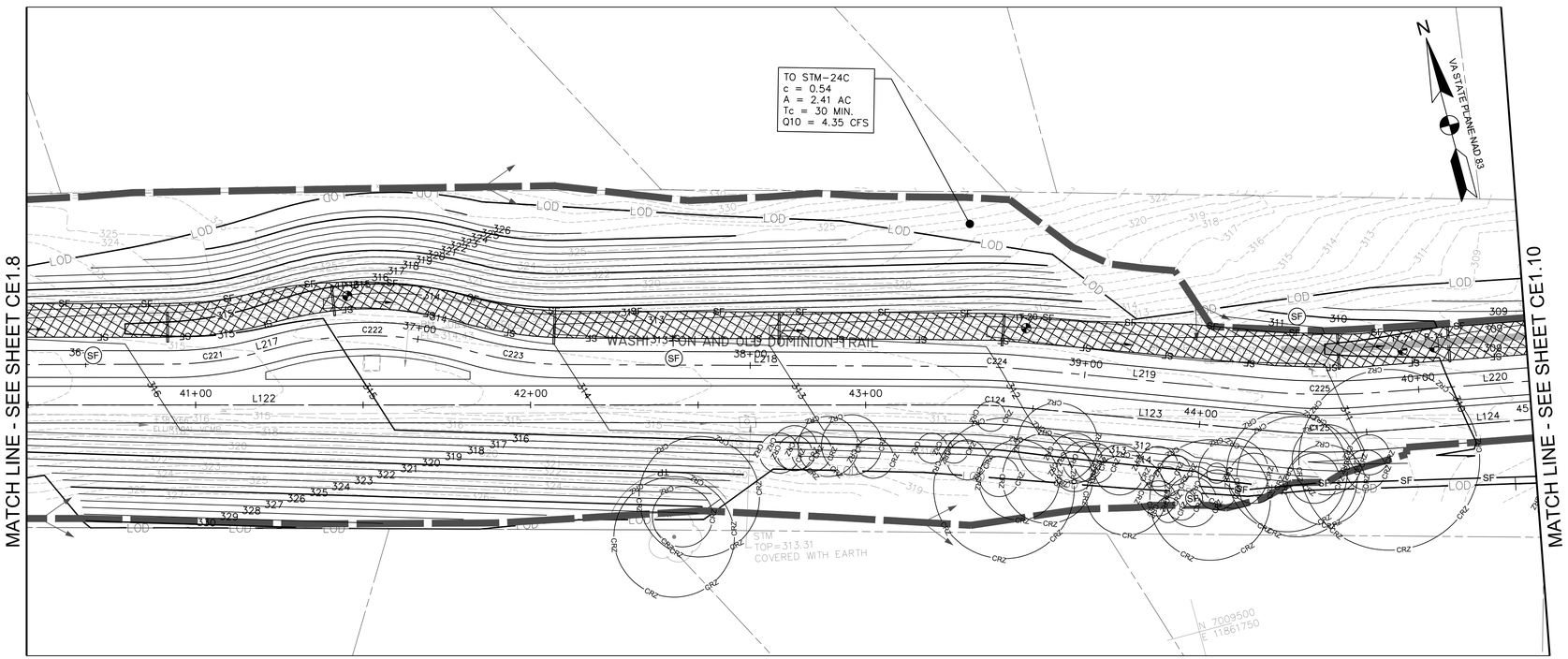
SHEET

CE1.8



EROSION AND SEDIMENT CONTROL PLAN- PHASE I

SCALE: 1"=20'



EROSION AND SEDIMENT CONTROL PLAN- PHASE II

SCALE: 1"=20'

EROSION AND SEDIMENT CONTROL LEGEND

NO.	KEY	LINETYPE	DESCRPITION
			PROPERTY LINE
		LOD	LIMIT OF DISTURBANCE
3.05	SF	SF	SILT FENCE
3.38	TP	LOD/TP	TREE PROTECTION FENCE
			DRAINAGE DIVIDE
3.07	IP		INLET PROTECTION
3.08	CIP		CULVERT INLET PROTECTION
3.02	CE	SCE	MODIFIED 40' X 10' STABILIZED CONSTRUCTION ENTRANCE WITH WASH RACK
3.36	B/M		STREAM BANK STABILIZATION

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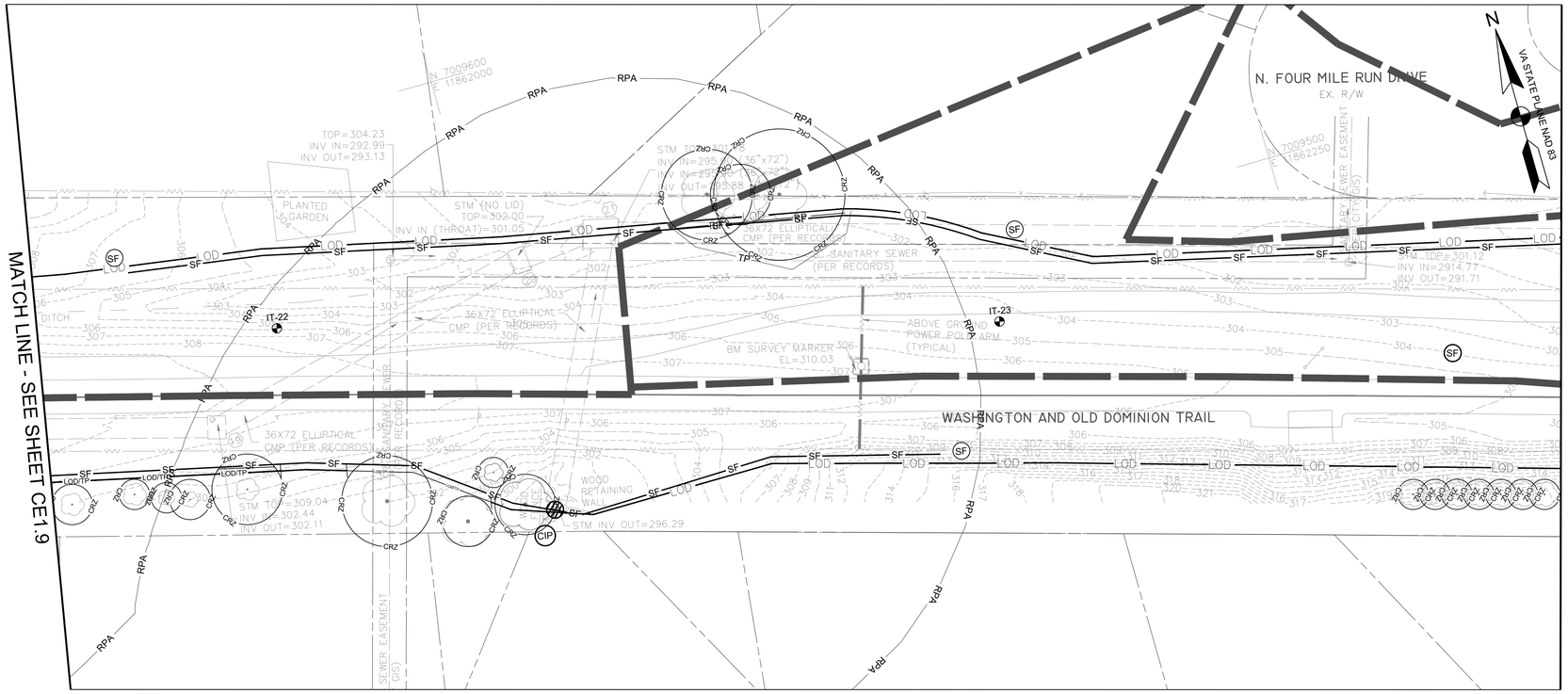
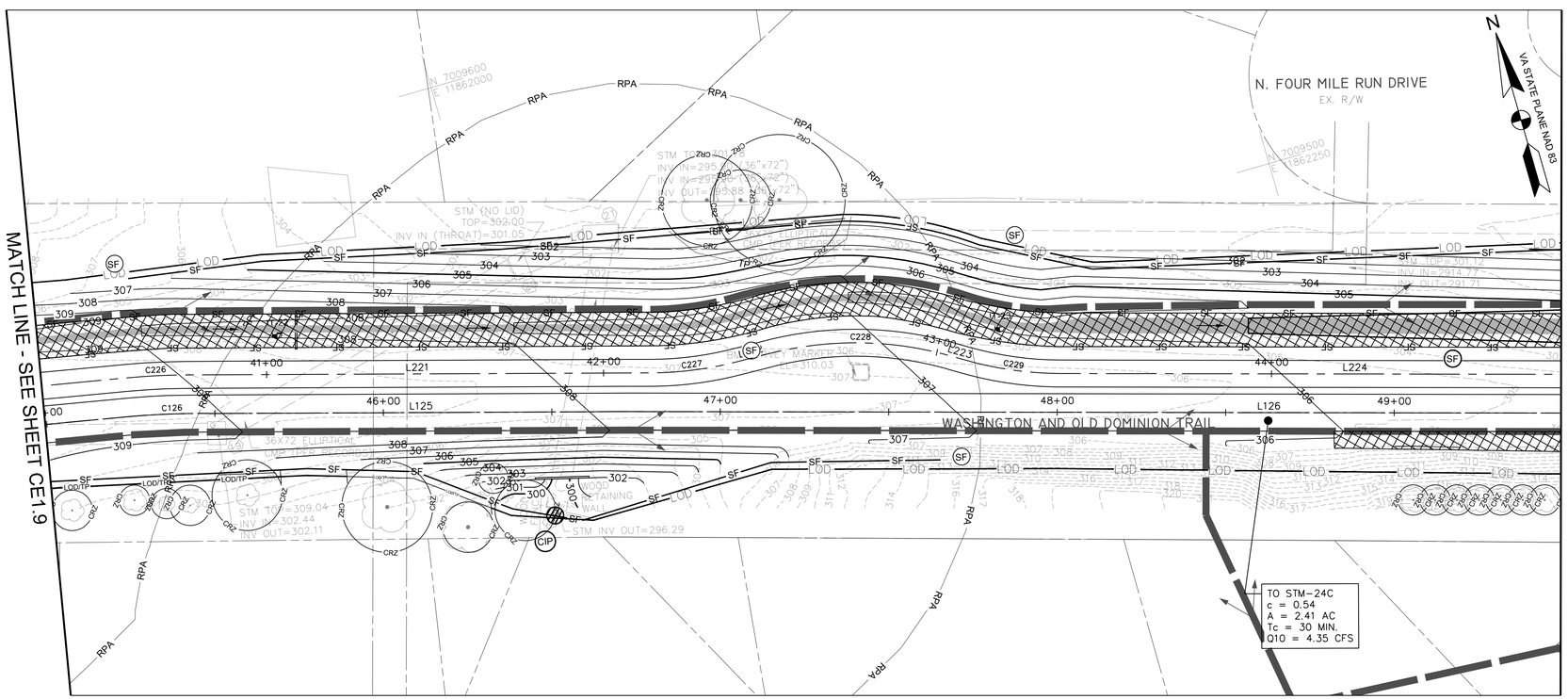


EROSION AND SEDIMENT CONTROL PLAN- PHASE I
SCALE: 1"=20'



EROSION AND SEDIMENT CONTROL PLAN- PHASE II
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EROSION AND SEDIMENT CONTROL LEGEND

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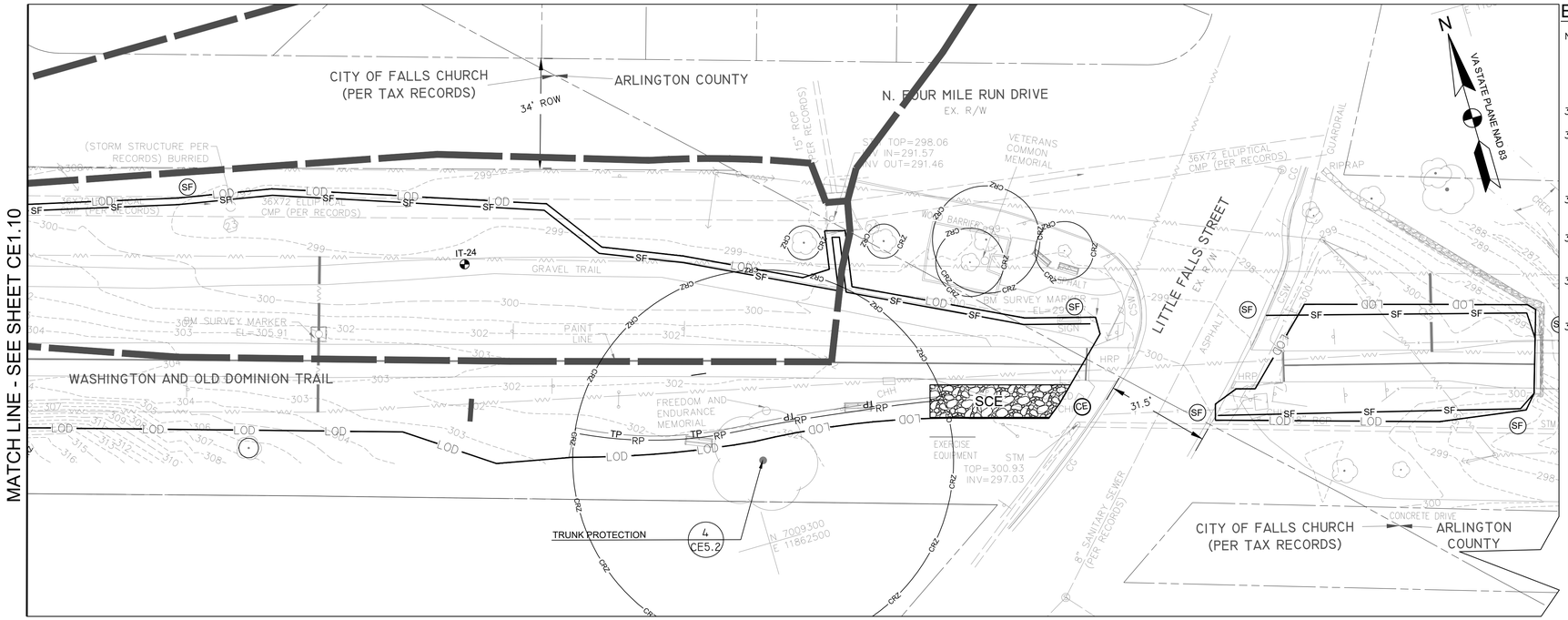

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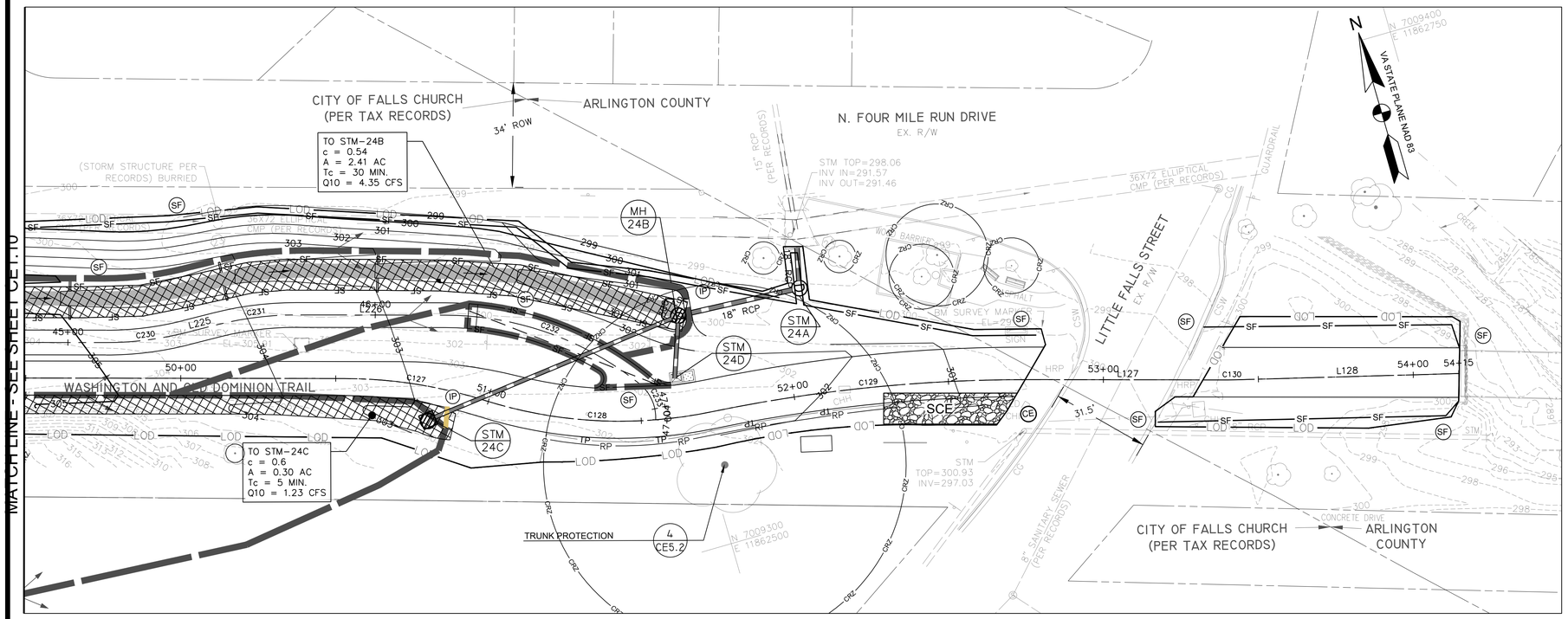

EROSION AND SEDIMENT CONTROL PLAN- PHASE II
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SHEET TITLE

EROSION AND SEDIMENT CONTROL- PHASE I AND PHASE II

SHEET

CE1.11

EROSION AND SEDIMENT CONTROL NARRATIVE

PROJECT DESCRIPTION
CONSTRUCTION OF TRAIL WITH ASSOCIATED UTILITIES AND SITE IMPROVEMENTS.

TOTAL AREA OF DISTURBANCE: 7.88 ACRES (343,464 SF)

EXISTING SITE CONDITIONS
EXISTING SLOPES: 2–20%

THE SITE CONSISTS OF ONE PARCEL IS SURROUNDED BY PRIVATE RESIDENTIAL PROPERTIES TO THE NORTH AND SOUTH, GROVE AVENUE TO THE WEST, AND FOUR MILE RUN TO THE EAST. THE PROPERTY IS INTERSECTED BY N. WEST STREET, NORTH SPRING STREET, GREAT FALLS STREET, NORTH OAK STREET, AND LITTLE FALLS ROAD ALONG WITH THE BORDER OF ARLINGTON COUNTY AND FALLS CHURCH. ABOUT TWO–THIRDS OF THE SITE IS COVERED IN TURF GRASS AND THE OTHER THIRD IS OF THE SITE IS COVERED WITH EXISTING ASPHALT PAVEMENT AND GRAVEL PATHS. THE SITE IS WITHIN TWO WATERSHEDS AND GENERALLY DRAINS FROM WEST TO EAST.

ADJACENT PROPERTIES
NORTH: PRIVATE RESIDENTIAL PROPERTIES
EAST: FOUR MILE RUN
SOUTH: PRIVATE RESIDENTIAL PROPERTIES
WEST: GROVE AVENUE

OFF–SITE AREAS
THERE IS NO PROPOSED CONSTRUCTION ON THE ADJACENT PROPERTIES. THERE ARE PROPOSED ROADWAY IMPROVEMENTS WITHIN THE RIGHT–OF–WAY OF GROVE AVENUE, N. WEST STREET, NORTH SPRING STREET GREAT FALLS STREET, NORTH OAK STREET, AND LITTLE FALLS ROAD.

SOILS
URBAN LAND, 2% TO 7% SLOPES, HYDROLOGIC GROUP D
THE ENTIRE MAPPING UNIT CONSISTS OF URBAN LAND (95), AT VARYING SLOPES. URBAN LAND IS A HYDROLOGIC GROUP D SOIL.

CRITICAL EROSION AREAS
THERE ARE CRITICAL EROSION AREAS WITHIN THE LIMITS OF DISTURBANCE. THE CRITICAL EROSION AREA CONSISTS OF FOUR MILE RUN ON THE EASTERN EDGE OF THE SITE.

EROSION AND SEDIMENT CONTROL MEASURES
PERMANENT OR TEMPORARY SOIL STABILIZATION MUST BE APPLIED TO DENUDED AREAS WITHIN 7 DAYS AFTER FINAL GRADE IS REACHED ON ANY PORTION OF THE SITE. SOIL STABILIZATION MUST BE APPLIED WITHIN 7 DAYS TO DENUDED AREAS WHICH MAY NOT BE AT FINAL GRADE BUT WILL REMAIN DORMANT (UNDISTURBED) FOR LONGER THAN 14 DAYS. ANY STOCKPILES MUST BE MULCHED AND SEEDED IMMEDIATELY AS DIRECTED BY THE COUNTY INSPECTOR. THERE ARE NO CRITICAL AREAS WITHIN THE LIMITS OF DISTURBANCE.

SEDIMENT CONTROL WILL BE EXECUTED THROUGH THE INSTALLATION OF SUPER SILT FENCE, INLET PROTECTION AND CONSTRUCTION ENTRANCES WITHIN THE DRAINAGE AREA OF THE LIMITS OF DISTURBANCE.

ALL TEMPORARY EROSION AND SEDIMENT CONTROL MEASURES SHALL BE REMOVED WITHIN 30 DAYS AFTER FINAL SITE STABILIZATION OR AFTER TEMPORARY MEASURES ARE NO LONGER NEEDED.

STRUCTURAL PRACTICES

SAFETY FENCE – 3.01
INSTALL A 6' HIGH CHAIN LINK FENCE TO PROHIBIT ACCESS TO THE SITE BY THE PUBLIC.

CONSTRUCTION ENTRANCE – 3.02
INSTALL A TEMPORARY CONSTRUCTION ENTRANCE WITH A WASH RACK IN THE SITE ENTRANCE AS SHOWN. WASH ALL CONSTRUCTION VEHICLES EGRESSING FROM THE SITE AS NECESSARY TO ENSURE THAT SEDIMENT WILL NOT LEAVE THE SITE. DIRECT WASH WATER TO NEAREST SEDIMENT CONTROL DEVICE. A PORTABLE SEDIMENT FILTER CAN BE USED FOR THIS PURPOSE.

SILT FENCE, SUPER SILT FENCE – 3.05
INSTALL SILT FENCE BARRIER DOWNSLOPE OF AREAS WITH MINIMAL GRADES TO FILTER SEDIMENT–LADEN RUNOFF FROM SHEET FLOW. WHERE SUPER SILT FENCE IS SHOWN ON PLAN NEXT TO TREE PROTECTION FENCE, ADHERE SILT FABRIC DIRECTLY TO FENCE.

INLET PROTECTION – 3.07
INSTALL A BLOCK AND GRAVEL CURB INLET SEDIMENT FILTER AROUND A STORM DRAIN CURB INLET AND INSTALL A SILT FENCE DROP INLET SEDIMENT FILTER AROUND A DROP INLET.

CULVERT INLET PROTECTION – 3.08
INSTALL SILT FENCE CULVERT INLET PROTECTION AROUND A STORM DRAIN CULVERT INLET.

TREE PROTECTION & PRESERVATION – 3.38
INSTALL TREE PROTECTION FENCING TO PROTECT TREES FROM MECHANICAL AND OTHER INJURY DURING LAND DISTURBING AND CONSTRUCTION ACTIVITY.

VEGETATIVE MEASURES
1. TOPSOILING (STOCKPILE)
TOPSOIL WILL BE STRIPPED FROM AREAS TO BE GRADED AND STOCKPILED FOR LATER USE. STOCKPILE LOCATIONS ARE TO BE STABILIZED WITH TEMPORARY VEGETATION WITHIN 14 DAYS.
2. TEMPORARY SEEDING
DISTURBED AREAS THAT WILL NOT BE BROUGHT TO FINAL GRADE WITHIN A PERIOD OF 14 DAYS WILL HAVE TEMPORARY VEGETATION ESTABLISHED. TEMPORARY VEGETATION WILL REDUCE DAMAGE FROM SEDIMENT AND RUNOFF TO DOWNSTREAM AND OFF–SITE AREAS. TEMPORARY SEEDING PLANT MATERIAL SHALL BE RAPIDLY GROWING PLANTS SELECTED FROM VESCH STANDARD AND SPEC. 3.31 AND TABLE 3.31–A&B. AREAS WHICH FAIL TO ESTABLISH VEGETATIVE COVER ADEQUATE TO PREVENT RILL EROSION ARE TO BE RESEEDED AS SOON AS POSSIBLE. FERTILIZER SHALL BE APPLIED AT A RATE OF 600 LBS. PER ACRE. FERTILIZER SHALL BE INCORPORATED INTO TOP 2–4 INCHES OF SOIL. SEED SHALL BE BE EVENLY APPLIED AND SMALL GRAINS SHALL BE PLANTED NO MORE THAN 1.5 INCHES DEEP. SEEDING MADE IN FALL FOR WINTER COVER AND DURING HOT AND DRY SUMMER MONTHS SHALL BE MULCHED ACCORDING TO STANDARD AND SPEC. 3.35.
3. PERMANENT SEEDING
ALL AREAS DISTURBED BY CONSTRUCTION SHALL BE STABILIZED WITH PERMANENT SEEDING IMMEDIATELY FOLLOWING FINISHED GRADING. SEEDING SHALL BE DONE WITH KENTUCKY 31 TALL FESCUE ACCORDING TO MINIMUM STANDARD #3, VESCH SPEC. 3.32–A&B. EROSION CONTROL BLANKETS ARE TO BE INSTALLED OVER FILL SLOPES, WHICH HAVE BEEN BROUGHT TO FINAL GRADE AND HAVE BEEN SEEDED. THIS WILL PROTECT THE SLOPES FROM RILL AND GULLY EROSION AND ALLOW THE SEED TO GERMINATE PROPERLY. MULCH (STRAW OR FIBER) WILL BE USED ON RELATIVELY FLAT AREAS. SOIL TESTS SHOULD BE DETERMINE THE EXACT REQUIREMENTS FOR LIME AND FERTILIZER. IN ALL SEEDING OPERATIONS, SEED, FERTILIZER AND LIME WILL BE APPLIED PRIOR TO MULCHING. THE PLANTING SOIL MUST HAVE ENOUGH FINE GRAINED SOIL, SUFFICIENT PORE SPACE, SUFFICIENT DEPTH AND BE FROM FROM TOXIC OR EXCESSIVE QUANTITIES OF ROOTS AND SHALL BE APPLIED IN ACCORDANCE WITH STD. AND SPEC. 3.30.
4. SODDING
AREAS THAT ARE TO BE SODDED SHALL BE BROUGHT TO FINAL GRADE IN ACCORDANCE WITH THE PLANS. SOIL TESTS SHOULD BE DETERMINE THE EXACT REQUIREMENTS FOR LIME AND FERTILIZER. PRIOR TO LAYING SOD, SOIL SURFACE SHALL BE CLEAR OF TRASH, DEBRIS, AND LARGE OBJECTS. QUALITY OF SOD SHALL BE STATE CERTIFIED AND ENSURE GENETIC PURITY AND HIGH QUALITY. SOD SHALL NOT BE LAID IN EXCESSIVELY WET OR DRY WEATHER AND BE DELIVERED AND INSTALLED WITHIN 36 HOURS. SOD SHOULD NOT BE LAID ON FROZEN SOIL SURFACE AND SHALL BE INSTALLED PER PLATE 3.33–1 OF THE VESCH. ANY 2:1 SLOPES ARE REQUIRED TO BE SODDED AND STAKED.
5. DUST CONTROL
DUST SHALL ME MINIMIZED AS MUCH AS PRACTICABLE.

SEDIMENT CONTROL – SEQUENCE OF CONSTRUCTION NARRATIVE
SEQUENCE OF CONSTRUCTION – PHASE 1, SEE SHEET C–108

A. INSTALL SILT FENCE (SF), INLET PROTECTION (IP), CULVERT INLET PROTECTION (CIP), CONSTRUCTION ENTRANCE (CE) AND TREE PROTECTION FENCE (TP). NOTE: WHERE SF AND TP ARE SHOWN ADJACENT ON PLAN, THE FILTER FABRIC FOR THE SF SHALL BE ADHERED TO THE TP FENCE. THESE ARE SHOWN AS TWO SEPARATE LINES ON THE PLAN VIEW FOR GRAPHICAL PURPOSES ONLY. AN 8' WIDE PATH MUST REMAIN OPEN AT ALL TIMES DURING CONSTRUCTION AND MAY BE CONSTRUCTTED IN PHASES TO KEEP PATH OPEN.
B. CONTRACTOR TO HAVE CONSTRUCTION WORKER PARKING, HAUL ROUTE, AND EXCAVATION PROTECTION PLAN APPROVED BY CITY OF FALLS CHURCH.
C. CONTRACTOR TO SUBMIT SEDIMENT DISPOSAL PLAN TO CITY OF FALLS CHURCH INSPECTOR FOR APPROVAL.
D. CLEAR AND GRUB SITE. REMOVE AND DISPOSE OF GRAVEL AND ASPHALT PATH MATERIALS PROPERLY.
E. ROUGH GRADE THE SITE.
F. RESTORE AND STABILIZE ALL UNPAVED AREAS. THIS WORK MUST BE PERFORMED AND INSPECTED AS EARLY AS SITE CONDITIONS ALLOW. AN 8' WIDE WALKING PATH SHALL REMAIN OPEN AT ALL TIMES. LAY GRAVEL FOR TEMPORARY ACCESS TO ASPHALT PATH AS NEEDED.
G. STRUCTURAL CONTROLS SHALL BE REMAIN IN PLACE FOR PHASE 2 OPERATIONS UNLESS OTHERWISE NOTED OR INSTRUCTED BY INSPECTOR. THE GROUND SHALL BE PERMANENTLY STABILIZED WITH VEGETATION UPON APPROVAL OF THE CITY OF FALLS CHURCH INSPECTOR.

SEQUENCE OF CONSTRUCTION – PHASE 2, SEE SHEET C–110

A. ALL SEDIMENT AND EROSION CONTROL DEVICES INSTALLED AS PART OF PHASE 1 SHALL REMAIN IN PLACE AND FUNCTIONING, UNLESS OTHERWISE DIRECTED BY THE INSPECTOR. AN 8' WIDE PATH MUST REMAIN OPEN AT ALL TIMES DURING CONSTRUCTION AND MAY BE CONSTRUCTTED IN PHASES TO KEEP WALKING PATH OPEN.
B. INSTALL ALL WET AND DRY UTILITIES. NEW STORM DRAIN INLETS AND CULVERTS SHALL HAVE INLET PROTECTION INSTALLED IMMEDIATELY. INSTALL SWM 7 AND SWM 8 MODULAR WETLAND FACILITIES.
C. EXCAVATE ALL AREAS TO BE PAVED TO A SUITABLE SUBGRADE. INSTALL STONE SUBBASE AND PROPOSED PAVING, PROPOSED PERMEABLE PAVEMENT AND RAMPS.
D. ONCE ALL HEAVY VEHICULAR TRAFFIC AREAS ARE COMPLETE ONSITE, INSTALL STORMWATER MANAGEMENT FACILITIES (SWALES A–D) INCLUDING PERFORATED UNDERDRAIN PIPING AND CLEANOUTS. INSTALL SOIL STABILIZATION BLANKET ON SIDES AND SLOPES OF SWALES AS SHOWN TO PREVENT EROSION. STABILIZE AREAS DRAINING TO STORMWATER MANAGEMENT FACILITIES 1–8 OR INSTALL SILT FENCE AROUND FACILITIES.
E. UPON FINAL STABILIZATION OF THE SITE WITH ESTABLISHED VEGETATION AND WITH THE PERMISSION OF THE SEDIMENT CONTROL INSPECTOR, REMOVE THE REMAINING SEDIMENT CONTROL MEASURES AND STABILIZE THOSE AREAS DISTURBED BY THIS PROCESS.

MAINTENANCE
A. ALL CONTROLS ARE TO BE INSPECTED ON A DAILY BASIS BY THE SITE SUPERINTENDENT OR THEIR REPRESENTATIVE, ANY DAMAGED CONTROLS ARE TO BE REPAIRED BY THE END OF THE WORKING DAY.
B. ALL CONSTRUCTION VEHICLES EGRESSING FROM THE SITE SHALL BE WASHED AS NECESSARY TO INSURE THAT SEDIMENT WILL NOT BE REMOVED FROM THE SITE. WASH WATER TO BE TRUCKED INTO THE SITE OR OBTAINED FROM A METERED WATER CONNECTION. WASH WATER TO BE DIRECTED TO A SEDIMENT TRAPPING DEVICE.
C. TO PREVENT CLOGGING, AREA DRAINS & TRENCH DRAINS ARE TO BE PROTECTED FROM DEBRIS AND CONSTRUCTION MATERIAL. CONTRACTOR TO COORDINATE WITH SITE INSPECTOR TO DETERMINE METHODOLOGY OF PROTECTION.
D. VPDES/VSMP PERMIT SHALL BE OBTAINED BY CONTRACTOR. CONDITIONS OF VPDES/VSMP PERMIT SHALL BE STRICTLY OBSERVED.

PERIMETER CONTROLS
□ SILT FENCE SHALL BE CHECKED FOR UNDERMINING, HOLES, OR DETERIORATION OF THE FABRIC. FENCING SHALL BE REPLACED IMMEDIATELY IF THE FABRIC IS DAMAGED OR WORN. SILT FENCE MUST BE TRENCHED INTO THE GROUND PER STATE SPECIFICATIONS (STD & SPEC 3.09).
□ WOODEN STAKES OR STEEL POSTS SHALL BE PROPERLY SECURED UPRIGHT INTO THE GROUND. DAMAGED POSTS OR STAKES MUST BE REPLACED.
□ SEDIMENT THAT HAS ACCUMULATED AGAINST THE SILT FENCE SHOULD BE REMOVED. ACCUMULATED SEDIMENT MUST BE REMOVED WHEN THE LEVEL REACHES ONE–HALF THE HEIGHT OF THE FENCING.
□ HAY BALES OR A STONE BERM SHOULD BE PLACED ACROSS THE CONSTRUCTION ENTRANCE TO PREVENT SEDIMENT FROM LEAVING THE CONSTRUCTION SITE.

EXPOSED SLOPES AND SOIL
□ EXPOSED SLOPES NOT AT THE FINAL STABILIZATION PHASE SHALL BE COVERED WITH TARPS, PLASTIC SHEETING, OR EROSION CONTROL MATTING. COVERING MATERIAL SHALL BE PROPERLY SECURED/ANCHORED.
□ CONTROLS SHALL BE INSTALLED TO PREVENT CONCENTRATED FLOW DOWN AN EXPOSED SLOPE. BERMS OR DIVERSION DIKES SHALL BE INSTALLED AT THE TOP OF CUT/EXPOSED SLOPES TO DIRECT STORM FLOW AROUND THE DISTURBED AREA.
□ EXPOSED SLOPES AT THE FINAL STABILIZATION PHASE SHALL BE STABILIZED USING SLOPE STABILIZATION PRACTICES SUCH AS SOIL STABILIZATION BLANKETS OR MATTING AS SPECIFIED IN THE VIRGINIA EROSION AND SEDIMENT CONTROL HANDBOOK (VESCH) STD & SPEC 3.36. BLANKETS OR MATS MUST BE PROPERLY SECURED AND ANCHORED TO THE SLOPE USING STAPLES, PINS, OR STAKES
□ SEEDED AREAS SHALL BE CHECKED AND RESEEDED AS NECESSARY TO COVER EXPOSED SOIL. RECENTLY SEEDED AREAS SHALL BE PROTECTED BY STRAW OR SOIL STABILIZATION BLANKETS TO PREVENT SEEDING FROM BEING WASHED AWAY.

STOCKPILES
□ STOCKPILED SOIL AND OTHER LOOSE MATERIALS THAT CAN BE WASHED AWAY SHALL BE COVERED WITH A TARP, PLASTIC SHEETING, OR OTHER STABILIZATION MATTING. THE COVER MUST BE PROPERLY SECURED/ANCHORED DOWN TO PREVENT IT FROM BEING BLOWN OFF AND EXPOSING MATERIALS TO RAIN. CONTROLS SUCH AS HAY BALES OR BOOMS SHOULD BE PLACED ALONG THE PERIMETER OF THE STOCK PILE (DOWNHILL SIDE).

INLET PROTECTION
□ INLET PROTECTION CONTROLS SHALL BE INSPECTED TO ENSURE THEY ARE FUNCTIONING PROPERLY AND FLOODING WILL NOT OCCUR. CLOGGED OR DAMAGED CONTROLS MUST BE REPLACED IMMEDIATELY. ENSURE CONTROLS ALLOW FOR OVERFLOW / BYPASS OF STORMWATER RUNOFF DURING SIGNIFICANT STORM EVENTS.
IN ADDITION TO THESE PRE–STORM ACTIONS, ALL EROSION AND SEDIMENT CONTROL (ESC) MEASURES MUST BE CHECKED DAILY AND AFTER EACH SIGNIFICANT RAINFALL.

GENERAL LAND CONSERVATION NOTES:

1. NO DISTURBED AREA WILL REMAIN DENUDED FOR MORE THAN 7 CALENDAR DAYS UNLESS OTHERWISE AUTHORIZED BY THE DIRECTOR OR HIS AGENT.

2. ALL EROSION CONTROL MEASURES ARE TO BE PLACED PRIOR TO OR AS THE FIRST STEP IN GRADING. FIRST AREAS TO BE CLEARED ARE TO BE THOSE REQUIRED FOR THE PERIMETER CONTROLS.

3. ALL STORM AND SANITARY SEWER LINES NOT IN STREET ARE TO BE MULCHED AND SEEDED WITHIN 5 DAYS AFTER BACKFILL. NO MORE THAN 500 FEET ARE TO BE OPEN AT ANY ONE TIME

4. ELECTRIC POWER, TELEPHONE AND GAS SUPPLY TRENCHED ARE TO BE COMPACTED, SEEDED AND MULCH WITHIN 5 DAYS OF BACKFILL.

5. ALL TEMPORARY BERMS, DIVERSION AND SEDIMENT CONTROL DAMS ARE TO BE MULCHED AND SEEDED FOR TEMPORARY VEGETATIVE COVER IMMEDIATELY AFTER GRADING. STRAW OR HAY MULCH IS REQUIRED. THE SAME APPLIES TO ALL SOIL STOCKPILE

6. DURING CONSTRUCTION, ALL STORM INLETS WILL BE PROTECTED BY INLET PROTECTION DEVICES, MAINTAINED AND MODIFIED AS REQUIRED BY CONSTRUCTION PROGRESS.

7. ANY DISTURBED AREA NOT COVERED IN NOTE # 1 ABOVE AND NOT PAVED, SODDED OR BUILT UPON BY NOVEMBER 1ST, OR DISTURBED AFTER THAT DATE, SHALL BE MULCHED WITH HAY OR STRAW AT THE RATE OF 2 TONS PER ACRE AND OVER–SEEDED NO LATER THAN MAY 15TH.

8. AT THE COMPLETION OF THE CONSTRUCTION PROJECT AND PRIOR TO BOND RELEASE, ALL TEMPORARY SEDIMENT CONTROLS SHALL BE REMOVED AND ALL DENUDED AREAS SHALL BE STABILIZED. FAIRFAX COUNTY INSPECTOR TO APPROVE REMOVAL OF ALL TEMPORARY SILTATION MEASURES.

EROSION AND SEDIMENT CONTROL NOTES:

ES–1: UNLESS OTHERWISE INDICATED, ALL VEGETATIVE AND STRUCTURAL EROSION AND SEDIMENT CONTROL PRACTICES WILL BE CONSTRUCTED AND MAINTAINED ACCORDING TO MINIMUM STANDARDS AND SPECIFICATIONS OF THE VIRGINIA EROSION AND SEDIMENT CONTROL HANDBOOK AND VIRGINIA'S REGULATIONS 9VAC25–840–30 EROSION AND SEDIMENT CONTROL REGULATIONS.

ES–2: THE PLAN APPROVING AUTHORITY MUST BE NOTIFIED ONE WEEK PRIOR TO THE PRE–CONSTRUCTION CONFERENCE, ONE WEEK PRIOR TO THE COMMENCEMENT OF LAND DISTURBING ACTIVITY, AND ONE WEEK PRIOR TO THE FINAL INSPECTION.

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

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

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

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

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

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

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

LAND DISTURBANCE NOTES:

WE ACKNOWLEDGE THAT THE TREE PROTECTION/LANDSCAPE PLANS SHALL BE REVIEWED AND APPROVED PRIOR TO THE ISSUANCE OF THE ASSOCIATED LAND DISTURBANCE PERMIT. THE APPROVED TREE PROTECTION AND/OR LANDSCAPE PLAN MUST BE SUBMITTED AS PART OF THE LDA PERMIT PACKAGE ALONG WITH ANY ADDITIONAL REQUIRED ITEMS.

DEWATERING NOTE:

ANY WATER THAT ACCUMULATES IN ANY OPEN EXCAVATION (FOOTING EXCAVATIONS, UTILITY TRENCHES, STRUCTURE EXCAVATIONS, ETC.) AND NEEDS TO BE REMOVED TO ALLOW CONSTRUCTION TO CONTINUE, SHALL BE PUMPED INTO A PORTABLE SEDIMENT TANK OR RUN THROUGH ANY OTHER FILTERING MEASURE APPROVED BY THE SITE INSPECTOR TO ENSURE THAT SEDIMENT IS REMOVED FROM THE WATER PRIOR TO DISCHARGE FROM THE CONSTRUCTION AREA.

TABLE 3.31-B
(Revised June 2003)
TEMPORARY SEEDING SPECIFICATIONS
QUICK REFERENCE FOR ALL REGIONS

SEED		
APPLICATION DATES	**SPECIES**	**APPLICATION RATES**
Sept. 1 - Feb. 15	50/50 Mix of Annual Ryegrass (Iolium multi-florum) & Cereal (Winter) Rye (Secale cereale)	50 -100 (lbs/acre)
Feb. 16 - Apr. 30	Annual Ryegrass (Iolium multi-florum)	60 - 100 (lbs/acre)
May 1 - Aug. 31	German Millet	50 (lbs/acre)

FERTILIZER & LIME

- Apply 10-10-10 **fertilizer** at a rate of 450 lbs. / acre (or 10 lbs. / 1,000 sq. ft.)
- Apply **Pulverized Agricultural Limestone** at a rate of 2 tons/acre (or 90 lbs. / 1,000 sq. ft.)

NOTE:
1 - A soil test is necessary to determine the actual amount of lime required to adjust the soil pH of site.
2 - Incorporate the lime and fertilizer into the top 4 – 6 inches of the soil by disking or by other means.
3 - When applying Slowly Available Nitrogen, use rates available in Erosion & Sediment Control Technical Bulletin #4, 2003 Nutrient Management for Development Sites at http://www.dcr.state.va.us/sw/esk.htm#pubs

TABLE 3.32-D
(Revised June 2003)
PERMANENT SEEDING SPECIFICATIONS FOR PIEDMONT AREA

SEED[1]		
LAND USE	**SPECIES**	**APPLICATION PER ACRE**
Minimum Care Lawn (Commercial or Residential)	Tall Fescue[1] Perennial Ryegrass Kentucky Bluegrass[1]	95-100% 0-5% 0-5% TOTAL: 175-200 lbs.
High-Maintenance Lawn	Tall Fescue[1]	TOTAL: 200-250 lbs.
General Slope (3:1 or less)	Tall Fescue[1] Red Top Grass or Creeping Red Fescue Seasonal Nurse Crop[2]	128 lbs. 2 lbs. 20 lbs. TOTAL: 150 lbs.
Low-Maintenance Slope (Steeper than 3:1)	Tall Fescue[1] Red Top Grass or Creeping Red Fescue Seasonal Nurse Crop[2] Crownvetch[3]	108 lbs. 2 lbs. 20 lbs. 20 lbs. TOTAL: 150 lbs.

1 - When selecting varieties of turfgrass, use the Virginia Crop Improvement Association (VCIA) recommended turfgrass variety list. Quality seed will bear a label indicating that they are approved by VCIA. A current turfgrass variety list is available at the local County Extension office or through VCIA at 804-746-4884 or at http://sudan.cses.vt.edu/html/Turf/turfpublications/publications2.html
2 - Use seasonal nurse crop in accordance with seeding dates as stated below:

February 16th - April	Annual Rye
May 1st - August 15th	Foxtail Millet
August 16th - October	Annual Rye
November - February 15th	Winter Rye

3 - Substitute Sericea lespedeza for Crownvetch east of Farmville, VA (May through September use hulled seed, all other periods, use unhulled Sericea). If Flatpea is used, increase rate to 30 lbs./acre. If Weeping Lovegrass is used, include in any slope or low maintenance mixture during warmer seeding periods, increase to 30 -40

FERTILIZER & LIME

- Apply 10-20-10 **fertilizer** at a rate of **500** lbs. / acre (or 12 lbs. / 1,000 sq. ft.)
- Apply **Pulverized Agricultural Limestone** at a rate of 2 tons/acre (or 90 lbs. / 1,000 sq. ft.)

NOTE:
- A soil test is necessary to determine the actual amount of lime required to adjust the soil pH of site.
- Incorporate the lime and fertilizer into the top 4 – 6 inches of the soil by disking or by other means.
- When applying Slowly Available Nitrogen, use rates available in Erosion & Sediment Control Technical Bulletin, #4, 2003 Nutrient Management for Development Sites at http://www.dcr.state.va.us/sw/esk.htm#pubs

TABLE 3.35-A

ORGANIC MULCH MATERIALS AND APPLICATION RATES

MULCHES:	RATES: Per Acre	RATES: Per 1000 sq. ft.	NOTES:
Straw or Hay	1½ - 2 tons (Minimum 2 tons for winter cover)	70 - 90 lbs.	Free from weeds and coarse matter. Must be anchored. Spread with mulch blower or by hand.
Fiber Mulch	Minimum 1500 lbs.	35 lbs.	Do not use as mulch for winter cover or during hot, dry periods.* Apply as slurry.
Corn Stalks	4 - 6 tons	185 - 275 lbs.	Cut or shredded in 4-6" lengths. Air-dried. Do not use in fine turf areas. Apply with mulch blower or by hand.
Wood Chips	4 - 6 tons	185 - 275 lbs.	Free of coarse matter. Air-dried. Treat with 12 lbs nitrogen per ton. Do not use in fine turf areas. Apply with mulch blower, chip handler, or by hand.
Bark Chips or Shredded Bark	50 - 70 cu. yds.	1-2 cu. yds.	Free of coarse matter. Air-dried. Do not use in fine turf areas. Apply with mulch blower, chip handler, or by hand.

* 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.

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03/03/2020
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PROJECT TITLE
EXPANSION OF THE W&OD TRAIL
FALLS CHURCH, VA
UPC 113612

REVISIONS

MARK	DATE	DESCRIPTION

AMT FILE NO.	18-0367
DATE:	3/2020
SCALE:	1"=20'
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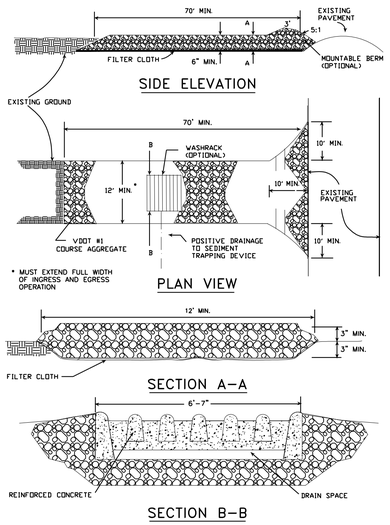
DRAWN BY:	AMT
CHECKED BY:	AMT

100% DESIGN

SHEET TITLE
EROSION & SEDIMENT CONTROL NOTES AND DETAILS

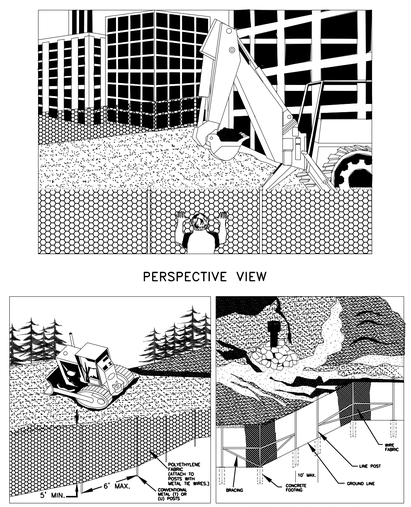
SHEET
CE5.0

STONE CONSTRUCTION ENTRANCE



SOURCE: ADAPTED from 1983 Maryland Standards for Soil erosion and Sediment Control, and Va. DSWC — Plate 3.02-1

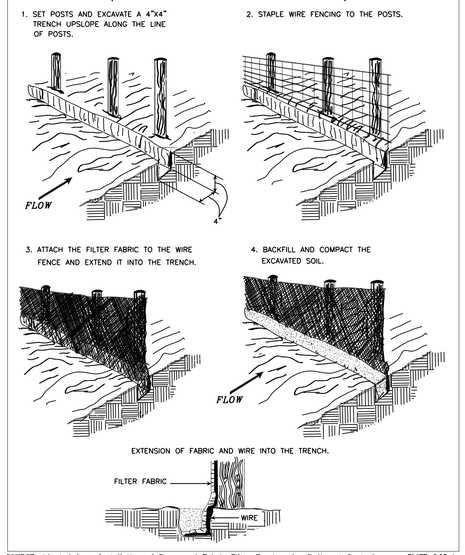
SAFETY FENCE



SOURCE: CONWED PLASTICS
VDOT ROAD AND BRIDGE STANDARDS
VA. DSWC

PLATE. 3.1-1

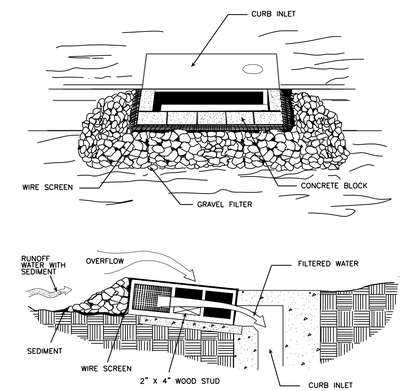
CONSTRUCTION OF A SILT FENCE (WITH WIRE SUPPORT)



SOURCE: Adapted from Installation of Straw and Fabric Filter Barriers for Sediment Control, Sherwood & Wyant

PLATE. 3.05-1

BLOCK & GRAVEL CURB INLET SEDIMENT FILTER



SPECIAL APPLICATION

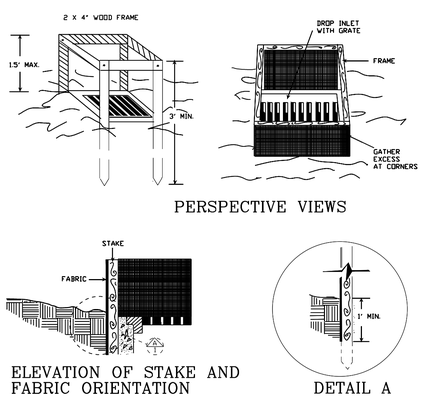
THIS METHOD OF INLET PROTECTION IS APPLICABLE AT CURB INLETS WHERE AN OVERFLOW CAPABILITY IS NECESSARY TO PREVENT EXCESSIVE PONDING IN FRONT OF THE STRUCTURE.

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

SOURCE: VA. DSWC

PLATE 3.07-8

SILT FENCE DROP INLET PROTECTION



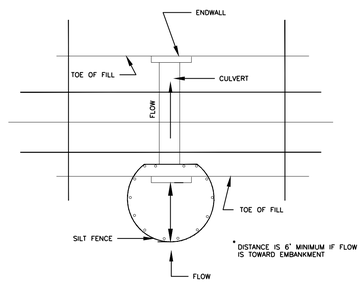
SPECIFIC APPLICATION

THIS METHOD OF INLET PROTECTION IS APPLICABLE WHERE THE INLET DRAINS A RELATIVELY FLAT AREA (SLOPE NO GREATER THAN 5%) WHERE THE INLET SHEET OR OVERLAND FLOWS (NOT EXCEEDING 1 C.F.S.) ARE TYPICAL. THE METHOD SHALL NOT APPLY TO INLETS RECEIVING CONCENTRATED FLOWS, SUCH AS IN STREET OR HIGHWAY MEDIANS.

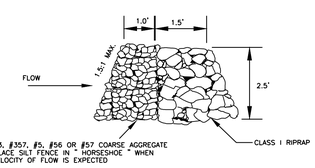
SOURCE: N.C. Erosion and Sediment Control Planning and Design Manual, 1988

PLATE 3.07-1

SILT FENCE CULVERT INLET PROTECTION



* OPTIONAL STONE COMBINATION

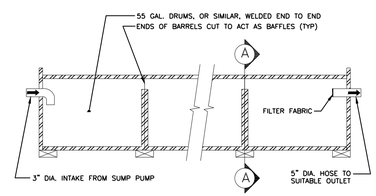


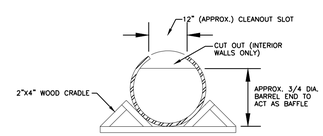
* VDOT #3, #357, #5, #56 OR #57 COARSE AGGREGATE TO REPLACE SILT FENCE IN " HORSESHOE " WHEN HIGH VELOCITY OF FLOW IS EXPECTED

SOURCE: ADAPTED from VDOT Standard Sheets and Va. DSWC

PLATE. 3.08-1

PORTABLE SEDIMENT TANK

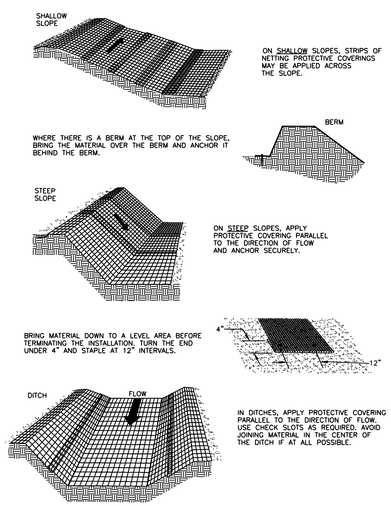




SOURCE: USDA - SCS

PLATE: 3.26-1

TYPICAL ORIENTATION OF TREATMENT - 1 (SOIL STABILIZATION BLANKET)



SOURCE: ADAPTED FROM LUDLOW PRODUCTS BROCHURE

PLATE: 3.36-1

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PROFESSIONAL ENGINEER

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PROJECT TITLE

EXPANSION OF THE W&OD TRAIL

FALLS CHURCH, VA
UPC 113612

REVISIONS

MARK	DATE	DESCRIPTION

AMT FILE NO.	18-0367
DATE:	3/2020
SCALE:	1"=20'
DESIGNED BY:	AMT
DRAWN BY:	AMT
CHECKED BY:	AMT

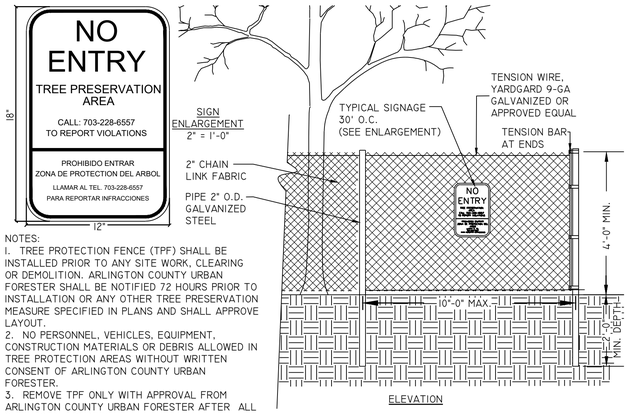
100% DESIGN

SHEET TITLE

EROSION & SEDIMENT CONTROL DETAILS

SHEET

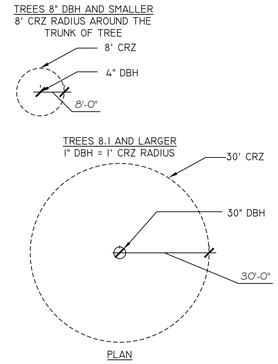
CE5.1



NOTES:
1. TREE PROTECTION FENCE (TPF) SHALL BE INSTALLED PRIOR TO ANY SITE WORK, CLEARING OR DEMOLITION. ARLINGTON COUNTY URBAN FORESTER SHALL BE NOTIFIED 72 HOURS PRIOR TO INSTALLATION OR ANY OTHER TREE PRESERVATION MEASURE SPECIFIED IN PLANS AND SHALL APPROVE LAYOUT.
2. NO PERSONNEL, VEHICLES, EQUIPMENT, CONSTRUCTION MATERIALS OR DEBRIS ALLOWED IN TREE PROTECTION AREAS WITHOUT WRITTEN CONSENT OF ARLINGTON COUNTY URBAN FORESTER.
3. REMOVE TPF ONLY WITH APPROVAL FROM ARLINGTON COUNTY URBAN FORESTER AFTER ALL SITE WORK HAS BEEN COMPLETED.
4. SIGN MATERIAL TO BE WEATHER RESISTANT.

1 4` CHAIN LINK TREE PROTECTION FENCE

1/2" = 1'-0" A-TP-05



NOTES:

1. GRAPHICALLY, THE CRITICAL ROOT ZONE (CRZ) IS REPRESENTED AS A CIRCULAR REGION MEASURED OUTWARD FROM A TREE TRUNK REPRESENTING THE AREA OF ROOTS THAT MUST BE MAINTAINED OR PROTECTED FOR THE TREE'S SURVIVAL.

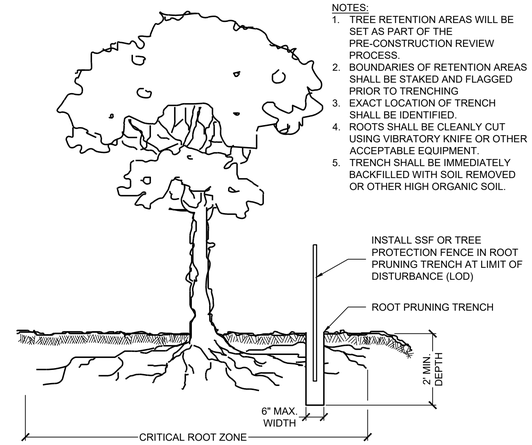
2. THE CRZ OF A TREE IS THE ZONE IN WHICH THE MAJORITY OF THE ROOTS LAY. 95% OF THE ROOTS OF MOST TREES WILL BE FOUND IN THE UPPER 12-18" OF THE SOIL. MOST OF THE ROOTS THAT SUPPLY THE NUTRIENTS AND WATER TO THE TREE ARE FOUND JUST BELOW THE SOIL SURFACE. THE TOTAL AMOUNT OF A TREE'S ROOTS ARE GENERALLY PROPORTIONAL TO THE VOLUME OF THE TREE'S CANOPY. THEREFORE, IF THE ROOTS ONLY PENETRATE A THIN LAYER OF SOIL, THEN THE ROOTS MUST SPREAD FAR FROM THE TREE, BEYOND THE EXTENSION OF THE CANOPY.

3. PLOT ACCURATE TRUNK LOCATIONS OF ALL TREES GREATER THAN 3" DIAMETER AT BREAST HEIGHT (DBH) AND/OR TREE STANDS WITHIN DEVELOPMENT AREAS ON ALL PLANS FOR THE PROJECT AND DELINEATE THEIR ESTIMATED CRITICAL ROOT ZONE.

4. PLOT ACCURATE TRUNK LOCATIONS OF OFFSITE TREES WHICH WILL HAVE THEIR CRZ AFFECTED BY DEVELOPMENT AND DELINEATE THEIR ESTIMATED CRITICAL ROOT ZONE.

2 TREE PROTECTION DETAIL FOR DETERMINING CRITICAL ROOT ZONE

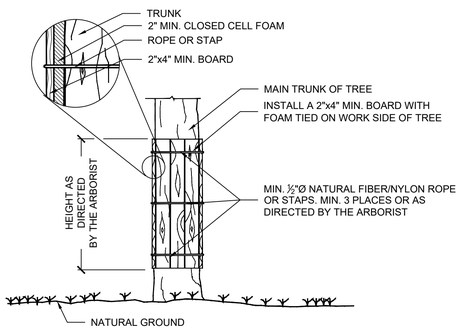
N.T.S.



NOTES:
1. TREE RETENTION AREAS WILL BE SET AS PART OF THE PRE-CONSTRUCTION REVIEW PROCESS.
2. BOUNDARIES OF RETENTION AREAS SHALL BE STAKED AND FLAGGED PRIOR TO TRENCHING
3. EXACT LOCATION OF TRENCH SHALL BE IDENTIFIED.
4. ROOTS SHALL BE CLEANLY CUT USING VIBRATORY KNIFE OR OTHER ACCEPTABLE EQUIPMENT.
5. TRENCH SHALL BE IMMEDIATELY BACKFILLED WITH SOIL REMOVED OR OTHER HIGH ORGANIC SOIL.

3 ROOT PRUNING

NOT TO SCALE A-TP-02



NOTES:
1. COMPLETE ALL INSTALLATION UNDER THE DIRECTION OF A CERTIFIED ARBORIST
2. TIE BOARDS WITH WITH 1/2" DIAMETER ROPE OR STAPS SUFFICIENT TO PROTECT ALL AREAS OF THE TREE EXPOSED TO CONSTRUCTION.
3. PROTECT THE TRUNK FROM DAMAGE DUE TO THE STRAPS WITH ADDITIONAL FOAM AND BOARDS AS NEEDED

4 TRUNK PROTECTION

NOT TO SCALE 02 03-03

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03/02/2022
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LICENSE NO. 1542 EXPIRATION DATE 04/30/2021"

PROJECT TITLE
EXPANSION OF THE W&OD TRAIL
FALLS CHURCH, VA
UPC 113612

REVISIONS

MARK	DATE	DESCRIPTION

AMT FILE NO.	18-0367
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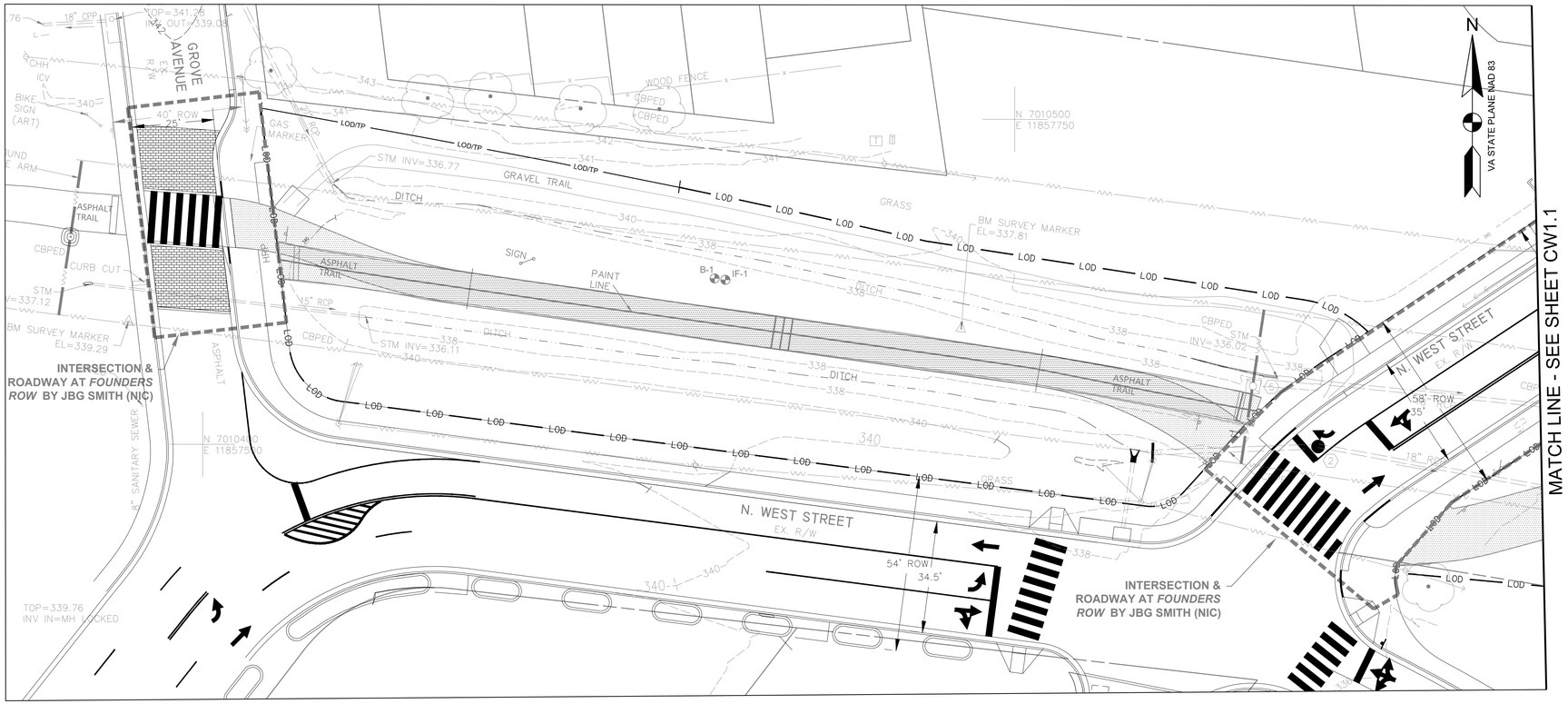
DRAWN BY:	AMT
CHECKED BY:	AMT

100% DESIGN

SHEET TITLE
TREE PROTECTION DETAILS

SHEET
CE5.2



PRE-DEVELOPMENT
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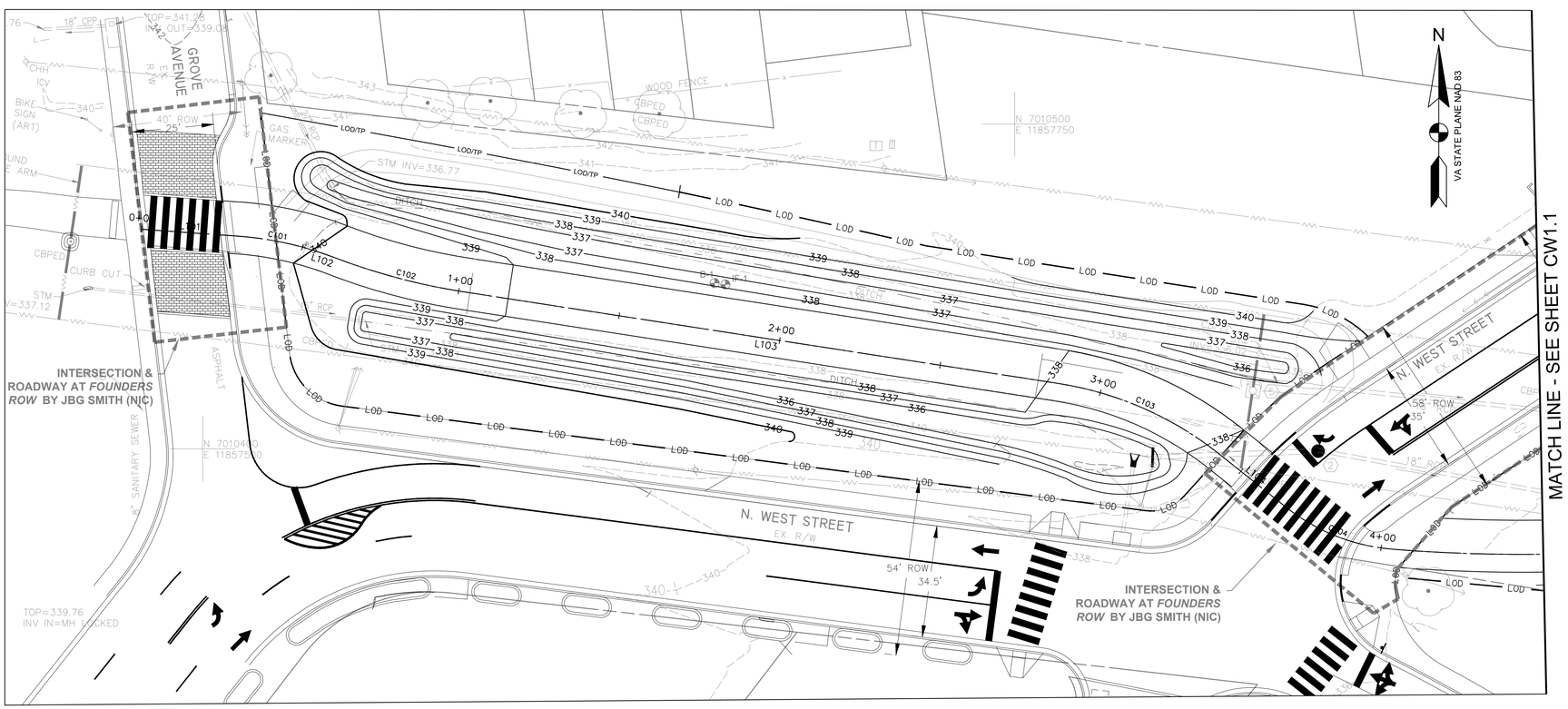


POST-DEVELOPMENT / SWM PLANS
SCALE: 1"=20'

STORMWATER MANAGEMENT LEGEND

- PROPERTY BOUNDARY
- LOD — LIMIT OF DISTURBANCE
- DRAINAGE DIVIDE
- 340 — PROPOSED MAJOR CONTOUR
- 339 — PROPOSED MINOR CONTOUR
- PERMEABLE PAVEMENT
- DRY SWALE
- CHECK DAM
- PROP. STORM DRAIN PIPE
- 4" PERF. PVC SCHD 40 PIPE
- B-7 — BORING TEST LOCATION
- IT-7 — INFILTRATION TEST LOCATION

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

AMT
A. MORTON THOMAS AND ASSOCIATES, INC.
CONSULTING ENGINEERS
800 KING FARM BLVD, FOURTH FLOOR ROCKVILLE, MD 20850
(301) 881-2545 FAX:(301) 881-0814
EMAIL: AMT1@AMTENGINEERING.COM

COMMONWEALTH OF VIRGINIA
J. KEITH SINCLAIR, JR.
Lic. No. 11195
03/02/2012
PROFESSIONAL ENGINEER

REGISTRATION STAMP

NOT FOR CONSTRUCTION

PROFESSIONAL CERTIFICATION

"I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF VIRGINIA."
LICENSE NO. 11195 EXPIRATION DATE 04/30/2021

PROJECT TITLE

EXPANSION OF THE W&OD TRAIL
FALLS CHURCH, VA
UPC 113612

REVISIONS

MARK	DATE	DESCRIPTION

AMT FILE NO.	18-0367
DATE:	3/2020
SCALE:	1"=20'
DESIGNED BY:	AMT
DRAWN BY:	AMT
CHECKED BY:	AMT

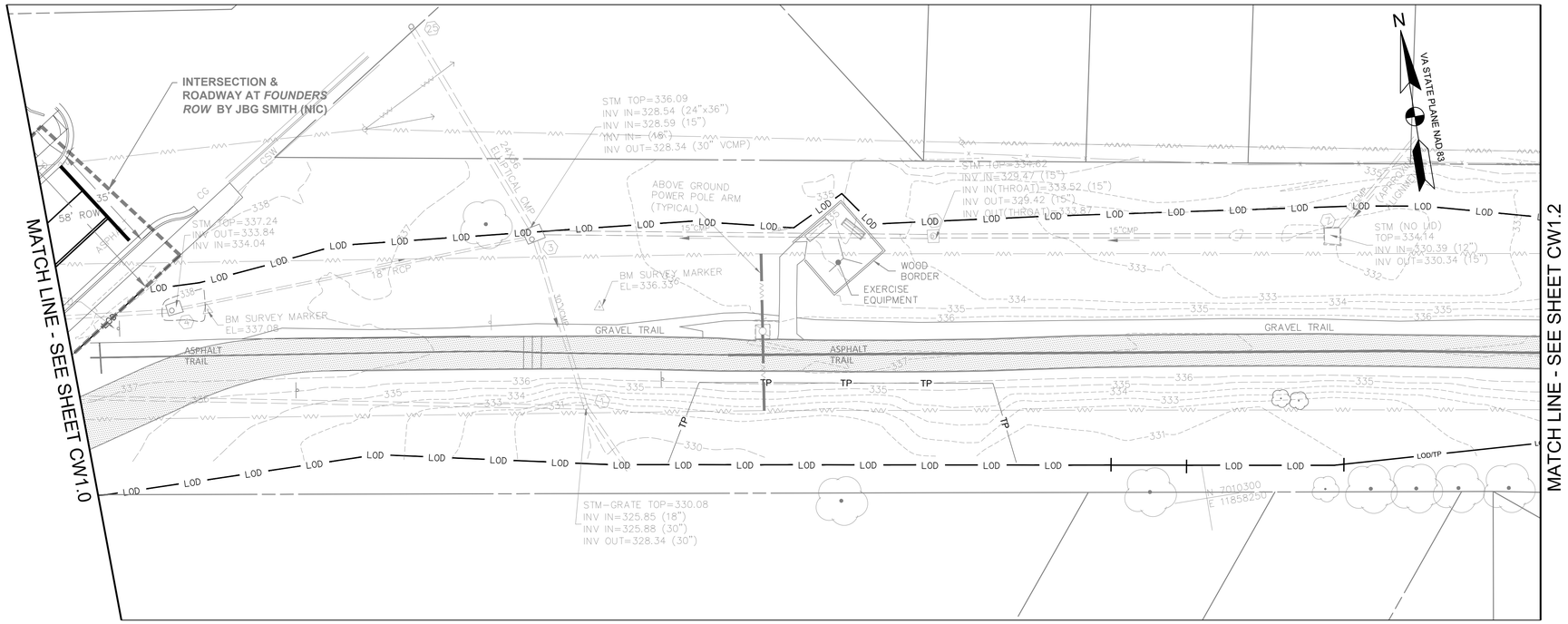
100% DESIGN

SHEET TITLE

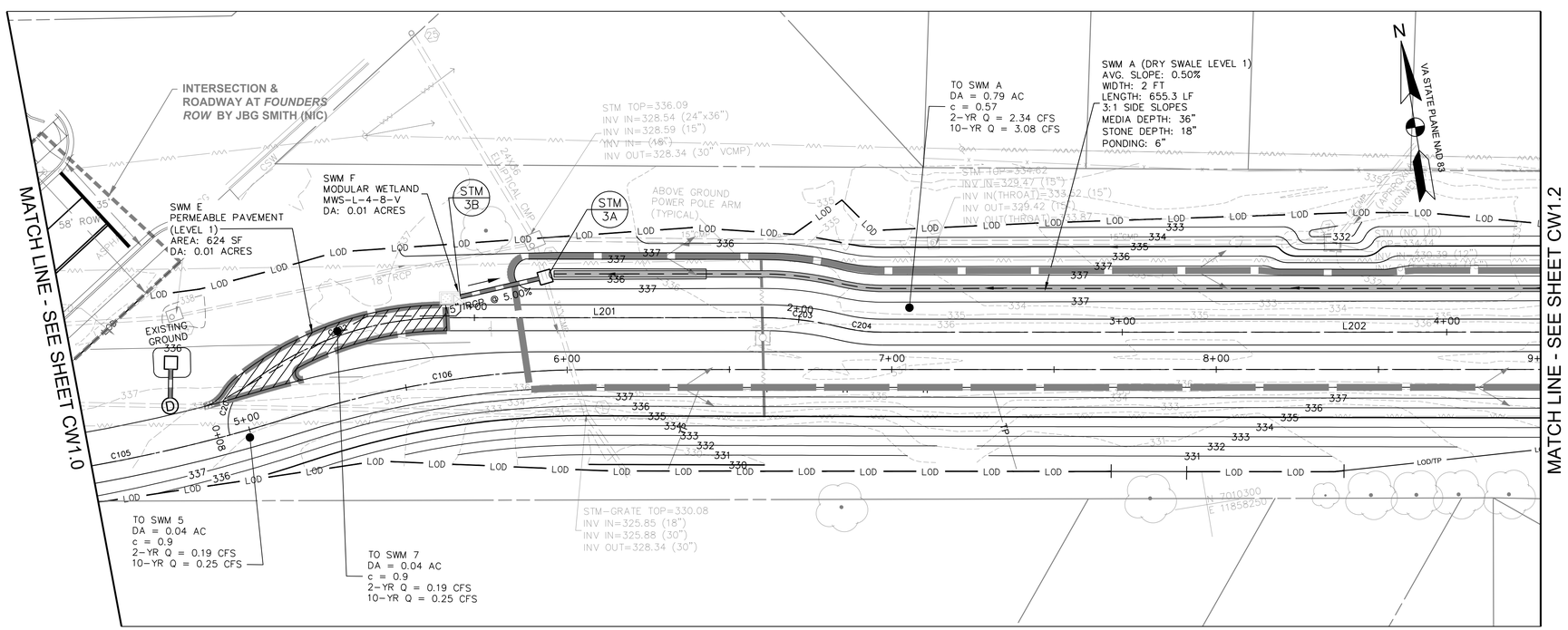
STORMWATER MANAGEMENT PLAN

SHEET

CW1.0



PRE-DEVELOPMENT
SCALE: 1"=20'



POST-DEVELOPMENT / SWM PLANS
SCALE: 1"=20'

STORMWATER MANAGEMENT LEGEND

- PROPERTY BOUNDARY
- LOD — LIMIT OF DISTURBANCE
- DRAINAGE DIVIDE
- 340 — PROPOSED MAJOR CONTOUR
- 339 — PROPOSED MINOR CONTOUR
- PERMEABLE PAVEMENT
- DRY SWALE
- CHECK DAM
- PROP. STORM DRAIN PIPE
- 4" PERF. PVC SCHD 40 PIPE
- B-7 — BORING TEST LOCATION
- IT-7 — INFILTRATION TEST LOCATION

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

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03/09/2022
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"I, HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED CERTIFIED LANDSCAPE ARCHITECT UNDER THE LAWS OF THE STATE OF VIRGINIA, LICENSE NO. 1342, EXPIRATION DATE 06/30/2021."

PROJECT TITLE
EXPANSION OF THE W&OD TRAIL
FALLS CHURCH, VA
UPC 113612

REVISIONS

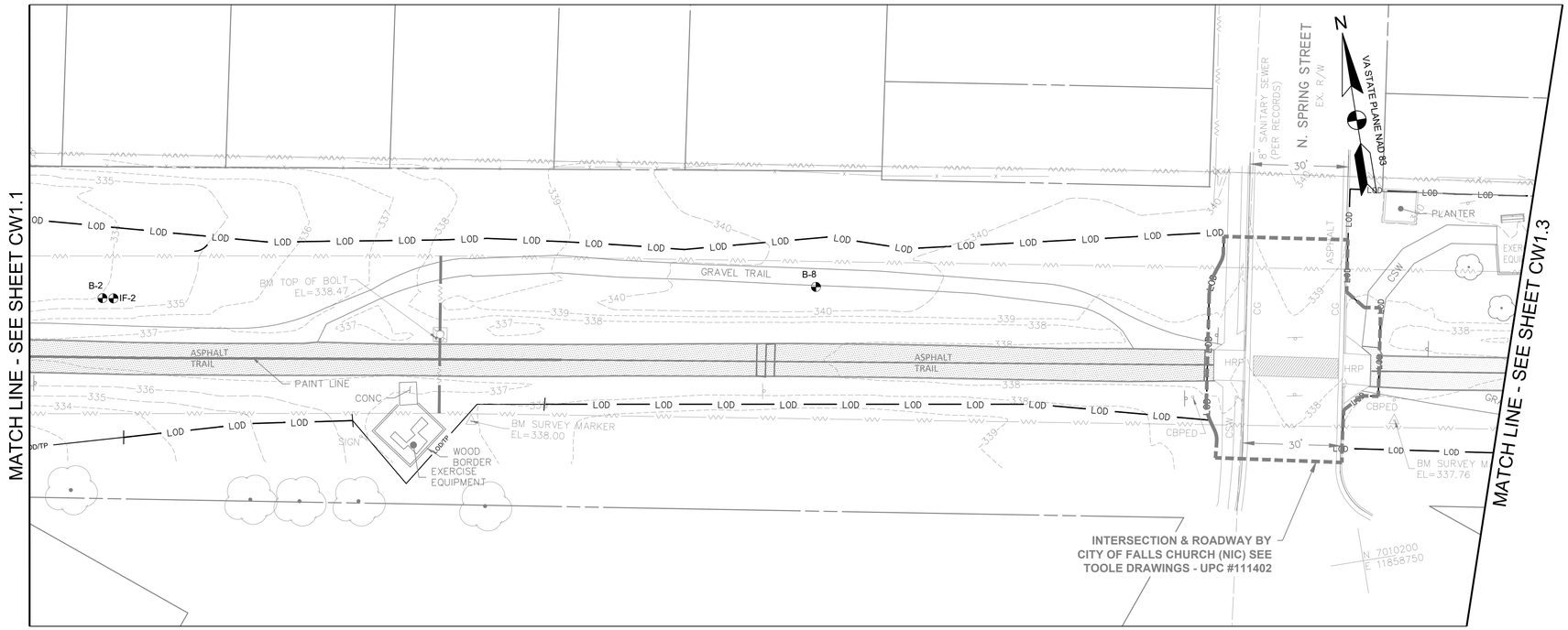
MARK	DATE	DESCRIPTION

AMT FILE NO.	18-0367
DATE:	3/2020
SCALE:	1"=20'
DESIGNED BY:	AMT
DRAWN BY:	AMT
CHECKED BY:	AMT

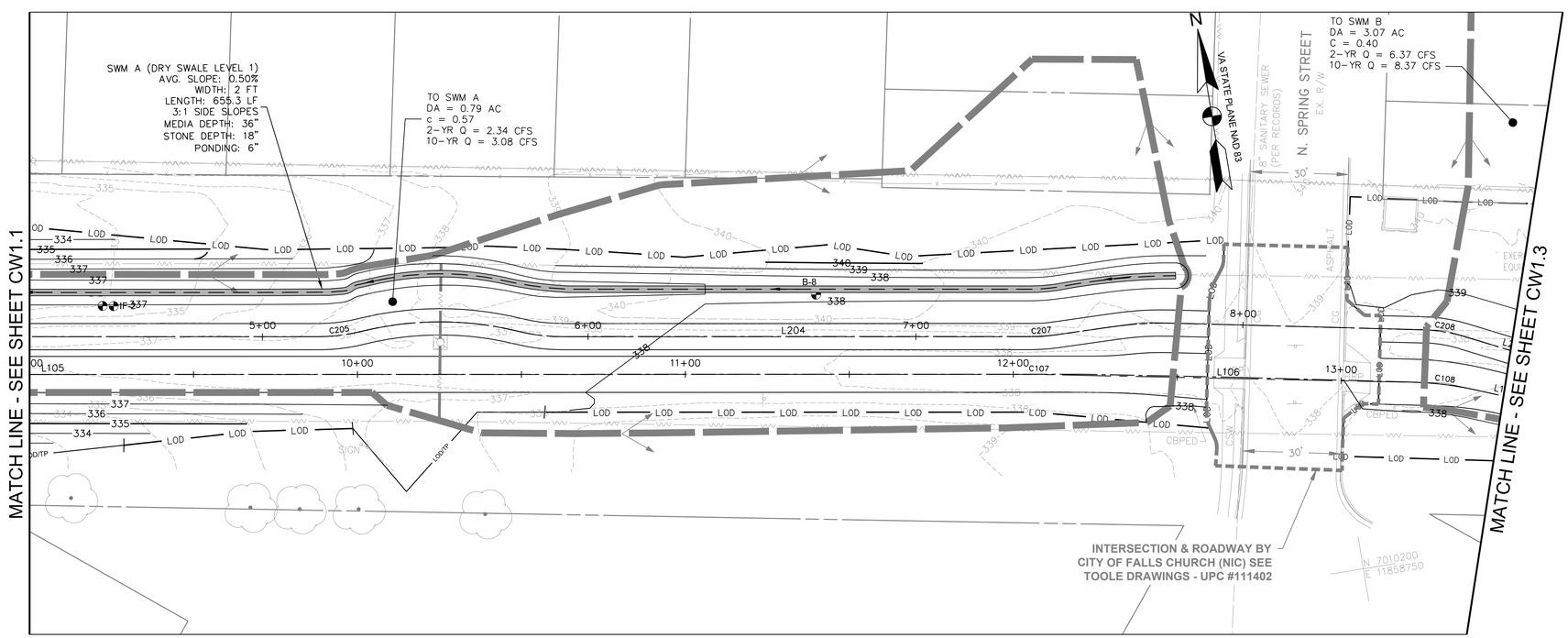
100% DESIGN

SHEET TITLE
STORMWATER MANAGEMENT PLAN

SHEET
CW1.1



PRE-DEVELOPMENT
SCALE: 1"=20'



POST-DEVELOPMENT / SWM PLANS
SCALE: 1"=20'

STORMWATER MANAGEMENT LEGEND

- PROPERTY BOUNDARY
- LOD — LIMIT OF DISTURBANCE
- DRAINAGE DIVIDE
- 340 — PROPOSED MAJOR CONTOUR
- 339 — PROPOSED MINOR CONTOUR
- PERMEABLE PAVEMENT
- DRY SWALE
- CHECK DAM
- PROP. STORM DRAIN PIPE
- 4" PERF. PVC SCHD 40 PIPE
- B-7 — BORING TEST LOCATION
- IT-7 — INFILTRATION TEST LOCATION

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

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PROJECT TITLE
EXPANSION OF THE W&OD TRAIL
FALLS CHURCH, VA
UPC 113612

REVISIONS

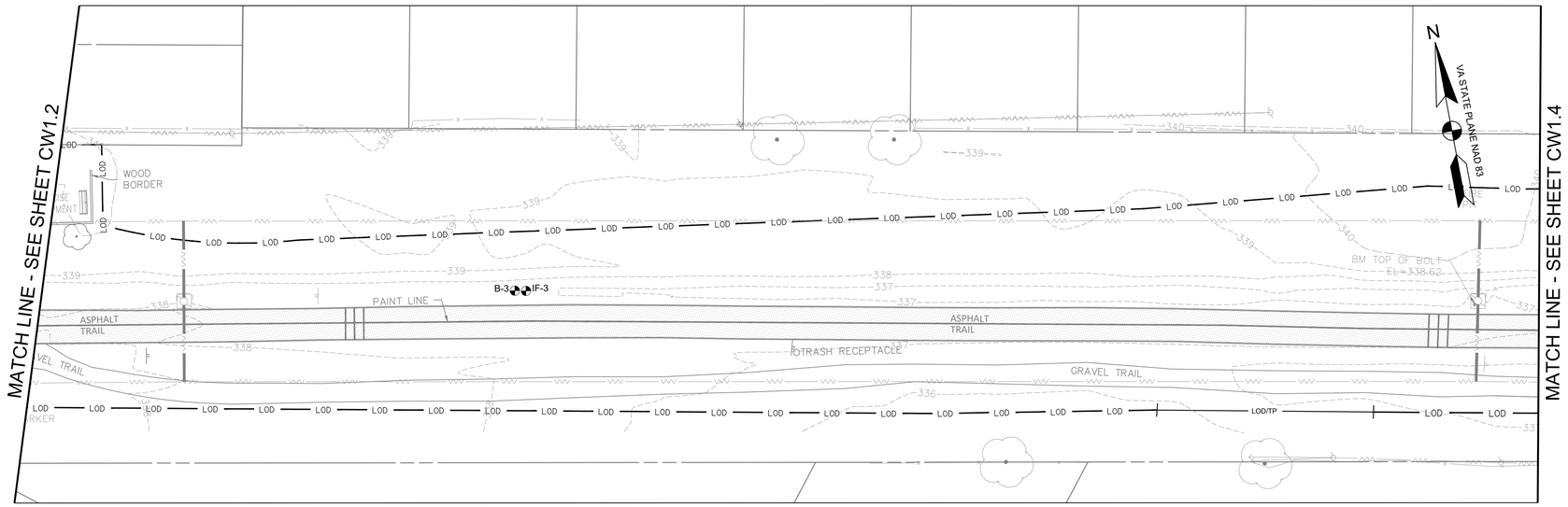
MARK	DATE	DESCRIPTION

AMT FILE NO.	18-0367
DATE:	3/2020
SCALE:	1"=20'
DESIGNED BY:	AMT
DRAWN BY:	AMT
CHECKED BY:	AMT

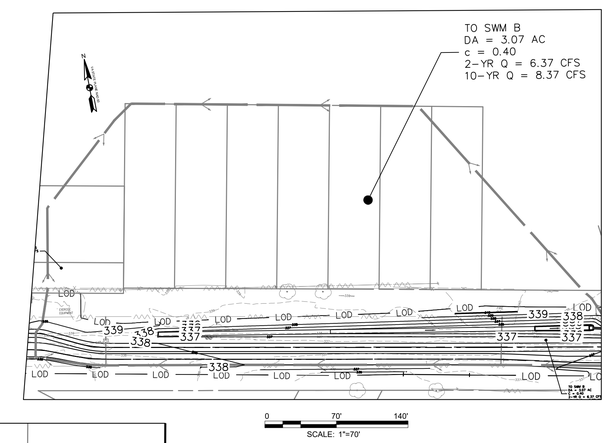
100% DESIGN

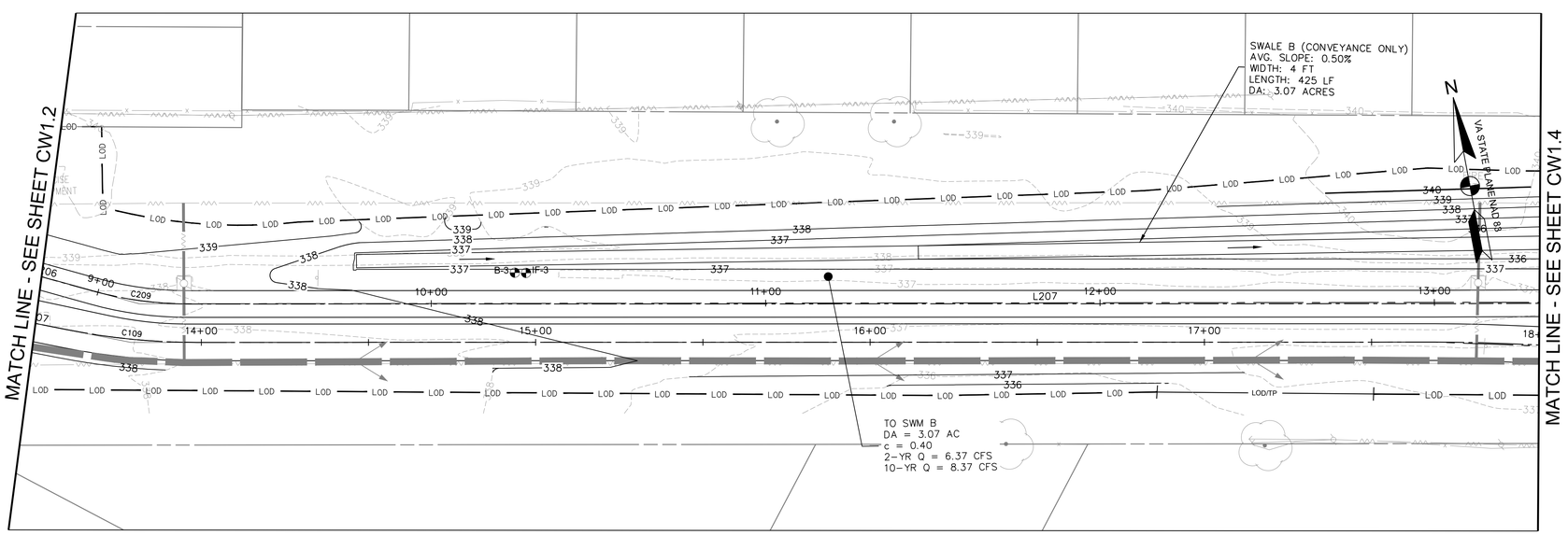
SHEET TITLE
STORMWATER MANAGEMENT PLAN

SHEET
CW1.2



PRE-DEVELOPMENT
SCALE: 1"=20'





POST-DEVELOPMENT / SWM PLANS
SCALE: 1"=20'

STORMWATER MANAGEMENT LEGEND

	BORING TEST LOCATION
LOD	LIMIT OF DISTURBANCE
	DRAINAGE DIVIDE
340	PROPOSED MAJOR CONTOUR
339	PROPOSED MINOR CONTOUR
	PERMEABLE PAVEMENT
	DRY SWALE
	CHECK DAM
	PROP. STORM DRAIN PIPE
	4" PERF. PVC SCHD 40 PIPE
	PROPERTY BOUNDARY
B-7	INFILTRATION TEST LOCATION
IT-7	

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

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PROJECT TITLE
EXPANSION OF THE W&OD TRAIL
FALLS CHURCH, VA
UPC 113612

REVISIONS

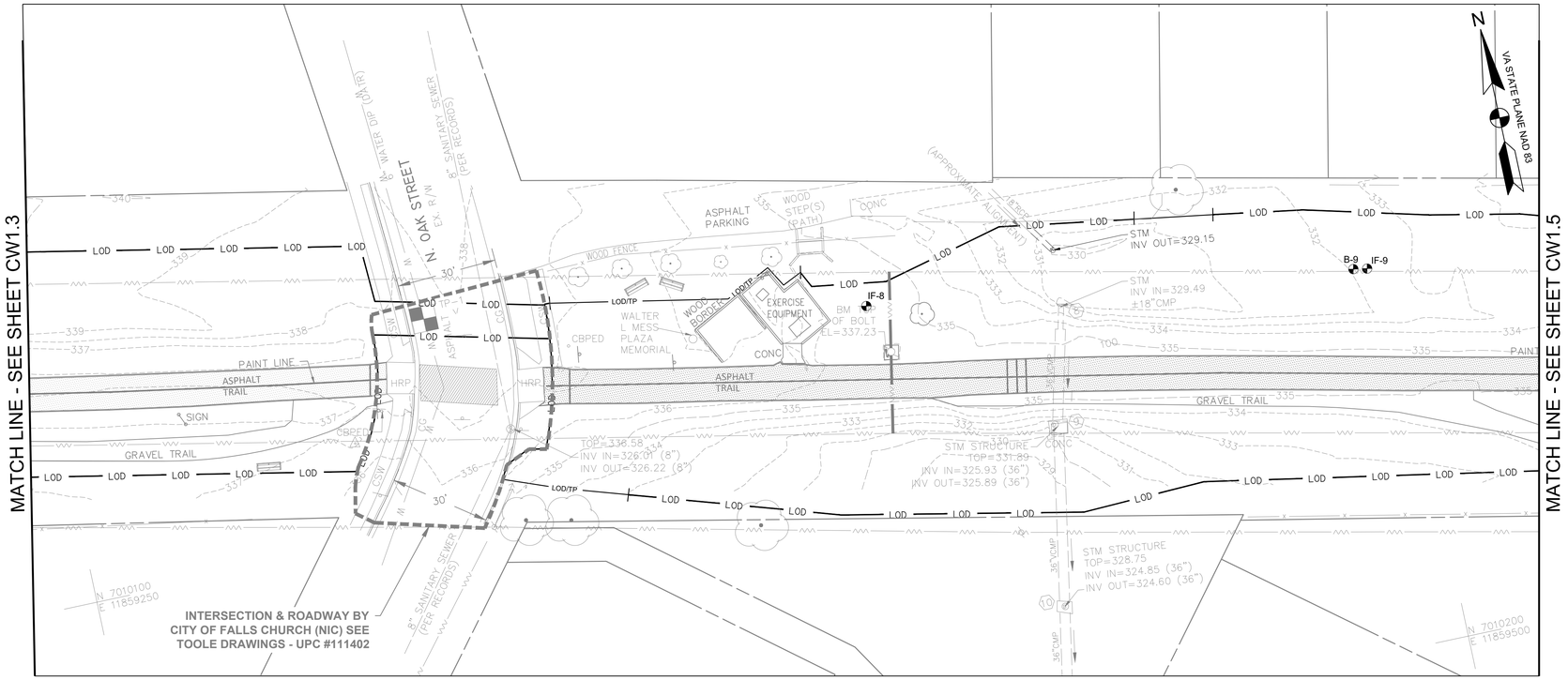
MARK	DATE	DESCRIPTION

AMT FILE NO.	18-0367
DATE:	3/2020
SCALE:	1"=20'
DESIGNED BY:	AMT
DRAWN BY:	AMT
CHECKED BY:	AMT

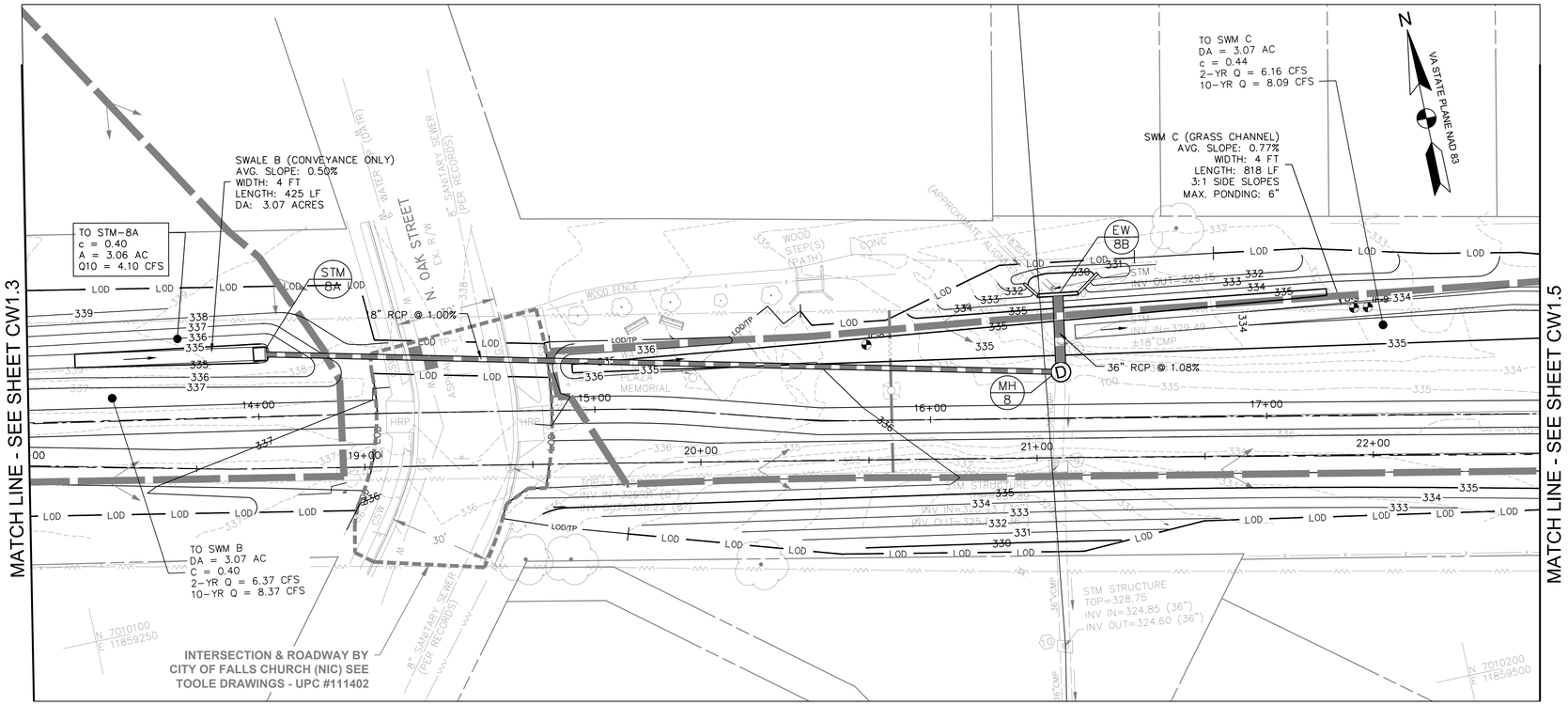
100% DESIGN

SHEET TITLE
STORMWATER MANAGEMENT PLAN

SHEET
CW1.3



PRE-DEVELOPMENT
SCALE: 1"=20'



POST-DEVELOPMENT / SWM PLANS
SCALE: 1"=20'

STORMWATER MANAGEMENT LEGEND

- PROPERTY BOUNDARY
- LOD — LIMIT OF DISTURBANCE
- DRAINAGE DIVIDE
- 340 — PROPOSED MAJOR CONTOUR
- 339 — PROPOSED MINOR CONTOUR
- PERMEABLE PAVEMENT
- DRY SWALE
- CHECK DAM
- PROP. STORM DRAIN PIPE
- 4" PERF. PVC SCHD 40 PIPE
- B-7 — BORING TEST LOCATION
- IT-7 — INFILTRATION TEST LOCATION

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

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PROJECT TITLE
EXPANSION OF THE W&OD TRAIL
FALLS CHURCH, VA
UPC 113612

REVISIONS

MARK	DATE	DESCRIPTION

AMT FILE NO.	18-0367
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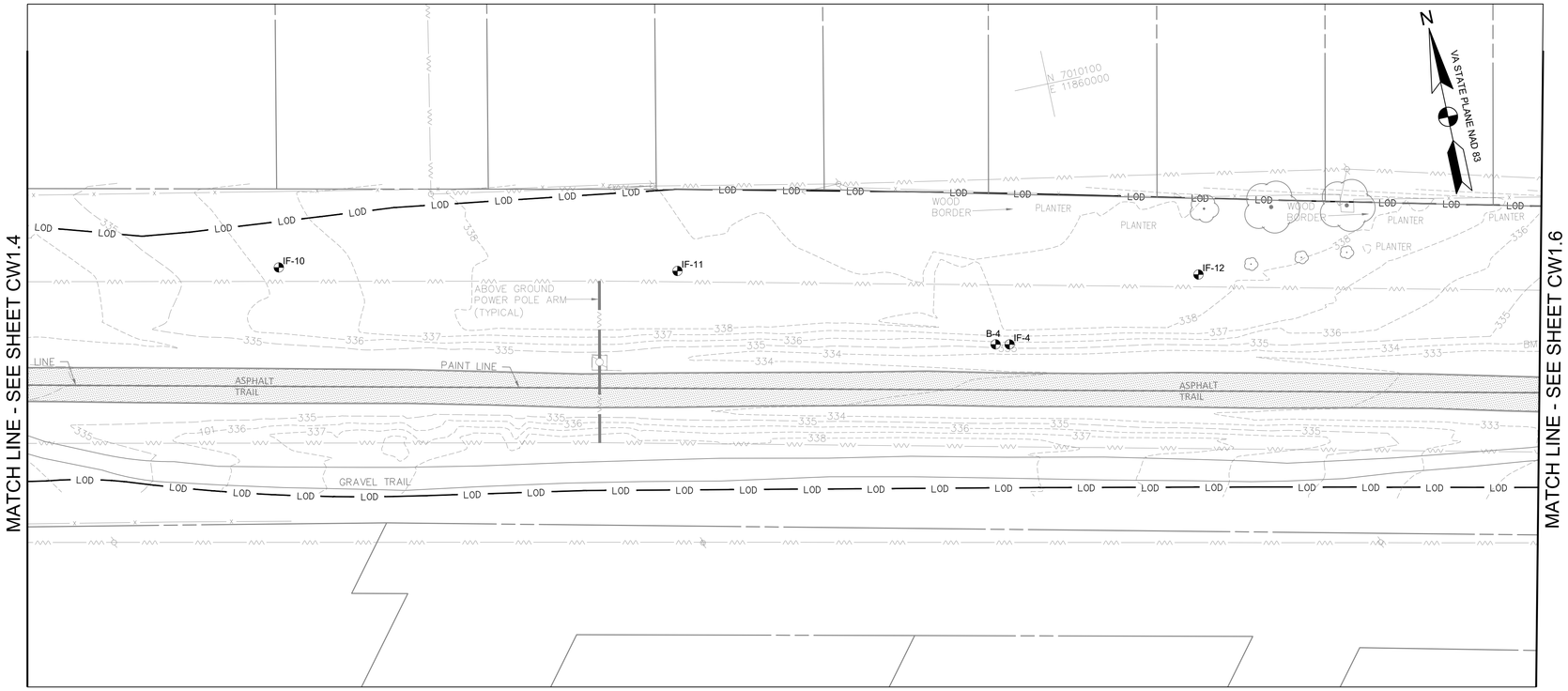
SCALE:	1"=20'
DESIGNED BY:	AMT
DRAWN BY:	AMT
CHECKED BY:	AMT

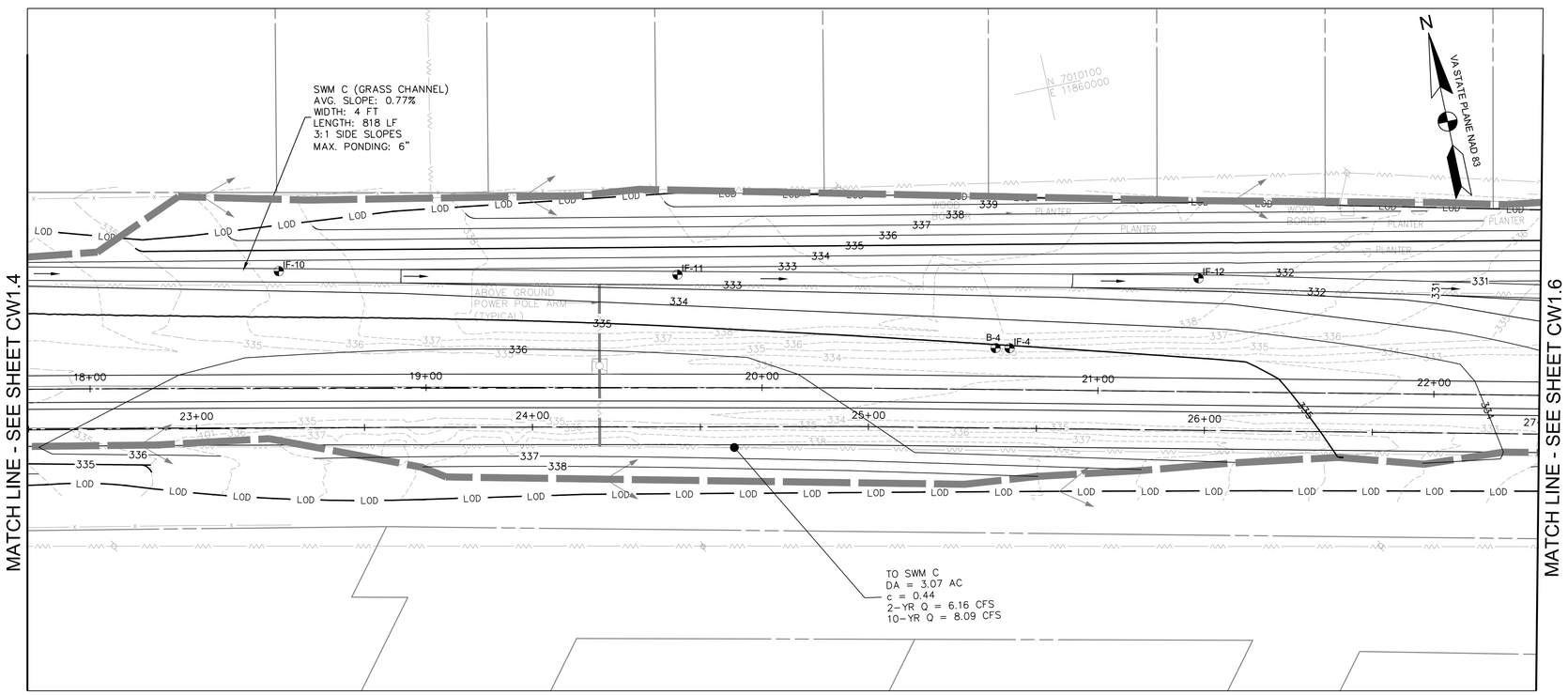
100% DESIGN

SHEET TITLE
STORMWATER MANAGEMENT PLAN

SHEET
CW1.4
69 OF 108



PRE-DEVELOPMENT
SCALE: 1"=20'



POST-DEVELOPMENT / SWM PLANS
SCALE: 1"=20'

STORMWATER MANAGEMENT LEGEND

- PROPERTY BOUNDARY
- LOD — LIMIT OF DISTURBANCE
- DRAINAGE DIVIDE
- 340 — PROPOSED MAJOR CONTOUR
- 339 — PROPOSED MINOR CONTOUR
- PERMEABLE PAVEMENT
- DRY SWALE
- CHECK DAM
- PROP. STORM DRAIN PIPE
- 4" PERF. PVC SCHD 40 PIPE
- B-7 — BORING TEST LOCATION
- IT-7 — INFILTRATION TEST LOCATION

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

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03/02/2022
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PROJECT TITLE
EXPANSION OF THE W&OD TRAIL
FALLS CHURCH, VA
UPC 113612

REVISIONS

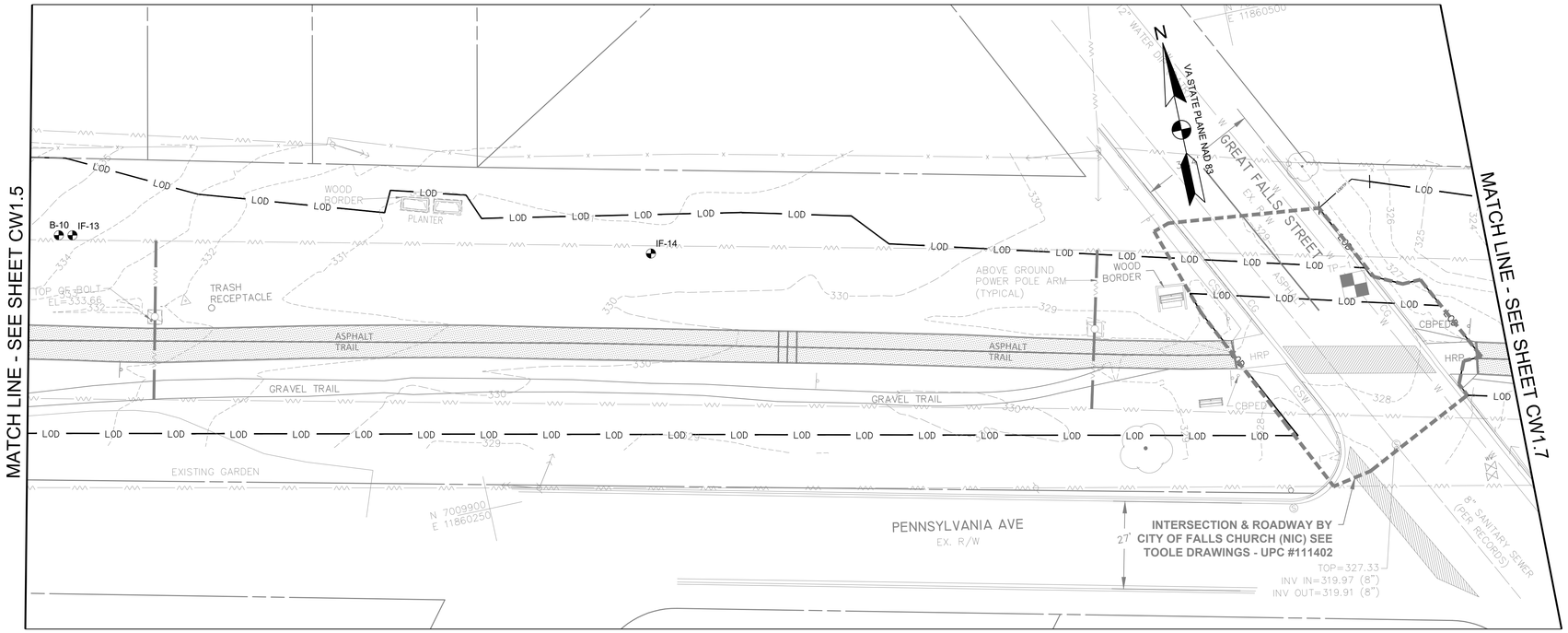
MARK	DATE	DESCRIPTION

AMT FILE NO.	18-0367
DATE:	3/2020
SCALE:	1"=20'
DESIGNED BY:	AMT
DRAWN BY:	AMT
CHECKED BY:	AMT

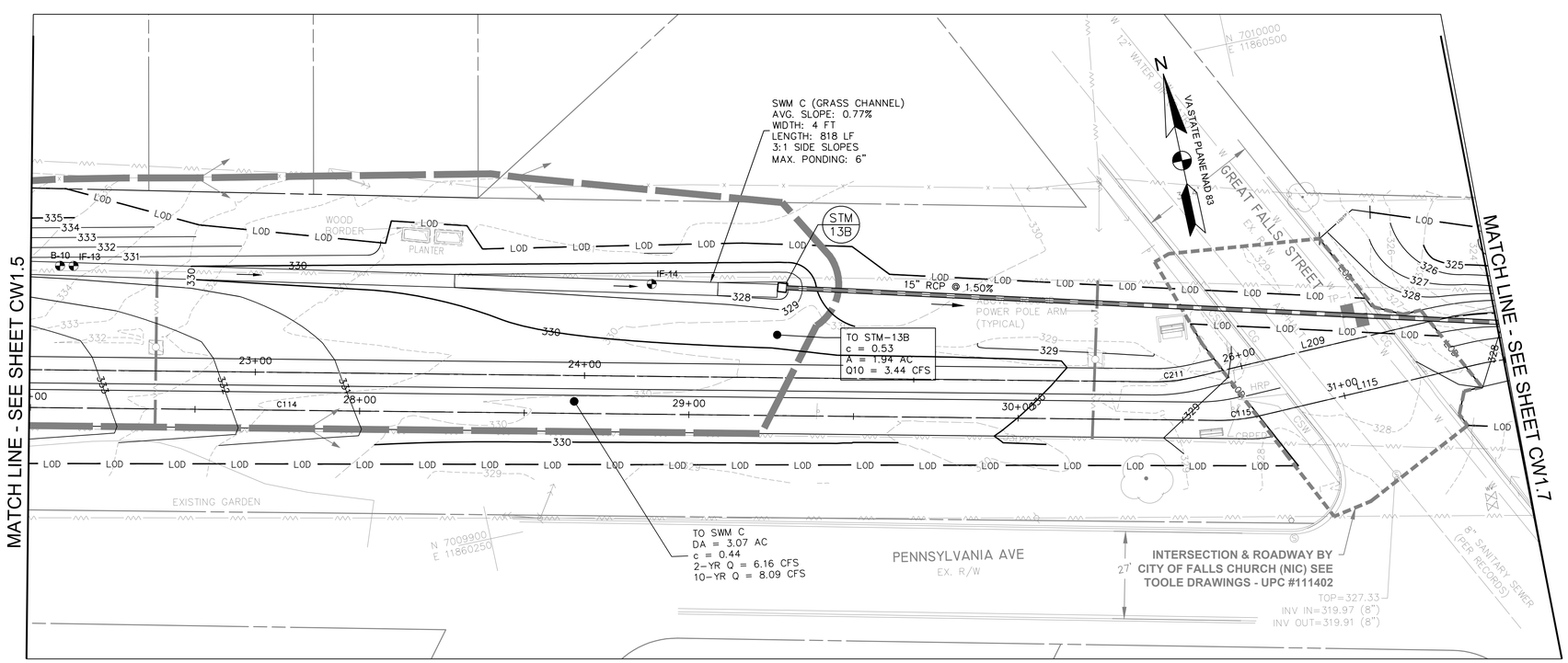
100% DESIGN

SHEET TITLE
STORMWATER MANAGEMENT PLAN

SHEET
CW1.5
70 OF 108



PRE-DEVELOPMENT
SCALE: 1"=20'



POST-DEVELOPMENT / SWM PLANS
SCALE: 1"=20'

STORMWATER MANAGEMENT LEGEND

	PROPERTY BOUNDARY
LOD	LIMIT OF DISTURBANCE
	DRAINAGE DIVIDE
340	PROPOSED MAJOR CONTOUR
339	PROPOSED MINOR CONTOUR
	PERMEABLE PAVEMENT
	DRY SWALE
	CHECK DAM
	PROP. STORM DRAIN PIPE
	4" PERF. PVC SCHD 40 PIPE
B-7	BORING TEST LOCATION
IT-7	INFILTRATION TEST LOCATION

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

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PROJECT TITLE
EXPANSION OF THE W&OD TRAIL
FALLS CHURCH, VA
UPC 113612

REVISIONS

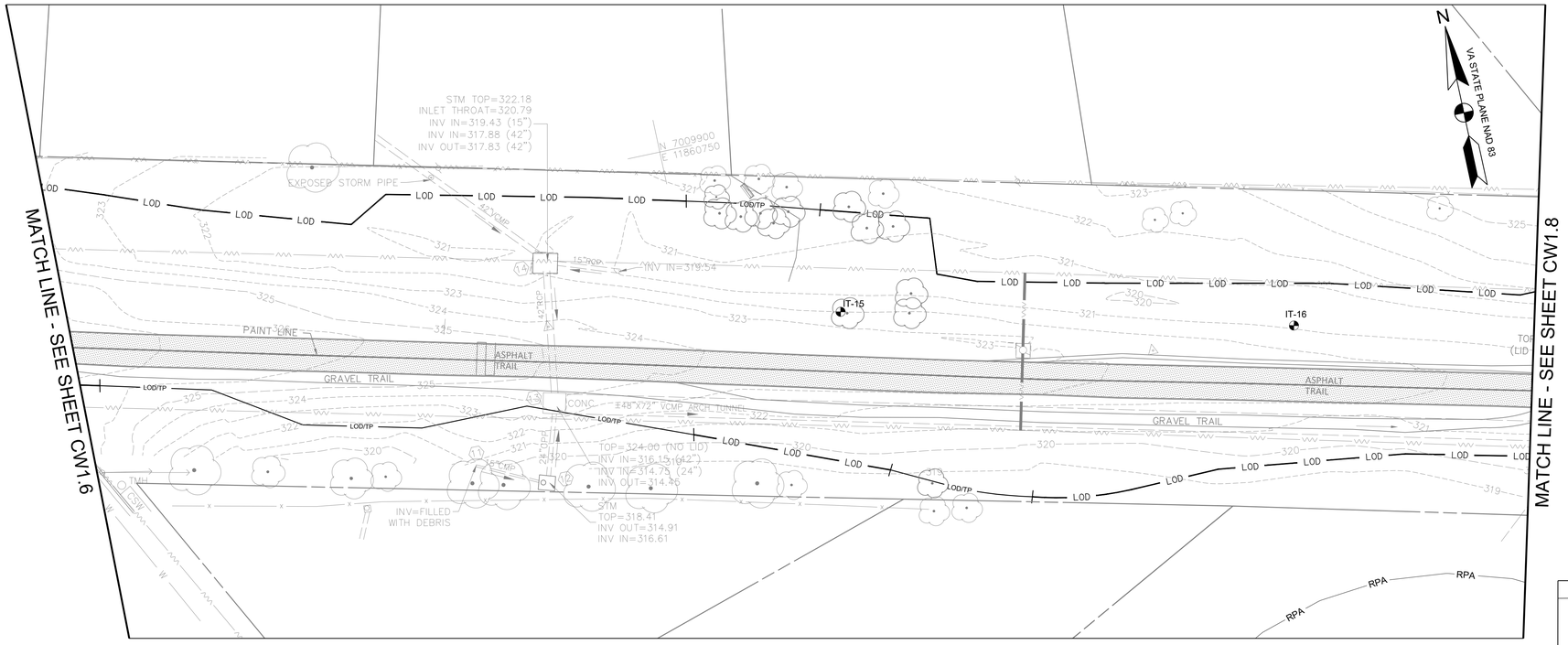
MARK	DATE	DESCRIPTION

AMT FILE NO.	18-0367
DATE:	3/2020
SCALE:	1"=20'
DESIGNED BY:	AMT
DRAWN BY:	AMT
CHECKED BY:	AMT

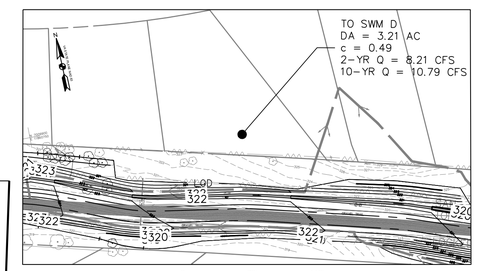
100% DESIGN

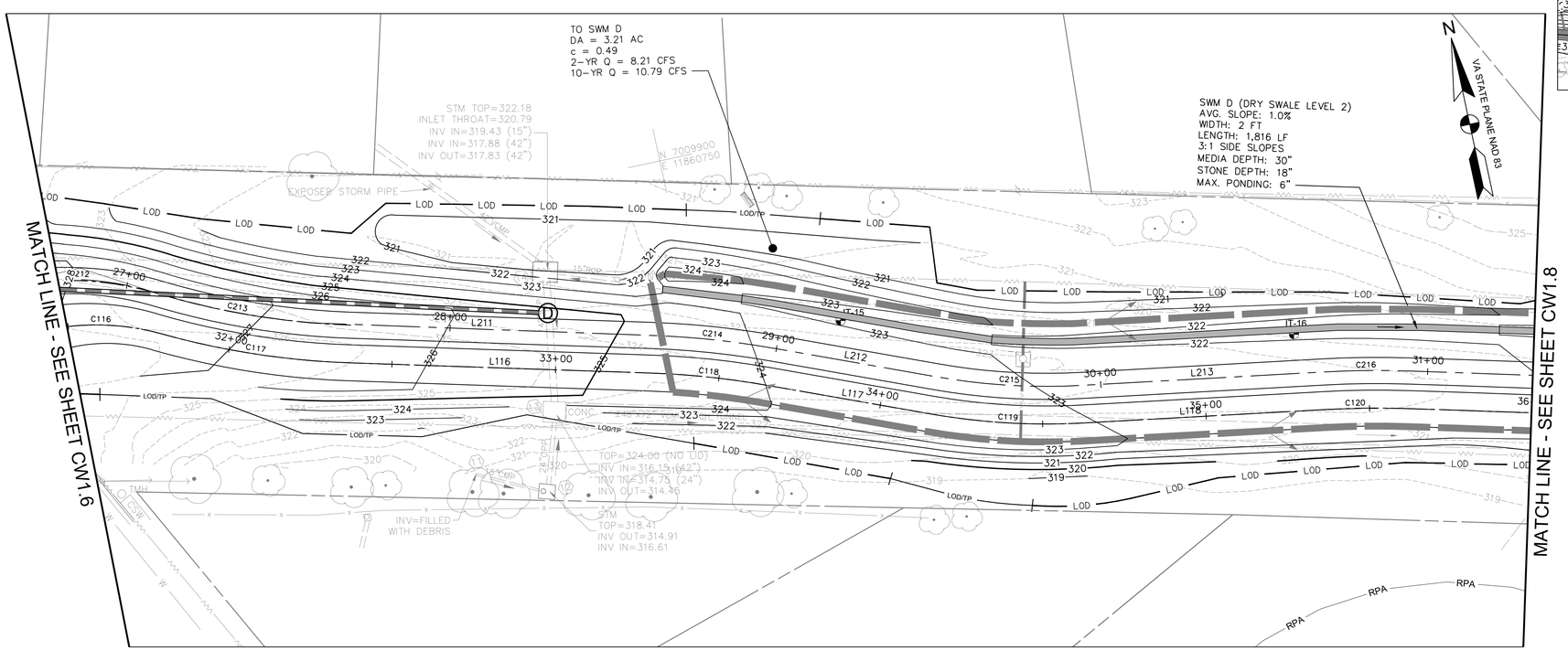
SHEET TITLE
STORMWATER MANAGEMENT PLAN

SHEET
CW1.6



PRE-DEVELOPMENT
SCALE: 1"=20'





POST-DEVELOPMENT / SWM PLANS
SCALE: 1"=20'

STORMWATER MANAGEMENT LEGEND

	PROPERTY BOUNDARY
LOD	LIMIT OF DISTURBANCE
	DRAINAGE DIVIDE
340	PROPOSED MAJOR CONTOUR
339	PROPOSED MINOR CONTOUR
	PERMEABLE PAVEMENT
	DRY SWALE
	CHECK DAM
	PROP. STORM DRAIN PIPE
	4" PERF. PVC SCHD 40 PIPE
B-7	BORING TEST LOCATION
IT-7	INFILTRATION TEST LOCATION

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

AMT
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PROJECT TITLE
EXPANSION OF THE W&OD TRAIL
FALLS CHURCH, VA
UPC 113612

REVISIONS

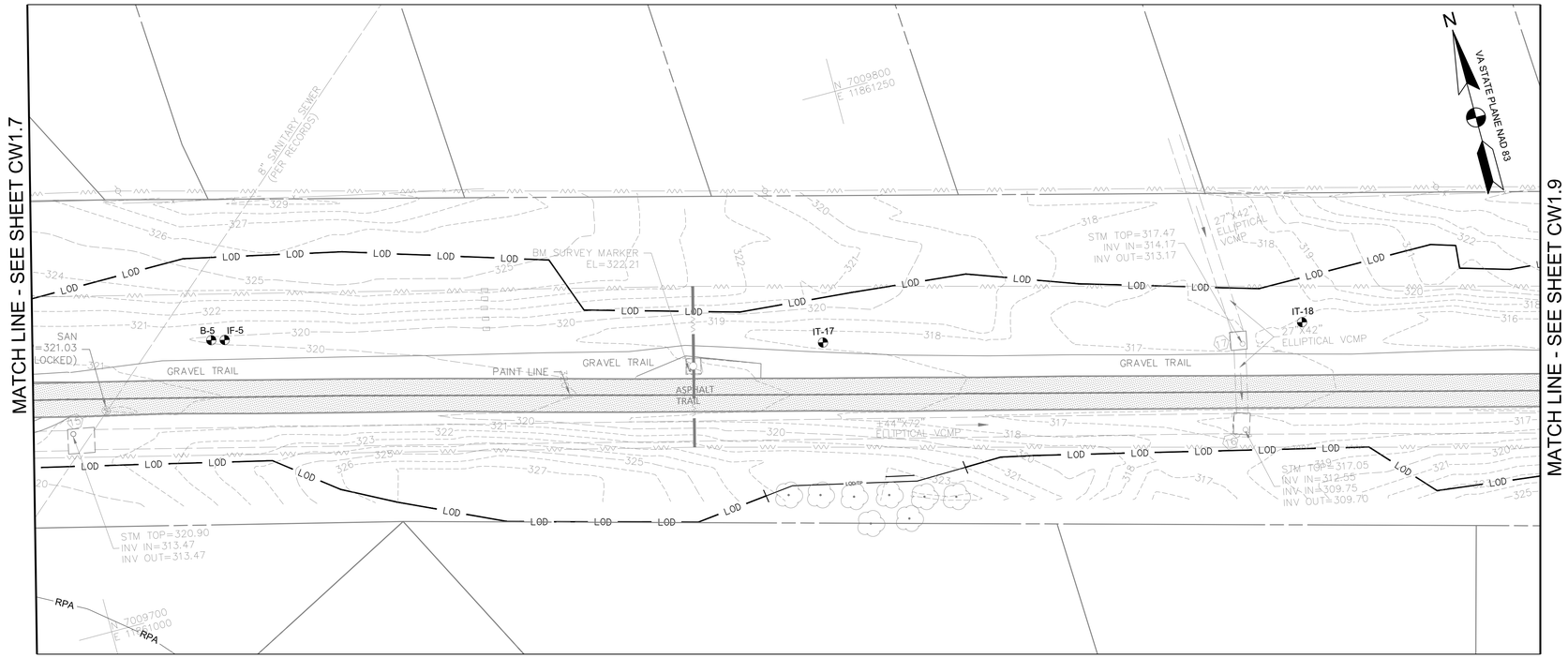
MARK	DATE	DESCRIPTION

AMT FILE NO.	18-0367
DATE:	3/2020
SCALE:	1"=20'
DESIGNED BY:	AMT
DRAWN BY:	AMT
CHECKED BY:	AMT

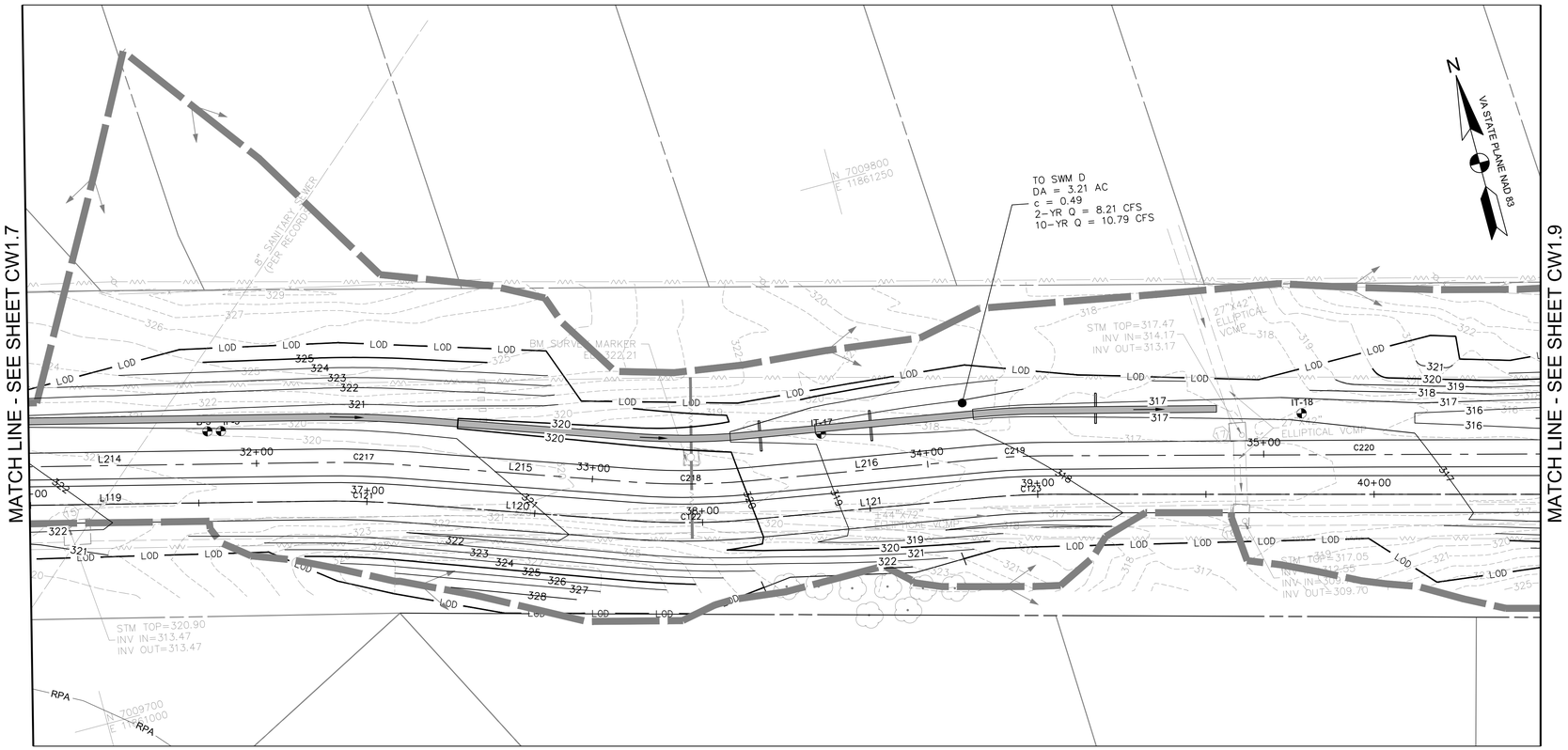
100% DESIGN

SHEET TITLE
STORMWATER MANAGEMENT PLAN

SHEET
CW1.7



PRE-DEVELOPMENT
SCALE: 1"=20'



POST-DEVELOPMENT / SWM PLANS
SCALE: 1"=20'

STORMWATER MANAGEMENT LEGEND

	PROPERTY BOUNDARY
LOD	LIMIT OF DISTURBANCE
	DRAINAGE DIVIDE
340	PROPOSED MAJOR CONTOUR
339	PROPOSED MINOR CONTOUR
	PERMEABLE PAVEMENT
	DRY SWALE
	CHECK DAM
	PROP. STORM DRAIN PIPE
	4" PERF. PVC SCHD 40 PIPE
B-7	BORING TEST LOCATION
IT-7	INFILTRATION TEST LOCATION

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

AMT
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PROJECT TITLE
EXPANSION OF THE W&OD TRAIL
FALLS CHURCH, VA
UPC 113612

REVISIONS

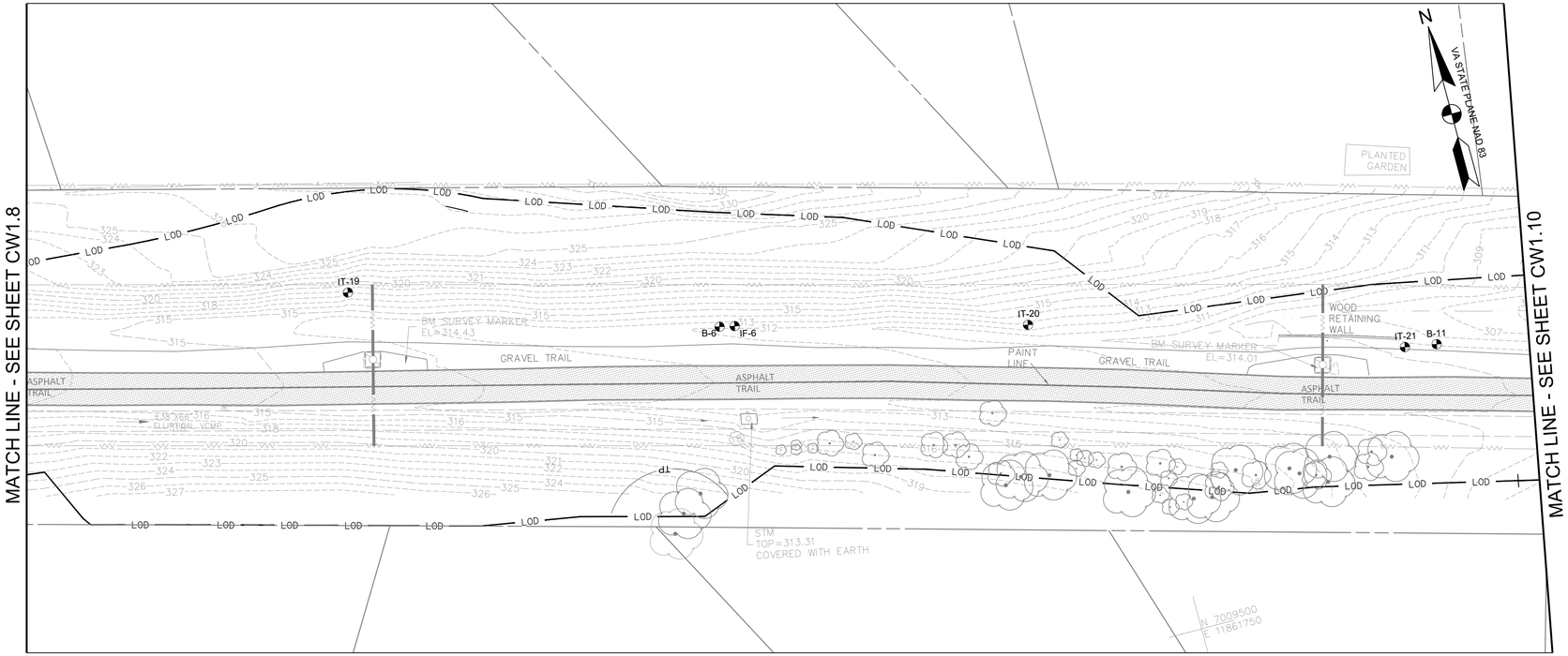
MARK	DATE	DESCRIPTION

AMT FILE NO.	18-0367
DATE:	3/2020
SCALE:	1"=20'
DESIGNED BY:	AMT
DRAWN BY:	AMT
CHECKED BY:	AMT

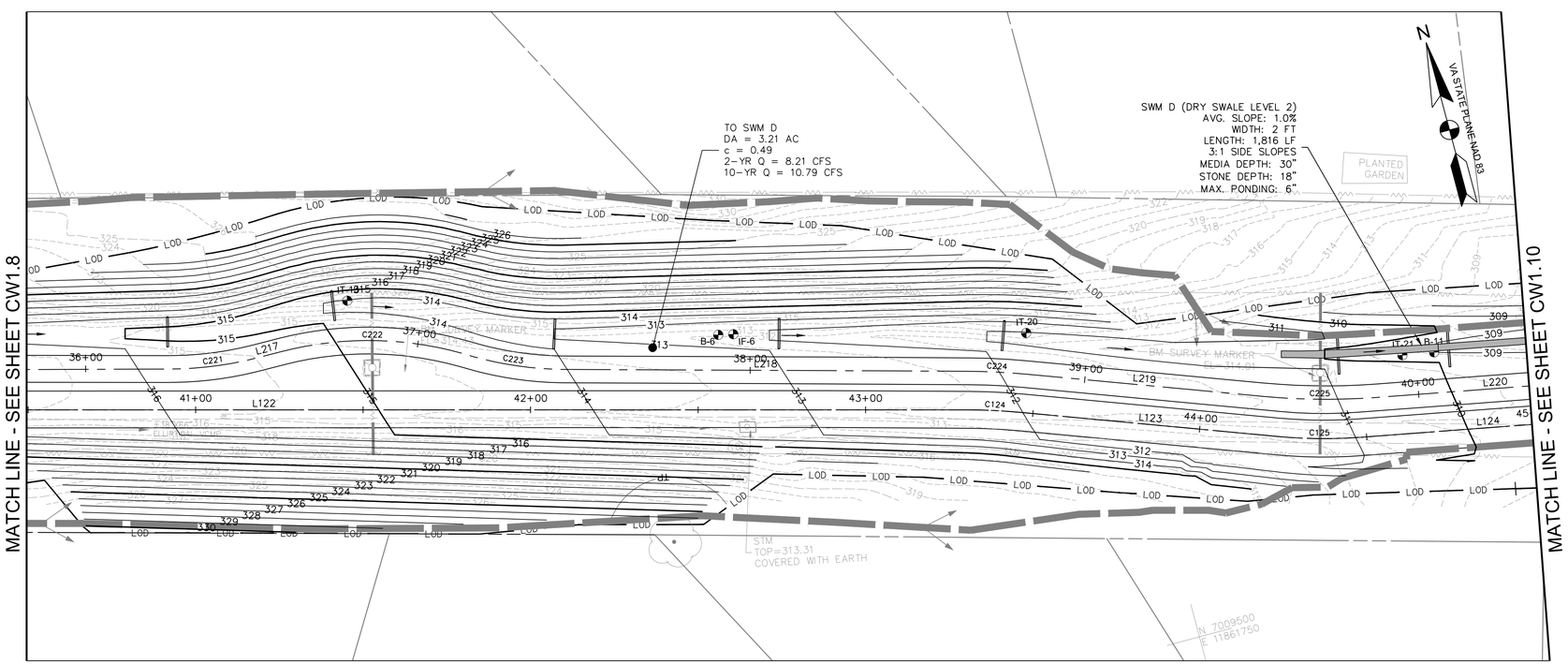
100% DESIGN

SHEET TITLE
STORMWATER MANAGEMENT PLAN

SHEET
CW1.8



PRE-DEVELOPMENT
SCALE: 1"=20'



POST-DEVELOPMENT / SWM PLANS
SCALE: 1"=20'

STORMWATER MANAGEMENT LEGEND

- PROPERTY BOUNDARY
- LOD — LIMIT OF DISTURBANCE
- DRAINAGE DIVIDE
- 340 — PROPOSED MAJOR CONTOUR
- 339 — PROPOSED MINOR CONTOUR
- PERMEABLE PAVEMENT
- DRY SWALE
- CHECK DAM
- PROP. STORM DRAIN PIPE
- 4" PERF. PVC SCHD 40 PIPE
- B-7 — BORING TEST LOCATION
- IT-7 — INFILTRATION TEST LOCATION

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

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COMMONWEALTH OF VIRGINIA
J. KEITH SINCLAIR, JR.
Lic. No. 11195
03/02/2022
PROFESSIONAL ENGINEER

REGISTRATION STAMP

NOT FOR CONSTRUCTION

PROFESSIONAL CERTIFICATION
"I, HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED CERTIFIED LANDSCAPE ARCHITECT UNDER THE LAWS OF THE STATE OF VIRGINIA; LICENSE NO. 1542, EXPIRATION DATE 06/30/2021."

PROJECT TITLE
EXPANSION OF THE W&OD TRAIL
FALLS CHURCH, VA
UPC 113612

REVISIONS

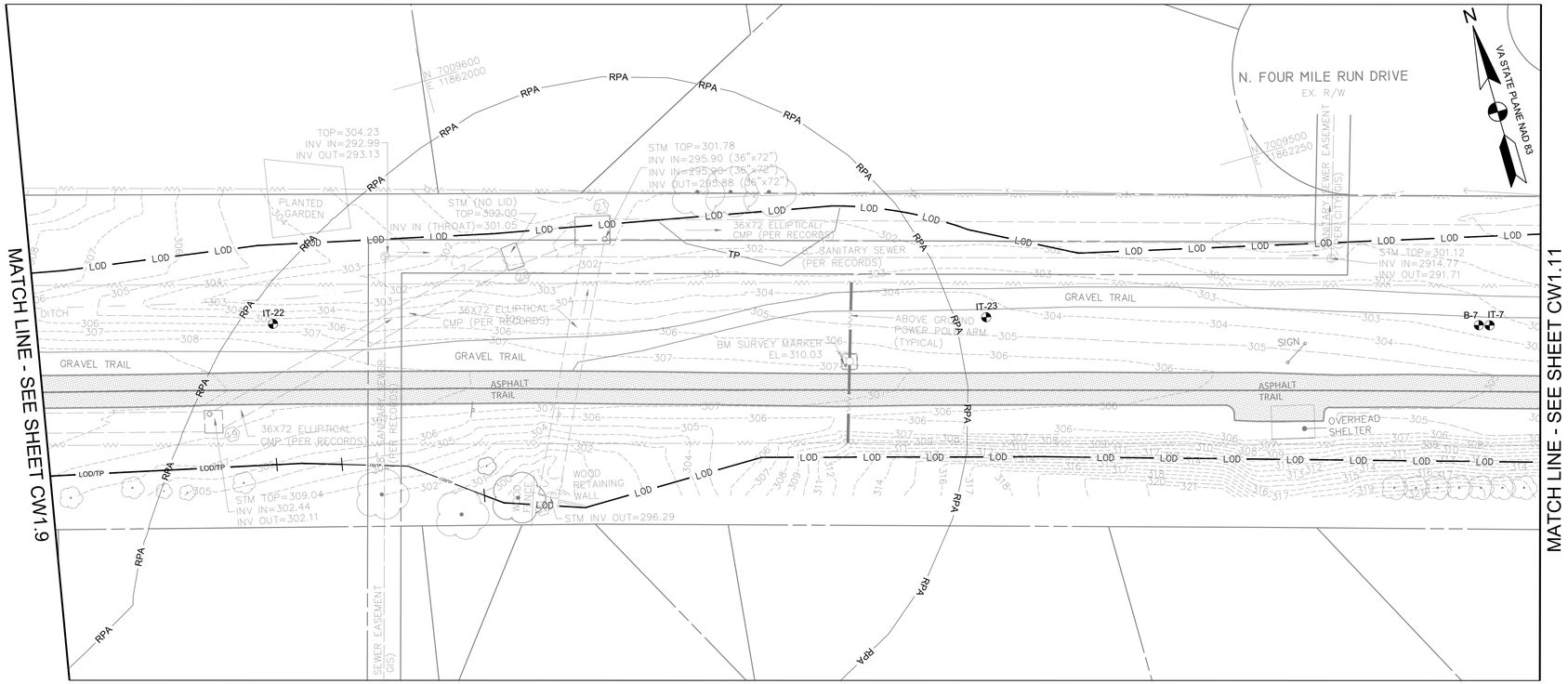
MARK	DATE	DESCRIPTION

AMT FILE NO.	18-0367
DATE:	3/2020
SCALE:	1"=20'
DESIGNED BY:	AMT
DRAWN BY:	AMT
CHECKED BY:	AMT

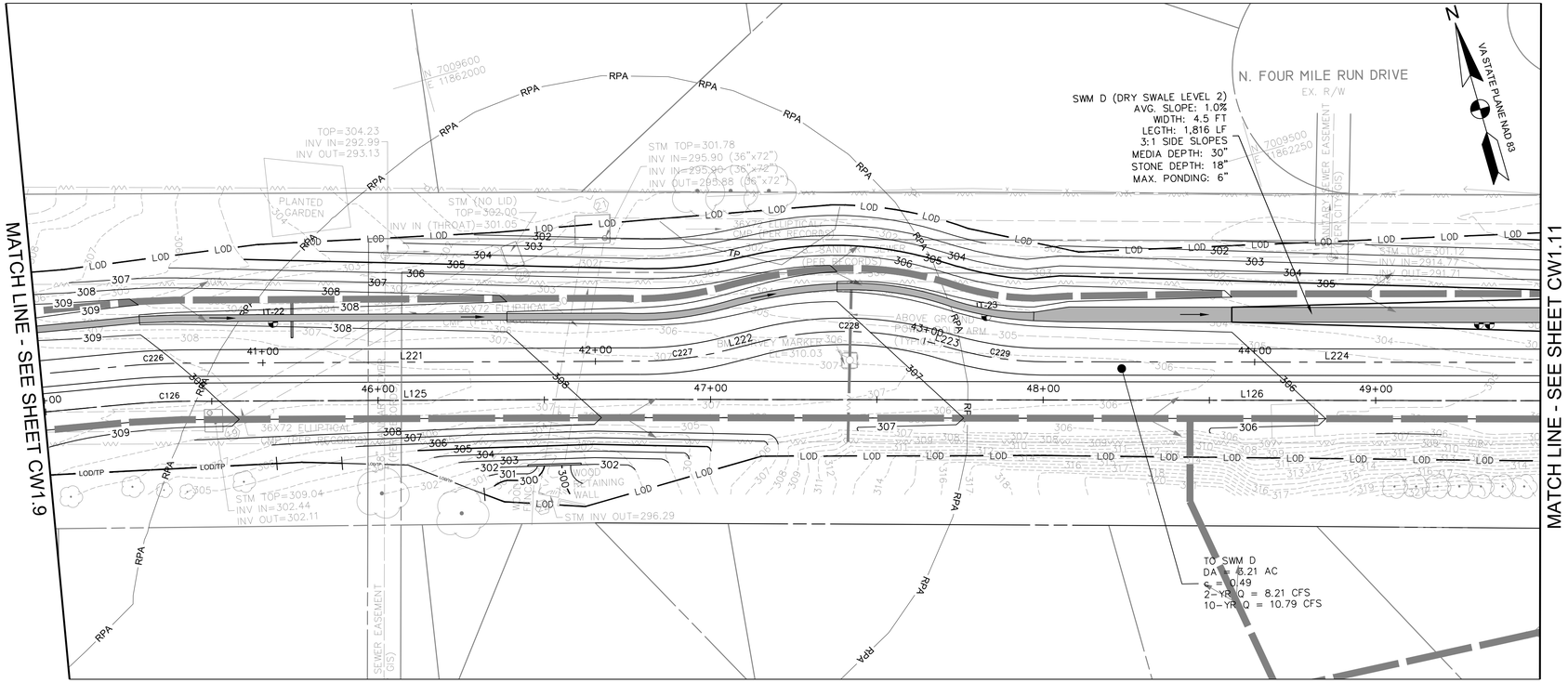
100% DESIGN

SHEET TITLE
STORMWATER MANAGEMENT PLAN

SHEET
CW1.9



PRE-DEVELOPMENT
SCALE: 1"=20'



POST-DEVELOPMENT / SWM PLANS
SCALE: 1"=20'

STORMWATER MANAGEMENT LEGEND

—·—·—	PROPERTY BOUNDARY
—LOD—	LIMIT OF DISTURBANCE
	DRAINAGE DIVIDE
—340—	PROPOSED MAJOR CONTOUR
—339—	PROPOSED MINOR CONTOUR
—RPA—	RESOURCE PROTECTION AREA
	PERMEABLE PAVEMENT
	DRY SWALE
	CHECK DAM
	PROP. STORM DRAIN PIPE
— — —	4" PERF. PVC SCHD 40 PIPE
B-7	BORING TEST LOCATION
IT-7	INFILTRATION TEST LOCATION

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

AMT
A. MORTON THOMAS AND ASSOCIATES, INC.
CONSULTING ENGINEERS
800 KING FARM BLVD, FOURTH FLOOR ROCKVILLE, MD 20850
(301) 881-2545 FAX:(301) 881-0814
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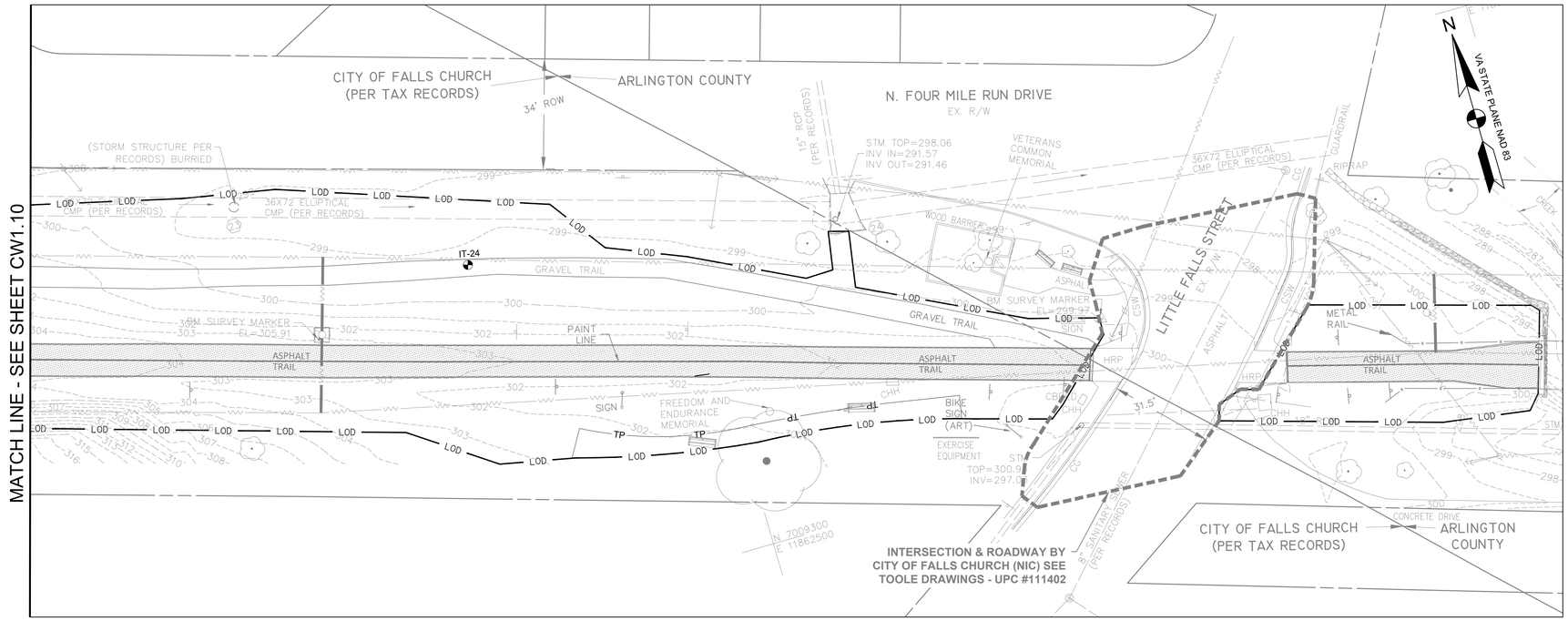
SHEET TITLE

STORMWATER MANAGEMENT PLAN

SHEET

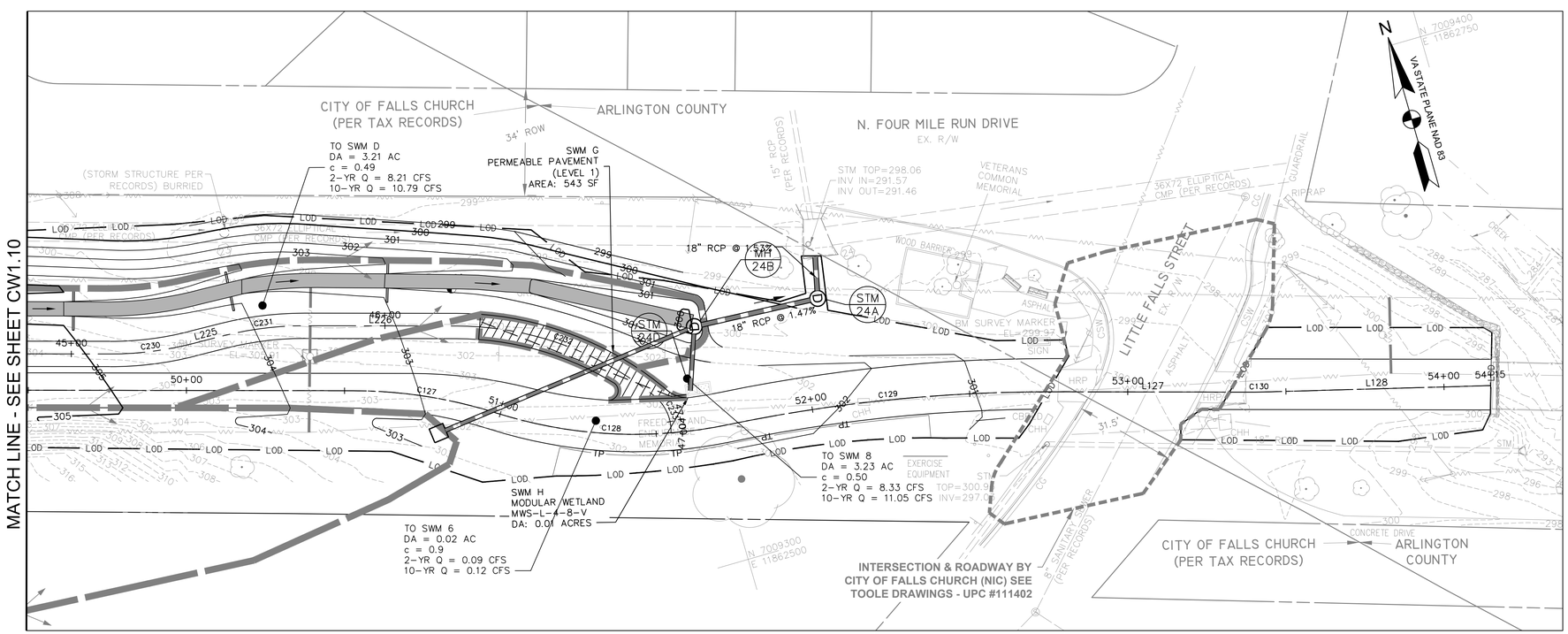
CW1.10



PRE-DEVELOPMENT
SCALE: 1"=20'

STORMWATER MANAGEMENT LEGEND

	PROPERTY BOUNDARY
LOD	LIMIT OF DISTURBANCE
	DRAINAGE DIVIDE
340	PROPOSED MAJOR CONTOUR
339	PROPOSED MINOR CONTOUR
	PERMEABLE PAVEMENT
	DRY SWALE
	CHECK DAM
	PROP. STORM DRAIN PIPE
	4" PERF. PVC SCHD 40 PIPE
B-7	BORING TEST LOCATION
IT-7	INFILTRATION TEST LOCATION



POST-DEVELOPMENT / SWM PLANS
SCALE: 1"=20'

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

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SHEET TITLE
STORMWATER MANAGEMENT PLAN

SHEET
CW1.11

WATER QUALITY NARRATIVE

THE SITE IS DEFINED BY THE TOTAL APPLICABLE AREA WITHIN THE LIMITS OF DISTURBANCE OF 7.91 ACRES. THE IMPERVIOUS AREA FOR THE EXISTING CONDITION IS 1.82 ACRES (23.0%) AND 2.45 ACRES (31.0%) FOR THE PROPOSED CONDITION. DUE TO THE INCREASE IN IMPERVIOUS AREA THERE IS A 2.52 LB/YR PHOSPHORUS LOAD REDUCTION REQUIREMENT. TO MEET CITY OF FALLS CHURCH AND STATE REQUIREMENTS FOR WATER QUALITY, THE PLANS PROPOSE ONE LEVEL 2 DRY SWALE FACILITY, ONE LEVEL 1 DRY SWALE FACILITY, ONE GRASS CHANNEL (C/D SOILS), TWO LEVEL 1 PERMEABLE PAVEMENT FACILITIES, AND TWO MANUFACTURED FILTERING TREATMENT DEVICES (BIOCLEAN MODULAR WETLAND SYSTEM). THE LEVEL 2 DRY SWALE FACILITY PROVIDES 2.09 LB/YR PHOSPHORUS REDUCTION, THE LEVEL 1 DRY SWALE FACILITY PROVIDES 0.50 LB/YR PHOSPHORUS REDUCTION, THE TWO LEVEL 1 PERMEABLE PAVEMENT FACILITIES PROVIDE 0.02 LB/YR PHOSPHORUS REDUCTION, AND THE TWO MANUFACUTURED FILTERING TREATMENT DEVICES PROVIDE 0.001 LB/YR PHOSPHORUS REDUCTION. THE TOTAL PHOSPHORUS REDUCTION PROVIDED IS 3.01 LB/YR WHICH EXCEEDS THE MINIMUM REQUIREMENT BY 0.52 LB/YR. THE FACILITIES ARE DESIGNED IN ACCORDANCE WITH THE JANUARY 2011 DRAFT VERSION 2.0 SPECS 7, 10, AND 17 OF THE VIRGINIA DEQ DESIGN

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

◎ 2011 BMP Standards and Specifications ○ 2013 Draft BMP Standards and Specifications

Project Name:	W & OD Trail Expansion
Date:	3/9/2020
Linear Development Project?	Yes

CLEAR ALL (Ctrl+Shift+M)

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

Site Information

Post-Development Project (Treatment Volume and Loads)

Enter Total Disturbed Area *(acres)* → 7.91

Maximum reduction required:	*20%*
The site's net increase in impervious cover (acres) is:	*0.63*
Post-Development TP Load Reduction for Site (lb/yr):	*2.49*

Check:
BMP Design Specifications List: 2011 Stds & Specs
Linear project? Yes
Land cover areas entered correctly? ✓
Total disturbed area entered? ✓

Pre-ReDevelopment Land Cover (acres)

	A Soils	B Soils	C Soils	D Soils	Totals
Forest/Open Space (acres) – undisturbed forest/open space					0.00
Managed Turf (acres) – disturbed, graded for yards or other turf to be				6.09	6.09
Impervious Cover (acres)				1.82	1.82
					7.91

Post-Development Land Cover (acres)

	A Soils	B Soils	C Soils	D Soils	Totals
Forest/Open Space (acres) – undisturbed, protected forest/open space or reforested					0.00
Managed Turf (acres) – disturbed, graded for yards or other turf to be				5.46	5.46
Impervious Cover (acres)				2.45	2.45
Area Check	OK.	OK.	OK.	OK.	7.91

Constants

Annual Rainfall (inches)	43
Target Rainfall Event (inches)	1.00
Total Phosphorus (TP) EMC (mg/L)	0.26
Total Nitrogen (TN) EMC (mg/L)	1.86
Target TP Load (lb/acre/yr)	0.41
Pj (unitless correction factor)	0.90

Runoff Coefficients (Rv)

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

LAND COVER SUMMARY -- PRE-REDEVELOPMENT

Land Cover Summary-Pre

Pre-ReDevelopment	Listed	Adjusted[1]
Forest/Open Space Cover (acres)	0.00	0.00
Weighted Rv(forest)	0.00	0.00
% Forest	0%	0%
Managed Turf Cover (acres)	6.09	5.46
Weighted Rv(turf)	0.25	0.25
% Managed Turf	77%	75%
Impervious Cover (acres)	1.82	1.82
Rv(impervious)	0.95	0.95
% Impervious	23%	25%
Total Site Area (acres)	**7.91**	**7.28**
Site Rv	**0.41**	**0.43**

Treatment Volume and Nutrient Load

Pre-ReDevelopment Treatment Volume (acre-ft)	0.2710	0.2578
Pre-ReDevelopment Treatment Volume (cubic feet)	11,803	11,231
Pre-ReDevelopment TP Load (lb/yr)	**7.42**	**7.06**
Pre-ReDevelopment TP Load per acre (lb/acre/yr)	0.94	0.97
Baseline TP Load (lb/yr) (0.41 lbs/acre/yr applied to pre-redevelopment area excluding pervious land proposed for new impervious cover)		2.98

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

LAND COVER SUMMARY -- POST DEVELOPMENT

Land Cover Summary-Post (Final)

Post ReDev. & New Impervious	
Forest/Open Space Cover (acres)	0.00
Weighted Rv(forest)	0.00
% Forest	0%
Managed Turf Cover (acres)	5.46
Weighted Rv (turf)	0.25
% Managed Turf	69%
Impervious Cover (acres)	2.45
Rv(impervious)	0.95
% Impervious	31%
Final Site Area (acres)	**7.91**
Final Post Dev Site Rv	**0.47**

Land Cover Summary-Post

Post-ReDevelopment	
Forest/Open Space Cover (acres)	0.00
Weighted Rv(forest)	0.00
% Forest	0%
Managed Turf Cover (acres)	5.46
Weighted Rv (turf)	0.25
% Managed Turf	75%
ReDev. Impervious Cover (acres)	1.82
Rv(impervious)	0.95
% Impervious	25%
Total ReDev. Site Area (acres)	**7.28**
ReDev Site Rv	**0.43**

Land Cover Summary-Post

Post-Development New Impervious	
New Impervious Cover (acres)	0.63
Rv(impervious)	0.95

Treatment Volume and Nutrient Load

Final Post-Development Treatment Volume (acre-ft)	0.3077
Final Post-Development Treatment Volume (cubic feet)	13,404
Final Post-Development TP Load (lb/yr)	**8.42**
Final Post-Development TP Load per acre (lb/acre/yr)	1.06

Treatment Volume and Nutrient Load

Post-ReDevelopment Treatment Volume (acre-ft)	0.2578
Post-ReDevelopment Treatment Volume (cubic feet)	11,231
Post-ReDevelopment Load (TP) (lb/yr)*	**7.06**
Post-ReDevelopment TP Load per acre (lb/acre/yr)	0.97
Max. Reduction Required (Below Pre-ReDevelopment Load)	20%
TP Load Reduction Required for Redeveloped Area (lb/yr)	**1.41**

Post-Development Treatment Volume (acre-ft)	0.0499
Post-Development Treatment Volume (cubic feet)	2,173
Post-Development TP Load (lb/yr)	**1.37**
TP Load Reduction Required for New Impervious Area (lb/yr)	**1.11**

Post-Development Requirement for Site Area

TP Load Reduction Required (lb/yr)	**2.52**
Linear Project TP Load Reduction Required (lb/yr):	**2.49**

Drainage Area A

CLEAR BMP AREAS

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)				1.25	1.25	0.25
Impervious Cover (acres)				0.51	0.51	0.95
				Total:	1.76	

Total Phosphorus Available for Removal in D.A. A (lb/yr): 1.82
Post Development Treatment Volume in D.A. A (ft^3): 2,893

Stormwater Best Management Practices (RR = Runoff Reduction)

–Select from dropdown lists–

Practice	Runoff Reduction Credit (%)	Managed Turf Credit Area (acres)	Impervious Cover Credit Area (acres)	Volume from Upstream Practice (ft^3)	Runoff Reduction (ft^3)	Remaining Runoff Volume (ft^3)	Total BMP Treatment Volume (ft^3)	Phosphorus Removal Efficiency (%)	Phosphorus Load from Upstream Practices (lb)	Untreated Phosphorus Load to Practice (lb)	Phosphorus Removed By Practice (lb)	Remaining Phosphorus Load (lb)	Downstream Practice to be Employed
3. Permeable Pavement (RR)													
3.a. Permeable Pavement #1 (Spec #7)	45		0.01	0	16	19	34	25	0.00	0.02	0.01	0.01	14.b. MTD - Filtering
5. Dry Swale (RR)													
5.a. Dry Swale #2 (Spec #10)	60	0.32	0.32	0	818	923	1,539	20	0.00	0.97	0.50	0.48	
14. Manufactured Treatment Devices (no RR)													
14.b. Manufactured Treatment Device-Filtering	0			19	0	19	19	50	0.01	0.00	0.00	0.00	

Drainage Area B

CLEAR BMP AREAS

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)				0.55	0.55	0.25
Impervious Cover (acres)				0.31	0.31	0.95
				Total:	0.86	

Total Phosphorus Available for Removal in D.A. B (lb/yr): 0.99
Post Development Treatment Volume in D.A. B (ft^3): 1,568

Drainage Area C

CLEAR BMP AREAS

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)				1.38	1.38	0.25
Impervious Cover (acres)				0.57	0.57	0.95
				Total:	1.95	

Total Phosphorus Available for Removal in D.A. C (lb/yr): 2.02
Post Development Treatment Volume in D.A. C (ft^3): 3,218

Stormwater Best Management Practices (RR = Runoff Reduction)

–Select from dropdown lists–

Practice	Runoff Reduction Credit (%)	Managed Turf Credit Area (acres)	Impervious Cover Credit Area (acres)	Volume from Upstream Practice (ft^3)	Runoff Reduction (ft^3)	Remaining Runoff Volume (ft^3)	Total BMP Treatment Volume (ft^3)	Phosphorus Removal Efficiency (%)	Phosphorus Load from Upstream Practices (lb)	Untreated Phosphorus Load to Practice (lb)	Phosphorus Removed By Practice (lb)	Remaining Phosphorus Load (lb)	Downstream Practice to be Employed
4. Grass Channel (RR)													
4.b. Grass Channel C/D Soils (Spec #8)	10	1.06	0.47	0	258	2,324	2,583	15	0.00	1.62	0.38	1.24	

Drainage Area D

CLEAR BMP AREAS

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)				2.28	2.28	0.25
Impervious Cover (acres)				1.06	1.06	0.95
				Total:	3.34	

Total Phosphorus Available for Removal in D.A. D (lb/yr): 3.60
Post Development Treatment Volume in D.A. D (ft^3): 5,725

Stormwater Best Management Practices (RR = Runoff Reduction)

–Select from dropdown lists–

Practice	Runoff Reduction Credit (%)	Managed Turf Credit Area (acres)	Impervious Cover Credit Area (acres)	Volume from Upstream Practice (ft^3)	Runoff Reduction (ft^3)	Remaining Runoff Volume (ft^3)	Total BMP Treatment Volume (ft^3)	Phosphorus Removal Efficiency (%)	Phosphorus Load from Upstream Practices (lb)	Untreated Phosphorus Load to Practice (lb)	Phosphorus Removed By Practice (lb)	Remaining Phosphorus Load (lb)	Downstream Practice to be Employed
3. Permeable Pavement (RR)													
3.a. Permeable Pavement #1 (Spec #7)	45		0.01	0	16	19	34	25	0.00	0.02	0.01	0.01	14.b. MTD - Filtering
5. Dry Swale (RR)													
5.b. Dry Swale #2 (Spec #10)	60	1.67	0.83	0	2,627	1,751	4,378	40	0.00	2.75	2.09	0.66	
14. Manufactured Treatment Devices (no RR)													
14.b. Manufactured Treatment Device-Filtering	0			19	0	19	19	50	0.01	0.00	0.00	0.00	

Site Results (Water Quality Compliance)

Area Checks	D.A. A	D.A. B	D.A. C	D.A. D	D.A. E	AREA CHECK
FOREST/OPEN SPACE (ac)	0.00	0.00	0.00	0.00	0.00	OK.
IMPERVIOUS COVER (ac)	0.51	0.31	0.57	1.06	0.00	OK.
IMPERVIOUS COVER TREATED (ac)	0.33	0.00	0.47	0.84	0.00	OK.
MANAGED TURF AREA (ac)	1.25	0.55	1.38	2.28	0.00	OK.
MANAGED TURF AREA TREATED (ac)	0.48	0.00	1.06	1.67	0.00	OK.
AREA CHECK	OK.	OK.	OK.	OK.	OK.	

Site Treatment Volume (ft^3) 13,404

Runoff Reduction Volume and TP By Drainage Area

	D.A. A	D.A. B	D.A. C	D.A. D	D.A. E	TOTAL
RUNOFF REDUCTION VOLUME ACHIEVED (ft^3)	631	0	258	2,642	0	3,532
TP LOAD AVAILABLE FOR REMOVAL (lb/yr)	1.82	0.99	2.02	3.60	0.00	8.42
TP LOAD REDUCTION ACHIEVED (lb/yr)	0.52	0.00	0.38	2.11	0.00	3.01
TP LOAD REMAINING (lb/yr)	1.30	0.99	1.64	1.49	0.00	5.42
NITROGEN LOAD REDUCTION ACHIEVED (lb/yr)	3.89	0.00	3.25	14.64	0.00	21.77

Total Phosphorus

		LINEAR PROJECT:
FINAL POST-DEVELOPMENT TP LOAD (lb/yr)	--	8.42
TP LOAD REDUCTION REQUIRED (lb/yr)	--	2.49
TP LOAD REDUCTION ACHIEVED (lb/yr)	--	3.01
TP LOAD REMAINING (lb/yr):	--	5.42
REMAINING TP LOAD REDUCTION REQUIRED (lb/yr):	--	0.00

** TARGET TP REDUCTION EXCEEDED BY 0.52 LB/YEAR **

Total Nitrogen (For Information Purposes)

POST-DEVELOPMENT LOAD (lb/yr)	60.25
NITROGEN LOAD REDUCTION ACHIEVED (lb/yr)	21.77
REMAINING POST-DEVELOPMENT NITROGEN LOAD (lb/yr)	38.47

Runoff Volume and Curve Number Calculations

Enter design storm rainfall depths (in):

1-year storm	2-year storm	10-year storm
2.64	3.19	4.90

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

Drainage Area Curve Numbers and Runoff Depths*

Curve numbers (CN, CNadj) and runoff depths ($RV_{Developed}$) are computed with and without reduction practices.

Drainage Area A — Total Area (acres): 1.76; Runoff Reduction Volume (ft^3): 631

		A Soils	B Soils	C Soils	D Soils
Forest/Open Space -- undisturbed, protected forest/open space or reforested land	Area (acres)	0.00	0.00	0.00	0.00
	CN	30	55	70	77
Managed Turf -- disturbed, graded for yards or other turf to be mowed/managed	Area (acres)	0.00	0.00	0.00	1.25
	CN	39	61	74	80
Impervious Cover	Area (acres)	0.00	0.00	0.00	0.51
	CN	98	98	98	98

$CN_{(D.A. A)}$ 85

	1-year storm	2-year storm	10-year storm
$RV_{Developed}$ *(watershed-inch)* with no Runoff Reduction*	1.29	1.75	3.28
$RV_{Developed}$ *(watershed-inch)* with Runoff Reduction*	1.19	1.65	3.18
Adjusted CN*	83	84	84

*See Notes above

Drainage Area B — Total Area (acres): 0.86; Runoff Reduction Volume (ft^3): 0

		A Soils	B Soils	C Soils	D Soils
Forest/Open Space -- undisturbed, protected forest/open space or reforested land	Area (acres)	0.00	0.00	0.00	0.00
	CN	30	55	70	77
Managed Turf -- disturbed, graded for yards or other turf to be mowed/managed	Area (acres)	0.00	0.00	0.00	0.55
	CN	39	61	74	80
Impervious Cover	Area (acres)	0.00	0.00	0.00	0.31
	CN	98	98	98	98

$CN_{(D.A. B)}$ 86

	1-year storm	2-year storm	10-year storm
$RV_{Developed}$ *(watershed-inch)* with no Runoff Reduction*	1.36	1.83	3.37
$RV_{Developed}$ *(watershed-inch)* with Runoff Reduction*	1.36	1.83	3.37
Adjusted CN*	86	86	86

*See Notes above

Drainage Area C — Total Area (acres): 1.95; Runoff Reduction Volume (ft^3): 258

		A Soils	B Soils	C Soils	D Soils
Forest/Open Space -- undisturbed, protected forest/open space or reforested land	Area (acres)	0.00	0.00	0.00	0.00
	CN	30	55	70	77
Managed Turf -- disturbed, graded for yards or other turf to be mowed/managed	Area (acres)	0.00	0.00	0.00	1.38
	CN	39	61	74	80
Impervious Cover	Area (acres)	0.00	0.00	0.00	0.57
	CN	98	98	98	98

$CN_{(D.A. C)}$ 85

	1-year storm	2-year storm	10-year storm
$RV_{Developed}$ *(watershed-inch)* with no Runoff Reduction*	1.29	1.75	3.28
$RV_{Developed}$ *(watershed-inch)* with Runoff Reduction*	1.25	1.71	3.24
Adjusted CN*	84	84	85

*See Notes above

Drainage Area D — Total Area (acres): 3.34; Runoff Reduction Volume (ft^3): 2,642

		A Soils	B Soils	C Soils	D Soils
Forest/Open Space -- undisturbed, protected forest/open space or reforested land	Area (acres)	0.00	0.00	0.00	0.00
	CN	30	55	70	77
Managed Turf -- disturbed, graded for yards or other turf to be mowed/managed	Area (acres)	0.00	0.00	0.00	2.28
	CN	39	61	74	80
Impervious Cover	Area (acres)	0.00	0.00	0.00	1.06
	CN	98	98	98	98

$CN_{(D.A. D)}$ 86

	1-year storm	2-year storm	10-year storm
$RV_{Developed}$ *(watershed-inch)* with no Runoff Reduction*	1.36	1.83	3.37
$RV_{Developed}$ *(watershed-inch)* with Runoff Reduction*	1.14	1.61	3.16
Adjusted CN*	83	83	84

*See Notes above

WATER QUANTITY NARRATIVE

WATER QUANTITY COMPLIANCE FOR THE SITE IMPROVEMENTS IS BEING ACCOMPLISHED BY THE RUNOFF REDUCTION PROVIDED BY THE LEVEL 1 DRY SWALE FACILITY, THE LEVEL 2 DRY SWALE FACILITY, THE GRASS CHANNEL, AND TWO PERMEABLE PAVEMENT FACILITIES. THE DEVELOPED SITE SHALL PROVIDE STORMWATER DETENTION CAPACITY TO SUFFICIENTLY PASS THE 2-YEAR AND 10-YEAR 24-HOUR PEAK RAINFALL EVENTS. DETENTION SIZING WAS DETERMINED UTILIZING THE ENERGY BALANCE METHOD FOR EACH OF THE PROJECT'S FOUR OUTFALL POINTS: A, B, C & D.

UTILZING THE ENERGY BALANCE SPREADSHEET, THE PRE- AND POST-DEVELOPED RUNOFF COMPUTATIONS FOR THE SITE WERE DEVELOPED TO ESTABLISH ALLOWABLE RELEASE RATES FOR EACH OUTFALL. THE 2-YEAR ALLOWABLE RELEASE RATES FOR OUTFALLS A, B, C AND D ARE: 2.71 CFS, 1.27 CFS, 3.22 CFS AND 5.43 CFS, RESPECTIVELY. THE 10-YEAR ALLOWABLE RELEASE RATES FOR OUTFALLS A, B, C AND D ARE: 6.14 CFS, 2.91 CFS, 7.02 CFS AND 16.18 CFS, RESPECTIVELY. THIS SPREADSHEET UTILIZES THE VIRGINIA RUNOFF REDUCTION ADJUSTED CURVE NUMBERS FROM THE CHANNEL AND FLOOD PROTECTION TAB, SHOWN ON THIS SHEET. THE POST-DEVELOPED PEAK FLOWS FOR THE 2-YEAR AND 10-YEAR STORM EVENTS FOR EACH WATERSHED IS LESS THAN THE ALLOWABLE RELEASE RATES, THEREFORE NO STORAGE VOLUME IS REQUIRED.

THE TREATMENT VOLUME FOR THE STORMWATER MANAGEMENT FACILITIES ARE:

- DRY SWALE (LEVEL 1) SWM A: 1,539 CF
- GRASS CHANNEL (C/D SOILS) SWM C: 0 CF
- DRY SWALE (LEVEL 2) SWM D: 4,378 CF
- PERMEABLE PAVEMENT FACILITY SWM E: 34 CF
- PERMEABLE PAVEMENT FACILITY SWM F: 34 CF
- MANUFACTURED TREATMENT DEVICE SWM G: 19 CF
- MANUFACTURED TREATMENT DEVICE SWM H: 19 CF

TOTAL TREATMENT VOLUME: 1,539 + 0 + 4,378 + 34 + 34 + 19 + 19 = 6,023 CF

TOTAL DETENTION VOLUME REQUIRED IS 0 CF

VOLUME PROVIDED WITHIN THE FACILITIES ARE:

- DRY SWALE (LEVEL 1) SWM A: 1,780 CF
- GRASS CHANNEL (C/D SOILS) SWM C: 54 CF
- DRY SWALE (LEVEL 2) SWM D: 4,474 CF
- PERMEABLE PAVEMENT FACILITY SWM E: 197 CF
- PERMEABLE PAVEMENT FACILITY SWM F: 170 CF

TOTAL PROVIDED: 6,675 CF *SEE SHEET CW5.2 FOR DETAILED FACILITY SIZING COMPUTATIONS.

CHECK: 6,675 CF > 6,023 CF

IT IS THE ENGINEER'S OPINION THAT THE IMPROVEMENTS PROPOSED WITH THIS APPLICATION WILL HAVE NO ADVERSE IMPACT TO THE ADJACENT PROPERTIES.

PER FEMA FLOODPLAIN MAP 51059C0360E, DATED JULY 16, 2004, THIS PROJECT IS OUTSIDE THE FLOODPLAIN.

THERE ARE RESOURCE PROTECTION AREAS LOCATED ON THE SUBJECT PROPERTY PER CITY OF FALLS CHURCH GIS DATA. REFER TO WQIA ON SHEET CW5.4.

WEIGHTED CURVE NUMBERS FOR PRE-DEVELOPED CONDITIONS:

OUTFALL A:
IMPERVIOUS AREA = 0.51 AC
TURF AREA = 1.25 AC
WEIGHTED CN = 85

OUTFALL B:
IMPERVIOUS AREA = 0.31 AC
TURF AREA = 0.55 AC
WEIGHTED CN = 86

OUTFALL C:
IMPERVIOUS AREA = 0.57 AC
TURF AREA = 1.38 AC
WEIGHTED CN = 85

OUTFALL D:
IMPERVIOUS AREA = 1.06 AC
TURF AREA = 2.28 AC
WEIGHTED CN = 86

SWM Water Quantity Energy Balance Worksheet - Tripps Run (DA: A)

SITE AREA (acre) 1.76

	2-year		10-year	
	PRE	POST (adjusted)	PRE	POST (adjusted)
P	3.19	3.19	4.90	4.90
CN	85	84	85	84
S=1000/CN-10	1.76	1.90	1.76	1.90
0.25	0.35	0.38	0.35	0.38
$RV=(P-0.25)^2/(P-0.25)+S$ (in.)	1.75	1.67	3.28	3.18

QPost Development <= I.F.* (Qpre-development* RVpre-development)/RVDeveloped)

I.F 0.8

CHANNEL PROTECTION (2-YEAR)		
Qpre-development (cfs)	3.20	From TR55
QPost Development (cfs)	1.94	From TR55
RVPost Development (with runoff reduction) (in.)	1.65	From RRM
Qallowable (cfs)	2.71	

FLOOD CONTROL (10-YEAR)		
Qpre-development	5.96	
QPost Development	3.65	
RVPost Development (with runoff reduction)	3.18	
Qallowable	6.14	

Qallowable/QPost Development	1.40	Fig 11.7 of DEQ Manual
Vs/Vr	0.00	
Vs	0.00	
Storage Required (CF)	0	

Qallowable/QPost Development	1.68	
Vs/Vr	0.00	
Vs	0.00	
Storage Required (CF)	0	

SWM Water Quantity Energy Balance Worksheet - Tripps Run (DA: B)

SITE AREA (acre) 0.86

	2-year		10-year	
	PRE	POST (adjusted)	PRE	POST (adjusted)
P	3.19	3.19	4.90	4.90
CN	86	86	86	86
S=1000/CN-10	1.63	1.63	1.63	1.63
0.25	0.33	0.33	0.33	0.33
$RV=(P-0.25)^2/(P-0.25)+S$ (in.)	1.83	1.83	3.37	3.37

QPost Development <= I.F.* (Qpre-development* RVpre-development)/RVDeveloped)

I.F 0.8

CHANNEL PROTECTION (2-YEAR)		
Qpre-development (cfs)	1.63	From TR55
QPost Development (cfs)	0.66	From TR55
RVPost Development (with runoff reduction) (in.)	1.83	From RRM
Qallowable (cfs)	1.30	

FLOOD CONTROL (10-YEAR)		
Qpre-development	2.98	
QPost Development	1.24	
RVPost Development (with runoff reduction)	3.37	
Qallowable	2.98	

Qallowable/QPost Development	1.97	Fig 11.7 of DEQ Manual
Vs/Vr	0.00	
Vs	0.00	
Storage Required (CF)	0	

Qallowable/QPost Development	2.41	
Vs/Vr	0.00	
Vs	0.00	
Storage Required (CF)	0	

SWM Water Quantity Energy Balance Worksheet - Four Mile Run (DA: C)

SITE AREA (acre) 1.95

	2-year		10-year	
	PRE	POST (adjusted)	PRE	POST (adjusted)
P	3.19	3.19	4.90	4.90
CN	85	84	85	85
S=1000/CN-10	1.76	1.90	1.76	1.76
0.25	0.35	0.38	0.35	0.35
$RV=(P-0.25)^2/(P-0.25)+S$ (in.)	1.75	1.67	3.28	3.28

QPost Development <= I.F.* (Qpre-development* RVpre-development)/RVDeveloped)

I.F 0.8

CHANNEL PROTECTION (2-YEAR)		
Qpre-development (cfs)	3.55	From TR55
QPost Development (cfs)	1.65	From TR55
RVPost Development (with runoff reduction) (in.)	1.71	From RRM
Qallowable (cfs)	2.90	

FLOOD CONTROL (10-YEAR)		
Qpre-development	6.61	
QPost Development	3.12	
RVPost Development (with runoff reduction)	3.24	
Qallowable	6.68	

Qallowable/QPost Development	1.76	Fig 11.7 of DEQ Manual
Vs/Vr	0.00	
Vs	0.00	
Storage Required (CF)	0	

Qallowable/QPost Development	2.14	
Vs/Vr	0.00	
Vs	0.00	
Storage Required (CF)	0	

SWM Water Quantity Energy Balance Worksheet - Four Mile Run (DA: D)

SITE AREA (acre) 3.30

	1-year		10-year	
	PRE	POST (adjusted)	PRE	POST (adjusted)
P	2.64	2.64	4.90	4.90
CN	84	82	84	83
S=1000/CN-10	1.90	2.20	1.90	2.05
0.25	0.38	0.44	0.38	0.41
$RV=(P-0.25)^2/(P-0.25)+S$ (in.)	1.23	1.10	3.18	3.08

QPost Development <= I.F.* (Qpre-development* RVpre-development)/RVDeveloped)

I.F 0.8

CHANNEL PROTECTION (1-YEAR)		
Qpre-development (cfs)	6.31	From TR55
QPost Development (cfs)	4.36	From TR55
RVPost Development (with runoff reduction) (in.)	1.14	From RRM
Qallowable (cfs)	5.43	

FLOOD CONTROL (10-YEAR)		
Qpre-development	16.03	
QPost Development	12.33	
RVPost Development (with runoff reduction)	3.15	
Qallowable	16.18	

Qallowable/QPost Development	1.24	Fig 11.7 of DEQ Manual
Vs/Vr	0.00	
Vs	0.00	
Storage Required (CF)	0	

Qallowable/QPost Development	1.31	
Vs/Vr	0.00	
Vs	0.00	
Storage Required (CF)	0	

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J. KEITH SINCLAIR, JR.
Lic. No. 11195
03/09/2020
PROFESSIONAL ENGINEER

REGISTRATION STAMP

NOT FOR CONSTRUCTION

PROFESSIONAL CERTIFICATION

"I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED CERTIFIED LANDSCAPE ARCHITECT UNDER THE LAWS OF THE STATE OF VIRGINIA, LICENSE NO. 1542, EXPIRATION DATE 06/30/2021."

PROJECT TITLE

EXPANSION OF THE W&OD TRAIL

FALLS CHURCH, VA
UPC 113612

REVISIONS

MARK	DATE	DESCRIPTION

AMT FILE NO.	18-0367
DATE:	3/18/2020
SCALE:	1"=20'
DESIGNED BY:	AMT
DRAWN BY:	AMT
CHECKED BY:	AMT

100% DESIGN

SHEET TITLE

SWM NARRATIVE AND CALCULATIONS

SHEET

CW5.0

OUTFALL A PIPE CAPACITY

Project Description		
Friction Method	Manning Formula	
Solve For	Full Flow Capacity	
Input Data		
Roughness Coefficient	0.024	
Channel Slope	0.04523	ft/ft
Normal Depth	2.50	ft
Diameter	2.50	ft
Discharge	47.25	ft³/s
Results		
Discharge	47.25	ft³/s
Normal Depth	2.50	ft
Flow Area	4.91	ft²
Wetted Perimeter	7.85	ft
Hydraulic Radius	0.63	ft
Top Width	0.00	ft
Critical Depth	2.26	ft
Percent Full	100.0	%
Critical Slope	0.03966	ft/ft
Velocity	9.63	ft/s
Velocity Head	1.44	ft
Specific Energy	3.94	ft
Froude Number	0.00	
Maximum Discharge	50.83	ft³/s
Discharge Full	47.25	ft³/s
Slope Full	0.04523	ft/ft
Flow Type	SubCritical	

OUTFALL B PIPE (S1695-S1701) CAPACITY

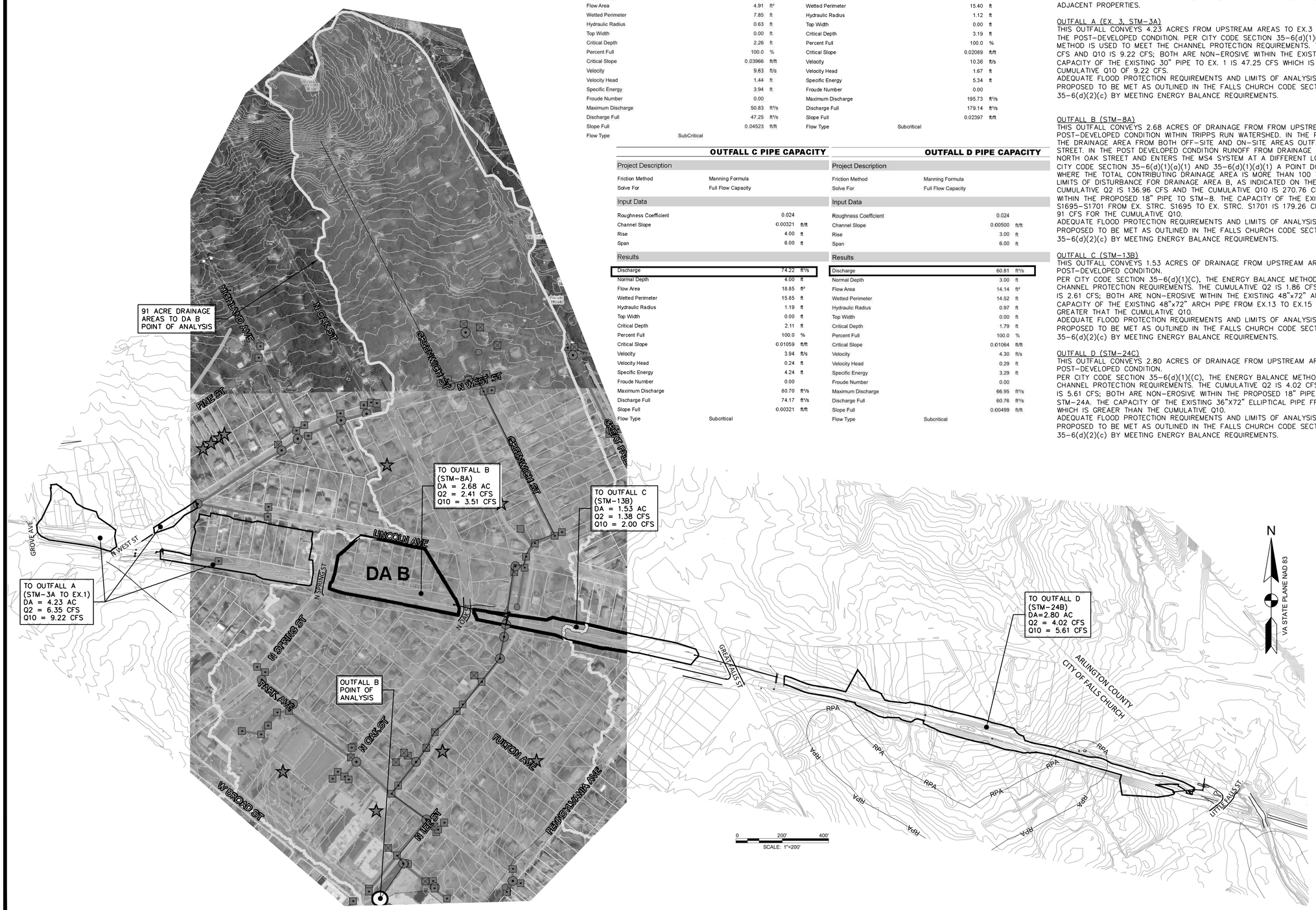
Project Description		
Friction Method	Manning Formula	
Solve For	Full Flow Capacity	
Input Data		
Roughness Coefficient	0.024	
Channel Slope	0.02400	ft/ft
Rise	3.67	ft
Span	6.00	ft
Results		
Discharge	179.26	ft³/s
Normal Depth	3.67	ft
Flow Area	17.29	ft²
Wetted Perimeter	15.40	ft
Hydraulic Radius	1.12	ft
Top Width	0.00	ft
Critical Depth	3.19	ft
Percent Full	100.0	%
Critical Slope	0.02089	ft/ft
Velocity	10.36	ft/s
Velocity Head	1.67	ft
Specific Energy	5.34	ft
Froude Number	0.00	
Maximum Discharge	195.73	ft³/s
Discharge Full	179.14	ft³/s
Slope Full	0.02397	ft/ft
Flow Type	Subcritical	

OUTFALL C PIPE CAPACITY

Project Description		
Friction Method	Manning Formula	
Solve For	Full Flow Capacity	
Input Data		
Roughness Coefficient	0.024	
Channel Slope	0.00321	ft/ft
Rise	4.00	ft
Span	6.00	ft
Results		
Discharge	74.22	ft³/s
Normal Depth	4.00	ft
Flow Area	18.85	ft²
Wetted Perimeter	15.85	ft
Hydraulic Radius	1.19	ft
Top Width	0.00	ft
Critical Depth	2.11	ft
Percent Full	100.0	%
Critical Slope	0.01059	ft/ft
Velocity	3.94	ft/s
Velocity Head	0.24	ft
Specific Energy	4.24	ft
Froude Number	0.00	
Maximum Discharge	80.70	ft³/s
Discharge Full	74.17	ft³/s
Slope Full	0.00321	ft/ft
Flow Type	Subcritical	

OUTFALL D PIPE CAPACITY

Project Description		
Friction Method	Manning Formula	
Solve For	Full Flow Capacity	
Input Data		
Roughness Coefficient	0.024	
Channel Slope	0.00500	ft/ft
Rise	3.00	ft
Span	6.00	ft
Results		
Discharge	60.81	ft³/s
Normal Depth	3.00	ft
Flow Area	14.14	ft²
Wetted Perimeter	14.52	ft
Hydraulic Radius	0.97	ft
Top Width	0.00	ft
Critical Depth	1.79	ft
Percent Full	100.0	%
Critical Slope	0.01064	ft/ft
Velocity	4.30	ft/s
Velocity Head	0.29	ft
Specific Energy	3.29	ft
Froude Number	0.00	
Maximum Discharge	66.95	ft³/s
Discharge Full	60.76	ft³/s
Slope Full	0.00499	ft/ft
Flow Type	Subcritical	



OUTFALL NARRATIVE

THE SUBJECT PROPERTY IS LOCATED WITHIN THE FOUR MILE RUN WATERSHED (1,222 ACRES) AND TRIPPS RUN WATERSHED (442 ACRES). THE SUBJECT PROPERTY MAINTAINS FOUR STORM DRAINAGE OUTFALLS. OUTFALLS A, B, AND C ARE WITHIN THE TRIPPS RUN WATERSHED AND OUTFALL D IS WITHIN THE FOUR MILE RUN WATERSHED. THERE ARE NO FLOODPLAIN AREAS ON THE SUBJECT PROPERTY, HOWEVER, THERE ARE AREAS THAT EXPERIENCE LOCALIZED FLOODING. THERE IS A RPA AREA PRESENT ON THE SUBJECT PROPERTY WITHIN OUTFALL D. AS A RESULT OF THE REDEVELOPMENT OF THE PROPERTY,TO MEET QUANTITY REQUIREMENTS, THREE (3) DRY SWALE FACILITIES, TWO (2) PERMEABLE PAVEMENT FACILITIES AND ONE (1) SWALE (FOR CONVEYANCE ONLY) ARE PROPOSED. THE POST-DEVELOPED DISCHARGE FROM THE SITE SHALL BE LESS THAN THE PRE-DEVELOPED DISCHARGE WITH THE INSTALLATION OF THE AFOREMENTIONED FACILITIES. CHANNEL PROTECTION REQUIREMENTS SHALL BE MET AS OUTLINED IN THE FALLS CHURCH CODE OF ORDINANCES SECTION 35-6(d)(1)(a)(1) AND 35-6(d)(1)(d)(1) FOR THE LIMITIS OF ANALYSIS. FLOOD PROTECTION REQUIREMENTS SHALL BE MET AS OUTLINED IN THE FALLS CHURCH CODE SECTION 35-6(d)(2)(b)(2) AND 35-6(d)(2)(c) FOR THE LIMITS OF ANALYSIS. THE LAYOUT OF THE SITE HAS BEEN DESIGNED TO MINIMIZE THE IMPACTS TO DOWNSTREAM PROPERTIES. THE INTENT SHALL BE TO MAINTAIN THE THE EXISTING DRAINAGE PATTERNS AND NOT HAVE A NEGATIVE IMPACT ON ADJACENT PROPERTIES.

OUTFALL A (EX. 3, STM-3A)

THIS OUTFALL CONVEYS 4.23 ACRES FROM UPSTREAM AREAS TO EX.3 AND STM-3A TO EX.1 IN THE POST-DEVELOPED CONDITION. PER CITY CODE SECTION 35-6(d)(1)(C), THE ENERGY BALANCE METHOD IS USED TO MEET THE CHANNEL PROTECTION REQUIREMENTS. THE CUMULATIVE Q2 IS 6.35 CFS AND Q10 IS 9.22 CFS; BOTH ARE NON-EROSIVE WITHIN THE EXISTING 30" PIPE TO EX.1. THE CAPACITY OF THE EXISTING 30" PIPE TO EX. 1 IS 47.25 CFS WHICH IS GREATER THAN THE CUMULATIVE Q10 OF 9.22 CFS.
ADEQUATE FLOOD PROTECTION REQUIREMENTS AND LIMITS OF ANALYSIS FOR THIS OUTFALL ARE PROPOSED TO BE MET AS OUTLINED IN THE FALLS CHURCH CODE SECTION 35-6(d)(2)(b)(2) AND 35-6(d)(2)(c) BY MEETING ENERGY BALANCE REQUIREMENTS.

OUTFALL B (STM-8A)

THIS OUTFALL CONVEYS 2.68 ACRES OF DRAINAGE FROM FROM UPSTREAM AREAS IN THE POST-DEVELOPED CONDITION WITHIN TRIPPS RUN WATERSHED. IN THE PRE-DEVELOPED CONDITION THE DRAINAGE AREA FROM BOTH OFF-SITE AND ON-SITE AREAS OUTFALLS TO NORTH OAK STREET. IN THE POST DEVELOPED CONDITION RUNOFF FROM DRAINAGE AREA B IS PIPED ACROSS NORTH OAK STREET AND ENTERS THE MS4 SYSTEM AT A DIFFERENT LOCATION. THEREFORE, PER CITY CODE SECTION 35-6(d)(1)(a)(1) AND 35-6(d)(1)(d)(1) A POINT DOWNSTREAM WAS IDENTIFIED WHERE THE TOTAL CONTRIBUTING DRAINAGE AREA IS MORE THAN 100 TIMES GREATER THAN THE LIMITS OF DISTURBANCE FOR DRAINAGE AREA B, AS INDICATED ON THE MAP BELOW. THE CUMULATIVE Q2 IS 136.96 CFS AND THE CUMULATIVE Q10 IS 270.76 CFS; BOTH ARE NON-EROSIVE WITHIN THE PROPOSED 18" PIPE TO STM-8. THE CAPACITY OF THE EXISTING ELLIPTICAL PIPE S1695-S1701 FROM EX. STRC. S1695 TO EX. STRC. S1701 IS 179.26 CFS WHICH IS DEFICIENT BY 91 CFS FOR THE CUMULATIVE Q10.
ADEQUATE FLOOD PROTECTION REQUIREMENTS AND LIMITS OF ANALYSIS FOR THIS OUTFALL ARE PROPOSED TO BE MET AS OUTLINED IN THE FALLS CHURCH CODE SECTION 35-6(d)(2)(b)(2) AND 35-6(d)(2)(c) BY MEETING ENERGY BALANCE REQUIREMENTS.

OUTFALL C (STM-13B)

THIS OUTFALL CONVEYS 1.53 ACRES OF DRAINAGE FROM UPSTREAM AREAS IN THE POST-DEVELOPED CONDITION.
PER CITY CODE SECTION 35-6(d)(1)(C), THE ENERGY BALANCE METHOD IS USED TO MEET THE CHANNEL PROTECTION REQUIREMENTS. THE CUMULATIVE Q2 IS 1.86 CFS AND THE CUMULATIVE Q10 IS 2.61 CFS; BOTH ARE NON-EROSIVE WITHIN THE EXISTING 48"x72" ARCH PIPE TO EX.15. THE CAPACITY OF THE EXISTING 48"x72" ARCH PIPE FROM EX.13 TO EX.15 IS 74.22 CFS WHICH IS GREATER THAT THE CUMULATIVE Q10.
ADEQUATE FLOOD PROTECTION REQUIREMENTS AND LIMITS OF ANALYSIS FOR THIS OUTFALL ARE PROPOSED TO BE MET AS OUTLINED IN THE FALLS CHURCH CODE SECTION 35-6(d)(2)(b)(2) AND 35-6(d)(2)(c) BY MEETING ENERGY BALANCE REQUIREMENTS.

OUTFALL D (STM-24C)

THIS OUTFALL CONVEYS 2.80 ACRES OF DRAINAGE FROM UPSTREAM AREAS IN THE POST-DEVELOPED CONDITION.
PER CITY CODE SECTION 35-6(d)(1)(C), THE ENERGY BALANCE METHOD IS USED TO MEET THE CHANNEL PROTECTION REQUIREMENTS. THE CUMULATIVE Q2 IS 4.02 CFS AND THE CUMULATIVE Q10 IS 5.61 CFS; BOTH ARE NON-EROSIVE WITHIN THE PROPOSED 18" PIPE FROM STM-24B TO STM-24A. THE CAPACITY OF THE EXISTING 36"X72" ELLIPTICAL PIPE FROM EX.24 IS 60.81 CFS WHICH IS GREAER THAN THE CUMULATIVE Q10.
ADEQUATE FLOOD PROTECTION REQUIREMENTS AND LIMITS OF ANALYSIS FOR THIS OUTFALL ARE PROPOSED TO BE MET AS OUTLINED IN THE FALLS CHURCH CODE SECTION 35-6(d)(2)(b)(2) AND 35-6(d)(2)(c) BY MEETING ENERGY BALANCE REQUIREMENTS.

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COMMONWEALTH OF VIRGINIA
J. KEITH SINCLAIR, JR.
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03/23/2020
PROFESSIONAL ENGINEER

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PROFESSIONAL CERTIFICATION

"I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL LANDSCAPE ARCHITECT UNDER THE LAWS OF THE STATE OF VIRGINIA."
LICENSE NO. 1542, EXPIRATION DATE: 04/30/2021"

PROJECT TITLE

EXPANSION OF THE W&OD TRAIL

FALLS CHURCH, VA
UPC 113612

REVISIONS

MARK	DATE	DESCRIPTION

AMT FILE NO.	18-0367
DATE:	3/18/2020
SCALE:	1"=20'
DESIGNED BY:	AMT
DRAWN BY:	AMT
CHECKED BY:	AMT

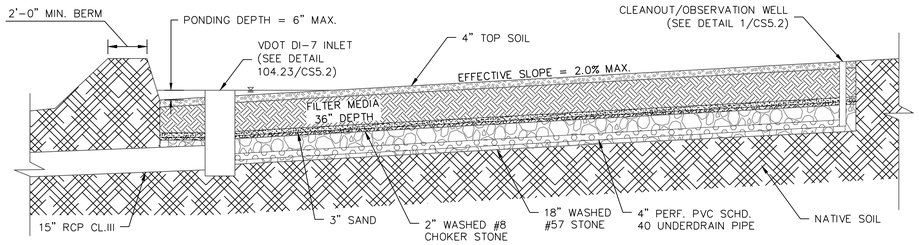
100% DESIGN

SHEET TITLE

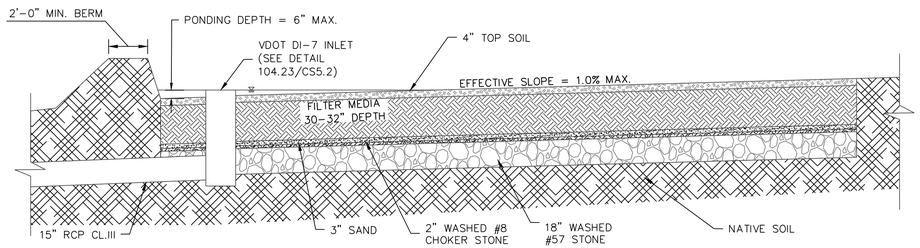
SWM OUTFALL ANALYSIS

SHEET

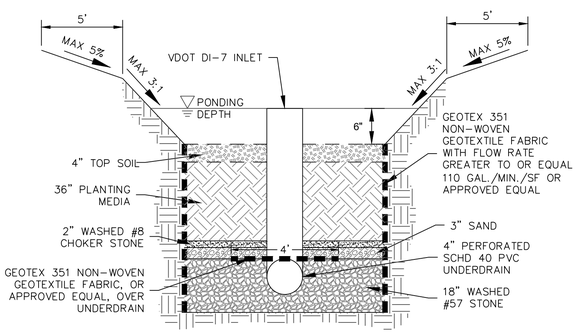
CW5.1



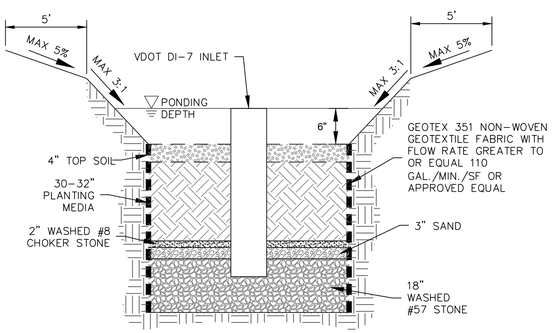
1 DRY SWALE LEVEL 1 SECTION DETAIL
SCALE:N.T.S.



2 DRY SWALE LEVEL 2 SECTION DETAIL
SCALE:N.T.S.



3 DRY SWALE TYPICAL SECTION (LEVEL1)
SCALE:NTS



4 DRY SWALE TYPICAL SECTION (LEVEL2)
SCALE:NTS

NOTE:
VEGETATED CHANNEL SHOULD BE MOWED CONCURRENTLY WITH THE EMBANKMENT AND SHOULD NOT BE CUT LESS THAN 6 TO 8 INCHES IN HEIGHT.

Table 10.5. Dry Swale Material Specifications

Material	Specification	Notes
Filter Media Composition	Filter Media to contain (specific media component composition is described in **Section 6.6** of **Spec No. 9**: • 85-88% sand • 8-12% soil fines • 3-5% qualified organic matter	The volume of filter media for construction should be is based on 110% of the plan volume to account for settling.
Filter Media Testing	Available P between 7 and 23 mg/kg.; CEC greater than 10 (to the extent possible)	The media should be certified by the supplier as meeting the intent of these specifications (refer to **Stormwater Design Spec No. 9: Bioretention**, for additional soil media information.
Surface Cover	Turf, river stone, select bioretention landscaping.	
Top Soil	4 inch surface depth of loamy sand or sandy loam texture, with less than 5% clay content, a corrected pH of 6 to 7, and at least 2% organic matter.	
Filter Fabric	Use an appropriate material for the application based on AASHTO M288-06. Fabric should have a flow rate of > 125 gpm/sq. ft. (ASTM D4491), and an Apparent Opening Size (AOS) equivalent to a US # 70 or # 80 sieve (ASTM D4751). The geotextile AOS selection is based on the percent passing the No. 200 sieve in "A" Soil subgrade, using FHWA or AASHTO selection criteria. Apply on the sides and immediately above the underdrain only. For hotspots and certain karst sites only, use an appropriate liner on the bottom.	
Choking Layer	A 2 to 4 inch layer of sand over a 2 inch layer of choker stone (typically #8 or # 89 washed gravel) laid above the underdrain stone.	
Stone and/or Storage Layer	1 inch stone should be double-washed and clean and free of all fines (e.g., VDOT #57 stone).	A 9 to 18 inch layer (depending on the desired depth of the storage layer)
Underdrains, Cleanouts, and Observation Wells	6-inch rigid schedule 40 PVC pipe, with 3/8-inch perforations(or equivalent corrugated HDPE), with 3/8-inch perforations at 6 inches on center;	Install perforated pipe for the full length of the dry swale cell. Use non-perforated pipe, as needed, to connect with the storm drain system.
Vegetation	Plant species as as specified on the landscaping plan	
Check Dams	Use non-erosive material such as wood, gabions, riprap, or concrete. All check dams should be underlain with filter fabric, and include weep holes. Wood used for check dams should consist of pressure-treated logs or timbers, or water-resistant tree species such as cedar, hemlock, swamp oak or locust.	
Erosion Control Fabric	Where flow velocities dictate, use woven biodegradable erosion control fabric or mats (EC3) that are durable enough to last at least 2 growing seasons.	

9.2. Maintenance Inspections

Annual inspections are used to trigger maintenance operations such as sediment removal, spot revegetation and inlet stabilization. The following is a list of several key maintenance inspection points:

- Add reinforcement planting to maintain 95% turf cover or vegetation density. Reseed any salt-killed vegetation.
- Remove any accumulated sand or sediment deposits on the filter bed surface or in pre-treatment cells.
- Inspect upstream and downstream of check dams for evidence of undercutting or erosion, and remove trash or blockages at weepholes.
- Examine filter beds for evidence of braiding, erosion, excessive ponding or dead grass.
- Check inflow points for clogging, and remove any sediment.
- Inspect side slopes and grass filter strips for evidence of any rill or gully erosion, and repair as needed.
- Look for any bare soil or sediment sources in the contributing drainage area, and stabilize immediately.

Ideally, inspections should be conducted in the spring of each year. Example maintenance inspection checklists for Dry Swales can be accessed in Appendix C of Chapter 9 of the *Virginia Stormwater Management Handbook* (2010) or at CWP website at:

http://www.cwp.org/Resource_Library/Controlling_Runoff_and_Discharges/sm.htm
(scroll to Tool6: Plan Review, BMP Construction, and Maintenance Checklists)

9.3 Routine Maintenance and Operation

Once established, Dry Swales have minimal maintenance needs outside of the spring clean up, regular mowing, and pruning and management of trees and shrubs. The surface of the filter bed can become clogged with fine sediment over time, but this can be alleviated through core aeration or deep tilling of the filter bed. Additional effort may be needed to repair check dams, stabilize inlet points, and remove deposited sediment from pre-treatment cells.

	SF	AC		Depth (in)	Storage Volume (CF)
SWM A (Dry Swale Level 1)			Ponding (6" max)	6.00	13
Footprint (3:1 Side slopes)	1,309	3.77%	Media (18"-36")	36.00	982
DA	34,706	0.7967	Gravel (9"-18")	18.00	785
Impervious	13,700	0.3145	Equiv. Depth	1.85	
Managed Turf	21,006	0.4822	Available Storage (CF)		1,780
SWM C (Grass Channel C/D Soils)					
Footprint (3:1 Side slopes)	2,040	3.16%			
DA	64,566	1.4822			
Impervious	19,524	0.4482			
Managed Turf	45,042	1.0340			
SWM D (Dry Swale Level 2)			Ponding (6" max)	6.00	25
Footprint (3:1 Side slopes)	3,632	3.3%	Media (24"-36")	30.00	2,270
DA	108,700	2.4954	Gravel (9"-18")	18.00	2,179
Impervious	35,980	0.8260	Equiv. Depth	1.73	
Managed Turf	72,721	1.6694	Available Storage (CF)		4,474

Table 3.5. Suggested Spring Maintenance Inspections/Cleanups for Grass Channels

Activity
Add reinforcement planting to maintain 90% turf cover. Reseed any salt-killed vegetation.
Remove any accumulated sand or sediment deposits behind check dams.
Inspect upstream and downstream of check dams for evidence of undercutting or erosion, and remove and trash or blockages at weep holes.
Examine channel bottom for evidence of erosion, braiding, excessive ponding or dead grass.
Check inflow points for clogging and remove any sediment.
Inspect side slopes and grass filter strips for evidence of any rill or gully erosion and repair.
Look for any bare soil or sediment sources in the contributing drainage area and stabilize immediately.

Table 3.4. Grass Channel Materials Specifications

Component	Specification
Grass	A dense cover of water-tolerant, erosion-resistant grass. The selection of an appropriate species or mixture of species is based on several factors including climate, soil type, topography, and sun or shade tolerance. Grass species should have the following characteristics: a deep root system to resist scouring; a high stem density with well-branched top growth; water-tolerance; resistance to being flattened by runoff; an ability to recover growth following inundation; and, if receiving runoff from roadways, salt-tolerance.
Check Dams	• Check dams should be constructed of a non-erosive material such as wood, gabions, riprap, or concrete. All check dams should be underlain with filter fabric conforming to local design standards. • Wood used for check dams should consist of pressure treated logs or timbers, or water-resistant tree species such as cedar, hemlock, swamp oak or locust.
Diaphragm	Pea gravel used to construct pre-treatment diaphragms should consist of washed, open-graded, coarse aggregate between 3 and 10 mm in diameter and must conform to local design standards.
Erosion Control Fabric	Where flow velocities dictate, biodegradable erosion control netting or mats that are durable enough to last at least two growing seasons must be used, conforming to VDOT EC3.
Filter Fabric (check dams)	Filter fabric is applicable in several different capacities when construction a grass channel with check dams and/or rip rap, etc. Designers should select an appropriate filter fabric for the particular application based on AASHTO M288-06

The following checklist provides a basic outline of the anticipated items for the construction inspection of grass channels for use as stormwater BMPs. Users of this information may wish to incorporate these items into a VSMP Authority Construction Checklist format consistent with the format used for erosion and sediment control and BMP construction inspections.

☐ Pre-construction meeting with the contractor designated to install the grass channel practice has been conducted.

☐ Impervious cover has been constructed/installed and area is free of construction equipment, vehicles, material storage, etc.

☐ All pervious areas of the contributing drainage areas have been adequately stabilized and erosion control measures have been removed.

☐ Grass channel has not been used during construction; or

☐ Grass channel has been used for construction and is scheduled to be restored by removing construction sediment and incorporating soil amendments.

☐ Stormwater has been diverted for the construction of the inflow measures (level spreader or gravel diaphragm).

☐ Proper grades have been achieved with light equipment to avoid compaction to provide the required geometry of the grass channel: length and longitudinal slope, bottom width, and side slopes.

☐ Soil amendments, if required, have been incorporated as specified (thickness of compost material and incorporated to the required depth).

☐ Check dams, (including driveway culverts, if required, have been installed in accordance with the approved plans (spacing, height, elevation of overflow notch, energy dissipaters, keyed into side slopes, etc.).

☐ Energy dissipater and sediment forebay (if required) have been installed at the areas of concentrated inflow in accordance with the approved plans.

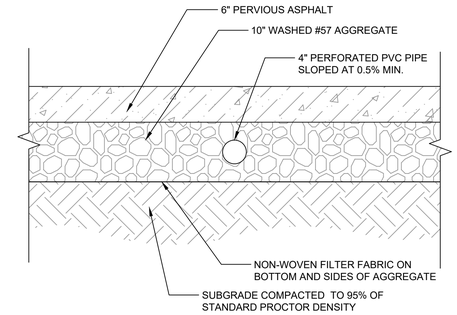
☐ Pretreatment practices have been installed for sheet flow entry.

☐ Channel bed and banks and adjacent disturbed areas have all been adequately stabilized (with matting if required, or needed to ensure a dense vegetative cover) prior to diverting runoff into the channel.

☐ All erosion and sediment control practices have been removed.

☐ Follow-up inspection and as-built survey/certification has been scheduled.

☐ GPS coordinates have been documented for all grass channels on the parcel.



5 PERVIOUS ASPHALT PAVING
1" = 1'-0" 3402-35

Table 7.6. Material Specifications for Underneath the Pavement Surface

Material	Specification	Notes
Bedding Layer	PC: None PA: 2 in. of No. 57 stone IP: 2 in. of No. 8 stone over 4 inches of No. 57 stone	ASTM D448 size No. 8 stone (e.g. 3/8 to 3/16 inch in size). Should be washed and clean and free of all fines.
Reservoir Layer	PC: No. 57 stone PA: No. 2 stone IP: No. 2, 3, or 4 stone	ASTM D448 size No. 57 stone (e.g. 1 1/2 to 1/2 inch in size); No. 2 Stone (e.g. 3 inch to 3/4 inch in size). Depth is based on the pavement structural and hydraulic requirements. Should be washed and clean and free of all fines.
Underdrain	Use 4 to 6 inch diameter perforated PVC (AASHTO M 252) pipe, with 3/8-inch perforations at 6 inches on center; each underdrain installed at a minimum 0.5% slope located 20 feet or less from the next pipe (or equivalent corrugated HDPE may be used for smaller load-bearing applications). Perforated pipe installed for the full length of the permeable pavement cell, and non-perforated pipe, as needed, is used to connect with the storm drain system. T's and Y's installed as needed, depending on the underdrain configuration. Extend cleanout pipes to the surface with vented caps at the Ts and Ys.	
Filter Layer	The underlying native soils should be separated from the stone reservoir by a thin, 2 to 4 inch layer of choker stone (e.g. No. 8) covered by a 6 to 8 inch layer of coarse sand (e.g. ASTM C 33, gradation).	The sand should be placed between the stone reservoir and the choker stone, which should be placed on top of the underlying native soils.
Filter Fabric (optional)	Use an appropriate filter fabric for the particular application based on AASHTO M288-06 Filter Fabric should have a Flow Rate greater than 125 gpm/sq. ft. (ASTM D4491), and an Apparent Opening Size (AOS) equivalent to a US # 70 or # 80 sieve (ASTM D4751). The geotextile AOS selection is based on the percent passing the No. 200 sieve in "A" Soil subgrade, using FHWA or AASHTO selection criteria.	
Impermeable Liner	Use a thirty mil (minimum) PVC Geomembrane liner covered by 8 to 12 oz./sq. yd. non-woven geotextile. NOTE: THIS IS USED ONLY FOR KARST REGIONS.	
Observation Well	Use a perforated 4 to 6 inch vertical PVC pipe (AASHTO M 252) with a lockable cap, installed flush with the surface.	

Table 7.7. Different Permeable Pavement Specifications

Material	Specification	Notes
Permeable Interlocking Concrete Pavers	Surface open area: 5% to 15%. Thickness: 3.125 inches for vehicles. Compressive strength: 55 Mpa. Open void fill media: aggregate	Must conform to ASTM C936 specifications. Reservoir layer required to support the structural load.
Concrete Grid Pavers	Open void content: 20% to 50%. Thickness: 3.5 inches. Compressive strength: 35 Mpa. Open void fill media: aggregate, topsoil and grass, coarse sand.	Must conform to ASTM C 1319 specifications. Reservoir layer required to support the structural load.
Plastic Reinforced Grid Pavers	Void content: depends on fill material. Compressive strength: varies, depending on fill material. Open void fill media: aggregate, topsoil and grass, coarse sand.	Reservoir layer required to support the structural load.
Pervious Concrete	Void content: 15% to 25 %. Thickness: typically 4 to 8 inches. Compressive strength: 2.8 to 28 Mpa. Open void fill media: None	May not require a reservoir layer to support the structural load, but a layer may be included to increase the storage or infiltration.
Porous Asphalt	Void content: 15% to 20 %. Thickness: typically 3 to 7 in. (depending on traffic load). Open void fill media: None.	Reservoir layer required to support the structural load.

Table 7.8. Recommended Maintenance Tasks for Permeable Pavement Practices

Maintenance Task	Frequency[1]
• For the first 6 months following construction, the practice and contributing drainage area should be inspected at least twice after storm events that exceed 1/2 inch of rainfall. Conduct any needed repairs or stabilization.	After installation
• Mow grass in grid paver applications	At least 1 time every 1-2 months during the growing season
• Stabilize the CDA to prevent erosion • Remove any soil or sediment deposited on pavement. • Replace or repair any necessary pavement surface areas that are degenerating or spalling	As needed
• Vacuum pavement with a standard street sweeper to prevent clogging	2-4 times per year (depending on use)
• Conduct a maintenance inspection • Spot weeding of grass applications	Annually
• Remove any accumulated sediment in pre-treatment cells and inflow points	Once every 2 to 3 years
• Conduct maintenance using a regenerative street sweeper • Replace any necessary joint material	If clogged

[1] Required frequency of maintenance will depend on pavement use, traffic loads, and surrounding land use.

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COMMONWEALTH OF VIRGINIA
J. KEITH SINCLAIR, JR.
Lic. No. 11195
03/03/2022
PROFESSIONAL ENGINEER

REGISTRATION STAMP

NOT FOR CONSTRUCTION

PROFESSIONAL CERTIFICATION
"I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED CERTIFIED LANDSCAPE ARCHITECT UNDER THE LAWS OF THE STATE OF VIRGINIA, LICENSE NO. 1542, EXPIRATION DATE 04/30/2021"

PROJECT TITLE
EXPANSION OF THE W&OD TRAIL
FALLS CHURCH, VA
UPC 113612

REVISIONS

MARK	DATE	DESCRIPTION

AMT FILE NO.	18-0367
DATE:	3/2020
SCALE:	1"=20'
DESIGNED BY:	AMT
DRAWN BY:	AMT
CHECKED BY:	AMT

100% DESIGN

SHEET TITLE
STORMWATER MANAGEMENT DETAILS

SHEET
CW5.2

SITE SPECIFIC DATA			
PROJECT NUMBER		----	
ORDER NUMBER		----	
PROJECT NAME		W&OD TRAIL PROJECT	
PROJECT LOCATION		FALLS CHURCH, VA	
STRUCTURE ID		STM-3B (SWM-G)	
TREATMENT REQUIRED			
VOLUME BASED (CF)		FLOW BASED (CFS)	
76			
TREATMENT HGL AVAILABLE (FT)			N/K
PEAK BYPASS REQUIRED (CFS) – IF APPLICABLE			0.3
PIPE DATA	I.E.	MATERIAL	DIAMETER
INLET PIPE 1	335.56	PVC	4"
INLET PIPE 2	N/A	N/A	N/A
OUTLET PIPE	334.23	RCP	15"
	PRETREATMENT	BIOFILTRATION	DISCHARGE
RIM ELEVATION	336.76	336.73	336.73
SURFACE LOAD	PEDESTRIAN	N/A	PEDESTRIAN
FRAME & COVER	36" x 36"	OPEN PLANTER	N/A
WETLANDMEDIA VOLUME (CY)			1.23
ORIFICE SIZE (DIA. INCHES)			#1.14"
NOTES: PRELIMINARY NOT FOR CONSTRUCTION.			

INSTALLATION NOTES

1. CONTRACTOR TO PROVIDE ALL LABOR, EQUIPMENT, MATERIALS AND INCIDENTALS REQUIRED TO OFFLOAD AND INSTALL THE SYSTEM AND APPURTENANCES IN ACCORDANCE WITH THIS DRAWING AND THE MANUFACTURERS SPECIFICATIONS, UNLESS OTHERWISE STATED IN MANUFACTURERS CONTRACT.
2. UNIT MUST BE INSTALLED ON LEVEL BASE. MANUFACTURER RECOMMENDS A MINIMUM 6" LEVEL ROCK BASE UNLESS SPECIFIED BY THE PROJECT ENGINEER. CONTRACTOR IS RESPONSIBLE TO VERIFY PROJECT ENGINEERS RECOMMENDED BASE SPECIFICATIONS.
4. CONTRACTOR TO SUPPLY AND INSTALL ALL EXTERNAL CONNECTING PIPES. ALL PIPES MUST BE FLUSH WITH INSIDE SURFACE OF CONCRETE. (PIPES CANNOT INTRUDE BEYOND FLUSH). INVERT OF OUTFLOW PIPE MUST BE FLUSH WITH DISCHARGE CHAMBER FLOOR. ALL PIPES SHALL BE SEALED WATER TIGHT PER MANUFACTURERS STANDARD CONNECTION DETAIL.
5. CONTRACTOR RESPONSIBLE FOR INSTALLATION OF ALL RISERS, MANHOLES, AND HATCHES. CONTRACTOR TO GROUT ALL MANHOLES AND HATCHES TO MATCH FINISHED SURFACE UNLESS SPECIFIED OTHERWISE.
6. VEGETATION SUPPLIED AND INSTALLED BY OTHERS; ALL UNITS WITH VEGETATION MUST HAVE DRIP OR SPRAY IRRIGATION SUPPLIED AND INSTALLED BY OTHERS.
7. CONTRACTOR RESPONSIBLE FOR CONTACTING BIO CLEAN FOR ACTIVATION OF UNIT. MANUFACTURERS WARRANTY IS VOID WITH OUT PROPER ACTIVATION BY A BIO CLEAN REPRESENTATIVE.

GENERAL NOTES

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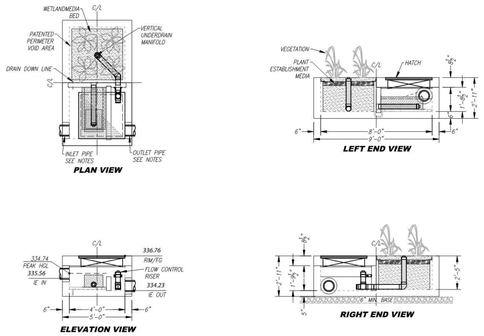
2. ALL DIMENSIONS, ELEVATIONS, SPECIFICATIONS AND CAPACITIES ARE SUBJECT TO CHANGE. FOR PROJECT SPECIFIC DRAWINGS DETAILING EXACT DIMENSIONS, WEIGHTS AND ACCESSORIES PLEASE CONTACT BIO CLEAN.



INTERNAL BYPASS DISCLOSURE:

THE DESIGN AND CAPACITY OF THE PEAK CONVEYANCE METHOD TO BE REVIEWED AND APPROVED BY THE ENGINEER OF RECORD. HGL(S) AT PEAK FLOW SHALL BE ASSESSED TO ENSURE NO UPSTREAM FLOODING. PEAK HGL AND BYPASS CAPACITY SHOWN ON DRAWING ARE USED FOR GUIDANCE ONLY.

TREATMENT VOLUME (CF)	76
OPERATING HEAD (FT)	1.0
PRETREATMENT LOADING RATE (GPM/SF)	0.6
WETLAND MEDIA LOADING RATE (GPM/SF)	1.0

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Bio Clean — A Portaera Company

MWS-L-4-8-2'-5"-V
STORMWATER BIOFILTRATION SYSTEM
STANDARD DETAIL

6 STORMWATER BIOFILTRATION SYSTEM (SWM G)
SCALE:NTS

SITE SPECIFIC DATA			
PROJECT NUMBER		----	
ORDER NUMBER		----	
PROJECT NAME		W&OD TRAIL PROJECT	
PROJECT LOCATION		FALLS CHURCH, VA	
STRUCTURE ID		STM-24D (SWM-H)	
TREATMENT REQUIRED			
VOLUME BASED (CF)		FLOW BASED (CFS)	
1.225			
TREATMENT HGL AVAILABLE (FT)			N/K
PEAK BYPASS REQUIRED (CFS) – IF APPLICABLE			9.08
PIPE DATA	I.E.	MATERIAL	DIAMETER
INLET PIPE 1	301.53	RCP	4"
INLET PIPE 2	N/A	N/A	N/A
OUTLET PIPE	297.57	RCP	15"
	PRETREATMENT	BIOFILTRATION	DISCHARGE
RIM ELEVATION	302.14	302.70	302.70
SURFACE LOAD	PEDESTRIAN	N/A	PEDESTRIAN
FRAME & COVER	36" x 36"	OPEN PLANTER	N/A
WETLANDMEDIA VOLUME (CY)			1.23
ORIFICE SIZE (DIA. INCHES)			#1.08"
NOTES: PRELIMINARY NOT FOR CONSTRUCTION.			

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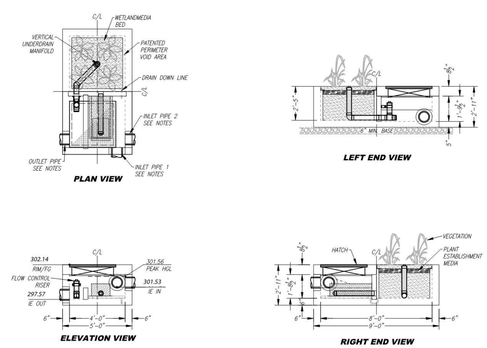

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TREATMENT VOLUME (CF)	76
OPERATING HEAD (FT)	0.8
PRETREATMENT LOADING RATE (GPM/SF)	0.5
WETLAND MEDIA LOADING RATE (GPM/SF)	1.0

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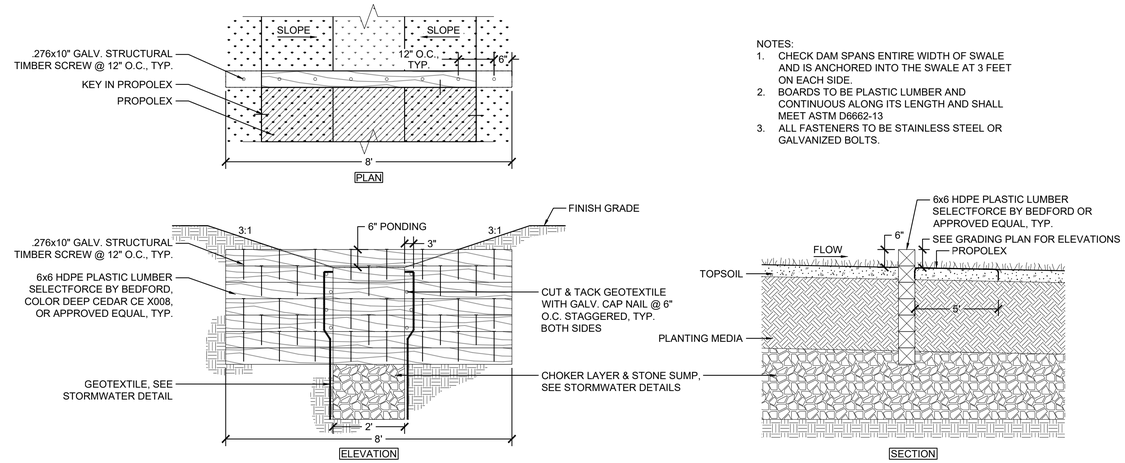
Bio Clean — A Portaera Company

MWS-L-4-8-2'-5"-V
STORMWATER BIOFILTRATION SYSTEM
STANDARD DETAIL

7 STORMWATER BIOFILTRATION SYSTEM (SWM H)
SCALE:NTS



NOTES:

1. CHECK DAM SPANS ENTIRE WIDTH OF SWALE AND IS ANCHORED INTO THE SWALE AT 3 FEET ON EACH SIDE.
2. BOARDS TO BE PLASTIC LUMBER AND CONTINUOUS ALONG ITS LENGTH AND SHALL MEET ASTM D6662-13
3. ALL FASTENERS TO BE STAINLESS STEEL OR GALVANIZED BOLTS.

8 PLASTIC LUMBER CHECK DAM
1/2" = 1'-0"

0630-04

STORM INLET COMPUTATIONS

EX. 3
DRAINAGE AREA: 0.33 Ac
c: 0.32
INLET AREA: 1.34 SF
INLET ELEV.: 336.09
i 10-YR: 5.47
Q10 = 0.58 CFS
i 100-YR: 7.24
Q100 = 0.77 CFS

ORIFICE EQ: Q=0.6xAx(2xgxh)^0.5 -> h = [(Q/(0.6xA))^2]/(2*g)

h10 = [(0.58/(0.6X1.34))^2]/(2*32.2) = 0.01 FT
= 10-YR ELEV = 335.43

h100 = [(0.77/(0.6X1.34))^2]/(2*32.2) = 0.02 FT
= 100-YR ELEV = 335.44

EX. 6
DRAINAGE AREA: 0.37 AC
c: 0.49
INLET AREA: 1.15 SF
INLET ELEV.: 333.52
i 10-YR: 5.47
Q10 = 0.99 CFS
i 100-YR: 7.24
Q100 = 1.31 CFS

ORIFICE EQ: Q=0.6XAX(2XGXH)^0.5 -> H = [(Q/(0.6XA))^2]/(2*G)

H10 = [(0.99/(0.6X1.34))^2]/(2*32.2) = 0.03 FT
10-YR ELEV = 335.55

H100 = [(1.31/(0.6X1.34))^2]/(2*32.2) = 0.06 FT
100-YR ELEV = 335.58

EX. 7
DRAINAGE AREA: 2.32 AC
c: 0.48
INLET AREA: 1.15 SF
INLET ELEV.: 333.47
i 10-YR: 4.62
Q10 = 5.14 CFS
i 100-YR: 6.10
Q100 = 6.79 CFS

ORIFICE EQ: Q=0.6XAX(2XGXH)^0.5 -> H = [(Q/(0.6XA))^2]/(2*G)

H10 = [(5.14/(0.6X1.15))^2]/(2*32.2) = 0.86 FT
10-YR ELEV = 334.33
H100 = [(6.79/(0.6X1.15))^2]/(2*32.2) = 1.50 FT
100-YR ELEV = 334.97

EX. 14
DRAINAGE AREA: 2.00 AC
c: 0.42
INLET AREA: 1.15 SF
INLET ELEV.: 320.79
i 10-YR: 4.62
Q10 = 3.88 CFS
i 100-YR: 6.10
Q100 = 5.12 CFS

ORIFICE EQ: Q=0.6XAX(2XGXH)^0.5 -> H = [(Q/(0.6XA))^2]/(2*G)

H10 = [(3.88/(0.6X1.15))^2]/(2*32.2) = 0.49 FT
10-YR ELEV = 321.28
H100 = [(5.12/(0.6X1.15))^2]/(2*32.2) = 0.85 FT
100-YR ELEV = 321.85

POLLUTION PREVENTION NOTES:

1. ONLY THE FOLLOWING NON-STORMWATER DISCHARGES ARE AUTHORIZED BY THE CITY OF FALLS CHURCH'S MS4 PERMIT. UNLESS THE STATE WATER CONTROL BOARD, THE VIRGINIA SOIL AND WATER CONSERVATION BOARD (BOARD), OR CITY OF FALLS CHURCH DETERMINES THE DISCHARGE TO BE A SIGNIFICANT SOURCE OF POLLUTANTS TO SURFACE WATERS: WATER LINE FLUSHING; LANDSCAPE IRRIGATION; DIVERTED STREAM FLOWS; RISING GROUND WATERS; UNCONTAMINATED GROUND WATER INFILTRATION (AS DEFINED AT 40 CFR 35.2005(20)); UNCONTAMINATED PUMPED GROUND WATER; DISCHARGES FROM POTABLE WATER SOURCES; FOUNDATION DRAINS; AIR CONDITIONING CONDENSATION; IRRIGATION WATER; SPRINGS; WATER FROM CRAWL SPACE PUMPS; FOOTING DRAINS; LAWN WATERING; INDIVIDUAL RESIDENTIAL CAR WASHING; FLOWS FROM RIPARIAN HABITATS AND WETLANDS; DECHLORINATED SWIMMING POOL DISCHARGES; DISCHARGES OR FLOWS FROM FIRE FIGHTING; AND, OTHER ACTIVITIES GENERATING DISCHARGES IDENTIFIED BY THE DEPARTMENT OF ENVIRONMENTAL QUALITY AS NOT REQUIRING VPDES AUTHORIZATION.

2. APPROPRIATE CONTROLS MUST BE IMPLEMENTED TO PREVENT ANY NON-STORMWATER DISCHARGES NOT INCLUDED ON THE ABOVE LIST (E.G., CONCRETE WASH WATER, PAINT WASH WATER, VEHICLE WASH WATER, DETERGENT WASH WATER, ETC.) FROM BEING DISCHARGED INTO CITY OF FALLS CHURCH'S MS4 SYSTEM, WHICH INCLUDES THE CURB AND GUTTER SYSTEM, AS WELL AS CATCH BASINS AND OTHER STORM DRAIN INLETS, OR STREAM NETWORK.

3. PER THE CITY OF FALLS CHURCH CODE, IT SHALL BE UNLAWFUL FOR ANY PERSON TO DISCHARGE DIRECTLY OR INDIRECTLY INTO THE STORM SEWER SYSTEM OR STATE WATERS, ANY SUBSTANCE LIKELY, IN THE OPINION OF THE CITY MANAGER, TO HAVE AN ADVERSE EFFECT ON THE STORM SEWER SYSTEM OR STATE WATERS.

2.0 Authorized Non-Stormwater Discharges

Type of Authorized Non-Stormwater Discharge	Likely Present at Your Project Site?	
External buildings wash down	☐ Yes	☒ No
Uncontaminated foundation or footing drains	☐ Yes	☒ No
Uncontaminated excavation dewatering	☐ Yes	☒ No
Landscape irrigation	☐ Yes	☒ No
Others [describe]	☐ Yes	☐ No

5.0 Potential Sources of Pollution & Pollution Prevention Practices

Pollutant-Generating Activity	Likely Present at your Project Site?	Sediment	Nutrients	Heavy Metals	pH (acids and bases)	Pesticides & Herbicides	Oil & Grease	Bacteria & Viruses	Trash, Debris, Solids	Other Toxic Chemicals	Pollution Prevention Practice	Responsible Party
Clearing, grading, excavating, and un-stabilized areas	☒ Yes ☐ No	X							X		(1)	Construction Activity Operator (See Cover Page of this SWPPP)
Paving operations	☒ Yes ☐ No	X					X		X		(2)	
Concrete washout and cement waste	☒ Yes ☐ No			X	X				X		(3)	
Structure construction, stucco, painting, and cleaning	☐ Yes ☒ No			X	X				X	X	(4)	
Dewatering operations	☒ Yes ☐ No	X	X						X		(5)	
Material delivery and storage	☒ Yes ☐ No	X	X	X	X		X		X	X	(6)	
Material use during building process	☒ Yes ☐ No		X	X	X		X		X	X	(7)	
Solid waste disposal	☒ Yes ☐ No								X	X	(8)	
Sanitary waste	☐ Yes ☒ No		X		X			X			(9)	
Landscaping operations	☒ Yes ☐ No	X	X			X			X	X	(10)	
Others [describe]	☐ Yes ☐ No	[X]	[X]	[X]	[X]	[X]	[X]	[X]	[X]	[X]	(11)	

Pollution Prevention Practices:

(1) **Clearing, grading, excavating and un-stabilized areas** – Utilize erosion and sediment controls to prevent sediment laden or turbid runoff from leaving the construction site. Dispose of clearing debris at acceptable disposal sites. Apply permanent or temporary stabilization, sodding and/or mulching to denuded areas in accordance with the erosion and sediment control specifications and the general VPDES permit for discharges of stormwater from construction activities.

(2) **Paving operations** – Cover storm drain inlets during paving operations and utilize pollution prevention materials such as drip pans and absorbent/oil dry for all paving machines to limit leaks and spills of paving materials and fluids.

(3) **Concrete washout and cement waste** – Direct concrete wash water into a leak-proof container or leak-proof settling basin that is designed so that no overflows can occur due to inadequate sizing or precipitation. Hardened concrete wastes shall be removed and disposed of in a manner consistent with the handling of other construction wastes.

(4) **Structure construction, stucco, painting and cleaning** – Enclose, cover or berm building material storage areas if susceptible to contaminated stormwater runoff. Conduct painting operations consistent with local air quality and OSHA regulations. Mix paint indoors, in a containment area or in a flat unpaved area. Prevent the discharge of soaps, solvents, detergents and wash water from construction materials, including the clean-up of stucco paint, form release oils and curing compounds.

(5) **Dewatering operations** – Construction site dewatering from building footings or other sources may not be discharged without treatment. Sediment laden or turbid water shall be filtered, settled or similarly treated prior to discharge.

(6) **Material delivery and storage** – Designate areas of the construction site for material delivery and storage. Place near construction entrances, away from waterways, and avoid transport near drainage paths or waterways.

(7) **Material use during building process** – Use materials only where and when needed to complete the construction activity. Follow manufacturer's instructions regarding uses, protective equipment, ventilation, flammability and mixing of chemicals.

(8) **Solid waste disposal** – Designate a waste collection area on the construction site that does not receive a substantial amount of runoff from upland areas and does not drain directly to a waterway. Ensure that containers have lids so they can be covered before periods of rain, and keep containers in a covered area whenever possible. Schedule waste collection to prevent the containers from overfilling.

(9) **Sanitary waste** – Prevent the discharge of sanitary waste by providing convenient and well-maintained portable sanitary facilities. Locate sanitary facilities in a convenient location away from waterways.

(10) **Landscaping operations** – Maintain as much existing vegetation as practicable. Apply permanent or temporary stabilization, sodding and/or mulching to denuded areas in accordance with the erosion and sediment control specifications and the general VPDES permit for discharges of stormwater from construction activities. Apply nutrients in accordance with manufacturer's recommendations and not during rainfall events.

(11) **Others** – If applicable, describe your Pollution Prevention Practice.

7.0 Spill Prevention & Response

Most spills can be cleaned up following manufacturer specifications. Absorbent/oil dry, sealable containers, plastic bags, and shovels/brooms are suggested minimum spill response items that should be available at this location.

1ST Priority: Protect all people
2ND Priority: Protect equipment and property
3RD Priority: Protect the environment

1. Check for hazards (flammable material, noxious fumes, cause of spill) – if flammable liquid, turn off engines and nearby electrical equipment. If serious hazards are present leave the area and call 911. LARGE SPILLS ARE LIKELY TO PRESENT A HAZARD.
2. Make Sure the spill area is safe to enter and that it does not pose an immediate threat to health or safety of any person.
3. Stop the spill source.
4. Call co-workers and supervisor for assistance and to make them aware of the spill and potential dangers.
5. If possible, stop spill from entering drains (use absorbent or other material as necessary).
6. Stop spill from spreading (use absorbent or other material)
7. If spilled material has entered a storm sewer, contact locality's storm water department.
8. Clean up spilled material according to manufacturer specifications, for liquid spills use absorbent materials and do not flush area with water.
9. Properly dispose of cleaning materials and used absorbent material according to manufacturer specifications.

Emergency Contacts:

Normal Working Hours

DEQ Northern Regional Office	703-583-3800

Nights, Holidays & Weekends

VA Dept. of Emergency Management 24 Hour Reporting Service	804-674-2400

Local Contacts

Falls Church Police	703-248-5053
Falls Church Fire & Rescue	703-532-2672
Public Works	703-228-6555
Washington Gas Emergency	703-750-1400

AMT
A. MORTON THOMAS AND ASSOCIATES, INC.
CONSULTING ENGINEERS
800 KING FARM BLVD, FOURTH FLOOR ROCKVILLE, MD 20850
(301) 881-2545 FAX:(301) 881-0814
EMAIL: AMT1@AMTENGINEERING.COM

COMMONWEALTH OF VIRGINIA
J. KEITH SINCLAIR, JR.
Lic. No. 11195
03/09/2022
PROFESSIONAL ENGINEER

REGISTRATION STAMP

NOT FOR CONSTRUCTION

PROFESSIONAL CERTIFICATION

"I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED CERTIFIED LANDSCAPE ARCHITECT UNDER THE LAWS OF THE STATE OF VIRGINIA, LICENSE NO. 1562, EXPIRATION DATE 06/30/2021"

PROJECT TITLE
EXPANSION OF THE W&OD TRAIL
FALLS CHURCH, VA
UPC 113612

REVISIONS

MARK	DATE	DESCRIPTION

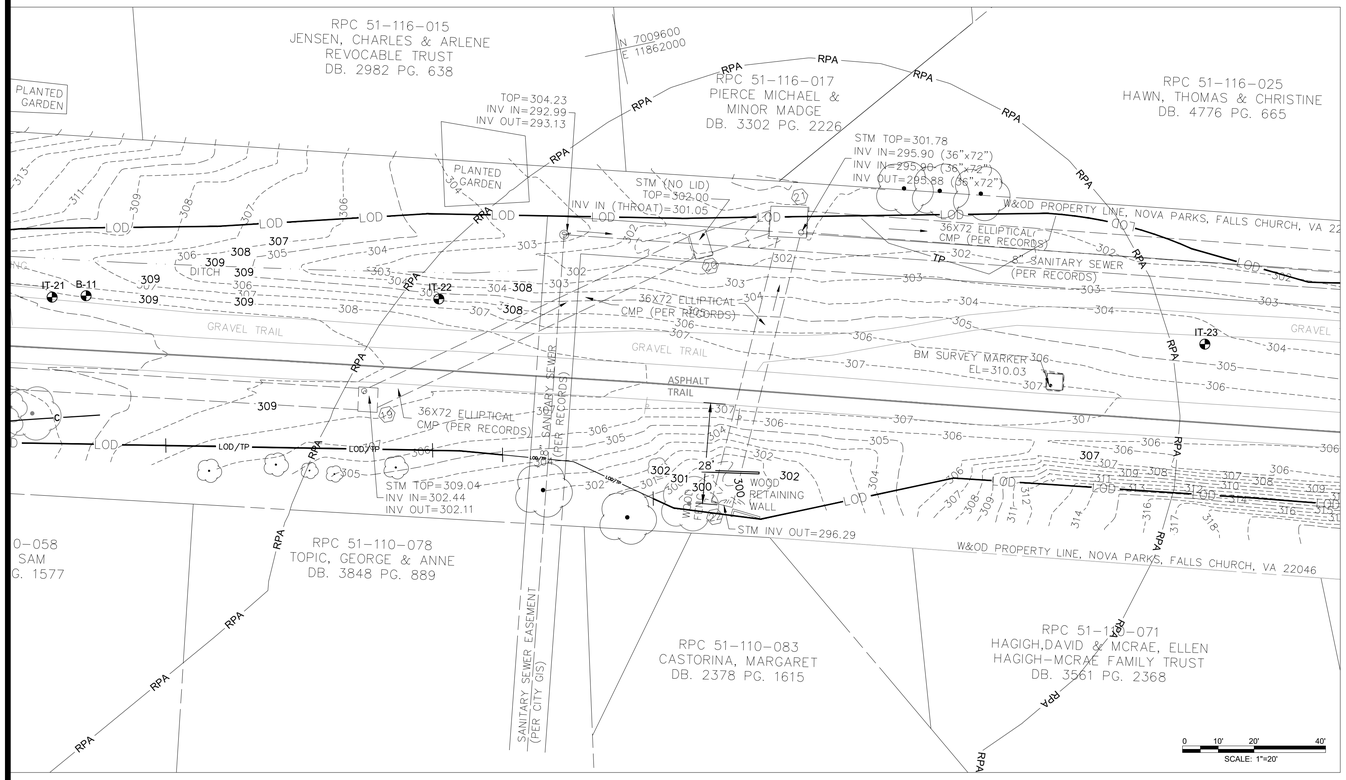
AMT FILE NO.	18-0367
DATE:	3/18/2020
SCALE:	1"=20'
DESIGNED BY:	AMT
DRAWN BY:	AMT
CHECKED BY:	AMT

100% DESIGN

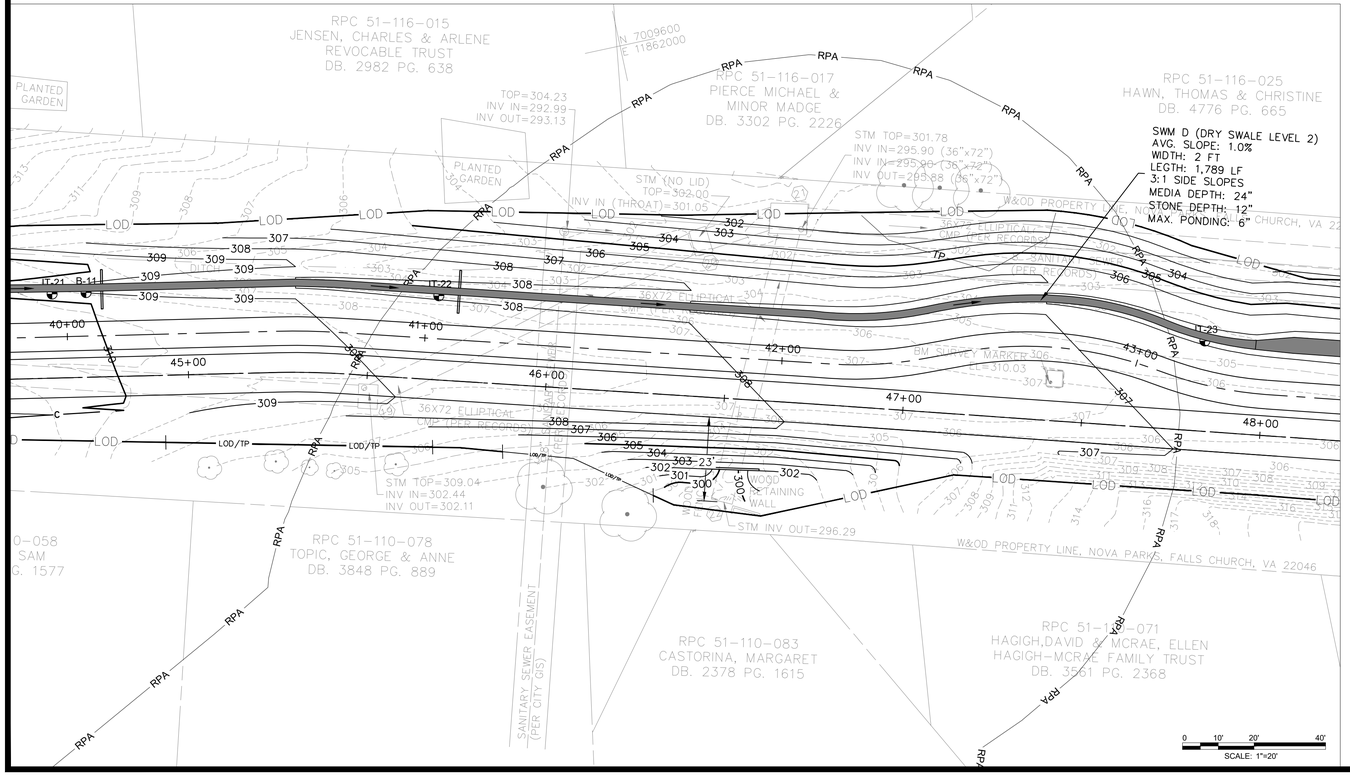
SHEET TITLE
STORMWATER MANAGEMENT DETAILS AND POLLUTION PREVENTION PLAN

SHEET
CW5.3

PRE-DEVELOPMENT



POST-DEVELOPMENT



Appendix C. Water Quality Impact Assessment Data Sheet

Project Address WASHINGTON & OLD DOMINION TRAIL	Date: 10/24/2019
Applicant Name/Affiliation: BRIAN NOLAN/NOVA PARKS	Applicant Contact Information (phone and email): 703-359-4621 ; BNOLAN@NVRPA.ORG
Owner/Client Name: BRIAN NOLAN/NOVA PARKS	Owner/Client Contact Information (phone and email): 703-359-4621 ; BNOLAN@NVRPA.ORG

Section 1: Type of activity proposed

Activity type (check all that apply):

- ☐ New construction (residential, commercial, public, etc.)
- ☐ Alteration of non-residential structure
- ☐ Residential addition
- ☐ Detached residential structure
- ☐ Deck, patio, or retaining wall
- ☑ Landscaping (includes tree removal)
- ☑ Utility work
- ☐ Fence
- ☑ Other (please describe): PUBLIC TRAIL IMPROVEMENTS

Section 2: Key details of the proposed activity

Complete all that apply		Explanation
Total area of disturbance on parcel (sf)	337,799	Includes building footprint plus a 10 foot buffer. Also includes all soil disturbance, ingress/egress areas, stockpiling areas, etc.
Area of disturbance within RPA (sf)	15,786	Includes removal of trees ≥ 3" in diameter
Area of disturbance on slopes greater than or equal to 15 percent located adjacent to landward RPA boundary (sf)	9,074	Does not apply to RPA parcels along Chain Bridge Road (15 percent and greater slopes are included as part of RPA)

Complete all fields		Existing condition	Proposed condition	Explanation
RPA encroachment (ft)	Left third of parcel or site	N/A	N/A	The **distance** (in feet) from the existing or proposed structure to the designated RPA feature (edge of stream or open channel, wetland, etc.). Encroachments of zero (0) indicate the project will impact the stream or other RPA feature.
	Middle third of parcel or site	28	23	
	Right third of parcel or site	N/A	N/A	
Total development footprint in RPA (sf)		3,744	4,736	The existing footprint includes the **area** of any existing structures, patios, decks, walkways, etc. Proposed footprint is the anticipated post-project area of all structures, additions, decks, walkways, regraded area behind a retaining wall, etc.
Impervious footprint in RPA (sf)		3,744	4,736	Total **area** of impervious surfaces within the RPA (rooftops, pavement, etc.)

(OVER)

STAFF USE ONLY

Building/demolition/LDA/Fence permit number(s):

Major WQIA required? ☐ Yes ☐ No

Date WQIA/Exception request information complete:

Date Chesapeake Bay Preservation Ordinance and E/S ordinance (if applicable) approvals issued in Permits Plus:

Section 3: Plan and Narrative

Provide a plan showing the location of the proposed activity, along with the RPA boundary
Briefly describe the proposed project, including any potential water quality impacts and mitigation measuresproposed. The narrative must address three impact categories 1. Tree/vegetation impacts, 2. Stormwater and runoff 3. Erosion and sediment control. Please refer to the WQIA plan/narrative checklist for additional information.

1. REFER TO SHEETS CD1.0 – CD1.11 FOR LOCATION OF TREE PROTECTION MEASURES AND SHEET CS5.3 FOR DETAILS.
2. REFER TO SHEETS CW1.0 – CW1.11 FOR STORMWATER MANAGEMENT PLANS AND SHEET CW5.0 AND CW5.0 FOR COMPUTATIONS AND DETAILS.
3. REFER TO SHEETS CE1.0 – CE1.11 FOR EROSION AND SEDIMENT CONTROL PLANS AND SHEETS CE5.0 AND CE5.1 FOR NOTES, NARRATIVES AND DETAILS.

PROJECT NARRATIVE:

THE PROJECT CONSISTS OF UPGRADING APPROXIMATELY 1.1 MILES OF THE EXISTING EXISTING VARIABLE WIDTH WASHINGTON & OLD DOMINION TRAIL TO A DUAL TRAIL SYSTEM. PER CITY OF FALLS CHURCH CODE SECTION 35-11(e)(4), PASSIVE RECREATION FACILITIES SUCH AS BOARDWALKS, TRAILS AND PATHWAYS MAY BE EXEMPT FROM THE REQUIREMENTS OF THE CHESAPEAKE BAY PRESERVATION ORDINANCE.

THE RIGHT-OF-WAY IS CURRENTLY MAINTAINED BY NOVA PARKS. THIS RPA IS THE END OF THE TRAMMEL BRANCH TRIBUTARY WHERE IT TRANSITIONS TO PIPED FLOW UNTIL OUTFALLING INTO FOUR MILE RUN TO THE EAST.

THE EXISTING TRAIL, 28 FEET FROM THE RPA, IS CROWNED SUCH THAT A PORTION OF THE IMPERVIOUS TRAIL SHEET FLOWS DIRECTLY INTO THE RPA. THE NEW TRAIL TYPICAL SECTION WILL FEATURE AN 11' WIDE BICYCLE TRAIL AND AN 8' WIDE PEDESTRIAN TRAIL. THE PROPOSED TRAIL ALIGNMENT IS 23 FEET FROM THE EDGE OF THE WATER FEATURE, BUT IS PITCHED TO DRAIN INTO A LEVEL 2 DRY SWALE TO THE NORTH. THEREFORE THIS PROJECT ELIMINATES IMPERVIOUS AREA SHEET FLOW INTO THE RPA. THE LEVEL 2 DRY SWALE DRAINS TO THE EAST WHERE IT WILL BE TREATED IN SERIES BY A MANUFACTURED TREATMENT DEVICE AND PIPED INTO THE MS4 SYSTEM PRIOR TO ENTERING FOUR MILE RUN.

Additional Water Quality Impact Assessment Information

The information supplied on this form satisfies the minimum requirements for a Minor Water Quality Impact Assessment. For projects that disturb over 2500 square feet, elements of a Major Water Quality Impact Assessment may also be required, depending on the nature and extent of the proposed RPA encroachment, as outlined in Section 35-12 of the ordinance.

AMT
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EMAIL: AMT1@AMTENGINEERING.COM

COMMONWEALTH OF VIRGINIA
J. KEITH SINCLAIR, JR.
Lic. No. 11195
03/03/2022
PROFESSIONAL ENGINEER

REGISTRATION STAMP

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PROFESSIONAL CERTIFICATION
"I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED CERTIFIED LANDSCAPE ARCHITECT UNDER THE LAWS OF THE STATE OF VIRGINIA. LICENSE NO. 1542 , EXPIRATION DATE 06/30/2021."

PROJECT TITLE

EXPANSION OF THE W&OD TRAIL
FALLS CHURCH, VA
UPC 113612

REVISIONS

MARK	DATE	DESCRIPTION

AMT FILE NO.	18-0367
DATE:	3/2020
SCALE:	1"=20'
DESIGNED BY:	AMT
DRAWN BY:	AMT
CHECKED BY:	AMT

100% DESIGN

SHEET TITLE

WATER QUALITY IMPACT ASSESSMENT

SHEET

CW5.4

Table 4-2: Summary of Infiltration Test Results

Boring ID	Infiltration Hole Depth (ft.)	Infiltration Rate (in./hr.)	USDA Classification
IF-1	6.0	9.50	Silt Loam
IF-2	6.0	0.0	Loam
IF-3	6.0	1.31	Loam
IF-4	6.0	5.44	Sandy Loam
IF-5	6.0	0.25	Sandy Loam
IF-6	6.0	0.30	Sandy Loam
IF-7	6.0	7.75	Sandy Loam

DMY

PROJECT NAME: W&OD Trail - Falls Church
PROJECT NO.: 01.03949.01
LOCATION: Falls Church, VA
CLIENT: AMT, Inc.

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PAGE 1 OF 1

DATE(S) DRILLED:7/3/2019
DRILLING METHOD(S): Hand Augers and DCP
DRILLING EQUIPMENT: Hand Auger
DRILLER: D. Pao/M. Becerra LOGGER: A. Damtew
SURFACE ELEVATION: 338.0 ft

GROUND WATER WAS NOT ENCOUNTERED DURING DRILLING
DRY ON 7/5/2019

FIELD DATA: DEPTH (FT) | ELEVATION (FT) | SPT BLOW COUNTS | SAMPLE LEGEND | SAMPLE INTERVAL | % RECOVERY | ROCK QUALITY DESIGNATION % | RMR | GEOLOGIC STRATA | GRAPHIC LOG

LAB DATA: LIQUID LIMIT | PLASTICITY INDEX | MOISTURE CONTENT (%) | % Finer than #200

MATERIAL DESCRIPTION OF STRATA

Depth	Elevation	SPT blow counts	Sample interval	Geologic strata	Material description	LL	PI	Moisture content (%)	% Finer than #200
					0.0 / 338.0 TOPSOIL **Tops -2** in				
		8	0.5	F1	0.2 / 337.8 Brown, sandy elastic silt FILL, trace gravel, firm, moist **FL-MH**			35.0	
	335	7	2.5		2.5 / 335.5 Brown, sandy ELASTIC SILT, firm, moist **MH**			34.5	
5		7	4.5	R1	SAME, trace gravel, contains mica			47.5	
		6	6.5					35.0	62.8
	330	8	8.5	R2	8.5 / 329.5 Brown, sandy SILT, trace gravel, firm, moist **ML**	NP	NP	18.3	67.6
10					10.0 / 328.0 Boring Terminated				

REMARKS: Approximate surface elevation obtained from the boring plan provided by AMT. N-values are corrected from the average of the second and third DCP blow counts at each interval based on ASTM Special Technical Publication #399 Dynamic Cone for Shallow in-situ Penetration Testing. 1½" PVC installed for 24-hr groundwater level reading.

PAGE 1 OF 1
B-1

DMY ENGINEERING CONSULTANTS INC.
45662 Terminal Drive, Suite 110
Dulles, Virginia 20166
tel: (703) 665-0586 fax: (301) 768-4169

DMY

PROJECT NAME: W&OD Trail - Falls Church
PROJECT NO.: 01.03949.01
LOCATION: Falls Church, VA
CLIENT: AMT, Inc.

B-2
PAGE 1 OF 1

DATE(S) DRILLED:7/3/2019
DRILLING METHOD(S): Hand Augers and DCP
DRILLING EQUIPMENT: Hand Auger
DRILLER: D. Pao/M. Becerra LOGGER: A. Damtew
SURFACE ELEVATION: 334.2 ft

GROUND WATER WAS NOT ENCOUNTERED DURING DRILLING
7.75 ON 7/5/2019

FIELD DATA: DEPTH (FT) | ELEVATION (FT) | SPT BLOW COUNTS | SAMPLE LEGEND | SAMPLE INTERVAL | % RECOVERY | ROCK QUALITY DESIGNATION % | RMR | GEOLOGIC STRATA | GRAPHIC LOG

LAB DATA: LIQUID LIMIT | PLASTICITY INDEX | MOISTURE CONTENT (%) | % Finer than #200

MATERIAL DESCRIPTION OF STRATA

Depth	Elevation	SPT blow counts	Sample interval	Geologic strata	Material description	LL	PI	Moisture content (%)	% Finer than #200
					0.0 / 334.2 TOPSOIL **Tops -2** in				
		3	0.5	F2	0.2 / 334.0 Brown and gray, sandy silt FILL, trace gravel, soft, moist **FL-ML**			21.8	
		6	2.5		2.5 / 331.7 Brown, sandy LEAN CLAY, trace gravel, firm, moist **CL**			23.4	
5	330	7	4.5	R2	SAME, contains mica			25.3	
		7	6.5		6.0 / 328.2 Brown, sandy ELASTIC SILT, contains mica, firm, moist **MH**			37.2	68.3
	325	7	8.5	R1				33.6	
10					10.0 / 324.2 Boring Terminated				

REMARKS: Approximate surface elevation obtained from the boring plan provided by AMT. N-values are corrected from the average of the second and third DCP blow counts at each interval based on ASTM Special Technical Publication #399 Dynamic Cone for Shallow in-situ Penetration Testing. 1½" PVC installed for 24-hr groundwater level reading.

PAGE 1 OF 1
B-2

DMY ENGINEERING CONSULTANTS INC.
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Dulles, Virginia 20166
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DMY

PROJECT NAME: W&OD Trail - Falls Church
PROJECT NO.: 01.03949.01
LOCATION: Falls Church, VA
CLIENT: AMT, Inc.

B-3
PAGE 1 OF 1

DATE(S) DRILLED:7/3/2019
DRILLING METHOD(S): Hand Augers and DCP
DRILLING EQUIPMENT: Hand Auger
DRILLER: D. Pao/M. Becerra LOGGER: A. Damtew
SURFACE ELEVATION: 337.5 ft

GROUND WATER WAS NOT ENCOUNTERED DURING DRILLING
7.67 ON 7/5/2019

FIELD DATA: DEPTH (FT) | ELEVATION (FT) | SPT BLOW COUNTS | SAMPLE LEGEND | SAMPLE INTERVAL | % RECOVERY | ROCK QUALITY DESIGNATION % | RMR | GEOLOGIC STRATA | GRAPHIC LOG

LAB DATA: LIQUID LIMIT | PLASTICITY INDEX | MOISTURE CONTENT (%) | % Finer than #200

MATERIAL DESCRIPTION OF STRATA

Depth	Elevation	SPT blow counts	Sample interval	Geologic strata	Material description	LL	PI	Moisture content (%)	% Finer than #200
					0.0 / 337.5 TOPSOIL **Tops -3** in				
		9	0.5	F2	0.3 / 337.3 Red and brown, sandy silt FILL, contains mica, soft to stiff, moist **FL-ML**			22.1	
	335	4	2.5					29.9	
5		6	4.5	R1	4.5 / 333.0 Red and brown, sandy ELASTIC SILT, contains mica, soft to firm, moist **MH**			45.1	
	330	4	6.5			51	7	50.0	75.6
		4	8.5					39.8	67.8
10					10.0 / 327.5 Boring Terminated				

REMARKS: Approximate surface elevation obtained from the boring plan provided by AMT. N-values are corrected from the average of the second and third DCP blow counts at each interval based on ASTM Special Technical Publication #399 Dynamic Cone for Shallow in-situ Penetration Testing. 1½" PVC installed for 24-hr groundwater level reading.

PAGE 1 OF 1
B-3

DMY ENGINEERING CONSULTANTS INC.
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Dulles, Virginia 20166
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DMY

PROJECT NAME: W&OD Trail - Falls Church
PROJECT NO.: 01.03949.01
LOCATION: Falls Church, VA
CLIENT: AMT, Inc.

B-4
PAGE 1 OF 1

DATE(S) DRILLED:7/3/2019
DRILLING METHOD(S): Hand Augers and DCP
DRILLING EQUIPMENT: Hand Auger
DRILLER: D. Pao/M. Becerra LOGGER: A. Damtew
SURFACE ELEVATION: 335.7 ft

GROUND WATER WAS NOT ENCOUNTERED DURING DRILLING
7.42 ON 7/5/2019

FIELD DATA: DEPTH (FT) | ELEVATION (FT) | SPT BLOW COUNTS | SAMPLE LEGEND | SAMPLE INTERVAL | % RECOVERY | ROCK QUALITY DESIGNATION % | RMR | GEOLOGIC STRATA | GRAPHIC LOG

LAB DATA: LIQUID LIMIT | PLASTICITY INDEX | MOISTURE CONTENT (%) | % Finer than #200

MATERIAL DESCRIPTION OF STRATA

Depth	Elevation	SPT blow counts	Sample interval	Geologic strata	Material description	LL	PI	Moisture content (%)	% Finer than #200
					0.0 / 335.7 TOPSOIL **Tops -3** in				
	335	10	0.5	F1	0.3 / 335.5 Red and brown, sandy elastic silt FILL, stiff, moist **FL-MH**			39.6	
		7	2.5		2.5 / 333.2 Red and brown, sandy ELASTIC SILT, trace gravel, firm to stiff, moist **MH**			43.4	
5	330	10	4.5	R1				45.2	
		10	6.5					48.1	51.1
		6	8.5		SAME, contains mica			40.4	
10					10.0 / 325.7 Boring Terminated				

REMARKS: Approximate surface elevation obtained from the boring plan provided by AMT. N-values are corrected from the average of the second and third DCP blow counts at each interval based on ASTM Special Technical Publication #399 Dynamic Cone for Shallow in-situ Penetration Testing. 1½" PVC installed for 24-hr groundwater level reading.

PAGE 1 OF 1
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DMY ENGINEERING CONSULTANTS INC.
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Dulles, Virginia 20166
tel: (703) 665-0586 fax: (301) 768-4169

DMY

PROJECT NAME: W&OD Trail - Falls Church
PROJECT NO.: 01.03949.01
LOCATION: Falls Church, VA
CLIENT: AMT, Inc.

B-5
PAGE 1 OF 1

DATE(S) DRILLED:7/3/2019
DRILLING METHOD(S): Hand Augers and DCP
DRILLING EQUIPMENT: Hand Auger
DRILLER: D. Pao/M. Becerra LOGGER: A. Damtew
SURFACE ELEVATION: 320.1 ft

GROUND WATER WAS NOT ENCOUNTERED DURING DRILLING
7.42 ON 7/5/2019

FIELD DATA: DEPTH (FT) | ELEVATION (FT) | SPT BLOW COUNTS | SAMPLE LEGEND | SAMPLE INTERVAL | % RECOVERY | ROCK QUALITY DESIGNATION % | RMR | GEOLOGIC STRATA | GRAPHIC LOG

LAB DATA: LIQUID LIMIT | PLASTICITY INDEX | MOISTURE CONTENT (%) | % Finer than #200

MATERIAL DESCRIPTION OF STRATA

Depth	Elevation	SPT blow counts	Sample interval	Geologic strata	Material description	LL	PI	Moisture content (%)	% Finer than #200
	320				0.0 / 320.1 TOPSOIL **Tops -2** in				
		4	0.5	F2	0.2 / 319.9 Brown and tan, sandy lean clay FILL, trace gravel, contains mica, soft to firm, moist **FL-CL**			25.8	
		7	2.5					26.0	
5	315	7	4.5	R3	4.5 / 315.6 Brown and gray, fine to medium SILTY SAND, contains mica, loose to medium dense, moist **SM**			20.8	
		16	6.5					20.9	45.8
		13	8.5					19.2	
10					10.0 / 310.1 Boring Terminated				

REMARKS: Approximate surface elevation obtained from the boring plan provided by AMT. N-values are corrected from the average of the second and third DCP blow counts at each interval based on ASTM Special Technical Publication #399 Dynamic Cone for Shallow in-situ Penetration Testing. 1½" PVC installed for 24-hr groundwater level reading.

PAGE 1 OF 1
B-5

DMY ENGINEERING CONSULTANTS INC.
45662 Terminal Drive, Suite 110
Dulles, Virginia 20166
tel: (703) 665-0586 fax: (301) 768-4169

DMY

PROJECT NAME: W&OD Trail - Falls Church
PROJECT NO.: 01.03949.01
LOCATION: Falls Church, VA
CLIENT: AMT, Inc.

B-6
PAGE 1 OF 1

DATE(S) DRILLED:7/3/2019
DRILLING METHOD(S): Hand Augers and DCP
DRILLING EQUIPMENT: Hand Auger
DRILLER: D. Pao/M. Becerra LOGGER: A. Damtew
SURFACE ELEVATION: 312.2 ft

GROUND WATER WAS NOT ENCOUNTERED DURING DRILLING
6.50 ON 7/5/2019

FIELD DATA: DEPTH (FT) | ELEVATION (FT) | SPT BLOW COUNTS | SAMPLE LEGEND | SAMPLE INTERVAL | % RECOVERY | ROCK QUALITY DESIGNATION % | RMR | GEOLOGIC STRATA | GRAPHIC LOG

LAB DATA: LIQUID LIMIT | PLASTICITY INDEX | MOISTURE CONTENT (%) | % Finer than #200

MATERIAL DESCRIPTION OF STRATA

Depth	Elevation	SPT blow counts	Sample interval	Geologic strata	Material description	LL	PI	Moisture content (%)	% Finer than #200
					0.0 / 312.2 TOPSOIL **Tops -3** in				
		4	0.5	F2	0.3 / 312.0 Brown and red, sandy silt FILL, trace gravel, contains mica, soft, moist **FL-ML**			18.9	
	310	2	2.5					26.0	
5		4	4.5	R3	4.5 / 307.7 Brown and red, fine to medium SILTY SAND, contains mica, loose, moist **SM**			30.1	
		4	6.5					27.0	27.9
					7.0 / 305.2 Hand Auger Refusal				

REMARKS: Approximate surface elevation obtained from the boring plan provided by AMT. N-values are corrected from the average of the second and third DCP blow counts at each interval based on ASTM Special Technical Publication #399 Dynamic Cone for Shallow in-situ Penetration Testing. 1½" PVC installed for 24-hr groundwater level reading.

PAGE 1 OF 1
B-6

DMY ENGINEERING CONSULTANTS INC.
45662 Terminal Drive, Suite 110
Dulles, Virginia 20166
tel: (703) 665-0586 fax: (301) 768-4169

AMT
A. MORTON THOMAS AND ASSOCIATES, INC.
CONSULTING ENGINEERS
800 KING FARM BLVD, FOURTH FLOOR ROCKVILLE, MD 20850
(301) 881-2545 FAX:(301) 881-0814
EMAIL: AMT1@AMTENGINEERING.COM

COMMONWEALTH OF VIRGINIA
J. KEITH SINCLAIR, JR.
Lic. No. 11195
03/03/2020
PROFESSIONAL ENGINEER

REGISTRATION STAMP

NOT FOR CONSTRUCTION

PROFESSIONAL CERTIFICATION
"I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED CERTIFIED LANDSCAPE ARCHITECT UNDER THE LAWS OF THE STATE OF VIRGINIA. LICENSE NO. 1542 , EXPIRATION DATE 06/30/2021"

PROJECT TITLE
EXPANSION OF THE W&OD TRAIL
FALLS CHURCH, VA
UPC 113612

REVISIONS

MARK	DATE	DESCRIPTION

AMT FILE NO.	18-0367
DATE:	3/2020
SCALE:	1"=20'
DESIGNED BY:	AMT
DRAWN BY:	AMT
CHECKED BY:	AMT

100% DESIGN

SHEET TITLE
SOIL BORING LOGS

SHEET
CW5.5

DMY

PROJECT NAME: W&OD Trail - Falls Church
PROJECT NO.: 01.03949.01
LOCATION: Falls Church, VA
CLIENT: AMT, Inc.

B-7

PAGE 1 OF 1

DATE(S) DRILLED:7/2/2019
DRILLING METHOD(S): Hand Augers and DCP
DRILLING EQUIPMENT: Hand Auger
DRILLER: D. Pac/M. Becerra LOGGER: A. Damtew
SURFACE ELEVATION: 302.6 ft

FIELD DATA | LAB DATA

GROUND WATER WAS NOT ENCOUNTERED DURING DRILLING

DRY ON 7/5/2019

DEPTH (FT)	ELEVATION (FT)	SPT BLOW COUNTS	SAMPLE LEGEND	SAMPLE INTERVAL	% RECOVERY	ROCK QUALITY DESIGNATION %	RMR	GEOLOGIC STRATA	GRAPHIC LOG	MATERIAL DESCRIPTION OF STRATA	LIQUID LIMIT LL	PLASTICITY INDEX PI	MOISTURE CONTENT (%)	% Finer than #200
										0.0 / 302.6 TOPSOIL **Tops** -3 in				
		6		0.5						0.3 / 302.4 Brown, sandy silt FILL, trace gravel, contains mica, firm to very stiff, moist **FL-ML**			10.5	
	300	16		2.5				F2					14.2	
5		14		4.5						4.5 / 298.1 Brown, fine to medium SILTY SAND, contains mica, medium dense, moist, no gravel **SM**	NP	NP	16.3	29.6
		14		6.5				R3					16.5	29.3
10	295	16		8.5						SAME, trace gravel			19.9	
										10.0 / 292.6 Boring Terminated				

REMARKS: Approximate surface elevation obtained from the boring plan provided by AMT. N-values are corrected from the average of the second and third DCP blow counts at each interval based on ASTM Special Technical Publication #399 Dynamic Cone for Shallow in-situ Penetration Testing. 1½" PVC installed for 24-hr groundwater level reading.

PAGE 1 OF 1

B-7

DMY ENGINEERING CONSULTANTS INC.
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SPT_LOG FIELD - ENGINEERING@ PROPOSAL SAPROJECTS\DMY VA\01.03949\W&OD TRAIL FALLS CHURCH\AMT\04-DRILLING\FIELD LOGS\01.03949.01-W&OD\01.03949.01-W&OD\01.03949.01.GPJ

HYNES & ASSOCIATES

LOG OF BORING B-8

(Page 1 of 1)

Piedmont Geotechnical, Inc.
286 High Rail Terrace, SE
Leesburg, Virginia 20175

Piedmont-W&OD Trail Project
Project No.: JDH-10/20/106

Date Completed: : February 5, 2020
Logged By: : J. Lindsey
Drilled By: : B. Walters
Drilling Method: : HSA (Geoprobe 3230 DT)
Total Depth: : 9 feet

Depth in Feet	DESCRIPTION	GRAPHIC	USCS	Sample No.	Blow Counts	REMARKS
0	Brown, wet, soft, clayey SILT, with trace fine to coarse sand (Micaceous)		ML	1	1-1-3-4	Scale 1" ~ 3 feet Approximately 6 inches of organic bearing soil was encountered at the ground surface.
2				2	1-2-3-4	Groundwater was not encountered during drilling operations.
4	Brown, wet, medium stiff, SILT, with trace to little fine to medium sand (Micaceous)		ML	3	2-4-5-7	Boring caved in at 8 feet. Laboratory Test Results Sample No. 6 From 6 to 8 feet
6				4	10-13-6-5	Atterberg Limits Liquid Limit = Plasticity Index = NP Natural Moisture = 46 %
8				5	6-8	
	Boring terminated at 9 feet.					
10						
12						
14						
16						
18						
20						

02-19-2020 J:\Mech 2019\Piedmont W&OD Trail Project\B-8.bor

HYNES & ASSOCIATES

LOG OF BORING B-9

(Page 1 of 1)

Piedmont Geotechnical, Inc.
286 High Rail Terrace, SE
Leesburg, Virginia 20175

Piedmont-W&OD Trail Project
Project No.: JDH-10/20/106

Date Completed: : February 5, 2020
Logged By: : J. Lindsey
Drilled By: : B. Walters
Drilling Method: : HSA (Geoprobe 3230 DT)
Total Depth: : 6 feet

Depth in Feet	DESCRIPTION	GRAPHIC	USCS	Sample No.	Blow Counts	REMARKS
0	Brown, wet, very soft, clayey SILT, with little fine to medium sand		ML	1	1-1-1-2	Scale 1" ~ 3 feet Approximately 4 inches of organic bearing soil was encountered at the ground surface.
2	Brown, wet, soft, clayey SILT, with trace fine sand (Micaceous)		MH	2	1-3-2-2	Groundwater was not encountered during drilling operations. Boring caved in at 5 feet.
4				3	2-1-3-3	Laboratory Test Results Sample No. 3 From 4 to 6 feet
6	Boring terminated at 6 feet.					Atterberg Limits Liquid Limit = 58 Plasticity Index = 21 Natural Moisture = 25.4 %
8						
10						
12						
14						
16						
18						
20						

02-19-2020 J:\Mech 2019\Piedmont W&OD Trail Project\B-9.bor

HYNES & ASSOCIATES

LOG OF BORING B-10

(Page 1 of 1)

Piedmont Geotechnical, Inc.
286 High Rail Terrace, SE
Leesburg, Virginia 20175

Piedmont-W&OD Trail Project
Project No.: JDH-10/20/106

Date Completed: : February 5, 2020
Logged By: : J. Lindsey
Drilled By: : B. Walters
Drilling Method: : HSA (Geoprobe 3230 DT)
Total Depth: : 10 feet

Depth in Feet	DESCRIPTION	GRAPHIC	USCS	Sample No.	Blow Counts	REMARKS
0	Brown, wet, soft, silty CLAY, with trace fine to medium sand		CL	1	1-2-3-4	Scale 1" ~ 3 feet Approximately 6 inches of organic bearing soil was encountered at the ground surface.
2	Brown, wet, medium stiff to stiff, clayey SILT, with trace to little fine to medium sand (Micaceous)		ML	2	2-2-4-6	Groundwater was not encountered during drilling operations. Boring caved in at 7 feet.
4				3	3-4-7-10	Laboratory Test Results Sample No. 5 From 8 to 9 feet
6	Brown, wet, very stiff, clayey SILT, with trace fine to medium sand (Micaceous)		ML	4	9-12-14-18	Atterberg Limits Liquid Limit = 45 Plasticity Index = 6 Natural Moisture = 31.2 %
8				5	4-7-8-9	
10	Boring terminated at 10 feet.					
12						
14						
16						
18						
20						

02-19-2020 J:\Mech 2019\Piedmont W&OD Trail Project\B-10.bor

HYNES & ASSOCIATES

LOG OF BORING B-11

(Page 1 of 1)

Piedmont Geotechnical, Inc.
286 High Rail Terrace, SE
Leesburg, Virginia 20175

Piedmont-W&OD Trail Project
Project No.: JDH-10/20/106

Date Completed: : February 5, 2020
Logged By: : J. Lindsey
Drilled By: : B. Walters
Drilling Method: : HSA (Geoprobe 3230 DT)
Total Depth: : 6 feet

Depth in Feet	DESCRIPTION	GRAPHIC	USCS	Sample No.	Blow Counts	REMARKS
0	Brown, wet, soft, silty CLAY, with trace fine to medium sand		CL	1	4-3-2-6	Scale 1" ~ 3 feet Approximately 6 inches of crushed stone was encountered at the ground surface.
2	Brown, wet, very stiff, silty CLAY, with little fine sand		CL	2	9-10-6-8	Groundwater was not encountered during drilling operations. Laboratory Test Results
4	Brown, wet, medium stiff SILT, with trace fine to medium sand (Micaceous)		ML	3	6-4-3-4	Sample No. 3 From 4 to 6 feet Atterberg Limits
6	Boring terminated at 6 feet.					Liquid Limit = 42 Plasticity Index = 4 Natural Moisture = 25.4 %
8						
10						
12						
14						
16						
18						
20						

02-19-2020 J:\Mech 2019\Piedmont W&OD Trail Project\B-11.bor

6.0 INFILTRATION TESTING RESULTS

Modified constant head infiltration test was conducted in the hand auger infiltration borings to determine the general infiltration capabilities of the soils at the proposed SWM facilities. Based on the field infiltration test results, the calculated infiltration rates for soils at each location are summarized below:

Infiltration Boring	Test Depth	Infiltration Rate (in/hr)	USDA
IF-8	6.8	0.8	Silt Loam
IF-9	5.5	2.8	Silt Loam
IF-10	9 - water	no test	
IF-11	12 - water	no test	
IF-12	13 - water	no test	
IF-13	8.3	0	Si Clay Loam
IF-14	6.8	0.1	Si Clay Loam
IF-15	6 - water	no test	
IF-16	6 - water	no test	
IF-17	5.9	1.8	Silt Loam
IF-18	5.3	1.6	Silt Loam
IF-19	10 - water	no test	
IF-20	6 - water	no test	
IF-21	5.3	0.3	Si Clay Loam
IF-22	5.5	0.8	Si Clay Loam
IF-23	5.9	3.5	Silt Loam
IF-24	5.1	2.0	Silt Loam

The infiltration testing results are included in Appendix C.

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COMMONWEALTH OF VIRGINIA
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Lic. No. 11195
03/03/2021
PROFESSIONAL ENGINEER

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PROJECT TITLE

EXPANSION OF THE W&OD TRAIL
FALLS CHURCH, VA
UPC 113612

REVISIONS

MARK	DATE	DESCRIPTION

AMT FILE NO.	18-0367
DATE:	3/2020
SCALE:	1"=20'
DESIGNED BY:	AMT
DRAWN BY:	AMT
CHECKED BY:	AMT

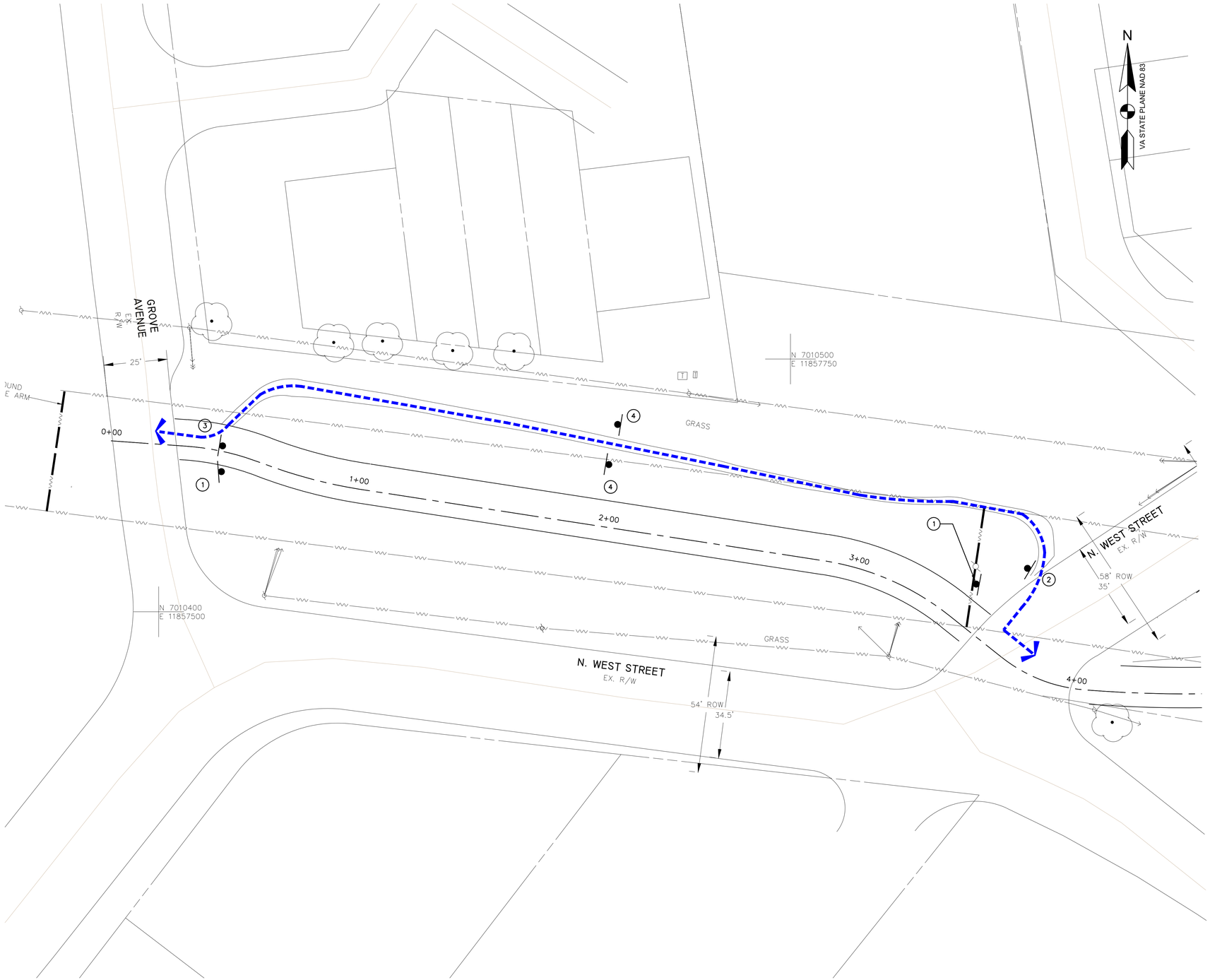
100% DESIGN

SHEET TITLE

SOIL BORING LOGS

SHEET

CW5.6



MAINTENANCE OF TRAFFIC PLAN
SCALE: 1"=20'

MAINTENANCE OF TRAFFIC NOTES

1. CONTRACTOR SHALL RECONSTRUCT EXISTING GRAVEL TRAIL TO HIKER/BIKER TRAIL STANDARD AND SPECIFICATIONS PRIOR TO SHIFTING BICYCLISTS/PEDESTRIANS ONTO IT.
2. CONTRACTOR SHALL MAKE SURE DETOUR SIGNS ARE INSTALLED PRIOR TO CLOSING THE EXISTING HIKER/BIKER TRAIL.

NARRATIVE

THE EXPANSION OF THE W&OD TRAIL WILL CONSIST OF A SIX (6) PHASE PEDESTRIAN AND BICYCLIST DETOUR IN WHICH LINCOLN AVENUE/FAIRFAX DRIVE WILL BE UTILIZED AS THE ALTERNATIVE PARALLEL ROUTE TO THE W&OD TRAIL. STREETS THAT INTERSECT THE W&OD TRAIL WILL HELP TO DIRECT PEDESTRIANS AND BICYCLISTS TO LINCOLN AVENUE/FAIRFAX DRIVE. DETOUR SIGNAGE WILL BE INSTALLED ALONG THE ALTERNATIVE ROUTES IN ORDER TO DIRECT PEDESTRIANS AND BICYCLISTS IN THEIR INTENDED DIRECTIONS IN A SAFE AND EFFICIENT MANNER. EACH PHASE IS PROPOSED TO BE CONSTRUCTED INDEPENDENTLY. THE CONTRACTOR MAY COMBINE PHASES PENDING CITY OF FALLS CHURCH APPROVAL. THE SIX (6) DETOUR PHASES HAVE BEEN BROKEN DOWN AS DESCRIBED BELOW:

PHASE 1:
DETOUR PEDESTRIANS AND BICYCLISTS ALONG THE EXISTING, ADJACENT GRAVEL TRAIL BETWEEN GROVE AVENUE AND N. WEST STREET.

PHASE 2:
DETOUR PEDESTRIANS AND BICYCLISTS TO LINCOLN AVENUE BETWEEN N. WEST STREET AND N. SPRING STREET.

PHASE 3:
DETOUR PEDESTRIANS AND BICYCLISTS TO LINCOLN AVENUE BETWEEN N. SPRING STREET AND N. OAK STREET.

PHASE 4:
DETOUR PEDESTRIANS AND BICYCLISTS TO LINCOLN AVENUE BETWEEN N. OAK STREET AND GREAT FALLS STREET.

PHASE 5:
DETOUR PEDESTRIANS AND BICYCLISTS TO LINCOLN AVENUE/FAIRFAX DRIVE BETWEEN GREAT FALLS STREET AND LITTLE FALLS STREET.

PHASE 6:
DETOUR PEDESTRIANS AND BICYCLISTS TO FAIRFAX DRIVE TO US 29.

SIGN LEGEND

1 — TRAIL CLOSED — R9-9 (MOD.) 30"x18"
TYPE 3 BARRICADE

2 — DETOUR — M4-9aR 30"x24"

3 — DETOUR — M4-9aL 30"x24"

4 — DETOUR — M4-V1(MOD.) 18"x36"

LEGEND

DETOUR ROUTE

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

AMT
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COMMONWEALTH OF VIRGINIA
JACK A. GOODE, II
LIC. NO. -02039202
PROFESSIONAL ENGINEER
1/8/20

REGISTRATION STAMP
NOT FOR CONSTRUCTION

PROFESSIONAL CERTIFICATION
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PROJECT TITLE
EXPANSION OF THE W&OD TRAIL
FALLS CHURCH, VA
UPC 113612

REVISIONS

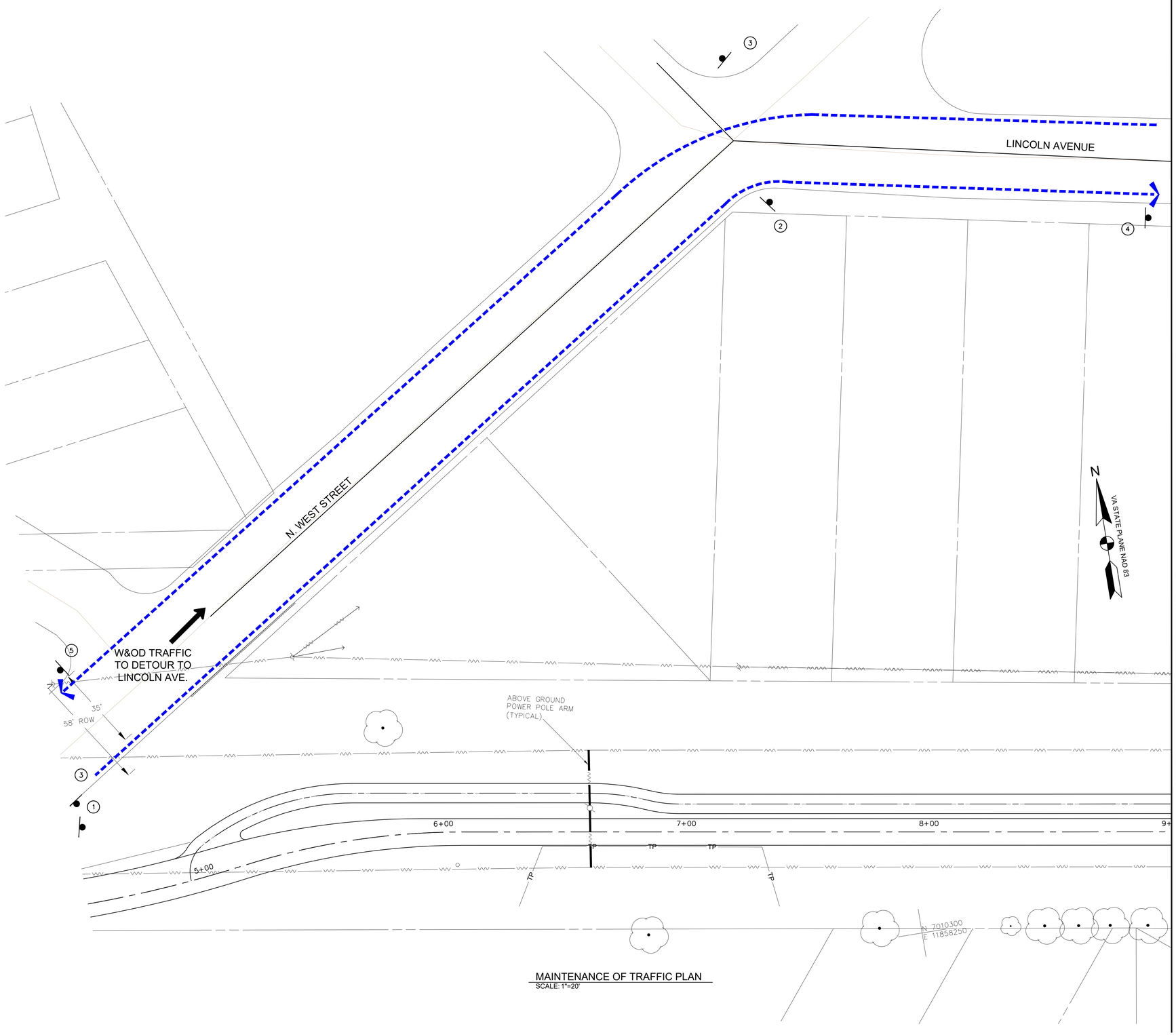
MARK	DATE	DESCRIPTION

AMT FILE NO.	18-0367
DATE:	3/2020
SCALE:	1"=20'
DESIGNED BY:	AMT
DRAWN BY:	AMT
CHECKED BY:	AMT

100% DESIGN

SHEET TITLE
MAINTENANCE OF TRAFFIC PLAN PHASE 1

SHEET
CT 1.0



MAINTENANCE OF TRAFFIC PLAN
SCALE: 1"=20'

MAINTENANCE OF TRAFFIC NOTE

1. CONTRACTOR SHALL MAKE SURE DETOUR SIGNS ARE INSTALLED PRIOR TO CLOSING THE EXISTING HIKER/BIKER TRAIL.

SIGN LEGEND

1 — TRAIL CLOSED — R9-9 (MOD.) 30"x18"

TYPE 3 BARRICADE

2 — DETOUR — M4-9aR 30"x24"

3 — DETOUR — M4-9aL 30"x24"

4 — DETOUR — M4-V1(MOD.) 18"x36"

5 — END DETOUR — M4-8a 24"x18"

LEGEND

DETOUR ROUTE

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

AMT
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COMMONWEALTH OF VIRGINIA
JACK A. GOODE, II
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PROFESSIONAL ENGINEER
1/8/20

REGISTRATION STAMP

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"I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE STATE OF VIRGINIA LICENSE NO. 1542, EXPIRATION DATE 06/30/2021"

PROJECT TITLE

EXPANSION OF THE W&OD TRAIL
FALLS CHURCH, VA
UPC 113612

REVISIONS

MARK	DATE	DESCRIPTION

AMT FILE NO.	18-0367
DATE:	3/2020
SCALE:	1"=20'
DESIGNED BY:	AMT
DRAWN BY:	AMT
CHECKED BY:	AMT

100% DESIGN

SHEET TITLE

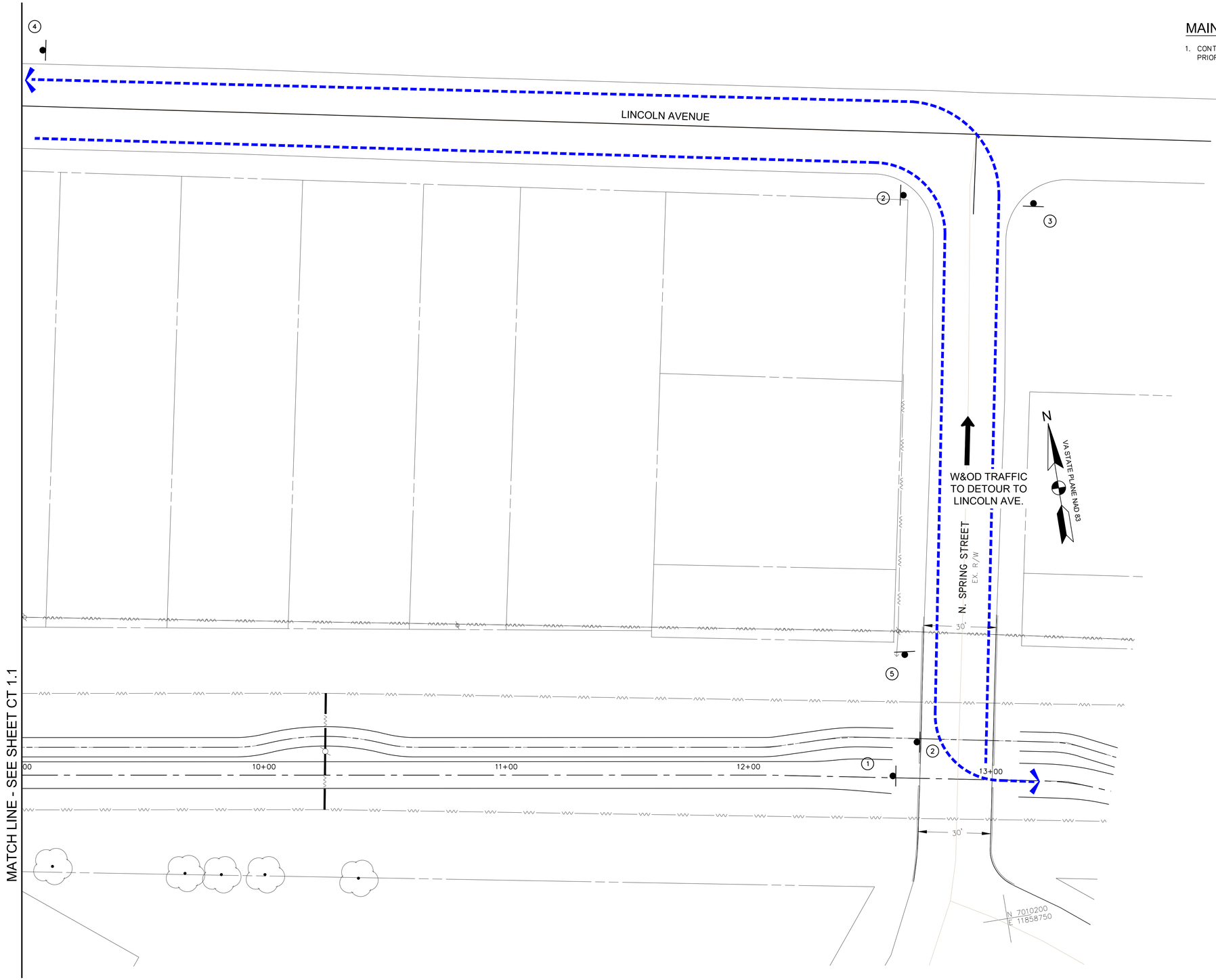
MAINTENANCE OF TRAFFIC PLAN PHASE 2

SHEET

CT 1.1

MAINTENANCE OF TRAFFIC NOTE

1. CONTRACTOR SHALL MAKE SURE DETOUR SIGNS ARE INSTALLED PRIOR TO CLOSING THE EXISTING HIKER/BIKER TRAIL.



MAINTENANCE OF TRAFFIC PLAN
SCALE: 1"=20'

SIGN LEGEND

1 — TRAIL CLOSED — R9-9 (MOD.) 30"x18"

TYPE 3 BARRICADE

2 — DETOUR — M4-9aR 30"x24"

3 — DETOUR — M4-9aL 30"x24"

4 — DETOUR — M4-V1(MOD.) 18"x36"

5 — END DETOUR — M4-8a 24"x18"

LEGEND

DETOUR ROUTE

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

AMT
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PROJECT TITLE

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FALLS CHURCH, VA
UPC 113612

REVISIONS

MARK	DATE	DESCRIPTION

AMT FILE NO.	18-0367
DATE:	3/2020
SCALE:	1"=20'
DESIGNED BY:	AMT
DRAWN BY:	AMT
CHECKED BY:	AMT

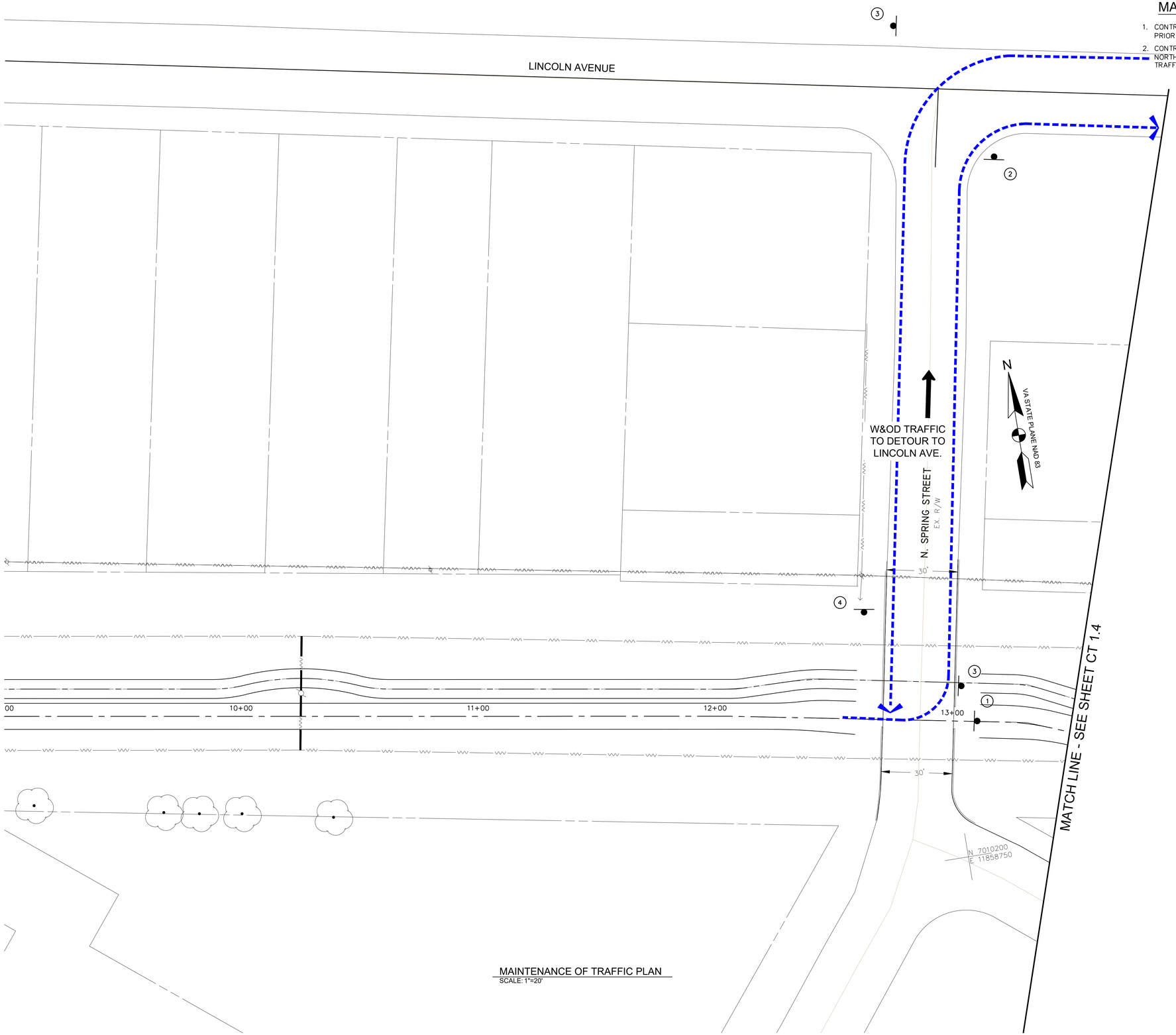
100% DESIGN

SHEET TITLE

MAINTENANCE OF TRAFFIC PLAN PHASE 2

SHEET

CT 1.2



MAINTENANCE OF TRAFFIC PLAN
SCALE: 1"=20'

MAINTENANCE OF TRAFFIC NOTES

1. CONTRACTOR SHALL MAKE SURE DETOUR SIGNS ARE INSTALLED PRIOR TO CLOSING THE EXISTING HIKER/BIKER TRAIL.
2. CONTRACTOR SHALL INSTALL A WATER-FILLED BARRIER ALONG NORTHBOUND SPRING STREET (5' WIDE SECTION) FOR PEDESTRIAN TRAFFIC DUE TO LACK OF SIDEWALK.

SIGN LEGEND

1 — TRAIL CLOSED — R9-9 (MOD.) 30"x18"

TYPE 3 BARRICADE

2 — DETOUR — M4-9aR 30"x24"

3 — DETOUR — M4-9aL 30"x24"

4 — END DETOUR — M4-8a 24"x18"

LEGEND

DETOUR ROUTE

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

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UPC 113612

REVISIONS

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AMT FILE NO.	18-0367
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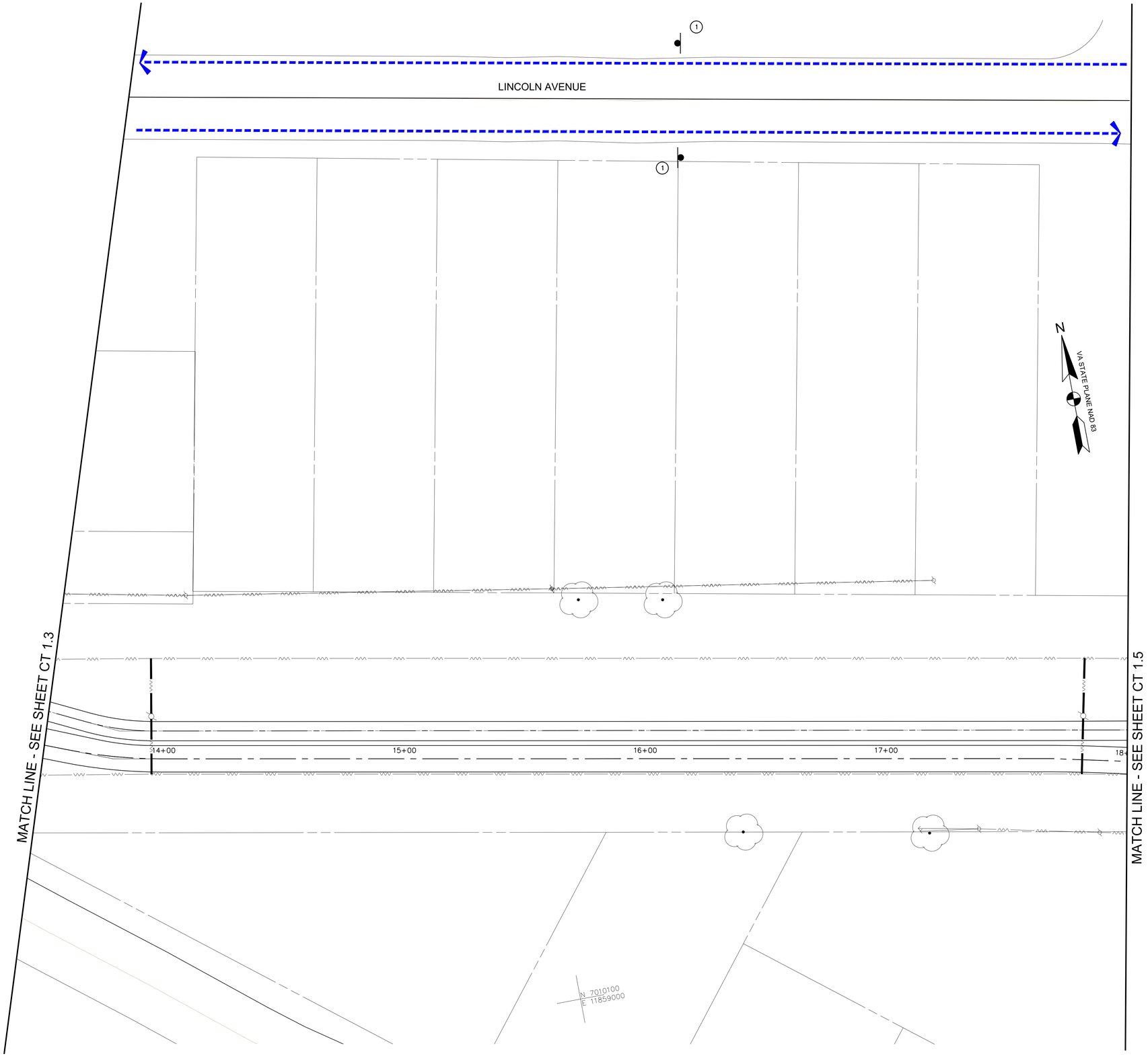
SCALE:	1"=20'
DESIGNED BY:	AMT
DRAWN BY:	AMT
CHECKED BY:	AMT

100% DESIGN

SHEET TITLE
MAINTENANCE OF TRAFFIC PLAN PHASE 3

SHEET
CT 1.3



MAINTENANCE OF TRAFFIC PLAN
SCALE: 1"=20'

MAINTENANCE OF TRAFFIC NOTE

1. CONTRACTOR SHALL MAKE SURE DETOUR SIGNS ARE INSTALLED PRIOR TO CLOSING THE EXISTING HIKER/BIKER TRAIL.

SIGN LEGEND

1

M4-V1(MOD.)
18"x36"

LEGEND

DETOUR ROUTE

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

AMT
A. MORTON THOMAS AND ASSOCIATES, INC.
CONSULTING ENGINEERS
800 KING FARM BLVD, FOURTH FLOOR ROCKVILLE, MD 20850
(301) 881-2545 FAX:(301) 881-0814
EMAIL: AMT1@AMTENGINEERING.COM

COMMONWEALTH OF VIRGINIA
JACK A. GOODE, II
LIC. NO. -02039202
PROFESSIONAL ENGINEER
1/8/20

REGISTRATION STAMP

NOT FOR CONSTRUCTION

PROFESSIONAL CERTIFICATION
"I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER, ARCHITECT LANDSCAPE ARCHITECT UNDER THE LAWS OF THE STATE OF VIRGINIA. LICENSE NO. 1542 EXPIRATION DATE 04/30/2021"

PROJECT TITLE
EXPANSION OF THE W&OD TRAIL
FALLS CHURCH, VA
UPC 113612

REVISIONS

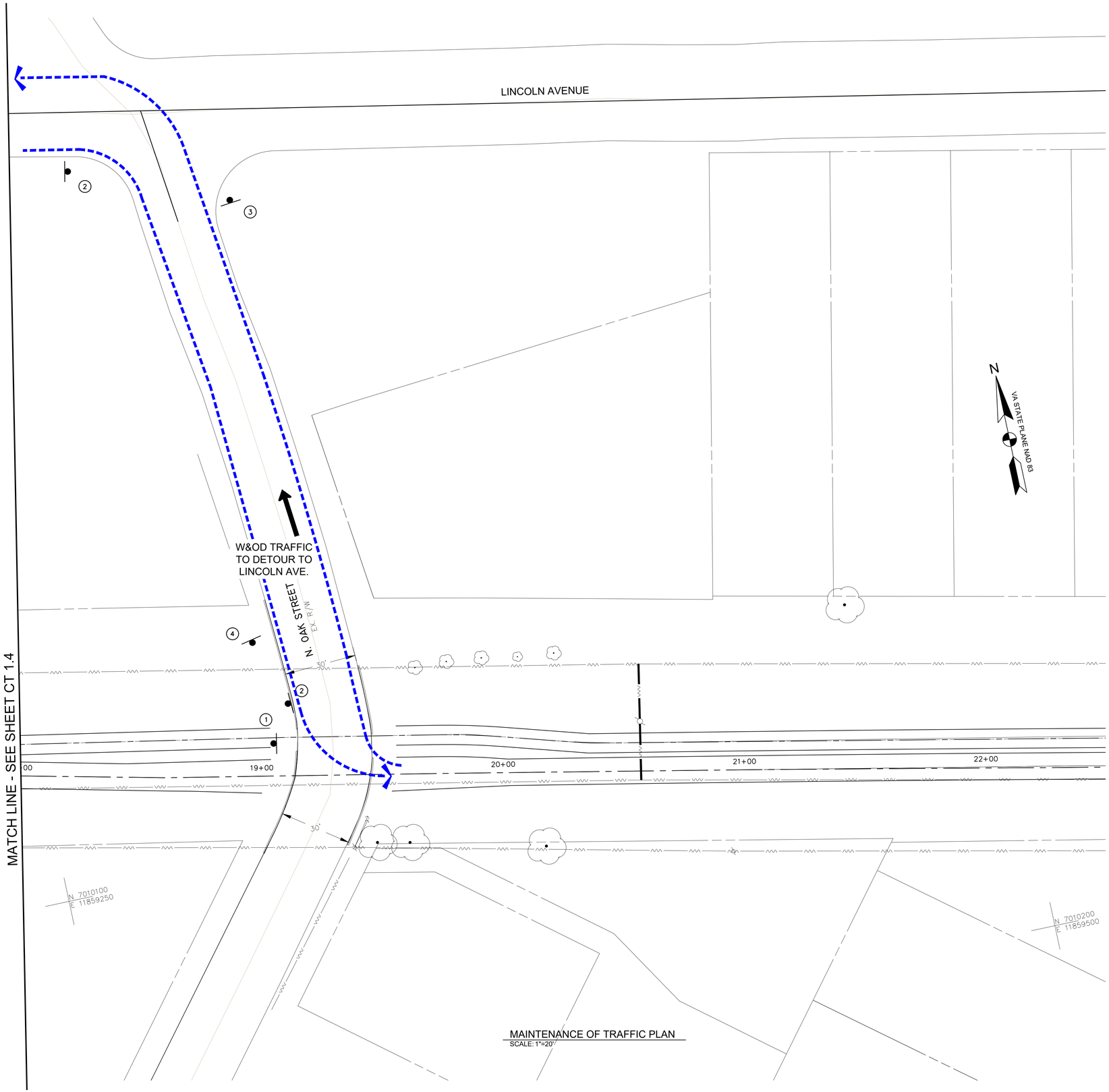
MARK	DATE	DESCRIPTION

AMT FILE NO.	18-0367
DATE:	3/2020
SCALE:	1"=20'
DESIGNED BY:	AMT
DRAWN BY:	AMT
CHECKED BY:	AMT

100% DESIGN

SHEET TITLE
MAINTENANCE OF TRAFFIC PLAN PHASE 3

SHEET
CT 1.4



MAINTENANCE OF TRAFFIC PLAN
SCALE: 1"=20'

MAINTENANCE OF TRAFFIC NOTE

1. CONTRACTOR SHALL MAKE SURE DETOUR SIGNS ARE INSTALLED PRIOR TO CLOSING THE EXISTING HIKER/BIKER TRAIL.

SIGN LEGEND

1 — TRAIL CLOSED — R9-9 (MOD.) 30"x18"

TYPE 3 BARRICADE

2 — DETOUR — M4-9aR 30"x24"

3 — DETOUR — M4-9aL 30"x24"

4 — END DETOUR — M4-8a 24"x18"

LEGEND

DETOUR ROUTE

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

AMT
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COMMONWEALTH OF VIRGINIA
JACK A. GOODE, II
LIC. NO. -02039202
PROFESSIONAL ENGINEER
1/8/20

REGISTRATION STAMP

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PROJECT TITLE
EXPANSION OF THE W&OD TRAIL
FALLS CHURCH, VA
UPC 113612

REVISIONS

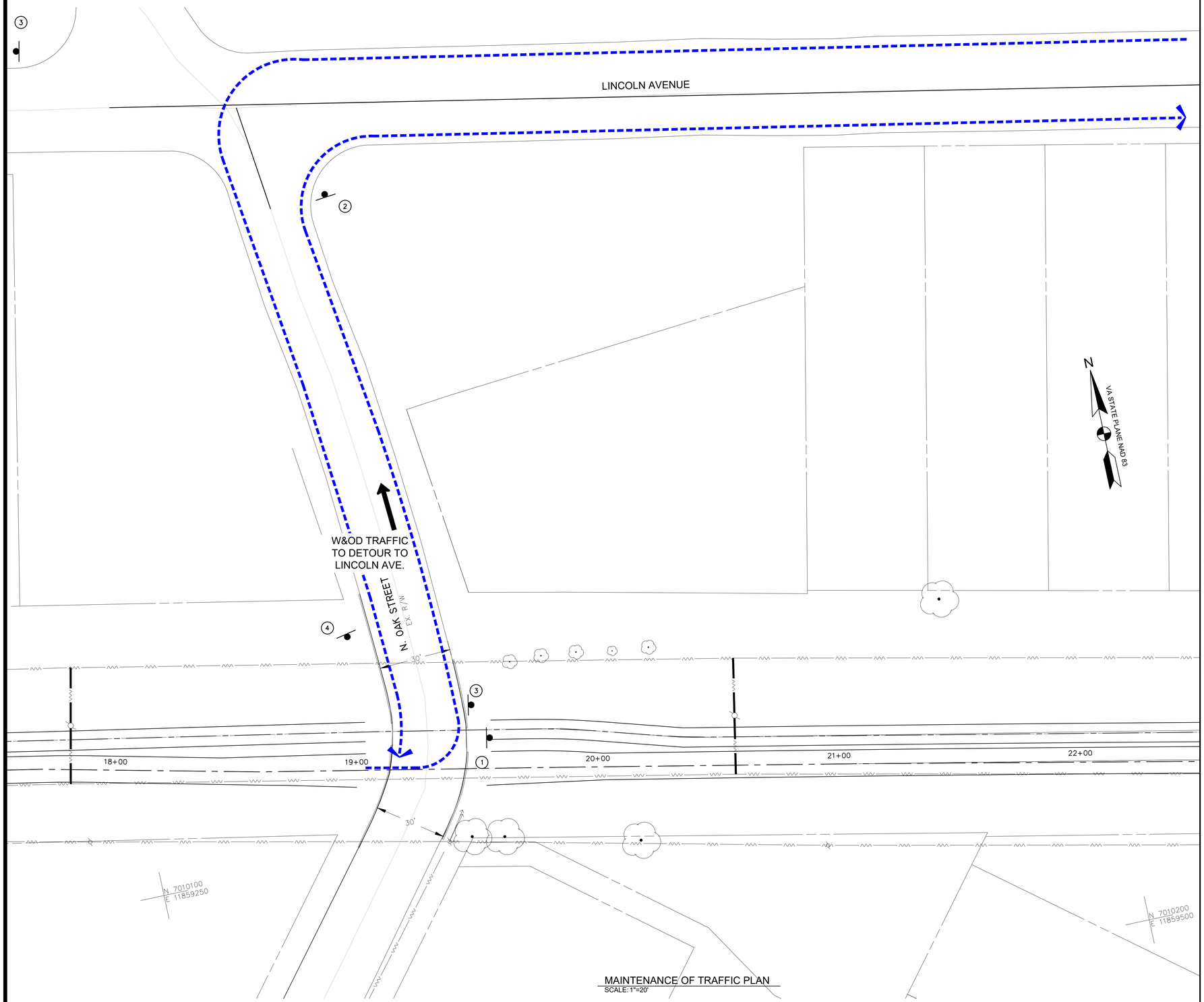
MARK	DATE	DESCRIPTION

AMT FILE NO.	18-0367
DATE:	3/2020
SCALE:	1"=20'
DESIGNED BY:	AMT
DRAWN BY:	AMT
CHECKED BY:	AMT

100% DESIGN

SHEET TITLE
MAINTENANCE OF TRAFFIC PLAN PHASE 3

SHEET
CT 1.5



MAINTENANCE OF TRAFFIC PLAN
SCALE: 1"=20'

MAINTENANCE OF TRAFFIC NOTE

1. CONTRACTOR SHALL MAKE SURE DETOUR SIGNS ARE INSTALLED PRIOR TO CLOSING THE EXISTING HIKER/BIKER TRAIL.

SIGN LEGEND

1 — TRAIL CLOSED — R9-9 (MOD.) 30"x18"

TYPE 3 BARRICADE

2 — DETOUR — M4-9aR 30"x24"

3 — DETOUR — M4-9aL 30"x24"

4 — END DETOUR — M4-8a(MOD.) 24"x18"

LEGEND

DETOUR ROUTE

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

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1/8/20

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LICENSE NO. 1542 EXPIRATION DATE 06/30/2021"

PROJECT TITLE

EXPANSION OF THE W&OD TRAIL
FALLS CHURCH, VA
UPC 113612

REVISIONS

MARK	DATE	DESCRIPTION

AMT FILE NO.	18-0367
DATE:	3/2020
SCALE:	1"=20'
DESIGNED BY:	AMT
DRAWN BY:	AMT
CHECKED BY:	AMT

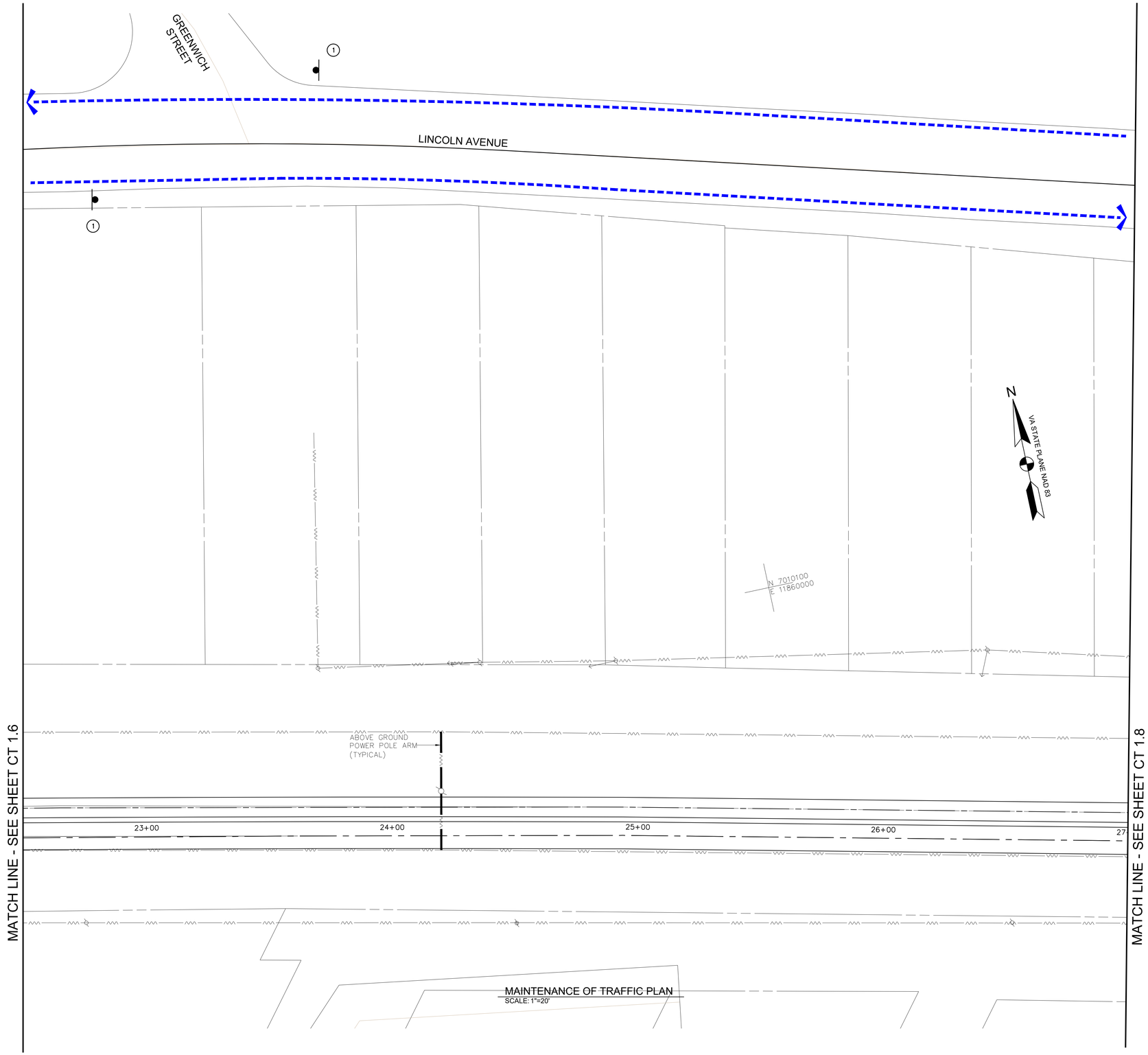
100% DESIGN

SHEET TITLE

MAINTENANCE OF TRAFFIC PLAN PHASE 4

SHEET

CT 1.6



MAINTENANCE OF TRAFFIC PLAN
SCALE: 1"=20'

MAINTENANCE OF TRAFFIC NOTE

1. CONTRACTOR SHALL MAKE SURE DETOUR SIGNS ARE INSTALLED PRIOR TO CLOSING THE EXISTING HIKER/BIKER TRAIL.

SIGN LEGEND

1

M4-V1(MOD.)
18"x36"

LEGEND

DETOUR ROUTE

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

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1/8/20

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PROJECT TITLE
EXPANSION OF THE W&OD TRAIL
FALLS CHURCH, VA
UPC 113612

REVISIONS

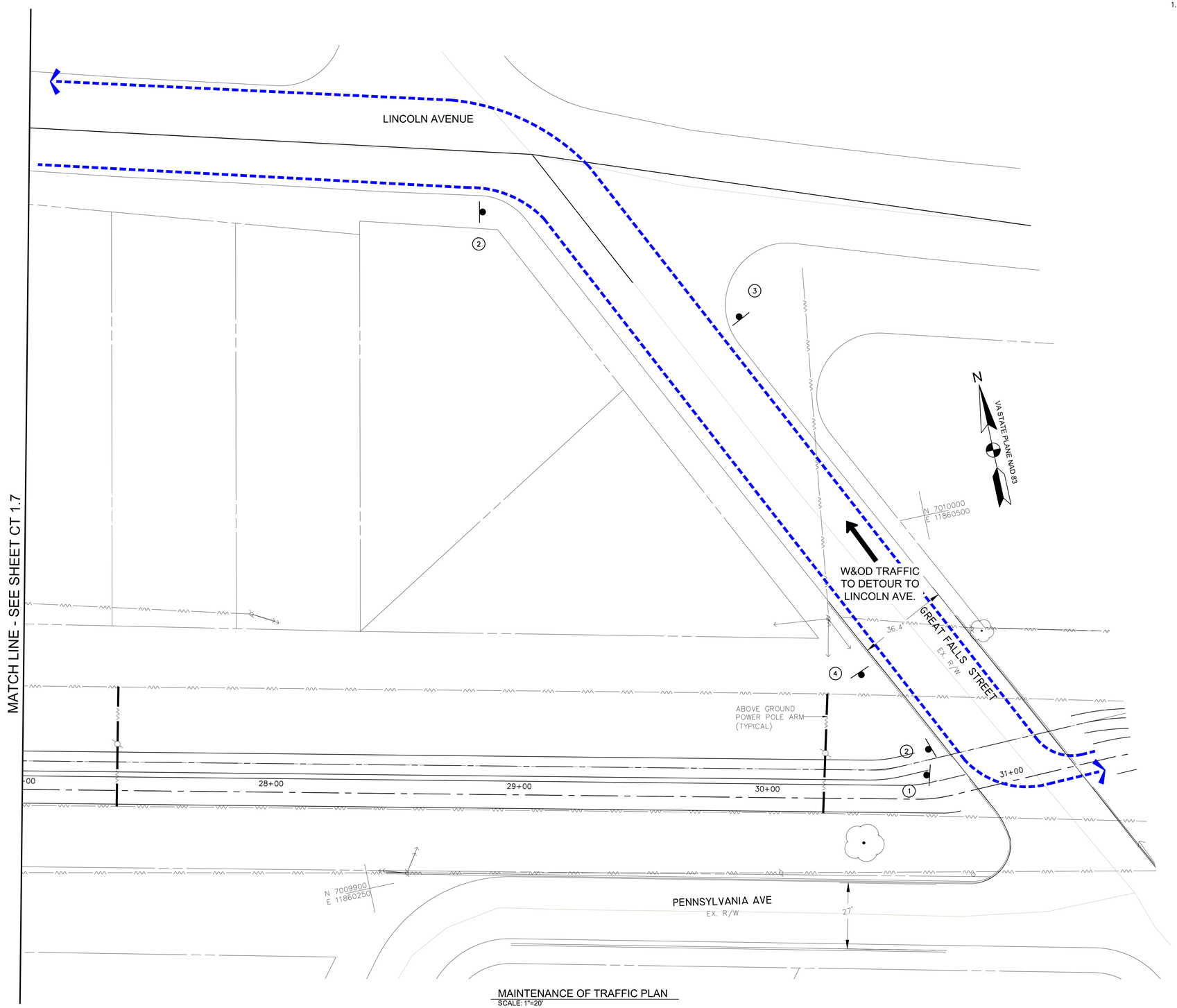
MARK	DATE	DESCRIPTION

AMT FILE NO.	18-0367
DATE:	3/2020
SCALE:	1"=20'
DESIGNED BY:	AMT
DRAWN BY:	AMT
CHECKED BY:	AMT

100% DESIGN

SHEET TITLE
MAINTENANCE OF TRAFFIC PLAN PHASE 4

SHEET
CT 1.7



MAINTENANCE OF TRAFFIC PLAN
SCALE: 1"=20'

MAINTENANCE OF TRAFFIC NOTE

1. CONTRACTOR SHALL MAKE SURE DETOUR SIGNS ARE INSTALLED PRIOR TO CLOSING THE EXISTING HIKER/BIKER TRAIL.

SIGN LEGEND

1 — TRAIL CLOSED — R9-9 (MOD.) 30"x18"
TYPE 3 BARRICADE

2 — DETOUR — M4-9aR 30"x24"

3 — DETOUR — M4-9aL 30"x24"

4 — END DETOUR — M4-8a 24"x18"

LEGEND

DETOUR ROUTE

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

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PROJECT TITLE
EXPANSION OF THE W&OD TRAIL
FALLS CHURCH, VA
UPC 113612

REVISIONS

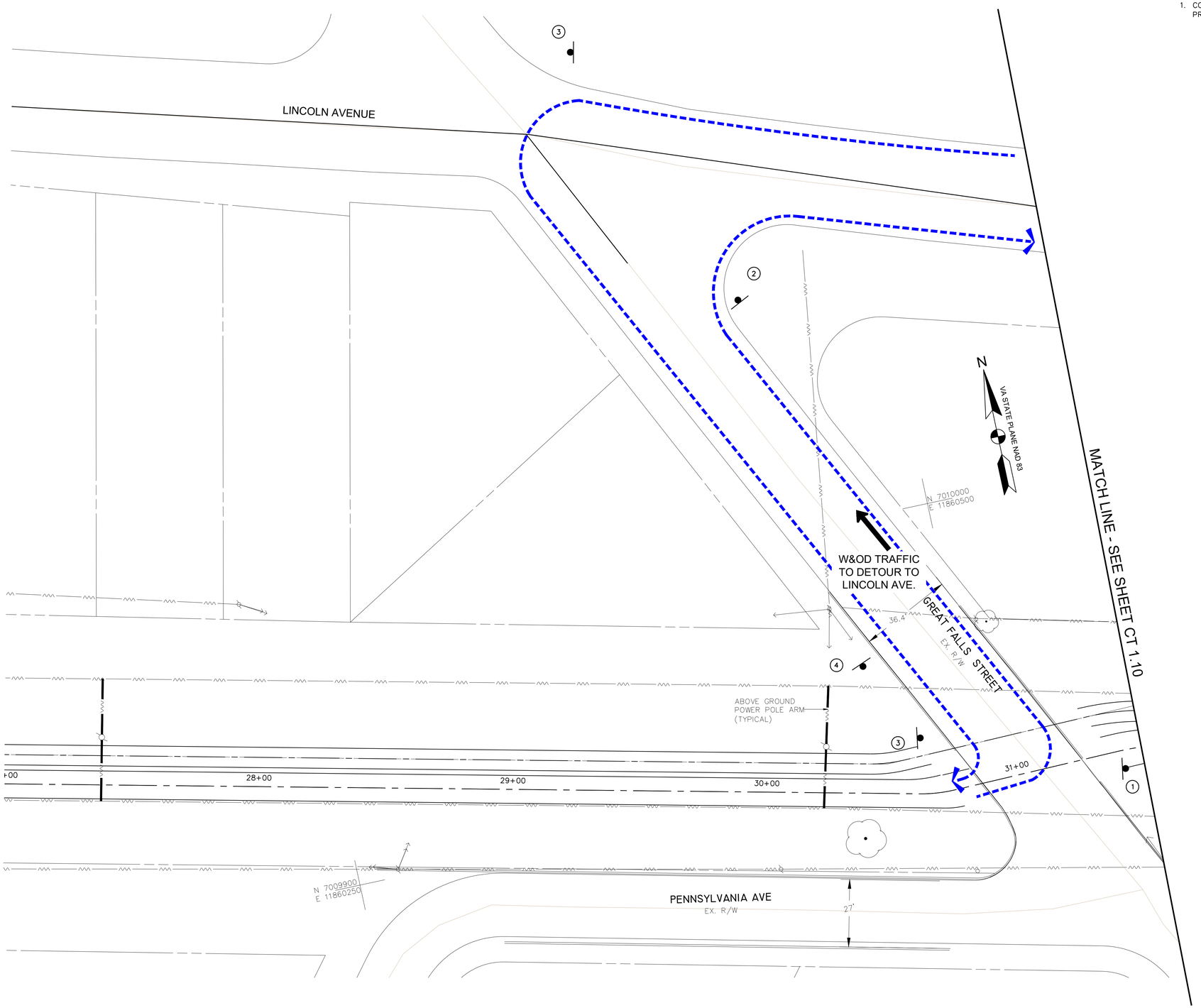
MARK	DATE	DESCRIPTION

AMT FILE NO.	18-0367
DATE:	3/2020
SCALE:	1"=20'
DESIGNED BY:	AMT
DRAWN BY:	AMT
CHECKED BY:	AMT

100% DESIGN

SHEET TITLE
MAINTENANCE OF TRAFFIC PLAN PHASE 4

SHEET
CT 1.8

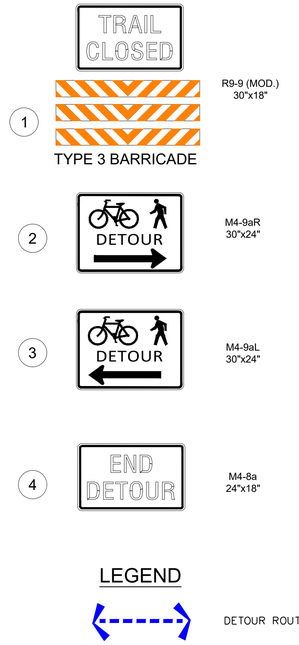


MAINTENANCE OF TRAFFIC PLAN
SCALE: 1"=20'

MAINTENANCE OF TRAFFIC NOTE

1. CONTRACTOR SHALL MAKE SURE DETOUR SIGNS ARE INSTALLED PRIOR TO CLOSING THE EXISTING HIKER/BIKER TRAIL.

SIGN LEGEND



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

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PROJECT TITLE
EXPANSION OF THE W&OD TRAIL
FALLS CHURCH, VA
UPC 113612

REVISIONS

MARK	DATE	DESCRIPTION

AMT FILE NO.	18-0367
DATE:	3/2020
SCALE:	1"=20'
DESIGNED BY:	AMT
DRAWN BY:	AMT
CHECKED BY:	AMT

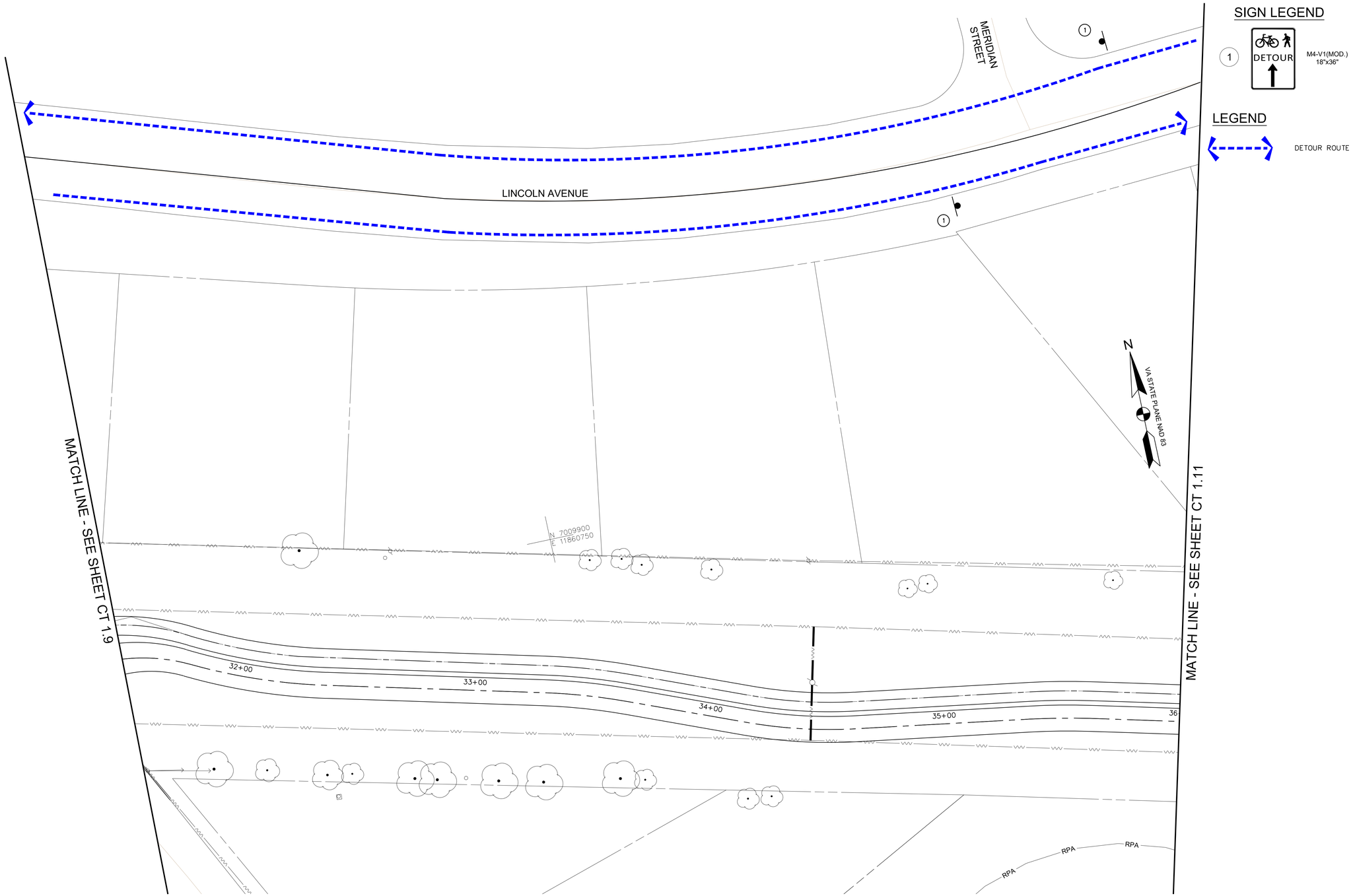
100% DESIGN

SHEET TITLE
MAINTENANCE OF TRAFFIC PLAN PHASE 5

SHEET
CT 1.9

MAINTENANCE OF TRAFFIC NOTE

1. CONTRACTOR SHALL MAKE SURE DETOUR SIGNS ARE INSTALLED PRIOR TO CLOSING THE EXISTING HIKER/BIKER TRAIL.



MAINTENANCE OF TRAFFIC PLAN
SCALE: 1"=20'

SIGN LEGEND

1 — DETOUR — M4-V1(MOD.) 18"x36"

LEGEND

DETOUR ROUTE

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

AMT
A. MORTON THOMAS AND ASSOCIATES, INC.
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COMMONWEALTH OF VIRGINIA
JACK A. GOODE, II
LIC. NO. -02039202
PROFESSIONAL ENGINEER
1/8/20

REGISTRATION STAMP

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PROFESSIONAL CERTIFICATION

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PROJECT TITLE

EXPANSION OF THE W&OD TRAIL
FALLS CHURCH, VA
UPC 113612

REVISIONS

MARK	DATE	DESCRIPTION

AMT FILE NO.	18-0367
DATE:	3/2020
SCALE:	1"=20'
DESIGNED BY:	AMT
DRAWN BY:	AMT
CHECKED BY:	AMT

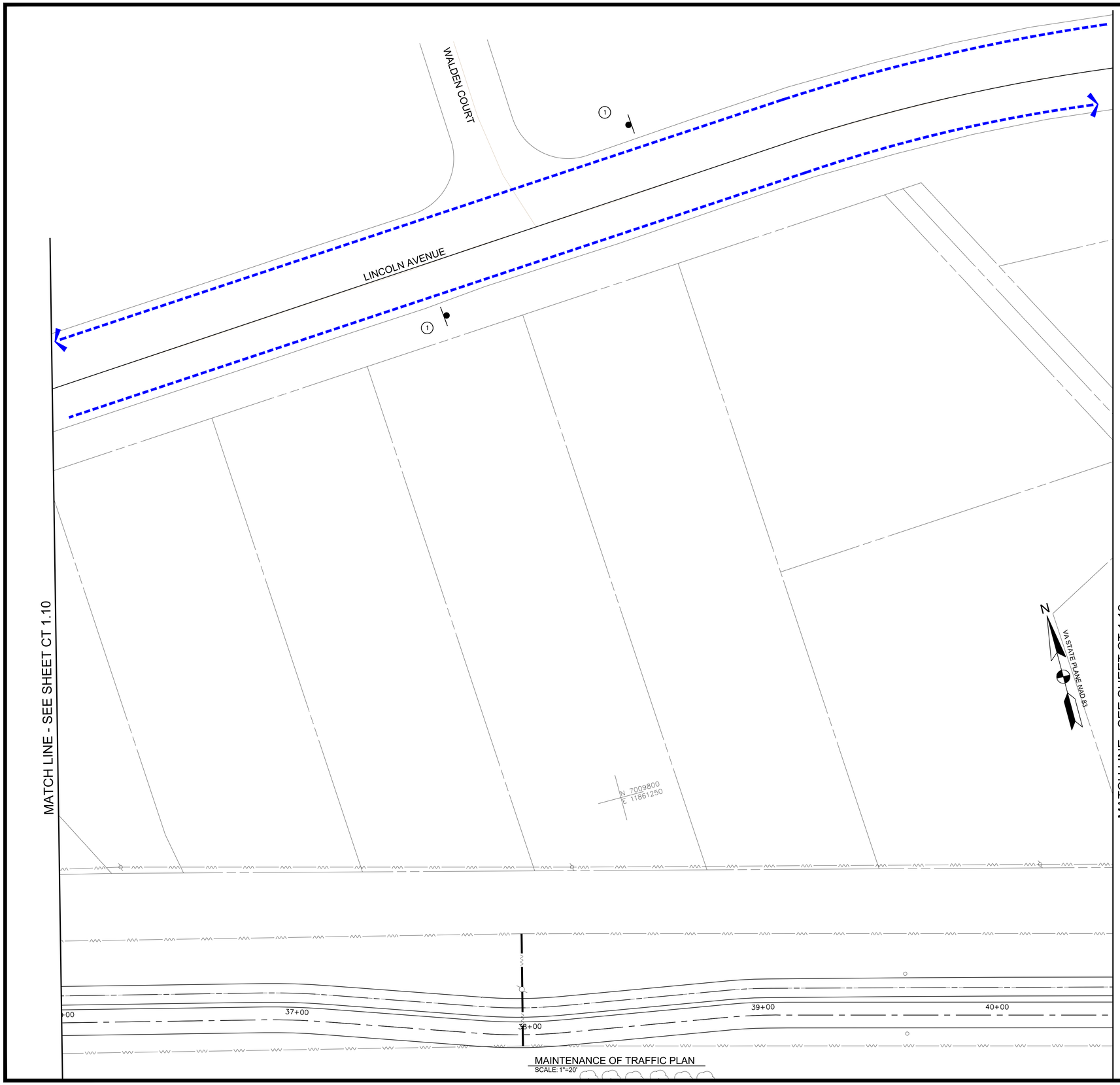
100% DESIGN

SHEET TITLE

MAINTENANCE OF TRAFFIC PLAN PHASE 5

SHEET

CT 1.10



MAINTENANCE OF TRAFFIC PLAN
SCALE: 1"=20'

MAINTENANCE OF TRAFFIC NOTE

1. CONTRACTOR SHALL MAKE SURE DETOUR SIGNS ARE INSTALLED PRIOR TO CLOSING THE EXISTING HIKER/BIKER TRAIL.

SIGN LEGEND

1 — DETOUR — M4-V1(MOD.) 18"x36"

LEGEND

DETOUR ROUTE

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

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LICENSE NO. 1542 , EXPIRATION DATE 06/30/2021"

PROJECT TITLE
EXPANSION OF THE W&OD TRAIL
FALLS CHURCH, VA
UPC 113612

REVISIONS

MARK	DATE	DESCRIPTION

AMT FILE NO.	18-0367
DATE:	3/2020
SCALE:	1"=20'
DESIGNED BY:	AMT
DRAWN BY:	AMT
CHECKED BY:	AMT

100% DESIGN

SHEET TITLE
MAINTENANCE OF TRAFFIC PLAN PHASE 5

SHEET
CT 1.11

MAINTENANCE OF TRAFFIC NOTE

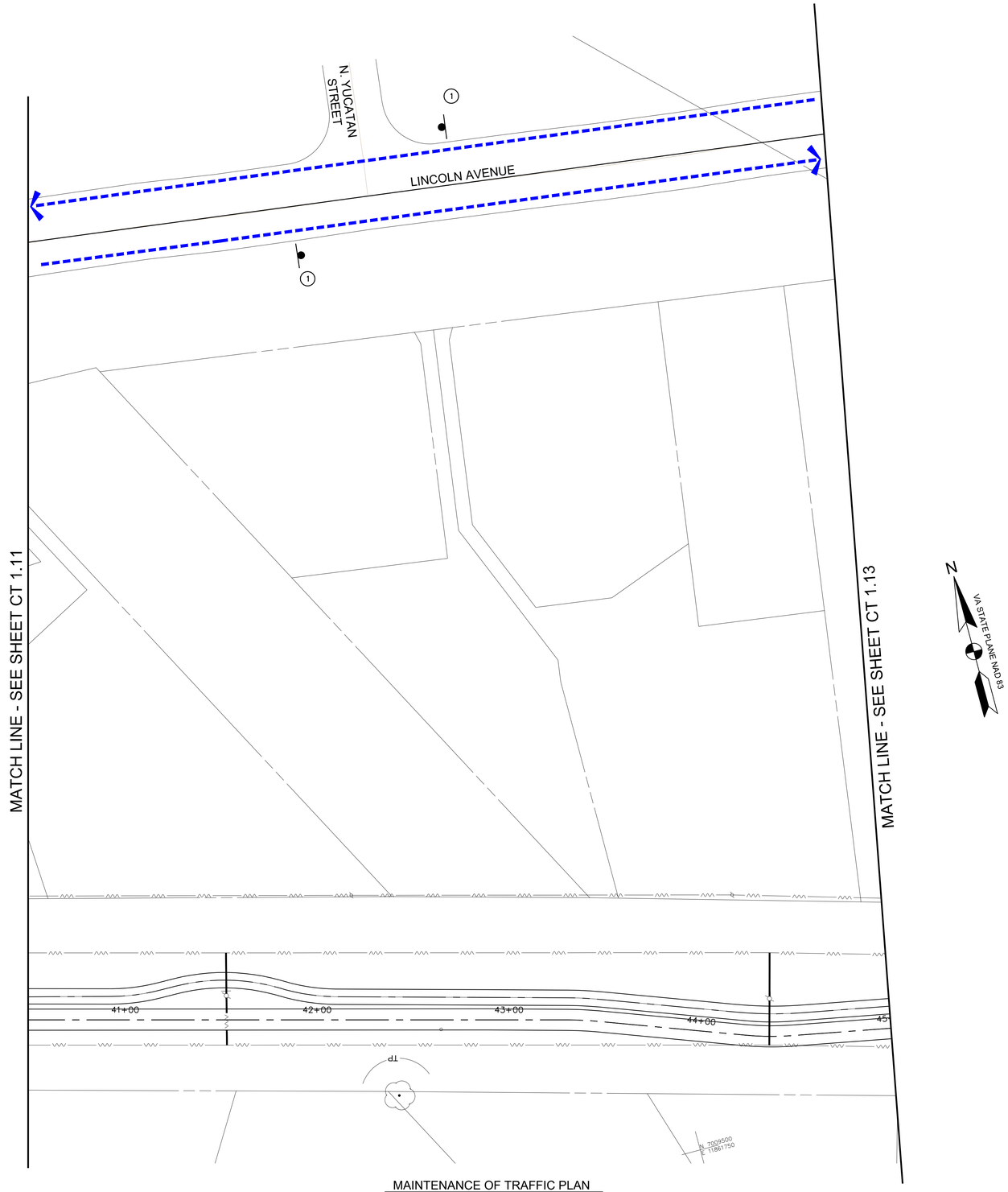
1. CONTRACTOR SHALL MAKE SURE DETOUR SIGNS ARE INSTALLED PRIOR TO CLOSING THE EXISTING HIKER/BIKER TRAIL.

SIGN LEGEND

1 — DETOUR — M4-V1(MOD.) 18"x36"

LEGEND

DETOUR ROUTE



MAINTENANCE OF TRAFFIC PLAN
SCALE: 1"=30'

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

AMT
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1/8/20

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PROFESSIONAL CERTIFICATION

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LICENSE NO. 1542 EXPIRATION DATE 04/30/2021

PROJECT TITLE

EXPANSION OF THE W&OD TRAIL
FALLS CHURCH, VA
UPC 113612

REVISIONS

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AMT FILE NO.	18-0367
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SCALE:	1"=30'
DESIGNED BY:	AMT
DRAWN BY:	AMT
CHECKED BY:	AMT

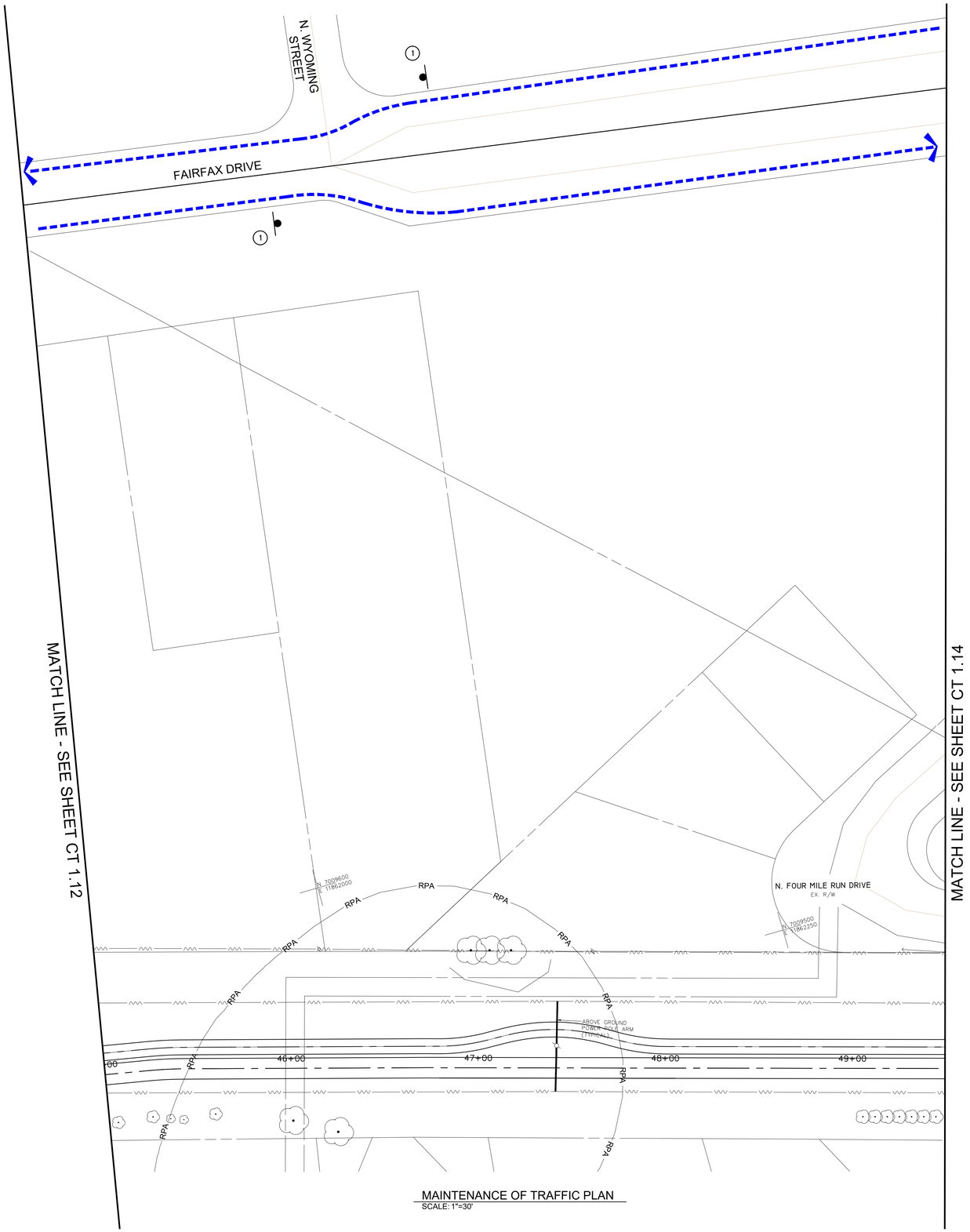
100% DESIGN

SHEET TITLE

MAINTENANCE OF TRAFFIC PLAN PHASE 5

SHEET

CT 1.12



MAINTENANCE OF TRAFFIC PLAN
SCALE: 1"=30'

MAINTENANCE OF TRAFFIC NOTE

1. CONTRACTOR SHALL MAKE SURE DETOUR SIGNS ARE INSTALLED PRIOR TO CLOSING THE EXISTING HIKER/BIKER TRAIL.

SIGN LEGEND

1 — DETOUR — M4-V1(MOD.) 18"x36"

LEGEND

DETOUR ROUTE

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

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PROJECT TITLE

EXPANSION OF THE W&OD TRAIL
FALLS CHURCH, VA
UPC 113612

REVISIONS

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AMT FILE NO.	18-0367
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SCALE:	1"=30'
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CHECKED BY:	AMT

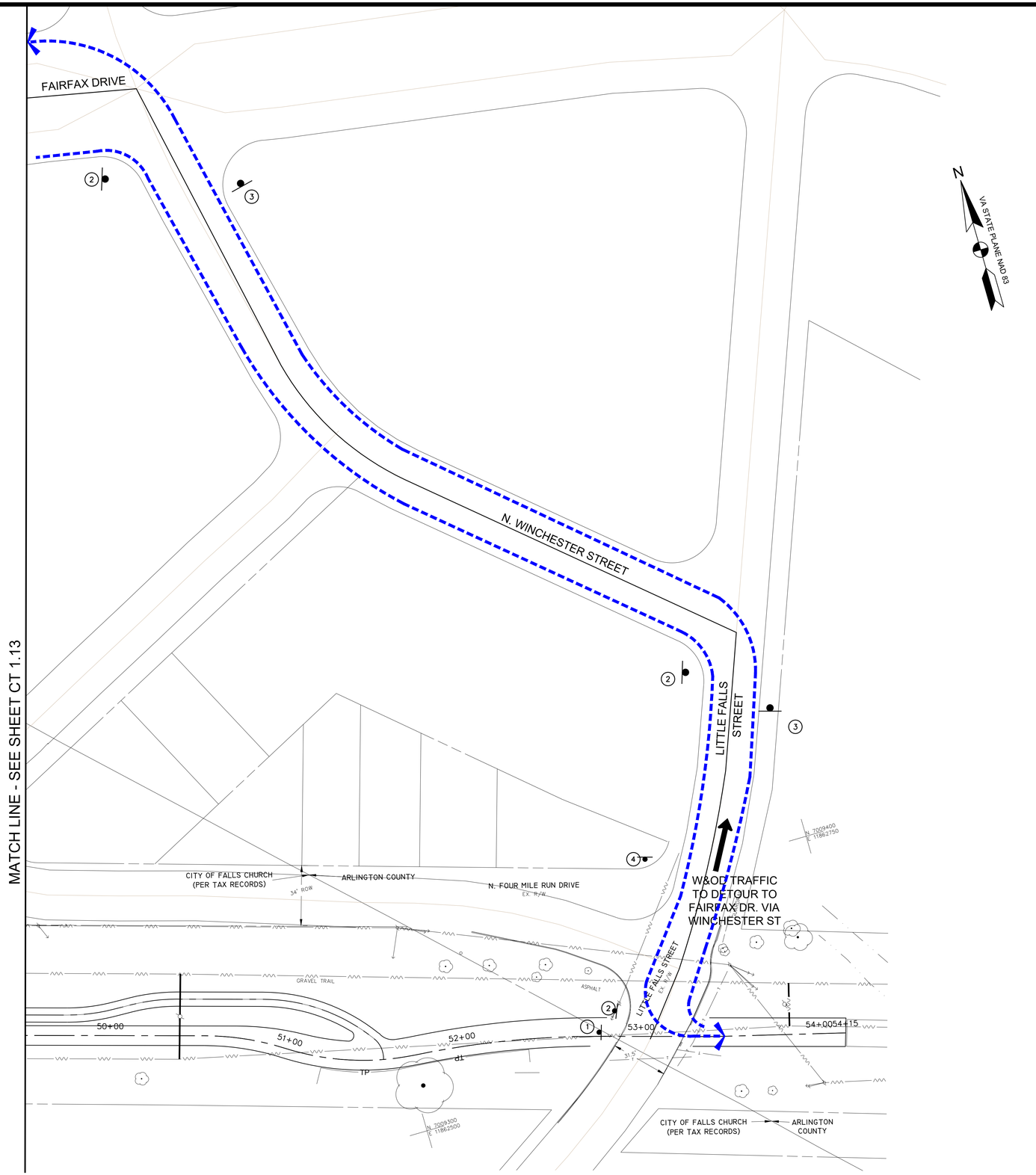
100% DESIGN

SHEET TITLE

MAINTENANCE OF TRAFFIC PLAN PHASE 5

SHEET

CT 1.13



MATCH LINE - SEE SHEET CT 1.13

MAINTENANCE OF TRAFFIC PLAN
SCALE: 1"=20'

MAINTENANCE OF TRAFFIC NOTE

1. CONTRACTOR SHALL MAKE SURE DETOUR SIGNS ARE INSTALLED PRIOR TO CLOSING THE EXISTING HIKER/BIKER TRAIL.

SIGN LEGEND

1 — TRAIL CLOSED — R9-9 (MOD.) 30"x18"
TYPE 3 BARRICADE

2 — DETOUR — M4-9aR 30"x24"

3 — DETOUR — M4-9aL 30"x24"

4 — END DETOUR — M4-8a 24"x18"

LEGEND

DETOUR ROUTE

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

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PROJECT TITLE
EXPANSION OF THE W&OD TRAIL
FALLS CHURCH, VA
UPC 113612

REVISIONS

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AMT FILE NO.	18-0367
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SCALE:	1"=20'
DESIGNED BY:	AMT
DRAWN BY:	AMT
CHECKED BY:	AMT

100% DESIGN

SHEET TITLE
MAINTENANCE OF TRAFFIC PLAN PHASE 5

SHEET
CT 1.14

MAINTENANCE OF TRAFFIC NOTES

1. CONTRACTOR SHALL DETOUR PEDESTRIANS/BICYCLISTS ALONG NORTHBOUND LITTLE FALLS STREET TO FAIRFAX DRIVE TO US29.
2. CONTRACTOR SHALL MAKE SURE DETOUR SIGNS ARE INSTALLED PRIOR TO CLOSING THE EXISTING HIKER/BIKER TRAIL.

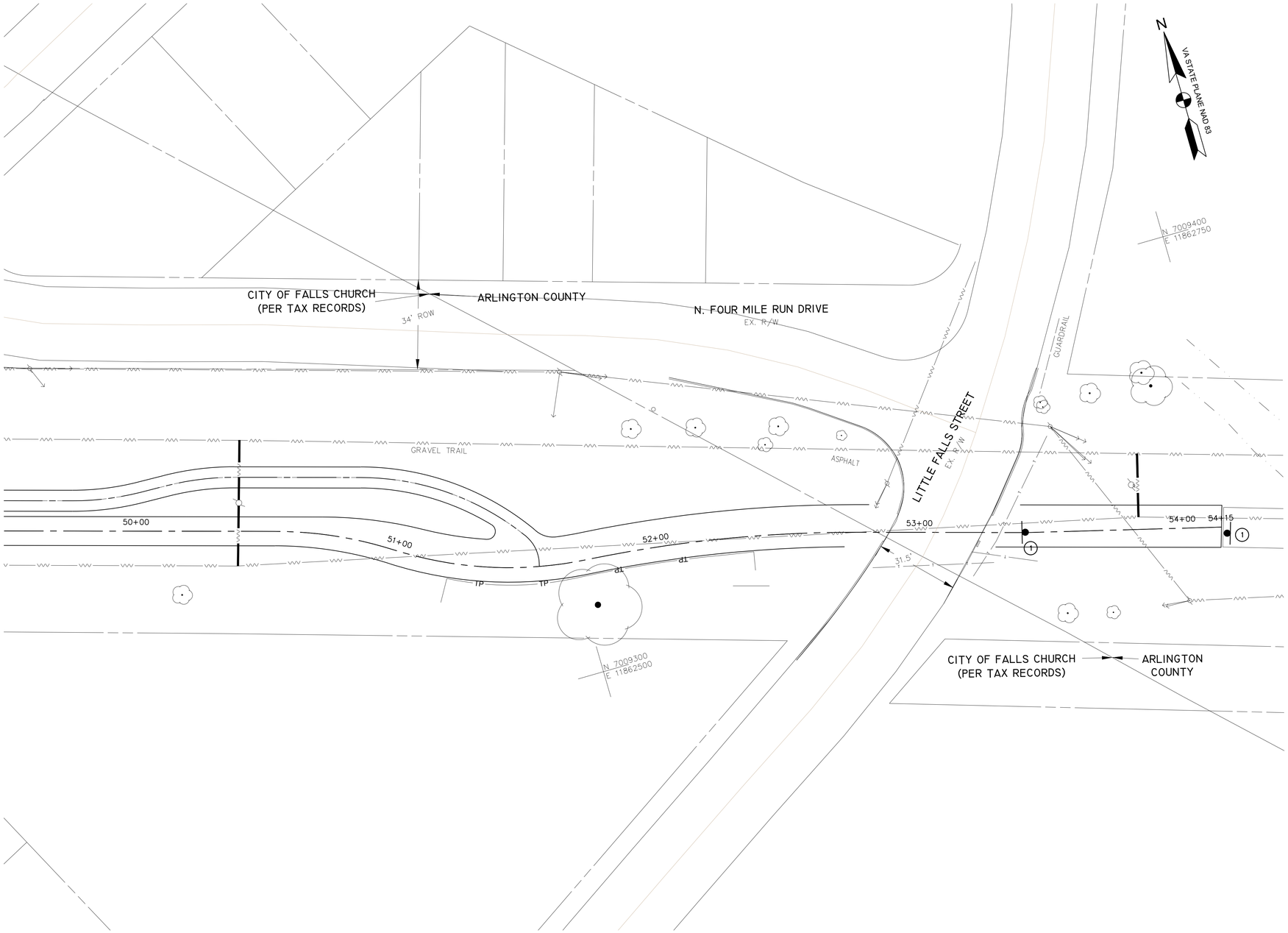
SIGN LEGEND

1 TRAIL CLOSED — R9-9 (MOD.) 30"x18"

TYPE 3 BARRICADE

LEGEND

DETOUR ROUTE



MAINTENANCE OF TRAFFIC PLAN
SCALE: 1"=20'

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

AMT
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PROJECT TITLE

EXPANSION OF THE W&OD TRAIL

FALLS CHURCH, VA
UPC 113612

REVISIONS

MARK	DATE	DESCRIPTION

AMT FILE NO.	18-0367
DATE:	3/2020
SCALE:	1"=20'
DESIGNED BY:	AMT
DRAWN BY:	AMT
CHECKED BY:	AMT

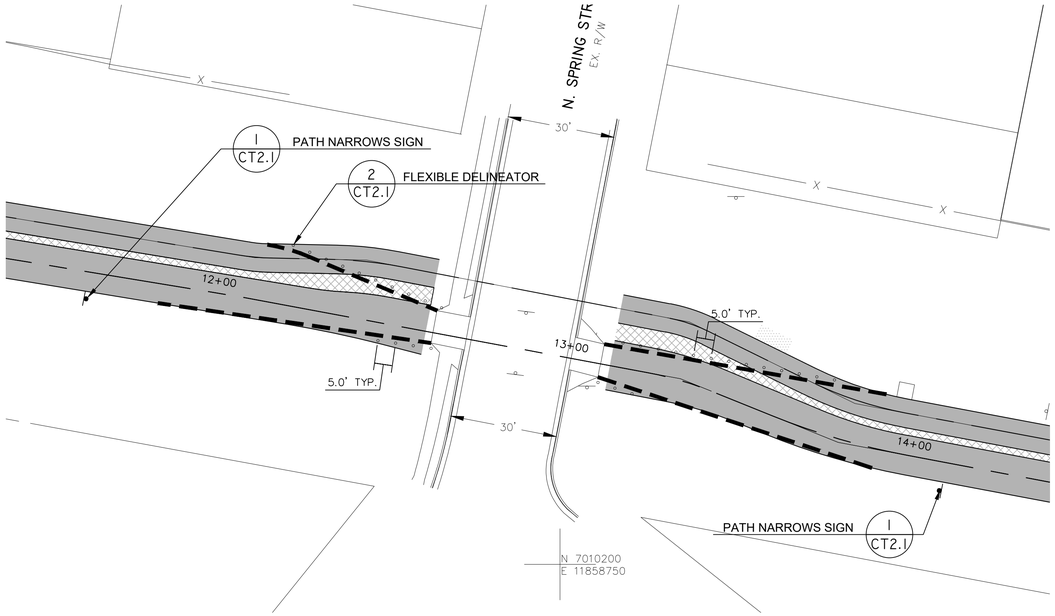
100% DESIGN

SHEET TITLE

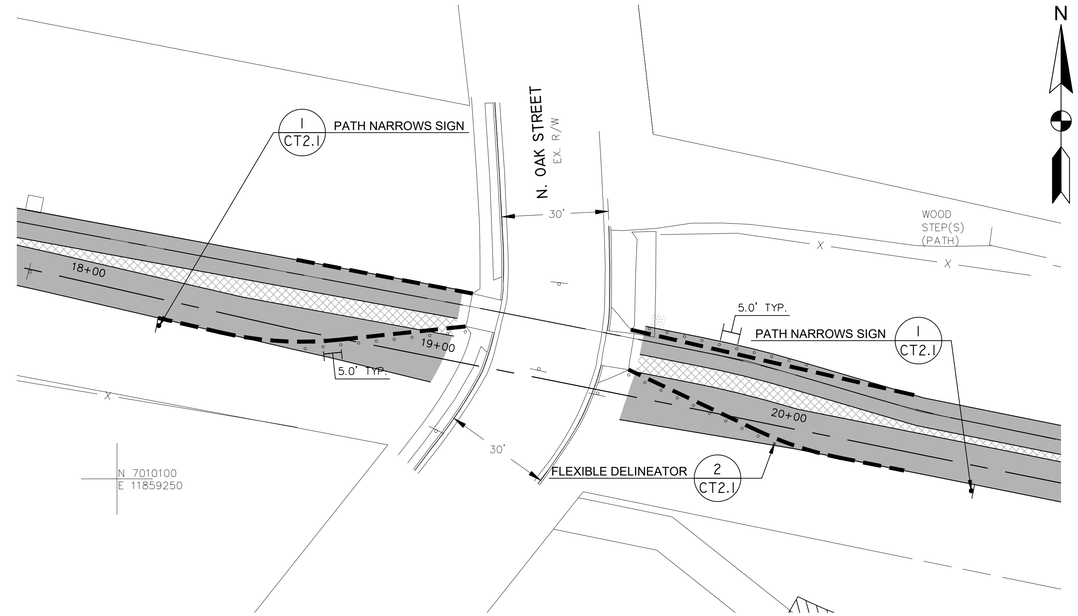
MAINTENANCE OF TRAFFIC PLAN PHASE 6

SHEET

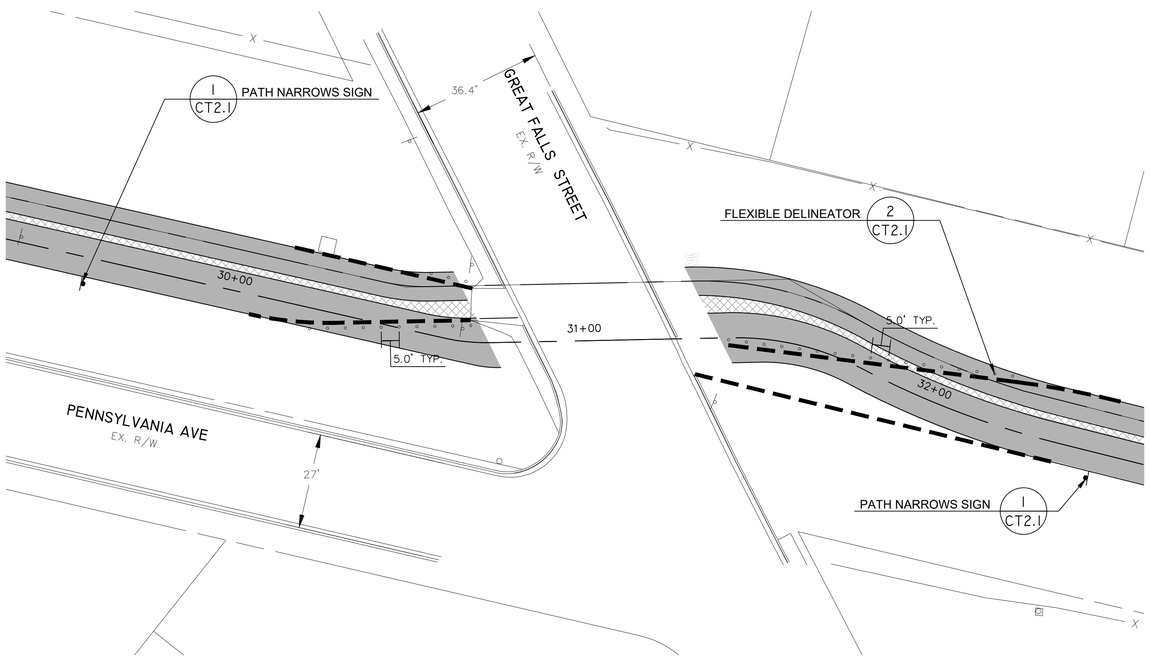
CT 1.15



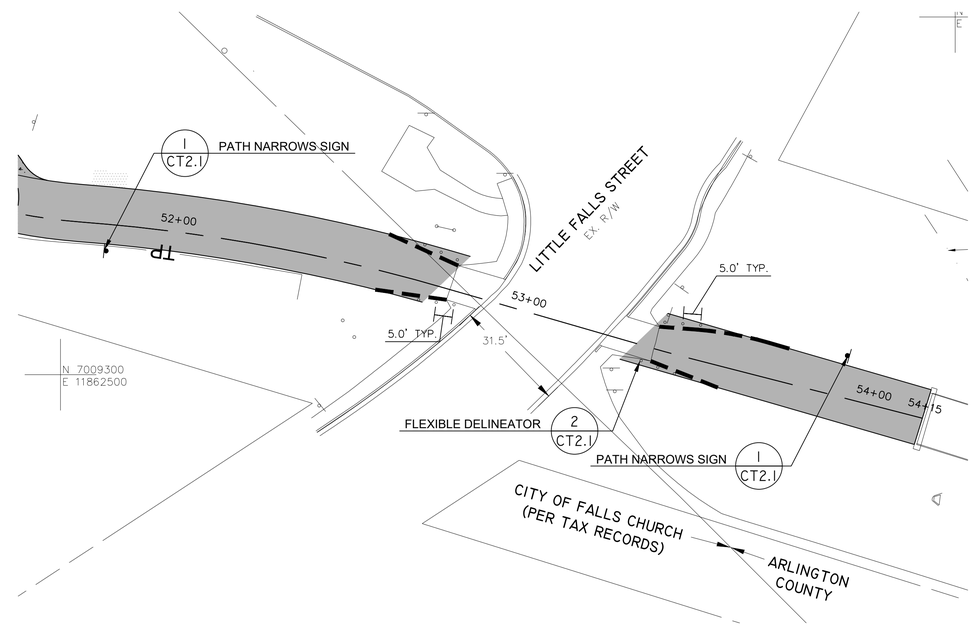
INTERIM CROSSING AT N. SPRING STREET
SCALE: 1"=20'



INTERIM CROSSING AT N. OAK STREET
SCALE: 1"=20'



INTERIM CROSSING AT GREAT FALLS STREET
SCALE: 1"=20'



INTERIM CROSSING AT LITTLE FALLS STREET
SCALE: 1"=20'

N
VA STATE PLANE NAD 83

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

AMT
A. MORTON THOMAS AND ASSOCIATES, INC.
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(301) 881-2545 FAX:(301) 881-0814
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COMMONWEALTH OF VIRGINIA
JACK A. GOODE, II
LIC. NO. -02039202
PROFESSIONAL ENGINEER
1/8/20

REGISTRATION STAMP

NOT FOR CONSTRUCTION

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FALLS CHURCH, VA
UPC 113612

REVISIONS

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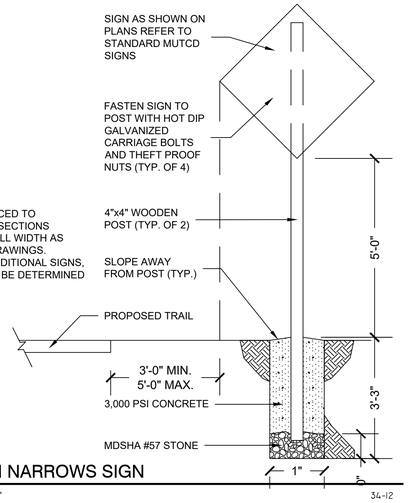
100% DESIGN

SHEET TITLE
INTERIM CROSSINGS

SHEET
CT 2.0



NOTE:
SIGN IS TO BE PLACED TO DESIGNATE TRAIL SECTIONS NARROW FROM FULL WIDTH AS SHOWN ON THE DRAWINGS. PLACEMENT OF ADDITIONAL SIGNS, IF NECESSARY, TO BE DETERMINED IN THE FIELD.

1 PATH NARROWS SIGN

1/2" = 1'-0"

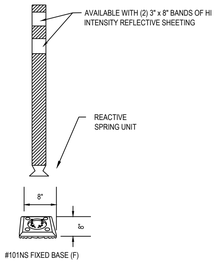
34-12

TUFF POSTS ARE AVAILABLE IN 36", 42", AND 48" LENGTHS WITH AN OD OF 2.375". AVAILABLE COLORS ARE WHITE, ORANGE, AND YELLOW.

- ☐ SELECT MARKER SIZE
- ☐ 36"
- ☑ 42"
- ☐ 48"

- ☐ SELECT DESIRED COLOR
- ☐ WHITE
- ☑ ORANGE
- ☐ YELLOW

SPECIFICATIONS
-POST IS CONSTRUCTED OF FLEXIBLE POLYPROPYLENE PLASTIC THAT IS RESISTANT TO: ULTRAVIOLET LIGHT, OZONE, AND HYDROCARBONS.
-UNIT HAS A REACTIVE SPRING ASSEMBLY TESTED TO 145LB. TENSION WITH STAINLESS STEEL CABLE.
-MEETS MUTCD SPECIFICATIONS.



#101NS FIXED BASE (F)

NOTES:
1. INSTALLATION TO BE COMPLETED IN ACCORDANCE WITH MANUFACTURERS SPECIFICATIONS.
2. DO NOT SCALE DRAWINGS.
3. POST AND PANEL ARE CONSTRUCTED OF FLEXIBLE POLYETHYLENE PLASTIC THAT IS RESISTANT TO: ULTRAVIOLET LIGHT, OZONE, AND HYDROCARBONS.
4. UNIT HAS A REACTIVE SPRING ASSEMBLY WITH STAINLESS STEEL CABLE.
5. CONTRACTORS NOTE: FOR PRODUCT AND COMPANY INFORMATION VISIT www.CADdetails.com/info REFERENCE NUMBER 720-041.

2 FLEXIBLE DELINEATOR

N.T.S.

34-11

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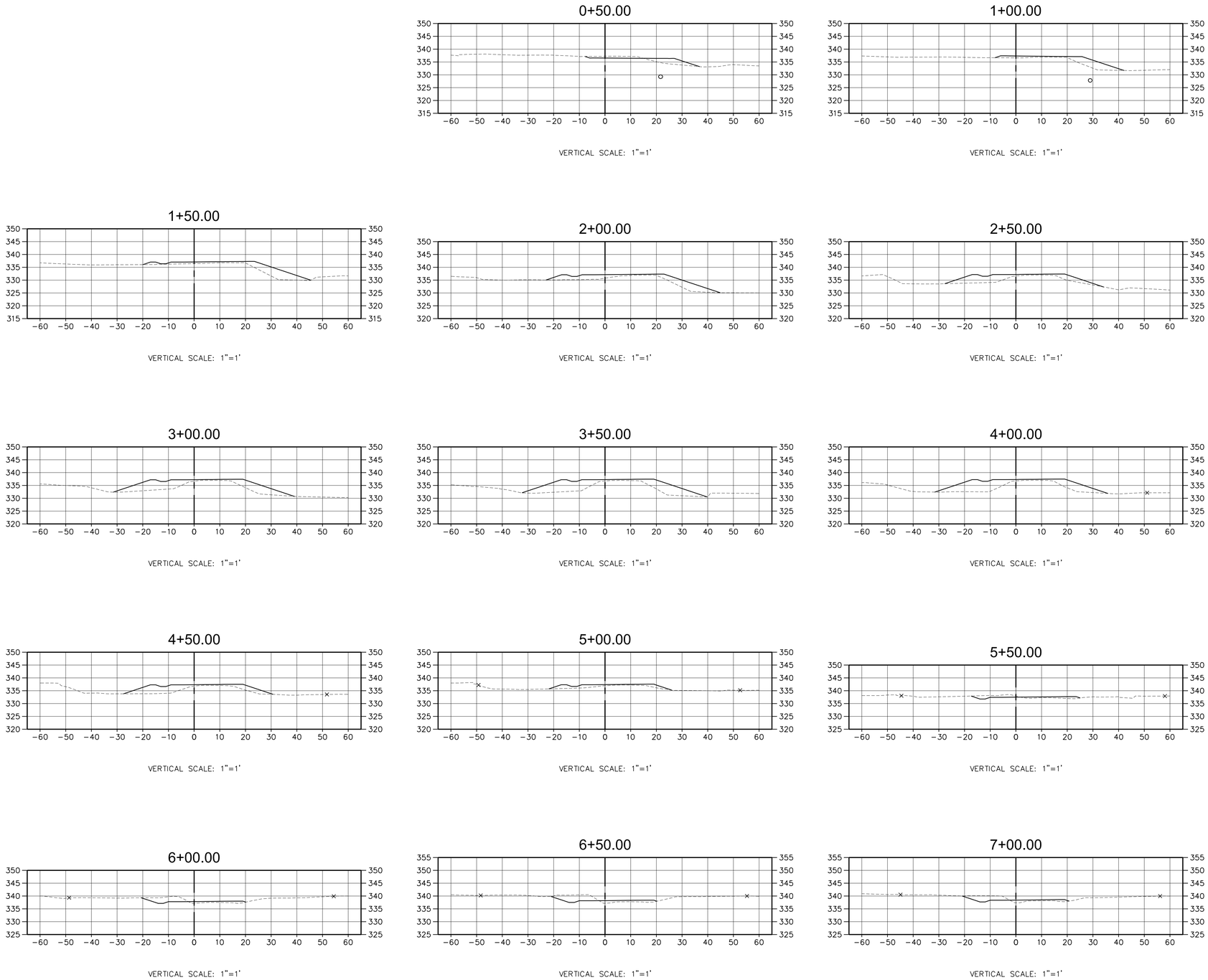
SHEET TITLE
INTERIM CROSSING SIGN DETAILS

SHEET
CT2.1



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Cert. No. 0406001542
01/05/2020
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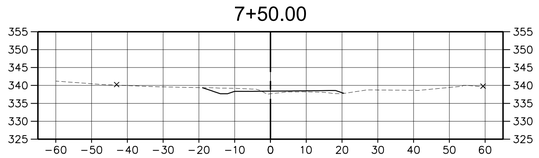
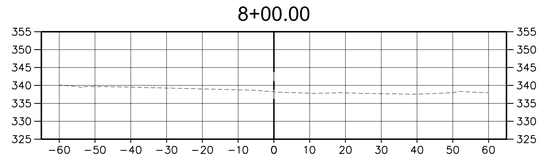
SHEET TITLE

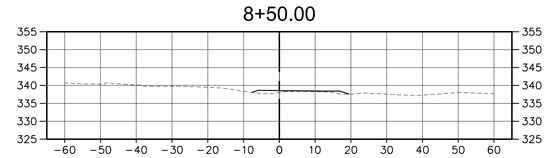
CROSS SECTIONS

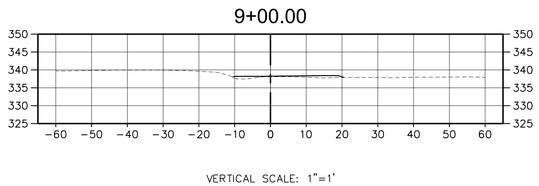
SHEET

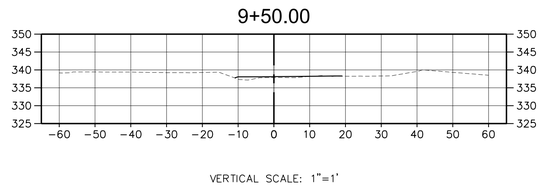
S1.0

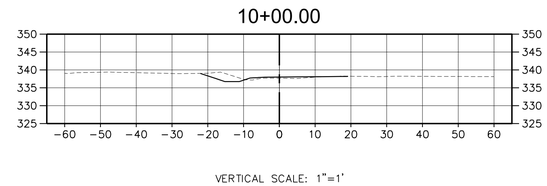


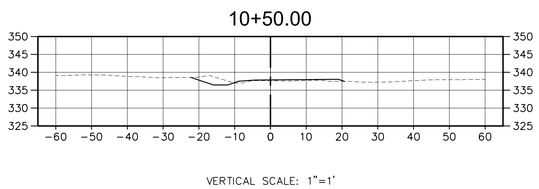


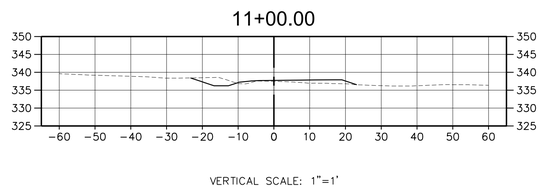


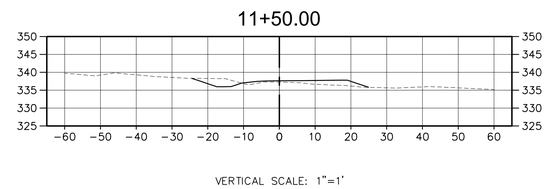


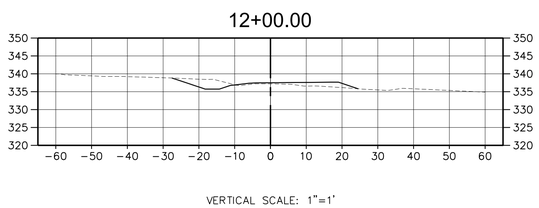


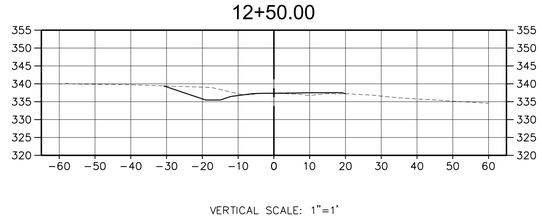


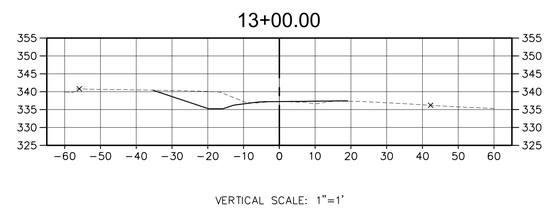


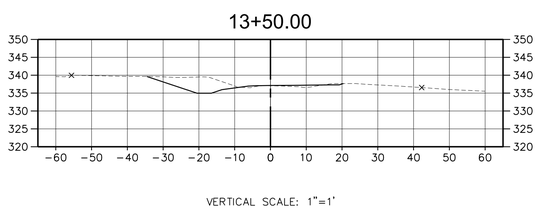


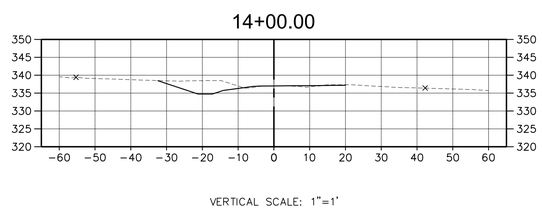


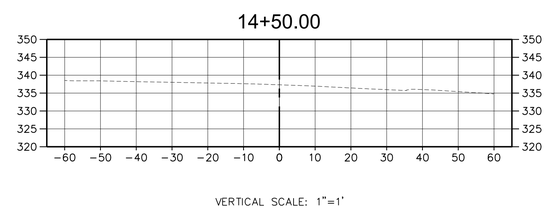












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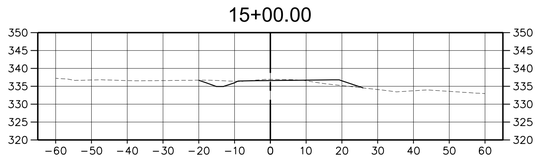
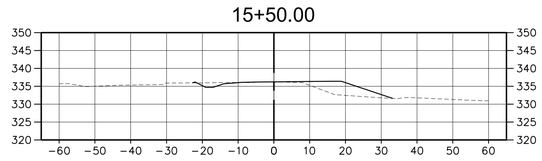
SHEET TITLE

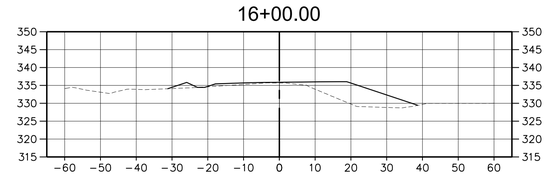
CROSS SECTIONS

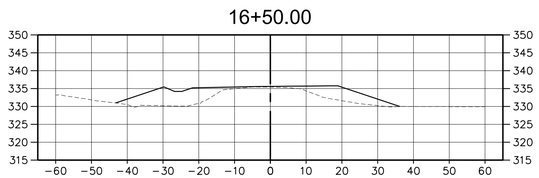
SHEET

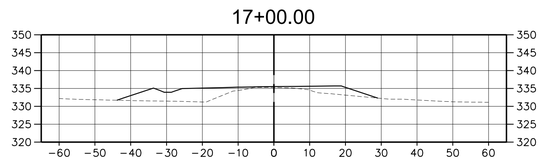
S1.1

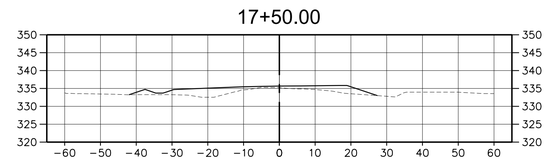


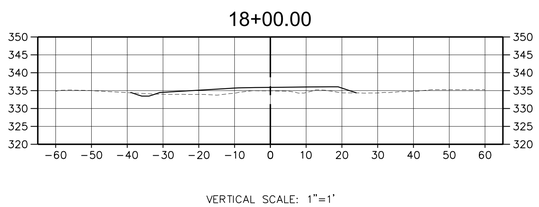


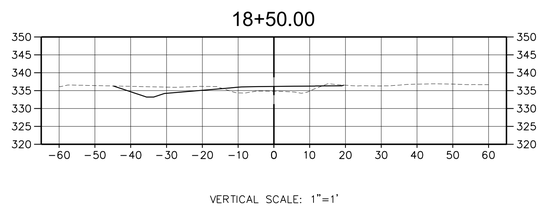


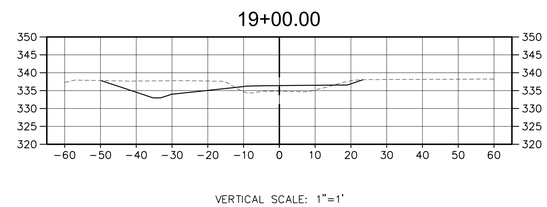


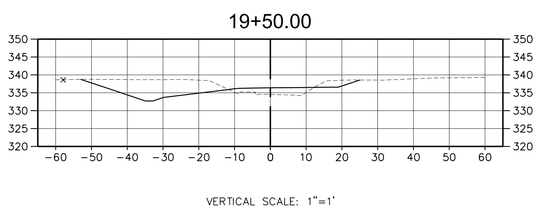


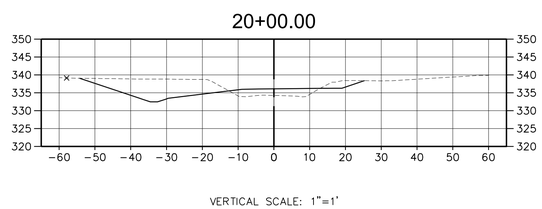


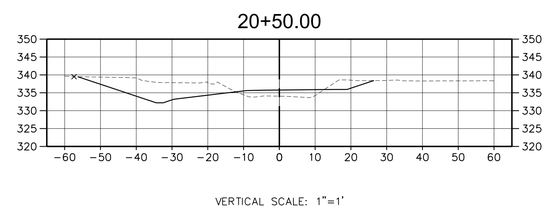


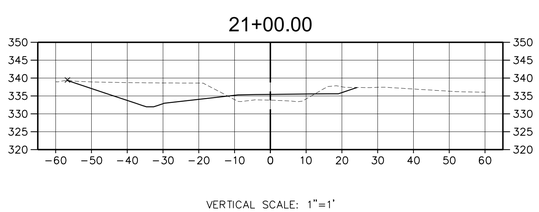


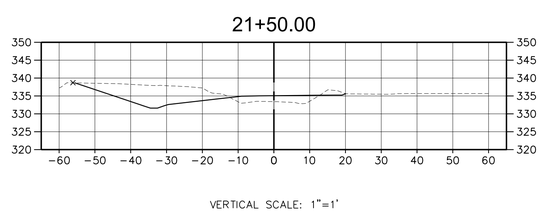


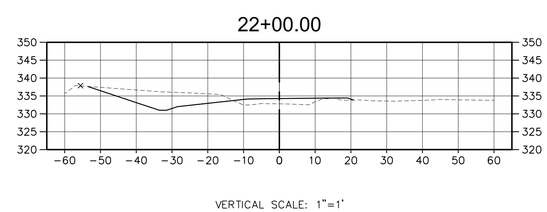












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LICENSE NO. 1542 EXPIRATION DATE 04/30/2021"

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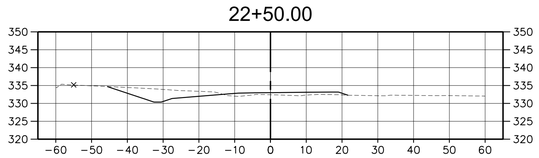
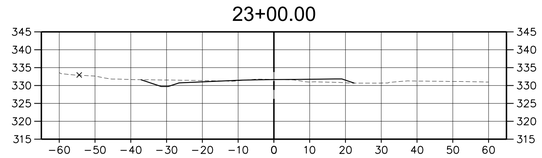
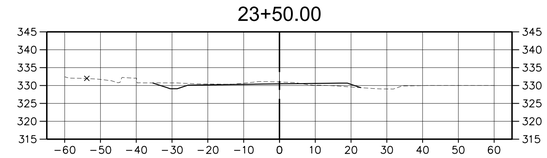
100% DESIGN

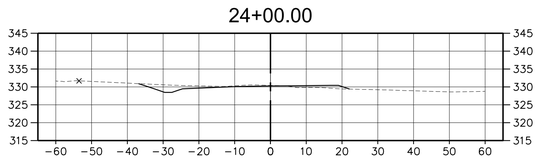
SHEET TITLE
CROSS SECTIONS

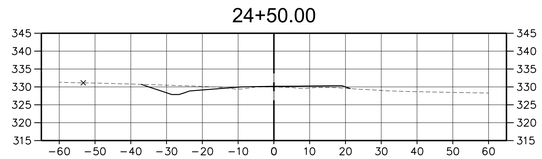
SHEET
S1.2

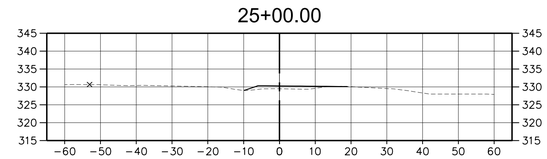


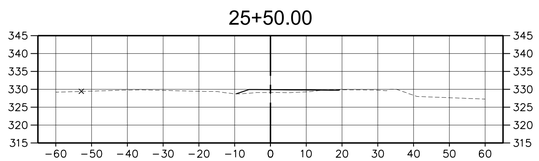


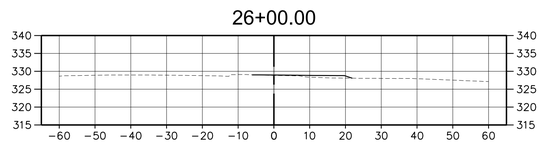


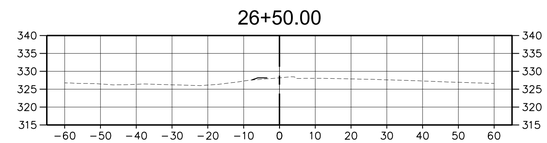


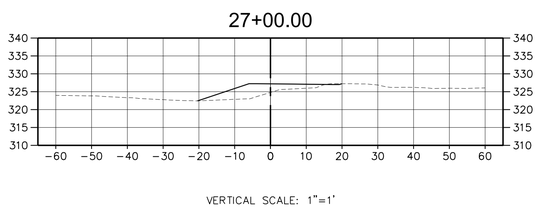


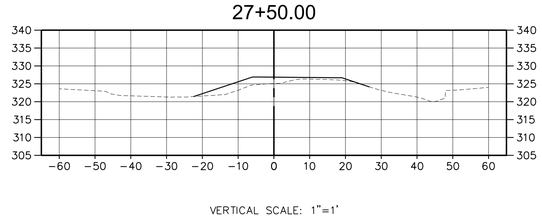


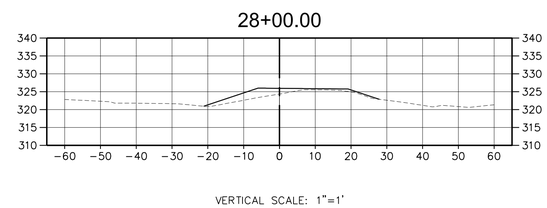


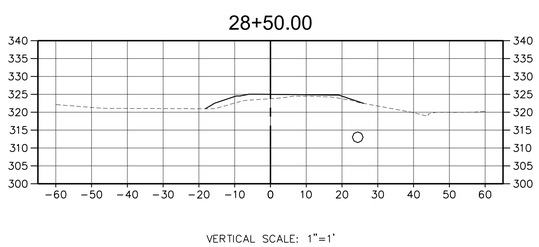


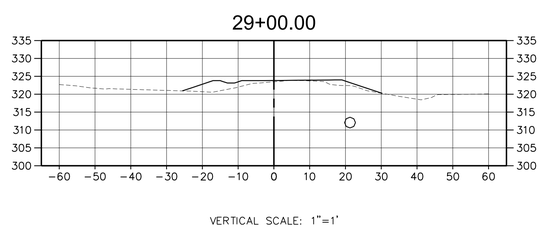


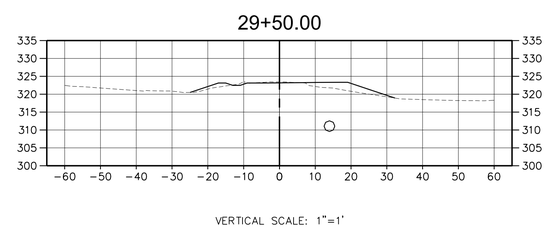












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COMMONWEALTH OF VIRGINIA
STEVEN TORGERSON
CERT. NO. 0406001342
01/05/2020
LANDSCAPE ARCHITECT

REGISTRATION STAMP

NOT FOR CONSTRUCTION

PROFESSIONAL CERTIFICATION
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PROJECT TITLE

EXPANSION OF THE W&OD TRAIL

FALLS CHURCH, VA
UPC 113612

REVISIONS

MARK	DATE	DESCRIPTION

AMT FILE NO.	18-0367
DATE:	3/2020
SCALE:	AS SHOWN
DESIGNED BY:	AMT
DRAWN BY:	AMT
CHECKED BY:	AMT

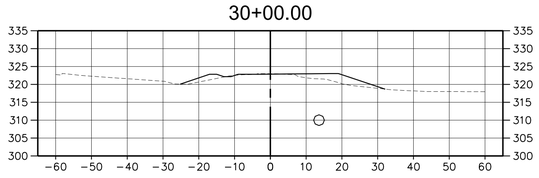
100% DESIGN

SHEET TITLE

CROSS SECTIONS

SHEET

S1.3



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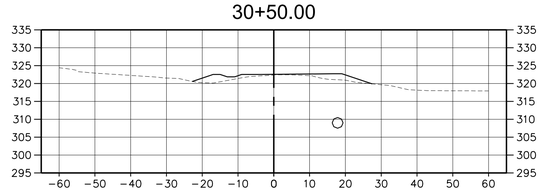

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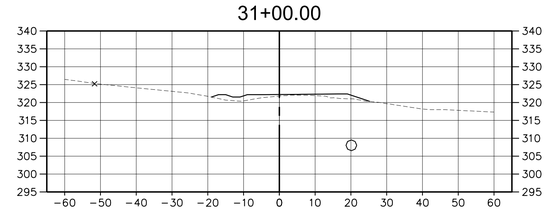

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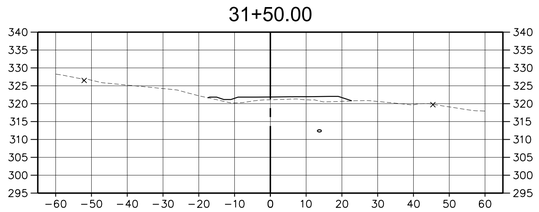

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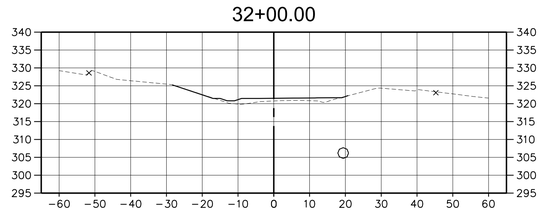

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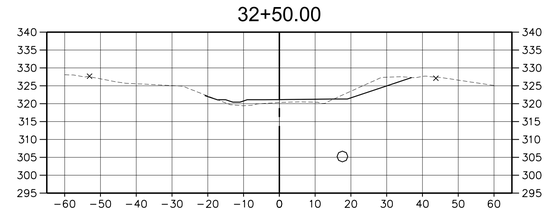

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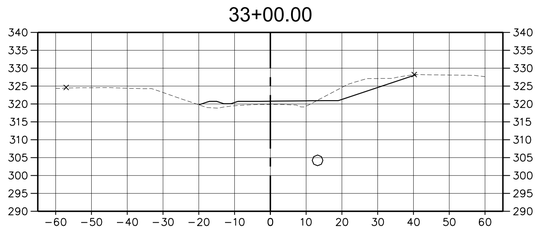

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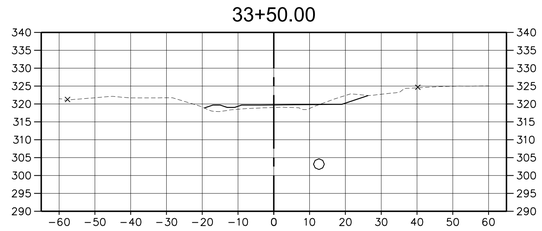

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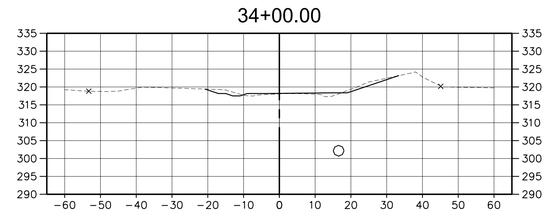

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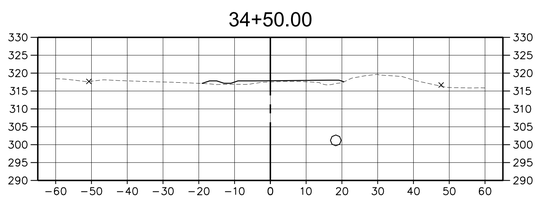

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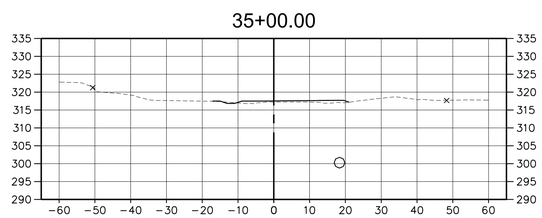

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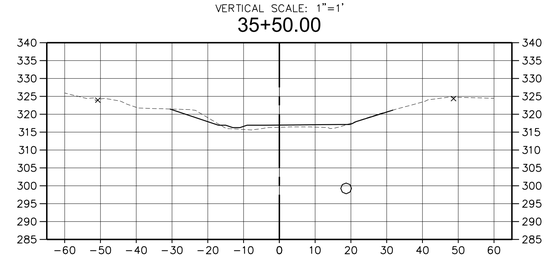

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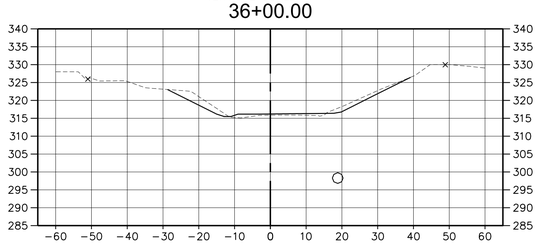

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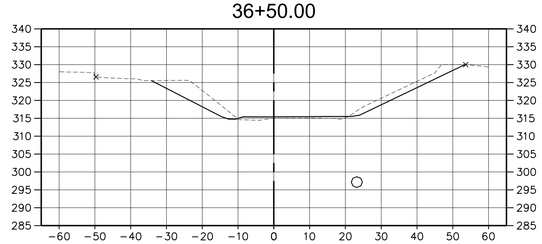

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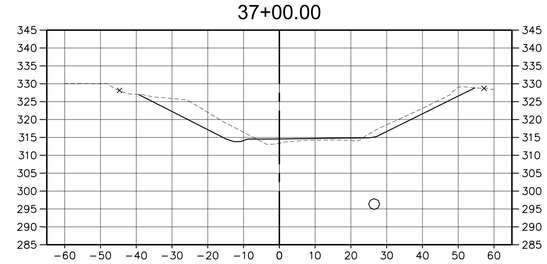

VERTICAL SCALE: 1"=1'

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COMMONWEALTH OF VIRGINIA
STEVEN TORGERSON
Cert. No. 0406001542
01/05/2020
LANDSCAPE ARCHITECT

REGISTRATION STAMP

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LICENSE NO. 1542 , EXPIRATION DATE 04/30/2021."

PROJECT TITLE

EXPANSION OF THE W&OD TRAIL
FALLS CHURCH, VA
UPC 113612

REVISIONS

MARK	DATE	DESCRIPTION

AMT FILE NO.	18-0367
DATE:	3/2020
SCALE:	AS SHOWN
DESIGNED BY:	AMT
DRAWN BY:	AMT
CHECKED BY:	AMT

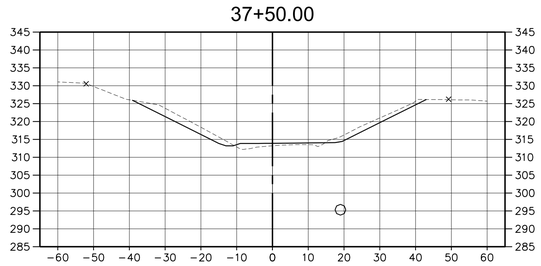
100% DESIGN

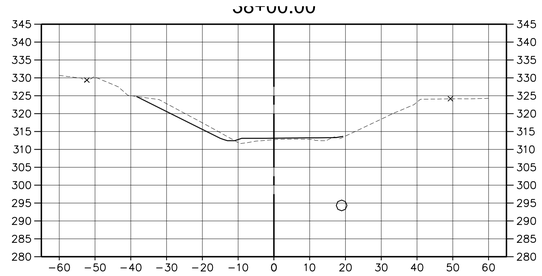
SHEET TITLE

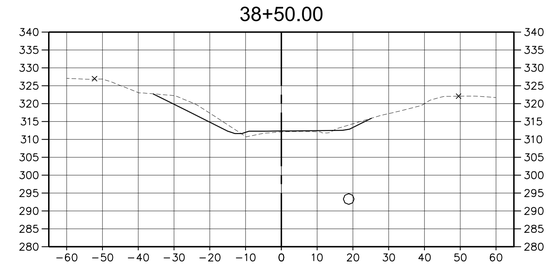
CROSS SECTIONS

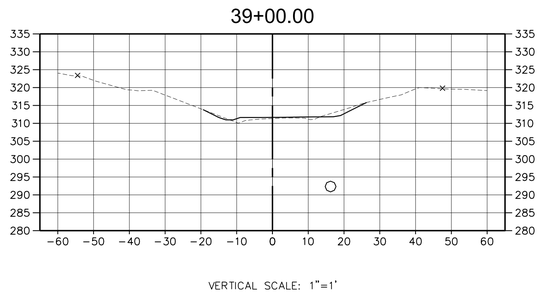
SHEET

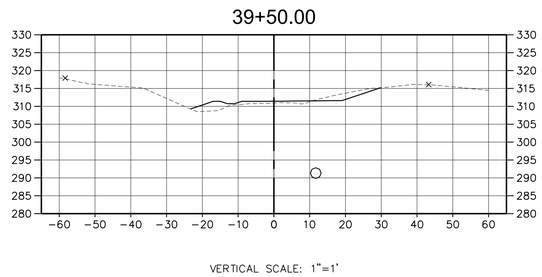
S1.4

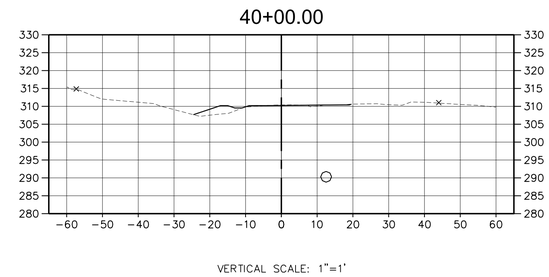


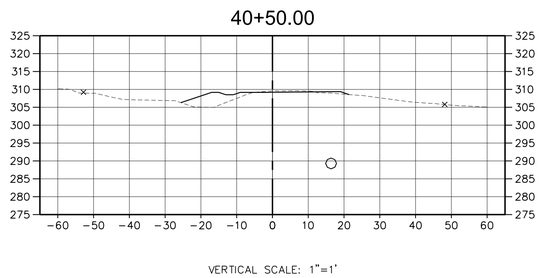


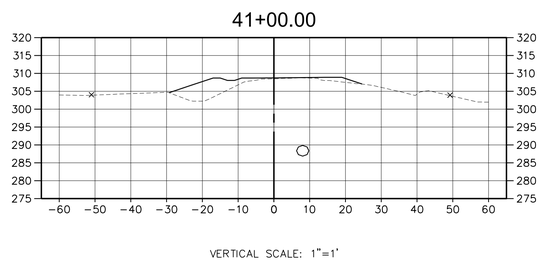


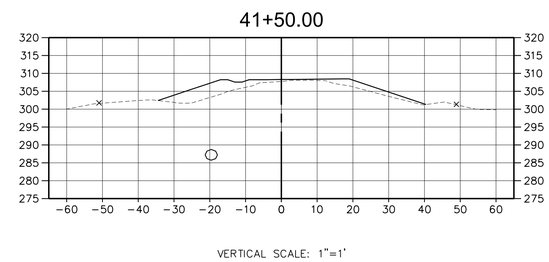


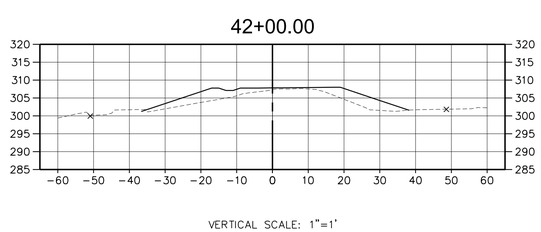


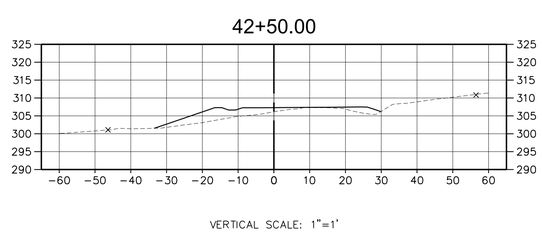


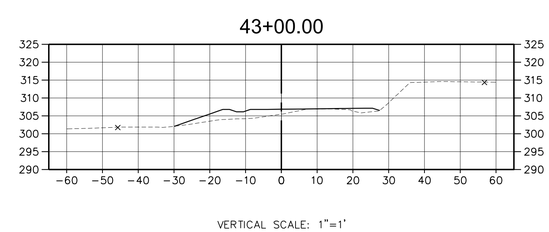












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COMMONWEALTH OF VIRGINIA
STEVEN TORGERSON
CERT. NO. 0406001542
01/05/2020
LANDSCAPE ARCHITECT

REGISTRATION STAMP

NOT FOR CONSTRUCTION

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PROJECT TITLE

EXPANSION OF THE W&OD TRAIL

FALLS CHURCH, VA

UPC 113612

REVISIONS

MARK	DATE	DESCRIPTION

AMT FILE NO.	18-0367
DATE:	3/2020
SCALE:	AS SHOWN
DESIGNED BY:	AMT
DRAWN BY:	AMT
CHECKED BY:	AMT

100% DESIGN

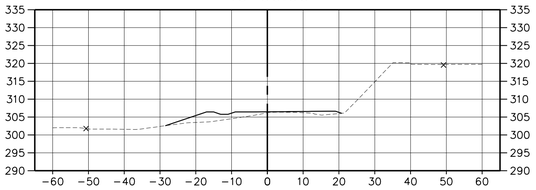
SHEET TITLE

CROSS SECTIONS

SHEET

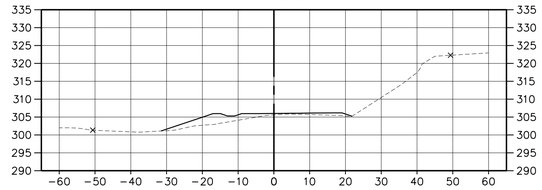
S1.5

43+50.00



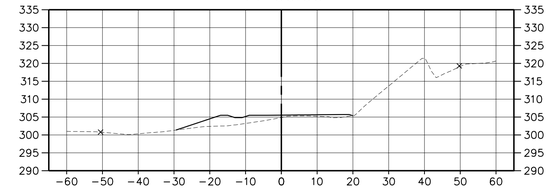
VERTICAL SCALE: 1"=1'

44+00.00



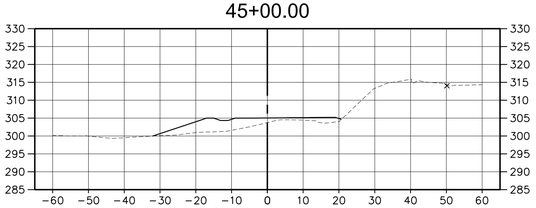
VERTICAL SCALE: 1"=1'

44+50.00



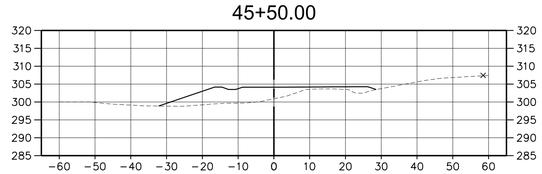
VERTICAL SCALE: 1"=1'

45+00.00



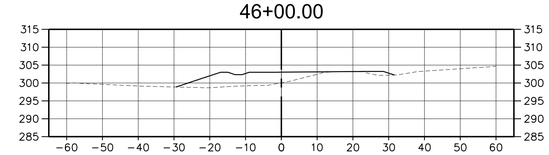
VERTICAL SCALE: 1"=1'

45+50.00



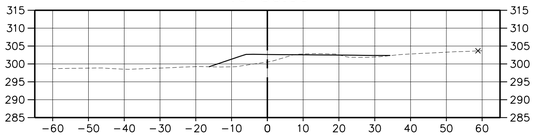
VERTICAL SCALE: 1"=1'

46+00.00



VERTICAL SCALE: 1"=1'

46+50.00



VERTICAL SCALE: 1"=1'

AMT
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PROJECT TITLE

EXPANSION OF THE W&OD TRAIL

FALLS CHURCH, VA
UPC 113612

REVISIONS

MARK	DATE	DESCRIPTION

AMT FILE NO.	18-0367
DATE:	3/2020
SCALE:	AS SHOWN
DESIGNED BY:	AMT
DRAWN BY:	AMT
CHECKED BY:	AMT

100% DESIGN

SHEET TITLE

CROSS SECTIONS

SHEET

S1.6