# PUBLIC WORKS NOTES:

1. All requirements relative to City Code and Public Works Design and Construction Standards shall be submitted and approved before release of site plans.
2. All required bonds, escrows, insurances, cash, etc., shall be submitted and approved before release of site plans.
3. Plan and profile shall be submitted (inked on mylar size 24" x 36") for all storm sewers and street projects in public right-of-ways or public easements and approved before release of site plans.
4. Contractor is responsible to notify all utility companies before construction begins.
5. All datum shall be based on USC and GS datum.
6. Bonds shall not be released until the receipt and approval by the City of as-built site plan, plans and profiles, etc.
7. All underground utilities and transformers shall be shown on site plan and confirmed per location on as-built plan.
8. The owner shall notify the Director of Public Works in Writing three days prior to the beginning of all street or storm sewer work shown on the site plan.
9. The installation of improvements as required in this article shall in no case serve to bind the city to accept such improvements for the maintenance, repair of operation thereof, but such acceptance, shall be subject to the existing regulations concerning the acceptance of each type of improvement.
10. No lane closures are permitted on West Broad Street before 9:30 AM and after 3:00 PM. Only one lane may be closed at a time. VDOT requirements for traffic control will govern.
11. Normal construction hours are 7:00 AM to 9:00 PM Monday, through Friday and 9:00 AM to 9:00 PM on weekends and holidays.
12. Permits are required for construction work located within the established City right-of-way.

COMMONWEALTH OF VIRGINIA
J. KEITH SINCLAIR, JR.
Lic. No. 11195
01/05/20
PROFESSIONAL ENGINEER

COMMONWEALTH OF VIRGINIA
JACK A. GOODE, II
LIC. NO. 02039202
PROFESSIONAL ENGINEER
1/8/20

# 48-1137 REQUIRED CONSIDERATIONS:

IN APRIL 2016, THE CITY ADOPTED THE "W&OD PARK MASTER PLAN. THE VISION STATEMENT FOR THE PLAN STATES: "DEVELOP THE W&OD AS A GREAT STREET AND GREENWAY WITHIN THE CITY, A PLACE THAT PROVIDES OPPORTUNITIES FOR RECREATION, RELAXATION AND TRANSPORTATION; PRESERVES AND IMPROVES THE NATURAL ENVIRONMENT; CONNECTS TO THE CITY'S COMMERCIAL AND RESIDENTIAL NEIGHBORHOODS; AND PROVIDES TRANSITIONS BETWEEN COMMERCIAL AND RESIDENTIAL AREAS." THE W&OD TRAIL IS THE MOST PROMINENT FEATURE OF THE W&OD PARK. THE TRAIL IS A POPULAR ROUTE FOR BOTH SHORT WALKS AND LONG BIKE RIDES. THE CITY'S MASTER BICYCLE PLAN CALLS FOR SEPARATING FOOT AND BICYCLE TRAFFIC BY PROVIDING SEPARATE TRAILS.

THE W&OD DUAL TRAIL IS CONSISTENT WITH THE W&OD PARKS MASTER PLAN. NOVA PARKS DEVELOPED THE PROPOSED TRAIL DESIGN THOROUGH DETAILED ANALYSIS OF SITES CONDITIONS AND CONSTRAINTS, BEST PRACTICES FOR TRAIL DESIGN, PRECEDENT STUDIES, TRAIL GUIDELINES AND STANDARDS, DOMINION ENERGY MAINTENANCE ACCESS, STORMWATER MANAGEMENT IMPLICATIONS, TRAIL MAINTENANCE PRACTICES, AND TRAIL SAFETY. RECOMMENDATIONS HAVE COME FROM EXPERTS IN THE FIELD OF BICYCLE AND PEDESTRIAN TRANSPORTATION PLANNING. THE RESULTING DESIGN CONNECTS THE CITY'S COMMERCIAL AND RESIDENTIAL NEIGHBORHOODS AND THE REST OF THE W&OD TRAIL FROM SHIRLINGTON TO PURCELLVILLE. THE DESIGN FOCUSES ON PRESERVING AND IMPROVING THE NATURAL ENVIRONMENT ALONG THE CORRIDOR BY REDUCING INVASIVE PLANT SPECIES AND DEVELOPING A DIVERSE MEADOW HABITAT THAT IS CONDUCIVE THE TRAIL VISION, MAINTENANCE REGIMEN, AND THE LOW DOMINION ENERGY TRANSMISSION POWER LINES THAT RUN THE LENGTH OF THE TRAIL. STORMWATER OFF THE TRAIL IS CAPTURED AND ALLOWED, WHERE POSSIBLE TO INFILTRATE INTO THE GROUND THROUGH A SERIES OF DRY SWALES, PERMEABLE PAVEMENT, AND MODULAR WETLANDS.

THE PROPOSED TRAIL CROSS SECTION ALLOWS FOR THE SAFE MOVEMENT OF PEDESTRIANS AND BICYCLISTS THROUGH THE CREATION OF A DUAL TRAIL SYSTEM. THE TRAIL IS SEPARATED BY A MINIMUM OF A TWO-FOOT, COLORED STAMPED ASPHALT SURFACE. THE STAMPED ASPHALT VISUALLY BREAKS DELINEATES THE TWO TRAILS. THE TEXTURED SURFACE PROVIDES TEXTURAL QUES AND ACTS AS A RUMBLE STRIP TO WARN WHEELED USERS IF THEY HAVE CROSSED THE THRESH HOLD. AT SOME LOCATIONS THE TRAIL IS BUMPED OUT FURTHER TO ALLOW FOR NATIVE GRASSES AND OTHER PERENNIALS PLANTINGS. THESE ZONES HELP REINFORCE THE APPEARANCE OF THE GREENWAY.

# PLANNING NOTES:

1. The property owner – Northern Virginia Regional Park Authority, 5400 Ox Road, Fairfax, VA 22039 – joins in this Site Plan and agrees to be bound by all Site Plan Requirements.
2. W&OD Trail is zoned R1-A, Low Density Residential.

# ARBORIST NOTES:

1. All requirements relative to the City Code and City Landscaping Standards shall be complied with.
2. Bonds are required for Existing Trees and new Landscaping prior to final signoff.

# RPI MAP INFORMATION:

RPC 51-216-064

**Lot(s)** N/A **Block** N/A

# MISCELLANEOUS NOTES:

1. Upon satisfactory completion of the installation of required improvements, as shown on the approved site plan or a section thereof, the developer shall submit to the Department of Planning five copies of an as-built site plan certified by the engineer, architect and/or surveyor for approval for conformity with the approved site plan.
2. The As-Built Site Plan shall be submitted and approved prior to the issuance of the final Occupancy Permit.
3. Final approval by the Planning Commission of this site plan shall expire one year after the day of such approval if building permits have not been obtained for construction in accordance therewith, unless an extension is granted by the City.
4. In any development involving a condominium, cooperative, automatic owners' association or other form of ownership in which there is common area within the development, the documents pertaining to this form of ownership shall be approved by the City Attorney prior to issuance of any Occupancy Permit.
5. Any proposed changes or revisions during the execution of or subsequent to implementation of the approved site plan shall be subject to City review and approval.
6. The federal emergency management agency's flood insurance rate map for the City of Falls Church, Virginia, map number 5100540001c, revised date July 16, 2004, designates the property as being in zone x, "Areas determined to be outside the 0.2% annual chance floodplain."

# WAIVERS:

# VARIANCE:

# RECORDATION DATA:

**Easement(s):**

**Subdvision(s) and Consolidation(s):**

**Dedication(s):**

**Site Plan Approval:**

# APPROVALS

## PLANNING COMMISSION FINAL APPROVAL:

## SPECIAL USE PERMIT ( Date(s) of Approval by BZA ):

## BOND(S) POSTED ( Date(s) and Amount(s) ):

## FINAL STAFF APPROVAL:

| | Signature : | Date : |
|---|---|---|
| Planning | | |
| Public Works | | |

## SUBSEQUENT ACTIONS:

BUILDING PERMIT ISSUED ( Date ) :
AS-BUILT APPROVED ( Date ) :
COMMON AREA DOCUMENTS APPROVED ( Date ) :
LANDSCAPE ESCROW ACCEPTED ( Date ) :
CERTIFICATE OF OCCUPANCY ( Date ) :
OTHER :

**Revisions Approved prior to Certificate of Occupancy:**

| Description | Date Approved |
|---|---|

Expansion of the W&OD Trail
NAME OF PROJECT
W&OD Trail Falls Church, VA
ADDRESS
Northern Virginia Regional Park Authority — 703-359-4621
OWNER — TELEPHONE #
5400 Ox Road, Fairfax, VA 22039
ADDRESS
Steve Torgerson — 301-881-2545
NAME OF CERTIFIED ENGINEER OR SURVEYOR SUBMITTING PLAN — TELEPHONE #
800 Kings Farm Blvd, Fourth Floor, Rockville, MD 20850
ADDRESS

# APPLICATION FOR REVIEW AND APPROVAL BY

# CITY OF FALLS CHURCH, VIRGINIA

Certification

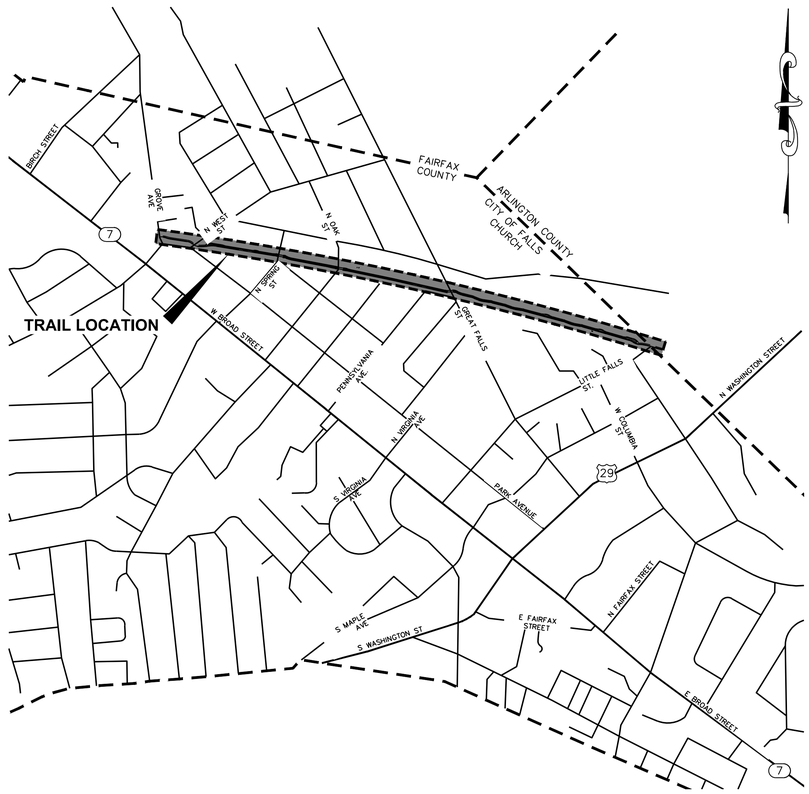
COMMONWEALTH OF VIRGINIA
STEVEN TORGERSON
Cert. No. 0406001542
01/08/2020
LANDSCAPE ARCHITECT

Signature

Site Plan — MUNIS # 2019-1098

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

## UPC# 113612, STATE PROJECT EN18-110-208
## DRAFT 90% CONSTRUCTION PLANS
## JANUARY 2020




PROJECT VICINITY MAP
SCALE: NTS

| SHEET LIST | |
|---|---|
| Sheet Number | Sheet Title |
| GI1.0 | COVER SHEET |
| GI1.1 | PROJECT NOTES |
| GI1.2 | KEY PLAN |
| CD1.0 | EXISTING CONDITIONS & DEMOLITION PLAN |
| CD1.1 | EXISTING CONDITIONS & DEMOLITION PLAN |
| CD1.2 | EXISTING CONDITIONS & DEMOLITION PLAN |
| CD1.3 | EXISTING CONDITIONS & DEMOLITION PLAN |
| CD1.4 | EXISTING CONDITIONS & DEMOLITION PLAN |
| CD1.5 | EXISTING CONDITIONS & DEMOLITION PLAN |
| CD1.6 | EXISTING CONDITIONS & DEMOLITION PLAN |
| CD1.7 | EXISTING CONDITIONS & DEMOLITION PLAN |
| CD1.8 | EXISTING CONDITIONS & DEMOLITION PLAN |
| CD1.9 | EXISTING CONDITIONS & DEMOLITION PLAN |
| CD1.10 | EXISTING CONDITIONS & DEMOLITION PLAN |
| CD1.11 | EXISTING CONDITIONS & DEMOLITION PLAN |
| CD5.0 | EXISTING CONDITIONS TREE SURVEY |
| CS1.0 | HORIZONTAL AND VERTICAL ALIGNMENTS |
| CS1.1 | HORIZONTAL AND VERTICAL ALIGNMENTS |
| CS1.2 | HORIZONTAL AND VERTICAL ALIGNMENTS |
| CS1.3 | HORIZONTAL AND VERTICAL ALIGNMENTS |
| CS1.4 | HORIZONTAL AND VERTICAL ALIGNMENTS |
| CS1.5 | HORIZONTAL AND VERTICAL ALIGNMENTS |
| CS1.6 | HORIZONTAL AND VERTICAL ALIGNMENTS |
| CS1.7 | HORIZONTAL AND VERTICAL ALIGNMENTS |
| CS1.8 | HORIZONTAL AND VERTICAL ALIGNMENTS |
| CS1.9 | HORIZONTAL AND VERTICAL ALIGNMENTS |
| CS1.10 | HORIZONTAL AND VERTICAL ALIGNMENTS |
| CS1.11 | HORIZONTAL AND VERTICAL ALIGNMENTS |
| CS2.0 | PIPE PROFILES |
| CS2.1 | PIPE PROFILES |
| CS3.0 | TYPICAL TRAIL SECTIONS |
| CS3.1 | SPECIFICATIONS |
| CG1.0 | GRADING – UTILITY PLAN & MATERIALS PLAN |
| CG1.1 | GRADING – UTILITY PLAN & MATERIALS PLAN |
| CG1.2 | GRADING – UTILITY PLAN & MATERIALS PLAN |
| CG1.3 | GRADING – UTILITY PLAN & MATERIALS PLAN |
| CG1.4 | GRADING – UTILITY PLAN & MATERIALS PLAN |
| CG1.5 | GRADING – UTILITY PLAN & MATERIALS PLAN |
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| CG1.7 | GRADING – UTILITY PLAN & MATERIALS PLAN |
| CG1.8 | GRADING – UTILITY PLAN & MATERIALS PLAN |
| CG1.9 | GRADING – UTILITY PLAN & MATERIALS PLAN |
| CG1.10 | GRADING – UTILITY PLAN & MATERIALS PLAN |
| CG1.11 | GRADING – UTILITY PLAN & MATERIALS PLAN |
| CS4.0 | ENLARGEMENT FOR EAST & WEST CONNECTION |
| CS5.0 | TRAIL MARKINGS & DETAILS |
| CS5.2 | UTILITY DETAILS |
| CS5.3 | INLET SIZING COMPUTATIONS |
| CS5.4 | PLANTING DETAILS |
| CE1.0 | EROSION AND SEDIMENT CONTROL– PHASE I AND PHASE II |
| CE1.1 | EROSION AND SEDIMENT CONTROL– PHASE I AND PHASE II |
| CE1.2 | EROSION AND SEDIMENT CONTROL– PHASE I AND PHASE II |
| CE1.3 | EROSION AND SEDIMENT CONTROL– PHASE I AND PHASE II |
| CE1.4 | EROSION AND SEDIMENT CONTROL– PHASE I AND PHASE II |
| CE1.5 | EROSION AND SEDIMENT CONTROL– PHASE I AND PHASE II |
| CE1.6 | EROSION AND SEDIMENT CONTROL– PHASE I AND PHASE II |
| CE1.7 | EROSION AND SEDIMENT CONTROL– PHASE I AND PHASE II |
| CE1.8 | EROSION AND SEDIMENT CONTROL– PHASE I AND PHASE II |
| CE1.9 | EROSION AND SEDIMENT CONTROL– PHASE I AND PHASE II |
| CE1.10 | EROSION AND SEDIMENT CONTROL– PHASE I AND PHASE II |
| CE1.11 | EROSION AND SEDIMENT CONTROL– PHASE I AND PHASE II |
| CE5.0 | EROSION & SEDIMENT CONTROL NOTES AND DETAILS |
| CE5.1 | EROSION & SEDIMENT CONTROL DETAILS |
| CE5.2 | TREE PROTECTION DETAILS |
| CW1.0 | STORMWATER MANAGEMENT PLAN |
| CW1.1 | STORMWATER MANAGEMENT PLAN |
| CW1.2 | STORMWATER MANAGEMENT PLAN |
| CW1.3 | STORMWATER MANAGEMENT PLAN |
| CW1.4 | STORMWATER MANAGEMENT PLAN |
| CW1.5 | STORMWATER MANAGEMENT PLAN |
| CW1.6 | STORMWATER MANAGEMENT PLAN |
| CW1.7 | STORMWATER MANAGEMENT PLAN |
| CW1.8 | STORMWATER MANAGEMENT PLAN |
| CW1.9 | STORMWATER MANAGEMENT PLAN |
| CW1.10 | STORMWATER MANAGEMENT PLAN |
| CW1.11 | STORMWATER MANAGEMENT PLAN |
| CW5.0 | SWM NARRATIVE AND CALCULATIONS |
| CW5.1 | SWM OUTFALL ANALYSIS |
| CW5.2 | STORMWATER MANAGEMENT DETAILS |
| CW5.3 | STORMWATER MANAGEMENT DETAILS |
| CW5.4 | WATER QUALITY IMPACT ASSESSMENT |
| CW5.5 | SOIL BORING LOGS |
| CW5.6 | SOIL BORING LOGS |
| CT 1.0 | MAINTENANCE OF TRAFFIC PLAN PHASE 1 |
| CT 1.1 | MAINTENANCE OF TRAFFIC PLAN PHASE 2 |
| CT 1.2 | MAINTENANCE OF TRAFFIC PLAN PHASE 2 |
| CT 1.3 | MAINTENANCE OF TRAFFIC PLAN PHASE 3 |
| CT 1.4 | MAINTENANCE OF TRAFFIC PLAN PHASE 3 |
| CT 1.5 | MAINTENANCE OF TRAFFIC PLAN PHASE 3 |
| CT 1.6 | MAINTENANCE OF TRAFFIC PLAN PHASE 4 |
| CT 1.7 | MAINTENANCE OF TRAFFIC PLAN PHASE 4 |
| CT 1.8 | MAINTENANCE OF TRAFFIC PLAN PHASE 4 |
| CT 1.9 | MAINTENANCE OF TRAFFIC PLAN PHASE 5 |
| CT 1.10 | MAINTENANCE OF TRAFFIC PLAN PHASE 5 |
| CT 1.11 | MAINTENANCE OF TRAFFIC PLAN PHASE 5 |
| CT 1.12 | MAINTENANCE OF TRAFFIC PLAN PHASE 5 |
| CT 1.13 | MAINTENANCE OF TRAFFIC PLAN PHASE 5 |
| CT 1.14 | MAINTENANCE OF TRAFFIC PLAN PHASE 5 |
| CT 1.15 | MAINTENANCE OF TRAFFIC PLAN PHASE 6 |
| S1.0 | CROSS SECTIONS |
| S1.1 | CROSS SECTIONS |
| S1.2 | CROSS SECTIONS |
| S1.3 | CROSS SECTIONS |
| S1.4 | CROSS SECTIONS |
| S1.5 | CROSS SECTIONS |
| S1.6 | CROSS SECTIONS |
| CT2.0 | INTERIM CROSSINGS |
| CT2.1 | INTERIM CROSSING SIGN DETAILS |


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


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 |
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| AMT FILE NO. | 18-0367 |
| DATE: | 01/08/2020 |
| SCALE: | N.T.S. |
| DESIGNED BY: | AMT |
| DRAWN BY: | AMT |
| CHECKED BY: | AMT |

**90% DESIGN**

SHEET TITLE

COVER SHEET

SHEET

GI1.0

01 OF 108

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

STEVEN TORGERSON Cert. No. 0406001542 LANDSCAPE ARCHITECT 10/30/2019 COMMONWEALTH OF VIRGINIA

JACK A. GOODE, II LIC. NO. 02039202 PROFESSIONAL ENGINEER COMMONWEALTH OF VIRGINIA 1/8/20

CITY OF FALLS CHURCH
APPROVALS

PUBLIC WORKS

DIRECTOR SIGNATURE DATE

DEVELOPMENT SERVICES

DIRECTOR SIGNATURE DATE

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OR LOG ON TO www.missutility.net

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-GID-180367.DWG, 1/8/2020 6:24 PM, KMUNDY

## 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
01/08/2020
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 |
|---|---|---|
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| AMT FILE NO. | 18-0367 |
| DATE: | 01/08/2020 |
| SCALE: | N.T.S. |
| DESIGNED BY: | AMT |
| DRAWN BY: | AMT |
| CHECKED BY: | AMT |

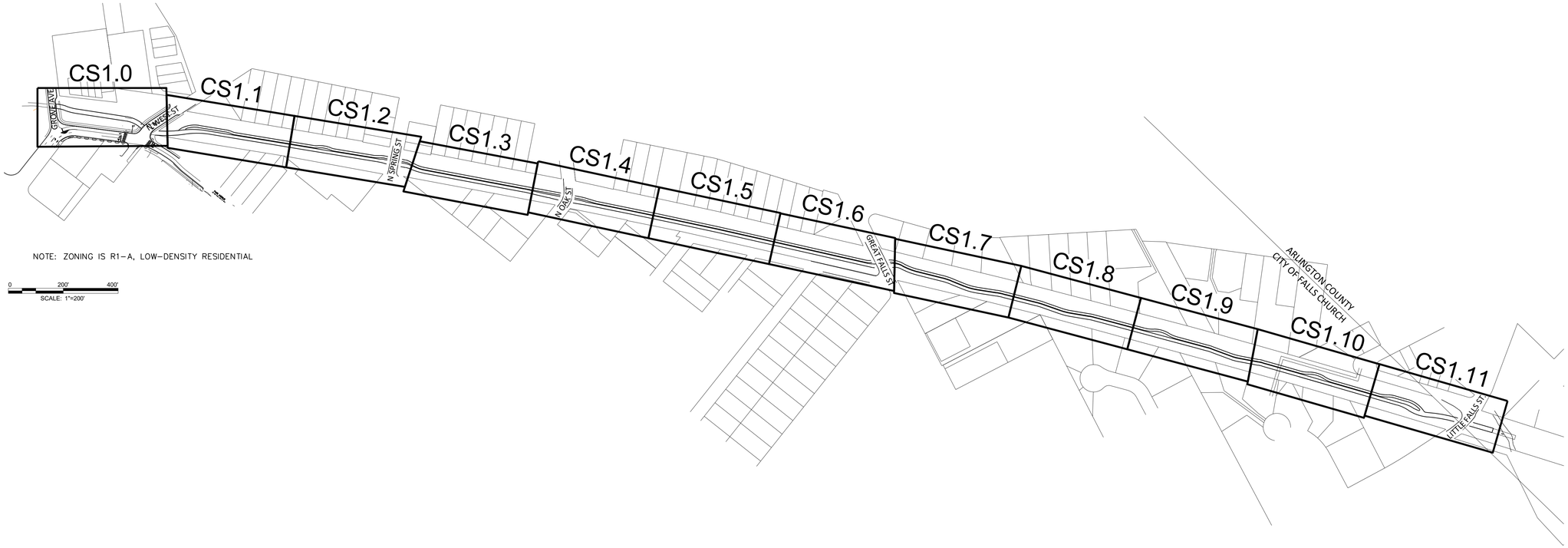
**90% DESIGN**

SHEET TITLE

PROJECT NOTES

SHEET

GI1.1




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

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

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FALLS CHURCH, VA
UPC 113612

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| CHECKED BY: | AMT |

**90% DESIGN**

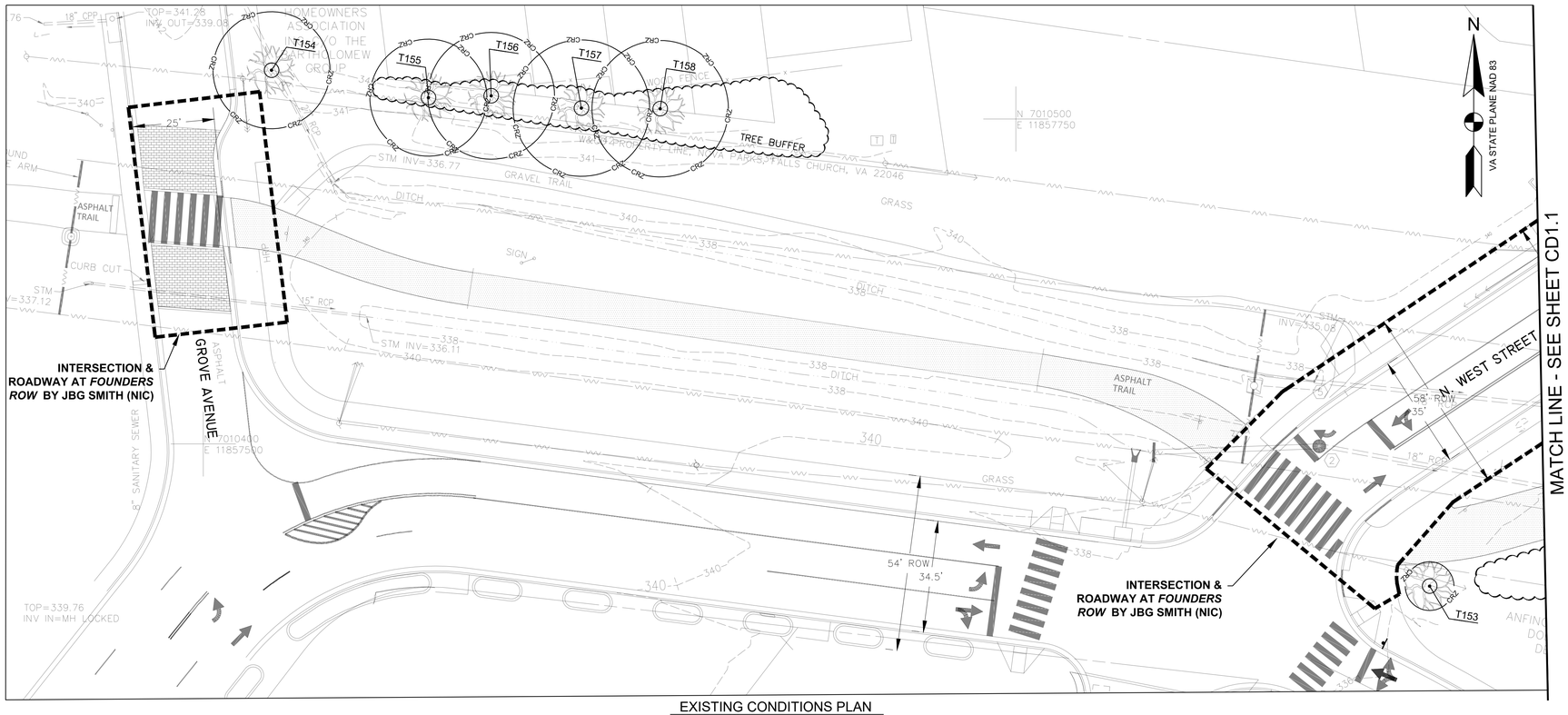
SHEET TITLE

KEY PLAN

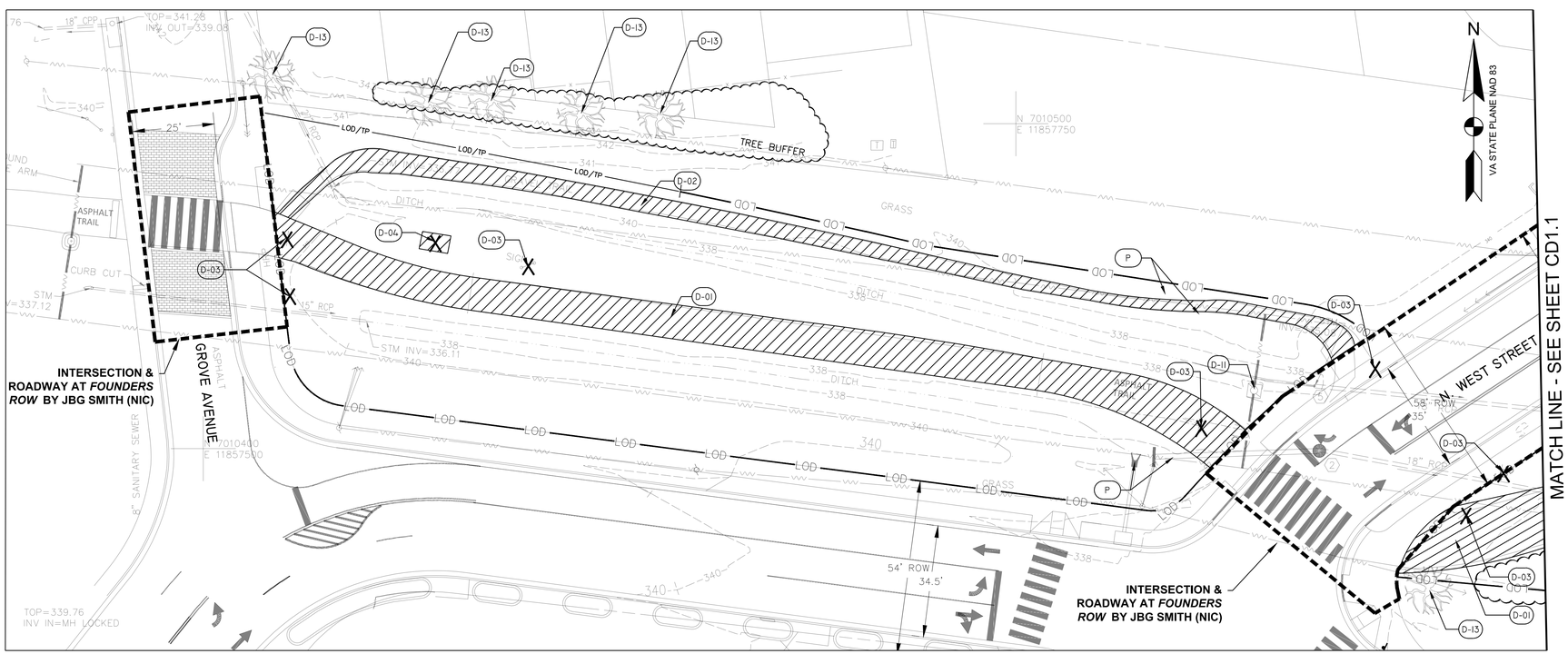
SHEET

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 |
| 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 |
| P | ITEM TO BE PROTECTED / PRESERVED DO NOT DISTURB |
| 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'
SCALE: 1"=20'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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 |
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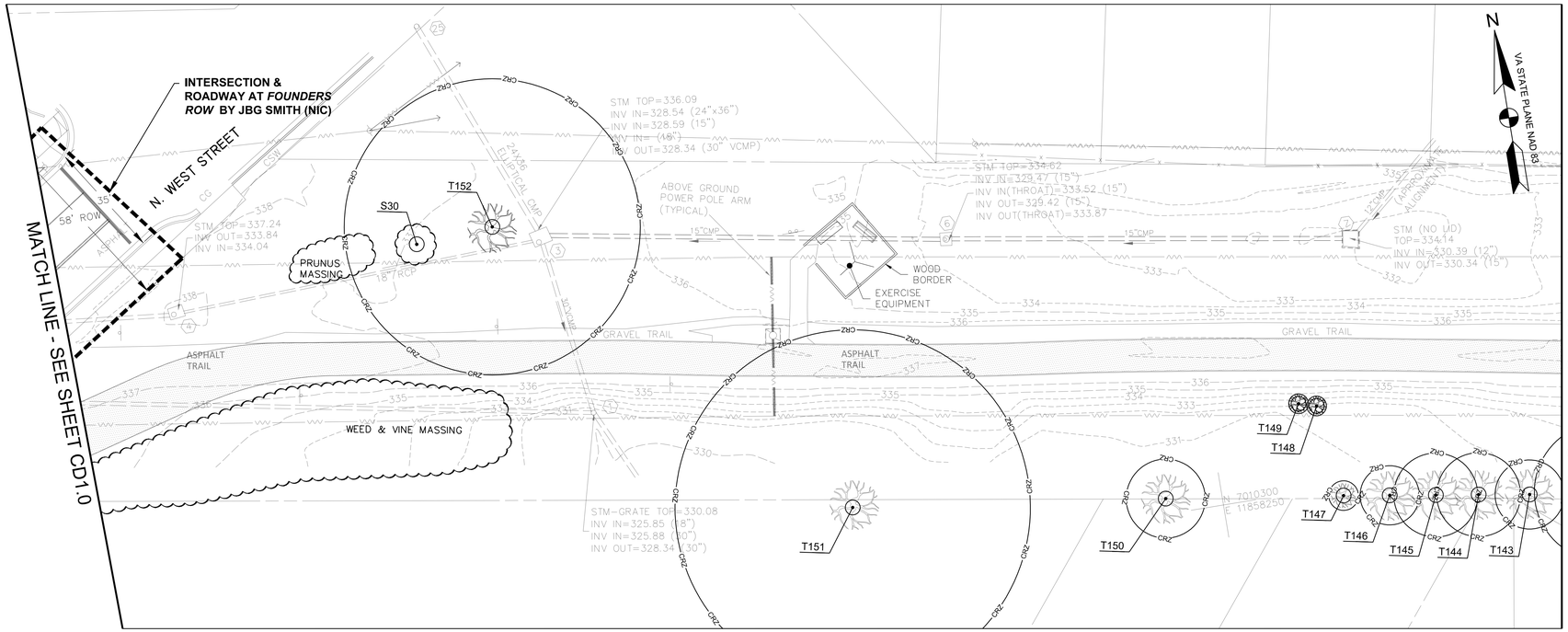
| AMT FILE NO. | 18-0367 |
| DATE: | 01/08/2020 |
| SCALE: | 1"=20' |
| DESIGNED BY: | AMT |
| DRAWN BY: | AMT |
| CHECKED BY: | AMT |

**90% DESIGN**

SHEET TITLE
EXISTING CONDITIONS & DEMOLITION PLAN

SHEET
CD1.0




EXISTING CONDITIONS PLAN
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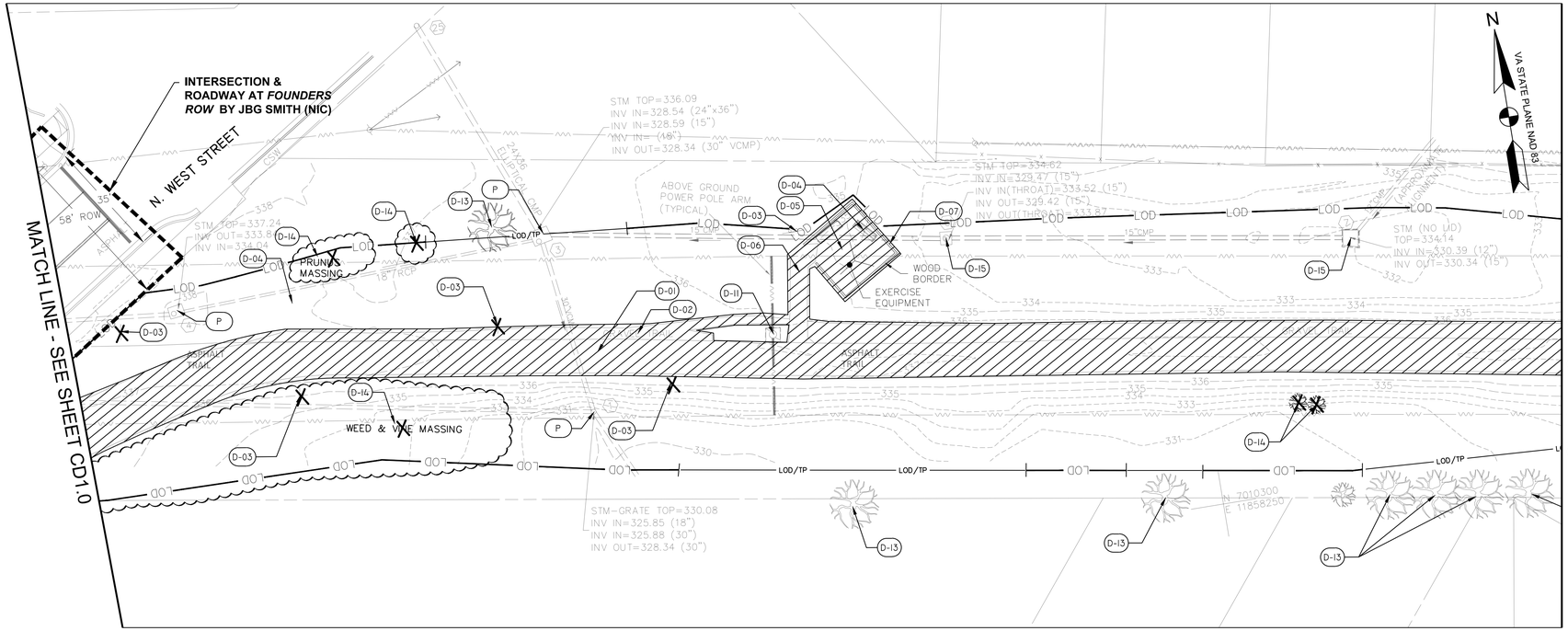


DEMOLITION PLAN
SCALE: 1"=20'

## LEGEND

| | |
|---|---|
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| EMH | ELECTRICAL MANHOLE |
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| T | ELECTRICAL TRANSFORMER |
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| ICV | IRRIGATION CONTROL VALVE |
| SMH | SANITARY MANHOLE |
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| | SIGN |
| | WATER VALVE |
| | WATER METER |
| CONC | CONCRETE |
| CSW | CONCRETE SIDEWALK |
| | BENCH |
| | TREE |
| | SHRUB LINE |
| | PROPERTY LINE |
| LOD | LIMIT OF DISTRUBANCE |
| CRZ | CRITICAL ROOT ZONE |
| 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 |
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*FOR DEMOLITION NOTES REFER TO PROJECT NOTES GI1.1

*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

| MARK | DATE | DESCRIPTION |
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| AMT FILE NO. | 18-0367 |
| DATE: | 01/08/2020 |
| SCALE: | 1"=20' |
| DESIGNED BY: | AMT |
| DRAWN BY: | AMT |
| CHECKED BY: | AMT |

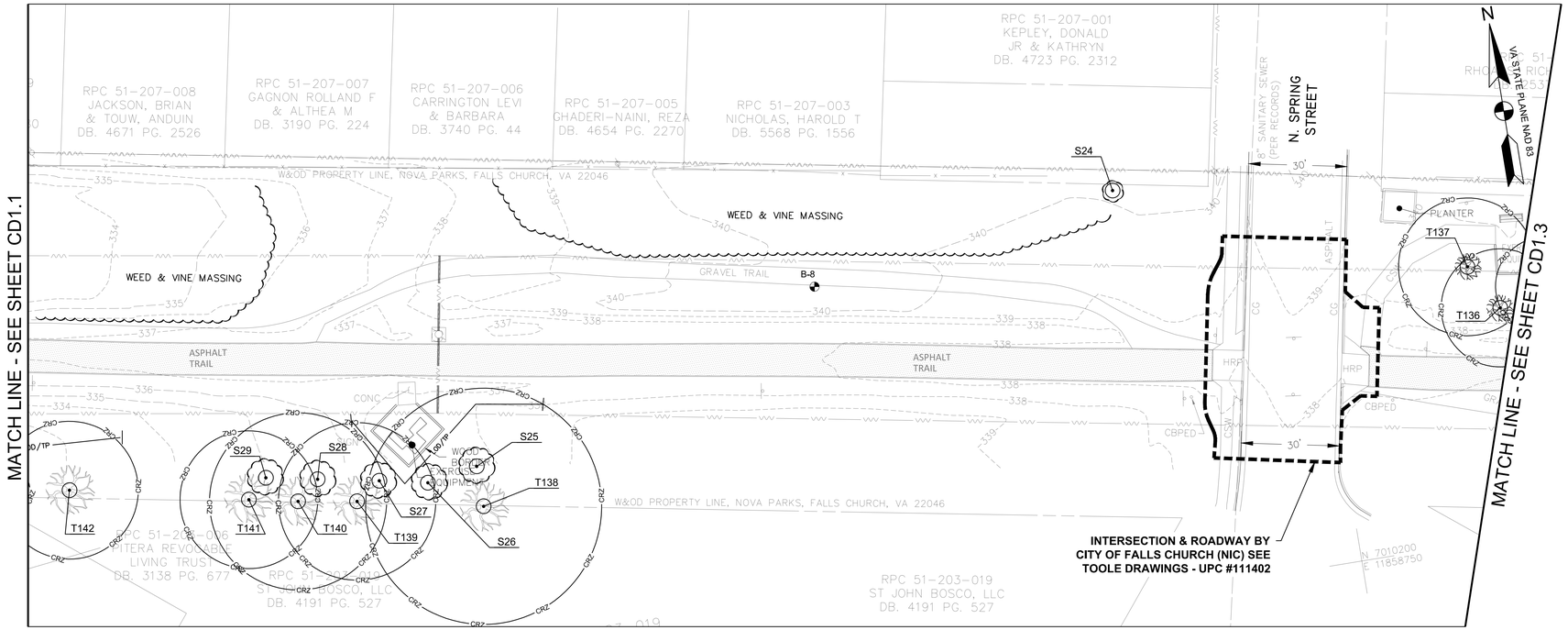
**90% DESIGN**

SHEET TITLE

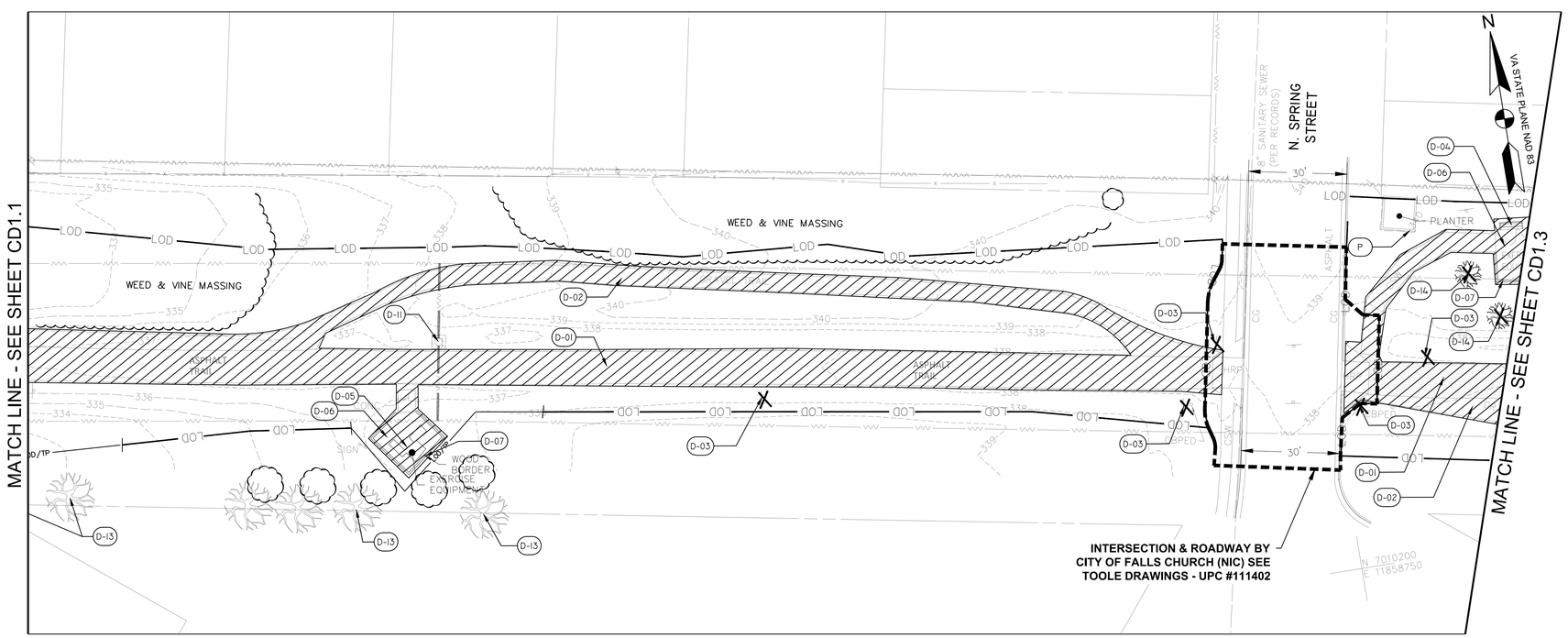
EXISTING CONDITIONS & DEMOLITION PLAN

SHEET

CD1.1




EXISTING CONDITIONS PLAN
SCALE: 1"=20'




DEMOLITION PLAN
SCALE: 1"=20'

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| D-02 | REMOVE AND DISPOSE OF GRAVEL PATH |
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| 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 |
| P | ITEM TO BE PROTECTED / PRESERVED DO NOT DISTURB |
| 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.
CONSULTING ENGINEERS
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EMAIL: AMT1@AMTENGINEERING.COM


COMMONWEALTH OF VIRGINIA
STEVEN TORGERSON
Cert. No. 0606001542
01/08/2020
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

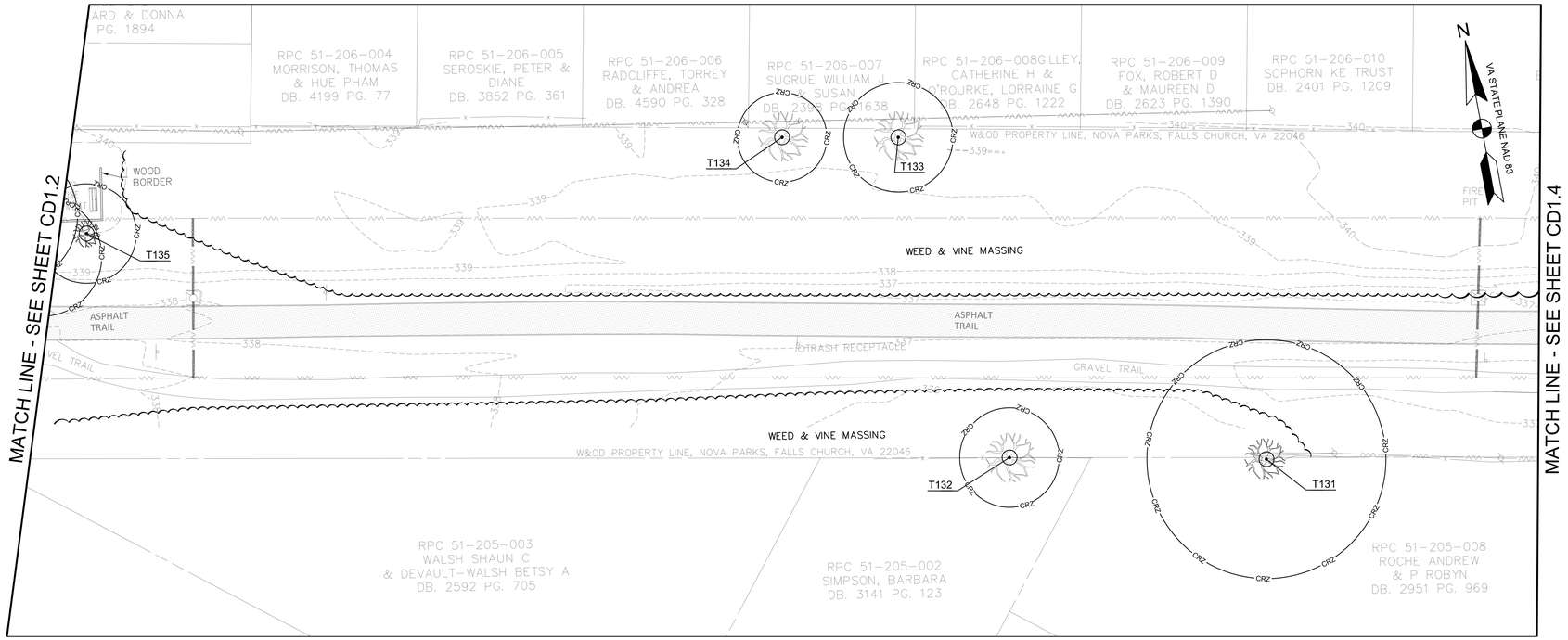
| MARK | DATE | DESCRIPTION |
|---|---|---|
| | | |

| | |
|---|---|
| AMT FILE NO. | 18-0367 |
| DATE: | 01/08/2020 |
| SCALE: | 1"=20' |
| DESIGNED BY: | AMT |
| DRAWN BY: | AMT |
| CHECKED BY: | AMT |

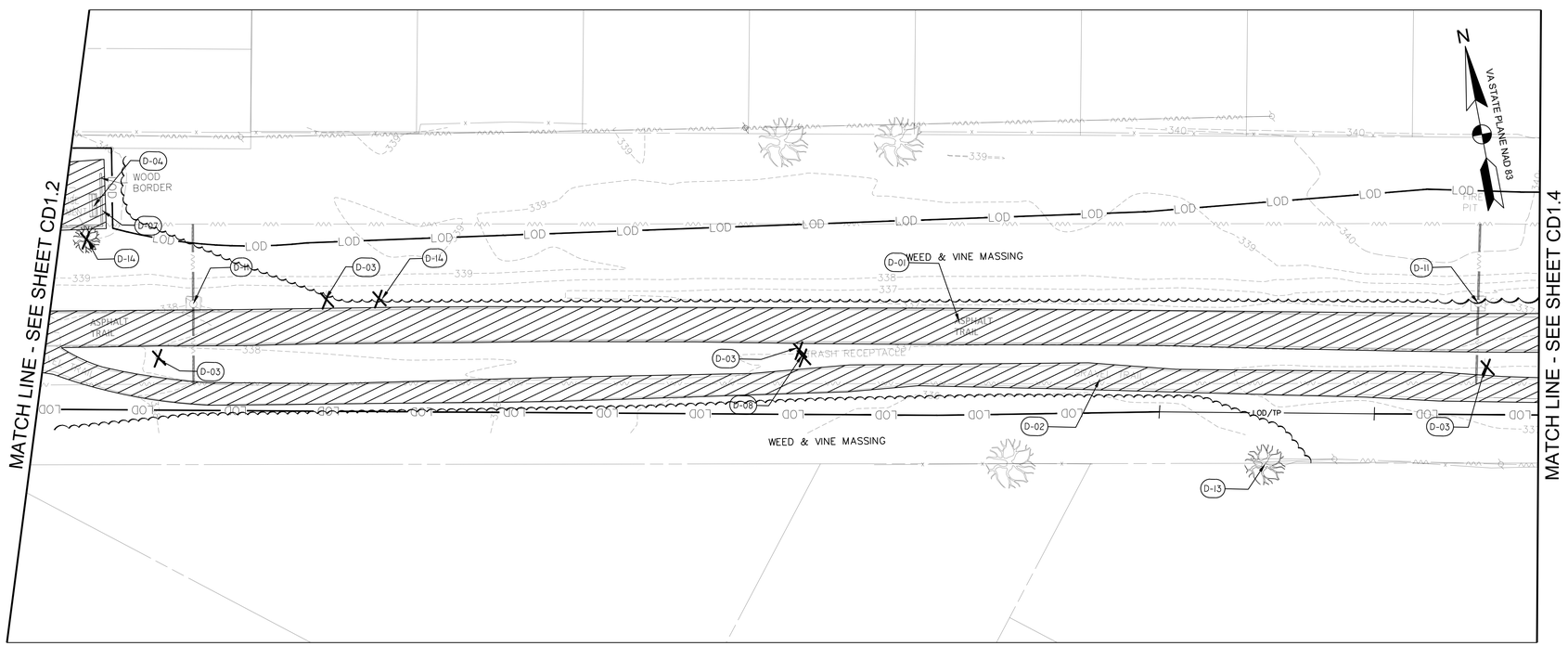
**90% DESIGN**

SHEET TITLE
EXISTING CONDITIONS & DEMOLITION PLAN

SHEET
CD1.2
06 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 |
| 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 |
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*FOR TREE TABLE REFER TO CD5.0

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FALLS CHURCH, VA
UPC 113612

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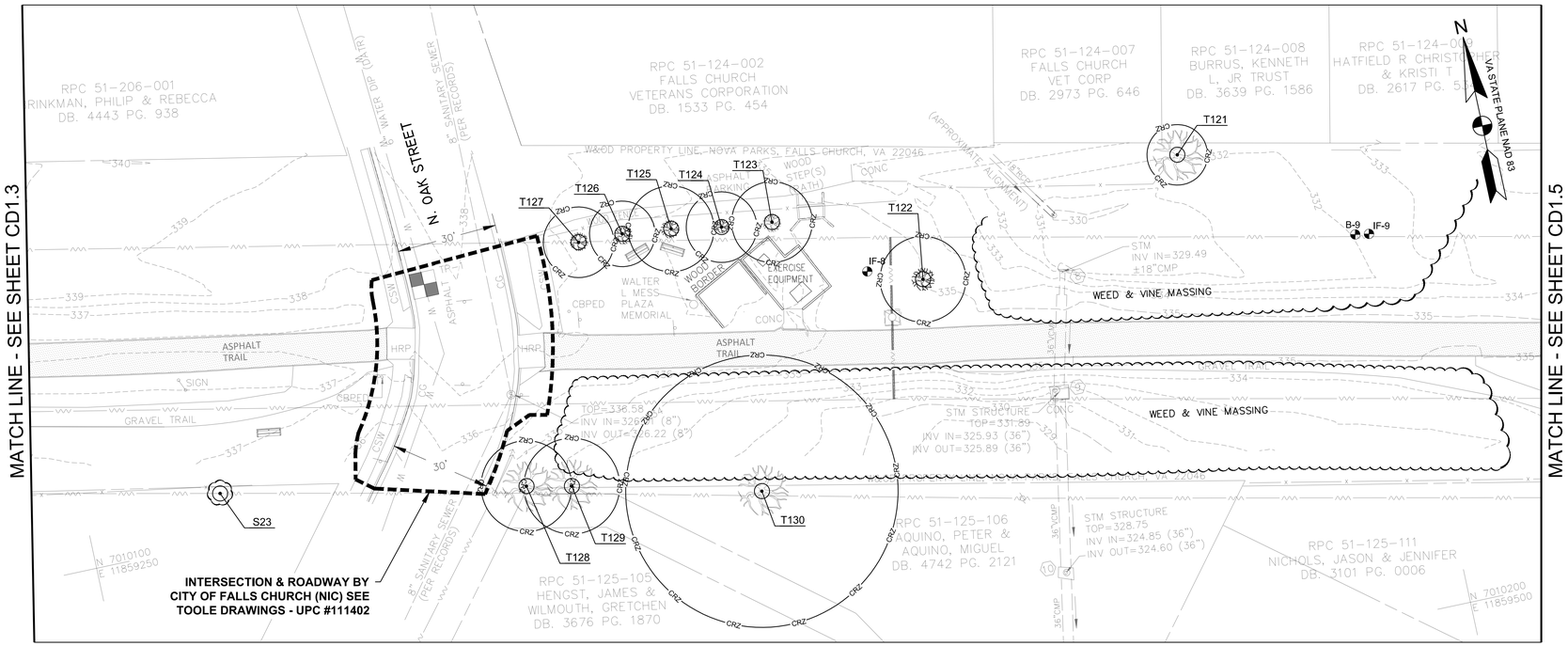
| DRAWN BY: | AMT |
| CHECKED BY: | AMT |

**90% DESIGN**

SHEET TITLE
EXISTING CONDITIONS & DEMOLITION PLAN

SHEET
CD1.3
07 OF 108




EXISTING CONDITIONS PLAN
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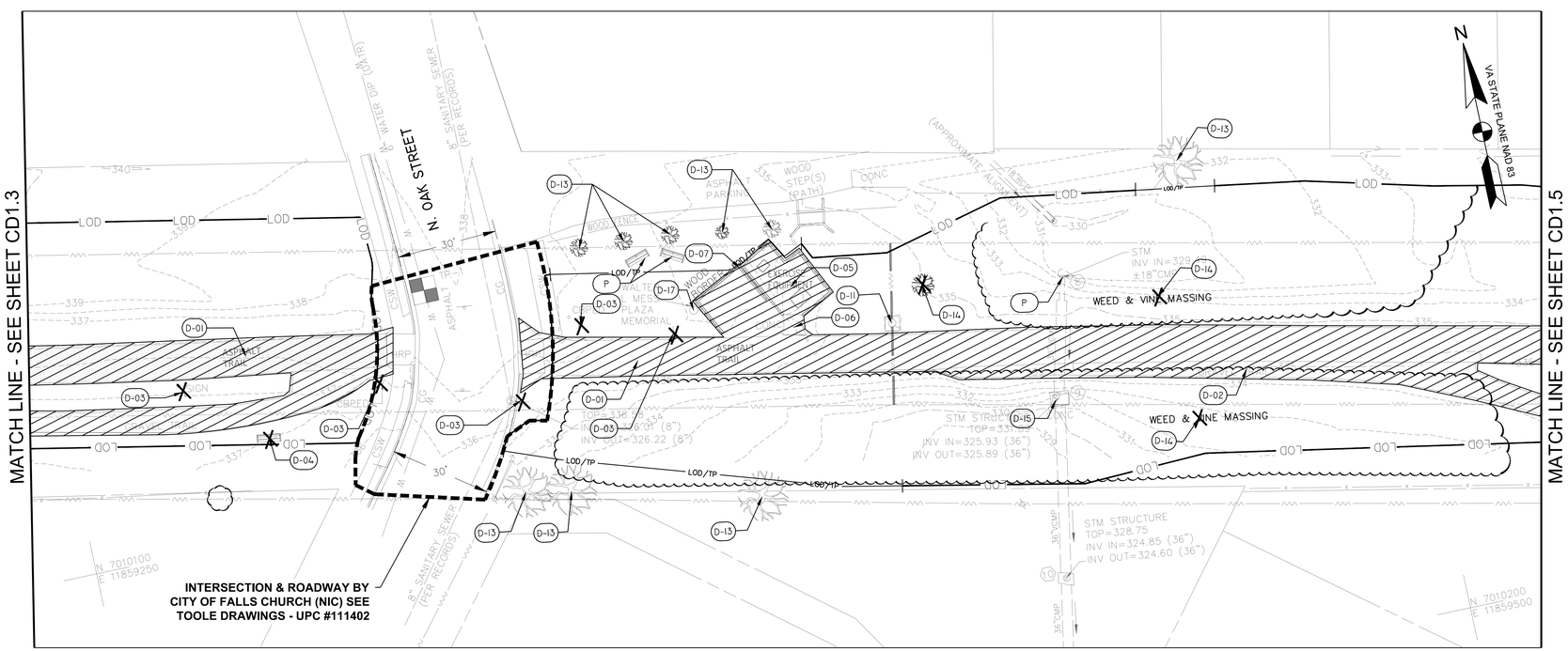


DEMOLITION PLAN
SCALE: 1"=20'

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| | SIGN |
| | WATER VALVE |
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| W | PAINTED EVIDENCE OF UNDERGROUND WATER UTILITY |
| | GUY WIRE |
| | EXISTING UNDERGROUND PIPE |
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| | OVERHEAD WIRE |
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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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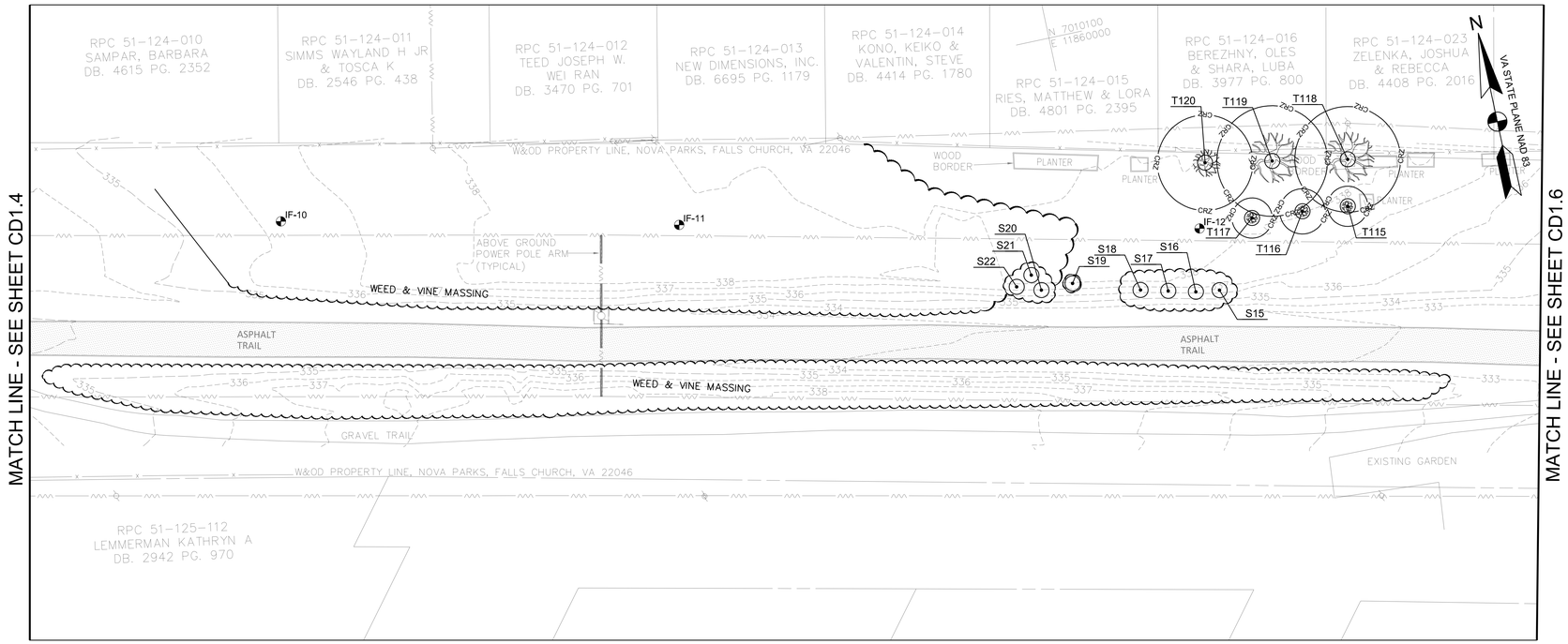
| AMT FILE NO. | 18-0367 |
| DATE: | 01/08/2020 |
| SCALE: | 1"=20' |
| DESIGNED BY: | AMT |
| DRAWN BY: | AMT |
| CHECKED BY: | AMT |

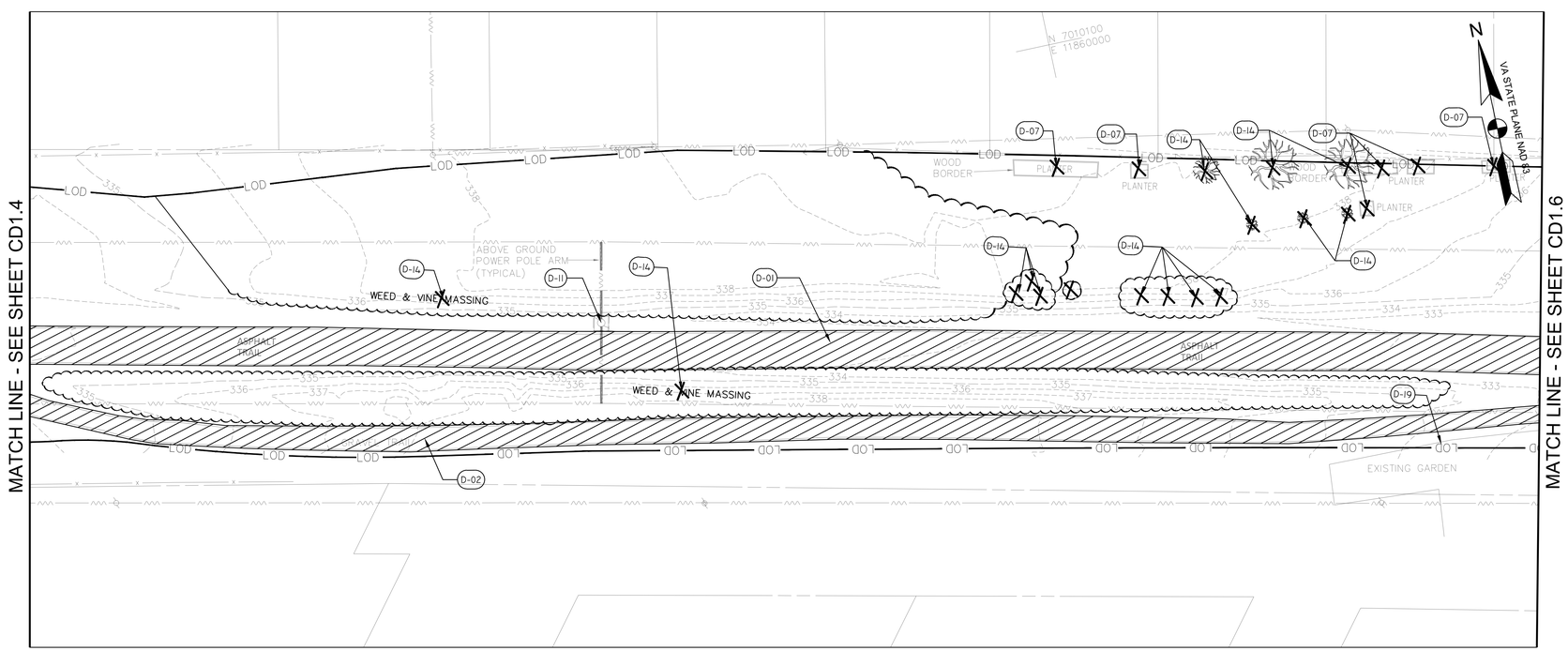
**90% DESIGN**

SHEET TITLE
EXISTING CONDITIONS & DEMOLITION PLAN

SHEET
CD1.4




EXISTING CONDITIONS PLAN
SCALE: 1"=20'




DEMOLITION PLAN
SCALE: 1"=20'

## LEGEND

| | |
|---|---|
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| EMH | ELECTRICAL MANHOLE |
| EB | ELECTRICAL BOX |
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| | SIGN |
| | WATER VALVE |
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| CONC | CONCRETE |
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| | BENCH |
| | TREE |
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| RP | ROOT PRUNING |
| RPA | RESOURCE PROTECTION AREA |
| 299 | TOPOGRAPHY |
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| | GUY WIRE |
| | EXISTING UNDERGROUND PIPE |
| x x x x | FENCE |
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## DEMOLITION SCHEDULE

| SYMBOL | DESCRIPTION |
|---|---|
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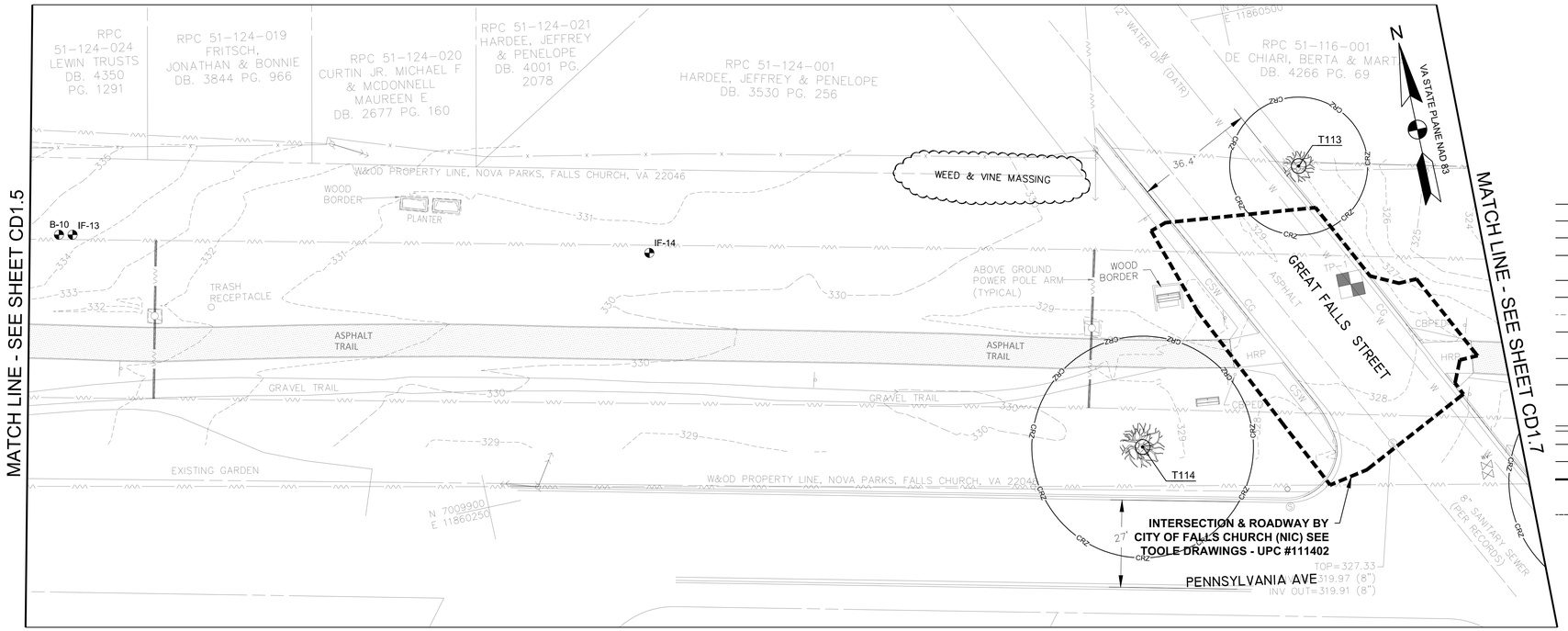
**90% DESIGN**

SHEET TITLE
EXISTING CONDITIONS & DEMOLITION PLAN

SHEET
CD1.5




EXISTING CONDITIONS PLAN
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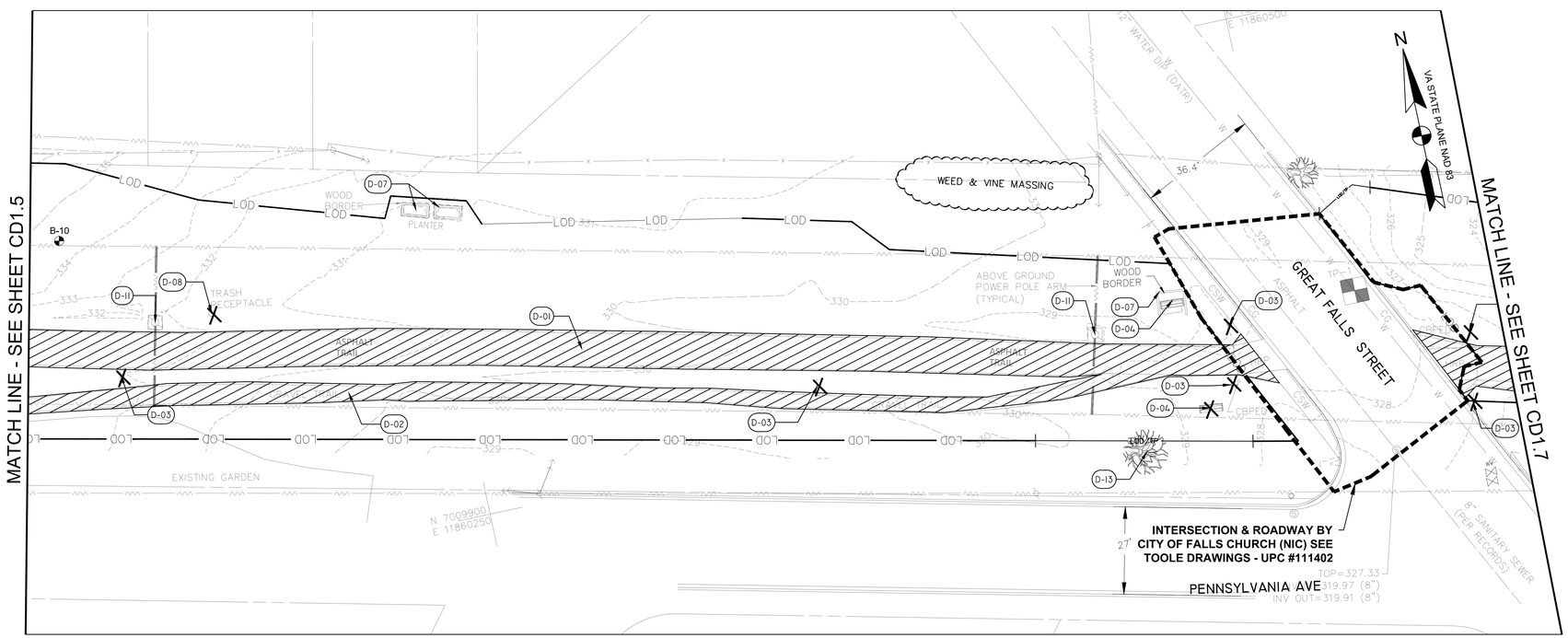


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## LEGEND

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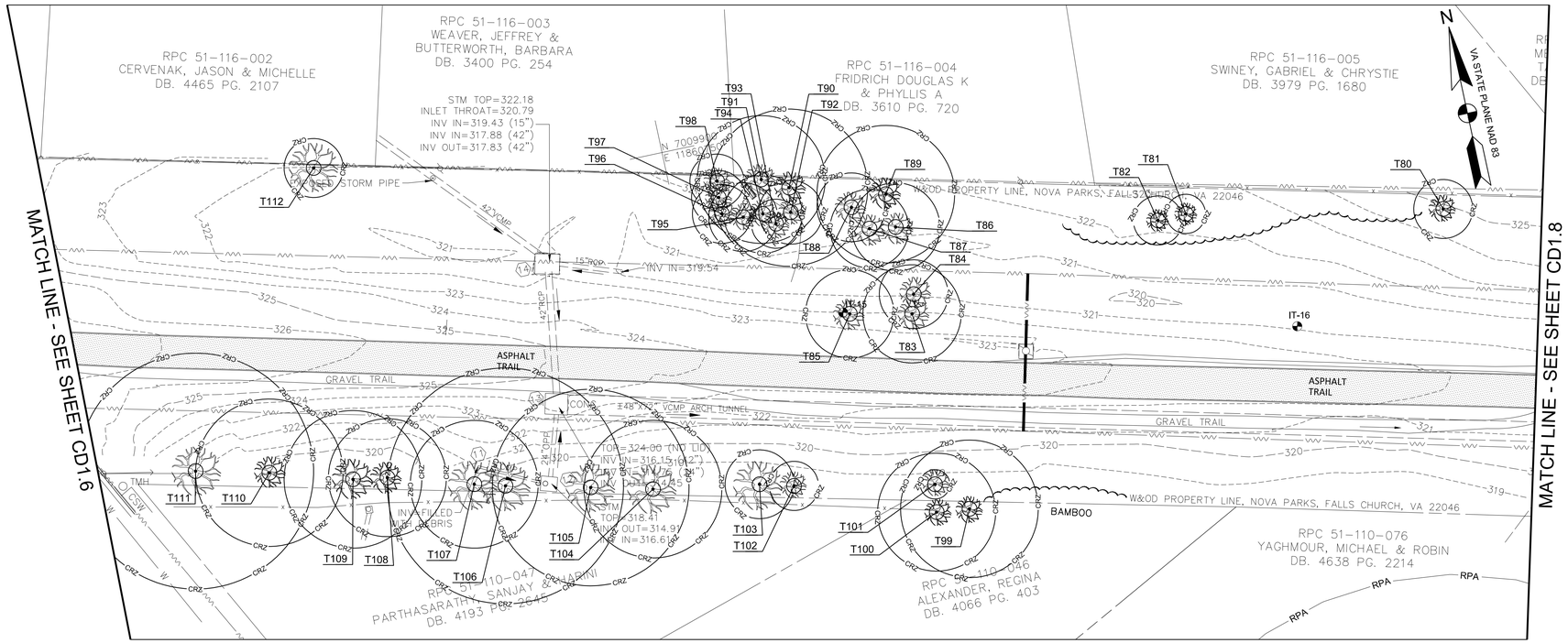
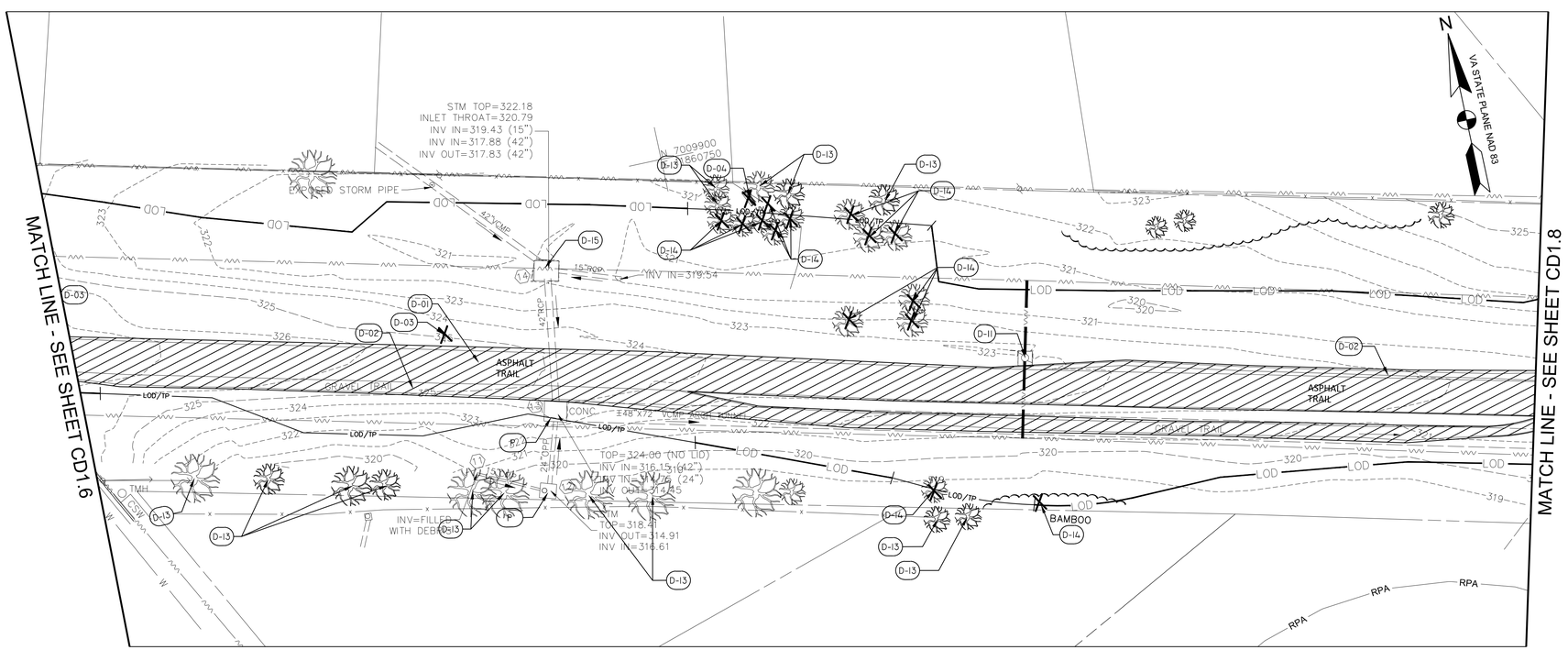
SHEET TITLE
EXISTING CONDITIONS & DEMOLITION PLAN

SHEET
CD1.6




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 |
| 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 |
| | ELECTRICAL TOWER |
| | 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 |
|---|---|
| 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 |
| P | ITEM TO BE PROTECTED / PRESERVED DO NOT DISTURB |
| 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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EMAIL: AMT1@AMTENGINEERING.COM


COMMONWEALTH OF VIRGINIA
STEVEN TORGERSON
Cert. No. 0406001542
01/08/2020
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

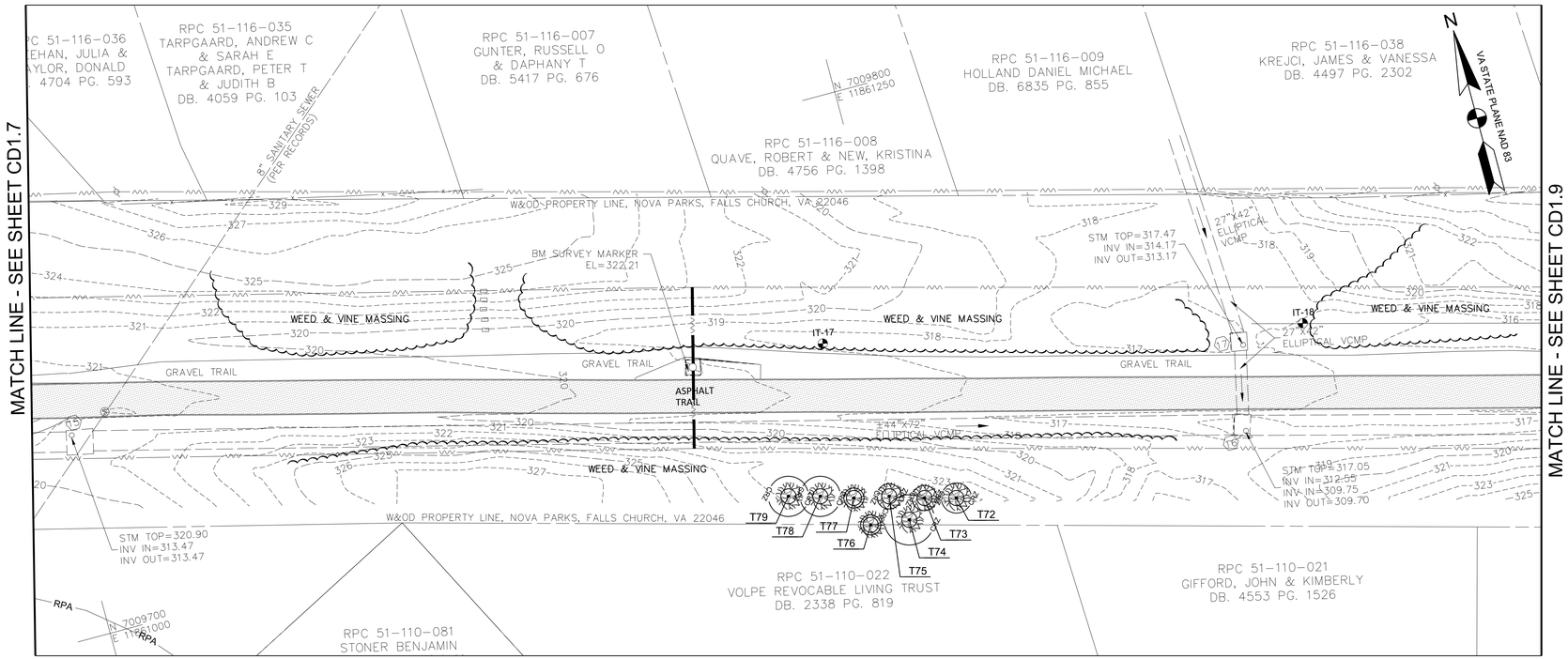
| MARK | DATE | DESCRIPTION |
|---|---|---|
| | | |

| | |
|---|---|
| AMT FILE NO. | 18-0367 |
| DATE: | 01/08/2020 |
| SCALE: | 1"=20' |
| DESIGNED BY: | AMT |
| DRAWN BY: | AMT |
| CHECKED BY: | AMT |

**90% DESIGN**

SHEET TITLE
EXISTING CONDITIONS & DEMOLITION PLAN

SHEET
CD1.7

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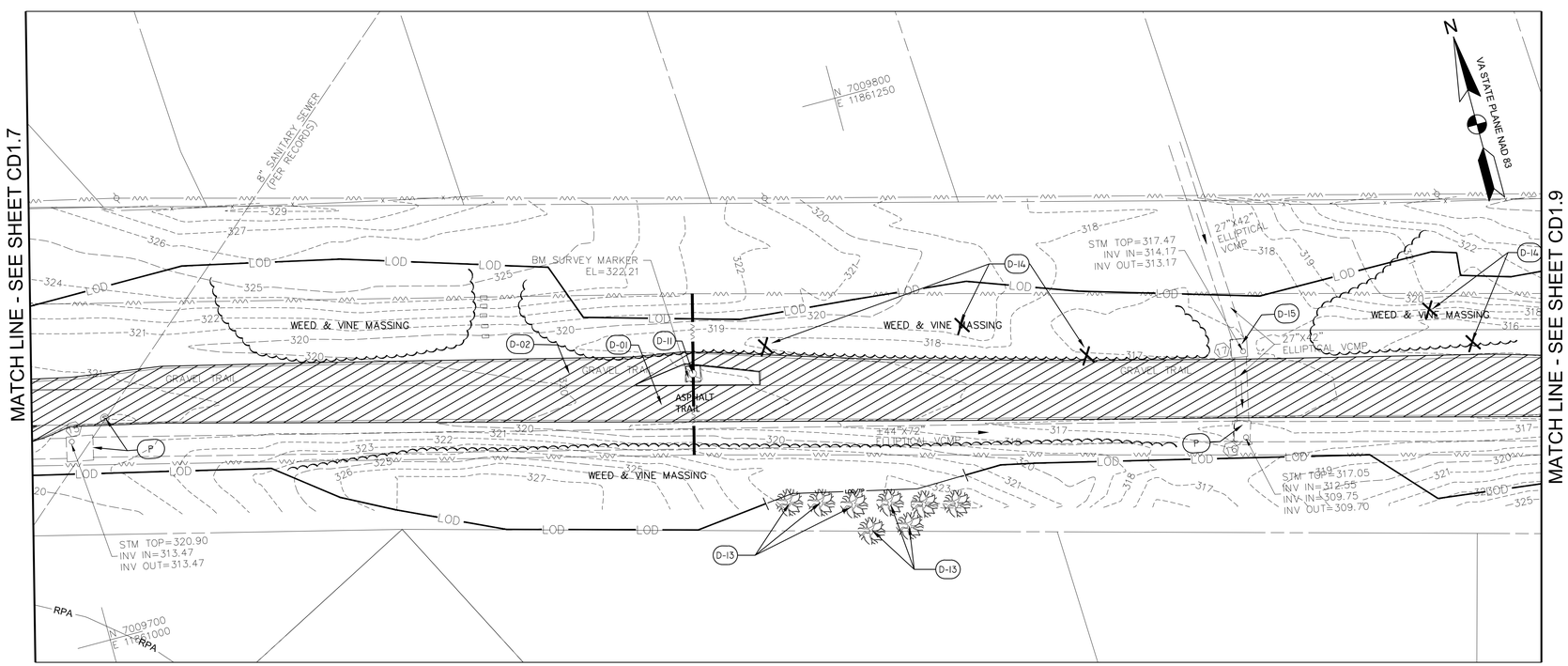


DEMOLITION PLAN
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PROJECT TITLE
**EXPANSION OF THE W&OD TRAIL**
FALLS CHURCH, VA
UPC 113612

REVISIONS

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| AMT FILE NO. | 18-0367 |
| DATE: | 01/08/2020 |
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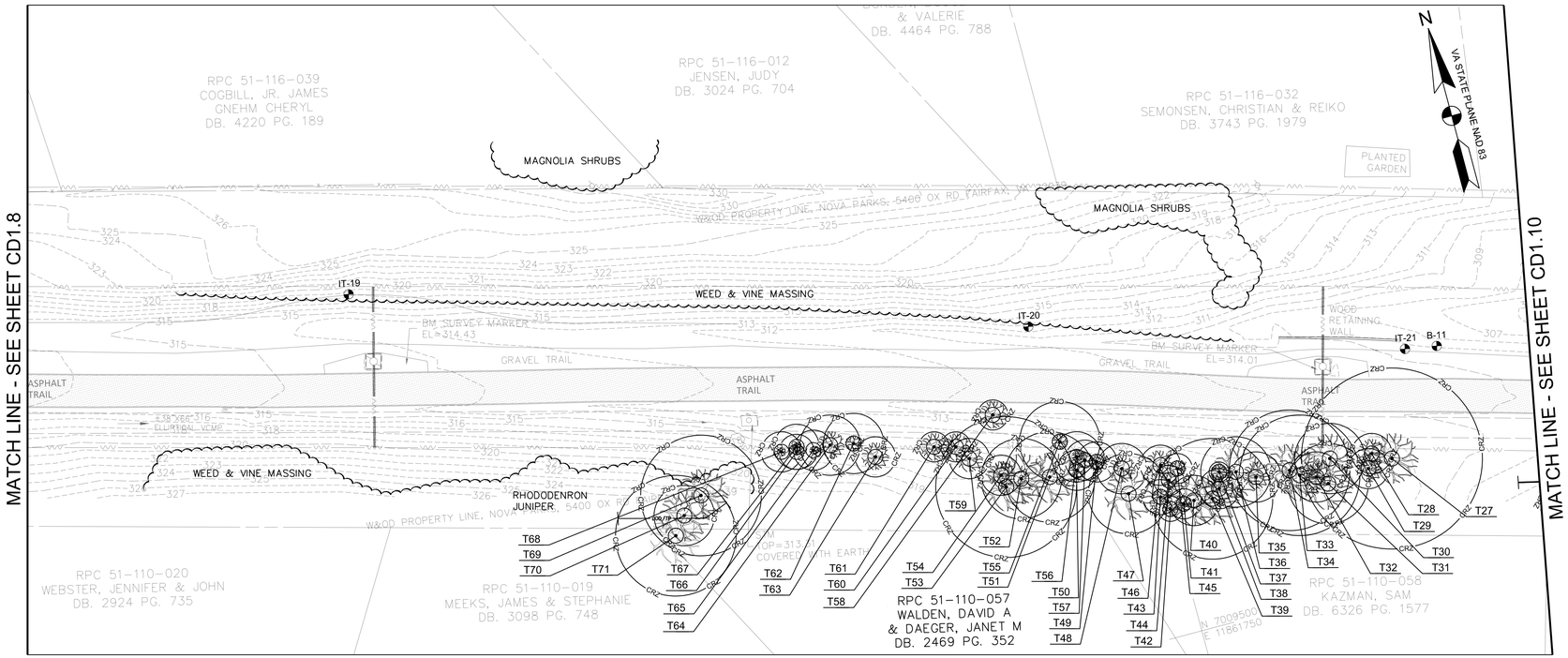
| DESIGNED BY: | AMT |
| DRAWN BY: | AMT |
| CHECKED BY: | AMT |

**90% DESIGN**

SHEET TITLE
EXISTING CONDITIONS & DEMOLITION PLAN

SHEET
CD1.8




EXISTING CONDITIONS PLAN
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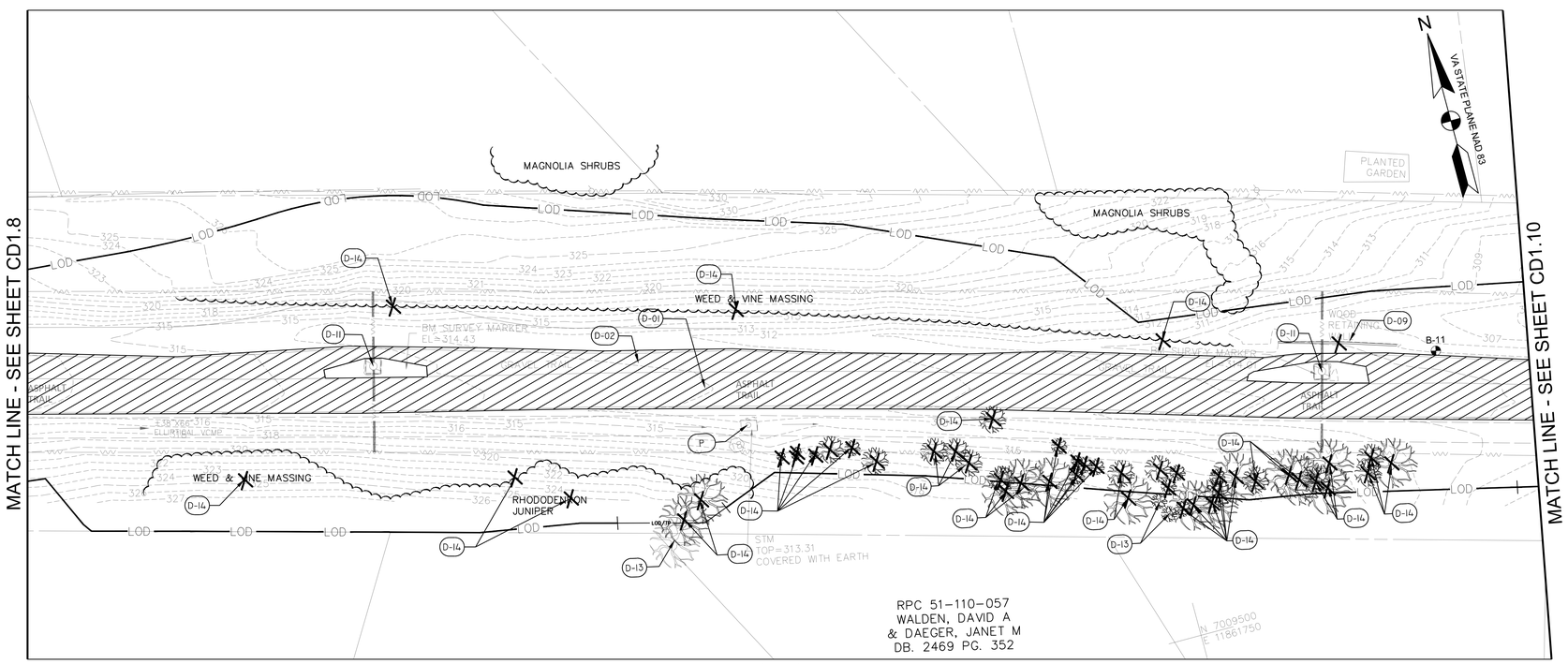


DEMOLITION PLAN
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PROJECT TITLE

**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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| DESIGNED BY: | AMT |
| DRAWN BY: | AMT |
| CHECKED BY: | AMT |

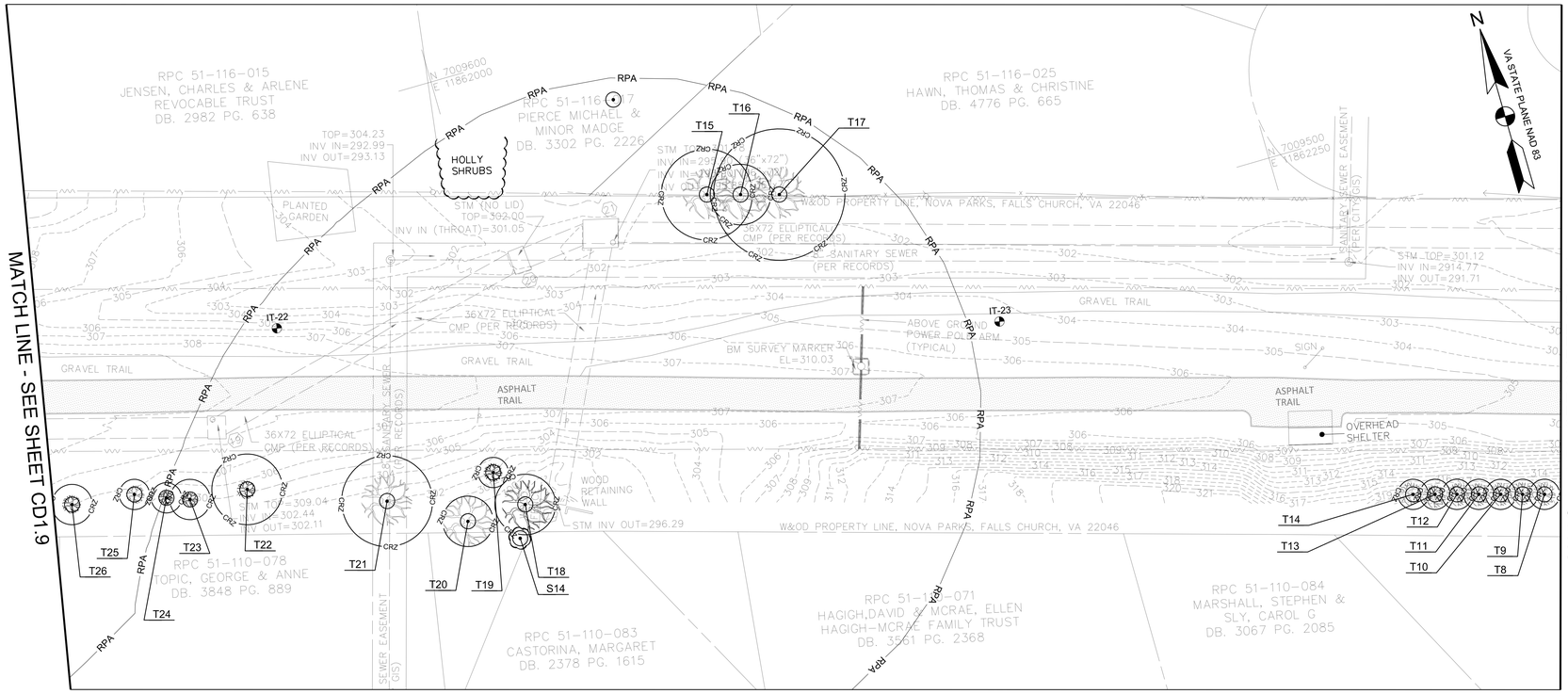
**90% DESIGN**

SHEET TITLE

EXISTING CONDITIONS & DEMOLITION PLAN

SHEET

CD1.9




EXISTING CONDITIONS PLAN
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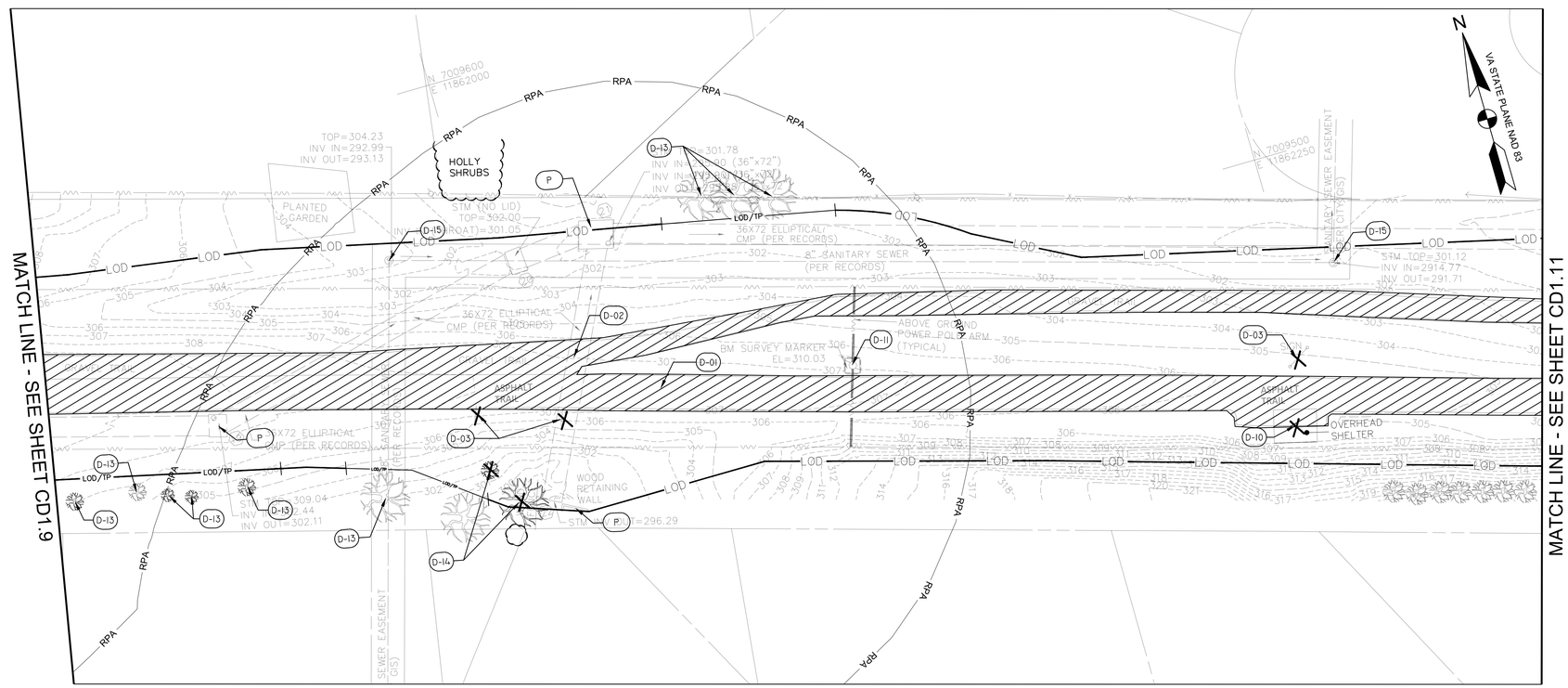


DEMOLITION PLAN
SCALE: 1"=20'

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**90% DESIGN**

SHEET TITLE
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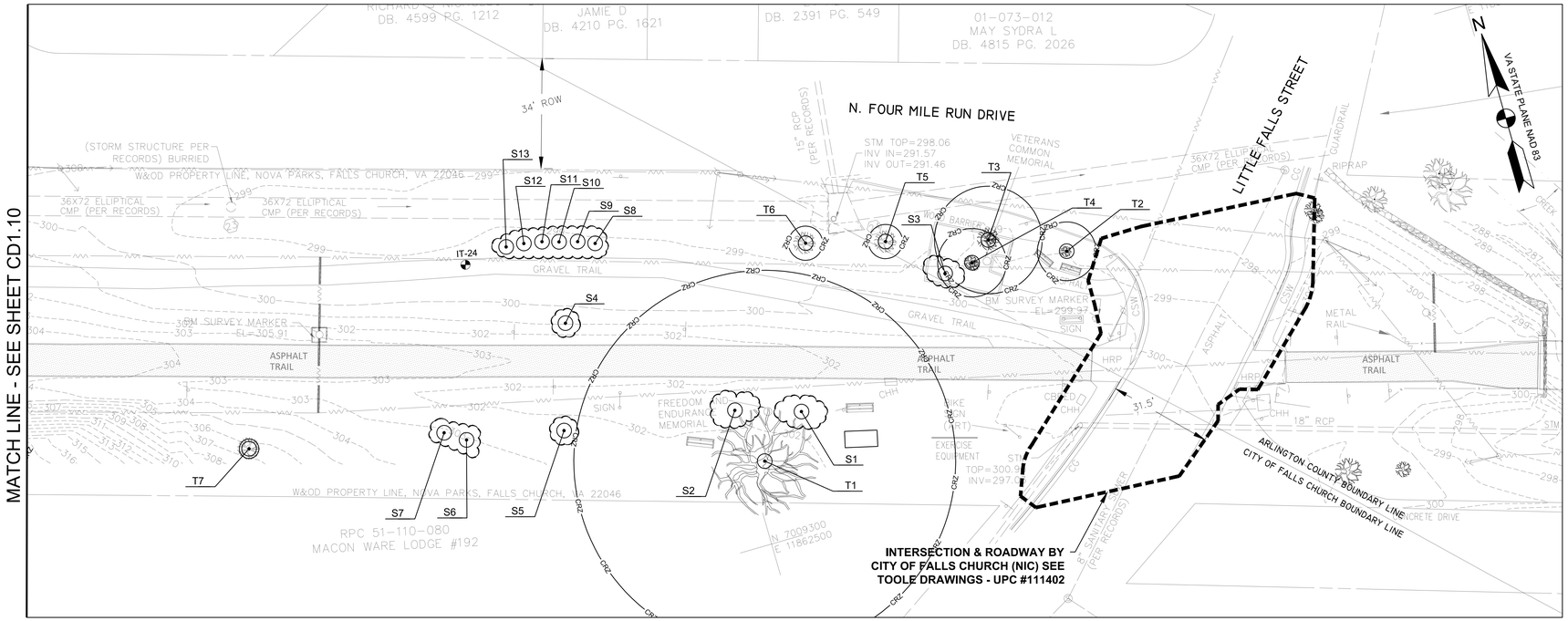


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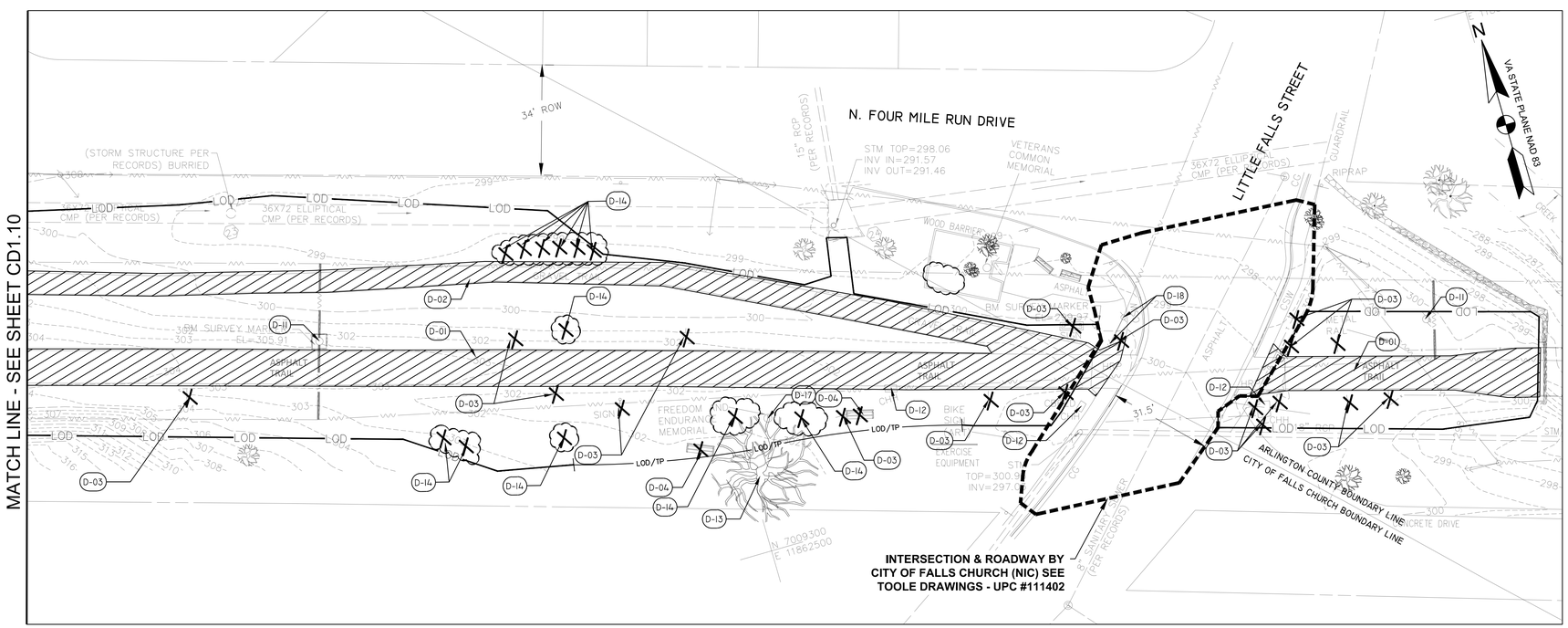


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| D-02 | REMOVE AND DISPOSE OF GRAVEL PATH |
| D-03 | REMOVE AND DISPOSE OF SIGNAGE AND FOOTER |
| D-04 | REMOVE AND DISPOSE OF BENCH AND FOOTER |
| D-05 | REMOVE AND SALVAGE EXERCISE EQUIPMENT AND ASSOCIATED PAVING AND FOOTERS |
| D-06 | REMOVE AND 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 |
| P | ITEM TO BE PROTECTED / PRESERVED DO NOT DISTURB |
| 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'


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COMMONWEALTH OF VIRGINIA
STEVEN TORGERSON
CERT. NO. 0406001542
01/08/2020
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: | 01/08/2020 |
| SCALE: | 1"=20' |
| DESIGNED BY: | AMT |
| DRAWN BY: | AMT |
| CHECKED BY: | AMT |

**90% 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
01/08/2020
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 |
|---|---|---|
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|---|---|
| AMT FILE NO. | 18-0367 |
| DATE: | 01/08/2020 |
| SCALE: | 1"=20' |
| DESIGNED BY: | AMT |
| DRAWN BY: | AMT |
| CHECKED BY: | AMT |

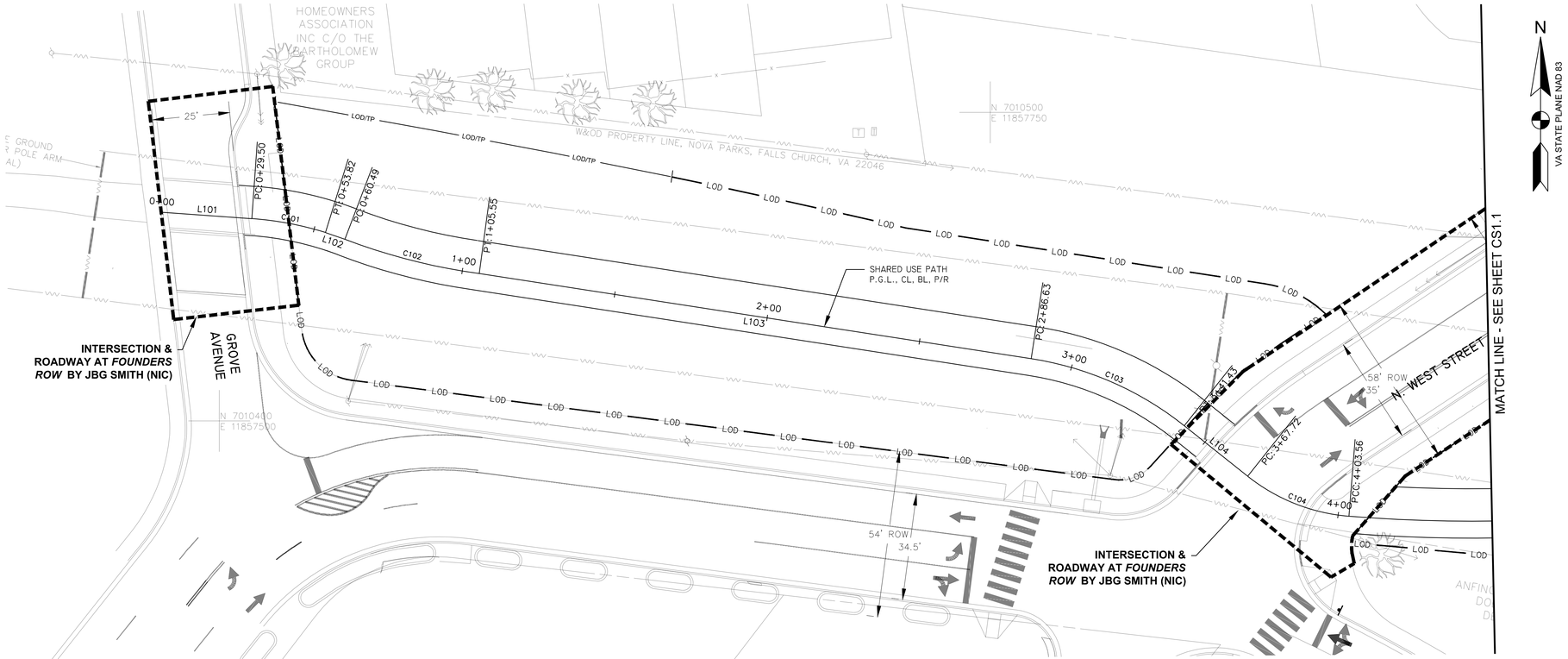
**90% DESIGN**

SHEET TITLE

EXISTING CONDITIONS TREE SURVEY

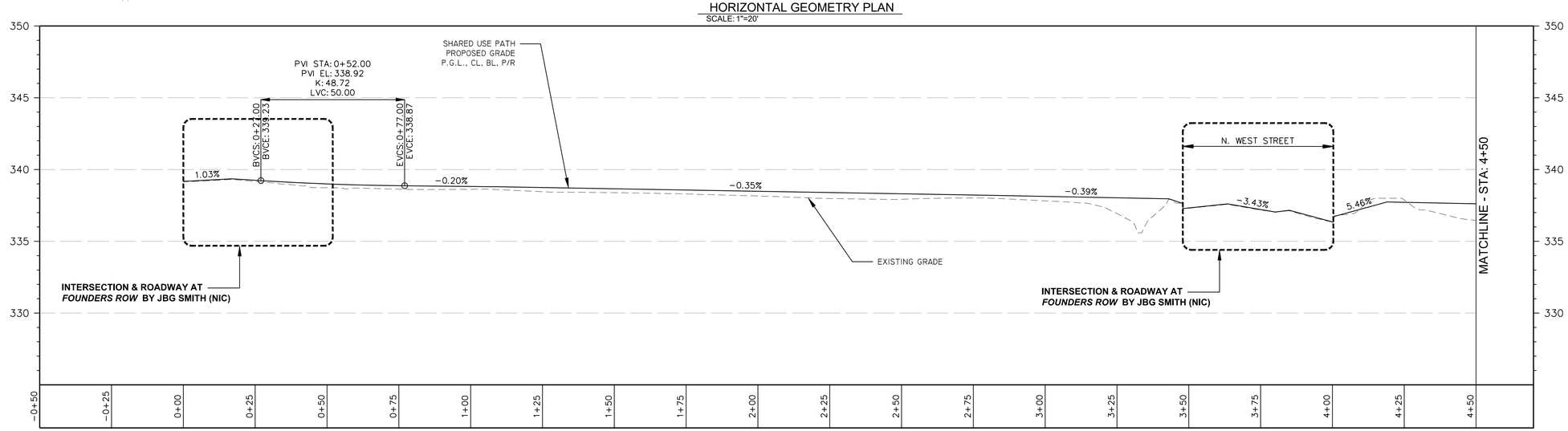
SHEET

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<br>E: 11857510.5632 | N: 7010461.0455<br>E: 11857534.4133 |
| C102 | 197.18' | 45.06' | S75°41'33.96"E | N: 7010458.8663<br>E: 11857540.7117 | N: 7010447.7550<br>E: 11857584.2803 |
| C103 | 105.50' | 54.80' | S66°21'32.07"E | N: 7010420.1725<br>E: 11857763.2480 | N: 7010398.4450<br>E: 11857812.8833 |
| C104 | 60.50' | 35.84' | S68°27'00.03"E | N: 7010382.0717<br>E: 11857833.4521 | N: 7010369.0990<br>E: 11857866.3011 |

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

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. 0606001342
01/08/2020
LANDSCAPE ARCHITECT

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

REVISIONS

| MARK | DATE | DESCRIPTION |
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| AMT FILE NO. | 18-0367 |
| DATE: | 01/08/2020 |
| SCALE: | AS SHOWN |
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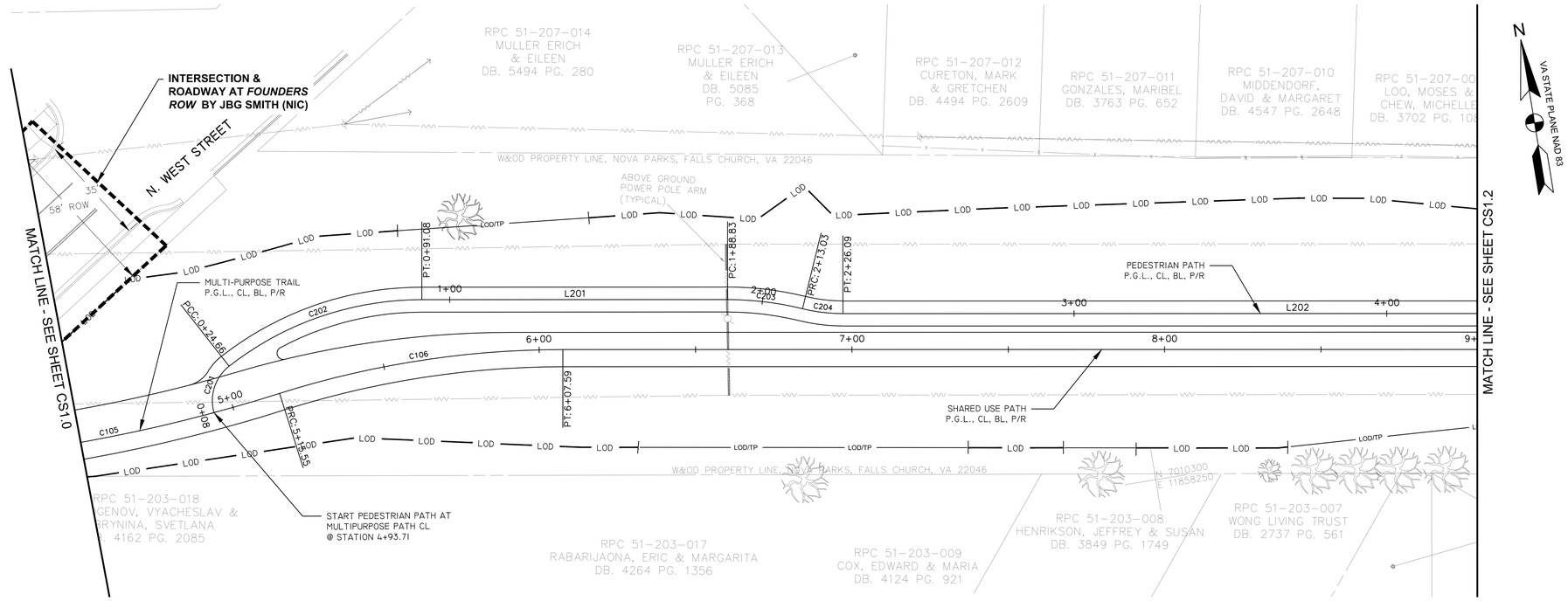
| DRAWN BY: | AMT |
| CHECKED BY: | AMT |

**90% DESIGN**

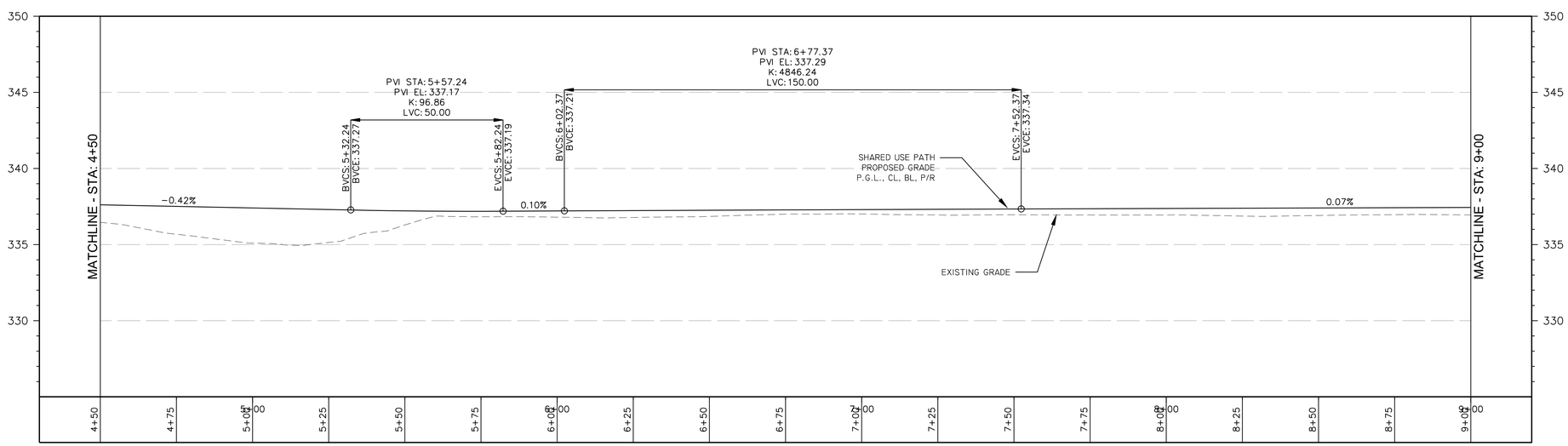
SHEET TITLE
HORIZONTAL AND VERTICAL ALIGNMENTS

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.

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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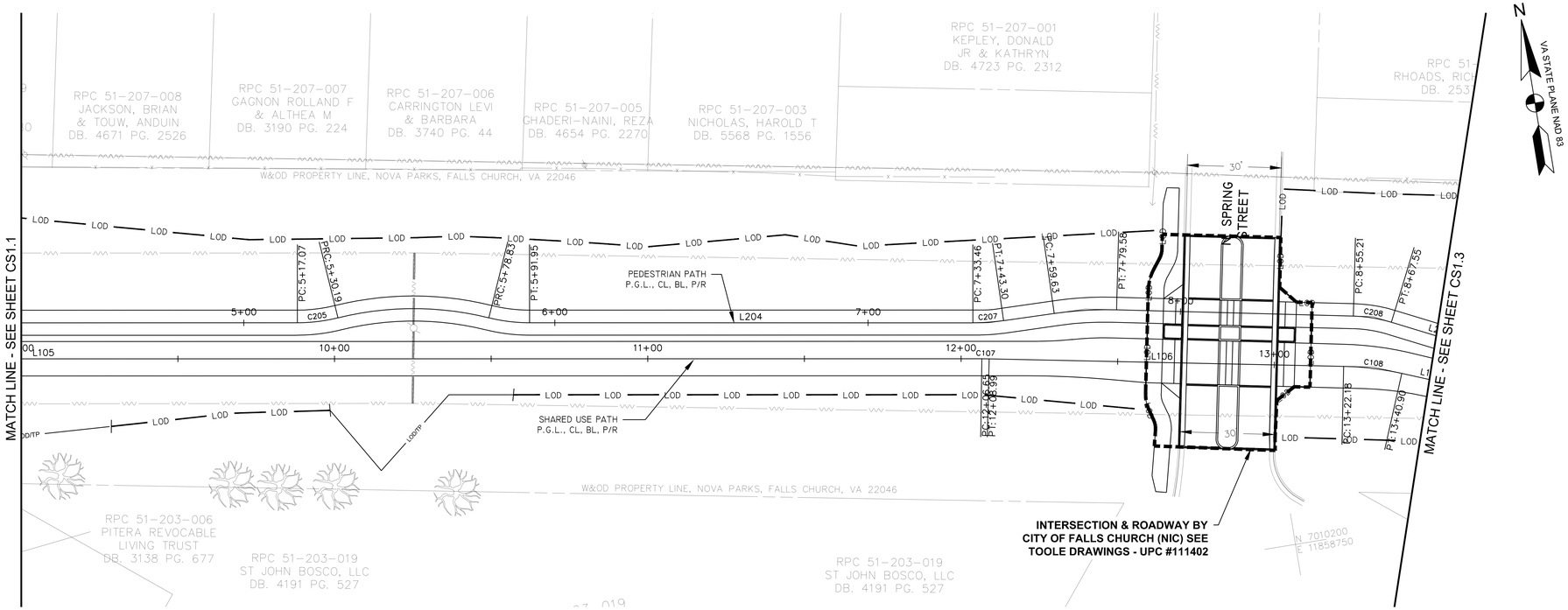
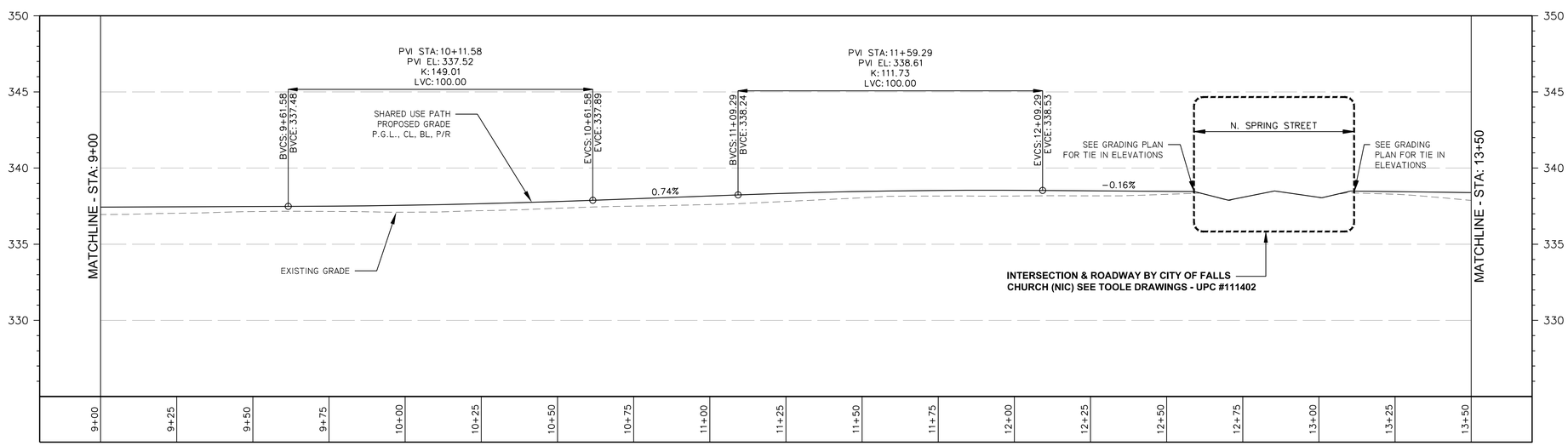
**90% DESIGN**

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<br>E: 11858660.8143 | N: 7010274.3145<br>E: 11858663.1177 |
| C108 | 94.03' | 18.72' | S73°45'09.23"E | N: 7010253.6037<br>E: 11858774.3955 | N: 7010248.3740<br>E: 11858792.3406 |
| C205 | 54.00' | 13.12' | S87°37'57.84"E | N: 7010321.5030<br>E: 11858447.0393 | N: 7010320.9624<br>E: 11858460.1146 |
| C207 | 69.35' | 9.84' | S84°43'05.42"E | N: 7010286.5047<br>E: 11858659.8334 | N: 7010285.5997<br>E: 11858669.6226 |
| C208 | 46.00' | 12.34' | S71°28'05.29"E | N: 7010268.9294<br>E: 11858780.0407 | N: 7010265.0186<br>E: 11858791.7074 |

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

NOTES:
SEE GI 1.1 FOR LAYOUT NOTES.

0 10' 20' 40'
SCALE: 1"=20'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FALLS CHURCH, VA
UPC 113612

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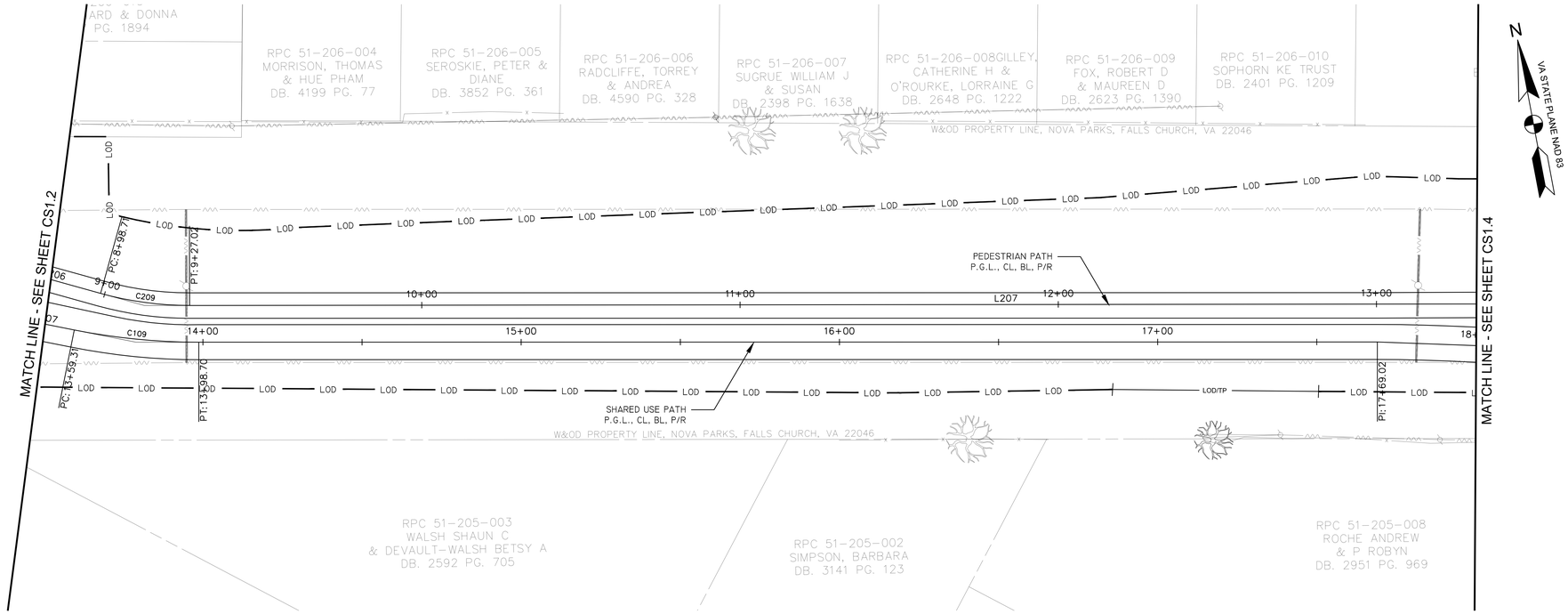
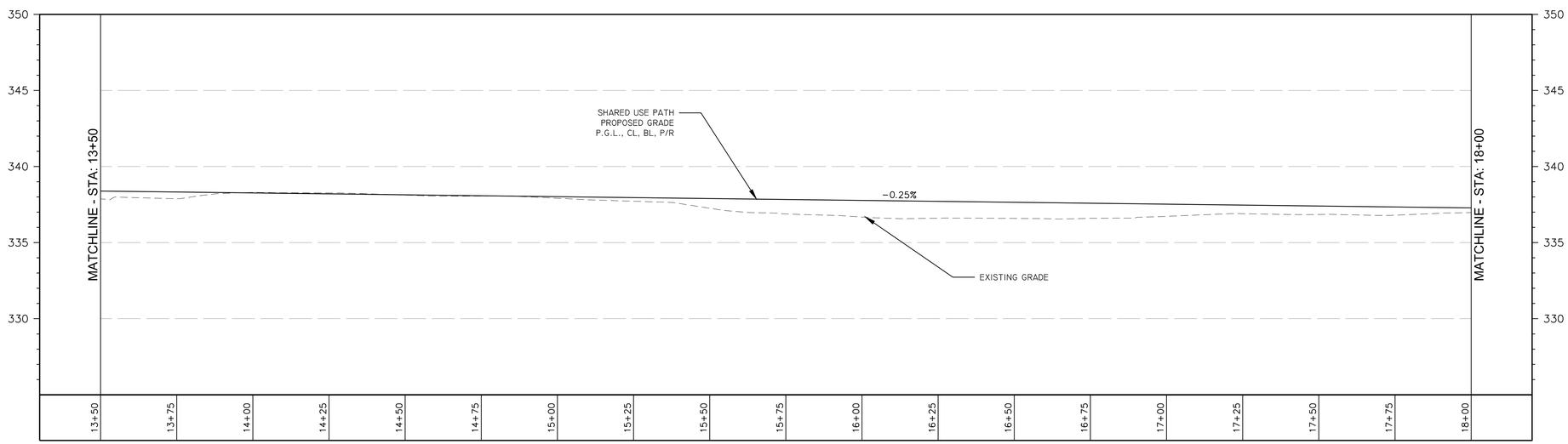
**90% DESIGN**

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<br>E: 11858809.4160 | N: 7010230.4478<br>E: 11858847.1608 |
| C209 | 103.94' | 28.31' | S71°35'01.46"E | N: 7010251.2506<br>E: 11858819.6655 | N: 7010242.3357<br>E: 11858846.4393 |

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

NOTES:
SEE GI 1.1 FOR LAYOUT NOTES.

0 10' 20' 40'
SCALE: 1"=20'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PROJECT TITLE
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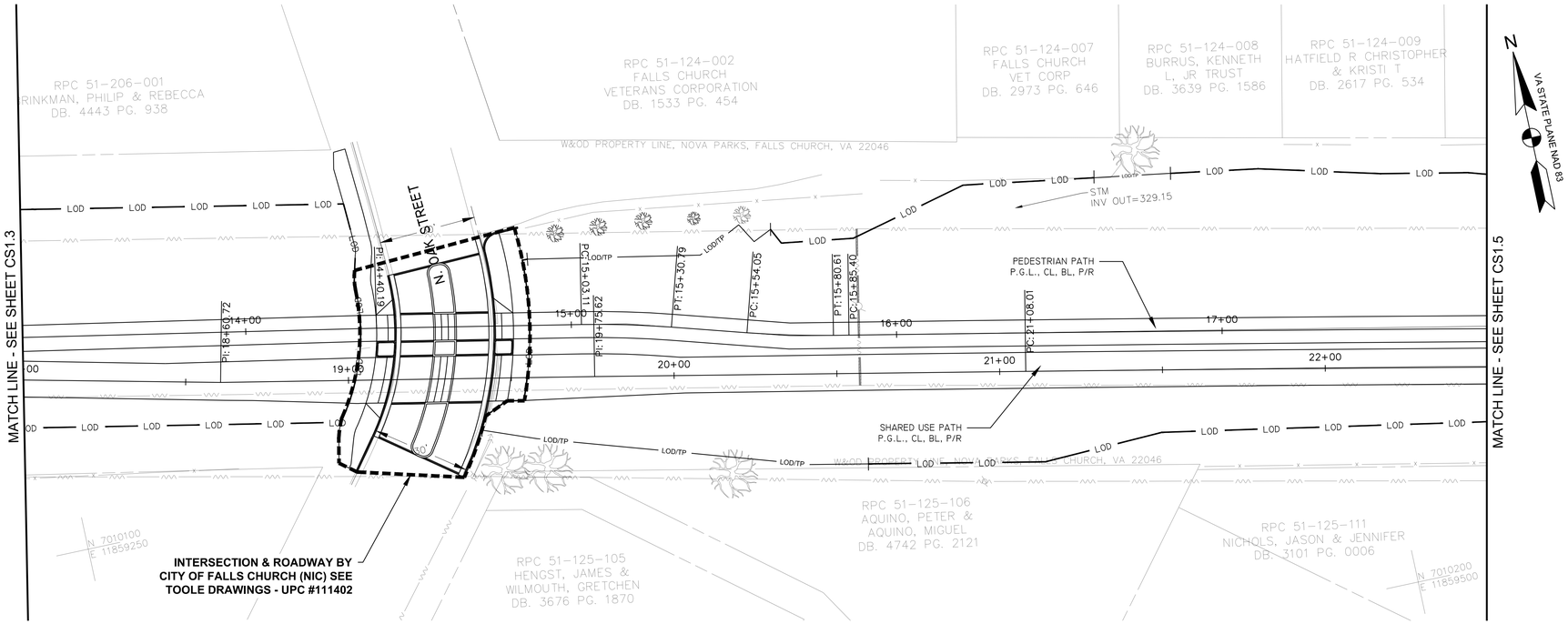
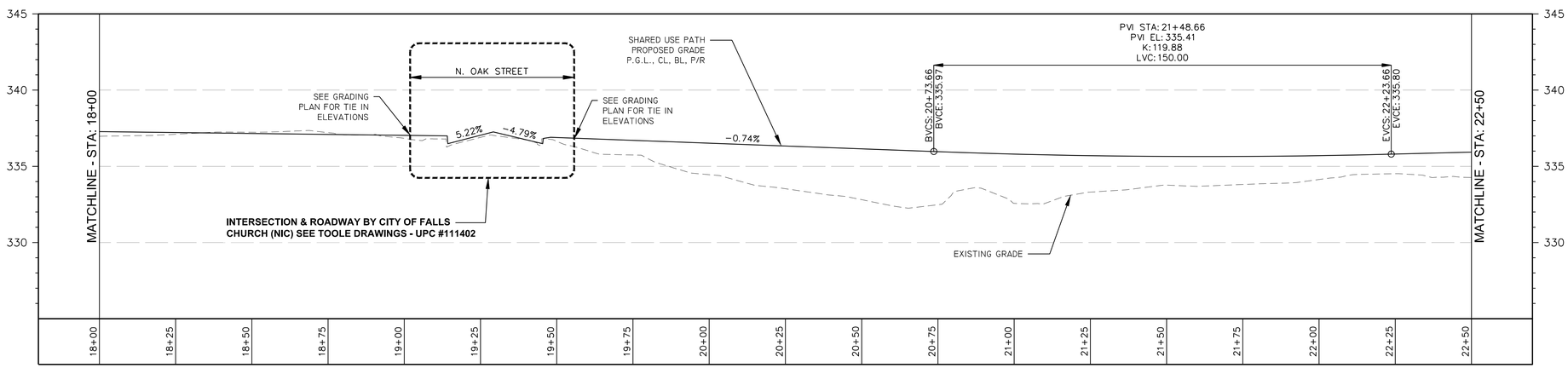
**90% DESIGN**

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.

0 10' 20' 40'
SCALE: 1"=20'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PROJECT TITLE
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UPC 113612

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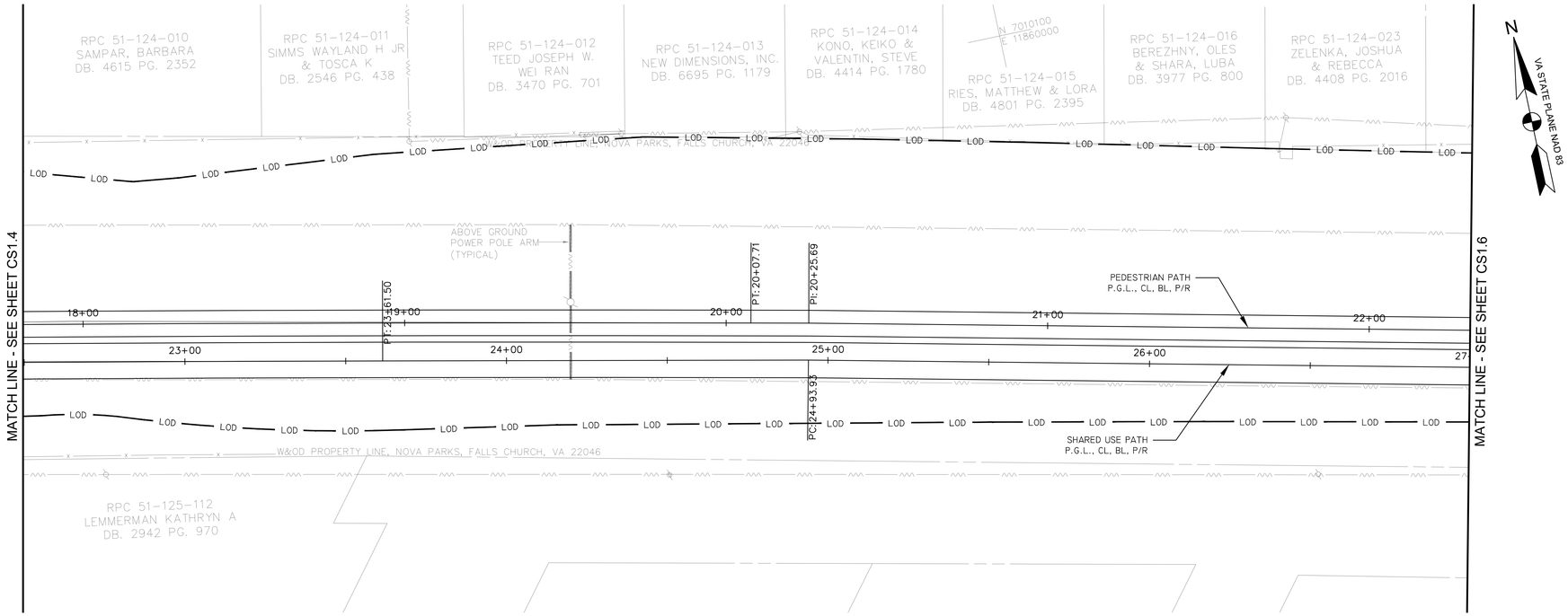
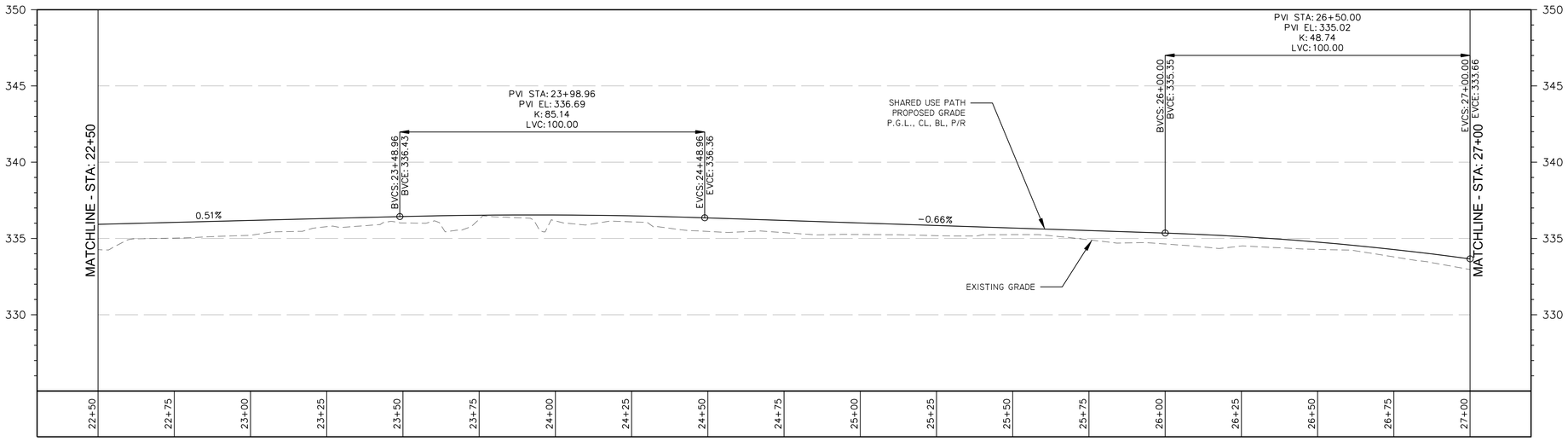
**90% DESIGN**

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'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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

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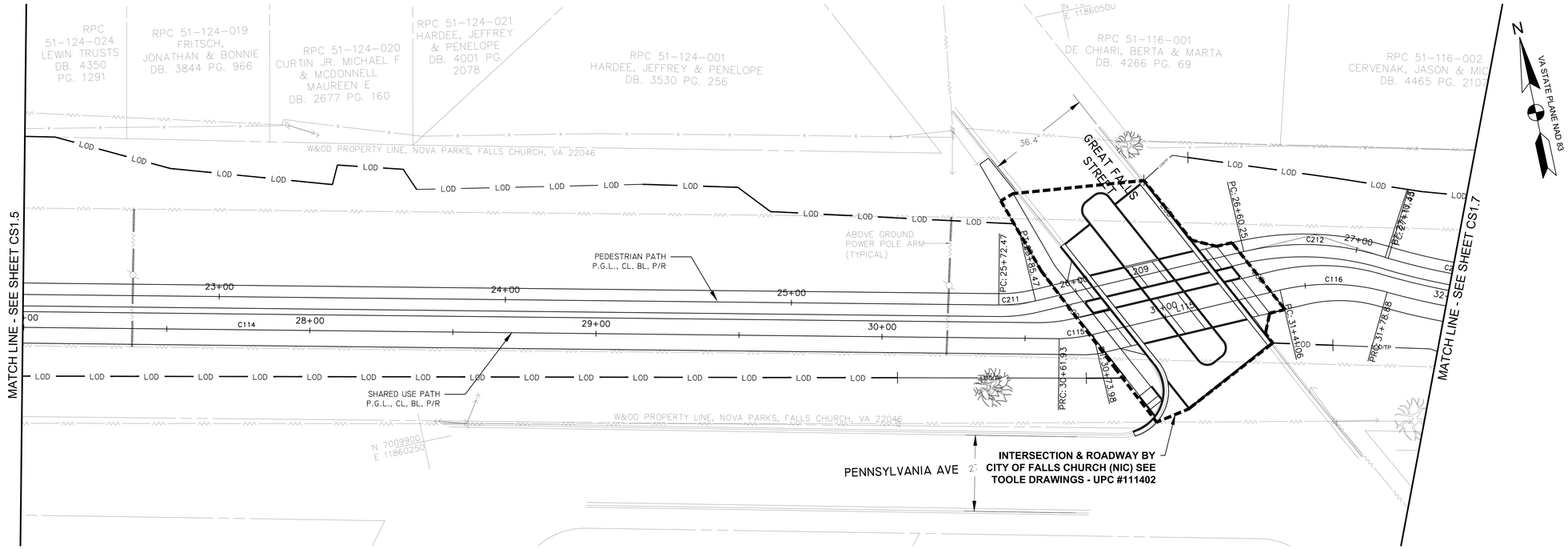
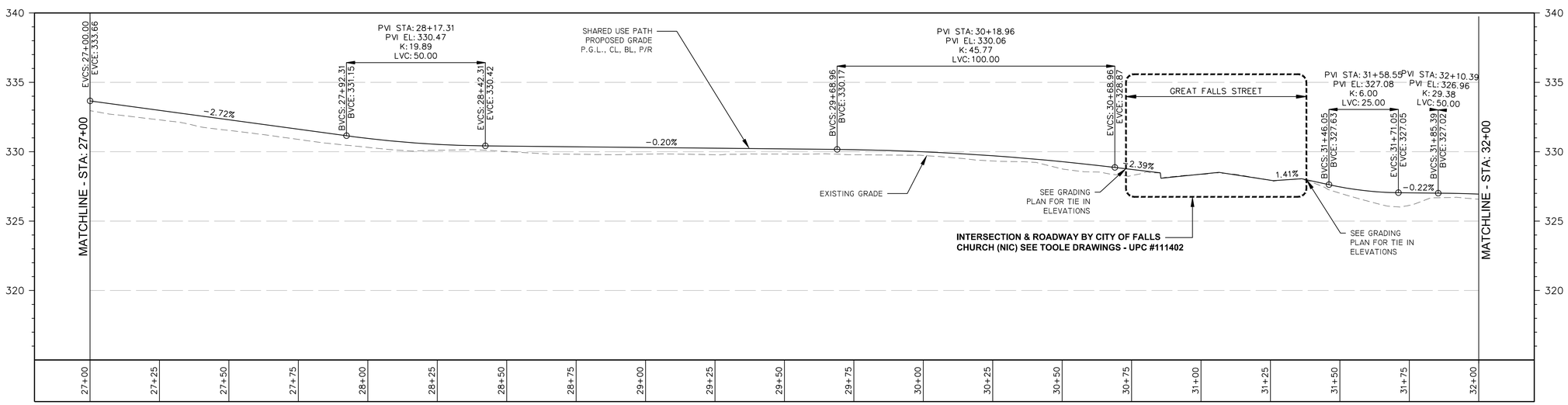
**90% DESIGN**

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


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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

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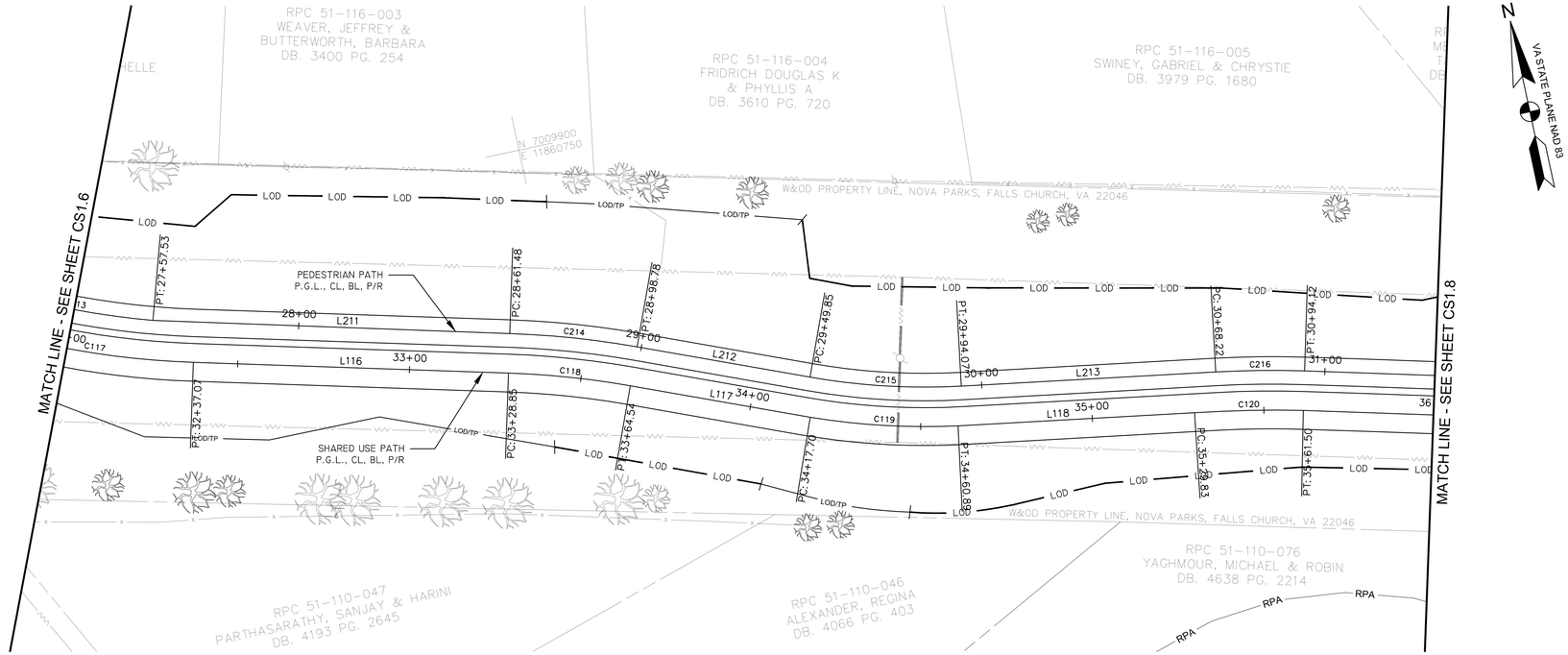
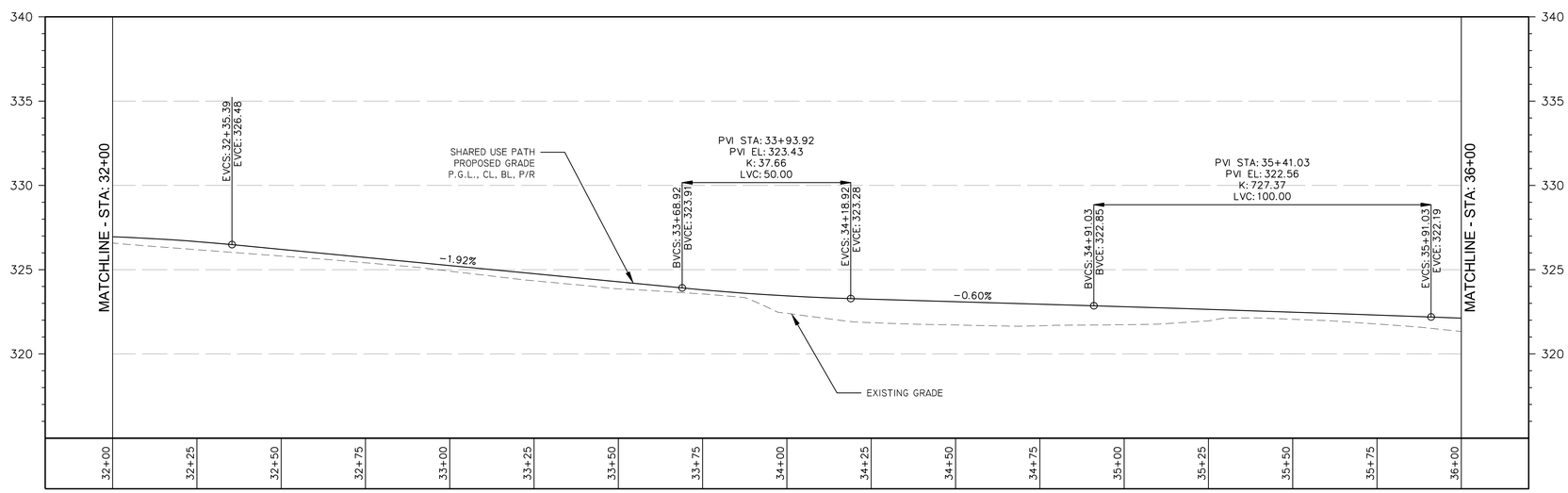
**90% DESIGN**

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

## LINE TABLE

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

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
01/08/2020
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 |
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| | | |

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| AMT FILE NO. | 18-0367 |
| DATE: | 01/08/2020 |
| SCALE: | AS SHOWN |
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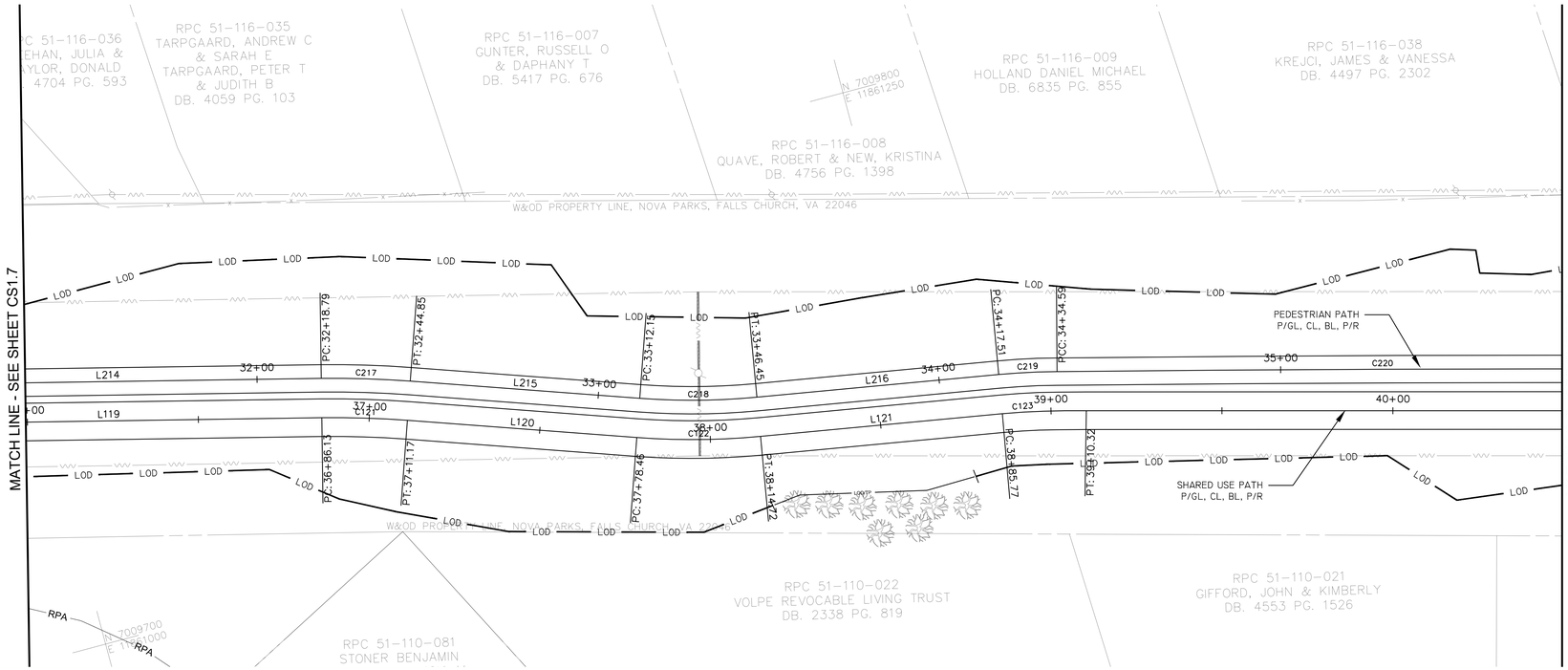
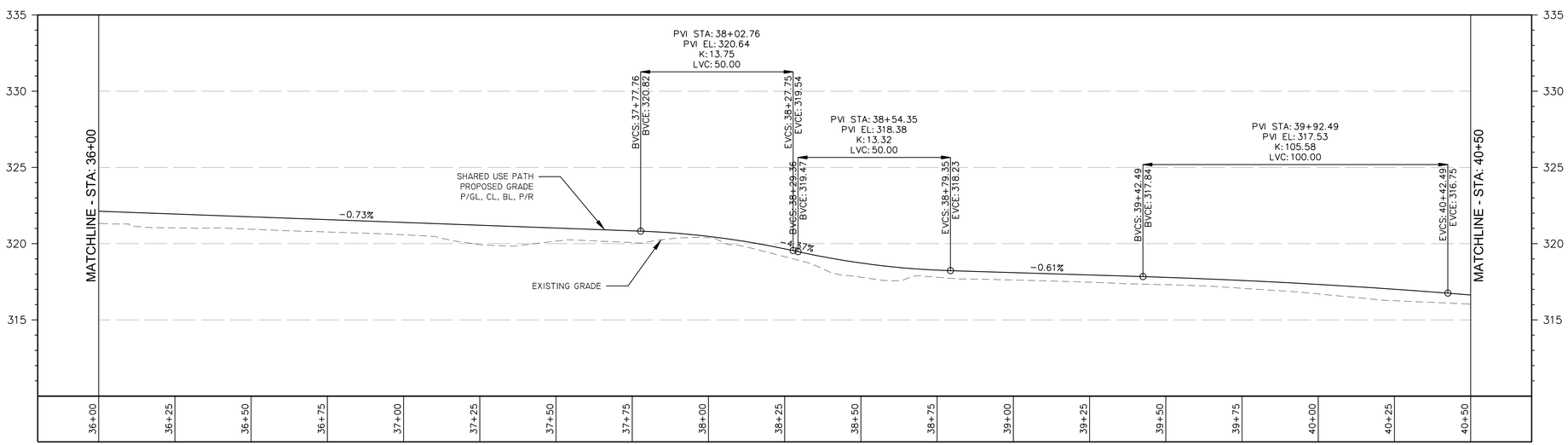
| DRAWN BY: | AMT |
| CHECKED BY: | AMT |

**90% 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<br>E: 11861078.1835 | N: 7009740.3956<br>E: 11861102.1596 |
| C122 | 215.50' | 36.26' | S75°34'24.30"E | N: 7009718.2141<br>E: 11861165.6898 | N: 7009709.1916<br>E: 11861200.7627 |
| C123 | 241.80' | 24.56' | S77°01'54.02"E | N: 7009697.3349<br>E: 11861270.8146 | N: 7009691.8260<br>E: 11861294.7366 |
| C217 | 296.00' | 26.06' | S73°16'30.73"E | N: 7009758.7485<br>E: 11861081.0051 | N: 7009751.2528<br>E: 11861105.9504 |
| C218 | 203.90' | 34.31' | S75°34'24.30"E | N: 7009729.0687<br>E: 11861169.4883 | N: 7009720.5317<br>E: 11861202.6738 |
| C219 | 196.00' | 17.08' | S77°53'46.52"E | N: 7009708.6736<br>E: 11861272.7337 | N: 7009705.0924<br>E: 11861289.4332 |
| C220 | 13709.87' | 190.45' | S75°15'08.07"E | N: 7009705.0924<br>E: 11861289.4332 | N: 7009656.6104<br>E: 11861473.6100 |

## LINE TABLE

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

NOTES:
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FALLS CHURCH, VA
UPC 113612

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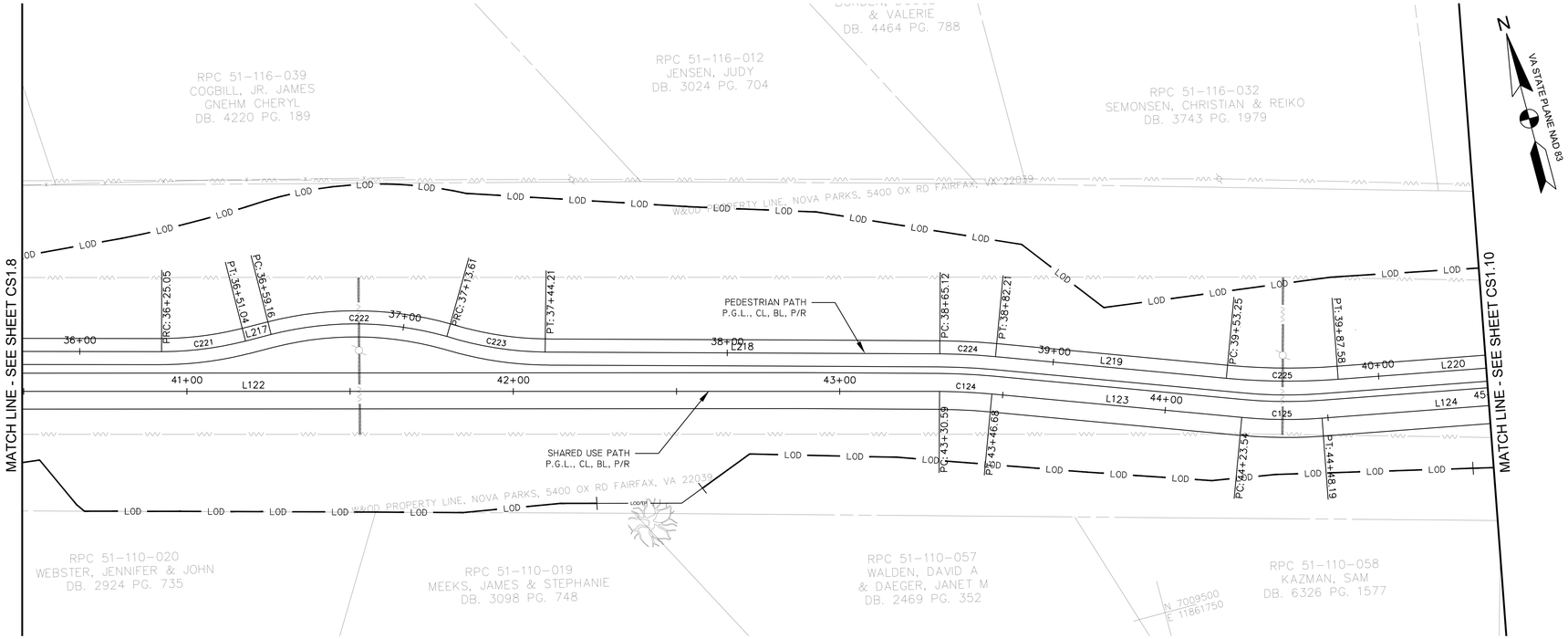
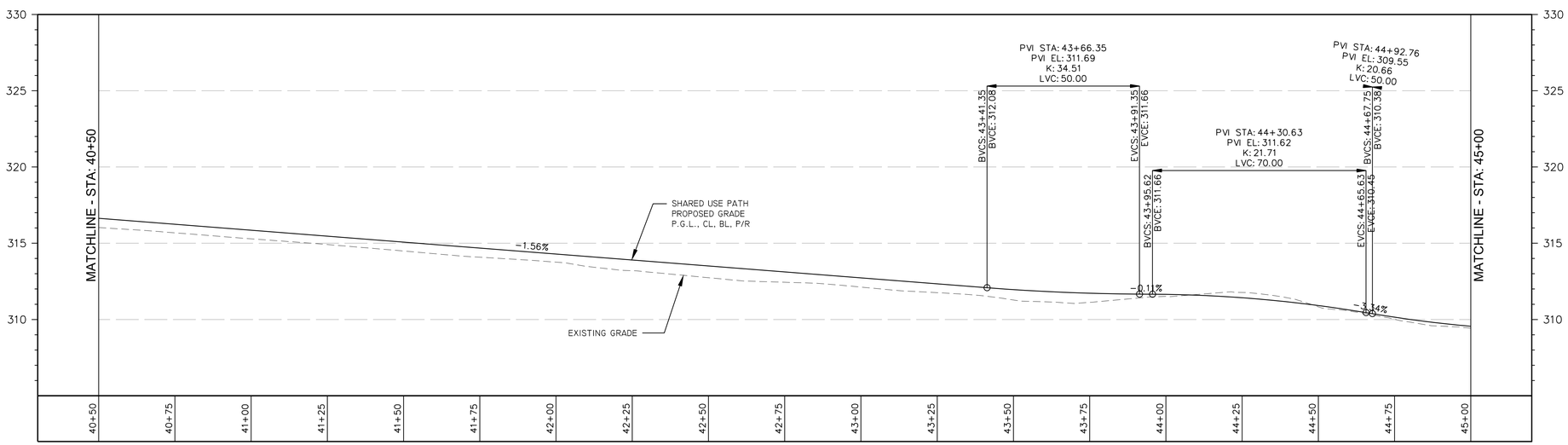
**90% DESIGN**

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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FALLS CHURCH, VA
UPC 113612

REVISIONS

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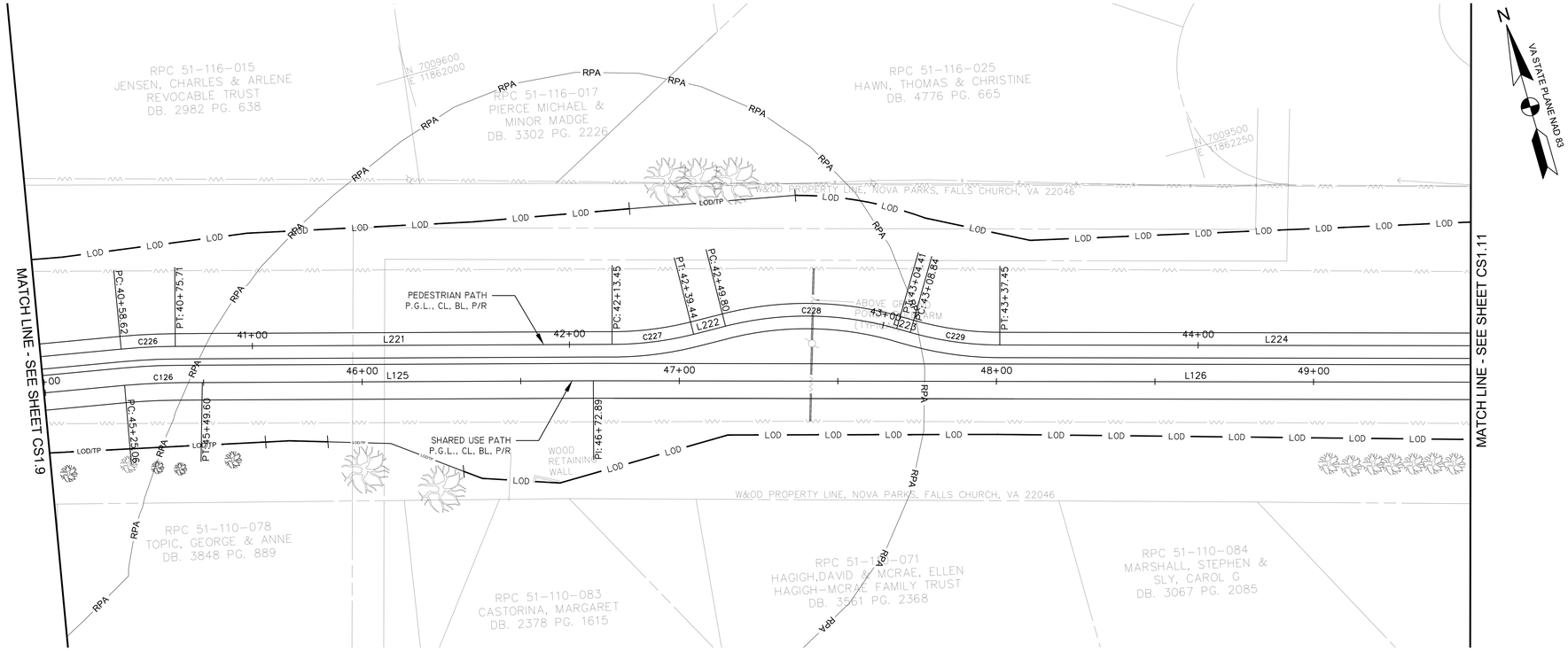
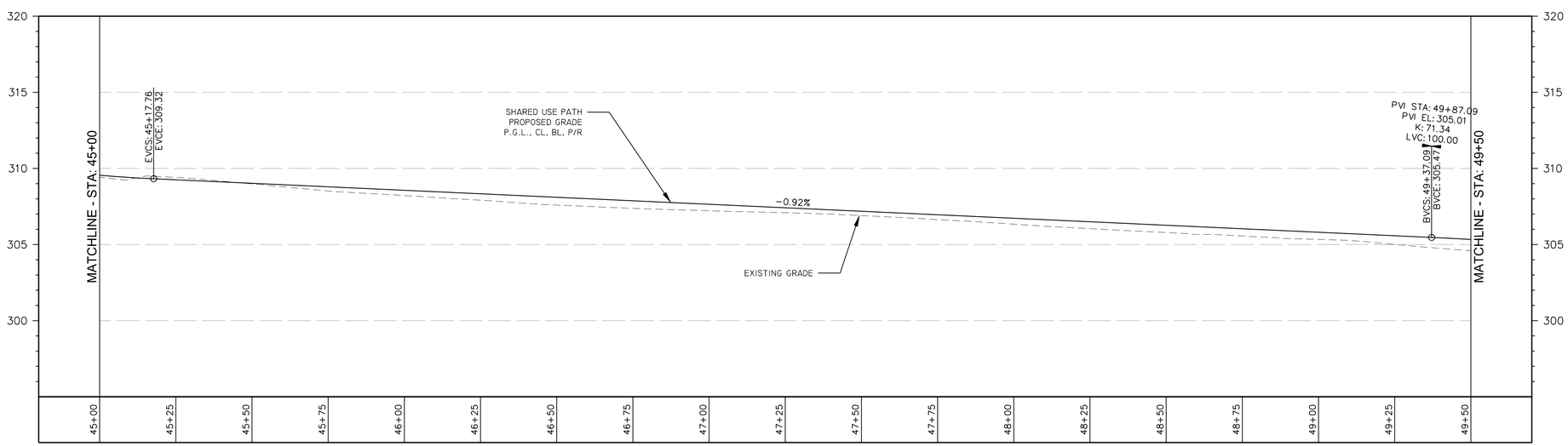
**90% DESIGN**

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<br>E: 11861911.1989 | N: 7009491.3727<br>E: 11862029.8385 |
| L126 | 379.955' | S73°51'29.94"E | N: 7009491.3727<br>E: 11862029.8385 | N: 7009385.7401<br>E: 11862394.8144 |
| L221 | 137.736' | S74°12'10.58"E | N: 7009538.2775<br>E: 11861906.1607 | N: 7009500.7814<br>E: 11862038.6950 |
| L222 | 10.360' | S88°10'46.24"E | N: 7009496.7339<br>E: 11862064.3045 | N: 7009496.4048<br>E: 11862074.6596 |
| L223 | 4.433' | S58°05'42.83"E | N: 7009480.7457<br>E: 11862126.3207 | N: 7009478.4029<br>E: 11862130.0839 |
| L224 | 174.819' | S73°51'29.45"E | N: 7009466.7913<br>E: 11862156.1355 | N: 7009418.1889<br>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<br>E: 11861887.4003 | N: 7009524.9188<br>E: 11861911.1989 |
| C226 | 196.00' | 17.08' | S76°49'29.64"E | N: 7009542.1703<br>E: 11861889.5311 | N: 7009538.2775<br>E: 11861906.1607 |
| C227 | 104.00' | 26.00' | S81°01'08.09"E | N: 7009500.7814<br>E: 11862038.6950 | N: 7009496.7339<br>E: 11862064.3045 |
| C228 | 104.00' | 54.61' | S73°08'14.54"E | N: 7009496.4048<br>E: 11862074.6596 | N: 7009480.7457<br>E: 11862126.3207 |
| C229 | 104.00' | 28.61' | S65°58'36.38"E | N: 7009478.4029<br>E: 11862130.0839 | N: 7009466.7913<br>E: 11862156.1355 |

NOTES:
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FALLS CHURCH, VA
UPC 113612

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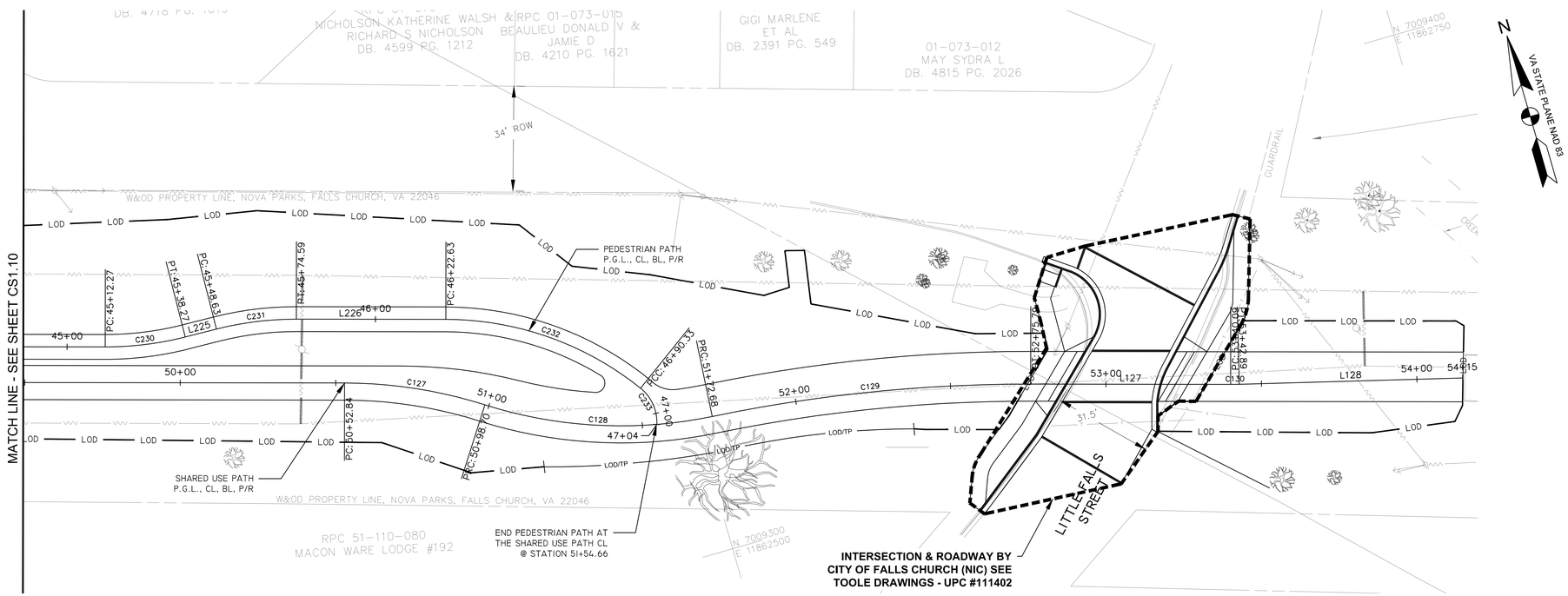
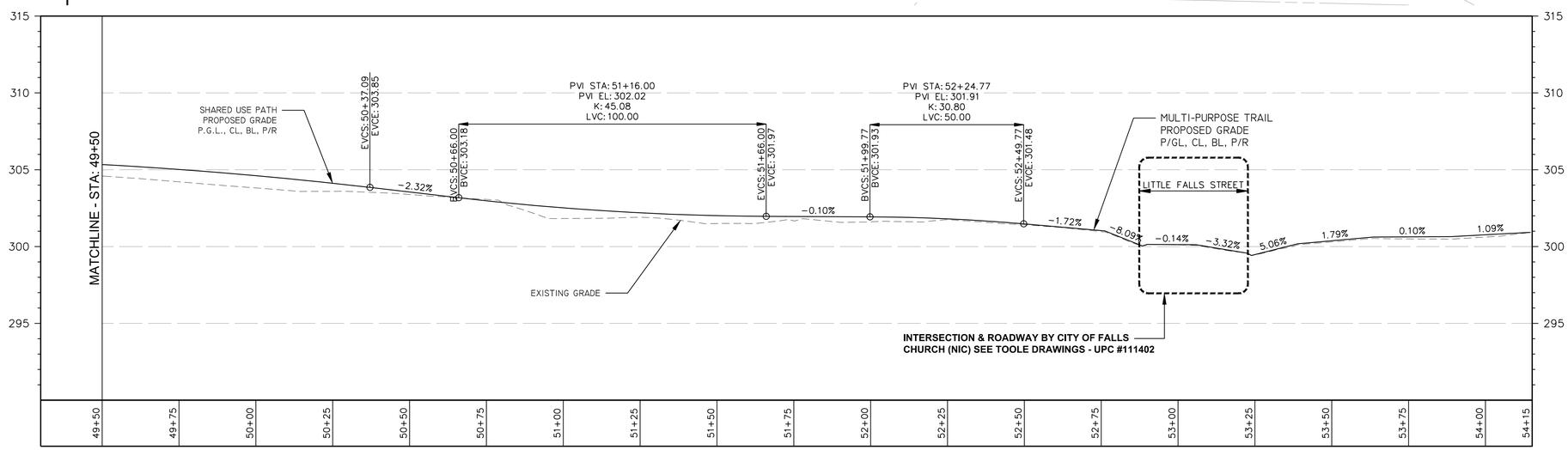
**90% DESIGN**

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<br>E: 11862394.8144 | N: 7009366.5072<br>E: 11862436.2482 |
| C128 | 144.50' | 73.98' | S71°00'28.25"E | N: 7009366.5072<br>E: 11862436.2482 | N: 7009342.6945<br>E: 11862505.4359 |
| C129 | 500.00' | 103.11' | S79°45'58.16"E | N: 7009342.6945<br>E: 11862505.4359 | N: 7009324.4076<br>E: 11862606.7271 |
| C130 | 94.50' | 2.81' | S74°42'31.91"E | N: 7009306.5318<br>E: 11862668.4906 | N: 7009305.7919<br>E: 11862671.1968 |
| C230 | 104.00' | 25.99' | S81°01'08.44"E | N: 7009418.1889<br>E: 11862324.0623 | N: 7009414.1416<br>E: 11862349.6715 |
| C231 | 104.00' | 25.96' | S81°00'35.97"E | N: 7009413.8124<br>E: 11862360.0267 | N: 7009409.7659<br>E: 11862385.6045 |
| C232 | 100.00' | 67.69' | S54°27'58.78"E | N: 7009396.4089<br>E: 11862431.7547 | N: 7009357.8144<br>E: 11862485.7950 |
| C233 | 14.14' | 13.25' | S08°07'42.68"E | N: 7009357.8144<br>E: 11862485.7950 | N: 7009345.1687<br>E: 11862487.6012 |

## LINE TABLE

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

NOTES:
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| DATE: | 01/08/2020 |
| SCALE: | AS SHOWN |
| DESIGNED BY: | AMT |
| DRAWN BY: | AMT |
| CHECKED BY: | AMT |

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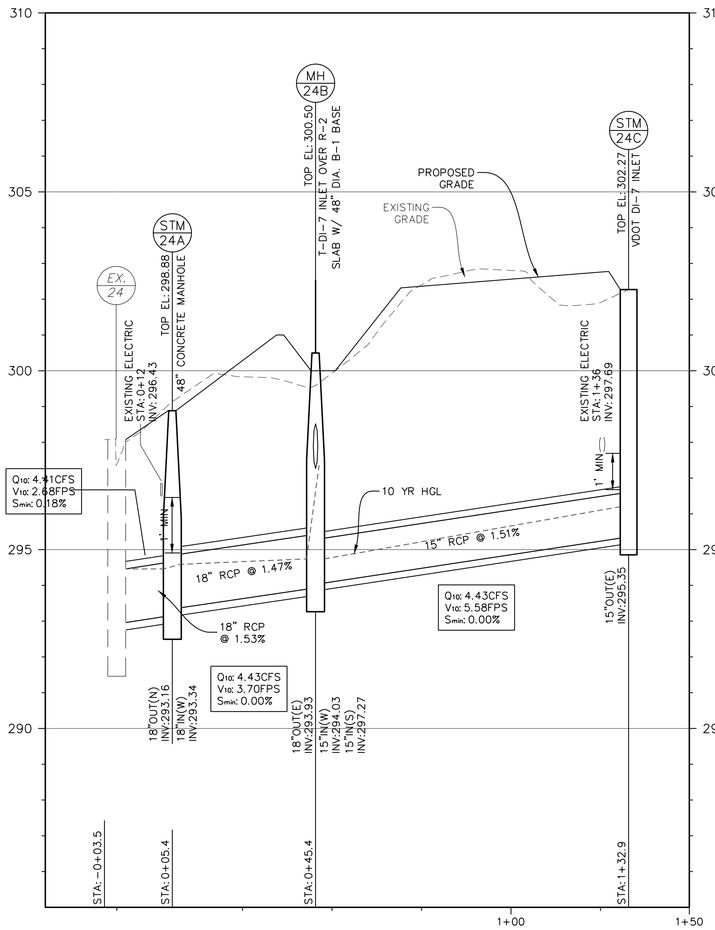
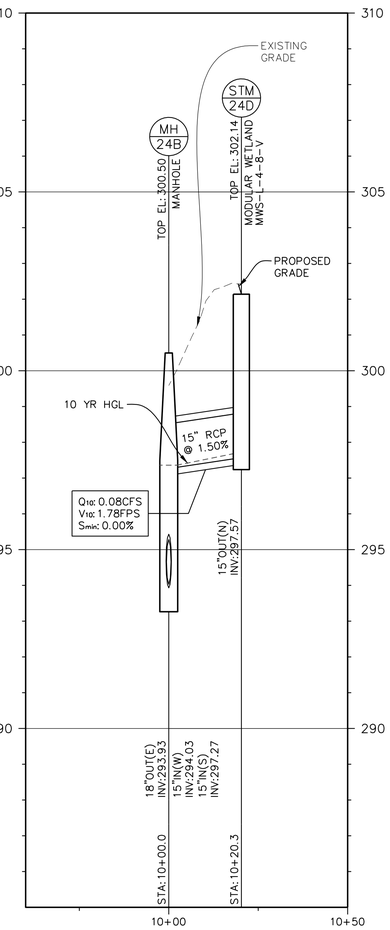
SHEET TITLE
HORIZONTAL AND VERTICAL ALIGNMENTS

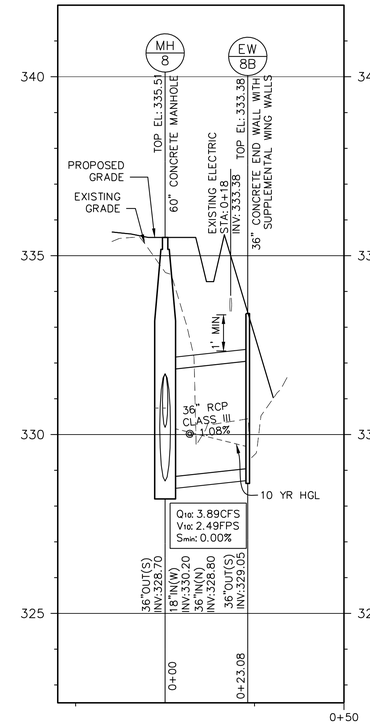
SHEET
CS1.11



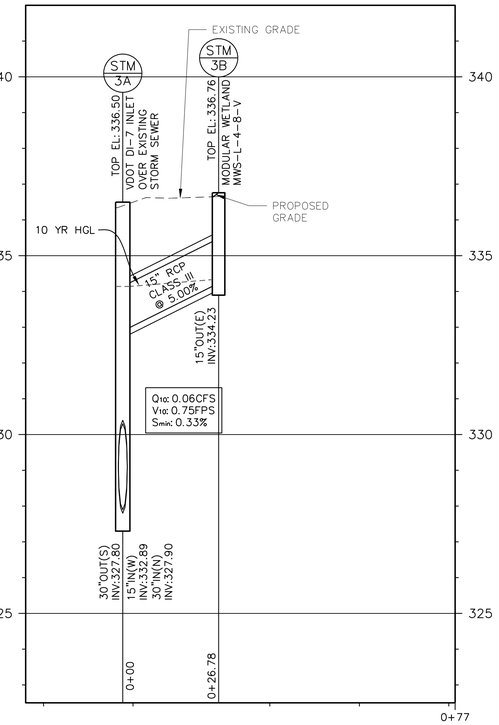

STM 24C TO EX 24
SCALE: HORZ 1"=20'
VERT 1"=2'



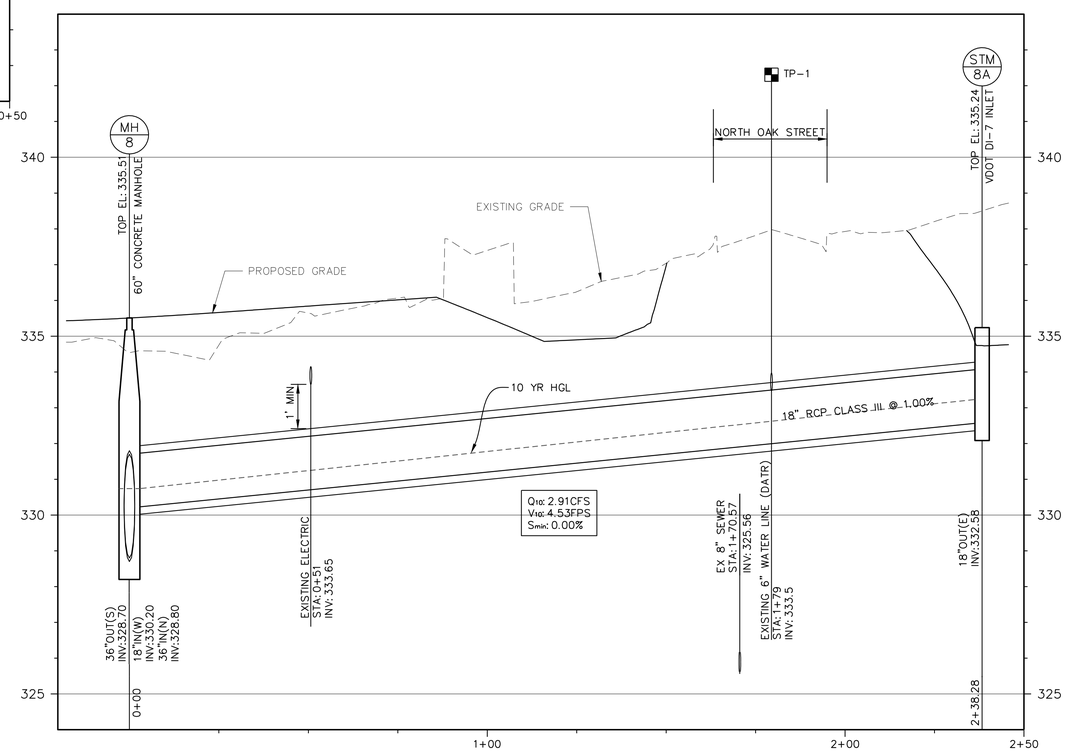

STM 24D TO STM 24B
SCALE: HORZ 1"=20'
VERT 1"=2'




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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Lic. No. 11195
01/08/20
PROFESSIONAL ENGINEER

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PROJECT TITLE

**EXPANSION OF THE W&OD TRAIL**

FALLS CHURCH, VA
UPC 113612

REVISIONS

| MARK | DATE | DESCRIPTION |
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| CHECKED BY: | AMT |

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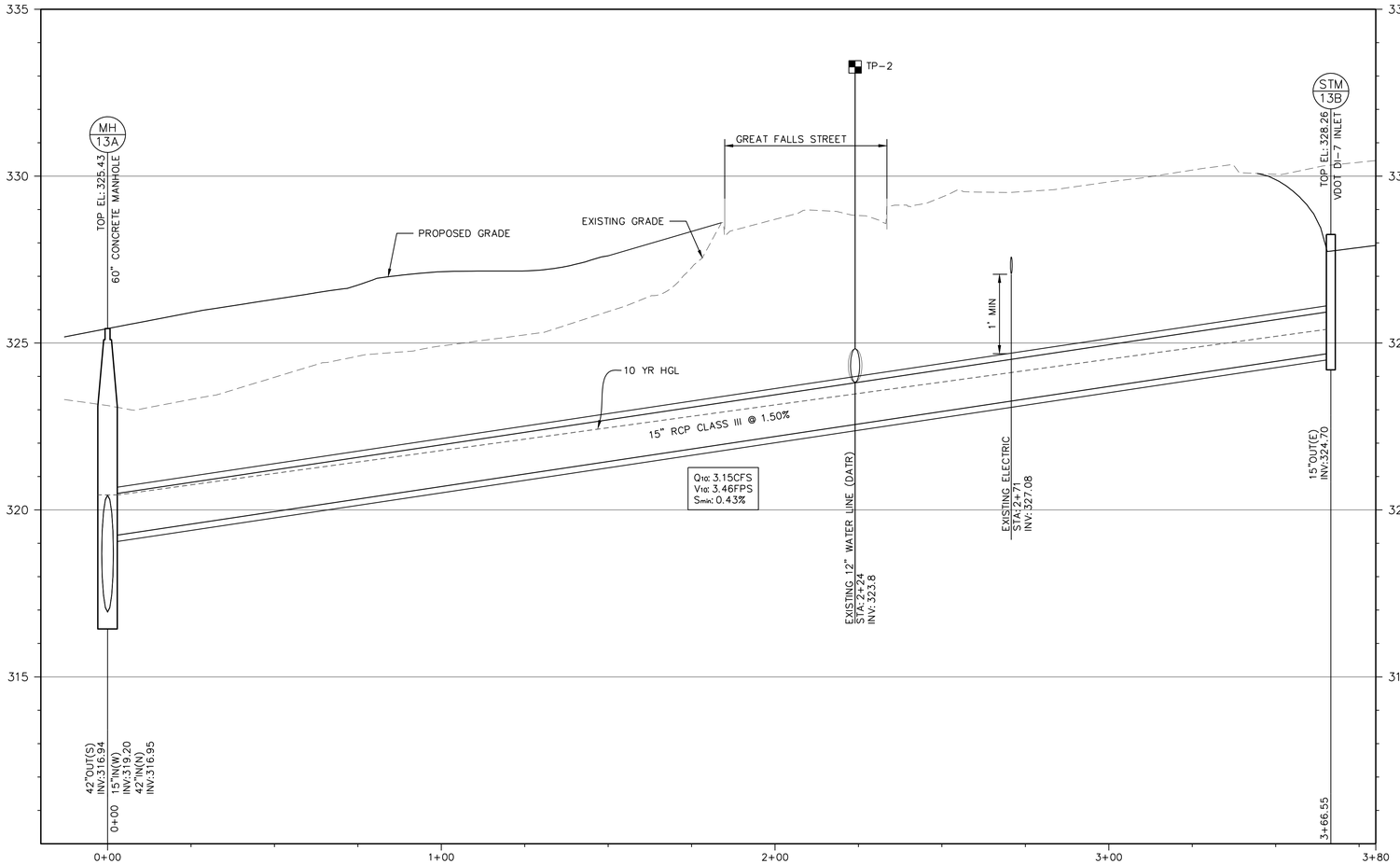
SHEET TITLE

PIPE PROFILES

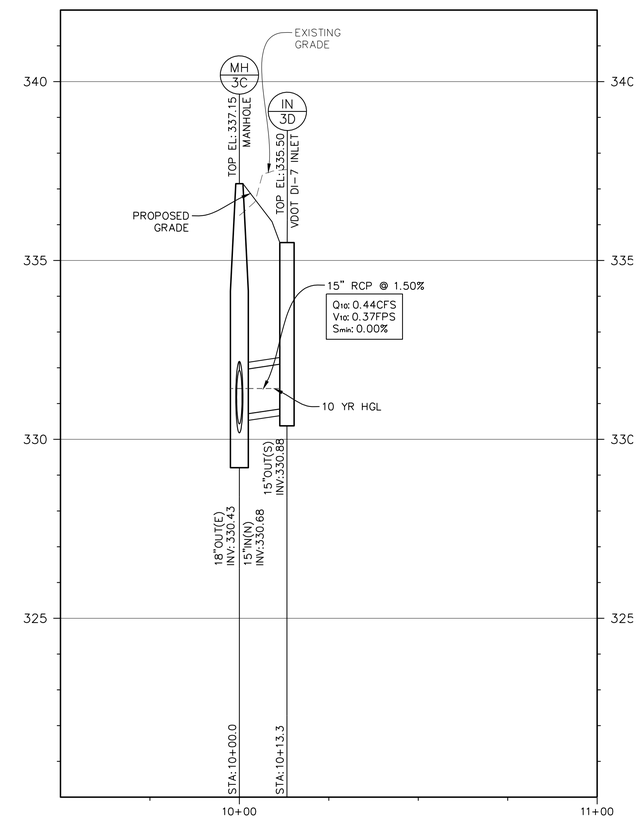
SHEET

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

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FALLS CHURCH, VA
UPC 113612

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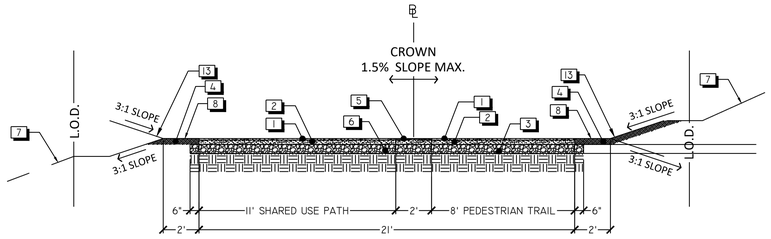
SHEET TITLE

PIPE PROFILES

SHEET

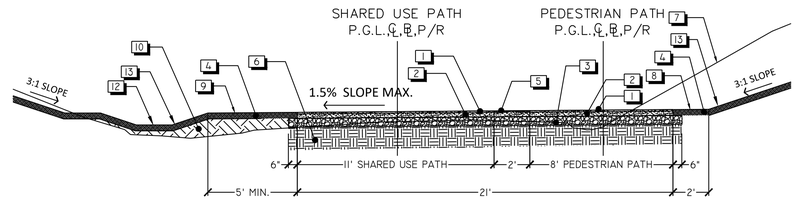
CS2.1




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

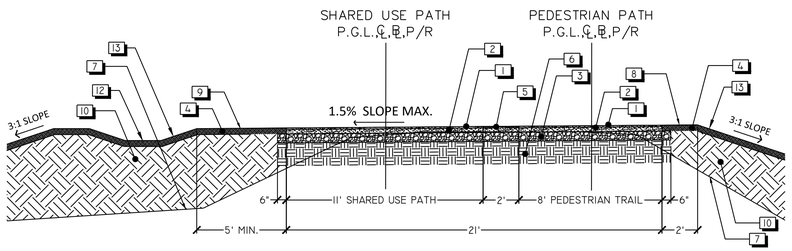
## 1 W&OD TRAIL TYPICAL SECTION

3" = 1'-0" 3402-27



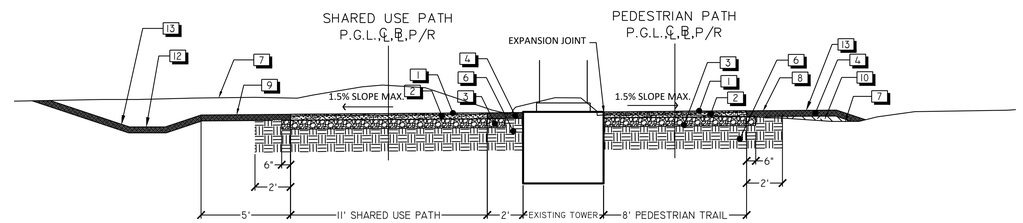

## 2 W&OD TRAIL TYPICAL CUT SECTION

3" = 1'-0" 3402-26




## 3 W&OD TRAIL TYPICAL FILL SECTION

3" = 1'-0" 3402-29



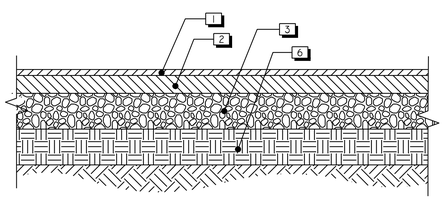

STA. 10+25, 41+53, 47+42, 50+40

## 4 W&OD TRAIL TYPICAL AT ELECTRIC TOWER

3" = 1'-0" 3402-30

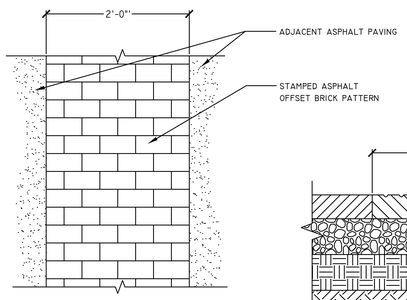
## REFERENCE NOTES SCHEDULE

| 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 |

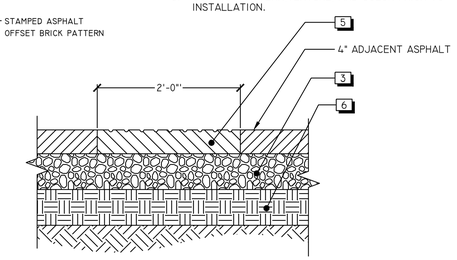


## 5 W&OD ASPHALT TRAIL

1" = 1'-0" 3402-32




SCHEMATIC PLAN VIEW



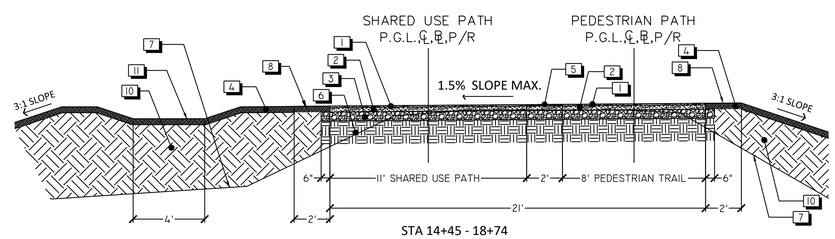

SCHEMATIC SECTION VIEW

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.

## 6 W&OD STAMPED ASPHALT

1" = 1'-0" 3402-33




STA 14+45 - 18+74

## 7 W&OD TRAIL TYPICAL FILL AND CHANNEL SECTION

3" = 1'-0" 3402-37

NOTES:

1. RUBBERMAID 45 GAL., ROUND, TRASH CAN, METAL, BLACK. ITEM #2KDH2. MODEL #FGSBR52BK. CATALOG GROUP #D0205. UNSPSC# 47121702.
2. TRASH RECEPTACLE TO BE ASSEMBLED PER MANUFACTURE'S INSTRUCTIONS.
3. TRASH CAN SHALL BE INSTALLED A MINIMUM OF 2' FROM EDGE OF TRAIL.
4. TRASH RECEPTACLE INSTALLATION TO BE PER NOVA PARKS STANDARDS.

## 8 NOVA PARKS TYPICAL TRASH RECEPTACLE

N.T.S.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PROJECT TITLE

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FALLS CHURCH, VA
UPC 113612

REVISIONS

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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


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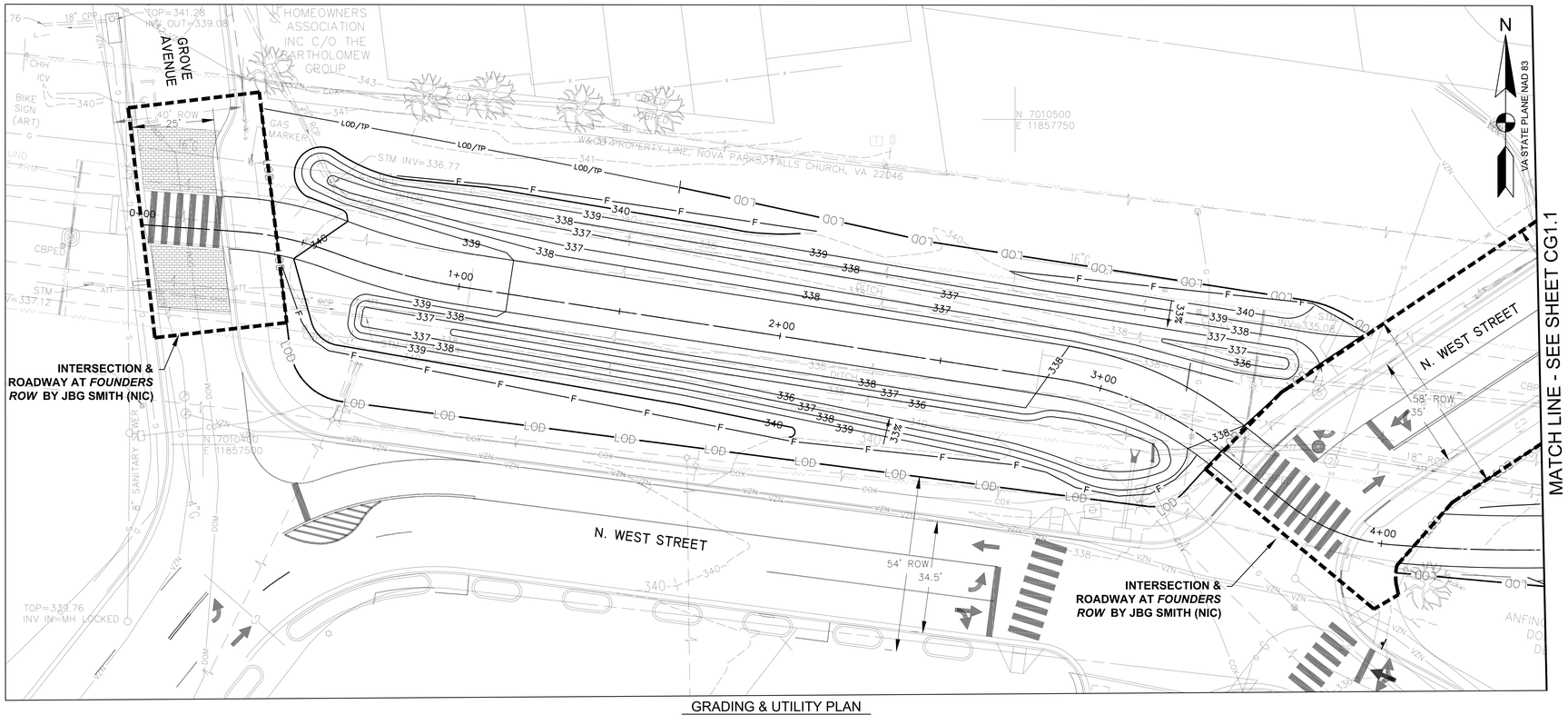
| AMT FILE NO. | 18-0367 |
| DATE: | 01/08/2020 |
| SCALE: | N.T.S. |
| DESIGNED BY: | AMT |
| DRAWN BY: | AMT |
| CHECKED BY: | AMT |

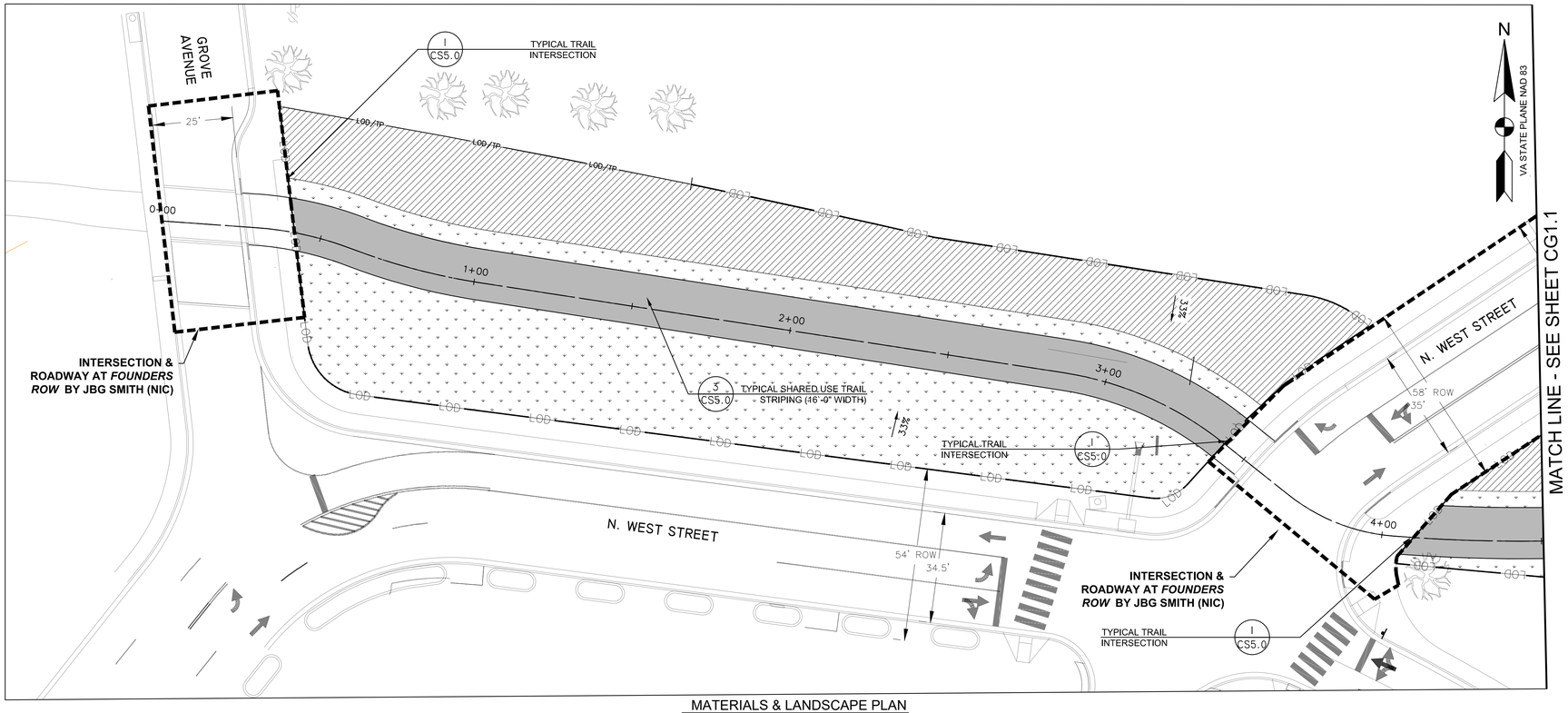
**90% DESIGN**

SHEET TITLE
SPECIFICATIONS

SHEET
CS3.1




GRADING & UTILITY PLAN
SCALE: 1"=20'




MATERIALS & LANDSCAPE PLAN
SCALE: 1"=20'

## LEGEND

| | |
|---|---|
| LOD | LIMITS OF DISTURBANCE |
| LOD/TP | TREE PROTECTION FENCING AT LIMITS OF DISTURBANCE |
| | PROPOSED PEDESTRIAN TRAIL |
| | PROPOSED BICYCLE TRAIL |
| 339 | PROPOSED MINOR CONTOUR |
| 340 | PROPOSED MAJOR CONTOUR |
| 336.0 G | PROPOSED STORMWATER MANAGEMENT - DRY SWALE |
| 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 |

## 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

ASPHALT TRAIL
- REFER TO DETAIL 5/CS3.0

STAMPED ASPHALT BUFFER (2' TYP.)
- REFER TO DETAIL 5/CS3.0

PERMEABLE ASPHALT PAVEMENT
- REFER TO DETAIL 4/CW5.1

| 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.

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

AMT

COMMONWEALTH OF VIRGINIA
STEVEN TORGERSON
Cert. No. 0406001342
01/08/2020
LANDSCAPE ARCHITECT

REGISTRATION STAMP

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

REVISIONS

| MARK | DATE | DESCRIPTION |
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| AMT FILE NO. | 18-0367 |
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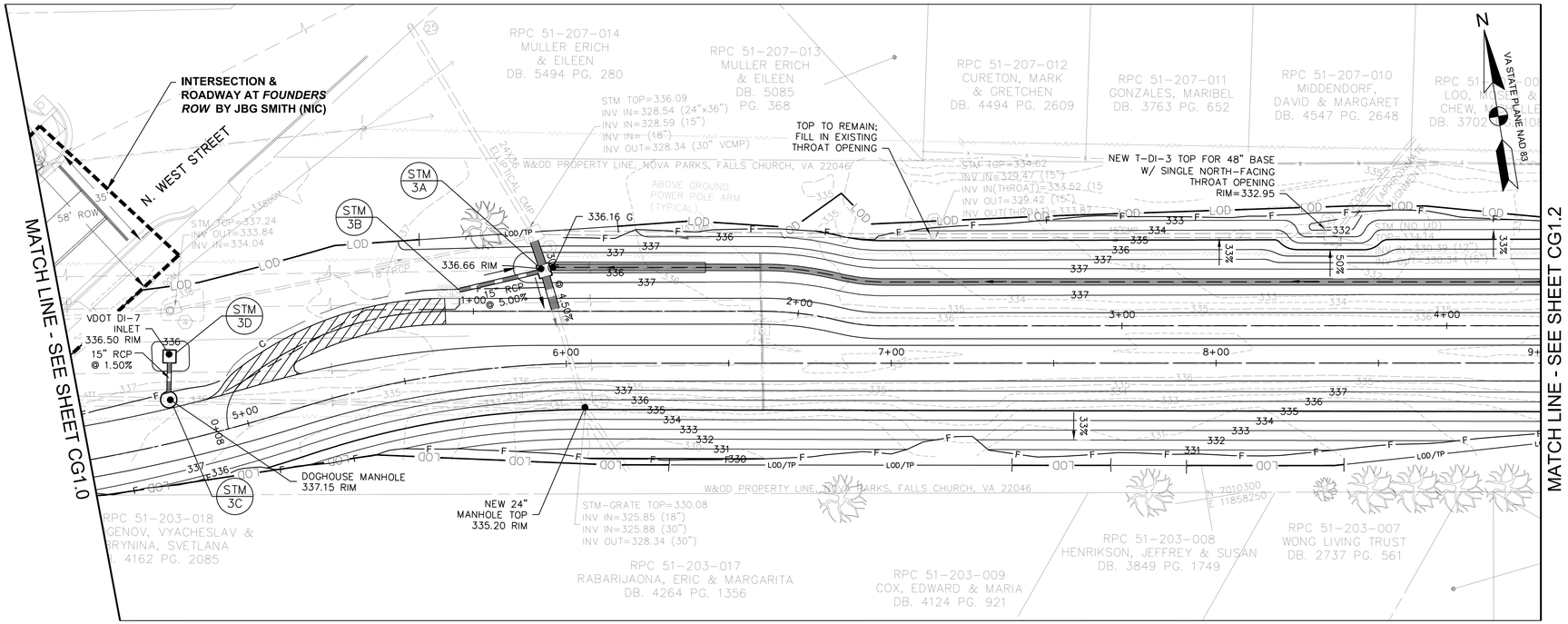
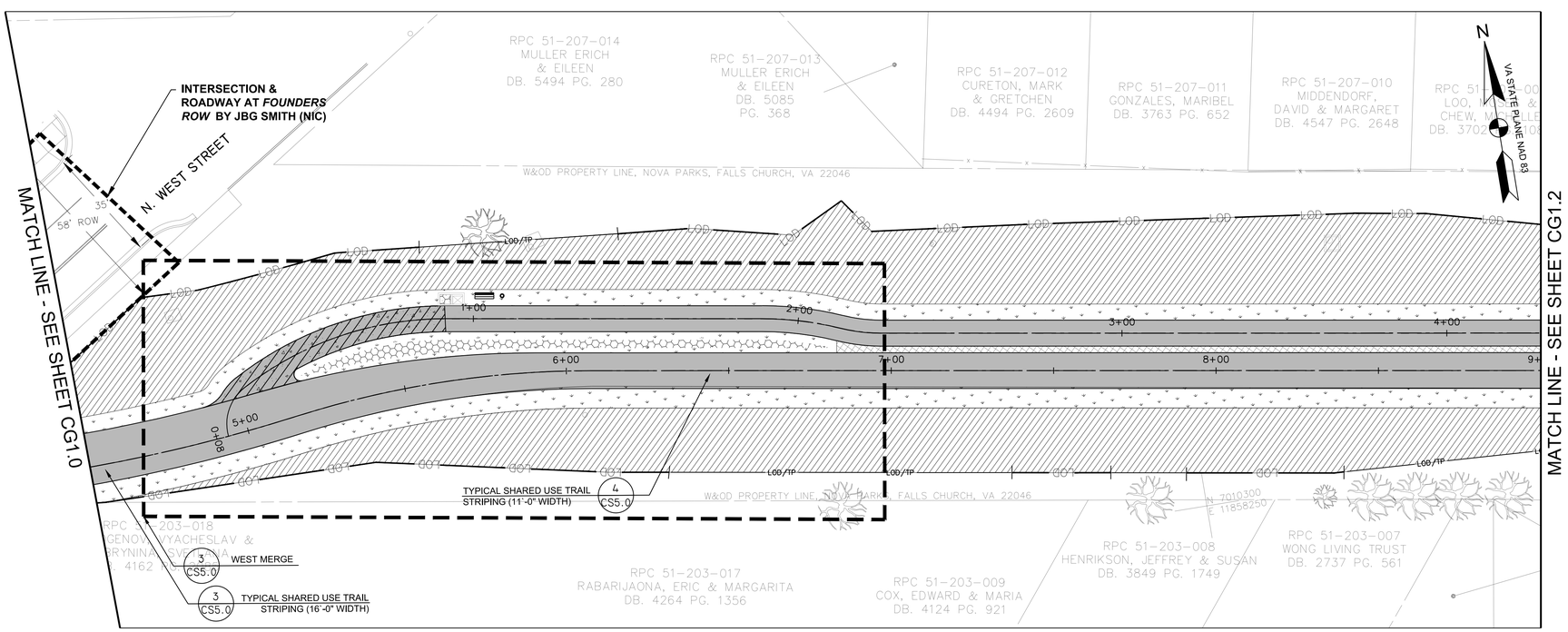
| DRAWN BY: | AMT |
| CHECKED BY: | AMT |

SHEET TITLE
GRADING - UTILITY PLAN & MATERIALS - LANDSCAPE PLAN

SHEET
CG1.0




GRADING & UTILITY PLAN
SCALE: 1"=20'




MATERIALS & LANDSCAPE PLAN
SCALE: 1"=20'

## LEGEND

- LOD — LIMITS OF DISTURBANCE
- LOD/TP — TREE PROTECTION FENCING AT LIMITS OF DISTURBANCE
- PROPOSED PEDESTRIAN TRAIL
- PROPOSED BICYCLE TRAIL
- 339 — PROPOSED MINOR CONTOUR
- 340 — PROPOSED MAJOR CONTOUR
- 336.0 G — PROPOSED STORMWATER MANAGEMENT - DRY SWALE
- 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

## 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
- ASPHALT TRAIL - REFER TO DETAIL 5/CS3.0
- STAMPED ASPHALT BUFFER (2' TYP.) - REFER TO DETAIL 5/CS3.0
- PERMEABLE ASPHALT PAVEMENT - REFER TO DETAIL 4/CW5.1

| 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.

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

AMT

COMMONWEALTH OF VIRGINIA
STEVEN TORGERSON
Cert. No. 0606001342
01/08/2020
LANDSCAPE ARCHITECT

REGISTRATION STAMP

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

REVISIONS

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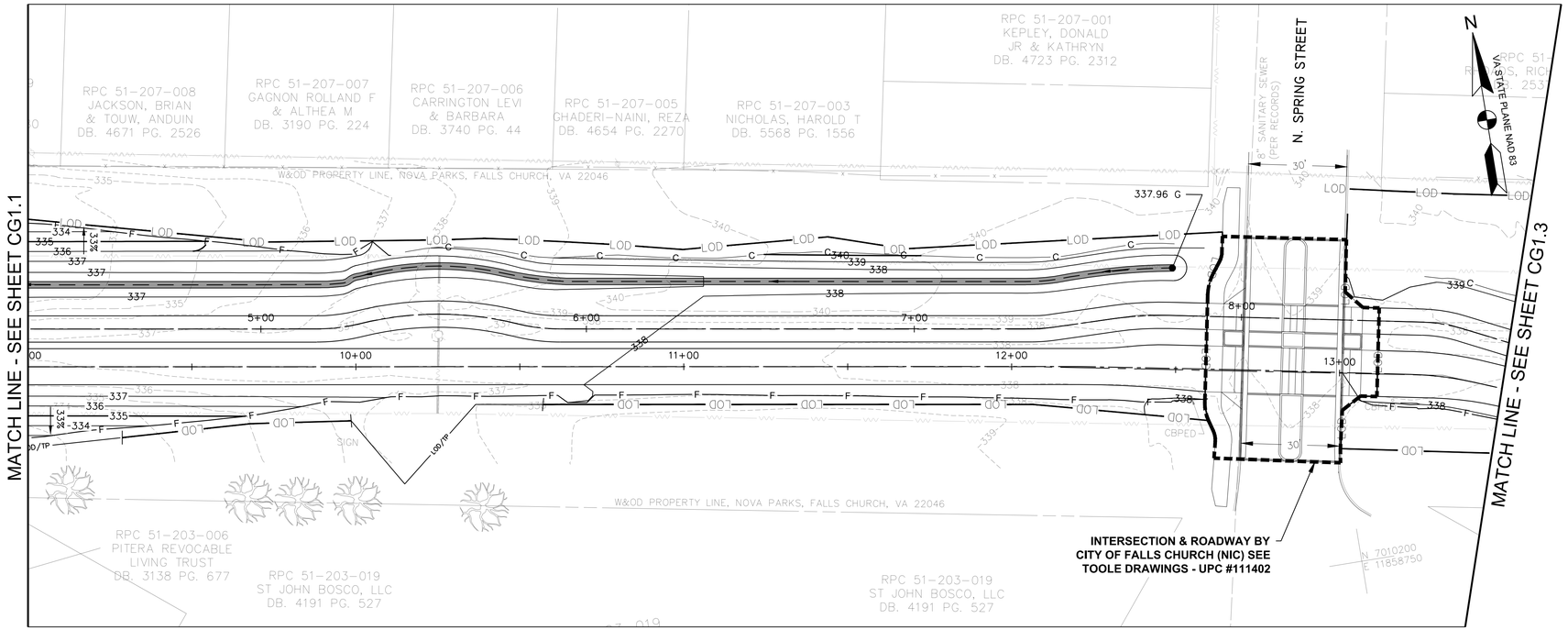
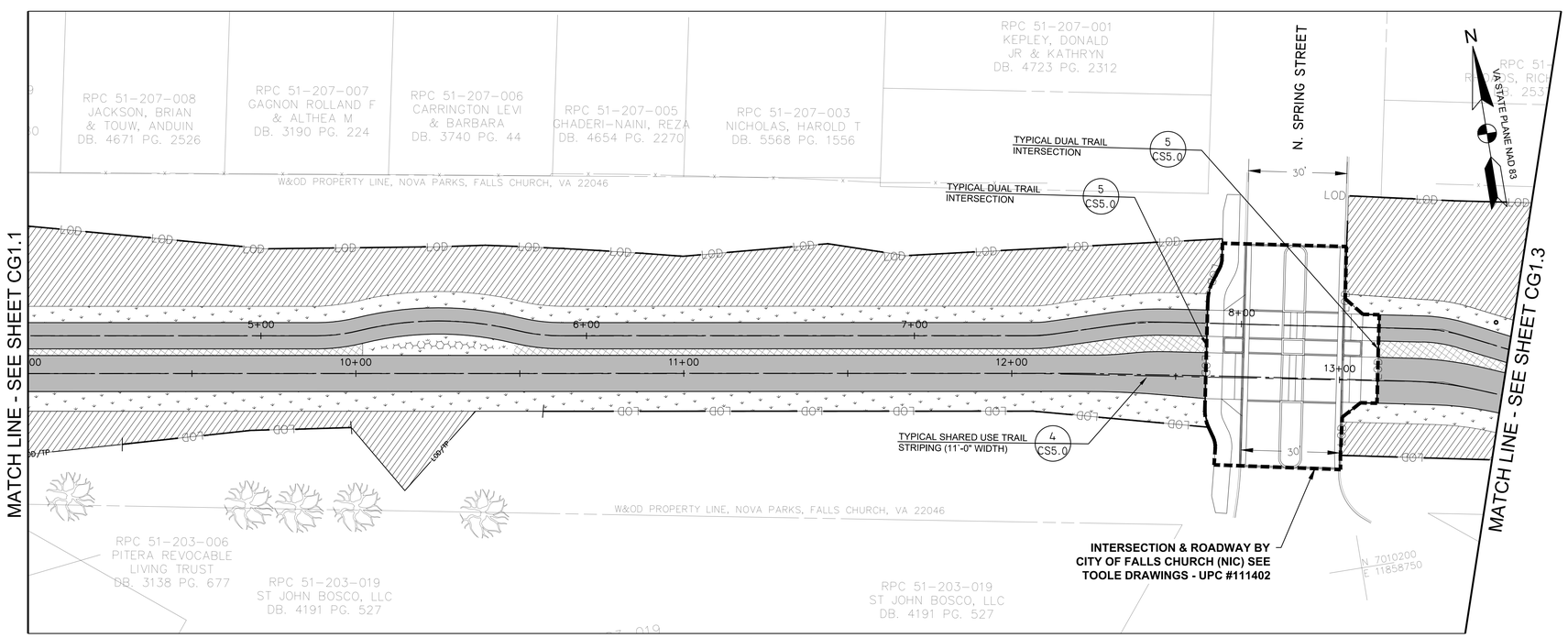
| DRAWN BY: | AMT |
| CHECKED BY: | AMT |

SHEET TITLE
GRADING - UTILITY PLAN & MATERIALS - LANDSCAPE PLAN

SHEET
CG1.1




GRADING & UTILITY PLAN
SCALE: 1"=20'




MATERIALS & LANDSCAPE PLAN
SCALE: 1"=20'

## LEGEND

- LOD — LIMITS OF DISTURBANCE
- LOD/TP — TREE PROTECTION FENCING AT LIMITS OF DISTURBANCE
- PROPOSED PEDESTRIAN TRAIL
- PROPOSED BICYCLE TRAIL
- 339 — PROPOSED MINOR CONTOUR
- 340 — PROPOSED MAJOR CONTOUR
- 336.0 G — PROPOSED STORMWATER MANAGEMENT - DRY SWALE
- 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

## 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
- ASPHALT TRAIL - REFER TO DETAIL 5/CS3.0
- STAMPED ASPHALT BUFFER (2' TYP.) - REFER TO DETAIL 5/CS3.0
- PERMEABLE ASPHALT PAVEMENT - REFER TO DETAIL 4/CW5.1

| 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
01/08/2020
LANDSCAPE ARCHITECT

REGISTRATION STAMP

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

REVISIONS

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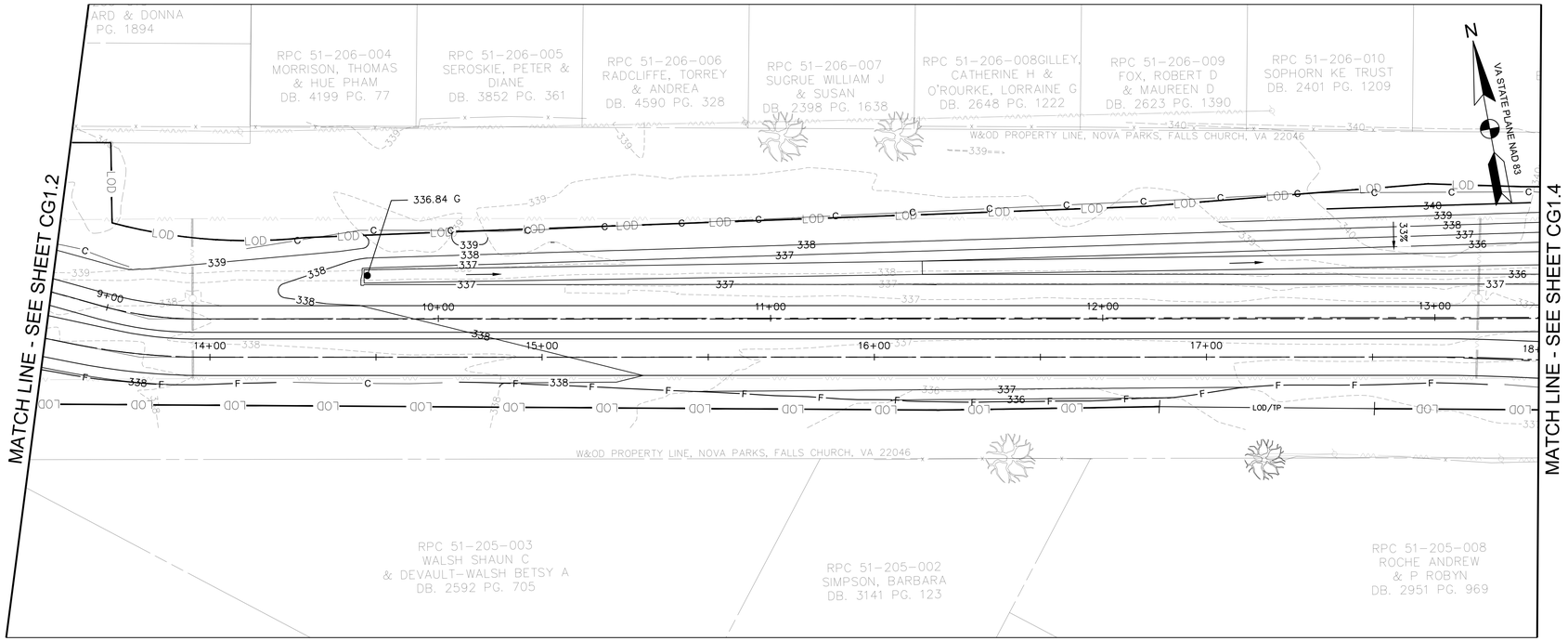
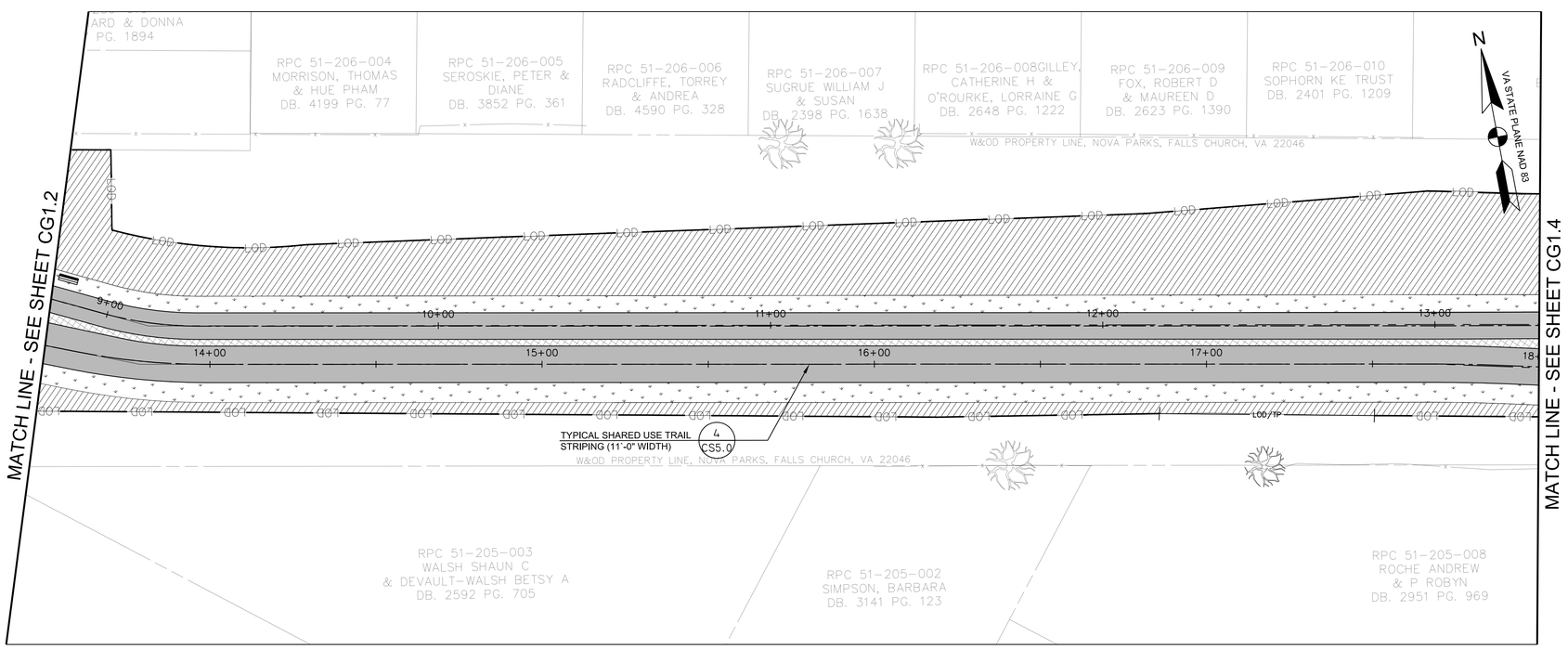
| DRAWN BY: | AMT |
| CHECKED BY: | AMT |

SHEET TITLE
GRADING - UTILITY PLAN & MATERIALS - LANDSCAPE PLAN

SHEET
CG1.2




GRADING & UTILITY PLAN
SCALE: 1"=20'




MATERIALS & LANDSCAPE PLAN
SCALE: 1"=20'

## LEGEND

- LOD — LIMITS OF DISTURBANCE
- LOD/TP — TREE PROTECTION FENCING AT LIMITS OF DISTURBANCE
- PROPOSED PEDESTRIAN TRAIL
- PROPOSED BICYCLE TRAIL
- 339 — PROPOSED MINOR CONTOUR
- 340 — PROPOSED MAJOR CONTOUR
- 336.0 G — PROPOSED STORMWATER MANAGEMENT - DRY SWALE
- 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

## 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
- ASPHALT TRAIL - REFER TO DETAIL 5/CS3.0
- STAMPED ASPHALT BUFFER (2' TYP.) - REFER TO DETAIL 5/CS3.0
- PERMEABLE ASPHALT PAVEMENT - REFER TO DETAIL 4/CWS.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
01/08/2020
LANDSCAPE ARCHITECT

REGISTRATION STAMP

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

REVISIONS

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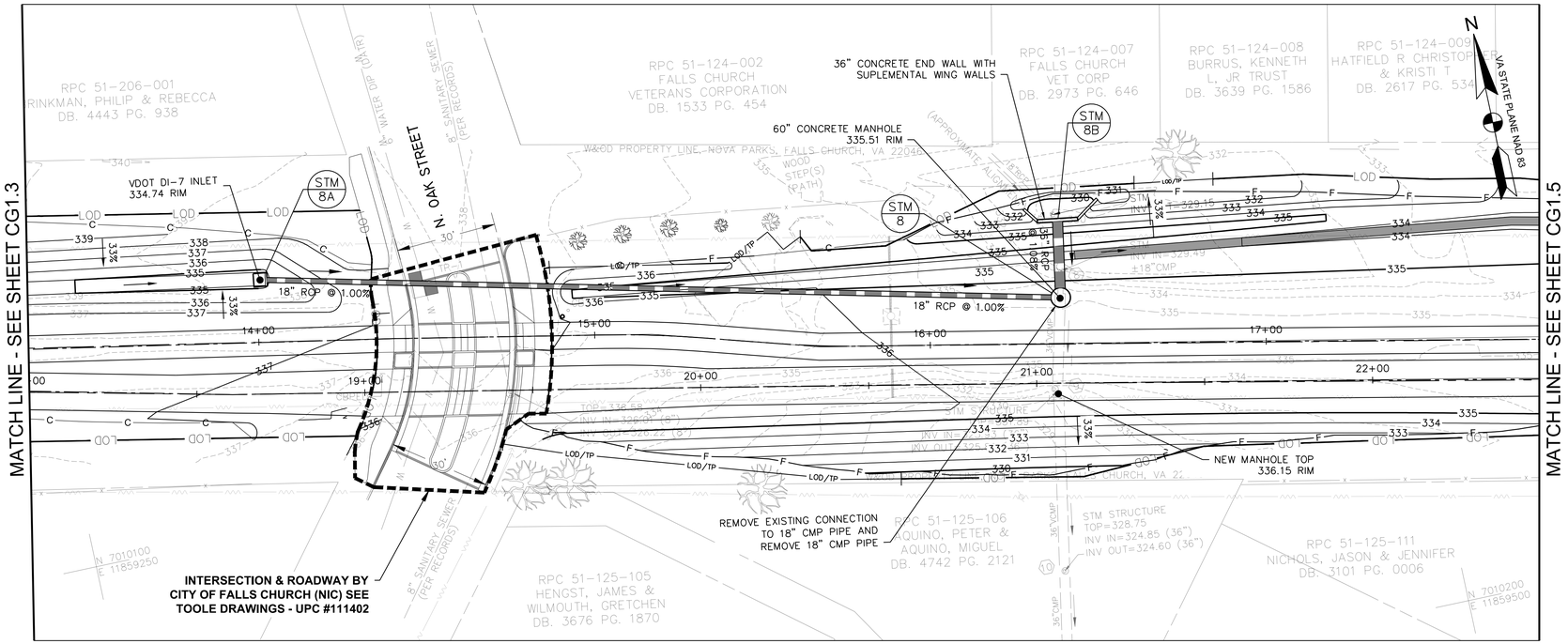
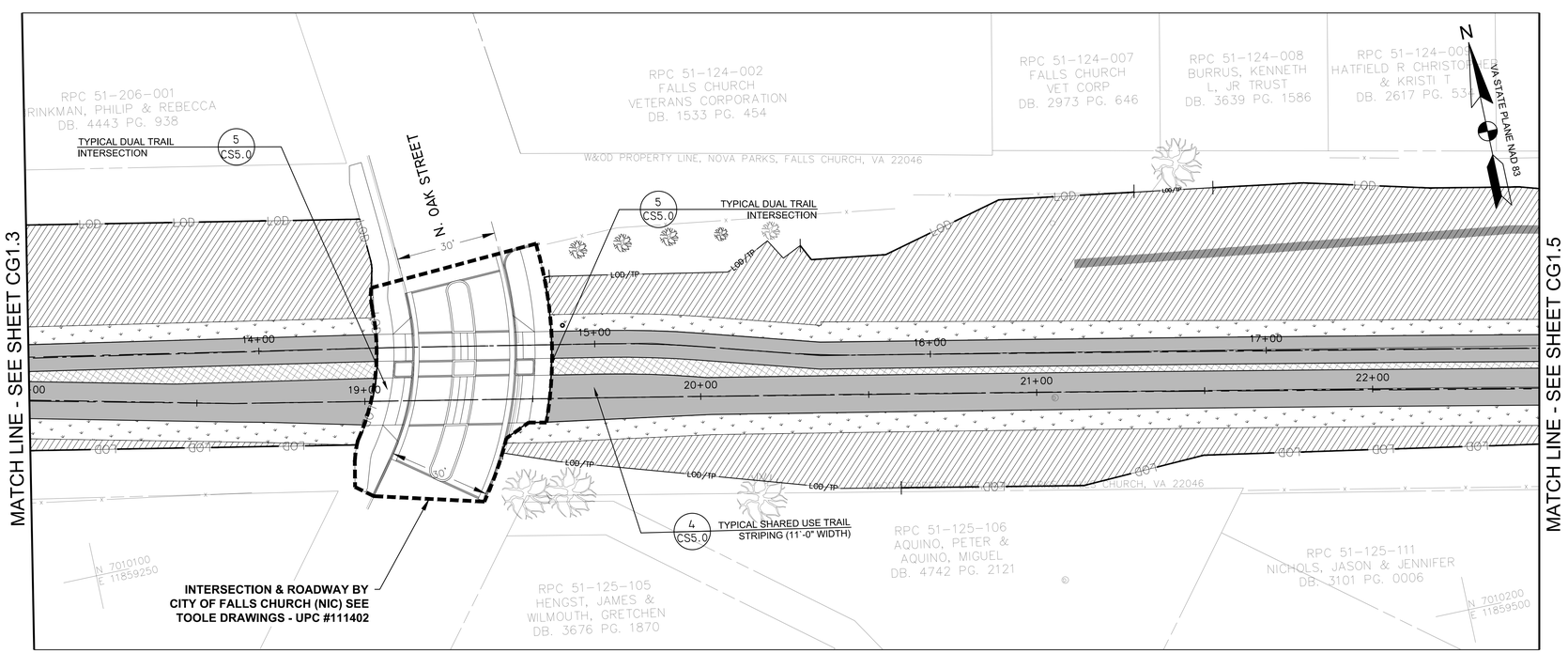
| DRAWN BY: | AMT |
| CHECKED BY: | AMT |

SHEET TITLE
GRADING - UTILITY PLAN & MATERIALS - LANDSCAPE PLAN

SHEET
CG1.3




GRADING & UTILITY PLAN
SCALE: 1"=20'




MATERIALS & LANDSCAPE PLAN
SCALE: 1"=20'

## LEGEND

| | |
|---|---|
| LOD | LIMITS OF DISTURBANCE |
| LOD/TP | TREE PROTECTION FENCING AT LIMITS OF DISTURBANCE |
| | PROPOSED PEDESTRIAN TRAIL |
| | PROPOSED BICYCLE TRAIL |
| 339 | PROPOSED MINOR CONTOUR |
| 340 | PROPOSED MAJOR CONTOUR |
| 336.0 G | PROPOSED STORMWATER MANAGEMENT - DRY SWALE |
| 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 |

## 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

ASPHALT TRAIL
- REFER TO DETAIL 5/CS3.0

STAMPED ASPHALT BUFFER (2' TYP.)
- REFER TO DETAIL 5/CS3.0

PERMEABLE ASPHALT PAVEMENT
- REFER TO DETAIL 4/CWS.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
01/08/2020
LANDSCAPE ARCHITECT

REGISTRATION STAMP

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

REVISIONS

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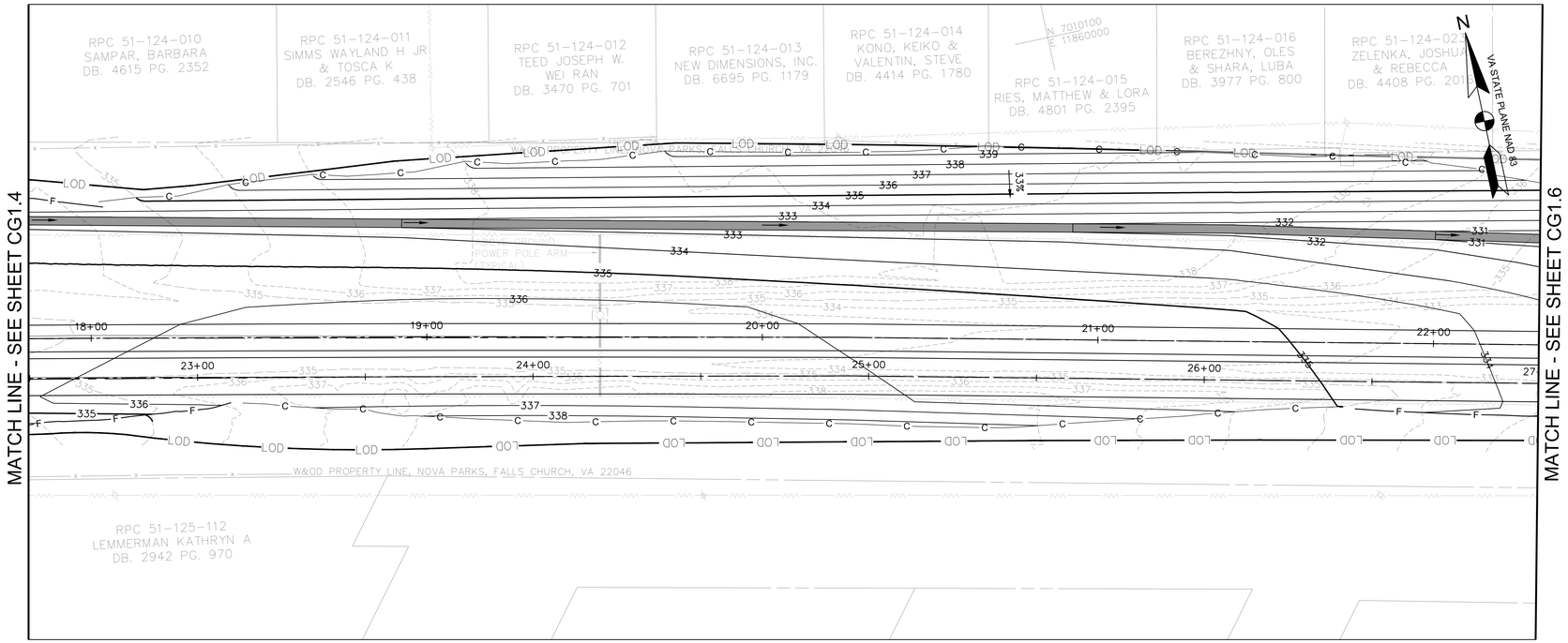
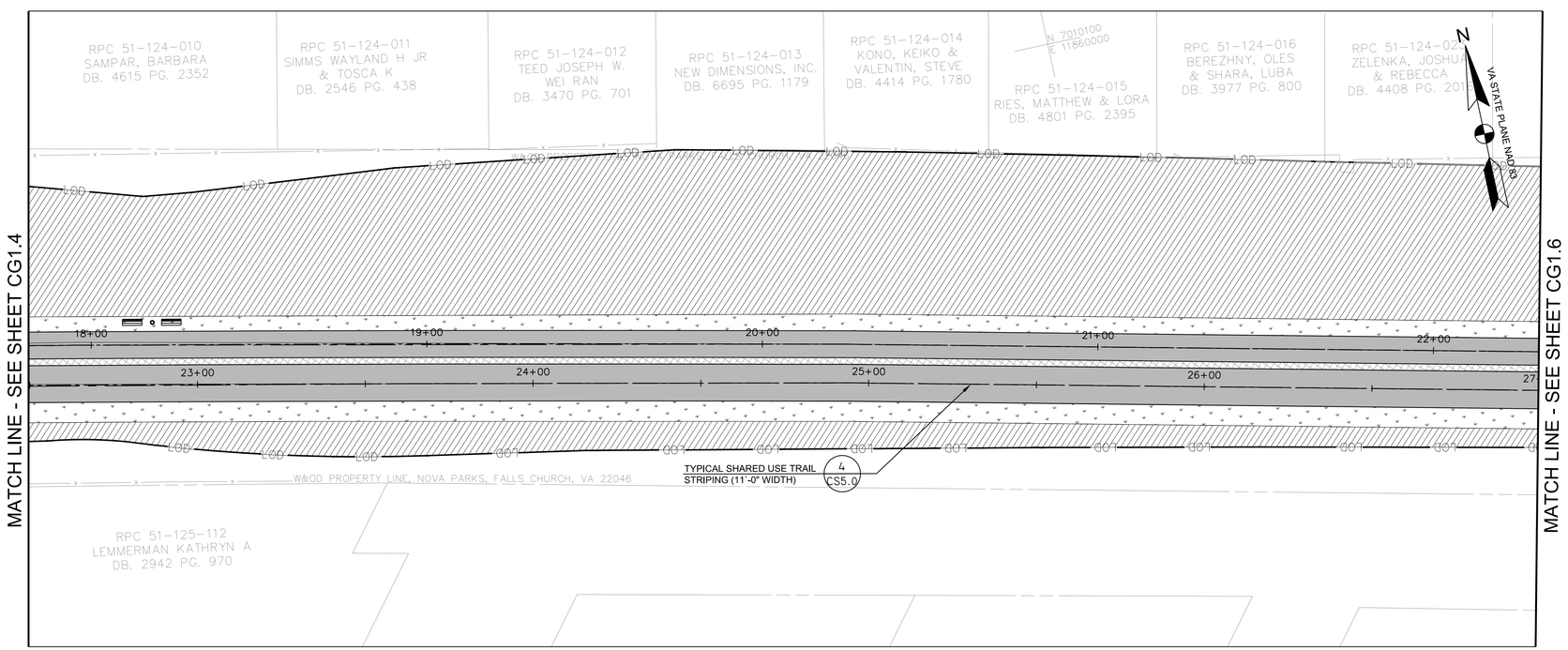
| DRAWN BY: | AMT |
| CHECKED BY: | AMT |

SHEET TITLE
GRADING - UTILITY PLAN & MATERIALS - LANDSCAPE PLAN

SHEET
CG1.4




GRADING & UTILITY PLAN
SCALE: 1"=20'




MATERIALS & LANDSCAPE PLAN
SCALE: 1"=20'

## LEGEND

- LOD — LIMITS OF DISTURBANCE
- LOD/TP — TREE PROTECTION FENCING AT LIMITS OF DISTURBANCE
- PROPOSED PEDESTRIAN TRAIL
- PROPOSED BICYCLE TRAIL
- 339 — PROPOSED MINOR CONTOUR
- 340 — PROPOSED MAJOR CONTOUR
- 336.0 G — PROPOSED STORMWATER MANAGEMENT - DRY SWALE
- 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

## 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
- ASPHALT TRAIL - REFER TO DETAIL 5/CS3.0
- STAMPED ASPHALT BUFFER (2' TYP.) - REFER TO DETAIL 5/CS3.0
- PERMEABLE ASPHALT PAVEMENT - REFER TO DETAIL 4/CW5.1

| 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
01/08/2020
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FALLS CHURCH, VA
UPC 113612

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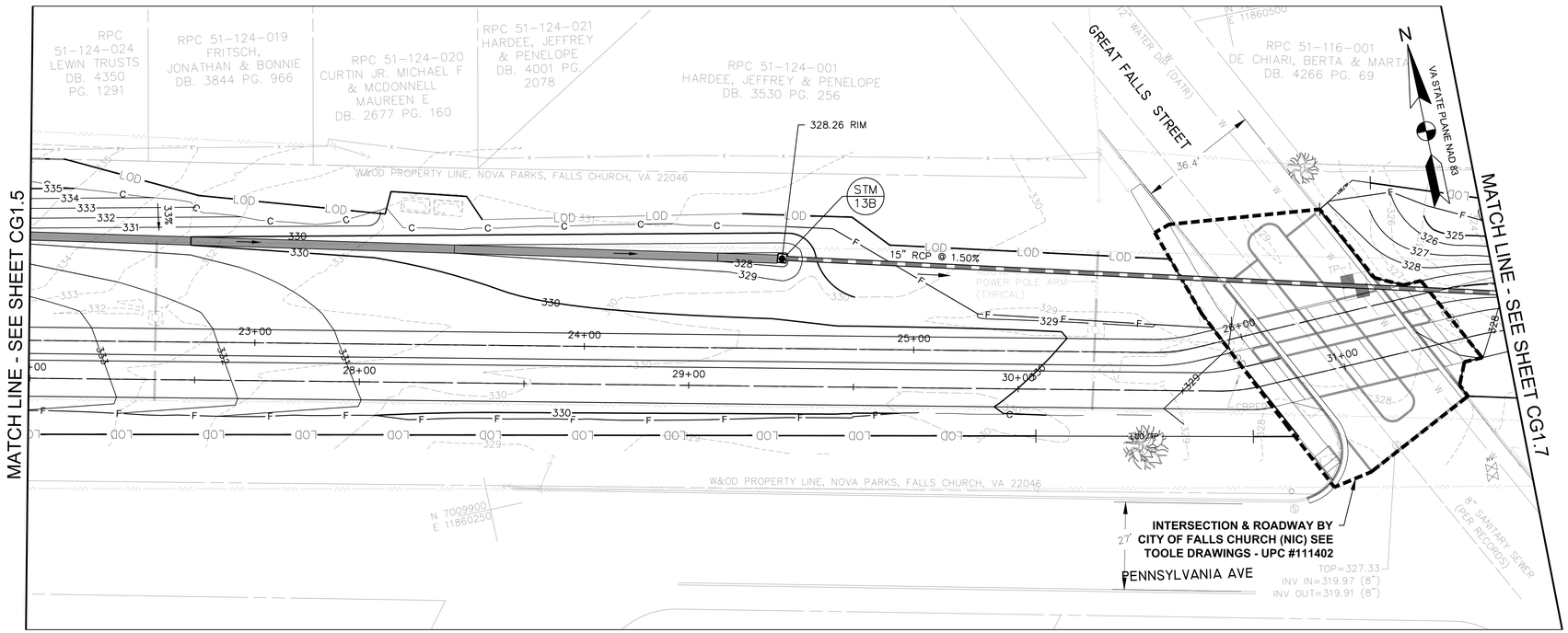
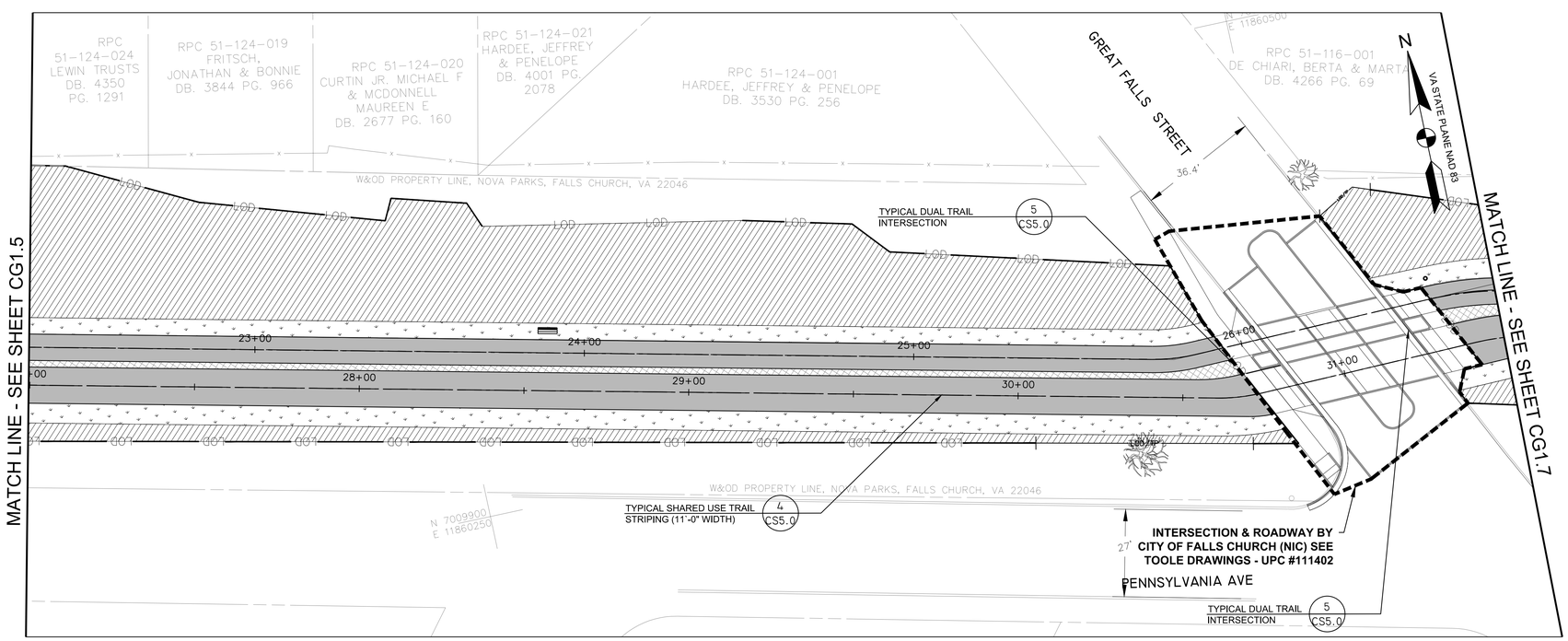
SHEET TITLE
GRADING - UTILITY PLAN & MATERIALS - LANDSCAPE PLAN

SHEET
CG1.5




GRADING & UTILITY PLAN
SCALE: 1"=20'




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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- 339 — PROPOSED MINOR CONTOUR
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- 4" PERF. PVC SCHD 40 PIPE
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## 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
- ASPHALT TRAIL - REFER TO DETAIL 5/CS3.0
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- PERMEABLE ASPHALT PAVEMENT - REFER TO DETAIL 4/CW5.1

| 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'

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COMMONWEALTH OF VIRGINIA
STEVEN TORGERSON
Cert. No. 0606001342
01/08/2020
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FALLS CHURCH, VA
UPC 113612

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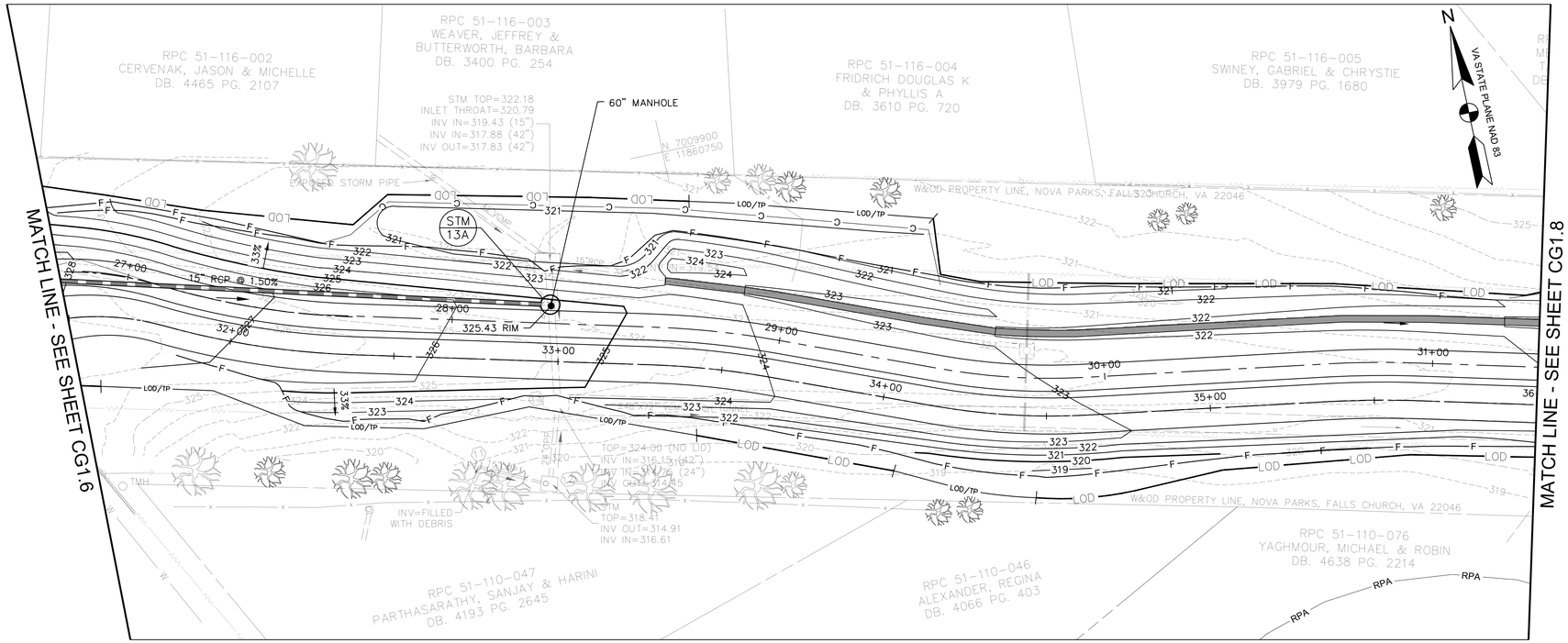
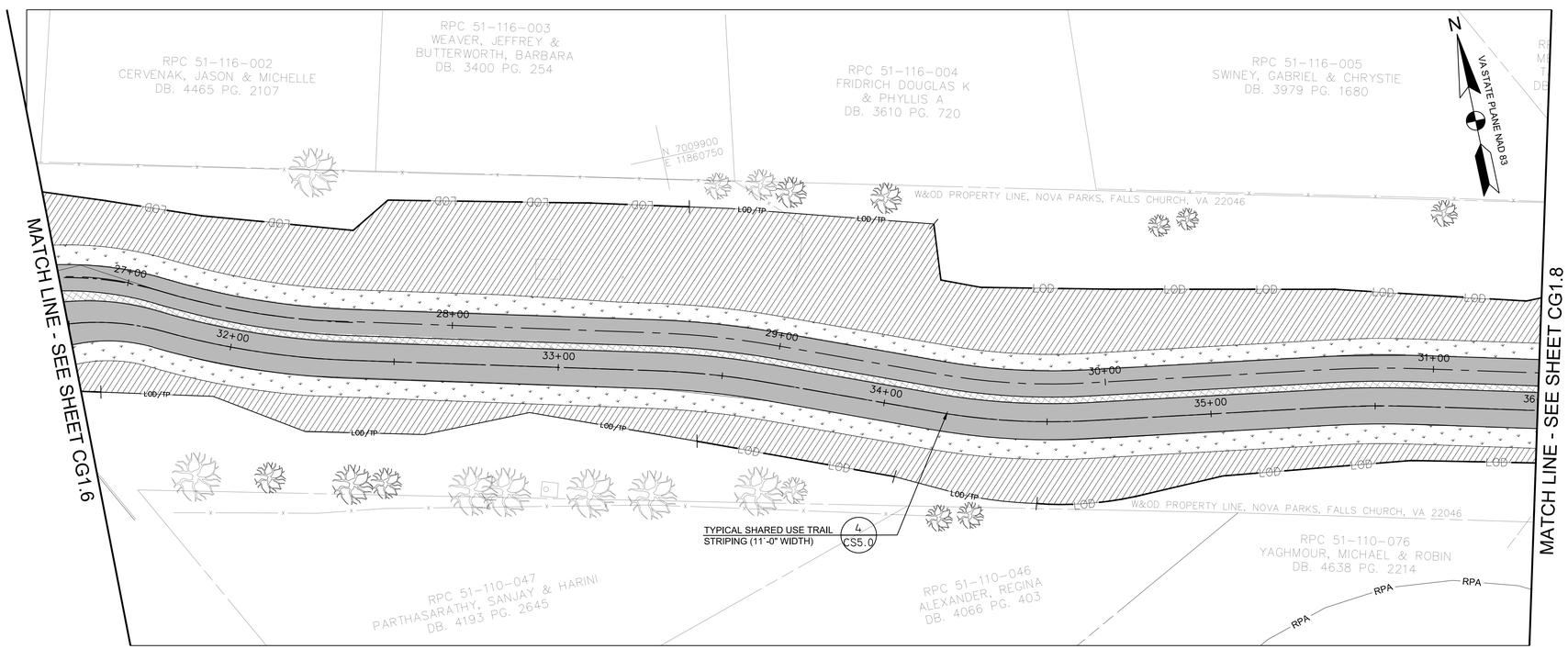
SHEET TITLE
GRADING - UTILITY PLAN & MATERIALS - LANDSCAPE PLAN

SHEET
CG1.6




GRADING & UTILITY PLAN
SCALE: 1"=20'




MATERIALS & LANDSCAPE PLAN
SCALE: 1"=20'

## LEGEND

- LOD — LIMITS OF DISTURBANCE
- LOD/TP — TREE PROTECTION FENCING AT LIMITS OF DISTURBANCE
- PROPOSED PEDESTRIAN TRAIL
- PROPOSED BICYCLE TRAIL
- 339 — PROPOSED MINOR CONTOUR
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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

## 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
- ASPHALT TRAIL - REFER TO DETAIL 5/CS3.0
- STAMPED ASPHALT BUFFER (2' TYP.) - REFER TO DETAIL 5/CS3.0
- PERMEABLE ASPHALT PAVEMENT - REFER TO DETAIL 4/CW5.1

| 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

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STEVEN TORGERSON
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UPC 113612

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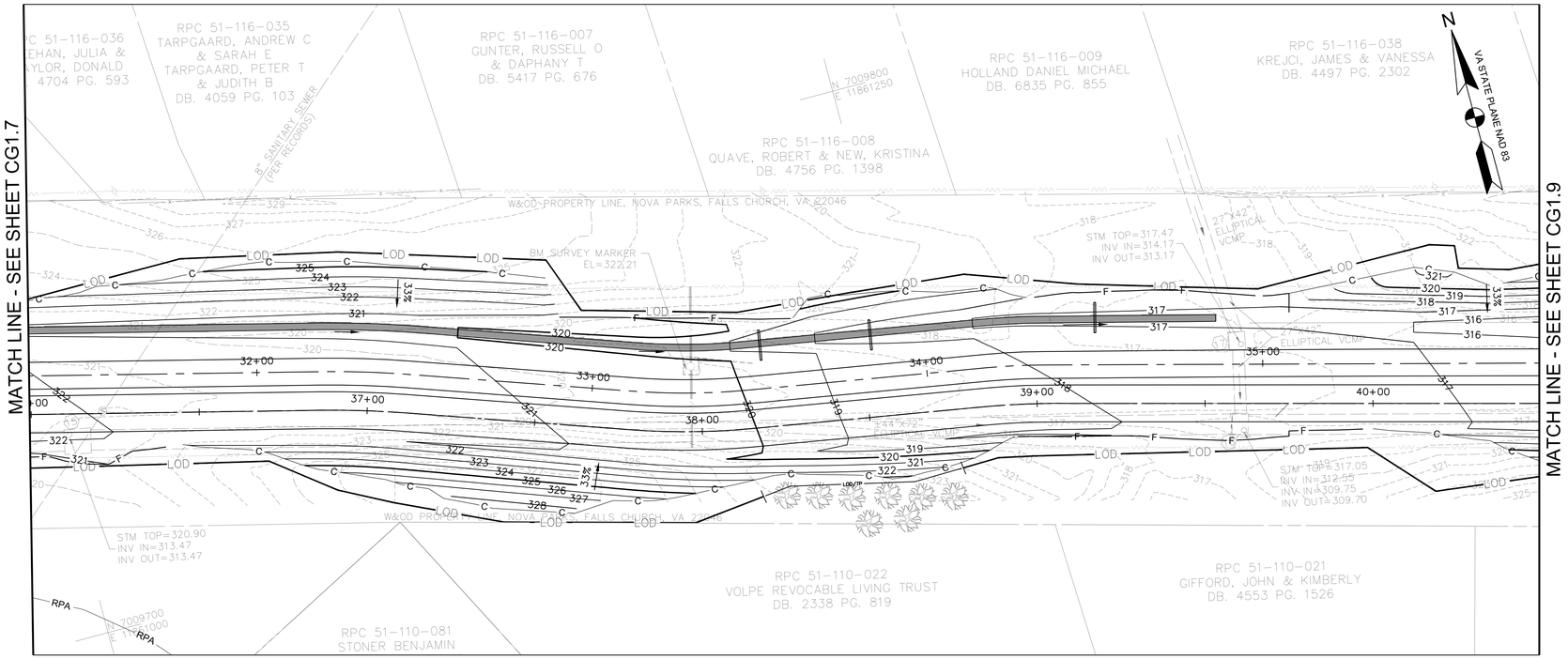
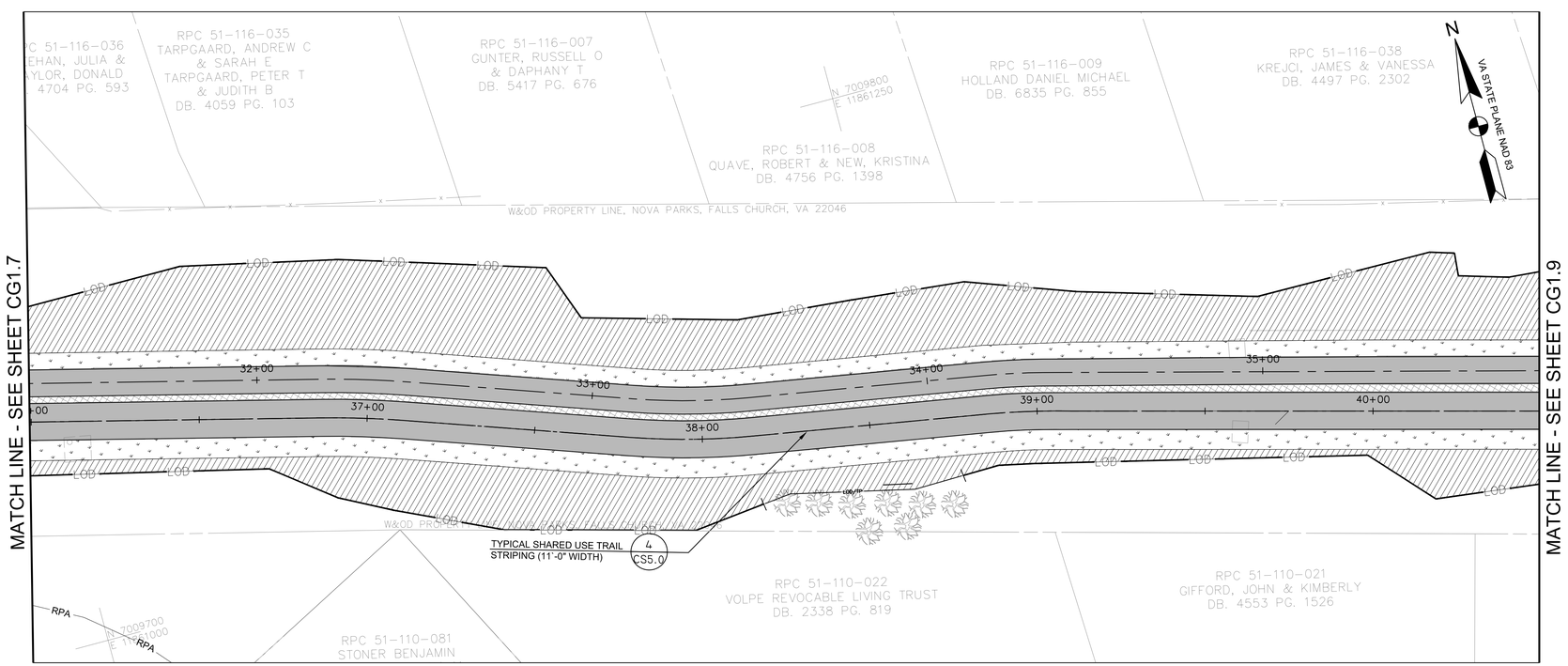
SHEET TITLE
GRADING - UTILITY PLAN & MATERIALS - LANDSCAPE PLAN

SHEET
CG1.7




GRADING & UTILITY PLAN
SCALE: 1"=20'




MATERIALS & LANDSCAPE PLAN
SCALE: 1"=20'

## LEGEND

- LOD — LIMITS OF DISTURBANCE
- LOD/TP — TREE PROTECTION FENCING AT LIMITS OF DISTURBANCE
- PROPOSED PEDESTRIAN TRAIL
- PROPOSED BICYCLE TRAIL
- 339 — PROPOSED MINOR CONTOUR
- 340 — PROPOSED MAJOR CONTOUR
- 336.0 G — PROPOSED STORMWATER MANAGEMENT - DRY SWALE
- 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

## 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
- ASPHALT TRAIL - REFER TO DETAIL 5/CS3.0
- STAMPED ASPHALT BUFFER (2' TYP.) - REFER TO DETAIL 5/CS3.0
- PERMEABLE ASPHALT PAVEMENT - REFER TO DETAIL 4/CW5.1

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

AMT

COMMONWEALTH OF VIRGINIA
STEVEN TORGERSON
Cert. No. 0406001342
01/08/2020
LANDSCAPE ARCHITECT

REGISTRATION STAMP

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

REVISIONS

| MARK | DATE | DESCRIPTION |
|---|---|---|
| | | |

| | |
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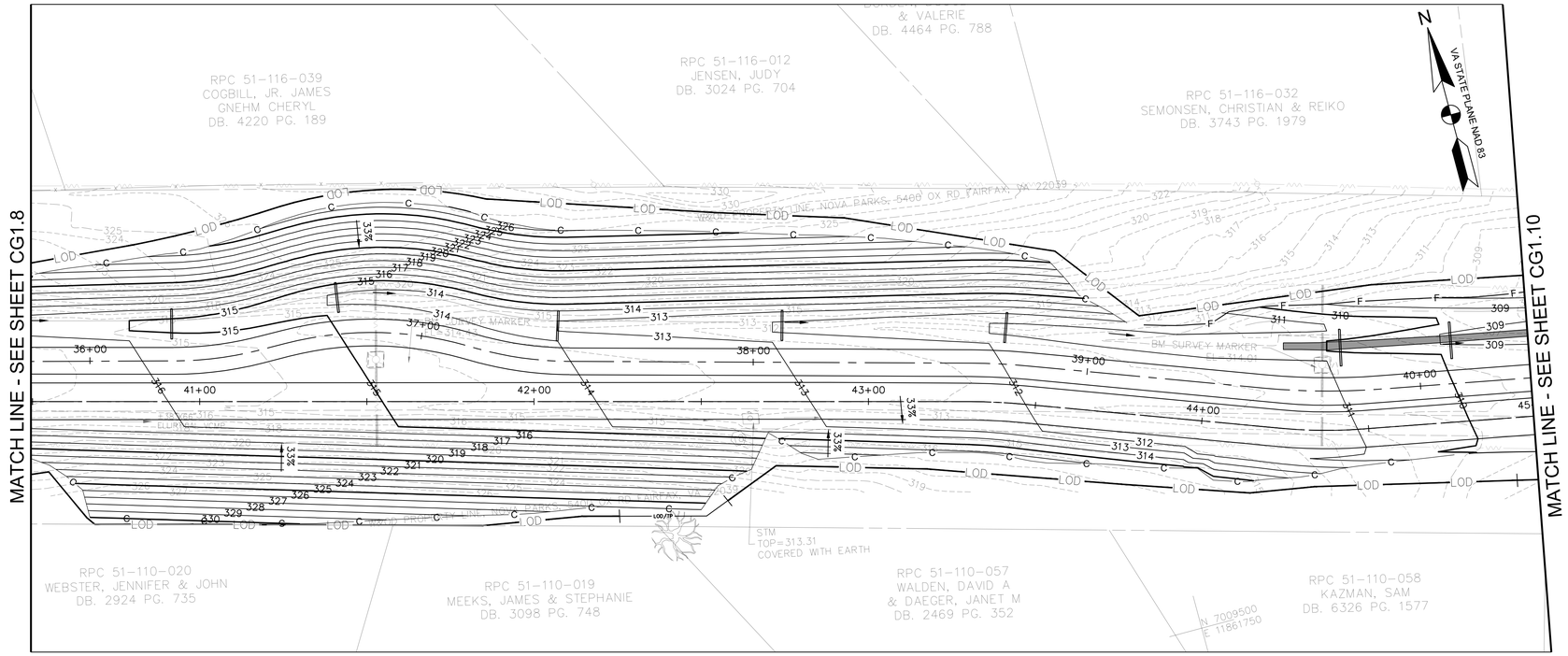
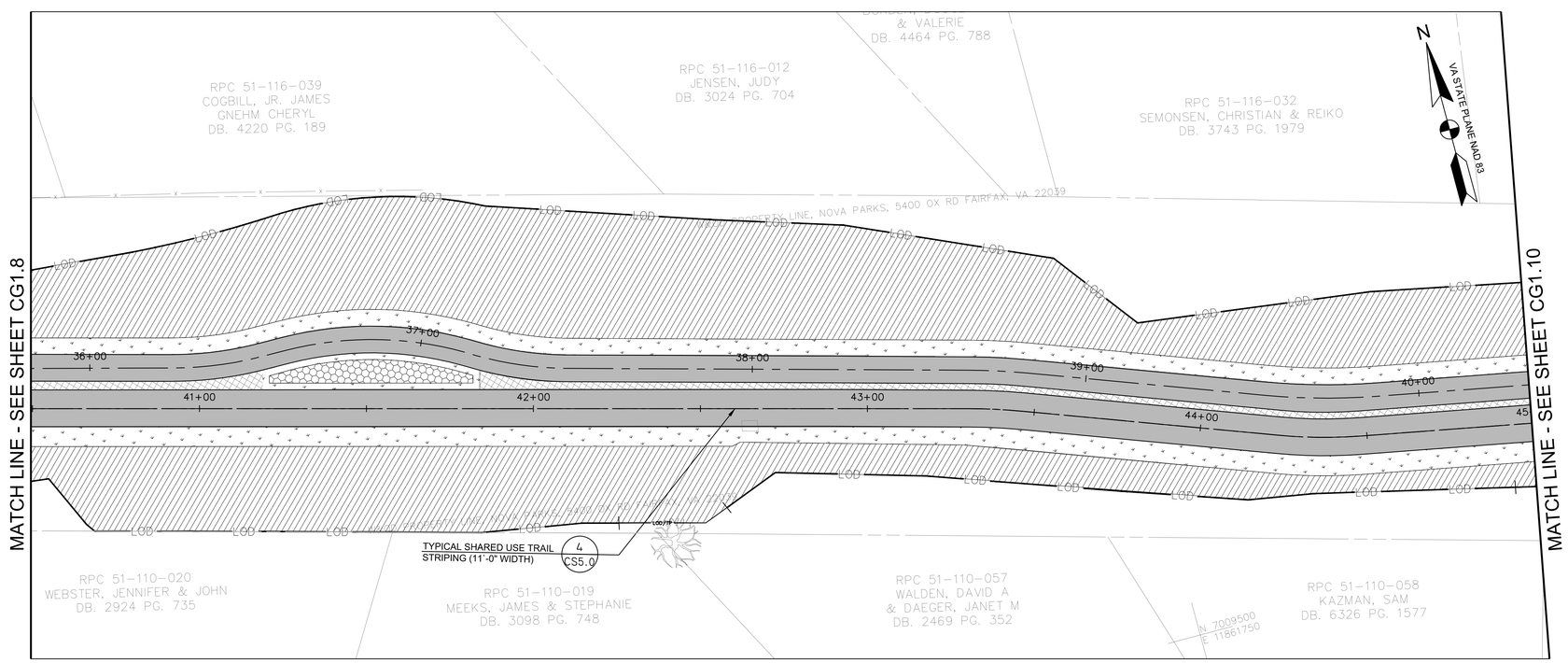
| AMT FILE NO. | 18-0367 |
| DATE: | 01/08/2020 |
| SCALE: | 1"=20' |
| DESIGNED BY: | AMT |
| DRAWN BY: | AMT |
| CHECKED BY: | AMT |

SHEET TITLE
GRADING - UTILITY PLAN & MATERIALS - LANDSCAPE PLAN

SHEET
CG1.8




GRADING & UTILITY PLAN
SCALE: 1"=20'




MATERIALS & LANDSCAPE PLAN
SCALE: 1"=20'

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- 4" PERF. PVC SCHD 40 PIPE
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- F — FILL LINE

## MATERIAL SCHEDULE

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- MEADOW PLANTING - REFER TO CS5.3 FOR SCHEDULE
- PERENNIAL PLANTING - REFER TO CS5.3 FOR SCHEDULE
- ASPHALT TRAIL - REFER TO DETAIL 5/CS3.0
- STAMPED ASPHALT BUFFER (2' TYP.) - REFER TO DETAIL 5/CS3.0
- PERMEABLE ASPHALT PAVEMENT - REFER TO DETAIL 4/CW5.1

| 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
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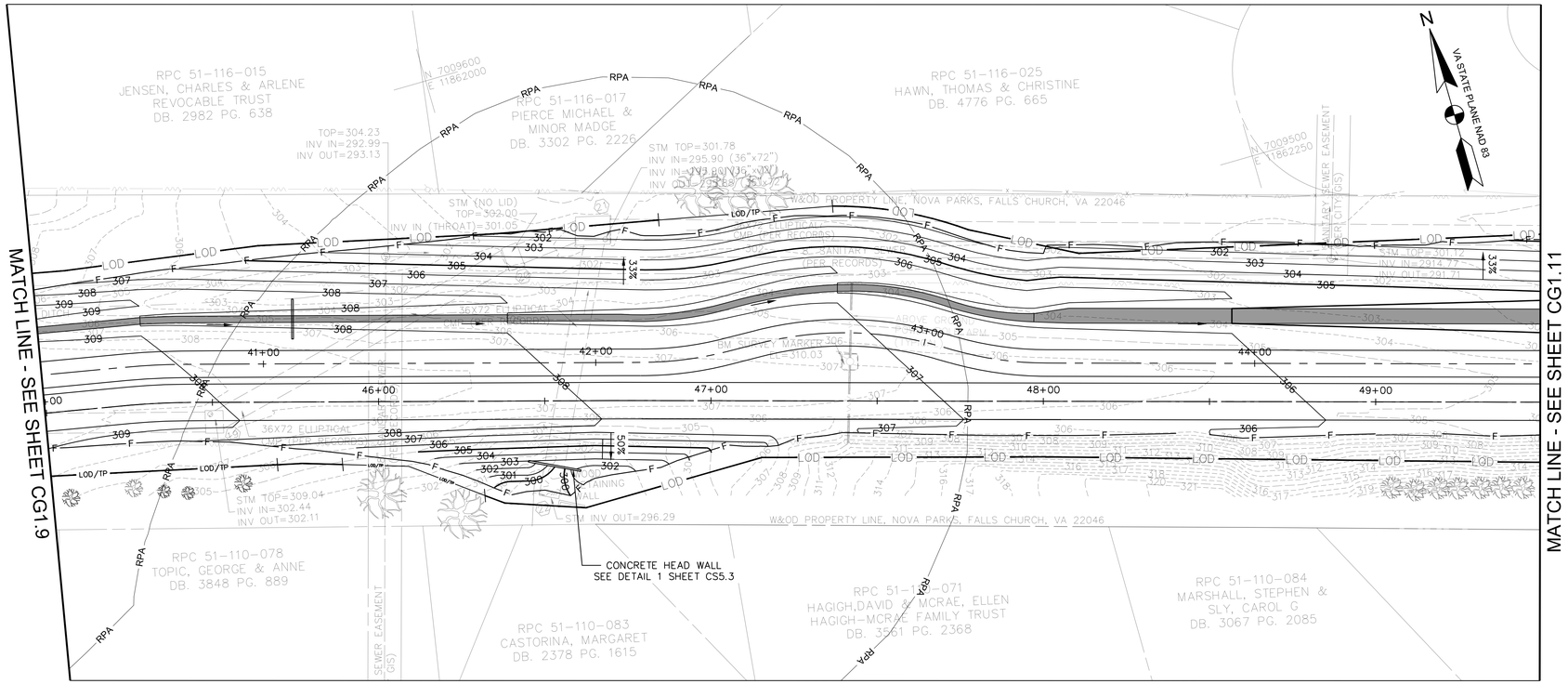
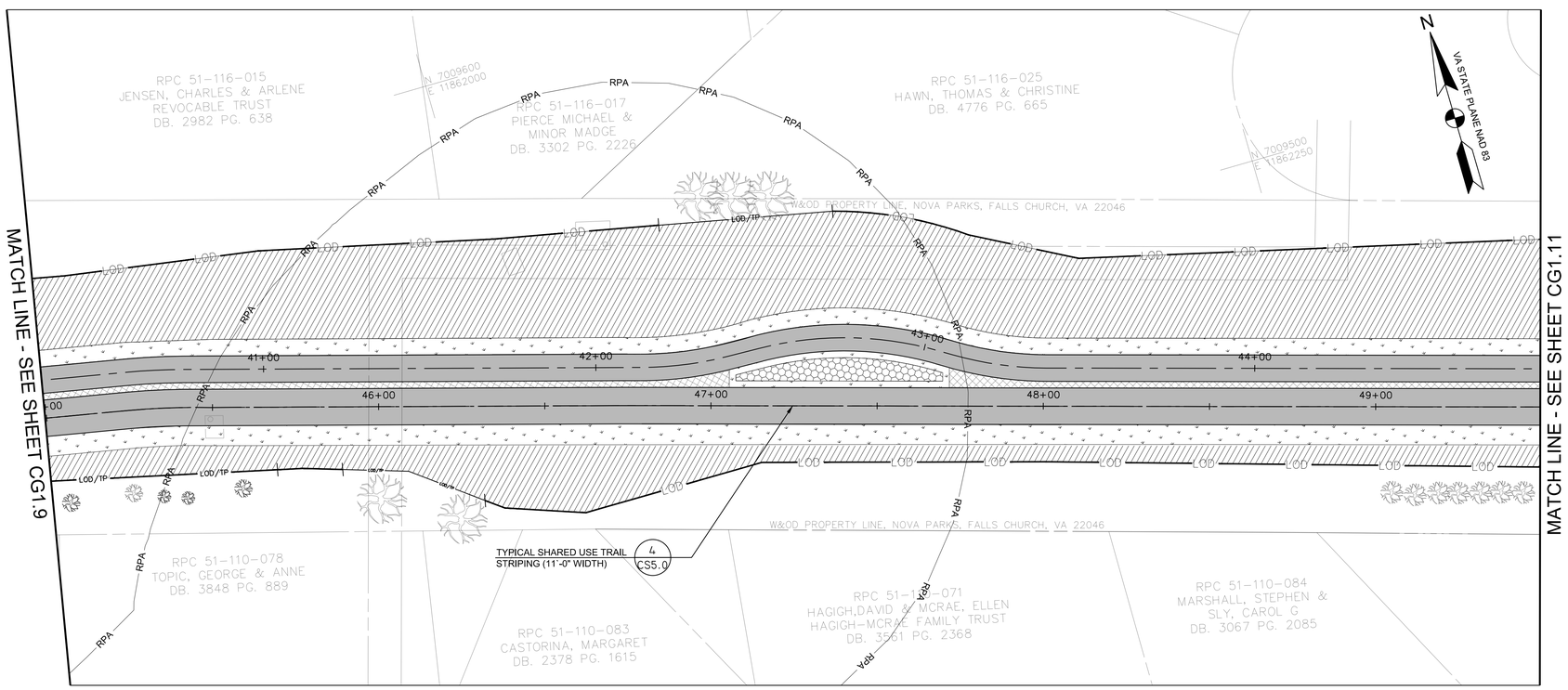
SHEET TITLE
GRADING -UTILITY PLAN & MATERIALS - LANDSCAPE PLAN

SHEET
CG1.9




GRADING & UTILITY PLAN
SCALE: 1"=20'




MATERIALS & LANDSCAPE PLAN
SCALE: 1"=20'

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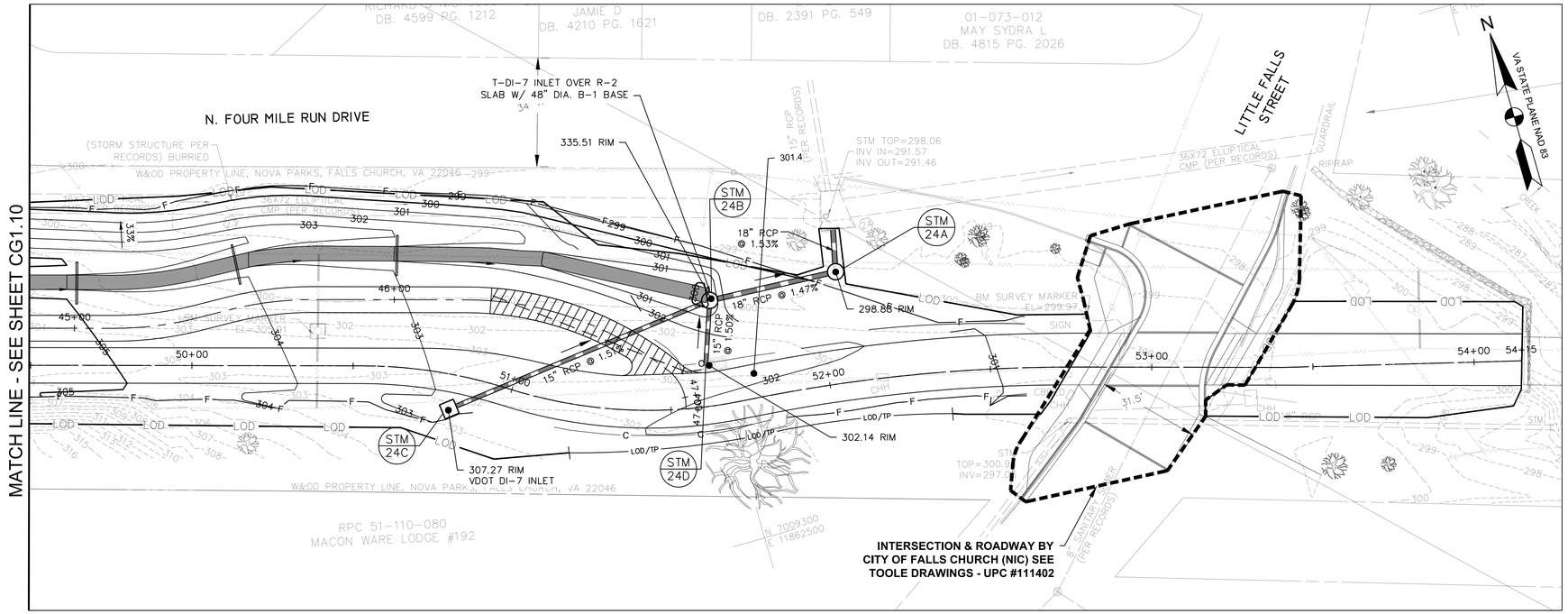
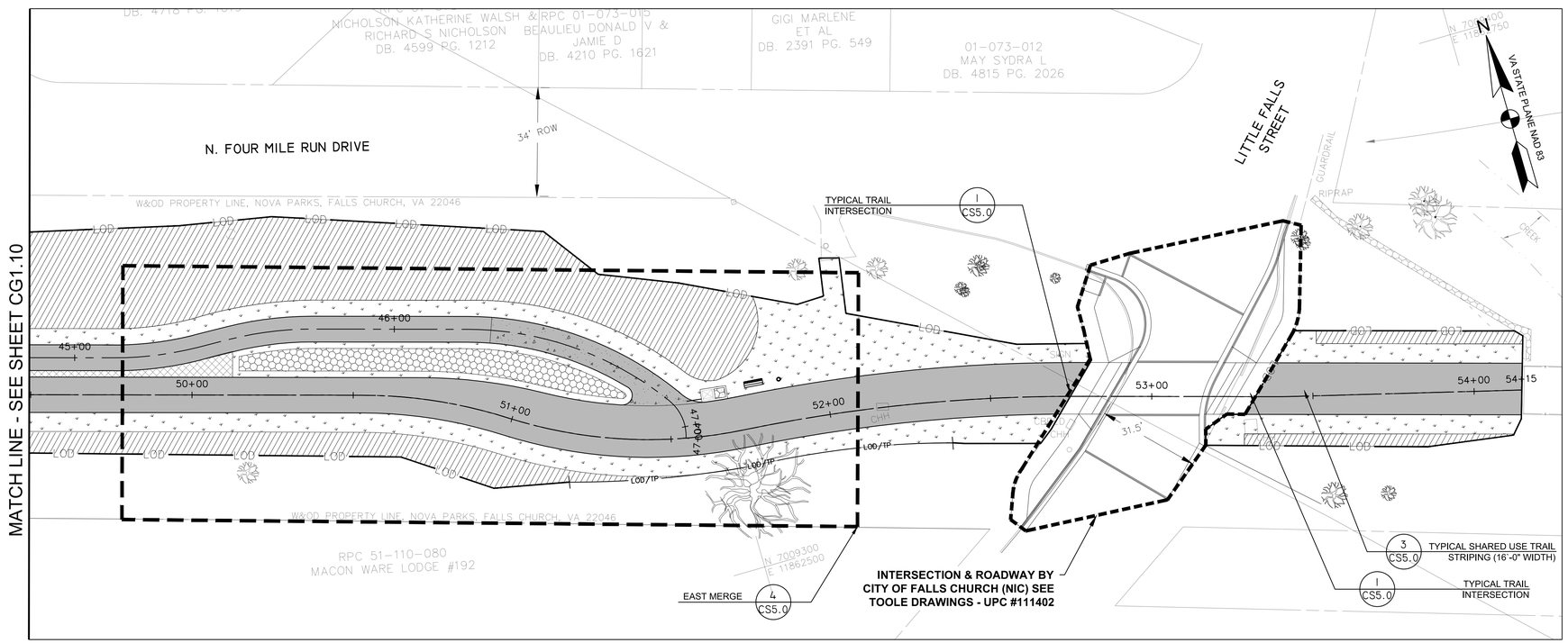
SHEET TITLE
GRADING - UTILITY PLAN & MATERIALS - LANDSCAPE PLAN

SHEET
CG1.10




GRADING & UTILITY PLAN
SCALE: 1"=20'




MATERIALS & LANDSCAPE PLAN
SCALE: 1"=20'

## LEGEND

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

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0 10' 20' 40'
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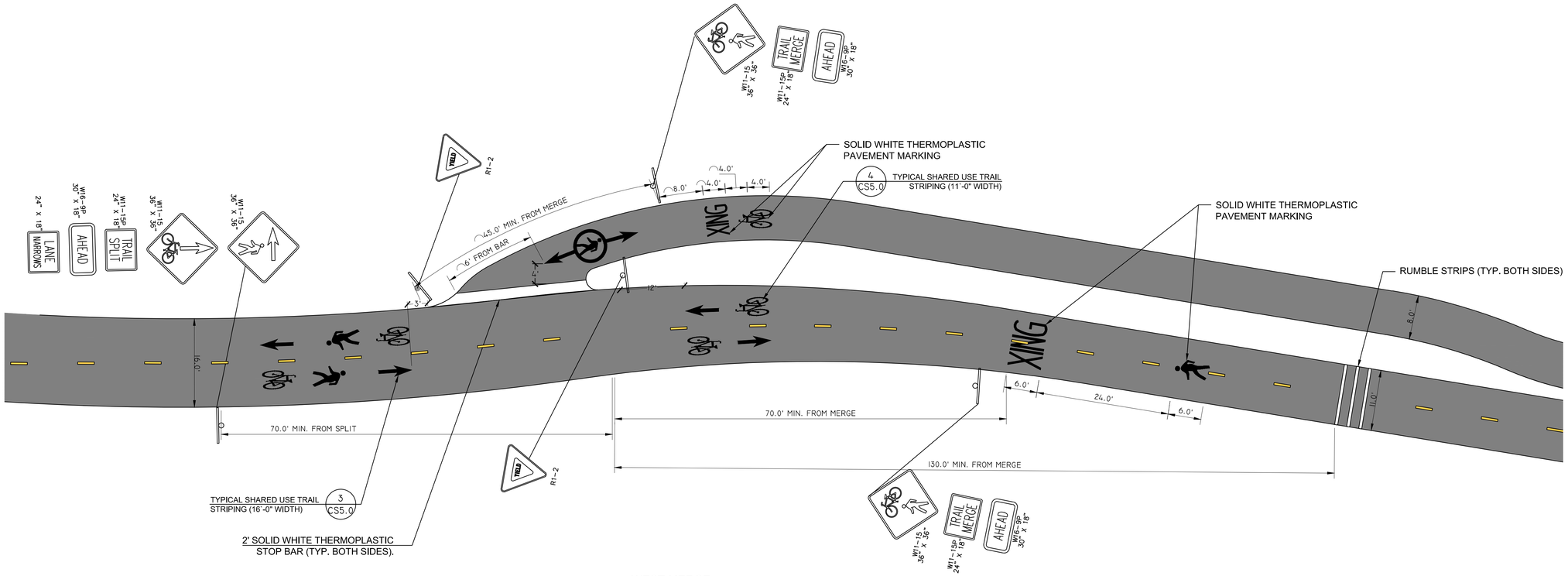
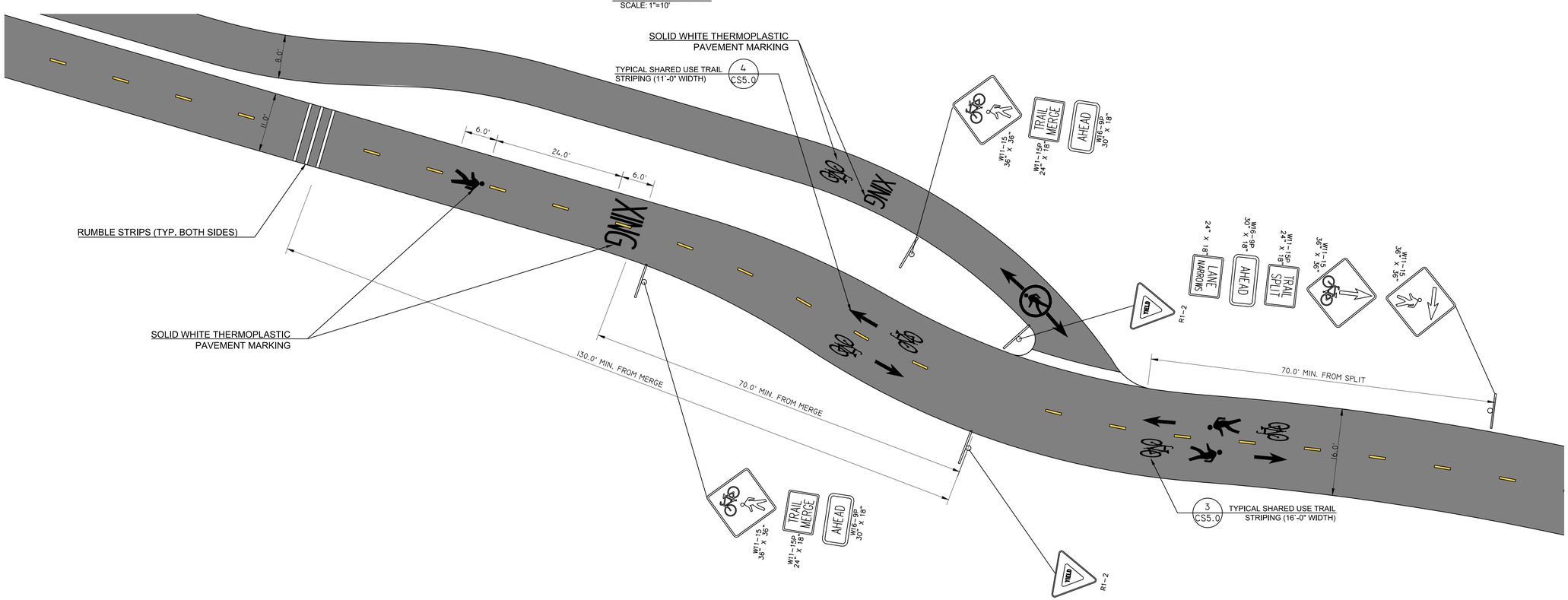
SHEET TITLE
GRADING - UTILITY PLAN & MATERIALS - LANDSCAPE PLAN

SHEET
CG1.11




WEST MERGE
SCALE: 1"=10'




EAST MERGE
SCALE: 1"=10'


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


COMMONWEALTH OF VIRGINIA
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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
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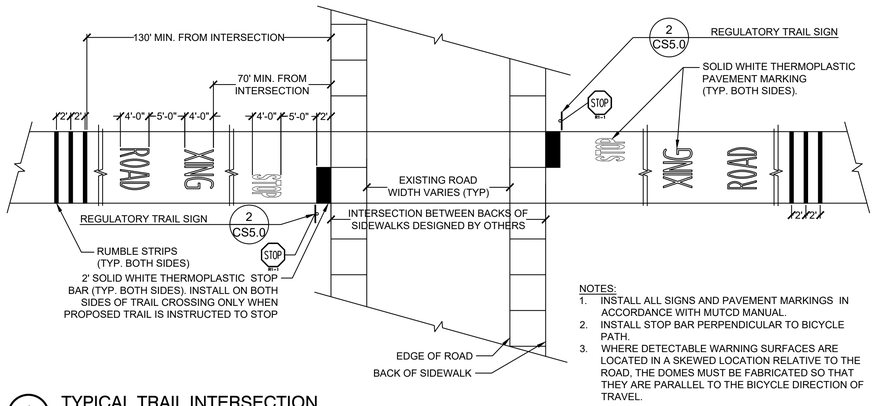
**90% DESIGN**

SHEET TITLE
ENLARGEMENT FOR EAST & WEST CONNECTION

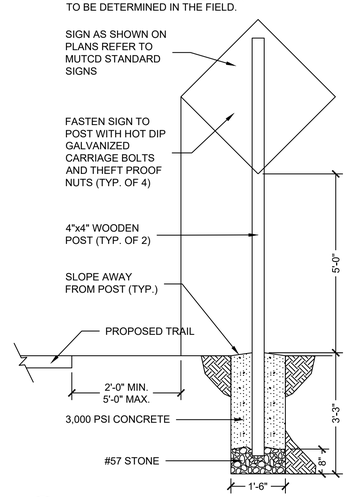
SHEET
CS4.0



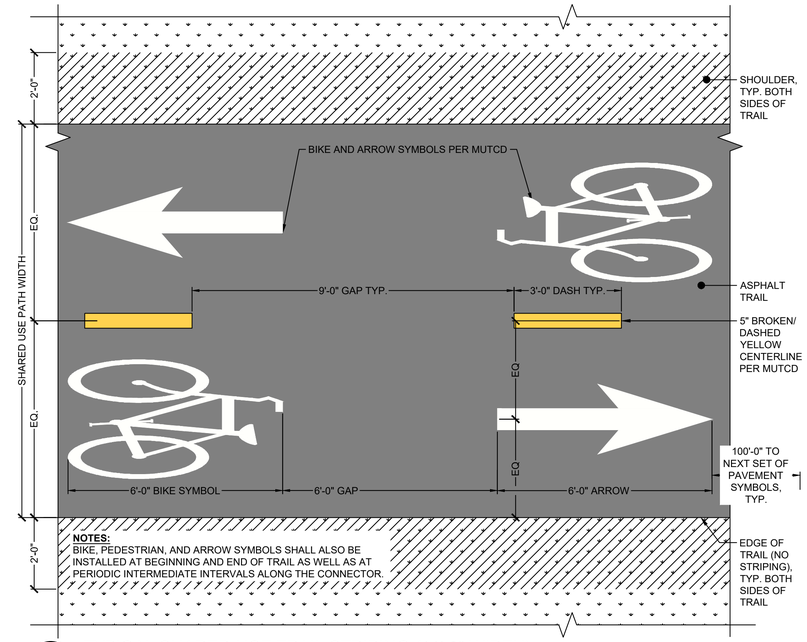

NOTES:
1. INSTALL ALL SIGNS AND PAVEMENT MARKINGS IN ACCORDANCE WITH MUTCD MANUAL.
2. INSTALL STOP BAR PERPENDICULAR TO BICYCLE PATH.
3. WHERE DETECTABLE WARNING SURFACES ARE LOCATED IN A SKEWED LOCATION RELATIVE TO THE ROAD, THE DOMES MUST BE FABRICATED SO THAT THEY ARE PARALLEL TO THE BICYCLE DIRECTION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

1 TYPICAL TRAIL INTERSECTION
1" = 10' 3402-31

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.

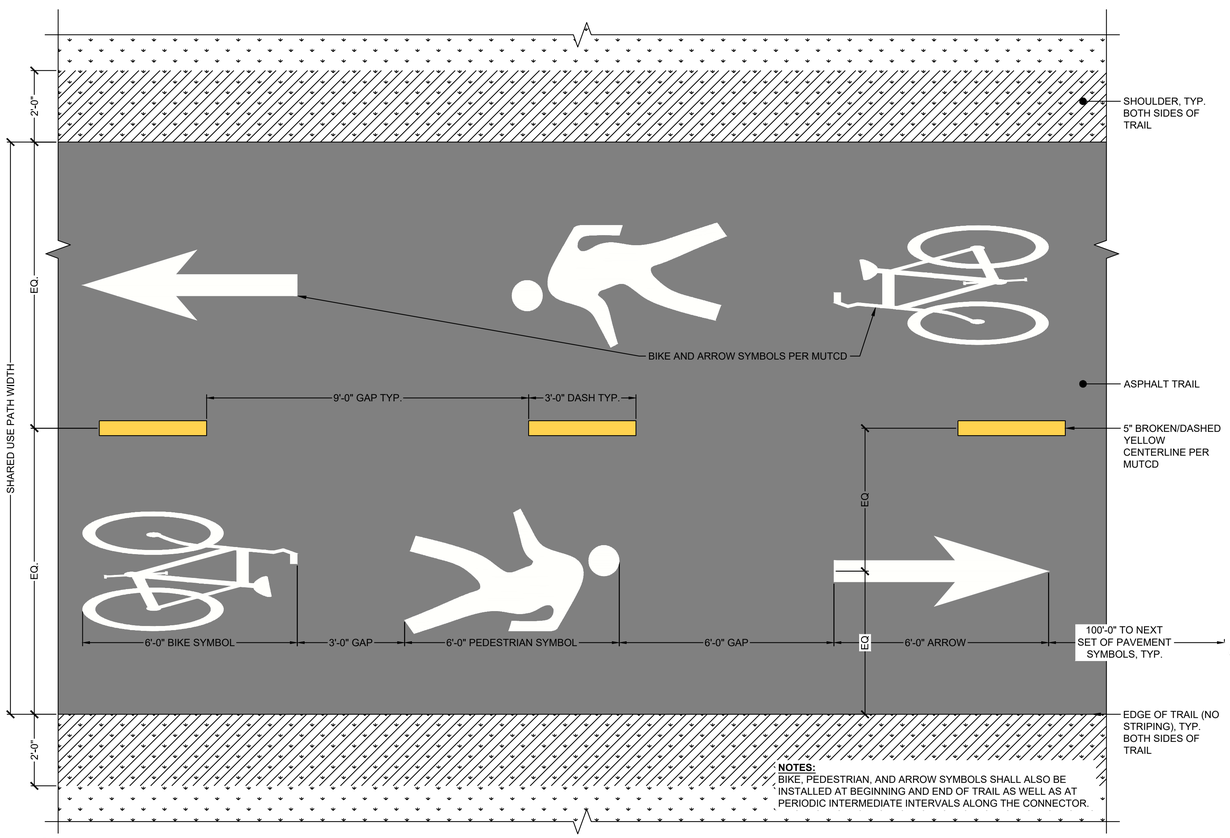



2 REGULATORY TRAIL SIGN
1/2" = 1'-0" 3402-36




NOTES:
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:
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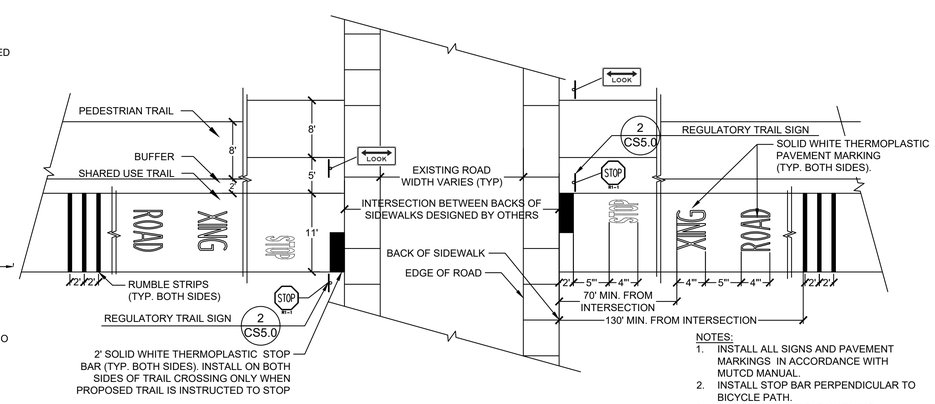
3 TYPICAL SHARED USE TRAIL STRIPING (16'-0" WIDTH)
1/2" = 1'-0" 34-09




NOTES:
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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


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STEVEN TORGERSON
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FALLS CHURCH, VA
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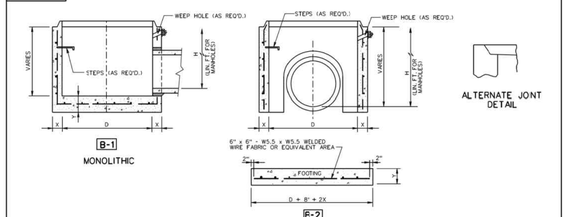
**90% DESIGN**

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.

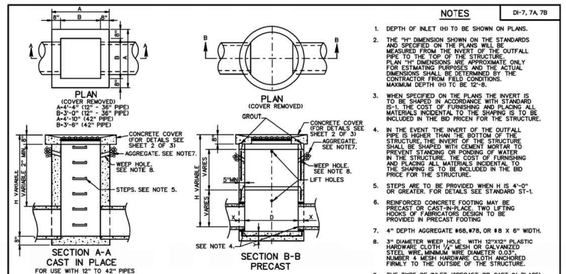
☆ ONE THROUGH PIPE ONLY. (ONE PIPE ENTERING AND ONE PIPE EXITING STRUCTURE)

| 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 / 103.11 | REVISION DATE 08/17 | 105 302 |

2016 ROAD & BRIDGE STANDARDS

2016 ROAD & BRIDGE STANDARDS

DI-7, 7A, 7B




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. THE "H" DIMENSION SHOWN ON PLANS 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 PRICEN 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 1/4" MESH OR GALVANIZED STEEL WIRE MINIMUM WIRE DIAMETER 0.047" (18 GAUGE) OR EQUIVALENT MATERIAL FASTENED 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.

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 (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 OF THE 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'-6¼" | 3'-1" | 3'-7½" | 4'-2" | 4'-8½" |
| CONCRETE CUBIC YARDS | .947 | 1.045 | 1.143 | 1.339 | 1.535 | 1.731 | 1927 |

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

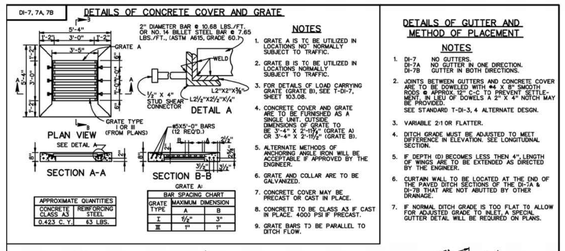
| SPECIFICATION REFERENCE | STANDARD MEDIAN DROP INLET 12" TO 42" PIPE VIRGINIA DEPARTMENT OF TRANSPORTATION | VDOT ROAD AND BRIDGE STANDARDS |
|---|---|---|
| 241 503 | | REVISION DATE / SHEET 1 OF 3 / 104.22 |

2016 ROAD & BRIDGE STANDARDS

2016 ROAD & BRIDGE STANDARDS

DI-7, 7A, 7B

DETAILS OF CONCRETE COVER AND GRATE



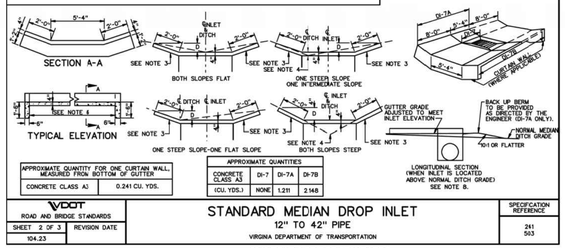

NOTES

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. FOR DETAILS OF 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'-10½" (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. (4000 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 RODS @ APPROX. 12" C-C TO PREVENT SETTLE. NO PROVISION OF 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

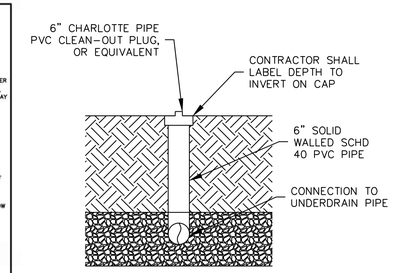
| CONCRETE CLASS A3 | 0.241 CU. YDS. |
|---|---|

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 / 104.23 | REVISION DATE | 241 503 |

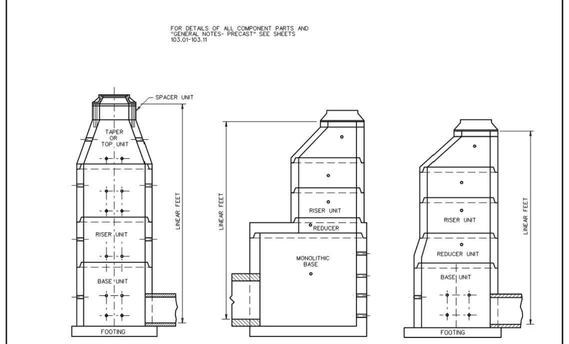
2016 ROAD & BRIDGE STANDARDS




1 CLEANOUT/OBSERVATION WELL DETAIL
SCALE:NTS

2016 ROAD & BRIDGE STANDARDS

MH-1

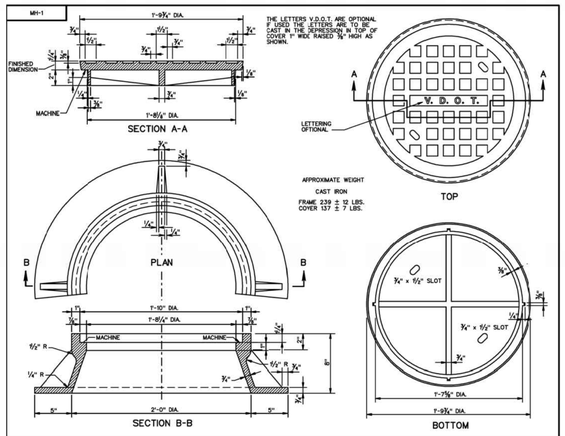



| SPECIFICATION REFERENCE | PRECAST MANHOLE VIRGINIA DEPARTMENT OF TRANSPORTATION | VDOT ROAD AND BRIDGE STANDARDS |
|---|---|---|
| 105 302 | | REVISION DATE / SHEET 1 OF 1 / 106.07 |

2016 ROAD & BRIDGE STANDARDS

2016 ROAD & BRIDGE STANDARDS

MH-1

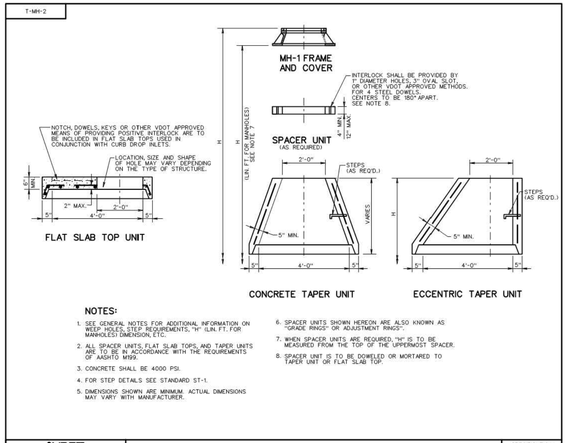



| VDOT ROAD AND BRIDGE STANDARDS | STANDARD MANHOLE FRAME AND COVER VIRGINIA DEPARTMENT OF TRANSPORTATION | SPECIFICATION REFERENCE |
|---|---|---|
| SHEET 2 OF 5 / 106.02 | REVISION DATE | 224 302 |

2016 ROAD & BRIDGE STANDARDS

2016 ROAD & BRIDGE STANDARDS

T-MH-2




NOTES:

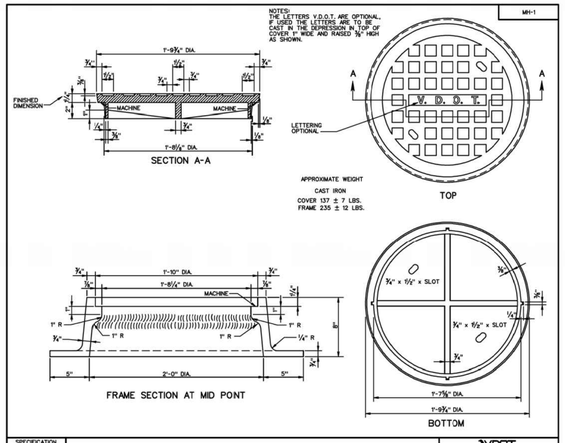
1. SEE GENERAL NOTES FOR ADDITIONAL INFORMATION ON WEEP HOLES, STEP REQUIREMENTS, "H" (LIN. FT. FOR MANHOLES) DIMENSION, ETC.
2. ALL SPACER UNITS, FLAT SLAB TOPS, AND TAPER UNITS TO BE IN ACCORDANCE WITH THE REQUIREMENTS OF AASHTO M199.
3. CONCRETE SHALL BE 4000 PSI.
4. FOR STEP DETAILS SEE STANDARD 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 / 103.09 | REVISION DATE | 105 302 |

2016 ROAD & BRIDGE STANDARDS

2016 ROAD & BRIDGE STANDARDS

MH-1

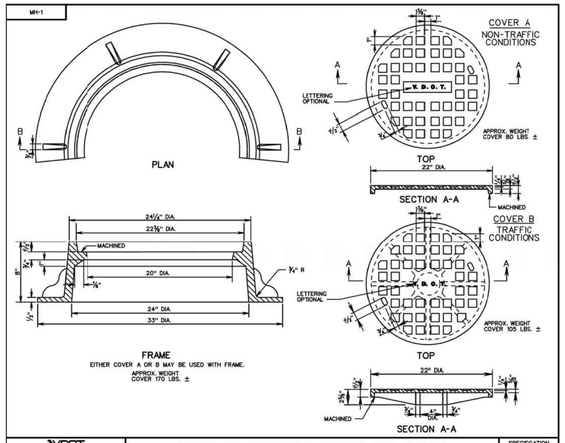



| SPECIFICATION REFERENCE | STANDARD MANHOLE FRAME AND COVER VIRGINIA DEPARTMENT OF TRANSPORTATION | VDOT ROAD AND BRIDGE STANDARDS |
|---|---|---|
| 224 302 | | REVISION DATE / SHEET 3 OF 5 / 106.03 |

2016 ROAD & BRIDGE STANDARDS

2016 ROAD & BRIDGE STANDARDS

MH-1

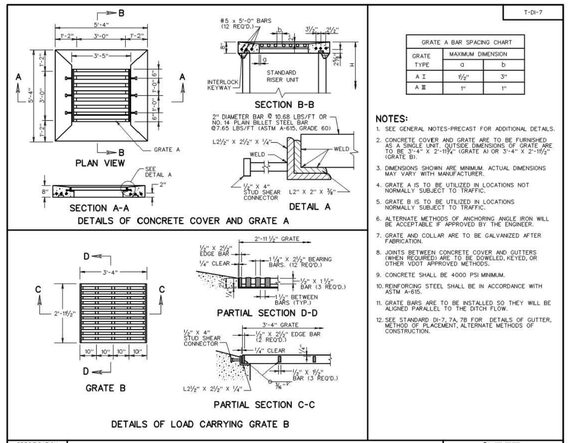



| VDOT ROAD AND BRIDGE STANDARDS | STANDARD MANHOLE FRAME AND COVER VIRGINIA DEPARTMENT OF TRANSPORTATION | SPECIFICATION REFERENCE |
|---|---|---|
| SHEET 4 OF 5 / 106.04 | REVISION DATE | 224 302 |

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 | 9½" | 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'-10½" (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.

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

2016 ROAD & BRIDGE STANDARDS


AMT
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COMMONWEALTH OF VIRGINIA
J. KEITH SINCLAIR, JR.
Lic. No. 11195
01/08/20
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. 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: | 01/08/2020 |
| SCALE: | N/A |
| DESIGNED BY: | AMT |
| DRAWN BY: | AMT |
| CHECKED BY: | AMT |

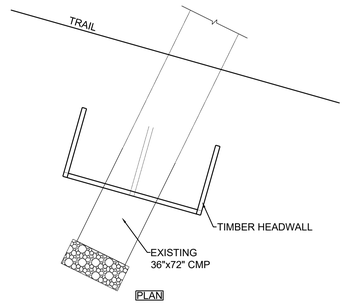
**90% DESIGN**

SHEET TITLE

UTILITY DETAILS

SHEET

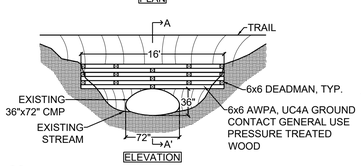
CS5.2



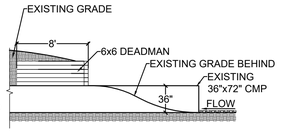

PLAN

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. Member joints shall be staggered a minimum of 3'-6" from joints of the course above and below.
4. 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

1/8" = 1'-0"

06 30-05

# 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

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PROJECT TITLE

**EXPANSION OF THE W&OD TRAIL**

FALLS CHURCH, VA
UPC 113612

REVISIONS

| MARK | DATE | DESCRIPTION |
|---|---|---|
| | | |
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|---|---|
| AMT FILE NO. | 18-0367 |
| DATE: | 01/08/2020 |
| SCALE: | N/A |
| DESIGNED BY: | AMT |
| DRAWN BY: | AMT |
| CHECKED BY: | AMT |

**90% 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 |

## PERENNIAL PLANTING

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

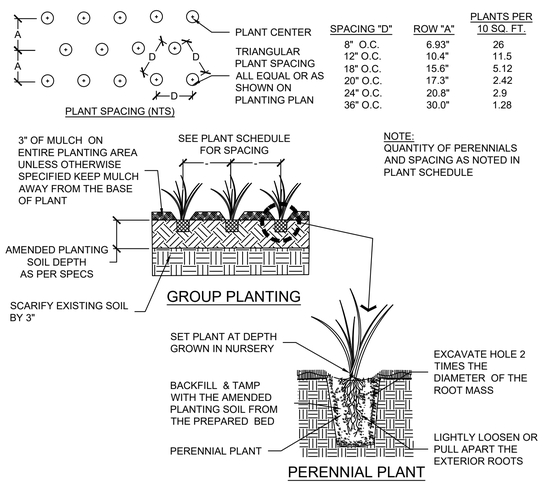
100% TOTAL
* 1 GALLON CONTAINERS PLANTED AT 18" ON CENTER.
* PLANT EACH SPECIES IN DRIFTS OF 11 TO 23 PLANTS.

1,000 Camassia scilloides / Blue Wild Hyacinth
* UNDERPLANTED

## 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 |

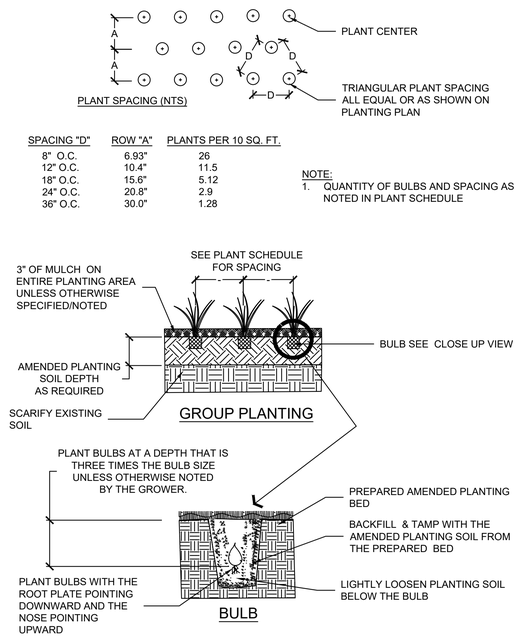
*SEEDING RATE: 20LB PER ACRE




| 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

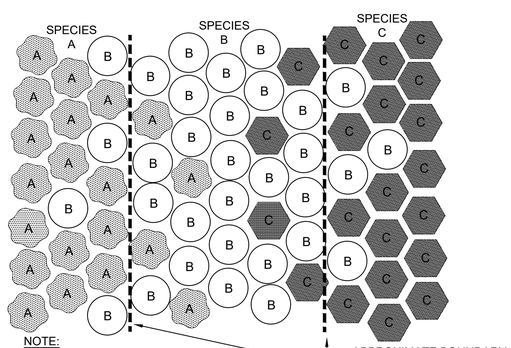
1 HERBACEOUS & GRASS PLANTING DETAIL
NOT TO SCALE
DETAIL-FILE




| SPACING "D" | ROW "A" | PLANTS PER 10 SQ. FT. |
|---|---|---|
| 8" O.C. | 6.93" | 26 |
| 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

## 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.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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."

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

REVISIONS

| MARK | DATE | DESCRIPTION |
|---|---|---|
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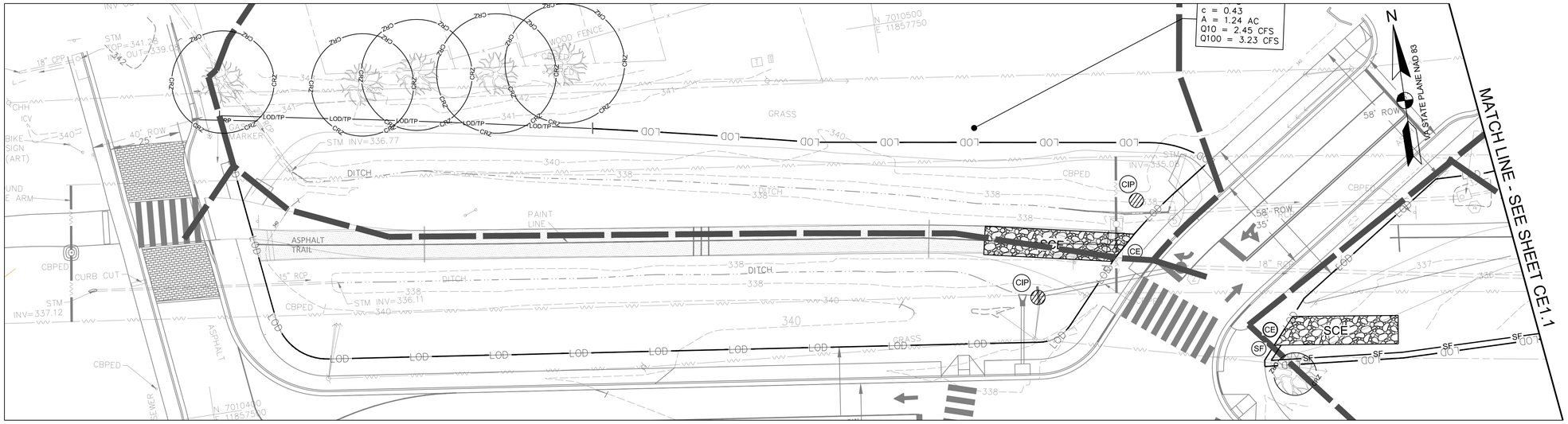
|---|---|
| AMT FILE NO. | 18-0367 |
| DATE: | 01/08/2020 |
| SCALE: | 1"=20' |
| DESIGNED BY: | AMT |
| DRAWN BY: | AMT |
| CHECKED BY: | AMT |

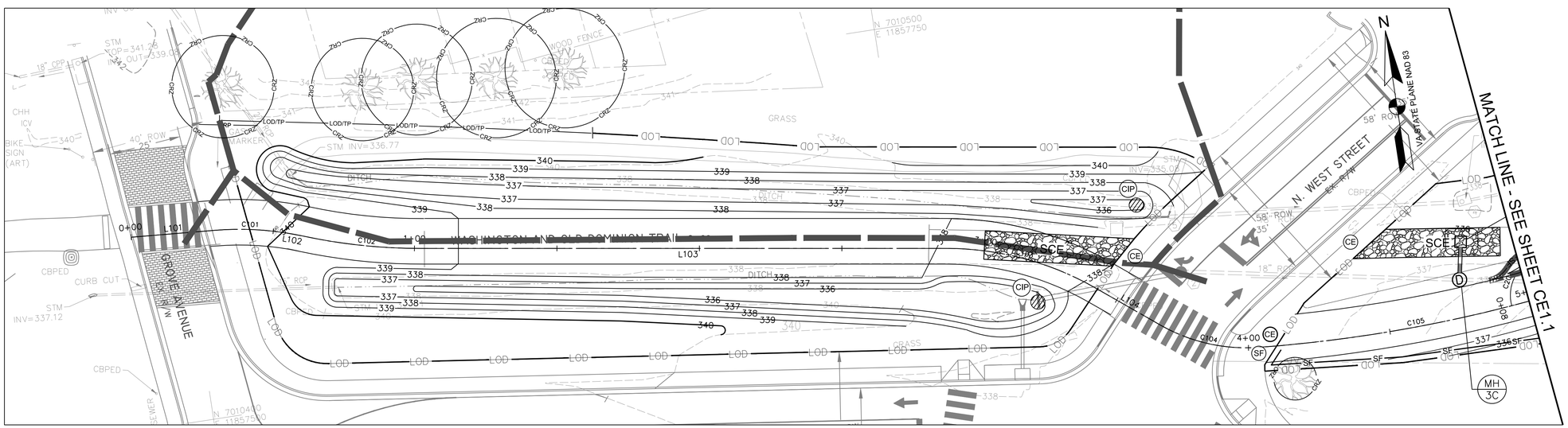
**90% DESIGN**

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'

## NOTES

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## 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 |

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


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COMMONWEALTH OF VIRGINIA
J. KEITH SINCLAIR, JR.
Lic. No. 11195
01/08/20
PROFESSIONAL ENGINEER

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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 |
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| AMT FILE NO. | 18-0367 |
| DATE: | 01/08/2020 |
| SCALE: | 1"=20' |
| DESIGNED BY: | AMT |
| DRAWN BY: | AMT |
| CHECKED BY: | AMT |

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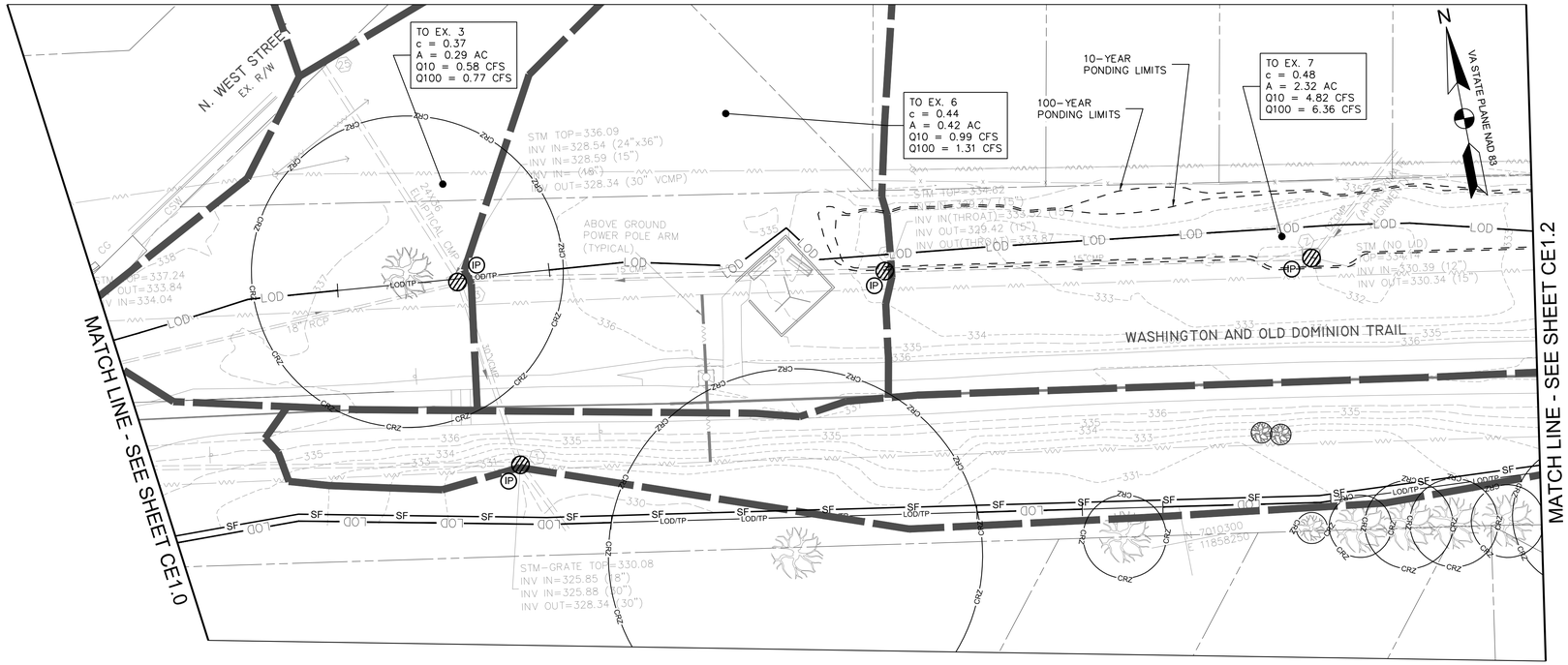
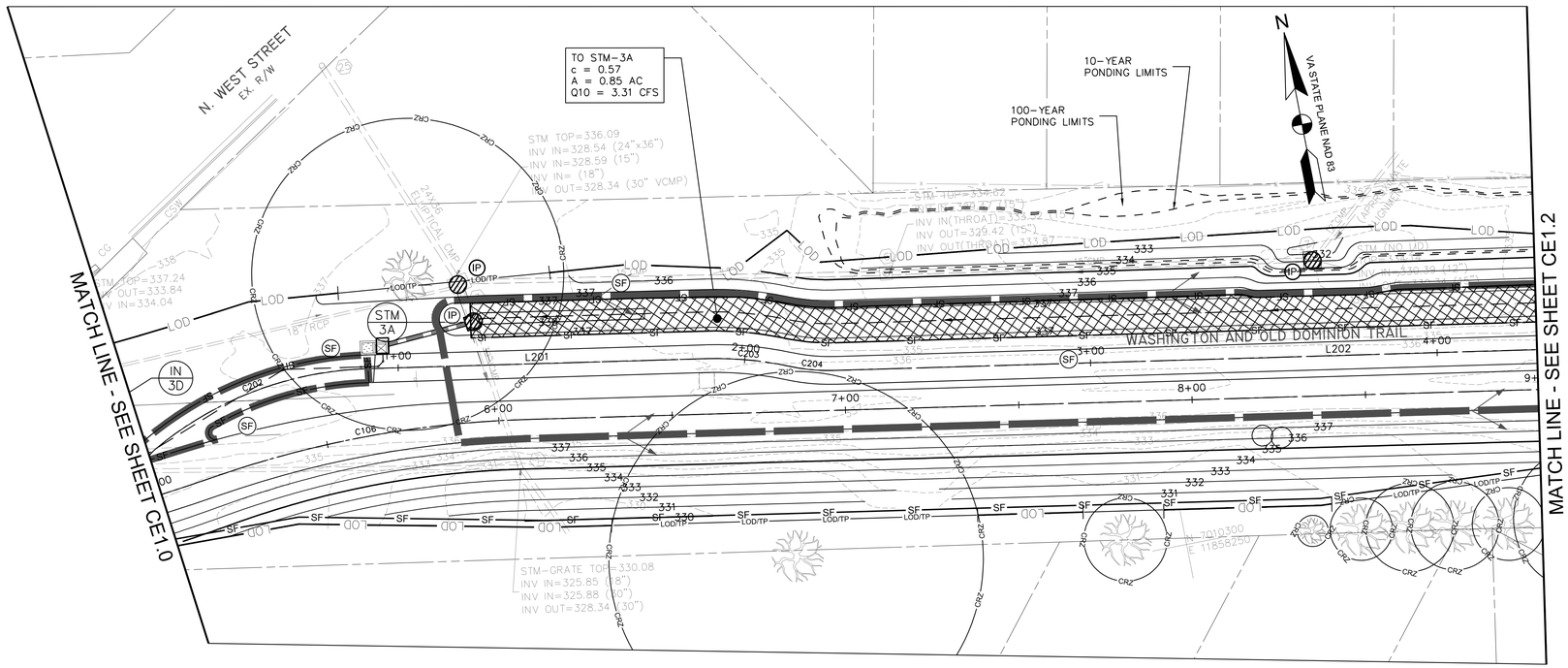
SHEET TITLE
EROSION AND SEDIMENT CONTROL- PHASE I AND PHASE II

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

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

REVISIONS

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| CHECKED BY: | AMT |

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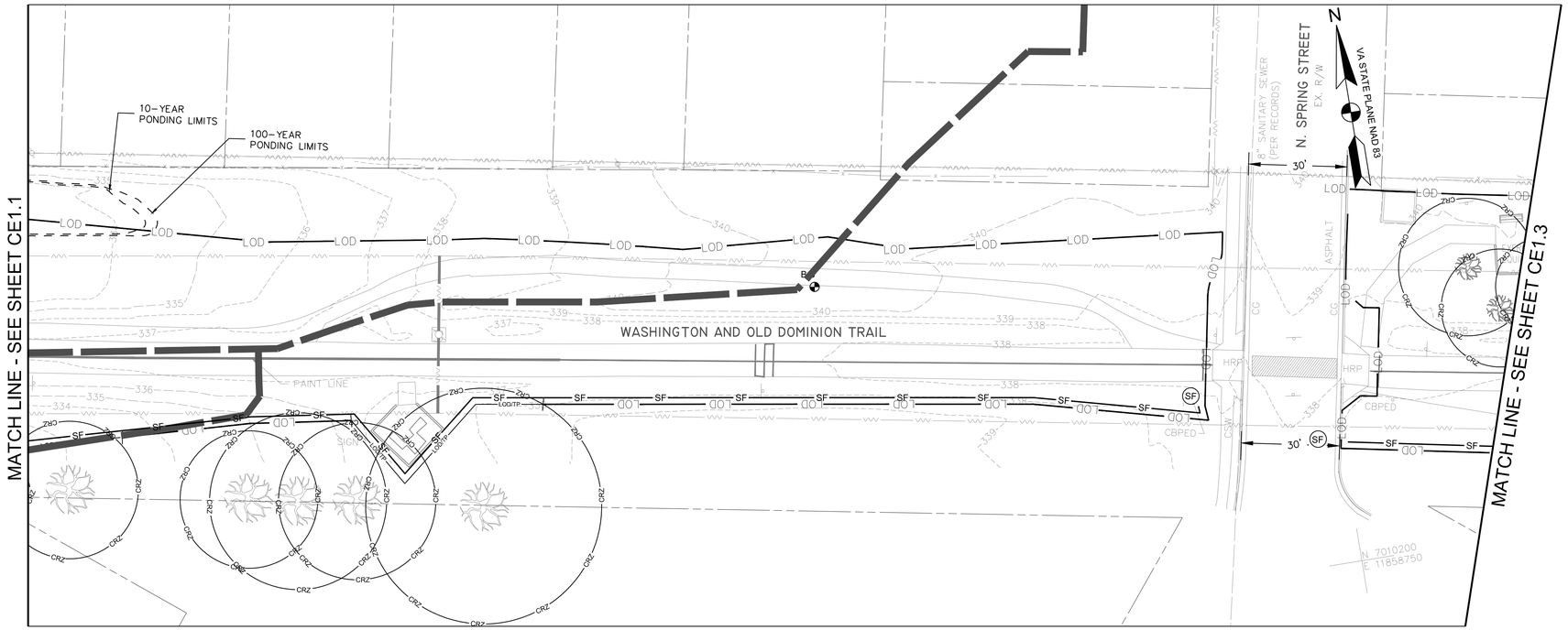
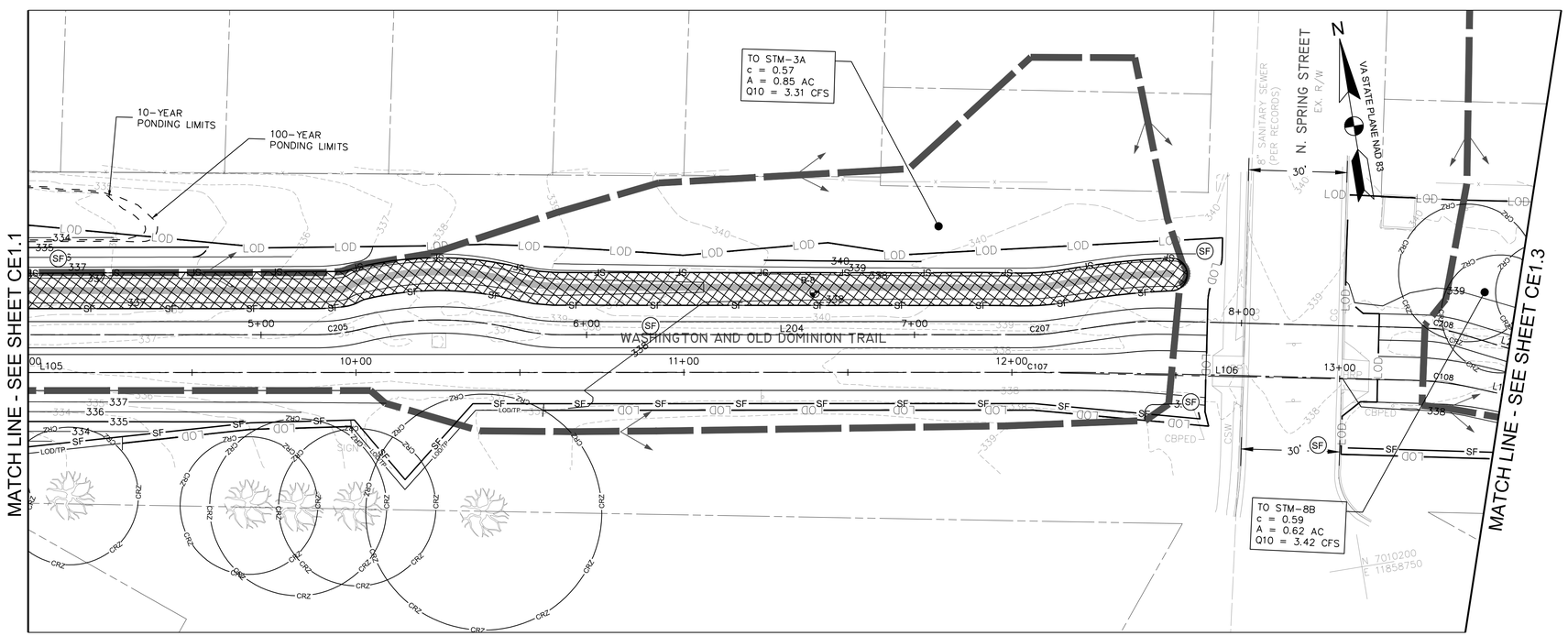
SHEET TITLE
EROSION AND SEDIMENT CONTROL- PHASE I AND PHASE II

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 |
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PROJECT TITLE

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

REVISIONS

| MARK | DATE | DESCRIPTION |
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| AMT FILE NO. | 18-0367 |
| DATE: | 01/08/2020 |
| SCALE: | 1"=20' |
| DESIGNED BY: | AMT |
| DRAWN BY: | AMT |
| CHECKED BY: | AMT |

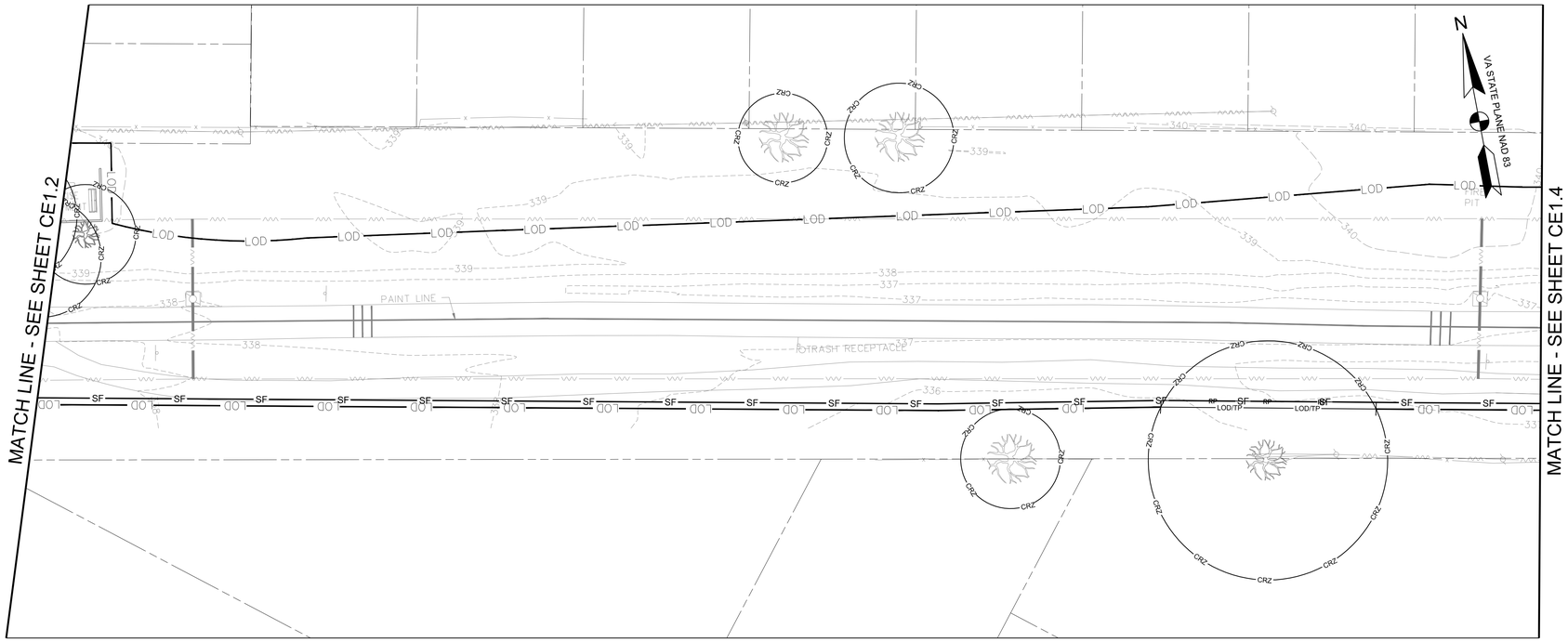
**90% DESIGN**

SHEET TITLE

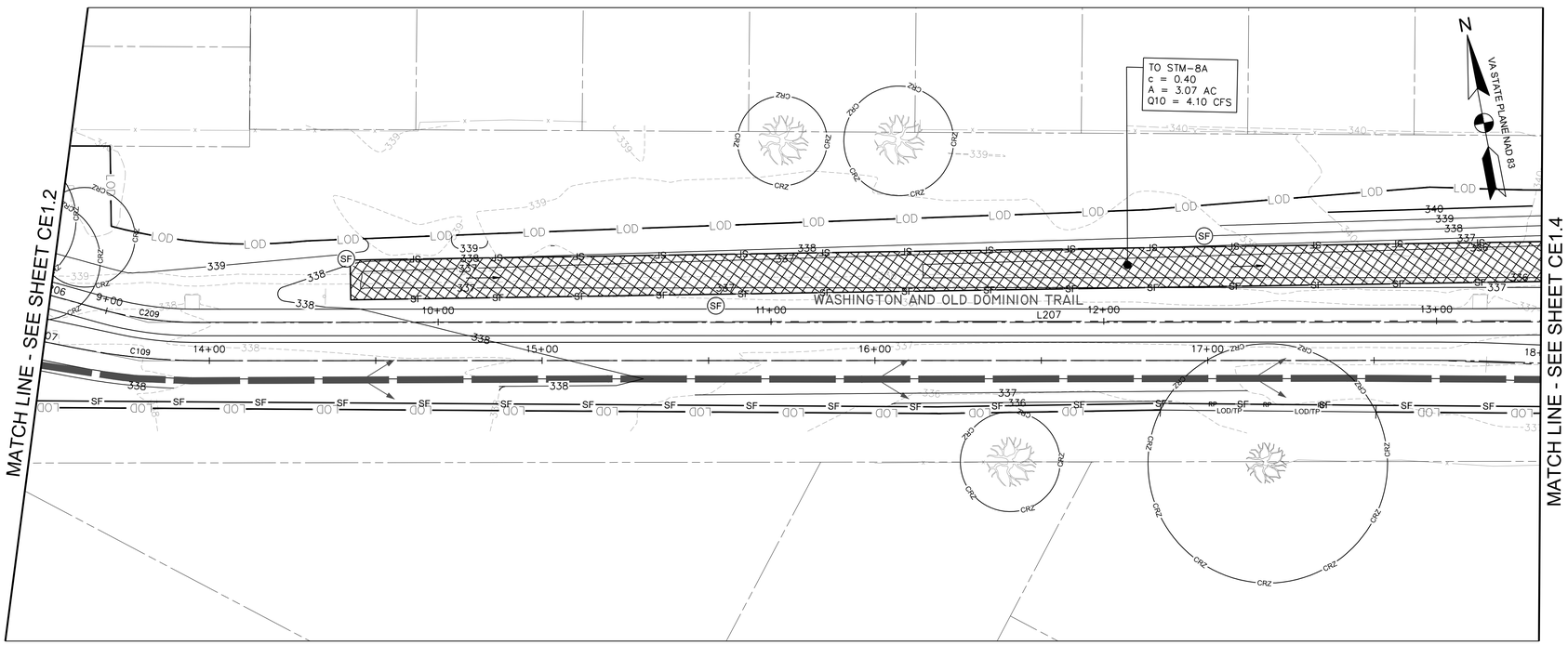
EROSION AND SEDIMENT CONTROL- PHASE I AND PHASE II

SHEET

CE1.2




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




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

## EROSION AND SEDIMENT CONTROL LEGEND

| NO. | KEY | LINETYPE | DESCRPITION |
|---|---|---|---|
| | | | PROPERTY LINE |
| | | LOD | LIMIT OF DISTURBANCE |
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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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| DESIGNED BY: | AMT |
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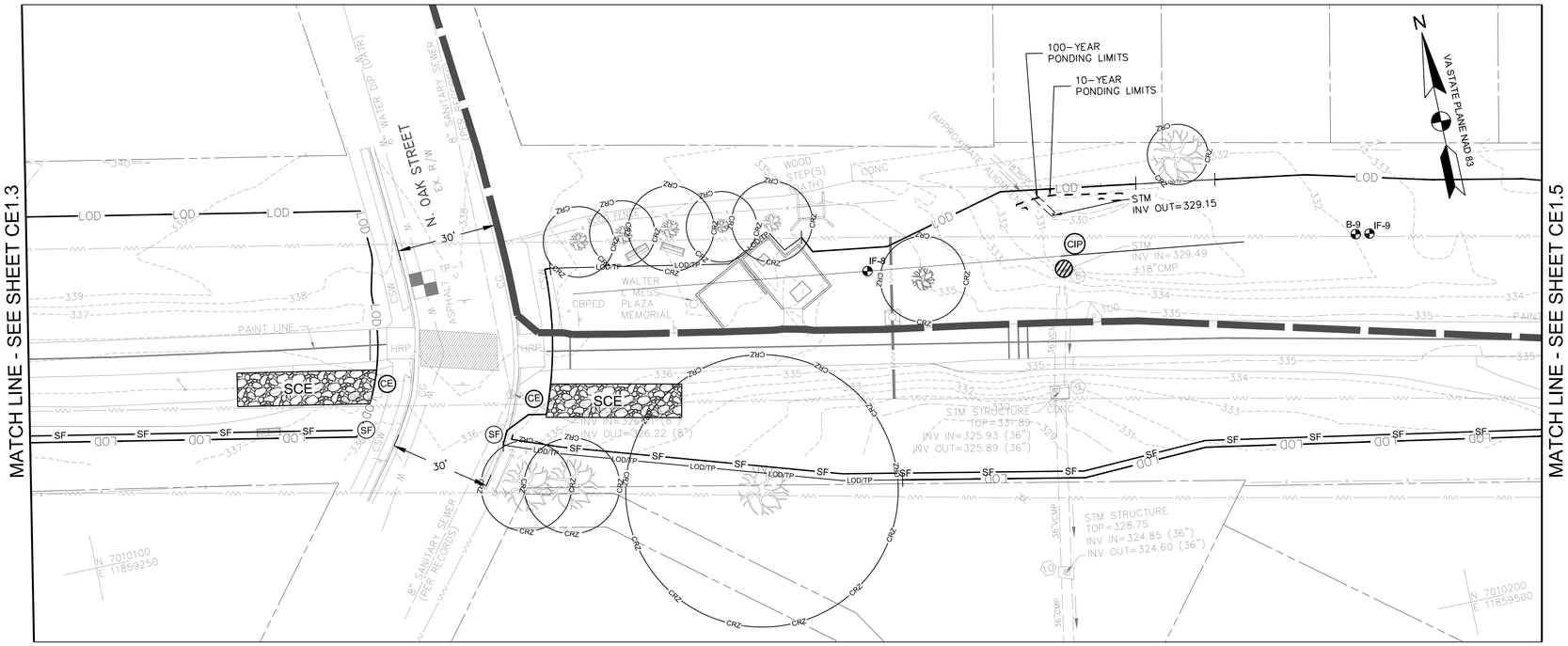
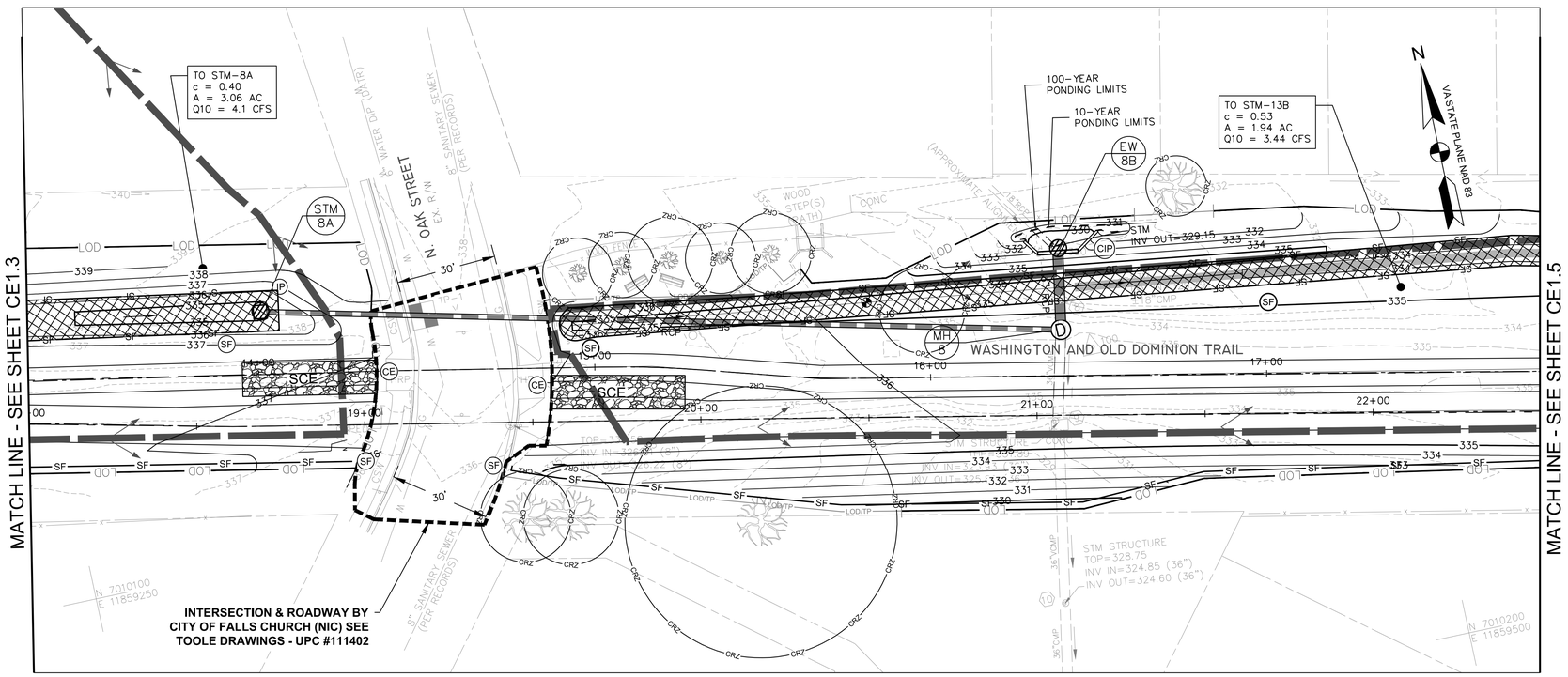
SHEET TITLE
EROSION AND SEDIMENT CONTROL- PHASE I AND PHASE II

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

REVISIONS

| MARK | DATE | DESCRIPTION |
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| AMT FILE NO. | 18-0367 |
| DATE: | 01/08/2020 |
| SCALE: | 1"=20' |
| DESIGNED BY: | AMT |
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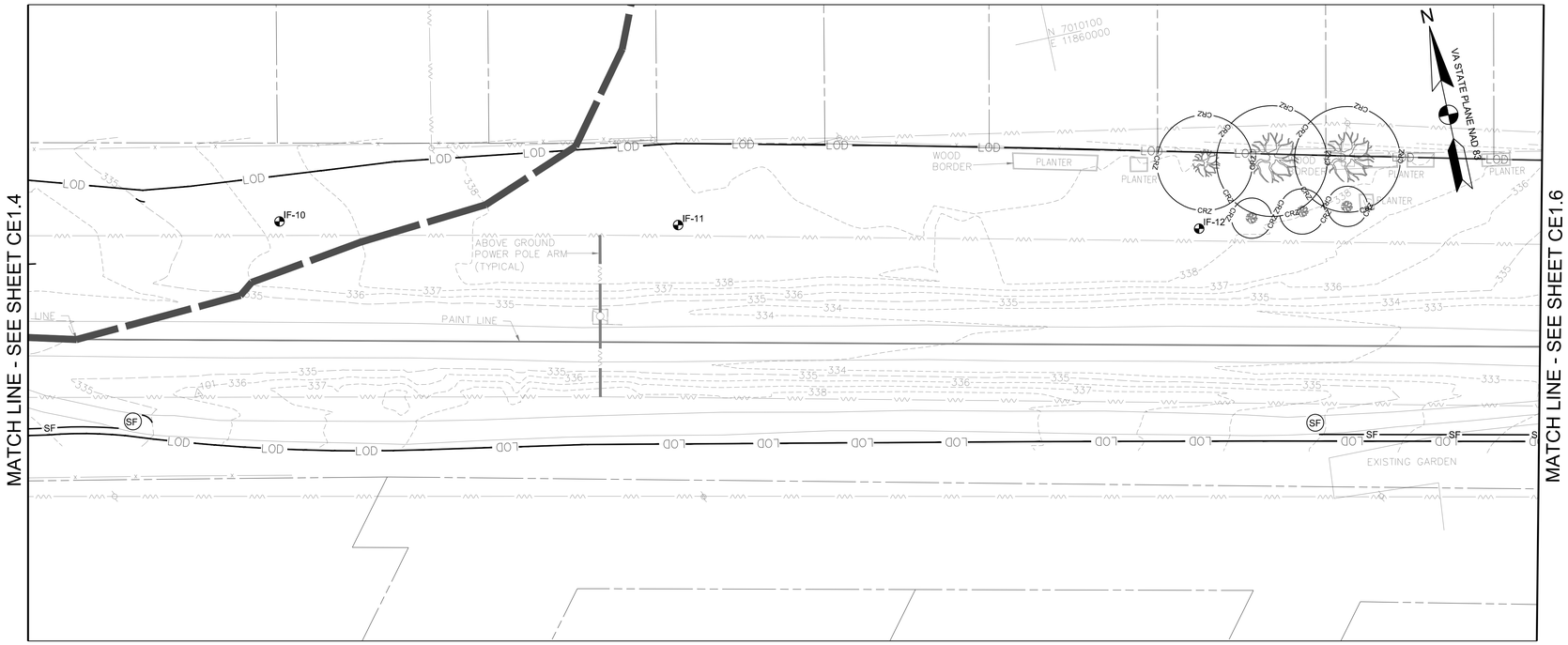
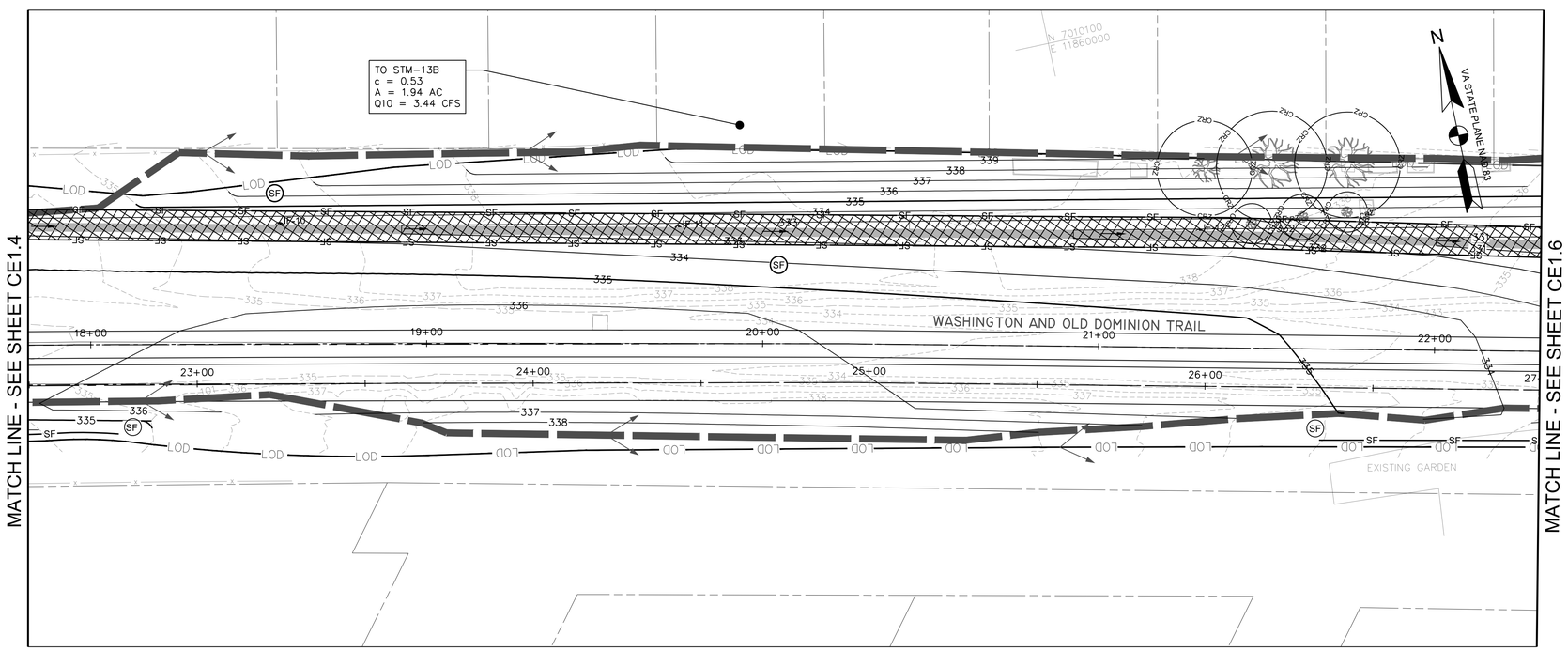
SHEET TITLE
EROSION AND SEDIMENT CONTROL- PHASE I AND PHASE II

SHEET
CE1.4




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

REVISIONS

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

SHEET
CE1.5

## EROSION AND SEDIMENT CONTROL LEGEND

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|---|---|---|---|
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| 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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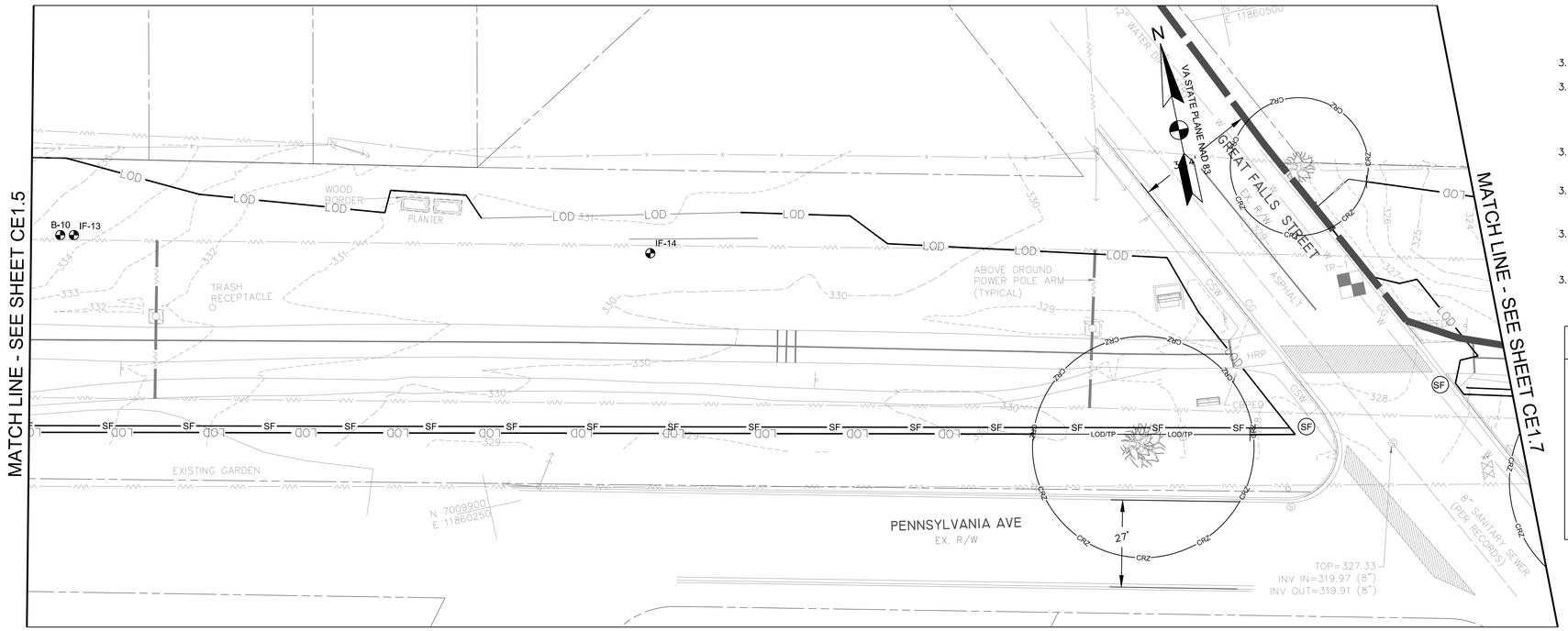
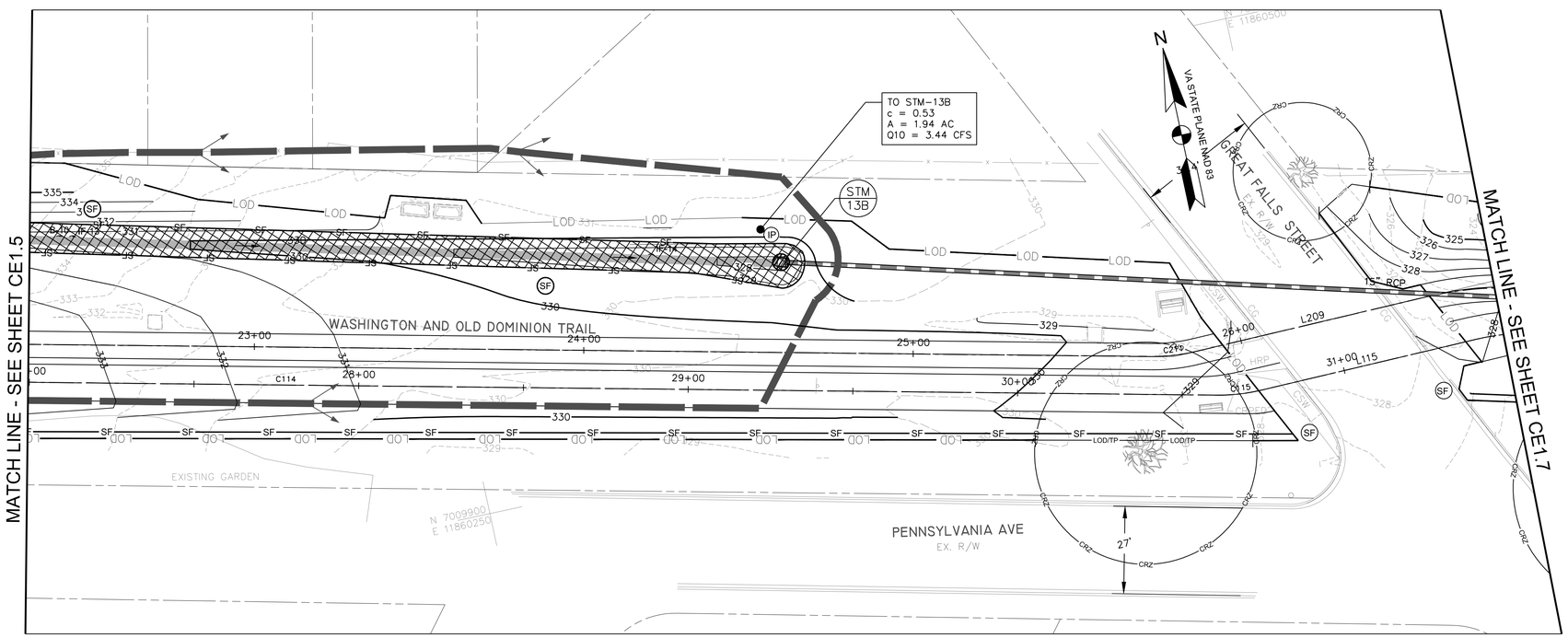



EROSION AND SEDIMENT CONTROL PLAN- PHASE I
SCALE: 1"=20'




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

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


AMT
A. MORTON THOMAS AND ASSOCIATES, INC.
CONSULTING ENGINEERS
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EMAIL: AMT1@AMTENGINEERING.COM


COMMONWEALTH OF VIRGINIA
J. KEITH SINCLAIR, JR.
Lic. No. 11195
01/08/20
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: | 01/08/2020 |
| SCALE: | 1"=20' |
| DESIGNED BY: | AMT |
| DRAWN BY: | AMT |
| CHECKED BY: | AMT |

**90% 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 |
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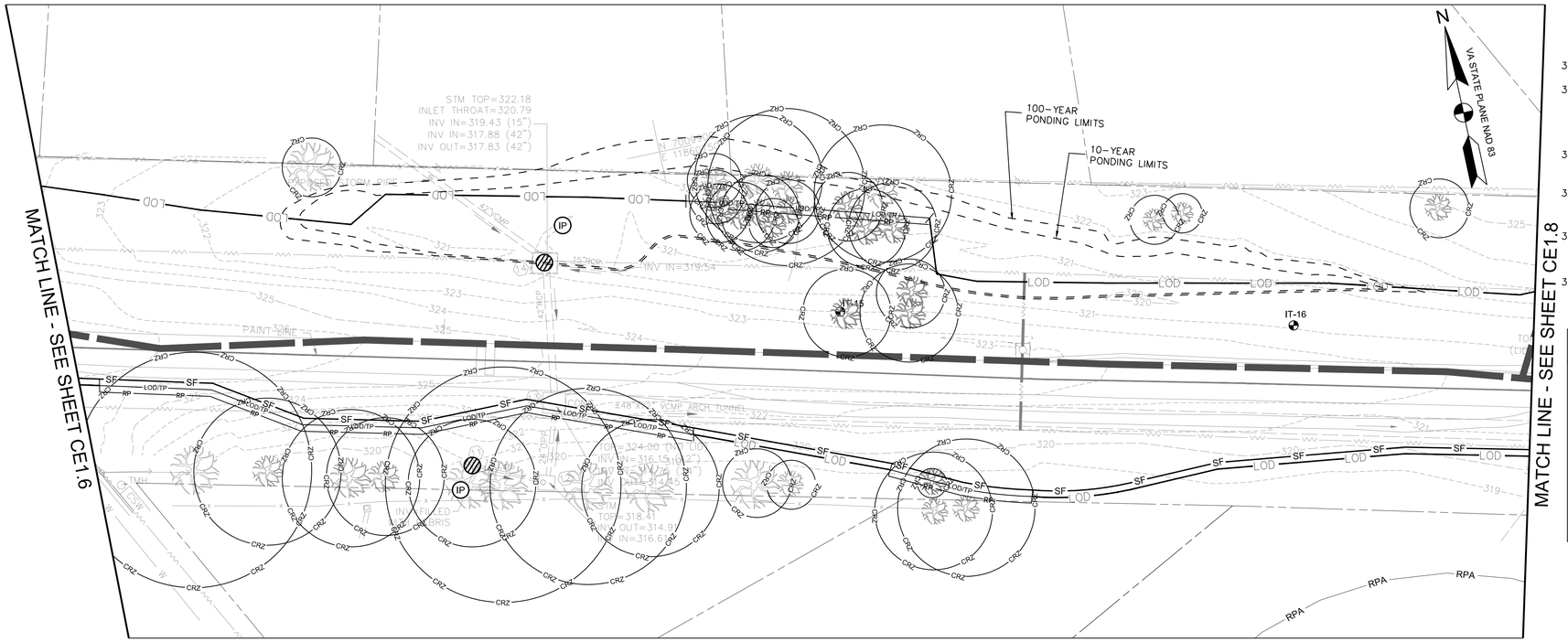


EROSION AND SEDIMENT CONTROL PLAN- PHASE I
SCALE: 1"=20'

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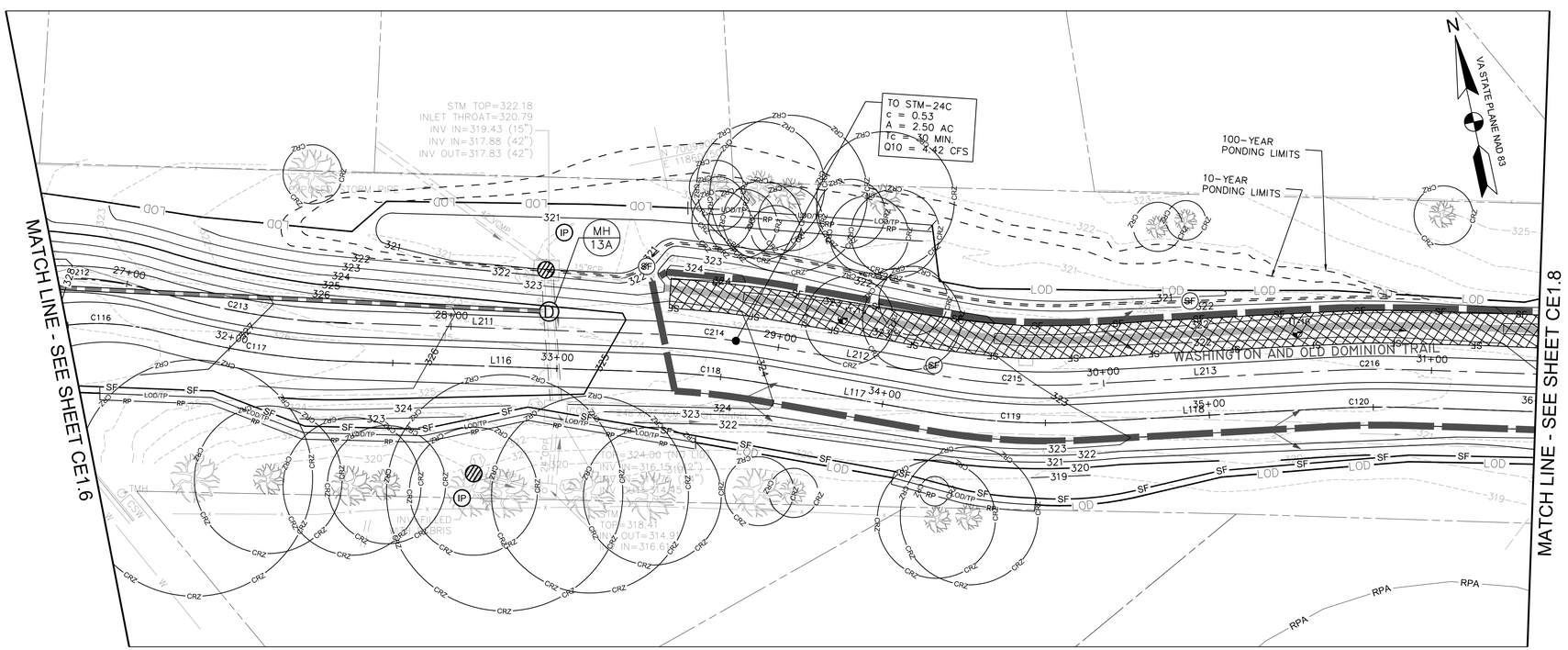


EROSION AND SEDIMENT CONTROL PLAN- PHASE II
SCALE: 1"=20'

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 |
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| | | |

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|---|---|
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| DATE: | 01/08/2020 |
| SCALE: | 1"=20' |
| DESIGNED BY: | AMT |
| DRAWN BY: | AMT |
| CHECKED BY: | AMT |

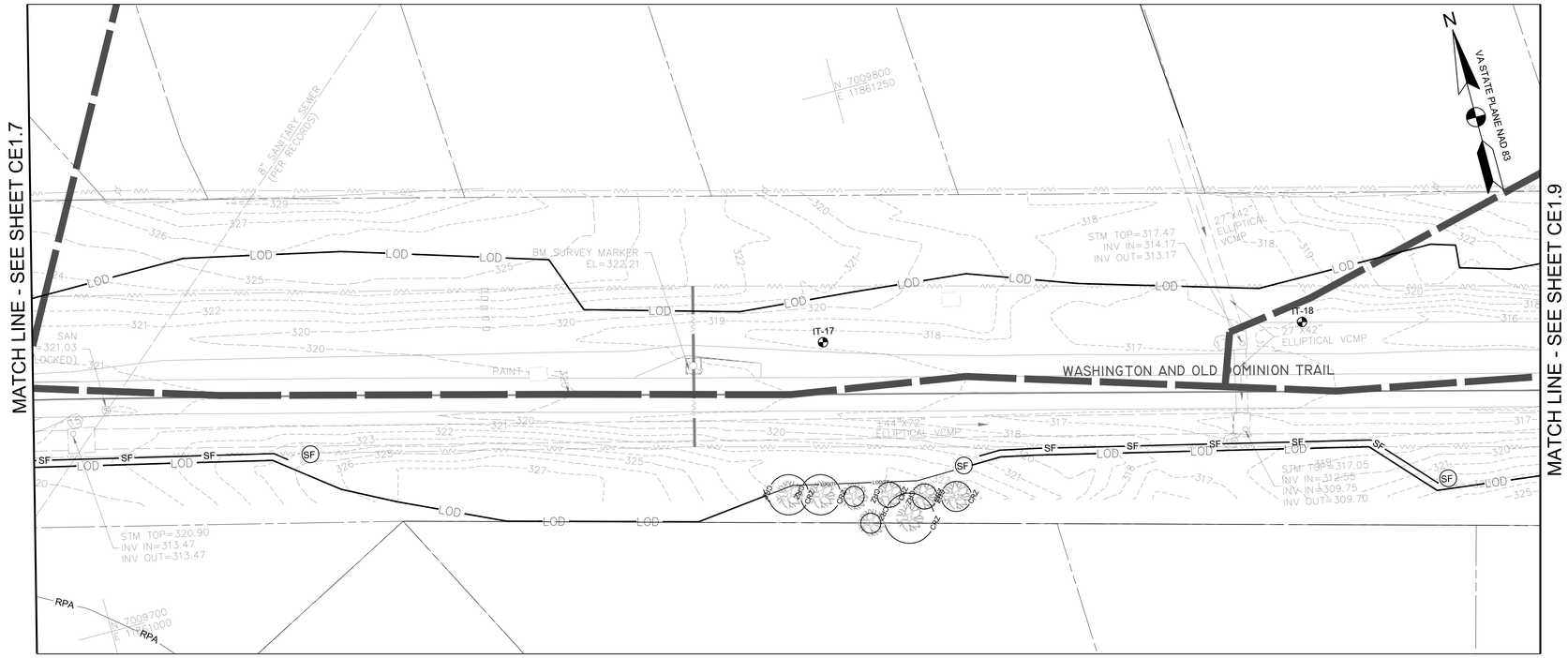
**90% DESIGN**

SHEET TITLE

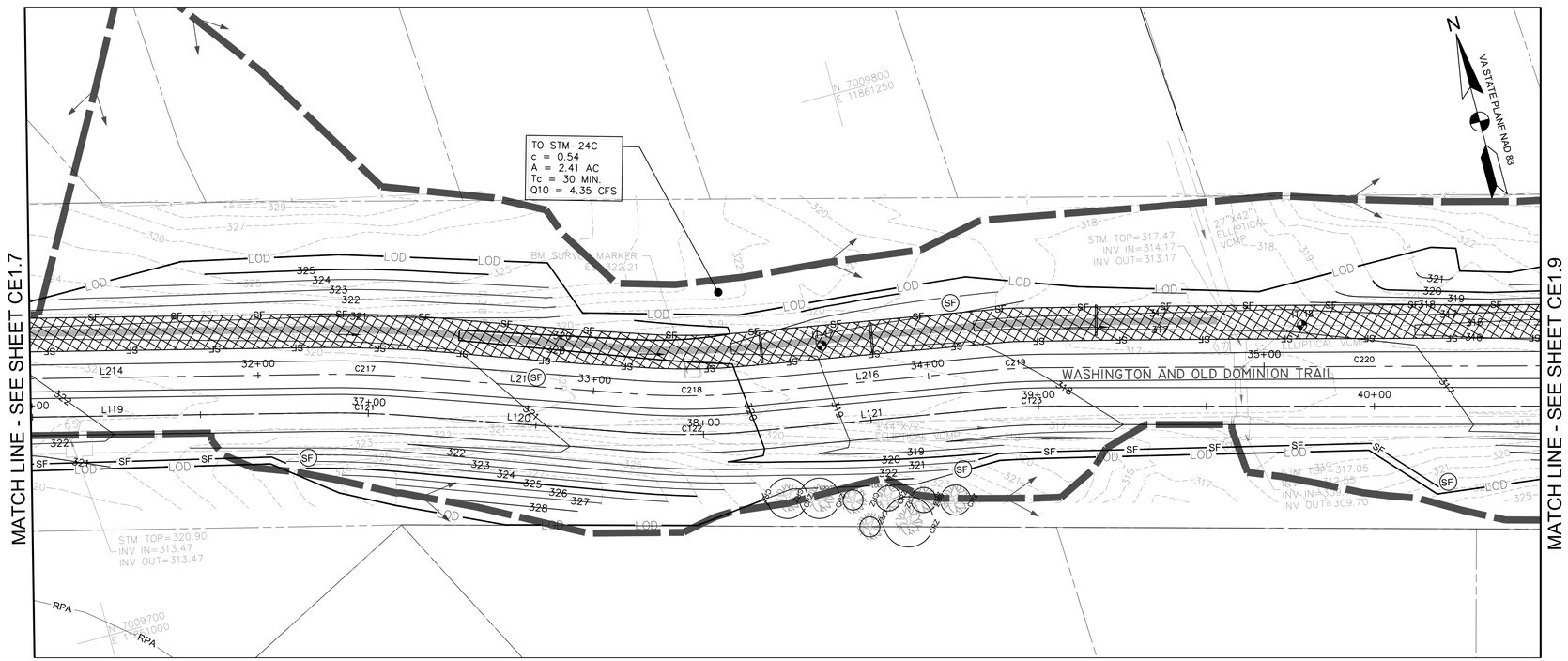
EROSION AND SEDIMENT CONTROL- PHASE I AND PHASE II

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 |
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| 3.08 | CIP | | CULVERT INLET PROTECTION |
| 3.02 | CE | SCE | MODIFIED 40' X 10' STABILIZED CONSTRUCTION ENTRANCE WITH WASH RACK |
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PROJECT TITLE

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

REVISIONS

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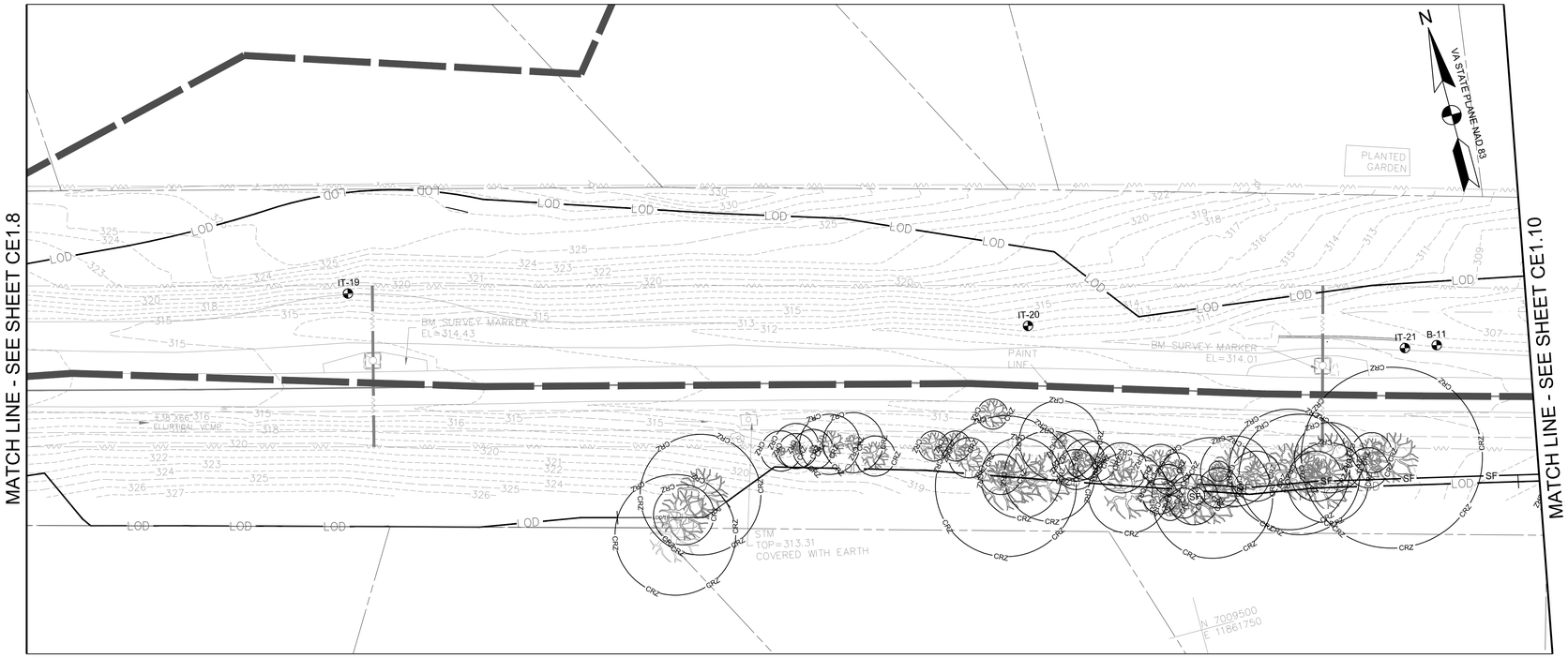
SHEET TITLE

EROSION AND SEDIMENT CONTROL- PHASE I AND PHASE II

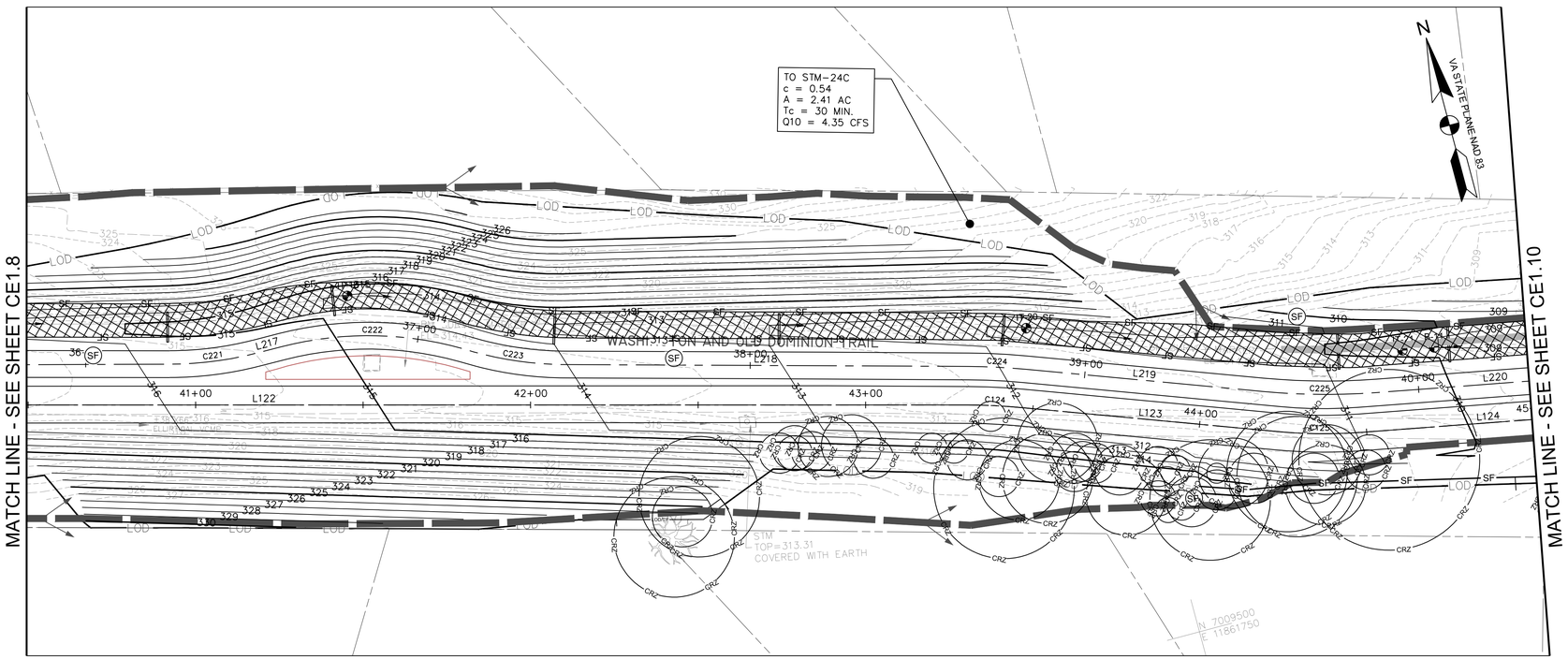
SHEET

CE1.8




EROSION AND SEDIMENT CONTROL PLAN- PHASE I

SCALE: 1"=20'




EROSION AND SEDIMENT CONTROL PLAN- PHASE II

SCALE: 1"=20'

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PROJECT TITLE

**EXPANSION OF THE W&OD TRAIL**

FALLS CHURCH, VA

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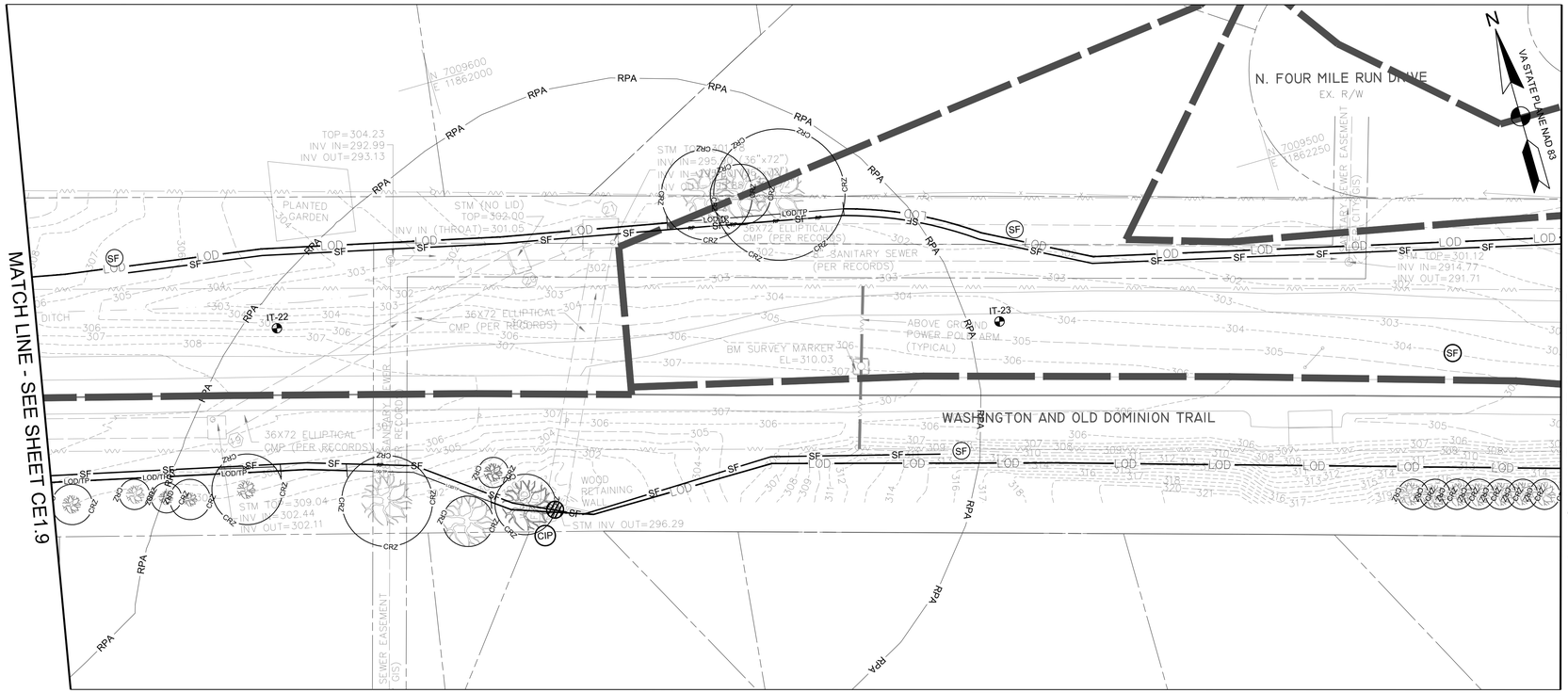
SHEET TITLE

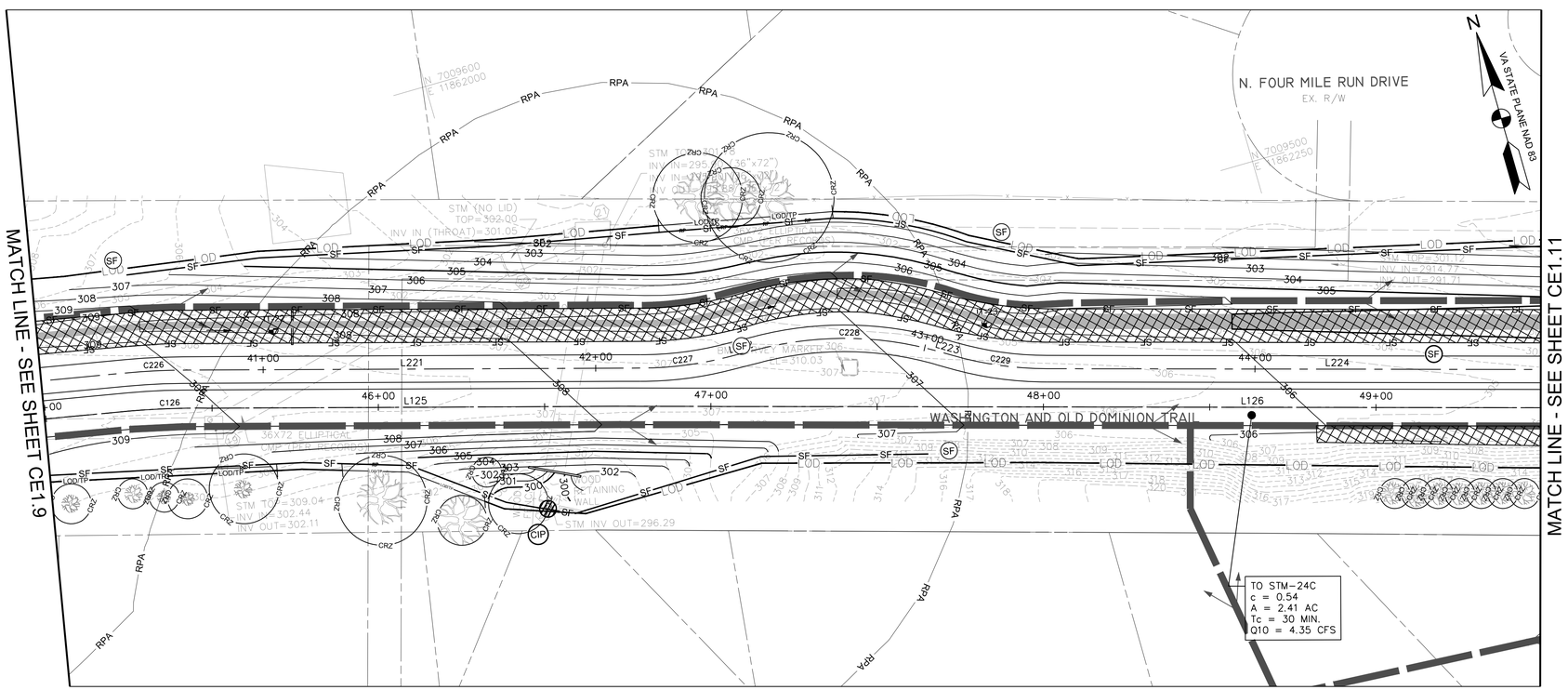
EROSION AND SEDIMENT CONTROL- PHASE I AND PHASE II

SHEET

CE1.9




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




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

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FALLS CHURCH, VA
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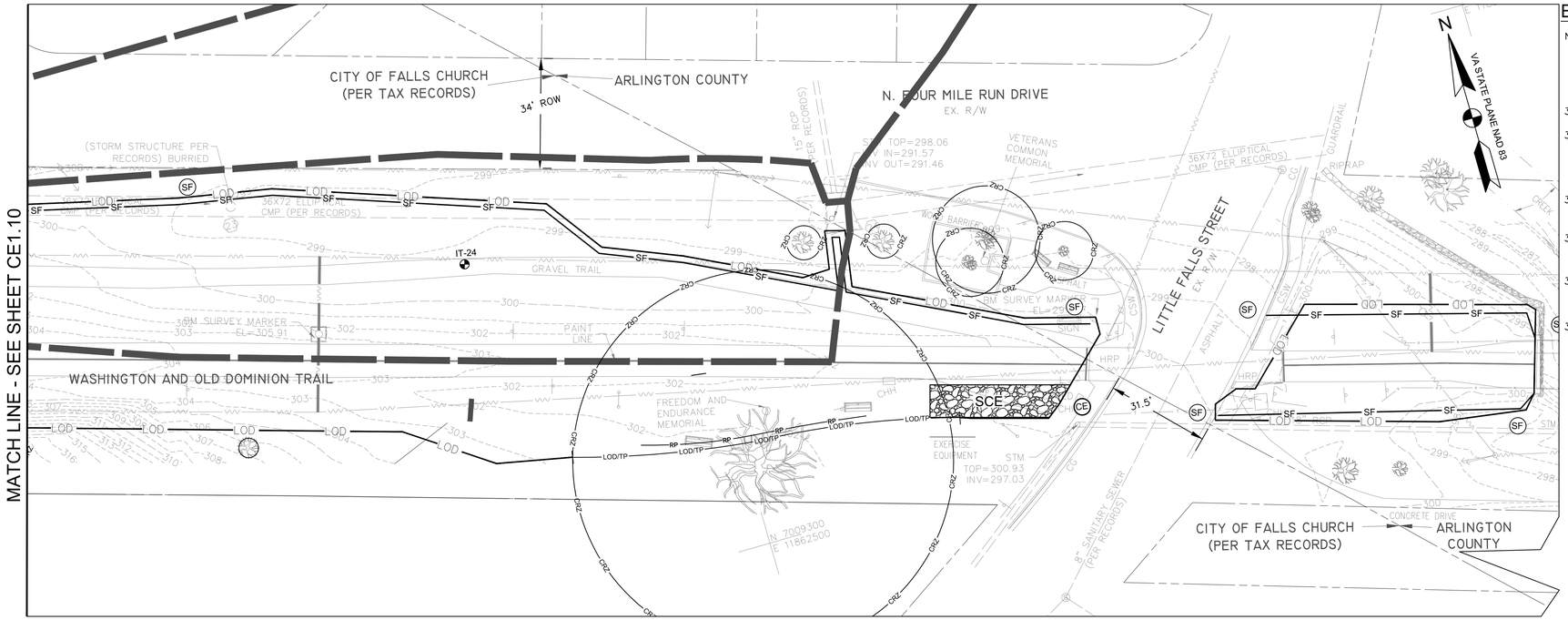
SHEET TITLE

EROSION AND SEDIMENT CONTROL- PHASE I AND PHASE II

SHEET

CE1.10




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

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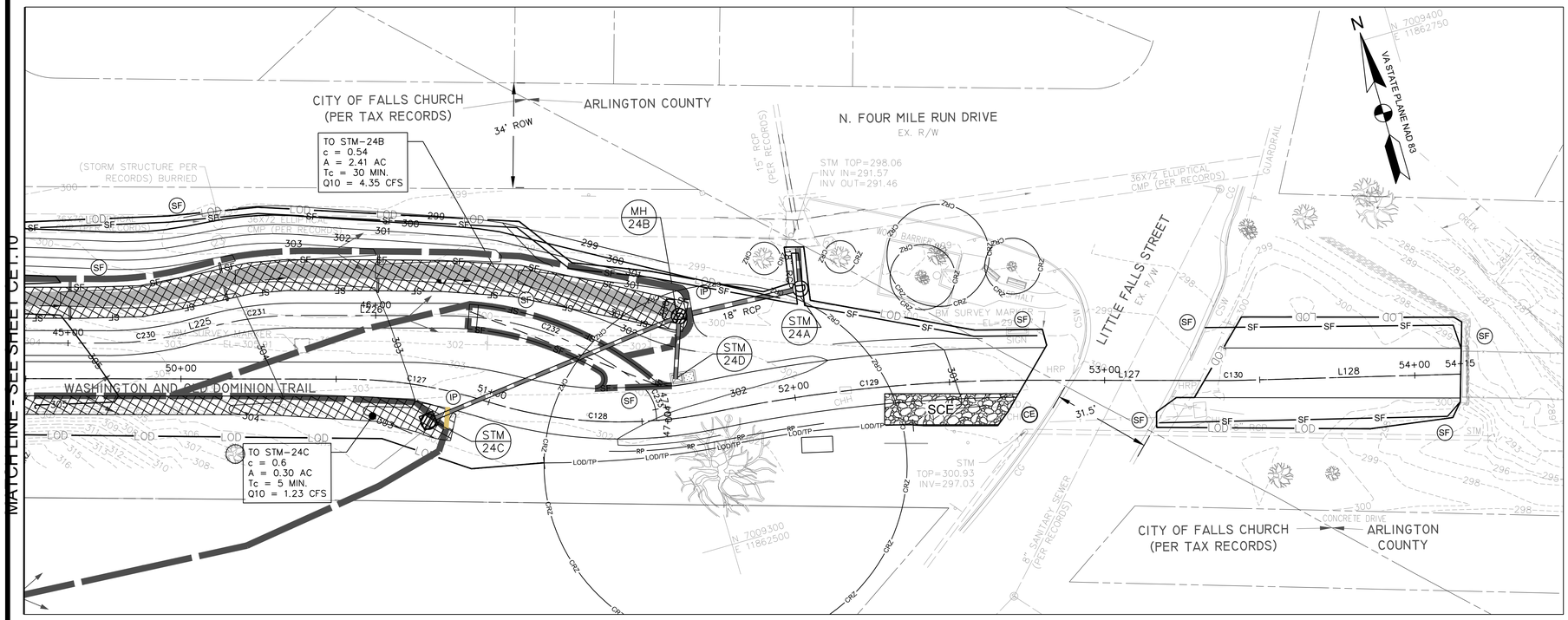


EROSION AND SEDIMENT CONTROL PLAN- PHASE II
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0 10' 20' 40'
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SHEET TITLE
EROSION AND SEDIMENT CONTROL- PHASE I AND PHASE II

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/es.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]<br>Perennial Ryegrass<br>Kentucky Bluegrass[1] | 95-100%<br>0-5%<br>0-5%<br>TOTAL: 175-200 lbs. |
| High-Maintenance Lawn | Tall Fescue[1] | TOTAL: 200-250 lbs. |
| General Slope (3:1 or less) | Tall Fescue[1]<br>Red Top Grass or Creeping Red Fescue<br>Seasonal Nurse Crop[2] | 128 lbs.<br>2 lbs.<br>20 lbs.<br>TOTAL: 150 lbs. |
| Low-Maintenance Slope (Steeper than 3:1) | Tall Fescue[1]<br>Red Top Grass or Creeping Red Fescue<br>Seasonal Nurse Crop[2]<br>Crownvetch[3] | 108 lbs.<br>2 lbs.<br>20 lbs.<br>20 lbs.<br>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/turf/publications/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/es.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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COMMONWEALTH OF VIRGINIA
J. KEITH SINCLAIR, JR.
Lic. No. 11195
01/08/20
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 |
|---|---|---|
| | | |

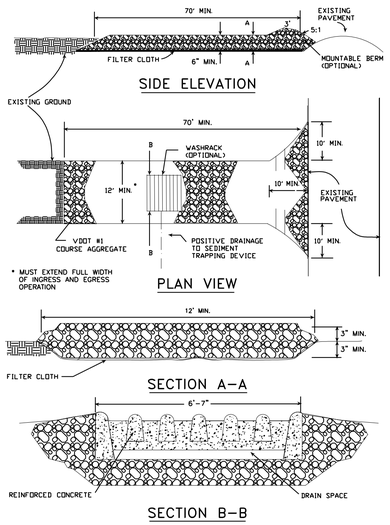
| | |
|---|---|
| AMT FILE NO. | 18-0367 |
| DATE: | 01/08/2020 |
| SCALE: | 1"=20' |
| DESIGNED BY: | AMT |
| DRAWN BY: | AMT |
| CHECKED BY: | AMT |

**90% DESIGN**

SHEET TITLE
EROSION & SEDIMENT CONTROL NOTES AND DETAILS

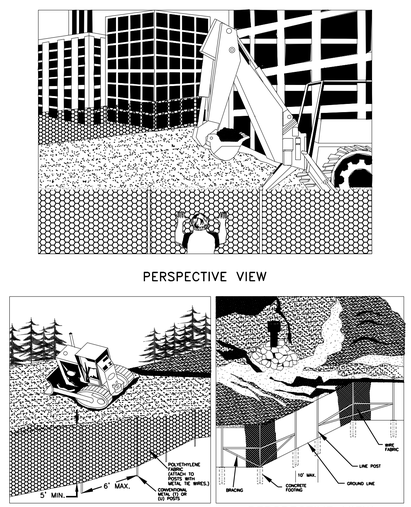
SHEET
CE5.0

## STONE CONSTRUCTION ENTRANCE




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

## SAFETY FENCE

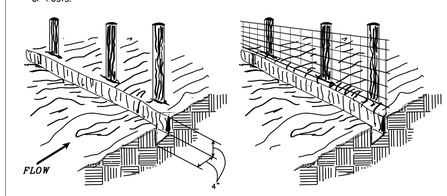



SOURCE: CONWED PLASTICS
VDOT ROAD AND BRIDGE STANDARDS
VA. DSWC

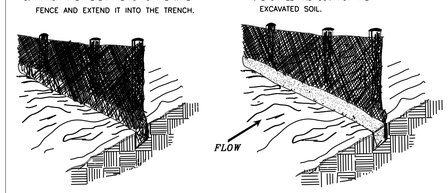
PLATE. 3.1-1

## CONSTRUCTION OF A SILT FENCE (WITH WIRE SUPPORT)

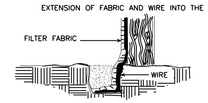
1. SET POSTS AND EXCAVATE A 4"X4" TRENCH UPSLOPE ALONG THE LINE OF POSTS.
2. STAPLE WIRE FENCING TO THE POSTS.




3. ATTACH THE FILTER FABRIC TO THE WIRE FENCE AND EXTEND IT INTO THE TRENCH.
4. BACKFILL AND COMPACT THE EXCAVATED SOIL.



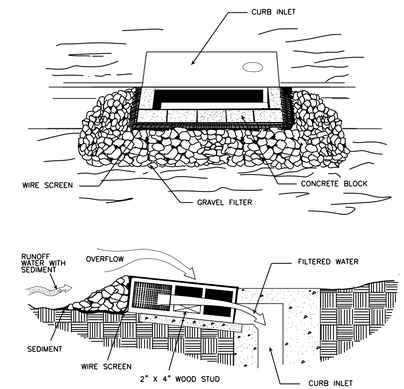

EXTENSION OF FABRIC AND WIRE INTO THE TRENCH.




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

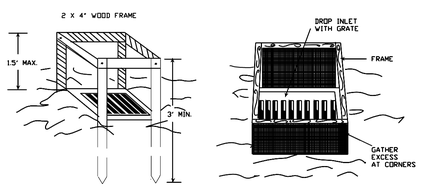
THIS METHOD OF INLET PROTECTION IS APPLICABLE AT CURB INLETS WHERE AN OVERFLOW CAPABILITY IS NECESSARY TO PREVENT EXCESSIVE PONDING IN FRONT OF THE STRUCTURE.

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

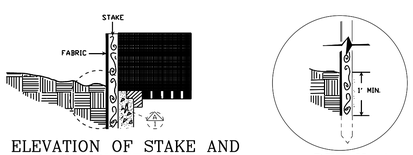
SOURCE: VA. DSWC

PLATE 3.07-8

## SILT FENCE DROP INLET PROTECTION




PERSPECTIVE VIEWS




ELEVATION OF STAKE AND FABRIC ORIENTATION

DETAIL A

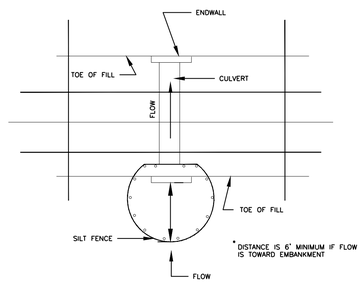
SPECIFIC APPLICATION

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.

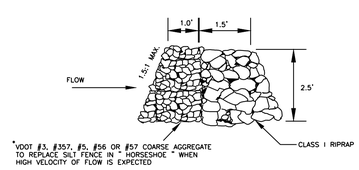
SOURCE: N.C. Erosion and Sediment Control Planning and Design Manual, 1988

PLATE 3.07-1

## SILT FENCE CULVERT INLET PROTECTION




## * OPTIONAL STONE COMBINATION

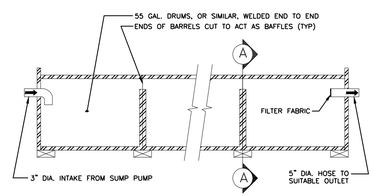



* VDOT #3, #357, #5, #56 OR #57 COARSE AGGREGATE TO REPLACE SILT FENCE IN " HORSESHOE " WHEN HIGH VELOCITY OF FLOW IS EXPECTED

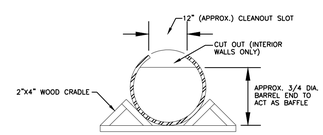
SOURCE: ADAPTED from VDOT Standard Sheets and Va. DSWC

PLATE. 3.08-1

## PORTABLE SEDIMENT TANK




ELEVATION

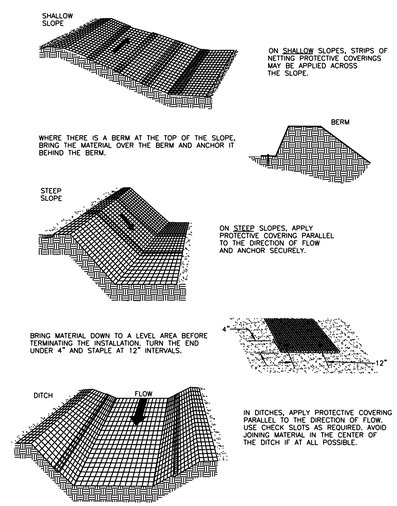



CROSS-SECTION A-A

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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COMMONWEALTH OF VIRGINIA
J. KEITH SINCLAIR, JR.
Lic. No. 11195
01/08/20
PROFESSIONAL ENGINEER

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PROJECT TITLE

**EXPANSION OF THE W&OD TRAIL**

FALLS CHURCH, VA
UPC 113612

REVISIONS

| MARK | DATE | DESCRIPTION |
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| AMT FILE NO. | 18-0367 |
| DATE: | 01/08/2020 |
| SCALE: | 1"=20' |
| DESIGNED BY: | AMT |
| DRAWN BY: | AMT |
| CHECKED BY: | AMT |

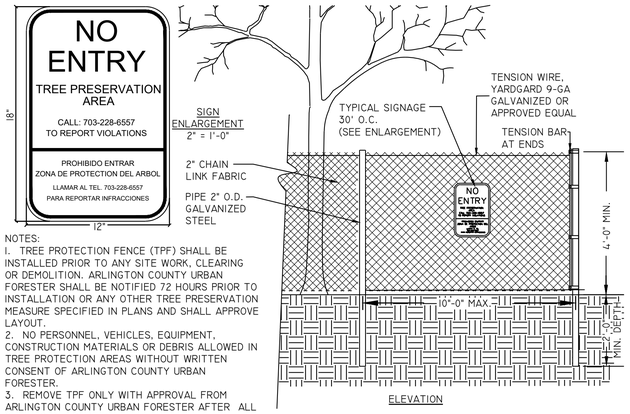
**90% DESIGN**

SHEET TITLE

EROSION & SEDIMENT CONTROL DETAILS

SHEET

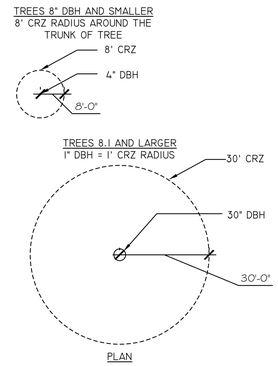
CE5.1




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.

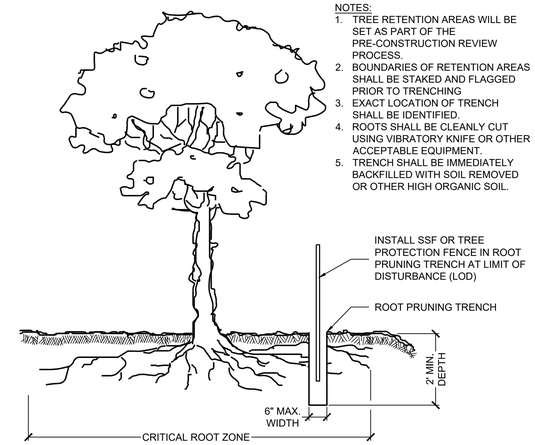
2. THE CRZ OF A TREE IS THE ZONE IN WHICH THE MAJORITY OF THE ROOTS LAY. 95% OF THE ROOTS OF MOST TREES WILL BE FOUND IN THE UPPER 12-18" OF THE SOIL. MOST OF THE ROOTS THAT SUPPLY THE NUTRIENTS AND WATER TO THE TREE ARE FOUND JUST BELOW THE SOIL SURFACE. THE TOTAL AMOUNT OF A TREE'S ROOTS ARE GENERALLY 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

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

REVISIONS

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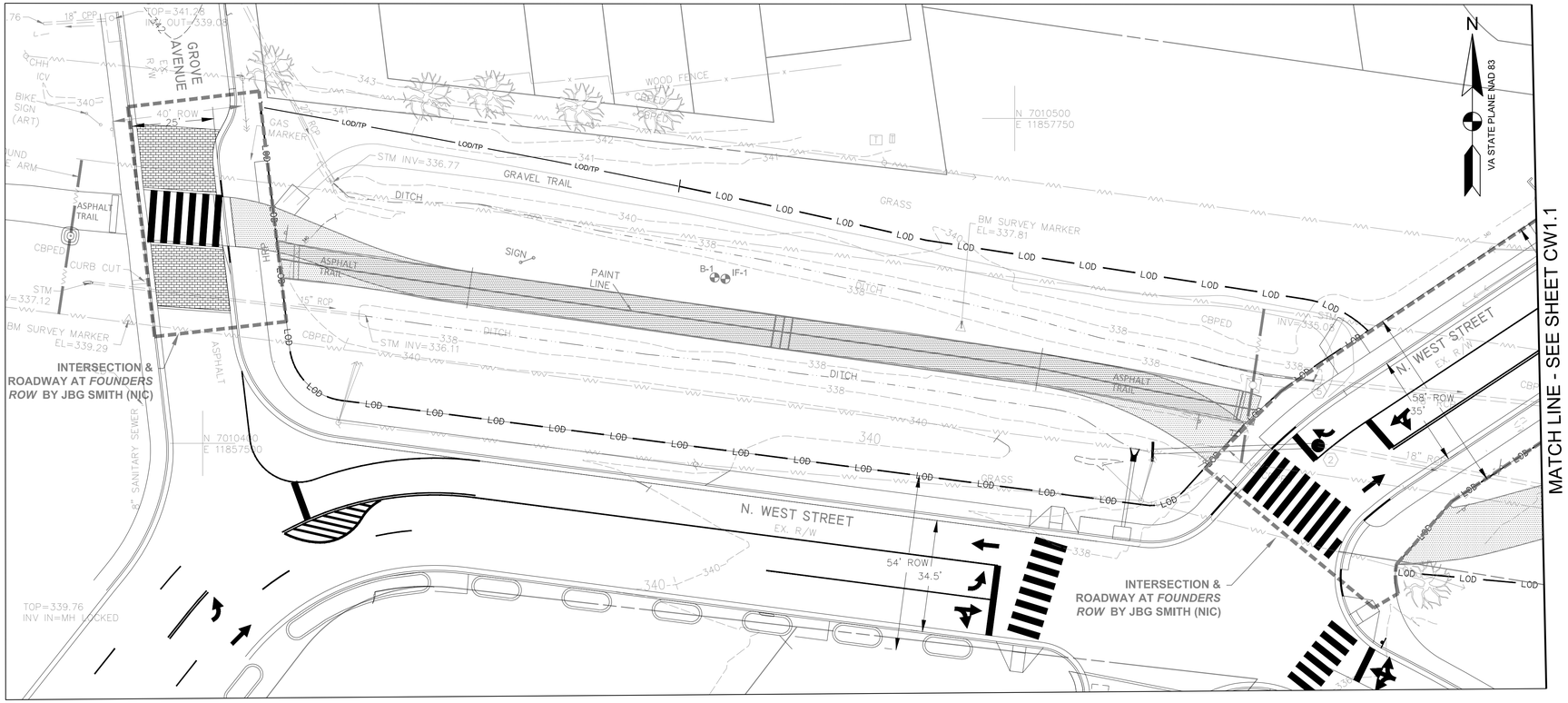
| DRAWN BY: | AMT |
| CHECKED BY: | AMT |

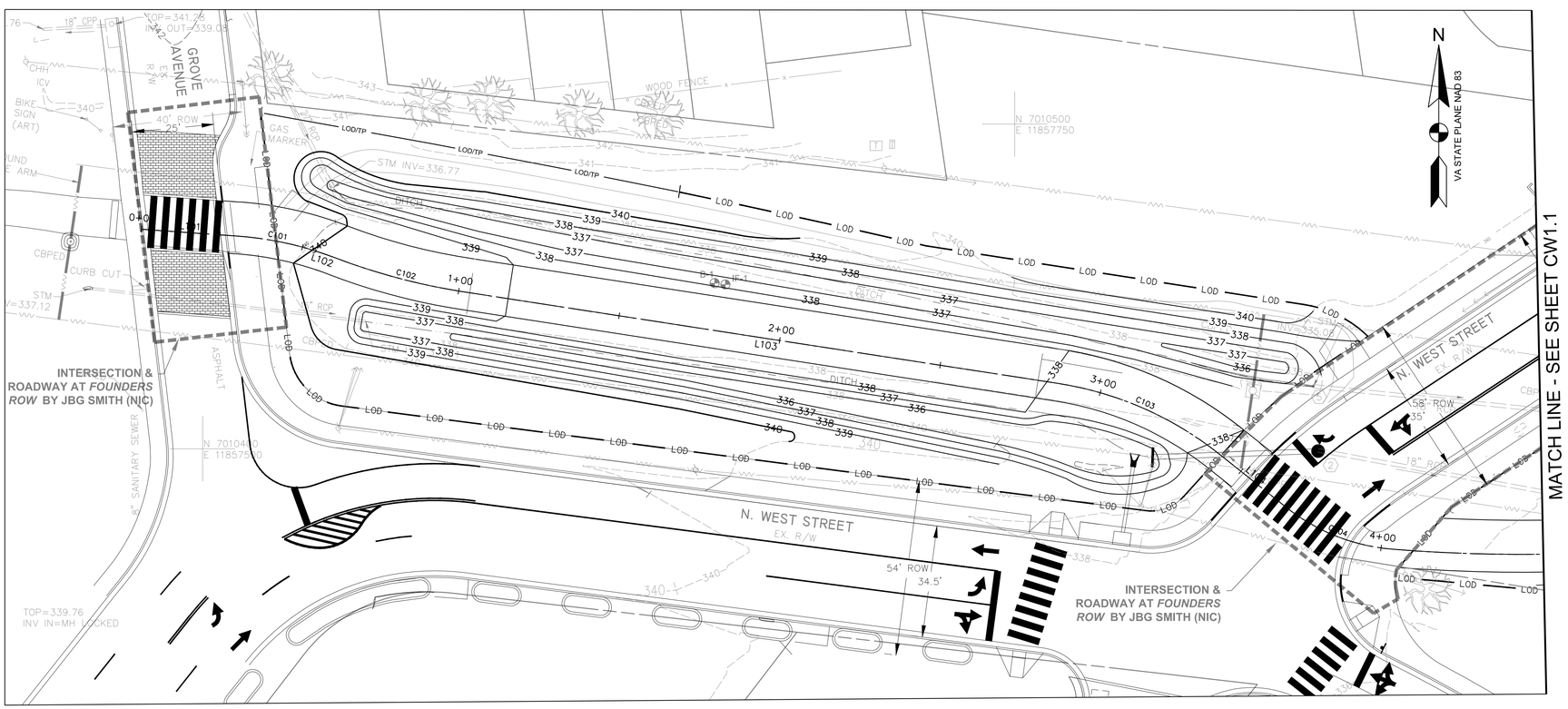
**90% DESIGN**

SHEET TITLE
TREE PROTECTION DETAILS

SHEET
CE5.2




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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LICENSE NO. 11195 EXPIRATION DATE: 04/30/2021

PROJECT TITLE

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

REVISIONS

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| SCALE: | 1"=20' |
| DESIGNED BY: | AMT |
| DRAWN BY: | AMT |
| CHECKED BY: | AMT |

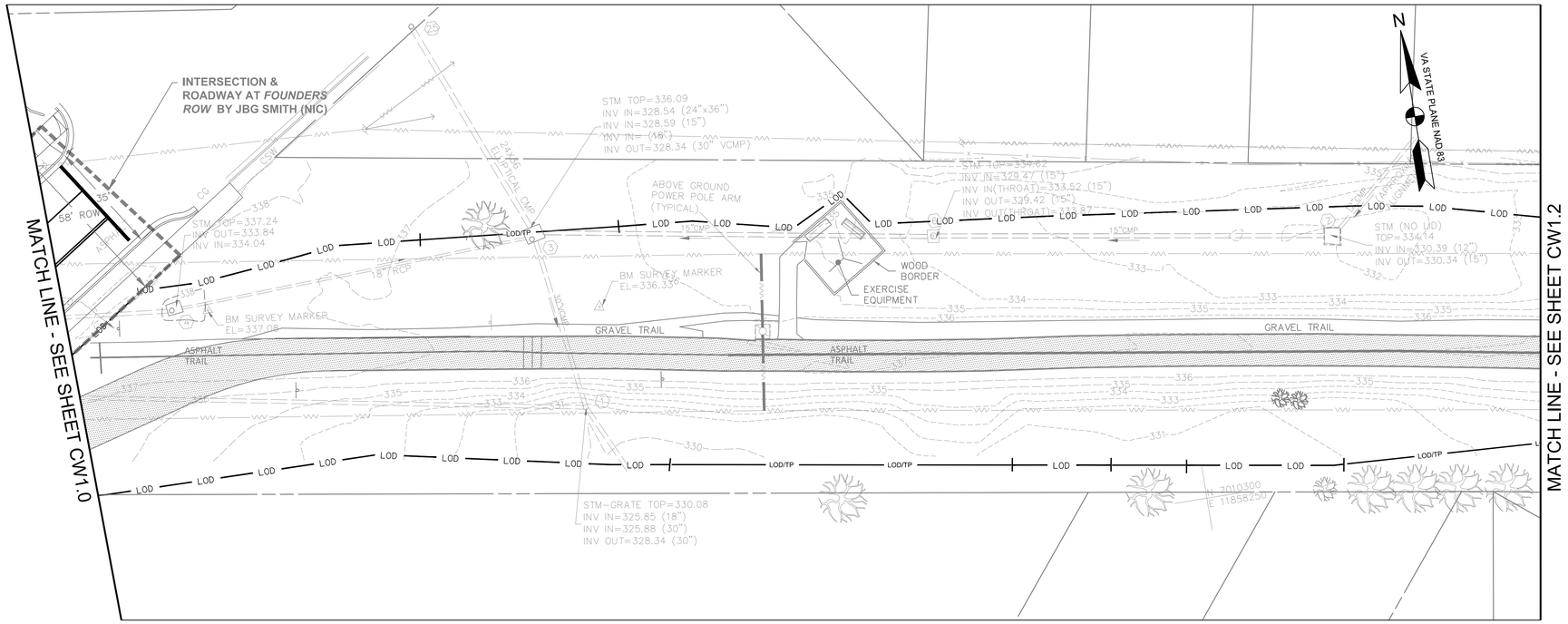
**90% DESIGN**

SHEET TITLE

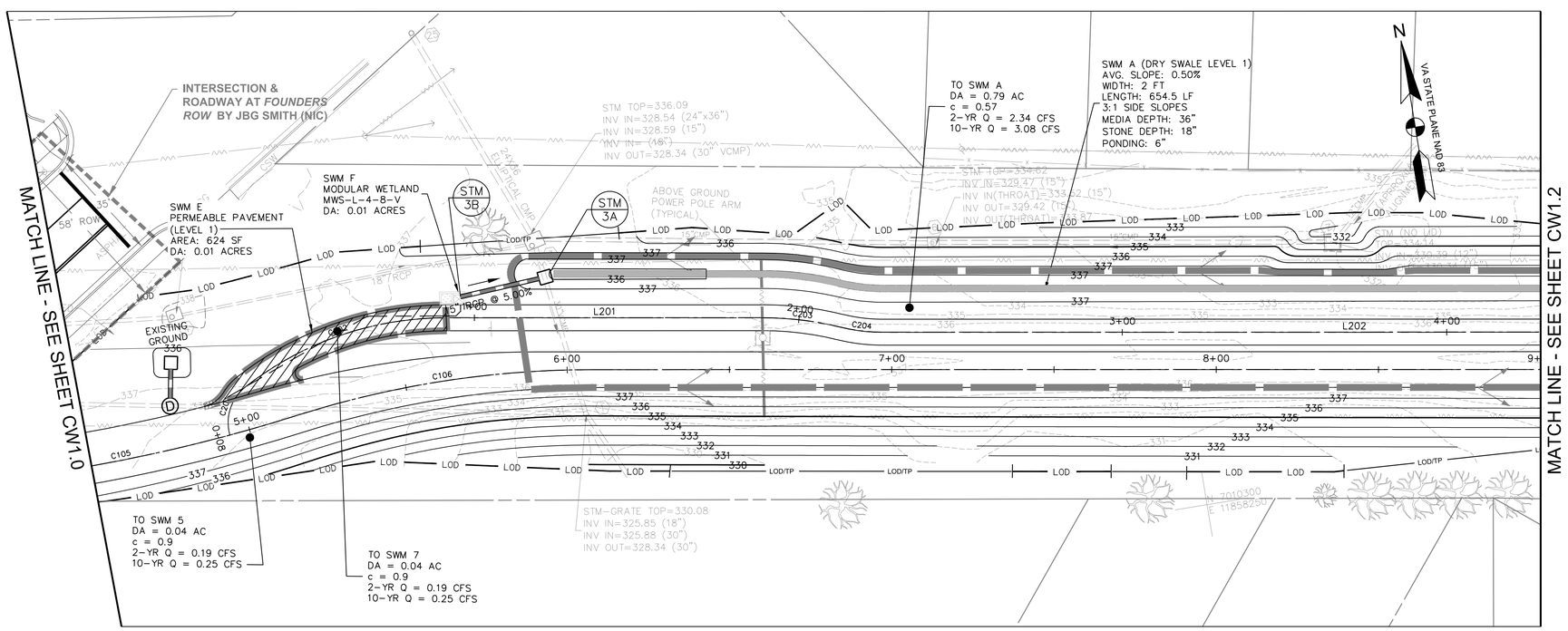
STORMWATER MANAGEMENT PLAN

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

REVISIONS

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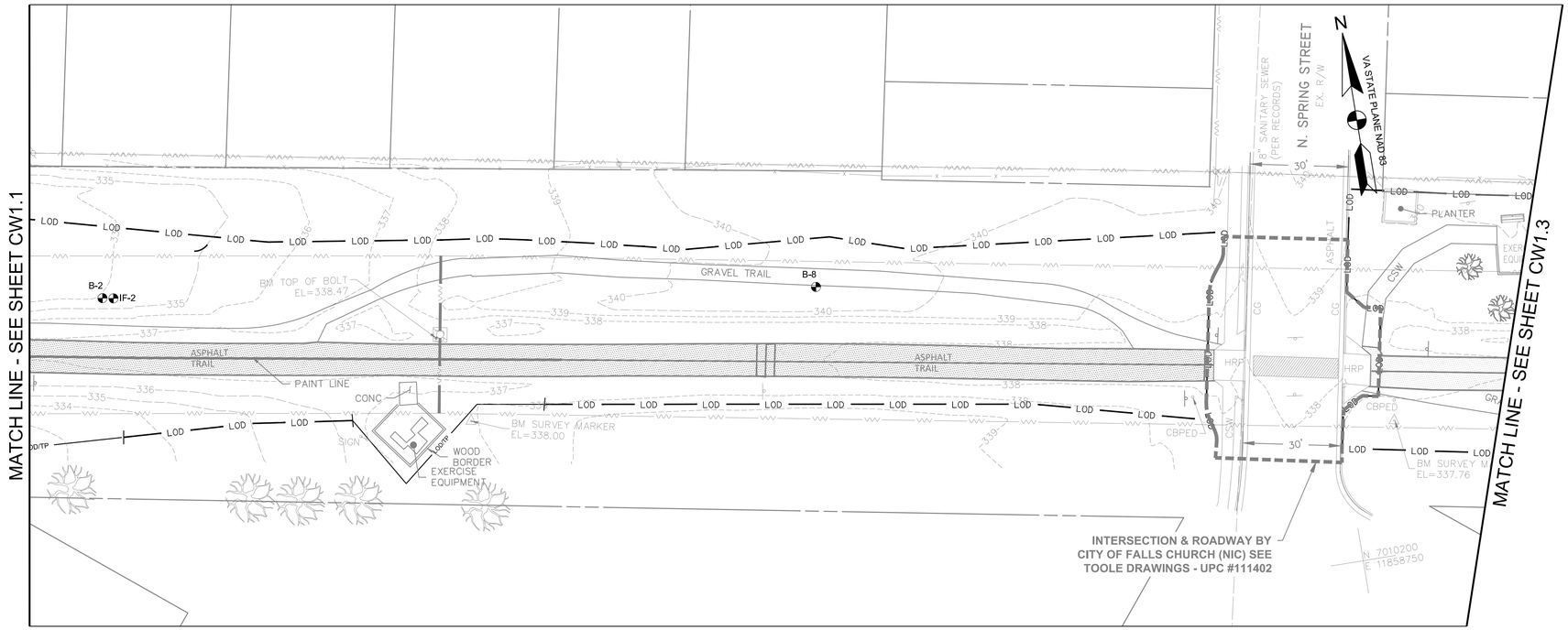
| DRAWN BY: | AMT |
| CHECKED BY: | AMT |

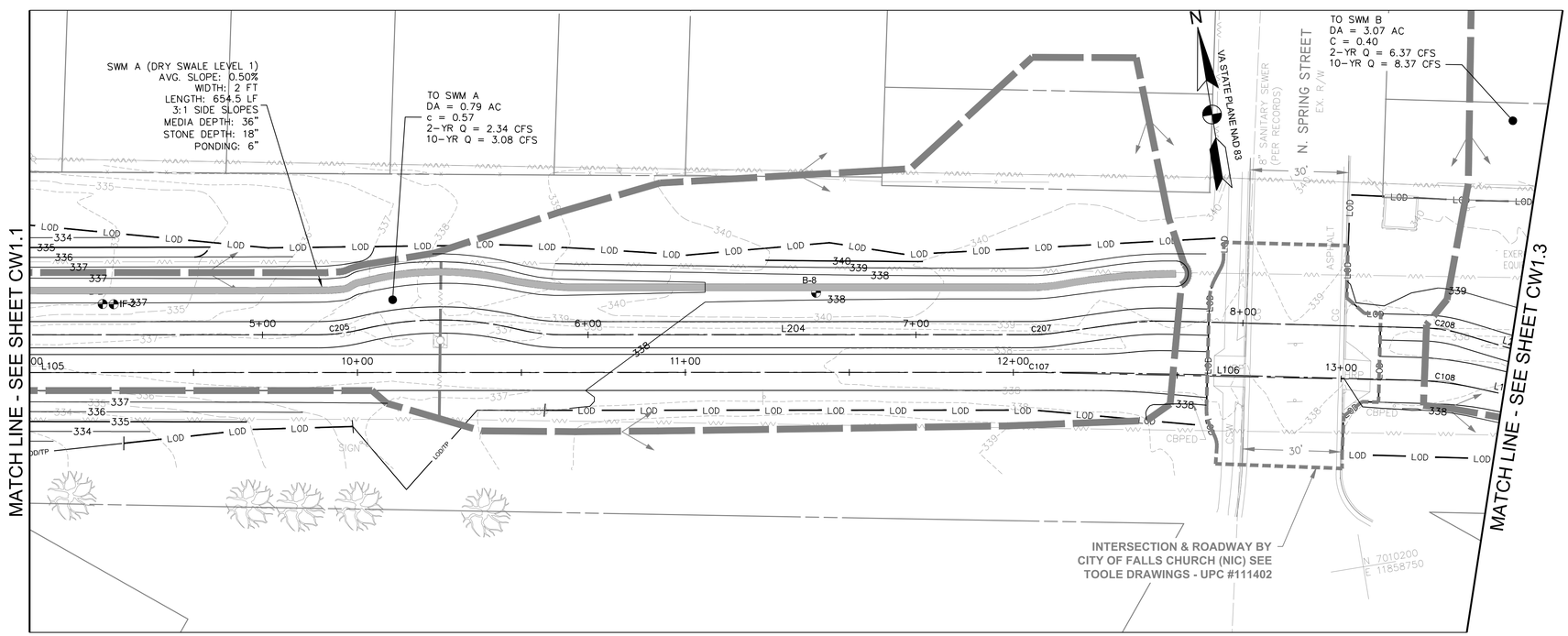
**90% DESIGN**

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
- LIMIT OF DISTURBANCE
- DRAINAGE DIVIDE
- PROPOSED MAJOR CONTOUR
- PROPOSED MINOR CONTOUR
- PERMEABLE PAVEMENT
- DRY SWALE
- CHECK DAM
- PROP. STORM DRAIN PIPE
- 4" PERF. PVC SCHD 40 PIPE
- BORING TEST LOCATION
- INFILTRATION TEST LOCATION

0 10' 20' 40'
SCALE: 1"=20'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FALLS CHURCH, VA
UPC 113612

REVISIONS

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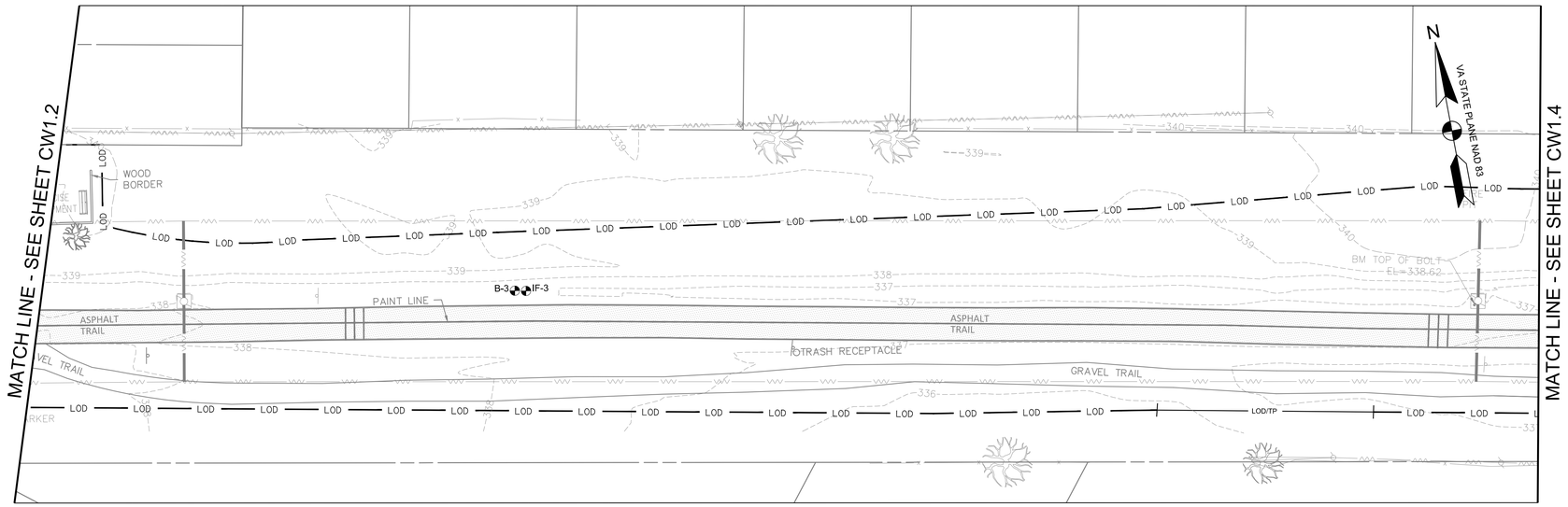
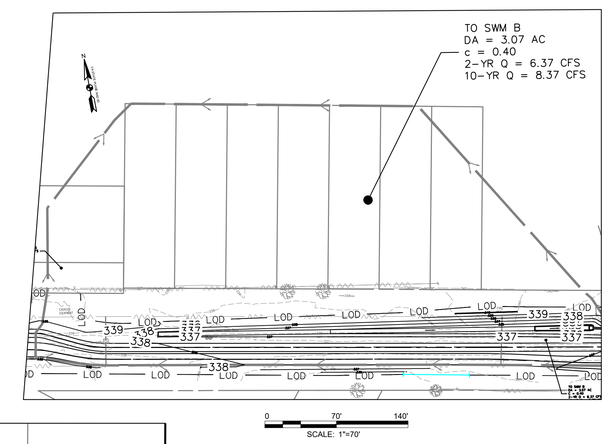
**90% DESIGN**

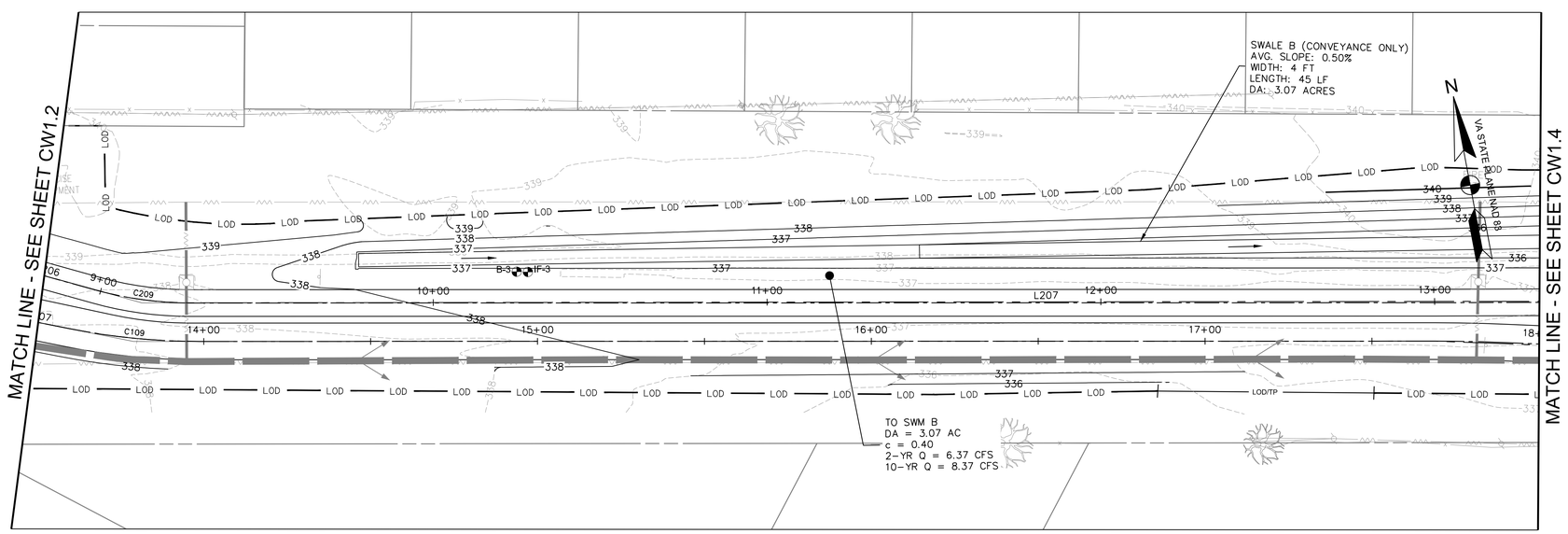
SHEET TITLE
STORMWATER MANAGEMENT PLAN

SHEET
CW1.2




PRE-DEVELOPMENT
SCALE: 1"=20'




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

## STORMWATER MANAGEMENT LEGEND

- LOD — BORING TEST LOCATION, 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, IT-7 — INFILTRATION TEST LOCATION

0 10' 20' 40'
SCALE: 1"=20'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FALLS CHURCH, VA
UPC 113612

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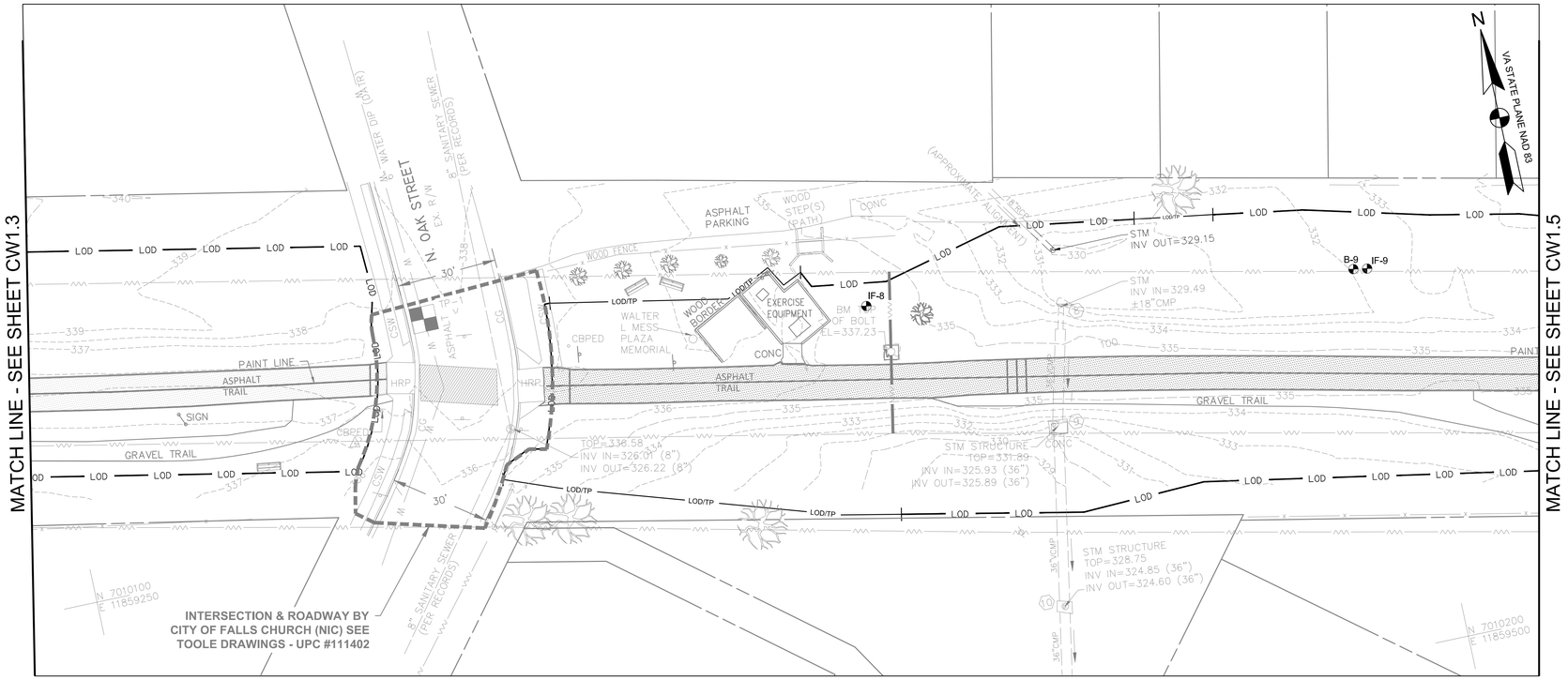
| DRAWN BY: | AMT |
| CHECKED BY: | AMT |

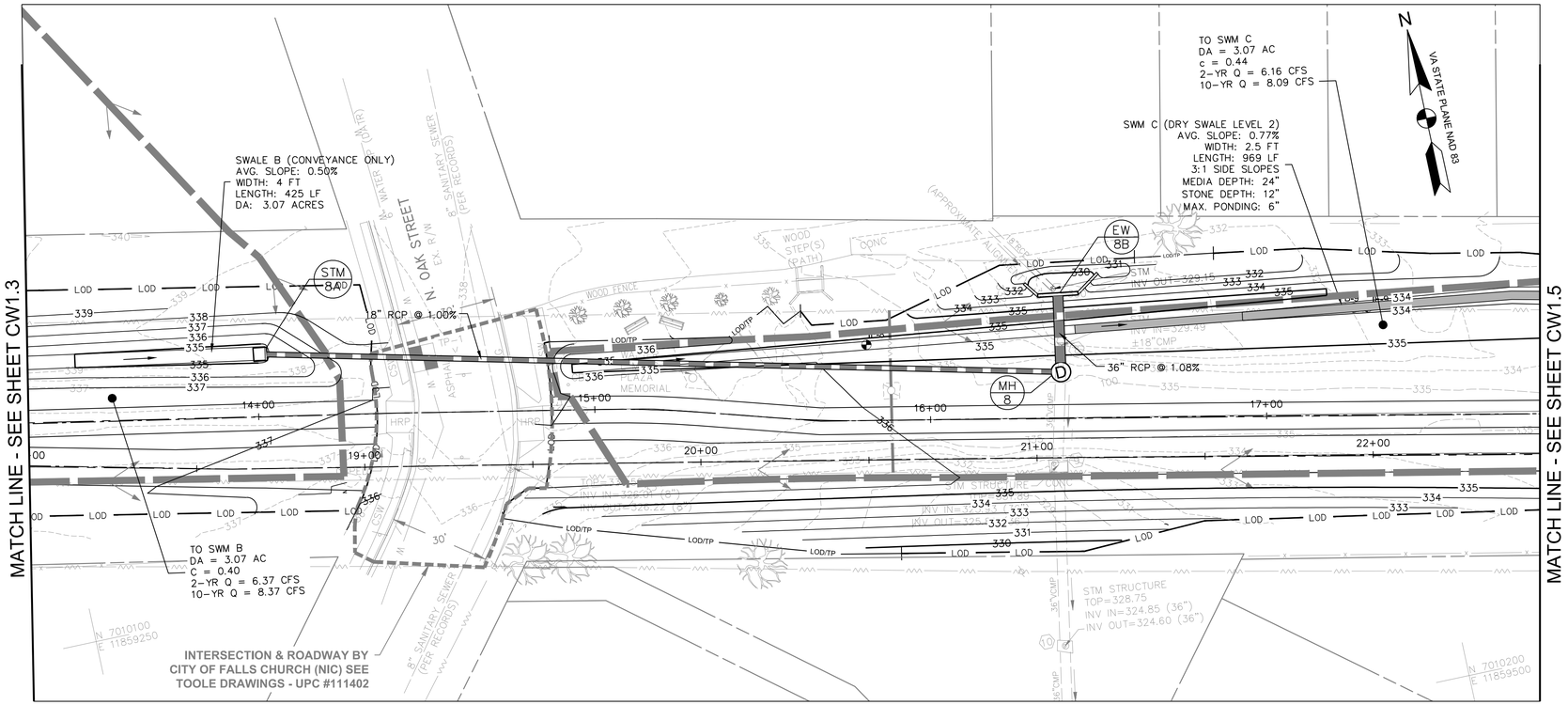
**90% DESIGN**

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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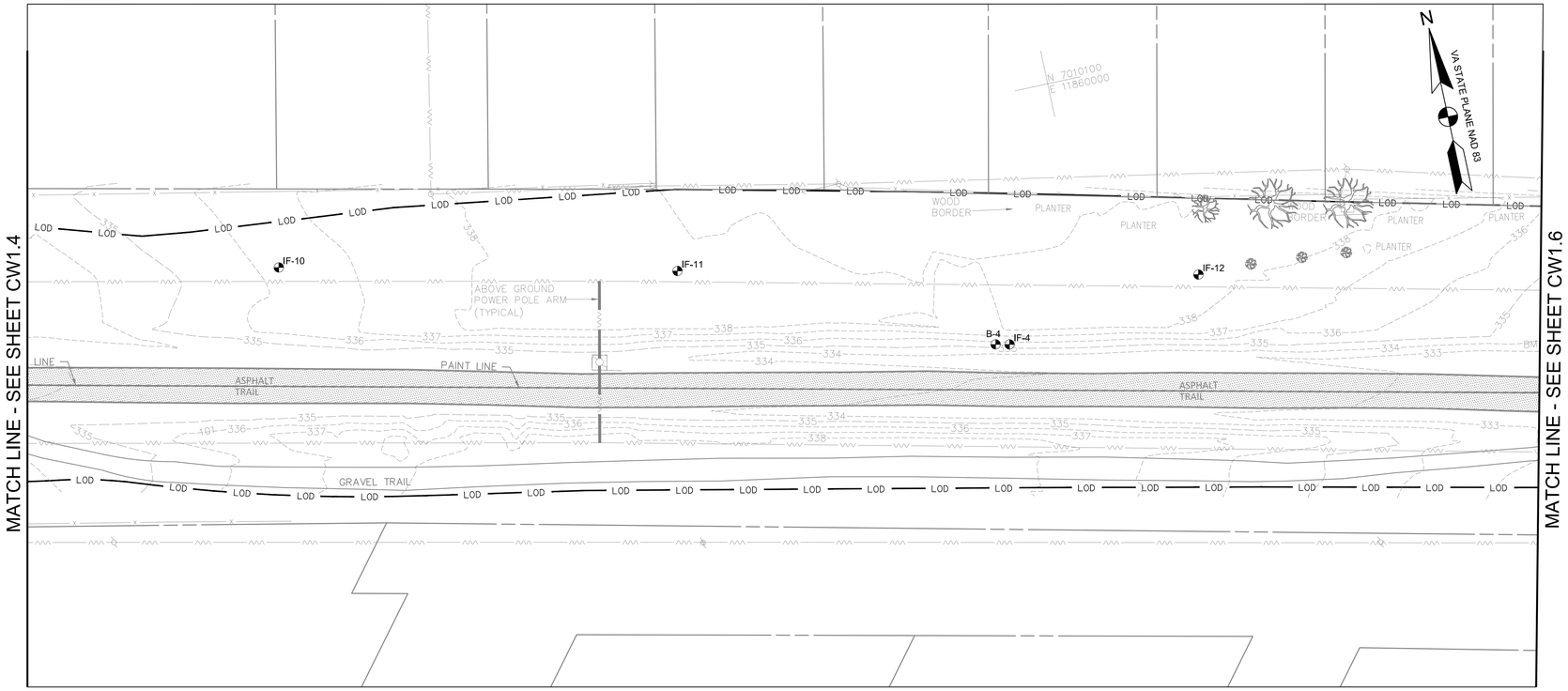
| DRAWN BY: | AMT |
| CHECKED BY: | AMT |

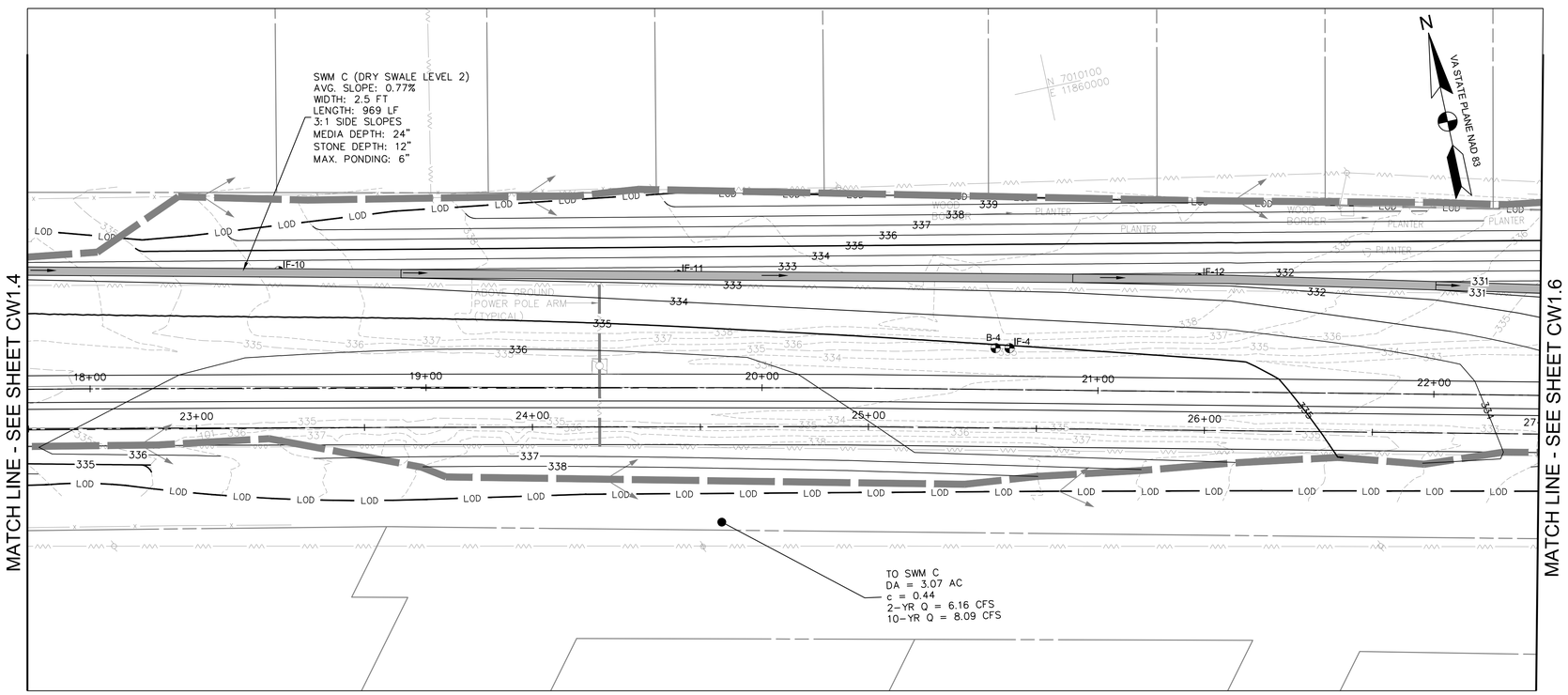
**90% DESIGN**

SHEET TITLE
STORMWATER MANAGEMENT PLAN

SHEET
CW1.4




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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EMAIL: AMT1@AMTENGINEERING.COM


COMMONWEALTH OF VIRGINIA
J. KEITH SINCLAIR, JR.
Lic. No. 11195
01/08/20
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 |
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| AMT FILE NO. | 18-0367 |
| DATE: | 01/08/2020 |
| SCALE: | 1"=20' |
| DESIGNED BY: | AMT |
| DRAWN BY: | AMT |
| CHECKED BY: | AMT |

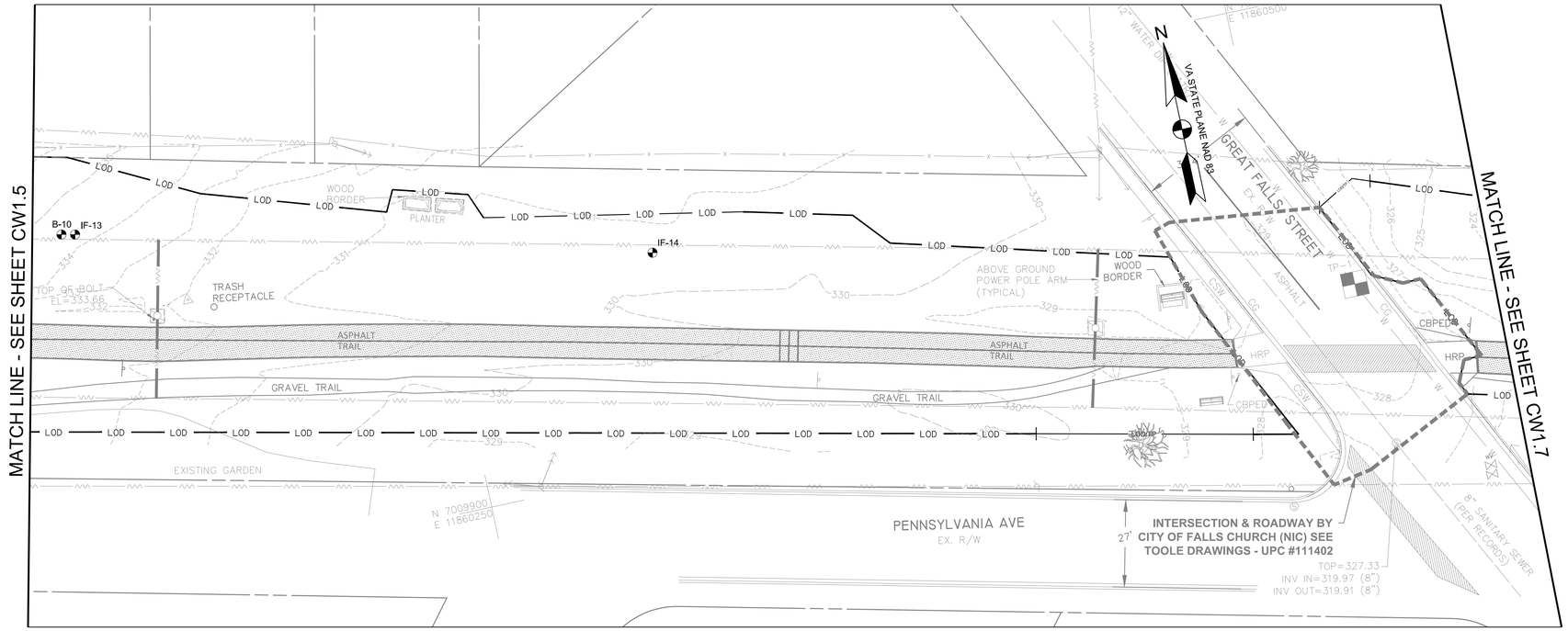
**90% DESIGN**

SHEET TITLE

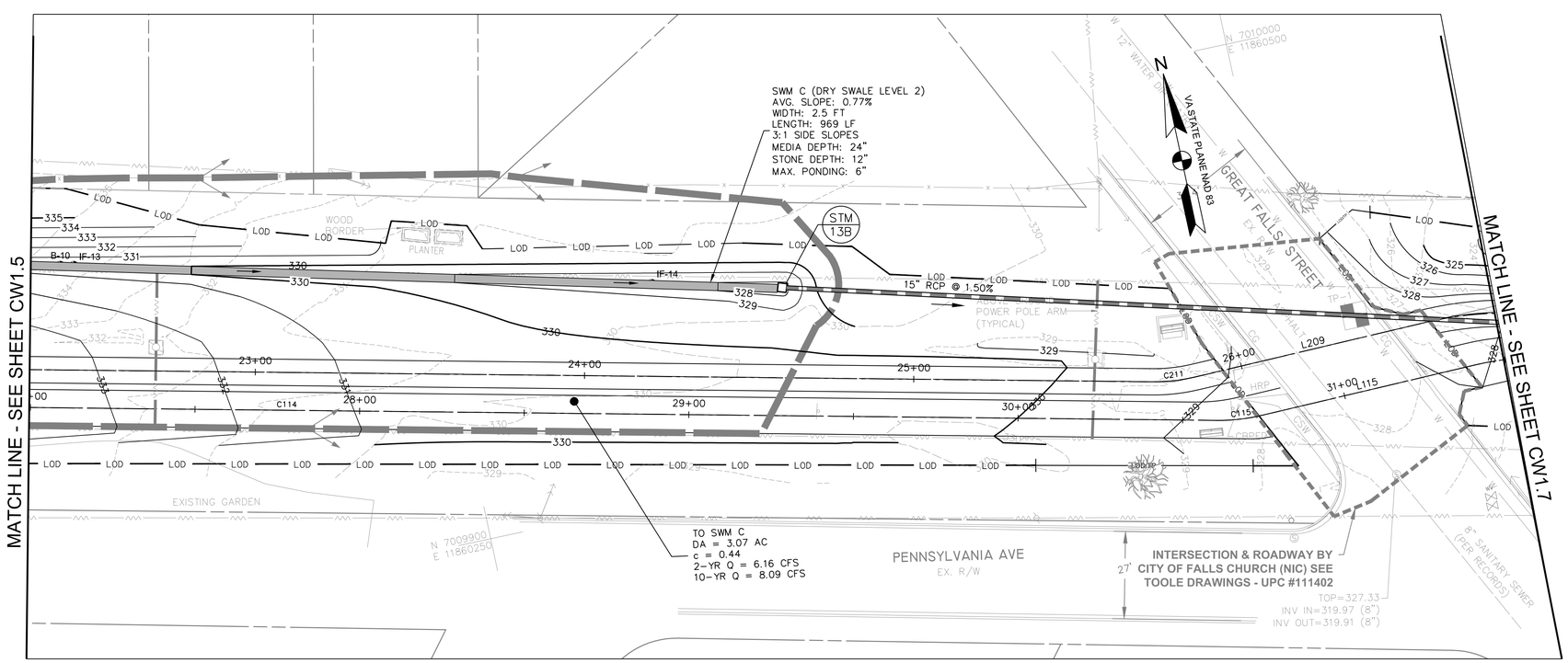
STORMWATER MANAGEMENT PLAN

SHEET

CW1.5




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

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|---|---|---|
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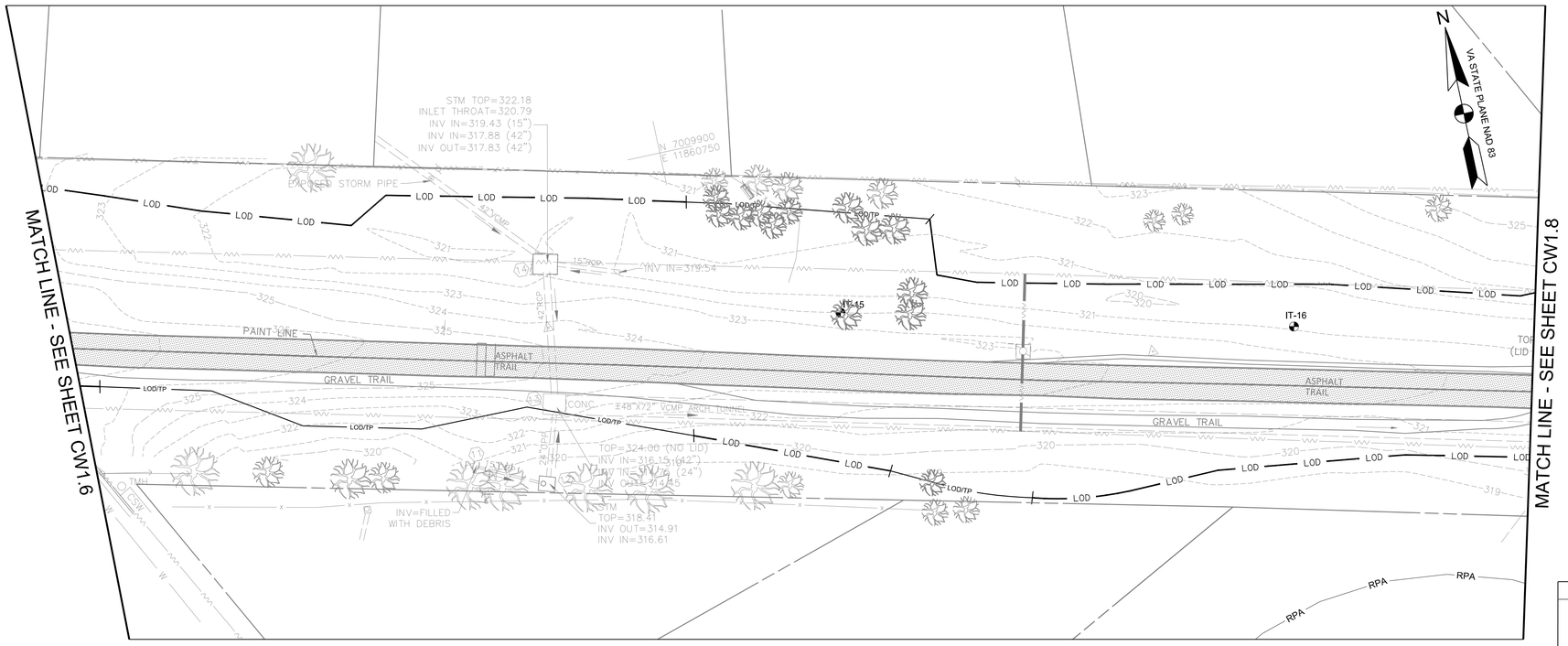
|---|---|
| AMT FILE NO. | 18-0367 |
| DATE: | 01/08/2020 |
| SCALE: | 1"=20' |
| DESIGNED BY: | AMT |
| DRAWN BY: | AMT |
| CHECKED BY: | AMT |

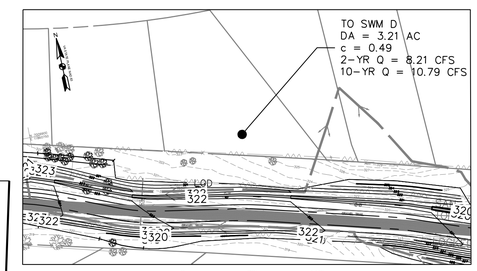
**90% DESIGN**

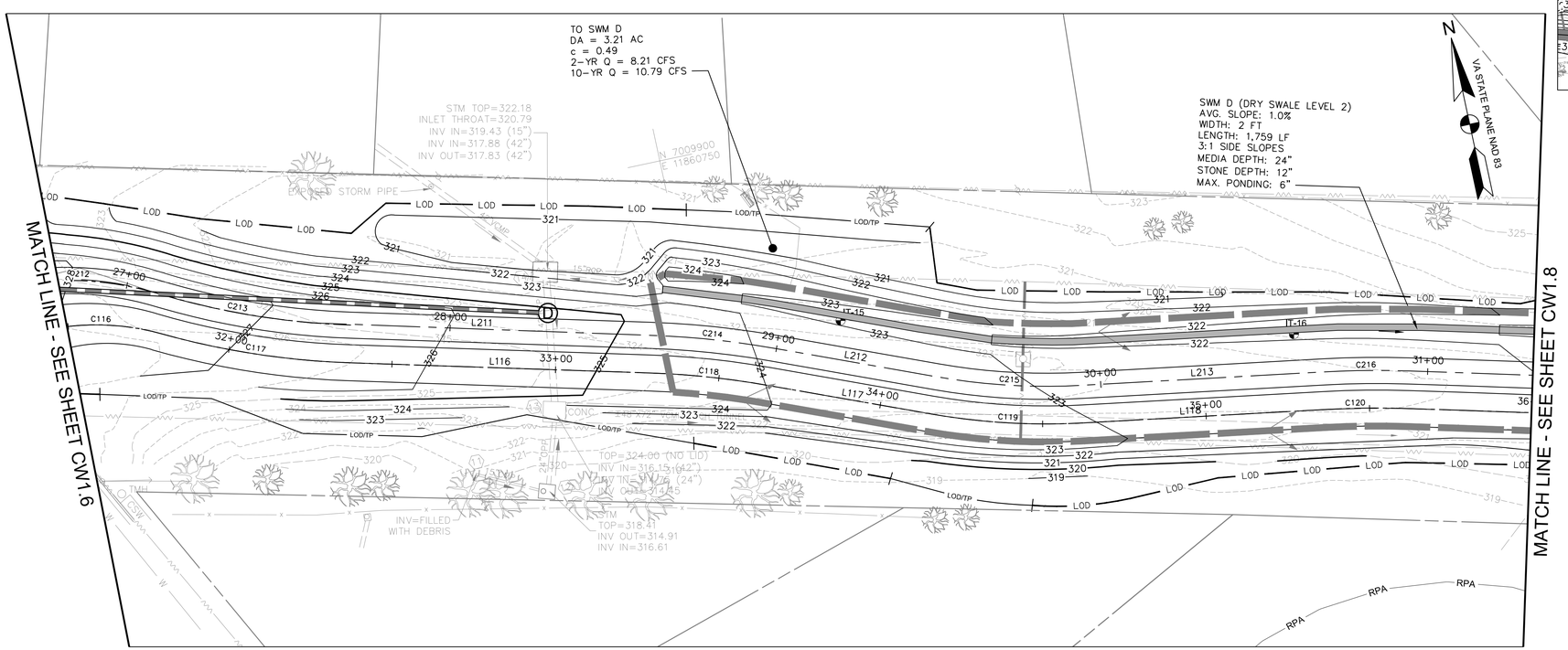
SHEET TITLE
STORMWATER MANAGEMENT PLAN

SHEET
CW1.6




PRE-DEVELOPMENT
SCALE: 1"=20'




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

## STORMWATER MANAGEMENT LEGEND

- PROPERTY BOUNDARY
- 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 |
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|---|---|
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| DATE: | 01/08/2020 |
| SCALE: | 1"=20' |
| DESIGNED BY: | AMT |
| DRAWN BY: | AMT |
| CHECKED BY: | AMT |

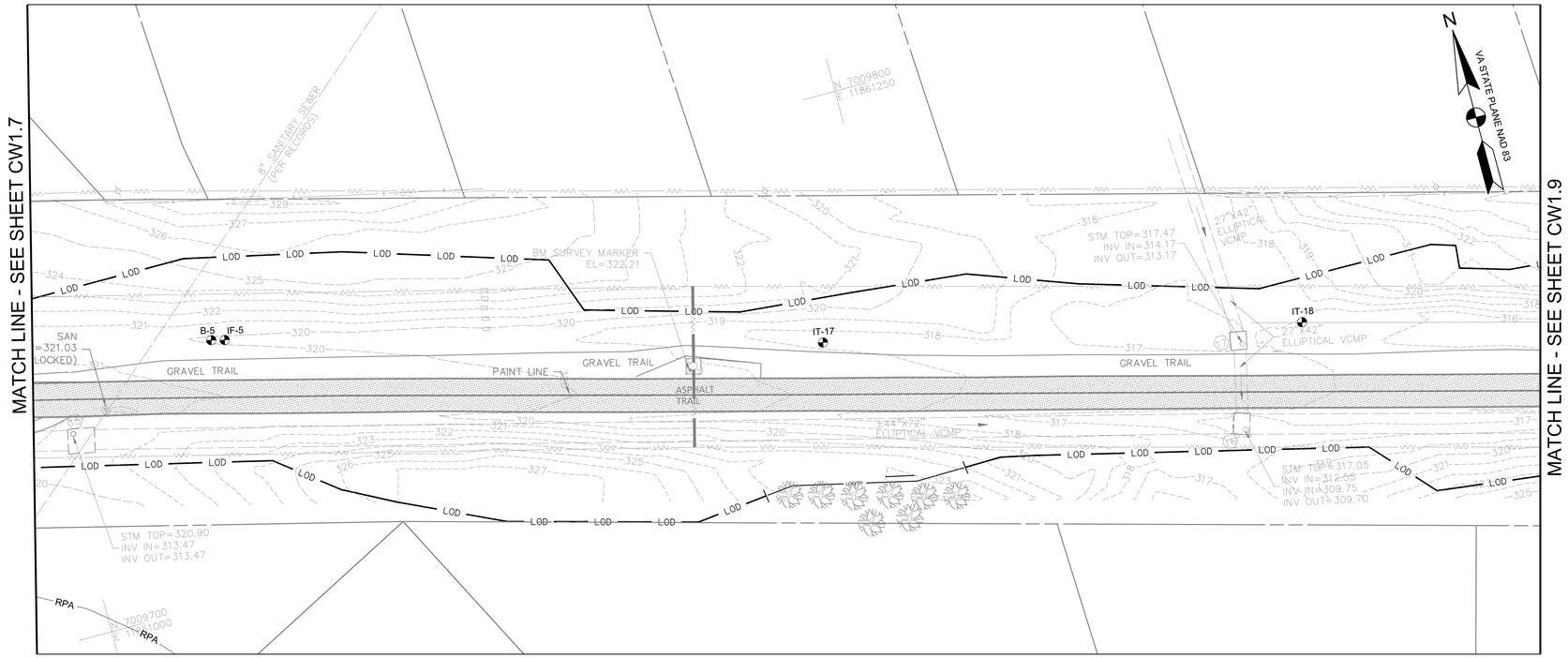
**90% DESIGN**

SHEET TITLE

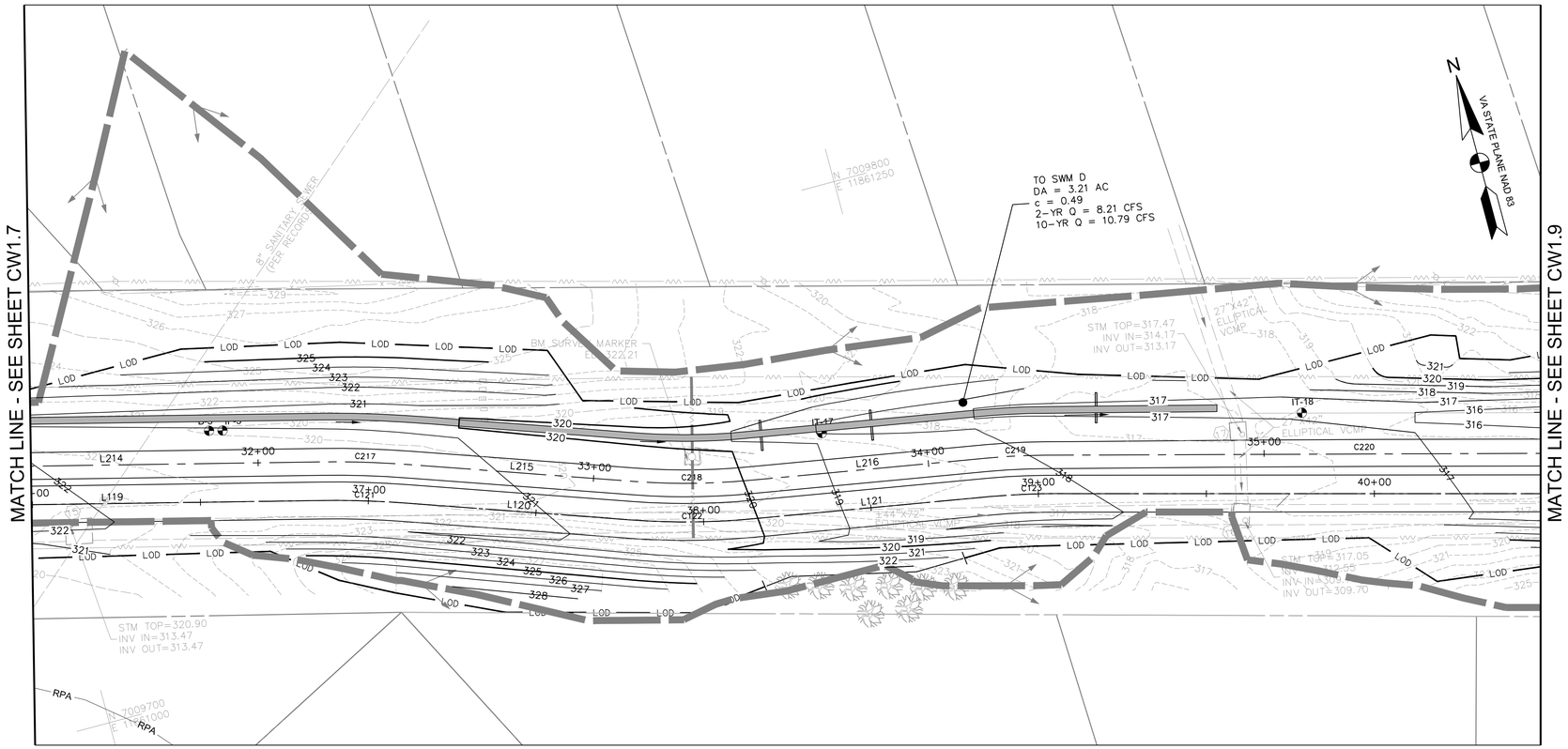
STORMWATER MANAGEMENT PLAN

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'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PROJECT TITLE
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FALLS CHURCH, VA
UPC 113612

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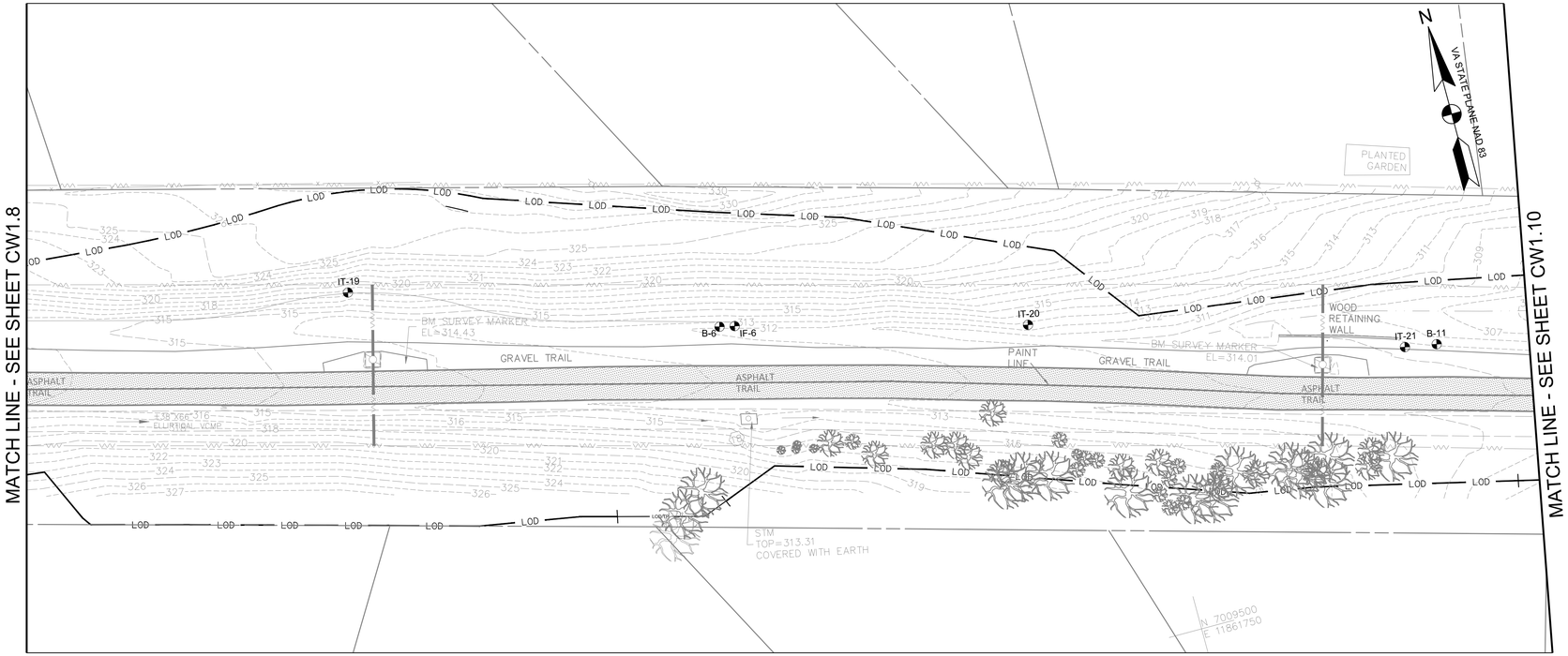
| DESIGNED BY: | AMT |
| DRAWN BY: | AMT |
| CHECKED BY: | AMT |

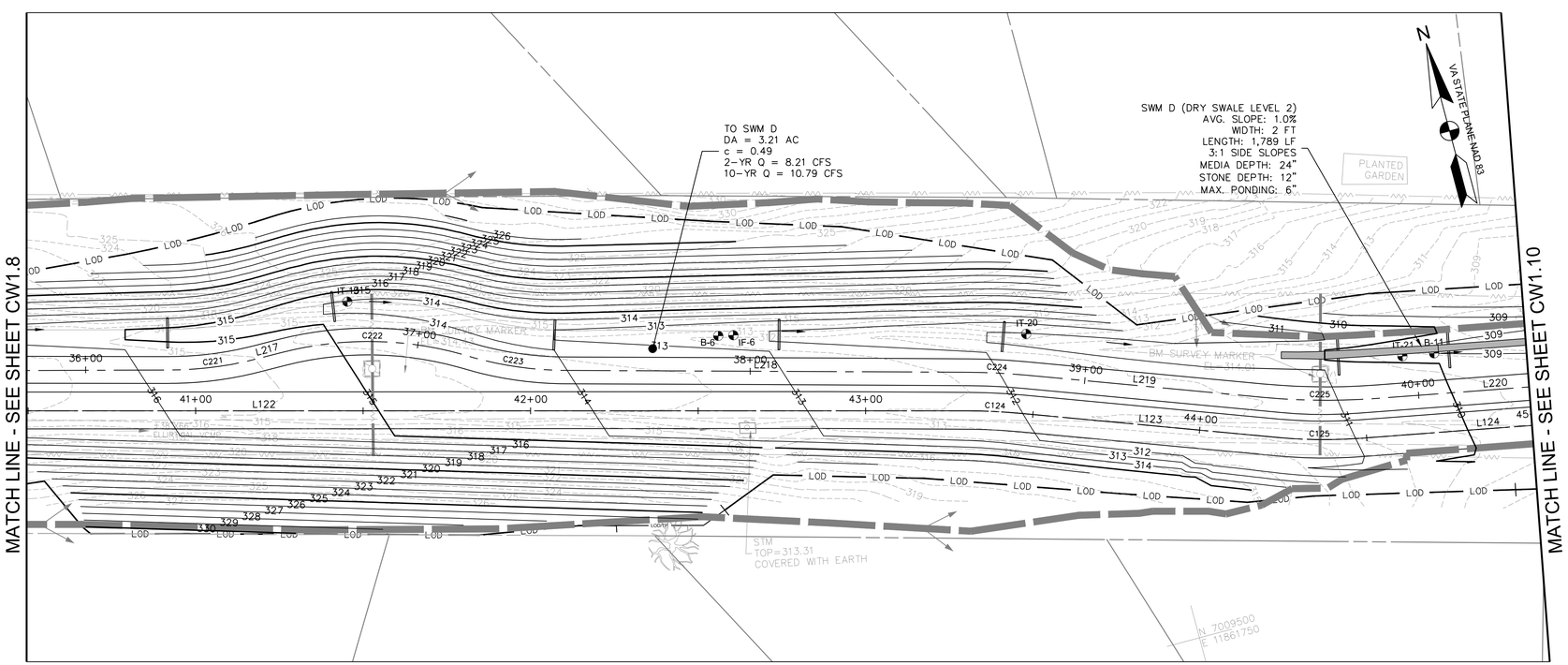
**90% DESIGN**

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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FALLS CHURCH, VA
UPC 113612

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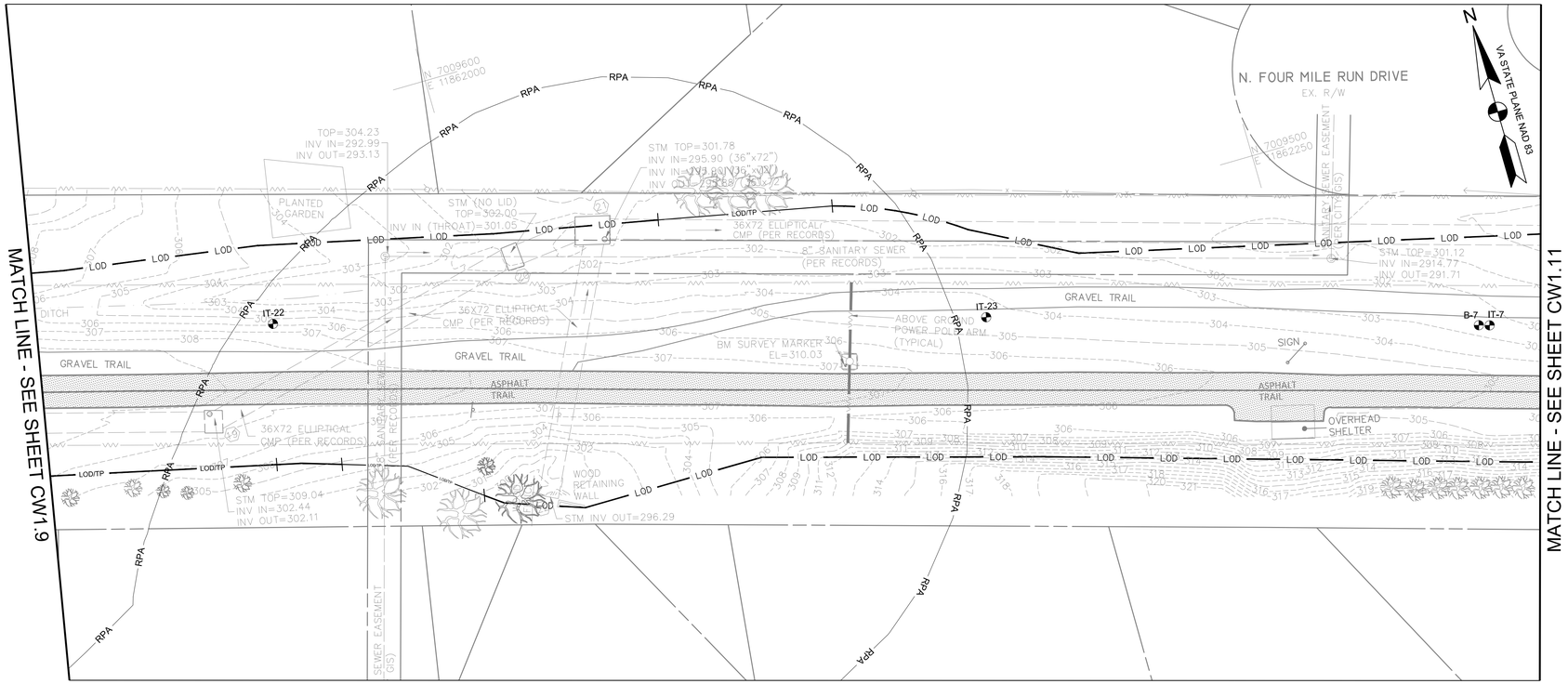
| DATE: | 01/08/2020 |
| SCALE: | 1"=20' |
| DESIGNED BY: | AMT |
| DRAWN BY: | AMT |
| CHECKED BY: | AMT |

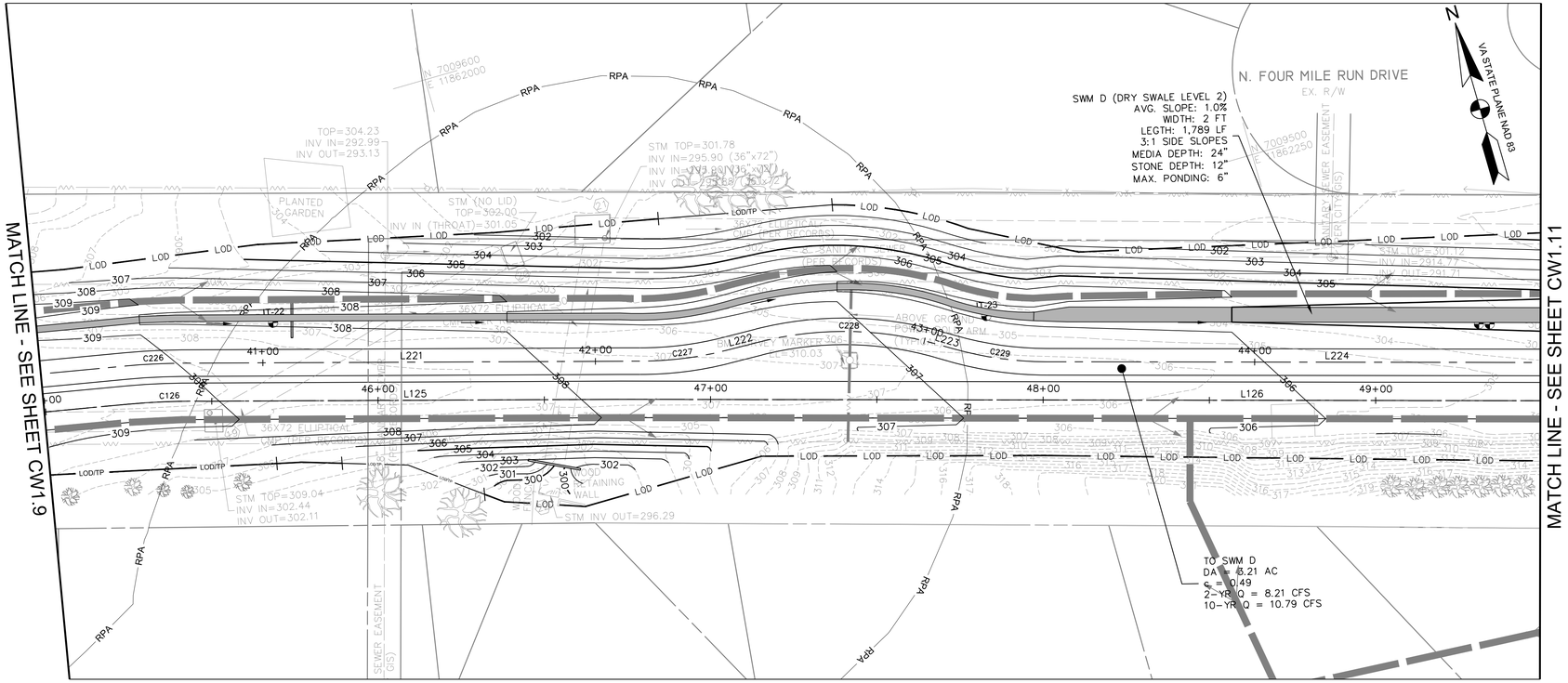
**90% DESIGN**

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'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FALLS CHURCH, VA
UPC 113612

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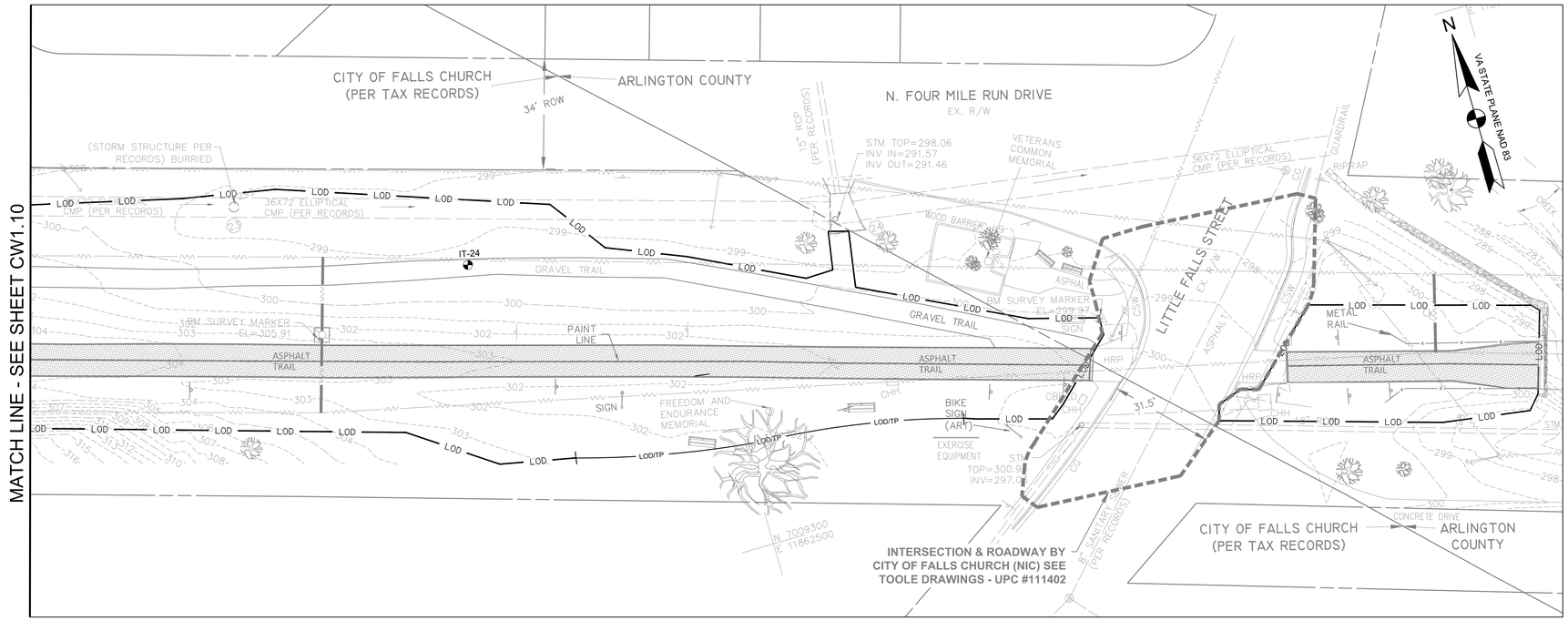
| DESIGNED BY: | AMT |
| DRAWN BY: | AMT |
| CHECKED BY: | AMT |

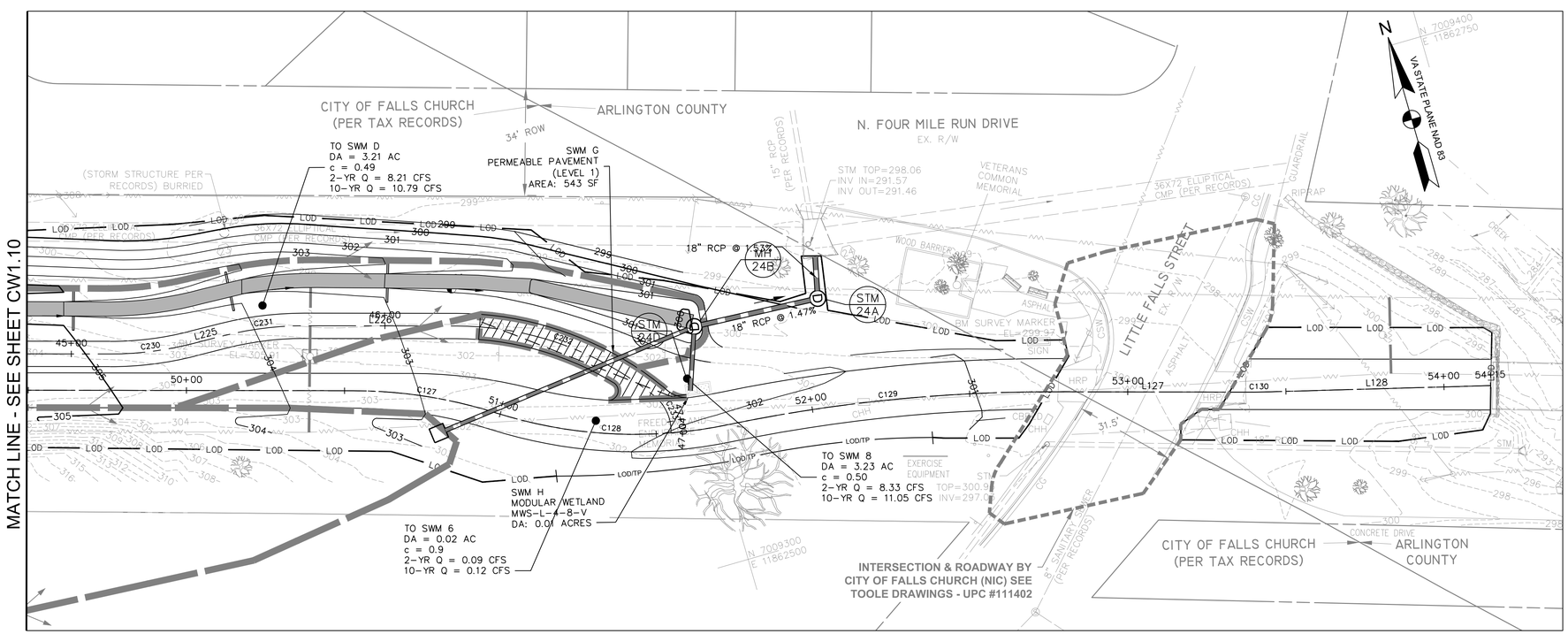
**90% DESIGN**

SHEET TITLE
STORMWATER MANAGEMENT PLAN

SHEET
CW1.10




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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| DESIGNED BY: | AMT |
| DRAWN BY: | AMT |
| CHECKED BY: | AMT |

**90% DESIGN**

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 7.88 ACRES. THE IMPERVIOUS AREA FOR THE EXISTING CONDITION IS 1.79 ACRES (22.7%) AND 2.42 ACRES (30.7%) FOR THE PROPOSED CONDITION. DUE TO THE INCREASE IN IMPERVIOUS AREA THERE IS A 2.51 LB/YR PHOSPHORUS LOAD REDUCTION REQUIREMENT. TO MEET CITY OF FALLS CHURCH AND STATE REQUIREMENTS FOR WATER QUALITY, THE PLANS PROPOSE TWO LEVEL 2 DRY SWALE FACILITIES, ONE LEVEL 1 DRY SWALE FACILITY, TWO LEVEL 1 PERMEABLE PAVEMENT FACILITIES, AND TWO MANUFACTURED FILTERING TREATMENT DEVICES (BIOCLEAN MODULAR WETLAND SYSTEM). THE LEVEL 2 DRY SWALE FACILITIES PROVIDE 3.32 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 3.86 LB/YR WHICH EXCEEDS THE MINIMUM REQUIREMENT BY 1.35 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 SPECIFICATIONS.

*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: **1/6/2020**
Linear Development Project? Yes

CLEAR ALL (Ctrl+Shift+R)

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

### Site Information

### Post-Development Project (Treatment Volume and Loads)

Enter Total Disturbed Area *(acres)* → 7.88

| | |
|---|---|
| *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):* | 2.48 |

*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) | | | | 1.79 | 1.79 |
| | | | | | 7.88 |

**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) | | | | 2.42 | 2.42 |
| Area Check | OK. | OK. | OK. | OK. | 7.88 |

**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 |
| Rv (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) | 1.79 | 1.79 |
| Rv(impervious) | 0.95 | 0.95 |
| % Impervious | 23% | 25% |
| **Total Site Area (acres)** | **7.88** | **7.25** |
| **Site Rv** | **0.41** | **0.42** |

Treatment Volume and Nutrient Load

| | | |
|---|---|---|
| Pre-ReDevelopment Treatment Volume (acre-ft) | 0.2686 | 0.2555 |
| Pre-ReDevelopment Treatment Volume (cubic feet) | 11,699 | 11,128 |
| Pre-ReDevelopment TP Load (lb/yr) | **7.35** | **6.99** |
| Pre-ReDevelopment TP Load per acre (lb/acre/yr) | 0.93 | 0.96 |
| Baseline TP Load (lb/yr) (0.41 lbs/acre/yr applied to pre-redevelopment area excluding pervious land proposed for new impervious cover) | *2.97* | |

[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 Re(forest) | 0.00 |
| % Forest | 0% |
| Managed Turf Cover (acres) | 5.46 |
| Weighted Rv (turf) | 0.25 |
| % Managed Turf | 69% |
| Impervious Cover (acres) | 2.42 |
| Rv(impervious) | 0.95 |
| % Impervious | 31% |
| **Final Site Area (acres)** | **7.88** |
| **Final Post Dev Site Rv** | **0.46** |

*Land Cover Summary-Post*

| Post-ReDevelopment | |
|---|---|
| Forest/Open Space Cover (acres) | 0.00 |
| Weighted Re(forest) | 0.00 |
| % Forest | 0% |
| Managed Turf Cover (acres) | 5.46 |
| Weighted Rv (turf) | 0.25 |
| % Managed Turf | 75% |
| ReDev. Impervious Cover (acres) | 1.79 |
| Rv(impervious) | 0.95 |
| % Impervious | 25% |
| **Total ReDev. Site Area (acres)** | **7.25** |
| **ReDev Site Rv** | **0.42** |

*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) | 0.3053 | Post-ReDevelopment Treatment Volume (acre-ft) | 0.2555 | Post-Development Treatment Volume (acre-ft) | 0.0499 |
| Final Post-Development Treatment Volume (cubic feet) | 13,300 | Post-ReDevelopment Treatment Volume (cubic feet) | 11,128 | Post-Development Treatment Volume (cubic feet) | 2,173 |
| Final Post-Development TP Load (lb/yr) | **8.36** | Post-ReDevelopment TP Load (TP) (lb/yr)* | **6.99** | Post-Development TP Load (lb/yr) | **1.37** |
| Final Post-Development TP Load per acre (lb/acre/yr) | 1.06 | Post-ReDevelopment TP Load per acre (lb/acre/yr) | 0.96 | | |
| | | Max. Reduction Required (Below Pre-ReDevelopment Load) | 20% | | |
| | | **TP Load Reduction Required for Redeveloped Area (lb/yr)** | **1.40** | **TP Load Reduction Required for New Impervious Area (lb/yr)** | **1.11** |

**Post-Development Requirement for Site Area**

| | |
|---|---|
| **TP Load Reduction Required (lb/yr)** | **2.51** |
| **Linear Project TP Load Reduction Required (lb/yr):** | **2.48** |

### Drainage Area A

Drainage Area A Land Cover (acres)

| | A Soils | B Soils | C Soils | D Soils | Totals | Land Cover Rv |
|---|---|---|---|---|---|---|
| Forest/Open Space (acres) | | | | | 0.00 | 0.00 |
| Managed Turf (acres) | | | | 1.25 | 1.25 | 0.25 |
| Impervious Cover (acres) | | | | 0.51 | 0.51 | 0.95 |
| | | | | Total | 1.76 | |

CLEAR BMP AREAS

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 | 18 | 19 | 34 | 25 | 0.00 | 0.02 | 0.01 | 0.01 | 14.b. MTD - Filtering |
| **5. Dry Swale (RR)** | | | | | | | | | | | | | |
| 5.a. Dry Swale #1 (Spec #10) | 40 | 0.48 | 0.52 | 0 | 618 | 913 | 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

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) | | | | 0.54 | 0.54 | 0.25 |
| Impervious Cover (acres) | | | | 0.30 | 0.30 | 0.95 |
| | | | | Total | 0.84 | |

CLEAR BMP AREAS

'otal Phosphorus Available for Removal in D.A. B (lb/yr) 0.96
Post Development Treatment Volume in D.A. B ($ft^3$) 1,525

### Drainage Area C

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) | | | | 0.55 | 0.55 | 0.95 |
| | | | | Total | 1.93 | |

CLEAR BMP AREAS

Total Phosphorus Available for Removal in D.A. C (lb/yr) 1.98
Post Development Treatment Volume in D.A. C ($ft^3$) 3,149

**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 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **5. Dry Swale (RR)** | | | | | | | | | | | | | |
| 5.b. Dry Swale #2 (Spec #10) | 60 | 1.06 | 0.47 | 0 | 1,550 | 1,033 | 2,583 | 40 | 0.00 | 1.62 | 1.23 | 0.39 | |

### Drainage Area D

Drainage Area A Land Cover (acres)

| | A Soils | B Soils | C Soils | D Soils | Totals | Land Cover Rv |
|---|---|---|---|---|---|---|
| Forest/Open Space (acres) | | | | | 0.00 | 0.00 |
| Managed Turf (acres) | | | | 2.28 | 2.28 | 0.25 |
| Impervious Cover (acres) | | | | 1.06 | 1.06 | 0.95 |
| | | | | Total | 3.34 | |

CLEAR BMP AREAS

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 | 0.30 | 0.55 | 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 | 0.54 | 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 ($ft^3$) 13,300

**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 | 1,550 | 2,642 | 0 | 4,823 |
| TP LOAD AVAILABLE FOR REMOVAL (lb/yr) | 1.82 | 0.96 | 1.98 | 3.60 | 0.00 | 8.35 |
| TP LOAD REDUCTION ACHIEVED (lb/yr) | 0.52 | 0.00 | 1.23 | 2.11 | 0.00 | 3.86 |
| TP LOAD REMAINING (lb/yr) | 1.30 | 0.96 | 0.75 | 1.49 | 0.00 | 4.49 |
| NITROGEN LOAD REDUCTION ACHIEVED (lb/yr) | 3.89 | 0.00 | 8.58 | 14.64 | 0.00 | 27.11 |

**Total Phosphorus**

| | | LINEAR PROJECT: |
|---|---|---|
| FINAL POST-DEVELOPMENT TP LOAD (lb/yr) | -- | 8.36 |
| TP LOAD REDUCTION REQUIRED (lb/yr) | -- | 2.48 |
| TP LOAD REDUCTION ACHIEVED (lb/yr) | -- | 3.86 |
| TP LOAD REMAINING (lb/yr) | -- | 4.50 |
| REMAINING TP LOAD REDUCTION REQUIRED (lb/yr): | -- | 0.00 |

** TARGET TP REDUCTION EXCEEDED BY 1.38 LB/YEAR **

**Total Nitrogen (For Information Purposes)**

| | |
|---|---|
| POST-DEVELOPMENT LOAD (lb/yr) | 59.78 |
| NITROGEN LOAD REDUCTION ACHIEVED (lb/yr) | 27.11 |
| REMAINING POST-DEVELOPMENT NITROGEN LOAD (lb/yr) | 32.67 |

### 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**

| | | 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 |

Total Area (acres): 1.76
Runoff Reduction Volume ($ft^3$): 631

| | 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**

| | | 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 | 0.54 |
| | CN | 39 | 61 | 74 | 80 |
| Impervious Cover | Area (acres) | 0.00 | 0.00 | 0.00 | 0.30 |
| | CN | 98 | 98 | 98 | 98 |
| | | | | | $CN_{(D.A. B)}$ 86 |

Total Area (acres): 0.84
Runoff Reduction Volume ($ft^3$): 0

| | 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**

| | | 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 | 0.55 |
| | CN | 98 | 98 | 98 | 98 |
| | | | | | $CN_{(D.A. C)}$ 85 |

Total Area (acres): 1.93
Runoff Reduction Volume ($ft^3$): 1,550

| | 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* | 1.07 | 1.53 | 3.05 |
| Adjusted CN* | 81 | 82 | 83 |

**See Notes above*

**Drainage Area D**

| | | 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 |

Total Area (acres): 3.34
Runoff Reduction Volume ($ft^3$): 2,642

| | 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, TWO LEVEL 2 DRY SWALE FACILITIES, 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
- DRY SWALE (LEVEL 2) SWM C: 2,583 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 + 2,583 + 4,378 + 34 + 34 + 19 + 19 = 8,606 CF

TOTAL DETENTION VOLUME REQUIRED IS 0 CF

VOLUME PROVIDED WITHIN THE FACILITIES ARE:

- DRY SWALE (LEVEL 1) SWM A: 1,780 CF
- DRY SWALE (LEVEL 2) SWM C: 2,609 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: 9,230 CF *SEE SHEET CW5.2 FOR DETAILED FACILITY SIZING COMPUTATIONS.

CHECK: 9,230 CF > 8,606 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.

**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 | 85 | 85 | 85 |
| S=1000/CN-10 | 1.76 | 1.76 | 1.76 | 1.76 |
| 0.2S | 0.35 | 0.35 | 0.35 | 0.35 |
| $RV=(P-0.2S)^2/(P-0.2S)+5$ (in.) | 1.75 | 1.75 | 3.28 | 3.28 |

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

I.F 0.8

| CHANNEL PROTECTION (2-YEAR) | | | FLOOD CONTROL (10-YEAR) | |
|---|---|---|---|---|
| Qpre-development (cfs) | 3.20 | From TR55 | Qpre-development | 5.96 |
| QPost Development (cfs) | 1.75 | From TR55 | QPost Development | 3.53 |
| RVPost Development (with runoff reduction) (in.) | 1.65 | From RRM | RVPost Development (with runoff reduction) | 3.18 |
| Qallowable (cfs) | 2.71 | | Qallowable | 6.14 |
| Qallowable/QPost Development | 1.55 | Fig 11.7 of DEQ Manual | Qallowable/QPost Development | 1.74 |
| Vs/Vr | 0.00 | | Vs/Vr | 0.00 |
| Vs | 0.00 | | Vs | 0.00 |
| Storage Required (CF) | 0 | | Storage Required (CF) | 0 |

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

SITE AREA (acre) 0.84

| | 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 |
| 0.2S | 0.33 | 0.33 | 0.33 | 0.33 |
| $RV=(P-0.2S)^2/(P-0.2S)+5$ (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) | | | FLOOD CONTROL (10-YEAR) | |
|---|---|---|---|---|
| Qpre-development (cfs) | 1.59 | From TR55 | Qpre-development | 2.91 |
| QPost Development (cfs) | 0.65 | From TR55 | QPost Development | 1.21 |
| RVPost Development (with runoff reduction) (in.) | 1.83 | From RRM | RVPost Development (with runoff reduction) | 3.37 |
| Qallowable (cfs) | 1.27 | | Qallowable | 2.91 |
| Qallowable/QPost Development | 1.95 | Fig 11.7 of DEQ Manual | Qallowable/QPost Development | 2.41 |
| Vs/Vr | 0.00 | | Vs/Vr | 0.00 |
| Vs | 0.00 | | Vs | 0.00 |
| Storage Required (CF) | 0 | | Storage Required (CF) | 0 |

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

SITE AREA (acre) 1.93

| | 2-year | | 10-year | |
|---|---|---|---|---|
| | PRE | POST (adjusted) | PRE | POST (adjusted) |
| P | 3.19 | 3.19 | 4.90 | 4.90 |
| CN | 85 | 82 | 85 | 83 |
| S=1000/CN-10 | 1.76 | 2.20 | 1.76 | 2.05 |
| 0.2S | 0.35 | 0.44 | 0.35 | 0.41 |
| $RV=(P-0.2S)^2/(P-0.2S)+5$ (in.) | 1.75 | 1.53 | 3.28 | 3.08 |

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

I.F 0.8

| CHANNEL PROTECTION (2-YEAR) | | | FLOOD CONTROL (10-YEAR) | |
|---|---|---|---|---|
| Qpre-development (cfs) | 3.52 | From TR55 | Qpre-development | 6.54 |
| QPost Development (cfs) | 1.42 | From TR55 | QPost Development | 2.95 |
| RVPost Development (with runoff reduction) (in.) | 1.53 | From RRM | RVPost Development (with runoff reduction) | 3.05 |
| Qallowable (cfs) | 3.22 | | Qallowable | 7.02 |
| Qallowable/QPost Development | 2.27 | Fig 11.7 of DEQ Manual | Qallowable/QPost Development | 2.38 |
| Vs/Vr | 0.00 | | Vs/Vr | 0.00 |
| Vs | 0.00 | | Vs | 0.00 |
| Storage Required (CF) | 0 | | 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 |
| 0.2S | 0.38 | 0.44 | 0.38 | 0.41 |
| $RV=(P-0.2S)^2/(P-0.2S)+5$ (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) | | | FLOOD CONTROL (10-YEAR) | |
|---|---|---|---|---|
| Qpre-development (cfs) | 6.31 | From TR55 | Qpre-development | 16.03 |
| QPost Development (cfs) | 4.36 | From TR55 | QPost Development | 12.33 |
| RVPost Development (with runoff reduction) (in.) | 1.14 | From RRM | RVPost Development (with runoff reduction) | 3.15 |
| Qallowable (cfs) | 5.43 | | Qallowable | 16.18 |
| Qallowable/QPost Development | 1.24 | Fig 11.7 of DEQ Manual | Qallowable/QPost Development | 1.31 |
| Vs/Vr | 0.00 | | Vs/Vr | 0.00 |
| Vs | 0.00 | | Vs | 0.00 |
| Storage Required (CF) | 0 | | Storage Required (CF) | 0 |


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J. KEITH SINCLAIR, JR.
Lic. No. 11195
01/08/20
PROFESSIONAL ENGINEER

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

REVISIONS

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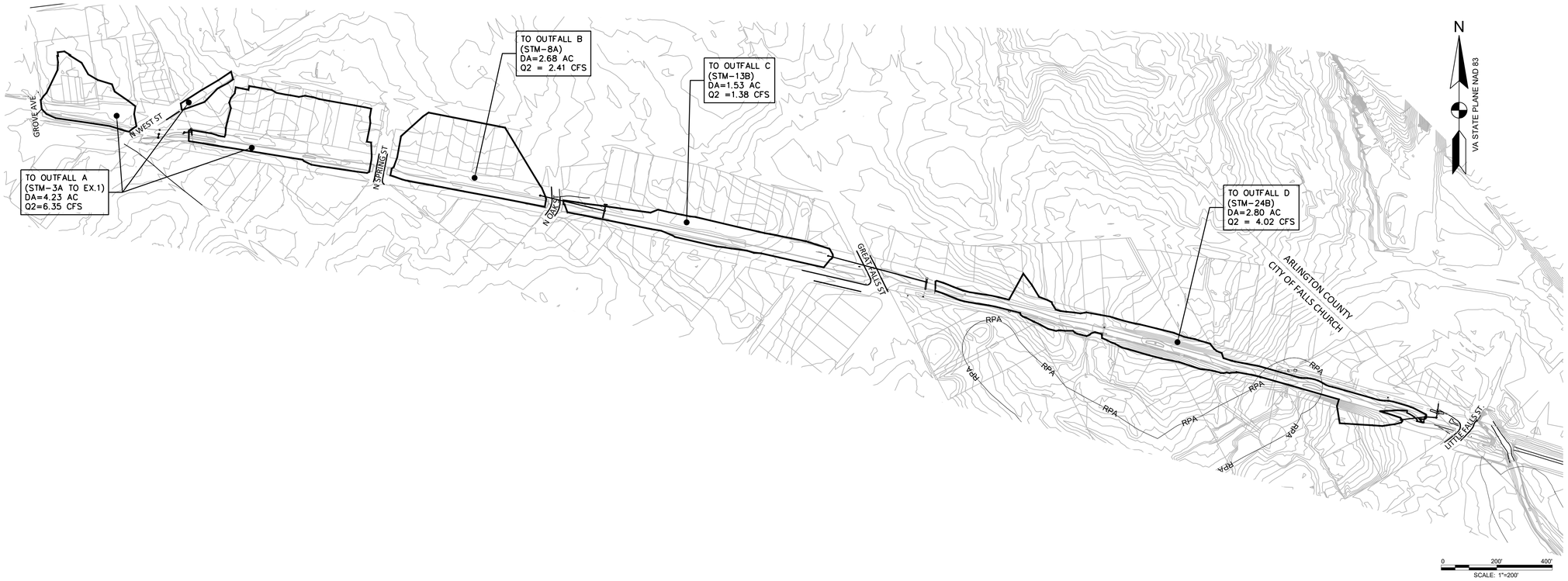
| AMT FILE NO. | 18-0367 |
| DATE: | 01/08/2020 |
| SCALE: | 1"=20' |
| DESIGNED BY: | AMT |
| DRAWN BY: | AMT |
| CHECKED BY: | AMT |

**90% DESIGN**

SHEET TITLE
SWM NARRATIVE AND CALCULATIONS

SHEET
CW5.0




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)(a)(1). PER 35-6(d)(1)(d)(1) THE OUTFALL CONTRIBUTING DRAINAGE AREA IS LESS THAN 1% OF THE TOTAL WATERSHED AREA OF 442 ACRES FOR TRIPPS RUN, THEREFORE THE LIMITS OF ANALYSIS IS THE POINT OF ANALYSIS IS WITHIN THE EXISTING 30" PIPE OUTFALL FROM NEW STORM STRUCTURE STM-3A. THE CUMULATIVE Q2 IS 6.35 CFS AND IS NON-EROSIVE WITHIN THE EXISTING 30" PIPE TO EX.1.
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. IN THE PRE-DEVELOPED CONDITION THE DRAINAGE AREA FROM BOTH OFF-SITE AND ON-SITE AREAS OUTFALLS TO NORTH OAK STREET. PER CITY CODE SECTION 35-6(d)(1)(a)(1). PER 35-6(d)(1)(d)(1) THE OUTFALL CONTRIBUTING DRAINAGE AREA IS LESS THAN 1% OF THE TOTAL WATERSHED AREA OF 442 ACRES FOR TRIPPS RUN, THEREFORE THE LIMITS OF ANALYSIS IS THE POINT OF ANALYSIS IS WITHIN THE PROPOSED 18" PIPE OUTFALL FROM NEW STORM STRUCTURE STM-8A. THE CUMULATIVE Q2 IS 2.41 CFS AND IS NON-EROSIVE WITHIN THE PROPOSED 18" PIPE TO STM-8.
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)(a)(1). PER 35-6(d)(1)(d)(1) THE OUTFALL CONTRIBUTING DRAINAGE AREA IS LESS THAN 1% OF THE TOTAL WATERSHED AREA OF 442 ACRES FOR TRIPPS RUN, THEREFORE THE LIMITS OF ANALYSIS IS THE POINT OF ANALYSIS IS WITHIN THE PROPOSED 15" PIPE OUTFALL FROM NEW STORM STRUCTURE STM-13B. THE CUMULATIVE Q2 IS 1.38 CFS AND IS NON-EROSIVE WITHIN THE PROPOSED 15" PIPE TO STM-13A.
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)(a)(1). PER 35-6(d)(1)(d)(1) THE OUTFALL CONTRIBUTING DRAINAGE AREA IS LESS THAN 1% OF THE TOTAL WATERSHED AREA OF 1,222 ACRES FOR FOUR MILE RUN, THEREFORE THE LIMITS OF ANALYSIS IS THE POINT OF ANALYSIS IS WITHIN THE PROPOSED 18" PIPE OUTFALL FROM NEW STORM STRUCTURE STM-24B. THE CUMULATIVE Q2 IS 4.02 CFS AND IS NON-EROSIVE WITHIN THE PROPOSED 18" PIPE FROM STM-24B TO STM-24A.
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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LICENSE NO.:3562, EXPIRATION DATE 06/30/2021."

PROJECT TITLE
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FALLS CHURCH, VA
UPC 113612

REVISIONS

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| DRAWN BY: | AMT |
| CHECKED BY: | AMT |

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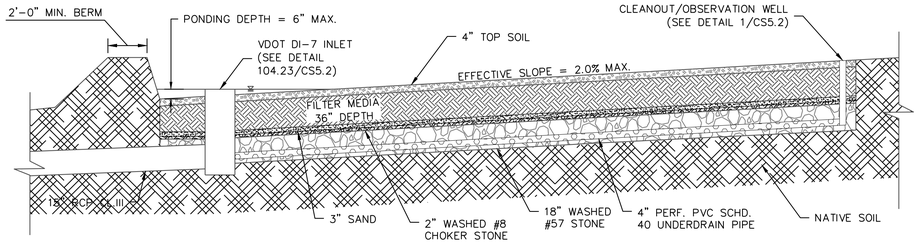
SHEET TITLE
SWM OUTFALL ANALYSIS

SHEET
CW5.1




1 DRY SWALE LEVEL 1 SECTION DETAIL
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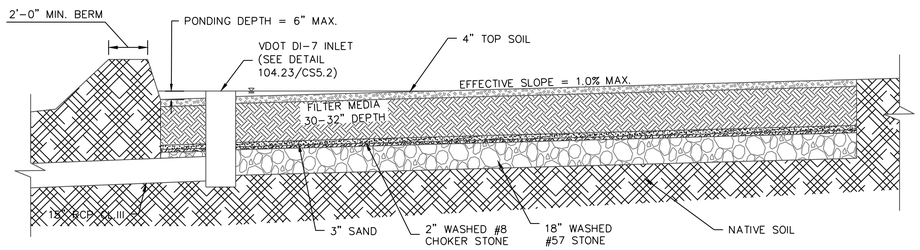
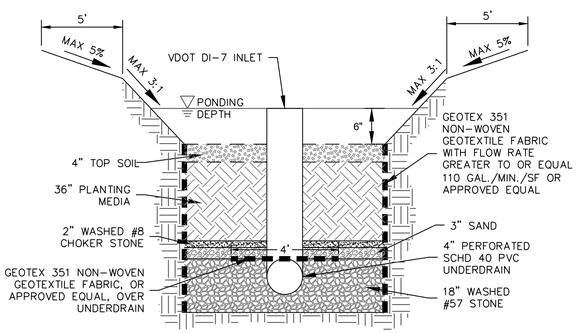
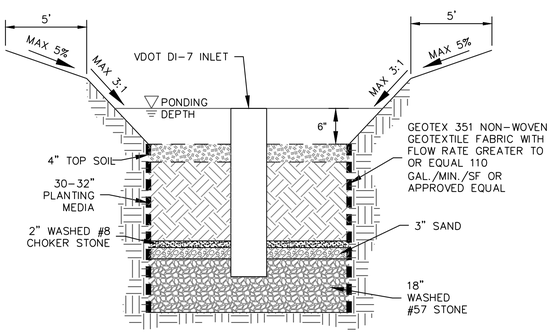



2 DRY SWALE LEVEL 2 SECTION DETAIL
SCALE:N.T.S.

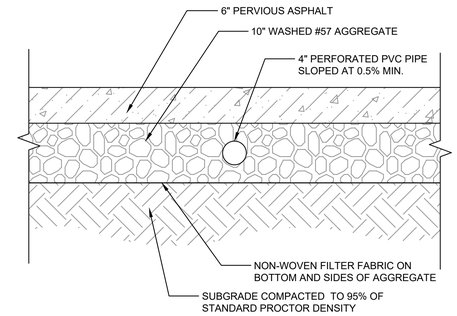



3 DRY SWALE TYPICAL SECTION (LEVEL1)
SCALE:NTS




4 DRY SWALE TYPICAL SECTION (LEVEL2)
SCALE:NTS

| | SF | AC | | Depth (in) | Storage Volume (CF) |
|---|---|---|---|---|---|
| **SWM A (Dry Swale Level 1)** | | | Ponding (6" max) | 6.00 | 13 |
| | | 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) | | |
| | | | | | |
| **SWM C (Dry Swale Level 2)** | | | Ponding (6" max) | 6.00 | 25 |
| | | 3.16% | Media (24"-36") | 32.00 | 1,360 |
| DA | 64,566 | 1.4822 | Gravel (9"-18") | 18.00 | 1,224 |
| Impervious | 19,524 | 0.4482 | Equiv. Depth | 1.77 | |
| Managed Turf | 45,042 | 1.0340 | Available Storage (CF) | | |
| | | | | | |
| **SWM D (Dry Swale Level 2)** | | | Ponding (6" max) | 6.00 | 25 |
| | | 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) | | |




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<br>PA: 2 in. of No. 57 stone<br>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<br>PA: No. 2 stone<br>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.2 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%.<br>Thickness: 3.125 inches for vehicles.<br>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%.<br>Thickness: 3.5 inches.<br>Compressive strength: 35 Mpa.<br>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.<br>Compressive strength: varies, depending on fill material.<br>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 %.<br>Thickness: typically 4 to 8 inches.<br>Compressive strength: 2.8 to 28 Mpa.<br>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 %.<br>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<br>• Remove any soil or sediment deposited on pavement.<br>• 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<br>• 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<br>• Replace any necessary joint material | If clogged |

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

***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**:<br>• 85-88% sand<br>• 8-12% soil fines<br>• 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. | |

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

**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.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PROJECT TITLE
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FALLS CHURCH, VA
UPC 113612

REVISIONS

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| SCALE: | 1"=20' |
| DESIGNED BY: | AMT |
| DRAWN BY: | AMT |
| CHECKED BY: | AMT |

**90% DESIGN**

SHEET TITLE
STORMWATER MANAGEMENT DETAILS

SHEET
CW5.2

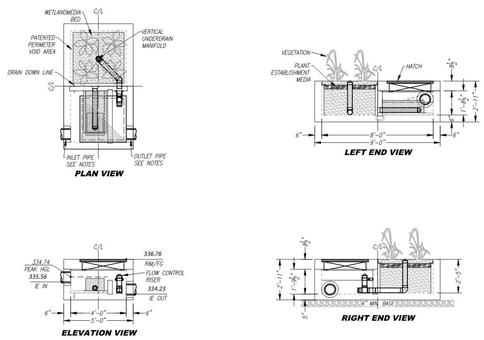
| SITE SPECIFIC DATA | | | |
|---|---|---|---|
| PROJECT NUMBER | ---- | | |
| ORDER NUMBER | ---- | | |
| PROJECT NAME | W&OD TRAIL PROJECT | | |
| PROJECT LOCATION | FALLS CHURCH, VA | | |
| STRUCTURE ID | STM-3B (SWM-G) | | |
| TREATMENT REQUIRED | | | |
| VOLUME BASED (CF) | FLOW BASED (CFS) | | |
| 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 |
| METLANDMEDIA 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

1. MANUFACTURER TO PROVIDE ALL MATERIALS UNLESS OTHERWISE NOTED.
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 |

PROPRIETARY AND CONFIDENTIAL:
THE INFORMATION CONTAINED IN THIS DOCUMENT IS THE SOLE PROPERTY OF PORTERS AND ITS COMPANIES. THIS DOCUMENT, NOR ANY PART THEREOF, MAY BE USED, REPRODUCED OR MODIFIED IN ANY MANNER WITH OUT THE WRITTEN CONSENT OF PORTERS.

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

6 STORMWATER BIOFILTRATION SYSTEM (SWM G)
SCALE:NTS

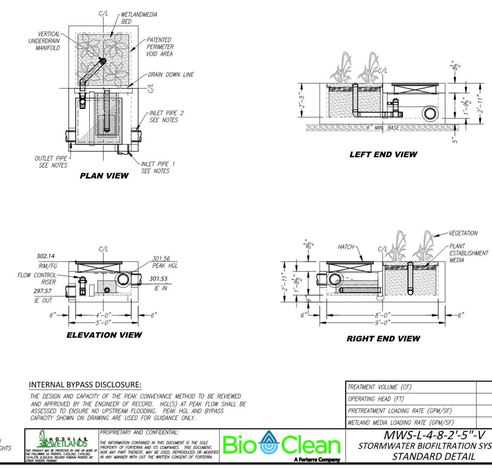
| SITE SPECIFIC DATA | | | |
|---|---|---|---|
| PROJECT NUMBER | ---- | | |
| ORDER NUMBER | ---- | | |
| PROJECT NAME | W&OD TRAIL PROJECT | | |
| PROJECT LOCATION | FALLS CHURCH, VA | | |
| STRUCTURE ID | STM-24D (SWM-H) | | |
| TREATMENT REQUIRED | | | |
| VOLUME BASED (CF) | FLOW BASED (CFS) | | |
| 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 |
| METLANDMEDIA VOLUME (CY) | | | 1.23 |
| ORIFICE SIZE (DIA. INCHES) | | | #1.08" |
| 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

1. MANUFACTURER TO PROVIDE ALL MATERIALS UNLESS OTHERWISE NOTED.
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) | 0.8 |
| PRETREATMENT LOADING RATE (GPM/SF) | 0.5 |
| WETLAND MEDIA LOADING RATE (GPM/SF) | 1.0 |

PROPRIETARY AND CONFIDENTIAL:
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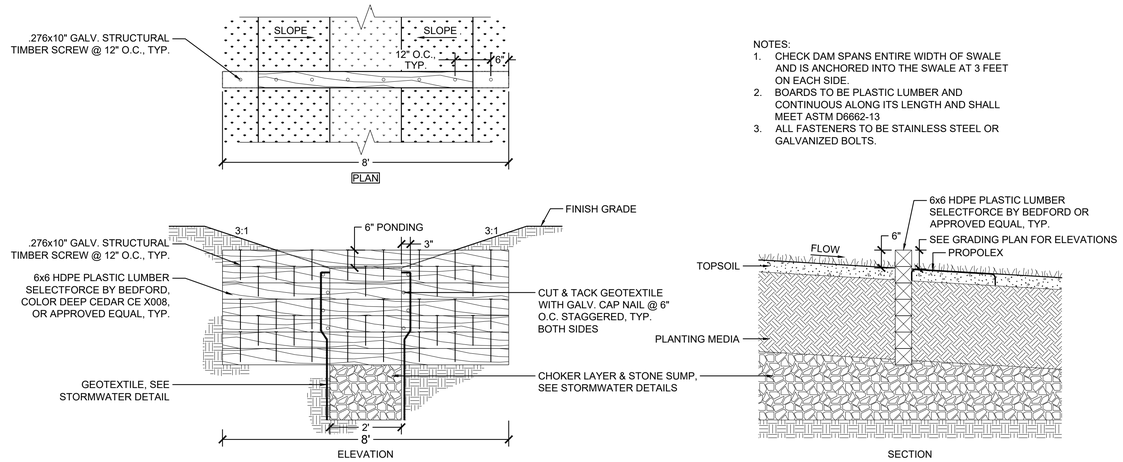
MWS-L-4-8-2'-5"-V
STORMWATER BIOFILTRATION SYSTEM
STANDARD DETAIL

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 DRAIN COMPUTATIONS

EX. 3
DRAIANGE 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
DRAIANGE AREA: 0.37 AC
c: 0.49
INLET AREA: 1.15 SF
INLET ELEV.: 335.52
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
DRAIANGE 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
DRAIANGE 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


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
J. KEITH SINCLAIR, JR.
Lic. No. 11195
01/08/20
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 |
|---|---|---|
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |

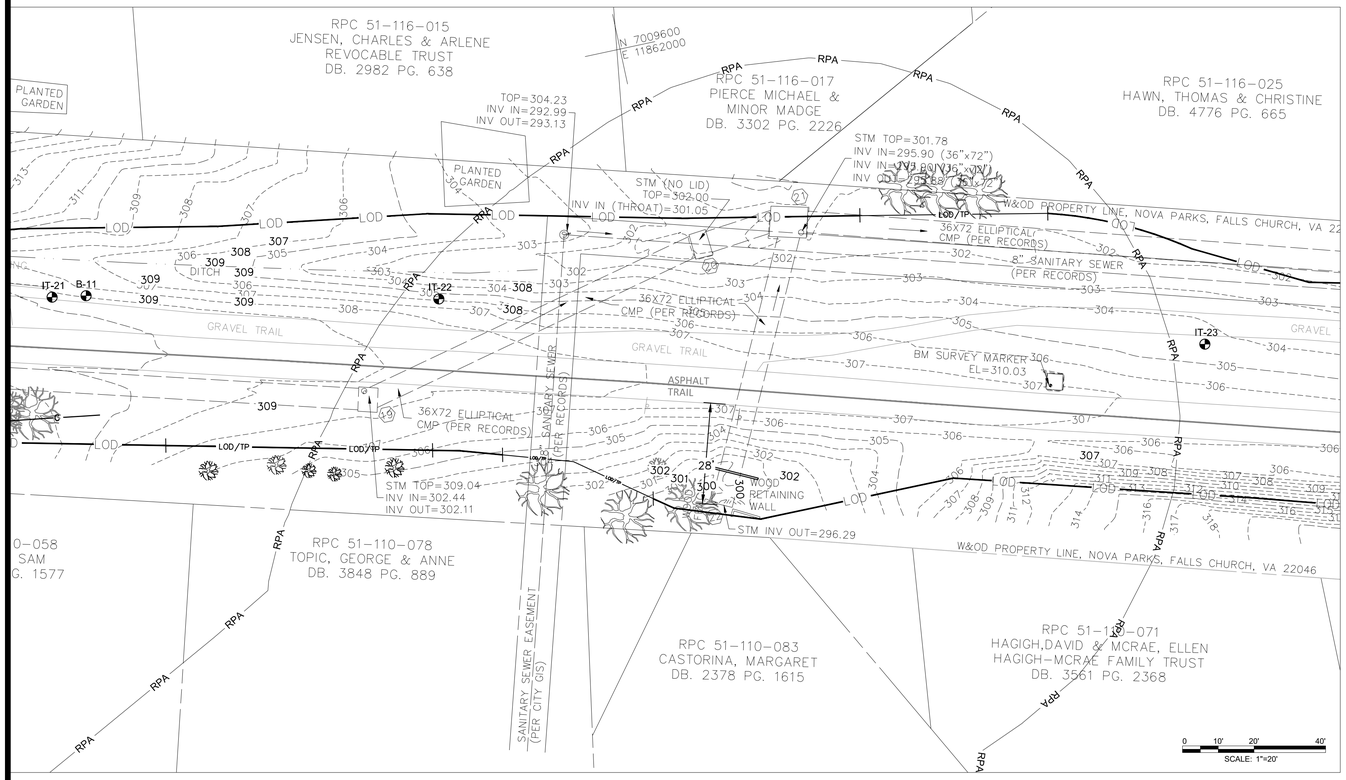
| | |
|---|---|
| AMT FILE NO. | 18-0367 |
| DATE: | 01/08/2020 |
| SCALE: | 1"=20' |
| DESIGNED BY: | AMT |
| DRAWN BY: | AMT |
| CHECKED BY: | AMT |

**90% DESIGN**

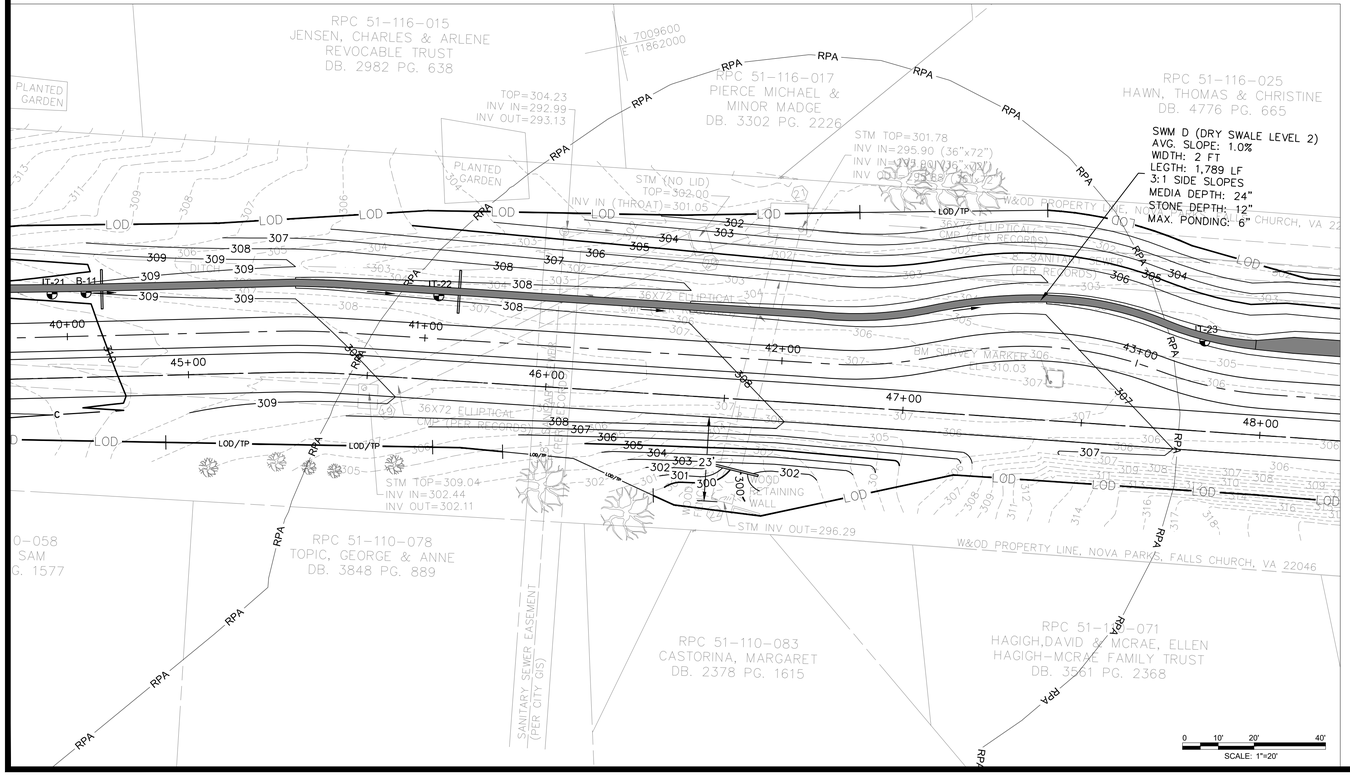
SHEET TITLE
STORMWATER MANAGEMENT DETAILS

SHEET
CW5.3

# PRE-DEVELOPMENT




# POST-DEVELOPMENT




## Appendix C. Water Quality Impact Assessment Data Sheet

| | |
|---|---|
| Project Address<br>WASHINGTON & OLD DOMINION TRAIL | Date:<br>10/24/2019 |
| Applicant Name/Affiliation:<br>BRIAN NOLAN/NOVA PARKS | Applicant Contact Information (phone and email):<br>703-359-4621 ; BNOLAN@NVRPA.ORG |
| Owner/Client Name:<br>BRIAN NOLAN/NOVA PARKS | Owner/Client Contact Information (phone and email):<br>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
A. MORTON THOMAS AND ASSOCIATES, INC.
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EMAIL: AMT1@AMTENGINEERING.COM


COMMONWEALTH OF VIRGINIA
J. KEITH SINCLAIR, JR.
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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: | 01/08/2020 |
| SCALE: | 1"=20' |
| DESIGNED BY: | AMT |
| DRAWN BY: | AMT |
| CHECKED BY: | AMT |

**90% 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.

**B-1**
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 | LL | PI | Moisture content (%) | % Finer than #200 |
|---|---|---|---|---|---|---|---|---|
| 0.0 / 338.0 TOPSOIL **Tops -2** in | | | | | | | | |
| 0.2 / 337.8 Brown, sandy elastic silt FILL, trace gravel, firm, moist **FL-MH** | | 8 | 0.5 | F1 | | | 35.0 | |
| 2.5 / 335.5 Brown, sandy ELASTIC SILT, firm, moist **MH** | 335 | 7 | 2.5 | F1 | | | 34.5 | |
| SAME, trace gravel, contains mica | 5 | 7 | 4.5 | R1 | | | 47.5 | |
| | | 6 | 6.5 | R1 | | | 35.0 | 62.8 |
| 8.5 / 329.5 Brown, sandy SILT, trace gravel, firm, moist **ML** | 330 10 | 8 | 8.5 | R2 | NP | NP | 18.3 | 67.6 |
| 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 | LL | PI | Moisture content (%) | % Finer than #200 |
|---|---|---|---|---|---|---|---|---|
| 0.0 / 334.2 TOPSOIL **Tops -2** in | | | | | | | | |
| 0.2 / 334.0 Brown and gray, sandy silt FILL, trace gravel, soft, moist **FL-ML** | | 3 | 0.5 | F2 | | | 21.8 | |
| 2.5 / 331.7 Brown, sandy LEAN CLAY, trace gravel, firm, moist **CL** | | 6 | 2.5 | F2 | | | 23.4 | |
| SAME, contains mica | 330 5 | 7 | 4.5 | R2 | | | 25.3 | |
| 6.0 / 328.2 Brown, sandy ELASTIC SILT, contains mica, firm, moist **MH** | | 7 | 6.5 | R1 | | | 37.2 | 68.3 |
| | 325 10 | 7 | 8.5 | R1 | | | 33.6 | |
| 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.
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-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 | LL | PI | Moisture content (%) | % Finer than #200 |
|---|---|---|---|---|---|---|---|---|
| 0.0 / 337.5 TOPSOIL **Tops -3** in | | | | | | | | |
| 0.3 / 337.3 Red and brown, sandy silt FILL, contains mica, soft to stiff, moist **FL-ML** | | 9 | 0.5 | F2 | | | 22.1 | |
| | 335 | 4 | 2.5 | F2 | | | 29.9 | |
| 4.5 / 333.0 Red and brown, sandy ELASTIC SILT, contains mica, soft to firm, moist **MH** | 5 | 6 | 4.5 | R1 | | | 45.1 | |
| | 330 | 4 | 6.5 | R1 | | | 50.0 | 75.6 |
| | | 4 | 8.5 | R1 | 51 | 7 | 39.8 | 67.8 |
| 10.0 / 327.5 Boring Terminated | 10 | | | | | | | |

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

**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-4**

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

**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**

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AMT
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(301) 881-2545 FAX:(301) 881-0814
EMAIL: AMT@AMTENGINEERING.COM


COMMONWEALTH OF VIRGINIA
J. KEITH SINCLAIR, JR.
Lic. No. 11195
01/08/20
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: | 01/08/2020 |
| SCALE: | 1"=20' |
| DESIGNED BY: | AMT |
| DRAWN BY: | AMT |
| CHECKED BY: | AMT |

**90% 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-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 | | | | | | | | | | LAB DATA | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 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 / 312.2<br>TOPSOIL **Tops** ~3 in | | | | |
| | | | | | | | | | 0.3 / 312.0<br>Brown and red, sandy silt FILL, trace gravel, contains mica, soft, moist **FL-ML** | | | | |
| | 310 | 4 | | 0.5 | | | | F2 | | | | 18.9 | |
| | | 2 | | 2.5 | | | | | | | | 26.0 | |
| | | | | | | | | | 4.5 / 307.7<br>Brown and red, fine to medium SILTY SAND, contains mica, loose, moist **SM** | | | | |
| 5 | | 4 | | 4.5 | | | | R3 | | | | 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

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. Pao/M. Becerra LOGGER: A. Damtew
SURFACE ELEVATION: 302.6 ft

GROUND WATER WAS NOT ENCOUNTERED DURING DRILLING

DRY ON 7/5/2019

| FIELD DATA | | | | | | | | | | LAB DATA | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 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<br>TOPSOIL **Tops** ~3 in | | | | |
| | | | | | | | | | 0.3 / 302.4<br>Brown, sandy silt FILL, trace gravel, contains mica, firm to very stiff, moist **FL-ML** | | | | |
| | | 6 | | 0.5 | | | | | | | | 10.5 | |
| | 300 | 16 | | 2.5 | | | | F2 | | | | 14.2 | |
| | | 14 | | 4.5 | | | | | 4.5 / 298.1<br>Brown, fine to medium SILTY SAND, contains mica, medium dense, moist, no gravel **SM** | NP | NP | 16.3 | 29.6 |
| 5 | | 14 | | 6.5 | | | | | | | | 16.5 | 29.3 |
| | 295 | | | | | | | R3 | | | | | |
| | | 16 | | 8.5 | | | | | SAME, trace gravel | | | 19.9 | |
| 10 | | | | | | | | | 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**

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COMMONWEALTH OF VIRGINIA
J. KEITH SINCLAIR, JR.
Lic. No. 11195
01/08/20
PROFESSIONAL ENGINEER

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PROJECT TITLE

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

REVISIONS

| MARK | DATE | DESCRIPTION |
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| AMT FILE NO. | 18-0367 |
| DATE: | 01/08/2020 |
| SCALE: | 1"=20' |
| DESIGNED BY: | AMT |
| DRAWN BY: | AMT |
| CHECKED BY: | AMT |

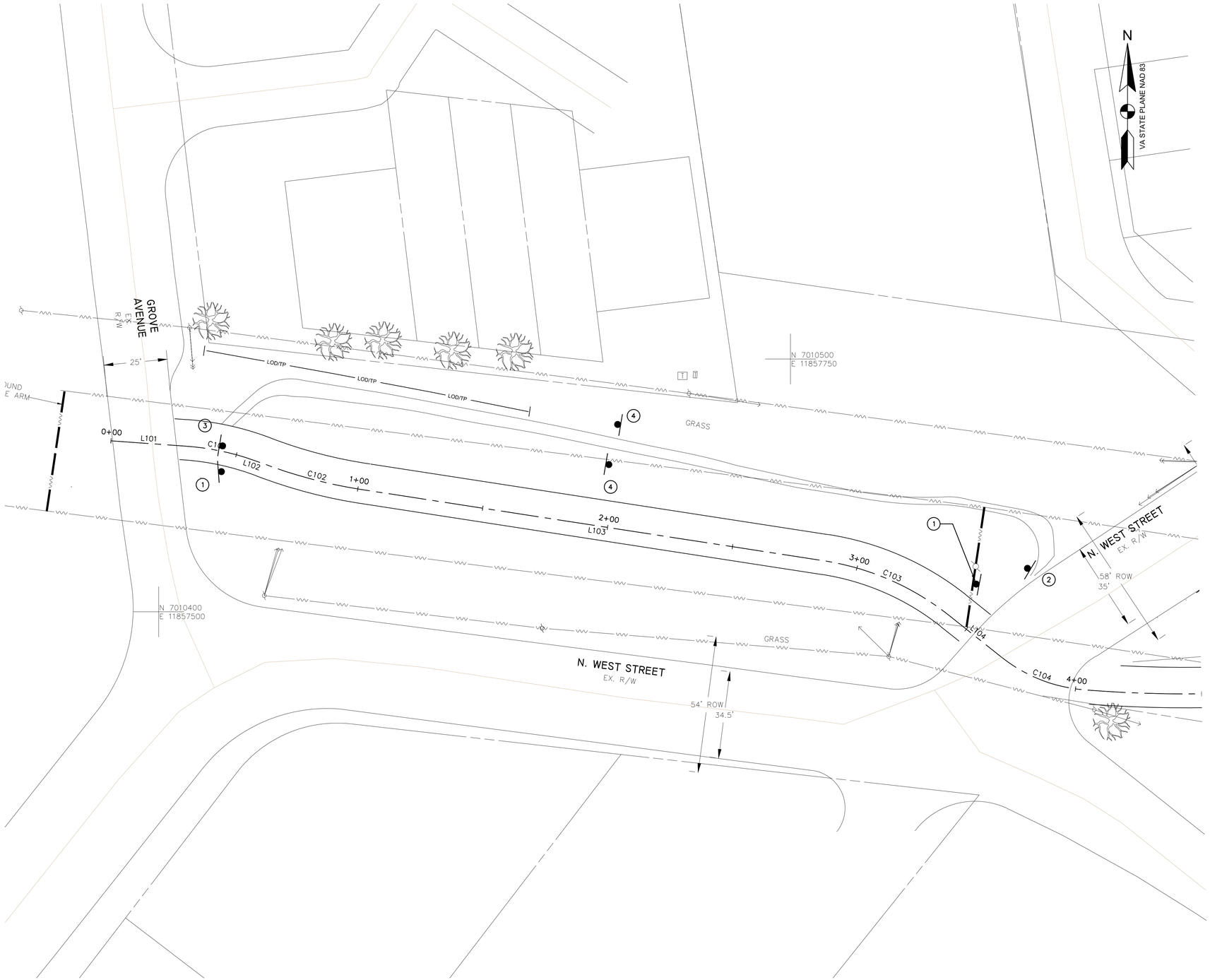
**90% DESIGN**

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"

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

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COMMONWEALTH OF VIRGINIA
JACK A. GOODE, II
LIC. NO. -02039202
PROFESSIONAL ENGINEER
1/8/20

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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 |
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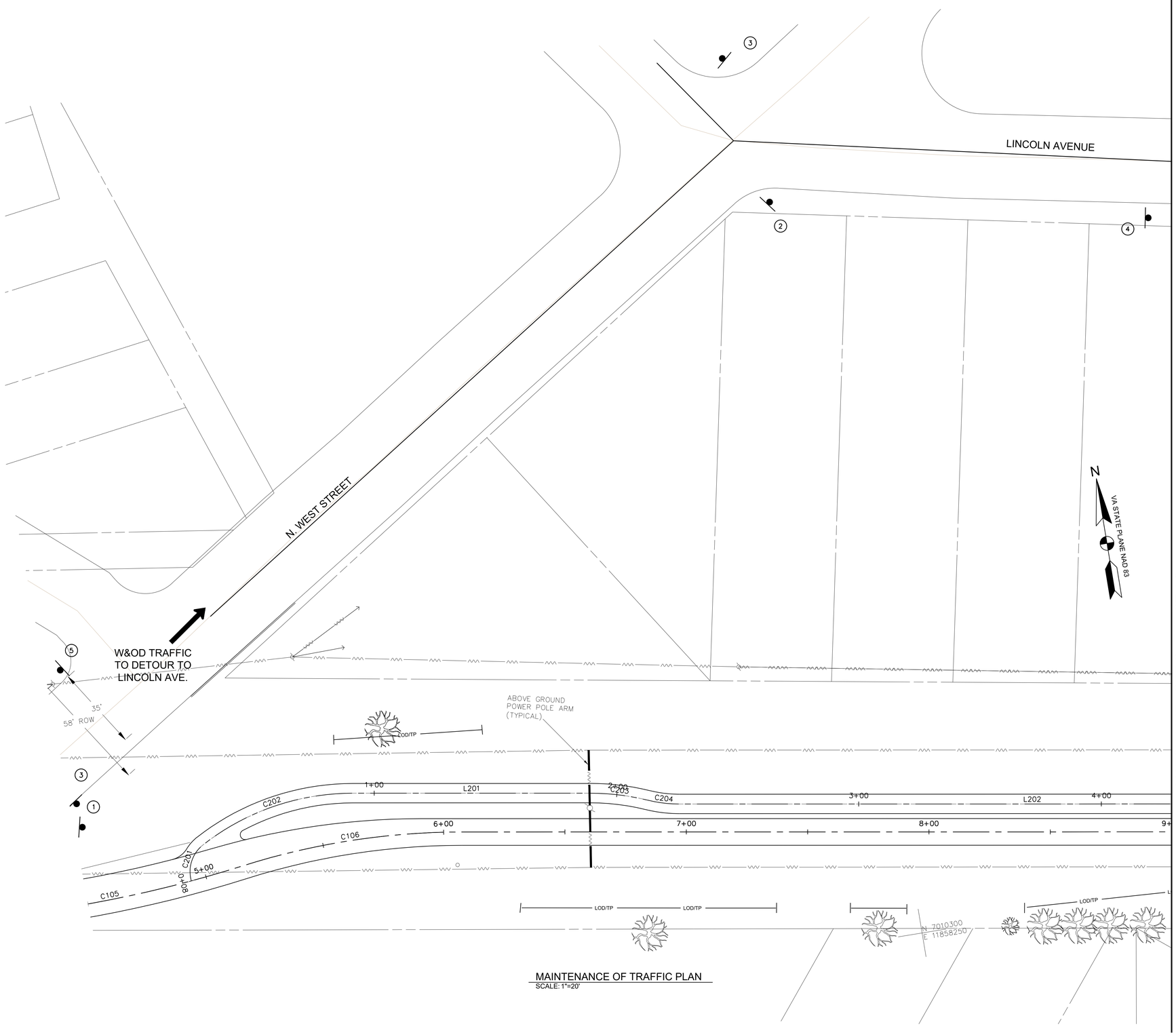
| AMT FILE NO. | 18-0367 |
| DATE: | 01/08/2020 |
| SCALE: | 1"=20' |
| DESIGNED BY: | AMT |
| DRAWN BY: | AMT |
| CHECKED BY: | AMT |

**90% DESIGN**

SHEET TITLE
MAINTENANCE OF TRAFFIC PLAN PHASE 1

SHEET
CT 1.0

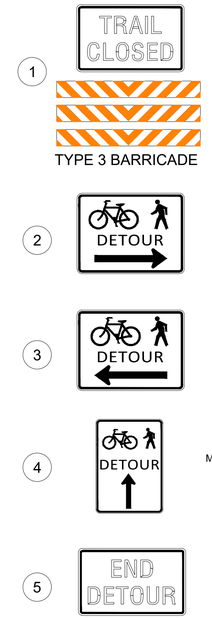



MAINTENANCE OF TRAFFIC PLAN
SCALE: 1"=20'

## MAINTENANCE OF TRAFFIC NOTE

1. CONTRACTOR SHALL MAKE SURE DETOUR SIGNS ARE INSTALLED PRIOR TO CLOSING THE EXISTING HIKER/BIKER TRAIL.

## SIGN LEGEND




0 10' 20' 40'
SCALE: 1"=20'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PROFESSIONAL ENGINEER
1/8/20

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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 |
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| AMT FILE NO. | 18-0367 |
| DATE: | 01/08/2020 |
| SCALE: | 1"=20' |
| DESIGNED BY: | AMT |
| DRAWN BY: | AMT |
| CHECKED BY: | AMT |

**90% DESIGN**

SHEET TITLE

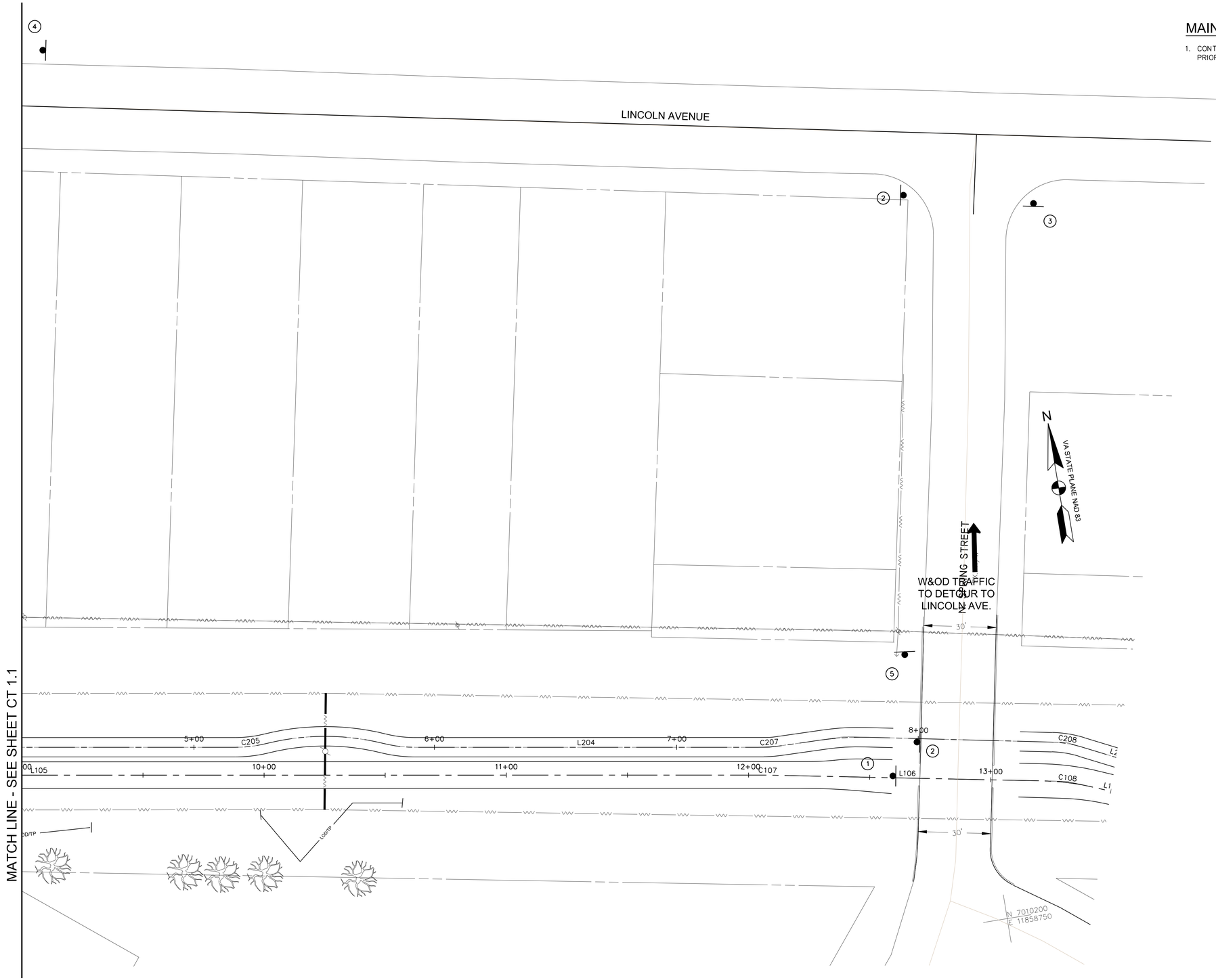
MAINTENANCE OF TRAFFIC PLAN PHASE 2

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"

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 |
|---|---|---|
| | | |

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|---|---|
| AMT FILE NO. | 18-0367 |
| DATE: | 01/08/2020 |
| SCALE: | 1"=20' |
| DESIGNED BY: | AMT |
| DRAWN BY: | AMT |
| CHECKED BY: | AMT |

**90% DESIGN**

SHEET TITLE

MAINTENANCE OF TRAFFIC PLAN PHASE 2

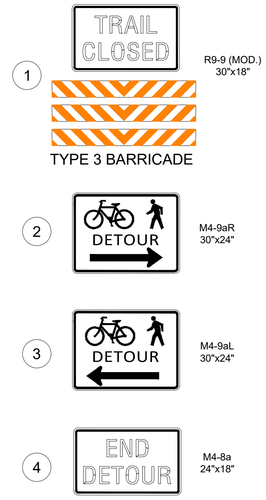
SHEET

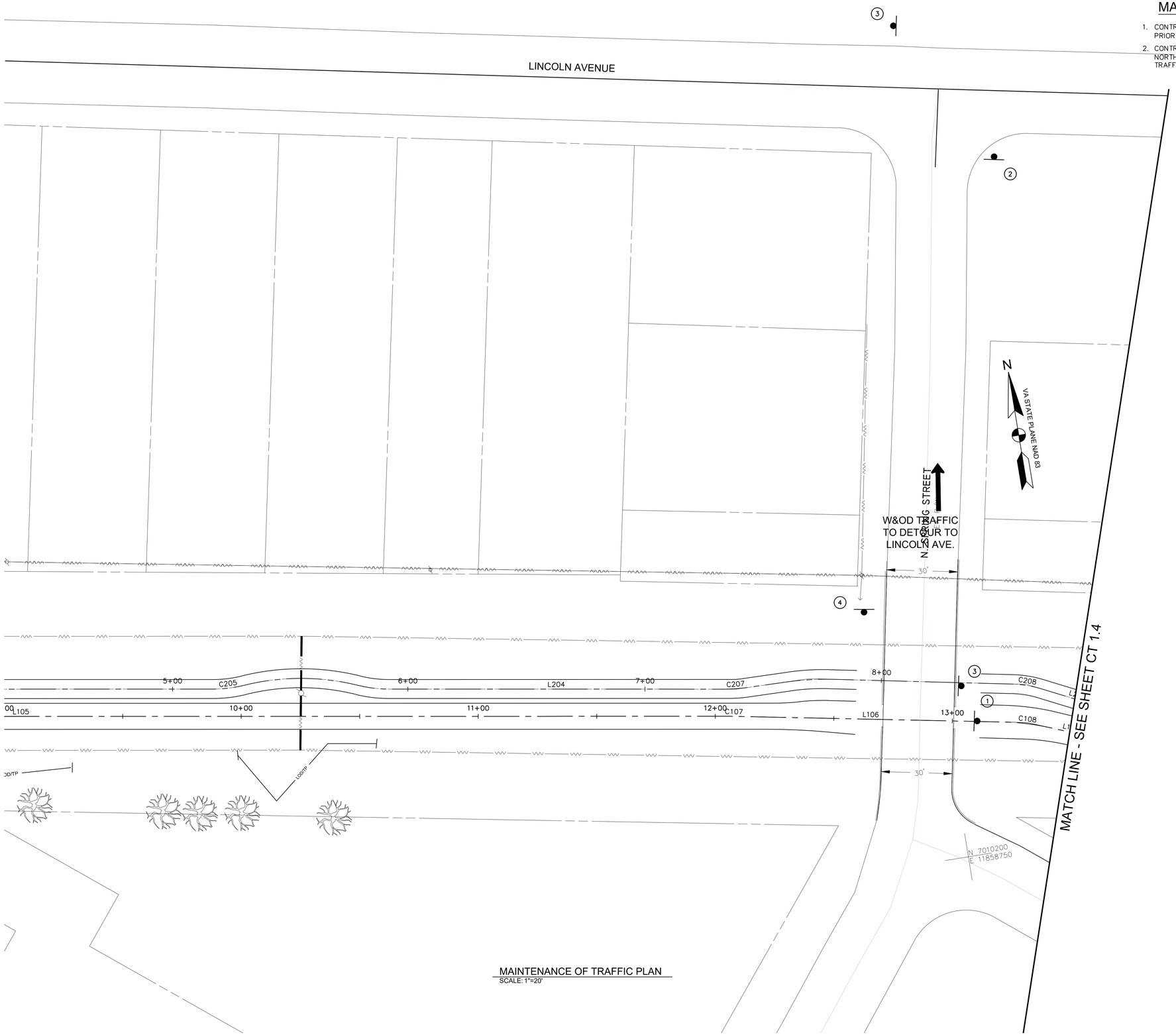
CT 1.2

## 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




MAINTENANCE OF TRAFFIC PLAN
SCALE: 1"=20'

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


AMT
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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 |
|---|---|---|
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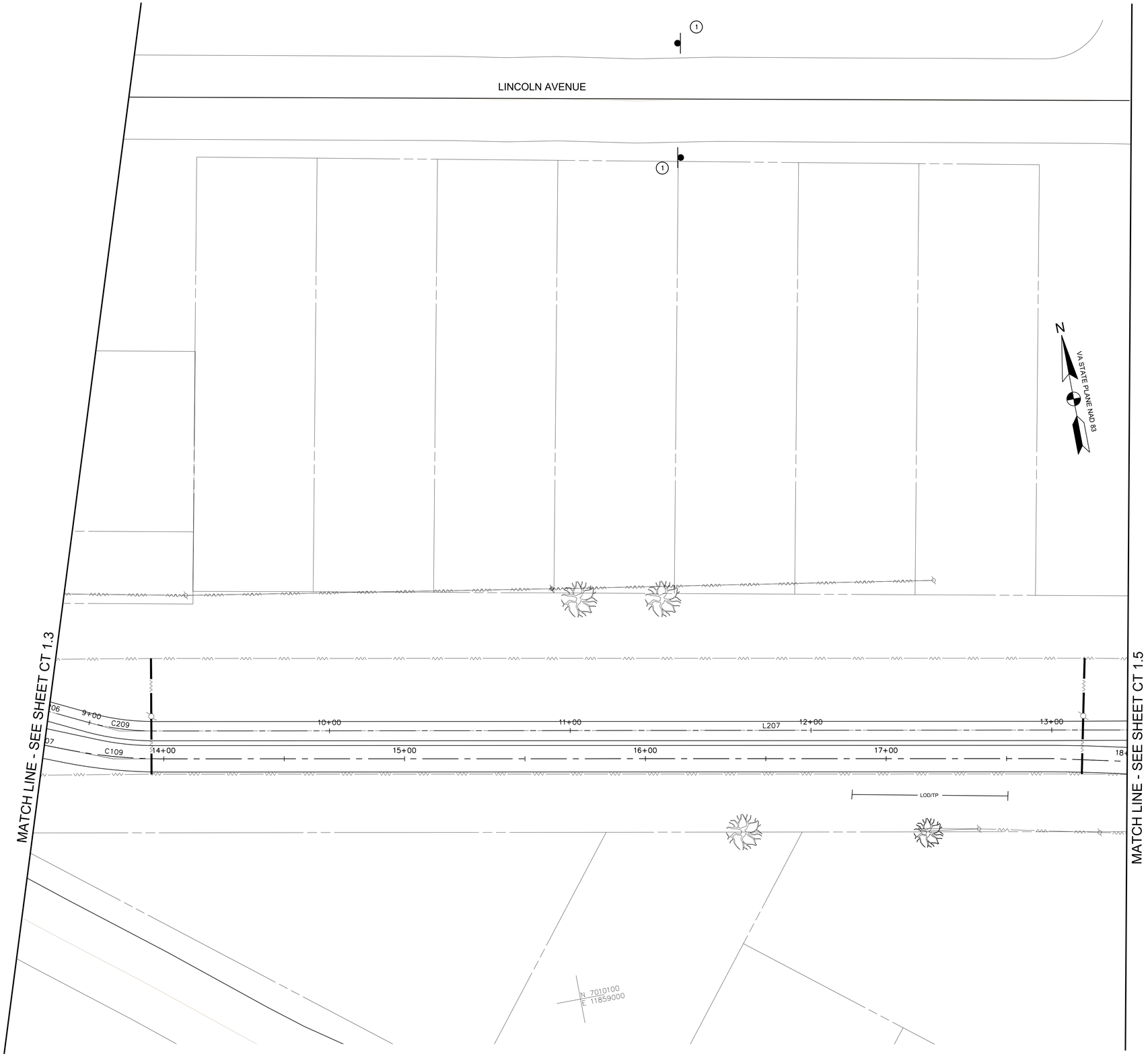
|---|---|
| AMT FILE NO. | 18-0367 |
| DATE: | 01/08/2020 |
| SCALE: | 1"=20' |
| DESIGNED BY: | AMT |
| DRAWN BY: | AMT |
| CHECKED BY: | AMT |

**90% 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"

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

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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 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

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| AMT FILE NO. | 18-0367 |
| DATE: | 01/08/2020 |
| SCALE: | 1"=20' |
| DESIGNED BY: | AMT |
| DRAWN BY: | AMT |
| CHECKED BY: | AMT |

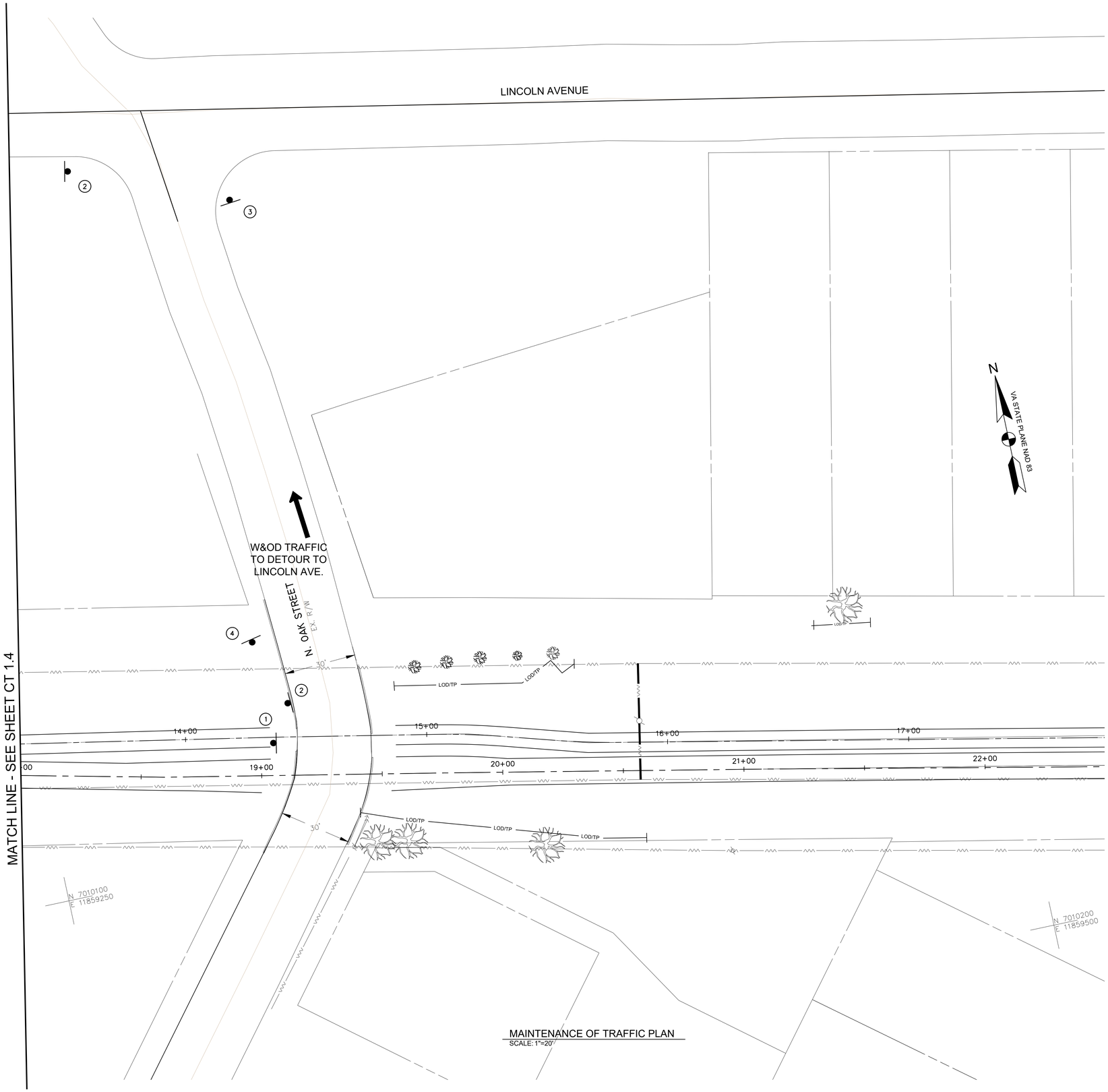
**90% DESIGN**

SHEET TITLE

MAINTENANCE OF TRAFFIC PLAN PHASE 3

SHEET

CT 1.4

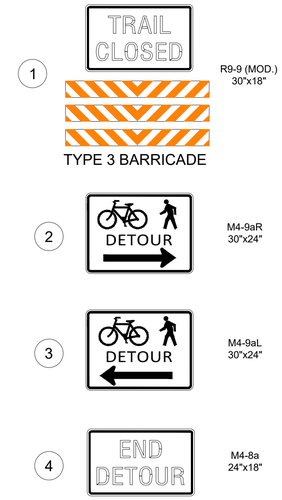



MAINTENANCE OF TRAFFIC PLAN
SCALE: 1"=20'

## MAINTENANCE OF TRAFFIC NOTE

1. CONTRACTOR SHALL MAKE SURE DETOUR SIGNS ARE INSTALLED PRIOR TO CLOSING THE EXISTING HIKER/BIKER TRAIL.

## SIGN LEGEND




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 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

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| AMT FILE NO. | 18-0367 |
| DATE: | 01/08/2020 |
| SCALE: | 1"=20' |
| DESIGNED BY: | AMT |
| DRAWN BY: | AMT |
| CHECKED BY: | AMT |

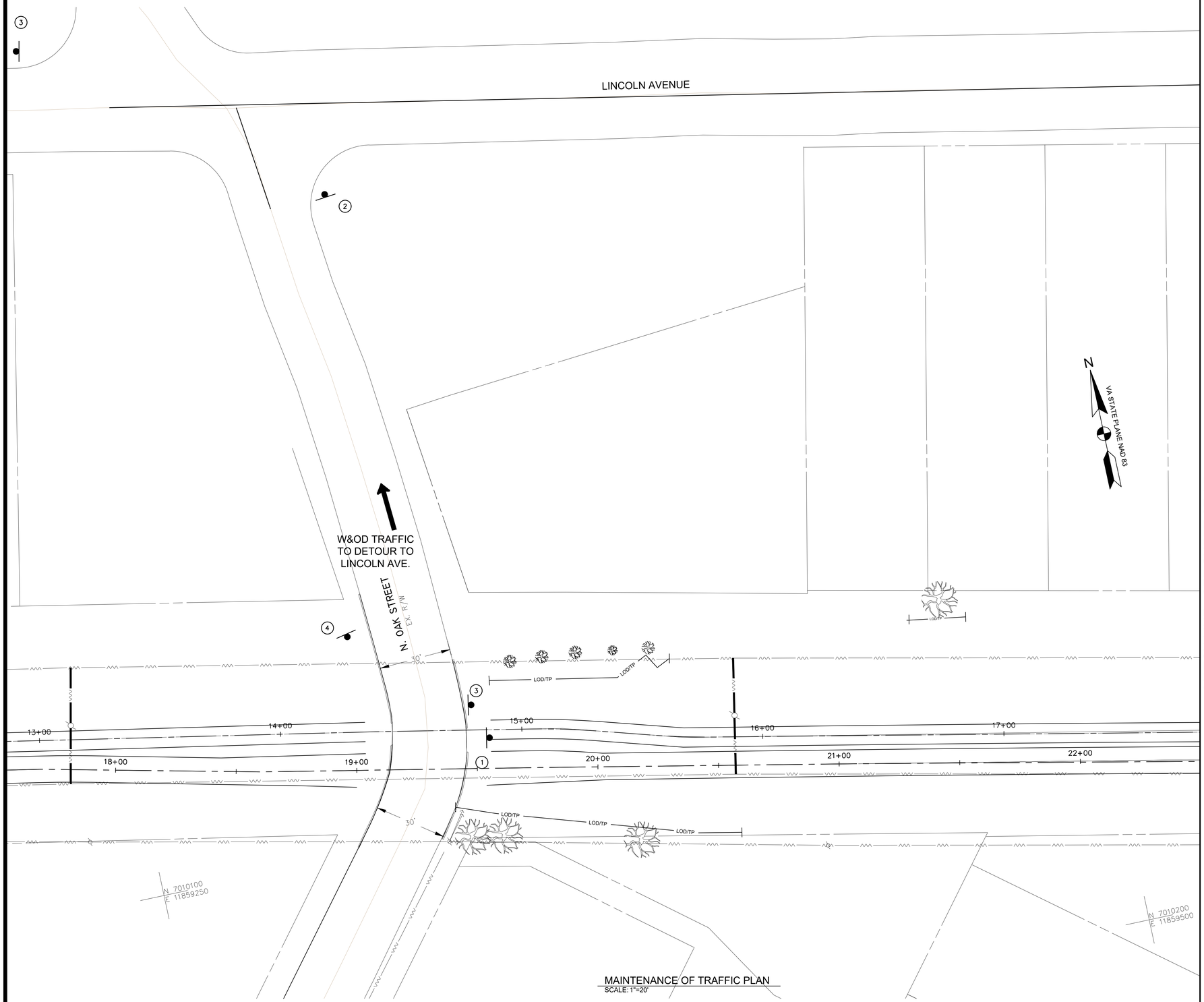
**90% DESIGN**

SHEET TITLE

MAINTENANCE OF TRAFFIC PLAN PHASE 3

SHEET

CT 1.5

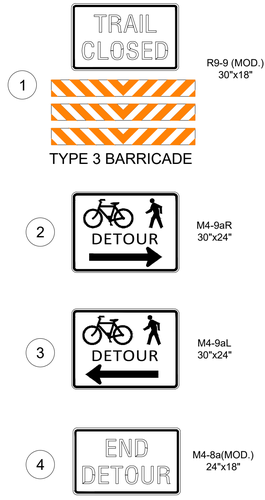



MAINTENANCE OF TRAFFIC PLAN
SCALE: 1"=20'

## MAINTENANCE OF TRAFFIC NOTE

1. CONTRACTOR SHALL MAKE SURE DETOUR SIGNS ARE INSTALLED PRIOR TO CLOSING THE EXISTING HIKER/BIKER TRAIL.

## SIGN LEGEND




0 10' 20' 40'
SCALE: 1"=20'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| CHECKED BY: | AMT |

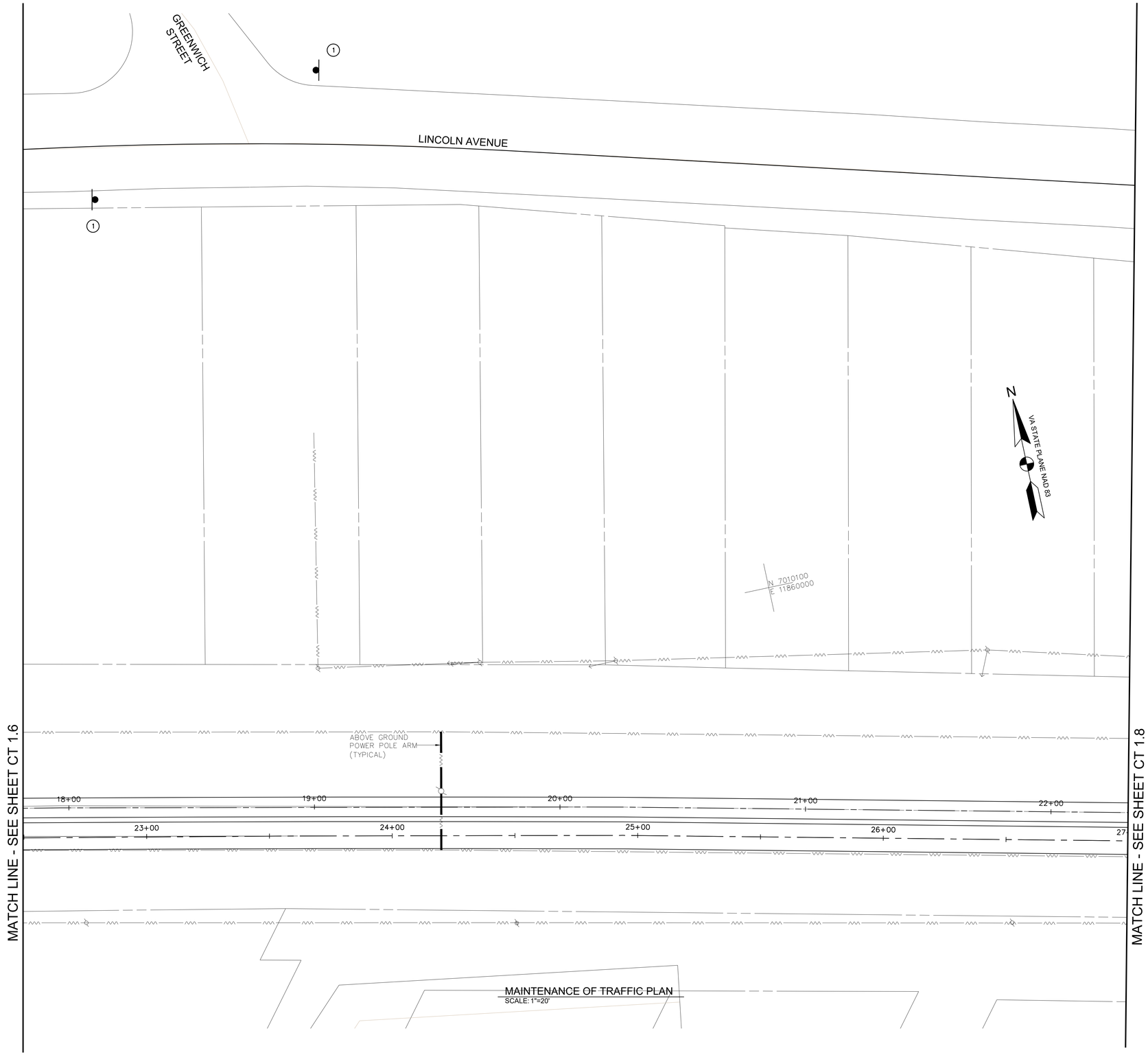
**90% DESIGN**

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"

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

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1/8/20

REGISTRATION STAMP

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PROJECT TITLE

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

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| SCALE: | 1"=20' |
| DESIGNED BY: | AMT |
| DRAWN BY: | AMT |
| CHECKED BY: | AMT |

**90% DESIGN**

SHEET TITLE

MAINTENANCE OF TRAFFIC PLAN PHASE 4

SHEET

CT 1.7

## MAINTENANCE OF TRAFFIC NOTE

1. CONTRACTOR SHALL MAKE SURE DETOUR SIGNS ARE INSTALLED PRIOR TO CLOSING THE EXISTING HIKER/BIKER TRAIL.

## SIGN LEGEND

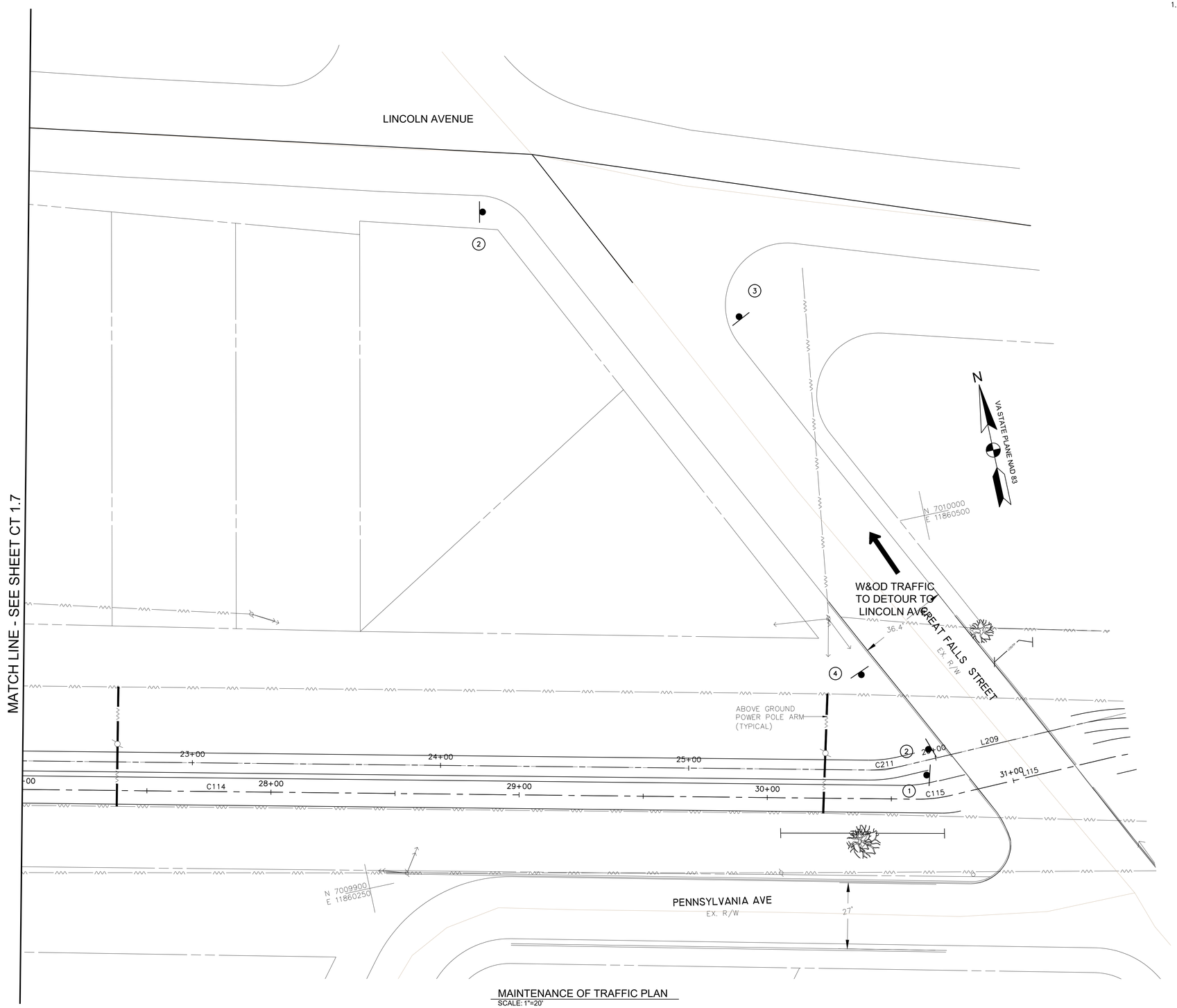
1 — TRAIL CLOSED — R9-9 (MOD.) 30"x18"

TYPE 3 BARRICADE

2 — DETOUR — M4-9aR 30"x24"

3 — DETOUR — M4-9aL 30"x24"

4 — END DETOUR — M4-8a 24"x18"




MAINTENANCE OF TRAFFIC PLAN
SCALE: 1"=20'

0 10' 20' 40'
SCALE: 1"=20'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| AMT FILE NO. | 18-0367 |
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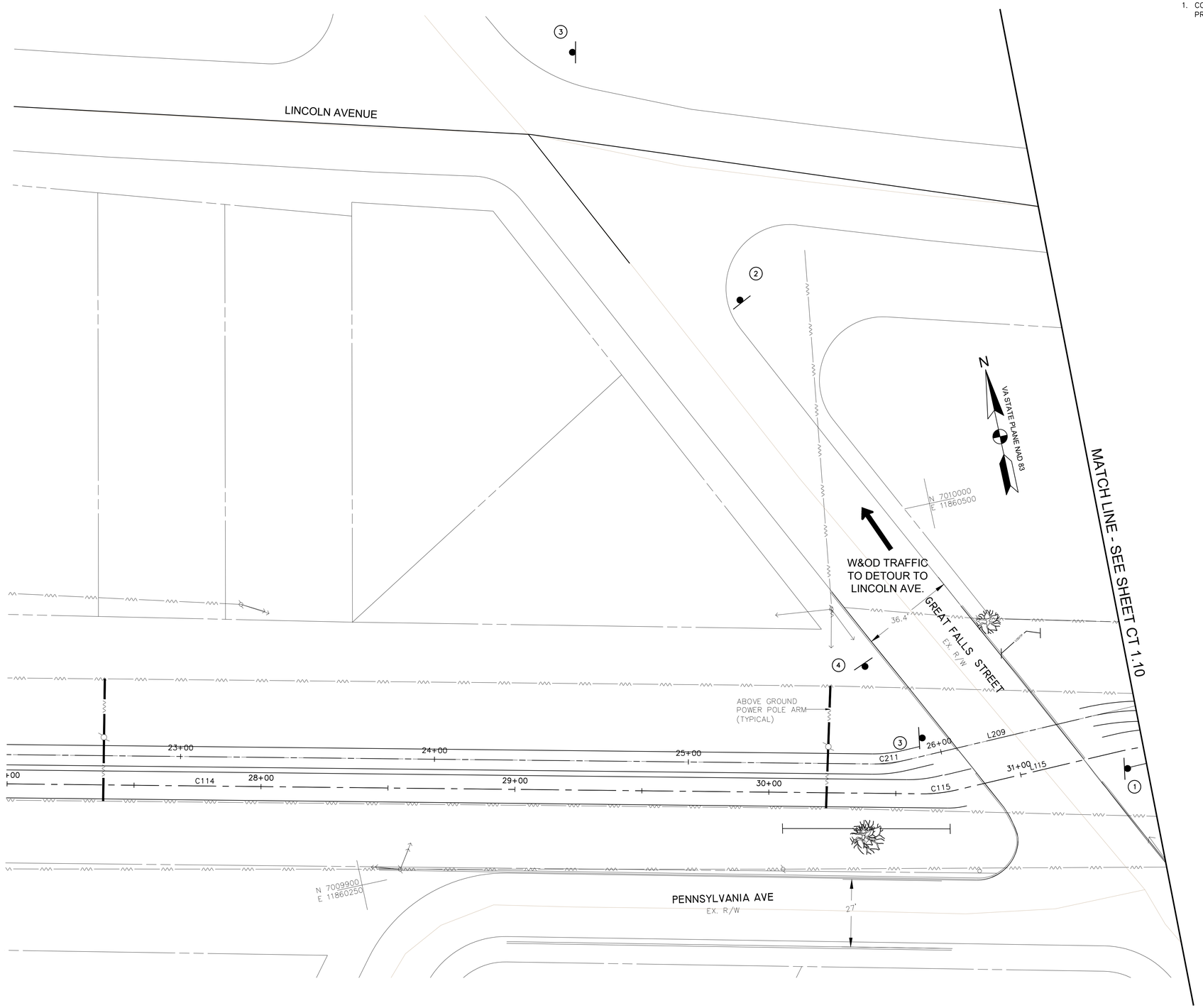
| DRAWN BY: | AMT |
| CHECKED BY: | AMT |

**90% DESIGN**

SHEET TITLE
MAINTENANCE OF TRAFFIC PLAN PHASE 4

SHEET
CT 1.8

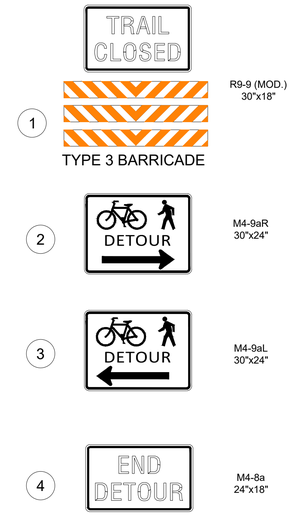



MAINTENANCE OF TRAFFIC PLAN
SCALE: 1"=20'

## MAINTENANCE OF TRAFFIC NOTE

1. CONTRACTOR SHALL MAKE SURE DETOUR SIGNS ARE INSTALLED PRIOR TO CLOSING THE EXISTING HIKER/BIKER TRAIL.

## SIGN LEGEND





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PROFESSIONAL ENGINEER
1/8/20

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PROJECT TITLE

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

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| AMT FILE NO. | 18-0367 |
| DATE: | 01/08/2020 |
| SCALE: | 1"=20' |
| DESIGNED BY: | AMT |
| DRAWN BY: | AMT |
| CHECKED BY: | AMT |

**90% DESIGN**

SHEET TITLE

MAINTENANCE OF TRAFFIC PLAN PHASE 5

SHEET

CT 1.9



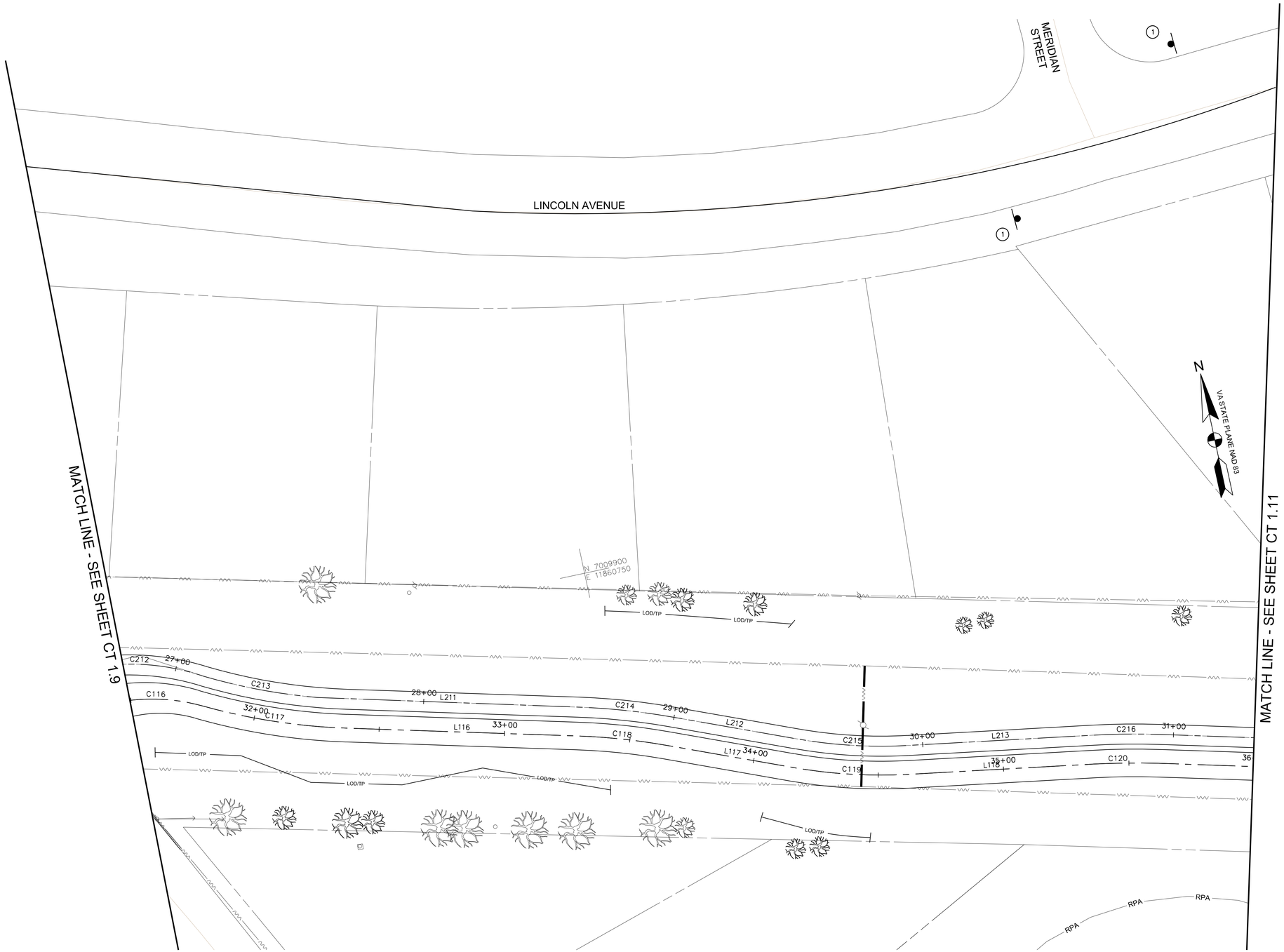
0 10' 20' 40'
SCALE: 1"=20'

## 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"




## MAINTENANCE OF TRAFFIC PLAN

SCALE: 1"=20'

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


AMT
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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

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

**90% 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


M4-V1(MOD.)
18"x36"

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

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1/8/20

REGISTRATION STAMP

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LICENSE NO. 1562 , EXPIRATION DATE 06/30/2021"

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

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| DRAWN BY: | AMT |
| CHECKED BY: | AMT |

**90% DESIGN**

SHEET TITLE
MAINTENANCE OF TRAFFIC PLAN PHASE 5

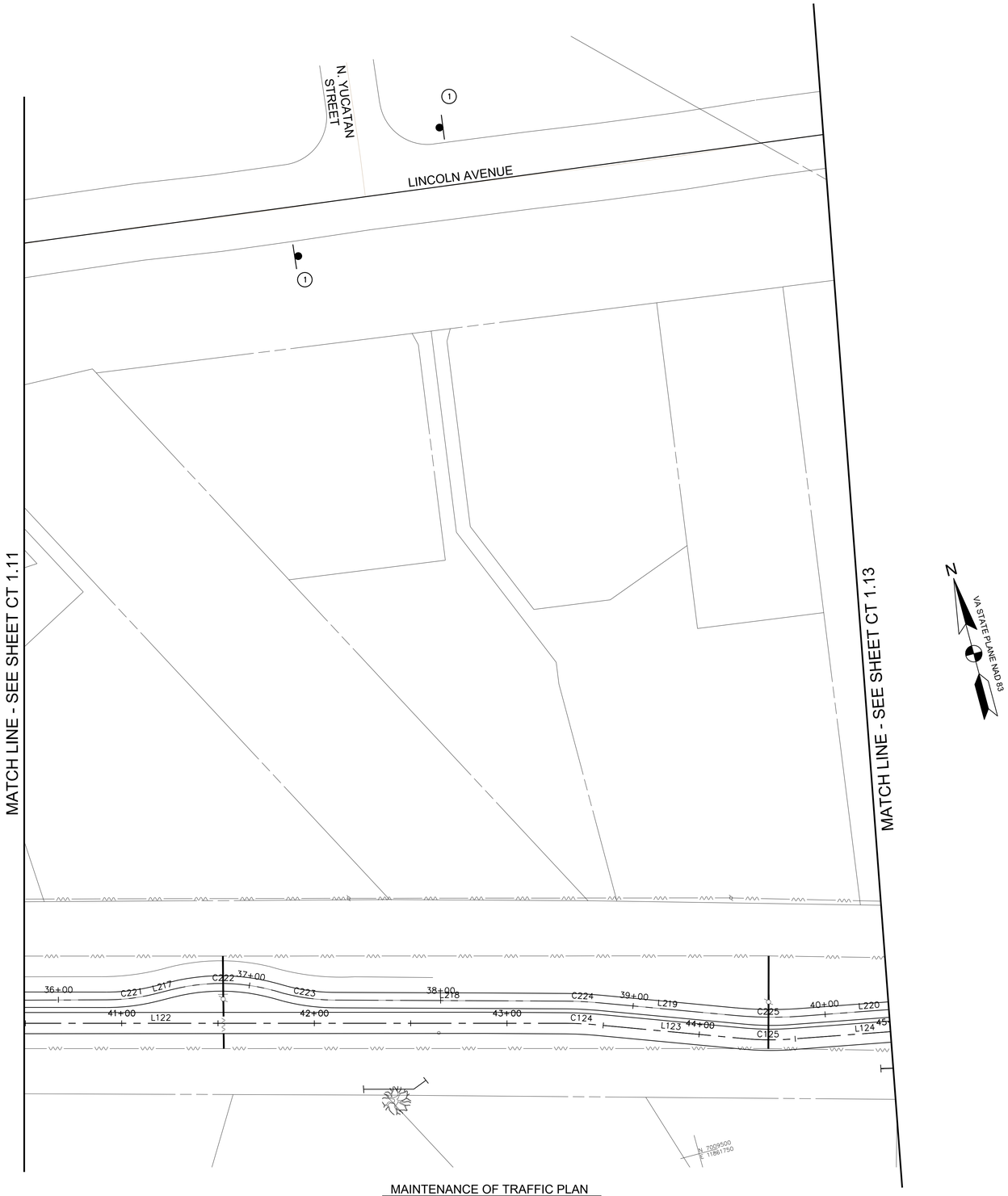
SHEET
CT 1.11

## 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"




MAINTENANCE OF TRAFFIC PLAN
SCALE: 1"=30'

0 10' 20' 40'
SCALE: 1"=20'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1/8/20

REGISTRATION STAMP

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PROFESSIONAL CERTIFICATION

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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

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| DRAWN BY: | AMT |
| CHECKED BY: | AMT |

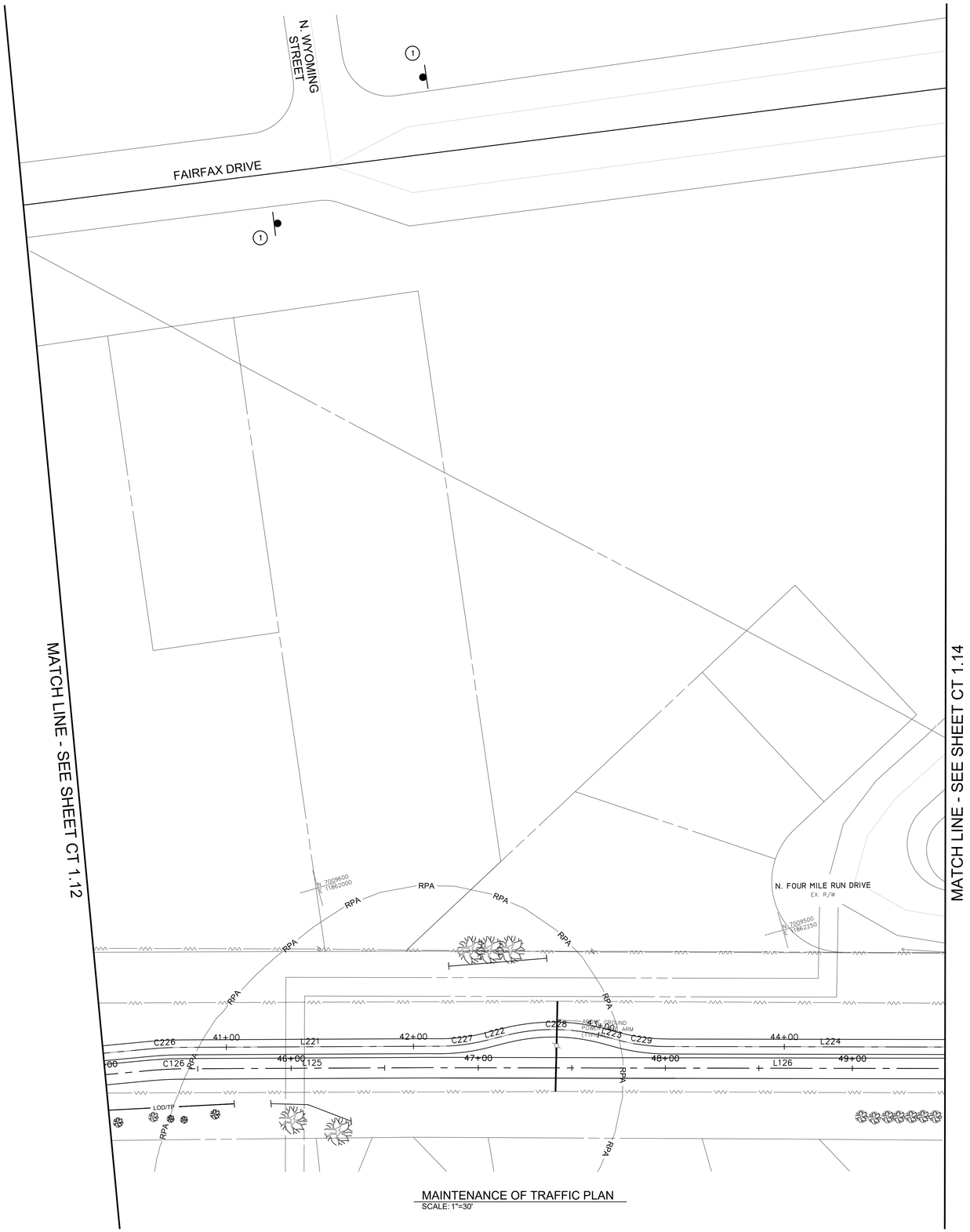
**90% DESIGN**

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


M4-V1(MOD.)
18"x36"

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

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| CHECKED BY: | AMT |

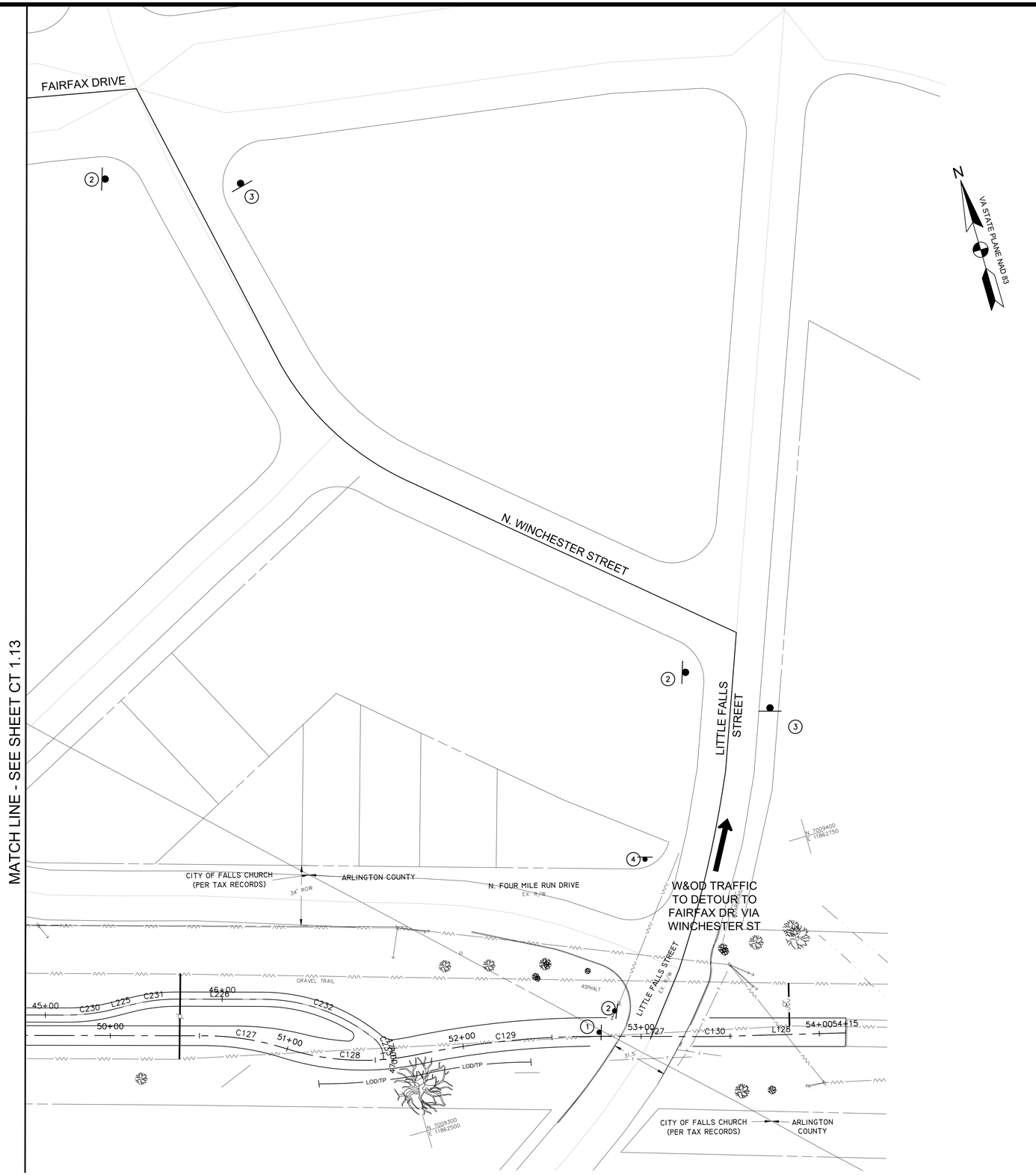
**90% DESIGN**

SHEET TITLE

MAINTENANCE OF TRAFFIC PLAN PHASE 5

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 / TYPE 3 BARRICADE — R9-9 (MOD.) 30"x18"

2 — DETOUR — M4-9aR 30"x24"

3 — DETOUR — M4-9aL 30"x24"

4 — END DETOUR — M4-8a 24"x18"

0 10' 20' 40'
SCALE: 1"=20'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**90% DESIGN**

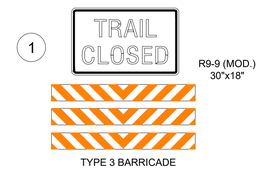
SHEET TITLE
MAINTENANCE OF TRAFFIC PLAN PHASE 5

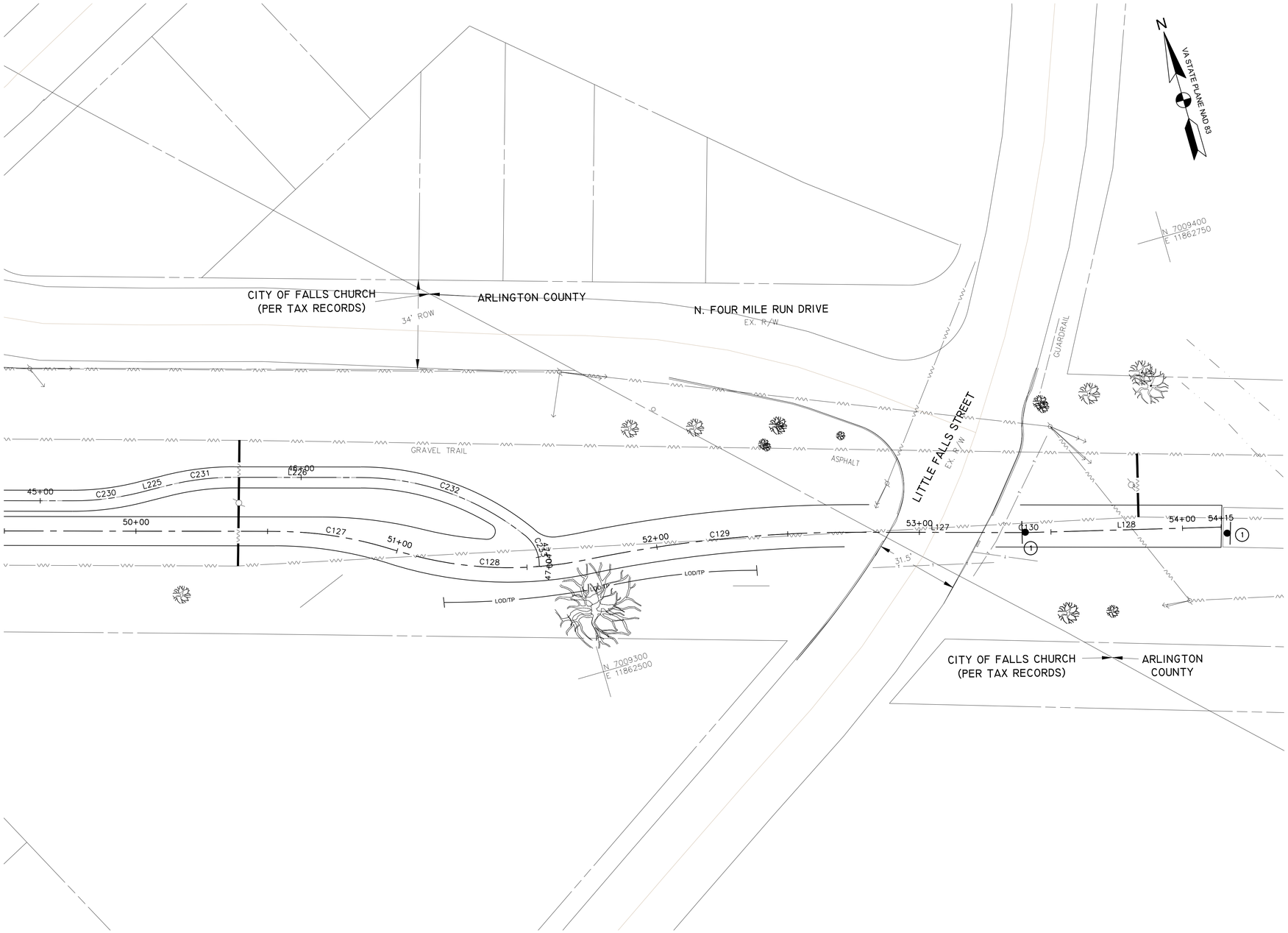
SHEET
CT 1.14

## 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




MAINTENANCE OF TRAFFIC PLAN
SCALE: 1"=20'

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


AMT
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EMAIL: AMT1@AMTENGINEERING.COM


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 |
|---|---|---|
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| AMT FILE NO. | 18-0367 |
| DATE: | 01/08/2020 |
| SCALE: | 1"=20' |
| DESIGNED BY: | AMT |
| DRAWN BY: | AMT |
| CHECKED BY: | AMT |

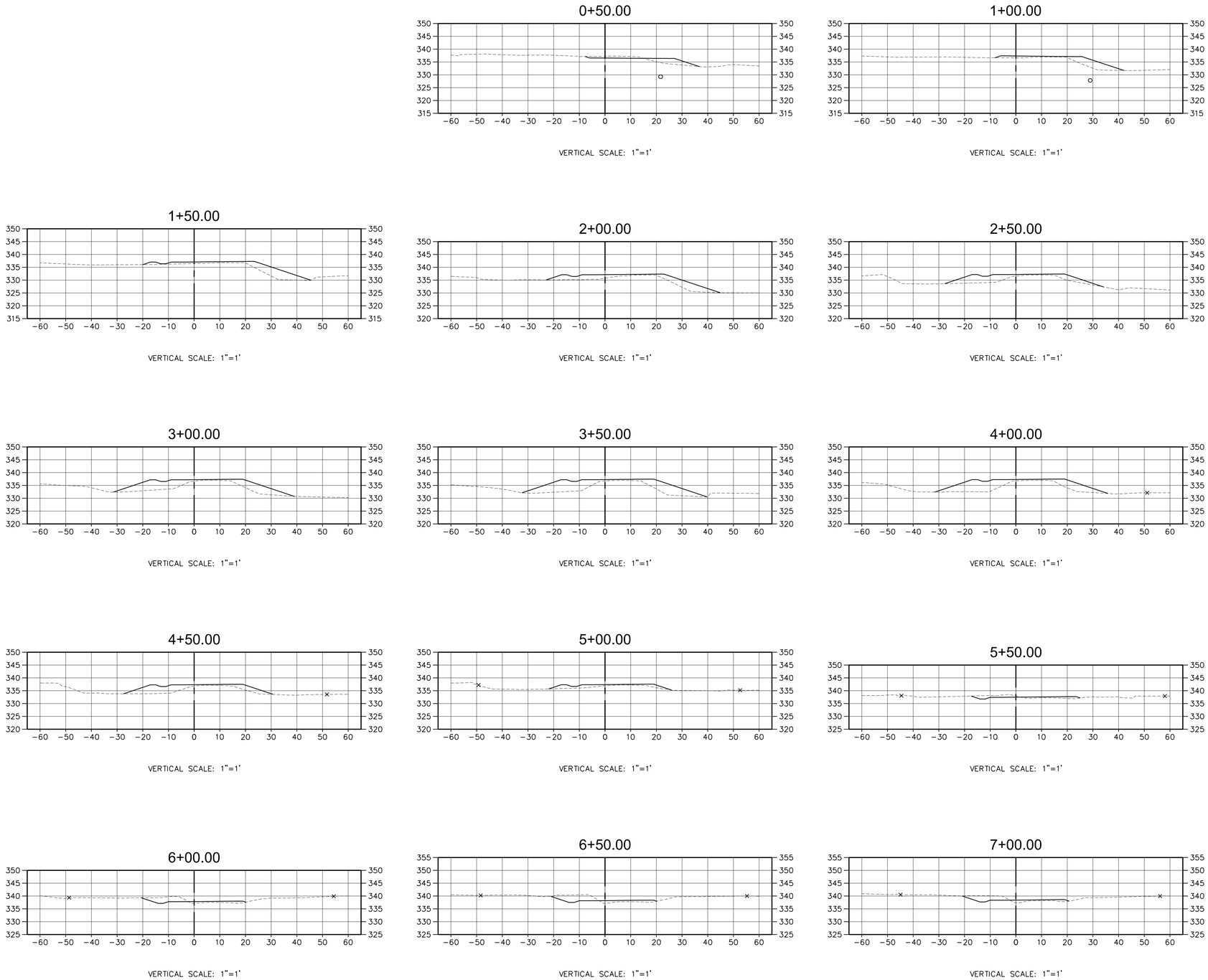
**90% DESIGN**

SHEET TITLE

MAINTENANCE OF TRAFFIC PLAN PHASE 6

SHEET

CT 1.15





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STEVEN TORGERSON
Cert. No. 0406001542
01/08/2020
LANDSCAPE ARCHITECT

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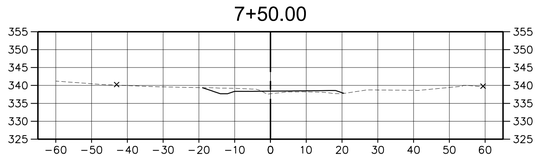
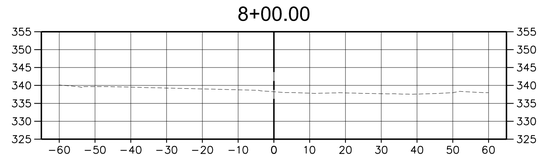
SHEET TITLE

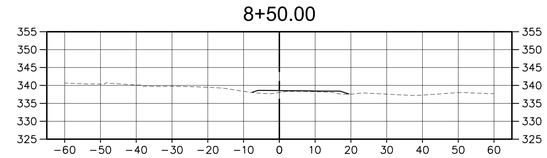
CROSS SECTIONS

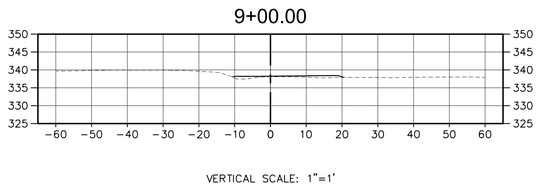
SHEET

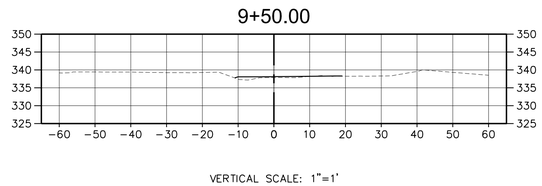
S1.0

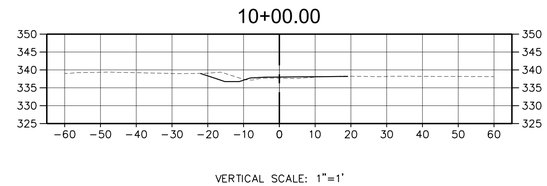


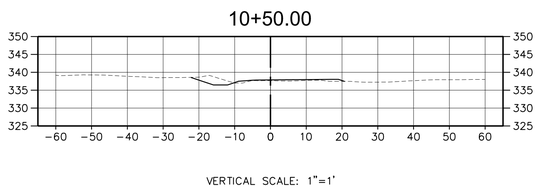



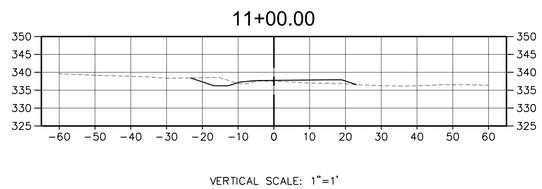



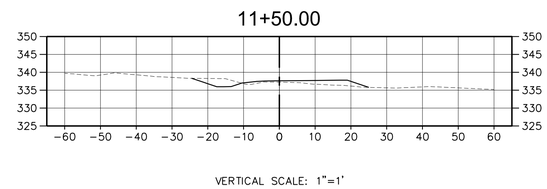



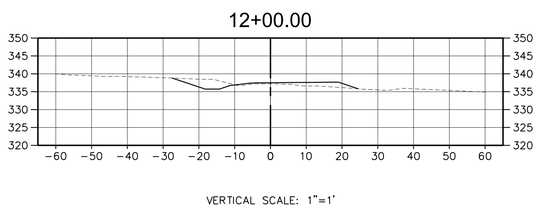



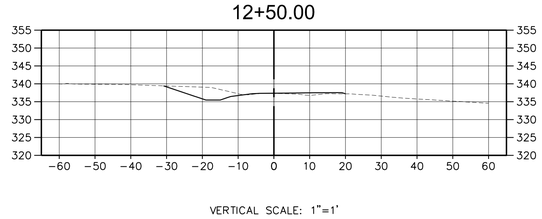



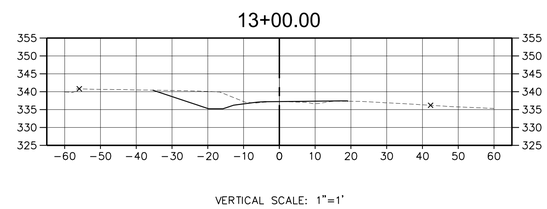



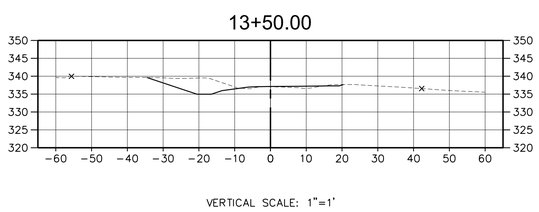



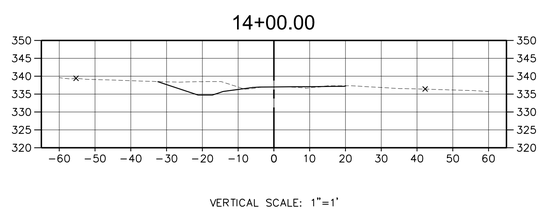



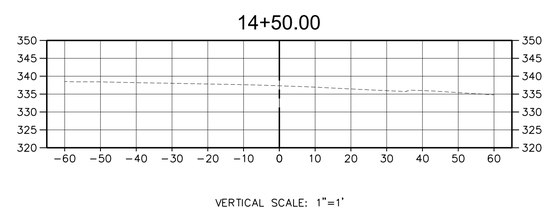

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UPC 113612

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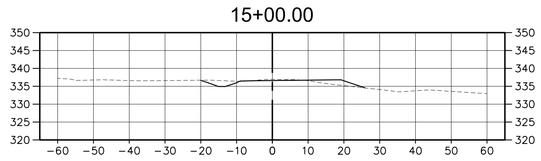
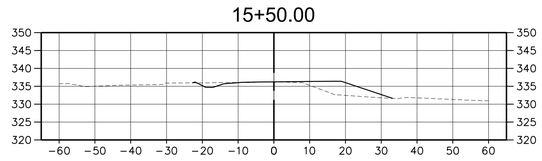
SHEET TITLE

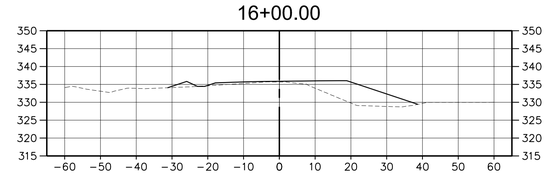
CROSS SECTIONS

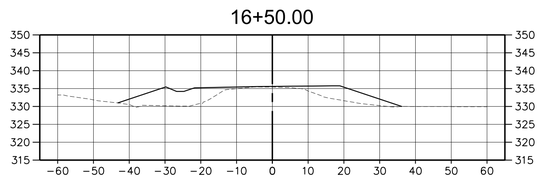
SHEET

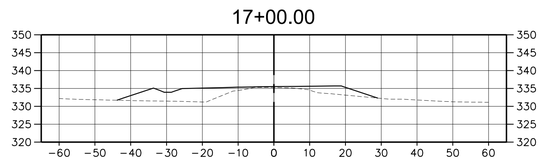
S1.1

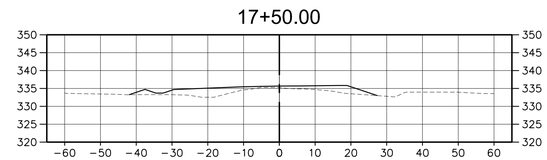


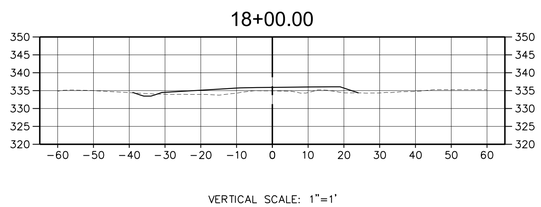



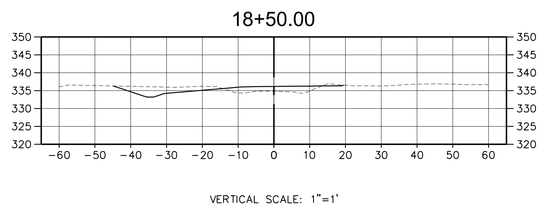



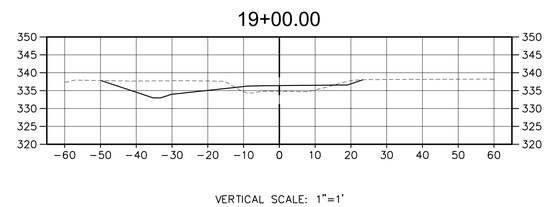



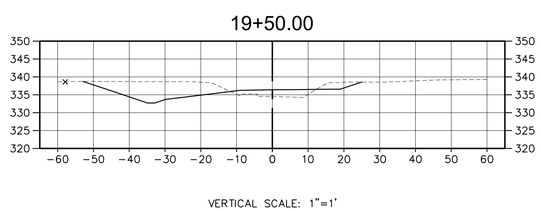



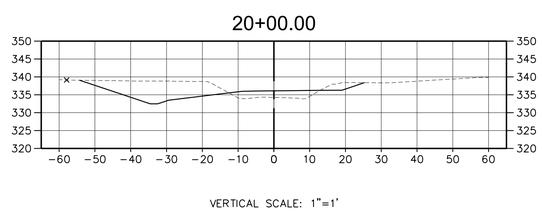



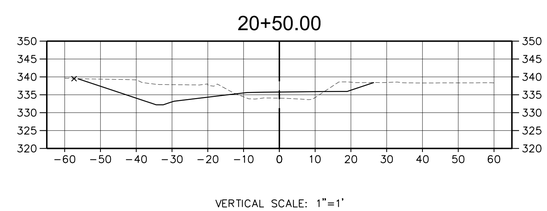



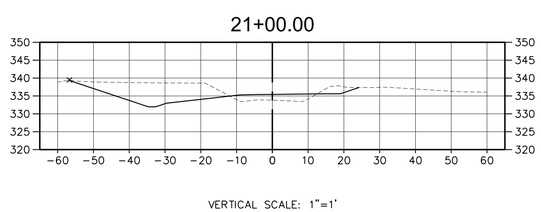



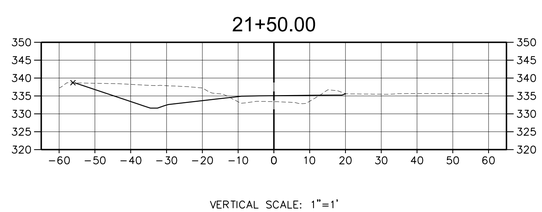



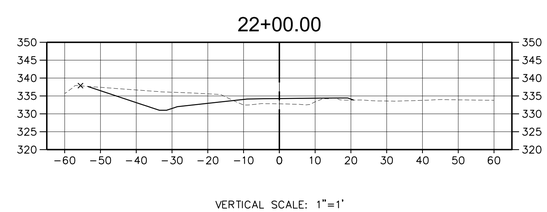

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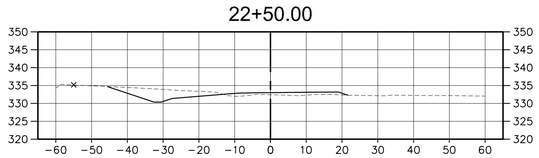
**90% DESIGN**

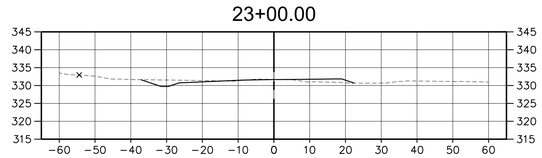
SHEET TITLE

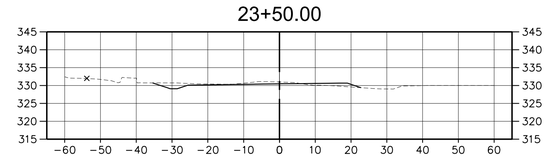
CROSS SECTIONS

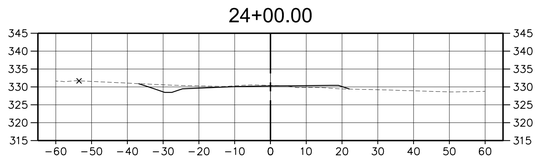
SHEET

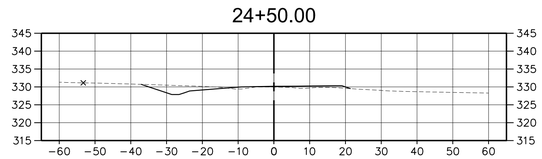
S1.2

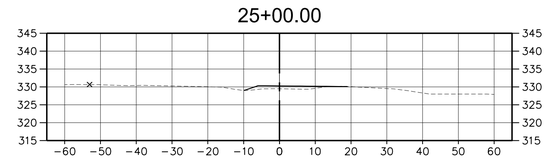


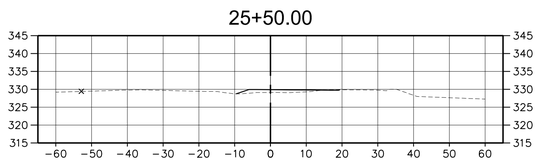



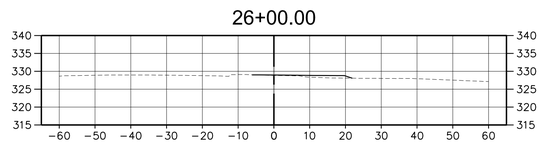



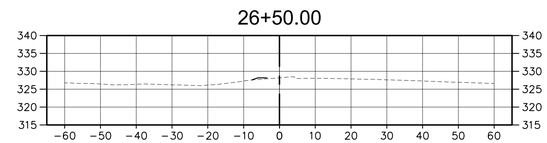



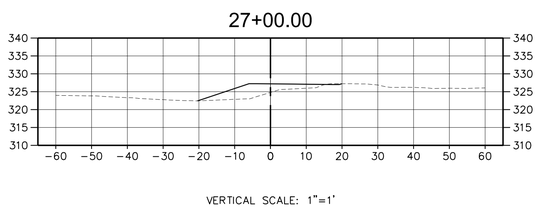



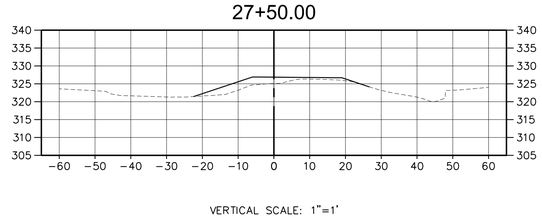



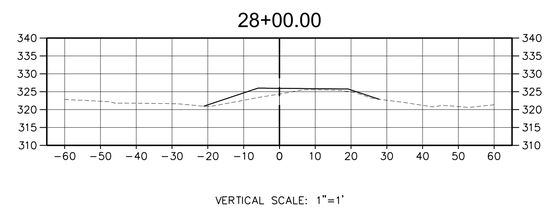



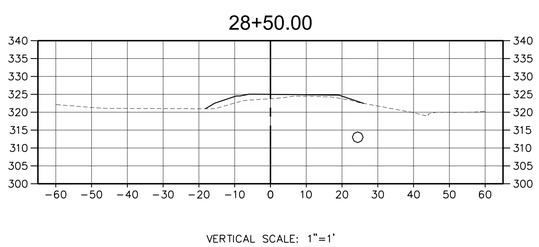



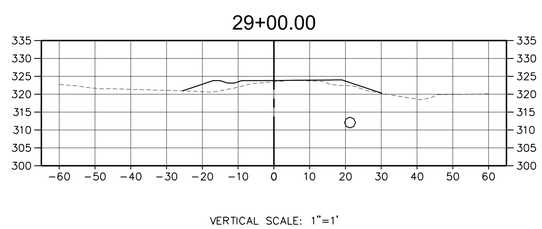



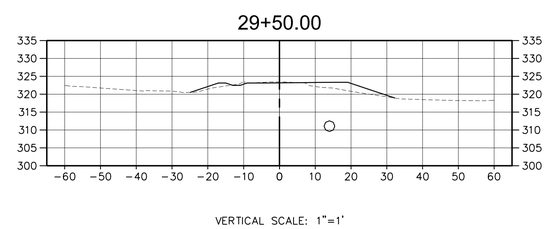

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COMMONWEALTH OF VIRGINIA
STEVEN TORGERSON
CERT. NO. 0406001542
01/08/2020
LANDSCAPE ARCHITECT

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 |
|---|---|---|
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|---|---|
| AMT FILE NO. | 18-0367 |
| DATE: | 01/08/2020 |
| SCALE: | AS SHOWN |
| DESIGNED BY: | AMT |
| DRAWN BY: | AMT |
| CHECKED BY: | AMT |

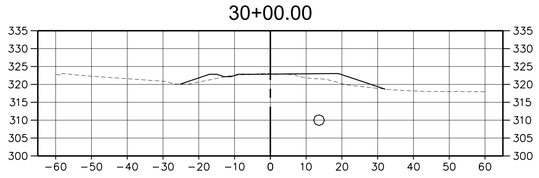
**90% DESIGN**

SHEET TITLE

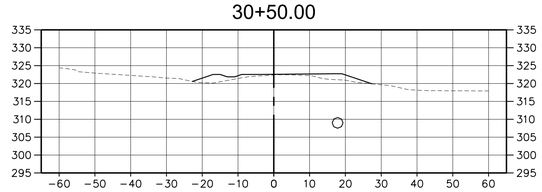
CROSS SECTIONS

SHEET

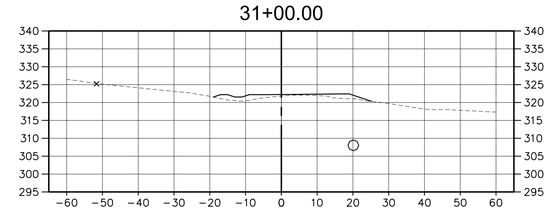
S1.3



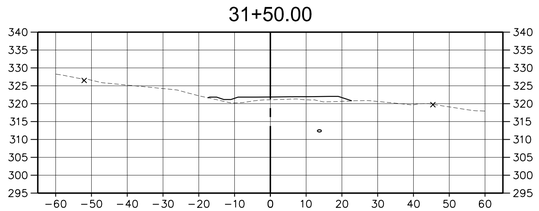

VERTICAL SCALE: 1"=1'




VERTICAL SCALE: 1"=1'




VERTICAL SCALE: 1"=1'

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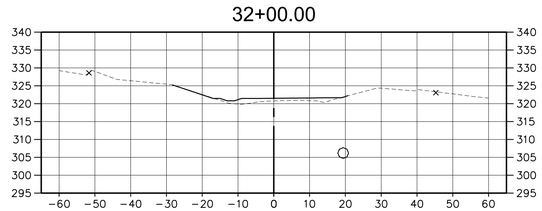


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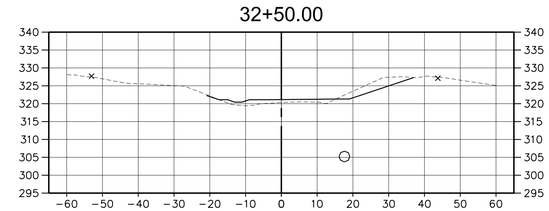


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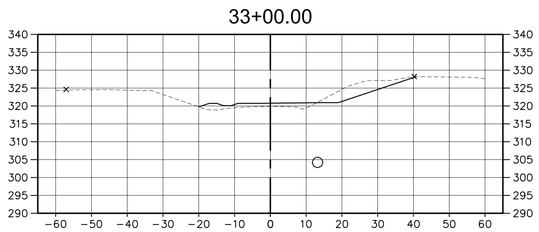


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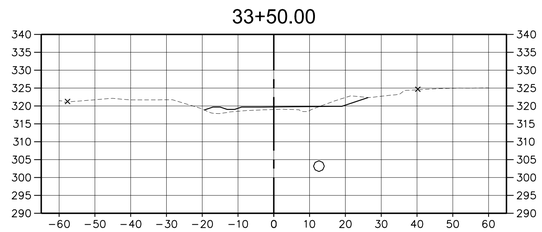


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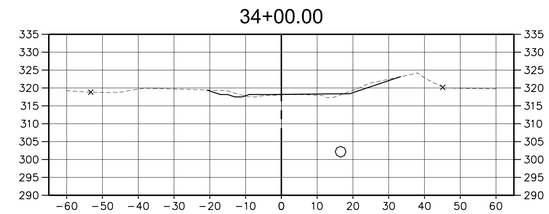


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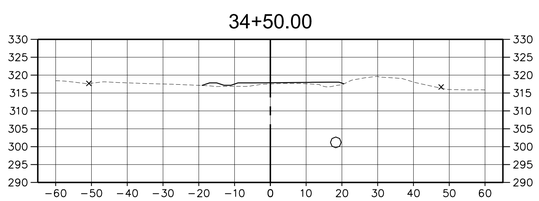
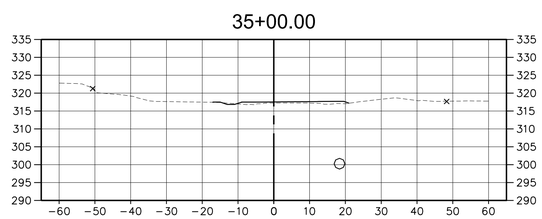
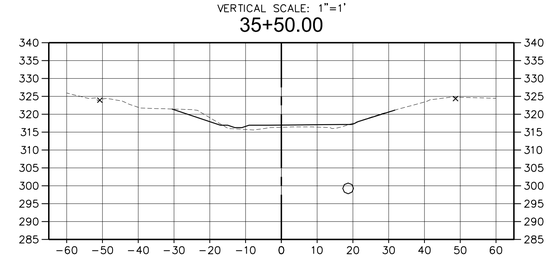



VERTICAL SCALE: 1"=1'




VERTICAL SCALE: 1"=1'

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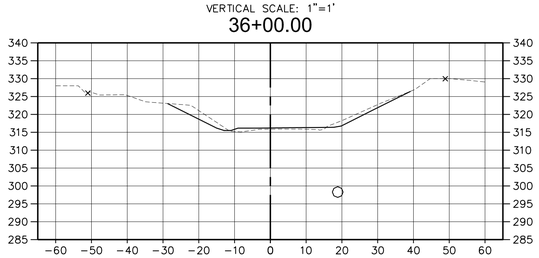


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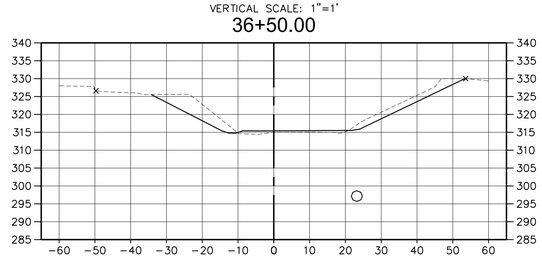
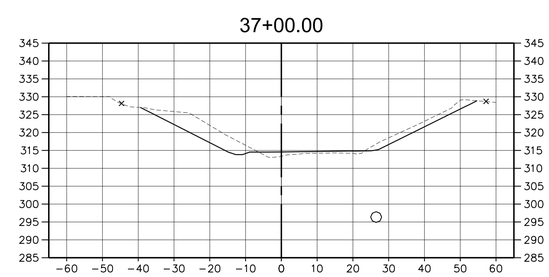



VERTICAL SCALE: 1"=1'




VERTICAL SCALE: 1"=1'

A. MORTON THOMAS AND ASSOCIATES, INC.
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COMMONWEALTH OF VIRGINIA
STEVEN TORGERSON
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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

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| CHECKED BY: | AMT |

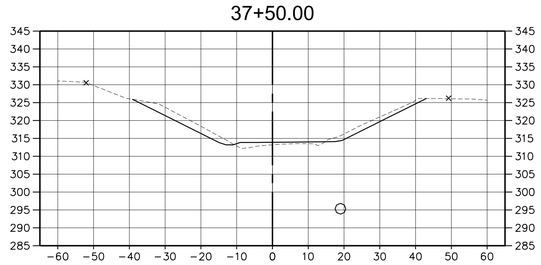
**90% DESIGN**

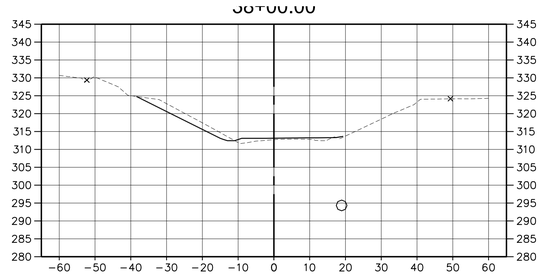
SHEET TITLE

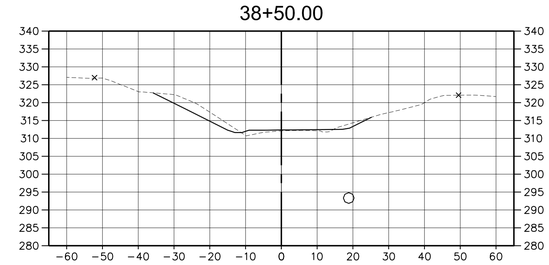
CROSS SECTIONS

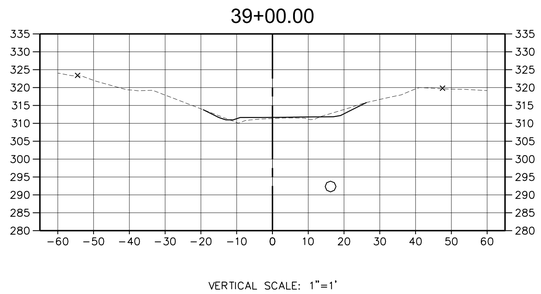
SHEET

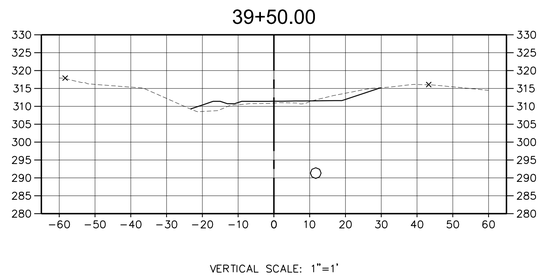
S1.4

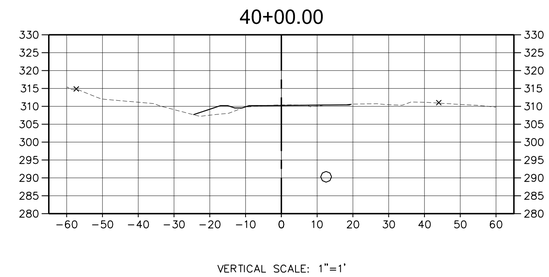


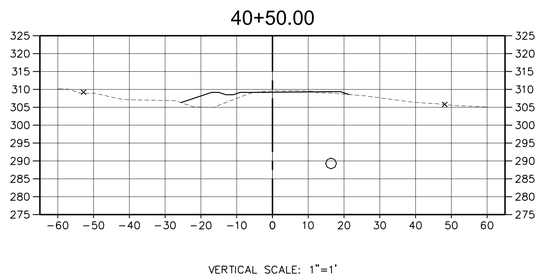



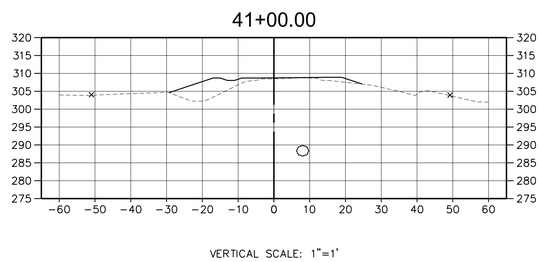



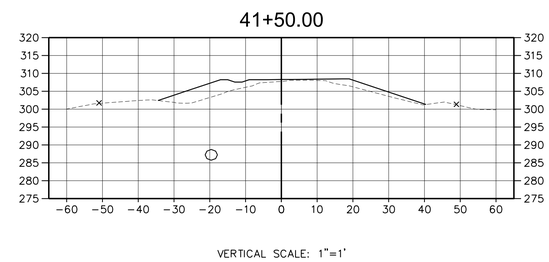



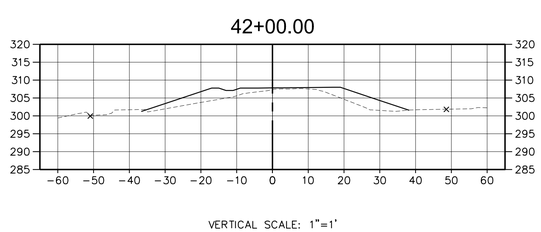



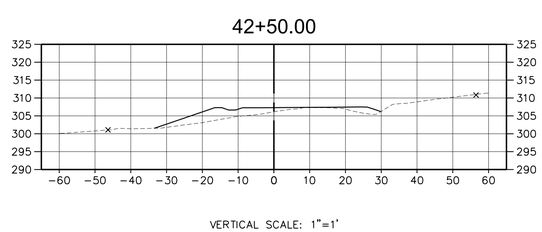



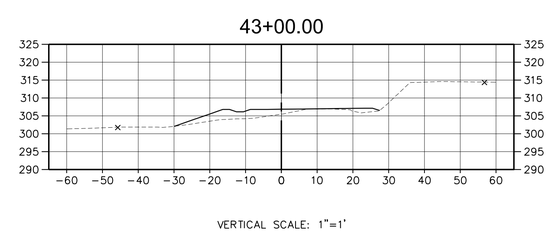

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PROJECT TITLE

**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: | AS SHOWN |
| DESIGNED BY: | AMT |
| DRAWN BY: | AMT |
| CHECKED BY: | AMT |

**90% DESIGN**

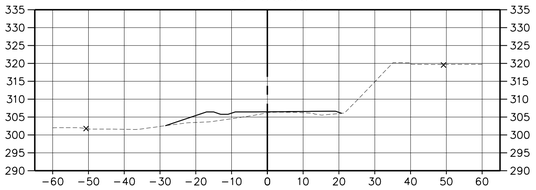
SHEET TITLE

CROSS SECTIONS

SHEET

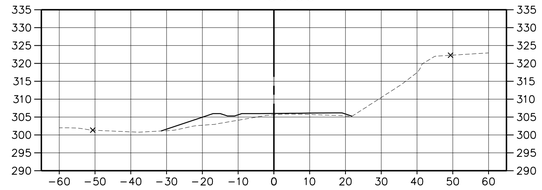
S1.5

43+50.00



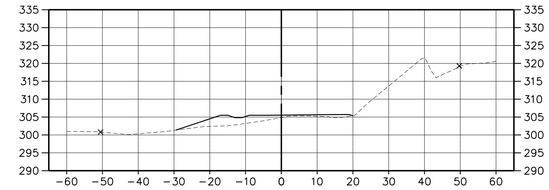

VERTICAL SCALE: 1"=1'

44+00.00



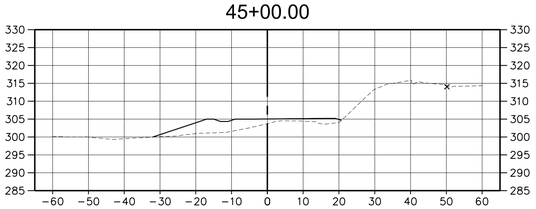

VERTICAL SCALE: 1"=1'

44+50.00



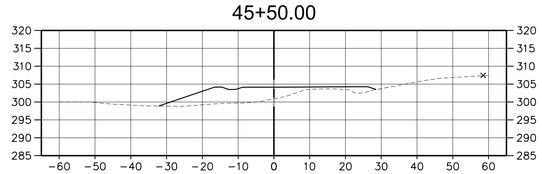

VERTICAL SCALE: 1"=1'

45+00.00



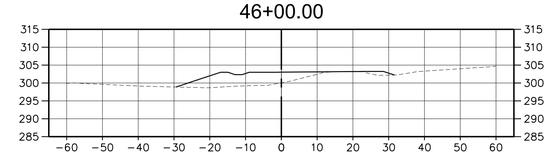

VERTICAL SCALE: 1"=1'

45+50.00



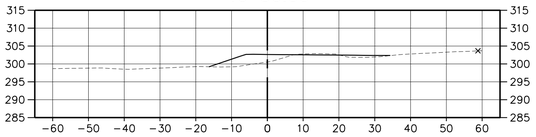

VERTICAL SCALE: 1"=1'

46+00.00




VERTICAL SCALE: 1"=1'

46+50.00




VERTICAL SCALE: 1"=1'


AMT
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PROJECT TITLE

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FALLS CHURCH, VA

UPC 113612

REVISIONS

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| DRAWN BY: | AMT |
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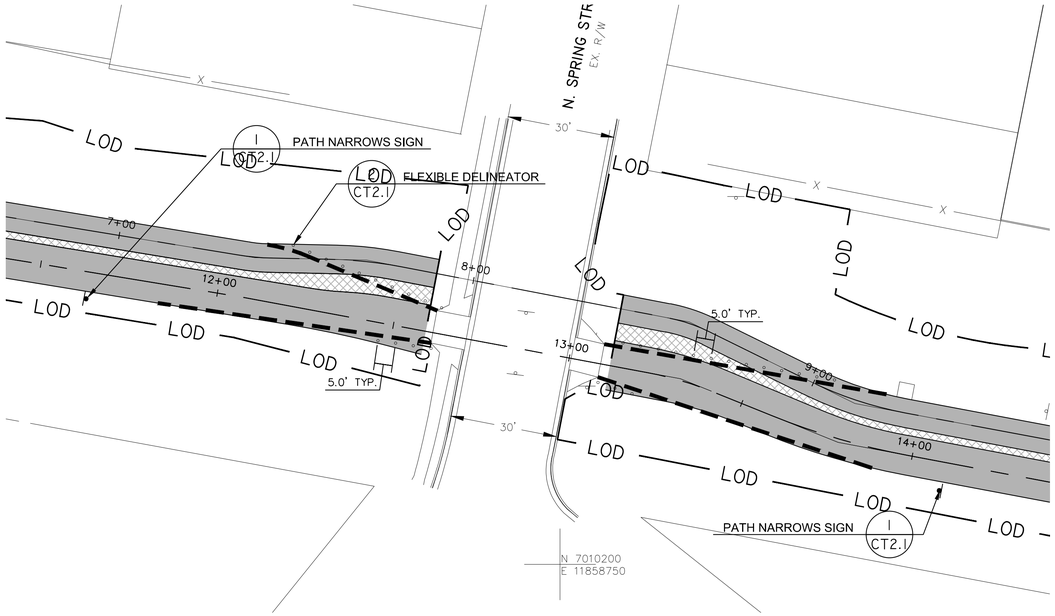
**90% DESIGN**

SHEET TITLE

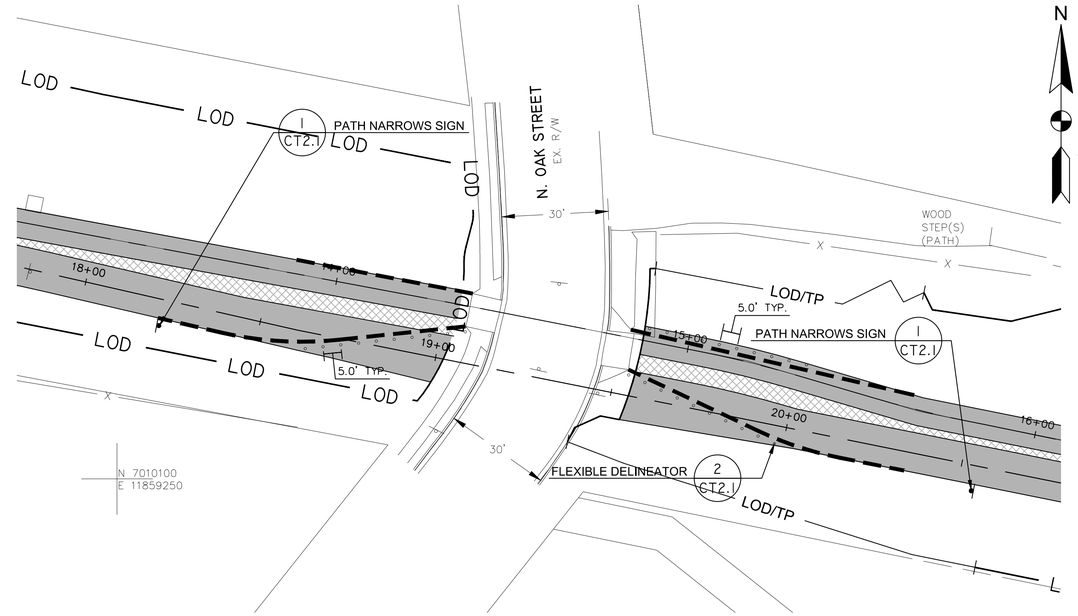
CROSS SECTIONS

SHEET

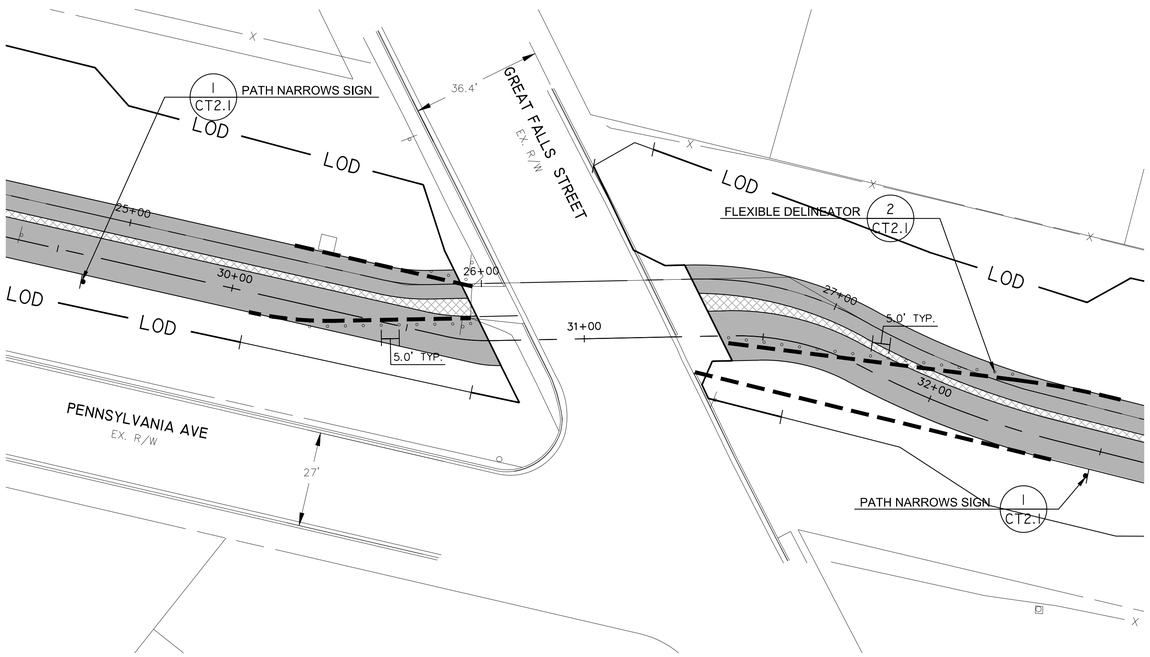
S1.6



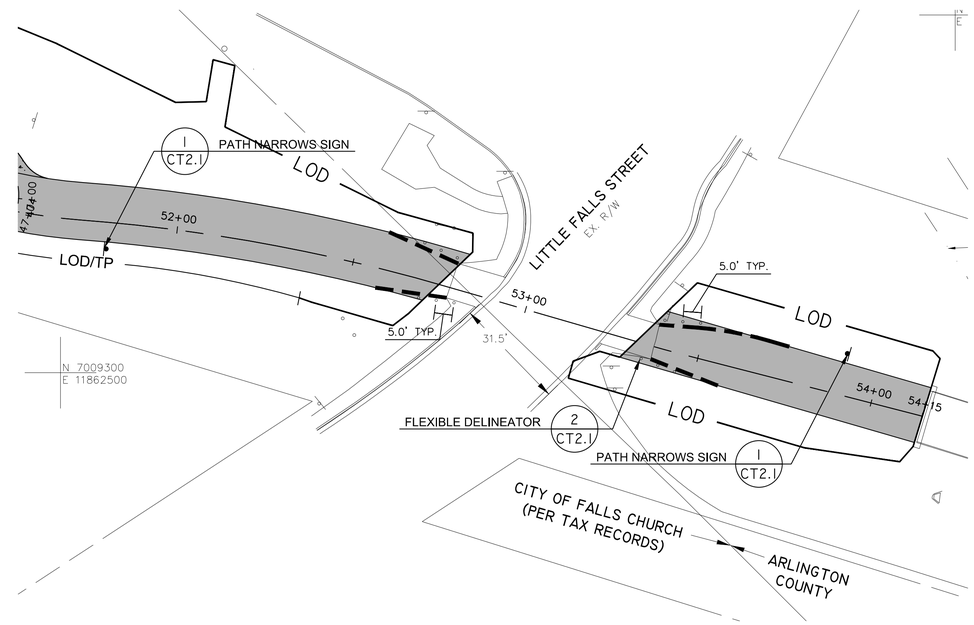

INTERIM CROSSING AT N. SPRING STREET
SCALE: 1"=20'




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'

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

N
VA STATE PLANE NAD 83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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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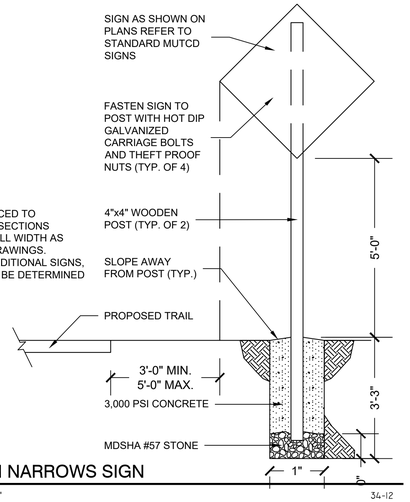
**90% DESIGN**

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"

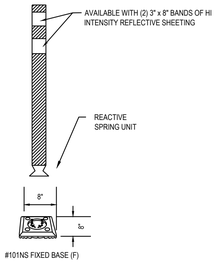
34-12

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

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 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 |
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| AMT FILE NO. | 18-0367 |
| DATE: | 01/08/2020 |
| SCALE: | 1"=20' |
| DESIGNED BY: | AMT |
| DRAWN BY: | AMT |
| CHECKED BY: | AMT |

**90% DESIGN**

SHEET TITLE
INTERIM CROSSING SIGN DETAILS

SHEET
CT2.1