UPC#	FED#	VDOT PROJECT NUMBER
97171	RSTP-5128(495)	EN08-080-105, P102, R201, C502

COUNTY OF ROANOKE, VA

GENERAL NOTES

PRE-CONSTRUCTION MEETING AND CONSTRUCTION COMMENCEMENT:

1. All construction methods and materials shall conform to the Construction Standards and Specifications of Roanoke County, the Western Virginia Water Authority, and the Virginia Department of Transportation.
2. Stormwater Management Agreements with an attached 8 1/2" x 11" or 8 1/2" x 14" plat must be approved and recorded prior to the pre-construction meeting.
3. Once all required items are submitted to Roanoke County, the developer must contact the Development Review Coordinator to indicate that a pre-construction meeting needs to be scheduled. The pre-construction meeting will be scheduled with the owner/developer two (2) working days later.
4. All land disturbing projects that require approval of an erosion and sediment control plan, grading or clearing permit shall require that the applicant provide the name of an individual who will be responsible for land disturbing activities and that this individual hold a Responsible Land Disturber (RLD) Certificate from the Department of Environmental Quality. The Responsible Land Disturber can be anyone from the Project team that is certified by the Commonwealth of Virginia to be in charge of carrying out the land disturbing activity for the project.
5. It is the responsibility of the owner/developer to notify the certified Responsible Land Disturber and the Utility Contractor to attend the pre-construction meeting.
6. The Development Review Coordinator will schedule the pre-construction meeting with the County Review Engineer, the County Inspector, and the Western Virginia Water Authority and the Town of Vinton Public Works Department if applicable.
7. An approved set of plans, Storm Water Pollution Prevention Plan (SWPPP), VSMP coverage letter, and all permits must be available at the construction site at all times.
8. The developer and/or contractor shall supply all utility companies with copies of approved plans, advising them that all grading and installation shall conform to approved plans.
9. The project engineer will inform the owner/developer verbally and in writing of the County's obligation to perform inspections on site. Everyone in the meeting will be required to sign a pre-construction checklist indicating their knowledge of Roanoke County's obligation to perform inspections on site.
10. The Erosion Control Permit or Combined Erosion Control & VSMP Permit is given to the developer at this pre-construction meeting.
11. Notify Roanoke County prior to beginning installation of ESC measures. The County will inspect initial installations to ensure compliance with approved plan prior to start of grading. The developer SHALL contact the project inspector 24 hours before beginning any grading or construction on the property.
12. County inspectors must inspect storm drain / stormwater management / BMP installations during the process of installation. Please contact the site inspector 24 hours in advance.
13. All work shall be subject to inspection by Roanoke County, the Western Virginia Water Authority and the Virginia Department of Transportation Inspectors.
14. Contractors shall notify utilities of proposed construction at least two (2), but not more than ten (10) working days in advance. Area public utilities may be notified thru "Miss Utility": 1-800-552-7001 or VA 811.
15. The 100 year Floodway shall be staked prior to any construction.
16. Grade stakes shall be set for all curb and gutter, culvert, sanitary sewer and storm sewer at all times of construction.
17. Roanoke County shall be notified when a spring is encountered during construction.
18. Construction debris shall be containerized in accordance with the Virginia Litter Control Act. No less than one litter receptacle shall be provided on site.
19. The contractor shall provide adequate means of cleaning mud from trucks and/or other equipment prior to entering public streets or rights of ways. It is the contractors responsibility to insure that the streets are in a clean, mud and dust free condition at all times.
20. Plan approval in no way relieves the developer or contractors of the responsibilities contained within the erosion and sediment control or stormwater management policies.
21. Field construction shall honor proposed drainage divides as shown on plans.
22. Field corrections shall be approved by the Roanoke County and/or the Western Virginia Water Authority and the Professional of Record, prior to such construction.
23. The developer or contractor shall supply the County and the Western Virginia Water Authority with correct As-Built plans before final acceptance.

VIRGINIA DEPARTMENT OF TRANSPORTATION:

1. Plan approval by Roanoke County does not guarantee issuance of any permits by the Virginia Department of Transportation.
2. A permit must be obtained from the Virginia Department of Transportation, Salem Residency Office prior to construction in the highway right-of-way.
3. The preliminary pavement designs should be based on a predicted sub-grade CBR value of 7.0 and with a Resiliency Factor (RF) of 2.0 as shown in the current edition of the Virginia Department of Transportation Pavement Design Guide for Subdivision and Secondary Roads. The sub-grade soil is to be tested by an independent laboratory and the results submitted to the Virginia Department of Transportation prior to base construction. Should the sub-grade CBR value and/or the RF value be less than the predicted values, additional base material will be required in accordance with Departmental specifications. Refer to the same manual as the number and locations of the required soil samples to be tested. All pavement designs shall be submitted to the Department for review and approval. The sub-grade shall be approved by the Virginia Department of Transportation prior to placement of the base. Base shall be approved by the Virginia Department of Transportation for depth, template, and compaction before the surface is applied.
4. Standard guardrail with safety end sections may be required on fills or in areas where hazards exist as deemed necessary. After completion of rough grading operations, the County Engineer and Virginia Department of Transportation shall be contacted to schedule a field review. Where guard rail is warranted, the standard shoulder width shall be provided and the guard rail shall be installed in accordance with the current edition of the VDOT Road and Bridge Standards as part of this development.
5. Standard street and traffic control signs shall be erected at each intersection by the developer prior to final street acceptance.
6. All traffic devices shall be in accordance with current edition of the "Manual on Uniform Traffic Control Devices" (MUTCD).
7. All unsuitable material shall be removed from the construction limits of the roadway before placing embankment.

See Sheet N/A for Stormwater Site Statistics Table.
See Sheet 8 for New BMP Information Table.

The Project Engineer shall provide electronic copies of the approved plans to the Development Review Coordinator within 5 working days of the pre-construction meeting.

The notes on this sheet shall not be modified.

NAME OF DEVELOPMENT	West Roanoke River Greenway, PH1
MAGISTERIAL DISTRICT(S)	Catawba
OWNER (name, address, telephone)	Roanoke County Parks and Recreation 1206 Kessler Mill Road; Salem, VA 24153 (540) 777-6324
DEVELOPER (name, address, telephone)	Roanoke County Parks and Recreation 1206 Kessler Mill Road; Salem, VA 24153 (540) 777-6234
ENGINEER, ARCHITECT OR SURVEYOR (name, address, telephone)	Hurt & Proffitt Jeremy Michael Johnson; 1861 Pratt Drive; Blacksburg, VA 24060 (540) 552-5592
TAX MAP NO(S)	056.01-01-17.00-000 0 WEST RIVERSIDE DRIVE ROANOKE COUNTY BOARD OF SUPERVISORS 178-4-1 CITY OF SALEM

I, _____ OWNER/DEVELOPER, AM AWARE OF THE SITE DESIGN REQUIREMENTS IMPOSED BY THIS SITE DEVELOPMENT PLAN, ALL REVISIONS THEREOF, AND OTHER APPLICABLE ROANOKE COUNTY CODES AND ORDINANCES.

I HEREBY CERTIFY THAT I AGREE TO COMPLY WITH THESE REQUIREMENTS SHOWN ON THIS COVER SHEET UNLESS MODIFIED IN ACCORDANCE WITH LOCAL LAW.

WATER AND SEWER NOTES

1. All construction methods and materials shall conform to the latest edition of the Design and Construction Standards and Specifications of the Western Virginia Water Authority (WVWA) available at www.westernvawater.org or by contacting the authority at 540-853-5700. The project shall also comply with the governing jurisdiction's standards and other agency standards (e.g. VDOT, DEQ, DCR, VDH, etc.) where applicable.
2. A minimum cover of three (3) feet is required on all WVWA water and sewer lines.
3. All existing utilities may not be shown in their exact locations. The contractor shall notify Miss Utility and shall verify location and elevation of all underground utilities in the areas of construction prior to starting work.
4. Please show all WVWA water and sewer utilities on any development plan.
5. The location of existing utilities across or along the line of proposed work are not necessarily shown on the plans and where shown are only approximately correct. The contractor shall on his own initiative and at no extra cost, locate all underground lines and structures and pothole as necessary. The contractor shall be responsible for any damage to underground structures. All damage incurred to existing utilities during construction shall be repaired at the contractor's expense.
6. Plan approval by the WVWA does not remove the contractor's responsibility to remove or relocate any existing conflicts found during construction.
7. The contractor shall maintain a minimum of 18" clearance vertically and two (2) feet minimum horizontally from the outside of pipe to outside of pipe with all other underground utilities. Where this cannot be achieved, additional measures in accordance with the WVWA standards shall be enforced.
8. All utility grade adjustments shall be in accordance with WVWA standards and are the responsibility of the contractor.
9. Field changes shall be submitted by the engineer of record to the locality and approved by the WVWA.

Western Virginia Water Authority
Availability letter number: _____

PRIVATE UTILITIES

Underground utilities installed on private property or in private utility easements and building related storm drains shall be designed and installed per the current edition of the Virginia Uniform Statewide Building Code (including amendments). Design and installation requirements issued by the Western Virginia Water Authority that meet or exceed the USBC requirements are acceptable for private utilities. All private utilities are to be permitted through and inspected by the Roanoke County Inspections Office. Vaults, valves and other devices installed by or under the control of the Western Virginia Water Authority may not substituted for the code required devices.

PR #:	NOTES:

Revision Table

Sheet Contents	Sheet No.
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Plan Layout	C-03
Greenway Plan & Profiles	C-04 to C-06
Trailhead Detail	C-07
Drainage, Erosion & Sediment Control Plans	C-08 to C-09
Storm Structure Profiles	C-10
SWPPP and E&S Notes and Details	C-11 to C-12
Alignment & Easement Data Sheets	C-13
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Structural Plans & Details	S-1 to S-8

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LEGEND

Property Line — P
Right-of-way — R/W
Centerline — CL
Minimum Building Line
Existing Storm Sewer
Existing Sanitary Sewer
Existing Water Main
Existing Contour
Proposed Contour — 1045
Proposed Drainage Divide
Proposed Limits of Clearing
Proposed Storm Sewer — 24" S.D.
Proposed Sanitary Sewer — 8" M.H.
Proposed Water Main — HYDRANT — VALVE — BLOWOFF

SURVEY INFORMATION

Horizontal and vertical control surveys were performed in year: 2014
By: Hurt & Proffitt, Inc.

All vertical elevations must be referenced to the National Geodetic Vertical Datum of 1929 or 1988. All horizontal elevations must be referenced to the North American Datum of 1927 or 1983.

Horizontal Datum: NAD83 Vertical Datum: NAV88

Source of topographic mapping is dated March 19, 2014

Boundary was performed by N/A dated: N/A

Benchmark Information: N/A

The professional seal and signature certifies the boundary survey and topographic mapping to be accurate and correct.

HURT & PROFFITT

ENGINEERING • SURVEYING
LAND DEVELOPMENT • ENVIRONMENTAL
GEOTECHNICAL • CULTURAL RESOURCES
CONSTRUCTION TESTING & INSPECTION

1861 Pratt Drive
BLACKSBURG, VA 24060
800.763.5596 TOLL FREE
540.552.5592 MAIN
540.552.5729 FAX

TOYR:

TREE CLEARING
NO TREE CLEARING ALLOWED BETWEEN APRIL 01 AND NOVEMBER 14 DUE TO TRICOLORED BAT

IN-STREAM WORK
NO IN-STREAM WORK ALLOWED BETWEEN MARCH 15 AND JUNE 30 DUE TO ROANOKE LOGPERCH

REFER TO PERMIT CONDITIONS IN PROJECT MANUAL APPENDIX

COMMONWEALTH OF VIRGINIA
JEREMY MICHAEL JOHNSON
Lic.No.0402050112
18 April 2023
PROFESSIONAL ENGINEER

Approved

West Roanoke River Greenway
City of Salem & Roanoke County, Virginia

TIER 1 PROJECT

LOCALLY ADMINISTERED PROJECTS
UPC: 97171

County of Roanoke
NAME OF LOCALITY

David M. Henderson
RECOMMENDED FOR APPROVAL FOR CONSTRUCTION

RECOMMENDED FOR APPROVAL FOR CONSTRUCTION

4/25/23	Roanoke County Engineer
DATE	TITLE OF POSITION

Western Roanoke River Greenway Phase 1

SHEET C-01 OF 31

TEMPORARY TRAFFIC CONTROL PLAN

PROJECT NUMBERS:

UPC#: 97171
VDOT PROJECT NUMBER: EN08-080-105, P102, R201, C502
FED#: TBD

ROADWAY CLASSIFICATION

W RIVERSIDE DR. MAJOR COLLECTOR (30 MPH) ADT: 3,100 – 4,800

TEMPORARY TRAFFIC CONTROL REFERENCES

TTC-5.2: SHOULDER OPERATION WITH MINOR ENCROACHMENT
TTC-23.2: FLAGGING OPERATIONS
TTC-53.0: SIGNING FOR PROJECT LIMITS

LOCAL EMERGENCY RESPONSE AGENCY CONTACT LIST

• SALEM SHERIFF'S OFFICE	540-375-3040
• SALEM FIRE/EMS	540-375-3080
• ROANOKE COUNTY POLICE	540-562-3265
• ROANOKE COUNTY FIRE	540-777-8701
• VIRGINIA STATE POLICE (DIV6 AREA 40)	540-375-9518

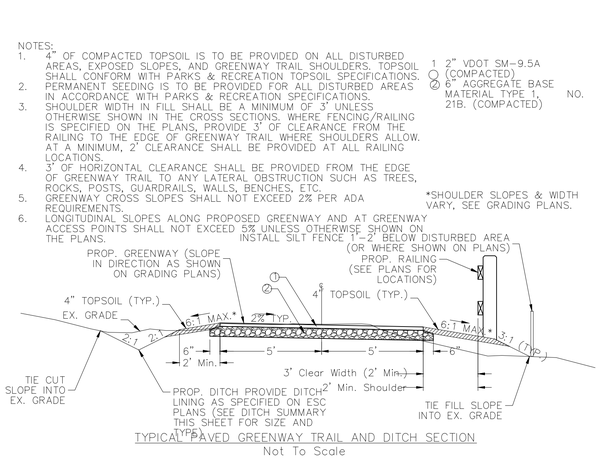
PROPOSED CONSTRUCTION SEQUENCE

1. INSTALLATION OF PROJECT LIMITS SIGNS.
2. INSTALLATION OF APPROVED TEMPORARY TRAFFIC CONTROL MEASURES.
3. PERFORM DEMOLITION ACTIVITIES.
4. INSTALLATION OF PROPOSED IMPROVEMENTS.
5. RESTORATION OF PROPERTY.
6. REMOVAL OF TEMPORARY TRAFFIC CONTROL MEASURES.
7. REMOVAL OF PROJECT LIMITS SIGNS.

PROPOSED CONSTRUCTION PHASING SHALL BE DETERMINED BY THE CONTRACTOR.

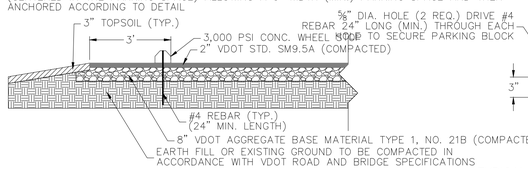
GENERAL TRAFFIC CONTROL NOTES

1. PROJECT CATEGORY: TYPE A, CATEGORY 1
2. ALL TEMPORARY TRAFFIC CONTROL SHALL BE PROVIDED AND INSTALLED PER THE 2011 VIRGINIA WORK AREA PROTECTION MANUAL (REV 2.1).
3. TWO-LANE TRAFFIC SHALL BE MAINTAINED AT ALL TIMES UNLESS APPROVED BY THE ENGINEER. LANE WIDTHS SHALL BE A MINIMUM OF 10 FEET.
4. WHEN FLAGGING OPERATIONS ARE NECESSARY:
   4.1. ALL FLAGGERS SHALL BE PERFORMED BY PERSONNEL HOLDING A CURRENT VDOT FLAGGER CARD (OR ATSSA EQUIVALENT)
   4.2. THE WORK ZONE SHALL NOT EXCEED THE AREA NECESSARY FOR DAILY WORK.
   4.3. THE ROAD SHALL BE RE-OPENED TO TWO-LANE TRAFFIC AT THE END OF THE WORK DAY.
   4.4. MINIMUM CLEARANCE FROM FACE OF CD TO EDGE OF PAVEMENT SHALL BE 13'.
   4.5. MAXIMUM STOPPAGE SHALL BE 12 MINUTES.
5. VEHICULAR ACCESS TO ADJOINING PROPERTIES SHALL BE MAINTAINED AT ALL TIMES.

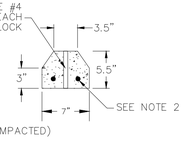


TYPICAL PAVED GREENWAY TRAIL AND DITCH SECTION
Not To Scale

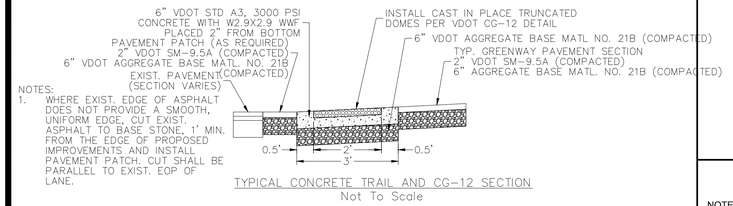
NOTES:
1. CONCRETE SHALL BE VDOT CLASS A3.
2. CONCRETE SHALL BE REINFORCED 2-#4 REINFORCING BARS.
3. WHEEL STOPS SHALL BE 6'-0" LONG AND BE POSITIONED AS SHOWN ON THE PARKING DETAILS (CENTERED IN THE PARKING SPACE) ALLOWING A 9' WIDTH (MIN.) PARKING SPACE AND THEN ANCHORED ACCORDING TO DETAIL.



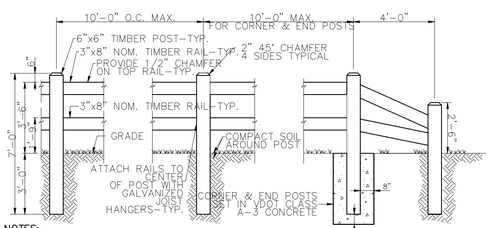
TYPICAL PAVED TRAILHEAD PARKING DETAIL
Not To Scale



TYPICAL WHEEL STOP DETAIL
Not To Scale



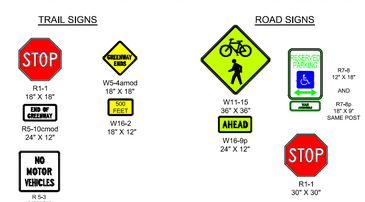
TYPICAL CONCRETE TRAIL AND CG-12 SECTION
Not To Scale



NOTES:
1. TIMBER GUARDRAIL SHALL BE AS SHOWN IN DRAWINGS.
2. POSTS SHALL BE NO MORE THAN 10' ON-CENTER. POSTS SHALL BE EQUALLY SPACED THROUGHOUT A RUN OF FENCING EXCEPT FOR POSTS INSTALLED AT ALL TRANSITIONS AND TERMINATIONS.
3. TIMBER POSTS SHALL BE 6"x6"x7' #1 SYP (SOUTHERN YELLOW PINE), S4S (SURFACE FOUR SIDES), GM (GRADE MARKED), ACQ PRESERVATIVE TO 0.40 LB./CU. FT., PET (PRECISION END TRIM), 2" CH4TE (2" CHAMFER AROUND TOP FOUR EDGES).
4. TIMBER RAILS SHALL BE #1 SYP (SOUTHERN YELLOW PINE), S4S (SURFACE FOUR SIDES), GM (GRADE MARKED), ACQ PRESERVATIVE TO 0.40 LB./CU. FT., DET (DOUBLE END TRIM), 1/2" CHAMFER ON BOTH EDGES OF TOP RAIL. DOH (DEPARTMENT OF HIGHWAYS) RAILS SHALL BE ATTACHED TO POST WITH TYPE 316 STAINLESS STEEL (18 GAUGE) CONCEALED FLANGE JOIST HANGERS WITH STAINLESS STEEL SCREWS.
5. ALL CUT ENDS SHALL BE FIELD TREATED IN ACCORDANCE WITH AWPA GUIDELINES AND THEN SEALED WITH A NON-STAINING WOOD SEALER.
6. SCREWS SHALL BE GALVANIZED IN ACCORDANCE WITH ASTM A153 UNLESS NOTED OTHERWISE.
7. CONCRETE USED TO ANCHOR FENCE POSTS SHALL MEET THE REQUIREMENTS OF VDOT TYPE A3 POST & RAIL.
8. WHERE NOTED IN PLANS AS TAPERED END, THE FINAL 4' SECTION OF RAILING BEYOND END POST IS TO BE TAPERED AWAY FROM TRAIL AT A RATE OF 4:1.
9. TIMBER GUARDRAIL MUST BE INSTALLED WITH A MINIMUM CLEAR DISTANCE OF 3' FROM THE EDGE OF TRAIL.

TYPICAL TIMBER GUARDRAIL
Not To Scale

NOTES:
1. ALL SIGNS SHALL CONFORM TO THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (MUTCD), LATEST ED., THE VIRGINIA SUPPLEMENT TO THE 2009 MUTCD, LATEST ED., THE STANDARD HIGHWAY SIGNS BOOK, LATEST ED., AND VDOT SPECIFICATIONS.
2. SIGNS SHALL BE MANUFACTURED TO PROVIDE A SMOOTH, SINGLE UNIT SURFACE.
3. SIGN PLACEMENT SHALL CONFORM TO MUTCD FIGURE 9B-1
   - DISTANCE FROM EDGE OF TRAIL TO EDGE OF SIGN 2' MIN.
   - DISTANCE FROM TRAIL SURFACE TO OVERHEAD SIGN 10' MIN.
   - HEIGHT OF SIGN 4' MIN. FROM TRAIL SURFACE TO BOTTOM OF SIGN.
4. W11-15, W11-1, W16-1, W16-9p, AND W16-7p SHALL HAVE A FLUORESCENT YELLOW-GREEN BACKGROUND.
5. POST MATERIAL, TREATMENTS, AND INSTALLATION SHALL BE PER VDOT SPECIFICATIONS FOR ALL ROAD SIGNS. TRAIL SIGN POSTS SHALL BE 4" X 4" TREATED SOUTHERN YELLOW PINE STAINED WITH 2 COATS OF CABOT BARK SEMI-TRANSPARENT STAIN PER CITY OF ROANOKE SPECIFICATIONS.



SIGNAGE DETAILS
Not To Scale

GENERAL NOTES

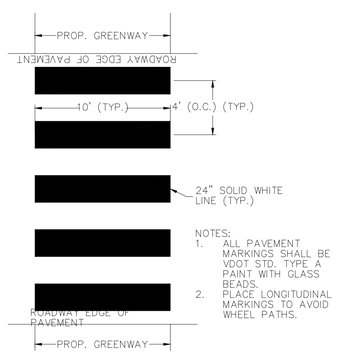
PLAN NOTES:

1. THIS PROJECT IS TO BE CONSTRUCTED IN ACCORDANCE THE ROANOKE COUNTY STANDARDS AND SPECIFICATIONS AND THE LATEST EDITION OF THE VIRGINIA DEPARTMENT OF TRANSPORTATION (VDOT) ROAD AND BRIDGE SPECIFICATIONS, VDOT ROAD AND BRIDGE STANDARDS, THE 2011 VIRGINIA WORK AREA PROTECTION MANUAL, WITH REVISION 2.1, THE VIRGINIA EROSION AND SEDIMENT CONTROL HANDBOOK, THE MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES, THE STANDARD HIGHWAY SIGNS BOOK, AND THESE PLANS.
2. TREES AND BRUSH SHALL BE CLEARED & GRUBBED WITHIN THE CONSTRUCTION LIMITS. DEBRIS AND REFUSE WITHIN THE PROPOSED TRAIL CORRIDOR AND AREAS OF DISTURBANCE/PROPOSED IMPROVEMENTS SHALL BE REMOVED AND DISPOSED OF BY THE CONTRACTOR.
3. THE SUBGRADE SHALL BE FREE OF DEBRIS, ORGANIC COMPONENTS, ETC. COMPACTION SHALL BE PERFORMED IN ACCORDANCE WITH VDOT SPECIFICATIONS. THE SUBGRADE SURFACE SHALL BE TREATED WITH A PRE-EMERGENT HERBICIDE PER VDOT SPECIFICATION 607 NO MORE THAN 2 WEEKS PRIOR TO SURFACE INSTALLATION. HERBICIDE TREATMENT SHALL BE INCIDENTAL TO OTHER ITEMS OF WORK.
4. EXISTING UTILITIES SHOWN ON THESE PLANS ARE APPROXIMATE AND MAY NOT REPRESENT ALL UTILITIES OR SERVICE LINES. PRIOR TO EXCAVATION, THE CONTRACTOR SHALL CONTACT THE PERTINENT UTILITY COMPANIES AND/OR UTILITY LOCATING SERVICES TO HAVE ALL UNDERGROUND UTILITIES LOCATED AND MARKED. THE CONTRACTOR SHALL PROTECT AND MAINTAIN EXISTING UTILITIES DURING CONSTRUCTION. WHERE PROPOSED IMPROVEMENTS, DRAINAGE CULVERTS, OR GRADING IS FOUND TO BE IN CONFLICT WITH EXISTING UTILITIES, THE CONTRACTOR SHALL NOTIFY THE ENGINEER IMMEDIATELY.
5. THE CONTRACTOR IS RESPONSIBLE FOR COORDINATING UTILITY RELOCATIONS WITH THE APPROPRIATE UTILITY OWNER(S).
6. THE CONTRACTOR IS RESPONSIBLE FOR COMPLIANCE WITH THE REQUIREMENTS OF SECTION 59.1-406 ET SEQ. OF THE CODE OF VIRGINIA (OVERHEAD HIGH VOLTAGE LINE SAFETY ACT.)
7. THE CONTRACTOR SHALL FURNISH AND INSTALL SIGNAGE IN ACCORDANCE WITH THESE PLANS, THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES, THE STANDARD HIGHWAY SIGNS BOOK, AND VDOT SPECIFICATIONS LATEST ED.
8. THE CONTRACTOR IS RESPONSIBLE FOR MAINTENANCE OF TRAFFIC.
9. THE CONTRACTOR IS RESPONSIBLE FOR SAFETY ON THE PROJECT. EXCAVATIONS SHALL NOT BE LEFT OPEN OVERNIGHT UNLESS APPROVED BY THE ENGINEER. THE MAIN ACCESS POINTS TO THE GREENWAY SHALL BE GATED OR BARRICADED AND SIGNED "CONSTRUCTION ZONE DO NOT ENTER." PHYSICAL BARRIERS AND SIGNS SHALL BE PLACED BLOCKING ACCESS TO ALL BRIDGES AND STRUCTURES AND FALL PROTECTION SHALL BE IMPLEMENTED AT ALL TIMES.
10. PROPOSED CULVERTS SHALL BE CLASS III REINFORCED CONCRETE PIPE, UNLESS OTHERWISE NOTED, AND INSTALLED ACCORDING TO THE PLANS. MINOR FIELD ADJUSTMENTS MAY BE REQUIRED AT THE DISCRETION OF THE ENGINEER.
11. THE PROPOSED TRAIL SHALL PROVIDE SMOOTH TRANSITIONS AND SHALL NOT EXCEED A 5% MAX. LONGITUDINAL SLOPE UNLESS OTHERWISE NOTED IN THE PLANS.
12. WHERE CROSS SLOPES TRANSITION FROM "GRADE LEFT" TO "GRADE RIGHT", THE TRANSITION SHOULD BE APPROXIMATELY 25' IN LENGTH.
13. THE CONTRACTOR SHALL OBTAIN ALL PERMITS WHICH WILL BE PAID BY ROANOKE COUNTY AND THE CITY OF SALEM, THESE INCLUDE BUT ARE NOT LIMITED TO:
    a. LAND USE PERMITS FROM VDOT, ROANOKE COUNTY AND THE CITY OF SALEM PRIOR TO BEGINNING ANY ACTIVITIES/OPERATIONS ON STATE, COUNTY, OR CITY RIGHT OF WAY. THIS WOULD INCLUDE POSITIONING EQUIPMENT ON THE HIGHWAY SHOULDER/RIGHT OF WAY AND GAINING CONSTRUCTION ACCESS.
    b. EROSION AND SEDIMENT CONTROL PERMIT FROM THE CITY OF SALEM. CONTRACTOR SHALL BE THE RESPONSIBLE LAND DISTURBER.
    c. VSMP PERMIT.
    d. VMRC PERMIT.
    e. BUILDING PERMITS (AS REQUIRED).
14. ALL MATERIAL SHALL BE FROM VDOT PRE-APPROVED SOURCES. CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING FULL SOURCE MATERIAL DOCUMENTATION (ON VDOT APPROVED FORMS) WITH SHOP SUBMITTALS.

SURVEYING NOTES:

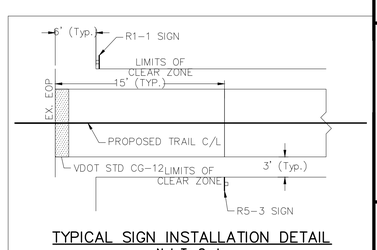
1. H&P FIELD WORK PORTION:
   THE AERIAL CONTROL AND CONVENTIONAL TOPOGRAPHIC FIELD SURVEY WORK WAS COMPLETED UNDER THE DIRECT AND RESPONSIBLE CHARGE OF, NEIL AVERY MARTIN, OF HURT & PROFFITT. FROM AN ACTUAL GROUND SURVEY MADE UNDER HIS SUPERVISION; THAT THE IMAGERY AND/OR ORIGINAL DATA WAS OBTAINED DURING THE MONTHS OF MARCH THRU APRIL OF 2014; AND THAT THIS TOPOGRAPHIC MAP MEETS MINIMUM ACCURACY STANDARDS UNLESS OTHERWISE NOTED.
2. AERIAL MAPPING PORTION:
   THIS PHOTOGRAMMETRIC SURVEY WAS COMPLETED UNDER THE DIRECT AND RESPONSIBLE CHARGE OF, MALCOLM C. MCKENZIE & JEFFREY L. SNYDER FROM AN ACTUAL AIRBORNE SURVEY MADE UNDER OUR SUPERVISION; THE IMAGERY WAS OBTAINED IN MARCH OF 2014 AND THIS DIGITAL GEOSPATIAL DATA INCLUDING METADATA MEETS MINIMUM ACCURACY STANDARDS UNLESS OTHERWISE NOTED. PREPARED FOR HURT & PROFFITT
3. PROPERTY DATA:
   PROPERTY LINE DATA SHOWN ON THE PLANS IS BASED ON A COMPILATION OF DEED RESEARCH, FIELD SURVEYS, AND TIES TO AVAILABLE PROPERTY CORNERS BY CALDWELL WHITE ASSOCIATES. CALDWELL WHITE ASSOCIATES DID NOT PREPARE A FULL BOUNDARY SURVEY OR TITLE SEARCH OF EACH PARCEL SHOWN.

THE FOLLOWING VDOT ROAD AND BRIDGE STANDARDS ARE MADE PART OF THIS PLAN SET BY REFERENCE HERE:
CG-2 - STANDARD 6" CURB
CG-12 - CURB RAMP AND DETECTABLE WARNING SURFACE
EC-4 - ROCK CHECK DAM
EW-1 AND EW-1PC - ENDWALL
GR-MGS2 - GUARDRAIL TERMINAL
GR-MGS4 - GUARDRAIL TRANSITION
PG-3 - RIP RAP
PG-4 - PAVED FLUME



NOTES:
1. ALL PAVEMENT MARKINGS SHALL BE VDOT STD. TYPE A PAINT WITH GLASS BEADS.
2. PLACE LONGITUDINAL MARKINGS TO AVOID WHEEL PATHS.

TYPICAL CROSSWALK DETAIL
Not To Scale



TYPICAL SIGN INSTALLATION DETAIL
Not To Scale

HURT&PROFFITT
INSPIRED / RESPONSIVE / TRUSTED
HANDP.COM
BLACKSBURG, VA. 24060
540.552.5592
1861 PRATT DR. STE 1100
ENGINEERING • SURVEYING • LAND DEVELOPMENT • ENVIRONMENTAL
GEOTECHNICAL • CONSTRUCTION TESTING & INSPECTION • CULTURAL RESOURCES

GENERAL NOTES AND DETAILS

WEST ROANOKE RIVER GREENWAY PH1

COUNTY OF ROANOKE, VA

PROJECT NO.	20221694
LAT.	
LONG.	
DATE:	18 April 2023
DRAWN BY:	
CHECKED BY:	JMJ

COMMONWEALTH OF VIRGINIA
JEREMY MICHAEL JOHNSON
Lic.No.0402050112
18 April 2023
PROFESSIONAL ENGINEER

SHEET NO.
C-02

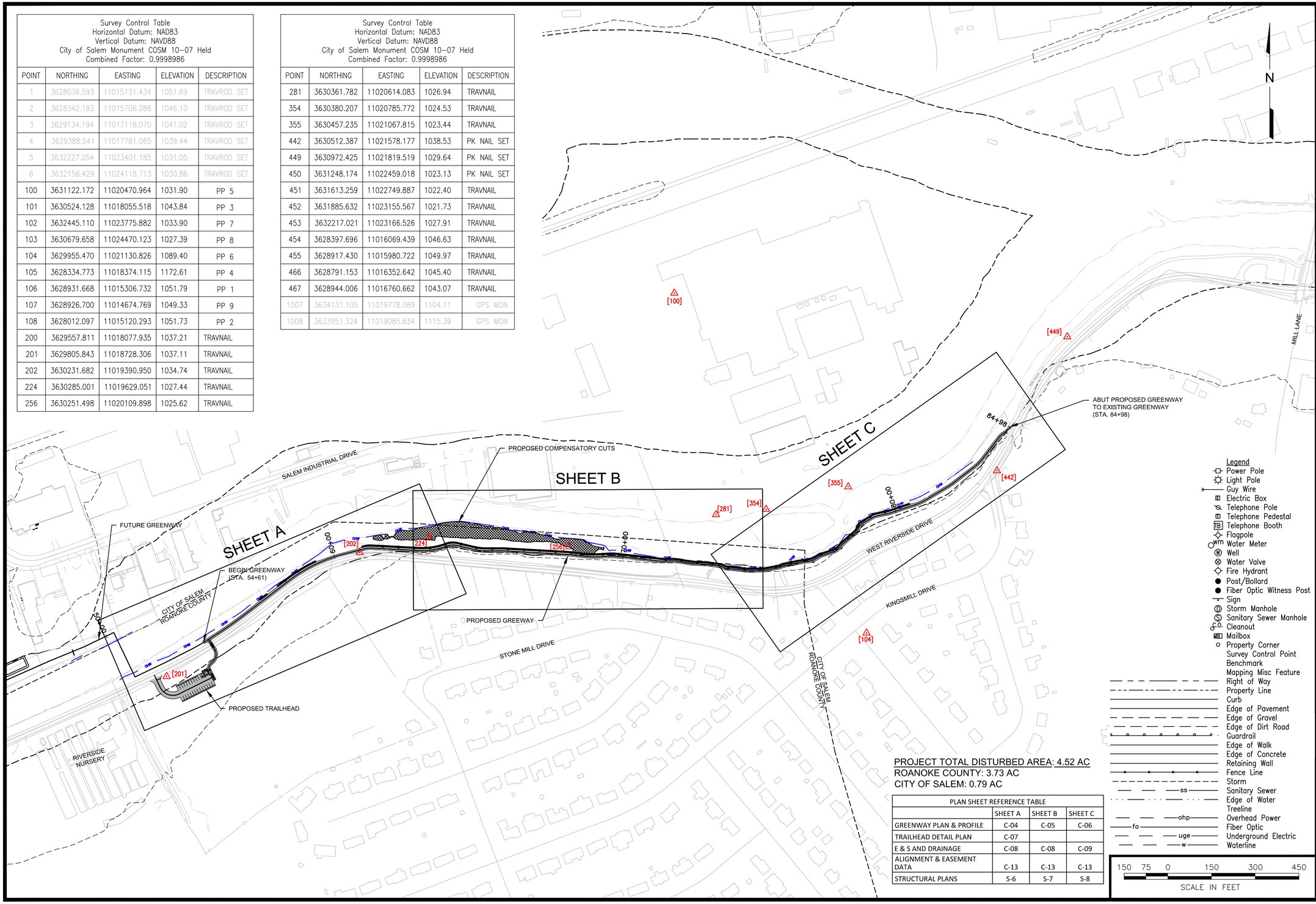
Apr 19, 2023 - 12:45pm \\data01\projects\2022\20221694\Engineering\CAD\221694_SHEETS1_TITLE.dwg

Survey Control Table
Horizontal Datum: NAD83
Vertical Datum: NAVD88
City of Salem Monument COSM 10-07 Held
Combined Factor: 0.9998986

POINT	NORTHING	EASTING	ELEVATION	DESCRIPTION
1	3628036.593	11015131.434	1051.69	TRAVROD SET
2	3628342.183	11015706.286	1046.10	TRAVROD SET
3	3629134.194	11017118.070	1041.02	TRAVROD SET
4	3629388.541	11017781.065	1039.44	TRAVROD SET
5	3632227.054	11023401.185	1031.05	TRAVROD SET
6	3632156.429	11024118.713	1030.86	TRAVROD SET
100	3631122.172	11020470.964	1031.90	PP 5
101	3630524.128	11018055.518	1043.84	PP 3
102	3632445.110	11023775.882	1033.90	PP 7
103	3630679.658	11024470.123	1027.39	PP 8
104	3629955.470	11021130.826	1089.40	PP 6
105	3628334.773	11018374.115	1172.61	PP 4
106	3628931.668	11015306.732	1051.79	PP 1
107	3628926.700	11014674.769	1049.33	PP 9
108	3628012.097	11015120.293	1051.73	PP 2
200	3629557.811	11018077.935	1037.21	TRAVNAIL
201	3629805.843	11018728.306	1037.11	TRAVNAIL
202	3630231.682	11019390.950	1034.74	TRAVNAIL
224	3630285.001	11019629.051	1027.44	TRAVNAIL
256	3630251.498	11020109.898	1025.62	TRAVNAIL

Survey Control Table
Horizontal Datum: NAD83
Vertical Datum: NAVD88
City of Salem Monument COSM 10-07 Held
Combined Factor: 0.9998986

POINT	NORTHING	EASTING	ELEVATION	DESCRIPTION
281	3630361.782	11020614.083	1026.94	TRAVNAIL
354	3630380.207	11020785.772	1024.53	TRAVNAIL
355	3630457.235	11021067.815	1023.44	TRAVNAIL
442	3630512.387	11021578.177	1038.53	PK NAIL SET
449	3630972.425	11021819.519	1029.64	PK NAIL SET
450	3631248.174	11022459.018	1023.13	PK NAIL SET
451	3631613.259	11022749.887	1022.40	TRAVNAIL
452	3631885.632	11023155.567	1021.73	TRAVNAIL
453	3632217.021	11023166.526	1027.91	TRAVNAIL
454	3628397.696	11016069.439	1046.63	TRAVNAIL
455	3628917.430	11015980.722	1049.97	TRAVNAIL
466	3628791.153	11016352.642	1045.40	TRAVNAIL
467	3628944.006	11016760.662	1043.07	TRAVNAIL
1007	3634131.105	11019778.089	1104.11	GPS MON
1008	3633951.324	11019085.834	1115.39	GPS MON



PROJECT TOTAL DISTURBED AREA: 4.52 AC
ROANOKE COUNTY: 3.73 AC
CITY OF SALEM: 0.79 AC

PLAN SHEET REFERENCE TABLE			
	SHEET A	SHEET B	SHEET C
GREENWAY PLAN & PROFILE	C-04	C-05	C-06
TRAILHEAD DETAIL PLAN	C-07		
E & S AND DRAINAGE	C-08	C-08	C-09
ALIGNMENT & EASEMENT DATA	C-13	C-13	C-13
STRUCTURAL PLANS	S-6	S-7	S-8

Legend
- Power Pole
- Light Pole
- Guy Wire
- Electric Box
- Telephone Pole
- Telephone Pedestal
- Telephone Booth
- Flagpole
- Water Meter
- Well
- Water Valve
- Fire Hydrant
- Post/Bollard
- Fiber Optic Witness Post
- Sign
- Storm Manhole
- Sanitary Sewer Manhole
- Cleanout
- Mailbox
- Property Corner
- Survey Control Point
- Benchmark
- Mapping Misc Feature
- Right of Way
- Property Line
- Curb
- Edge of Pavement
- Edge of Gravel
- Edge of Dirt Road
- Guardrail
- Edge of Walk
- Edge of Concrete
- Retaining Wall
- Fence Line
- Storm
- Sanitary Sewer
- Edge of Water
- Treeline
- Overhead Power
- Fiber Optic
- Underground Electric
- Waterline

150 75 0 150 300 450
SCALE IN FEET

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PLAN LAYOUT
WEST ROANOKE RIVER GREENWAY PH1
COUNTY OF ROANOKE, VA

PROJECT NO.	20221694
LAT.	
LONG.	
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18 April 2023
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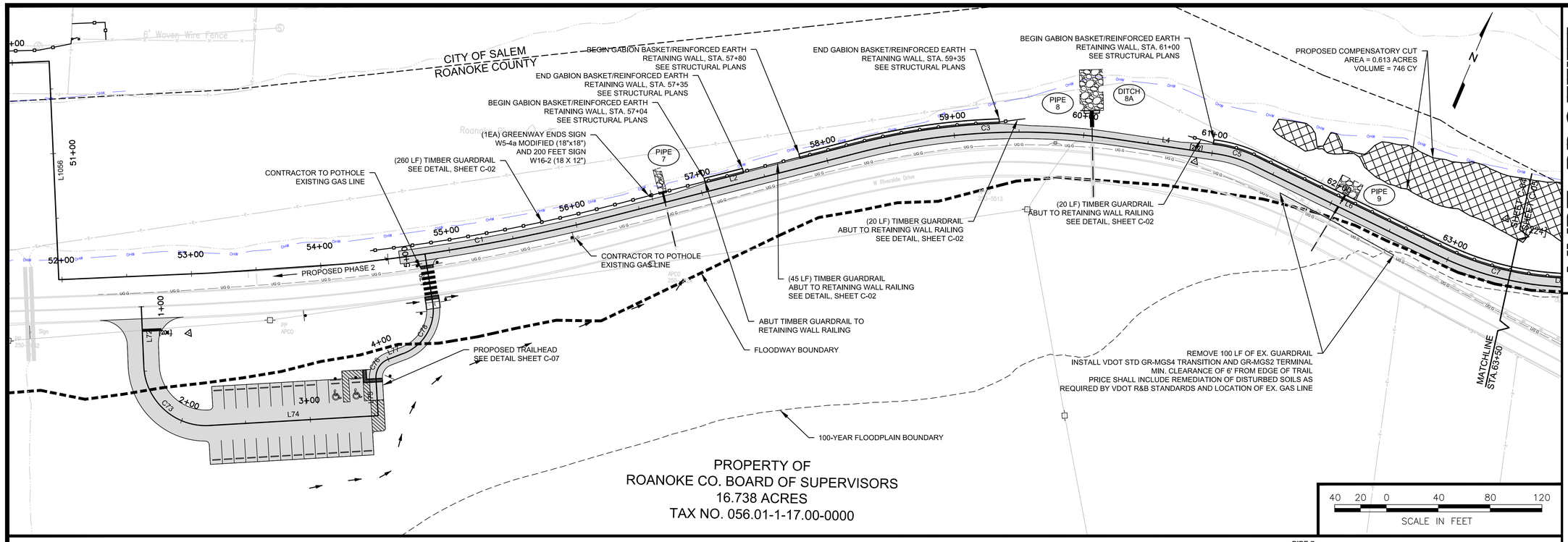
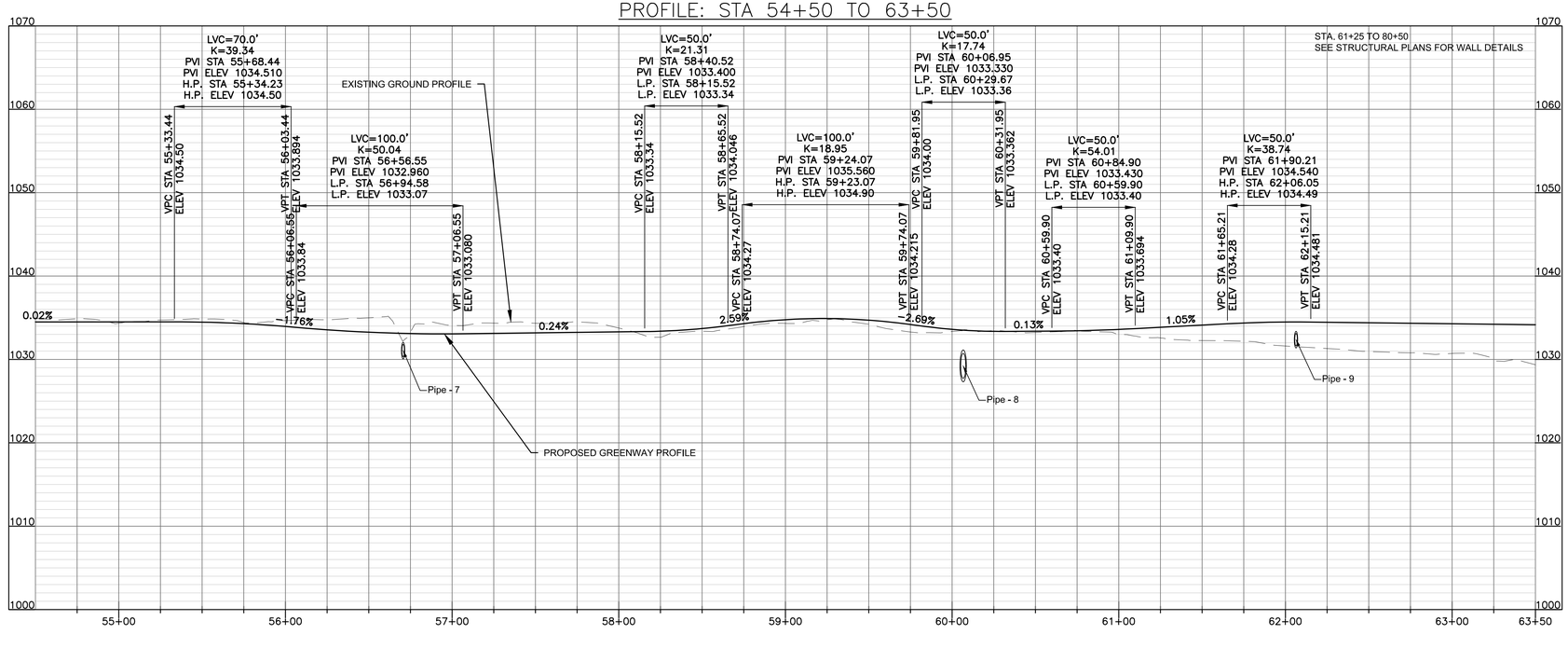
SHEET NO.
C-03

Apr 19, 2023 - 12:46pm \\data01\projects\2022\20221694\Engineering\CAD\221694_SHEETS2_PP.dwg



PROFILE: STA 54+50 TO 63+50



PIPE 7
7.3' OF 18" RCP @ 1.19%
INVERT IN: 1030.30'
INVERT OUT: 1030.21'
INSTALL VDOT STD EW-1
WITH 24 TONS CLASS II RR (OP)

PIPE 8
13' OF 36" RCP @ 1.83%
INVERT IN: 1027.60'
INVERT OUT: 1027.36'
INSTALL VDOT STD EW-1
WITH 130 TONS CLASS II RR (OP)

PIPE 9
16' OF 18" CMP @ 0.30%
INVERT IN: 1031.64'
INVERT OUT: 1031.59'
PROJECT THROUGH GABION WALL
WITH 53 TONS CLASS II RR (OP)

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PLAN AND PROFILE
STA. 54+61 TO 63+50
WEST ROANOKE RIVER GREENWAY PH1
COUNTY OF ROANOKE, VA

PROJECT NO.	20221694
LAT.	
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18 April 2023
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SHEET NO.
C-04

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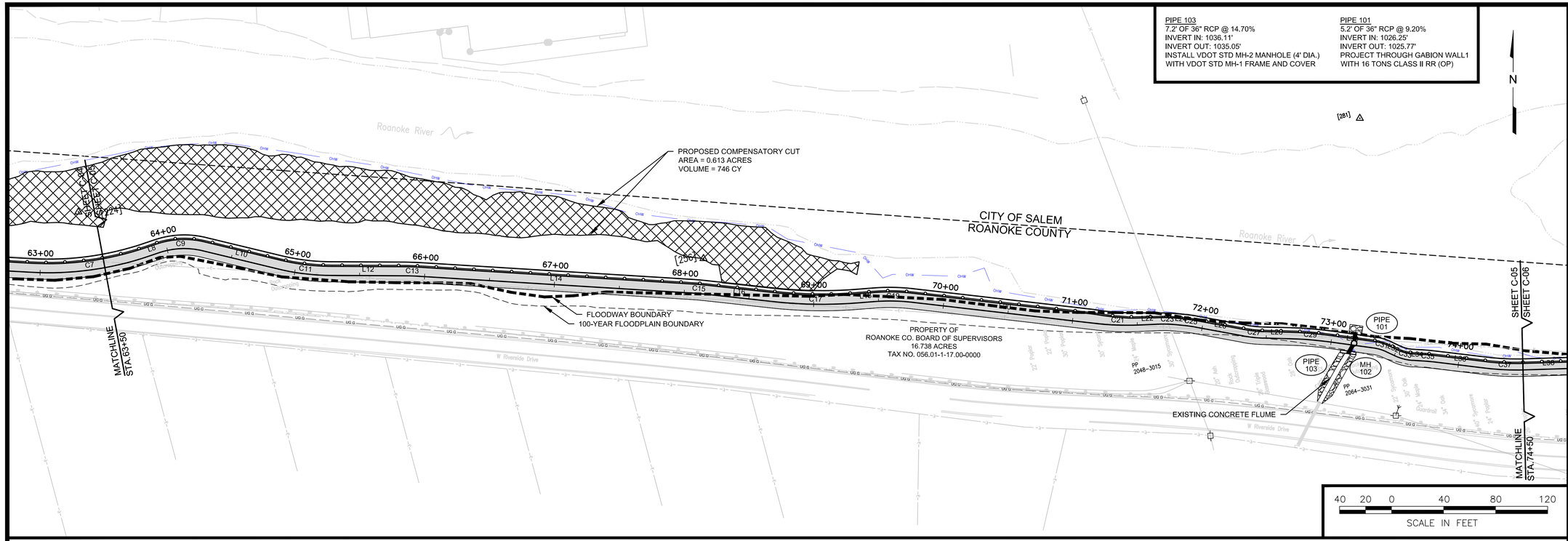
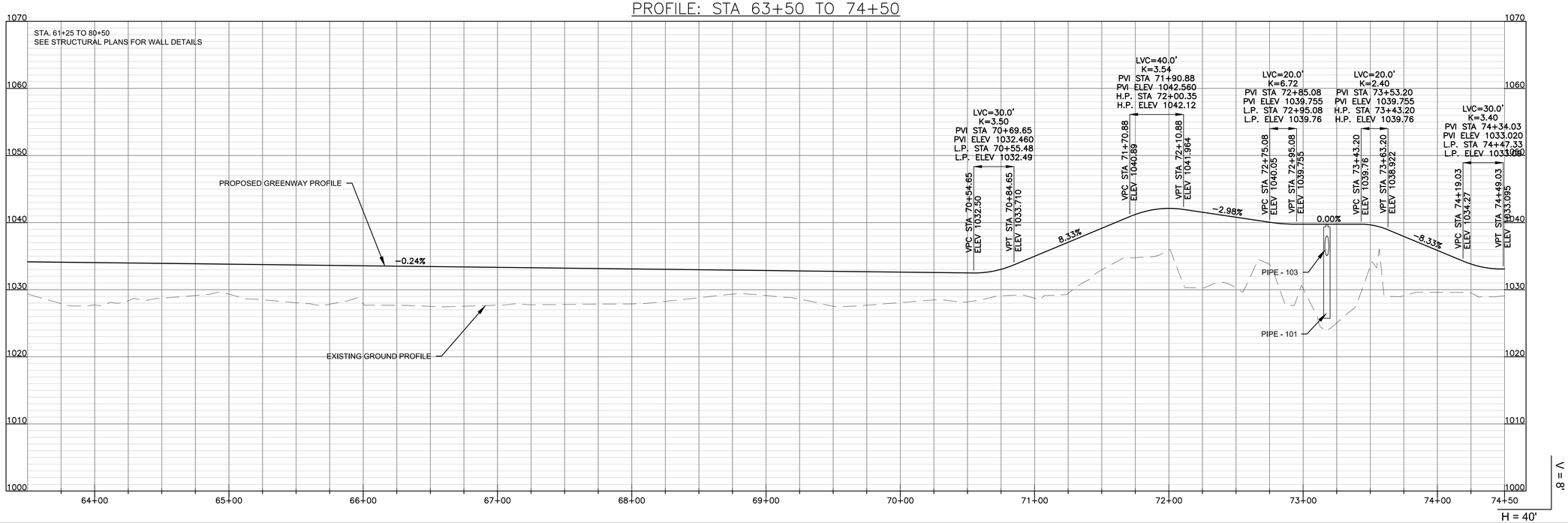
PIPE 103
7.2' OF 36" RCP @ 14.70%
INVERT IN: 1036.11'
INVERT OUT: 1035.05'
INSTALL VDOT STD MH-2 MANHOLE (4' DIA.)
WITH VDOT STD MH-1 FRAME AND COVER

PIPE 101
5.2' OF 36" RCP @ 9.20%
INVERT IN: 1026.25'
INVERT OUT: 1025.77'
PROJECT THROUGH GABION WALL1
WITH 16 TONS CLASS II RR (OP)



PROFILE: STA 63+50 TO 74+50



PLAN AND PROFILE
STA. 63+50 TO 74+50
WEST ROANOKE RIVER GREENWAY PH1
COUNTY OF ROANOKE, VA

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SHEET NO.
C-05

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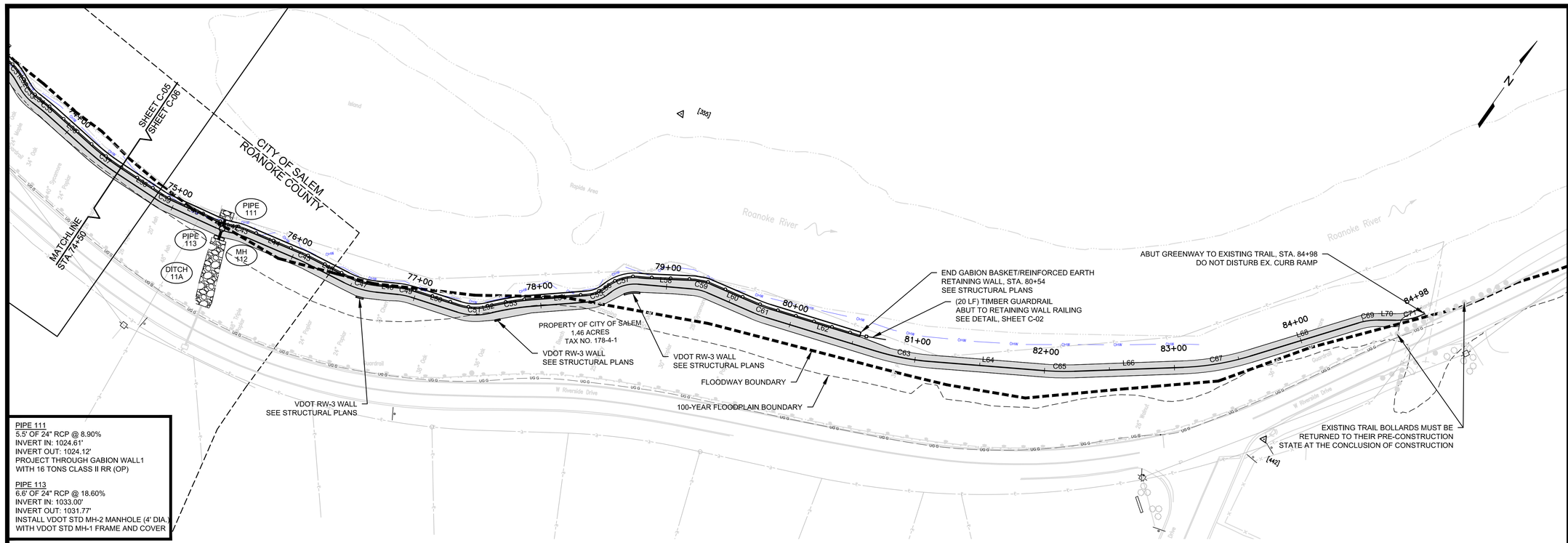
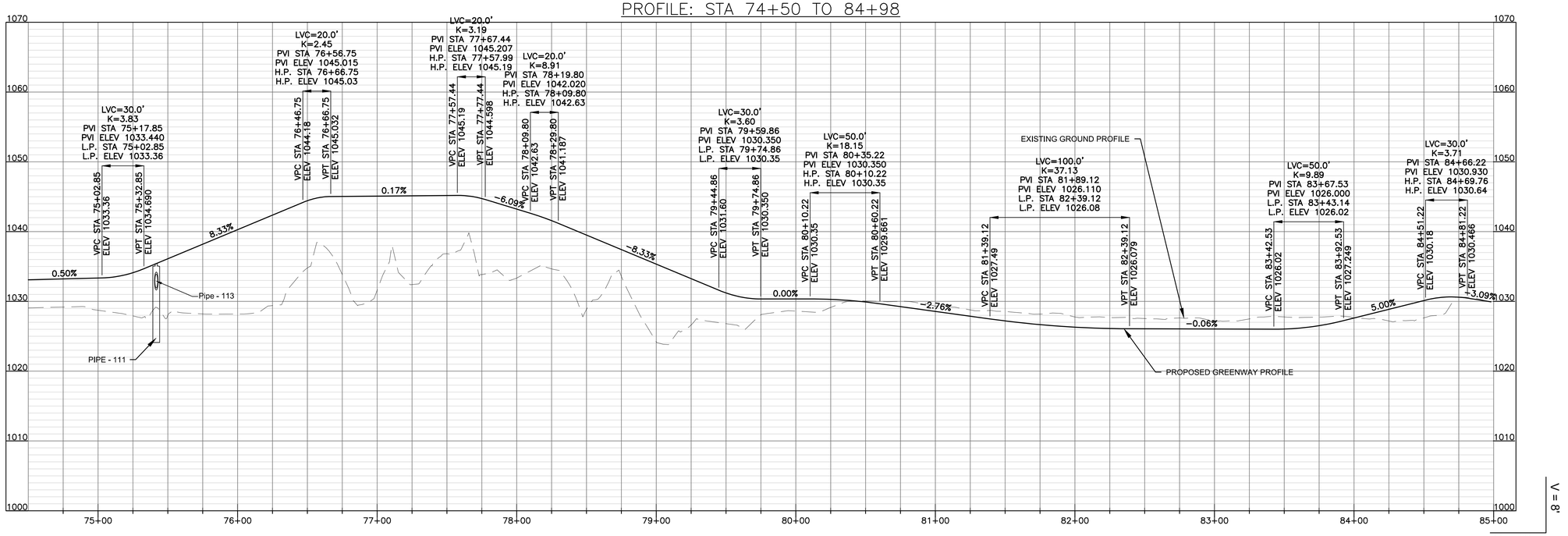


PIPE 111
5.5' OF 24" RCP @ 8.90%
INVERT IN: 1024.61'
INVERT OUT: 1024.12'
PROJECT THROUGH GABION WALL1
WITH 16 TONS CLASS II RR (OP)

PIPE 113
6.6' OF 24" RCP @ 18.60%
INVERT IN: 1033.00'
INVERT OUT: 1031.77'
INSTALL VDOT STD MH-2 MANHOLE (4' DIA.)
WITH VDOT STD MH-1 FRAME AND COVER

PROFILE: STA 74+50 TO 84+98



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PLAN AND PROFILE
STA. 74+50 TO 84+98
WEST ROANOKE RIVER GREENWAY PH1
COUNTY OF ROANOKE, VA

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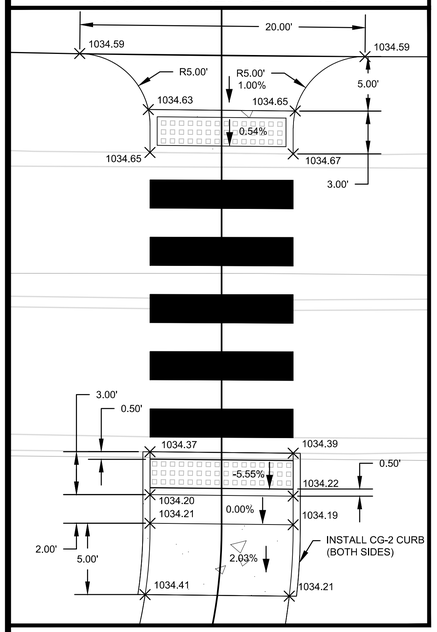
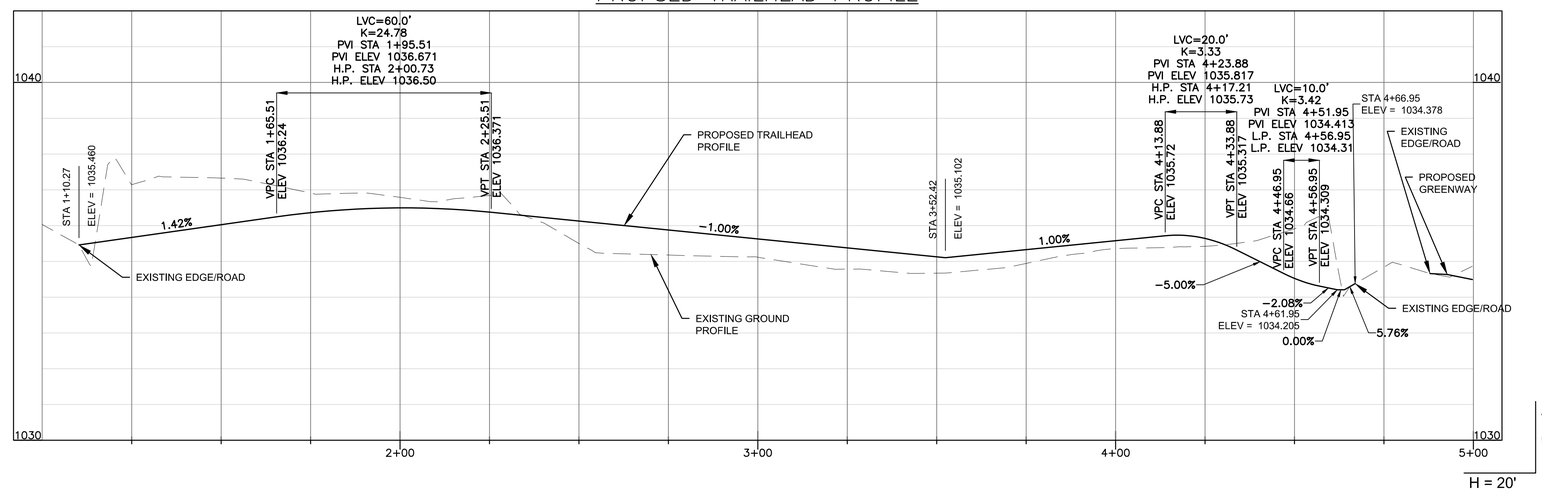
SHEET NO.
C-06

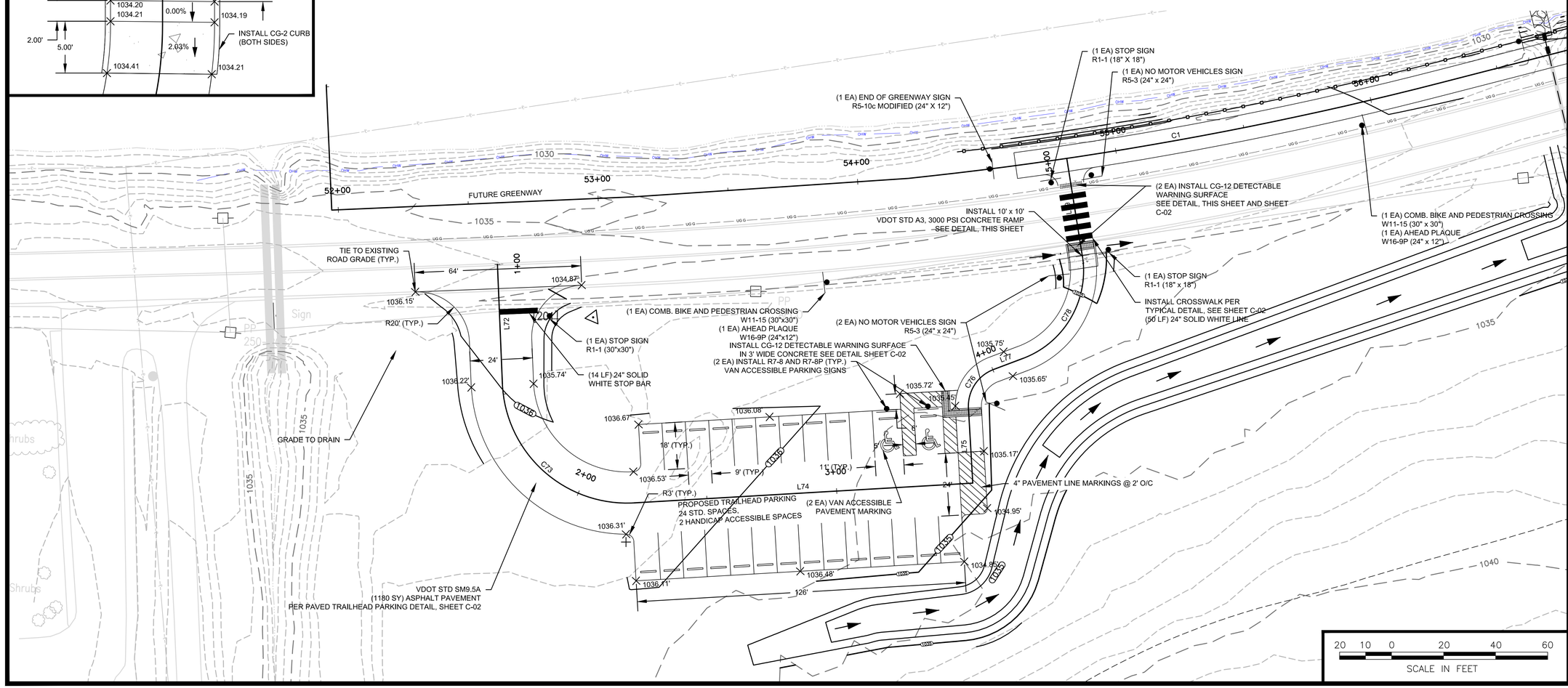
Apr 19, 2023 - 12:46pm \\data01\projects\2022\20221694\Engineering\CAD\221694_SHEETS2_PP.dwg

CROSSWALK DETAILS



PROPSED TRAILHEAD PROFILE





20 10 0 20 40 60
SCALE IN FEET

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TRAILHEAD DETAIL

WEST ROANOKE RIVER GREENWAY PH1

COUNTY OF ROANOKE, VA

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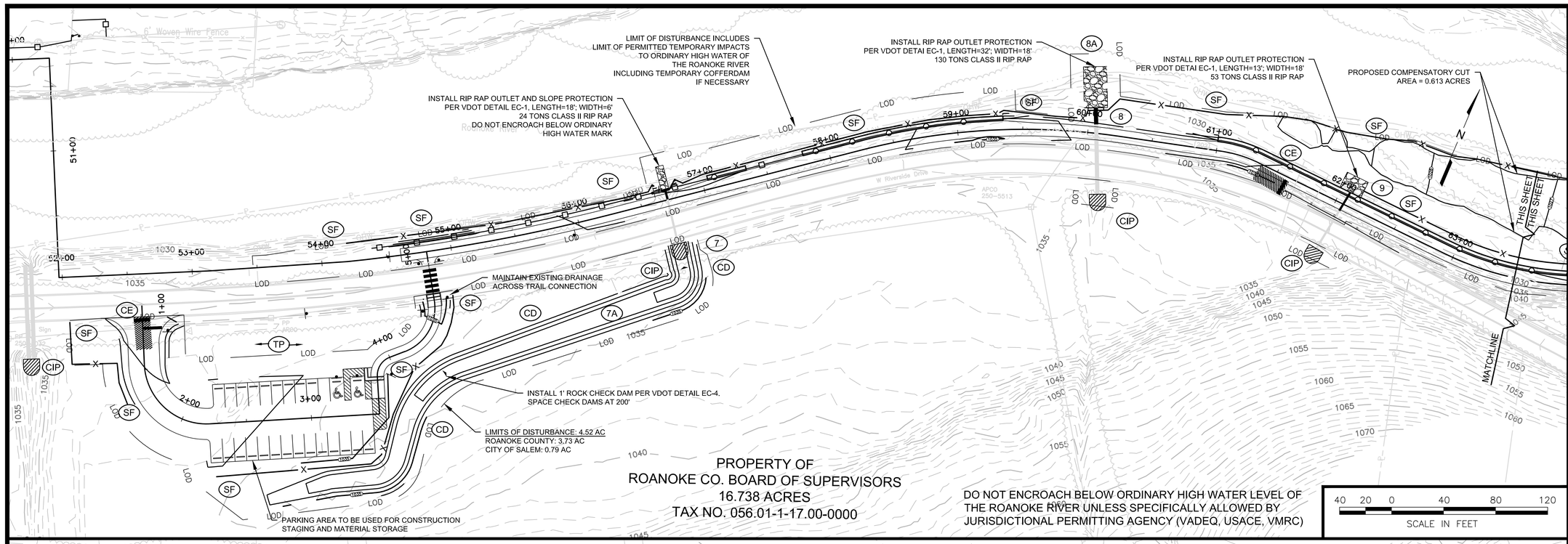

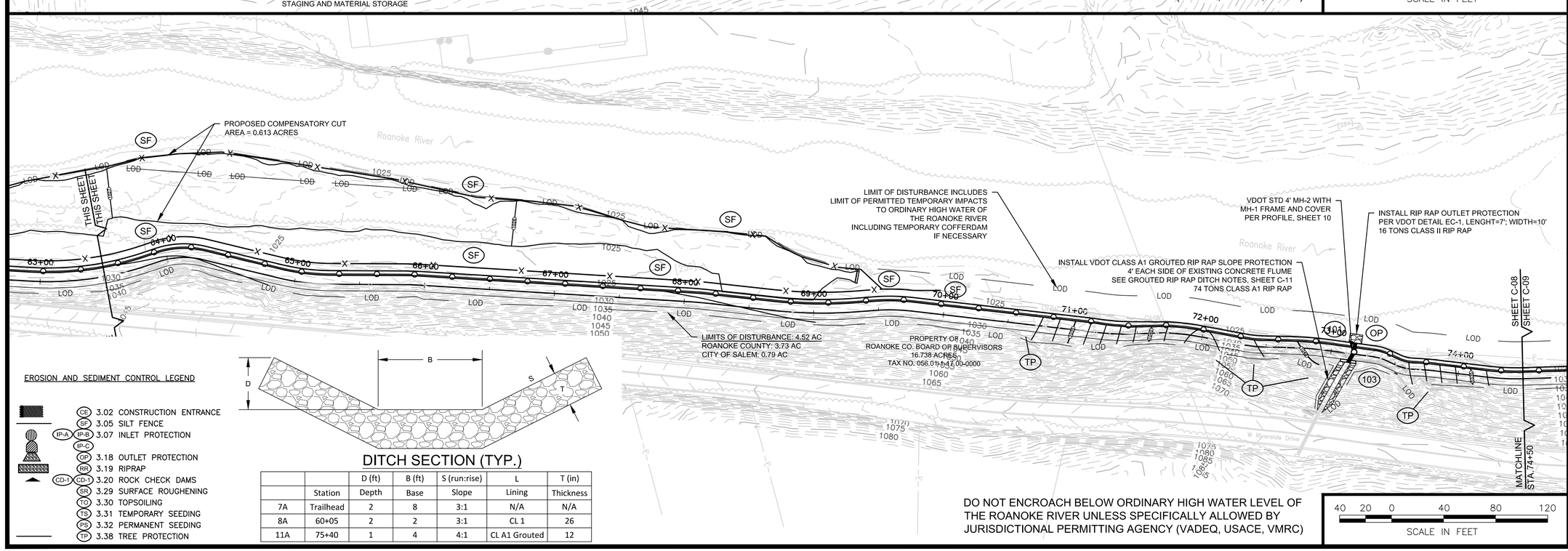

EROSION AND SEDIMENT CONTROL LEGEND

- CE 3.02 CONSTRUCTION ENTRANCE
- SF 3.05 SILT FENCE
- IP-A IP-B IP-C 3.07 INLET PROTECTION
- OP 3.18 OUTLET PROTECTION
- RR 3.19 RIPRAP
- CD-1 CD-1 3.20 ROCK CHECK DAMS
- SR 3.29 SURFACE ROUGHENING
- TO 3.30 TOPSOILING
- TS 3.31 TEMPORARY SEEDING
- PS 3.32 PERMANENT SEEDING
- TP 3.38 TREE PROTECTION

DITCH SECTION (TYP.)

		D (ft)	B (ft)	S (run:rise)	L	T (in)
	Station	Depth	Base	Slope	Lining	Thickness
7A	Trailhead	2	8	3:1	N/A	N/A
8A	60+05	2	2	3:1	CL 1	26
11A	75+40	1	4	4:1	CL A1 Grouted	12

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DRAINAGE AND ESC PLAN

STA. 54+61 - 74+50

WEST ROANOKE RIVER GREENWAY PH1

COUNTY OF ROANOKE, VA

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SHEET NO.
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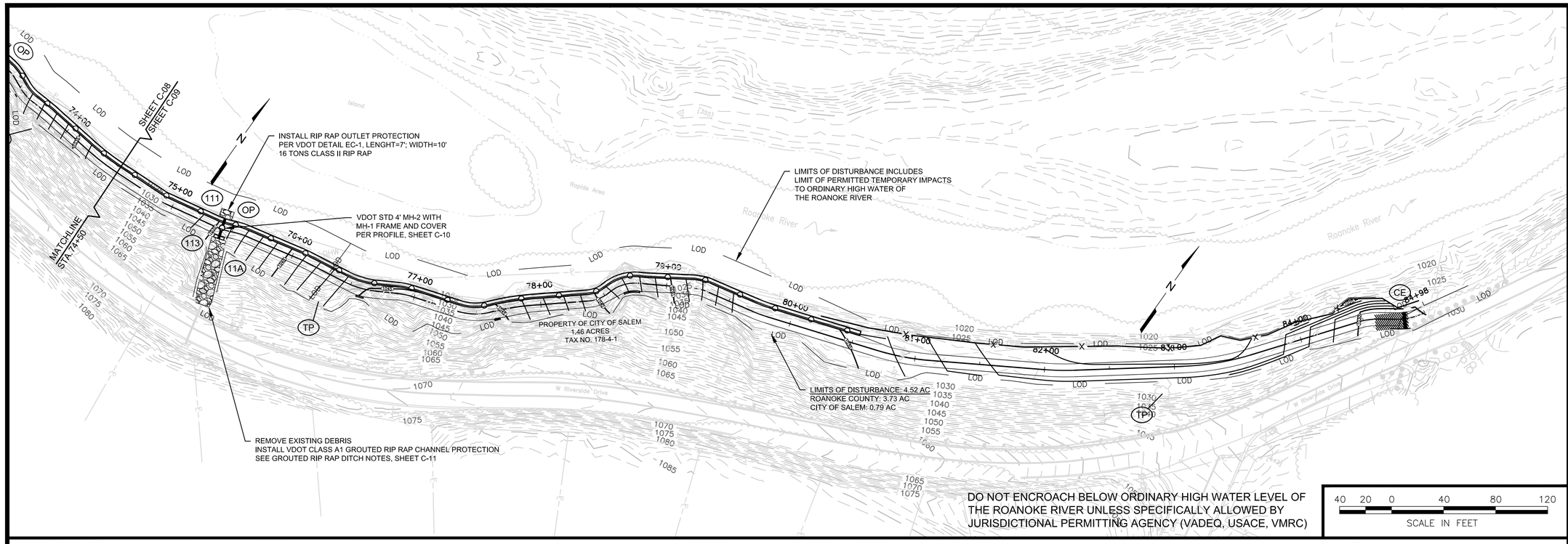

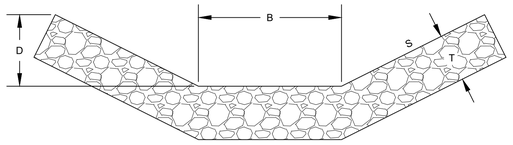

DITCH SECTION (TYP.)

		D (ft)	B (ft)	S (run:rise)	L	T (in)
	Station	Depth	Base	Slope	Lining	Thickness
7A	Trailhead	2	8	3:1	N/A	N/A
8A	60+05	2	2	3:1	CL 1	26
11A	75+40	1	4	4:1	CL A1 Grouted	12

EROSION AND SEDIMENT CONTROL LEGEND

- CE 3.02 CONSTRUCTION ENTRANCE
- SF 3.05 SILT FENCE
- IP-A IP-B IP-C 3.07 INLET PROTECTION
- OP 3.18 OUTLET PROTECTION
- RR 3.19 RIPRAP
- CD-1 CD-1 3.20 ROCK CHECK DAMS
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- TS 3.31 TEMPORARY SEEDING
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DRAINAGE AND ESC PLAN

STA. 74+50 - 84+98

WEST ROANOKE RIVER GREENWAY PH1

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SHEET NO.
C-09

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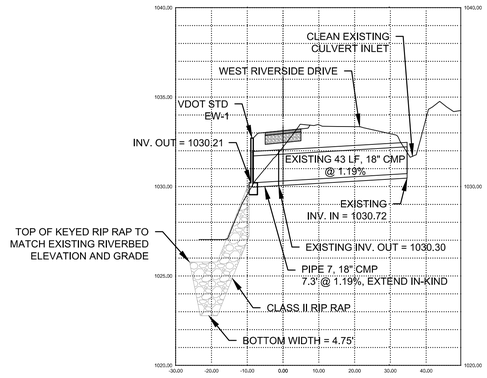
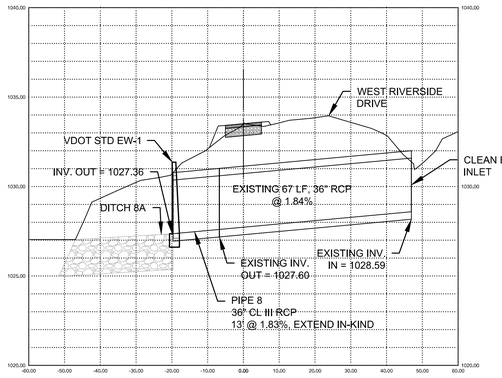
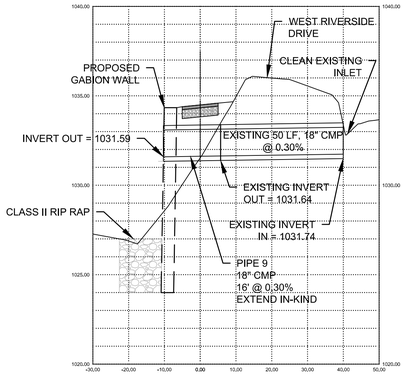
STORM STRUCTURE 7



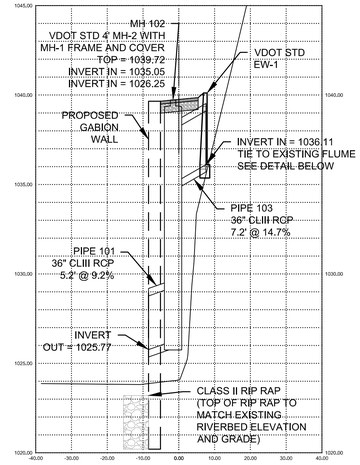
STROM STRUCTURE 8



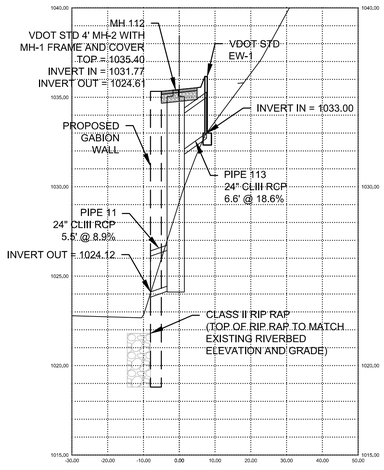
STORM STRUCTURE 9

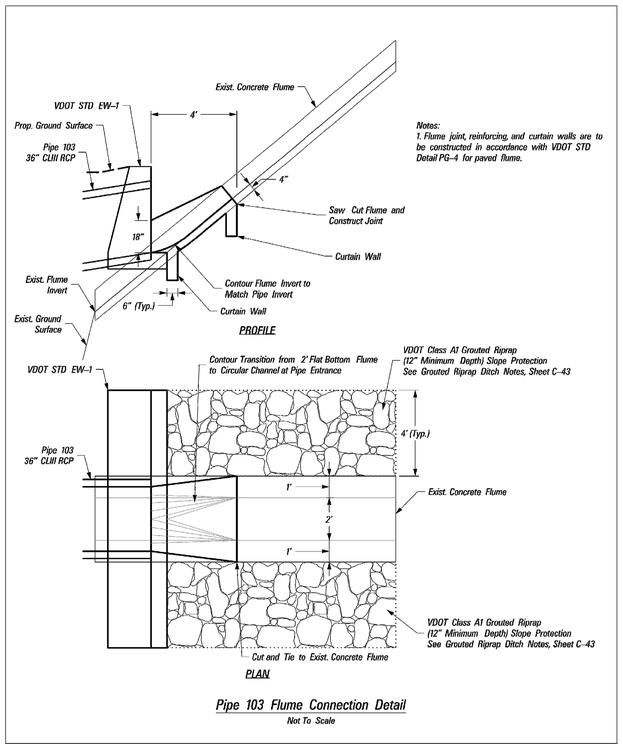


STORM SYSTEM 10



STORM SYSTEM 11





Notes:
1. Flume joint, reinforcing, and curtain walls are to be constructed in accordance with VDOT STD Detail PG-4 for paved flume.

Pipe 103 Flume Connection Detail
Not To Scale

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STORM STRUCTURE PROLILES

WEST ROANOKE RIVER GREENWAY PH1

COUNTY OF ROANOKE, VA

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Lic. No. 0402050112
18 April 2023
PROFESSIONAL ENGINEER

SHEET NO.
C-10

EROSION & SEDIMENT CONTROL NARRATIVE

1. Project Area

The project area runs generally parallel to the Roanoke River. It is bounded to the west by the proposed trailhead adjacent to 2306 W Riverside Dr and joins the end of an existing greenway between West Riverside Drive and the Roanoke River, near Kingsmill Lane. The proposed trailhead will be constructed on a parcel owned by Roanoke County on the south side of West Riverside Drive which will have parking for approximately 25 vehicles.

The contractor shall be responsible for providing an approved erosion and sediment control plan for off-site borrow or waste areas.

2. Critical Areas

The proximity of the entire project area to the Roanoke River will require that particular attention is given to eliminating sediment laden runoff to the maximum extent practicable.

Through the "steep slope section," between stations 70+00 and 80+50, a temporary cofferdam will be utilized, and silt fence will be installed wherever possible. To minimize the possibility of sediment runoff into the Roanoke River, the slope is not to be denuded until immediately before construction of the gabion basket retaining wall is to begin; however, tree cutting will commence as soon as permitting through U.S. Fish and Wildlife Service (USFWS) allows.

3. Erosion and Sediment Control Measures

The construction phase erosion and sediment controls shall be designed to retain sediment on site to the maximum extent practicable. All control measures must be properly selected, installed, and maintained in accordance with the manufacturers' specifications and good engineering practices. If periodic inspections or other information indicates a control has been used inappropriately, or incorrectly, the permittee must replace or modify the control for site situations. If sediment escapes the construction site, offsite accumulations of sediment must be removed at a frequency sufficient to minimize offsite impacts (e.g. fugitive sediment in street could be washed into storm sewers by the next rain and/or pose a safety hazard to users of public streets). Sediment must be removed from sediment traps or sedimentation ponds when design capacity has been reduced by 50%. Litter, construction debris, and construction chemicals exposed to storm water shall be prevented from becoming a pollutant source for storm water discharges (e.g., screening outfalls, picked up daily).

The following measures will be used to control erosion and sediment-laden runoff on this project. See Appendix A for locations of specific erosion control measures which have been incorporated into the design plans. The Contractor shall be responsible for installation of appropriate soil stabilization measures as required by the construction sequencing.

1. Safety Fence: will prevent the public from entering the construction site. (VESCH Standard and Spec. 3.01)

2. Construction Entrance: will be used to reduce mud/sediment tracking onto public roads. (VESCH Standard and Spec. 3.02). If mud or sediment is transported onto a paved road surface, the road shall be cleaned thoroughly at the end of each day. Sediment and mud shall be removed from the roads by shoveling or sweeping and transported to a sediment control disposal area. Street washing shall be allowed only after sediment and mud are removed in this manner.

3. Silt Fence: will be used to intercept and detain small amounts of sediment from disturbed areas during construction operations and to prevent sediment from leaving the site. (VESCH Standard and Spec. 3.05)

4. Culvert Inlet Protection: will prevent sediment from entering, accumulating in and being transferred by a culvert and associated drainage system prior to permanent stabilization of a disturbed project area. (VESCH Standard and Spec. 3.08)

5. Stormwater Conveyance Channel: will provide for the conveyance of concentrated surface runoff water to a receiving channel or system without damage from erosion. (VESCH Standard and Spec. 3.17)

6. Outlet Protection: will prevent scour at stormwater outlets, protect the outlet structure, and minimize the potential for downstream erosion by reducing the velocity and energy of concentrated stormwater flows. (VESCH Standard and Spec. 3.18)

7. Riprap: will protect the soil from the erosive forces of concentrated runoff and slow the velocity of concentrated runoff while enhancing the potential for infiltration and stabilizing slopes with seepage problems and/or non-cohesive soils. (VESCH Standard and Spec. 3.19)

8. Surface Roughening (All Denuded Surfaces): will aid in establishment of vegetative cover with seed, reduce runoff velocity, and increase infiltration, while reducing erosion and providing for sediment trapping. (VESCH Standard and Spec. 3.29)

9. Topsoiling (All New Fill): will provide a suitable growth medium for final site stabilization with vegetation. (VESCH Standard and Spec. 3.30)

10. Temporary Seeding (As Required): Permanent or temporary soil stabilization shall be applied to denuded areas within seven days after final grade is reached on any portion of the site. Temporary soil stabilization shall be applied within seven days to denuded areas that may not be at final grade but will remain dormant (undisturbed) for longer than 30 days. (VESCH Standard and Spec. 3.31)

11. Permanent Seeding (All Denuded Surfaces): will be used to establish vegetative cover and to reduce silt runoff for any areas not paved or roofed. Permanent stabilization shall be applied to areas that are to be left dormant for more than one year. (VESCH Standard and Spec. 3.32)

12. Mulching (All Denuded Surfaces): will prevent erosion by protecting the soil surface from raindrop impact and reducing the velocity of overland flow. Will also foster the growth of vegetation by increasing available moisture and providing insulation against extreme heat and cold. (VESCH Standard and Spec. 3.35)

13. Soil Stabilization Blankets & Matting (As Required): will aid in controlling erosion on critical areas by providing a microclimate, which protects young vegetation and promotes its establishment. (VESCH Standard and Spec. 3.36)

14. Tree Preservation & Protection: will ensure the survival of desirable trees where they will be effective for erosion and sediment control, watershed protection, landscape beautification, dust and pollution control, noise reduction, shade, and other environmental benefits while the land is being converted from forest to urban-type use. (VESCH Standard and Spec. 3.38)

15. Dust Control (As Required): will prevent surface and air movement of dust from exposed soil surfaces and reduce the presence of airborne substances which may present health hazards, traffic safety problems, or harm animal or plant life. (VESCH Standard and Spec. 3.39)

4. Stabilization Practices

No specific schedule other than those guidelines given in the Erosion and Sediment Control Measures descriptions of the vegetative practices (given above) will be used for temporary and permanent seeding measures. Riprap for areas requiring outlet protection shall be placed within two days after the outlet structures are functional.

See Section B.11, SWPPP Support Documents for Record of Grading Activities, a log to be used by the contractor to document all major grading activities, any cessation, temporary or permanent, of construction activity, and when stabilization measures are implemented. This record shall be kept throughout the duration of the project. The permittee shall ensure that these records are updated, maintained, and become a permanent part of this overall plan.

Construction will be sequenced so that grading operations can begin and end as quickly as possible. Stabilization measures shall be implemented on disturbed areas as soon as practicable. Embankment walls, upon reaching final grade, must be immediately seeded and fertilized to ensure proper stabilization. Permanent seeding shall be installed within 7 days of reaching final grade. Denuded areas which are not at final grade but which will remain dormant for more than 30 days shall be temporarily seeded. Areas that are not to be disturbed must be clearly marked by flags, signs, etc.

After the construction is completed, the site will be permanently stabilized in accordance with VESCH Standard and Specification 3.32, unless otherwise noted in the plans.

5. Maintenance

All erosion and sediment control structures and systems shall be maintained, inspected, and repaired as needed to ensure continued performance of their intended function. In general, all erosion and sediment control measures shall be checked at least every 14 days and after each rain event over 0.5 inches of precipitation. The following items shall be checked in particular:

1. The construction entrances shall be checked to ensure that the stone does not become clogged with mud.

2. The seeded areas shall be checked every 2 days to ensure that a good stand of grass is maintained. Grassed areas should be fertilized and reseeded as needed.

3. Silt fence shall be checked for undermining or deterioration (of the fabric) and cleaned when sediment levels have reached half of the silt fence height.

4. Sediment traps shall be cleaned out when sediment has accumulated to one-half of the design wet-storage volume and filter stone shall be removed and cleaned or replaced if it becomes choked with sediment.

5. Inlet and outlet protection areas around culverts, temporary slope drains, and drop inlets shall be checked for buildup of sediment. If significant clogging is found (the capacity of the structure has been reduced by half), they will either be cleaned out or replaced.

Specific requirements related to inspection and maintenance of each erosion control measure are discussed in the VESCH Standards and Specifications. The contractor shall be responsible for maintenance of all erosion control measures to the satisfaction of local review authorities, as well as the installation of additional measures as needed to ensure that sediment-laden runoff does not leave the site.

6. Inspection

Disturbed areas of the construction site that have not been finally stabilized, areas used for storage of materials that are exposed to precipitation, structural control measures, and locations where vehicles enter or exit the site shall be inspected at least once every 14 calendar days and within 48 hours of the end of a storm event that is 0.5 inches or greater. In those areas that have been finalized, temporarily stabilized, or runoff is unlikely due to winter conditions, inspections shall take place at least once a month.

Disturbed areas and areas used for storage of materials that are exposed to precipitation shall be inspected for evidence of, or the potential for, pollutants entering the drainage system. ESC measures shall be checked to see they are operating correctly. At accessible discharge points, inspection shall take place to ensure these control measures are effective at preventing significant impacts to receiving waters. Nearby downstream locations shall be inspected if discharge points are inaccessible. Sites of vehicle entrance or exit shall be inspected for evidence of offsite sediment tracking.

If existing control measures or Best Management Practices (BMPs) require modification or additional measures, such changes shall be made within 7 calendar days of the inspection or before the next anticipated storm event, as implementation is practicable.

Include inspection reports of all stormwater and erosion & sediment control measures along with any required actions as a result of inspections, with the stormwater pollution prevention plan. These reports shall include the name and qualifications of the inspector, dates of inspection, major observations and actions taken in response to inspections. Major observations include: the location of discharge of sediment or pollutant from the site, locations of BMPs that need to be maintained, locations of BMPs that failed to operate or proved inadequate, and locations where additional BMPs are needed that didn't exist at the time of inspection. These reports shall include incidents of noncompliance. If the report does not include any noncompliance incidents, the report shall contain a certification that the facility is in compliance with the stormwater pollution prevention plan and permit.

7. Other Pollutant Controls

Materials, Garbage, Debris

No solid materials, including building materials, garbage, and debris shall be discharged to surface waters of the State. The permittee shall ensure that these items are not left in a location where they could be transported by stormwater runoff off the site.

Expected Construction and Waste Materials

Construction and waste materials that could potentially be stored on site include topsoil, fill dirt, excavated material, storm drainage and utility piping, timber and block building materials, fertilizer for seeding operations, stone to be placed on gravel areas, stone for riprap, fuel and silt fence material.

Any stockpiles of topsoil, excavated material or fill dirt that are needed shall be surrounded on the downslope side by silt fence. Fertilizer must be kept in watertight containers, preferably in portable storage units and out from exposure to the weather, during storage on site. Care must be taken to minimize spillage of fertilizer if mixing operations are required to prepare the fertilizer for application.

If overnight storage of fuel is required, the fuel storage container must be equipped with a fueling mechanism disable device. To minimize the effect of any potential spills, maintain all on-site fueling operations as far away from surrounding wetlands, surface waters and drainage facilities as is practical. Daily inspections of the fuel storage container must be implemented to detect the presence of leaks. The fueling operator shall have a safe fill, shutdown, and transfer procedure in place to minimize spillage during fueling activities. The operator must maintain a fully equipped spill kit on site at all times with the stored fuel. The kit must at least include absorbent mats or material to cleanup any spilled fuel. For any fuel spill on site equal to or exceeding 25 gallons, immediately create an appropriately-sized berm around the area of spillage to minimize surface movement of the fuel. Contact local hazmat authorities, the ENGINEER, and the regional DEQ office in Roanoke as quickly as possible to report the spill and seek further assistance with spill cleanup.

Construction materials which could be carried offsite by stormwater (plastics, paper, timber, etc.) shall be picked up daily and placed in appropriate waste disposal containers.

8. Non-Stormwater Discharges

No non-storm water discharges other than those permitted by the VPDES general permit for Stormwater Discharge from Construction Activities are anticipated during this project.

9. Minimum Standards (MS-19)

All applicable Virginia Erosion and Sediment Control Regulations and Minimum Standards shall be adhered to during all phases of construction. If plan details and specifications are more stringent, then they shall supersede the Minimum Standards. The Minimum Standards include, but are not limited to the following:

1. STABILIZATION OF DENUDED AREAS:

   Permanent or temporary soil stabilization shall be applied to bare areas within seven days after final grade is reached on any portion of the site. Temporary soil stabilization shall be applied within seven days to denuded areas that may not be at final grade, but will remain dormant or undisturbed for longer than 14 days. Permanent stabilization shall be applied at areas that are to be left dormant for more than 1 year.

   Applicable: The Contractor shall establish permanent within seven days after final grade. If Contractor elects to rough grade areas of the trail or postpone permanent seeding until other sections of the greenway are complete which will remain dormant or undisturbed for more than 30 days then temporary seeding shall be applied at the Contractor's expense.

2. STABILIZATION OF SOIL STOCKPILES:

   During construction of the project, soil stockpiles shall be stabilized or protected with sediment trapping measures. The applicant is responsible for temporary protection and permanent stabilization of all soil stockpiles on site as well as soil intentionally transported from the project site.

   Applicable: Due to limited space, existing easements, and floodplain limits, stockpiling off site may be required. With approved property owner agreements obtained by the contractor, stockpiles will be allowed offsite. The Contractor shall provide the required E&S permits and temporary and permanent stabilization measures for areas offsite and ensure that on site stockpiles include appropriate stabilization measures.

3. PERMANENT VEGETATIVE COVER

   A permanent vegetative cover shall be established on denuded areas not otherwise permanently stabilized. Permanent vegetation shall not be considered established until a ground cover is achieve that, in the opinion of the local authority (Roanoke County), is uniform and mature enough to survive to inhibit erosion.

   Applicable: The Contractor must seed and mulch all denuded areas per the project specifications. Over-seeding may be required at the Contractor's expense until an adequate ground cover is achieved as determined by Roanoke County. ESC measures shall not be removed until approved by the County. Areas of rutting shall be filled in and reseeded at the Contractor's expense.

4. TIMING & STABILIZATION OF SILT TRAPPING MEASURES:

   Sediment basins and traps, perimeter dikes, sediment barriers and other measures intended to trap sediment shall be constructed as a first step in any land disturbing activity and shall be made functional before upslope land disturbance takes place.

   Applicable: The Contractor shall install construction entrances, perimeter silt fence, and inlet protection on existing structures as denoted on the plans prior to any land disturbance. Once proposed storm pipes are installed, culvert inlet and outlet protection shall be installed immediately after installation.

5. STABILIZATION OF EARTHEN STRUCTURES:

   Stabilization measures shall be applied to earthen structures such as dams, dikes and diversions immediately after installation.

   Not Applicable: Dams, dikes, and diversions are not proposed.

6. SEDIMENT TRAPS AND BASINS:

   A sediment basin shall control surface runoff from disturbed areas that is comprised of flow from drainage areas greater than or equal to three acres. The sediment basin shall be designed and constructed to accommodate the anticipated sediment loading for the land disturbing activity. The outfall device or system device shall take into account the total drainage area flowing through the disturbed area to be served by the basin.

   Not Applicable: No sediment traps or basins are proposed since concentrated drainage crosses the trail perpendicularly and there is minor land disturbance per outfall.

7. CUT AND FILL SLOPES:

   Cut and fill slopes shall be designed and constructed in a manner that will minimize erosion. Slopes that are found to be eroding excessively within one year of permanent stabilization shall be provided with additional slope stabilizing measures until the problem is corrected.

   Applicable: Prior to final acceptance, there shall be no evidence of excessive erosion and the cut/fill slopes shall be stabilized with permanent stabilization acceptable to Roanoke County and/or the City of Salem. In the event that excessive erosion is present within one year after project acceptance, the Contractor shall be responsible for remediation.

8. CONCENTRATED RUN-OFF DOWN CUT OR FILL SLOPES:

   Concentrated runoff shall not flow down cut or fill slopes unless contained within an adequate temporary or permanent channel, flume, or slope drain structure.

   Applicable: Concentrated runoff is designed to flow down cut or fill slopes with existing or newly constructed ditches with riprap lining. In the event, concentrated runoff is present prior to culvert and ditch installation, the Contractor shall provide temporary ditches or slope drains to accommodate the concentrated runoff to prevent erosion on cut and fill slopes.

9. WATER SEEPS FROM A SLOPE FACE:

   Whenever water seeps from a slope face, adequate drainage or other protection shall be provided.

   Not Applicable: Based on site investigation, there are no existing water seeps within the project corridor. In the event water seeps are discovered, the Contractor shall notify the Engineer and Roanoke County and adequate drainage or other protection shall be provided.

10. STORM SEWER INLET PROTECTION:

    All storm sewer inlets that are made operable during construction shall be protected so that sediment-laden water cannot enter the conveyance system without first being filtered or otherwise treated to remove sediment.

    Applicable: The Contractor shall protect the existing storm sewer system with inlet protection as shown on the plans. Inlets to proposed storm sewer must also be protected by inlet protection as shown on the plans. The Contractor shall protect proposed culverts from sediment laden water with culvert inlet protection as shown on the plans. All inlet protection shall be maintained until final completion.

11. STABILIZATION OF OUTLETS:

    Before newly constructed stormwater conveyance channels are made operational, adequate outlet protection and any required temporary or permanent channel lining shall be installed in both the conveyance channel and receiving channel.

    Applicable: Concentrated runoff crossing perpendicular to the greenway requires a culvert and a riprap lined outlet ditch. In order to comply with this standard, The Contractor will be required to construct or reconstruct the outlet ditch from the end of the culvert and install temporary or permanent channel lining prior to the installation of the culvert. If construction activity allows the installation of the culvert and outlet ditch protection within the same day, then this will be an acceptable approach.

12. WORK IN LIVE WATERCOURSES:

    When work in a live watercourse is performed, precautions shall be taken to minimize encroachment, control sediment transport and stabilize the work area to the greatest extent possible during construction. Non-erodible material shall be used for the construction of causeways and cofferdams. Earthen fill may be used for these structures if armored by non-erodible cover materials.

    Applicable: Gabion basket retaining wall is proposed to encroach on the ordinary high water of the Roanoke River. Environmental permitting has accounted for use of a cofferdam in the watercourse to aid in wall construction. These measures are to be removed fully and completely from the Roanoke River at the conclusion of construction.

13. CROSSING A LIVE WATERCOURSE:

    When a live watercourse must be crossed by construction vehicles more than twice in any six month period, a temporary stream crossing constructed of non-erodible materials shall be provided.

    Not Applicable: No stream crossing are proposed.

14. APPLICABLE REGULATIONS:

    All applicable federal, state and local regulations pertaining to working in or crossing live watercourses shall be met.

    Applicable: Utilization of cofferdams and a work bridge are proposed as part of the project. There shall be strict E&S adherence to protect sediment from entering the Roanoke River which flows adjacent to the greenway construction.

15. STABILIZATION OF BED AND BANKS

    The bed and banks of a watercourse shall be stabilized immediately after work in the watercourse is completed.

    Applicable: All materials used in construction of cofferdams and causeways, including, but not limited to rip rap and other construction debris, shall be removed from the river following construction and every effort will be taken to prevent sediment from entering the Roanoke River.

16. UNDERGROUND UTILITIES:

    Underground utilities shall be installed in accordance with the following standards in addition to other criteria:

    a. No more than 500 linear feet of trench may be opened at one time.

    b. Excavated material shall be placed on the uphill side of trenches

    c. Effluent for dewatering operations shall be filtered or passed through approved sediment trapping device, or both, and discharged in a manner that does not adversely affect flowing streams or offsite property.

    d. Material used for backfilling trenches shall be properly compacted in order to minimize erosion and promote stabilization.

    e. Re-stabilization shall be accomplished in accordance with these regulations.

    f. Applicable safety regulations shall be complied with.

    Applicable: Storm sewer pipe shall be installed per these requirements for trenching. Additionally, adjustment of sanitary sewer manhole rim elevations is to be completed in accordance with these requirements for excavation safety and stabilization.

17. CONSTRUCTION ACCESS ROUTES:

    Where construction vehicle access routes intersect paved public roads, provisions shall be made to minimize the transport of sediment by vehicular tracking onto paved surfaces. Where sediment is transported onto a public road surface, the road shall be cleaned thoroughly at the end of each day. Sediment shall be removed by shoveling or sweeping and transported to a sediment control disposal area. Street washing shall be allowed only after sediment is removed in this manner. This provision shall apply to individual lots as well as to larger land disturbing activities.

    Applicable: The Contractor shall install and maintain the construction entrance as shown on the plans. In the event another construction access to the site is obtained by the Contractor, a construction entrance shall be installed and maintained at the Contractor's expense. When no longer utilized, the construction entrances shall be removed and the areas restored prior to final acceptance.

18. TEMPORARY E&S CONTROL MEASURE REMOVAL:

    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, unless otherwise authorized by the local program authority. Trapped sediment and the disturbed soil areas resulting from the disposition of temporary measures shall be permanently stabilized to prevent further erosion and sediment.

    Applicable: After the site is stabilized and approved by Roanoke County, silt fence, inlet protection, construction entrances, and other temporary ESC measures shall be removed within 30 days. The areas of removal shall be smoothly graded, seeded, and mulched. Any remaining buildup of sediment shall be removed from the site by the Contractor.

19. ADEQUACY OF RECEIVING CHANNELS:

    Properties and waterways downstream from the development site shall be protected from sediment deposition, erosion, and damage, due to increases in volume, velocity and peak flow rates of stormwater runoff for the stated frequency storm of 24-hour duration in accordance with the following standards and criteria:

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

    b. Adequacy of all channels and pipes shall be verified in the following manner:

    1. The applicant shall demonstrate that the total drainage areas to the point of analysis within the channel is one hundred times greater than the contributing drainage area of the project in question; or

    2. Each of the following:

    a. Natural channels shall be analyzed by the use of a two-year storm to verify that stormwater will not overtop channel banks nor cause erosion of channel bed or banks; and

    b. All previously constructed man-made channels shall be analyzed by the use of a ten-year storm to verify that stormwater will not overtop its banks and by the use of a two-year storm to demonstrate that stormwater will not cause erosion of channel bed or banks; and

    c. Pipes and storm sewer systems shall be analyzed by the use of a ten-year storm to verify that stormwater will be contained within the pipe or system.

    c. If natural receiving channels or previously constructed man-made channels or pipes are not adequate, the applicant shall:

    1. Improve the channel to a condition where a ten-year storm will not overtop the banks and a two-year storm will not cause erosion to the channel bed or banks; or

    2. Improve the pipe or pipe system to a condition where the ten-year storm is contained within the appurtenances; or

    3. Develop a site design that will not cause the pre-development peak runoff rate from a two-year storm to increase when runoff outfalls into a natural channel or will not cause the pre-development peak runoff rate from a ten-year storm to increase when runoff outfalls onto a man-made channel; or

    4. Provide a combination of channel improvement, stormwater detention or other measures which is satisfactory to the plan-approving authority to prevent downstream erosion.

    d. The applicant shall provide evidence of permission to make the improvements.

    e. All hydraulic analyses shall be based in the existing watershed characteristics and the ultimate development of the subject project.

    f. If the applicant chooses an option that includes stormwater detention, he shall obtain approval from the locality of a plan for maintenance of the detention facilities. The plan shall set forth the maintenance of the facility and the person responsible for performing the maintenance.

    g. Outfall from a detention facility shall be discharged to a receiving channel, and energy dissipaters shall be placed at the outfall of all detention facilities as necessary to provide a stabilized transition from the facility to the receiving channel.

    h. All on-site channels must be verified to be adequate.

    i. Increased Volumes of sheet flows that may cause erosion or sedimentation on adjacent properties shall be diverted to a stable outlet, adequate channel, pipe or pipe system, or to a detention facility.

    j. In applying these stormwater runoff criteria, individual lots or parcels in a residential, commercial, or industrial development shall not be considered to be separate development projects. Instead, the development, as a whole, shall be considered to be a single development project. Hydrologic parameters that reflect the ultimate development condition shall be used in all engineering calculations.

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

    Applicable: Each outfall has been analyzed and found that there are no increases in the peak flow rates. Proposed culverts and outfalls have been analyzed and found to be adequate. The receiving channel is the Roanoke River which has a drainage areas more than a 100 times the project site. There is no runoff from the post development condition that is collected in an existing or proposed storm sewer system.

IN RECOGNITION THAT OVER 50% OF THE PROJECT DISTURBED AREA IS LOCATED WITHIN ROANOKE COUNTY; ROANOKE COUNTY AND THE CITY OF SALEM HAVE EXECUTED A MEMORANDUM OF UNDERSTANDING THAT AUTHORIZES ROANOKE COUNTY TO ACT AS THE PERMITTING AUTHORITY FOR THE EROSION CONTROL PROGRAM AND THE VIRGINIA STORMWATER MANAGEMENT PROGRAM FOR THE ENTIRE PROJECT, INCLUDING THOSE AREAS THAT ARE WITHIN THE CITY OF SALEM.

GENERAL CONSTRUCTION SEQUENCE:

1. IDENTIFY LIMITS OF PERMITTED DISTURBANCE.
2. INSTALL EROSION AND SEDIMENT CONTROL MEASURES.
   2.1. APPROVED EROSION AND SEDIMENT CONTROL MEASURES INSTALLED BELOW OHW OR WITHIN THE ROANOKE RIVER SHALL BE INSTALLED PRIOR TO THE START OF THE TIME OF YEAR RESTRICTIONS AND BE MAINTAINED UNTIL THE RESTRICTIONS END. CONTRACTOR SHALL BE RESPONSIBLE FOR COMPLIANCE WITH ALL VMRC PERMIT REQUIREMENTS.
3. BEGIN LAND DISTURBANCE ACTIVITIES.
4. PERFORM ONGOING INSPECTION AND MAINTENANCE OF EROSION AND SEDIMENT CONTROL MEASURES AND INSTALL TEMPORARY MEASURES AS NEEDED, FOLLOWING RAIN EVENTS, CONTRACTOR SHALL DEWATER BEHIND COFFER DAMS PER VESCH AND VMRC PERMIT.
5. INSTALL PERMANENT STABILIZATION FOR DENUDED AREAS.
6. FOLLOWING FINAL APPROVAL OF WORK AND STABILIZED AREAS, REMOVE EROSION AND SEDIMENT CONTROL MEASURES AND PROVIDE SEEDING FOR AREAS DISTURBED DURING REMOVAL.

ENVIRONMENTAL RESTRICTIONS:

7. TREE CLEARING MAY ONLY OCCUR FROM NOVEMBER 15 TO MARCH 14 DUE TO TRICOLORED BAT.
8. WORK WITHIN THE ROANOKE RIVER IS ONLY PERMITTED FROM JULY 1 TO MARCH 14 DUE TO ROANOKE LOGPERCH. WORK MAY BE PERFORMED BEHIND COFFERDAMS AND WITHIN DEWATERED AREAS OF THE ROANOKE RIVER PROVIDED DIVERSION MEASURES ARE PLACED AND REMOVED OUTSIDE OF THE TIME OF YEAR RESTRICTIONS' DATES.
9. REFER TO PROJECT MANUAL APPENDIX FOR ADDITIONAL INFORMATION. COMPLIANCE WITH ALL PERMIT CONDITIONS AND REQUIREMENTS IS REQUIRED.

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EROSION AND SEDIMENT CONTROL NOTES
WEST ROANOKE RIVER GREENWAY PH1
COUNTY OF ROANOKE, VA

PROJECT NO.	20221694
LAT.	
LONG.	
DATE:	18 April 2023
DRAWN BY:	
CHECKED BY:	JMJ

COMMONWEALTH OF VIRGINIA
JEREMY MICHAEL JOHNSON
Lic.No.0402050112
18 April 2023
PROFESSIONAL ENGINEER

SHEET NO.
C-11

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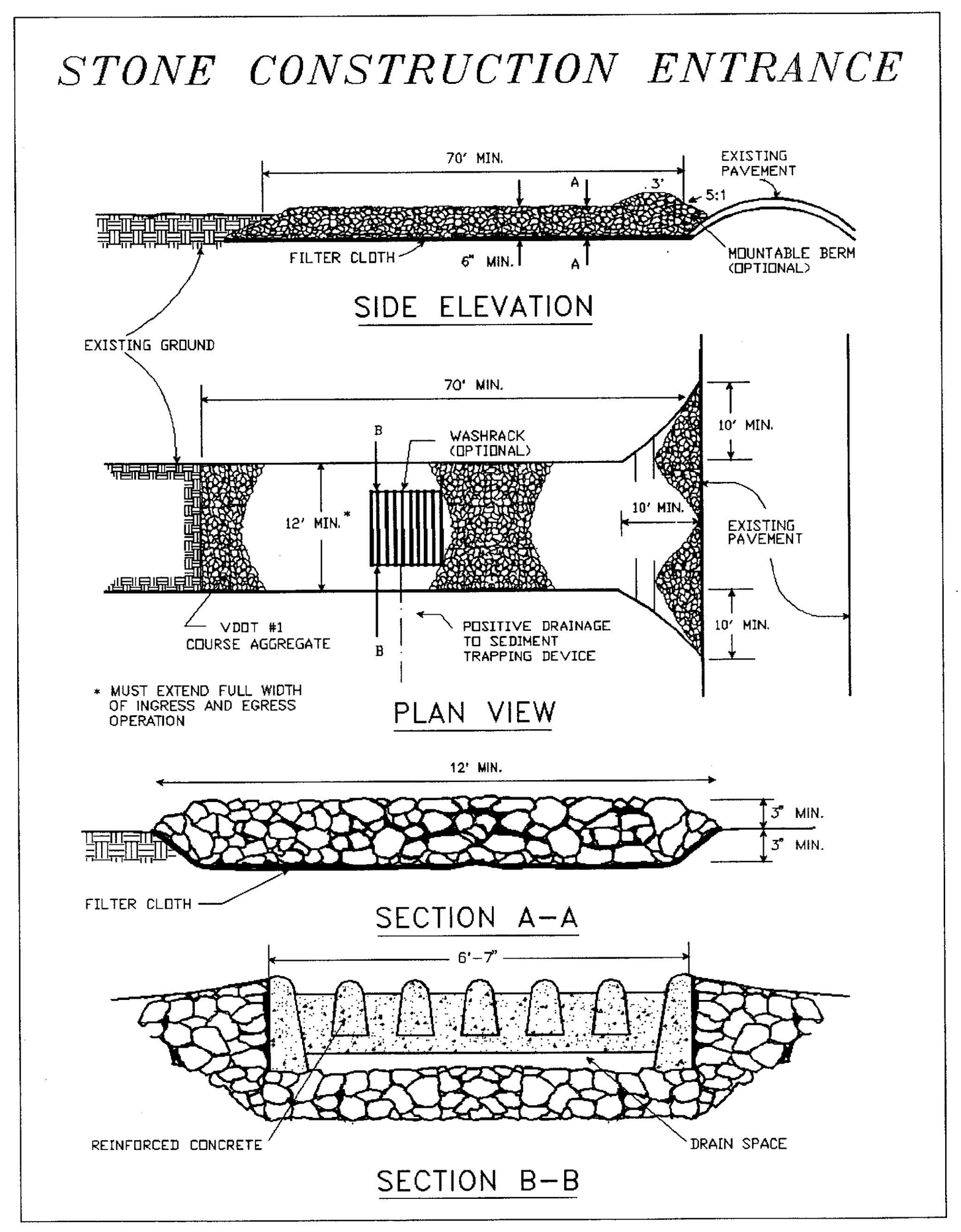

Source: Adapted from 1983 Maryland Standards for Soil Erosion and Sediment Control, and Va. DSWC — Plate 3.02-1

III - 9

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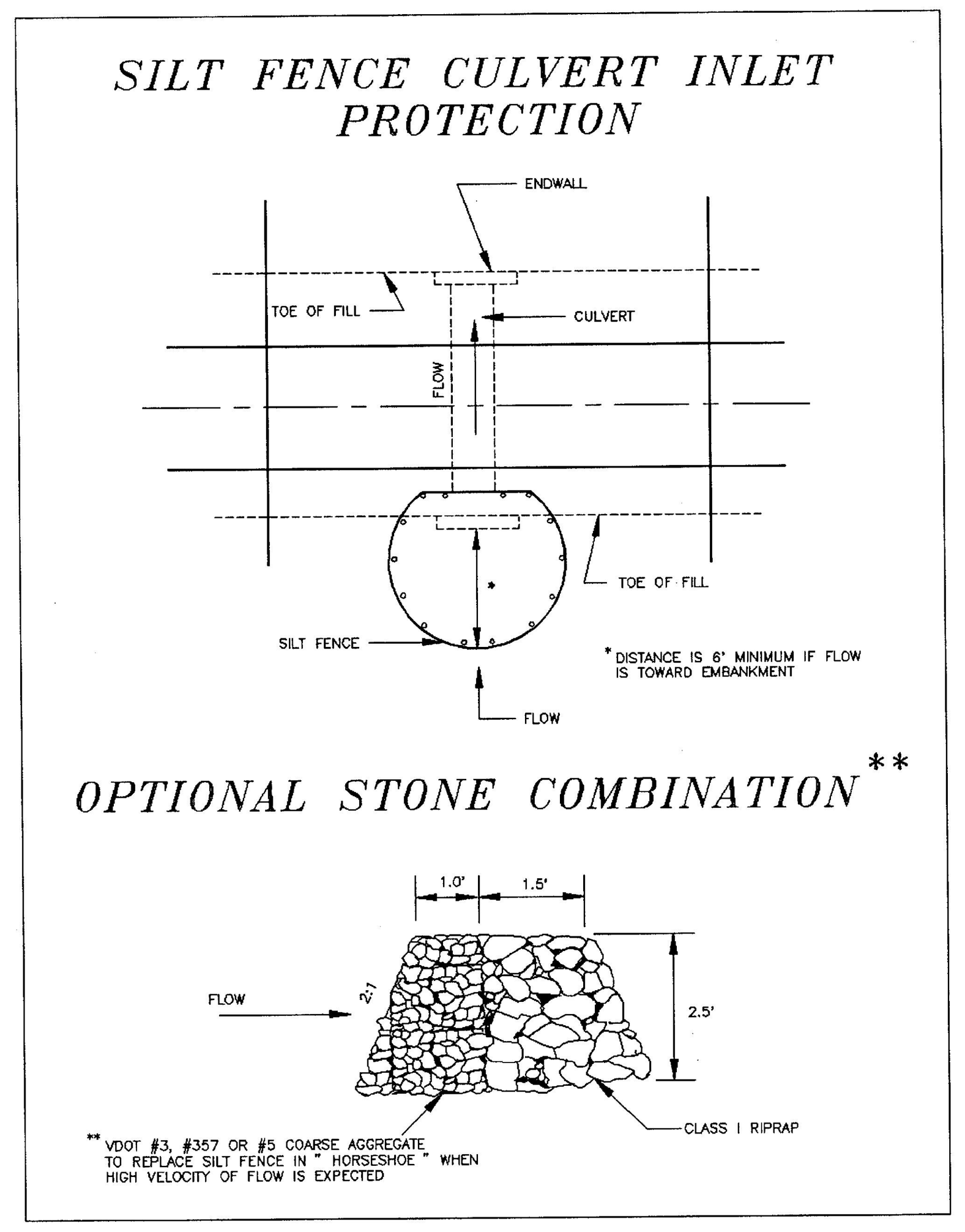

Source: Adapted from VDOT Standard Sheets and Va. DSWC — Plate 3.08-1

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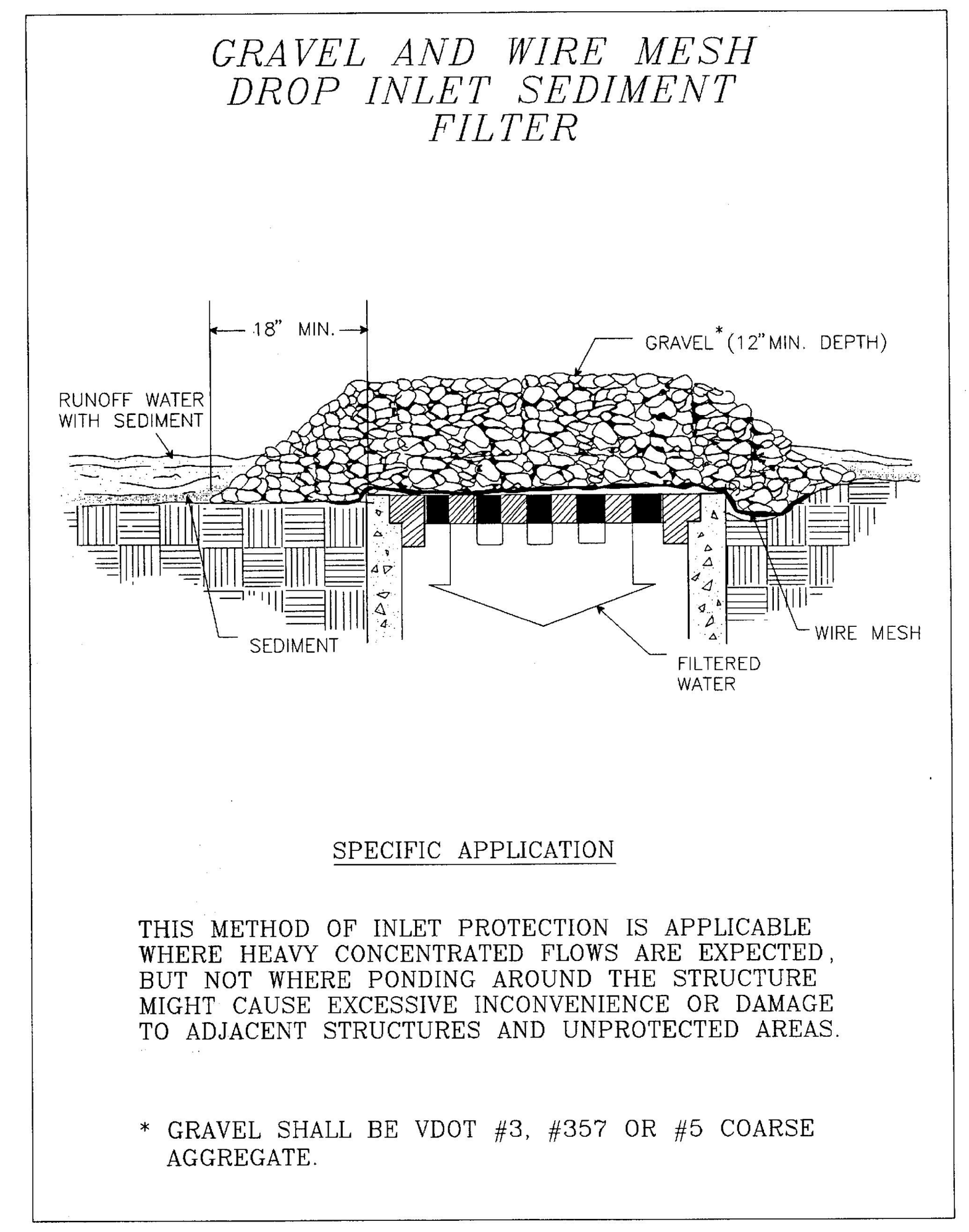

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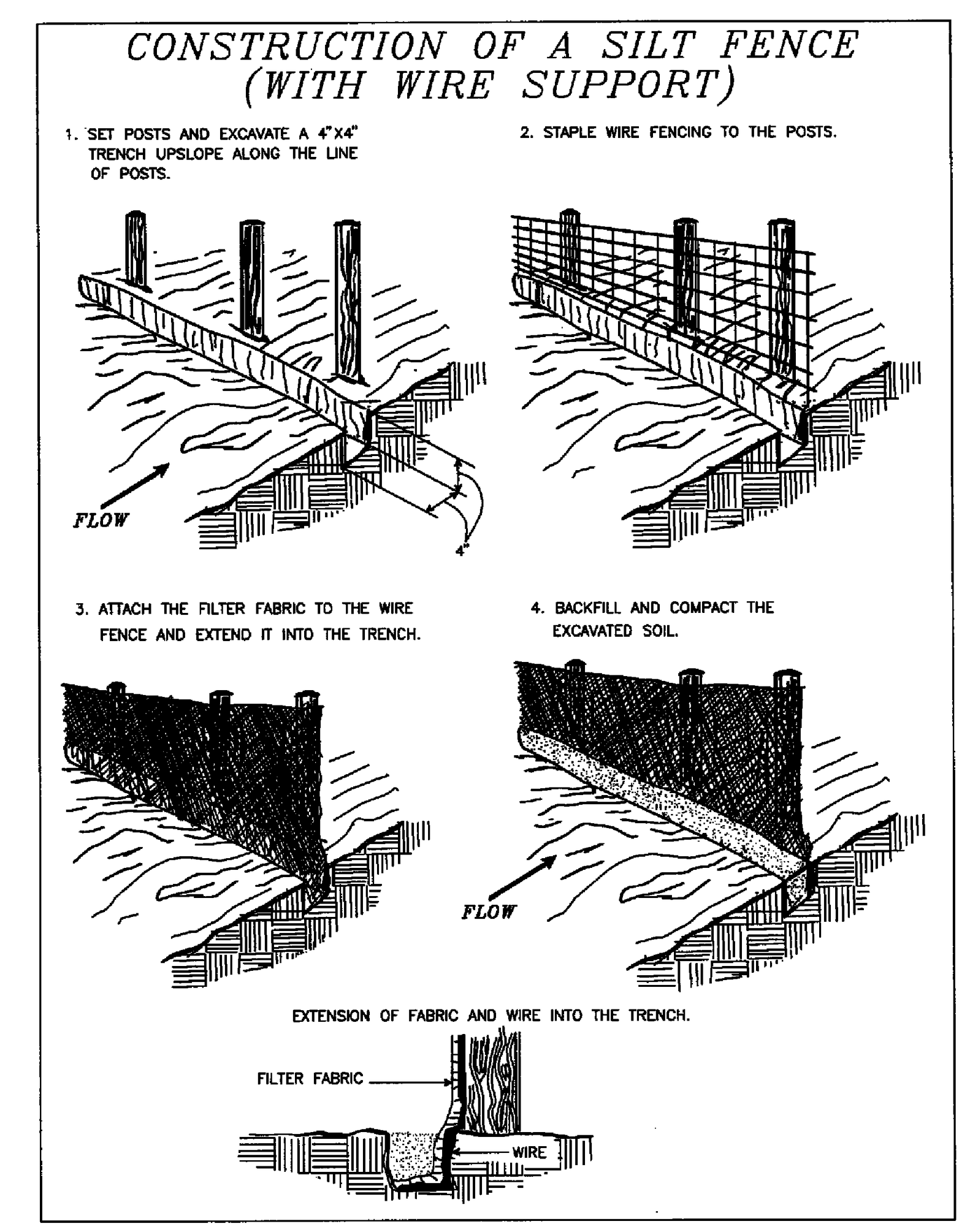

Source: Adapted from Installation of Straw and Fabric Filter Barriers for Sediment Control, Sherwood and Wyant — Plate 3.05-1

III - 24

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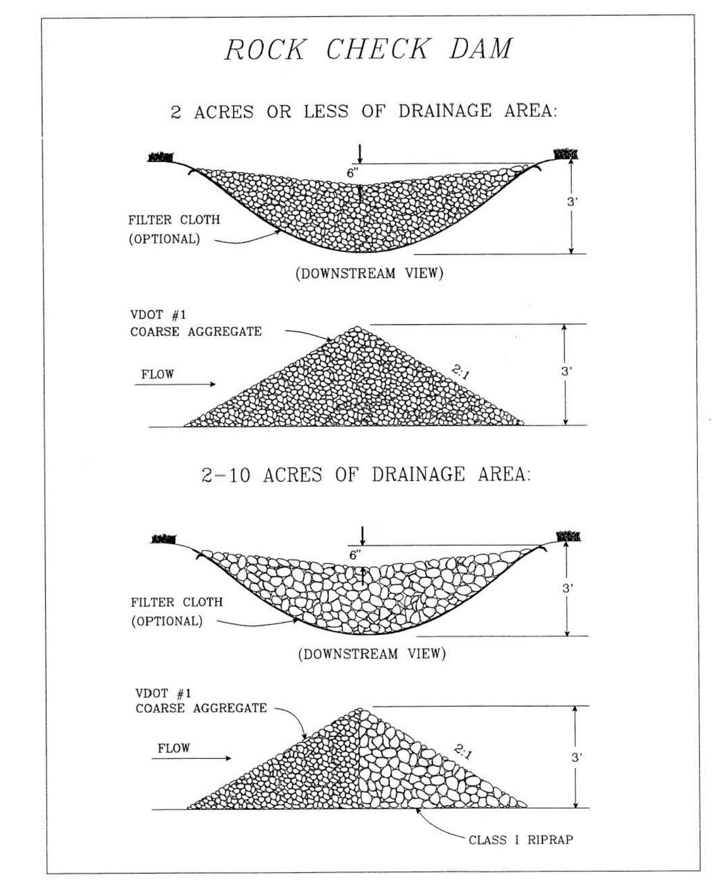

Source: Va. DSWC — Plate 3.20-1

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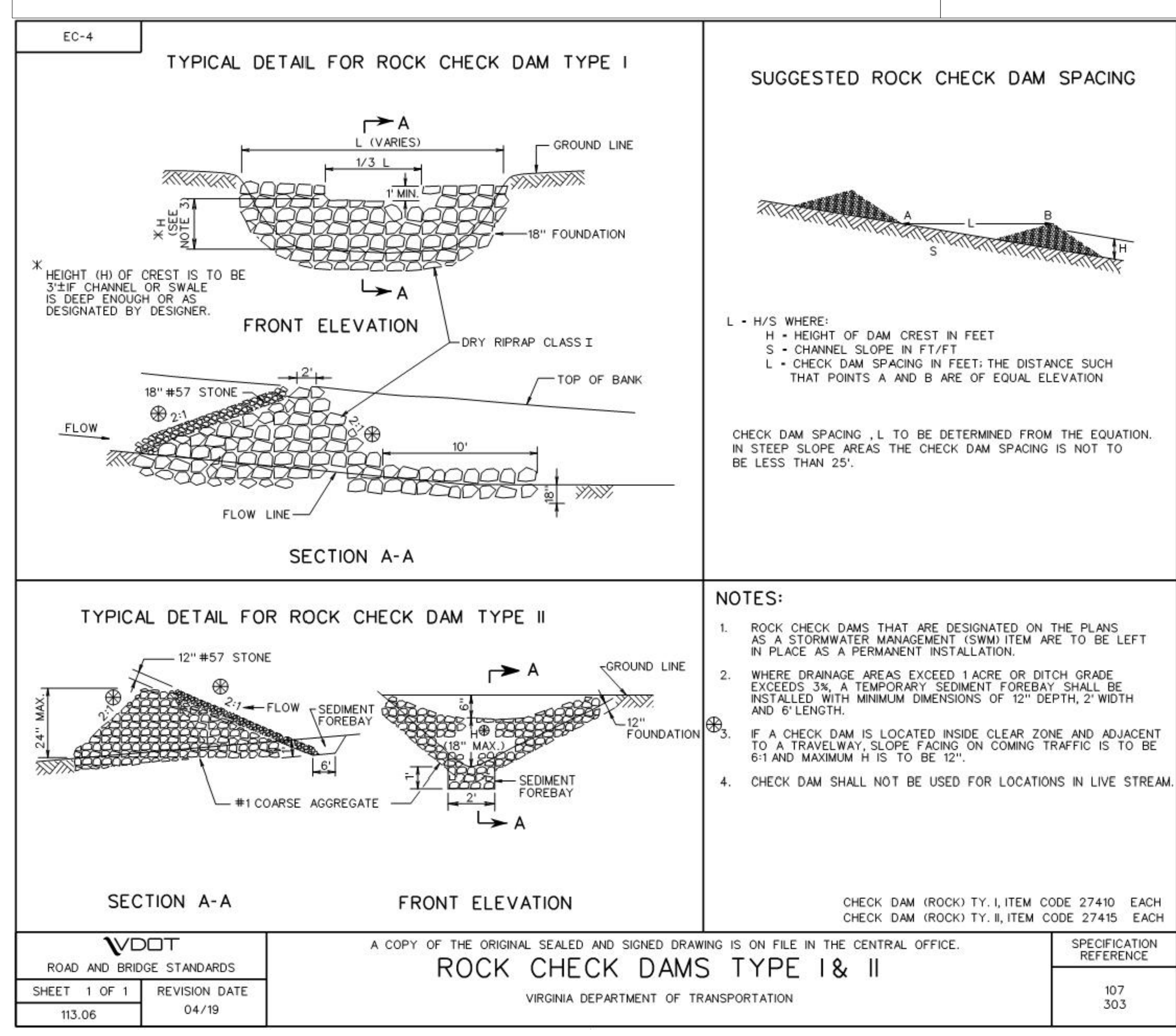


PERMANENT SEEDING MIXES

Compensatory cut area seeding

Mellow Marsh Farm MMF Wetland Seed Mix @ 25 lb/ac

Ernst Seeds OBL Wetland Mix ERNMX-131 @ 20 lb/ac

Roundstone Native Seed Southern Emergent Wetland Mix Mix# 158 @ 6 lb/ac PLS

Upland area seeding

Mellow Marsh Farm MMF Riparian Buffer Mix @ 25 lb/ac

Ernst Seeds Riparian Buffer Mix ERNMX-178 @ 20 lb/ac plus 30 lb/ac grain rye as cover crop

Roundstone Native Seed Southern Riparian Buffer Mix Mix#168 @ 11 lb/ ac PLS

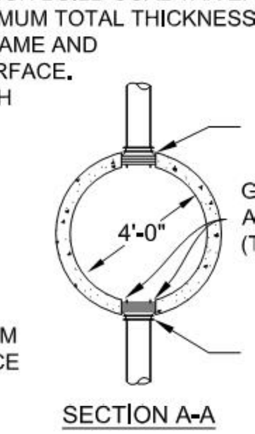
Around parking area and Trail shoulder area seeding (within 5' of trail)

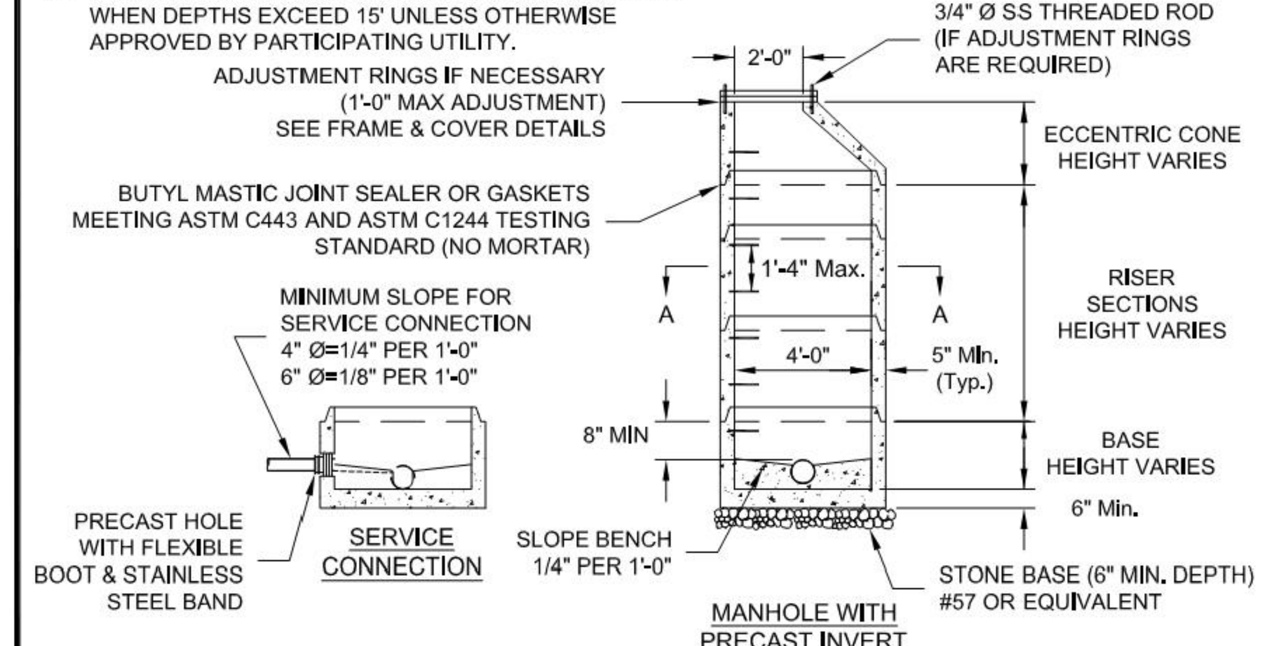
Tall Fescue @ 128 lb/ac[1]
Red Top Grass or Creeping Red Fescue @ 2 lb/ac
Seasonal Nurse Crop @20 lb/ac[2]

1. Turfgrass varieties shall be approved by Virginia Crop Improvement Associates (VCIA)

2. Use seasonal nurse crop in accordance with seeding dates as stated below:
March, April - May 15.......................Annual Rye
May 16 - August 15..........................Foxtail Millet
August 16 - September, October.....Annual Rye
November - February ....Winter Rye

1. MATERIALS AND FABRICATION IN ACCORDANCE WITH ASTM C478-09.
2. WHEN USED AS SAMPLING MANHOLE FLOW SHALL PASS STRAIGHT THROUGH, i.e., 180°.
3. STEPS SHALL BE VERTICALLY ALIGNED. FIRST STEP SHALL BE WITHIN 12" OF COVER, BOTTOM STEP SHALL BE WITHIN 24" OF BOTTOM OF MANHOLE.
4. FRAME AND COVER SHALL BE PROPERLY ALIGNED WITH THE 2 FOOT OPENING OF THE MANHOLE STRUCTURE AND BOLTED IN PLACE.
5. FLAT TOP MANHOLES MAY ONLY BE SUBSTITUTED WITH THE PERMISSION OF THE PARTICIPATING UTILITY.
6. FLEXIBLE JOINT MANHOLE CONNECTION SHALL BE AS MANUFACTURED BY PRES-SEAL GASKET CORPORATION OR EQUAL.
7. GROUT ANNULAR SPACE BETWEEN PIPE AND PRECAST MANHOLE ON INSIDE OF MANHOLE.
8. WHEN REPLACING AN EXISTING MANHOLE OR INSTALLING A NEW PRECAST MANHOLE ON AN EXISTING SEWER, A MINIMUM OF SIX FEET (6') OF EXISTING PIPE SHALL BE REMOVED AND REPLACED WITH NEW MATERIAL ON INLET AND OUTLET OF MANHOLE.
9. MANHOLES WHERE THE INVERT IS LOWER THAN THE NORMAL GROUNDWATER ELEVATION (I.E., ALONG CREEKS, RIVERS, LOW-LYING AREAS, ETC.) SHALL HAVE A FULL EXTERIOR COATING AND JOINT WRAP APPLIED IN ADDITION TO JOINT SEALANT. SEE NOTES 10 & 11.
10. IF REQUIRED EXTERIOR VERTICAL WALL SURFACES SHALL BE FACTORY COATED IN ACCORDANCE WITH THE MANUFACTURERS RECOMMENDATION. COATING SHALL BE HIGH BUILD COAL TAR EPOXY MEETING ASTM D1227. COATING SHALL BE APPLIED IN TWO COATS TO A MINIMUM TOTAL THICKNESS OF 16 MILS.
11. IF REQUIRED ALL MANHOLES SHALL UTILIZE AN EXTERNAL FRAME AND JOINT SEAL AT ALL JOINTS AND AT THE FRAME/CHIMNEYINTERFACE. SEAL SHALL BE MADE OF EPDM RUBBER INACCORDANCE WITH ASTM D412 OR POLYOLEFIN BACKED EXTERIOR JOINT WRAP IN ACCORDANCE WITH ASTM E-1745, C-877, AND C-990. EDM SEAL SHALL HAVE A MINIMUM THICKNESS OF 60 MILS. POLYOLEFIN BACKED EXTERIOR JOINT WRAP SHALL HAVE A BACKING BAND ELEMENT WITH MINIMUM THICKNESS OF 4 MILS. AND BUTYL ROLLER ADHESIVE WITH MINIMUM THICKNESS OF 60 MILS. SEAL SHALL AGGRESSIVELY BOND TO CONCRETE AND METAL STRUCTURES.
12. FOR PIPE LARGER THAN 15 INCHES IN DIAMETER, THE MINIMUM INSIDE DIAMETER OF THE MANHOLE SHALL BE IN ACCORDANCE WITH MANUFACTURERS RECOMMENDATIONS BASED ON PIPE SIZE AND ANGLE BETWEEN INLET AND OUTLET PIPING.
13. 6' MINIMUM DIAMETER MANHOLE SHALL BE REQUIRED WHEN DEPTHS EXCEED 15' UNLESS OTHERWISE APPROVED BY PARTICIPATING UTILITY.

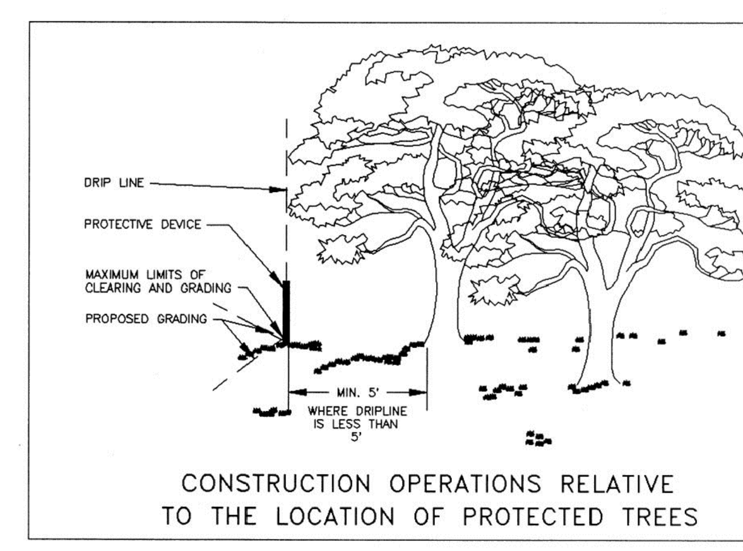




WESTERN VIRGINIA REGIONAL - CONSTRUCTION DETAIL

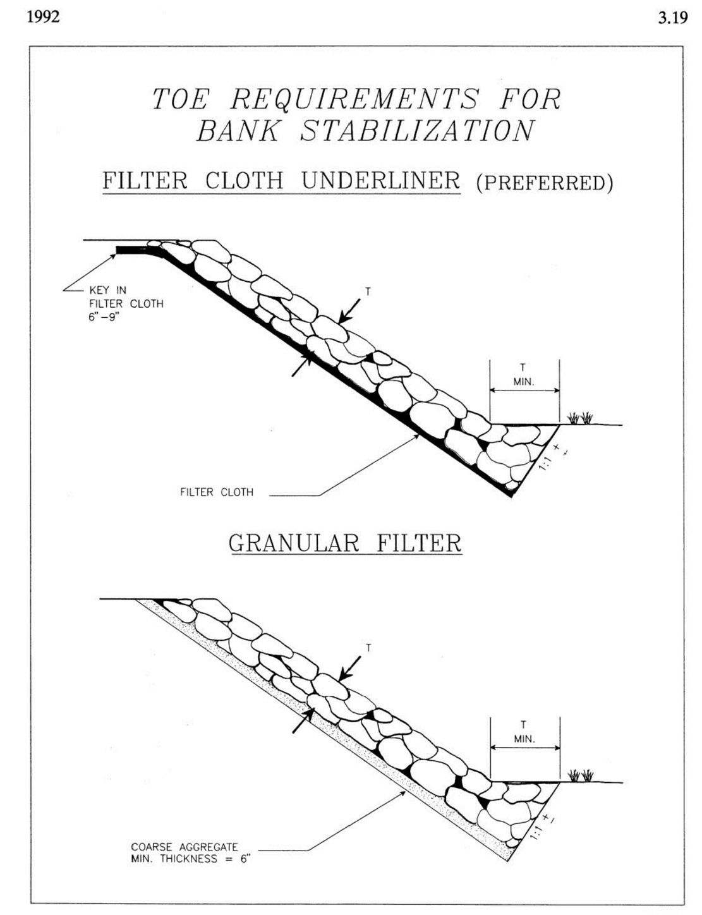
4' STANDARD MANHOLE FOR PIPE 15" OR SMALLER (FOR DEPTHS UP TO 15 FEET) — S-1 — 08/01/15

1992 3.38



Source: Public Facilities Manual, Vol. III, Fairfax Co., Va., 1976 — Plate 3.38-1

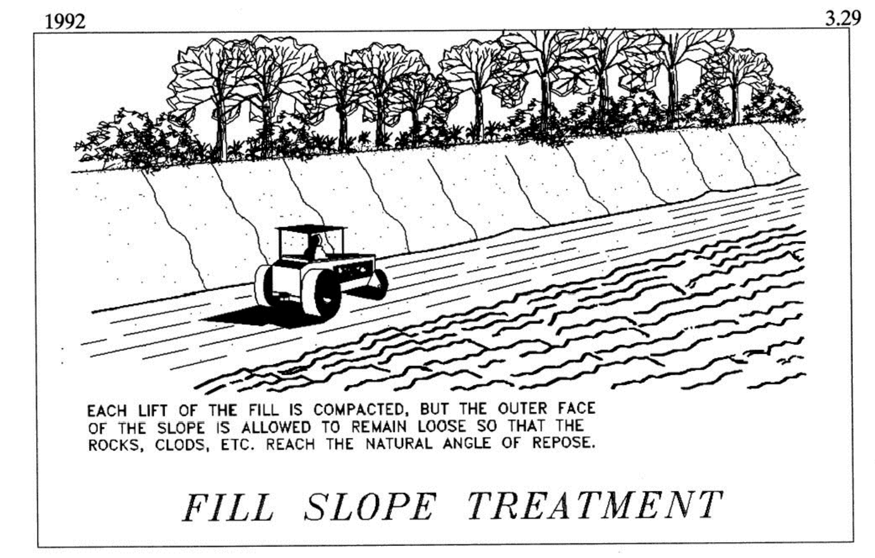
1992 3.19



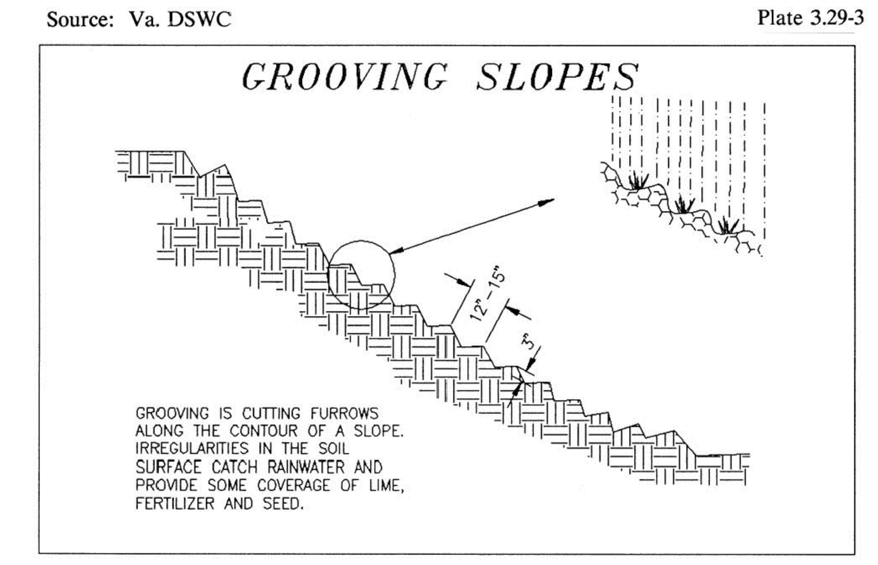
Source: Adapted from VDOT Drainage Manual — Plate 3.19-1

III - 173

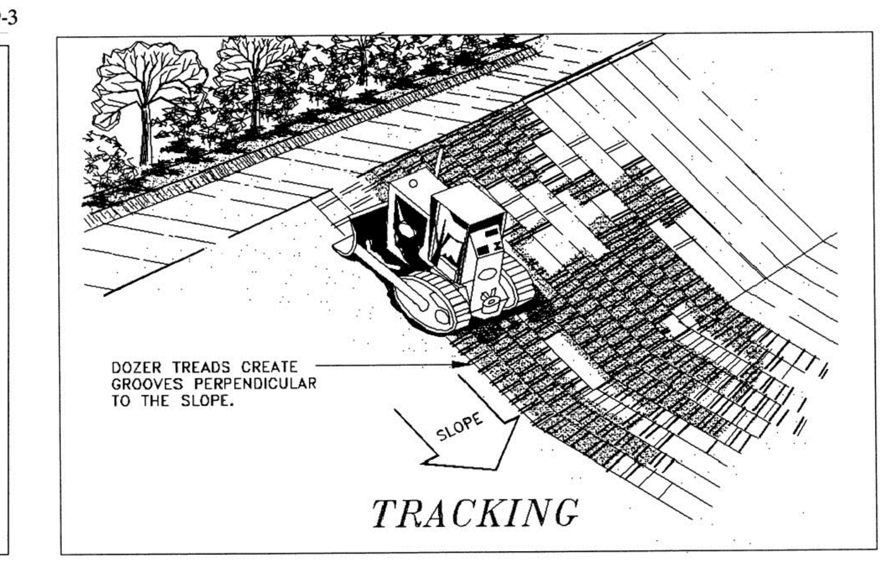
1992 3.29



Source: Va. DSWC — Plate 3.29-3

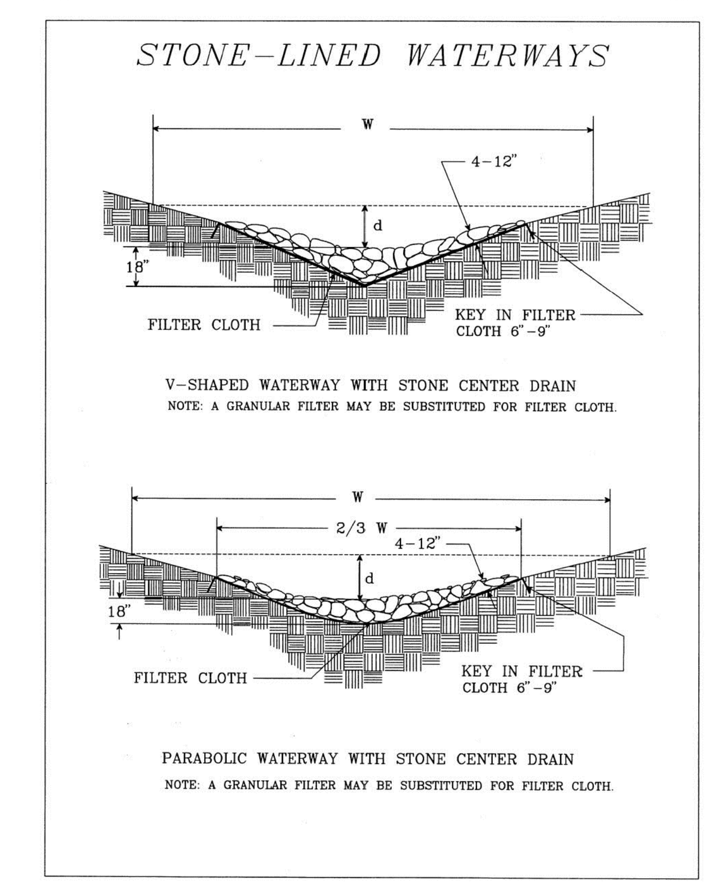


Source: Va. DSWC — Plate 3.29-2



Source: Michigan Soil Erosion and Sedimentation Guide — Plate 3.29-4

1992 3.17



Source: USDA-SCS — Plate 3.17-2

III - 134

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GEOTECHNICAL • CONSTRUCTION TESTING & INSPECTION • CULTURAL RESOURCES

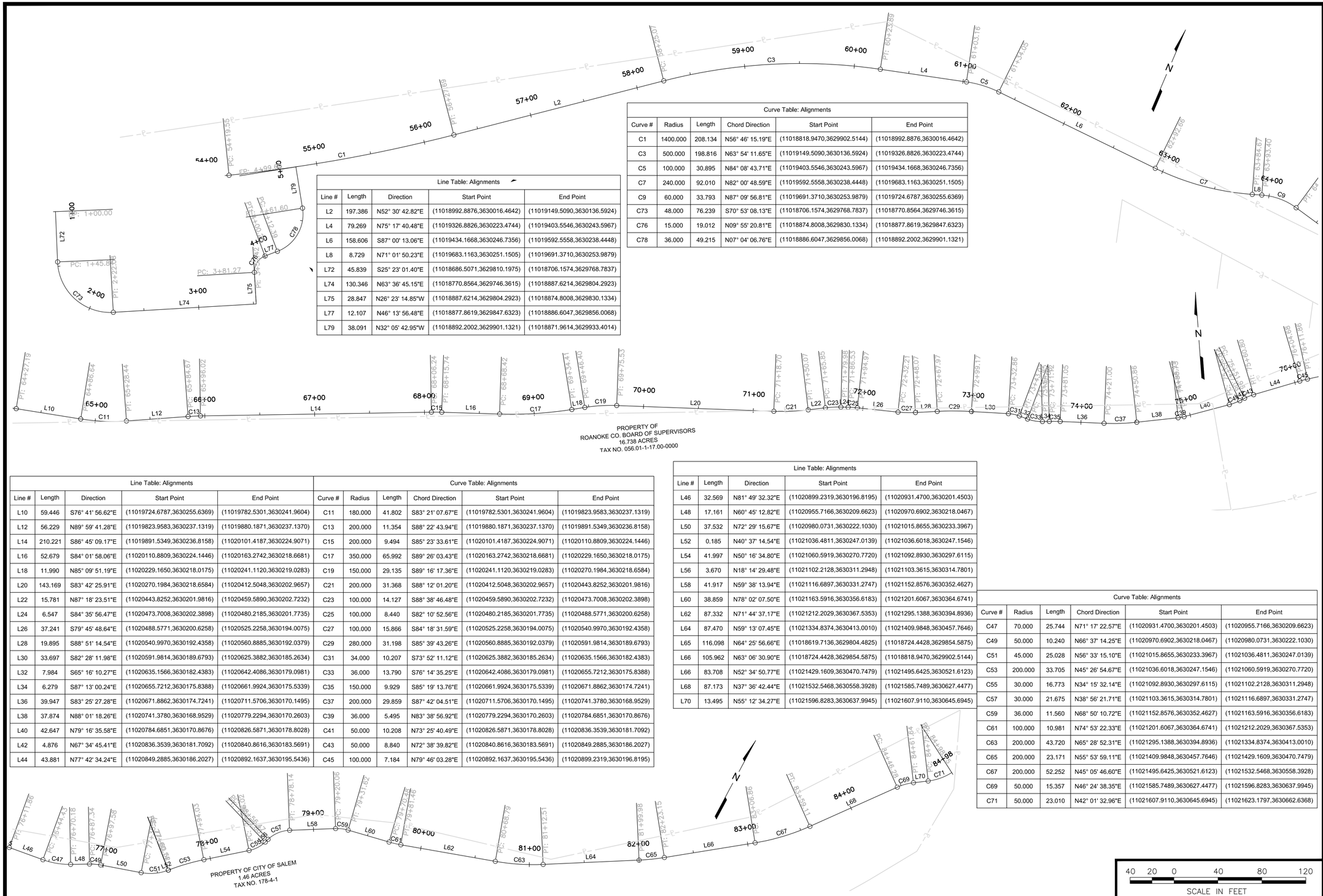
STANDARD DETAILS

WEST ROANOKE RIVER GREENWAY PH1

COUNTY OF ROANOKE, VA

PROJECT NO.	20221694
LAT.	
LONG.	
DATE:	18 April 2023
DRAWN BY:	
CHECKED BY:	JMJ

SHEET NO.
C-12



Curve Table: Alignments					
Curve #	Radius	Length	Chord Direction	Start Point	End Point
C1	1400.000	208.134	N56° 46' 15.19"E	(11018818.9470,3629902.5144)	(11018992.8876,3630016.4642)
C3	500.000	198.816	N63° 54' 11.65"E	(11019149.5090,3630136.5924)	(11019326.8826,3630223.4744)
C5	100.000	30.895	N84° 08' 43.71"E	(11019403.5546,3630243.5967)	(11019434.1668,3630246.7356)
C7	240.000	92.010	N82° 00' 48.59"E	(11019592.5558,3630238.4448)	(11019683.1163,3630251.1505)
C9	60.000	33.793	N87° 09' 56.81"E	(11019691.3710,3630253.9879)	(11019724.6787,3630255.6369)
C73	48.000	76.239	S70° 53' 08.13"E	(11018706.1574,3629768.7837)	(11018770.8564,3629746.3615)
C76	15.000	19.012	N09° 55' 20.81"E	(11018874.8008,3629830.1334)	(11018877.8619,3629847.6323)
C78	36.000	49.215	N07° 04' 06.76"E	(11018886.6047,3629856.0068)	(11018892.2002,3629901.1321)

Line Table: Alignments				
Line #	Length	Direction	Start Point	End Point
L2	197.386	N52° 30' 42.82"E	(11018992.8876,3630016.4642)	(11019149.5090,3630136.5924)
L4	79.269	N75° 17' 40.48"E	(11019326.8826,3630223.4744)	(11019403.5546,3630243.5967)
L6	158.606	S87° 00' 13.06"E	(11019434.1668,3630246.7356)	(11019592.5558,3630238.4448)
L8	8.729	N71° 01' 50.23"E	(11019683.1163,3630251.1505)	(11019691.3710,3630253.9879)
L72	45.839	S25° 23' 01.40"E	(11018686.5071,3629810.1975)	(11018706.1574,3629768.7837)
L74	130.346	N63° 36' 45.15"E	(11018770.8564,3629746.3615)	(11018887.6214,3629804.2923)
L75	28.847	N26° 23' 14.85"W	(11018887.6214,3629804.2923)	(11018874.8008,3629830.1334)
L77	12.107	N46° 13' 56.48"E	(11018877.8619,3629847.6323)	(11018886.6047,3629856.0068)
L79	38.091	N32° 05' 42.95"W	(11018892.2002,3629901.1321)	(11018871.9614,3629933.4014)

Line Table: Alignments					Curve Table: Alignments					
Line #	Length	Direction	Start Point	End Point	Curve #	Radius	Length	Chord Direction	Start Point	End Point
L10	59.446	S76° 41' 56.62"E	(11019724.6787,3630255.6369)	(11019782.5301,3630241.9604)	C11	180.000	41.802	S83° 21' 07.67"E	(11019782.5301,3630241.9604)	(11019823.9583,3630237.1319)
L12	56.229	N89° 59' 41.28"E	(11019823.9583,3630237.1319)	(11019880.1871,3630237.1370)	C13	200.000	11.354	S88° 22' 43.94"E	(11019880.1871,3630237.1370)	(11019891.5349,3630236.8158)
L14	210.221	S86° 45' 09.17"E	(11019891.5349,3630236.8158)	(11020101.4187,3630224.9071)	C15	200.000	9.494	S85° 23' 33.61"E	(11020101.4187,3630224.9071)	(11020110.8809,3630224.1446)
L16	52.679	S84° 01' 58.06"E	(11020110.8809,3630224.1446)	(11020163.2742,3630218.6681)	C17	350.000	65.992	S89° 26' 03.43"E	(11020163.2742,3630218.6681)	(11020229.1650,3630218.0175)
L18	11.990	N85° 09' 51.19"E	(11020229.1650,3630218.0175)	(11020241.1120,3630219.0283)	C19	150.000	29.135	S89° 16' 17.36"E	(11020241.1120,3630219.0283)	(11020270.1984,3630218.6584)
L20	143.169	S83° 42' 25.91"E	(11020270.1984,3630218.6584)	(11020412.5048,3630202.9657)	C21	200.000	31.368	S88° 12' 01.20"E	(11020412.5048,3630202.9657)	(11020443.8252,3630201.9816)
L22	15.781	N87° 18' 23.51"E	(11020443.8252,3630201.9816)	(11020459.5890,3630202.7232)	C23	100.000	14.127	S88° 38' 46.48"E	(11020459.5890,3630202.7232)	(11020473.7008,3630202.3898)
L24	6.547	S84° 35' 56.47"E	(11020473.7008,3630202.3898)	(11020480.2185,3630201.7735)	C25	100.000	8.440	S82° 10' 52.56"E	(11020480.2185,3630201.7735)	(11020488.5771,3630200.6258)
L26	37.241	S79° 45' 48.64"E	(11020488.5771,3630200.6258)	(11020525.2258,3630194.0075)	C27	100.000	15.866	S84° 18' 31.59"E	(11020525.2258,3630194.0075)	(11020540.9970,3630192.4358)
L28	19.895	S88° 51' 14.54"E	(11020540.9970,3630192.4358)	(11020560.8885,3630192.0379)	C29	280.000	31.198	S85° 39' 43.26"E	(11020560.8885,3630192.0379)	(11020591.9814,3630189.6793)
L30	33.697	S82° 28' 11.98"E	(11020591.9814,3630189.6793)	(11020625.3882,3630185.2634)	C31	34.000	10.207	S73° 52' 11.12"E	(11020625.3882,3630185.2634)	(11020635.1566,3630182.4383)
L32	7.984	S65° 16' 10.27"E	(11020635.1566,3630182.4383)	(11020642.4086,3630179.0981)	C33	36.000	13.790	S76° 14' 35.25"E	(11020642.4086,3630179.0981)	(11020655.7212,3630175.8388)
L34	6.279	S87° 13' 00.24"E	(11020655.7212,3630175.8388)	(11020661.9924,3630175.5339)	C35	150.000	9.929	S85° 19' 13.76"E	(11020661.9924,3630175.5339)	(11020671.8862,3630174.7241)
L36	39.947	S83° 25' 27.28"E	(11020671.8862,3630174.7241)	(11020711.5706,3630170.1495)	C37	200.000	29.859	S87° 42' 04.51"E	(11020711.5706,3630170.1495)	(11020741.3780,3630168.9529)
L38	37.874	N88° 01' 18.26"E	(11020741.3780,3630168.9529)	(11020779.2294,3630170.2603)	C39	36.000	5.495	N83° 38' 56.92"E	(11020779.2294,3630170.2603)	(11020784.6851,3630170.8676)
L40	42.647	N79° 16' 35.58"E	(11020784.6851,3630170.8676)	(11020826.5871,3630178.8028)	C41	50.000	10.208	N73° 25' 40.49"E	(11020826.5871,3630178.8028)	(11020836.3539,3630181.7092)
L42	4.876	N67° 34' 45.41"E	(11020836.3539,3630181.7092)	(11020840.8616,3630183.5691)	C43	50.000	8.840	N72° 38' 39.82"E	(11020840.8616,3630183.5691)	(11020849.2885,3630186.2027)
L44	43.881	N77° 42' 34.24"E	(11020849.2885,3630186.2027)	(11020892.1637,3630195.5436)	C45	100.000	7.184	N79° 46' 03.28"E	(11020892.1637,3630195.5436)	(11020899.2319,3630196.8195)

Line Table: Alignments				
Line #	Length	Direction	Start Point	End Point
L46	32.569	N81° 49' 32.32"E	(11020899.2319,3630196.8195)	(11020931.4700,3630201.4503)
L48	17.161	N60° 45' 12.82"E	(11020955.7166,3630209.6623)	(11020970.6902,3630218.0467)
L50	37.532	N72° 29' 15.67"E	(11020980.0731,3630222.1030)	(11021015.8655,3630233.3967)
L52	0.185	N40° 37' 14.54"E	(11021036.4811,3630247.0139)	(11021036.6018,3630247.1546)
L54	41.997	N50° 16' 34.80"E	(11021060.5919,3630270.7720)	(11021092.8930,3630297.6115)
L56	3.670	N18° 14' 29.48"E	(11021102.2128,3630311.2948)	(11021103.3615,3630314.7801)
L58	41.917	N59° 38' 13.94"E	(11021116.6897,3630331.2747)	(11021152.8576,3630352.4627)
L60	38.859	N78° 02' 07.50"E	(11021163.5916,3630356.6183)	(11021201.6067,3630364.6741)
L62	87.332	N71° 44' 37.17"E	(11021212.2029,3630367.5353)	(11021295.1388,3630394.8936)
L64	87.470	N59° 13' 07.45"E	(11021334.8374,3630413.0010)	(11021409.9848,3630457.7646)
L65	116.098	N64° 25' 56.66"E	(11018619.7136,3629804.4825)	(11018724.4428,3629854.5875)
L66	105.962	N63° 06' 30.90"E	(11018724.4428,3629854.5875)	(11018818.9470,3629902.5144)
L66	83.708	N52° 34' 50.77"E	(11021429.1609,3630470.7479)	(11021495.6425,3630521.6123)
L68	87.173	N37° 36' 42.44"E	(11021532.5468,3630558.3928)	(11021585.7489,3630627.4477)
L70	13.495	N55° 12' 34.27"E	(11021596.8283,3630637.9945)	(11021607.9110,3630645.6945)

Curve Table: Alignments					
Curve #	Radius	Length	Chord Direction	Start Point	End Point
C47	70.000	25.744	N71° 17' 22.57"E	(11020931.4700,3630201.4503)	(11020955.7166,3630209.6623)
C49	50.000	10.240	N66° 37' 14.25"E	(11020970.6902,3630218.0467)	(11020980.0731,3630222.1030)
C51	45.000	25.028	N56° 33' 15.10"E	(11021015.8655,3630233.3967)	(11021036.4811,3630247.0139)
C53	200.000	33.705	N45° 26' 54.67"E	(11021036.6018,3630247.1546)	(11021060.5919,3630270.7720)
C55	30.000	16.773	N34° 15' 32.14"E	(11021092.8930,3630297.6115)	(11021102.2128,3630311.2948)
C57	30.000	21.675	N38° 56' 21.71"E	(11021103.3615,3630314.7801)	(11021116.6897,3630331.2747)
C59	36.000	11.560	N68° 50' 10.72"E	(11021152.8576,3630352.4627)	(11021163.5916,3630356.6183)
C61	100.000	10.981	N74° 53' 22.33"E	(11021201.6067,3630364.6741)	(11021212.2029,3630367.5353)
C63	200.000	43.720	N65° 28' 52.31"E	(11021295.1388,3630394.8936)	(11021334.8374,3630413.0010)
C65	200.000	23.171	N55° 53' 59.11"E	(11021409.9848,3630457.7646)	(11021429.1609,3630470.7479)
C67	200.000	52.252	N45° 05' 46.60"E	(11021495.6425,3630521.6123)	(11021532.5468,3630558.3928)
C69	50.000	15.357	N46° 24' 38.35"E	(11021585.7489,3630627.4477)	(11021596.8283,3630637.9945)
C71	50.000	23.010	N42° 01' 32.96"E	(11021607.9110,3630645.6945)	(11021623.1797,3630662.6368)

40 20 0 40 80 120
SCALE IN FEET

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ALIGNMENT & EASEMENT DATA
WEST ROANOKE RIVER GREENWAY PH1
COUNTY OF ROANOKE, VA

PROJECT NO.	20221694
LAT.	
LONG.	
DATE:	18 April 2023
DRAWN BY:	
CHECKED BY:	JMJ

COMMONWEALTH OF VIRGINIA
JEREMY MICHAEL JOHNSON
Lic.No.0402050112
18 April 2023
PROFESSIONAL ENGINEER

SHEET NO.
C-13

Apr 19, 2023 - 12:48pm C:\ACAD_TEMP\AcPublish_8580\221694_SHEETS1_ESC.dwg

Cut Area	Fill Area	Cut Vol	Fill Vol
3.51 SF	0.19 SF	0 CY	0 CY

STATION 54+50

Cut Area	Fill Area	Cut Vol	Fill Vol
2.01 SF	2.85 SF	3 CY	2 CY

STATION 54+81

Cut Area	Fill Area	Cut Vol	Fill Vol
0.00 SF	5.26 SF	1 CY	3 CY

STATION 55+00

Cut Area	Fill Area	Cut Vol	Fill Vol
5.64 SF	0.00 SF	5 CY	5 CY

STATION 55+50

Cut Area	Fill Area	Cut Vol	Fill Vol
9.69 SF	0.00 SF	14 CY	0 CY

STATION 56+00

Cut Area	Fill Area	Cut Vol	Fill Vol
16.48 SF	0.00 SF	24 CY	0 CY

STATION 56+50

Cut Area	Fill Area	Cut Vol	Fill Vol
12.39 SF	0.00 SF	27 CY	0 CY

STATION 57+00

Cut Area	Fill Area	Cut Vol	Fill Vol
12.35 SF	3.35 SF	9 CY	1 CY

STATION 57+20

Cut Area	Fill Area	Cut Vol	Fill Vol
12.99 SF	0.00 SF	14 CY	2 CY

STATION 57+50

20 10 0 20 40 60

SCALE IN FEET

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CROSS SECTIONS

STA. 54+50 TO 57+50

WEST ROANOKE RIVER GREENWAY PH1

COUNTY OF ROANOKE, VA

PROJECT NO.	20221694
LAT.	
LONG.	
DATE:	18 April 2023
DRAWN BY:	TWH
CHECKED BY:	JMJ

COMMONWEALTH OF VIRGINIA
JEREMY MICHAEL JOHNSON
Lic.No.0402050112
18 April 2023
PROFESSIONAL ENGINEER

SHEET NO.
C-14

Apr 19, 2023 - 11:49am \\data01\projects\2022\20221694\Engineering\CAD\221694_SHEETS_X_SECTIONS.dwg

Cut Area	Fill Area	Cut Vol	Fill Vol
3.22 SF	5.56 SF	15 CY	5 CY

STATION 58+00

Cut Area	Fill Area	Cut Vol	Fill Vol
0.00 SF	16.60 SF	3 CY	21 CY

STATION 58+50

Cut Area	Fill Area	Cut Vol	Fill Vol
0.33 SF	13.43 SF	0 CY	28 CY

STATION 59+00

Cut Area	Fill Area	Cut Vol	Fill Vol
0.00 SF	10.13 SF	0 CY	22 CY

STATION 59+50

Cut Area	Fill Area	Cut Vol	Fill Vol
0.00 SF	5.66 SF	0 CY	15 CY

STATION 60+00

Cut Area	Fill Area	Cut Vol	Fill Vol
0.27 SF	3.06 SF	0 CY	8 CY

STATION 60+50

Cut Area	Fill Area	Cut Vol	Fill Vol
2.88 SF	15.52 SF	3 CY	17 CY

STATION 61+00

Cut Area	Fill Area	Cut Vol	Fill Vol
8.29 SF	32.72 SF	12 CY	46 CY

STATION 61+50

Cut Area	Fill Area	Cut Vol	Fill Vol
0.03 SF	51.92 SF	8 CY	78 CY

STATION 62+00

20 10 0 20 40 60

SCALE IN FEET

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CROSS SECTIONS

STA. 58+00 TO 62+00

WEST ROANOKE RIVER GREENWAY PH1

COUNTY OF ROANOKE, VA

PROJECT NO.	20221694
LAT.	
LONG.	
DATE:	18 April 2023
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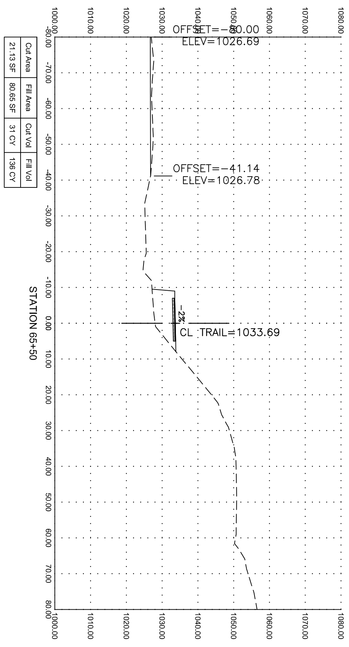
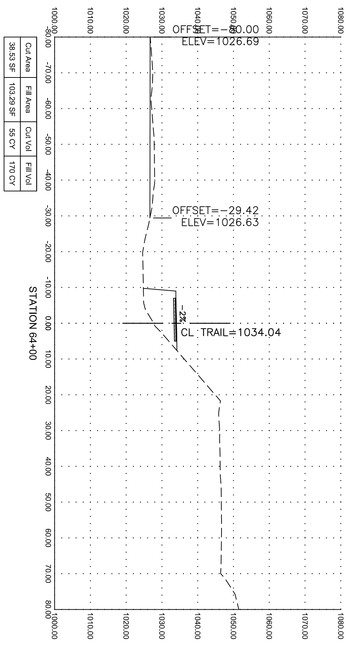
CHECKED BY:	JMJ

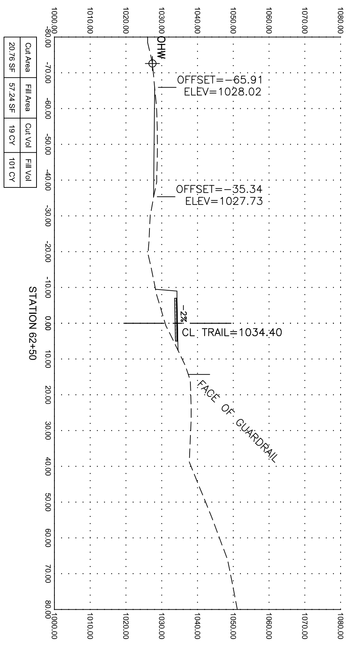
COMMONWEALTH OF VIRGINIA
JEREMY MICHAEL JOHNSON
Lic.No.0402050112
18 April 2023
PROFESSIONAL ENGINEER

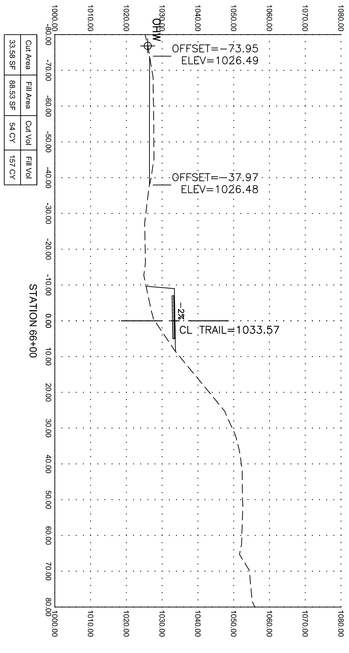
SHEET NO.
C-15

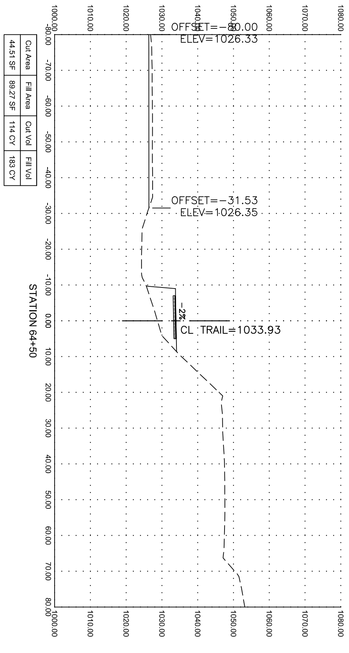
Apr 19, 2023 - 11:49am \\data01\projects\2022\20221694\Engineering\CAD\221694_SHEETS_X_SECTIONS.dwg

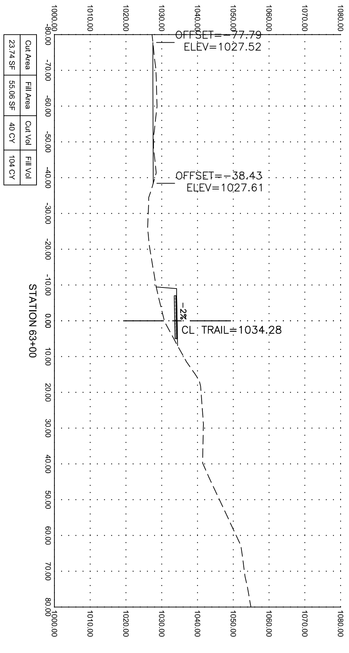


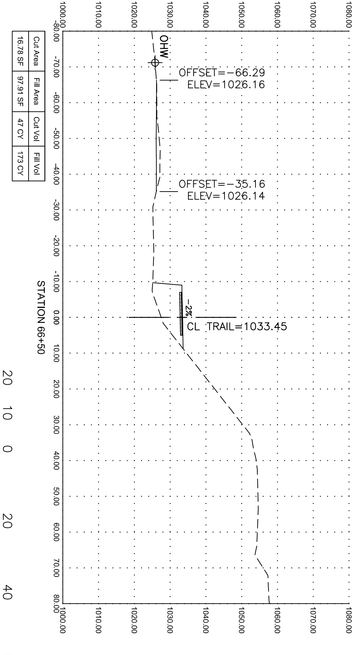


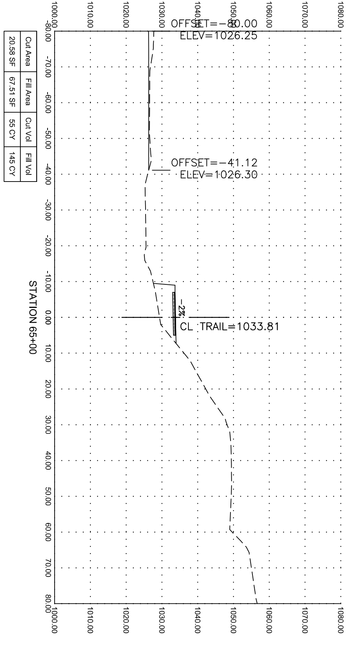


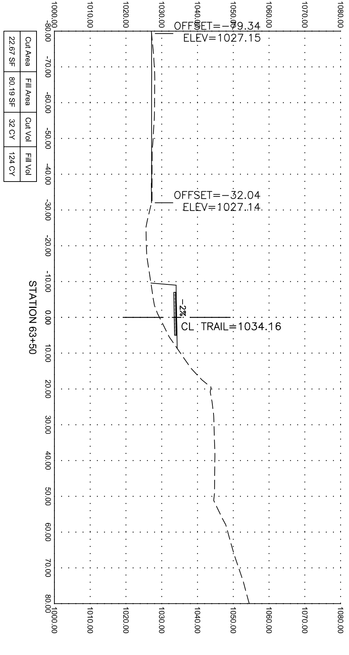












SHEET NO.
C-16

COMMONWEALTH OF VIRGINIA
JEREMY MICHAEL JOHNSON
Lic. No. 040205012
18 April 2023
PROFESSIONAL ENGINEER

PROJECT NO. 20221694
LAT.
LONG.
DATE: 18 April 2023
DRAWN BY: TWH
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CROSS SECTIONS

STA. 62+50 TO 66+50

WEST ROANOKE RIVER GREENWAY PH1

COUNTY OF ROANOKE, VA

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Cut Area	Fill Area	Cut Vol	Fill Vol
25.73 SF	86.81 SF	39 CY	171 CY

STATION 67+00

Cut Area	Fill Area	Cut Vol	Fill Vol
12.48 SF	83.01 SF	35 CY	157 CY

STATION 67+50

Cut Area	Fill Area	Cut Vol	Fill Vol
14.55 SF	79.13 SF	25 CY	150 CY

STATION 68+00

Cut Area	Fill Area	Cut Vol	Fill Vol
21.47 SF	68.09 SF	35 CY	137 CY

STATION 68+50

Cut Area	Fill Area	Cut Vol	Fill Vol
12.94 SF	60.61 SF	30 CY	119 CY

STATION 69+00

Cut Area	Fill Area	Cut Vol	Fill Vol
0.00 SF	73.66 SF	12 CY	124 CY

STATION 69+50

20 10 0 20 40 60

SCALE IN FEET

CROSS SECTIONS

STA. 67+00 TO 69+50

WEST ROANOKE RIVER GREENWAY PH1

COUNTY OF ROANOKE, VA

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PROJECT NO.	20221694
LAT.	
LONG.	
DATE:	18 April 2023
DRAWN BY:	TWH
CHECKED BY:	JMJ

COMMONWEALTH OF VIRGINIA

JEREMY MICHAEL JOHNSON

Lic.No.0402050112

18 April 2023

PROFESSIONAL ENGINEER

SHEET NO.

C-17

Cut Area	Fill Area	Cut Vol	Fill Vol
0.00 SF	68.58 SF	0 CY	133 CY

STATION 70+00

Cut Area	Fill Area	Cut Vol	Fill Vol
0.00 SF	72.44 SF	0 CY	131 CY

STATION 70+50

Cut Area	Fill Area	Cut Vol	Fill Vol
0.00 SF	113.40 SF	0 CY	172 CY

STATION 71+00

Cut Area	Fill Area	Cut Vol	Fill Vol
0.00 SF	94.70 SF	0 CY	191 CY

STATION 71+50

Cut Area	Fill Area	Cut Vol	Fill Vol
0.00 SF	100.06 SF	0 CY	183 CY

STATION 72+00

Cut Area	Fill Area	Cut Vol	Fill Vol
0.00 SF	137.22 SF	0 CY	218 CY

STATION 72+50

20 10 0 20 40 60

SCALE IN FEET

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CROSS SECTIONS

STA. 70+00 TO 72+50

WEST ROANOKE RIVER GREENWAY PH1

COUNTY OF ROANOKE, VA

PROJECT NO.	20221694
LAT.	
LONG.	
DATE:	18 April 2023
DRAWN BY:	TWH
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COMMONWEALTH OF VIRGINIA
JEREMY MICHAEL JOHNSON
Lic.No.0402050112
18 April 2023
PROFESSIONAL ENGINEER

SHEET NO.
C-18

Cut Area	Fill Area	Cut Vol	Fill Vol
0.00 SF	133.01 SF	0 CY	251 CY

STATION 73+00

Cut Area	Fill Area	Cut Vol	Fill Vol
0.00 SF	97.04 SF	0 CY	216 CY

STATION 73+50

Cut Area	Fill Area	Cut Vol	Fill Vol
0.00 SF	84.10 SF	0 CY	165 CY

STATION 74+00

Cut Area	Fill Area	Cut Vol	Fill Vol
0.00 SF	56.03 SF	0 CY	129 CY

STATION 74+50

Cut Area	Fill Area	Cut Vol	Fill Vol
0.00 SF	65.43 SF	0 CY	112 CY

STATION 75+00

Cut Area	Fill Area	Cut Vol	Fill Vol
0.00 SF	131.03 SF	0 CY	181 CY

STATION 75+50

20 10 0 20 40 60

SCALE IN FEET

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CROSS SECTIONS

STA. 73+00 TO 75+50

WEST ROANOKE RIVER GREENWAY PH1

COUNTY OF ROANOKE, VA

PROJECT NO.	20221694
LAT.	
LONG.	
DATE:	18 April 2023
DRAWN BY:	TWH
CHECKED BY:	JMJ

COMMONWEALTH OF VIRGINIA
JEREMY MICHAEL JOHNSON
Lic.No.0402050112
18 April 2023
PROFESSIONAL ENGINEER

SHEET NO.
C-19

Cut Area	Fill Area	Cut Vol	Fill Vol
0.00 SF	250.15 SF	0 CY	351 CY

STATION 76+00

Cut Area	Fill Area	Cut Vol	Fill Vol
0.00 SF	154.51 SF	0 CY	375 CY

STATION 76+50

Cut Area	Fill Area	Cut Vol	Fill Vol
7.23 SF	115.26 SF	1 CY	43 CY

STATION 76+59

Cut Area	Fill Area	Cut Vol	Fill Vol
0.00 SF	285.48 SF	5 CY	304 CY

STATION 77+00

Cut Area	Fill Area	Cut Vol	Fill Vol
0.00 SF	149.15 SF	0 CY	406 CY

STATION 77+50

Cut Area	Fill Area	Cut Vol	Fill Vol
0.00 SF	96.18 SF	0 CY	61 CY

STATION 77+64

20 10 0 20 40 60

SCALE IN FEET

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CROSS SECTIONS

STA. 76+00 TO 77+64

WEST ROANOKE RIVER GREENWAY PH1

COUNTY OF ROANOKE, VA

PROJECT NO.	20221694
LAT.	
LONG.	
DATE:	18 April 2023
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COMMONWEALTH OF VIRGINIA
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18 April 2023
PROFESSIONAL ENGINEER

SHEET NO.
C-20

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Cut Area	Fill Area	Cut Vol	Fill Vol
0.00 SF	154.03 SF	0 CY	169 CY

STATION 78+00

Cut Area	Fill Area	Cut Vol	Fill Vol
0.00 SF	172.75 SF	0 CY	298 CY

STATION 78+50

Cut Area	Fill Area	Cut Vol	Fill Vol
5.06 SF	80.66 SF	2 CY	98 CY

STATION 78+70

Cut Area	Fill Area	Cut Vol	Fill Vol
0.00 SF	159.06 SF	3 CY	136 CY

STATION 79+00

Cut Area	Fill Area	Cut Vol	Fill Vol
0.00 SF	84.69 SF	0 CY	229 CY

STATION 79+50

Cut Area	Fill Area	Cut Vol	Fill Vol
0.00 SF	43.01 SF	0 CY	117 CY

STATION 80+00

20 10 0 20 40 60

SCALE IN FEET

CROSS SECTIONS

STA. 78+00 TO 80+00

WEST ROANOKE RIVER GREENWAY PH1

COUNTY OF ROANOKE, VA

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18 April 2023
PROFESSIONAL ENGINEER

SHEET NO.
C-21

Apr 19, 2023 - 11:48am \\data01\projects\2022\20221694\Engineering\CAD\221694_SHEETS_X_SECTIONS.dwg

Cut Area	Fill Area	Cut Vol	Fill Vol
0.57 SF	18.99 SF	1 CY	57 CY

STATION 80+50

Cut Area	Fill Area	Cut Vol	Fill Vol
14.96 SF	0.00 SF	14 CY	18 CY

STATION 81+00

Cut Area	Fill Area	Cut Vol	Fill Vol
26.47 SF	0.00 SF	38 CY	0 CY

STATION 81+50

Cut Area	Fill Area	Cut Vol	Fill Vol
32.81 SF	0.00 SF	55 CY	0 CY

STATION 82+00

Cut Area	Fill Area	Cut Vol	Fill Vol
35.01 SF	0.00 SF	62 CY	0 CY

STATION 82+50

Cut Area	Fill Area	Cut Vol	Fill Vol
24.97 SF	0.00 SF	56 CY	0 CY

STATION 83+00

20 10 0 20 40 60

SCALE IN FEET

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CROSS SECTIONS

STA. 80+50 TO 83+00

WEST ROANOKE RIVER GREENWAY PH1

COUNTY OF ROANOKE, VA

PROJECT NO.	20221694
LAT.	
LONG.	
DATE:	18 April 2023
DRAWN BY:	TWH
CHECKED BY:	JMJ

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JEREMY MICHAEL JOHNSON
Lic.No.0402050112
18 April 2023
PROFESSIONAL ENGINEER

SHEET NO.
C-22

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Cut Area	Fill Area	Cut Vol	Fill Vol
36.45 SF	0.00 SF	56 CY	0 CY

STATION 83+50

Cut Area	Fill Area	Cut Vol	Fill Vol
2.25 SF	7.07 SF	36 CY	7 CY

STATION 84+00

Cut Area	Fill Area	Cut Vol	Fill Vol
0.00 SF	42.45 SF	2 CY	46 CY

STATION 84+50

Cut Area	Fill Area	Cut Vol	Fill Vol
0.58 SF	0.51 SF	1 CY	38 CY

STATION 84+98

20 10 0 20 40 60

SCALE IN FEET

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CROSS SECTIONS

STA. 83+50 TO 84+98

WEST ROANOKE RIVER GREENWAY PH1

COUNTY OF ROANOKE, VA

PROJECT NO.	20221694
LAT.	
LONG.	
DATE:	18 April 2023
DRAWN BY:	TWH
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COMMONWEALTH OF VIRGINIA
JEREMY MICHAEL JOHNSON
Lic.No.0402050112
18 April 2023
PROFESSIONAL ENGINEER

SHEET NO.
C-23

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GENERAL NOTES:

Any misuse of electronic files, including scanned signatures is illegal. Violators will be prosecuted to the full extent of the applicable laws.

Specifications:

Construction: Virginia Department of Transportation Road and Bridge Specifications, 2020 and 2022 supplement.

Design: AASHTO LRFD Bridge Design Specifications, 7th Edition, 2014; and VDOT Modifications.

All information on existing conditions is obtained from best available sources. The actual as-built construction may possibly differ from what is assumed in the contract documents. The Contractor shall verify all existing conditions noted on the contract documents, and shall notify the Engineer in writing of any discrepancies between the existing conditions and the contract documents.

The Contractor shall request in writing and highlight on the shop drawings any proposed changes in the materials, details, etc. indicated on the drawings or specifications. Any changes must be approved by the Engineer in writing.

The design, adequacy, and safety of erection bracing, shoring, temporary supports, etc. is the sole responsibility of the Contractor.

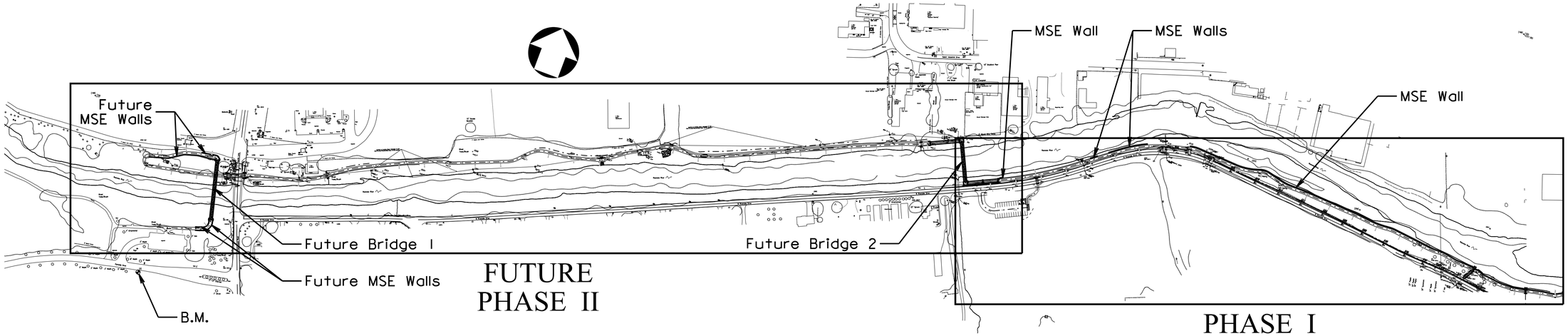
The location of the utilities, including underground utilities, is indicated on the drawings in so far as their existence and location were known at the time of preparation of the drawings. However, nothing in these contract documents shall be construed as a guarantee that such utilities are in the location indicated or that they actually exist, or that such utilities are not within the area of operations. The Contractor shall make necessary investigations to determine the existence and location of such utilities. The Contractor shall pay for any damage to and for maintenance of protection of existing utilities and structures including water service and sewer laterals.

B.M.: Iron Rod set south of Parkside Drive, just east of the entrance to the Greenway Trail parking lot in Green Hill Park (see map below).
3628342.18 N, 11015706.29 E, El. 1046.10

BACKFILL NOTES:

See Sheets S-5 through S-8 for information on the Mechanically Stabilized Earth (MSE) Retaining Structures.

SHEET LIST



COMMONWEALTH OF VIRGINIA
CHAD M. THOMAS
Lic. No. 036962
01/15/23
PROFESSIONAL ENGINEER

Date

Revisions

Issue Date: 01/15/23
Drawn By: DKA
Designed By: MLF
Checked By: SAC
Date: 01/15/23

Mattern & Craig
ENGINEERS • SURVEYORS
701 FIRST STREET, S.W.
ROANOKE, VIRGINIA 24016
PHONE (540) 345-6802
FAX (540) 345-7691

WEST ROANOKE RIVER GREENWAY - PHASE I
STRUCTURES COVER SHEET
ROANOKE COUNTY, VA AND CITY OF SALEM, VA

Vertical Scale: N/A
Horizontal Scale: N/A
Commission Number: 3435A
Sheet No.: S-1

ESTIMATED QUANTITIES - RETAINING STRUCTURES ONLY

	NS - MSE Retaining Structure (Gabion Faced) SF	Retaining Wall RW-3 CY	Handrail HR-1 Type III Modified LF	Retaining Wall Excav. CY ⊗	Dry Riprap Class II 38" TON	Misc. Concrete CY
Left (Sta. 57+04 to 57+35)	275	———	32	———	22	———
Left (Sta. 57+80 to 59+35)	1,575	———	163	———	108	———
Left (Sta. 61+00 to 80+54)	33,575	———	1,955	———	1,304	100
Right (Sta. 76+56 to 76+62)	———	2.0	———	6.0	———	———
Right (Sta. 77+62 to 77+67)	———	2.0	———	7.0	———	———
Right (Sta. 78+65 to 78+80)	———	8.0	———	23.0	———	———
Total	35,425	12.0	2,150	36.0	1,434	100

⊗ Denotes items to be paid for on the basis of plan quantities in accordance with current Road and Bridge Specifications.

Note:
These estimated quantities reflect retaining structure quantities only. Incidental items for wall construction, including but not limited to mobilization, construction surveying, and erosion and sediment control, are required but not included on this sheet.

COMMONWEALTH OF VIRGINIA
CHAD M. THOMAS
Lic. No. 036962
01/15/23
PROFESSIONAL ENGINEER

Date

Revisions

Issue Date: 01/15/23
Drawn By: DKA
Designed By: MLF
Checked By: SAC
Date: 01/15/23

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WEST ROANOKE RIVER GREENWAY - PHASE I
ESTIMATED QUANTITIES
ROANOKE COUNTY, VA AND CITY OF SALEM, VA

Vertical Scale: N/A
Horizontal Scale: N/A
Commission Number: 3435A
Sheet No.: S-2

BORING LOG

Location SALEM - W. ROANOKE CO. GREENWAY
Contractor Geotechnics, Inc.
Structure Wall
Geologist
Engineer JRC
Comm. No. 4561
Sheet 1 of 1
Boring No. AB-1
Date 27 June 2016

Stratification Elevation	Depth	Legend	Description of Materials (Type, color & Consistency)	Sampler or Spoon Blows	Penetration	Sample No.	Misc. Data / REMARKS
							Length of hole 16.5'
							Rock ----
							Wt. of hammer 140#
							Avg. fall of hammer 30"
							El of ground water ----
1039	0						REMARKS
1038.6	0.4		TOPSOIL ALLUVIUM Tan Clayey SAND with Pebbles, Cobbles and Boulders				Vicinity STA 15+17, 11' Left
				2 3 12	0.5' 0.5' 0.5'	1	SAMPLE 2.0'-3.5'
							Auger Scraping Hard at 4.5' Augers Deflecting
				10 5 6	0.5' 0.5' 0.5'	2	SAMPLE 5.0'-6.5'
1031.5	7.5		Tan and Orange Tan Silty SAND with Pebbles and Cobbles	WH WH WH	0.5' 0.5' 0.5'	3	SAMPLE 7.5'-9.0'
				12 18 9	0.5' 0.5' 0.5'	4	SAMPLE 10.0'-11.5' Tools Wet
1025.0	14.0		RESIDUUM Decomposed Tan, Gray and Maroon Shale	8 12 15	0.5' 0.5' 0.5'	5	SAMPLE 15.0'-16.5'
1022.5	16.5		Bottom of Hole Completed: 9:45 PM 27 JUNE 16				W.L. @ Completion: Muddy at 10' Hole Backfilled

GEOTECHNICS Form 10

BORING LOG

Location SALEM - W. ROANOKE CO. GREENWAY
Contractor Geotechnics, Inc.
Structure Wall
Geologist
Engineer JRC
Comm. No. 4561
Sheet 1 of 1
Boring No. AB-2
Date 27 June 2016

Stratification Elevation	Depth	Legend	Description of Materials (Type, color & Consistency)	Sampler or Spoon Blows	Penetration	Sample No.	Misc. Data / REMARKS
							Length of hole 9.6'
							Rock ----
							Wt. of hammer 140#
							Avg. fall of hammer 30"
							El of ground water 1032.1
1039	0						REMARKS
1038.6	0.4		TOPSOIL ALLUVIUM Brown Silty SAND				Vicinity STA 15+94, 6' Left
				1 2 2	0.5' 0.5' 0.5'	1	SAMPLE 2.0'-3.5'
				1 2 2	0.5' 0.5' 0.5'	2	SAMPLE 5.0'-6.5'
				4 4 3	0.5' 0.5' 0.5'	3	SAMPLE 7.5'-9.0' Tools Wet
1030.5	8.5		RESIDUUM Brown Silty SAND with Shale Fragments				
1029.4	9.6		AUGER REFUSAL Bottom of Hole Completed: 10:20 AM 27 JUNE 16				W.L. @ Completion: 6.9' Hole Backfilled

GEOTECHNICS Form 10

BORING LOG

Location SALEM - W. ROANOKE CO. GREENWAY
Contractor Geotechnics, Inc.
Structure Wall
Geologist
Engineer JRC
Comm. No. 4561
Sheet 1 of 1
Boring No. AB-3
Date 27 June 2016

Stratification Elevation	Depth	Legend	Description of Materials (Type, color & Consistency)	Sampler or Spoon Blows	Penetration	Sample No.	Misc. Data / REMARKS
							Length of hole 6.5'
							Rock ----
							Wt. of hammer 140#
							Avg. fall of hammer 30"
							El of ground water ----
1039	0						REMARKS
1038.6	0.4		TOPSOIL ALLUVIUM Brown Silty SAND				Vicinity STA 16+70, CL
				1 2 2	0.5' 0.5' 0.5'	1	SAMPLE 2.0'-3.5'
				1 8 30	0.5' 0.5' 0.2'	2	SAMPLE 5.0'-6.2'
1033.1	5.9		RESIDUUM Highly Weathered to Decomposed Tan Shale				
1032.5	6.5		AUGER REFUSAL Bottom of Hole Completed: 10:50 AM 27 JUNE 16				W.L. @ Completion: Dry at 5.9' Hole Backfilled

GEOTECHNICS Form 10

SUBSURFACE INFORMATION - Boring Logs

This subsurface information shown on the boring logs in these plans was obtained with reasonable care and recorded in good faith solely for use by the County of Roanoke and the City of Salem and in establishing design controls for the project. The County and City have no reason to suspect that such information is not reasonably accurate as an approximate indication of the subsurface conditions at the sites where the borings were taken. The County and City do not in any way warrant or guarantee that such data can be projected as indicative of conditions beyond the limits of the borings shown; and any such projections by bidders are purely interpretive and altogether speculative. Further, the County and City do not in any way guarantee, either expressly or by implication, the sufficiency of the information for bid purposes.

The boring logs are made available to bidders in order that they may have access to subsurface data identical to that which is possessed by the County and City, and are not intended as a substitute for personal investigation, interpretation and judgment by the bidders.

COMMONWEALTH OF VIRGINIA
CHAD M. THOMAS
Lic. No. 036962
PROFESSIONAL ENGINEER
01/15/23

Date
Revisions

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Drawn By: DKA
Designed By: MLF
Checked By: SAC
Date: 01/15/23

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WEST ROANOKE RIVER GREENWAY - PHASE I
GEOLOGY SHEET NO. 1
ROANOKE COUNTY, VA AND CITY OF SALEM, VA

Vertical Scale: N/A
Horizontal Scale: N/A
Commission Number: 3435A
Sheet No.: S-3

BORING LOG

SALEM - W. ROANOKE CO.
Location GREENWAY
Contractor Geotechnics, Inc.

Structure Wall
Geologist
Engineer JRC

Comm. No. 4561
Sheet 1 of 1
Boring No. AB-4
Date 14 October 2015

Stratification Elevation	Depth	Legend	Description of Materials (Type, color & Consistency)	Sampler or Spoon Blows	Penetration	Sample No.	Misc. Data / REMARKS
							Length of hole 11.7'
							Rock ----
							Wt. of hammer 140#
							Avg. fall of hammer 30"
							El of ground water
1050	0						REMARKS
			FILL Gray-Brown Clayey SAND with Crushed Stone Fragments				Vicinity STA 15+17, 16' Right
				4 3 3	0.5' 0.5' 0.5'	1	SAMPLE 2.0'-3.5'
				1 2 2	0.5' 0.5' 0.5'	2	SAMPLE 5.0'-6.5'
1042.0	8.0		Brown Silty SAND with Pebbles, Cobbles and Boulders	2 6 12	0.5' 0.5' 0.5'	3	SAMPLE 7.5'-9.0'
				12 14 16	0.5' 0.5' 0.5'	4	SAMPLE 10.0'-11.5' Auger Scraping 10'-11.7'
1038.3	11.7		AUGER REFUSAL Bottom of Hole Completed: 1:45 PM 14 OCTOBER 15				W.L. @ Completion: Dry Hole Backfilled

GEOTECHNICS Form 10

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WEST ROANOKE RIVER GREENWAY - PHASE I
GEOLOGY SHEET NO. 2
ROANOKE COUNTY, VA AND CITY OF SALEM, VA

Vertical Scale: N/A
Horizontal Scale: N/A
Commission Number: 3435A
Sheet No.: S-4

MSE RETAINING STRUCTURE (GABION FACED) NOTES:

The minimum design life of the Mechanically Stabilized Earth (MSE) retaining structure shall be 75-years.

Based on the Geotechnical Report, the man-made fill and alluvium is variable, and some consolidation or settlement of the MSE retaining structure is expected to occur. Due to the coarse-grained nature of the man-made fill and alluvium, the settlement will occur quickly.

Based on the Geotechnical Report, since the MSE retaining structure shall bear on bedrock, an allowable bearing value not to exceed 6 TSF may be utilized for design.

The entire area of mechanically stabilized earth mass behind the MSE wall between the wall and excavation or existing grade shall be backfilled with course aggregate backfill material. The existing slopes to be backfilled shall be bench cut every 2 feet in elevation change, prior to placing backfill. The cost of all materials, labor, and equipment for excavation and course aggregate backfill in this area shall be included in the price bid for the MSE Retaining Structure.

The lateral limits of excavation are dependent on the depth at a particular location below the wall. Additional localized excavation may be required depending on the site conditions at the time of construction as determined by the Engineer in the field.

A geotextile fabric shall be used between the mechanically stabilized earth mass and the existing soils.

Provide drainage details such as perforated pipe underdrain and/or drainage blanket based upon field conditions.

MSE RETAINING STRUCTURE (GABION FACED) NOTES CONT'D:

All wall segments and other related elements shall be detailed on shop drawings.

See the Special Provision for Mechanically Stabilized Earth (MSE) retaining structure.

Dimensions may vary based on the design, the Contractor shall record the changes on the plans for the as- built records.

The MSE gabion basket facing shall bear on competent bedrock with a roughened surface which will provide a minimum friction coefficient as specified by the designer to resist sliding and provide adequate bearing capacity.

The bearing elevations are based on the best information available at the time of preparation of the drawings. The Contractor shall verify the existing conditions noted on the contract documents, and shall notify the Engineer in writing of any discrepancies between the existing conditions and the contract documents.

Shoring may be required during excavation. If shoring is required, the shoring shall be designed and sealed by a Professional Engineer with a current Professional Engineering License in the Commonwealth of Virginia.

Handrail shall be installed per manufacturer's requirements and location of posts shall be coordinated by the Contractor to maintain the minimum trail width.

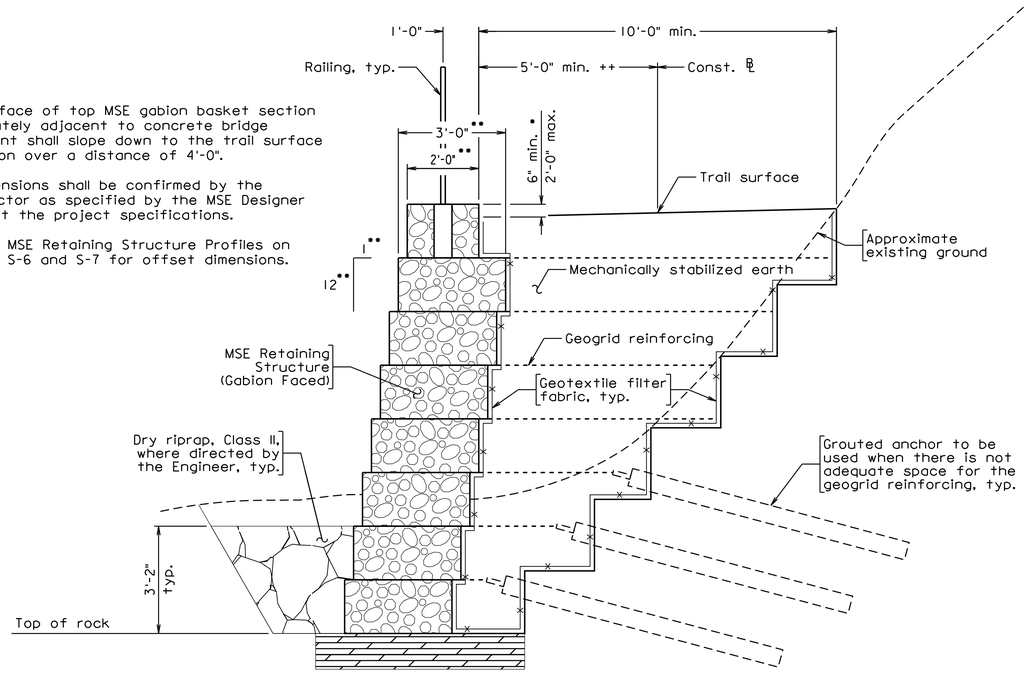
Elevations denoting base of MSE gabion basket facing shown on the plans shall be considered approximate only. Excavation for MSE retaining structure shall terminate at competent bedrock. Foundations shall not be considered satisfactory until approved by the Engineer.

MSE RETAINING STRUCTURE (GABION FACED) NOTES CONT'D:

The Contractor shall explore foundations by rod soundings or drillings to determine, to the Engineer's satisfaction, the adequacy for the foundations to support the structure. In the event that competent bedrock is not reasonably accessible, a concrete sub-footing may be installed as directed by the Engineer. If the Engineer recommends a sub-footing be installed, it shall consist of Concrete Class B2 or Class A3.

Any required or recommended sub-footing will be paid for at contract price per cubic yard for "Miscellaneous Concrete." The price shall include all labor and materials required for clearing and grubbing, excavating, dewatering, sheeting, shoring, bracing, placing of concrete, disposing of unsuitable or surplus material, and clearing the channel of obstructions caused by construction operations.

Miscellaneous Concrete shall be measured in cubic yard of concrete placed within the limits of vertical planes 18 inches outside of the base layer of the MSE Retaining Structure (Gabion Faced) to the depth of the sub-footing. The depth of the sub-footing shall be approved by the Engineer prior to placement of concrete.



• Top face of top MSE gabion basket section immediately adjacent to concrete bridge abutment shall slope down to the trail surface elevation over a distance of 4'-0".

•• Dimensions shall be confirmed by the Contractor as specified by the MSE Designer to meet the project specifications.

++ See MSE Retaining Structure Profiles on Sheets S-6 and S-7 for offset dimensions.

ONE WALL SECTION
Scale: Not to Scale

MECHANICALLY STABILIZED EARTH (MSE) RETAINING STRUCTURE (GABION FACED) DOWNSTREAM OF BRIDGE NO. 2

COMMONWEALTH OF VIRGINIA
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Revisions | Date

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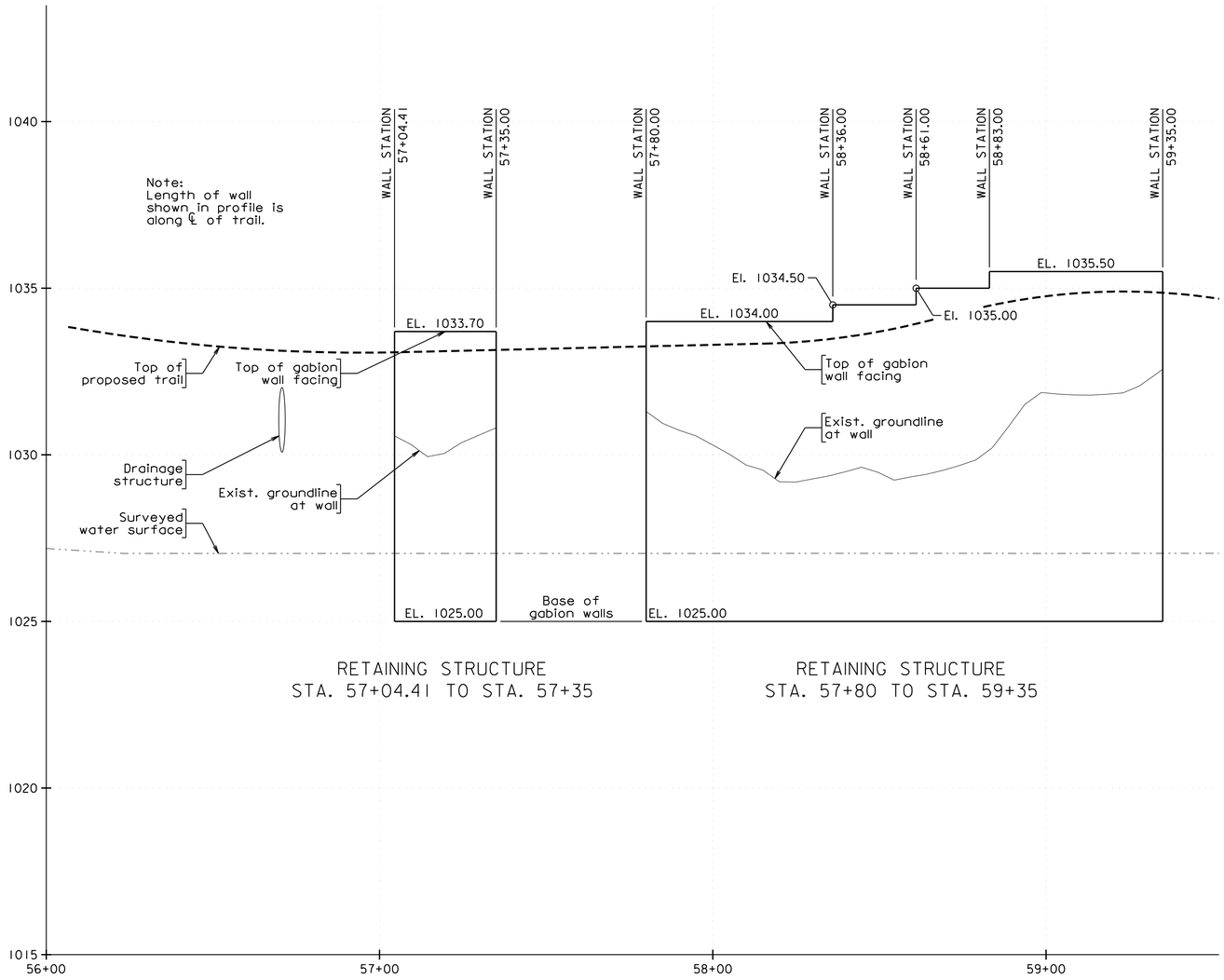
WEST ROANOKE RIVER GREENWAY - PHASE I
MSE RETAIN. STRUCTURE (GABION FACED)
DOWNSTREAM OF FUTURE BRIDGE NO. 2
ROANOKE COUNTY, VA AND CITY OF SALEM, VA

Vertical Scale: N/A
Horizontal Scale: AS NOTED
Commission Number: 3435A
Sheet No.: S-5



RETAINING STRUCTURES (2) BETWEEN STA. 57+04 AND STA. 59+35

Trailside face top of the wall shall be offset 7.0' left from trail℄ based on the detail shown on Sheet S-5

MECHANICALLY STABILIZED EARTH (MSE) RETAINING STRUCTURE PROFILES
WALLS (2) BETWEEN STA. 57+04 AND STA. 59+35

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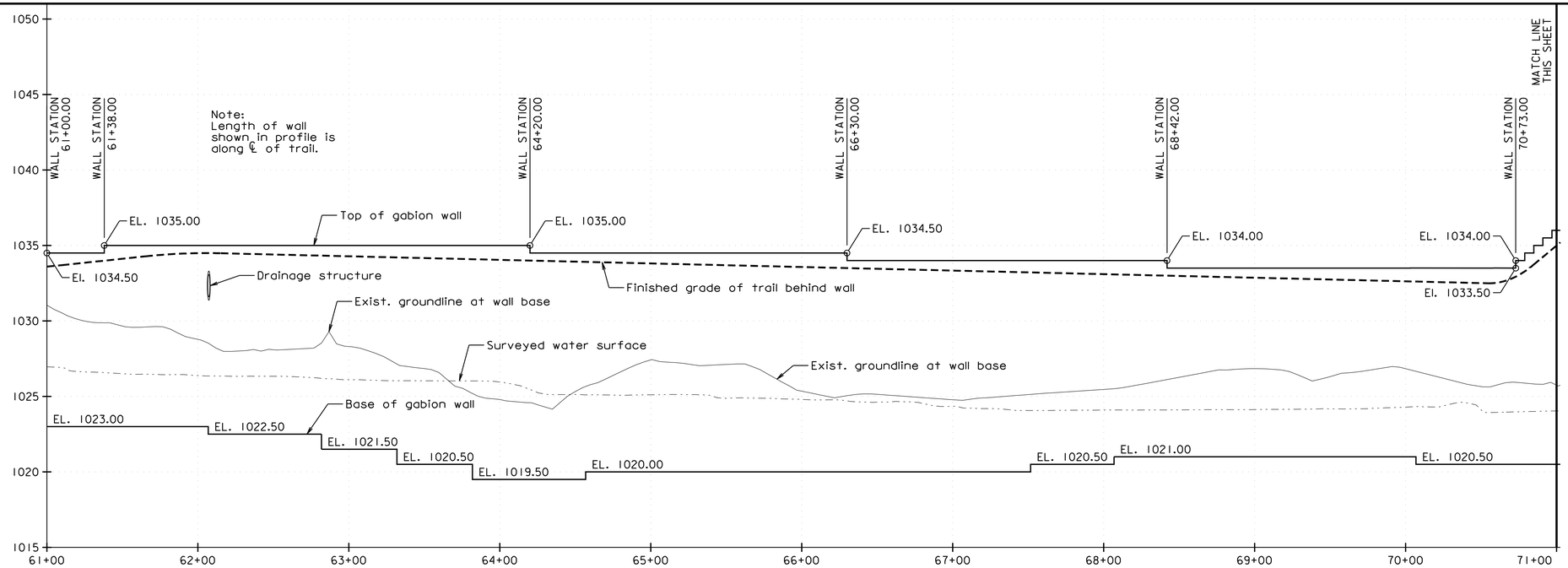
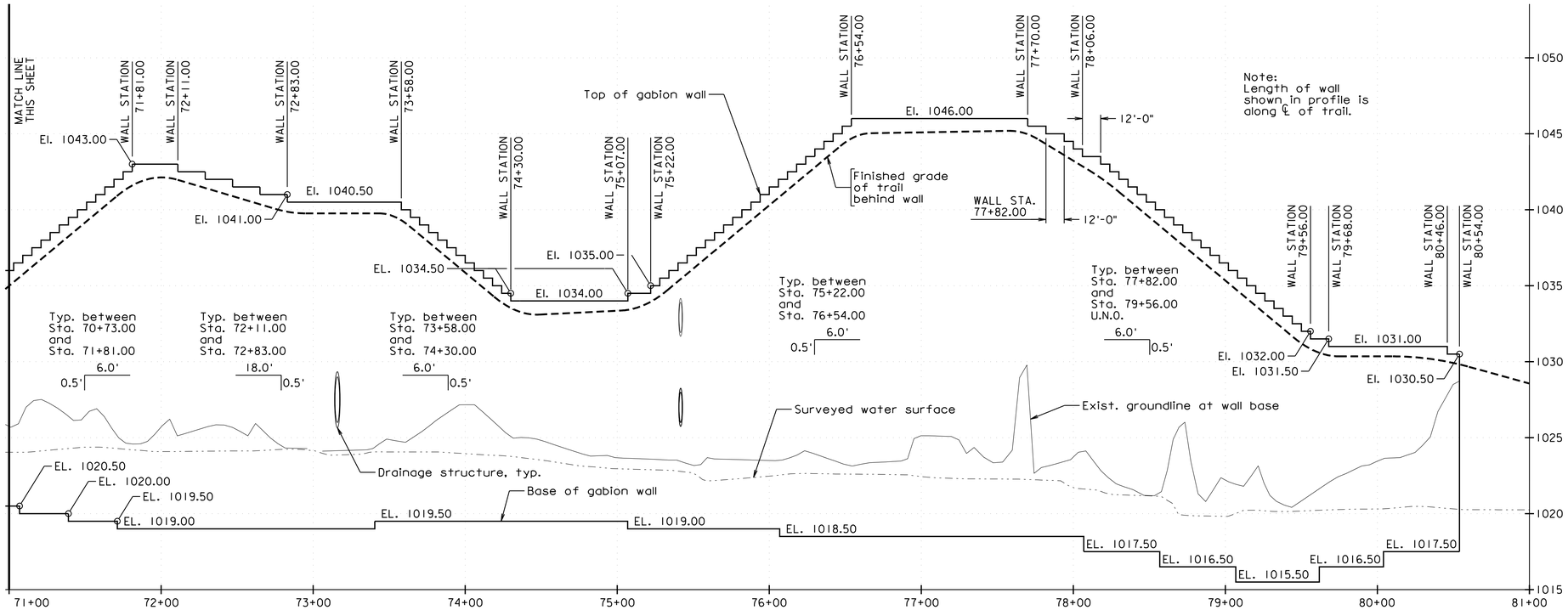
WEST ROANOKE RIVER GREENWAY - PHASE I
MSE RETAIN. STRUCTURE PROFILES
2 WALLS
ROANOKE COUNTY, VA AND CITY OF SALEM, VA

Vertical Scale: 1" = 2'-0"
Horizontal Scale: 1" = 20'-0"
Commission Number: 3435A
Sheet No.: S-6



RETAINING STRUCTURE BETWEEN STA. 61+00 AND 71+00



RETAINING STRUCTURE BETWEEN STA. 71+00 AND 80+54

Notes:

Trailside face of the wall shall be offset 7.0' left from trail ℄ between stations 61+00.00 and 71+14.00.

Trailside face of the wall shall be offset 7.0' left from trail ℄ at station 71+14.00 and transition to 5.0' at 71+64.00.

Trailside face of the wall shall be offset 5.0' left from trail ℄ between stations 71+64.00 and 78+80.00.

Trailside face of the wall shall be offset 5.0' left from trail ℄ at station 78+80.00 and transition to 7.0' at 79+30.00.

Trailside face of the wall shall be offset 7.0' left from trail ℄ between stations 79+30.00 and 80+54.00.

All offsets are based on the details shown on Sheet S-5.

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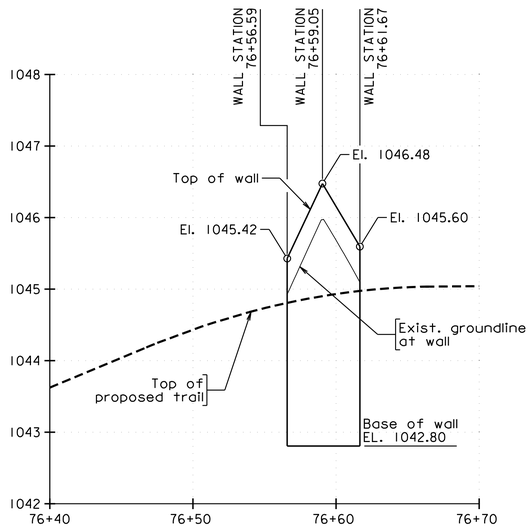
WEST ROANOKE RIVER GREENWAY - PHASE I
MSE RETAIN. STRUCTURE PROFILE
BTW STA. 61+00 AND 80+54
ROANOKE COUNTY, VA AND CITY OF SALEM, VA

Vertical Scale: 1" = 4'-0"
Horizontal Scale: 1" = 40'-0"
Commission Number: 3435A
Sheet No.: S-7

Notes:

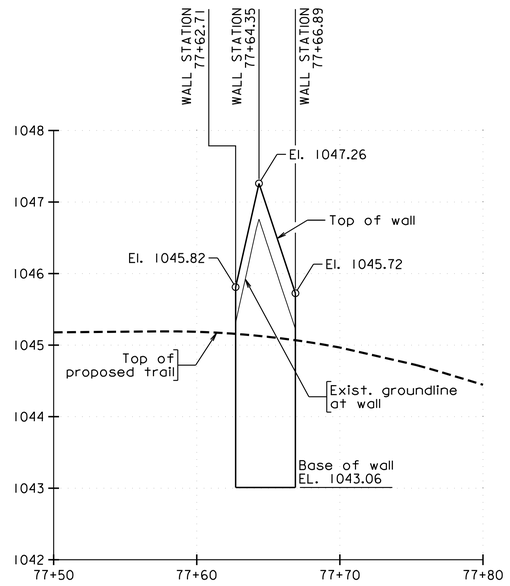
The retaining wall shall be constructed per VDOT Road and Bridge Standard RW-3 Concrete Gravity Retaining Walls Infinite Surcharge and Deck Surcharge - Loaded.



VDOT RW-3 WALL BETWEEN STA. 76+56 AND STA. 76+62

Trailside face of wall is offset 5'-0" right from trail ℄

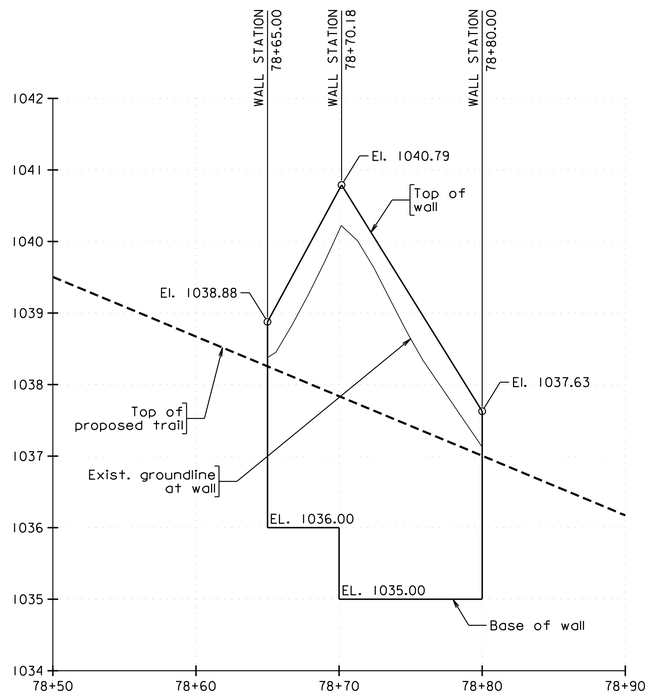
Vertical Scale: 1" = 1'-0"
Horizontal Scale: 1" = 5'-0"



VDOT RW-3 WALL BETWEEN STA. 77+62 AND STA. 77+67

Trailside face of wall is offset 5'-0" right from trail ℄

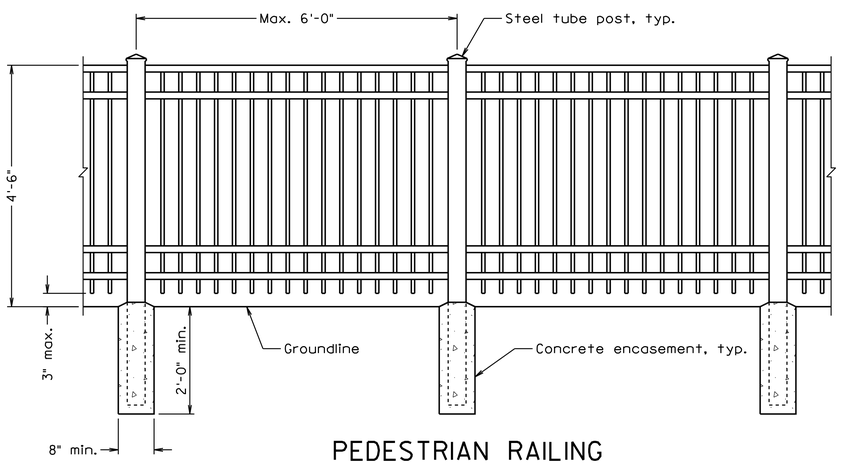
Vertical Scale: 1" = 1'-0"
Horizontal Scale: 1" = 5'-0"



VDOT RW-3 WALL BETWEEN STA. 78+65 AND STA. 78+80

Trailside face of wall is offset 5'-0" right from trail ℄

Vertical Scale: 1" = 1'-0"
Horizontal Scale: 1" = 5'-0"



PEDESTRIAN RAILING (HR-1 TYPE III BICYCLE RAILING - MODIFIED)

Not to Scale

Railing Notes:

1. Railing shall meet the requirements for VDOT Standard HR-1 Type III Bicycle Railing and will be paid for at the unit price bid for Handrail HR-1 Type III Modified. The unit price bid shall include all items required to install the railing (including the foundations), the finish of the railing, and the items listed in the VDOT Road and Bridge Specifications.
2. Railing style and finish and shall be approved by the Owner.
3. The Contractor shall submit drawings detailing all aspects of fabrication and installation of railing, including concrete encasement, and expansion joint location for approval by the Engineer prior to installation. Shop drawings shall be signed and sealed by a professional engineer, holding a valid license to practice engineering in the Commonwealth of Virginia.
4. All railing components and fasteners shall be galvanized in accordance with the current Road and Bridge Specifications. to achieve a uniform coating on all surfaces venting and drainage holes for galvanizing shall be included in the shop drawings.
5. All steel shall be hot dip galvanized. After galvanizing, all steel members shall be painted black with the following Tnemec paint system (or approved equal):
   Surface Preparation: SSPC-SP7 abrasive sweep blast.
   First Coat: Series N69 Black at 4.0-6.0 mils dft.
   Second Coat: Series 73 Urethane Black at 2.0-3.0 mils dft.
   Total Dry Film Thickness: 6.0-9.0 mils dft.
6. All fasteners shall be in accordance with ASTM A307, ASTM A563, and ASTM F844. All anchor bolts shall be in accordance with AASHTO M314, Grade 36.
7. Posts shall be mitered to match grade of trail.
8. Pedestrian railings shall match grade of trail.
9. All posts and pickets shall be set plumb.
10. Railings shall be grounded and effectively bonded. Grounding materials installation to be in accordance with ST'D FE-6.
11. Commercially available railing systems may be used in lieu of designing and fabricating the railing upon approval from the Owner. Documentation from the manufacturer verifying that the project requirements are met with the railing system shall be submitted with the installation drawings and approved by the Engineer in accordance with Notes 2 and 3.
12. Handrail to be in accordance with the latest edition of the Virginia Uniform Statewide Building Code.

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WEST ROANOKE RIVER GREENWAY - PHASE I

RW-3 WALL PROFILES (3) AND TYP. PEDESTRIAN RAILING DETAIL

ROANOKE COUNTY, VA AND CITY OF SALEM, VA

Vertical Scale: AS NOTED
Horizontal Scale: AS NOTED
Commission Number: 3435A
Sheet No.: S-8