

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 2016 Road and Bridge Standards (Rev. Sept. 2022) and 2020 Road and Bridge Specifications.
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.
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 _____ for Stormwater Site Statistics Table.
See Sheet _____ 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.

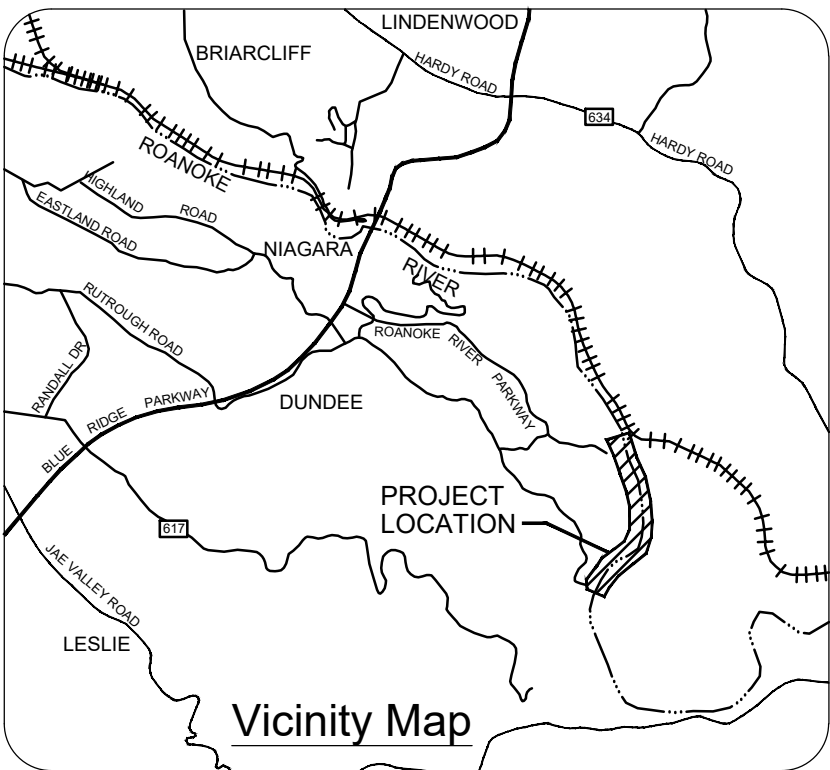


NAME OF DEVELOPMENT	ROANOKE RIVER GREENWAY THROUGH EXPLORE PARK		
MAGISTERIAL DISTRICT(S)	VINTON, COUNTY OF ROANOKE		
OWNER (name, address, telephone)	VIRGINIA RECREATIONAL FACILITY AUTHORITY, C/O DOUG BLOUNT, ASSISTANT COUNTY ADMINISTRATOR 1206 KESSLER MILL ROAD SALEM, VA 24153		
DEVELOPER (name, address, telephone)	COUNTY OF ROANOKE, ATTENTION DAVID HENDERSON 5204 BERNARD DRIVE ROANOKE, VA 24018		
ENGINEER, ARCHITECT OR SURVEYOR (name, address, telephone)	AECOM TECHNICAL SERVICES, INC. 10 S. JEFFERSON STREET, SUITE 1600 ROANOKE, VIRGINIA 24011 540-857-3100 FAX 540-857-3180		
TAX MAP NO(S)	080.00-05-24.00-0000, 080.00-05-26.00-0000, 080.00-05-27.00-0000, 080.00-05-29.00-0000, 080.00-05-30.00.0000, 080.00-05-31.00-0000		

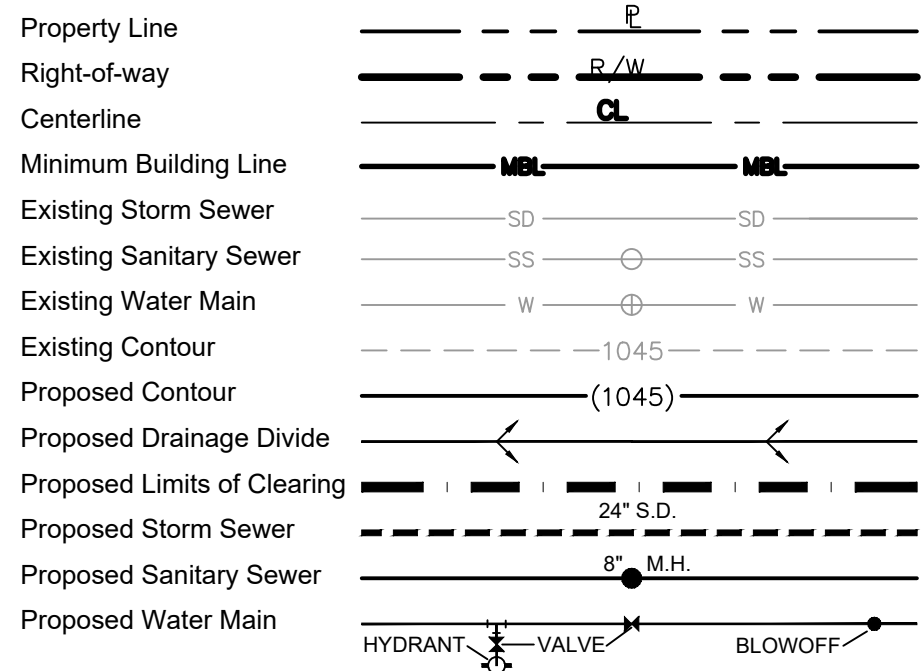
WATER AND SEWER NOTES

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.westernvwater.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 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: _____



LEGEND



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.

TRI-COLORED BAT TIME OF YEAR RESTRICTION

The Contractor shall comply with all guidance for the protection of selected wildlife resources, focusing on times of year during which certain species maybe most sensitive to human activities such as construction and land clearing. Guidance on when construction and tree removal should be restricted for the tri-colored bat on this project can be found from Virginia Department of Wildlife Resources and VDOT. Tree removal, cutting any tree limbs 3 inches or larger, and land clearing is only permitted from November 15th to March 31st.

PR #:	NOTES:
Revision Table	

1	COVERSHEET
2-9	SURVEY SHEETS
10-13	ALIGNMENT DATA SHEET
14	TYPICAL SECTIONS AND DETAILS SHEET
15-16	GRAVEL ROAD ALIGNMENT DATA AND PROFILES
17-23	PLAN & PROFILE SHEETS
24-25	DRAINAGE PROFILES SHEETS
26	DRAINAGE DETAILS SHEET
27-30	RIGHT-OF-WAY DATA SHEETS
31	ESC NOTES
32-33	ESC DETAILS
34-37	EROSION AND SEDIMENT CONTROL SHEETS
38-41	SIGNING SHEETS
XS100-XS117	CROSS SECTIONS

Sheet Index

SURVEY INFORMATION

Horizontal and vertical control surveys were performed in year: 2021
By: H & B Surveying

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: NAVD88

Source of topographic mapping is dated: 2021

Boundary was performed by H & B Surveying dated: 2021

Benchmark Information: 2021

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

QUANTITY & COST ESTIMATE

ITEM	QUANTITY	UNIT	UNIT PRICE	COST	BONDABLE
CLEARING AND GRUBBING		AC			
EXCAVATION		C.Y.			
EMBANKMENT		C.Y.			
CURB INLET DI-		EA			
CURB INLET DI-		EA			
MANHOLE MH-		EA			
MANHOLE MH-		EA			
-IN. CONCRETE PIPE, CLASS III		LF			
-IN. CONCRETE PIPE, CLASS IV		LF			
-IN. C.M. CULVERT		LF			
-IN. C.M. CULVERT		LF			
BOX CULVERT		LS			
PAVED SWALE		LF			
RIPRAP - CLASS		SF			
PERMANENT GRASS SWALE		LF			
-IN. CONCRETE ENDWALL EW-		EA			
-IN. END SECTION ES-		EA			
HEADER CURB & GUTTER CG-		LF			
CURB & GUTTER CG-		LF			
VALLEY GUTTER		EA			
GRAVEL BASE		SY			
GRAVEL SHOULDER		SY			
SURFACE TREATMENT		SY			
-IN. BIT. CONC.: TYPE B-		SY			
-IN. BIT. CONC.: TYPE S-		SY			
-IN. BASE MATERIAL		C.Y.			
-IN. SUBBASE MATERIAL		C.Y.			
TRAFFIC BARRICADE		EA			
8" WATER LINE		LF			
6" WATER LINE		LF			
FIRE HYDRANT ASSEMBLIES		EA			
BLOW OFFS W/ VAULT, FRAME & COVER		EA			
-IN. GATE VALVES, W/ VAULT, FRAME & COVER		EA			
-IN. GATE VALVES, W/ VAULT, FRAME & COVER		EA			
8" SANITARY SEWER		LF			
STANDARD MANHOLE W/FRAME & COVER		EA			
SAMPLING MANHOLE/PORT		EA			
LANDSCAPING		LS			
AMENITIES (INCLUDING BUT NOT LIMITED TO TRAILS, ETC...)		LS			
STORMWATER MANAGEMENT		LS			
AS-BUILT PLANS (STORM SEWER SYSTEMS)		LS			
AS-BUILT PLANS (STORMWATER MANAGEMENT)		LS			
10% CONTINGENCY					
ESTIMATED TOTAL					

BY SEALING THE PLANS, THE DESIGN PROFESSIONAL HEREBY CERTIFIES THAT THE FOREGOING ESTIMATE REFLECTS THE CURRENT IMPROVEMENT COSTS OF THIS PROJECT.



AECOM TECHNICAL SERVICES, INC.
10 S. JEFFERSON STREET, SUITE 1600
ROANOKE, VIRGINIA 24011
PHONE: 540-857-3100
FAX 540-857-3180

DRAWN BY: BJJ

DESIGNED BY: BJJ

CHECKED BY: DKB

DATE: NOVEMBER 2023

REVISIONS:

ROANOKE RIVER GREENWAY THROUGH EXPLORE PARK

VDOT Project #: 9999-080-934, P101, C501

UPC #: 113567

FEDERAL PN: RSTP-5128(508)

Roanoke, Virginia

TIER 1 PROJECT

LOCALLY ADMINISTERED PROJECTS

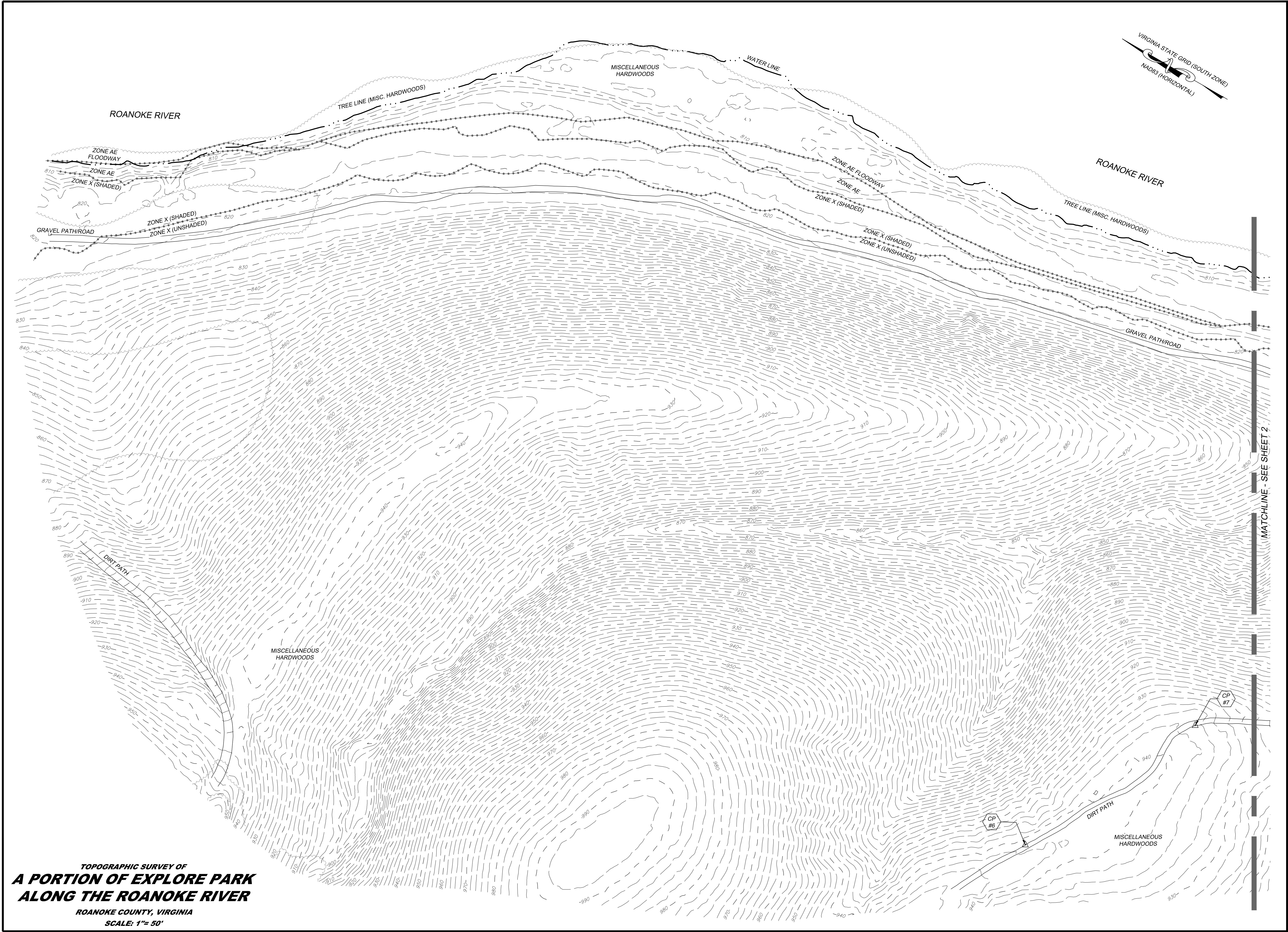
ROANOKE COUNTY
NAME OF LOCALITY

DAVID M. HENDERSON

RECOMMENDED FOR APPROVAL FOR CONSTRUCTION

COUNTY ENGINEER

DATE TITLE OF POSITION



TOPOGRAPHIC SURVEY OF
A PORTION OF EXPLORE PARK
ALONG THE ROANOKE RIVER
ROANOKE COUNTY, VIRGINIA
SCALE: 1"= 50'

Sheet Status:
FINAL
Submittal Date:
11-24-2021

Job #: AE2002.01
Date: 06-15-2021
Sheet: 1 of 8
Drawn By: TJW
Checked By: JLN

Rev. #	Rev. Date
1	11-24-2021

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COMMONWEALTH OF VIRGINIA
11-24-2021
Jessica L. Nash
Lic. No. 002929
LAND SURVEYOR

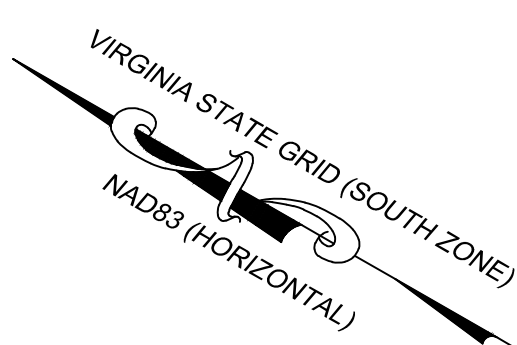
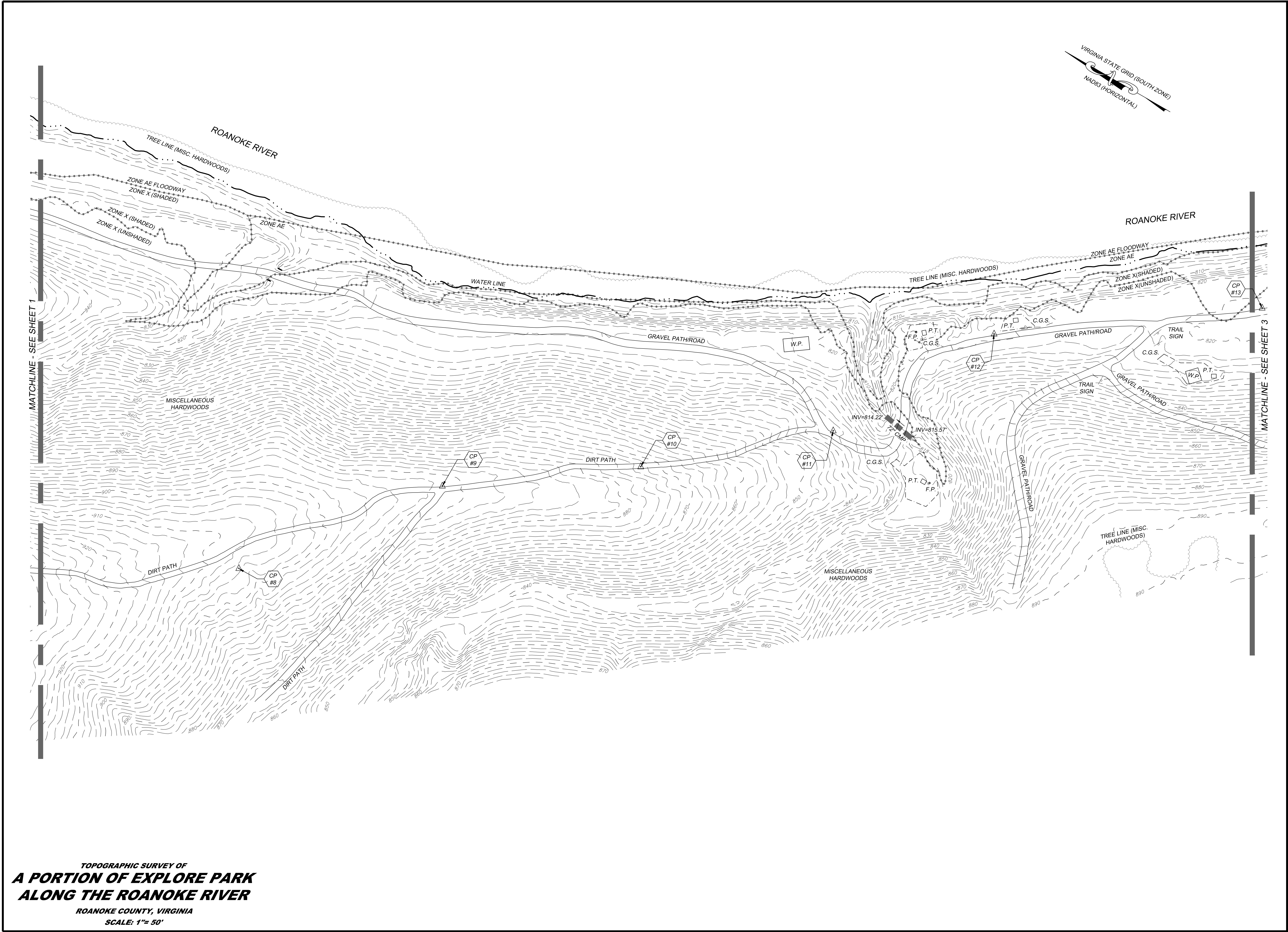
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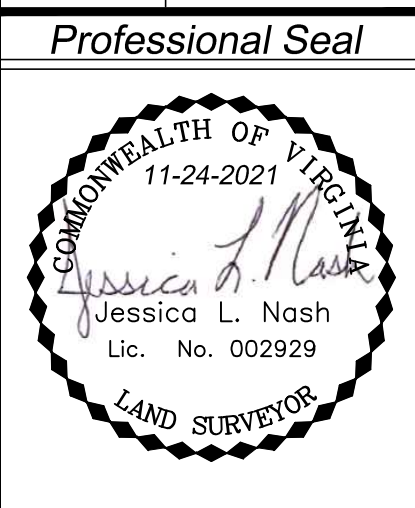
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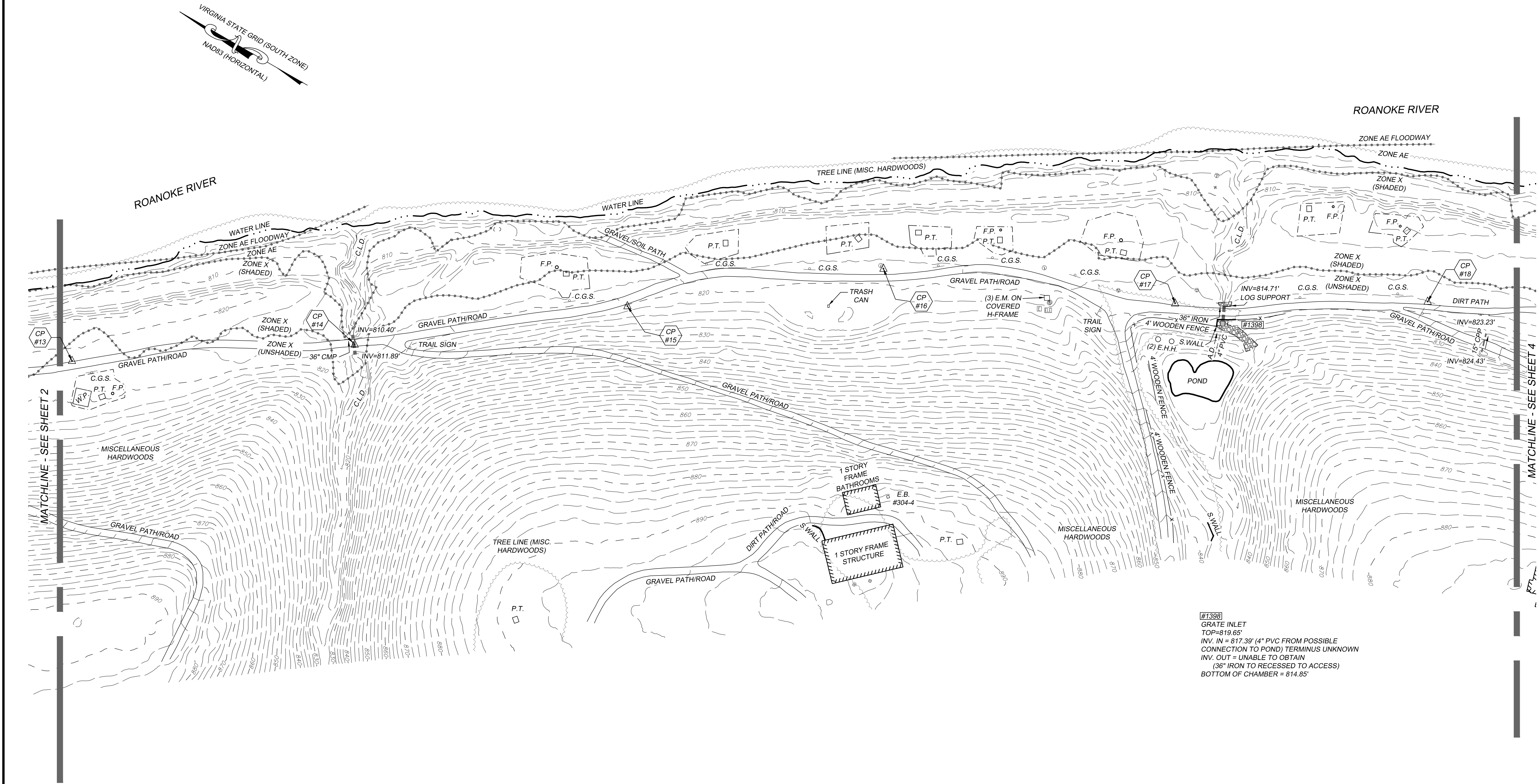


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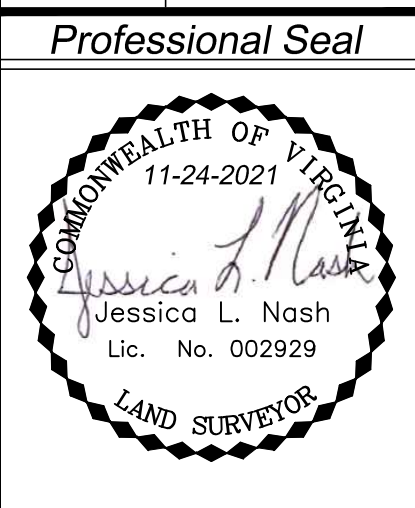


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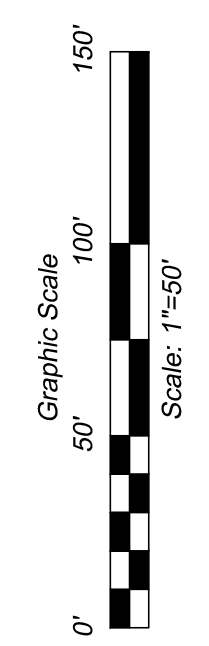
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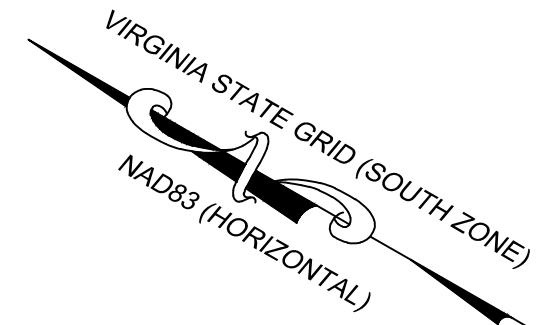
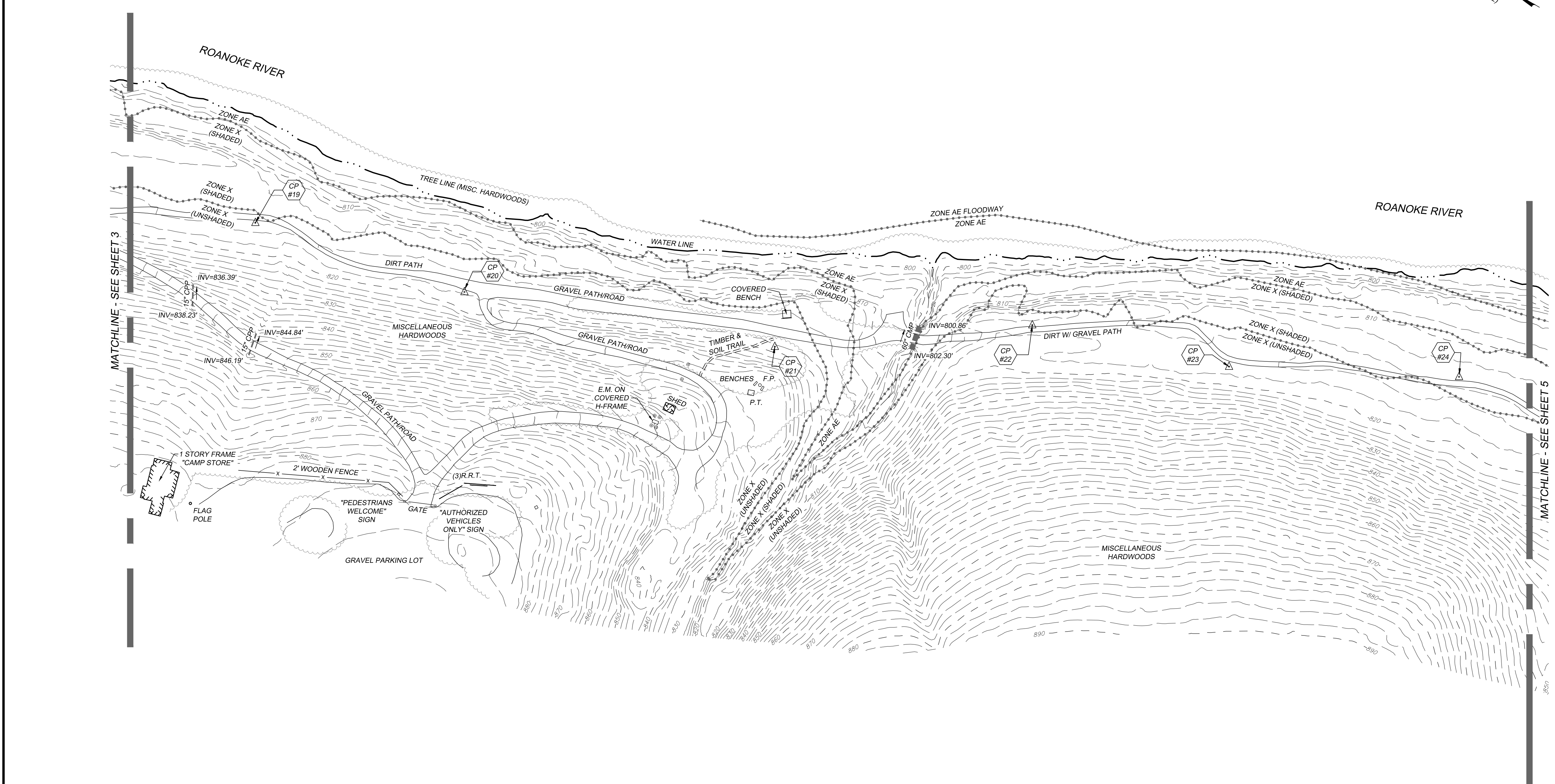
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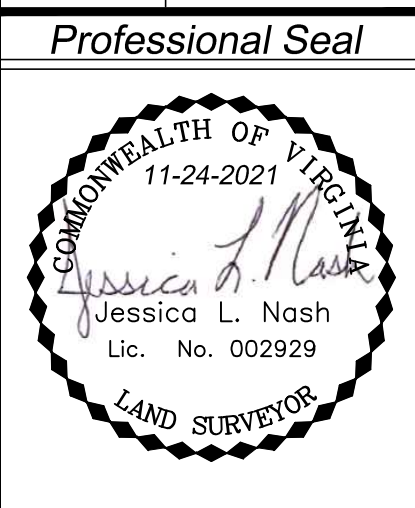
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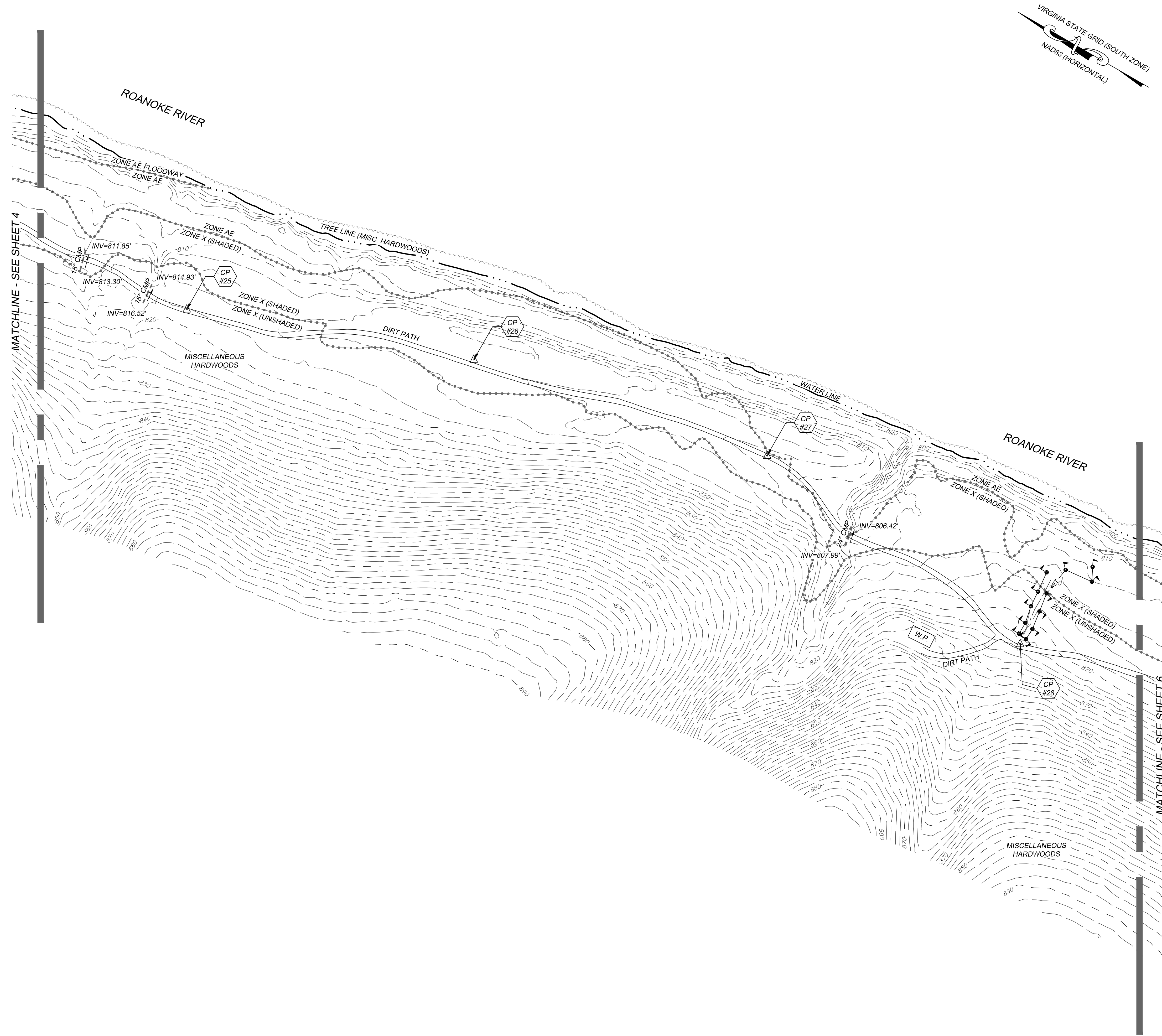
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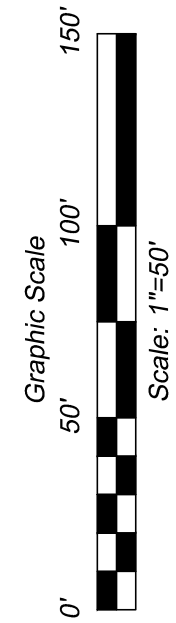
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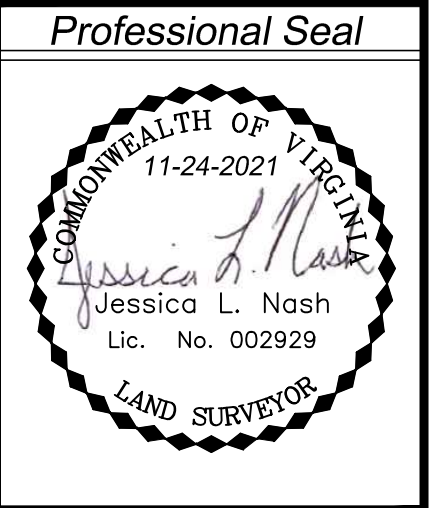


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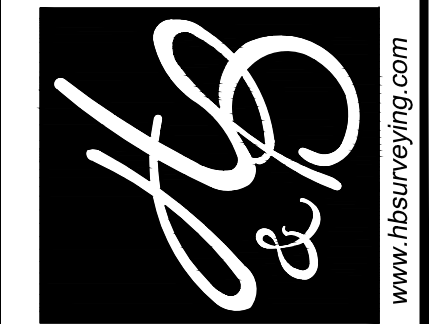


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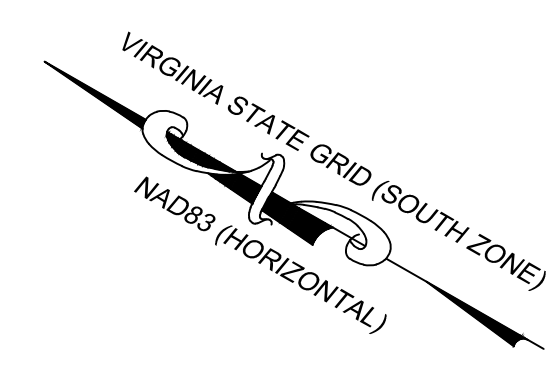
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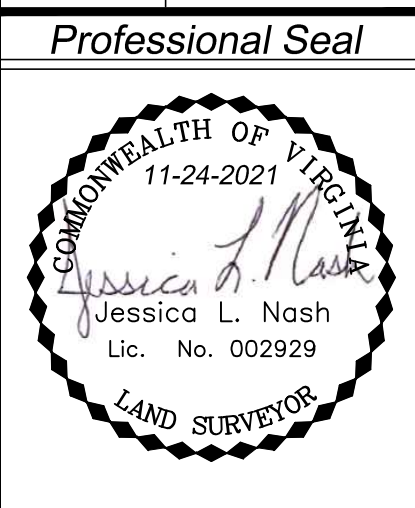
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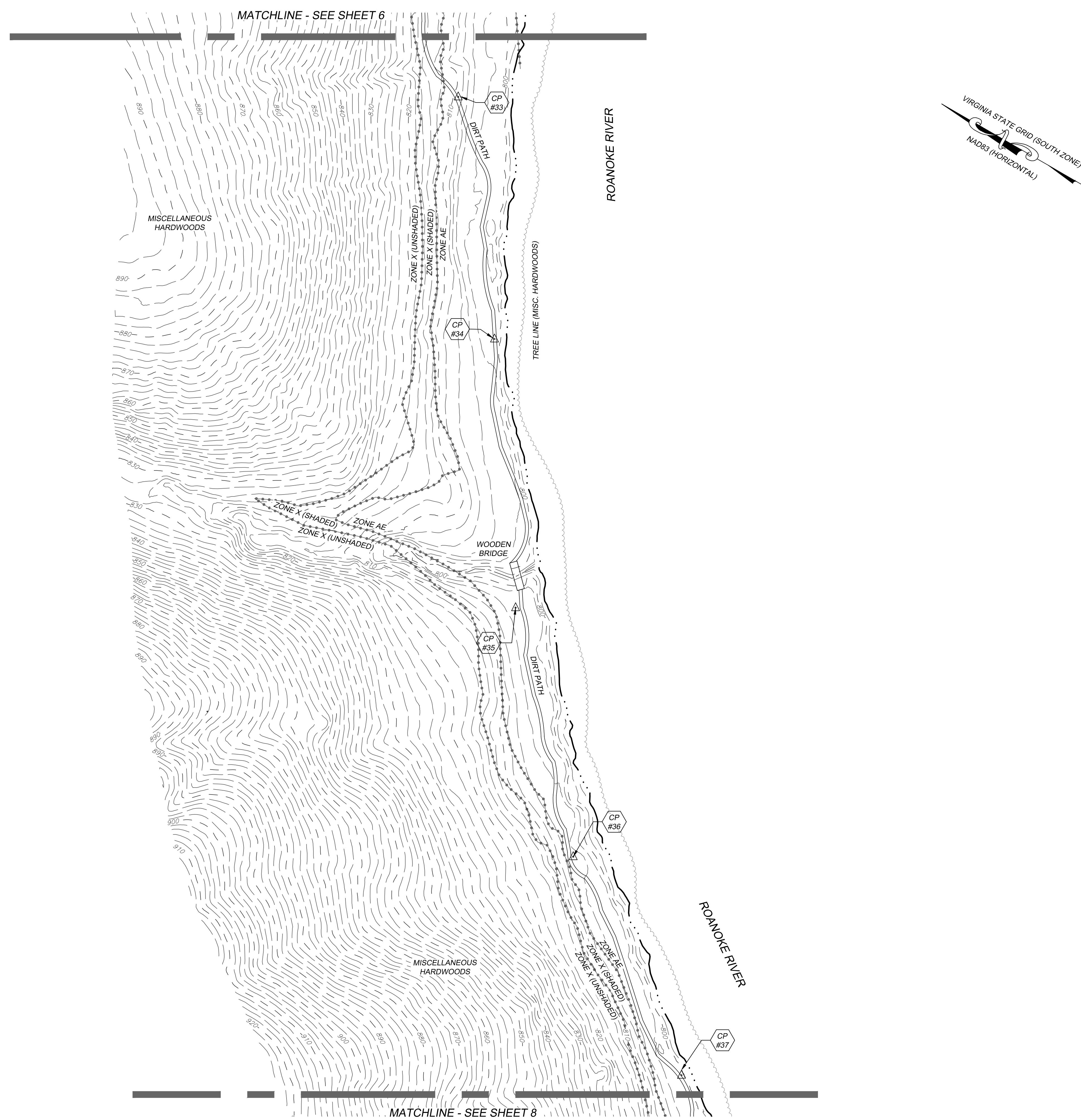
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H & B CONTROL POINT TABLE				
POINT #	NORTHING	EASTING	ELEVATION	DESCRIPTION
3	3616188.64	11088538.70	984.29	T-BAR SET
4	3615999.67	11088766.97	966.11	T-BAR SET
5	3615777.91	11088898.45	955.26	T-BAR SET
6	3615692.22	11089168.46	941.59	T-BAR SET
7	3615583.80	11089401.33	936.24	T-BAR SET
8	3615311.67	11089566.05	904.81	T-BAR SET
9	3615144.39	11089779.95	891.29	T-BAR SET
10	3614943.62	11089923.06	872.95	T-BAR SET
11	3614759.54	11090080.45	836.61	T-BAR SET
12	3614646.79	11090283.50	819.96	T-BAR SET
13	3614375.46	11090476.75	819.74	T-BAR SET
14	3614134.43	11090634.71	816.43	T-BAR SET
15	3613913.42	11090807.03	819.98	T-BAR SET
16	3613706.73	11090970.09	819.38	T-BAR SET
17	3613431.88	11091087.64	819.51	T-BAR SET
18	3613210.05	11091217.39	817.96	T-BAR SET
19	3613012.84	11091306.53	814.82	T-BAR SET
20	3612798.17	11091350.60	817.65	T-BAR SET
21	3612503.30	11091457.56	818.04	T-BAR SET
22	3612291.94	11091604.08	817.27	T-BAR SET
23	3612101.61	11091665.99	816.34	T-BAR SET
24	3611898.20	11091771.40	813.18	T-BAR SET
25	3611661.01	11091790.26	817.88	T-BAR SET
26	3611389.51	11091889.20	814.71	T-BAR SET
27	3611090.02	11091951.78	810.76	T-BAR SET
28	3610779.39	11091915.22	823.68	T-BAR SET
29	3610453.99	11091990.35	812.19	T-BAR SET
30	3610193.85	11091979.67	811.48	T-BAR SET
31	3609964.76	11091917.58	811.18	T-BAR SET
32	3609823.72	11091785.08	814.69	T-BAR SET
33	3609671.87	11091639.54	809.41	T-BAR SET
34	3609529.92	11091460.91	800.96	T-BAR SET
35	3609387.86	11091253.66	803.32	T-BAR SET
36	3609225.50	11091079.37	805.40	T-BAR SET
37	3609036.37	11090953.24	801.13	T-BAR SET
38	3608889.53	11090819.29	800.03	T-BAR SET
39	3608687.96	11090648.06	803.89	T-BAR SET
40	3608802.46	11090135.02	857.35	T-BAR SET

LEGEND

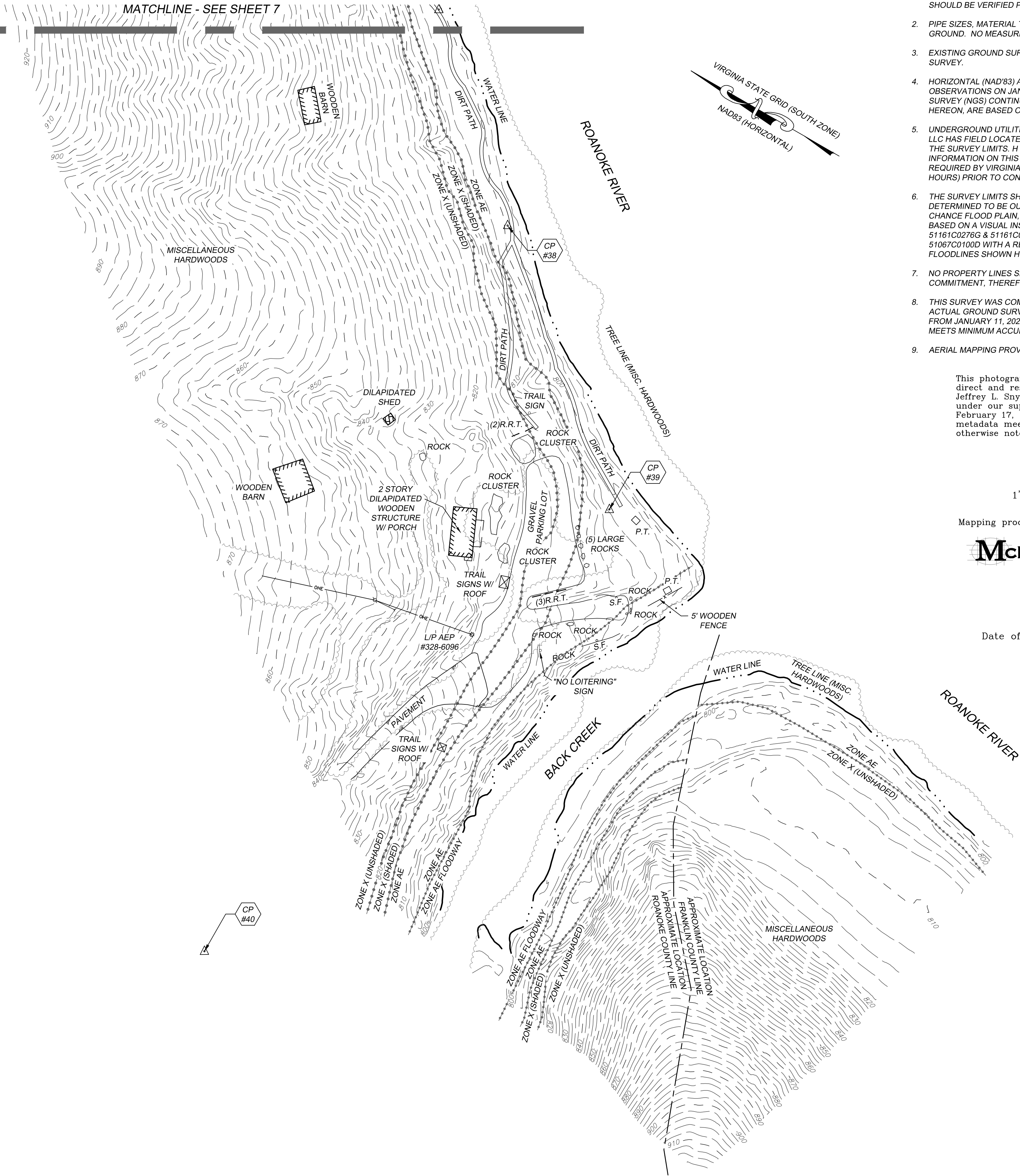
These standard symbols will be found in the drawing.

- PRIMARY CONTROL (CP)
- STORM INLET GRATE
- POWER POLE
- LIGHT POLE
- ELECTRICAL BOX
- ELECTRICAL PEDESTAL
- ELECTRICAL METER
- ELECTRICAL OUTLET CONNECTION
- WATER SPIGOT
- WETLAND FLAG
- BOLLARD or POST
- SIGN

- STONE WALL
- WOODEN PLATFORM
- PICNIC TABLE
- FIRE PIT
- CAMPGROUND SIGN
- ELECTRICAL METER
- ELECTRICAL BOX
- ELECTRICAL HAND HOLE
- RAILROAD TIE BEAM
- CENTERLINE OF DITCH
- SILT FENCE
- INVERT
- CORRUGATED METAL PIPE
- CORRUGATED PLASTIC PIPE
- DUCTILE IRON PIPE
- POLYVINYL CHLORIDE PIPE
- APPROXIMATE DIRECTION

- BUILDING LINE
- EDGE OF WATER
- EDGE OF CAMPGROUND AREA
- UNDERGROUND STORM PIPE
- FEMA DEFINED FLOODLINE (APPROXIMATE LOCATION)
- EDGE OF ASPHALT
- WETLAND FLAGGED LINE
- OVERHEAD ELECTRICAL LINES
- WOODSLINE
- FENCE LINE
- SILT FENCE
- RIPRAP

TOPOGRAPHIC SURVEY OF
A PORTION OF EXPLORE PARK
ALONG THE ROANOKE RIVER
ROANOKE COUNTY, VIRGINIA
SCALE: 1"= 50'



NOTES:

- INVERTS FOR PIPES AND STRUCTURES SHOWN HEREON ARE BASED ON FIELD MEASUREMENTS, HOWEVER THEY SHOULD BE VERIFIED PRIOR TO CONSTRUCTION.
- PIPE SIZES, MATERIAL TYPE AND INVERT ELEVATIONS AS INDICATED ARE BASED UPON OBSERVATIONS MADE ABOVE GROUND. NO MEASUREMENTS HAVE BEEN PERFORMED BY PERSONNEL IN A CONFINED SPACE SITUATION.
- EXISTING GROUND SURFACE LOCATION IS A MERGER BETWEEN AERIAL MAPPING AND A CONVENTIONAL INSTRUMENT SURVEY.
- HORIZONTAL (NAD'83) AND VERTICAL (NAVD'88) DATUM ESTABLISHED THROUGH REAL TIME KINEMATIC (RTK) GPS OBSERVATIONS ON JANUARY 11, 2021. DIFFERENTIAL CORRECTIONS WERE DERIVED FROM NATIONAL GEODETIC SURVEY (NGS) CONTINUALLY OPERATING REFERENCE STATION (CORS) "LS04". COORDINATE VALUES, IF SHOWN HEREON, ARE BASED ON VIRGINIA STATE GRID, SOUTH ZONE.
- UNDERGROUND UTILITIES WERE NOT DESIGNATED (PAINTED) DURING THIS SURVEY. H & B SURVEYING AND MAPPING, LLC HAS FIELD LOCATED ANY ABOVEGROUND UTILITY STRUCTURES OBSERVED ALONG THE TRAVERSED PATH THROUGH THE SURVEY LIMITS. H & B IS NOT RESPONSIBLE FOR THE LOCATION OF UNDERGROUND UTILITY LINES. UTILITY INFORMATION ON THIS DRAWING WILL NEED TO BE FIELD VERIFIED PRIOR TO CONSTRUCTION. INDIVIDUALS ARE REQUIRED BY VIRGINIA LAW TO CONTACT MISS UTILITY OF VIRGINIA AT 1-800-552-7001 (OR 811) 2 BUSINESS DAYS (48 HOURS) PRIOR TO CONSTRUCTION OR EXCAVATION ACTIVITIES.
- THE SURVEY LIMITS SHOWN HEREON FALL IN THE FOLLOWING FLOOD HAZARD ZONES: "X"(UNSHADED)-AREAS DETERMINED TO BE OUTSIDE OF THE 0.2% ANNUAL CHANCE FLOOD PLAIN, "X"(SHADED)-AREAS IN THE 0.2% ANNUAL CHANCE FLOOD PLAIN, AND "AE ELEVATION"-BASE FLOOD ELEVATIONS DETERMINED (NAVD'88). THIS DETERMINATION IS BASED ON A VISUAL INSPECTION OF FEMA FLOOD INSURANCE RATE MAP, ROANOKE COUNTY MAP NUMBERS 51161C0276G & 51161C0277G WITH A REVISED DATE OF SEPTEMBER 28, 2007 AND FRANKLIN COUNTY MAP NUMBER 51067C0100D WITH A REVISED DATE OF JANUARY 6, 2010 AND HAS NOT BEEN VERIFIED BY FIELD ELEVATIONS. FLOODLINES SHOWN HEREON WERE SCALED FROM SAID MAPS AND SHOULD BE CONSIDERED APPROXIMATE.
- NO PROPERTY LINES SHOWN AT THIS TIME. THIS SURVEY WAS PREPARED WITHOUT THE BENEFIT OF A TITLE COMMITMENT, THEREFORE ALL EASEMENTS MAY NOT BE SHOWN ON THIS SURVEY.
- THIS SURVEY WAS COMPLETED UNDER THE DIRECT AND RESPONSIBLE CHARGE OF JESSICA L. NASH, LS FROM AN ACTUAL GROUND SURVEY MADE UNDER HER SUPERVISION. THE IMAGERY AND/OR ORIGINAL DATA WAS OBTAINED FROM JANUARY 11, 2021 THROUGH JUNE 14, 2021. THIS PLAT, MAP, OR DIGITAL GEOSPATIAL DATA INCLUDING METADATA MEETS MINIMUM ACCURACY STANDARDS UNLESS OTHERWISE NOTED.
- AERIAL MAPPING PROVIDED BY:

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 on February 17, 2021 and this digital geospatial data including metadata meets minimum accuracy standards unless otherwise noted. Prepared for H& B Surveying.

Explore Park

1"=50' scale with 2' contours

Mapping produced using Photogrammetric Methods by:

McKENZIE SNYDER, INC.

Purcellville, VA

MSI Project # 21-010

Date of Photography : February 17, 2021

Sheet Status:

FINAL

Submittal Date:

11-24-2021

Job #: AE2002.01

Date: 06-15-2021

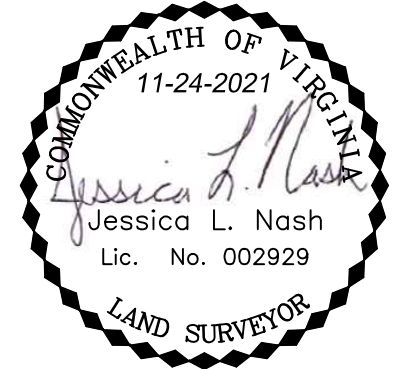
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Drawn By: TJW

Checked By: JLN

Rev. #	Rev. Date
1	11-24-2021

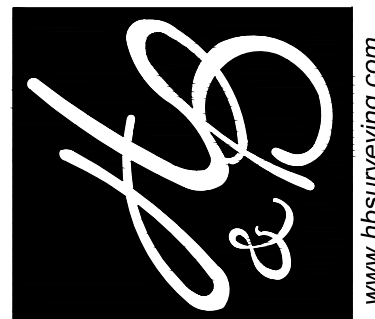
Professional Seal

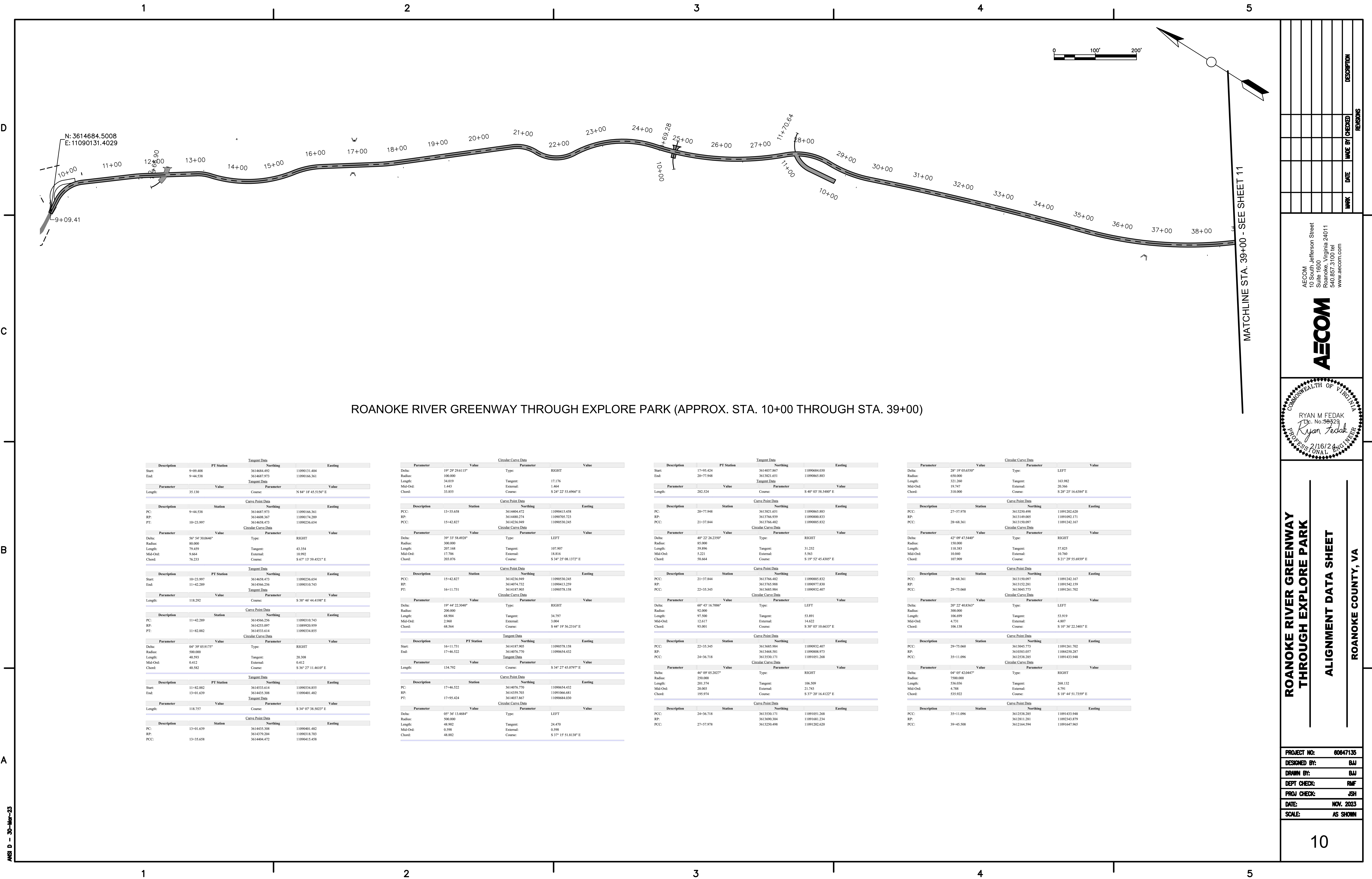


H&B Surveying and Mapping, LLC
insightful solutions, quality service
A DBE/WBE SWaM Certified Business

2105 Electric Road SW, Suite 103
Roanoke, VA 23224
804.330.3781 Office 804.859.5330 Fax

Survey
Produced
at Roanoke
Office Location





ROANOKE RIVER GREENWAY THROUGH EXPLORE PARK (APPROX. STA. 10+00 THROUGH STA. 39+00)

Description		PT Station		Tangent Data		Northing		Easting	
Start:		9+09.408		3614684.492		11090131.404			
End:		9+44.538		3614687.973		11090166.361			
Parameter		Value		Parameter		Value			
Length:		35.130		Course:		N 84° 18' 45.5156" E			
Description		Station		Curve Point Data		Northing		Easting	
PC:		9+44.538		3614687.973		11090166.361			
RP:				3614688.367		11090174.289			
PT:		10+23.997		3614688.473		11090236.654			
Parameter		Value		Parameter		Value			
Delta:		56° 54' 30.0646"		Type:		RIGHT			
Radius:		80.000							
Length:		79.459		Tangent:		43.354			
Mid-Ord:		9.664		External:		10.992			
Chord:		76.233		Course:		S 67° 13' 59.4521" E			
Description		PT Station		Tangent Data		Northing		Easting	
Start:		10+23.997		3614688.473		11090236.654			
End:		11+42.289		3614586.256		11090310.743			
Parameter		Value		Parameter		Value			
Length:		118.292		Course:		S 38° 46' 44.4198" E			
Description		Station		Curve Point Data		Northing		Easting	
PC:		11+42.289		3614586.256		11090310.743			
RP:				3614233.097		11089920.959			
PT:		11+82.882		3614533.614		11090334.855			
Parameter		Value		Parameter		Value			
Delta:		04° 39' 05.9175"		Type:		RIGHT			
Radius:		500.000							
Length:		40.593		Tangent:		20.308			
Mid-Ord:		0.412		External:		0.412			
Chord:		40.582		Course:		S 36° 27' 11.4610" E			
Description		PT Station		Tangent Data		Northing		Easting	
Start:		11+82.882		3614533.614		11090334.855			
End:		13+01.639		3614435.308		11090401.482			
Parameter		Value		Parameter		Value			
Length:		118.757		Course:		S 34° 07' 38.5023" E			
Description		Station		Curve Point Data		Northing		Easting	
PC:		13+01.639		3614435.308		11090401.482			
RP:				3614379.204		11090518.703			
PCC:		13+35.658		3614404.472		11090415.458			

Circular Curve Data				
Parameter	Value	Parameter	Value	
Delta:	19° 29' 29.6115"	Type:	RIGHT	
Radius:	100.000			
Length:	34.019	Tangent:	17.176	
Mid-Ord:	1.443	External:	1.464	
Chord:	33.855	Course:	S 24° 22' 53.6966° E	
Curve Point Data				
Description	Station	Northing	Easting	
PCC:	13+35.658	3614404.472	1109041.5458	
RP:		3614480.274	11090705.723	
PCC:	15+42.827	3614236.949	11090530.245	
Circular Curve Data				
Parameter	Value	Parameter	Value	
Delta:	39° 33' 58.4928"	Type:	LEFT	
Radius:	300.000			
Length:	207.168	Tangent:	107.907	
Mid-Ord:	17.706	External:	18.816	
Chord:	203.076	Course:	S 34° 25' 08.1372° E	
Curve Point Data				
Description	Station	Northing	Easting	
PCC:	15+42.827	3614236.949	11090530.245	
RP:		3614074.732	11090413.259	
PT:	16+11.731	3614187.905	11090578.158	
Circular Curve Data				
Parameter	Value	Parameter	Value	
Delta:	19° 44' 22.3640"	Type:	RIGHT	
Radius:	200.000			
Length:	68.904	Tangent:	34.797	
Mid-Ord:	2.960	External:	3.004	
Chord:	68.564	Course:	S 44° 19' 56.2316° E	
Tangent Data				
Description	PT Station	Northing	Easting	
Start:	16+11.731	3614187.905	11090578.158	
End:	17+46.522	3614076.770	11090654.432	
Tangent Data				
Parameter	Value	Parameter	Value	
Length:	134.792	Course:	S 34° 27' 45.0797° E	
Curve Point Data				
Description	Station	Northing	Easting	
PC:	17+46.522	3614076.770	11090654.432	
RP:		3614359.703	11091066.681	
PT:	17+95.424	3614037.867	11090684.030	
Circular Curve Data				
Parameter	Value	Parameter	Value	
Delta:	05° 30' 13.4684"	Type:	LEFT	
Radius:	500.000			
Length:	48.902	Tangent:	24.470	
Mid-Ord:	0.598	External:	0.598	
Chord:	48.882	Course:	S 37° 15' 51.8138° E	

Description		PT Station	Tangent Data		
			Northing		Easting
Start:		17+95.424	3614037.867		11090684.030
End:		20+77.948	3613821.651		11090665.883
Parameter		Value	Tangent Data		Value
Length:		282.524	Course:		S 40° 03' 58.5489" E
Curve Point Data					
Description		Station	Northing		Easting
PC:		20+77.948	3613821.651		11090665.883
RP:			3613766.939		11090800.833
PCC:		21+37.844	3613766.482		11090885.832
Parameter		Value	Circular Curve Data		Parameter
			Parameter		Value
Delta:		40° 22' 26.2350"	Type:		RIGHT
Radius:		85.000			
Length:		99.896	Tangent:		31.252
Mid-Ord:		5.221	External:		5.563
Chord:		58.664	Course:		S 19° 52' 45.4305" E
Curve Point Data					
Description		Station	Northing		Easting
PCC:		21+37.844	3613766.482		11090885.832
RP:			3613765.988		11090977.830
PCC:		22+35.345	3613685.984		11090932.407
Parameter		Value	Circular Curve Data		Parameter
			Parameter		Value
Delta:		60° 43' 16.7006"	Type:		LEFT
Radius:		92.000			
Length:		97.500	Tangent:		53.891
Mid-Ord:		12.617	External:		14.622
Chord:		93.001	Course:		S 30° 03' 10.6633" E
Curve Point Data					
Description		Station	Northing		Easting
PCC:		22+35.345	3613685.984		11090932.407
RP:			3613468.581		11090808.973
PCC:		24+36.718	3613530.171		11091051.268
Parameter		Value	Circular Curve Data		Parameter
			Parameter		Value
Delta:		46° 09' 05.2027"	Type:		RIGHT
Radius:		250.000			
Length:		201.374	Tangent:		106.509
Mid-Ord:		20.003	External:		21.743
Chord:		195.974	Course:		S 37° 20' 16.4122" E
Curve Point Data					
Description		Station	Northing		Easting
PCC:		24+36.718	3613530.171		11091051.268
RP:			3613609.304		11091681.234
PCC:		27+57.978	3613250.498		11091202.620

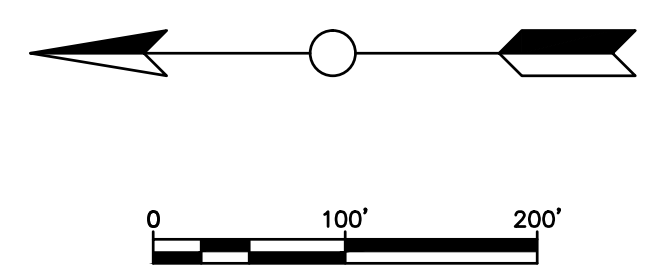
Circular Curve Data				
Parameter	Value	Parameter	Value	
Delta:	28° 19' 05.6550"	Type:	LEFT	
Radius:	650.000			
Length:	321.260	Tangent:	163.982	
Mid-Ord:	19.747	External:	20.366	
Chord:	318.000	Course:	S 28° 25' 16.6384" E	
Curve Point Data				
Description	Station	Northing	Easting	
PCC:	27+57.978	3613250.498	11091202.620	
RP:		3613149.005	11091092.171	
PCC:	28+68.361	3613150.097	11091242.167	
Circular Curve Data				
Parameter	Value	Parameter	Value	
Delta:	42° 09' 47.5440"	Type:	RIGHT	
Radius:	150.000			
Length:	110.383	Tangent:	57.825	
Mid-Ord:	10.040	External:	10.760	
Chord:	107.909	Course:	S 21° 29' 55.6939" E	
Curve Point Data				
Description	Station	Northing	Easting	
PCC:	28+68.361	3613150.097	11091242.167	
RP:		3613152.281	11091342.159	
PCC:	29+75.060	3613045.773	11091261.702	
Circular Curve Data				
Parameter	Value	Parameter	Value	
Delta:	20° 22' 40.8363"	Type:	LEFT	
Radius:	300.000			
Length:	106.699	Tangent:	53.919	
Mid-Ord:	4.731	External:	4.807	
Chord:	106.138	Course:	S 10° 36' 22.3401" E	
Curve Point Data				
Description	Station	Northing	Easting	
PCC:	29+75.060	3613045.773	11091261.702	
RP:		3610383.057	11084250.287	
PCC:	35+11.096	3612538.285	11091433.948	
Circular Curve Data				
Parameter	Value	Parameter	Value	
Delta:	04° 05' 42.0447"	Type:	RIGHT	
Radius:	7500.000			
Length:	536.056	Tangent:	268.132	
Mid-Ord:	4.788	External:	4.791	
Chord:	535.922	Course:	S 18° 44' 51.7359" E	
Curve Point Data				
Description	Station	Northing	Easting	
PCC:	35+11.096	3612538.285	11091433.948	
RP:		3612811.281	11092343.879	
PCC:	39+45.508	3612164.594	11091647.965	

ROANOKE RIVER GREENWAY
THROUGH EXPLORE PARK

ALIGNMENT DATA SHEET

ROANOKE COUNTY, VA

PROJECT NO:	60847135
DESIGNED BY:	BAJ
DRAWN BY:	BAJ
DEPT CHECK:	RMF
PROJ CHECK:	JSH
DATE:	NOV. 2023
SCALE:	AS SHOWN



C

		Tangent Data			
Description	PT Station	Northing		Easting	
Start:	45+85.942	3611559.435		11091819.906	
End:	46+31.609	3611521.298		11091845.028	
Parameter	Value	Parameter		Parameter	Value
Length:	45.668	Course:	S 33° 22' 24.0856° E		
Curve Point Data					
Description	Station	Northing		Easting	
PC:	46+31.609	3611521.298		11091845.028	
RP:		3611438.784		11091719.762	
PT:	46+87.795	3611469.745		11091866.532	
Parameter	Value	Parameter		Parameter	Value
Delta:	21° 27' 41.2023°	Type:	RIGHT		
Radius:	150.000	Tangent:	28.426		
Length:	56.186	External:	2.670		
Mid-Ord:	2.623	Course:	S 22° 38' 33.4844° E		
Chord:	55.858				
Tangent Data					
Description	PT Station	Northing		Easting	
Start:	46+87.795	3611469.745		11091866.532	
End:	48+17.015	3611343.307		11091893.204	
Parameter	Value	Parameter		Parameter	Value
Length:	129.220	Course:	S 11° 54' 42.8833° E		
Curve Point Data					
Description	Station	Northing		Easting	
PC:	48+17.015	3611343.307		11091893.204	
RP:		3611405.230		11092186.744	
PT:	48+50.724	3611310.784		11091901.998	
Parameter	Value	Parameter		Parameter	Value
Delta:	06° 26' 16.8537°	Type:	LEFT		
Radius:	300.000	Tangent:	16.872		
Length:	33.709	External:	0.474		
Mid-Ord:	0.473	Course:	S 15° 07' 51.3102° E		
Chord:	33.692				
Tangent Data					
Description	PT Station	Northing		Easting	
Start:	48+50.724	3611310.784		11091901.998	
End:	49+21.635	3611241.479		11091924.323	
Parameter	Value	Parameter		Parameter	Value
Length:	70.911	Course:	S 18° 20' 59.7370° E		
Curve Point Data					
Description	Station	Northing		Easting	
PC:	49+21.635	3611241.479		11091924.323	
RP:		3611196.256		11091781.950	
PT:	49+39.096	3611226.624		11091928.844	

11

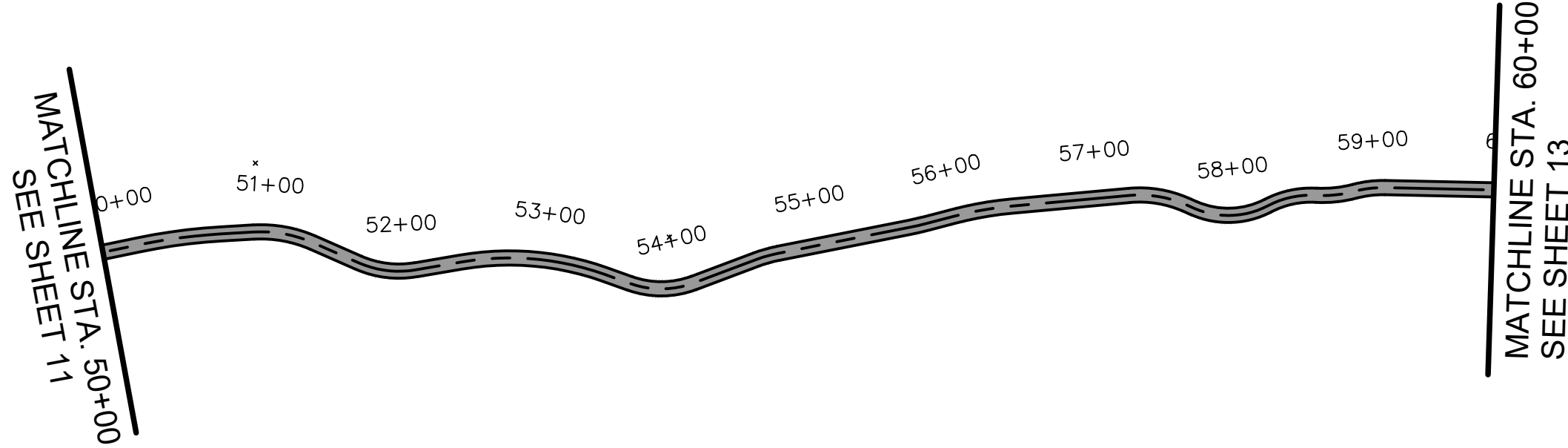
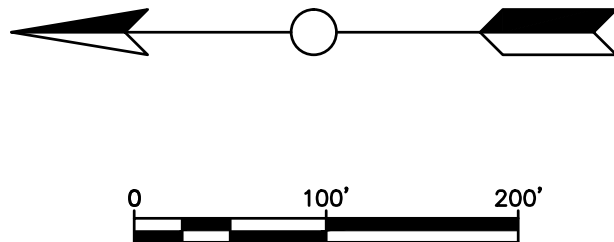
D

C

B

A

ANSI D - 30-Mar-23



ROANOKE RIVER GREENWAY THROUGH EXPLORE PARK (APPROX. STA. 50+00 THROUGH STA. 60+00)

Circular Curve Data				
Parameter	Value	Parameter	Value	
Delta:	06° 40' 10.2453"	Type:	RIGHT	
Radius:	150.000			
Length:	17.461	Tangent:	8.740	
Mid-Ord:	0.254	External:	0.254	
Chord:	17.451	Course:	S 15° 00' 54.6144" E	
Tangent Data				
Description	PT Station	Northing	Easting	
Start:	49+39.096	3611226.624	11091928.844	
End:	50+08.856	3611158.308	11091942.967	
Circular Curve Data				
Parameter	Value	Parameter	Value	
Length:	69.760	Course:	S 11° 40' 49.4917" E	
Curve Point Data				
Description	Station	Northing	Easting	
PC:	50+08.856	3611158.308	11091942.967	
RP:	50+07.188	3611077.327	11091951.914	
PT:	50+67.188	3611106.527	11091950.577	
Circular Curve Data				
Parameter	Value	Parameter	Value	
Delta:	08° 21' 19.5005"	Type:	RIGHT	
Radius:	400.000			
Length:	58.332	Tangent:	29.218	
Mid-Ord:	1.063	External:	1.066	
Chord:	58.280	Course:	S 07° 30' 09.7415" E	
Tangent Data				
Description	PT Station	Northing	Easting	
Start:	50+67.188	3611106.527	11091950.577	
End:	50+90.249	3611077.505	11091951.914	
Circular Curve Data				
Parameter	Value	Parameter	Value	
Length:	23.061	Course:	S 03° 19' 29.9912" E	
Curve Point Data				
Description	Station	Northing	Easting	
PC:	50+90.249	3611077.505	11091951.914	
RP:	51+32.754	3611034.060	11091944.453	
PT:	51+32.754	3611034.060	11091944.453	
Circular Curve Data				
Parameter	Value	Parameter	Value	
Delta:	27° 03' 34.0549"	Type:	RIGHT	
Radius:	90.000			
Length:	42.505	Tangent:	21.656	
Mid-Ord:	2.498	External:	2.569	
Chord:	42.111	Course:	S 10° 12' 17.0362" W	
Tangent Data				
Description	PT Station	Northing	Easting	
Start:	51+32.754	3611034.060	11091944.453	
End:	51+67.962	3611003.830	11091930.282	

Tangent Data				
Parameter	Value	Parameter	Value	
Length:	35.208	Course:	S 23° 44' 04.0637" W	
Curve Point Data				
Description	Station	Northing	Easting	
PC:	51+67.962	3611003.830	11091930.282	
RP:	52+08.791	3610975.655	11091944.362	
PT:	52+08.791	3610963.879	11091925.359	
Circular Curve Data				
Parameter	Value	Parameter	Value	
Delta:	33° 25' 08.5738"	Type:	LEFT	
Radius:	70.000			
Length:	40.829	Tangent:	21.014	
Mid-Ord:	2.956	External:	3.086	
Chord:	40.253	Course:	S 07° 01' 28.7768" W	
Tangent Data				
Description	PT Station	Northing	Easting	
Start:	52+08.791	3610963.879	11091925.359	
End:	52+41.483	3610931.653	11091930.859	
Circular Curve Data				
Parameter	Value	Parameter	Value	
Length:	32.692	Course:	S 09° 41' 04.5101" E	
Curve Point Data				
Description	Station	Northing	Easting	
PC:	52+41.483	3610931.653	11091930.859	
RP:	53+43.818	3610898.008	11091933.789	
PT:	53+43.818	3610850.812	11091922.083	
Circular Curve Data				
Parameter	Value	Parameter	Value	
Delta:	29° 19' 00.9626"	Type:	RIGHT	
Radius:	200.000			
Length:	102.335	Tangent:	52.314	
Mid-Ord:	6.510	External:	6.729	
Chord:	101.223	Course:	S 04° 58' 25.9812" W	
Tangent Data				
Description	PT Station	Northing	Easting	
Start:	53+43.818	3610850.812	11091922.083	
End:	53+62.657	3610813.069	11091915.753	
Circular Curve Data				
Parameter	Value	Parameter	Value	
Length:	18.838	Course:	S 19° 37' 56.4725" W	
Curve Point Data				
Description	Station	Northing	Easting	
PC:	53+62.657	3610813.069	11091915.753	
RP:	54+08.263	3610791.230	11091976.975	
PT:	54+08.263	3610708.393	11091976.118	

Circular Curve Data				
Parameter	Value	Parameter	Value	
Delta:	40° 12' 03.7559"	Type:	LEFT	
Radius:	65.000			
Length:	45.607	Tangent:	23.787	
Mid-Ord:	3.959	External:	4.216	
Chord:	44.677	Course:	S 00° 28' 05.4054" E	
Tangent Data				
Description	PT Station	Northing	Easting	
Start:	54+08.263	3610708.393	11091916.118	
End:	54+54.789	3610724.833	11091932.464	
Circular Curve Data				
Parameter	Value	Parameter	Value	
Length:	46.526	Course:	S 20° 34' 07.2834" E	
Curve Point Data				
Description	Station	Northing	Easting	
PC:	54+54.789	3610724.833	11091932.464	
RP:	54+71.187	3610689.700	11091838.839	
PT:	54+71.187	3610709.978	11091936.943	
Circular Curve Data				
Parameter	Value	Parameter	Value	
Delta:	09° 23' 43.2365"	Type:	RIGHT	
Radius:	100.000			
Length:	16.398	Tangent:	8.217	
Mid-Ord:	0.336	External:	0.337	
Chord:	16.380	Course:	S 15° 52' 15.6551" E	
Tangent Data				
Description	PT Station	Northing	Easting	
Start:	54+71.187	3610709.978	11091936.943	
End:	55+65.385	3610616.665	11091955.197	
Circular Curve Data				
Parameter	Value	Parameter	Value	
Length:	94.199	Course:	S 11° 10' 24.0269" E	
Curve Point Data				
Description	Station	Northing	Easting	
PC:	55+65.385	3610616.665	11091955.197	
RP:	55+65.385	3610655.421	11092151.406	
PT:	55+77.705	3610604.660	11091957.955	
Circular Curve Data				
Parameter	Value	Parameter	Value	
Delta:	03° 31' 45.0659"	Type:	LEFT	
Radius:	200.000			
Length:	12.319	Tangent:	6.162	
Mid-Ord:	0.095	External:	0.095	
Chord:	12.317	Course:	S 12° 56' 16.5598" E	

Tangent Data				
Description	PT Station	Northing	Easting	
Start:	55+77.705	3610604.660	11091957.955	
End:	55+97.376	3610585.633	11091962.947	
Circular Curve Data				
Parameter	Value	Parameter	Value	
Length:	19.671	Course:	S 14° 42' 09.0928" E	
Curve Point Data				
Description	Station	Northing	Easting	
PC:	55+97.376	3610585.633	11091962.947	
RP:	56+38.943	3610522.183	11091721.133	
PT:	56+38.943	3610544.738	11091970.114	
Circular Curve Data				
Parameter	Value	Parameter	Value	
Delta:	09° 31' 34.9130"	Type:	RIGHT	
Radius:	250.000			
Length:	41.567	Tangent:	20.831	
Mid-Ord:	0.863	External:	0.866	
Chord:	41.519	Course:	S 09° 50' 21.6362" E	
Tangent Data				
Description	PT Station	Northing	Easting	
Start:	56+38.943	3610544.738	11091970.114	
End:	57+21.954	3610462.065	11091977.603	
Circular Curve Data				
Parameter	Value	Parameter	Value	
Length:	83.011	Course:	S 05° 10' 34.1797" E	
Curve Point Data				
Description	Station	Northing	Easting	
PC:	57+21.954	3610462.065	11091977.603	
RP:	57+62.137	3610454.848	11091997.929	
PT:	57+62.137	3610422.815	11091971.236	
Circular Curve Data				
Parameter	Value	Parameter	Value	
Delta:	28° 40' 46.0388"	Type:	RIGHT	
Radius:	80.000			
Length:	40.184	Tangent:	20.525	
Mid-Ord:	2.510	External:	2.591	
Chord:	39.763	Course:	S 09° 12' 48.8397" W	
Tangent Data				
Description	PT Station	Northing	Easting	
Start:	57+62.137	3610422.815	11091971.236	
End:	57+68.868	3610416.647	11091968.541	
Circular Curve Data				
Parameter	Value	Parameter	Value	
Length:	6.731	Course:	S 23° 36' 11.8590" W	
Curve Point Data				
Description	Station	Northing	Easting	
PC:	57+68.868	3610416.647	11091968.541	
RP:	58+22.534	3610392.623	11092023.522	
PCC:	58+22.534	3610364.786	11091970.170	

Circular Curve Data				
Parameter	Value	Parameter	Value	
Delta:	51° 14' 47.0600"	Type:	LEFT	
Radius:	60.000			
Length:	53.865	Tangent:	28.777	
Mid-Ord:	5.901	External:	6.544	
Chord:	51.894	Course:	S 02° 01' 11.6709" E	
Curve Point Data				
Description	Station	Northing	Easting	
PC:	58+22.534	3610364.786	11091970.170	
RP:	58+57.652	3610334.628	11091912.790	
PCC:	58+57.652	3610330.872	11091977.681	
Circular Curve Data				
Parameter	Value	Parameter	Value	
Delta:	30° 57' 30.6790"	Type:	RIGHT	
Radius:	65.000			
Length:	35.118	Tangent:	17.999	
Mid-Ord:	2.257	External:	2.446	
Chord:	34.693	Course:	S 12° 09' 54.8611" E	
Curve Point Data				
Description	Station	Northing	Easting	
PC:	58+57.652	3610330.872	11091977.681	
RP:	58+85.009	3610325.960	11092062.539	
PCC:	58+85.009	3610303.777	11091980.485	
Circular Curve Data				
Parameter	Value	Parameter	Value	
Delta:	18° 26' 26.2388"	Type:	LEFT	
Radius:	85.000			
Length:	27.357	Tangent:	13.798	
Mid-Ord:	1.098	External:	1.113	
Chord:	27.239	Course:	S 05° 54' 27.6408" E	
Curve Point Data				
Description	Station	Northing	Easting	
PC:	58+85.009	3610303.777	11091980.485	
RP:	59+06.362	3610284.204	11091908.084	
PT:	59+06.362	3610282.654	11091983.068	
Circular Curve Data				
Parameter	Value	Parameter	Value	
Delta:	16° 18' 45.8237"	Type:	RIGHT	
Radius:	75.000			
Length:	21.353	Tangent:	10.749	
Mid-Ord:	0.729	External:	0.766	
Chord:	21.281	Course:	S 06° 58' 17.8483" E	
Tangent Data				
Description	PT Station	Northing	Easting	
Start:	59+06.362	3610282.654	11091983.068	
End:	59+95.958	3610193.077	11091981.215	
Circular Curve Data				
Parameter	Value	Parameter	Value	
Length:	89.596	Course:	S 01° 11' 05.0635" W	

PROJECT NO: 60647135

DESIGNED BY: BAJ

DRAWN BY: BAJ

DEPT CHECK: RMF

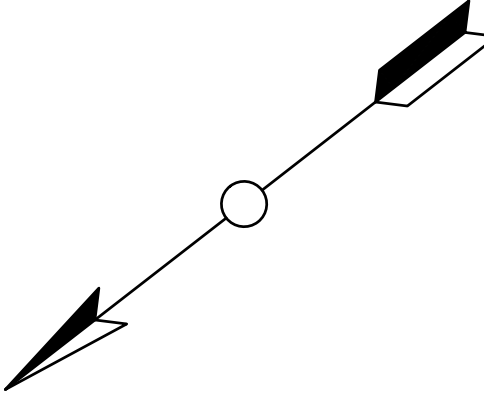
PROJ CHECK: JSH

DATE: NOV. 2023

SCALE: AS SHOWN

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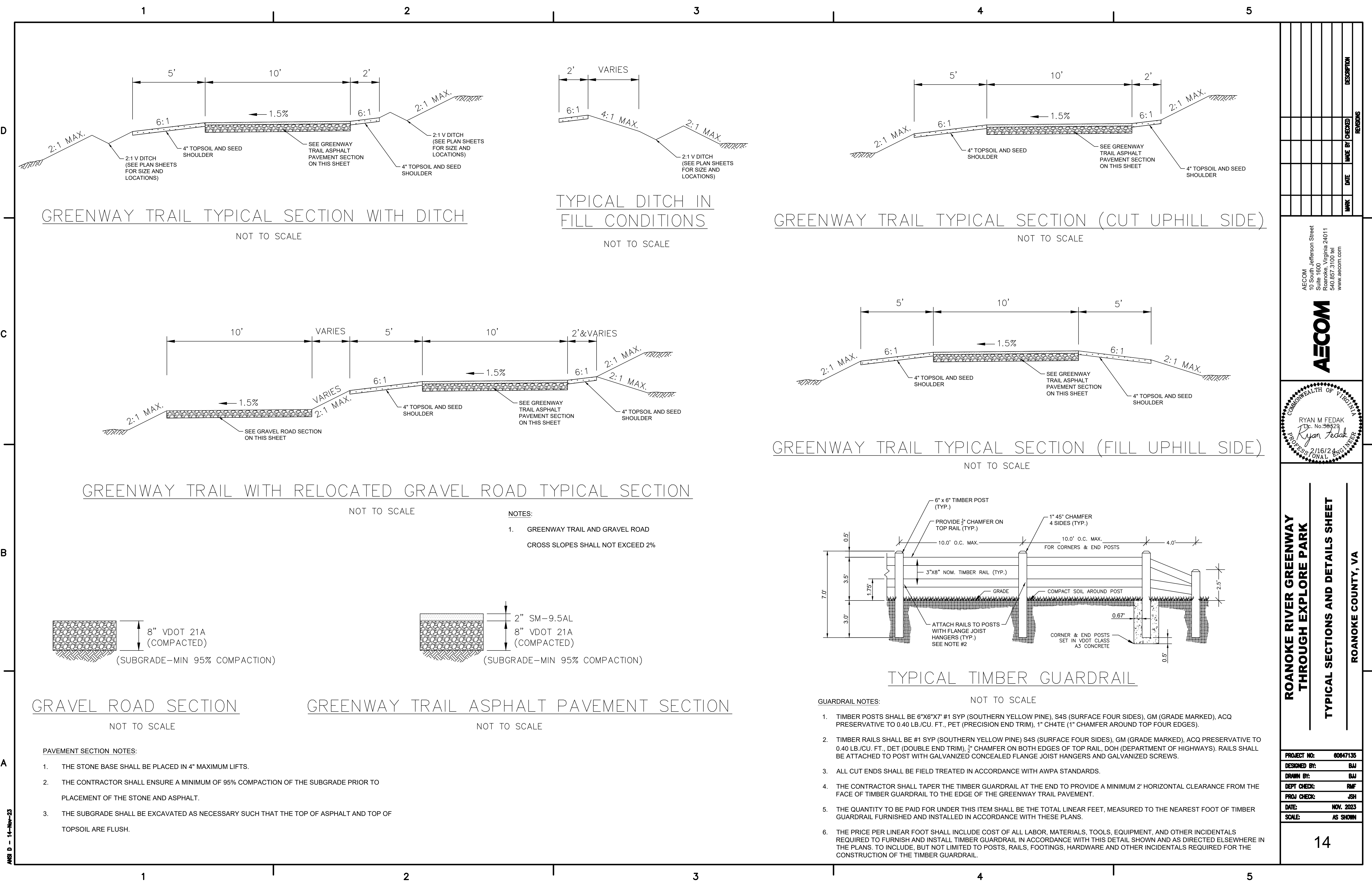


ALIGNMENT DATA SHEET

ROANOKE COUNTY, VA

PROJECT NO:	60847135
DESIGNED BY:	BAJ
DRAWN BY:	BAJ
DEPT CHECK:	RMF
PROJ CHECK:	JSH
DATE:	NOV. 2023
SCALE:	AS SHOWN

13



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REVISIONS	DATE	MADE BY	CHECKED BY	DESCRIPTION

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COMMONWEALTH OF VIRGINIA

RYAN M FEDAK
Lic. No. 38329
Ryan Fedak
PROFESSIONAL ENGINEER
2/16/24

ROANOKE RIVER GREENWAY
THROUGH EXPLORE PARK

TYPICAL SECTIONS AND DETAILS SHEET

ROANOKE COUNTY, VA

PROJECT NO:	00647135
DESIGNED BY:	BAJ
DRAWN BY:	BAJ
DEPT CHECK:	RMF
PROJ CHECK:	JSH
DATE:	NOV. 2023
SCALE:	AS SHOWN

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ANS D - 30-Mar-23

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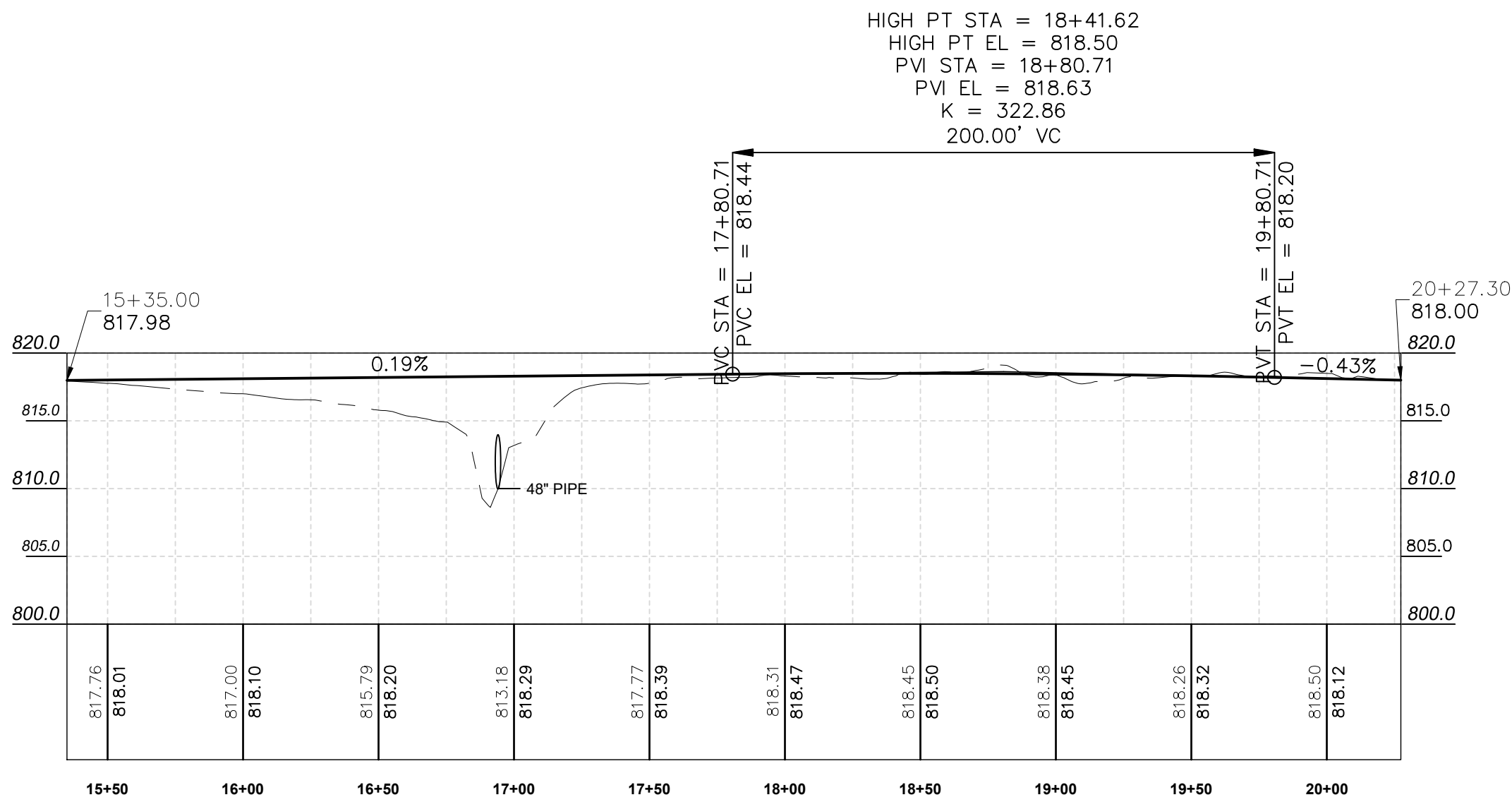
Alignment: Gravel_Road_-_1

Tangent Data			
Description	PT Station	Northing	Easting
Start:	15+35.000	3614270.572	11090557.531
End:	16+48.828	3614176.365	11090621.420
Tangent Data			
Parameter	Value	Parameter	Value
Length:	113.828	Course:	S 34° 08' 38.2680" E
Curve Point Data			
Description	Station	Northing	Easting
PC:	16+48.828	3614176.365	11090621.420
RP:	16+47.577	3614177.639	11091449.650
PT:	17+36.141	3614106.332	11090673.517
Circular Curve Data			
Parameter	Value	Parameter	Value
Delta:	05° 09' 09.6290"	Type:	LEFT
Radius:	1000.000		
Length:	87.313	Tangent:	43.684
Mid-Ord:	0.953	External:	0.954
Chord:	87.285	Course:	S 30° 38' 43.0870" E
Tangent Data			
Description	PT Station	Northing	Easting
Start:	17+36.141	3614106.332	11090673.517
End:	20+27.298	3613480.530	11090857.327
Tangent Data			
Parameter	Value	Parameter	Value
Length:	291.157	Course:	S 39° 08' 47.9071" E

Alignment: Gravel_Road_-_2

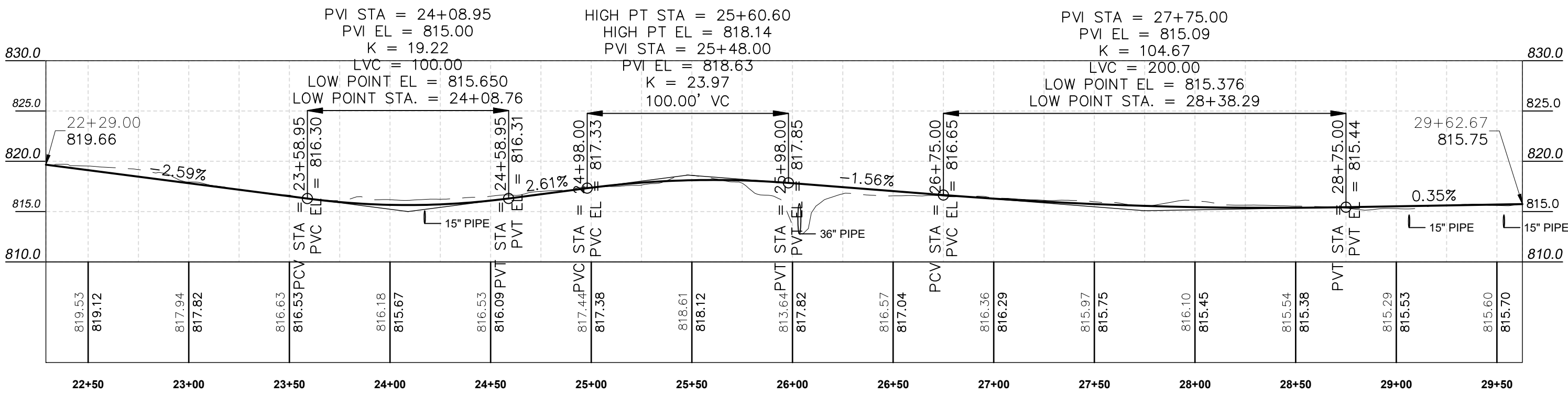
Curve Point Data			
Description	Station	Northing	Easting
PC:	22+29.000	3613715.458	11090954.176
RP:	23+26.190	3613966.707	11091296.758
PCC:	23+26.190	3613664.966	11091020.770
Circular Curve Data			
Parameter	Value	Parameter	Value
Delta:	13° 15' 30.6465"	Type:	LEFT
Radius:	420.000		
Length:	97.190	Tangent:	48.813
Mid-Ord:	2.808	External:	2.827
Chord:	96.973	Course:	S 43° 22' 16.3164" E
Curve Point Data			
Description	Station	Northing	Easting
PCC:	23+26.190	3613664.966	11091020.770
RP:	24+43.752	3613524.228	11090921.190
PCC:	24+43.752	3613543.892	11091075.129
Circular Curve Data			
Parameter	Value	Parameter	Value
Delta:	43° 27' 34.8624"	Type:	RIGHT
Radius:	155.000		
Length:	117.562	Tangent:	61.771
Mid-Ord:	11.013	External:	11.855
Chord:	114.785	Course:	S 28° 16' 19.2085" E
Curve Point Data			
Description	Station	Northing	Easting
PCC:	24+43.752	3613543.892	11091075.129
RP:	26+30.050	3613586.057	11091442.719
PT:	26+30.050	3613371.779	11091141.081
Circular Curve Data			
Parameter	Value	Parameter	Value
Delta:	28° 59' 44.9336"	Type:	LEFT
Radius:	370.000		
Length:	186.278	Tangent:	95.158
Mid-Ord:	11.661	External:	12.041
Chord:	184.317	Course:	S 20° 57' 59.2441" E
Tangent Data			
Description	PT Station	Northing	Easting
Start:	26+30.050	3613371.779	11091141.081
End:	28+20.494	3613216.506	11091251.385
Tangent Data			
Parameter	Value	Parameter	Value
Length:	190.464	Course:	S 35° 23' 21.7109" E

Curve Point Data			
Description	Station	Northing	Easting
PC:	28+20.494	3613216.506	11091251.385
RP:	28+75.907	3613155.697	11091165.785
PT:	28+75.907	3613165.126	11091270.361
Circular Curve Data			
Parameter	Value	Parameter	Value
Delta:	30° 14' 14.5277"	Type:	RIGHT
Radius:	105.000		
Length:	55.413	Tangent:	28.368
Mid-Ord:	3.634	External:	3.765
Chord:	54.772	Course:	S 20° 16' 14.4470" E
Tangent Data			
Description	PT Station	Northing	Easting
Start:	28+75.907	3613165.126	11091270.361
End:	29+62.669	3613070.715	11091278.152
Tangent Data			
Parameter	Value	Parameter	Value
Length:	86.761	Course:	S 05° 09' 07.1832" E



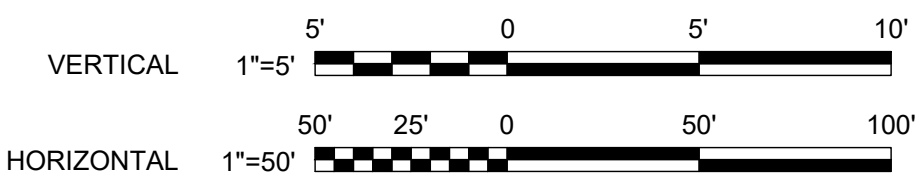
PROFILE - Gravel Road - 1

STA. 15+35 TO STA. 20+27

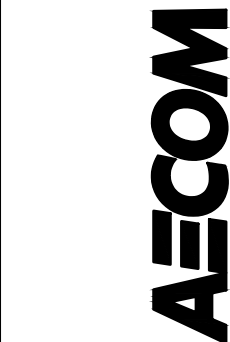


PROFILE - Gravel Road - 2

STA. 22+29 TO STA. 29+63



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ROANOKE RIVER GREENWAY
THROUGH EXPLORE PARK

GRAVEL ROAD ALIGNMENT DATA AND PROFILE

ROANOKE COUNTY, VA

PROJECT NO:	00847135
DESIGNED BY:	BAJ
DRAWN BY:	BAJ
DEPT CHECK:	RMF
PROJ CHECK:	JSH
DATE:	NOV. 2023
SCALE:	AS SHOWN

[illegible]

COMMONWEALTH OF VIRGINIA

RYAN M FEDAK
Lic. No. 58329

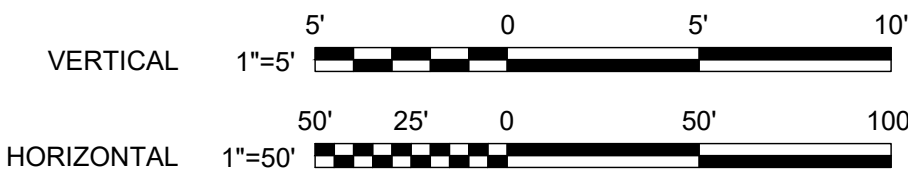
Ryan Fedak

2/16/24

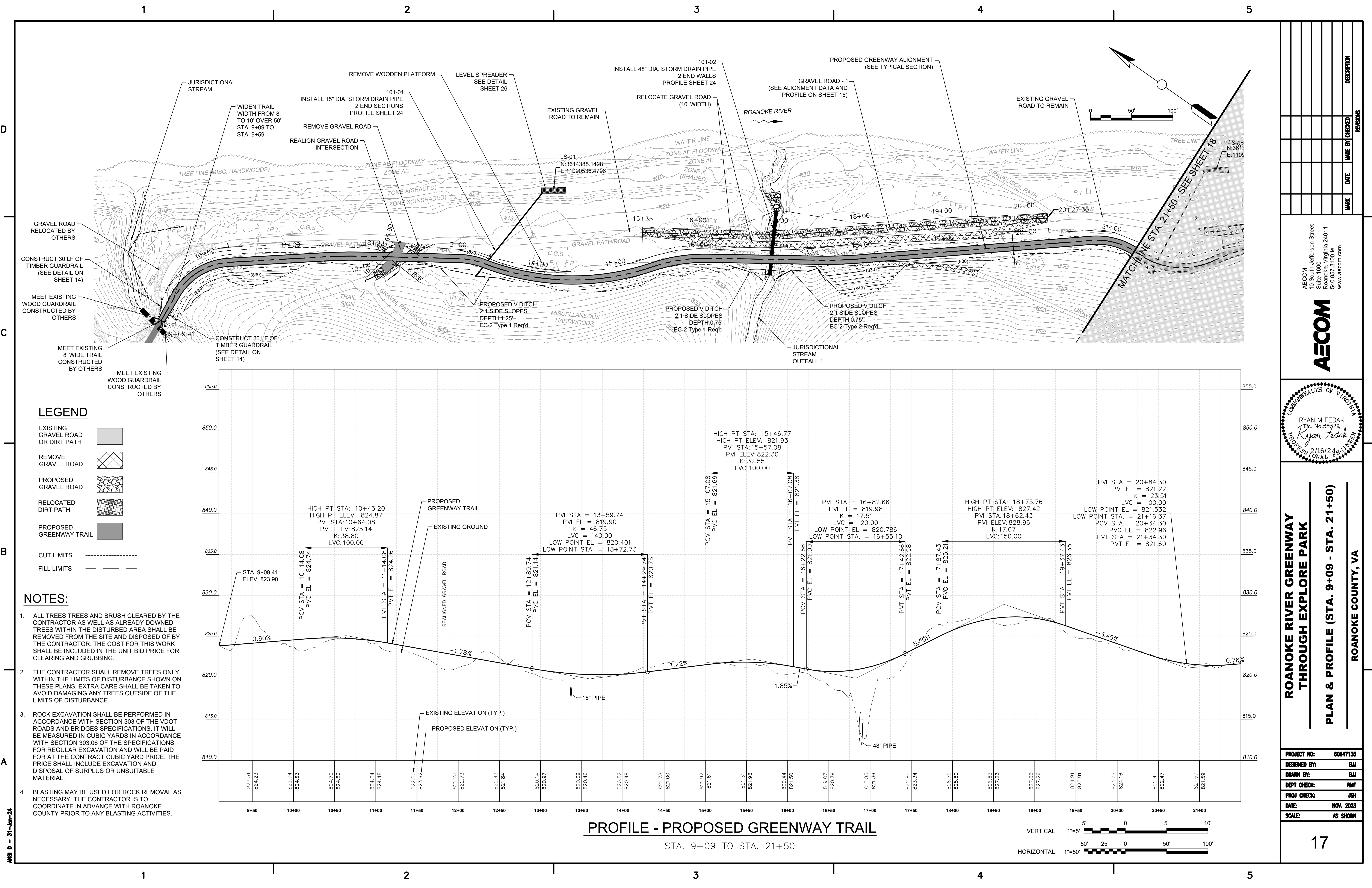
PROFESSIONAL ENGINEER

PROJECT NO:	60647135
DESIGNED BY:	BAJ
DRAWN BY:	BAJ
DEPT CHECK:	RMF
PROJ CHECK:	JSH
DATE:	NOV. 2023
SCALE:	AS SHOWN

DESIGNED BY:	BJJ
--------------	-----



STA. 30+41 TO STA. 35+26



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LEGEND

EXISTING
GRAVEL ROAD
OR DIRT PATH

REMOVE
GRAVEL ROAD

PROPOSED
GRAVEL ROAD

RELOCATED
DIRT PATH

PROPOSED
GREENWAY TRAIL

CUT LIMITS

FILL LIMITS

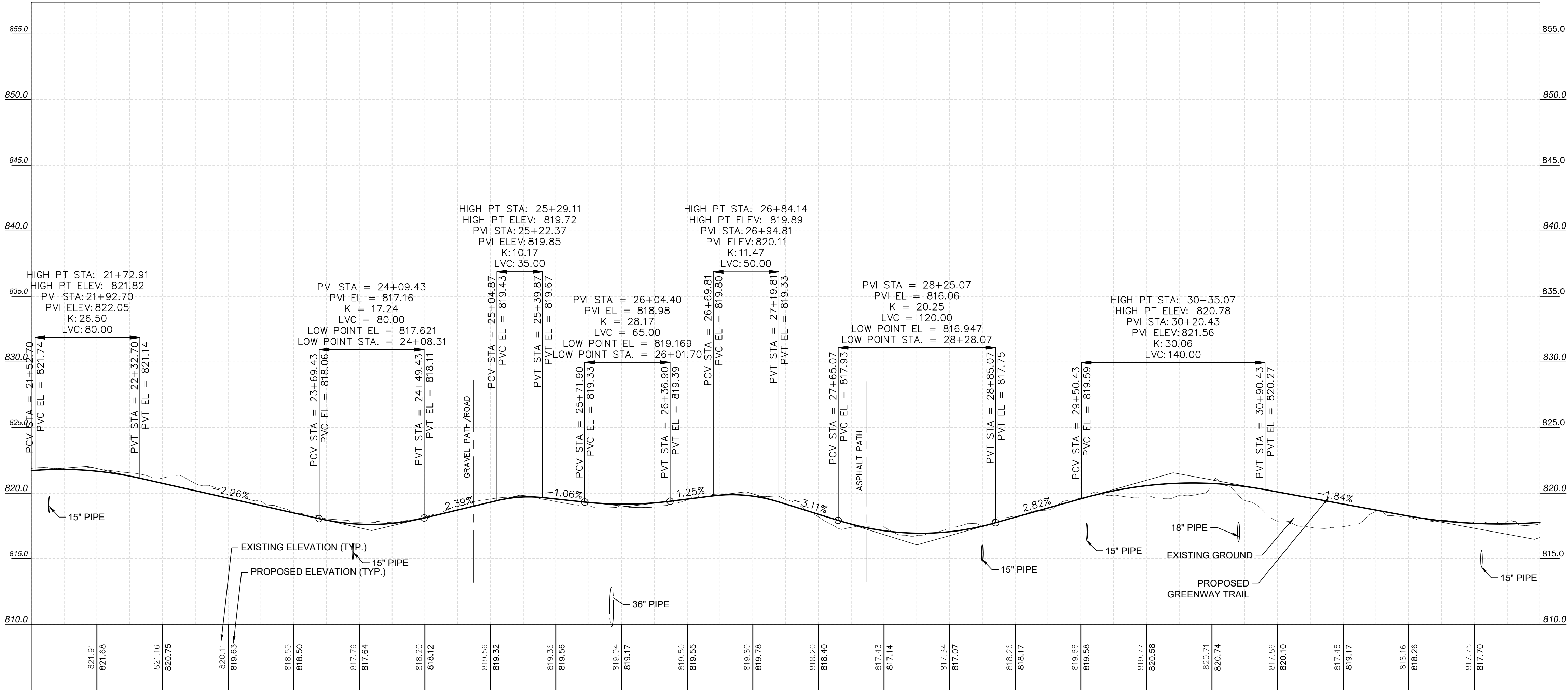
- NOTES:
1.

THE ASPHALT ROADWAY TO JOURNEYS END MUST REMAIN OPEN DURING CONSTRUCTION.
2.

CAMPsites WILL BE CLOSED AS NEEDED. ALL PICNIC TABLES, GRILLS, AND OTHER APPURTENANCES SHALL BE REMOVED BY ROANOKE COUNTY, PRIOR TO CONSTRUCTION.
3.

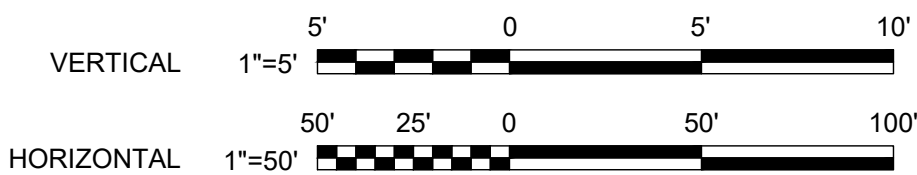
THE CONTRACTOR SHALL PROTECT THE EXISTING ELECTRICAL SERVICE PANEL AND SUPPLY LINE. COORDINATION WITH ROANOKE COUNTY WILL BE REQUIRED TO DEENERGIZE AND DISCONNECT ALL CABLES COMING OUT OF THE PANEL. ALL CABLES WITH THE EXCEPTION OF THE SUPPLY LINE TO THE PANEL MAY BE REMOVED DURING CONSTRUCTION.
4.

THE ENTRANCE AT STA. 25+00 SHALL REMAIN OPEN DURING CONSTRUCTION.



PROFILE - PROPOSED GREENWAY TRAIL

STA. 21+50 TO STA. 33+00



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COMMONWEALTH OF VIRGINIA

RYAN M FEDAK
Lic. No. 36329
Ryan Fedak
PROFESSIONAL ENGINEER

2/16/24

ROANOKE RIVER GREENWAY
THROUGH EXPLORE PARK

PLAN & PROFILE (STA. 21+50 - STA. 33+00)

ROANOKE COUNTY, VA

PROJECT NO.: 60647135

DESIGNED BY: BAJ

DRAWN BY: BAJ

DEPT CHECK: RMF

PROJ CHECK: JSH

DATE: NOV. 2023

SCALE: AS SHOWN

18

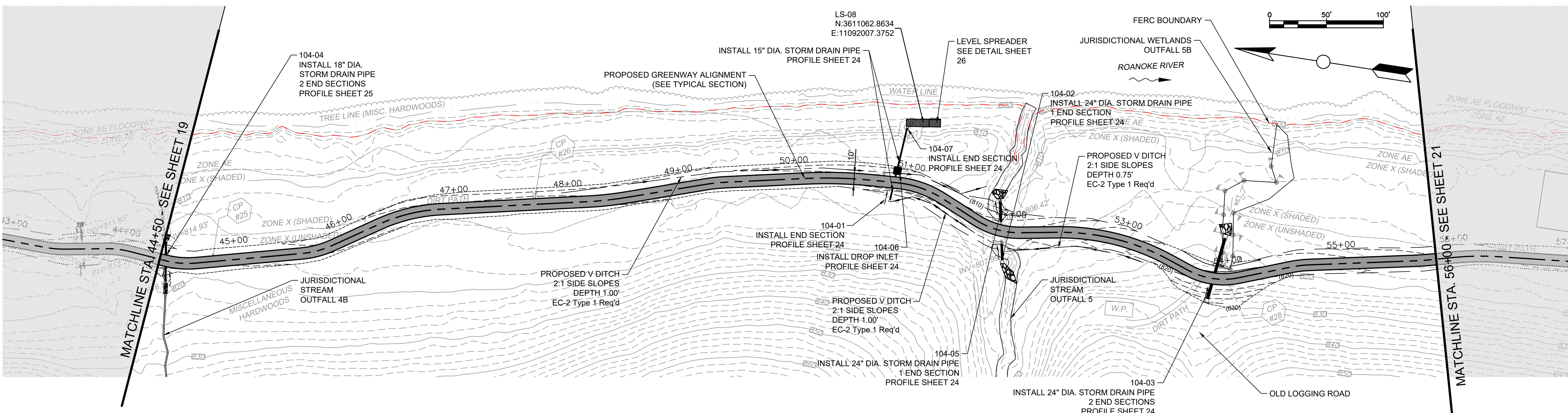
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ANSI D - 14-Nov-23



LEGEND

EXISTING GRAVEL ROAD OR DIRT PATH

REMOVE GRAVEL ROAD

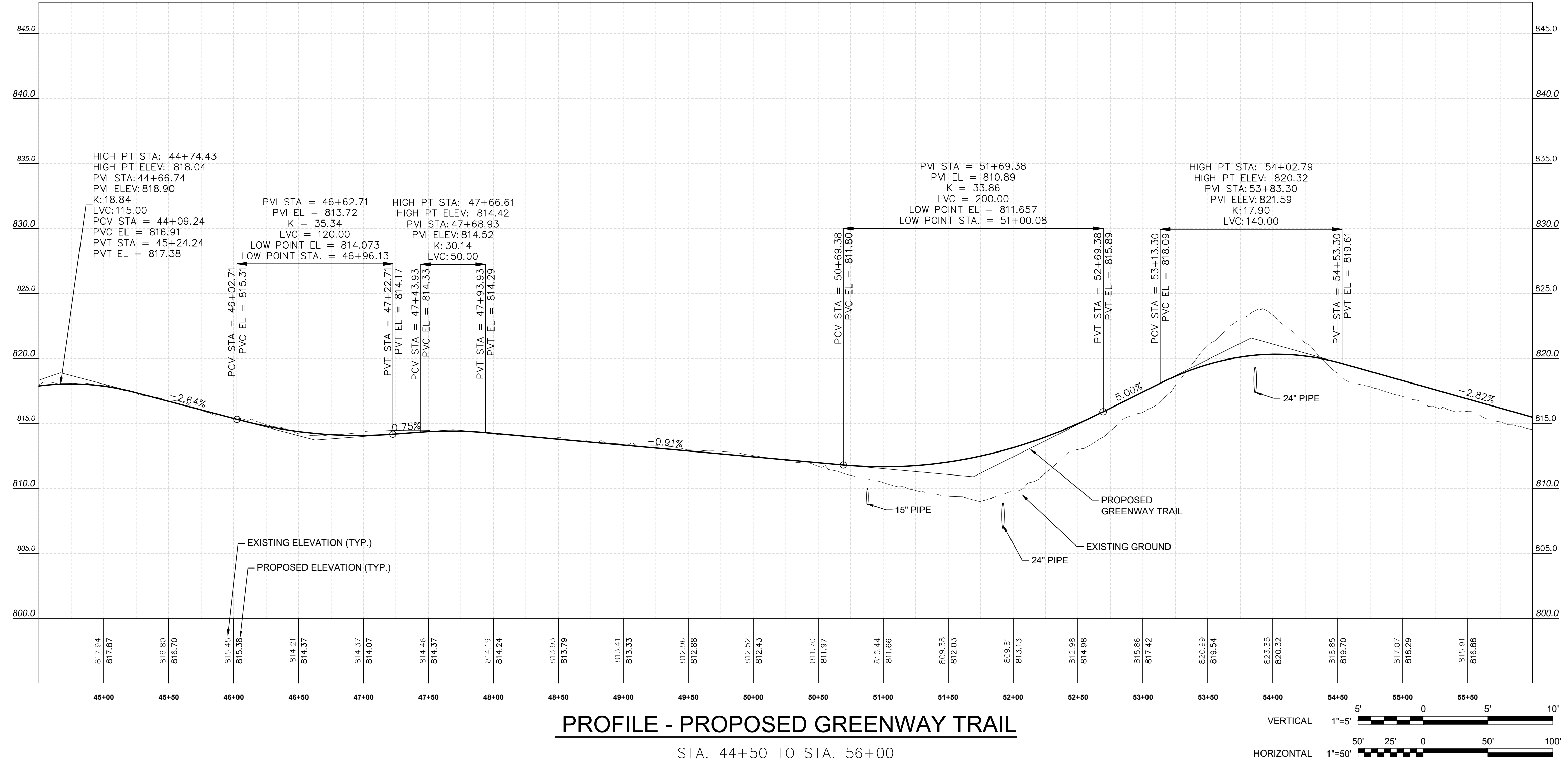
PROPOSED GRAVEL ROAD

RELOCATED DIRT PATH

PROPOSED GREENWAY TRAIL

CUT LIMITS

FILL LIMITS



REVISIONS		DESCRIPTION
NO.	DATE	BY

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COMMONWEALTH OF VIRGINIA

RYAN M FEDAK
Lic. No. 38329
Professional Engineer
2/16/24

ROANOKE RIVER GREENWAY THROUGH EXPLORE PARK

PLAN & PROFILE (STA. 44+50 - STA. 56+00)

ROANOKE COUNTY, VA

PROJECT NO: 80847135
DESIGNED BY: BAJ
DRAWN BY: BAJ
DEPT CHECK: RMF
PROJ CHECK: JSH
DATE: NOV. 2023
SCALE: AS SHOWN

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ANSI D - 14 Nov-23

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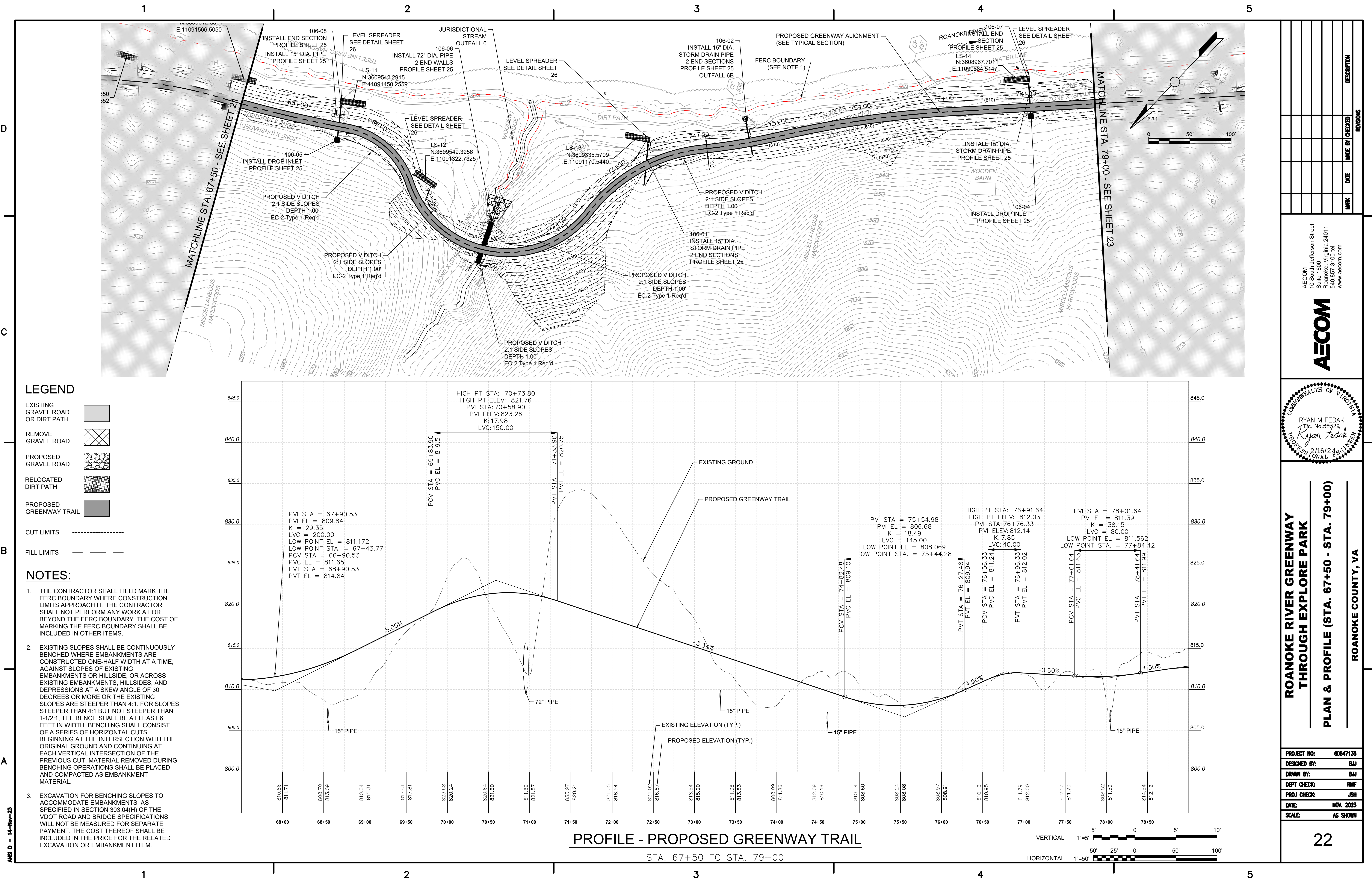
ANSI D - 14 Nov-23

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ANSI D - 14-Nov-23

REVISIONS		DESCRIPTION
NO.	DATE	BY

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PROFESSIONAL ENGINEER
2/16/24

**ROANOKE RIVER GREENWAY
THROUGH EXPLORE PARK**

PLAN & PROFILE (STA. 67+50 - STA. 79+00)

ROANOKE COUNTY, VA

PROJECT NO:	80847135
DESIGNED BY:	BAJ
DRAWN BY:	BAJ
DEPT CHECK:	RMF
PROJ CHECK:	JSH
DATE:	NOV. 2023
SCALE:	AS SHOWN

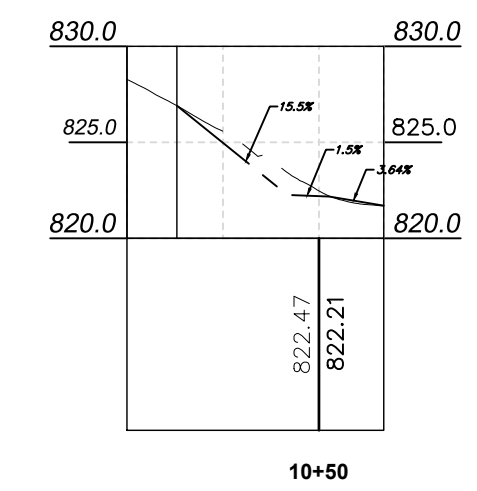
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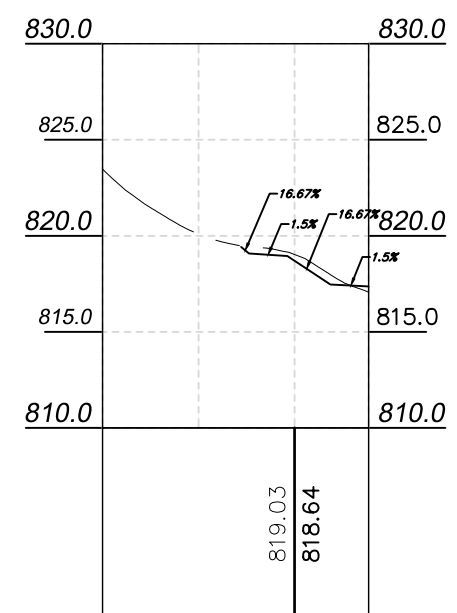
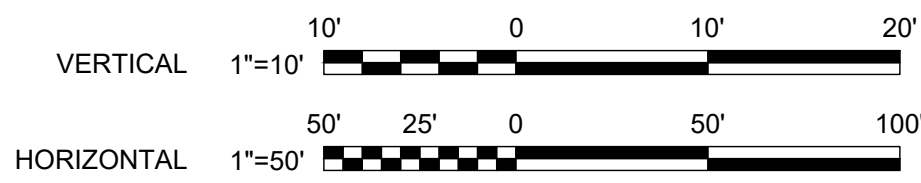
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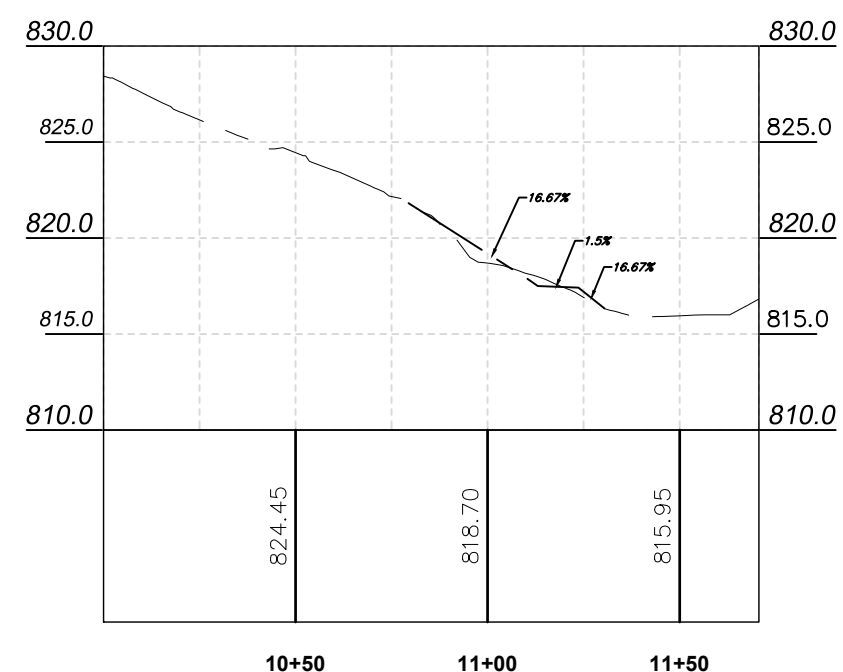
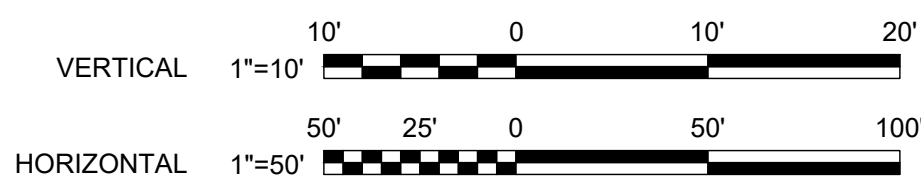
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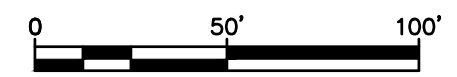
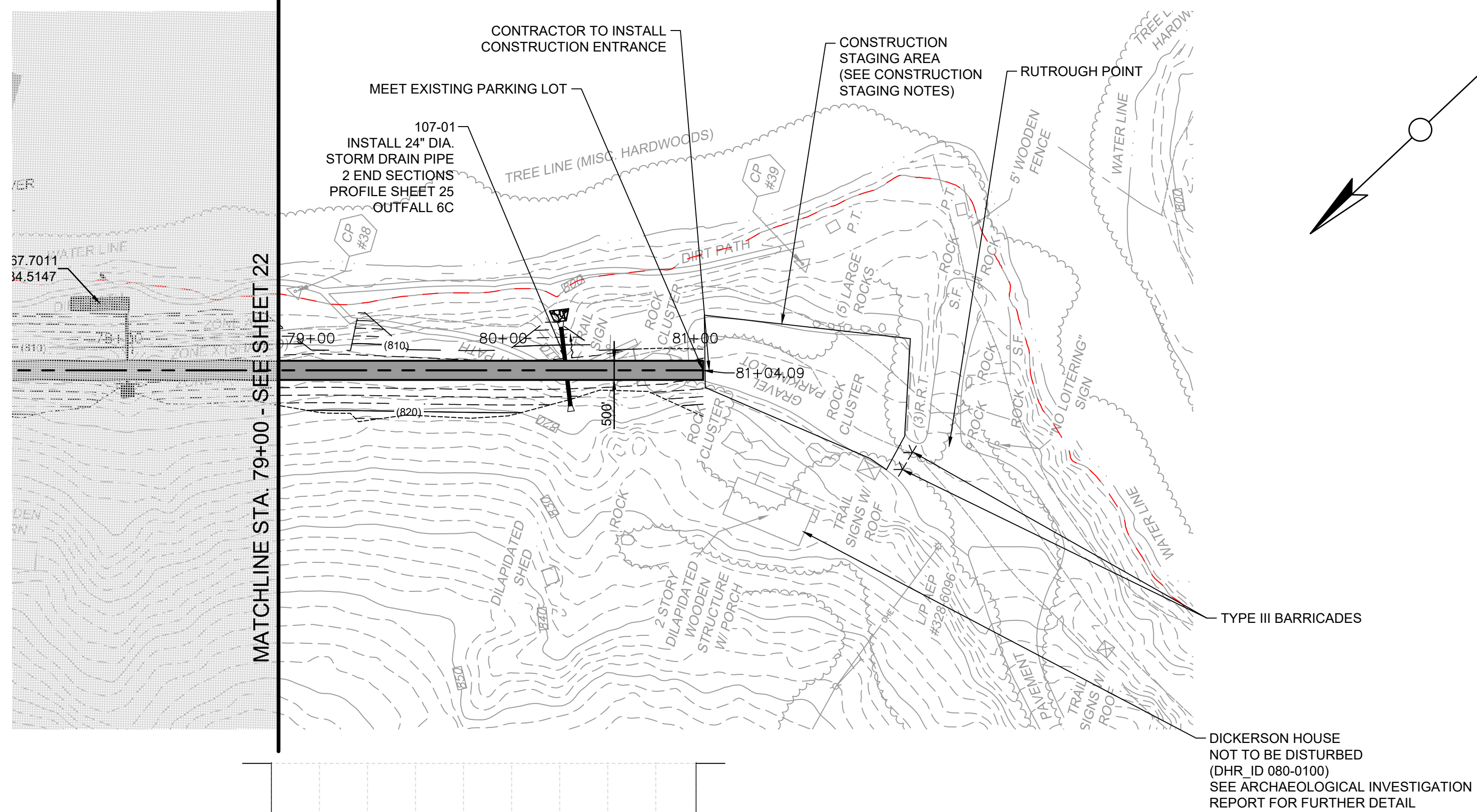
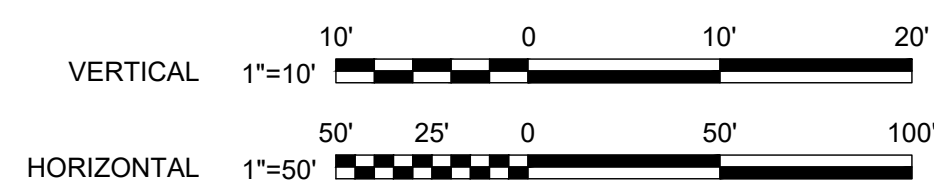
PROFILE :
TRAIL TIE-IN GREENWAY STA. 12+25



PROFILE :
TRAIL TIE-IN GREENWAY STA. 24+87



PROFILE :
TRAIL TIE-IN GREENWAY STA. 27+84

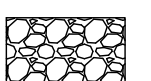


LEGEND

EXISTING
GRAVEL ROAD
OR DIRT PATH



REMOVE
GRAVEL ROAD



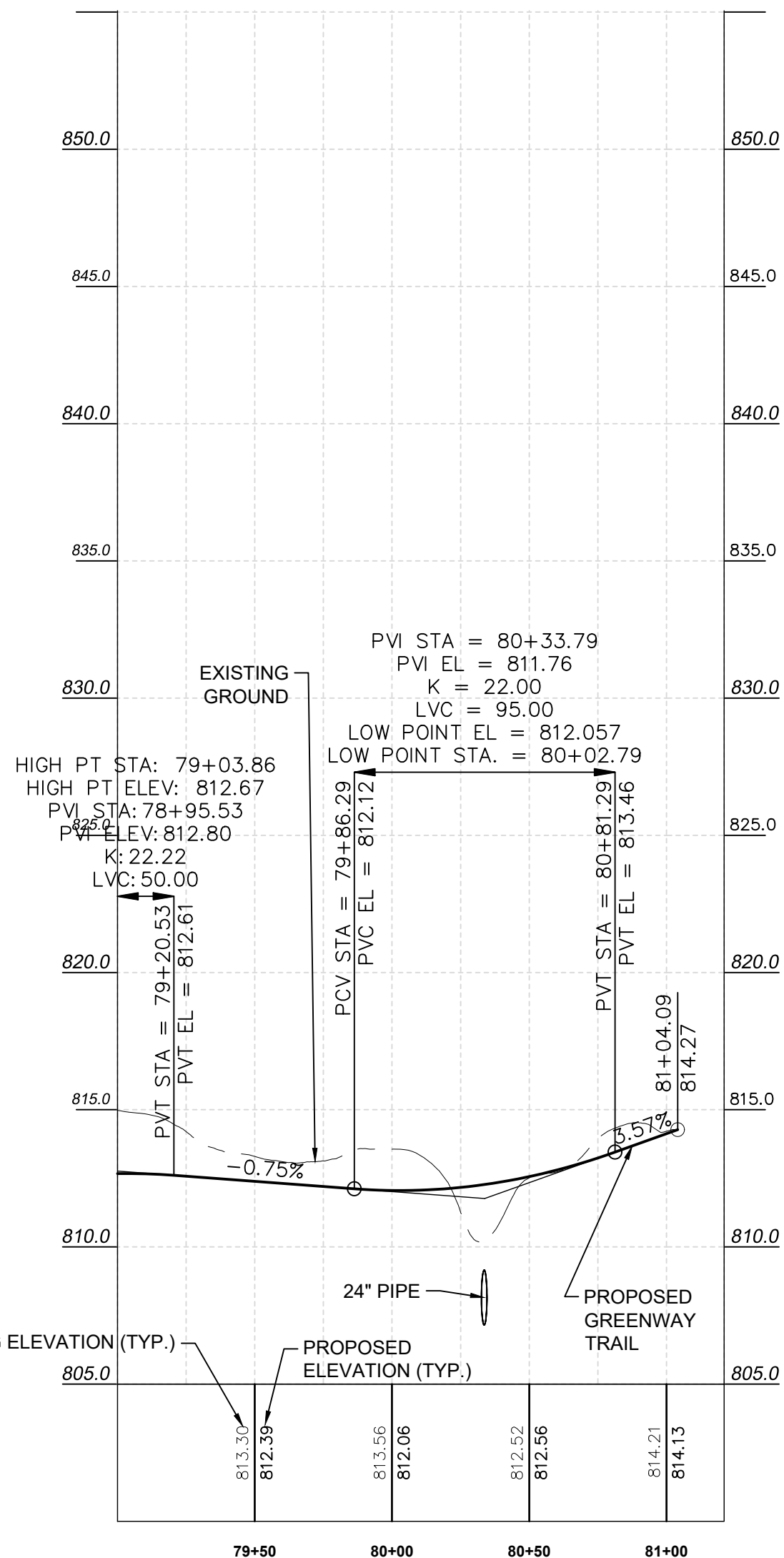
PROPOSED
GRAVEL ROAD

BELOCATED

PROPOSED
GREENWAY TRAIL

CUT LIMITS -----

FILL LIMITS — — —



PROFILE - PROPOSED GREENWAY TRAIL

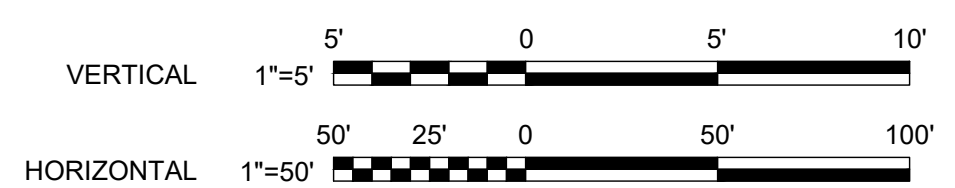
STA. 79+00 TO STA. 81+21

CONSTRUCTION STAGING NOTES:

1. THE RUTROUGH POINT PARKING AREA AND TURKEY FIELD ARE THE ONLY STAGING AREAS TO BE USED BY THE CONTRACTOR.
2. THERE MAY BE WORK RESTRICTION PERIODS WITHIN THE PARK. THE ROAD THROUGH JOURNEY'S END MAY NOT BE USED BY THE CONTRACTOR AFTER 3:30 PM IN THE MONTHS OF NOVEMBER AND DECEMBER, DUE TO THE ILLUMINIGHTS WINTER WALK OF LIGHTS PRESENTED BY ROANOKE COUNTY PARK AND RECREATION EACH YEAR.

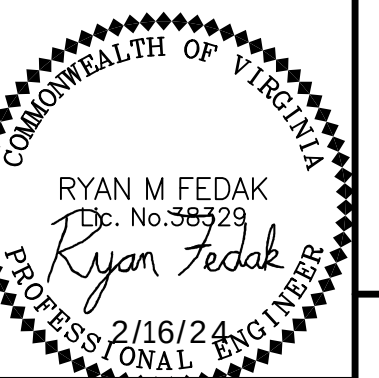
MAINTENANCE OF TRAFFIC NOTES:

1. THE CONTRACTOR SHALL IMPLEMENT AND PROVIDE MEASURES NECESSARY TO PROTECT THE PUBLIC FROM THE CONSTRUCTION ACTIVITIES.
2. UNDER THE MAINTENANCE OF TRAFFIC ITEM, THE CONTRACTOR SHALL PROTECT THE PUBLIC FROM ALL DAMAGE TO PERSON AND PROPERTY, FOR THE DURATION OF THE CONTRACT. THE CONSTRUCTION AREA SHALL BE MARKED BY SIGNS, DELINEATION AND/OR OTHER METHODS, THAT A PERSON WHO HAS NO KNOWLEDGE OF CONDITIONS CAN SAFELY, AND WITH A MINIMUM OF DISCOMFORT AND INCONVENIENCE, RIDE OR WALK OVER ALL OR ANY PORTION OF THE PARK WHERE TRAFFIC IS TO BE MAINTAINED.
3. THE QUANTITY TO BE PAID UNDER THE MAINTENANCE OF TRAFFIC ITEM SHALL BE A LUMP SUM AMOUNT FOR THE DURATION OF THE ENTIRE CONTRACT.
4. THE LUMP SUM BID PRICE SHALL INCLUDE, BUT NOT BE LIMITED TO THE COST OF ALL LABOR, MATERIALS, TOOLS, EQUIPMENT, AND OTHER INCIDENTALS TO SATISFACTORILY COMPLETE THE REQUIRED WORK INCLUDING TEMPORARY SAFETY FENCING.

[illegible]

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Roanoke, Virginia 24011
540.857.3100 tel
www.aecom.com

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ROANOKE RIVER GREENWAY THROUGH EXPLORE PARK

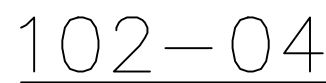
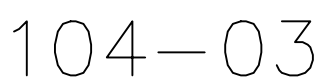
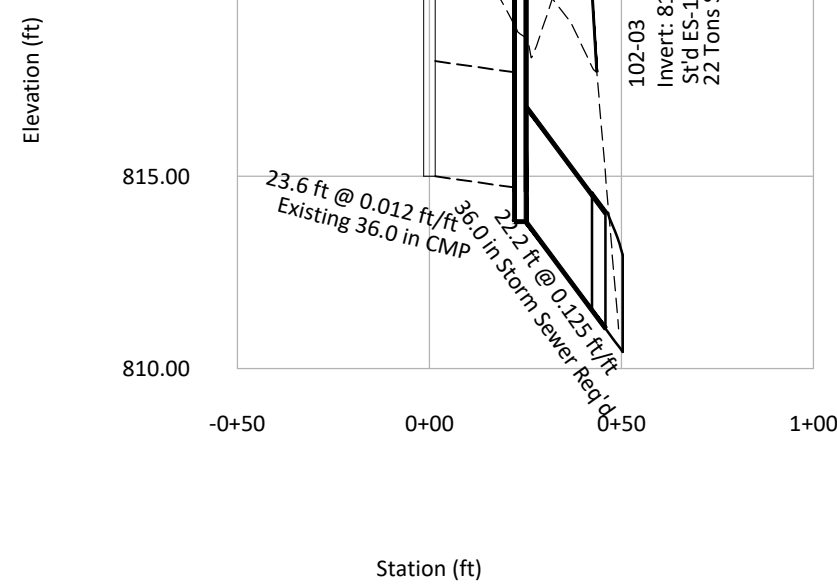
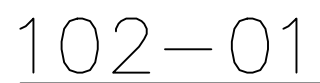
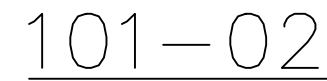
PLAN & PROFILE (SIA. 79+00 - SIA. 81+21)

A	B
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PROJECT NO:	60647135
DESIGNED BY:	BJJ
DRAWN BY:	BJJ
DEPT CHECK:	RMF
PROJ CHECK:	JSJ
DATE:	NOV. 2023
SCALE:	AS SHOWN

23

D



**ROANOKE RIVER GREENWAY
THROUGH EXPLORE PARK**

DRAINAGE PROFILES SHEET

ROANOKE COUNTY, VA

A

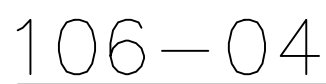
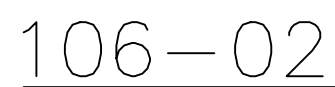
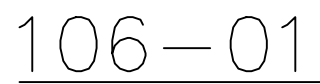
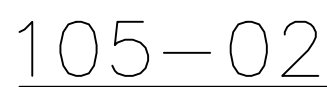
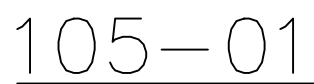
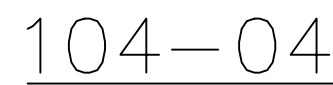
COMMONWEALTH OF VIRGINIA
 RYAN M FEDAK
 Lic. No. 38329
Ryan Fedak
 2/16/24
 PROFESSIONAL ENGINEER

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Suite 1600
Roanoke, Virginia 24011
540.857.3100 tel
www.aecom.com

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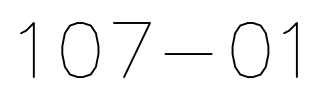
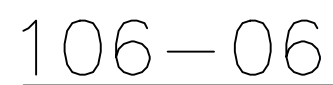
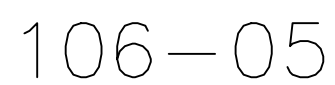


DETAIL B

CONCRETE PIPE

TYPICAL METHOD OF INSTALLATION FOR PIPE ON SLOPE

VIRGINIA DEPARTMENT OF TRANSPORTATION



PROJECT NO:	60647135
DESIGNED BY:	BJJ
DRAWN BY:	BJJ
DEPT CHECK:	RMF
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DATE:	NOV. 2023
SCALE:	AS SHOWN

Note: Inverts provided are at end of end section. End Sections drawn are St'd ES-1 but Contractor can substitute for other type of End Sections based on pipe type. Contractor may adjust pipe length as appropriate to maintain inverts.

25

DRAINAGE NOTES:

- D-1 The horizontal location of all drainage structures shown on these plans is approximate only.
- D-2 The horizontal location and invert elevations shown for proposed culverts and storm sewer outfall pipes are based on existing survey data and required design criteria. The actual horizontal locations and invert elevations are to be determined by the contractor from field conditions.
- D-3 The "H" dimensions shown on plans for drop inlets and junction boxes and the "L.F." dimensions shown for manholes are for estimating purposes and are based on the proposed invert elevations shown for the structure and the anticipated top (rim) elevation based on existing or proposed finished grade. The actual "H" or "L.F." dimensions are to be determined by the contractor from field conditions.
- D-4 Pipes shall conform to any of the allowable types shown on this sheet within the applicable height of cover limitations.
For strength, sheet thickness, or class designation; available sizes; height of cover limitations; and other restrictions for a particular pipe type or height of cover, see the VDOT Road and Bridge Standard PC-1.
- D-5 The proposed riprap may be omitted by the Contractor if the slope designated for placement of riprap is found to be comprised of solid rock or closely consolidated boulders with soundness, size and weight equal to, or exceeding, the specifications for the proposed riprap.
- D-6 The quantity to be paid for the Level Spreader Item shall be the number of level spreaders furnished and installed.
- D-7 The unit price to furnish and install a level spreader shall include the cost of furnishing all labor, materials, tools, equipment, and incidentals to satisfactorily complete construction according to the details and notes shown on this plan. It shall include, but not be limited to, concrete work, galvanized wire mesh baskets, wire staples, aggregate, and geotextile fabric.
- D-8 Bedding material aggregate no. 57 shall conform to section 203 of the specifications and shall be placed in accordance with section 302 of the VDOT Road and Bridges Specifications. Bedding material aggregate shall be placed at locations shown on the plans or as directed by the Engineer. The bedding material shall be measured in tons and will be paid for at the Contract ton price. This price shall include furnishing, placing, and compacting.

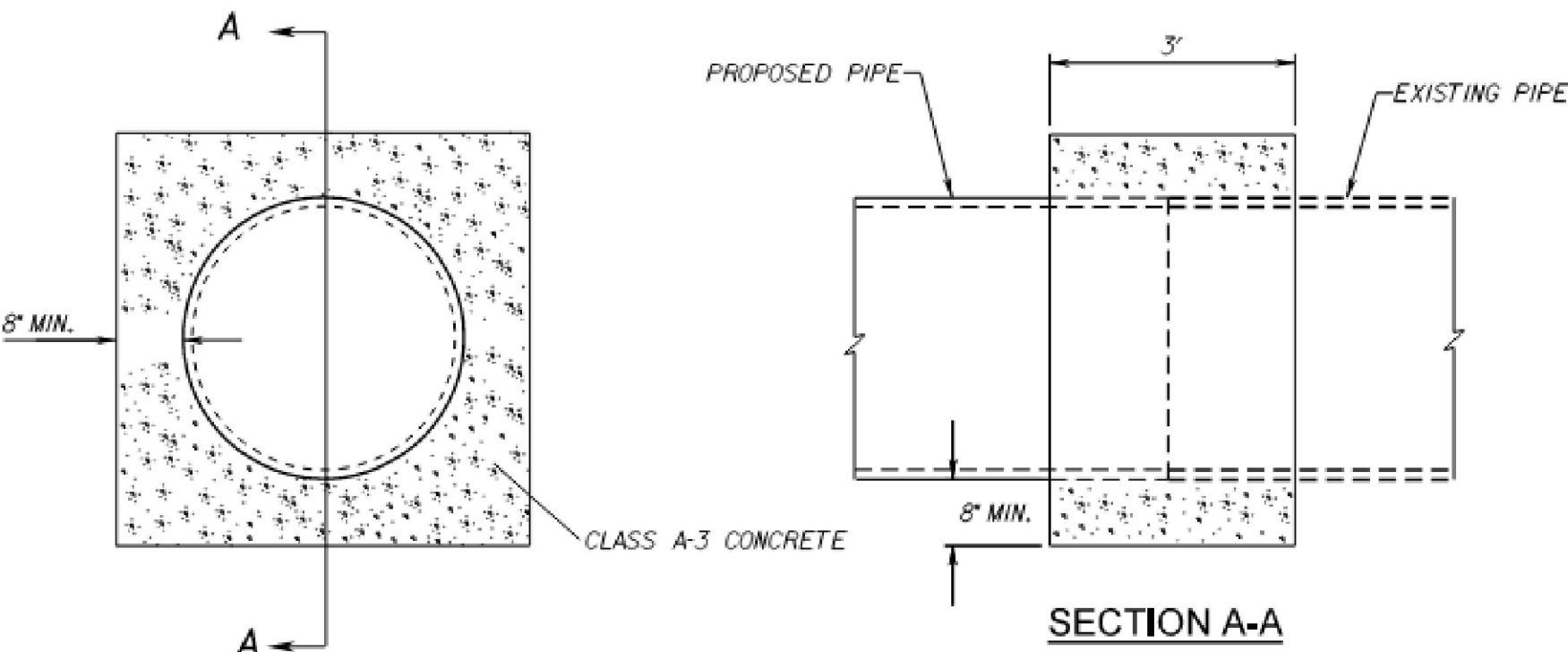
BMP LOCATION TABLE

DESIGNATION	BMP TYPE	LOCATION (STATE PLANE COORDINATES, CENTER OF BMP)	
		NORTHING	EASTING
LS-01	LEVEL SPREADER	3614388.1428	11090536.4796
LS-02	LEVEL SPREADER	3613747.8618	11091023.9223
LS-03	LEVEL SPREADER	3613559.9583	11091143.6975
LS-04	LEVEL SPREADER	3613031.6585	11091324.9876
LS-05	LEVEL SPREADER	3612936.3955	11091376.1189
LS-06	LEVEL SPREADER	3612780.4657	11091417.5187
LS-07	LEVEL SPREADER	3611927.4449	11091770.5267
LS-08	LEVEL SPREADER	3611062.8634	11092007.3752
LS-09	LEVEL SPREADER	3609690.0850	11091688.7352
LS-10	LEVEL SPREADER	3609612.6311	11091566.5050
LS-11	LEVEL SPREADER	3609542.2915	11091450.2559
LS-12	LEVEL SPREADER	3609549.3956	11091322.7325
LS-13	LEVEL SPREADER	3609335.5709	11091170.5440
LS-14	LEVEL SPREADER	3608967.7011	11090884.5147

ALLOWABLE PIPE TYPES

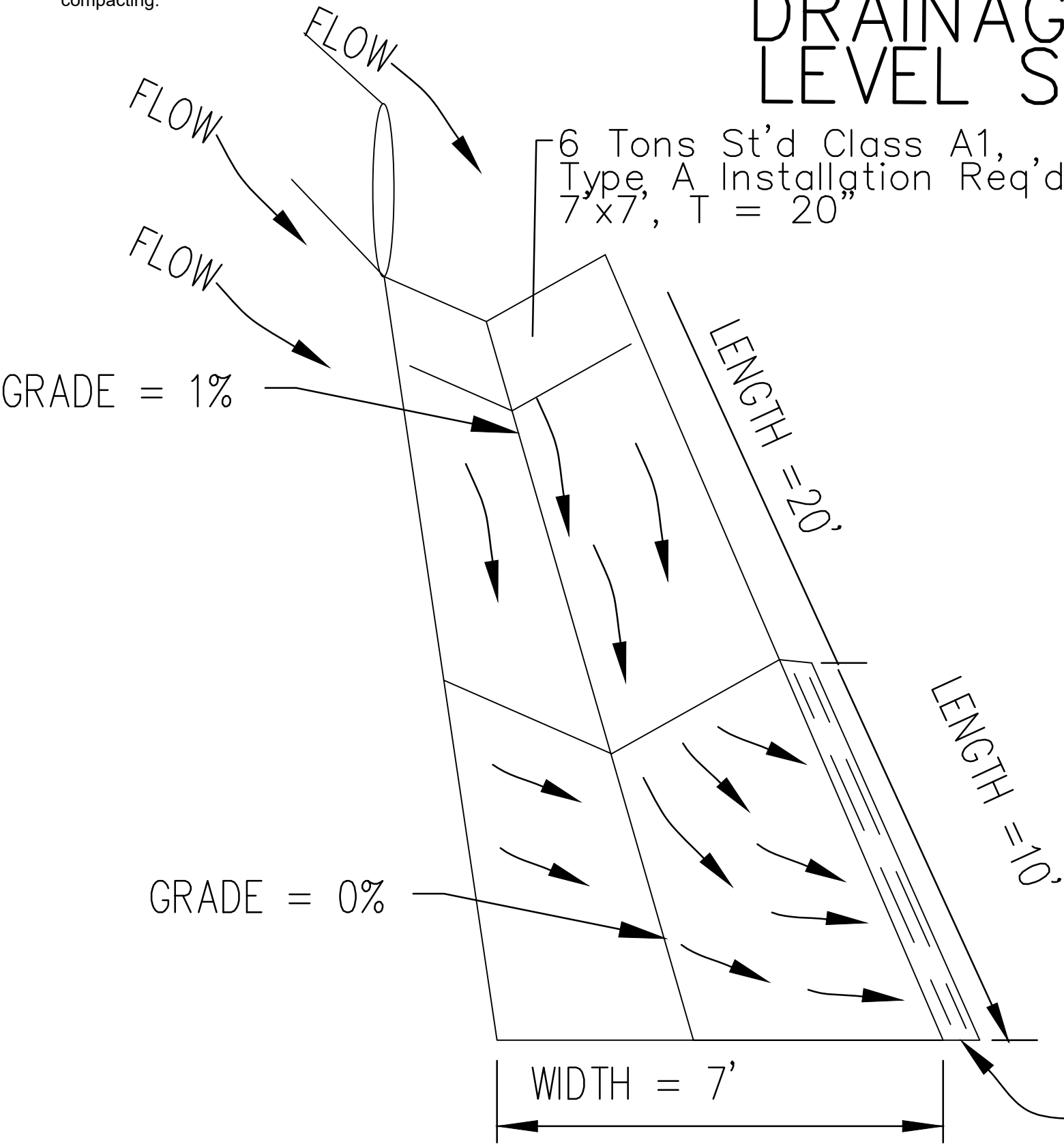
ALLOWABLE TYPE OF STORM SEWER PIPE (SEE ROAD AND BRIDGE STANDARD PC-1 FOR HEIGHT OF COVER LIMITATIONS FOR EACH TYPE)								
	CONCRETE	ALUMINUM COATED TYPE 2 STEEL SPIRAL RIB	POLYMER COATED (10/10) CORRUGATED STEEL SPIRAL RIB	POLYMER COATED (10/10) CORRUGATED STEEL DOUBLE WALL (SMOOTH INTERIOR)	ALUMINUM SPIRAL RIB	POLYVINYLCHLORIDE (PVC) RIBBED PIPE (SMOOTH INTERIOR)	POLYETHYLENE (PE) CORRUGATED TYPE S	POLYPROPYLENE (PP) TYPE D OR S
Roanoke River Greenway	X					X	X	X

DRAINAGE DETAIL PIPE COLLAR



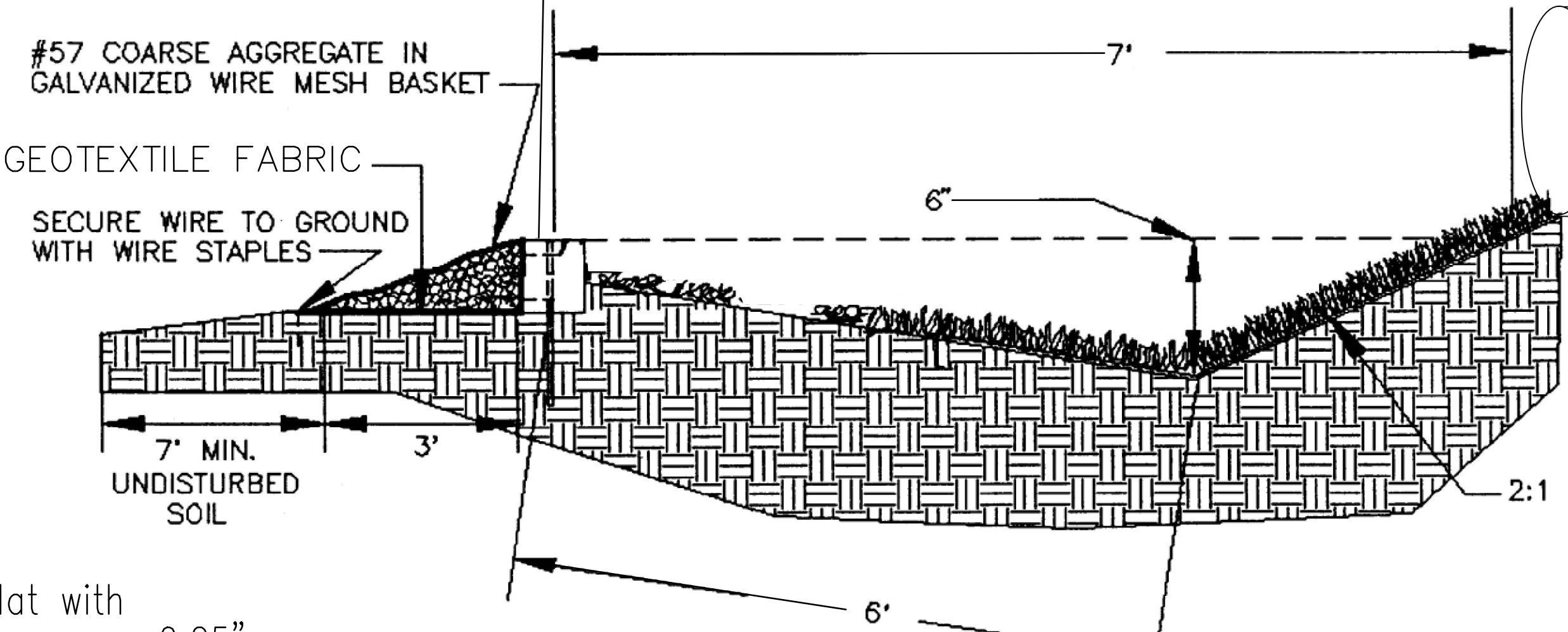
- Notes:
- Wire mesh basket shall have openings of approx. 1/2" x 1" and weigh approx. 0.82 lbs per sq. ft. mesh shall be galvanized in accordance with ASTM A-123.
- Staples formed from No. 8 Steel Wire. 8" staple minimum length for sandy soil, 6" staple minimum length for other soil.
- Geotextile Fabric to be installed in accordance with VDOT Specification 245.03 b
- Aggregate, Geotextile fabric, CG-2, Wire Mesh, EC-1 and all other items, grading and associated work shall be included in the bid price for level spreader.

DRAINAGE DETAIL
LEVEL SPREADER



LEVEL SPREADER SHALL HAVE A RIGID, CONCRETE LIP IN ACCORDANCE WITH VDOT STD CG-2, Depth 18"

CROSS SECTION



LEVEL SPREADER WITH RIGID LIP

RIGID LIP
Constructed Flat with maximum tolerance = 0.25"
Set Elevation such that lip is at least 1" above existing ground along length of lip

Note: Location shown in Plans. Engineer Approval of Location needed to confirm discharge to flat stable areas

REVISIONS	DATE	MADE BY	CHECKED	DESCRIPTION

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Suite 1600
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540.857.3100 tel
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COMMONWEALTH OF VIRGINIA

RYAN M FEDAK
Lic. No. 38329
Ryan Fedak
PROFESSIONAL ENGINEER

ROANOKE RIVER GREENWAY
THROUGH EXPLORE PARK

DRAINAGE DETAILS SHEET

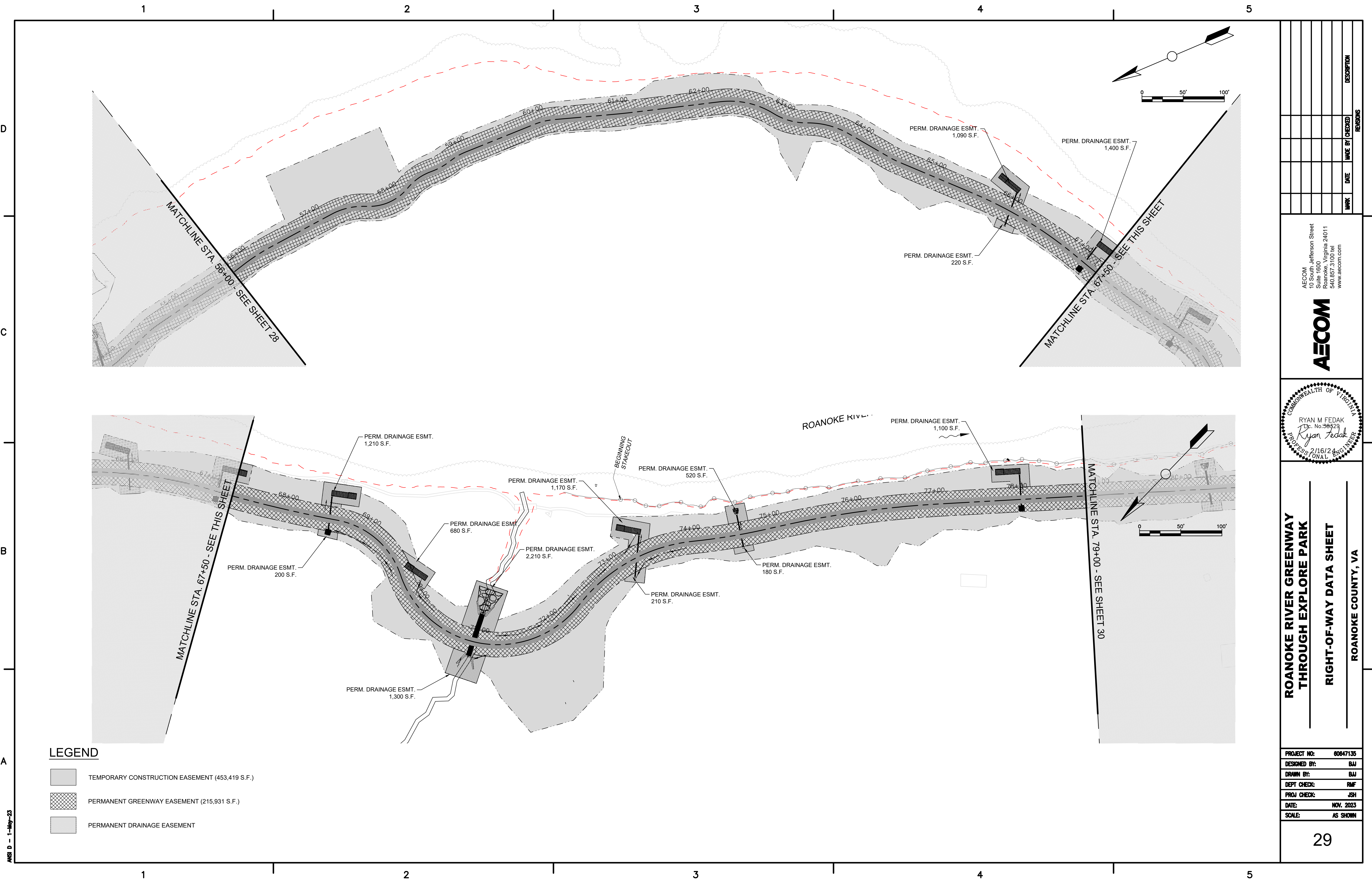
ROANOKE COUNTY, VA

PROJECT NO:	00847135
DESIGNED BY:	BAJ
DRAWN BY:	BAJ
DEPT CHECK:	RMF
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DATE:	NOV. 2023
SCALE:	AS SHOWN

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ANS D - 14-Nov-23

12345



ANSI D - 1-14-23

LEGEND

- TEMPORARY CONSTRUCTION EASEMENT (453,419 S.F.)
- PERMANENT GREENWAY EASEMENT (215,931 S.F.)
- PERMANENT DRAINAGE EASEMENT

REVISIONS		DESCRIPTION
NO.	DATE	BY

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Suite 1600
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540.857.3100 tel
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RYAN M FEDAK
Lic. No. 38329
Ryan Fedak
PROFESSIONAL ENGINEER
2/16/24

**ROANOKE RIVER GREENWAY
THROUGH EXPLORE PARK**

RIGHT-OF-WAY DATA SHEET

ROANOKE COUNTY, VA

PROJECT NO:	60647135
DESIGNED BY:	BAJ
DRAWN BY:	BAJ
DEPT CHECK:	RMF
PROJ CHECK:	JSH
DATE:	NOV. 2023
SCALE:	AS SHOWN

29

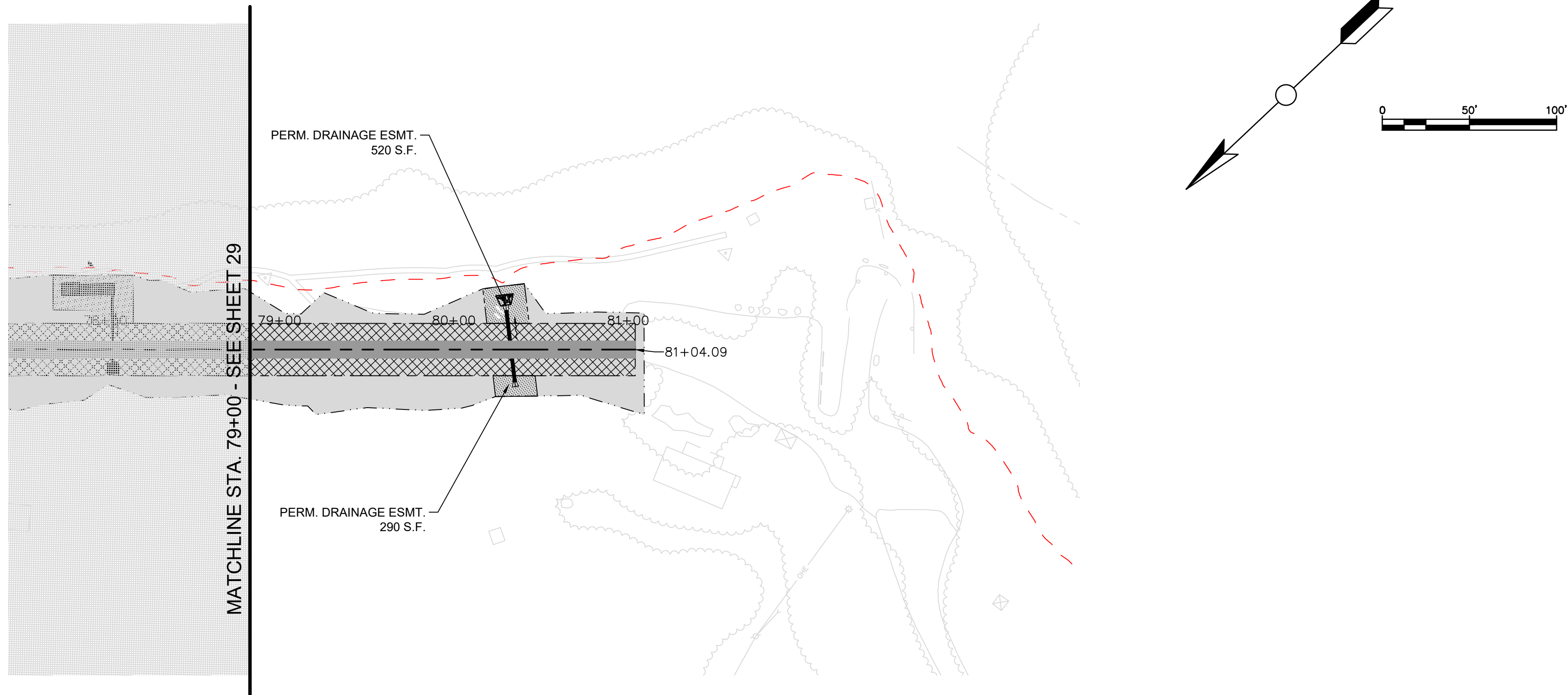
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MATCHLINE STA. 79+00 - SEE SHEET 29

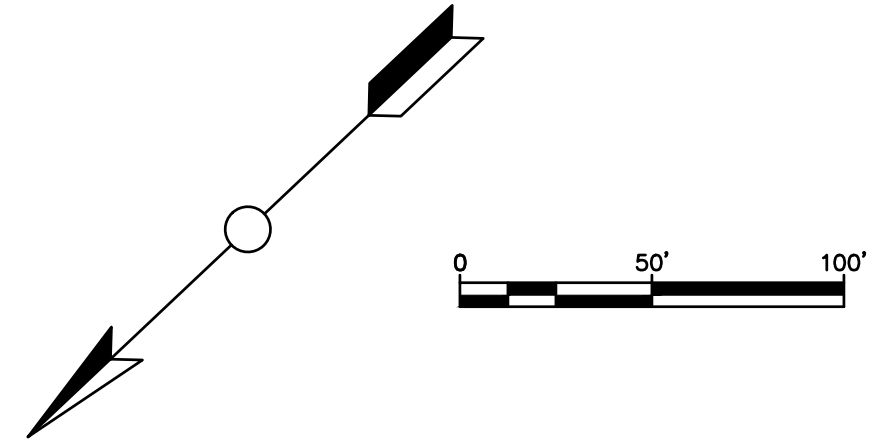
PERM. DRAINAGE ESMT
290 S.F.

-81+04.09

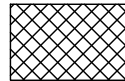
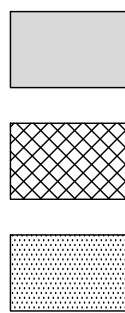
$$\underline{79+00}$$

80±0.0

31.00



LEGEND



ROANOKE RIVER GREENWAY THROUGH EXPLORE PARK

THROUGH EXPLORE PARK

RIGHT-OF-WAY DATA SHEET

ROANOKE COUNTY, VA

PROJECT NO:	80847135
DESIGNED BY:	BJJ
DRAWN BY:	BJJ
DEPT CHECK:	RMF
PROJ CHECK:	JSH
DATE:	NOV. 2023
SCALE:	AS SHOWN

DESIGNED BY: BJJ

DRAWN BY: **BJJ**

DEPT CHECK: RMF

PROJ CHECK:	JSH
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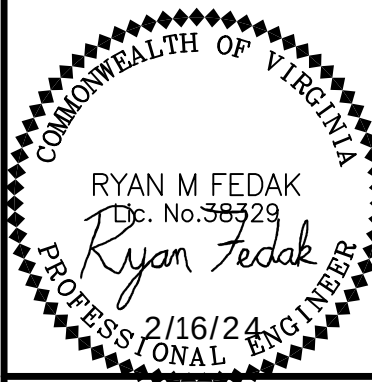
DATE: NOV. 2023

SCALE: AS SHOWN

30

AECOM
10 South Jefferson Street
Suite 1600
Roanoke, Virginia 24011
540.857.3100 tel
www.aecom.com

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RYAN M FEDAK
Lic. No. 38329

Kyan Teda

OFF 0

SS 2/16/24 ENG

PERSONAL

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GENERAL EROSION AND SEDIMENT CONTROL NOTES

- ALL SOIL EROSION & SEDIMENT CONTROL MEASURES SHALL BE ACCOMPLISHED IN STRICT ACCORDANCE WITH THE STANDARDS AND SPECIFICATIONS CONTAINED IN THE VIRGINIA EROSION AND SEDIMENT CONTROL HANDBOOK, LATEST EDITION.
- THE APPROVING AUTHORITY MAY ADD TO, DELETE, RELOCATE, CHANGE, OR OTHERWISE MODIFY CERTAIN EROSION AND SEDIMENT CONTROL MEASURES WHERE FIELD CONDITIONS ARE ENCOUNTERED THAT WARRANT SUCH MODIFICATIONS.
- ALL SOIL EROSION AND SEDIMENT CONTROL MEASURES AS SHOWN ON THE PLAN SHALL BE PLACED IN ADVANCE OF THE WORK BEING PERFORMED, AS FAR AS PRACTICAL.
- IN NO CASE DURING CONSTRUCTION SHALL WATER RUNOFF BE DIVERTED OR ALLOWED TO FLOW TO LOCATIONS WHERE ADEQUATE PROTECTION HAS NOT BEEN PROVIDED.
- IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO LEAVE THE SITE ADEQUATELY PROTECTED AGAINST EROSION, SEDIMENTATION, OR ANY DAMAGE TO ANY ADJACENT PROPERTY AT THE END OF EACH DAY'S WORK.
- FOR THE EROSION CONTROL KEY SYMBOLS SHOWN ON THE PLANS, REFER TO THE VIRGINIA UNIFORM CODING SYSTEM FOR EROSION AND SEDIMENT CONTROL PRACTICES CONTAINED IN THE VIRGINIA EROSION AND SEDIMENT CONTROL HANDBOOK, LATEST EDITION. THESE SYMBOLS AND KEYS ARE TO BE UTILIZED ON ALL EROSION CONTROL PLANS SUBMITTED TO ROANOKE COUNTY.
- THE LOCATION OF ALL OFF-SITE FILL OR BORROW AREAS ASSOCIATED WITH THE CONSTRUCTION PROJECT WILL BE PROVIDED TO ROANOKE COUNTY DEPARTMENT OF DEVELOPMENT SERVICES. AN EROSION CONTROL PLAN OR MEASURES MAY BE REQUIRED FOR THIS AREA.
- THIS SHEET MAY NOT BE MODIFIED EXCEPT FOR TABLES.

TOTAL DISTURBED AREA = 9.9 AC. = 429500 SQ. FT.

GRADING NOTES:

Remove trees, shrubs, grass, and other vegetation, improvements or obstructions as required to permit installation of new construction. Remove trees and other vegetation, including stumps and roots, completely in areas required for subsequent seeding. Cut off trees and stumps in areas to receive fill more than three feet in depth to within eight inches of the original ground surface.

Barriade open excavations occurring as part of this work and operate warning lights as recommended by authorities having jurisdiction.

Excavation for structures:

- Conform to elevations and dimensions shown within a tolerance of 0.1"
- Provide true and straight footing excavations with uniform and level bottoms of the width indicated to ensure proper placement and cover of all reinforcement.
- Remove all loose materials from the excavation prior to placement of concrete.
- Footings which support concrete masonry units may be stepped provided the vertical step does not exceed one half of the horizontal distances between steps and horizontal distance between steps is not less than two feet.
- If rock is encountered in a footing excavation, undercut it a minimum excavation with controlled fill.

Excavate trenches to uniform width conforming to VDOT Standard PB-1 for storm drainage piping.

Prevent surface water and subsurface or ground water from flowing into excavations and from flooding project site and surrounding area. Do not allow water to accumulate in excavations. Remove water to prevent softening of foundation bottoms, undercut footings, and soil changes detrimental to stability of subgrades and foundations. Convey water when atmospheric temperature is less than 35°F (1°C).

Protect excavated bottoms of all footings and trenches against freezing when atmospheric temperature is less than 35°F (1°C).

Finish lawn areas to within one inch above or below required subgrade elevations. Shape surface under walks and pavement to line, grade, and cross section, with not more than 1/2" above or below required subgrade elevation.

Protect graded areas from traffic and erosion. Repair areas which have settled, eroded, or become damaged due to construction activities at no additional cost to owner.

Place all fill and backfill as controlled fill as follows:

- Establish suitable subgrade conditions prior to placing fill by proofrolling, undercutting and compacting as necessary.
- Place fill materials in layers not more than 8" in loose depth for heavy for heavy compaction equipment, and not more than 4" for hand tampers.
- Prior to compaction, provide moisture content to within 3% of optimum by moistening or aerating each layer. Do not place fill material on surfaces which are muddy, frozen or contain frost or ice.
- Compact soil to not less than 95% of maximum dry density in accordance with ASTM D 698 (Standard Proctor).

Spread topsoil to a depth of 4" over all disturbed areas not receiving walks or pavement, including trenches. Immediately following placement of topsoil, disk the entire topsoiled area and rake free of stones and debris over 1/2" in any dimension. Provide a finished surface free of depressions or high spots. Seed immediately.

Owner (Contractor) shall employ a qualified soil testing laboratory to inspect earthwork operations. Notify laboratory prior to performing earthwork operations.

MODIFIED VIRGINIA CODING SYSTEM FOR EROSION & SEDIMENT CONTROL PRACTICES

NO.	TITLE	KEY	SYMBOL	NO.	TITLE	KEY	SYMBOL
3.01	SAFETY FENCE	SAF		3.21	LEVEL SPREADER	LS	
3.02	TEMPORARY GRAVEL CONSTRUCTION ENTRANCE	CE		3.22	VEGETATIVE STREAMBANK STABILIZATION	VSS	
3.03	CONSTRUCTION ROAD STABILIZATION	CRS		3.23	STRUCTURAL STREAMBANK STABILIZATION	SSS	
3.04	STRAW BALE BARRIER	STB		3.24	TEMPORARY VEHICULAR STREAM CROSSING	VSC	
3.05	SILT FENCE	SF		3.25	UTILITY STREAM CROSSING	USC	
3.06	BRUSH BARRIER	BB		3.26	DEWATERING STRUCTURE	DS	
3.07	STORM DRAIN INLET PROTECTION	IP		3.27	TURBIDITY CURTAIN	TC	
3.08	CULVERT INLET PROTECTION	CIP		3.28	SUBSURFACE DRAIN	SD	
3.09	TEMPORARY DIVERSION DIKE	DD		3.29	SURFACE ROUGHENING	SR	
3.10	TEMPORARY FILL DIVERSION	FD		3.30	TOPSOILING	TO	
3.11	TEMPORARY RIGHT-OF-WAY DIVERSION	RWD		3.31	TEMPORARY SEEDING	TS	
3.12	DIVERSION	DV		3.32	PERMANENT SEEDING	PS	
3.13	TEMPORARY SEDIMENT TRAP	ST		3.33	SODDING	SO	
3.14	TEMPORARY SEDIMENT BASIN	SB		3.34	BERMUDA GRASS AND ZOYSIAURASS ESTABLISHMENT	BZ	
3.15	TEMPORARY SLOPE DRAIN	TSD		3.35	MULCHING	MU	
3.16	PAVED FLUME	PF		3.36	SOIL STABILIZATION BLANKETS & MATTING	SB	
3.17	STORMWATER CONVEYANCE CHANNEL	CC		3.37	TREES, SHRUBS, VINES AND GROUND COVERS	VEG	
3.18	OUTLET PROTECTION	OP		3.38	TREE PRESERVATION AND PROTECTION	TP	
3.19	RIPRAP	RR		3.39	DUST CONTROL	DC	
3.20	ROCK CHECK DAMS	CD					

EROSION AND SEDIMENT CONTROL NARRATIVE

PROJECT DESCRIPTION: THE PURPOSE OF THIS PROJECT IS THE CONSTRUCTION OF A MULTI-USE TRAIL APPROXIMATELY 1.36 MILES IN LENGTH. THE TRAIL WILL TIE INTO A PREVIOUSLY DESIGNED SECTION TO THE NORTH AND RUTROUGH POINT TO THE SOUTH. THE PROJECT IS A PROPOSED ADDITION TO THE ROANOKE RIVER GREENWAY SYSTEM. CONSTRUCTION ACTIVITIES WILL CONSIST OF GRADING AND STORMWATER MANAGEMENT.

EXISTING SITE CONDITIONS: THE LIMITS OF DISTURBANCE IS LOCATED WITHIN THE SUBJECT PROPERTY, EXPLORE PARK. THE SITE IS CHARACTERIZED BY MODERATE TO STEEP SLOPE. THE ENTIRE SITE DRAINS INTO THE ADJACENT ROANOKE RIVER. THERE ARE CURRENTLY NO KNOWN EROSION PROBLEMS RELATED TO THE PROJECT AREA.

ADJACENT PROPERTY: THE PROJECT AREA IS BOUNDED BY VDOT R/W TO THE WEST AND NORTH, ROANOKE RIVER TO THE EAST, AND A CREEK TO THE SOUTH.

OFFSITE AREAS: THE CONTRACTOR WILL BE REQUIRED TO PROVIDE, TO THE COUNTY OF ROANOKE: A. THE LOCATION OF ANY OFFSITE BORROW AREAS. B. THE LOCATION OF ANY OFFSITE AREAS WHERE EXCESS EXCAVATED MATERIAL WILL BE DISPOSED.

SOILS:

CRITICAL AREAS: CRITICAL AREAS FOR THIS PROJECT INCLUDE ALL AREAS NEAR THE ROANOKE RIVER. SPECIAL CARE SHALL BE TAKEN TO ENSURE THAT THESE AREAS HAVE ADEQUATE EROSION CONTROL AND THAT SEDIMENT TRANSPORT FROM THE PROPERTY IS MINIMIZED. THE CONTRACTOR SHALL KEEP ALL WORK ABOVE THE FERC BOUNDARY.

EROSION AND SEDIMENT CONTROL MEASURES: UNLESS OTHERWISE INDICATED, ALL VEGETATIVE AND STRUCTURAL EROSION AND SEDIMENT CONTROL PRACTICES SHALL BE CONSTRUCTED AND MAINTAINED ACCORDING TO THE MINIMUM STANDARDS AND SPECIFICATIONS OF THE "VIRGINIA EROSION AND SEDIMENT CONTROL HANDBOOK", LATEST EDITION (VESCH). THE MINIMUM STANDARDS OF THE VESCH SHALL BE ADHERED TO UNLESS DIRECTED BY THE LOCAL PROGRAM ADMINISTRATOR.

STRUCTURAL:

CONSTRUCTION ENTRANCE-Std. 3.02 a stone pad, located at points of vehicular ingress and egress to the construction site, to reduce the soil transported onto public roads and other paved areas.

SILT FENCE, 3.05 a temporary sediment barrier consisting of a synthetic filter fabric stretched across and attached to supporting posts and entranced to intercept and detain small amounts of sediment from disturbed areas.

INLET PROTECTION 3.07 a sediment filter to prevent sediment from entering, accumulating in and being transferred into an inlet and associated drainage system prior to permanent stabilization of a disturbed project area.

CULVERT INLET PROTECTION 3.08 a sediment filter located at the inlet to storm sewer culvert to prevent sediment from entering, accumulating in, and being transferred by a culvert and associated drainage system.

OUTLET PROTECTION 3.18 the installation of a riprap channel sections and/or stilling basins below storm drain outlets to reduce erosion and under-cutting from scouring at outlets and to reduce flow velocities before stormwater enters receiving channels below these outlets.

RIP-RAP 3.19 permanent erosion resistant ground cover of large, loose, angular stone installed where soil conditions, water turbulence/velocity, etc, may erode under design flow conditions.

ROCK CHECK DAMS 3.20 to reduce the velocity of the concentrated stormwater flows, thereby reducing erosion of the swale or ditch. This practice also traps sediment generated from adjacent areas or the ditch itself, mainly by ponding of the stormwater runoff. Field experience has shown it to perform more effectively than silt fence or straw bales in the effort to stabilize "wet-weather" ditches.

LEVEL SPREADER 3.21 an outlet for dikes or diversions consisting of an excavated depression at zero slope across a slope to convert concentrated, sediment-free run-off to sheet flow and release it onto areas of undisturbed soil stabilized by vegetation.

VEGETATIVE:

TEMPORARY SEEDING, 3.31 establishment of temporary vegetative cover on disturbed areas by seeding with appropriate rapidly growing annual plants to reduce erosion by stabilizing disturbed areas that will not be brought to final grade for a period of more than 14 days.

PERMANENT SEEDING, 3.32 establishment of perennial vegetative cover on disturbed areas by planting seed to reduce erosion and decrease sediment yield from disturbed areas.

MULCHING, 3.35 application of plant residues or other suitable materials to the soil surface. Mulching will prevent erosion by protecting the soils surface from raindrop impact and reducing the velocity of overland flow. After seeding, mulching will foster the growth of vegetation by increasing available moisture and providing insulation against extreme heat and cold.

SOIL STABILIZATION BLANKETS & MATTING 3.36 installation of a protective blanket or soil stabilization mat on a prepared steep slope or channel.

DUST CONTROL, 3.39 the application of measures to 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.

MANAGEMENT STRATEGIES:

A) CONSTRUCTION WILL BE SEQUENCED SO THAT GRADING OPERATIONS CAN BEGIN AND END AS QUICKLY AS POSSIBLE.

B) SEDIMENT TRAPPING MEASURES WILL BE INSTALLED AS A FIRST STEP IN GRADING.

C) THE LOCAL PROGRAM ADMINISTRATOR RESERVES THE RIGHT TO ADD TO, DELETE OR OTHERWISE CHANGE THE EROSION CONTROL MEASURES AS DEEMED NECESSARY DUE TO ACTUAL FIELD CONDITIONS BY WRITTEN NOTIFICATION TO THE CONTRACTOR.

D) ALL FILL AND CUT SLOPES SHALL BE SEEDED WITHIN SEVEN (7) DAYS OF ACHIEVING FINAL GRADE.

E) ONLY AFTER INSPECTION AND APPROVAL FROM THE LOCAL PROGRAM ADMINISTRATOR, EROSION AND SEDIMENT CONTROL DEVICES MAY BE REMOVED FOLLOWING THE STABILIZATION OF THE CONTRIBUTING AREAS.

THE GENERAL CONTRACTOR SHALL INSPECT DISTURBED AREAS OF THE SITE THAT HAVE NOT BEEN FINALLY STABILIZED, AND AREAS USED FOR STORAGE OF MATERIALS THAT ARE EXPOSED TO PRECIPITATION, STRUCTURAL CONTROL MEASURES, AND THE AREA OF CONSTRUCTION VEHICLE ACCESS AT LEAST EVERY FOURTEEN (14) CALENDAR DAYS, AND WITHIN 48 HOURS OF THE END OF A STORM EVENT PRODUCING 1/2" OR GREATER OF PRECIPITATION. WHERE AREAS HAVE BEEN FINALLY OR TEMPORARY STABILIZED OR RUNOFF IS UNLIKELY DUE TO WINTER CONDITIONS (SITE IS COVERED WITH, ICE, OR FROZEN GROUND EXISTS) SUCH INSPECTIONS SHALL BE CONDUCTED AT LEAST ONCE EVERY MONTH.

A) INSPECT DISTURBED AREAS AND AREAS OF MATERIALS STORAGE THAT ARE EXPOSED TO PRECIPITATION FOR EVIDENCE OF, OR THE POTENTIAL FOR SEDIMENT ENTERING THE STORM DRAIN SYSTEM. INSPECT EAS CONTROLS IN ACCORDANCE WITH REQUIREMENTS STATED HEREIN, AND INSPECT POINTS OF STORM DRAIN DISCHARGE FOR EXCESSIVE SEDIMENTATION. CORRECT SITE CONTROLS AS AS REQUIRED TO REDUCE SEDIMENTATION OF STORM DRAINED, CULVERTS, AND RECEIVING CHANNELS.

B) IF CONTROLS OR SEDIMENT PREVENTION AREAS ARE FOUND TO BE IN NEED OF REPAIR OR MODIFICATION, THE GENERAL CONTRACTOR SHALL PROVIDE ADDITIONAL MEASURES OR MODIFICATION TO EXISTING MEASURES AS REQUIRED. ANY ADDITIONAL MEASURES OR MODIFICATIONS TO EXISTING MEASURES SHALL BE RECORDED AS FIELD REVISIONS TO THESE PLANS. IN THE EVENT THAT ADDITIONAL CONTROLS ARE FOUND TO BE REQUIRED, THE GENERAL CONTRACTOR SHALL BE RESPONSIBLE FOR IMPLEMENTING THESE CONTROLS BEFORE THE NEXT ANTICIPATED STORM EVENT IS IMPRACTICAL, THEY SHALL BE IMPLEMENTED AS SOON AS PRACTICAL.

C) A REPORT SUMMARIZING THE SCOPE OF INSPECTIONS, NAME OF INSPECTOR, INSPECTOR'S QUALIFICATIONS, DATES OF INSPECTIONS, MAJOR OBSERVATIONS PERTAINING TO THE IMPLEMENTATION OF THESE EROSION CONTROL PLANS, AND ACTIONS TAKEN SHALL BE MADE AND RETAINED AS A PART OF THESE PLANS. MAJOR OBSERVATIONS OF THESE REPORTS SHALL INCLUDE: THE LOCATIONS OF EXCESSIVE SEDIMENTATION FROM THE SITE; LOCATIONS OF CONTROLS IN NEED OF REPAIR; LOCATION OF FAILED OR INADEQUATE CONTROLS; AND LOCATIONS WHERE ADDITIONAL CONTROLS ARE NEEDED.

STORMWATER MANAGEMENT:

The energy balance equation is being utilized for this development to provide conformance with state regulations related to channel protection requirements. The 1-year and 10-year storms have been analyzed and detained utilizing the stormwater management facility to ensure the development conforms to current standards.

Flood protection requirements are met by providing a reduction in the post development 10-year peak flow rate when compared to the existing 10-year peak flow rate and current discharge from the site.

4.30 Acres of open space will be conserved in Sugar Loaf Mountain Preserve and Happy Hollow to address stormwater quality for the site.

MINIMUM STANDARDS

THE FOLLOWING STANDARDS ARE TO BE PROVIDED OR ADDRESSED ON EVERY DEVELOPMENT PROJECT EXCEEDING 10,000 S.F. IN AREA OF DISTURBANCE. THESE STANDARDS ARE CONSIDERED A MINIMUM AND MAY REQUIRE ADDITIONAL MEASURES AS DEEMED NECESSARY BY THE LOCAL PROGRAM AUTHORITY OR THE CONSULTING ENGINEER.

NO.	CRITERIA, TECHNIQUE OR METHOD	PRACTICES PROVIDED
1	PERMANENT OR TEMPORARY SOIL STABILIZATION SHALL BE APPLIED TO DENUDED AREAS WITHIN SEVEN DAYS AFTER FINAL GRADE IS REACHED ON ANY PORTION OF THE SITE. TEMPORARY SOIL STABILIZATION SHALL BE APPLIED WITHIN SEVEN DAYS TO DENUDED AREAS THAT MAY NOT BE AT FINAL GRADE BUT WILL REMAIN DORMANT FOR LONGER THAN 14 DAYS. PERMANENT STABILIZATION SHALL BE APPLIED TO AREAS THAT ARE TO BE LEFT DORMANT FOR MORE THAN ONE YEAR.	TS PS MU B/M
2	DURING CONSTRUCTION OF THE PROJECT, SOIL STOCK PILES AND BORROW AREAS SHALL BE STABILIZED OR PROTECTED WITH SEDIMENT TRAPPING MEASURES. THE APPLICANT IS RESPONSIBLE FOR THE TEMPORARY PROTECTION AND PERMANENT STABILIZATION OF ALL SOIL STOCKPILES ON SITE AS WELL AS BORROW AREAS AND SOIL INTENTIONALLY TRANSPORTED FROM THE PROJECT SITE.	SF TS PS MU B/M
3	A PERMANENT VEGETATIVE COVER SHALL BE ESTABLISHED ON DENUDED AREAS NOT OTHERWISE PERMANENTLY STABILIZED. PERMANENT VEGETATION SHALL NOT BE CONSIDERED ESTABLISHED UNTIL A GROUND COVER IS ACHIEVED THAT IS UNIFORM, MATURE ENOUGH TO SURVIVE AND WILL INHIBIT EROSION.	TS PS MU B/M
4	SEDIMENT BASINS AND TRAPS, PERIMETER DIKES, SEDIMENT BARRIERS AND OTHER MEASURES INTENDED TO TRAP SEDIMENT SHALL BE CONSTRUCTED AS A FIRST STEP IN ANY LAND-DISTURBING ACTIVITY AND SHALL BE MADE FUNCTIONAL BEFORE UPSLOPE LAND DISTURBANCE TAKES PLACE.	SF
5	STABILIZATION METHODS SHALL BE APPLIED TO EARTHEN STRUCTURES SUCH AS DAMS, DIKES AND DIVERSIONS IMMEDIATELY AFTER INSTALLATION.	TS PS MU B/M
6	SEDIMENT TRAPS AND SEDIMENT BASINS SHALL BE DESIGNED AND CONSTRUCTED BASED UPON THE TOTAL DRAINAGE AREA TO BE SERVED BY THE TRAP OR BASIN.	NOT APPLICABLE
7	CUT AND FILL SLOPES SHALL BE DESIGNED AND CONSTRUCTED IN A MANNER THAT WILL MINIMIZE EROSION. SLOPES THAT ARE FOUND TO BE ERODING EXCESSIVELY WITHIN ONE YEAR OF PERMANENT STABILIZATION SHALL BE PROVIDED WITH ADDITIONAL SLOPE STABILIZATION MEASURES UNTIL THE PROBLEM IS CORRECTED.	TS PS MU B/M
8	CONCENTRATED RUNOFF SHALL NOT FLOW DOWN CUT OR FILL SLOPES UNLESS CONTAINED WITHIN AN ADEQUATE TEMPORARY OR PERMANENT CHANNEL, FLUME OR SLOPE DRAIN STRUCTURE.	NOT APPLICABLE
9	WHENEVER WATER SEEPS FROM A SLOPE FACE, ADEQUATE DRAINAGE OR OTHER PROTECTION SHALL BE PROVIDED.	NOT APPLICABLE
10	ALL STORM SEWER SLEETS THAT ARE MADE OPERABLE DURING CONSTRUCTION SHALL BE PROTECTED SO THAT SEDIMENT WATER CANNOT ENTER THE CONVEYANCE SYSTEM WITHOUT FIRST BEING FILTERED OR OTHERWISE TREATED TO REMOVE SEDIMENT.	CIP IP
11	BEFORE NEWLY CONSTRUCTED STORMWATER CONVEYANCE CHANNELS OR PIPES ARE MADE OPERATIONAL, ADEQUATE OUTLET PROTECTION AND ANY REQUIRED TEMPORARY OR PERMANENT CHANNEL LINING SHALL BE INSTALLED IN BOTH THE CONVEYANCE CHANNEL AND RECEIVING CHANNEL.	RR OP LS
12	WHEN WORK IN A LIVE WATERCOURSE IS PERFORMED, PRECAUTIONS SHALL BE TAKEN TO MINIMIZE ENCROACHMENT, CONTROL SEDIMENT TRANSPORT AND STABILIZE THE WORK AREA TO THE GREATEST EXTENT POSSIBLE DURING CONSTRUCTION. 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.	NOT APPLICABLE
13	WHEN A LIVE WATERCOURSE MUST BE CROSSED BY CONSTRUCTION VEHICLES MORE THAN TWICE IN ANY (6) SIX-MONTH PERIOD, A TEMPORARY VEHICULAR STREAM CROSSING CONSTRUCTED OF NON-ERODIBLE MATERIAL SHALL BE PROVIDED.	NOT APPLICABLE
14	ALL APPLICABLE FEDERAL, STATE AND LOCAL REGULATIONS PERTAINING TO WORKING IN OR CROSSING LIVE WATERCOURSES SHALL BE MET.	NOT APPLICABLE
15	THE BEDS AND BANKS OF A WATERCOURSE SHALL BE STABILIZED IMMEDIATELY AFTER WORK IN THE WATERCOURSE IS COMPLETED.	NOT APPLICABLE
16	UNDERGROUND UTILITY LINES SHALL BE INSTALLED IN ACCORDANCE WITH THE FOLLOWING STANDARDS IN ADDITION TO OTHER APPLICABLE CRITERIA: 1.) NO MORE THAN 500 LINEAR FEET OF TRENCH MAY BE OPENED AT ONE TIME. 2.) EXCAVATED MATERIAL SHALL BE PLACED ON THE UPHILL SIDE OF TRENCHES. 3.) EFFLUENT FROM DE-WATERING OPERATIONS SHALL BE FILTERED OR PASSED THROUGH AN APPROVED SEDIMENT TRAPPING DEVICE, OR BOTH, AND DISCHARGED IN A MANNER THAT DOES NOT ADVERSELY AFFECT FLOWING STREAMS OR OFFSET PROPERTY. 4.) MATERIAL USED FOR BACKFILLING TRENCHES SHALL BE PROPERLY COMPACTED IN ORDER TO MINIMIZE EROSION AND PROMOTE STABILIZATION. 5.) RE-STABILIZATION SHALL BE ACCORDANCE WITH THIS CHAPTER. 6.) APPLICABLE SAFETY REQUIREMENTS SHALL BE COMPLIED WITH.	SF
17	WHERE CONSTRUCTION VEHICLE ACCESS ROUTES INTERSECT PAVED OR PUBLIC ROADS, PROVISIONS SHALL BE MADE TO MINIMIZE THE TRANSPORT OF SEDIMENT BY VEHICULAR TRACKING ONTO THE PAVED SURFACE. WHERE SEDIMENT IS TRANSPORTED ONTO A PAVED OR PUBLIC ROAD SURFACE, THE ROAD SURFACE SHALL BE CLEANED THOROUGHLY AT THE END OF EACH DAY. SEDIMENT SHALL BE REMOVED FROM THE ROADS BY SHOVELING OR SWEEPING AND TRANSPORTED TO A DESIGNATED DISPOSAL AREA. STREET WASHING SHALL BE ALLOWED ONLY AFTER SEDIMENT IS REMOVED IN THIS MANNER. THIS PROVISION SHALL APPLY TO INDIVIDUAL DEVELOPMENT LOTS AS WELL AS TO LARGER LAND-DISTURBING ACTIVITIES.	CE
18	ALL TEMPORARY EROSION AND SEDIMENT CONTROL MEASURES SHALL BE REMOVED WITHIN 30 DAYS AFTER FINAL SITE STABILIZATION OR AFTER THE TEMPORARY MEASURES ARE NO LONGER NEEDED, UNLESS OTHERWISE AUTHORIZED BY THE VESCP AUTHORITY. TRAPPED SEDIMENT AND THE DISTURBED SOIL AREAS RESULTING FROM THE DISPOSITION OF TEMPORARY MEASURES SHALL BE PERMANENTLY STABILIZED TO PREVENT FURTHER EROSION AND SEDIMENTATION.	TS PS MU B/M
19	PROPERTIES AND WATERWAYS DOWNSTREAM FROM DEVELOPMENT SITES SHALL BE PROTECTED FROM SEDIMENT DEPOSITION, EROSION AND DAMAGE DUE TO INCREASES IN VOLUME, VELOCITY AND PEAK FLOW RATE OF STORMWATER RUNOFF FOR THE STATED FREQUENCY STORM OF 24-HOUR DURATION IN ACCORDANCE WITH THE FOLLOWING STANDARDS AND CRITERIA. STREAM RESTORATION AND RELOCATION PROJECTS THAT INCORPORATE NATURAL CHANNEL DESIGN CONCEPTS ARE NOT MAN-MADE CHANNELS AND SHALL BE EXEMPT FROM ANY FLOW RATE CAPACITY AND VELOCITY REQUIREMENTS FOR NATURAL OR MAN-MADE CHANNELS. A.) CONCENTRATED STORMWATER RUNOFF LEAVING A DEVELOPMENT SITE SHALL BE DISCHARGED DIRECTLY INTO AN ADEQUATE NATURAL OR MAN-MADE RECEIVING CHANNEL, PIPE OR STORM SEWER SYSTEM. FOR THOSE SITES WHERE RUNOFF IS DISCHARGED INTO A PIPE OR PIPE SYSTEM, DOWNSTREAM STABILITY ANALYSES AT THE OUTFALL OF THE PIPE OR PIPE SYSTEM SHALL BE PERFORMED. B.) ADEQUACY OF ALL CHANNELS AND PIPES SHALL BE VERIFIED IN THE FOLLOWING MANNER: (1) THE APPLICANT SHALL DEMONSTRATE THAT THE TOTAL DRAINAGE AREA TO THE POINT OF ANALYSIS WITHIN THE CHANNEL IS ONE HUNDRED TIMES GREATER THAN THE CONTRIBUTING DRAINAGE AREA OF THE PROJECT IN QUESTION; OR (2) (a) NATURAL CHANNELS SHALL BE ANALYZED BY THE USE OF A TWO-YEAR STORM TO VERIFY THAT STORMWATER WILL NOT OVERTOP CHANNEL BANKS NOR CAUSE EROSION OF CHANNEL BED OR BANKS. (b) ALL PREVIOUSLY CONSTRUCTED MAN-MADE CHANNELS SHALL BE ANALYZED BY THE USE OF A 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 EXISTING NATURAL RECEIVING CHANNELS OR PREVIOUSLY CONSTRUCTED MAN-MADE CHANNELS OR PIPES ARE NOT ADEQUATE, THE APPLICANT SHALL: (1) IMPROVE THE CHANNELS TO A CONDITION WHERE A TEN-YEAR STORM WILL NOT OVERTOP THE BANKS AND A TWO-YEAR STORM WILL NOT CAUSE EROSION TO THE CHANNEL BED OR BANKS; OR (2) IMPROVE THE PIPE OR PIPE SYSTEM TO A CONDITION WHERE THE TEN-YEAR STORM IS CONTAINED WITHIN THE APPURTENANCES; OR (3) DEVELOP A SITE DESIGN THAT WILL NOT CAUSE THE PRE-DEVELOPMENT PEAK RUNOFF RATE FROM A TWO-YEAR STORM TO INCREASE WHEN RUNOFF OUTFALLS INTO A NATURAL CHANNEL OR WILL NOT CAUSE THE PRE-DEVELOPMENT PEAK RUNOFF RATE FROM A TEN-YEAR STORM TO INCREASE WHEN RUNOFF OUTFALLS INTO A MAN-MADE CHANNEL; OR (4) PROVIDE A COMBINATION OF CHANNEL IMPROVEMENT, STORMWATER DETENTION OR OTHER MEASURES WHICH IS SATISFACTORY TO THE VESCP AUTHORITY TO PREVENT DOWNSTREAM EROSION. D.) THE APPLICANT SHALL PROVIDE EVIDENCE OF PERMISSION TO MAKE THE IMPROVEMENTS. E.) ALL HYDROLOGIC ANALYSES SHALL BE BASED ON THE EXISTING WATERSHED CHARACTERISTICS AND THE ULTIMATE DEVELOPMENT CONDITION OF THE SUBJECT PROJECT. F.) IF THE APPLICANT CHOOSES AN OPTION THAT INCLUDES STORMWATER DETENTION, HE SHALL OBTAIN APPROVAL FROM THE VESCP OF A PLAN FOR MAINTENANCE OF THE DETENTION FACILITIES. THE PLAN SHALL SET FORTH THE MAINTENANCE REQUIREMENTS OF THE FACILITY AND THE PERSON RESPONSIBLE FOR PERFORMING THE MAINTENANCE. G.) OUTFALL FROM A DETENTION FACILITY SHALL BE DISCHARGED TO A RECEIVING CHANNEL, AND ENERGY DISSIPATORS SHALL BE PLACED AT THE OUTFALL OF ALL DETENTION FACILITIES AS NECESSARY TO PROVIDE A STABILIZED TRANSITION FROM THE FACILITY TO THE RECEIVING CHANNEL. H.) ALL ON-SITE CHANNELS MUST BE VERIFIED TO BE ADEQUATE. I.) INCREASED VOLUMES OF SHEET FLOWS THAT MAY CAUSE EROSION OR SEDIMENTATION ON ADJACENT PROPERTY SHALL BE DIVERTED TO A STABLE OUTLET, ADEQUATE CHANNEL, PIPE OR PIPE SYSTEM, TO A DETENTION FACILITY. J.) IN APPLYING THESE STORMWATER MANAGEMENT CRITERIA, INDIVIDUAL LOTS OR PARCELS IN A RESIDENTIAL, COMMERCIAL OR INDUSTRIAL DEVELOPMENT SHALL NOT BE CONSIDERED TO BE SEPARATE DEVELOPMENT PROJECTS. INSTEAD, THE DEVELOPMENT, AS A WHOLE, SHALL BE CONSIDERED TO BE A SINGLE DEVELOPMENT PROJECT. HYDROLOGIC PARAMETERIZATION OF THE FORESTED PEAK FLOW RATE BY THE REDUCTION FACTOR THAT IS EQUAL TO THE RUNOFF VOLUME FROM THE SITE WHEN IT WAS IN A GOOD FORESTED CONDITION DIVIDED BY THE RUNOFF VOLUME FROM THE SITE IN ITS PROPOSED CONDITION, AND SHALL BE EXEMPT FROM ANY FLOW RATE CAPACITY AND VELOCITY REQUIREMENTS FOR NATURAL OR MAN-MADE CHANNELS AS DEFINED IN ANY REGULATIONS PROMULGATED PURSUANT TO 10.1-562 OR 10.1-570 OF THE ACT. K.) FOR PLANS APPROVED ON AND AFTER JULY 1, 2014, THE FLOW RATE CAPACITY AND VELOCITY REQUIREMENTS OF 10.1-561 A OF THE ACT AND THIS SUBSECTION SHALL BE SATISFIED BY COMPLIANCE WITH WATER QUALITY REQUIREMENTS IN THE STORMWATER MANAGEMENT ACT (10.1-603.2 ET SEQ. OF THE CODE OF VIRGINIA) AND ATTENDANT REGULATIONS, UNLESS SUCH LAND-DISTURBING ACTIVITIES ARE IN ACCORDANCE WITH 4AVAC50-60-48 OF THE VIRGINIA STORMWATER MANAGEMENT PROGRAM (VSPM) PERMIT REGULATIONS. L.) COMPLIANCE WITH THE WATER QUANTITY MINIMUM STANDARDS SET OUT IN 4AVAC50-60-86 OF THE VIRGINIA STORMWATER MANAGEMENT PROGRAM (VSPM) PERMIT REGULATIONS SHALL BE DEEMED TO SATISFY THE REQUIREMENTS OF SUBDIVISION 19 OF THIS SUBSECTION.	SEE SUPPLEMENTAL CALCULATIONS FOR FLOOD AND CHANNEL PROTECTION REQUIREMENTS FOR THE PROPOSED DEVELOPMENT.

PROJECT NO: 00647135
DESIGNED BY: BAJ
DRAWN BY: BAJ
DEPT CHECK: RMF
PRJ CHECK: JSH
DATE: NOV. 2023
SCALE: AS SHOWN

31

COMMONWEALTH OF VIRGINIA
RYAN M FEDAK
Dc. No. 38329
PROFESSIONAL ENGINEER
2/16/24

ROANOKE RIVER GREENWAY
THROUGH EXPLORE PARK
ESC NOTES
ROANOKE COUNTY, VA

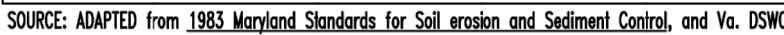
AECOM
10 South Jefferson Street
Suite 1600
Roanoke, Virginia 24011
540.857.3100 tel
www.aecom.com

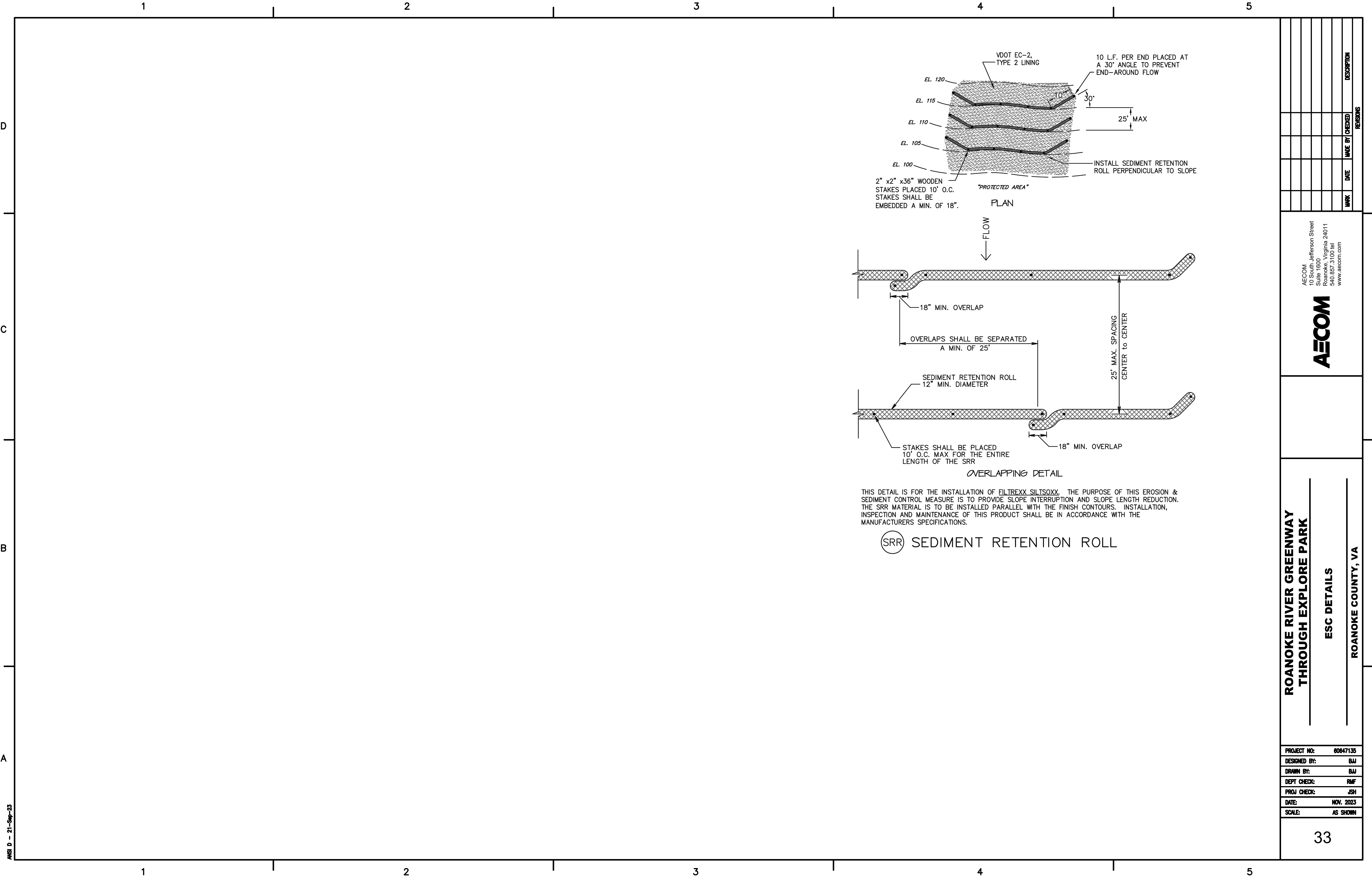
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THIS DETAIL IS FOR THE INSTALLATION OF FILTREXX SILTSOXX. THE PURPOSE OF THIS EROSION & SEDIMENT CONTROL MEASURE IS TO PROVIDE SLOPE INTERRUPTION AND SLOPE LENGTH REDUCTION. THE SRR MATERIAL IS TO BE INSTALLED PARALLEL WITH THE FINISH CONTOURS. INSTALLATION, INSPECTION AND MAINTENANCE OF THIS PRODUCT SHALL BE IN ACCORDANCE WITH THE MANUFACTURERS SPECIFICATIONS.

(SRR) SEDIMENT RETENTION ROLL

PROJECT NO: 00047135	
DESIGNED BY: BAJ	
DRAWN BY: BAJ	
DEPT CHECK: RMF	
PROJ CHECK: JSH	
DATE: NOV. 2023	
SCALE: AS SHOWN	
33	

ROANOKE RIVER GREENWAY
THROUGH EXPLORE PARK

ESC DETAILS

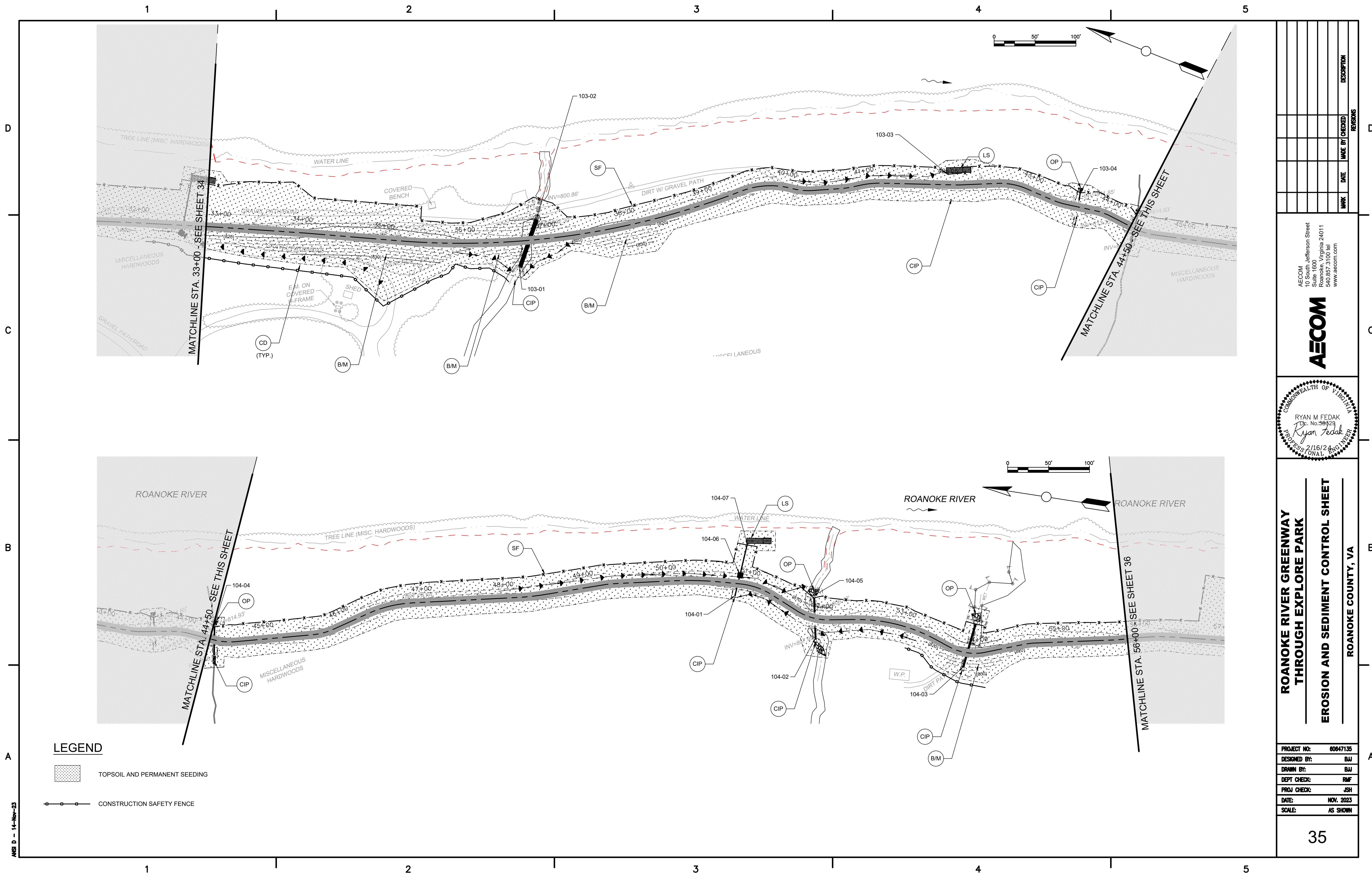
ROANOKE COUNTY, VA

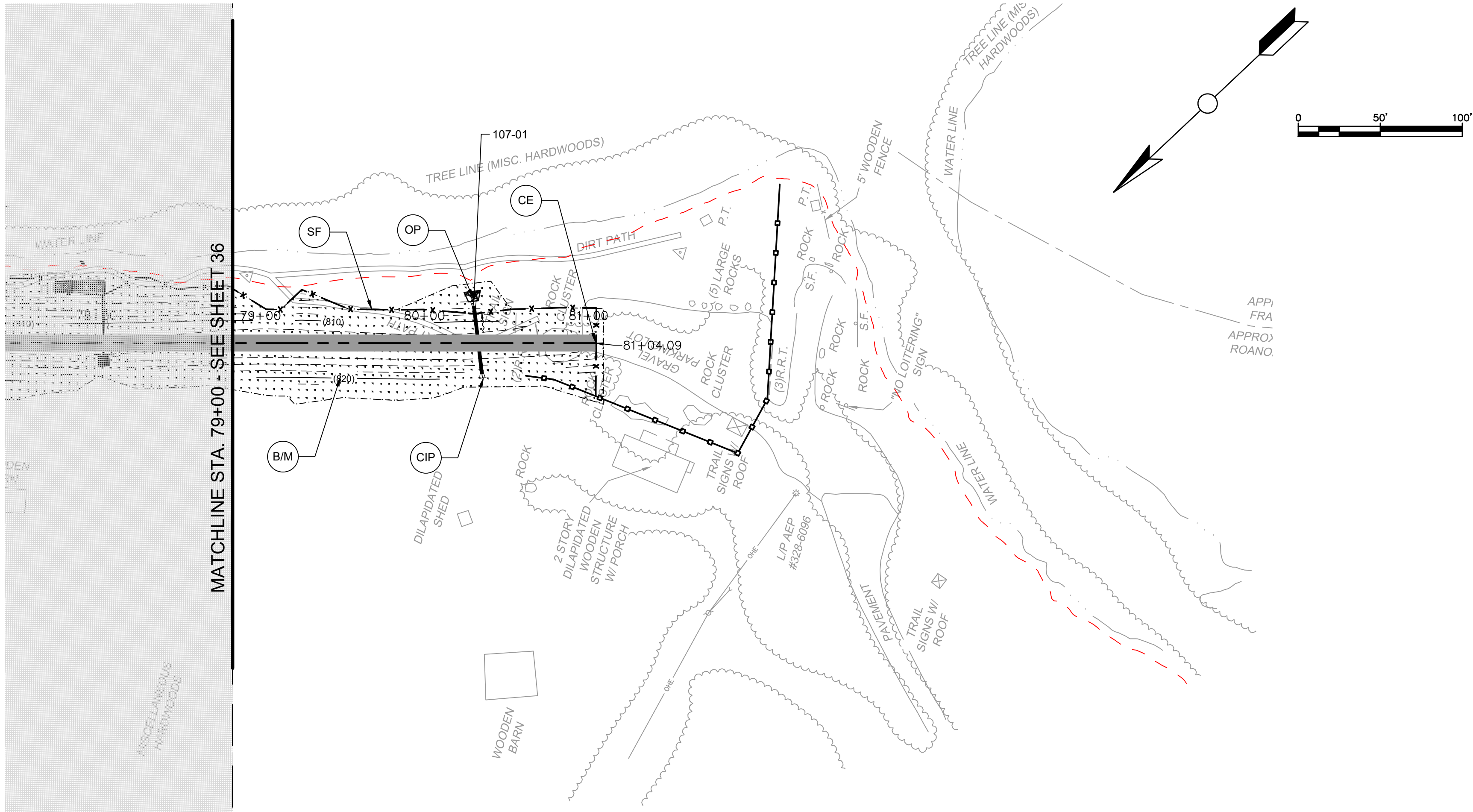
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AECOM
10 South Jefferson Street
Suite 1600
Roanoke, Virginia 24011
540.857.3100 tel
www.aecom.com

REVISIONS

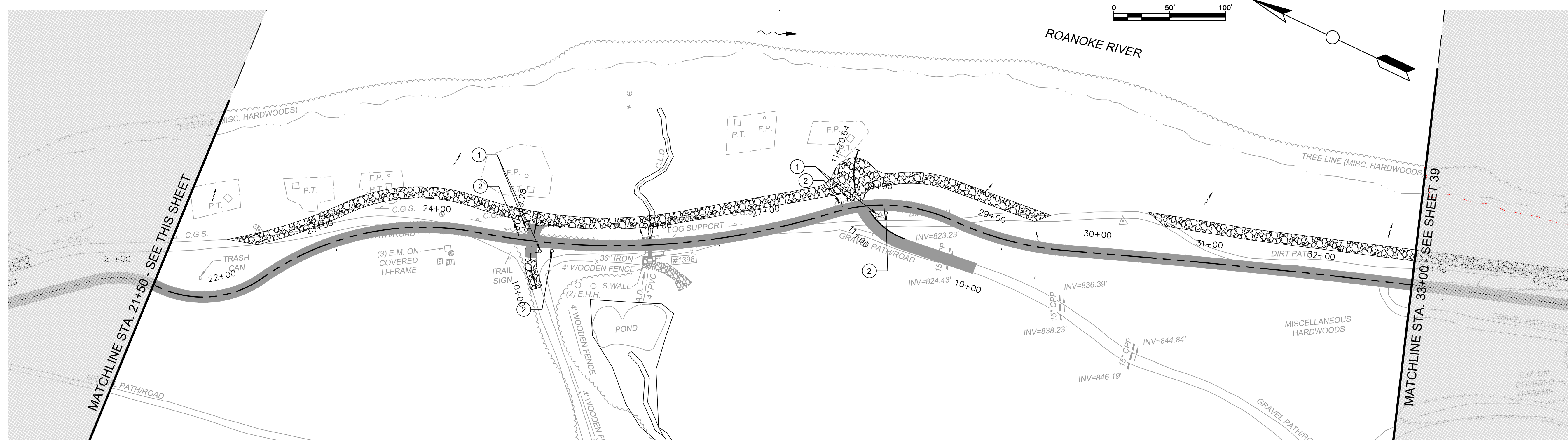
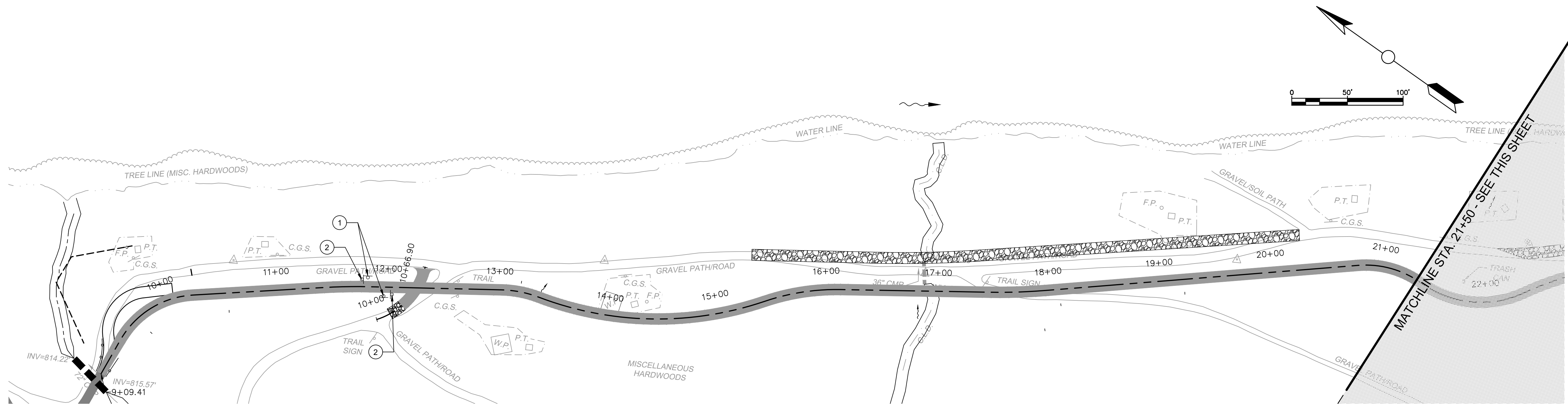
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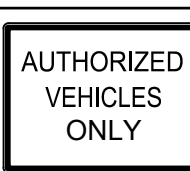




37

—■—■—■— CONSTRUCTION SAFETY FENCE



SIGN SCHEDULE						
DESIGNATION	SIGN	NUMBER	SIZE	ASSEMBLY AREA (SF)	SIGN STRUCTURE STD.	FOUNDATION
①		R1-1	18"x18"	2.25	STP-1 2" 14 GA	TYPE A
②		R5-11	30"x24"	5	STP-1 2" 14 GA	TYPE A

SIGN SCHEDULE						
DESIGNATION	SIGN	NUMBER	SIZE	ASSEMBLY AREA (SF)	SIGN STRUCTURE STD.	FOUNDATION
③		W11-15	18"x18"	2.25	STP-1 2" 14 GA	TYPE A

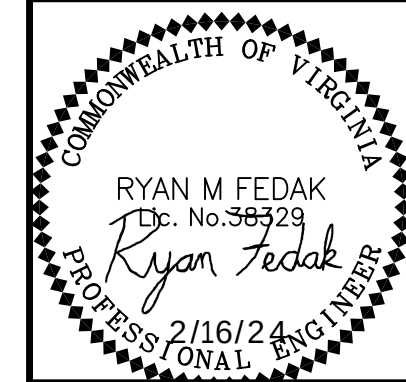
SIGN NOTES:

1. NO PORTION OF A SIGN SHALL BE PLACED LESS THAN 2 FEET Laterally FROM THE NEAR EDGE OF THE SHARED-USE PATH.
2. MOUNTING HEIGHT FOR POST-MOUNTED SIGNS ON SHARED-USE PATHS SHALL BE A MINIMUM OF 4 FEET, MEASURED VERTICALLY FROM THE BOTTOM OF THE SIGN TO THE ELEVATION OF THE NEAR EDGE OF THE PATH SURFACE.
3. FURNISHING AND INSTALLATION OF SIGNS SHALL BE PAID AS A LUMP SUM ITEM.
4. THE LUMP SUM UNIT PRICE TO FURNISH AND INSTALL ALL SIGNS SHALL INCLUDE, BUT NOT BE LIMITED TO, THE SIGNS, POSTS, MOUNTING HARDWARE, AND ALL LABOR AND EQUIPMENT REQUIRED TO COMPLETE THE WORK.

[illegible]

AECOM
10 South Jefferson Street
Suite 1600
Roanoke, Virginia 24011
540.857.3100 tel
www.aecom.com

AECOM



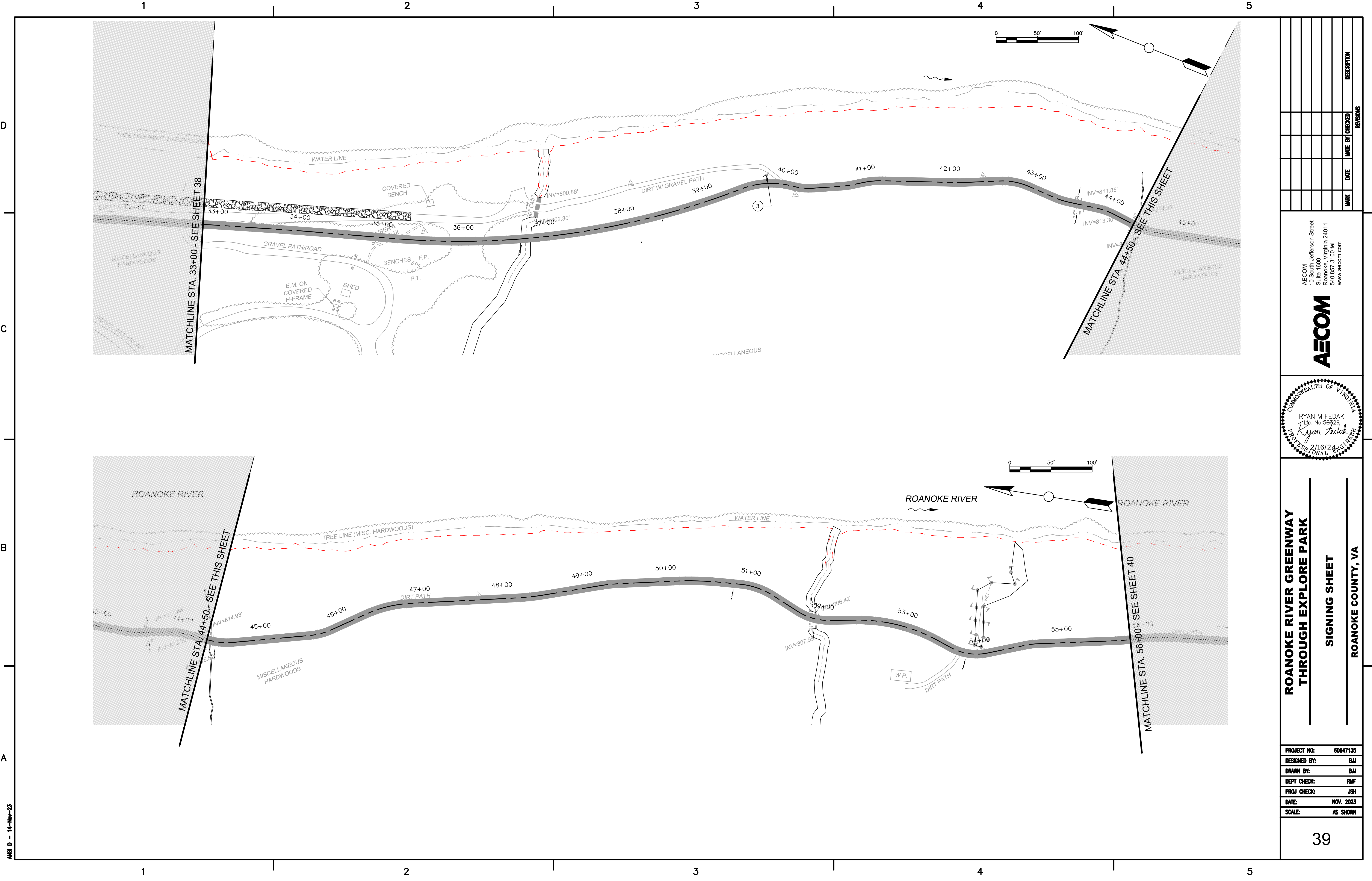
ROANOKE RIVER GREENWAY THROUGH EXPLORE PARK

SIGNING SHEET

ROANOKE COUNTY, VA

PROJECT NO:	80647135
DESIGNED BY:	BJJ
DRAWN BY:	BJJ
DEPT CHECK:	RMF
PROJ CHECK:	JSJ
DATE:	NOV. 2023
SCALE:	AS SHOWN

38



1 2 3 4 5

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ANS D - 14-Nov-23

REVISIONS		DATE	MADE BY	CHECKED	DESCRIPTION

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10 South Jefferson Street
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Roanoke, Virginia 24011
540.857.3100 tel
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COMMONWEALTH OF VIRGINIA

RYAN M FEDAK
Lic. No. 38329
Ryan Fedak
PROFESSIONAL ENGINEER

2/16/24

ROANOKE RIVER GREENWAY
THROUGH EXPLORE PARK

SIGNING SHEET

ROANOKE COUNTY, VA

PROJECT NO:	60847135
DESIGNED BY:	BAJ
DRAWN BY:	BAJ
DEPT CHECK:	RMF
PROJ CHECK:	JSH
DATE:	NOV. 2023
SCALE:	AS SHOWN

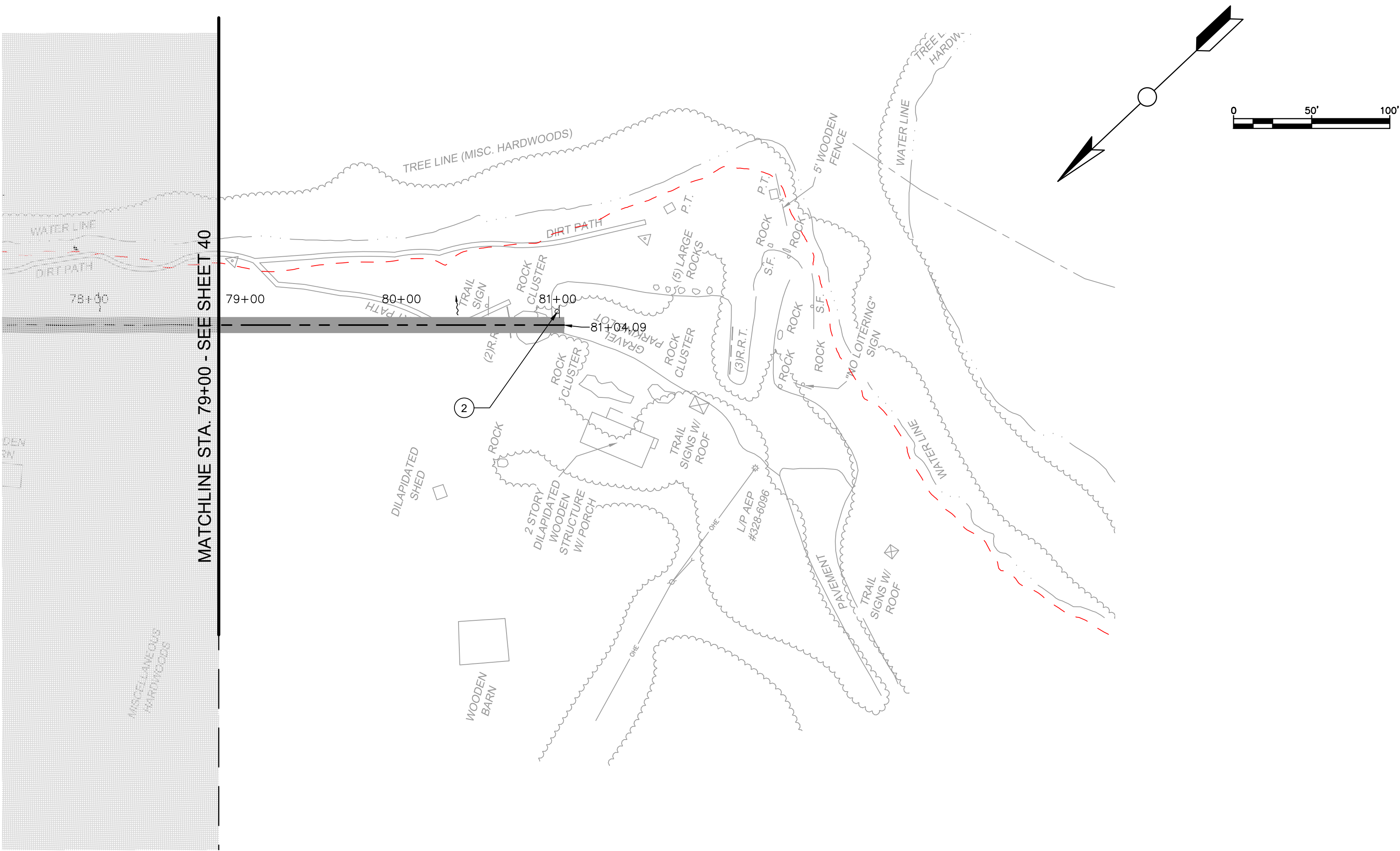
39

D

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MARK	DATE	MADE BY	CHECKED	REVISIONS	DESCRIPTION

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10 South Jefferson Street
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COMMONWEALTH OF VIRGINIA

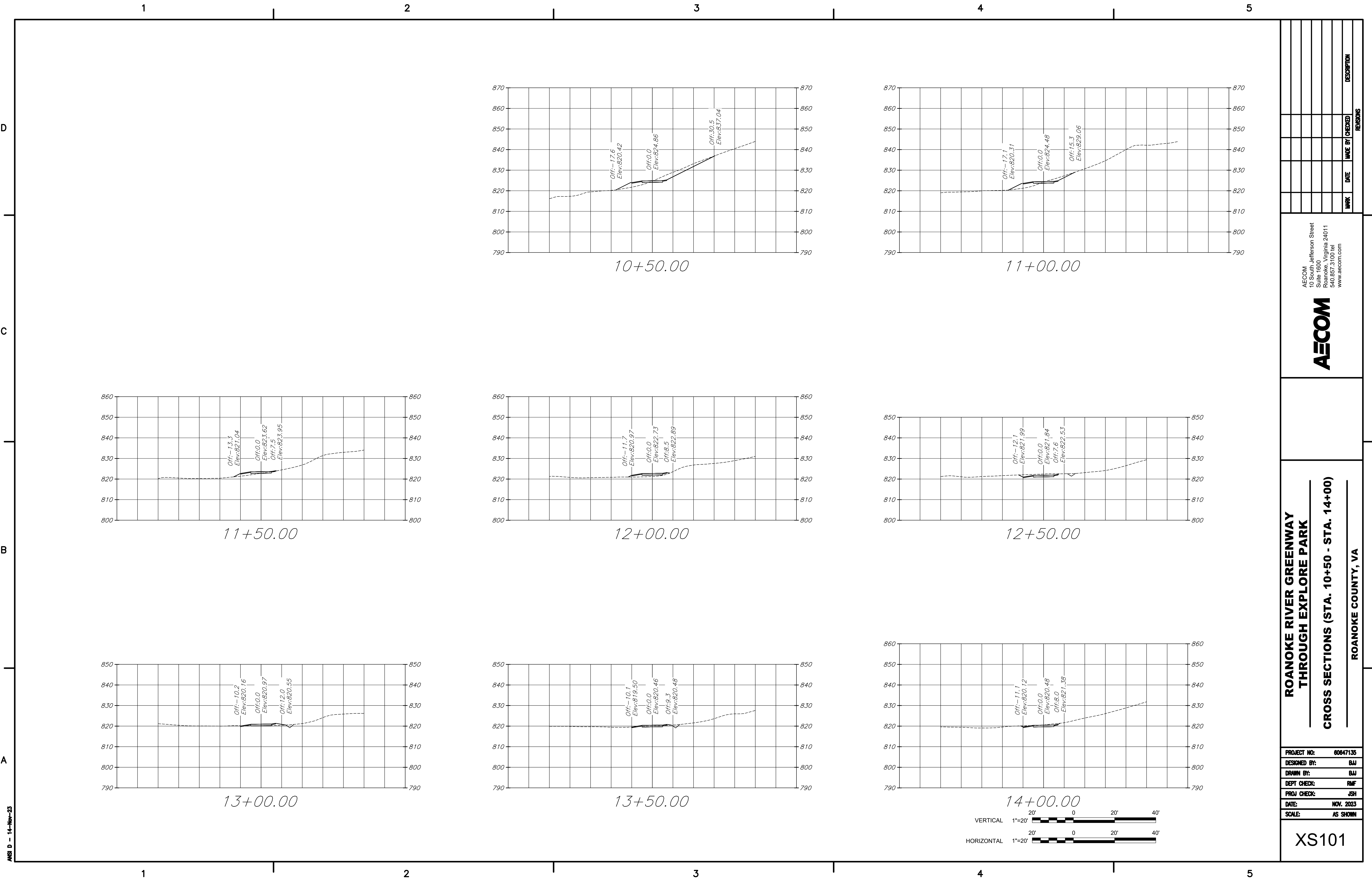
RYAN M FEDAK
Lic. No. 35329
Ryan Fedak
2/16/24
PROFESSIONAL ENGINEER

ROANOKE RIVER GREENWAY
THROUGH EXPLORE PARK

SIGNING SHEET

ROANOKE COUNTY, VA

PROJECT NO:	60647135
DESIGNED BY:	BAJ
DRAWN BY:	BAJ
DEPT CHECK:	RMF
PROJ CHECK:	JSH
DATE:	NOV. 2023
SCALE:	AS SHOWN



D

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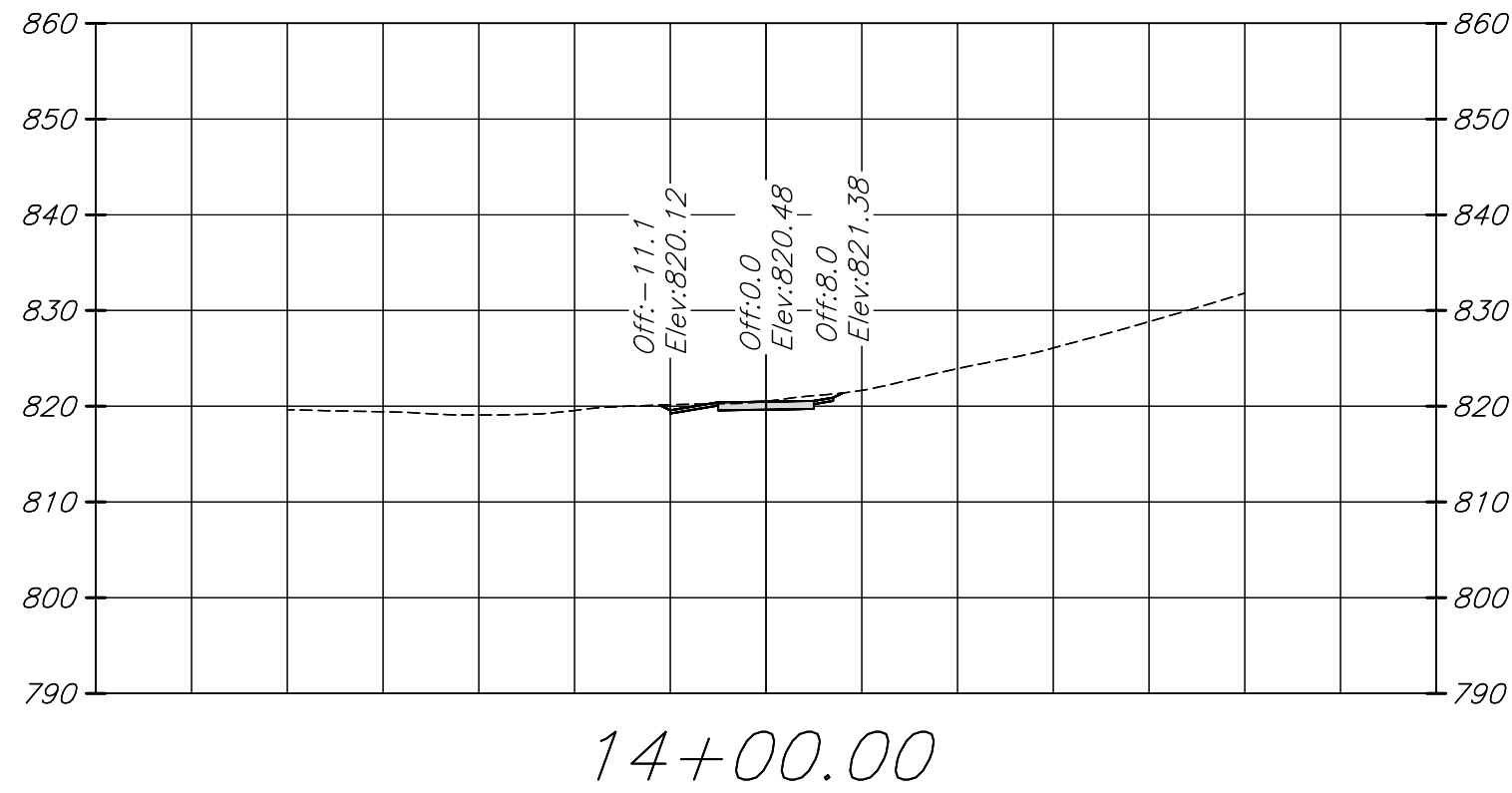
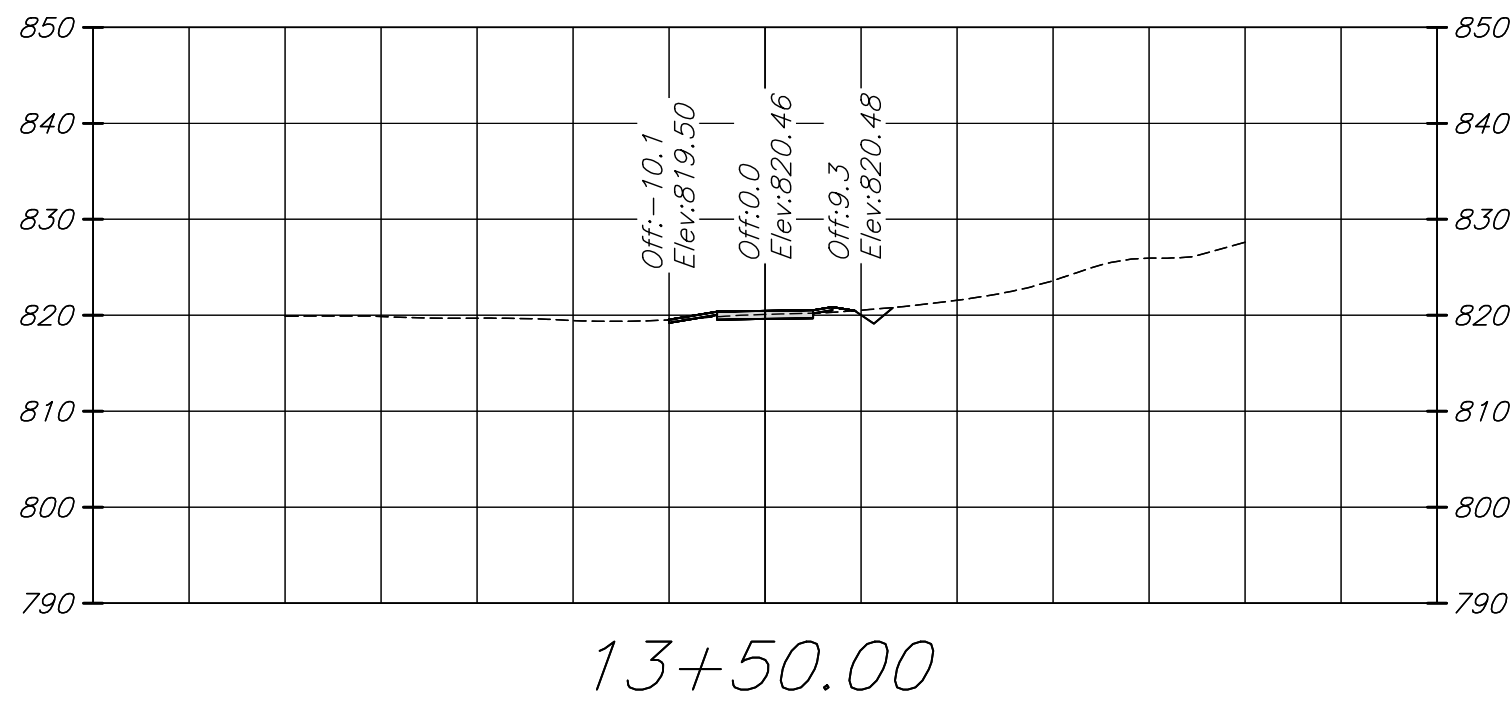
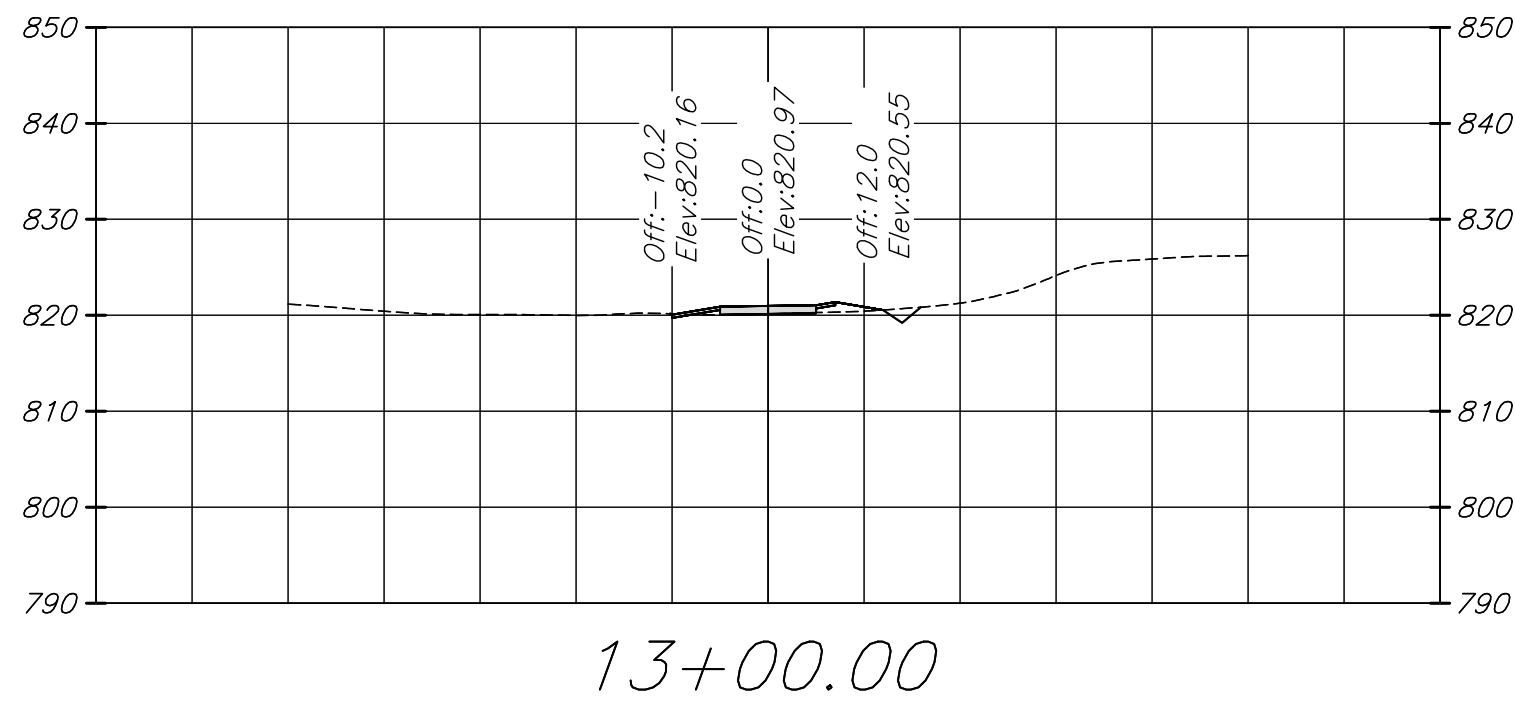
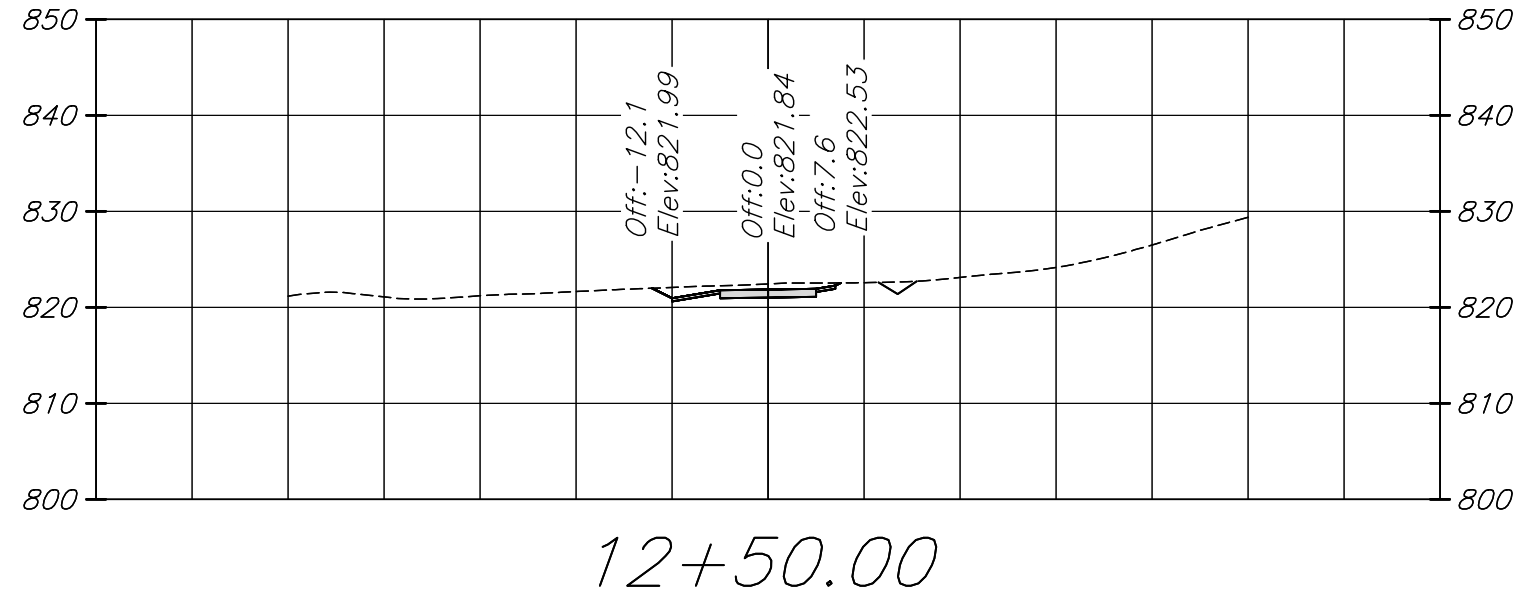
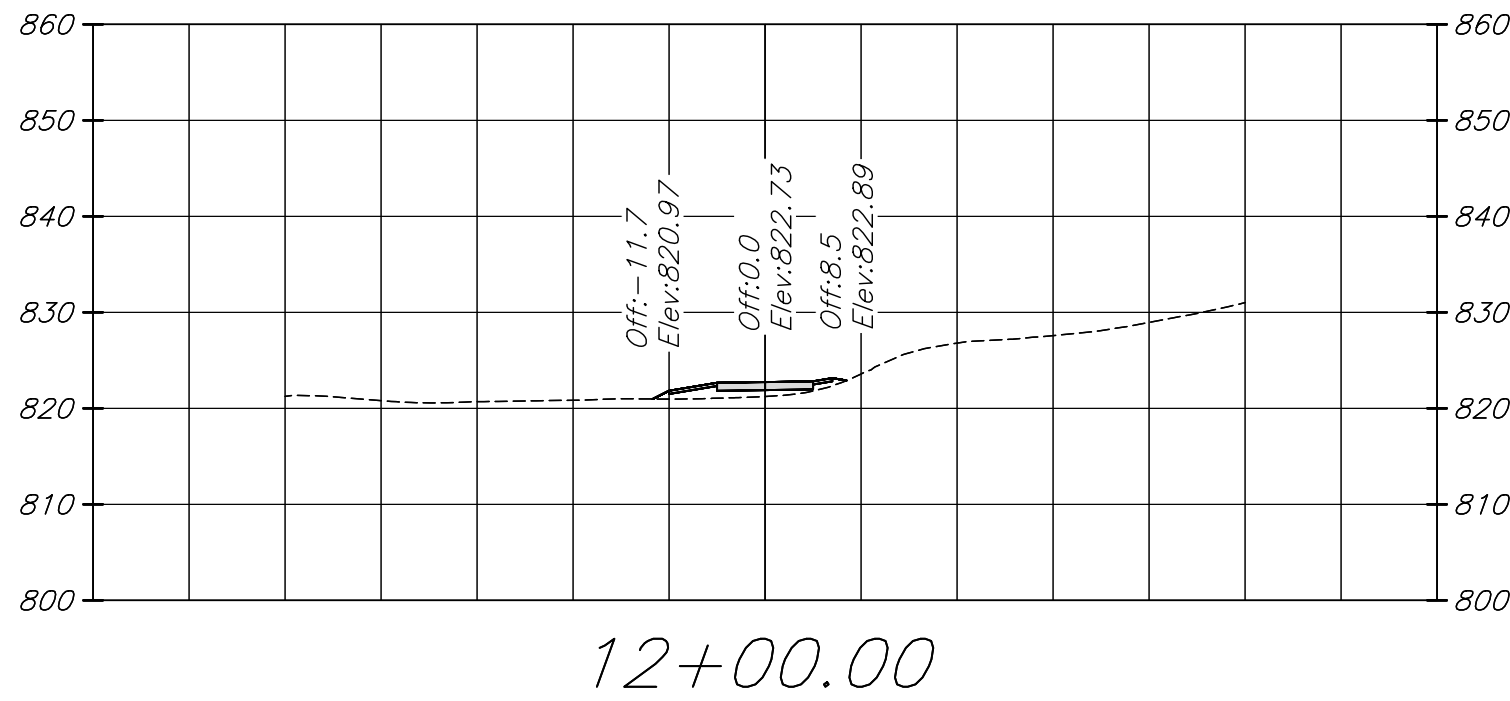
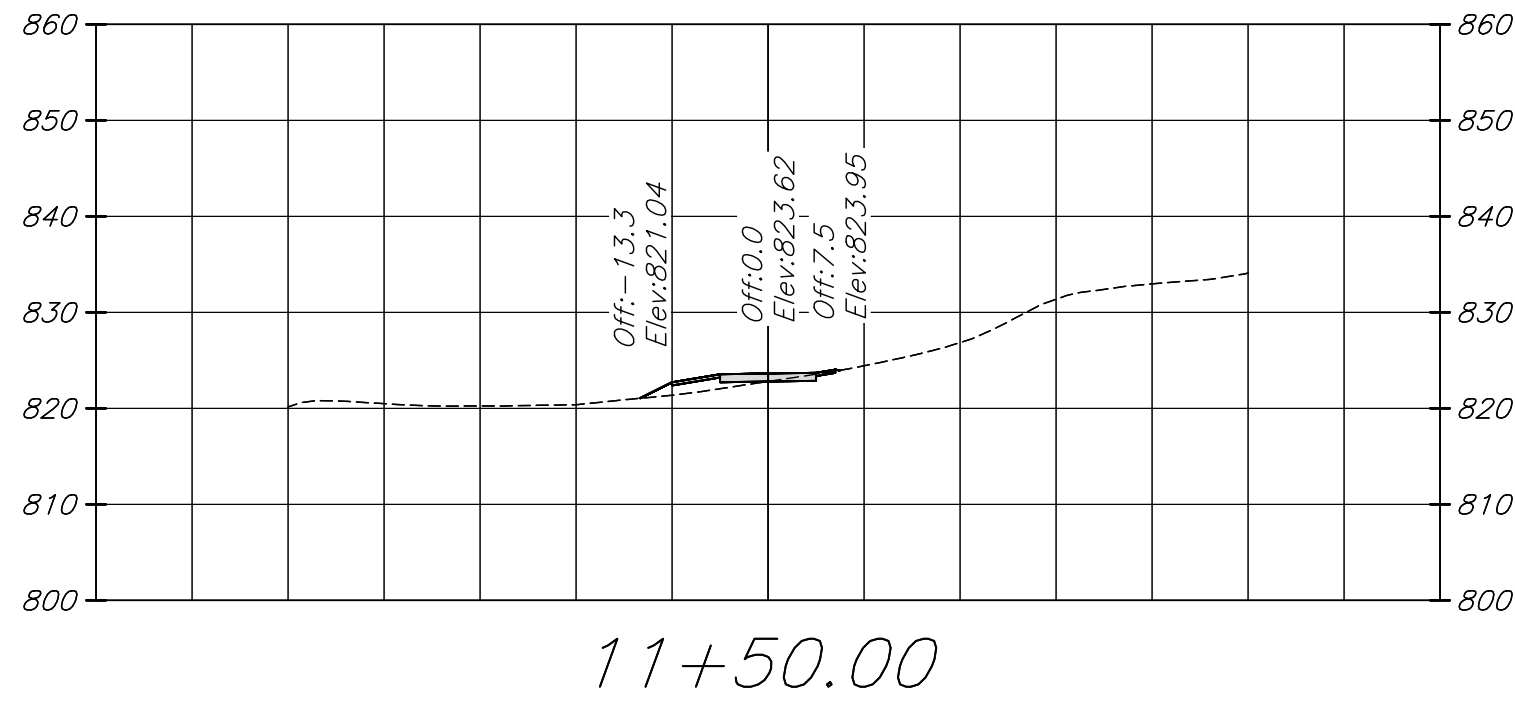
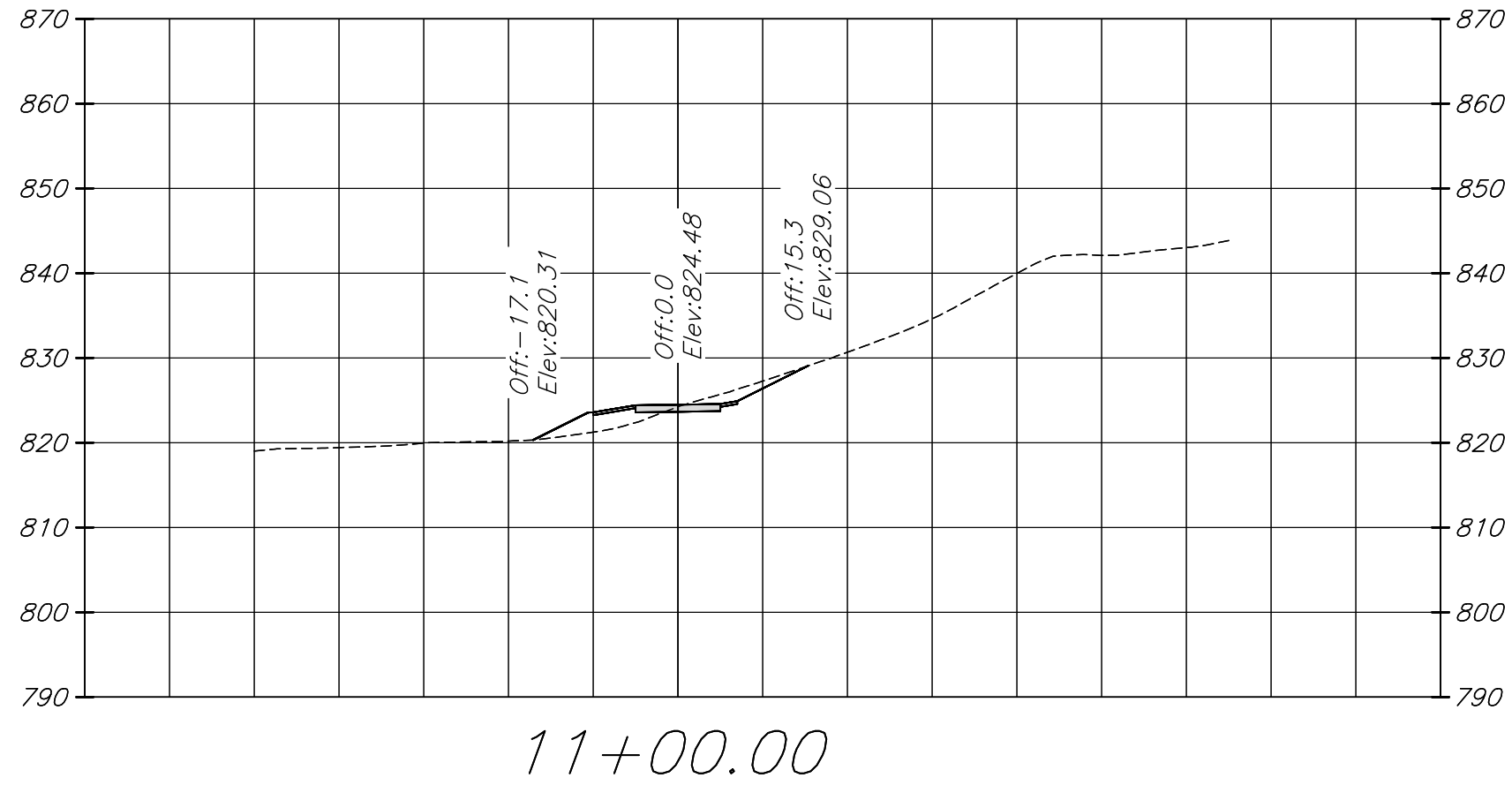
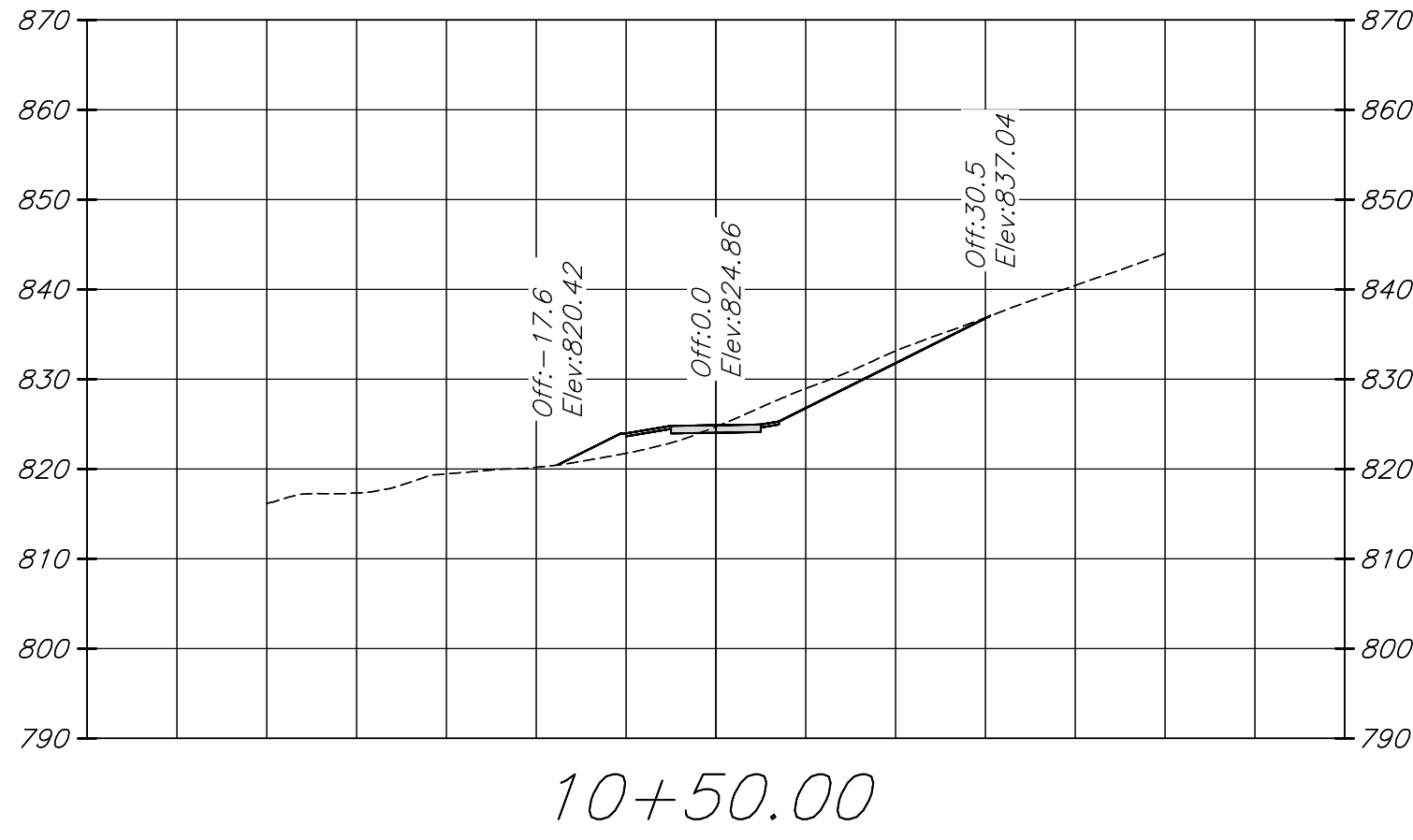
ANSI D - 14-Nov-23

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**ROANOKE RIVER GREENWAY
THROUGH EXPLORE PARK**

CROSS SECTIONS (STA. 10+50 - STA. 14+00)

ROANOKE COUNTY, VA

PROJECT NO:	60847135
DESIGNED BY:	BAJ
DRAWN BY:	BAJ
DEPT CHECK:	RMF
PROJ CHECK:	JSH
DATE:	NOV. 2023
SCALE:	AS SHOWN

XS101

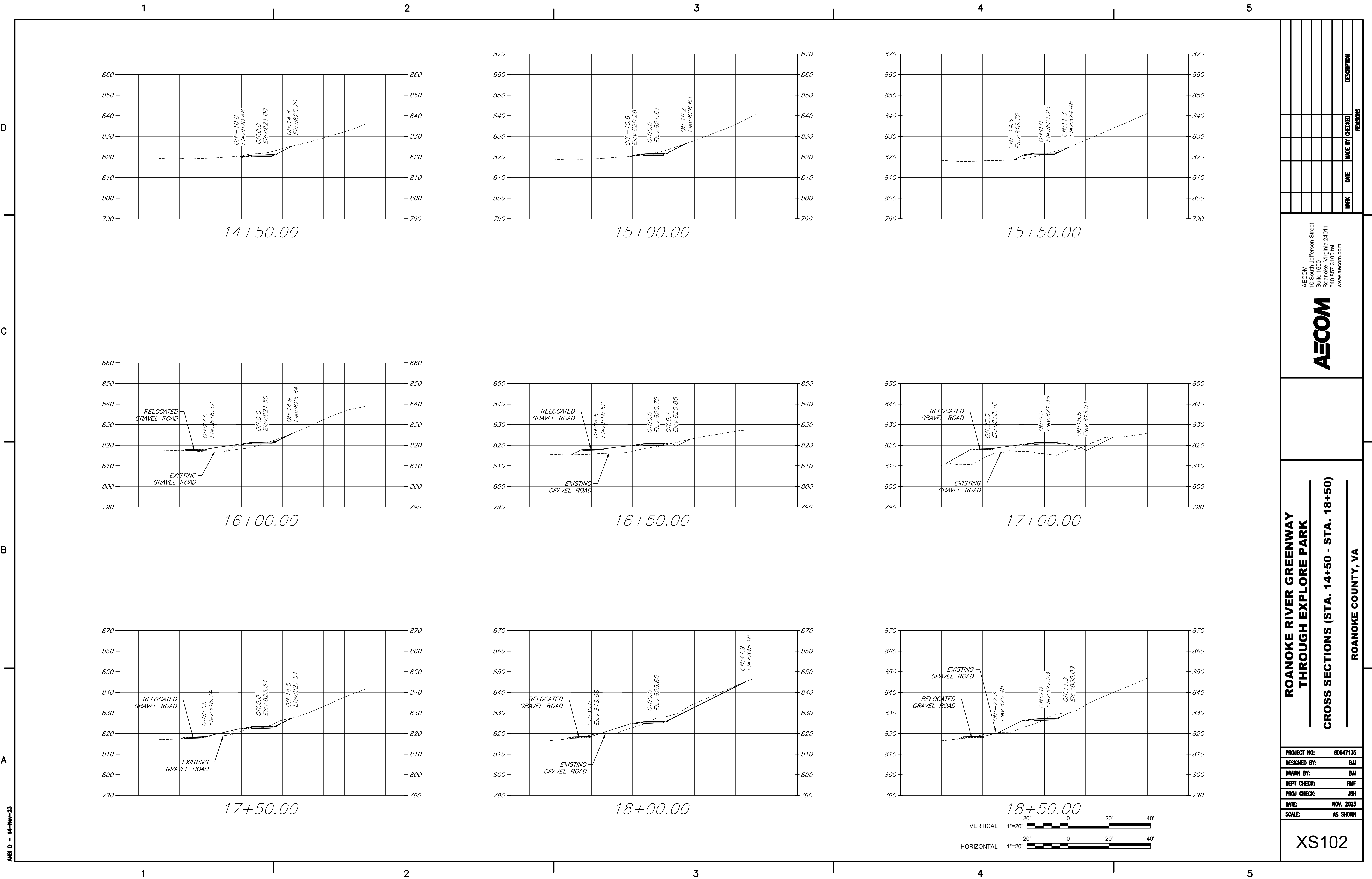
REVISIONS

DATE

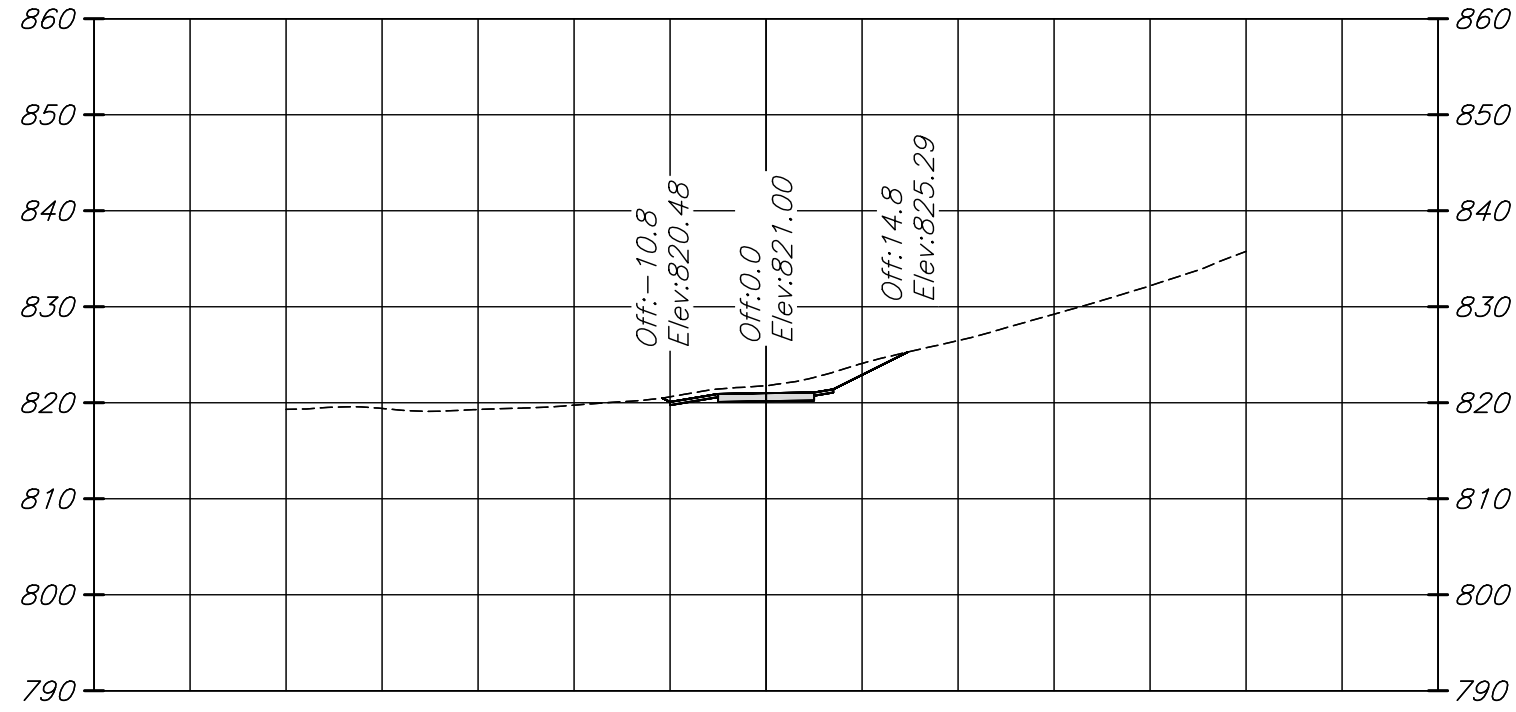
MADE BY

CHECKED

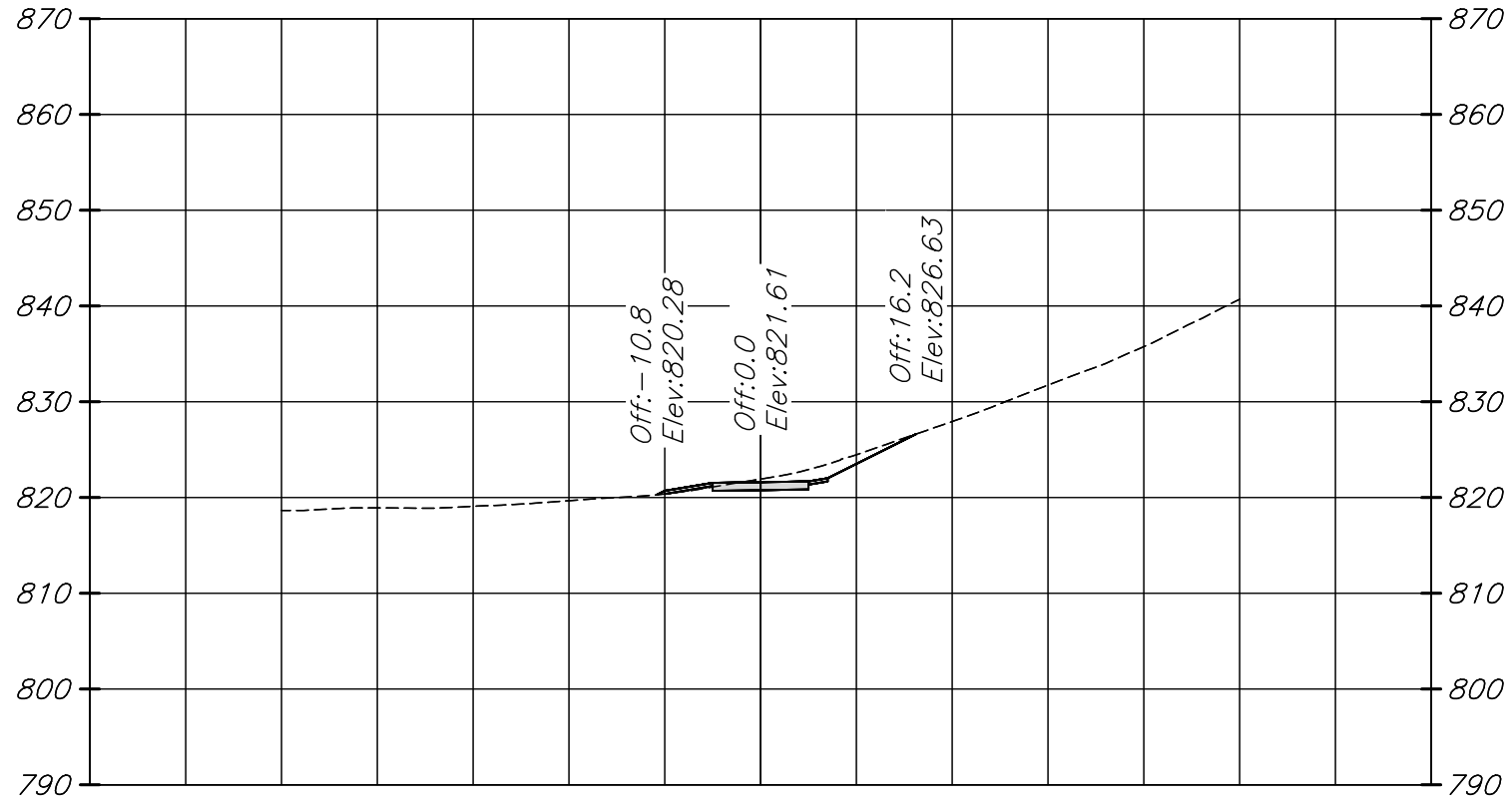
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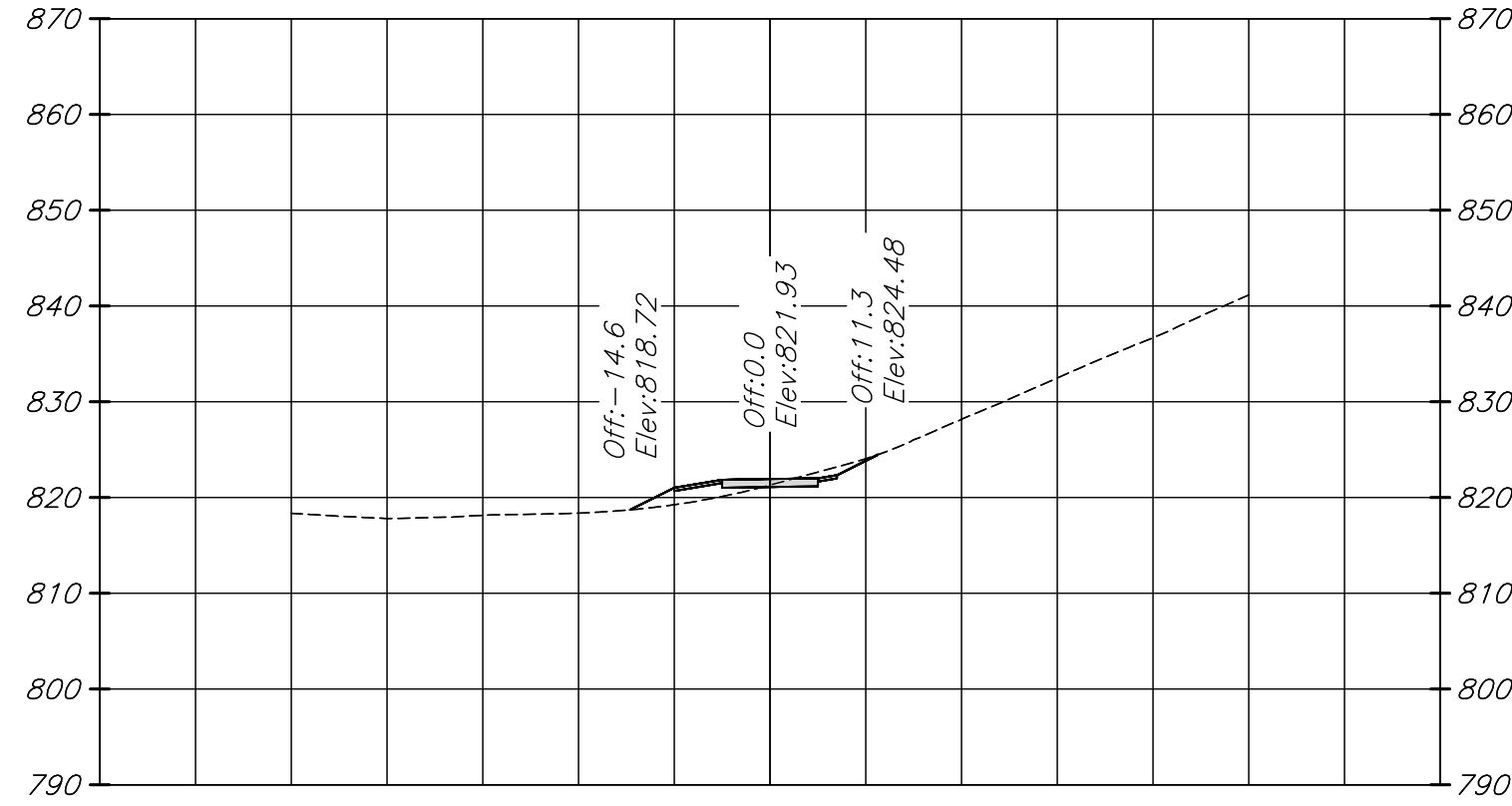
ANSI D - 14-Nov-23



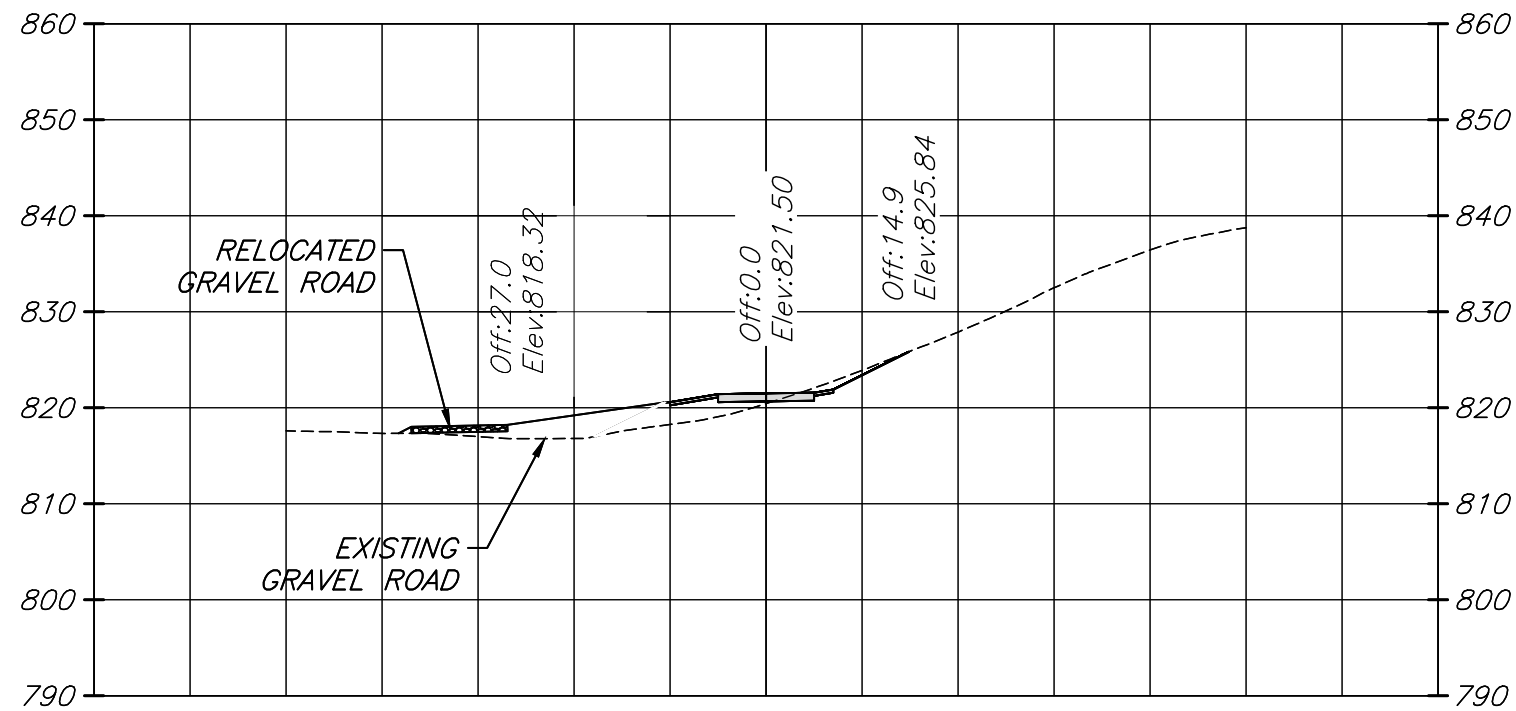
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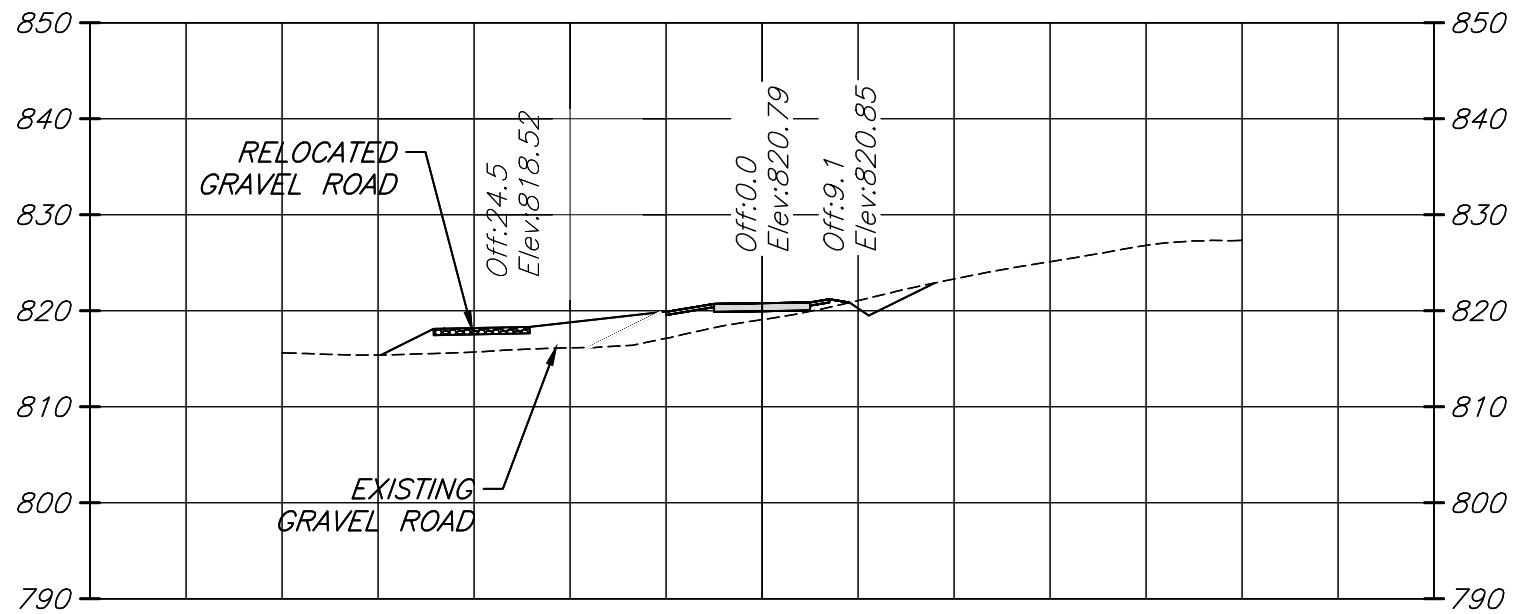
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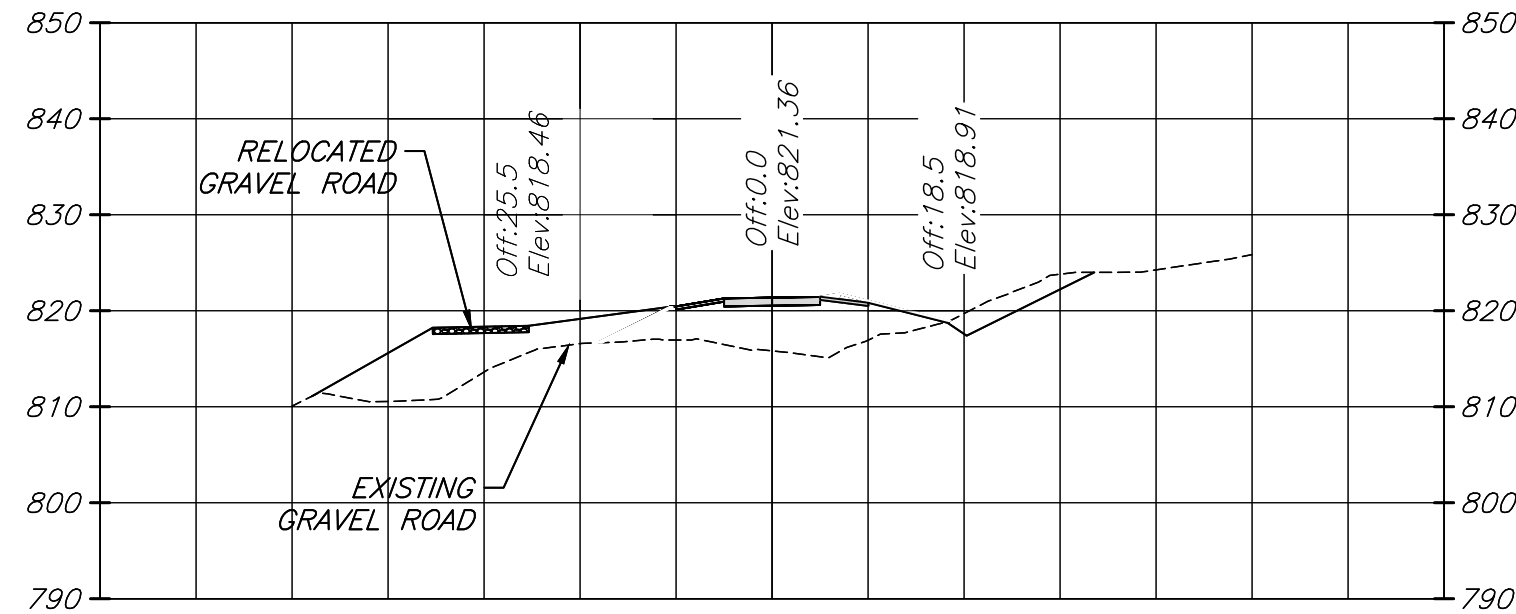
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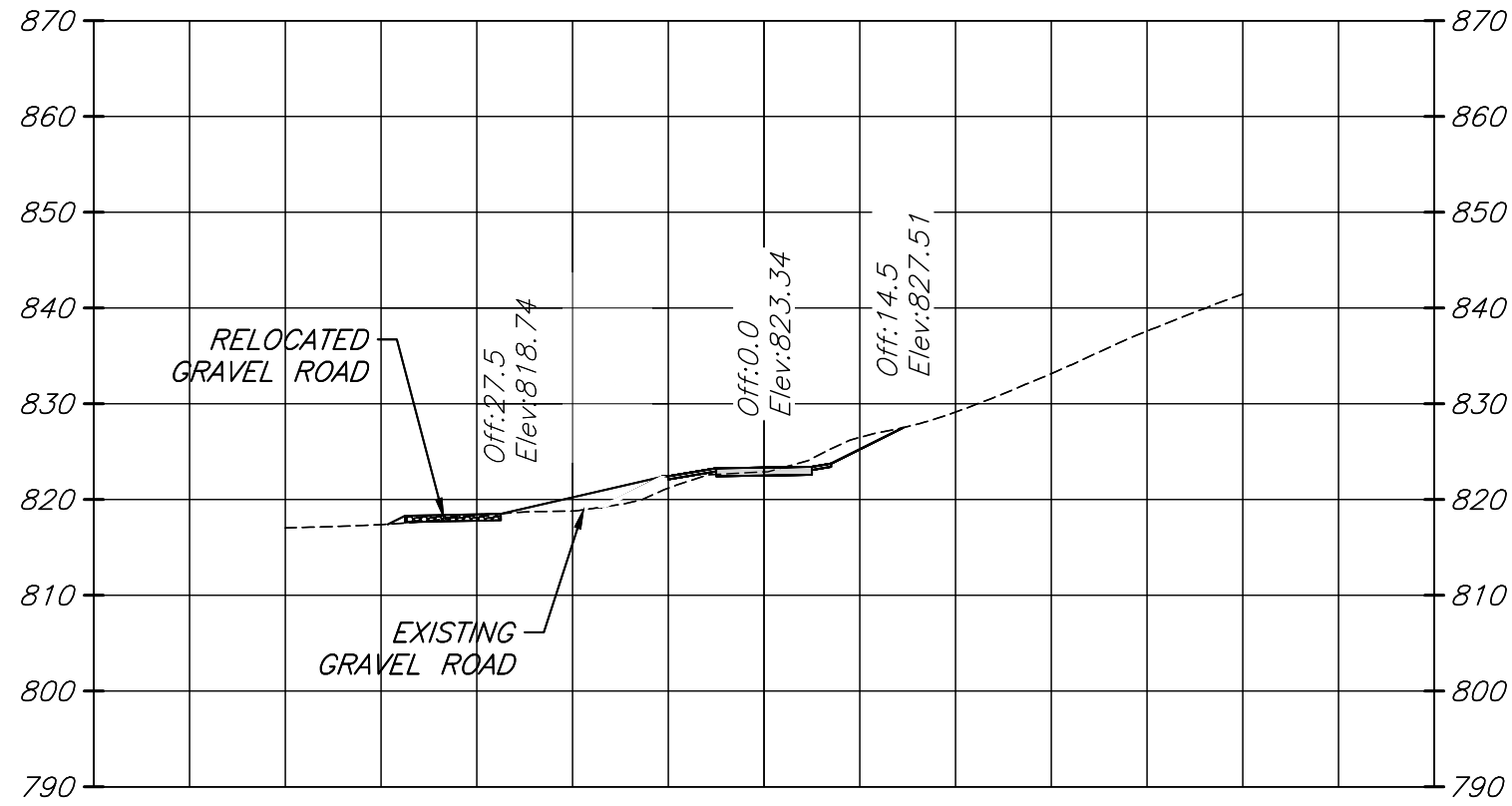
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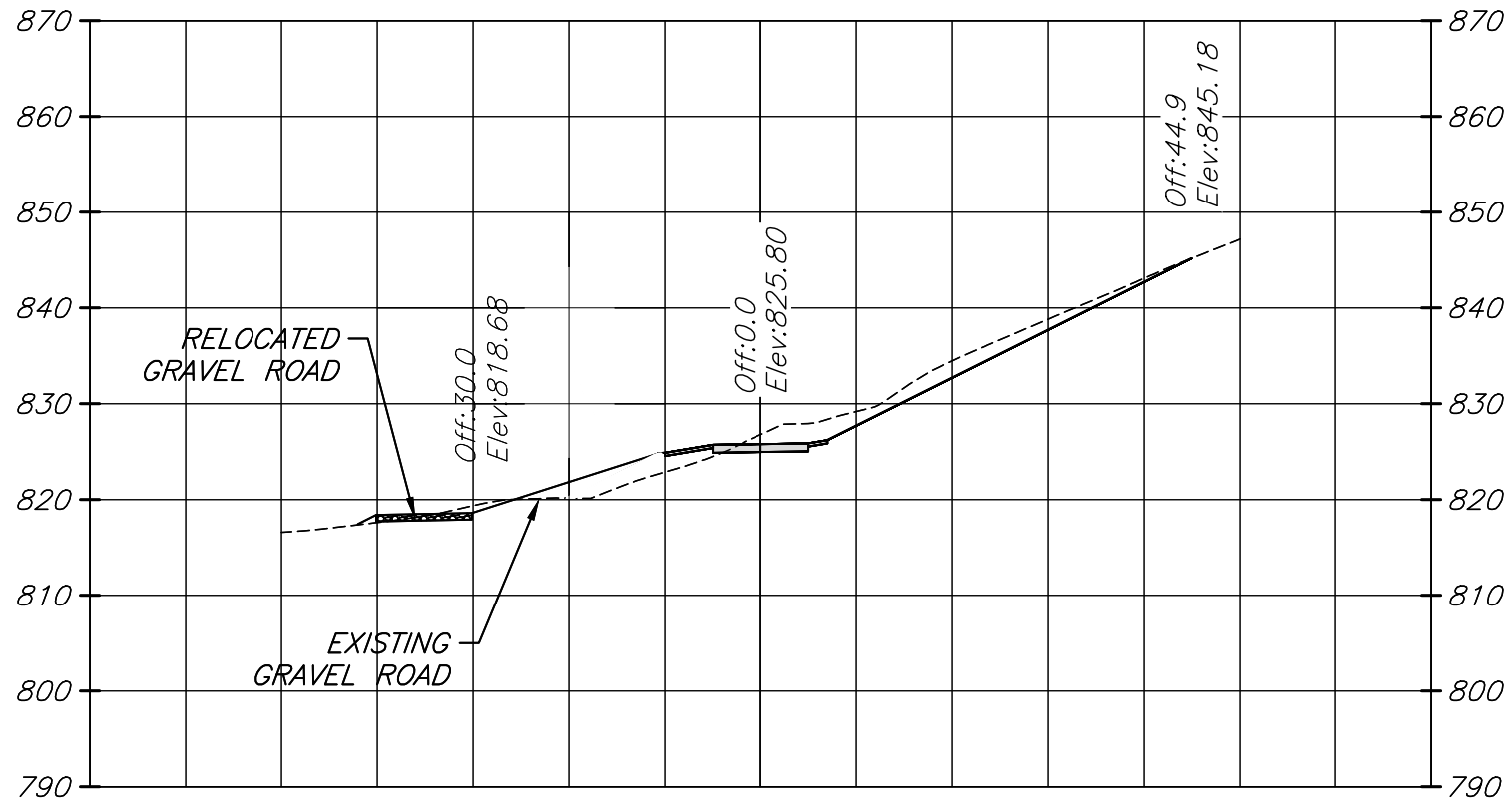
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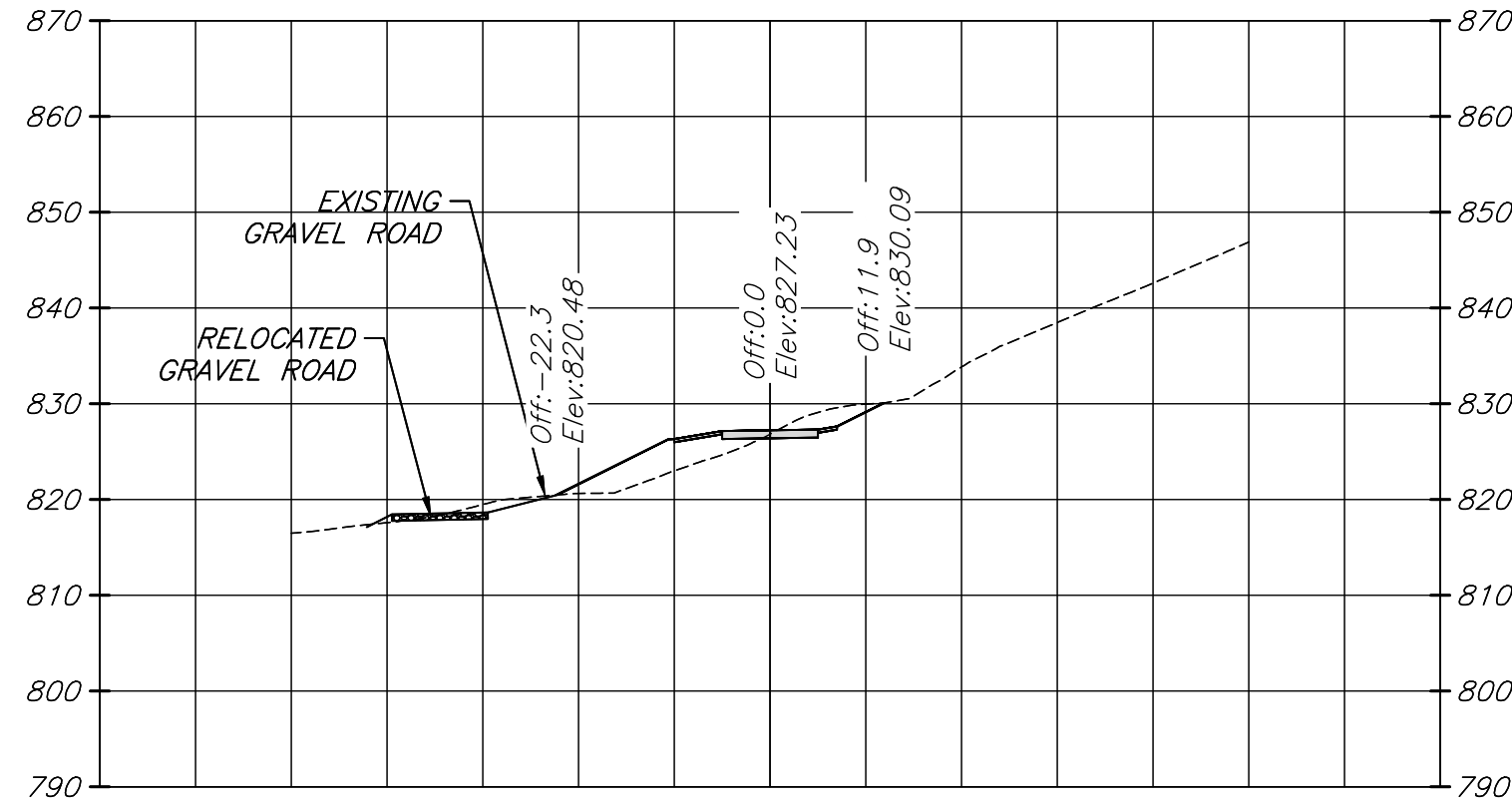
17+00.00



17+50.00



18+00.00



18+50.00



PROJECT NO: 60647135

DESIGNED BY: BAJ

DRAWN BY: BAJ

DEPT CHECK: RMF

PROJ CHECK: JSH

DATE: NOV. 2023

SCALE: AS SHOWN

ROANOKE RIVER GREENWAY
THROUGH EXPLORE PARK

CROSS SECTIONS (STA. 14+50 - STA. 18+50)

ROANOKE COUNTY, VA

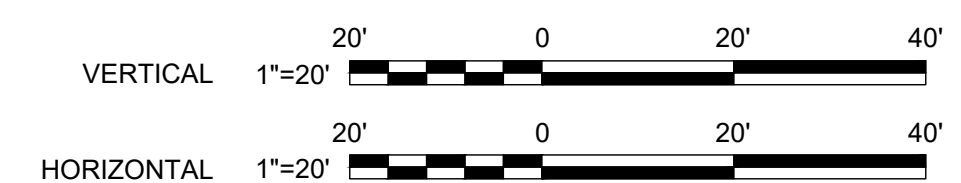
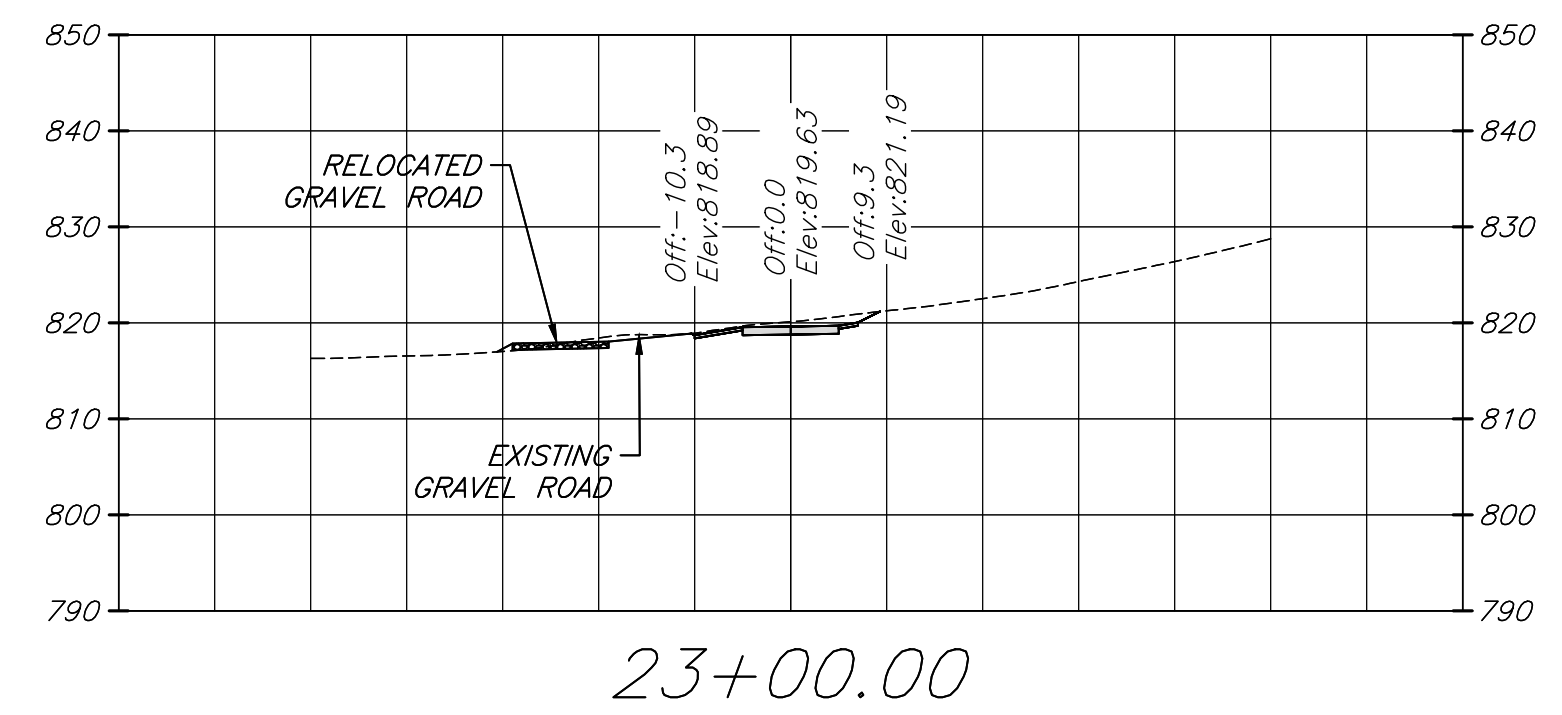
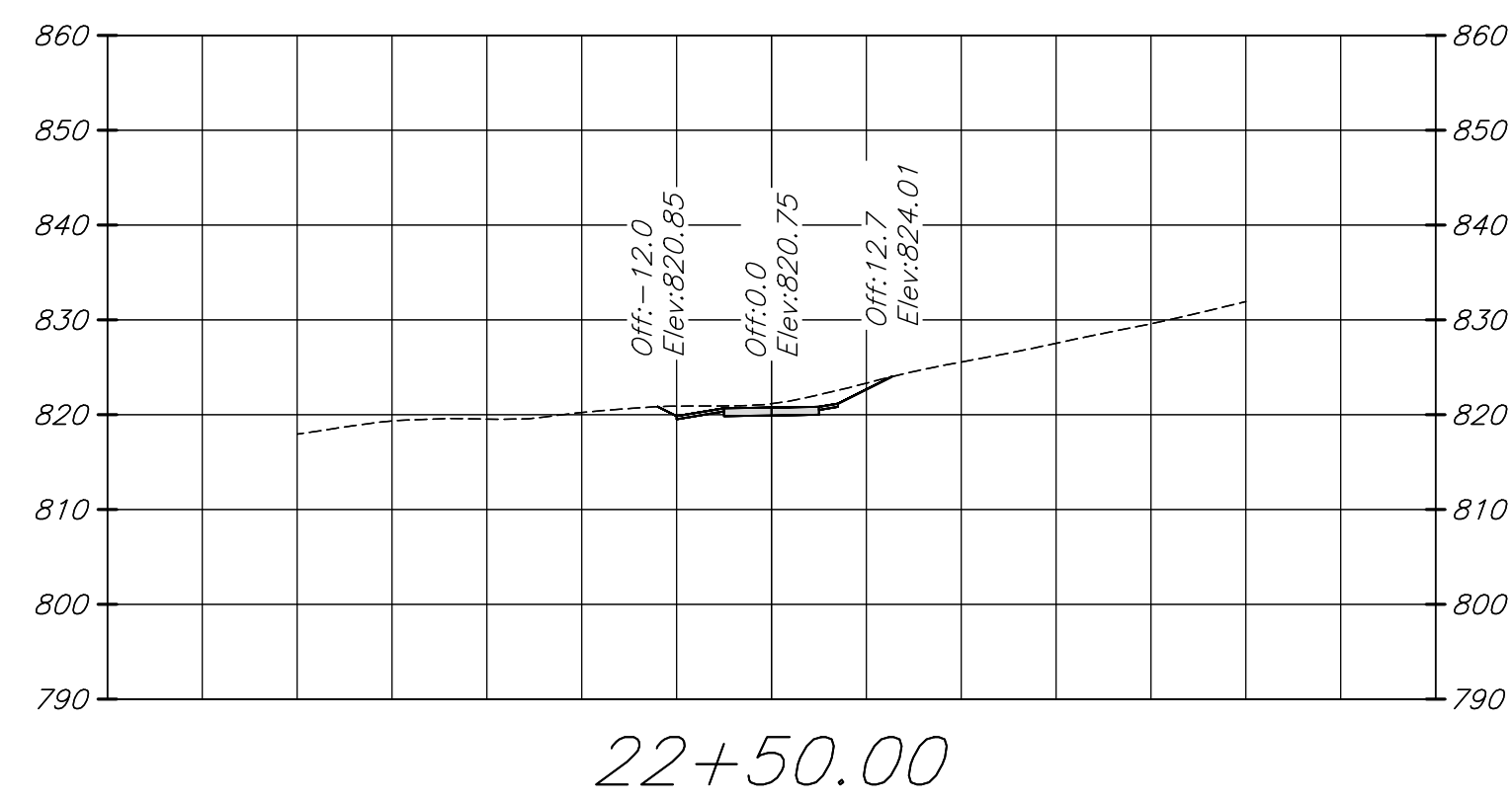
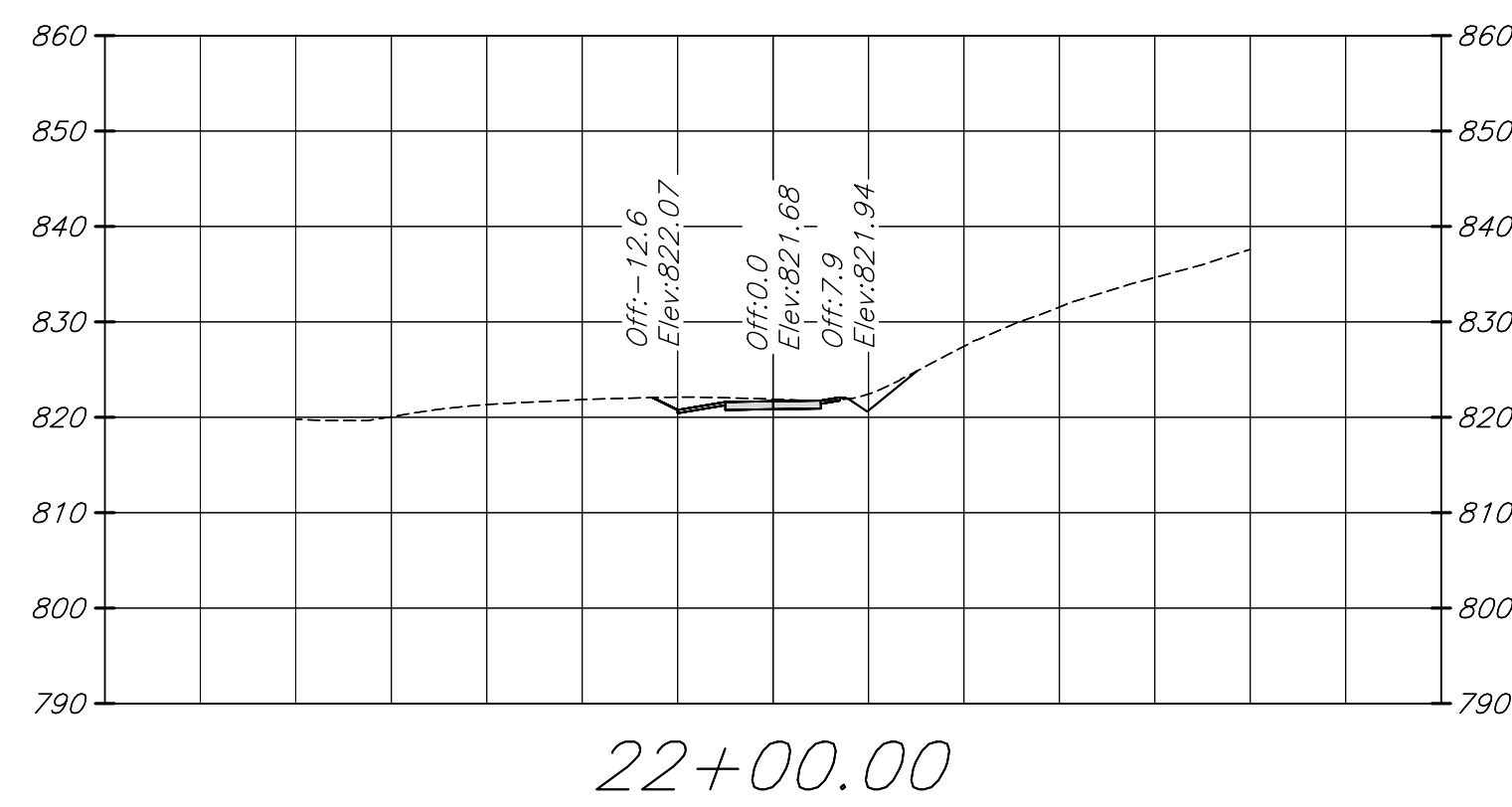
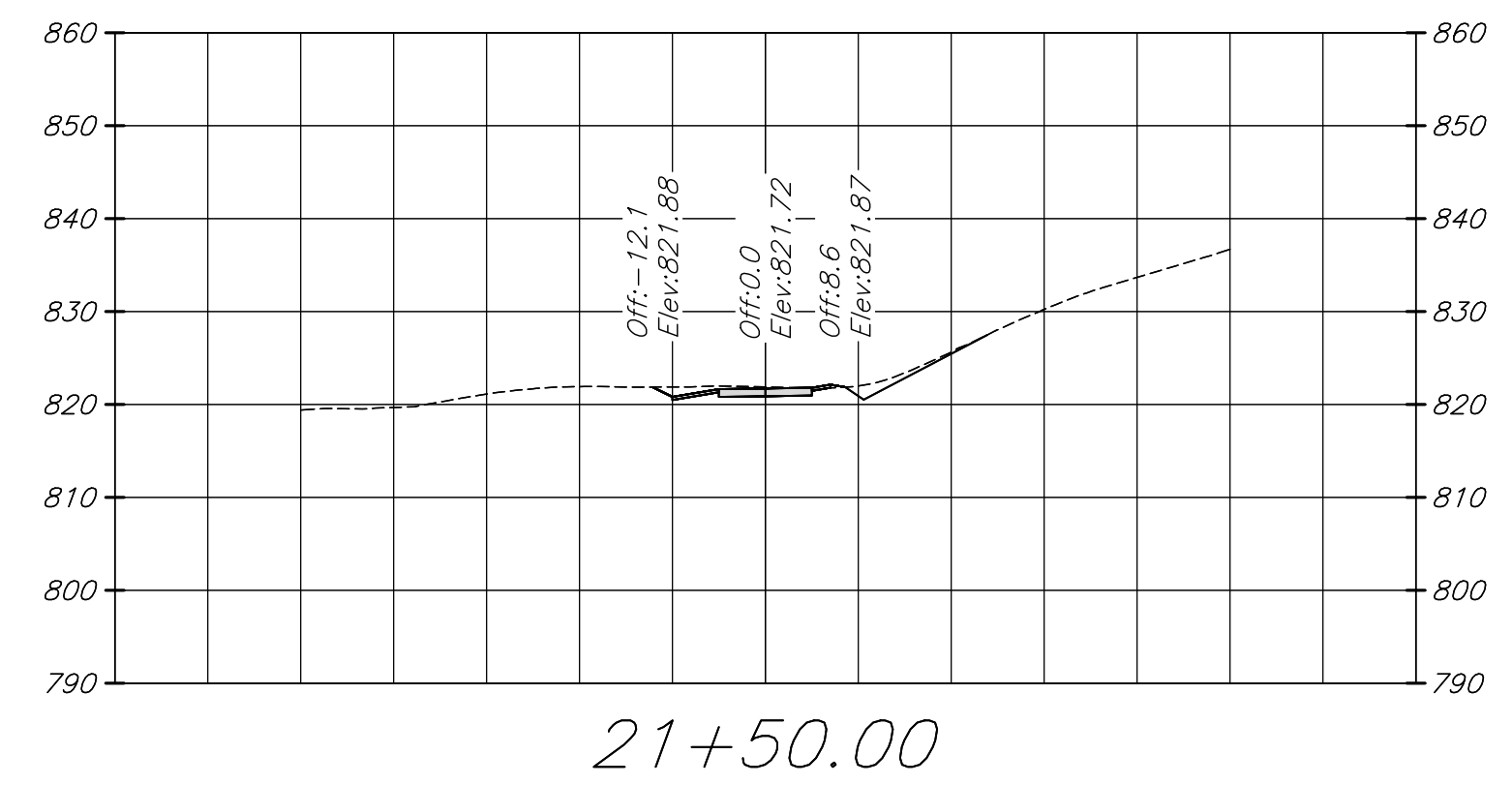
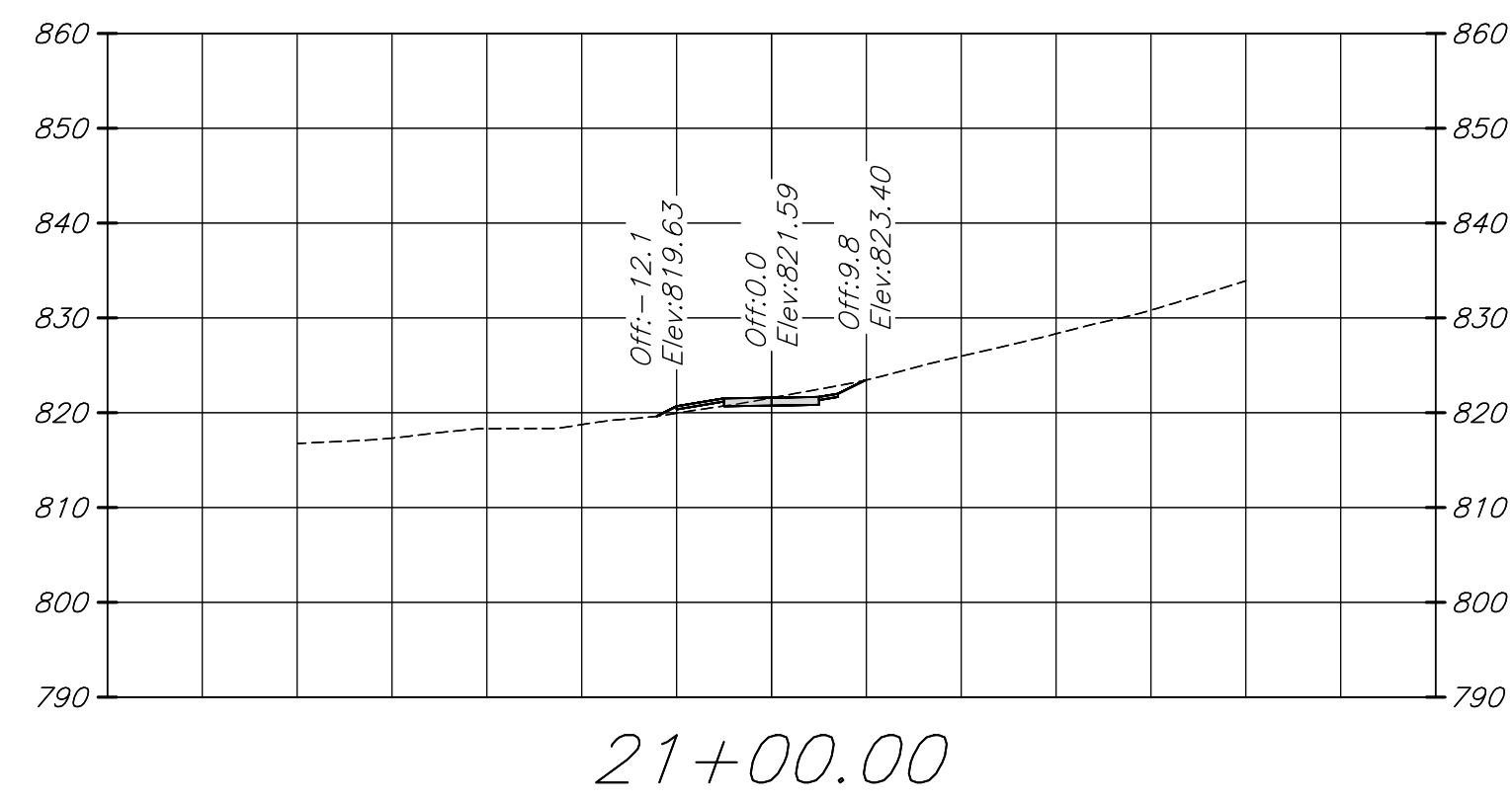
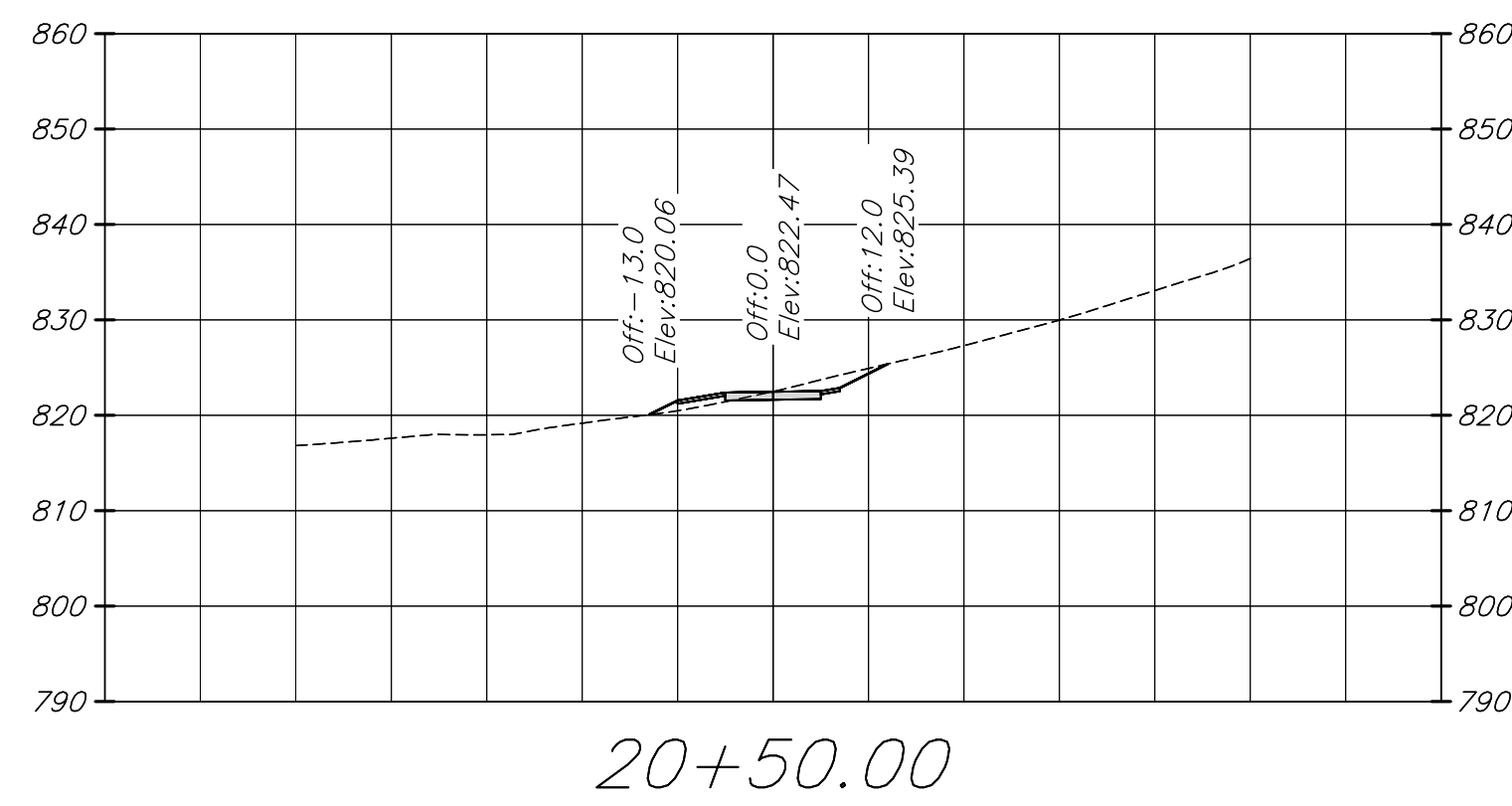
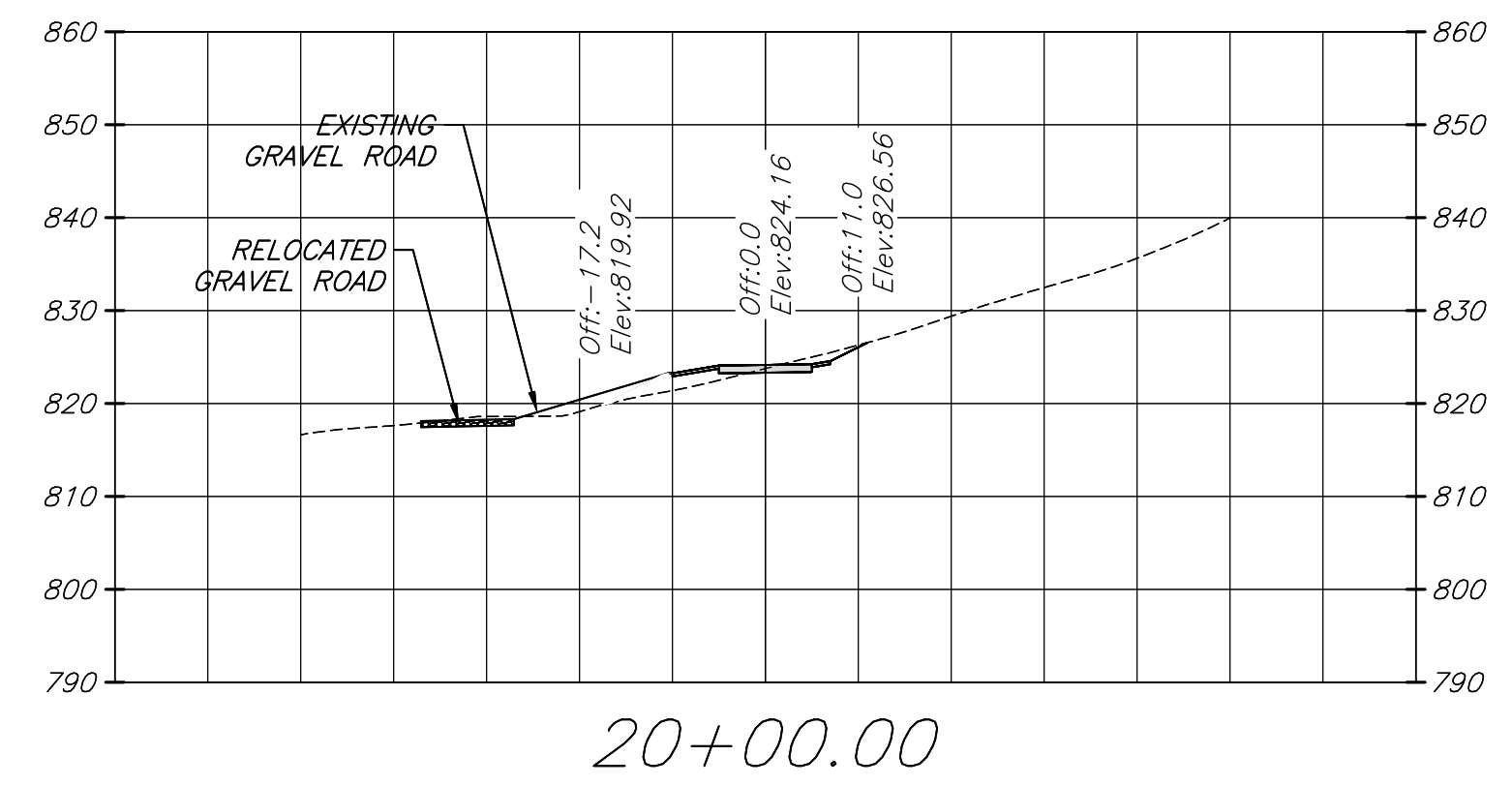
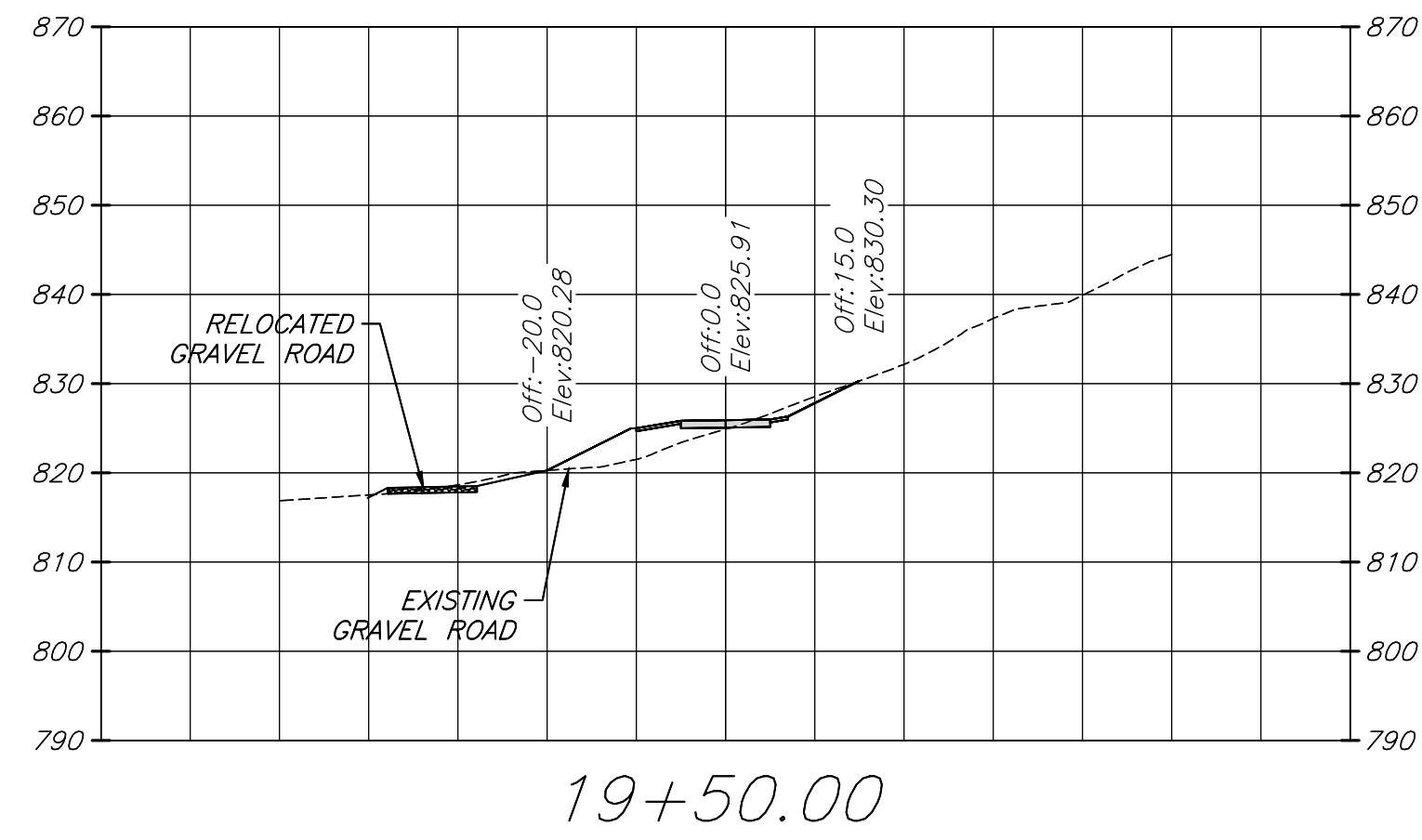
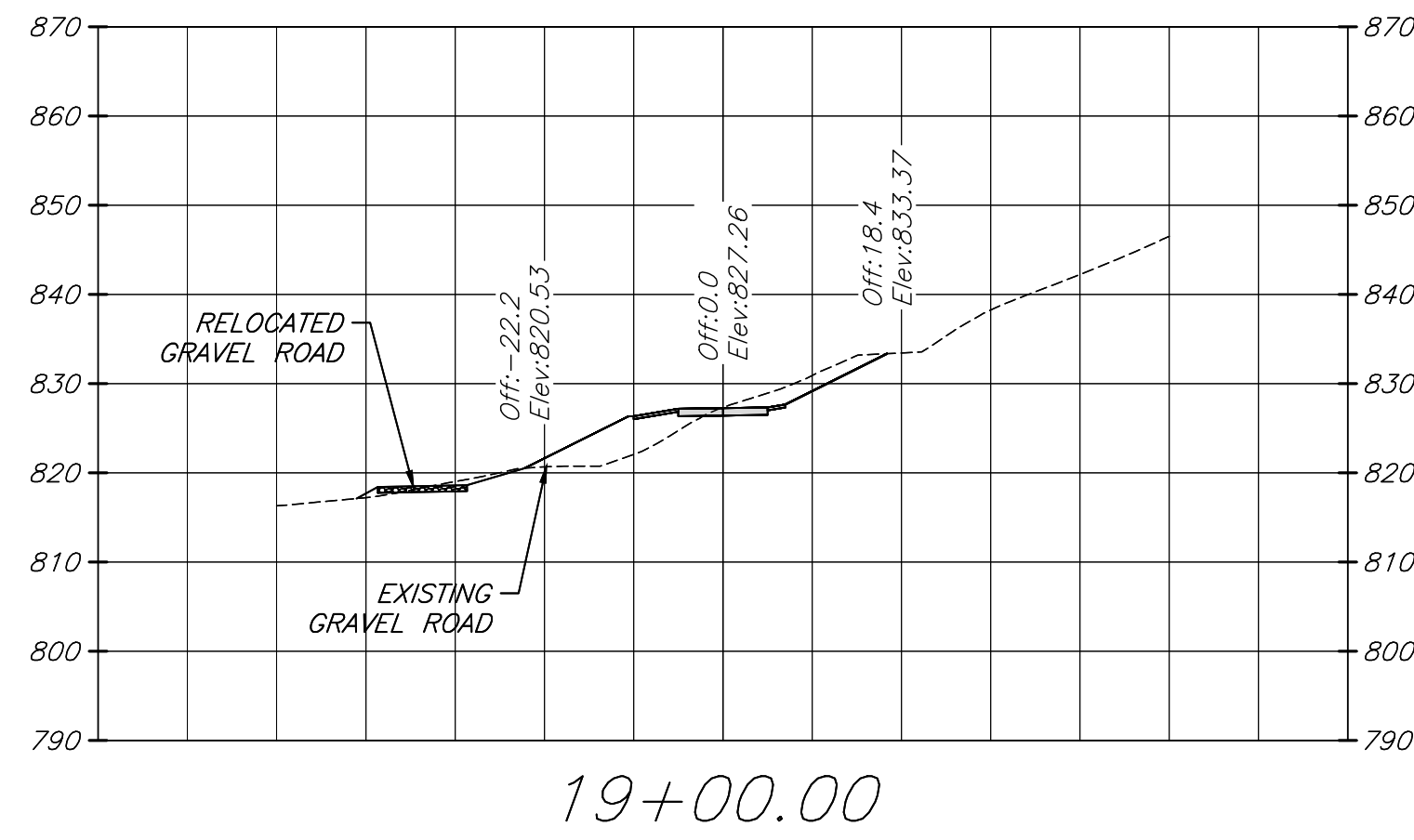
REVISIONS

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XS102

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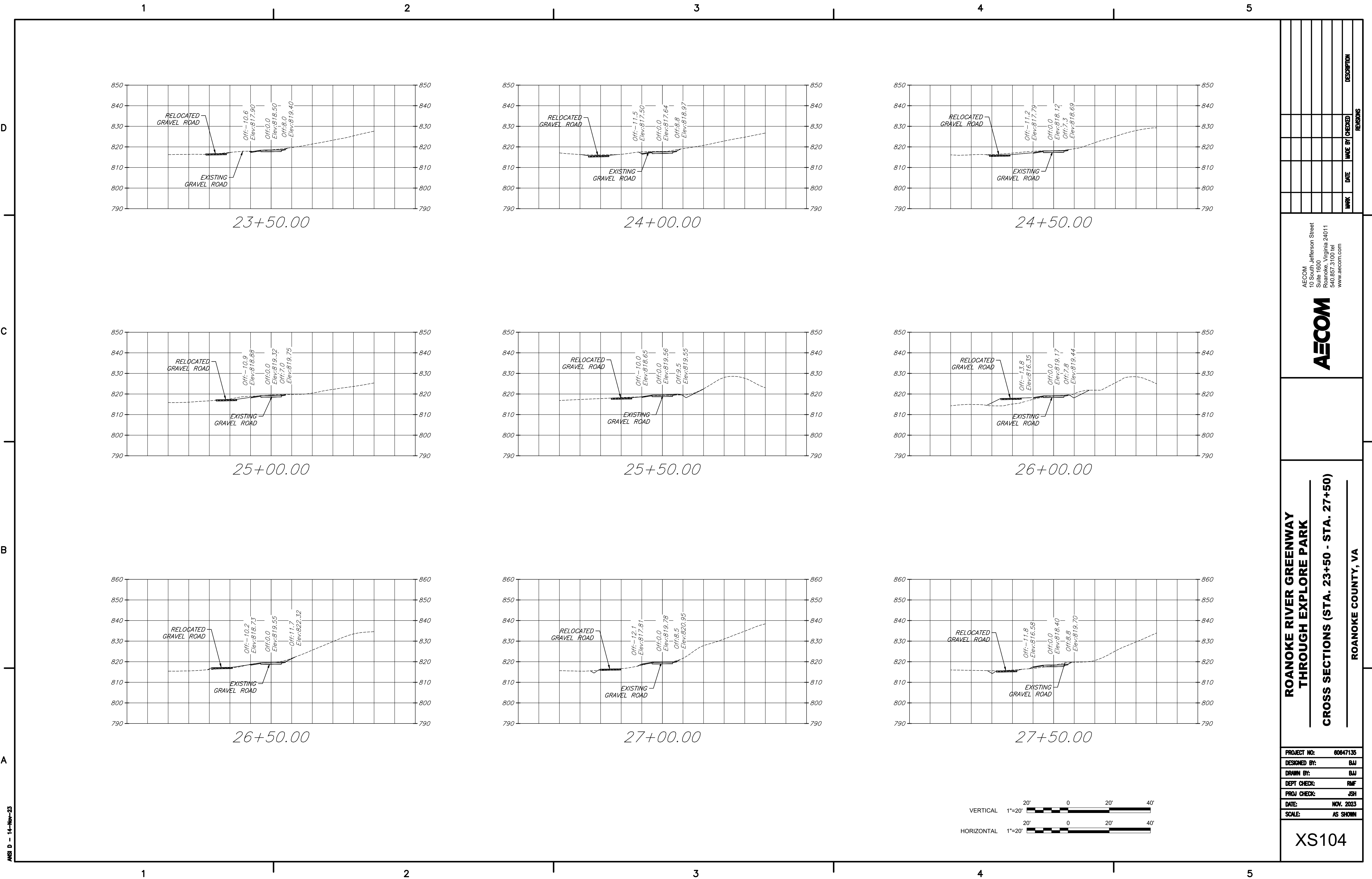
**ROANOKE RIVER GREENWAY
THROUGH EXPLORE PARK**

CROSS SECTIONS (STA. 19+00 - STA. 23+00)

A

PROJECT NO:	80647135
DESIGNED BY:	BAJ
DRAWN BY:	BAJ
DEPT CHECK:	RMF
PROJ CHECK:	JSH
DATE:	NOV. 2023
SCALE:	AS SHOWN

XS103



ANSI D - 14-Nov-23

PROJECT NO: 60847135

DESIGNED BY: BAJ

DRAWN BY: BAJ

DEPT CHECK: RMF

PROJ CHECK: JSH

DATE: NOV. 2023

SCALE: AS SHOWN

ROANOKE RIVER GREENWAY
THROUGH EXPLORE PARK

CROSS SECTIONS (STA. 23+50 - STA. 27+50)

ROANOKE COUNTY, VA

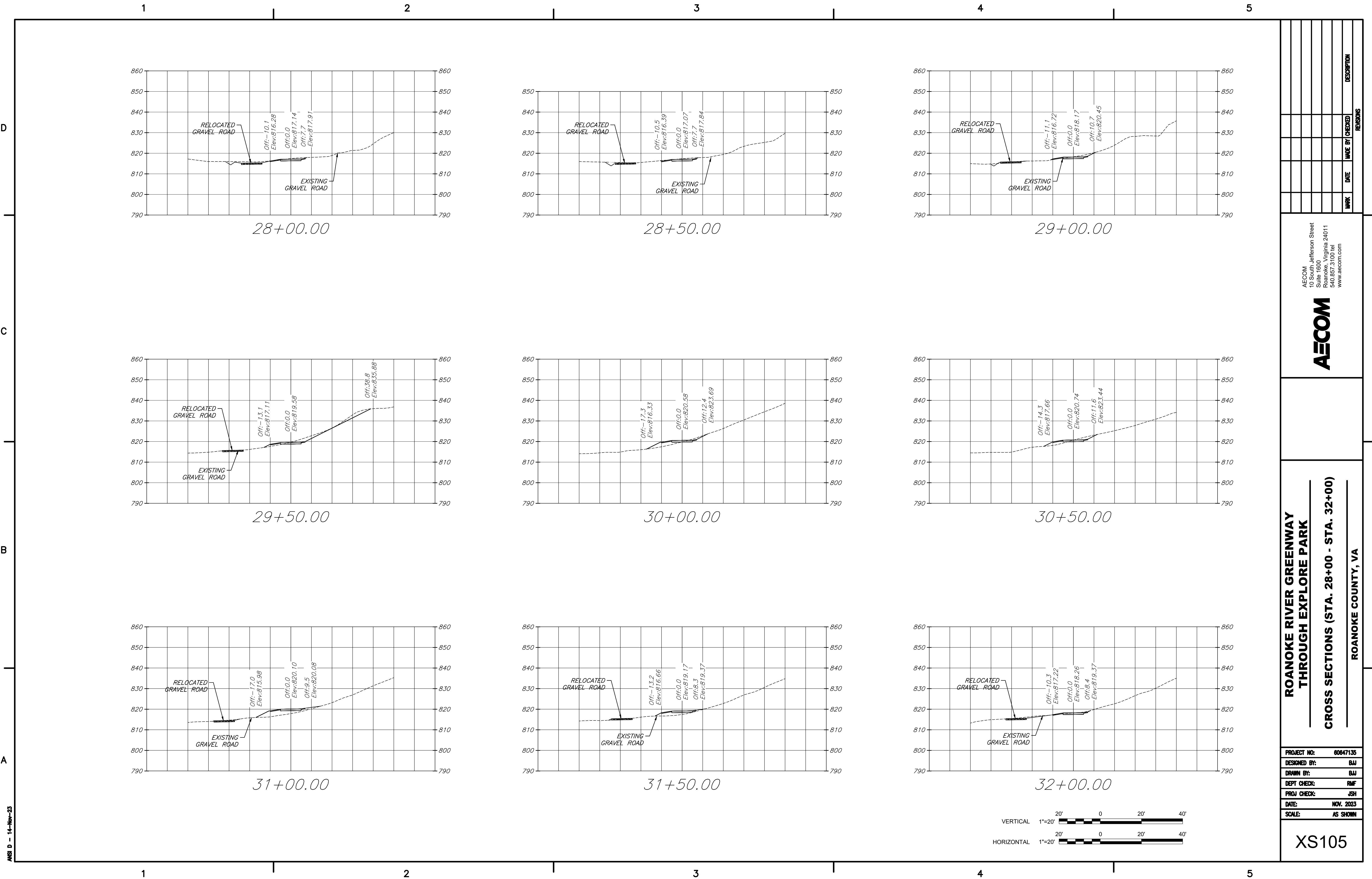
REVISIONS

MARK	DATE	MADE BY	CHECKED	DESCRIPTION

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XS104



ANSI D - 14-Nov-23

ROANOKE RIVER GREENWAY
THROUGH EXPLORE PARK

CROSS SECTIONS (STA. 28+00 - STA. 32+00)

ROANOKE COUNTY, VA

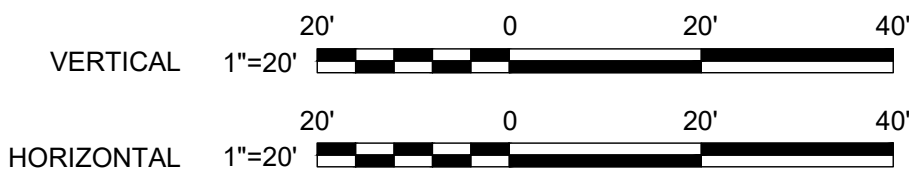
PROJECT NO:	60847135
DESIGNED BY:	BAJ
DRAWN BY:	BAJ
DEPT CHECK:	RMF
PROJ CHECK:	JSH
DATE:	NOV. 2023
SCALE:	AS SHOWN

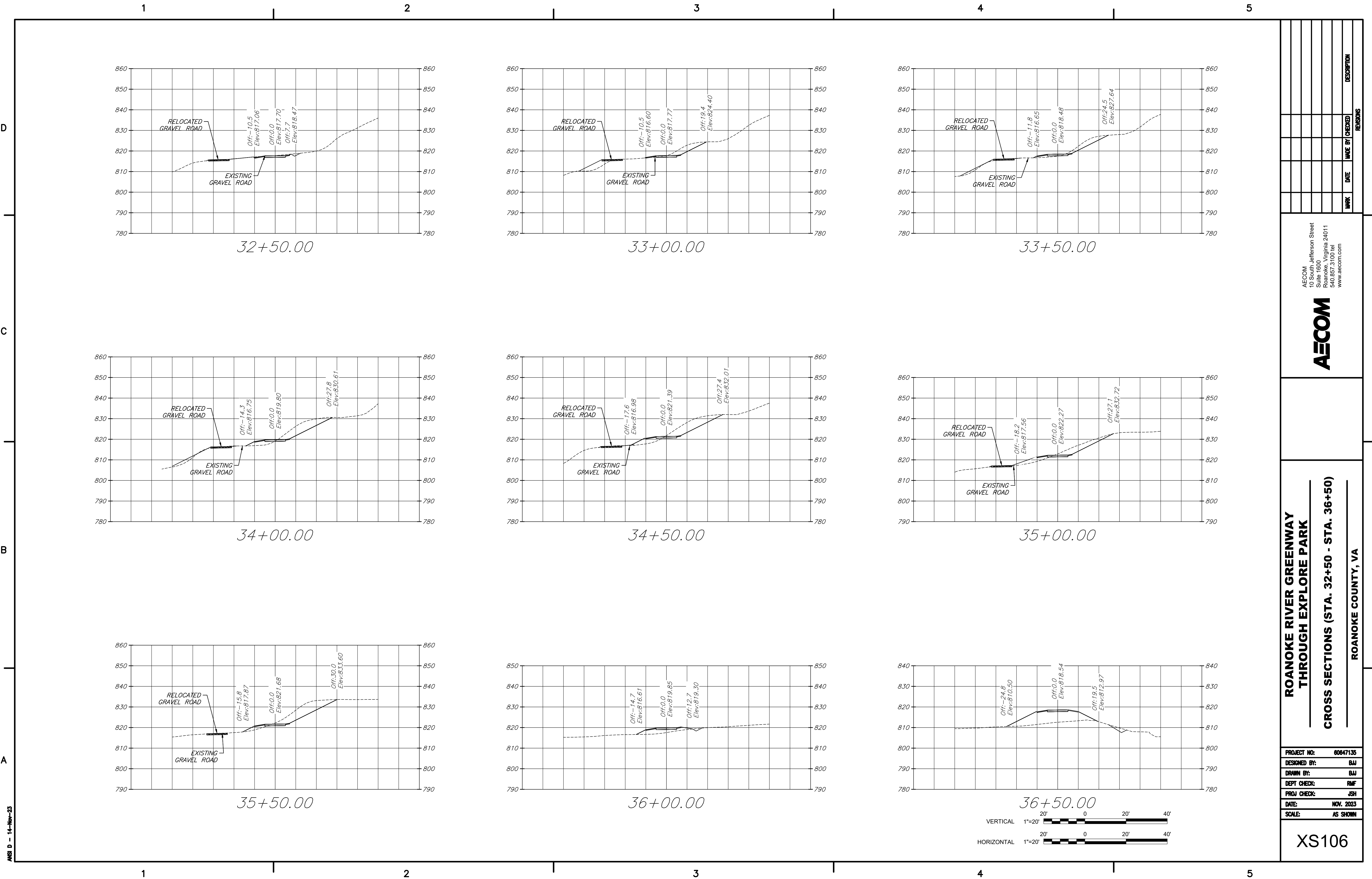
XS105

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ANSI D - 14-Nov-23

PROJECT NO: 60847135

DESIGNED BY: BAJ

DRAWN BY: BAJ

DEPT CHECK: RMF

PROJ CHECK: JSH

DATE: NOV. 2023

SCALE: AS SHOWN

ROANOKE RIVER GREENWAY
THROUGH EXPLORE PARK

CROSS SECTIONS (STA. 32+50 - STA. 36+50)

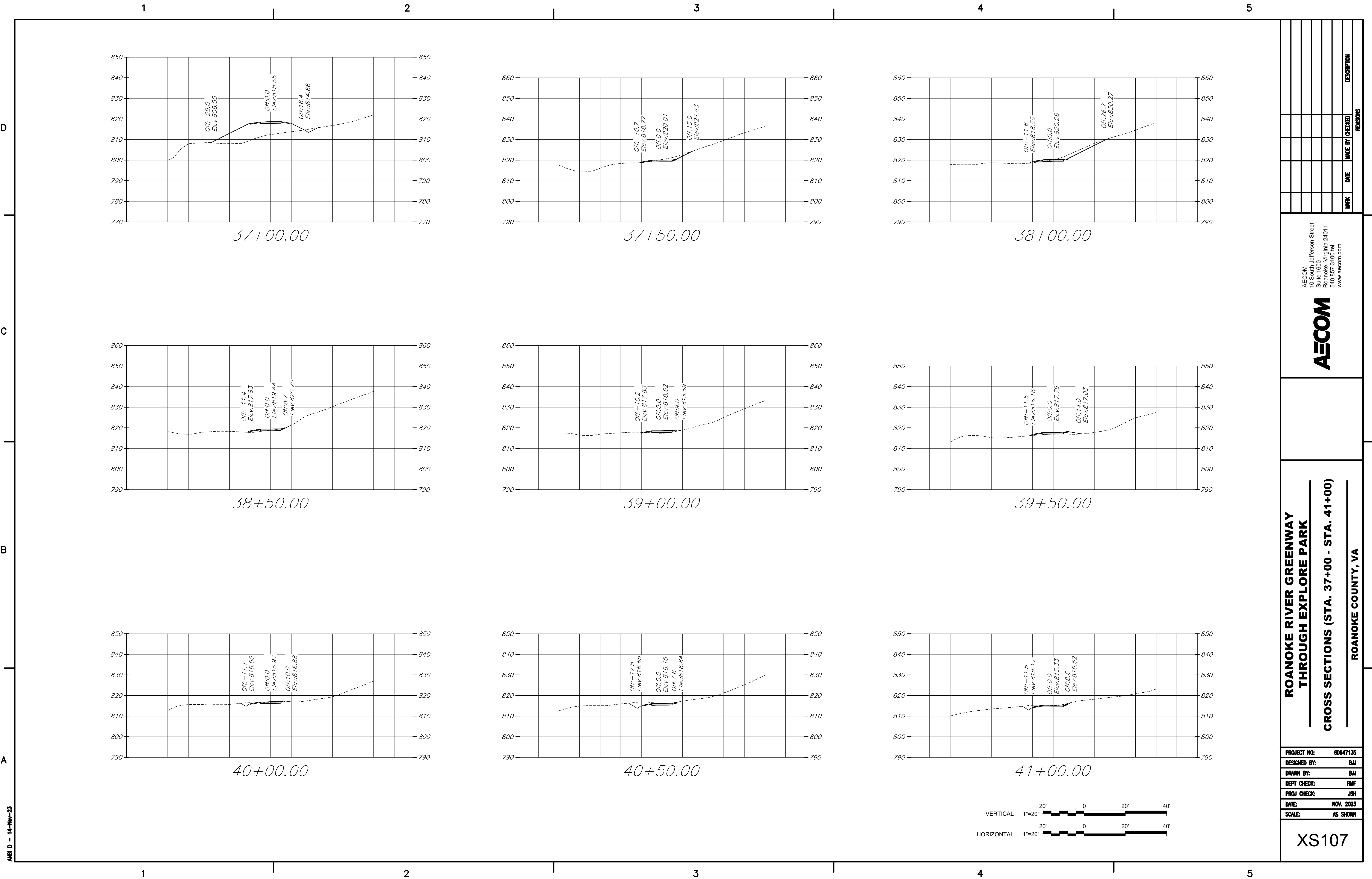
ROANOKE COUNTY, VA

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REVISIONS

MARK	DATE	MADE BY	CHECKED	DESCRIPTION

XS106



ANSI D - 14-Nov-23

PROJECT NO: 60647135

DESIGNED BY: BAJ

DRAWN BY: BAJ

DEPT CHECK: RMF

PROJ CHECK: JSH

DATE: NOV. 2023

SCALE: AS SHOWN

ROANOKE RIVER GREENWAY
THROUGH EXPLORE PARK

CROSS SECTIONS (STA. 37+00 - STA. 41+00)

ROANOKE COUNTY, VA

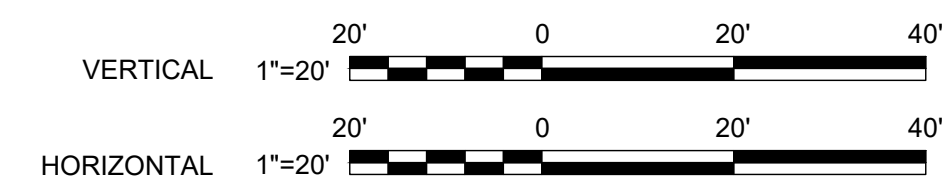
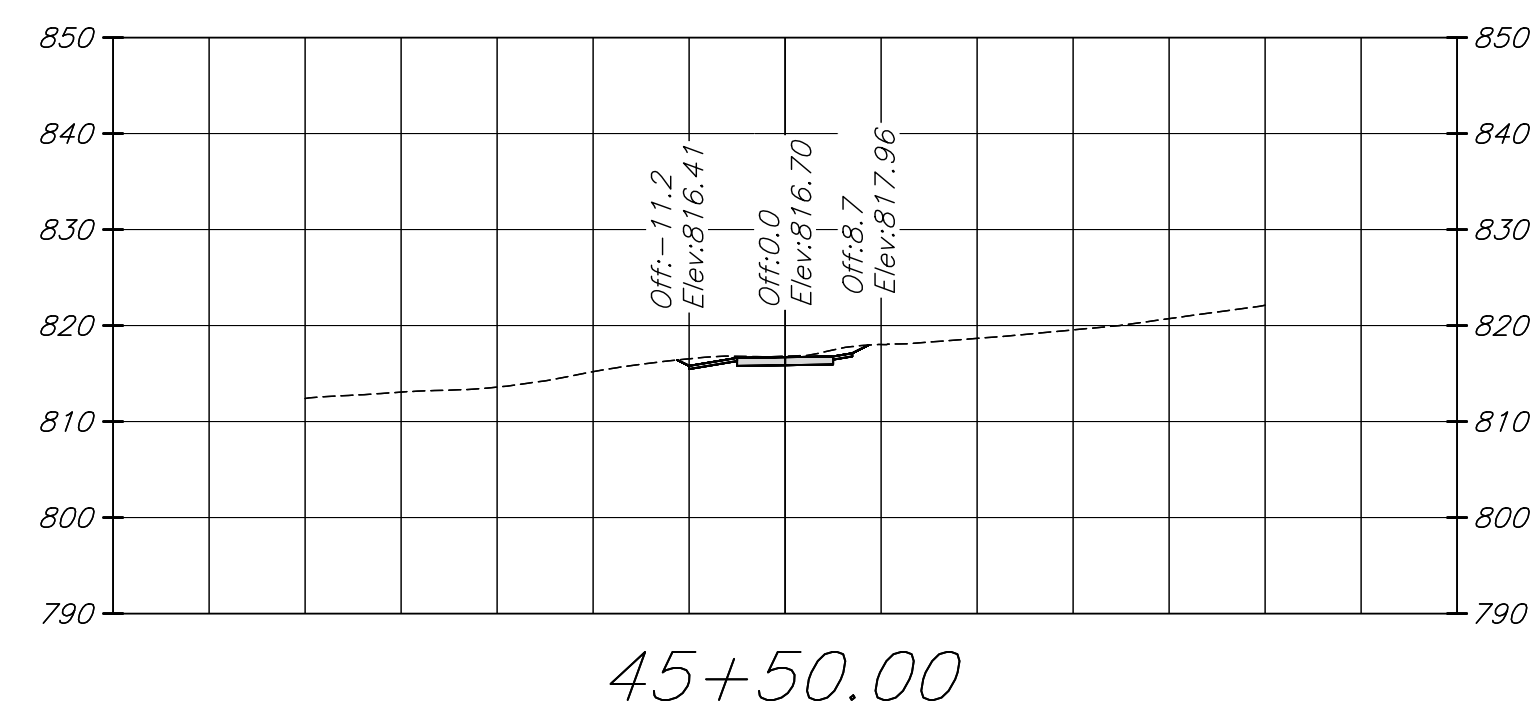
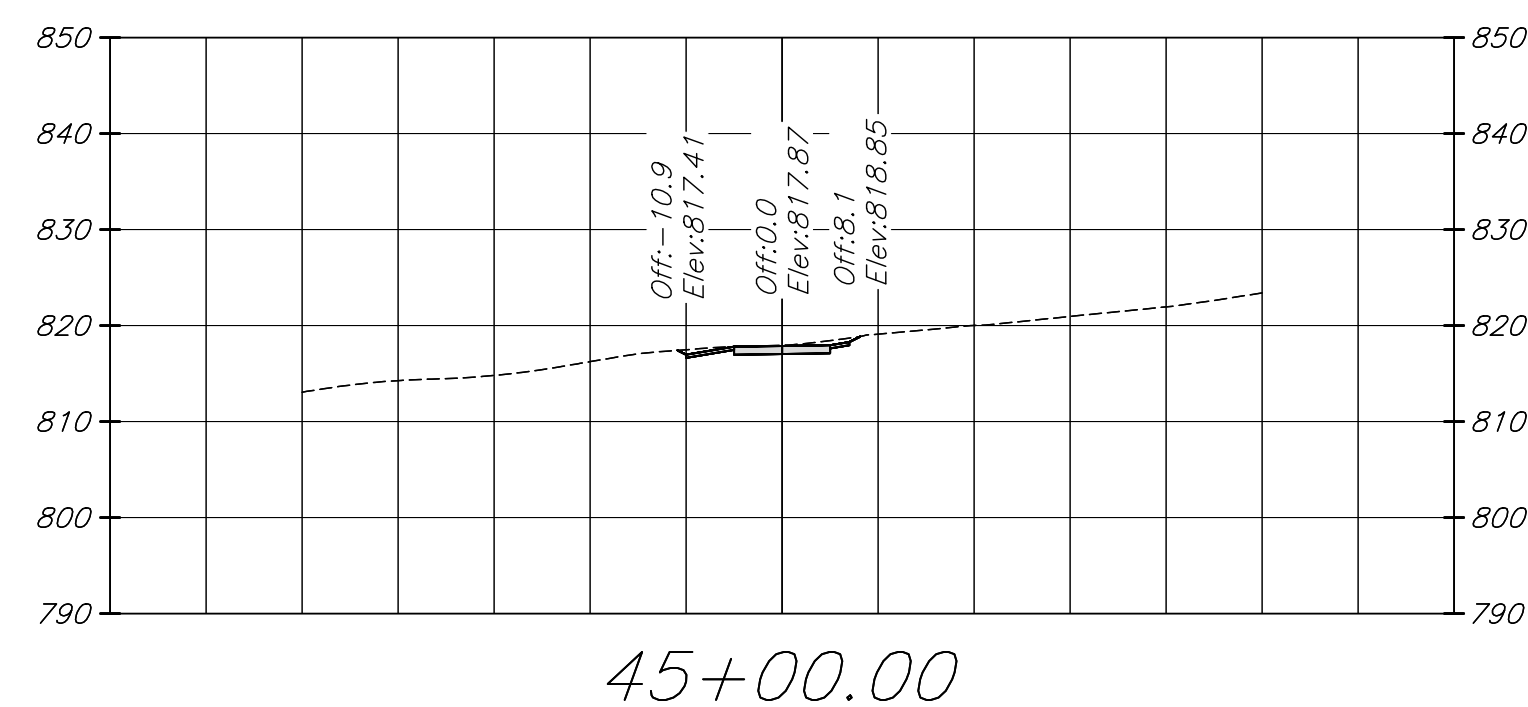
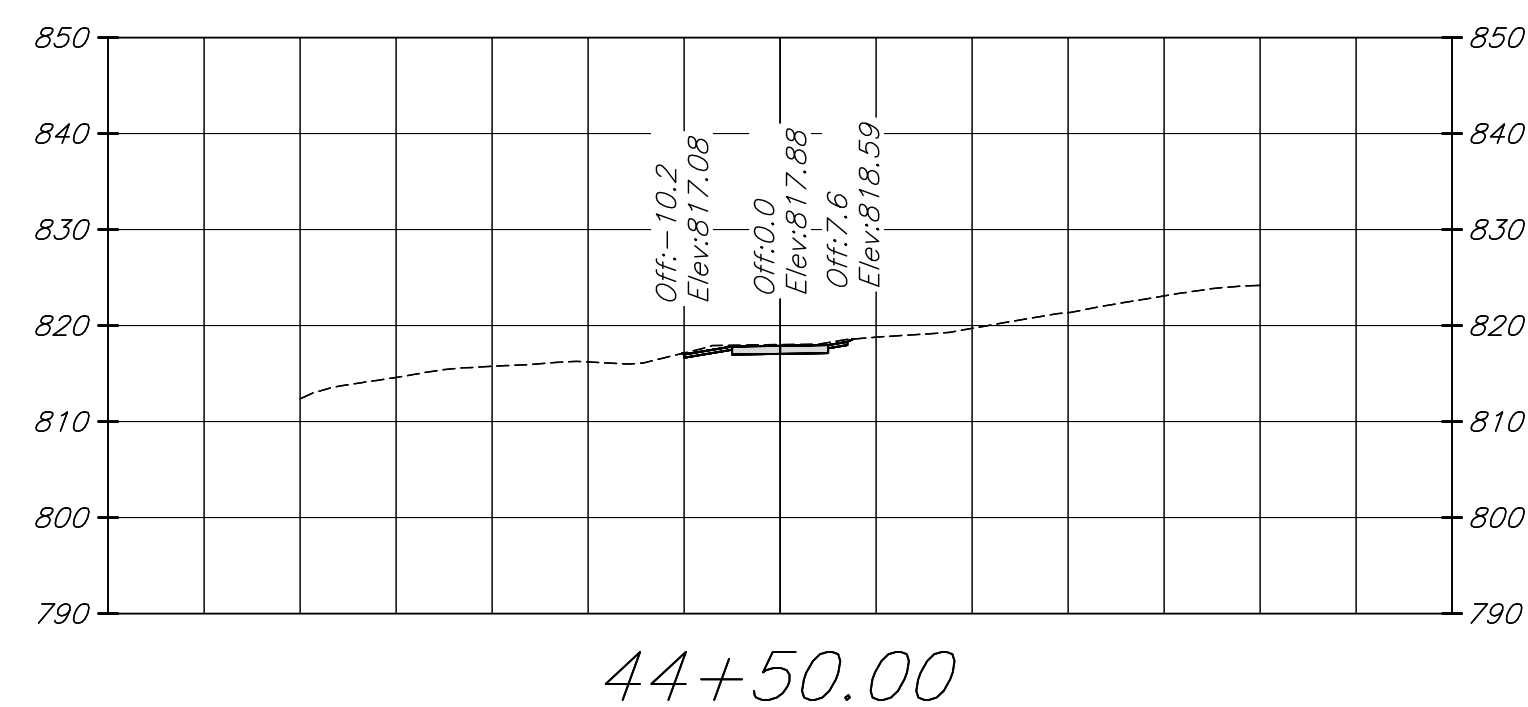
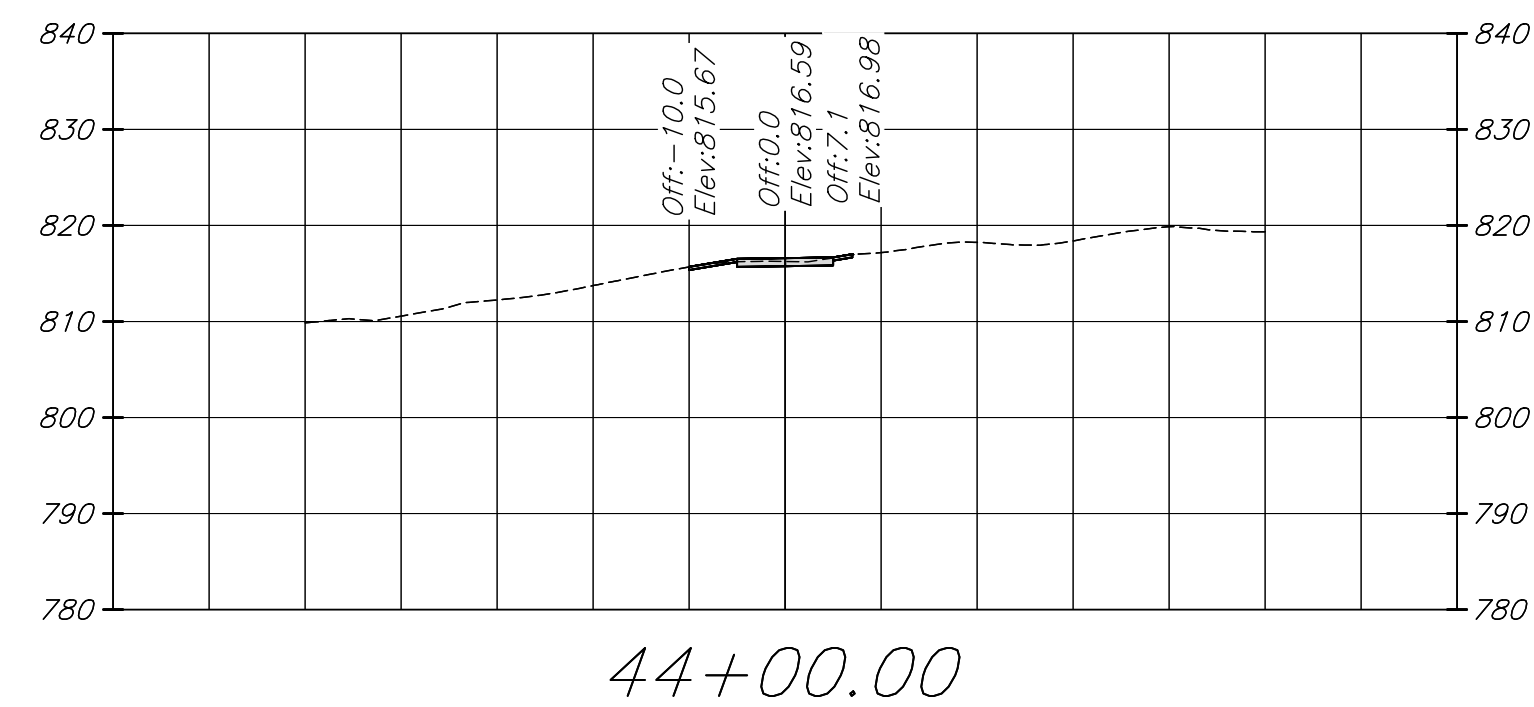
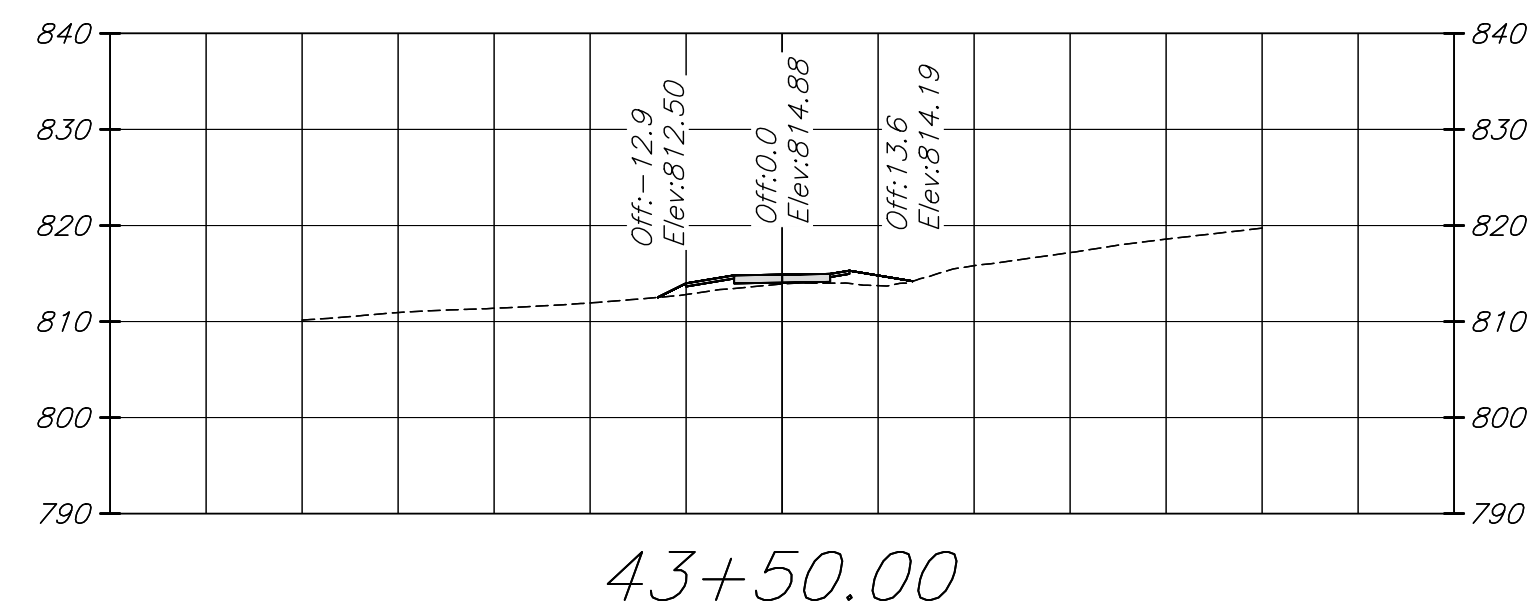
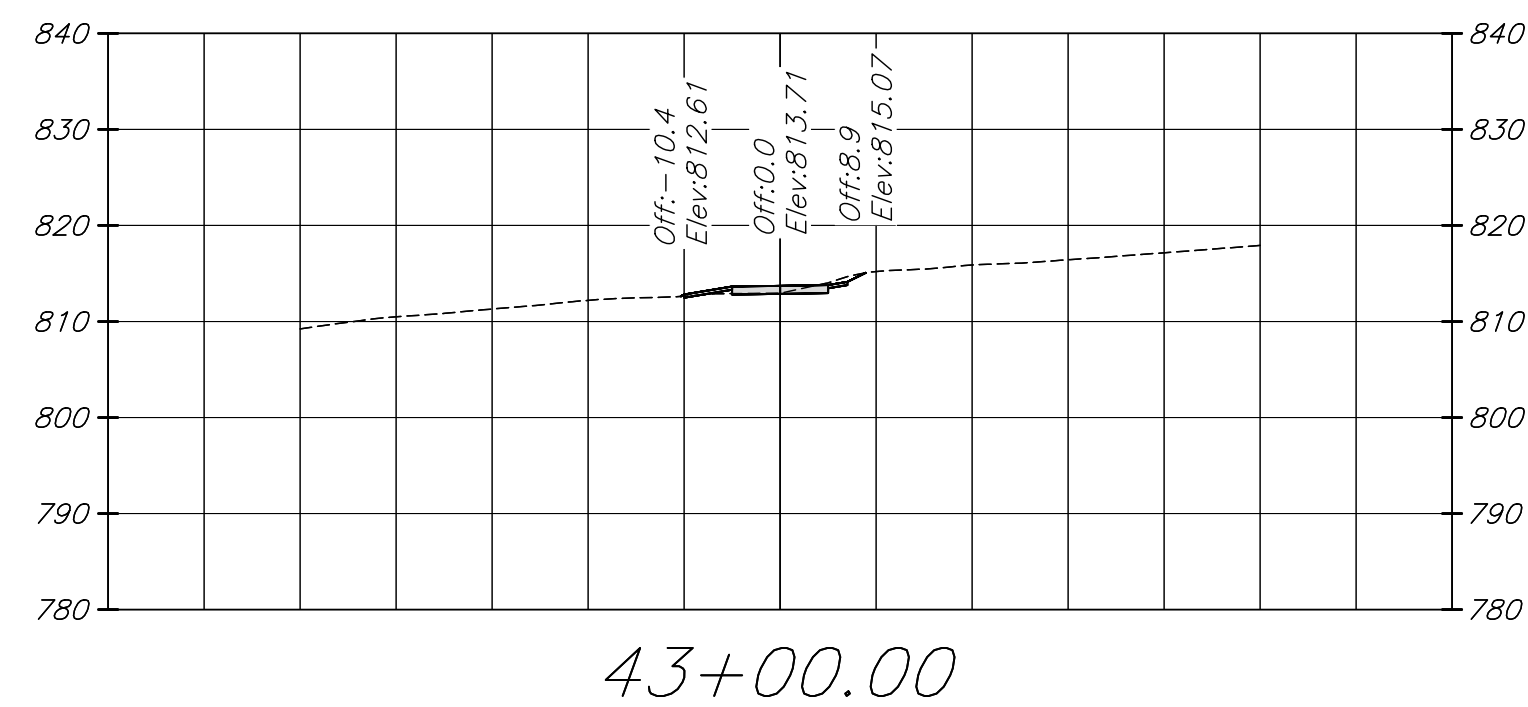
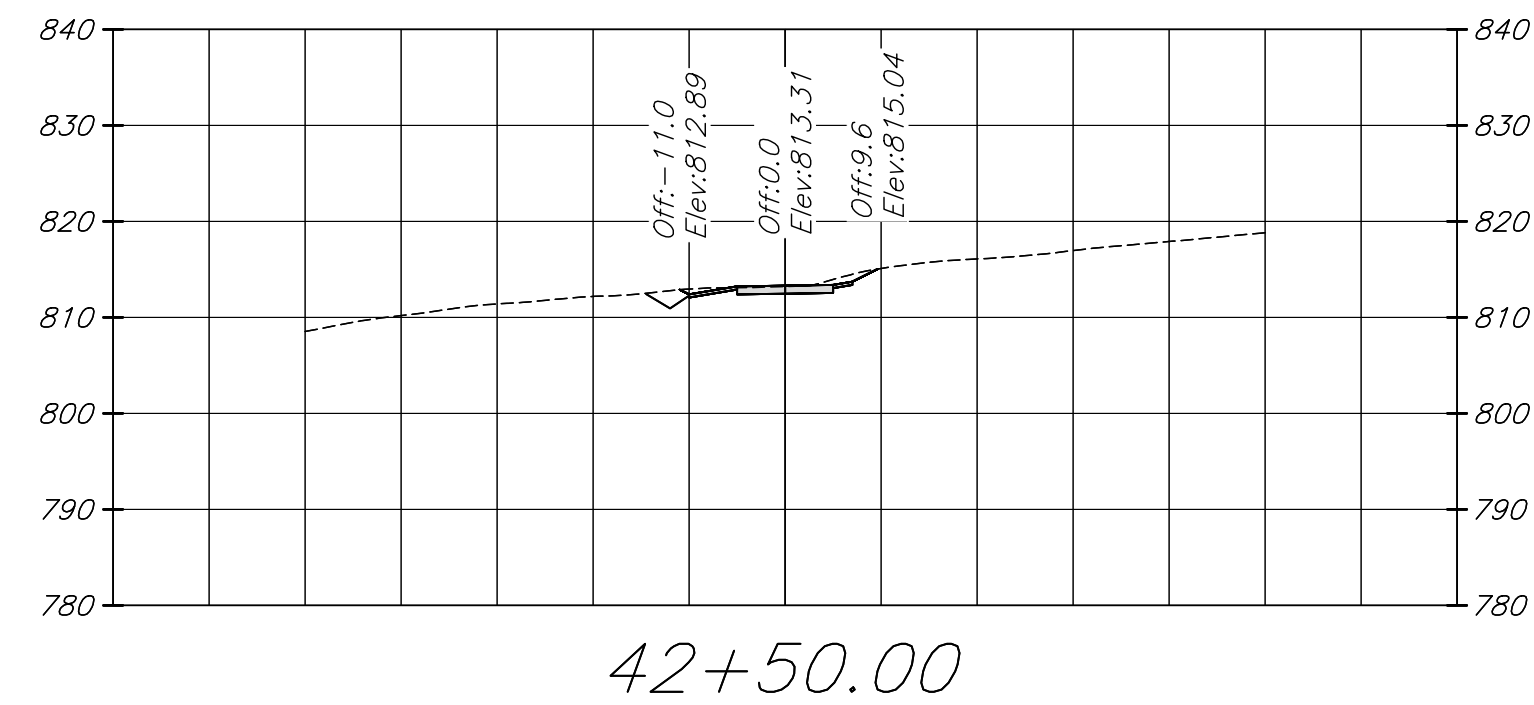
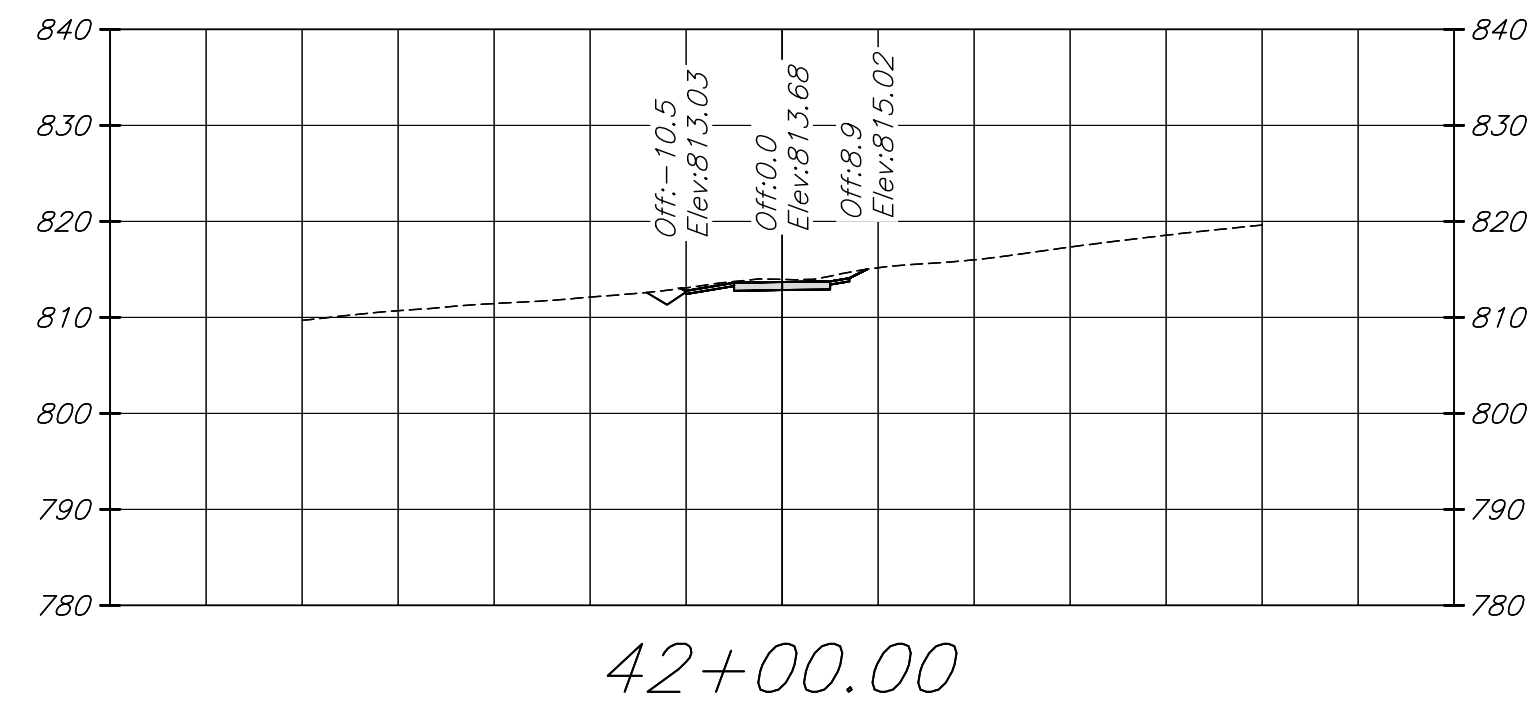
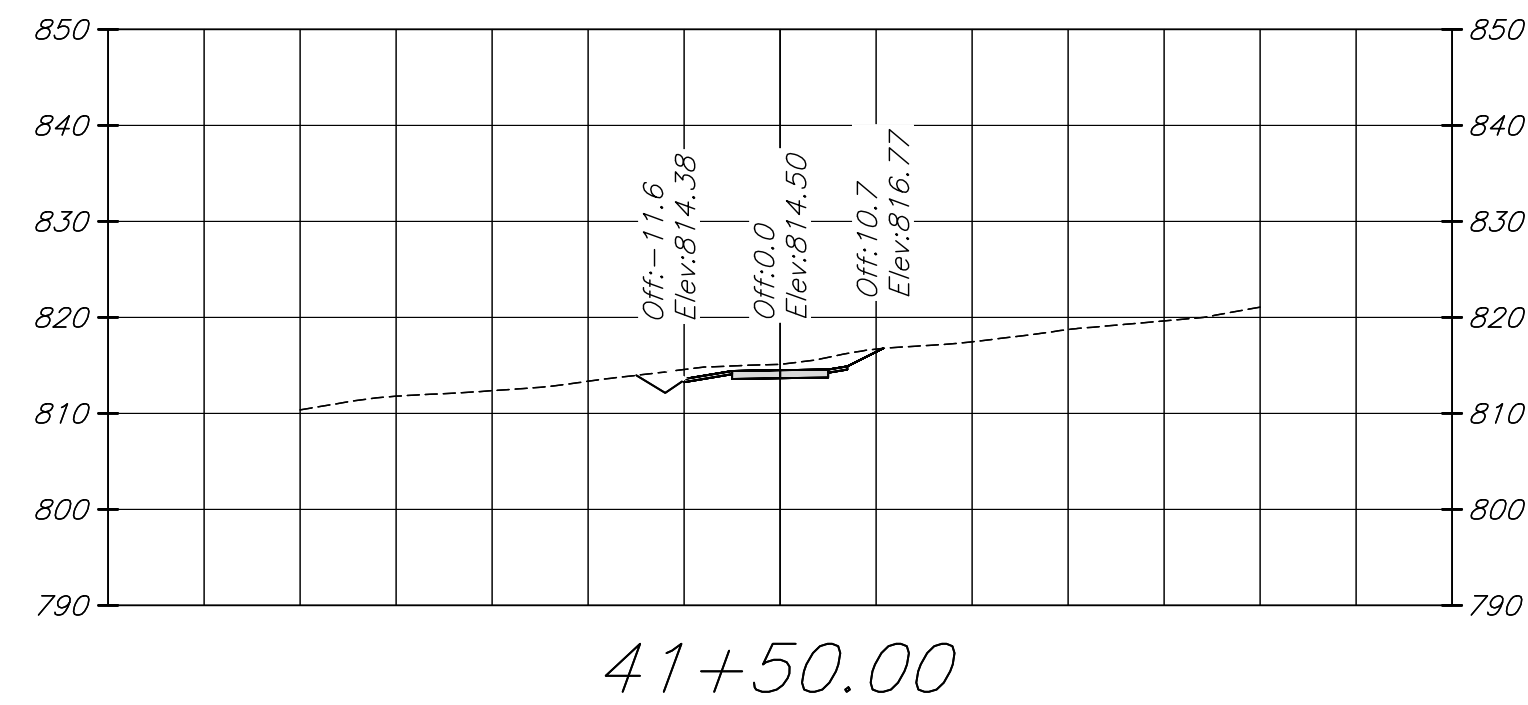
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REVISIONS

MARK	DATE	MADE BY	CHECKED	DESCRIPTION

XS107

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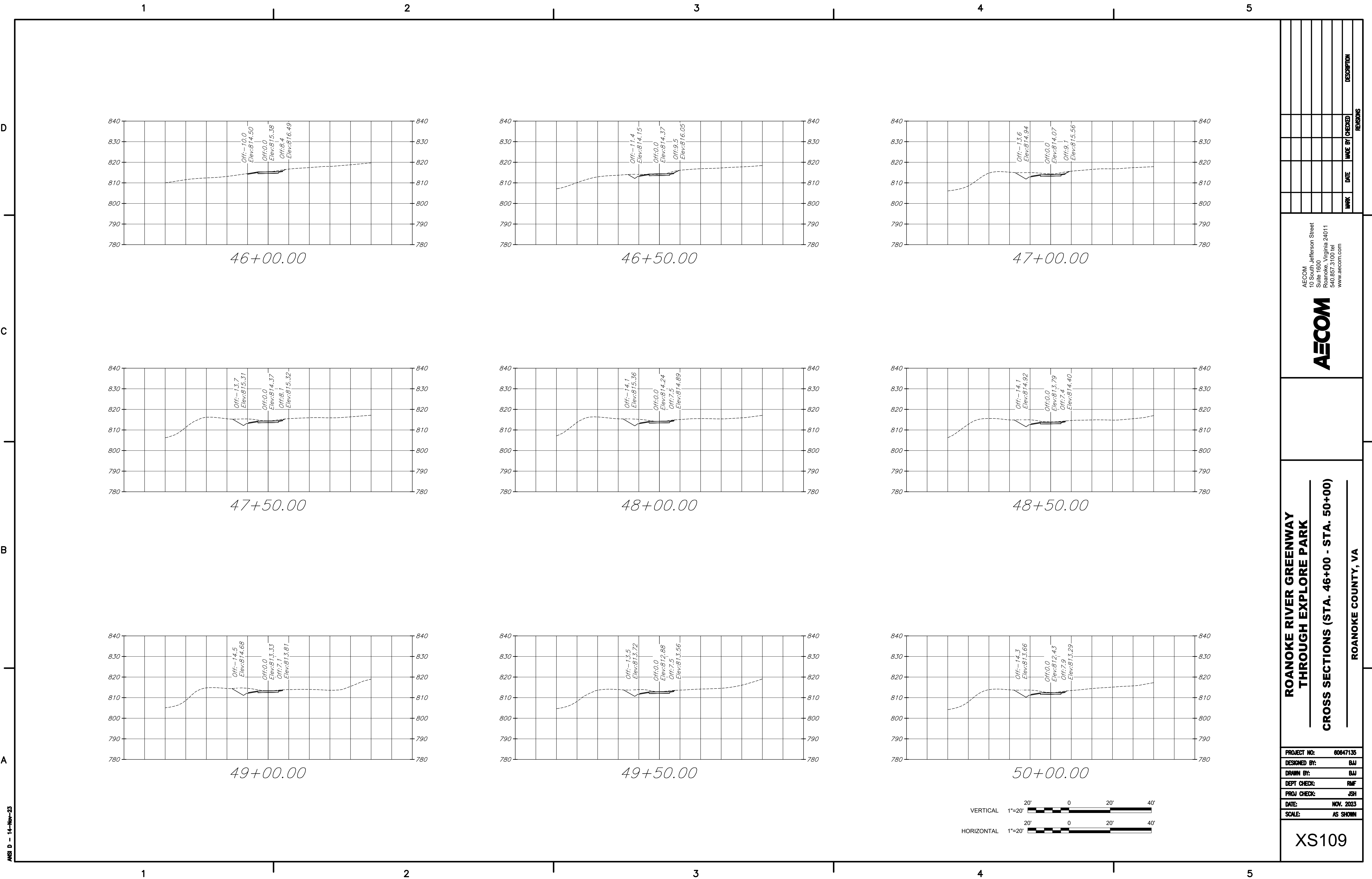
ROANOKE RIVER GREENWAY THROUGH EXPLORE PARK

CROSS SECTIONS (STA. 41+50 - STA. 45+50)

ROANOKE COUNTY, VA

PROJECT NO:	60647135
DESIGNED BY:	BJJ
DRAWN BY:	BJJ
DEPT CHECK:	RMF
PROJ CHECK:	JSH
DATE:	NOV. 2023
SCALE:	AS SHOWN

XS108



ANSI D - 14-Nov-23

PROJECT NO: 60647135

DESIGNED BY: BAJ

DRAWN BY: BAJ

DEPT CHECK: RMF

PROJ CHECK: JSH

DATE: NOV. 2023

SCALE: AS SHOWN

XS109

ROANOKE RIVER GREENWAY
THROUGH EXPLORE PARK

CROSS SECTIONS (STA. 46+00 - STA. 50+00)

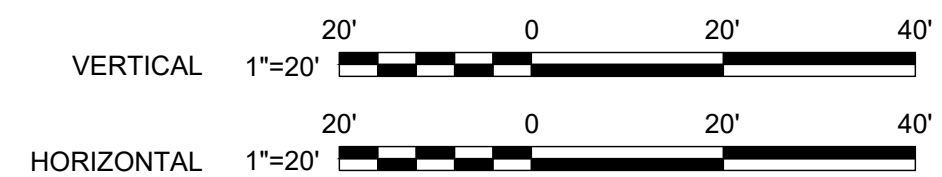
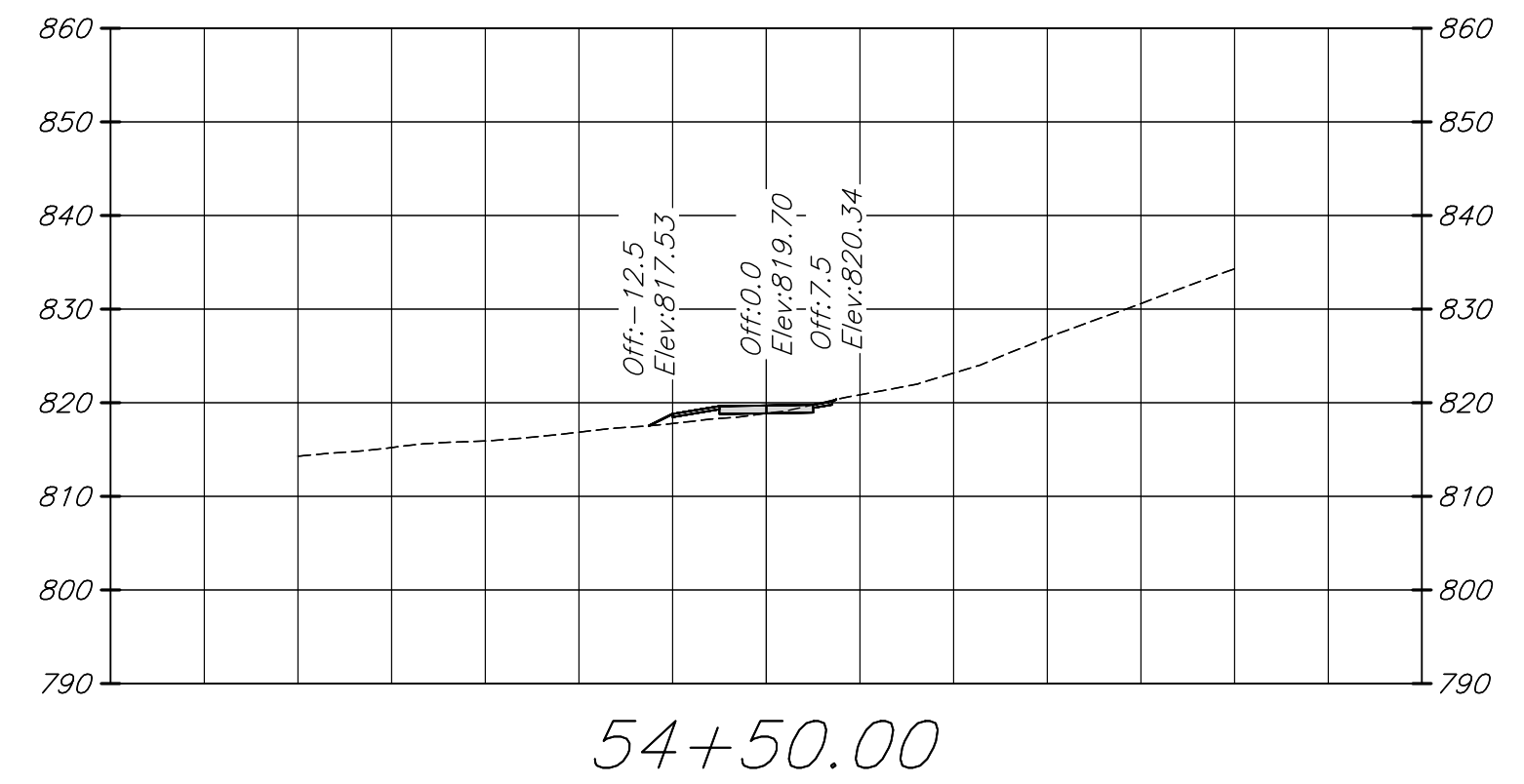
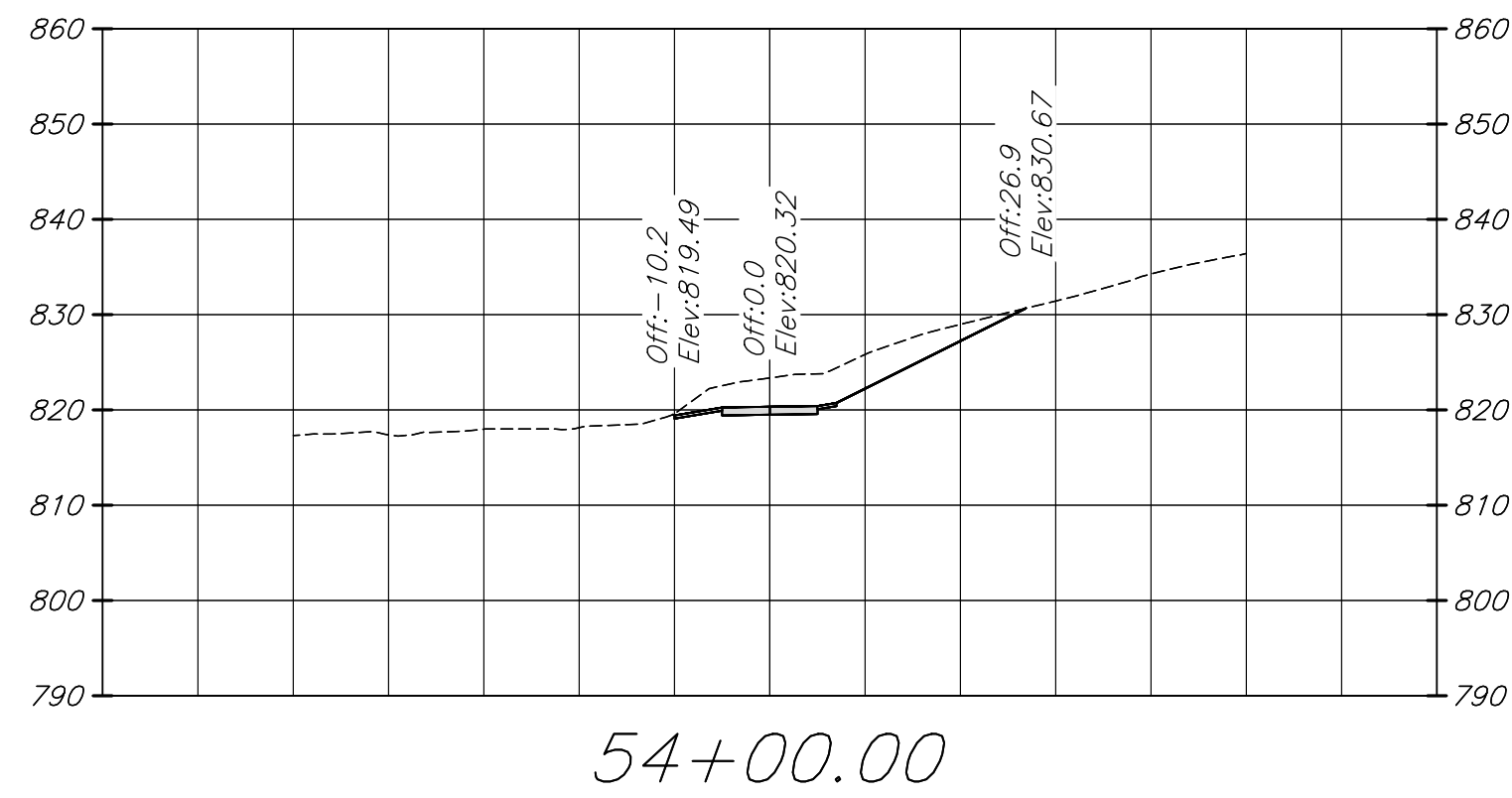
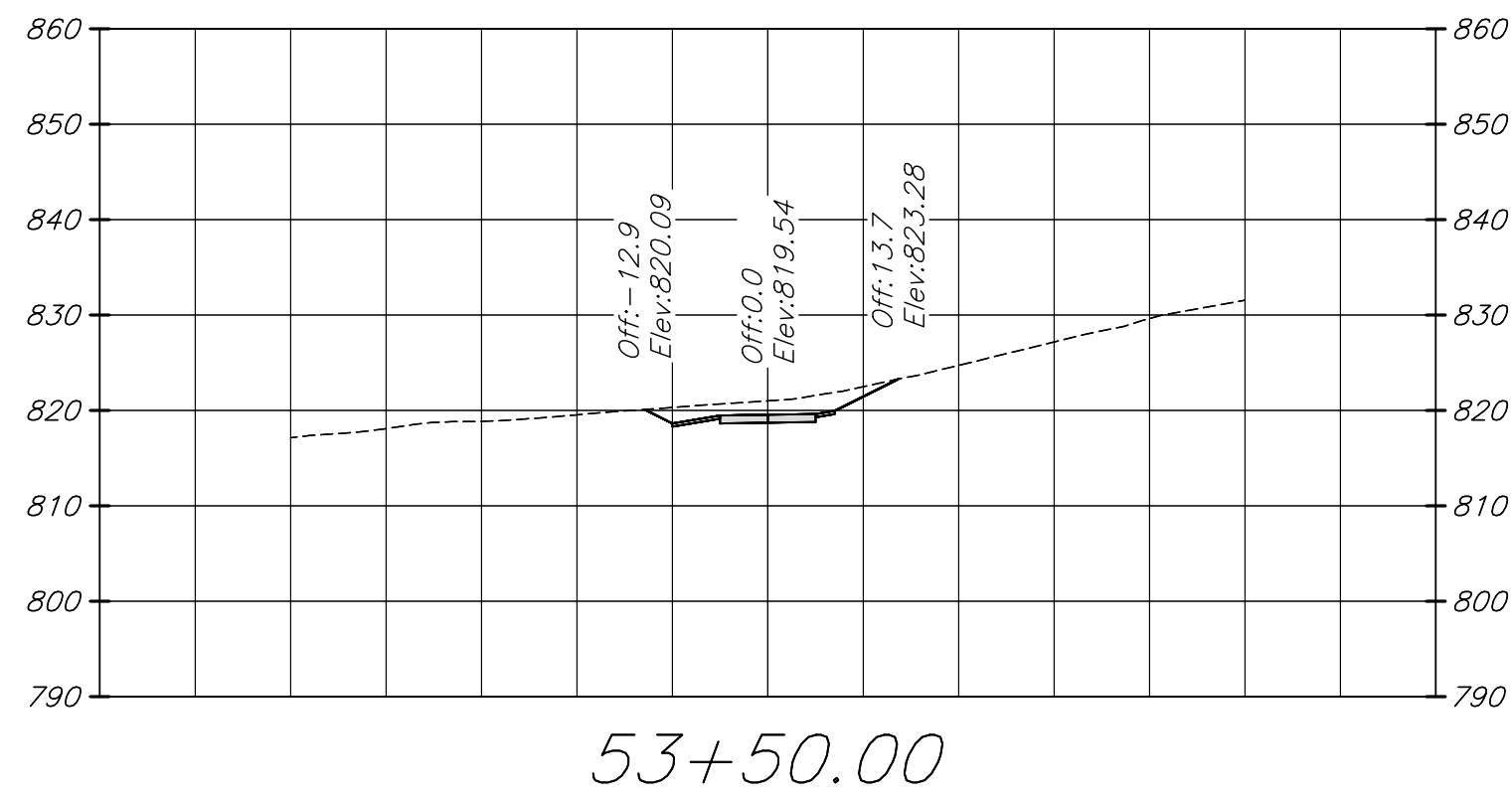
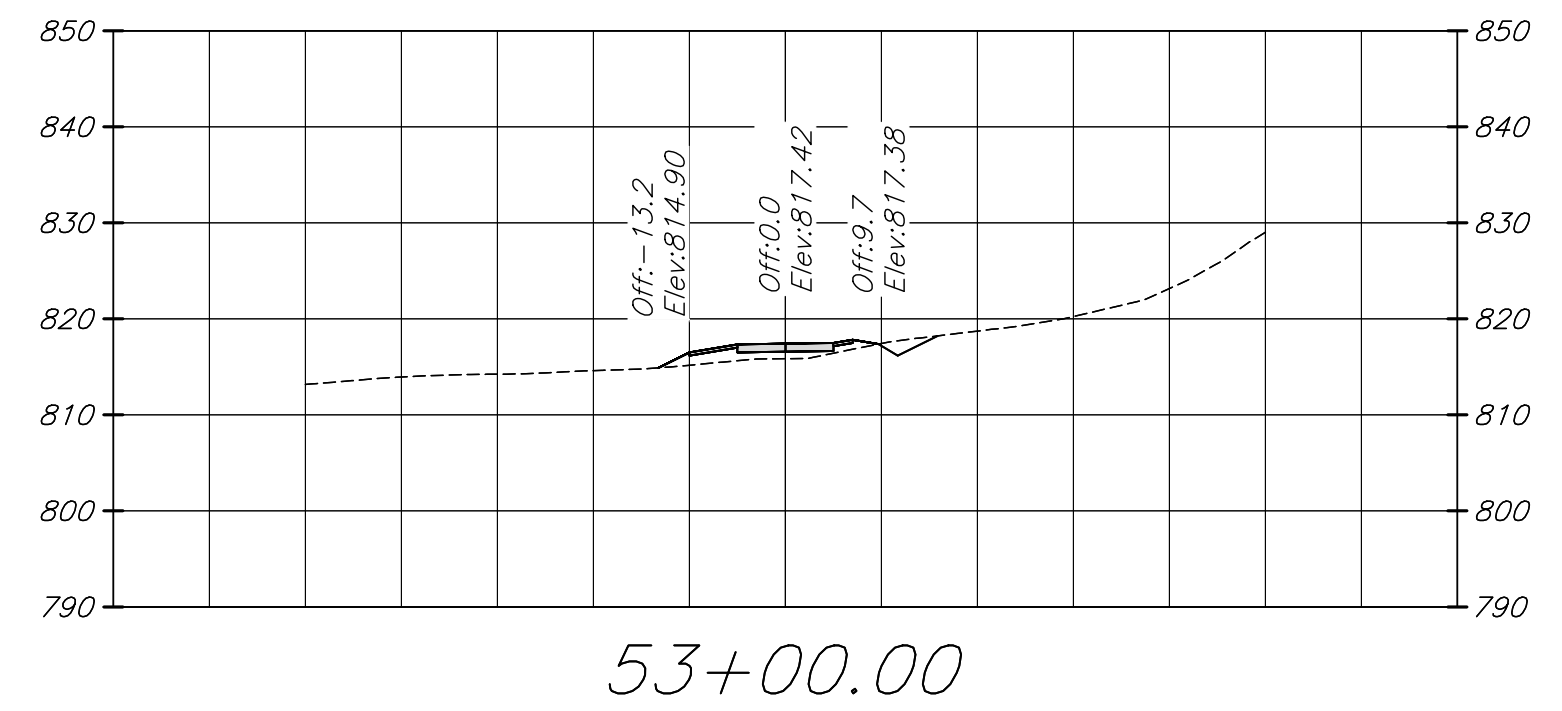
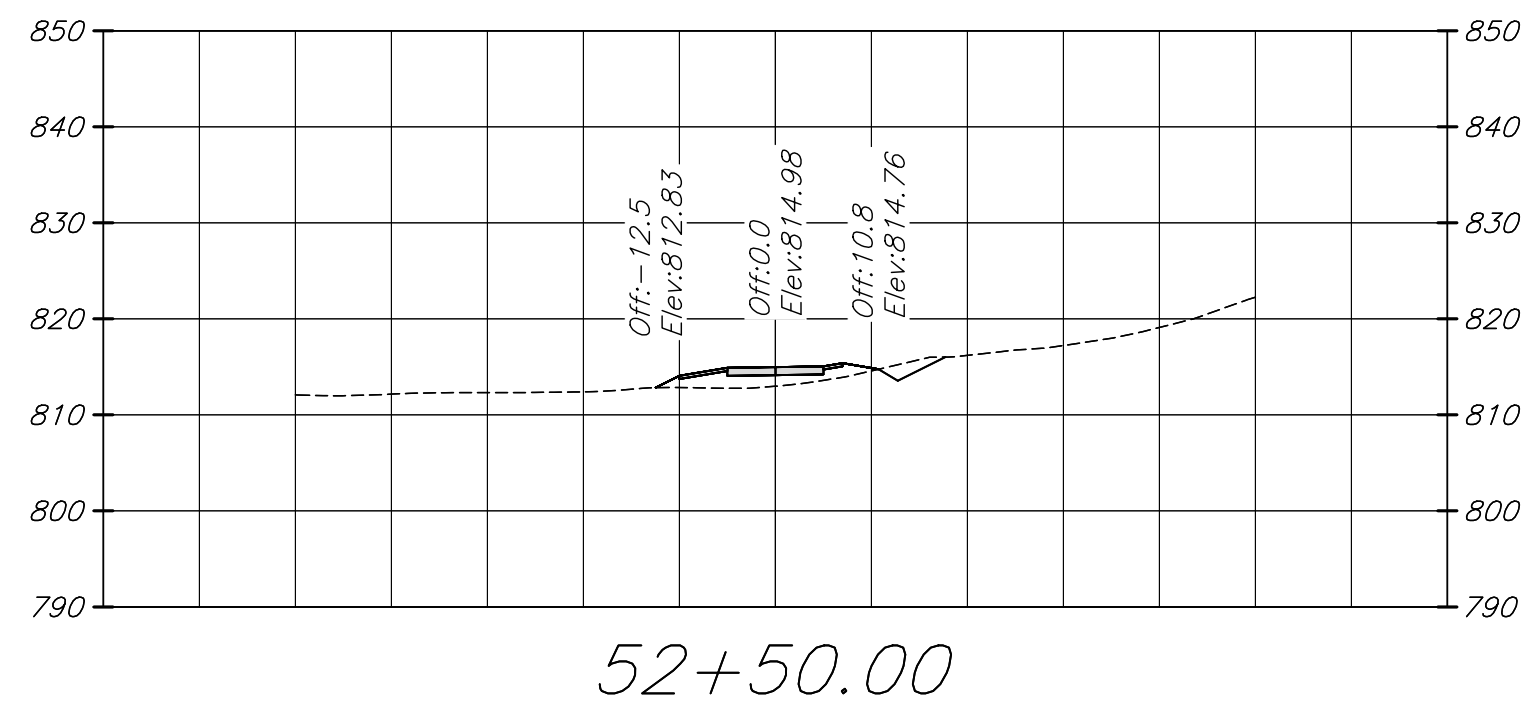
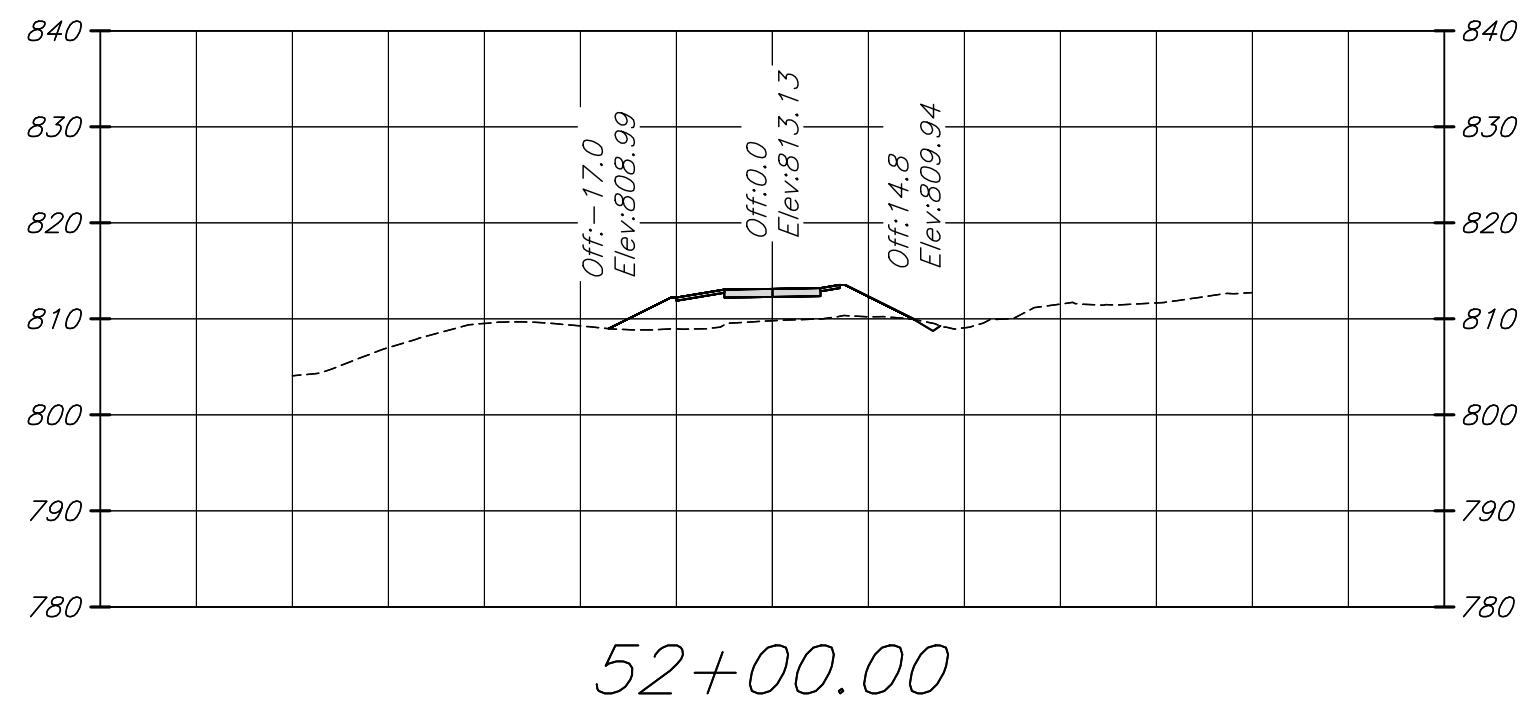
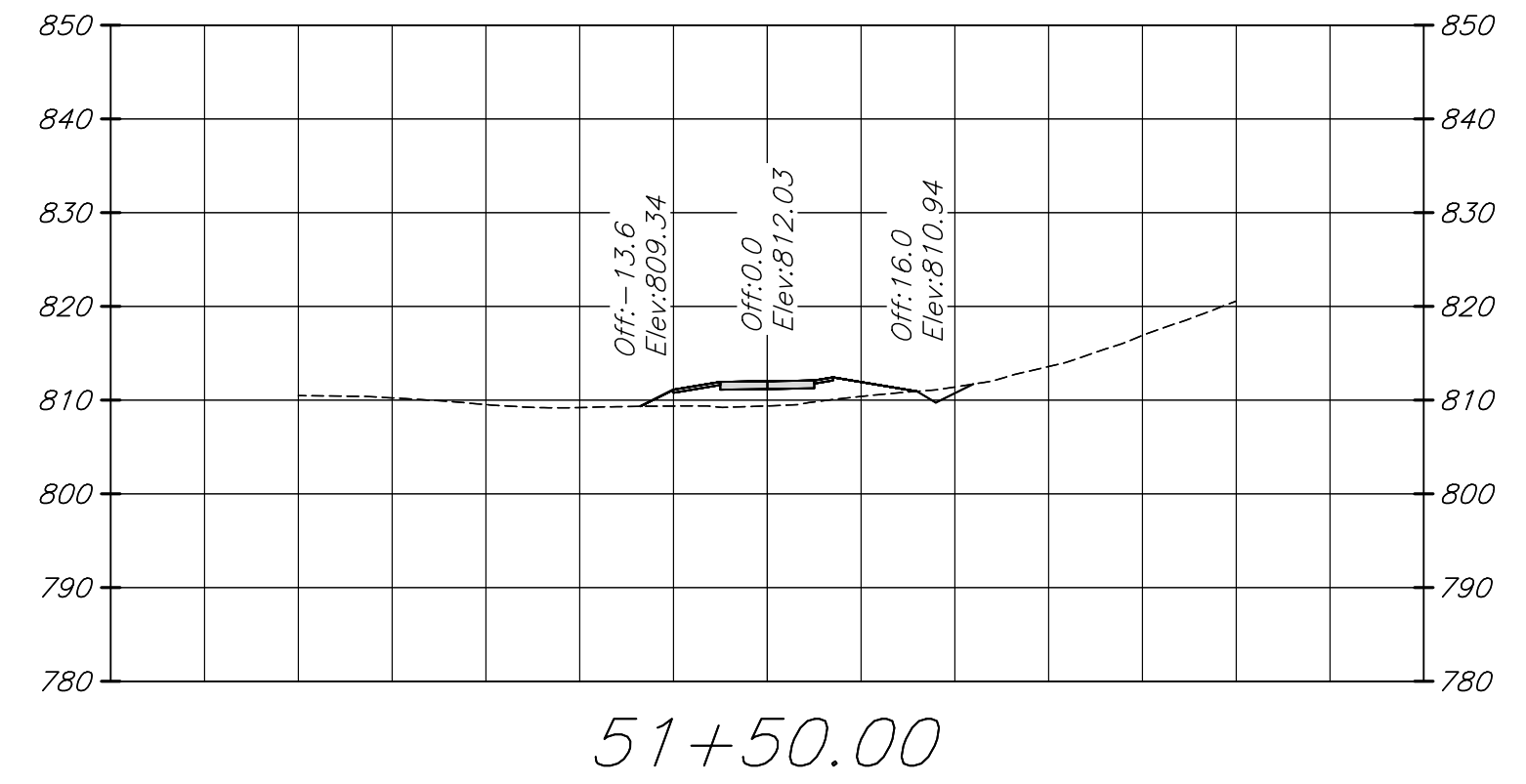
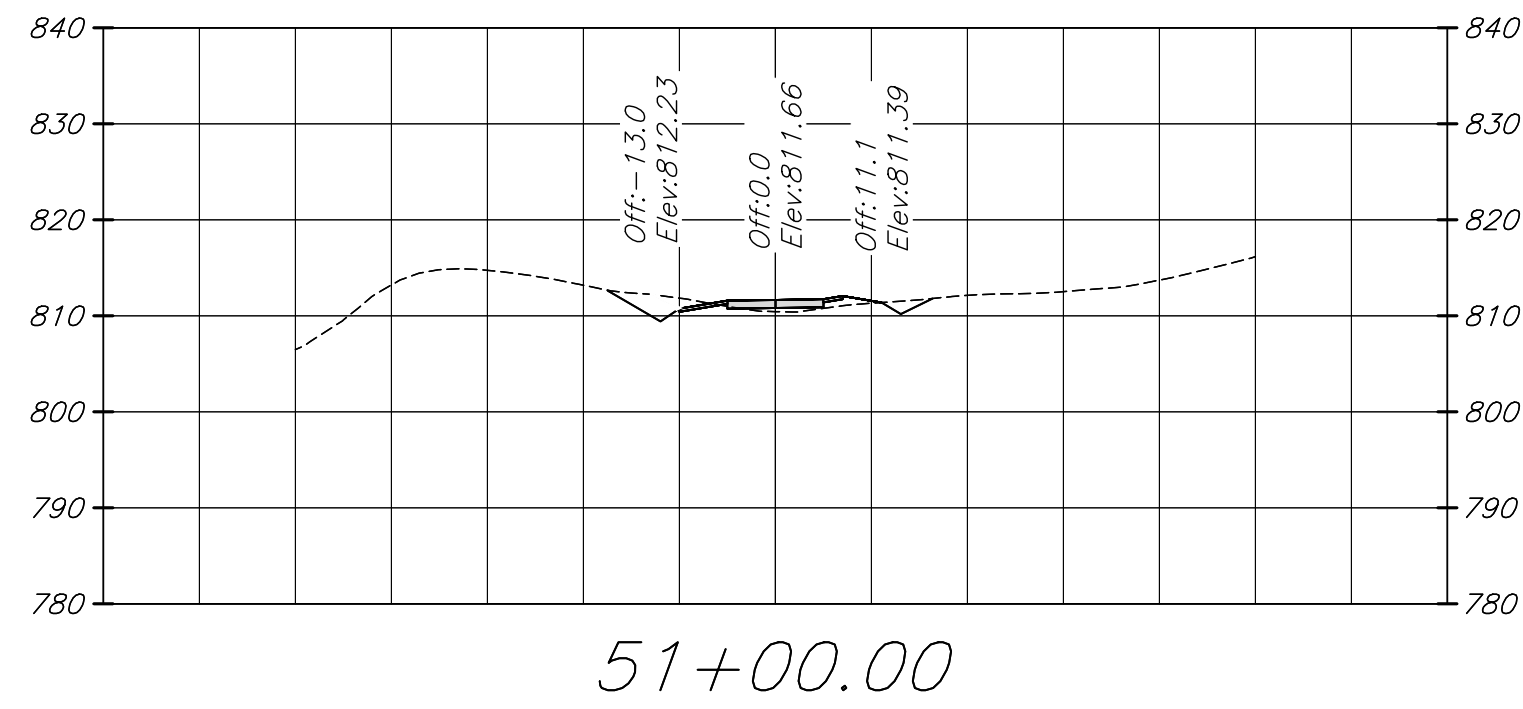
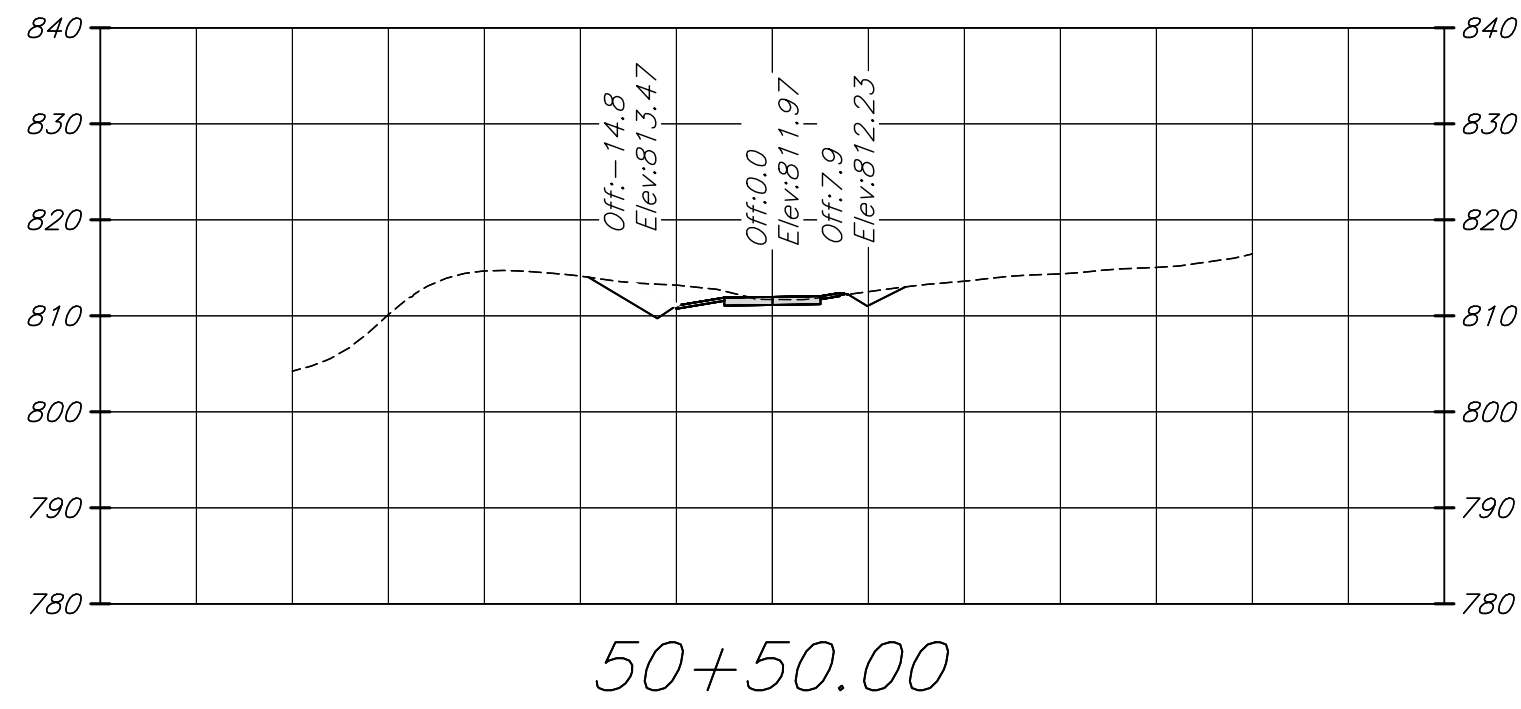
ROANOKE COUNTY, VA

AECOM

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Roanoke, Virginia 24011
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REVISIONS

MARK	DATE	MADE BY	CHECKED	DESCRIPTION



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**ROANOKE RIVER GREENWAY
THROUGH EXPLORE PARK**

CROSS SECTIONS (STA. 50+50 - STA. 54+50)

CROSS SECTIONS (SIA. 50+50 - SIA. 54+50)

ROANOKE COUNTY, VA

PROJECT NO:	60647135
DESIGNED BY:	BAJ
DRAWN BY:	BAJ
DEPT CHECK:	RMF
PROJ CHECK:	JSH
DATE:	NOV. 2023
SCALE:	AS SHOWN

XS110

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REVISIONS

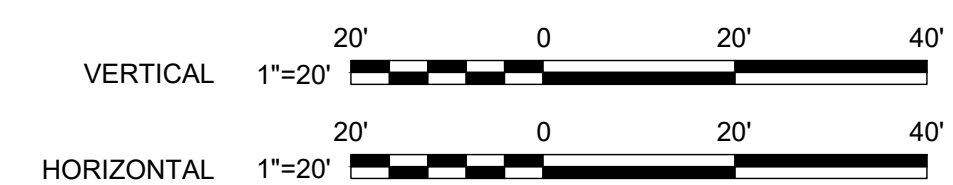
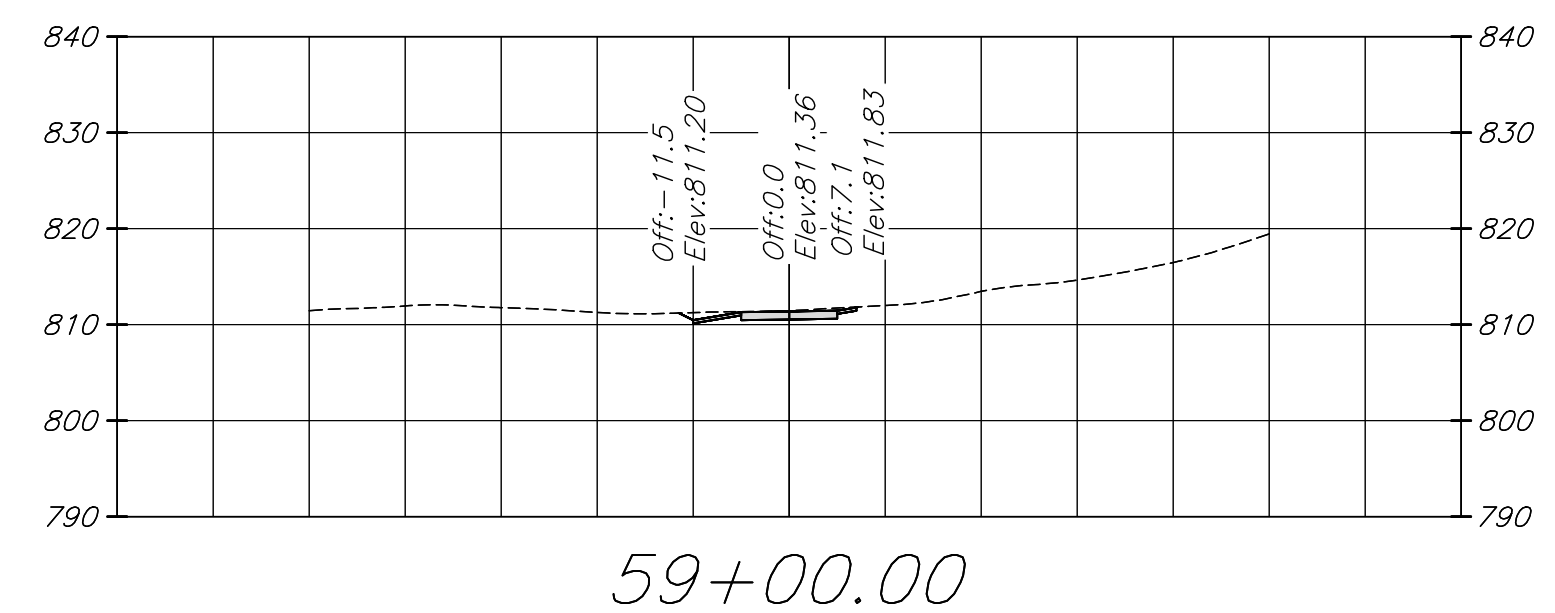
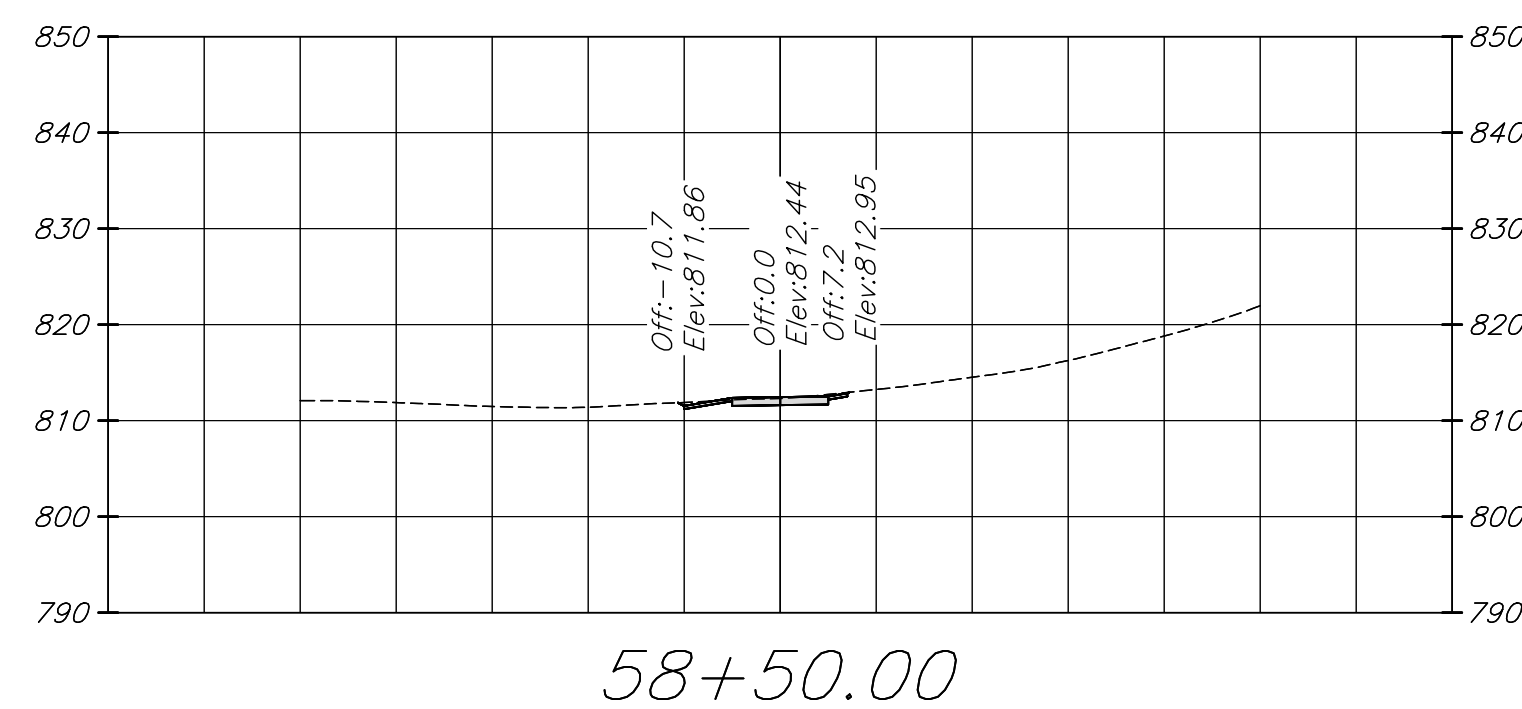
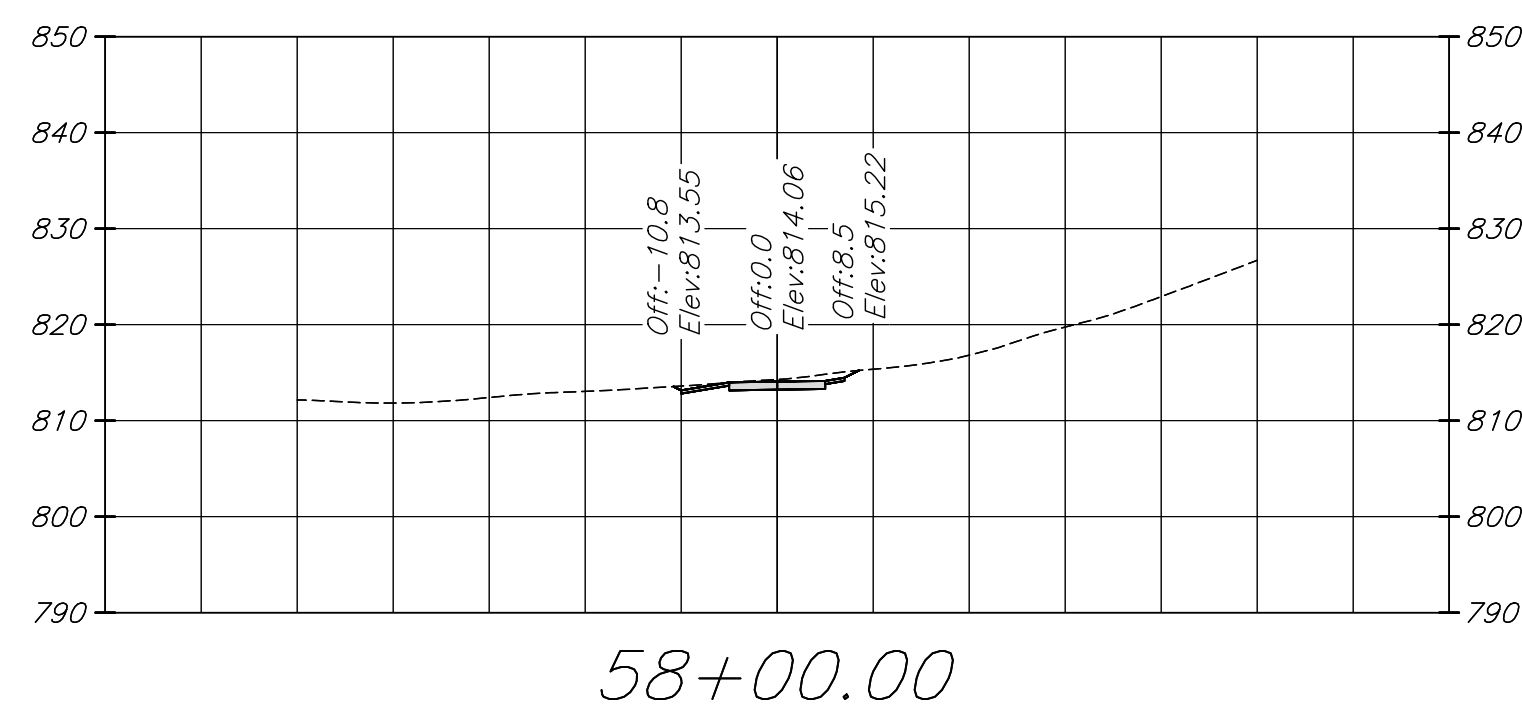
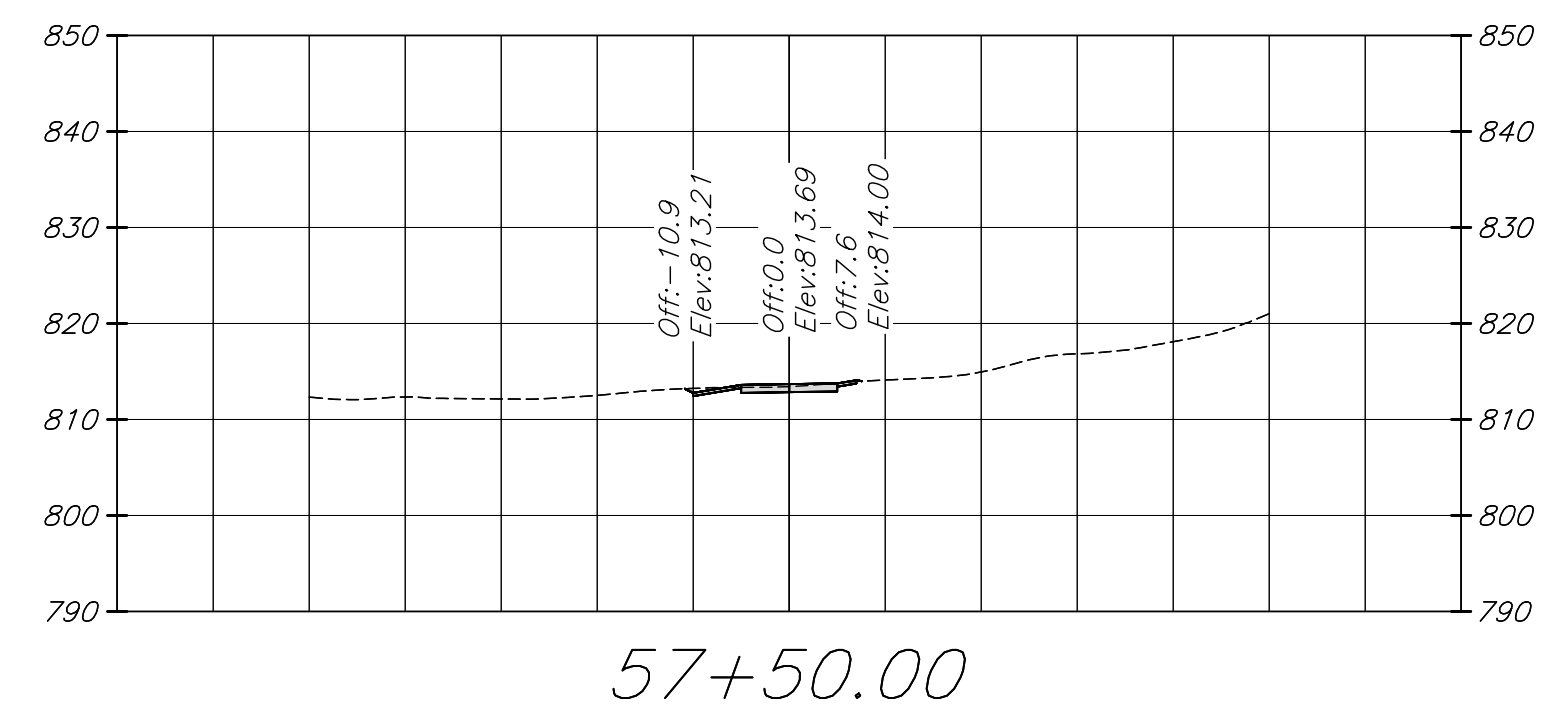
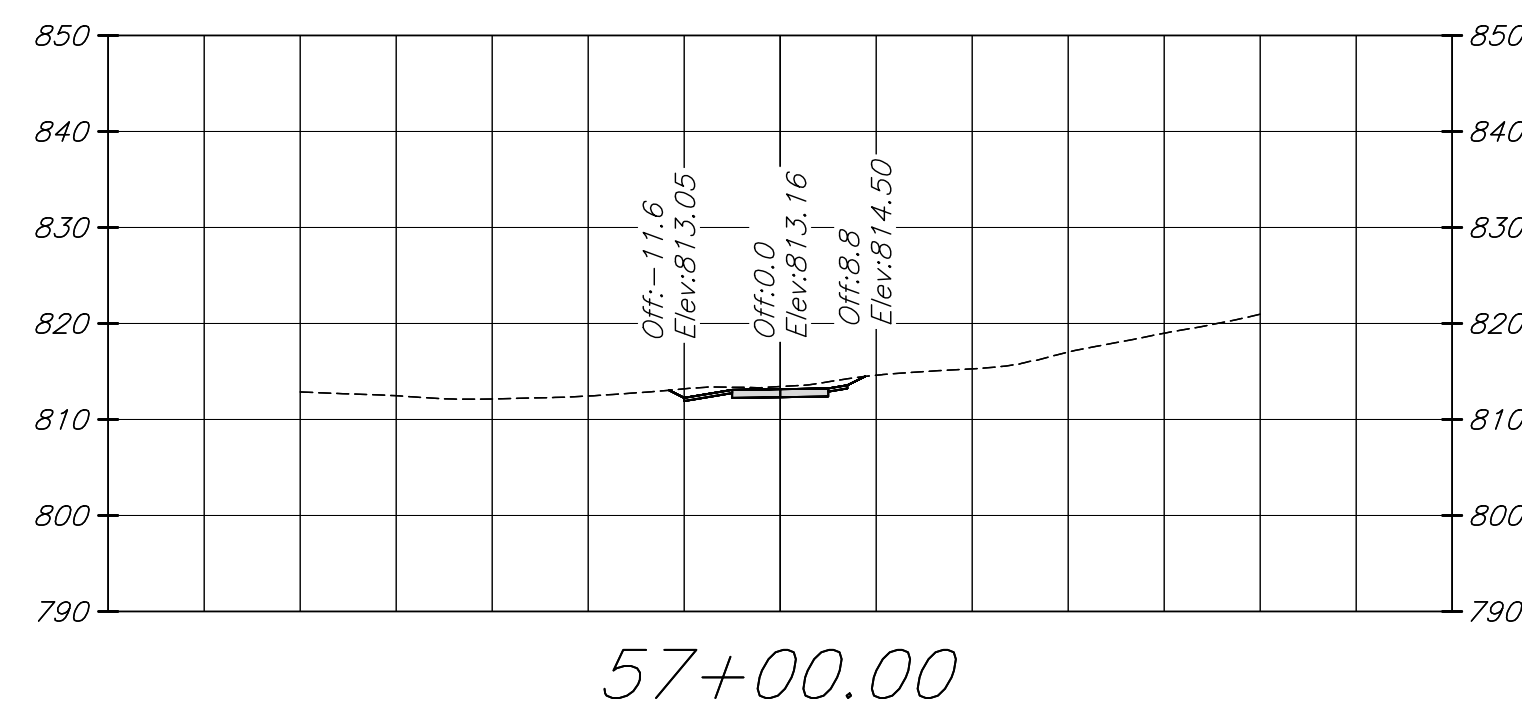
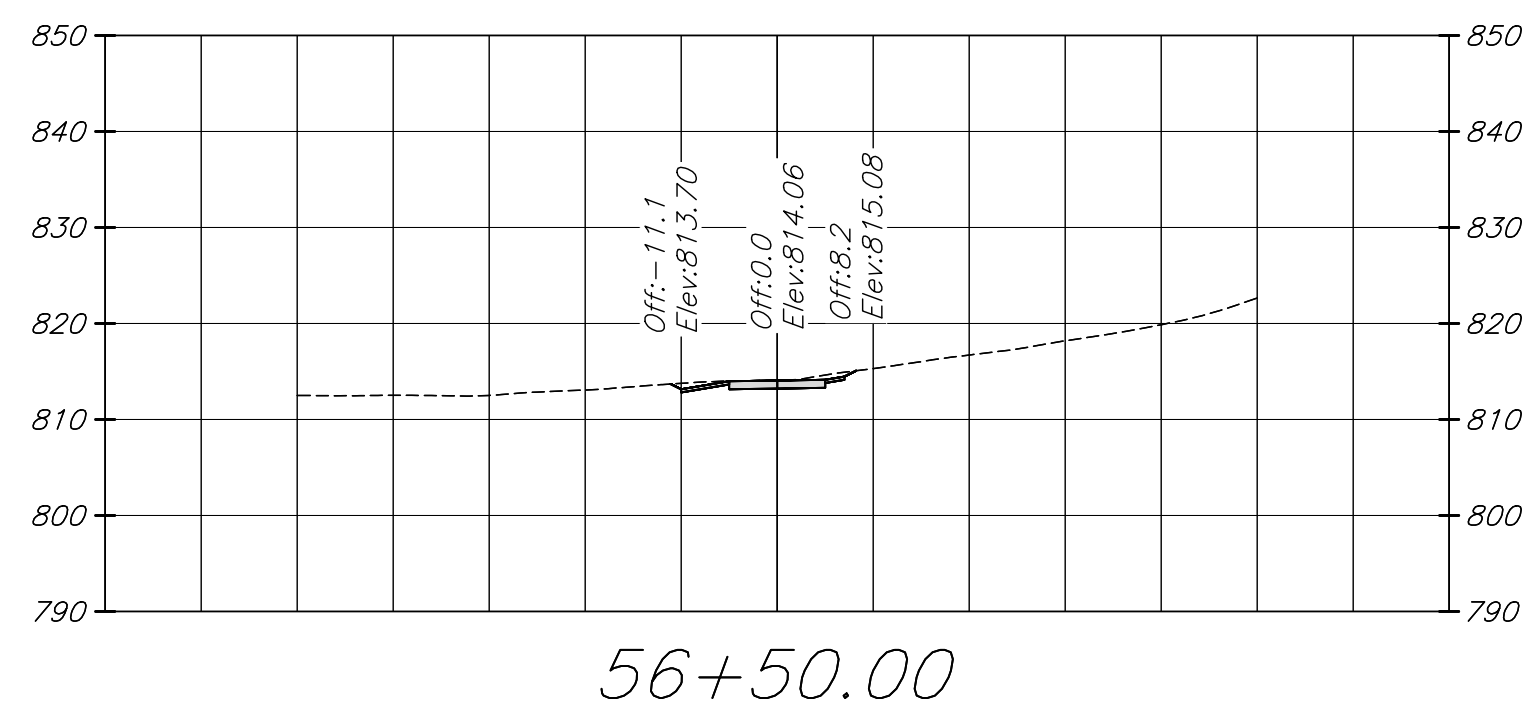
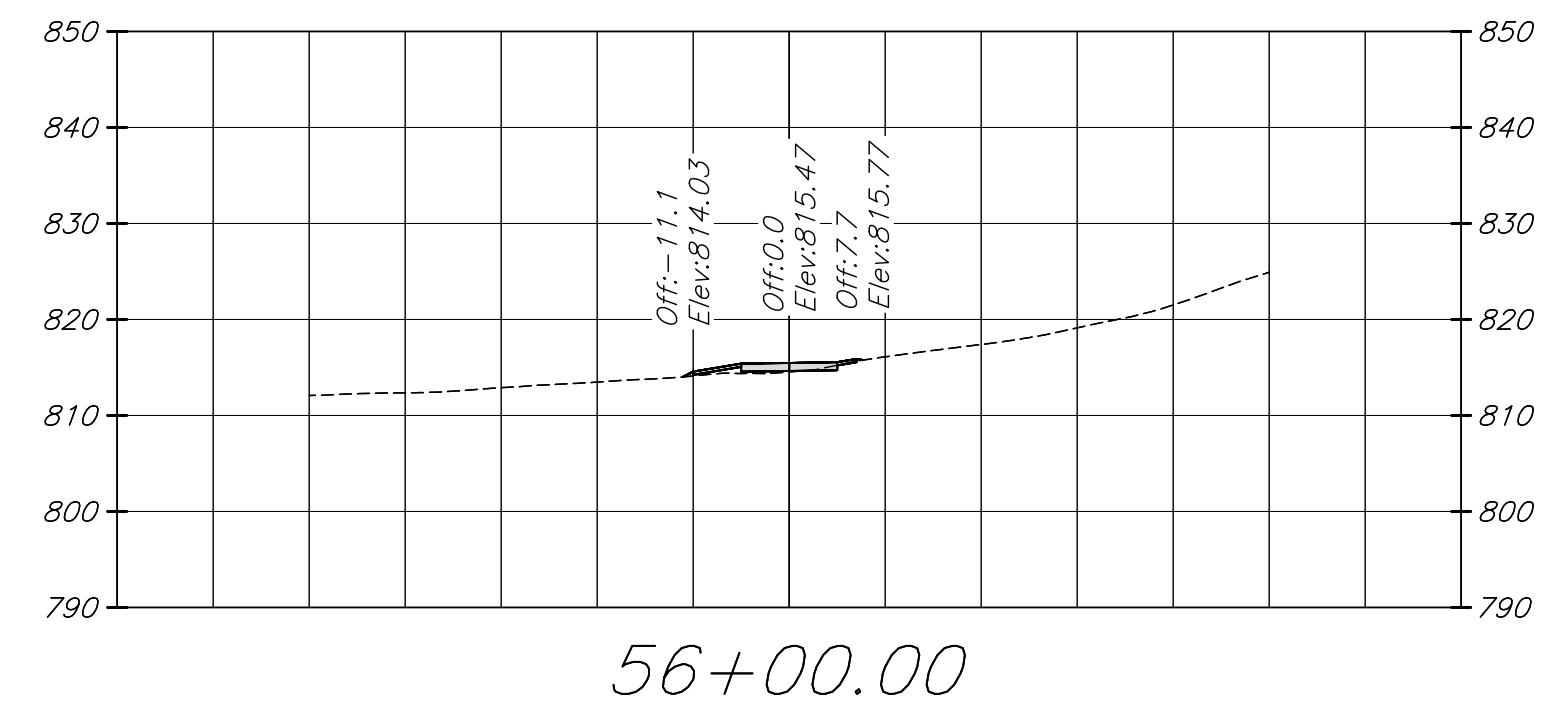
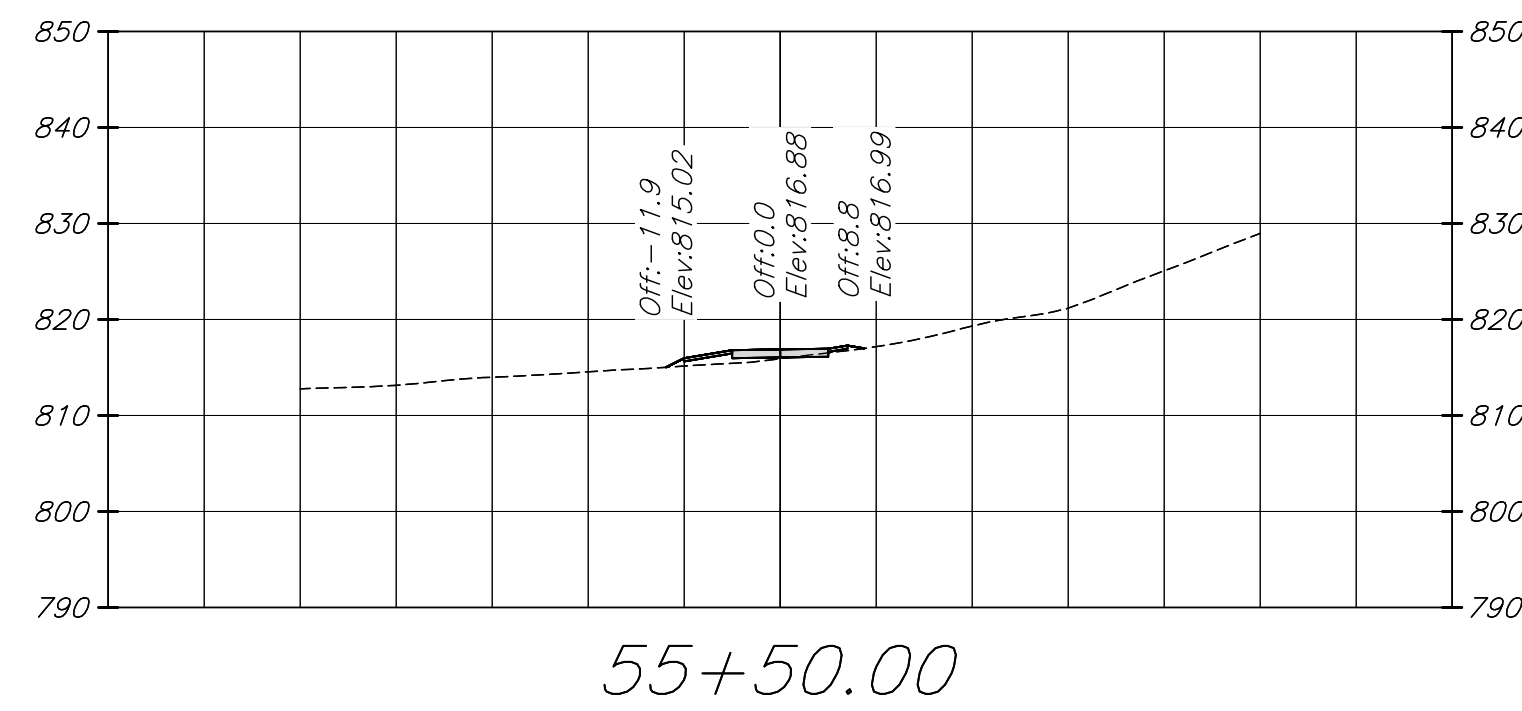
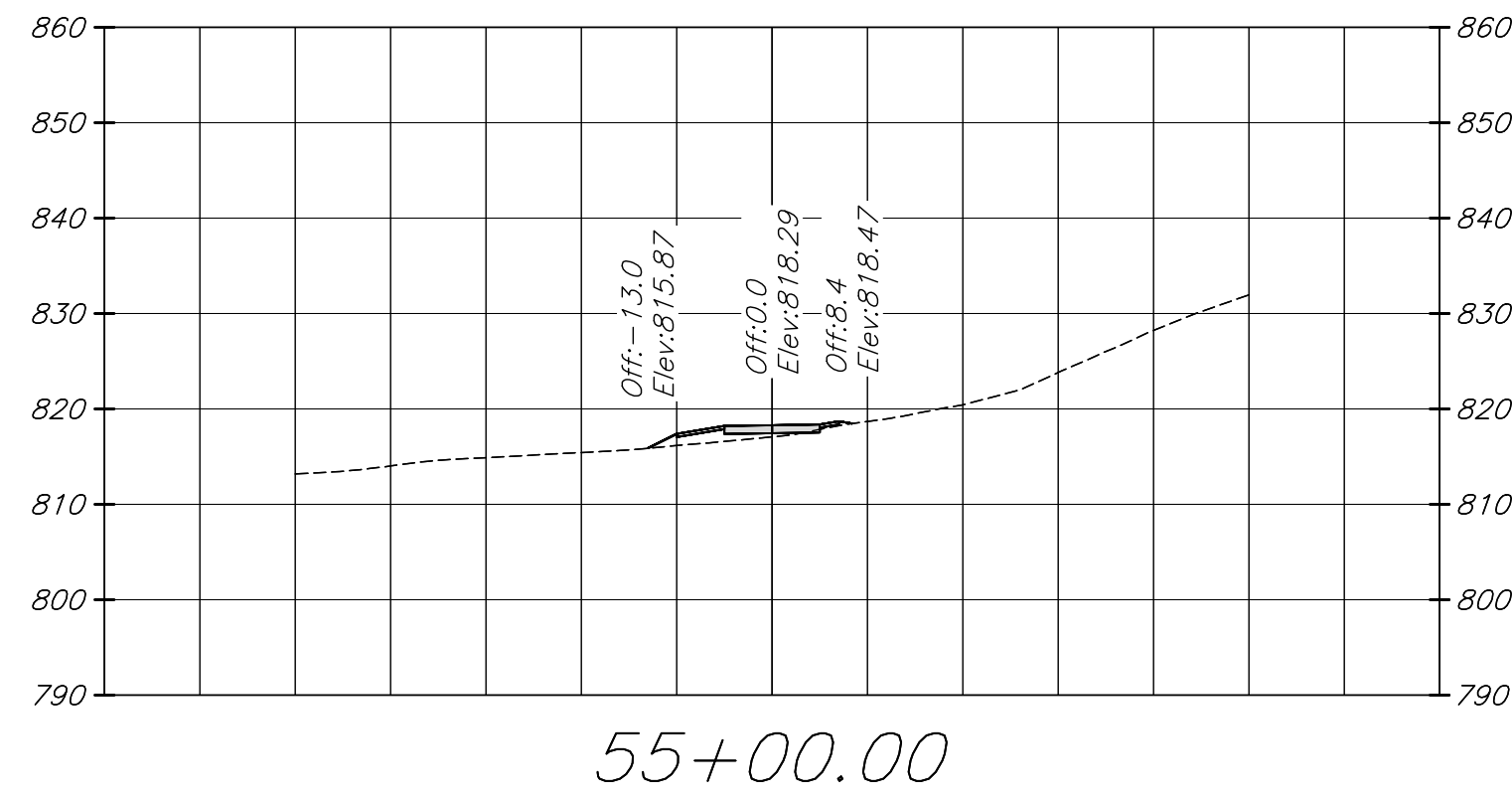
ANSI D - 14-Nov-23

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**ROANOKE RIVER GREENWAY
THROUGH EXPLORE PARK**

CROSS SECTIONS (STA. 55+00 - STA. 59+00)

CROSS SECTIONS (STA. 55+00 - STA. 59+00)

ROANOKE COUNTY, VA

PROJECT NO:	60647135
DESIGNED BY:	BAJ
DRAWN BY:	BAJ
DEPT CHECK:	RMF
PROJ CHECK:	JSH
DATE:	NOV. 2023
SCALE:	AS SHOWN

XS111

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BU	

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[illegible]

ANSI D - 14-Nov-23

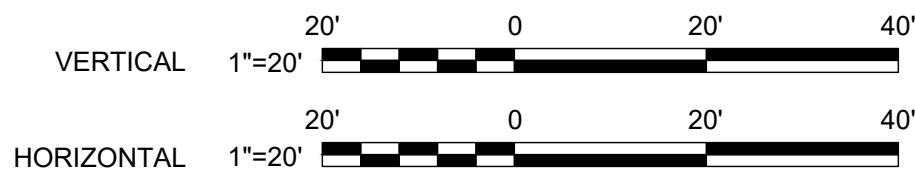
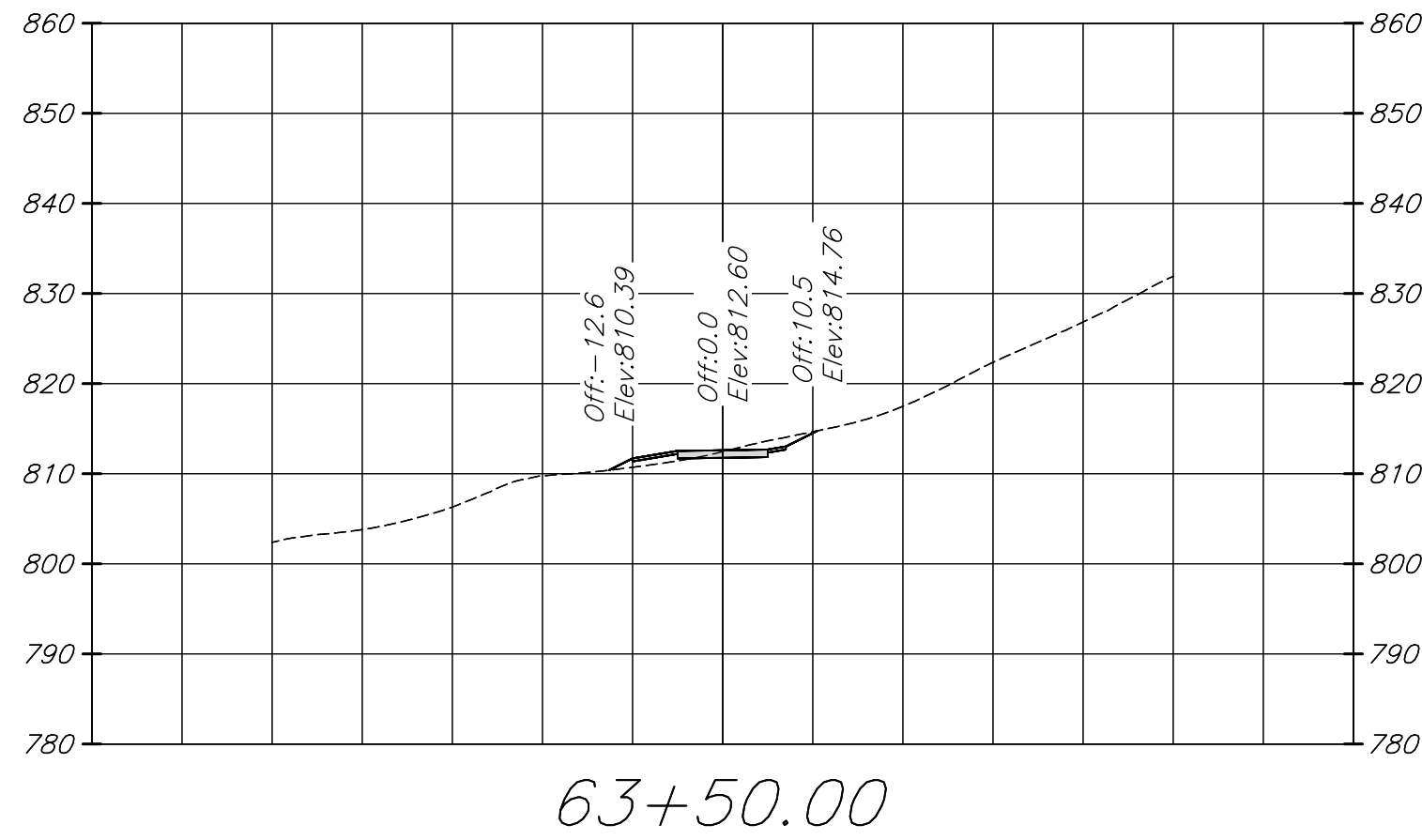
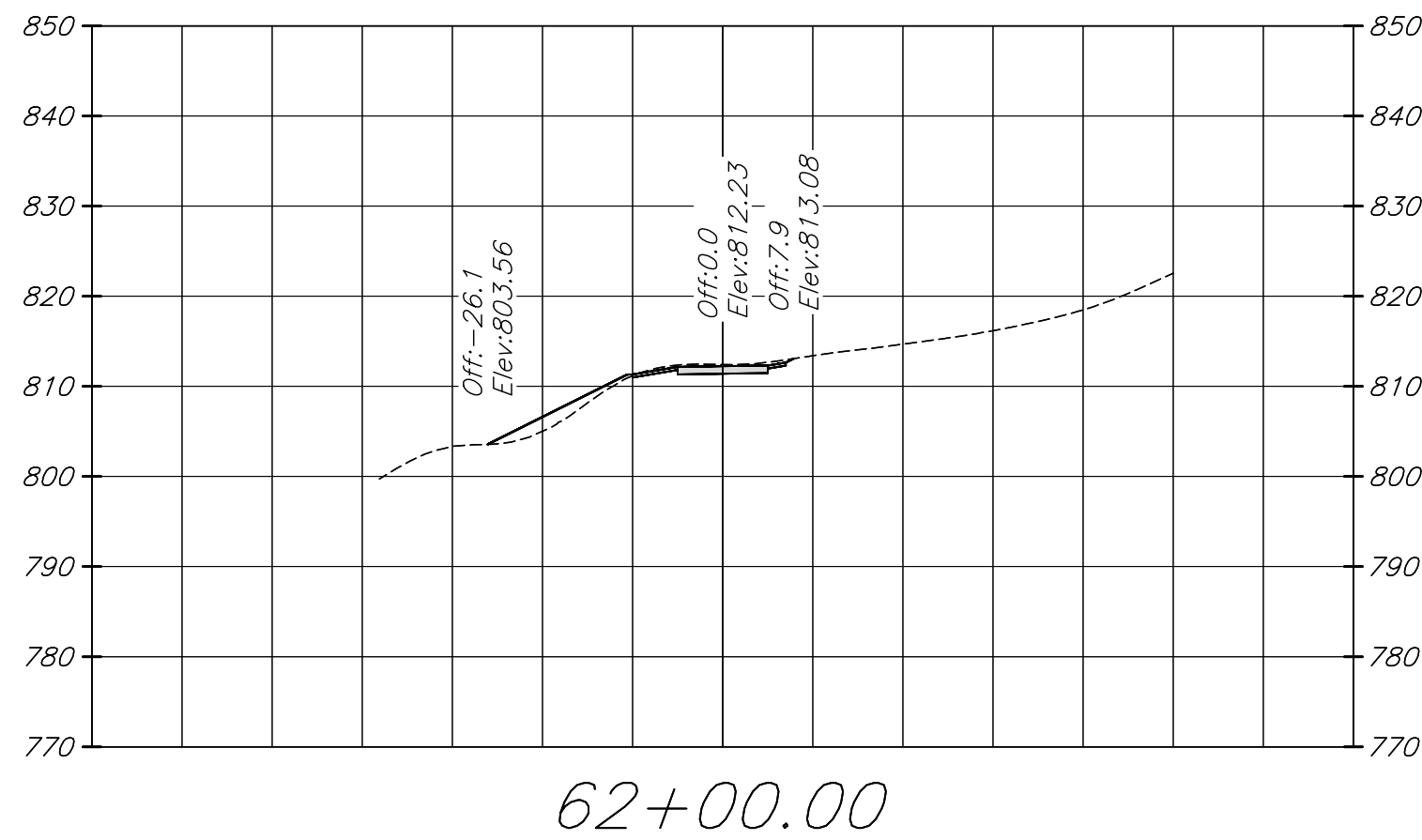
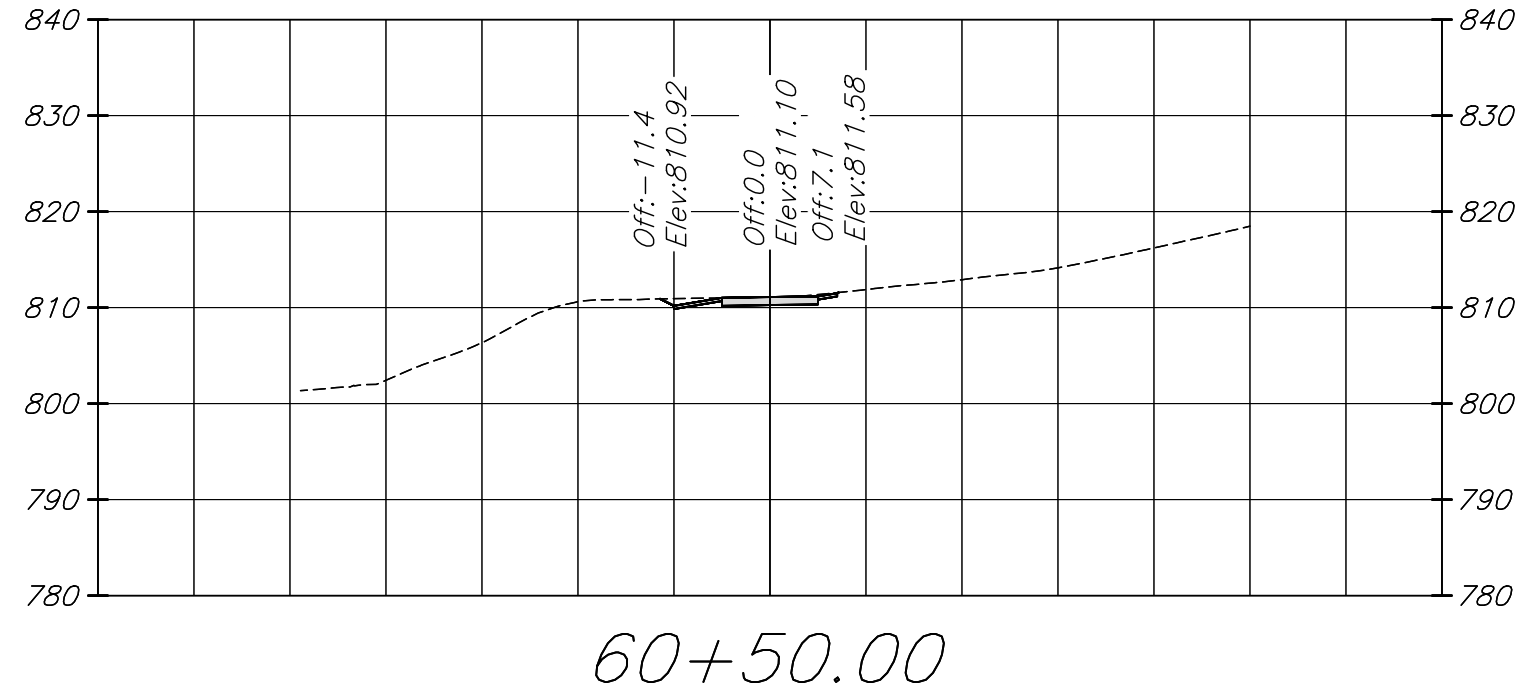
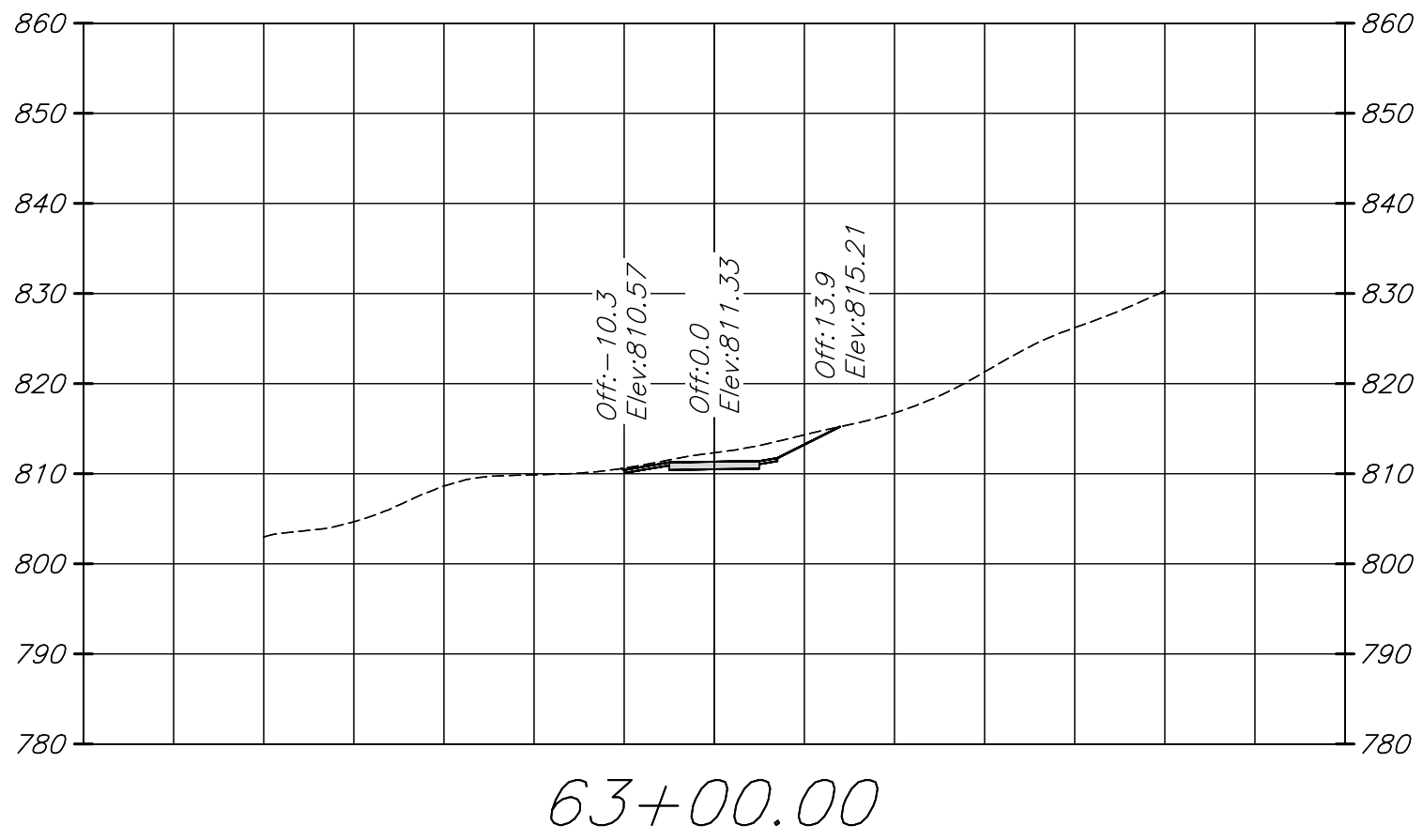
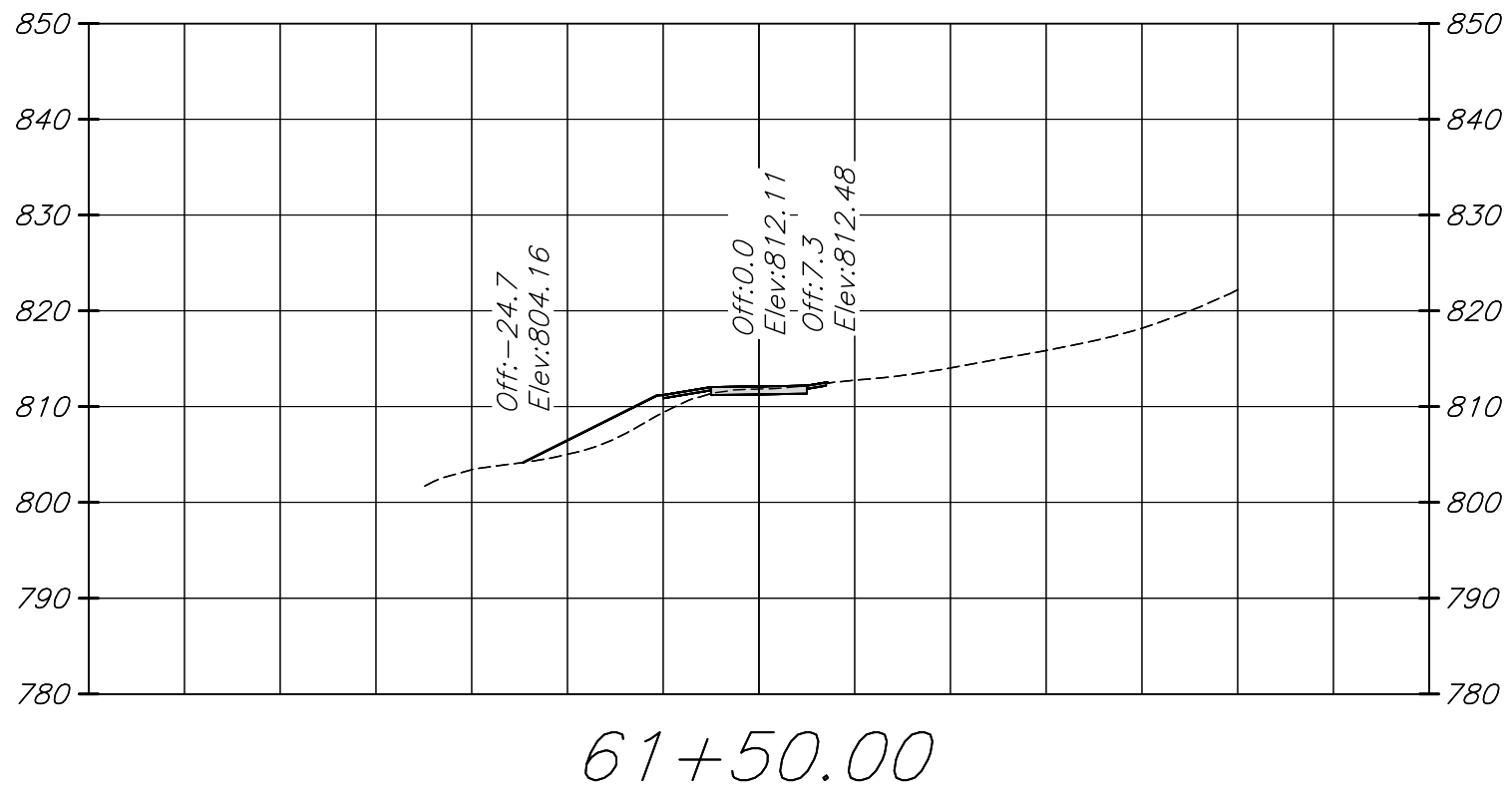
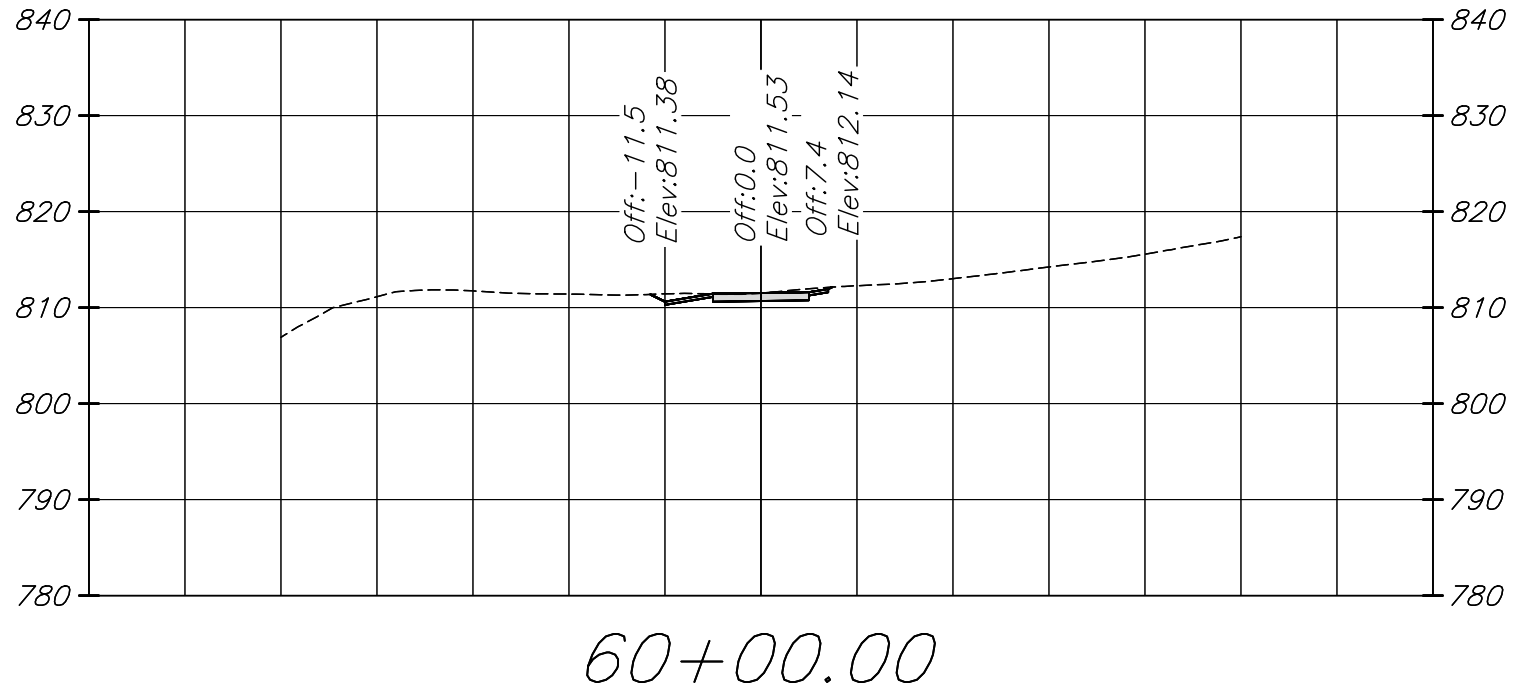
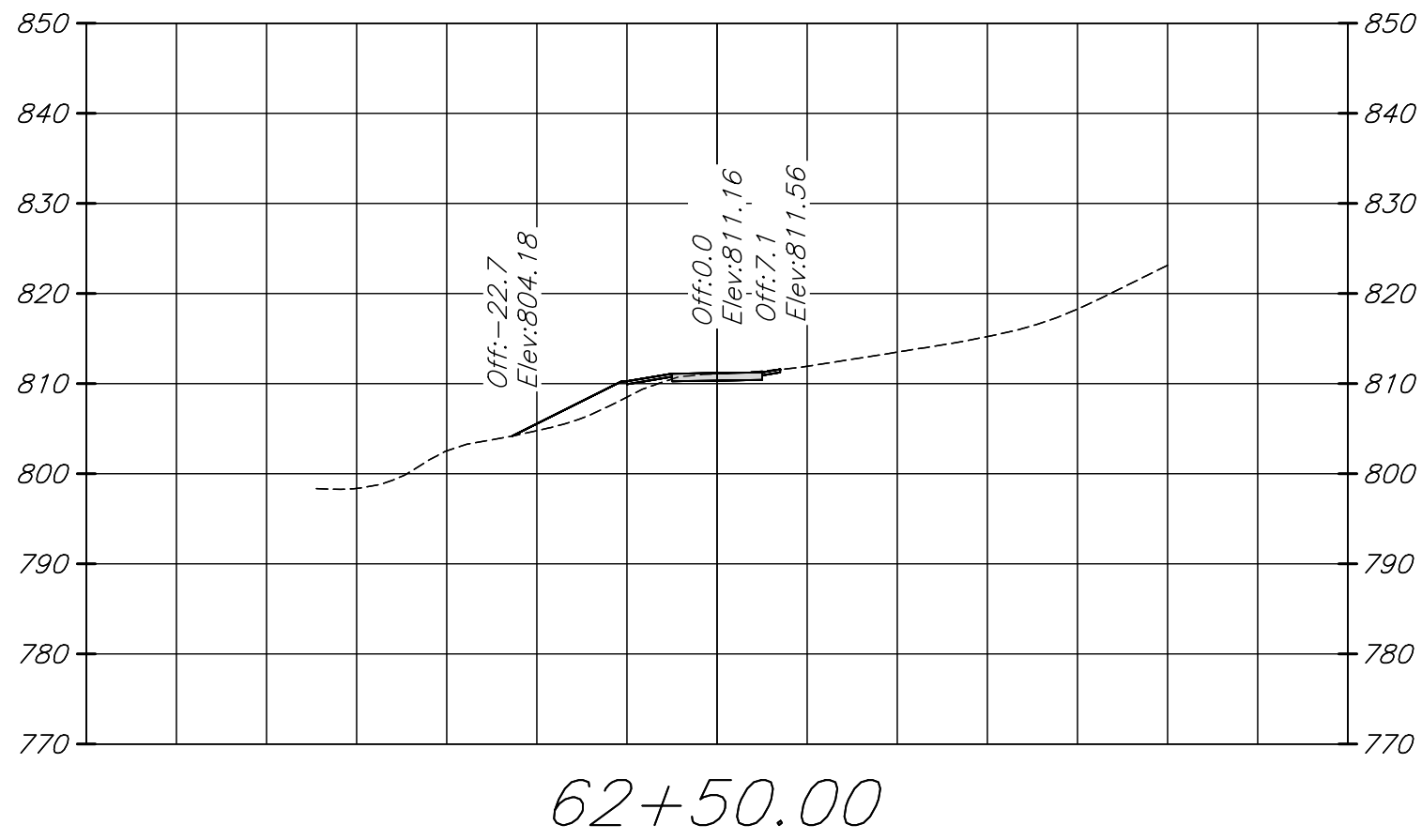
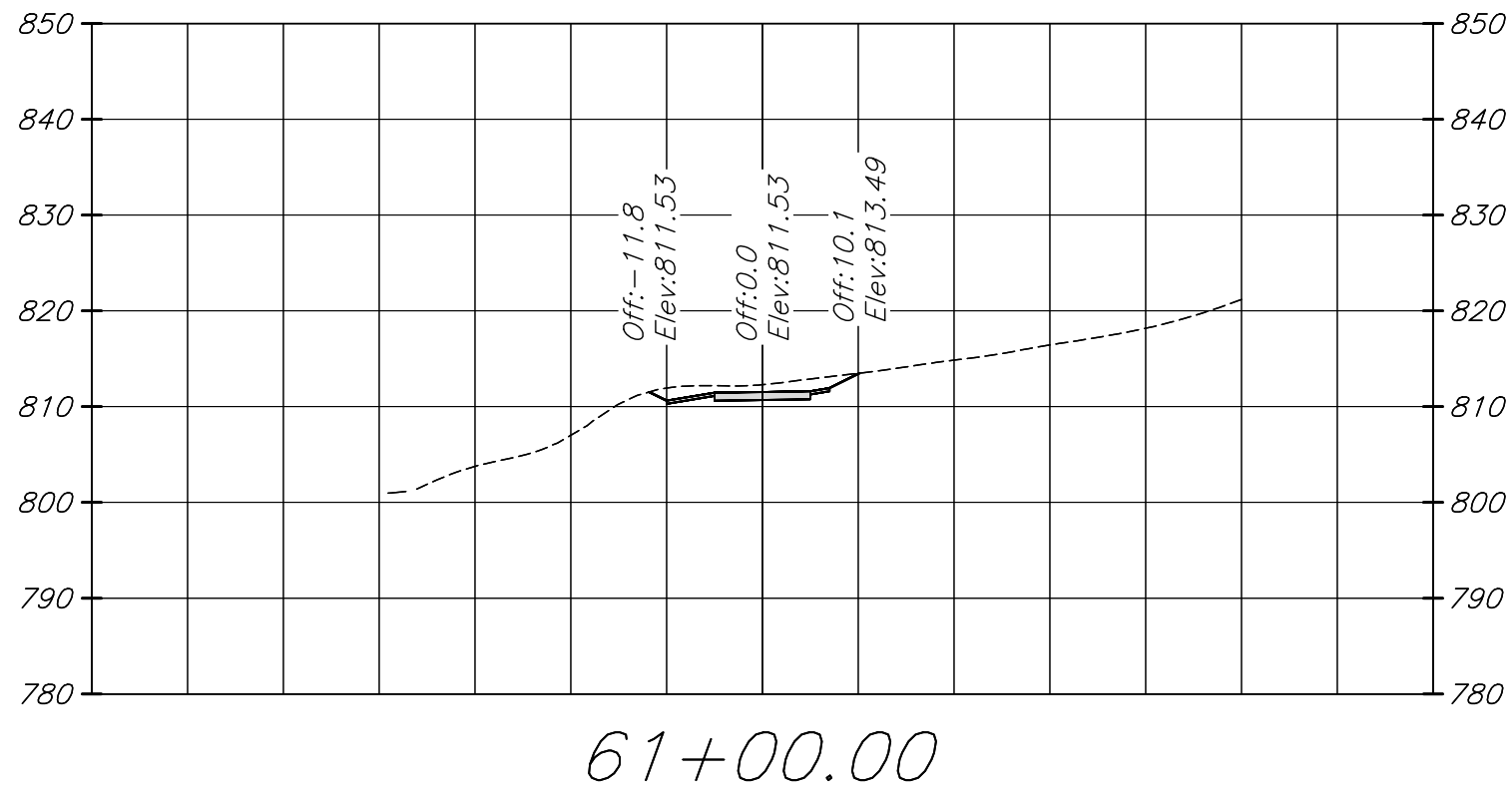
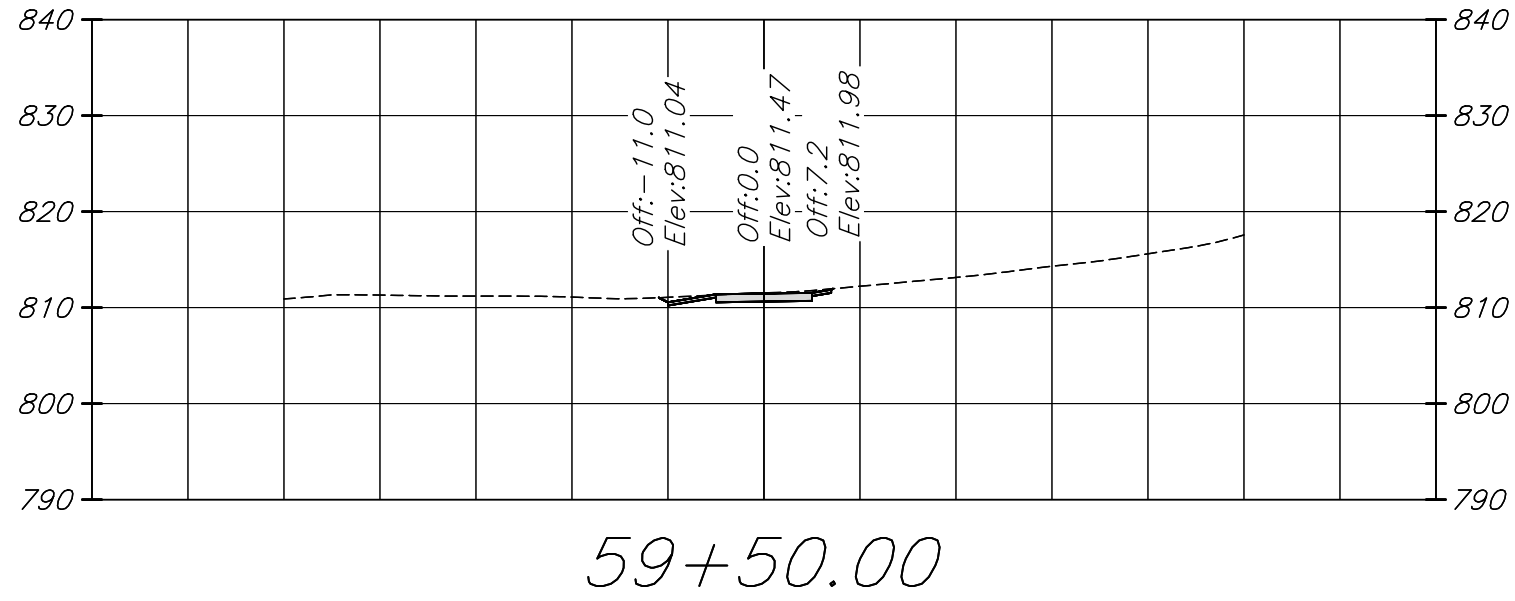
D

C

B

A

ANSI D - 14-Nov-23



ROANOKE RIVER GREENWAY
THROUGH EXPLORE PARK

CROSS SECTIONS (STA. 59+50 - STA. 63+50)

B

A

PROJECT NO:	60847135
DESIGNED BY:	BAJ
DRAWN BY:	BAJ
DEPT CHECK:	RMF
PROJ CHECK:	JSH
DATE:	NOV. 2023
SCALE:	AS SHOWN

XS112

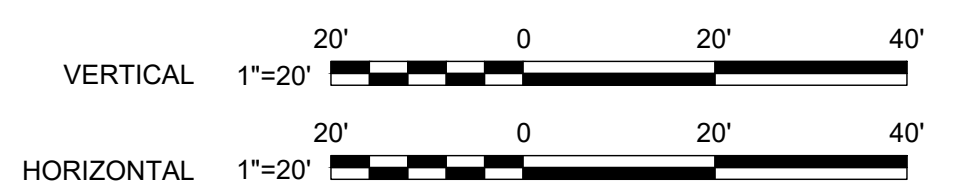
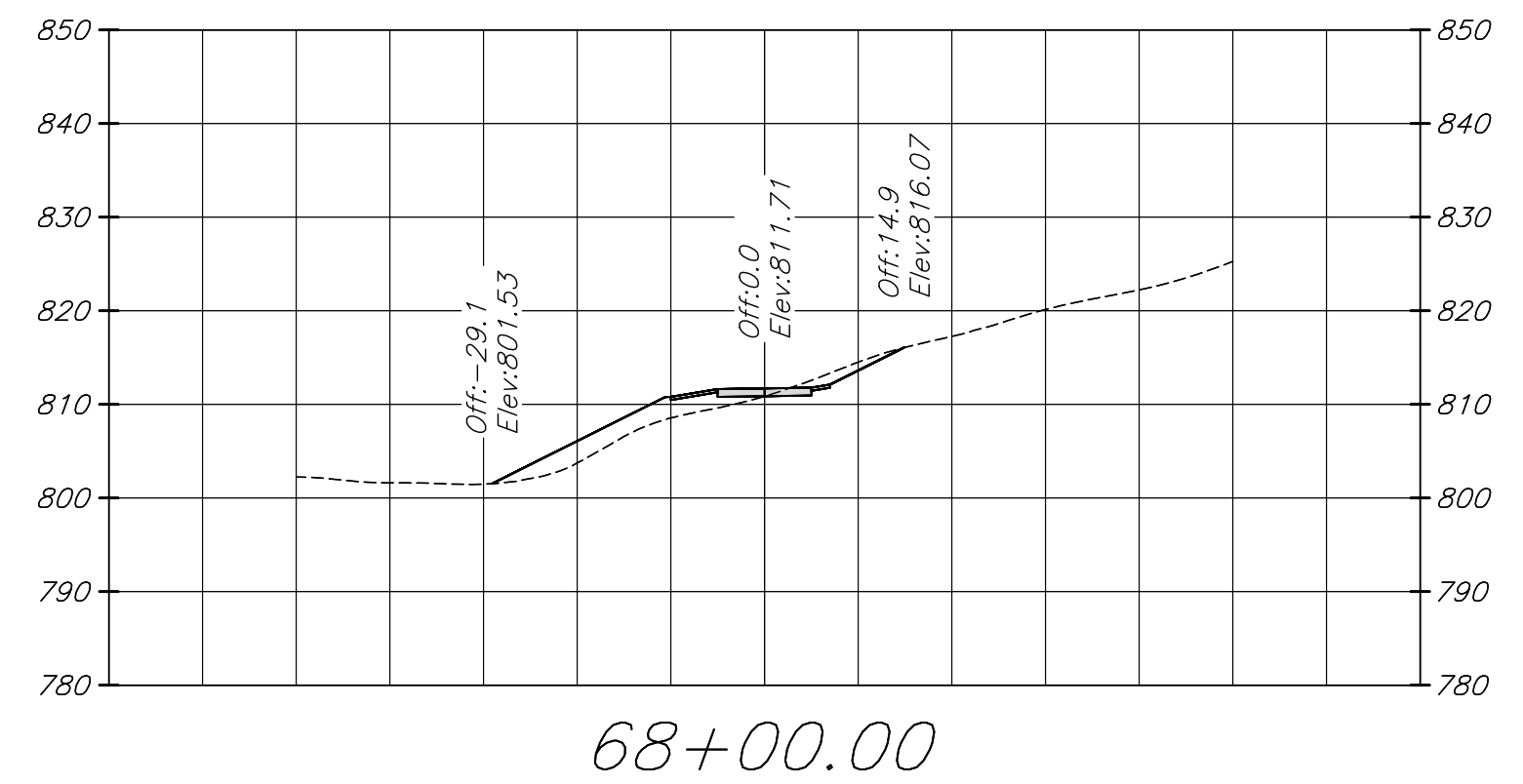
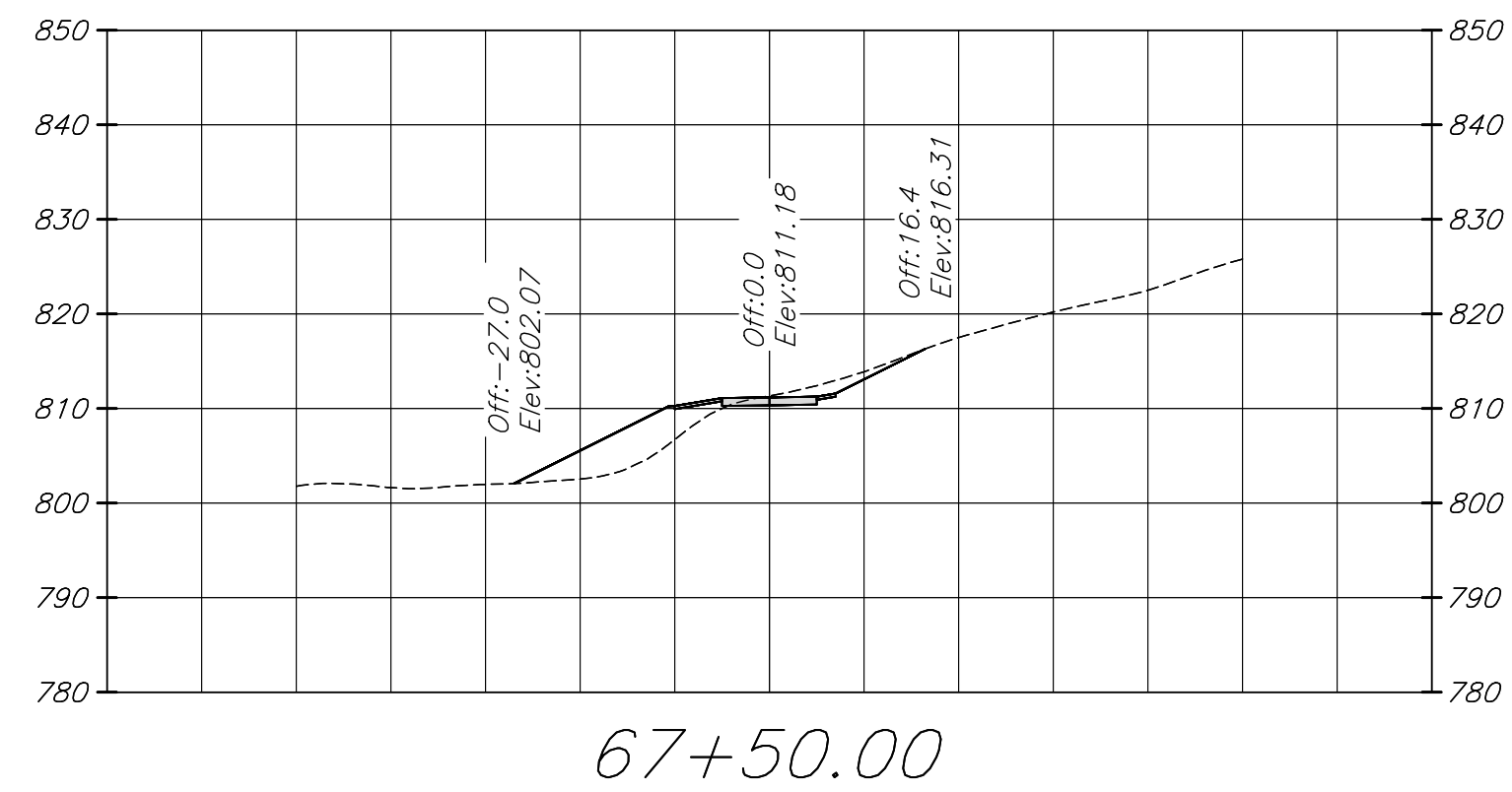
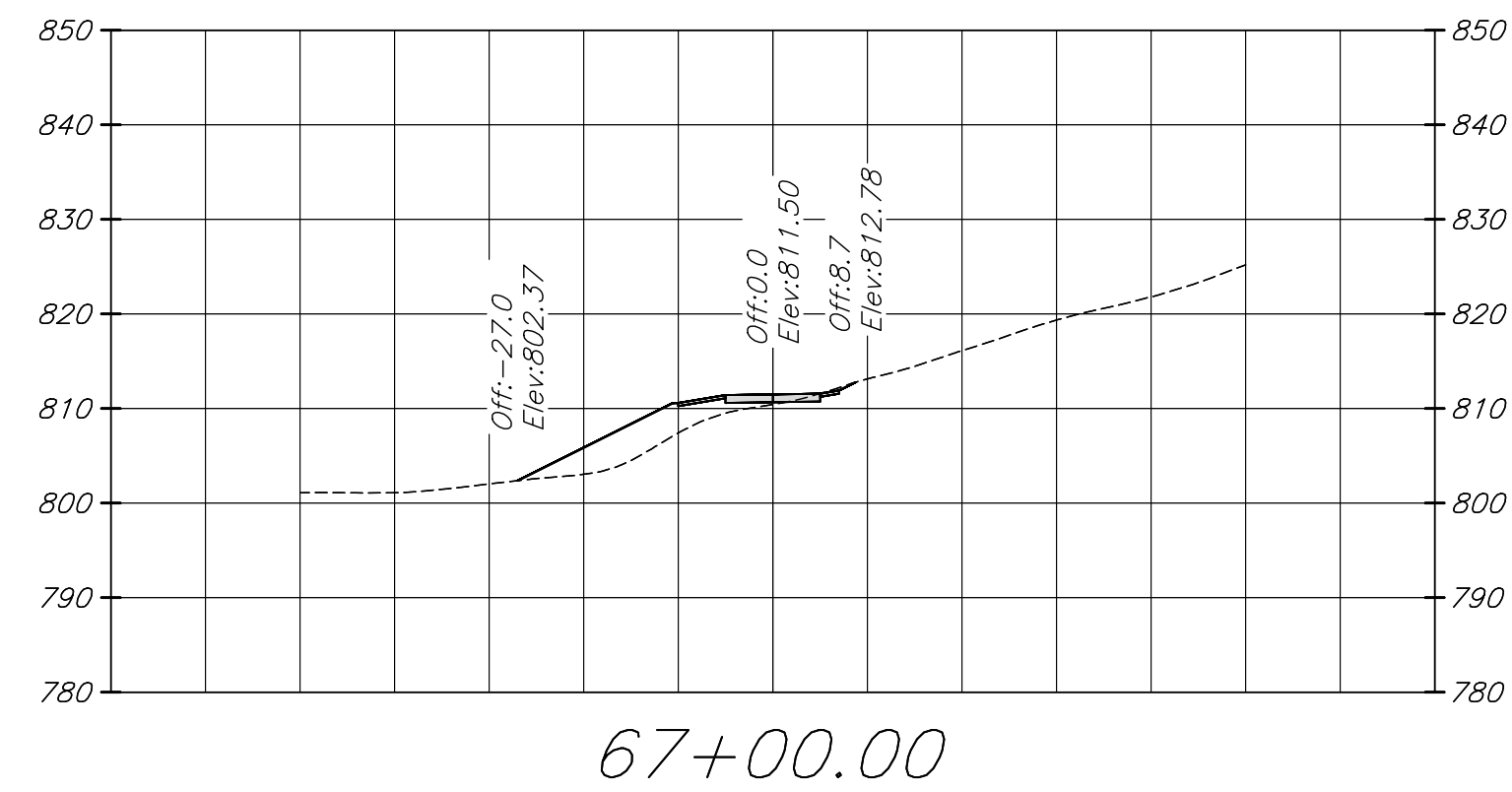
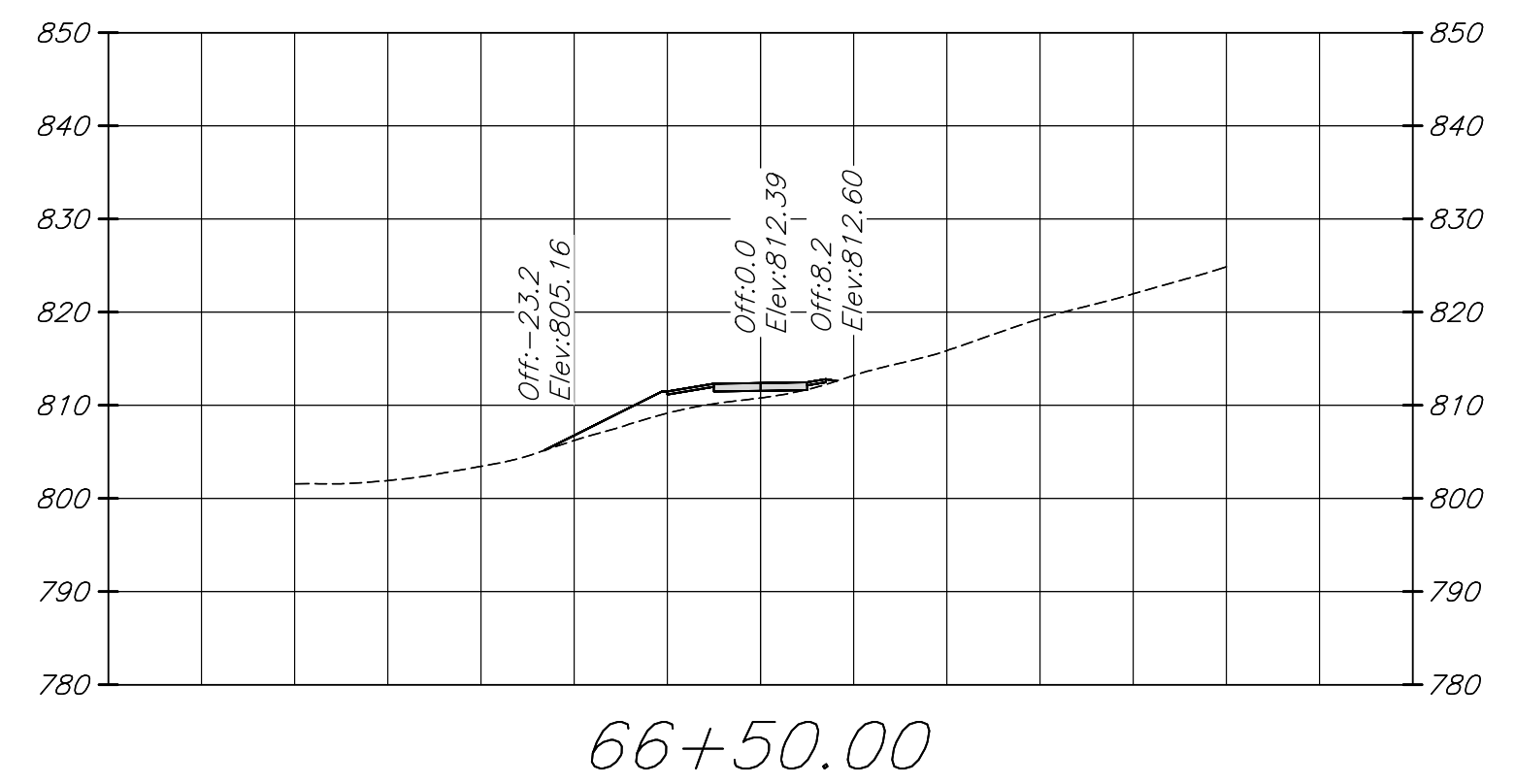
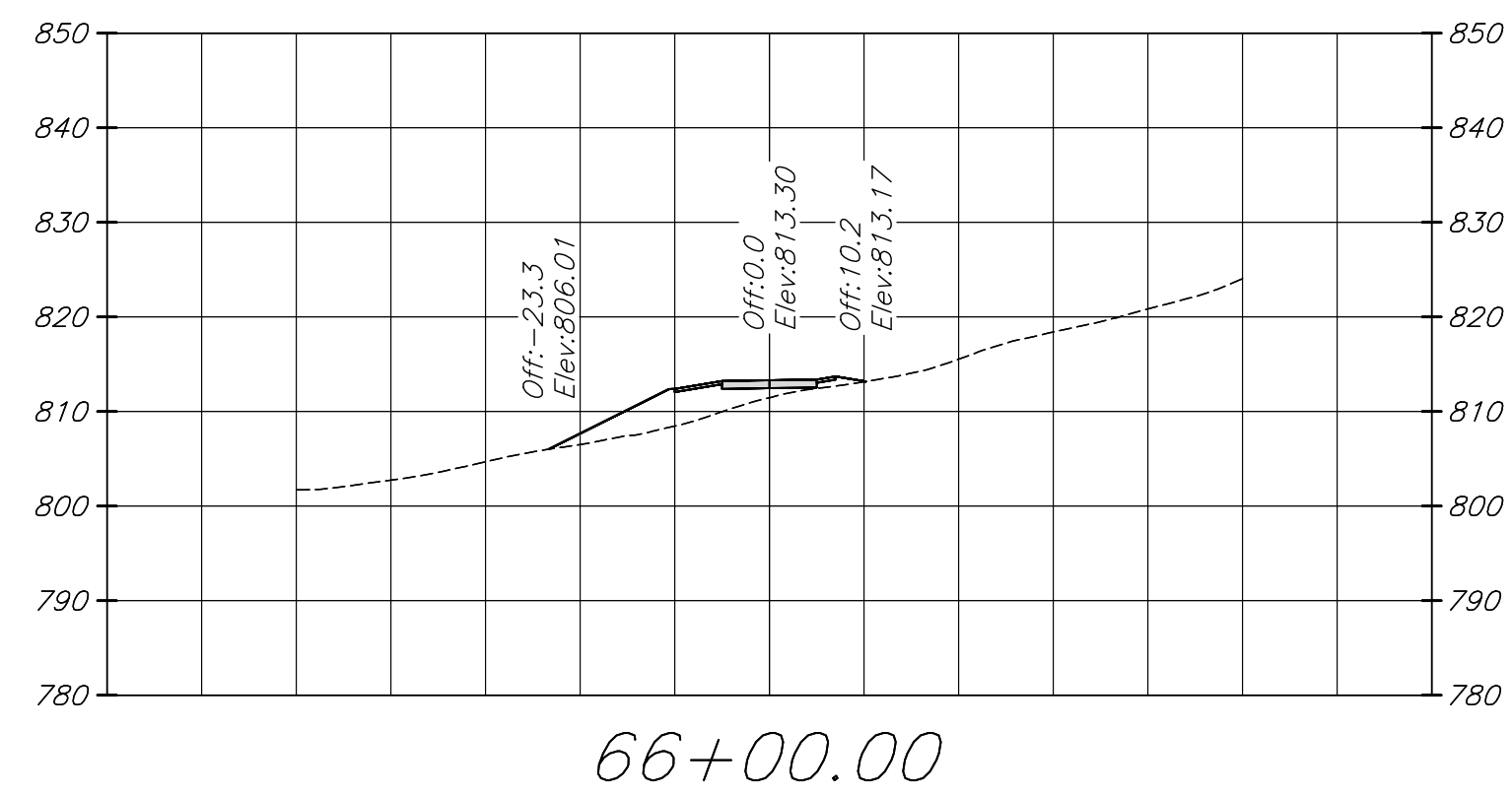
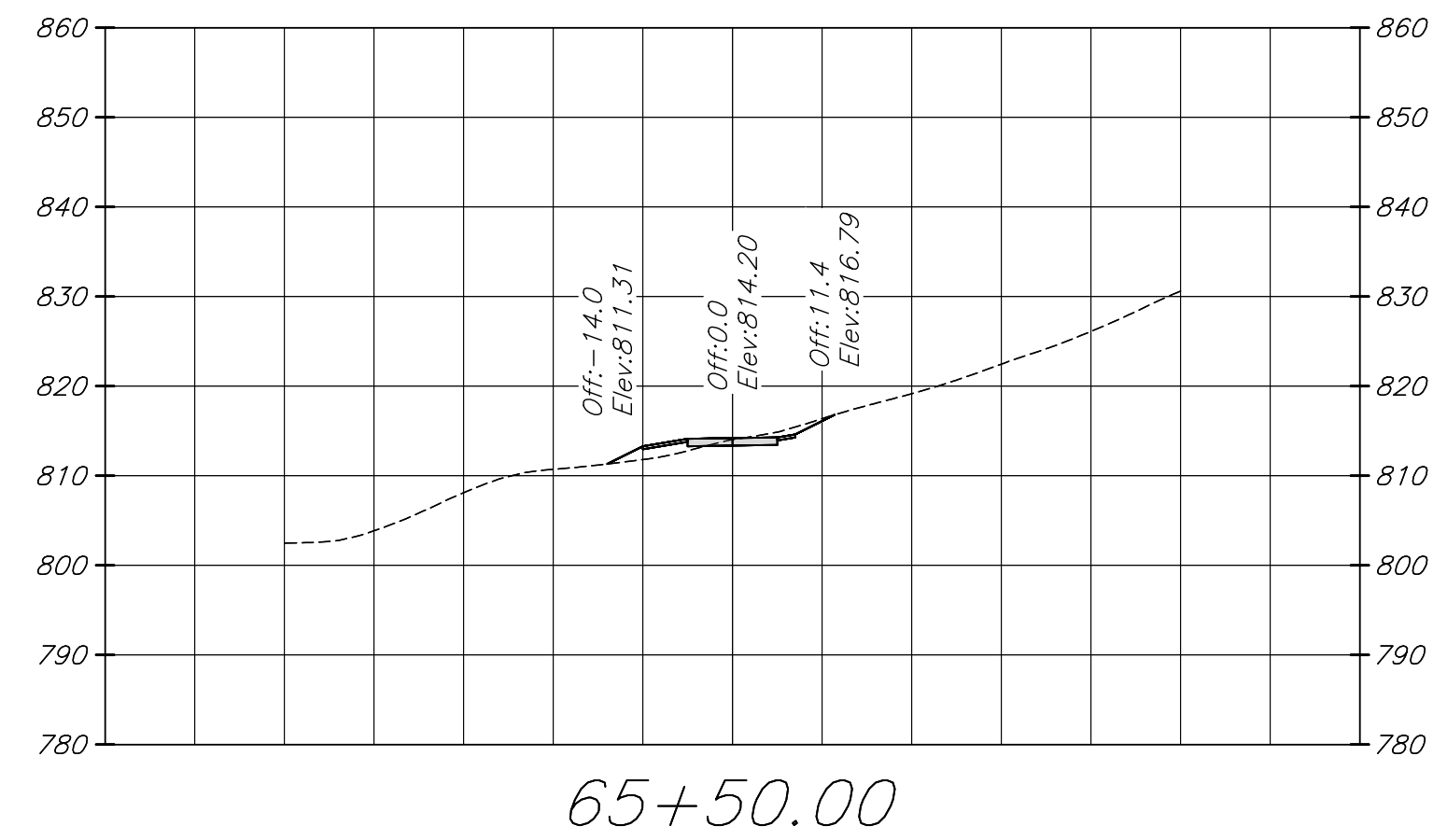
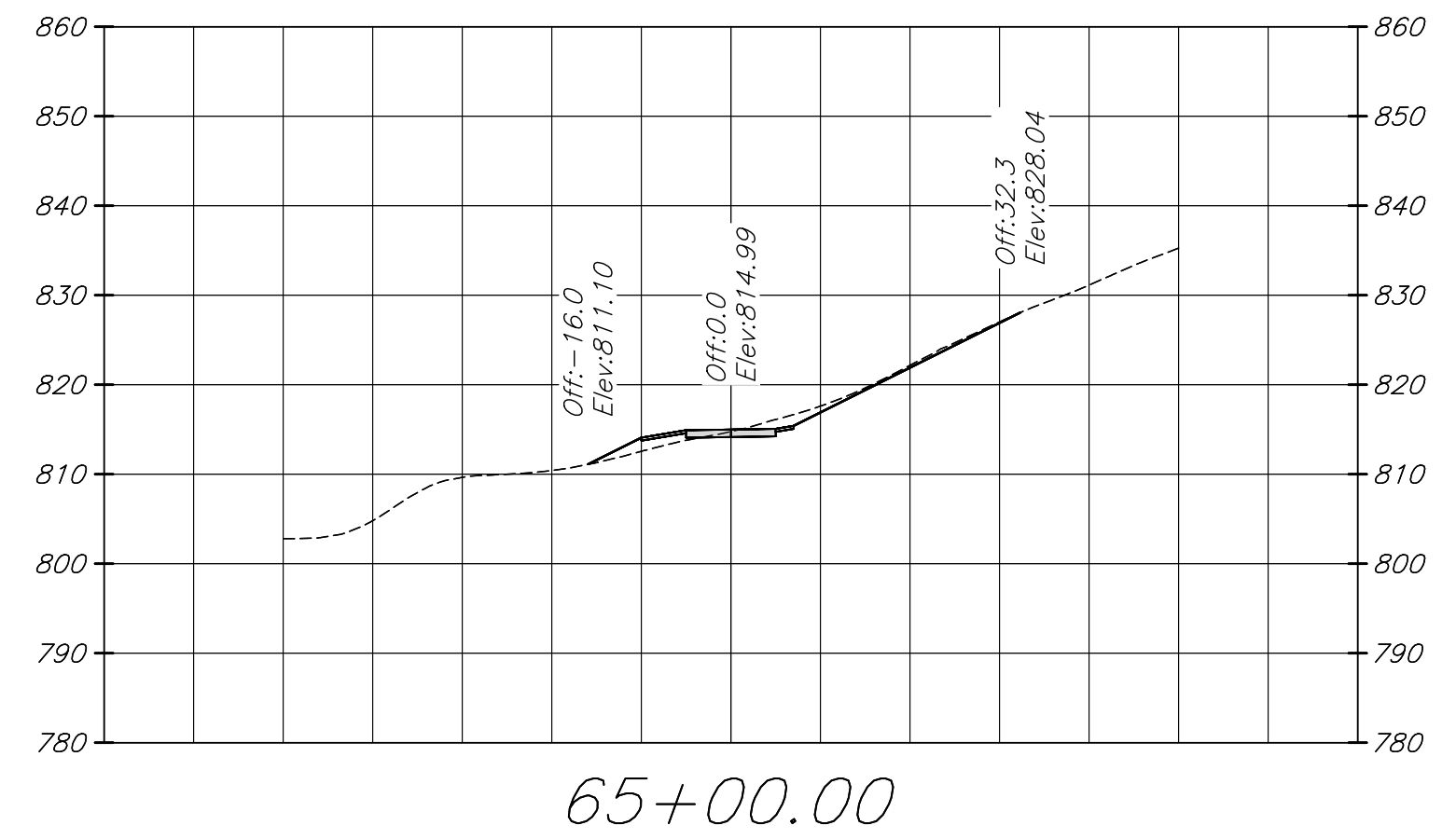
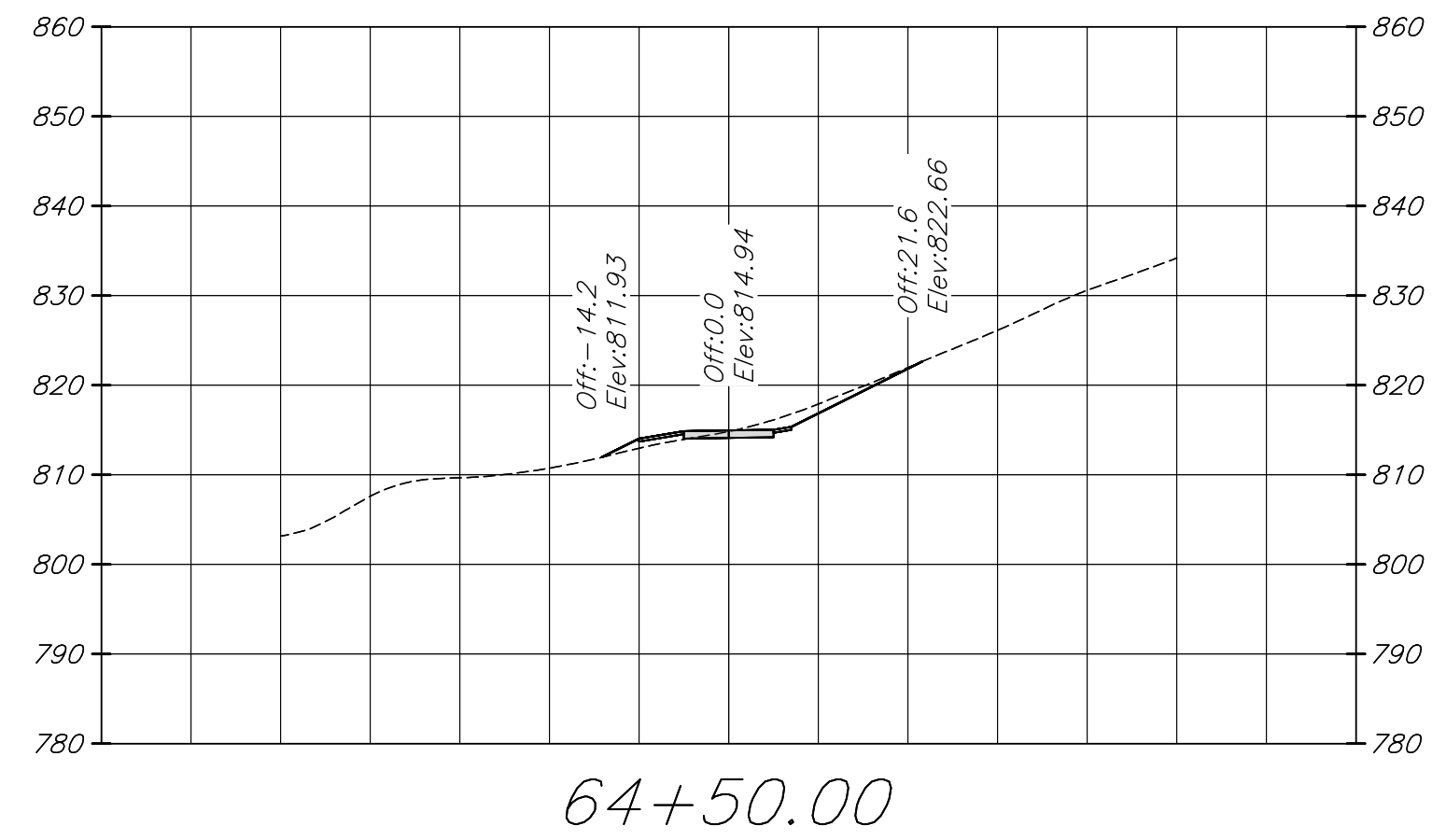
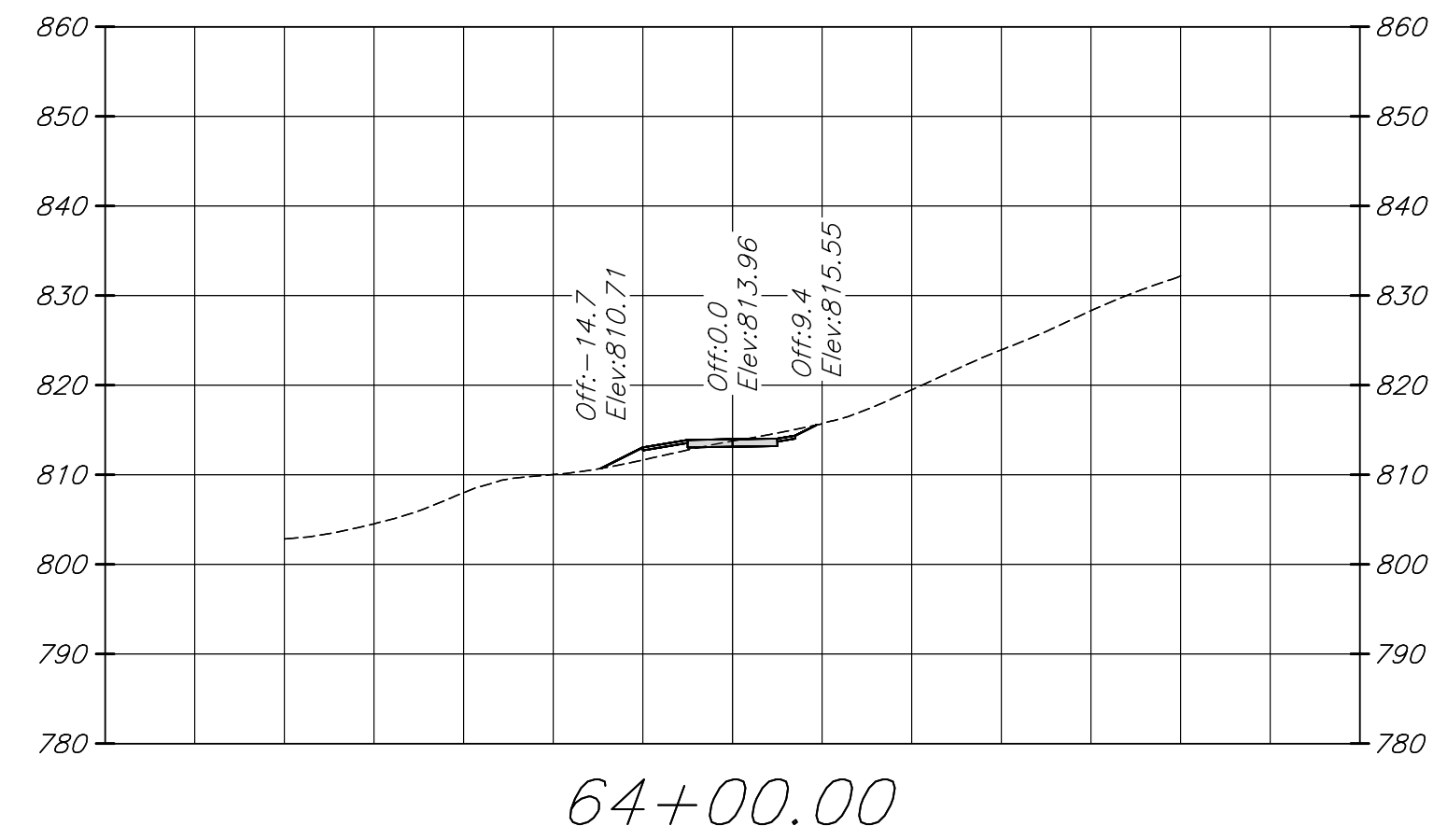
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C

D

MARK	DATE	MADE BY	CHECKED	REVISIONS	DESCRIPTION

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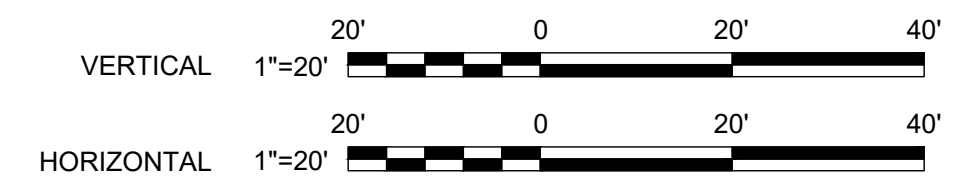
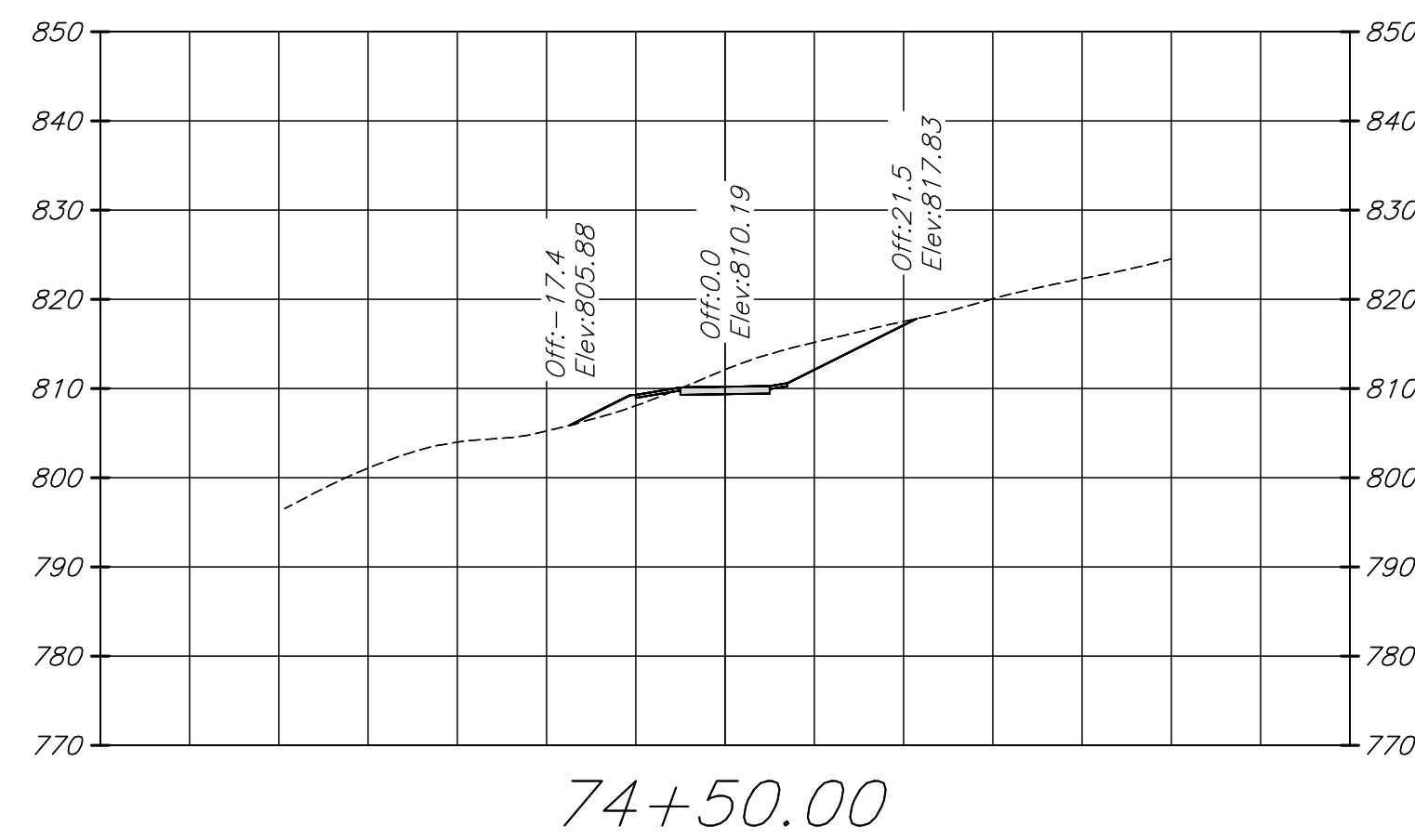
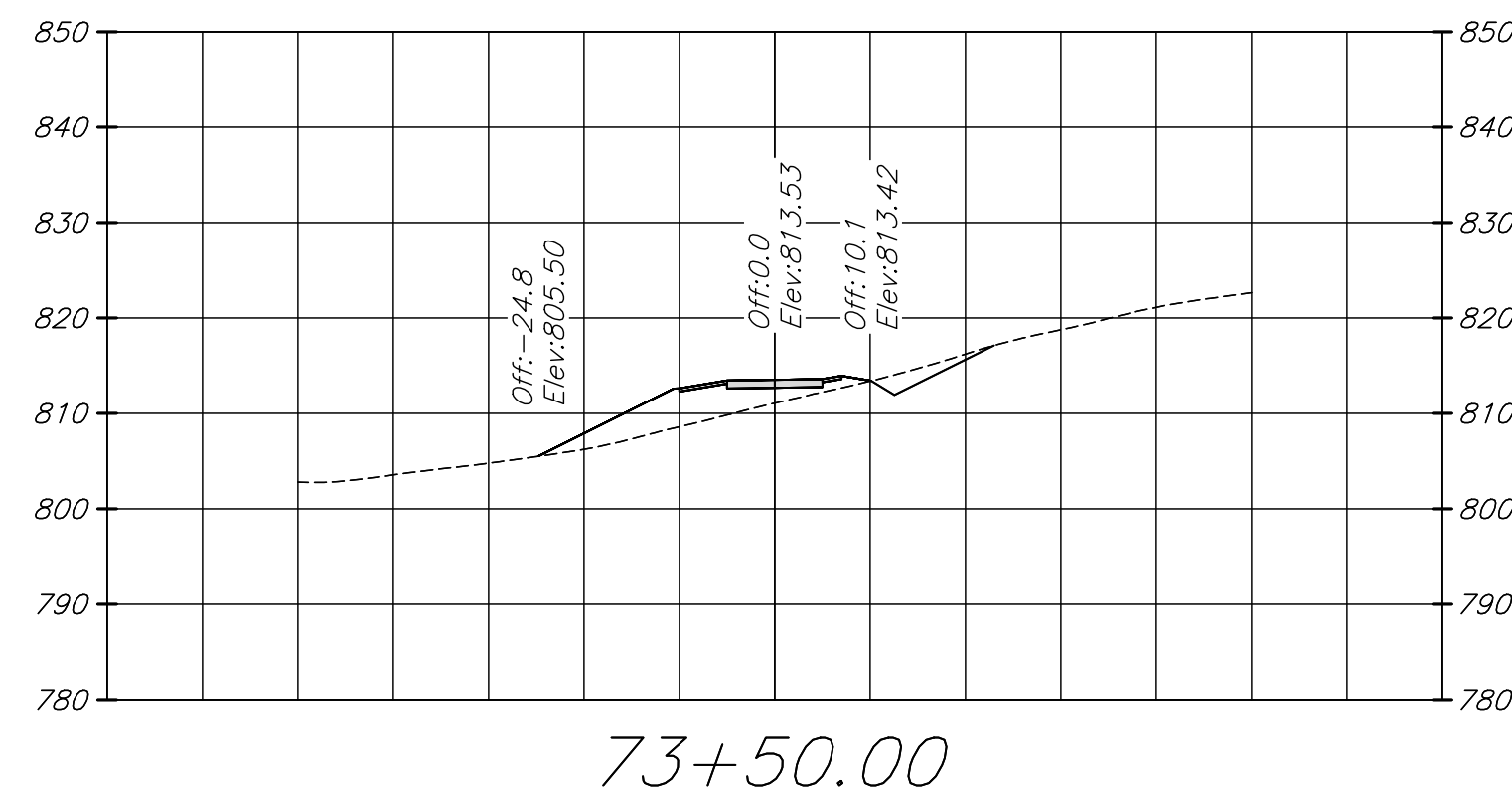
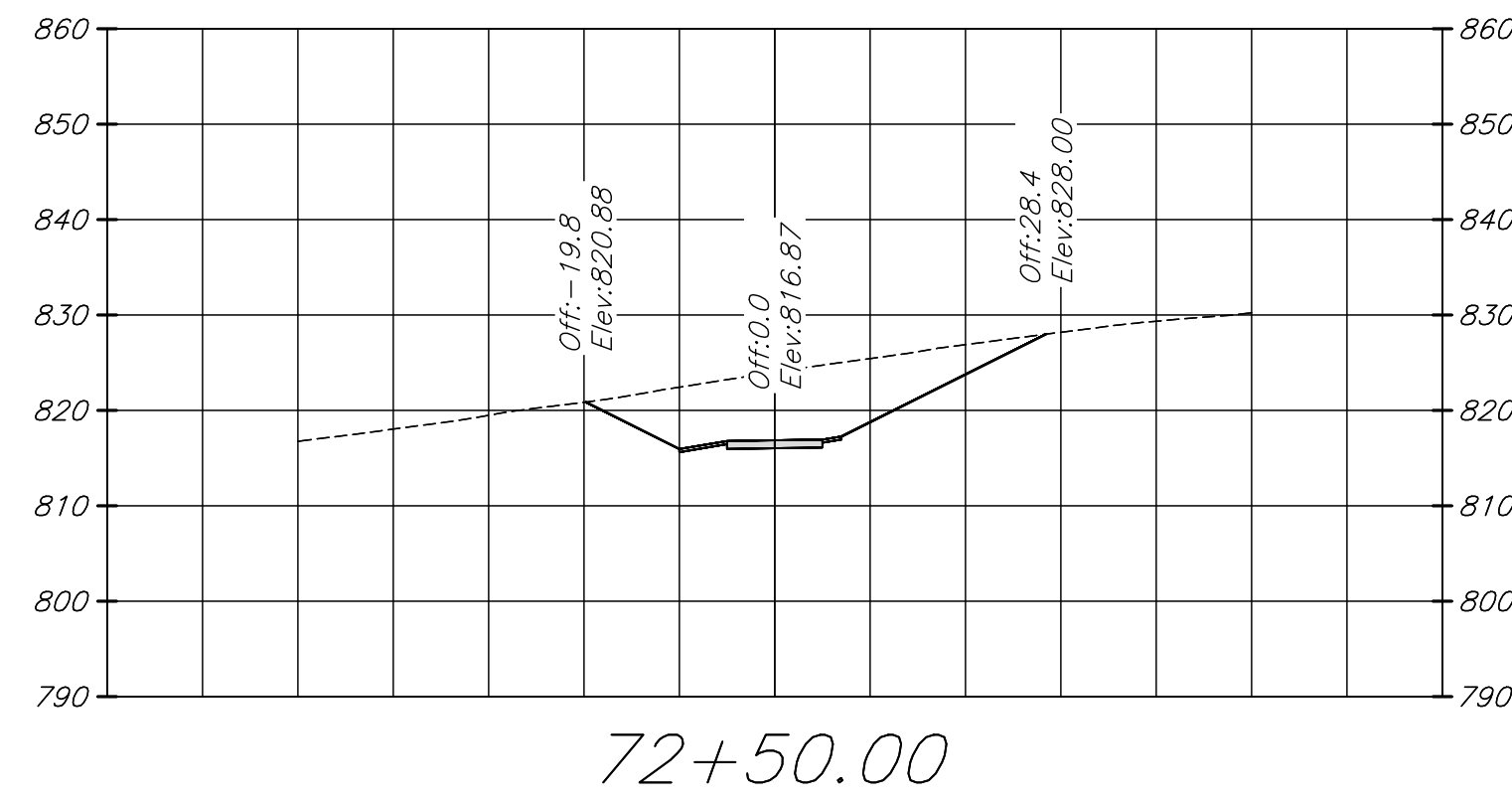
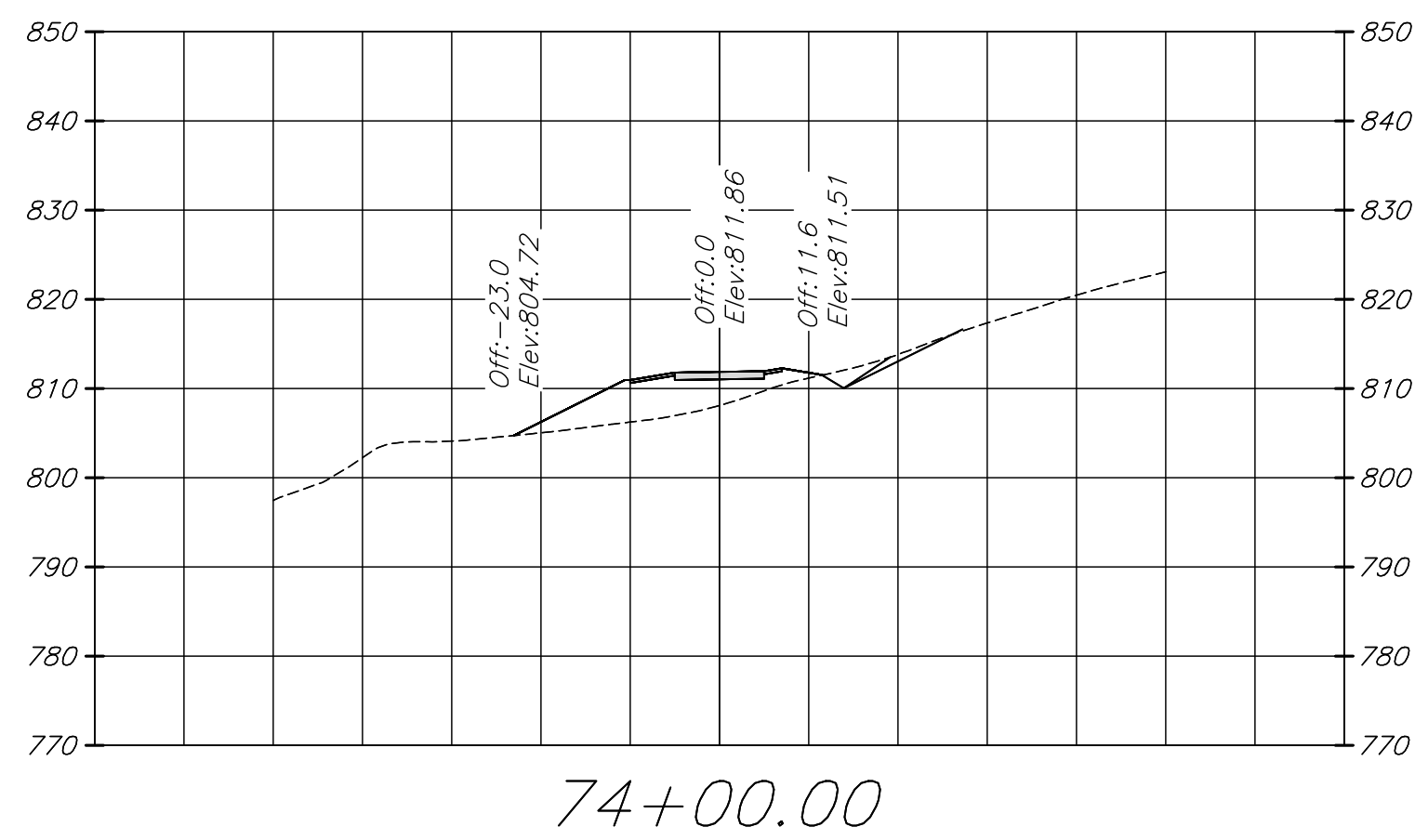
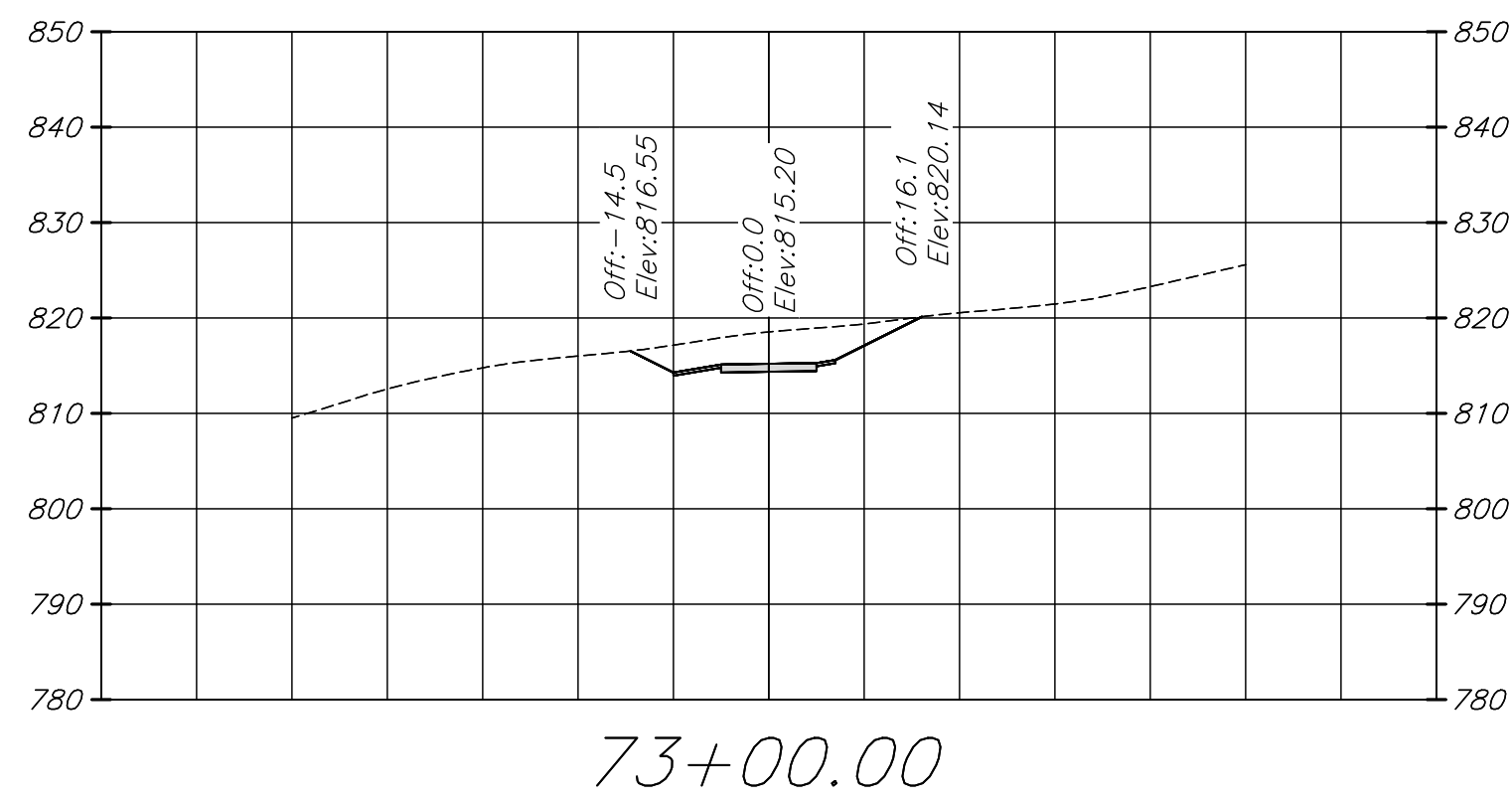
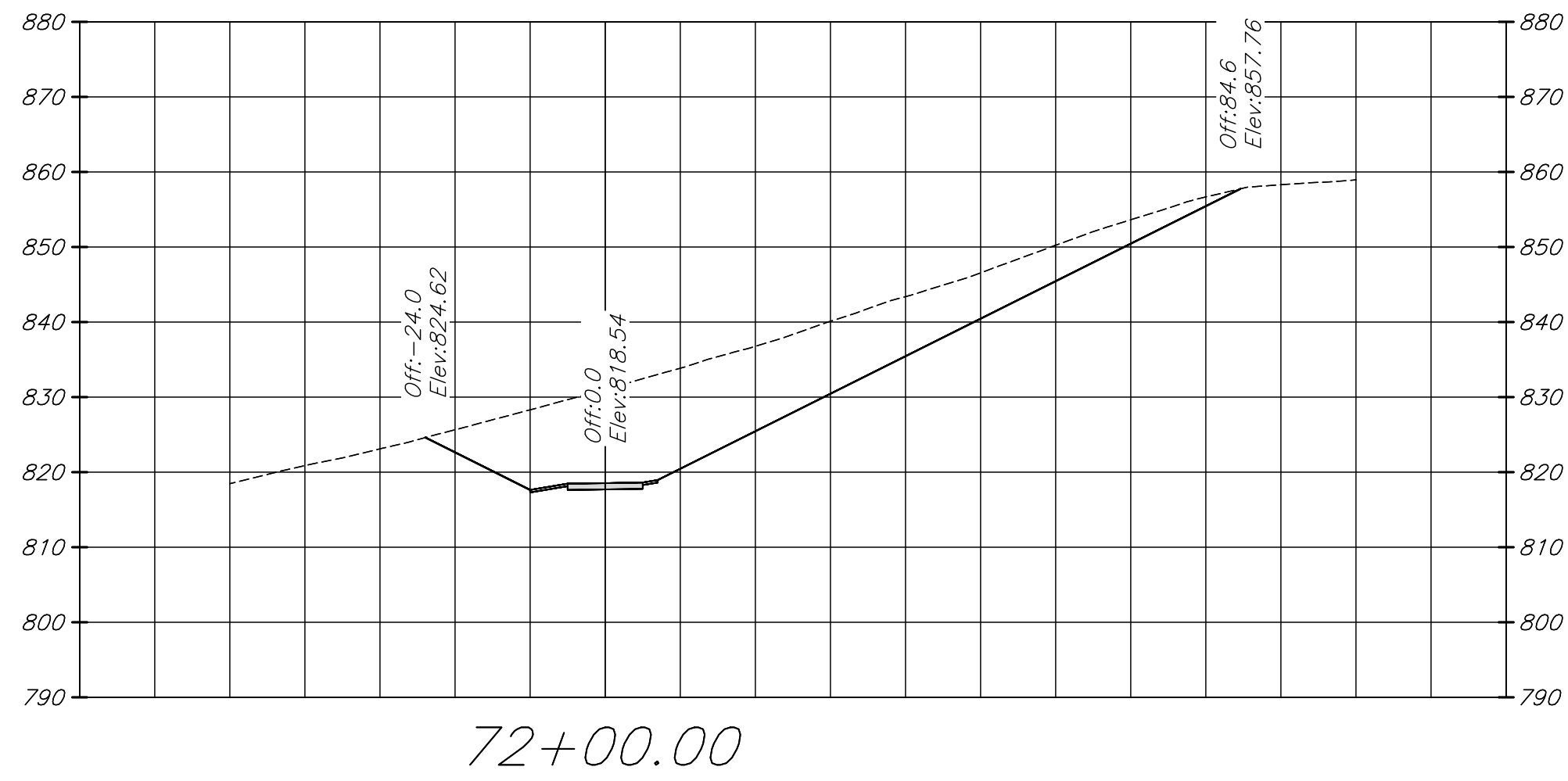
**ROANOKE RIVER GREENWAY
THROUGH EXPLORE PARK**

CROSS SECTIONS (STA. 64+00 - STA. 68+00)

ROANOKE COUNTY, VA

PROJECT NO:	60647135
DESIGNED BY:	BJW
DRAWN BY:	BJW
DEPT CHECK:	RMF
PROJ CHECK:	JSH
DATE:	NOV. 2023
SCALE:	AS SHOWN

XS113

[illegible]

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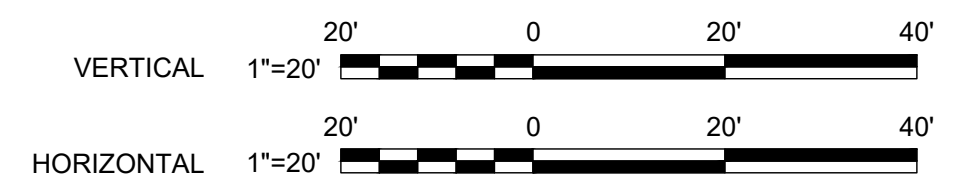
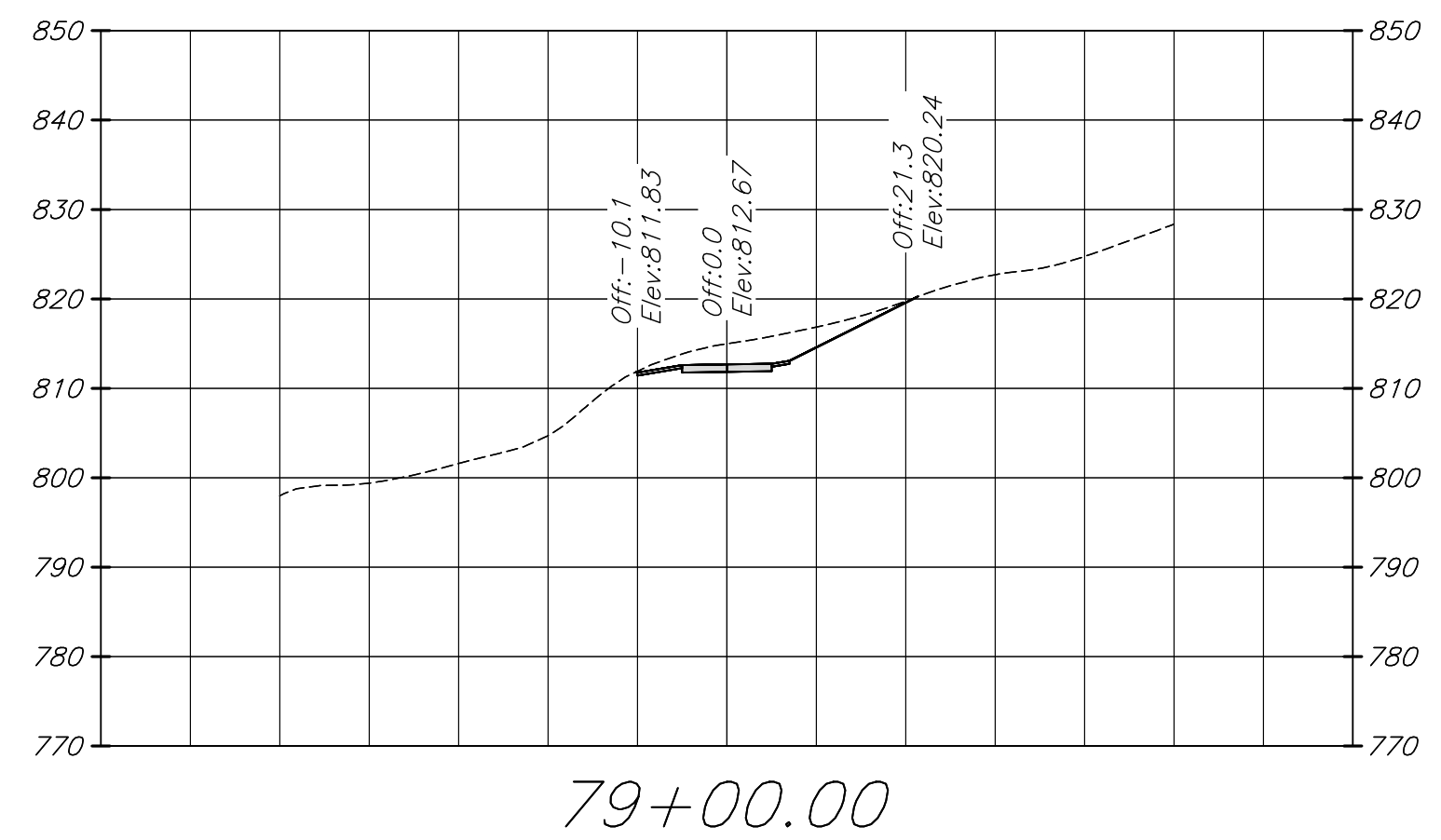
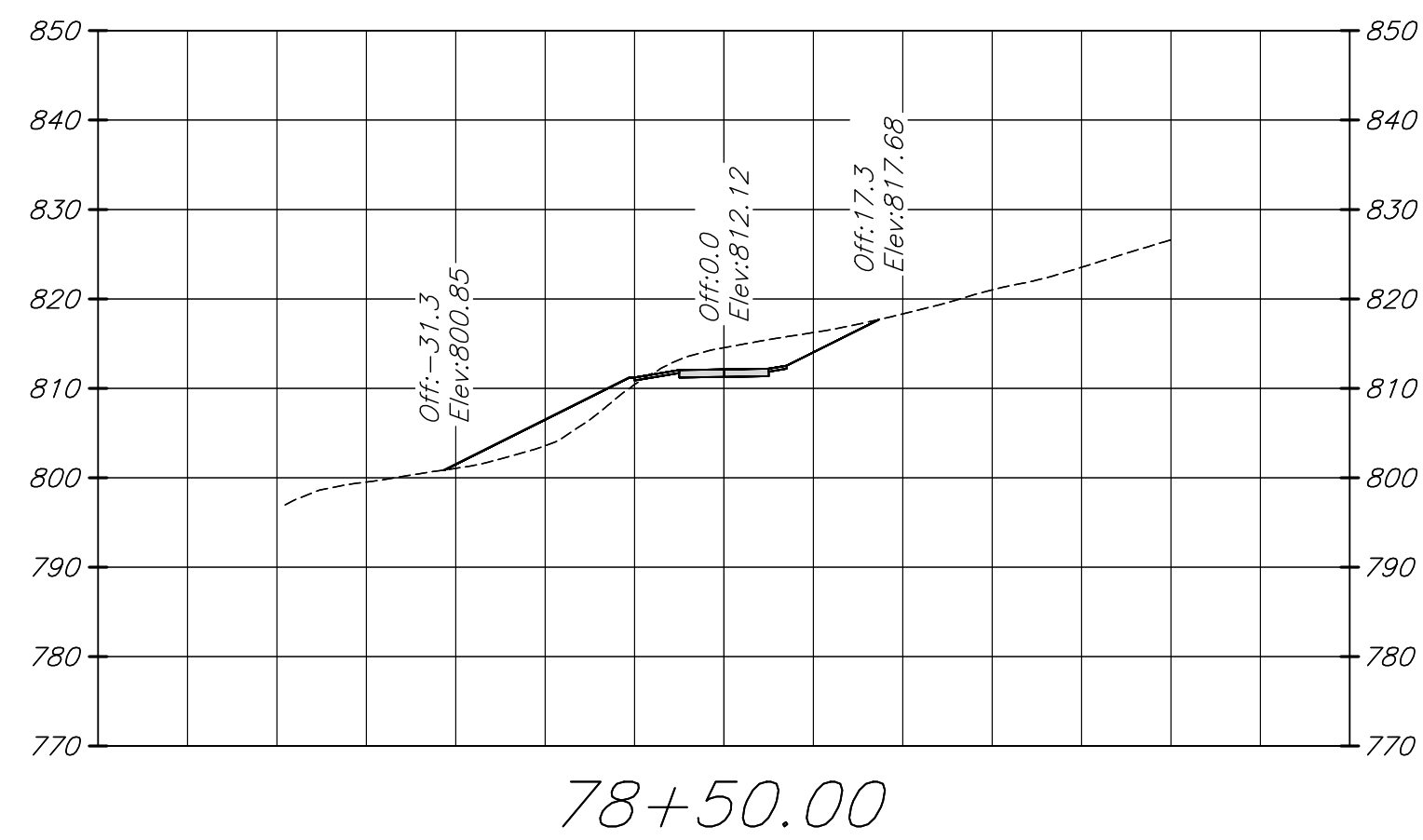
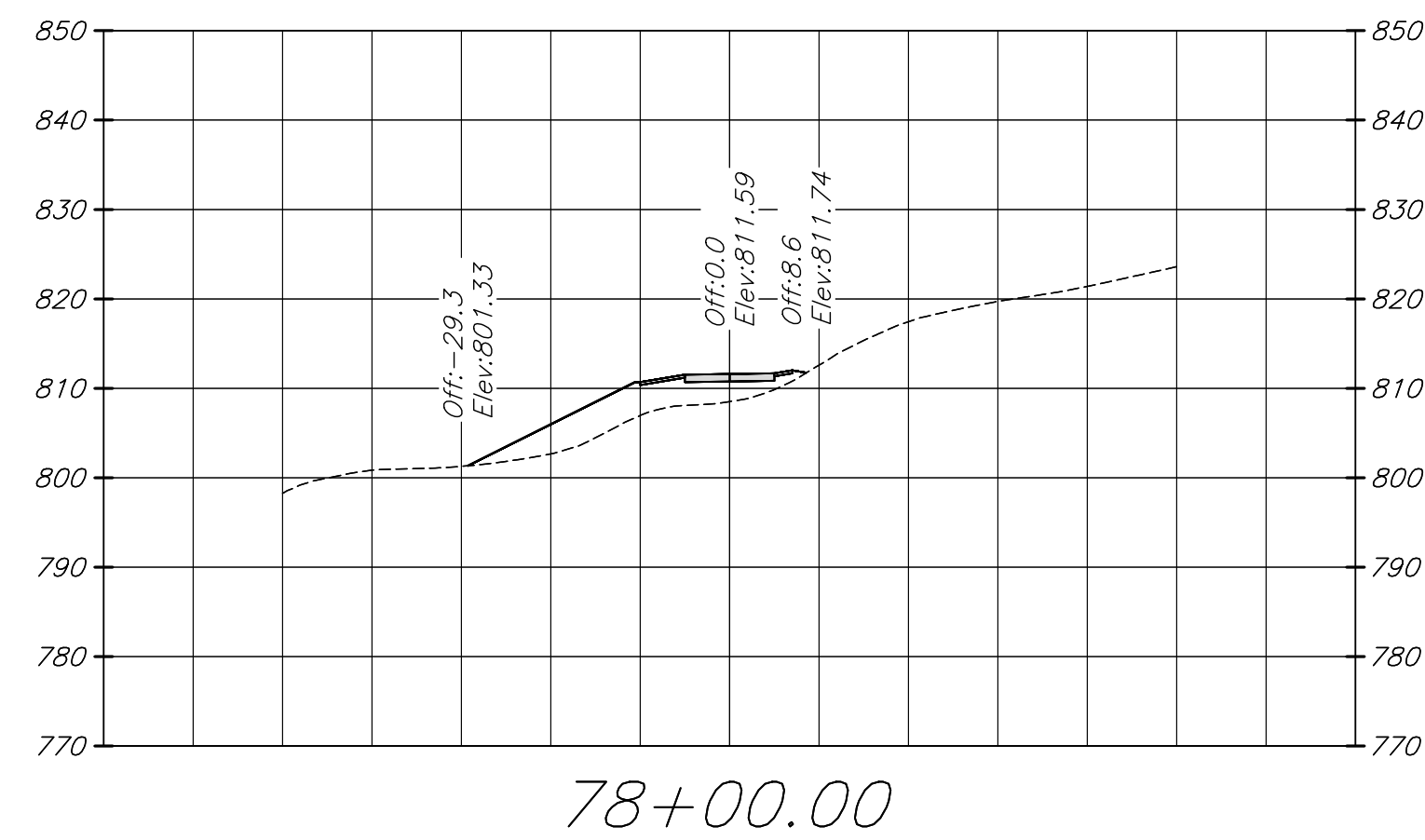
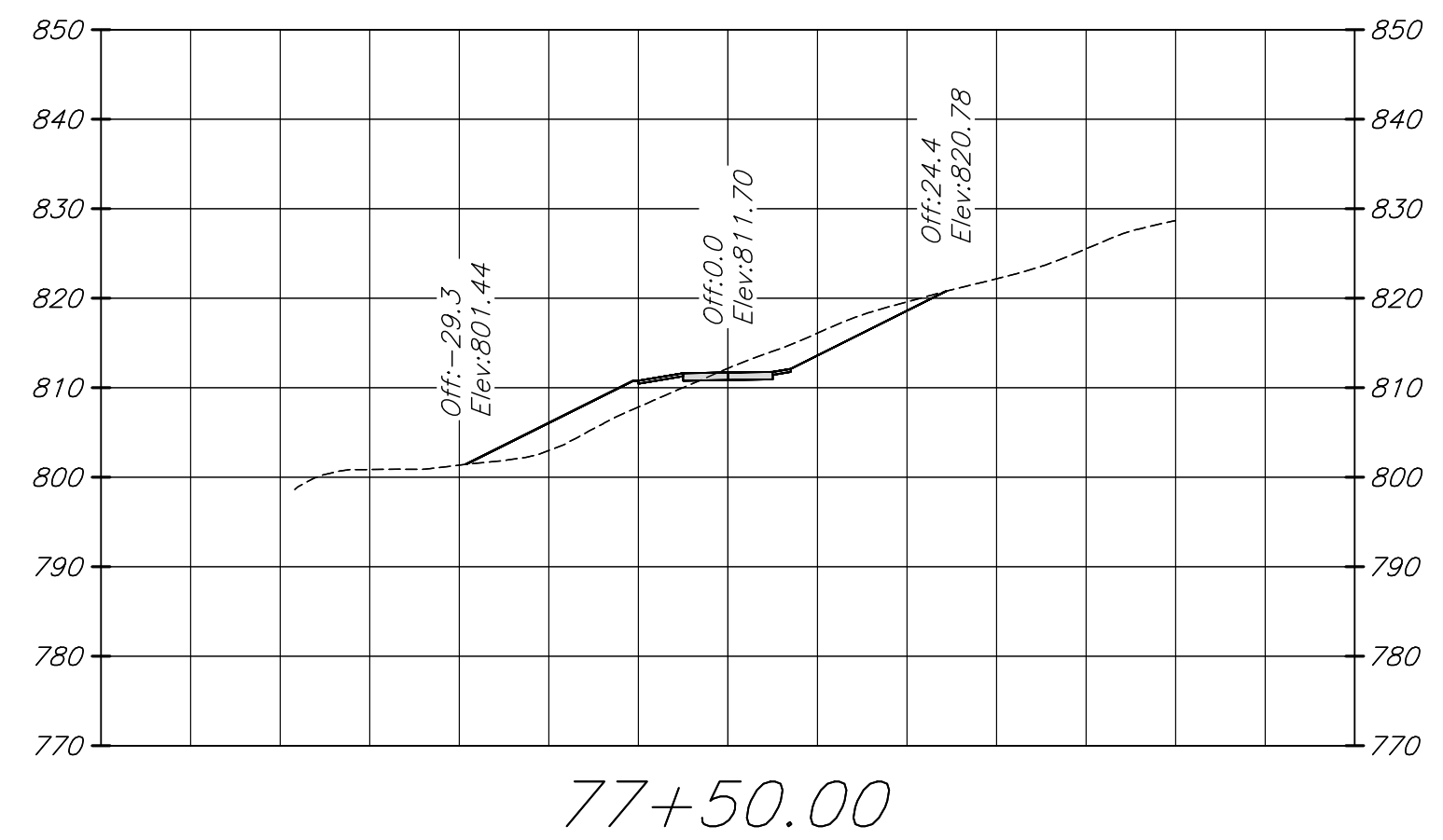
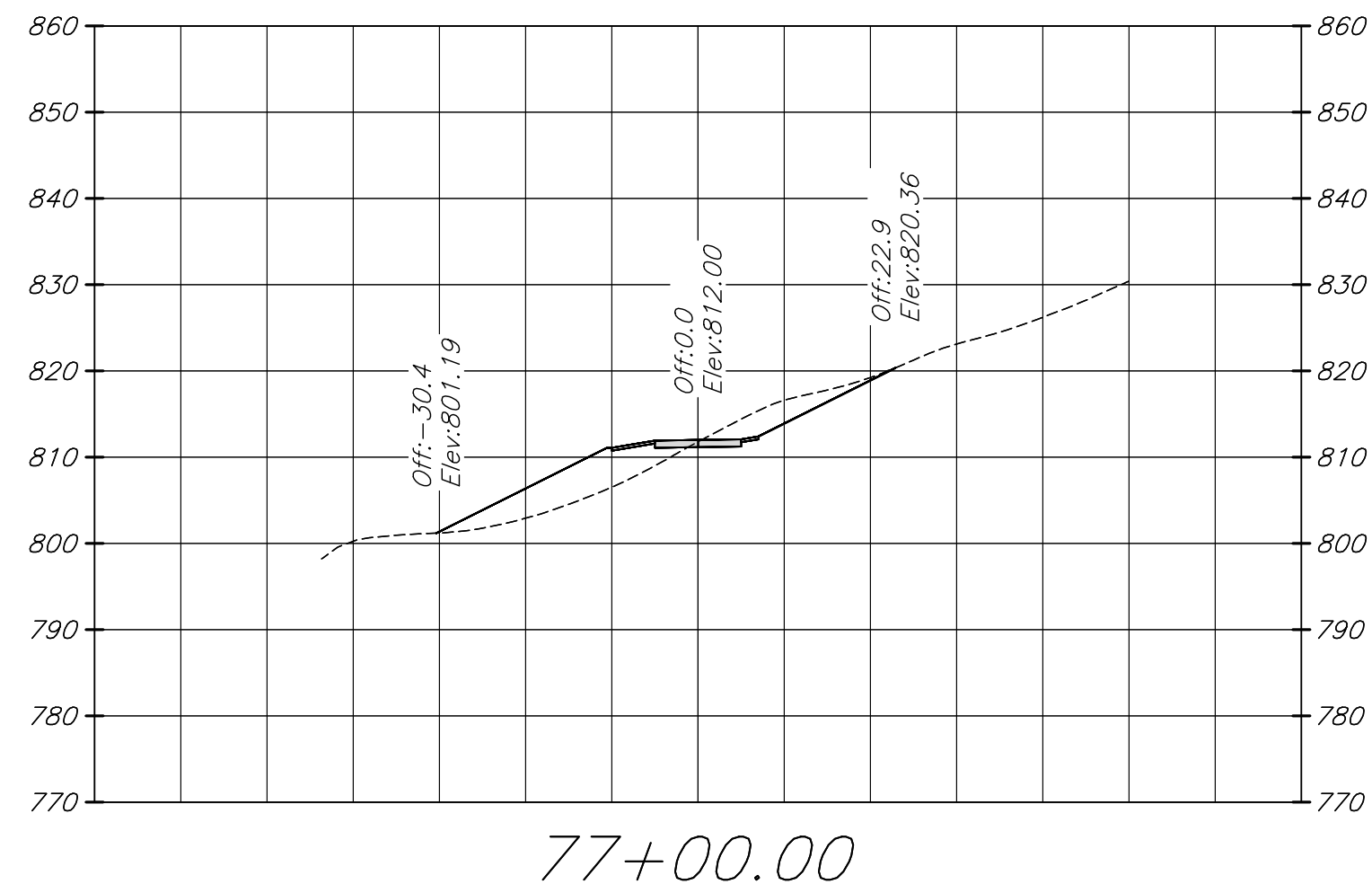
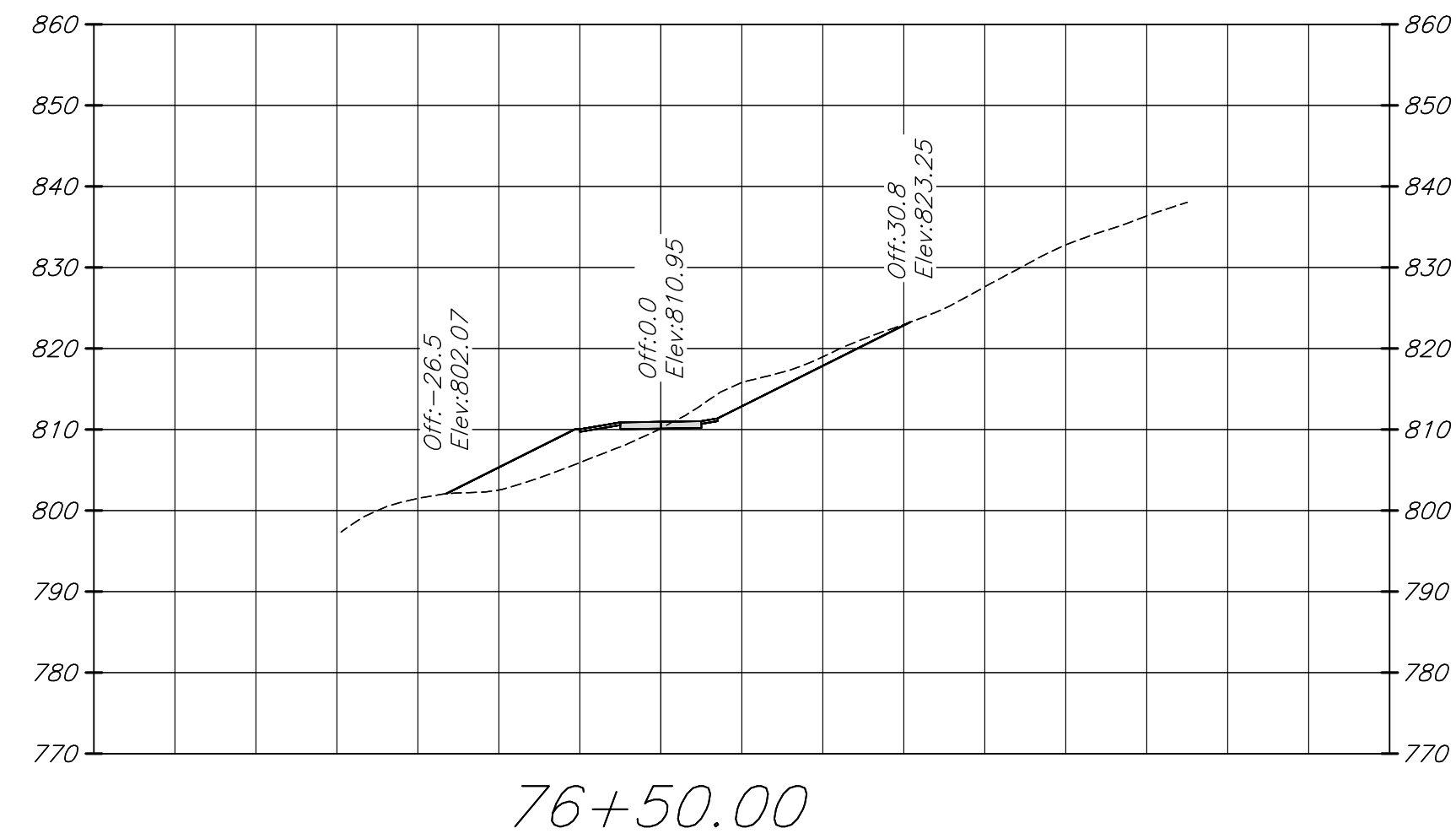
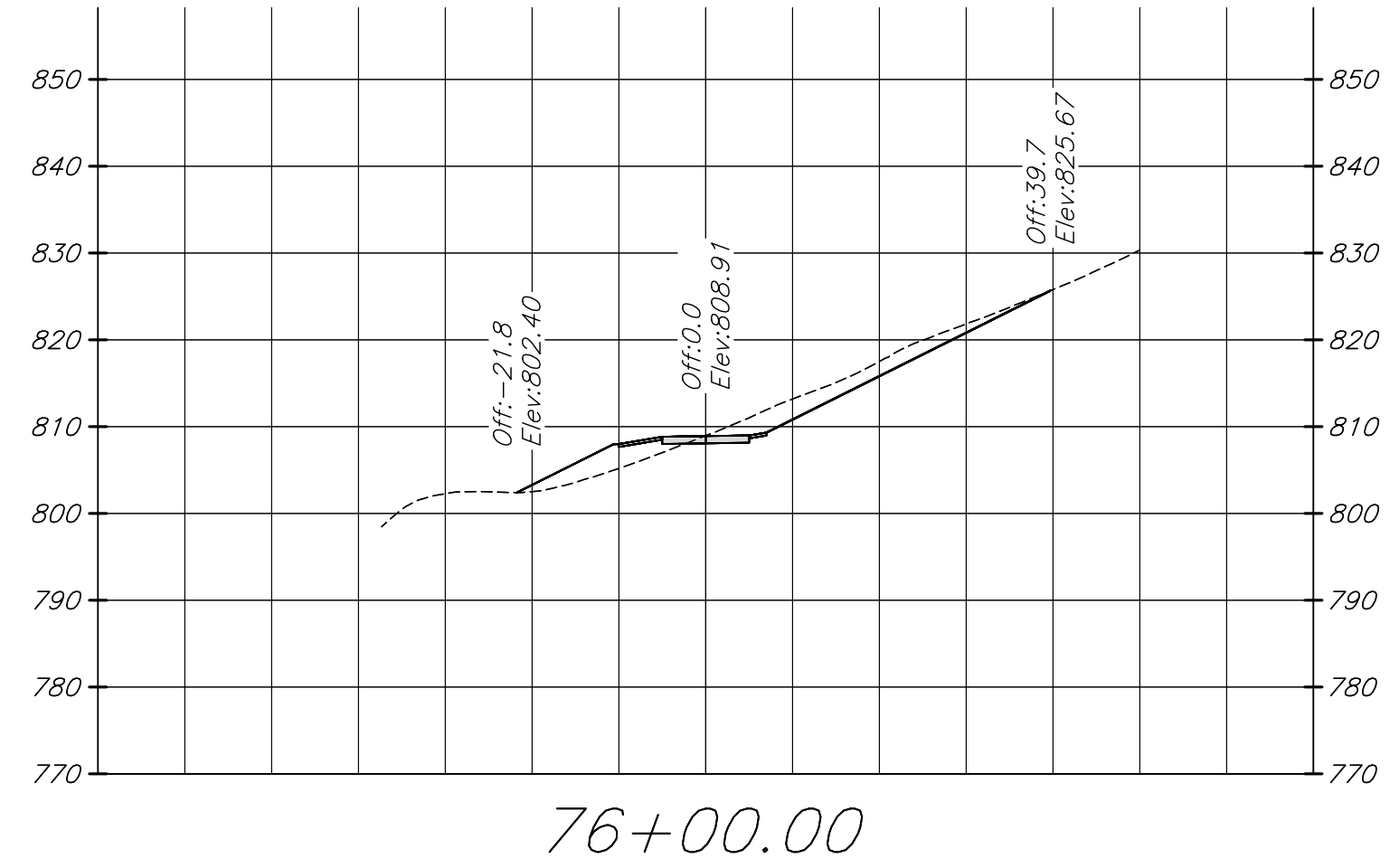
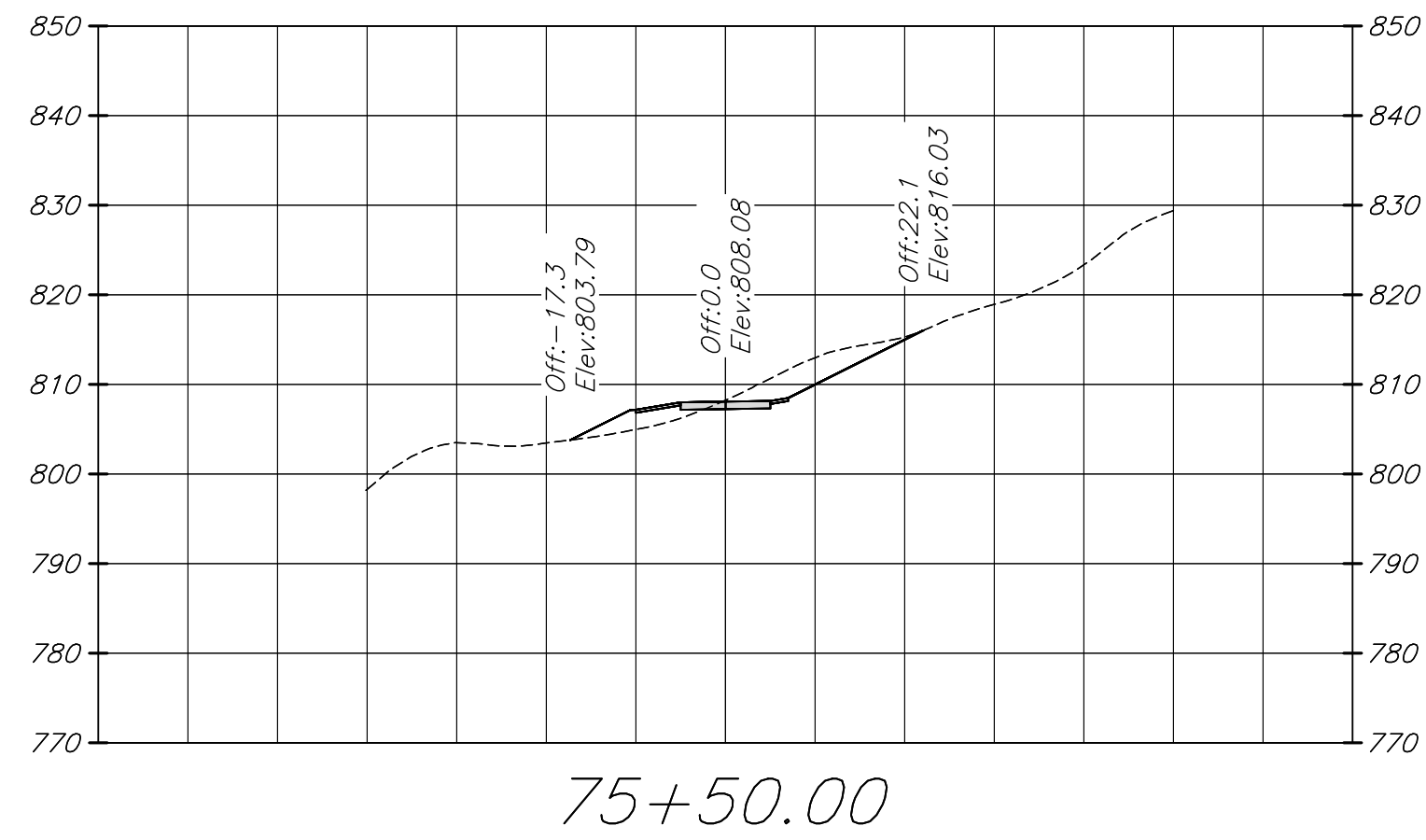
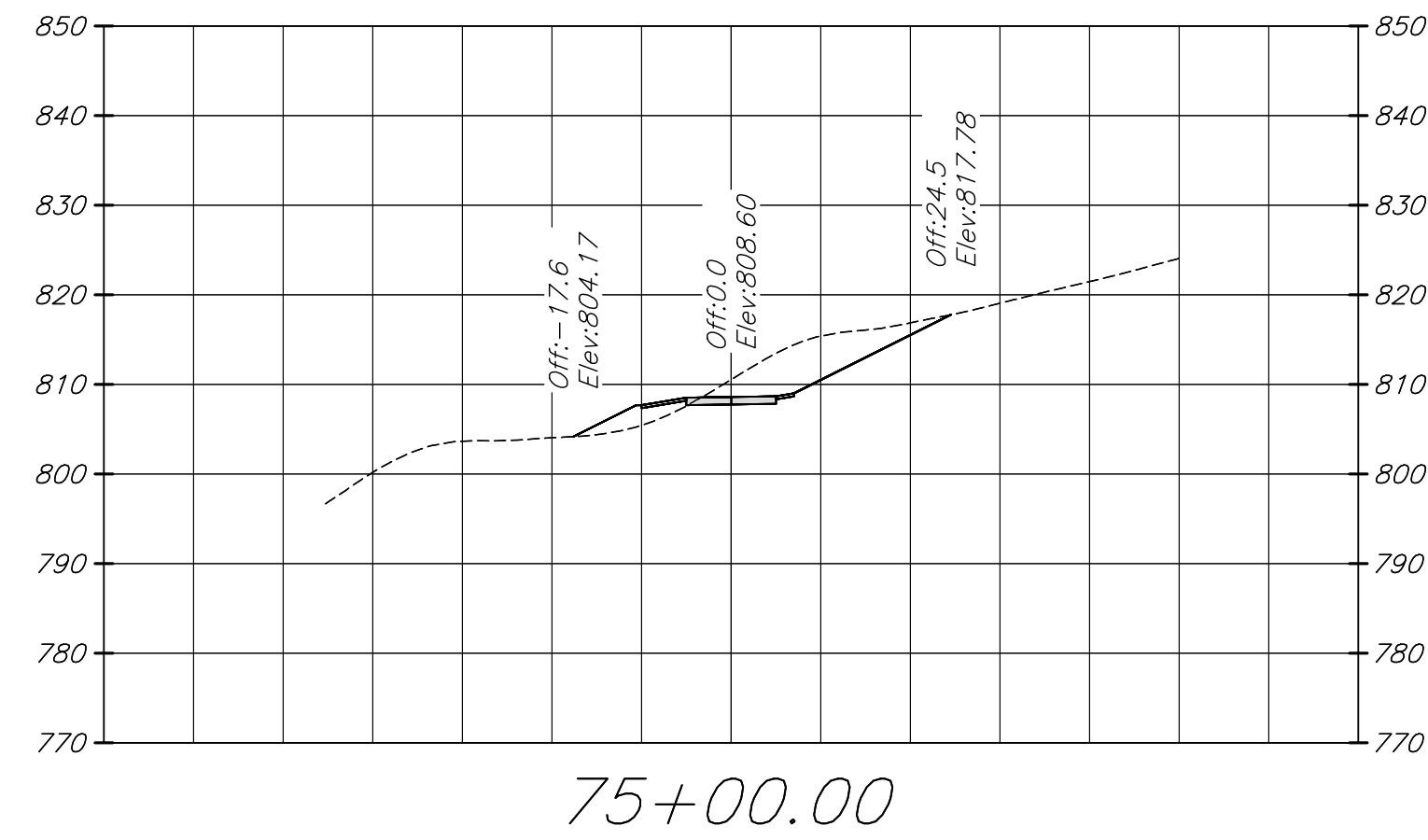
**ROANOKE RIVER GREENWAY
THROUGH EXPLORE PARK**

CROSS SECTIONS (STA. 72+00 - STA. 74+50)

A

PROJECT NO:	60647135
DESIGNED BY:	BJJ
DRAWN BY:	BJJ
DEPT CHECK:	RMF
PROJ CHECK:	JSH
DATE:	NOV. 2023
SCALE:	AS SHOWN

XS115

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**ROANOKE RIVER GREENWAY
THROUGH EXPLORE PARK**

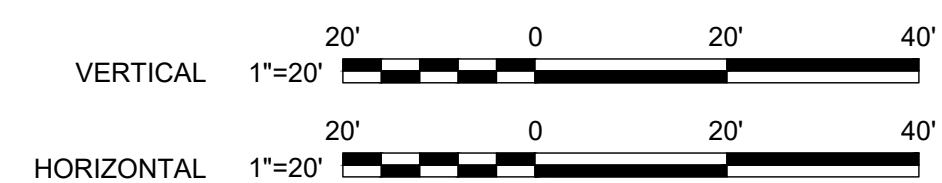
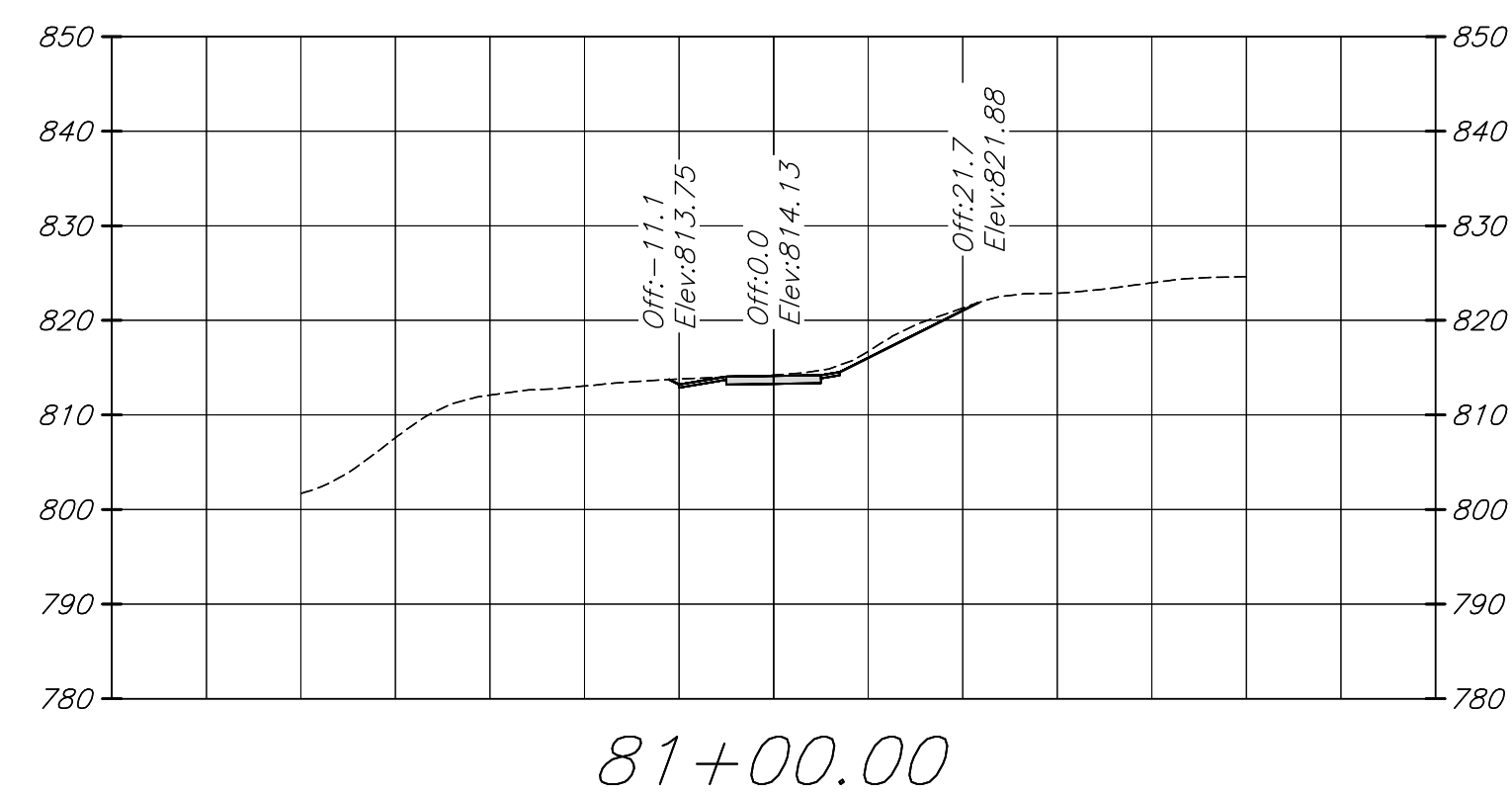
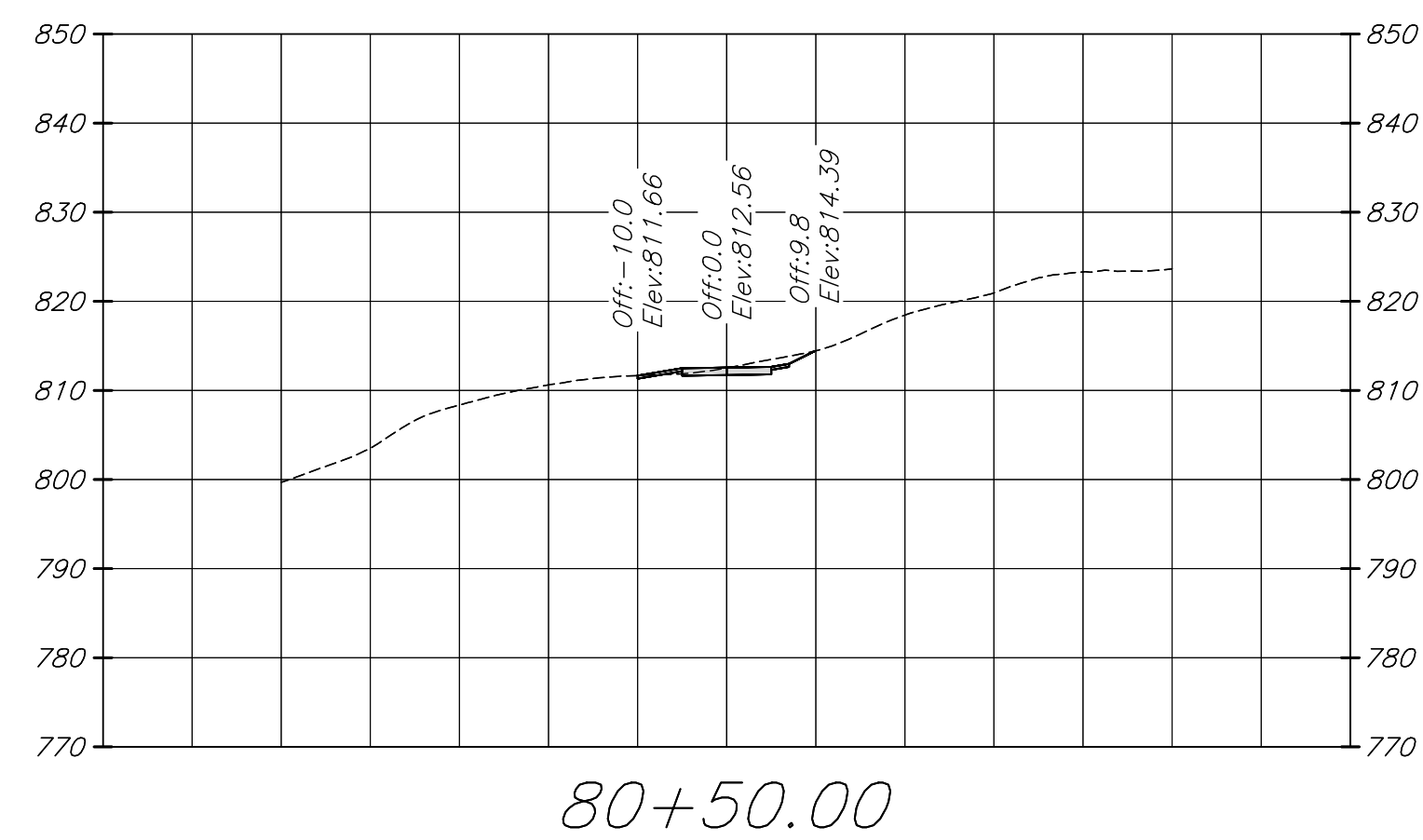
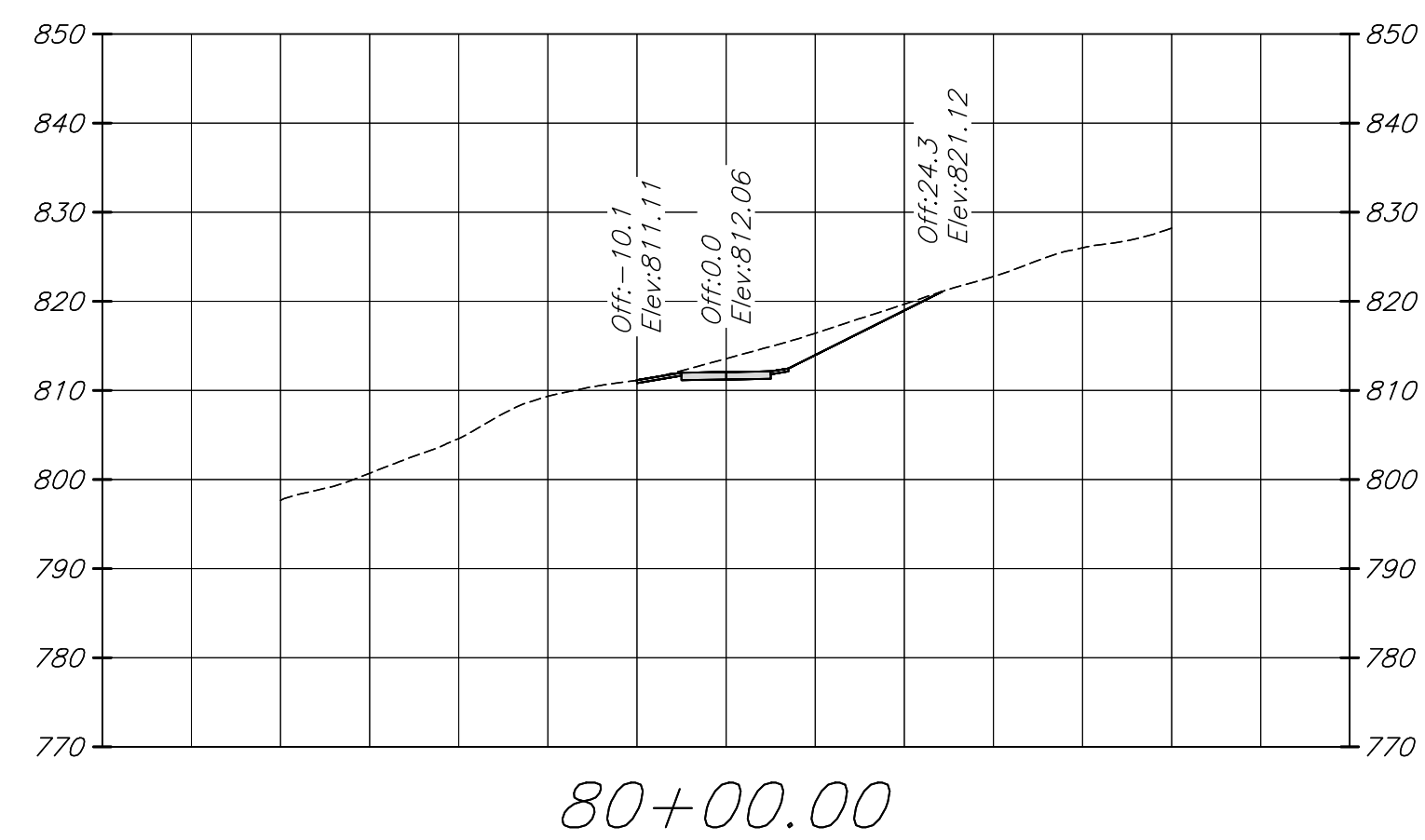
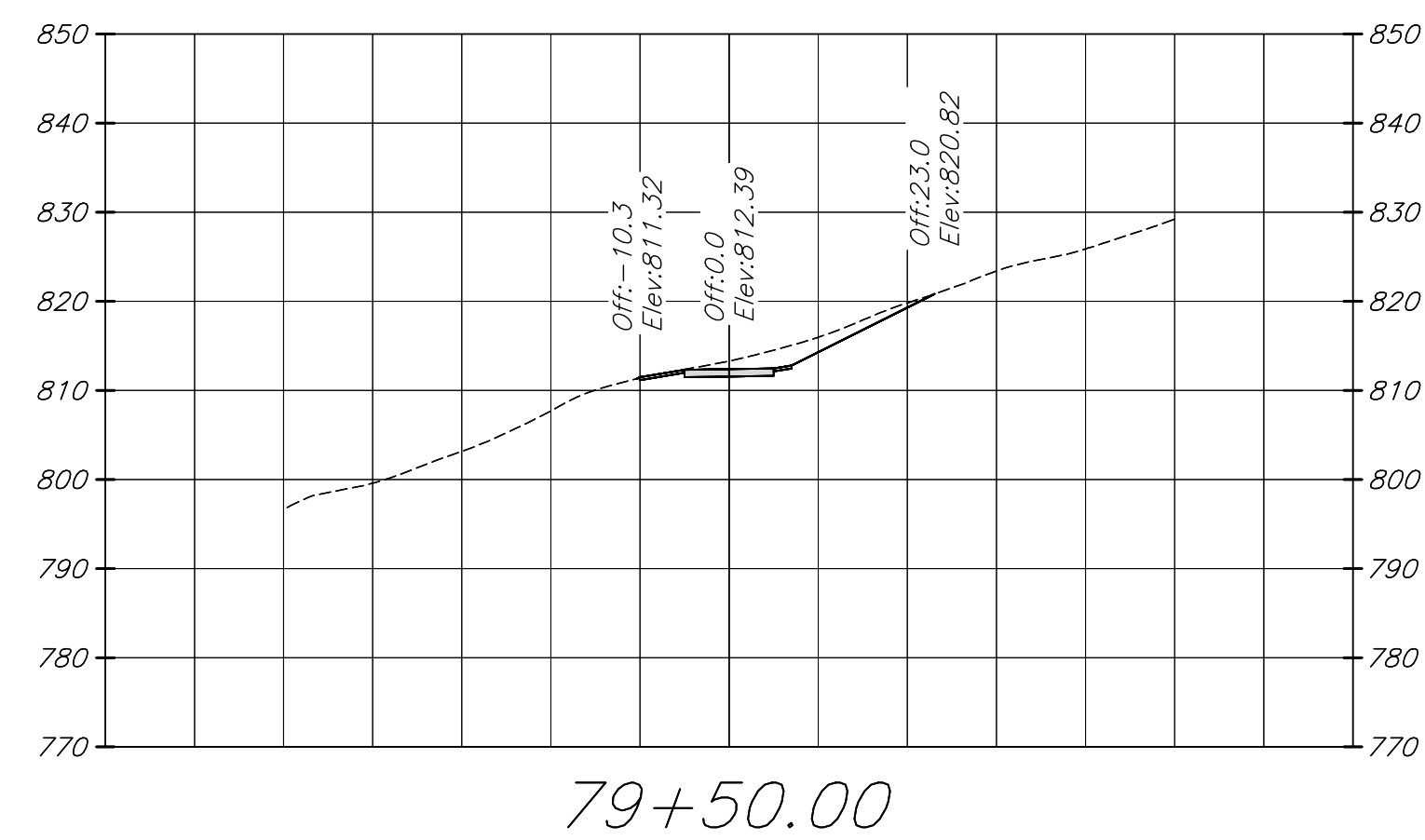
CROSS SECTIONS (STA. 75+00 - STA. 79+00)

CROSS SECTIONS (STA. 75+00 - STA. 79+00)

ROANOKE COUNTY, VA

PROJECT NO:	80647135
DESIGNED BY:	BAJ
DRAWN BY:	BAJ
DEPT CHECK:	RMF
PROJ CHECK:	JSH
DATE:	NOV. 2023
SCALE:	AS SHOWN

XS116



**ROANOKE RIVER GREENWAY
THROUGH EXPLORE PARK**

CROSS SECTIONS (STA. 79+50 - STA. 81+21)

CROSS SECTIONS (STA. 79+50 - STA. 81+21)

ROANOKE COUNTY, VA

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PROJECT NO:	60647135
DESIGNED BY:	BJJ
DRAWN BY:	BJJ
DEPT CHECK:	RMF
PROJ CHECK:	JSH
DATE:	NOV. 2023
SCALE:	AS SHOWN

XS117