



## Doddridge County, WV Floodplain Management

This permit gives approval for the development/project listed that impacts the FEMA-designated floodplain and/or floodway of Doddridge County, WV, pursuant to the rules and regulations established by all applicable Federal, State and local laws and ordinances, including the Doddridge County Floodplain Ordinance. ***This permit must be posted at the site of work as to be clearly visible and must remain posted during entirety of development.***

**Permit #: 23-637**

**Date Approved: November 27, 2023**

**Expires: November 27, 2024**

**Issued to: Antero Midstream**

**POC: Daniel Bulian**

**Company Address: 535 White Oaks Blvd. Bridgeport, WV 26330**

**Project Address: 8667 Big Flint Road West Union, WV**

**Firm: 54017C0130C**

**Lat/Long: 39.365407, -80.718887**

**Purpose of development: Permit Renewal (23-623) Surface Water Line**

**Issued by: George C. Eidel, Doddridge County FPM (or designee)**

**Date: November 27, 2023**

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For additional information regarding this permit, please contact  
Doddridge County Floodplain Manager at 304.873.1343, or via email at  
doddridgecountyfpm@gmail.com  
101 Church Street Suite 102; West Union, WV 26456

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COPY

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**KLEINFELDER OFFICE CHECKING**  
550 WEST C STREET SUITE 1200  
SAN DIEGO, CA 92101

COPY 12476

PAY TO THE ORDER OF

Doddridge County Commission

DATE 10/19/2023

19-10/1250

\$ 550.00

**usbank.**

DOLLARS

Security Features Details on Back.

FOR 20232718 0024/12 0002

*Missy A. Kuan*

101919 1125001051 15751988791

MP

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## Doddridge County Floodplain Permits

(Week of November 6, 2023)

Please take notice that on the (1<sup>st</sup>) of (November), 2023, (Antero Midstream) filed a Floodplain Permit application (#23-637) to develop land located at or about (8667 Big Flint Road); Coordinates:

39.365407, -80.718887. The Application is on file with the Floodplain Manager of the County and may be inspected or copied during regular business hours in accordance with WV Code Chapter 29B Freedom of Information, Article 1 Public Records and county policy and procedures. Any interested persons who desire to comment shall present the same in writing by (November 27, 2023) (20 calendar days after the announcement at the regularly scheduled Doddridge County Commission Meeting) delivered to the Floodplain Manager of the County at 105 Court Street, Suite #3, West Union, WV 26456. **This project is for the renewal of permit 23-623 Crimson South Surface Water Line**

GEORGE C. EIDEL, CFM

Doddridge County Floodplain Manager

## FLOODPLAIN PERMIT #23-637

Antero Midstream, Crimson South Surface Water Line, 8667 Big Flint Road, 39.365407, -80.718887

TASK	COMPLETE (DATE)	NOTES
<i>CHECK RECEIVED</i>	11/1/2023	
<i>US ARMY CORP. ENGINEERS (USACE)</i>	✓	
<i>US FISH &amp; WILDLIFE SERVICES (USFWS)</i>	✓	
<i>WV DEPT. NATURAL RESOURCES (WVDNR)</i>	✓	
<i>WV DEPT. ENVIROMENTAL PROTECTION (WVDEP)</i>	✓	
<i>STATE HISTORIC &amp; PRESERVATION OFFICE (SHPO)</i>	N/A	
<i>OFFICE of LAND &amp; STREAM (OLS)</i>	✓	
<i>WVDOH</i>	✓	
<i>Elevation Certificate</i>	N/A	
<i>DATE OF COMMISSION READING</i>	11/7/2023	
<i>DATE AVAILABLE TO BE GRANTED</i>	11/27/2023	
<i>PERMIT GRANTED</i>		
<i>COMPLETE</i>		

\*\*\*Renewal of Permit #23-623\*\*\*



# TRANSMITTAL

To:

Mr. George Eidel  
Floodplain Manager  
101 Church Street, Suite #102  
West Union, WV 26456-2095

Date: November 1, 2023

cc: Project File

Subject:

Floodplain Permit Application renewal  
Antero Midstream  
Crimson South Surface Water Line  
Doddridge County, West Virginia



Attached



Under separate cover

Via:

- Messenger/Courier
- First Class Mail
- FedEx
- United Parcel
- DHL
- Lone Star Overnight
- Freight
- Other

Transmitted:

- As Requested
- For Approval
- For Your Use
- For Review & Comment

Remarks:

Enclosed please find the following documents to facilitate your review of the above referenced renewal application:

Attachment A – Floodplain Application

Attachment B – Table of Adjacent Property Owners

Attachment C – WV Flood Tool Map

Attachment D – Site Plans

Attachment E – No-Rise Certificate

Attachment F – Permitting & Coordination Table

The check for fee is \$550.00. The site budget within the Floodplain is \$75,000.00 bringing the permit fee to \$550.00 and was previously sent to you on October 20, 2023.

By:

**Matt Albright**  
Project Manager  
51 Dutilh Rd., Suite 240  
Cranberry Township, PA 16066  
[MAlbright@Kleinfelder.com](mailto:MAlbright@Kleinfelder.com)  
m| 609.947.5296





# TRANSMITTAL

To:

Mr. George Eidel  
Floodplain Manager  
101 Church Street, Suite #102  
West Union, WV 26456-2095

Date: October 20, 2023

cc: Project File

Subject:

Floodplain Permit Renewal Fee  
Antero Midstream  
Crimson South Surface Water Line  
Doddridge County, West Virginia



Attached



Under separate cover

Via:

- Messenger/Courier
- First Class Mail
- FedEx
- United Parcel
- DHL
- Lone Star Overnight
- Freight
- Other

Transmitted:

- As Requested
- For Approval
- For Your Use
- For Review & Comment

Remarks:

A check in the amount of \$550.00 is enclosed for the above reference floodplain renewal that was requested via email to your attention on October 18, 2023. The site budget within the Floodplain is \$75,000.00 bringing the permit fee to \$550.00.

By:

**Matt Albright**  
Project Manager  
51 Dutilh Rd., Suite 240  
Cranberry Township, PA 16066  
[MAlbright@Kleinfelder.com](mailto:MAlbright@Kleinfelder.com)  
m| 609.947.5296



ATTACHMENT A  
FLOODPLAIN APPLICATION



Permit#	23-637
Project	Crimson South Surface Water Line
Permittees Name	ANtero Midstream

## Doddridge County, WV

### Floodplain Development Permit Application

This document is to be used for projects that impact/potentially impact the FEMA---designated floodplain and/or floodway of Doddridge County, WV pursuant to the rules and regulations established by all applicable Federal, State and local laws and ordinances, including the Doddridge County Floodplain Ordinance.

#### SECTION 1: GENERAL PROVISIONS (APPLICANT TO READ AND SIGN)

1. No work may start until a permit is issued.
2. The permit may be revoked if any false statements are made herein.
3. If revoked, all work must cease until permit is re-issued.
4. The permit will expire if no work is commenced within six months of issuance.
5. Applicant is hereby informed that other permits may be required to fulfill local, state, and federal requirements.
6. Applicant hereby gives consent to the Floodplain Administrator/Manager or his/her representative to make inspections to verify compliance.
7. I THE APPLICANT CERTIFY THAT ALL STATEMENTS HEREIN AND IN ATTACHMENTS TO THIS APPLICATION ARE, TO THE BEST OF MY KNOWLEDGE, TRUE AND ACCURATE.

APPLICANT'S SIGNATURE Daniel Bulian

DATE 11/01/2023



Doddridge County Commercial/Industrial  
Floodplain Development Permit Application

**Applicant Information:**

*Please provide all pertinent data.*

Applicant Information		
Responsible Company Name: Antero Midstream		
Corporate Mailing Address: 1615 Wynkoop Street		
City: Denver	State: CO	Zip: 80202
Corporate Point of Contact (POC): N/A		
Corporate POC Title: N/A		
Corporate POC Primary Phone: N/A		
Corporate POC Primary Email: N/A		
Corporate FEIN: N/A	Corporate DUNS: N/A	
Corporate Website: <a href="http://www.anteroresources.com">www.anteroresources.com</a>		
Local Mailing Address: 535 White Oaks Blvd		
City: Bridgeport	State: WV	Zip: 26330
Local Project Manager (PM): Daniel Bulian		
Local PM Primary Phone: (304) 842-4093		
Local PM Secondary Phone: N/A		
Local PM Primary Email: <a href="mailto:dbulian@anteroresources.com">dbulian@anteroresources.com</a>		
Person Filing Application: Daniel Bulian		
Applicant Title: Environmental Supervisor		
Applicant Primary Phone: (304) 842-4093		
Applicant Secondary Phone: N/A		
Applicant Primary Email: <a href="mailto:dbulian@anteroresources.com">dbulian@anteroresources.com</a>		

Doddridge County Commercial/Industrial  
Floodplain Development Permit Application

**Project Narrative:**

*Describe in detail the proposed development including project name/title, type of development, estimated start and completion timeline, and its potential impact on the floodplain. Use additional copies of this page as needed.*

Project Narrative:
<p>This permit renewal is being submitted by Antero Midstream to construct approximately 3.8 miles of one 18-inch diameter surface water pipeline known as the Crimson South Surface Water Line (Pipeline) in Doddridge County, West Virginia (WV). The southwestern terminus occurs at 39.362046, -80.729105, while the northeastern terminus occurs at 39.385516, -80.685486.</p>
<p>The proposed Pipeline will result in a limit of disturbance of approximately 69.1 acres, of which 1.87 acres (2.7%) is located within the limits of the Flint Run regulated floodplain. The West Virginia Flood Tool Map is included in Attachment C and depicts the approximate location where work associated with the proposed Pipeline will encroach upon the floodplain. Construction activities within the regulated floodplain will be temporary and consist of but are not limited to: installation of a 18-inch diameter surface water pipeline, which will be buried at the Flint Run and Big Flint Road (CR-3) crossings, temporary structure (dam and flume or equivalent) crossing materials, and jersey barrier/pier installations for timber mat crossing of equipment at 1 stream crossing (KLF_Flint Run). In addition, rock construction entrances will be installed on both sides of CR-3 (Big Flint Road). The proposed Pipeline design plans are included as Attachment D.</p>
<p>The ground surface will be returned to approximate original contours following construction, which should not adversely affect the regulated floodplain in Doddridge County. A No-Rise Certification has been prepared and is included as Attachment E, which indicates that the proposed construction activities will not affect the base flood elevation.</p>
<p>A permitting and coordination table is included in Attachment F that outlines all necessary permits and current status.</p>

Doddridge County Commercial/Industrial  
Floodplain Development Permit Application

**Proposed Development:**

*Please check all elements of the proposed project that apply.*

**DESCRIPTION OF WORK (CHECK ALL APPLICABLE BOXES)**

**A. STRUCTURAL DEVELOPMENT**

<u>ACTIVITY</u>		<u>STRUCTURAL TYPE</u>	
<input type="checkbox"/>	New Structure	<input type="checkbox"/>	Residential (1 – 4 Family)
<input type="checkbox"/>	Addition	<input type="checkbox"/>	Residential (more than 4 Family)
<input type="checkbox"/>	Alteration	<input type="checkbox"/>	Non-residential (floodproofing)
<input type="checkbox"/>	Relocation	<input type="checkbox"/>	Combined Use (res. & com.)
<input type="checkbox"/>	Demolition	<input type="checkbox"/>	Replacement
<input type="checkbox"/>	Manufactured/Mobil Home		

**B. OTHER DEVELOPMENT ACTIVITIES:**

- Fill                     Mining                     Drilling                     Pipelining
- Grading
- Excavation (except for STRUCTURAL DEVELOPMENT checked above)
- Watercourse Alteration (including dredging and channel modification)
- Drainage Improvements (including culvert work)
- Road, Street, or Bridge Construction
- Subdivision (including new expansion)
- Individual Water or Sewer System
- Other (please specify)

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Doddridge County Commercial/Industrial  
Floodplain Development Permit Application

**Development Site/Property Information:**

*Please provide physical description of the site/property, along with pertinent ownership (surface and mineral rights) data as applicable. Attach appropriate maps from the WV Flood Tool showing location of proposed development. Use additional copies of this page if development spans multiple property boundaries. Designate each property by number (i.e. Property 1 of 1, Property 2 of 7, etc.)*

Property Designation:   1   of   1  

<b>Site/Property Information:</b>		
Legal Description: <b>Crimson South Surface Water Line</b>		
Physical Address/911 Address: <b>Big Flint Rd, Center Point, WV 26339</b>		
Decimal Latitude/Longitude: <b>39.365815, -80.718835</b>		
DMS Latitude/Longitude:		
District: <b>3 (Grant)</b>	Map: <b>5</b>	Parcel: <b>1</b>
Land Book Description: <b>N/A</b>		
Deed Book Reference: <b>N/A</b>		
Tax Map Reference: <b>N/A</b>		
Existing Buildings/Use of Property: <b>Farm</b>		

<b>Floodplain Location Data: (to be completed by Floodplain Manager or designee)</b>			
Community:	Number:	Panel:	Suffix:
Location (Lat/Long):		Approximate Elevation:	
		Estimated BFE:	
Is the development in the floodway? <input type="checkbox"/> Yes <input type="checkbox"/> No		Is the development in the floodplain? <input type="checkbox"/> Yes <input type="checkbox"/> No    Zone: _____	
Notes:			

Doddridge County Commercial/Industrial  
Floodplain Development Permit Application

**Property Owner Data:**

*Please provide data on current site/property landowner(s), both surface and mineral rights (as applicable). Use additional copies of this page as needed. Designate each page in relation to each property listed above.*

Property Designation: __1__ of __2__
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<b>Property Owner Data:</b>		
Name of Primary Owner (PO): TRENT STEPHEN W & REMONDA L		
PO Address: 14 Millbrook Rd		
City: Bridgeport	State: WV	Zip: 26330
PO Primary Phone: N/A		
PO Secondary Phone: N/A		
PO Primary Email: N/A		

<b>Surface Rights Owner Data:</b>		
Name of Primary Owner (PO):		
PO Address: N/A		
City: N/A	State: N/A	Zip: N/A
PO Primary Phone: N/A		
PO Secondary Phone: N/A		
PO Primary Email: N/A		

<b>Mineral Rights Owner Data: (As Applicable)</b>		
Name of Primary Owner (PO):		
PO Address: N/A		
City: N/A	State: N/A	Zip: N/A
PO Primary Phone: N/A		
PO Secondary Phone: N/A		
PO Primary Email: N/A		

Doddridge County Commercial/Industrial  
Floodplain Development Permit Application

**Property Owner Data:**

*Please provide data on current site/property landowner(s), both surface and mineral rights (as applicable). Use additional copies of this page as needed. Designate each page in relation to each property listed above.*

Property Designation: <u>  2  </u> of <u>  2  </u>
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<b>Property Owner Data:</b>		
Name of Primary Owner (PO): ASHCRAFT JAMES & BEVERLY (SURV)		
PO Address: 8375 Big Flint Rd		
City: West Union	State: WV	Zip: 26456
PO Primary Phone: N/A		
PO Secondary Phone: N/A		
PO Primary Email: N/A		

<b>Surface Rights Owner Data:</b>		
Name of Primary Owner (PO):		
PO Address: N/A		
City: N/A	State: N/A	Zip: N/A
PO Primary Phone: N/A		
PO Secondary Phone: N/A		
PO Primary Email: N/A		

<b>Mineral Rights Owner Data: (AsApplicable)</b>		
Name of Primary Owner (PO):		
PO Address: N/A		
City: N/A	State: N/A	Zip: N/A
PO Primary Phone: N/A		
PO Secondary Phone: N/A		
PO Primary Email: N/A		



Doddridge County Commercial/Industrial  
Floodplain Development Permit Application

**Contractor Data:**

*Please provide all pertinent data for contractors and sub---contractors that may be participating in this project. Use additional copies of this page as needed. Designate each page in relation to each property listed above.*

**Property Designation:** \_\_ 1 of \_1

Contractor/Sub-•-Contractor (C/SC) Information:		
C/SC Company Name: One contractor to be selected from the following: ACE Pipeline (#WV049594), Apex Pipeline Services Inc (#WV040540), Integrity Kokosing Pipeline Services LLC (#WV050096), Momentum Pipeline LLC (#WV057216), Entegra Energy Solutions LLC (#WV054560).		
C/SC Company Name: See Above		
C/SC WV License Number: See Above		
C/SC FEIN: TBD	C/SC DUNS: TBD	
Local C/SC Point of Contact (POC): TBD		
Local C/SC POC Title: TBD		
C/SC Mailing Address: TBD		
City: TBD	State: TBD	Zip-•-Code: TBD
Local C/SC Office Phone: TBD		
Local C/SC POC Phone: TBD		
Local C/SC POC E-•-Mail: TBD		

Engineer Firm Information:		
Engineer Firm Name: The Thrasher Group, Inc.		
Engineer WV License Number: 23629		
Engineer Firm FEIN: N/A	Engineer Firm DUNS: N/A	
Engineer Firm Primary Point of Contact (POC): James Howes		
Engineer Firm Primary POC Title: Survey Project Manager		
Engineer Firm Mailing Address: 600 White Oaks Blvd		
City: Bridgeport	State: WV	Zip-•-Code: 26330
Engineer Firm Office Phone: 304-205-8802		
Engineer Firm Primary POC Phone: 304-288-7888		
Engineer Firm Primary POC E-•-Mail: jhowes@thethrashergroup.com		

## Adjacent and/or Affected Landowners Data

Please provide data for all adjacent and/or affected surface owners (both up and down stream) whose property may be impacted by proposed development as demonstrated by a floodplain study or survey. Use additional copies of this page as needed.

Adjacent Property Owner Data: Upstream		
Name of Primary Owner (PO): See Table of Adjacent Property Owners (Attachment B)		
Physical Address: N/A		
City: N/A	State: N/A	Zip: N/A
PO Primary Phone: N/A		
PO Secondary Phone: N/A		
PO Primary Email: N/A		

Adjacent Property Owner Data: Upstream		
Name of Primary Owner (PO): N/A		
Physical Address: N/A		
City: N/A	State: N/A	Zip: N/A
PO Primary Phone: N/A		
PO Secondary Phone: N/A		
PO Primary Email: N/A		

Adjacent Property Owner Data: Downstream		
Name of Primary Owner (PO): See Table of Adjacent Property Owners (Attachment B)		
Physical Address: N/A		
City: N/A	State: N/A	Zip: N/A
PO Primary Phone: N/A		
PO Secondary Phone: N/A		
PO Primary Email: N/A		

Adjacent Property Owner Data: Downstream		
Name of Primary Owner (PO): N/A		
Physical Address: N/A		
City: N/A	State: N/A	Zip: N/A
PO Primary Phone: N/A		
PO Secondary Phone: N/A		
PO Primary Email: N/A		

## Site Plan

**A Site Plan is an accurate and detailed map of the proposed development for this project.** It shows the size, shape, location and special features of the project property, and the size and location of any development planned to the property, especially as that development will impact the floodplain and/or floodway. Site plans show what currently exists on the project property, and any changes or improvements you are proposing to make. **A certified and licensed engineering firm should complete site plans.**

### **A SITE PLAN MUST CONTAIN THE FOLLOWING INFORMATION:**

1. Legal description of the parcel, north arrow and scale
2. All property lines and their dimensions
3. Names of adjacent roads, location of driveways
4. Location of sloughs, tributaries, streams, rivers, wetlands, ponds, and lakes, with setbacks indicated, and including FEMA floodplain data based on most updated FIRM.
5. Location, size, shape of all buildings, existing and proposed, with elevation of lowest floor indicated.
6. Location and dimensions of existing or proposed on-site sewage systems.
7. Location of all propane tanks, fuel tanks or other liquid storage tanks whether above ground or below ground level.
8. Location and dimensions of any proposed pipeline placement(s) into floodplain/floodway.
9. Location and dimensions of any roadway development into floodplain/floodway. *(Includes initial development access roads)*
10. Location and dimensions of any bridge and/or culvert development into floodplain/floodway.
11. Location and dimensions of any storage yard or facility into the floodplain/floodway.
12. Location of any existing utilities and/or proposed utility placement and/or displacement.
13. Location, dimensions and depth of any existing or proposed fill on site.
14. A survey showing the **existing ground elevations** of at least location on the building site. **ELEVATION NOTE:** All vertical datum will reference either NGVD 29 or NAVD 88. Assumed datum will not be acceptable unless the property is located in an area where vertical datum has not been published. For those areas where vertical datum has not been established, a site plan with contours, elevations using assumed datum, high water marks and existing water levels of sloughs, rivers, lakes or streams and proposed lowest floor elevation.

## Applicant

*Please read print name, sign and date below:*

- I certify that I am authorized to submit this application for the primary project developer.
- I certify that the information included in this application is to the best of my knowledge true and complete.
- I certify that all required Federal, State, and local permits required by law and/or ordinance for the above described development of this project have will be properly attained, are current and valid, and must be presented prior to a Doddridge County Floodplain Permit being issued.
- I understand that if in the course of the development project additional permits become required that were not needed during the initial proposal, the primary developer must notify the Doddridge County Floodplain Manager within 48 hours of such need, and that a "Stop Work" order may be issued for all project work directly impacting the floodplain or floodway, until such time the required additional permits are acquired.
- I understand that once the floodplain permit is submitted, the application will be entered into official public record at the next regularly scheduled Doddridge County Commission meeting after the date of submittal.
- I understand that from the date of submittal of the fully completed permit application, the Doddridge County Floodplain Manager has ninety (90) days to make a determination to either grant or deny said permit application. During this approval period, the Doddridge County Floodplain Manager may, at his or her discretion, conduct a review and/or additional study of provided documentation by means of an independent engineering firm. All costs associated with said review and/or study must be reimbursed to the County before issuance of approved permit.
- I understand that during the approval period, the Doddridge County Floodplain Manager of designee may at his or her discretion conduct site visits and document conditions of proposed development pursuant to the permit application.
- I understand that once the Floodplain Permit is granted, the permit will be entered into official public record. Appeals to the permit may be made no later than twenty (20) days after said issuance. If a valid appeal is submitted, as determined by the Doddridge County Floodplain Manager, a "Stop Work" order will be issued for all project development directly involving the floodplain or floodway. A public hearing by the Doddridge County Appeals Board will be scheduled no less than ten (10) days after the next regularly scheduled Doddridge County Commission meeting.
- I understand that all decisions of the Doddridge County Appeals Board shall be final.
- **I understand issuance of a Floodplain Permit authorizes me to proceed with construction as proposed.**
- In signing this application, the primary developer hereby grants the Doddridge County Floodplain Manager or designee the right to enter onto the above---described location to inspect the development work proposed, in progress, and/or completed.
- I understand that if I do not follow exactly the site---plan submitted and approved by this permit that a "Stop Work" order may be issued by the Doddridge County Floodplain Manager and that I must stop all construction immediately until discrepancies of actual work vs. proposed work is resolved.

*Daniel Bulian*

11/01/2023

Applicant Signature: \_\_\_\_\_ Date: \_\_\_\_\_

Applicant Printed Name:  Daniel J Bulian





ATTACHMENT B  
TABLE OF ADJACENT PROPERTY OWNERS

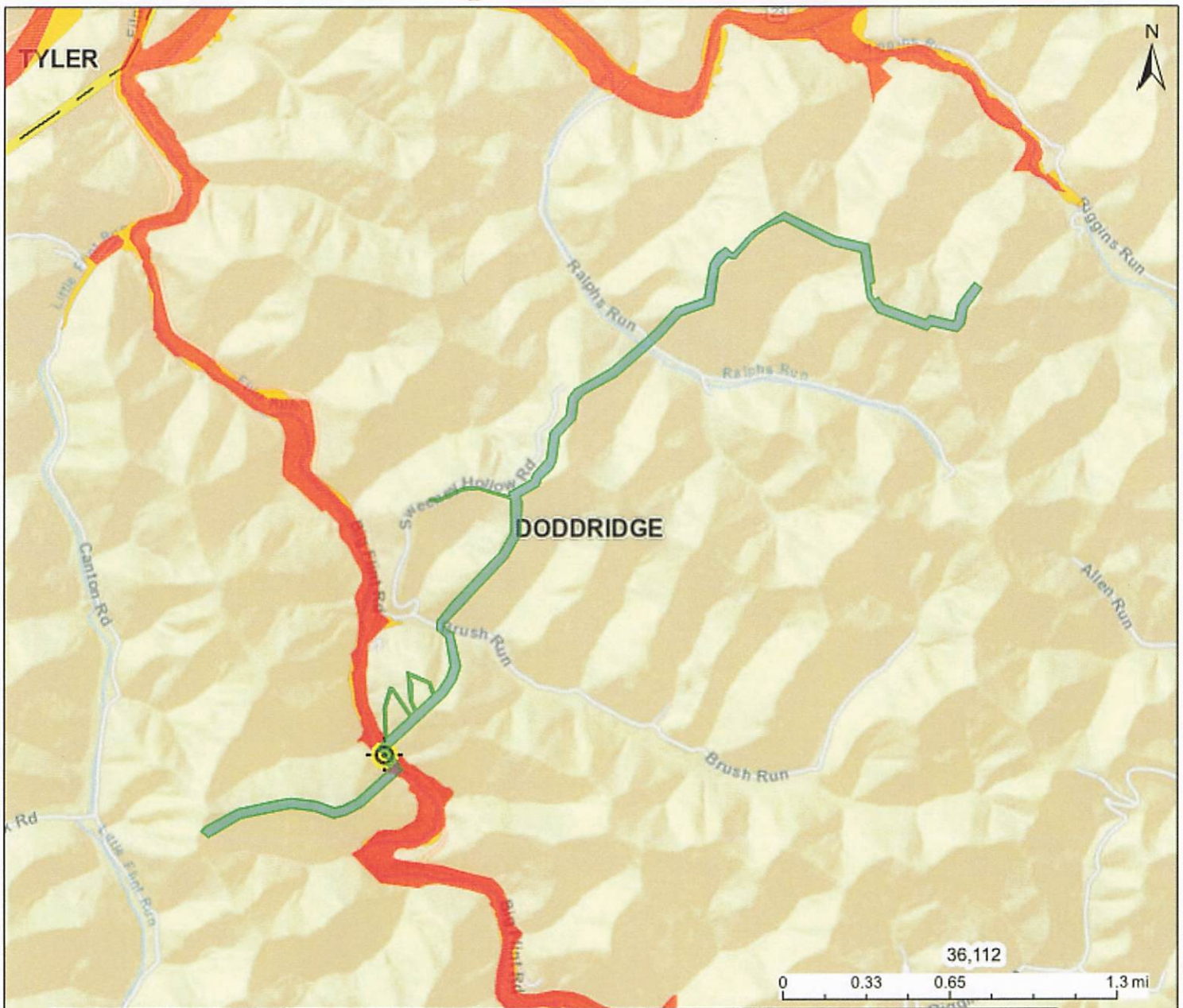
## Table of Adjacent Property Owners

PROPERTY OWNER	PARCEL ID NUMBER	E-911 ADDRESS	PROPERTY OWNER ADDRESS	IN FLOODPLAIN
TRENT STEPHEN W & REMONDA L	09-03-0005-0005-0001	8667 BIG FLINT RD, WEST UNION, WV, 26456	14 MILLBROOK RD, BRIDGEPORT, WV 26330	Yes
ASHCRAFT JAMES & BEVERLY (SURV)	09-03-0006-0012-0000	8375 BIG FLINT RD , WEST UNION, WV, 26456 8359 BIG FLINT RD , WEST UNION, WV, 26456	8375 BIG FLINT RD, WEST UNION, WV 26456	Yes
GESSLER SHIRLEY LEE	09-03-0002-0011-0000	9371 BIG FLINT RD, WEST UNION, WV, 26456	9371 BIG FLINT RD, WEST UNION, WV 26456	Yes (Downstream)
KELLEY DWAYNE E	09-03-0005-0005-0000	75 DOVE LN, WEST UNION, WV, 26456	75 DOVE LN, WEST UNION, WV 26456	Yes (Downstream)
MCKINNEY JEFFEREY E & PHYLLIS M (SURV)	09-03-0006-0012-0004	8205 BIG FLINT RD , WEST UNION, WV, 26456	VANDERBILT TAX DEPT, P O BOX 9800, MARYVILLE, TN 37802	Yes (Upstream)



ATTACHMENT C  
WV FLOOD TOOL MAP

# WV Flood Map-Crimson South SWL

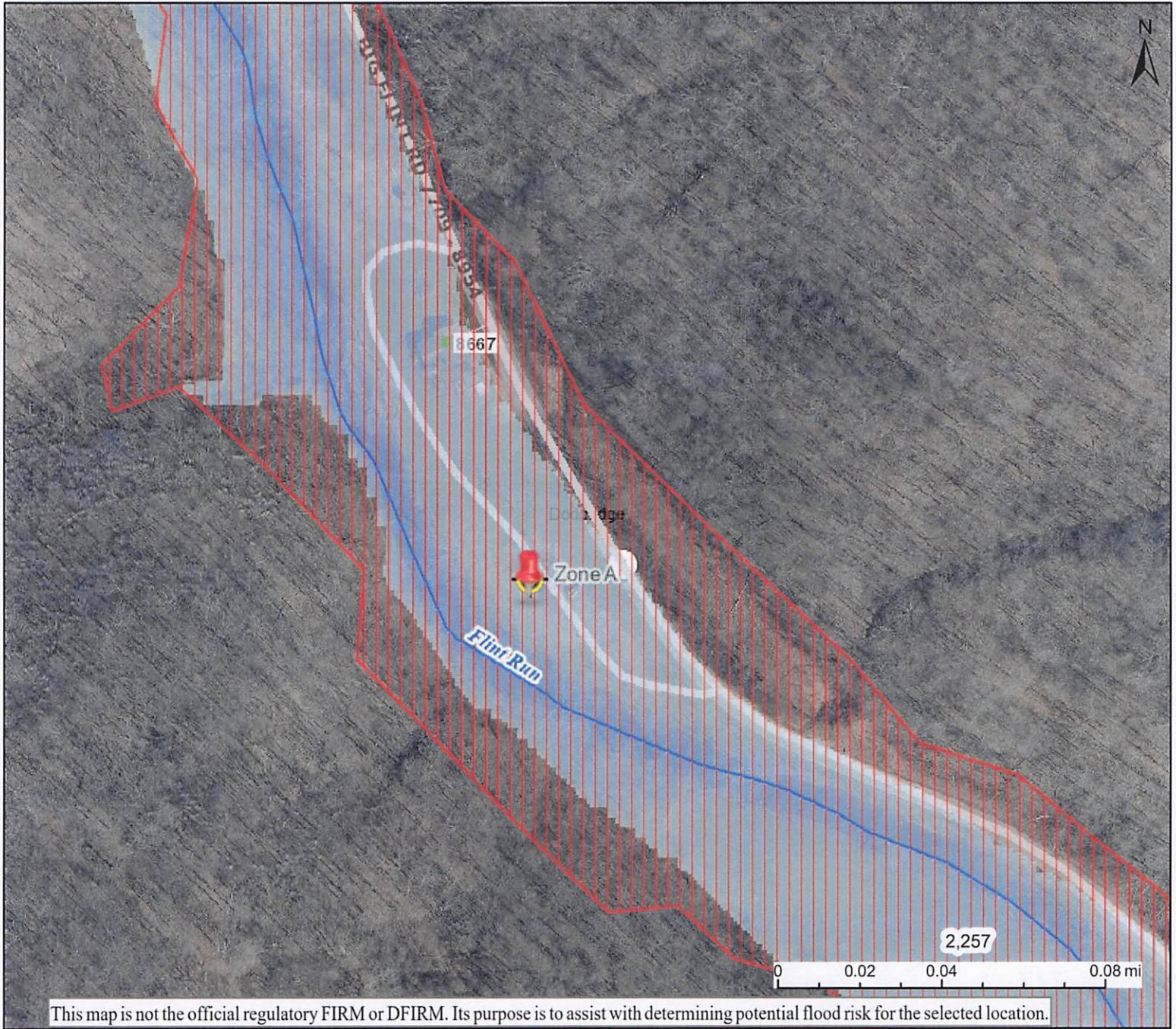


This map is not the official regulatory FIRM or DFIRM. Its purpose is to assist with determining potential flood risk for the selected location.

<p>H I G H  R I S K</p>	Regulatory Floodway	Flood Info Location <span style="float: right;">Map created on 12/14/2022</span>	
	Zone Af 1-Percent-Annual-Chance Flood Hazard Area <b>With Base Flood Elevation (BFE)</b>	<b>User Notes</b> <b>Flood Hazard Area</b> Location is <b>WITHIN</b> the FEMA 100-year floodplain. Advisory Flood Heights available. <b>Flood Zone</b> A (Advisory Flood Heights available) <b>Stream</b> Flint Run <b>Watershed (HUC8)</b> Little Musringum-Middle Island (5030201)	
Zone A 1-Percent-Annual-Chance Flood Hazard Area <b>Without BFE</b> (may have Advisory Flood Heights)	<b>Flood Height</b> Flood Height 4 About 768.1 ft (Source: AFH) NAVD88 <b>Water Depth</b> About 3.7 ft (Source: HEC-RAS) <b>Elevation</b> 761.4 ft (Source: FEMA 2018-20) (NAVD88)		
Advisory 1-Percent-Annual-Chance Future Conditions (High Risk Advisory Flood Zones)	<b>Community &amp; ID</b> Doddridge County (ID: 540024) <b>FEMA Map &amp; Date</b> 54017C0130C; Effective Date: 10/4/2011 <b>Location (lat, long)</b> (39.365407, -80.718887) (WGS84) <b>Parcel ID</b> 09-03-0006-0012-0000 <b>E-911 Address</b> multiple addresses		
<p>Download the Full Legend for all flood tool symbols  <a href="https://www.mapwv.gov/flood/map/docs/wv_flood_tool_legend.pdf">https://www.mapwv.gov/flood/map/docs/wv_flood_tool_legend.pdf</a></p> <p><b>Disclaimer:</b>          The online map is for use in administering the National Flood Insurance Program. It does not necessarily identify all areas subject to flooding, particularly from local drainage sources of small size. Refer to the official Flood Insurance Study (FIS) for detailed flood elevation data in flood profiles and data tables. WV Flood Tool (<a href="https://www.MapWV.gov/flood">https://www.MapWV.gov/flood</a>) is supported by FEMA, WV NFIP Office, and WV GIS Technical Center.</p>			



# WV Flood Map



This map is not the official regulatory FIRM or DFIRM. Its purpose is to assist with determining potential flood risk for the selected location.

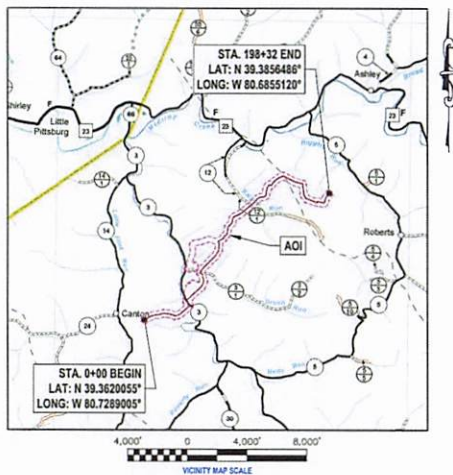
<p>H I G H</p> <p><b>Zone AE</b> 1-Percent-Annual-Chance Flood Hazard Area With Base Flood Elevation (BFE)</p> <p><b>Floodway</b> Regulatory Floodway in AE Zone</p>		<p>📍 Flood Info Location <span style="float: right;">Map created on 11/1/2023</span></p>	
<p>R I S K</p> <p><b>Zone A</b> 1-Percent-Annual-Chance Flood Hazard Area Without BFE (may have Advisory Flood Heights)</p> <p><b>Advisory</b> 1-Percent-Annual-Chance High Risk Advisory</p>		<p><b>User Notes</b></p>	
<p>Download the Full Legend for all flood tool symbols <a href="https://www.mapwv.gov/flood/map/docs/wv_flood_tool_legend.pdf">https://www.mapwv.gov/flood/map/docs/wv_flood_tool_legend.pdf</a></p>		<p><b>Flood Hazard Area</b></p>	
<p><b>Disclaimer:</b> The online map is for use in administering the National Flood Insurance Program. It does not necessarily identify all areas subject to flooding, particularly from local drainage sources of small size. Refer to the official Flood Insurance Study (FIS) for detailed flood elevation data in flood profiles and data tables. WV Flood Tool (<a href="https://www.mapwv.gov/flood">https://www.mapwv.gov/flood</a>) is supported by FEMA, WV NFIP Office, and WV GIS Technical Center.</p>		<p><b>Flood Zone</b></p>	
		<p><b>Stream</b> Flint Run</p>	
		<p><b>Watershed (HUC8)</b> Little Musringum-Middle Island (5030201)</p>	
		<p><b>Flood Height</b></p>	
		<p><b>Water Depth</b></p>	
		<p><b>Elevation</b> 761.4 ft (Source: FEMA 2018-20) (NAVD88)</p>	
		<p><b>Community &amp; ID</b> Doddridge County (ID: 540024)</p>	
		<p><b>FEMA Map &amp; Date</b> 54017C0130C; Effective Date: 10/4/2011</p>	
		<p><b>Location (lat, long)</b></p>	
		<p><b>Parcel ID</b> 09-03-0005-0030-0000</p>	
		<p><b>E-911 Address</b> multiple addresses</p>	





ATTACHMENT D  
SITE PLANS

# ANTERO MIDSTREAM ISSUED FOR PERMITTING PLANS FOR THE CRIMSON SOUTH SWL 18" HDPE SURFACE WATER LINE AFE # A11568 101-050-11638 DODDRIDGE COUNTY, WEST VIRGINIA NOVEMBER 2022



PHONE: (303) 357-7310 | FAX: (303) 357-7315  
1615 WYNNKOOP STREET  
DENVER, CO 80202

ALIGNMENT SHEETS PREPARED BY

**BRIDGEPORT, WV OFFICE**  
600 WHITE OAKS BLVD  
BRIDGEPORT, WV 26330  
(304) 624-4108  
PO BOX 940

**PLAN REPRODUCTION WARNING**

THESE PLANS ARE INTENDED TO BE PLOTTED ON ANSI D (24" X 36") SHEETS. FOR REDUCTIONS, REFER TO GRAPHIC SCALE. THESE PLANS HAVE BEEN CREATED FOR FULL COLOR PLOTTING. ANY SET OF THESE PLANS THAT IS NOT PLOTTED IN FULL COLOR SHALL NOT BE CONSIDERED ADEQUATE FOR CONSTRUCTION PURPOSES.

\*\*WARNING\*\* INFORMATION MAY BE LOST IN COPYING AND/OR GRAY SCALE PLOTTING.

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**EXISTING INFORMATION SOURCES**

- BASE CONTOUR DATA PROVIDED BY OTHERS
- ROUTE INFORMATION AND LOCATION PROVIDED BY ANTERO
- SUPPLEMENTAL SPOT ELEVATIONS AND ALIGNMENT PROVIDED BY:
  - THE THRASHER GROUP  
600 WHITE OAKS BLVD., P.O. BOX 940  
BRIDGEPORT, WV 26330
- BENCHMARK:  
HORIZONTAL - NAD 83 WEST VIRGINIA STATE PLANE, NORTH ZONE, US SURVEY FOOT  
VERTICAL - NAVD 83 (GEOID2011), US SURVEY FOOT
- ROAD DESIGNATIONS OBTAINED FROM WV-DOT  
(<http://www.transportation.wv.gov/>)

1-800-245-4848  
TICKET # 2223866992, 2223866997, 2223867009



CONTRACTOR SHALL NOTIFY THE ONE-CALL SYSTEM OF THE INTENDED EXCAVATION OR DEMOLITION NOT LESS THAN FORTY-EIGHT (48) HOURS, EXCLUDING SATURDAYS, SUNDAYS AND LEGAL FEDERAL OR STATE HOLIDAYS, NOR MORE THAN TEN (10) WORK DAYS PRIOR TO THE BEGINNING OF SUCH WORK. CALL 811 COMB1-811 IN YOUR STATE.

TOTAL AREA AND TREE CLEARING	AREA	UNITS
PERMITTED LIMITS-OF-DISTURBANCE	52.3	ACRES
TREE CLEARING	39.1	ACRES

THIS PLAN SET DEPICTS THE NECESSARY INFORMATION FOR EROSION AND SEDIMENT CONTROL MEASURES AS REQUIRED BY THE WVDEP FOR STORM WATER PERMITTING PURPOSES.

THE PIPELINE MATERIALS, ASSOCIATED APPURTENANCES, MATERIAL STRENGTHS, MAMP CALCULATIONS, PIPELINE ROUTING, ETC. DEPICTED ON THESE DRAWINGS ARE AS PROVIDED TO THE THRASHER GROUP, INC. BY OTHERS. THRASHER WILL NOT ACCEPT ANY LIABILITY FOR THE APPROPRIATENESS, OR DESIGN, OR SAID MATERIAL DEPICTED IN THESE PLANS.

THE AQUATIC RESOURCES DEPICTED ON THESE DRAWINGS ARE AS PROVIDED TO THE THRASHER GROUP, INC. BY OTHERS. THRASHER WILL NOT ACCEPT ANY LIABILITY FOR THE ACCURACY, OR COMPLETENESS, OF THE AQUATIC RESOURCES DEPICTED ON THESE PLANS.



CLAYTON C. WHITE, WV P.E. # 24495

ISSUED FOR PERMITS      DATE: 11/17/22      BY: [Signature]

LAYOUT FILE: C:\P05\101-050-11638-DO-ADD-ANTERO-MIDSTREAM-CRIMSON-SW-18\" HDPE SURFACE WATER LINE\101-050-11638-DO-ADD-ANTERO-MIDSTREAM-CRIMSON-SW-18\" HDPE SURFACE WATER LINE.DWG  
 PLOT DATE/TIME: 11/17/2022 4:27 PM  
 USER: jared.jenkins



WVDH GENERAL NOTES

- ALL CONSTRUCTION ON THE DIVISION OF HIGHWAYS RIGHT OF WAY WILL CONFORM TO THE FOLLOWING:
1. ALL METER SETTINGS ACROSS PAVED ROADS SHALL BE BORED OR MOLED, UNLESS OPEN CUT HAS BEEN APPROVED BY W.V.D.O.H. AND SPECIFICALLY INDICATED ON PLANS.
2. NOTIFICATION OF PROPOSED EXCAVATION, DEMOLITION OR ANY OTHER EARTH DISTURBING ACTIVITIES ARE REQUIRED TO BE PLACED TO MISS UTILITY OF WEST VIRGINIA (1-800-245-4848) NOT LESS THAN FORTY EIGHT (48) BUSINESS HOURS BEFORE ANY SUCH WORK IS TO BEGIN.
3. BEDDING SHALL BE PLACED ON ASPHALT SURFACE TO PROTECT THE PAVEMENT WHEN A TRENCHER OR TRACKED VEHICLE IS USED.
4. THE WEST VIRGINIA DIVISION OF HIGHWAYS PUBLICATIONS "STANDARD SPECIFICATIONS ROADS AND BRIDGES" AND "ACCOMMODATIONS OF UTILITIES ON HIGHWAY RIGHT OF WAY" LATEST EDITION ARE PART OF THE SPECIFICATIONS AND WILL BE ADHERED TO BY THE CONTRACTOR.
5. ALL DAMAGE TO ROAD SURFACE SHALL BE REPAIRED ACCORDING TO THE WEST VIRGINIA DIVISION OF HIGHWAYS STANDARD SPECIFICATIONS AND DETAILS.
6. ALL EXISTING DUMP ROOK OR RIP RAP DITCHES DISTURBED BY THE UTILITY LINE CONTRACTOR SHALL BE RESTORED WITH THE SAME SIZE, GRADE AND QUALITY OF ROCK AFTER THE UTILITY LINE HAS BEEN INSTALLED. NEW DUMP ROOK (RIP RAP) IS TO BE PLACED IN ALL LOCATIONS WHERE THE DITCH LINE GRADE IS GREATER THAN 5% AND THERE IS NO EXISTING RIP RAP.
7. TRAFFIC CONTROL SHALL CONFORM TO THE W.V.D.O.H. PUBLICATION "TRAFFIC CONTROL FOR STREET AND HIGHWAY CONSTRUCTION AND MAINTENANCE" OPERATION LATEST EDITION.
8. ALL BACKFILL MATERIAL AND COMPACTION REQUIREMENT SHALL BE IN ACCORDANCE WITH THE SPECIFICATIONS IN THE ACCOMMODATION OF UTILITIES ON HIGHWAY RIGHT OF WAY AND ADJUSTMENT AND RELOCATION OF UTILITY FACILITIES ON HIGHWAY PROJECTS AND SUBJECT TO D.O.H. APPROVAL. EVIDENCE OF PROPER COMPACTION BY TESTING WILL BE THE RESPONSIBILITY OF THE CONTRACTOR. THE TESTING SHALL BE ONE (1) PER DAY OR EVERY 500 LINEAL FEET OR AS DETERMINED BY THE DISTRICT MANAGER (ENGINEER) OR HIS AUTHORIZED REPRESENTATIVE.
9. UTILITY LINES SHALL BE PLACED EITHER AROUND, UNDER OR OVER DRAINAGE CULVERTS AS SHOWN ON PLANS.
10. AGGREGATE SHOULDER STONE IS TO BE PLACED ON THE SHOULDER AT A THICKNESS EQUAL TO 6" OR ITS ORIGINAL THICKNESS WHICHEVER IS GREATER. PAVED SHOULDERS WILL BE PAVED.
11. MAGNETIC MARKING TAPE SHALL BE INSTALLED AT A DEPTH OF 12" TO 18" BELOW THE SURFACE AND ALONG THE LINE PIPE.
12. REPAIR TO DRIVEWAYS ON W.V.D.O.H. RIGHT OF WAYS SHALL CONFORM TO THE APPROPRIATE W.V.D.O.H. TYPICAL REPAIR DETAIL.
13. CLEANUP WILL BE ACCOMPLISHED DAILY. RIGHT OF WAYS SHALL CONFORM TO THE APPROPRIATE W.V.D.O.H. REPAIR. ALL CULVERTS AND DRAINAGE DITCHES SHALL BE OPEN AND MAINTAINED DURING CONSTRUCTION. SHOULDERS WILL BE RESTORED AND STABILIZED WITH STONE DAILY WITH APPROPRIATE STONE AT THE DISCRETION OF W.V.D.O.H.
14. ALL DISTURBED AREAS SHALL BE SEEDED AND MULCHED WITHIN SEVEN DAYS OF COMPLETION OF BACK FILL OPERATION.
15. NO EXCESS EXCAVATION MATERIAL SHALL BE WASTED ON W.V.D.O.H. RIGHT OF WAYS WITHOUT THE AGREEMENT OF THE W.V.D.O.H.
16. THE W.V.D.O.H. RESERVES THE RIGHT TO RELOCATE WATERLINES, FIRE HYDRANTS, AND VALVES AS DEEMED NECESSARY.
17. THE CONTRACTOR IS RESPONSIBLE FOR CONTACTING UTILITY COMPANIES, PRIOR TO CONSTRUCTION TO OBTAIN UTILITY LOCATIONS AND PERFORMING EXPLORATORY WORK TO DETERMINE SUBSURFACE MATERIALS AND STRUCTURES THAT MAY AFFECT ITS WORK. PRIOR TO THE START OF ANY WORK WITHIN STATE HIGHWAY RIGHT-OF-WAY, THE CONTRACTOR SHALL GIVE THE WEST VIRGINIA DEPARTMENT OF TRANSPORTATION 48 HOURS NOTICE.
18. THE CONTRACTOR IS RESPONSIBLE FOR ANY OFFSITE DISPOSAL. DISPOSAL SHALL BE TO AN ACCEPTABLE LEGAL SITE. CONTRACTOR IS RESPONSIBLE FOR EROSION CONTROL AT DISPOSAL SITES.
19. ALL ELEVATION GRADES AND DISTANCES SHALL BE CHECKED AND VERIFIED BY THE CONTRACTOR AT THE SITE PRIOR TO CONSTRUCTION.
20. ALL CONSTRUCTION SHALL MAINTAIN 5' FROM EDGE OF PAVEMENT OR BOTTOM OF DITCH UNLESS NO OTHER PRACTICAL MEANS OF CONSTRUCTION EXISTS.
21. PERFORM ACCEPTABLE REPAIR OF ANY AND ALL SUB-BASE FAILURES THAT ARE CAUSED BY THE CONTRACTOR'S OPERATION ON A DAILY BASIS.
22. PERFORM TOTAL REPAIR AND/OR REPLACEMENT OF ANY DAMAGED ASPHALT SURFACE AS DETERMINED BY THE W.V.D.O.H REPRESENTATIVE.
23. PRIOR TO ANY CONSTRUCTION, THE CONTRACTOR SHALL MAKE A COMPLETE VIDEO SHOWING THE ROAD SURFACE OF ALL ROADS TO BE UTILIZED AND PRESENT IT TO THE UTILITY SUPERVISOR W.V.D.O.H.
24. REMOVE DITCH-LINE OBSTACLES AND/OR RECONSTRUCTION OF THE DITCH-LINE.
25. IN THE CASE OF MANHOLES OR VALVES IF AT ALL POSSIBLE SHALL BE PLACED OUTSIDE THE ROADWAY, SHOULDER, OR DITCH LINE IF PLACED IN THE SHOULDER THERE IS TO BE A MINIMUM OF 6 INCHES OF COVER IN THE DITCH LINE THERE IS TO BE 12 INCHES OF COVER BETWEEN THE MANHOLE AND THE INVERT OF THE DITCH.
26. ANY MANHOLES OR VALVES OR VALVE BOXES PLACED IN THE ROADWAY WILL BE ON THE SAME PLANE AS THE ROADWAY AND SET FLUSH WITH ROADWAY.
27. ANY ROADS REQUIRING AN H.L.B.C. OVERLAY, FULL WIDTH OR PARTIAL, SHALL HAVE SHOULDER STONE FROM AN APPROVED SOURCE PLACED AS PER D.O.H. SPECIFICATIONS.
28. THE DEPARTMENT OF HIGHWAYS REQUIRES THERE BE NO WORK WITHIN THE DEPARTMENT'S RIGHT-OF-WAY DURING SNOW AND ICE REMOVAL. THERE MAY BE EXCEPTIONS FOR EMERGENCY AND CASE CASE BY CASE SITUATIONS WITH NOTIFICATION TO THE DEPARTMENT.

UTILITY AGENCIES SERVING AREA

MISS UTILITY
1-800-245-4848
TICKET # 2223868992, 2223866997, 222387009
WEST VIRGINIA DIVISION OF HIGHWAYS
W.DOH DIST #4
P.O. BOX 4220
CLARKSBURG, WV 25031-4220
(304) 842-1500
(304) 842-1564 FAX
LACY PRATT - UTILITY SUPERVISOR - CROSSINGS
TARA CARDER - PERMIT SUPERVISOR - TEMP. ACCESSES
POWER
MGN POWER
1-800-686-0022
CABLE
AT&T
1-304-216-4100
TELEPHONE
VERIZON TELECOMMUNICATIONS
1-800-275-2355
RESPONSE TEAMS:
NATIONAL RESPONSE CENTER FOR REPORTING
CHEMICAL OR OIL SPILLS
1-800-424-8802
STATE EMERGENCY SILL
NOTIFICATION
1-800-642-3074
EMERGENCY AMBULANCE, FIRE, LAW ENFORCEMENT
911

Table with 5 columns: STATION, LAT, LONG, DESCRIPTION, PLAN SHEET #. Lists gas line crossings with details like EX. 100' GAS LINE (SIZE UNKNOWN) and EX. 12" POLY GAS LINE (OWNER UNKNOWN).

DRAWING INDEX

Table with 2 columns: NO., DESCRIPTION. Lists drawing sheets including COVER SHEET, GENERAL NOTES SHEET, INDEX SHEETS, PROPOSED ALIGNMENT PLAN AND PROFILE SHEETS, ACCESS ROAD PLAN SHEETS, HYDROSTATIC PROFILE SHEET, STREAM & WETLAND CROSSING SHEETS, ESP DETAIL SHEETS, and CULVERT & CHANNEL REPORT SHEETS.

GENERAL NOTES

- 1. EXISTING UTILITIES SHOWN ON PLANS WHERE EVIDENCE HAS BEEN FOUND OR PROVIDED BY LOCAL UTILITIES. EXACT DEPTH AND LOCATION OF UTILITY LINES NOT KNOWN, CONTRACTOR TO VERIFY UTILITY LOCATIONS PRIOR TO CROSSING BY CONTACTING MISS UTILITY AT 1-800-245-4848 AND LOCAL UTILITY COMPANIES AS LISTED AND/OR NOT LISTED ON THIS SHEET. CONTRACTOR TO LOCATE WATER AND UTILITY SERVICES BEFORE BORING AND JACKING.
2. IN THE EVENT AN ERROR WITH THE PLANS SEEMS APPARENT, THE MATTER MUST BE TAKEN UP WITH THE ENGINEER FOR REVIEW BEFORE PROCEEDING WITH CONSTRUCTION.
3. ALL PERMITS MUST BE SECURED PRIOR TO CONSTRUCTION.
4. THE CONTRACTOR SHALL COORDINATE ALL STREAM CROSSING INSTALLATIONS PROPOSED SO NOT TO DELAY THE CONSTRUCTION PROCESS. STREAM CROSSINGS ARE TO BE CONSTRUCTED USING AN OPEN CUT CROSSING METHOD UNLESS OTHERWISE SPECIFIED ON THE PLANS.
5. ALL PROPOSED PERMANENT FILL TO BE FILLED WITH STONE, NATURAL ROCK, OR A 20" CULVERT TO BE INSTALLED TO MAINTAIN STREAM FLOW.
6. ALL WOOD ROAD CROSSINGS TO BE CONSTRUCTED USING AN OPEN CUT CROSSING METHOD UNLESS OTHERWISE SPECIFIED ON THE PLANS. WOOD TO BE NOTIFIED AT LEAST 48 HOURS PRIOR TO ANY WORK WITHIN WOOD R/W.
7. ALL CONSTRUCTION TO BE DONE IN THE PROPOSED PIPELINE LIMITS OF DISTURBANCE AS SHOWN.
8. ALL CONSTRUCTION SHALL CONFORM TO THE APPLICABLE STANDARDS AND SPECIFICATIONS PROVIDED IN A SEPARATE BOUND VOLUME.
9. CONTRACTOR SHALL FIELD VERIFY EXISTING PIPE TYPES AND O.D. PRIOR TO CONNECTION.
10. PROPERTY LINES SHOWN ON PLANS WERE OBTAINED FROM PARTIAL FIELD SURVEY AND RESEARCHED INFORMATION TAKEN FROM VARIOUS RECORDS ON FILE IN THE LOCAL COUNTY COURTHOUSE. TO OBTAIN A MORE ACCURATE BOUNDARY LINE LOCATION, A FULL PROPERTY SURVEY IS RECOMMENDED.
EROSION & SEDIMENT CONTROL NOTES
1. ALL EROSION AND SEDIMENT MEASURES TO BE IN ACCORDANCE WITH WEST VIRGINIA ONLINE BMP MANUAL FOR STANDARD GUIDELINES AND SPECIFICATIONS AVAILABLE AT: HTTPS://APPS.DEP.WV.GOV/DWM/STORMWATER/BMP/INDEX.HTM
2. EROSION AND SEDIMENT CONTROL MEASURES HAVE BEEN SHOWN ON PLANS AND DETAILED IN SPECIFICATIONS.
3. EXPOSED SOILS SHALL BE STABILIZED BY APPLICATION OF EFFECTIVE BMPs THAT PROTECT THE SOIL FROM THE EROSION FORCES OF RAINDROPS, FLOWING WATER, AND WIND.
4. CLEARING AND GRUBBING IS TO OCCUR IN THE NOTED LIMITS OF DISTURBANCE (L.O.D.) ONLY.
5. ALL GRADED AREAS THAT ARE AT FINAL GRADE MUST BE SEEDED AND MULCHED WITHIN 7 DAYS AND AREAS THAT WILL NOT BE WORKED AGAIN FOR 21 DAYS OR MORE MUST BE SEEDED AND MULCHED WITHIN 7 DAYS. WHERE THE INITIATION OF STABILIZATION MEASURES BY THE SEVENTH DAY AFTER CONSTRUCTION ACTIVITY TEMPORARILY OR PERMANENTLY CEASES IS PRECLUDED BY SNOW COVER, STABILIZATION MEASURES SHALL BE INITIATED AS SOON AS CONDITIONS ALLOW. WHERE CONSTRUCTION ACTIVITY WILL RESUME ON A PORTION OF THE SITE WITHIN 21 DAYS FROM WHEN ACTIVITIES CEASED, (E.G., THE TOTAL TIME PERIOD THAT CONSTRUCTION ACTIVITY IS TEMPORARILY HALTED IS LESS THAN 21 DAYS) THEN STABILIZATION MEASURES DO NOT HAVE TO BE INITIATED ON THAT PORTION OF THE SITE BY THE SEVENTH DAY AFTER CONSTRUCTION ACTIVITIES HAVE TEMPORARILY CEASED.
6. AREAS WHERE THE SEED HAS FAILED TO GERMINATE ADEQUATELY (UNIFORM PERENNIAL VEGETATIVE COVER WITH A DENSITY OF 70% WITHIN 30 DAYS AFTER SEEDING AND MULCHING MUST BE RE-SEEDED IMMEDIATELY, OR AS SOON AS WEATHER CONDITIONS ALLOW.
7. TEMPORARY AND PERMANENT EROSION AND SEDIMENT CONTROL BMPs SHALL BE MAINTAINED AND REPAIRED AS NEEDED TO ASSURE CONTINUED PERFORMANCE OF THEIR INTENDED FUNCTION. MAINTENANCE AND REPAIR SHALL BE CONDUCTED IN ACCORDANCE WITH BMPs.
8. EROSION AND SEDIMENT CONTROLS BMPs SHALL BE INSPECTED AT LEAST ONCE EVERY SEVEN CALENDAR DAYS AND WITHIN 24 HOURS AFTER ANY STORM EVENT GREATER THAN 0.5 INCHES PER 24 HOUR PERIOD. ANY NECESSARY OR REQUIRED REPAIRS SHOULD BE MADE IMMEDIATELY. ANTHER HAS ONLINE ACCESS TO SEVERAL RAIN GAUGE LOCATIONS IN THE GENERAL AREA OF EACH WORK LOCATION. THIS DATA WILL BE MONITORED AND USED BY INSPECTION PERSONNEL. USE OF ONLINE WEATHER TRACKING TOOLS MAY BE UTILIZED. RAINFALL DATA WILL BE RECORDED ON INSPECTION RECORDS.

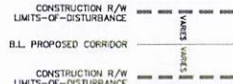
CONSTRUCTION SEQUENCE OF EVENTS

- 1. CALL MISS UTILITY (1-800-245-4848)
2. INSTALLATION OF EROSION AND SEDIMENT CONTROL MEASURES.
3. CONSTRUCTION OF PIPELINE WITH RESTORATIONS.
4. TESTING OF PIPELINE AND APPURTENANCES.
5. WORK CLOSE-OUT, FUNCH LIST, CLEAN UP, REPAIRS, FINAL SEEDING AND MULCHING, ETC...

LEGEND / ABBREVIATIONS

- EXISTING PIPELINE VENT
EXISTING GAS METER (AS NOTED)
EXISTING GAS METER
EXISTING PIPELINE MARKER
EXISTING GAS VALVE
EXISTING MONUMENT FOUND (AS NOTED)
EXISTING UTILITY POLE
EXISTING GATE / FENCE POST
EXISTING PIPELINE
EXISTING WATER LINE
EXISTING FENCE
EXISTING OVERHEAD UTILITY
EXISTING UNDERGROUND UTILITY
EXISTING TELEPHONE
EXISTING GUARDRAIL
EXISTING UNPAVED ROAD
EXISTING PAVED ROAD
EXISTING DITCH
EXISTING TREELINE
PROPERTY LINE
DOH RIGHT-OF-WAY LINE
PROPOSED PERMANENT RIGHT-OF-WAY
PROPOSED CONSTRUCTION RIGHT-OF-WAY/LIMITS-OF-DISTURBANCE
COMPRESSOR/WELL PAD LIMITS-OF-DISTURBANCE
PROPOSED ANTERO BASELINE
PROPOSED ANTERO GAS LINE
PROPOSED ANTERO BURIED WATER LINE
PROPOSED ANTERO SURFACE WATER LINE
EXISTING GROUND PROFILE
PROPOSED PIPELINE PROFILE
CONTOUR
AREA-OF-INTEREST
PROPOSED TYPE A BMP (SEE TABLE ON SHEET 22)
PROPOSED TYPE B BMP (SEE TABLE ON SHEET 22)
PROPOSED TYPE C BMP (SEE TABLE ON SHEET 22)
PROPOSED GRASS SAFETY FENCE
PROPOSED RIGHT-OF-WAY DIVERSION (PLAN)
PROPOSED ACCESS ROAD DITCH
PROPOSED CULVERT
DELINEATED CULVERT
DELINEATED STREAMS
DELINEATED STREAMS (PROPOSED PERMANENT FILL)
DELINEATED WETLANDS
DELINEATED WETLANDS (PROPOSED PERMANENT FILL)
DELINEATED GROUNDWATER SEEP/SPRING
ROLLED EROSION CONTROL PRODUCT (INDICATES AREAS WHERE SLOPE IS 3:1 OR GREATER)
ADDITIONAL TEMPORARY WORKSPACE
STONE CONSTRUCTION ENTRANCE
TEMPORARY TIMBERNAT CROSSING
PROPOSED ACCESS ROAD
PIPELINE MILE POST
PROPOSED RIGHT-OF-WAY DIVERSION (PROFILE)
PROPOSED EARTH TRENCH BREAKER (PROFILE)
PROPOSED FRENCH PUGH DRAIN (PROFILE)
PROPOSED GAS LINE MARKER
PROPOSED TEST STATION
43-3-4-311 - PARCEL IDENTIFICATION
\*LEGEND IS TYPICAL. NOT ALL ITEMS IN LEGEND APPEAR IN DRAWING.

PROPOSED CONSTRUCTION RIGHT-OF-WAY/LIMITS-OF-DISTURBANCE



GENERAL INFORMATION

- 1. ALL DESIGN, STRENGTH OF PIPELINE AND MAP CALCULATIONS ALONG WITH ROUTING WERE PREPARED BY ANTHER AND PROVIDED TO THRASHER AS PART OF THE ANTHER THRASHER AGREEMENT. ANTHER ASSUMES NO LIABILITY FOR THE CORRECTNESS OF THESE CALCULATIONS AND/OR ROUTE PROVIDED BY ANTHER.
2. FIELD DELINEATION PERFORMED AND PROVIDED BY: KLENFELDER, INC.
3. THIS SHEET IS INTENDED TO BE PLOTTED ON A8 1/2 (21" x 34") FOR REDUCTIONS. REFER TO GRAPHIC SCALE.



CRIMSON SOUTH SWL GENERAL NOTES

PROPOSED 18" HOPE SURFACE WATER LINE
OODRIDGE COUNTY, WEST VIRGINIA

DRAWN BY: JSD (TIG) DATE: 11/9/2022
CHECKED BY: TIS (TIG) DATE: 11/9/2022
SCALE: AS SHOWN
REVISION NO.: 3 SHEET: 02 - GNOTS

SUMMARY OF MATERIALS (3D)

Table with 4 columns: NO., DESCRIPTION, QTY, NO. Lists materials for the 3D summary.

SUMMARY OF MATERIALS (3D)

Table with 4 columns: NO., DESCRIPTION, QTY, NO. Lists materials for the 3D summary.

REVISION

Table with 4 columns: NO., DESCRIPTION, DATE, BY. Lists revisions to the drawing.



DATE: 11/09/2022
AFE # A11568

DATE: 11/9/2022 4:00 PM

DATE: 11/9/2022 4:00 PM







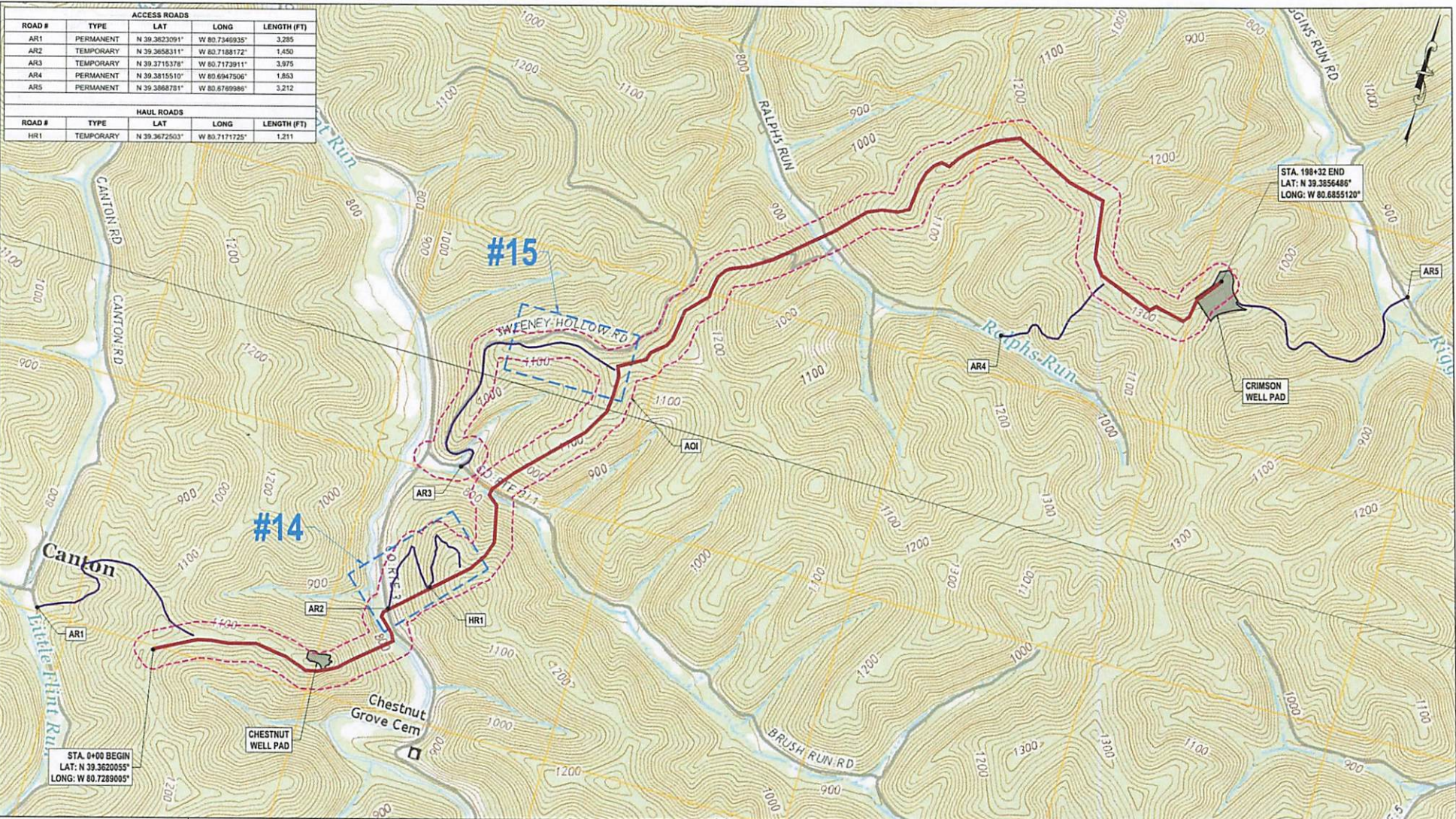




ACCESS ROADS				
ROAD #	TYPE	LAT	LONG	LENGTH (FT)
AR1	PERMANENT	N 39.2623091°	W 80.7346935°	3,285
AR2	TEMPORARY	N 39.2658311°	W 80.7188172°	1,450
AR3	TEMPORARY	N 39.3715378°	W 80.7172911°	3,975
AR4	PERMANENT	N 39.3815510°	W 80.6947596°	1,863
AR5	PERMANENT	N 39.3868781°	W 80.6789986°	3,212

HAUL ROADS				
ROAD #	TYPE	LAT	LONG	LENGTH (FT)
HR1	TEMPORARY	N 39.3672503°	W 80.7171725°	1,211



**THRASHER**

**IFP**  
ISSUED FOR PERMITTING

DATE: 11/09/2022  
AFE # A11568

0 600 1200  
HORIZ. SCALE IN FEET

SUMMARY OF MATERIALS (3D)		
NO.	DESCRIPTION	QTY.

SUMMARY OF MATERIALS (3D)		
NO.	DESCRIPTION	QTY.

REVISION		
NO.	DESCRIPTION	DATE
1	REVISED PER COMMENTS FROM NATIONAL	10/27/22 .JSL
2	REVISED PER COMMENTS FROM KLEINFELDER	11/3/22 .JSL
3	REVISED PER COMMENTS FROM ANTERO	11/9/22 .JSL

- GENERAL INFORMATION**
- ALL DESIGN, STRENGTH OF PIPELINE AND MAP CALCULATIONS ALONG WITH ROUTING WERE PREPARED BY ANTERO AND PROVIDED TO THRASHER FOR INCLUSION ON THE PLANS. THRASHER ASSUMES NO LIABILITY FOR THE CORRECTNESS OF THESE CALCULATIONS AND/OR ROUTE PROVIDED BY ANTERO.
  - FIELD DELINEATION PERFORMED AND PROVIDED BY KLEINFELDER, INC.
  - MAPPING SOURCE: CENTER POINT, WV USGS 7.5 MINUTE QUADRIANGLE DATED 2019  
SHERBORN, NY USGS 7.5 MINUTE QUADRIANGLE DATED 2014
  - COORDINATE SYSTEM USED FOR MAPPING AND TOPOGRAPHY:  
HORIZONTAL - NAD 83 NORTHERN STATE PLANE, NORTH ZONE, U.S. SURVEY FOOT  
VERTICAL - NAVD 83 (GEOIDAL) U.S. SURVEY FOOT
  - THIS SHEET IS INTENDED TO BE PLOTTED ON A83 D (21" x 34") FOR REDUCATIONS, REFER TO GRAPHIC SCALE.
  - FOR LEGEND/ABBREVIATION INFORMATION, REFER TO THE GENERAL NOTES SHEET.

**Antero**  
Midstream

**CRIMSON SOUTH SWL ACCESS ROAD INDEX SHEET**

PROPOSED 18" HDPE SURFACE WATER LINE  
DOORIDGE COUNTY, WEST VIRGINIA

DRAWN BY: JSL (TTC) DATE: 11/9/2022  
CHECKED BY: TTC (TTC) AFE NO.: A11568  
SCALE: AS SHOWN SHEET: 05 - AR-INDEX  
REVISION NO.: 3

LAYOUT: TBA, AR-INDEX, CAD FILE: R:\3000\3000-1830M-00-Antero-Crimson SWL A11568\Drawings\PLAN\INDEX SHEETS.dwg, PLOT DATE: /TMC, 11/9/2022, 4:31 PM, USER: jared.joshua







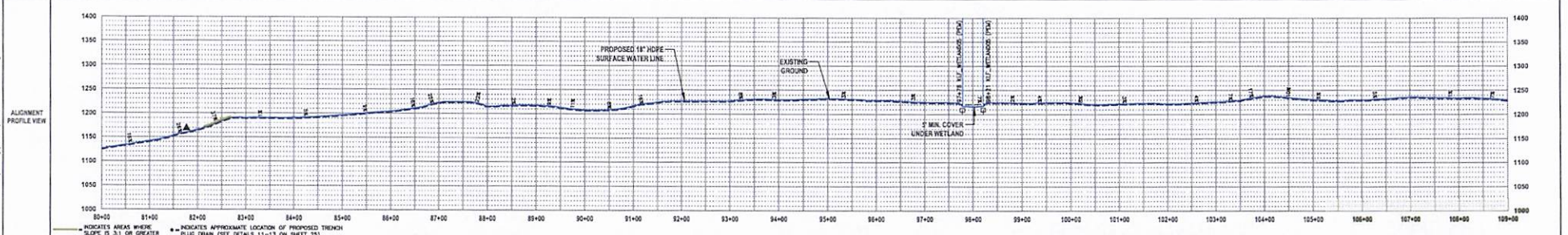
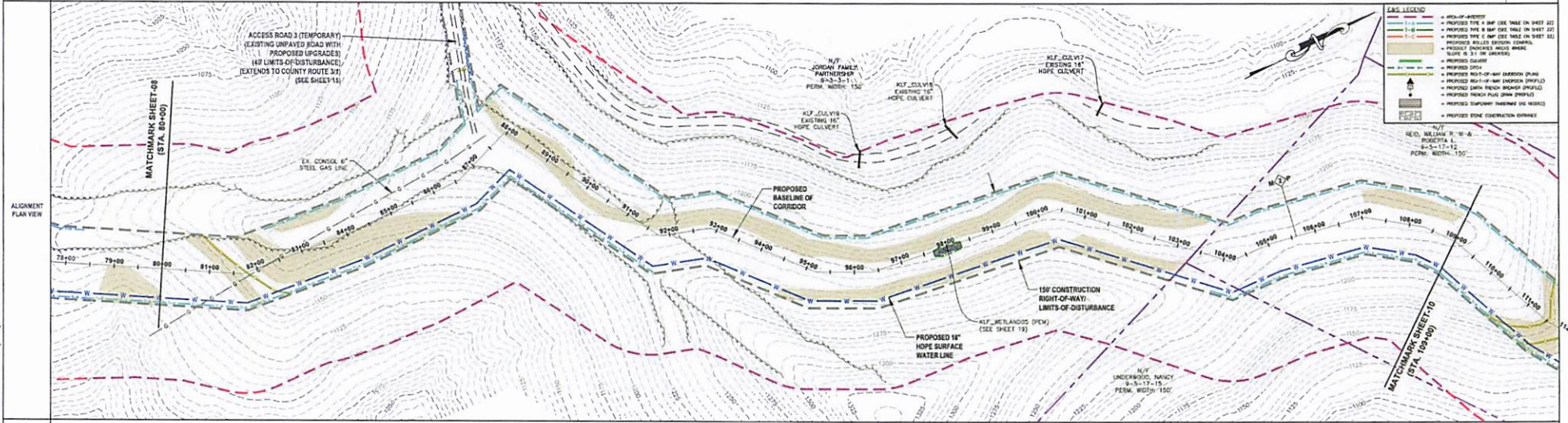








OWNERSHIP & PARCEL NO.	80+00	JORDAN FAMILY PARTNERSHIP 3-3-1 CONST. WIDTH: 150' PERM. WIDTH: 150'	103+00	80+00	104+00
P.I. DEFLECTION ANGLES	80+50			103+00	104+00



**THRASHER**

**IFP**  
ISSUED FOR PERMITTING

DATE: 11/09/2022  
AFE # A11568

0 100 200  
HORIZ. SCALE IN FEET  
0 100 200  
VERT. SCALE IN FEET

SUMMARY OF MATERIALS (3D)		
NO.	DESCRIPTION	QTY

SUMMARY OF MATERIALS (3D)		
NO.	DESCRIPTION	QTY

GENERAL INFORMATION		
1.	ALL DESIGN, STRENGTH OF PIPELINE AND MANIFOLD CALCULATIONS ALONG WITH FIELD DELINEATION PERFORMED AND PROVIDED BY: ALBERTUS, INC.	11/09/2022
2.	CONVERTED SYSTEM LINES FOR MARKING AND CONFORMANCE: HORIZONTAL - 1" = 40' BEST PRACTICE STATE PLANS, NORTH SINE, U.S. SURVEY FOOT	11/09/2022
3.	VERTICAL - 1" = 40' (EXISTING) U.S. SURVEY FOOT	11/09/2022
4.	ALL EXISTING SURFACE ELEVATIONS AND PROFILES TO BE BASED ON THE FINISHED CORRIDOR. IT IS NOT A DIRECT REPRESENTATION OF WHERE THE PIPELINE WILL BE INSTALLED. ELEVATIONS WITHIN THE PRINTED CORRIDOR WILL BE CORRECTED IN THE FIELD BY ANTERO CONSTRUCTION REPRESENTATIVE.	11/09/2022
5.	THE BOUNDARY MONUMENTS FOUND AND PROPERTY LINES SHOWN ON THIS SHEET WERE OBTAINED FROM PUBLIC RECORDS. FIELD SURVEY AND PRELIMINARY INFORMATION TAKEN FROM VARIOUS RECORDS ON FILE IN THE LOCAL COUNTY COURTHOUSE TO OBTAIN A MORE ACCURATE BOUNDARY AND LOCATION. A FULL PROPERTY SURVEY IS RECOMMENDED.	11/09/2022
6.	ALL EXISTING POWER AND HEAVY DUTY CABLES BEING CONSTRUCTION TO BE REPLACED BY CONTRACTOR POST-CONSTRUCTION.	11/09/2022
7.	SEE SHEETS 09 & 10 REGARDING MATERIALS. ALL MATERIALS TO BE INSTALLED IN ACCORDANCE WITH THE SIZES OF THE CALIBERS AND TYPES DESIGNATED ON ACCESS ROAD, CLEANOUT AND STORM SEWERS ARE BASED ON AVAILABLE HANDBOOKS AND ADOPTED PROPOSED ROAD SURFACE ELEVATIONS.	11/09/2022
8.	ALL SHEET BOUNDS EXCLUDING ALIGNMENT PLAN VIEW REFERENCE THE ALIGNMENT PROFILE VIEW.	11/09/2022
9.	THIS SHEET IS INTENDED TO BE PLOTTED ON A10 (22" x 34") FOR REDUCTIONS, REFER TO GRAPHIC SCALE.	11/09/2022
10.	FOR LEGEND/ABBREVIATION INFORMATION, REFER TO THE GENERAL NOTES SHEET.	11/09/2022

**Antero**  
Midstream

**CRIMSON SOUTH SWL  
STA. 80+00 TO STA. 109+00**

PROPOSED 18" HOPE  
SURFACE WATER LINE  
DODDRIIDGE COUNTY, WEST VIRGINIA

DATE: 11/09/2022  
CHECKED BY: TJE (TJE) AFE No.: A11568  
SCALE: AS SHOWN  
REVISION No.: 3

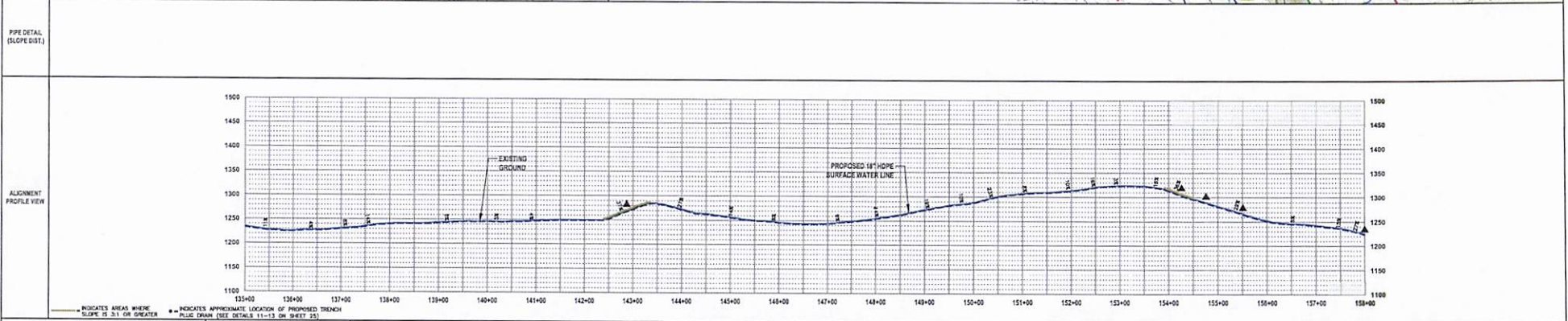
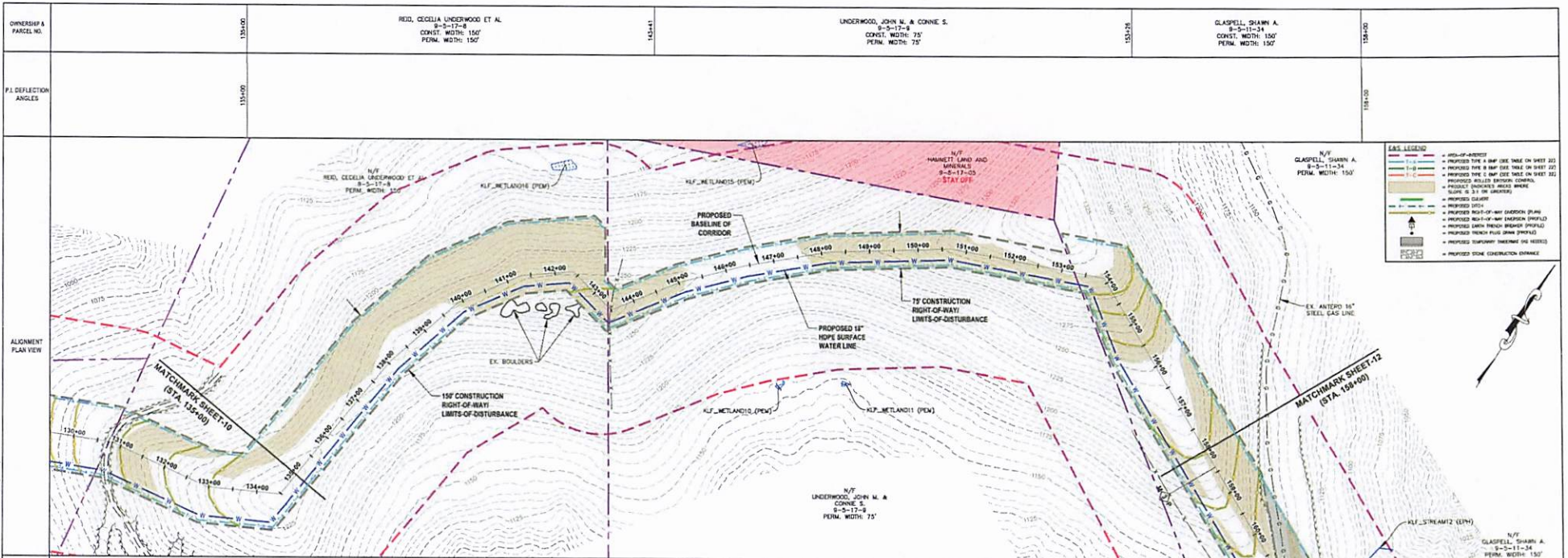
SHEET: 09 - PLAN 4

USER: jrdm\jrdm  
 PLOT DATE/TIME: 11/9/2022 4:02 PM  
 CADD FILE: R:\0501050-11568-00-Antero\_Crimson\_SWL\_A11568\Drawings\PLAN\PLAN SHEETS 1-4.dwg









**THRASHER**

**IFP**  
ISSUED FOR PERMITTING

DATE: 11/09/2022  
AFE # A11568

1" = 100'  
0" 100' 200'

1" = 100'  
0" 100' 200'

INDICATES AREAS WHERE SLOPE IS 3:1 OR GREATER

INDICATES APPROXIMATE LOCATION OF PROPOSED TRENCH PLUS DRAIN (SEE DETAILS 11-13 ON SHEET 21)

SUMMARY OF MATERIALS (3D)			
NO.	DESCRIPTION	QTY	NO.

SUMMARY OF MATERIALS (3D)			
NO.	DESCRIPTION	QTY	NO.

- GENERAL INFORMATION**
- ALL DESIGN STRENGTH OF PIPELINE AND MANIFOLD CALCULATIONS ALONG WITH ROUTING WERE PROVIDED BY ANTERO AND PROVIDED TO THRASHER FOR INCLUSION ON THE PLAN. THRASHER ASSUMES NO LIABILITY FOR THE CORRECTNESS OF THESE CALCULATIONS AND/OR SCALE PROVIDED BY ANTERO.
  - PORTIONS OF THE PIPELINE RIGHT-OF-WAY LOCATED WITHIN WELL PAD LIMITS-OF-DISTURBANCE COVERED UNDER WELL PAD PERMIT AS WELL AS EXISTING PIPELINE LIMITS-OF-DISTURBANCE SHALL OUP WITH THE WORK.
  - FIELD CALCULATION PERFORMED AND PROVIDED BY KLEINFELDER, INC.
  - COORDINATE SYSTEM USED FOR MARKING AND TOPOGRAPHY: NAD 83 - 2011 AS PER WEST VIRGINIA STATE PLAT, NORTH ZONE, NAD 83 - 2011 (GEOIDAL) U.S. SURVEY FOOT
  - ALL ELEVATIONS SHOWN IN HORIZONTAL AND VERTICAL TO THE BASELINE OF THE PERMITTED CORNER. IT IS NOT A DIRECT REPRESENTATION OF WHERE THE PIPELINE WILL BE INSTALLED, INSTALLATION WITHIN THE PERMITTED CORNER REPRESENTATIVE.
  - THE BOUNDARY SURVEYS FOUND AND PROPERTY LINES SHOWN ON THIS DRAWING WERE OBTAINED FROM PHYSICAL FIELD SURVEY AND RECORDED INFORMATION TAPED FROM VARIOUS RECORDS ON FILE IN THE LOCAL COUNTY COURTHOUSE. TO OBTAIN A MORE ACCURATE BOUNDARY LINE LOCATION, A SURVEY SHOULD BE CONDUCTED.
  - ALL EXISTING FENCES AND MARKS DETERMINED DURING CONSTRUCTION TO BE REPLACED BY CONTRACTOR AND MAINTAINED.
  - SEE SHEET 11-B FOR RELEVANT WATERWAYS, CULVERTS AND OTHERS TO BE INSTALLED ON ACCESS ROADS. SEE SHEET 21 FOR CULVERT AND OTHER STRUCTURES ON ACCESS ROADS. CULVERT AND OTHER DETAILS ARE BASED ON AVAILABLE SURVEY AND AVAILABLE PROPOSED ROAD SURFACE ELEVATIONS.
  - ALL SHEET BARRIERS INCLUDING ALIGNMENT PLAN VIEW REFER TO THE ALIGNMENT PROFILE VIEW.
  - THIS SHEET IS INTENDED TO BE PLOTTED ON A11568 (24" x 36") FOR REDUCING, WITH TO SHARING SCALE.
  - FOR LEGAL/APPROPRIATION INFORMATION, REFER TO THE GENERAL NOTES SHEET.

**Antero**  
Midstream

**CRIMSON SOUTH SWL  
STA. 135+00 TO STA. 158+00**

PROPOSED 18" HDPE  
SURFACE WATER LINE

DOODRIDGE COUNTY, WEST VIRGINIA

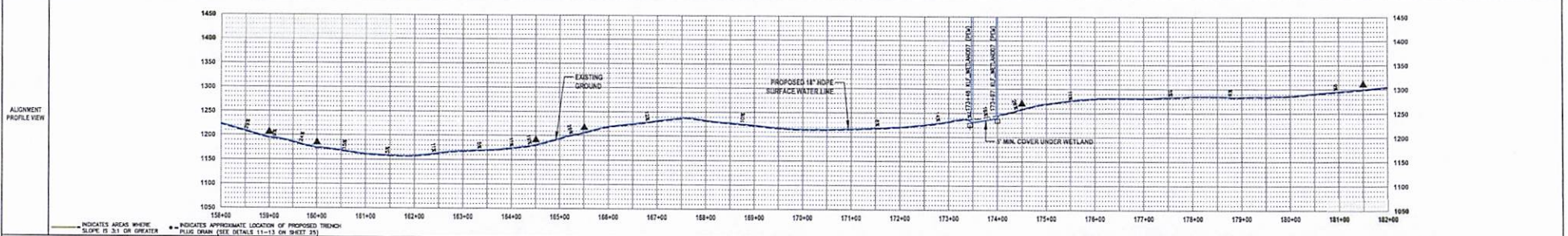
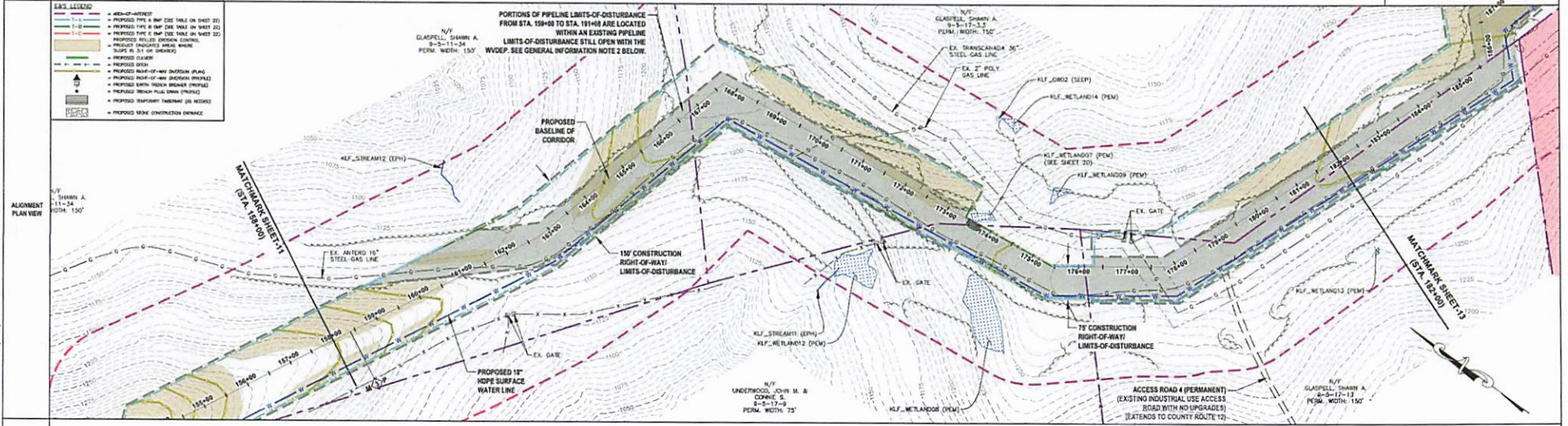
CREATED BY: JGU (TIG) DATE: 11/9/2022  
CHECKED BY: TIG (TIG) AFE No.: A11568  
SCALE: AS SHOWN SHEET: 11 - PLANG  
REVISION No.: 3

LAYOUT DATE: PLANG 11/09/2022 4:03 PM  
 PLOT DATE/TIME: 11/09/2022 4:03 PM  
 USER: jgu@antero.com  
 PROJECT: C:\Users\jgu\AppData\Local\Temp\1111111111\PLANS\PLAN SHEETS 5-8.dwg



OWNER'S & PARCEL NO.	158+00	GLASPELL, SHAWN A. 8-21-11-24 CONST. WIDTH: 150' PERM. WIDTH: 150'	159+00	GLASPELL, SHAWN A. 8-21-11-24 CONST. WIDTH: 150' PERM. WIDTH: 150'	173+11	UNDERWOOD, JOHN M. & CONNIE S. 8-21-11-24 CONST. WIDTH: 75' PERM. WIDTH: 75'	179+12	GLASPELL, SHAWN A. 8-21-11-24 CONST. WIDTH: 150' PERM. WIDTH: 150'	179+45	GLASPELL, SHAWN A. 8-21-11-24 CONST. WIDTH: 150' PERM. WIDTH: 150'	182+00
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P.I. DEFLECTION ANGLES	158+00		159+00		173+11		179+12		179+45		182+00
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**IFP**  
ISSUED FOR PERMITTING

DATE: 11/09/2022  
AFE # A11568

0 50 100 200  
HORIZ. SCALE IN FEET  
1" = 100'

0 10 20  
VERT. SCALE IN FEET  
1" = 10'

SUMMARY OF MATERIALS (3D)			SUMMARY OF MATERIALS (3D)		
NO.	DESCRIPTION	QTY	NO.	DESCRIPTION	QTY
<b>REVISION</b>					
1	REVISED PER COMMENTS FROM NATIONAL	10/26/2021 JCU			
2	REVISED PER COMMENTS FROM REDEVELOPER	11/27/20 JCU			
3	REVISED PER COMMENTS FROM ANTERO	11/9/20 JCU			

- GENERAL INFORMATION**
- ALL DESIGN, STRENGTH OF PIPELINE AND WAPP CALCULATIONS ALONG WITH THE PIPELINE PROFILE HAVE BEEN PROVIDED TO THE DIVISION OF HIGHWAY DESIGN AND CONSTRUCTION FOR REVIEW AND APPROVAL. THE DIVISION OF HIGHWAY DESIGN AND CONSTRUCTION ASSUMES NO LIABILITY FOR THE CORRECTNESS OF THESE CALCULATIONS AND/OR ROUTE PROVIDED BY ANTERO.
  - PORTIONS OF THE PIPELINE RIGHT-OF-WAY LOCATED WITHIN WELLS WILL FILL AND LIMITS-OF-DISTURBANCE CORRECTIONS WILL FILL PERMIT AS WELL AS EXISTING PIPELINE LIMITS-OF-DISTURBANCE SHALL OPEN WITH THE WELLS.
  - FIELD SURVEYING PERFORMED AND PROVIDED BY: REDEVELOPER, INC.
  - COORDINATE SYSTEM USED FOR DRAWING AND CONSTRUCTION: HORIZONTAL - NAD 83 WEST VIRGINIA STATE PLANE, NORTH ZONE, U.S. SURVEY FOOT; VERTICAL - NAVD 83 (GEOIDAL) U.S. SURVEY FOOT.
  - ALL EXISTING SURVEY IS NON-PATENTED AND PROVIDED TO THE BUREAU OF THE PRINTED CORRECTION. IT IS NOT A DIRECT REPRESENTATION OF WHERE THE PIPELINE IS INSTALLED, RECALCULATED WITHIN THE PRINTED CORRECTION REPRESENTATION.
  - THE NEIGHBORLY MONUMENTS FOUND AND PROPERTY LINES SHOWN ON THIS DRAWING HAVE BEEN OBTAINED FROM PUBLIC RECORDS AND FIELD SURVEY. INFORMATION TAKEN FROM PUBLIC RECORDS IS RELIED ON FOR THE LOCAL COUNTY COURTSIDE TO OBTAIN A MORE ACCURATE BOUNDARY LINE LOCATION, A FULL PROPERTY SURVEY IS RECOMMENDED.
  - ALL EXISTING POWER AND CABLES OPERATED DURING CONSTRUCTION TO BE REPLACED BY CONTRACTOR POST-CONSTRUCTION.
  - THE SHEETS TO BE SUBMITTED TO ANTERO, CLIENTS ARE ADVISED TO BE INSTALLED ON ACCESS ROADS (SEE SHEET 18) INCLUDING INTERSECTIONS TO BE INSTALLED ON ACCESS ROADS. SEE SHEETS 18 FOR DETAILS AND NOTES REGARDING ACCESS ROADS. CLIENTS AND OTHER DESIGNERS ARE ADVISED ON AVAILABLE MATERIALS AND ASSUMED PROPOSED ROAD SURFACE ELEVATIONS.
  - ALL SHEET BANDS EXCLUDING ALIGNMENT PLAN VIEW REFERENCE THE ALIGNMENT PROFILE VIEW.
  - THIS SHEET IS INTENDED TO BE PLOTTED ON A10 (11" x 17") FOR CONSTRUCTION. REFER TO GENERAL NOTES.
  - FOR LEGEND/ANNOTATION INFORMATION REFER TO THE GENERAL NOTES SHEET.

**CRIMSON SOUTH SWL STA. 158+00 TO STA. 182+00**

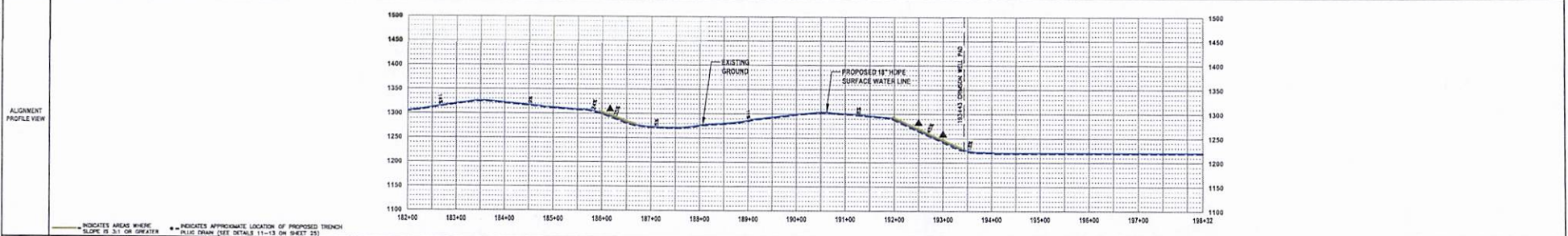
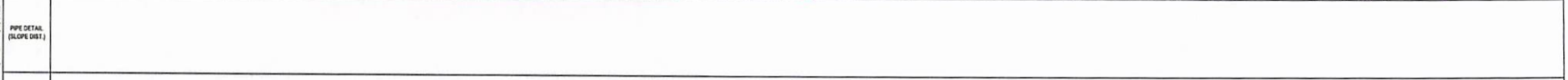
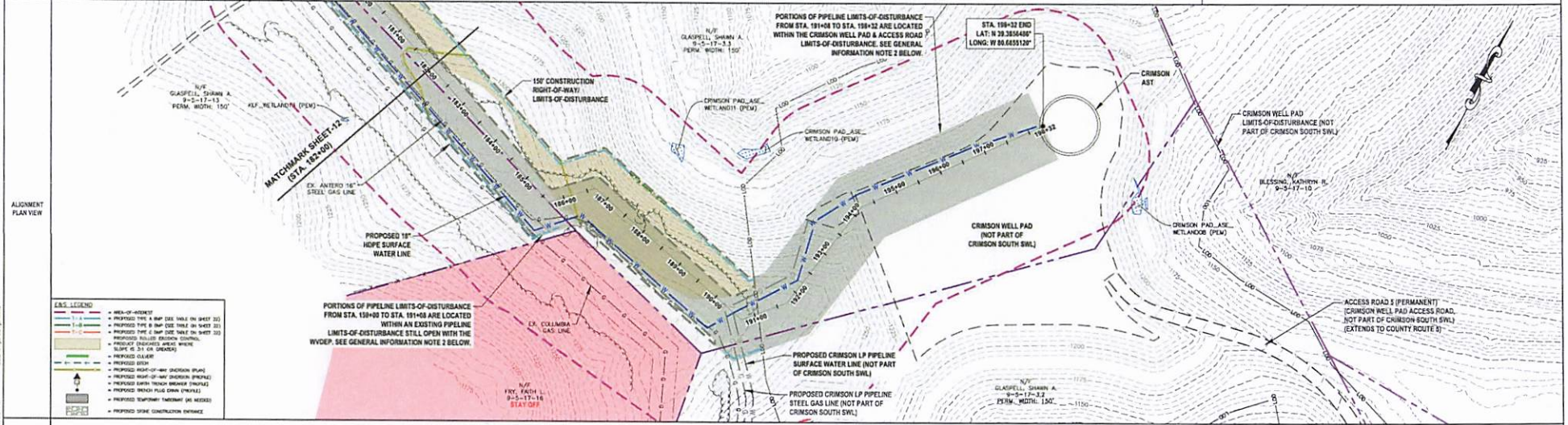
PROPOSED 18" HDPE SURFACE WATER LINE  
DOODRIDGE COUNTY, WEST VIRGINIA

DRAWN BY: JCU (TIG) DATE: 11/9/2022  
CHECKED BY: TIG (TIG) LFE, PAL: A11568  
SCALE: AS SHOWN  
REVISION No: 3 SHEET: 12 - PLAN/7

LAYOUT TITLE: PLAN/7  
 CAD FILE: S:\2020\158-182\158-182-00-Antero\_Crimson\_South\_SWL\_Plan\_Sheets\_5-8.dwg  
 PLOT DATE/TIME: 11/9/2022 4:03 PM  
 USER: jared.johnson



OWNERSHIP & PARCEL NO.	182+00	GLASPELL, SHAWN A. 8-17-12-23 CONST. WIDTH: 150' PERM. WIDTH: 150'	198+32
P.I. DEFLECTION ANGLES	182+00		198+32



**THRASHER**

**IFP**  
ISSUED FOR PERMITTING

DATE: 11/09/2022  
AFE # A11568

0 100 200  
HORIZ. SCALE IN FEET  
0 100 200  
VERT. SCALE IN FEET

SUMMARY OF MATERIALS (3D)		
NO.	DESCRIPTION	QTY

SUMMARY OF MATERIALS (3D)		
NO.	DESCRIPTION	QTY

GENERAL INFORMATION		
1.	ALL DESIGN STRENGTH OF PIPELINE AND WELDP CALCULATIONS ALONG WITH DESIGN OF WELDS SHALL BE PROVIDED TO THE PERMITTING AGENCY FOR REVIEW. THRASHER ASSUMES NO LIABILITY FOR THE CORRECTNESS OF THESE CALCULATIONS UNLESS SPECIFICALLY ADVISED BY ANTERO, U.S. SURVEY FOOT.	
2.	PORTIONS OF PIPELINE LIMITS-OF-DISTURBANCE WITHIN AN EXISTING PIPELINE LIMITS-OF-DISTURBANCE STILL OPEN WITH THE WYDEP. SEE GENERAL INFORMATION NOTE 2 BELOW.	
3.	FIELD CALCULATION PERFORMED AND PROVIDED BY: KLEINFELDER, INC.	
4.	COORDINATE SYSTEM USED FOR MARKING AND TOWNSHIP: HORIZONTAL - NAD 83 WEST VIRGINIA STATE PLANE, NORTH ZONE, U.S. SURVEY FOOT VERTICAL - NAVD 83 (GEOID), U.S. SURVEY FOOT	
5.	ALL ELEVATIONS SHOWN IN HORIZONTAL AND PROFILE ARE TO THE ADJACENT OF THE PERMITTED CONDUIT. IT IS NOT A DIRECT REPRESENTATION OF WHERE THE PIPELINE WILL BE INSTALLED. INSTALLATIONS WITHIN THE PERMITTED CONDUIT WILL BE COORDINATED IN THE FIELD BY ANTERO CONSTRUCTION REPRESENTATIVE.	
6.	THE BOUNDARY SURVEYS PLANS AND PROPERTY LINES SHOWN ON THIS SHEET HAVE BEEN OBTAINED FROM PUBLIC FILE SURVEY AND THE INFORMATION THEREIN SHALL BE RELIED UPON BY THE LOCAL COUNTY ENGINEER TO OBTAIN A MORE ACCURATE BOUNDARY LINE LOCATION, A FULL PROPERTY SURVEY IS RECOMMENDED.	
7.	ALL EXISTING TRENCHES AND ROAD STRUCTURES DURING CONSTRUCTION TO BE REPLACED BY CONTRACTOR POST-CONSTRUCTION.	
8.	SEE SHEETS 21 & 26 REGARDING MATERIALS, QUALITY AND OTHERS TO BE INSTALLED ON ACCESS ROADS. SEE SHEET 20 REGARDING MATERIALS TO BE INSTALLED ON ACCESS ROADS. DELIVERY AND STOCK DESIGNS ARE BASED ON AVAILABLE MATERIALS AND ASSUMED PROPOSED ROAD SURFACE ELEVATIONS.	
9.	ALL SHEET BOUNDS INCLUDING ALIGNMENT PLAN VIEW REFERENCE THE ALIGNMENT PROFILE VIEW.	
10.	THIS SHEET IS INTENDED TO BE PLOTTED ON A11568 (24" x 36") FOR REDUCTION, REFER TO GRAPHIC SCALE.	
11.	FOR LEGEND/ABBREVIATION INFORMATION REFER TO THE GENERAL NOTES SHEET.	

**Antero**  
Midstream

**CRIMSON SOUTH SWL  
STA. 182+00 TO STA. 198+32**

PROPOSED 18" HDPE  
SURFACE WATER LINE  
DODDORIDGE COUNTY, WEST VIRGINIA

DRAWN BY: JDU (TRG) DATE: 11/9/2022  
CHECKED BY: TRG (TIG) AFE No.: A11568  
SCALE: AS SHOWN  
REVISION No.: 3

SHEET: 13 - PLANS

LAYOUT TAB: PLANS  
 CAD FILE: R:\030350-11833-00-Access-Crimson-South-SWL-11833-00-PLANS\PLANS\PLANS SHEETS 8-13.dwg  
 PLOT DATE/TIME: 11/9/2022 4:03 PM  
 USER: jdu@antero.com



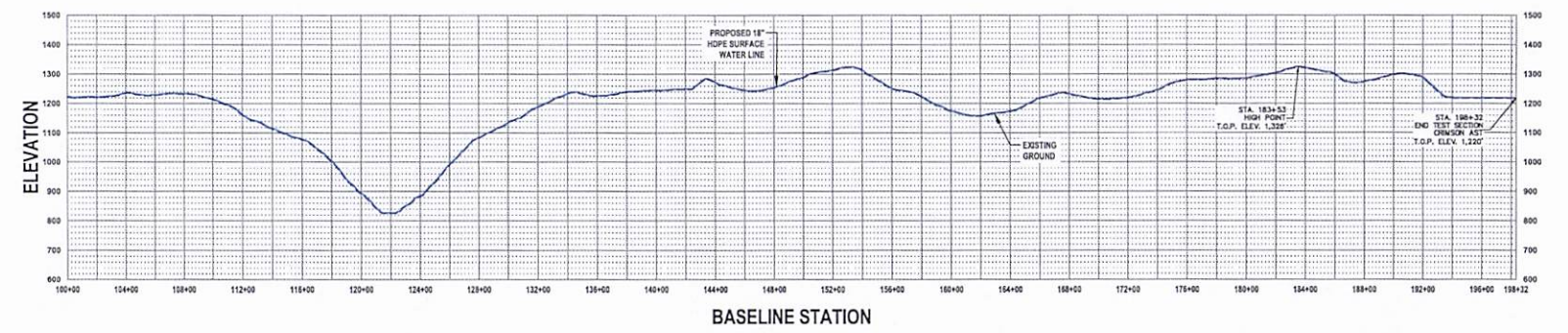
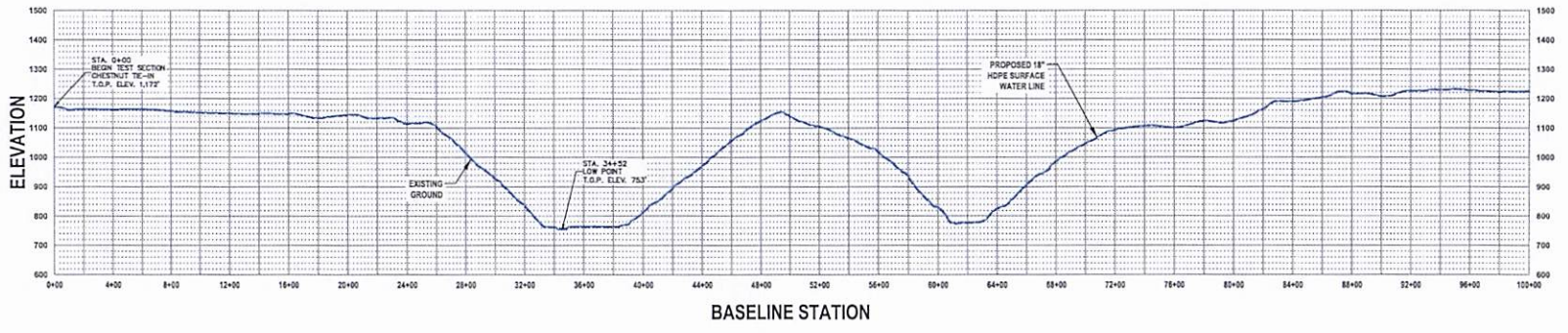








USER: jared\_johnson  
 PLOT DATE/TIME: 11/9/2022 4:04 PM  
 C:\p1\11\_09\_2022\11568\_00-Antero\_Crimson SWL\_A11568.dwg\PLANS\HYDROSTATIC PROFILE SHEET.dwg



HYDROSTATIC PROFILE	Station	Elevation (ft msd)
Start Point	0+00	1,172
Low Point	34+52	753
High Point	183+53	1,326
End Point	198+32	1,220
Differential		573 ft.
Static Head Pressure @ 753' Elevation		248 PSI
Overall Slope Length (3D)		20,491 ft.

**IFP**  
 ISSUED FOR PERMITTING  
 DATE: 11/09/2022  
 AFE # A11568

HORIZ. SCALE IN FEET: 1" = 400'  
 VERT. SCALE IN FEET: 1" = 400'

SUMMARY OF MATERIALS (3D)		
NO.	DESCRIPTION	QTY

SUMMARY OF MATERIALS (3D)		
NO.	DESCRIPTION	QTY

- GENERAL INFORMATION**
- ALL DESIGN, STRENGTH OF PIPELINE AND MAP CALCULATIONS ALONG WITH ROUTING WERE PREPARED BY ANTERO AND PROVIDED TO THRASHER FOR INCLUSION ON THE PLANS. THRASHER ASSUMES NO LIABILITY FOR THE CORRECTNESS OF THESE CALCULATIONS AND/OR ROUTE PROVIDED BY ANTERO.
  - REFER TO ANTERO MIDSTREAM PRESSURE TESTING PROCEDURE.
  - COORDINATE SYSTEM USED FOR MAPPING AND TOPOGRAPHY: HORIZONTAL - NAD 83 WEST VIRGINIA STATE PLUMB NORTH ZONE, U.S. SURVEY FOOT; VERTICAL - NAVD 83 (GEOID38), U.S. SURVEY FOOT.
  - ALL STATIONING SHOWN IS HORIZONTAL, AND PERTAINS TO THE BASELINE OF THE PERMITTED CORRIDOR. IT IS NOT A DIRECT REPRESENTATION OF WHERE THE PIPELINE WILL BE INSTALLED. INSTALLATION WITHIN THE PERMITTED CORRIDOR WILL BE COORDINATED IN THE FIELD BY ANTERO CONSTRUCTION REPRESENTATIVE.
  - THIS SHEET IS INTENDED TO BE PLOTTED ON A11 X 17" FOR REDUCTIONS, REFER TO GRAPHIC SCALE.

**CRIMSON SOUTH SWL HYDROSTATIC PROFILE**  
 PROPOSED 18" HDPE SURFACE WATER LINE  
 DODDRIDGE COUNTY, WEST VIRGINIA

DRAWN BY: JJJ (TIC) DATE: 11/9/2022  
 CHECKED BY: TIC (TIC) AFE No.: A11568  
 SCALE: AS SHOWN SHEET: 16 - HSP  
 REVISION No.: 3

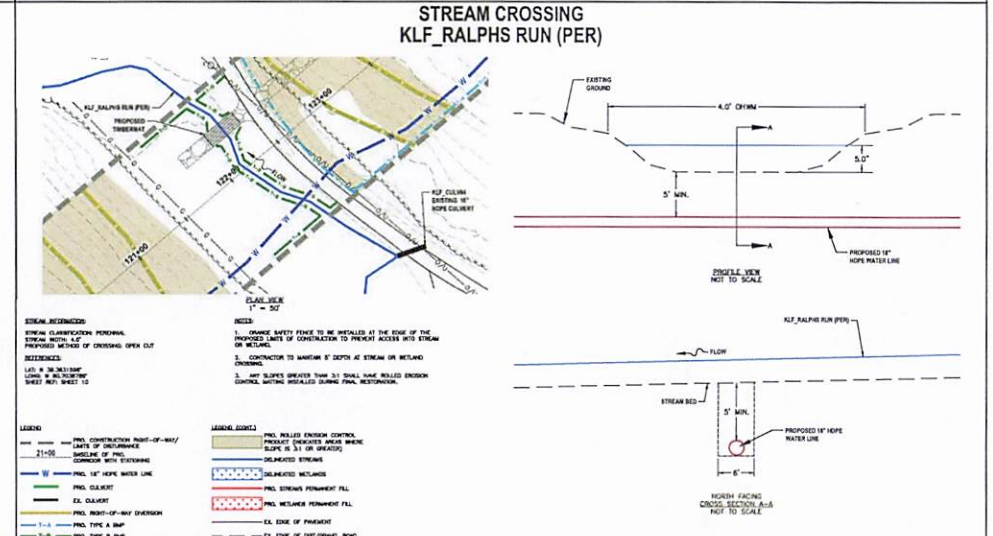
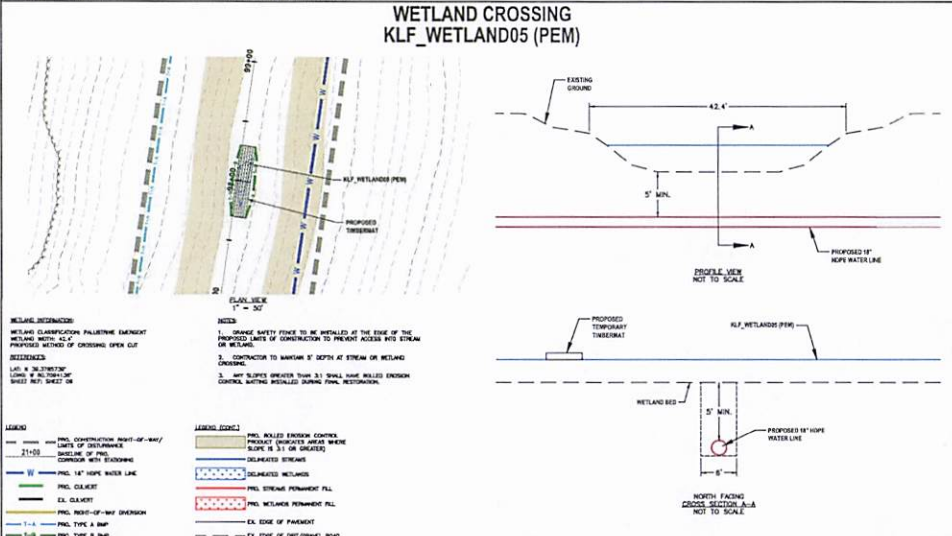
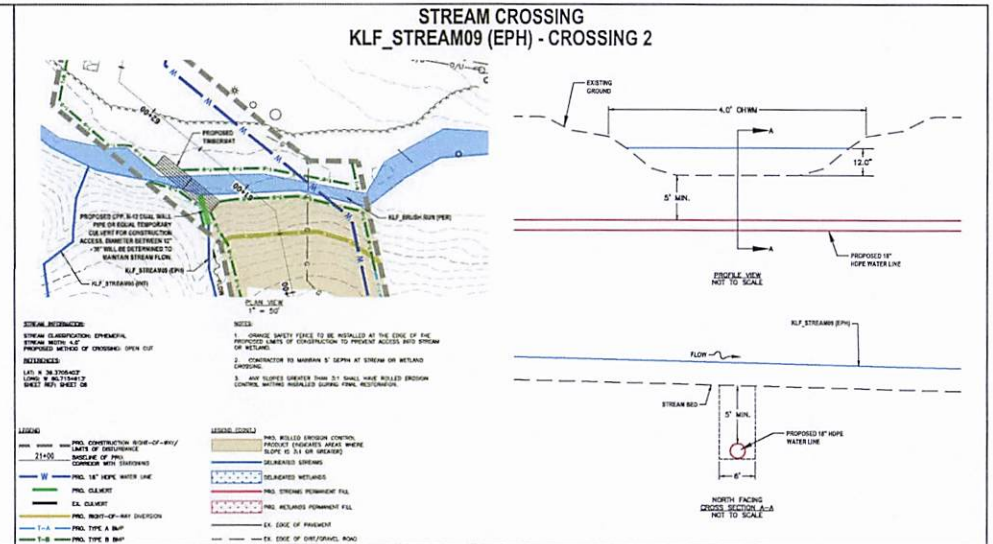
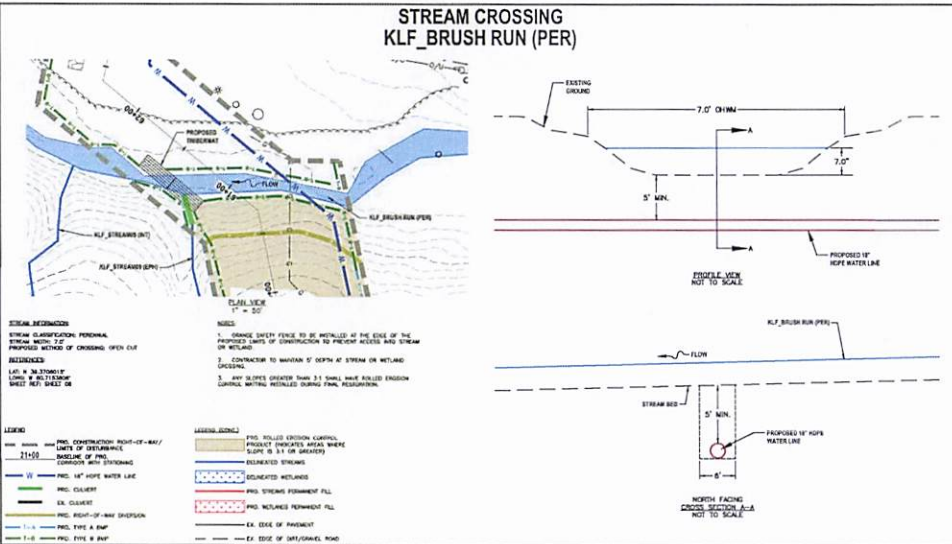








COUNTY: MONTGOMERY COUNTY, MISSISSIPPI  
 PROJECT: PROPOSED 18" HOPE SURFACE WATER LINE AND WETLAND CROSSINGS SHEETS  
 DATE: 11/09/2022  
 SHEET: 19 OF 34



**THRASHER**

**IFP**

ISSUED FOR PERMITTING

DATE: 11/09/2022

APE # A11568

SUMMARY OF MATERIALS (3D)		
NO.	DESCRIPTION	QTY

SUMMARY OF MATERIALS (3D)		
NO.	DESCRIPTION	QTY

GENERAL INFORMATION		
1.	ALL DESIGN, STRENGTH OF PIPELINE AND GANTRY CALCULATIONS ALONG WITH ROUTING WERE PREPARED BY ANTERO AND PROVIDED TO THRASHER FOR REVIEW ON THE PLANS. THRASHER ASSUMES NO LIABILITY FOR THE CORRECTNESS OF THESE CALCULATIONS AND/OR ROUTE PROVIDED BY ANTERO.	
2.	PORTIONS OF THE PIPELINE RIGHT-OF-WAY LOCATED WITHIN WELL PAD LIMITS-OF-DISTURBANCE COVERED UNDER WELL PAD PERMIT.	
3.	FIELD DELINEATION PERFORMED AND PROVIDED BY: KLEINFELDER, INC.	
4.	COORDINATE SYSTEM USED FOR MAPPING AND TOPOGRAPHY: HORIZONTAL - NAD 83 (GEOIDAL), U.S. SURVEY FOOT; VERTICAL - NA83 (GEOIDAL), U.S. SURVEY FOOT.	
5.	ALL ELEVATIONS SHOWN IS HORIZONTAL, AND PERTAINS TO THE BASELINE OF THE PERMITTED CORRIDOR. IT IS NOT A SHEET REPRESENTATION OF WHERE THE PIPELINE WILL BE INSTALLED. INSTALLATION WITHIN THE PERMITTED CORRIDOR WILL BE COORDINATED IN THE FIELD BY ANTERO CONSTRUCTION REPRESENTATIVE.	
6.	THIS SHEET IS INTENDED TO BE PLOTTED ON AVID 9 (24" x 34") FOR PRODUCTIONS. REFER TO GRAPHIC SCALE.	

**Antero**  
Midstream

**CRIMSON SOUTH SWL  
STREAM & WETLAND CROSSINGS**

PROPOSED 18" HOPE  
SURFACE WATER LINE  
DOODRIDGE COUNTY, WEST VIRGINIA

DRAWN BY: JLU (TTC) DATE: 11/9/2022  
 CHECKED BY: TIS (TTC) AFE No: A11568  
 SCALE: AS SHOWN  
 REVISION No: 3 SHEET: 19 -- S&WC3











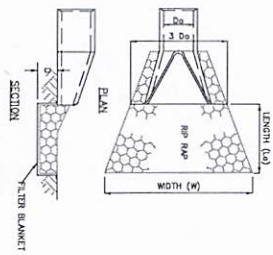






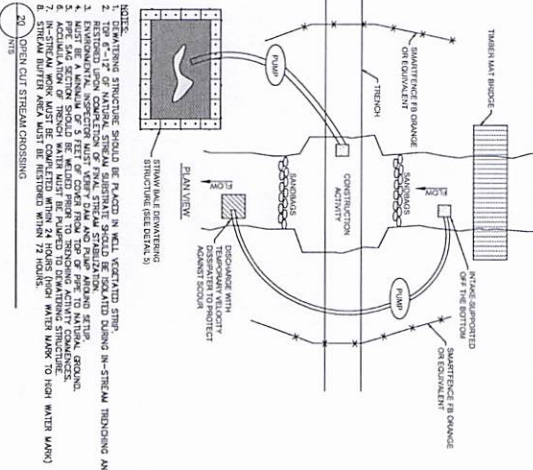




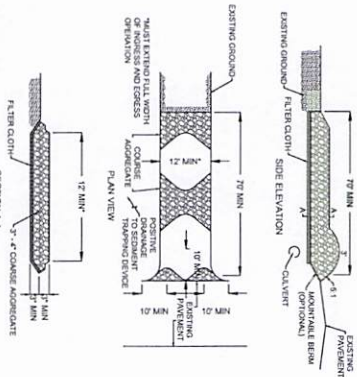


- NOTES:**
1. SEE PLAN AND SECTION FOR DIMENSIONS AND DETAIL FROM THE LEFT. EXTEND RIB RAP UP OTHER BANK ON OPPOSITE A MINIMUM OF 10 FEET.
  2. USE WOOD RIB RAP GALVANIZED AND FLAT. EXAMINE AND RECORD THE PERCENTAGE OF WEAR AND DAMAGE TO THE RIB RAP. A SUBSTITUTE NON-WOOD EQUIVALENT FACING, USED ACCORDING TO THE DESIGNER'S APPROVAL, MAY BE SUBSTITUTED FOR THE RIB RAP.
  3. RIB RAP SHALL BE 12" HIGH AND 12" WIDE.
  4. RIB RAP SHALL BE 12" THICK THE MAXIMUM STONE DIAMETER BUT NOT LESS THAN 6".

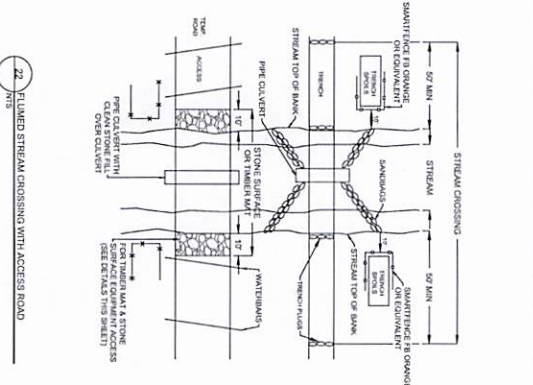
20 RIB RAP ANCHOR  
 NTS



21 FLUME PIPE CROSSING  
 NTS



22 FILMED STREAM CROSSING WITH ACCESS ROAD  
 NTS



23 OPEN CUT ROAD CROSSING  
 NTS

20 RIB RAP ANCHOR  
 NTS

21 FLUME PIPE CROSSING  
 NTS

22 FILMED STREAM CROSSING WITH ACCESS ROAD  
 NTS

23 OPEN CUT ROAD CROSSING  
 NTS

**THRASHER**

**IFP**

DESIGNED FOR PERMITTING

DATE: 11/09/2022  
 A/E # A11568

**SUMMARY OF MATERIALS (3D)**

NO.	DESCRIPTION	QTY	NO.	DESCRIPTION
1	WOOD RIB RAP GALVANIZED	1000	1	WOOD RIB RAP GALVANIZED
2	WOOD RIB RAP GALVANIZED	1000	2	WOOD RIB RAP GALVANIZED
3	WOOD RIB RAP GALVANIZED	1000	3	WOOD RIB RAP GALVANIZED

**SUMMARY OF MATERIALS (3D)**

NO.	DESCRIPTION	QTY	NO.	DESCRIPTION
1	WOOD RIB RAP GALVANIZED	1000	1	WOOD RIB RAP GALVANIZED
2	WOOD RIB RAP GALVANIZED	1000	2	WOOD RIB RAP GALVANIZED
3	WOOD RIB RAP GALVANIZED	1000	3	WOOD RIB RAP GALVANIZED

**GENERAL INFORMATION**

1. ALL DESIGN, DIMENSIONS, AND MATERIALS SHALL BE AS SHOWN UNLESS OTHERWISE NOTED. THE DESIGNER SHALL BE RESPONSIBLE FOR OBTAINING ALL NECESSARY PERMITS AND APPROVALS FROM THE LOCAL, STATE, AND FEDERAL AGENCIES. THE DESIGNER SHALL BE RESPONSIBLE FOR OBTAINING ALL NECESSARY PERMITS AND APPROVALS FROM THE LOCAL, STATE, AND FEDERAL AGENCIES. THE DESIGNER SHALL BE RESPONSIBLE FOR OBTAINING ALL NECESSARY PERMITS AND APPROVALS FROM THE LOCAL, STATE, AND FEDERAL AGENCIES.

**Antero**

CRIMSON SOUTH SWL  
 ESCP DETAILS

PROPOSED 18" HOPE  
 SURFACE WATER LINE  
 DOODRIDGE COUNTY, WEST VIRGINIA

DATE: 11/9/2022  
 A/E: JARED JENKINS  
 SCALE: AS SHOWN  
 SHEET: 26 - ESCP8

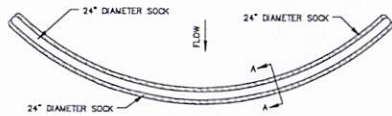




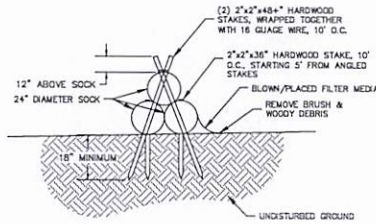






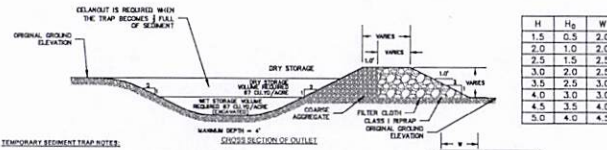


PLAN VIEW



SECTION A-A

42 TRIPLE STACK FILTER SOCK SEDIMENT TRAP  
NTS



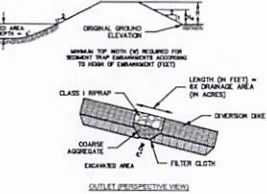
TEMPORARY SEDIMENT TRAP NOTES:

1. THE EXISTING SLOPE & GENERAL SCHEMATIC. THE CONTRACTOR SHALL DESIGN AND SIZE EACH TRAP ACCORDING TO THE EXISTING PLAN.
2. SEDIMENT TRAPS SHALL BE USED IN AREAS WHERE THE TOTAL CONTRIBUTING DRAINAGE AREA IS LESS THAN 5 ACRES.
3. FULL MATERIAL FOR ANY REQUIRED TRAP EMBANKMENT SHALL BE FREE OF ROOTS OR OTHER OBSTACLES. OBSTRUCTION, SUCH AS TREES, LARGE STONES, AND OTHER OBSTACLES SHALL BE REMOVED PRIOR TO CONSTRUCTION. THE EMBANKMENT SHALL BE CONSTRUCTED IN LAYERS OF 18 INCHES WITH CONSTRUCTION EQUIPMENT.
4. ANY SEDIMENT TRAP LAMB (EMBANKMENT) SHALL BE SEEDED WITH TEMPORARY VEGETATION IMMEDIATELY AFTER INSTALLATION.
5. CONSTRUCTION OPERATIONS SHALL BE CARRIED OUT IN SUCH A MANNER THAT EROSION AND WATER POLLUTION ARE MINIMIZED.
6. THE SEDIMENT TRAP SHALL BE REMOVED AND THE AREA RESTORED WHEN THE UP-SLOUT DRAINAGE AREA HAS BEEN STABILIZED.
7. ALL CUT AND FILL SLOPES FORMING THE SEDIMENT TRAP SHALL BE 3:1 OR FLATTER.
8. SEDIMENT SHALL BE REMOVED AND THE TRAP RESTORED TO ITS ORIGINAL DRAINAGE WHEN THE SEDIMENT HAS ACCUMULATED TO 50% OF THE VOLUME INDICATED BEHIND THE TRAP SHALL BE EXPOSED IN A SUITABLE AREA IN SUCH A MANNER THAT IT WILL NOT BLOCK AND CAUSE SEDIMENTATION PROBLEMS.
9. THE STRUCTURE SHALL BE DESIGNED REGULARLY TO ENSURE THAT IT IS STRUCTURALLY SOUND AND HAS NOT BEEN DAMAGED BY FLOODING OR CONSTRUCTION EQUIPMENT.
10. A TRAP (SPILLWAY CHANNEL) MAY BE NECESSARY IF A CONCENTRATED OUTLET FLOW IS ANTICIPATED.
11. FASTER STONE SHALL BE REGULARLY CHECKED TO ENSURE THAT EROSION PERFORMANCE IS MAINTAINED. STONE COVERED WITH SEDIMENT SHALL BE REMOVED AND CLEANED OR REPLACED.

NOTES:

TEMPORARY SEDIMENT TRAPS ARE ESSENTIALLY SMALL SEDIMENT PONDS. THEY GIVE THE WATER A PLACE TO POOL AND SLOW DOWN THIS REDUCES THE CHANCES OF ADDITIONAL EROSION WHILE ALLOWING ANY SEDIMENT IN THE WATER TO SETTLE OUT. THE OUTLET IS DESIGNED OUT OF GRAVELS OF DIFFERENT DIMENSIONS WHICH CREATES A FILTER AS WELL.

43 TEMPORARY SEDIMENT TRAP  
NTS



OUTLET (PERSPECTIVE VIEW)

NOTES:

ON MOST LOCATIONS ANTERO WILL ALSO CONSTRUCT EROSION AND SEDIMENT (EAS) CONTROLS ABOVE AND BEYOND THE EAS CONTROLS LISTED ON THE PLAN SHEETS. THESE CONTROLS WILL BE CATEGORIZED AS PHASE I, PHASE II, AND PHASE III CONTROLS. THESE CONTROLS WILL BE INSTALLED TO BOTH PROVIDE EXTRA EAS PROTECTION, AND TO ELIMINATE THE CHANCES OF MATERIALS SUCH AS SOIL OR GRAVEL BEING PLACED IN A STREAM OR WETLAND. THE SITE PLANS AND DELINEATIONS ARE REVIEWED AND THESE CONTROLS ARE SPECIFIED IN ANTERO'S CONSTRUCTION RELEASE WHICH IS SENT OUT JUST PRIOR TO CONSTRUCTION BEGINNING. THE PHASE I, II, AND III CONTROLS WILL BE CONSTRUCTED AS FOLLOWS:



PHASE I: THIS IS ESSENTIALLY ORANGE SAFETY FENCE LIKE SHOWN ABOVE. THIS MEASURE IS PUT IN PLACE TO LET CONTRACTORS KNOW THAT NO WORK IS TO TAKE PLACE BEYOND THIS POINT. THIS CONTROL IS TYPICALLY UTILIZED WHEN THERE IS A WETLAND OR STREAM LOCATED IN THE AREA BUT NOT WITHIN APPROXIMATELY 100 FEET OF THE DISTURBANCE.

44 SUPPLEMENTAL 404 CWA BMP CONTROLS  
NTS



PHASE II: THIS CONTROL CONSISTS OF TYPICAL SILT FENCE, SUPER SILT FENCE, OR FILTER SOCKS. THIS CONTROL WILL BE INSTALLED AS DESCRIBED IN THE PREVIOUS SECTIONS. THIS CONTROL WILL TYPICALLY BE USED WHEN WETLANDS OR STREAMS ARE LOCATED WITHIN 100 FEET OF THE DISTURBED AREA.

44 SUPPLEMENTAL 404 CWA BMP CONTROLS  
NTS



PHASE III: THIS CONTROL CONSISTS OF SUPER SILT FENCE WITH ORANGE CONSTRUCTION FENCE ACTING AS THE VISIBLE PORTION OF THE BARRIER. THIS CONTROL IS USED TO PREVENT SOILS OR GRAVELS FROM ENTERING STREAMS OR WETLANDS DURING CONSTRUCTION. THE SUPER SILT FENCE CAN BE USED IN CONJUNCTION WITH OTHER EAS METHODS. THIS CONTROL IS USED IN AREAS WHERE STREAMS OR WETLANDS ARE WITHIN APPROXIMATELY 50 FEET OF THE DISTURBED AREA.

\*NOTE THAT THE DISTANCES MENTIONED IN THE PHASE I, II, AND III CONTROLS ARE A GUIDELINE NOT A RULE FOR THE DECISION OF WHEN AND WHERE TO USE THESE CONTROLS.

44 SUPPLEMENTAL 404 CWA BMP CONTROLS  
NTS

DEFINITIONS:

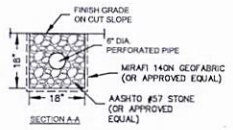
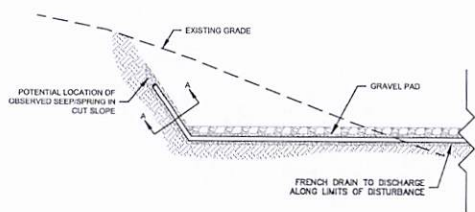
- RIP RAP - LOOSE STONE USED TO FORM A FOUNDATION FOR A BREAKWATER OR OTHER STRUCTURE. THIS STONE IS TYPICALLY 3 INCHES OR GREATER IN DIAMETER.
- FILTER CLOTH - TYPICALLY TYRAN OR ANOTHER SUCH MATERIAL (USUALLY WOVEN) WHICH IS DESIGNED TO ALLOW WATER TO FLOW BUT RETAIN SEDIMENT.
- AGGREGATE - TERM USED TO IDENTIFY ANY TYPE SOLID DENSE MATERIAL USED DURING CONSTRUCTION TYPICALLY GRAVELS, SANDS, AND STONES.
- EMBANKMENT - A WALL OR BANK OF EARTH OR STONE.
- CLASS I RIP RAP - TYPICAL RIP RAP WITH STONES OF A DIAMETER BETWEEN 8 AND 18 INCHES.

45 DEFINITIONS  
NTS

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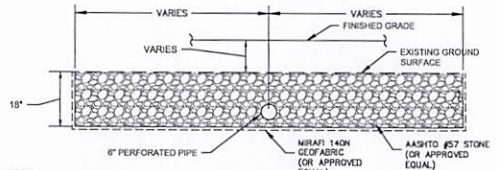
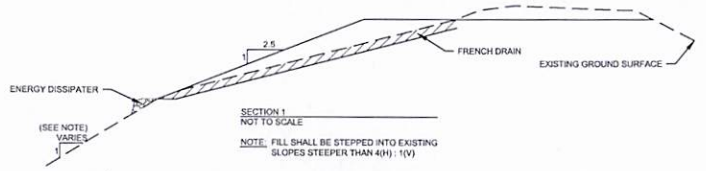
	<p>ISSUED FOR PERMITTING</p> <p>DATE: 11/09/2022</p> <p>AFE # A11568</p>	SUMMARY OF MATERIALS (3D)			SUMMARY OF MATERIALS (3D)			GENERAL INFORMATION																								
		<table border="1"> <thead> <tr> <th>NO.</th> <th>DESCRIPTION</th> <th>QTY</th> </tr> </thead> <tbody> <tr> <td> </td> <td> </td> <td> </td> </tr> <tr> <td> </td> <td> </td> <td> </td> </tr> <tr> <td> </td> <td> </td> <td> </td> </tr> </tbody> </table>			NO.	DESCRIPTION	QTY										<table border="1"> <thead> <tr> <th>NO.</th> <th>DESCRIPTION</th> <th>QTY</th> </tr> </thead> <tbody> <tr> <td> </td> <td> </td> <td> </td> </tr> <tr> <td> </td> <td> </td> <td> </td> </tr> <tr> <td> </td> <td> </td> <td> </td> </tr> </tbody> </table>			NO.	DESCRIPTION	QTY										<p>1. ALL DESIGN, STRENGTH OF PIPELINE AND WAP CALCULATIONS ALONG WITH ROUTING WERE PREPARED BY ANTERO AND PROVIDED TO THRASHER FOR INCLUSION ON THE PLANS. THRASHER ASSUMES NO LIABILITY FOR THE CORRECTNESS OF THESE CALCULATIONS AND/OR ROUTE PROVIDED BY ANTERO.</p> <p>2. THIS SHEET IS INTENDED TO BE PLOTTED ON AYS D (24" X 36") FOR REDUCTIONS, NEVER TO GRAPHIC SCALE.</p>
NO.	DESCRIPTION	QTY																														
NO.	DESCRIPTION	QTY																														
<p>CRIMSON SOUTH SWL ESCP DETAILS</p> <p>PROPOSED 18" HDPE SURFACE WATER LINE</p> <p>DOODRIDGE COUNTY, WEST VIRGINIA</p>		<table border="1"> <thead> <tr> <th>NO.</th> <th>DESCRIPTION</th> <th>QTY</th> <th>NO.</th> <th>DESCRIPTION</th> <th>QTY</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>REVISION FOR COMMENTS FROM NATIONAL</td> <td>01/09/2022</td> <td>1</td> <td>REVISION FOR COMMENTS FROM NATIONAL</td> <td>01/09/2022</td> </tr> <tr> <td>2</td> <td>REVISION FOR COMMENTS FROM NEWFORKER</td> <td>11/27/22</td> <td>2</td> <td>REVISION FOR COMMENTS FROM NEWFORKER</td> <td>11/27/22</td> </tr> <tr> <td>3</td> <td>REVISION FOR COMMENTS FROM ANTERO</td> <td>11/27/22</td> <td>3</td> <td>REVISION FOR COMMENTS FROM ANTERO</td> <td>11/27/22</td> </tr> </tbody> </table>			NO.	DESCRIPTION	QTY	NO.	DESCRIPTION	QTY	1	REVISION FOR COMMENTS FROM NATIONAL	01/09/2022	1	REVISION FOR COMMENTS FROM NATIONAL	01/09/2022	2	REVISION FOR COMMENTS FROM NEWFORKER	11/27/22	2	REVISION FOR COMMENTS FROM NEWFORKER	11/27/22	3	REVISION FOR COMMENTS FROM ANTERO	11/27/22	3	REVISION FOR COMMENTS FROM ANTERO	11/27/22	<p>DRAWN BY: JJJ (TJD) DATE: 11/9/2022</p> <p>CHECKED BY: TJD (TJD) AFE No.: A11568</p> <p>SCALE: AS SHOWN</p> <p>REVISION No.: 3 SHEET: 30 - ESCP10</p>			
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3	REVISION FOR COMMENTS FROM ANTERO	11/27/22	3	REVISION FOR COMMENTS FROM ANTERO	11/27/22																											





**NOTE:**  
IF EVIDENCE OF A SEEP/SPRING IN A CUT SLOPE IS OBSERVED, THE CONTRACTOR SHOULD INSTALL A FRENCH DRAIN PER DETAIL 36 ABOVE.

46 FRENCH DRAIN AT OBSERVED SEEP/SPRING IN CUT SLOPES  
NTS



**NOTES:**

- WHERE SPRINGS OR SEEPS ARE ENCOUNTERED DURING CONSTRUCTION, DRAINABLE FILL AND PERFORATED PIPES (FRENCH DRAINS) SHOULD BE INSTALLED TO PROVIDE A DRAINAGE PATH FOR SEEPAGE FROM THE EXISTING SLOPE.
- THE FRENCH DRAIN SHOULD CONSIST OF A 6 INCH DIAMETER PERFORATED PIPE SURROUNDED BY DRAINABLE FILL. INSTALLED IN AN 18 INCH DEEP TRENCH ALONG THE EXISTING DRAINAGE FEATURE OR SEEP. PRIOR TO DRAINABLE FILL PLACEMENT, THE TRENCH SHOULD BE LINED WITH A LAYER OF GEOFABRIC SUCH AS MRFA1 140N OR APPROVED EQUAL, WITH SUFFICIENT OVERLAP TO PROVIDE AN ENVELOP AROUND THE PIPE. TRENCH TO PREVENT THE MIGRATION OF FINES INTO THE FRENCH DRAIN.
- THE FRENCH DRAIN SHOULD DAYLIGHT BEYOND THE TOE OR SIDE OF THE SLOPE AND EXTEND UP TO THE CREST OF THE SLOPE TO FACILITATE DRAINAGE THROUGH THE FILL SECTION. THE AS-BUILT WIDTH OF THE FRENCH DRAIN SHOULD BE A FUNCTION OF THE WIDTH OF THE SPRING, SEEP OR DRAINAGE FEATURE OBSERVED DURING CONSTRUCTION.
- THE FRENCH DRAIN SHOULD BE CONSTRUCTED TO SPAN THE ENTIRE WIDTH OF THE OBSERVED SPRING OR SEEP.

47 FRENCH DRAIN AND DRAINABLE FILL SECTION AT OBSERVED SEEP/SPRING OR EXISTING DRAINAGE FEATURE LOCATION  
NTS



**Typical Polymer Stabilized Fiber Matrix Application Rates**

SLOPE	Maximum Rainfall of 5.29"									
	6:1	5:1	4:1	3:1	2:1	1.5:1	1:1	1:1	1:1	1:1
Soil Stabilizer (gal/acre)	4	5	6	7	8	9	10			
Fiber (lb/acre)	1,500	1,500	1,500	1,800	2,000	2,500	3,000			

SLOPE	Maximum Rainfall of > 29" and for Site Winterization		
	<= 5:1	4:1	> 3:1
Soil Stabilizer (gal/acre)	6	8	10
Fiber (lb/acre)	2,000	2,500	3,000

**NOTES:**

A BONDED FIBER MATRIX (BFM) IS AN EFFECTIVE METHOD OF STABILIZING STEEP SLOPES WHEN USED PROPERLY. BFM'S MAKE USE OF A GROSS-LINKED HYDROCOLLOID TACKIFIER TO BOND THERMALLY PROCESSED WOOD FIBERS. APPLICATION RATES VARY ACCORDING TO SITE CONDITIONS. FOR SLOPES UP TO 3H:1V THE BFM SHOULD BE APPLIED AT A RATE OF 3,000 LB/ACRE. STEEPER SLOPES MAY NEED AS MUCH AS 4,000 LB/ACRE.

BFM SHOULD ONLY BE USED WHEN NO RAIN IS FORECASTED FOR AT LEAST 48 HOURS FOLLOWING THE APPLICATION. THIS IS TO ALLOW THE TACKIFIER SUFFICIENT TIME TO CURE PROPERLY. ONCE PROPERLY APPLIED, A BFM IS TYPICALLY 99% EFFECTIVE IN PREVENTING ACCELERATED EROSION. BFM SHOULD NOT BE APPLIED BETWEEN SEPTEMBERS 30 AND APRIL 1.

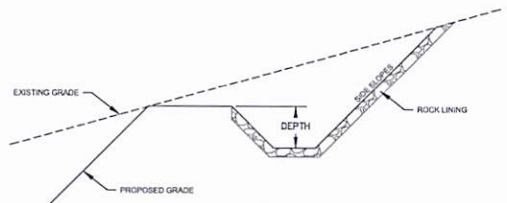
A POLYMER STABILIZED FIBER MATRIX (PSFM) CAN ALSO BE AN EFFECTIVE METHOD OF STABILIZING STEEP SLOPES WHEN USED PROPERLY. PSFM MAKE USE OF A LINEAR SOIL STABILIZING TACKIFIER THAT WORKS DIRECTLY ON SOIL TO MAINTAIN SOIL STRUCTURE, MAINTAIN PORE SPACE CAPACITY AND FLOCCULATE DISLODGED SEDIMENT THAT WILL SIGNIFICANTLY REDUCE RUNOFF TURBIDITY. PROPERLY APPLIED, A PSFM MAY BE AS MUCH AS 99% EFFECTIVE.

**NOTES:**

UNLIKE ROLLED BLANKETS, THERE IS NO NEED TO SMOOTH THE SLOPE PRIOR TO APPLICATION OF HYDRAULICALLY APPLIED BLANKETS. IN FACT SOME ROUGHENING OF THE SURFACE, EITHER NATURAL OR MECHANICALLY INDUCED, IS PREFERABLE. HOWEVER, LARGE ROCKS, THOSE > 8 INCHES, AND EXISTING HILLS SHOULD BE REMOVED PRIOR TO APPLICATION. TRACKING OR GROOVING OF SLOPES SHOULD BE CONSIDERED TO SLOW WATER FLOWS DURING A STORM EVENT. SLOPE INTERRUPTION DEVICES SUCH AS STAIR STEP GRADING OR BENCHING SHOULD BE APPLIED PRIOR TO THE APPLICATION. MIXING AND APPLICATION RATES SHOULD FOLLOW MANUFACTURER'S RECOMMENDATIONS.

HYDRAULICALLY APPLIED BLANKETS ARE TYPICALLY APPLIED IN TWO STAGES, UNLESS SPECIFICALLY RECOMMENDED TO BE APPLIED IN ONE APPLICATION BY THE MANUFACTURER. THE SEED MIXTURE AND SOIL AMENDMENTS SHOULD BE APPLIED FIRST. IF THE SEED IS APPLIED AT THE SAME TIME AS THE HYDRAULICALLY APPLIED BLANKET, THE BONDED FIBERS MAY KEEP THE SEED FROM MAKING SUFFICIENT CONTACT WITH THE SOIL TO GERMINATE. AFTER THE SEED MIXTURE IS APPLIED, THE BFM, FBM, OR PSFM SHOULD BE SPRAWLED OVER THE AREA AT THE REQUIRED APPLICATION RATE. (SEE ABOVE TABLES)

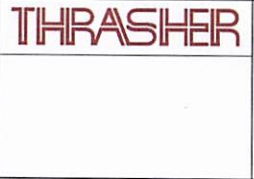
48 BONDED FIBER MATRIX (HYDROMULCH)  
NTS



**NOTE:**  
DRAINAGE CHANNEL DIMENSIONS AND LINING WILL BE DETERMINED BY ENGINEER AS APPLICABLE.

49 TYPICAL ROCK LINED CHANNEL  
NTS

USER: jared.walker  
PLOT DATE/TIME: 11/9/2022 4:05 PM  
LAYOUT FILE: ESCP11  
CAD FILE: A11558.dwg  
DRAWN BY: JBJ (TIG)  
CHECKED BY: TIG (TIG)  
SCALE: AS SHOWN  
REVISION No.: 3



**IFP**  
ISSUED FOR PERMITTING

DATE: 11/09/2022  
AFE # A11558

SUMMARY OF MATERIALS (3D)		
NO.	DESCRIPTION	QTY

SUMMARY OF MATERIALS (3D)		
NO.	DESCRIPTION	QTY

GENERAL INFORMATION	
1.	ALL DESIGN STRENGTH OF PIPELINE AND MANIP CALCULATIONS ALONG WITH ROUTING WERE PREPARED BY ANTERO AND PROVIDED TO THRASHER FOR REVIEW ON THE PLANS. THRASHER ASSUMES NO LIABILITY FOR THE CORRECTNESS OF THESE CALCULATIONS AND/OR ROUTE PROVIDED BY ANTERO.
2.	THIS SHEET IS INTENDED TO BE PLOTTED ON A 24" X 36" FOR REDUCTIONS. REFER TO GRAPHIC SCALE.

**Antero**  
Midstream

**CRIMSON SOUTH SWL  
ESCP DETAILS**

PROPOSED 18" HDPE  
SURFACE WATER LINE  
DODDRIDGE COUNTY, WEST VIRGINIA

DRAWN BY: JBJ (TIG) DATE: 11/9/2022  
CHECKED BY: TIG (TIG) AFE No.: A11558  
SCALE: AS SHOWN  
REVISION No.: 3 SHEET: 31 - ESCP11







ATTACHMENT E  
NO-RISE CERTIFICATE



This is to certify that I am a duly qualified registered professional engineer licensed to practice in the State of West Virginia.

It is further to certify that based on the information provided to me, and the attached technical data supports the fact that the proposed Crimson South Surface Water Line (Site) will not impact the 100-year flood elevation of Flint Run at the published sections in the Flood Insurance Study for Doddridge County (Community ID 540024) effective 10/04/2011 and will not impact the 100-year flood elevation at unpublished cross-sections in the vicinity of the Site.

Work to be performed at the Site involves temporary disturbances associated with a temporary stream timber mat crossing supported with jersey barrier piers, and pipeline installation activities for the permanent 18" HDPE water pipe which will be trenched within the stream boundaries and aboveground within the floodplain.

The work outlined above is the focus of this Hydrologic Engineering Center-River Analysis System (HEC-RAS) analysis as it was shown to be within Flood Zone A. Much of the work will be performed in the floodplain, and the extent of the work is shown on the attached design plans. The total watershed (drainage basin) for Flint Run at this crossing was shown to be 16.671 square miles. A peak flow from this area was calculated utilizing the National Streamflow Statistics application available online. A HEC-RAS analysis was completed, based on the drainage area above and associated flows, to verify that no influence will occur due to the proposed activities within the floodplain of Flint Run. The flows compared for the affected area are attached.

Attached are the following documents that support my findings:

[West Virginia Flood Tool Map](#)

[Design Plans](#)

[National Streamflow Statistics – Drainage Area](#)

[Comparison for Calculated Flows – HEC-RAS Excel Data](#)





Date: 12/19/2022

Signature: *Sathie Pretzel*

Title: Senior Program Manager

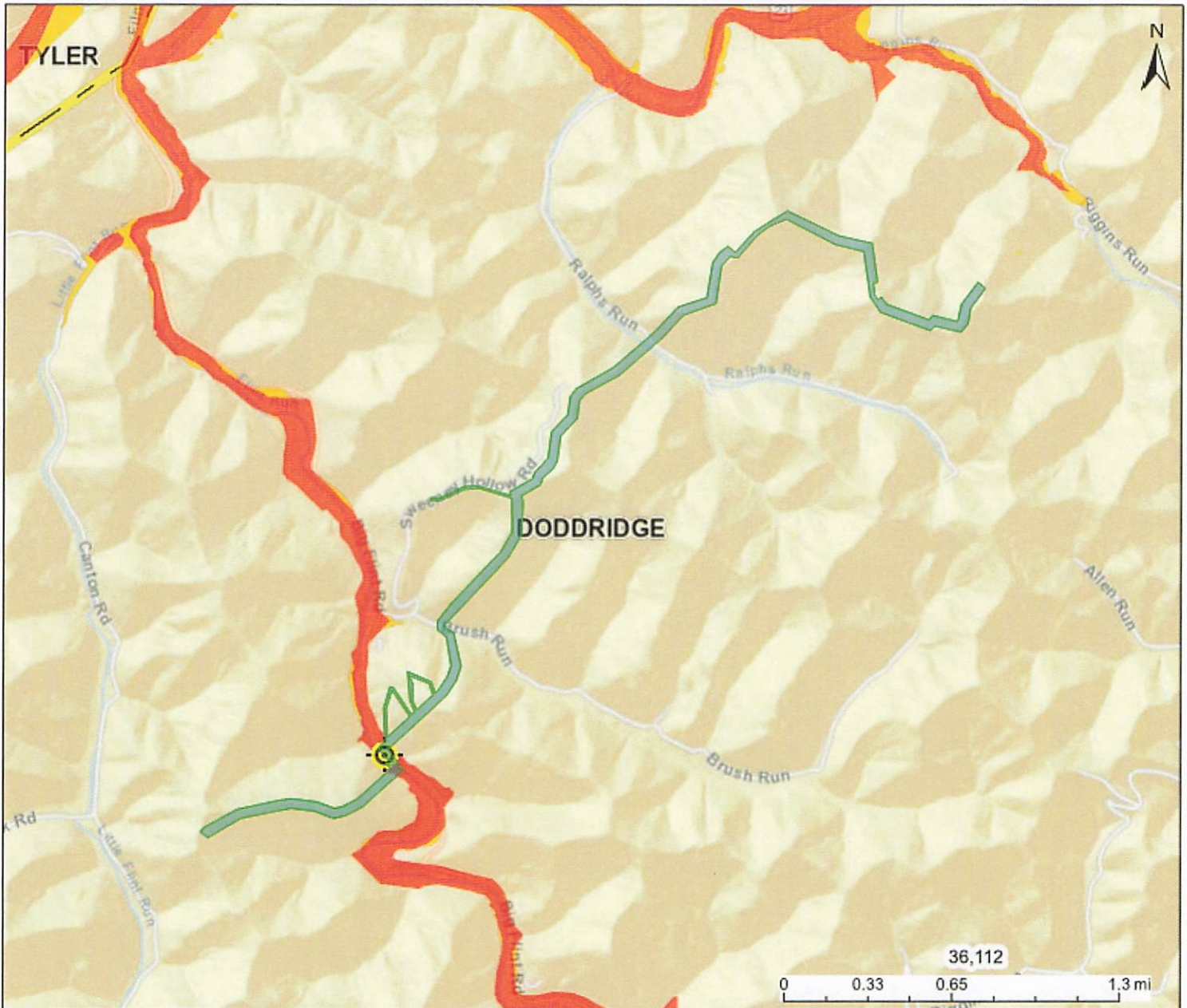




APPENDIX A  
West Virginia Flood Tool Map



# WV Flood Map-Crimson South SWL



This map is not the official regulatory FIRM or DFIRM. Its purpose is to assist with determining potential flood risk for the selected location.

H I G H  R I S K	Regulatory Floodway		
	Zone At	1-Percent-Annual-Chance Flood Hazard Area With Base Flood Elevation (BFE)	Flood Info Location <span style="float: right;">Map created on 12/14/2022</span>
	Zone A	1-Percent-Annual-Chance Flood Hazard Area Without BFE (may have Advisory Flood Heights)	<b>User Notes</b> Flood Hazard Area Location is <b>WITHIN</b> the FEMA 100-year floodplain. Advisory Flood Heights available. Flood Zone A (Advisory Flood Heights available)
	Advisory	1-Percent-Annual-Chance Future Conditions (High Risk Advisory Flood Zones)	Stream Flint Run Watershed (HUC8) Little Musringum-Middle Island (5030201)
Download the Full Legend for all flood tool symbols <a href="https://www.mapwv.gov/flood/map/docs/wv_flood_tool_legend.pdf">https://www.mapwv.gov/flood/map/docs/wv_flood_tool_legend.pdf</a>		Flood Height Flood Height 4 About 768.1 ft (Source: AFH) NAVD88 Water Depth About 3.7 ft (Source: HEC-RAS) Elevation 761.4 ft (Source: FEMA 2018-20) (NAVD88)	
<b>Disclaimer:</b> The online map is for use in administering the National Flood Insurance Program. It does not necessarily identify all areas subject to flooding, particularly from local drainage sources of small size. Refer to the official Flood Insurance Study (FIS) for detailed flood elevation data in flood profiles and data tables. WV Flood Tool ( <a href="https://www.MapWV.gov/flood">https://www.MapWV.gov/flood</a> ) is supported by FEMA, WV NFIP Office, and WV GIS Technical Center.		Community & ID Doddridge County (ID: 540024) FEMA Map & Date 54017C0130C; Effective Date: 10/4/2011 Location (lat, long) (39.365407, -80.718887) (WGS84) Parcel ID 09-03-0006-0012-0000 E-911 Address multiple addresses	



## APPENDIX B Design Plans





















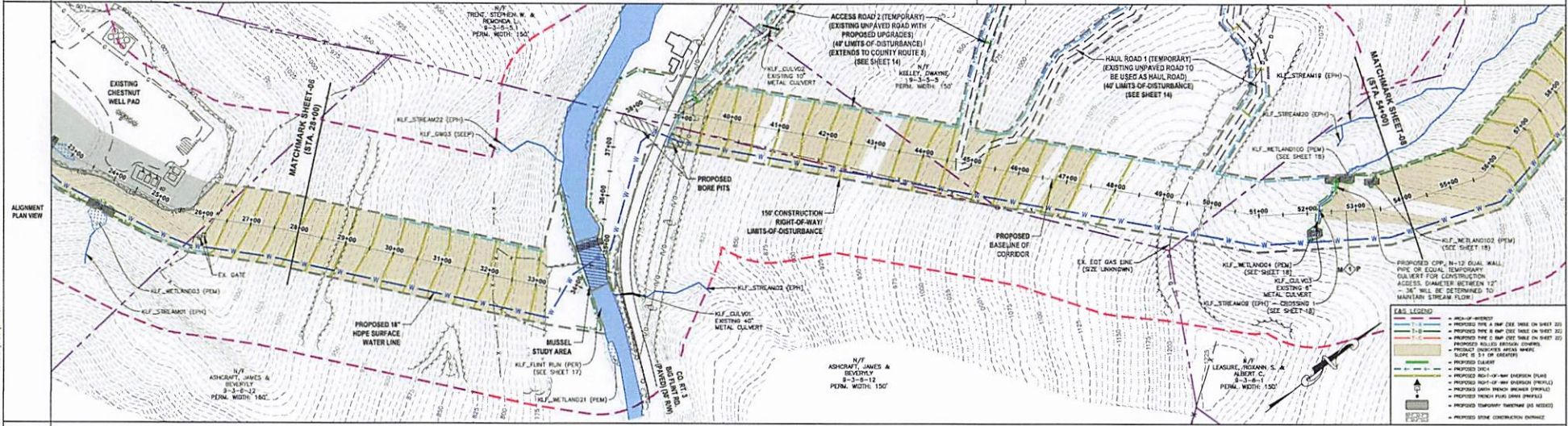




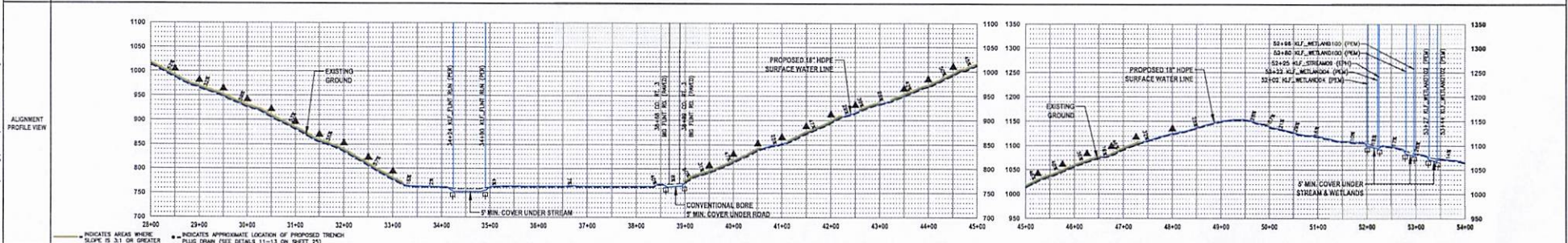


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P.I. DEFLECTION ANGLES	21+00	21+00	44+13	54+00	54+00
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PIPE DETAIL (SLOPE DIST.)	25+00	37+00	44+13	54+00	54+00
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**THRASHER**

**IFP**  
ISSUED FOR PERMITTING

DATE: 11/09/2022  
AFE # A11568

SCALE: 1" = 100'  
VERT. SCALE IN FEET

SUMMARY OF MATERIALS (3D)		
NO.	DESCRIPTION	QTY

SUMMARY OF MATERIALS (3D)		
NO.	DESCRIPTION	QTY

REVISION	
NO.	DESCRIPTION
1	REVISED PER COMMENTS FROM NATIONAL
2	REVISED PER COMMENTS FROM ILLINOIS
3	REVISED PER COMMENTS FROM ANTERO

**Antero**  
Midstream

**CRIMSON SOUTH SWL  
STA. 28+00 TO STA. 54+00**

PROPOSED 18" HDPE  
SURFACE WATER LINE  
DODDRIEGE COUNTY, WEST VIRGINIA

DATE: 11/09/2022  
DRAWN BY: JGU (TIG)  
CHECKED BY: TIG (TIG)  
SCALE: AS SHOWN  
REVISION NO: 3

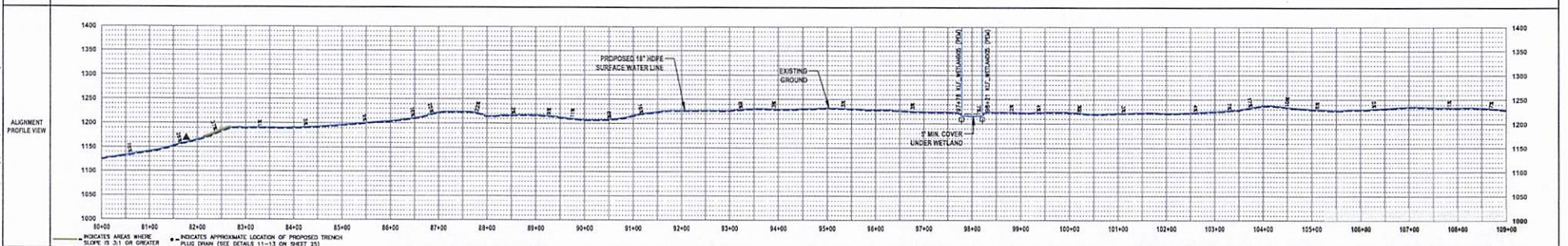
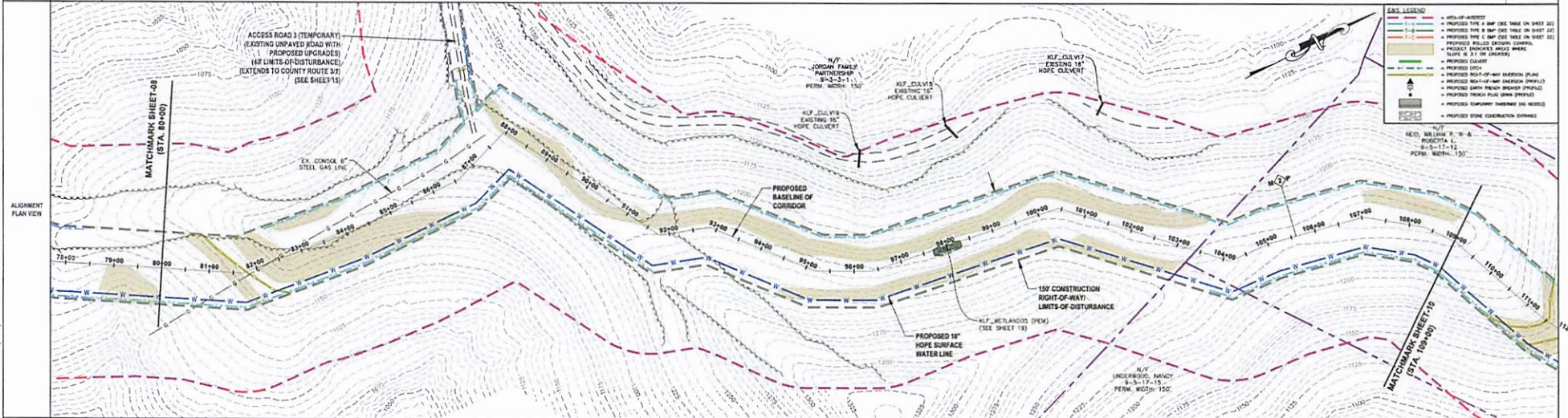
1. ALL DESIGN STRENGTH OF PIPELINE AND MANHOLE CALCULATIONS ALONG WITH...  
2. PORTIONS OF THE PIPELINE RIGHT-OF-WAY LOCATED WITHIN WELL PAD...  
3. FIELD DEFLECTION PERFORMED AND PROVIDED BY: HENNINGER, INC.  
4. COORDINATE SYSTEM USED FOR MARKING AND TEMPORARILY...  
5. THE BOUNDARY SURVEYS FOUND AND PROPERTY LINES SHOWN ON THIS...  
6. THE SHEET IS TO BE REVISIONED...  
7. ALL EXISTING POWER AND FIBER OPTIC CABLES...  
8. THE SHEET IS TO BE REVISIONED...  
9. THIS SHEET IS INTENDED TO BE PUBLISHED ON AFD 8 (27 x 34"), FOR...  
10. FOR LEGIBILITY/ANNOTATION INFORMATION, REFER TO THE GENERAL NOTES...  
11. FOR LEGIBILITY/ANNOTATION INFORMATION, REFER TO THE GENERAL NOTES...







OWNER/SHP & PARCEL NO.	80+00	JORDAN FAMILY PARTNERSHIP 8-3-31 CONST. WIDTH: 150' PERM. WIDTH: 150'	101+00	RED, WILLIAM R. & ROBERTA L. 8-5-17-15 CONST. WIDTH: 150' PERM. WIDTH: 150'	109+00
PI DEFLECTION ANGLES	80+00		101+00		109+00



**THRASHER**

**IFP**  
ISSUED FOR PERMITTING

DATE: 11/09/2022  
AFE # A11568

Scale: 1" = 100' (Horizontal), 1" = 20' (Vertical)

NO.	DESCRIPTION	DATE	BY
1	REVISED FOR COMMENTS FROM NATIONAL	10/26/22	JUL
2	REVISED FOR COMMENTS FROM MEMPHIS	11/2/22	JUL
3	REVISED FOR COMMENTS FROM ANTERO	11/9/22	JUL

SUMMARY OF MATERIALS (3D)		SUMMARY OF MATERIALS (3D)	
NO.	DESCRIPTION	NO.	DESCRIPTION

REVISION	
NO.	DESCRIPTION

- GENERAL INFORMATION**
- ALL DESIGN, STRENGTH OF PIPELINE AND WADP CALCULATIONS ALONG WITH SECTION LINE PROVIDED BY ANTERO AND PROVIDED TO THRASHER FOR REVIEW. THRASHER ASSUMES NO LIABILITY FOR THE ACCURACY OF THESE CALCULATIONS AND/OR DATA PROVIDED BY ANTERO.
  - PORTIONS OF THE PIPELINE RIGHT-OF-WAY LOCATED WITHIN WELL PAD LIMITS-OF-DISTURBANCE COVERED HEREIN WILL BE PERMITTED AS WELL AS EXISTING PIPELINE LIMITS-OF-DISTURBANCE SHALL OPEN WITH THE WORK.
  - FIELD OBSERVATION PERFORMED AND PROVIDED BY MEMPHIS, INC.
  - COORDINATE SYSTEM USED FOR BENCHMARK AND TOPOGRAPHY: HORIZONTAL - NAD 83 AT NEAR MINNESOTA STATE PLANE, NORTH ZONE, U.S. SURVEY FOOT.
  - VERTICAL - FANG 88 (ELEVATION) U.S. SURVEY FOOT.
  - ALL STATIONING SHOWN IS HORIZONTAL AND PROVIDED TO THE BASELINE OF THE PRINTED CORRIDOR. IT IS NOT A DIRECT REPRESENTATION OF WHERE THE PIPELINE WILL BE INSTALLED, OR WHERE THE PRINTED CORRIDOR REPRESENTS.
  - THE BOUNDARY MONUMENTS FOUND AND PROPERTY LINES SHOWN ON THIS DRAWING WERE OBTAINED FROM PUBLIC FIELD SURVEY AND RECORDED INFORMATION. THESE FROM VARIOUS RECORDS ON FILE AT THE LOCAL COUNTY COURTHOUSE. TO OBTAIN A MORE ACCURATE BOUNDARY LINE LOCATION, A FULL PROPERTY SURVEY IS RECOMMENDED.
  - ALL EXISTING PIPES AND RECORDS DETERMINED DURING CONSTRUCTION TO BE REPLACED BY CONTRACTOR PRIOR TO CONSTRUCTION.
  - THIS SHEET IS A REVISION. UNLESS OTHERWISE NOTED, ALL DETAILS TO BE INSTALLED ON ACCESS ROADS ARE SHOWN ON REVISIONS UNLESS OTHERWISE NOTED. ON ACCESS ROADS, CLASSET AND OTHER SIGNALS WILL BE BASED ON AVAILABLE BENCHMARKS AND ADJUSTED PROPOSED ROAD SURFACE ELEVATIONS.
  - ALL SHEET BOUNDS INCLUDING ALIGNMENT PLAN VIEW REFERENCE THE ALIGNMENT PROFILE VIEW.
  - THIS SHEET IS INTENDED TO BE PLOTTED ON A11 (8 1/2" x 11") FOR REDUCED SCALE. ALL DIMENSIONS SHALL BE TO SHOWN SCALE.
  - FOR LEGAL/ABBREVIATION INFORMATION, REFER TO THE GENERAL NOTES SHEET.

**Antero**  
Midstream

**CRIMSON SOUTH SWL  
STA. 80+00 TO STA. 109+00**

PROPOSED 18" HOPE  
SURFACE WATER LINE  
DODDRIEGE COUNTY, WEST VIRGINIA

DATE: 11/9/2022  
CHECKED BY: TIG (TIG) M.E. PAUL  
SCALE: AS SHOWN  
REVISION No.: 3

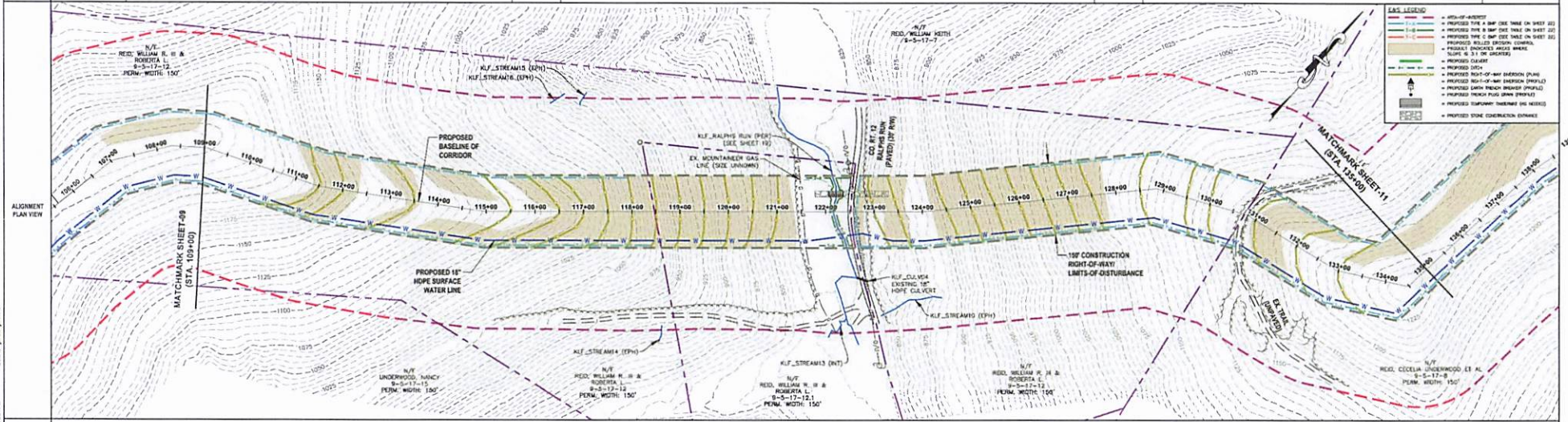
SHEET: 09 - PLAN 4

UNDATED: TAB: PLAN4  
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 PLOT DATE/TIME: 11/09/2022 4:02 PM  
 USER: jmf@antero.com

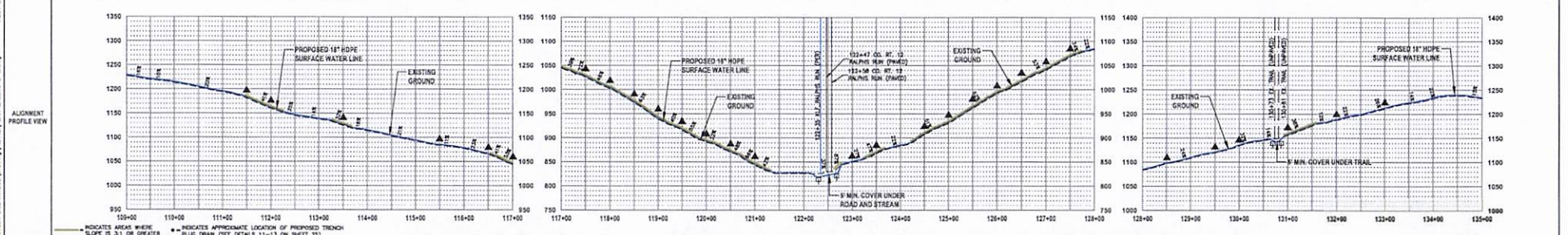


OWNER/SHIP & PARCEL NO.	109+00	118+47	121+53	135+74	135+00
	RED, WILLIAM R. II & ROBERTA L. 9-5-17-12 CONST. WIDTH: 150' PERM. WIDTH: 150'	RED, WILLIAM R. II & ROBERTA L. 9-5-17-12 CONST. WIDTH: 150' PERM. WIDTH: 150'	RED, WILLIAM R. II & ROBERTA L. 9-5-17-12 CONST. WIDTH: 150' PERM. WIDTH: 150'	RED, WILLIAM R. II & ROBERTA L. 9-5-17-12 CONST. WIDTH: 150' PERM. WIDTH: 150'	RED, WILLIAM R. II & ROBERTA L. 9-5-17-12 CONST. WIDTH: 150' PERM. WIDTH: 150'

PI DEFLECTION ANGLES	109+00	117+00	117+00	123+00	123+00	135+00
		SEPARATION IN PROFILE		SEPARATION IN PROFILE		



PIPE DETAIL (SLOPE DIST)						
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**THRASHER**

**IFP**

ISSUED FOR PERMITTING

DATE: 11/09/2022

AFE # A11568

SCALE: HORIZ. SCALE IN FEET 1"=100' VERT. SCALE IN FEET 1"=20'

SUMMARY OF MATERIALS (3D)		
NO.	DESCRIPTION	QTY

SUMMARY OF MATERIALS (3D)		
NO.	DESCRIPTION	QTY

GENERAL INFORMATION	
1. ALL DESIGN, STRENGTH OF PIPELINE AND MAJOR CALCULATIONS ALONG WITH DESIGN SHALL BE PROVIDED TO THE PERMITTING AGENCY FOR REVIEW AND APPROVAL. THRASHER ASSUMES NO LIABILITY FOR THE CORRECTNESS OF THESE CALCULATIONS AND/OR DATA PROVIDED BY OTHERS.	10/26/22 [JL]
2. PORTION OF THE PIPELINE RIGHT-OF-WAY LOCATED WITHIN WELL PAD LIMITS IS NOT COVERED UNDER THIS PERMIT. THE PERMIT WILL BE AN EXISTING PIPELINE LIMITS-OF-DISTURBANCE. EST. OPEN WITH THE WEAIR.	11/23/22 [JL]
3. FIELD INVESTIGATION PERFORMED AND PROVIDED BY: ALLENWELLS, INC.	11/23/22 [JL]
4. COORDINATE SYSTEM USED FOR MARKING AND TOPOGRAPHY: HORIZONTAL - NAD 83 WEST VIRGINIA STATE PLANE NORTH ZONE, U.S. SURVEY FOOT. VERTICAL - NAVD 83 (GEOIDAL) U.S. SURVEY FOOT.	
5. ALL EXISTING POWER AND RELATED ENGINEERING UTILITIES ARE SHOWN TO BE THE LATEST OF ACCESS RECORDS FOR THIS SHEET. ALL EXISTING UTILITIES NOT SHOWN ON ACCESS RECORDS OR NOT SHOWN ON THIS SHEET SHALL BE FIELD VERIFIED. ALL EXISTING UTILITIES SHALL BE FIELD VERIFIED AND SHOWN ON ACCESS RECORDS AND SHOWN ON THIS SHEET.	
6. ALL SHEET BARRIERS INCLUDING ALIGNMENT PLAN VIEW REFERENCE THE ALIGNMENT PROFILE VIEW.	
7. THIS SHEET IS INTENDED TO BE PLOTTED ON A11 (24" x 36") FOR PERMITTING, REFER TO DRAWING SCALE.	
8. FOR LEGEND/ABBREVIATION INFORMATION, REFER TO THE GENERAL NOTES SHEET.	

**Antero** Midstream

**CRIMSON SOUTH SWL STA. 109+00 TO STA. 135+00**

PROPOSED 18" HDPE SURFACE WATER LINE

DODDRIE COUNTY, WEST VIRGINIA

DRAWN BY: JLU (TJL) DATE: 11/9/2022  
 CHECKED BY: TJC (TJC) DATE: 11/9/2022  
 SCALE: AS SHOWN  
 SHEET: 10 - PLANS

LAYOUT TAB PLANS  
 CADD FILE: S:\010\109+00-135+00-Antero-Crimson SWL A11568\Drawings\PLAN SHEETS\10-PLANS.dwg  
 PLOT DATE/TIME: 11/9/2022 4:52 PM  
 USER: jlu@antero.com

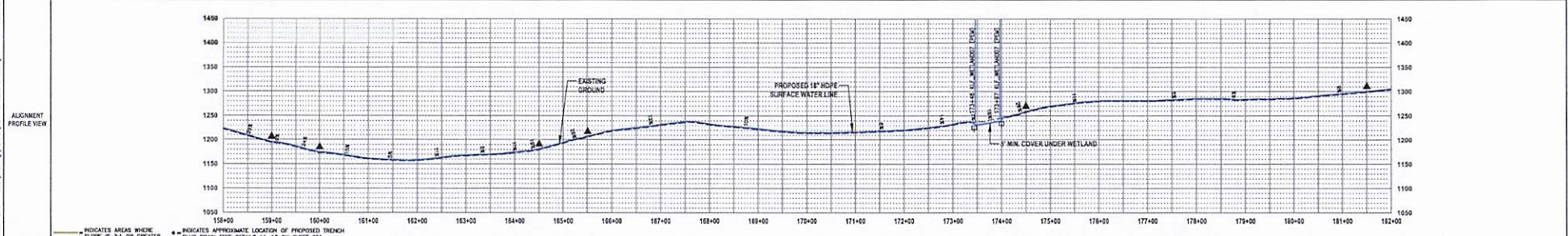
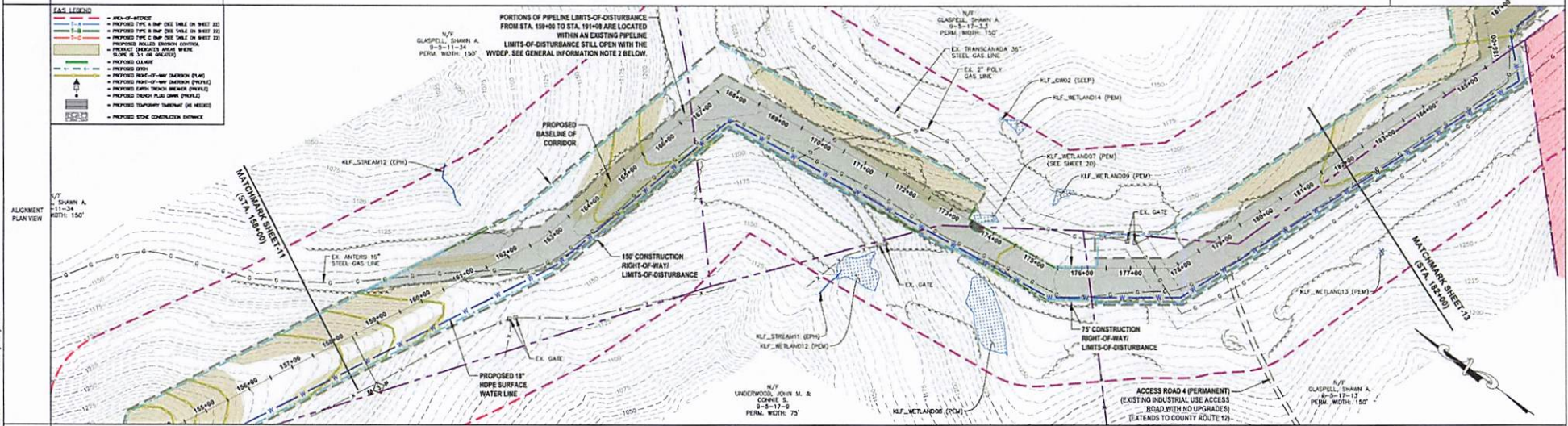






OWNER/Parcel No.	158+00	GLASPELL, SHAWN A. 8-23-11-34 CONST. WIDTH: 150' PERM. WIDTH: 150'	164+00	GLASPELL, SHAWN A. 8-23-11-34 CONST. WIDTH: 150' PERM. WIDTH: 150'	173+00	UNDERWOOD, JOHN M. & CONNIE S. 8-23-17-8 CONST. WIDTH: 75' PERM. WIDTH: 75'	178+00	GLASPELL, SHAWN A. 8-23-11-34 CONST. WIDTH: 150' PERM. WIDTH: 150'	178+00	GLASPELL, SHAWN A. 8-23-11-34 CONST. WIDTH: 150' PERM. WIDTH: 150'	182+00
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PI DEFLECTION ANGLES	158+00		164+00		173+00		178+00		178+00		182+00
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**THRASHER**

**IFP**  
ISSUED FOR PERMITTING

DATE: 11/09/2022  
AFE # A11568

0 100 200  
HORIZ. SCALE IN FEET

0 100 200  
VERT. SCALE IN FEET

SUMMARY OF MATERIALS (3D)			SUMMARY OF MATERIALS (3D)		
NO.	DESCRIPTION	QTY	NO.	DESCRIPTION	QTY
1	REVISED PER COMMENTS FROM NATIONAL		10/29/22	JSL	
2	REVISED PER COMMENTS FROM HUNZIKER		11/02/22	JSL	
3	REVISED PER COMMENTS FROM ANTONIO		11/02/22	JSL	

SUMMARY OF MATERIALS (3D)			SUMMARY OF MATERIALS (3D)		
NO.	DESCRIPTION	QTY	NO.	DESCRIPTION	QTY
1	REVISED PER COMMENTS FROM NATIONAL		10/29/22	JSL	
2	REVISED PER COMMENTS FROM HUNZIKER		11/02/22	JSL	
3	REVISED PER COMMENTS FROM ANTONIO		11/02/22	JSL	

- GENERAL INFORMATION**
- ALL DESIGN, STRENGTH OF PIPELINE AND MAMP CALCULATIONS ALONG WITH ALL FIELD SURVEY DATA AND RECORDS SHALL BE PROVIDED TO THE OWNER FOR REVIEW AND APPROVAL PRIOR TO THE START OF CONSTRUCTION. THE OWNER SHALL BE RESPONSIBLE FOR OBTAINING ALL NECESSARY PERMITS AND APPROVALS FROM THE LOCAL, COUNTY, STATE, AND FEDERAL AGENCIES TO CONDUCT THE PROJECT AND TO OBTAIN A MORE ACCURATE BOUNDARY LINE LOCATION, A FULL PROPERTY SURVEY IS RECOMMENDED.
  - ALL EXISTING UTILITIES AND RECORDS OBTAINED DURING CONSTRUCTION TO BE REPLACED BY CONTRACTOR PRIOR TO CONSTRUCTION.
  - SEE SHEETS 12-14 FOR MATERIALS, METHODS, COLLECTIVE AND OTHERS TO BE INSTALLED ON ACCESS ROADS. THE SHEET TO BE INSTALLED IN ACCORDANCE WITH ACCESS ROAD, DRAINAGE AND OTHER DESIGNS ARE BASED ON AVAILABLE RECORDS AND ASSUMED PROPOSED ROAD SURFACE ELEVATIONS.
  - ALL SHEET BANDS INCLUDING ALIGNMENT PLAN VIEW REFERENCE THE ALIGNMENT PROFILE VIEW.
  - THIS SHEET IS INTENDED TO BE PLOTTED ON A 34" X 34" FOR REDUCTIONS, REFER TO GRAPHIC SCALE.
  - FOR LEGEND/ABBREVIATION INFORMATION, REFER TO THE GENERAL NOTES SHEET.

**CRIMSON SOUTH SWL  
STA. 158+00 TO STA. 182+00**

PROPOSED 18" HOPE  
SURFACE WATER LINE  
CRODGE COUNTY, WEST VIRGINIA

DRAWN BY: JSL (TIG) DATE: 11/9/2022  
CHECKED BY: TIG (TIG) AFE No.: A11568  
SCALE: AS SHOWN  
REVISION No.: 3 SHEET: 12 - PLAN7

LAYOUT DATE: 11/09/2022 11:58:00 AM; USER: jpsd; PROJECT: CRIMSON SOUTH SWL; SHEET: 12 - PLAN7; DATE: 11/09/2022 4:03 PM; USER: jpsd; PROJECT: CRIMSON SOUTH SWL; SHEET: 12 - PLAN7











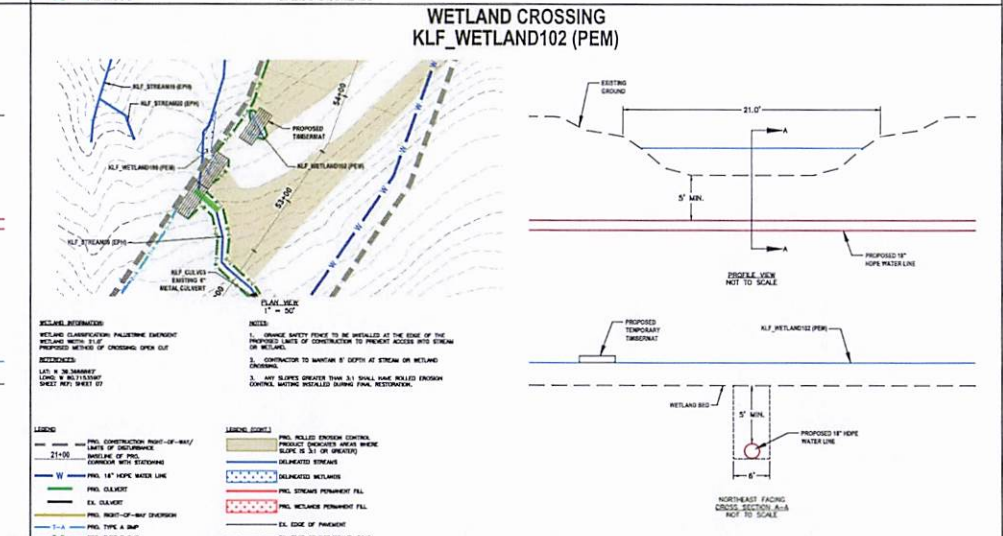
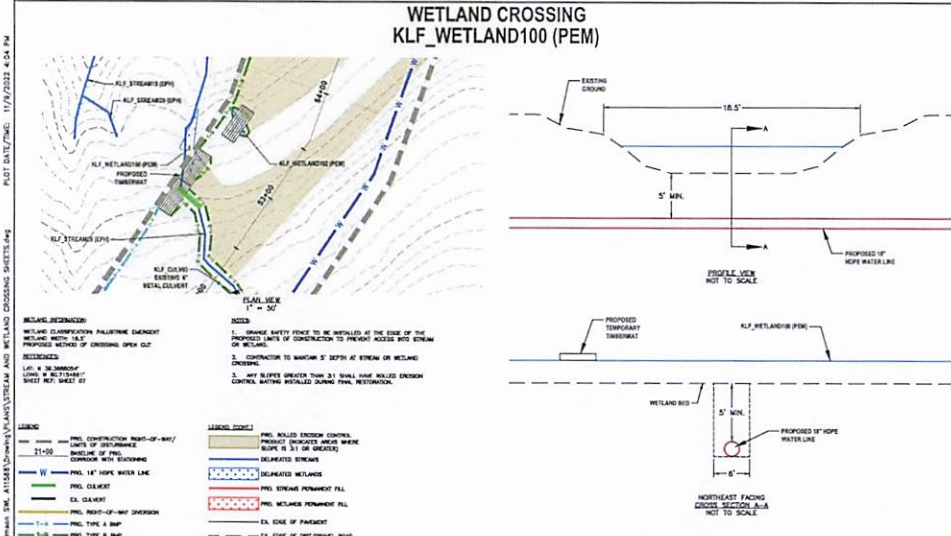
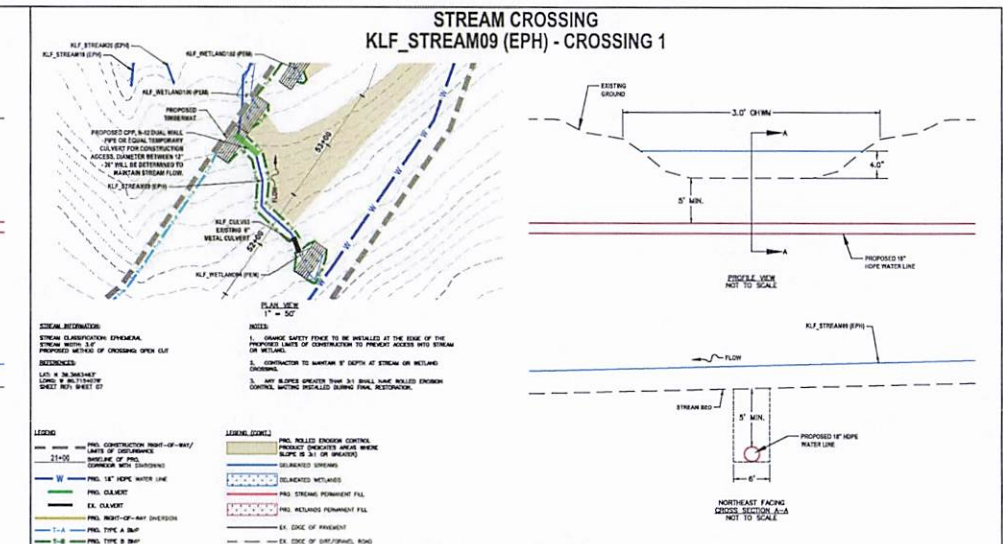
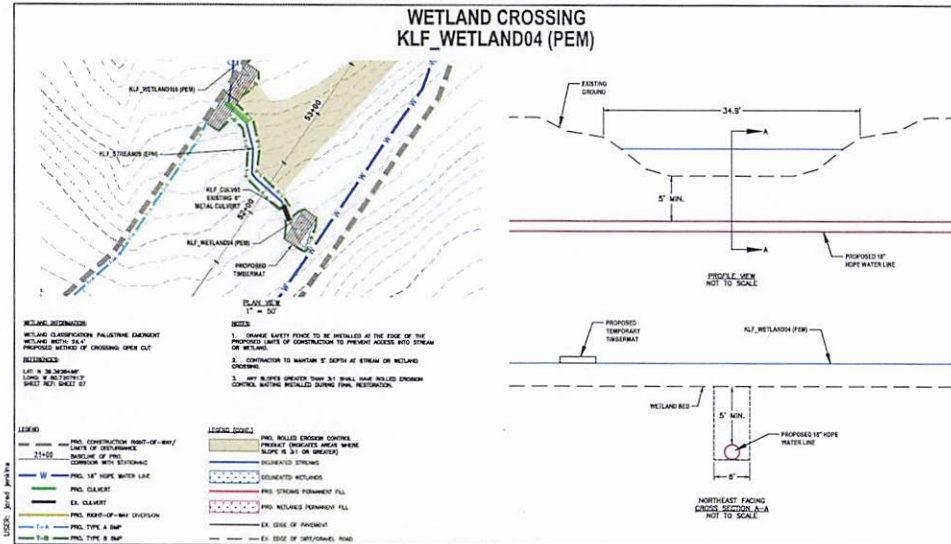












**IFP**  
ISSUED FOR PERMITTING

DATE: 11/09/2022  
AFE # A11568

SUMMARY OF MATERIALS (3D)		
NO.	DESCRIPTION	QTY

SUMMARY OF MATERIALS (3D)		
NO.	DESCRIPTION	QTY

GENERAL INFORMATION		
1.	ALL DESIGN STRENGTH OF PIPELINE AND MAMP CALCULATIONS ALONG WITH ROUTING WERE PREPARED BY ANTERO AND PROVIDED TO THRASHER FOR REVISION ON THE PLANS. THRASHER ASSUMES NO LIABILITY FOR THE CORRECTNESS OF THESE CALCULATIONS AND/OR ROUTE PROVIDED BY ANTERO.	
2.	PORTIONS OF THE PIPELINE RIGHT-OF-WAY LOCATED WITHIN WELL PAD LIMITS-OF-DISTURBANCE COVERED UNDER WELL PAD PERMIT.	
3.	FIELD DELINEATION PERFORMED AND PROVIDED BY KLEINFELDER, INC.	
4.	COORDINATE SYSTEM USED FOR MAPPING AND TOPOGRAPHY: HORIZONTAL - NAD 83 WEST VIRGINIA STATE PLANNING ZONE, U.S. SURVEY FOOT; VERTICAL - NAD 83 (GEOID2011), U.S. SURVEY FOOT	
5.	ALL STATING SYMBOLS IS HORIZONTAL AND PERTAINS TO THE BASELINE OF THE PERMITTED CORRIDOR. IT IS NOT A CORRECT REPRESENTATION OF THE GROUND. THE PIPELINE WILL BE INSTALLED, INSTALLATION WITHIN THE PERMITTED CORRIDOR WILL BE GOVERNED BY THE FIELD BY ANTERO CONSTRUCTION REPRESENTATIVE.	
6.	THIS SHEET IS INTENDED TO BE PLOTTED ON A8S D (24" x 36") FOR REVISIONS, REFER TO GRAPHIC SCALE.	

**Antero**  
Midstream

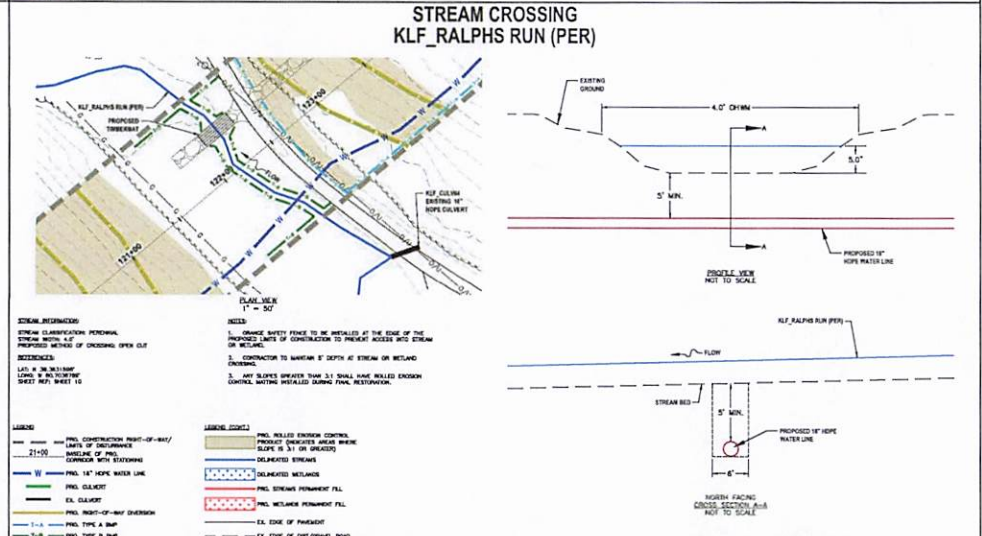
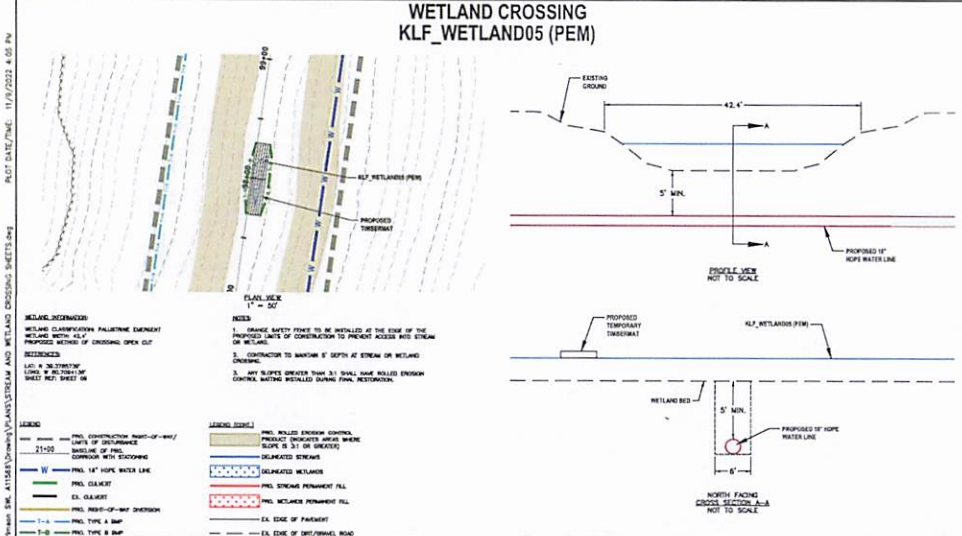
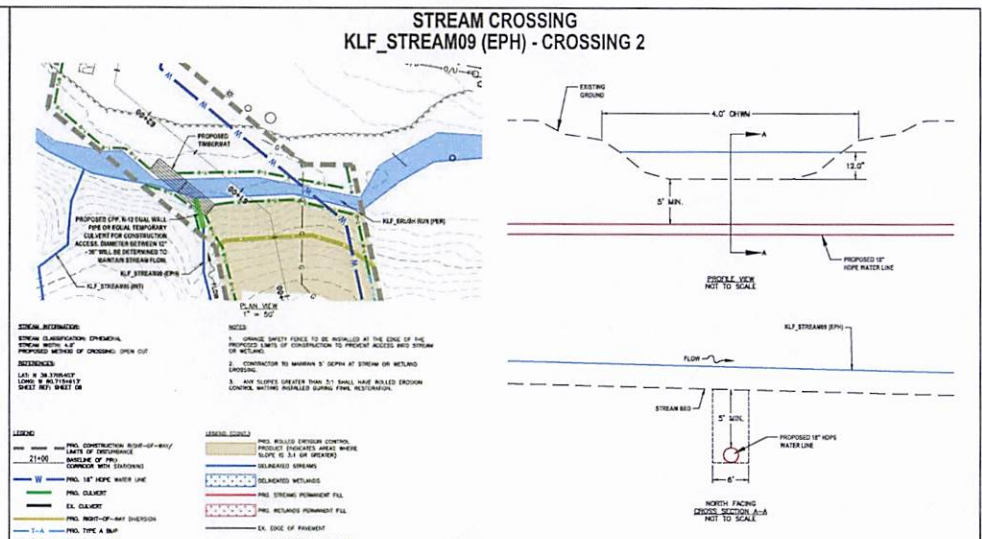
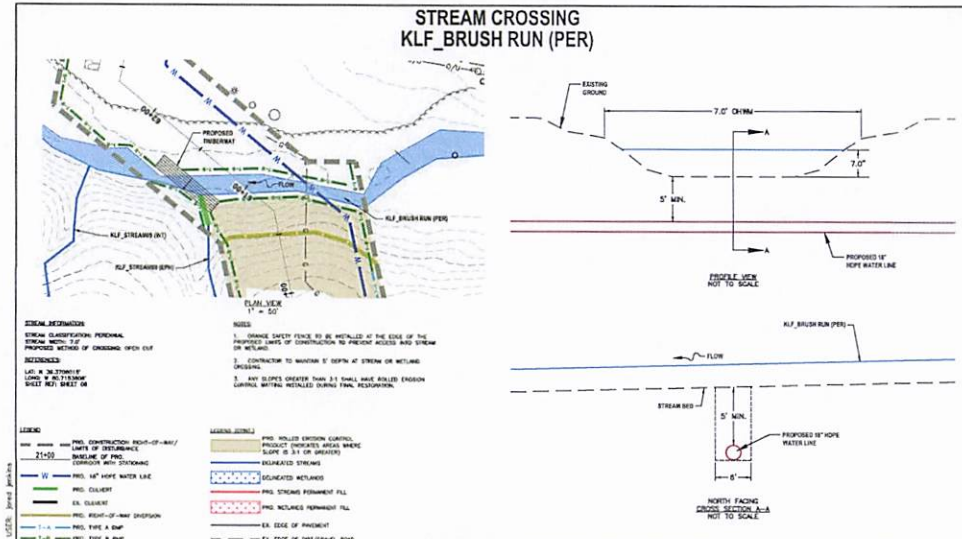
**CRIMSON SOUTH SWL  
STREAM & WETLAND CROSSINGS**

PROPOSED 18" HDPE  
SURFACE WATER LINE  
DOODRIDGE COUNTY, WEST VIRGINIA

DRAWN BY: JLU (TIG) DATE: 11/02/2022  
CHECKED BY: TIG (TIG) AFE No: A11568  
SCALE: AS SHOWN  
REVISION No: 3 SHEET: 18 - S&WC2

LAYOUT DATE: 08/05/2022; 11/09/2022; 11/07/2022; 4:04 PM  
PROJECT DATE: 08/05/2022; 11/07/2022; 4:04 PM  
DRAWN BY: JLU (TIG) DATE: 11/02/2022





**THRASHER**

**IFP**  
 ISSUED FOR PERMITTING

DATE: 11/09/2022  
 AFE # A11568

NO.	DESCRIPTION	QTY

NO.	DESCRIPTION	QTY

NO.	DESCRIPTION	QTY

NO.	DESCRIPTION	DATE	BY
1	REVISED PER COMMENTS FROM NATIONAL	05/09/22	JLS
2	REVISED PER COMMENTS FROM KLEINFELDER	11/20/22	JLS
3	REVISED PER COMMENTS FROM ANTERO	11/09/22	JLS

**Antero**  
 Midstream

**CRIMSON SOUTH SWL  
 STREAM & WETLAND CROSSINGS**

PROPOSED 18" HDPE  
 SURFACE WATER LINE  
 DODDRIEGE COUNTY, WEST VIRGINIA

DRAWN BY: JLS (TIG) DATE: 11/09/2022  
 CHECKED BY: TIG (TIG) AFE No: A11568  
 SCALE: AS SHOWN  
 SHEET: 19 - S&WC3







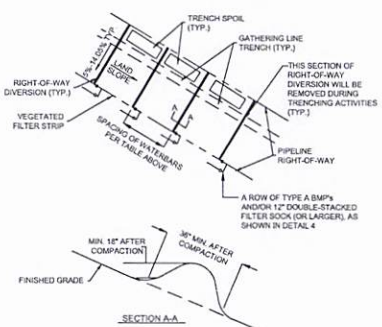


LAYOUT TAB: ESC2P  
 DRAWN BY: JLU (TIC) DATE: 11/17/2022  
 CHECKED BY: TIE (TIC) DATE: 11/17/2022  
 SCALE: AS SHOWN SHEET: 22 - ESC2P  
 PROJECT: 11558 (0000000000) CRIMSON SWL - DETAILED - 11/17/2022 4:05 PM  
 USER: jlu@antero.com

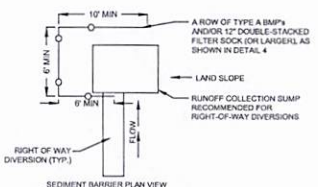
**RIGHT-OF-WAY DIVERSION SPACING IN FEET**

PIPELINE GRADE	>200' FROM STREAM	<200' FROM STREAM
2-5%	400	250
6-12%	300	150
13-23%	200	100
23-34%	100	50
35-50%	50	25

1. IF DIFFICULT TO INSTALL DIVERSIONS ON SLOPES GREATER THAN 5%, THE DIVISION OF WATER AND WASTE MANAGEMENT WILL ALLOW GREATER DISTANCES BETWEEN DIVERSIONS ON THESE SLOPES.



NOTE: SUMP TO BE USED DURING CONSTRUCTION (TEMPORARY) PER DETAIL 1A.



**NOTES:**

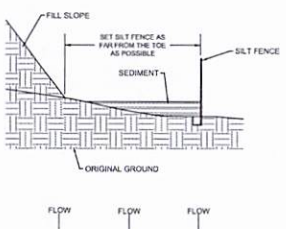
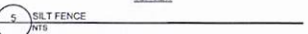
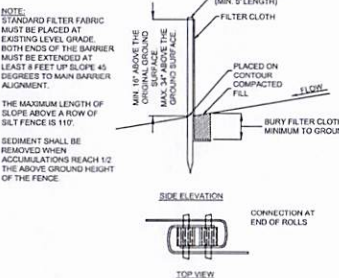
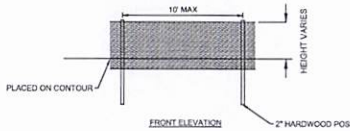
- RIGHT-OF-WAY DIVERSIONS SHOULD BE INSTALLED ACROSS THE ENTIRE RIGHT-OF-WAY ON ALL SLOPES GREATER THAN 5%.
- RIGHT-OF-WAY DIVERSIONS SHALL BE PLACED AT 5% TO 14.0% SLOPE DOWNHILL. THEY SHALL BE SPACED AT THE INCREMENTS AS SHOWN IN DETAIL 1, AND IN ACCORDANCE WITH WJDEP EAS STANDARDS.
- RIGHT-OF-WAY DIVERSIONS SHOULD NOT DISCHARGE INTO AN OPEN TRENCH WHEN AVAILABLE. RIGHT-OF-WAY DIVERSIONS SHOULD BE ORIENTED SO THAT THE DISCHARGE DOES NOT FLOW BACK INTO THE RIGHT-OF-WAY. A ROW OF TYPE A BMPs AND/OR 12" DOUBLE-STACKED FILTER SOCK (OR LARGER) AS SHOWN IN DETAIL 4, SHOULD BE LOCATED BELOW THE DISCHARGE END OF THE RIGHT-OF-WAY DIVERSIONS.
- BSW CAN BE SUBSTITUTED IN PLACE OF SMARTFENCE FB WITH APPROVAL FROM ANTERO.
- SUMPS TO BE USED DURING CONSTRUCTION (TEMPORARY).

**MAINTENANCE:**

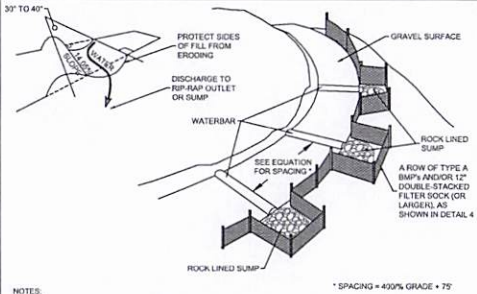
- RIGHT-OF-WAY DIVERSIONS SHALL BE INSPECTED WEEKLY (DAILY ON ACTIVE ROADS) AND AFTER EACH RUNOFF EVENT. DAMAGED OR ERODED RIGHT-OF-WAY DIVERSIONS SHALL BE RESTORED TO ORIGINAL DIMENSIONS AS SOON AS CONDITIONS ALLOW.
- MAINTENANCE OF RIGHT-OF-WAY DIVERSIONS SHALL BE PROVIDED UNTIL RIGHT-OF-WAY HAS ACHIEVED PERMANENT STABILIZATION.
- RIGHT-OF-WAY DIVERSIONS ON RETIRED RIGHT-OF-WAY SHALL BE LEFT IN PLACE AFTER PERMANENT STABILIZATION HAS BEEN ACHIEVED.
- CONTRACTOR SHALL RESTORE ALL WATERBARS AT THE END OF EACH WORKDAY AND PRIOR TO A RAIN EVENT.



CATEGORY	PRODUCT
TYPE A	1 - SILT SAVER SILT FENCE PRIORITY 2 (BELTED)
	2 - ACF ENVIRONMENTAL FILTRATION BARRIER (SMART FENCE FB) WITH WOOD POSTS
	3 - MEDIUM DUTY WOVEN BELTED WBSF25-6 SILT FENCE 2 STAGE
TYPE B	1 - SILT SAVER SILT FENCE PRIORITY 1 (BELTED)
	2 - ACF ENVIRONMENTAL FILTRATION BARRIER SMART FENCE 36 (SD) WITH WOOD POSTS
	3 - ACF ENVIRONMENTAL FILTRATION BARRIER (SMART FENCE FB) ORANGE WITH WOOD POSTS
	4 - HEAVY DUTY WOVEN BELTED WBSF25-4 SILT FENCE 2 STAGE
TYPE C	1 - ACF ENVIRONMENTAL SMARTFENCE 42
	2 - SUPER SILT FENCE



Slope / Percent	Minimum Filter Cloth Height (ft)	Minimum Filter Cloth Length (ft)	Minimum Filter Cloth Width (ft)	Minimum Filter Cloth Area (sq ft)
2%	18"	100'	100'	1000
3%	18"	100'	100'	1000
4%	18"	100'	100'	1000
5%	18"	100'	100'	1000
6%	18"	100'	100'	1000
7%	18"	100'	100'	1000
8%	18"	100'	100'	1000
9%	18"	100'	100'	1000
10%	18"	100'	100'	1000
11%	18"	100'	100'	1000
12%	18"	100'	100'	1000
13%	18"	100'	100'	1000
14%	18"	100'	100'	1000
15%	18"	100'	100'	1000
16%	18"	100'	100'	1000
17%	18"	100'	100'	1000
18%	18"	100'	100'	1000
19%	18"	100'	100'	1000
20%	18"	100'	100'	1000



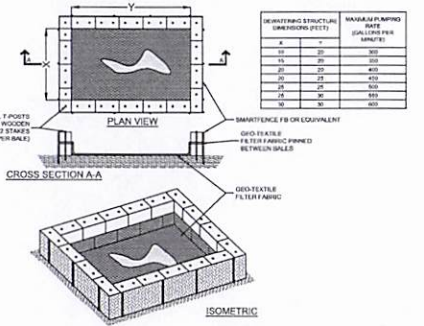
**NOTES:**

- WATERBARS SHOULD BE INSTALLED ACROSS THE ENTIRE ROADWAY ON ALL SLOPES GREATER THAN 5%.
- WATERBARS SHALL BE PLACED AT 5% TO 14.0% SLOPE DOWNHILL. THEY SHALL BE SPACED AT THE INCREMENTS AS SHOWN ON THE PLANS, AND IN ACCORDANCE WITH WJDEP EAS STANDARDS.
- WATERBARS SHOULD BE CONSTRUCTED TO DISCHARGE TO A RIP-RAP OUTLET OR SUMP. WATERBARS SHOULD BE ORIENTED SO THAT THE DISCHARGE DOES NOT FLOW BACK INTO THE ROADWAY. SMARTFENCE FB OR EQUIVALENT SHOULD BE LOCATED BELOW THE DISCHARGE END OF THE WATERBARS.

**4. REFER TO WJDEP MANUAL SECTIONS 3.03-1, 3.35-6, & 3.35-7 FOR MORE INFORMATION**

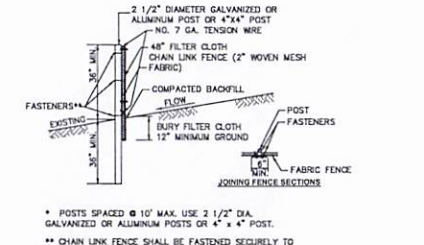
**MAINTENANCE:**

- WATERBARS SHALL BE INSPECTED WEEKLY (DAILY ON ACTIVE ROADS) AND AFTER EACH RUNOFF EVENT. DAMAGED OR ERODED WATERBARS SHALL BE RESTORED TO ORIGINAL DIMENSIONS AS SOON AS CONDITIONS ALLOW.
- MAINTENANCE OF WATERBARS SHALL BE PROVIDED UNTIL ROADWAY, SKIDTRAIL, OR RIGHT-OF-WAY HAS ACHIEVED PERMANENT STABILIZATION.
- WATERBARS ON RETIRED ROADWAYS, SKIDTRAILS, AND RIGHT-OF-WAYS SHALL BE LEFT IN PLACE AFTER PERMANENT STABILIZATION HAS BEEN ACHIEVED, UNLESS OTHERWISE SPECIFIED BY LANDOWNER STIPULATIONS.



**NOTES:**

- STRAW BALES SHOULD BE PLACED ON THEIR SIDES WITH THE THIN FACING OUT.
- STRAW BALES SHOULD BE STACKED TWO HIGH WITH GEO-TEXTILE FABRIC FINISHED BETWEEN BALES.
- BALES OF GEO-TEXTILE FABRIC SHOULD BE INTERLOCKING.
- 4" HIGH METAL POSTS ARE RECOMMENDED OVER THROUGH WITH STRAW BALES IF METAL POSTS ARE NOT AVAILABLE. WOODEN STAPLES SHOULD BE A MINIMUM OF 2"x2" 4" STAPLES SHOULD BE DRIVEN AROUND THE PERIMETER OF THE STRAW BALES AS STRUCTURAL SUPPORT AS WELL AS THROUGH THE BALES TO HELP PIN THE GEO-TEXTILE FABRIC IN PLACE.
- DEWATERING STRUCTURE DIMENSIONS SHOULD BE DESIGNED TO ACCOMMODATE THE SIZE OF THE WASH-WATER PUMP USED.
- DEWATERING STRUCTURE DIMENSIONS MAY NEED TO BE ADJUSTED TO SUIT THE VARIOUS SIZES OF FILTER BAGS, THOUGH SQUARE FOOTAGE SPECIFICATION SHOULD STILL BE MAINTAINED. THE STRUCTURE SHOULD COMPLETELY ENCOMPASS THE BAGS BEING UTILIZED.
- WHEN PUMPING LARGE AMOUNTS OF WATER FOR AN EXTENDED PERIOD OF TIME (SEVERAL HOURS, ETC.) INTERNAL PUMPING MAY BE NECESSARY TO AVOID OVERFLOWING THE DEWATERING STRUCTURE.
- USE OF AREA FINE MEDIA (SAND) STRUCTURES MAY BE NECESSARY UNDER SPECIAL CIRCUMSTANCES.
- FOR STREAM CROSSINGS, BALE PILING OUT THE TRENCH WITH A 2 FOOT TRENCH PUMP AT 45 DEGREES IS A PREFERRED METHOD OF DEWATERING STRUCTURE WITH A COMPACTIBLE FILTER BAG SHOULD BE USED. FEED ADJUSTMENTS WILL BE MADE IF FLOW IS OVERPOWERING THE STRUCTURE.
- ADDITIONAL BRUSH CHANNELS MAY BE UTILIZED DOWNSTREAM OF DEWATERING STRUCTURES WHERE NEEDED.
- DEWATERING STRUCTURE SHALL BE PLACED TO MAXIMIZE AVAILABLE VEGETATIVE STRIP.



- \* POSTS SPACED @ 10' MAX. USE 2 1/2" DIA. GALVANIZED OR ALUMINUM POSTS OR 4" x 4" POST.
- \*\* CHAIN LINK FENCE SHALL BE FASTENED SECURELY TO THE FENCE POST WITH WIRE TIES OR STAPLES. GEO-TEXTILE FABRIC SHALL BE FASTENED SECURELY TO THE CHAIN LINK FENCE WITH TIES SPACED EVERY 24 INCHES AT THE TOP AND MID-SECTIONS.

NO. 7 GA. TENSION WIRE INSTALLED HORIZONTALLY AT TOP AND BOTTOM OF CHAIN-LINK FENCE.

FILTER FABRIC FENCE SHOULD BE PLACED AS CLOSE TO THE CONTOUR AS POSSIBLE.

THE LENGTH OF SLOPE ABOVE THE FENCE SHALL NOT EXCEED 400 FEET IN STEEP TERRAIN. IN FLATTER AREAS THE LENGTH CAN BE EXTENDED WITH THE APPROVAL OF THE ENGINEER.

NO SECTION OF SILT FENCE SHOULD EXCEED A GRADE OF 5% FOR MORE THAN A DISTANCE OF 20 FEET.

SEDIMENT MUST BE REMOVED WHEN ACCUMULATIONS REACH 1/2 THE ABOVE GROUND HEIGHT OF THE FENCE.



**SUMMARY OF MATERIALS (3D)**

NO.	DESCRIPTION	QTY

**SUMMARY OF MATERIALS (3D)**

NO.	DESCRIPTION	QTY

**GENERAL INFORMATION**

- ALL DESIGN STRENGTH OF PIPELINE AND MAP CALCULATIONS ALONG WITH ROUTING WERE PREPARED BY ANTERO AND PROVIDED TO THRASHER FOR REVIEW ON THE PLANS. THRASHER ASSUMES NO LIABILITY FOR THE CORRECTNESS OF THESE CALCULATIONS AND/OR ROUTE PROVIDED BY ANTERO.
- THIS SHEET IS INTENDED TO BE PLOTTED ON A18" x 34" FOR REDUCTIONS REFER TO GRAPHIC SCALE.

**Antero**  
Midstream

**CRIMSON SOUTH SWL ESCP DETAILS**

PROPOSED 18" HDPE SURFACE WATER LINE  
DODDRIIDGE COUNTY, WEST VIRGINIA

DRAWN BY: JLU (TIC) DATE: 11/17/2022  
CHECKED BY: TIE (TIC) DATE: 11/17/2022  
SCALE: AS SHOWN SHEET: 22 - ESC2P  
REVISION No: 3

**THRASHER**

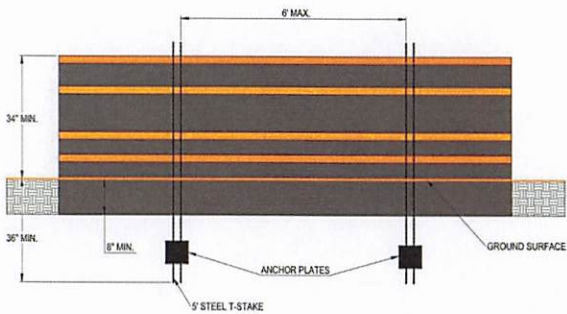
**IFP**  
ISSUED FOR PERMITTING

DATE: 11/09/2022  
AFE # A11568

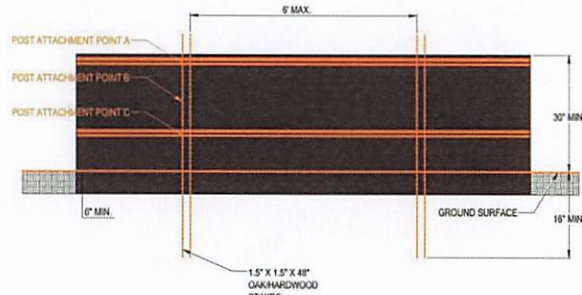




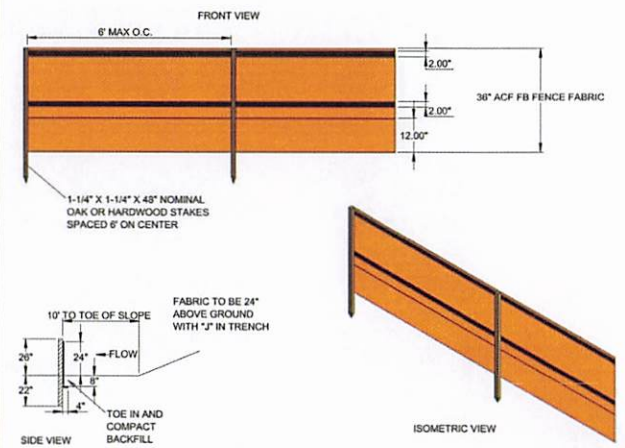
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 USER: jgiles\_jgiles  
 PLOT DATE/TIME: 11/17/2022 4:53 PM



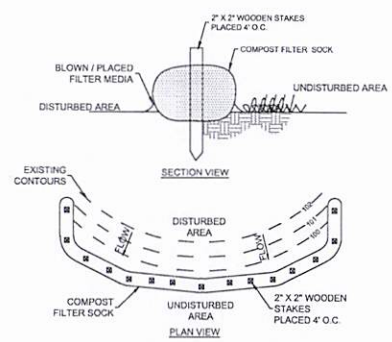
9 ACF ENVIRONMENTAL SMARTFENCE 42  
NTS



9 B ACF ENVIRONMENTAL SMARTFENCE 36 (SD) WITH WOOD POSTS  
NTS



9 C ACF ENVIRONMENTAL FILTRATION BARRIER (SMARTFENCE FB) WITH WOOD POSTS  
NTS



10 A COMPOST FILTER SOCK  
NTS

- CONDITIONS WHERE PRACTICE APPLIES:**
- INSTALL ON DISTURBED AREAS THAT REQUIRE IMMEDIATE EROSION PROTECTION.
  - USE ON SLOPES REQUIRING STABILIZATION UNTIL PERMANENT VEGETATION CAN BE ESTABLISHED.
  - CAN BE USED ALONG THE PERIMETER OF THE PRELINE, AS A CHECK DAM IN UNLINED DITCHES AND AROUND TEMPORARY STOCKPILES.
  - SOCK CAN BE STAKED TO THE GROUND USING MELLOW CUTTINGS FOR ADDED VEGETATION.
  - EROSION CAN OCCUR BENEATH AND BETWEEN SOCK IF NOT PROPERLY ENTRENCHED, ALLOWING WATER TO PASS BELOW AND BETWEEN SOCKS. IT IS THEREFORE VERY IMPORTANT TO INSTALL SOCKS CORRECTLY.
  - ROLLS ARE A SHORT-TERM SOLUTION TO HELP ESTABLISH NATIVE VEGETATION.
  - ROLLS STORE MOISTURE FOR VEGETATION PLANTED IMMEDIATELY UPLSLOPE.

- CONSTRUCTION SPECIFICATIONS:**
- IT IS CRITICAL THAT SOCK IS INSTALLED PERPENDICULAR TO THE FLOW DIRECTION AND PARALLEL TO THE SLOPE CONTOUR.
  - NARROW TRENCHES SHOULD BE DUG ACROSS THE SLOPE, ON CONTOUR, TO A DEPTH OF 3 TO 5 INCHES ON CLAY SOILS AND SOILS WITH GRADUAL SLOPES. ON LOOSE SOILS, STEEP SLOPES, AND DURING HIGH RAINFALL EVENTS, THE TRENCHES SHOULD BE DUG TO A DEPTH OF 5 TO 7 INCHES, OR 2/3 TO 2/3 OF THE THICKNESS OF THE SOCK.
  - START CONSTRUCTION OF TRENCHES AND INSTALLING SOCK FROM THE BASE OF THE SLOPE AND WORK UPHILL. EXCAVATED MATERIAL SHOULD BE SPREAD EVENLY ALONG THE UPHILL SLOPE AND COMPACTED USING HAND TAMING OR OTHER METHOD. CONSTRUCT TRENCHES AT CONTOUR INTERVALS OF 3 TO 30 FEET APART DEPENDING ON THE STEEPNESS OF THE SLOPE, SOIL TYPE, AND RAINFALL. THE STEEPER THE SLOPE, THE CLOSER TOGETHER THE TRENCHES SHOULD BE CONSTRUCTED.
  - INSTALL THE SOCK SNUGLY INTO THE TRENCHES AND ABOUT TIGHTLY END TO END, DO NOT OVERLAP THE ENDS.
  - INSTALL STAKES AT EACH END OF THE SOCK, AND AT A MINIMUM OF 4-FOOT CENTERS ALONG THE ENTIRE LENGTH OF THE SOCK.
  - IF REQUIRED, INSTALL PILOT HOLES FOR THE STAKES USING A STRAIGHT BAR TO DRIVE HOLES THROUGH THE SOCK AND INTO THE SOIL.
  - AT A MINIMUM, WOODEN STAKES SHOULD BE APPROXIMATELY 2 X 2 X 24 INCHES. MELLOW CUTTINGS OR 3/8-INCH REBAR CAN ALSO BE USED FOR STAKES.
  - STAKES SHOULD BE DRIVEN THROUGH THE MIDDLE OF THE SOCK, LEAVING 2 TO 3 INCHES OF THE STAKE PROTRUDING ABOVE THE SOCK.

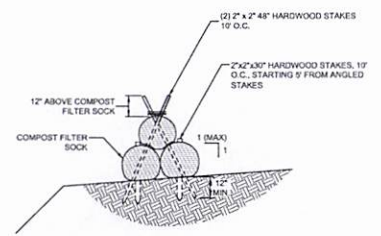
10 B COMPOST FILTER SOCK  
NTS

- MAINTENANCE:**
- INSPECT SOCK AT LEAST ONCE A WEEK AND AFTER EACH RAIN EVENT GREATER THAN 0.5 INCH.
  - REPAIR OR REPLACE SPLIT, TORN, RAVELING, OR SLUMPING SOCK.
  - REMOVE SEDIMENT ACCUMULATIONS WHEN EXCEEDING 1/2 THE HEIGHT BETWEEN THE TOP OF THE SOCK AND THE GROUND SURFACE.
  - REPAIR ANY RILLS OR GULLIES PROMPTLY.
  - RESEED OR REPLANT VEGETATION IF NECESSARY UNTIL THE SLOPE IS STABILIZED.

Slope Percent	Minimum Sock Length Above Treatment Channel or Pipe (inches)*			
	1% to 20% (25 to 500 mm)	20% to 30% (500 to 750 mm)	30% to 40% (750 to 1000 mm)	40% to 50% (1000 to 1250 mm)
2 to 10%	180 (457)	270 (686)	360 (914)	450 (1143)
10	270 (686)	360 (914)	450 (1143)	540 (1372)
15	360 (914)	450 (1143)	540 (1372)	630 (1601)
20	450 (1143)	540 (1372)	630 (1601)	720 (1830)
25	540 (1372)	630 (1601)	720 (1830)	810 (2059)
30	630 (1601)	720 (1830)	810 (2059)	900 (2288)
35	720 (1830)	810 (2059)	900 (2288)	990 (2517)
40	810 (2059)	900 (2288)	990 (2517)	1080 (2746)
45	900 (2288)	990 (2517)	1080 (2746)	1170 (2975)
50	990 (2517)	1080 (2746)	1170 (2975)	1260 (3204)

\* Based on a failure point of 20 to 30 PSI super soil fence reinforced at 1000 PSI of soil, watered with equivalent to receiving length of untreated treated channel. 10 to 20 PSI super soil fence needs.  
 \*\* Effective height of treatment canal after installation and with a sand sheet from runoff as determined by Ohio State University.

10 C COMPOST FILTER SOCK  
NTS



10 C TRIPLE STACK FILTER SOCK  
NTS

**THRASHER**

**IFP**  
ISSUED FOR PERMITTING

DATE: 11/09/2022  
AFE # A11568

**SUMMARY OF MATERIALS (3D)**

NO.	DESCRIPTION	QTY

**SUMMARY OF MATERIALS (3D)**

NO.	DESCRIPTION	QTY

**REVISION**

NO.	DESCRIPTION	DATE	BY
1	REVISED PER COMMENTS FROM MWH/AN	10/26/22	JGJ
2	REVISED PER COMMENTS FROM MWH/FILLER	11/23/22	JGJ
3	REVISED PER COMMENTS FROM ANTERO	11/29/22	JGJ

**GENERAL INFORMATION**

- ALL DESIGN, STRENGTH OF PIPELINE AND MAP CALCULATIONS ALONG WITH ROUTING WERE PREPARED BY ANTERO AND PROVIDED TO THRASHER FOR REVIEW ON THE PLANS. THRASHER ASSUMES NO LIABILITY FOR THE CORRECTNESS OF THESE CALCULATIONS AND/OR ROUTE PROVIDED BY ANTERO.
- THIS SHEET IS INTENDED TO BE PLOTTED ON A8 1/2" (21" x 34") FOR REDUCTIONS, REFER TO GRAPHIC SCALE.

**Antero**  
Midstream

**CRIMSON SOUTH SWL  
ESCP DETAILS**

PROPOSED 18" HDPE  
SURFACE WATER LINE  
DODDRIDGE COUNTY, WEST VIRGINIA

DRAWN BY: JGJ (TIG) DATE: 11/17/2022  
 CHECKED BY: TIG (TIG) AFE No.: A11568  
 SCALE: AS SHOWN  
 REVISION No.: 3 SHEET: 24 - ESCP4





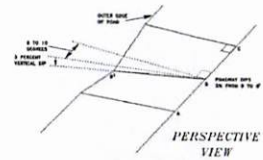






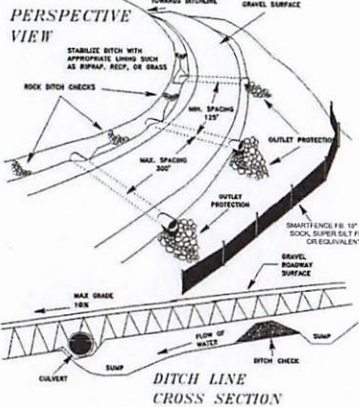




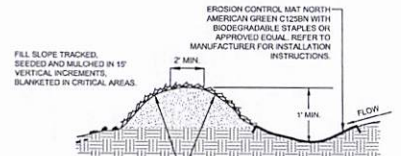


Subarea Area (Acres)	Total Silt Load			
	TON	CU YD	CU YD	CU YD
3.18	24	10	30	30
36.70	28	11	42	42
11.10	38	15	42	42
105.15	38	42	42	42
152.20	38	42	42	42
202.20	42	42	42	42
252.20	42	42	42	42
302.20	42	42	42	42
352.20	42	42	42	42
402.20	42	42	42	42
452.20	42	42	42	42
502.20	42	42	42	42
552.20	42	42	42	42
602.20	42	42	42	42
652.20	42	42	42	42

35 BROAD-BASE DIP  
NTS



36 EROSION AND SEDIMENT CONTROL FOR ACCESS ROADS AND DRIVEWAYS  
NTS



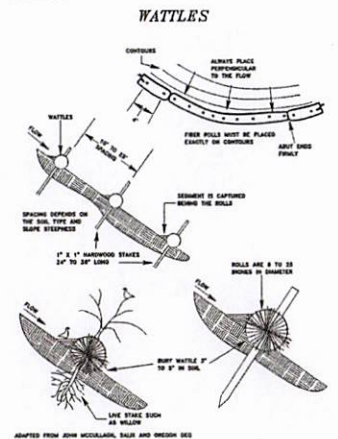
- INSTALLATION:**
1. WHEN CLEARING THE LOCATION FOR THE DIVERSION, ONLY CLEAR ENOUGH ROOM FOR CONSTRUCTION AND MAINTENANCE EQUIPMENT ACCESS. DO NOT CLEAR ANY ADDITIONAL AREA UNTIL ALL EROSION CONTROL DEVICES ARE IN PLACE.
  2. REMOVE ALL STUMPS, ROOTS, AND OTHER DEBRIS AND DISPOSE OF THEM PROPERLY.
  3. INSTALL MATERIALS AND COMPACT AS SHOWN IN DETAIL INSURE POSITIVE DRAINAGE DURING CONSTRUCTION OF BERM.
  4. SCARP F, SEED, MULCH AND TACK DISTURBED AREAS IMMEDIATELY UPON COMPLETION OF BERM.
  5. INST ALL EROSION CONTROL MAT NORTH AMERICAN GREEN C1228 PER MANUFACTURERS RECOMMENDATIONS AND KEY INTO SIDES OF CHANNEL TO PREVENT WATER FROM UNDERMINING OR DAMAGING CHANNEL LINER.

- NOTE:**
1. TEMPORARY BERMS SHALL BE PLACED, MAINTAINED AND ADJUSTED CONTINUOUSLY UNTIL 90% VEGETATIVE GROWTH IS ESTABLISHED ON THE EXTERIOR SLOPES WITH PERMANENT STORM DRAINAGE FACILITIES FUNCTIONING.
  2. BERMS SHALL OUTLET TO SLOPE PIPES, CHANNELS, OR OTHER APPROVED MEANS OF CONVEYING RUNOFF TO A SEDIMENT TRAP, SEDIMENT BASIN, OR COLLECTOR CHANNEL.
  3. CHANNEL BEHIND BERM SHALL HAVE POSITIVE GRADE TO OUTLET AND AN APPROPRIATE PROTECTIVE LINING.
  4. BERM SHALL BE ADEQUATELY COMPACTED TO PREVENT FAILURE.
  5. AN ACCEPTABLE ALTERNATIVE TO TOP-OF-SLOPE BERMS IS TO CONTINUOUSLY GRADE THE TOP OF FILL TO DIRECT RUNOFF AWAY FROM THE FILLSLOPE TO A COLLECTOR CHANNEL, SEDIMENT TRAP, OR SEDIMENT BASIN.

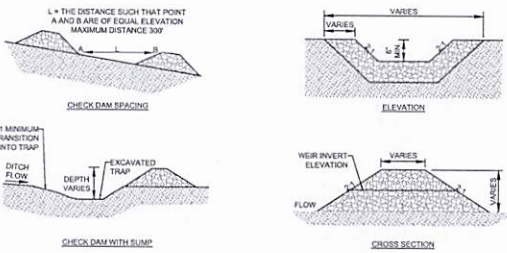
**MAINTENANCE:**  
INSPECT TEMPORARY DIVERSIONS ONCE A WEEK AND AFTER EVERY RAINFALL. IMMEDIATELY REMOVE SEDIMENT FROM THE FLOW AREA AND REPAIR THE DIVERSION RIDGE. CAREFULLY CHECK OUTLETS AND MAKE TIMELY REPAIRS. REMOVE THE RIDGE AND THE CHANNEL TO BLEND WITH THE NATURAL GROUND LEVEL AND APPROPRIATELY STABILIZE IT.

37 TEMPORARY DIVERSION BERM FOR OFFSITE WATER  
NTS

FIGURE 3.06.1

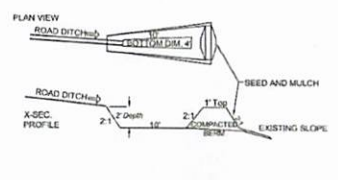


38 WATTLES  
NTS



**NOTES:**  
DITCH CHECKS WILL BE CONSTRUCTED IN CHANNELS TO MINIMIZE EROSION. THE CONSTRUCTION OF THE DITCH CHECK WILL FOLLOW THE GUIDELINES ABOVE. DITCH CHECKS WILL BE CONSTRUCTED TO THE ELEVATION OF THE TOP OF THE DOWNSTREAM DITCH CHECK OR EQUAL TO THE ELEVATION OF THE BASE OF THE DITCH CHECK ABOVE. THIS CREATES A SITUATION WHERE THE CHANNEL HAS NO CHANNELIZED FLOW PER SE. THE WATER FLOWING DOWN THE DITCH WILL CARCAUSE FROM THE POOL, CREATED BY ONE DITCH CHECK INTO THE POOL CREATED BY THE DOWNSTREAM DITCH CHECK THIS DISSIPATES ENERGY AND SLOWS THE WATER FLOW REDUCING EROSION AND ALLOWING ANY SEDIMENT IN THE DRAINAGE TO FALL OUT.

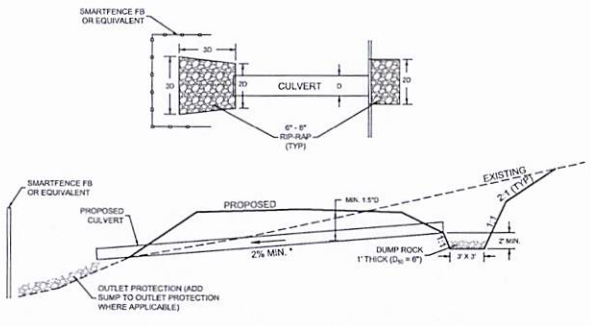
32 ROCK CHECK DAM  
NTS



**NOTE:** TO BE PLACED AT THE ENDS OF DITCHES CALLING FOR LEVEL SPREADERS LEVEL SPREADERS WILL BE CUT INTO THE CONTOUR OF THE EXISTING SLOPE.

**NOTES:**  
LEVEL SPREADER TO BE CONSTRUCTED IN AREAS WHERE A CULVERT OR CHANNEL MUST EMPTY ONTO GROUND WITH NO ASSOCIATED CHANNELIZED FLOW. THE PURPOSE OF THE LEVEL SPREADER IS TO DISSIPATE ENERGY AND SPREAD THE FLOW OUT OVER A SIGNIFICANT AREA. THIS WILL TAKE A CHANNELIZED FLOW AND ESSENTIALLY CONVERT IT BACK TO A SHEET FLOW OVER THE GROUND SURFACE. THE SHEET FLOW WILL HAVE LESS CHANGE FOR EROSION. CONSIDERING THE LOWER VELOCITIES AND FLOW VOLUMES IN ANY PARTICULAR AREA, THEY MAY BE CONSTRUCTED MUCH LIKE A SUMP WHERE THE CHANNEL OR CULVERT EMPTIES INTO THE SUMP AND THEN OVERTOPS THE BERMED AREA, BUT THEY MAY OFTEN CONTAIN GRAVEL IN THE SUMPED AREA. THEY WILL ALLOW BE CONSTRUCTED ALONG THE GROUND CONTOUR.

40 LEVEL SPREADER  
NTS



**NOTES:**  
1. 2% MINIMUM SLOPE EXCEPT WHERE NOTED ON PLANS.  
2. CULVERTS IN STREAMS SHALL BE LAD AT 90 AND COUNTERSUNK.  
INLET AND OUTLET PROTECTION IS ESSENTIALLY GRAVELS AND OR RAP PLACED AT BOTH THE INLET AND OUTLET SIDES OF CULVERTS. THE GRAVELS WILL HELP TO SLOW THE FLOW OF WATER, AND DISSIPATE ENERGY. THIS WILL IN TURN DECREASE THE CHANCES OF EROSION AND ALSO ALLOW ANY SEDIMENT IN THE WATER TO SETTLE OUT.

41 TYPICAL CULVERT & CULVERT INLET/OUTLET PROTECTION  
NTS

USER: Jerald Jenkins  
 PLOT DATE/TIME: 11/29/2022 4:05 PM  
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**IFP**  
ISSUED FOR PERMITTING  
DATE: 11/09/2022  
AFE # A11568

SUMMARY OF MATERIALS (3D)		
NO.	DESCRIPTION	QTY

SUMMARY OF MATERIALS (3D)		
NO.	DESCRIPTION	QTY

**GENERAL INFORMATION**

1. ALL DESIGN, STRENGTH OF PIPELINE AND MAP CALCULATIONS ALONG WITH ROUTING WERE PREPARED BY ANTERO AND PROVIDED TO THRASHER FOR INCLUSION ON THE PLANS. THRASHER ASSUMES NO LIABILITY FOR THE CORRECTNESS OF THESE CALCULATIONS AND/OR ROUTE PROVIDED BY ANTERO.
2. THIS SHEET IS INTENDED TO BE PLOTTED ON AHS D (22" x 34"), FOR REDUCTIONS, REFER TO GRAPHIC SCALE.

**Antero**  
Midstream

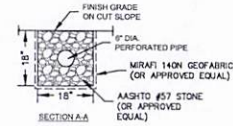
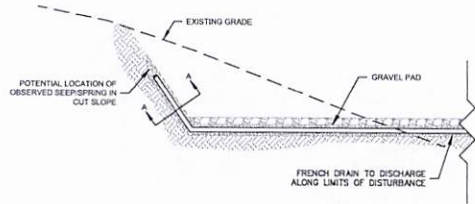
**CRIMSON SOUTH SWL  
ESCP DETAILS**

PROPOSED 18" HDPE  
SURFACE WATER LINE  
DODDORIDGE COUNTY, WEST VIRGINIA

DRAWN BY: JZJ (T12) DATE: 11/29/2022  
 CHECKED BY: TTS (T10) AFE No.: A11568  
 SCALE: AS SHOWN  
 REVISION No.: 3 SHEET: 29 - ESCP9

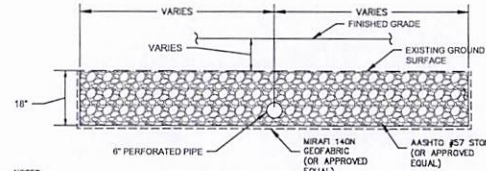
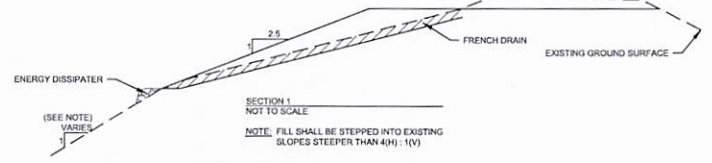






**NOTE:**  
IF EVIDENCE OF A SEEPSPRING IN A CUT SLOPE IS OBSERVED, THE CONTRACTOR SHOULD INSTALL A FRENCH DRAIN PER DETAIL 36 ABOVE.

46 FRENCH DRAIN AT OBSERVED SEEPSPRING IN CUT SLOPES  
NTS



- NOTES:**
- WHERE SPRINGS OR SEEPS ARE ENCOUNTERED DURING CONSTRUCTION, DRAINABLE FILL AND PERFORATED PIPES (FRENCH DRAINS) SHOULD BE INSTALLED TO PROVIDE A DRAINAGE PATH FOR SEEPAGE FROM THE EXISTING SLOPE.
  - THE FRENCH DRAIN SHOULD CONSIST OF A 6 INCH DIAMETER PERFORATED PIPE SURROUNDED BY DRAINABLE FILL, INSTALLED IN AN 18 INCH DEEP TRENCH ALONG THE EXISTING DRAINAGE FEATURE OR SEEP. PRIOR TO DRAINABLE FILL PLACEMENT, THE TRENCH SHOULD BE LINED WITH A LAYER OF GEOTEXTILE SUCH AS MRAP 140N, OR APPROVED EQUAL, WITH SUFFICIENT OVERLAP TO PROVIDE AN ENVELOPE AROUND THE PIPE TRENCH TO PREVENT THE MIGRATION OF FINES INTO THE FRENCH DRAIN.
  - THE FRENCH DRAIN SHOULD DAYLIGHT BEYOND THE TOE OR SIDE OF THE SLOPE AND EXTEND UP TO THE CREST OF THE SLOPE TO FACILITATE DRAINAGE THROUGH THE FILL SECTION. THE AS-BUILT WIDTH OF THE FRENCH DRAIN SHOULD BE A FUNCTION OF THE WIDTH OF THE SPRING, SEEP OR DRAINAGE FEATURE OBSERVED DURING CONSTRUCTION.
  - THE FRENCH DRAIN SHOULD BE CONSTRUCTED TO SPAN THE ENTIRE WIDTH OF THE OBSERVED SPRING OR SEEP.

47 FRENCH DRAIN AND DRAINABLE FILL SECTION AT OBSERVED SEEPSPRING OR EXISTING DRAINAGE FEATURE LOCATION  
NTS



**Typical Polymer Stabilized Fiber Matrix Application Rates**

SLOPE	Maximum Rainfall of ≤ 20"						
	6:1	5:1	4:1	3:1	2:1	1.5:1	1:1
Soil Stabilizer (gal/acre)	4	5	6	7	8	9	10
Fiber (lb/acre)	1,500	1,500	1,500	1,800	2,000	2,500	3,000

SLOPE	Maximum Rainfall of > 20" and for Site Winterization		
	5:1	4:1	3:1
Soil Stabilizer (gal/acre)	6	8	10
Fiber (lb/acre)	2,000	2,500	3,000

**NOTES:**

A BONDED FIBER MATRIX (BFM) IS AN EFFECTIVE METHOD OF STABILIZING STEEP SLOPES WHEN USED PROPERLY. BFM MAKE USE OF A CROSS-LINKED HYDROCOLLOID TACKIFIER TO BOND THERMALLY PROCESSED WOOD FIBERS. APPLICATION RATES VARY ACCORDING TO SITE CONDITIONS. FOR SLOPES UP TO 3H 1V THE BFM SHOULD BE APPLIED AT A RATE OF 3,000 LB/ACRE. STEEPER SLOPES MAY NEED AS MUCH AS 6,000 LB/ACRE.

BFM SHOULD ONLY BE USED WHEN NO RAIN IS FORECASTED FOR AT LEAST 48 HOURS FOLLOWING THE APPLICATION. THIS IS TO ALLOW THE TACKIFIER SUFFICIENT TIME TO CURE PROPERLY. ONCE PROPERLY APPLIED, A BFM IS TYPICALLY 90% EFFECTIVE IN PREVENTING ACCELERATED EROSION. BFM SHOULD NOT BE APPLIED BETWEEN SEPTEMBER 30 AND APRIL 1.

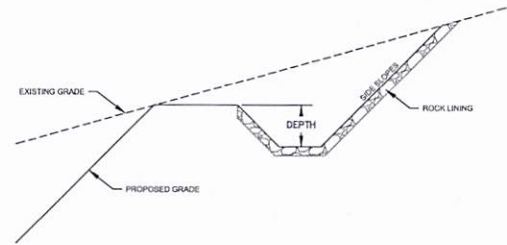
A POLYMER STABILIZED FIBER MATRIX (PSFM) CAN ALSO BE AN EFFECTIVE METHOD OF STABILIZING STEEP SLOPES WHEN USED PROPERLY. PSFM MAKE USE OF A LINEAR SOL STABILIZING TACKIFIER THAT WORKS DIRECTLY ON SOIL TO MAINTAIN SOIL STRUCTURE, MAINTAIN PORE SPACE CAPACITY AND FLOCCULATE DISLODGED SEDIMENT THAT WILL SIGNIFICANTLY REDUCE RUNOFF TURBIDITY. PROPERLY APPLIED, A PSFM MAY BE AS MUCH AS 99% EFFECTIVE.

**NOTES:**

UNLIKE ROLLED BLANKETS, THERE IS NO NEED TO SMOOTH THE SLOPE PRIOR TO APPLICATION OF HYDRAULICALLY APPLIED BLANKETS. IN FACT SOME ROUGHENING OF THE SURFACE, EITHER NATURAL OR MECHANICALLY INDUCED, IS PREFERABLE. HOWEVER, LARGE ROCKS THOSE > 9 INCHES, AND EXISTING PILLS SHOULD BE REMOVED PRIOR TO APPLICATION. TRACKING OR GROOVING OF SLOPES SHOULD BE CONSIDERED TO SLOW WATER FLOWS DURING A STORM EVENT. SLOPE INTERRUPTION DEVICES SUCH AS STAIR STEP GRADING OR BENCHING SHOULD BE APPLIED PRIOR TO THE APPLICATION. MIXING AND APPLICATION RATES SHOULD FOLLOW MANUFACTURER'S RECOMMENDATIONS.

HYDRAULICALLY APPLIED BLANKETS ARE TYPICALLY APPLIED IN TWO STAGES, UNLESS SPECIFICALLY RECOMMENDED TO BE APPLIED IN ONE APPLICATION BY THE MANUFACTURER. THE SEED MIXTURE AND SOIL AMENDMENTS SHOULD BE APPLIED FIRST. IF THE SEED IS APPLIED AT THE SAME TIME AS THE HYDRAULICALLY APPLIED BLANKET, THE BONDED FIBERS MAY KEEP THE SEED FROM MAKING SUFFICIENT CONTACT WITH THE SOIL TO GERMINATE. AFTER THE SEED MIXTURE IS APPLIED, THE BFM, FOM, OR PSFM SHOULD BE SPRAYED OVER THE AREA AT THE REQUIRED APPLICATION RATE. (SEE ABOVE TABLES)

48 BONDED FIBER MATRIX (HYDROMULCH)  
NTS



**NOTE:**  
DRAINAGE CHANNEL DIMENSIONS AND LINING WILL BE DETERMINED BY ENGINEER AS APPLICABLE.

49 TYPICAL ROCK LINED CHANNEL  
NTS

DRAWN: JAB, ESD/STL, 11/9/2022 4:05 PM  
CHECKED BY: JAB, ESD/STL, 11/9/2022 4:05 PM  
DATE: 11/09/2022  
SCALE: AS SHOWN  
SHEET: 31 - ESCP11

**THRASHER**

**IFP**  
ISSUED FOR PERMITTING

DATE: 11/09/2022  
AFE # A11568

**CRIMSON SOUTH SWL**  
ESCP DETAILS

PROPOSED 18" HDPE SURFACE WATER LINE  
DOODRIDGE COUNTY, WEST VIRGINIA

DRAWN BY: JAB (TTC) DATE: 11/9/2022  
CHECKED BY: TTC (TTC) REV. NO.: A1568  
SCALE: AS SHOWN  
REVISION NO.: 3 SHEET: 31 - ESCP11

SUMMARY OF MATERIALS (3D)		
NO.	DESCRIPTION	QTY

SUMMARY OF MATERIALS (3D)		
NO.	DESCRIPTION	QTY

GENERAL INFORMATION		
1.	ALL DESIGN, STRENGTH OF PIPELINE AND WAPF CALCULATIONS ALONG WITH ROUTING WERE PREPARED BY ANTERO AND PROVIDED TO THRASHER FOR INCLUSION ON THE PLANS. THRASHER ASSUMES NO LIABILITY FOR THE CORRECTNESS OF THESE CALCULATIONS AND/OR ROUTE PROVIDED BY ANTERO.	
2.	THIS SHEET IS INTENDED TO BE PLOTTED ON A8S D (24" X 36"), FOR REDUCTIONS, REFER TO GRAPHIC SCALE.	

REVISION		
NO.	DESCRIPTION	DATE BY
1	REVISED PER COMMENTS FROM NATIONAL	10/26/22 JAB
2	REVISED PER COMMENTS FROM KLENZELER	11/2/22 JAB
3	REVISED PER COMMENTS FROM ANTERO	11/9/22 JAB







APPENDIX C  
National Streamflow Statistics – Drainage Area

Legend

Basins

Layers

Basemaps

Input Coordinate

examples:

38 15 30.1, -81 25 15.2 (lat, lon)  
38.123456, -81.123456 (lat, lon)  
500000, 4200000 (UTM as easting, northing)

Lat/Lon WGS 1984

zoom to point

Go

7Q10 Query Results

Stream Name Flint Run  
Stream Code OMN-13-CH-16  
WV Code WVOMI-30-H  
Drainage Area 16.671 sq mi

Exceptions and Warnings

Regulated Flow N  
Regulated Flow Info NA  
Known Losing Stream N  
Potential Karst Influence N  
Potential Non-Perennial N

Gage-based Estimates

Method  
Upstream Gage  
Downstream Gage  
Annual 7Q10 cfs  
Spring 7Q10 cfs  
Summer 7Q10 cfs  
Fall 7Q10 cfs  
Winter 7Q10 cfs

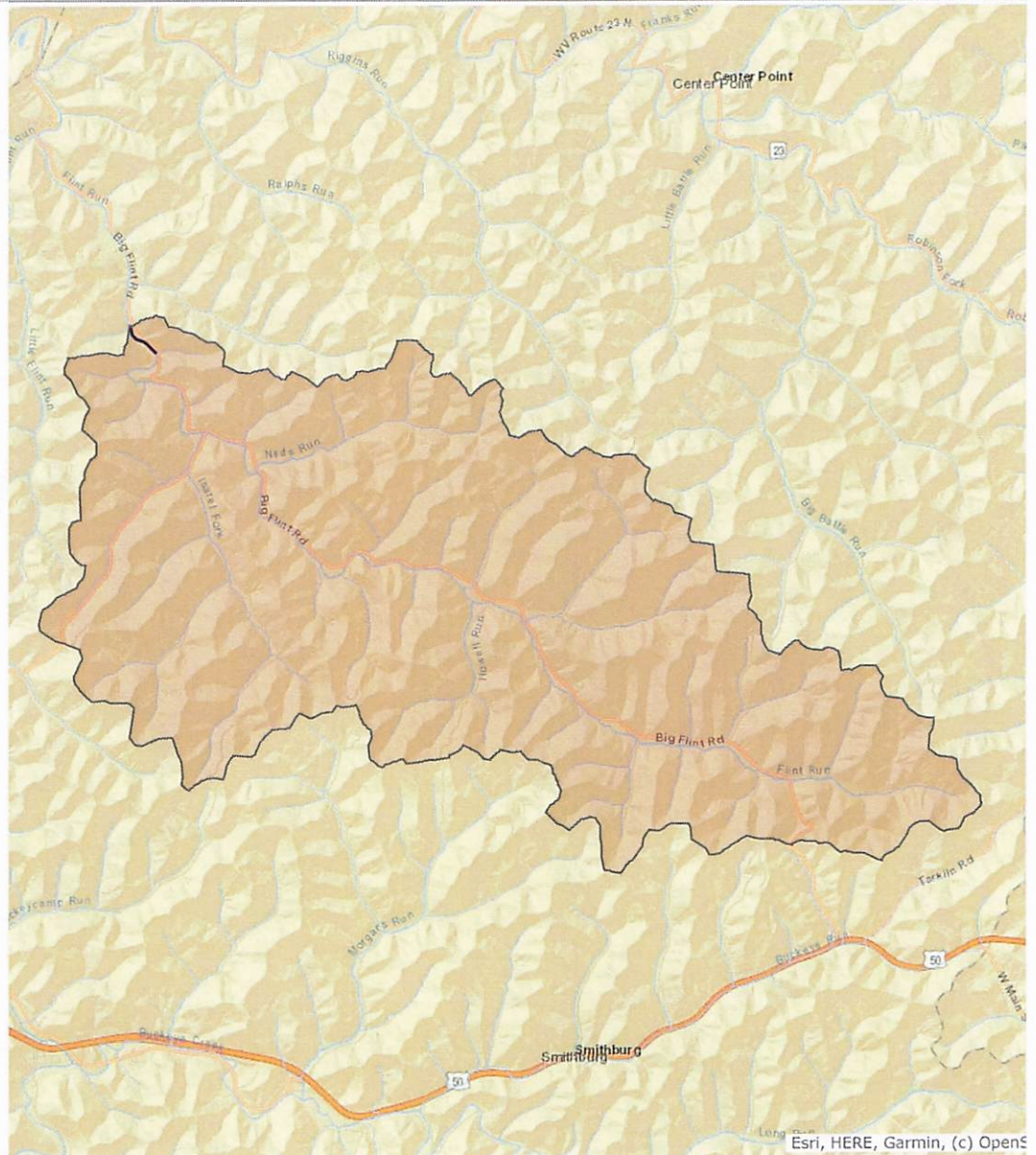
Regional Estimates

Annual 7Q10 0.010 cfs  
Spring 7Q10 0.214 cfs  
Summer 7Q10 0.010 cfs  
Fall 7Q10 0.050 cfs  
Winter 7Q10 1.539 cfs  
Spring D50 7.801 cfs  
Summer D50 0.774 cfs  
Fall D50 3.404 cfs  
Winter D50 19.315 cfs  
D75 1.154 cfs  
Harmonic Mean 0.457 cfs

Guidance:

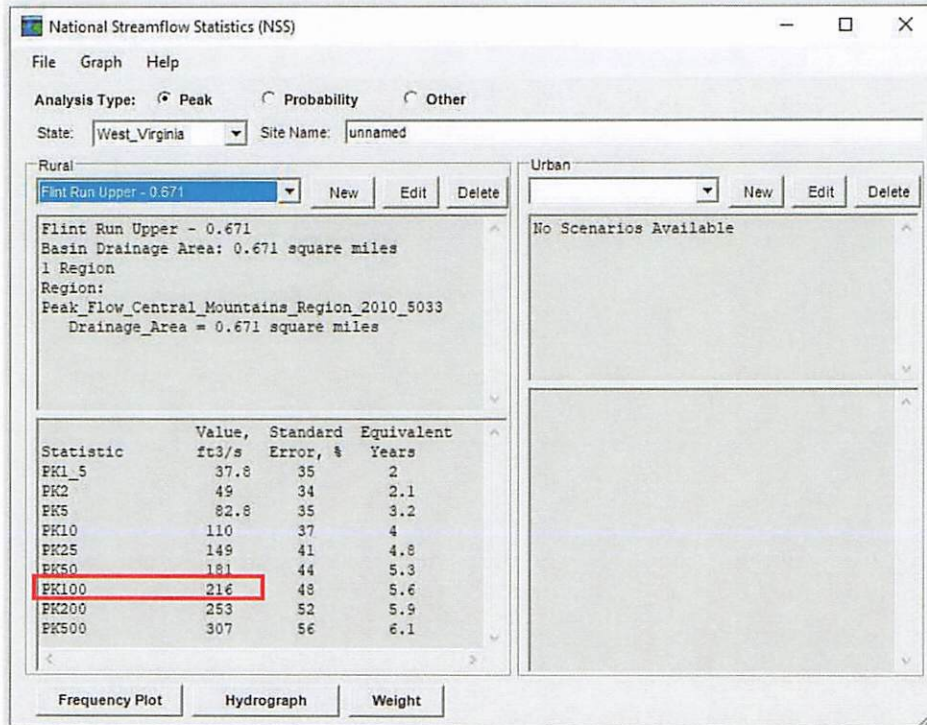
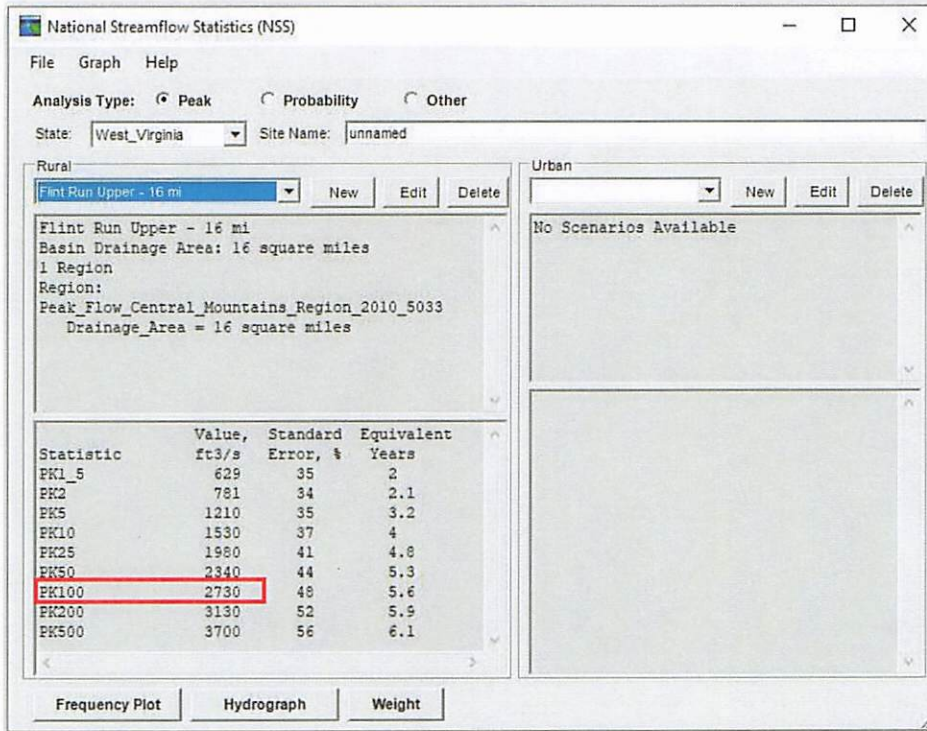
This stream is not proximate to a stream gage. Use the regional estimate.

[flow calculation methods](#)





Upper Flint Run = 16.671 sq. mi.



Legend

Basins

Layers

Basemaps

Input Coordinate

examples:

38 15 30.1, -81 25 15.2 (lat, lon)  
38.123456, -81.123456 (lat, lon)  
500000, 4200000 (UTM as easting, northing)

Lat/Lon WGS 1984

zoom to point

Go

7Q10 Query Results

Stream Name UNT/Flint Run RM  
2.59  
Stream Code OMN-13-CH-16-F  
WV Code  
Drainage Area 0.116 sq mi

Exceptions and Warnings

Regulated Flow N  
Regulated Flow Info NA  
Known Losing Stream N  
Potential Karst Influence N  
Potential Non-Perennial Y

Gage-based Estimates

Method  
Upstream Gage  
Downstream Gage  
Annual 7Q10 cfs  
Spring 7Q10 cfs  
Summer 7Q10 cfs  
Fall 7Q10 cfs  
Winter 7Q10 cfs

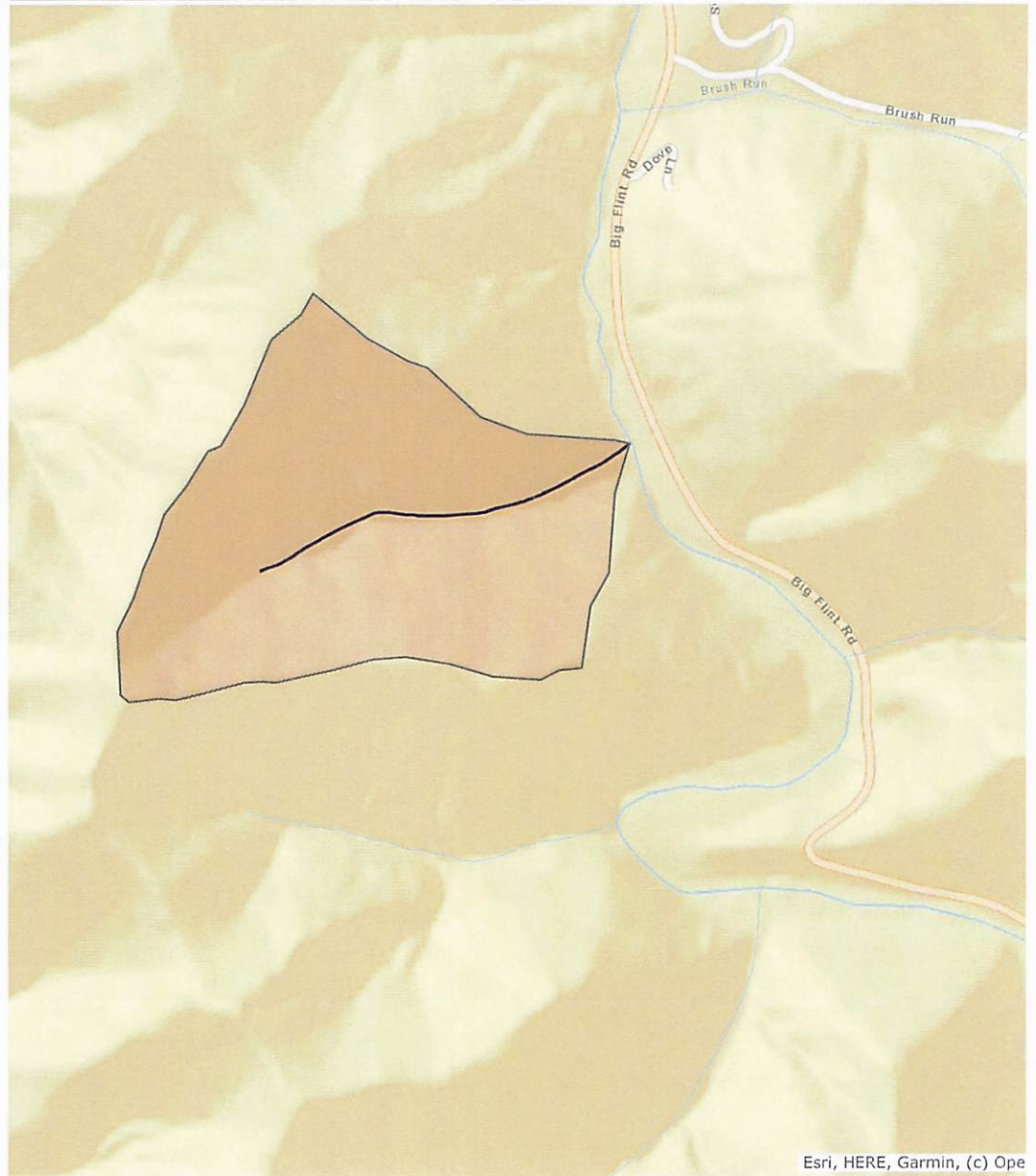
Regional Estimates

Annual 7Q10 0.000 cfs  
Spring 7Q10 0.001 cfs  
Summer 7Q10 0.000 cfs  
Fall 7Q10 0.000 cfs  
Winter 7Q10 0.006 cfs  
Spring D50 0.036 cfs  
Summer D50 0.001 cfs  
Fall D50 0.011 cfs  
Winter D50 0.089 cfs  
D75 0.003 cfs  
Harmonic Mean 0.001 cfs

Guidance:

This stream is not proximate to a stream gage.  
Use the regional estimate.

[flow calculation methods](#)



Esri, HERE, Garmin, (c) Ope





Stream = 0.116 sq. mi.

The screenshot shows the National Streamflow Statistics (NSS) software interface. The window title is "National Streamflow Statistics (NSS)". The menu bar includes "File", "Graph", and "Help". The "Analysis Type" is set to "Peak". The "State" is "West\_Virginia" and the "Site Name" is "unnamed".

There are two main panels: "Rural" and "Urban". The "Rural" panel is active and shows a dropdown menu with "Stream" selected. Below the dropdown are "New", "Edit", and "Delete" buttons. The text in the "Rural" panel reads: "Stream", "Basin Drainage Area: 0.116 square miles", "I Region", "Region:", "Peak\_Flow\_Central\_Mountains\_Region\_2010\_5033", and "Drainage\_Area = 0.116 square miles".

The "Urban" panel is inactive and shows a dropdown menu with "No Scenarios Available" selected. Below the dropdown are "New", "Edit", and "Delete" buttons.

At the bottom of the "Rural" panel is a table with the following data:

Statistic	Value, ft3/s	Standard Error, %	Equivalent Years
EK1_5	7.96	35	2
EK2	10.6	34	2.1
EK5	18.8	35	3.2
EK10	25.5	37	4
EK25	35.5	41	4.8
EK50	43.9	44	5.3
<b>EK100</b>	<b>53</b>	48	5.6
EK200	62.9	52	5.9
EK500	77.4	56	6.1

At the bottom of the window are three tabs: "Frequency Plot", "Hydrograph", and "Weight".

Legend

Basins

Layers

Basemaps

Input Coordinate

examples:  
38 15 30.1, -81 25 15.2 (lat, lon)  
38.123456, -81.123456 (lat, lon)  
500000, 4200000 (UTM as easting, northing)

Lat/Lon WGS 1984

zoom to point

Go

7Q10 Query Results

Stream Name *Flint Run*  
Stream Code *OMN-13-CH-16*  
WV Code *WVOMI-30-H*  
Drainage Area *16.882* sq mi

Exceptions and Warnings

Regulated Flow *N*  
Regulated Flow Info *NA*  
Known Losing Stream *N*  
Potential Karst Influence *N*  
Potential Non-Perennial *N*

Gage-based Estimates

Method  
Upstream Gage  
Downstream Gage  
Annual 7Q10 *cfs*  
Spring 7Q10 *cfs*  
Summer 7Q10 *cfs*  
Fall 7Q10 *cfs*  
Winter 7Q10 *cfs*

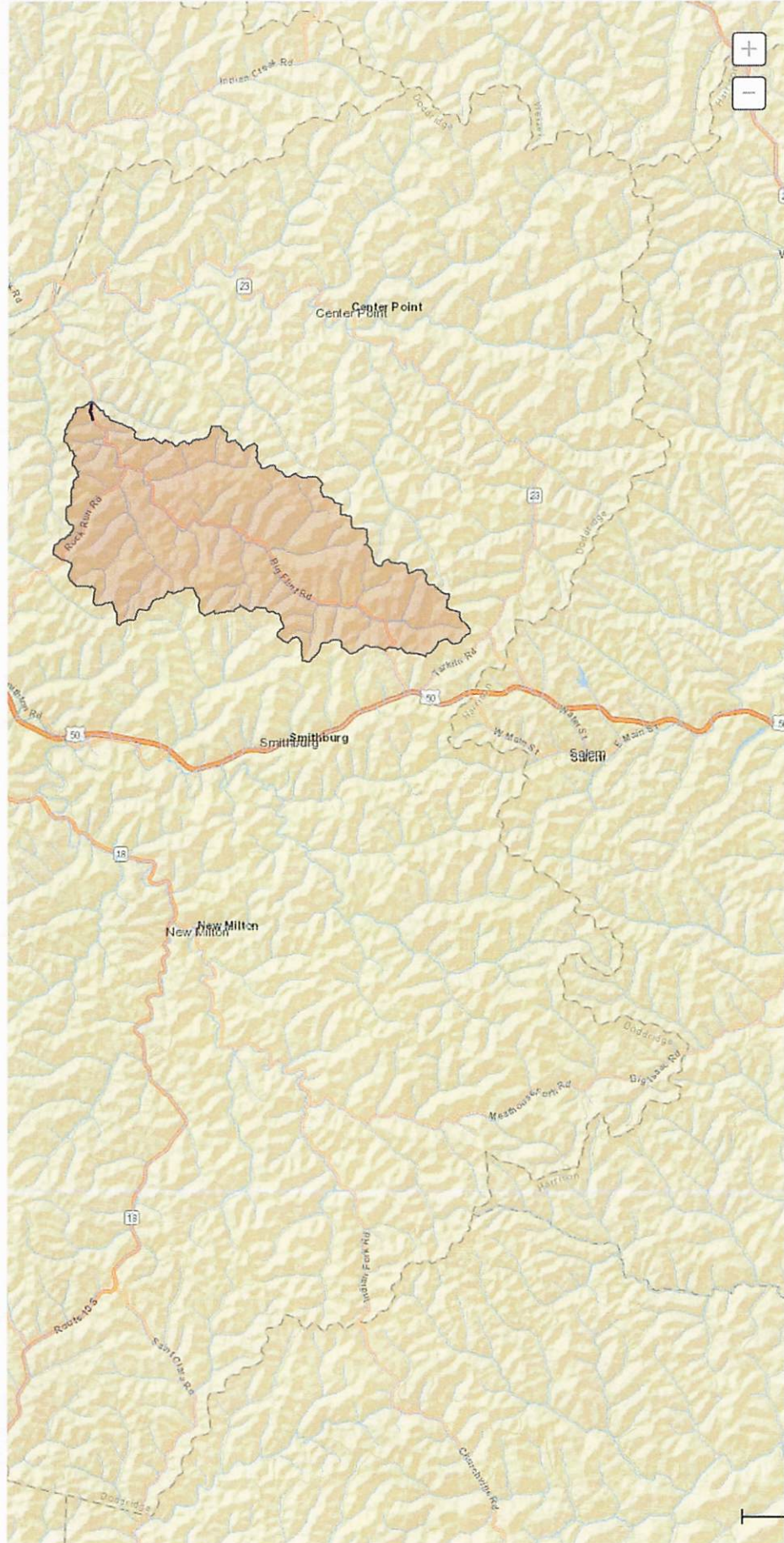
Regional Estimates

Annual 7Q10 *0.010* *cfs*  
Spring 7Q10 *0.217* *cfs*  
Summer 7Q10 *0.010* *cfs*  
Fall 7Q10 *0.051* *cfs*  
Winter 7Q10 *1.550* *cfs*  
Spring D50 *7.905* *cfs*  
Summer D50 *0.786* *cfs*  
Fall D50 *3.452* *cfs*  
Winter D50 *19.576* *cfs*  
D75 *1.171* *cfs*  
Harmonic Mean *0.464* *cfs*

Guidance:

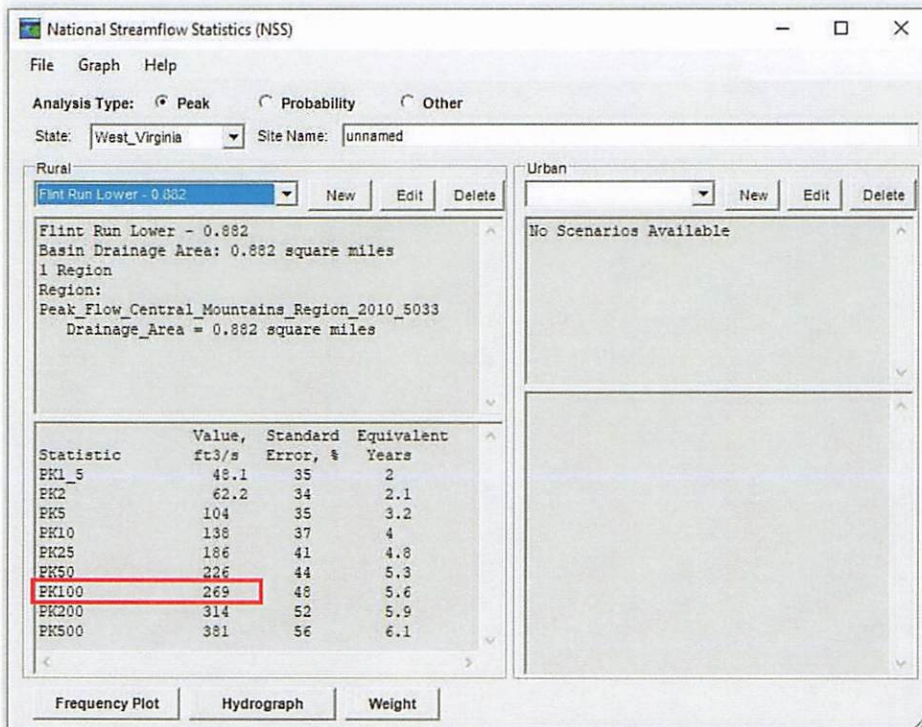
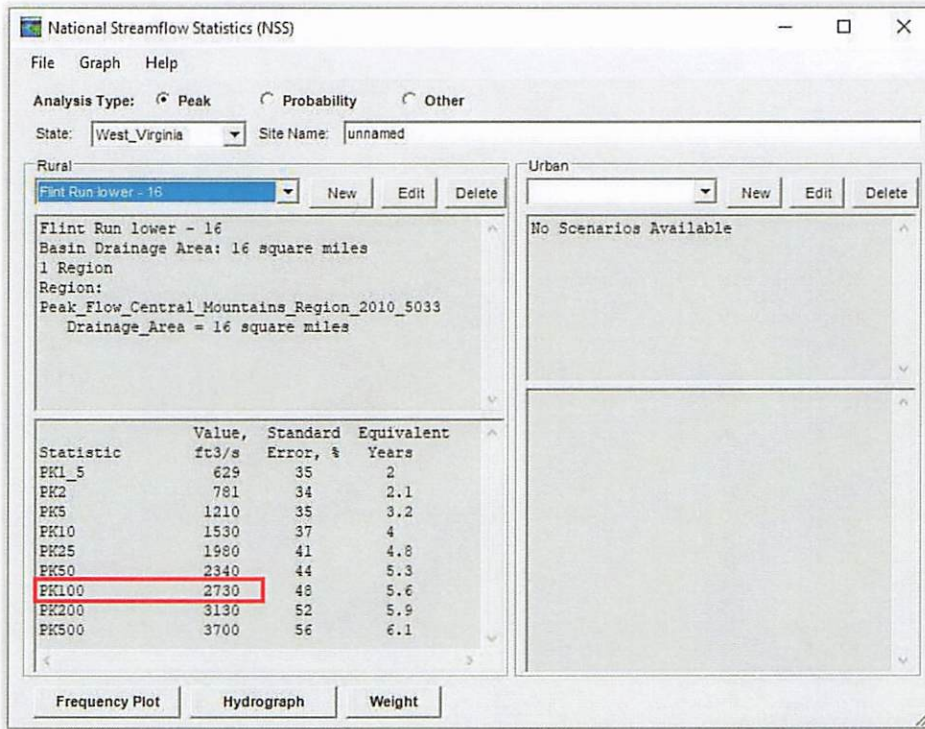
This stream is not proximate to a stream gage.  
Use the regional estimate.

[flow calculation methods](#)





Lower Flint Run = 16.882 sq.mi.





APPENDIX D  
Comparison for Calculated Flows - HEC-RAS  
Excel Data



HEC-RAS River: Flint Run Profile: PF 1

Reach	River Sta	Profile	Plan	Q Total	Min Ch El	W.S. Elev
				(cfs)	(ft)	(ft)
Upper	1402	PF 1	Pre	2946	758.00	765.85
Upper	1402	PF 1	Post	2946	758.00	765.93
Upper	1133	PF 1	Pre	2946	758.00	765.42
Upper	1133	PF 1	Post	2946	758.00	765.52
Upper	921	PF 1	Pre	2946	758.00	765.05
Upper	921	PF 1	Post	2946	758.00	765.22
Proposed Matting Bridge: River Sta 900						
Upper	874	PF 1	Pre	2946	758.00	764.93
Upper	874	PF 1	Post	2946	758.00	764.88
Upper	680	PF 1	Pre	2946	758.00	764.07
Upper	680	PF 1	Post	2946	758.00	763.96
Upper	422	PF 1	Pre	2946	758.00	763.10
Upper	422	PF 1	Post	2946	758.00	762.99
lower	176	PF 1	Pre	2999	756.00	763.06
lower	176	PF 1	Post	2999	756.00	762.90
lower	114	PF 1	Pre	2999	756.00	762.96
lower	114	PF 1	Post	2999	756.00	762.92



ATTACHMENT F  
PERMITTING & COORDINATION TABLE



### Permitting & Coordination Table

Permitting Agency	Permit/Coordination Required	Submitted	Received (Anticipated)	Status
USACE <sup>1</sup>	NWP 58	11/07/2022	04/17/2023	Approved
	Mitigation Plan	Not Applicable	Not Applicable	Not Required
USFWS <sup>2</sup>	Threatened & Endangered Species (Section 7 Coordination)	03/29/2023	04/17/2023	Approved via Issuance of NWP
WVSHPO <sup>3</sup>	Section 106 Coordination	<b>A Cultural Resources Literature Review Was Submitted to Support USACE's Determination of Potential Affects.</b>		Approved via Issuance of NWP
	Phase I & Architectural Survey			
WVDNR-OLS <sup>4</sup>	Stream Activity Application	11/07/2022	11/28/2022	Approved
WVDNR-WRS <sup>5</sup>	Mussel Survey	09/26/2022	09/28/2022	Approved
	Threatened & Endangered State Species	11/07/2022	11/15/2022	Approved
	Spawning Waiver	02/07/2023	02/10/2023	Approved
County Floodplain	Doddridge County Floodplain Application	01/11/2023	02/06/2023	Approved
	Doddridge County Floodplain Application Renewal	11/01/2023	(12/16/2023)	Pending
WVDEP <sup>6</sup>	401 WQC Program Notification	11/07/2022	11/09/2022	Approved
	NPDES <sup>7</sup> Permit	Not Applicable	Not Applicable	Not Required
	Construction Stormwater General Permit	11/14/2022	01/24/2023	Approved
WVDOH <sup>8</sup>	Utility Permit	Not Available	01/10/2023	Approved

- 1 United States Army Corps of Engineers
- 2 United States Fish and Wildlife Service
- 3 West Virginia Division of Culture and History, State Historic Preservation Office
- 4 West Virginia Division of Natural Resources Office of Land and Stream
- 5 West Virginia Division of Natural Resources – Wildlife Resources Section
- 6 West Virginia Department of Environmental Protection
- 7 National Pollutant Discharge Elimination System
- 8 West Virginia Division of Highways



REPLY TO  
ATTENTION OF

**DEPARTMENT OF THE ARMY**  
**U.S. ARMY CORPS OF ENGINEERS, HUNTINGTON DISTRICT**  
**502 8TH STREET**  
**HUNTINGTON, WV 25701-2018**

April 17, 2023

Regulatory Division  
Energy Resource Branch  
LRH-2022-916-LKR-Flint Run

**NATIONWIDE PERMIT (NWP) NO. 58 VERIFICATION AND  
PRELIMINARY JURISDICTIONAL DETERMINATION**

Mr. Daniel Bulian  
Antero Midstream  
535 White Oaks Boulevard  
Bridgeport, WV 26330

Dear Mr. Bulian:

I refer to the pre-construction notification (PCN) requesting a Department of the Army (DA) authorization for the discharge of dredged and/or fill material into waters of the United States (U.S.) in association with the construction of the Crimson South Surface Water Line. The proposed pipeline is located near Center Point, in Doddridge County, West Virginia (northeastern terminus occurs at 39.385516, -80.685486; southwestern terminus occurs at 39.362046, -80.729105). The proposed project area drains to Flint Run, an indirect tributary to the Little Kanawha River, a traditional navigable water of the U.S. Your PCN has been assigned the following file number: LRH-2022-916-LKR-Flint Run. Please reference this number on all future correspondence related to this project.

The U.S. Army Corps of Engineers' (Corps) authority to regulate waters of the U.S. is based on the definitions and limits of jurisdiction contained in 33 CFR 328 and 33 CFR 329. Section 404 of the Clean Water Act (Section 404) requires a DA permit be obtained prior to discharging dredged and/or fill material into waters of the U.S., including wetlands. Section 10 of the Rivers and Harbors Act of 1899 (Section 10) requires a DA permit be obtained for any work in, on, over or under a navigable water.

Based upon a review of the provided information, this office has determined that approximately 6,556 linear feet of twenty-seven (27) streams and 0.51 acre of twenty-five (25) wetlands, as indicated on the enclosed preliminary JD form, are located within the review area. This office has determined that these aquatic resources may be waters of the United States in accordance with the Regulatory Guidance Letter for JDs issued by the Corps on October 31, 2016 (Regulatory Guidance Letter No. 16-01). As indicated in the guidance, this Preliminary JD is non-binding and cannot be appealed (33 C.F.R. 331.2) and only provides a written indication that waters of the United States, including wetlands, may be present on-site.



You have declined to exercise the option to obtain an approved JD in this instance and at this time for the above aquatic resources. However, for the purposes of the determination of impacts, compensatory mitigation, and other resource protection measures for activities that require authorization from this office, the non-wetlands and wetlands will be evaluated as if they are waters of the United States.

Enclosed please find two (2) copies of the Preliminary JD form. If you agree with the findings of this Preliminary JD and understand your options regarding the same, please sign and date one (1) copy of the Preliminary JD form and return it to this office within 30 days of receipt of this letter. You should submit the signed copy to the following address:

United States Army Corps of Engineers  
Huntington District  
Attn: Energy Resource Branch  
502 Eighth Street  
Huntington, West Virginia 25701  
LRH-2022-916-LKR-Flint Run

Each single and complete project, as described in the submitted information, has been reviewed in accordance with Section 404 and Section 10. Based on your description of the proposed work, and other information available to us, it has been determined that each single and complete project will not involve activities subject to the requirements of Section 10. However, each single and complete project will include the discharge of dredged and/or fill material into waters of the U.S. subject to the requirements of Section 404.

In the submitted PCN materials, you have requested a DA authorization for the temporary discharge of dredge and/or fill material into 660 linear feet (0.13 acre) of four (4) streams and 0.057 acre of eight (8) wetlands at eight (8) single and complete project locations, in association with the construction of the Crimson South Surface Waterline. The discharge of dredged and/or fill material into waters of the U.S. is described in the enclosed Table 1. Upon completion of the pipeline crossings, the temporarily affected waters of the United States will be restored to their pre-disturbance conditions. All work will be conducted in accordance with the PCN received in this office on November 7, 2022.

Based on the provided information, it has been determined that each single and complete project meets the criteria for Nationwide Permit (NWP) No. 58 (*Utility Line Activities for Water and Other Substances*) under the January 13, 2021 Federal Register, Reissuance and Modification of NWPs (86 FR 2744) provided you comply with all terms and conditions of the enclosed material, the enclosed special conditions, and the Section 401 Water Quality Certification (401 WQC) issued by the West Virginia Department of Environmental Protection (WVDEP). A copy of this NWP can be found on our website at <http://www.lrh.usace.army.mil/Missions/Regulatory.aspx>.

Please be aware this NWP verification does not obviate the requirement to obtain other local, state, and federal authorizations. This verification is valid until the expiration date of the NWPs, unless the NWP authorization is modified, suspended, or revoked. The verification will remain valid if the NWP authorization is reissued without modification or the activity complies with any subsequent modification of the NWP authorization. All of the existing NWPs are scheduled to be modified, reissued, or revoked on March 14, 2026. Prior to this date, it is not necessary to contact this office for re-verification of your project unless the plans for the proposed activity are modified. Furthermore, if you commence or under contract to commence this activity before March 14, 2026, you will have twelve (12) months from the date of the modification or revocation of the NWP to complete the activity under the present terms and conditions of this NWP.

A copy of this NWP and verification letter must be supplied to your project engineer responsible for construction activities. A copy of the verification letter must be kept at the site during construction. Upon completion of the work associated with this project, the attached certification must be signed and returned to this office. If you have any questions concerning the above, please contact Emma K. Kist of the Energy Resource Branch at 304-399-6900 or by email at [emma.k.kist@usace.army.mil](mailto:emma.k.kist@usace.army.mil).

Sincerely,

*Kimberly Courts-Brown*

Kimberly D. Courts-Brown  
Regulatory Project Manager  
Energy Resource Branch

Enclosures

cc (letter only; via email):

Matt Albright  
Kleinfelder, Inc.  
[MAlbright@kleinfelder.com](mailto:MAlbright@kleinfelder.com)

Cristina Sanders  
U.S. Fish and Wildlife Service  
West Virginia Field Office  
[cristina\\_sanders@fws.gov](mailto:cristina_sanders@fws.gov)



<b>Table 1. Authorized discharge of dredged and/or fill material into waters of the United States in association with the Crimson South Surface Water Line – LRH-2022-916-LKR-Flint Run.</b>					
<b>Single and Complete Project</b>	<b>Aquatic Resource</b>	<b>Latitude and Longitude</b>	<b>Fill Length (LF)</b>	<b>Fill Area (Acre)</b>	<b>Description of the Regulated Activity</b>
1	KLF_Wetland01	39.362304, -80.728508	N/A	0.0062	18-inch diameter water pipeline, native backfill, timber mats for equipment tracking, and temporary workspace
2	KLF_Wetland02	39.362873, -80.721337	N/A	0.0310	18-inch diameter water pipeline, native backfill, timber mats for equipment tracking, and temporary workspace
	KLF_Wetland03	39.362854, -80.720768	N/A	0.0047	18-inch diameter water pipeline, native backfill, timber mats for equipment tracking, and temporary workspace
3	KLF_Flint Run	39.364976, -80.718263	104	0.0669	18-inch water pipeline, native backfill, temporary crossing materials, jersey barrier/pier for equipment crossing, and workspace
4	KLF_Wetland102	39.368689, -80.715357	N/A	0.0014	18-inch diameter water pipeline, native backfill, timber mats for equipment tracking, and temporary workspace
	KLF_Wetland100	39.368603, -80.715487	N/A	0.0017	18-inch diameter water pipeline, native backfill, timber mats for equipment tracking, and temporary workspace
	KLF_Wetland04	39.368251, -80.715303	N/A	0.0065	18-inch diameter water pipeline, native backfill, timber mats for equipment tracking, and temporary workspace

	KLF_ Stream09 Crossing 1	39.368422, -80.715450	137	0.0094	18-inch water pipeline, native backfill, temporary crossing materials, jersey barrier/pier for equipment crossing, and workspace
	KLF_ Stream09 Crossing 2	39.370532, -80.715488	34	0.0031	18-inch water pipeline, native backfill, temporary crossing materials, jersey barrier/pier for equipment crossing, and workspace
5	KLF_ Brush Run	39.370621, -80.715414	226	0.0363	18-inch water pipeline, native backfill, temporary crossing materials, jersey barrier/pier for equipment crossing, and workspace
6	KLF_ Wetland05	39.378577, -80.709412	N/A	0.0054	18-inch diameter water pipeline, native backfill, timber mats for equipment tracking, and temporary workspace
7	KLF_ Ralphs Run	39.383222, -80.704037	159	0.0146	18-inch water pipeline, native backfill, temporary crossing materials, jersey barrier/pier for equipment crossing, and workspace
8	KLF_ Wetland07	39.385694, -80.691590	N/A	0.0005	18-inch diameter water pipeline, native backfill, timber mats for equipment tracking, and temporary workspace

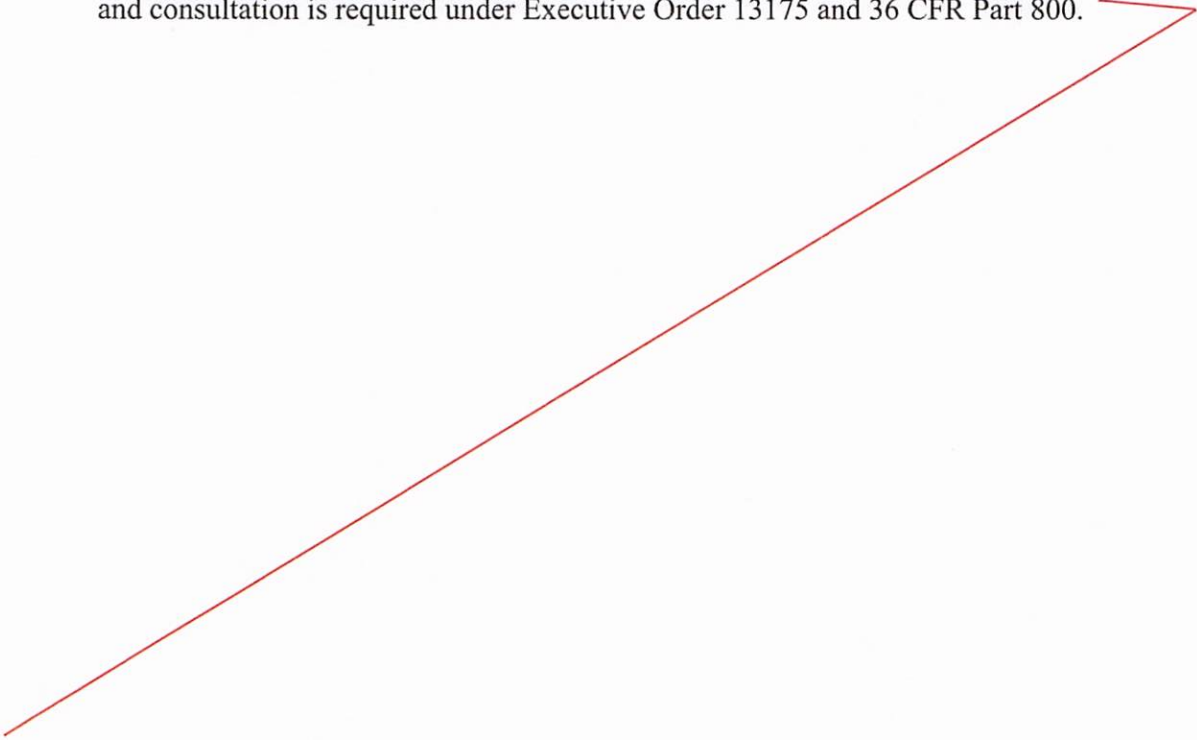


**Nationwide Permit NO. 58 Verification Special Conditions for the  
Crimson South Surface Water Line  
LRH-2022-916-LKR-Flint Run  
1 of 2**

1. Enclosed is a copy of Nationwide Permit 58 which will be kept at the site during construction. A copy of the nationwide permit verification and special conditions must be kept at the site during construction. The permittee will supply a copy of these documents to their project engineer responsible for construction activities.
2. Construction activities will be performed during low flow conditions to the greatest extent practicable. Additionally, appropriate site-specific best management practices for sediment and erosion control will be fully implemented during construction activities at the site.
3. Upon completion of the activity authorized by this nationwide permit verification, the enclosed certification must be signed and returned to this office.
4. No area for which grading has been completed will be unseeded or unmulched for longer than 14 days. All disturbed areas will be seeded and/or revegetated with native species and approved seed mixes (where practicable) after completion of construction activities for stabilization and to help preclude the establishment of non-native invasive species.
5. The project site lies within the range of the Indiana bat (*Myotis sodalis*), a federally-listed endangered species, the northern long-eared bat (*Myotis septentrionalis*), a federally-listed endangered species, and the tricolored bat (*Perimyotis subflavus*), a proposed federally-listed endangered species. Several factors have contributed to the three species decline, including habitat loss, fragmentation of habitat and the disease White Nose Syndrome. During winter, the three bat species hibernate in caves and abandoned mines. Suitable summer habitat for the Indiana bats and the northern long-eared bats consists of a wide variety of forested/wooded habitats where they roost, forage, and travel and may also include some adjacent and interspersed non-forested habitats such as emergent wetlands and adjacent edges of agricultural fields, old fields and pastures. This includes forests and woodlots containing potential roosts (i.e., live trees and/or snags  $\geq 3$  inches diameter at breast height (dbh) that have any exfoliating bark, cracks, crevices, hollows and/or cavities), as well as linear features such as fencerows, riparian forests, and other wooded corridors. These wooded areas may be dense or loose aggregates of trees with variable amounts of canopy closure. Individual trees may be considered suitable habitat when they exhibit the characteristics of a potential roost tree and are located within 1,000 feet (305 meters) of other forested/wooded habitat.

The permittee will preserve wooded/forested habitats exhibiting any of the characteristics listed above wherever possible. Should suitable habitat be present that cannot be saved during construction activities, any trees  $\geq 3$  inches dbh will only be cut between November 15 - March 31.

**Nationwide Permit NO. 58 Verification Special Conditions for the  
Crimson South Surface Water Line  
LRH-2022-916-LKR-Flint Run  
2 of 2**

6. Section 7 obligations under the Endangered Species Act (Section 7) must be reconsidered if new information reveals impacts of the project that may affect Federally listed species or critical habitat in a manner not previously considered, the proposed project is subsequently modified to include activities which were not considered during Section 7 consultation with the USFWS, or new species are listed, or critical habitat designated that might be affected by the subject project.
  7. Should new information regarding the scope and/or impacts of the project become available that was not submitted to this office during our review of the proposal, the permittee must submit written information concerning proposed modification(s) to this office for review and evaluation, as soon as practicable.
  8. In the event any previously unknown historic or archaeological sites or human remains are uncovered while accomplishing the activity authorized by this nationwide permit authorization, the permittee must cease all work in waters of the United States immediately and contact local, state and county law enforcement offices (only contact law enforcement on findings of human remains), the Corps at 304-399-5610 and the West Virginia State Historic Preservation Office at 304-558-0220. The Corps will initiate the Federal, state and tribal coordination required to comply with the National Historic Preservation Act and applicable state and local laws and regulations. Federally recognized tribes are afforded a government-to-government status as sovereign nations and consultation is required under Executive Order 13175 and 36 CFR Part 800.
- 





## Doddridge County, WV Floodplain Management

This permit gives approval for the development/ project listed that impacts the FEMA-designated floodplain and/or floodway of Doddridge County, WV, pursuant to the rules and regulations established by all applicable Federal, State and local laws and ordinances, including the Doddridge County Floodplain Ordinance. ***This permit must be posted at the site of work as to be clearly visible and must remain posted during entirety of development.***

**Permit #: 23-623**

**Date Approved: February 6, 2023**

**Expires: February 6, 2024**

**Issued to: Antero Midstream**

**POC: Daniel Bullan**

**Company Address: 535 White Oaks Blvd. Bridgeport, WV 26330**

**Project Address: 8667 Big Flint Road West Union, WV 26456**

**Firm: 54017C0130C**

**Lat/Long: 39.365407N, -80.718887W**

**Purpose of development: Surface Waterline (Pipeline)**

**Issued by: George C. Eidel, Doddridge County FPM (or designee)**

**Date: February 6, 2023**

For additional information regarding this permit, please contact  
Doddridge County Floodplain Manager at 304.873.1343, or via email at  
doddridgecountyfpm@gmail.com  
101 Church Street Suite 102; West Union, WV 26456

## Matthew Albright

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**From:** Dickson, Nancy J <nancy.j.dickson@wv.gov>  
**Sent:** Wednesday, November 9, 2022 2:07 PM  
**To:** Daniel Bulian; Matthew Albright  
**Subject:** Crimson South Surface Water Line PCN

### External Email

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Mr. Bulian,

The West Virginia Department of Environmental Protection-Division of Water and Waste Management has received the pre-construction notification for the following project:

**Company:** Antero Midstream

**Project:** Crimson South Surface Water Line

**County:** Doddridge

This fulfills the requirement of Standard Condition 1 for prior written notification for these nationwide permits. All other applicable standard conditions for nationwide permits remain in force until the project is complete.

Feel free to contact me should you have any additional questions or concerns.

Thank you,

--

**Nancy J. Dickson**

Environmental Resources Analyst

West Virginia Department of Environmental Protection



Division of Water and Waste Management

401 Certification Program

601 57th Street, SE

Charleston, WV 25304

Phone: (304) 541-4268

Email: [nancy.j.dickson@wv.gov](mailto:nancy.j.dickson@wv.gov)

## Matthew Albright

---

**From:** Paige Gardner <pgardner@anteroresources.com>  
**Sent:** Tuesday, January 24, 2023 9:50 AM  
**To:** James Funk  
**Cc:** Haley Shreve; Parke Bongiorno; Brian Ratica; Matthew Albright; Daniel Bulian; James Howes  
**Subject:** FW: Approval for WVR310279 Modification No. 4, North Canton Connector (Crimson South Surface Water Line Section), Doddridge County, Acres (145.3)

### External Email

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Hi James, good morning!

Our public comment period has ended with no comments to address and we have received the approval for **WVR310279 Modification No. 4**, North Canton Connector (Crimson South Surface Water Line Section). Please see below; also for our internal folks, the approval is saved [here](#) on the server.

Please note that **Registration WVR310279** has been extended to October 15, 2023 based on the date provided in our storm water application. We will include this date on our Permitting Checklist to be distributed with the Full Construction Release.

Questions/concerns, let me know. Thanks!!

Sincerely,

*Paige Gardner, CES*  
*Environmental Specialist II*  
304.842.9765 Office  
304.203.4292 Cell  
[pgardner@anteroresources.com](mailto:pgardner@anteroresources.com)

---

**From:** NPDESEP, DEP <dep.npdesepp@wv.gov>  
**Sent:** Monday, January 23, 2023 2:29 PM  
**To:** Paige Gardner <pgardner@anteroresources.com>  
**Cc:** Larry D Board <larry.d.board@wv.gov>; Timothy J Casto <tim.j.casto@wv.gov>; Timothy G Wine <timothy.g.wine@wv.gov>; Amy N Cosco <amy.n.cosco@wv.gov>; Joseph W Cochran <joseph.w.cochran@wv.gov>; DEP NPDESEP <dep.npdesepp@wv.gov>  
**Subject:** Approval for WVR310279 Modification No. 4, North Canton Connector (Crimson South Surface Water Line Section), Doddridge County, Acres (145.3)

This email came from outside of Antero. Do not click any link or open any attachment unless you know it is not malicious. Forward it to the helpdesk if you are not sure.

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Paige Gardner  
Antero Midstream, LLC  
535 White Oaks Boulevard  
Bridgeport, WV 26330



Physical Site Location: CR 3, Center Point, Doddridge County, WV 26339

Dear Permittee:

Please be advised that this e-mail constitutes approval and serves as Modification No. 4 of your existing State General Permit Registration No. WV0116815, issued 13th of May 2013.

After reviewing and consideration of the submitted information the subject permit registration WVR310279-4 is hereby modified in accordance with the following:

The purpose of this modification is to install the Crimson South Surface Waterline, a 3.8 mile long 18-inch diameter surface water pipeline. The disturbed acreage for the project has increased from 93 to 145.3 acres, an increase of 52.3 acres. The annual permit fee is \$1,500.00.

All other terms and conditions of the subject WV/State Water Pollution Control Permit Registration No. WVR310279 shall remain in effect and unchanged.

Registration WVR310279 has been extended to October 15, 2023 based on the date provided in Roman Numeral V of the online modification application form. This date is conditional since General Permit WV00116815 expires on April 23, 2023. If the GP is reissued prior to your revised expiration date, DWWM will identify reasonable time for you to provide additional information so permit coverage can continue under the reissued General Permit.

Your efforts toward preventing the degradation of our natural resources are greatly appreciated.

If you have any questions relative to this approval, please do not hesitate to contact **Joseph Cochran** at (304) 414-3793 or by email at [joseph.w.cochran@wv.gov](mailto:joseph.w.cochran@wv.gov).

Katheryn Emery, P. E., Director  
Division of Water and Waste Management  
601 57<sup>th</sup> St SE  
Charleston, WV 25304-2345  
Phone: (304) 926-0495  
Fax: (304) 926-0463



Governor Jim Justice

Director Brett W. McMillion

November 28, 2022

Office of Land and Streams  
**RIGHT OF ENTRY**

**Re: P-2022-VI-09-15459**

Antero Midstream LLC  
c/o Kleinfelder, Inc.  
Attention: Matt Albright  
51 Dutilh Road, Suite 240  
Cranberry Township, PA 16066

To Whom It May Concern:

The West Virginia Division of Natural Resources (WVDNR) hereby authorizes for a term of 10 years, from the date hereof, a Right of Entry to construct, replace, cover, repair, operate, maintain, use and remove an 18" pipeline at five separate locations (Crimson South Surface Water Line), along Flint Run, Brush Run, and Ralphs Run, Grant and McClellan Districts, near Center Point, in Doddridge County, West Virginia, as shown on the map attached hereto.

The issuance of this Right of Entry by the WVDNR does not preclude the necessity to obtain permits from the U.S. Army Corps of Engineers (USACE), W.V. Department of Environmental Protection (WVDEP), or the W.V. Division of Homeland Security and Emergency Management (WVDHSEM). This Right of Entry does not negate the need to comply with the West Virginia Water Pollution Control Act and/or the State Environmental Quality Board's administrative regulations.

It is advised to contact the following agencies for additional guidelines and/or regulations:

1. The USACE [Huntington District (304-399-5210) or the Pittsburgh District (412-395-7155)] may require either an Individual Clean Water Act 404 permit or a Nationwide Permit.  
<http://www.lrh.usace.army.mil/Missions/Regulatory.aspx>
2. The WVDNR Environmental Coordination Unit (304-637-0245) should be contacted for the Mussel survey requirements for streams with mussel populations as described in the West Virginia Mussel Survey Protocol  
<http://www.wvdnr.gov/Mussels/West%20Virginia%20Mussel%20Survey%20Protocols%20APR2016.pdf>



3. The WVDEP (304-926-0499) may require the following permits:
  - a. A Clean Water Act Section 401 Water Quality Certification  
<http://www.dep.wv.gov/WWE/Programs/Pages/401Certification.aspx>
  - b. Construction Stormwater Site Registration and Notice of Intent. Not needed if disturbance less than (1) acre.  
[http://dep.wv.gov/WWE/Programs/stormwater/Pages/sw\\_home.aspx](http://dep.wv.gov/WWE/Programs/stormwater/Pages/sw_home.aspx)
4. The Division of Water and Waste Management, (304-926-0495) should be contacted for the WVDEP Erosion and Sediment Control Best Management Practice Manual, Revised 2016, that it requires to be followed.  
[http://www.dep.wv.gov/WWE/Programs/stormwater/csw/Pages/ESC\\_BMP.aspx](http://www.dep.wv.gov/WWE/Programs/stormwater/csw/Pages/ESC_BMP.aspx)
5. The WVDHSEM (304-957-2571) may require a Floodplain Permit.
6. The U.S. Fish and Wildlife Service Field Office (304-636-6568) should be contacted for any activity in waterways listed in Appendix A of the 2017 USACE Nationwide Permits for threatened or endangered aquatic species identified by the U.S. Fish and Wildlife Service.  
<http://www.lrp.usace.army.mil/Portals/72/docs/regulatory/2017%20Public%20Notices/West%20Virginia%20-%20NWP%20March%202017%20PN.pdf?ver=2017-03-22-095505-870>
7. The local Conservation District for the district where the work is to be performed should be contacted for technical support.

This Right of Entry does not allow in-stream work to be performed during the cold-water fish spawning season (September 15- March 31) and warm-water fish spawning season (April 1 - June 30). Spawning waivers may be obtained by from the WVDNR Environmental Coordination Unit (304-637-0245).

This Right of Entry does not allow work outside the requested boundaries. The WVDNR does not assume any liability for your construction activities. By accepting this Right of Entry, you assume liability for any and all damages caused by this activity to both upstream and downstream landowners. This Right of Entry does not authorize any rights or privileges, or permission to enter upon, or to cross the property of any other person, nor does it authorize removal of any material that lies upon the property of another person.

All work authorized under this Right of Entry should be completed as soon as possible, but no longer than one year from the date hereof.


The payment of \$1250.00 is now due and payable to the West Virginia Division of Natural Resources which payment covers the entire 10 year fee.

Antero Midstream LLC  
Right of Entry # P-2022-VI-09-15459  
Page 3  
November 28, 2022

The Right of Entry will be effective upon receipt of your payment in full.

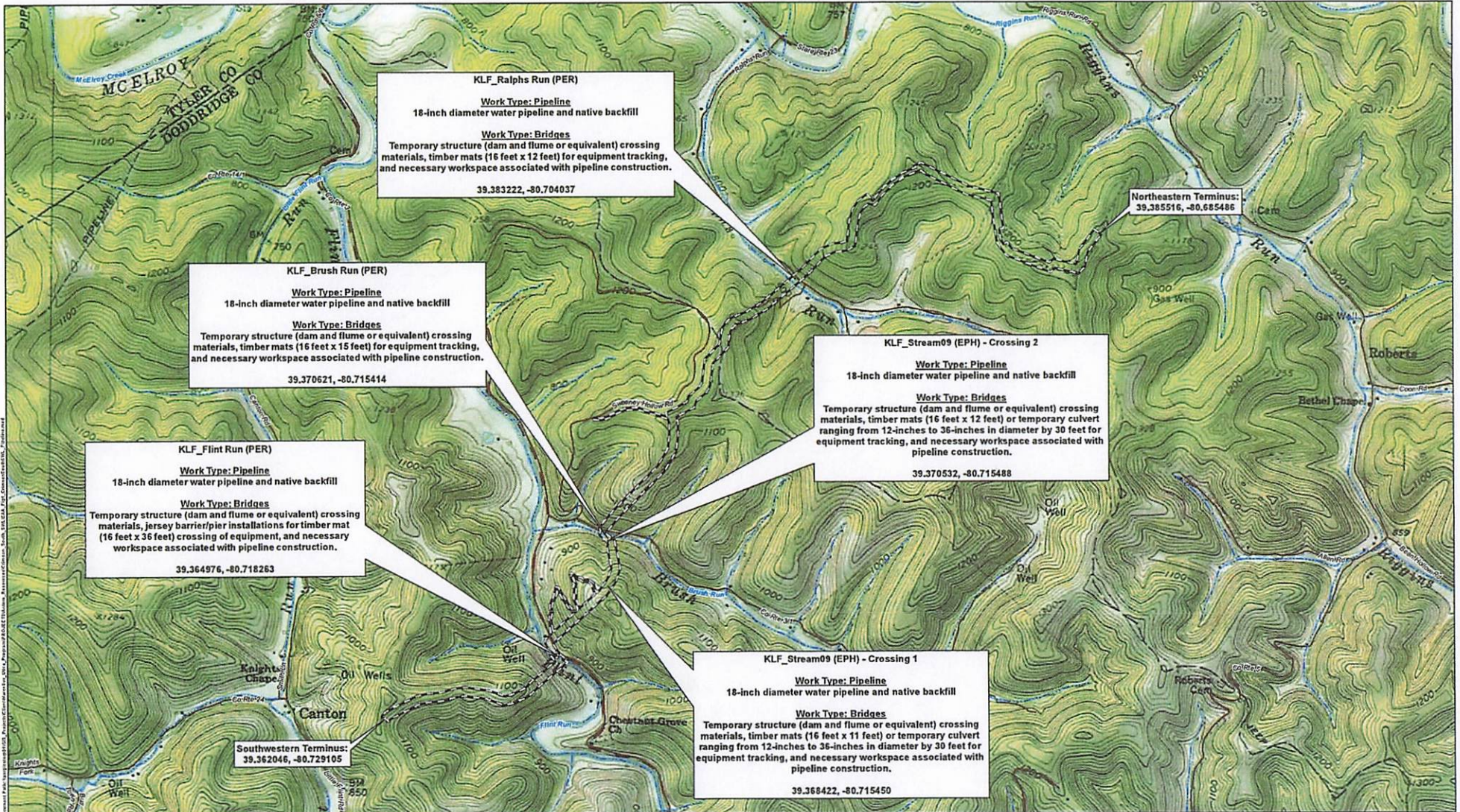
Please notify the Office of Land and Streams in writing when the pipeline is transferred or removed.

Sincerely yours,

  
Brett W. McMillion  
Director

BWM:cb





<p>PROJECT NO. 20232715          DRAWN BY: S. Williams          CHECKED BY: M. Abright</p> <p>The information included on this graphic representation has been compiled from a variety of sources and is subject to change without notice. Kleinfelder makes no representations or warranties, express or implied, as to accuracy, completeness, timeliness, or rights to the use of such information. This document is not intended for use as a land survey product nor is it designed or intended as a construction design document. The use or misuse of the information contained on this graphic representation is at the sole risk of the party using or relying on the information.</p>	<p>Doddridge County, West Virginia          Aerial Imagery: ESRI</p>	<ul style="list-style-type: none"> <li> LOD (69.1 ac)</li> <li> NHD Stream</li> <li> NWI Wetland</li> <li> Existing Road</li> </ul>	<b>Antero Midstream</b>	
			Figure 1 USGS Topographic Map Crimson South Surface Water Line	
			Date: 11/4/2022	Sheet 1 of 1



**West Virginia Division of Natural Resources**

**Invoice Pay on-line at**  
**<https://agencies.wvsto.com/LandAndStreams/Account.aspx>**

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<b>In Acct With</b>	Antero Midstream LLC	<b>Invoice No#:</b> LS0000000006492
	535 White Oaks Boulevard	<b>Bill Date:</b> 11/17/2022
	Bridgeport, WV 26330	

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<b>Location</b>	<b>Agreement</b>	<b>Invoice Period</b>	<b>Balance</b>
Land and Streams/DNR	P-2022-VI-09-15459	For 11/17/2022 to 11/17/2032	\$1,250.00

**Description:**

an 18" pipeline at five separate locations (Crimson South Surface Water Line), along Flint Run, Brush Run, and Ralphs Run, Grant and McClellan Districts, near Center Point, in Doddridge County

**OASIS Customer Code:** VC0000034995

**PLEASE RETURN COPY OF THIS INVOICE WITH REMITTANCE**

WV Division of Natural Resources  
Office of Land & Stream  
324 Fourth Avenue, Room 200  
South Charleston, WV 25303

IF YOU HAVE ANY QUESTIONS, PLEASE CONTACT  
DNR Office of Land & Stream (304) 558-3225  
DNRLandandStreams@wv.gov



Governor Jim Justice



Director Brett W. McMillion

November 28, 2022

Office of Land and Streams  
**RIGHT OF ENTRY**

**Re: R-2022-VI-09-15460**

Antero Midstream LLC  
c/o Kleinfelder, Inc.  
Attention: Matt Albright  
51 Dutilh Road, Suite 240  
Cranberry Township, PA 16066

To Whom It May Concern:

The West Virginia Division of Natural Resources (WVDNR) hereby authorizes for a term of 5 years, from the date hereof, a Right of Entry to install and maintain a timber mat crossing at five separate locations (Crimson South Surface Water Line), along Flint Run, Brush Run, and Ralphs Run, in Grant and McClellan Districts, near Center Point, in Doddridge County, West Virginia.

The issuance of this Right of Entry by the WVDNR does not preclude the necessity to obtain permits from the U.S. Army Corps of Engineers (USACE), W.V. Department of Environmental Protection (WVDEP), or the W.V. Division of Homeland Security and Emergency Management (WVDHSEM). This Right of Entry does not negate the need to comply with the West Virginia Water Pollution Control Act and/or the State Environmental Quality Board's administrative regulations.

It is advised to contact the following agencies for additional guidelines and/or regulations:

1. The USACE [Huntington District (304-399-5210) or the Pittsburgh District (412-395-7155)] may require either an Individual Clean Water Act 404 permit or a Nationwide Permit.
  - a. <http://www.lrh.usace.army.mil/Missions/Regulatory.aspx>
2. The WVDNR Environmental Coordination Unit (304-637-0245) should be contacted for the Mussel survey requirements for streams with mussel populations as described in the West Virginia Mussel Survey Protocol
  - a. <http://www.wvdnr.gov/Mussels/West%20Virginia%20Mussel%20Survey%20Protocols%20APR2016.pdf>

3. The WVDEP (304-926-0499) may require the following permits:
  - a. A Clean Water Act Section 401 Water Quality Certification  
<http://www.dep.wv.gov/WWE/Programs/Pages/401Certification.aspx>
  - b. Construction Stormwater Site Registration and Notice of Intent. Not needed if disturbance less than (1) acre.  
[http://dep.wv.gov/WWE/Programs/stormwater/Pages/sw\\_home.aspx](http://dep.wv.gov/WWE/Programs/stormwater/Pages/sw_home.aspx)
4. The Division of Water and Waste Management, (304-926-0495) should be contacted for the WVDEP Erosion and Sediment Control Best Management Practice Manual, Revised 2016, that it requires to be followed.  
[http://www.dep.wv.gov/WWE/Programs/stormwater/csw/Pages/ESC\\_BMP.aspx](http://www.dep.wv.gov/WWE/Programs/stormwater/csw/Pages/ESC_BMP.aspx)
5. The WVDHSEM (304-957-2571) may require a Floodplain Permit.
6. The U.S. Fish and Wildlife Service Field Office (304-636-6568) should be contacted for any activity in waterways listed in Appendix A of the 2017 USACE Nationwide Permits for threatened or endangered aquatic species identified by the U.S. Fish and Wildlife Service.
  - a. <http://www.lrp.usace.army.mil/Portals/72/docs/regulatory/2017%20Public%20Notices/West%20Virginia%20-%20NWP%20March%202017%20PN.pdf?ver=2017-03-22-095505-870>
7. The local Conservation District for the district where the work is to be performed should be contacted for technical support.

This Right of Entry does not allow in-stream work to be performed during the cold-water fish spawning season (September 15- March 31) and warm-water fish spawning season (April 1 - June 30). Spawning waivers may be obtained by from the WVDNR Environmental Coordination Unit (304-637-0245).

This Right of Entry does not allow work outside the requested boundaries. The WVDNR does not assume any liability for your construction activities. By accepting this Right of Entry, you assume liability for any and all damages caused by this activity to both upstream and downstream landowners. This Right of Entry does not authorize any rights or privileges, or permission to enter upon, or to cross the property of any other person, nor does it authorize removal of any material that lies upon the property of another person.

All work authorized under this Right of Entry should be completed as soon as possible, but no longer than one year from the date hereof.

The annual payment of \$500.00 is now due and payable to the West Virginia Division of Natural Resource. An invoice will be sent to you for each subsequent annual payment.



Antero Midstream LLC  
Right of Entry # R-2022-VI-09-15460  
Page 3  
November 28, 2022

The Right of Entry will be effective upon receipt of your payment in full.

Please notify the Office of Land and Streams in writing when this installation is transferred or removed.

Sincerely yours,



Brett W. McMillion  
Director

BWM:cb

**West Virginia Division of Natural Resources**

**Invoice Pay on-line at  
<https://agencies.wvsto.com/LandAndStreams/Account.aspx>**

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<b>In Acct With</b>	Antero Midstream LLC 535 White Oaks Boulevard Bridgeport, WV 26330	<b>Invoice No#:</b> LS0000000006493 <b>Bill Date:</b> 11/17/2022
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<b>Location</b>	<b>Agreement</b>	<b>Invoice Period</b>	<b>Balance</b>
Land and Streams/DNR	R-2022-VI-09-15460	For 11/17/2022 to 11/17/2023	\$500.00

**Description:**

a timber mat crossing at five separate locations (Crimson South Surface Water Line), along Flint Run, Brush Run, and Ralphs Run, in Grant and McClellan Districts, near Center Point, in Doddridge County

**OASIS Customer Code:** VC0000034995

**PLEASE RETURN COPY OF THIS INVOICE WITH REMITTANCE**

WV Division of Natural Resources  
Office of Land & Stream  
324 Fourth Avenue, Room 200  
South Charleston, WV 25303

IF YOU HAVE ANY QUESTIONS, PLEASE CONTACT  
DNR Office of Land & Stream (304) 558-3225  
[DNRLandandStreams@wv.gov](mailto:DNRLandandStreams@wv.gov)



## Matthew Albright

---

**From:** Wakeford, Anne M <anne.m.wakeford@wv.gov>  
**Sent:** Friday, February 10, 2023 10:44 AM  
**To:** DBulian@anteroresources.com; Matthew Albright; Jocelyn J Phares; Nate D Taylor; Danny A Bennett; Kevin M Eliason  
**Subject:** Fwd: Antero Midstream: Crimson South Surface Water Line - 2023 Fish Spawning Waiver Request  
**Attachments:** 20230207\_Crimson South SWL\_WVDNR-WRS\_Fish Spawning Waiver.xlsx; 20220928\_Crimson South SWL\_WVDNR-WRS\_Mussel Survey-Approval.pdf

### External Email

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Dear Matt and Daniel,

Thank you for the fish spawning waiver requests.

Ralphs Run and Brush Run fish spawning waivers are approved.

In addition to being a group 1 state mussel stream, Flint Run is also a high quality warmwater stream. Downstream of the site fish sampling records show a diverse assemblage of gamefish (bluegill, sunfish, rock bass, smallmouth bass, and spotted bass) in addition to nongame fish such as sucker, shiner, minnow, and chub. Therefore, if possible, conducting instream work during late May/June at the Flint Run site would be preferred.

Thank you for including the mussel results and correspondence.

Please contact me if you have any questions.

Anne

Anne M. Wakeford  
Coordination Biologist  
WVDNR/EOC  
738 Ward Rd.  
PO Box 67  
Elkins, WV 26241  
304-637-0245 ext 2035  
[Anne.M.Wakeford@wv.gov](mailto:Anne.M.Wakeford@wv.gov)

----- Forwarded message -----

**From:** Matthew Albright <[MAlbright@kleinfelder.com](mailto:MAlbright@kleinfelder.com)>  
**Date:** Tue, Feb 7, 2023 at 3:25 PM  
**Subject:** Antero Midstream: Crimson South Surface Water Line - 2023 Fish Spawning Waiver Request  
**To:** Wakeford, Anne M <[Anne.M.Wakeford@wv.gov](mailto:Anne.M.Wakeford@wv.gov)>  
**Cc:** Daniel Bulian ([dbulian@anteroresources.com](mailto:dbulian@anteroresources.com)) <[dbulian@anteroresources.com](mailto:dbulian@anteroresources.com)>, Bennett, Danny A <[Danny.A.Bennett@wv.gov](mailto:Danny.A.Bennett@wv.gov)>

Hi Anne,

On behalf of Antero Midstream (Antero), Kleinfelder, Inc. is submitting the attached Fish Spawning Waiver Request for perennial stream crossings associated with the Crimson South Surface Water Line (Pipeline) for your review. In addition, it should be noted that Flint Run (a Group 1 mussel stream ) is located within the limits of disturbance and is proposed to be crossed via open cut by the Pipeline. As a result, a mussel survey was performed at the proposed stream crossing on August 19, 2022 with the results reported to the WV Division of Natural Resources - Wildlife Resources Section (WVDNR-WRS) on September 26, 2022. Fourteen live freshwater mussels were found during the mussel survey. Eleven of the 14 freshwater mussels were collected from the salvage zone and were successfully moved into suitable habitat upstream of the project area. No Federally rare, threatened, or endangered species of mussels or their relic shells were collected. The mussel survey results were subsequently approved by WVDNR-WRS on September 28, 2022. Agency correspondence is attached for your reference.

Please address your response to Daniel Bulian of Antero. He is cc'd on the email and his contact information is provided below.

Daniel Bulian

Environmental Specialist III

Antero Midstream

535 White Oaks Blvd

Bridgeport, WV 26330

(304) 842-4093

[dbulian@anteroresources.com](mailto:dbulian@anteroresources.com)

Thanks,

**Matt Albright**  
Project Manager

51 Dutilh Rd., Suite 240  
Cranberry Township, PA 16066  
m| 609.947.5296





*This email may contain confidential information. If you have received this email—including any attachments—in error, please notify the sender promptly and delete the email and any attachments from all of your systems.*

ProjectID	ProjectName	SubmittedBy	Date	StreamName	StreamRegime	County	yLat	xLong	Type	DateImpact	Duration	Purpose	StreamWidth	WatershedDrain	SC Impact	Feet	Treatment	LicenseNumber	Rationale	Approval
KLF_Flint Run (PER)	Crimson South Surface Water Line	Kleinfelder, Inc.	2/7/2023	Flint Run	Perennial	Doddridge	39.36498	-80.718263	Temporary	Sometime Between April 1 & June 30	3 days	18-inch water pipeline installation and jersey barrier/pier installations for timber mat crossing of equipment.	35	16.671	104	Seed & Mulch/Permanently Herbaceous Layer-Mowed Regularly	P-2022-VI-09-15459 & R-2022-VI-09-15460	1) Temporary Crossing for Pipeline Install. 2) Temporary install of jersey barriers/piers placed not to impede or prevent fish movement upstream or downstream & removed following construction.		
KLF_Brush Run (PER)	Crimson South Surface Water Line	Kleinfelder, Inc.	2/7/2023	Brush Run	Perennial	Doddridge	39.370621	-80.715414	Temporary	Sometime Between April 1 & June 30	3 days	18-inch diameter water pipeline installation.	10	1.499	226	Seed & Mulch/Permanently Herbaceous Layer-Mowed Regularly	P-2022-VI-09-15459 & R-2022-VI-09-15460	1) Temporary Crossing for Pipeline Install.		
KLF_Ralphs Run (PER)	Crimson South Surface Water Line	Kleinfelder, Inc.	2/7/2023	Ralphs Run	Perennial	Doddridge	39.383222	-80.704037	Temporary	Sometime Between April 1 & June 30	3 days	18-inch diameter water pipeline installation.	6	1.011	159	Seed & Mulch/Permanently Herbaceous Layer-Mowed Regularly	P-2022-VI-09-15459 & R-2022-VI-09-15460	1) Temporary Crossing for Pipeline Install.		



## Matthew Albright

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**From:** Daniel Bulian <[dbulian@anteroresources.com](mailto:dbulian@anteroresources.com)>  
**Sent:** Wednesday, September 28, 2022 5:04 PM  
**To:** Matthew Albright; John Lewis  
**Subject:** FW: Crimson South SWL Mussel Survey Scope, AllStar Ecology

### External Email

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Matt,  
See survey approvals for Crimson South SWL.

*Daniel Bulian*, CPESC

Environmental Specialist III



535 White Oaks Blvd  
Bridgeport, WV 26330  
Office: (304) 842-4093  
Cell: (304) 579-3666  
[dbulian@anteroresources.com](mailto:dbulian@anteroresources.com)

---

**From:** [anna@allstarecology.com](mailto:anna@allstarecology.com) <[anna@allstarecology.com](mailto:anna@allstarecology.com)>  
**Sent:** Wednesday, September 28, 2022 4:27 PM  
**To:** Daniel Bulian <[dbulian@anteroresources.com](mailto:dbulian@anteroresources.com)>; Beau Colligan <[jcolligan@anteroresources.com](mailto:jcolligan@anteroresources.com)>; James Funk <[jfunk@anteroresources.com](mailto:jfunk@anteroresources.com)>  
**Cc:** Eli Shleser <[Eli@allstarecology.com](mailto:Eli@allstarecology.com)>; [clayton@allstarecology.com](mailto:clayton@allstarecology.com)  
**Subject:** FW: Crimson South SWL Mussel Survey Scope, AllStar Ecology

This email came from outside of Antero. Do not click any link or open any attachment unless you know it is not malicious. Forward it to the helpdesk if you are not sure.

---

Daniel,

See below approval for the mussel survey from the WVDNR. Please let me know if you have any questions. Thanks!

Anna H Runner, M.S.  
Senior Lead Project Manager  
AllStar Ecology, LLC.  
304-627-7229

---

**From:** Eliason, Kevin M <[kevin.m.eliason@wv.gov](mailto:kevin.m.eliason@wv.gov)>  
**Sent:** Wednesday, September 28, 2022 3:17 PM  
**To:** [eli@allstarecology.com](mailto:eli@allstarecology.com)  
**Cc:** Sargent, Barbara D <[barbara.d.sargent@wv.gov](mailto:barbara.d.sargent@wv.gov)>; [clayton@allstarecology.com](mailto:clayton@allstarecology.com); DNR Collecting <[DNRScientificCollectingPermit@wv.gov](mailto:DNRScientificCollectingPermit@wv.gov)>; Anna Runner <[anna@allstarecology.com](mailto:anna@allstarecology.com)>  
**Subject:** Re: Crimson South SWL Mussel Survey Scope, AllStar Ecology

Eli,

No additional mussel concerns need to be addressed for the Crimson South SWL Project on Flint Run so long as in-stream work has commenced prior to 15 July 2023, after which date additional salvage may be required.

**Kevin Eliason, Mussel Biologist**

**Wildlife Diversity Program**

Phone (304) 637-0245 | Cell (304) 389-8526 | Fax (304) 637-0250

Elkins Operation Center

P.O. Box 67 | 738 Ward Road | Elkins, WV 26241

On Mon, Sep 26, 2022 at 1:09 PM <[eli@allstarecology.com](mailto:eli@allstarecology.com)> wrote:

All,

See the attached report for the Crimson South SWL Mussel Survey.

Please let me know if there are any questions. Thanks!

Eli

**Eli Ben Shleser, B.S.**

**Environmental Scientist II/Malacologist**

**AllStar Ecology LLC**

**1582 Meadowdale Rd.**

**Fairmont, WV 26554**

**Office: 304-816-3490**

**Toll-Free: 866-213-2666**

**Cell: 304-573-9810**

**[eli@allstarecology.com](mailto:eli@allstarecology.com)**

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Please consider the environment before printing this email.



WEST VIRGINIA



Governor Jim Justice

Director Brett W. McMillion

November 15, 2022

Mr. Daniel Bulian  
Antero Midstream  
535 White Oaks Boulevard  
Bridgeport, WV 26330

Dear Mr. Bulian:

We have reviewed Natural Heritage Program files for information on rare, threatened and endangered (RTE) species and sensitive habitats for the area of the proposed Crimson South Surface Waterline project in Doddridge County, WV.

We have no known records of any RTE species within the project area; however, Flint Run is a state mussel stream. As long as there are no disturbances to the stream bed, a mussel survey will not be required. The Wildlife Resources Section knows of no surveys that have been conducted in the area for rare species or rare species habitat. Consequently, this response is based on information currently available and should not be considered a comprehensive survey of the area under review. This response is valid for two years.

The information provided above is the product of a database search and retrieval. This information does not satisfy other consultation or permitting requirements for disturbances to the natural resources of the state, and further consultation may be required. Additionally, any concurrence requirements for federally listed species must come from the US Fish and Wildlife Service.

Thank you for your inquiry, and should you have any questions please feel free to contact me at the above number, or [barbara.d.sargent@wv.gov](mailto:barbara.d.sargent@wv.gov). An invoice is enclosed.

Sincerely,

A handwritten signature in blue ink, appearing to read "Barbara Sargent".

Barbara Sargent  
Environmental Resources Specialist  
Environmental Coordination  
Operations Unit

Drive\Invoices\Antero2



WEST VIRGINIA DEPARTMENT OF TRANSPORTATION

Division of Highways

Office of the District Engineer/Manager
District Four

Jimmy Wriston, P. E.
Secretary of Transportation

PO Box 4220 (EXIT 121, I-79) \* Clarksburg, WV 26302 \* 304-842-1500
January 10, 2023

ANTERO MIDSTREAM LLC
535 WHITE OAKS BOULEVARD
BRIDGEPORT, WV 26330

Dear Applicant:

Your approved copy of Permit Number 04-2022-0867 for a UW - Utility Water

permit type is enclosed. A description of the work is on the permit.

Please contact the District Four office:

Lacy Pratt 304-326-0091

at least 48 hours in advance of the date you plan to begin work so arrangements can be made to inspect the work authorized by the permit.

Failure to comply will result in cancellation of your permit.

A copy of this permit is to be available on the job at all times while the work is in progress for inspection by the West Virginia Division of Highways' personnel.

Sincerely,

Michael C. Daley, DM
District Engineer / District Manager

Lacy Pratt

Permit Supervisor

Initials: MD:MD:lp
Attachments: Yes
Enclosure: No
cc:OM 0409 O&G file



**Addendum to Permit 04-2022-0867**

This addendum, made this 10<sup>th</sup> day of January 2023, between the West Virginia Department of Transportation, Division of Highways, a statutory company hereinafter called the DIVISION and

**Antero Midstream, LLC**

Address: 535 White Oaks Blvd., Bridgeport, WV 26330 Phone: (304) 842-4198

hereinafter called APPLICANT.

The Applicant has filed with the DIVISION a written application for the following named routes and locations:

**Doddridge County Route SLS 3, Big Flint Road at Mile Post 2.628**

Have steel plates available, traffic barriers, and orange safety fence in place or on standby.

- ❖ In instances where a proposed gas and/or water line crossing intersects West Virginia Division of Highways right-of-way and the disturbed slope on either side that exceeds a 1:1 slope – the contractor must submit plans for permanent slide prevention. The plan must allow for the establishment/maintenance of a roadside ditch. The length of the slide prevention plan must span the limits of disturbance on the existing slope. Avoidance of the slope and resubmitting the method of crossing is an acceptable plan.
- ❖ In instances where a proposed gas and/or water line crossing occurs on West Virginia Division of Highways right-of-way deemed unimproved, the contractor must submit a plan that upgrades the unimproved portion of road to a minimum standard determined by the Division. The route review will cite drainage deficiencies and a cross section view of the improved road section will be provided. Unimproved is defined as roads that are not receiving scheduled maintenance to either the road surface or drainage features.
- ❖ HDD Bore Method exit point must be pre-approved by WV DOH.
- ❖ HDD Bore pit locations must be identified and approved by WV DOH.
- ❖ Applicant to utilize CASE A-6 Traffic Control where lane closures are necessary.
- After completion of the project, a joint review of roads will be filmed and evaluated to assure roads have been repaired to existing condition or better.
- No travel on School Bus Routes during their traversing operational hours on above mentioned route on bi-directional roadways where the lane widths are less than 10 ft.
- Pilot Vehicle required for all oversized loads.
- Ditch lines to be maintained by applicant. \*FDR or equivalent may be required to stabilize road to uphold increased traffic and heavy and excess amount of loads. Centerline of roadway cannot be relocated without an agreement between WV DOH and the Applicant. This work requires an advanced notice and prior approval by Maintenance/Design Engineer.
- Repairs that will include “Hot Mix Asphalt” will have the following testing requirement: The supplier will be responsible for testing at the plant; Compaction testing will be as per WV DOH specifications.
- The Division of Highways shall have the right at all times to inspect the work, and if such inspections should reveal that the work is not done according to specifications, upon being so advised by the Division, Applicant agrees to take immediate corrective actions.

---

APPLICANT shall properly repair and maintain any and all damages that may result to said bridges, highways, shoulders and ditches from hauling activities of APPLICANT, its agents, contractors and employees, to as good a condition prior to commencement of APPLICANT's operation or as when the permit was issued, as determined by the District Engineer/Manager of the DIVISION having jurisdiction over the work permitted, or pay damages therefore in the amount to sufficiently restore such bridges, roads, highways, shoulders and ditches to original condition; and shall reimburse the DIVISION for all inspection costs incurred by it in connection with said work and repairs of such damages and faithfully comply with all terms and conditions of said permits and save harmless the DIVISION and the State of West Virginia from all losses resulting from the conduct of said work and repairs; provided that all projects covered by this blanket bond have been restored to original or better condition; then this Bond shall be released once; or otherwise will remain in full force and effect.

**Bond Amount: \$1,000,000.00**

**Bond Number: LPM9062891**

**Date: 02/21/2012**

# West Virginia Department of Transportation Division of Highways Right of Way Entry Permit Application

PERMIT NO. 04-2022-0867

By signing below, APPLICANT agrees to all terms and conditions (see page 2) associated with this permit to enter upon, under, over, or across the state road right(s) of way of the State of West Virginia.

Applicant: Antero Midstream, LLC

Address: 535 White Oaks Boulevard City: Bridgeport State: WV Zip: 26330

Phone Number: (304) 842-4198 Email: jdepoy@anteroresources.com

Route Type: US WV County Route Number: 3 Milepost: 2.628 County: Doddridge

Latitude/Longitude at/along Roadway (in whole degrees): 39.3657836, -80.7188236

Description of Work: Install one (1) 18" HDPE water line by conventional bore method across CR 3 along with temporary construction entrances in Doddridge County. All work shall comply with WV DOT/DOH specifications.

A11568 RC1

Length of Installation: 30 LF Estimated Construction Duration: \_\_\_\_\_

DOH Project Number/Name (if applicable): \_\_\_\_\_

Inspection Fees (must check one):

- For any inspection fees incurred under this permit
- At \$0.85 per linear foot of water line installed under this permit
- At \$3.37 per linear foot of sewer line installed under this permit

**\*Traffic control required, see case A-6 attached.**  
**\*Minimum 15" diameter culvert required for temporary approach on north side of SLS 3.**

Applicant: *John Depoy*

Applicant Title: Design Manager

Applicant Printed Name: John Depoy

Date: 12/16/22

DOH Reviewer: *Lacy Pratt*

DOH Reviewer Title: Permit Supervisor

DOH Approver: *[Signature]*

DOH Approver Title: For District Maintenance Engineer

FOR DIVISION USE ONLY

DEPOSIT/BOND REQUIRED:  YES  NO

DEPOSIT/BOND AMOUNT: 1,000,000.00

Check Attached  Bond Attached  Bond On File

BOND NUMBER: LPM9062891 DATE: 2/21/12

INSPECTION:  By Owner/Consultant  By Division  
 Full Time  Part Time  
 Reimbursable (Authorization \_\_\_\_\_)

Periodic  
 No Cost

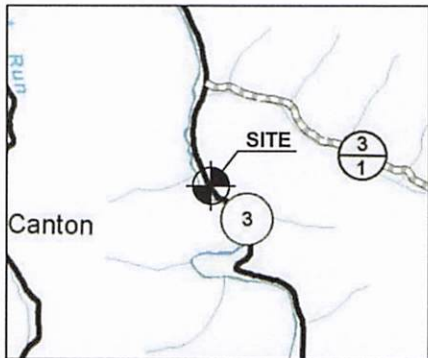
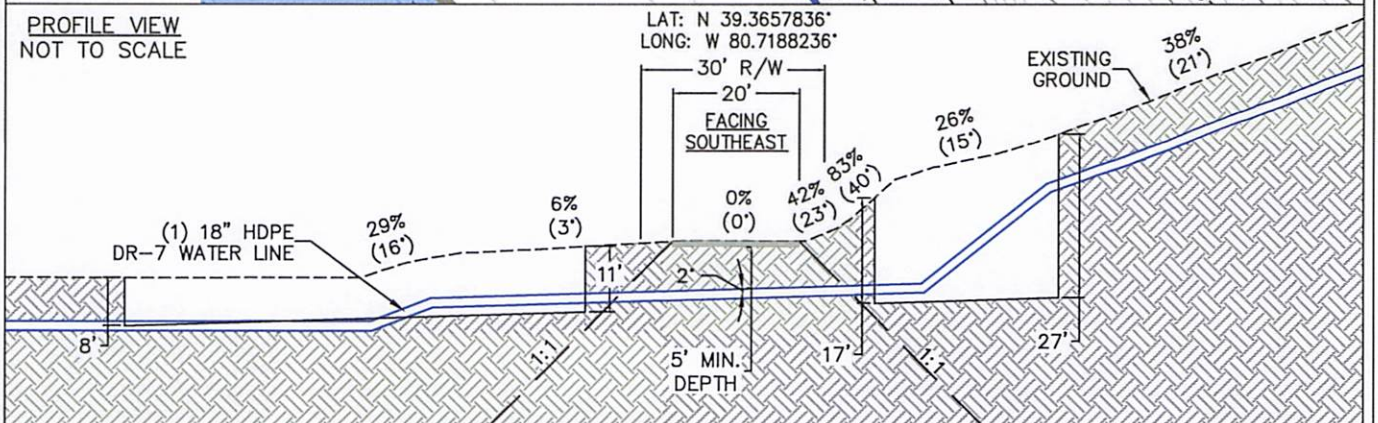
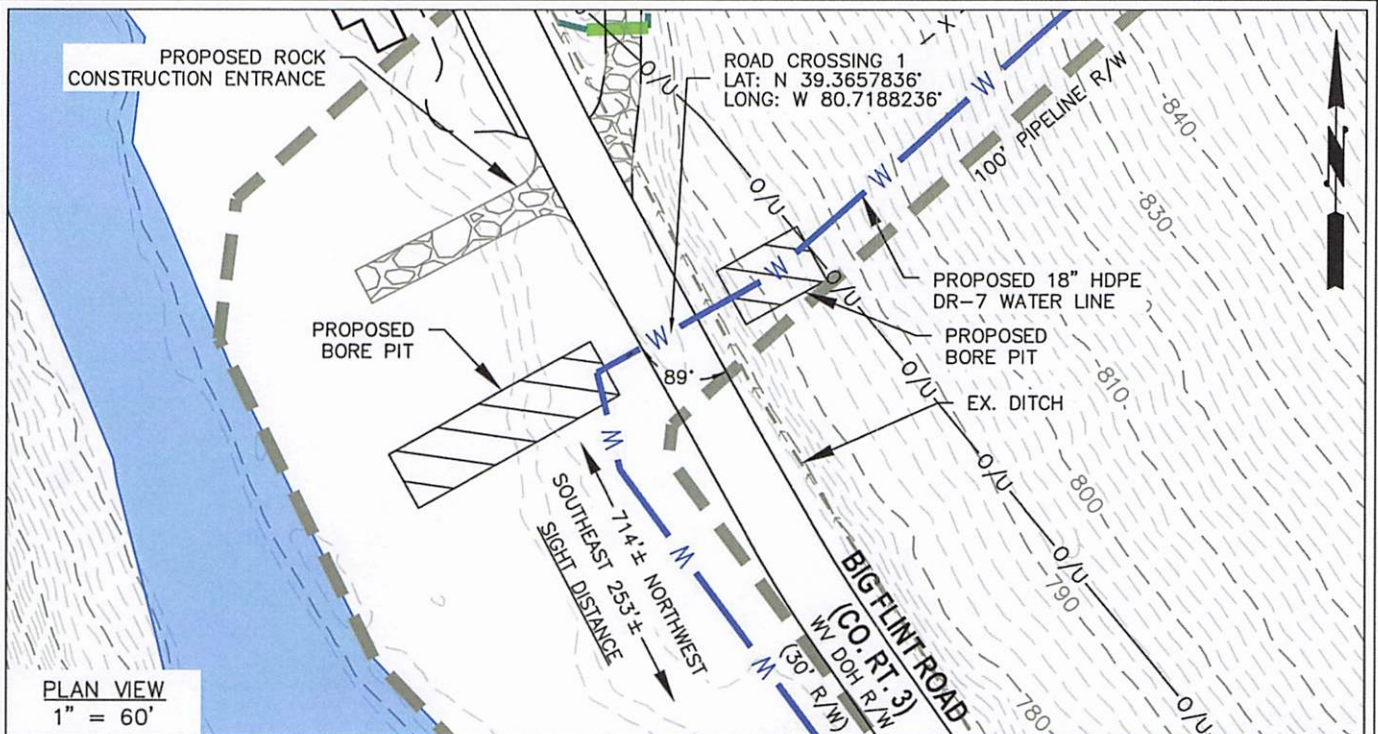
PERMIT ISSUE DATE: \_\_\_\_\_



## TERMS AND CONDITIONS

1. This permit, between the WEST VIRGINIA DEPARTMENT OF TRANSPORTATION, DIVISION OF HIGHWAYS, a statutory corporation, hereinafter called "DIVISION" and APPLICANT, a person, firm or corporation, listed on page one.
2. In consideration of the conditions hereinafter set forth and in accordance with all state and federal laws, including but not limited to, W. Va. Code §17-2E-1 et seq., §17-4-8, §17-16-6, §17-16-9, §31H-1-1 et seq., and any related rules, regulations, policies, manuals, or guidelines, APPLICANT does hereby apply to enter DIVISION's right(s) of way listed on page one, for the purpose listed in Description of Work on page one.
3. APPLICANT shall deposit with DIVISION an official, certified or cashier's check, or executed bond with surety satisfactory to DIVISION to cover any damage and inspection costs DIVISION may sustain by reason of the issuing of this permit, including any expense incurred in restoring said right(s) of way to original condition or the proper repair of any and all damages arising from, related to, or otherwise connected to said entry.
4. APPLICANT agrees to reimburse DIVISION for inspection costs as listed on page one.
5. **APPLICANT shall notify DIVISION at least 48 hours in advance of the date the work will begin. Failure to comply may result in cancellation of this permit.**
6. APPLICANT shall notify DIVISION upon completion of any work authorized under this permit. If APPLICANT's work is anticipated to extend beyond the estimated construction duration indicated on page one, APPLICANT shall notify the DIVISION as soon as possible. Failure to comply may result in additional charges.
7. APPLICANT agrees to protect all users of the road right(s) of way, as well as all employees and equipment of APPLICANT and DIVISION, at all times in accordance with the current Division of Highways manual, "[Manual on Temporary Traffic Control for Streets and Highways](https://transportation.wv.gov/highways/traffic/Pages/default.aspx)" (<https://transportation.wv.gov/highways/traffic/Pages/default.aspx>).
8. APPLICANT agrees to comply with all applicable state and federal laws related to the entry that is the subject of this permit, including but not limited to the requirement to provide DIVISION copies of any NEPA clearance documentation for utility installations along or across the Interstate Highway System and/or controlled-access right(s) of way.
9. The person, firm or corporation to whom a permit is issued agrees to defend, indemnify, and hold the State of West Virginia and DIVISION harmless on account of any damages to persons or property which may arise during the process of the work authorized by this permit or by reason thereof.
10. Applications for permission to perform work within highway right(s) of way shall be made on DIVISION's standard permit form and shall be signed by the authorized representative of the person, firm or corporation applying.
11. The APPLICANT shall give detailed information concerning the nature of the entry and any work to be performed, and the application must include plans sufficient to show the same.
12. Any work authorized under this permit shall be completed on or before one calendar year from the issue date listed on page one, unless otherwise specified or approved by DIVISION.
13. APPLICANT, its agents, successor, heirs or assigns, contractors or any other person, firm or corporation working under APPLICANT's real or apparent authority, shall perform the work in a manner satisfactory to DIVISION. Damage to the right(s) of way resulting at any time from work authorized under this permit shall be repaired by APPLICANT. Unsatisfactory repairs, at the sole discretion of DIVISION, may be corrected by DIVISION or its authorized agent and the cost thereof paid by APPLICANT.
14. DIVISION shall not be liable for any damage or costs incurred by APPLICANT arising from or related to DIVISION's construction or maintenance of DIVISION's facilities.
15. Utility installation(s) shall be in accordance with the current manual, "[Accommodation of Utilities on Highway Right of Way](https://transportation.wv.gov/highways/right-of-way/Pages/Utility-Publications.aspx)" (<https://transportation.wv.gov/highways/right-of-way/Pages/Utility-Publications.aspx>).
16. Driveway construction shall be in accordance with the current manual, "[Rules and Regulations for Constructing Driveways on State Highway Rights-of-Way](https://transportation.wv.gov/highways/traffic/Pages/default.aspx)" (<https://transportation.wv.gov/highways/traffic/Pages/default.aspx>).
17. DIVISION reserves the right to cancel this permit at any time.
18. This permit is issued only insofar as DIVISION has a right to do so. APPLICANT has sole responsibility to secure all necessary rights or permissions for any third-party property interests related to the entry, known or unknown. APPLICANT, by signing on page one, hereby warrants that, to the extent its entry onto DIVISION's right(s) of way involves or affects any other entity's property, real or personal, on or within DIVISION's right(s) of way, that APPLICANT has full legal authorization or the legal right to do so. To the fullest extent permitted by law, APPLICANT agrees to defend, indemnify, and hold harmless DIVISION for damage to any persons or property arising from APPLICANT's breach of this representation and warranty.
19. All attachments are incorporated into this permit. To the extent of any conflict, the terms of this permit shall control.





**CONSTRUCTION**

- CROSSING IS TO BE CONVENTIONAL BORE
- DEPTH MINIMUM 5' FROM TOP OF PIPE.
- PROPOSED PIPELINES WILL BE (1) 18" HDPE DR-7 WATER LINE WITHIN WVDH R/W
- EXISTING DITCH ALONG DODDRIDGE COUNTY ROUTE 3 TO BE MAINTAINED 100' IN EITHER DIRECTION OR TO THE NEAREST CULVERT.

**SLOPE PROTECTION CONTROL**

- INSTALL TRENCH BREAKERS (SANDBAGS), WATER BARS, AND ROLLED EROSION CONTROL PRODUCT.

**THRASHER**

THE THRASHER GROUP, INC.  
600 WHITE OAKS BLVD.  
BRIDGEPORT, WV 26330  
PHONE 304-624-4108

**ANTERO MIDSTREAM LLC**

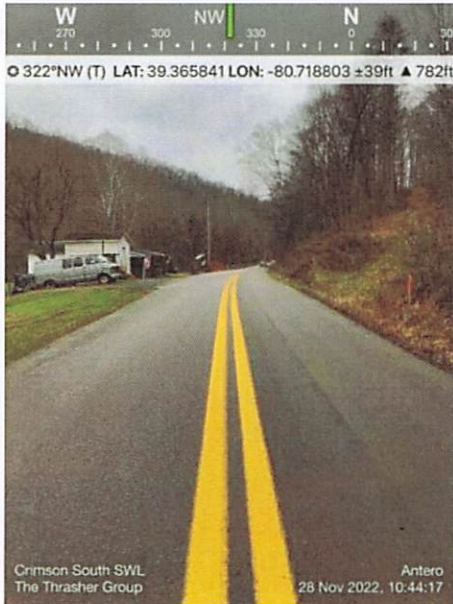
**CRIMSON SOUTH SWL  
CROSSING DODDRIDGE  
COUNTY ROUTE 3 (BIG FLINT RD.) (PAVED)**

DODDRIDGE COUNTY, WEST VIRGINIA

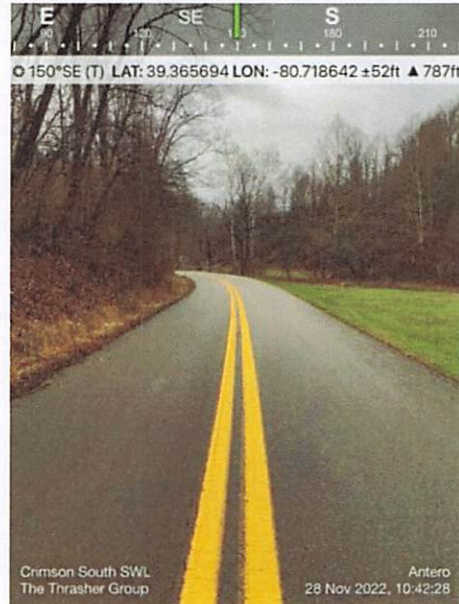
11/21/2022	SCALE AS SHOWN	REVISED 12/12/2022	STA. 38+78
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**ROAD CROSSING 1**  
CRIMSON SOUTH SWL PIPELINE  
COUNTY ROUTE 3  
DODDRIDGE COUNTY, WV  
LAT: 39.3657836° N  
LON: 80.7188236° W



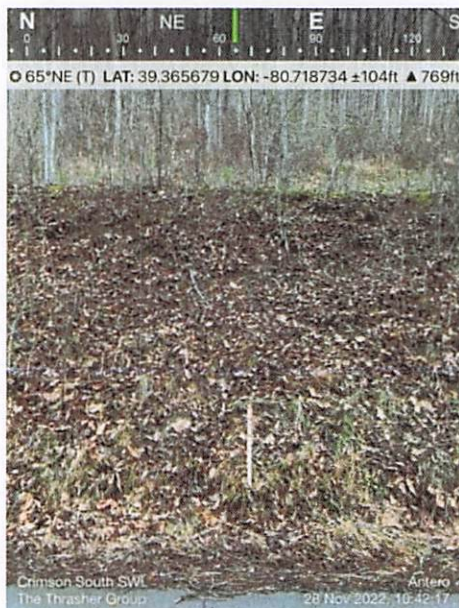
**FACING NORTHWEST**  
**SIGHT DISTANCE: 714'**



**FACING SOUTHEAST**  
**SIGHT DISTANCE: 253'**



**FACING SOUTHWEST**



**FACING NORTHEAST**





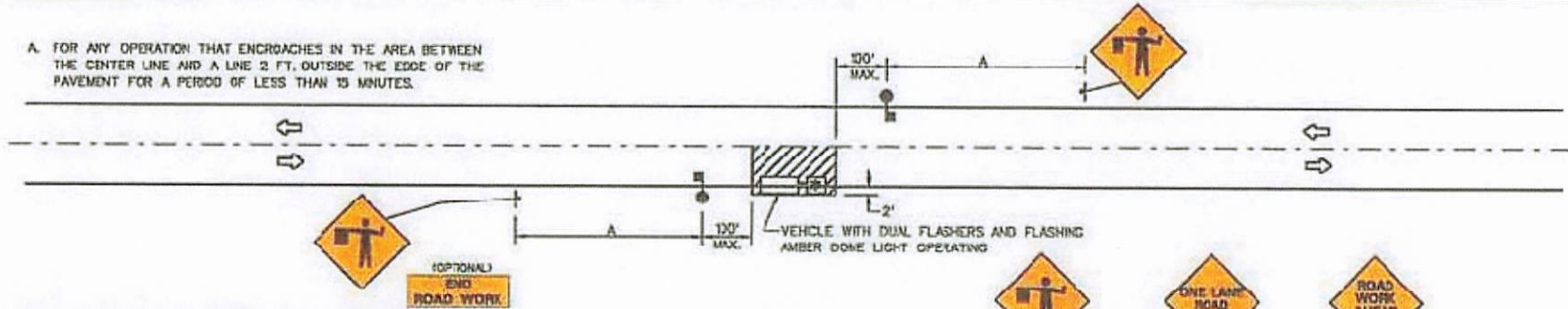




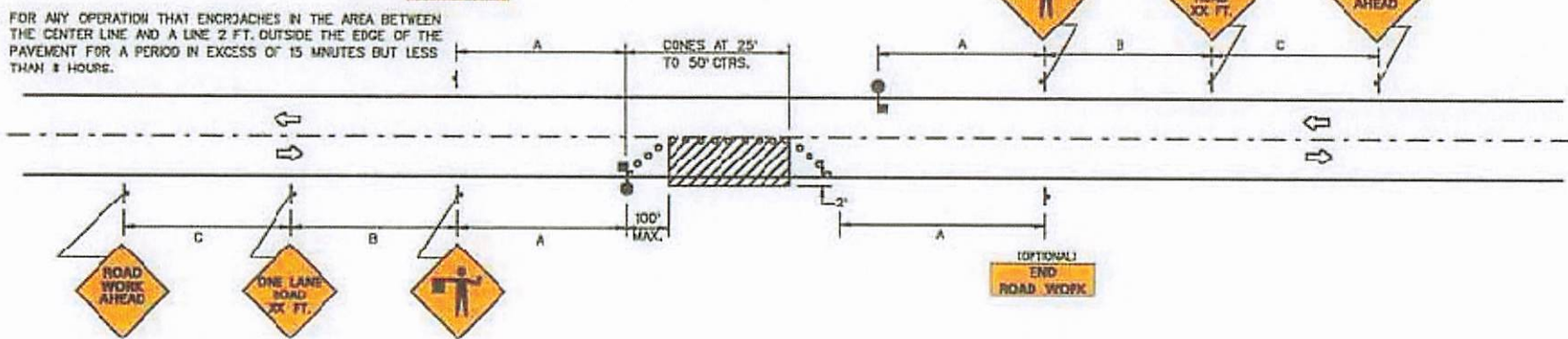




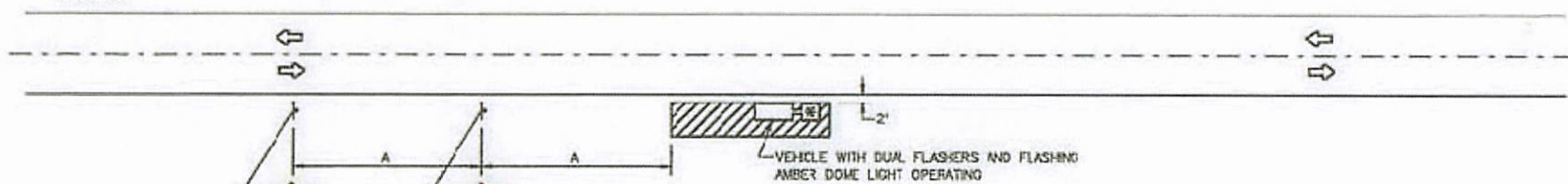
A. FOR ANY OPERATION THAT ENCRDACHES IN THE AREA BETWEEN THE CENTER LINE AND A LINE 2 FT. OUTSIDE THE EDGE OF THE PAVEMENT FOR A PERIOD OF LESS THAN 15 MINUTES.



B. FOR ANY OPERATION THAT ENCRDACHES IN THE AREA BETWEEN THE CENTER LINE AND A LINE 2 FT. OUTSIDE THE EDGE OF THE PAVEMENT FOR A PERIOD IN EXCESS OF 15 MINUTES BUT LESS THAN 4 HOURS.



C. FOR ANY OPERATION THAT IS MORE THAN 2 FT. OUTSIDE THE EDGE OF THE PAVEMENT FOR A PERIOD OF LESS THAN 60 MINUTES.



**SYMBOLS**

- WORK AREA.
- SIGN
- SIGN ON PORTABLE OR PERMANENT SUPPORT.
- FLAGGER WITH PADDLE.
- CONES

**GENERAL NOTES**

1. CONSTRUCTION OPERATIONS SHALL BE CONFINED TO ONE TRAFFIC LANE, LEAVING THE OPPOSITE LANE OPEN TO TRAFFIC. AT LEAST 300 FT. OF BOTH TRAFFIC LANES SHALL BE AVAILABLE FOR TRAFFIC MOVEMENT AT INTERVALS NOT GREATER THAN 1,000 FT. A COMPLETE TRAFFIC CONTROL PLAN MUST BE APPROVED FOR ANY PROJECT EXPECTING TO EXCEED 1,000 FT. IN LENGTH INCLUDING BOTH TAPER AND WORK AREAS.
2. FOR LOW-VOLUME SITUATIONS WITH SHORT WORK ZONES ON STRAIGHT ROADWAYS WHERE THE FLAGGER IS VISIBLE TO ROAD USERS APPROACHING FROM BOTH DIRECTIONS, A SINGLE FLAGGER, POSITIONED TO BE VISIBLE TO ROAD USERS APPROACHING FROM BOTH DIRECTIONS, MAY BE USED.
3. FLASHING WARNING LIGHTS AND/OR FLAHS MAY BE USED TO CALL ATTENTION TO THE ADVANCE WARNING SIGNS.
4. THE FLAGGERS SHALL BE IN SIGHT OF EACH OTHER OR IN DIRECT COMMUNICATION AT ALL TIMES.
5. ALL SIGNS ARE TO BE REMOVED AT COMPLETION OF THE DAY'S OPERATIONS.
6. FOR MULTILANE DIVIDED ROADWAYS THE ADVANCE WARNING SIGNS FOR TRAFFIC APPROACHING FROM THE OPPOSITE DIRECTION MAY BE OMITTED IF APPROVED BY THE ENGINEER.

**SUGGESTED ADVANCE WARNING SIGN SPACING**

ROAD TYPE	DISTANCE BETWEEN SIGNS (IN FT)		
	A	B	C
URBAN (LOW SPEED)*	100	100	100
URBAN (HIGH SPEED)*	350	350	350
RURAL	500	500	500
EXPRESSWAY/FREWAY	1,000	1,500	2,640

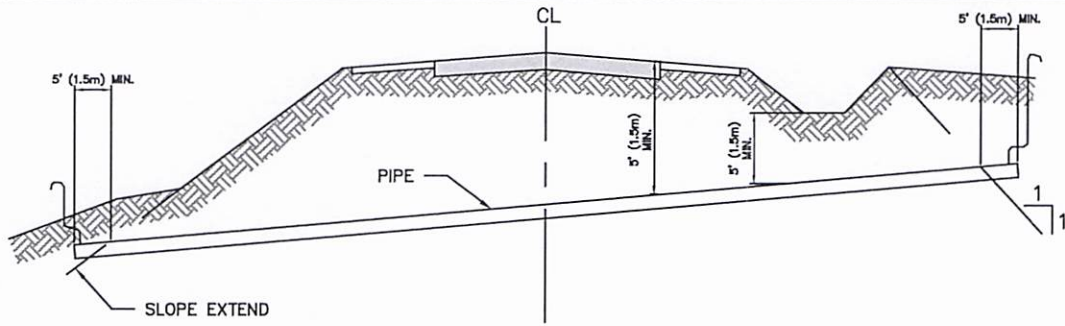
**TYPICAL APPLICATIONS**

- PATCHING PAVEMENT.
- FIELD SURVEY.
- CLEANING UP DEBRIS ON PAVEMENT.
- CROSSWALK PAINTING.

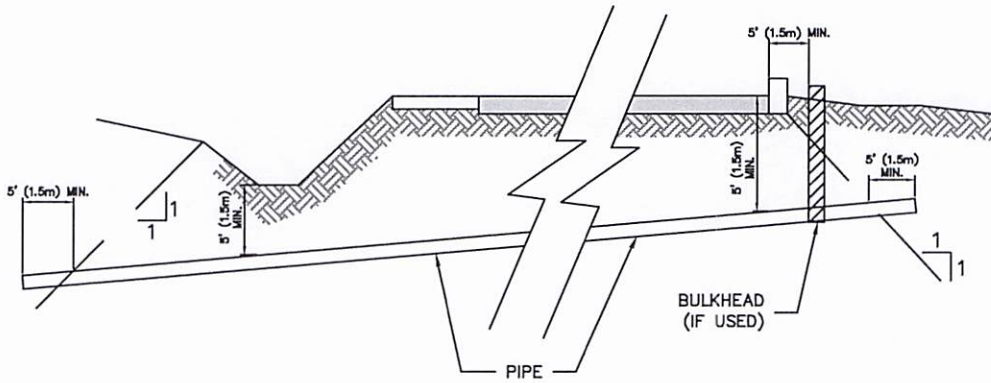
**CASE A6**

TWO-LANE, TWO-WAY TRAFFIC  
SHORT-TERM OPERATIONS  
DAYTIME ONLY

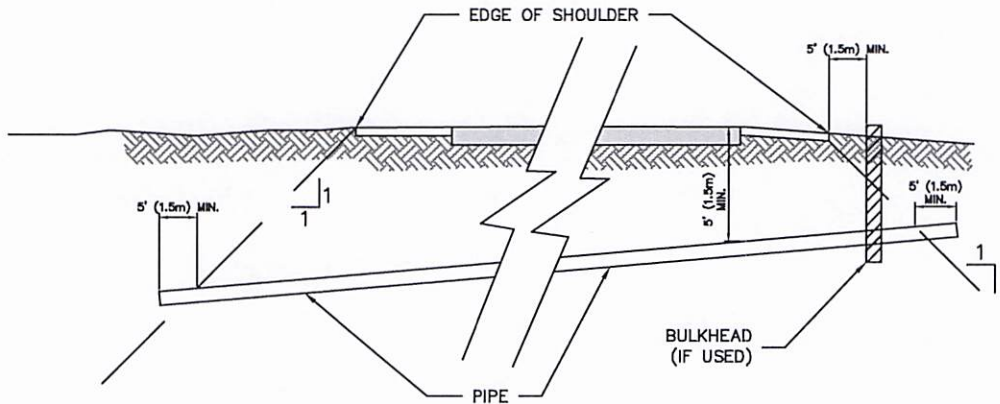
\*SPEED CATEGORY TO BE DETERMINED BY WV DCH



**A. NORMAL CUT OR FILL SECTION**



**B. SECTION WITH DITCH OR CURB**



**C. SECTION WITHOUT DITCH**

**THRASHER**

THE THRASHER GROUP, INC.  
600 WHITE OAKS BLVD.  
BRIDGEPORT, WV 26330  
PHONE 304-624-4108

ANTERO MIDSTREAM LLC

TYPICAL ROAD CROSSING  
CONSTRUCTION DETAILS

DODDRIDGE COUNTY, WEST VIRGINIA

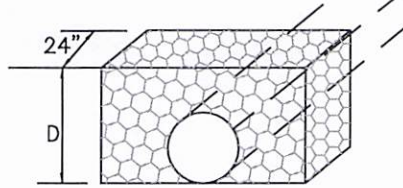
SCALE  
NTS

REVISED

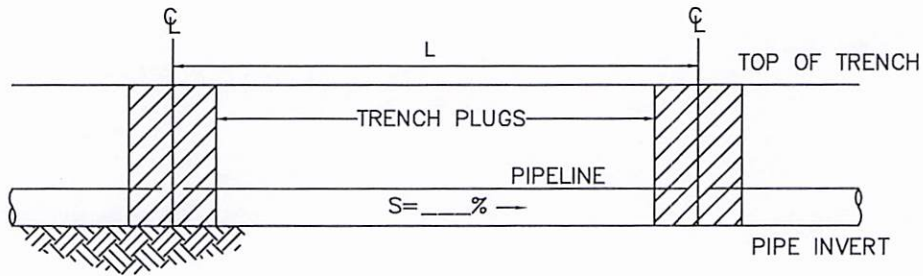
D3



D= TRENCH DEPTH TO PIPE INVERT



SECTION VIEW



NOTES:

1. BAGS FILLED WITH ROCK FREE SOIL.
2. ADDITIONAL INFORMATION INCLUDED ON OTHER DRAWINGS
3. AS AN ALTERNATE TO BAGS SPRAYED FOAM MAY BE USED

ELEVATION

SPACING (L) AND MATERIALS FOR TRENCH PLUGS		
SLOPE %	L FEET	PLUG MATERIAL
0 - 5	0	NONE
5 - 15	500	EARTH FILLED SACKS
15 - 25	300	EARTH FILLED SACKS
25 - 35	200	EARTH FILLED SACKS
35 - 100	100	EARTH FILLED SACKS
OVER 100	50	CEMENT FILLED BAGS (WETTED)

TRENCH BREAKER

NOT TO SCALE

**THRASHER**

THE THRASHER GROUP, INC.  
600 WHITE OAKS BLVD.  
BRIDGEPORT, WV 26330  
PHONE 304-624-4108

ANTERO MIDSTREAM LLC

TYPICAL ROAD CROSSING  
CONSTRUCTION DETAILS

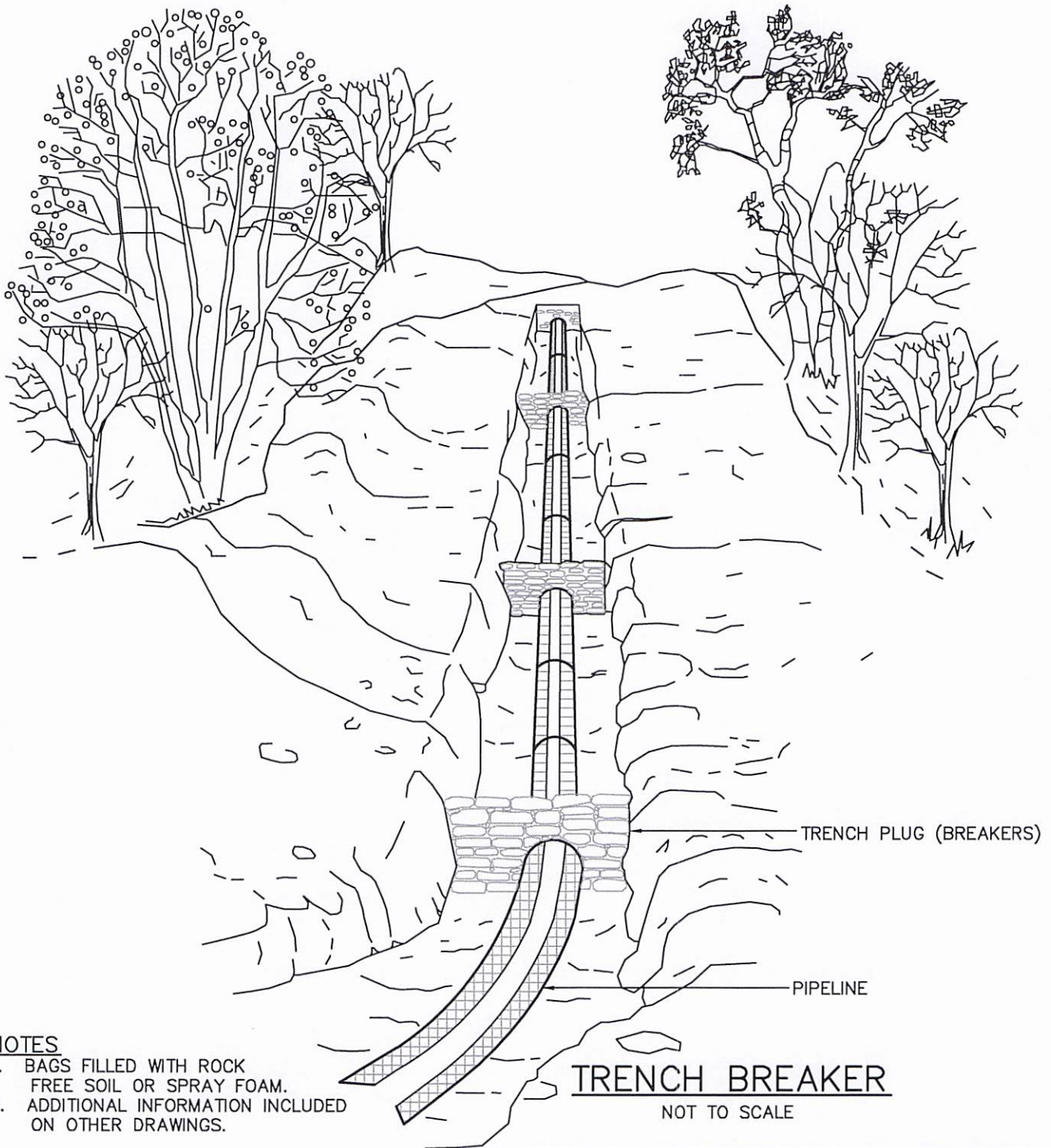
DODDRIDGE COUNTY, WEST VIRGINIA

SCALE

NTS

REVISED

D4



**NOTES**

1. BAGS FILLED WITH ROCK  
FREE SOIL OR SPRAY FOAM.
2. ADDITIONAL INFORMATION INCLUDED  
ON OTHER DRAWINGS.

**TRENCH BREAKER**

NOT TO SCALE

ANTERO MIDSTREAM LLC

TYPICAL ROAD CROSSING  
CONSTRUCTION DETAILS

DODDRIDGE COUNTY, WEST VIRGINIA

**THRASHER**

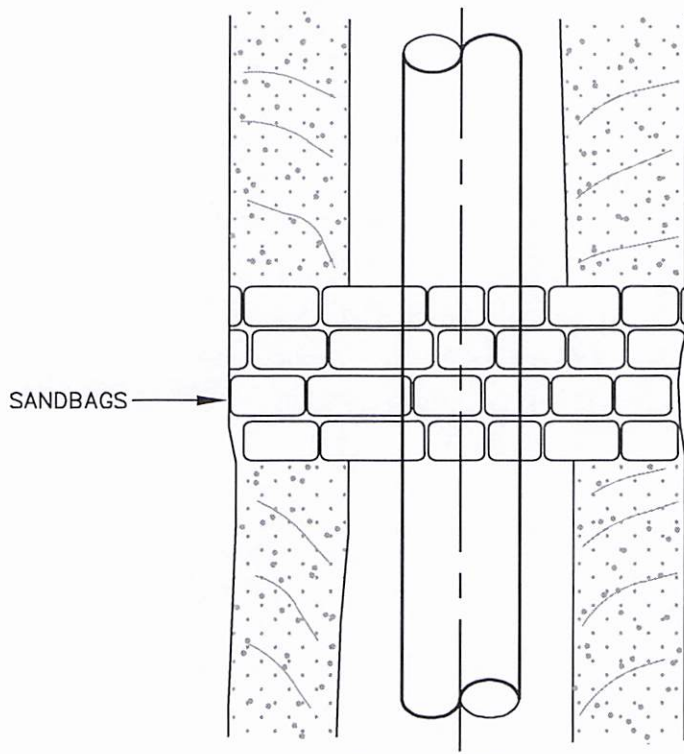
THE THRASHER GROUP, INC.  
600 WHITE OAKS BLVD.  
BRIDGEPORT, WV 26330  
PHONE 304-624-4108

SCALE  
NTS

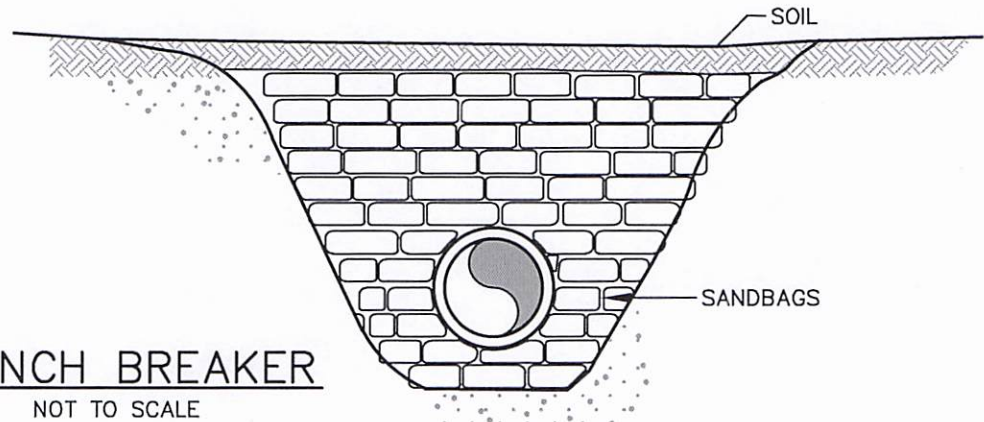
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D5





PLAN VIEW  
NOT TO SCALE



TRENCH BREAKER  
NOT TO SCALE

PROFILE VIEW  
NOT TO SCALE

NOTES

1. BAGS WILL NOT BE FILLED WITH TOPSOIL.
2. ADDITIONAL INFORMATION INCLUDED ON OTHER DRAWINGS.

**THRASHER**

THE THRASHER GROUP, INC.  
600 WHITE OAKS BLVD.  
BRIDGEPORT, WV 26330  
PHONE 304-624-4108

ANTERO MIDSTREAM LLC

TYPICAL ROAD CROSSING  
CONSTRUCTION DETAILS

DODDRIDGE COUNTY, WEST VIRGINIA

SCALE  
NTS

REVISED

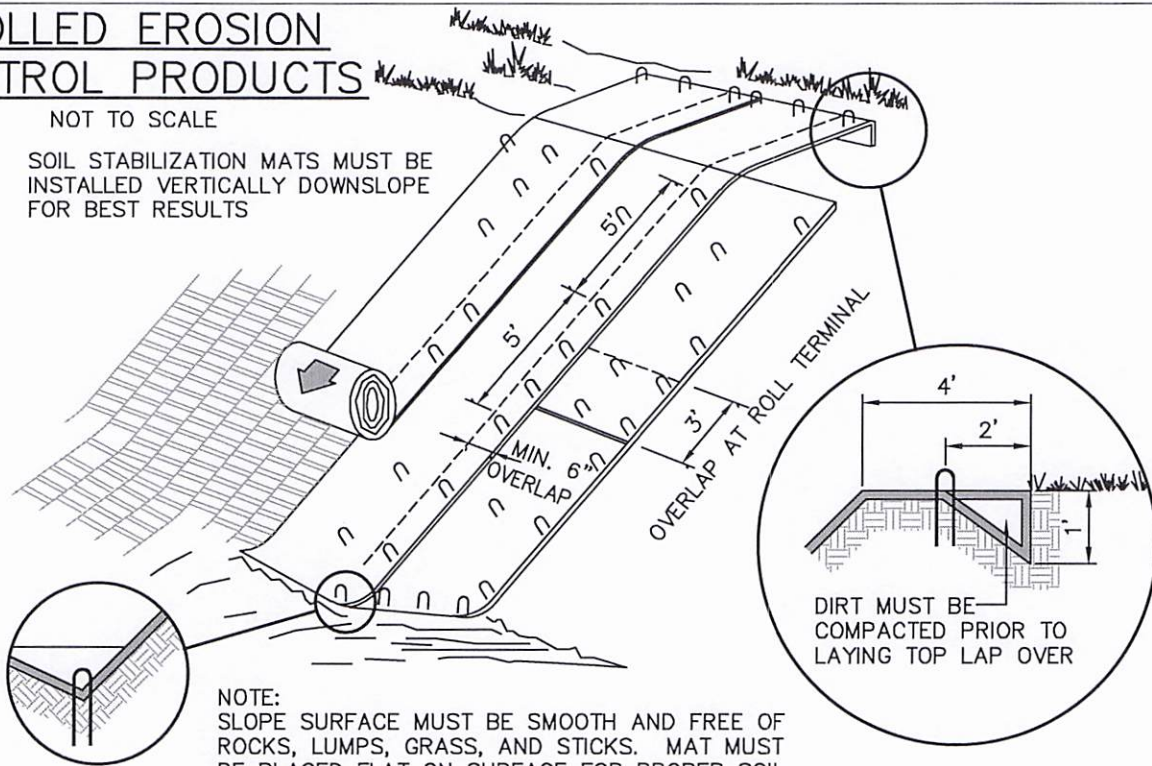
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# ROLLED EROSION CONTROL PRODUCTS

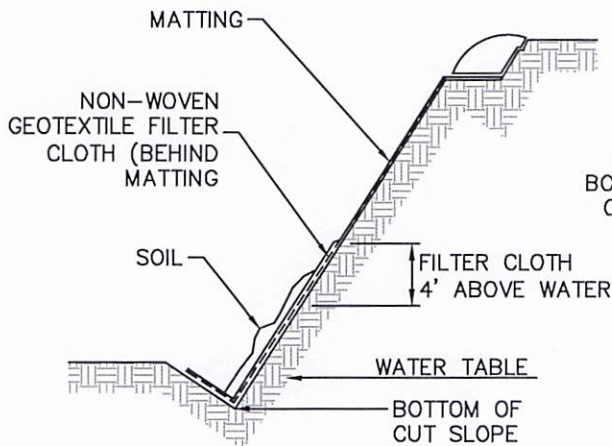
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SOIL STABILIZATION MATS MUST BE INSTALLED VERTICALLY DOWNSLOPE FOR BEST RESULTS



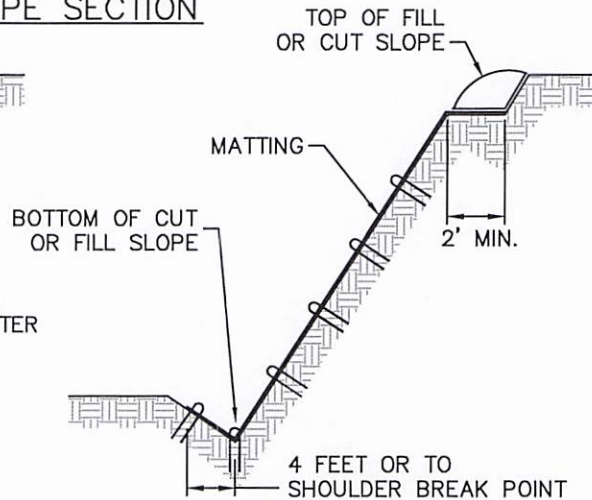
NOTE: SLOPE SURFACE MUST BE SMOOTH AND FREE OF ROCKS, LUMPS, GRASS, AND STICKS. MAT MUST BE PLACED FLAT ON SURFACE FOR PROPER SOIL CONTACT.

## FILL SLOPE SECTION



## SLOPE LINING (WET SLOPE)

SPRAY-ON EROSION CONTROL BLANKETS (E.G. BONDED FIBER MATRIX OR FLEXIBLE GROWTH MEDIUM) MAY BE USED IN LIEU OF ROLL ON BLANKETS IF MANUFACTURER'S RECOMMENDATIONS ARE FOLLOWED.



## SLOPE LINING (DRY SLOPE)

# THRASHER

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600 WHITE OAKS BLVD.  
BRIDGEPORT, WV 26330  
PHONE 304-624-4108

ANTERO MIDSTREAM LLC

TYPICAL ROAD CROSSING  
CONSTRUCTION DETAILS

DODDRIDGE COUNTY, WEST VIRGINIA

SCALE  
NTS

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Project Crimson South SWL (RC1) - Antero Midstream, LLC		<b>THRASHER</b>
Location Doddridge County, WV	Project Number 050-11638	

### Road Crossing Pipe Stress Calculation Report

**Crossing Details:**

Road Number/Name	CR 3	Big Flint Road
GPS Coordinates	39.3657836 N	80.718824 W
Construction Type	Bore	Shallow crossings only
Road Surface	Paved	
Loading Type	H2O	
Depth to Top of Pipe ( <i>H</i> )	5 ft	

**Notes:**

**Pipe Data:**

Material:	HDPE 4710	
Pipe OD ( <i>D<sub>O</sub></i> )	18 in	
Dimension Ratio ( <i>DR</i> )	7 -	
Wall Thickness ( <i>t</i> )	2.571 in	
Mean Diameter ( <i>D<sub>M</sub></i> )	15.429 in	
Pipe Max ID	12.857 in	
Pipe Min ID	12.549 in	
Apparent Modulus of Elasticity ( <i>E</i> )	28,200 psi	
Poisson Ratio ( $\mu$ )	0.45 -	
Safe Ring Deflection ( $\Delta X/D_M$ )	3.0 %	Table 3-11 (In Tables Tab)
Critical Compressive Stress ( <i>S<sub>cr</sub></i> )	1150 psi	
Allowable Compressive Stress ( <i>S<sub>al</sub></i> )	575 psi	
Factor of Safety ( <i>N<sub>S</sub></i> )	2 -	


**Soil Data:**

Soil Unit Weight ( <i>w</i> )	120 pcf
-------------------------------	---------

**Calculation Results:**

		Pass/Fail	Allowable Limit	Factor of Safety
Ring Deflection ( $\Delta X/D_M$ )	0.85 %	Pass	3.0	3.5
Compressive Stress ( <i>S</i> )	20.7 psi	Pass	575	27.8
Total Vertical Soil Pressure ( <i>P<sub>E</sub></i> + <i>P<sub>L</sub></i> )	5.9 psi	Pass	147	25.0

Notes: Calculations are derived from the Handbook of Polyethylene Pipe by the Plastic Pipe Institute.

Prepared By: James C. Anderson, PE	Approved By: Clayton White, PE, PMP 
---------------------------------------	--

Project Crimson South SWL (RC1) - Antero Midstream, LLC	
Location Doddridge County, WV	Project Number 050-11638



**Soil Pressure on Pipe**

**Notes:**

**Vertical Earth Pressure**

Soil Unit Weight ( $w$ )	120 pcf	In the absence of Geotech, assume 120 pcf
Depth to Top of Pipe ( $H$ )	5 ft	
Vertical Earth Pressure ( $P_E$ )	600 psf	Assume Prism Load - No Arching
Vertical Earth Pressure ( $P_E$ )	4.2 psi	$P_E = wH$


**Live Loading Pressure**

Depth to Top of Pipe ( $H$ )	5 ft	
Soil Pressure at top of pipe ( $P_{H20}$ )	250 psf	From Table 3-3 or Table 3-4 (In Tables Tab)
Impact Factor ( $I_f$ )	1 -	Typically 1.0 if paved, 2.0 if unpaved
Live Load at top of Pipe ( $P_L$ )	250 psf	
Live Load at top of Pipe ( $P_L$ )	1.7 psi	$P_L = I_f P_{H20}$

**Total Soil Pressure**

Total Vertical Soil Pressure ( $P_E + P_L$ )	850 psf	Earth Load + Live Load
Total Vertical Soil Pressure ( $P_E + P_L$ )	5.9 psi	

Prepared By:  
James C. Anderson, PE

Approved By:  
Clayton White, PE, PMP 



Project Crimson South SWL (RC1) - Antero Midstream, LLC		<b>THRASHER</b>
Location Doddridge County, WV	Project Number 050-11638	

**Pipe Reaction to Loading**

**Notes:**

**Ring Deflection**

Modified Iowa Formula

Modulus of Soil Reaction ( $E'$ )	700 psi	Table 3-8, Assume 90% Compaction
Deflection Lag Factor ( $L_{DL}$ )	1.5 -	Typically 1.25 - 1.5
Bedding Factor ( $K_{BED}$ )	0.1 -	Typically 0.1
Soil Support Factor ( $F_s$ )	0.15 -	Assume Worst Case

Dimension Ratio ( $DR$ )	7 -
Apparent Modulus of Elasticity ( $E$ )	28,200 psi

Ring Deflection ( $\Delta X/D_M$ )	0.85 %
------------------------------------	--------

$$\frac{\Delta X}{D_M} = \frac{1}{144} \left( \frac{K_{BED} L_{DL} P_E + K_{BED} P_L}{\frac{2E}{3} \left( \frac{1}{DR-1} \right)^3 + 0.061 F_s E'} \right)$$

**Ring Compression**

Compressive Stress ( $S$ )	20.66 psi
----------------------------	-----------

$$S = \frac{(P_E + P_L) DR}{288}$$

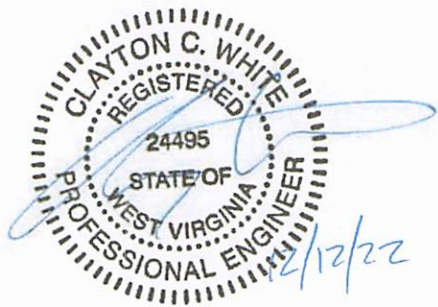
**Unconstrained Buckling**

Factor of Safety	2 -	
Ovality Correction Factor	0.9 -	Based on % Deflection and Figure 3-9 in Tables tab
Apparent Modulus of Elasticity	28,200 psi	
Poisson Ratio	0.45 -	
DR	7 -	

Allowable Buckling Pressure ( $P_{WU}$ )	147.34 psi
--	------------

$$P_{WU} = \frac{f_o}{N_s} \frac{2E}{(1-\mu^2)} \left( \frac{1}{DR-1} \right)^3$$

End of Calculations



Prepared By: James C. Anderson, PE	Approved By: Clayton White, PE, PMP
---------------------------------------	--



WEST VIRGINIA DEPARTMENT OF TRANSPORTATION

**Division of Highways**

Office of the District Engineer/Manager

District Four

Post Office Box 4220 · Clarksburg, West Virginia 26302 · (304) 842-1500

**Drilling Operators Permit Conditions & Requirements**

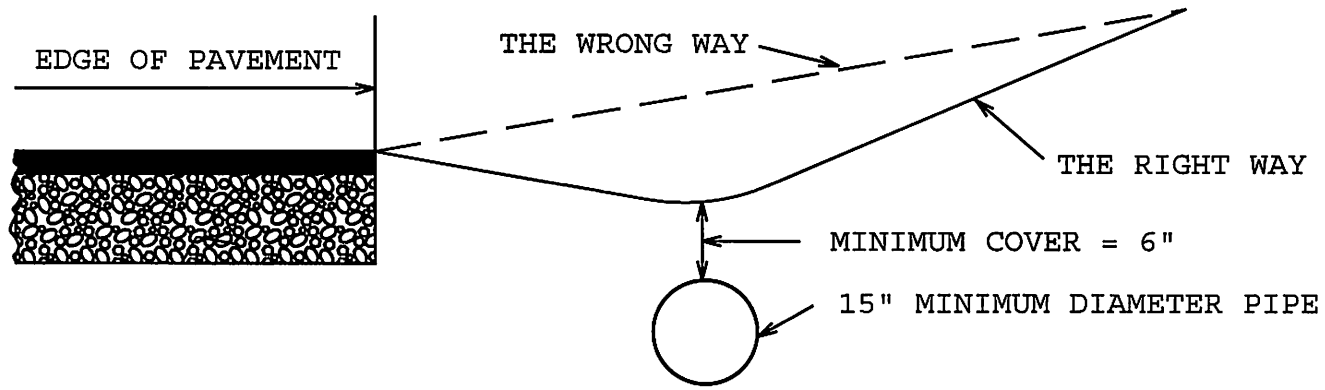
1. Applicant shall ensure the driveway is constructed in accordance with the [WVDOH Driveway Manual](#). The surfacing is specifically addressed on pages 20 and 21 under Section 8.4.6.
2. Prior to permit expiration, applicant must remove this temporary access and return DOH right-of-way to original or better condition; OR the property owner must submit a separate application to obtain a permanent permit.
3. If required, applicant must utilize appropriate traffic control during any use of the access. Failure to provide traffic control will void this permit and bond.
4. At no time may the drilling operation encroach on DOH right-of-way. Specifically, no loading, parking, or staging operations may be conducted on the traveled way or within DOH right-of-way.
5. Vehicles accessing the site are not permitted to stop in DOH right of way or back into the traveled way for any reason.
6. Applicant is responsible for immediate removal of mud and debris from the roadway caused by any entity involved with the drilling operations.
7. Applicant must notify the Permits Office/Oil & Gas Coordinator at (304) 326-0091 when drilling operations cease due to abandoning a well. If the driveway will no longer be used, the driveway must be removed, and ditch line restored to original or better condition, including the removal of pipe. The property owner must place the approach in their name for the driveway to remain. Note that bonds will not be released until every approach issued to your company has been removed or placed in the property owner's name.
8. Applicant shall ensure the driveway is constructed in accordance with the [WVDOH Driveway Manual](#) and that sight lines are free from vegetation or other obstructions at all times during use of the driveway.

**WVDOH Driveway Manual:**

<https://transportation.wv.gov/highways/engineering/Manuals/Traffic/Driveway.pdf>

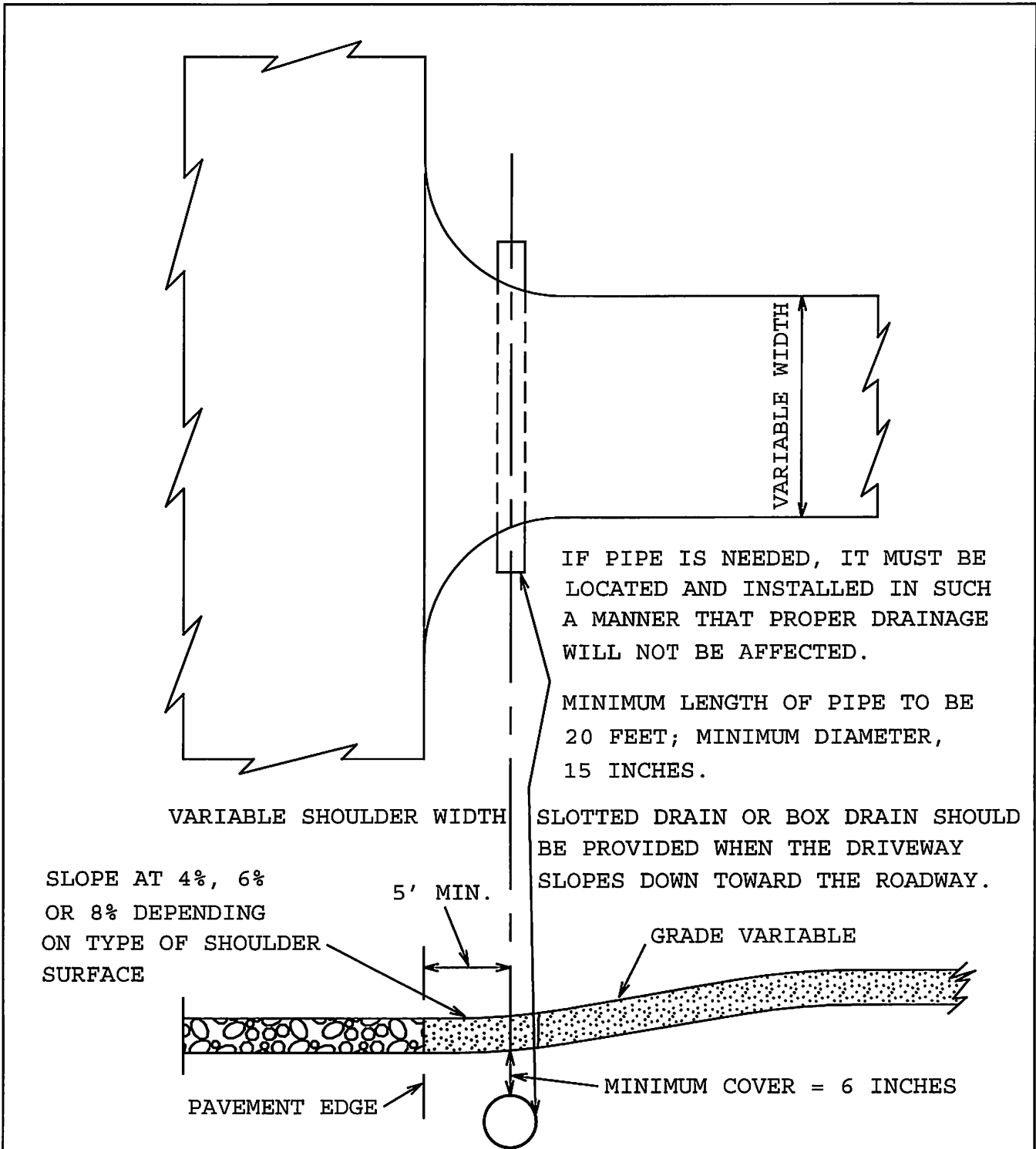
**Failure to comply with any condition or requirement will void this permit.**





PIPE INSTALLATION FOR SIDE ROAD  
APPROACH WITH STEEP GRADE

FIGURE 17



PIPE INSTALLATION FOR SIDE ROAD  
OR PRIVATE ENTRANCE APPROACH

FIGURE 18



# FEDERAL HIGHWAY ADMINISTRATION (FHWA)

## SUMMARY OF PILOT/ESCORT VEHICLE OPERATORS BEST PRACTICES GUIDELINES

### I. PRE-TRIP PLANNING

- ✓ Route review
- ✓ Pilot/Escort vehicle operator and equipment checklist

### II. PRE-TRIP SAFETY MEETING

- ✓ Review load limitations
- ✓ Test communication equipment
- ✓ Coordinate with local law enforcement

### III. LOAD MOVEMENT

- ✓ Know the load, and know the law
- ✓ Position vehicles in compliance with regulations and permit requirements

### IV. TRAFFIC CONTROL

- ✓ Develop and follow a traffic control plan
- ✓ Use proper equipment
- ✓ Follow defensive flagging guidelines

### V. SPECIAL CHALLENGES

- ✓ Railroad Crossings
- ✓ Tall loads, overhead obstructions
- ✓ Steerable Trailers/Tillerman Operations

### VI. EMERGENCY PROCEDURES

- ✓ Injury issues

### VII. POST-TRIP ACTIVITIES

- ✓ Turn off warning lights, remove OVERSIZE LOAD signage
- ✓ Review/evaluate procedure

<https://ops.fhwa.dot.gov/publications/fhwahop16051/index.htm>



WEST VIRGINIA DEPARTMENT OF TRANSPORTATION

Division of Highways

Office of the District Engineer/Manager  
District Four

Jimmy Wriston, P. E.  
Secretary of Transportation

PO Box 4220 (EXIT 121, I-79) \* Clarksburg, WV 26302 \* 304-842-1500  
January 10, 2023

ANTERO MIDSTREAM LLC  
  
535 WHITE OAKS BOULEVARD  
BRIDGEPORT, WV 26330

Dear Applicant:

Your approved copy of Permit Number 04-2022-0868 for a UW - Utility Water

permit type is enclosed. A description of the work is on the permit.

Please contact the District Four office:

**Lacy Pratt 304-326-0091**

at least 48 hours in advance of the date you plan to begin work so arrangements can be made to inspect the work authorized by the permit.

**Failure to comply will result in cancellation of your permit.**

A copy of this permit is to be available on the job at all times while the work is in progress for inspection by the West Virginia Division of Highways' personnel.

Sincerely,

*Michael C. Daley, DM*

District Engineer / District Manager

*Lacy Pratt*

Permit Supervisor

Initials: MD:MD:lp

Attachments: Yes

Enclosure: No

cc:OM 0409 O&G file



**Addendum to Permit 04-2022-0868**

This addendum, made this 10<sup>th</sup> day of January 2023, between the West Virginia Department of Transportation, Division of Highways, a statutory company hereinafter called the DIVISION and

**Antero Midstream, LLC**

Address: **535 White Oaks Blvd., Bridgeport, WV 26330** Phone: **(304) 842-4198**

hereinafter called APPLICANT.

The Applicant has filed with the DIVISION a written application for the following named routes and locations:

**Doddridge County Route SLS 3/1, Brush Run Road at Mile Post 0.184**

Have steel plates available, traffic barriers, and orange safety fence in place or on standby.

- ❖ In instances where a proposed gas and/or water line crossing intersects West Virginia Division of Highways right-of-way and the disturbed slope on either side that exceeds a 1:1 slope – the contractor must submit plans for permanent slide prevention. The plan must allow for the establishment/maintenance of a roadside ditch. The length of the slide prevention plan must span the limits of disturbance on the existing slope. Avoidance of the slope and resubmitting the method of crossing is an acceptable plan.
  - ❖ In instances where a proposed gas and/or water line crossing occurs on West Virginia Division of Highways right-of-way deemed unimproved, the contractor must submit a plan that upgrades the unimproved portion of road to a minimum standard determined by the Division. The route review will cite drainage deficiencies and a cross section view of the improved road section will be provided. Unimproved is defined as roads that are not receiving scheduled maintenance to either the road surface or drainage features.
  - ❖ Applicant to utilize CASE A-6 Traffic Control where lane closures are necessary.
  - ❖ Use Type C Trench Repair, refer to type C trench repair typical.
- After completion of the project, a joint review of roads will be filmed and evaluated to assure roads have been repaired to existing condition or better.
  - No travel on School Bus Routes during their traversing operational hours on above mentioned route on bi-directional roadways where the lane widths are less than 10 ft.
  - Pilot Vehicle required for all oversized loads.
  - Ditch lines to be maintained by applicant. \*FDR or equivalent may be required to stabilize road to uphold increased traffic and heavy and excess amount of loads. Centerline of roadway cannot be relocated without an agreement between WV DOH and the Applicant. This work requires an advanced notice and prior approval by Maintenance/Design Engineer.
  - Repairs that will include “Hot Mix Asphalt” will have the following testing requirement: The supplier will be responsible for testing at the plant; Compaction testing will be as per WV DOH specifications.
  - The Division of Highways shall have the right at all times to inspect the work, and if such inspections should reveal that the work is not done according to specifications, upon being so advised by the Division, Applicant agrees to take immediate corrective actions.

---

APPLICANT shall properly repair and maintain any and all damages that may result to said bridges, highways, shoulders and ditches from hauling activities of APPLICANT, its agents, contractors and employees, to as good a condition prior to commencement of APPLICANT's operation or as when the permit was issued, as determined by the District Engineer/Manager of the DIVISION having jurisdiction over the work permitted, or pay damages therefore in the amount to sufficiently restore such bridges, roads, highways, shoulders and ditches to original condition; and shall reimburse the DIVISION for all inspection costs incurred by it in connection with said work and repairs of such damages and faithfully comply with all terms and conditions of said permits and save harmless the DIVISION and the State of West Virginia from all losses resulting from the conduct of said work and repairs; provided that all projects covered by this blanket bond have been restored to original or better condition; then this Bond shall be released once; or otherwise will remain in full force and effect.

**Bond Amount: \$1,000,000.00**

**Bond Number: LPM9062891**

**Date: 02/21/2012**

# West Virginia Department of Transportation Division of Highways Right of Way Entry Permit Application

PERMIT NO. 04-2022-0868

By signing below, APPLICANT agrees to all terms and conditions (see page 2) associated with this permit to enter upon, under, over, or across the state road right(s) of way of the State of West Virginia.

Applicant: Antero Midstream, LLC

Address: 535 White Oaks Boulevard City: Bridgeport State: WV Zip: 26330

Phone Number: (304) 842-4198 Email: idepoy@anteroresources.com

Route Type: US WV County Route Number: 3/1 Milepost: 0.184 County: Doddridge

Latitude/Longitude at/along Roadway (in whole degrees): 39.3710461, -80.7156963

Description of Work: Install one (1) 18" water line by open cut method across CR 3/1 along with temporary construction entrances in Doddridge County. All work shall comply with WV DOT/DOH specifications.

**Use traffic control, case A-6 attached. Use slope protection. Have steel plates on-site before work begins.** A11568 RC2

Length of Installation: 30 LF Estimated Construction Duration: \_\_\_\_\_

DOH Project Number/Name (if applicable): \_\_\_\_\_

Inspection Fees (must check one):

**\*Berm to be stabilized and replaced to original condition when work is complete.**

- For any inspection fees incurred under this permit
- At \$0.85 per linear foot of water line installed under this permit
- At \$3.37 per linear foot of sewer line installed under this permit

Applicant: *John Depoy*

Applicant Title: Design Manager

Applicant Printed Name: John Depoy

Date: 12/16/22

DOH Reviewer: *Hacy Pratt*

DOH Reviewer Title: Permit Supervisor

DOH Approver: *[Signature]*

DOH Approver Title: For District Maintenance Engineer

FOR DIVISION USE ONLY

DEPOSIT/BOND REQUIRED:  YES  NO

DEPOSIT/BOND AMOUNT: 1,000,000.00

Check Attached  Bond Attached  Bond On File

BOND NUMBER: LPM9062891 DATE: 2/21/12

INSPECTION:  By Owner/Consultant  By Division

Full Time  Part Time

Reimbursable (Authorization \_\_\_\_\_)

Periodic

No Cost

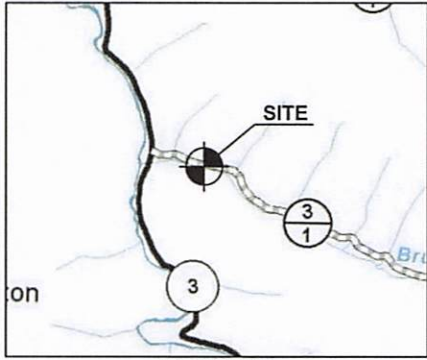
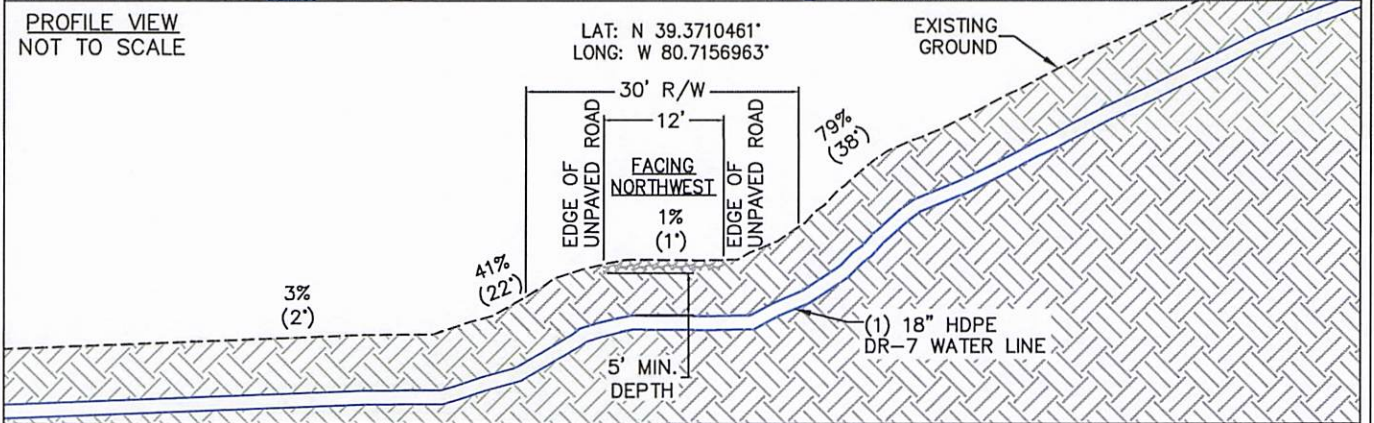
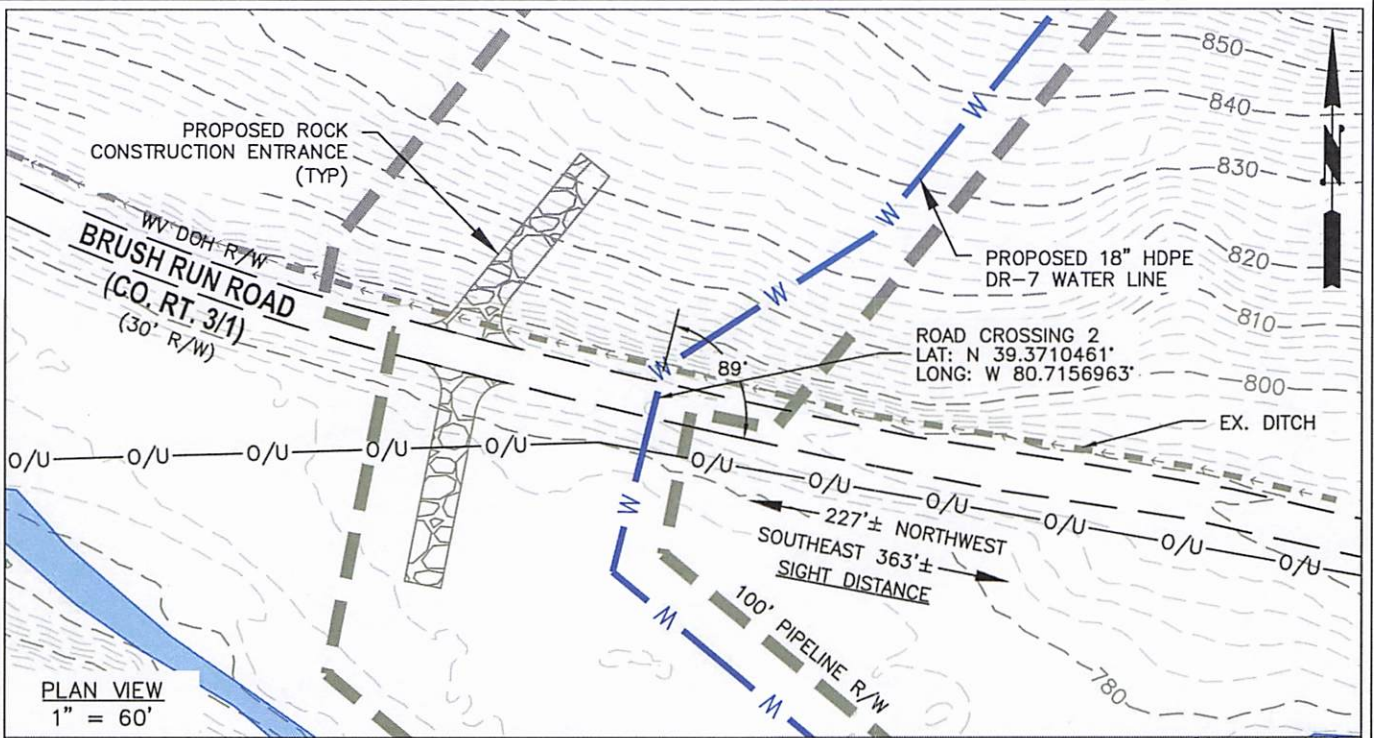
PERMIT ISSUE DATE: \_\_\_\_\_



## TERMS AND CONDITIONS

1. This permit, between the WEST VIRGINIA DEPARTMENT OF TRANSPORTATION, DIVISION OF HIGHWAYS, a statutory corporation, hereinafter called "DIVISION" and APPLICANT, a person, firm or corporation, listed on page one.
2. In consideration of the conditions hereinafter set forth and in accordance with all state and federal laws, including but not limited to, W. Va. Code §17-2E-1 et seq., §17-4-8, §17-16-6, §17-16-9, §31H-1-1 et seq., and any related rules, regulations, policies, manuals, or guidelines, APPLICANT does hereby apply to enter DIVISION's right(s) of way listed on page one, for the purpose listed in Description of Work on page one.
3. APPLICANT shall deposit with DIVISION an official, certified or cashier's check, or executed bond with surety satisfactory to DIVISION to cover any damage and inspection costs DIVISION may sustain by reason of the issuing of this permit, including any expense incurred in restoring said right(s) of way to original condition or the proper repair of any and all damages arising from, related to, or otherwise connected to said entry.
4. APPLICANT agrees to reimburse DIVISION for inspection costs as listed on page one.
5. **APPLICANT shall notify DIVISION at least 48 hours in advance of the date the work will begin. Failure to comply may result in cancellation of this permit.**
6. APPLICANT shall notify DIVISION upon completion of any work authorized under this permit. If APPLICANT's work is anticipated to extend beyond the estimated construction duration indicated on page one, APPLICANT shall notify the DIVISION as soon as possible. Failure to comply may result in additional charges.
7. APPLICANT agrees to protect all users of the road right(s) of way, as well as all employees and equipment of APPLICANT and DIVISION, at all times in accordance with the current Division of Highways manual, "[Manual on Temporary Traffic Control for Streets and Highways](https://transportation.wv.gov/highways/traffic/Pages/default.aspx)" (<https://transportation.wv.gov/highways/traffic/Pages/default.aspx>).
8. APPLICANT agrees to comply with all applicable state and federal laws related to the entry that is the subject of this permit, including but not limited to the requirement to provide DIVISION copies of any NEPA clearance documentation for utility installations along or across the Interstate Highway System and/or controlled-access right(s) of way.
9. The person, firm or corporation to whom a permit is issued agrees to defend, indemnify, and hold the State of West Virginia and DIVISION harmless on account of any damages to persons or property which may arise during the process of the work authorized by this permit or by reason thereof.
10. Applications for permission to perform work within highway right(s) of way shall be made on DIVISION's standard permit form and shall be signed by the authorized representative of the person, firm or corporation applying.
11. The APPLICANT shall give detailed information concerning the nature of the entry and any work to be performed, and the application must include plans sufficient to show the same.
12. Any work authorized under this permit shall be completed on or before one calendar year from the issue date listed on page one, unless otherwise specified or approved by DIVISION.
13. APPLICANT, its agents, successor, heirs or assigns, contractors or any other person, firm or corporation working under APPLICANT's real or apparent authority, shall perform the work in a manner satisfactory to DIVISION. Damage to the right(s) of way resulting at any time from work authorized under this permit shall be repaired by APPLICANT. Unsatisfactory repairs, at the sole discretion of DIVISION, may be corrected by DIVISION or its authorized agent and the cost thereof paid by APPLICANT.
14. DIVISION shall not be liable for any damage or costs incurred by APPLICANT arising from or related to DIVISION's construction or maintenance of DIVISION's facilities.
15. Utility installation(s) shall be in accordance with the current manual, "[Accommodation of Utilities on Highway Right of Way](https://transportation.wv.gov/highways/right-of-way/Pages/Utility-Publications.aspx)" (<https://transportation.wv.gov/highways/right-of-way/Pages/Utility-Publications.aspx>).
16. Driveway construction shall be in accordance with the current manual, "[Rules and Regulations for Constructing Driveways on State Highway Rights-of-Way](https://transportation.wv.gov/highways/traffic/Pages/default.aspx)" (<https://transportation.wv.gov/highways/traffic/Pages/default.aspx>).
17. DIVISION reserves the right to cancel this permit at any time.
18. This permit is issued only insofar as DIVISION has a right to do so. APPLICANT has sole responsibility to secure all necessary rights or permissions for any third-party property interests related to the entry, known or unknown. APPLICANT, by signing on page one, hereby warrants that, to the extent its entry onto DIVISION's right(s) of way involves or affects any other entity's property, real or personal, on or within DIVISION's right(s) of way, that APPLICANT has full legal authorization or the legal right to do so. To the fullest extent permitted by law, APPLICANT agrees to defend, indemnify, and hold harmless DIVISION for damage to any persons or property arising from APPLICANT's breach of this representation and warranty.
19. All attachments are incorporated into this permit. To the extent of any conflict, the terms of this permit shall control.





**CONSTRUCTION**

- CROSSING IS TO BE OPEN CUT.
- DEPTH MINIMUM 5' FROM TOP OF PIPE.
- PROPOSED PIPELINES WILL BE (1) 18" HDPE DR-7 SURFACE WATER LINE WITHIN WVDODH R/W
- EXISTING DITCH ALONG DODDRIDGE COUNTY ROUTE 3/1 TO BE MAINTAINED 100' IN EITHER DIRECTION OR TO THE NEAREST CULVERT.

**SLOPE PROTECTION CONTROL**

- INSTALL TRENCH BREAKERS (SANDBAGS), WATER BARS, AND ROLLED EROSION CONTROL PRODUCT.



THE THRASHER GROUP, INC.  
600 WHITE OAKS BLVD.  
BRIDGEPORT, WV 26330  
PHONE 304-624-4108

<b>ANTERO MIDSTREAM LLC</b>			
<b>CRIMSON SOUTH SWL CROSSING DODDRIDGE COUNTY ROUTE 3/1 (BRUSH RUN) (UNPAVED)</b>			
<b>DODDRIDGE COUNTY, WEST VIRGINIA</b>			
11/21/2022	SCALE AS SHOWN	REVISED 12/12/2022	STA. 63+17

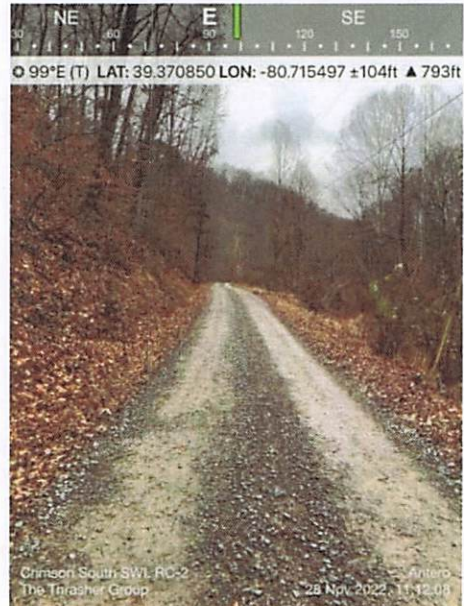
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**ROAD CROSSING 2**  
CRIMSON SOUTH SWL PIPELINE  
COUNTY ROUTE 3/I  
DODDRIDGE COUNTY, WV  
LAT: 39.3710461° N  
LON: 80.7156963° W



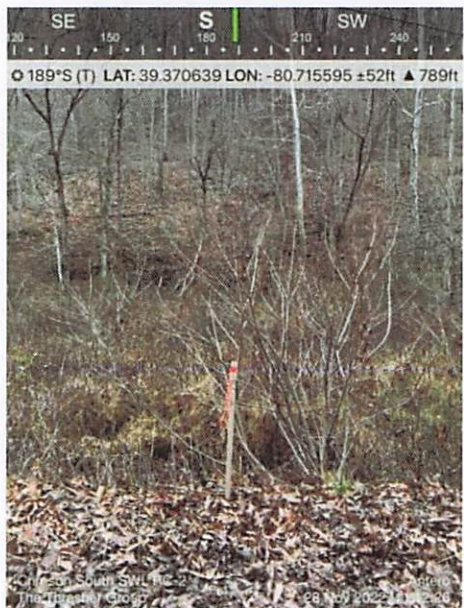
**FACING WEST**  
**SIGHT DISTANCE: 227'**



**FACING EAST**  
**SIGHT DISTANCE: 363'**



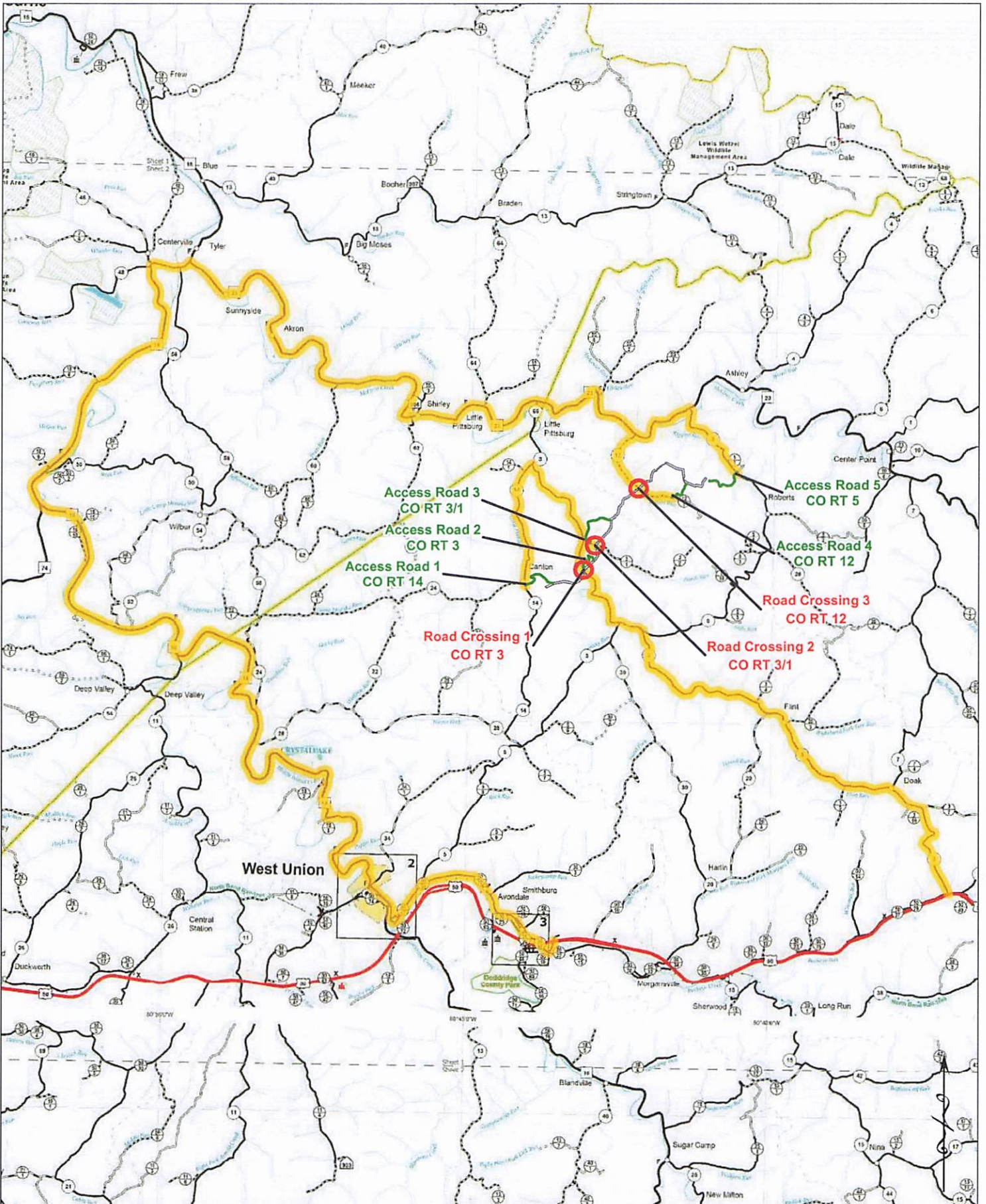
**FACING NORTH**



**FACING SOUTH**



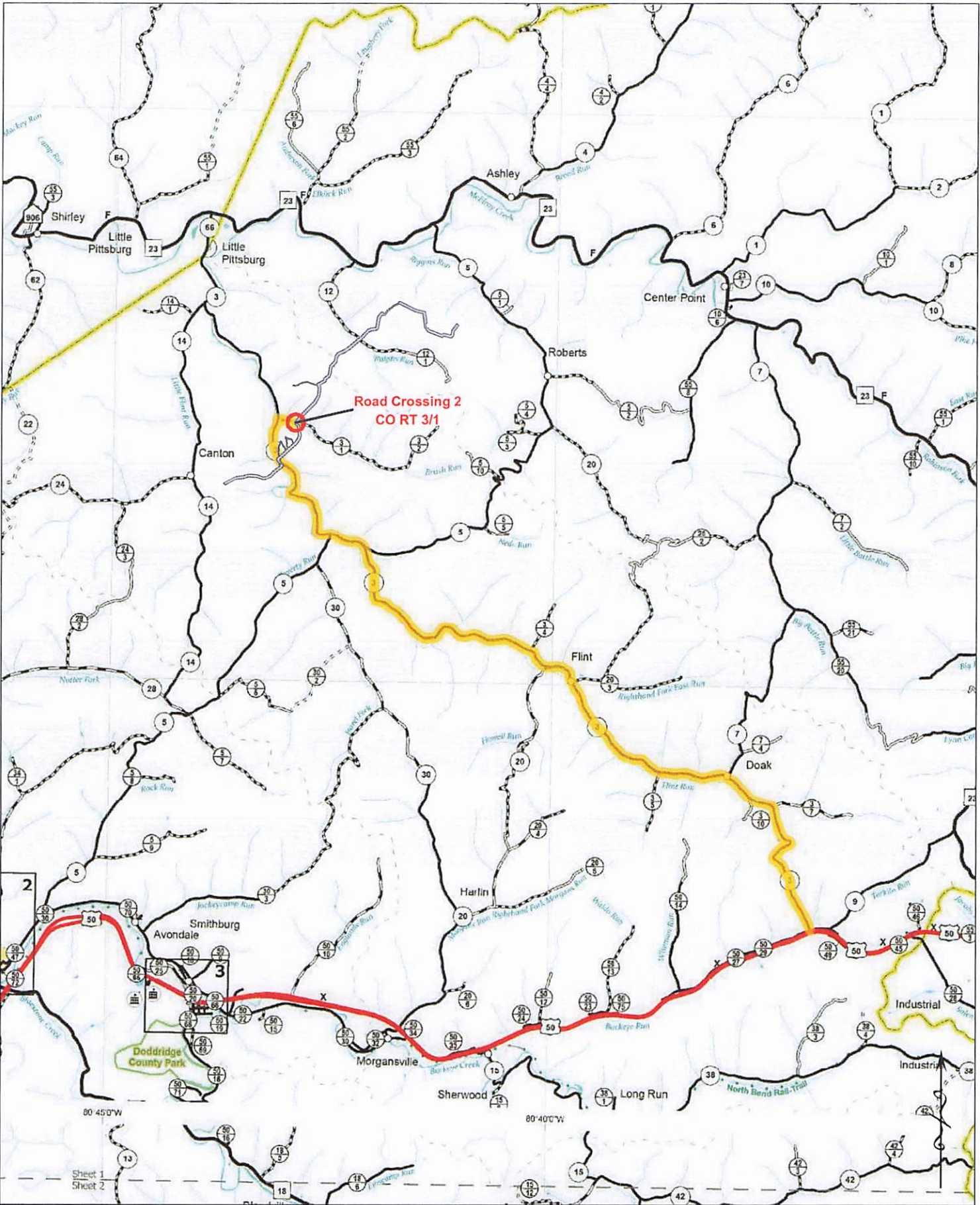




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	<p><b>—</b> Access Road</p>	<p>Drawn By: _____ Date: _____</p>		<p>Contract No.</p>		<p>Index</p>
	<p><b>■</b> LOD</p>	<p>Checked: _____ Date: _____</p>		<p>Project No.</p>		
	<p><b>—</b> Haul Route</p>	<p>Entered By: _____ Date: _____</p>		<p>050-11638</p>		

Document Path: \\doddridge\proj\050-11638\Crimson SWL Highway Overview Map - Doddridge County - WV.dwg (1/15/2013 10:41:00 AM)



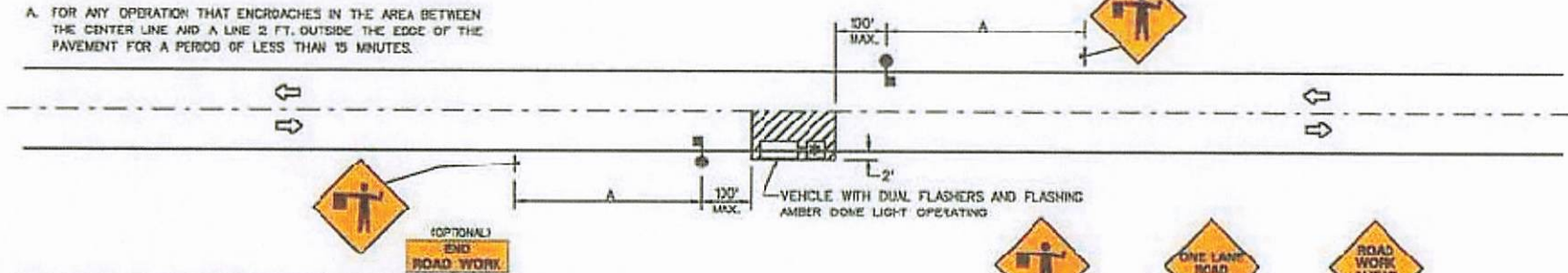


Road Crossing 2  
CO RT 3/1

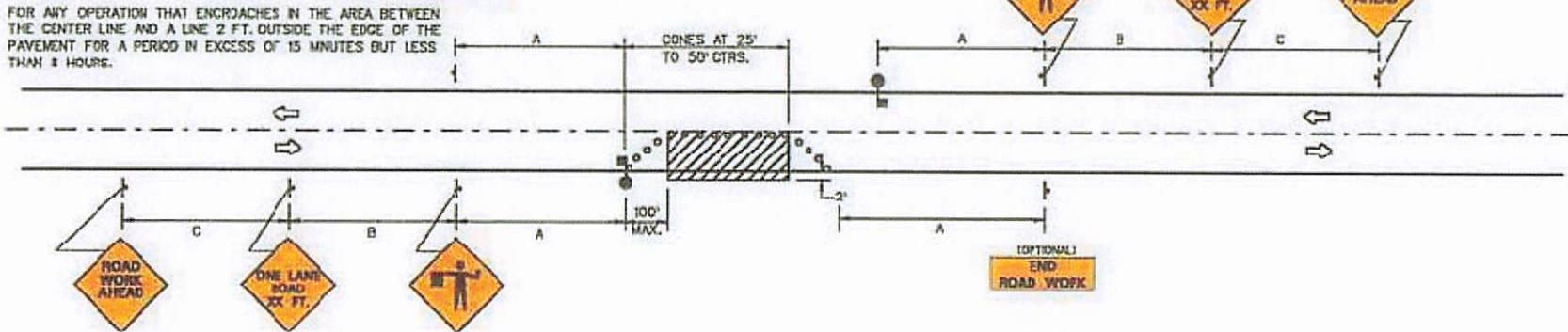
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	<p><b>■</b> LOD</p>	<p>Drawn By: [ ] Date: [ ]</p>		<p>Contract No.</p>		<p>RC 2</p>
	<p><b>■</b> Haul Route</p>	<p>Checked By: [ ] Date: [ ]</p>		<p>Project No.</p>		
	<p>Antero</p>	<p>Antero</p>		<p>050-11638</p>		



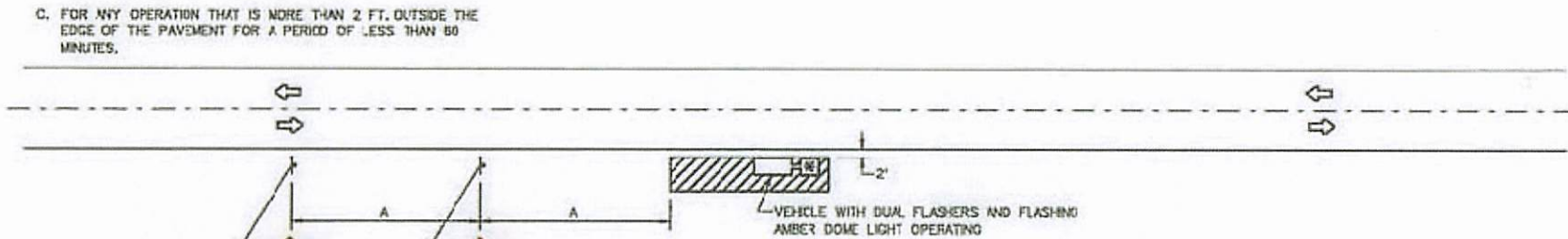
A. FOR ANY OPERATION THAT ENCRDACHES IN THE AREA BETWEEN THE CENTER LINE AND A LINE 2 FT. OUTSIDE THE EDGE OF THE PAVEMENT FOR A PERIOD OF LESS THAN 15 MINUTES.



B. FOR ANY OPERATION THAT ENCRDACHES IN THE AREA BETWEEN THE CENTER LINE AND A LINE 2 FT. OUTSIDE THE EDGE OF THE PAVEMENT FOR A PERIOD IN EXCESS OF 15 MINUTES BUT LESS THAN 4 HOURS.



C. FOR ANY OPERATION THAT IS MORE THAN 2 FT. OUTSIDE THE EDGE OF THE PAVEMENT FOR A PERIOD OF LESS THAN 60 MINUTES.



**SYMBOLS**

- WORK AREA.
- SIGN
- SIGN ON PORTABLE OR PERMANENT SUPPORT.
- FLAGGER WITH PADDLE.
- CONES

**GENERAL NOTES**

1. CONSTRUCTION OPERATIONS SHALL BE CONFINED TO ONE TRAFFIC LANE, LEAVING THE OPPOSITE LANE OPEN TO TRAFFIC. AT LEAST 300 FT. OF BOTH TRAFFIC LANES SHALL BE AVAILABLE FOR TRAFFIC MOVEMENT AT INTERVALS NOT GREATER THAN 1,000 FT. A COMPLETE TRAFFIC CONTROL PLAN MUST BE APPROVED FOR ANY PROJECT EXPECTING TO EXCEED 1,000 FT. IN LENGTH INCLUDING BOTH TAPER AND WORK AREAS.
2. FOR LOW-VOLUME SITUATIONS WITH SHORT WORK ZONES ON STRAIGHT ROADWAYS WHERE THE FLAGGER IS VISIBLE TO ROAD USERS APPROACHING FROM BOTH DIRECTIONS, A SINGLE FLAGGER, POSITIONED TO BE VISIBLE TO ROAD USERS APPROACHING FROM BOTH DIRECTIONS, MAY BE USED.
3. FLASHING WARNING LIGHTS AND/OR FLAGS MAY BE USED TO CALL ATTENTION TO THE ADVANCE WARNING SIGNS.
4. THE FLAGGERS SHALL BE IN SIGHT OF EACH OTHER OR IN DIRECT COMMUNICATION AT ALL TIMES.
5. ALL SIGNS ARE TO BE REMOVED AT COMPLETION OF THE DAY'S OPERATIONS.
6. FOR MULTILANE DIVIDED ROADWAYS THE ADVANCE WARNING SIGNS FOR TRAFFIC APPROACHING FROM THE OPPOSITE DIRECTION MAY BE OMITTED IF APPROVED BY THE ENGINEER.

**SUGGESTED ADVANCE WARNING SIGN SPACING**

ROAD TYPE	DISTANCE BETWEEN SIGNS (IN FT.)		
	A	B	C
URBAN (LOW SPEED)*	100	100	100
URBAN (HIGH SPEED)*	350	350	350
RURAL	500	500	500
EXPRESSWAY/FREEWAY	1,000	1,500	2,640

\*SPEED CATEGORY TO BE DETERMINED BY WV DCH

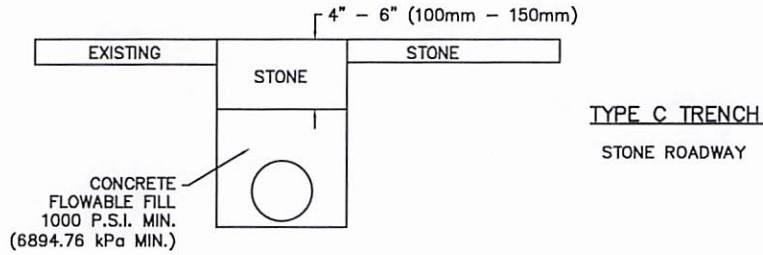
**TYPICAL APPLICATIONS**

- PATCHING PAVEMENT.
- FIELD SURVEY.
- CLEANING UP DEBRIS ON PAVEMENT.
- CROSSWALK PAINTING.

**CASE A6**

TWO-LANE, TWO-WAY TRAFFIC  
SHORT-TERM OPERATIONS  
DAYTIME ONLY

CONCRETE TO BE ROUGH FOR  
BONDING OF HMA



**NOTES**

1. TRAFFIC IS TO BE MAINTAINED AT ALL TIMES BY THE USE OF APPROPRIATE TRAFFIC CONTROL DEVICES. USE OF METAL PLATES, HAVING SUFFICIENT RIGIDITY TO SPAN TYPE C TRENCH, IS REQUIRED TO PREVENT WHEEL LOADS FROM BEING TRANSMITTED TO THE CONCRETE FLOWABLE FILL. THE PLATES SECURELY ANCHORED TO PREVENT MOVEMENT CAUSED BY TRAFFIC. THE PLATES ARE TO BE LEFT IN PLACE UNTIL THE CONCRETE FLOWABLE FILL HAS ATTAINED 50% OF ITS COMPRESSIVE STRENGTH.

ANTERO MIDSTREAM LLC

TYPICAL ROAD CROSSING  
CONSTRUCTION DETAILS

DODDRIDGE COUNTY, WEST VIRGINIA

**THRASHER**

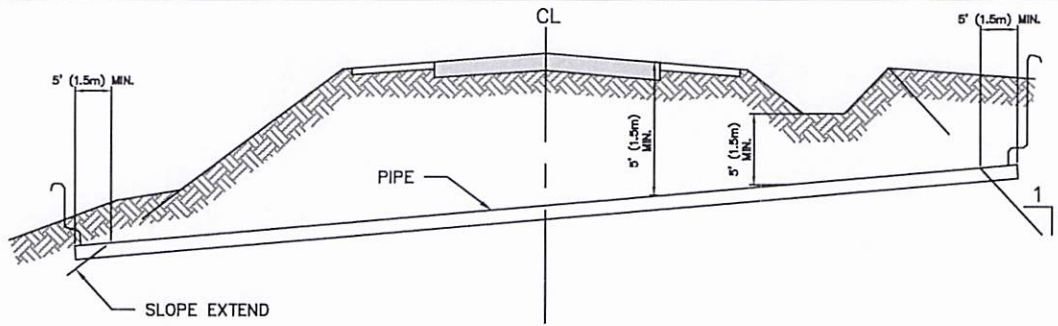
THE THRASHER GROUP, INC.  
600 WHITE OAKS BLVD.  
BRIDGEPORT, WV 26330  
PHONE 304-624-4108

SCALE  
NTS

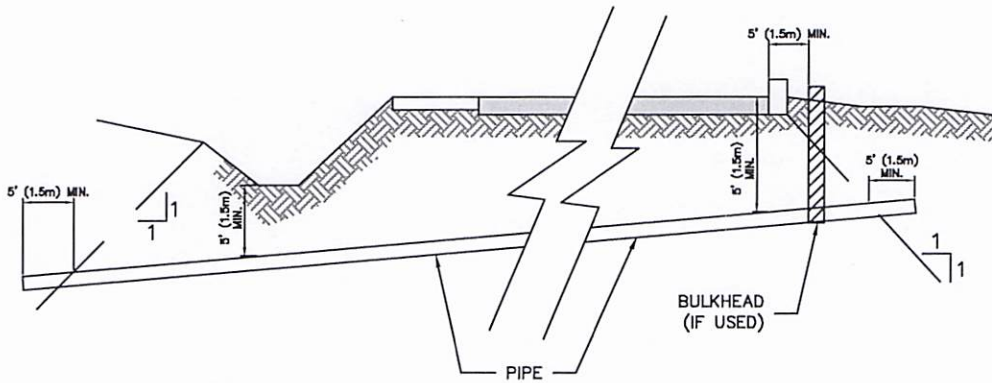
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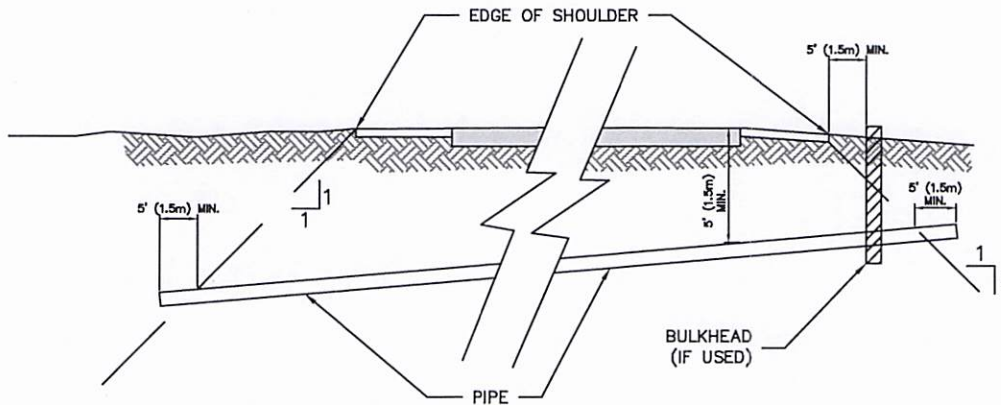




**A. NORMAL CUT OR FILL SECTION**



**B. SECTION WITH DITCH OR CURB**



**C. SECTION WITHOUT DITCH**

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ANTERO MIDSTREAM LLC

TYPICAL ROAD CROSSING  
CONSTRUCTION DETAILS

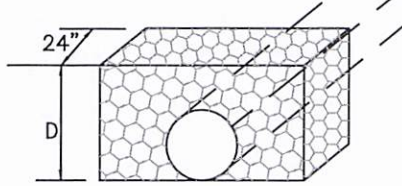
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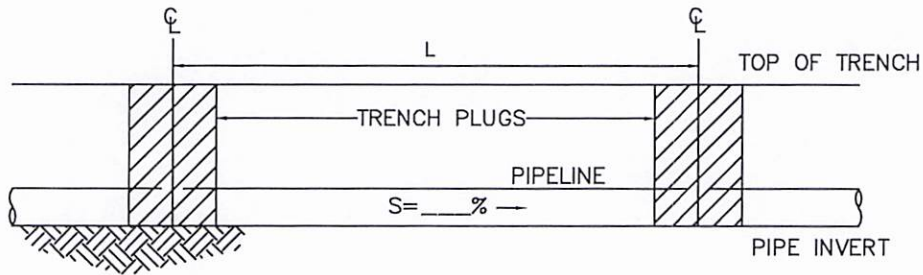
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D3

D= TRENCH DEPTH TO PIPE INVERT



SECTION VIEW



NOTES:

1. BAGS FILLED WITH ROCK FREE SOIL.
2. ADDITIONAL INFORMATION INCLUDED ON OTHER DRAWINGS
3. AS AN ALTERNATE TO BAGS SPRAYED FOAM MAY BE USED

ELEVATION

SPACING (L) AND MATERIALS FOR TRENCH PLUGS		
SLOPE %	L FEET	PLUG MATERIAL
0 - 5	0	NONE
5 - 15	500	EARTH FILLED SACKS
15 - 25	300	EARTH FILLED SACKS
25 - 35	200	EARTH FILLED SACKS
35 - 100	100	EARTH FILLED SACKS
OVER 100	50	CEMENT FILLED BAGS (WETTED)

TRENCH BREAKER

NOT TO SCALE

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ANTERO MIDSTREAM LLC

TYPICAL ROAD CROSSING  
CONSTRUCTION DETAILS

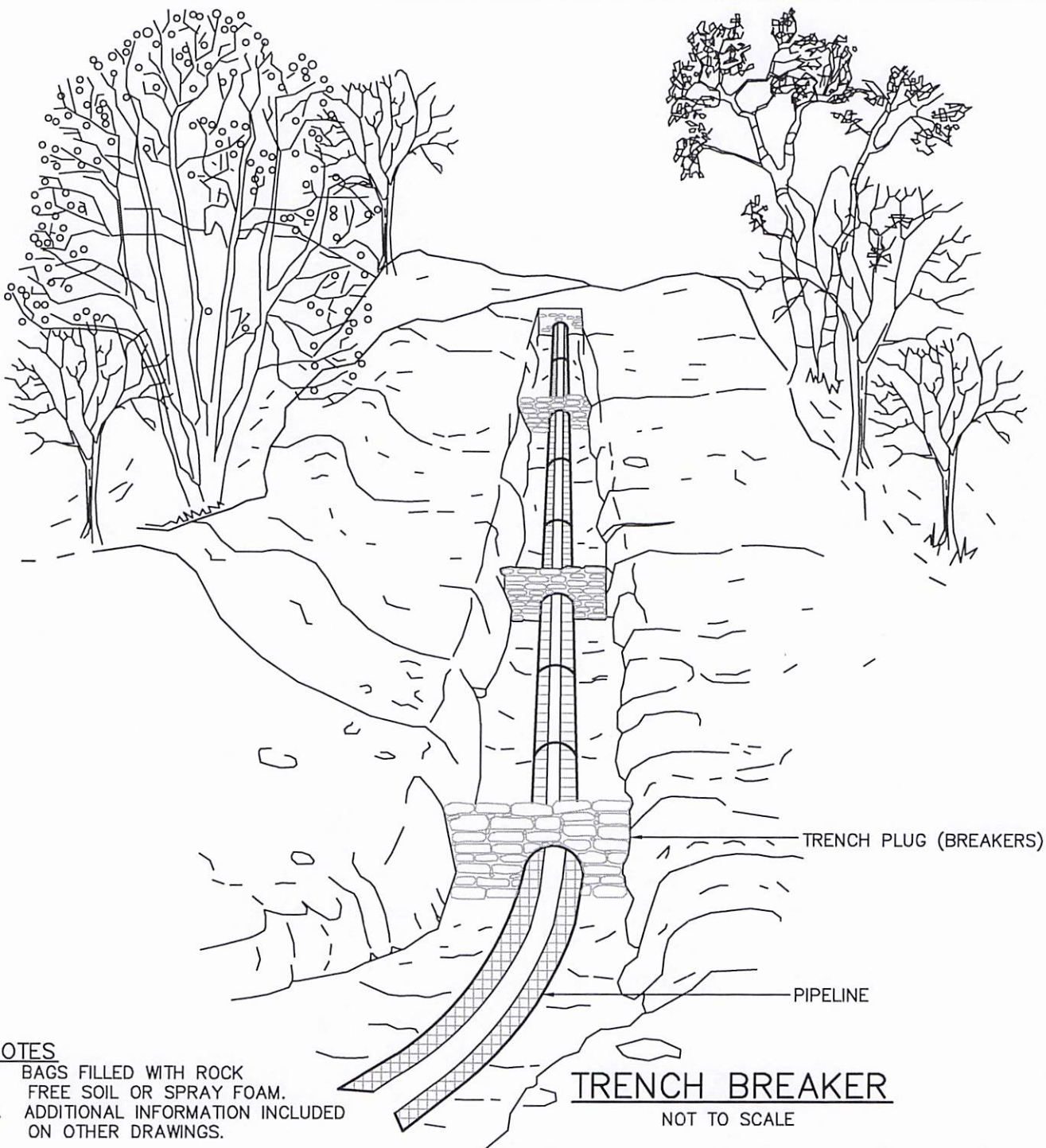
DODDRIDGE COUNTY, WEST VIRGINIA

SCALE  
NTS

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D4





**NOTES**

- 1. BAGS FILLED WITH ROCK FREE SOIL OR SPRAY FOAM.
- 2. ADDITIONAL INFORMATION INCLUDED ON OTHER DRAWINGS.

**TRENCH BREAKER**  
NOT TO SCALE

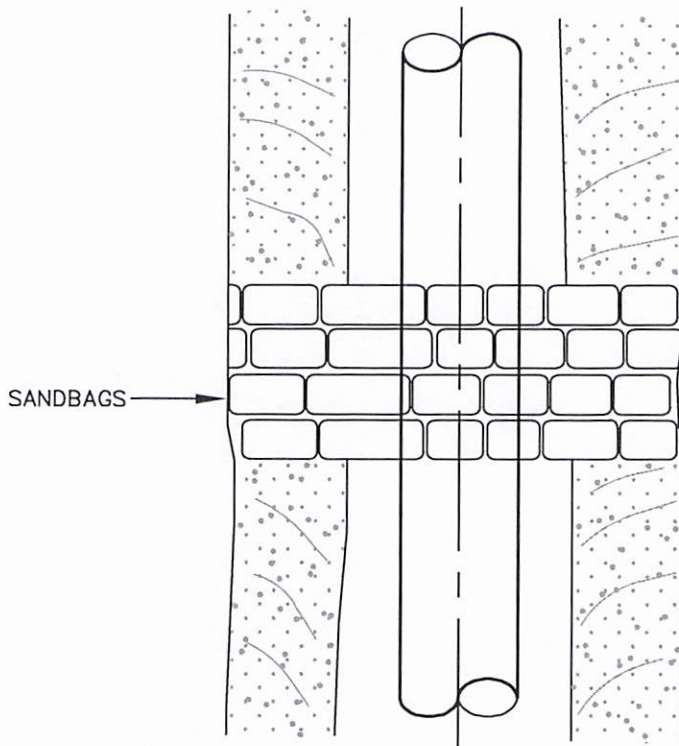
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PHONE 304-624-4108

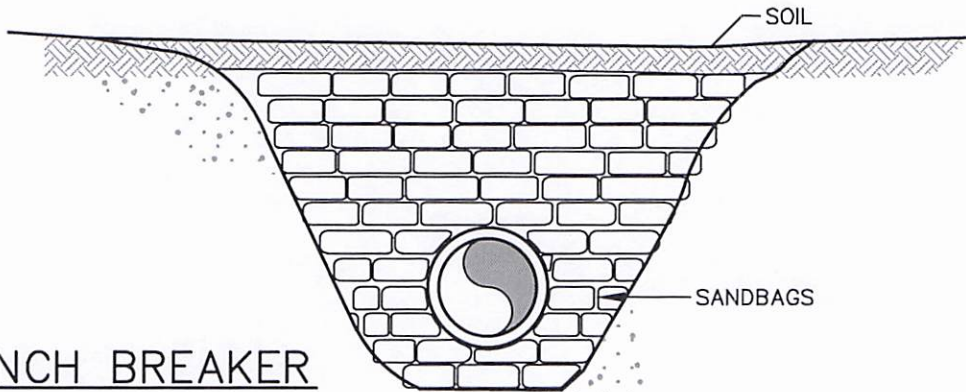
ANTERO MIDSTREAM LLC		
TYPICAL ROAD CROSSING CONSTRUCTION DETAILS		
DODDRIDGE COUNTY, WEST VIRGINIA		
SCALE	REVISED	
NTS		

D5

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PLAN VIEW  
NOT TO SCALE



TRENCH BREAKER  
NOT TO SCALE

PROFILE VIEW  
NOT TO SCALE

NOTES

1. BAGS WILL NOT BE FILLED WITH TOPSOIL.
2. ADDITIONAL INFORMATION INCLUDED ON OTHER DRAWINGS.

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ANTERO MIDSTREAM LLC

TYPICAL ROAD CROSSING  
CONSTRUCTION DETAILS

DODDRIDGE COUNTY, WEST VIRGINIA

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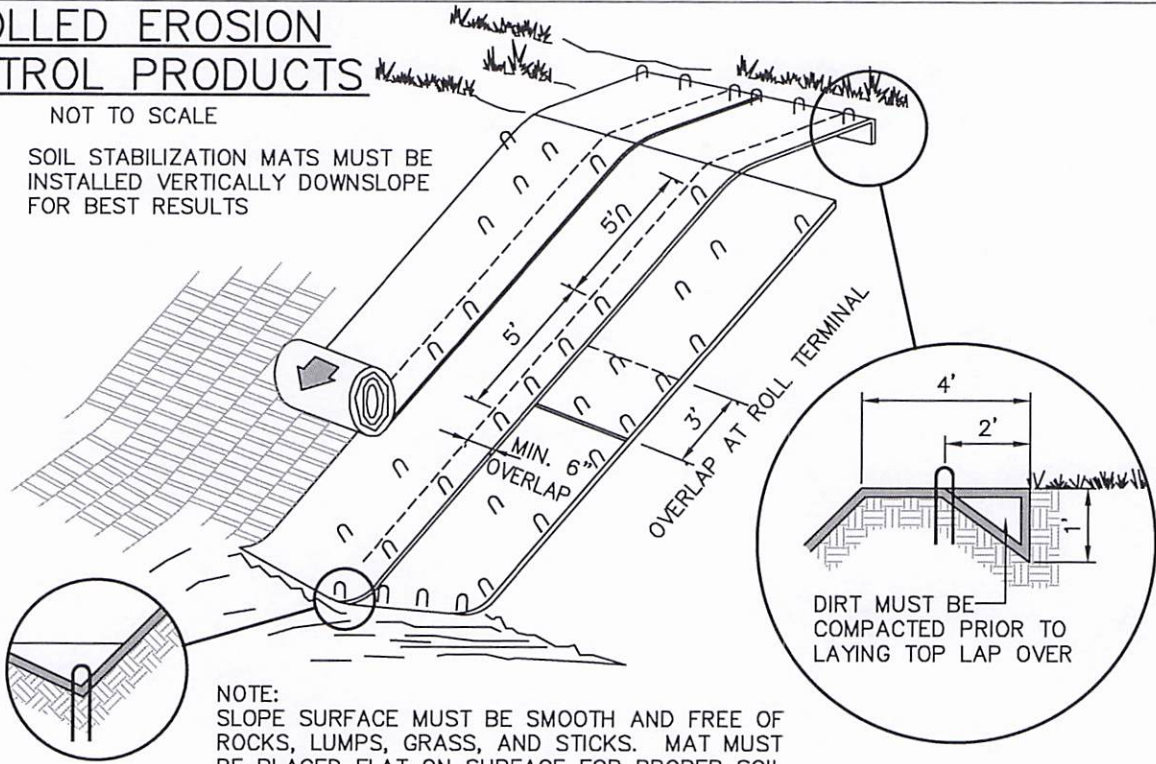
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# ROLLED EROSION CONTROL PRODUCTS

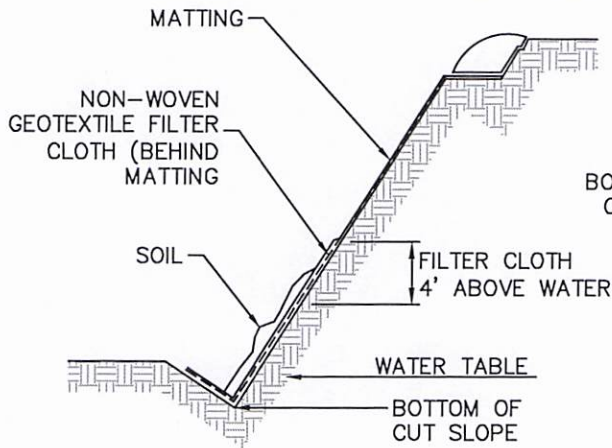
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SOIL STABILIZATION MATS MUST BE INSTALLED VERTICALLY DOWNSLOPE FOR BEST RESULTS



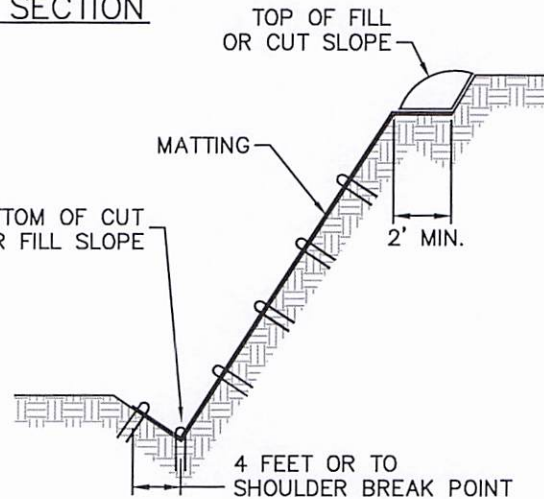
NOTE: SLOPE SURFACE MUST BE SMOOTH AND FREE OF ROCKS, LUMPS, GRASS, AND STICKS. MAT MUST BE PLACED FLAT ON SURFACE FOR PROPER SOIL CONTACT.

## FILL SLOPE SECTION



## SLOPE LINING (WET SLOPE)

SPRAY-ON EROSION CONTROL BLANKETS (E.G. BONDED FIBER MATRIX OR FLEXIBLE GROWTH MEDIUM) MAY BE USED IN LIEU OF ROLL ON BLANKETS IF MANUFACTURER'S RECOMMENDATIONS ARE FOLLOWED.



## SLOPE LINING (DRY SLOPE)

# THRASHER

THE THRASHER GROUP, INC.  
600 WHITE OAKS BLVD.  
BRIDGEPORT, WV 26330  
PHONE 304-624-4108

ANTERO MIDSTREAM LLC

TYPICAL ROAD CROSSING  
CONSTRUCTION DETAILS

DODDRIDGE COUNTY, WEST VIRGINIA

SCALE  
NTS

REVISED

D7

Project Crimson South SWL (RC2) - Antero Midstream, LLC		<b>THRASHER</b>
Location Doddridge County, WV	Project Number 050-11638	

### Road Crossing Pipe Stress Calculation Report

**Crossing Details:**

Road Number/Name	CR 3/1	Brush Run Road
GPS Coordinates	39.3710461 N	80.715696 W
Construction Type	Open Cut	Shallow crossings only
Road Surface	Unpaved	
Loading Type	H20	
Depth to Top of Pipe ( $H$ )	5 ft	

**Notes:**
**Pipe Data:**

Material:	HDPE 4710	
Pipe OD ( $D_O$ )	18 in	
Dimension Ratio ( $DR$ )	7 -	
Wall Thickness ( $t$ )	2.571 in	
Mean Diameter ( $D_M$ )	15.429 in	
Pipe Max ID	12.857 in	
Pipe Min ID	12.549 in	
Apparent Modulus of Elasticity ( $E$ )	28,200 psi	
Poisson Ratio ( $\mu$ )	0.45 -	
Safe Ring Deflection ( $\Delta X/D_M$ )	3.0 %	Table 3-11 (In Tables Tab)
Critical Compressive Stress ( $S_{cr}$ )	1150 psi	
Allowable Compressive Stress ( $S_{al}$ )	575 psi	
Factor of Safety ( $N_S$ )	2 -	


**Soil Data:**

Soil Unit Weight ( $w$ )	120 pcf
--------------------------	---------

**Calculation Results:**

		Pass/Fail	Allowable Limit	Factor of Safety
Ring Deflection ( $\Delta X/D_M$ )	1.27 %	Pass	3.0	2.4
Compressive Stress ( $S$ )	34.3 psi	Pass	575	16.8
Total Vertical Soil Pressure ( $P_E + P_L$ )	9.8 psi	Pass	139	14.2

Notes: Calculations are derived from the Handbook of Polyethylene Pipe by the Plastic Pipe Institute.

Prepared By: James C. Anderson, PE	Approved By: Clayton White, PE, PMP 
---------------------------------------	--



Project Crimson South SWL (RC2) - Antero Midstream, LLC		<b>THRASHER</b>
Location Doddridge County, WV	Project Number 050-11638	

**Soil Pressure on Pipe**

**Notes:**

**Vertical Earth Pressure**

Soil Unit Weight ( $w$ )                      120 pcf    In the absence of Geotech, assume 120 pcf  
 Depth to Top of Pipe ( $H$ )                      5 ft

Vertical Earth Pressure ( $P_E$ )                      600 psf    Assume Prism Load - No Arching

Vertical Earth Pressure ( $P_E$ )                      4.2 psi     $P_E = wH$

**Live Loading Pressure**

Depth to Top of Pipe ( $H$ )                      5 ft  
 Soil Pressure at top of pipe ( $P_{H20}$ )                      405 psf    From Table 3-3 or Table 3-4 (In Tables Tab)  
 Impact Factor ( $I_f$ )                      2 -    Typically 1.0 if paved, 2.0 if unpaved


Live Load at top of Pipe ( $P_L$ )                      810 psf

Live Load at top of Pipe ( $P_L$ )                      5.6 psi     $P_L = I_f P_{H20}$

**Total Soil Pressure**

Total Vertical Soil Pressure ( $P_E + P_L$ )                      1410 psf    Earth Load + Live Load

Total Vertical Soil Pressure ( $P_E + P_L$ )                      9.8 psi

Prepared By: James C. Anderson, PE	Approved By: Clayton White, PE, PMP 
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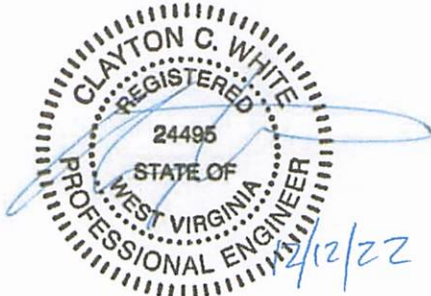
Project Crimson South SWL (RC2) - Antero Midstream, LLC		<b>THRASHER</b>
Location Doddridge County, WV	Project Number 050-11638	

<b>Pipe Reaction to Loading</b>		<b>Notes:</b>
<b>Ring Deflection</b>		Modified Iowa Formula
Modulus of Soil Reaction ( $E'$ )	700 psi	Table 3-8, Assume 90% Compaction
Deflection Lag Factor ( $L_{DL}$ )	1.5 -	Typically 1.25 - 1.5
Bedding Factor ( $K_{BED}$ )	0.1 -	Typically 0.1
Soil Support Factor ( $F_s$ )	0.15 -	Assume Worst Case
Dimension Ratio ( $DR$ )	7 -	
Apparent Modulus of Elasticity ( $E$ )	28,200 psi	
Ring Deflection ( $\Delta X/D_M$ )	1.27 %	$\frac{\Delta X}{D_M} = \frac{1}{144} \left( \frac{K_{BED} L_{DL} P_E + K_{BED} P_L}{\frac{2E}{3} \left( \frac{1}{DR-1} \right)^3 + 0.061 F_s E'} \right)$

<b>Ring Compression</b>		
Compressive Stress ( $S$ )	34.27 psi	$S = \frac{(P_E + P_L) DR}{288}$

<b>Unconstrained Buckling</b>		
Factor of Safety	2 -	
Ovality Correction Factor	0.85 -	Based on % Deflection and Figure 3-9 in Tables tab
Apparent Modulus of Elasticity	28,200 psi	
Poisson Ratio	0.45 -	
DR	7 -	
Allowable Buckling Pressure ( $P_{WU}$ )	139.15 psi	$P_{WU} = \frac{f_o}{N_s} \frac{2E}{(1-\mu^2)} \left( \frac{1}{DR-1} \right)^3$

End of Calculations



Prepared By: James C. Anderson, PE	Approved By: Clayton White, PE, PMP
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WEST VIRGINIA DEPARTMENT OF TRANSPORTATION

**Division of Highways**

Office of the District Engineer/Manager

District Four

Post Office Box 4220 · Clarksburg, West Virginia 26302 · (304) 842-1500

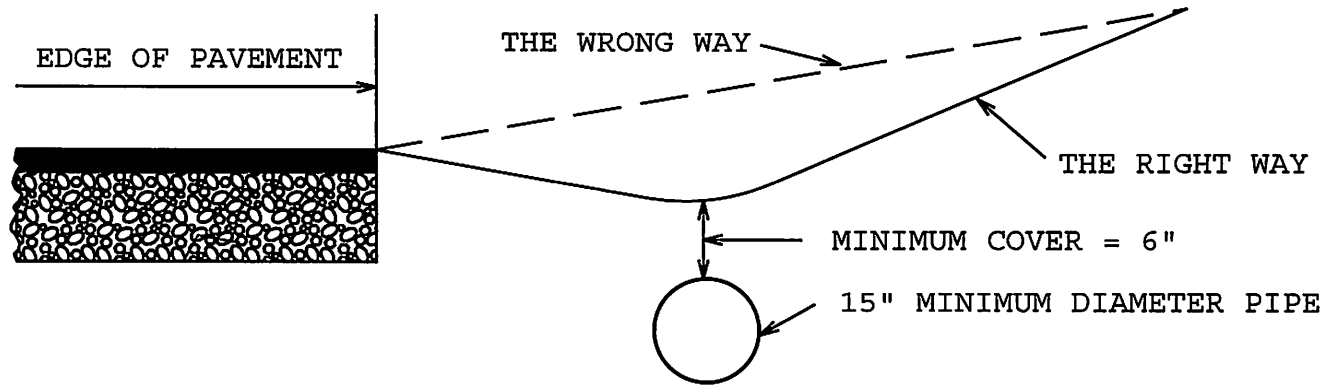
**Drilling Operators Permit Conditions & Requirements**

1. Applicant shall ensure the driveway is constructed in accordance with the [WVDOH Driveway Manual](#). The surfacing is specifically addressed on pages 20 and 21 under Section 8.4.6.
2. Prior to permit expiration, applicant must remove this temporary access and return DOH right-of-way to original or better condition; OR the property owner must submit a separate application to obtain a permanent permit.
3. If required, applicant must utilize appropriate traffic control during any use of the access. Failure to provide traffic control will void this permit and bond.
4. At no time may the drilling operation encroach on DOH right-of-way. Specifically, no loading, parking, or staging operations may be conducted on the traveled way or within DOH right-of-way.
5. Vehicles accessing the site are not permitted to stop in DOH right of way or back into the traveled way for any reason.
6. Applicant is responsible for immediate removal of mud and debris from the roadway caused by any entity involved with the drilling operations.
7. Applicant must notify the Permits Office/Oil & Gas Coordinator at (304) 326-0091 when drilling operations cease due to abandoning a well. If the driveway will no longer be used, the driveway must be removed, and ditch line restored to original or better condition, including the removal of pipe. The property owner must place the approach in their name for the driveway to remain. Note that bonds will not be released until every approach issued to your company has been removed or placed in the property owner's name.
8. Applicant shall ensure the driveway is constructed in accordance with the [WVDOH Driveway Manual](#) and that sight lines are free from vegetation or other obstructions at all times during use of the driveway.

**WVDOH Driveway Manual:**

<https://transportation.wv.gov/highways/engineering/Manuals/Traffic/Driveway.pdf>

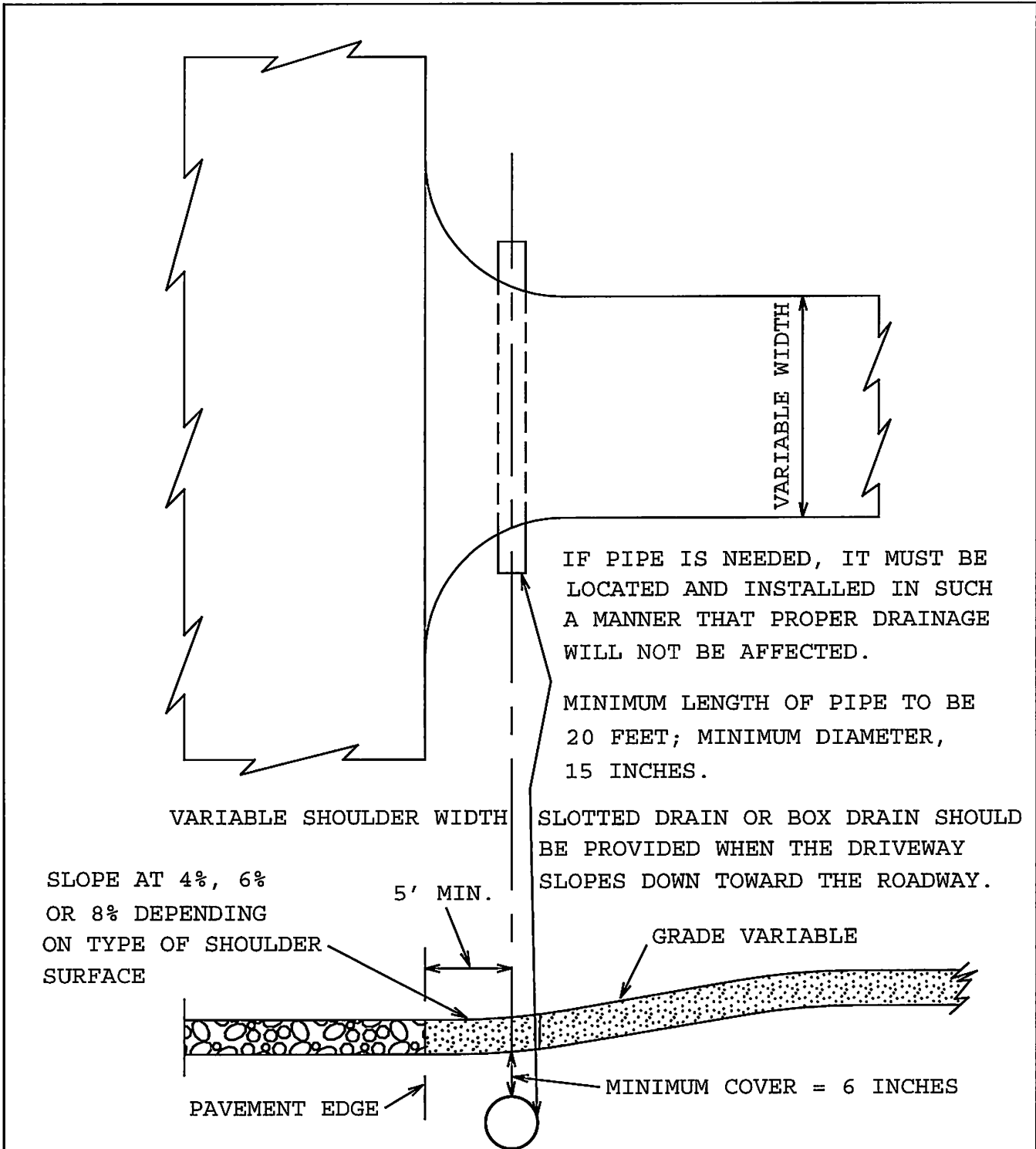
**Failure to comply with any condition or requirement will void this permit.**



PIPE INSTALLATION FOR SIDE ROAD  
APPROACH WITH STEEP GRADE

FIGURE 17



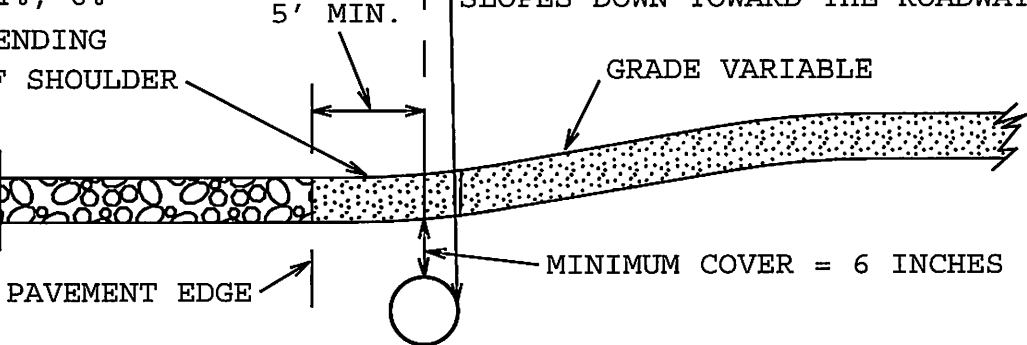


IF PIPE IS NEEDED, IT MUST BE LOCATED AND INSTALLED IN SUCH A MANNER THAT PROPER DRAINAGE WILL NOT BE AFFECTED.

MINIMUM LENGTH OF PIPE TO BE 20 FEET; MINIMUM DIAMETER, 15 INCHES.

VARIABLE SHOULDER WIDTH  
 SLOPE AT 4%, 6% OR 8% DEPENDING ON TYPE OF SHOULDER SURFACE

SLOTTED DRAIN OR BOX DRAIN SHOULD BE PROVIDED WHEN THE DRIVEWAY SLOPES DOWN TOWARD THE ROADWAY.



PIPE INSTALLATION FOR SIDE ROAD OR PRIVATE ENTRANCE APPROACH

FIGURE 18

# FEDERAL HIGHWAY ADMINISTRATION (FHWA)

## SUMMARY OF PILOT/ESCORT VEHICLE OPERATORS BEST PRACTICES GUIDELINES

### I. PRE-TRIP PLANNING

- ✓ Route review
- ✓ Pilot/Escort vehicle operator and equipment checklist

### II. PRE-TRIP SAFETY MEETING

- ✓ Review load limitations
- ✓ Test communication equipment
- ✓ Coordinate with local law enforcement

### III. LOAD MOVEMENT

- ✓ Know the load, and know the law
- ✓ Position vehicles in compliance with regulations and permit requirements

### IV. TRAFFIC CONTROL

- ✓ Develop and follow a traffic control plan
- ✓ Use proper equipment
- ✓ Follow defensive flagging guidelines

### V. SPECIAL CHALLENGES

- ✓ Railroad Crossings
- ✓ Tall loads, overhead obstructions
- ✓ Steerable Trailers/Tillerman Operations

### VI. EMERGENCY PROCEDURES

- ✓ Injury issues

### VII. POST-TRIP ACTIVITIES

- ✓ Turn off warning lights, remove OVERSIZE LOAD signage
- ✓ Review/evaluate procedure

<https://ops.fhwa.dot.gov/publications/fhwahop16051/index.htm>





WEST VIRGINIA DEPARTMENT OF TRANSPORTATION

**Division of Highways**

Office of the District Engineer/Manager  
District Four

Jimmy Wriston, P. E.  
Secretary of Transportation

PO Box 4220 (EXIT 121, I-79) \* Clarksburg, WV 26302 \* 304-842-1500  
March 16, 2023

ANTERO MIDSTREAM LLC

535 WHITE OAKS BOULEVARD  
BRIDGEPORT, WV 26330

Dear Applicant:

Your approved copy of Permit Number 04-2022-0869 for a UW - Utility Water

permit type is enclosed. A description of the work is on the permit.

Please contact the District Four office:

**Lacy Pratt 304-326-0091**

at least 48 hours in advance of the date you plan to begin work so arrangements can be made to inspect the work authorized by the permit.

**Failure to comply will result in cancellation of your permit.**

A copy of this permit is to be available on the job at all times while the work is in progress for inspection by the West Virginia Division of Highways' personnel.

Sincerely,

*Michael C. Daley, DM*

District Engineer / District Manager

*Lacy Pratt*

Permit Supervisor

Initials: MD:MD:lp

Attachments: Yes

Enclosure: No

cc:OM 0409 O&G file

**Addendum to Permit 04-2022-0869**

This addendum, made this 16<sup>th</sup> day of March 2023, between the West Virginia Department of Transportation, Division of Highways, a statutory company hereinafter called the DIVISION and

**Antero Midstream, LLC**

Address: **535 White Oaks Blvd., Bridgeport, WV 26330** Phone: **(304) 842-4198**

hereinafter called APPLICANT.

The Applicant has filed with the DIVISION a written application for the following named routes and locations:

**Doddridge County Route SLS 12/1, Ralphs Run at Mile Post 0.215**

- ❖ In instances where a proposed gas and/or water line crossing intersects West Virginia Division of Highways right-of-way and the disturbed slope on either side that exceeds a 1:1 slope – the contractor must submit plans for permanent slide prevention. The plan must allow for the establishment/maintenance of a roadside ditch. The length of the slide prevention plan must span the limits of disturbance on the existing slope. Avoidance of the slope and resubmitting the method of crossing is an acceptable plan.
  - ❖ In instances where a proposed gas and/or water line crossing occurs on West Virginia Division of Highways right-of-way deemed unimproved, the contractor must submit a plan that upgrades the unimproved portion of road to a minimum standard determined by the Division. The route review will cite drainage deficiencies and a cross section view of the improved road section will be provided. Unimproved is defined as roads that are not receiving scheduled maintenance to either the road surface or drainage features.
  - ❖ Applicant to utilize CASE A-6 Traffic Control where lane closures are necessary.
  - ❖ The trench shall be back filled with flowable fill to the surface and the entire L.O.D. be overlaid with HMA to include heel in joints for a smooth transition. Refer to trench repair typical.
- 
- After completion of the project, a joint review of roads will be filmed and evaluated to assure roads have been repaired to existing condition or better.
  - No travel on School Bus Routes during their traversing operational hours on above mentioned route on bi-directional roadways where the lane widths are less than 10 ft.
  - Pilot Vehicle required for all oversized loads.
  - Ditch lines to be maintained by applicant. \*FDR or equivalent may be required to stabilize road to uphold increased traffic and heavy and excess amount of loads. Centerline of roadway cannot be relocated without an agreement between WV DOH and the Applicant. This work requires an advanced notice and prior approval by Maintenance/Design Engineer.
  - Repairs that will include “Hot Mix Asphalt” will have the following testing requirement: The supplier will be responsible for testing at the plant; Compaction testing will be as per WV DOH specifications.
  - The Division of Highways shall have the right at all times to inspect the work, and if such inspections should reveal that the work is not done according to specifications, upon being so advised by the Division, Applicant agrees to take immediate corrective actions.

---

APPLICANT shall properly repair and maintain any and all damages that may result to said bridges, highways, shoulders and ditches from hauling activities of APPLICANT, its agents, contractors and employees, to as good a condition prior to commencement of APPLICANT's operation or as when the permit was issued, as determined by the District Engineer/Manager of the DIVISION having jurisdiction over the work permitted, or pay damages therefore in the amount to sufficiently restore such bridges, roads, highways, shoulders and ditches to original condition; and shall reimburse the DIVISION for all inspection costs incurred by it in connection with said work and repairs of such damages and faithfully comply with all terms and conditions of said permits and save harmless the DIVISION and the State of West Virginia from all losses resulting from the conduct of said work and repairs; provided that all projects covered by this blanket bond have been restored to original or better condition; then this Bond shall be released once; or otherwise will remain in full force and effect.

**Bond Amount: \$1,000,000.00**

**Bond Number: LPM9062891**

**Date: 02/21/2012**



# West Virginia Department of Transportation Division of Highways Right of Way Entry Permit Application

PERMIT NO. 04-2022-0869

By signing below, APPLICANT agrees to all terms and conditions (see page 2) associated with this permit to enter upon, under, over, or across the state road right(s) of way of the State of West Virginia.

Applicant: Antero Midstream, LLC

Address: 535 White Oaks Boulevard City: Bridgeport State: WV Zip: 26330

Phone Number: (304) 842-4198 Email: idepoy@anteroresources.com

Route Type: US WV County Route Number: 12/1 Milepost: 0.215 County: Doddridge

Latitude/Longitude at/along Roadway (in whole degrees): 39.3832940, -80.7039518

Description of Work: Install one (1) 18" HDPE water line by open cut method across CR 12/1 along with temporary construction entrances in Doddridge County. All work shall comply with WV DOT/DOH specifications.

**Required: Plate prior and during usage the pipe structure on Doddridge county route 12 at mile post 0.50. A11568 RC3**

Length of Installation: 30 LF Estimated Construction Duration: \_\_\_\_\_

DOH Project Number/Name (if applicable): \_\_\_\_\_

Inspection Fees (must check one):

- For any inspection fees incurred under this permit
- At \$0.85 per linear foot of water line installed under this permit
- At \$3.37 per linear foot of sewer line installed under this permit

**\*County route 12/1 must be paved at crossing, from center of crossing pave in both directions 50'. See heel in detail attached.**

**\*Traffic control must be used, case A-6 attached.**

**\*Berm to be stabilized and replaced to original condition when work is complete.**

Applicant: John Depoy

Applicant Title: Design Manager

Applicant Printed Name: John Depoy

Date: 12/16/22

DOH Reviewer: Lacy Pratt

DOH Reviewer Title: Permit Supervisor

DOH Approver: [Signature]

DOH Approver Title: For District Maintenance Engineer

FOR DIVISION USE ONLY

DEPOSIT/BOND REQUIRED:  YES  NO

DEPOSIT/BOND AMOUNT: 1,000,000.00

Check Attached  Bond Attached  Bond On File

BOND NUMBER: LPM9062891 DATE: 2/21/12

INSPECTION:  By Owner/Consultant  By Division  
 Full Time  Part Time  
 Reimbursable (Authorization \_\_\_\_\_)

Periodic  
 No Cost

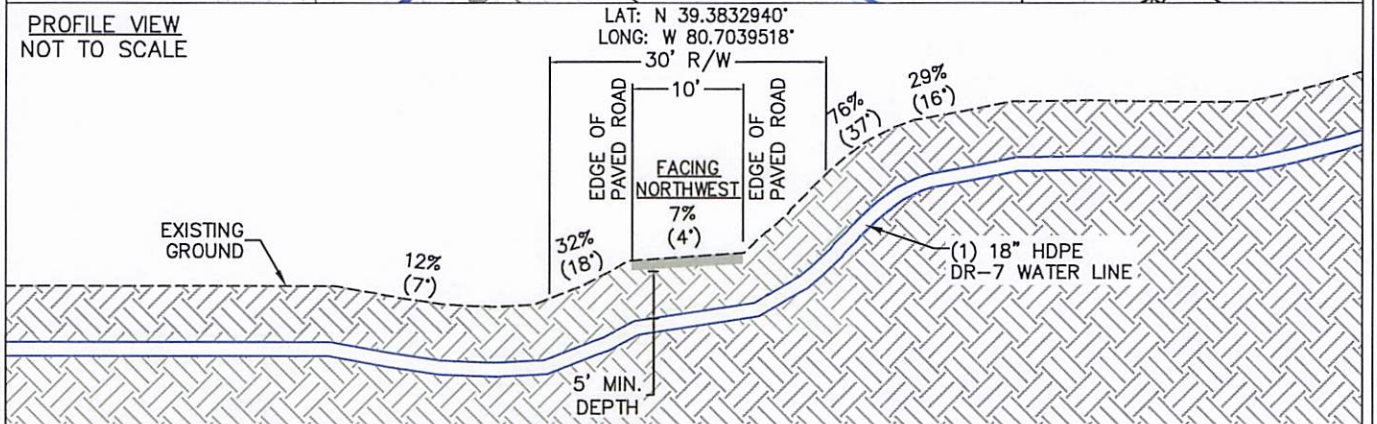
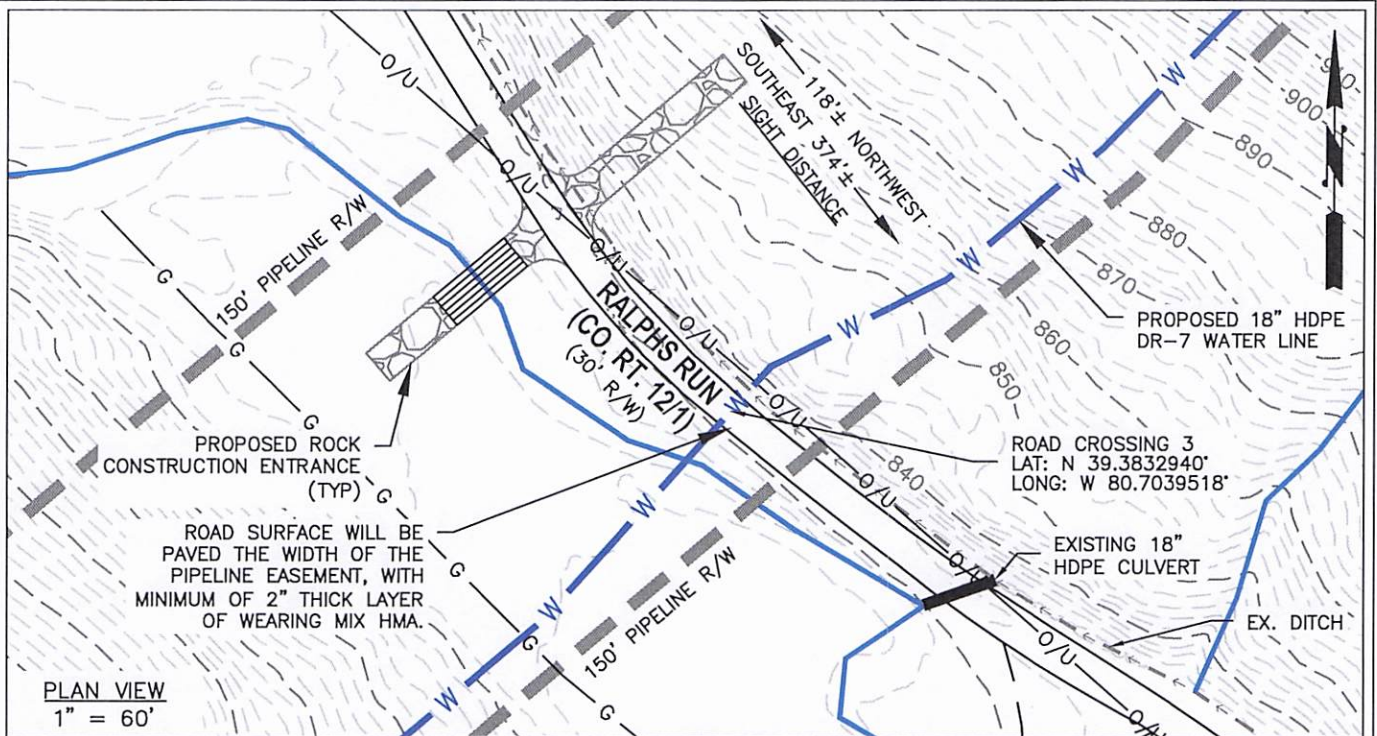
PERMIT ISSUE DATE: 16th March 2023



## TERMS AND CONDITIONS

1. This permit, between the WEST VIRGINIA DEPARTMENT OF TRANSPORTATION, DIVISION OF HIGHWAYS, a statutory corporation, hereinafter called "DIVISION" and APPLICANT, a person, firm or corporation, listed on page one.
2. In consideration of the conditions hereinafter set forth and in accordance with all state and federal laws, including but not limited to, W. Va. Code §17-2E-1 et seq., §17-4-8, §17-16-6, §17-16-9, §31H-1-1 et seq., and any related rules, regulations, policies, manuals, or guidelines, APPLICANT does hereby apply to enter DIVISION's right(s) of way listed on page one, for the purpose listed in Description of Work on page one.
3. APPLICANT shall deposit with DIVISION an official, certified or cashier's check, or executed bond with surety satisfactory to DIVISION to cover any damage and inspection costs DIVISION may sustain by reason of the issuing of this permit, including any expense incurred in restoring said right(s) of way to original condition or the proper repair of any and all damages arising from, related to, or otherwise connected to said entry.
4. APPLICANT agrees to reimburse DIVISION for inspection costs as listed on page one.
5. **APPLICANT shall notify DIVISION at least 48 hours in advance of the date the work will begin. Failure to comply may result in cancellation of this permit.**
6. APPLICANT shall notify DIVISION upon completion of any work authorized under this permit. If APPLICANT's work is anticipated to extend beyond the estimated construction duration indicated on page one, APPLICANT shall notify the DIVISION as soon as possible. Failure to comply may result in additional charges.
7. APPLICANT agrees to protect all users of the road right(s) of way, as well as all employees and equipment of APPLICANT and DIVISION, at all times in accordance with the current Division of Highways manual, "[Manual on Temporary Traffic Control for Streets and Highways](https://transportation.wv.gov/highways/traffic/Pages/default.aspx)" (<https://transportation.wv.gov/highways/traffic/Pages/default.aspx>).
8. APPLICANT agrees to comply with all applicable state and federal laws related to the entry that is the subject of this permit, including but not limited to the requirement to provide DIVISION copies of any NEPA clearance documentation for utility installations along or across the Interstate Highway System and/or controlled-access right(s) of way.
9. The person, firm or corporation to whom a permit is issued agrees to defend, indemnify, and hold the State of West Virginia and DIVISION harmless on account of any damages to persons or property which may arise during the process of the work authorized by this permit or by reason thereof.
10. Applications for permission to perform work within highway right(s) of way shall be made on DIVISION's standard permit form and shall be signed by the authorized representative of the person, firm or corporation applying.
11. The APPLICANT shall give detailed information concerning the nature of the entry and any work to be performed, and the application must include plans sufficient to show the same.
12. Any work authorized under this permit shall be completed on or before one calendar year from the issue date listed on page one, unless otherwise specified or approved by DIVISION.
13. APPLICANT, its agents, successor, heirs or assigns, contractors or any other person, firm or corporation working under APPLICANT's real or apparent authority, shall perform the work in a manner satisfactory to DIVISION. Damage to the right(s) of way resulting at any time from work authorized under this permit shall be repaired by APPLICANT. Unsatisfactory repairs, at the sole discretion of DIVISION, may be corrected by DIVISION or its authorized agent and the cost thereof paid by APPLICANT.
14. DIVISION shall not be liable for any damage or costs incurred by APPLICANT arising from or related to DIVISION's construction or maintenance of DIVISION's facilities.
15. Utility installation(s) shall be in accordance with the current manual, "[Accommodation of Utilities on Highway Right of Way](https://transportation.wv.gov/highways/right-of-way/Pages/Utility-Publications.aspx)" (<https://transportation.wv.gov/highways/right-of-way/Pages/Utility-Publications.aspx>).
16. Driveway construction shall be in accordance with the current manual, "[Rules and Regulations for Constructing Driveways on State Highway Rights-of-Way](https://transportation.wv.gov/highways/traffic/Pages/default.aspx)" (<https://transportation.wv.gov/highways/traffic/Pages/default.aspx>).
17. DIVISION reserves the right to cancel this permit at any time.
18. This permit is issued only insofar as DIVISION has a right to do so. APPLICANT has sole responsibility to secure all necessary rights or permissions for any third-party property interests related to the entry, known or unknown. APPLICANT, by signing on page one, hereby warrants that, to the extent its entry onto DIVISION's right(s) of way involves or affects any other entity's property, real or personal, on or within DIVISION's right(s) of way, that APPLICANT has full legal authorization or the legal right to do so. To the fullest extent permitted by law, APPLICANT agrees to defend, indemnify, and hold harmless DIVISION for damage to any persons or property arising from APPLICANT's breach of this representation and warranty.
19. All attachments are incorporated into this permit. To the extent of any conflict, the terms of this permit shall control.



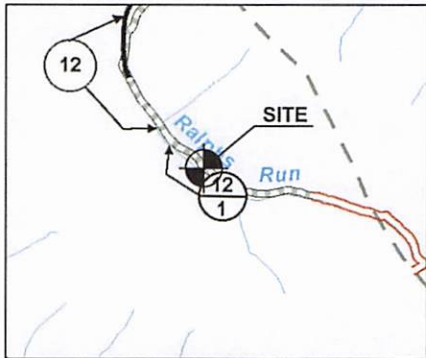


**CONSTRUCTION**

- CROSSING IS TO BE OPEN CUT.
- DEPTH MINIMUM 5' FROM TOP OF PIPE.
- PROPOSED PIPELINES WILL BE (1) 18" HDPE DR-7 SURFACE WATER LINE WITHIN WVDH R/W
- EXISTING DITCH ALONG DODDRIDGE COUNTY ROUTE 12/1 TO BE MAINTAINED 100' IN EITHER DIRECTION OR TO THE NEAREST CULVERT.
- ROAD SURFACE WILL BE PAVED THE WIDTH OF THE PIPELINE EASEMENT, WITH A MINIMUM OF 2" THICK LAYER OF WEARING MIX HMA.

**SLOPE PROTECTION CONTROL**

- INSTALL TRENCH BREAKERS (SANDBAGS), WATER BARS, AND ROLLED EROSION CONTROL PRODUCT.



**THRASHER**

THE THRASHER GROUP, INC.  
600 WHITE OAKS BLVD.  
BRIDGEPORT, WV 26330  
PHONE 304-624-4108

**ANTERO MIDSTREAM LLC**

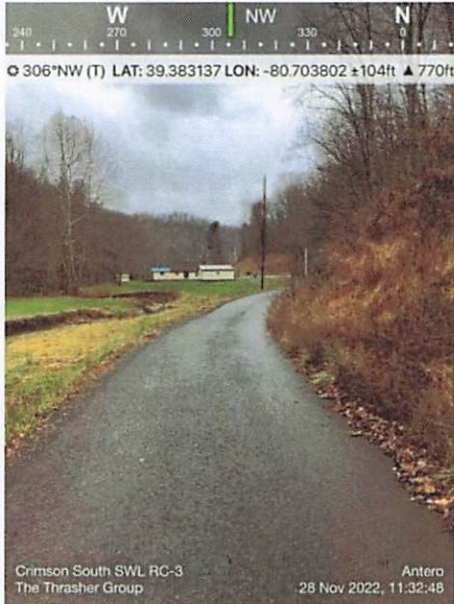
CRIMSON SOUTH SWL  
CROSSING DODDRIDGE  
COUNTY ROUTE 12/1 (RALPHS RUN) (PAVED)

DODDRIDGE COUNTY, WEST VIRGINIA

11/21/2022	SCALE	REVISED	STA.
	AS SHOWN	12/12/2022	122+52



**ROAD CROSSING 3**  
CRIMSON SOUTH SWL PIPELINE  
COUNTY ROUTE 12/1  
DODDRIDGE COUNTY, WV  
LAT: 39.3832940° N  
LON: 80.7039518° W



**FACING NORTHWEST**  
**SIGHT DISTANCE: 118'**



**FACING SOUTHEAST**  
**SIGHT DISTANCE: 374'**



**FACING SOUTHWEST**



**FACING NORTHEAST**



Company Reference No. A11568  
 Bond No. LPM9062891

Dist. Permit No 04-2022-0869  
 Authorization No \_\_\_\_\_  
 Received Dt \_\_\_\_\_

**OIL and GAS DATA INFORMATION SHEET**

**APPLICANT**

Company Name Antero Midstream, LLC  
 Address 535 White Oaks Boulevard  
 City Bridgeport State WV Zip 26330  
 Permit Contact Person John Depoy Telephone 740-760-1087 Cell 740-516-0127  
 Email jdepoy@anteroresources.com  
 24/7 Road Maint. Contact Jeff McCauley Telephone 304-842-4255 Cell 304-859-4209  
 24/7 Backup Contact Shelton Barger Telephone 304-842-4327 Cell 304-203-4022

**PERMIT INFORMATION**

Route Number CR 12/1 Road Local Name Ralphs Run GPS Lat. 39.3832940  
(DD.ddddd)  
 Mile Post 0.215 County Doddridge (-DD.ddddd) Long. -80.7039518  
 Location Description On Rte. # 12/1 being 1.05 miles South of Jct. of Rte. # 12 and Rte. # 23  
(N S E W)  
 Description of Work Install one (1) 18" water line by open cut method across CR 12/1 along  
with temporary construction entrances in Doddridge County. All work shall comply with WV DOT/DOH  
specifications. A11568 RC3

**PROJECT DETAILS**

Project Name Crimson SWL Project Description Pipeline GPS Lat. 39.3832940  
 Operation will require hauling >= 5,000 barrels of liquids on roadways \_\_\_\_\_ Long. -80.7039518  
(Yes or No)  
 Additional info \_\_\_\_\_

(Please note any additional Projects using the same permit for access)

**HAULING ROUTE(S)** From Interstate, US or WV Route (Attach Map)

Route No.	Route Name	Begin MP	End MP	Comments
<u>US 50</u>		<u>11.266</u>	<u>11.266</u>	
<u>CR 50/22</u>		<u>0.187</u>	<u>0.00</u>	
<u>CR 50/30</u>	<u>Smithton Rd</u>	<u>13.008</u>	<u>9.632</u>	
<u>WV 18</u>	<u>Sisterville Pike</u>	<u>19.402</u>	<u>26.965</u>	<u>To Tyler County Line</u>
<u>WV 18</u>		<u>0.00</u>	<u>10.354</u>	
<u>WV 23</u>	<u>McElroy Creek Rd</u>	<u>0.00</u>	<u>8.741</u>	<u>To Tyler County Line</u>
<u>WV 23</u>		<u>0.00</u>	<u>1.937</u>	
<u>CR 12</u>	<u>Ralphs Run</u>	<u>0.876</u>	<u>0.00</u>	
<u>CR 12/1</u>	<u>Ralphs Run</u>	<u>0.00</u>	<u>0.215</u>	

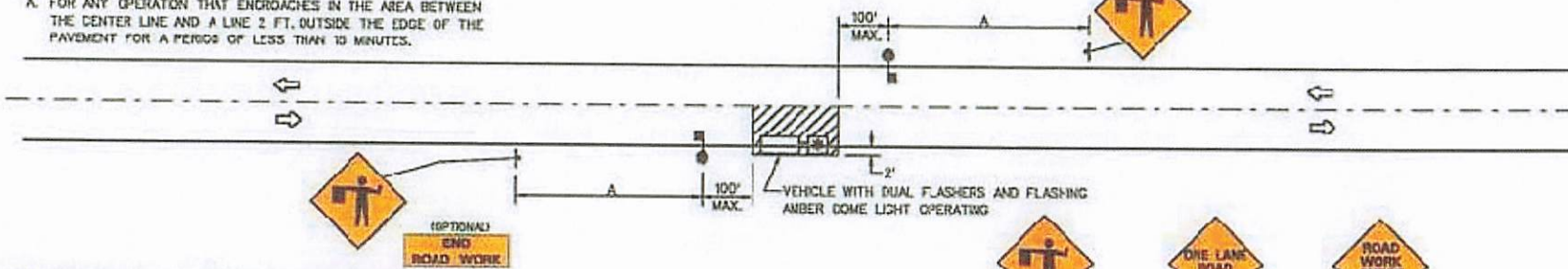




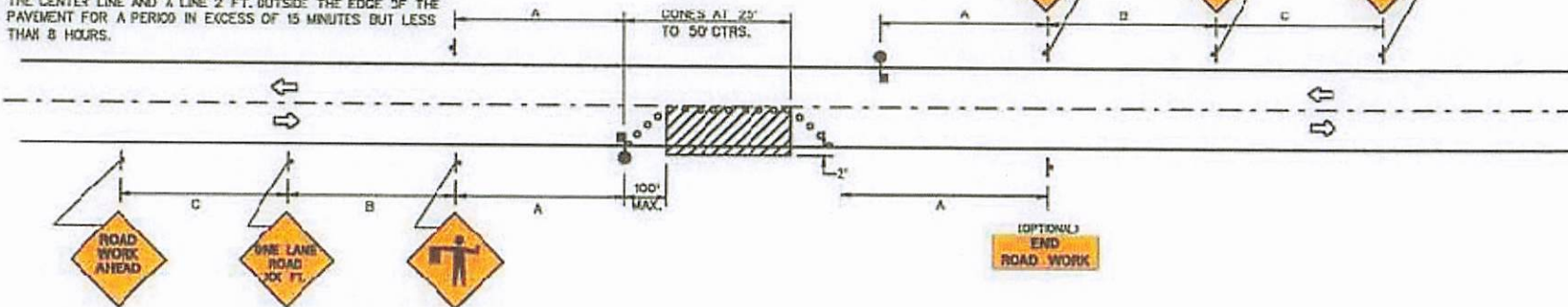




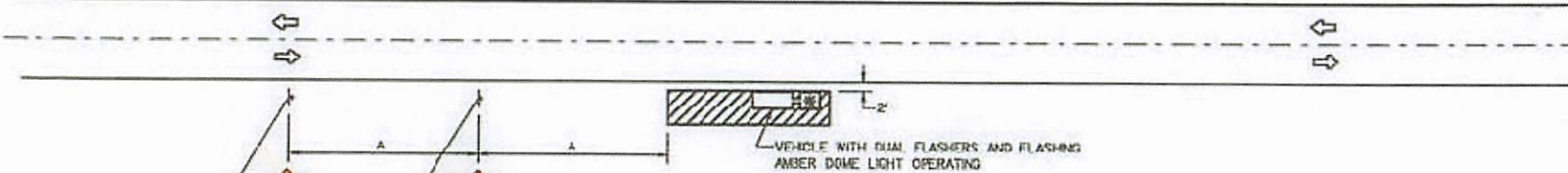
A. FOR ANY OPERATION THAT ENCROACHES IN THE AREA BETWEEN THE CENTER LINE AND A LINE 2 FT. OUTSIDE THE EDGE OF THE PAVEMENT FOR A PERIOD OF LESS THAN 10 MINUTES.



B. FOR ANY OPERATION THAT ENCROACHES IN THE AREA BETWEEN THE CENTER LINE AND A LINE 2 FT. OUTSIDE THE EDGE OF THE PAVEMENT FOR A PERIOD IN EXCESS OF 15 MINUTES BUT LESS THAN 8 HOURS.



C. FOR ANY OPERATION THAT IS MORE THAN 2 FT. OUTSIDE THE EDGE OF THE PAVEMENT FOR A PERIOD OF LESS THAN 80 MINUTES.



### SYMBOLS

- WORK AREA.
- SIGN
- SIGN ON PORTABLE OR PERMANENT SUPPORT.
- FLAGGER WITH PADDLE.
- CONES

### TYPICAL APPLICATIONS

PATCHING PAVEMENT,  
FIELD SURVEY,  
CLEANING UP DEBRIS ON PAVEMENT,  
CROSSWALK PAINTING.

### GENERAL NOTES

1. CONSTRUCTION OPERATIONS SHALL BE CONFINED TO ONE TRAFFIC LANE, LEAVING THE OPPOSITE LANE OPEN TO TRAFFIC. AT LEAST 500 FT. OF BOTH TRAFFIC LANES SHALL BE AVAILABLE FOR TRAFFIC MOVEMENT AT INTERVALS NOT GREATER THAN 1,000 FT. A COMPLETE TRAFFIC CONTROL PLAN MUST BE APPROVED FOR ANY PROJECT EXPECTING TO EXCEED 1,000 FT. IN LENGTH INCLUDING BOTH TAPER AND WORK AREAS.
2. FOR LOW-VOLUME SITUATIONS WITH SHORT WORK ZONES ON STRAIGHT ROADWAYS WHERE THE FLAGGER IS VISIBLE TO ROAD USERS APPROACHING FROM BOTH DIRECTIONS, A SINGLE FLAGGER, POSITIONED TO BE VISIBLE TO ROAD USERS APPROACHING FROM BOTH DIRECTIONS, MAY BE USED.
3. FLASHING WARNING LIGHTS AND/OR FLAGS MAY BE USED TO CALL ATTENTION TO THE ADVANCE WARNING SIGNS.
4. THE FLAGGERS SHALL BE IN SIGHT OF EACH OTHER OR IN DIRECT COMMUNICATION AT ALL TIMES.

5. ALL SIGNS ARE TO BE REMOVED AT COMPLETION OF THE DAY'S OPERATIONS.
6. FOR MULTILANE DIVIDED ROADWAYS THE ADVANCE WARNING SIGNS FOR TRAFFIC APPROACHING FROM THE OPPOSITE DIRECTION MAY BE OMITTED IF APPROVED BY THE ENGINEER.

#### SUGGESTED ADVANCE WARNING SIGN SPACING

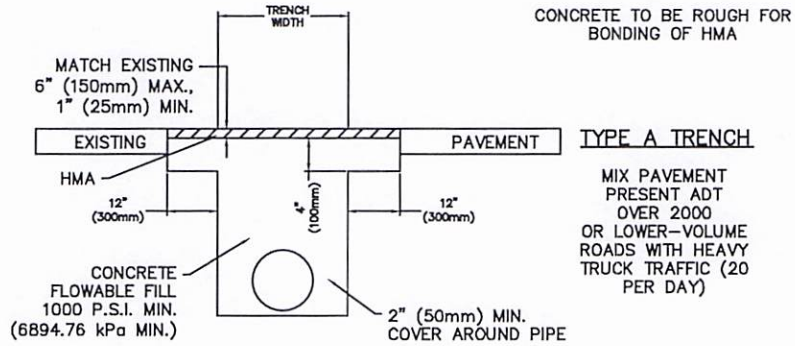
ROAD TYPE	DISTANCE BETWEEN SIGNS (IN FT)		
	A	B	C
URBAN (LOW SPEED)*	100	300	100
URBAN (HIGH SPEED)*	350	350	350
RURAL	500	500	300
EXPRESSWAY/FREEWAY	1,000	1,500	1,640

### CASE A6

TWO-LANE, TWO-WAY TRAFFIC  
SHORT-TERM OPERATIONS  
DAYTIME ONLY

\*SPEED CATEGORY TO BE DETERMINED BY WV DDM





**NOTES**

1. TRAFFIC IS TO BE MAINTAINED AT ALL TIMES BY THE USE OF APPROPRIATE TRAFFIC CONTROL DEVICES. USE OF METAL PLATES, HAVING SUFFICIENT RIGIDITY TO SPAN TYPE A TRENCH, IS REQUIRED TO PREVENT WHEEL LOADS FROM BEING TRANSMITTED TO THE CONCRETE FLOWABLE FILL. THE PLATES SECURELY ANCHORED TO PREVENT MOVEMENT CAUSED BY TRAFFIC. THE PLATES ARE TO BE LEFT IN PLACE UNTIL THE CONCRETE FLOWABLE FILL HAS ATTAINED 50% OF ITS COMPRESSIVE STRENGTH.

**THRASHER**

THE THRASHER GROUP, INC.  
600 WHITE OAKS BLVD.  
BRIDGEPORT, WV 26330  
PHONE 304-624-4108

ANTERO MIDSTREAM LLC

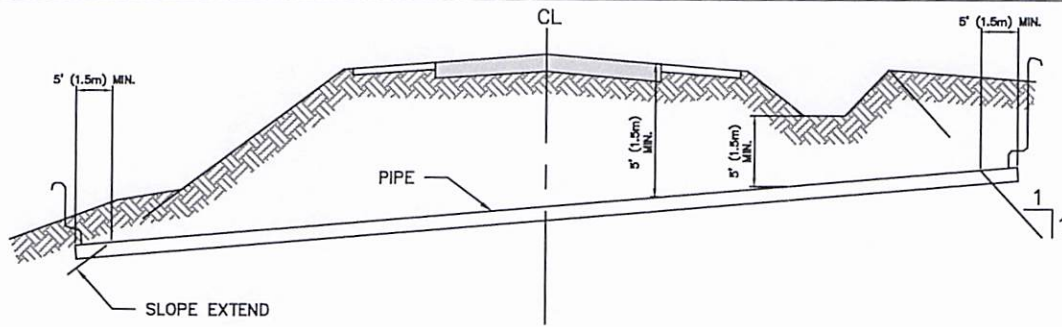
TYPICAL ROAD CROSSING  
CONSTRUCTION DETAILS

DODDRIDGE COUNTY, WEST VIRGINIA

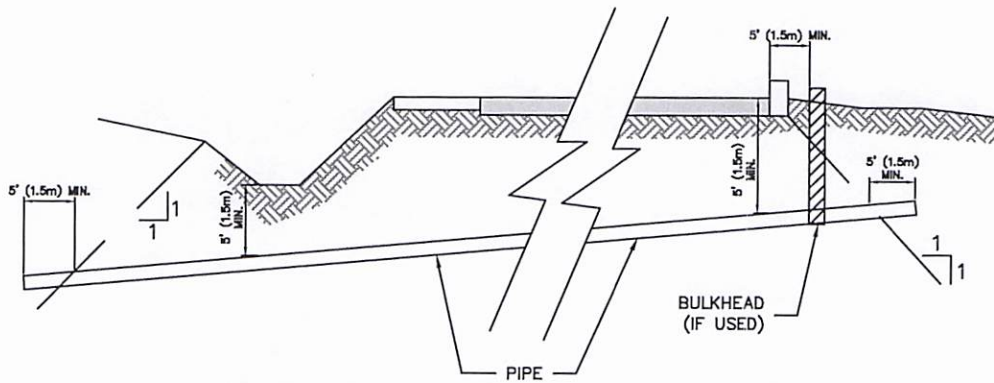
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REVISED

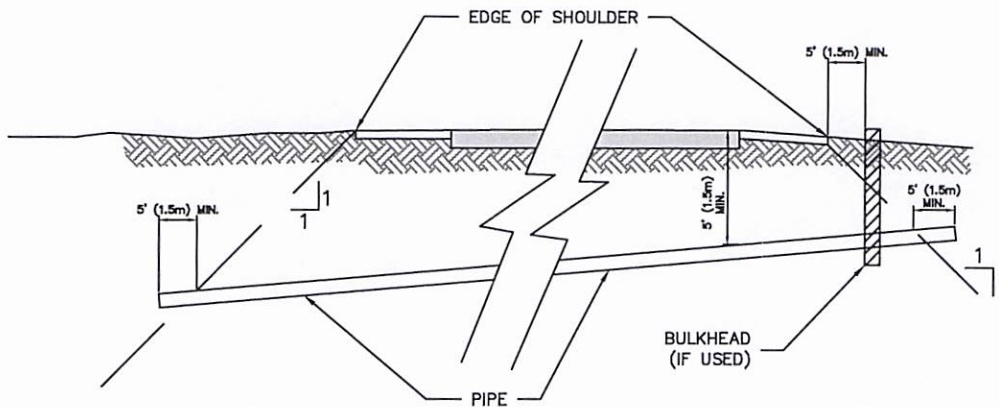
D1



**A. NORMAL CUT OR FILL SECTION**



**B. SECTION WITH DITCH OR CURB**



**C. SECTION WITHOUT DITCH**

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ANTERO MIDSTREAM LLC

TYPICAL ROAD CROSSING  
CONSTRUCTION DETAILS

DODDRIDGE COUNTY, WEST VIRGINIA

SCALE  
NTS

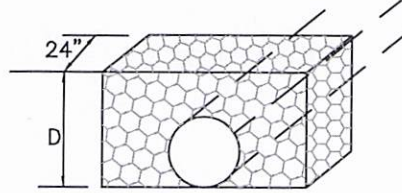
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D3

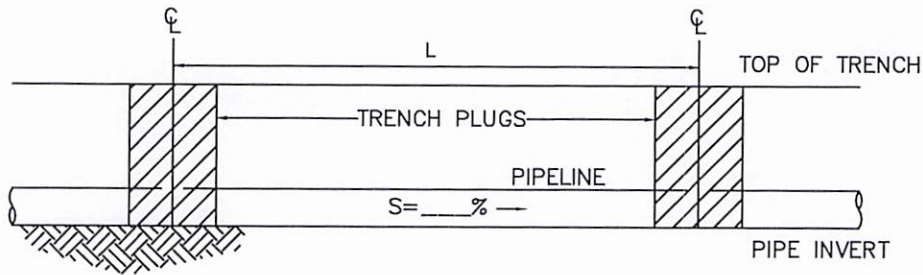
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D= TRENCH DEPTH TO PIPE INVERT



SECTION VIEW



NOTES:

1. BAGS FILLED WITH ROCK FREE SOIL.
2. ADDITIONAL INFORMATION INCLUDED ON OTHER DRAWINGS
3. AS AN ALTERNATE TO BAGS SPRAYED FOAM MAY BE USED

ELEVATION

SPACING (L) AND MATERIALS FOR TRENCH PLUGS		
SLOPE %	L FEET	PLUG MATERIAL
0 - 5	0	NONE
5 - 15	500	EARTH FILLED SACKS
15 - 25	300	EARTH FILLED SACKS
25 - 35	200	EARTH FILLED SACKS
35 - 100	100	EARTH FILLED SACKS
OVER 100	50	CEMENT FILLED BAGS (WETTED)

TRENCH BREAKER

NOT TO SCALE

**THRASHER**

THE THRASHER GROUP, INC.  
600 WHITE OAKS BLVD.  
BRIDGEPORT, WV 26330  
PHONE 304-624-4108

ANTERO MIDSTREAM LLC

TYPICAL ROAD CROSSING  
CONSTRUCTION DETAILS

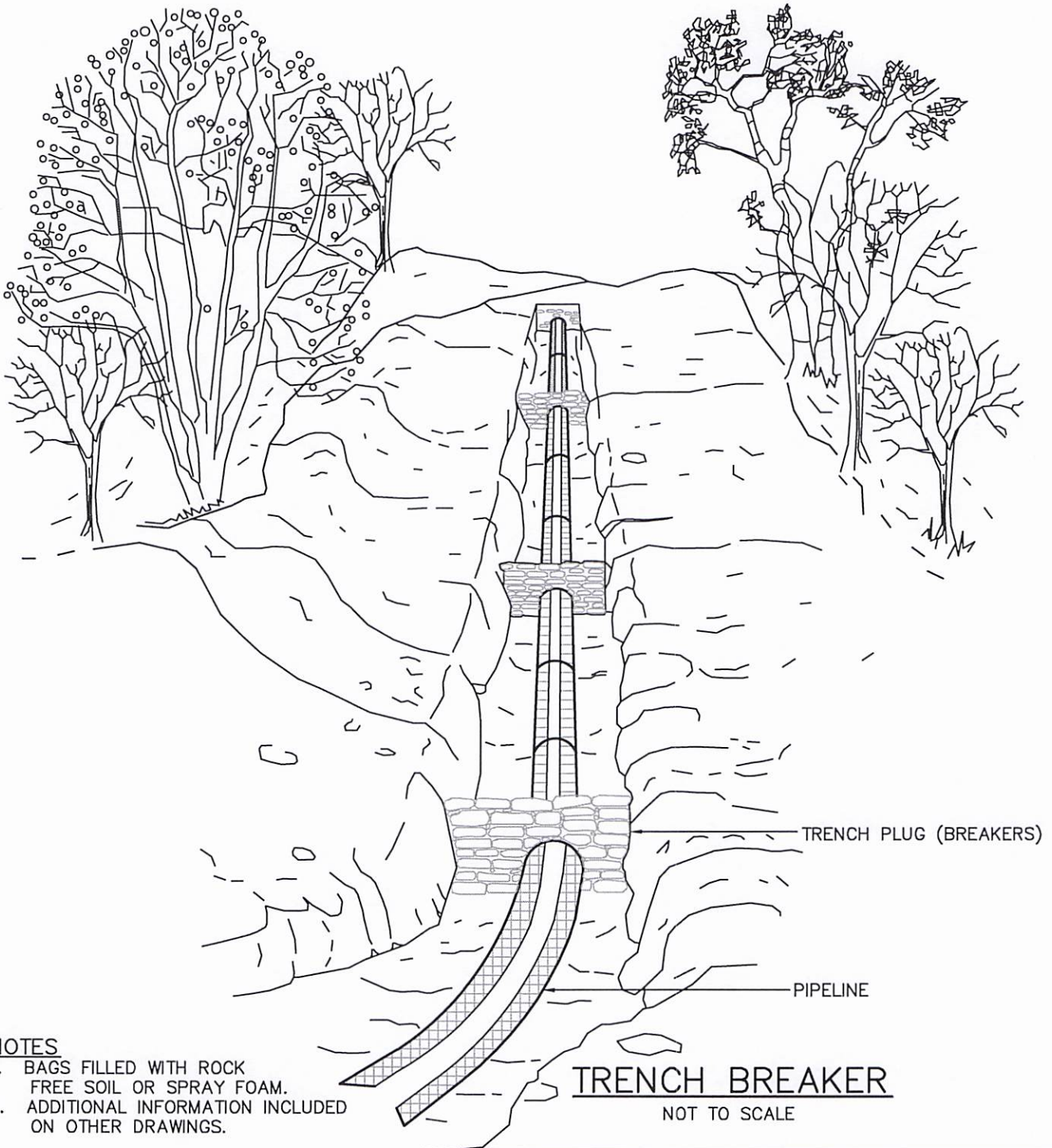
DODDRIDGE COUNTY, WEST VIRGINIA

SCALE

NTS

REVISED

D4



**NOTES**

1. BAGS FILLED WITH ROCK FREE SOIL OR SPRAY FOAM.
2. ADDITIONAL INFORMATION INCLUDED ON OTHER DRAWINGS.

**TRENCH BREAKER**

NOT TO SCALE

ANTERO MIDSTREAM LLC

TYPICAL ROAD CROSSING  
CONSTRUCTION DETAILS

DODDRIDGE COUNTY, WEST VIRGINIA

**THRASHER**

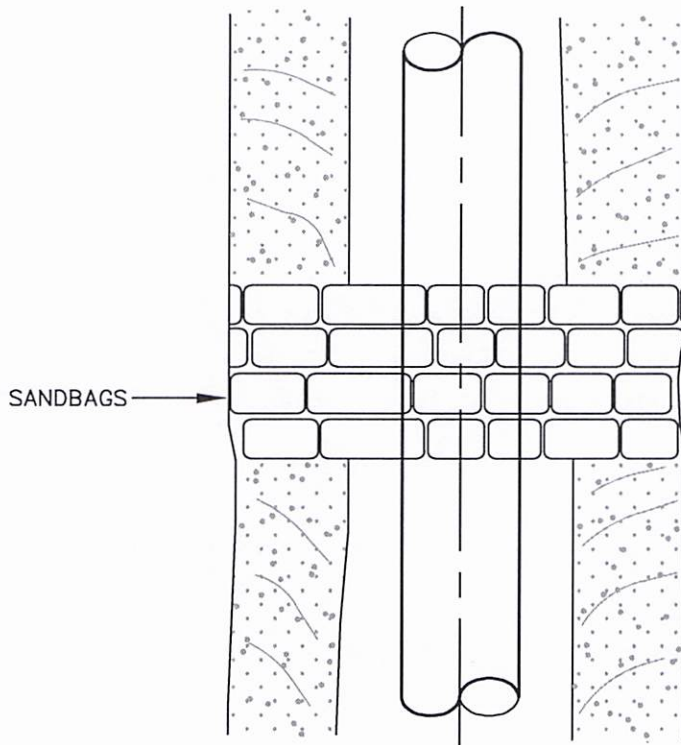
THE THRASHER GROUP, INC.  
600 WHITE OAKS BLVD.  
BRIDGEPORT, WV 26330  
PHONE 304-624-4108

SCALE  
NTS

REVISED

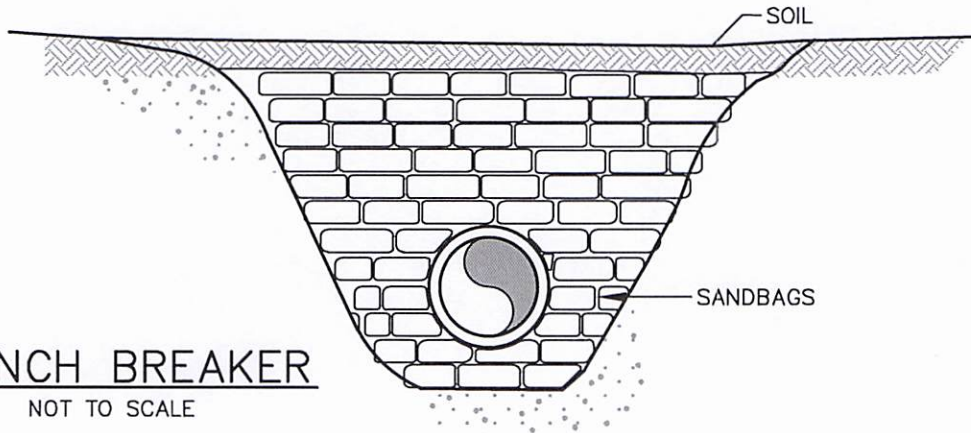
D5





SANDBAGS

PLAN VIEW  
NOT TO SCALE



SOIL

SANDBAGS

TRENCH BREAKER  
NOT TO SCALE

PROFILE VIEW  
NOT TO SCALE

NOTES

1. BAGS WILL NOT BE FILLED WITH TOPSOIL.
2. ADDITIONAL INFORMATION INCLUDED ON OTHER DRAWINGS.

**THRASHER**

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ANTERO MIDSTREAM LLC

TYPICAL ROAD CROSSING  
CONSTRUCTION DETAILS

DODDRIDGE COUNTY, WEST VIRGINIA

SCALE  
NTS

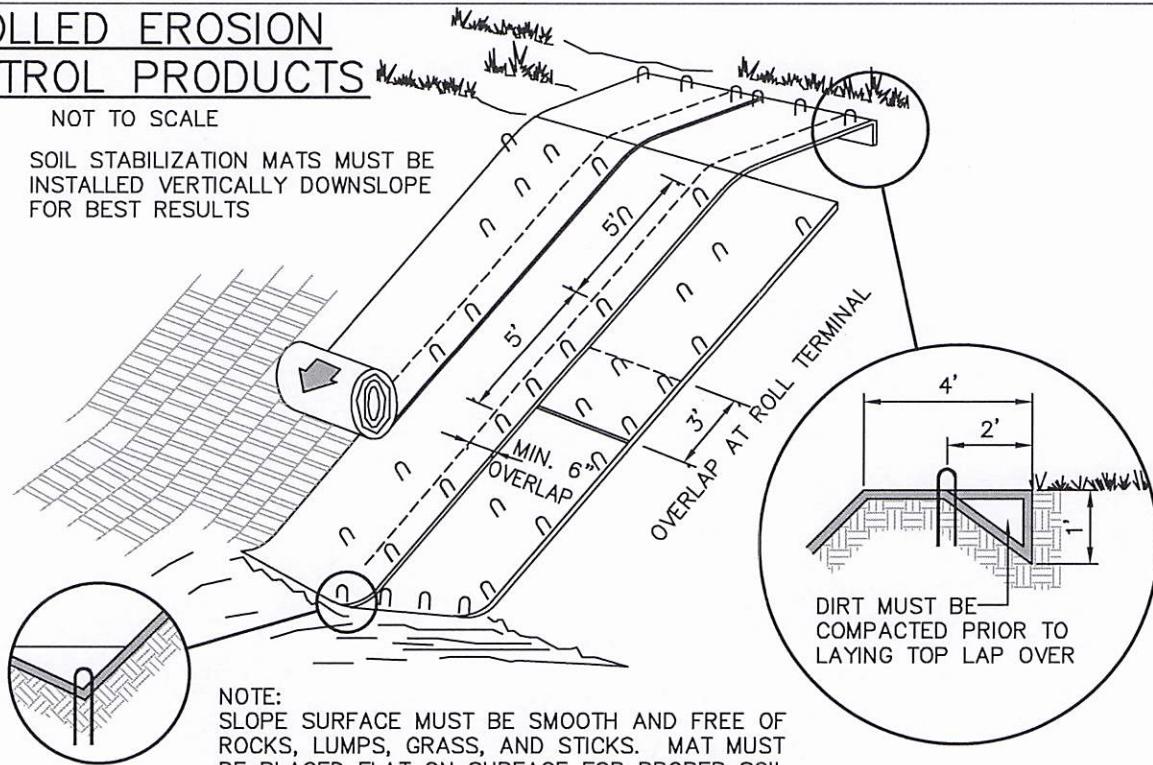
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D6

# ROLLED EROSION CONTROL PRODUCTS

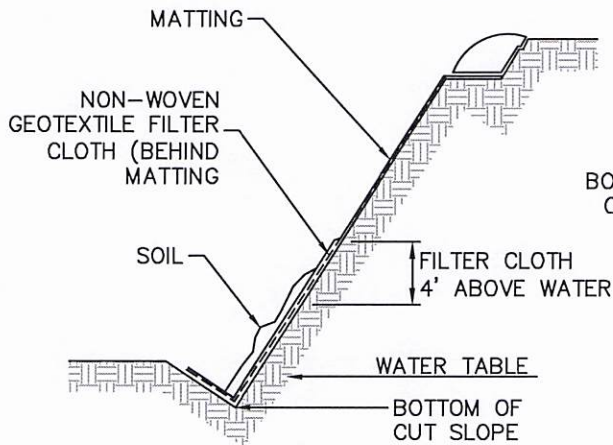
NOT TO SCALE

SOIL STABILIZATION MATS MUST BE INSTALLED VERTICALLY DOWNSLOPE FOR BEST RESULTS



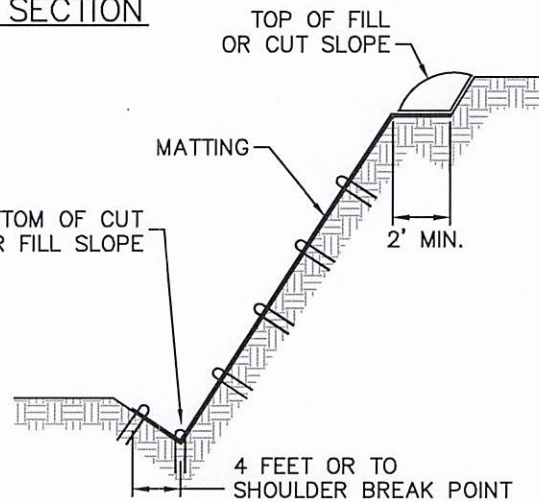
NOTE: SLOPE SURFACE MUST BE SMOOTH AND FREE OF ROCKS, LUMPS, GRASS, AND STICKS. MAT MUST BE PLACED FLAT ON SURFACE FOR PROPER SOIL CONTACT.

## FILL SLOPE SECTION



## SLOPE LINING (WET SLOPE)

SPRAY-ON EROSION CONTROL BLANKETS (E.G. BONDED FIBER MATRIX OR FLEXIBLE GROWTH MEDIUM) MAY BE USED IN LIEU OF ROLL ON BLANKETS IF MANUFACTURER'S RECOMMENDATIONS ARE FOLLOWED.



## SLOPE LINING (DRY SLOPE)

# THRASHER

THE THRASHER GROUP, INC.  
600 WHITE OAKS BLVD.  
BRIDGEPORT, WV 26330  
PHONE 304-624-4108

ANTERO MIDSTREAM LLC

TYPICAL ROAD CROSSING  
CONSTRUCTION DETAILS

DODDRIDGE COUNTY, WEST VIRGINIA

SCALE

NTS

REVISED

D7



Project Crimson South SWL (RC3) - Antero Midstream, LLC		<b>THRASHER</b>
Location Doddridge County, WV	Project Number 050-11638	

### Road Crossing Pipe Stress Calculation Report

**Crossing Details:**
**Notes:**

Road Number/Name	CR 12/1	Ralphs Run
GPS Coordinates	39.383294 N	80.703952 W
Construction Type	Open Cut	Shallow crossings only
Road Surface	Paved	
Loading Type	H2O	
Depth to Top of Pipe ( $H$ )	5 ft	

**Pipe Data:**

Material:	HDPE 4710	
Pipe OD ( $D_O$ )	18 in	
Dimension Ratio ( $DR$ )	7 -	
Wall Thickness ( $t$ )	2.571 in	
Mean Diameter ( $D_M$ )	15.429 in	
Pipe Max ID	12.857 in	
Pipe Min ID	12.549 in	
Apparent Modulus of Elasticity ( $E$ )	28,200 psi	
Poisson Ratio ( $\mu$ )	0.45 -	
Safe Ring Deflection ( $\Delta X/D_M$ )	3.0 %	Table 3-11 (In Tables Tab)
Critical Compressive Stress ( $S_{cr}$ )	1150 psi	
Allowable Compressive Stress ( $S_{al}$ )	575 psi	
Factor of Safety ( $N_S$ )	2 -	


**Soil Data:**

Soil Unit Weight ( $w$ )	120 pcf
--------------------------	---------

**Calculation Results:**

		Pass/Fail	Allowable Limit	Factor of Safety
Ring Deflection ( $\Delta X/D_M$ )	0.85 %	Pass	3.0	3.5
Compressive Stress ( $S$ )	20.7 psi	Pass	575	27.8
Total Vertical Soil Pressure ( $P_E + P_L$ )	5.9 psi	Pass	147	25.0


Notes: Calculations are derived from the Handbook of Polyethylene Pipe by the Plastic Pipe Institute.

Prepared By: James C. Anderson, PE	Approved By: Clayton White, PE, PMP 
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12/12/2022

Project Crimson South SWL (RC3) - Antero Midstream, LLC		<b>THRASHER</b>
Location Doddridge County, WV	Project Number 050-11638	

<b>Soil Pressure on Pipe</b>		<b>Notes:</b>
<b>Vertical Earth Pressure</b>		
Soil Unit Weight ( $w$ )	120 pcf	In the absence of Geotech, assume 120 pcf
Depth to Top of Pipe ( $H$ )	5 ft	
Vertical Earth Pressure ( $P_E$ )	600 psf	Assume Prism Load - No Arching
Vertical Earth Pressure ( $P_E$ )	4.2 psi	$P_E = wH$
<b>Live Loading Pressure</b>		
Depth to Top of Pipe ( $H$ )	5 ft	
Soil Pressure at top of pipe ( $P_{H20}$ )	250 psf	From Table 3-3 or Table 3-4 (In Tables Tab)
Impact Factor ( $I_f$ )	1 -	Typically 1.0 if paved, 2.0 if unpaved
Live Load at top of Pipe ( $P_L$ )	250 psf	
Live Load at top of Pipe ( $P_L$ )	1.7 psi	$P_L = I_f P_{H20}$
<b>Total Soil Pressure</b>		
Total Vertical Soil Pressure ( $P_E + P_L$ )	850 psf	Earth Load + Live Load
Total Vertical Soil Pressure ( $P_E + P_L$ )	5.9 psi	

Prepared By: James C. Anderson, PE	Approved By: Clayton White, PE, PMP 
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Project Crimson South SWL (RC3) - Antero Midstream, LLC		<b>THRASHER</b>
Location Doddridge County, WV	Project Number 050-11638	

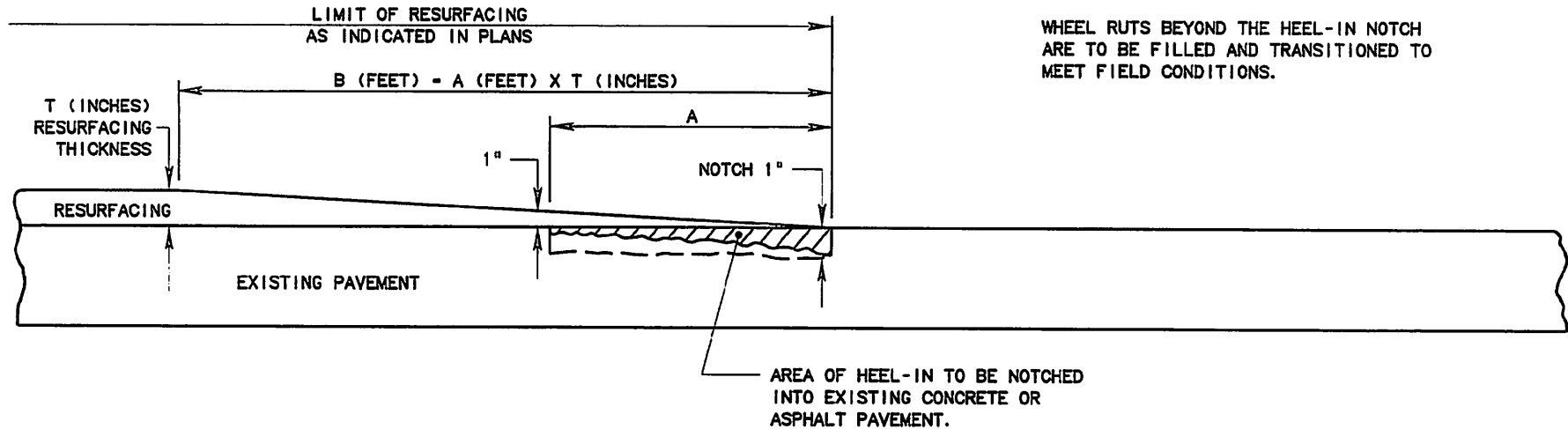
<b>Pipe Reaction to Loading</b>		<b>Notes:</b>
<b>Ring Deflection</b>		Modified Iowa Formula
Modulus of Soil Reaction ( $E'$ )	700 psi	Table 3-8, Assume 90% Compaction
Deflection Lag Factor ( $L_{DL}$ )	1.5 -	Typically 1.25 - 1.5
Bedding Factor ( $K_{BED}$ )	0.1 -	Typically 0.1
Soil Support Factor ( $F_s$ )	0.15 -	Assume Worst Case
Dimension Ratio ( $DR$ )	7 -	
Apparent Modulus of Elasticity ( $E$ )	28,200 psi	
Ring Deflection ( $\Delta X/D_M$ )	0.85 %	$\frac{\Delta X}{D_M} = \frac{1}{144} \left( \frac{K_{BED} L_{DL} P_E + K_{BED} P_L}{\frac{2E}{3} \left( \frac{1}{DR-1} \right)^3 + 0.061 F_s E'} \right)$
<b>Ring Compression</b>		
Compressive Stress ( $S$ )	20.66 psi	$S = \frac{(P_E + P_L) DR}{288}$
<b>Unconstrained Buckling</b>		
Factor of Safety	2 -	
Ovality Correction Factor	0.9 -	Based on % Deflection and Figure 3-9 in Tables tab
Apparent Modulus of Elasticity	28,200 psi	
Poisson Ratio	0.45 -	
DR	7 -	
Allowable Buckling Pressure ( $P_{WU}$ )	147.34 psi	$P_{WU} = \frac{f_o}{N_s} \frac{2E}{(1-\mu^2)} \left( \frac{1}{DR-1} \right)^3$
End of Calculations		



Prepared By: James C. Anderson, PE	Approved By: Clayton White, PE, PMP
---------------------------------------	--

**TEMPORARY WEDGES AT HEEL-INS**

THE CONTRACTOR MAY ELECT TO CUT THE REQUIRED HEEL-INS SUCH THAT TRAFFIC MUST BE MAINTAINED OVER THE HEEL-IN AREAS PRIOR TO THE PLACEMENT OF THE PERMANENT ASPHALT MATERIAL. IF THE CONTRACTOR CHOOSES THIS METHOD AS AN ALTERNATE TO CUTTING THE HEEL-INS AND BACKFILLING WITH PERMANENT ASPHALT PRIOR TO RESTORING TRAFFIC. IT SHALL BE THE CONTRACTORS RESPONSIBILITY TO PLACE TEMPORARY ASPHALT WEDGES 10 FEET IN LENGTH FOR EACH 1 INCH OF EXISTING SURFACE REMOVED AT THE VERTICAL FACE. FOR EXAMPLE, IF 2 INCHES ARE REMOVED AT THE VERTICAL FACE, THE TEMPORARY ASPHALT WEDGE SHALL BE 20 FEET IN LENGTH. THE WEDGES SHALL BE CONSTRUCTED OF ITEM 401001-011, TYPE 19, PLACED AND COMPACTED IN ACCORDANCE WITH SECTION 401.14. THESE TEMPORARY WEDGES SHALL BE REMOVED IMMEDIATELY PRIOR TO PLACING THE PERMANENT SURFACE. THE COST OF THIS WORK WILL BE INCLUDED IN VARIOUS PAVEMENT ITEMS.



WHEEL RUTS BEYOND THE HEEL-IN NOTCH ARE TO BE FILLED AND TRANSITIONED TO MEET FIELD CONDITIONS.

1. PAYMENT FOR HEEL-IN TO BE INCLUDED IN VARIOUS PAY ITEMS OF THIS PROJECT
2. THIS DETAIL TO BE USED AT TERMINI OF RESURFACING PROJECTS AND AT ALL TERMINI FOR SKIP RESURFACING PROJECTS.
3. THIS DETAIL TO BE USED AT LOCATIONS FOR HEEL-IN INTERSECTIONS OF THIS PROJECT.
4. THE FOLLOWING NUMBER(S) OF HEEL-INS FOR THE MAINLINE ON THIS PROJECT SHALL BE:  
 PERPENDICULAR  
 SKEWED AT °

POSTED SPEED LIMIT	A
25 mph	12'
30 TO 35 mph	14'
40 TO 45 mph	16'
50 TO 55 mph	18'
60 TO 70 mph	25'

THE WEST VIRGINIA DEPARTMENT OF TRANSPORTATION DIVISION OF HIGHWAYS

**RESURFACING HEEL-IN DETAIL**

Public Roads Div.	State Dist. No.	State Project No.	Federal Project No.	County
W. V.				





WEST VIRGINIA DEPARTMENT OF TRANSPORTATION

**Division of Highways**

Office of the District Engineer/Manager

District Four

Post Office Box 4220 · Clarksburg, West Virginia 26302 · (304) 842-1500

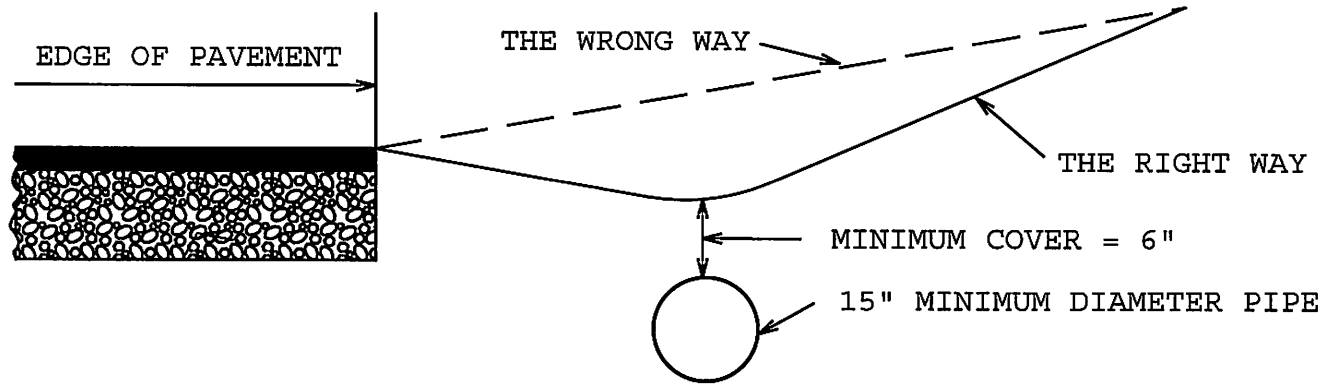
**Drilling Operators Permit Conditions & Requirements**

1. Applicant shall ensure the driveway is constructed in accordance with the [WVDOH Driveway Manual](#). The surfacing is specifically addressed on pages 20 and 21 under Section 8.4.6.
2. Prior to permit expiration, applicant must remove this temporary access and return DOH right-of-way to original or better condition; OR the property owner must submit a separate application to obtain a permanent permit.
3. If required, applicant must utilize appropriate traffic control during any use of the access. Failure to provide traffic control will void this permit and bond.
4. At no time may the drilling operation encroach on DOH right-of-way. Specifically, no loading, parking, or staging operations may be conducted on the traveled way or within DOH right-of-way.
5. Vehicles accessing the site are not permitted to stop in DOH right of way or back into the traveled way for any reason.
6. Applicant is responsible for immediate removal of mud and debris from the roadway caused by any entity involved with the drilling operations.
7. Applicant must notify the Permits Office/Oil & Gas Coordinator at (304) 326-0091 when drilling operations cease due to abandoning a well. If the driveway will no longer be used, the driveway must be removed, and ditch line restored to original or better condition, including the removal of pipe. The property owner must place the approach in their name for the driveway to remain. Note that bonds will not be released until every approach issued to your company has been removed or placed in the property owner's name.
8. Applicant shall ensure the driveway is constructed in accordance with the [WVDOH Driveway Manual](#) and that sight lines are free from vegetation or other obstructions at all times during use of the driveway.

**WVDOH Driveway Manual:**

<https://transportation.wv.gov/highways/engineering/Manuals/Traffic/Driveway.pdf>

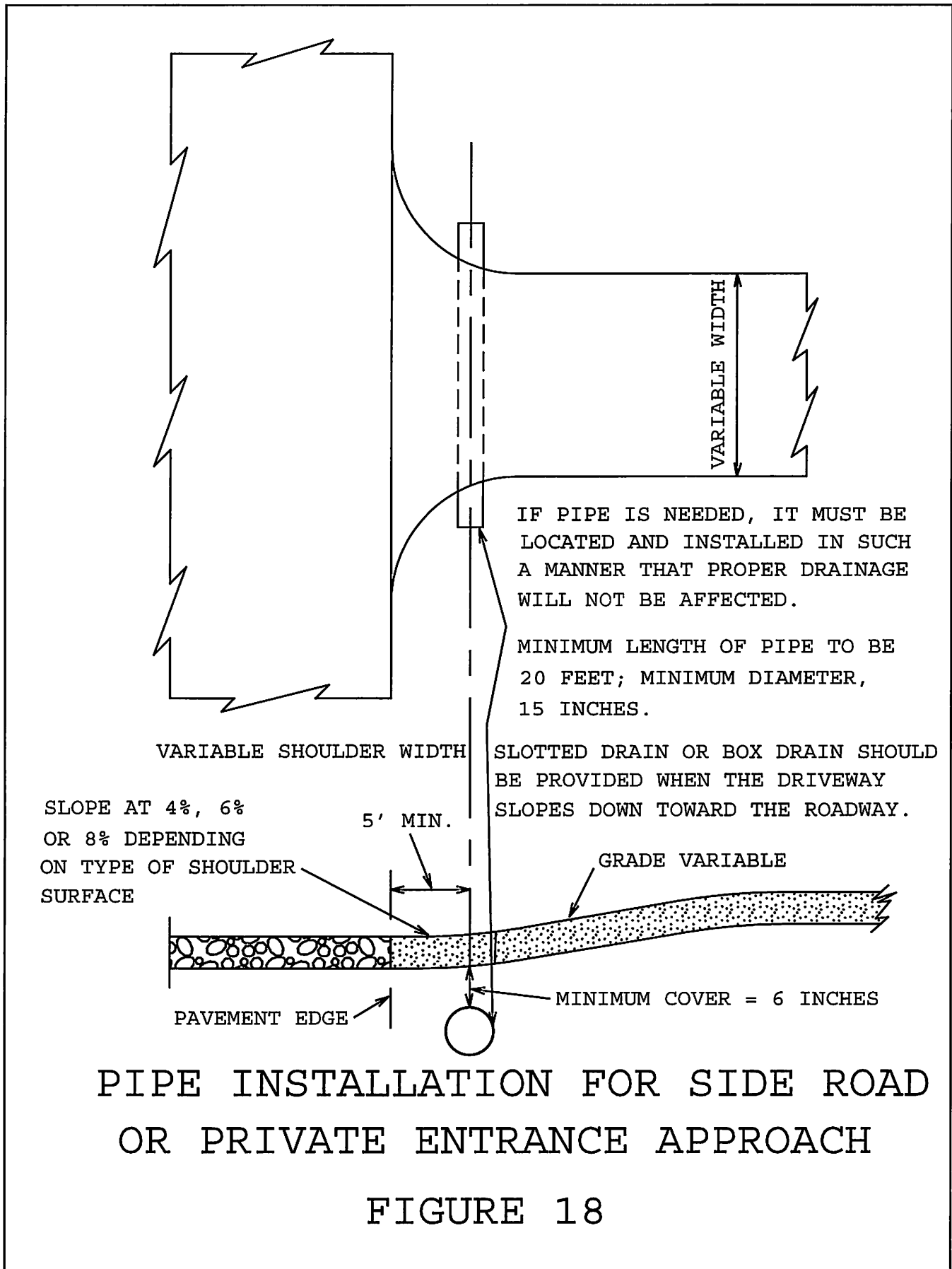
**Failure to comply with any condition or requirement will void this permit.**



PIPE INSTALLATION FOR SIDE ROAD  
APPROACH WITH STEEP GRADE

FIGURE 17





IF PIPE IS NEEDED, IT MUST BE LOCATED AND INSTALLED IN SUCH A MANNER THAT PROPER DRAINAGE WILL NOT BE AFFECTED.

MINIMUM LENGTH OF PIPE TO BE 20 FEET; MINIMUM DIAMETER, 15 INCHES.

SLOTTED DRAIN OR BOX DRAIN SHOULD BE PROVIDED WHEN THE DRIVEWAY SLOPES DOWN TOWARD THE ROADWAY.

VARIABLE SHOULDER WIDTH

SLOPE AT 4%, 6% OR 8% DEPENDING ON TYPE OF SHOULDER SURFACE

5' MIN.

PAVEMENT EDGE

MINIMUM COVER = 6 INCHES

PIPE INSTALLATION FOR SIDE ROAD OR PRIVATE ENTRANCE APPROACH

FIGURE 18

# FEDERAL HIGHWAY ADMINISTRATION (FHWA)

## SUMMARY OF PILOT/ESCORT VEHICLE OPERATORS BEST PRACTICES GUIDELINES

### I. PRE-TRIP PLANNING

- ✓ Route review
- ✓ Pilot/Escort vehicle operator and equipment checklist

### II. PRE-TRIP SAFETY MEETING

- ✓ Review load limitations
- ✓ Test communication equipment
- ✓ Coordinate with local law enforcement

### III. LOAD MOVEMENT

- ✓ Know the load, and know the law
- ✓ Position vehicles in compliance with regulations and permit requirements

### IV. TRAFFIC CONTROL

- ✓ Develop and follow a traffic control plan
- ✓ Use proper equipment
- ✓ Follow defensive flagging guidelines

### V. SPECIAL CHALLENGES

- ✓ Railroad Crossings
- ✓ Tall loads, overhead obstructions
- ✓ Steerable Trailers/Tillerman Operations

### VI. EMERGENCY PROCEDURES

- ✓ Injury issues

### VII. POST-TRIP ACTIVITIES

- ✓ Turn off warning lights, remove OVERSIZE LOAD signage
- ✓ Review/evaluate procedure

<https://ops.fhwa.dot.gov/publications/fhwahop16051/index.htm>





WEST VIRGINIA DEPARTMENT OF TRANSPORTATION

**Division of Highways**

Earl Ray Tomblin  
Governor

Office of the District Engineer/Manager  
District Four  
PO Box 4220 (EXIT 121, I-79) \* Clarksburg, WV 26302 \* 304-842-1550  
April 3, 2013

Paul A. Mattox, Jr., P. E.  
Secretary of Transportation /  
Commissioner of Highways

ANTERO RESOURCES APPALACHIAN  
CORPORATION  
175 D ELK CREEK ROAD  
MOUNT CLARE, WV 26408

Dear Applicant:

Your approved copy of Permit Number 04-2013-0214 for a DP - Drilling Permit  
permit type is enclosed. A description of the work is on the permit.

Please contact the District Four office:

**Denise Roncone 304-842-1575**

at least 48 hours in advance of the date you plan to begin work so arrangements can be made to inspect the work authorized  
by the permit.

**Failure to comply will result in cancellation of your permit.**

A copy of this permit is to be available on the job at all times while the work is in progress for inspection by the  
West Virginia Division of Highways' personnel.

Sincerely,

\_\_\_\_\_  
District Engineer / District Manager

\_\_\_\_\_  
Permit Supervisor

Initials: TC

Attachments: Yes

Enclosure: No

cc:0409 Charleston Permits

PERMIT TO ENTER UPON, UNDER, OVER OR ACROSS THE STATE ROADS OF THE STATE OF WEST VIRGINIA, AS PROVIDED FOR IN SECTION 6, ARTICLE 16, CHAPTER 17; SECTION 9, ARTICLE 16, CHAPTER 17; SECTION 8, ARTICLE 4, CHAPTER 17, WEST VIRGINIA CODE, 1931, AS AMENDED.

THIS PERMIT, Made this 5th day of March 20 13, between the WEST VIRGINIA DEPARTMENT OF TRANSPORTATION, DIVISION OF HIGHWAYS, a statutory corporation hereinafter called DIVISION and Antero Resources Appalachian Corporation  
Address: 1625 17<sup>th</sup> Street, Denver, CO 80202 Phone No: 303) 357-7310  
hereinafter called APPLICANT.

WITNESSETH

In consideration of the hereinafter set out covenants and in accordance with Section 6, Article 16, Chapter 17; or Section 9, Article 16, Chapter 17; or Section 8, Article 4, Chapter 17, of the Official Code of West Virginia, 1931, as amended, and the rules and regulations promulgated thereunder, APPLICANT does hereby apply to enter

Route Type & No. SLS 14 DOH Project No. \_\_\_\_\_ (if applicable);  
at located .04 miles South of the intersection of SLS 14 & SLS 24 Mile Post 2 586  
in Doddridge County, for the purposes hereinafter set forth and in accordance with the plans and specifications which are attached hereto and made a part hereof: To construct and maintain a existing heavy hauling approach for a RJ Smith pad. Site distance is approximately 200 feet in both directions. The approach is located on SLS 14 approximately .04 miles South of the intersection of SLS 14 and SLS 24. SEE ATTACHED ADDENDUM.

APPLICANT further agrees to accept the conditions hereinafter set forth:

1. APPLICANT shall deposit with DIVISION the sum of \$ 1,000,000 in the form of an official, certified or cashier's check, or executed bond with surety satisfactory to DIVISION to cover any damage and inspection costs DIVISION may sustain by reason of the granting of this permit, including any expense incurred in restoring said highway to its original condition or the proper repair of any and all damages that may result within one (1) year from the date of the completion of said work.
2. APPLICANT agrees to reimburse DIVISION for inspection costs as follows:
  - A. For any inspection costs incurred under this permit.
  - B. At \$ \_\_\_\_\_ per linear foot for \_\_\_\_\_ feet of water line installed under this permit
  - C. At \$ \_\_\_\_\_ per linear foot for \_\_\_\_\_ feet of sewer line installed under this permit
3. APPLICANT shall notify DIVISION at least 48 hours in advance of the date the work will begin. Failure to comply will be cause for cancellation of this permit.
4. APPLICANT agrees to protect its employees, equipment and users of the highway at all times in accordance with the current Division of Highways manual "Traffic Control For Street and Highway Construction and Maintenance Operations".
5. APPLICANT agrees to comply with all applicable state and federal laws in the performance of work under this permit.
6. Supplementary conditions cited on the reverse side of this permit are understood and agreed to be a part hereof.
7. The work authorized under this permit shall be completed on or before (Date): March 5, 2014

RECOMMENDED:

*Christie Rowan*  
Title Permit Supervisor

*Eugene B. Smith*  
Signature and Title of Applicant

BOND REQUIREMENT:

BOND NO. LPM 8062891 /DATE 2/21/2012  
Attached  On File

INSPECTION: Owner/Consultant   
Full Time  Part Time   
Periodic  Reimbursable  No Cost

APPROVED:

*Paul Bullock*  
Title DISTRICT MANAGER  
West Virginia Division of Highways

AUTHORIZATION NO: \_\_\_\_\_

PERMIT NO: 0420130214



## CHAPTER 17 WEST VIRGINIA CODE, 1931

### §17-4-8. Use of roadbed by railroad, telephone company, etc.

No railroad or electric or other railway shall be constructed upon the roadbed of any state road, except to cross the same, nor shall any person, firm or corporation enter upon or construct any works in or upon such road, or lay or maintain thereon or thereunder any drainage, sewer or water pipes, gas pipes, electric conduits or other pipes, nor shall any telephone, telegraph or electric line or power pole, or any other structure whatsoever, be erected upon, in or over any portion of a state road, except under such restrictions, conditions and regulations as may be prescribed by the state road commissioner. Whenever any railroad or electric or other railway, heretofore or hereafter constructed, shall cross any state road, it shall be required to keep its own roadbed, and the bed of the road or highway at such crossing, in proper repair, or else to construct and maintain an overhead or undergrade crossing, subject to the approval of the state road commissioner; and the tracks of such railroad or railway at grade crossings shall be so constructed as to give a safe and easy approach to and across the same, and when the construction of such approaches is made necessary by a change in the railroad grade at the grade crossing, the cost shall be upon the railway company.

### §17-16-6. Permit by commission or county court for openings in or structures on public roads; franchises and easements of oil, etc., transportation companies.

No opening shall be made in any state or county-district road or highway, nor shall any structure be placed therein or thereover, nor shall any structure, which has been so placed, be changed or removed, except in accordance with a permit from the state road commission or county court, as the case may be. No road or highway shall be dug up for laying or placing pipes, sewers, poles or wires, or for other purposes, and no trees shall be planted or removed or obstructions placed thereon, without the written permit of the commission or county court, or its duly authorized agent, and then only in accordance with the regulations of the commission or court. The work shall be done under the supervision and to the satisfaction of the commission or court; and the entire expense of replacing the highway in as good condition as before shall be paid by the persons to whom the permit was given, or by whom the work was done: Provided, however, That nothing herein contained shall be so construed as to prevent any oil or gas company or person having a proper permit or franchise from transporting oil or gasoline along any of the public highways of this State, nor to give such company a franchise without paying to the landowners through whose lands such road passes the usual and customary compensation paid or to be paid to the landowners for such right of way. Any grant or franchise when made shall be construed to give to such company or person only the right to use the easement in such public road.

A violation of any provision of this section shall be a misdemeanor, and the person or corporation violating the same shall, upon conviction thereof, be fined not less than twenty-five nor more than one hundred dollars for each offense.

### §17-16-9. Private driveways or approaches to roads; obstruction of ditches.

The owner or tenant of land fronting on any state road shall construct and keep in repair all approaches or driveways to and from the same, under the direction of the state road commission, and, likewise, the owner or tenant of land fronting on any county-district road shall construct and keep in repair approaches or driveways to and from the same, under the direction of the county road engineer, and it shall be unlawful for such owner or tenant to fill up any ditch, or place any material of any kind or character in any ditch, so as in any manner to obstruct or interfere with the purposes for which it was made.

## SUPPLEMENTARY CONDITIONS

1. The person, firm or corporation to whom a permit is issued agrees to hold the State of West Virginia and DIVISION harmless on account of any damages to persons or property which may arise during the process of the work authorized by this permit or by reason thereof.
2. Applications for permission to perform work within highway rights of way shall be made on DIVISION'S standard permit form and shall be signed by the authorized representative of the person, firm or corporation applying.
3. The APPLICANT shall give detailed information concerning the work to be performed and the application must include a sketch sufficient to show the nature of the work performed.
4. APPLICANT, his agents, successor, heirs or assigns, contractors or any other person, firm or corporation working under APPLICANT'S real or apparent authority, shall perform the work in a manner satisfactory to DIVISION. Damage to the road resulting at any time from work authorized under this permit shall be repaired by APPLICANT. Unsatisfactory repairs may be corrected by DIVISION or its authorized agent and the cost thereof paid by APPLICANT.
5. DIVISION assumes no liability for damage to the proposed work by reason of construction or maintenance work on the road.
6. This permit is granted subject to removal of the authorized installation by APPLICANT at no cost to DIVISION when required for improvement of the road, and subject to all regulations now or hereafter adopted by DIVISION.
7. Utility installation shall be in accordance with the current manual, "Accommodation of Utilities on Highway Right of Way".
8. Driveways shall be in accordance with the current manual, "Rules and Regulations for Constructing Driveways on State Highway Rights-of-Way."
9. DIVISION reserves the right to cancel this permit at any time, should APPLICANT fail to comply with the terms and conditions under which it is granted.
10. This permit is granted only insofar as the DIVISION has a right to do so.

0420130214

Addendum to Permit 04-2013-0214 & 04-2013-0215

This addendum, made this 15<sup>th</sup> day of March 2013, between the West Virginia Department of Transportation, Division of Highways, a statutory company hereinafter called the Division  
and  
Antero Resources

Address: 1625 17<sup>th</sup> Street, Denver, CO 80202 Phone: 303 357-7310  
hereinafter called APPLICANT.

The Applicant has filed with the DIVISION a written application for the following named route and location:

Doddridge Route 14, Little Fork @ MP 0.00 to 2.587; Route 28, Nutter Fork, @ MP 4.374, 4.690; Route 5, Rock Run, @ MP 0.00 to 2.839; Route 50/30, Old Us 50, @ MP 10.62 to 13.01; Route 50/22, Old US 50 @ MP to 0.19. Additional routing included Route 14 @ MP 2.586 to 4.60, Route 3, Big Flint @ MP 0 to 8.10, and Route 24 @ MP 6.002 to 6.21.

- ❖ Traffic Control will include the following signage in both directions as per the D/4 Traffic Engineer, Fred Shoukry: ROADWORK AHEAD 1 MILE, ROAD WORK AHEAD ½ MILE, ROAD MILE AHEAD 1000 FT, FLAGGER AHEAD 200 FT., install ROAD WORK signs 500 ft. onto SLS 24, 50 ft. from junction SLS 14. All signs must have warning lights and good reflectivity. Consider additional lighting at entrance.
- ❖ Agreement executed for SLS 24 and SLS 14 for widening and to place a temporary bridge to access SLS 24.
- ❖ Construct a swale across approach to catch surface water and divert it before running onto the roadway.
  - After completion of the project, a joint review of roads will be filmed and evaluated to assure roads have been repaired to existing condition or better.
  - No travel on School Bus Routes during their traversing operational hours on above mentioned route on bi-directional roadways where the lane widths are less than 10 ft.
  - Pilot Vehicle required for all Oversized Loads on covered roads.
  - Repairs that will include "Hot Mix Asphalt" will have the following testing requirement: The supplier will be responsible for testing at the plant; Compaction testing will be as per WV DOH specifications.
  - The Division of Highways shall have the right at all times to inspect the work, and if such inspections should reveal that the work is not done according to specifications, upon being so advised by the Division, ANTERO Resources agrees to take immediate corrective actions.

---

Applicant shall properly repair and maintain any and all damages that may result to said bridges, highways, shoulders and ditches from hauling activities of Applicant, its agents, contractors and employees, to as good a condition prior to commencement of Applicant's operation or as when the permit was issued, as determined by the District Engineer/Manager of the DIVISION having jurisdiction over the work permitted, or pay damages therefore in the amount to sufficiently restore such bridges, roads, highways, shoulders and ditches to original condition; and shall reimburse the DIVISION for all inspection costs incurred by it in connection with said work and repairs of such damages and faithfully comply with all terms and conditions of said permits and save harmless the DIVISION and the State of West Virginia from all losses resulting from the conduct of said work and repairs; provided that all projects covered by this blanket bond have been restored to original or better condition; then this Bond shall be released; or otherwise will remain in full force and effect.

Bond Amount: \$1,000,000.00

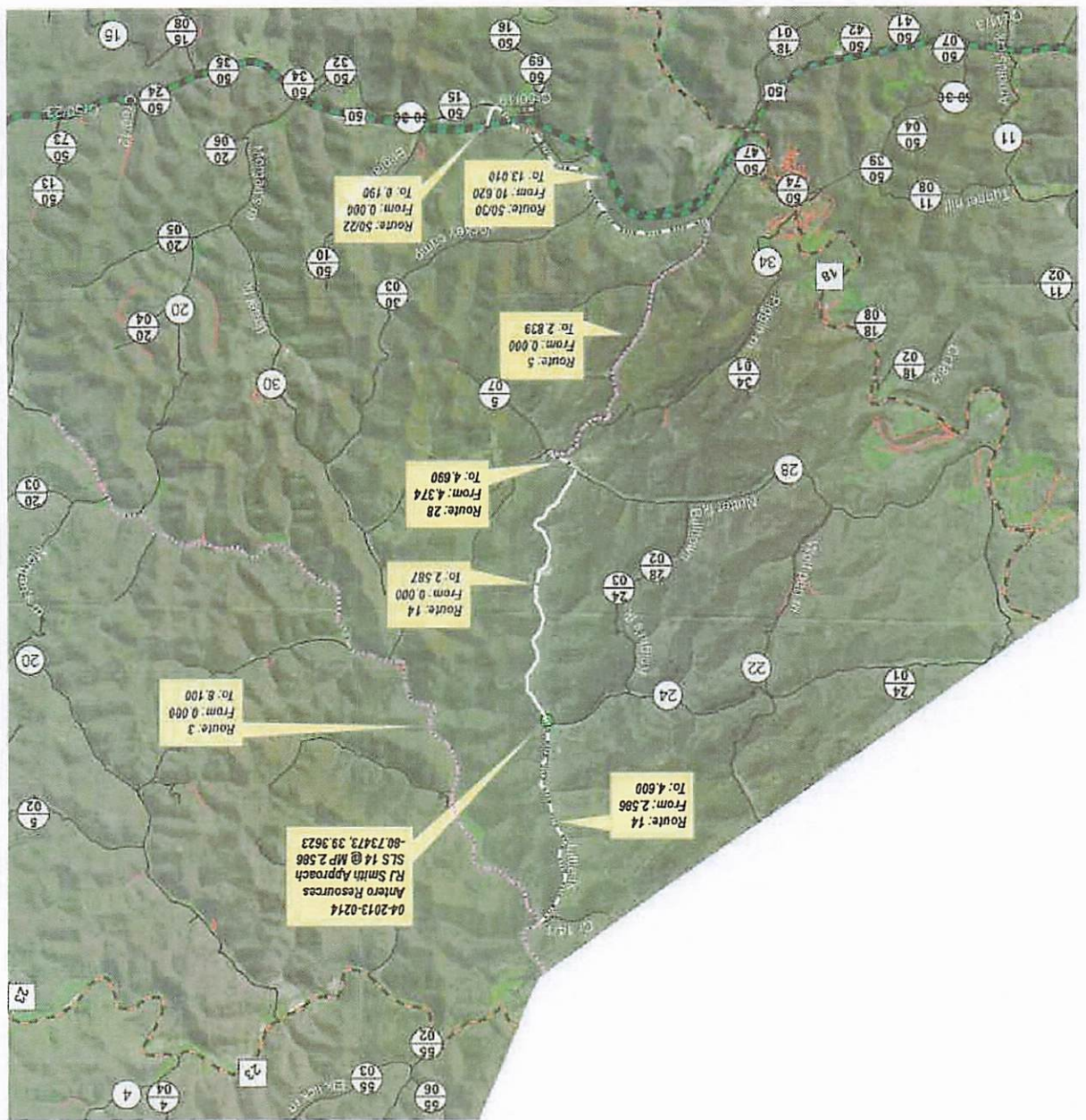
Bond Number: LFM9062891 Date: 2/21/2012





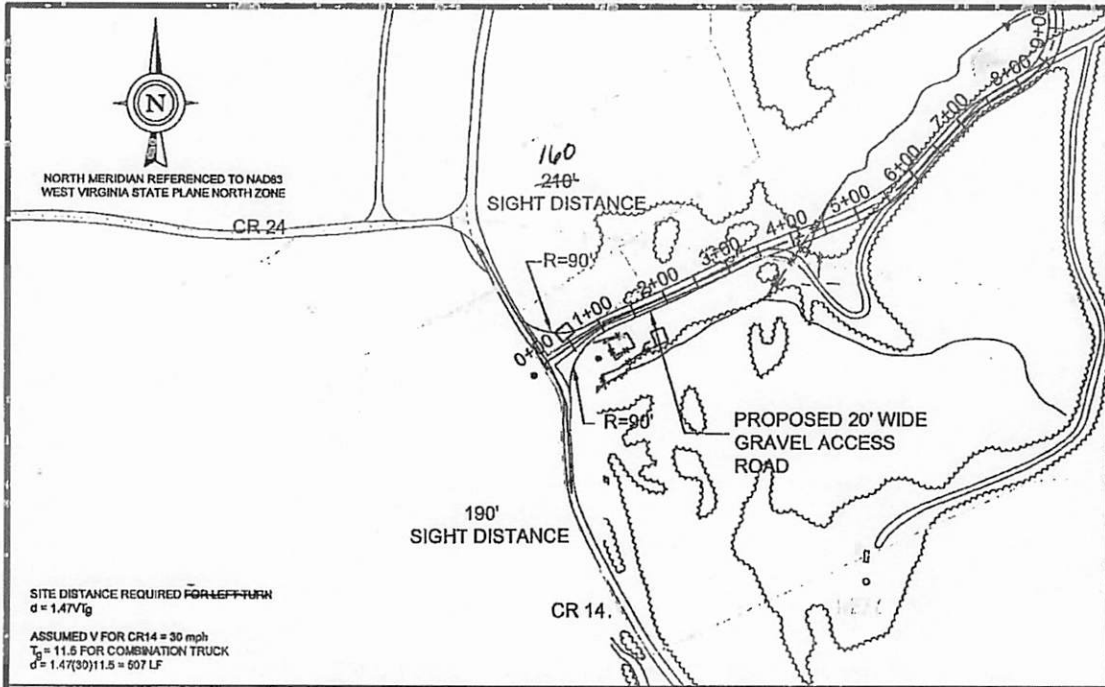
04-2013-0214  
Antero Resources  
RJ Smith Approach  
SLS 14 @ MP 2.586  
-80.73473, 39.3623

24

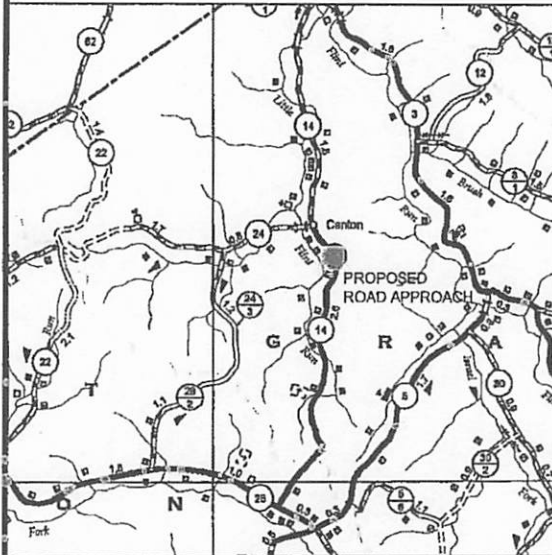




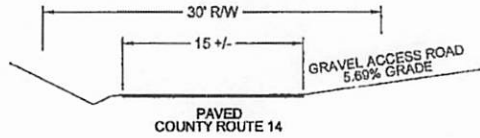
R.J. Smith





PLAN VIEW OF PROPOSED ROAD APPROACH-DENZIL PAD



VICINITY MAP (NTS)



APPROACH PROFILE

<p>NOTES: ALL SPECIFICATIONS AS SET FORTH IN THE "RULES AND REGULATIONS FOR CONSTRUCTION OF DRIVEWAYS ON STATE RIGHT-OF-WAYS" WHICH ARE APPLICABLE WILL BE CARRIED OUT IN FULL.</p> <p>DRAWN BY: TIMOTHY T. WHITE, P.E.</p> <p>DATE: 11-20-12</p> <p>FIELD REVIEW &amp; DATE:</p> <p>PROJECT NO.:</p>	<p>LOCATION:</p> <p>PROPOSAL TO CREATE A NEW APPROACH AND MAINTAIN A 26 FT. WIDE COMMERCIAL APPROACH ON THE NORTHEASTERN SIDE OF CR 14, 0.64 MILES SOUTH OF THE INTERSECTION WITH CR 24, IN GRANT DISTRICT, DOODRIDGE COUNTY, WEST VIRGINIA.</p>	<p>THIS DOCUMENT PREPARED BY:</p>  <p>B&amp;B ENGINEERS &amp; ARCHITECTS, LLC</p> <p>ENGINEERING AND SURVEYING IN WEST VIRGINIA CREATED BY: 11/20/12 1504000001</p>	<p>THIS DOCUMENT PUBLISHED FOR:</p> <p>ANTERO RESOURCES</p> <p>1425 150th St. Dover, PA 17202</p> 
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0420130214

Dist. Permit Number 0420130214

BOND Number LPM 9062891

**OIL and GAS DATA INFORMATION SHEET**

**APPLICANT**

Company Name ANTERO RESOURCES APPALCHIAN CORPORATION

Address 1625 17<sup>TH</sup> STREET

City DENVER ST CO Zip 80202

Contact Person Permit Burt Simcox Telephone (304) 282-9372

24/7 Road Maintenance Contact Aaron Kunzler Telephone \_\_\_\_\_ Cell (405) 227-8344

24/7 Backup Contact Dusty Wood Telephone \_\_\_\_\_ Cell (817) 771-1436

Drilling/Fracking will require \_\_\_\_\_ Less than 5000 Barrels of fluids \_\_\_\_\_ 5000/+

**Site Location**

Site Name RJ Smith Approach Road Local Name \_\_\_\_\_ Rte.# SLS 14

Approach location WGS 83 Decimal Format GPS 39.36230 W: 80.73473 County Doddridge

**Location Description**

On Route.# SLS 14 being .04 miles NSEW of Jct. of Rte.# SLS 14 and Rte.# SLS 24

**DOH USE ONLY HAULING ROUTE From US or WV Route (Attach Map)**

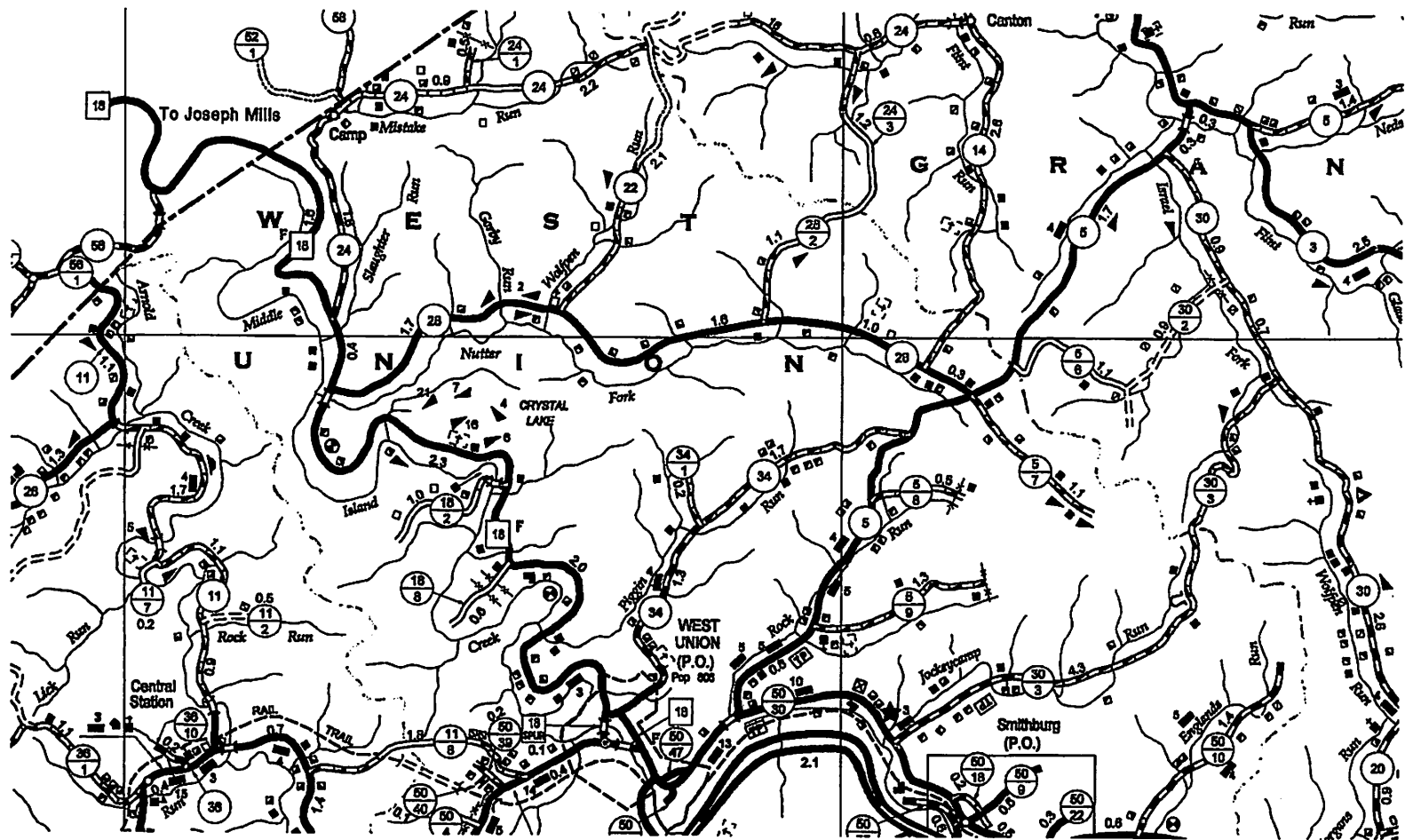
<u>Name &amp; Rte.#</u>	<u>Beg MP</u>	<u>End MP</u>	<u>Surface Type</u>	<u>Condition</u>
<u>Little Fork 14</u>	<u>0.00</u>	<u>2.587</u>	<u>HMA + T&amp;C</u>	<u>E. Yacht to fair</u>
<u>Nutter Fork 28</u>	<u>4.374</u>	<u>4.690</u>	<u>HLBC</u>	<u>good</u>
<u>Rock Run 5</u>	<u>0.00</u>	<u>2.839</u>	<u>HLBC</u>	<u>good</u>
<u>Old US50 50/30</u>	<u>10.62</u>	<u>13.01</u>	<u>HLBC</u>	<u>good</u>
<u>Old US50 50/22</u>	<u>0</u>	<u>0.19</u>	<u>HLBC</u>	<u>good</u>
<u>Big Flint 3</u>	<u>0</u>	<u>8.10</u>	<u>HLBC</u>	<u>good - Angel looks only</u>
<u>Little Fork 14</u>	<u>2.586</u>	<u>4.60</u>	<u>T&amp;C</u>	<u>good - But built</u>
<u>Camp MISTAKE</u>				
<u>Slaughter Run 24</u>	<u>6.002</u>	<u>6.21</u>	<u>Rock Base</u>	<u>good</u>

Well location WGS 83 Decimal Format GPS N: W:

WV DEP Permit Number 47 - \_\_\_\_\_ - \_\_\_\_\_

STATE COUNTY PERMIT NUMBER





0420130214

Permit: 4-2013-214

Applicant: Antero

Addendum Continued  
 Conditions and Requirements  
 Repairs/Upgrades Necessary for Maintenance Permit

County: Woods

Well Pad: R.J. Smith

Route No.	Route Name	Mile Post	Perform Distressing	Patch Potholes	Clean Curb/curbs	Repair Base Failures	Slip Repair	Overlay Asphalt	Overlay S&C	Stone/Aggregate Roadway	Stone/Repair Shoulders	Bridge Concrete	Opening Roadway Maintained	Other	Approach Coordinates:		Comments
															N _____	W _____	
S15	50/22	0.19															In Good condition
		0.00															" " Pavement damage at 0.04
S15 SD/30	old US50	13.01	✓														Remove debris from ditch line old US50 has Good base keep - road paved
		10.62															Road in excellent condition
S155	Rock Run	0.00															Parapet walls to be cut down & Guard Rail
		0.77															" " " " " " " "
		0.95															" " " " " " " "
		2.0				✓											Piling Job starting to Fail Roadway excellent
		2.87															Int 28 Excellent condition 2.87 miles

RECOMMENDATIONS: Roadway SD/22, SD/30 & S are Good @ excellent condition  
S155 needs FDR, or equivalent to handle heavy loads SD/30 & SD/22 needs Paved 1/2" wearing

Above routes reviewed for necessary repairs and upgraded required for Maintenance Permit/Agreement.

Engel Scott  
 Applicant Representative

3-20-2013  
 Date

Richard Smith  
 DOH Representative

3/15/13  
 Date



Permit: 4-2013-214

Applicant: Antero

Addendum Continued  
 Conditions and Requirements  
 Repairs/Upgrades Necessary for Maintenance Permit

2 of 4

County: Wood

Well Pad: R.J. Smith

Route No.	Route Name	Mile Post	Perform Ditching	Patch Potholes	Clean Culverts	Repair Base Failures	Slip Repair	Overlay Asphalt	Overlay S&C	Stone/Stabilize Roadway	Stone/Repair Shoulders	Bridge Concerns	Ongoing Roadway Maintenance	Other	Approach Coordinates:		Comments
															N _____	W _____	
28	Nutter Fork	4.69	✓														1/4 mile of 28 in excellent condition
28		4.74	✓														" " " " "
14	Benton Rd Nutter Fork	0.100	✓														extensive surface cracking through out
		0.32	✓														damage to road
		0.417	✓														road subsidence
		0.55															Piling Job
		0.63	✓	✓													Road deterioration
		0.83	✓	✓													damage to culvert & Pot holes to 0.95
		1.5	✓	✓													debris in ditch line
		1.75				48" culvert		Good condition									Armour creek several places
		2.0															Pipeline King

RECOMMENDATIONS: RLS 28 & 14 in Need of FDR if used for heavy hauling  
14 - needs traffic control while approach is in place

Above routes reviewed for necessary repairs and upgraded required for Maintenance Permit/Agreement.

Applicant Representative

Date

[Signature]  
 DOH Representative

3/15/13  
 Date

Permit: 4-2013-214

Addendum Continued

3 of 4

County: Wood

Applicant: Anfero

Conditions and Requirements

Repairs/Upgrades Necessary for Maintenance Permit

Well Pad: RJSmith

Route No.	Route Name	Mile Post	Perform Ditching	Patch Potholes	Clean Culverts	Repair Base Failures	Slip Repair	Overlay Asphalt	Overlay S/C	Stone/Spallline Roadway	Stone/Repair Shoulders	Bridge Concerns	Ongoing Roadway Maintained	Other	Approach Coordinates:		Comments
															N	W	
14	CANTON RD Little Fork	2.1															(Need Pipe Placed parallel) to make turn
		2.586															RJ Smith Road Entrance
24	CAMP Mistake Rd	6.21															Temp bridge reinforced per R. Harris
		6.002			Entrance												Rock base road in good condition
14	Canton Rd	2.586															Road Repaired Paved
		2.9															Debris in ditch line
		3.0	✓														Road Repaired & paved
		3.26	-	3.34													Intermittent Base Failures
		3.7	-	4.3													
		4.13	-	4.6	End of S1514												

RECOMMENDATIONS: S1514 instead of FDR if used heavy hauling

Above routes reviewed for necessary repairs and upgraded required for Maintenance Permit/Agreement.

Applicant Representative

Date

Roger O. Alt  
DOH Representative

3/15/13  
Date



Permit: 7-2013-214

Addendum Continued

Hot 4

County: Wood

Applicant: Antero

Conditions and Requirements  
Repairs/Upgrades Necessary for Maintenance Permit

Well Pad: R.J. Smith

Route No.	Route Name	Mile Post	Perform Patching	Patch Pot holes	Clean Culverts	Repair Base Failures	Slip Repair	Overlay Asphalt	Overlay S&C	Stone Stabilize Roadway	Stone/Repair Shoulders	Bridge Concerns	Ongoing Roadway Maintained	Other	Approach Coordinates:		Comments	
															N	W		
SB3	Big Flint	0.0	✓															
		0.64	✓															New Bridge
		0.76	✓															
		1.3	✓															End of new paving
		1.8	✓															Patching
		3.0 - 3.6																Skip Paved
		6.67	✓			✓	✓											Piling Job failing
		7.5	✓			✓												
		8.1					✓											

RECOMMENDATIONS: CR 3 in Need of FDR. it used for heavy hauling

Above routes reviewed for necessary repairs and upgraded required for Maintenance Permit/Agreement.

Applicant Representative

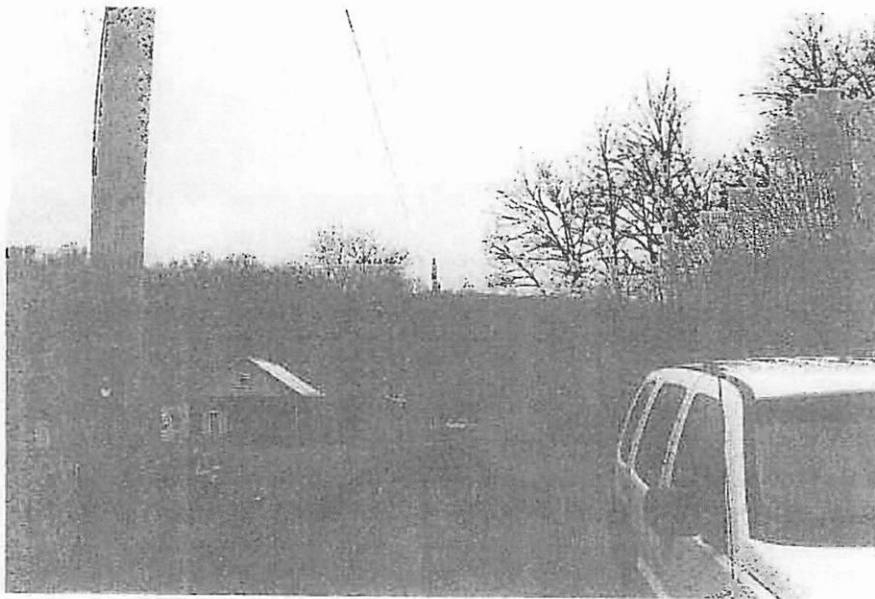
Date

DOH Representative

Date



*SOUTH*

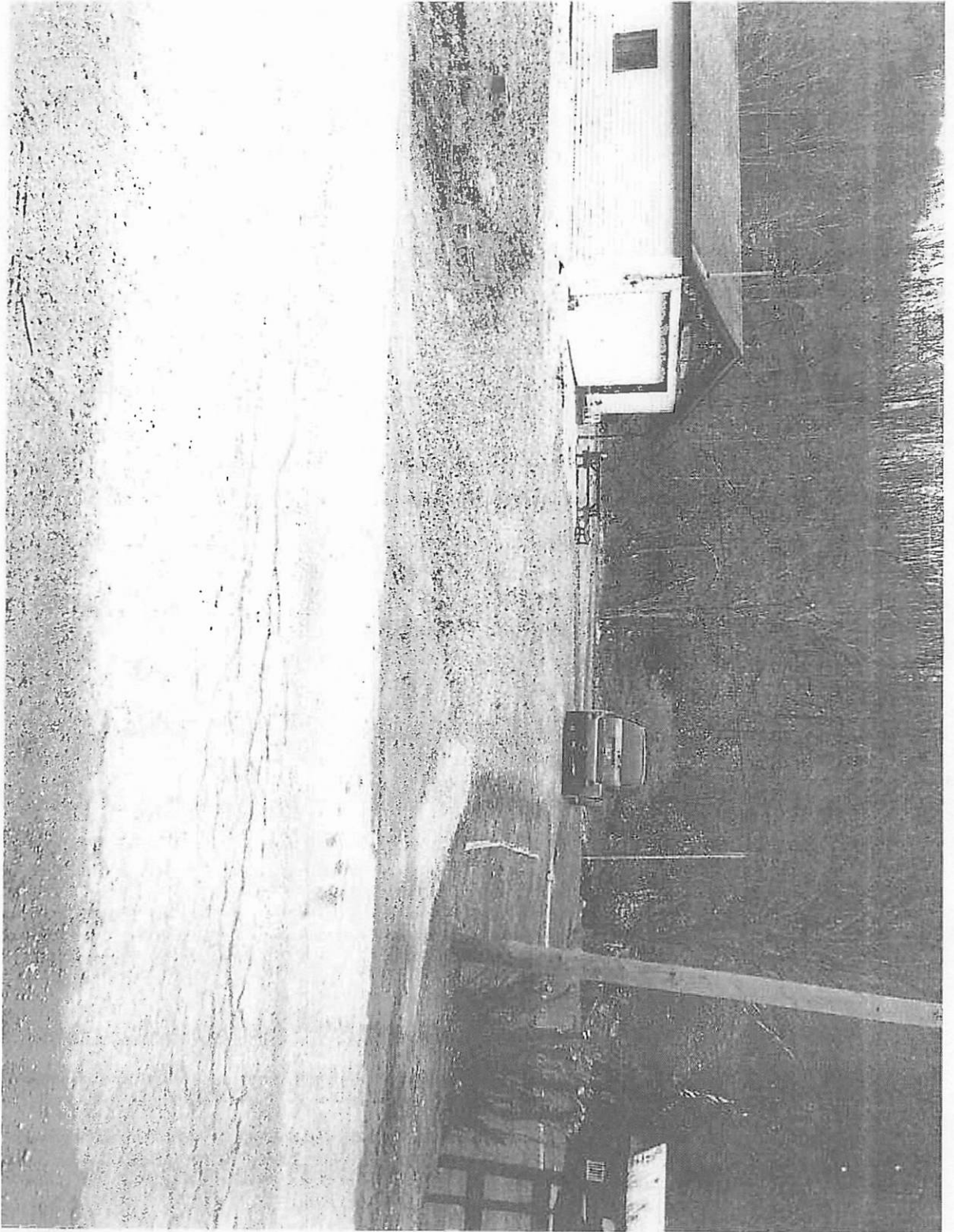


*NORTH*



0420130214







0420130214



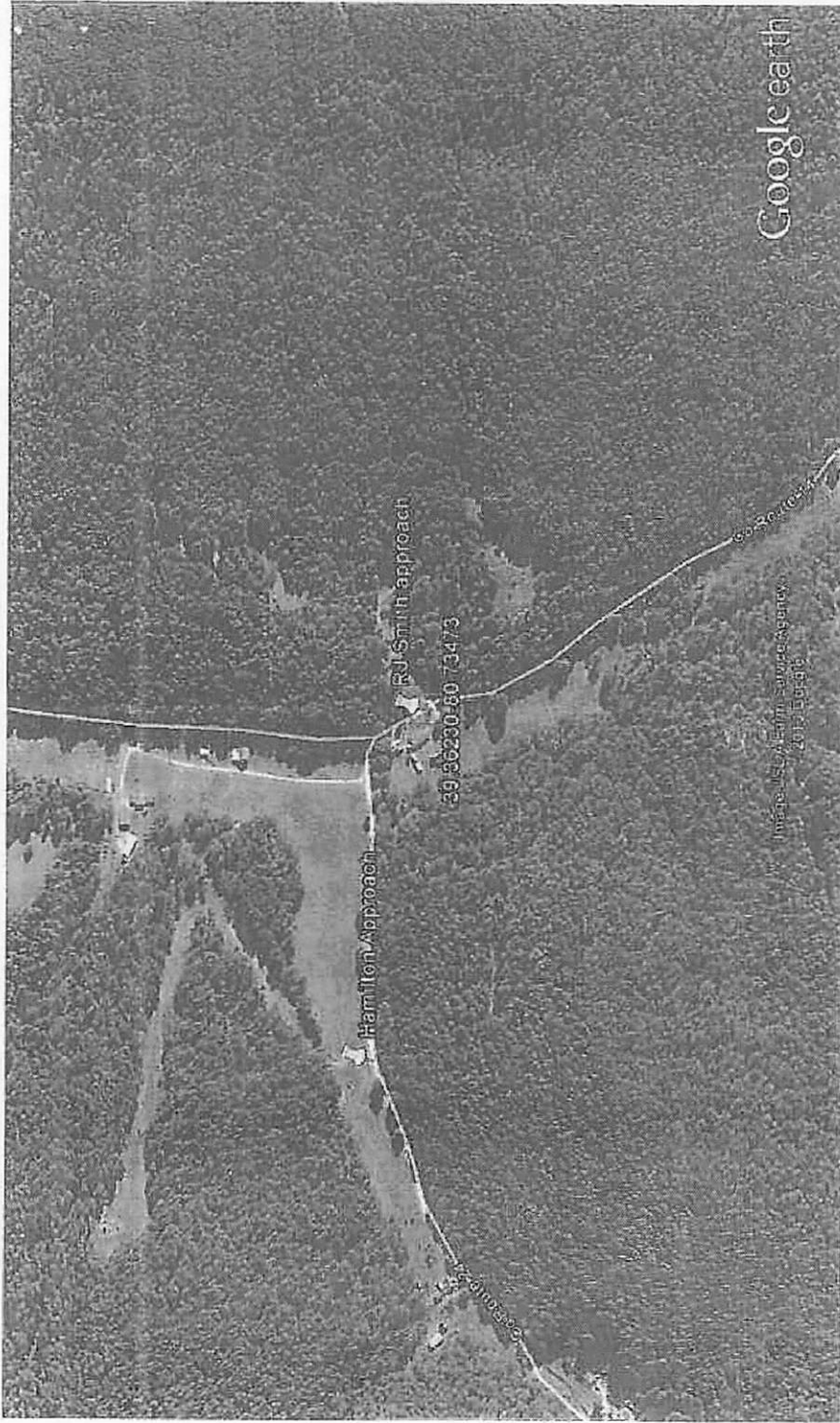




F  
C  
2  
H  
R



0420130214



Google earth

feet  
meters

2000

800



Google earth

Imagery © 2013 Earthstar Geographics



WEST VIRGINIA DEPARTMENT OF TRANSPORTATION

Division of Highways

Office of the District Engineer/Manager  
District Four

Jimmy Wriston, P. E.  
Secretary of Transportation

PO Box 4220 (EXIT 121, I-79) \* Clarksburg, WV 26302 \* 304-842-1500  
January 10, 2023

ANTERO MIDSTREAM LLC  
  
535 WHITE OAKS BOULEVARD  
BRIDGEPORT, WV 26330

Dear Applicant:

Your approved copy of Permit Number 04-2022-0865 for a T - Temporary

permit type is enclosed. A description of the work is on the permit.

Please contact the District Four office:

**Lacy Pratt 304-326-0091**

at least 48 hours in advance of the date you plan to begin work so arrangements can be made to inspect the work authorized by the permit.

**Failure to comply will result in cancellation of your permit.**

A copy of this permit is to be available on the job at all times while the work is in progress for inspection by the West Virginia Division of Highways' personnel.

Sincerely,

*Michael C. Daley, DM*

District Engineer / District Manager

*Lacy Pratt*

Permit Supervisor

Initials: MD:MD:lp

Attachments: Yes

Enclosure: No

cc:OM 0409 O&G file



**Addendum to Permit 04-2022-0865**

This addendum, made this 10<sup>th</sup> day of January 2023, between the West Virginia Department of Transportation, Division of Highways, a statutory company hereinafter called the DIVISION and

**Antero Midstream, LLC**

Address: **535 White Oaks Blvd., Bridgeport, WV 26330** Phone: **(304) 842-4198**

hereinafter called APPLICANT.

The Applicant has filed with the DIVISION a written application for the following named routes and locations:

**Doddridge County Route SLS 3, Big Flint Road at Mile Post 2.626**

- ❖ Road conditions have been verified by a route review filming and any further degradation will be the responsibility of the applicant to restore. Release of the applicant's bond will be determined by a final route review
  - ❖ Utilize CASE A6 Traffic Control.
  - ❖ Perform repairs as necessary during operation. A new permit must be obtained for repair work beyond maintenance activities.
  - ❖ Approaches that have a positive grade must slope the approach for natural drainage toward parallel ditch or have a trench drain.
  - ❖ Temporary approaches are to be reclaimed, ditch line restored, area seeded and mulched upon completion of project.
  - ❖ Temporary approaches wanting kept in place by landowner must require new permit by landowner.
- 
- After completion of the project, a joint review of roads will be filmed and evaluated to assure roads have been repaired to existing condition or better.
  - No travel on School Bus Routes during their traversing operational hours on above mentioned route on bi-directional roadways where the lane widths are less than 10 ft.
  - Pilot Vehicle required for all oversized loads.
  - Ditch lines to be maintained by applicant. \*FDR or equivalent may be required to stabilize road to uphold increased traffic and heavy and excess amount of loads after slide repairs are performed. Centerline of roadway cannot be relocated without an agreement between WV DOH and the Applicant. This work requires an advance notice and prior approval by Maintenance/Design Engineer.
  - Repairs that will include "Hot Mix Asphalt" will have the following testing requirement: The supplier will be responsible for testing at the plant; Compaction testing will be as per WV DOH specifications.
  - The Division of Highways shall have the right at all times to inspect the work, and if such inspections should reveal that the work is not done according to specifications, upon being so advised by the Division, the Applicant agrees to take immediate corrective actions.

---

APPLICANT shall properly repair and maintain any and all damages that may result to said bridges, highways, shoulders and ditches from hauling activities of APPLICANT, its agents, contractors and employees, to as good a condition prior to commencement of APPLICANT's operation or as when the permit was issued, as determined by the District Engineer/Manager of the DIVISION having jurisdiction over the work permitted, or pay damages therefore in the amount to sufficiently restore such bridges, roads, highways, shoulders and ditches to original condition; and shall reimburse the DIVISION for all inspection costs incurred by it in connection with said work and repairs of such damages and faithfully comply with all terms and conditions of said permits and save harmless the DIVISION and the State of West Virginia from all losses resulting from the conduct of said work and repairs; provided that all projects covered by this blanket bond have been restored to original or better condition; then this bond shall be released; or otherwise will remain in full force and effect.

# West Virginia Department of Transportation Division of Highways Right of Way Entry Permit Application

PERMIT NO. 04-2022-0865

By signing below, APPLICANT agrees to all terms and conditions (see page 2) associated with this permit to enter upon, under, over, or across the state road right(s) of way of the State of West Virginia.

Applicant: Antero Midstream, LLC

Address: 535 White Oaks Boulevard City: Bridgeport State: WV Zip: 26330

Phone Number: (304) 842-4198 Email: jdepoy@anteroresources.com

Route Type: US WV County Route Number: 3 Milepost: 2.626 County: Doddridge

Latitude/Longitude at/along Roadway (in whole degrees): 39.3658311, -80.7188172

Description of Work: To construct a temporary construction access on the ~~eastern~~ <sup>north</sup> side of CR3 for the  
Crimson SWL project. All work shall comply with WV DOT/DOH specifications. **Minimum 15" diameter culvert required.**

**Sight distance fails, traffic control required, see case A-6 attached.**

A11568

AR 2

Length of Installation: \_\_\_\_\_ Estimated Construction Duration: \_\_\_\_\_

DOH Project Number/Name (if applicable): \_\_\_\_\_

Inspection Fees (must check one):

- For any inspection fees incurred under this permit
- At \$0.85 per linear foot of water line installed under this permit
- At \$3.37 per linear foot of sewer line installed under this permit

Applicant: *John Depoy*

Applicant Title: Design Manager

Applicant Printed Name: John Depoy

Date: 12/16/22

DOH Reviewer: *Darcy Pratt*

DOH Reviewer Title: Permit Supervisor

DOH Approver: *[Signature]*

DOH Approver Title: For District Maintenance Engineer

FOR DIVISION USE ONLY

DEPOSIT/BOND REQUIRED:  YES  NO

DEPOSIT/BOND AMOUNT: 1,000,000.00

Check Attached  Bond Attached  Bond On File

BOND NUMBER: LPM9062891 DATE: 2/21/12

INSPECTION:  By Owner/Consultant  By Division

Full Time  Part Time

Reimbursable (Authorization \_\_\_\_\_)

Periodic

No Cost

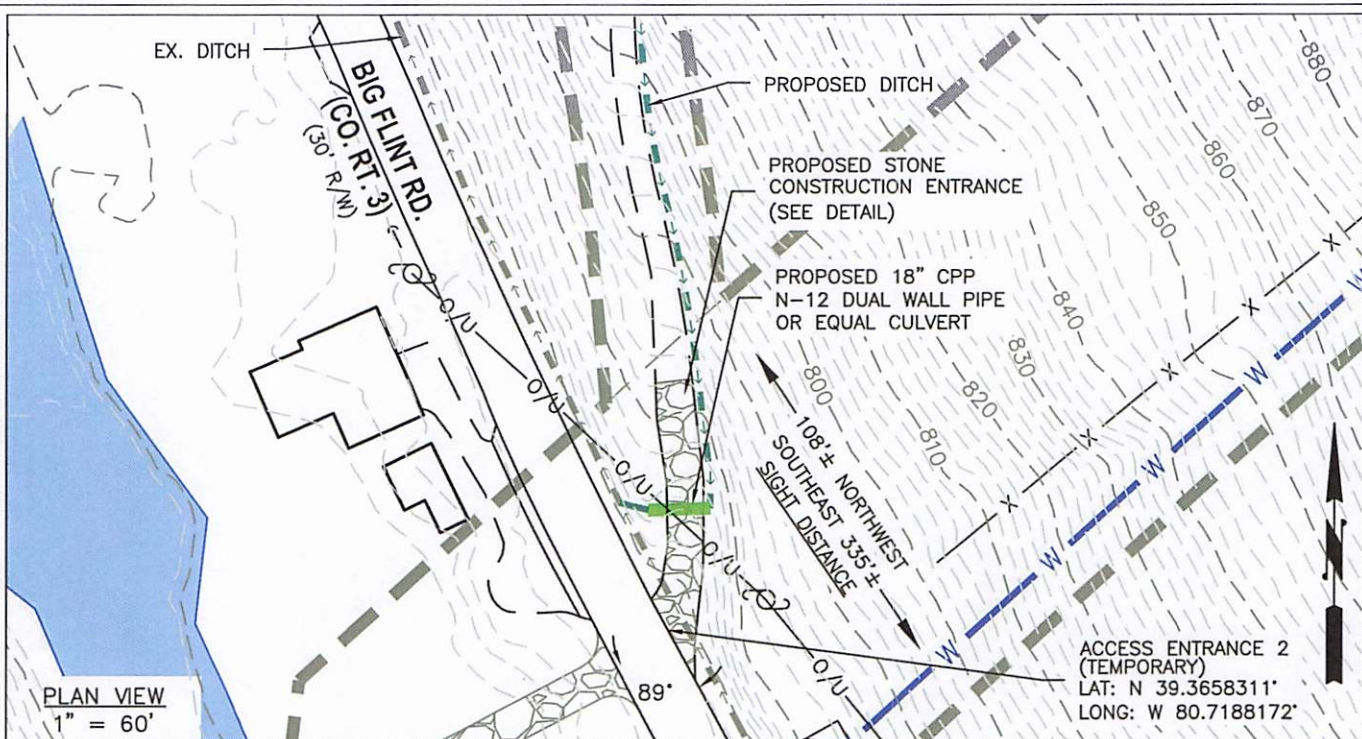
PERMIT ISSUE DATE: \_\_\_\_\_



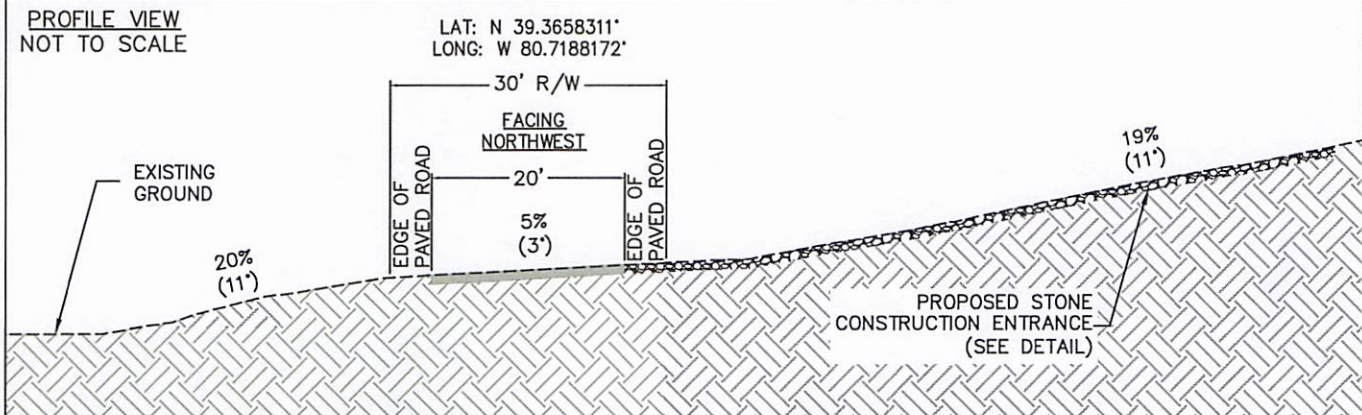
## TERMS AND CONDITIONS

1. This permit, between the WEST VIRGINIA DEPARTMENT OF TRANSPORTATION, DIVISION OF HIGHWAYS, a statutory corporation, hereinafter called "DIVISION" and APPLICANT, a person, firm or corporation, listed on page one.
2. In consideration of the conditions hereinafter set forth and in accordance with all state and federal laws, including but not limited to, W. Va. Code §17-2E-1 et seq., §17-4-8, §17-16-6, §17-16-9, §31H-1-1 et seq., and any related rules, regulations, policies, manuals, or guidelines, APPLICANT does hereby apply to enter DIVISION's right(s) of way listed on page one, for the purpose listed in Description of Work on page one.
3. APPLICANT shall deposit with DIVISION an official, certified or cashier's check, or executed bond with surety satisfactory to DIVISION to cover any damage and inspection costs DIVISION may sustain by reason of the issuing of this permit, including any expense incurred in restoring said right(s) of way to original condition or the proper repair of any and all damages arising from, related to, or otherwise connected to said entry.
4. APPLICANT agrees to reimburse DIVISION for inspection costs as listed on page one.
5. **APPLICANT shall notify DIVISION at least 48 hours in advance of the date the work will begin. Failure to comply may result in cancellation of this permit.**
6. APPLICANT shall notify DIVISION upon completion of any work authorized under this permit. If APPLICANT's work is anticipated to extend beyond the estimated construction duration indicated on page one, APPLICANT shall notify the DIVISION as soon as possible. Failure to comply may result in additional charges.
7. APPLICANT agrees to protect all users of the road right(s) of way, as well as all employees and equipment of APPLICANT and DIVISION, at all times in accordance with the current Division of Highways manual, "[Manual on Temporary Traffic Control for Streets and Highways](https://transportation.wv.gov/highways/traffic/Pages/default.aspx)" (<https://transportation.wv.gov/highways/traffic/Pages/default.aspx>).
8. APPLICANT agrees to comply with all applicable state and federal laws related to the entry that is the subject of this permit, including but not limited to the requirement to provide DIVISION copies of any NEPA clearance documentation for utility installations along or across the Interstate Highway System and/or controlled-access right(s) of way.
9. The person, firm or corporation to whom a permit is issued agrees to defend, indemnify, and hold the State of West Virginia and DIVISION harmless on account of any damages to persons or property which may arise during the process of the work authorized by this permit or by reason thereof.
10. Applications for permission to perform work within highway right(s) of way shall be made on DIVISION's standard permit form and shall be signed by the authorized representative of the person, firm or corporation applying.
11. The APPLICANT shall give detailed information concerning the nature of the entry and any work to be performed, and the application must include plans sufficient to show the same.
12. Any work authorized under this permit shall be completed on or before one calendar year from the issue date listed on page one, unless otherwise specified or approved by DIVISION.
13. APPLICANT, its agents, successor, heirs or assigns, contractors or any other person, firm or corporation working under APPLICANT's real or apparent authority, shall perform the work in a manner satisfactory to DIVISION. Damage to the right(s) of way resulting at any time from work authorized under this permit shall be repaired by APPLICANT. Unsatisfactory repairs, at the sole discretion of DIVISION, may be corrected by DIVISION or its authorized agent and the cost thereof paid by APPLICANT.
14. DIVISION shall not be liable for any damage or costs incurred by APPLICANT arising from or related to DIVISION's construction or maintenance of DIVISION's facilities.
15. Utility installation(s) shall be in accordance with the current manual, "[Accommodation of Utilities on Highway Right of Way](https://transportation.wv.gov/highways/right-of-way/Pages/Utility-Publications.aspx)" (<https://transportation.wv.gov/highways/right-of-way/Pages/Utility-Publications.aspx>).
16. Driveway construction shall be in accordance with the current manual, "[Rules and Regulations for Constructing Driveways on State Highway Rights-of-Way](https://transportation.wv.gov/highways/traffic/Pages/default.aspx)" (<https://transportation.wv.gov/highways/traffic/Pages/default.aspx>).
17. DIVISION reserves the right to cancel this permit at any time.
18. This permit is issued only insofar as DIVISION has a right to do so. APPLICANT has sole responsibility to secure all necessary rights or permissions for any third-party property interests related to the entry, known or unknown. APPLICANT, by signing on page one, hereby warrants that, to the extent its entry onto DIVISION's right(s) of way involves or affects any other entity's property, real or personal, on or within DIVISION's right(s) of way, that APPLICANT has full legal authorization or the legal right to do so. To the fullest extent permitted by law, APPLICANT agrees to defend, indemnify, and hold harmless DIVISION for damage to any persons or property arising from APPLICANT's breach of this representation and warranty.
19. All attachments are incorporated into this permit. To the extent of any conflict, the terms of this permit shall control.

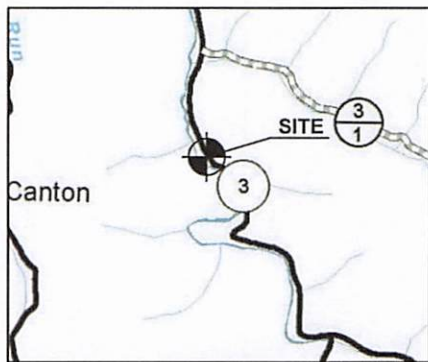




PLAN VIEW  
1" = 60'



PROFILE VIEW  
NOT TO SCALE



VICINITY MAP  
NOT TO SCALE

**THRASHER**

THE THRASHER GROUP, INC.  
600 WHITE OAKS BLVD.  
BRIDGEPORT, WV 26330  
PHONE 304-624-4108

ANTERO MIDSTREAM LLC

CRIMSON SOUTH SWL  
ACCESS ENTRANCE 2  
COUNTY ROUTE 3, BIG FLINT RD. (PAVED)

DODDRIDGE COUNTY, WEST VIRGINIA

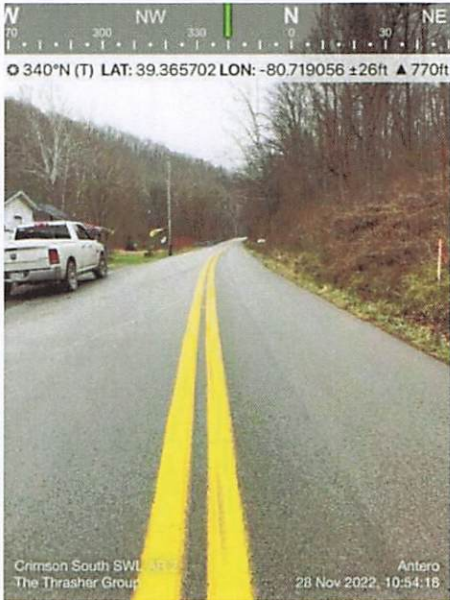
11/22/2022	SCALE	REVISED	STA.
	AS SHOWN	11/29/2022	38+89

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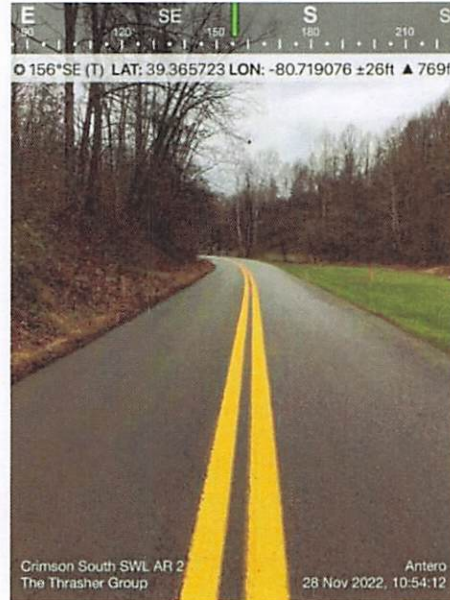
AR2



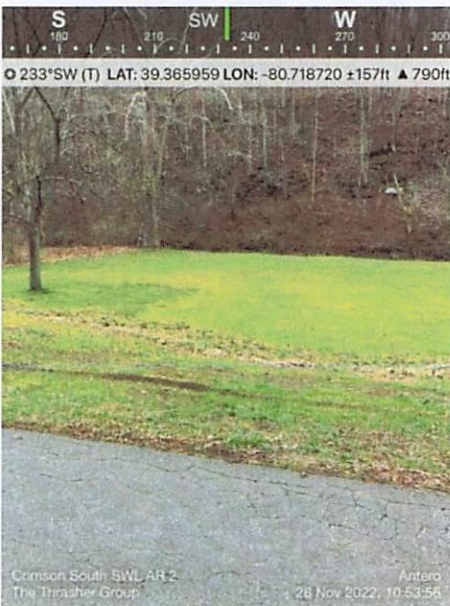
**ACCESS ENTRANCE 2**  
CRIMSON SOUTH SWL PIPELINE  
COUNTY ROUTE 3  
DODDRIDGE COUNTY, WV  
LAT: 39.3658311° N  
LON: 80.7188172° W



**FACING NORTHWEST**  
**SIGHT DISTANCE: 108'**



**FACING SOUTHEAST**  
**SIGHT DISTANCE: 335'**



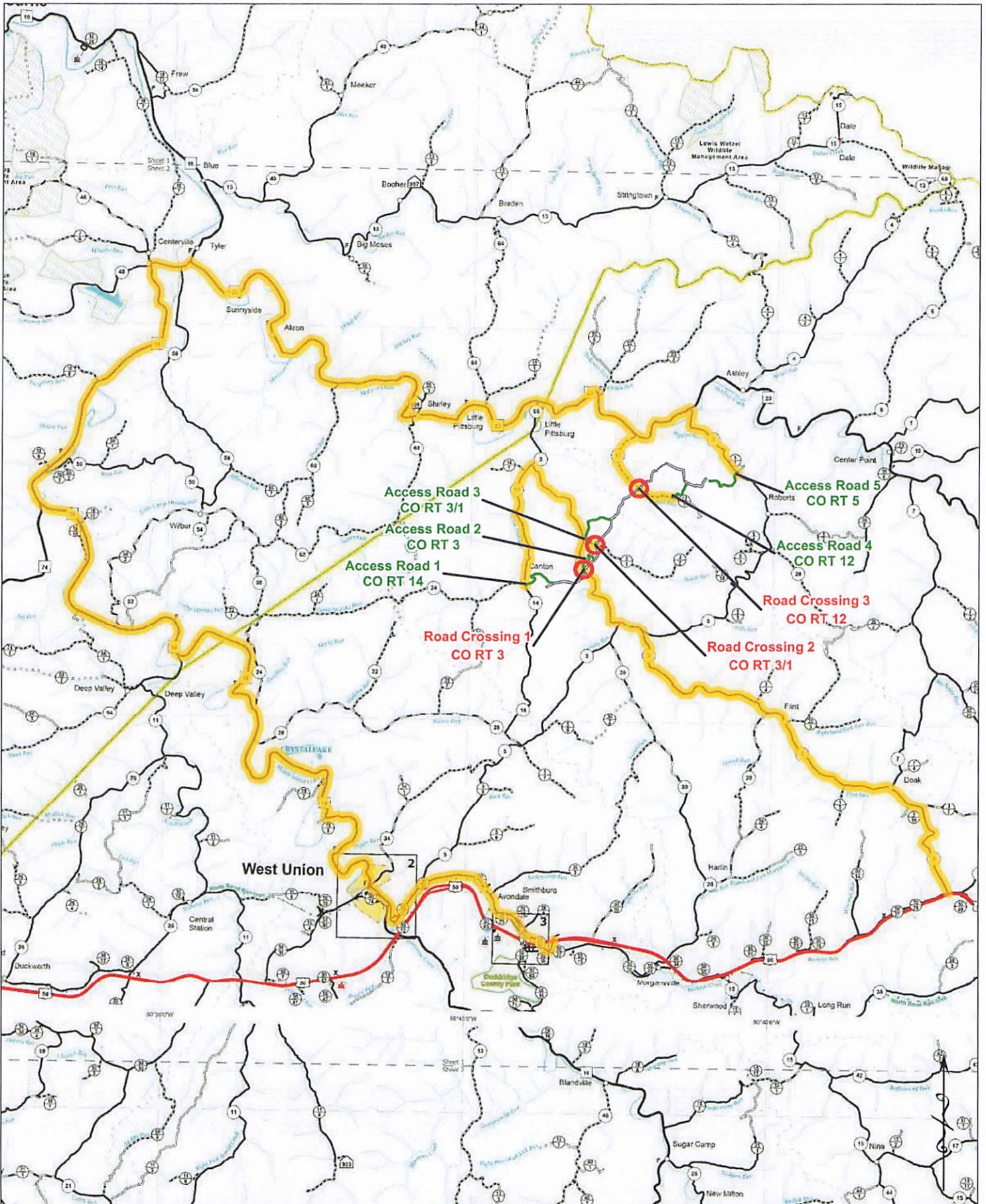
**FACING SOUTHWEST**  
**Looking across from approach.**



**FACING NORTHEAST**  
**Looking at approach.**







<p>The information contained herein is the sole property of The Thrasher Group, Inc. Reproduction of these documents in whole or in part, for any reason without prior written permission, is strictly prohibited. Copyright (c) 2015 THE THRASHER GROUP, INC.</p>	<p>Scale: 1 inch = 9,500 feet</p> <p>Drawn By: [ ] Date: [ ]</p> <p>Checked: [ ] Date: [ ]</p> <p>Approved: [ ] Date: [ ]</p> <p>Survey Date: [ ]</p> <p>Survey By: [ ]</p> <p>Field No.: [ ]</p> <p>Field Date: [ ]</p>	<p><b>THRASHER</b></p> <p><b>Antero</b> Midstream</p>	<p>Phase No. [ ]</p> <p>Contract No. [ ]</p> <p>Project No. [ ]</p> <p>050-11638</p>	<p>Sheet No. [ ]</p> <p>Index</p>
	<p><b>○</b> Crossing</p> <p><b>—</b> Access Road</p> <p><b>■</b> LOD</p> <p><b>—</b> Haul Route</p>		<p><b>Crimson South SWL</b> Highway Overview Map Doddrige County - WV</p>	
	<p>West Union</p> <p>Smithburg</p> <p>Avondale</p> <p>Doddrige County Park</p>		<p>1</p> <p>2</p> <p>3</p>	
	<p>Map of Doddrige County, WV showing road crossings and access roads.</p>		<p>Map of Doddrige County, WV showing road crossings and access roads.</p>	

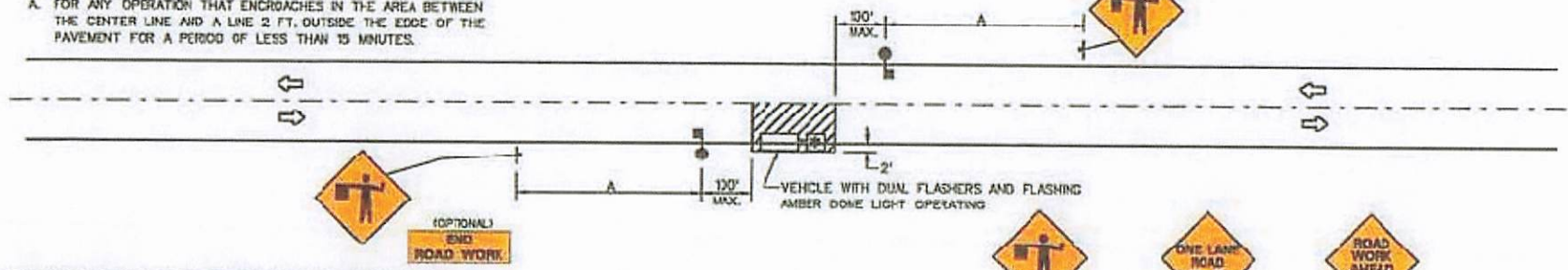
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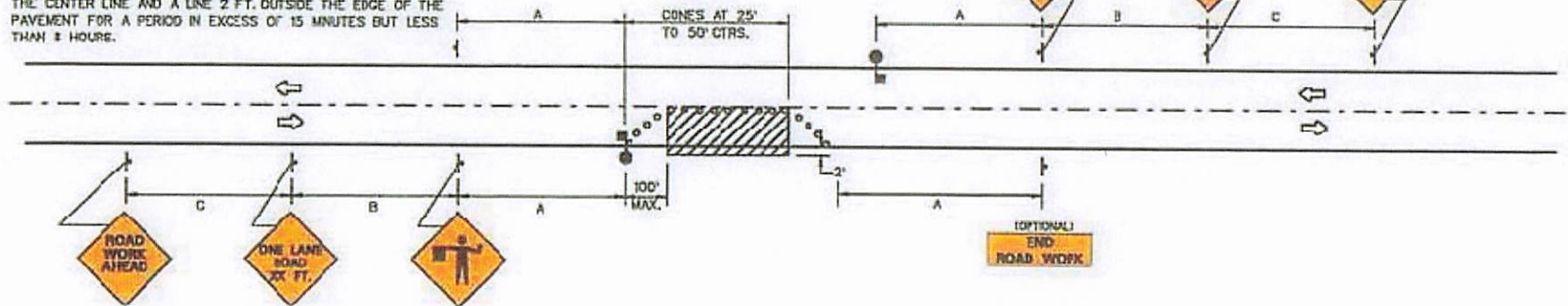




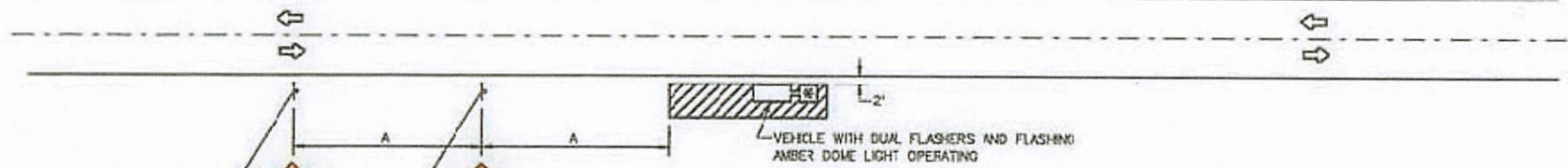
A. FOR ANY OPERATION THAT ENCROACHES IN THE AREA BETWEEN THE CENTER LINE AND A LINE 2 FT. OUTSIDE THE EDGE OF THE PAVEMENT FOR A PERIOD OF LESS THAN 15 MINUTES.



B. FOR ANY OPERATION THAT ENCROACHES IN THE AREA BETWEEN THE CENTER LINE AND A LINE 2 FT. OUTSIDE THE EDGE OF THE PAVEMENT FOR A PERIOD IN EXCESS OF 15 MINUTES BUT LESS THAN 2 HOURS.



C. FOR ANY OPERATION THAT IS MORE THAN 2 FT. OUTSIDE THE EDGE OF THE PAVEMENT FOR A PERIOD OF LESS THAN 60 MINUTES.



**SYMBOLS**

- WORK AREA.
- SIGN
- SIGN ON PORTABLE OR PERMANENT SUPPORT.
- FLAGGER WITH PADDLE.
- CONES

**GENERAL NOTES**

1. CONSTRUCTION OPERATIONS SHALL BE CONFINED TO ONE TRAFFIC LANE, LEAVING THE OPPOSITE LANE OPEN TO TRAFFIC. AT LEAST 300 FT. OF BOTH TRAFFIC LANES SHALL BE AVAILABLE FOR TRAFFIC MOVEMENT AT INTERVALS NOT GREATER THAN 1,000 FT. A COMPLETE TRAFFIC CONTROL PLAN MUST BE APPROVED FOR ANY PROJECT EXPECTING TO EXCEED 1,000 FT. IN LENGTH INCLUDING BOTH TAPER AND WORK AREAS.
2. FOR LOW-VOLUME SITUATIONS WITH SHORT WORK ZONES ON STRAIGHT ROADWAYS WHERE THE FLAGGER IS VISIBLE TO ROAD USERS APPROACHING FROM BOTH DIRECTIONS, A SINGLE FLAGGER, POSITIONED TO BE VISIBLE TO ROAD USERS APPROACHING FROM BOTH DIRECTIONS, MAY BE USED.
3. FLASHING WARNING LIGHTS AND/OR FLAGS MAY BE USED TO CALL ATTENTION TO THE ADVANCE WARNING SIGNS.
4. THE FLAGGERS SHALL BE IN SIGHT OF EACH OTHER OR IN DIRECT COMMUNICATION AT ALL TIMES.
5. ALL SIGNS ARE TO BE REMOVED AT COMPLETION OF THE DAY'S OPERATIONS.
6. FOR MULTILANE DIVIDED ROADWAYS THE ADVANCE WARNING SIGNS FOR TRAFFIC APPROACHING FROM THE OPPOSITE DIRECTION MAY BE OMITTED IF APPROVED BY THE ENGINEER.

**SUGGESTED ADVANCE WARNING SIGN SPACING**

ROAD TYPE	DISTANCE BETWEEN SIGNS (IN FT)		
	A	B	C
URBAN (LOW SPEED)*	100	100	100
URBAN (HIGH SPEED)*	350	350	350
RURAL	500	500	500
EXPRESSWAY/FREWAY	1,000	1,500	2,540

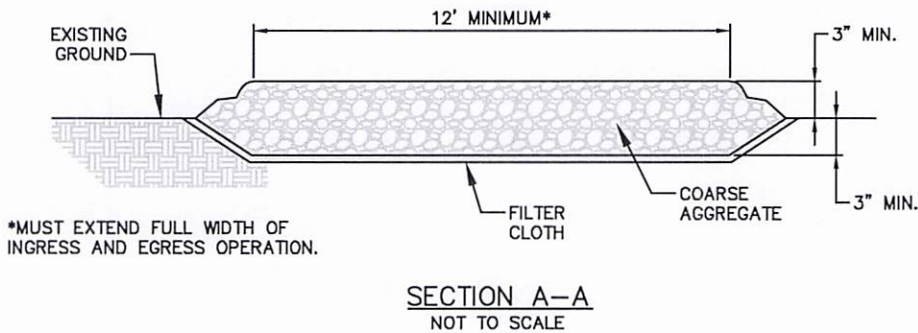
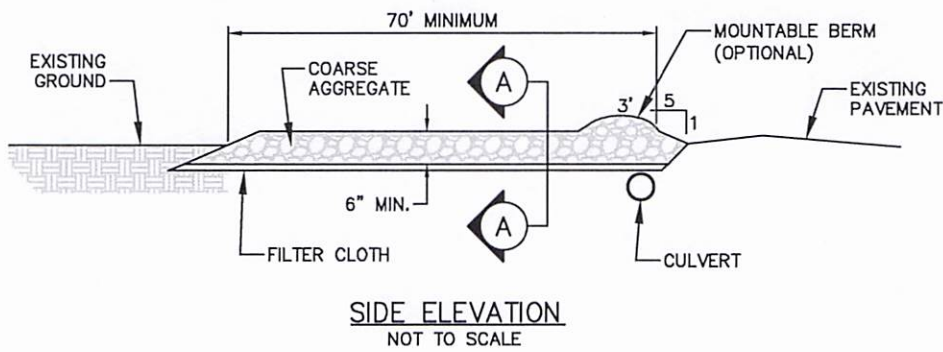
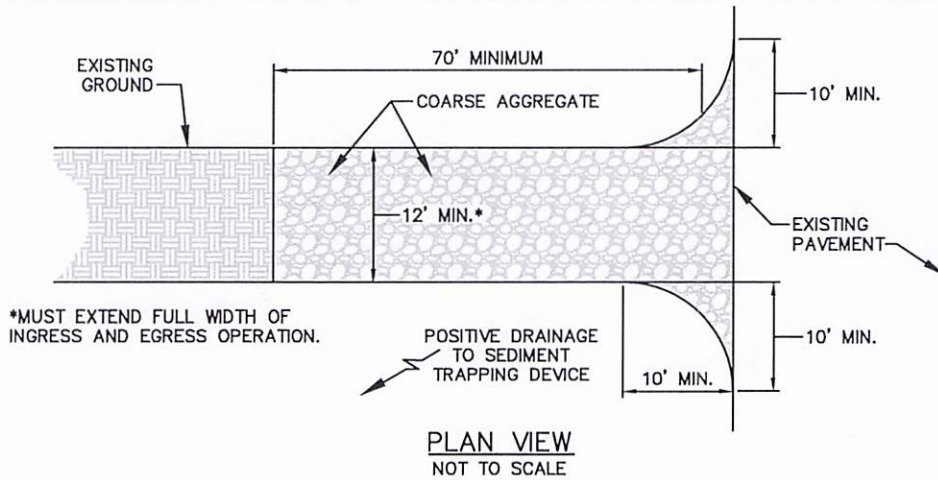
\*SPEED CATEGORY TO BE DETERMINED BY WV DCH

**TYPICAL APPLICATIONS**

- PATCHING PAVEMENT.
- FIELD SURVEY.
- CLEANING UP DEBRIS ON PAVEMENT.
- CROSSWALK PAINTING.

**CASE A6**

TWO-LANE, TWO-WAY TRAFFIC  
SHORT-TERM OPERATIONS  
DAYTIME ONLY



**STONE CONSTRUCTION ENTRANCE**  
NOT TO SCALE

**THRASHER**

THE THRASHER GROUP, INC.  
600 WHITE OAKS BLVD.  
BRIDGEPORT, WV 26330  
PHONE 304-624-4108

ANTERO MIDSTREAM LLC

TYPICAL ACCESS ENTRANCE  
STONE CONSTRUCTION DETAIL

DODDRIDGE COUNTY, WEST VIRGINIA

SCALE  
NTS

REVISED

D1





WEST VIRGINIA DEPARTMENT OF TRANSPORTATION

**Division of Highways**

Office of the District Engineer/Manager

District Four

Post Office Box 4220 · Clarksburg, West Virginia 26302 · (304) 842-1500

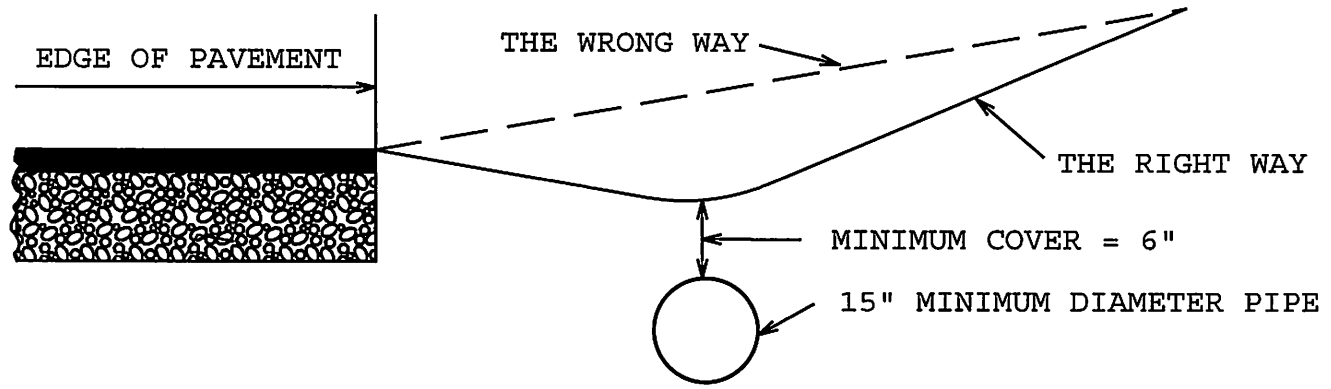
**Drilling Operators Permit Conditions & Requirements**

1. Applicant shall ensure the driveway is constructed in accordance with the [WVDOH Driveway Manual](#). The surfacing is specifically addressed on pages 20 and 21 under Section 8.4.6.
2. Prior to permit expiration, applicant must remove this temporary access and return DOH right-of-way to original or better condition; OR the property owner must submit a separate application to obtain a permanent permit.
3. If required, applicant must utilize appropriate traffic control during any use of the access. Failure to provide traffic control will void this permit and bond.
4. At no time may the drilling operation encroach on DOH right-of-way. Specifically, no loading, parking, or staging operations may be conducted on the traveled way or within DOH right-of-way.
5. Vehicles accessing the site are not permitted to stop in DOH right of way or back into the traveled way for any reason.
6. Applicant is responsible for immediate removal of mud and debris from the roadway caused by any entity involved with the drilling operations.
7. Applicant must notify the Permits Office/Oil & Gas Coordinator at (304) 326-0091 when drilling operations cease due to abandoning a well. If the driveway will no longer be used, the driveway must be removed, and ditch line restored to original or better condition, including the removal of pipe. The property owner must place the approach in their name for the driveway to remain. Note that bonds will not be released until every approach issued to your company has been removed or placed in the property owner's name.
8. Applicant shall ensure the driveway is constructed in accordance with the [WVDOH Driveway Manual](#) and that sight lines are free from vegetation or other obstructions at all times during use of the driveway.

**WVDOH Driveway Manual:**

<https://transportation.wv.gov/highways/engineering/Manuals/Traffic/Driveway.pdf>

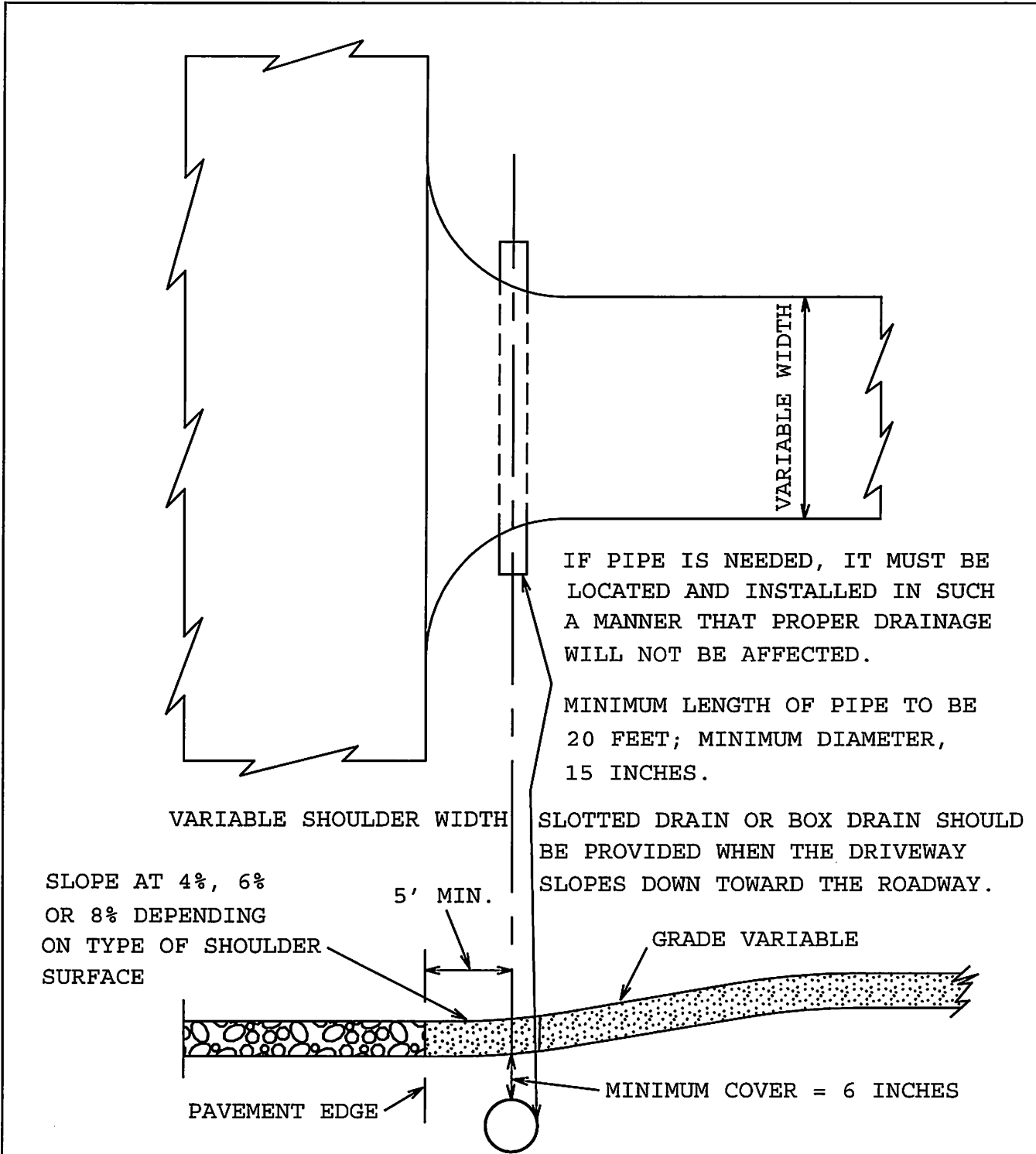
**Failure to comply with any condition or requirement will void this permit.**



PIPE INSTALLATION FOR SIDE ROAD  
APPROACH WITH STEEP GRADE

FIGURE 17





PIPE INSTALLATION FOR SIDE ROAD  
OR PRIVATE ENTRANCE APPROACH

FIGURE 18

# FEDERAL HIGHWAY ADMINISTRATION (FHWA)

## SUMMARY OF PILOT/ESCORT VEHICLE OPERATORS BEST PRACTICES GUIDELINES

### I. PRE-TRIP PLANNING

- ✓ Route review
- ✓ Pilot/Escort vehicle operator and equipment checklist

### II. PRE-TRIP SAFETY MEETING

- ✓ Review load limitations
- ✓ Test communication equipment
- ✓ Coordinate with local law enforcement

### III. LOAD MOVEMENT

- ✓ Know the load, and know the law
- ✓ Position vehicles in compliance with regulations and permit requirements

### IV. TRAFFIC CONTROL

- ✓ Develop and follow a traffic control plan
- ✓ Use proper equipment
- ✓ Follow defensive flagging guidelines

### V. SPECIAL CHALLENGES

- ✓ Railroad Crossings
- ✓ Tall loads, overhead obstructions
- ✓ Steerable Trailers/Tillerman Operations

### VI. EMERGENCY PROCEDURES

- ✓ Injury issues

### VII. POST-TRIP ACTIVITIES

- ✓ Turn off warning lights, remove OVERSIZE LOAD signage
- ✓ Review/evaluate procedure

<https://ops.fhwa.dot.gov/publications/fhwahop16051/index.htm>





WEST VIRGINIA DEPARTMENT OF TRANSPORTATION

**Division of Highways**

Office of the District Engineer/Manager  
District Four

Jimmy Wriston, P. E.  
Secretary of Transportation

PO Box 4220 (EXIT 121, I-79) \* Clarksburg, WV 26302 \* 304-842-1500  
January 10, 2023

ANTERO MIDSTREAM LLC

535 WHITE OAKS BOULEVARD  
BRIDGEPORT, WV 26330

Dear Applicant:

Your approved copy of Permit Number 04-2022-0866 for a T - Temporary

permit type is enclosed. A description of the work is on the permit.

Please contact the District Four office:

**Lacy Pratt 304-326-0091**

at least 48 hours in advance of the date you plan to begin work so arrangements can be made to inspect the work authorized by the permit.

**Failure to comply will result in cancellation of your permit.**

A copy of this permit is to be available on the job at all times while the work is in progress for inspection by the West Virginia Division of Highways' personnel.

Sincerely,

*Michael C. Daley, DM*

District Engineer / District Manager

*Lacy Pratt*

Permit Supervisor

Initials: MD:MD:lp

Attachments: Yes

Enclosure: No

cc:OM 0409 O&G file

**Addendum to Permit 04-2022-0866**

This addendum, made this 10<sup>th</sup> day of January 2023, between the West Virginia Department of Transportation, Division of Highways, a statutory company hereinafter called the DIVISION and

**Antero Midstream, LLC**

Address: **535 White Oaks Blvd., Bridgeport, WV 26330** Phone: **(304) 842-4198**

hereinafter called APPLICANT.

The Applicant has filed with the DIVISION a written application for the following named routes and locations:

**Doddridge County Route SLS 3/1, Brush Run at Mile Post 0.083**

- ❖ Road conditions have been verified by a route review filming and any further degradation will be the responsibility of the applicant to restore. Release of the applicant's bond will be determined by a final route review
  - ❖ Utilize CASE A6 Traffic Control.
  - ❖ Perform repairs as necessary during operation. A new permit must be obtained for repair work beyond maintenance activities.
  - ❖ Approaches that have a positive grade must slope the approach for natural drainage toward parallel ditch or have a trench drain.
  - ❖ Temporary approaches are to be reclaimed, ditch line restored, area seeded and mulched upon completion of project.
  - ❖ Temporary approaches wanting kept in place by landowner must require new permit by landowner.
- 
- After completion of the project, a joint review of roads will be filmed and evaluated to assure roads have been repaired to existing condition or better.
  - No travel on School Bus Routes during their traversing operational hours on above mentioned route on bi-directional roadways where the lane widths are less than 10 ft.
  - Pilot Vehicle required for all oversized loads.
  - Ditch lines to be maintained by applicant. \*FDR or equivalent may be required to stabilize road to uphold increased traffic and heavy and excess amount of loads after slide repairs are performed. Centerline of roadway cannot be relocated without an agreement between WV DOH and the Applicant. This work requires an advance notice and prior approval by Maintenance/Design Engineer.
  - Repairs that will include "Hot Mix Asphalt" will have the following testing requirement: The supplier will be responsible for testing at the plant; Compaction testing will be as per WV DOH specifications.
  - The Division of Highways shall have the right at all times to inspect the work, and if such inspections should reveal that the work is not done according to specifications, upon being so advised by the Division, the Applicant agrees to take immediate corrective actions.

---

APPLICANT shall properly repair and maintain any and all damages that may result to said bridges, highways, shoulders and ditches from hauling activities of APPLICANT, its agents, contractors and employees, to as good a condition prior to commencement of APPLICANT's operation or as when the permit was issued, as determined by the District Engineer/Manager of the DIVISION having jurisdiction over the work permitted, or pay damages therefore in the amount to sufficiently restore such bridges, roads, highways, shoulders and ditches to original condition; and shall reimburse the DIVISION for all inspection costs incurred by it in connection with said work and repairs of such damages and faithfully comply with all terms and conditions of said permits and save harmless the DIVISION and the State of West Virginia from all losses resulting from the conduct of said work and repairs; provided that all projects covered by this blanket bond have been restored to original or better condition; then this bond shall be released; or otherwise will remain in full force and effect.

**Bond Amount: \$1,000,000.00**

**Bond Number: LPM9062891**

**Date: 02/21/2012**



# West Virginia Department of Transportation Division of Highways Right of Way Entry Permit Application

PERMIT NO. 04-2022-0866

By signing below, APPLICANT agrees to all terms and conditions (see page 2) associated with this permit to enter upon, under, over, or across the state road right(s) of way of the State of West Virginia.

Applicant: Antero Midstream, LLC

Address: 535 White Oaks Boulevard City: Bridgeport State: WV Zip: 26330

Phone Number: (304) 842-4198 Email: jdepy@anteroresources.com

Route Type: US WV County Route Number: 3/1 Milepost: 0.083 County: Doddridge

Latitude/Longitude at/along Roadway (in whole degrees): 39.3715378, -80.7173911

Description of Work: To construct a temporary construction access on the northern side of CR 3/1 for the Crimson SWL project. All work shall comply with WV DOT/DOH specifications.

A11568 AR 3

Length of Installation: \_\_\_\_\_ Estimated Construction Duration: \_\_\_\_\_

DOH Project Number/Name (if applicable): \_\_\_\_\_

Inspection Fees (must check one):

- For any inspection fees incurred under this permit
- At \$0.85 per linear foot of water line installed under this permit
- At \$3.37 per linear foot of sewer line installed under this permit

Applicant: *John Depoy*

Applicant Title: Design Manager

Applicant Printed Name: John Depoy

Date: 12/16/22

DOH Reviewer: *Lacy Pratt*

DOH Reviewer Title: Permit Supervisor

DOH Approver: *[Signature]*

DOH Approver Title: For District Maintenance Engineer

FOR DIVISION USE ONLY

DEPOSIT/BOND REQUIRED:  YES  NO

DEPOSIT/BOND AMOUNT: 1,000,000.00

Check Attached  Bond Attached  Bond On File

BOND NUMBER: LPM9062891 DATE: 2/21/12

INSPECTION:  By Owner/Consultant  Full Time  Reimbursable (Authorization \_\_\_\_\_)

By Division  Part Time

Periodic  No Cost

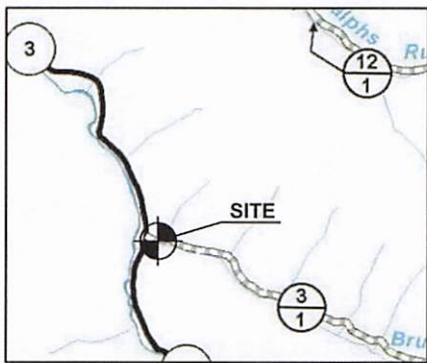
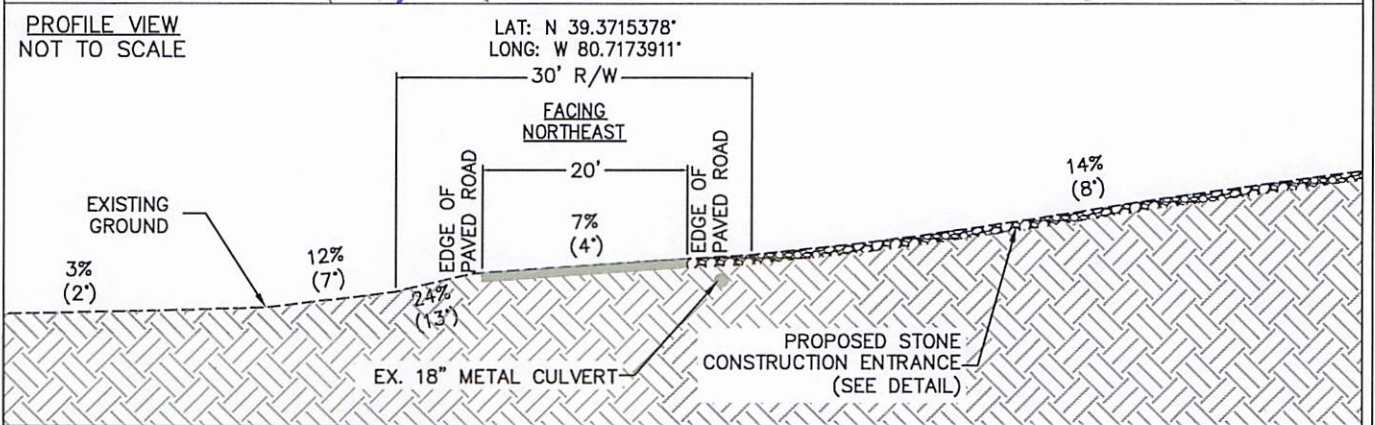
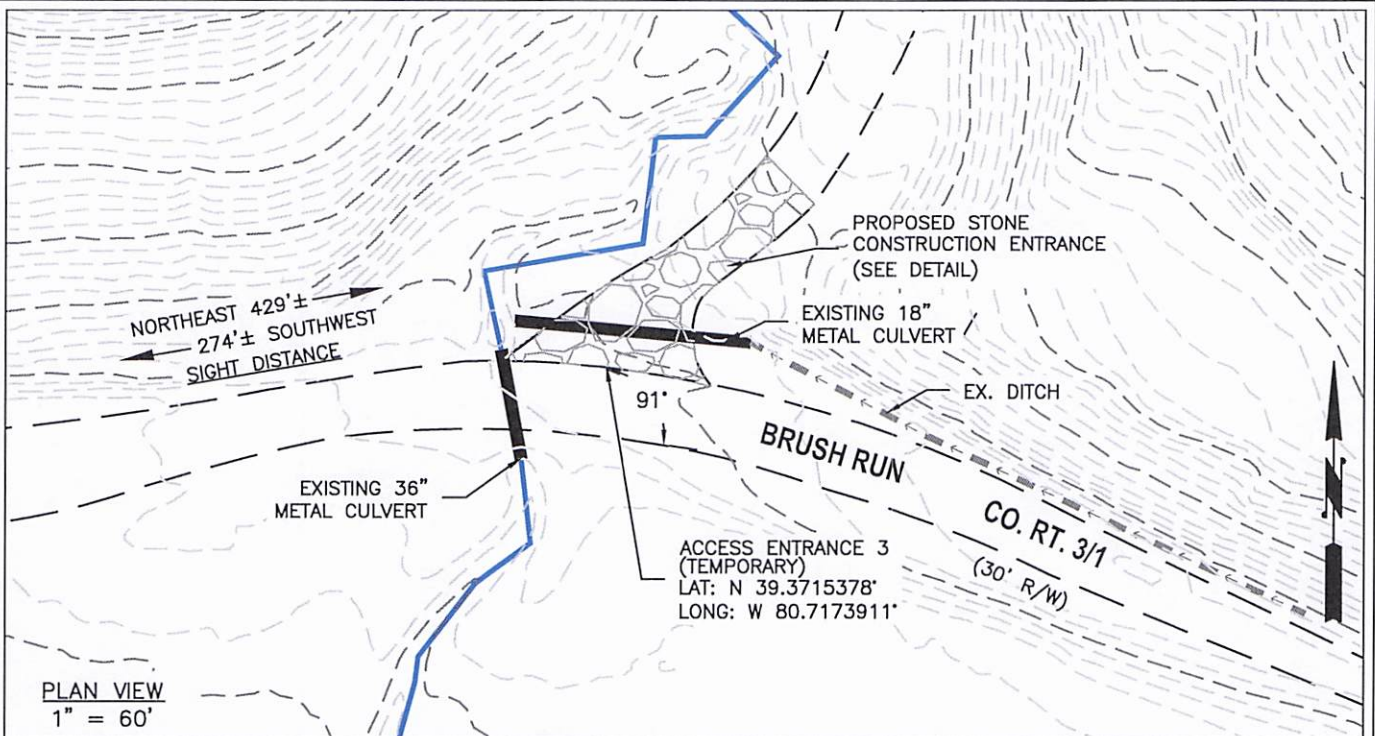
PERMIT ISSUE DATE: \_\_\_\_\_



## TERMS AND CONDITIONS

1. This permit, between the WEST VIRGINIA DEPARTMENT OF TRANSPORTATION, DIVISION OF HIGHWAYS, a statutory corporation, hereinafter called "DIVISION" and APPLICANT, a person, firm or corporation, listed on page one.
2. In consideration of the conditions hereinafter set forth and in accordance with all state and federal laws, including but not limited to, W. Va. Code §17-2E-1 et seq., §17-4-8, §17-16-6, §17-16-9, §31H-1-1 et seq., and any related rules, regulations, policies, manuals, or guidelines, APPLICANT does hereby apply to enter DIVISION's right(s) of way listed on page one, for the purpose listed in Description of Work on page one.
3. APPLICANT shall deposit with DIVISION an official, certified or cashier's check, or executed bond with surety satisfactory to DIVISION to cover any damage and inspection costs DIVISION may sustain by reason of the issuing of this permit, including any expense incurred in restoring said right(s) of way to original condition or the proper repair of any and all damages arising from, related to, or otherwise connected to said entry.
4. APPLICANT agrees to reimburse DIVISION for inspection costs as listed on page one.
5. **APPLICANT shall notify DIVISION at least 48 hours in advance of the date the work will begin. Failure to comply may result in cancellation of this permit.**
6. APPLICANT shall notify DIVISION upon completion of any work authorized under this permit. If APPLICANT's work is anticipated to extend beyond the estimated construction duration indicated on page one, APPLICANT shall notify the DIVISION as soon as possible. Failure to comply may result in additional charges.
7. APPLICANT agrees to protect all users of the road right(s) of way, as well as all employees and equipment of APPLICANT and DIVISION, at all times in accordance with the current Division of Highways manual, "[Manual on Temporary Traffic Control for Streets and Highways](https://transportation.wv.gov/highways/traffic/Pages/default.aspx)" (<https://transportation.wv.gov/highways/traffic/Pages/default.aspx>).
8. APPLICANT agrees to comply with all applicable state and federal laws related to the entry that is the subject of this permit, including but not limited to the requirement to provide DIVISION copies of any NEPA clearance documentation for utility installations along or across the Interstate Highway System and/or controlled-access right(s) of way.
9. The person, firm or corporation to whom a permit is issued agrees to defend, indemnify, and hold the State of West Virginia and DIVISION harmless on account of any damages to persons or property which may arise during the process of the work authorized by this permit or by reason thereof.
10. Applications for permission to perform work within highway right(s) of way shall be made on DIVISION's standard permit form and shall be signed by the authorized representative of the person, firm or corporation applying.
11. The APPLICANT shall give detailed information concerning the nature of the entry and any work to be performed, and the application must include plans sufficient to show the same.
12. Any work authorized under this permit shall be completed on or before one calendar year from the issue date listed on page one, unless otherwise specified or approved by DIVISION.
13. APPLICANT, its agents, successor, heirs or assigns, contractors or any other person, firm or corporation working under APPLICANT's real or apparent authority, shall perform the work in a manner satisfactory to DIVISION. Damage to the right(s) of way resulting at any time from work authorized under this permit shall be repaired by APPLICANT. Unsatisfactory repairs, at the sole discretion of DIVISION, may be corrected by DIVISION or its authorized agent and the cost thereof paid by APPLICANT.
14. DIVISION shall not be liable for any damage or costs incurred by APPLICANT arising from or related to DIVISION's construction or maintenance of DIVISION's facilities.
15. Utility installation(s) shall be in accordance with the current manual, "[Accommodation of Utilities on Highway Right of Way](https://transportation.wv.gov/highways/right-of-way/Pages/Utility-Publications.aspx)" (<https://transportation.wv.gov/highways/right-of-way/Pages/Utility-Publications.aspx>).
16. Driveway construction shall be in accordance with the current manual, "[Rules and Regulations for Constructing Driveways on State Highway Rights-of-Way](https://transportation.wv.gov/highways/traffic/Pages/default.aspx)" (<https://transportation.wv.gov/highways/traffic/Pages/default.aspx>).
17. DIVISION reserves the right to cancel this permit at any time.
18. This permit is issued only insofar as DIVISION has a right to do so. APPLICANT has sole responsibility to secure all necessary rights or permissions for any third-party property interests related to the entry, known or unknown. APPLICANT, by signing on page one, hereby warrants that, to the extent its entry onto DIVISION's right(s) of way involves or affects any other entity's property, real or personal, on or within DIVISION's right(s) of way, that APPLICANT has full legal authorization or the legal right to do so. To the fullest extent permitted by law, APPLICANT agrees to defend, indemnify, and hold harmless DIVISION for damage to any persons or property arising from APPLICANT's breach of this representation and warranty.
19. All attachments are incorporated into this permit. To the extent of any conflict, the terms of this permit shall control.





**THRASHER**

THE THRASHER GROUP, INC.  
600 WHITE OAKS BLVD.  
BRIDGEPORT, WV 26330  
PHONE 304-624-4108

ANTERO MIDSTREAM LLC

CRIMSON SOUTH SWL  
ACCESS ENTRANCE 3  
COUNTY ROUTE 3/1, BRUSH RUN (UNPAVED)

DODDRIDGE COUNTY, WEST VIRGINIA

11/22/2022	SCALE	REVISED	STA.
	AS SHOWN	11/29/2022	

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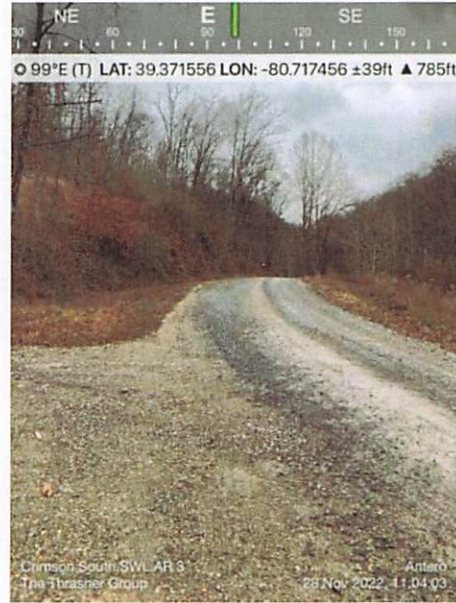
AR3



**ACCESS ENTRANCE 3**  
CRIMSON SOUTH SWL PIPELINE  
COUNTY ROUTE 3/1  
DODDRIDGE COUNTY, WV  
LAT: 39.3715378° N  
LON: 80.7173911° W



**FACING WEST**  
**SIGHT DISTANCE: 274'**



**FACING EAST**  
**SIGHT DISTANCE: 429'**



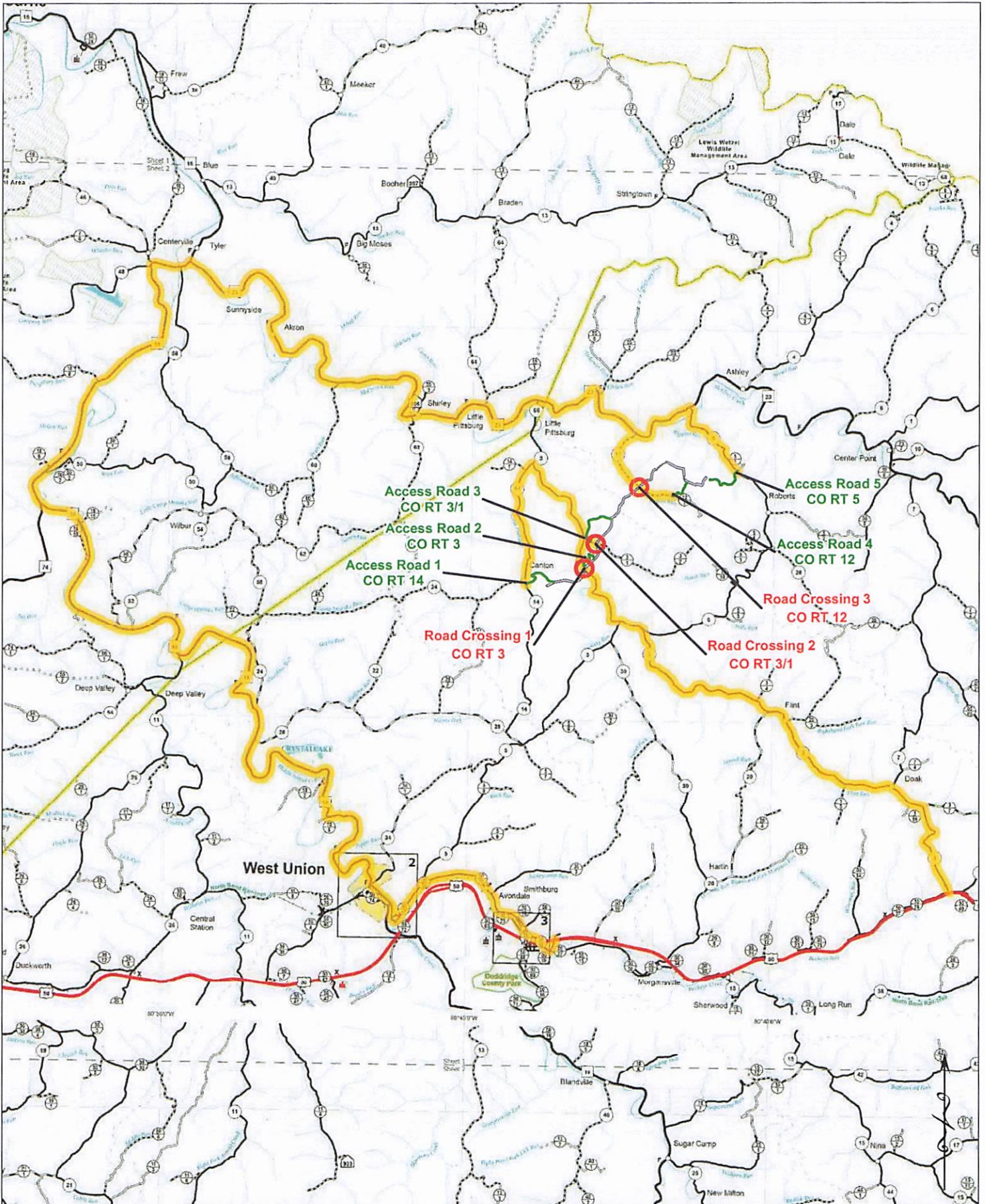
**FACING SOUTH**



**FACING NORTHEAST**







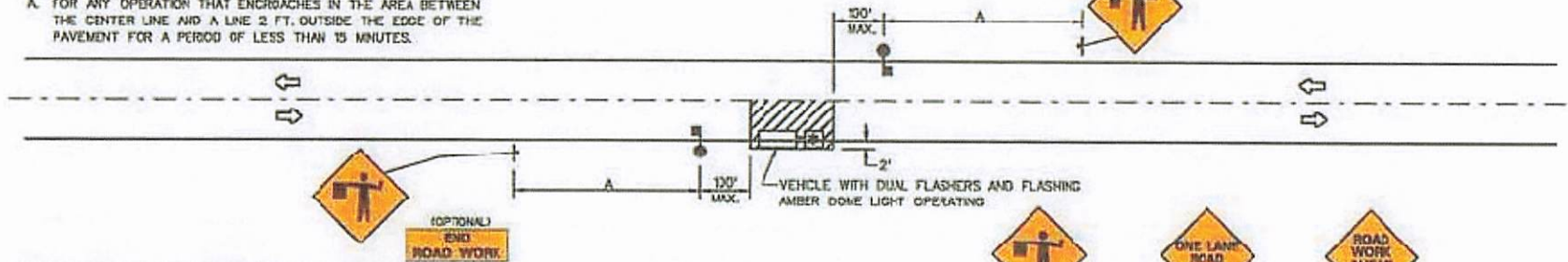
<p>The information contained herein is the sole property of Thrasher Group, Inc. Reproduction of these documents in whole or in part, for any reason without prior written permission, is strictly prohibited. Copyright (C) 2023 THE THRASHER GROUP, INC.</p>	<p>Scale: 1 inch = 6,500 feet</p> <p>Drawn by: _____ Date: _____</p> <p>Checked by: _____ Date: _____</p> <p>Approved by: _____ Date: _____</p> <p>Survey by: _____ Date: _____</p> <p>Survey No: _____</p> <p>WVD with State/County Survey License No. _____ PLS print with permission of the State of WV.</p>	<p><b>THRASHER</b></p> <p><b>Antero</b> Midstream</p>	<p>Phase No. _____</p> <p>Contract No. _____</p> <p>Project No. _____</p> <p>050-11638</p>	<p>Crimson South SWL Highway Overview Map Doddridge County - WV</p>	<p>Sheet No. _____</p> <p>Index</p>
	<p><b>○</b> Crossing</p> <p><b>—</b> Access Road</p> <p><b>■</b> LOD</p> <p><b>—</b> Haul Route</p>				



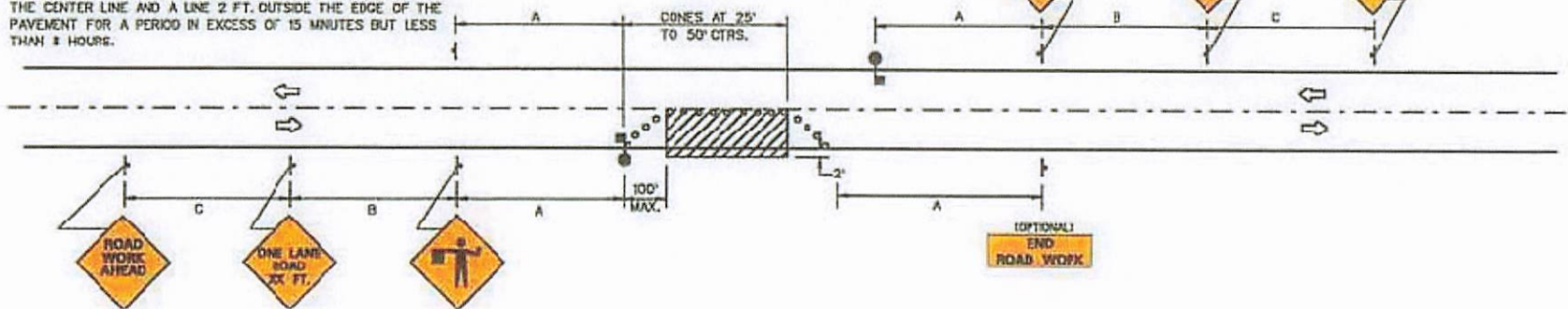




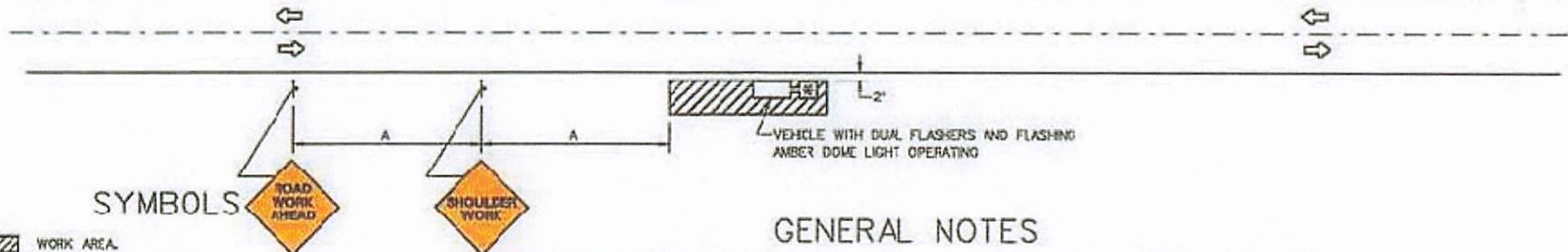
A. FOR ANY OPERATION THAT ENCRDACHES IN THE AREA BETWEEN THE CENTER LINE AND A LINE 2 FT. OUTSIDE THE EDGE OF THE PAVEMENT FOR A PERIOD OF LESS THAN 15 MINUTES.



B. FOR ANY OPERATION THAT ENCRDACHES IN THE AREA BETWEEN THE CENTER LINE AND A LINE 2 FT. OUTSIDE THE EDGE OF THE PAVEMENT FOR A PERIOD IN EXCESS OF 15 MINUTES BUT LESS THAN 4 HOURS.



C. FOR ANY OPERATION THAT IS MORE THAN 2 FT. OUTSIDE THE EDGE OF THE PAVEMENT FOR A PERIOD OF LESS THAN 60 MINUTES.



**SYMBOLS**

- WORK AREA.
- SIGN
- SIGN ON PORTABLE OR PERMANENT SUPPORT.
- FLAGGER WITH PADDLE.
- CONES

**GENERAL NOTES**

1. CONSTRUCTION OPERATIONS SHALL BE CONFINED TO ONE TRAFFIC LANE, LEAVING THE OPPOSITE LANE OPEN TO TRAFFIC. AT LEAST 300 FT. OF BOTH TRAFFIC LANES SHALL BE AVAILABLE FOR TRAFFIC MOVEMENT AT INTERVALS NOT GREATER THAN 1,000 FT. A COMPLETE TRAFFIC CONTROL PLAN MUST BE APPROVED FOR ANY PROJECT EXPECTING TO EXCEED 1,000 FT. IN LENGTH INCLUDING BOTH TAPER AND WORK AREAS.
2. FOR LOW-VOLUME SITUATIONS WITH SHORT WORK ZONES ON STRAIGHT ROADWAYS WHERE THE FLAGGER IS VISIBLE TO ROAD USERS APPROACHING FROM BOTH DIRECTIONS, A SINGLE FLAGGER, POSITIONED TO BE VISIBLE TO ROAD USERS APPROACHING FROM BOTH DIRECTIONS, MAY BE USED.
3. FLASHING WARNING LIGHTS AND/OR FLAGS MAY BE USED TO CALL ATTENTION TO THE ADVANCE WARNING SIGNS.
4. THE FLAGGERS SHALL BE IN SIGHT OF EACH OTHER OR IN DIRECT COMMUNICATION AT ALL TIMES.
5. ALL SIGNS ARE TO BE REMOVED AT COMPLETION OF THE DAY'S OPERATIONS.
6. FOR MULTILANE DIVIDED ROADWAYS THE ADVANCE WARNING SIGNS FOR TRAFFIC APPROACHING FROM THE OPPOSITE DIRECTION MAY BE OMITTED IF APPROVED BY THE ENGINEER.

**SUGGESTED ADVANCE WARNING SIGN SPACING**

ROAD TYPE	DISTANCE BETWEEN SIGNS (IN FT.)		
	A	B	C
URBAN (LOW SPEED)*	100	100	100
URBAN (HIGH SPEED)*	350	350	350
RURAL	500	500	500
EXPRESSWAY/FREEWAY	1,000	1,500	2,610

**TYPICAL APPLICATIONS**

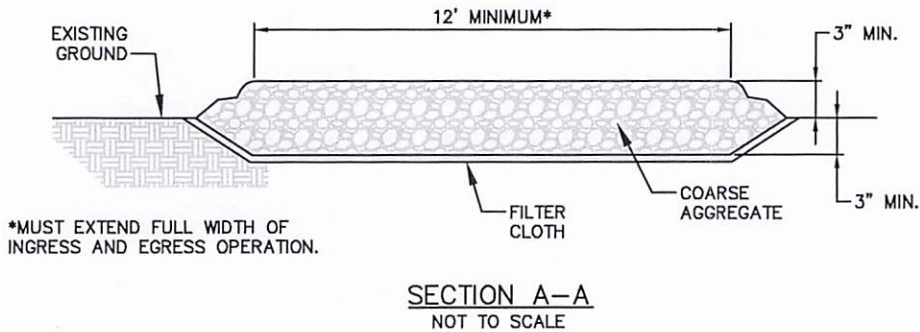
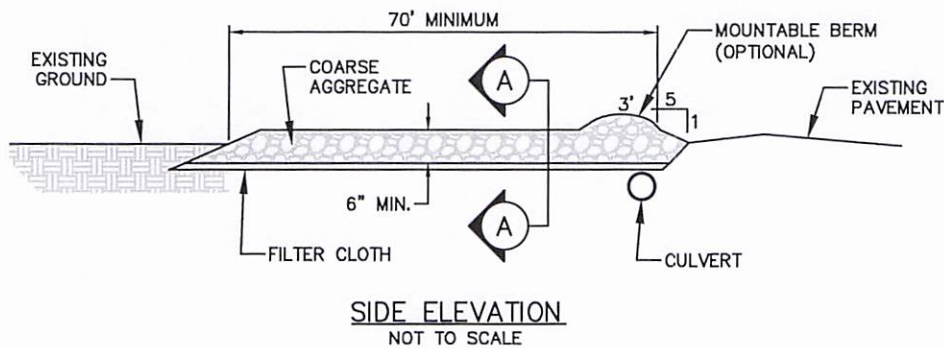
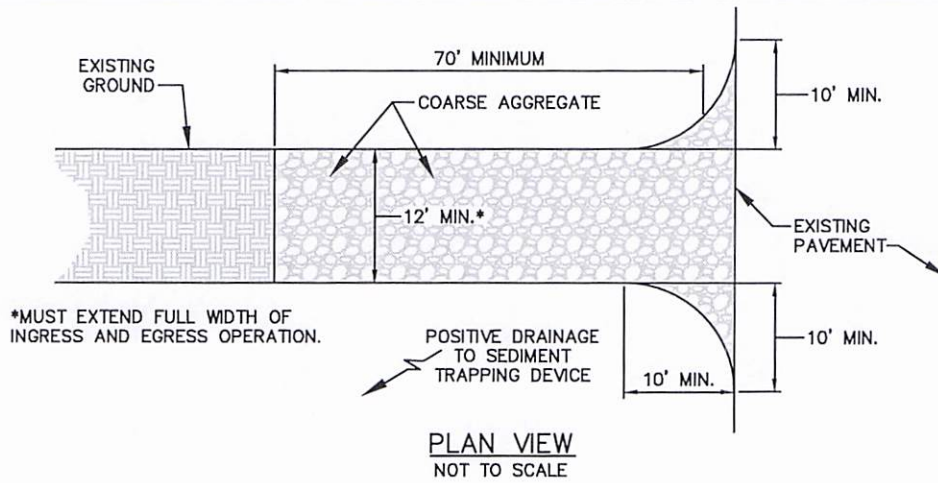
- PATCHING PAVEMENT.
- FIELD SURVEY.
- CLEANING UP DEBRIS ON PAVEMENT.
- CROSSWALK PAINTING.

**CASE A6**

TWO-LANE, TWO-WAY TRAFFIC  
SHORT-TERM OPERATIONS  
DAYTIME ONLY

\*SPEED CATEGORY TO BE DETERMINED BY WY DMH





**STONE CONSTRUCTION ENTRANCE**  
NOT TO SCALE

**THRASHER**

THE THRASHER GROUP, INC.  
600 WHITE OAKS BLVD.  
BRIDGEPORT, WV 26330  
PHONE 304-624-4108

ANTERO MIDSTREAM LLC

TYPICAL ACCESS ENTRANCE  
STONE CONSTRUCTION DETAIL

DODDRIDGE COUNTY, WEST VIRGINIA

SCALE  
NTS

REVISED

D1



WEST VIRGINIA DEPARTMENT OF TRANSPORTATION

**Division of Highways**

Office of the District Engineer/Manager

District Four

Post Office Box 4220 · Clarksburg, West Virginia 26302 · (304) 842-1500

**Drilling Operators Permit Conditions & Requirements**

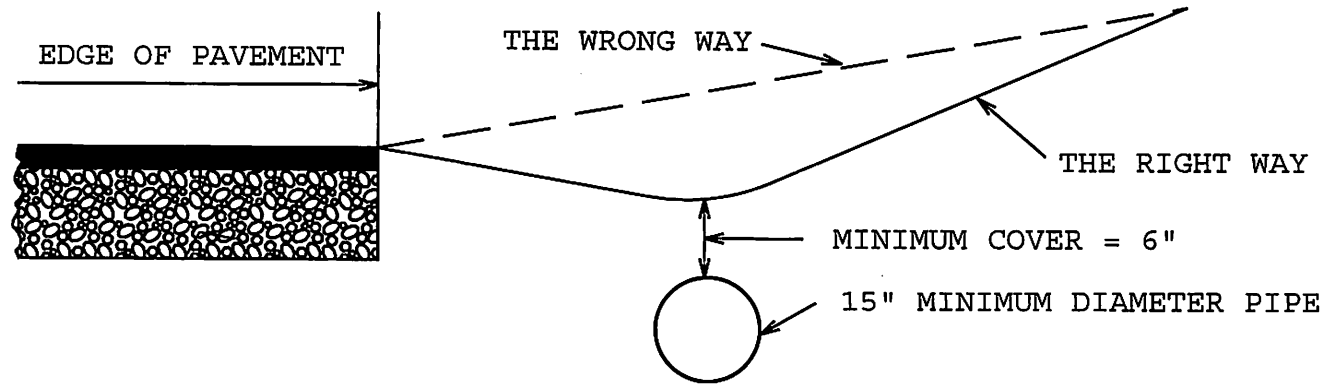
1. Applicant shall ensure the driveway is constructed in accordance with the [WVDOH Driveway Manual](#). The surfacing is specifically addressed on pages 20 and 21 under Section 8.4.6.
2. Prior to permit expiration, applicant must remove this temporary access and return DOH right-of-way to original or better condition; OR the property owner must submit a separate application to obtain a permanent permit.
3. If required, applicant must utilize appropriate traffic control during any use of the access. Failure to provide traffic control will void this permit and bond.
4. At no time may the drilling operation encroach on DOH right-of-way. Specifically, no loading, parking, or staging operations may be conducted on the traveled way or within DOH right-of-way.
5. Vehicles accessing the site are not permitted to stop in DOH right of way or back into the traveled way for any reason.
6. Applicant is responsible for immediate removal of mud and debris from the roadway caused by any entity involved with the drilling operations.
7. Applicant must notify the Permits Office/Oil & Gas Coordinator at (304) 326-0091 when drilling operations cease due to abandoning a well. If the driveway will no longer be used, the driveway must be removed, and ditch line restored to original or better condition, including the removal of pipe. The property owner must place the approach in their name for the driveway to remain. Note that bonds will not be released until every approach issued to your company has been removed or placed in the property owner's name.
8. Applicant shall ensure the driveway is constructed in accordance with the [WVDOH Driveway Manual](#) and that sight lines are free from vegetation or other obstructions at all times during use of the driveway.

**WVDOH Driveway Manual:**

<https://transportation.wv.gov/highways/engineering/Manuals/Traffic/Driveway.pdf>

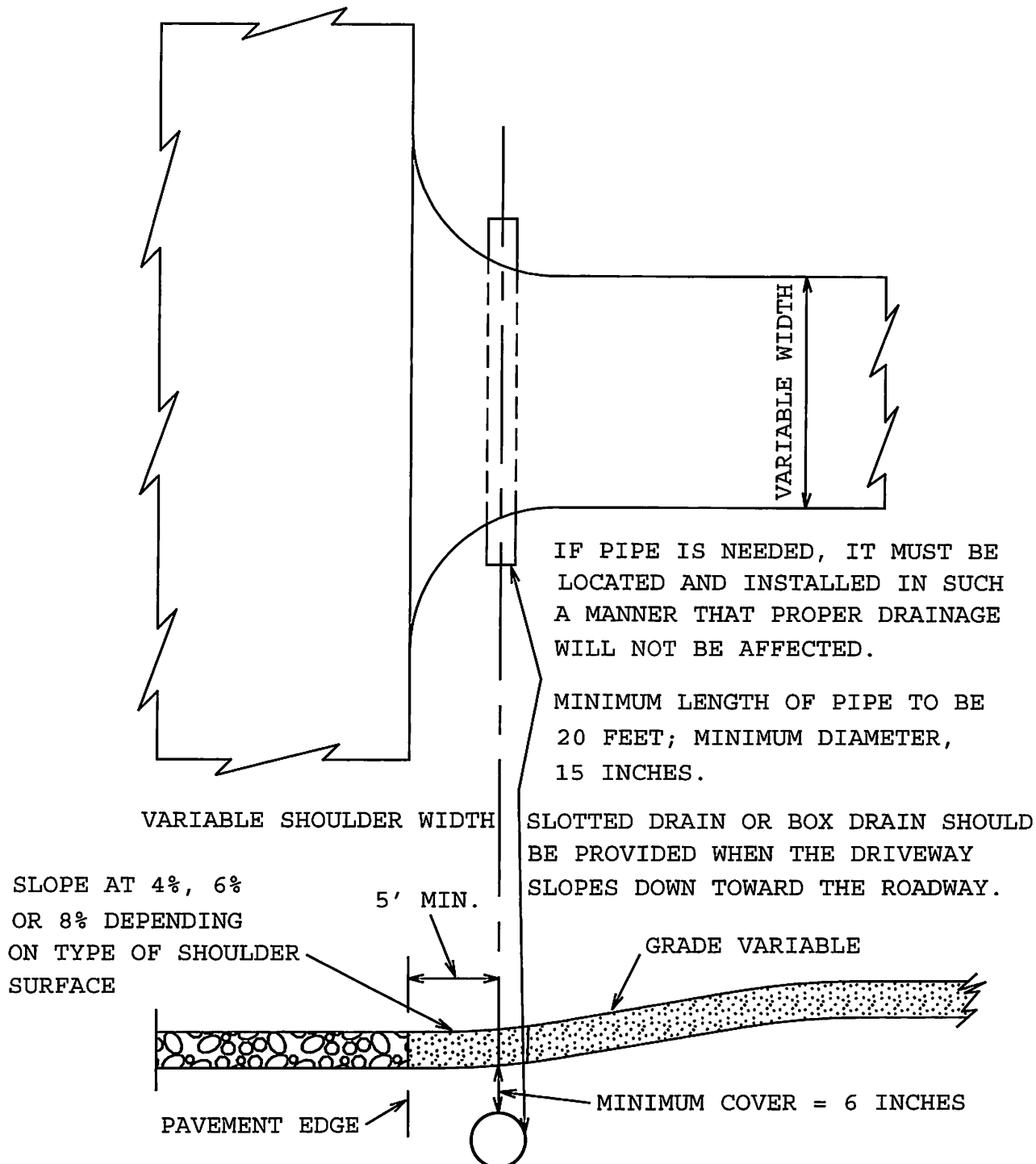
**Failure to comply with any condition or requirement will void this permit.**





PIPE INSTALLATION FOR SIDE ROAD  
APPROACH WITH STEEP GRADE

FIGURE 17



PIPE INSTALLATION FOR SIDE ROAD  
OR PRIVATE ENTRANCE APPROACH

FIGURE 18



# FEDERAL HIGHWAY ADMINISTRATION (FHWA)

## SUMMARY OF PILOT/ESCORT VEHICLE OPERATORS BEST PRACTICES GUIDELINES

### I. PRE-TRIP PLANNING

- ✓ Route review
- ✓ Pilot/Escort vehicle operator and equipment checklist

### II. PRE-TRIP SAFETY MEETING

- ✓ Review load limitations
- ✓ Test communication equipment
- ✓ Coordinate with local law enforcement

### III. LOAD MOVEMENT

- ✓ Know the load, and know the law
- ✓ Position vehicles in compliance with regulations and permit requirements

### IV. TRAFFIC CONTROL

- ✓ Develop and follow a traffic control plan
- ✓ Use proper equipment
- ✓ Follow defensive flagging guidelines

### V. SPECIAL CHALLENGES

- ✓ Railroad Crossings
- ✓ Tall loads, overhead obstructions
- ✓ Steerable Trailers/Tillerman Operations

### VI. EMERGENCY PROCEDURES

- ✓ Injury issues

### VII. POST-TRIP ACTIVITIES

- ✓ Turn off warning lights, remove OVERSIZE LOAD signage
- ✓ Review/evaluate procedure

<https://ops.fhwa.dot.gov/publications/fhwahop16051/index.htm>



WEST VIRGINIA DEPARTMENT OF TRANSPORTATION

**Division of Highways**  
Office of the District Engineer/Manager  
District Four

Jim Justice  
Governor

P. O. Box 4220 · Clarksburg, West Virginia 26302 · (304) 842-1500

Thomas J. Smith, P.E.  
Secretary of Transportation/  
Commissioner of Highways

June 2, 2017

Antero Resources Corporation  
535 White Oaks Blvd.  
Bridgeport, West Virginia 26330  
Attention: Rachel Grzybek

Dear Ms. Grzybek:

The Division of Highways (DOH) Permit Department has received your request dated May 11, 2017, for the revision of a Temporary Approach, permit number 04-2014-0665, to a Permanent Approach. Our District Four personnel reviewed the information, and have determined that this revision may be granted. Therefore, your revised copy of Permit Number 04-2014-0665 for a Permanent Approach is enclosed as per your request.

A copy of this permit is to be available on the job at all times while the work is in progress for inspection by the West Virginia Division of Highways personnel.

Sincerely,

Donald Williams  
District Engineer

Mike Roncone  
District Oil and Gas Coordinator

DW:MR:tc  
Attachments  
bcc: County 0409  
Charleston OM  
Permits  
MR





WEST VIRGINIA DEPARTMENT OF TRANSPORTATION

**Division of Highways**

Earl Ray Tomblin  
Governor

Office of the District Engineer/Manager  
District Four

PO Box 4220 (EXIT 121, I-79) \* Clarksburg, WV 26302 \* 304-842-1550

July 25, 2014

Paul A. Mattox, Jr., P. E.  
Secretary of Transportation /  
Commissioner of Highways

ANTERO RESOURCES CORPORATION  
1615 WYNKOOP STREET  
DENVER, CO 80202

Dear Applicant:

Your approved copy of Permit Number 04-2014-0665 for a T - Temporary permit type is enclosed. A description of the work is on the permit.

Please contact the District Four office:

**Dense Roncone 304-842-1575**

at least 48 hours in advance of the date you plan to begin work so arrangements can be made to inspect the work authorized by the permit.

**Failure to comply will result in cancellation of your permit.**

A copy of this permit is to be available on the job at all times while the work is in progress for inspection by the West Virginia Division of Highways' personnel.

Sincerely,

District Engineer / District Manager

Permit Supervisor

Initials: TC

Attachments: Yes

Enclosure: No

cc:0409 Charleston Permits MR

E.E.O.AFFIRMATIVE ACTION EMPLOYER

PERMIT TO ENTER UPON, UNDER, OVER OR ACROSS THE STATE ROADS OF THE STATE OF WEST VIRGINIA, AS PROVIDED FOR IN SECTION 6, ARTICLE 16, CHAPTER 17; SECTION 9, ARTICLE 16, CHAPTER 17; SECTION 8, ARTICLE 4, CHAPTER 17, WEST VIRGINIA CODE, 1931, AS AMENDED.

THIS PERMIT, Made this 12<sup>th</sup> day of June 20 14, between the WEST VIRGINIA DEPARTMENT OF TRANSPORTATION, DIVISION OF HIGHWAYS, a statutory corporation hereinafter called DIVISION and Antero Resources Corporation

Address: 1625 17th St., Denver, CO 80202 Phone No: (303) 357-7342  
hereinafter called APPLICANT.

WITNESSETH

In consideration of the hereinafter set out covenants and in accordance with Section 6, Article 16, Chapter 17; or Section 9, Article 16, Chapter 17; or Section 8, Article 4, Chapter 17, of the Official Code of West Virginia, 1931, as amended, and the rules and regulations promulgated thereunder, APPLICANT does hereby apply to enter

Route Type & No. County Route 12/1 DOH Project No. \_\_\_\_\_ (if applicable);  
at 0.39 miles East of the junction of Co. Rd. 12/1 and Co. Rd. 12 Mile Post 0.754

in Doddridge County, for the purposes hereinafter set forth and in accordance with the plans and specifications which are attached hereto and made a part hereof: Access CR 12/1 LaPalce

To construct and maintain a Permanent ~~temporary commercial approach to access pipeline work area.~~ and monitor the pipeline <sup>5/20/17 JC</sup>  
(39.381373N, -80.693891W)

AFE# 13NCANTNLP

APPLICANT further agrees to accept the conditions hereinafter set forth:

1. APPLICANT shall deposit with DIVISION the sum of \$ 1,000,000 in the form of an official, certified or cashier's check, or executed bond with surety satisfactory to DIVISION to cover any damage and inspection costs DIVISION may sustain by reason of the granting of this permit, including any expense incurred in restoring said highway to its original condition or the proper repair of any and all damages that may result within one (1) year from the date of the completion of said work.
2. APPLICANT agrees to reimburse DIVISION for inspection costs as follows:
  - A. For any inspection costs incurred under this permit.
  - B. At \$ \_\_\_\_\_ per linear foot for \_\_\_\_\_ feet of water line installed under this permit
  - C. At \$ \_\_\_\_\_ per linear foot for \_\_\_\_\_ feet of sewer line installed under this permit
3. APPLICANT shall notify DIVISION at least 48 hours in advance of the date the work will begin. Failure to comply will be cause for cancellation of this permit.
4. APPLICANT agrees to protect its employees, equipment and users of the highway at all times in accordance with the current Division of Highways manual "Traffic Control For Street and Highway Construction and Maintenance Operations".
5. APPLICANT agrees to comply with all applicable state and federal laws in the performance of work under this permit.
6. Supplementary conditions cited on the reverse side of this permit are understood and agreed to be a part hereof.
7. The work authorized under this permit shall be completed on or before (Date): 12<sup>th</sup> June 18  
06/01/2015

Applicant's signature on this permit affirms that all text herein is a verbatim reproduction of The West Virginia Division of Highways Encroachment Permit Form MM-109, revision date May 19, 2005. All attachments are inclusive to this permit.

RECOMMENDED: [Signature]  
Title ADM 3

Troy B. Daniel, PE - Authorized Representative

[Signature]  
Signature and Title of Applicant

BOND REQUIREMENT:  
 BOND NO. LPM9062891 DATE 02/21/2012  
 Attached  On File   
 INSPECTION: Owner/Consultant   
 Full Time  Part Time   
 Periodic  Reimbursable  No Cost

APPROVED: [Signature]  
Title ACTING MAINTENANCE ENGINEER  
West Virginia Division of Highways

AUTHORIZATION NO: \_\_\_\_\_



North Canton Pipeline Addendum to Permit 04-2014-0627, 04-2014-0663,  
04-2014-0664, 04-2014-0665, 04-2014-0666, 04-2014-0667, 04-2014-0668, 04-2014-0669,

This addendum, made this 14<sup>th</sup> day of July 2014, between the West Virginia Department of Transportation, Division of Highways, a statutory company hereinafter called the Division and

Antero Resources

Address: 1625 Wynkoop Street, Denver, Colorado 80202 Phone: 303 357-7310  
hereinafter called APPLICANT.

The Applicant has filed with the DIVISION a written application for the following named route and location:

DODDRIDGE SLS 3, Big Flint Road, at Mile Post 0.00 to 11.37;  
SLS 5, Riggin's Run at Mile Post 5.69 to 11.59;  
SLS 5/3, Allen Road at Mile Post 0.00 to 0.236; SLS 5/4, Allen Run at Mile Post 0.00 to 0.40;  
SLS 12, Ralph's Run at Mile Post 0.00 to 0.90; SLS 12/1 at Mile Post 0.00 to 0.753  
SLS 20, Morgan's Run at Mile Post 9.182 to 9.46;  
SLS 55/2, Laugherty's Fork at Mile Post 0.00 to 0.583; SLS 55/3, Elk Lick Run at Mile Post 0.00 to 1.80;  
SLS 55/6 at Mile Post 0.00 to 0.47.

Road conditions have been verified and any degradation will be the responsibility of the applicant to restore. Release of the applicant's bond will be determined by a final route review.

- ❖ Since use of existing entrances has a change of scope from residential to industrial, these permits are to be temporary in the applicant's name and then be issued in the property owner's name as permanent upon completion of project and prior to release of bond.
  - ❖ In instances where the approach is above grade of the roadway, the applicant must prevent water from entering the Division's roads by slanting the access road to a parallel ditch or utilize a Box & Grate.
  - ❖ Applicant will utilize CASE C-1 or CASE C-2 as applicable to the specific permit.
  - ❖ Doddridge SLS 55/6 will require stone stabilization prior to work.
- After completion of the project, a joint review of roads will be filmed and evaluated to assure roads have been repaired to existing condition or better.
  - No travel on School Bus Routes during their traversing operational hours on above mentioned route on bi-directional roadways where the lane widths are less than 10 ft.
  - Pilot Vehicle required for all Oversized Loads on covered roads.
  - Ditch lines to be maintained by applicant. FDR or equivalent may be required to stabilize road to uphold increased traffic and heavy and excess amount of loads. Centerline of roadway cannot be relocated without an agreement between WV DOH and the Applicant. This work required an advanced notice and prior approval by Maintenance/Design Engineer.
  - Repairs that will include "Hot Mix Asphalt" will have the following testing requirement: The supplier will be responsible for testing at the plant; Compaction testing will be as per WV DOH specifications.
  - The Division of Highways shall have the right at all times to inspect the work, and if such inspections should reveal that the work is not done according to specifications, upon being so advised by the Division, ANTERO Resources agrees to take immediate corrective actions.

Applicant shall properly repair and maintain any and all damages that may result to said bridges, highways, shoulders and ditches from hauling activities of Applicant, its agents, contractors and employees, to as good a condition prior to commencement of Applicant's operation or as when the permit was issued, as determined by the District Engineer/Manager of the DIVISION having jurisdiction over the work permitted, or pay damages therefore in the amount to sufficiently restore such bridges, roads, highways, shoulders and ditches to original condition; and shall reimburse the DIVISION for all inspection costs incurred by it in connection with said work and repairs of such damages and faithfully comply with all terms and conditions of said permits and save harmless the DIVISION and the State of West Virginia from all losses resulting from the conduct of said work and repairs; provided that all projects covered by this blanket bond have been restored to original or better condition; then this Bond shall be released; or otherwise will remain in full force and effect.

Bond Amount: \$1,000,000.00

Bond Number: LPM9062891

Date: 2/21/2012

0420140665

Revised 1/2012

Dist. Permit Number \_\_\_\_\_

BOND Number LPM 9062891

OIL and GAS DATA INFORMATION SHEET

APPLICANT

Company Name Antero Resources Corporation

Address 1625 17th Street

City Denver ST CO Zip 80202

Contact Person Permit Chris Hummel Telephone 303-357-7342

24/7 Road Maintenance Contact Chris Hummel Telephone 303-357-7342 Cell 303-725-3911

24/7 Backup Contact Garry Lott Telephone \_\_\_\_\_ Cell 601-325-7219

Drilling/ Fracking will require usage of \* \_\_\_\_\_ Less than 5000 Barrels of fluids \_\_\_\_\_ 5000 /+  
\* N/A, project is for construction of a gathering pipeline.

Site Location

Site Name North Canton Gathering Pipeline Road Local Name \_\_\_\_\_ Rte.# 12/1

Decimal Format GPS N: 39.381373 W: 80.693891 County Doddridge

Location Description

On Rte. # 12/1 being 0.39 miles N S(E)W of Jct. of Rte. # 12/1 and Rte. # 12

DOH USE ONLY HAULING ROUTE from US or WV Route (Attach Map)

Name & Rte.#	Beg MP	End MP	Surface Type	Condition
<u>SLS 3</u>	<u>0.00</u>	<u>11.37</u>	<u>Asphalt</u>	<u>Fair</u>
<u>WV 23</u>	_____	_____	<u>Asphalt</u>	<u>Fair</u>
<u>SLS 55/6</u>	_____	_____	<u>Gravel</u>	<u>Fair</u>
<u>SLS 55/2</u>	_____	_____	<u>Gravel</u>	<u>Fair</u>
<u>SLS 55/3</u>	_____	_____	<u>Gravel</u>	<u>Fair</u>
<u>SLS 5</u>	<u>5.69</u>	<u>11.59</u>	<u>Gravel</u>	<u>Fair</u>
<u>SLS 5/3</u>	_____	_____	<u>Gravel</u>	<u>Fair</u>
<u>SLS 20</u>	<u>9.182</u>	<u>9.46</u>	<u>Gravel</u>	<u>Fair</u>
<u>SLS 5/4</u>	_____	_____	<u>Gravel</u>	<u>Fair</u>
<u>SLS 12</u>	<u>0.00</u>	<u>0.96</u>	<u>Gravel</u>	<u>Fair</u>
<u>SLS 12/1</u>	<u>0.00</u>	<u>0.758</u>	<u>Gravel</u>	<u>Fair</u>
<u>SLS 55/1 (Tyler Co)</u>	_____	_____	<u>Gravel</u>	<u>Fair</u>

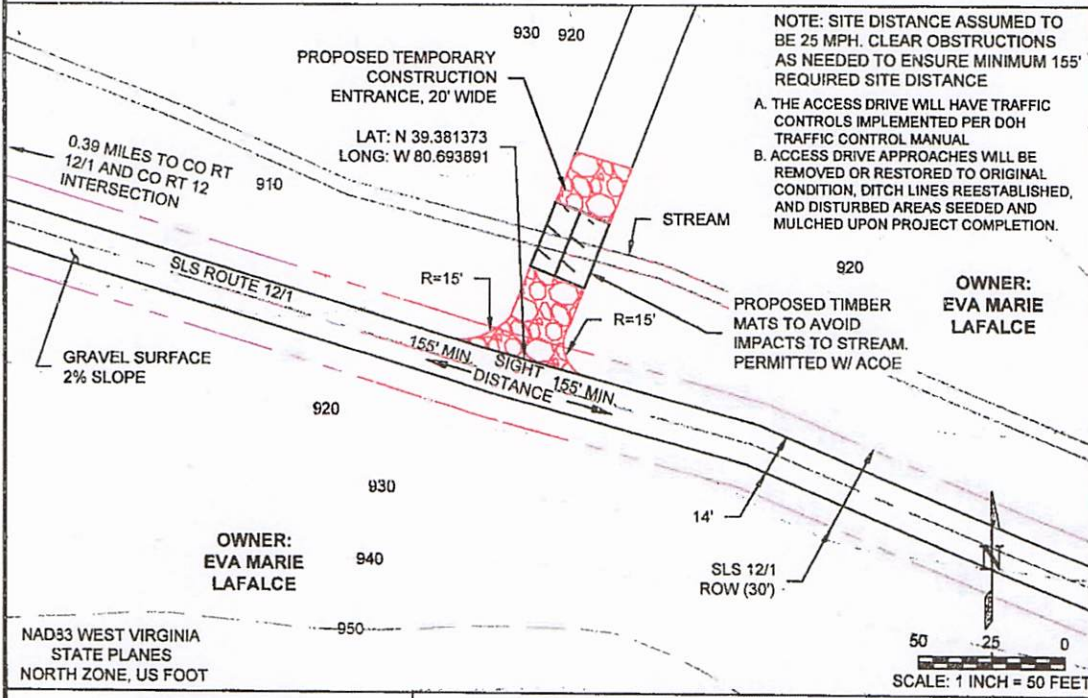
Well location WGS83 Decimal Format GPS N: NA W: NA

WV DEP Permit Number 47 - NA - NA

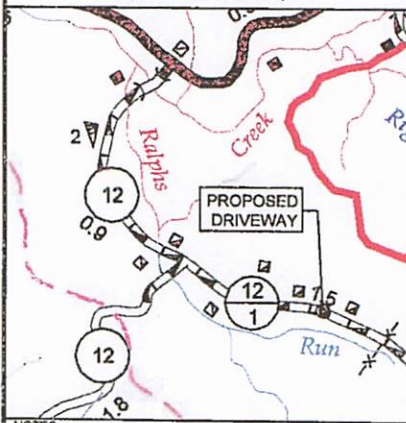
STATE COUNTY PERMIT NUMBER



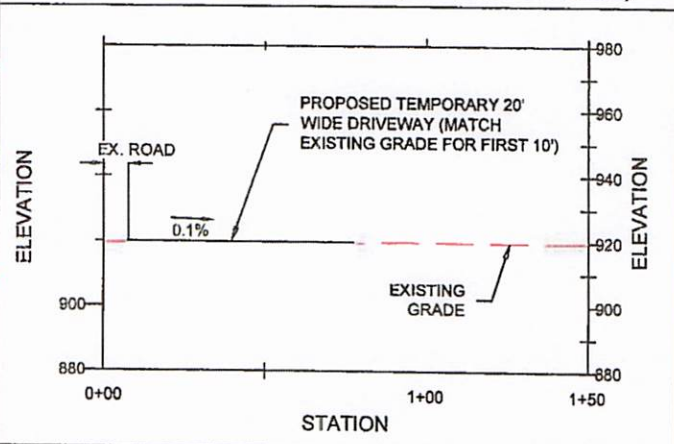
# PLAN VIEW OF PROPOSED ROAD APPROACH



## VICINITY MAP (NOT TO SCALE)



## APPROACH PROFILE (NOT TO SCALE)



- NOTES:
1. LOCATED ON SLS ROUTE 12/1 0.39 MI EAST OF THE JUNCTION OF CO ROUTE 12 AND SLS ROUTE 12/1 IN DODDRIDGE COUNTY, WEST VIRGINIA.
  2. ALL SPECIFICATIONS AS SET FORTH IN THE RULES AND REGULATIONS FOR "CONSTRUCTING DRIVEWAYS ON HIGHWAY RIGHT OF WAY" WHICH ARE APPLICABLE WILL BE CARRIED OUT IN FULL.

<p><b>KLEINFELDER</b> Bright People. Right Solutions. www.kleinfelder.com</p>	PROJECT NO. 139198	<p><b>SLS ROUTE 12/1 (LAFALCE) DRIVEWAY EXHIBIT AFE#13NCANTNLP</b></p> <p>ANTERO RESOURCES CORPORATION DODDRIDGE COUNTY WEST VIRGINIA</p>	DETAIL
	DRAWN: 08-11-2014		<p><b>A</b></p>
	DRAWN BY: E.L.D.		
	CHECKED BY: T.D.		
FILE NAME: N_Canton_Drive_ex.dwg			

FORM PV-100

WEST VIRGINIA DEPARTMENT OF HIGHWAYS  
STATEWIDE PLANNING DIVISION

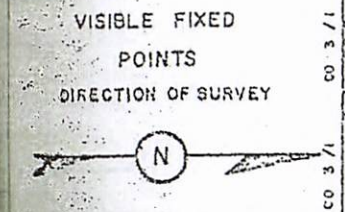
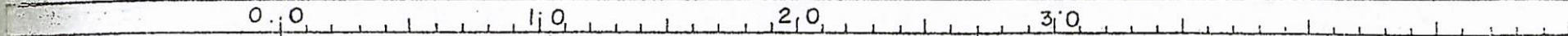
DISTRICT 4  
COUNTY DODDRIDGE  
ROUTE NO. CO 12  
SHEET NO. 1 OF 1

TOTAL MILES 2.70

LOCAL NAME RALPH'S RUN

DATE 7-22-82

M. O. DATE 5-18-82



Project Designation			
Project Number			
Project Length			
Control Section No. & Length			
Subsection Identification	0.00	1.00	2.46
Subsection Length	1.80	0.66	0.24
Surface Type & Widths	2000 - 10 - 16	2010 - 12 - 16	220-14-10
Year Built			

PERPETUATION DATA

IS _____			
Subsection Identification			
Subsection Length			
Surface Type & Widths			
IS _____			
Subsection Identification			
Subsection Length			
Surface Type & Widths			
IS _____			
Subsection Identification			
Subsection Length			
Surface Type & Widths			

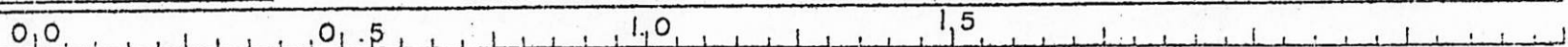


WEST VIRGINIA DEPARTMENT OF HIGHWAYS  
STATEWIDE PLANNING DIVISION

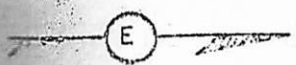
DISTRICT 7  
COUNTY DODDRIDGE  
ROUTE NO. CO. 12/1  
SHEET NO. 1 OF 1

TOTAL MILES 1.50  
LOCAL NAME \_\_\_\_\_

DATE 7-16-82 M. O. DATE 5-18-82



VISIBLE FIXED  
POINTS  
DIRECTION OF SURVEY



C.O. 12  
0.00  
C.O. 12

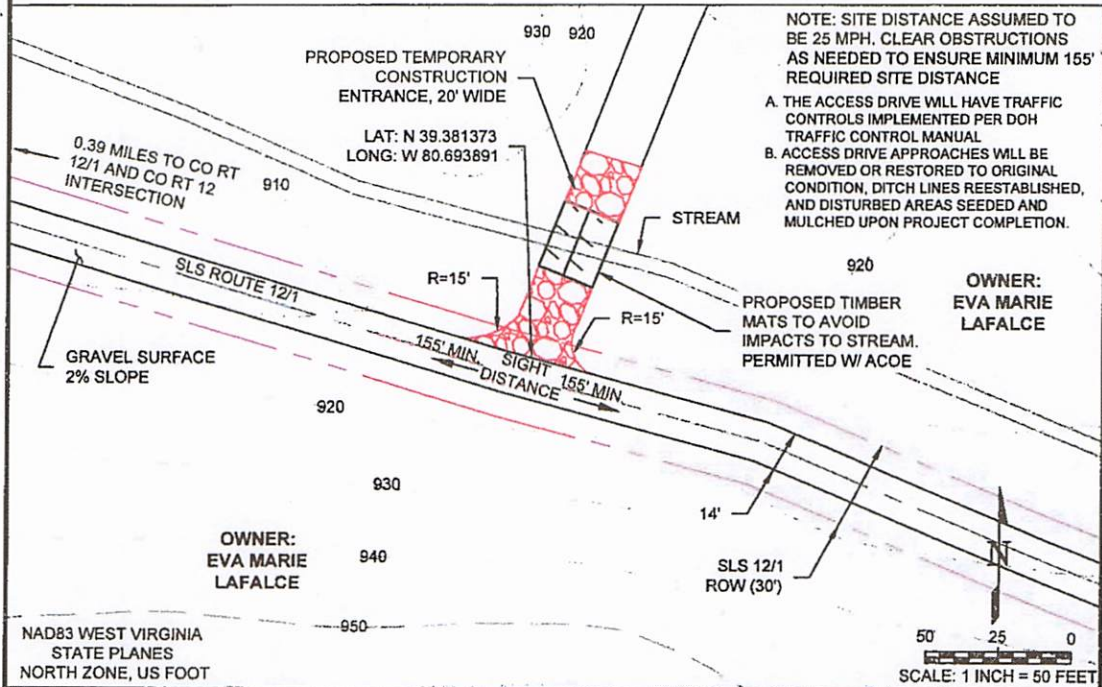
1.50  
END  
DEAD

Project Designation	
Project Number	
Project Length	
Center Section No. & Length	
Subsection Identification	0 - 00
Subsection Length	1.50
Surface Type & Widths	00 02 - 10 - 16
Year Built	

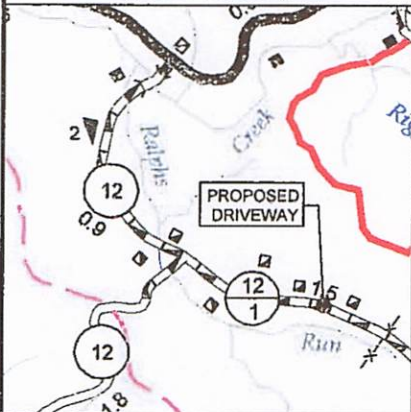
PERPETUATION DATA

19 _____	
Subsection Identification	
Subsection Length	
Surface Type & Widths	
19 _____	
Subsection Identification	
Subsection Length	
Surface Type & Widths	
19 _____	
Subsection Identification	
Subsection Length	
Surface Type & Widths	

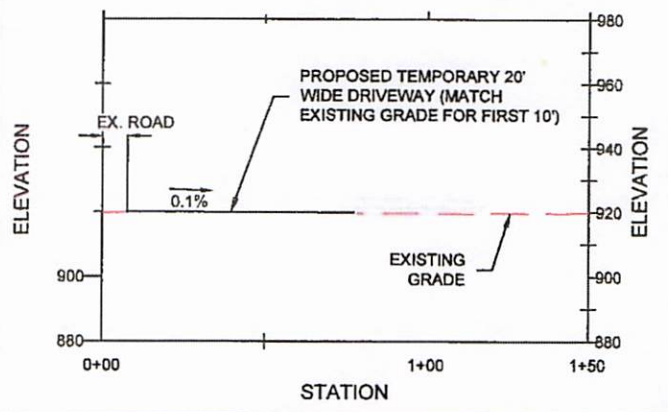
# PLAN VIEW OF PROPOSED ROAD APPROACH



## VICINITY MAP (NOT TO SCALE)



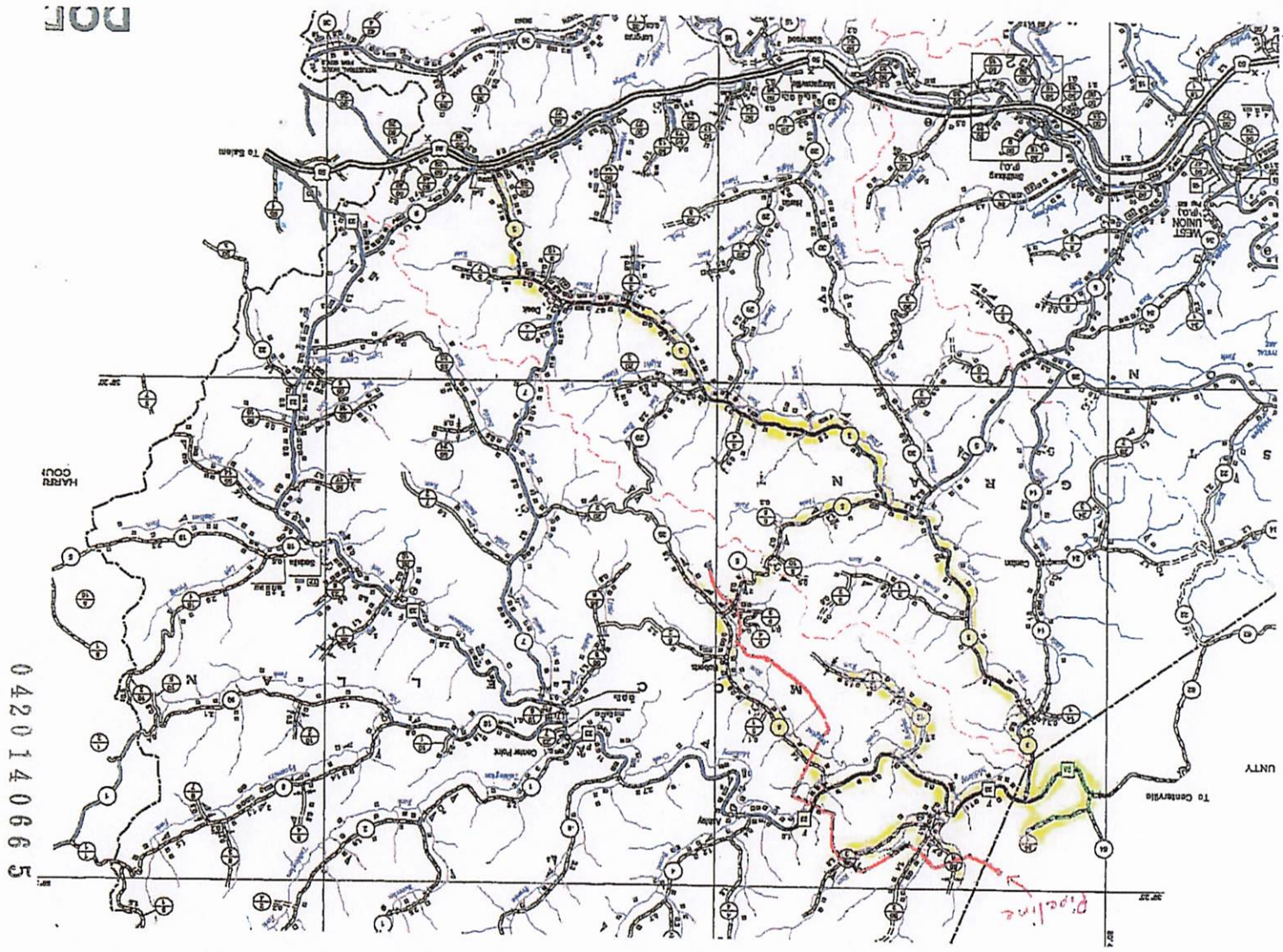
## APPROACH PROFILE (NOT TO SCALE)



- NOTES:**
1. LOCATED ON SLS ROUTE 12/1 0.39 MI EAST OF THE JUNCTION OF CO ROUTE 12 AND SLS ROUTE 12/1 IN DODDRIDGE COUNTY, WEST VIRGINIA.
  2. ALL SPECIFICATIONS AS SET FORTH IN THE RULES AND REGULATIONS FOR "CONSTRUCTING DRIVEWAYS ON HIGHWAY RIGHT OF WAY" WHICH ARE APPLICABLE WILL BE CARRIED OUT IN FULL.

<p><b>KLEINFELDER</b> Bright People. Right Solutions. www.kleinfelder.com</p>	PROJECT NO. 139198	<p><b>SLS ROUTE 12/1 (LAFALCE) DRIVEWAY EXHIBIT AFE#13NCANTNLP</b></p> <p>ANTERO RESOURCES CORPORATION DODDRIDGE COUNTY WEST VIRGINIA</p>	DETAIL
	DRAWN: 08-11-2014		<p><b>A</b></p>
	DRAWN BY: E.L.D.		
	CHECKED BY: T.D.		
FILE NAME: N_Canton_Drive_ex.dwg			





0420140665

HARRIS  
COU?

DOT

SLS Route 12/1  
Doddridge County, West Virginia  
North Canton Connector Pipeline Project  
Antero Resources Corporation

View Towards Access Location



View East of Access Location



0420140665



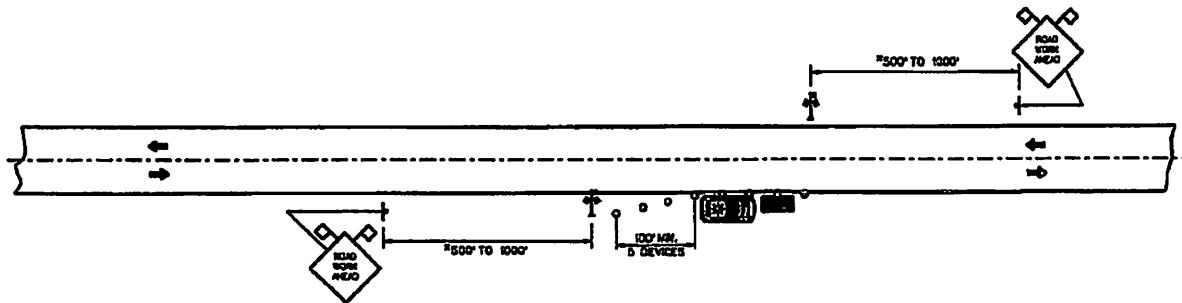
SLS Route 12/1  
Doddridge County, West Virginia  
North Canton Connector Pipeline Project  
Antero Resources Corporation

View **West** of Access Location









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0420140665



### SYMBOLS

-  WORK AREA.
-  SIGN WITH 13 IN. BY 13 IN. (MINIMUM) ORANGE FLAGS ATTACHED (2 FLAGS PER SIGN).
-  SIGN ON PORTABLE OR PERMANENT SUPPORT.
-  HIGH LEVEL WARNING DEVICE.
-  FLASHING VEHICLE LIGHT.
-  CONES ON 25' CENTERS MAX.

### TYPICAL APPLICATIONS

UTILITY OPERATIONS ONLY

### GENERAL NOTES

1. ROAD WORK AHEAD SIGNS ARE TO BE REMOVED WHEN NO WORK IS BEING PERFORMED. ANY UNATTENDED OBSTACLE OR EXCAVATION IN THE WORK AREA SHALL BE PROTECTED BY TYPE I OR TYPE B BARRICADES WITH FLASHING LIGHTS. (TYPE "A").
2. IF THE WORK OPERATION REQUIRES THAT FOUR OR MORE WORK VEHICLES ENTER THE THROUGH TRAFFIC LANES IN A ONE-HOUR PERIOD A FLAGGER SHALL BE PROVIDED AND THE FLAGGER SIGN SHALL BE DIRECTED ACCORDINGLY.
3. ALL VEHICLES, EQUIPMENT, WORKERS (EXCEPT FLAGGERS) AND THEIR ACTIVITIES ARE RESTRICTED AT ALL TIMES TO ONE SIDE OF THE PAVEMENT UNLESS OTHERWISE AUTHORIZED BY THE ENGINEER.

\* - MAY BE DECREASED TO 200' TO 250' FOR URBAN AREA

### CASE C1

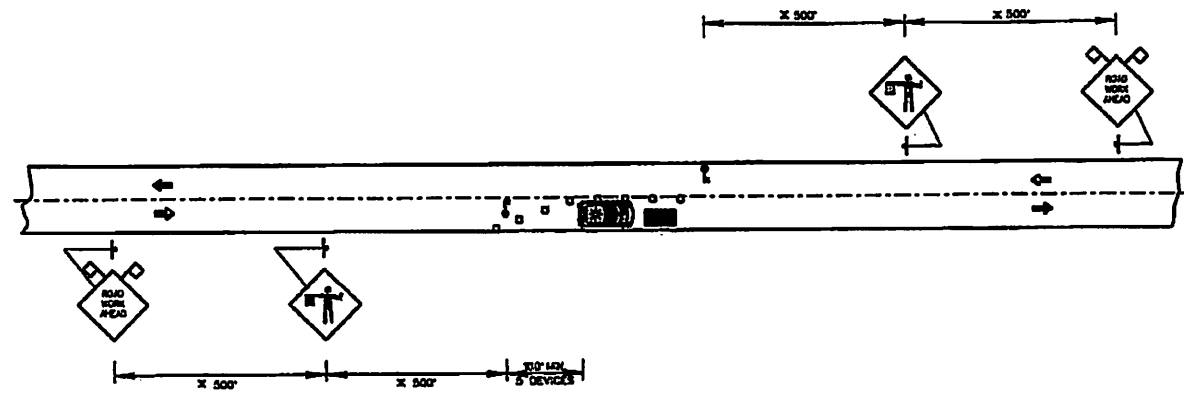
TWO-LANE, TWO-WAY TRAFFIC  
DAYLIGHT OPERATIONS ONLY

WHERE, AT ANY TIME, ANY VEHICLES, EQUIPMENT, WORKERS OR THEIR ACTIVITIES WILL ENCRoACH IN THE AREA BETWEEN 2 FT. AND 15 FT. FROM THE EDGE OF PAVEMENT.

0420140665



0420140665



**SYMBOLS**

- WORK AREA.
- SIGN WITH 18 IN. BY 18 IN. (MINIMUM) ORANGE FLAGS ATTACHED (2 FLAGS PER SIGN).
- SIGN ON PORTABLE OR PERMANENT SUPPORT.
- FLAGGER WITH PADDLE.
- FLASHING VEHICLE LIGHT.
- CONES ON 25' CENTERS MAX.

**TYPICAL APPLICATIONS**

UTILITY OPERATIONS ONLY

**GENERAL NOTES**

1. CONSTRUCTION OPERATIONS SHALL BE CONFINED TO ONE TRAFFIC LANE, LEAVING THE OPPOSITE LANE OPEN TO TRAFFIC.
2. IF THE WORK OPERATION DOES NOT EXCEED 60 MINUTES, TRAFFIC CONTROL WILL BE IN CONFORMANCE WITH CASE A6.
3. THE FLAGGERS SHALL BE IN SIGHT OF EACH OTHER OR IN DIRECT COMMUNICATION AT ALL TIMES.
4. IN LIGHT TRAFFIC WHEN THERE IS NO WORK BEING PERFORMED FLAGGER SIGNS AND THE FLAGGER MAY NOT BE REQUIRED (AT THE OPTION OF THE ENGINEER). IN THIS CASE ONE LANE ROAD SIGNS SHALL BE INSTALLED IN PLACE OF THE FLAGGER SIGNS.
5. ALL SIGNS ARE TO BE REMOVED AT COMPLETION OF THE WORK AND THE DAYS OPERATIONS.
6. WHEN A SIDE ROAD INTERSECTS THE HIGHWAY ON WHICH WORK IS BEING PERFORMED ADDITIONAL TRAFFIC CONTROL DEVICES SHALL BE DICTATED AS DIRECTED BY THE ENGINEER.
7. ALL VEHICLES, EQUIPMENT, WORKERS (EXCEPT FLAGGERS) AND THEIR ACTIVITIES ARE RESTRICTED AT ALL TIMES TO ONE SIDE OF THE PAVEMENT UNLESS OTHERWISE AUTHORIZED BY THE ENGINEER.

x - MAY BE DECREASED TO 200' TO 350' FOR URBAN AREAS

**CASE C2**

TWO-LANE, TWO-WAY TRAFFIC  
DAYLIGHT OPERATIONS ONLY  
WHERE, AT ANY TIME, ANY VEHICLE, EQUIPMENT, WORKERS OR THEIR ACTIVITIES WILL ENDOURCH IN THE AREA BETWEEN THE CENTER LINE AND A LANE 2 FT. OUTSIDE THE EDGE OF PAVEMENT.



REPLY TO  
ATTENTION OF

DEPARTMENT OF THE ARMY  
HUNTINGTON DISTRICT, CORPS OF ENGINEERS  
502 EIGHTH STREET  
HUNTINGTON, WEST VIRGINIA 25701-2070

Regulatory Division  
Energy Resource Branch  
LRH-2014-00463-OHR McElroy Creek;  
North Canton to EQT Pipeline Project

JUL 18 2014

Mr. Brett Fletcher  
Antero Resources Corporation  
1615 Wynkoop Street  
Denver, Colorado 80202

Dear Mr. Fletcher:

I refer to information received in this office on May 13, 2014, and subsequent information received June 20, 2014 requesting Department of the Army (DA) authorization to discharge dredged and/or fill material into waters of the United States (U.S.) as a part of the North Canton to EQT Pipeline Project. On-site waters flow into McElroy Creek and its tributaries. McElroy Creek drains to Middle Island Creek, a traditionally navigable water (TNW) of the U.S. The project will be located approximately 1.4 miles south of the community of Roberts at its southern terminus and proceeds generally north north-west to a location approximately 2.0 miles northeast of the community of Shirley at its northern terminus. The project is located in Doddridge and Tyler Counties, West Virginia. This project has been assigned the following file number: LRH-2014-00463-OHR, McElroy Creek. Please reference this file number on all future correspondence related to this project.

The U.S. Army Corps of Engineers (Corps) authority to regulate waters of the U.S. is based, in part, on the definitions and limits of jurisdiction contained in 33 CFR 328 and 33 CFR 329. Section 404 of the Clean Water Act requires that a Department of the Army permit be obtained prior to the discharge of dredged or fill material into waters of the United States, including wetlands. Section 10 of the Rivers and Harbors Act of 1899 requires that a Department of the Army permit be obtained for any work in, on, over or under a navigable water.

The proposed project, as described in the submitted information, has been reviewed in accordance with Section 404 of the Clean Water Act and Section 10 of the Rivers and Harbors Act. Based on your description of the proposed work, and other information available to us, it has been determined that this project will not involve activities subject to the requirements of Section 10, but will involve activities subject to Section 404.

*Preliminary Jurisdictional Determination*

Based on a review of the information provided, and other information available to us, 15 streams, six wetlands, and one pond are located within the delineation boundary as described in



the enclosed table. This office has determined the streams and wetlands may be waters of the U.S. in accordance with the Regulatory Guidance Letter (RGL) for JDs issued by the Corps on June 26, 2008 (RGL No. 08-02). As indicated in the guidance, this preliminary JD is non-binding and cannot be appealed (33 CFR 331.2) and only provides a written indication that waters of the U.S., including wetlands, may be present on-site.

You have declined to exercise the option to obtain an approved JD in this instance and at this time. For the purposes of the determination of impacts, compensatory mitigation, and other resource protection measures for activities that require authorization from this office, the streams and wetlands described in the attached *Preliminary Jurisdictional Determination Form* will be evaluated as if they are waters of the U.S. Enclosed please find two copies of the preliminary JD. If you agree with the findings of this preliminary JD and understand your options regarding the same, please sign and date one copy of the form and return it to this office within 30 days of receipt of this letter. You should submit the signed copy to the following address:

Mr. Adam Fannin (LRH-2014-00463-OHR McElroy Creek)  
U.S. Army Corps of Engineers, Huntington District  
502 Eight Street  
Huntington, West Virginia 25701

*Nationwide Permit No. 12*

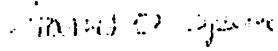
In the Pre-Construction Notification received in this office on May 13, 2014, you have requested DA authorization to temporarily discharge dredged and/or fill material into a total of 223 linear feet of 11 streams and 0.005 acre of five wetlands; and to permanently discharge dredged and/or fill material into a total of 0.02 acre of a single wetland at five single and complete permit areas associated with the North Canton to EQT Pipeline Project. The discharge of dredged and/or fill material into waters of the U.S. will facilitate the construction of a 4.68 mile 16-inch steel natural gas pipeline and a 7.86 mile 20-inch steel natural gas pipeline. The information submitted indicates the streams and wetlands which are temporarily affected by the pipeline installation will be restored to pre-construction conditions upon completion of the project. Additionally, you note that matting would be utilized for equipment crossings of streams and wetlands which are not crossed by access roads or the pipeline routes to avoid discharges into waters of the U.S.

Based on your description of the proposed work, and other information available to us, it has been determined the proposed discharge of dredged and/or fill material into waters of the U.S. for the construction of the North Canton to EQT Pipeline Project meets the criteria for authorization under Nationwide Permit (NWP) #12 under the February 21, 2012 Federal Register. Notice of Reissuance of NWPs (77 FR 10184) provided you comply with all terms and conditions of the enclosed material. The West Virginia Department of Environmental Protection has issued a §401 Water Quality Certification, with conditions, for this NWP. A copy of this NWP can be found on our website at <http://www.lrh.usace.army.mil/Missions/Regulatory.aspx>

Please be aware this nationwide permit authorization does not obviate the requirement to obtain other Federal, state or local authorizations required by law. A copy of this NWP and letter

must be supplied to your project engineer responsible for construction activities. Upon completion of the work, the attached certification must be signed and returned to this office. If you have any questions concerning the above, please contact Mr. Adam Fannin at (304) 399-6901 or by email at Adam.E.Fannin@usace.army.mil.

Sincerely,



**James Spence  
Regulatory Project Manager  
Energy Resources Branch**

Enclosures



RD-F-AEF

Permit Number LRH-2014-00463-1 KR, McIlroy Creek;  
North Canton to EQT Pipeline Project

Name of Permittee: Mr. Brett Fletcher  
Antero Resources Corporation  
1615 Wynkoop Street  
Denver, Colorado 80202

Date of Issuance: 7/18/2014

Upon completion of the activity authorized by this permit and any mitigation required by the permit, sign this certification and return it to the following address:

Huntington District  
U.S. Army Corps of Engineers  
502 8<sup>th</sup> Street  
Huntington, West Virginia 25701-2070  
Attn: RD-F

Please note that your permitted activity is subject to a compliance inspection by an United States Army Corps of Engineers representative. If you fail to comply with this permit you are subject to permit suspension, modification, or revocation.

I hereby certify that the work authorized by the above referenced permit has been completed in accordance with the terms and conditions of the said permit, and required mitigation was completed in accordance with the permit conditions.

\_\_\_\_\_  
Signature of Permittee

\_\_\_\_\_  
Date



**DIVISION OF NATURAL RESOURCES**

324 Fourth Avenue, Room 200  
South Charleston WV 25303-1228  
TDD (304) 558-1439  
TDD 1-800-354-6087  
Fax (304) 558-6048  
Telephone (304) 558-3225

Earl Ray Tomblin  
*Governor*

Frank Jezloro  
*Director*

July 23, 2014

Division of Natural Resources  
**RIGHT OF ENTRY**

Re: LS-14-VI/09-1116

Antero Resources Corporation  
Brett Fletcher  
c/o Kleinfelder East, Inc.  
Attention: Heather Krepsik  
230 Executive Drive, Suite 122  
Cranberry Township, PA 16066-

Dear Mr. Fletcher:

The Division of Natural Resources hereby grants to you for a period of ten (10) years from the date hereof, a Right of Entry for the purpose of installing and maintaining a matting and pallets crossing (North Canton Pipeline to EQT Pipeline, North Canton Connector Project) at four (4) separate locations along Riggins Run, an unnamed tributary of Ellick Run, and an unnamed tributary of Ralphs Run near Shirley in Doddridge County, West Virginia.

This Right of Entry is subject to the following terms and conditions:

1. No in stream work during the fish-spawning season (April 1-June 30).
2. Work should be completed as quickly as possible during low flows in designated work areas only.
3. All shore areas disturbed by this operation must be reshaped, seeded and mulched immediately upon completion of work. The prompt establishment of vegetative cover will reduce future damage from high water levels.
4. Green concrete must not be put in the stream (highly toxic to aquatic life).
5. Guidance should be obtained from NRCS (formerly SCS) and a registered engineer for the design and construction. Must allow for passage of at least ten-year flood flow.
6. Best management practices should be followed; measures such as hay bales must be used to reduce downstream siltation.



7. Applicant is responsible for removing debris from in and around the installation periodically to prevent stream flow obstruction.
8. Durable head walls of logs, rock, or concrete shall be constructed at both the upstream and downstream ends of crossing to prevent erosion of fill material into the stream.
9. The State's issuance of this Right-of-Entry does not provide for the applicant to work outside the requested boundaries nor does the State assume any liability for the applicant's/landowner's construction activities. By accepting this Right-of-Entry, the applicant/landowner assumes liability for any/all damages caused by this activity to both upstream and downstream landowners.

Guidelines of Best Management Practices for Sediment and Erosion Control as outlined by the Section of Water Resources, Division of Environmental Protection must be followed. Copies of those guidelines are available from the Section of Water Resources, 801 57<sup>th</sup> Street S.E., Charleston, West Virginia 25304-2345, Telephone No. (304) 928-0440.

The issuance of this Right of Entry by the Division of Natural Resources does not preclude the necessity to obtain a permit from the Corps of Engineers or any other state or federal permits which may be required by law, nor does this Right of Entry negate the need to comply with the West Virginia Water Pollution Control Act and/or the State Environmental Quality Board's administrative regulations, applicant is also responsible for determining if the proposed activity is located within an identified flood plain and it is the applicant's responsibility for contacting the local governmental agency in charge of that program and obtaining a flood plain development permit for it. This Right of Entry does not grant any rights or privileges, or permission to enter upon or to cross the property of any other person, nor is permission granted to remove any material that lies upon the property of any other persons. Work should be completed in as brief a period as possible and within one year from the date of this letter. In the event you fail or refuse to comply with any of the terms or conditions herein, this Right of Entry will be canceled and considered null and void and the Division will reject further applications.

Your payment is now due and payable in the amount of \$400.00 to the Division of Natural Resources covering the first year's annual fee of this agreement. Your agreement will be effective upon receipt of your payment in full. You must notify this office in writing when this installation has been removed.

Sincerely,

  
Joe T. Scarberry Supervisor  
Office of Land and Streams

JTS:cb

pc: DNR Fish Biologist  
Mr. Mike Zeto, Environmental Enforcement  
DNR Conservation Officers



June 5, 2014

West Virginia Division of Natural Resources  
Office of Land and Streams  
Building 74, Room 200  
324 Fourth Avenue  
South Charleston, WV 25303

Attn: Carrie Brooks

RE: North Canton Pipeline to EQT Pipeline (North Canton Connector) Project -- Access Road  
Doddridge and Tyler Counties, West Virginia  
Right of Entry Modification Request

Dear Ms. Brooks:

On behalf of Antero Resources Corporation (Antero), Kleinfelder, Inc. (Kleinfelder) submitted Right of Entry (ROE) Permit applications for the proposed North Canton Pipeline to EQT Pipeline (North Canton Connector) Project on May 8, 2014. The proposed 7.86 mile pipeline project is located in Doddridge and Tyler Counties, WV. Since the submission of the original applications, the locations of the proposed access roads have been determined. Kleinfelder visited the site on May 5-6, 2014 and May 16, 2014, to conduct stream and wetland delineations for the area of interest (AOI) surrounding the proposed access roads.


A modification is requested for the use of timber mats and pallets at four (4) additional stream crossings along existing access roads within Doddridge County, West Virginia (Figures 1 and 2). Timber mats and pallets will be placed at each of the proposed crossings to protect stream banks from construction related traffic and will be removed from access roads once construction activities are complete. Additionally, one (1) of the proposed crossings (Stream 1002) will place timber mats and pallets over an existing culvert in order to protect the culvert and stream banks.

Attachment A provides the dimensions of the proposed timber mat bridges. The access roads do not propose any tree clearing or land disturbance activities. No permanent or temporary fill is proposed. No other project changes are proposed at this time.



We appreciate your timely review of these materials. Please contact me at (724) 831-5128 with any questions or concerns.

Respectfully submitted,  
Kleinfelder, Inc.



Heather S. Krepsik  
Senior Environmental Scientist

cc: Antero Resources Corporation, c/o Brett Fletcher  
Attachments

OFFICE OF LAND AND STREAMS  
STREAM ACTIVITY APPLICATION

1. Name of Applicant: Antero Resources Corporation, c/o Brett Fletcher  
(Landowner)

2. Date: June 5, 2014

3. Complete mailing address of applicant: 1615 Wynkoop Street, Denver, CO 80202

Telephone Number: (303) 357-8785

Fax Number: (303) 357-7315

E-Mail Address: bletcher@anteroresources.com

4. Name, address, telephone number, and title of applicant's authorized agent (i.e. contractor employed by landowner):  
Heather S. Krepsek, Kleinfelder, Inc. - 230 Executive Drive, Suite 122, Cranberry Township, PA 16066 - Phone (724) 831-5128

Please  if you want the approval sent to the agent

5. Describe the proposed activity, its purpose and intended use after completion, type of equipment to be used in the stream, amount of material to be dredged (if any), plan for disposing of dredged materials, length of stream/bank to be worked or type and size of structure to be placed in the stream (i.e. length and width of bridge, diameter and length of culvert). One copy of a map (topographical or detailed, hand-drawn) showing exact location of the work site (enabling Officials to locate site) must accompany this application, and all other information that may be important to this application.

On behalf of Antero Resources Corporation (Antero), Kleinfelder, Inc. (Kleinfelder) submitted Right of Entry (ROE) Permit applications for the proposed North Canton Pipeline to EQT Pipeline (North Canton Connector) Project on May 8, 2014. The proposed 7.86 mile pipeline project is located in Doddridge and Tyler Counties, WV. Since the submission of the applications, the locations of the proposed access roads have been determined. Kleinfelder visited the site on May 5-6, 2014 and May 16, 2014, to conduct stream and wetland delineations for the area of interest (AOI) surrounding the proposed access roads.

A modification is requested for the use of timber mats and pallets at four (4) additional stream crossings along existing access roads within Doddridge County, West Virginia (Figures 1 and 2). Timber mats and pallets will be placed at each of the proposed crossings to protect stream banks from construction related traffic and will be removed from access roads once construction activities are complete. Additionally, one (1) of the proposed crossings (Stream 1002) will place timber mats and pallets over an existing culvert in order to protect the culvert and stream banks.

Attachment A provides the dimensions of the proposed timber mat bridges. The access roads do not propose any tree clearing or land disturbance activities. No permanent or temporary fill is proposed. No other project changes are proposed at this time.

(If additional space is required, continue on a separate sheet)



6. Please  the proposed use:  
 Private: \_\_\_\_\_ Public: \_\_\_\_\_ Commercial:   
 (person use) (Government Agency) (Business)

7. Location where proposed activity exists or will occur:  
See Attachment A  
 Name of Water Way (if unnamed or unknown tributary, provide the stream that it flows into)  
 \_\_\_\_\_  
 Doddridge McClellan Shirley, WV  
 County District (taxable) Closest City or Town

8. Date activity is proposed to commence: June 2014  
 Date activity is expected to be complete: June 2015

9. Is any portion of the activity for which authorization is sought now complete? Yes \_\_\_\_\_ No   
 (If the answer is "Yes", give reasons in Section 5 including month and year the activity was completed)

10. Below is a list of entities that may require permits. Please list all approvals or certifications required by other Government Agencies for the above-described activity:

Issuing agency: Corps of Engineers -- (304) 399-5710 Type of approval: N/A  
 (412) 395-7170  
 (412) 395-7157  
 Identification No.: \_\_\_\_\_ Date of approval: \_\_\_\_\_

Issuing agency: County Commission Type of approval: N/A  
 Flood Plain Coordinator  
 Identification No.: \_\_\_\_\_ Date of approval: \_\_\_\_\_

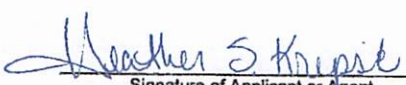
Issuing agency: City Government Type of approval: N/A  
 (if in City Limits the County isn't needed)  
 Identification No.: \_\_\_\_\_ Date of approval: \_\_\_\_\_

11. Has any agency denied approval for the activity described herein? Yes \_\_\_\_\_ No   
 (if "Yes", explain in Section 5 and/or attach a copy of the denial)

12. If activity is a pipeline construction (that is, gas, water, or sewer) give:  
 Material pipeline is made of: \_\_\_\_\_  
 Size of Pipeline: \_\_\_\_\_  
 Maximum pressure of the pipeline: \_\_\_\_\_

Please provide the appropriate line number and if a Gathering or Well Line provide the A.P.I. Well Number:  
 Transmission: \_\_\_\_\_ Distribution: \_\_\_\_\_ Gathering: \_\_\_\_\_ Well Line: \_\_\_\_\_ A.P.I Well Number: \_\_\_\_\_

13: Application is hereby made for authorization to conduct the activities described herein. I certify that I am familiar with the information in this application, and that to the best of my knowledge and belief such information is true, complete and accurate. I further certify that I possess the authority to undertake the proposed activities.

  
 Signature of Applicant or Agent

Office of Land and Streams  
 Building 74, Room 200  
 324 Fourth Avenue  
 South Charleston, WV 25303  
 Phone Number 304-558-3225  
 Fax Number 304-558-6048

OLS Form 1 (08/07)

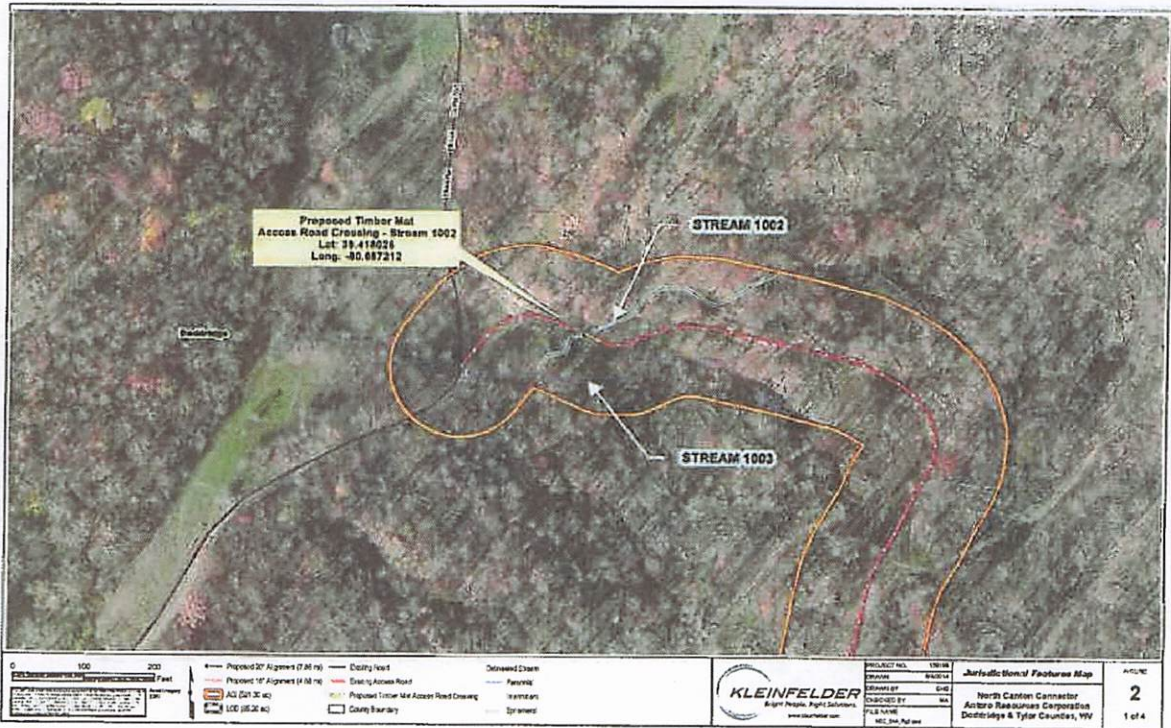
## Figures

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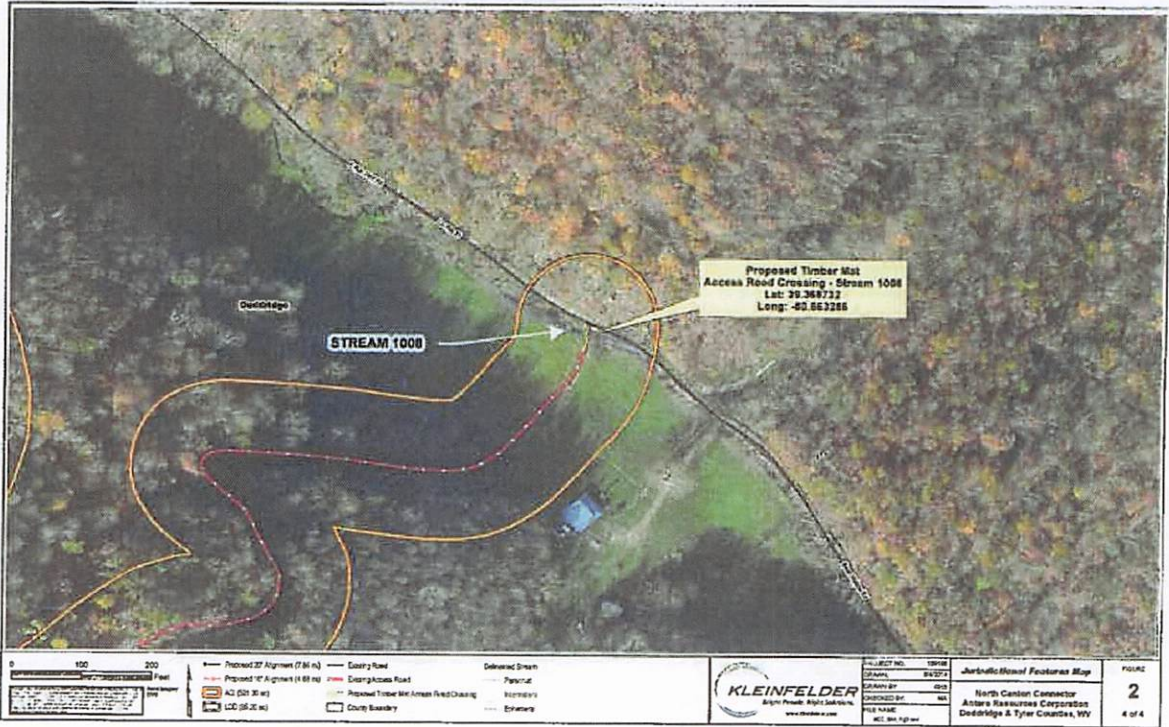












**Attachment A: Stream Temporary Disturbance Table**

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**Table 1: Doddridge County Temporary Disturbance Related to Construction (No Fill)**

<b>Feature Label</b>	<b>Local Waterway</b>	<b>LAT</b>	<b>LONG</b>	<b>Length of Temporary Disturbance (feet)</b>	<b>Area of Temporary Disturbance (acres)</b>	<b>Nature of Temporary Disturbance</b>	<b>Avoidance and Minimization</b>
Stream 1002 (Int)	UNT to Elkick Run	39.418026	-80.687212	17.0	N/A	Equipment crossing point	Matting and pallets (25 feet x 16 feet) will be placed over existing culvert during construction.
Stream 1004 (Per)	UNT to Ralphs Run	39.381398	-80.693872	6.5	N/A	Equipment crossing point	Matting and pallets (14.5 feet x 16 feet) will be in place during construction.
Stream 1006 (Per)	Riggins Run	39.388084	-80.677075	21.0	N/A	Equipment crossing point	Matting and pallets (29 feet x 16 feet) will be in place during construction.
Stream 1008 (Per)	Riggins Run	39.388732	-80.683288	8.5	N/A	Equipment crossing point	Matting and pallets (18.5 feet x 16 feet) will be in place during construction.



WEST VIRGINIA DEPARTMENT OF TRANSPORTATION

Division of Highways

Office of the District Engineer/Manager  
District Four

Jimmy Wriston, P. E.  
Secretary of Transportation

PO Box 4220 (EXIT 121, I-79) \* Clarksburg, WV 26302 \* 304-842-1500  
July 29, 2022

ANTERO RESOURCES CORPORATION

535 WHITE OAKS BOULEVARD  
BRIDGEPORT, WV 26330

Dear Applicant:

Your approved copy of Permit Number 04-2022-0309 for a DP - Drilling Permit

permit type is enclosed. A description of the work is on the permit.

Please contact the District Four office:

**Lacy Pratt 304-326-0091**

at least 48 hours in advance of the date you plan to begin work so arrangements can be made to inspect the work authorized by the permit.

**Failure to comply will result in cancellation of your permit.**

A copy of this permit is to be available on the job at all times while the work is in progress for inspection by the West Virginia Division of Highways' personnel.

Sincerely,

*Michael Cronin*

District Engineer / District Manager

*Lacy Pratt*

Permit Supervisor

Initials: AS:MC:lp

Attachments: Yes

Enclosure: No

cc:OM 0409 O&G file



**Addendum to Permit 04-2022-0309**

This addendum, made this 6<sup>th</sup> day of July 2022, between the West Virginia Department of Transportation, Division of Highways, a statutory company hereinafter called the DIVISION and

**Antero Resources Corporation**

Address: **535 White Oaks Blvd, Bridgeport, WV 26330** Phone: **(304) 824-4100**  
hereinafter called APPLICANT.

The Applicant has filed with the DIVISION a written application for the following named routes and locations:

**Doddridge County Route SLS 5, Riggins Run at Mile Post 10.219**

- ❖ Road conditions have been verified by a route review filming and any further degradation will be the responsibility of the applicant to restore. Release of the applicant's bond will be determined by a final route review
  - ❖ Utilize CASE A6 Traffic Control.
  - ❖ Perform repairs as necessary during operation. A new permit must be obtained for repair work beyond maintenance activities.
  - ❖ Approaches that have a positive grade must slope the approach for natural drainage toward parallel ditch or have a trench drain.
  - ❖ Temporary approaches are to be reclaimed, ditch line restored, area seeded and mulched upon completion of project.
  - ❖ Temporary approaches wanting kept in place by landowner must require new permit by landowner.
- 
- After completion of the project, a joint review of roads will be filmed and evaluated to assure roads have been repaired to existing condition or better.
  - No travel on School Bus Routes during their traversing operational hours on above mentioned route on bi-directional roadways where the lane widths are less than 10 ft.
  - Pilot Vehicle required for all oversized loads.
  - Ditch lines to be maintained by applicant. \*FDR or equivalent may be required to stabilize road to uphold increased traffic and heavy and excess amount of loads after slide repairs are performed. Centerline of roadway cannot be relocated without an agreement between WV DOH and the Applicant. This work requires an advance notice and prior approval by Maintenance/Design Engineer.
  - Repairs that will include "Hot Mix Asphalt" will have the following testing requirement: The supplier will be responsible for testing at the plant; Compaction testing will be as per WV DOH specifications.
  - The Division of Highways shall have the right at all times to inspect the work, and if such inspections should reveal that the work is not done according to specifications, upon being so advised by the Division, the Applicant agrees to take immediate corrective actions.

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APPLICANT shall properly repair and maintain any and all damages that may result to said bridges, highways, shoulders and ditches from hauling activities of APPLICANT, its agents, contractors and employees, to as good a condition prior to commencement of APPLICANT's operation or as when the permit was issued, as determined by the District Engineer/Manager of the DIVISION having jurisdiction over the work permitted, or pay damages therefore in the amount to sufficiently restore such bridges, roads, highways, shoulders and ditches to original condition; and shall reimburse the DIVISION for all inspection costs incurred by it in connection with said work and repairs of such damages and faithfully comply with all terms and conditions of said permits and save harmless the DIVISION and the State of West Virginia from all losses resulting from the conduct of said work and repairs; provided that all projects covered by this blanket bond have been restored to original or better condition; then this bond shall be released; or otherwise will remain in full force and effect.

**Bond Amount: \$1,000,000.00**

**Bond Number: LPM9062891**

**Date: 02/21/2012**

**West Virginia Department of Transportation  
Division of Highways  
Right-of-way Encroachment Permit Application**

Form MM-109  
Rev. 12-9-2019

PERMIT NO. 04-2022-0309

PERMIT TO ENTER UPON, UNDER, OVER OR ACROSS THE STATE ROADS OF THE STATE OF WEST VIRGINIA.

THIS PERMIT, Made this 6th day of July 20 22, between the WEST VIRGINIA DEPARTMENT OF TRANSPORTATION, DIVISION OF HIGHWAYS, a statutory corporation hereinafter called DIVISION and Antero Resources Corporation

Address: 535 White Oaks Blvd Bridgeport, WV 26330 Phone No: 304-842-4100

hereinafter called APPLICANT.

**WITNESSETH**

In consideration of the hereinafter set out covenants and in accordance with W. Va. Code §17-2E-1 *et seq.*, §17-4-8, §17-16-6, §17-16-9, §31H-1-1 *et seq.*, federal law, and the rules, policies, guidelines, manuals, and federal regulations promulgated thereunder, APPLICANT does hereby apply to enter

Route Type & No. CO 5 DOH Project No. n/a (if applicable);

at 1.3 miles southeast of the intersection of WV-23 and CO. 5 Mile Post 10.219

in Doddridge County, for the purposes hereinafter set forth and in accordance with the

plans and specifications which are attached hereto and made a part hereof: O&G: to construct and maintain

a permanent entrance which will originate on the right-of-way of CO. 5 for the Crimson Pad as

shown on the attached sketch and plans. All work must comply with WVDOT/DOH specifications.

West side of CO5.

APPLICANT further agrees to accept the conditions hereinafter set forth:

**Crimson Pad AR-1  
39.386878, -80.676999**

1. APPLICANT shall deposit with DIVISION the sum of \$ 1,000,000 in the form of an official, certified or cashier's check, or executed bond with surety satisfactory to DIVISION to cover any damage and inspection costs DIVISION may sustain by reason of the granting of this permit, including any expense incurred in restoring said highway to its original condition or the proper repair of any and all damages that may result within one (1) year from the date of the completion of said work.
2. APPLICANT agrees to reimburse DIVISION for inspection costs as follows:
  - A. For any inspection costs incurred under this permit.
  - B. At \$ \_\_\_\_\_ per linear foot for \_\_\_\_\_ feet of water line installed under this permit
  - C. At \$ \_\_\_\_\_ per linear foot for \_\_\_\_\_ feet of sewer line installed under this permit
3. APPLICANT shall notify DIVISION at least 48 hours in advance of the date the work will begin. Failure to comply will be cause for cancellation of this permit.
4. APPLICANT agrees to protect its employees, equipment and users of the highway at all times in accordance with the current Division of Highways manual "Traffic Control For Street and Highway Construction and Maintenance Operations".
5. APPLICANT agrees to comply with all applicable state and federal laws in the performance of work under this permit.



6. Supplementary conditions cited below are understood and agreed to be a part hereof.

7. The work authorized under this permit shall be completed on or before (Date): 07/06/2023

**I attest that I have not modified the terms of this document. All attachments are inclusive to this permit.**

Recommended by DOH Reviewer: *Haley Pratt*

Applicant Signature: *John Depoy*

Title: Permit Supervisor

Title: Design Manager

**BOND REQUIREMENT:**

BOND LPM9062891 /DATE 2/21/2012

Attached  On File

APPROVED: *[Signature]*

INSPECTION: Owner/Consultant

Title: Deputy District Engineer  
West Virginia Division of Highways

Full Time  Part Time

Periodic  Reimbursable  No Cost

AUTHORIZATION \_\_\_\_\_

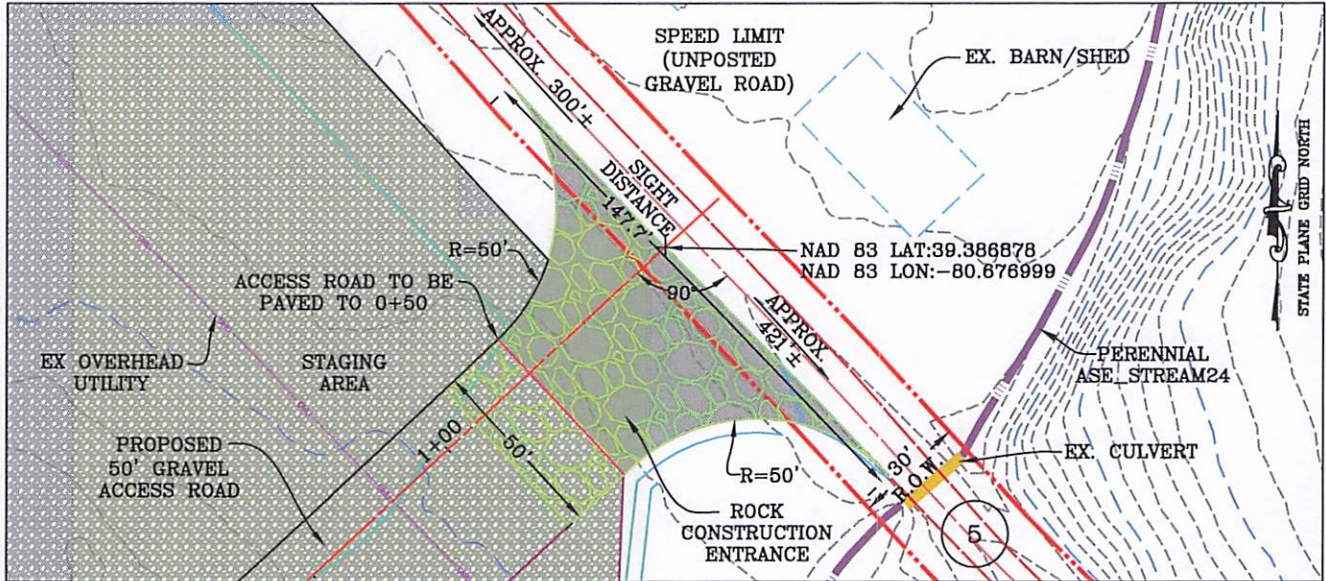
PERMIT 04-2022-0309

**SUPPLEMENTARY CONDITIONS**

1. The person, firm or corporation to whom a permit is issued agrees to hold the State of West Virginia and DIVISION harmless on account of any damages to persons or property which may arise during the process of the work authorized by this permit or by reason thereof.
2. Applications for permission to perform work within highway rights of way shall be made on DIVISION'S standard permit form and shall be signed by the authorized representative of the person, firm or corporation applying.
3. The APPLICANT shall give detailed information concerning the work to be performed and the application must include a sketch sufficient to show the nature of the work performed.
4. APPLICANT, his agents, successor, heirs or assigns, contractors or any other person, firm or corporation working under APPLICANT'S real or apparent authority, shall perform the work in a manner satisfactory to DIVISION. Damage to the road resulting at any time from work authorized under this permit shall be repaired by APPLICANT. Unsatisfactory repairs may be corrected by DIVISION or its authorized agent and the cost thereof paid by APPLICANT.
5. DIVISION assumes no liability for damage to the proposed work by reason of construction or maintenance work on the road.
6. This permit is granted subject to removal of the authorized installation by APPLICANT at no cost to DIVISION when required for improvement of the road, and subject to all regulations now or hereafter adopted by DIVISION.
7. Utility installation shall be in accordance with the current manual, "Accommodation of Utilities on Highway Right of Way".
8. Driveways shall be in accordance with the current manual, "Rules and Regulations for Constructing Driveways on State Highway Rights-of-Way."
9. DIVISION reserves the right to cancel this permit at any time, should APPLICANT fail to comply with the terms and conditions under which it is granted.
10. This permit is granted only insofar as the DIVISION has a right to do so.

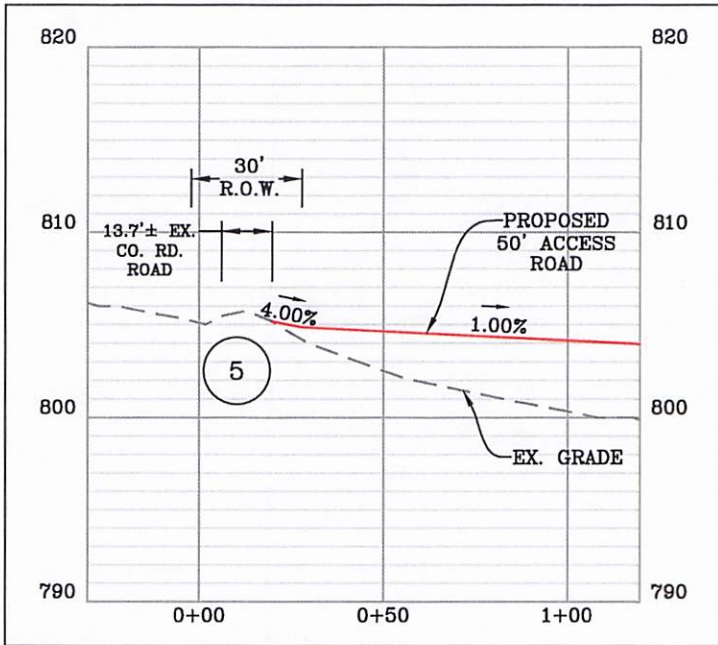


## PLAN VIEW OF PROPOSED ROAD APPROACH



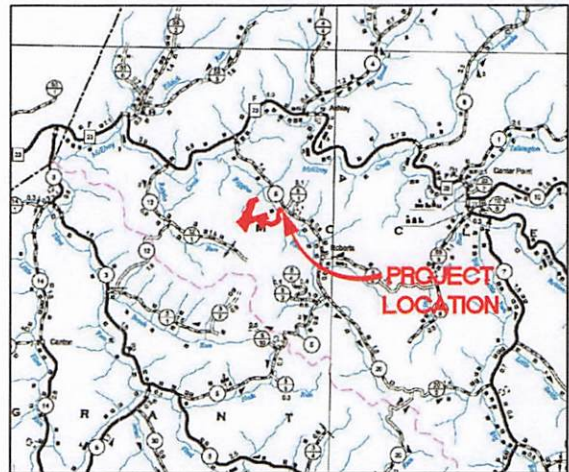
### APPROACH PROFILE

SCALE: HORIZ. 1" = 50'    VERT. 1" = 10'



### VICINITY MAP

N.T.S.



#### NOTES:

ALL SPECIFICATIONS AS SET FORTH IN THE "RULES AND REGULATIONS FOR CONSTRUCTION OF DRIVEWAYS ON STATE HIGHWAY RIGHT-OF-WAY" WHICH ARE APPLICABLE WILL BE CARRIED OUT IN FULL.

#### LOCATION:

PROPOSAL TO CONSTRUCT AND MAINTAIN A PROPOSED 50 FT. COMMERCIAL APPROACH ON THE SOUTHWEST SIDE OF CO. RT. 5, 1.11 MILES SOUTH OF THE INTERSECTION OF CO. RT. 5 & WV. RT. 23 IN McCLELLAN DISTRICT, DODDRIDGE COUNTY, WEST VIRGINIA.

#### PREPARED FOR:

**ANTERO RESOURCES CORPORATION**

535 WHITE OAKS BLVD.  
BRIDGEPORT, WV 28330

CRIMSON

SHEET 1 OF 3

DODDRIDGE COUNTY, WEST VIRGINIA

DESIGNED BY: CSK/TVF

DATE: 05/02/2022

FILE NO: ANT324

SCALE: AS SHOWN

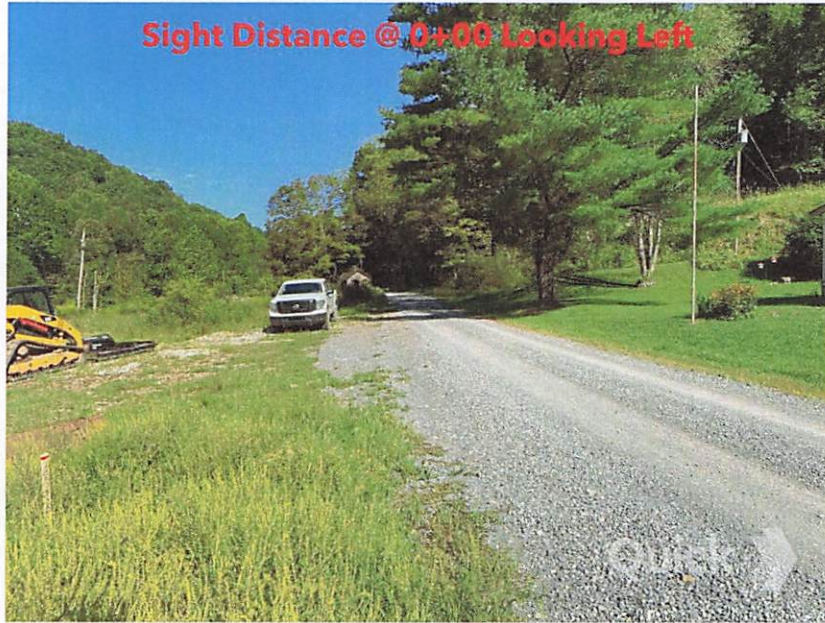
# NAVITUS

ENERGY ENGINEERING

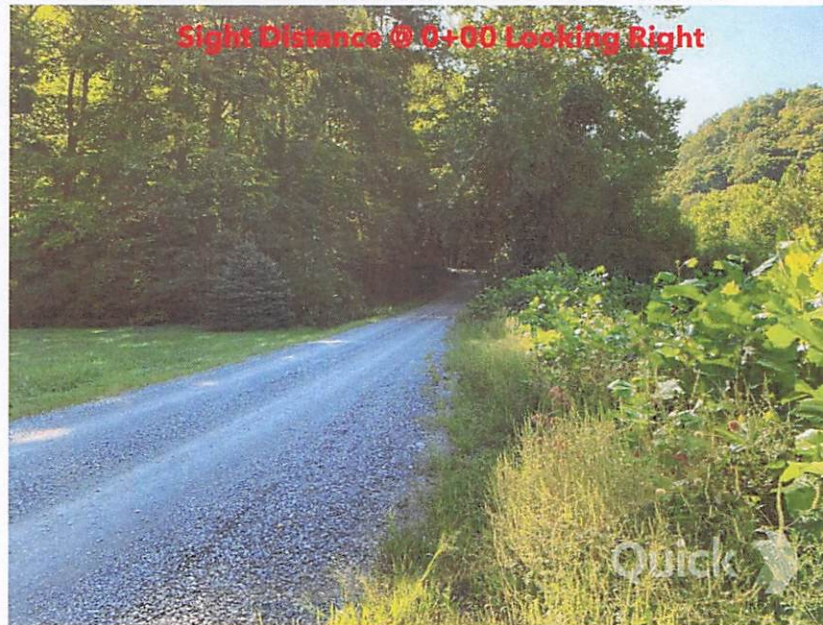
Telephone: (888) 662-4185 | www.NavitusEng.com



PROPOSED ROAD APPROACH LOOKING LEFT - 300'±



PROPOSED ROAD APPROACH LOOKING RIGHT - 421'±



**NOTES:**

ALL SPECIFICATIONS AS SET FORTH IN THE "RULES AND REGULATIONS FOR CONSTRUCTION OF DRIVEWAYS ON STATE HIGHWAY RIGHT-OF-WAY" WHICH ARE APPLICABLE WILL BE CARRIED OUT IN FULL.

**LOCATION:**

PROPOSAL TO CONSTRUCT AND MAINTAIN A PROPOSED 50 FT. COMMERCIAL APPROACH ON THE SOUTHWEST SIDE OF CO. RT. 5, 1.11 MILES SOUTH OF THE INTERSECTION OF CO. RT. 5 & WV. RT. 23 IN McCLELLAN DISTRICT, DODDRIDGE COUNTY, WEST VIRGINIA.

**PREPARED FOR:**

ANTERO RESOURCES CORPORATION  
535 WHITE OAKS BLVD.  
BRIDGEPORT, WV 26330



Telephone: (888) 662-4185 | www.NavitusEng.com

CRIMSON SHEET 2 OF 3

DODDRIDGE COUNTY, WEST VIRGINIA

DESIGNED BY: CSK/TVF DATE: 05/02/2022

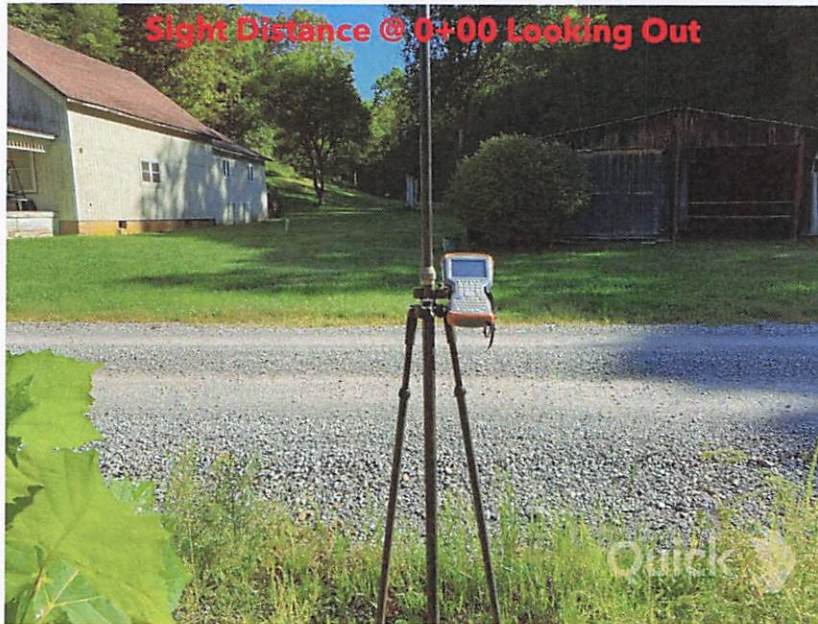
FILE NO: ANT324 SCALE: AS SHOWN



LOOKING AT PROPOSED ROAD APPROACH



PROPOSED ROAD APPROACH LOOKING OUT



**NOTES:**

ALL SPECIFICATIONS AS SET FORTH IN THE "RULES AND REGULATIONS FOR CONSTRUCTION OF DRIVEWAYS ON STATE HIGHWAY RIGHT-OF-WAY" WHICH ARE APPLICABLE WILL BE CARRIED OUT IN FULL.

**LOCATION:**

PROPOSAL TO CONSTRUCT AND MAINTAIN A PROPOSED 50 FT. COMMERCIAL APPROACH ON THE SOUTHWEST SIDE OF CO. RT. 5, 1.11 MILES SOUTH OF THE INTERSECTION OF CO. RT. 5 & WV. RT. 23 IN McCLELLAN DISTRICT, DODDRIDGE COUNTY, WEST VIRGINIA.

**PREPARED FOR:**

**ANTERO RESOURCES CORPORATION**  
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BRIDGEPORT, WV 26330



**CRIMSON** SHEET 3 OF 3

**DODDRIDGE COUNTY, WEST VIRGINIA**

DESIGNED BY: CSK/TVF DATE: 05/02/2022

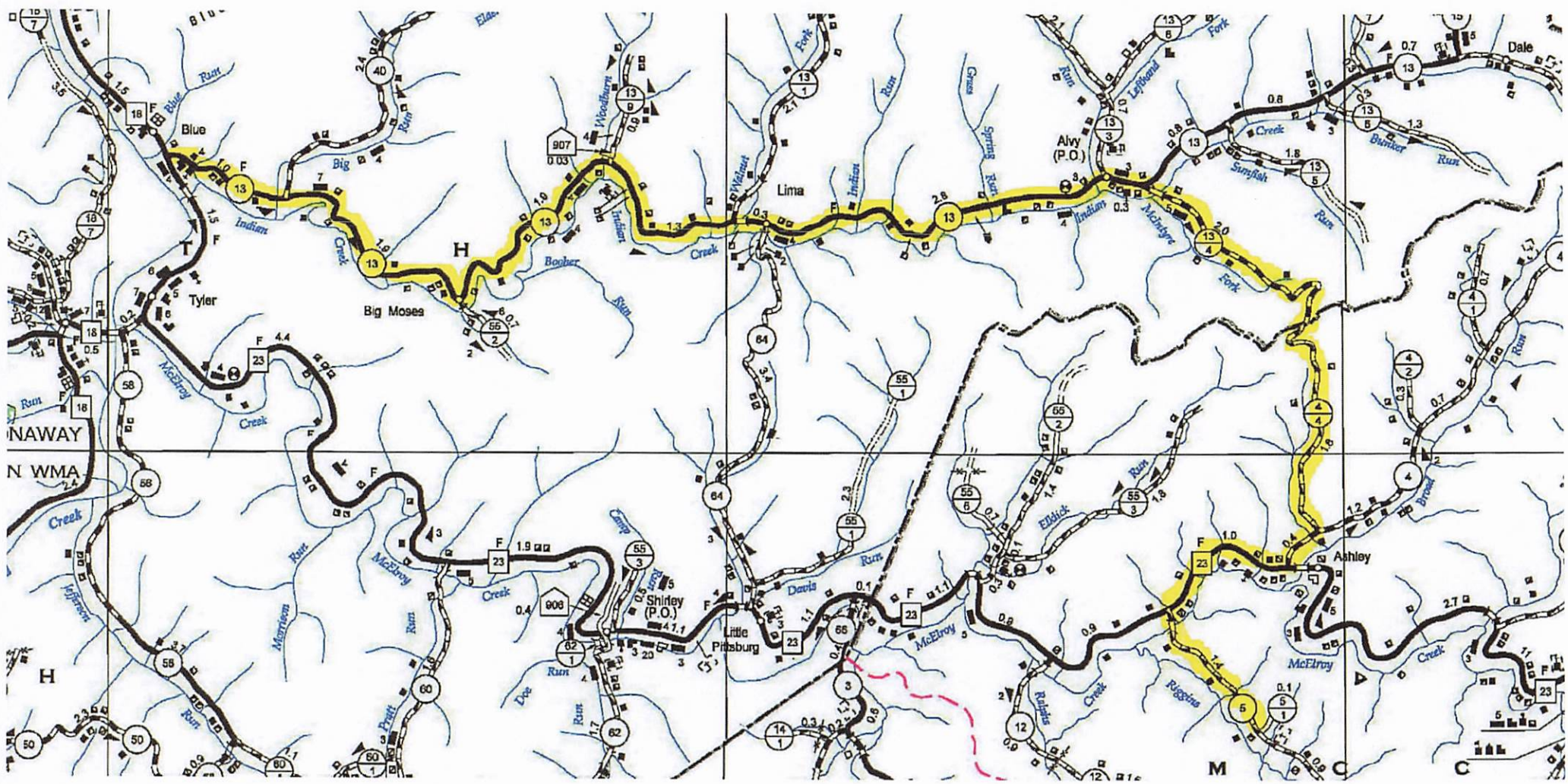
Telephone: (888) 662-4185 | www.NavitusEng.com

FILE NO: ANT324

SCALE: AS SHOWN

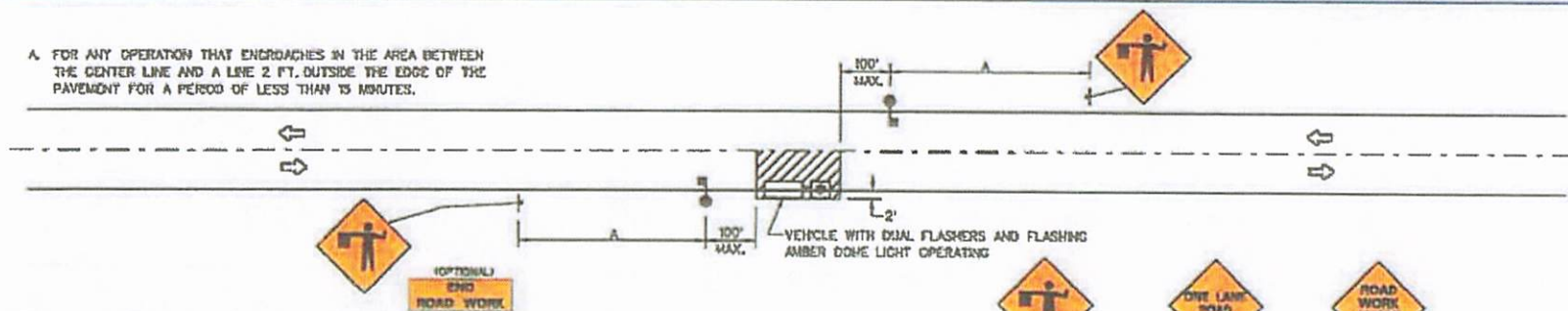




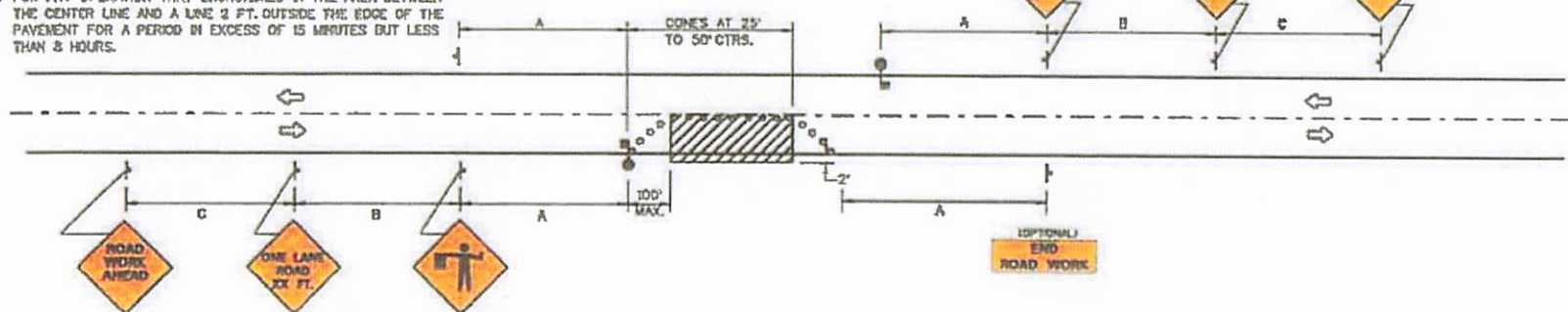




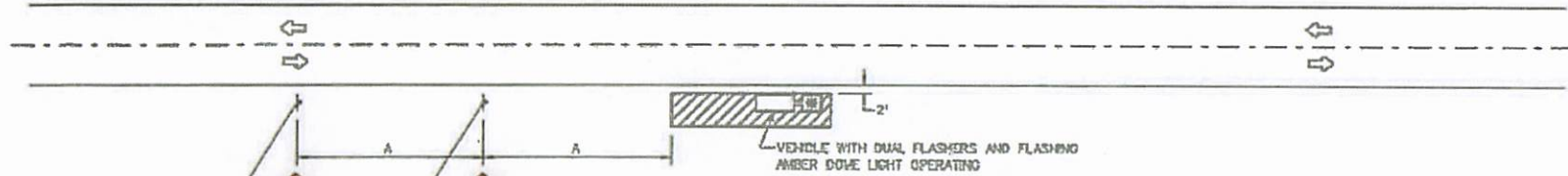
A. FOR ANY OPERATION THAT ENDOUCHES IN THE AREA BETWEEN THE CENTER LINE AND A LINE 2 FT. OUTSIDE THE EDGE OF THE PAVEMENT FOR A PERIOD OF LESS THAN 15 MINUTES.



B. FOR ANY OPERATION THAT ENDOUCHES IN THE AREA BETWEEN THE CENTER LINE AND A LINE 2 FT. OUTSIDE THE EDGE OF THE PAVEMENT FOR A PERIOD IN EXCESS OF 15 MINUTES BUT LESS THAN 3 HOURS.



C. FOR ANY OPERATION THAT IS MORE THAN 2 FT. OUTSIDE THE EDGE OF THE PAVEMENT FOR A PERIOD OF LESS THAN 30 MINUTES.



### SYMBOLS

- WORK AREA.
- SIGN
- SIGN ON PORTABLE OR PERMANENT SUPPORT.
- FLAGGER WITH PADDLE.
- CONES

### GENERAL NOTES

1. CONSTRUCTION OPERATIONS SHALL BE CONFINED TO ONE TRAFFIC LANE, LEAVING THE OPPOSITE LANE OPEN TO TRAFFIC. AT LEAST 500 FT. OF BOTH TRAFFIC LANES SHALL BE AVAILABLE FOR TRAFFIC MOVEMENT AT INTERVALS NOT GREATER THAN 1,000 FT. A COMPLETE TRAFFIC CONTROL PLAN MUST BE APPROVED FOR ANY PROJECT EXPECTING TO EXCEED 1,000 FT. IN LENGTH INCLUDING BOTH TAPER AND WORK AREAS.
2. FOR LOW-VOLUME SITUATIONS WITH SHORT WORK ZONES ON STRAIGHT ROADWAYS WHERE THE FLAGGER IS VISIBLE TO ROAD USERS APPROACHING FROM BOTH DIRECTIONS, A SINGLE FLAGGER, POSITIONED TO BE VISIBLE TO ROAD USERS APPROACHING FROM BOTH DIRECTIONS, MAY BE USED.
3. FLASHING WARNING LIGHTS AND/OR FLAGS MAY BE USED TO CALL ATTENTION TO THE ADVANCE WARNING SIGNS.
4. THE FLAGGERS SHALL BE IN SIGHT OF EACH OTHER OR IN DIRECT COMMUNICATION AT ALL TIMES.
5. ALL SIGNS ARE TO BE REMOVED AT COMPLETION OF THE DAY'S OPERATIONS.
6. FOR MULTILANE DIVIDED ROADWAYS THE ADVANCE WARNING SIGNS FOR TRAFFIC APPROACHING FROM THE OPPOSITE DIRECTION MAY BE OMITTED IF APPROVED BY THE ENGINEER.

#### SUGGESTED ADVANCE WARNING SIGN SPACING

ROAD TYPE	DISTANCE BETWEEN SIGNS (IN FT)		
	A	B	C
URBAN LOW SPEEDS*	100	100	100
URBAN HIGH SPEEDS*	250	350	350
RURAL	500	500	500
EXPRESSWAY/FREEWAY	1,000	1,500	2,640

### CASE A6

TWO-LANE, TWO-WAY TRAFFIC  
SHORT-TERM OPERATIONS  
DAYTIME ONLY

### TYPICAL APPLICATIONS

PATCHING PAVEMENT.  
FIELD SURVEY.  
CLEANING UP DEBRIS ON PAVEMENT.  
CROSSWALK PAINTING.

\*SPEED CATEGORY TO BE DETERMINED BY WY DOH



WEST VIRGINIA DEPARTMENT OF TRANSPORTATION

**Division of Highways**

Office of the District Engineer/Manager

District Four

Post Office Box 4220 · Clarksburg, West Virginia 26302 · (304) 842-1500

**Drilling Operators Permit Conditions & Requirements**

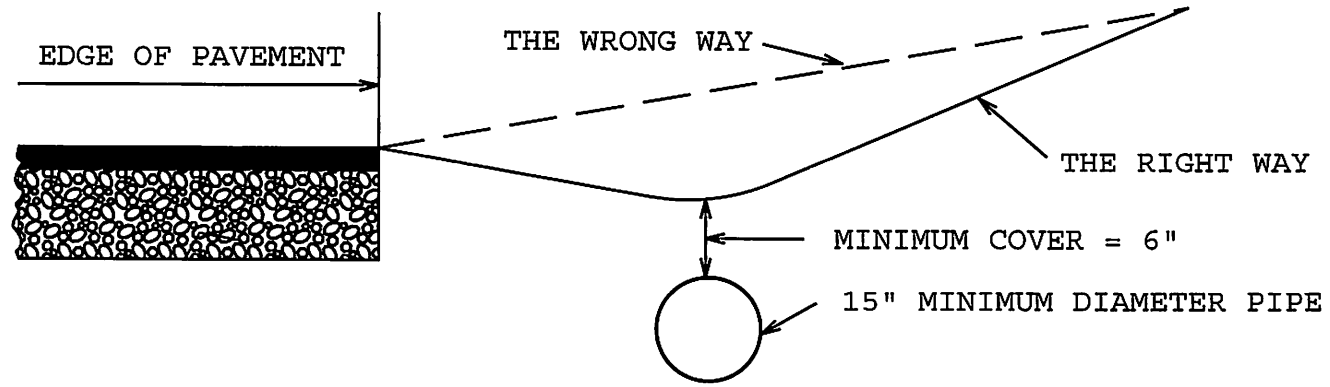
1. Applicant shall ensure the driveway is constructed in accordance with the [WVDOH Driveway Manual](#). The surfacing is specifically addressed on pages 20 and 21 under Section 8.4.6.
2. Prior to permit expiration, applicant must remove this temporary access and return DOH right-of-way to original or better condition; OR the property owner must submit a separate application to obtain a permanent permit.
3. If required, applicant must utilize appropriate traffic control during any use of the access. Failure to provide traffic control will void this permit and bond.
4. At no time may the drilling operation encroach on DOH right-of-way. Specifically, no loading, parking, or staging operations may be conducted on the traveled way or within DOH right-of-way.
5. Vehicles accessing the site are not permitted to stop in DOH right of way or back into the traveled way for any reason.
6. Applicant is responsible for immediate removal of mud and debris from the roadway caused by any entity involved with the drilling operations.
7. Applicant must notify the Permits Office/Oil & Gas Coordinator at (304) 326-0091 when drilling operations cease due to abandoning a well. If the driveway will no longer be used, the driveway must be removed, and ditch line restored to original or better condition, including the removal of pipe. The property owner must place the approach in their name for the driveway to remain. Note that bonds will not be released until every approach issued to your company has been removed or placed in the property owner's name.
8. Applicant shall ensure the driveway is constructed in accordance with the [WVDOH Driveway Manual](#) and that sight lines are free from vegetation or other obstructions at all times during use of the driveway.

**WVDOH Driveway Manual:**

<https://transportation.wv.gov/highways/engineering/Manuals/Traffic/Driveway.pdf>

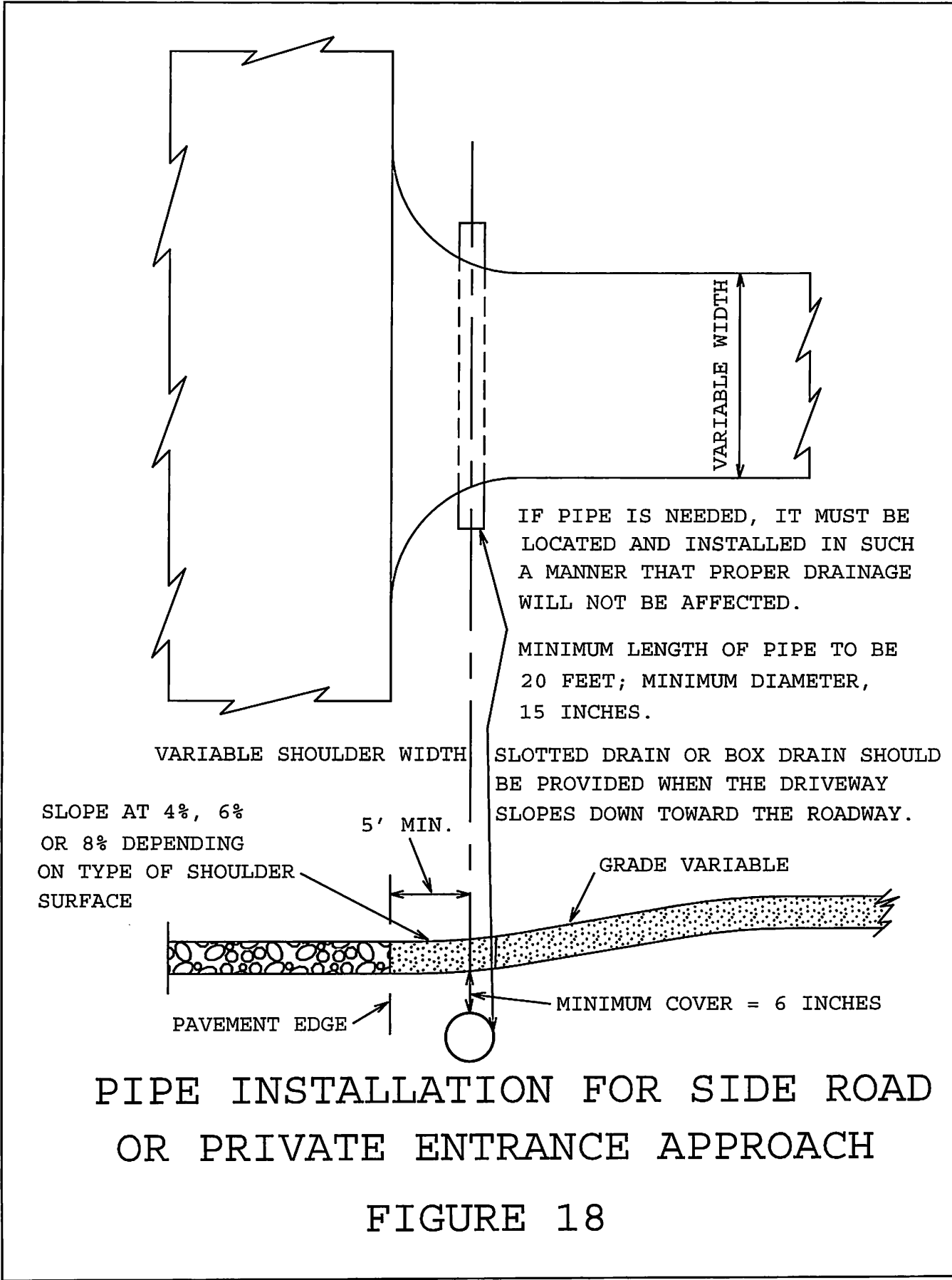
**Failure to comply with any condition or requirement will void this permit.**





PIPE INSTALLATION FOR SIDE ROAD  
APPROACH WITH STEEP GRADE

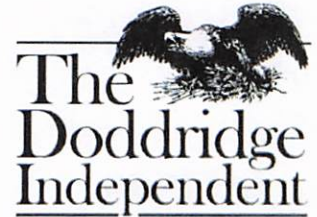
FIGURE 17





The Doddridge Independent, LLC  
 187 Main Street  
 West Union, WV 26456  
 (304) 844-8040

# Invoice



**BILL TO**

George Eidel  
 Doddridge County OES/Floodplain  
 108 Court St.  
 West Union, WV 26456-2095 USA

**COPY**

INVOICE #	DATE	TOTAL DUE	DUE DATE	TERMS	ENCLOSED
6130	11/13/2023	\$91.00	12/13/2023	Net 30	

DATE	ACCOUNT SUMMARY	AMOUNT
09/12/2023	Balance Forward	271.70
	Other payments and credits after 09/12/2023 through 11/12/2023	-271.70
11/13/2023	Other invoices from this date	0.00
	New charges (details below)	91.00
	Total Amount Due	91.00

DESCRIPTION	QTY	RATE	AMOUNT
<b>Legal Ad Class 2</b> Class 2 Legal Ad - Please take notice that on the (26th) of (October), 2023, (Antero Resources) filed an application for a Floodplain Permit (#23-636) to develop land located at or about (191 Jockey Camp Run Road); Coordinates: 39.298344, -80.740360.	1	45.50	45.50
<b>Legal Ad Class 2</b> Class 2 Legal Ad - Please take notice that on the (1st) of (November), 2023, (Antero Midstream) filed a Floodplain Permit application (#23-637) to develop land located at or about (8667 Big Flint Road); Coordinates: 39.365407, -80.718887.	1	45.50	45.50

Thank you for your business...

SUBTOTAL	91.00
TAX	0.00
TOTAL	91.00
TOTAL OF NEW CHARGES	91.00
BALANCE DUE	<b>\$91.00</b>

# The Doddridge Independent

## The Doddridge Independent PUBLISHER'S CERTIFICATE

I, Michael D. Zorn, Publisher of The Doddridge Independent, A newspaper of general circulation published in the town of West Union, Doddridge County, West Virginia, do hereby certify that:

Please take notice that on the (1st) of (November), 2023, (Antero Midstream) filed a Floodplain Permit application (#23-637) to develop land located at or about (8667 Big Flint Road); Coordinates: 39.365407, -80.718887. The Application is on file with the Floodplain Manager of the County and may be inspected or copied during regular business hours in accordance with WV Code Chapter 29B Freedom of Information, Article 1 Public Records and county policy and procedures. Any interested persons who desire to comment

was published in The Doddridge Independent 2 times commencing on Friday, November 3, 2023 and Ending on Friday, November 10, 2023 at the request of:

**George Eidel, Doddridge County Floodplain Manager & Doddridge County Commission**

Given under my hand this Monday, November 13, 2023


The publisher's fee for said publication is:

**\$ 26.00 1st Run/\$ 19.50 Subsequent Runs**  
**This Legal Ad Total: \$ 45.50**

  
Michael D. Zorn  
Publisher of The Doddridge Independent

Subscribed to and sworn to before me on

this date: 11 / 13 / 2023

  
Notary Public in and for Doddridge County  
My Commission expires on

The 20 day of May 2025





### Floodplain Public Notice • Legal Notice

Please take notice that on the (1st) of (November), 2023, (Antero Midstream) filed a Floodplain Permit application (#23-637) to develop land located at or about (8667 Big Flint Road); Coordinates: 39.365407, -80.718887. The Application is on file with the Floodplain Manager of the County and may be inspected or copied during regular business hours in accordance with WV Code Chapter 29B Freedom of Information, Article 1 Public Records and county policy and procedures. Any interested persons who desire to comment shall present the same in writing by (November 27, 2023) {20 calendar days after the announcement at the regularly scheduled Doddridge County Commission Meeting} delivered to the Floodplain Manager of the County at 105 Court Street, Suite #3, West Union, WV 26456. This project is for the renewal of permit 23-623 Crimson South Surface Water Line. 11/3 - 11/10



# INVOICE

The Herald Record LLC  
177 MAIN STREET  
WEST UNION, West Virginia 26456  
United States

Phone: 304-873-1600  
Fax: 304-666-1017  
Mobile: 304-266-2247  
TheHeraldRecord.com

## Bill to

Doddridge County OFFICE OF EMERGENCY MANAGEMENT  
101 Church Street  
West Union, West Virginia 26456  
United States

Invoice Number: 4236

Invoice Date: November 14, 2023

Payment Due: November 14, 2023

Amount Due (USD): \$102.42

Items	Quantity	Price	Amount
<b>Floodplain Permit #636</b> Run Date: 11/8/23 & 11/1/23	1	\$50.71	\$50.71
<b>Floodplain Permit # 637</b> Run dates: 11/8/23 & 11/15/23	1	\$51.71	\$51.71
		<b>Total:</b>	\$102.42
		<b>Amount Due (USD):</b>	<b>\$102.42</b>

Doddridge County Floodplain Permits  
(Week of November 6<sup>th</sup> 2023)

Please take notice that on the (1<sup>st</sup>) of (November), 2023, (Antero Midstream) filed an application for a Floodplain Permit (#23-637) to develop land located at or about (8667 Big Flint Road), Coordinates: 39.365407, - 80.718887. The Application is on file with the Floodplain Manager of the County and may be inspected or copied during regular business hours in accordance with WV Code Chapter 29B Freedom of Information, Article 1 Public Records and county policy and procedures. Any interested persons who desire to comment shall present the same in writing by (November 27<sup>th</sup>, 2023) (20 calendar days after the announcement at the regularly scheduled Doddridge County Commission Meeting) delivered to the Floodplain Manager of the County at 105 Court Street, Suite #3, West Union, WV 26456. This project is for the renewal of permit 23-623, Crimson South Surface Water Line.

George Eidel, CFM, OEM  
Doddridge County Floodplain Manager

**STATE of WEST VIRGINIA:**  
**COUNTY OF DODDRIDGE, TO WIT:**

I, Tamela B. Beamer, Editor of THE HERALD RECORD, a certified weekly newspaper published regularly in Doddridge County, West Virginia, Do Hereby Certify Upon Oath that the accompanying Legal Notice entitled:

**Doddridge County Floodplain Permit Application**  
**# 637**

was published in said paper for 2 successive weeks beginning with the issue of 11/8/2023 and ending with the issue of 11/15/2023 that contains 252 word space at .115 cents per word and amounts to the sum of \$28.98 FOR THE FIRST PUBLICATION.

SECOND PUBLICATION IS 75% OF THE FIRST PUBLICATION and each other publication thereafter \$21.73 for the TOTAL OF: \$ 50.71

Editor

Tamela B. Beamer

SWORN TO AND SUBSCRIBED BEFORE ME THIS THE 15th day of November, 2023

Alice A. Fultz  
Notary Public

My Commission Expires: Oct. 11, 2024





# The Doddridge Independent

## The Doddridge Independent PUBLISHER'S CERTIFICATE

I, Michael D. Zorn, Publisher of The Doddridge Independent, A newspaper of general circulation published in the town of West Union, Doddridge County, West Virginia, do hereby certify that:

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was published in The Doddridge Independent 2 times commencing on Friday, November 3, 2023 and Ending on Friday, November 10, 2023 at the request of:


**George Eidel, Doddridge County Floodplain Manager & Doddridge County Commission**

Given under my hand this Monday, November 27, 2023

The publisher's fee for said publication is:  
**\$ 26.00 1st Run/\$ 19.50 Subsequent Runs**  
**This Legal Ad Total: \$ 45.50**

  
Michael D. Zorn  
Publisher of The Doddridge Independent

Subscribed to and sworn to before me on  
this date: 11 / 27 / 23

  
Notary Public in and for Doddridge County  
My Commission expires on  
The 27<sup>th</sup> day of November 20 23



### Floodplain Public Notice • Legal Notice

Please take notice that on the (1st) of (November), 2023, (Antero Midstream) filed a Floodplain Permit application (#23-637) to develop land located at or about (8667 Big Flint Road); Coordinates: 39.365407, -80.718887. The Application is on file with the Floodplain Manager of the County and may be inspected or copied during regular business hours in accordance with WV Code Chapter 29B Freedom of Information, Article 1 Public Records and county policy and procedures. Any interested persons who desire to comment shall present the same in writing by (November 27, 2023) {20 calendar days after the announcement at the regularly scheduled Doddridge County Commission Meeting} delivered to the Floodplain Manager of the County at 105 Court Street, Suite #3, West Union, WV 26456. This project is for the renewal of permit 23-623 Crimson South Surface Water Line. 11/3 - 11/10

The Doddridge Independent, LLC  
 187 Main Street  
 West Union, WV 26456  
 (304) 844-8040

Invoice



020-718-220

**BILL TO**  
 George Eidel  
 Doddridge County OES/Floodplain  
 108 Court St.  
 West Union, WV 26456-2095 USA

INVOICE #	DATE	TOTAL DUE	DUE DATE	TERMS	ENCLOSED
6133	11/27/2023	\$243.88	12/27/2023	Net 30	

DATE	ACCOUNT SUMMARY	AMOUNT
11/13/2023	Balance Forward	91.00
	Other payments and credits after 11/13/2023 through 11/26/2023	0.00
11/27/2023	Other invoices from this date	0.00
	New charges (details below)	152.88
	Total Amount Due	243.88

DESCRIPTION	QTY	RATE	AMOUNT
<b>Legal Ad Class 2</b> Class 2 Legal Ad - West Virginia State Auditor's Office County Collections Division 1900 Kanawha Boulevard East Building 1 Room W-114 Charleston, West Virginia 25305 (2022-C-000058-DODDRIDGE COUNTY-ELEMENTAL RESOURCES) THE DODDRIDGE INDEPENDENT 187 MAIN STREET WEST UNION, WV 26456 To: ROBERT D HUDKINS JR, ROBERT D HUDKINS SR, ROBERT D HUDKINS JR, PAUL C HUDKINS, THOMAS R HUDKINS, MOLLY HUDKINS, JENNIFER DIVINCENZO HUDKINS, ERIN HUDKINS, KIRA HUDKINS, GARY R HUDKINS, JEFFREY C HUDKINS, DAVIDE HUDKINS, WILLIAM FRANCIS HUDKINS, W F HUDKINS, W FREEL HUDKINS, WILLIAM FREEL HUDKINS. EDGAR F HUDKINS, PAUL C HUDKINS, GARY R HUDKINS, JEFFREY C HUDKINS, DAVIDE HUDKINS, WILLIAM F HUDKINS, MOLLY HUDKINS, or heirs at law, devisees, creditors, representatives, successors, assigns, all known heirs, guardians, conservators, fiduciaries, administrators, lienholders, co-owners, other parties having an undivided interest in the delinquent property, and other parties that may have any interest in the subject property.	1	45.50	45.50
<b>Legal Ad Class 2</b> Class 2 Legal Ad - Please take notice that on the (8th) of (November), 2023, (Long Reach Federal Credit Union) filed an application for a Floodplain Permit (#23-638) to develop land located at or about (54 Main Street, West Union); Coordinates: 39.294302, -80.771882. The Application is on file with the Floodplain Manager of the County and may be	1	45.50	45.50



DESCRIPTION	QTY	RATE	AMOUNT
<p>inspected or copied during regular business hours in accordance with WV Code Chapter 29B Freedom of Information, Article 1 Public Records and county policy and procedures. Any interested persons who desire to comment shall present the same in writing by (December 11, 2023) (20 calendar days after the announcement at the regularly scheduled Doddridge County Commission Meeting) delivered to the Floodplain Manager of the County at 105 Court Street, Suite #3, West Union, This project is for a commercial structure, bank. 11/10 - 11/17</p> <p><b>Legal Ad Class 2</b>  Class 2 Legal Ad - Creek Cleaning Bid - Rt. 18N Early Learning Academy  The Doddridge County Commission will be accepting bids for a creek bank clearing project. The project is located along Rt. 18N near Rt. 50 West Union, Doddridge County, WV, near the Early Learning Academy. This will be for tree/brush removal, along the west side of the Middle Island Creek, in order to keep the creek maintained, and to avoid potential flooding issues.  This project will cover approximately a 1,100 ft. area beginning at the new bridge next to the Early Learning Academy and continue approximately 1,100 ft. South. This project is sponsored by the Doddridge County Commission. The Commission will obtain written permission from the State of West Virginia Department of Highways as well as any property owners that will be affected by this project.</p>	1	61.88	61.88

Thank you for your business...

SUBTOTAL	152.88
TAX	0.00
TOTAL	152.88
TOTAL OF NEW CHARGES	152.88
BALANCE DUE	<b>\$243.88</b>

**DODDRIDGE COUNTY FLOOD PLAIN**

108 COURT ST. STE. 1  
WEST UNION, WV 26456

1663

69-222/522  
00051

DATE 12-5-2023

PAY TO THE  
ORDER OF

The Doddridge Independent

\$ 243.88

Two hundred forty-three

88  
100

DOLLARS



FOR Inv # 6133

*CER*  
*J. S. Spill*  
*Lorena Cate Slater*

⑈001663⑈ ⑆052202225⑆

1196499⑈

**DODDRIDGE COUNTY FLOOD PLAIN**

108 COURT ST. STE. 1  
WEST UNION, WV 26456

1664

69-222/522  
00051

DATE 12-5-2023

PAY TO THE  
ORDER OF

The Herald Record

\$ 101.42

One hundred One

42  
100

DOLLARS



FOR Inv #'s 4244, 4246

*CER*  
*J. S. Spill*  
*Lorena Cate Slater*

⑈001664⑈ ⑆052202225⑆

1196499⑈