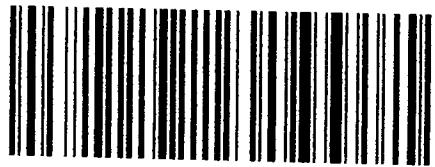
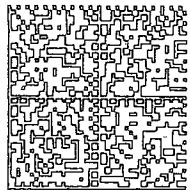


CERTIFIED MAIL™

George Eidel  
Doddridge County OEM/CFM  
108 Court St. Ste 1  
West Union, WV 26456



7014 0150 0001 7356 9898



HASLER

\$006.74<sup>0</sup>

08/24/2016 ZIP 26456  
012E14643162

US POSTAGE

8126116  
6388  
2/22/16  
6388

Daniel Jozwick  
462 Greenbrier Road  
Salem, WV 26426

NIXIE 250 DE 1 0010/07/16

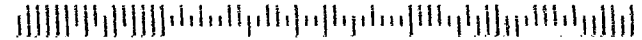
RETURN TO SENDER  
UNCLAIMED  
UNABLE TO FORWARD

1: 93093106822079

UNC

BC: 26456209501 \*1271-05805-24-43

26426 26456 > 2095  
5177 RGR



PLACE STICKER AT TOP OF ENVELOPE TO THE RIGHT  
OF THE RETURN ADDRESS. FOLD AT DOTTED LINE

**SE** **EP** COMPLETE THIS SECTION

- Complete items 1, 2, and 3.
- Print your name and address on the reverse so that we can return the card to you.
- Attach this card to the back of the mailpiece, or on the front if space permits.

Daniel Jozwick  
 462 Greenbrier Road  
 Salem, WV 26426



9590 9402 1601 5362 0149 15

2. Article Number (Transfer from service label)

COMPLETE THIS SECTION ON DELIVERY

A. Signature

X

- Agent
- Addressee

B. Received by (Printed Name)

C. Date of Delivery

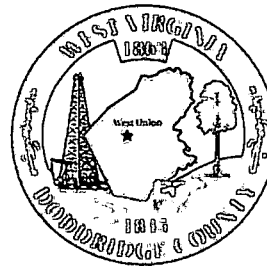
D. Is delivery address different from item 1?  Yes  
 if YES, enter delivery address below:  No

#16432

3. Service Type

- Adult Signature
- Adult Signature Restricted Delivery
- Certified Mail®
- Certified Mail Restricted Delivery
- Collect on Delivery
- Collect on Delivery Restricted Delivery
- Insured Mail
- Insured Mail Restricted Delivery (over \$500)
- Priority Mail Express®
- Registered Mail™
- Registered Mail Restricted Delivery
- Return Receipt for Merchandise
- Signature Confirmation™
- Signature Confirmation Restricted Delivery

Doddridge County Office of  
Emergency Management/Floodplain Management  
108 Court Street Suite 1  
Tel 304-873-1343  
doddridgecountyfpm@gmail.com



Dear Sir or Ma'am,

You are receiving this letter because you have been identified as a land surface and/or mineral rights owner for property or adjacent property related to the proposed development/project identified by the following page.

No action is required of you. This letter is simply to inform you of the proposed development.

If you would like to comment on this proposed project, or would like additional information, you may contact the Doddridge County Floodplain Manager at the above address.

Respectfully yours,

George Eidel

A handwritten signature in cursive script, appearing to read "George Eidel", is written over the typed name.

Doddridge County Floodplain Manager

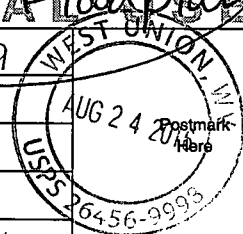


## Doddridge County Floodplain Permits

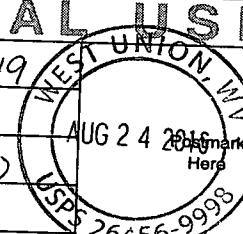
(Week of September 5, 2016)


Please take notice that on the **23 day of August, 2016**, **CEC Inc. on behalf of Mark West** filed an application for a Floodplain Permit (**#16-432**) to develop land located at or about **80.656261W, 39.265696**. The Application is on file with the Clerk of the County Court and may be inspected or copied during regular business hours. Any interested persons who desire to comment shall present the same in writing by **September 26, 2016** (20 calendar days after the announcement at the regularly scheduled Doddridge County Commission Meeting) delivered to the Clerk of the County Court at 108 Court Street Ste. 1, West Union, WV 26456. This project is a **3.3 mile pipeline from Mark West's, Sherwood Plant to the Momentum Pipeline**

7014 0150 0001 7356 9898


<b>U.S. Postal Service™</b> <b>CERTIFIED MAIL™ RECEIPT</b> <small>(Domestic Mail Only; No Insurance Coverage Provided)</small>	
<small>For delivery information visit our website at <a href="http://www.usps.com">www.usps.com</a></small>	
<b>OFFICIAL USE</b>	
Postage \$ .49	
Certified Fee	
Return Receipt Fee (Endorsement Required) 2.80	
Restricted Delivery Fee (Endorsement Required)	
<b>Total Postage &amp; Fees \$ 6.74</b>	
Sent To	
Street, Apt. No.; or PO Box No.	
City, State, ZIP+4	
PS Form 3800, August 2006 <span style="float: right;">See Reverse for Instructions</span>	

7014 0150 0001 7356 9879

<b>U.S. Postal Service™</b> <b>CERTIFIED MAIL™ RECEIPT</b> <small>(Domestic Mail Only; No Insurance Coverage Provided)</small>	
<small>For delivery information visit our website at <a href="http://www.usps.com">www.usps.com</a></small>	
<b>OFFICIAL USE</b>	
Postage \$ .49	
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Street, Apt. No.; or PO Box No.	
City, State, ZIP+4	
PS Form 3800, August 2006 <span style="float: right;">See Reverse for Instructions</span>	

<b>SENDER: COMPLETE THIS SECTION</b>		<b>COMPLETE THIS SECTION ON DELIVERY</b>	
<ul style="list-style-type: none"> <li>Complete items 1, 2, and 3.</li> <li>Print your name and address on the reverse so that we can return the card to you.</li> <li>Attach this card to the back of the mailpiece, or on the front if space permits.</li> </ul>		<b>A. Signature</b> <input checked="" type="checkbox"/> Addressee <input type="checkbox"/> Agent <i>Amanda Martin</i>	
		<b>B. Received by (Printed Name)</b> <i>A. Martin</i>	<b>C. Date of Delivery</b> <i>8/26/16</i>
<b>Robert and Kenneth Martin</b> <b>3 Hideaway Lane</b> <b>Salem, WV 26426</b>		<b>D. Is delivery address different from item 1?</b> <input type="checkbox"/> Yes if YES, enter delivery address below: <input checked="" type="checkbox"/> No	
 9590 9402 1601 5362 0149 39		<b>3. Service Type</b> <input type="checkbox"/> Adult Signature <input type="checkbox"/> Adult Signature Restricted Delivery <input type="checkbox"/> Certified Mail® <input type="checkbox"/> Certified Mail Restricted Delivery <input type="checkbox"/> Collect on Delivery <input type="checkbox"/> Collect on Delivery Restricted Delivery <input type="checkbox"/> Insured Mail <input type="checkbox"/> Insured Mail Restricted Delivery (over \$500)	
2. Article Number (Transfer from service label)		<input type="checkbox"/> Priority Mail Express® <input type="checkbox"/> Registered Mail™ <input type="checkbox"/> Registered Mail Restricted Delivery <input type="checkbox"/> Return Receipt for Merchandise <input type="checkbox"/> Signature Confirmation™ <input type="checkbox"/> Signature Confirmation Restricted Delivery	
PS Form 3811, July 2015 PSN 7530-02-000-9053		Domestic Return Receipt	

#110432

<b>SENDER: COMPLETE THIS SECTION</b>		<b>COMPLETE THIS SECTION ON DELIVERY</b>	
<ul style="list-style-type: none"> <li>Complete items 1, 2, and 3.</li> <li>Print your name and address on the reverse so that we can return the card to you.</li> <li>Attach this card to the back of the mailpiece, or on the front if space permits.</li> </ul>		<b>A. Signature</b> <input checked="" type="checkbox"/> Addressee <input type="checkbox"/> Agent	
		<b>B. Received by (Printed Name)</b> <i>R. Kelley</i>	<b>C. Date of Delivery</b> <i>8/26/16</i>
<b>Guss Kelley</b> <b>1185 Greenbrier Road</b> <b>Salem, WV 26426</b>		<b>D. Is delivery address different from item 1?</b> <input type="checkbox"/> Yes if YES, enter delivery address below: <input checked="" type="checkbox"/> No	
 9590 9402 1601 5362 0149 22		<b>3. Service Type</b> <input type="checkbox"/> Adult Signature <input type="checkbox"/> Adult Signature Restricted Delivery <input type="checkbox"/> Certified Mail® <input type="checkbox"/> Certified Mail Restricted Delivery <input type="checkbox"/> Collect on Delivery <input type="checkbox"/> Collect on Delivery Restricted Delivery <input type="checkbox"/> Insured Mail <input type="checkbox"/> Insured Mail Restricted Delivery (over \$500)	
2. Article Number (Transfer from service label)		<input type="checkbox"/> Priority Mail Express® <input type="checkbox"/> Registered Mail™ <input type="checkbox"/> Registered Mail Restricted Delivery <input type="checkbox"/> Return Receipt for Merchandise <input type="checkbox"/> Signature Confirmation™ <input type="checkbox"/> Signature Confirmation Restricted Delivery	
PS Form 3811, July 2015 PSN 7530-02-000-0063		Domestic Return Receipt	

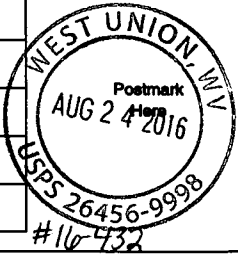
#110432

**U.S. Postal Service™**  
**CERTIFIED MAIL™ RECEIPT**  
 (Domestic Mail Only; No Insurance Coverage Provided)

For delivery information visit our website at [www.usps.com](http://www.usps.com).

OFFICIAL USE

Postage	\$ .49
Certified Fee	
Return Receipt Fee (Endorsement Required)	2.80
Restricted Delivery Fee (Endorsement Required)	
<b>Total Postage &amp; Fees</b>	<b>\$ 6.74</b>



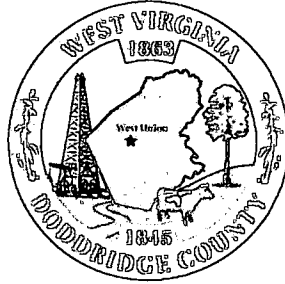
Sent To

Street, Apt. No., or PO Box No.

City, State, ZIP+4

PS Form 3800, August 2006 See Reverse for Instructions

7014 0150 0001 7356 9881



# Floodplain Development Permit

## 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 #: 16-432**

**Date Approved: 9/26/2016**

**Expires: 9/26/2017**

**Issued to: Mark West Liberty Midstream & Resources, LLC POC: Richard Lowry**

**Company Address: 4600 J Barry Court, Suite 500 Canonsburg, Pa. 15317**

**Project Address: 218 Swisher Ln. West Union, WV 26456**

**Firm: 54017C0145C**

**Lat/Long: 80.656261 W, 39.265696**

**Purpose of development: 3.3 mile pipeline connecting Mark West's Sherwood plant to the Momentum Pipeline**

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

**Date:**

---

For additional information regarding this permit, please contact  
Doddridge County Floodplain Manager at 304.873.2631, or via email at  
doddridgecountyfpm@gmail.com  
118 East Court Street; West Union, WV 26456

---

123386

**CIVIL & ENVIRONMENTAL CONSULTANTS, INC.**

333 BALDWIN ROAD  
PITTSBURGH, PA 15205  
(412) 429-2324

COPY

PNC BANK, N.A.  
Pittsburgh, PA

8-9/430



CHECK DATE 8/19/2016

Security features. Details on back.

PAY Two Thousand Eight Hundred Twenty Eight and 00/100 Dollars

TO Doddridge County Commission

COPY

AMOUNT 2,828.00

AUTHORIZED SIGNATURE

⑈ 123386 ⑈ ⑆ 043000096 ⑆ 0002272405 ⑈

**CIVIL & ENVIRONMENTAL CONSULTANTS, INC.**

123386

Check Date: 8/19/2016

Invoice Number	Date	Voucher	Amount	Discounts	Previous Pay	Net Amount
08192016	8/19/2016	000000278193	2,828.00			2,828.00
Doddridge County Commission			TOTAL	2,828.00		2,828.00
- Operating Account	36	11261				

COPY

COPY

Sherwood to Momentum - Doddridge County, WV  
Opinion of Probable Construction Costs - Construction in the Floodplain  
Project #: 151-611  
September 2015

Item	Units	Quantity	Unit Cost	Total Cost
Pipeline Installation*	LF	463	\$ 975.00	\$ 451,425.00
Stabilized Construction Entrances	EA	3	\$ 3,000.00	\$ 9,000.00
Stream Crossings	EA	1	\$ 5,000.00	\$ 5,000.00
<b>Total</b>	-	-	-	\$ 465,425.00

\* Pipeline Installation item includes E&S controls, pipeline trenching and installation, pipe material, inspection, and restoration.





## **Doddridge County Floodplain Permits**

**(Week of September 5, 2016)**

Please take notice that on the **23** day of **August, 2016**, **CEC Inc. on behalf of Mark West** filed an application for a Floodplain Permit (**#16-432**) to develop land located at or about **80.656261W, 39.265696**. The Application is on file with the Clerk of the County Court and may be inspected or copied during regular business hours. Any interested persons who desire to comment shall present the same in writing by **September 26, 2016** (20 calendar days after the announcement at the regularly scheduled Doddridge County Commission Meeting) delivered to the Clerk of the County Court at 108 Court Street Ste. 1, West Union, WV 26456. **This project is a 3.3 mile pipeline from Mark West's, Sherwood Plant to the Momentum Pipeline**

APN	APN2	OWNER	ADDR	CITY	STATE	ZIP	MAP LABEL
03-20-44	09-03-0020-0044-0000-0000	MARTIN KENNETH JR & ROBERT S	LONG RUN RD	SALEM	WV	26426	1
04-3-6	09-04-0003-0006-0000-0000	KELLEY GUSS ET UX	SALEM RD 1	SALEM	WV	26426	2
04-1-24	09-04-0001-0024-0000-0000	JOZWICK DANIEL K	ROUTE 15	SALEM	WV	26426	3
04-1-19	09-04-0001-0019-0000-0000	JOZWICK DANIEL K	SALEM RD 1 RT 15	SALEM	WV	26426	4
04-1-20	09-04-0001-0020-0000-0000	JOZWICK DANIEL K	ROUTE 15	SALEM	WV	26426	5
04-1-21	09-04-0001-0021-0000-0000	JOZWICK DANIEL K	ROUTE 15	SALEM	WV	26426	6
04-1-22	09-04-0001-0022-0000-0000	JOZWICK DANIEL K	SALEM RD 1 RT 15	SALEM	WV	26426	7
04-1-12	09-04-0001-0012-0000-0000	JOZWICK DANIEL K	ROUTE 15	SALEM	WV	26426	8
04-1-11	09-04-0001-0011-0000-0000	JOZWICK DANIEL K	ROUTE 15	SALEM	WV	26426	9
04-1-10	09-04-0001-0010-0000-0000	JOZWICK DANIEL K	ROUTE 15	SALEM	WV	26426	10
04-1-9	09-04-0001-0009-0000-0000	JOZWICK DANIEL K	ROUTE 15	SALEM	WV	26426	11
04-1-8	09-04-0001-0008-0000-0000	JOZWICK DANIEL K	ROUTE 15	SALEM	WV	26426	12
04-1-7	09-04-0001-0007-0000-0000	JOZWICK DANIEL K	ROUTE 15	SALEM	WV	26426	13
04-1-6	09-04-0001-0006-0000-0000	JOZWICK DANIEL K	ROUTE 15	SALEM	WV	26426	14
04-1-5	09-04-0001-0005-0000-0000	JOZWICK DANIEL K	ROUTE 15	SALEM	WV	26426	15
04-1-23	09-04-0001-0023-0000-0000	JOZWICK DANIEL K	SALEM RD 1 RT 15	NEW MILTON	WV	26411	16
04-1-2	09-04-0001-0002-0000-0000	JOZWICK DANIEL K	ROUTE 15	NEW MILTON	WV	26411	17

7014 0150 0001 7356 9898

#16-432

Daniel Jozwick  
462 Greenbrier Road  
Salem, WV 26426

7014 0150 0001 7356 9881

Guss Kelley  
1185 Greenbrier Road  
Salem, WV 26426

7014 0150 0001 7356 9874

Robert and Kenneth Martin  
3 Hideaway Lane  
Salem, WV 26426



August 19, 2016

Mr. George C. Eidel, CFM, OEM, Floodplain Manager  
Doddridge County Commission  
108 Court Street, Suite 1  
West Union, WV 26456

AUG23 16 12:45PM

Dear Mr. Eidel:

Subject: Floodplain Development Permit Modification Application  
Sherwood to Momentum Pipeline  
Doddridge County, West Virginia  
CEC Project 151-611

Civil & Environmental Consultants, Inc. (CEC) was hired as a consultant to provide professional engineering services to MarkWest Liberty Midstream & Resources, LLC (MarkWest). MarkWest previously obtained a Floodplain Development Permit (#15-384) for the proposed Sherwood to Momentum Pipeline Project on November 18, 2015; however, a re-routed section of approximately 3,800 linear feet of pipeline is now being proposed as well as two (2) additional temporary access roads and revised workspace areas. None of the above referenced modifications will permanently impact FEMA mapped floodplain areas. The revised Sherwood to Momentum Pipeline is approximately 3.3 miles in length and will serve as a connection from MarkWest's Sherwood Gas Plant to Momentum's Meter Site in Doddridge County, West Virginia.

On behalf of MarkWest, CEC is submitting the following enclosed information for the Doddridge County Floodplain Development Permit Application:

- The permit fee in the amount of \$2,828; and
- A copy of the Doddridge County Floodplain Development Permit Application including all supporting maps, plans, exhibits, and documentation

Should you have any questions or require additional information, please do not hesitate to contact us at 412-429-2324.

Very truly yours,

CIVIL & ENVIRONMENTAL CONSULTANTS, INC.

  
18689

Edward J. Fink, P.E., CPESC, CPSWQ  
Project Manager  
STATE OF WEST VIRGINIA

Enclosures



Richard P. Celender, C.E.T., CPESC, CPSWQ  
Vice President

cc: Richard Lowry, MarkWest Liberty Midstream & Resources, LLC

151-611-L-Floodplain Permit-8-19-16/P



Permit#	# 16-432
Project Name:	Sherwood Pipeline
Permittees Name:	Mark West CEC INC.

## ***Doddridge County, WV***

# Floodplain Development Permit Application

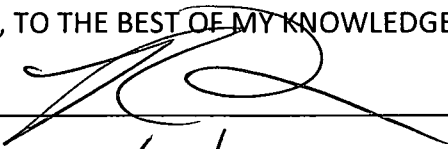
This document is to be used for projects that impact/potentially impact the FEMA---designated floodplain and/or floodway of Doddridge County, WV pursuant to the rules and regulations established by all applicable Federal, State and local laws and ordinances, including the Doddridge County Floodplain 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. Development shall not be used or occupied until a Certificate of Compliance is issued.
5. The permit will expire if no work is commenced within six months of issuance.
6. Applicant is hereby informed that other permits may be required to fulfill local, state, and federal requirements.
7. Applicant hereby gives consent to the Floodplain Administrator/Manager or his/her representative to make inspections to verify compliance.
8. 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 \_\_\_\_\_

DATE \_\_\_\_\_

  
8/19/16

Doddridge County Commercial/Industrial  
Floodplain Development Permit Application

**Applicant Information:**

*Please provide all pertinent data.*

<b>Applicant Information</b>		
<b>Responsible Company Name:</b> MARKWEST LIBERTY MIDSTREAM & RESOURCES, LLC.		
<b>Corporate Mailing Address:</b> 4600 J BARRY COURT, SUITE 500		
<b>City:</b> CANONSBURG	<b>State:</b> PA	<b>Zip:</b> 15317
<b>Corporate Point of Contact (POC):</b> RICHARD LOWRY		
<b>Corporate POC Title:</b> ENVIRONMENTAL MANAGER – NEW CONSTRUCTION		
<b>Corporate POC Primary Phone:</b> (724) 416-0520		
<b>Corporate POC Primary Email:</b> <a href="mailto:richard.lowry@markwest.com">richard.lowry@markwest.com</a>		
<b>Corporate FEIN:</b> 30-052-8059	<b>Corporate DUNS:</b> N/A	
<b>Corporate Website:</b> <a href="http://www.markwest.com/">http://www.markwest.com/</a>		
<b>Local Mailing Address:</b> 4600 J BARRY COURT, SUITE 500		
<b>City:</b> CANONSBURG	<b>State:</b> PA	<b>Zip:</b> 15317
<b>Local Project Manager (PM):</b> DUSTIN VINCENT		
<b>Local PM Primary Phone:</b> (304) 842-2034		
<b>Local PM Secondary Phone:</b> (304) 638-8134		
<b>Local PM Primary Email:</b> <a href="mailto:dustin.vincent@markwest.com">dustin.vincent@markwest.com</a>		
<b>Person Filing Application:</b> RICHARD LOWRY		
<b>Applicant Title:</b> ENVIRONMENTAL MANAGER – NEW CONSTRUCTION		
<b>Applicant Primary Phone:</b> (724) 416-0520		
<b>Applicant Secondary Phone:</b> (412) 925-8165		
<b>Applicant Primary Email:</b> <a href="mailto:richard.lowry@markwest.com">richard.lowry@markwest.com</a>		



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:** 17 TOTAL PROPERTIES

<b>Site/Property Information:</b> SEE ATTACHED (17 PROPERTIES)		
<b>Legal Description:</b>		
<b>Physical Address/911 Address:</b>		
<b>Decimal Latitude/Longitude:</b>		
<b>DMS Latitude/Longitude:</b>		
<b>District:</b>	<b>Map:</b>	<b>Parcel:</b>
<b>Land Book Description:</b>		
<b>Deed Book Reference:</b>		
<b>Tax Map Reference:</b>		
<b>Existing Buildings/Use of Property:</b> WOODLANDS; EXISTING RIGHT-OF-WAY		

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



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.*

<b>Property Designation:</b> ____ of ____
---

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

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

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

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:** \_\_\_ of \_\_\_

<b>Contractor/Sub-Contractor (C/SC) Information:</b>		
C/SC Company Name: TO BE DETERMINED		
C/SC WV License Number:		
C/SC FEIN:	C/SC DUNS:	
Local C/SC Point of Contact (POC):		
Local C/SC POC Title:		
C/SC Mailing Address:		
City:	State:	Zip-Code:
Local C/SC Office Phone:		
Local C/SC POC Phone:		
Local C/SC POC E-Mail:		

<b>Engineer Firm Information:</b>		
Engineer Firm Name: CIVIL & ENVIRONMENTAL CONSULTANTS, INC.		
Engineer WV License Number: 18669		
Engineer Firm FEIN: 25-1599565	Engineer Firm DUNS:	
Engineer Firm Primary Point of Contact (POC): EDWARD FINK		
Engineer Firm Primary POC Title: PROJECT MANAGER		
Engineer Firm Mailing Address: 333 BALDWIN ROAD		
City: PITTSBURGH	State: PA	Zip-Code: 15205
Engineer Firm Office Phone: (412) 429-2324		
Engineer Firm Primary POC Phone: (412) 249-1554		
Engineer Firm Primary POC E-Mail: efink@cecinc.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.*

<b>Adjacent Property Owner Data: Upstream</b> SEE ATTACHED		
Name of Primary Owner (PO):		
Physical Address:		
City:	State:	Zip:
PO Primary Phone:		
PO Secondary Phone:		
PO Primary Email:		

<b>Adjacent Property Owner Data: Upstream</b> SEE ATTACHED		
Name of Primary Owner (PO):		
Physical Address:		
City:	State:	Zip:
PO Primary Phone:		
PO Secondary Phone:		
PO Primary Email:		

<b>Adjacent Property Owner Data: Downstream</b> SEE ATTACHED		
Name of Primary Owner (PO):		
Physical Address:		
City:	State:	Zip:
PO Primary Phone:		
PO Secondary Phone:		
PO Primary Email:		

<b>Adjacent Property Owner Data: Downstream</b> SEE ATTACHED		
Name of Primary Owner (PO):		
Physical Address:		
City:	State:	Zip:
PO Primary Phone:		
PO Secondary Phone:		
PO Primary Email:		

## 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 been properly attained, are current and valid, and must be presented with this application before a Doddridge County Floodplain Permit may be 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 or 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 at the next scheduled Doddridge County Commission meeting after the date of issuance. 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. A Certificate of Compliance is required upon substantial completion of the project.**
- 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 Wirt County Floodplain Manager and that I must stop all construction immediately until discrepancies of actual work vs. proposed work is resolved.

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

Date: \_\_\_\_\_







Applicant Printed Name: \_\_\_\_\_

*Rick Lowry, MARK West Liberty Midstream + Resources, LLC*

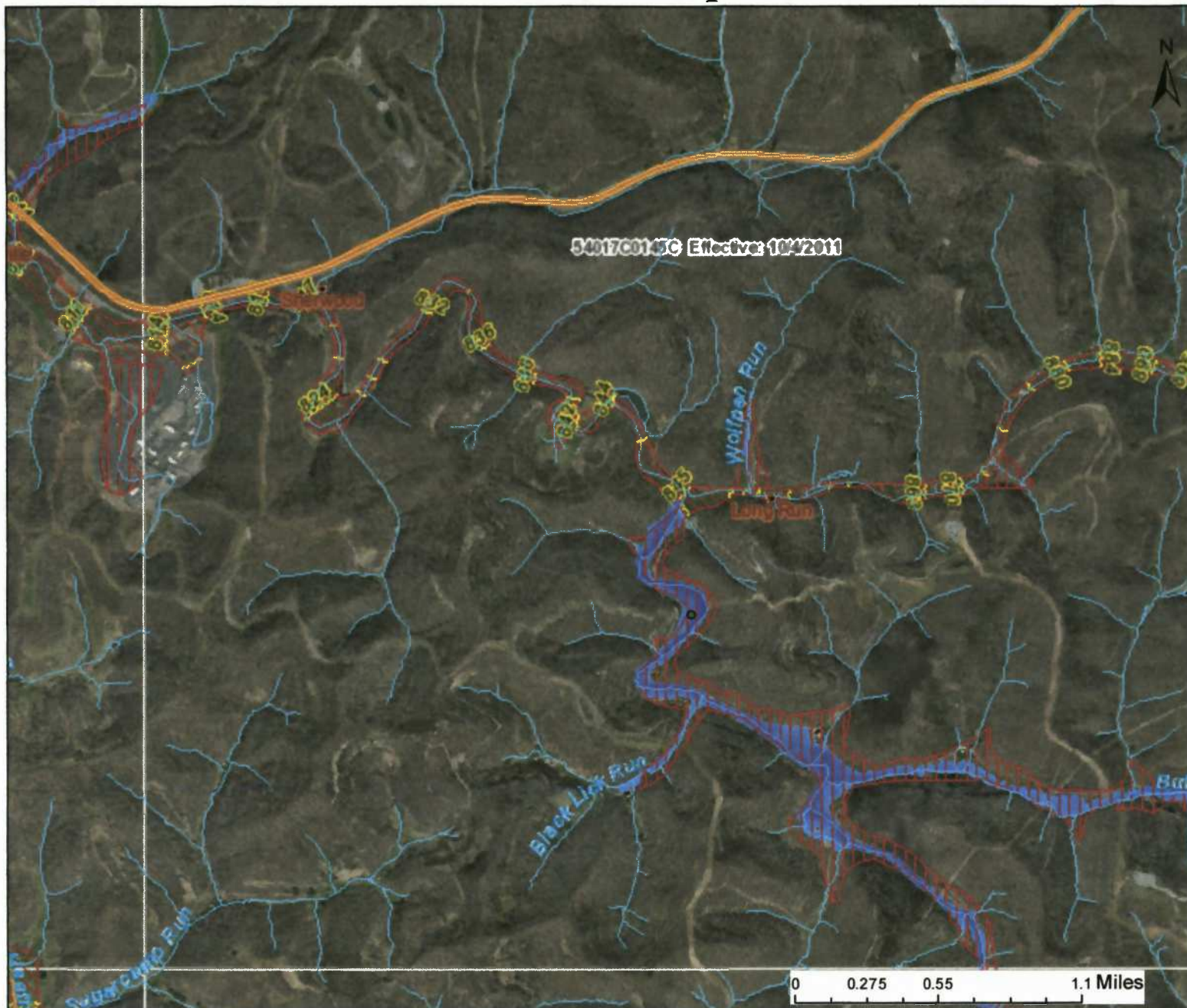
# WV Flood Map




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




 Location of flood information <b>User Notes:</b>		Map created on August 23, 2016
<ul style="list-style-type: none"> <li> Cross Section (XS) Lines</li> <li> Base Flood Elevation (BFE) Lines</li> <li> Floodway</li> </ul>	<b>Flood Hazard Zone</b> <ul style="list-style-type: none"> <li> Approximate Study (Zone A)</li> <li> Detailed Study (AE, AH, AO)</li> </ul>	
<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. To obtain more detailed information in areas where Base Flood Elevations have been determined, users are encouraged to consult the latest Flood Profile data contained in the official flood insurance study. These studies are available online at <a href="http://www.msc.fema.gov">www.msc.fema.gov</a> . WV Flood Tool ( <a href="http://www.MapWV.gov/flood">http://www.MapWV.gov/flood</a> ) is supported by FEMA, WV NFIP Office, and WV GIS Technical Center.		
		<b>Flood Hazard Area:</b> Flood Hazard Area: Location is WITHIN the FEMA 100-year floodplain.
		<b>Flood Hazard Zone:</b> A (Advisory A)
		<b>Stream:</b> Buffalo Calf Fork
		<b>FEMA Issued Flood Map:</b> 54017C0145C
		<b>Watershed (HUC8):</b> Little Musringum-Middle Island (5030
		<b>Advisory Flood Height:</b> About 855 ft
		<b>Water Depth:</b> About 11.9 ft (Source: HEC_R
		<b>Elevation:</b> About 843 ft
		<b>Location (long, lat):</b> (80.656261 W, 39.265696 N)
		<b>Location (UTM 17N):</b> (529654, 4346317)
		<b>Contacts:</b> Doddridge
		<b>CRS Information:</b> N/A
		<b>Flood Profile:</b>
		<b>HEC-RAS Model:</b> Buffalo Calf Fork
		<b>Parcel Number:</b>

# 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.

 Location of flood information  
User Notes:

-  Cross Section (XS) Lines
-  Base Flood Elevation (BFE) Lines
-  Floodway

### Flood Hazard Zone

-  Approximate Study (Zone A)
-  Detailed Study (AE, AH, AO)

### Disclaimer:

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. To obtain more detailed information in areas where Base Flood Elevations have been determined, users are encouraged to consult the latest Flood Profile data contained in the official flood insurance study. These studies are available online at [www.msc.fema.gov](http://www.msc.fema.gov).  
WV Flood Tool (<http://www.MapWV.gov/flood>) is supported by FEMA, WV NFIP Office, and WV GIS Technical Center.

Map created on August 23, 2016

### Flood Hazard Area:

Flood Hazard Area: Location is WITHIN the FEMA 100-year floodplain.

### Flood Hazard Zone:

A (Advisory A)

### Stream:

Buffalo Calf Fork

### FEMA Issued Flood Map:

54017C0145C

Watershed (HUC8): Little Musringum-Middle Island (5030

Advisory Flood Height: About 855 ft

Water Depth: About 4.7 ft (Source: HEC\_RAS)

Elevation: About 850 ft

Location (long, lat): (80.656<sup>367</sup> W, 39.265<sup>696</sup> N)

Location (UTM 17N): (529594, 4346273)

Contacts: Doddridge

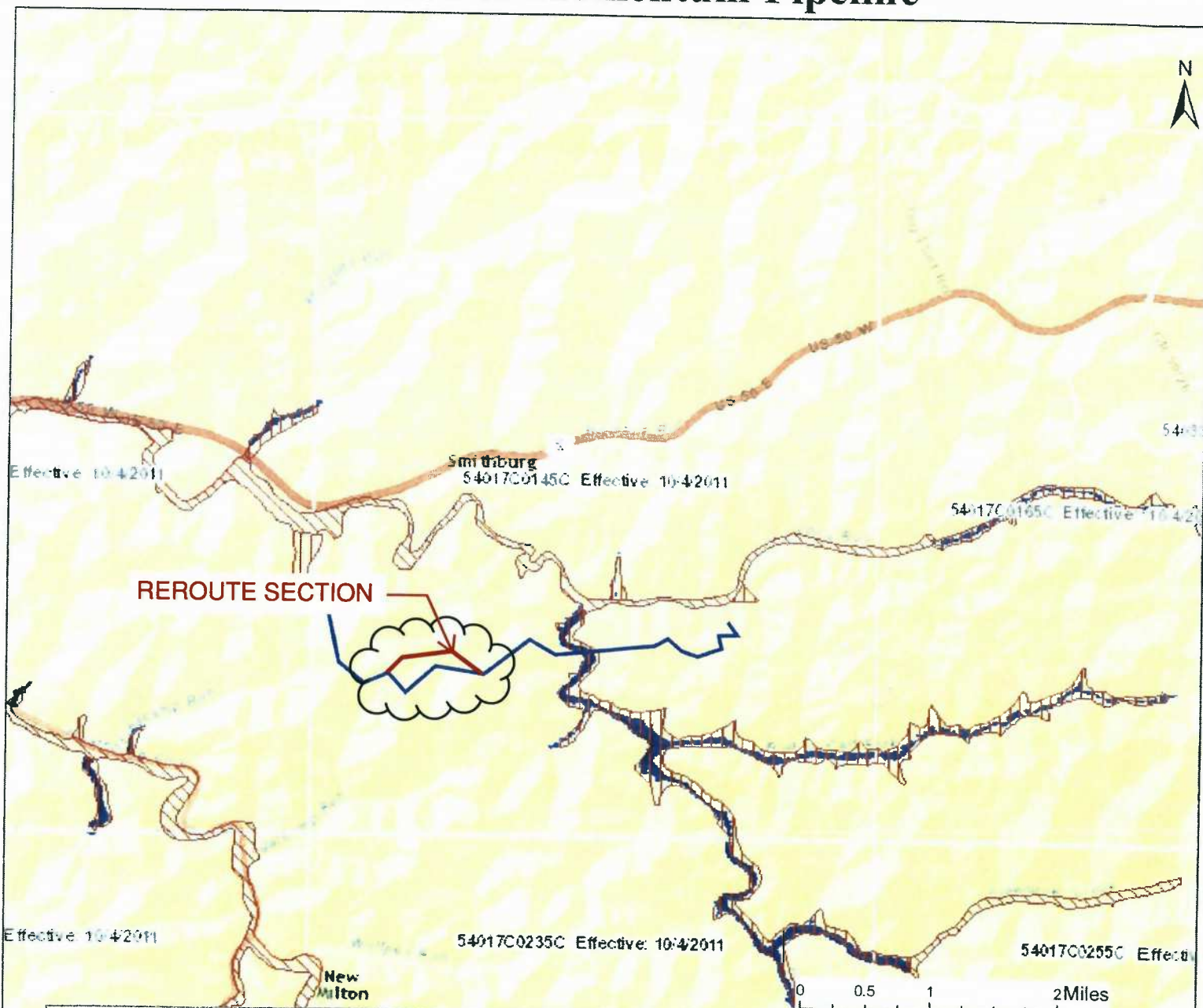
CRS Information: N/A

Flood Profile:

HEC-RAS Model: Buffalo Calf Fork

Parcel Number:

# Sherwood to Momentum Pipeline



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

 Location of flood information

User Notes:

Map created on September 17, 2015



Floodway

**Flood Hazard Zone**



Approximate Study (Zone A)



Detailed Study (AE, AH, AO)



Community Rating System Areas

**Disclaimer:**

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. To obtain more detailed information in areas where Base Flood Elevations have been determined, users are encouraged to consult the latest Flood Profile data contained in the official flood insurance study. These studies are available online at [www.msc.fema.gov](http://www.msc.fema.gov).  
 WV Flood Tool (<http://www.MapWV.gov/flood>) is supported by FEMA, WV NFIP Office, and WV GIS Technical Center.

**Flood Hazard Area:**

Flood Hazard Area:

**Flood Hazard Zone:**

Stream:

**FEMA Issued Flood Map:**

**Watershed (HUC8):**

**Advisory Flood Height:**

**Water Depth:**

**Elevation:**

**Location (long, lat):**

**Location (UTM 17N):**

**Contacts:**

**CRS Information:**

**Flood Profile:**

**HEC-RAS Model:**

**Parcel Number:**





Grant

Greenbrier

PANEL #: 54017C0145C  
QUAD: Smithburg (39080-C6)



SHEET INDEX

- LEGEND**
- LIMIT OF DISTURBANCE
  - ADJACENT PARCEL IN FLOODPLAIN
  - PIPELINE PARCEL
  - 100-YEAR FLOOD ZONE
  - TAX DISTRICT
  - STREAM



**REFERENCE**  
 ESRI WORLD IMAGERY / ARCGIS MAP SERVICE:  
[HTTP://GTO.ARCGISONLINE.COM/MAPS/WORLD\\_IMAGERY](http://gto.arcgis.com/arcgis/rest/services/world_imagery),  
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 USGS NATIONAL HYDROGRAPHY DATASET, 2012  
 PARCEL INFORMATION FOR DODDRIDGE COUNTY, WV  
 WEST VIRGINIA DEPARTMENT OF REVENUE, 2009.  
 FEMA DIGITAL FLOOD INSURANCE RATE MAP DATABASE,  
 DODDRIDGE COUNTY, WEST VIRGINIA. DATE: 2010

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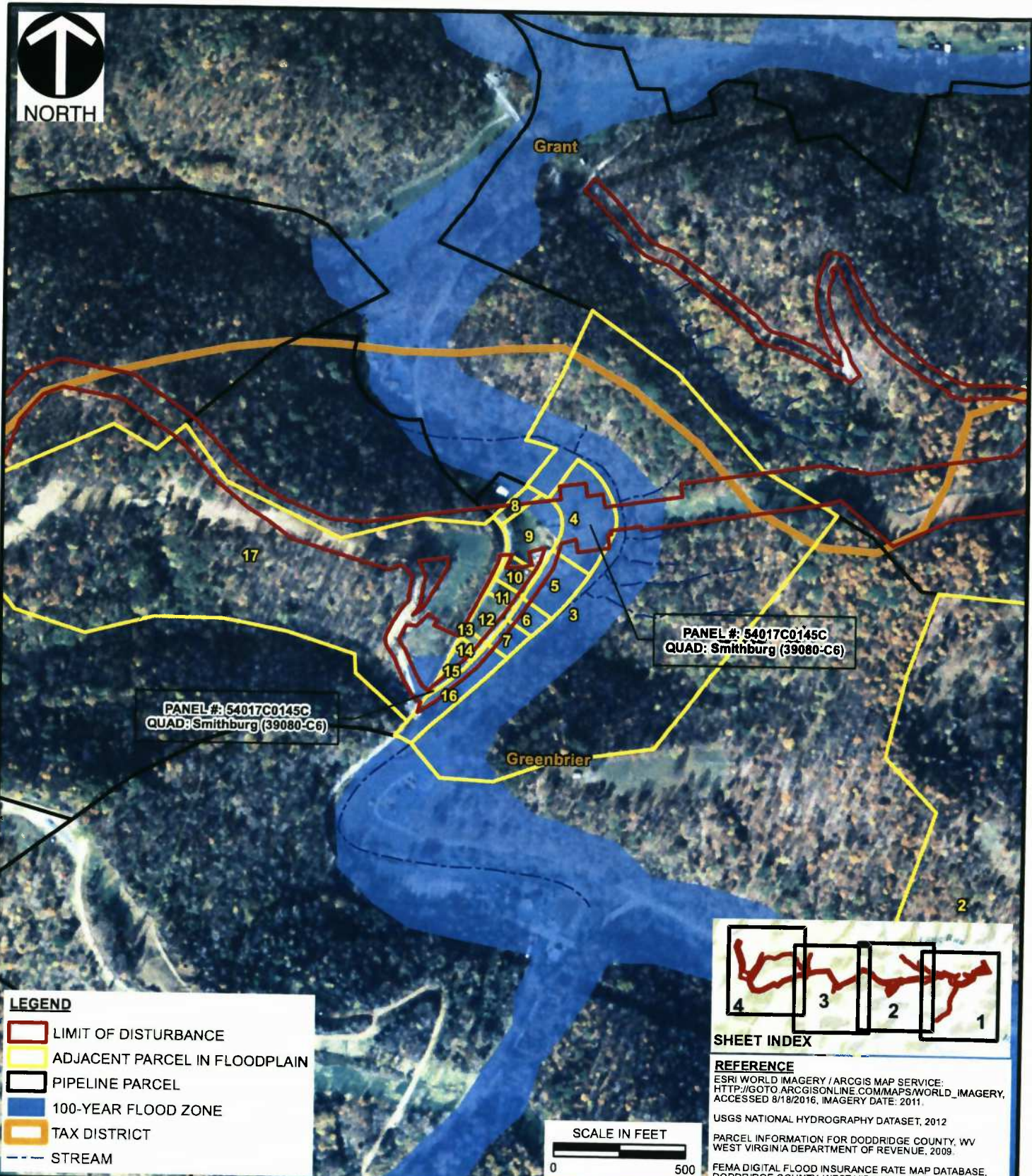
**Civil & Environmental Consultants, Inc.**

333 Baldwin Road - Pittsburgh, PA 15205-9072  
412-429-2324 • 800-365-2324  
www.cecinc.com

MARKWEST LIBERTY MIDSTREAM & RESOURCES, LLC  
SHERWOOD TO MOMENTUM  
GRANT AND GREENBRIER TAX DISTRICTS  
DODDRIDGE COUNTY, WEST VIRGINIA

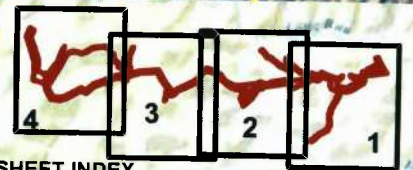
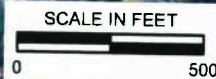
**FLOOD INSURANCE RATE MAP**

DRAWN BY:	MSM	CHECKED BY:	EMZ	APPROVED BY:	EJF*	FIGURE NO:	<b>3</b>
DATE:	8/17/2016	SCALE:	1" = 500'	PROJECT NO:	132-828	* Hand signature on file	



**LEGEND**

- LIMIT OF DISTURBANCE
- ADJACENT PARCEL IN FLOODPLAIN
- PIPELINE PARCEL
- 100-YEAR FLOOD ZONE
- TAX DISTRICT
- STREAM



**SHEET INDEX**

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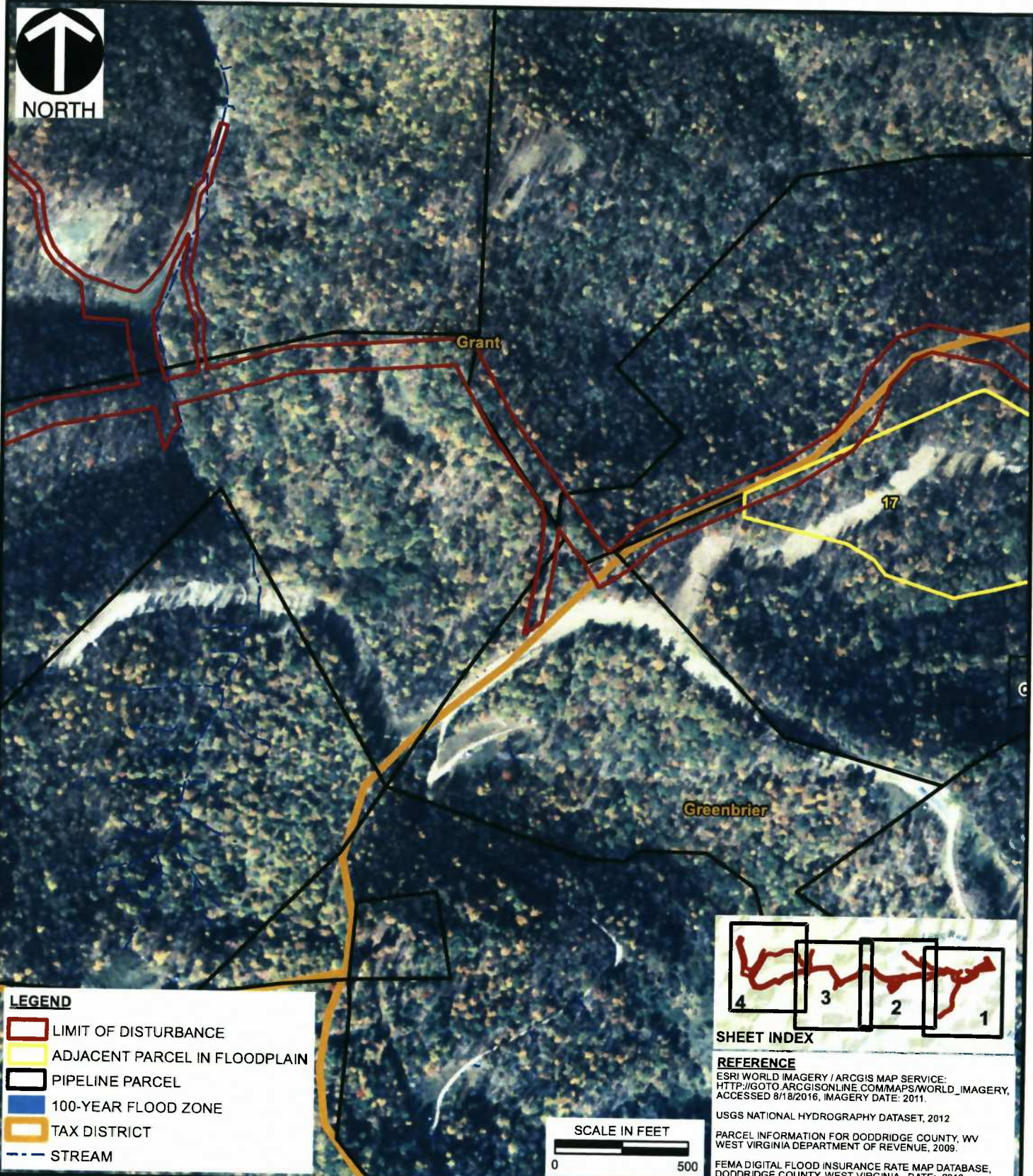
333 Baldwin Road - Pittsburgh, PA 15205-9072  
 412-429-2324 · 800-365-2324  
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**FLOOD INSURANCE RATE MAP**

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**LEGEND**

-  LIMIT OF DISTURBANCE
-  ADJACENT PARCEL IN FLOODPLAIN
-  PIPELINE PARCEL
-  100-YEAR FLOOD ZONE
-  TAX DISTRICT
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**SHEET INDEX**

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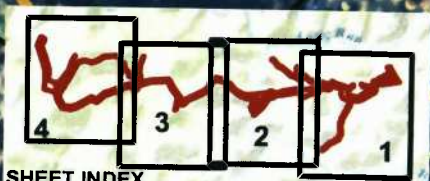


NORTH



**LEGEND**

- LIMIT OF DISTURBANCE
- ADJACENT PARCEL IN FLOODPLAIN
- PIPELINE PARCEL
- 100-YEAR FLOOD ZONE
- TAX DISTRICT
- STREAM



**SHEET INDEX**

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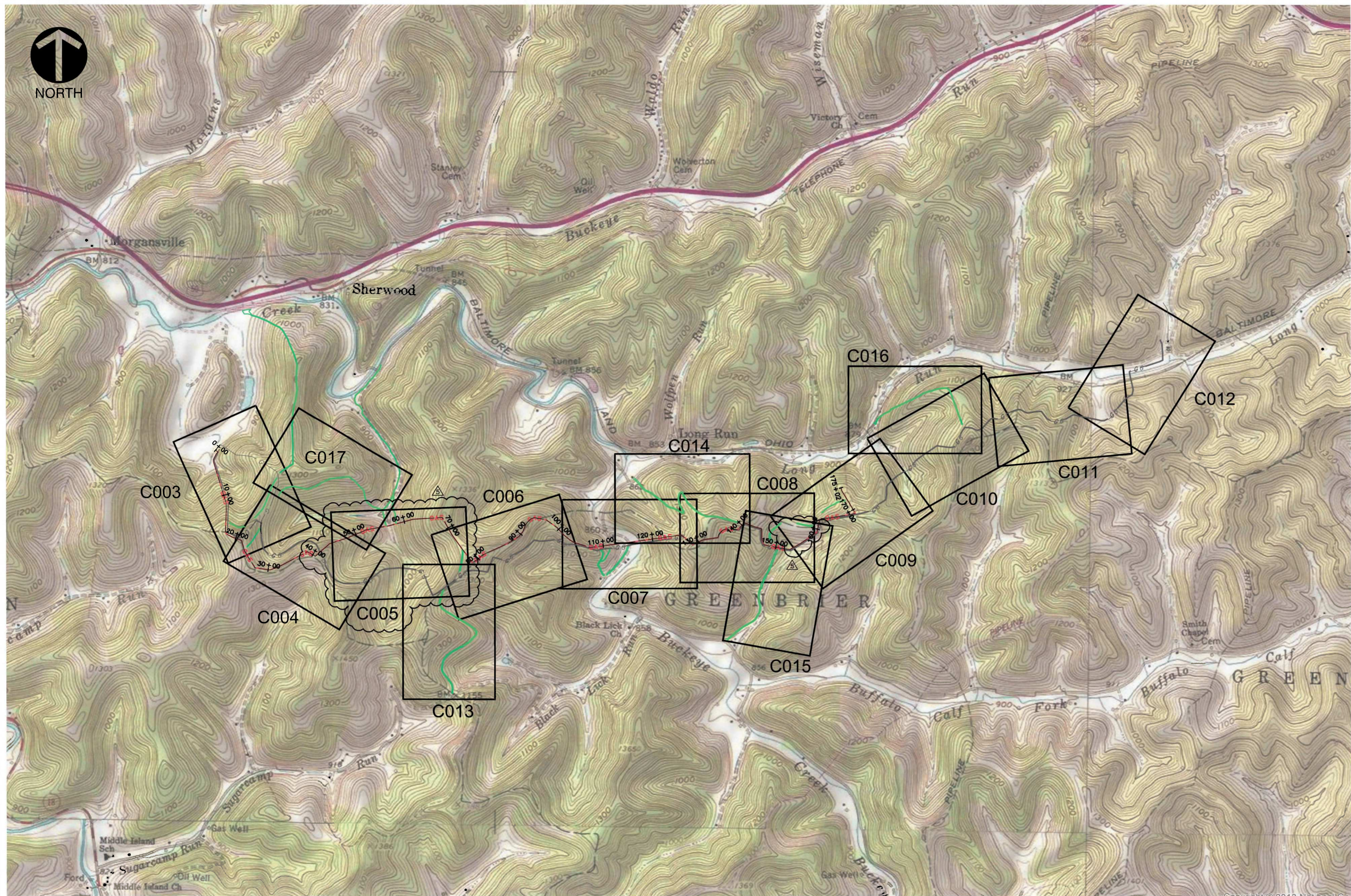
MARKWEST LIBERTY MIDSTREAM & RESOURCES, LLC  
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Document Path: P:\2013\132-828\GIS\Maps\FLOODPLAIN\_APP\20160817\132828\_FLOODPLAIN\_FIGS.mxd





**LEGEND**

	EXISTING ROAD
	EXISTING PIPELINE
	PROPOSED PIPELINE
	ACCESS ROAD
	PLAN SHEET REFERENCE

**REVISION RECORD**

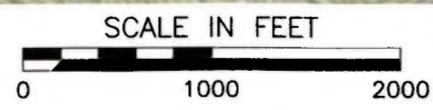
NO	DATE	DESCRIPTION
1	04/20/14	REUSE PIPELINE ALIGNMENT, RIGHT OF WAY, LIMIT OF DISTURBANCE, AND E&E CONTROLS
2	02/27/2015	REVISED TO INCLUDE ADDITIONAL WORKSPACES
3	09/15/2015	REVISED FOR ADDITIONAL PIPELINE
4	10/21/15	REVISED PER COMMENTS FROM WORK DATED 10/7/15
5	02/20/16	REUSE PIPELINE ALIGNMENT, RIGHT OF WAY, LIMIT OF DISTURBANCE, AND E&E CONTROLS

**C&E**  
**Civil & Environmental Consultants, Inc.**  
 333 Baldwin Road - Pittsburgh, PA 15205  
 412-429-2324 - 800-365-2324  
 www.ccecinc.com

**MARKWEST LIBERTY  
 MIDSTREAM & RESOURCES, LLC  
 SHERWOOD SALES  
 PIPELINE  
 DODDRIDGE COUNTY, WEST VIRGINIA**

**USGS OVERALL PLAN**

DATE:	10/14/2013	DRAWN BY:	JSC
DWG SCALE:	AS NOTED	CHECKED BY:	EJF
PROJECT NO.:		APPROVED BY:	131-985
			*RPC



**NOTES**

- CONTRACTOR SHALL REFER TO OTHER PLANS WITHIN THIS CONSTRUCTION SET FOR OTHER PERTINENT INFORMATION. IT IS NOT THE ENGINEER'S INTENT THAT ANY SINGLE PLAN SHEET IN THIS SET OF DOCUMENTS FULLY DEPICT ALL WORK ASSOCIATED WITH THE PROJECT.
- CIVIL AND ENVIRONMENTAL CONSULTANTS INC. DOES NOT GUARANTEE THAT THE SURVEY OR MAPPING INCLUDED IN THESE PLANS DEPICTS COMPLETE OR CONCLUSIVE SUBSURFACE INFORMATION NOR DOES IT REFLECT A COMPLETED BOUNDARY SURVEY. CONTRACTOR IS REQUIRED TO CONTACT THE WEST VIRGINIA MISS UTILITY SYSTEM PRIOR TO PERFORMING ANY EXCAVATIONS. ENGINEERING DATA WAS PROVIDED BY OTHERS.



\* HAND SIGNATURE ON FILE

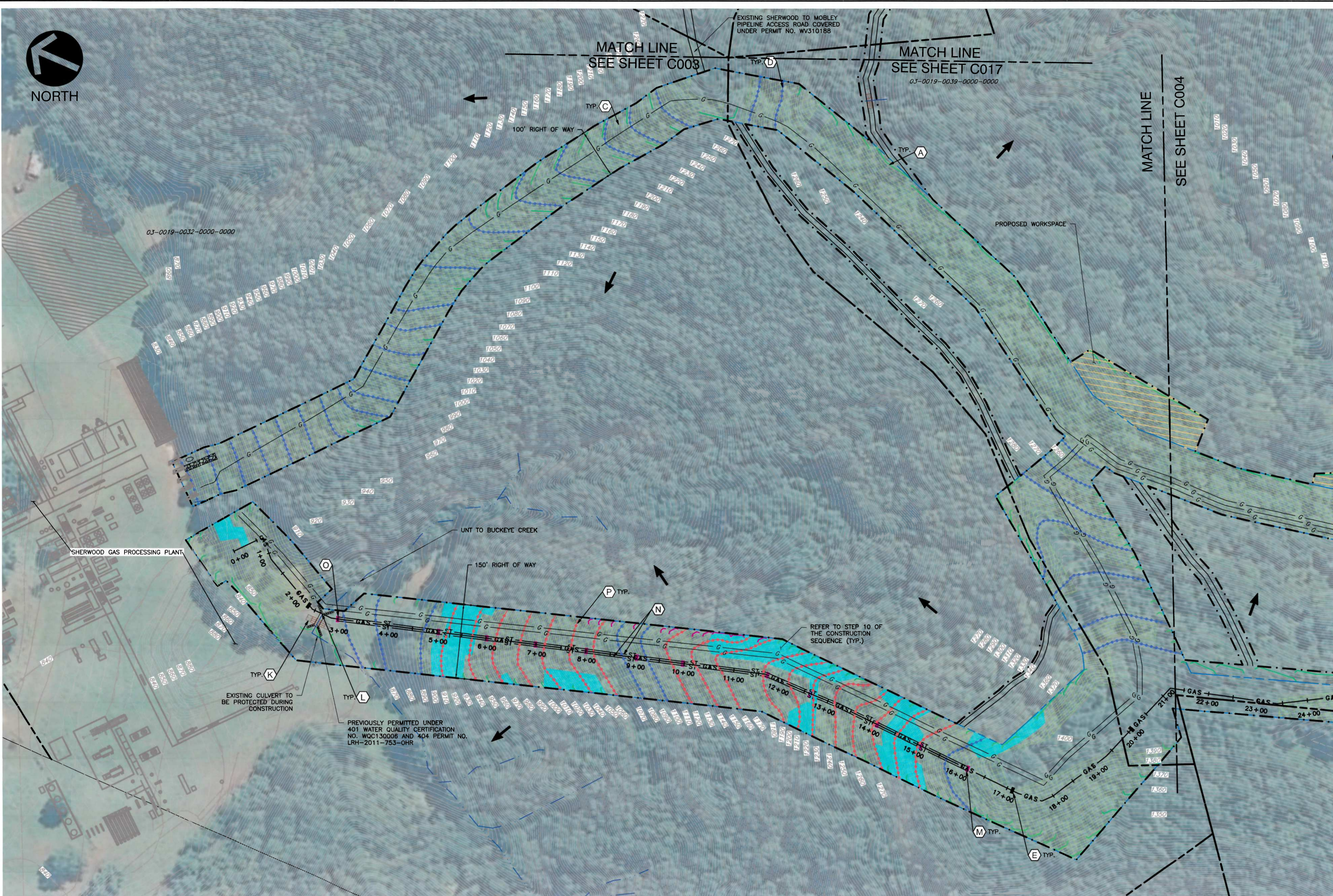


DRAWING NO. **C002**  
 SHEET 2 OF 25

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NORTH



**LEGEND**

	EXISTING INDEX CONTOUR
	EXISTING INTERMEDIATE CONTOUR
	EXISTING APPROXIMATE STREAM CENTERLINE
	EXISTING PEM WETLAND
	EXISTING ROADS
	EXISTING TAX PARCEL PROPERTY LINE
	EXISTING GAS PIPELINE
	PROPOSED PIPELINE
	PROPOSED DOUBLE TRENCH DRAIN
	PROPOSED WATERBAR
	PROPOSED SLOPE INTERRUPTER
	PROPOSED 30" REINFORCED SILT FENCE
	PROPOSED SUPER SILT FENCE
	PROPOSED EROSION CONTROL BLANKET
	PROPOSED ROCK CONSTRUCTION ENTRANCE AND STONE STOCKPILE
	PROPOSED TRENCH PLUG
	PROPOSED DRAINED TRENCH PLUG
	PROPOSED WORKSPACE
	PROPOSED PIPELINE RIGHT OF WAY
	PROPOSED LIMIT OF DISTURBANCE
	PROPOSED TIMBER MATTING
	PROPOSED COFFERDAM
	PROPOSED CONSTRUCTION FENCE
	DRAINAGE ARROW
	STREAM FLOW DIRECTION
	TAX PARCEL NUMBER
	EXISTING SLOPES OF 30° AND GREATER
	8% CEMENT MIXTURE BACKFILL (SEE KEY NOTE Q)

**REVISION RECORD**

NO.	DATE	DESCRIPTION
1	04/20/2014	ISSUE FOR PERMIT
2	02/27/2014	REVISED TO INCLUDE ADDITIONAL WORKSPACES
3	09/10/2013	REVISED FOR ADDITIONAL PIPELINE
4	10/01/15	REVISED PER COMMENT FROM WPOD DATED 10/7/15
5	02/20/16	REVISED PIPELINE ALIGNMENT, RIGHT OF WAY, LIMIT OF DISTURBANCE, AND E&E CONTROLS

**Civil & Environmental Consultants, Inc.**  
 333 Baldwin Road - Pittsburgh, PA 15205  
 412-425-2324 - 800-365-2324  
 www.cecinc.com

**MARKWEST LIBERTY  
 MIDSTREAM & RESOURCES, LLC  
 SHERWOOD SALES  
 PIPELINE  
 DODDRIDGE COUNTY, WEST VIRGINIA**

**EROSION AND SEDIMENTATION CONTROL PLAN**

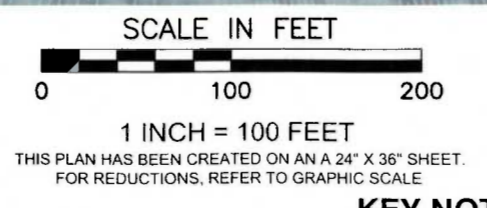
DATE:	10/14/2013	DRAWN BY:	JSC
DWG SCALE:	AS NOTED	CHECKED BY:	EJF
PROJECT NO.:	131-985	APPROVED BY:	*RPC

DRAWING NO. **C003**  
 SHEET 3 OF 25

- REFERENCES:**
- EXISTING CONTOURS ARE DERIVED FROM 3 METER SAMP ELEVATION DATA CREATED IN 2011, RETRIEVED FROM THE WEST VIRGINIA GIS TECHNICAL CENTER ONLINE RESOURCE.
  - EXISTING ROADWAYS ARE DERIVED FROM ESRI® DATA & MAPS: STREETMAP™ BY TELE ATLAS NORTH AMERICA, INC.
  - PROPERTY BOUNDARY LOCATIONS ARE BASED ON DIGITAL TAX PARCEL INFORMATION AND ARE APPROXIMATE.
  - GAS PIPELINE ALIGNMENTS AND STREAM CROSSING LOCATIONS PER MARKWEST LIBERTY MIDSTREAM & RESOURCES, LLC.
  - AERIAL PHOTOGRAPHY FROM AERIAL 1 METER COLOR ORTHOPHOTOS (2011) NAIP, RETRIEVED FROM THE WEST VIRGINIA GIS TECHNICAL CENTER ONLINE RESOURCE.
  - WETLAND BOUNDARIES BASED ON WETLAND SURVEYS CONDUCTED BY CEC AND/OR DIGITAL DATA SUPPLIED BY MARKWEST LIBERTY MIDSTREAM & RESOURCES, LLC.
  - STREAM INFORMATION FROM THE NATIONAL HYDROGRAPHY DATASET.

**SITE RESTORATION**  
 SITE RESTORATION SHALL COMMENCE PROMPTLY AFTER COMPLETION OF EACH PIPELINE SECTION. FOR SITE RESTORATION, THE ENTIRE RIGHT OF WAY SHALL BE SEEDING IN ACCORDANCE WITH THE SEEDING DETAIL. DURING SITE RESTORATION, ALL TEMPORARY CONTROLS SHALL BE REMOVED AND THE GRADES SHALL BE RETURNED TO THE EXISTING CONDITION GRADES. THE PERMANENT WATERBARS SHALL REMAIN AS PART OF SITE RESTORATION PLAN.

**NOTES**  
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**KEY NOTES**

- FURNISH AND INSTALL SUPER SILT FENCE PER DETAIL 10, SHEET D004. (TYPICAL)
- FURNISH AND INSTALL 30" REINFORCED SILT FENCE PER DETAIL 10, SHEET D004. (TYPICAL)
- FURNISH AND INSTALL EROSION CONTROL BLANKET PER DETAIL 7 AND DETAIL 8, SHEET D004.
- FURNISH AND INSTALL WATERBAR PER DETAIL 9, SHEET D004. (TYPICAL)
- FURNISH AND INSTALL TRENCH BREAKER PER DETAIL 3, SHEET D003. (TYPICAL)
- CONSTRUCT PIPELINE CROSSING OF STREAM PER DETAIL 11, AND DETAIL 14, SHEET D005.
- CONSTRUCT PIPELINE CROSSING OF WETLAND PER DETAIL 15, SHEET D006.
- CONSTRUCT PIPELINE CROSSING OF ROAD PER DETAIL 13, SHEET D005.
- FURNISH AND INSTALL ROCK CONSTRUCTION ENTRANCE/EXIT WITH ROCK STOCKPILE PER DETAIL 1, SHEET D003. (TYPICAL)
- CONSTRUCT TEMPORARY EQUIPMENT CROSSING OF WETLAND PER DETAIL 16, SHEET D005.
- CONSTRUCT TEMPORARY EQUIPMENT CROSSING OF STREAM PER DETAIL 17, SHEET D006.
- CONSTRUCT PIPELINE CROSSING OF STREAM PER DETAIL 11, SHEET D005 AND DETAIL 20, SHEET D006.
- FURNISH AND INSTALL DRAINED TRENCH PLUG PER DETAIL 21, SHEET D007. (TYPICAL)

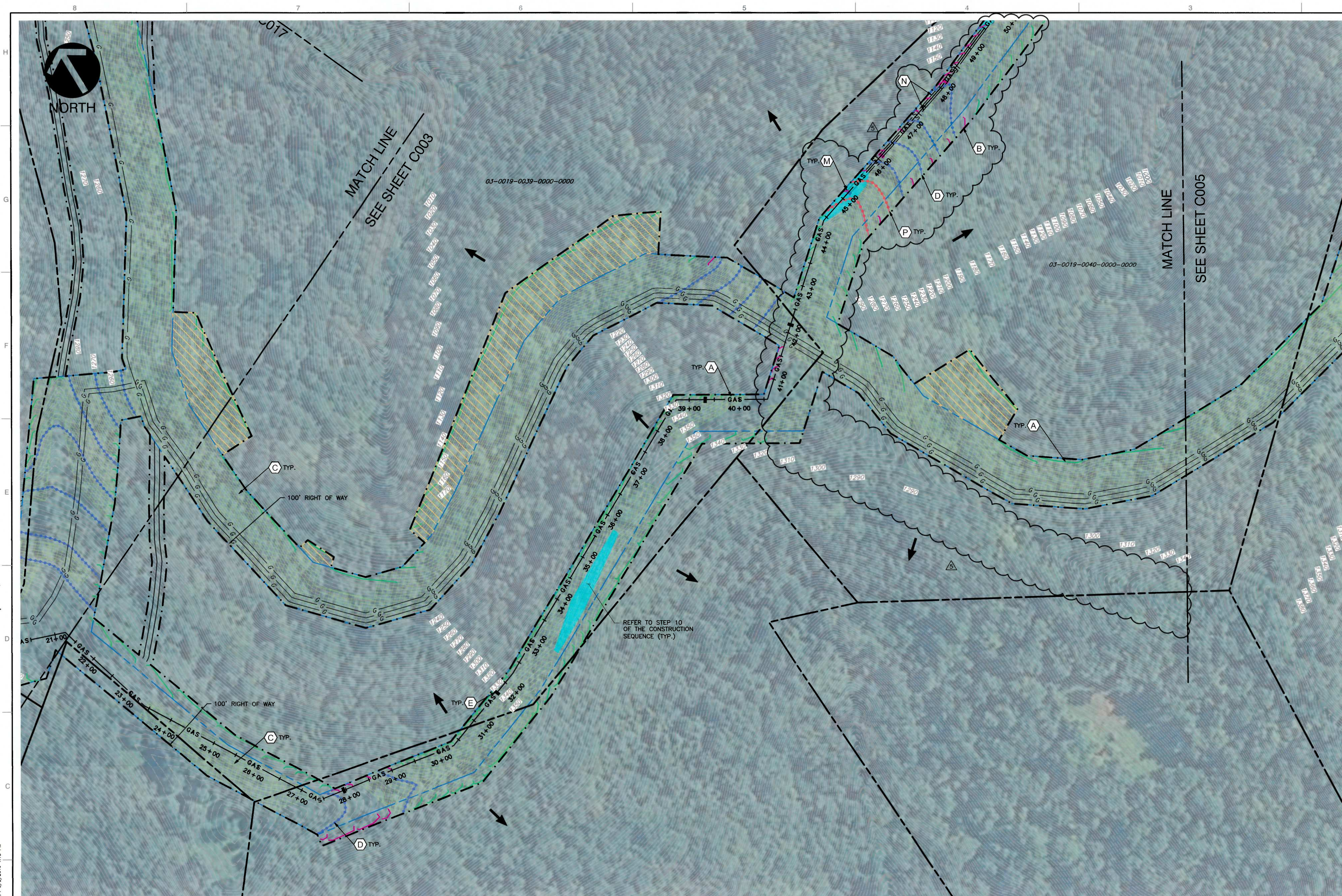
- FURNISH AND INSTALL DOUBLE TRENCH DRAIN PER DETAIL 22, SHEET D007. (TYPICAL)
- FURNISH AND INSTALL TRENCH DRAIN RIP RAP OUTLET PER DETAIL 23, SHEET D007. (TYPICAL)
- FURNISH AND INSTALL SLOPE INTERRUPTER PER DETAIL 24, SHEET D007. (TYPICAL)
- ALL BACKFILL PLACED IN PIPE TRENCH AND TO RE-GRADE TRAVEL WAY SHALL BE MIXED WITH 8% CEMENT AND PROPER MOISTURE CONDITIONS FOR HYDRATION. LEAVE SURFACE OF STABILIZED FILL ROUGHENED AND COVER WITH 1 FOOT OF SOIL FOR REVEGETATION.



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HAND SIGNATURE ON FILE

P:\2013\131-985-C003\131-985-C003-003.dwg (131-985-C003-003.dwg) 15/06/2016 12:52 PM  
 LP: 8/2/2016 12:52 PM



**LEGEND**

- 1250 — EXISTING INDEX CONTOUR
- — — EXISTING INTERMEDIATE CONTOUR
- — — EXISTING APPROXIMATE STREAM & WETLAND
- — — EXISTING PEM WETLAND
- — — EXISTING ROADS
- — — EXISTING TAX PARCEL PROPERTY LINE
- — — EXISTING GAS PIPELINE
- — — PROPOSED PIPELINE
- — — ST
- — — PROPOSED DOUBLE TRENCH DRAIN
- — — PROPOSED WATERBAR
- — — PROPOSED SLOPE INTERRUPT
- — — PROPOSED 30" REINFORCED SILT FENCE
- — — PROPOSED SUPER SILT FENCE
- — — PROPOSED EROSION CONTROL BLANKET
- — — PROPOSED ROCK CONSTRUCTION ENTRANCE AND STONE STOCKPILE
- — — PROPOSED TRENCH PLUG
- — — PROPOSED DRAINED TRENCH PLUG
- — — PROPOSED WORKSPACE
- — — PROPOSED PIPELINE RIGHT OF WAY
- — — PROPOSED LIMIT OF DISTURBANCE
- — — PROPOSED TIMBER MATTING
- — — PROPOSED COFFERDAM
- — — PROPOSED CONSTRUCTION FENCE
- — — DRAINAGE ARROW
- — — STREAM FLOW DIRECTION
- 12-0013-0017-0000-0000 TAX PARCEL NUMBER
- — — EXISTING SLOPES OF 30° AND GREATER
- — — 8% CEMENT MIXTURE BACKFILL (SEE KEY NOTE Q)

**REVISION RECORD**

NO.	DATE	DESCRIPTION
1	04/20/14	REVISED PIPELINE ALIGNMENT, RIGHT OF WAY, LIMIT OF DISTURBANCE AND E&S CONTROLS
2	02/27/2011	REVISED TO INCLUDE ADDITIONAL WORKSPACES
3	04/10/2011	REVISED FOR ADDITIONAL PIPELINE
4	10/21/15	REVISED PER COMMENTS FROM WORK DATED 10/21/15
5	02/20/16	REVISED PIPELINE ALIGNMENT, RIGHT OF WAY, LIMIT OF DISTURBANCE AND E&S CONTROLS

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 PIPELINE  
 DODDRIDGE COUNTY, WEST VIRGINIA**

**EROSION AND SEDIMENTATION  
 CONTROL PLAN**

DRAWING NO: **C004**  
 SHEET 4 OF 25

DATE: 10/14/2013 DRAWN BY: JSC  
 DWG SCALE: AS NOTED CHECKED BY: EJJ  
 PROJECT NO: 131-985  
 APPROVED BY: \*RPC

**REFERENCES:**

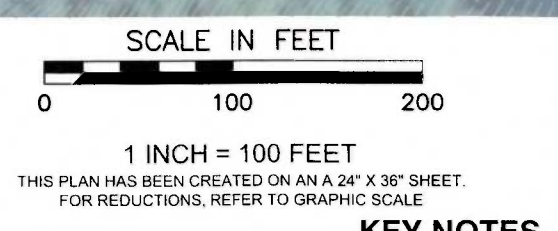
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- STREAM INFORMATION FROM THE NATIONAL HYDROGRAPHY DATASET.

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**NOTES**

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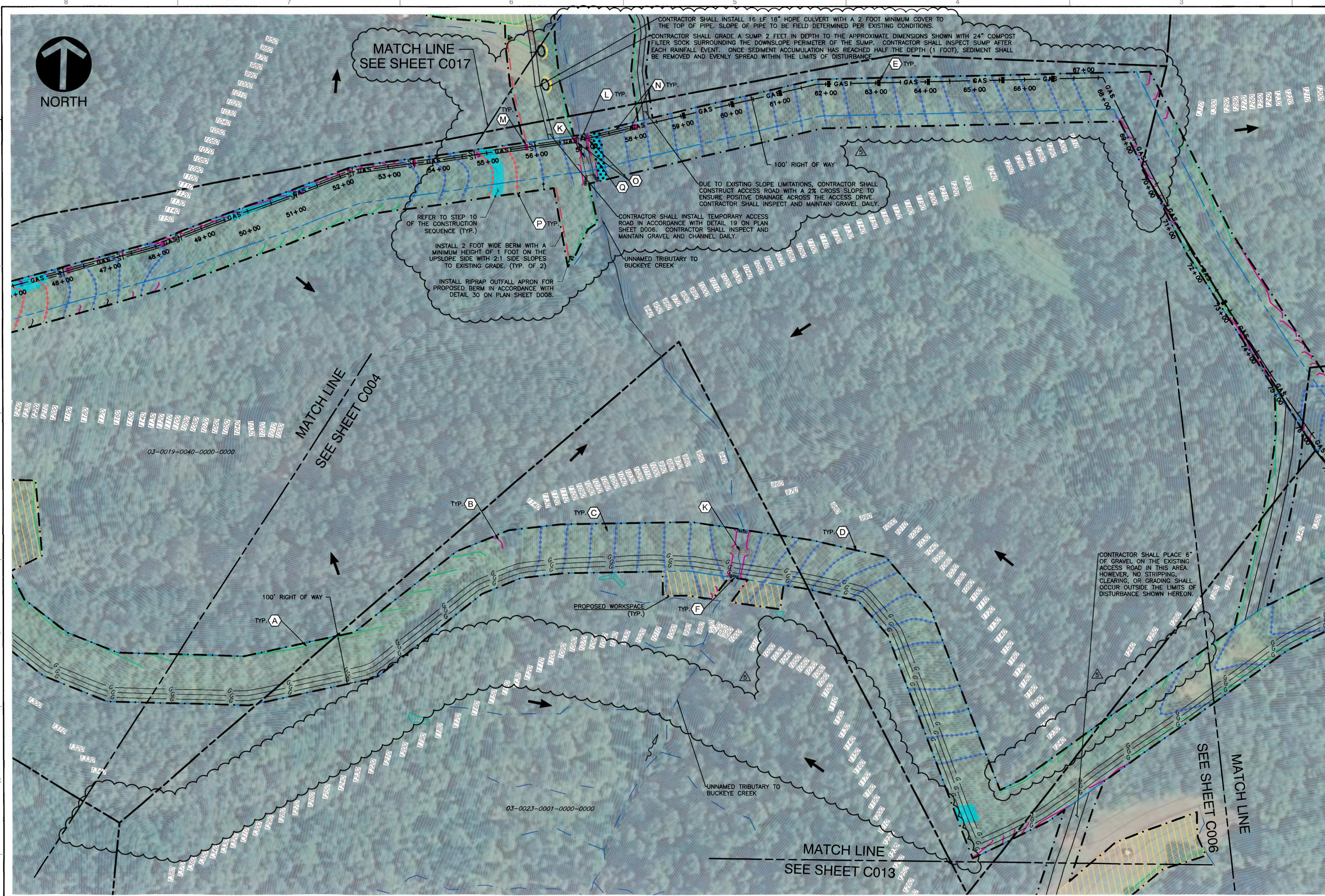
**KEY NOTES**

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- FURNISH AND INSTALL TRENCH BREAKER PER DETAIL 3, SHEET D003. (TYPICAL)
- CONSTRUCT PIPELINE CROSSING OF STREAM PER DETAIL 11, AND DETAIL 14, SHEET D005.
- CONSTRUCT PIPELINE CROSSING OF WETLAND PER DETAIL 15, SHEET D006.
- CONSTRUCT PIPELINE CROSSING OF ROAD PER DETAIL 13, SHEET D005.
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- CONSTRUCT TEMPORARY EQUIPMENT CROSSING OF WETLAND PER DETAIL 16, SHEET D006.
- CONSTRUCT TEMPORARY EQUIPMENT CROSSING OF STREAM PER DETAIL 17, SHEET D006.
- CONSTRUCT PIPELINE CROSSING OF STREAM PER DETAIL 11, SHEET D005 AND DETAIL 20, SHEET D006.
- FURNISH AND INSTALL DRAINED TRENCH PLUG PER DETAIL 21, SHEET D007. (TYPICAL)

- FURNISH AND INSTALL DOUBLE TRENCH DRAIN PER DETAIL 22, SHEET D007. (TYPICAL)
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**LEGEND**

	EXISTING INDEX CONTOUR
	EXISTING INTERMEDIATE CONTOUR
	EXISTING APPROXIMATE STREAM CENTERLINE
	EXISTING PEM WETLAND
	EXISTING ROADS
	EXISTING TAX PARCEL PROPERTY LINE
	EXISTING GAS PIPELINE
	PROPOSED PIPELINE
	PROPOSED DOUBLE TRENCH DRAIN
	PROPOSED WATERBAR
	PROPOSED SLOPE INTERRUPTER
	PROPOSED 30" REINFORCED SILT FENCE
	PROPOSED SUPER SILT FENCE
	PROPOSED EROSION CONTROL BLANKET
	PROPOSED ROCK CONSTRUCTION ENTRANCE AND STONE STOCKPILE
	PROPOSED TRENCH PLUG
	PROPOSED DRAINED TRENCH PLUG
	PROPOSED WORKSPACE
	PROPOSED PIPELINE RIGHT OF WAY
	PROPOSED LIMIT OF DISTURBANCE
	PROPOSED TIMBER MATTING
	PROPOSED COFFERDAM
	PROPOSED CONSTRUCTION FENCE
	DRAINAGE ARROW
	STREAM FLOW DIRECTION
	12-0013-0017-0000-0000 TAX PARCEL NUMBER
	EXISTING SLOPES OF 30° AND GREATER
	8% CEMENT MIXTURE BACKFILL (SEE KEY NOTE Q)

**REVISION RECORD**

NO.	DATE	DESCRIPTION
1	04/20/2014	REVISE PIPELINE ALIGNMENT, RIGHT OF WAY, LIMIT OF DISTURBANCE, AND EROSION CONTROL.
2	02/27/2015	REVISED TO INCLUDE ADDITIONAL WORKSPACES.
3	08/10/2015	REVISED FOR ADDITIONAL PIPELINE.
4	10/15/15	REVISED PER COMMENTS FROM WORK DATED 10/15/15.
5	02/02/16	REVISE PIPELINE ALIGNMENT, RIGHT OF WAY, LIMIT OF DISTURBANCE, AND EROSION CONTROL.

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**EROSION AND SEDIMENTATION  
 CONTROL PLAN**

DRAWING NO. **C005**  
 SHEET 5 OF 25

DATE: 10/14/2013 DRAWN BY: USC  
 DWG SCALE: AS NOTED CHECKED BY: EJP  
 PROJECT NO: 131-985  
 APPROVED BY: \*RPC

**REFERENCES:**

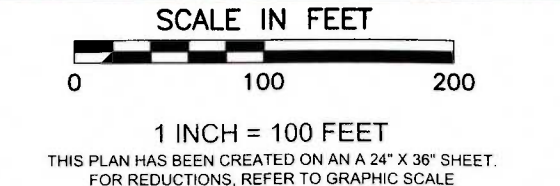
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**KEY NOTES**

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**LEGEND**

- 1250 — EXISTING INDEX CONTOUR
- EXISTING INTERMEDIATE CONTOUR
- EXISTING APPROXIMATE STREAM &
- EXISTING PEM WETLAND
- EXISTING ROADS
- EXISTING TAX PARCEL PROPERTY LINE
- G — EXISTING GAS PIPELINE
- PROPOSED PIPELINE
- ST — PROPOSED DOUBLE TRENCH DRAIN
- PROPOSED WATERBAR
- PROPOSED SLOPE INTERRUPT
- PROPOSED 30" REINFORCED SILT FENCE
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- PROPOSED DRAINED TRENCH PLUG
- PROPOSED WORKSPACE
- PROPOSED PIPELINE RIGHT OF WAY
- PROPOSED LIMIT OF DISTURBANCE
- PROPOSED TIMBER MATTING
- PROPOSED COFFERDAM
- PROPOSED CONSTRUCTION FENCE
- DRAINAGE ARROW
- STREAM FLOW DIRECTION
- 12-0013-0017-0000-0000 TAX PARCEL NUMBER
- EXISTING SLOPES OF 30° AND GREATER
- 8% CEMENT MIXTURE BACKFILL (SEE KEY NOTE ⑩)

**REVISION RECORD**

NO.	DATE	DESCRIPTION
1	02/20/14	ISSUE PIPELINE ALIGNMENT, RIGHT OF WAY, LIMIT OF DISTURBANCE, AND ERIE CONTROLS
2	02/27/14	REVISED TO INCLUDE ADDITIONAL WORKSPACES
3	09/15/15	REVISED FOR ADDITIONAL PIPELINE
4	10/31/15	REVISED PER COMMENTS FROM WOOD DATED 10/7/15
5	02/20/16	REVISE PIPELINE ALIGNMENT, RIGHT OF WAY, LIMIT OF DISTURBANCE, AND ERIE CONTROLS

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**REFERENCES:**

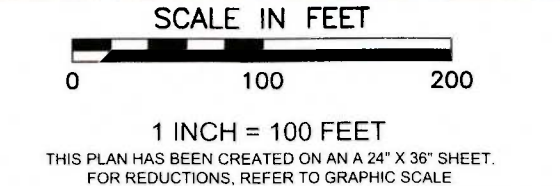
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- FURNISH AND INSTALL SUPER SILT FENCE PER DETAIL 10, SHEET D004. (TYPICAL)
  - FURNISH AND INSTALL 30" REINFORCED SILT FENCE PER DETAIL 10, SHEET D004. (TYPICAL)
  - FURNISH AND INSTALL EROSION CONTROL BLANKET PER DETAIL 7 AND DETAIL 8, SHEET D004.
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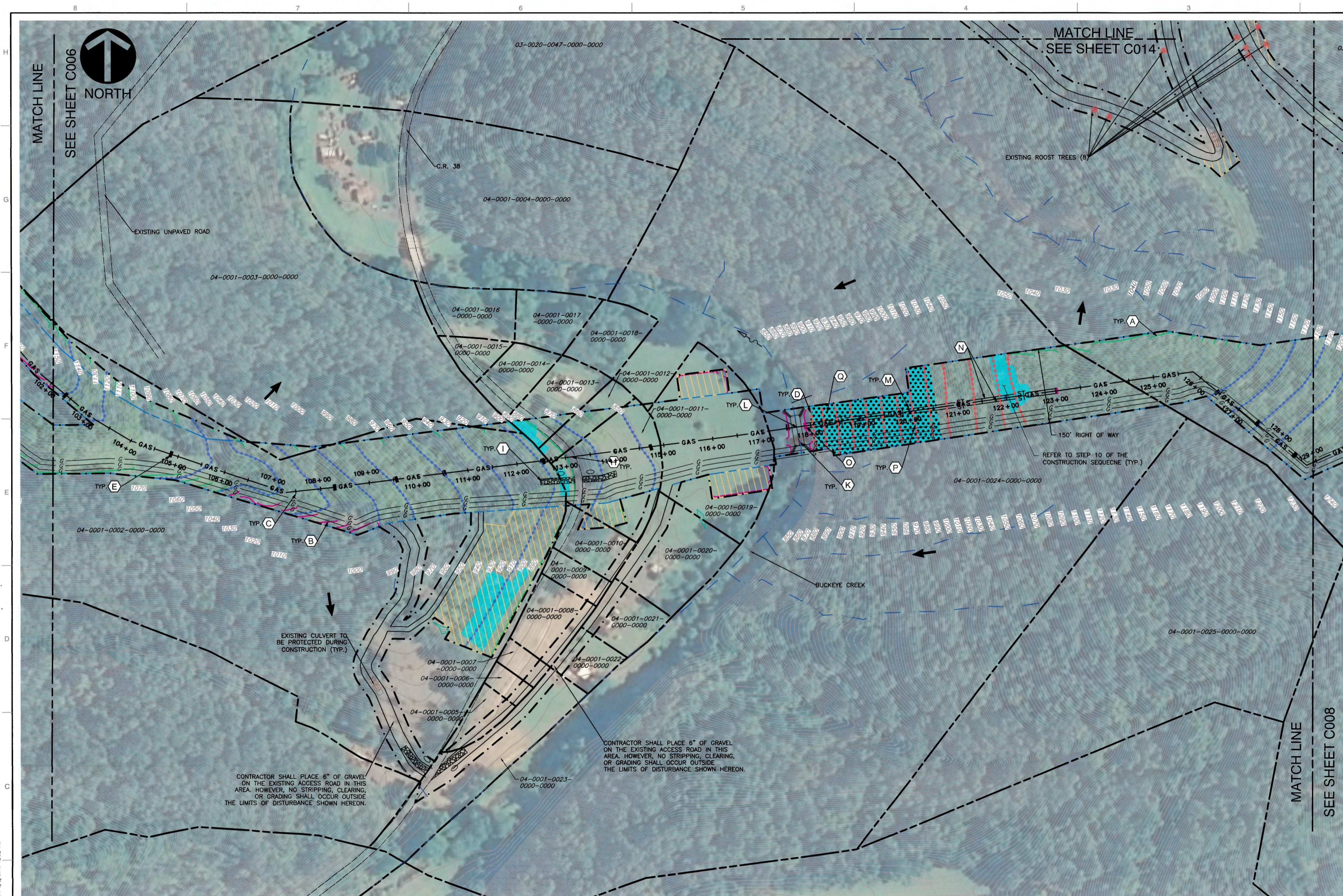
**EROSION AND SEDIMENTATION CONTROL PLAN**

DRAWING NO: **C006**

SHEET 6 OF 25

DATE:	10/14/2013	DRAWN BY:	JSC
DATE:	AS NOTED	CHECKED BY:	EJF
PROJECT NO:	131-965	APPROVED BY:	*RPC

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**LEGEND**

- 1250 --- EXISTING INDEX CONTOUR
- 1250 --- EXISTING INTERMEDIATE CONTOUR
- 1250 --- EXISTING APPROXIMATE STREAM
- 1250 --- EXISTING PEM WETLAND
- 1250 --- EXISTING ROADS
- 1250 --- EXISTING TAX PARCEL PROPERTY LINE
- 1250 --- EXISTING GAS PIPELINE
- 1250 --- PROPOSED PIPELINE
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- 1250 --- PROPOSED SLOPE INTERRUPT
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- 1250 --- PROPOSED EROSION CONTROL BLANKET
- 1250 --- PROPOSED ROCK CONSTRUCTION ENTRANCE AND STONE STOCKPILE
- 1250 --- PROPOSED TRENCH PLUG
- 1250 --- PROPOSED DRAINED TRENCH PLUG
- 1250 --- PROPOSED WORKSPACE
- 1250 --- PROPOSED PIPELINE RIGHT OF WAY
- 1250 --- PROPOSED LIMIT OF DISTURBANCE
- 1250 --- PROPOSED TIMBER MATTING
- 1250 --- PROPOSED COFFERDAM
- 1250 --- PROPOSED CONSTRUCTION FENCE
- 1250 --- DRAINAGE ARROW
- 1250 --- STREAM FLOW DIRECTION
- 1250 --- 12-0013-0017-0000-0000 TAX PARCEL NUMBER
- 1250 --- EXISTING SLOPES OF 30° AND GREATER
- 1250 --- 8% CEMENT MIXTURE BACKFILL (SEE KEY NOTE Q)

**REVISION RECORD**

NO.	DATE	DESCRIPTION
1	02/27/18	REVISED PIPELINE ALIGNMENT, RIGHT OF WAY, LIMIT OF DISTURBANCE, AND E&S CONTROLS
2	02/27/18	REVISED TO INCLUDE ADDITIONAL WORKSPACES
3	03/01/18	REVISED PER COMMENTS FROM WFOUD DATED 12/15/17
4	03/01/18	REVISED PIPELINE ALIGNMENT, RIGHT OF WAY, LIMIT OF DISTURBANCE, AND E&S CONTROLS
5	03/01/18	REVISED PIPELINE ALIGNMENT, RIGHT OF WAY, LIMIT OF DISTURBANCE, AND E&S CONTROLS

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 DODDRIDGE COUNTY, WEST VIRGINIA**

- REFERENCES:**
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  - EXISTING ROADWAYS ARE DERIVED FROM ESRI® DATA & MAPS: STREETMAP™ BY TELE ATLAS NORTH AMERICA, INC.
  - PROPERTY BOUNDARY LOCATIONS ARE BASED ON DIGITAL TAX PARCEL INFORMATION AND ARE APPROXIMATE.
  - GAS PIPELINE ALIGNMENTS AND STREAM CROSSING LOCATIONS PER MARKWEST LIBERTY MIDSTREAM & RESOURCES, LLC.
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  - WETLAND BOUNDARIES BASED ON WETLAND SURVEYS CONDUCTED BY CEC AND/OR DIGITAL DATA SUPPLIED BY MARKWEST LIBERTY MIDSTREAM & RESOURCES, LLC.
  - STREAM INFORMATION FROM THE NATIONAL HYDROGRAPHY DATASET.

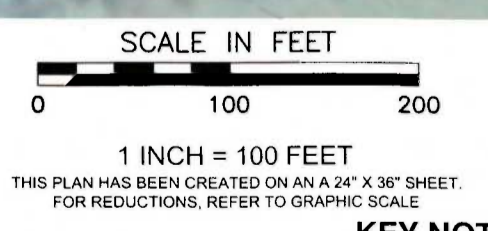
**SITE RESTORATION**  
 SITE RESTORATION SHALL COMMENCE PROMPTLY AFTER COMPLETION OF EACH PIPELINE SECTION. FOR SITE RESTORATION, THE ENTIRE RIGHT OF WAY SHALL BE SEEDED IN ACCORDANCE WITH THE SEEDING DETAIL. DURING SITE RESTORATION, ALL TEMPORARY CONTROLS SHALL BE REMOVED AND THE GRADES SHALL BE RETURNED TO THE EXISTING CONDITION GRADES. THE PERMANENT WATERBARS SHALL REMAIN AS PART OF SITE RESTORATION PLAN.

**NOTES**

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- KEY NOTES**
- FURNISH AND INSTALL SUPER SILT FENCE PER DETAIL 10, SHEET D004. (TYPICAL)
  - FURNISH AND INSTALL 30" REINFORCED SILT FENCE PER DETAIL 10, SHEET D004. (TYPICAL)
  - FURNISH AND INSTALL EROSION CONTROL BLANKET PER DETAIL 7 AND DETAIL 8, SHEET D004.
  - FURNISH AND INSTALL WATERBAR PER DETAIL 9, SHEET D004. (TYPICAL)
  - FURNISH AND INSTALL TRENCH BREAKER PER DETAIL 3, SHEET D003. (TYPICAL)
  - CONSTRUCT PIPELINE CROSSING OF STREAM PER DETAIL 11, AND DETAIL 14, SHEET D005.
  - CONSTRUCT PIPELINE CROSSING OF WETLAND PER DETAIL 15, SHEET D006.
  - CONSTRUCT PIPELINE CROSSING OF ROAD PER DETAIL 13, SHEET D005.
  - FURNISH AND INSTALL ROCK CONSTRUCTION ENTRANCE/EXIT WITH ROCK STOCKPILE PER DETAIL 1, SHEET D003. (TYPICAL)
  - CONSTRUCT TEMPORARY EQUIPMENT CROSSING OF WETLAND PER DETAIL 16, SHEET D006.
  - CONSTRUCT TEMPORARY EQUIPMENT CROSSING OF STREAM PER DETAIL 17, SHEET D006.
  - CONSTRUCT PIPELINE CROSSING OF STREAM PER DETAIL 11, SHEET D005 AND DETAIL 20, SHEET D006.
  - FURNISH AND INSTALL DRAINED TRENCH PLUG PER DETAIL 21, SHEET D007. (TYPICAL)

- FURNISH AND INSTALL DOUBLE TRENCH DRAIN PER DETAIL 22, SHEET D007. (TYPICAL)
- FURNISH AND INSTALL TRENCH DRAIN RIP RAP OUTLET PER DETAIL 23, SHEET D007. (TYPICAL)
- FURNISH AND INSTALL SLOPE INTERRUPTER PER DETAIL 24, SHEET D007. (TYPICAL)
- ALL BACKFILL PLACED IN PIPE TRENCH AND TO RE-GRADE TRAVEL WAY SHALL BE MIXED WITH 8% CEMENT AND PROPER MOISTURE CONDITIONS FOR HYDRATION. LEAVE SURFACE OF STABILIZED FILL ROUGHENED AND COVER WITH 1 FOOT OF SOIL FOR VEGETATION.

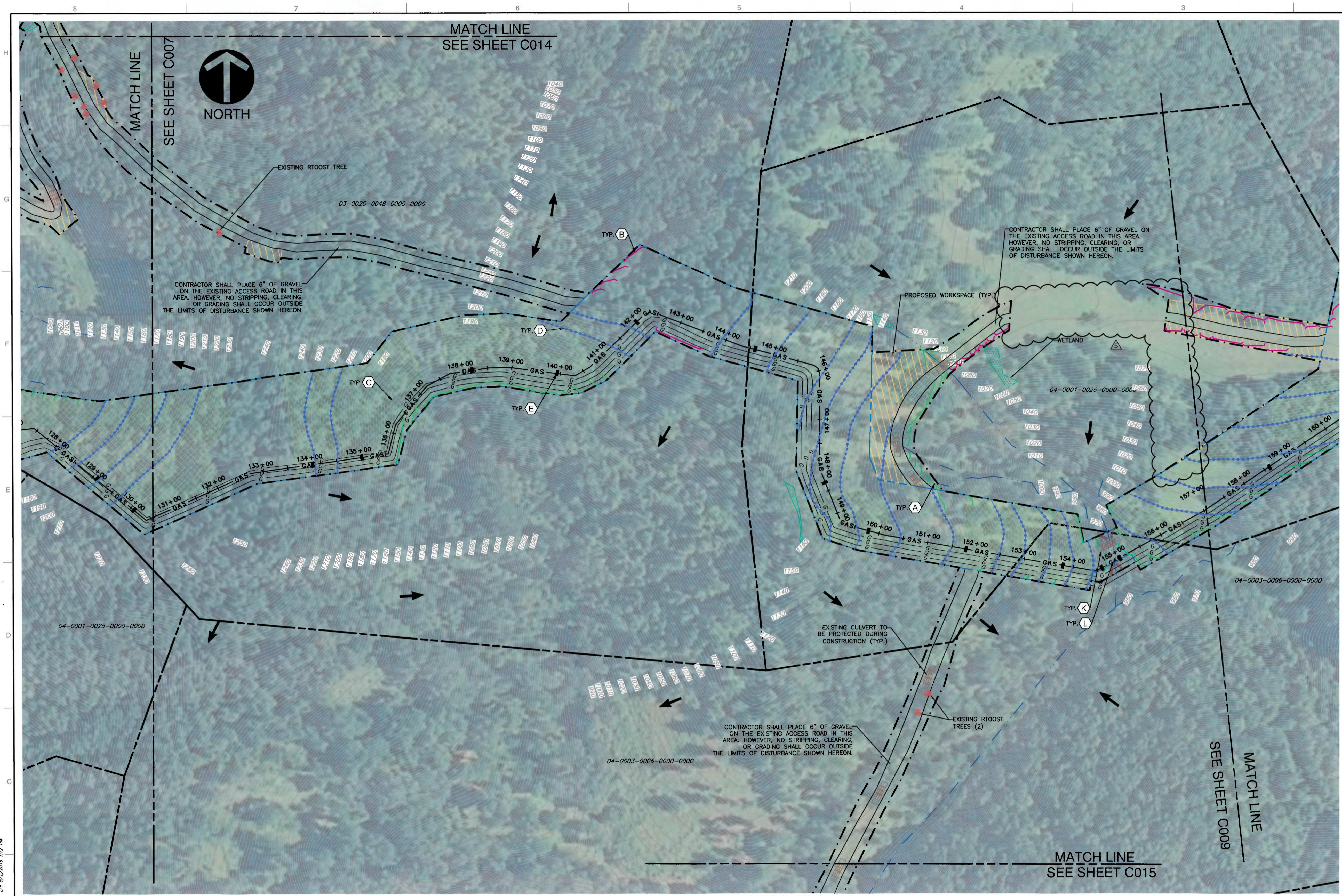


**EROSION AND SEDIMENTATION CONTROL PLAN**

DRAWING NO. **C007**  
 SHEET 7 OF 25

DATE: 10/14/2013 DRAWN BY: JSC  
 DWG SCALE: AS NOTED CHECKED BY: EJF  
 PROJECT NO: 131-985  
 APPROVED BY: \*RPC

P:\2013\131-985\131-985-0001-C007.dwg (15/02/2018 - 10:00 AM) - LP: 0/2/2018 12:52 PM



**LEGEND**

---	EXISTING INDEX CONTOUR
---	EXISTING INTERMEDIATE CONTOUR
---	EXISTING APPROXIMATE STREAM
---	EXISTING PEM WETLAND
---	EXISTING ROADS
---	EXISTING TAX PARCEL PROPERTY LINE
---	EXISTING GAS PIPELINE
---	PROPOSED PIPELINE
---	PROPOSED DOUBLE TRENCH DRAIN
---	PROPOSED WATERBAR
---	PROPOSED SLOPE INTERRUPTER
---	PROPOSED 30" REINFORCED SILT FENCE
---	PROPOSED SUPER SILT FENCE
---	PROPOSED EROSION CONTROL BLANKET
---	PROPOSED ROCK CONSTRUCTION ENTRANCE AND STONE STOCKPILE
---	PROPOSED TRENCH PLUG
---	PROPOSED DRAINED TRENCH PLUG
---	PROPOSED WORKSPACE
---	PROPOSED PIPELINE RIGHT OF WAY
---	PROPOSED LIMIT OF DISTURBANCE
---	PROPOSED TIMBER MATTING
---	PROPOSED COFFERDAM
---	PROPOSED CONSTRUCTION FENCE
---	DRAINAGE ARROW
---	STREAM FLOW DIRECTION
---	12-0013-0017-0000-0000 TAX PARCEL NUMBER
---	EXISTING SLOPES OF 30° AND GREATER
---	8% CEMENT MIXTURE BACKFILL (SEE KEY NOTE Q)

**REVISION RECORD**

NO.	DATE	DESCRIPTION
1	04/20/2014	ISSUE PIPELINE ALIGNMENT, RIGHT OF WAY LIMIT OF DISTURBANCE, AND EROSION CONTROLS
2	02/27/2015	REVISED TO INCLUDE ADDITIONAL WORKSPACES
3	04/15/2015	REVISED FOR ADDITIONAL PIPELINE
4	04/15/2015	REVISED PER COMMENTS FROM WSPD DATED 04/15/15
5	08/20/16	REVISED PIPELINE ALIGNMENT, RIGHT OF WAY LIMIT OF DISTURBANCE, AND EROSION CONTROLS

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 MIDSTREAM & RESOURCES, LLC**  
**SHERWOOD SALES  
 PIPELINE**  
 DODDRIDGE COUNTY, WEST VIRGINIA

**EROSION AND SEDIMENTATION CONTROL PLAN**

DATE:	10/14/2013	DRAWN BY:	JSC
DWG SCALE:	AS NOTED	CHECKED BY:	EJF
PROJECT NO.:	131-985	APPROVED BY:	*RPC

DRAWING NO. **C008**  
 SHEET 8 OF 25

**REFERENCES:**

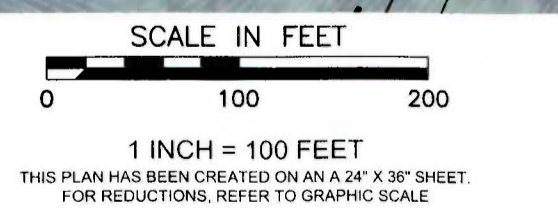
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- STREAM INFORMATION FROM THE NATIONAL HYDROGRAPHY DATASET.

**SITE RESTORATION**

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**NOTES**

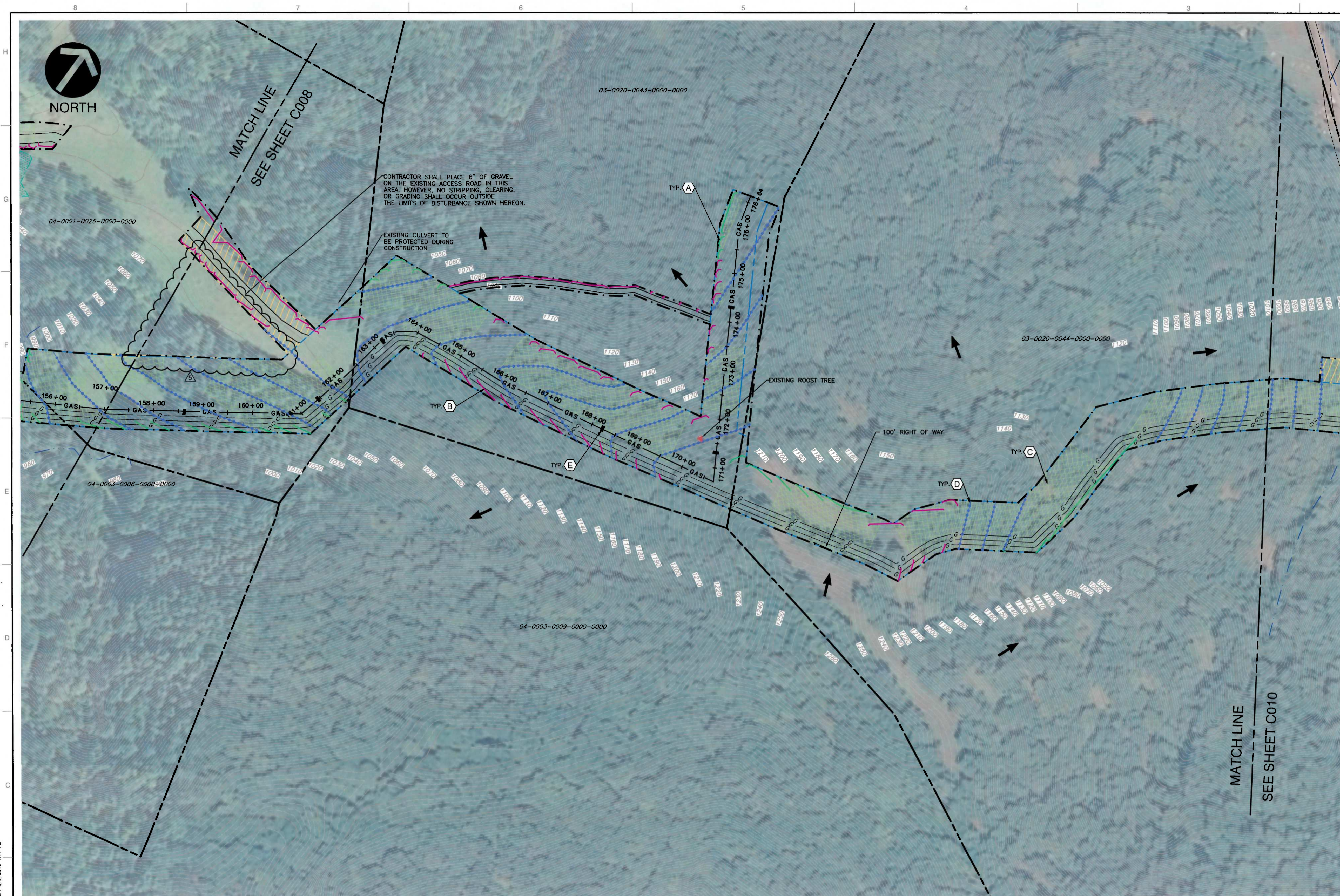
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- KEY NOTES**
- (A) FURNISH AND INSTALL SUPER SILT FENCE PER DETAIL 10, SHEET D004. (TYPICAL)
  - (B) FURNISH AND INSTALL 30" REINFORCED SILT FENCE PER DETAIL 10, SHEET D004. (TYPICAL)
  - (C) FURNISH AND INSTALL EROSION CONTROL BLANKET PER DETAIL 7 AND DETAIL 8, SHEET D004.
  - (D) FURNISH AND INSTALL WATERBAR PER DETAIL 9, SHEET D004. (TYPICAL)
  - (E) FURNISH AND INSTALL TRENCH BREAKER PER DETAIL 3, SHEET D003. (TYPICAL)
  - (F) CONSTRUCT PIPELINE CROSSING OF STREAM PER DETAIL 11, AND DETAIL 14, SHEET D005.
  - (G) CONSTRUCT PIPELINE CROSSING OF WETLAND PER DETAIL 15, SHEET D006.
  - (H) CONSTRUCT PIPELINE CROSSING OF ROAD PER DETAIL 13, SHEET D005.
  - (I) FURNISH AND INSTALL ROCK CONSTRUCTION ENTRANCE/EXIT WITH ROCK STOCKPILE PER DETAIL 1, SHEET D003. (TYPICAL)
  - (J) CONSTRUCT TEMPORARY EQUIPMENT CROSSING OF WETLAND PER DETAIL 16, SHEET D006.
  - (K) CONSTRUCT TEMPORARY EQUIPMENT CROSSING OF STREAM PER DETAIL 17, SHEET D006.
  - (L) CONSTRUCT PIPELINE CROSSING OF STREAM PER DETAIL 11, SHEET D005 AND DETAIL 20, SHEET D006.
  - (M) FURNISH AND INSTALL DRAINED TRENCH PLUG PER DETAIL 21, SHEET D007. (TYPICAL)

- (N) FURNISH AND INSTALL DOUBLE TRENCH DRAIN PER DETAIL 22, SHEET D007. (TYPICAL)
- (O) FURNISH AND INSTALL TRENCH DRAIN RIP RAP OUTLET PER DETAIL 23, SHEET D007. (TYPICAL)
- (P) FURNISH AND INSTALL SLOPE INTERRUPTER PER DETAIL 24, SHEET D007. (TYPICAL)
- (Q) ALL BACKFILL PLACED IN PIPE TRENCH AND TO RE-GRADE TRAVEL WAY SHALL BE MIXED WITH 8% CEMENT AND PROPER MOISTURE CONDITIONS FOR HYDRATION. LEAVE SURFACE OF STABILIZED FILL ROUGHENED AND COVER WITH 1 FOOT OF SOIL FOR REVEGETATION.





**LEGEND**

---	EXISTING INDEX CONTOUR
---	EXISTING INTERMEDIATE CONTOUR
---	EXISTING APPROXIMATE STREAM
---	EXISTING PEM WETLAND
---	EXISTING ROADS
---	EXISTING TAX PARCEL PROPERTY LINE
---	EXISTING GAS PIPELINE
---	PROPOSED PIPELINE
---	PROPOSED DOUBLE TRENCH DRAIN
---	PROPOSED WATERBAR
---	PROPOSED SLOPE INTERRUPT
---	PROPOSED 30" REINFORCED SILT FENCE
---	PROPOSED SUPER SILT FENCE
---	PROPOSED EROSION CONTROL BLANKET
---	PROPOSED ROCK CONSTRUCTION ENTRANCE AND STONE STOCKPILE
---	PROPOSED TRENCH PLUG
---	PROPOSED DRAINED TRENCH PLUG
---	PROPOSED WORKSPACE
---	PROPOSED PIPELINE RIGHT OF WAY
---	PROPOSED LIMIT OF DISTURBANCE
---	PROPOSED TIMBER MATTING
---	PROPOSED COFFERDAM
---	PROPOSED CONSTRUCTION FENCE
---	DRAINAGE ARROW
---	STREAM FLOW DIRECTION
---	12-0013-0017-0000-0000 TAX PARCEL NUMBER
---	EXISTING SLOPES OF 30° AND GREATER
---	8% CEMENT MIXTURE BACKFILL (SEE KEY NOTE Q)

**REVISION RECORD**

NO.	DATE	DESCRIPTION
1	04/20/14	REVISE PIPELINE ALIGNMENT, RIGHT OF WAY LIMIT OF DISTURBANCE AND EAC CONTROLS
2	02/27/2014	REVISED TO INCLUDE ADDITIONAL WORKSPACES
3	04/15/2014	REVISED FOR ADDITIONAL PIPELINE
4	10/21/15	REVISED PER COMMENTS FROM WOOD DATED 07/15
5	08/20/16	REVISE PIPELINE ALIGNMENT, RIGHT OF WAY LIMIT OF DISTURBANCE AND EAC CONTROLS

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 SHERWOOD SALES  
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 DODDRIDGE COUNTY, WEST VIRGINIA**

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- FURNISH AND INSTALL 30" REINFORCED SILT FENCE PER DETAIL 10, SHEET D004. (TYPICAL)
- FURNISH AND INSTALL EROSION CONTROL BLANKET PER DETAIL 7 AND DETAIL 8, SHEET D004.
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- CONSTRUCT PIPELINE CROSSING OF WETLAND PER DETAIL 15, SHEET D006.
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- FURNISH AND INSTALL DRAINED TRENCH PLUG PER DETAIL 21, SHEET D007. (TYPICAL)

- FURNISH AND INSTALL DOUBLE TRENCH DRAIN PER DETAIL 22, SHEET D007. (TYPICAL)
- FURNISH AND INSTALL TRENCH DRAIN RIP RAP OUTLET PER DETAIL 23, SHEET D007. (TYPICAL)
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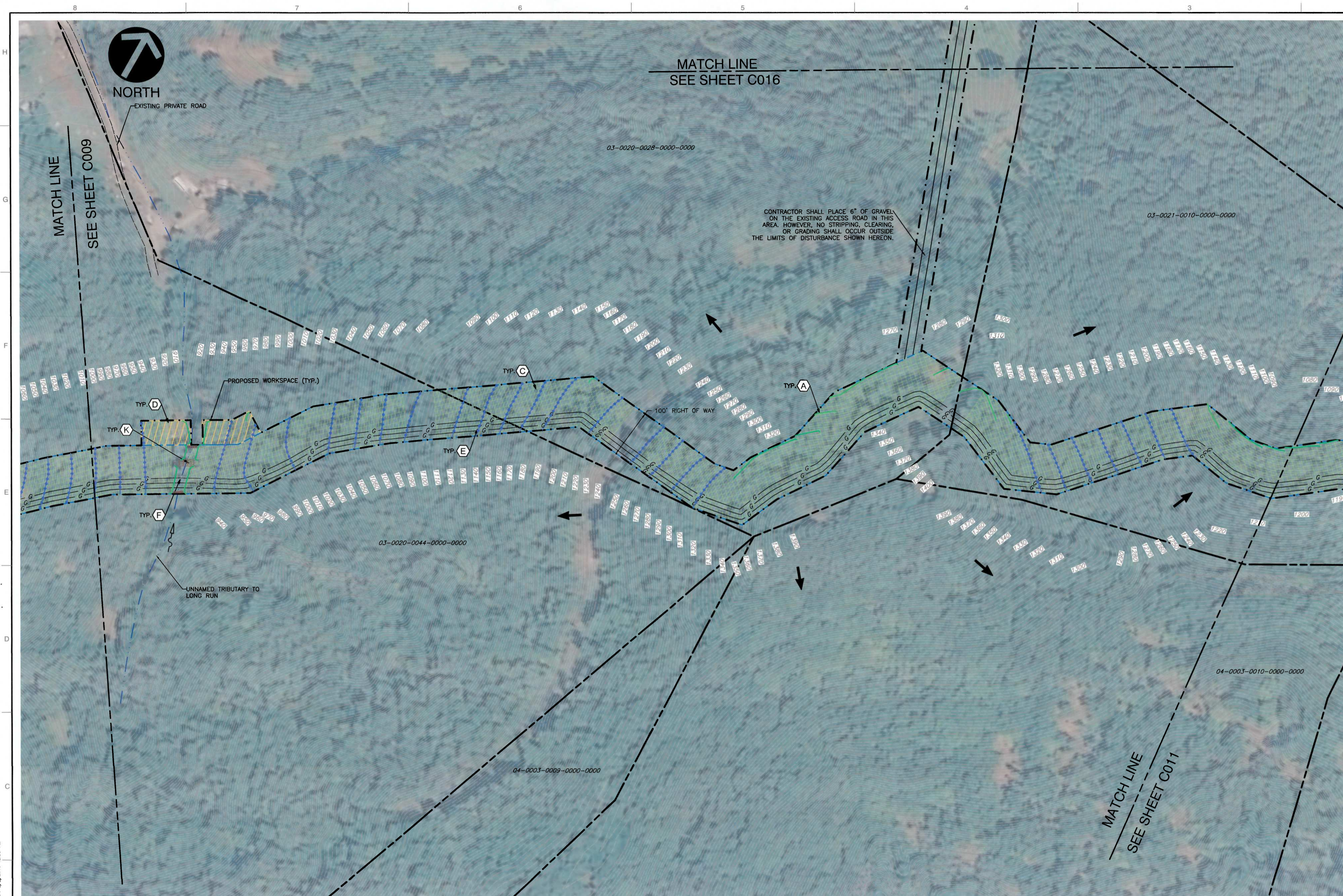


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DATE: 10/14/2013 DRAWN BY: JSC  
 AS NOTED CHECKED BY: EIJ  
 PROJECT NO: 131-985  
 APPROVED BY: \*RPC

**EROSION AND SEDIMENTATION CONTROL PLAN**

DRAWING NO: **C009**  
 SHEET 9 OF 25



**LEGEND**

---	EXISTING INDEX CONTOUR
---	EXISTING INTERMEDIATE CONTOUR
---	EXISTING APPROXIMATE STREAM &
---	EXISTING PEM WETLAND
---	EXISTING ROADS
---	EXISTING TAX PARCEL PROPERTY LINE
---	EXISTING GAS PIPELINE
---	PROPOSED PIPELINE
---	PROPOSED DOUBLE TRENCH DRAIN
---	PROPOSED WATERBAR
---	PROPOSED SLOPE INTERRUPT
---	PROPOSED 30" REINFORCED SILT FENCE
---	PROPOSED SUPER SILT FENCE
---	PROPOSED EROSION CONTROL BLANKET
---	PROPOSED ROCK CONSTRUCTION ENTRANCE AND STONE STOCKPILE
---	PROPOSED TRENCH PLUG
---	PROPOSED DRAINED TRENCH PLUG
---	PROPOSED WORKSPACE
---	PROPOSED PIPELINE RIGHT OF WAY
---	PROPOSED LIMIT OF DISTURBANCE
---	PROPOSED TIMBER MATTING
---	PROPOSED COFFERDAM
---	PROPOSED CONSTRUCTION FENCE
---	DRAINAGE ARROW
---	STREAM FLOW DIRECTION
---	12-0013-0017-0000-0000 TAX PARCEL NUMBER
---	EXISTING SLOPES OF 30° AND GREATER
---	8% CEMENT MIXTURE BACKFILL (SEE KEY NOTE 0)

**REVISION RECORD**

NO.	DATE	DESCRIPTION
1	11/20/14	ISSUE FOR PERMITS AND EAS CONTROL
2	02/27/16	REVISED TO INCLUDE ADDITIONAL WORKSPACES
3	08/15/16	REVISED FOR ADDITIONAL PIPELINE
4	10/15/16	REVISED PER COMMENTS FROM WFOID DATED 10/15/16
5	02/20/16	REVISED PIPELINE ALIGNMENT, RIGHT OF WAY OF DISTURBANCE, AND EAS CONTROL

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**REFERENCES:**

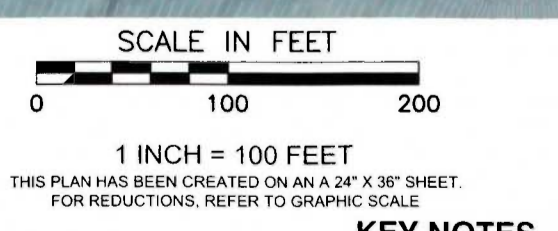
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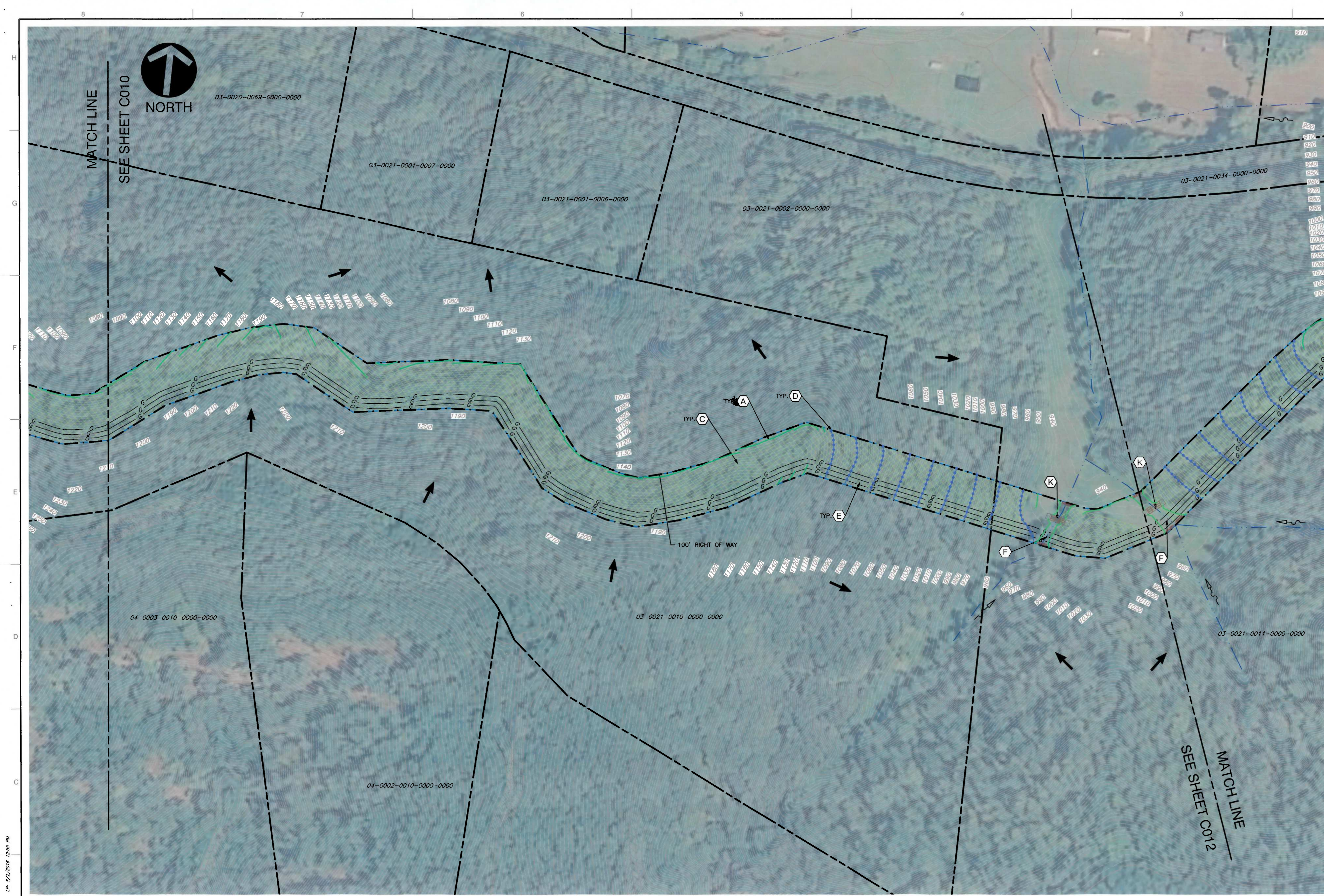
HAND SIGNATURE ON FILE

**EROSION AND SEDIMENTATION CONTROL PLAN**

DATE:	10/14/2013	DRAWN BY:	JSC
DWG SCALE:	AS NOTED	CHECKED BY:	EJF
PROJECT NO.:	131-985	APPROVED BY:	*RPC

DRAWING NO. **C010**  
 SHEET 10 OF 25

P:\2013\131-985\131-985-0000-0012.dwg (C010) LS (6/2/2016 - 10:56 AM) - LP: 8/2/2016 12:56 PM



**LEGEND**

- 1250 — EXISTING INDEX CONTOUR
- — EXISTING INTERMEDIATE CONTOUR
- — EXISTING APPROXIMATE STREAM
- — EXISTING PEM WETLAND
- — EXISTING ROADS
- — EXISTING TAX PARCEL PROPERTY LINE
- G — EXISTING GAS PIPELINE
- ST — PROPOSED PIPELINE
- — PROPOSED DOUBLE TRENCH DRAIN
- — PROPOSED WATERBAR
- — PROPOSED SLOPE INTERRUPT
- — PROPOSED 30" REINFORCED SILT FENCE
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- — PROPOSED EROSION CONTROL BLANKET
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- — PROPOSED WORKSPACE
- — PROPOSED PIPELINE RIGHT OF WAY
- — PROPOSED LIMIT OF DISTURBANCE
- — PROPOSED TIMBER MATTING
- — PROPOSED COFFERDAM
- — PROPOSED CONSTRUCTION FENCE
- — DRAINAGE ARROW
- — STREAM FLOW DIRECTION
- — TAX PARCEL NUMBER
- — EXISTING SLOPES OF 30° AND GREATER
- — 8% CEMENT MIXTURE BACKFILL (SEE KEY NOTE Q)

**REVISION RECORD**

NO	DATE	DESCRIPTION
1	03/20/14	REVISE PIPELINE ALIGNMENT, RIGHT OF WAY, LIMIT OF DISTURBANCE, AND E&E CONTROLS
2	03/27/14	REVISED TO INCLUDE ADDITIONAL WORKSPACES
3	04/10/14	REVISED FOR ADDITIONAL PIPELINE
4	10/31/15	REVISED PER COMMENTS FROM WRP/EP DATED 10/15/15
5	03/20/16	REVISE PIPELINE ALIGNMENT, RIGHT OF WAY, LIMIT OF DISTURBANCE, AND E&E CONTROLS

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 SHERWOOD SALES  
 PIPELINE  
 DODDRIDGE COUNTY, WEST VIRGINIA**

**REFERENCES:**

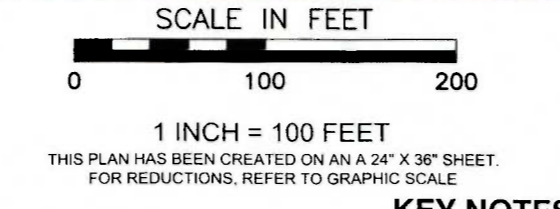
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- STREAM INFORMATION FROM THE NATIONAL HYDROGRAPHY DATASET.

**SITE RESTORATION**

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**NOTES**

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**KEY NOTES**

- (A) FURNISH AND INSTALL SUPER SILT FENCE PER DETAIL 10, SHEET D004. (TYPICAL)
- (B) FURNISH AND INSTALL 30" REINFORCED SILT FENCE PER DETAIL 10, SHEET D004. (TYPICAL)
- (C) FURNISH AND INSTALL EROSION CONTROL BLANKET PER DETAIL 7 AND DETAIL 8, SHEET D004.
- (D) FURNISH AND INSTALL WATERBAR PER DETAIL 9, SHEET D004. (TYPICAL)
- (E) FURNISH AND INSTALL TRENCH BREAKER PER DETAIL 3, SHEET D003. (TYPICAL)
- (F) CONSTRUCT PIPELINE CROSSING OF STREAM PER DETAIL 11, AND DETAIL 14, SHEET D005.
- (G) CONSTRUCT PIPELINE CROSSING OF WETLAND PER DETAIL 15, SHEET D006.
- (H) CONSTRUCT PIPELINE CROSSING OF ROAD PER DETAIL 13, SHEET D005.
- (I) FURNISH AND INSTALL ROCK CONSTRUCTION ENTRANCE/EXIT WITH ROCK STOCKPILE PER DETAIL 1, SHEET D003. (TYPICAL)
- (J) CONSTRUCT TEMPORARY EQUIPMENT CROSSING OF WETLAND PER DETAIL 16, SHEET D006.
- (K) CONSTRUCT TEMPORARY EQUIPMENT CROSSING OF STREAM PER DETAIL 17, SHEET D006.
- (L) CONSTRUCT PIPELINE CROSSING OF STREAM PER DETAIL 11, SHEET D005 AND DETAIL 20, SHEET D006.
- (M) FURNISH AND INSTALL DRAINED TRENCH PLUG PER DETAIL 21, SHEET D007. (TYPICAL)
- (N) FURNISH AND INSTALL DOUBLE TRENCH DRAIN PER DETAIL 22, SHEET D007. (TYPICAL)
- (O) FURNISH AND INSTALL TRENCH DRAIN RIP RAP OUTLET PER DETAIL 23, SHEET D007. (TYPICAL)
- (P) FURNISH AND INSTALL SLOPE INTERRUPTER PER DETAIL 24, SHEET D007. (TYPICAL)
- (Q) ALL BACKFILL PLACED IN PIPE TRENCH AND TO RE-GRADE TRAVEL WAY SHALL BE MIXED WITH 8% CEMENT AND PROPER MOISTURE CONDITIONS FOR HYDRATION. LEAVE SURFACE OF STABILIZED FILL ROUGHENED AND COVER WITH 1 FOOT OF SOIL FOR VEGETATION.



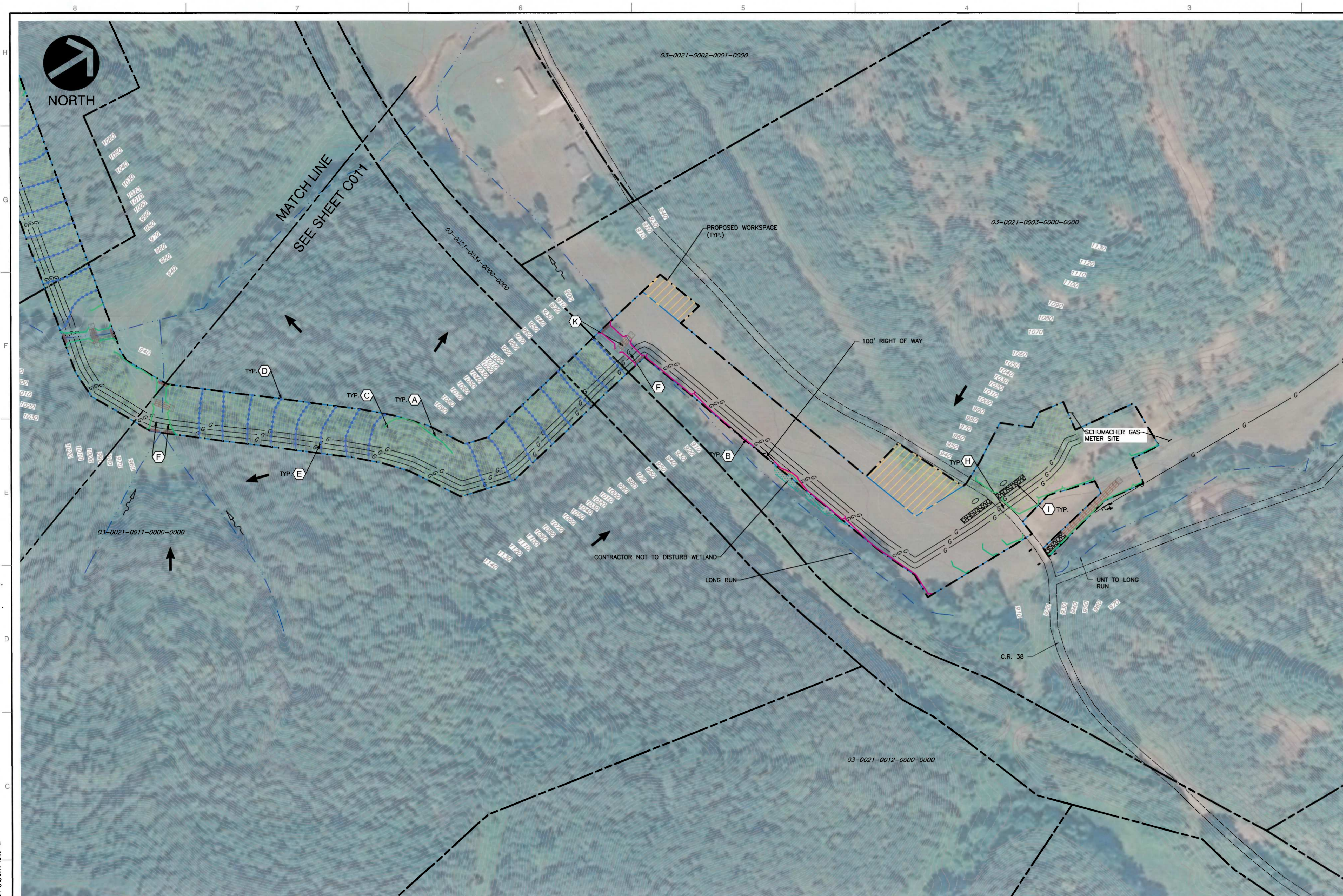
EDWARD J. FINK  
 REGISTERED PROFESSIONAL ENGINEER  
 STATE OF WEST VIRGINIA  
 18669

**EROSION AND SEDIMENTATION CONTROL PLAN**

DRAWING NO: **C011**

SHEET 11 OF 25

DATE	DRAWN BY	JSC
10/14/2013	AS NOTED	EJF
PROJECT NO.	CHECKED BY	PROJECT NO.
131-985		131-985
APPROVED BY:	APPROVED BY:	APPROVED BY:
		*RPC



**LEGEND**

- EXISTING INDEX CONTOUR
- EXISTING INTERMEDIATE CONTOUR
- EXISTING APPROXIMATE STREAM
- EXISTING PEM WETLAND
- EXISTING ROADS
- EXISTING TAX PARCEL PROPERTY LINE
- EXISTING GAS PIPELINE
- PROPOSED PIPELINE
- PROPOSED DOUBLE TRENCH DRAIN
- PROPOSED WATERBAR
- PROPOSED SLOPE INTERRUPT
- PROPOSED 30" REINFORCED SILT FENCE
- PROPOSED SUPER SILT FENCE
- PROPOSED EROSION CONTROL BLANKET
- PROPOSED ROCK CONSTRUCTION ENTRANCE AND STONE STOCKPILE
- PROPOSED TRENCH PLUG
- PROPOSED DRAINED TRENCH PLUG
- PROPOSED WORKSPACE
- PROPOSED PIPELINE RIGHT OF WAY
- PROPOSED LIMIT OF DISTURBANCE
- PROPOSED TIMBER MATTING
- PROPOSED COFFERDAM
- PROPOSED CONSTRUCTION FENCE
- DRAINAGE ARROW
- STREAM FLOW DIRECTION
- TAX PARCEL NUMBER
- EXISTING SLOPES OF 30° AND GREATER
- 8% CEMENT MIXTURE BACKFILL (SEE KEY NOTE Q)

**REVISION RECORD**

NO	DATE	DESCRIPTION
1	04/20/14	REVISE PIPELINE ALIGNMENT, RIGHT OF WAY, LIMIT OF DISTURBANCE, AND EAC CONTROLS
2	02/27/14	REVISED TO INCLUDE ADDITIONAL WORKSPACES
3	09/10/13	REVISED PER COMMENTS FROM WORK DATED 10/7/13
4	10/31/13	REVISED PER COMMENTS FROM WORK DATED 10/7/13
5	02/20/14	REVISE PIPELINE ALIGNMENT, RIGHT OF WAY, LIMIT OF DISTURBANCE, AND EAC CONTROLS

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**MARKWEST LIBERTY  
 MIDSTREAM & RESOURCES, LLC  
 SHERWOOD SALES  
 PIPELINE  
 DODDRIDGE COUNTY, WEST VIRGINIA**

**REFERENCES:**

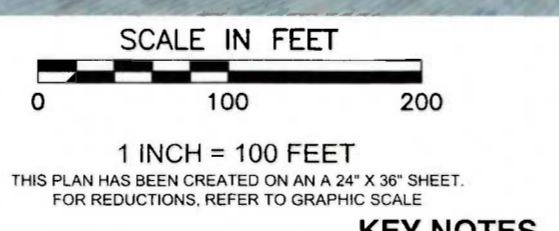
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  - ③ FURNISH AND INSTALL EROSION CONTROL BLANKET PER DETAIL 7 AND DETAIL 8, SHEET D004.
  - ④ FURNISH AND INSTALL WATERBAR PER DETAIL 9, SHEET D004. (TYPICAL)
  - ⑤ FURNISH AND INSTALL TRENCH BREAKER PER DETAIL 3, SHEET D003. (TYPICAL)
  - ⑥ CONSTRUCT PIPELINE CROSSING OF STREAM PER DETAIL 11, AND DETAIL 14, SHEET D005.
  - ⑦ CONSTRUCT PIPELINE CROSSING OF WETLAND PER DETAIL 15, SHEET D005.
  - ⑧ CONSTRUCT PIPELINE CROSSING OF ROAD PER DETAIL 13, SHEET D005.
  - ⑨ FURNISH AND INSTALL ROCK CONSTRUCTION ENTRANCE/EXIT WITH ROCK STOCKPILE PER DETAIL 1, SHEET D003. (TYPICAL)
  - ⑩ CONSTRUCT TEMPORARY EQUIPMENT CROSSING OF WETLAND PER DETAIL 16, SHEET D006.
  - ⑪ CONSTRUCT TEMPORARY EQUIPMENT CROSSING OF STREAM PER DETAIL 17, SHEET D006.
  - ⑫ CONSTRUCT PIPELINE CROSSING OF STREAM PER DETAIL 11, SHEET D005 AND DETAIL 20, SHEET D006.
  - ⑬ FURNISH AND INSTALL DRAINED TRENCH PLUG PER DETAIL 21, SHEET D007. (TYPICAL)

- ⑭ FURNISH AND INSTALL DOUBLE TRENCH DRAIN PER DETAIL 22, SHEET D007. (TYPICAL)
- ⑮ FURNISH AND INSTALL TRENCH DRAIN RIP RAP OUTLET PER DETAIL 23, SHEET D007. (TYPICAL)
- ⑯ FURNISH AND INSTALL SLOPE INTERRUPTER PER DETAIL 24, SHEET D007. (TYPICAL)
- ⑰ ALL BACKFILL PLACED IN PIPE TRENCH AND TO RE-GRADE TRAVEL WAY SHALL BE MIXED WITH 8% CEMENT AND PROPER MOISTURE CONDITIONS FOR HYDRATION. LEAVE SURFACE OF STABILIZED FILL ROUGHENED AND COVER WITH 1 FOOT OF SOIL FOR REVEGETATION.



CALL BEFORE YOU DIG  
**MUWV**  
 1-800-245-4848

\* HAND SIGNATURE ON FILE

**EROSION AND SEDIMENTATION CONTROL PLAN**

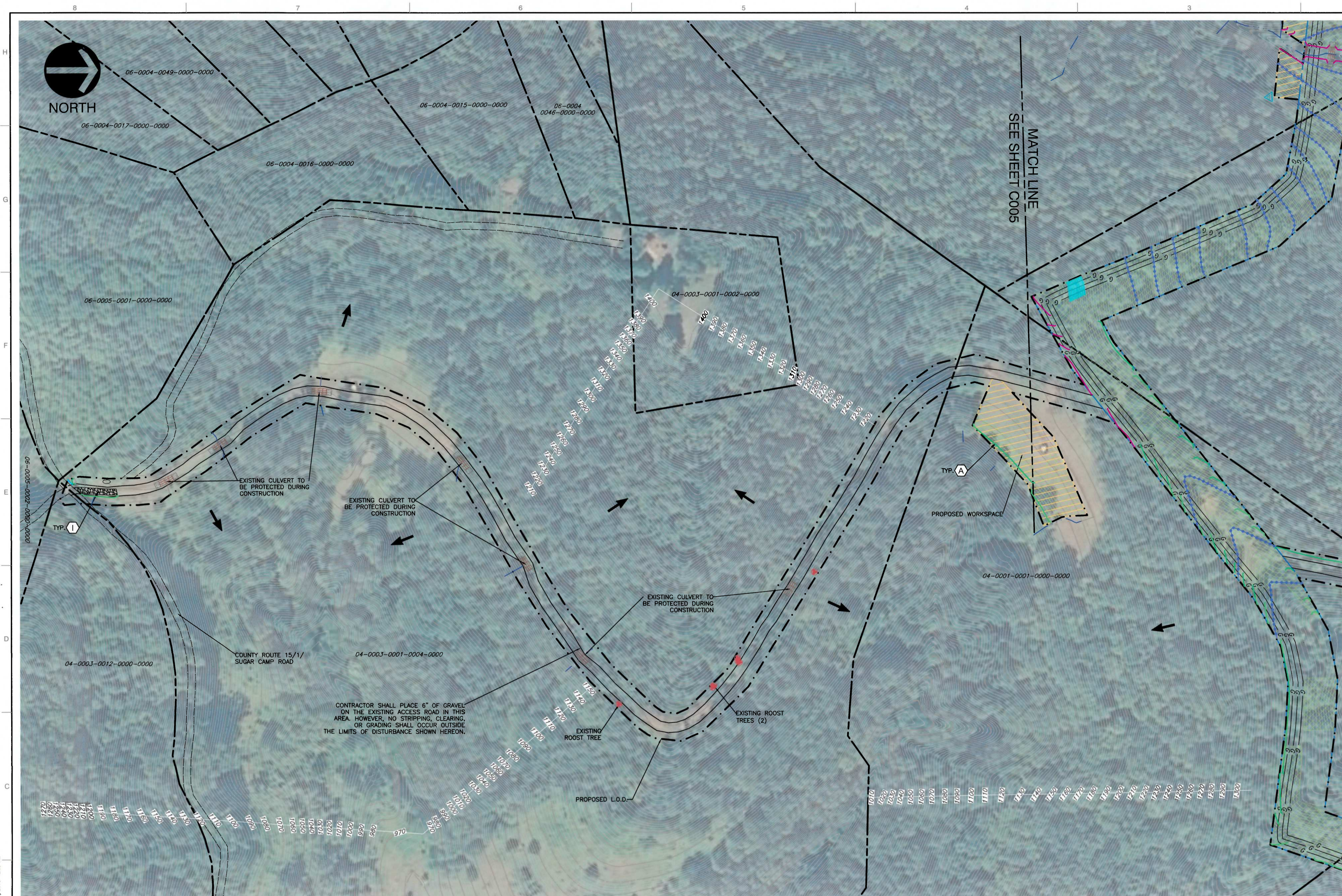
DRAWING NO: **C012**

SHEET 12 OF 25

DATE:	10/14/2013	DRAWN BY:	JSC
DWG SCALE:	AS NOTED	CHECKED BY:	EJF
PROJECT NO:	131-985	APPROVED BY:	*RPC

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**LEGEND**

- 1250 — EXISTING INDEX CONTOUR
- EXISTING INTERMEDIATE CONTOUR
- EXISTING APPROXIMATE STREAM & EXISTING PEM WETLAND
- EXISTING ROADS
- EXISTING TAX PARCEL PROPERTY LINE
- EXISTING GAS PIPELINE
- PROPOSED PIPELINE
- ST — PROPOSED DOUBLE TRENCH DRAIN
- PROPOSED WATERBAR
- PROPOSED SLOPE INTERRUPT
- PROPOSED 30" REINFORCED SILT FENCE
- PROPOSED SUPER SILT FENCE
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- PROPOSED DRAINED TRENCH PLUG
- PROPOSED WORKSPACE
- PROPOSED PIPELINE RIGHT OF WAY
- PROPOSED LIMIT OF DISTURBANCE
- PROPOSED TIMBER MATTING
- PROPOSED COFFERDAM
- PROPOSED CONSTRUCTION FENCE
- DRAINAGE ARROW
- STREAM FLOW DIRECTION
- 12-0013-0017-0000-0000 TAX PARCEL NUMBER
- EXISTING SLOPES OF 30° AND GREATER
- 8% CEMENT MIXTURE BACKFILL (SEE KEY NOTE Q)

**REVISION RECORD**

NO.	DATE	DESCRIPTION
1	04/20/14	ISSUE PIPELINE ALIGNMENT, RIGHT OF WAY, LIMIT OF DISTURBANCE, AND EROSION CONTROLS
2	08/27/14	REVISED TO INCLUDE ADDITIONAL WORKSPACES
3	09/10/14	REVISED FOR ADDITIONAL PIPELINE
4	10/31/14	REVISED PER COMMENTS FROM WORK DATED 10/15/14
5	02/20/15	REVISED PIPELINE ALIGNMENT, RIGHT OF WAY, LIMIT OF DISTURBANCE, AND EROSION CONTROLS

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 SHERWOOD SALES  
 PIPELINE  
 DODDRIDGE COUNTY, WEST VIRGINIA**

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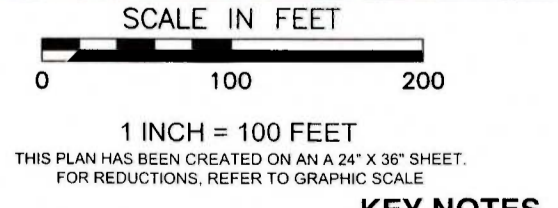
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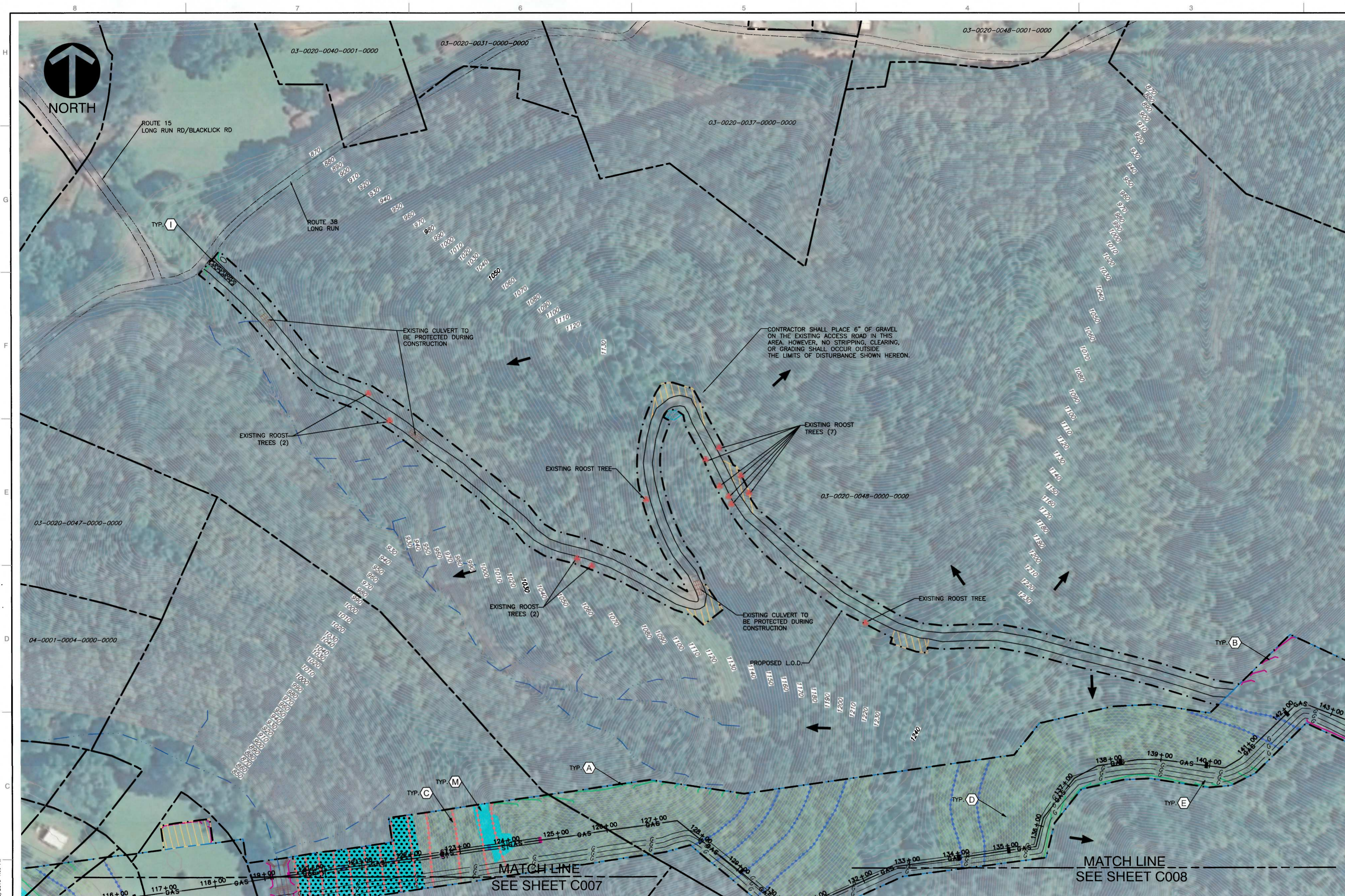


**EROSION AND SEDIMENTATION CONTROL PLAN**  
**ACCESS ROAD AT PIPELINE STA 75+80**

DATE: 10/14/2013 DRAWN BY: JSC  
 DWS SCALE: AS NOTED CHECKED BY: EJJ  
 PROJECT NO: 131-985  
 APPROVED BY: \*RPC

DRAWING NO: **C013**  
 SHEET 13 OF 25

P:\2013\131-985-0000\DWG\131985-0013.dwg (131985-0013) LS:02/2016 - 801mm - 10 02/2016 12:58 PM



**LEGEND**

---	EXISTING INDEX CONTOUR
- - -	EXISTING INTERMEDIATE CONTOUR
---	EXISTING APPROXIMATE STREAM
---	EXISTING PEM WETLAND
---	EXISTING ROADS
---	EXISTING TAX PARCEL PROPERTY LINE
---	EXISTING GAS PIPELINE
---	PROPOSED PIPELINE
---	PROPOSED DOUBLE TRENCH DRAIN
---	PROPOSED WATERBAR
---	PROPOSED SLOPE INTERRUPT
---	PROPOSED 30" REINFORCED SILT FENCE
---	PROPOSED SUPER SILT FENCE
---	PROPOSED EROSION CONTROL BLANKET
---	PROPOSED ROCK CONSTRUCTION ENTRANCE AND STONE STOCKPILE
---	PROPOSED TRENCH PLUG
---	PROPOSED DRAINED TRENCH PLUG
---	PROPOSED WORKSPACE
---	PROPOSED PIPELINE RIGHT OF WAY
---	PROPOSED LIMIT OF DISTURBANCE
---	PROPOSED TIMBER MATTING
---	PROPOSED COFFERDAM
---	PROPOSED CONSTRUCTION FENCE
---	DRAINAGE ARROW
---	STREAM FLOW DIRECTION
---	12-0013-0017-0000-0000 TAX PARCEL NUMBER
---	EXISTING SLOPES OF 30° AND GREATER
---	8% CEMENT MIXTURE BACKFILL (SEE KEY NOTE Q)

**REVISION RECORD**

NO	DATE	DESCRIPTION
1	03/20/14	REVISION PIPELINE ALIGNMENT, RIGHT OF WAY, LIMIT OF DISTURBANCE, AND EAC CONTROLS
2	03/27/2014	REVISION TO INCLUDE ADDITIONAL WORKSPACES
3	09/18/2014	REVISION FOR ADDITIONAL PIPELINE
4	10/21/15	REVISION PER COMMENTS FROM WORK DATED 10/15
5	03/20/16	REVISION PIPELINE ALIGNMENT, RIGHT OF WAY, LIMIT OF DISTURBANCE, AND EAC CONTROLS

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 DODDRIDGE COUNTY, WEST VIRGINIA**

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**KEY NOTES**

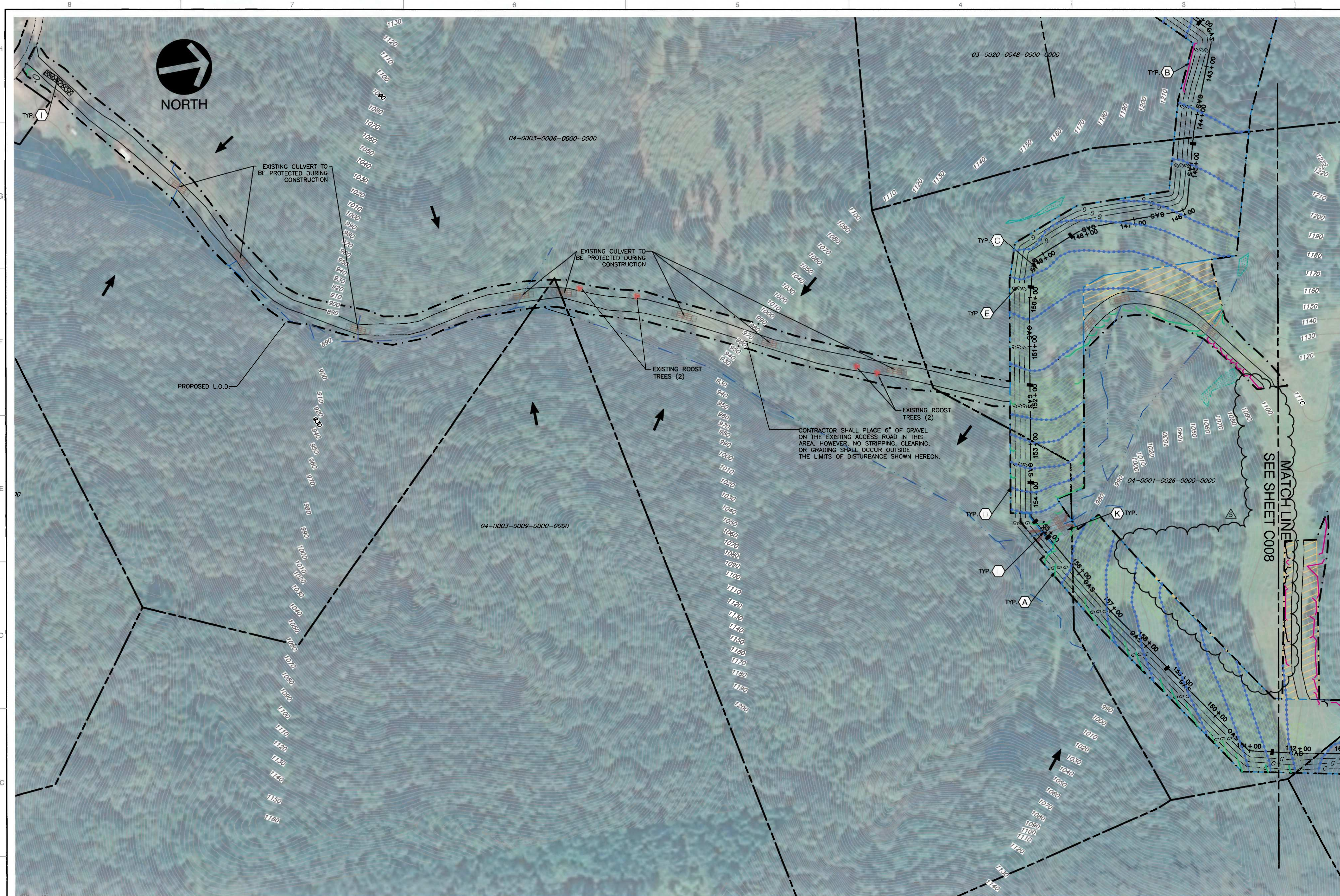
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**EDWARD J. FINK**  
 REGISTERED  
 18669  
 STATE OF WEST VIRGINIA  
 PROFESSIONAL ENGINEER

**EROSION AND SEDIMENTATION CONTROL PLAN**  
**ACCESS ROAD AT PIPELINE STA 139+10**

DRAWING NO:	<b>C014</b>
SHEET	14 OF 25
DATE:	10/14/2013
DWG SCALE:	AS NOTED
PROJECT NO:	131-985
APPROVED BY:	*RPC



**LEGEND**

- 1250 — EXISTING INDEX CONTOUR
- EXISTING INTERMEDIATE CONTOUR
- EXISTING APPROXIMATE STREAM &
- EXISTING PEM WETLAND
- EXISTING ROADS
- EXISTING TAX PARCEL PROPERTY LINE
- EXISTING GAS PIPELINE
- GAS — PROPOSED PIPELINE
- ST — PROPOSED DOUBLE TRENCH DRAIN
- PROPOSED WATERBAR
- PROPOSED SLOPE INTERRUPT
- PROPOSED 30" REINFORCED SILT FENCE
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- PROPOSED COFFERDAM
- PROPOSED CONSTRUCTION FENCE
- DRAINAGE ARROW
- STREAM FLOW DIRECTION
- 12-0013-0017-0000-0000 TAX PARCEL NUMBER
- EXISTING SLOPES OF 30° AND GREATER
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**REVISION RECORD**

NO.	DATE	DESCRIPTION
1	08/20/16	ISSUE FOR PIPELINE ALIGNMENT, RIGHT-OF-WAY LIMIT OF DISTURBANCE, AND EROSION CONTROLS
2	08/22/16	REVISED TO INCLUDE ADDITIONAL WORKSPACES
3	09/15/16	REVISED FOR ADDITIONAL PIPELINE
4	10/11/16	REVISED FOR COMMENTS FROM AERIAL DATUM 10/11/16
5	08/20/16	ISSUE FOR PIPELINE ALIGNMENT, RIGHT-OF-WAY LIMIT OF DISTURBANCE, AND EROSION CONTROLS

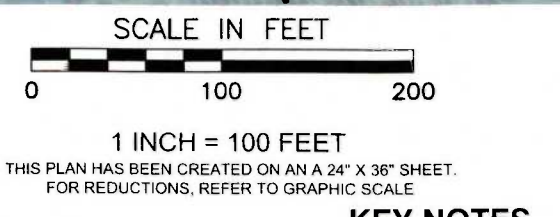
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 MIDSTREAM & RESOURCES, LLC  
 SHERWOOD SALES  
 PIPELINE  
 DODDRIDGE COUNTY, WEST VIRGINIA**

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 SITE RESTORATION SHALL COMMENCE PROMPTLY AFTER COMPLETION OF EACH PIPELINE SECTION. FOR SITE RESTORATION, THE ENTIRE RIGHT OF WAY SHALL BE SEEDING IN ACCORDANCE WITH THE SEEDING DETAIL. DURING SITE RESTORATION, ALL TEMPORARY CONTROLS SHALL BE REMOVED AND THE GRADES SHALL BE RETURNED TO THE EXISTING CONDITION GRADES. THE PERMANENT WATERBARS SHALL REMAIN AS PART OF SITE RESTORATION PLAN.

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- Ⓐ FURNISH AND INSTALL SUPER SILT FENCE PER DETAIL 10, SHEET D004. (TYPICAL)
- Ⓑ FURNISH AND INSTALL 30" REINFORCED SILT FENCE PER DETAIL 10, SHEET D004. (TYPICAL)
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- Ⓜ FURNISH AND INSTALL TRENCH DRAIN RIP RAP OUTLET PER DETAIL 23, SHEET D007. (TYPICAL)
- Ⓨ FURNISH AND INSTALL SLOPE INTERRUPTER PER DETAIL 24, SHEET D007. (TYPICAL)
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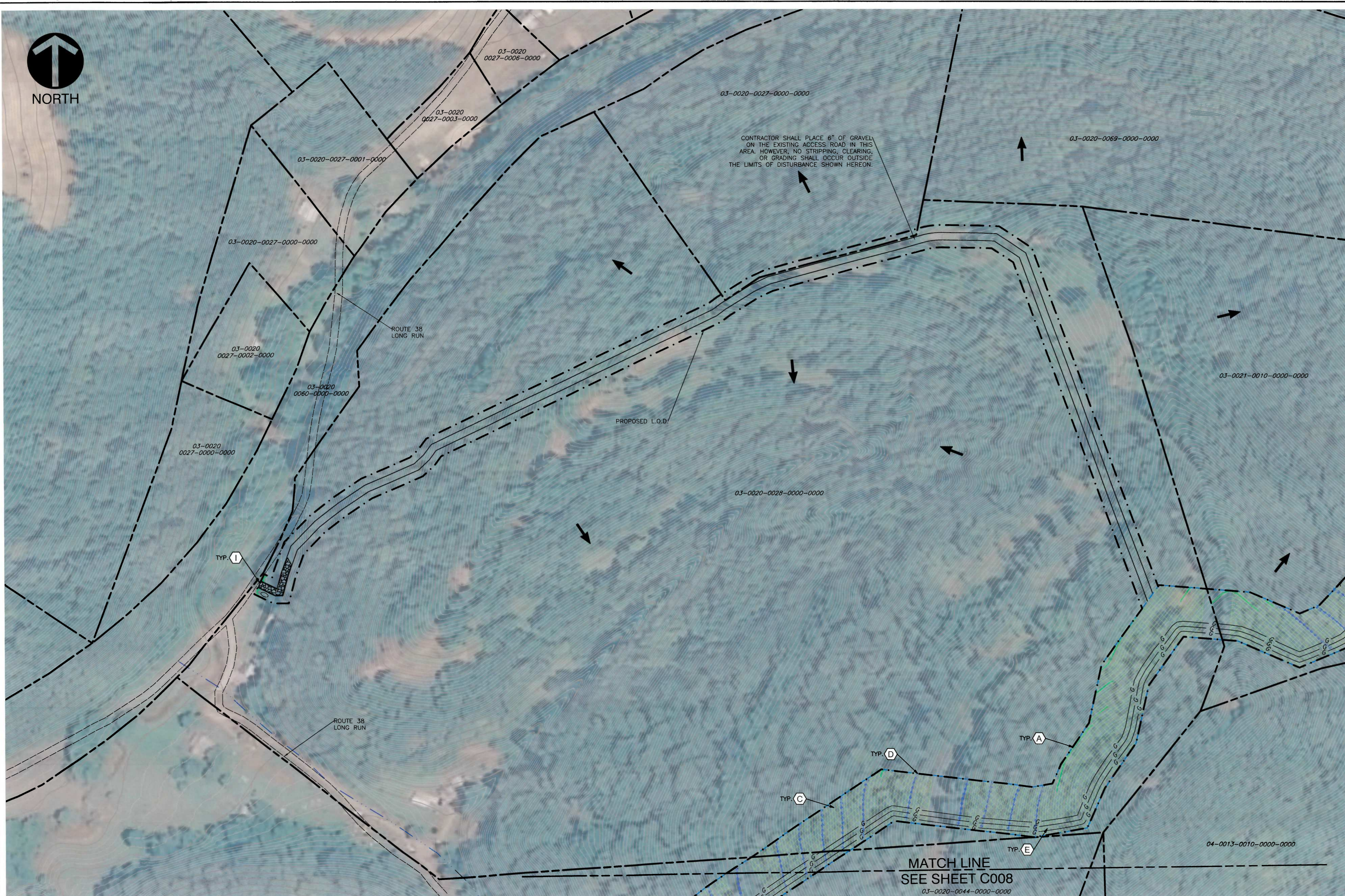
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**EROSION AND SEDIMENTATION CONTROL PLAN**  
**ACCESS ROAD AT PIPELINE**  
**STA 153+10 AND STA 163+00**

DATE: 10/14/2013 DRAWN BY: JSC  
 DWG SCALE: AS NOTED CHECKED BY: EJJ  
 PROJECT NO: 131-985  
 APPROVED BY: \*RPC

DRAWING NO: **C015**  
 SHEET 15 OF 25

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**LEGEND**

	EXISTING INDEX CONTOUR
	EXISTING INTERMEDIATE CONTOUR
	EXISTING APPROXIMATE STREAM & EXISTING PEM WETLAND
	EXISTING TAX PARCEL PROPERTY LINE
	EXISTING GAS PIPELINE
	PROPOSED PIPELINE
	PROPOSED DOUBLE TRENCH DRAIN
	PROPOSED WATERBAR
	PROPOSED SLOPE INTERRUPT
	PROPOSED 30" REINFORCED SILT FENCE
	PROPOSED SUPER SILT FENCE
	PROPOSED EROSION CONTROL BLANKET
	PROPOSED ROCK CONSTRUCTION ENTRANCE AND STONE STOCKPILE
	PROPOSED TRENCH PLUG
	PROPOSED DRAINED TRENCH PLUG
	PROPOSED WORKSPACE
	PROPOSED PIPELINE RIGHT OF WAY
	PROPOSED LIMIT OF DISTURBANCE
	PROPOSED TIMBER MATTING
	PROPOSED COFFERDAM
	PROPOSED CONSTRUCTION FENCE
	DRAINAGE ARROW
	STREAM FLOW DIRECTION
	12-0013-0017-0000-0000 TAX PARCEL NUMBER
	EXISTING SLOPES OF 30° AND GREATER
	8% CEMENT MIXTURE BACKFILL (SEE KEY NOTE Q)

**REVISION RECORD**

NO.	DATE	DESCRIPTION
1	04/23/14	REVISE PIPELINE ALIGNMENT, RIGHT OF WAY LIMIT OF DISTURBANCE, AND EAC CONTROLS
2	02/27/15	REVISED TO INCLUDE ADDITIONAL WORKSPACES
3	09/16/15	REVISED FOR ADDITIONAL PIPELINE
4	10/27/15	REVISED PER COMMENTS FROM WSPF DATED 10/17/15
5	11/2/16	REVISE PIPELINE ALIGNMENT, RIGHT OF WAY LIMIT OF DISTURBANCE, AND EAC CONTROLS

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 PIPELINE  
 DODDRIDGE COUNTY, WEST VIRGINIA**

**EROSION AND SEDIMENTATION  
 CONTROL PLAN  
 ACCESS ROAD AT PIPELINE STA 203+00**

DATE: 10/14/2013 DRAWN BY: JSC  
 AS NOTED CHECKED BY: E.J.F.  
 PROJECT NO: 131-985  
 APPROVED BY: \*R.P.C.

DRAWING NO: **C016**  
 SHEET 16 OF 25

**REFERENCES:**

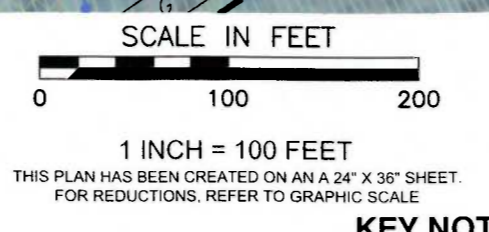
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**LEGEND**

- 1250 --- EXISTING INDEX CONTOUR
- EXISTING INTERMEDIATE CONTOUR
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- EXISTING TAX PARCEL PROPERTY LINE
- EXISTING GAS PIPELINE
- G --- PROPOSED PIPELINE
- ST --- PROPOSED DOUBLE TRENCH DRAIN
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**REVISION RECORD**

NO	DATE	DESCRIPTION
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2	02/27/2014	REVISED TO INCLUDE ADDITIONAL WORKSPACES
3	09/10/2014	REVISED FOR ADDITIONAL PIPELINE
4	10/01/15	REVISED PER COMMENTS FROM WORK DATED 10/1/15
5	02/02/16	REVISED PIPELINE ALIGNMENT, RIGHT OF WAY, LIMIT OF DISTURBANCE, AND E&E CONTROLS

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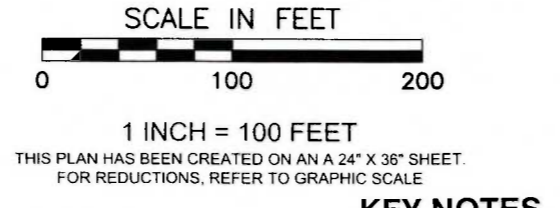
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**EROSION AND SEDIMENTATION CONTROL PLAN**

DRAWING NO: **C017**  
 SHEET 17 OF 25

DATE:	10/14/2013	DRAWN BY:	JSC
DWG SCALE:	AS NOTED	CHECKED BY:	EJF
PROJECT NO:	131-985	APPROVED BY:	*RPC

### GENERAL EROSION AND SEDIMENTATION CONTROL PLAN NOTES

1. THE LOCATION OF EXISTING UTILITIES AND UNDERGROUND STRUCTURES SHOWN ARE APPROXIMATE AND THOSE SHOWN ARE NOT NECESSARILY ALL THE EXISTING UTILITIES AND STRUCTURES. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO DETERMINE THE EXACT LOCATION OF ALL ABOVE AND BELOW GROUND UTILITIES AND STRUCTURES PRIOR TO INITIATING CONSTRUCTION ACTIVITIES.
2. ANY CHANGES TO THE SEDIMENT CONTROL PLAN SHALL BE APPROVED BY THE ENGINEER AND THE PROJECT OWNER. THE REVISED PLANS MUST MEET ALL CURRENT STATE SOIL EROSION AND SEDIMENTATION CONTROL STANDARDS.
3. ALL WORK SHALL BE DONE IN ACCORDANCE WITH THE WDEP EROSION AND SEDIMENT POLLUTION CONTROL STANDARDS BMP MANUAL.
4. ADDITIONAL EROSION AND SEDIMENTATION CONTROL MEASURES MAY BE REQUIRED AS DEEMED NECESSARY BY THE WDEP, OR THE OWNER, IN THE EVENT THAT ANY UNFORESEEN PROBLEMS ARISE DURING CONSTRUCTION.
5. THE CONTRACTOR SHALL INSTALL SOIL EROSION AND SEDIMENTATION CONTROL MEASURES PRIOR TO ANY SOIL DISTURBANCE, OR IN THEIR PROPER SEQUENCE, AND MAINTAIN THEM UNTIL PERMANENT STABILIZATION IS ESTABLISHED.
6. THE CONTRACTOR SHALL VERIFY ALL EXISTING UTILITIES TO BE REMOVED, RELOCATED, AND/OR RAZED ARE DISCONNECTED PRIOR TO INITIATING EARTHMOVING ACTIVITIES.
7. UPON TEMPORARY CESSATION OF AN EARTH DISTURBANCE ACTIVITY OR ANY STAGE OR PHASE OF AN ACTIVITY WHERE A CESSATION OF EARTH DISTURBANCE ACTIVITIES WILL EXCEED 7 DAYS, THE SITE SHALL BE IMMEDIATELY SEEDED, MULCHED, OR OTHERWISE PROTECTED FROM ACCELERATED EROSION AND SEDIMENTATION PENDING FUTURE EARTH DISTURBANCE ACTIVITIES. IF THE SEASON PREVENTS THE ESTABLISHMENT OF A TEMPORARY COVER, STRAW SHALL BE APPLIED AT A RATE OF THREE (3) TONS PER ACRE OVER TOP EXPOSED AREAS.
8. AT THE TIME WHEN THE SITE PREPARATION FOR PERMANENT VEGETATIVE STABILIZATION IS GOING TO BE COMPLETED, ANY SOIL THAT DOES NOT PROVIDE A SUITABLE ENVIRONMENT FOR PERMANENT VEGETATIVE GROUND COVER SHALL BE REMOVED OR TREATED BY THE CONTRACTOR TO MAKE IT SUITABLE TO SUPPORT VEGETATIVE GROUND COVER.
9. THE CONTRACTOR SHALL CONTROL DUST WITH WATER OR OTHER METHODS APPROVED BY THE WDEP AND THE OWNER.
10. ALL BMPs SHALL BE INSPECTED AT LEAST ONCE EVERY SEVEN (7) CALENDAR DAYS AND WITHIN 24 HOURS AFTER ANY STORM EVENT GREATER THAN 0.5 INCHES PER 24-HOUR PERIOD. ANY REQUIRED REPAIRS OR MAINTENANCE SHOULD BE MADE IMMEDIATELY. INSPECTION REPORTS MUST BE READILY AVAILABLE FOR REVIEW BY WDEP, AT THEIR REQUEST.
11. THE CONTRACTOR SHALL PROVIDE THE LOCATION AND ANY APPLICABLE PERMIT NUMBERS OF ALL THE OFF SITE DISPOSAL AND BORROW SITES THAT WILL BE UTILIZED DURING CONSTRUCTION TO THE WDEP PRIOR TO CONSTRUCTION. THE CONTRACTOR SHALL ALSO IDENTIFY THE EROSION AND SEDIMENTATION CONTROL MEASURES, WHICH WILL BE IMPLEMENTED AT THE DISPOSAL AND/OR BORROW SITES. IF THE DISPOSAL AND/OR BORROW SITES ARE NOT PERMITTED, A SEDIMENT CONTROL PLAN MUST BE APPROVED BY THE OWNER PRIOR TO THEIR USE.
12. THE CONTRACTOR SHALL SUBMIT A PREPAREDNESS, PREVENTION AND CONTINGENCY (PPC) PLAN TO THE OWNER PRIOR TO CHEMICALS, SOLID OR OTHER HAZARDOUS WASTES OR MATERIALS WITH TOXICITY POTENTIAL TO CAUSE ACCIDENTAL POLLUTION DURING EARTHMOVING OR OTHER CONSTRUCTION ACTIVITIES ARE STORED OR USED ON SITE.
13. THE CONTRACTOR SHALL CONSTRUCT A BERM AROUND AREAS WHERE HYDRAULIC FLUID AND DIESEL FUEL WILL BE STORED DURING CONSTRUCTION TO SERVE AS A CONTAINMENT AREA FOR THE CONTROL OF POSSIBLE SPILLS. ANY WITHIN THE CONTAINMENT AREA SHALL BE IMMEDIATELY CLEANED. TELEPHONE NUMBERS OF EMERGENCY RESPONSE TEAMS ARE TO BE KEPT ON SITE, AND THEY ARE TO BE NOTIFIED IN THE CASE OF A SPILL.
14. DIESEL FUEL STORAGE CONTAINERS SHALL BE LOCATED WITHIN AN IMPERVIOUS SECONDARY CONTAINMENT.
15. PETROLEUM PRODUCT STORAGE SHALL MAINTAIN A MINIMUM 100' SETBACK FROM STREAMS/WETLAND BOUNDARIES.

### CONSTRUCTION NOTES

1. LIMITING EXPOSED AREAS  
EARTH DISTURBANCE ACTIVITIES SHALL BE PLANNED AND CONDUCTED TO MINIMIZE THE EXTENT AND DURATION OF DISTURBANCE.  
THE LENGTH OF TIME FOR CONSTRUCTING ACCESS ROADS, TRENCH BACKFILLING, FINAL GRADING AND CLEANUP SHOULD BE KEPT TO A MINIMUM. GOOD PLANNING AND SCHEDULING OF THE VARIOUS CONSTRUCTION ITEMS, TOGETHER WITH TIMELY AVAILABILITY OF MATERIALS, ADEQUATE EQUIPMENT, AND ADEQUATE MAN POWER WILL HELP REDUCE THE TIME OF EXPOSURE OF DISTURBED LAND.
2. SWALE, DITCH, CHANNEL, WATERWAY CROSSLINGS  
TIMBER MAT CROSSLINGS OR ADEQUATELY SIZED PIPE CULVERTS SHALL BE INSTALLED FOR ACCESS ROADS AT ALL LOCATIONS WHERE ACCESS ROADS CROSS A SWALE, DITCH, CHANNEL, OR WATERWAY WHETHER OR NOT FLOWING WATER IS ENCOUNTERED. WHERE THE WORK CROSSES A SWALE, DITCH, CHANNEL OR WATERWAY WITH FLOWING WATER, THEN A TEMPORARY PIPE CULVERT OR PUMP-AROUND SYSTEM PROPERLY SAND BAGGED SHALL BE INSTALLED PRIOR TO THE TRENCHING OPERATION AND MAINTAINED UNTIL THE WORK IS COMPLETED, AND THE SWALE, DITCH, CHANNEL OR WATERWAY IS RESTORED AND STABILIZED.
3. CHANNEL AND STREAM BANK STABILIZATION  
ADEQUATE STREAM BANK STABILIZATION MUST BE PROVIDED AT ALL LOCATIONS WHERE STREAM BANKS ARE DISTURBED. THE STREAM BANK STABILIZATION SHALL BE DESIGNED TO WITHSTAND THE ANTICIPATED WATER FLOW VELOCITIES OR THE MAXIMUM ANTICIPATED SHEAR STRESS. ALL EXISTING SWALES, DITCHES, CHANNELS OR WATERWAYS THAT ARE DISTURBED NEED TO BE STABILIZED TO WITHSTAND ANTICIPATED WATER FLOW VELOCITIES OR MAXIMUM ANTICIPATED SHEAR STRESS WHEN THE CHANNEL, PROPOSED DITCHES AND CHANNELS SHALL BE PROVIDED WITH ADEQUATE STABILIZATION TO WITHSTAND DESIGN FLOW VELOCITIES OR MAXIMUM ANTICIPATED SHEAR STRESS WHEN THEY ARE INSTALLED.
4. PERMANENT STABILIZATION  
UPON COMPLETION OF ANY EARTH DISTURBANCE ACTIVITY, THE SITE SHALL BE IMMEDIATELY SEEDED, MULCHED, OR OTHERWISE PROTECTED FROM ACCELERATED EROSION AND SEDIMENTATION.  
THE INSTALLATION OF PAVEMENT, ROCK RIP RAP, OR GABIONS ARE SOME EXAMPLES OF STABILIZATION. THE STANDARD FOR VEGETATIVE COVER AS STABILIZATION IS PERENNIAL VEGETATION THAT IS ESTABLISHED WITH A UNIFORM COVERAGE DENSITY OF 70% ACROSS THE DISTURBED AREA. THE APPLICATION OF LIME, FERTILIZERS, SEED, AND MULCH IS USUALLY DONE TO ACHIEVE PERMANENT STABILIZATION. THE MULCH IS CONSIDERED TO BE AN INTERIM STABILIZATION MEASURE TO ASSIST IN THE ESTABLISHMENT OF THE PERMANENT VEGETATIVE COVER.
5. INTERIM STABILIZATION  
TEMPORARY SEEDING WITH MULCH COVER FOR INTERIM STABILIZATION IS A TYPE OF BMP THAT CAN USUALLY BE PROVIDED WHERE THE EARTH DISTURBANCE ACTIVITY TEMPORARILY CEASES UNLESS DIRECTED BY THE PROJECT OWNER.  
THE INSTALLATION OF AN EROSION CONTROL BLANKET OR APPLICATION OF MULCH UPON SEEDED AREAS ARE BOTH CONSIDERED TO BE INTERIM STABILIZATION BMPs TO PROTECT THE SEEDED UNTIL VEGETATION IS ESTABLISHED.
6. STABILIZATION DURING NON-GROWING SEASONS  
WHEN CONSTRUCTION MUST BE DONE AND IS COMPLETED DURING A NON-GROWING SEASON, INTERIM STABILIZATION BMPs MUST BE IMPLEMENTED AND ADEQUATELY MAINTAINED. THE APPLICATION OF STRAW MULCH AT THE RATE OF 3.0 TONS PER ACRE IS RECOMMENDED. SLOPES 3:1 OR GREATER REQUIRE INSTALLATION OF AN EROSION CONTROL BLANKET. THE BMPs SHOULD BE INSPECTED WEEKLY (UNLESS SNOW COVERED) TO IDENTIFY AREAS THAT BECOME BARE.

1. ALL TEMPORARY EROSION AND SEDIMENT POLLUTION CONTROLS MUST BE MAINTAINED UNTIL PERENNIAL VEGETATION IS ESTABLISHED.
7. WATERBARS  
WATERBARS SHOULD BE INSTALLED ACROSS DISTURBED AREAS (ACCESS ROADS, ETC.) OF THE RIGHT-OF-WAY ON ALL SLOPES GREATER THAN 5% AND DISCHARGE TO WELL VEGETATED AREAS. WATERBARS NOT ONLY COLLECT RUNOFF FROM THE DISTURBED AREAS AND DISCHARGE IT TO WELL VEGETATED AREAS UNTIL PERMANENT VEGETATION IS ESTABLISHED, BUT THEY ALSO PROVIDE LONG-TERM EROSION CONTROL ON THE COMPLETED RIGHT-OF-WAY.  
PERMANENT INSTALLATION OF SLOPE BREAKERS, INTERCEPTOR DIKES, AND WATERBARS SHOULD BE DONE PRIOR TO APPLICATION OF SOIL AMENDMENTS, SEED, AND MULCH DURING FINAL RESTORATION.
8. SOLIDS SEPARATION  
ROCK FILTER BERMS WITH COMPOST, ROCK FILTERS WITH COMPOST, COMPOST FILTER SOCKS, AND STORM DRAIN INLET PROTECTION ARE EXAMPLES OF SOLIDS SEPARATION BMPs. THEY SHOULD REMOVE SEDIMENT BY EITHER TEMPORARILY IMPOUNDING THE SEDIMENT LADEN RUNOFF OR BY SUFFICIENTLY SLOWING THE VELOCITY OF THE RUNOFF TO INCREASE SETTLING OF THE SEDIMENT PARTICLES.  
A PUMPED WATER FILTER BAG SURROUNDED BY COMPOST FILTER SOCK IS USED AS A SOLIDS SEPARATION DEVICE TO REMOVE SEDIMENT FROM MUDDY WATER PUMPED FROM TRENCHES OR EXCAVATIONS.
9. EROSION CONTROL BLANKETS FOR STEEP SLOPES  
STEEP SLOPES THAT ARE DISTURBED FOR CONSTRUCTION SUCH AS ROADWAY CUT OR EMBANKMENT SLOPES GREATER THAN 3H:1V SHOULD BE PROTECTED AGAINST EROSION WITH EROSION CONTROL BLANKETS OR MATS SUITABLE FOR THE ESTABLISHMENT OF PERMANENT VEGETATION. THE EROSION CONTROL BLANKETS SHOULD BE INSTALLED IMMEDIATELY AFTER THE SOIL AMENDMENTS AND THE SEED IS APPLIED. EROSION CONTROL BLANKETS SHOULD ALSO BE INSTALLED ON OTHER STEEP RIGHT-OF-WAY SLOPES WHERE EROSION WILL BE A PROBLEM UNTIL VEGETATION IS ESTABLISHED.  
THE INSTALLATION PROCEDURE FOR EROSION CONTROL BLANKETS SHOULD COMPLY WITH THE MANUFACTURER'S RECOMMENDATIONS, INCLUDING SLOPE PREPARATION, ORIENTATION, TRENCHING, OVERLAP AND SPACING OF STAPLES.

### TEMPORARY CONTROL MEASURES

- INSPECTIONS ARE TO BE PERFORMED 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 REQUIRED REPAIRS OR MAINTENANCE SHOULD BE MADE IMMEDIATELY.
- A. **ROCK CONSTRUCTION ENTRANCE**  
INSPECTIONS ARE TO BE PERFORMED 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 REQUIRED REPAIRS OR MAINTENANCE SHOULD BE MADE IMMEDIATELY.  
ROCK CONSTRUCTION ENTRANCES WILL BE PROVIDED AT THE LOCATIONS SHOWN ON THE PLANS AND IN ACCORDANCE WITH THE STANDARD DETAIL TO REMOVE SEDIMENT/MUD FROM VEHICLES BEFORE ENTERING ONTO STATE AND COUNTY ROADS.  
INSTALLATION:  
1. THE ROCK CONSTRUCTION ENTRANCE IS TO BE A MINIMUM OF SEVENTY FEET (70') IN LENGTH AND TWELVE FEET (12') IN WIDTH, BUT NOT LESS THAN THE FULL WIDTH AT POINTS WHERE INGRESS OR EGRESS OCCURS. EXCAVATE THE AREA OF THE ROCK CONSTRUCTION ENTRANCE A MINIMUM OF SIX INCHES (6").  
2. PLACE A LAYER OF SEPARATION GEOTEXTILE ALONG THE FULL LENGTH AND WIDTH OF THE ROCK CONSTRUCTION ENTRANCE.  
3. PLACE SIX INCHES (6") OF ASHTO #1 STONE ACROSS THE FULL LENGTH AND WIDTH OF THE ROCK CONSTRUCTION ENTRANCE. STONE DEPTH IS TO BE A MINIMUM OF SIX INCHES (6") THICK.  
4. MAINTENANCE:  
THE ROCK CONSTRUCTION ENTRANCE THICKNESS SHALL BE CONSTANTLY MAINTAINED TO THE SPECIFIED DIMENSIONS BY ADDING ROCK. A STOCKPILE SHALL BE MAINTAINED ON SITE FOR THIS PURPOSE. AT THE END OF EACH CONSTRUCTION DAY, ALL SEDIMENT DEPOSITED ON PAVED ROADWAYS SHALL BE REMOVED AND RETURNED TO THE CONSTRUCTION SITE. IF THE CRUSHED STONE DOES NOT ADEQUATELY REMOVE THE MUD FROM THE VEHICLE TIRES, THE TIRES SHOULD BE HOSED OFF BEFORE THE VEHICLE ENTERS A PUBLIC STREET. THE WASHING SHOULD BE DONE ON AN AREA COVERED WITH CRUSHED STONE, AND THE WASH WATER SHOULD DRAIN TO A SEDIMENT CONTROL DEVICE.
- B. **COMPOST FILTER SOCK**  
COMPOST FILTER SOCK SHALL BE INSTALLED IN THE LOCATIONS SHOWN ON THE PLANS AND IN ACCORDANCE WITH THE STANDARD DETAIL PROVIDED.  
INSTALLATION:  
1. COMPOST FILTER SOCK SHALL BE INSTALLED PARALLEL TO THE BASE OF THE SLOPE OR OTHER DISTURBED AREA AND PARALLEL TO THE CONTOUR.  
2. STAKES SHALL BE INSTALLED THROUGH THE MIDDLE OF THE COMPOST FILTER SOCK ON 10 FOOT CENTERS, USING 2-INCH BY 2-INCH WOODEN STAKES.  
3. STAKE DEPTH FOR SAND AND SILT LOAMS SHALL BE 12-INCH, AND 8-INCH FOR CLAY SOILS. REFER TO THE SOILS MAP PROVIDED IN APPENDIX A.  
4. BACKFILL WITH LOOSE COMPOST ALONG THE UPSLOPE SIDE OF THE COMPOST FILTER SOCK, FILLING THE SEAM BETWEEN THE SOIL SURFACE AND THE DEVICE, IMPROVING FILTRATION AND SEDIMENT RETENTION.

- MAINTENANCE:  
ACCUMULATED SEDIMENTS SHALL BE REMOVED IN ALL CASES WHERE ACCUMULATIONS HAVE REACHED HALF THE ABOVE-GROUND HEIGHT OF THE SOCK. IF THE SOCK HAS BEEN DAMAGED, IT SHALL BE REPAIRED, OR REPLACED IF BEYOND REPAIR. THE FILTER MEDIA WILL BE DISPERSED ON SITE ONCE THE DISTURBED AREA HAS BEEN PERMANENTLY STABILIZED. ADHERE TO ANY MANUFACTURER'S RECOMMENDATIONS. THE SOCK SHALL BE MAINTAINED UNTIL A DISTURBED AREA ABOVE THE DEVICE HAS BEEN PERMANENTLY STABILIZED AND A UNIFORM 70% PERENNIAL VEGETATION HAS BEEN ESTABLISHED.

- C. **SUPER SILT FENCE**  
SUPER SILT FENCE IS USED TO CONTROL RUNOFF FROM DISTURBED AREAS WHEN IT IS IN THE FORM OF SHEET FLOW, AND THE DISCHARGE IS TO A STABLE AREA. SLOPE LENGTH ABOVE THE FENCE SHOULD NOT EXCEED 400' IN STEEP TERRAIN.  
INSTALLATION:  
1. EXCAVATE A 12-INCH TRENCH, MINIMIZING THE DISTURBANCE ON THE DOWNSLOPE SIDE. THE BOTTOM OF THE TRENCH SHOULD BE AT LEVEL GRADE. MAXIMUM DEVIATION FROM LEVEL GRADE SHOULD BE 5% AND NOT EXTEND FOR MORE THAN 20 FEET.  
2. A CHAIN LINK FENCE SHOULD BE INSTALLED IN THE DOWNSLOPE SIDE OF THE TRENCH WITH THE FENCE ON THE UPSLOPE SIDE. THE FENCE SHOULD BE 2 1/2-INCH DIAMETER GALVANIZED OR ALUMINUM POSTS, OR 4" BY 4" PRESSURE TREATED POSTS SET AT 10-FOOT MAXIMUM SPACING. POLES SHOULD BE DRIVEN A MINIMUM OF 36 INCHES BELOW THE GROUND SURFACE AND EXTEND A MINIMUM OF 36 INCHES ABOVE THE GROUND SURFACE.  
3. STRETCH THE FILTER FABRIC AND SECURELY FASTEN IT TO THE FENCE WITH WIRE FASTENERS, STAPLES, OR PREFORMED SLIPS. IT SHOULD EXTEND A MINIMUM OF 36 INCHES ABOVE THE GROUND SURFACE, AND FASTENED SECURELY TO THE CHAIN LINK FENCE WITH TIRES SPACED EVERY 2' AT THE TOP AND MID-SECTION.  
4. AT FABRIC ENDS, BOTH ENDS SHOULD BE OVERLAPPED A MINIMUM OF 6 INCHES, FOLDED, AND SECURE TO THE FENCE. THE FABRIC TOW SHOULD BE PLACED IN THE BOTTOM OF THE TRENCH, BACKFILLED, AND COMPACTED.  
5. BOTH ENDS OF EACH FENCE SECTION SHOULD BE EXTENDED AT LEAST 8 FEET UPSLOPE AT 45 DEGREES TO THE MAIN FENCE ALIGNMENT TO ALLOW FOR POOLING OF WATER.

- MAINTENANCE:  
ACCUMULATED SEDIMENTS SHALL BE REMOVED IN ALL CASES WHERE ACCUMULATIONS HAVE REACHED HALF THE ABOVE-GROUND HEIGHT OF THE FENCE. IF THE FENCE HAS BEEN DAMAGED, IT SHALL BE REPAIRED, OR REPLACED IF BEYOND REPAIR.

- D. **REINFORCED 30" SILT FENCE**  
SILT FENCE IS USED TO CONTROL RUNOFF FROM SMALL DISTURBED AREAS WHEN IT IS IN THE FORM OF SHEET FLOW, AND THE DISCHARGE IS TO A STABLE AREA. SILT FENCE SHOULD BE LIMITED TO SITUATIONS IN WHICH ONLY SHEET FLOW IS EXPECTED.  
INSTALLATION:  
1. A TRENCH SHALL BE EXCAVATED APPROXIMATELY 4 INCHES WIDE AND 4 INCHES DEEP ON THE UPSLOPE SIDE OF THE PROPOSED LOCATION OF THE MEASURE.  
2. THE FILTER FABRIC SHOULD BE STAPLED SECURELY TO THE UPSLOPE SIDE OF THE POSTS USING ONE-INCH LONG (MINIMUM) HEAVY-DUTY WIRE STAPLES OR THE WIRES AND EIGHT INCHES OF FABRIC SHALL BE EXTENDED INTO THE TRENCH. THE FABRIC SHALL NOT BE STAPLED TO EXISTING TREES.  
3. WOODEN STAKES SHALL BE 2" BY 2" (OAK) OR 2" BY 4" (PINE), AND A MINIMUM OF 5-FEET IN LENGTH. SILT FENCE SHALL BE A MINIMUM OF 16-INCHES ABOVE THE ORIGINAL GROUND SURFACE AND NOT EXCEED 34-INCHES ABOVE GROUND ELEVATION.  
4. THE 4-INCH BY 4-INCH TRENCH SHALL BE BACKFILLED AND THE SOIL COMPACTED OVER THE FILTER FABRIC.  
5. BOTH ENDS OF EACH FENCE SECTION SHOULD BE EXTENDED AT LEAST 8 FEET UPSLOPE AT 45 DEGREES TO THE MAIN FENCE ALIGNMENT TO ALLOW FOR POOLING OF WATER.

- MAINTENANCE:  
ACCUMULATED SEDIMENTS SHALL BE REMOVED IN ALL CASES WHERE ACCUMULATIONS HAVE REACHED HALF THE ABOVE-GROUND HEIGHT OF THE FENCE. IF THE FENCE HAS BEEN DAMAGED, IT SHALL BE REPAIRED, OR REPLACED IF BEYOND REPAIR.

- E. **TEMPORARY VEGETATIVE STABILIZATION**  
FERTILIZING, SEEDING, AND MULCHING WILL BE USED AS A TEMPORARY E&S CONTROL MEASURE ON ALL DISTURBED AREAS AS NEEDED. APPLY TEMPORARY SEEDING TO EXPOSED SOIL SURFACES WITHIN 7 DAYS IF SOILS ARE NOT TO BE FINE-GRADED FOR A PERIOD OF 14 DAYS. SUCH AREAS INCLUDE DENUDED AREAS, SOIL STOCKPILES, TEMPORARY ROAD BANKS, ETC. REFER TO THE SEEDING MIXTURES PROVIDED ON THE DRAWINGS FOR TEMPORARY MIXTURES.

- INSTALLATION:  
THE CONTRACTOR SHALL VEGETATE ALL DISTURBED AREAS AT THE EARLIEST APPROPRIATE TIMES FOR ESTABLISHMENT OF TEMPORARY OR PERMANENT SEED MIXTURES, RESPECTIVELY. WHEN SITE DEVELOPMENT STAGING OR SEASON WILL NOT PERMIT TIMELY SOWING OF THE PERMANENT SEED MIXTURE(S), PREPARE SOILS (FERTILIZERS AND LIME) AS FOR PERMANENT SEEDING, SEED WITH TEMPORARY SEED MIXTURE AND MULCH, AND THEN OVERSOW THE PERENNIAL SEED MIXTURE INTO THE STUBBLE OF TEMPORARY VEGETATION AT THE NEXT APPROPRIATE SEEDING SEASON PER ITEM 6 BELOW. UNLESS DIRECTED OTHERWISE, VEGETATION SHALL BE ESTABLISHED AS FOLLOWS:

1. SOIL PLACEMENT: SOIL TO RECEIVE SEED SHALL BE PLACED TO THE DESIGN THICKNESS AND GRADE AND TRACKED AND ROLLED INTO PLACE IN A MANNER THAT WILL NOT CAUSE EXCESSIVE COMPACTION. IF SOIL DENSITY IS VERIFIED IN THE FIELD, SOIL SHALL BE COMPACTED TO A DRY DENSITY BETWEEN 75 AND 100 POUNDS PER CUBIC FOOT, AFTER CORRECTION TO ZERO PERCENT COARSE FRAGMENT (PARTICLES LARGER THAN 2 MILLIMETERS) CONTENT.
2. TEMPORARY SEEDING THAT WILL NOT BE FOLLOWED BY PERMANENT SEEDING, SUCH AS TOPSOIL STOCKPILES OR INTERIM GRADING PATTERNS DO NOT REQUIRE THE APPLICATION OF LIME OR FERTILIZER.
3. SEEDBED PREPARATION: JUST BEFORE SEEDING, PREPARE SEEDBED BY TRACKING, RAKING, OR OTHER APPROPRIATE METHOD AS NECESSARY TO BREAK UP SOIL CRUSTS. IF TRACKING THE SITE WITH A DOZER, TRACK IN A MANNER THAT LEAVES CLEAT MARKS PARALLEL TO SITE CONTOURS.
4. SEEDING: EVENLY APPLY THE TEMPORARY SEED MIXTURE USING A BROADCAST SEEDER, DRILL, CULTI-PACKER SEEDER, OR HYDROSEEDER. SMALL GRAINS SHALL BE PLANTED NO MORE THAN 1.5" DEEP. SMALL SEEDS, SUCH AS ANNUAL RYE, SHALL BE PLANTED NO MORE THAN 0.25" DEEP. OTHER GRASSES AND LEGUMES SHALL BE PLANTED NO MORE THAN 0.50" DEEP.
5. MULCHING AND TACKING: AFTER SEEDING, PROMPTLY MULCH USING STRAW APPLIED AT A RATE OF 6,000 LBS/ACRE OR 90LBS/1,000 SQUARE FEET OR AS NECESSARY TO OBTAIN 70% MULCH GROUND COVER. DO NOT USE HAY AS A STRAW SUBSTITUTE. STRAW SHALL BE ADDED WHEN TEMPORARY SEEDING IS CONDUCTED IN FALL FOR WINTER COVER AND DURING HOT AND DRY SUMMER MONTHS.

- IN SOME LOCATIONS SHOWN ON THE DRAWINGS, SUCH AS SLOPES STEEPER THAN 3:1 (H:V), EROSION CONTROL BLANKET OR TURF REINFORCEMENT MAT (TRM) MAY BE THE ONLY PERMISSIBLE MULCHING OPTION. INSTALL EROSION CONTROL BLANKETS/TRM PER MANUFACTURER'S INSTRUCTIONS. STAPLE BLANKET/TRM IN PLACE USING 6-INCH (MINIMUM) SOD STAPLES IN ROWS AT THE EDGES AND CENTERLINE OF THE BLANKET AND ON 24-INCH OR CLOSER CENTERS.

6. OVER-SEEDING AND RE-SEEDING: WHEN THE SITE DEVELOPMENT STAGING OR SEASON WILL NOT PERMIT TIMELY SOWING OF THE PERMANENT SEED MIXTURE(S), PREPARE SOILS (FERTILIZERS AND LIME) AS FOR PERMANENT SEEDING, THEN SEED WITH TEMPORARY SEED MIXTURE AND MULCH. OVERSOW THE PERENNIAL SEED MIXTURE INTO THE STUBBLE OF TEMPORARY VEGETATION AT THE NEXT APPROPRIATE SEEDING SEASON.

1. SOIL PLACEMENT: SOIL TO RECEIVE SEED SHALL BE PLACED TO THE DESIGN THICKNESS AND GRADE AND TRACKED AND ROLLED INTO PLACE IN A MANNER THAT WILL NOT CAUSE EXCESSIVE COMPACTION. IF SOIL DENSITY IS VERIFIED IN THE FIELD, SOIL SHALL BE COMPACTED TO A DRY DENSITY BETWEEN 75 AND 100 POUNDS PER CUBIC FOOT, AFTER CORRECTION TO ZERO PERCENT COARSE FRAGMENT (PARTICLES LARGER THAN 2 MILLIMETERS) CONTENT.
2. TEMPORARY SEEDING THAT WILL NOT BE FOLLOWED BY PERMANENT SEEDING, SUCH AS TOPSOIL STOCKPILES OR INTERIM GRADING PATTERNS DO NOT REQUIRE THE APPLICATION OF LIME OR FERTILIZER.
3. SEEDBED PREPARATION: JUST BEFORE SEEDING, PREPARE SEEDBED BY TRACKING, RAKING, OR OTHER APPROPRIATE METHOD AS NECESSARY TO BREAK UP SOIL CRUSTS. IF TRACKING THE SITE WITH A DOZER, TRACK IN A MANNER THAT LEAVES CLEAT MARKS PARALLEL TO SITE CONTOURS.
4. SEEDING: EVENLY APPLY THE TEMPORARY SEED MIXTURE USING A BROADCAST SEEDER, DRILL, CULTI-PACKER SEEDER, OR HYDROSEEDER. SMALL GRAINS SHALL BE PLANTED NO MORE THAN 1.5" DEEP. SMALL SEEDS, SUCH AS ANNUAL RYE, SHALL BE PLANTED NO MORE THAN 0.25" DEEP. OTHER GRASSES AND LEGUMES SHALL BE PLANTED NO MORE THAN 0.50" DEEP.
5. MULCHING AND TACKING: AFTER SEEDING, PROMPTLY MULCH USING STRAW APPLIED AT A RATE OF 6,000 LBS/ACRE OR 90LBS/1,000 SQUARE FEET OR AS NECESSARY TO OBTAIN 70% MULCH GROUND COVER. DO NOT USE HAY AS A STRAW SUBSTITUTE. STRAW SHALL BE ADDED WHEN TEMPORARY SEEDING IS CONDUCTED IN FALL FOR WINTER COVER AND DURING HOT AND DRY SUMMER MONTHS.

- IN SOME LOCATIONS SHOWN ON THE DRAWINGS, SUCH AS SLOPES STEEPER THAN 3:1 (H:V), EROSION CONTROL BLANKET OR TURF REINFORCEMENT MAT (TRM) MAY BE THE ONLY PERMISSIBLE MULCHING OPTION. INSTALL EROSION CONTROL BLANKETS/TRM PER MANUFACTURER'S INSTRUCTIONS. STAPLE BLANKET/TRM IN PLACE USING 6-INCH (MINIMUM) SOD STAPLES IN ROWS AT THE EDGES AND CENTERLINE OF THE BLANKET AND ON 24-INCH OR CLOSER CENTERS.

6. OVER-SEEDING AND RE-SEEDING: WHEN THE SITE DEVELOPMENT STAGING OR SEASON WILL NOT PERMIT TIMELY SOWING OF THE PERMANENT SEED MIXTURE(S), PREPARE SOILS (FERTILIZERS AND LIME) AS FOR PERMANENT SEEDING, THEN SEED WITH TEMPORARY SEED MIXTURE AND MULCH. OVERSOW THE PERENNIAL SEED MIXTURE INTO THE STUBBLE OF TEMPORARY VEGETATION AT THE NEXT APPROPRIATE SEEDING SEASON.

### TEMPORARY CONTROL MEASURES (CONTINUED)

- IF PERENNIAL SEED IS BEING SOWN INTO THE STUBBLE OF ACTIVELY GROWING TEMPORARY VEGETATION, MOW THE TEMPORARY VEGETATION TO REDUCE COMPETITION EITHER BEFORE OR IMMEDIATELY AFTER SOWING THE PERMANENT SEED.
7. STABILIZATION MEASURES SHALL BE INITIATED AS SOON AS PRACTICABLE IN PORTIONS OF THE SITE WHERE CONSTRUCTION ACTIVITIES HAVE TEMPORARILY OR PERMANENTLY CEASED, BUT IN NO CASE MORE THAN SEVEN DAYS AFTER THE CONSTRUCTION ACTIVITY IN THAT PORTION OF THE SITE HAS PERMANENTLY CEASED.
  8. 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.
  9. WHERE CONSTRUCTION ACTIVITY WILL RESUME ON A PORTION OF THE SITE WITHIN 14 DAYS FROM WHEN ACTIVITIES CEASED, (E.G., THE TOTAL TIME PERIOD THAT CONSTRUCTION ACTIVITY IS TEMPORARILY HALTED IS LESS THAN 14 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. APPLY TEMPORARY SEEDING TO EXPOSED SOIL SURFACES WITHIN 7 DAYS IF SOILS ARE NOT TO BE FINE-GRADED FOR A PERIOD OF 14 DAYS. SUCH AREAS INCLUDE DENUDED AREAS, SOIL STOCKPILES, TEMPORARY ROAD BANKS, ETC. REFER TO THE SEEDING MIXTURES PROVIDED ON THE DRAWINGS FOR TEMPORARY MIXTURES.

- MAINTENANCE:  
WATER AS NECESSARY TO ESTABLISH AND MAINTAIN VEGETATION. IN MOWED AREAS, MOW TO MAINTAIN GRASS HEIGHT BETWEEN 4 AND 6 INCHES TALL FOR FIRST TWO MONTHS OF GROWTH DURING THE ESTABLISHMENT YEAR, AND TO THE DESIRED HEIGHT THEREAFTER. IF STRING TRIMMERS ARE USED, TAKE MEASURES TO AVOID DAMAGE TO BARK OF TREES AND SHRUBS.

- F. **SLOPE EROSION CONTROL BLANKET**  
NORTH AMERICAN GREEN S150BN, OR EQUIVALENT, EROSION CONTROL BLANKET WILL BE USED TO PREVENT EROSION FROM THE GRADING OPERATIONS AND INSTALLED ON PERMANENT SLOPES. THE EROSION CONTROL BLANKETS WILL PROVIDE EROSION PROTECTION AND ASSIST WITH VEGETATION ESTABLISHMENT FOR UP TO 12 MONTHS. AFTER A 12 MONTH PERIOD THE BLANKETS WILL BIODEGRADE LEAVING A STABLE VEGETATED ROOF STRUCTURE.

- INSTALLATION:  
1. PREPARE SOIL ON ALL ESTABLISHED TEMPORARY AND PERMANENT SLOPES AND ANY NECESSARY APPLICATION OF FERTILIZER AND SEED. SEED SLOPES IN ACCORDANCE WITH THE "SEEDING CRITERIA" TABLE LOCATED ON THE EROSION AND SEDIMENTATION CONTROL NOTES DRAWING BEFORE INSTALLING EROSION CONTROL BLANKET.

2. BEGIN AT THE TOP OF THE SLOPE BY ANCHORING THE EROSION CONTROL BLANKET IN A 6-INCH BY 6-INCH WIDE TRENCH WITH APPROXIMATELY 12 INCHES OF BLANKET EXTENDED BEYOND THE UP-SLOPE PORTION OF THE TRENCH. ANCHOR THE BLANKET WITH A ROW OF STAPLES APPROXIMATELY 12 INCHES APART IN THE BOTTOM OF THE TRENCH. BACKFILL AND COMPACT THE TRENCH AFTER STAPLING. APPLY SEED TO COMPACTED SOIL AND FOLD REMAINING 12 INCH PORTION OF THE EROSION CONTROL BLANKET BACK OVER SEED AND COMPACTED SOIL. SECURE BLANKET OVER COMPACTED SOIL WITH A ROW OF STAPLES SPACED APPROXIMATELY 12 INCHES APART ACROSS THE WIDTH OF THE BLANKET.

3. ROLL THE EROSION CONTROL BLANKET DOWN THE SLOPE. BLANKET WILL UNROLL WITH APPROPRIATE SIDE AGAINST THE SOIL SURFACE. ALL BLANKETS MUST BE SECURELY FASTENED TO SOIL SURFACE BY PLACING STAPLES IN APPROPRIATE LOCATIONS AS RECOMMENDED BY THE MANUFACTURER.
4. THE EDGES OF PARALLEL BLANKETS MUST BE STAPLED WITH APPROXIMATELY 2 TO 5 INCH OVERLAP OR AS RECOMMENDED BY MANUFACTURER.

- MAINTENANCE:  
ANY SCOURED AREAS SHALL BE FIXED IMMEDIATELY BY COMPACTING SOIL IN THE WASHOUT AREA AND PLACING SEED. ANY DAMAGED EROSION CONTROL BLANKETS SHALL BE REPLACED IMMEDIATELY. BLANKETS SHALL BE MAINTAINED UNTIL A UNIFORM 70% PERENNIAL VEGETATION HAS BEEN ESTABLISHED.

- G. **GEOTEXTILE FILTER BAG**  
GEOTEXTILE FILTER BAGS MAY BE USED TO FILTER SEDIMENT LADEN WATER PUMPED FROM DISTURBED AREAS, TRENCHES, ETC. PRIOR TO DISCHARGING.

- INSTALLATION:  
FILTER BAGS SHALL BE MADE FROM NON-WOVEN GEOTEXTILE MATERIAL SEWN WITH HIGH-STRENGTH, DOUBLE-STITCHED "J"-TYPE SEAMS. THEY SHALL BE CAPABLE OF TRAPPING PARTICLES LARGER THAN 150 MICRONS.

- A SUITABLE MEANS OF ACCESSING THE BAG WITH MACHINERY REQUIRED FOR DISPOSAL PURPOSES MUST BE PROVIDED. FILTER BAGS SHALL BE REPLACED WHEN THEY BECOME FULL. SPARE BAGS SHALL BE KEPT AVAILABLE FOR REPLACEMENT OF THOSE THAT HAVE FAILED OR ARE FILLED.

- BAGS SHALL BE LOCATED IN WELL VEGETATED (GRASSY) AREAS AND DISCHARGE ONTO STABLE EROSION RESISTANT AREAS. WHERE THIS IS NOT POSSIBLE, A GEOTEXTILE FLOW PATH SHALL BE PROVIDED. BAGS SHALL NOT BE PLACED ON SLOPES GREATER THAN 5%. THE PUMP DISCHARGE HOSE SHALL BE INSERTED INTO THE BAGS IN THE MANNER SPECIFIED BY THE MANUFACTURER AND SECURELY CLAMPED. THE PUMPING RATE SHALL BE NO GREATER THAN 750 GPM OR ONE-HALF THE MAXIMUM SPECIFIED BY THE MANUFACTURER, WHICHEVER IS LESS. PUMP INTAKES SHALL BE FLOATING AND SCREENED.

- MAINTENANCE:  
PUMP AND FILTER BAGS SHALL BE MONITORED DURING PUMPING OPERATIONS. IF ANY PROBLEM IS DETECTED, PUMPING SHALL CEASE IMMEDIATELY, AND SHALL NOT RESUME UNTIL THE PROBLEM IS CORRECTED. SEDIMENT REMOVED FROM THE FILTER BAG SHALL BE SPREAD ON SITE UPSTREAM FROM ESTABLISHED SEDIMENT CONTROLS AND ALLOWED TO DRY. ONCE DRY, THE SEDIMENT MAY BE INCORPORATED ON SITE AS PART OF THE FILL.

- L. **CONSTRUCTION WASTE RECYCLE/DISPOSAL**  
CONSTRUCTION WASTES ARE REFUSE MATERIALS THAT ARE EXISTING ON-SITE OR GENERATED DURING THE COURSE OF CONSTRUCTION AND INCLUDE, BUT ARE NOT LIMITED TO PAPER, PLASTIC, RUBBER, WOOD, TEXTILE, AND METAL PRODUCTS.

- INSTALLATION:  
THE CONTRACTOR SHALL BE RESPONSIBLE FOR IDENTIFYING WASTE RECYCLING/DISPOSAL AREAS ON THE PLANS, ONCE THEY HAVE BEEN DETERMINED. WASTE DISPOSAL STOCKPILES SHALL BE PLACED UPSTREAM OF TEMPORARY E&S CONTROL MEASURES. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ALL WASTE RECYCLING/DISPOSAL PERMITS PRIOR TO THE COMMENCEMENT OF CONSTRUCTION ACTIVITIES.

- MAINTENANCE:  
ALL CONSTRUCTION WASTE SHALL BE REMOVED BY THE CONTRACTOR AND DISPOSED OF AT A STATE-APPROVED WASTE SITE AND IN ACCORDANCE WITH ALL LOCAL AND STATE CODES AND PERMIT REQUIREMENTS. THE BURNING OF WASTE MATERIALS SHALL NOT BE PERMITTED.

### PERMANENT CONTROL MEASURES

- A. **WATERBARS**  
WATERBARS WERE DESIGNED IN ACCORDANCE WITH THE RECOMMENDED SPACING AND WILL BE PLACED IN THE PIPELINE CORRIDOR AS INDICATED ON THE DRAWINGS. WATERBARS ARE SHOWN ON THE E&S DRAWINGS AS GENERAL GUIDANCE AS TO THE APPROXIMATE LOCATION OF INSTALLATION.  
INSTALLATION:  
THE WATERBARS SHALL BE SLOPED AT 2 PERCENT DOWNGRADE, THIS SHOULD BE INSTALLED BASED ON THE ACTUAL SITE TOPOGRAPHY. STEEPER GRADIENTS SHOULD BE AVOIDED TO PREVENT EROSION OF THE WATERBAR, WHEREVER ERODIBLE SOILS ARE PRESENT, OR WHERE THERE IS NOT A SUFFICIENT VEGETATIVE FILTER STRIP BETWEEN THE WATERBAR AND THE WATER. THE WATERBAR SHOULD BE PROVIDED WITH A TEMPORARY PROTECTIVE LINER. ALL WATERBARS SHOULD BE VEGETATED.

- MAINTENANCE:  
DAMAGED OR ERODED WATERBARS SHALL BE RESTORED TO ORIGINAL DIMENSIONS WITHIN 24 HOURS OF INSPECTION. MAINTENANCE OF WATERBARS SHALL BE PROVIDED UNTIL RIGHT OF WAY HAS ACHIEVED PERMANENT STABILIZATION. WATERBARS SHALL BE LEFT IN PLACE UNTIL PERMANENT STABILIZATION HAS BEEN ACHIEVED.

- B. **PERMANENT VEGETATIVE STABILIZATION**  
FERTILIZING, SEEDING AND MULCHING WILL BE USED AS A PERMANENT E&S CONTROL MEASURE ON ALL DISTURBED AREAS. REFER TO THE PERMANENT SEED MIXTURES PROVIDED ON THE DRAWINGS.

- INSTALLATION:  
FERTILIZING, SEEDING, AND MULCHING WILL BE USED AS A TEMPORARY/PERMANENT E&S CONTROL MEASURE ON ALL NON-PAVED DISTURBED AREAS. EXPOSED SOILS, NOT SUBJECT TO CONSTRUCTION TRAFFIC, SHALL NOT REMAIN UNSEEDED OR UNCOVERED BY MULCH FOR MORE THAN 14 DAYS. SEED AND MULCH TOPSOIL STOCKPILES WITHIN DAYS IF THE STOCKPILE IS TO REMAIN IN PLACE FOR LONGER THAN 14 DAYS. REFER TO THE SEEDING MIXTURE TABLES PROVIDED. FOR TEMPORARY/PERMANENT SEED MIXES, UNLESS THE OWNER'S REPRESENTATIVE DIRECTS OTHERWISE, VEGETATION SHALL BE ESTABLISHED AS FOLLOWS:

1. SOIL PLACEMENT: SOIL TO RECEIVE SEED SHALL BE PLACED TO THE DESIGN THICKNESS AND GRADE AND TRACKED AND ROLLED INTO PLACE IN A MANNER THAT WILL NOT CAUSE EXCESSIVE COMPACTION. IF SOIL DENSITY IS VERIFIED IN THE FIELD, SOIL SHALL BE COMPACTED TO A DRY DENSITY BETWEEN 75 AND 100 POUNDS PER CUBIC FOOT, AFTER CORRECTION TO ZERO PERCENT COARSE FRAGMENT (PARTICLES LARGER THAN 2 MILLIMETERS) CONTENT.
2. FOR PERMANENT SEEDING, SOIL TESTING AND SOIL AMENDMENT (LIME AND FERTILIZER) RATES ARE AS FOLLOWS: UNLESS SOIL TEST RESULTS AND RECOMMENDATIONS FROM WVU EXTENSION SERVICE SOIL TESTING LABORATORY (OR EQUIVALENT SOIL TESTING LABORATORY) INDICATE OTHERWISE, EVENLY APPLY: 1) AGRICULTURAL GRADE GROUND LIMESTONE AT A RATE OF 2 TONS PER ACRE (CALCIUM CARBONATE EQUIVALENT BASIS); AND 2) 1,000 LBS./ACRE OF FERTILIZER AT A RATE OF: 10-20-20 (N-P205-K2O) FOR MIXED GRASSES AND LEGUMES; 5-10-10 (N-P205-K2O) FOR LEGUME STANDS ONLY; AND 10-20-10 (N-P205-K2O) FOR GRASSES ONLY. LIME AND FERTILIZER SHALL BE INCORPORATED INTO THE TOP 4"-6" BY DISKING OR OTHER MEANS. IF LIME REQUIREMENTS ARE LESS THAN 4 TONS PER ACRE OR SLOPES ARE TOO STEEP TO PERMIT SAFE TILLAGE, THE SOIL AMENDMENTS CAN BE MIXED INTO A HYDROMULCH SLURRY OR CAN BE TRACKED IN WITH A DOZER IN LIEU OF INCORPORATION. IF TRACKING THE SITE WITH A DOZER, TRACK IN A MANNER THAT LEAVES CLEAT MARKS PARALLEL TO SITE CONTOURS.
3. SEEDBED PREPARATION: JUST BEFORE SEEDING, PREPARE SEEDBED BY TRACKING, RAKING, OR OTHER APPROPRIATE METHOD AS NECESSARY TO BREAK UP SOIL CRUSTS. IF TRACKING THE SITE WITH A DOZER, TRACK IN A MANNER THAT LEAVES CLEAT MARKS PARALLEL TO SITE CONTOURS.
4. SEEDING: EVENLY APPLY THE SEED MIXTURE USING A BROADCAST SEEDER, DRILL, CULTI-PACKER SEEDER, OR HYDROSEEDER. SMALL GRAINS SHALL BE PLANTED NO MORE THAN 1.5" DEEP. SMALL SEEDS, SUCH AS ANNUAL RYE, SHALL BE PLANTED NO MORE THAN 0.25" DEEP. OTHER GRASSES AND LEGUMES SHALL BE PLANTED NO MORE THAN 0.50" DEEP. FOR PERMANENT SEEDING, SEED DEPTH SHOULD BE 0.25" TO 0.50" DEEP.
5. MULCHING AND TACKING: AFTER SEEDING, PROMPTLY MULCH USING STRAW APPLIED AT A RATE OF 6,000 LBS/ACRE OR 90LBS/1,000 SQUARE FEET OR AS NECESSARY TO OBTAIN 70% MULCH GROUND COVER. DO NOT USE HAY AS A STRAW SUBSTITUTE. STRAW SHALL BE ADDED WHEN TEMPORARY SEEDING IS CONDUCTED IN FALL FOR WINTER COVER AND DURING HOT AND DRY SUMMER MONTHS.

- IN SOME LOCATIONS SHOWN ON THE DRAWINGS, SUCH AS SLOPES STEEPER THAN 3:1 (H:V), EROSION CONTROL BLANKET OR TURF REINFORCEMENT MAT (TRM) MAY BE THE ONLY PERMISSIBLE MULCHING OPTION. INSTALL EROSION CONTROL BLANKETS/TRM PER MANUFACTURER'S INSTRUCTIONS. STAPLE BLANKET/TRM IN PLACE USING 6-INCH (MINIMUM) SOD STAPLES IN ROWS AT THE EDGES AND CENTERLINE OF THE BLANKET AND ON 24-INCH OR CLOSER CENTERS.

6. OVER-SEEDING AND RE-SEEDING: WHEN THE SITE DEVELOPMENT STAGING OR SEASON WILL NOT PERMIT TIMELY SOWING OF THE PERMANENT SEED MIXTURE(S), PREPARE SOILS (FERTILIZERS AND LIME) AS FOR PERMANENT SEEDING, THEN SEED WITH TEMPORARY SEED MIXTURE AND MULCH. OVERSOW THE PERENNIAL SEED MIXTURE INTO THE STUBBLE OF TEMPORARY VEGETATION AT THE NEXT APPROPRIATE SEEDING SEASON.

- IF PERENNIAL SEED IS BEING SOWN INTO THE STUBBLE OF ACTIVELY GROWING TEMPORARY VEGETATION, MOW THE TEMPORARY VEGETATION TO REDUCE COMPETITION EITHER BEFORE OR IMMEDIATELY AFTER SOWING THE PERMANENT SEED.

- STABILIZATION MEASURES SHALL BE INITIATED AS SOON AS PRACTICABLE IN PORTIONS OF THE SITE WHERE CONSTRUCTION ACTIVITIES HAVE TEMPORARILY OR PERMANENTLY CEASED, BUT IN NO CASE MORE THAN SEVEN DAYS AFTER THE CONSTRUCTION ACTIVITY IN THAT PORTION OF THE SITE HAS PERMANENTLY CEASED.

- 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.

- MAINTENANCE:  
WATER AS NECESSARY TO ESTABLISH AND MAINTAIN VEGETATION. IN MOWED AREAS, MOW TO MAINTAIN GRASS HEIGHT BETWEEN 4 AND 6 INCHES TALL FOR FIRST TWO MONTHS OF GROWTH DURING THE ESTABLISHMENT YEAR, AND TO THE DESIRED HEIGHT THEREAFTER. IF STRING TRIMMERS ARE USED, TAKE MEASURES TO AVOID DAMAGE TO BARK OF TREES AND SHRUBS. CONTRACTOR SHALL INSPECT THE SITE UNTIL A 70 PERCENT PERENNIAL VEGETATIVE COVER IS ESTABLISHED. THE CONTRACTOR IS TO PLACE SEED ON ALL BARE SPOTS AND DISTURBED AREAS NOT ESTABLISHING GROUND COVER.

REVISION RECORD	
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**STANDARD EROSION & SEDIMENTATION CONTROL PLAN NOTES**

- VEHICLES AND EQUIPMENT MAY NEITHER ENTER DIRECTLY NOR EXIT DIRECTLY FROM ANYWHERE EXCEPT AT THE PROPOSED ROCK CONSTRUCTION ENTRANCE/EXITS.
- STOCKPILE HEIGHTS MUST NOT EXCEED 35 FEET, WITH SLOPES AT 2H:1V OR LESS.
- THE CONTRACTOR SHALL ASSURE THAT THE APPROVED SEDIMENT CONTROL PLAN IS PROPERLY AND COMPLETELY IMPLEMENTED.
- IMMEDIATELY UPON DISCOVERING UNFORESEEN CIRCUMSTANCES POSING THE POTENTIAL FOR ACCELERATED EROSION AND/OR SEDIMENT POLLUTION, THE CONTRACTOR SHALL IMPLEMENT APPROPRIATE BMPs TO ELIMINATE POTENTIAL FOR ACCELERATED EROSION AND/OR SEDIMENT POLLUTION.
- ALL PUMPING OF SEDIMENT LADEN WATER SHALL BE THROUGH A SEDIMENT CONTROL BMP.
- A COPY OF THE APPROVED SEDIMENT CONTROL PLAN MUST BE AVAILABLE AT THE PROJECT SITE AT ALL TIMES.
- EROSION AND SEDIMENTATION CONTROL BMPs MUST BE CONSTRUCTED, STABILIZED, AND FUNCTIONAL BEFORE THE DISTURBANCE BEGINS WITHIN THE TRIBUTARY AREAS OF THOSE BMPs.
- AFTER FINAL SITE STABILIZATION HAS BEEN ACHIEVED (UNIFORM 70% PERENNIAL VEGETATIVE COVER), TEMPORARY EROSION AND SEDIMENT CONTROL BMPs MUST BE REMOVED. AREAS DISTURBED DURING THE REMOVAL OF THE BMPs MUST BE RE-STABILIZED IMMEDIATELY.
- AT LEAST SEVEN (7) DAYS BEFORE STARTING ANY EARTH DISTURBANCE ACTIVITIES, THE PROJECT OWNER SHALL INVITE ALL CONTRACTORS INVOLVED IN THOSE ACTIVITIES, ALL APPROPRIATE MUNICIPAL OFFICIALS AND THE SEDIMENT CONTROL PLAN PREPARER TO AN ONSITE PRECONSTRUCTION MEETING. THE CONTRACTOR SHALL HAVE PRESENTED THE SUPERVISORY PERSON RESPONSIBLE FOR THE GENERAL CONSTRUCTION AND THE SUPERVISORY PERSON RESPONSIBLE FOR THE INSTALLATION AND MAINTENANCE OF BMPs FOR THE PROJECT. THE PROJECT OWNER SHALL HAVE PRESENTED AT LEAST ONE PERSON WHO HAS ENFORCEMENT AUTHORITY TO ASSURE THAT THE CONTRACTOR COMPLIES WITH THE DESIGNED BMPs. THE PROJECT OWNER SHOULD ALSO HAVE AT LEAST ONE INSPECTION PERSONNEL (WITH STOP WORK AUTHORITY) WHO WILL BE ON SITE TO ASSURE THAT THE CONTRACTOR COMPLIES WITH THE DESIGNED BMPs AND IS QUALIFIED TO DIRECT THE INSTALLATION OF ADDITIONAL BMPs AS NECESSARY.
- ALL EARTH DISTURBANCE ACTIVITIES SHALL PROCEED IN ACCORDANCE WITH THE CONSTRUCTION SEQUENCE. EACH STAGE SHALL BE COMPLETED BEFORE ANY FOLLOWING STAGE IS INITIATED. CLEARING AND GRUBBING SHALL BE LIMITED ONLY TO THOSE AREAS DESCRIBED IN EACH STAGE.
- STRAW MULCH SHALL BE APPLIED IN LONG STRANDS, NOT FINELY CHOPPED OR BROKEN.
- THE CONTRACTOR SHALL REMOVE SILT AND DEBRIS FROM EROSION AND SEDIMENTATION CONTROL DEVICES AS OUTLINED IN THE SEDIMENT CONTROL PLAN. SEDIMENT REMOVED FROM BMPs SHALL BE DISPOSED OF IN AREAS OUTSIDE OF STEEP SLOPES, WETLANDS, FLOODPLAINS, OR DRAINAGE SWALES AND IMMEDIATELY STABILIZED, OR PLACED IN UPHILL OF AN EFFECTIVE SEDIMENT CONTROL DEVICE OR FACILITY.
- DISCHARGING SEDIMENT LADEN WATER WHICH WILL CAUSE OR CONTRIBUTE TO THE DEGRADATION OF A BENEFICIAL USE OF THE STATE FROM THE CONSTRUCTION SITE, A DEWATERING SITE, OR SEDIMENT BASIN/TRAP INTO ANY WATER BODY OR STORM DRAIN WITHOUT FILTRATION OR EQUIVALENT TREATMENT IS PROHIBITED.
- THE DISCHARGER SHALL AMEND THE SEDIMENT CONTROL PLAN WHENEVER THERE IS A CHANGE IN THE CONSTRUCTION OR OPERATIONS, WHICH MAY EFFECT THE DISCHARGE OF POLLUTANTS TO SURFACE WATERS, GROUNDWATER, OR A MUNICIPAL STORM DRAIN SYSTEM.
- DISCHARGES ORIGINATING FROM OFF-SITE SOURCES, WHICH FLOW THROUGH OR ACROSS THE AREAS DISTURBED BY CONSTRUCTION, SHALL BE DIVERTED OR PUMPED AROUND THE ACTIVE CONSTRUCTION AREA.
- EROSION AND SEDIMENTATION CONTROL BMPs ARE REQUIRED AT APPROPRIATE LOCATIONS ALONG THE PROJECT PERIMETER AND AT ANY AND ALL OPERATIONAL STORM DRAIN INLETS WITHIN THE PROJECT VICINITY.
- EQUIPMENT AND WORKERS FOR EMERGENCY WORK SHALL BE MADE AVAILABLE AT ALL TIMES. ALL NECESSARY MATERIALS SHALL BE STOCKPILED ON SITE AT CONVENIENT LOCATIONS TO FACILITATE RAPID CONSTRUCTION OF TEMPORARY BMP DEVICES WHEN RAIN, SNOW MELT, OR RUNOFF EVENTS ARE IMMINENT.
- STAGING AREAS, ASSEMBLY AREAS, TEMPORARY EQUIPMENT AND NON-HAZARDOUS MATERIAL STORAGE AREAS SHALL BE LOCATED OUTSIDE THE 100-YR FLOOD ZONE. HAZARDOUS MATERIAL STORAGE AREAS SHALL BE LOCATED AT LEAST 100 FEET BACK FROM SURFACE WATER BODIES.
- ALL EXCAVATED MATERIALS THAT WILL NOT BE USED ON THE SITE CANNOT BE STORED IN THE FLOODPLAIN AND MUST BE HAULED TO A DISPOSAL SITE LOCATED OUTSIDE OF THE FLOODPLAIN.

**CONSTRUCTION SEQUENCE**

GENERAL CONSTRUCTION SEQUENCE: RELATIVE TIME LINE WILL BE IN CONJUNCTION WITH THE CONSTRUCTION SEQUENCE.

**SEQUENCE**

- INSTALL THE WV STORMWATER PERMIT SIGN AT THE ACCESS POINT IN ACCORDANCE WITH THE STANDARD DETAIL AND AS PER WDEP REQUIREMENTS.
- THE CONTRACTOR SHALL CONTACT MISS UTILITY OF WEST VIRGINIA AT (800) 245-4848 AND THE APPROPRIATE UTILITY COMPANIES AT LEAST THREE (3) DAYS PRIOR TO THE INITIATION OF CONSTRUCTION ACTIVITIES.
- PRIOR TO COMMENCEMENT OF ANY EARTH DISTURBANCE ACTIVITIES, INCLUDING CLEARING AND GRUBBING, THE CONTRACTOR SHALL CLEARLY DELINEATE APPROPRIATE AREAS, RIPARIAN FOREST BUFFER BOUNDARIES, THE LIMITS OF CLEARING, AND TREES THAT ARE TO BE CONSERVED WITHIN THE PROJECT SITE. THE CONTRACTOR SHALL INSTALL APPROPRIATE BARRIERS WHERE EQUIPMENT MAY NOT BE PARKED, STAGED, OPERATED, OR LOCATED FOR ANY PURPOSES.
- LAY OUT THE LIMITS OF THE SITE AND ESTABLISH BENCHMARKS AND REFERENCE POINTS.
- SITE ACCESS - THE SITE WILL BE ACCESSED FROM EXISTING ACCESS ROADS. THE CONTRACTOR SHALL PROVIDE BMPs TO MINIMIZE ACCELERATED EROSION AND SEDIMENTATION FROM THE FOLLOWING AREAS: ENTRANCE TO THE SITE, CONSTRUCTION ROUTES, AREAS DESIGNATED FOR EQUIPMENT AND PARKING, AND STOCKPILE AREAS.
- SEDIMENT BARRIERS - INSTALL PERIMETER BMPs AFTER THE CONSTRUCTION SITE IS ACCESSED. THE CONTRACTOR SHALL KEEP ANY ASSOCIATED CLEARING AND GRUBBING LIMITED TO ONLY THAT AMOUNT REQUIRED FOR INSTALLING PERIMETER BMPs.
- CONCURRENT WITH PIPE TRENCHING ACTIVITIES, FURNISH AND INSTALL SUBSURFACE DRAINAGE BMPs IN AREAS WHERE PROPOSED TRENCHING WILL OCCUR ON EXISTING SLOPES OF 30° AND GREATER AS INDICATED ON THE PLAN SHEETS AND IN ACCORDANCE WITH THE STANDARD DETAILS.
- TEMPORARY STREAM CROSSING - CONSTRUCT TEMPORARY STREAM CROSSINGS AT THE LOCATIONS SHOWN ON THE PLANS AND IN ACCORDANCE WITH THE APPLICABLE DETAILS.
- AFTER ALL PERIMETER EROSION AND SEDIMENTATION CONTROL BMPs HAVE BEEN CONSTRUCTED, REPAIR EXISTING RIGHT-OF-WAY EROSION AREAS, AS NEEDED, PER THE STABILIZED SLOPE DETAIL PROVIDED.
- SHOULD A LANDSLIDE OCCUR DURING OR AFTER CONSTRUCTION, REPAIR THE SLOPE FAILURE TO PRE-CONSTRUCTION CONDITIONS AS FOLLOWS:
  - IF THE PIPELINE HAS ALREADY BEEN INSTALLED IN THE AREA OF THE SLOPE FAILURE, LOCATE THE EXISTING PIPELINE TO DETERMINE WHETHER OR NOT IT HAS BEEN PLACED IN BEDROCK. IF THE PIPELINE IS NOT LOCATED IN BEDROCK, CONTACT MARKWEST TO DETERMINE THE APPROPRIATE METHOD TO SECURE THE PIPELINE.
  - NOTIFY THE GEOTECHNICAL ENGINEER TO OBSERVE LANDSLIDE AND CONFIRM METHOD OF REPAIR. REPAIR OF LANDSLIDE COULD VARY FROM WHAT IS SHOWN ON THE DRAWINGS.
  - IF THE LANDSLIDE IS SHALLOW, EXCAVATE AND STOCKPILE THE LANDSLIDE MASS. INSTALL REINFORCED 30" SILT FENCE AROUND EACH STOCKPILE. THE GEOTECHNICAL ENGINEER SHALL ESTIMATE THE LIMIT OF THE SLIDE MASS IN THE FIELD. PRECAUTIONS SHOULD BE TAKEN TO MINIMIZE ADDITIONAL GROUND MOVEMENT. SUCH PRECAUTIONS CAN INCLUDE DIVERTING ALL RUNOFF AWAY FROM THE SLIDE MASS PRIOR TO EXCAVATION, AVOIDING EXCAVATION DURING PERIODS OF PRECIPITATION, MINIMIZING THE TIME THE EXCAVATED AREA IS LEFT UN-BACKFILLED, SEQUENCING THE EXCAVATION, ETC.
  - EXCAVATE AND CONSTRUCT THE FILL FOUNDATION KEY IN ACCORDANCE WITH DETAIL 26, SHEET 0007. THE DEPTH OF THE FILL FOUNDATION KEY SHALL BE DETERMINED IN THE FIELD BY THE GEOTECHNICAL ENGINEER. BACKFILL THE FILL FOUNDATION KEY WITH ON-SITE ROCK OR IMPORTED R4 RIP RAP OR OTHER APPROVED ROCK. CONSTRUCT THE INTERMEDIATE FILL KEYS (DETAIL 27) AND COMPACTION KEYS (DETAIL 28) AS THE WORK PROGRESSES.
  - OUTLET FILL FOUNDATION AND INTERMEDIATE KEY DRAINS IN WELL VEGETATED AREAS AT THE LIMIT OF THE RIGHT-OF-WAY.
  - INSTALL DRAINS (DETAIL 29) OR GRAVEL BLANKET DRAINS TO COLLECT ANY SEEPS ENCOUNTERED.
  - BACKFILL THE SLIDE AREA USING EXCAVATED SLIDE MASS OR AVAILABLE SUITABLE BORROW. IF THE BACKFILL IS TOO WET TO PROPERLY PLACE AND COMPACT AS FILL, ADD PORTLAND CEMENT OR LIME AS REQUIRED TO DRY THE MATERIAL. COMPACT THE BACKFILL USING THE LARGEST ROLLER PRACTICAL. THE BACKFILL LIFT THICKNESS AND NUMBER PASSES OF THE ROLLER SHALL BE DETERMINED BY THE GEOTECHNICAL ENGINEER AND SHALL BE BASED ON THE SIZE OF THE ROLLER AND MOISTURE CONTENT OF THE SOIL.
- SURFACE STABILIZATION - APPLY TEMPORARY OR PERMANENT STABILIZATION MEASURES IMMEDIATELY TO ANY DISTURBED AREAS WHERE WORK HAS REACHED FINAL GRADE, HAS BEEN DELAYED, OR HAS OTHERWISE BEEN TEMPORARILY SUSPENDED. CONTRACTOR TO APPLY TEMPORARY SEEDING TO EXPOSED SOIL SURFACES WITHIN 7 DAYS IF SOILS ARE NOT TO BE FINE-GRADED FOR A PERIOD OF 14 DAYS. SUCH AREAS INCLUDE DENUDED AREAS, SOIL STOCKPILES, TEMPORARY ROAD BANKS, ETC. REFER TO THE SEEDING MIXTURES PROVIDED ON THE DRAWINGS FOR TEMPORARY MIXTURES.
- REMOVAL OF TEMPORARY STREAM CROSSING - AFTER FINAL STABILIZATION OF SLOPE RESTORATION, REMOVE TEMPORARY STREAM CROSSING, AND RESTORE STREAM CHANNEL TO PRE-CONSTRUCTION CONDITIONS PER THE STANDARD DETAIL.
- FINAL STABILIZATION - AREAS SHOULD BE RETURNED TO PRE-CONSTRUCTION CONDITIONS IN TERMS OF GRADE AND VEGETATIVE STABILIZATION TO RESTORE DRAINAGE PATTERNS. AFTER CONSTRUCTION IS COMPLETED, INSTALL STABILIZATION BMPs INCLUDING: PLACING TOPSOIL AND PERMANENT SEEDING, MULCHING, AND PLACING RIPRAP. STABILIZE ALL OPEN AREAS INCLUDING BORROW AND SPOIL AREAS.
- A UNIFORM 70 PERCENT PERENNIAL VEGETATIVE COVER SHALL BE ACHIEVED ON ALL DISTURBED AREAS BEFORE ANY TEMPORARY EROSION AND SEDIMENT CONTROL MEASURES ARE REMOVED. ALL DISTURBED AREAS SHALL BE SEEDDED AND MULCHED AS SOON AS POSSIBLE TO OBTAIN OPTIMUM SEED GERMINATION AND SEEDING GROWTH BUT AT A MINIMUM WITHIN 7 DAYS OF REACHING FINAL GRADE OR WITHIN 7 DAYS IF NO ADDITIONAL ACTIVITY IS ANTICIPATED FOR 14 DAYS OR MORE.

LIMITING SOIL CHARACTERISTICS									
MAP SYMBOL	SOIL NAME	ERODIBLE	CLIFF BANKS CAVE	CORROSIVE TO CONCRETE OR STEEL	HIGH WATER TABLE	LOW STRENGTH	PIPING	POOR TOPSOIL	POTENTIALLY HYDRIC
Ch	CHAGRIN SILT LOAM	X	X	C	X	X	X	X	X
GaE	GILPIN-PEABODY COMPLEX, 15-35% SLOPES	X	X	C	X	X	X	X	X
GaF	GILPIN-PEABODY COMPLEX, 35-70% SLOPES	X	X	C	X	X	X	X	X
Guc	GUERNSEY SILT LOAM, 8-15% SLOPES	X	X	C/S	X	X	X	X	X
Gud	GUERNSEY SILT LOAM, 15-25% SLOPES	X	X	C/S	X	X	X	X	X
Ka	KANAWHA LOAM	X	X	C		X	X		
Se	SENSABAUGH SILT LOAM		X		X	X	X	X	
SeB	SENSABAUGH SILT LOAM, 3-8% SLOPES		X		X	X	X	X	
VaE	VANDALIA SILT LOAM, 15-35% SLOPES	X	X	C/S	X	X	X	X	

SEED MIXTURE USE	
SITE CONDITION	SEED MIXTURE (SELECT ONE)*
CUT SLOPES AND FILLS (NOT MOWED) WELL DRAINED	4
CUT SLOPES AND FILL (NOT MOWED) VARIABLE DRAINAGE	4
CUT SLOPES AND FILLS (MOWED)	1
CUT SLOPES AND FILLS (GRAZED/HAY)	1 OR 2
GULLES AND ERODED AREAS	4
EROSION CONTROL BMPs - CHANNELS, DRAINAGE DITCHES, TRAPS, EMBANKMENTS, ETC.	1
EROSION CONTROL BMPs - FOR HAY OR SILAGE	2
RIGHT-OF-WAY, WELL-DRAINED	1, 2, OR 4
RIGHT-OF-WAY, VARIABLE DRAINAGE	2 OR 3
RIGHT-OF-WAY, WELL-DRAINED AREAS FOR GRAZING/HAY	2
STRIP MINED AREAS - SPOILS, WASTE AREAS, FLY ASH, SLAG, ETC.	2, 3, OR 4
STRIP MINED AREAS - FOR GRAZING/HAY	2 OR 4

\* PLUS "NURSE CROP" OF 64 LBS/ACRE OF OATS OR 112 LBS/ACRE OF WINTER RYE  
 \* OR ACCORDING TO LANDOWNER STIPULATIONS

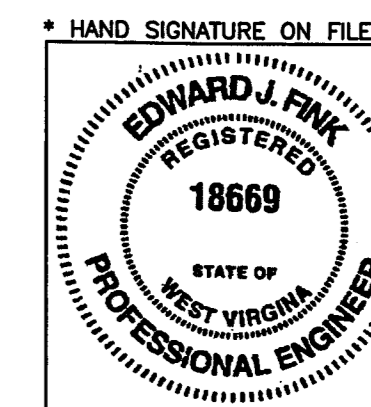
**WEST VIRGINIA**

**SEEDING TABLE FOR SITE STABILIZATION**  
 NOT TO SCALE

PERMANENT SEED MIXTURES			
MIXTURE NUMBER	SEASON	SPECIES	SEEDLING RATE LB/AC
1	COOL	FINE FESCUE, PLUS REDTOP, PLUS BIRDSFOOT TREFOLI	46, 4, 8
2	COOL	ORCHARDGRASS PLUS BIRDSFOOT TREFOLI	26, 8
3	WARM	DEERTONGUE, PLUS BIRDSFOOT TREFOLI	21, 8
4	WARM	SWITCHGRASS OR BIG BLUESTEM, PLUS BIRDSFOOT TREFOLI	15, 15, 8

TEMPORARY SEED CHART			
PLANT NAMES		PLANTING DATES	APPLICATION RATE LBS/ACRE
COMMON	SCIENTIFIC		
Annual Ryegrass	Lolium multiflorum	2/16-5/15 8/1-11/1	40
Field Bromegrass	Bromus ciliatus	3/1-6/15 8/1-9/15	40
Spring Oats	Avena sativa	3/1-6/15	100
Winter Rye	Secale cereale	8/15-2/28	170
Winter Wheat	Triticum aestivum	8/15-2/28	180
Japanese Millet	Echinochloa crusgalli	5/15-8/15	30
Redtop	Agrostis alba	3/1-6/15	10
Annual Ryegrass and Spring Oats	Lolium multiflorum Avena sativa	3/1-6/15	30 70
German Foxtail Millet	Setaria italica	5/1-8/1	40
Hairy Vetch	Vicia villosa	8/15-4/1	60

\*Inoculation is required. If a hydroseder is utilized, the application rate is 5 times the recommended rate.



EROSION AND SEDIMENTATION CONTROL NOTES

DRAWING NO. **D002**

SHEET 19 OF 25

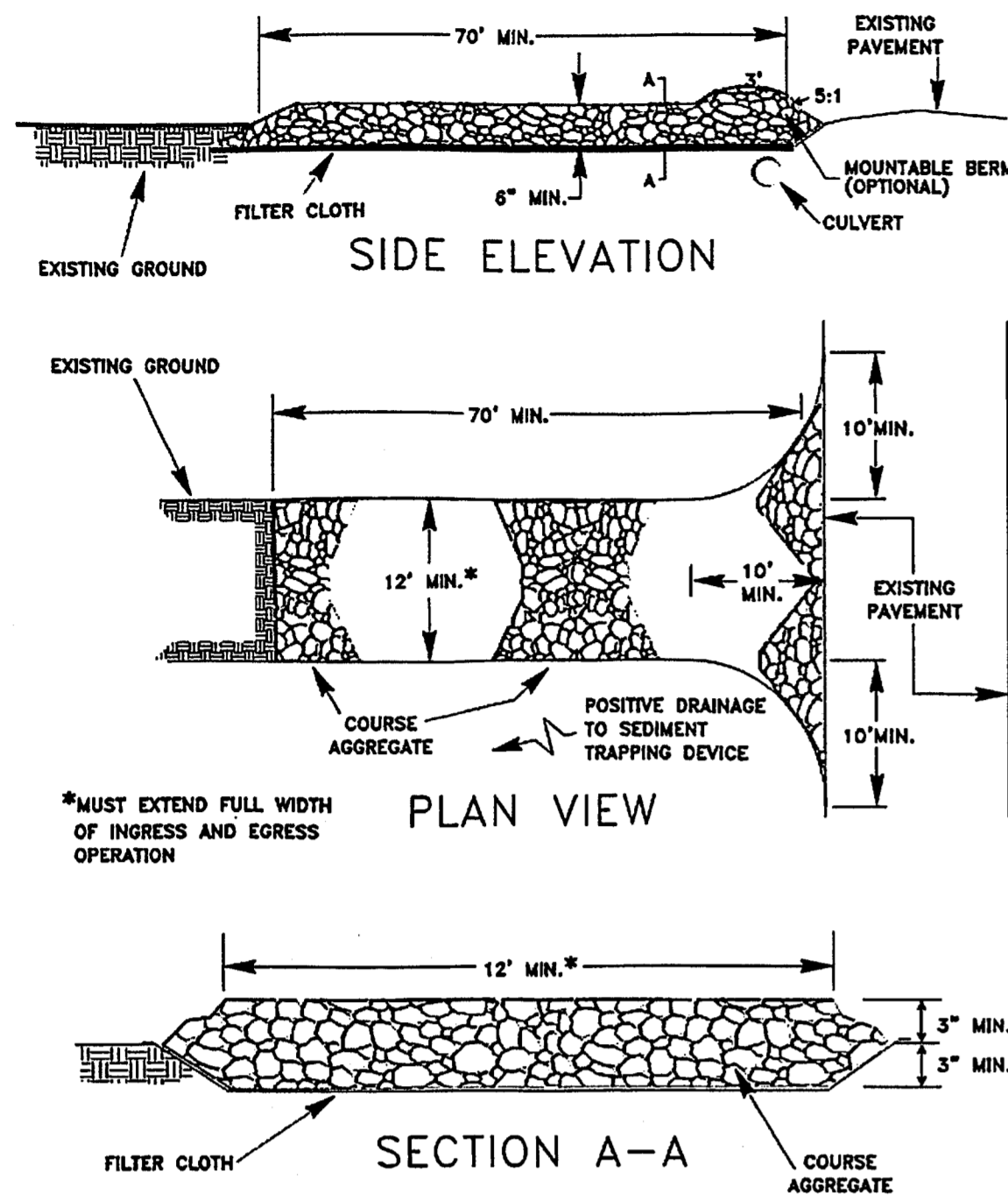
**Civil & Environmental Consultants, Inc.**  
 333 Baldwin Road - Pittsburgh, PA 15205  
 412-429-2324 · 800-365-2324  
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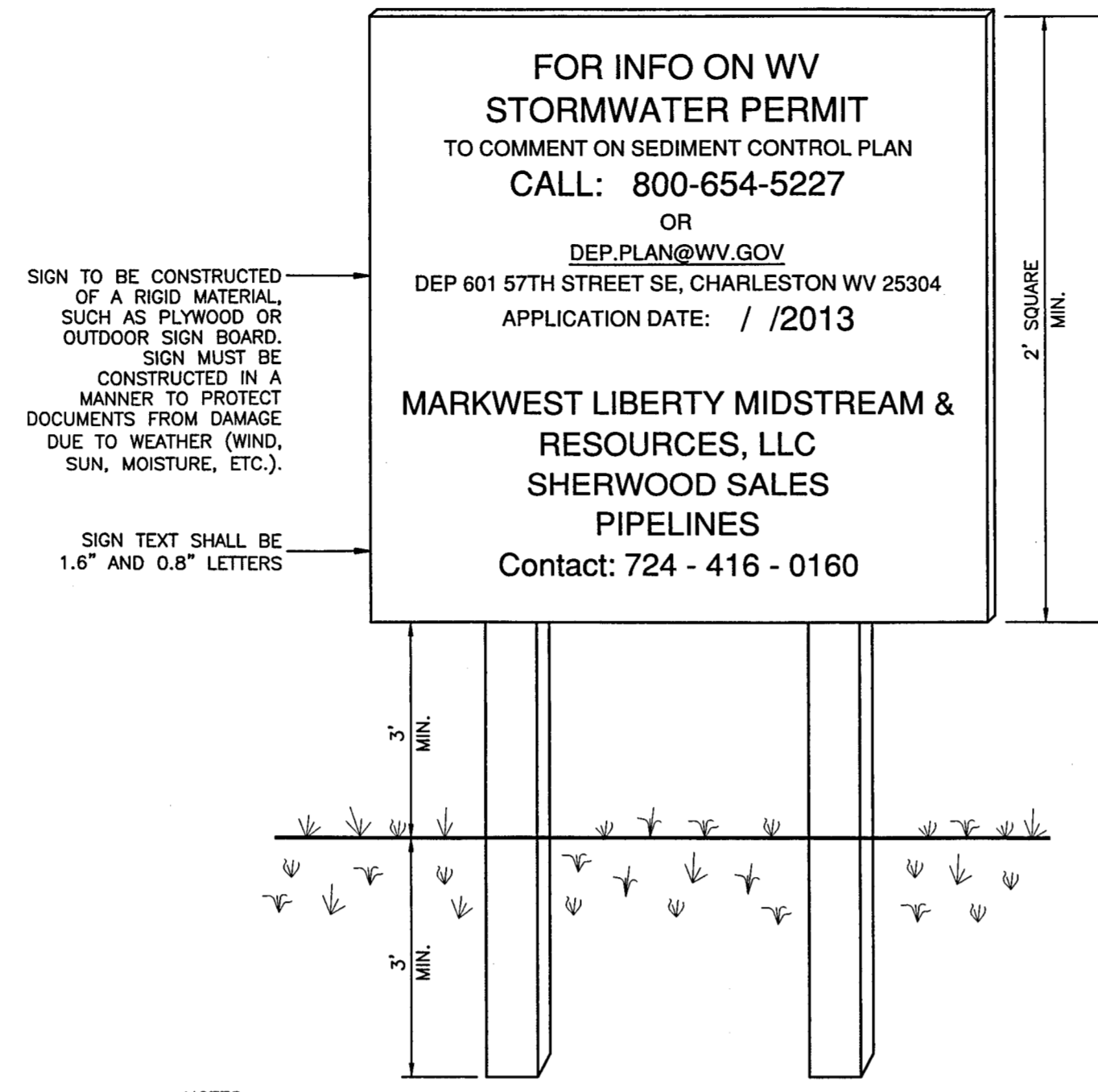
DATE: \_\_\_\_\_  
 DWG SCALE: \_\_\_\_\_  
 PROJECT NO: 131-985  
 APPROVED BY: \_\_\_\_\_  
 JISC: \_\_\_\_\_  
 EJJF: \_\_\_\_\_  
 AS NOTED / CHECKED BY: \_\_\_\_\_  
 131-985  
 \*RPC

REVISION RECORD

NO	DATE	DESCRIPTION
1	04/20/14	REVISE PERLINE ALIGNMENT, RIGHT-OF-WAY LIMIT OF DISTURBANCE, AND E&S CONTROLS
2	02/27/15	REVISED TO INCLUDE ADDITIONAL WORKSHEETS
3	08/10/15	REVISED PER COMMENTS FROM WDEP DATED 10/7/15
4	10/21/15	REVISED PER COMMENTS FROM WDEP DATED 10/7/15
5	02/27/16	REVISE PERLINE ALIGNMENT, RIGHT-OF-WAY LIMIT OF DISTURBANCE, AND E&S CONTROLS

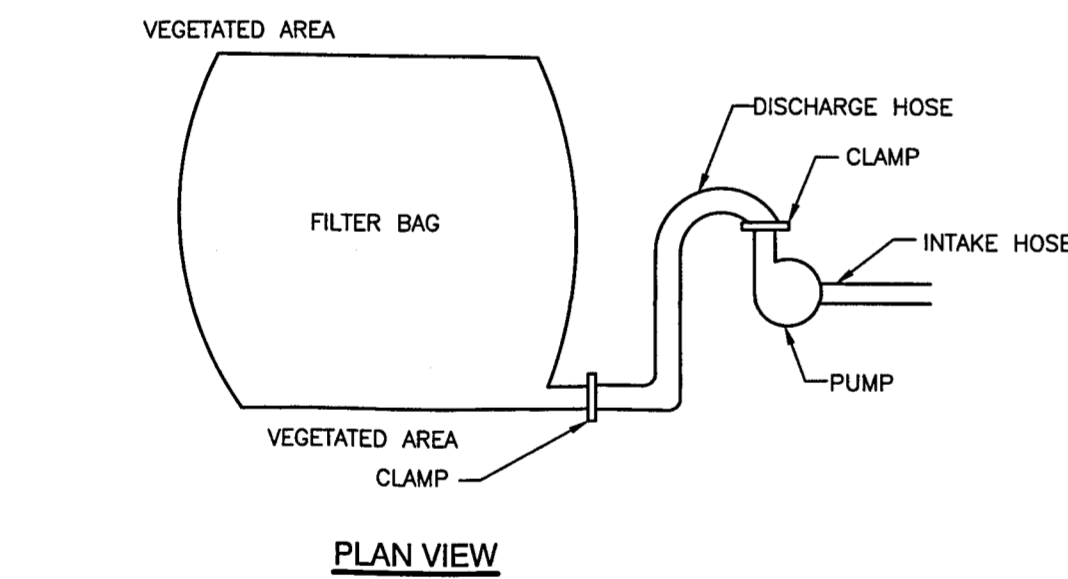


**DETAIL 1**  
**ROCK CONSTRUCTION ENTRANCE/EXIT**  
NOT TO SCALE



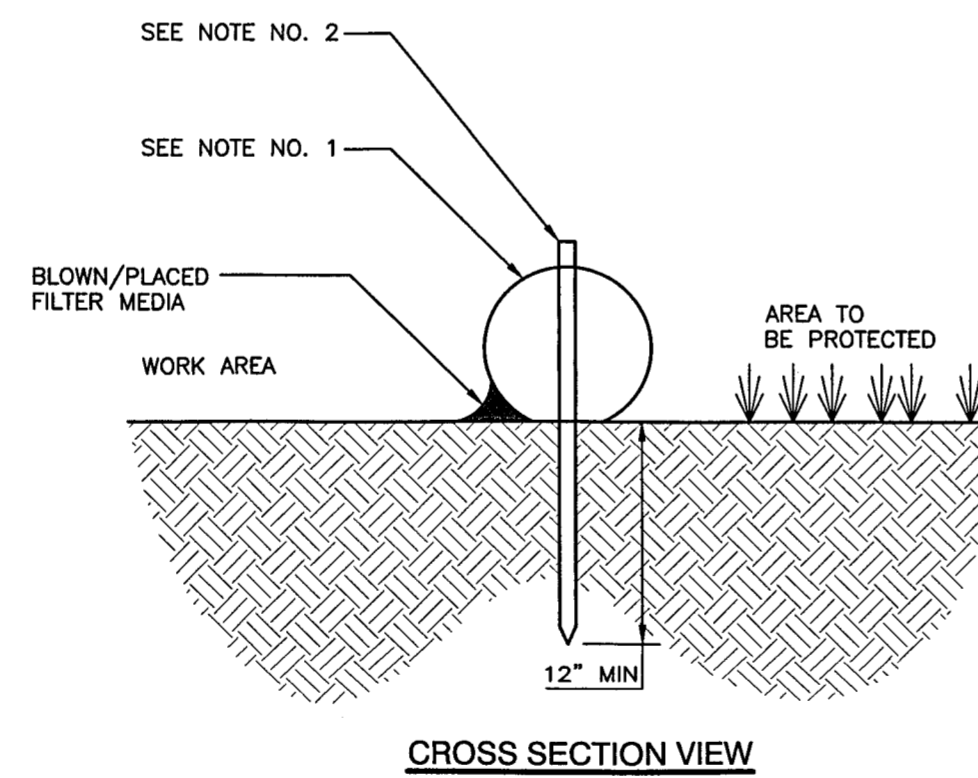
- NOTES:**
1. THE WV STORMWATER PERMIT SIGN MUST BE LOCATED NEAR THE CONSTRUCTION ENTRANCE OF THE SITE, SUCH THAT IT IS ACCESSIBLE AND VIEWABLE BY THE GENERAL PUBLIC, BUT NOT OBSTRUCTING VIEWS AS TO CAUSE A SAFETY HAZARD.
  2. ALL POSTED DOCUMENTS MUST BE MAINTAINED IN A CLEARLY READABLE CONDITION AT ALL TIMES THROUGHOUT CONSTRUCTION AND UNTIL THE NOTICE-OF-TERMINATION (NOT) IS FILED FOR THE PERMIT.
  3. CONTRACTOR SHALL POST OTHER STORMWATER AND/OR EROSION AND SEDIMENTATION CONTROL RELATED PERMITS ON THE SIGN AS REQUIRED BY THE GOVERNING AGENCY.
  4. SIGN SHALL BE LOCATED OUTSIDE OF PUBLIC RIGHT-OF-WAY AND EASEMENTS UNLESS APPROVED BY THE GOVERNING AGENCY.
  5. CONTRACTOR IS RESPONSIBLE FOR ENSURING STABILITY OF THE WV STORMWATER PERMIT SIGN.

**DETAIL 2**  
**WV STORMWATER PERMIT SIGN**  
NOT TO SCALE



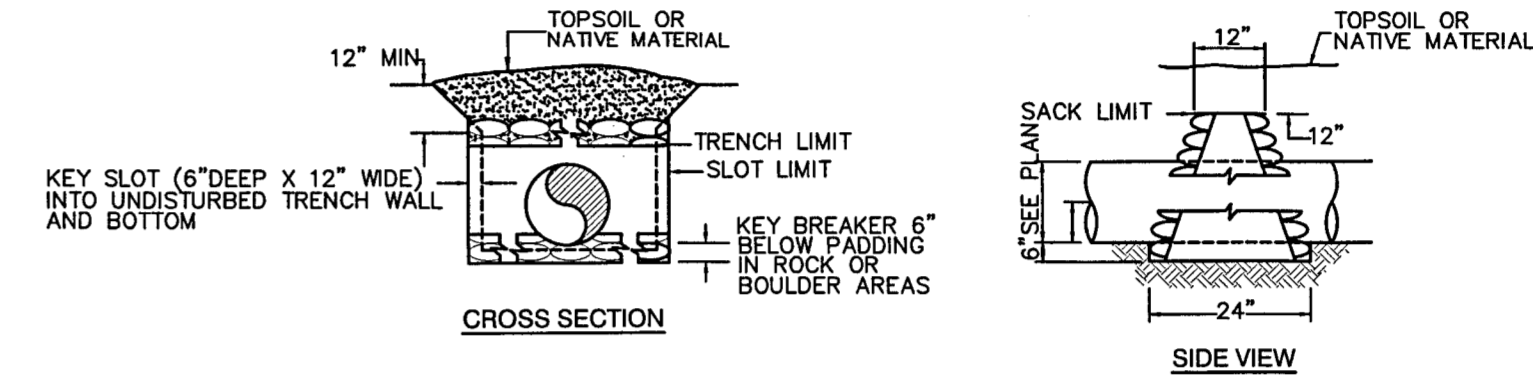
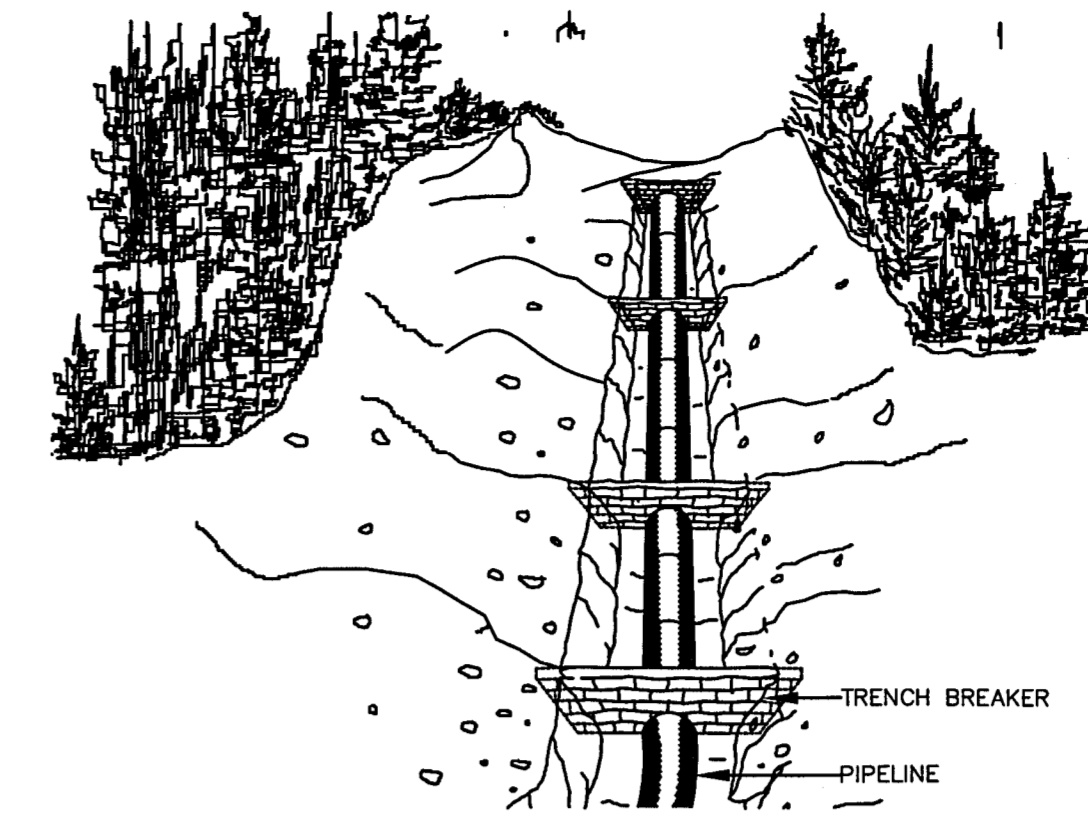
- NOTES:**
1. FILTER BAGS MAY BE USED TO FILTER WATER PUMPED FROM DISTURBED AREAS SUCH AS UTILITY TRENCHES AND FOOTERS.
  2. FILTER BAGS SHALL BE MADE FROM NON-WOVEN GEOTEXTILE MATERIAL SEWN WITH HIGH STRENGTH DOUBLE STITCHED "J" TYPE SEAMS. THEY SHALL BE CAPABLE OF TRAPPING PARTICLES LARGER THAN 150 MICRONS.
  3. FILTER BAGS SHALL BE REPLACED WHEN THEY BECOME 1/2 FULL. SPARE BAGS SHALL BE KEPT AVAILABLE FOR REPLACEMENT OF THOSE FILLED OR FAILED. FILTER BAGS WILL BE DISPOSED OF AT A WVDEP APPROVED FACILITY.
  4. BAGS SHALL BE LOCATED IN WELL VEGETATED (GRASSY) AREAS, AND DISCHARGE ONTO STABLE, EROSION RESISTANT AREAS. WHERE THIS IS NOT POSSIBLE, A GEOTEXTILE LINED FLOW PATH SHALL BE PROVIDED. BAGS SHALL NOT BE PLACED ON SLOPES GREATER THAN 5 PERCENT.
  5. THE PUMP RATE SHALL BE NO GREATER THAN 750 GPM OR 1/2 THE MAXIMUM SPECIFIED BY THE MANUFACTURER, WHICHEVER IS LESS. PUMP INTAKES SHOULD BE FLOATING AND SCREENED.
  6. FILTER BAGS SHALL BE INSPECTED DAILY AND ANY CORRECTIVE ACTION REQUIRED SHALL BE DONE IMMEDIATELY.

**DETAIL 4**  
**GEOTEXTILE FILTER BAG**  
NOT TO SCALE



- NOTES:**
1. ALL MATERIAL TO MEET SPECIFICATIONS.
  2. COMPOST FILTER SOCK FILL TO MEET APPLICATION REQUIREMENTS.
  3. COMPOST MATERIAL TO BE DISPERSED ON SITE AS DETERMINED BY ENGINEER.
  4. CONTRACTOR SHALL ENSURE COMPOST FILTER SOCKS ARE INSTALLED IN CONJUNCTION WITH WATERBARS AND PARALLEL TO CONTOUR LINES.

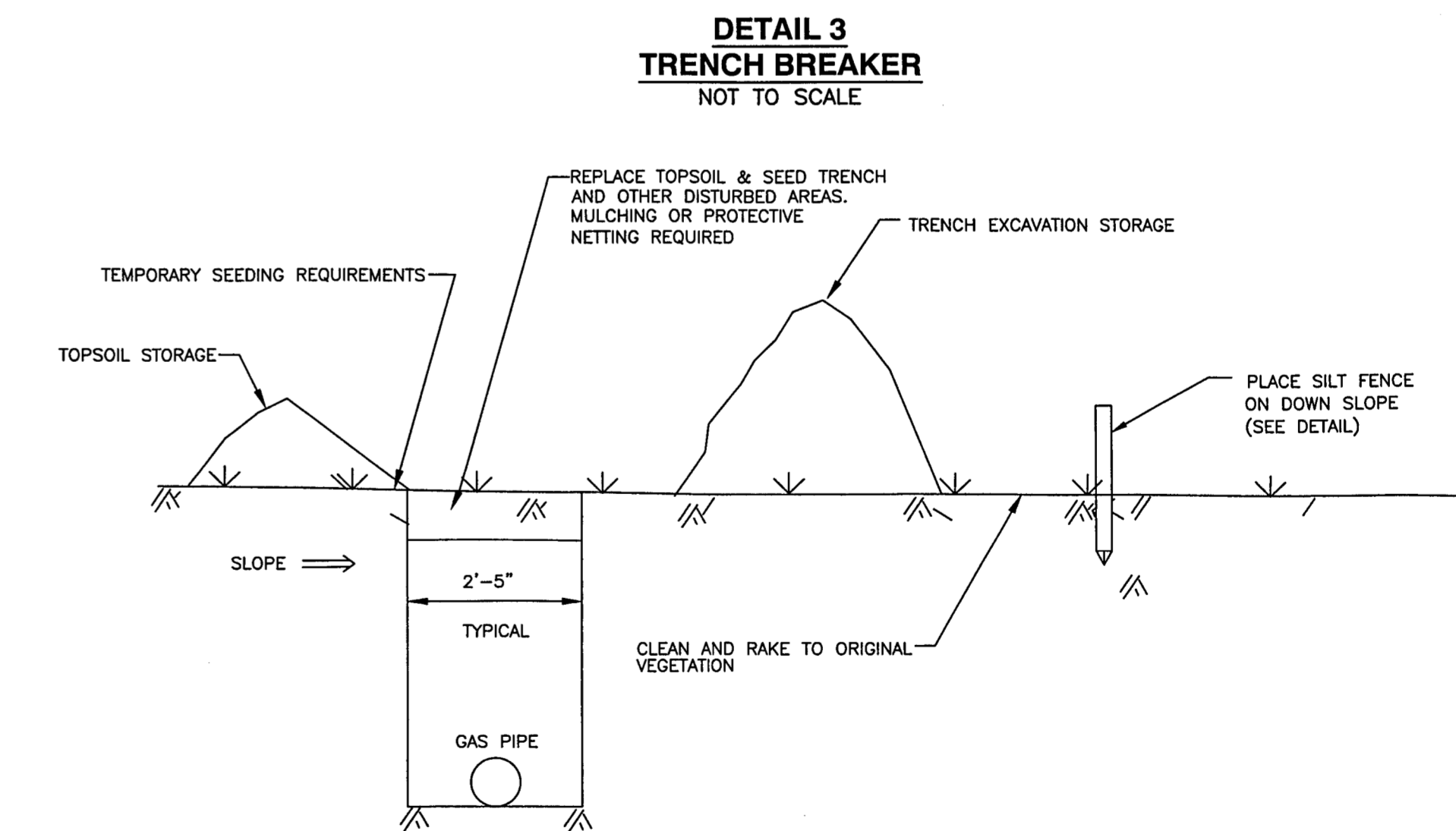
**DETAIL 5**  
**COMPOST FILTER SOCK**  
NOT TO SCALE



- NOTES:**
1. TRENCH BREAKERS SHALL BE INSTALLED:
    - ON SLOPES ALONG THE TRENCH LINE WHERE THE NATURAL DRAINAGE PATTERN, PROFILE, AND TYPE OF BACKFILL MATERIAL MAY RESULT IN LOSS OF BACKFILL MATERIAL OR ALTERATION OF NATURAL PATTERN;
    - AT THE BASE OF SLOPES ADJACENT TO WATERBODIES AND WETLANDS
    - WHERE NEEDED TO AVOID DRAINING A WETLAND
    - ON UPLAND SLOPES, AT THE SAME SPACING AS SLOPE BREAKERS AND UP SLOPE OF SLOPE BREAKERS
    - IN CULTIVATED LAND AND RESIDENTIAL AREAS WHERE PERMANENT SLOPE BREAKERS ARE NOT TYPICALLY INSTALLED, AT THE SAME SPACING AS IF PERMANENT SLOPE BREAKERS WERE REQUIRED.
  2. AS AN ALTERNATIVE TO THE MATERIALS SPECIFIED IN THE TABLE BELOW, OPEN WEAVE HEMP OR JUTE SACKS MAY BE FILLED WITH A MINIMUM OF 55lbs. MIXTURE OF 1 PART CEMENT TO 5 PARTS SAND OR SUBSOIL SO THAT NATURAL GROUND WATER WILL PERMIT MIXTURE TO EXUDE AND BOND SACKS TOGETHER.
  3. BREAKER SPACING AND CONFIGURATION MAY BE CHANGED AS DIRECTED BY COMPANY. DEPTH OF DITCH MAY VARY WITH SITE CONDITIONS.
  4. ALL MATERIALS SHALL BE SUPPLIED BY CONTRACTOR.
  5. GEOTECHNICAL POLYURETHANE FOAM TRENCH BREAKERS MAY BE USED IN LIEU OF SACKS FILLED WITH CEMENT / SOIL MIXTURE.
  6. TRENCH BREAKER SPACING SHOWN BELOW IS THE MAXIMUM ALLOWABLE PER WVDEP REGULATIONS. ALL TRENCH BREAKER LOCATIONS SHOWN ARE APPROXIMATE. FINAL LOCATIONS WILL BE FIELD IDENTIFIED BY A QUALIFIED INDIVIDUAL TO ACCOMMODATE PIPELINE FITTINGS, SIDE BENDS, OVER BENDS AND SAG BENDS TO ASSURE THAT ALL TRENCH BREAKER INDUCED STRESSES ARE MINIMIZED.

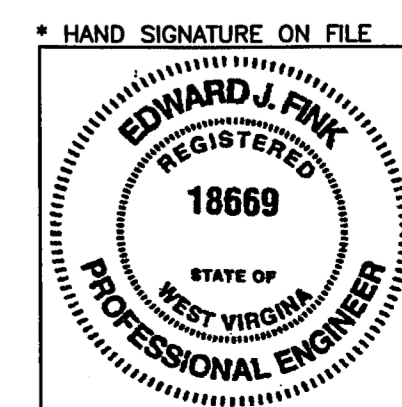
MAXIMUM SPACING AND MATERIALS FOR TRENCH BREAKERS		
TRENCH SLOPE (%)	SPACING L (FEET)	TRENCH BREAKER MATERIAL
0 - 5	1,000	*CLAY, BENTONITE, OR CONCRETE FILLED SACKS, OR AS SPECIFIED IN NOTES 2 AND 5
5 - 15	500	*CLAY, BENTONITE, OR CONCRETE FILLED SACKS, OR AS SPECIFIED IN NOTES 2 AND 5
15 - 25	300	*CLAY, BENTONITE, OR CONCRETE FILLED SACKS, OR AS SPECIFIED IN NOTES 2 AND 5
25 - 35	200	*CLAY, BENTONITE, OR CONCRETE FILLED SACKS, OR AS SPECIFIED IN NOTES 2 AND 5
35 - 100	100	*CLAY, BENTONITE, OR CONCRETE FILLED SACKS, OR AS SPECIFIED IN NOTES 2 AND 5
OVER 100	50	CEMENT FILLED BAGS, (WETTED), MORTARED STONE, OR GEOTECHNICAL POLYURETHANE FOAM

\*TOPSOIL MAY NOT BE USED TO FILL SACKS.  
\*\*IMPERVIOUS TRENCH PLUGS ARE REQUIRED AT ALL STREAM, RIVER, WETLAND, OR OTHER WATERBODY CROSSINGS.



**DETAIL 3**  
**TRENCH BREAKER**  
NOT TO SCALE

**DETAIL 6**  
**EROSION CONTROL MEASURES FOR PIPELINE TRENCHES**  
NOT TO SCALE



**REVISION RECORD**

NO.	DATE	DESCRIPTION
1	06/20/13	HOUSE PIPELINE ALIGNMENT, RIGHT OF WAY LIMIT OF DISTURBANCE, AND EASE CONTROLS
2	07/22/2013	REVISED TO INCLUDE ADDITIONAL WORKSPACES
3	08/14/2013	REVISED FOR ADDITIONAL PIPELINE
4	10/01/13	REVISED PER COMMENTS FROM WAPED DATED 09/15
5	08/20/14	REVISED PERLINE ALIGNMENT, RIGHT OF WAY LIMIT OF DISTURBANCE, AND EASE CONTROLS

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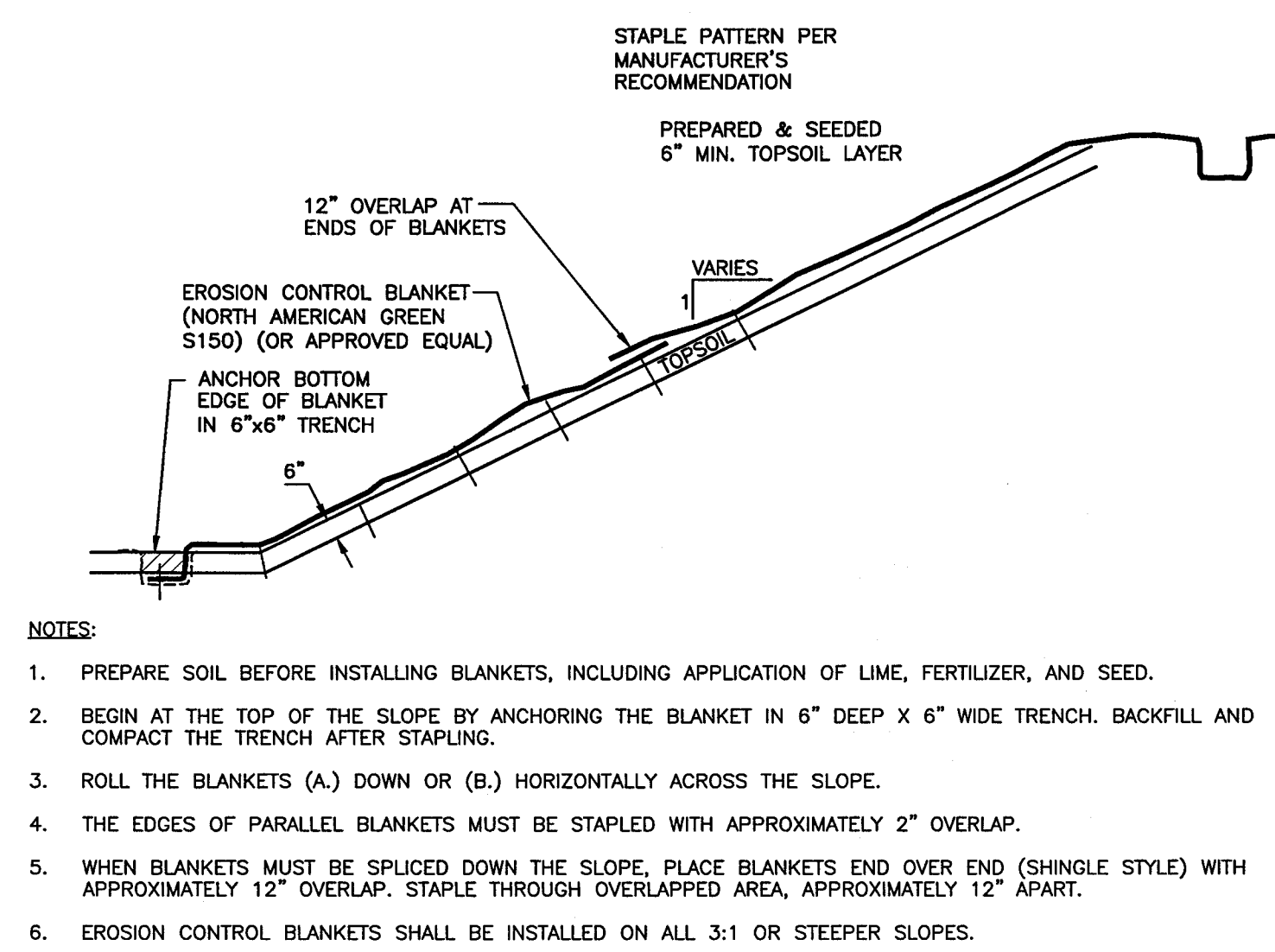
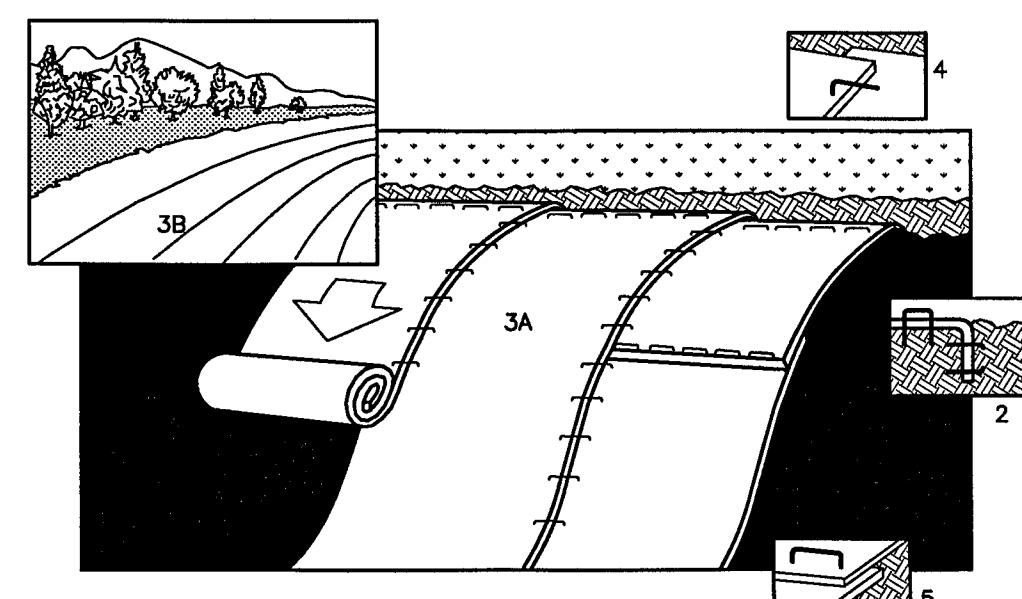
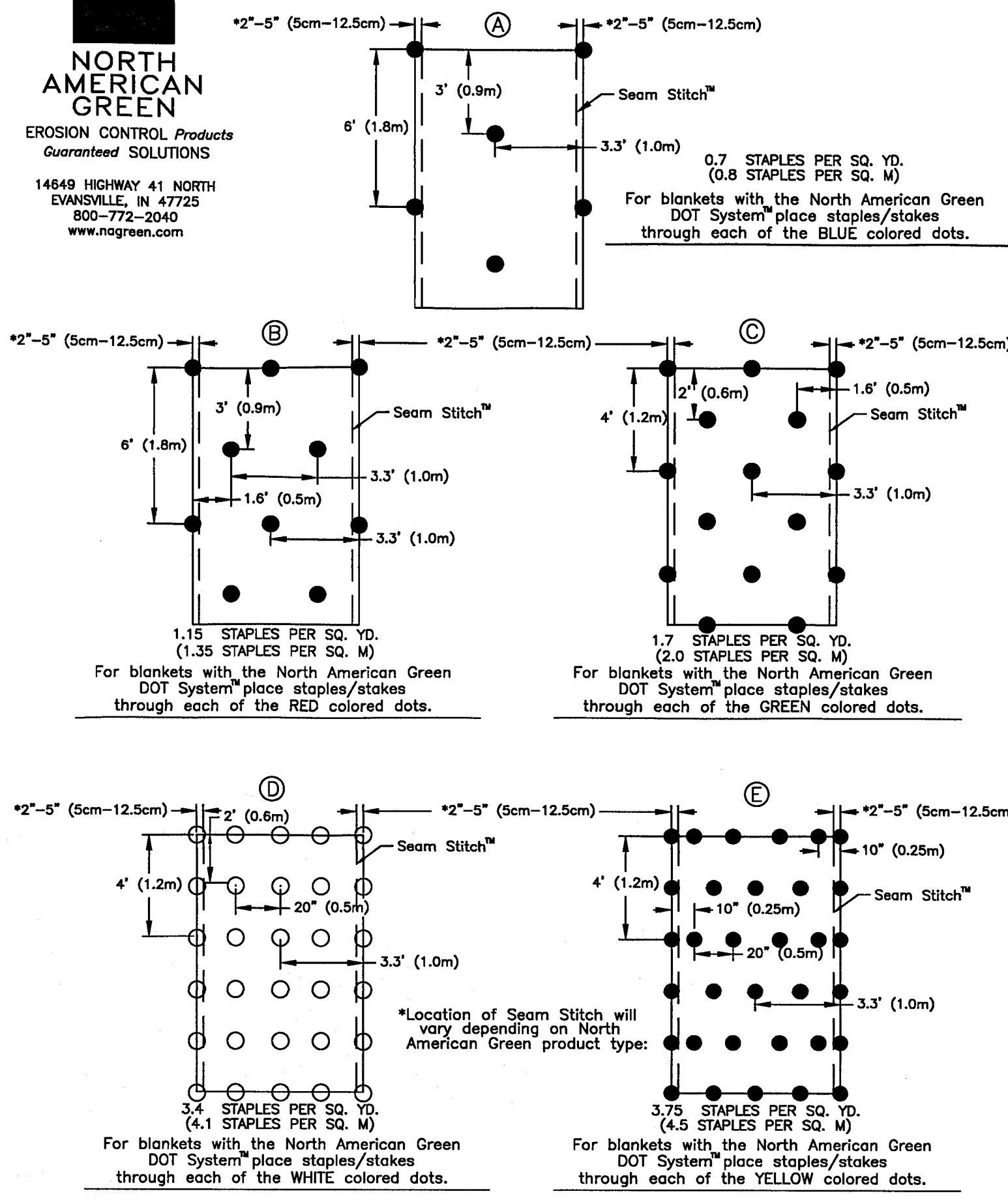
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DATE: AS NOTED  
CHECKED BY: EJF  
PROJECT NO: 131-985  
APPROVED BY: \*RPC

DRAWING NO.: **D003**  
SHEET 20 OF 25

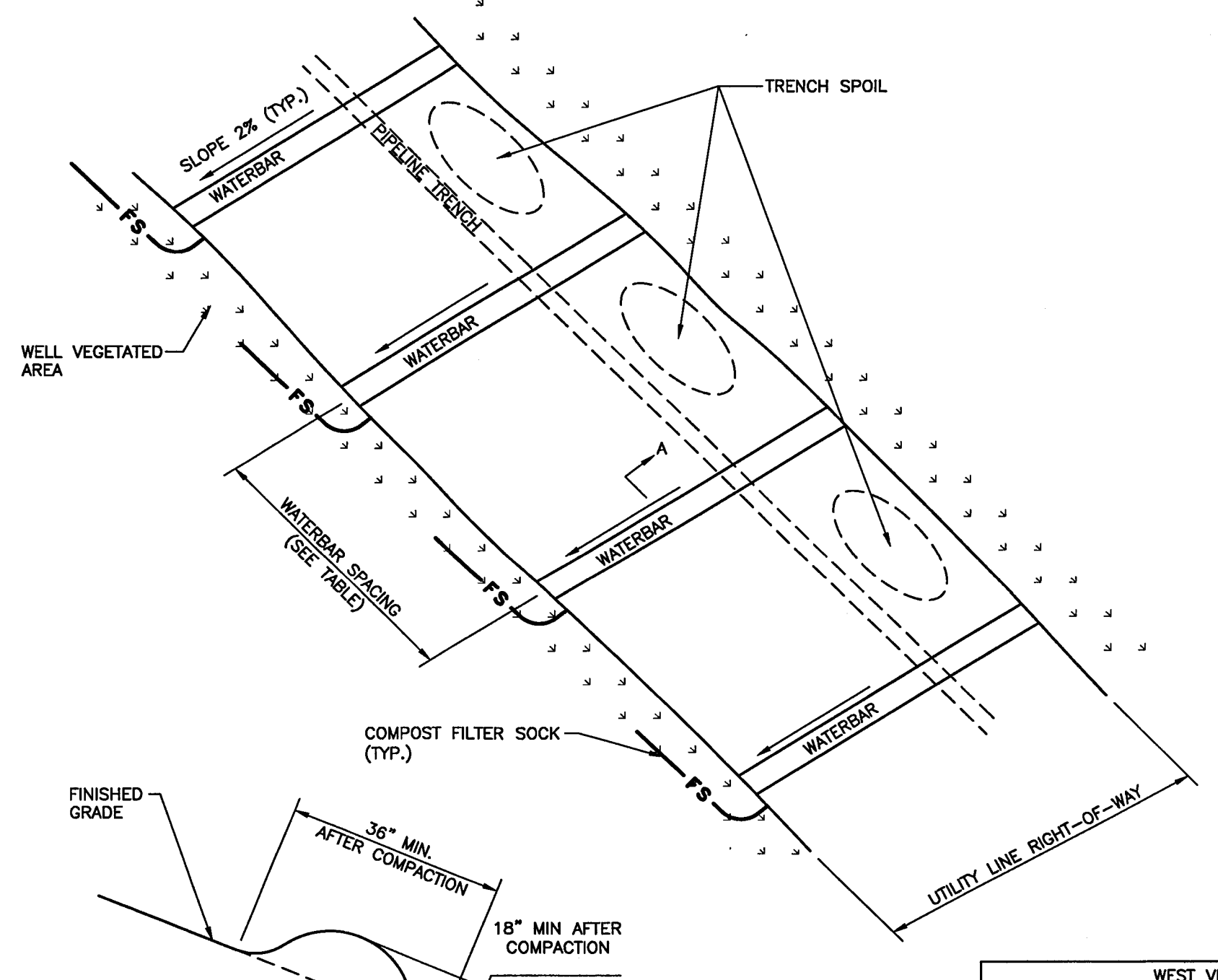


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- NOTES:**
1. PREPARE SOIL BEFORE INSTALLING BLANKETS, INCLUDING APPLICATION OF LIME, FERTILIZER, AND SEED.
  2. BEGIN AT THE TOP OF THE SLOPE BY ANCHORING THE BLANKET IN 6" DEEP X 6" WIDE TRENCH. BACKFILL AND COMPACT THE TRENCH AFTER STAPLING.
  3. ROLL THE BLANKETS (A.) DOWN OR (B.) HORIZONTALLY ACROSS THE SLOPE.
  4. THE EDGES OF PARALLEL BLANKETS MUST BE STAPLED WITH APPROXIMATELY 2" OVERLAP.
  5. WHEN BLANKETS MUST BE SPLICED DOWN THE SLOPE, PLACE BLANKETS END OVER END (SHINGLE STYLE) WITH APPROXIMATELY 12" OVERLAP. STAPLE THROUGH OVERLAPPED AREA, APPROXIMATELY 12" APART.
  6. EROSION CONTROL BLANKETS SHALL BE INSTALLED ON ALL 3:1 OR STEEPER SLOPES.



**SECTION A-A  
 (NOT TO SCALE)**

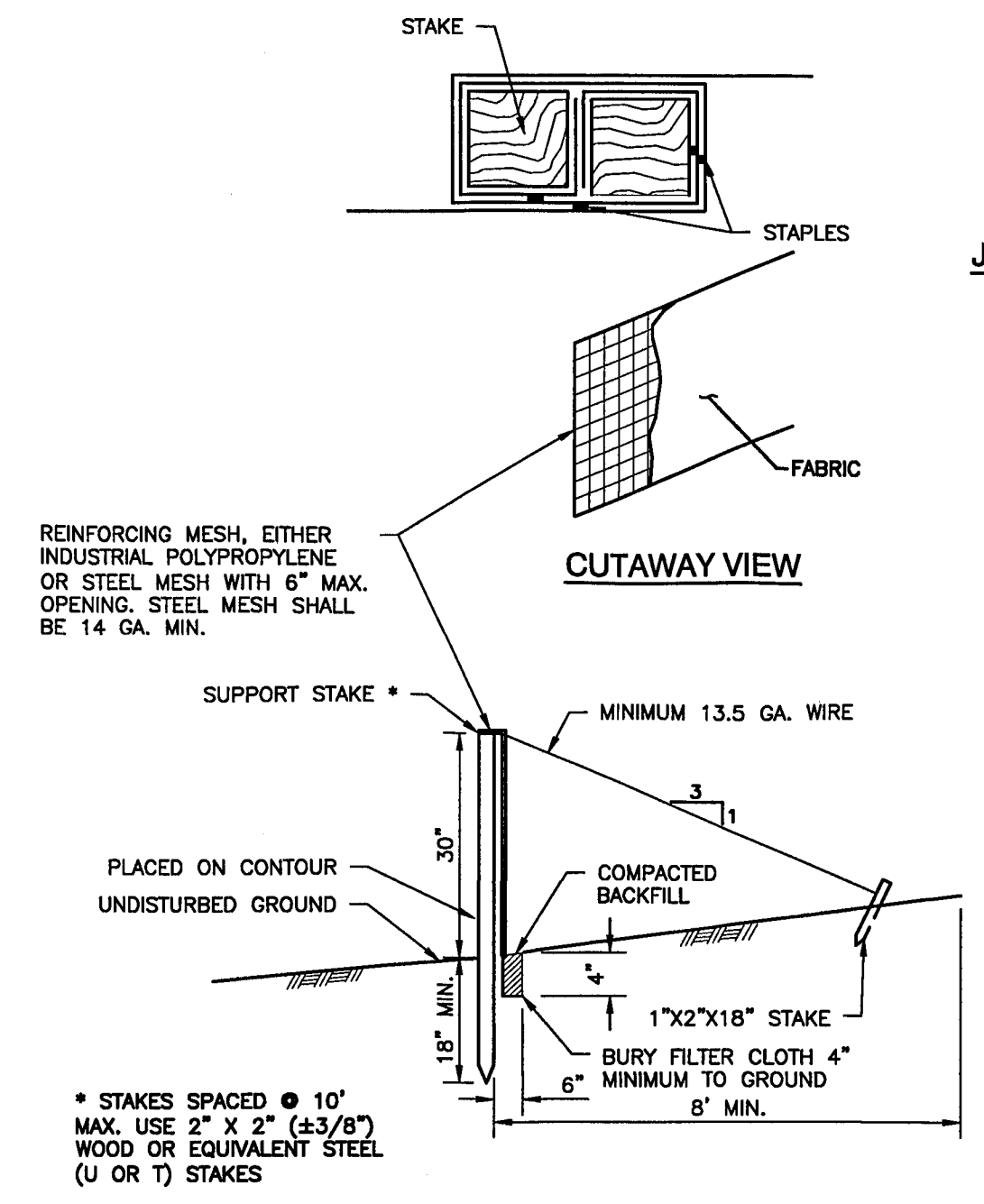
- NOTES:**
1. WATERBARS (SLOPE BREAKERS, INTERCEPTOR DIKES) SHOULD BE INSTALLED ACROSS THE ENTIRE RIGHT-OF-WAY ON ALL SLOPES GREATER THAN 5%.
  2. WATERBARS SHALL BE PLACED AT 2% SLOPE DOWNHILL. THEY SHALL BE SPACED AT THE INCREMENTS AS SHOWN ON THE PLANS, AND IN ACCORDANCE WITH THE WDEP EROSION AND SEDIMENT POLLUTION CONTROL STANDARDS BMP MANUAL.
  3. WATERBARS SHOULD BE CONSTRUCTED AT A SLOPE OF 2% AND DISCHARGE TO A WELL-VEGETATED AREA. WATERBARS SHOULD NOT DISCHARGE INTO AN OPEN TRENCH. WATERBARS SHOULD BE ORIENTED SO THAT THE DISCHARGE DOES NOT FLOW BACK ONTO THE RIGHT-OF-WAY. COMPOST FILTER SOCK SHOULD BE LOCATED BELOW THE DISCHARGE END OF THE WATERBAR.
  4. A SOFT TRENCH PLUG WILL BE USED IN AREAS WHERE WATER MUST BE CONVEYED ACROSS THE PIPELINE TRENCH.

WEST VIRGINIA	
REQUIRED SPACING FOR PERMANENT WATERBARS	
PERCENT SLOPE	SPACING (FT)
<5	250
5-15	150
15-30	100
>30	50

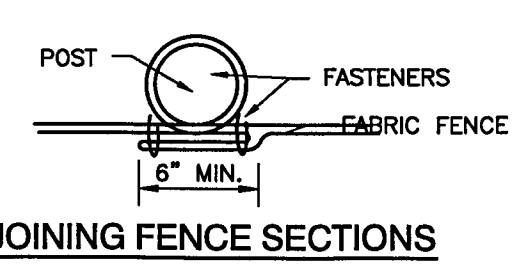
**DETAIL 7  
 EROSION CONTROL BLANKET STAPLE PATTERN  
 NOT TO SCALE**

**DETAIL 8  
 EROSION CONTROL BLANKET  
 NOT TO SCALE**

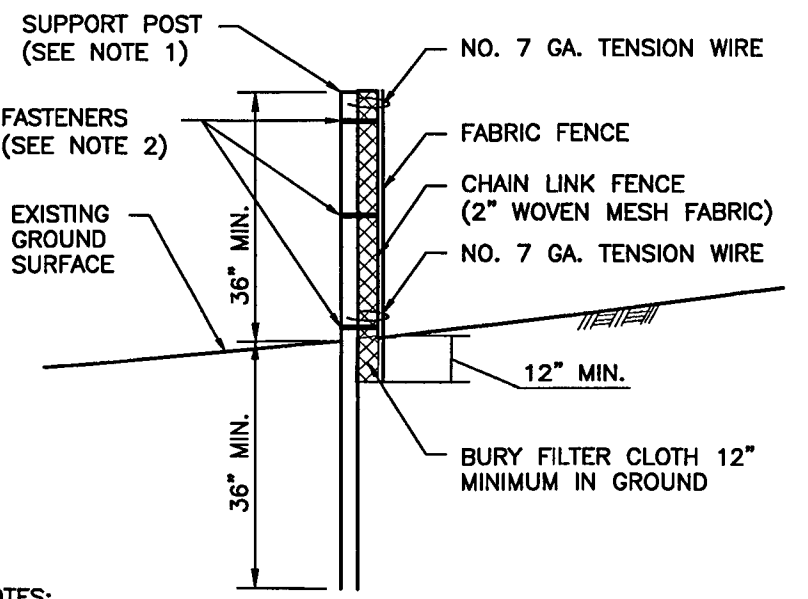
**DETAIL 9  
 TYPICAL WATERBAR INSTALLATION  
 NOT TO SCALE**



**REINFORCED 30" SILT FENCE**



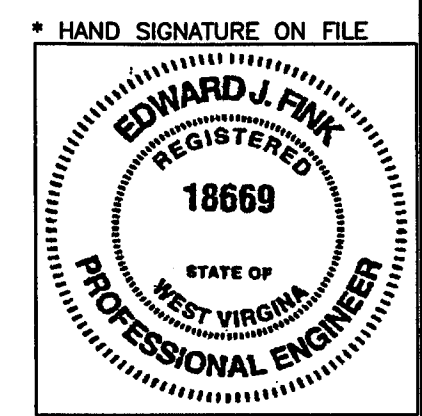
**JOINING FENCE SECTIONS**



- NOTES:**
1. POSTS SPACED @ 10' MAX. USE 2 1/2" HEAVY DUTY GALVANIZED OR ALUMINUM POSTS.
  2. CHAIN LINK TO POST FASTENERS SPACED @ 14" MAX. USE NO. 9 GALVANIZED STEEL PRE FORMED CLIPS. CHAIN LINK TO TENSION WIRE FASTENERS SPACED @ 60" MAX. USE NO. 13.5 GA. GALVANIZED STEEL WIRE. FABRIC TO CHAIN FASTENERS SPACED @ 24" MAX. C. TO C.
  3. POST HOLES MAY NEED TO BE DRILLED IN ROCKY SOIL OR AREAS WHERE CONVENTIONAL INSTALLATION IS DIFFICULT TO ACHIEVE REQUIRED DEPTH.

**SUPER SILT FENCE**

**DETAIL 10  
 SILT FENCE DETAILS  
 NOT TO SCALE**



**REVISION RECORD**

NO.	DATE	DESCRIPTION
1		ISSUED FOR PERMITS, RIGHT-OF-WAY, LIMIT OF DISTURBANCE, AND BEE CONTROLS
2		ISSUED FOR PERMITS, RIGHT-OF-WAY, LIMIT OF DISTURBANCE, AND BEE CONTROLS
3		ISSUED FOR PERMITS, RIGHT-OF-WAY, LIMIT OF DISTURBANCE, AND BEE CONTROLS
4		ISSUED FOR PERMITS, RIGHT-OF-WAY, LIMIT OF DISTURBANCE, AND BEE CONTROLS
5		ISSUED FOR PERMITS, RIGHT-OF-WAY, LIMIT OF DISTURBANCE, AND BEE CONTROLS
6		ISSUED FOR PERMITS, RIGHT-OF-WAY, LIMIT OF DISTURBANCE, AND BEE CONTROLS
7		ISSUED FOR PERMITS, RIGHT-OF-WAY, LIMIT OF DISTURBANCE, AND BEE CONTROLS
8		ISSUED FOR PERMITS, RIGHT-OF-WAY, LIMIT OF DISTURBANCE, AND BEE CONTROLS
9		ISSUED FOR PERMITS, RIGHT-OF-WAY, LIMIT OF DISTURBANCE, AND BEE CONTROLS

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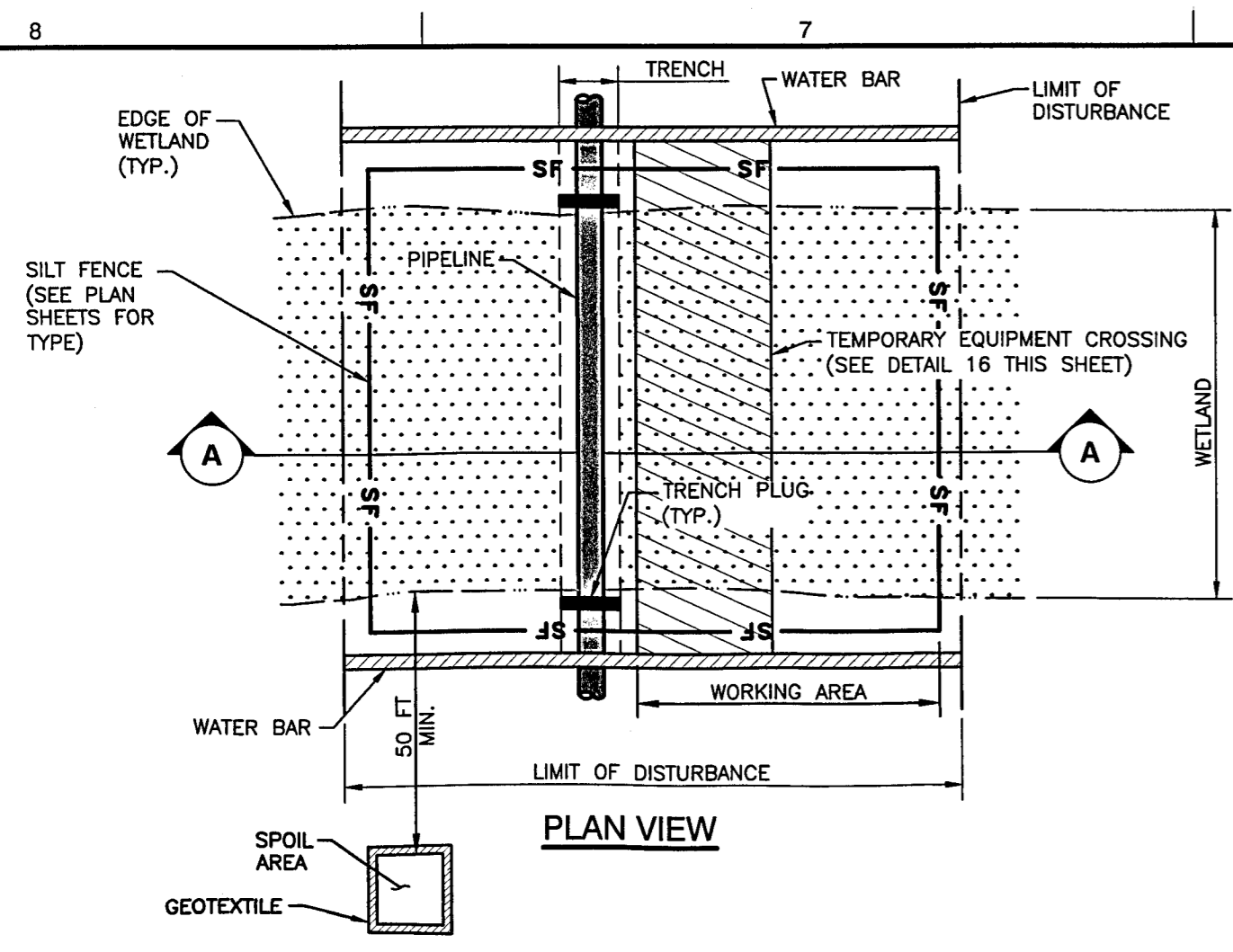
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 CONTROL DETAILS**

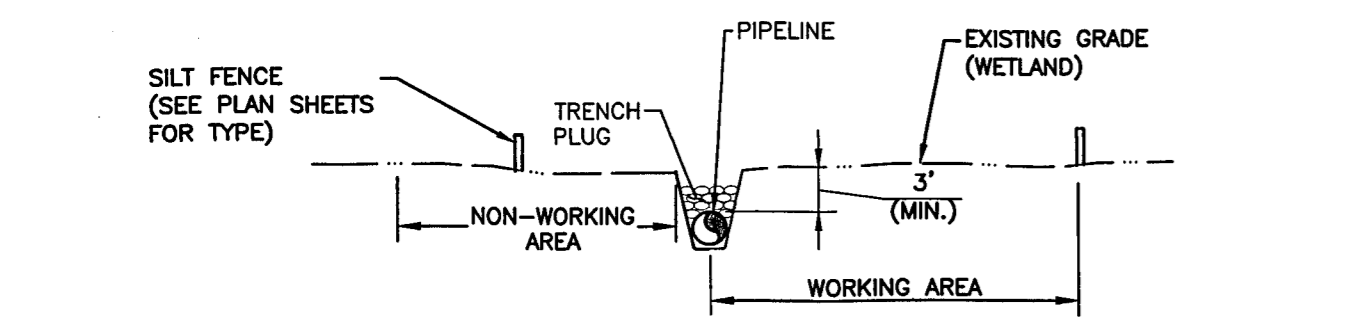
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 DATE: 131-985  
 PROJECT NO: 131-985  
 APPROVED BY: \*RPC

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 SHEET 21 OF 25





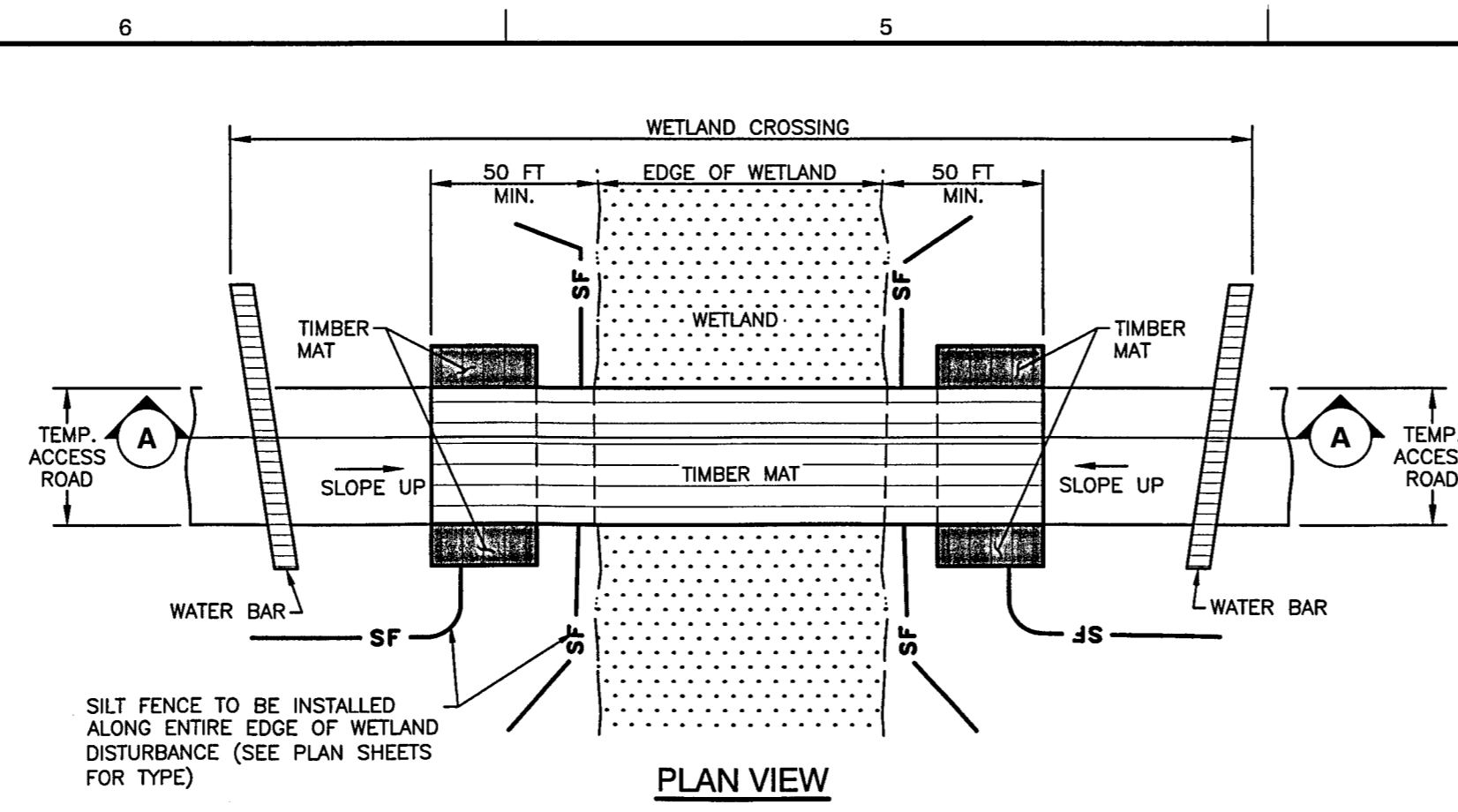
**PLAN VIEW**



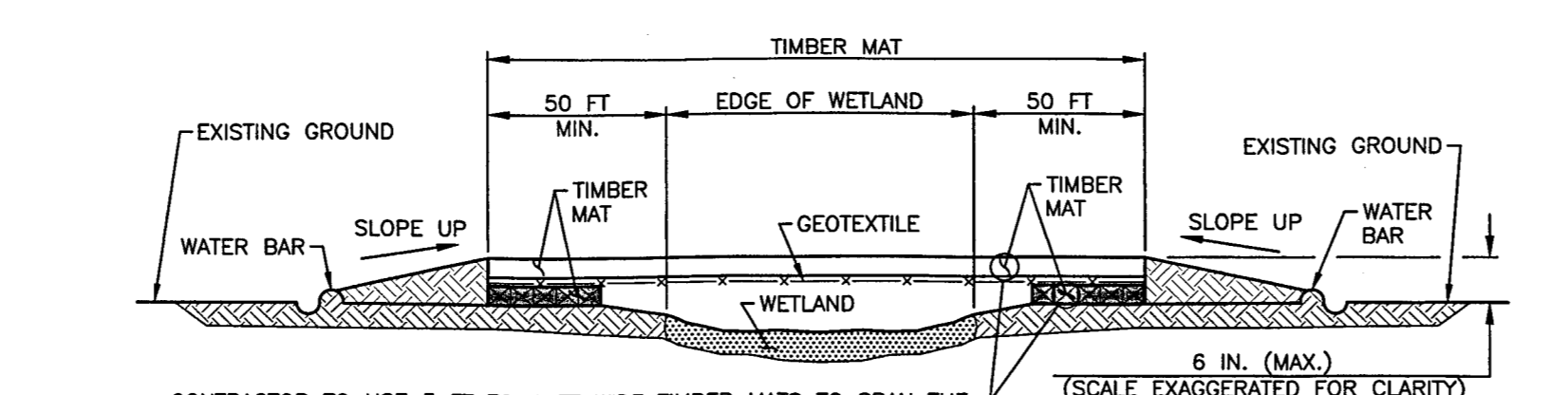
**CROSS SECTION A-A**

- NOTES:**
1. INSTALL SILT FENCE ACROSS THE RIGHT-OF-WAY, IMMEDIATELY UP-SLOPE OF THE WETLAND BOUNDARY, AT THE EDGE OF THE LIMIT OF DISTURBANCE, AND AS NECESSARY, AROUND SOIL STOCKPILES.
  2. EQUIPMENT STAGING AREA MUST BE LOCATED A MINIMUM OF 50 FEET FROM THE EDGE OF THE WETLAND.
  3. USE TIMBER MATS FOR VEHICULAR CROSSING OF THE WETLAND. VEHICLES ARE NOT ALLOWED ACCESS TO THE WETLAND CROSSING UNLESS THE WETLAND IS BEING PROTECTED BY TIMBER MATS.
  4. INSTALL TRENCH PLUGS ON EACH SIDE OF THE WETLAND TO PREVENT THE TRENCH FROM DRAINING WETLAND OR CHANGING HYDROLOGY.
  5. WHEN EXCAVATING TRENCH IN WETLAND, EXCAVATE WETLAND TOPSOIL (TOP 12 INCHES) AND STOCKPILE SEPARATELY FROM SUBSOIL. DURING BACKFILLING OF TRENCH, REPLACE TOPSOIL IN TOP OF TRENCH TO RESTORE WETLAND.
  6. TIMBER MATS WILL BE UTILIZED IN WORKING AREA TO MINIMIZE DISTURBANCE/COMPACTION OF WETLANDS.
  7. UPON RESTORATION, REMOVE GEOTEXTILE, TIMBER MATS, INSTALL WATERBARS, AND RESTORE WETLAND TO EXISTING GRADE.

**DETAIL 15  
PIPELINE AND EQUIPMENT CROSSING  
OF WETLAND AND RESTORATION**  
NOT TO SCALE



**PLAN VIEW**

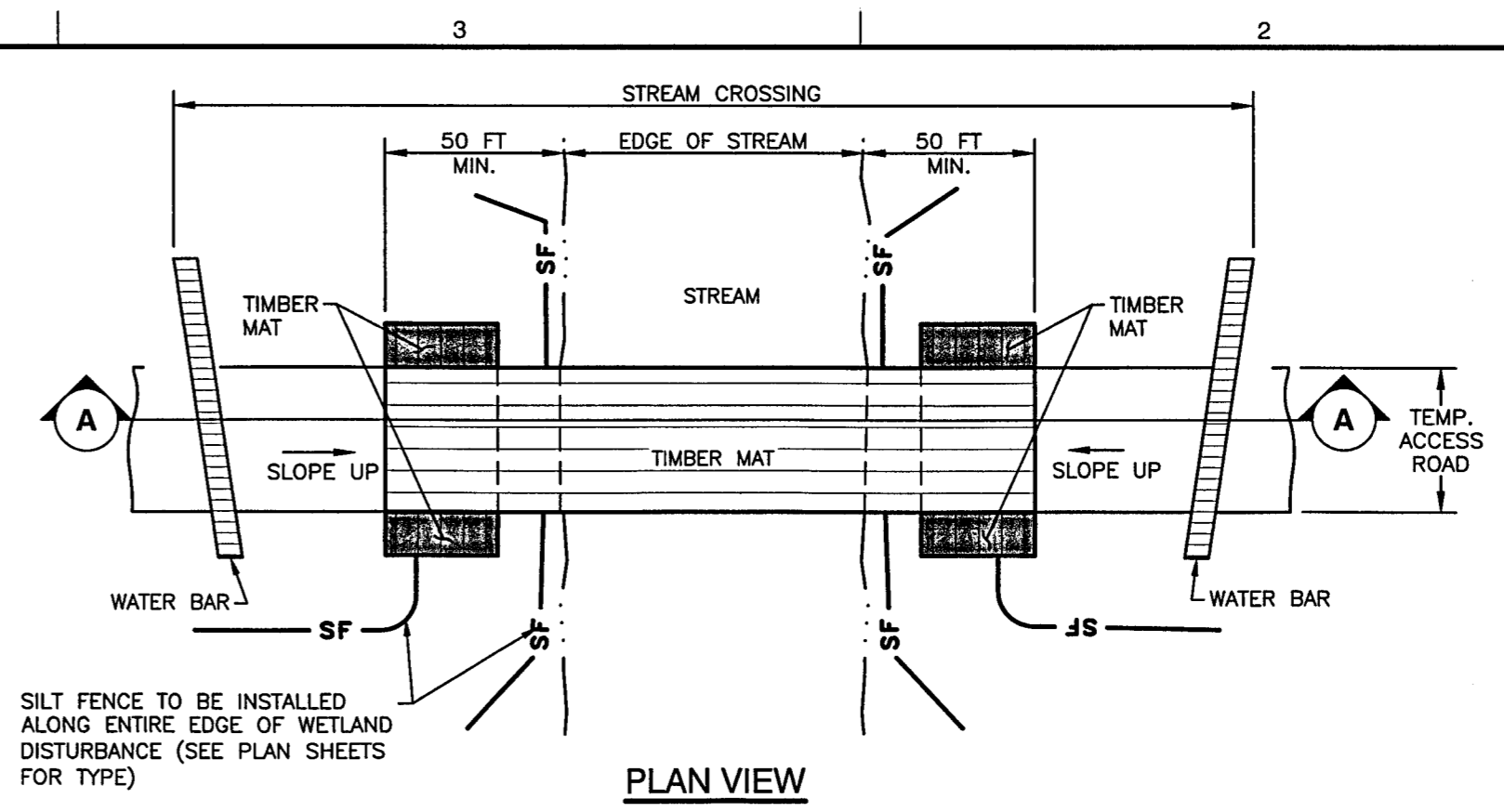


CONTRACTOR TO USE 3 FT TO 4 FT WIDE TIMBER MATS TO SPAN THE WETLAND WITH 1 - 4 FT WIDE X 18 FT LONG TIMBER MAT FOR SUPPORT ON EACH END FOR EACH CROSSING

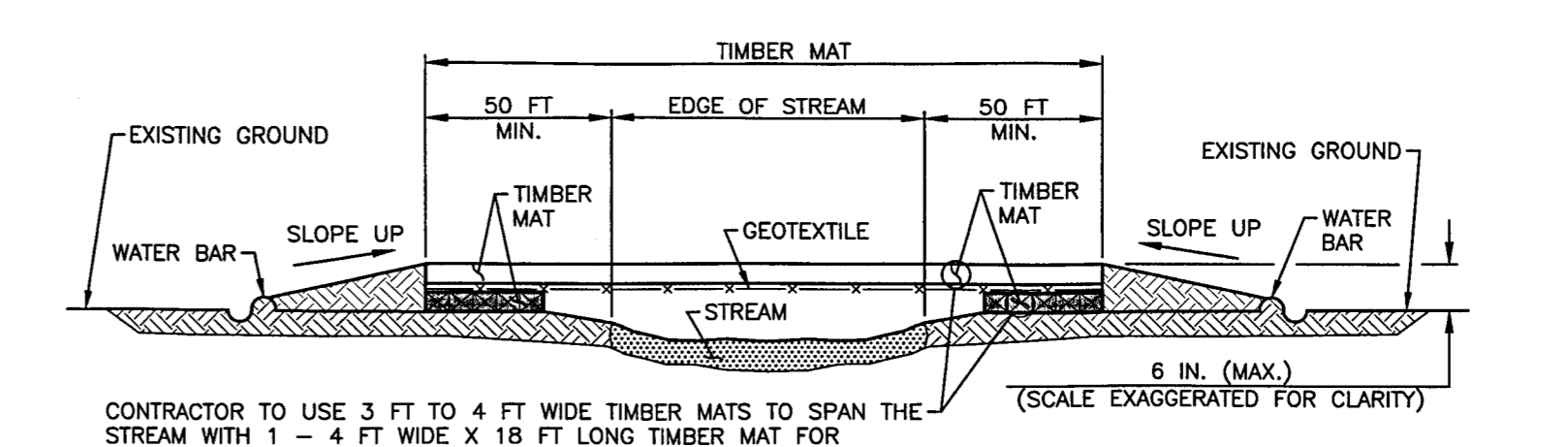
**CROSS SECTION A-A**

- NOTES:**
1. INSTALL WATER BARS AT APPROACHES TO WETLAND CROSSING AND SILT FENCE ALONG EDGE OF WETLAND. INSTALL SILT FENCE AT OUTLET OF WATER BARS.
  2. A SKIRT FORMED OF SILT FENCE, GEOTEXTILE FABRIC OR EQUIVALENT SHALL BE PLACED ON THE BOTTOM OF THE BRIDGE TO TRAP SEDIMENT AS NECESSARY.
  3. MAINTAIN SURFACE OF TEMPORARY BRIDGE TO PREVENT SOIL DISCHARGES TO WETLAND.
  4. EXTEND TIMBER MAT 50 FEET ON BOTH SIDES OF WETLAND CROSSING IN ORDER TO MINIMIZE DISTURBANCE.
  5. APPROACHES TO CROSSINGS ARE NOT TO EXCEED A DEPTH OF 6-INCHES ABOVE ORIGINAL GRADE.

**DETAIL 16  
TEMPORARY EQUIPMENT CROSSING OF WETLAND**  
NOT TO SCALE



**PLAN VIEW**

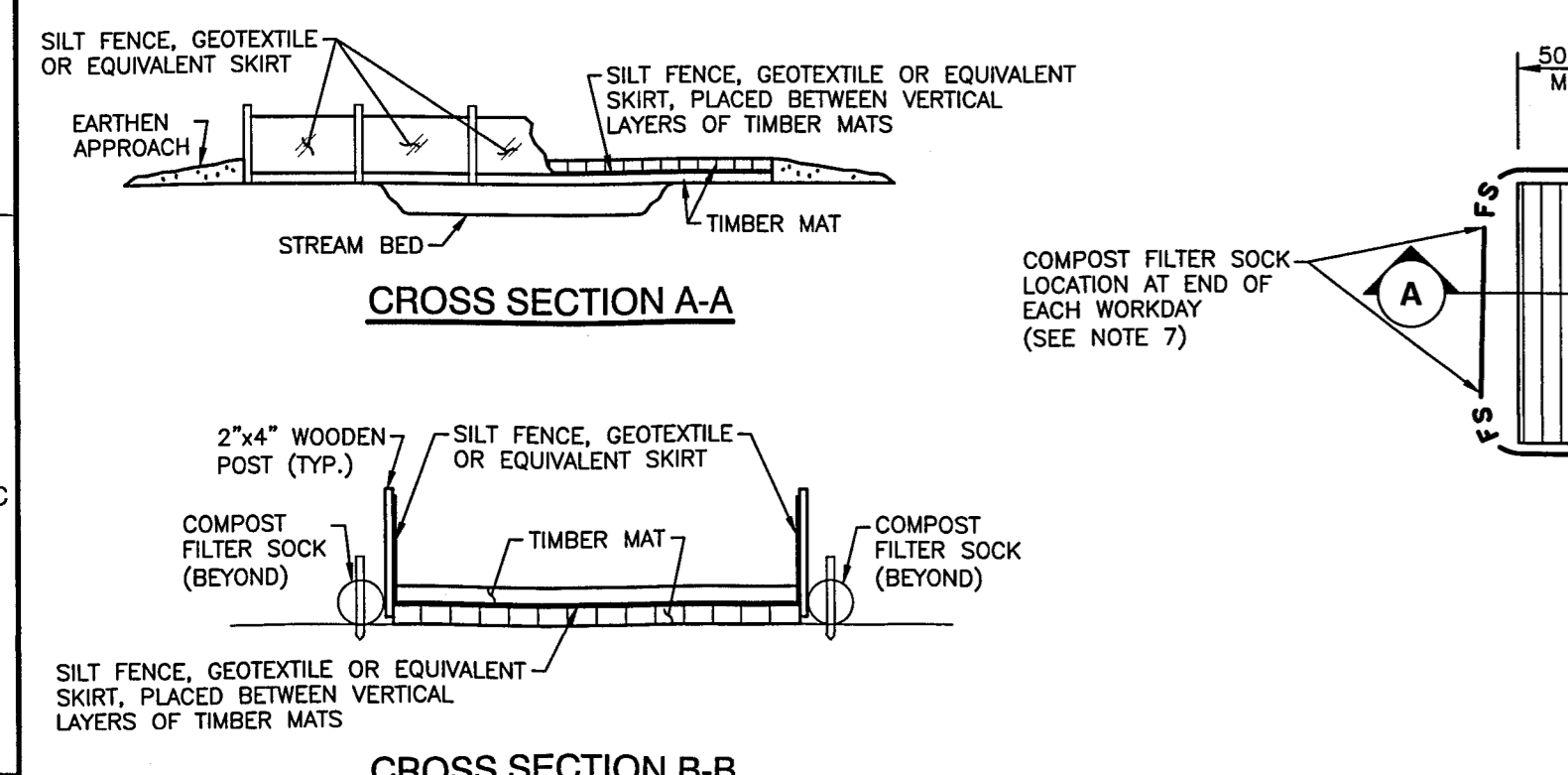


CONTRACTOR TO USE 3 FT TO 4 FT WIDE TIMBER MATS TO SPAN THE STREAM WITH 1 - 4 FT WIDE X 18 FT LONG TIMBER MAT FOR SUPPORT ON EACH END FOR EACH CROSSING

**CROSS SECTION A-A**

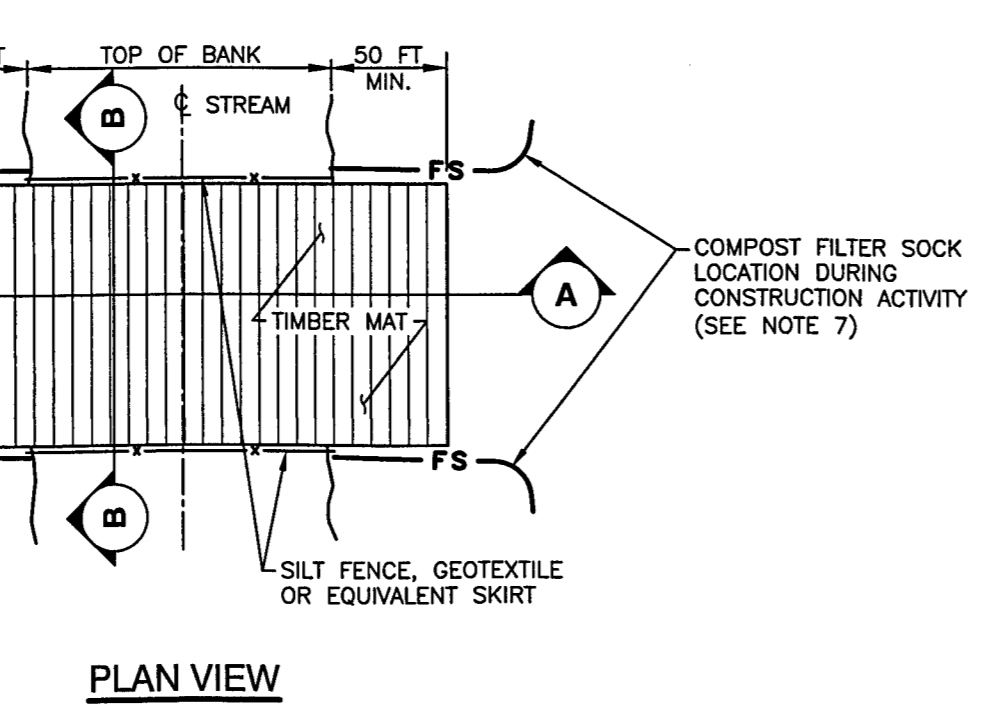
- NOTES:**
1. ALL RUNOFF FROM DISTURBED UP SLOPE AREAS WITHIN LIMIT OF DISTURBANCE MUST BE TREATED FOR SEDIMENT BEFORE IT REACHES STREAM.
  2. PLACE SPOIL PILES A MINIMUM OF 50 FEET FROM TOP OF BANK.
  3. INSTALL WATERBARS AT APPROACHES TO STREAM CROSSING AND COMPOST FILTER SOCK AT OUTLETS OF WATERBARS AND INSTALL SILT FENCE ALONG STREAM BANKS.
  4. A SKIRT FORMED OF SILT FENCE, GEOTEXTILE FABRIC OR EQUIVALENT SHALL BE PLACED ON THE BOTTOM OF THE BRIDGE TO TRAP SEDIMENT AS NECESSARY.
  5. MAINTAIN SURFACE OF TEMPORARY EQUIPMENT CROSSING TO PREVENT SOIL DISCHARGES TO STREAM.
  6. EXTEND TIMBER MAT 50 FEET, FROM TOP OF BANK, ON BOTH SIDES OF STREAM CROSSING IN ORDER TO MINIMIZE DISTURBANCE OF STREAM BANKS AND RIPARIAN AREAS.
  7. APPROACHES TO CROSSINGS ARE NOT TO EXCEED A DEPTH OF 6 INCHES ABOVE ORIGINAL GRADE.

**DETAIL 17  
TEMPORARY EQUIPMENT CROSSING OF STREAM**  
NOT TO SCALE



**CROSS SECTION A-A**

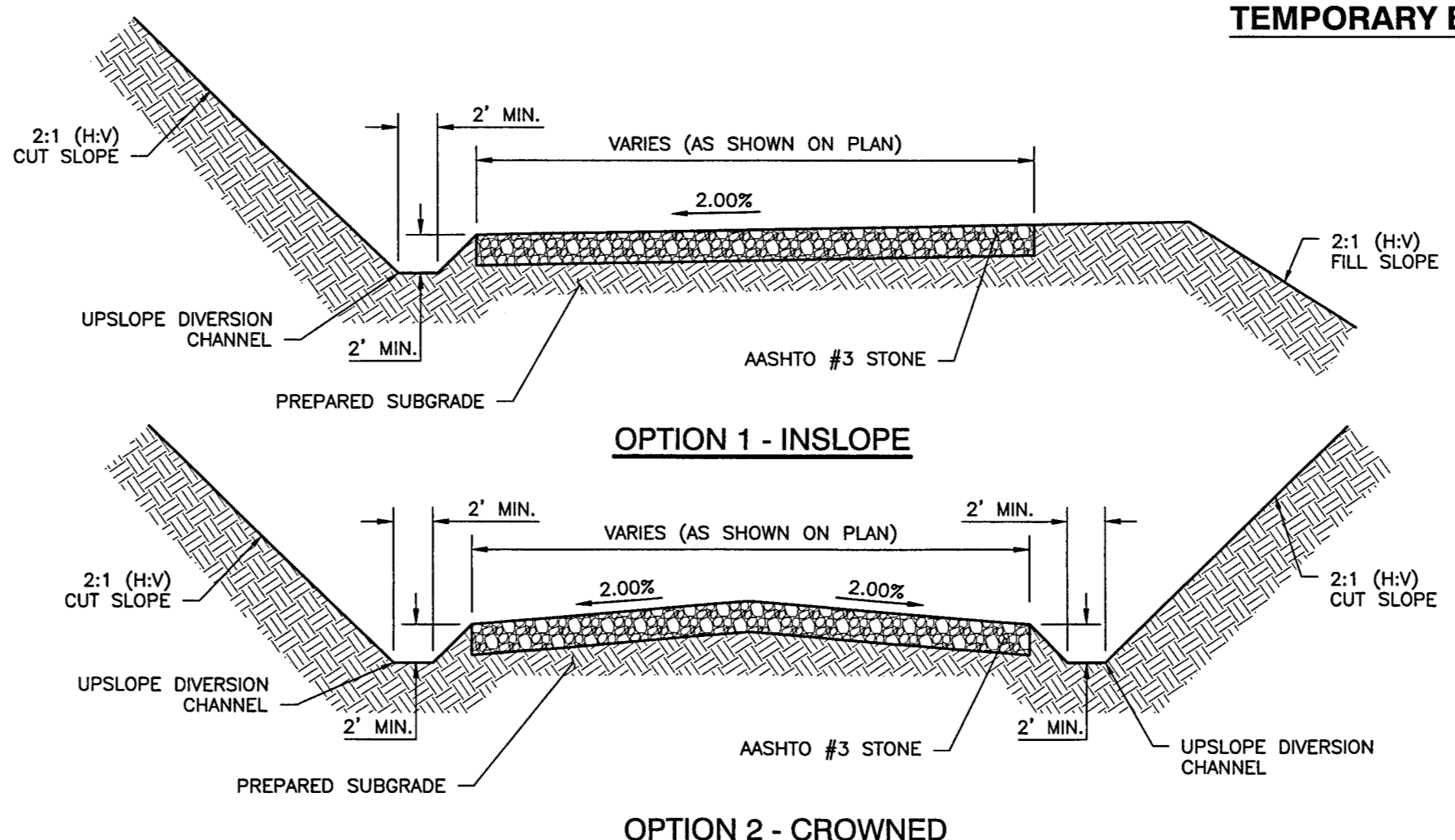
**CROSS SECTION B-B**



**PLAN VIEW**

- NOTES:**
1. THIS TYPE OF BRIDGE IS GENERALLY USED FOR SMALL STREAM CROSSINGS LESS THAN 25 FEET IN WIDTH AND A PROPER STREAM BANK CONFIGURATION.
  2. EXTEND TIMBER MAT 50 FEET, FROM TOP OF BANK, ON BOTH SIDES OF STREAM CROSSING IN ORDER TO MINIMIZE DISTURBANCE OF STREAM BANKS AND RIPARIAN AREAS.
  3. BRIDGE WILL BE TEMPORARILY REMOVED IF HIGH WATER RENDERS IT UNSAFE FOR CROSSING.
  4. BRIDGE TO REMAIN IN PLACE UNTIL COMPLETION OF FINAL RESTORATION.
  5. A SKIRT FORMED OF SILT FENCE, GEOTEXTILE FABRIC, OR EQUIVALENT SHALL BE PLACED ON THE SIDES AND BOTTOM OF THE BRIDGE TO TRAP SEDIMENT AS NECESSARY.
  6. INDIVIDUAL MATS SHALL BE ANCHORED AND BUTTED TIGHTLY TO MINIMIZE THE INTRODUCTION OF SEDIMENT TO THE WATERBODY.
  7. COMPOST FILTER SOCK WILL BE PLACED AT THE EDGE OF THE EQUIPMENT BRIDGE AT THE END OF EACH WORK DAY TO PREVENT EROSION, BUT WILL BE REMOVED DURING CONSTRUCTION ACTIVITY.
  8. TEMPORARY STREAM CROSSINGS SHALL BE INSPECTED ON A DAILY BASIS.
  9. DAMAGED CROSSINGS SHALL BE REPAIRED WITHIN 24 HOURS OF THE INSPECTION, AND BEFORE ANY SUBSEQUENT USE.
  10. SEDIMENT DEPOSITS ON THE CROSSING OR ITS APPROACHES SHALL BE REMOVED WITHIN 24 HOURS OF THE INSPECTION.

**DETAIL 18  
TIMBER MAT BRIDGE EQUIPMENT  
CROSSING OVER STREAM**  
NOT TO SCALE



**OPTION 2 - CROWNED**

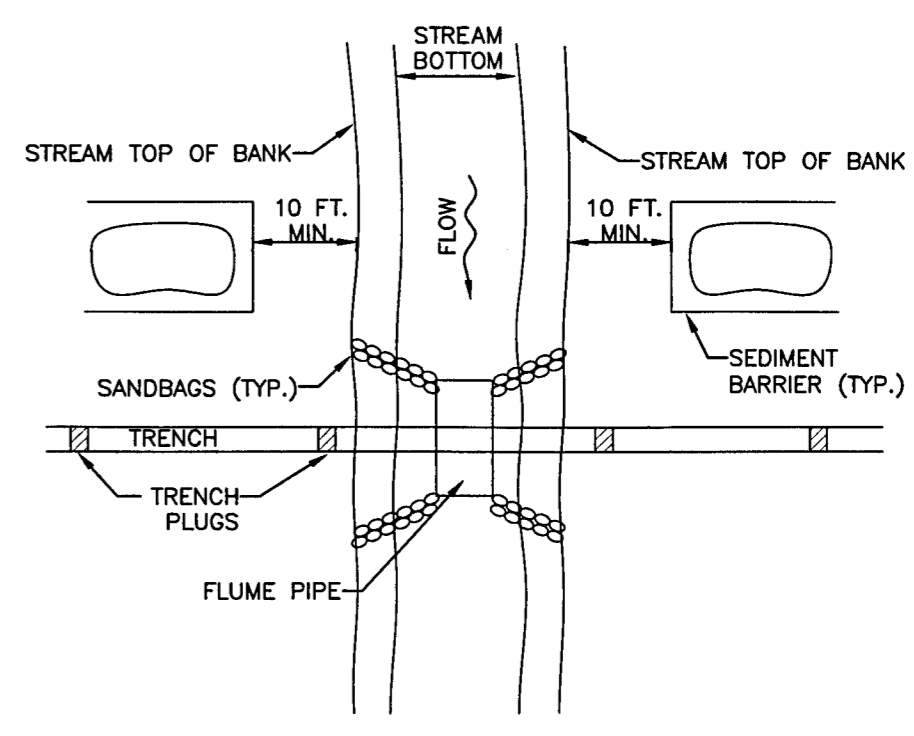
**NOTES:**

1. REFER TO DETAIL 16 ON SHEET D006 IF THE PROPOSED TEMPORARY ACCESS ROAD OR ASSOCIATED GRADING IMPACTS A WETLAND.
2. ROADSIDE DITCHES SHALL BE PROVIDED WITH ADEQUATE PROTECTIVE LINING. ADEQUATELY SIZED CULVERTS OR OTHER SUITABLE CROSS DRAINS SHALL BE PROVIDED AT ALL SEEPS, SPRINGS, AND DRAINAGEWAYS. DITCH RELIEF CULVERTS SHALL BE PROVIDED AT THE INTERVALS INDICATED ON THE TABLES BELOW. ROADWAY SHALL BE INSPECTED WEEKLY AND AFTER EACH RUNOFF EVENT. DAMAGED ROADWAYS, DITCHES, OR CROSS DRAINS SHALL BE REPAIRED IMMEDIATELY.
3. CUT AND FILL SLOPES SHALL BE STABILIZED PROMPTLY FOLLOWING COMPLETION OF ROADWAY GRADING.

ROAD GRADE (%)	CULVERT SPACING (FT)	LENGTH OF UPSLOPE DRAINAGE (FT)				
		< 300	300 - 400	400 - 500	500 - 600	> 600
1	300	12	15	15	15	18
2	235	12	15	15	15	18
3	200	12	15	15	15	18
4	180	12	15	15	15	18
5	180	12	15	15	15	18
6	165	12	15	15	15	18
7	155	12	15	15	15	18
8	150	12	15	15	15	18
9	145	12	15	15	15	18
10	140	12	15	15	15	18
12	135	12	15	15	15	18

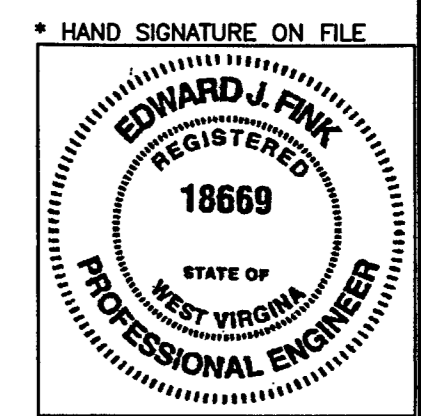
\* SPACING MAYBE ADJUSTED SLIGHTLY TO TAKE ADVANTAGE OF NATURAL DRAINAGE-WAYS. R-4 (MIN.) RIPRAP PROTECTION WILL BE PROVIDED AT ALL OUTFALLS. AT ALL STREAM CROSSING LOCATIONS, RUNOFF MUST BE DIRECTED TO A SEDIMENT REMOVAL AREA. I.E. FILTER STRIP, SILT FENCE, SUMP, OR TRAP FOR TREATMENT. WATERBARS AND/OR BROAD BASED DIPS SHOULD BE INSTALLED AND MAINTAINED AS REQUIRED ON THE APPROACHES TO THE STREAM CROSSING.

**DETAIL 19  
TEMPORARY ACCESS ROAD**  
NOT TO SCALE



**DETAIL 20  
UTILITY LINE FLUME STREAM CROSSING**  
NOT TO SCALE

- NOTES:**
1. GRUBBING SHALL NOT TAKE PLACE WITHIN 50 FEET OF TOP-OF-BANK UNTIL ALL MATERIALS REQUIRED TO COMPLETE CROSSING ARE ON SITE AND PIPE IS READY FOR INSTALLATION.
  2. TRENCH PLUGS SHALL BE INSTALLED WITHIN THE TRENCH ON BOTH SIDES OF THE STREAM CHANNEL.
  3. WATER ACCUMULATING WITHIN THE WORK AREA SHALL BE PUMPED TO A PUMPED WATER FILTER BAG OR SEDIMENT TRAP PRIOR TO DISCHARGING INTO ANY SURFACE WATER.
  4. HAZARDOUS OR POLLUTANT MATERIAL STORAGE AREAS SHALL BE LOCATED AT LEAST 100 FEET BACK FROM THE TOP OF STREAMBANK.
  5. ALL EXCESS EXCAVATED MATERIAL SHALL BE IMMEDIATELY REMOVED FROM THE STREAM CROSSING AREA.
  6. ALL DISTURBED AREAS WITHIN 50 FEET OF TOP-OF-BANK SHALL BE BLANKETED OR MATTED WITHIN 24 HOURS OF INITIAL DISTURBANCE FOR MINOR STREAMS OR 48 HOURS OF INITIAL DISTURBANCE FOR MAJOR STREAMS UNLESS OTHERWISE AUTHORIZED. APPROPRIATE STREAMBANK PROTECTION SHALL BE PROVIDED WITHIN THE CHANNEL.



**REVISION RECORD**

NO.	DATE	DESCRIPTION
1	04/20/14	REVISE PIPELINE ALIGNMENT, RIGHT-OF-WAY LIMIT OF DISTURBANCE, AND E&C CONTROLS
2	02/27/15	REVISED TO INCLUDE ADDITIONAL WORKPACES
3	01/10/15	REVISED FOR ADDITIONAL PIPELINE
4	10/21/15	REVISED PER COMMENTS FROM WRP/ DATED 10/21
5	02/20/16	REVISE PIPELINE ALIGNMENT, RIGHT-OF-WAY LIMIT OF DISTURBANCE, AND E&C CONTROLS

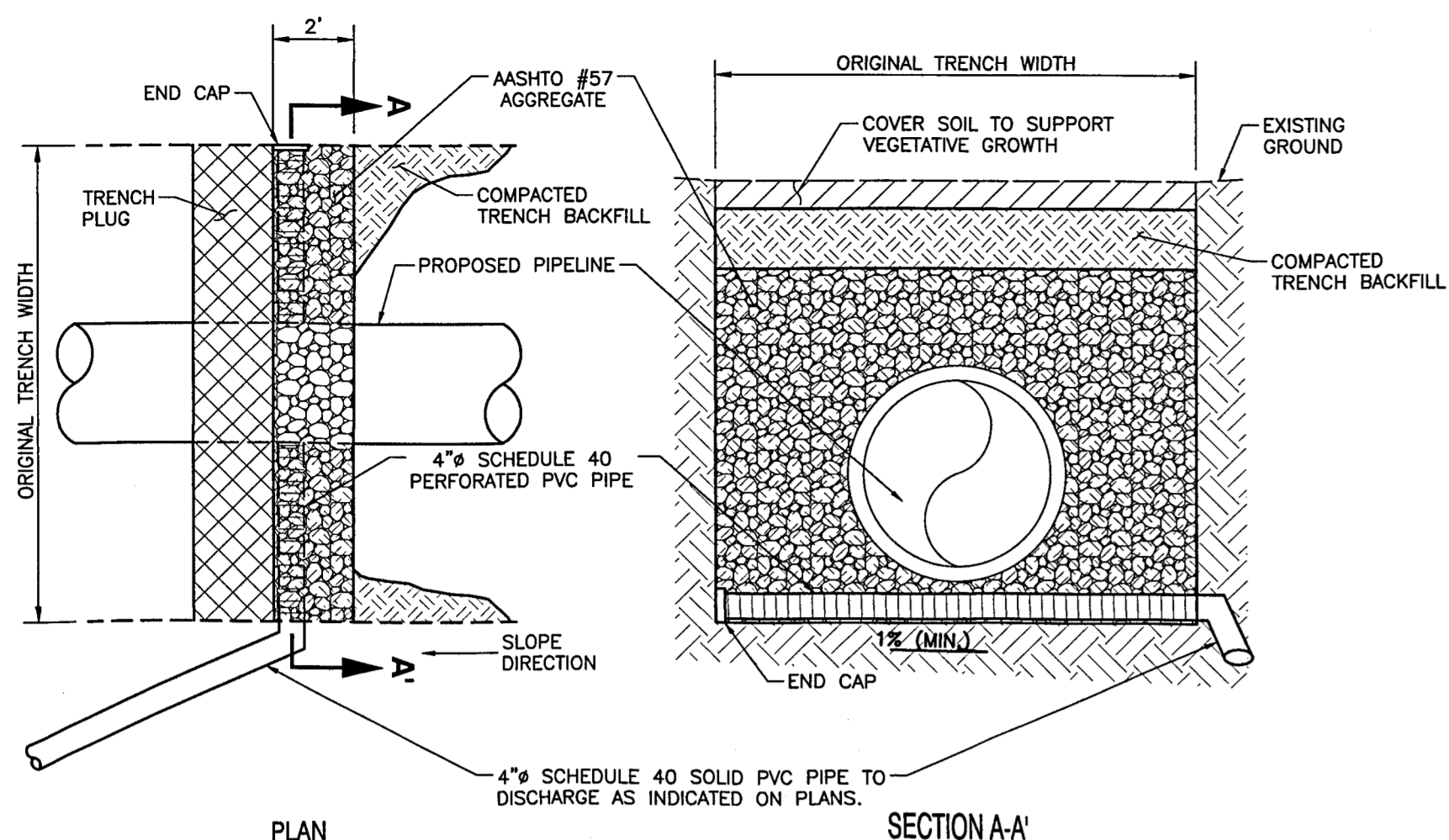
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**EROSION AND SEDIMENTATION  
CONTROL DETAILS**

DRAWN BY: JSC  
CHECKED BY: EJP  
DATE: 11/10/15  
PROJECT NO: 131-985  
APPROVED BY: \*RRC

DRAWING NO.: **D006**  
SHEET 23 OF 25

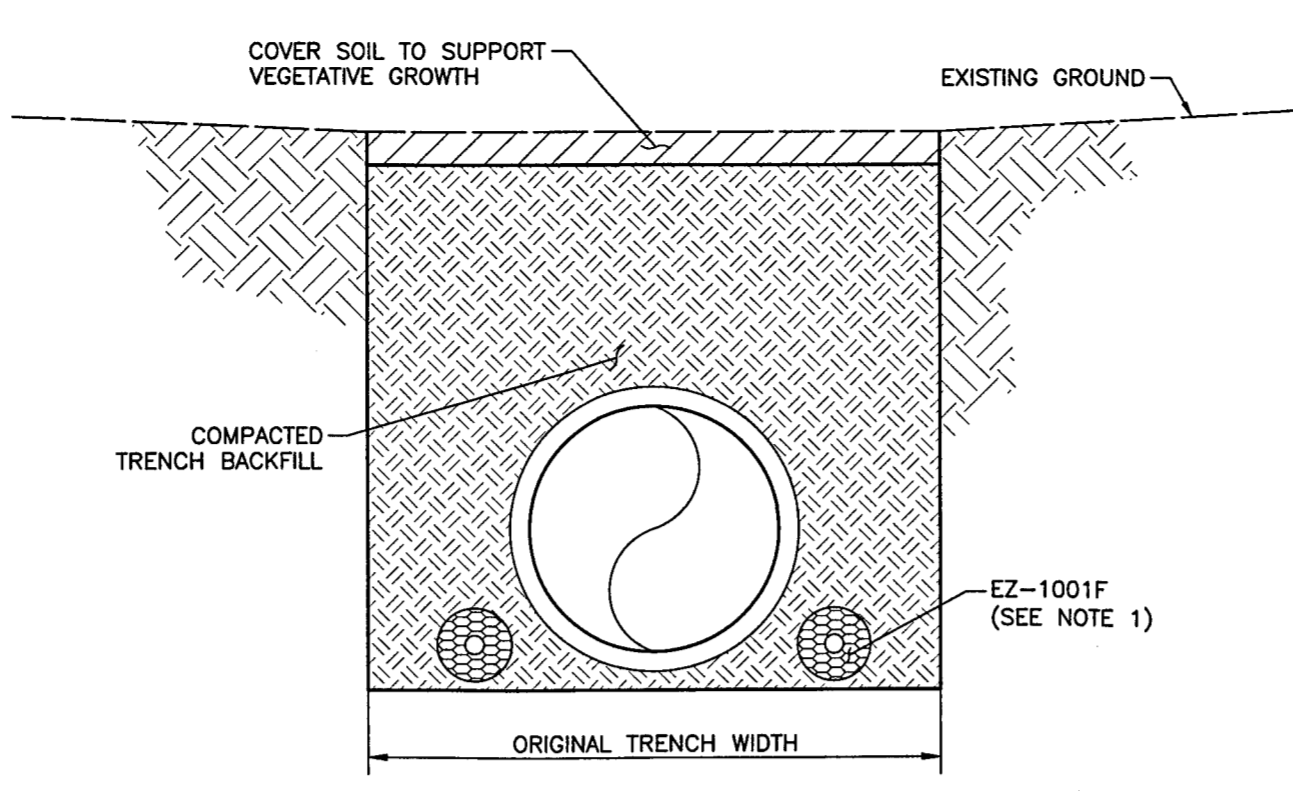


**PLAN**

**NOTE:**

1. DAYLIGHT DISCHARGE PIPE TO A WELL VEGETATIVE AREA.
2. SLOPE BASE OF PIPE TRENCH, AT THE UPSLOPE SIDE OF TRENCH PLUG TOWARDS THE OUTLET PIPE AT A MINIMUM 1% GRADE.

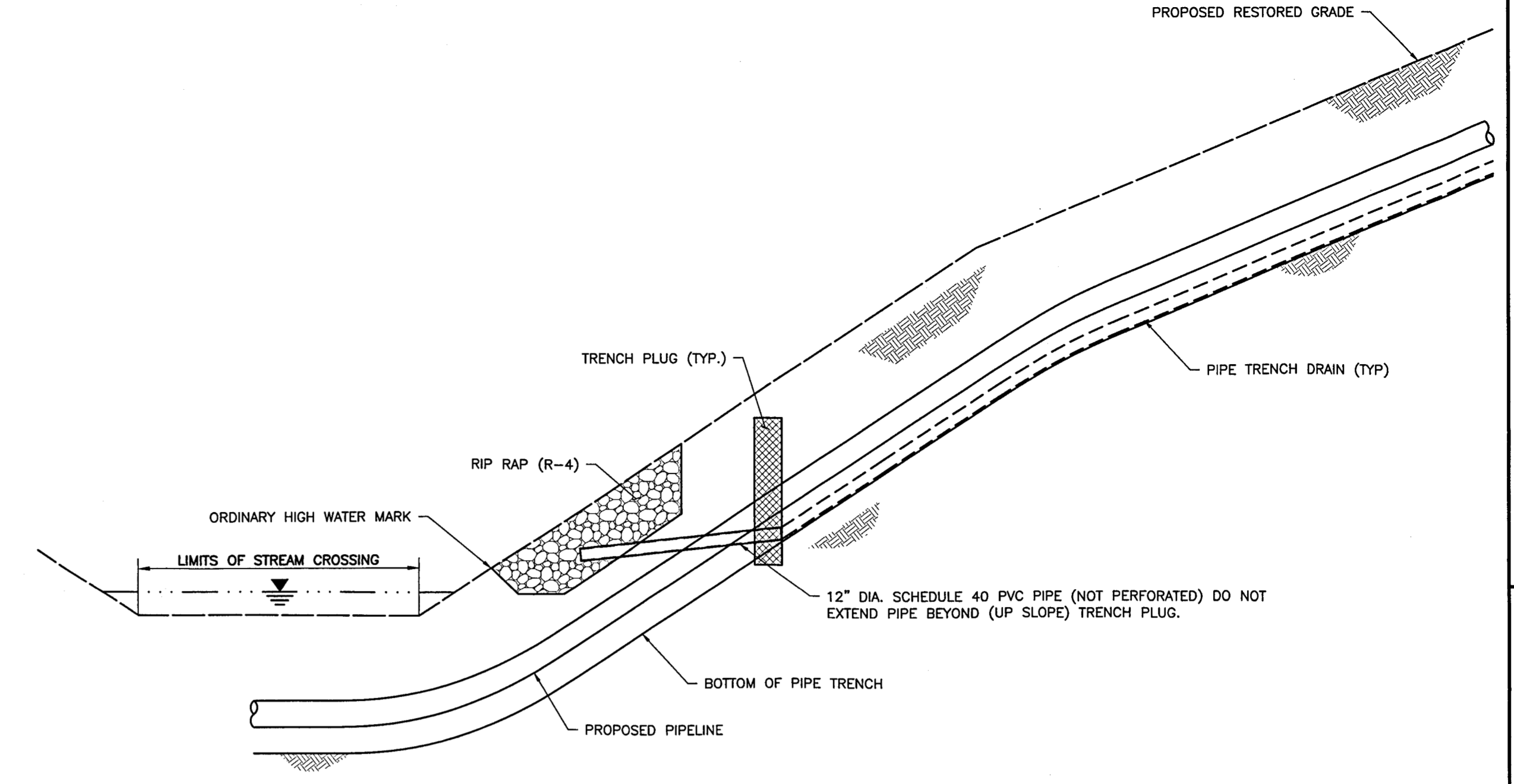
**DETAIL 21**  
**DRAINED TRENCH PLUG**  
NOT TO SCALE



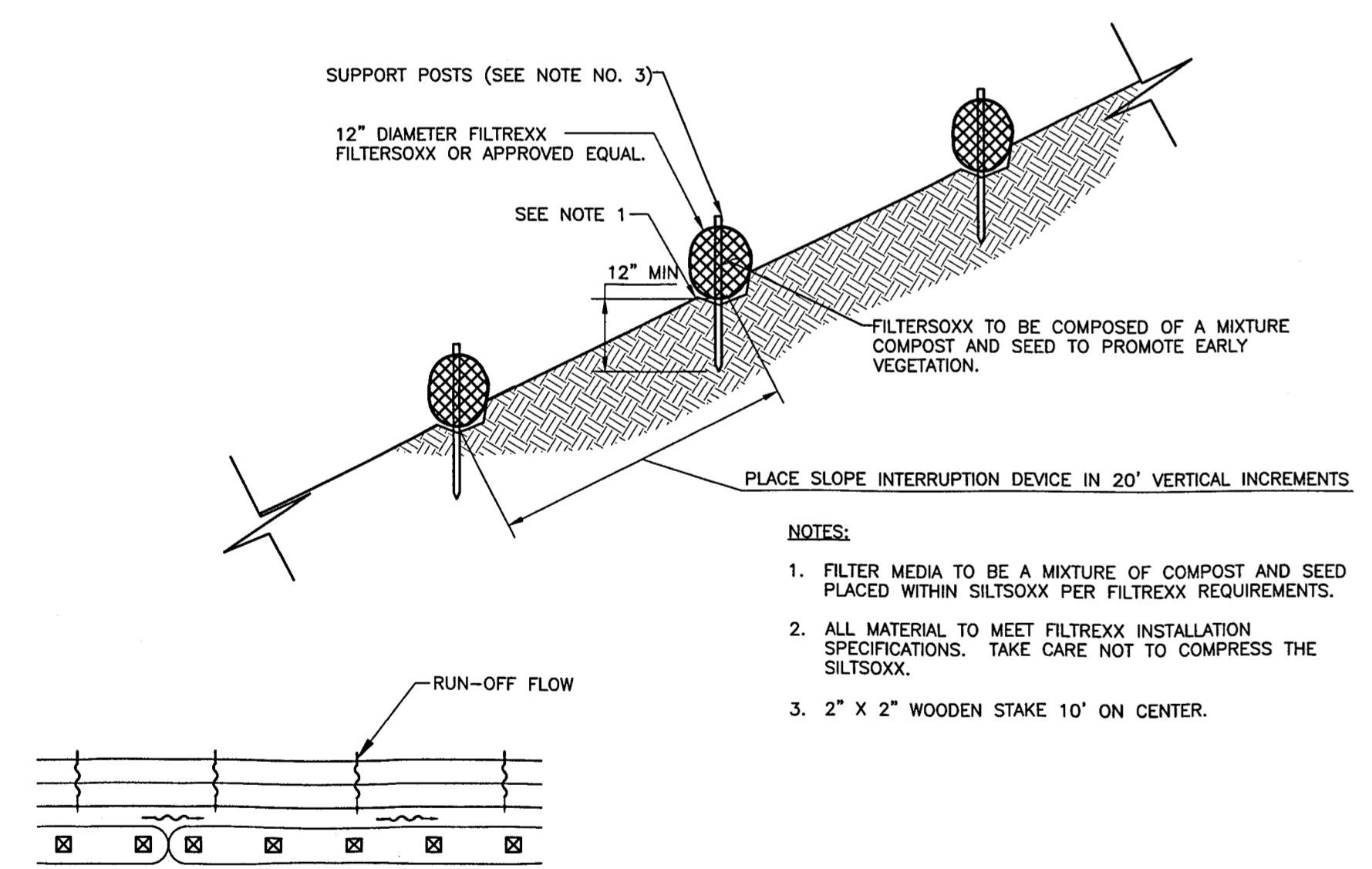
**NOTES:**

1. IF TRENCH PLUGS ARE CONSTRUCTED ON THE SLOPE, SLEEVE THROUGH TRENCH PLUG WITH 12" SOLID SCHEDULE 40 PVC PIPE.
2. CONTRACTOR SHALL USE MANUFACTURER'S COUPLERS TO JOIN SECTIONS OF EZ-FLOW PIPE.
3. 24" WIDE GEOCOMPOSITE SITEDRAIN STRIP 6600 SERIES BY AMERICAN WICK (OR EQUAL) MAY BE USED IN PLACE OF EZ-FLOW DRAIN.

**DETAIL 22**  
**DOUBLE TRENCH DRAIN**  
NOT TO SCALE



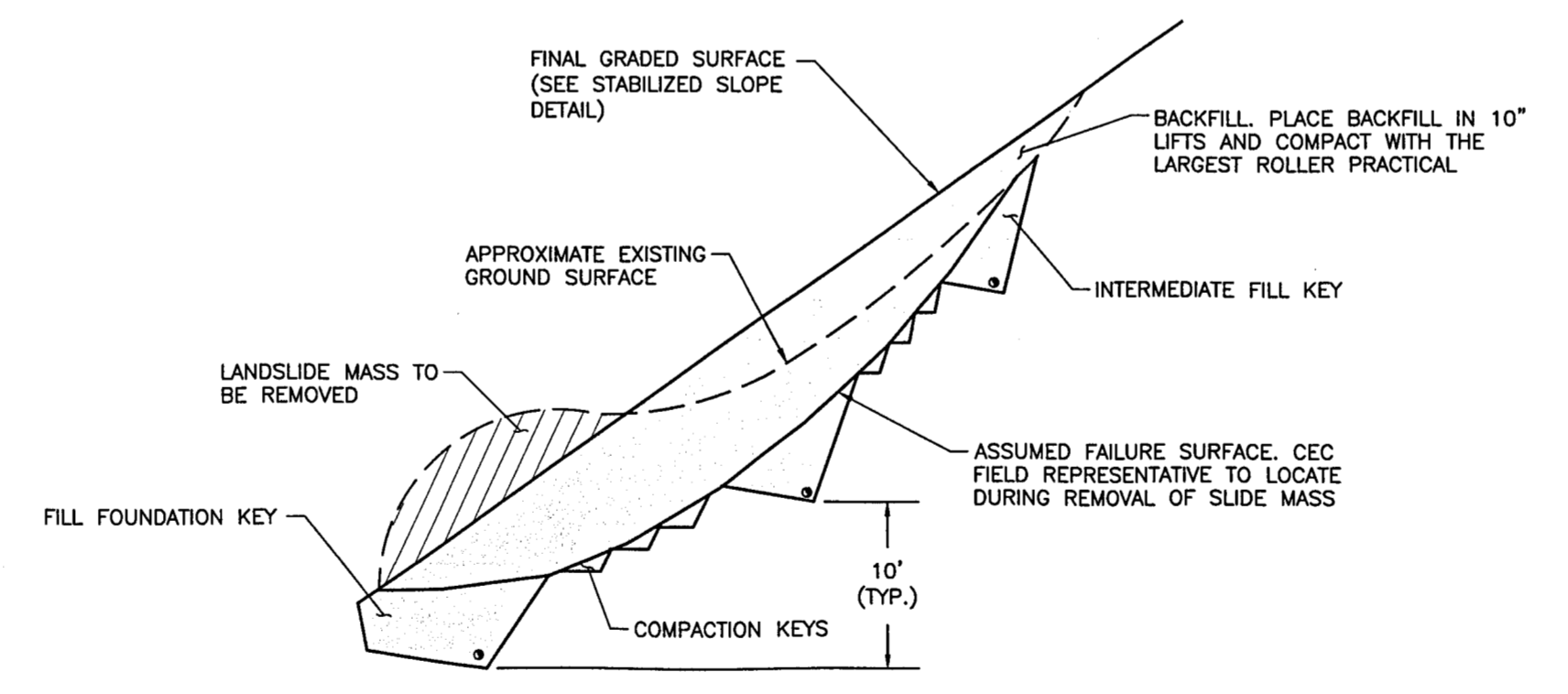
**DETAIL 23**  
**TRENCH DRAIN RIP RAP OUTLET**  
NOT TO SCALE



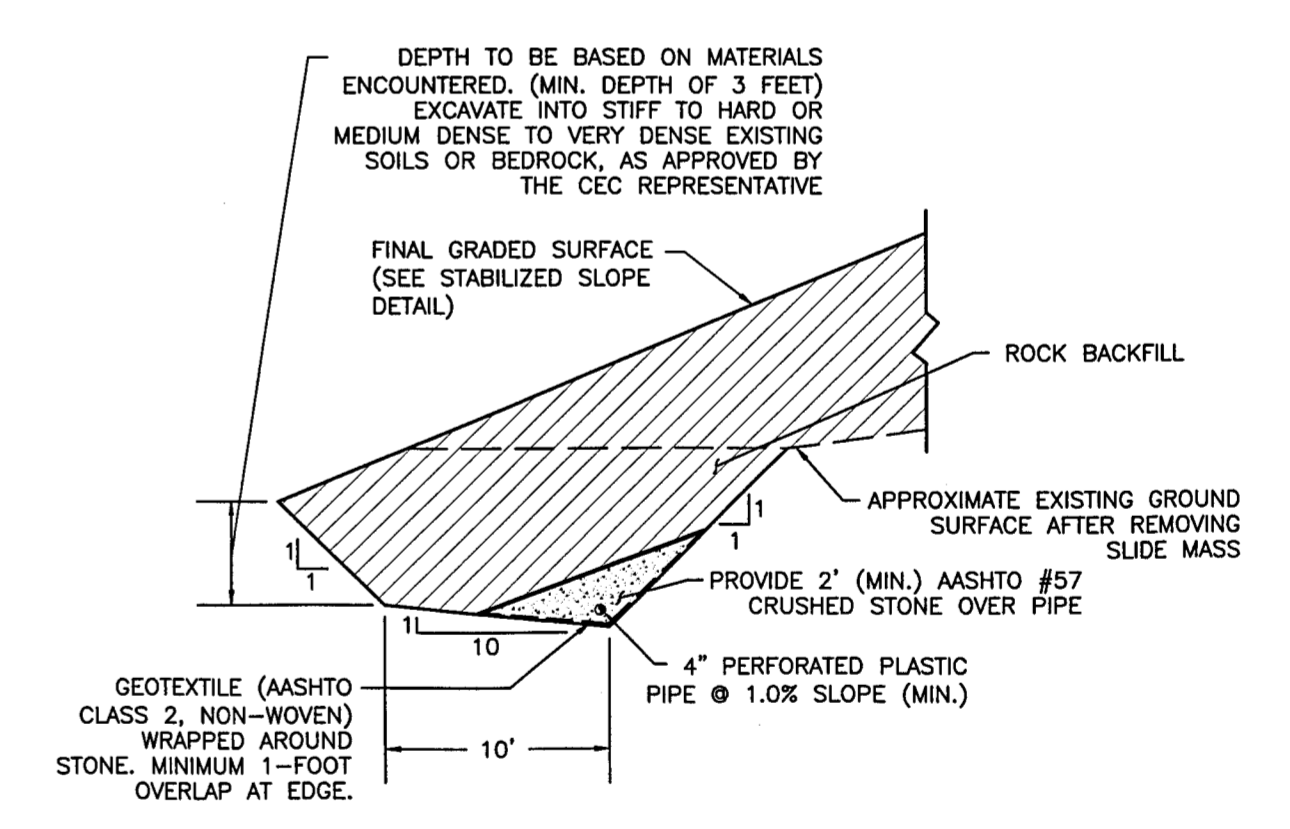
**NOTES:**

1. FILTER MEDIA TO BE A MIXTURE OF COMPOST AND SEED PLACED WITHIN SILTSOXX PER FILTREXX REQUIREMENTS.
2. ALL MATERIAL TO MEET FILTREXX INSTALLATION SPECIFICATIONS. TAKE CARE NOT TO COMPRESS THE SILTSOXX.
3. 2" X 2" WOODEN STAKE 10' ON CENTER.

**DETAIL 24**  
**SLOPE INTERRUPTER**  
NOT TO SCALE



**DETAIL 25**  
**TYPICAL SHALLOW LANDSLIDE REPAIR**  
NOT TO SCALE



**DETAIL 26**  
**TYPICAL FILL FOUNDATION KEY**  
NOT TO SCALE

NO	DATE	DESCRIPTION
1	06/20/14	REVISE PIPELINE ALIGNMENT, RIGHT OF WAY, LIMIT OF DISTURBANCE, AND E&E CONTROLS
2	02/27/2015	REVISED TO INCLUDE ADDITIONAL WORKSPACES
3	09/10/2015	REVISED FOR ADDITIONAL PIPELINE
4	10/15/15	REVISED PER COMMENTS FROM WORK DATED 10/15
5	06/22/16	REVISE PIPELINE ALIGNMENT, RIGHT OF WAY, LIMIT OF DISTURBANCE, AND E&E CONTROLS

**Civil & Environmental Consultants, Inc.**  
333 Baldwin Road - Pittsburgh, PA 15205  
412-429-2324 - 800-365-2324  
www.cecinc.com

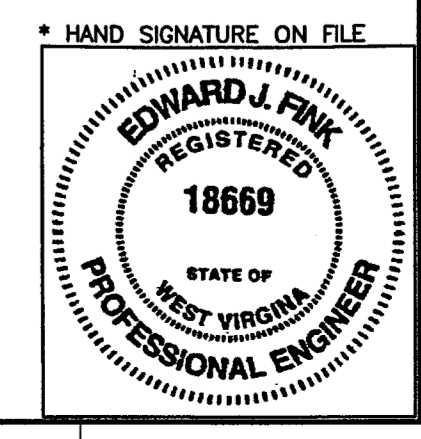
**MARKWEST LIBERTY**  
**MIDSTREAM & RESOURCES, LLC**  
**SHERWOOD SALES**  
**PIPELINE**  
**DODDRIDGE COUNTY, WEST VIRGINIA**

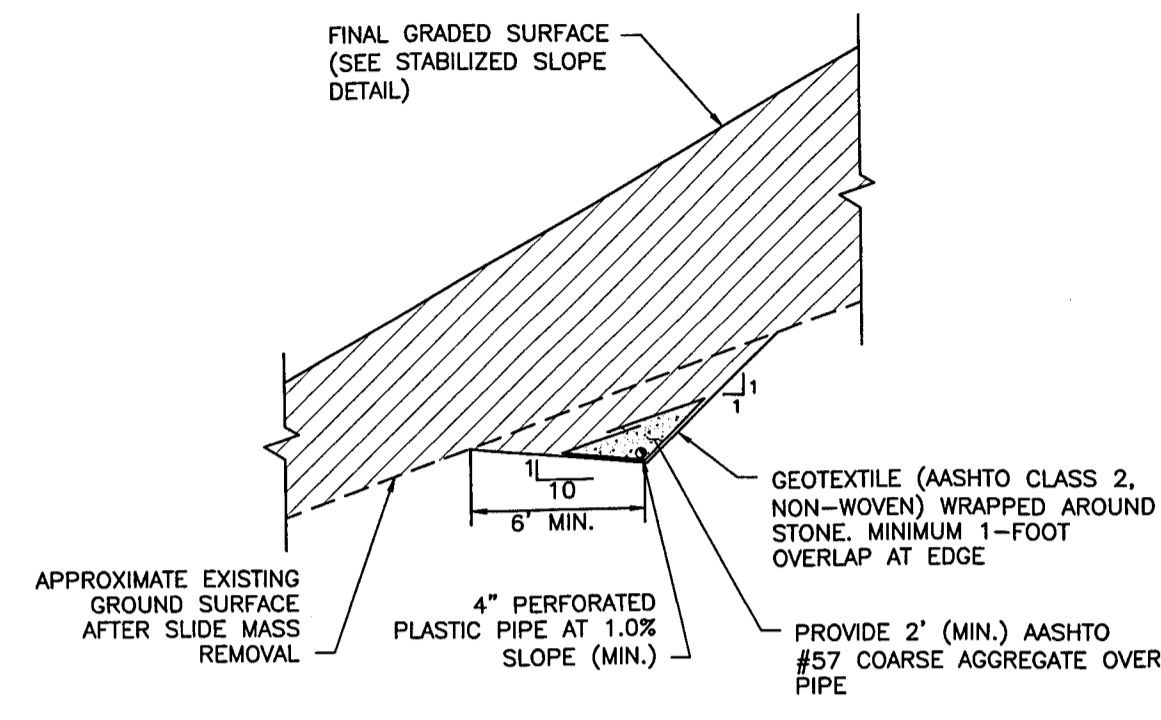
**EROSION AND SEDIMENTATION CONTROL DETAILS**

DRAWING NO.: **D007**

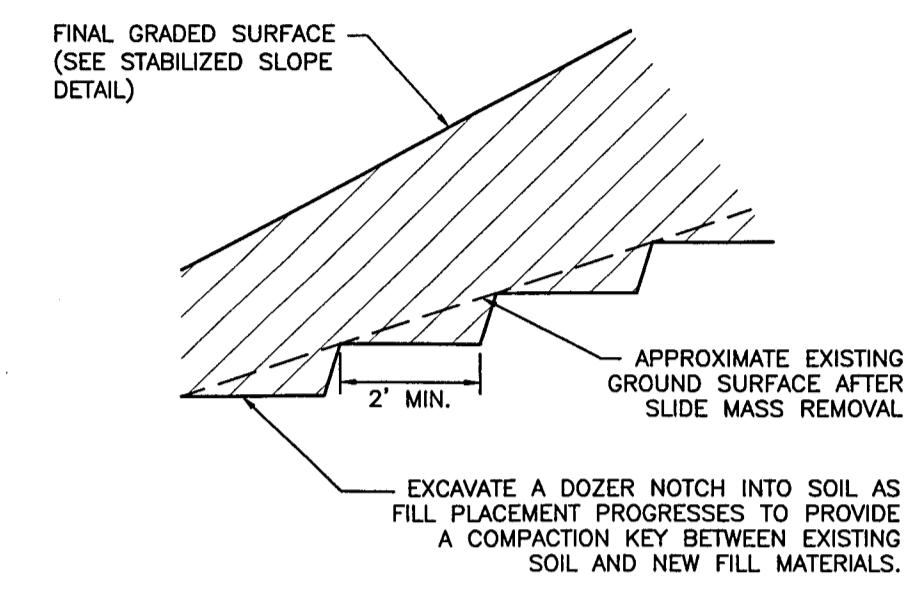
SHEET 24 OF 25

DATE: \_\_\_\_\_ DRAWN BY: JSC  
DATE: \_\_\_\_\_ AS NOTED CHECKED BY: EJJ  
PROJECT NO.: 131-985  
APPROVED BY: \*RPC

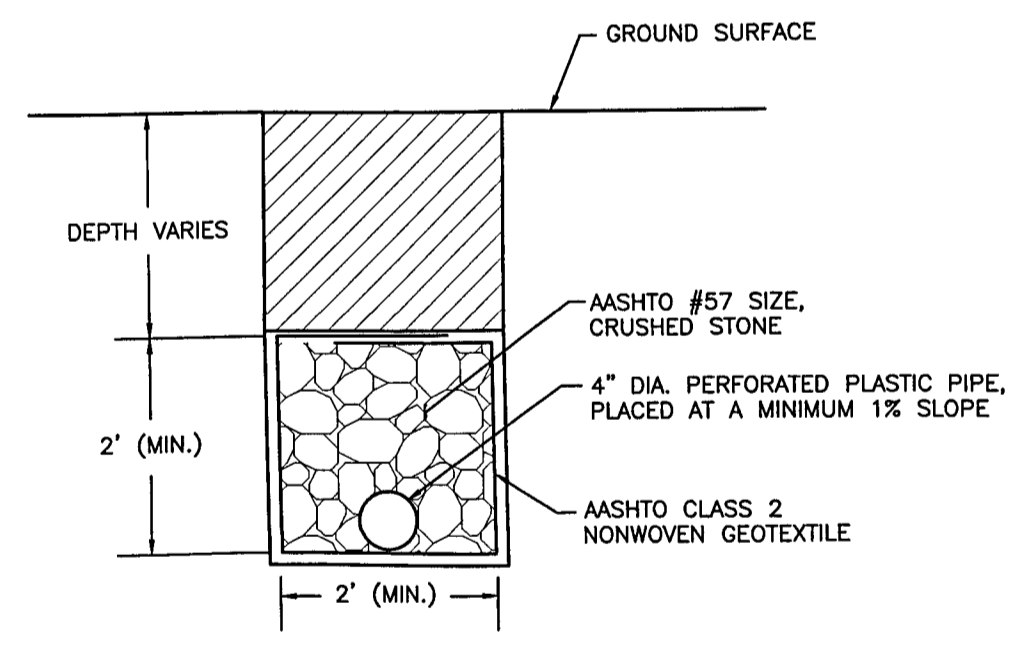




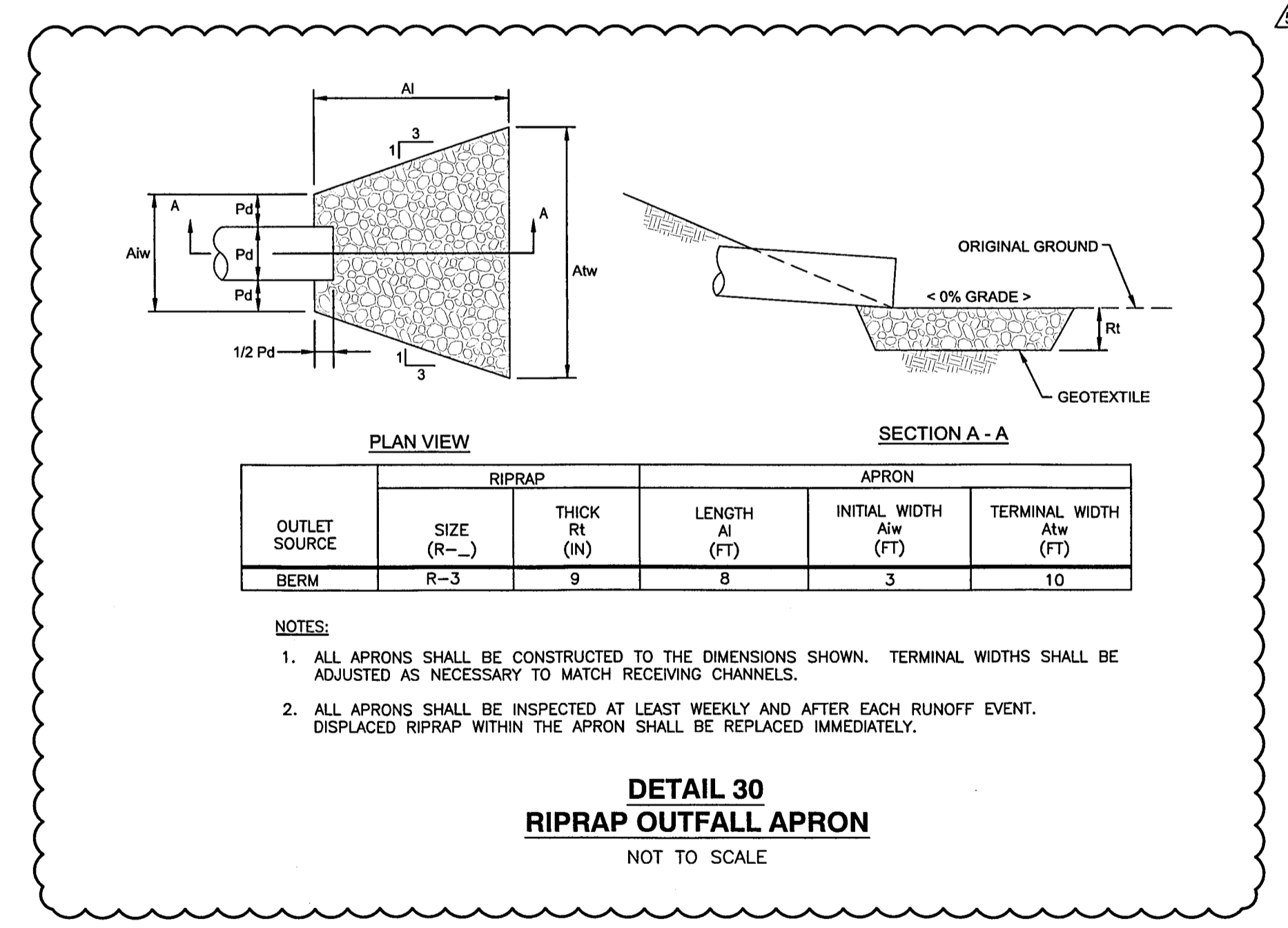
**DETAIL 27**  
**TYPICAL INTERMEDIATE FILL KEY**  
NOT TO SCALE



**DETAIL 28**  
**TYPICAL COMPACTION KEY**  
NOT TO SCALE



**DETAIL 29**  
**TYPICAL SUBSURFACE DRAIN**  
NOT TO SCALE



**DETAIL 30**  
**RIPRAP OUTFALL APRON**  
NOT TO SCALE

**REVISION RECORD**

NO	DATE	DESCRIPTION
1	04/20/14	REVISE PIPELINE ALIGNMENT, RIGHT-OF-WAY, LIMIT OF DISTURBANCE, AND E&E CONTROLS
2	02/27/15	REVISED TO INCLUDE ADDITIONAL WORKSPACES
3	09/10/15	REVISED FOR ADDITIONAL PIPELINE
4	10/21/15	REVISED PER COMMENTS FROM WORK DATED 10/21/15
5	03/20/16	REVISE PIPELINE ALIGNMENT, RIGHT-OF-WAY, LIMIT OF DISTURBANCE, AND E&E CONTROLS

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**PIPELINE**  
**DODDRIDGE COUNTY, WEST VIRGINIA**

**EROSION AND SEDIMENTATION CONTROL DETAILS**

DATE: \_\_\_\_\_ DRAWN BY: JSC  
 AS NOTED CHECKED BY: EJP  
 PROJECT NO: 131-985  
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