

# Commercial/Industrial Floodplain Development Permit

## Doddridge County, WV Floodplain Management

This permit has been issued to CNX Gas Company LLC, and is for the approved commercial and/or industrial development project associated with this permit 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: #14-201**

**Date Approved: 07/02/2014**

**Expires: N/A**

**Issued to: CNX Gas Company, LLC**

**POC: Amanda Wright  
304-884-2027**

**Company Address: One Energy Drive  
Jane Lew, WV 26378**

**Project Address: Southwest District & Cove District**

**Firm: Lat/Long: 39.168696N / 80.764664W to 39.153111N / 80.768373W**

**Purpose of development: Pipeline. Project does not impact floodplain.**

**Issued by: Edwin L. "Bo" Wriston, Doddridge County FPM (or designee)**

**Date: 07/02/2014**

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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

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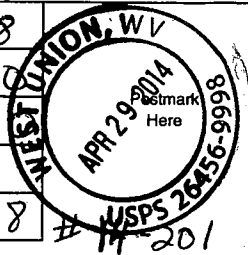
7013 2250 0001 6914 8614

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

For delivery information visit our website at www.usps.com®

OFFICIAL USE

Postage	\$ .48
Certified Fee	3.30
Return Receipt Fee (Endorsement Required)	2.70
Restricted Delivery Fee (Endorsement Required)	
Total Postage & Fees	\$ 6.48



Sent To James G. Ross, II  
Street, Apt. No.; or PO Box No. 733 Sugar Camp Rd  
City, State, ZIP+4 New Milton, WV 26411  
PS Form 3800, August 2006 See Reverse for Instructions

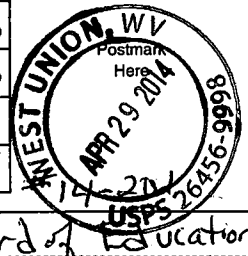
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Sent To Doddridge Co Board of Education  
Street, Apt. No.; or PO Box No. Sistersville Pike  
City, State, ZIP+4 West Union, WV 26456  
PS Form 3800, August 2006 See Reverse for Instructions

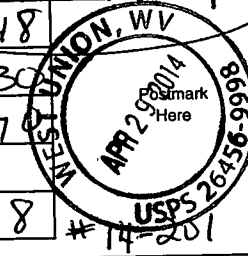
7013 2250 0001 6914 8629

U.S. Postal Service  
CERTIFIED MAIL™ RECEIPT  
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For delivery information visit our website at www.usps.com®

OFFICIAL USE

Postage	\$ .48
Certified Fee	3.30
Return Receipt Fee (Endorsement Required)	2.70
Restricted Delivery Fee (Endorsement Required)	
Total Postage & Fees	\$ 6.48



Sent To Michael D. Travis  
Street, Apt. No.; or PO Box No. 5689 WV Rt 18 S  
City, State, ZIP+4 West Union WV 26456  
PS Form 3800, August 2006 See Reverse for Instructions

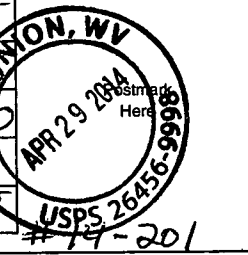
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Restricted Delivery Fee (Endorsement Required)	
Total Postage & Fees	\$ 6.48



Sent To D.K. & Janet Kelly  
Street, Apt. No.; or PO Box No. 201 Sugar Camp Rd  
City, State, ZIP+4 New Milton, WV 26411  
PS Form 3800, August 2006 See Reverse for Instructions

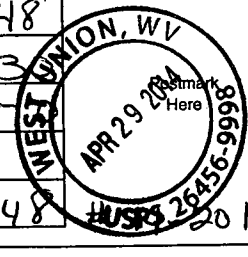
7013 2250 0001 6914 8834

U.S. Postal Service  
CERTIFIED MAIL™ RECEIPT  
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For delivery information visit our website at www.usps.com®

OFFICIAL USE

Postage	\$ .48
Certified Fee	3.30
Return Receipt Fee (Endorsement Required)	2.70
Restricted Delivery Fee (Endorsement Required)	
Total Postage & Fees	\$ 6.48



Sent To Jack Blazer  
Joan May Dickenson  
Street, Apt. No.; or PO Box No. 5938 WV Rt 18 S  
City, State, ZIP+4 New Milton, WV 26411  
PS Form 3800, August 2006 See Reverse for Instructions

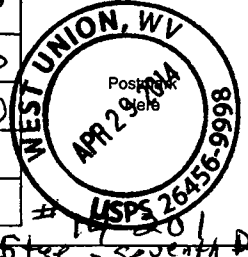
7013 2250 0001 6914 8841

U.S. Postal Service  
CERTIFIED MAIL™ RECEIPT  
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For delivery information visit our website at www.usps.com®

OFFICIAL USE

Postage	\$ .48
Certified Fee	3.30
Return Receipt Fee (Endorsement Required)	2.70
Restricted Delivery Fee (Endorsement Required)	
Total Postage & Fees	\$ 6.48



Sent To John Polan - Trustee - Seventh Day  
Baptist Church c/o Helen Sutton  
Street, Apt. No.; or PO Box No. Rt. 1  
City, State, ZIP+4 New Milton, WV 26411  
PS Form 3800, August 2006 See Reverse for Instructions

**SENDER: COMPLETE THIS SECTION**

- Complete items 1, 2, and 3. Also complete item 4 if Restricted Delivery is desired.
- 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.

1. Article Addressed to: # 14-201

Doddridge Co Board of Ed.  
Sistersville Pike  
West Union, WV 26456

2. Article Number

(Transfer from service label)

7013 2250 0001 6914 8612

**COMPLETE THIS SECTION ON DELIVERY**

A. Signature

*Amanda M Bentz*  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

3. Service Type

- Certified Mail®  Priority Mail Express™  
 Registered  Return Receipt for Merchandise  
 Insured Mail  Collect on Delivery

4. Restricted Delivery? (Extra Fee)

 Yes



**SENDER: COMPLETE THIS SECTION**

- Complete items 1, 2, and 3. Also complete item 4 if Restricted Delivery is desired.
- 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.

1. Article Addressed to: #14-201

Jack Blazp  
 Joan May Dickerson  
 5938 WV Rt. 185  
 New Milton, WV 26411

2. Article Number  
 (Transfer from service label)

7013 2250 0001 6914 8834

**COMPLETE THIS SECTION ON DELIVERY**

A. Signature

X

*Jack Blazp*

Agent

Addressee

B. Received by (Printed Name)

*JACK BLAZP*

C. Date of Delivery

*8-30-14*

D. Is delivery address different from item 1?  Yes

If YES, enter delivery address below:  No

3. Service Type

Certified Mail®

Priority Mail Express™

Registered

Return Receipt for Merchandise

Insured Mail

Collect on Delivery

4. Restricted Delivery? (Extra Fee)

Yes

UNITED STATES POSTAL SERVICE



First-Class Mail  
Postage & Fees Paid  
USPS  
Permit No. G-10

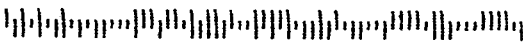
• Sender: Please print your name, address, and ZIP+4® in this box •

FILED

2014 MAY -1 AM 10:19

BETH A. ...  
COUNTY ...  
WEST UNION, WV

Beth A. ...riston  
Bedford County FloodPlain MGT  
118 East Court St., Suite 102  
West Union, WV 26456



**SENDER: COMPLETE THIS SECTION**

- Complete items 1, 2, and 3. Also complete item 4 if Restricted Delivery is desired.
- 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.

1. Article Addressed to: #14-201

D.K. & Janet Kelly  
 201 Sugar Camp Rd  
 New Market, WV 26411

2. Article Number  
 (Transfer from service label)

7013 2250 0001 6914 8827

**COMPLETE THIS SECTION ON DELIVERY**

A. Signature

X Janet Kelly

- Agent  
 Addressee

B. Received by (Printed Name)

JANET KELLY

C. Date of Delivery

4-30-14

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

3. Service Type

- Certified Mail®  Priority Mail Express™  
 Registered  Return Receipt for Merchandise  
 Insured Mail  Collect on Delivery

4. Restricted Delivery? (Extra Fee)  Yes

UNITED STATES POSTAL SERVICE



First-Class Mail  
Postage & Fees Paid  
USPS  
Permit No. G-10

MAY 20 2014  
MAY 20 11 44 AM '14  
MAY 20 11 44 AM '14

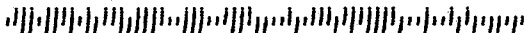
FILED

2014 MAY -1 AM 10

BETH A. ROGERS  
COUNTY CLERK  
BOONVILLE COUNTY, WV

• Sender: Please print your name, address, and ZIP+4® in this box •

Wriston  
Boonville County FloodPlain MGT  
118 East Court St., Suite 102  
West Union, WV 26456





**SENDER: COMPLETE THIS SECTION**

- Complete items 1, 2, and 3. Also complete item 4 if Restricted Delivery is desired.
- 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.

1. Article Addressed to: #14-201

James G. Ross II  
 733 Sugar Camp Rd  
 New Milton, WV 26411

2. Article Number  
(Transfer from service label)

7013 2250 0001 6914 8810

**COMPLETE THIS SECTION ON DELIVERY**

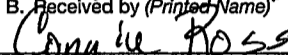
A. Signature

x

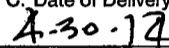


- 
- Agent
- 
- 
- Addressee

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

3. Service Type

- 
- Certified Mail®
- 
- Priority Mail Express™
- 
- 
- Registered
- 
- Return Receipt for Merchandise
- 
- 
- Insured Mail
- 
- Collect on Delivery

4. Restricted Delivery? (Extra Fee)
- 
- Yes

UNITED STATES POSTAL SERVICE

WEST VIRGINIA  
10 APR 14



First-Class Mail  
Postage & Fees Paid  
USPS  
Permit No. G-10

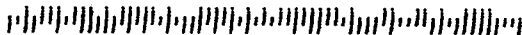
- Sender: Please print your name, address, and ZIP+4® in this box •

FILED

2014 MAY -1 AM 10:49

BETHA, RO  
BRIDGE COUNTY, WV  
06071866

Wriston  
Bridge County FloodPlain MGT  
East Court St., Suite 102  
West Union, WV 26456



**SENDER: COMPLETE THIS SECTION**

- Complete items 1, 2, and 3. Also complete item 4 if Restricted Delivery is desired.
- 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.

1. Article Addressed to: #14-201

Michael D. Travis  
 5689 WV Rt 18 S  
 West Union, WV 26456

2. Article Number  
 (Transfer from service label)

7013 2250 0001 6914 8629

**COMPLETE THIS SECTION ON DELIVERY**

A. Signature

X *Michael D. Travis*

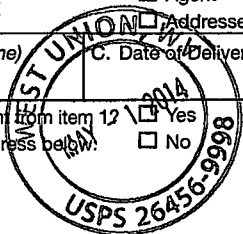
Agent

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



3. Service Type

Certified Mail®

Priority Mail Express™

Registered

Return Receipt for Merchandise

Insured Mail

Collect on Delivery

4. Restricted Delivery  Yes

Yes

UNITED STATES POSTAL SERVICE



First-Class Mail  
Postage & Fees Paid  
USPS  
Permit No. G-10

- Sender. Please print your name, address, and ZIP+4® in this box •

FILED

24 MAY -2 AM 10:02

THOMAS ROGERS  
DUNN COUNTY  
RIDGE

Wriston  
Bordridge County FloodPlain MGT  
118 East Court St., Suite 102  
Union, WV 26456



**SENDER: COMPLETE THIS SECTION**

- Complete items 1, 2, and 3. Also complete item 4 if Restricted Delivery is desired.
- 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.

1. Article Addressed to: #14-201

John Polan, Trustee  
 Seventh Day Baptist Church  
 40 Helen Sutton, Treas.

Rt 1  
 New Milton, WV 26411

2. Article Number  
 (Transfer from service label)

7013 2250 0001 6914 8841

PS Form 3811, July 2013

Domestic Return Receipt

**COMPLETE THIS SECTION ON DELIVERY**

A. Signature

*[Handwritten Signature]*

- Agent
- Addressee

B. Received by (Printed Name)

*Joe Michael*

C. Date of Delivery

5.2.14

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

3. Service Type

- Certified Mail®
- Registered
- Insured Mail
- Priority Mail Express™
- Return Receipt for Merchandise
- Collect on Delivery

4. Restricted Delivery? (Extra Fee)

- Yes

UNITED STATES POSTAL SERVICE

WV 260

02 MAY 14

9111



First-Class Mail  
Postage & Fees Paid  
USPS  
Permit No. G-10

• Sender: Please print your name, address, and ZIP+4® in this box •

FILED

2014 MAY -5 AM 10:14

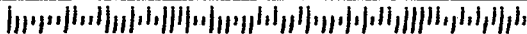
BETHANY  
COUNTY  
BOODRIDGE COUNTY, WV

Wriston

Boodridge County FloodPlain MGT

East Court St., Suite 102

West Union, WV 26456



Legal Advertisement:  
Doddridge County  
Floodplain Permit Application

Please take notice that on the 29<sup>th</sup> day of April, 2014

**ANTERO RESOURCES CORPORATION. #14-201**

filed an

application for a Floodplain Permit to develop land located at or  
about: **SURFACE OWNERS: MICHAEL D TRAVIS, NEW MILTON DIST.  
RT. 18 SOUTH AND SUGAR CAMP, TM 4 PARCEL 10**

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 **May 20<sup>th</sup>, 2014.**

Delivered to the:

Clerk of the County Court  
118 E. Court Street, West Union, WV 26456.

Beth A Rogers, Doddridge County Clerk  
Edwin L. "Bo" Wriston. Doddridge County Flood Plain Manager

TRANSACTION REPORT

P. 01

APR-28-2014 MON 05:27 PM

FOR: DODDRIDGE CO. CLERK 304 873 1840

SEND

DATE	START	RECEIVER	TX TIME	PAGES	TYPE	NOTE	M#	DP
APR-28	05:27 PM	3048731600	26"	1	FAX TX	OK	989	

TOTAL : 26S PAGES: 1

Legal Advertisement:

Doddridge County  
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Clerk of the County Court  
118 E. Court Street, West Union, WV 26456.

Beth A Rogers, Doddridge County Clerk  
Edwin L. "Bo" Wriston, Doddridge County Flood Plain Manager





P.O. BOX 150, GLENVILLE, WV 26351  
 (304) 462-5634 • FAX (304) 462-5656

# LETTER OF TRANSMITTAL

DATE 4/21/14	JOB NO. 8031
ATTENTION Catie Slater	
RE: CNX Gas Company's OXFD10	

TO: Doddridge County Floodplain Coordinator  
118 East Court Street  
West Union, WV 26456

> WE ARE SENDING YOU  Attached  Under separate cover via \_\_\_\_\_ the following items:

- Shop drawings   
  Prints   
  Plans   
  Samples   
  Specifications  
 Copy of letter   
  Change order   
  \_\_\_\_\_

COPIES	DATE	NO.	DESCRIPTION
1			Cover Letter requesting concurrence to begin work on CNX Gas Company's OXFD10
1			Floodplain Permit Application
1			FEMA Map
1			WV Flood Tool Map
1			Site Plans

THESE ARE TRANSMITTED as checked below:

- For approval   
  Approved as submitted   
  Resubmit \_\_\_\_\_ copies for approval  
 For your use   
  Approved as noted   
  Submit \_\_\_\_\_ copies for distribution  
 As requested   
  Returned for corrections   
  Return \_\_\_\_\_ corrected prints  
 For review and comment   
  \_\_\_\_\_  
 FOR BIDS DUE \_\_\_\_\_ 20\_\_\_\_\_   
 PRINTS RETURNED AFTER LOAN TO US

REMARKS \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

COPY TO SLS Files; CNX Gas Company, LLC

SIGNED: Deanna McVicker

If enclosures are not as noted, kindly notify us at once.

#14-201



PROFESSIONAL ENERGY CONSULTANTS

A DIVISION OF SMITH LAND SURVEYING, INC.

April 21, 2014

Ms. Catie Slater  
Floodplain Coordinator  
Doddridge County Commission  
118 East Court Street  
West Union, WV 26456

RE: CNX Gas Company, LLC  
OXFD 10 Well Pad, Tank Pad, Access Road, and Stockpiles

Ms. Slater,

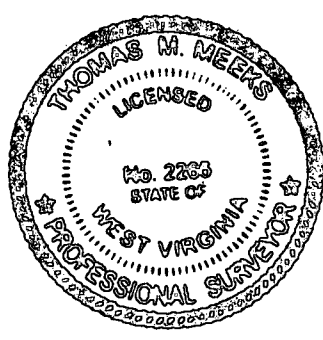
On behalf of CNX, SLS is asking for your concurrence that a Doddridge County floodplain/building permit is not required for this project. CNX has proposed an access road, well pad, tank pad and stockpiles to aid in the development of individual Marcellus Shale gas wells. The site is located near Porto Rico off of Doddridge County Route 19/11 (Freedom Road). The access road entrance is located at Latitude 39.168696 and Longitude -80.764664 (NAD 83) and the well pad is located at Latitude 39.153111 and Longitude -80.768373 (NAD 83).

This site does not impact a floodplain. Please see the attached project location map, site plans, FEMA firmette, and WV Flood Tool Map.

Again CNX, SLS is requesting your concurrence in order that they can be able to begin construction on the OXFD 10 Well Pad Project once the WVDEP drilling permits are received. Please feel to contact Thomas Meeks with SLS at 304-462-5634 or [tmeeks@slssurveys.com](mailto:tmeeks@slssurveys.com), or Amanda Wright with CNX at 304-884-2027 or [AmandaWright@consolenergy.com](mailto:AmandaWright@consolenergy.com) should you have any questions or comments.

Respectfully submitted,

Thomas M. Meeks, P.S.  
Surveying Manager



cc: Amanda Wright/CNX Gas Company LLC

**DODDRIDGE COUNTY  
FLOODPLAIN DEVELOPMENT PERMIT APPLICATION**

**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 \_\_\_\_\_

4/21/14

**SECTION 2: PROPOSE DEVELOPMENT (TO BE COMPLETED BY APPLICANT).**

**IF THE APPLICANT IS NOT A NATURAL PERSON, THE NAME, ADDRESS, AND TELEPHONE NUMBER OF A NATURAL PERSON WHO SHALL BE APPOINTED BY THE APPLICANT TO RECEIVE NOTICE PURSUANT TO ANY PROVISION OF THE CURRENT DODDRIDGE COUNTY FLOODPLAIN ORDINANCE.**

APPLICANT'S NAME: CNX Gas Company, LLC

ADDRESS: One Energy Drive Jane Lew, WV 26378

TELEPHONE NUMBER: 304-884-2027

**BUILDER'S NAME:** CNX Gas Company, LLC

**ADDRESS:** One Energy Drive Jane Lew, WV 26378

**TELEPHONE NUMBER:** 304-884-2027

**ENGINEER'S NAME:** Smith Land Surveying

**ADDRESS:** 226 West Main Street, Glenville, WV 26351

**TELEPHONE NUMBER:** 304-462-5634

**PROJECT LOCATION:** The site is located on a ridge south of Doddridge County Route 19/11, approximately 6,900 feet south of the Doddridge County Route 54/1 and Doddridge County Route 19/11 intersection. The access road entrance is located at latitude 39.168696 and longitude -80.764664 (NAD 83). The well pad is located at latitude 39.153111 and longitude -80.768373 (NAD 83).

**NAME OF SURFACE OWNER/OWNERS (IF NOT THE APPLICANT)** I.L Morris, CNX Gas LLC, Diane Hickock, Rebecca Simpson, Ronald Frye, Joseph Schulte, Michael Ruppert, Key Oil Company

**ADDRESS OF SURFACE OWNER/OWNERS (IF NOT THE APPLICANT)** \_\_\_\_\_

**DISTRICT:** Southwest District / Cove District

**DATE/FROM WHOM PROPERTY**

**PURCHASED:** \_\_\_\_\_

**LAND BOOK DESCRIPTION:** \_\_\_\_\_

**DEED BOOK REFERENCE:** Deed Book page

**TAX MAP REFERENCE:** 10-2 Southwest (Morris), 2-1 Cove (CNX), 2-2 Cove (Hickock), 1-8 Cove (Simpson), 1-12 Cove (Frye), 1-13 Cove (Frye), 5-1 Cove (Schulte), 4-21 Cove (Ruppert), 1-10.1 Cove (Key Oil), and 1-10.2 Cove (Ruppert)

**EXISTING BUILDINGS/USES OF PROPERTY:** \_\_\_\_\_

**NAME OF AT LEAST ONE ADULT RESIDING IN EACH RESIDENCE LOCATED UPON THE SUBJECT PROPERTY** \_\_\_\_\_

**ADDRESS OF AT LEAST ONE ADULT RESIDING IN EACH RESIDENCE LOCATED UPON THE SUBJECT PROPERTY** \_\_\_\_\_

To avoid delay in processing the application, please provide enough information to easily identify the project location.

**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 Altercation (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)
- 

**C. STANDARD SITE PLAN OR SKETCH**

- 1. SUBMIT ALL STANDARD SITE PLANS, IF ANY HAVE BEEN PREPARED.**
- 2. IF STANDARD SITE PLANS HAVE NOT BEEN PREPARED:**  
SKETCH ON A SEPARATE 8 ½ X 11 INCH SHEET OF PAPER THE SHAPE AND LOCATION OF THE LOT. SHOW THE LOCATION OF THE INTENDED CONSTRUCTION OR LAND USE

INDICATING BUILDING SETBACKS, SIZE & HEIGHT. IDENTIFY EXISTING BUILDINGS, STRUCTURES OR LAND USES ON THE PROPERTY.

3. SIGN AND DATE THE SKETCH.

**ACTUAL TOTAL CONSTRUCTION COSTS OF THE COMPLETE DEVELOPMENT IRRESPECTIVE OF WHETHER ALL OR ANY PART OF THE SUBJECT PROPOSED CONSTRUCTION PROJECT IS WITHIN THE FLOODPLAIN \$ \_\_\_\_\_**

**D. ADJACENT AND/OR AFFECTED LANDOWNERS:**

1. NAME AND ADDRESS OF ALL OWNERS OF SURFACE TRACTS ADJACENT TO THE AREA OF THE SURFACE TRACT (UP & DOWN STREAM) UPON WHICH THE PROPOSED ACTIVITY WILL OCCUR AND ALL OTHER SURFACE OWNERS UP & DOWN STREAM) WHO OWN PROPERTY THAT MAY BE AFFECTED BY FLOODING AS IS DEMONSTRATED BY A FLOODPLAIN STUDY OR SURVEY (IF ONE HAS BEEN COMPLETED).

NAME: \_\_\_\_\_

ADDRESS: \_\_\_\_\_

\_\_\_\_\_

NAME: \_\_\_\_\_

ADDRESS: \_\_\_\_\_

\_\_\_\_\_

NAME: \_\_\_\_\_

ADDRESS: \_\_\_\_\_

\_\_\_\_\_

NAME: \_\_\_\_\_

ADDRESS: \_\_\_\_\_

\_\_\_\_\_

1. NAME AND ADDRESS OF AT LEAST ONE ADULT RESIDING IN EACH RESIDENCE LOCATED UPON ANY ADJACENT PROPERTY AT THE TIME THE FLOODPLAIN PERMIT APPLICATION IS FILED AND THE NAME AND ADDRESS OF AT LEAST ONE ADULT RESIDING IN ANY HOME ON ANY PROPERTY THAT MAY BE AFFECTED BY FLOODING AS IS DEMONSTRATED BY A FLOODPLAIN STUDY OR SURVEY.

NAME: \_\_\_\_\_

ADDRESS: \_\_\_\_\_

\_\_\_\_\_

NAME: \_\_\_\_\_

ADDRESS: \_\_\_\_\_

\_\_\_\_\_

NAME: \_\_\_\_\_

ADDRESS: \_\_\_\_\_

\_\_\_\_\_

NAME: \_\_\_\_\_

ADDRESS: \_\_\_\_\_

\_\_\_\_\_

**E. CONFIRMATION FORM**

THE APPLICANT ACKNOWLEDGES, AGREES, AND CONFIRMS THAT HE/IT WILL PAY WITHIN 30 DAYS OF RECEIPT OF INVOICE BY THE COUNTY FOR ALL EXPENSES RELATIVE TO THE PERMIT APPLICATION PROCESS GREATER THAN THE REQUIRED DEPOSIT FOR EXPENSES INCLUDING:

- (A) PERSONAL SERVICE OF PROCESS BY THE DODDRIDGE COUNTY SHERIFF AT THE RATES PERMITTED BY LAW FOR SUCH SERVICE.
- (B) SERVICE BY CERTIFIED MAIL RETURN RECEIPT REQUESTED.
- (C) PUBLICATION.
- (D) COURT REPORTING SERVICES AT ANY HEARINGS REQUESTED BY THE APPLICANT.
- (E) CONSULTANTS AND/OR HEARING EXPERTS UTILIZED BY DODDRIDGE COUNTY FLOODPLAIN ADMINISTRATOR/MANAGER OR FLOODPLAIN APPEALS BOARD FOR REVIEW OF MATERIALS AND/OR TESTIMONY REGARDING THE EFFICACY OF GRANTING OR DENYING THE APPLICANT'S FLOODPLAIN PERMIT.

NAME (PRINT): Amanda Wright

SIGNATURE:  DATE: 4/21/14

After completing SECTION 2, APPLICANT should submit form to Floodplain Administrator/Manager or his/her representative for review.

**SECTION 3: FLOODPLAIN DETERMINATION (to be completed by Floodplain Administrator/Manager or his/her representative)**

**THE PROPOSED DEVELOPMENT:**

THE PROPOSED DEVELOPMENT IS LOCATED ON:

FIRM Panel: \_\_\_\_\_

Dated: \_\_\_\_\_

Is **NOT** located in a Specific Flood Hazard Area (Notify applicant that the application review is complete and **NO FLOODPLAIN DEVELOPMENT PERMIT IS REQUIRED**).

- Is located in Special Flood Hazard Area.  
     FIRM zone designation \_\_\_\_\_  
     100-Year flood elevation is: \_\_\_\_\_ NGVD (MSL)
  - Unavailable
  - The proposed development is located in a floodway.  
     FBFM Panel No. \_\_\_\_\_ Dated \_\_\_\_\_
  - See section 4 for additional instructions.
- SIGNED** \_\_\_\_\_ **DATE** \_\_\_\_\_

**SECTION 4: ADDITIONAL INFORMATION REQUIRED (To be completed by Floodplain Administrator/Manager or his/her representative)**

The applicant must submit the documents checked below before the application can be processed.

- A plan showing the location of all existing structures, water bodies, adjacent roads, lot dimensions and proposed development.
- Development plans, drawn to scale, and specifications, including where applicable: details for anchoring structures, storage tanks, proposed elevation of lowest floor, (including basement or crawl space), types of water resistant materials used below the first floor, details of flood proofing of utilities located below the first floor and details of enclosures below the first floor. Also \_\_\_\_\_  
 \_\_\_\_\_
- Subdivision or other development plans (If the subdivision or development exceeds 50 lots or 5 acres, whichever is the lesser, the applicant must provide 100-year flood elevations if they are not otherwise available).
- Plans showing the extent of watercourse relocation and/or landform alterations.



- Top of new fill elevation \_\_\_\_\_ Ft. NGVD (MSL).  
For floodproofing structures applicant must attach certification from registered engineer or architect.
- Certification from a registered engineer that the proposed activity in a regulatory floodway will not result in any increase in the height of the 100-year flood. A copy of all data and calculations supporting this finding must also be submitted.
- Manufactured homes located in a floodplain area must have a West Virginia Contractor's License and a Manufactured Home Installation License as required by the Federal Emergency Management Agency (FEMA).
- Other:  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

**SECTION 5: PERMIT DETERMINATION (To be completed by Floodplain Administrator/Manager or his/her representative)**

I have determined that the proposed activity **(type is or is not)** in conformance with provisions of the Floodplain Ordinance adopted by the County Commission of Doddridge County on May 21, 2013. The permit is issued subject to the conditions attached to and made part of this permit.

SIGNED \_\_\_\_\_ DATE \_\_\_\_\_

If the Floodplain Administrator/Manager found that the above was not in conformance with the provisions of the Doddridge County Floodplain Ordinance and/or denied that application, the applicant may complete an appealing process below.

APPEALS:   Appealed to the County Commission of Doddridge County?  Yes   {} No  
                   Hearing Date: \_\_\_\_\_  
                   County Commission Decision - Approved    Yes    No

CONDITIONS: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

**SECTION 6: AS-BUILT ELEVATIONS (To be submitted by APPLICANT before Certificate of Compliance is issued).**

The following information must be provided for project structures. This section must be completed by a registered professional engineer or a licensed land surveyor (or attach a certification to this application).

COMPLETE 1 OR 2 BELOW:

- 1 Actual (As-Built) Elevation of the top of the lowest floor (including basement or crawl space is \_\_\_\_\_ FT. NGVD (MSL)
- 2 Actual (As Built) elevation of floodproofing is \_\_\_\_\_ FT. NGVD (MSL)

**Note: Any work performed prior to submittal of the above information is at risk of the applicant.**

**SECTION 7: COMPLIANCE ACTION (To be completed by the Floodplain Administrator/Manager or his/her representative).**

The Floodplain Administrator/Manager or his/her representative will complete this section as applicable based on inspection of the project to ensure compliance with the Doddridge County Floodplain Ordinance.

**INSPECTIONS:**

DATE: \_\_\_\_\_ BY: \_\_\_\_\_  
DEFICIENCIES ? Y/N

COMMENTS \_\_\_\_\_

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**SECTION 8: CERTIFICATE OF COMPLIANCE (To be completed by Floodplain Administrator/Manager or his/her representative).**

Certificate of Compliance issued: DATE: \_\_\_\_\_ BY: \_\_\_\_\_

**CERTIFICATE OF COMPLIANCE  
FOR DEVELOPMENT IN SPECIAL FLOOD HAZARD AREA  
(OWNER MUST RETAIN)**

**PERMIT NUMBER:** \_\_\_\_\_

**PERMIT DATE:** \_\_\_\_\_

**PURPOSE –**

**CONSTRUCTION LOCATION:** \_\_\_\_\_

**OWNER'S ADDRESS:** \_\_\_\_\_

---

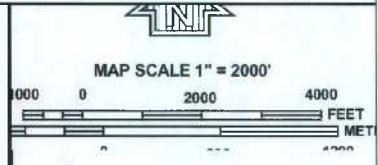
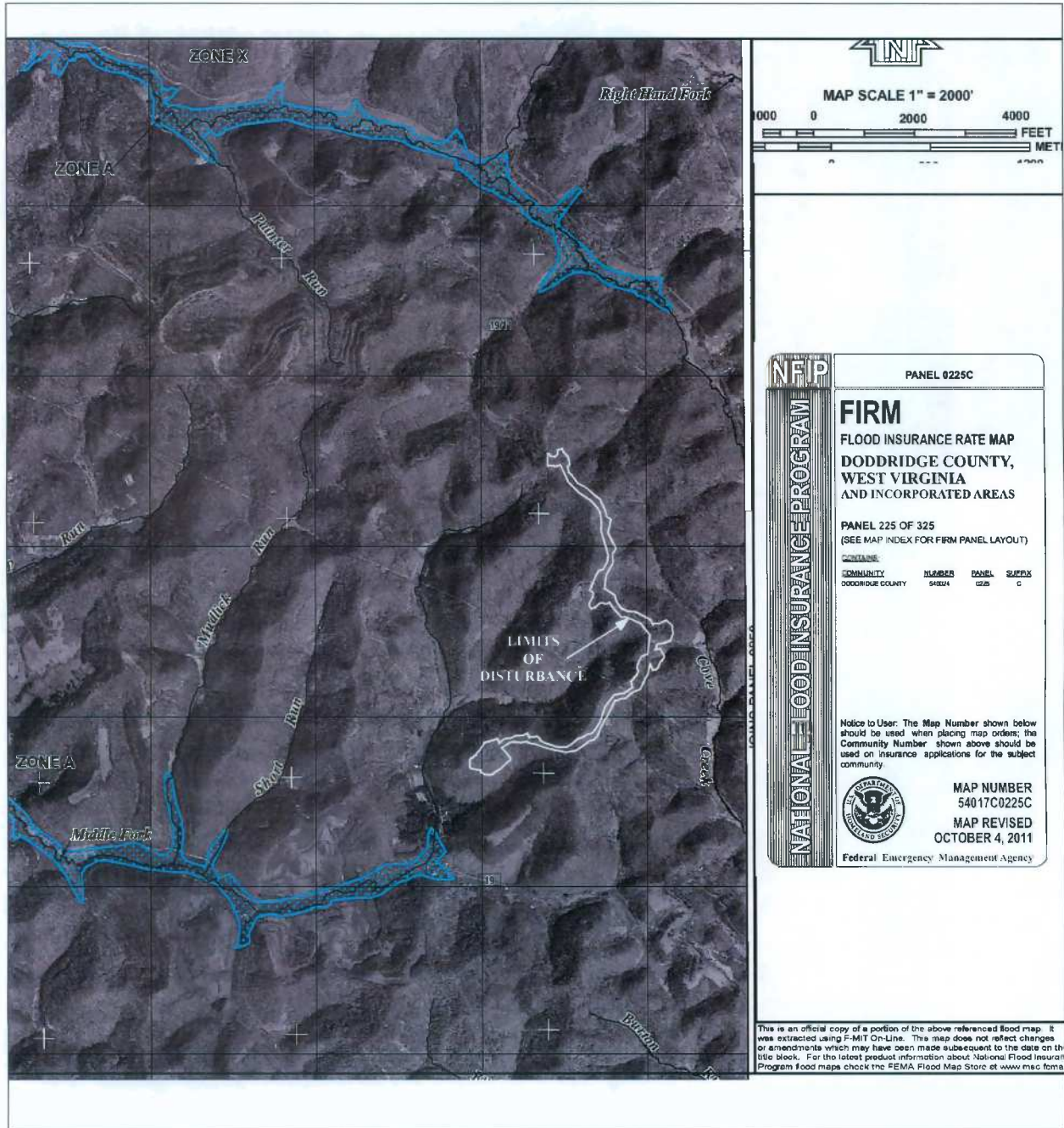
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**THE FOLLOWING MUST BE COMPLETED BY THE FLOODPLAIN ADMINISTRATOR/MANAGER OR HIS/HER AGENT.**

**COMPLIANCE IS HEREBY CERTIFIED WITH THE REQUIREMENT OF THE FLOODPLAIN ORDINANCE ADOPTED BY THE COUNTY COMMISSION OF DODDRIDGE COUNTY ON MAY 21, 2013.**

**SIGNED \_\_\_\_\_ DATE \_\_\_\_\_**

# OXFD 10 FEMA MAP



PANEL 0225C

**FIRM**  
**FLOOD INSURANCE RATE MAP**  
**DODDRIDGE COUNTY,**  
**WEST VIRGINIA**  
**AND INCORPORATED AREAS**

PANEL 225 OF 325  
 (SEE MAP INDEX FOR FIRM PANEL LAYOUT)

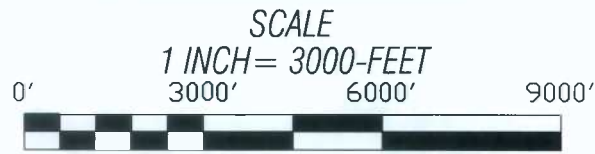
**CONTAINS:**

COMMUNITY	NUMBER	PANEL	SUFFIX
DODDRIDGE COUNTY	54024	0225	C

Notice to User: The Map Number shown below should be used when placing map orders; the Community Number shown above should be used on insurance applications for the subject community.

**MAP NUMBER**  
 54017C0225C  
**MAP REVISED**  
 OCTOBER 4, 2011  
 Federal Emergency Management Agency

This is an official copy of a portion of the above referenced flood map. It was extracted using F-MIT On-Line. The map does not reflect changes or amendments which may have been made subsequent to the date on the title block. For the latest product information about National Flood Insurance Program flood maps check the FEMA Flood Map Store at [www.msc.fema.gov](http://www.msc.fema.gov)



JOB #: 8031  
 DRAWN BY: CMH  
 DATE: 04-14-14  
 SCALE: 1" = 3000'

**OXFD 10**

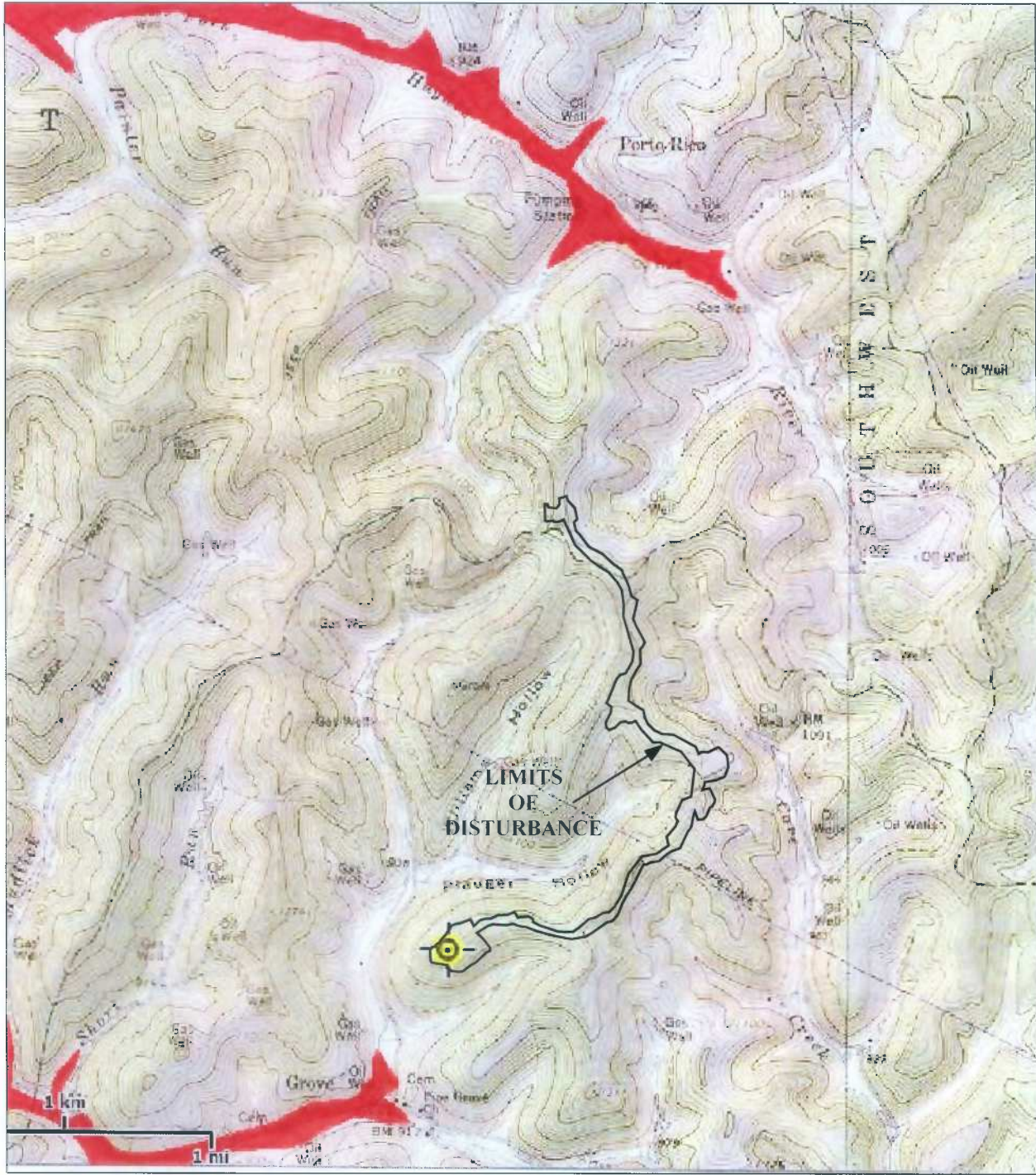
THIS DOCUMENT WAS PREPARED BY:  
 SMITH LAND SURVEYING, INC.  
 FOR: CNX

**Professional Energy Consultants**  
 A DIVISION OF SMITH LAND SURVEYING, INC.

SURVEYORS  
 ENGINEERS  
 ENVIRONMENTAL  
 PROJECT MGMT.  
 WWW.SLSURVEYS.COM



# OXFD 10 WV FLOOD TOOL MAP



SCALE

1 INCH = 2000-FEET

0'                      2000'                      4000'                      6000'



**NOTES**

FEMA MAP NUMBER  
54017C0225C

## OXFD 10

THIS DOCUMENT WAS PREPARED BY:  
SMITH LAND SURVEYING, INC.  
FOR: CNX



**Professional Energy Consultants**  
A DIVISION OF SMITH LAND SURVEYING, INC.



SURVEYORS  
ENGINEERS  
ENVIRONMENTAL  
PROJECT MGMT.  
  
WWW.SLSSURVEYS.COM

(304) 462-5634



**CONSOL ENERGY**

JOB #: 8031

DRAWN BY: CMH

DATE: 04-14-14

SCALE: 1" = 2000'

STATE OF WEST VIRGINIA,  
COUNTY OF DODDRIDGE, TO WIT

I, Virginia Nicholson, Editor of THE  
HERALD RECORD, a weekly newspaper  
published regularly, in Doddridge County,  
West Virginia, Do Hereby Certify Upon  
Oath That the Accompanying Legal Notice  
Entitled:

*Floodplain Permit*  
*EX 14-201*  
*Antex*

was published in said paper for *2*  
successive weeks beginning with the issue  
of *May 6<sup>th</sup>* 2014 and  
ending with the issue of

*May 13<sup>th</sup>* 2014 and  
that said notice contains *189*

WORD SPACE at *115* cents a word  
amounts to the sum of \$ *21.74*

FOR FIRST PUBLICATION, SECOND  
PUBLICATION IS 75% OF THE FIRST  
PUBLICATION

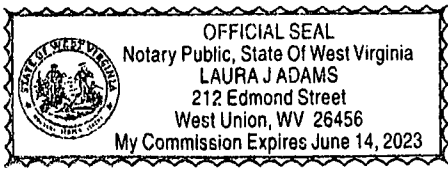
\$ *16.31*  
and each publication thereafter  
\$ *38.05* TOTAL

EDITOR  
*Virginia Nicholson*

SWORN TO AND SUBSCRIBED  
BEFORE ME THIS THE ..... DAY  
OF ..... 2014

NOTARY PUBLIC  
*Laura J Adams*

LEGAL ADVERTISEMENT:  
Doddridge County  
Floodplain Permit Application  
Please take notice that on the 29th day of April, 2014  
ANTERO RESOURCES CORPORATION, #14-201 filed  
an application for a Floodplain Permit to develop land  
located at or about: SURFACE OWNERS: MICHAEL D  
TRAVIS, NEW MILTON DIST. RT. 18 SOUTH AND  
SUGAR CAMP, TM 4 PARCEL 10  
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 May 20th,  
2014.  
Delivered to the:  
Clerk of the County Court  
118 E. Court Street, West Union, WV 26456  
Beth A. Rogers, Doddridge County Clerk  
Edwin L. "Bo" Wriston, Doddridge County Flood Plain  
Manager  
5-6-2xb



PROJECT INFORMATION

PROJECT NAME: OXFD 10

TAX PARCEL & SURFACE OWNER:

- TAX MAP/PARCEL 10-2 I L MORRIS SOUTHWEST DISTRICT
TOTAL PROPERTY AREA: 8,803.75 ACRES
TX MAP/PARCEL 2-1 CNX GAS LLC COVE DISTRICT
TOTAL PROPERTY AREA: 169.37 ACRES
TAX MAP/PARCEL 2-2 DIANE HICKOCK COVE DISTRICT
TOTAL PROPERTY AREA: 165.13 ACRES
TAX MAP/PARCEL 8 REBECCA SIMPSON ET AL COVE DISTRICT
TOTAL PROPERTY AREA: 98.00 ACRES
TAX MAP/PARCEL 1-12 RONALD FRYE ET AL COVE DISTRICT
TOTAL PROPERTY AREA: 60.00 ACRES
TAX MAP/PARCEL 1-13 RONALD FRYE ET AL COVE DISTRICT
TOTAL PROPERTY AREA: 80.00 ACRES
TAX MAP/PARCEL 5-1 JOSEPH SCHULTE COVE DISTRICT
TOTAL PROPERTY AREA: 130.00 ACRES
TAX MAP/PARCEL 4-21 MICHAEL RUPPERT COVE DISTRICT
TOTAL PROPERTY AREA: 120.25 ACRES
TAX MAP/PARCEL 1-10.1 KEY OIL COMPANY COVE DISTRICT
TOTAL PROPERTY AREA: 20.12 ACRES
TAX MAP/PARCEL 1-10.2 MICHAEL RUPPERT COVE DISTRICT
TOTAL PROPERTY AREA: 19.45 ACRES

(ALL PROPERTIES ARE LOCATED IN DODDRIDGE COUNTY)

OIL AND GAS ROYALTY OWNER:
S.L. CHAPMAN & CYRENE CHAPMAN
COVE DISTRICT
DODDRIDGE COUNTY, WV
TOTAL PROPERTY AREA: 179.00 ± ACRES

SITE LOCATION:

THE OXFD 10 SITE IS LOCATED ON A RIDGE SOUTH OF CO. RT. 19/11, APPROXIMATELY 6,900 FT SOUTH OF THE CO. RT. 54/1 AND CO. RT. 19/11. INTERSECTION.

LOCATION COORDINATES

OXFD 10 ACCESS ROAD ENTRANCE
LATITUDE: 39.168896 LONGITUDE: -80.784864 (NAD 83)

OXFD 10 WELL PAD LOCATION
LATITUDE: 39.153111 LONGITUDE: -80.786373 (NAD 83)

OXFD 10 TANK PAD
LATITUDE: 39.159927 LONGITUDE: -80.756495 (NAD 83)

GENERAL DESCRIPTION

THE WELL PAD AND TANK PAD ARE BEING CONSTRUCTED TO AID IN THE DEVELOPMENT OF INDIVIDUAL MARCELLUS SHALE GAS WELLS.

SITE DISTURBANCE COMPUTATIONS

PAD/CONTAINMENT PAD AREA = 10.5 ± ACRES\*
ACCESS ROAD = 32.1 ± ACRES\*\*
TOTAL SITE DISTURBANCE = 42.6 ± ACRES
\*INCLUDES AREA OF THE TANK PAD & STOCKPILE A
\*\*INCLUDES AREA OF THE ACCESS ROADS, AND STOCKPILES B, C & D

ENTRANCE PERMIT

CNX GAS CO LLC WILL OBTAIN AN ENCROACHMENT PERMIT (FORM MM-109) FROM THE WEST VIRGINIA DEPARTMENT OF TRANSPORTATION DIVISION OF HIGHWAYS, PRIOR TO COMMENCEMENT OF CONSTRUCTION ACTIVITIES.

MISS UTILITY STATEMENT

MISS UTILITY OF WEST VIRGINIA WAS NOTIFIED FOR THE LOCATING OF UTILITIES PRIOR TO THIS PROJECT DESIGN; TICKET #1401697642. IN ADDITION, MISS UTILITY WILL BE CONTACTED PRIOR TO START OF THE PROJECT.

FLOODPLAIN NOTE

THE PROPOSED LIMITS OF DISTURBANCE FOR THIS PROJECT IS LOCATED IN FEMA FLOOD ZONE X, PER THE FLOOD INSURANCE RATE MAP (FIRM) NUMBER 54017C0225C, DATED OCT. 04, 2011.

ENVIRONMENTAL NOTES

A WETLAND DELINEATION WAS PERFORMED ON NOVEMBER 19, 2013 BY ALLSTAR ECOLOGY, LLC (ASE) TO REVIEW THE SITE FOR WATERS AND WETLANDS THAT ARE MOST LIKELY WITHIN THE REGULATORY PURVIEW OF THE U.S. ARMY CORPS OF ENGINEERS (USACE) AND/OR THE WEST VIRGINIA DEPARTMENT OF ENVIRONMENTAL PROTECTION (WVDEP). THE NOVEMBER 25, 2013 REPORT PROJECT FRYE IMPONDMENT ENVIRONMENTAL REPORT WAS PREPARED BY ALLSTAR ECOLOGY, LLC (ASE) SUMMARIZES THE RESULTS OF THE FIELD DELINEATION. THE REPORT DOES NOT, IN ANY WAY, REPRESENT A JURISDICTIONAL DETERMINATION OF THE LANDWARD LIMITS OF WATERS AND WETLANDS WHICH MAY BE REGULATED BY THE USACE OR THE WVDEP. IT IS STRONGLY RECOMMENDED THAT THE AFOREMENTIONED AGENCIES BE CONSULTED IN AN EFFORT TO GAIN WRITTEN CONFIRMATION OF THE DELINEATION DESCRIBED BY THIS REPORT PRIOR TO ENGAGING CONSTRUCTION ON THE PROPERTY DESCRIBED HEREIN. THE DEVELOPER SHALL OBTAIN THE APPROPRIATE PERMITS FROM THE FEDERAL AND/OR STATE REGULATORY AGENCIES PRIOR TO ANY PROPOSED IMPACTS TO WATERS OF THE U.S., INCLUDING WETLAND FILLS AND STREAM CROSSINGS.

GEOTECHNICAL NOTES

A SUBSURFACE INVESTIGATION OF THE PROPOSED SITE WAS PERFORMED BY TRIAD ENGINEERING, INC. THE REPORT PREPARED BY TRIAD ENGINEERING, INC., DATED FEBRUARY 28, 2014, REFLECTS THE RESULTS OF THE SUBSURFACE INVESTIGATION. THE INFORMATION AND RECOMMENDATIONS CONTAINED IN THIS REPORT WERE USED IN THE PREPARATION OF THESE PLANS. PLEASE REFER TO THE SUBSURFACE INVESTIGATION REPORT BY TRIAD ENGINEERING, INC. FOR ADDITIONAL INFORMATION, AS NEEDED.

RESTRICTIONS NOTES:

- 1. THERE ARE NO PERENNIAL STREAMS, LAKES, PONDS, OR RESERVOIRS WITHIN 100 FEET OF THE PAD AND LOD. THERE ARE WETLANDS WITHIN 100 FEET OF THE PAD AND LOD, AND A WAIVER FROM THE WVDEP WILL BE APPLIED FOR THROUGH THE ARMY CORPS OF ENGINEERS.
2. THERE IS NO NATURALLY PRODUCING TROUT STREAMS WITHIN 300 FEET OF THE PAD AND LOD.
3. THERE ARE NO GROUNDWATER INTAKE OR PUBLIC WATER SUPPLY FACILITIES WITHIN 1000 FEET OF THE PAD AND LOD.
4. THERE ARE NO EXISTING WATER WELLS OR DEVELOPED SPRINGS WITHIN 250 FEET OF THE WELL(S) BEING DRILLED.
5. THERE ARE NO OCCUPIED DWELLING STRUCTURES WITHIN 625 FEET OF THE CENTER OF THE PAD.
6. THERE ARE NO AGRICULTURAL BUILDINGS LARGER THAN 2,500 SQUARE FEET WITHIN 625 FEET OF THE CENTER OF THE PAD.

OXFD 10 SITE PLAN
CNX GAS COMPANY, LLC

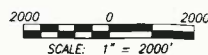
PROPOSED WELL NO. OXFD10AHS, OXFD10BHS, OXFD10CHS, OXFD10DHS, OXFD10EHS, OXFD10FHS, OXFD10GHS, OXFD10HHS & OXFD10IHS

SITUATE ON THE WATERS OF TRIBUTARIES OF S FORK OF HUGHES RIVER IN SOUTHWEST & COVE DISTRICTS, DODDRIDGE COUNTY, WV.



OXFORD QUAD

NEW MILTON QUAD



MISS Utility of West Virginia
1-800-245-4848
West Virginia State Law
(Section XIV: Chapter 24-C)
Requires that you call two
business days before you dig in
the state of West Virginia.
IT'S THE LAW!!

LIST OF DRAWINGS

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03 OVERALL SHEET INDEX & VOLUMES
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35 ACCESS ROAD RECLAMATION PLAN
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LEGEND

Table with 3 columns: EX. (Existing), PROP. (Proposed), and symbols. Includes items like INDEX CONTOUR, BOUNDARY LINE, ROAD EDGE OF GRAVEL/DIRT, etc. Includes a section line diagram and matchline symbols.

NAVITUS
ENERGY ENGINEERING

Telephone: (888) 662-4185 | www.NavitusEng.com

Professional Energy Consultants
SURVEYORS
ENGINEERS
ENVIRONMENTAL
PROJECT MGMT.
www.slsurveys.com



THIS DOCUMENT WAS
PREPARED BY:
NAVITUS ENGINEERING
INC.
FOR: CNX GAS
COMPANY, LLC

COVER SHEET
OXFD 10
SOUTHWEST & COVE DISTRICTS
DODDRIDGE COUNTY, WV

DATE: 04/08/2014

SCALE: AS NOTED

DESIGNED BY: CSK

FILE NO. 8031

SHEET 01 OF 39

OPERATOR

CNX GAS COMPANY, LLC
OPERATOR ID: 494458046
P.O. BOX 1248
JANE LEW, WV 26378
PHONE: (304) 889-2009

ENGINEER

NAVITUS ENGINEERING, INC.
151 WINDY HILL LANE
WINCHESTER, VA 22602
PHONE: (888) 662-4185

SURVEYOR

SMITH LAND SURVEYING, INC.
226 WEST MAIN STREET
P.O. BOX 150
GLENNVILLE, WV 26351
PHONE: (304) 462-5634



### CONSTRUCTION NOTES:

1. THE CONTRACTOR IS TO VERIFY FIELD CONDITIONS PRIOR TO AND DURING CONSTRUCTION AND WILL NOTIFY NAVITUS ENGINEERING AT (888) 662-4185 OR SMITH LAND SURVEYING AT (304) 462-5634 IMMEDIATELY OF ANY DISCREPANCIES BETWEEN ACTUAL FIELD CONDITIONS AND THE APPROVED PLAN. ANY WORK PERFORMED BY THE CONTRACTOR AFTER THE FINDING OF SUCH DISCREPANCIES, SHALL BE DONE AT THE CONTRACTOR'S RISK.
2. METHODS AND MATERIALS USED IN THE CONSTRUCTION OF THE IMPROVEMENTS HEREIN SHALL CONFORM TO THE CURRENT COUNTY CONSTRUCTION STANDARDS AND SPECIFICATIONS AND/OR CURRENT WVDEP EROSION AND SEDIMENT CONTROL BEST MANAGEMENT PRACTICE MANUAL STANDARDS AND SPECIFICATIONS. SHOULD A CONFLICT BETWEEN THE DESIGN, SPECIFICATIONS, AND PLANS OCCUR, THE MOST STRINGENT REQUIREMENT WILL APPLY. THE APPROVAL OF THESE PLANS IN NO WAY RELIEVES THE DEVELOPER OR HIS AGENT OF THE RESPONSIBILITIES CONTAINED IN THE WVDEP EROSION AND SEDIMENT CONTROL BEST MANAGEMENT PRACTICE MANUAL.
3. AN APPROVED SET OF PLANS AND ALL APPLICABLE PERMITS MUST BE AVAILABLE AT THE CONSTRUCTION SITE. ALSO, A REPRESENTATIVE OF THE DEVELOPER MUST BE AVAILABLE AT ALL TIMES.
4. THE CONTRACTOR SHALL PROVIDE ADEQUATE MEANS OF CLEANING MUD FROM TRUCKS AND/OR OTHER EQUIPMENT PRIOR TO ENTERING PUBLIC STREETS, AND IT IS THE CONTRACTOR'S RESPONSIBILITY TO CLEAN STREETS, ALLAY DUST AND TO TAKE WHATEVER MEASURES ARE NECESSARY TO INSURE THAT THE STREETS ARE MAINTAINED IN A CLEAN, MUD AND DUST FREE CONDITION AT ALL TIMES.
5. THE LOCATION OF EXISTING UTILITIES SHOWN IN THESE PLANS ARE FROM FIELD LOCATIONS. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO VERIFY THE EXACT HORIZONTAL AND VERTICAL LOCATION OF ALL EXISTING UTILITIES AS NEEDED PRIOR TO CONSTRUCTION. THE CONTRACTOR SHALL INFORM THE ENGINEER OF ANY CONFLICTS ARISING FROM HIS EXISTING UTILITY VERIFICATION AND THE PROPOSED CONSTRUCTION.
6. THE CONTRACTOR SHALL PROVIDE NOTIFICATION TO THE APPROPRIATE UTILITY COMPANY PRIOR TO CONSTRUCTION OF WATER AND/OR GAS PIPE LINES. INFORMATION SHOULD ALSO BE OBTAINED FROM THE APPROPRIATE AUTHORITY CONCERNING PERMITS, CUT SHEETS, AND CONNECTIONS TO EXISTING LINES.
7. THE CONTRACTOR WILL BE RESPONSIBLE FOR THE REPAIR OF ANY DAMAGES TO THE EXISTING STREETS AND UTILITIES WHICH OCCURS AS A RESULT OF HIS CONSTRUCTION PROJECT WITHIN OR CONTIGUOUS TO THE EXISTING RIGHT-OF-WAY.
8. WHEN GRADING IS PROPOSED WITHIN EASEMENTS OF UTILITIES, LETTERS OF PERMISSION FROM ALL INVOLVED COMPANIES MUST BE OBTAINED PRIOR TO GRADING AND/OR SITE DEVELOPMENT.
9. THE DEVELOPER WILL BE RESPONSIBLE FOR THE RELOCATION OF ANY UTILITIES WHICH IS REQUIRED AS A RESULT OF HIS PROJECT. THE RELOCATION SHOULD BE DONE PRIOR TO CONSTRUCTION.
10. THESE PLANS IDENTIFY THE LOCATION OF ALL KNOWN GRAVESITES. GRAVESITES SHOWN ON THIS PLAN WILL BE PROTECTED IN ACCORDANCE WITH STATE LAW. IN THE EVENT GRAVESITES ARE DISCOVERED DURING CONSTRUCTION, THE OWNER AND ENGINEER MUST BE NOTIFIED IMMEDIATELY.
11. THE CONTRACTOR(S) SHALL NOTIFY OPERATORS WHO MAINTAIN UNDERGROUND UTILITY LINES IN THE AREA OF PROPOSED EXCAVATING OR BLASTING AT LEAST TWO (2) WORKING DAYS, BUT NOT MORE THAN TEN (10) WORKING DAYS, PRIOR TO COMMENCEMENT OF EXCAVATION OR DEMOLITION.
12. CONTRACTOR TO CONTACT OPERATOR AND ENGINEER IF GROUNDWATER IS ENCOUNTERED DURING CONSTRUCTION.
13. THE CONTRACTOR SHALL SCHEDULE A PRE-CONSTRUCTION MEETING WITH THE EROSION AND SEDIMENT CONTROL INSPECTOR, 2 DAYS PRIOR TO THE START OF CONSTRUCTION.
14. THE CONTRACTOR IS RESPONSIBLE FOR ALL FILL MATERIAL TESTING REQUIRED DURING THE CONSTRUCTION OF THIS PROJECT. ALL MATERIAL TEST SHALL BE CONDUCTED BY A CERTIFIED MATERIALS TESTING LABORATORY AND A CERTIFICATION OF THE MATERIALS TESTED SHALL BE PROVIDED BY A LICENSED PROFESSIONAL ENGINEER REPRESENTING THE LABORATORY. ALL TEST RESULTS SHALL BE SUBMITTED TO THE ENGINEER CERTIFYING THE CONSTRUCTED FACILITY. FAILURE TO CONDUCT THE DENSITY TEST SHALL BE CAUSE FOR NON-ACCEPTANCE OF THE CONSTRUCTED FACILITY.
15. THE CONTRACTOR IS RESPONSIBLE FOR CONSTRUCTING THE SITE IN ACCORDANCE WITH THE DESIGN PLANS AND CONSTRUCTION DOCUMENTS AND THE SCOPE OF WORK SHALL CONFORM WITH THE GRADES, BERMS, DEPTHS, DIMENSIONS, ETC. SHOWN HEREON.

### CONSTRUCTION SEQUENCE

- THE DEVELOPMENT OF THIS SITE SHALL BE CONSISTENT WITH THE FOLLOWING GENERAL SEQUENCE OF CONSTRUCTION: THE CONTRACTOR SHALL IMPLEMENT, MAINTAIN, AND OPERATE ALL PROPOSED EROSION AND SEDIMENT CONTROL MEASURES TO EFFECTIVELY MITIGATE THE HAZARD OF ACCELERATED EROSION AND SEDIMENTATION TO ACCEPTABLE LEVELS. MINOR DEVIATIONS FROM THIS SEQUENCE SHALL BE EXECUTED BY THE PROJECT'S SUPERINTENDENT AS NEEDED TO ELIMINATE ANY POTENTIAL EROSION CONDITION THAT MAY ARISE FOR THE DURATION OF THE PROJECT. THE WVDEP OFFICE OF OIL AND GAS SHALL BE NOTIFIED OF ANY AND ALL SUCH DEVIATIONS FROM THE APPROVED PLANS.
- 1) A PRE-CONSTRUCTION CONFERENCE WITH THE CONTRACTOR AND THE APPROPRIATE EROSION AND SEDIMENT CONTROL INSPECTOR 48 HOURS PRIOR TO BEGINNING WORK TO REVIEW THE CONSTRUCTION DRAWINGS AND PROVIDE ANY REQUESTED GUIDANCE
  - 2) STAKE THE LIMITS OF CONSTRUCTION.
  - 3) INSTALL THE ROCK CONSTRUCTION ENTRANCE AS SHOWN ON THE PLANS.
  - 4) INSTALL ALL ORANGE SAFETY FENCE AS SHOWN AROUND ANY DELINEATED STREAMS AND WETLANDS TO CLEARLY IDENTIFY THOSE AREAS THAT ARE NOT TO BE DISTURBED.
  - 5) INSTALL ALL BMP'S (COMPOST FILTER SOCKS, SEDIMENT TRAPS, ETC) AS SHOWN ON THE PLANS AND DETAILS. THE SEDIMENT TRAPS SHOWN ON THIS PLAN WILL FUNCTION AS A PLUNGE POOL TO REDUCE THE VELOCITIES ON THE PROPOSED DITCHES DRAINING INTO THEM. THE RUNOFF DRAINING TO THESE FACILITIES WILL BE SEDIMENT FREE.
  - 6) CLEAR AND GRUB THE ACCESS ROAD, WELL PAD AND TANK PAD AREA. ALL WOODY MATERIAL, BRUSH, TREES, STUMPS, LARGE ROOTS, BOULDERS, AND DEBRIS SHALL BE CLEARED FROM THE SITE AREA AND KEPT TO THE MINIMUM NECESSARY FOR PROPER CONSTRUCTION, INCLUDING THE INSTALLATION OF NECESSARY SEDIMENT CONTROLS. TREES SIX INCHES IN DIAMETER AND LARGER SHALL BE CUT AND LOGS STACKED. SMALLER TREES, BRUSH, & STUMPS SHALL BE CUT AND OR GRUBBED AND WINDROWED IN APPROPRIATE AREAS FOR USE AS SEDIMENT BARRIERS AT WATER DRAINAGE OUTLETS, WINDROWED BELOW THE WELL SITE, USED FOR WILDLIFE HABITAT, BURNED (AS PER WV FOREST FIRE LAWS), REMOVED FROM SITE, OR DISPOSED OF BY OTHER METHODS APPROVED BY DEP.
  - 7) CONSTRUCT THE ACCESS ROAD. DITCH RELIEF CULVERTS SHALL BE INSTALLED AT A GRADE OF 1-8% TO MINIMIZE OUTLET VELOCITIES TO THE EXTENT POSSIBLE. INSTALL OUTLET PROTECTION AS SHOWN ON PLANS. STABILIZE THE ROAD WITH GEOTEXTILE FABRIC & STONE AND SIDE SLOPES AS SPECIFIED WITH PERMANENT SEEDING. STOCKPILE AND STABILIZE EXCESS MATERIAL ALONG THE ACCESS ROAD, AS NEEDED.
  - 8) STRIP THE TOPSOIL FROM THE PAD AREA. ALL STRIPPED TOPSOIL SHALL BE STOCKPILED IN AREAS SHOWN IN THE PLANS AND IMMEDIATELY STABILIZED. ADDITIONAL BMP MEASURE SHALL BE CONSTRUCTED AROUND TOPSOIL STOCKPILES, IF NECESSARY.
  - 9) ALL DITCH LINES SHALL BE CLEANED PRIOR TO INSTALLATION OF LINED PROTECTION. ALL DITCHES SHALL HAVE ROCK AND GEOTEXTILE FABRIC LINING. INSTALL OUTLET PROTECTION ONCE DITCH RELIEF CULVERTS ARE INSTALLED, AS SHOWN ON THIS PLAN.
  - 10) GRADE THE PAD AREA AS SHOWN ON THE PLANS. IMMEDIATELY STABILIZE THE OUTER AREAS OF THE PADS. THE WELL PAD AND TURNAROUND AREA(S) SHALL BE STABILIZED WITH GEOTEXTILE FABRIC & STONE AND THE SIDE SLOPES WITH COCONUT EROSION CONTROL BLANKETS ON ALL SLOPES. APPLY SEED AND MULCH TO ALL DISTURBED AREAS. THIS SHALL INCLUDE ALL AREAS THAT WILL NOT BE SUBJECT TO REGULAR TRAFFIC ACTIVITY (TO BE STABILIZED WITH STONE), OR ANY DISTURBED AREA THAT WILL NOT BE RE-DISTURBED BEFORE SITE RECLAMATION BEGINS.
  - 11) PREVIOUSLY DISTURBED AREAS AND IMMEDIATE DOWN SLOPE AREAS SHALL BE INSPECTED AFTER EACH RAINFALL STORM EVENT AND MONITORED WEEKLY FOR SIGNS OF ACCELERATED EROSION. IMPLEMENT ADDITIONAL BMP'S AS DEEMED NECESSARY. THESE INSPECTIONS SHALL CONTINUE DURING THE DURATION OF THE PROJECT AND SUBSEQUENT SITE RECLAMATION.
  - 12) COMMENCE THE DRILLING ACTIVITY.
  - 13) ONCE DISTURBED AREAS HAVE BEEN RE-VEGETATED AND STABILIZED FOLLOWING RECLAMATION, THE TEMPORARY BMP'S IN THOSE AREAS MAY BE REMOVED. CONTINUE TO MONITOR THESE AREAS TO ENSURE A UNIFORM RATE OF 70% VEGETATIVE COVERAGE IS MAINTAINED. ANY AREAS FOUND TO BE DEFICIENT SHALL BE RE-SEEDING AND MULCHED.

### SITE CLEANUP & RECYCLE PROGRAM

1. GARBAGE, FUELS OR ANY SUBSTANCE HARMFUL TO HUMAN, AQUATIC OR FISH LIFE, WILL BE PREVENTED FROM ENTERING SPRINGS, STREAMS, PONDS, LAKES, WETLANDS OR ANY WATER COURSE OR WATER BODY.
2. OILS, FUELS, LUBRICANTS AND COOLANTS WILL BE PLACED IN SUITABLE CONTAINERS AND DISPOSED PROPERLY.
3. ALL TRASH AND GARBAGE WILL BE COLLECTED AND DISPOSED PROPERLY.
4. ALL SEDIMENT REMOVED FROM SEDIMENT CAPTURING DEVICES SHALL BE PLACED ON THE TOPSOIL STOCKPILE, THEN SEEDED AND MULCHED, AS NECESSARY. ALTERNATIVELY, THE REMOVED SEDIMENT CAN BE TRANSPORTED TO A SITE WITH AN APPROVED PERMIT.

### MAINTENANCE PROGRAM

1. BMP'S WILL BE INSPECTED ON A WEEKLY BASIS AND AFTER EACH MEASURABLE RAINFALL EVENT DURING THE ACTIVE CONSTRUCTION PHASE OF THE PROJECT.
2. ALL REVEGETATED ACCESS ROADS AND FACILITIES ARE TO BE MAINTAINED THROUGHOUT THE LIFE OF EACH STRUCTURE.
3. CULVERTS, ROAD DITCHES, BROAD-BASED DIPS, DIVERSION DITCHES, AND ROCK CHECK DAMS MUST BE MAINTAINED IN PROPER WORKING ORDER AND WILL BE CLEANED OUT, REPAIRED, OR REPLACED AS NECESSARY.
4. FILTER STRIPS AND/OR SILT FENCE WILL BE MAINTAINED.
5. ALL AREAS OF EARTH DISTURBANCE WILL BE REPAIRED WHERE SIGNS OF ACCELERATED EROSION ARE DETECTED.
6. SEEDING AND MULCHING WILL BE REPEATED IN THOSE AREAS THAT APPEAR TO BE FAILING OR HAVE FAILED.

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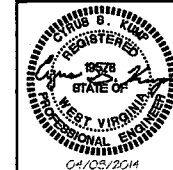
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INC.  
FOR: CNX GAS  
COMPANY, LLC

NOTES  
OXFD 10  
SOUTHWEST & COVE DISTRICTS  
DODDRIDGE COUNTY, WV

DATE: 04/08/2014

SCALE: N/A

DESIGNED BY: CSK

FILE NO. 8031

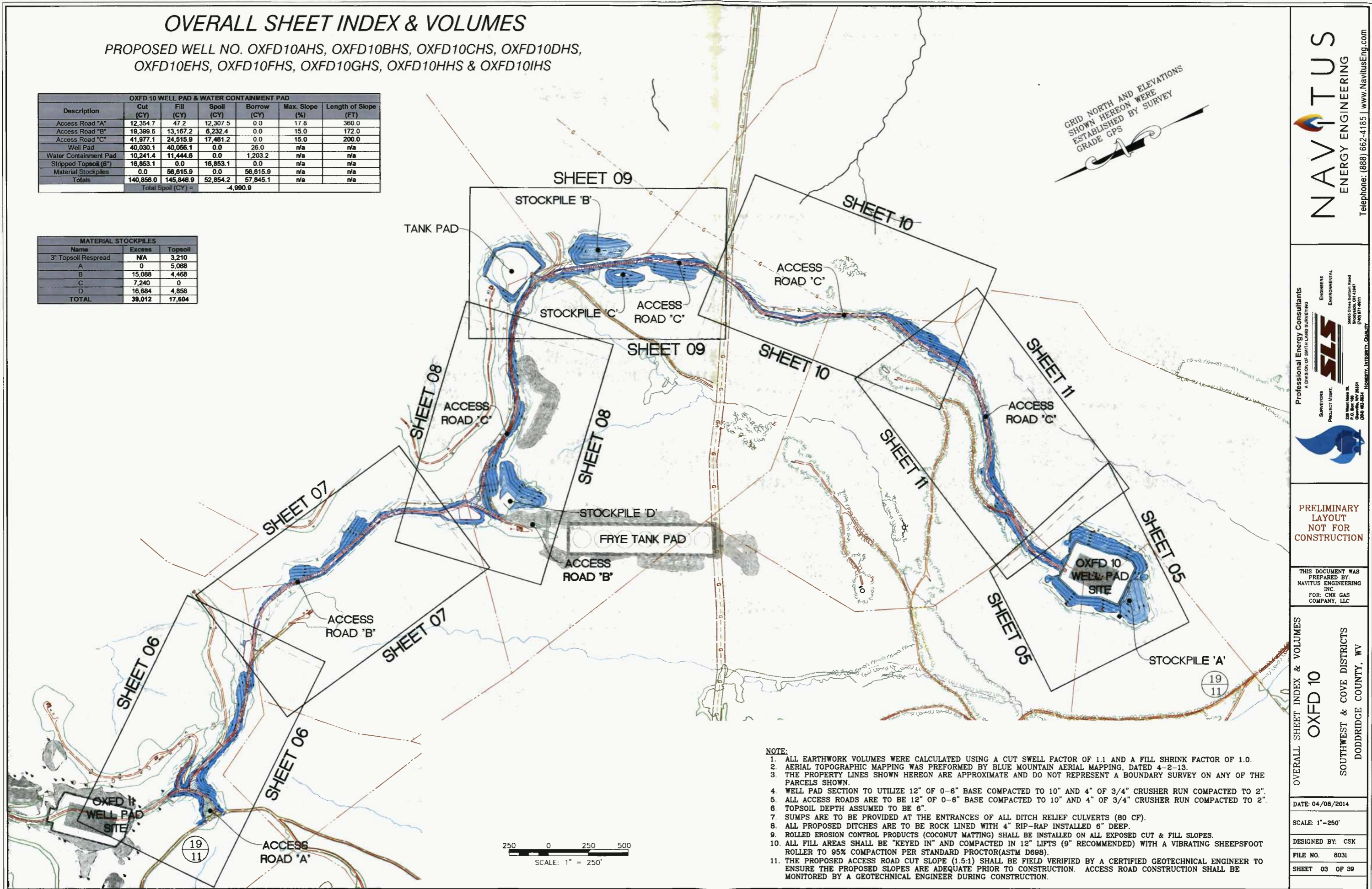
SHEET 02 OF 39

# OVERALL SHEET INDEX & VOLUMES

PROPOSED WELL NO. OXFD10AHS, OXFD10BHS, OXFD10CHS, OXFD10DHS,  
OXFD10EHS, OXFD10FHS, OXFD10GHS, OXFD10HHS & OXFD10IHS

OXFD 10 WELL PAD & WATER CONTAINMENT PAD						
Description	Cut (CY)	Fill (CY)	Spill (CY)	Borrow (CY)	Max. Slope (%)	Length of Slope (FT)
Access Road "A"	12,354.7	47.2	12,307.5	0.0	17.5	360.0
Access Road "B"	19,399.6	13,167.2	6,232.4	0.0	15.0	172.0
Access Road "C"	41,977.1	24,515.9	17,461.2	0.0	15.0	200.0
Well Pad	40,030.1	40,056.1	0.0	26.0	n/a	n/a
Water Containment Pad	10,241.4	11,444.8	0.0	1,203.2	n/a	n/a
Stripped Topsoil (6")	16,853.1	0.0	16,853.1	0.0	n/a	n/a
Material Stockpiles	0.0	56,815.9	0.0	56,815.9	n/a	n/a
<b>Totals</b>	<b>140,856.0</b>	<b>145,846.9</b>	<b>52,854.2</b>	<b>57,845.1</b>	<b>n/a</b>	<b>n/a</b>
Total Spoil (CY) =			-4,990.9			

MATERIAL STOCKPILES		
Name	Excess	Topsoil
3" Topsoil Respread	NA	3,210
A	0	5,068
B	15,088	4,468
C	7,240	0
D	16,684	4,858
<b>TOTAL</b>	<b>38,012</b>	<b>17,604</b>



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  2. AERIAL TOPOGRAPHIC MAPPING WAS PERFORMED BY BLUE MOUNTAIN AERIAL MAPPING, DATED 4-2-13.
  3. THE PROPERTY LINES SHOWN HEREON ARE APPROXIMATE AND DO NOT REPRESENT A BOUNDARY SURVEY ON ANY OF THE PARCELS SHOWN.
  4. WELL PAD SECTION TO UTILIZE 12" OF 0-6" BASE COMPACTED TO 10" AND 4" OF 3/4" CRUSHER RUN COMPACTED TO 2".
  5. ALL ACCESS ROADS ARE TO BE 12" OF 0-6" BASE COMPACTED TO 10" AND 4" OF 3/4" CRUSHER RUN COMPACTED TO 2".
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  7. SUMPS ARE TO BE PROVIDED AT THE ENTRANCES OF ALL DITCH RELIEF CULVERTS (80 CF).
  8. ALL PROPOSED DITCHES ARE TO BE ROCK LINED WITH 4" RIP-RAP INSTALLED 6" DEEP.
  9. ROLLED EROSION CONTROL PRODUCTS (COCONUT MATTING) SHALL BE INSTALLED ON ALL EXPOSED CUT & FILL SLOPES.
  10. ALL FILL AREAS SHALL BE "KEYED IN" AND COMPACTED IN 12" LIFTS (9" RECOMMENDED) WITH A VIBRATING SHEEPSFOOT ROLLER TO 95% COMPACTION PER STANDARD PROCTOR (ASTM D698).
  11. THE PROPOSED ACCESS ROAD CUT SLOPE (1.5:1) SHALL BE FIELD VERIFIED BY A CERTIFIED GEOTECHNICAL ENGINEER TO ENSURE THE PROPOSED SLOPES ARE ADEQUATE PRIOR TO CONSTRUCTION. ACCESS ROAD CONSTRUCTION SHALL BE MONITORED BY A GEOTECHNICAL ENGINEER DURING CONSTRUCTION.

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Product Name:  
221 West Jackson St.  
P.O. Box 108  
Glenwood, WV 26031  
DATE: 04/08/2014  
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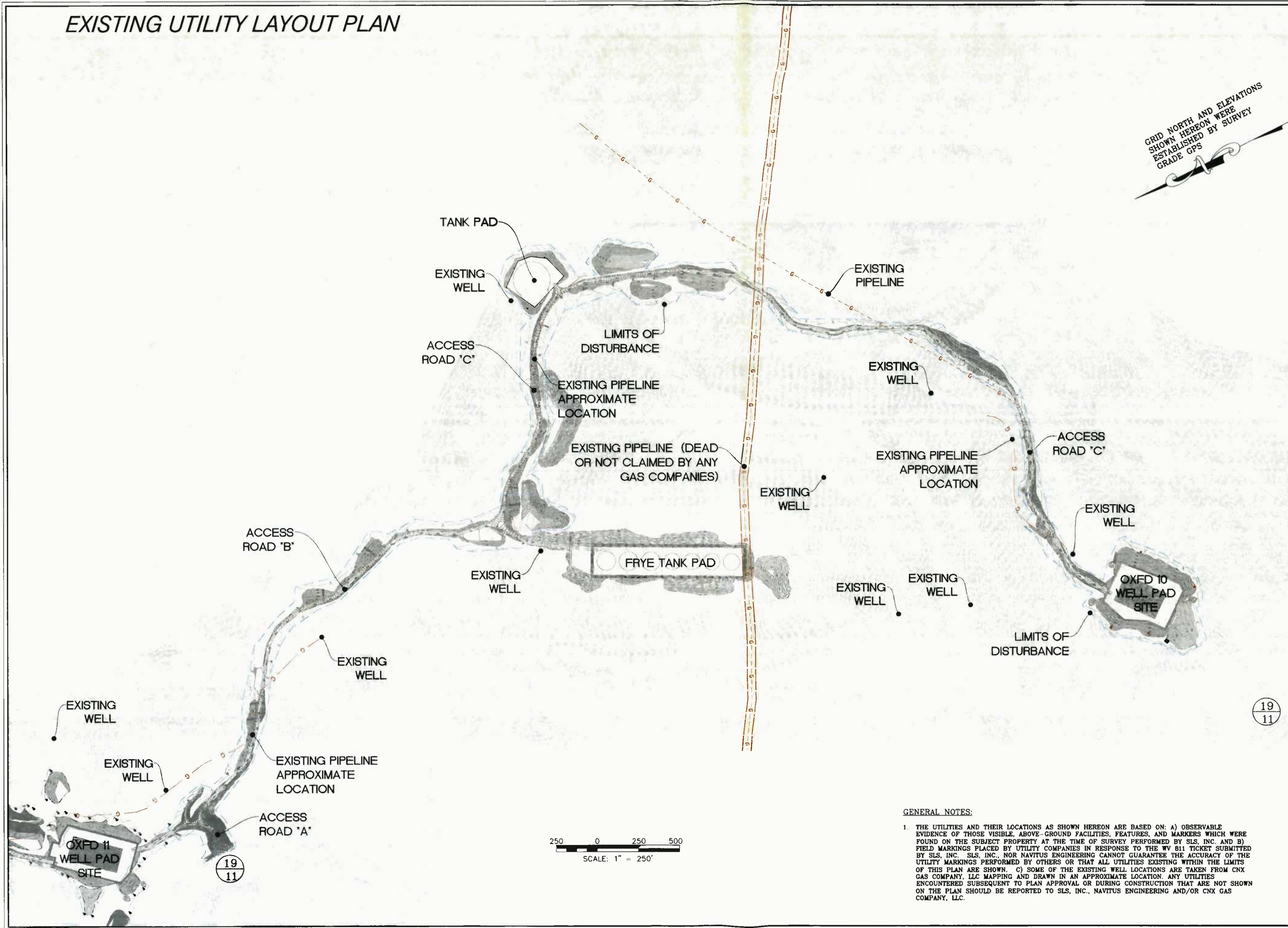
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OVERALL SHEET INDEX & VOLUMES  
**OXFD 10**  
SOUTHWEST & COVE DISTRICTS  
DODDRIDGE COUNTY, WV

DATE: 04/08/2014  
SCALE: 1" = 250'  
DESIGNED BY: CSK  
FILE NO. 8031  
SHEET 03 OF 39

# EXISTING UTILITY LAYOUT PLAN



GRID NORTH AND ELEVATIONS SHOWN HEREON WERE ESTABLISHED BY SURVEY GRADE GPS

250 0 250 500  
SCALE: 1" = 250'

**GENERAL NOTES:**

1. THE UTILITIES AND THEIR LOCATIONS AS SHOWN HEREON ARE BASED ON: A) OBSERVABLE EVIDENCE OF THOSE VISIBLE ABOVE-GROUND FACILITIES, FEATURES, AND MARKERS WHICH WERE FOUND ON THE SUBJECT PROPERTY AT THE TIME OF SURVEY PERFORMED BY SLS, INC. AND B) FIELD MARKINGS PLACED BY UTILITY COMPANIES IN RESPONSE TO THE WV 811 TICKET SUBMITTED BY SLS, INC. SLS, INC. NOR NAVITUS ENGINEERING CANNOT GUARANTEE THE ACCURACY OF THE UTILITY MARKINGS PERFORMED BY OTHERS OR THAT ALL UTILITIES EXISTING WITHIN THE LIMITS OF THIS PLAN ARE SHOWN. C) SOME OF THE EXISTING WELL LOCATIONS ARE TAKEN FROM CNX GAS COMPANY, LLC MAPPING AND DRAWN IN AN APPROXIMATE LOCATION. ANY UTILITIES ENCOUNTERED SUBSEQUENT TO PLAN APPROVAL OR DURING CONSTRUCTION THAT ARE NOT SHOWN ON THE PLAN SHOULD BE REPORTED TO SLS, INC., NAVITUS ENGINEERING AND/OR CNX GAS COMPANY, LLC.

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FOR: CNX GAS COMPANY, LLC

EXISTING UTILITY LAYOUT PLAN  
**OXFD 10**  
SOUTHWEST & COVE DISTRICTS  
DODDRIDGE COUNTY, WV

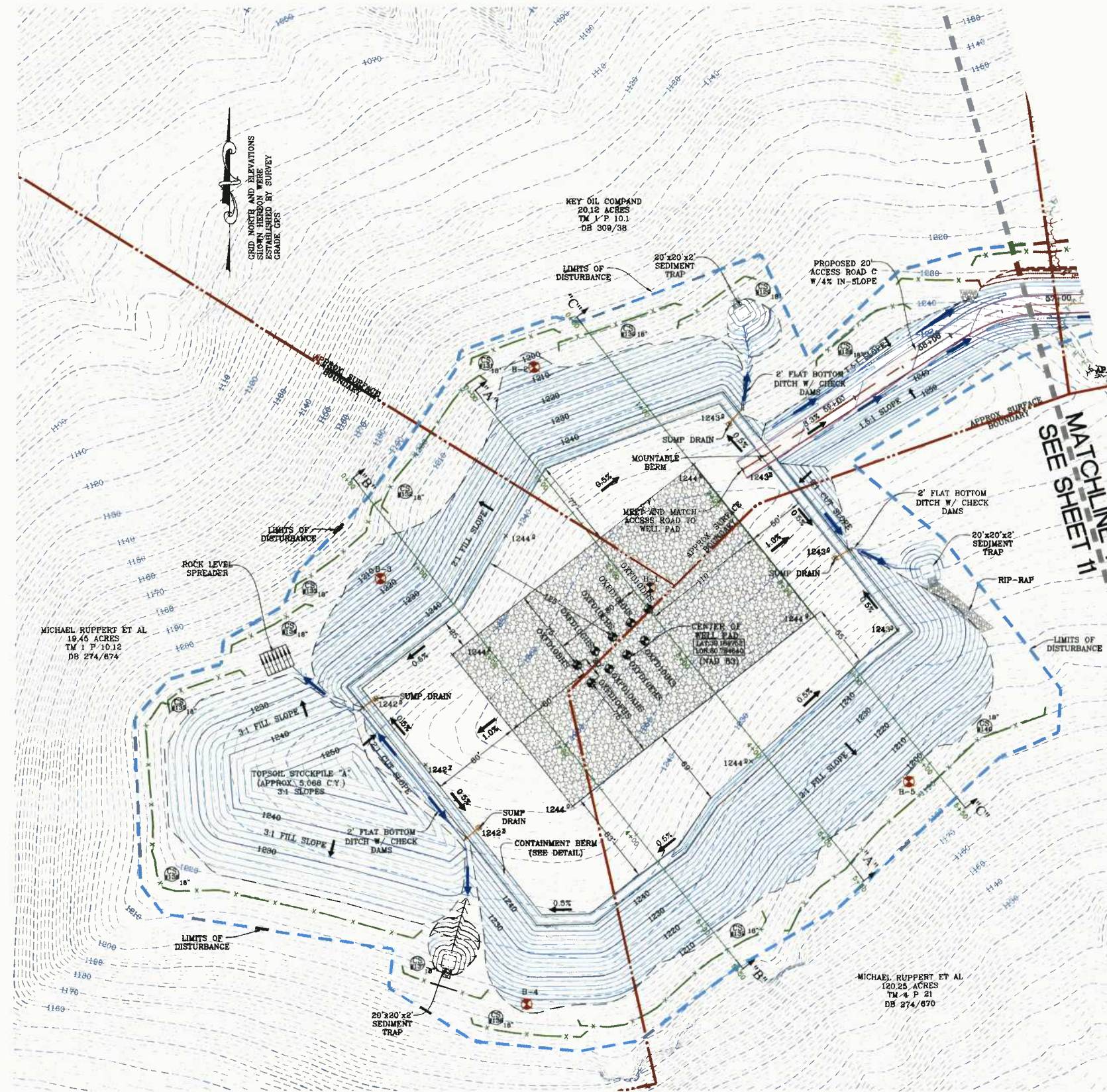
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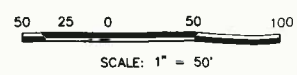
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# WELL PAD DETAILS

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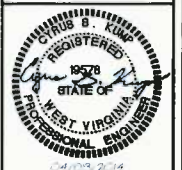


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  2. AERIAL TOPOGRAPHIC MAPPING WAS PERFORMED BY BLUE MOUNTAIN AERIAL MAPPING, DATED 4-2-13.
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  11. THE PROPOSED ACCESS ROAD CUT SLOPE (1.5:1) SHALL BE FIELD VERIFIED BY A CERTIFIED GEOTECHNICAL ENGINEER TO ENSURE THE PROPOSED SLOPES ARE ADEQUATE PRIOR TO CONSTRUCTION. ACCESS ROAD CONSTRUCTION SHALL BE MONITORED BY A GEOTECHNICAL ENGINEER DURING CONSTRUCTION.
  12. FILL SLOPES ON THE WELL PAD SHALL BE CONSTRUCTED USING BONDING BENCHES WITH DRAINS. (SEE DETAILS SHEETS 13 & 14). WELL PAD CONSTRUCTION SHALL BE MONITORED BY A GEOTECHNICAL ENGINEER DURING CONSTRUCTION. PLEASE REFER TO THE SUBSURFACE INVESTIGATION REPORT BY TRIAD ENGINEERING, INC. FOR ADDITIONAL INFORMATION, AS NEEDED.



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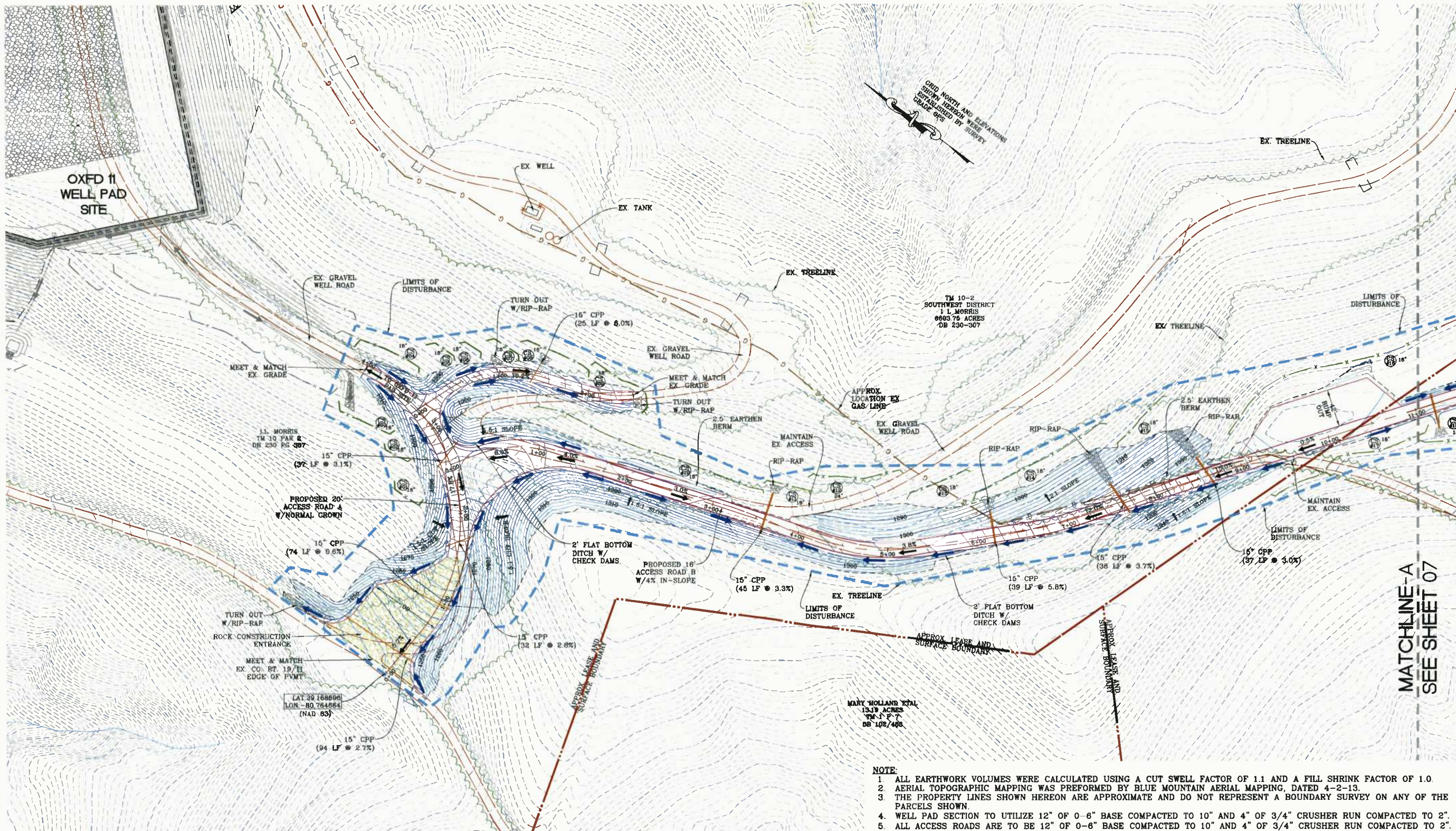
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WELL PAD DETAILS  
**OXFD 10**  
SOUTHWEST & COVE DISTRICTS  
DODDRIDGE COUNTY, WV

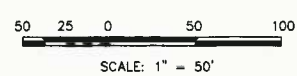
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SHEET 05 OF 39

# ACCESS ROAD DETAILS

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OXFD10EHS, OXFD10FHS, OXFD10GHS, OXFD10HHS & OXFD10IHS



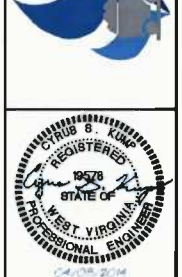
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MATCHLINE-A  
SEE SHEET 07

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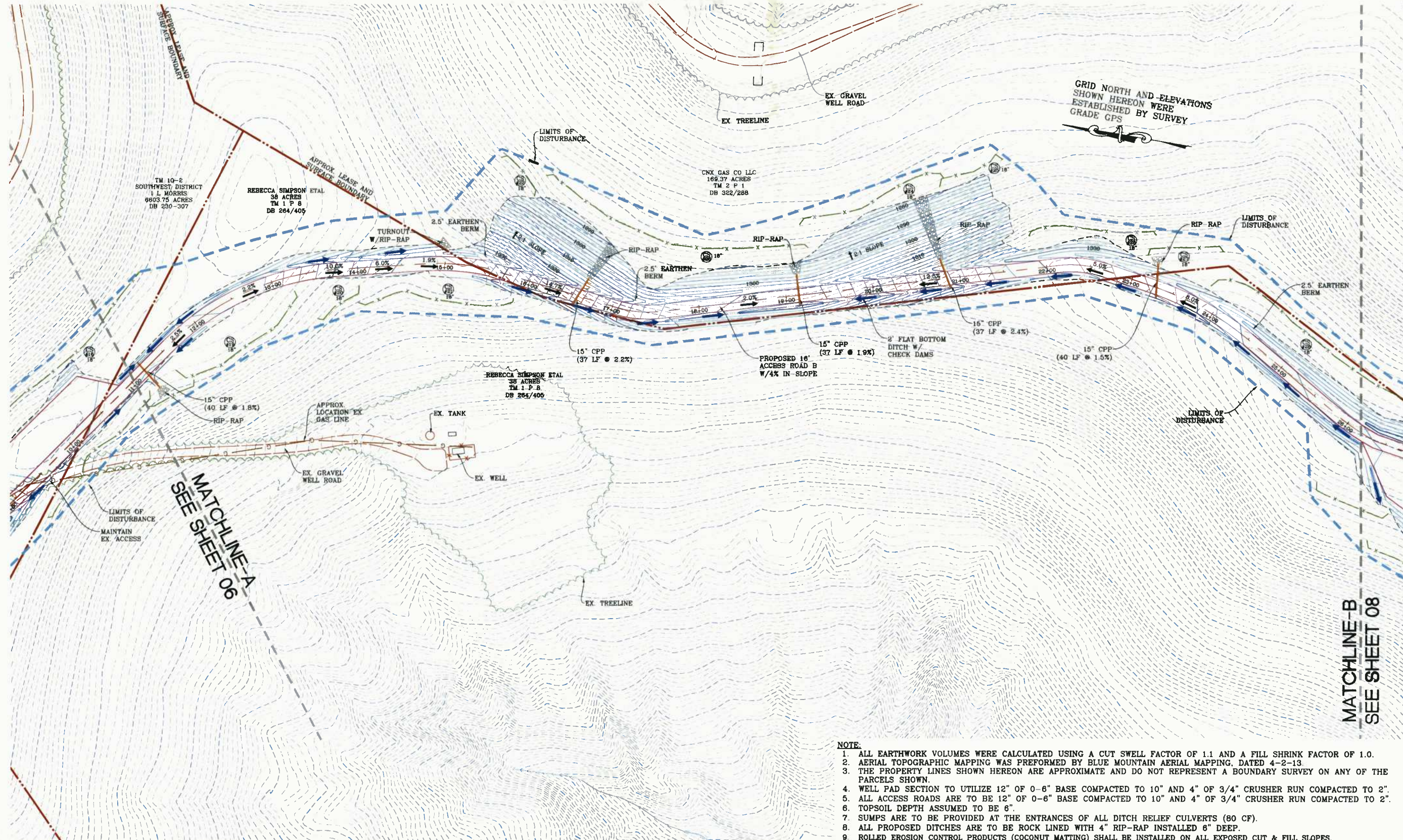
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ACCESS ROAD DETAILS  
**OXFD 10**  
SOUTHWEST & COVE DISTRICTS  
DODDRIDGE COUNTY, WV

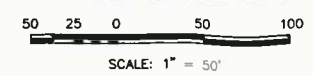
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FILE NO. 8031  
SHEET 06 OF 39

# ACCESS ROAD DETAILS

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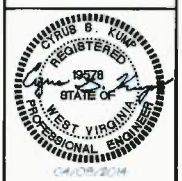


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  7. SUMPS ARE TO BE PROVIDED AT THE ENTRANCES OF ALL DITCH RELIEF CULVERTS (60 CF).
  8. ALL PROPOSED DITCHES ARE TO BE ROCK LINED WITH 4" RIP-RAP INSTALLED 6" DEEP.
  9. ROLLED EROSION CONTROL PRODUCTS (COCONUT MATTING) SHALL BE INSTALLED ON ALL EXPOSED CUT & FILL SLOPES.
  10. ALL FILL AREAS SHALL BE "KEYED IN" AND COMPACTED IN 12" LIFTS (9" RECOMMENDED) WITH A VIBRATING SHEEPSFOOT ROLLER TO 95% COMPACTION PER STANDARD PROCTOR (ASTM D698).
  11. THE PROPOSED ACCESS ROAD CUT SLOPE (1.5:1) SHALL BE FIELD VERIFIED BY A CERTIFIED GEOTECHNICAL ENGINEER TO ENSURE THE PROPOSED SLOPES ARE ADEQUATE PRIOR TO CONSTRUCTION. ACCESS ROAD CONSTRUCTION SHALL BE MONITORED BY A GEOTECHNICAL ENGINEER DURING CONSTRUCTION.



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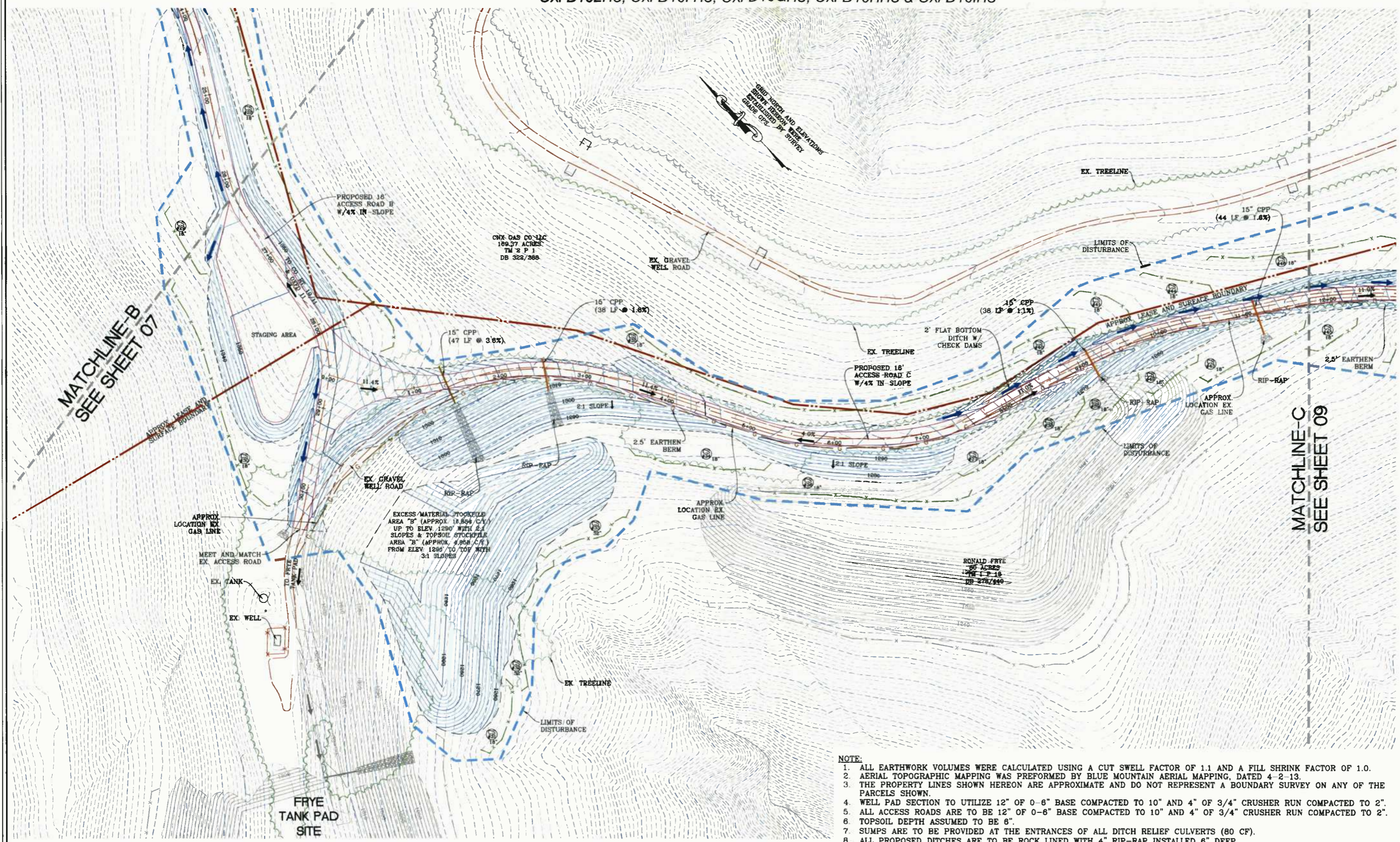
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INC.  
FOR: CNX GAS  
COMPANY, LLC

ACCESS ROAD DETAILS  
OXFD 10  
SOUTHWEST & COVE DISTRICTS  
DODDRIDGE COUNTY, WV

DATE 04/08/2014  
SCALE: 1"=50'  
DESIGNED BY: CSK  
FILE NO. 8031  
SHEET 07 OF 39

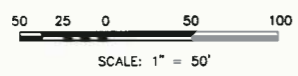
# ACCESS ROAD DETAILS

PROPOSED WELL NO. OXFD10AHS, OXFD10BHS, OXFD10CHS, OXFD10DHS,  
OXFD10EHS, OXFD10FHS, OXFD10GHS, OXFD10HHS & OXFD10IHS



MATCHLINE-B  
SEE SHEET 07

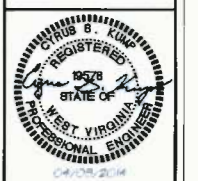
MATCHLINE-C  
SEE SHEET 09



- NOTE:**
1. ALL EARTHWORK VOLUMES WERE CALCULATED USING A CUT SWELL FACTOR OF 1.1 AND A FILL SHRINK FACTOR OF 1.0.
  2. AERIAL TOPOGRAPHIC MAPPING WAS PERFORMED BY BLUE MOUNTAIN AERIAL MAPPING, DATED 4-2-13.
  3. THE PROPERTY LINES SHOWN HEREON ARE APPROXIMATE AND DO NOT REPRESENT A BOUNDARY SURVEY ON ANY OF THE PARCELS SHOWN.
  4. WELL PAD SECTION TO UTILIZE 12" OF 0-6" BASE COMPACTED TO 10" AND 4" OF 3/4" CRUSHER RUN COMPACTED TO 2".
  5. ALL ACCESS ROADS ARE TO BE 12" OF 0-6" BASE COMPACTED TO 10" AND 4" OF 3/4" CRUSHER RUN COMPACTED TO 2".
  6. TOPSOIL DEPTH ASSUMED TO BE 6".
  7. SUMPS ARE TO BE PROVIDED AT THE ENTRANCES OF ALL DITCH RELIEF CULVERTS (80 CF).
  8. ALL PROPOSED DITCHES ARE TO BE ROCK LINED WITH 4" RIP-RAP INSTALLED 6" DEEP.
  9. ROLLED EROSION CONTROL PRODUCTS (COCONUT MATTING) SHALL BE INSTALLED ON ALL EXPOSED CUT & FILL SLOPES.
  10. ALL FILL AREAS SHALL BE "KEYED IN" AND COMPACTED IN 12" LIFTS (9" RECOMMENDED) WITH A VIBRATING SHEEPSFOOT ROLLER TO 95% COMPACTION PER STANDARD PROCTOR (ASTM D698).
  11. THE PROPOSED ACCESS ROAD CUT SLOPE (1.5:1) SHALL BE FIELD VERIFIED BY A CERTIFIED GEOTECHNICAL ENGINEER TO ENSURE THE PROPOSED SLOPES ARE ADEQUATE PRIOR TO CONSTRUCTION. ACCESS ROAD CONSTRUCTION SHALL BE MONITORED BY A GEOTECHNICAL ENGINEER DURING CONSTRUCTION.

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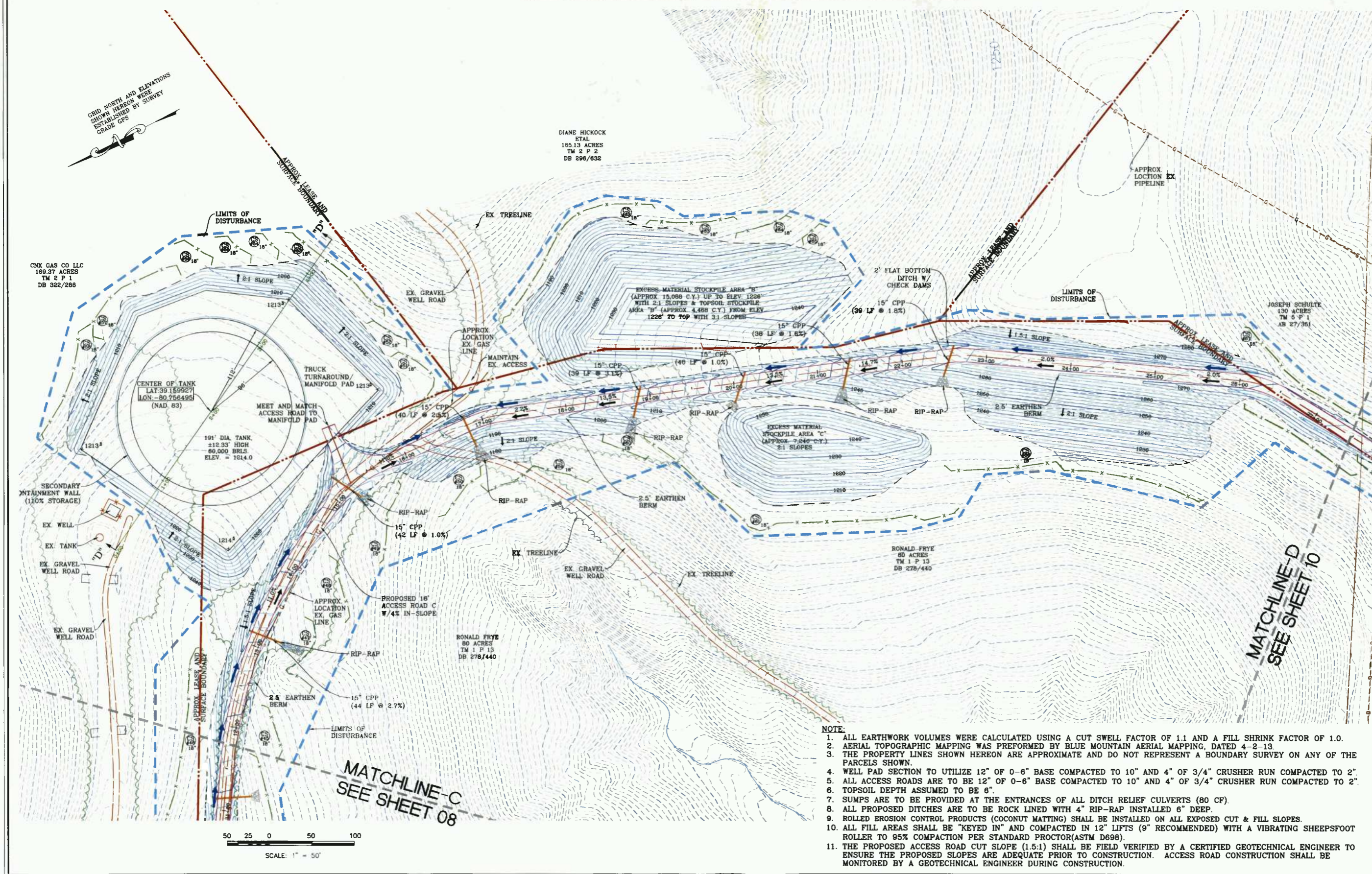
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ACCESS ROAD DETAILS  
**OXFD 10**  
SOUTHWEST & COVE DISTRICTS  
DODDRIDGE COUNTY, WV

DATE: 04/08/2014  
SCALE: 1"=50'  
DESIGNED BY: CSK  
FILE NO. 8031  
SHEET 08 OF 39

# ACCESS ROAD DETAILS

PROPOSED WELL NO. OXFD10AHS, OXFD10BHS, OXFD10CHS, OXFD10DHS,  
OXFD10EHS, OXFD10FHS, OXFD10GHS, OXFD10HHS & OXFD10IHS

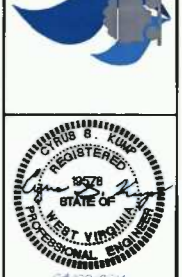


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  3. THE PROPERTY LINES SHOWN HEREON ARE APPROXIMATE AND DO NOT REPRESENT A BOUNDARY SURVEY ON ANY OF THE PARCELS SHOWN.
  4. WELL PAD SECTION TO UTILIZE 12" OF 0-6" BASE COMPACTED TO 10" AND 4" OF 3/4" CRUSHER RUN COMPACTED TO 2".
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  6. TOPSOIL DEPTH ASSUMED TO BE 6".
  7. SUMPS ARE TO BE PROVIDED AT THE ENTRANCES OF ALL DITCH RELIEF CULVERTS (80 CF).
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  9. ROLLED EROSION CONTROL PRODUCTS (COCONUT MATTING) SHALL BE INSTALLED ON ALL EXPOSED CUT & FILL SLOPES.
  10. ALL FILL AREAS SHALL BE "KEYED IN" AND COMPACTED IN 12" LIFTS (9" RECOMMENDED) WITH A VIBRATING SHEEPSFOOT ROLLER TO 95% COMPACTION PER STANDARD PROCTOR (ASTM D698).
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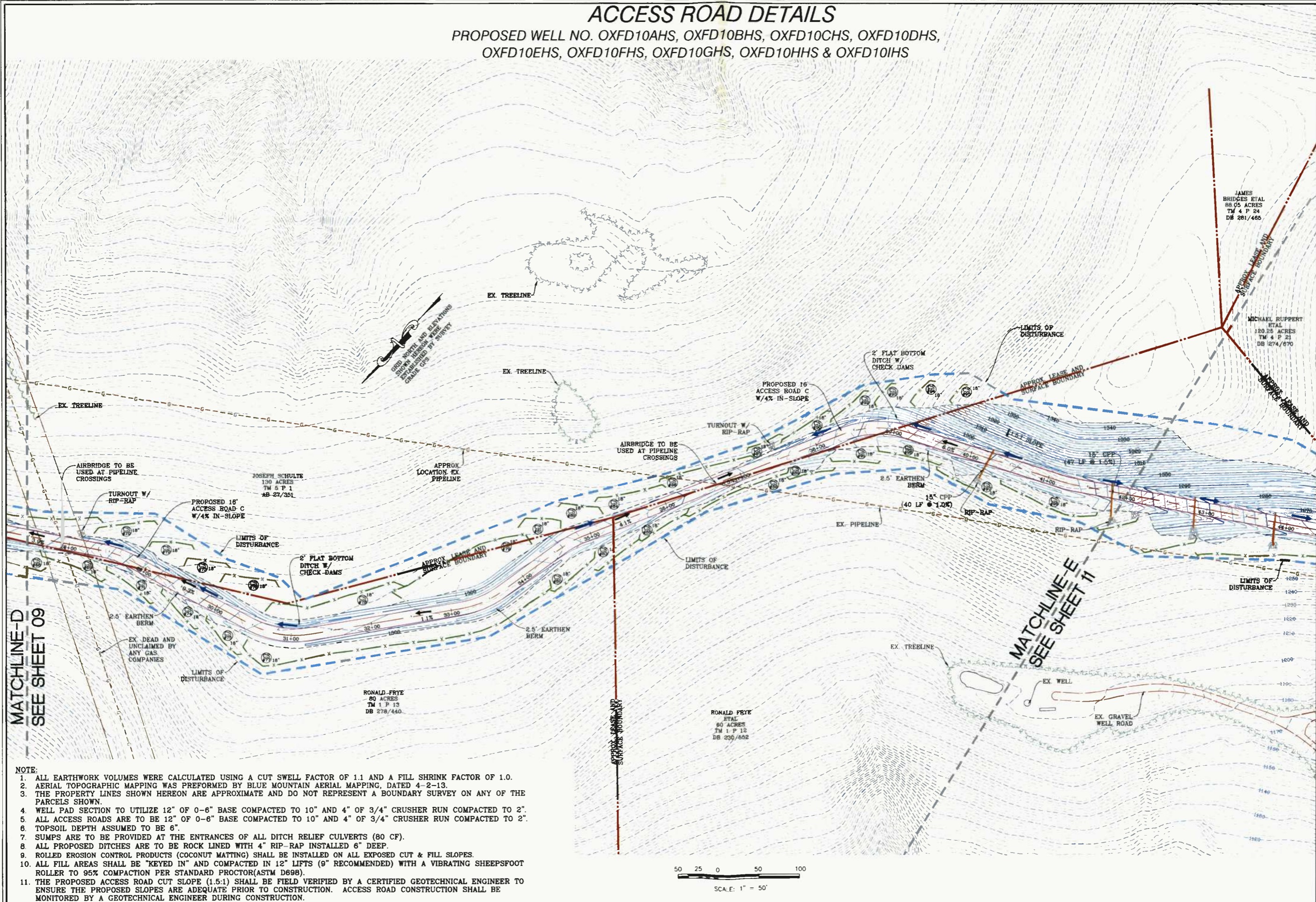
ACCESS ROAD DETAILS  
**OXFD 10**  
SOUTHWEST & COVE DISTRICTS  
DODDRIDGE COUNTY, WV

DATE 04/08/2014  
SCALE 1"=50'  
DESIGNED BY: CSK  
FILE NO. 8031  
SHEET 09 OF 39



# ACCESS ROAD DETAILS

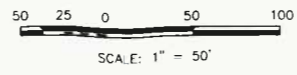
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OXFD10EHS, OXFD10FHS, OXFD10GHS, OXFD10HHS & OXFD10IHS



MATCHLINE-D  
SEE SHEET 09

MATCHLINE-E  
SEE SHEET 11

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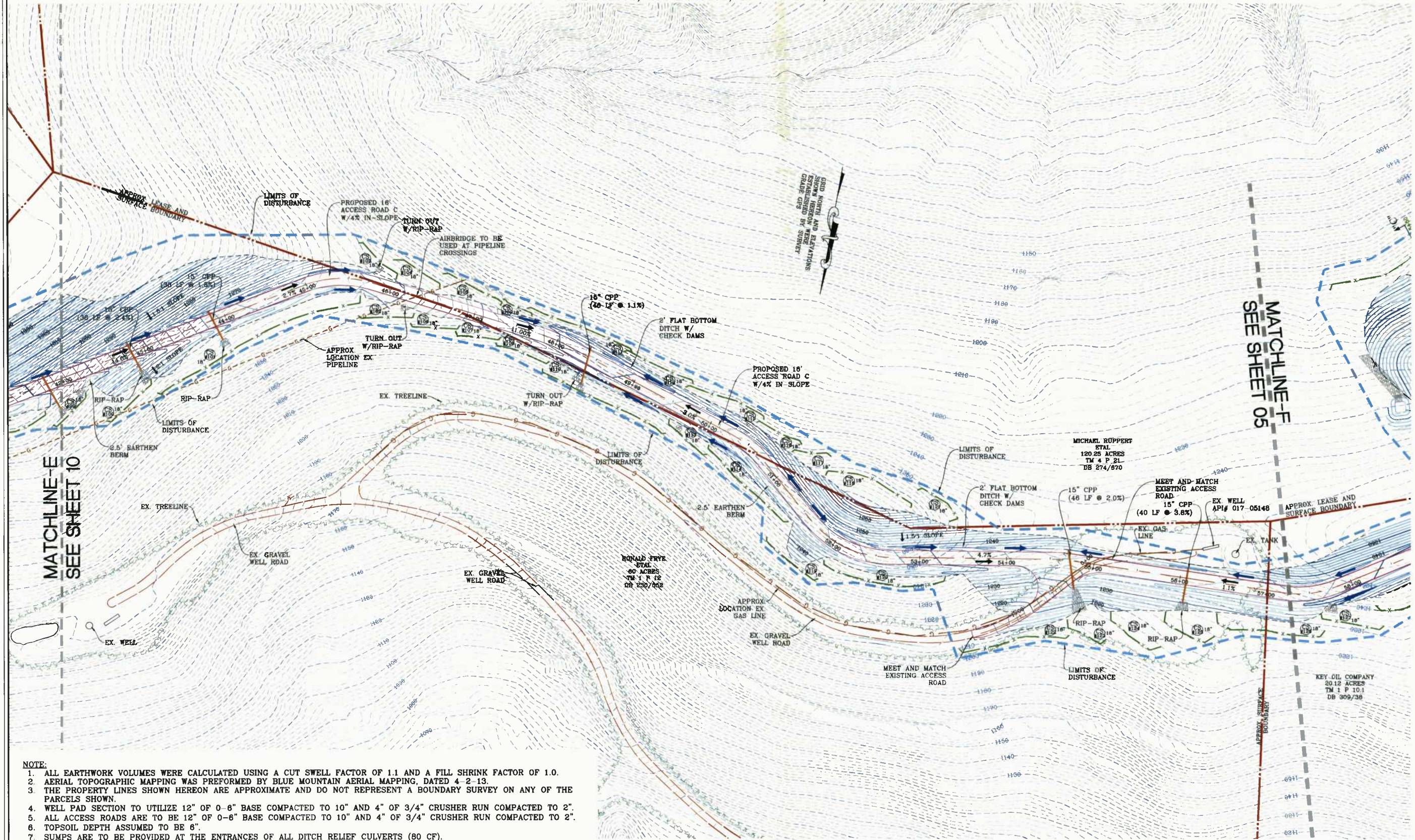
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ACCESS ROAD DETAILS  
**OXFD 10**  
SOUTHWEST & COVE DISTRICTS  
DODDRIDGE COUNTY, WV

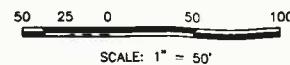
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SCALE: 1"=50'  
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FILE NO. 8031  
SHEET 10 OF 39

# ACCESS ROAD DETAILS

PROPOSED WELL NO. OXFD10AHS, OXFD10BHS, OXFD10CHS, OXFD10DHS,  
OXFD10EHS, OXFD10FHS, OXFD10GHS, OXFD10HHS & OXFD10IHS

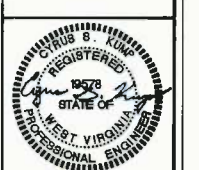


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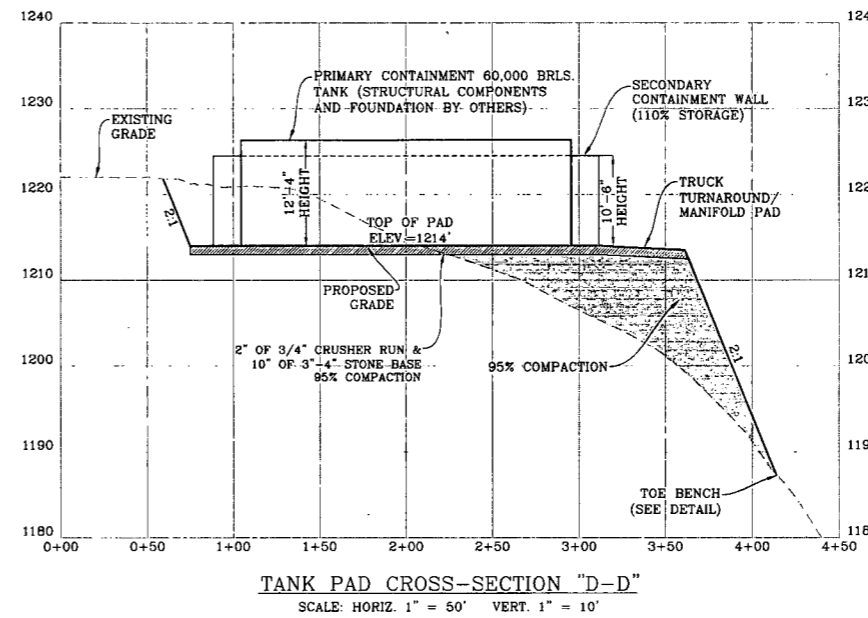
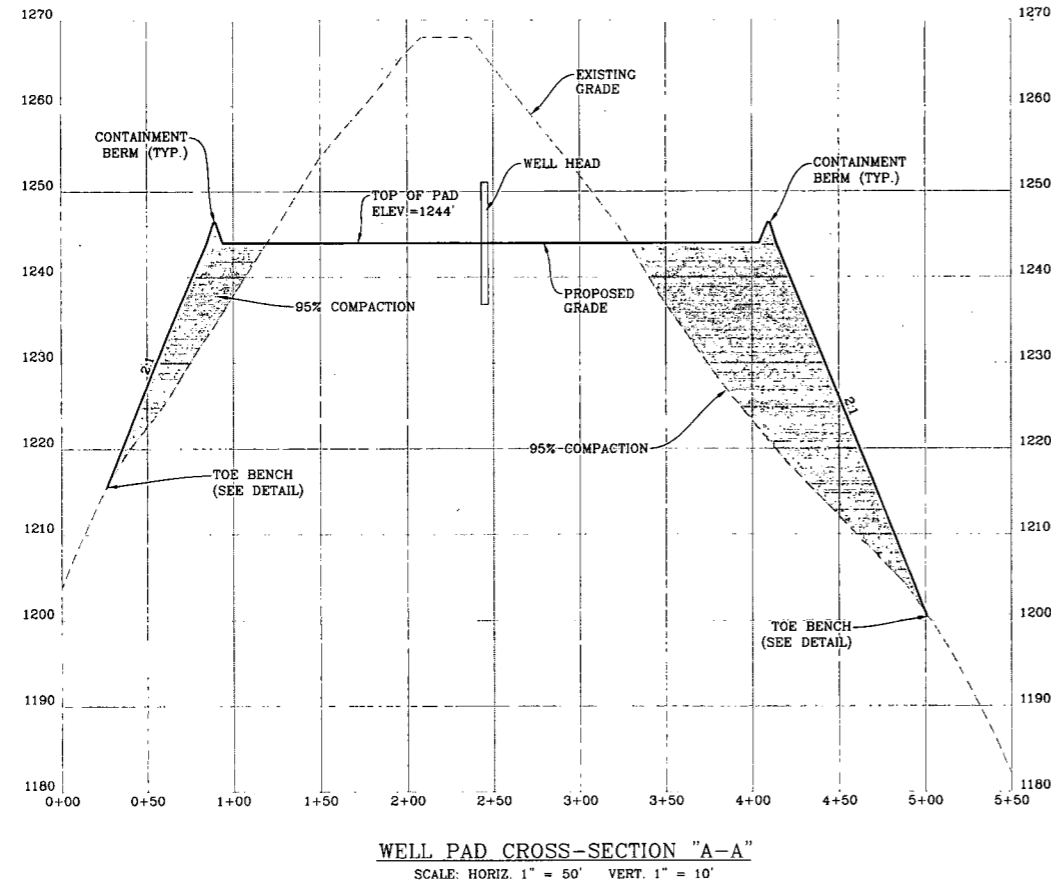


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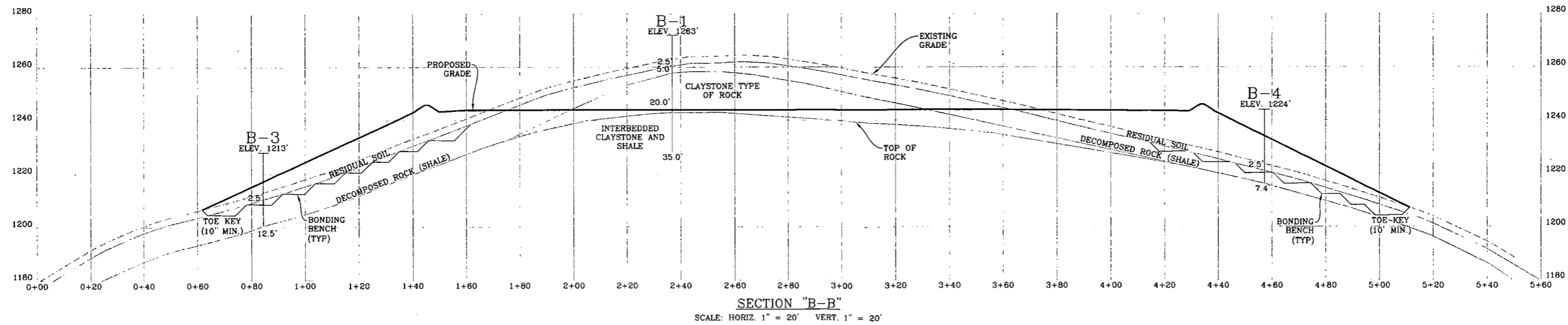
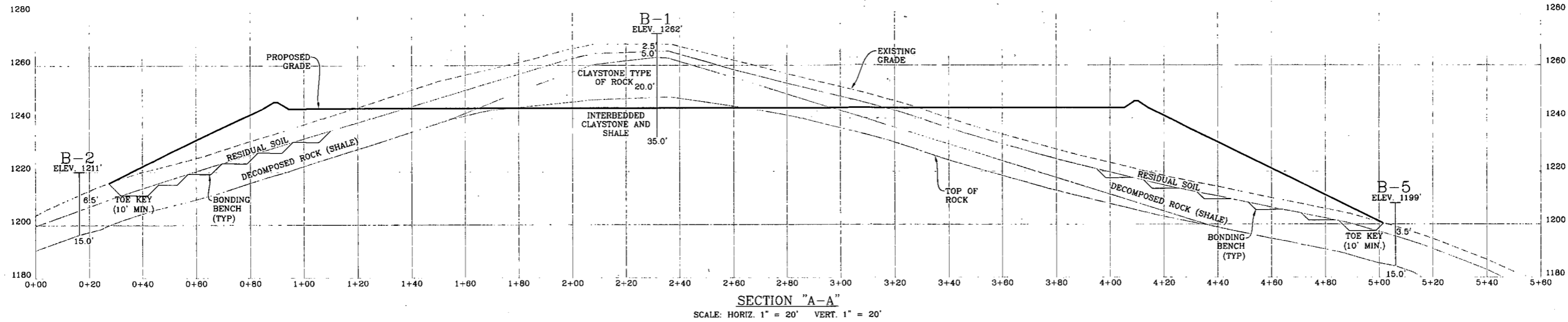
ACCESS ROAD DETAILS  
**OXFD 10**  
SOUTHWEST & COVE DISTRICTS  
DODDRIDGE COUNTY, WV

DATE: 04/08/2014  
SCALE: 1" = 50'  
DESIGNED BY: CSK  
FILE NO. 8031  
SHEET 11 OF 39

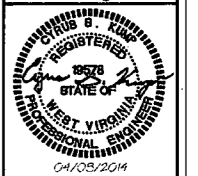
# WELL PAD & TANK PAD SECTIONS



# WELL PAD SECTIONS



**NOTE:**  
THE TOE KEY AND (STEP) BONDING BENCH LOCATIONS SHOWN FOR THE PAD EMBANKMENT FILL SLOPES WERE ESTABLISHED FROM THE AVAILABLE SUBSURFACE INFORMATION THAT WAS COLLECTED BY TRIAD ENGINEERING, INC. THE DECOMPOSED ROCK DEPTHS THAT THE TOE KEY SHALL BE FOUNDED UPON WERE INTERPOLATED FROM THE AVAILABLE BORING DATA AND MAY VARY IN THE FIELD. DURING CONSTRUCTION, IT IS RECOMMENDED THE ADDITIONAL TEST PITTING BE PERFORMED DURING CONSTRUCTION OF THE TOE KEYS TO ENSURE THAT THE TOE KEY IS FOUNDED ON A SOLID, COMPETENT SURFACE.

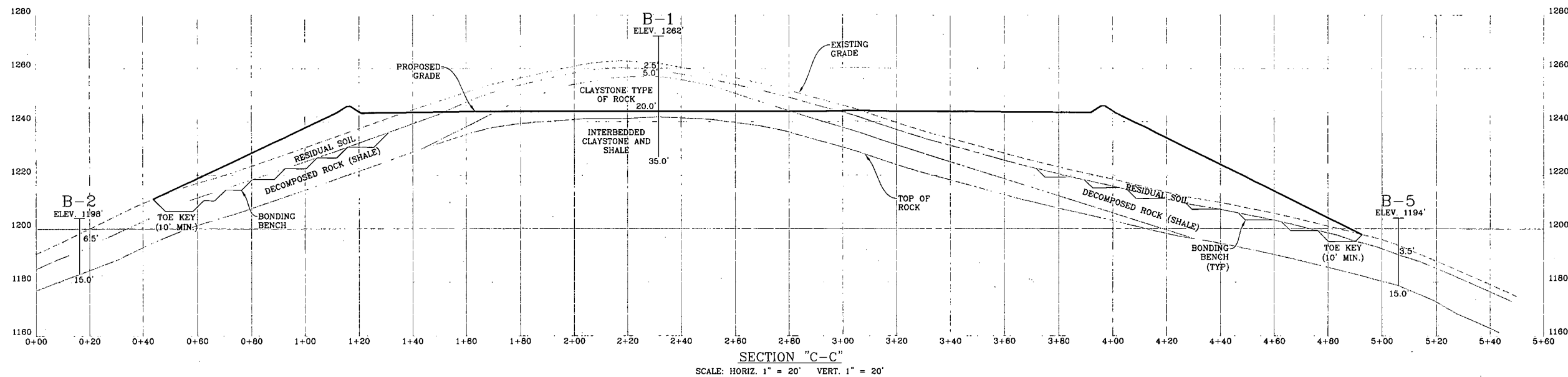


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WELL PAD SECTIONS  
**OXFD 10**  
SOUTHWEST & COVE DISTRICTS  
DODDRIDGE COUNTY, WV

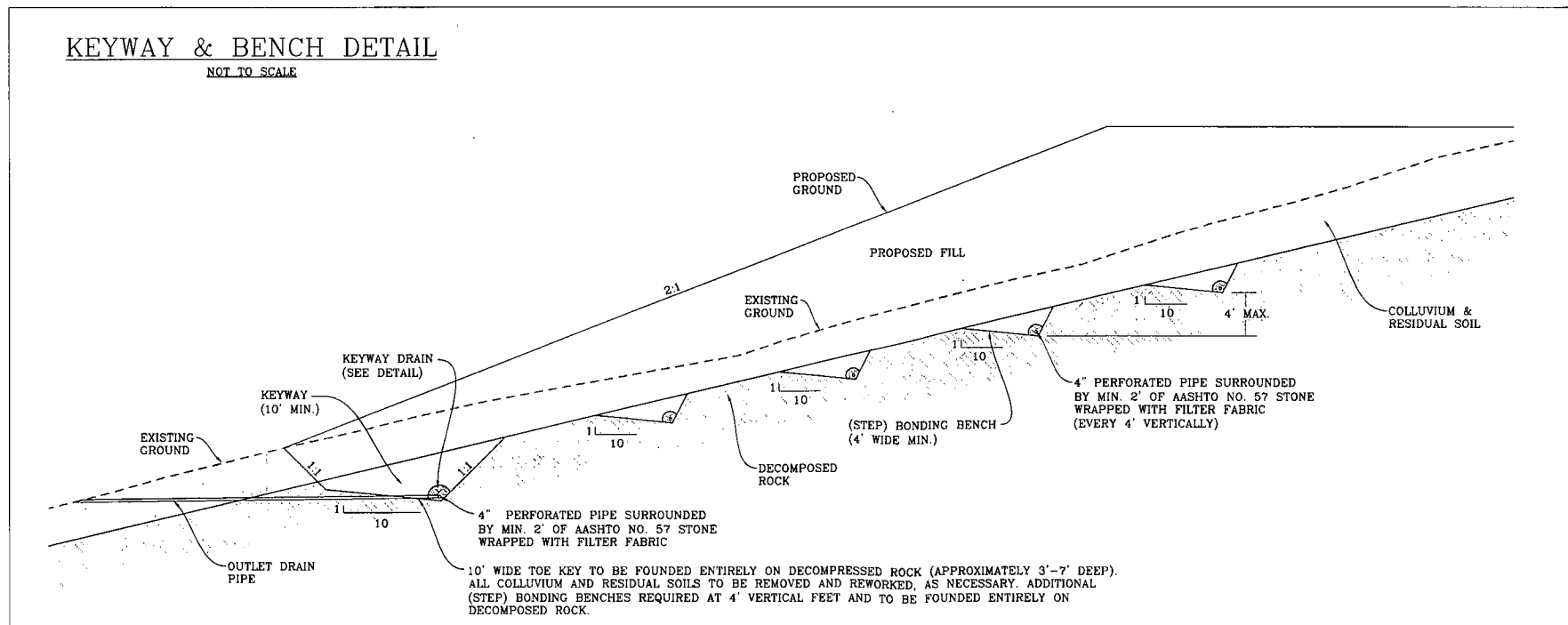
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SCALE: AS SHOWN  
DESIGNED BY: CSK  
FILE NO. 8031  
SHEET 13 OF 39

# WELL PAD SECTIONS



## KEYWAY & BENCH DETAIL

NOT TO SCALE



### NOTE:

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FOR: CNX GAS COMPANY, LLC

WELL PAD SECTIONS  
**OXFD 10**  
SOUTHWEST & COVE DISTRICTS  
DODDRIDGE COUNTY, WV

DATE: 04/08/2014

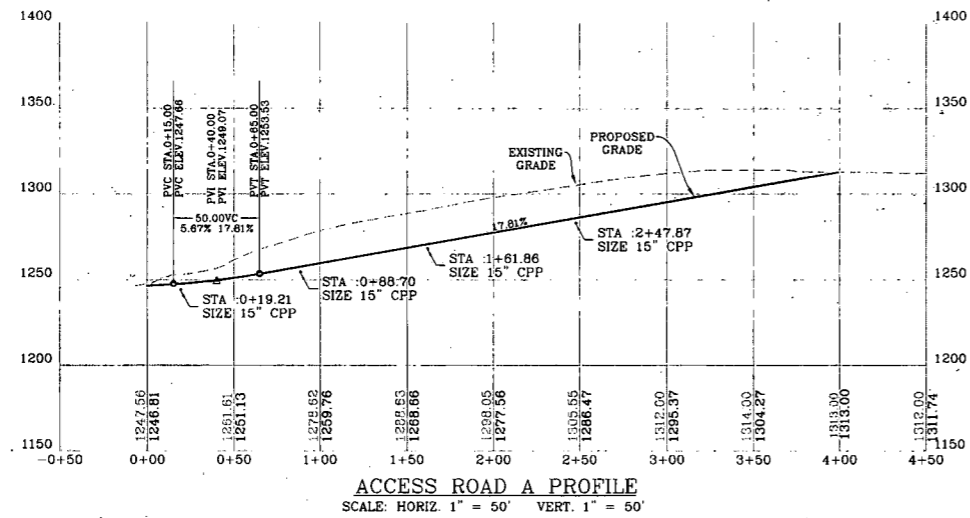
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DESIGNED BY: CSK

FILE NO. 8031

SHEET 14 OF 39

# ACCESS ROAD A PROFILE



ACCESS ROAD A PROFILE  
SCALE: HORIZ. 1" = 50' VERT. 1" = 50'

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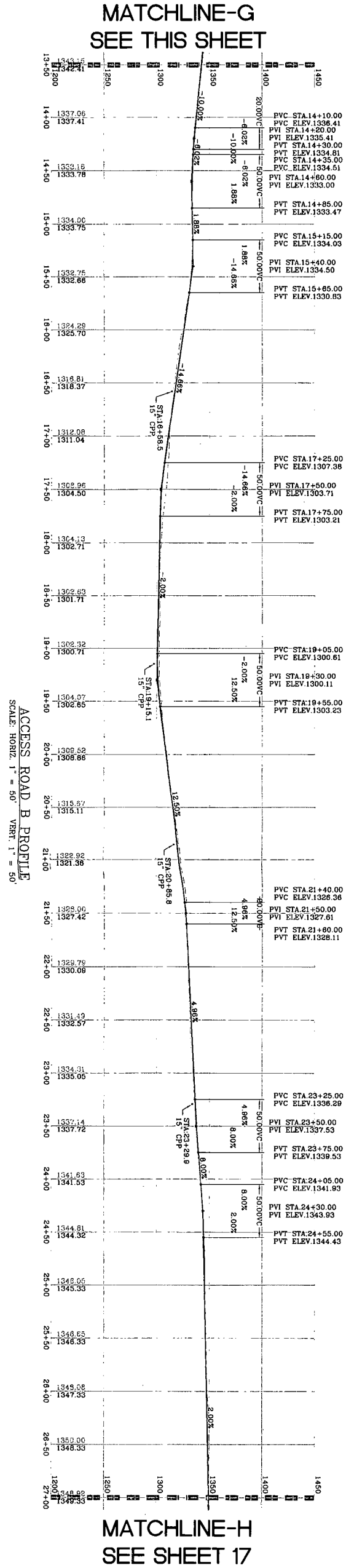
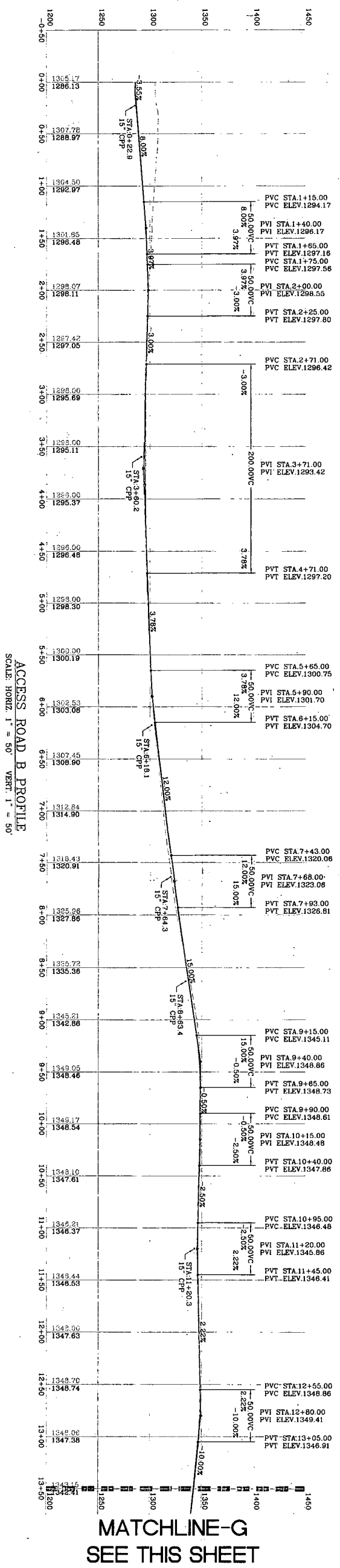


THIS DOCUMENT WAS  
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NAVITUS ENGINEERING  
INC.  
FOR: CNX GAS  
COMPANY, LLC

ACCESS ROAD A PROFILE  
**OXFD 10**  
SOUTHWEST & COVE DISTRICTS  
DODDRIDGE COUNTY, WV

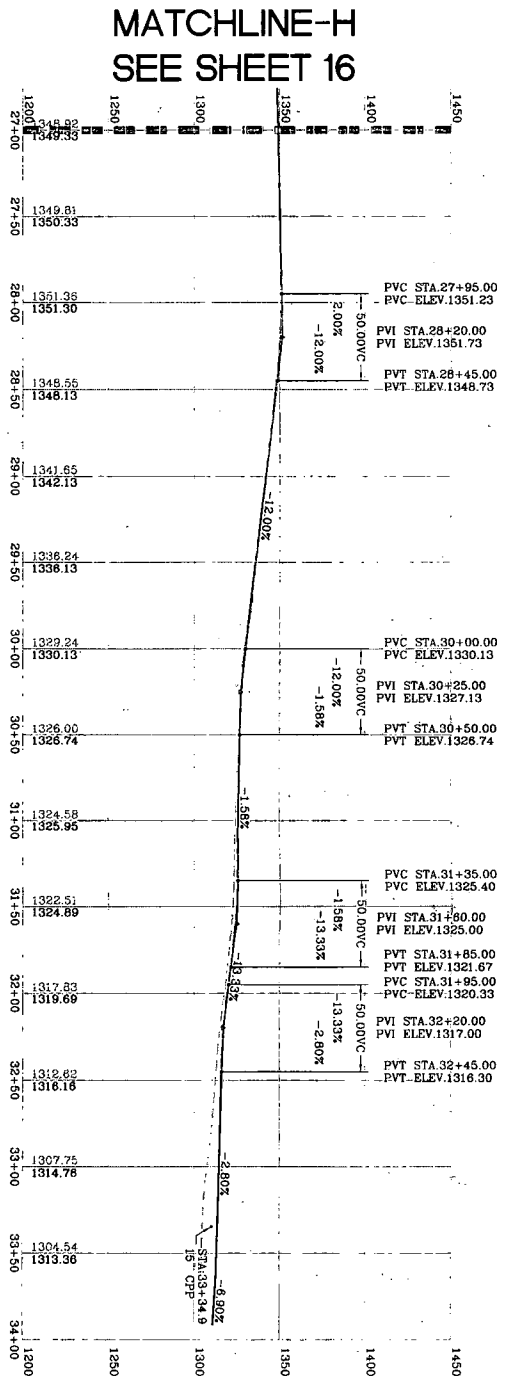
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SHEET 15 OF 39

ACCESS ROAD B PROFILE

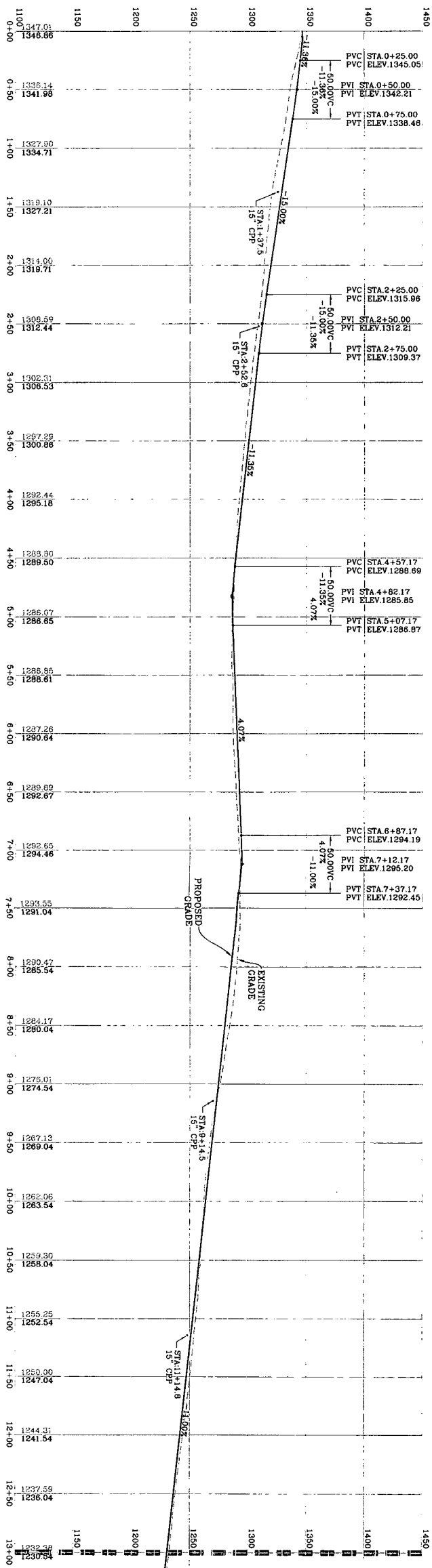


<p>ACCESS ROAD B PROFILE <b>OXFD 10</b> SOUTHWEST &amp; COVE DISTRICTS DODDRIDGE COUNTY, WV</p>	<p>THIS DOCUMENT WAS PREPARED BY NAVITUS ENGINEERING FOR: CNX GAS CORP., LLC 04/03/2014</p>		<p><b>Professional Energy Consultants</b> A DIVISION OF SMITHLAND SURVEYING, INC.</p> <p><b>SLS</b> SURVEYORS ENGINEERS ENVIRONMENTAL PROJECT MGMT.</p> <p>(304) 462-5634 WWW.SLSURVEYS.COM</p>	<p><b>NAVITUS</b> ENERGY ENGINEERING</p> <p>Telephone: (888) 662-4185   www.NavitusEng.com</p>
<p>DATE: 04/08/2014 SCALE: AS NOTED DESIGNED BY: CSK FILE NO: 8031 SHEET: 16 OF 39</p>				

# ACCESS ROAD B & C PROFILE





ACCESS ROAD B PROFILE  
SCALE: HORIZ. 1" = 50' VERT. 1" = 50'



ACCESS ROAD C PROFILE  
SCALE: HORIZ. 1" = 50' VERT. 1" = 50'

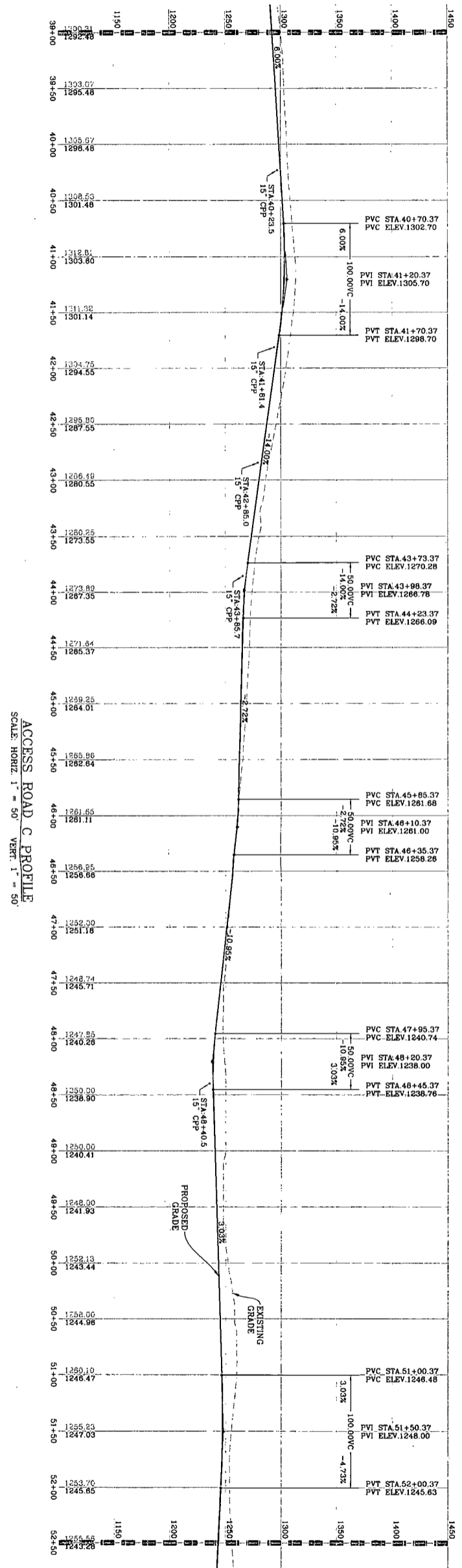
MATCHLINE-I  
SEE SHEET 18

<p>DATE 04/08/2014 DESIGNED BY: CSK FILE NO. 8031 SHEET 17 OF 38</p>	<p>ACCESS ROAD B &amp; C PROFILE <b>OXFD 10</b> SOUTHWEST &amp; COVE DISTRICTS DODDRIDGE COUNTY, WV</p>	<p>THIS DOCUMENT WAS PREPARED BY NAVITUS ENGINEERING FOR CHX GAS COMPANY, LLC 04/08/2014</p>	 <p>Professional Energy Consultants A DIVISION OF SMITH LAND SURVEYING, INC. SURVEYORS ENGINEERS ENVIRONMENTAL PROJECT MGMT. (304) 462-5634 WWW.SLSURVEYS.COM</p>	 <p>NAVITUS ENERGY ENGINEERING Telephone: (888) 662-4185   www.NavitusEng.com</p>
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ACCESS ROAD C PROFILE

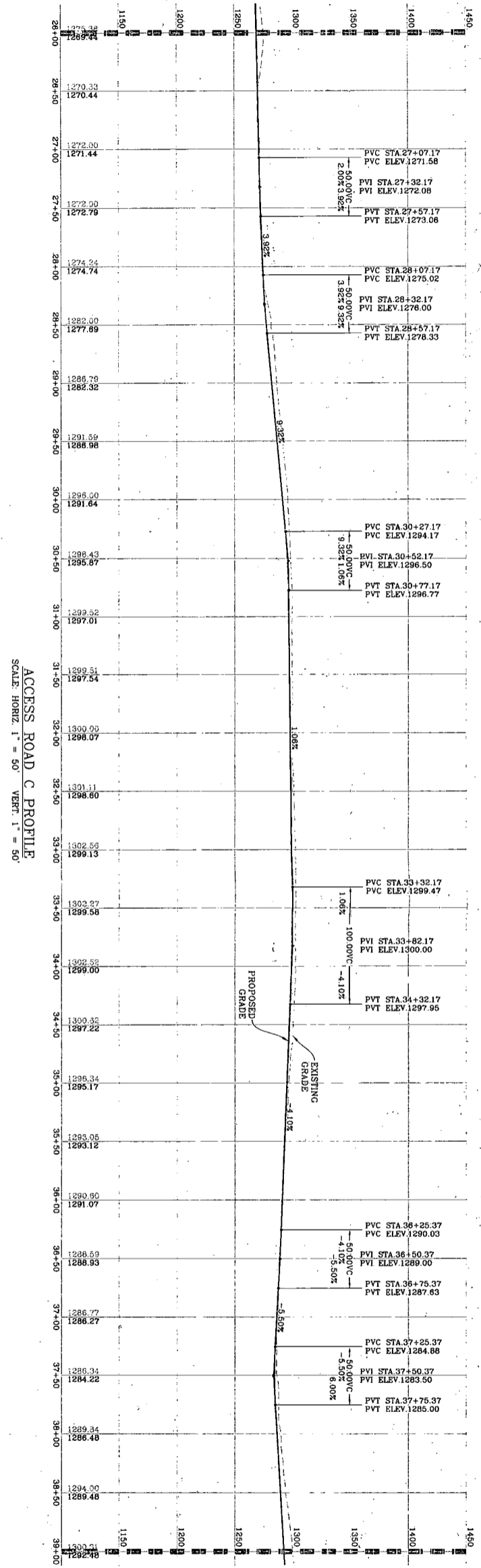
MATCHLINE-J  
SEE THIS SHEET



ACCESS ROAD C PROFILE  
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MATCHLINE-K  
SEE SHEET 19

MATCHLINE-I  
SEE SHEET 17



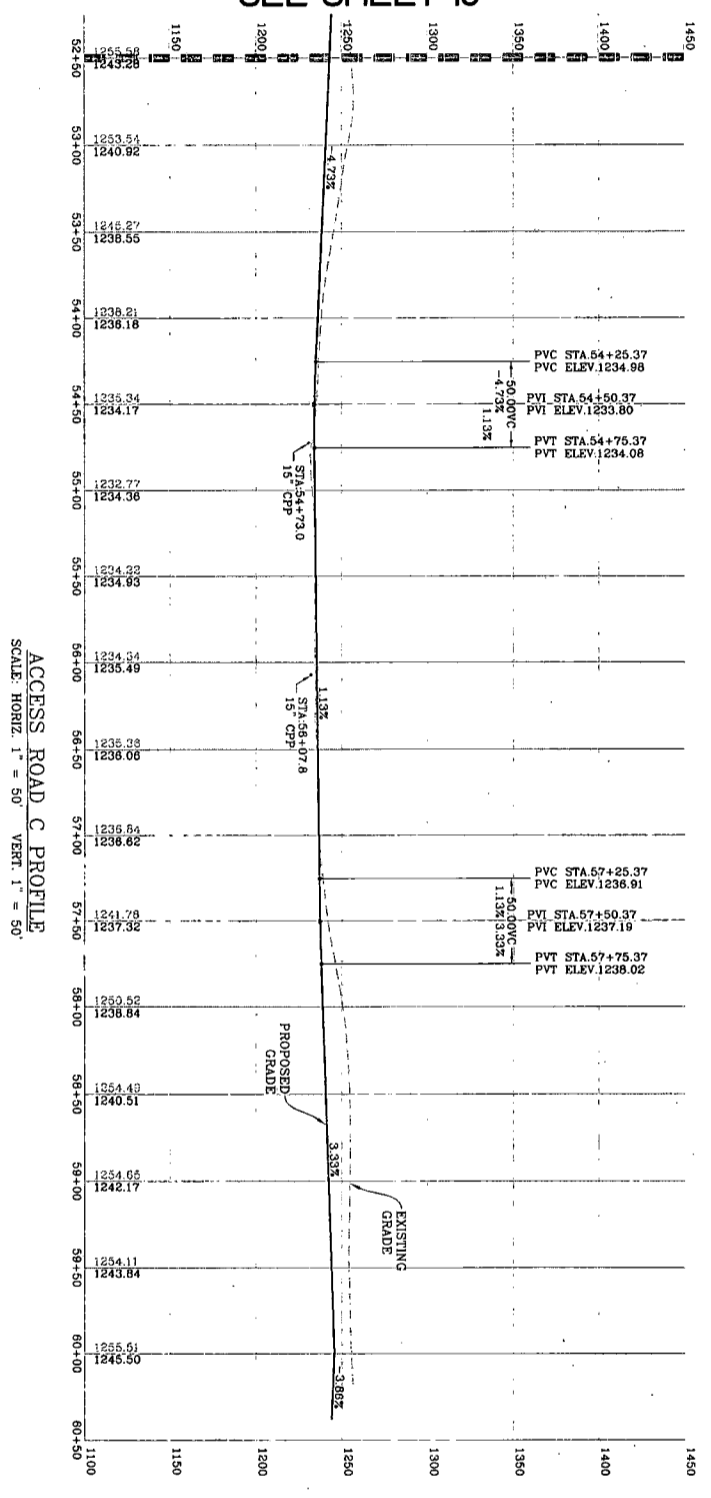
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MATCHLINE-J  
SEE THIS SHEET

<p>ACCESS ROAD C PROFILE <b>OXFD 10</b> SOUTHWEST &amp; COVE DISTRICTS DODDRIDGE COUNTY, WV</p>	<p>THIS DOCUMENT WAS PREPARED BY NAVITUS ENGINEERING FOR: C&amp;A GAS CORP., INC., LLC</p>		<p><b>Professional Energy Consultants</b> A DIVISION OF SMITH LAND SURVEYING, INC.</p> <p><b>NAVITUS</b> ENGINEERS ENVIRONMENTAL PROJECT MGMT.</p> <p>(304) 462-5634 WWW.SLSURVEYS.COM</p>	<p><b>NAVITUS</b> ENERGY ENGINEERING</p> <p>Telephone: (888) 662-4185   www.NavitusEng.com</p>
<p>DATE: 04/08/2014 SCALE: AS NOTED DESIGNED BY: CSK FILE NO.: 8031 SHEET 18 OF 38</p>				

ACCESS ROAD C PROFILE

MATCHLINE-K  
SEE SHEET 18



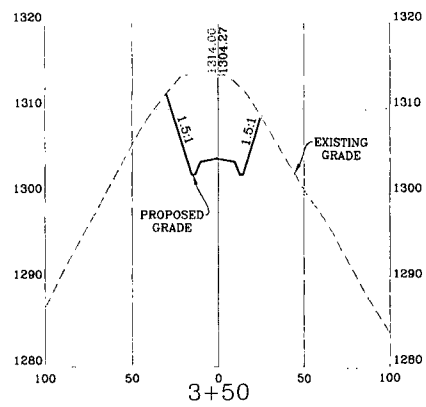
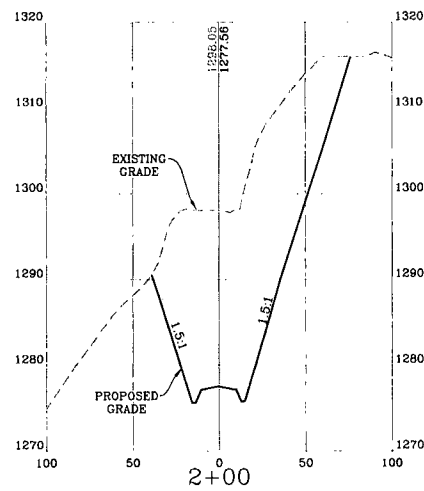
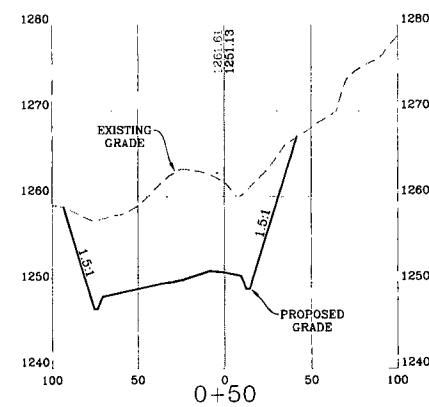
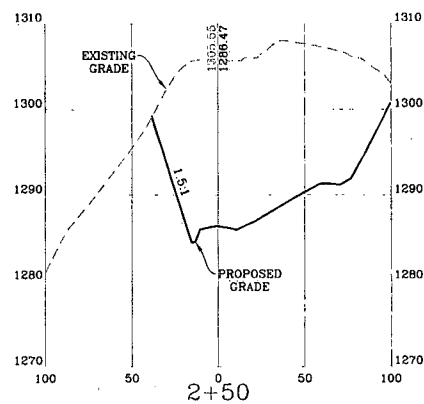
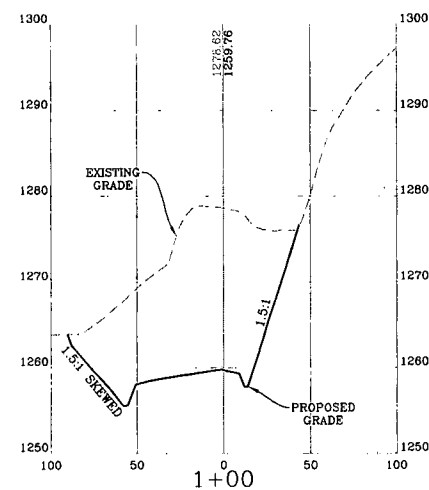
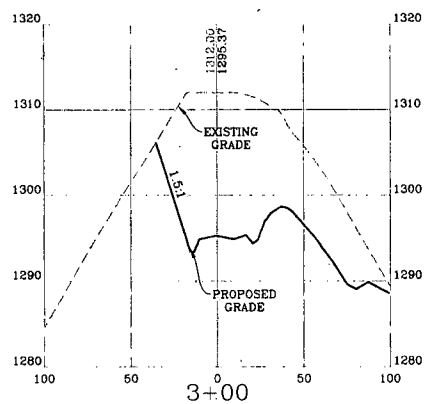
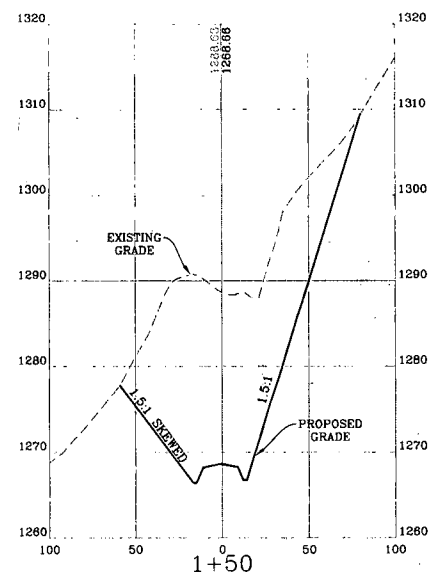
ACCESS ROAD C PROFILE  
SCALE: HORIZ. 1" = 50' VERT. 1" = 50'

DATE: 04/08/2014 SCALE: AS NOTED DESIGNED BY: CSK FILE NO: 8031 SHEET 19 OF 39	ACCESS ROAD C PROFILE <b>OXFD 10</b> SOUTHWEST & COVE DISTRICTS DODDRIDGE COUNTY, WV	THIS DOCUMENT WAS PREPARED BY NAVITUS ENGINEERING FOR: CHX GAS COMPANY, LLC CHX09-2014		 <p><b>Professional Energy Consultants</b>                  A DIVISION OF SMITHLAND SURVEYING, INC.  <b>SLS</b>                  (304) 462-5634                  www.slsurveys.com</p>	 <p><b>NAVITUS</b>                  ENERGY ENGINEERING                  Telephone: (888) 662-4185   www.NavitusEng.com</p>
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# ROAD SECTIONS

## ACCESS ROAD A CROSS-SECTIONS

SCALE: HORIZ. 1" = 50' VERT. 1" = 10'



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ROAD SECTIONS  
**OXFD 10**  
SOUTHWEST & COVE DISTRICTS  
DODDRIDGE COUNTY, WV

DATE: 04/08/2014

SCALE: AS NOTED

DESIGNED BY: CSK

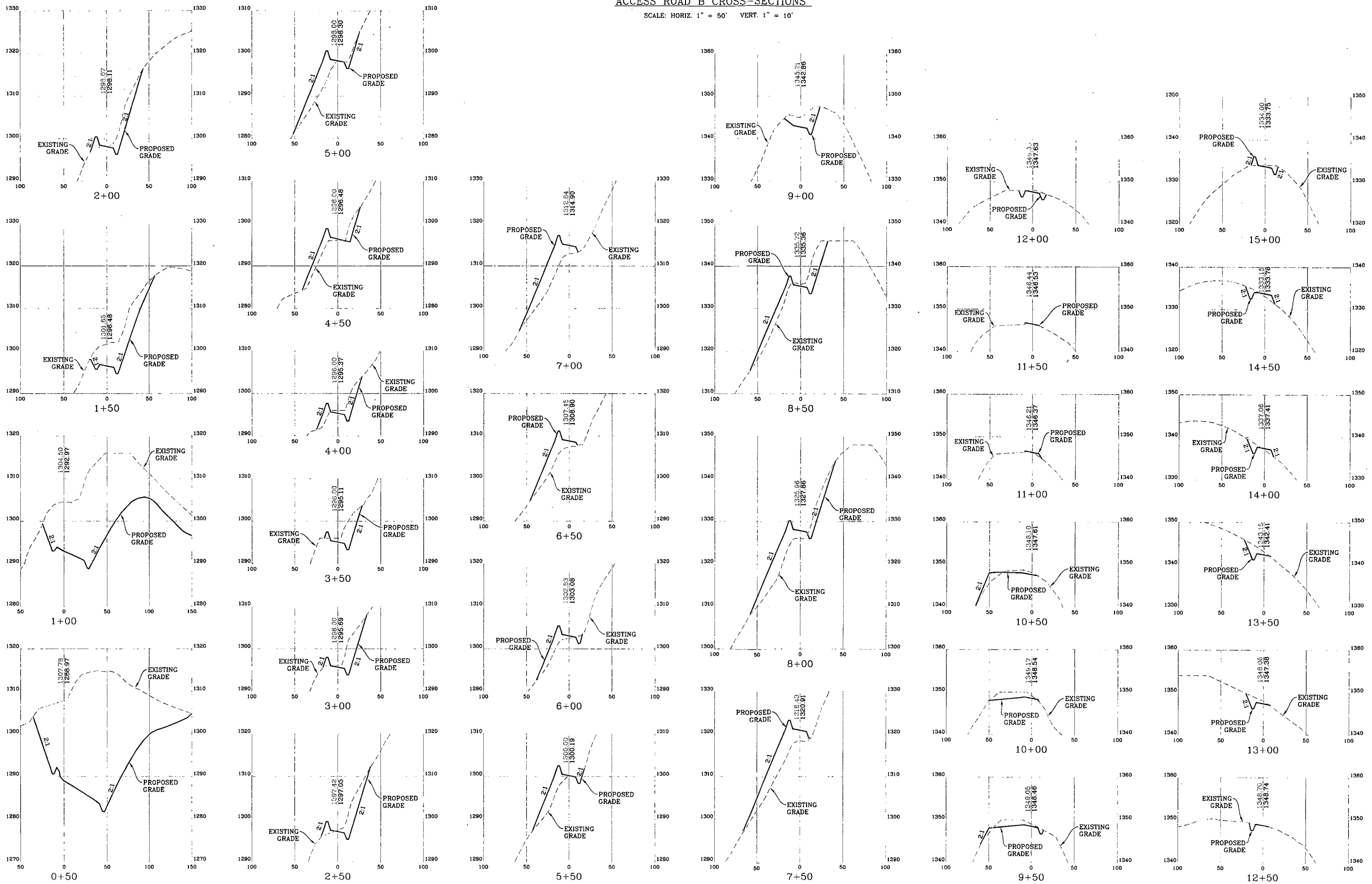
FILE NO. 8031

SHEET 20 OF 39

# ROAD SECTIONS

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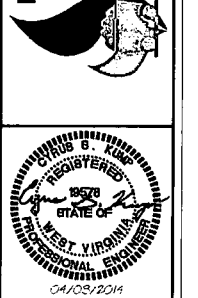
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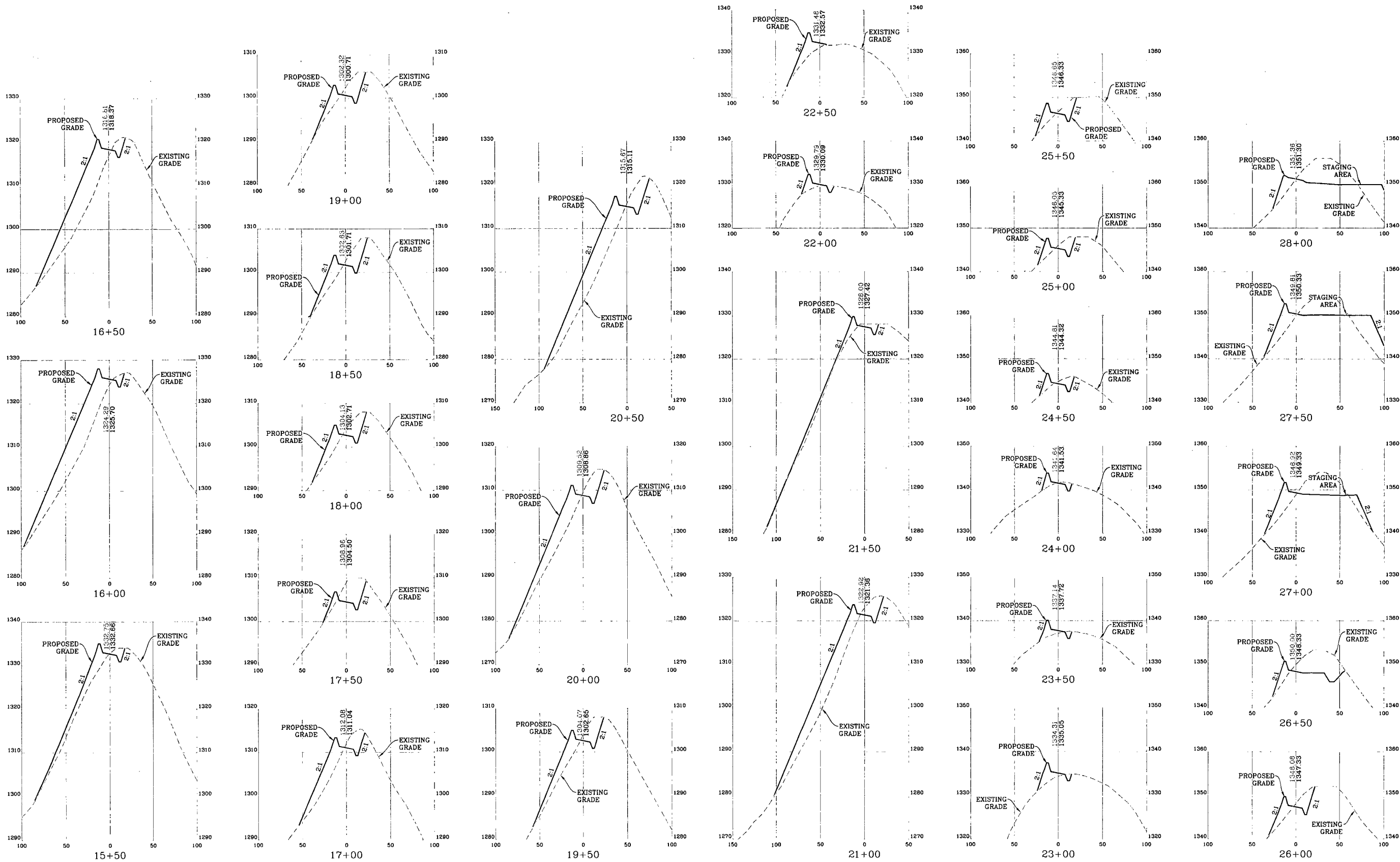
ROAD SECTIONS  
**OXFD 10**  
SOUTHWEST & COVE DISTRICTS  
DODDRIDGE COUNTY, WV

DATE: 04/08/2014  
SCALE: AS NOTED  
DESIGNED BY: CSK  
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SHEET 21 OF 39

# ROAD SECTIONS

## ACCESS ROAD B CROSS-SECTIONS

SCALE: HORIZ. 1" = 50' VERT. 1" = 10'



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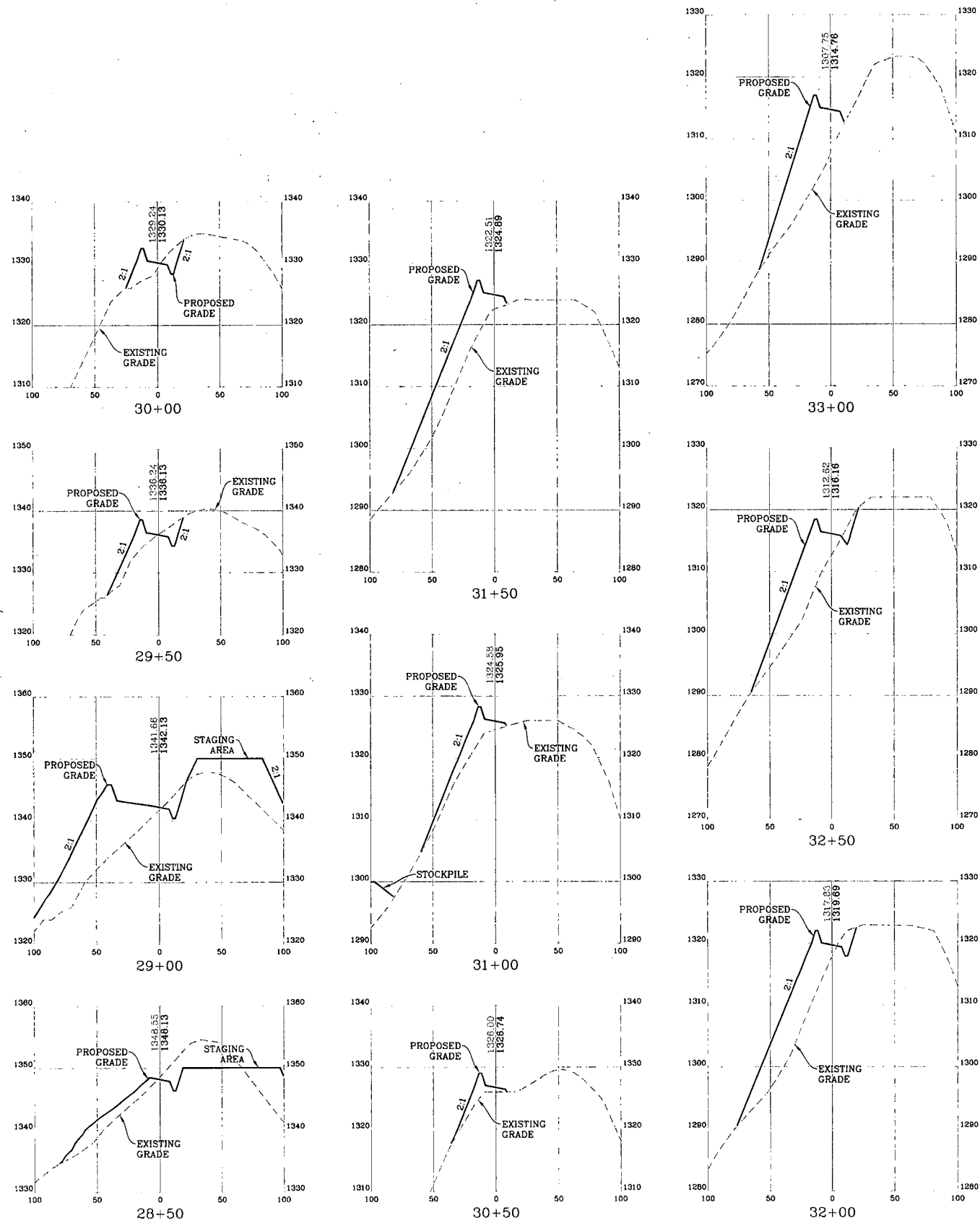
ROAD SECTIONS  
**OXFD 10**  
SOUTHWEST & COVE DISTRICTS  
DODDRIDGE COUNTY, WV

DATE: 04/08/2014  
SCALE: AS NOTED  
DESIGNED BY: CSK  
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SHEET 22 OF 39

# ROAD SECTIONS

## ACCESS ROAD B CROSS-SECTIONS

SCALE: HORIZ. 1" = 50' VERT. 1" = 10'



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DODDRIDGE COUNTY, WV

DATE: 04/08/2014

SCALE: AS NOTED

DESIGNED BY: CSK

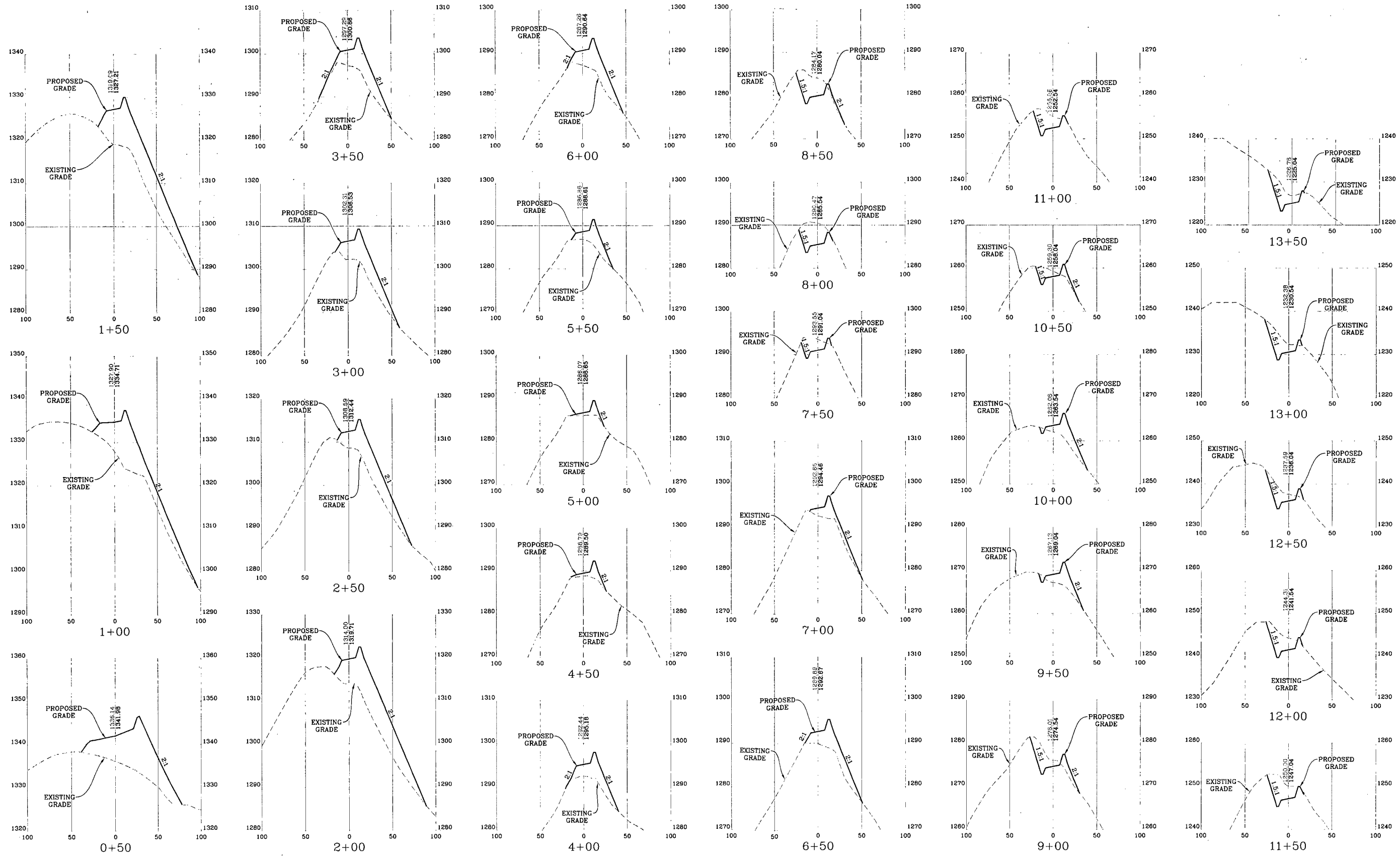
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SHEET 23 OF 39

# ROAD SECTIONS

## ACCESS ROAD C CROSS-SECTIONS

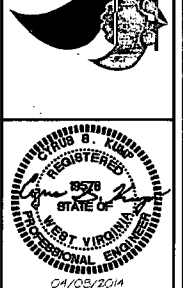
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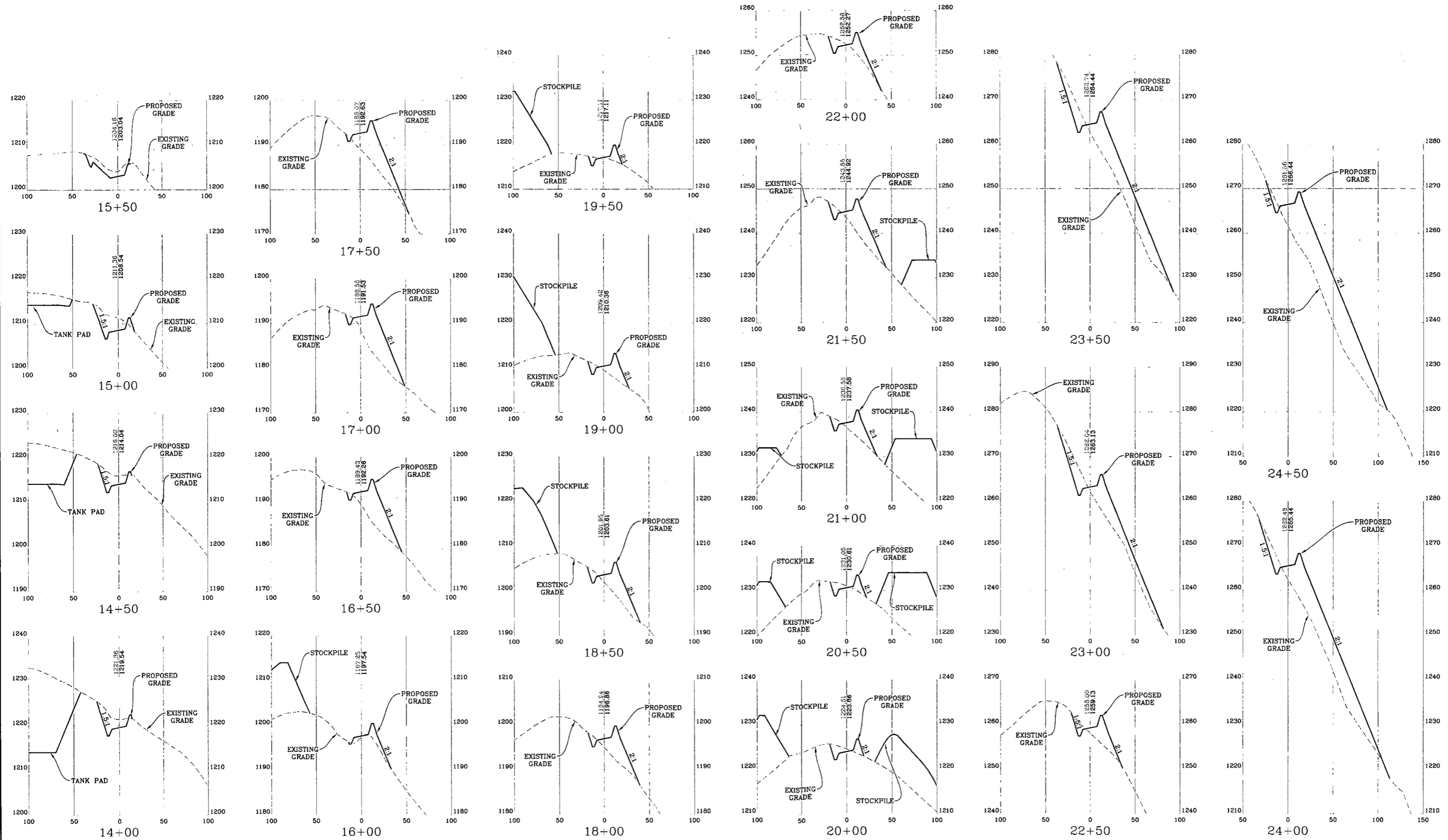
ROAD SECTIONS  
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# ROAD SECTIONS

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ROAD SECTIONS  
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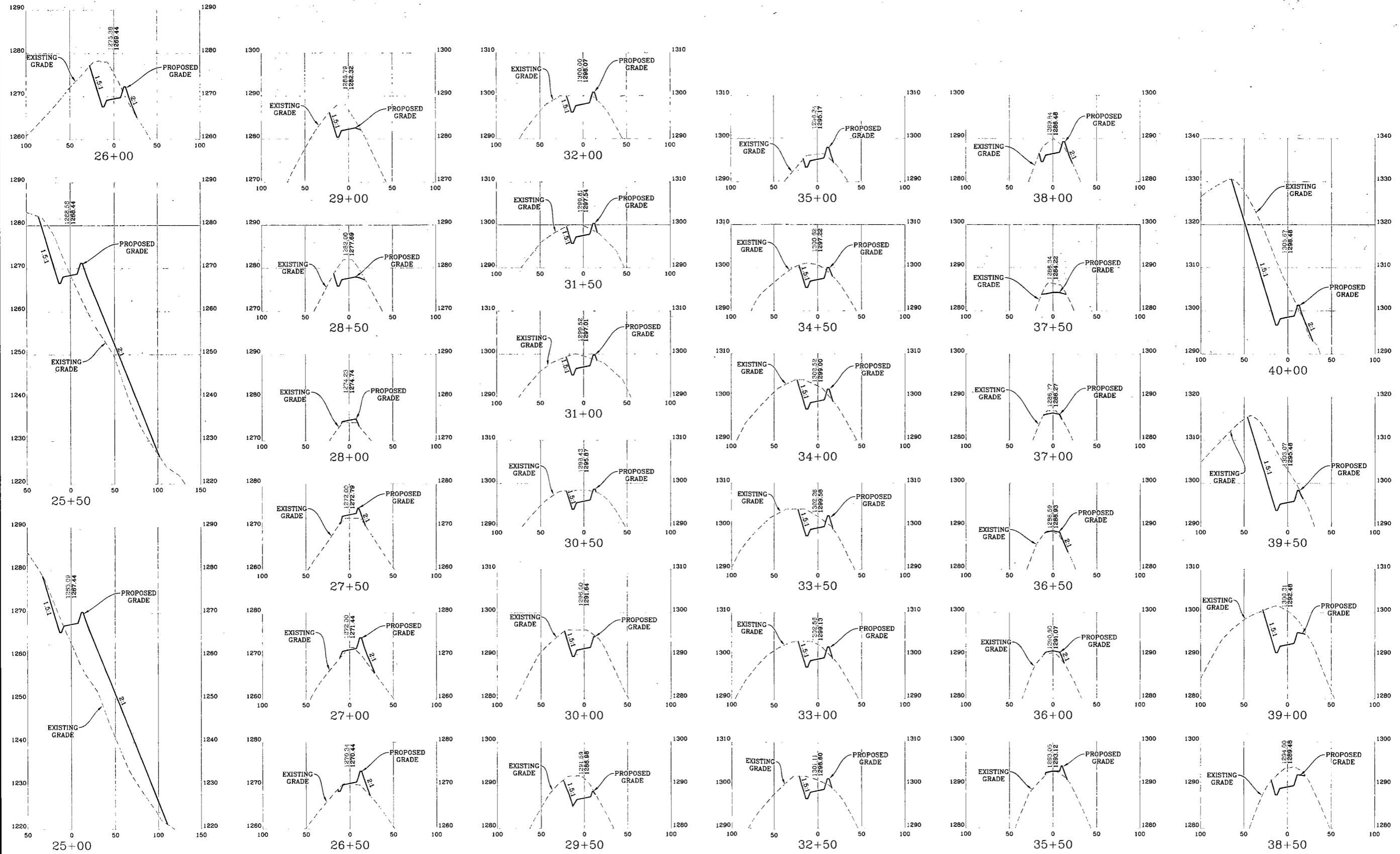
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SHEET 25 OF 39



# ROAD SECTIONS

## ACCESS ROAD C CROSS-SECTIONS

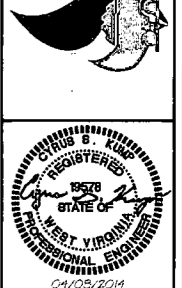
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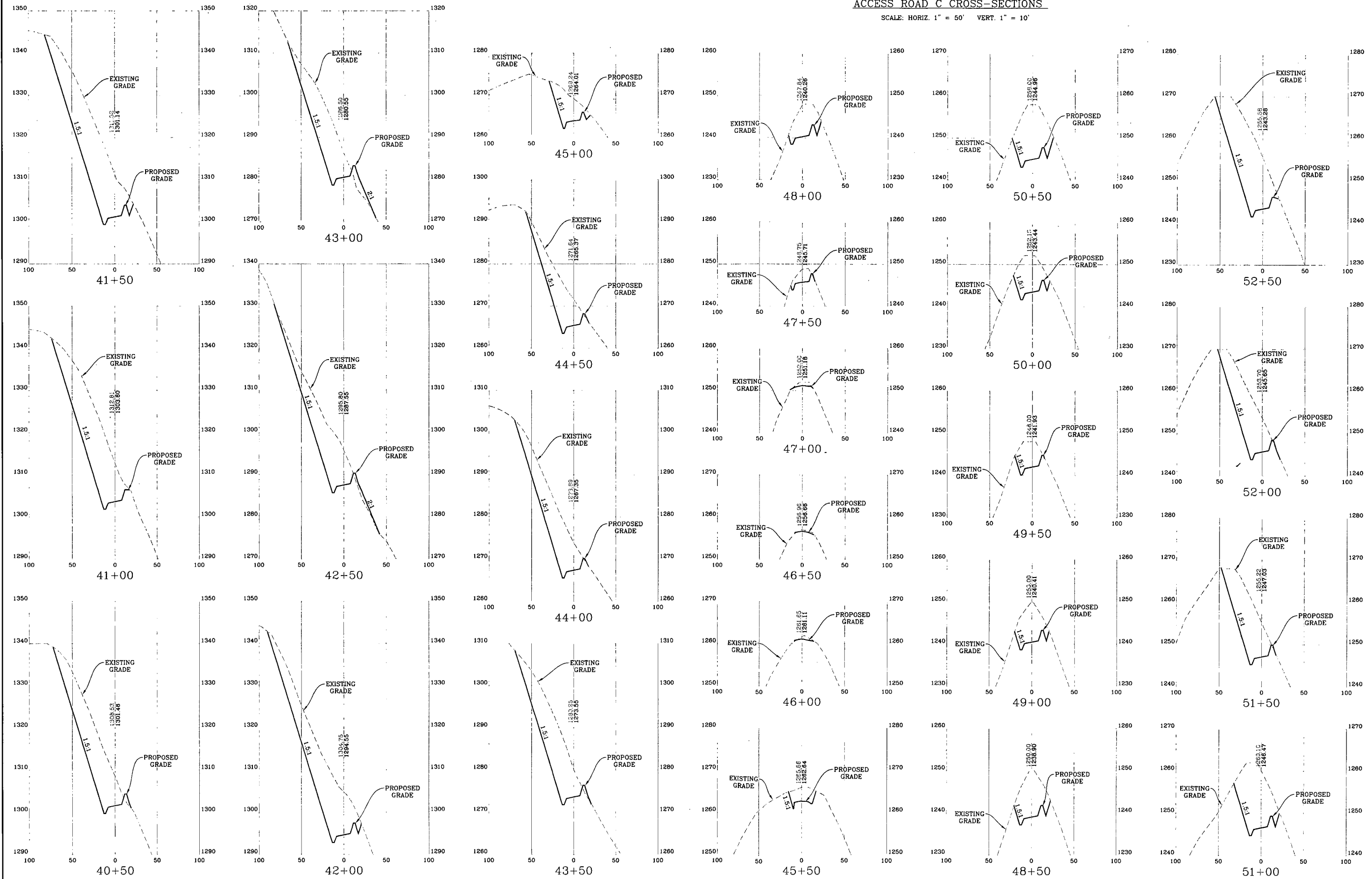
ROAD SECTIONS  
**OXFD 10**  
SOUTHWEST & COVE DISTRICTS  
DODDRIDGE COUNTY, WV

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FILE NO. 8031  
SHEET 26 OF 39

# ROAD SECTIONS

## ACCESS ROAD C CROSS-SECTIONS

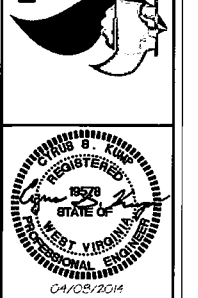
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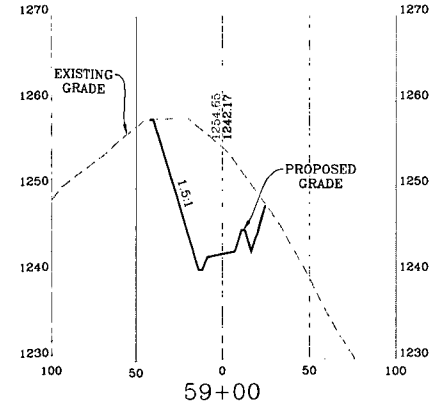
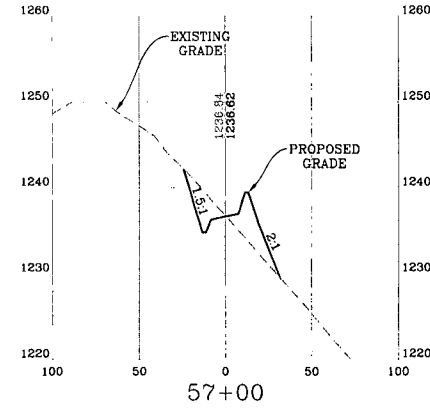
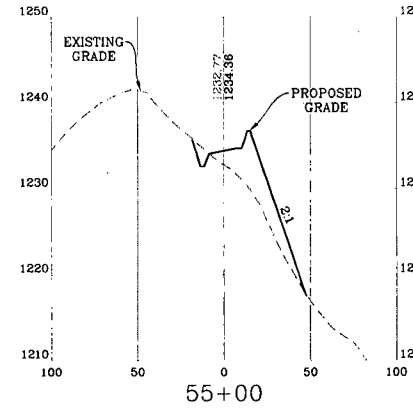
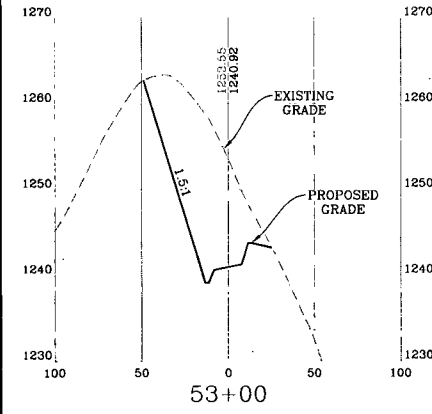
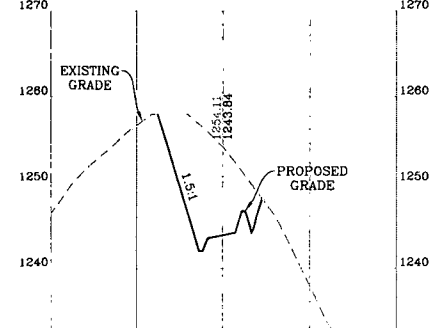
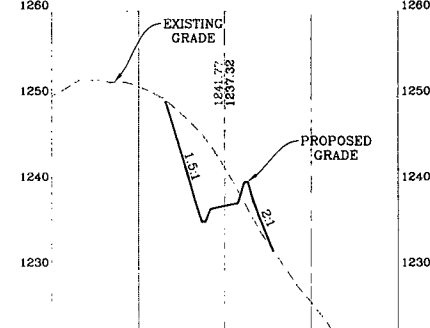
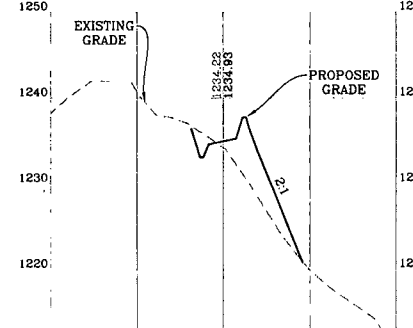
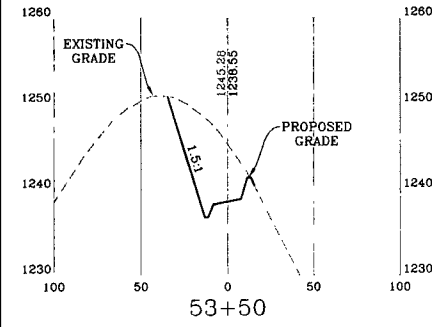
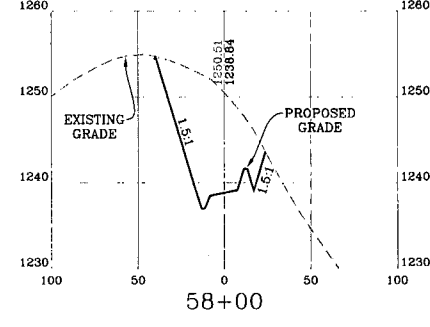
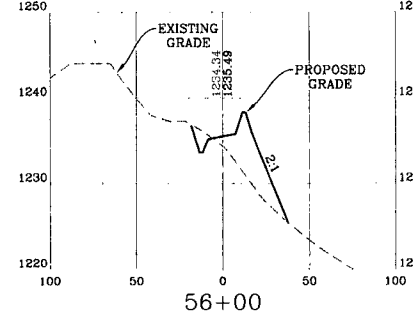
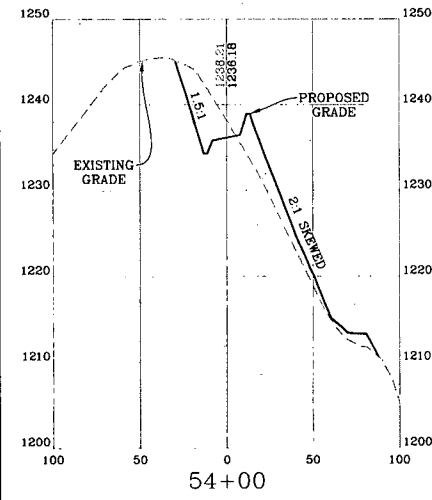
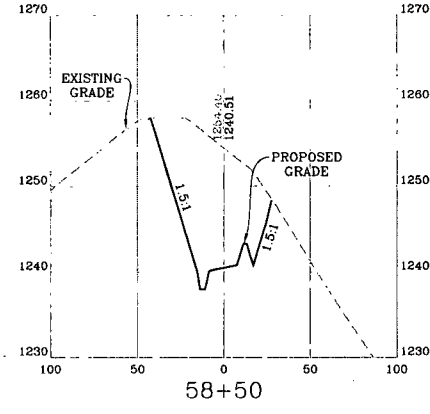
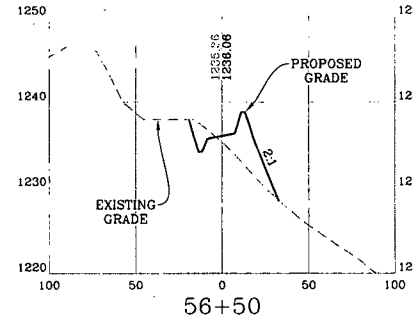
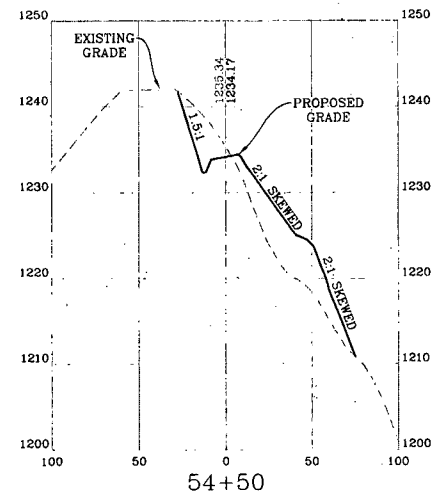
ROAD SECTIONS  
**OXFD 10**  
SOUTHWEST & COVE DISTRICTS  
DODDRIDGE COUNTY, WV

DATE: 04/08/2014  
SCALE: AS NOTED  
DESIGNED BY: CSK  
FILE NO. 8031  
SHEET 27 OF 39

# ROAD SECTIONS

## ACCESS ROAD C CROSS-SECTIONS

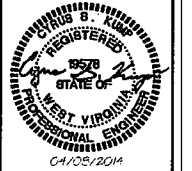
SCALE: HORIZ. 1" = 50' VERT. 1" = 10'



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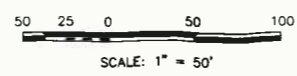
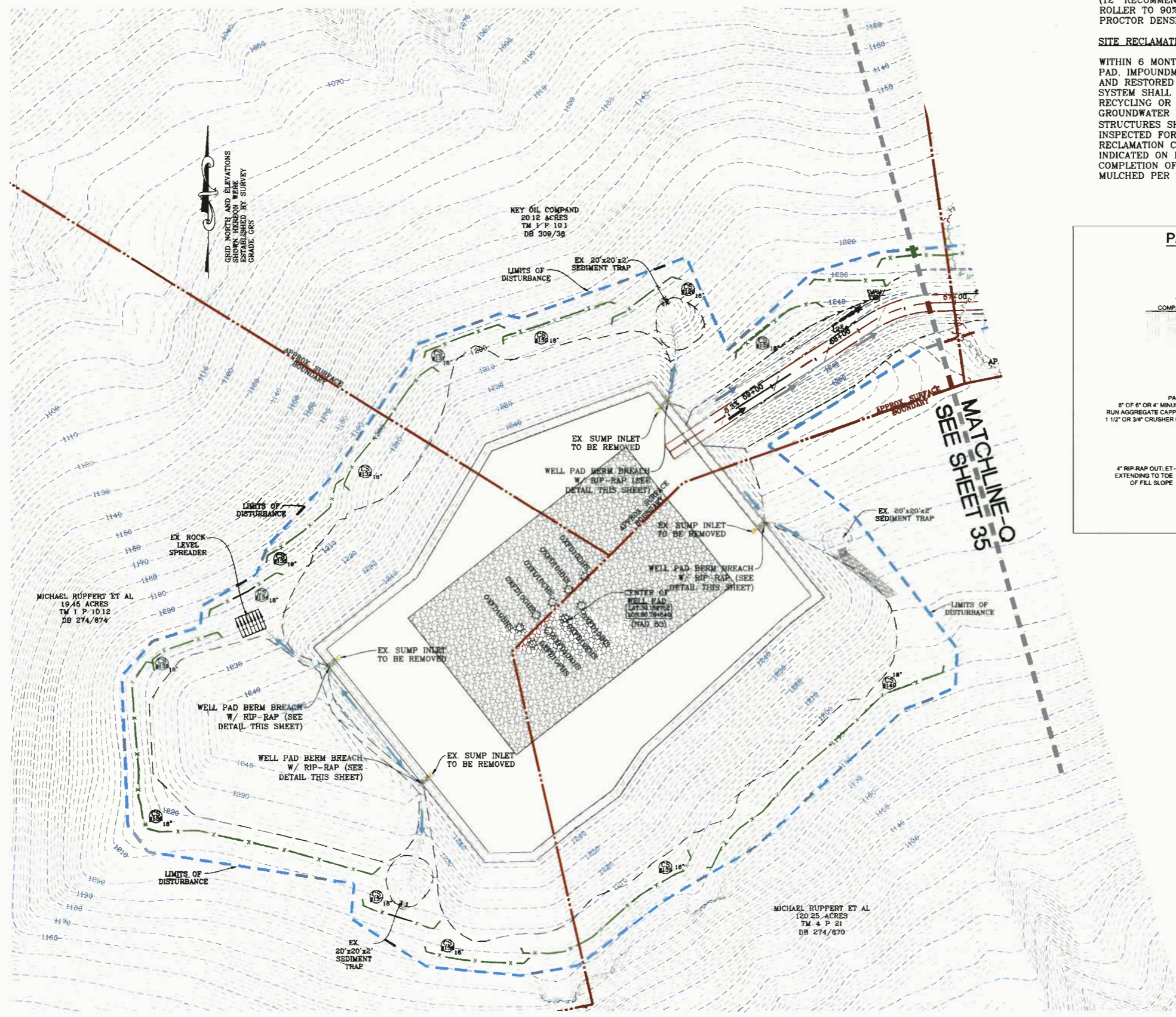


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DODDRIDGE COUNTY, WV

DATE: 04/08/2014  
SCALE: AS NOTED  
DESIGNED BY: CSK  
FILE NO. 8031  
SHEET 28 OF 39

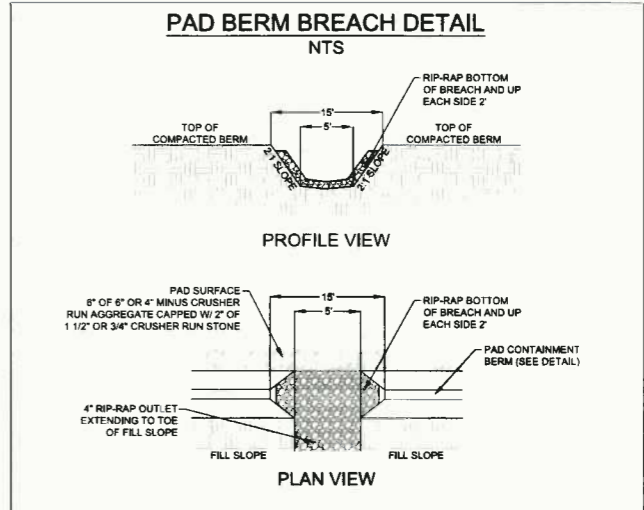
# WELL PAD RECLAMATION PLAN



NOTE:  
1. DURING SITE RECLAMATION ALL FILL AREAS SHALL BE COMPACTED IN 24" MAXIMUM LIFT THICKNESS (12" RECOMMENDED) WITH A VIBRATING SHEEPSFOOT ROLLER TO 90% COMPACTION PER STANDARD PROCTOR DENSITY, ASTM D-698.

**SITE RECLAMATION NARRATIVE**

WITHIN 6 MONTHS OF THE EXPIRATION OF APPROVAL OF THE WELL PAD, IMPOUNDMENT & PIT FACILITY, THIS SITE SHALL BE CLOSED AND RESTORED TO A PRE-CONSTRUCTION CONDITION. THE LINER SYSTEM SHALL BE REMOVED AND DISPOSED OF IN AN APPROVED RECYCLING OR WASTE DISPOSAL FACILITY. ALL PIPING FOR THE GROUNDWATER DEWATERING SYSTEM, WATER LINES, AND ASSOCIATED STRUCTURES SHALL BE REMOVED. ALL EX. BMP'S SHOWN SHALL BE INSPECTED FOR DAMAGE AND REPLACED AS NECESSARY BEFORE RECLAMATION CAN BEGIN. THE SITE SHALL BE REGRADED AS INDICATED ON PLANS TO PRE-CONSTRUCTION GRADES. UPON COMPLETION OF GRADING, THE SITE SHALL BE SEEDED AND MULCHED PER THE REVEGETATION DETAILS ON SHEET 38.



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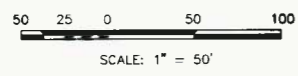
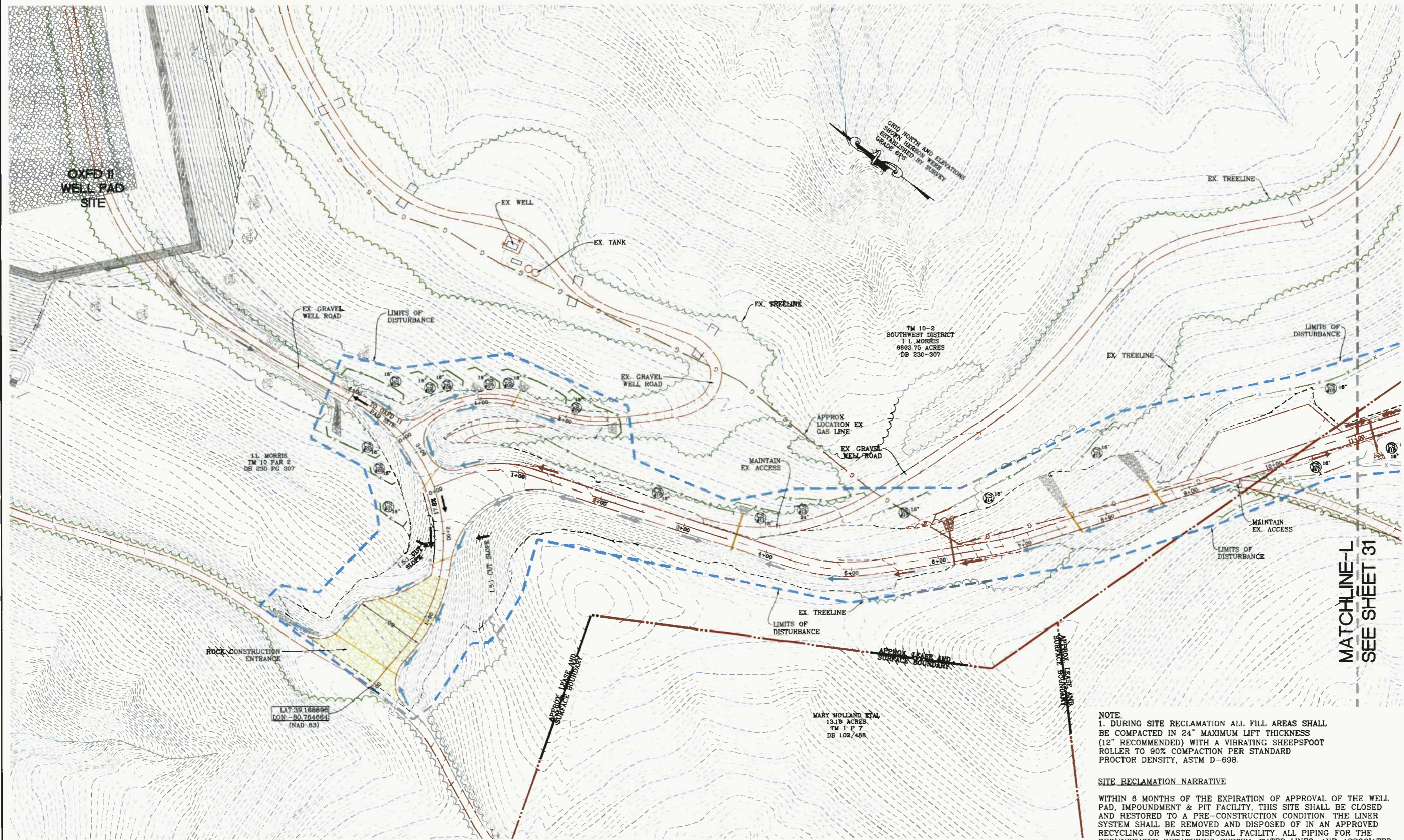


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WELL PAD RECLAMATION PLAN  
**OXFD 10**  
SOUTHWEST & COVE DISTRICTS  
DODDRIDGE COUNTY, WV

DATE: 04/08/2014  
SCALE: 1" = 50'  
DESIGNED BY: CSK  
FILE NO. 8031  
SHEET 29 OF 39

# ACCESS ROAD RECLAMATION PLAN



MATCHLINE-L  
SEE SHEET 31

**NOTE**  
1. DURING SITE RECLAMATION ALL FILL AREAS SHALL BE COMPACTED IN 24" MAXIMUM LIFT THICKNESS (12" RECOMMENDED) WITH A VIBRATING SHEEPSFOOT ROLLER TO 90% COMPACTION PER STANDARD PROCTOR DENSITY, ASTM D-698.

**SITE RECLAMATION NARRATIVE**  
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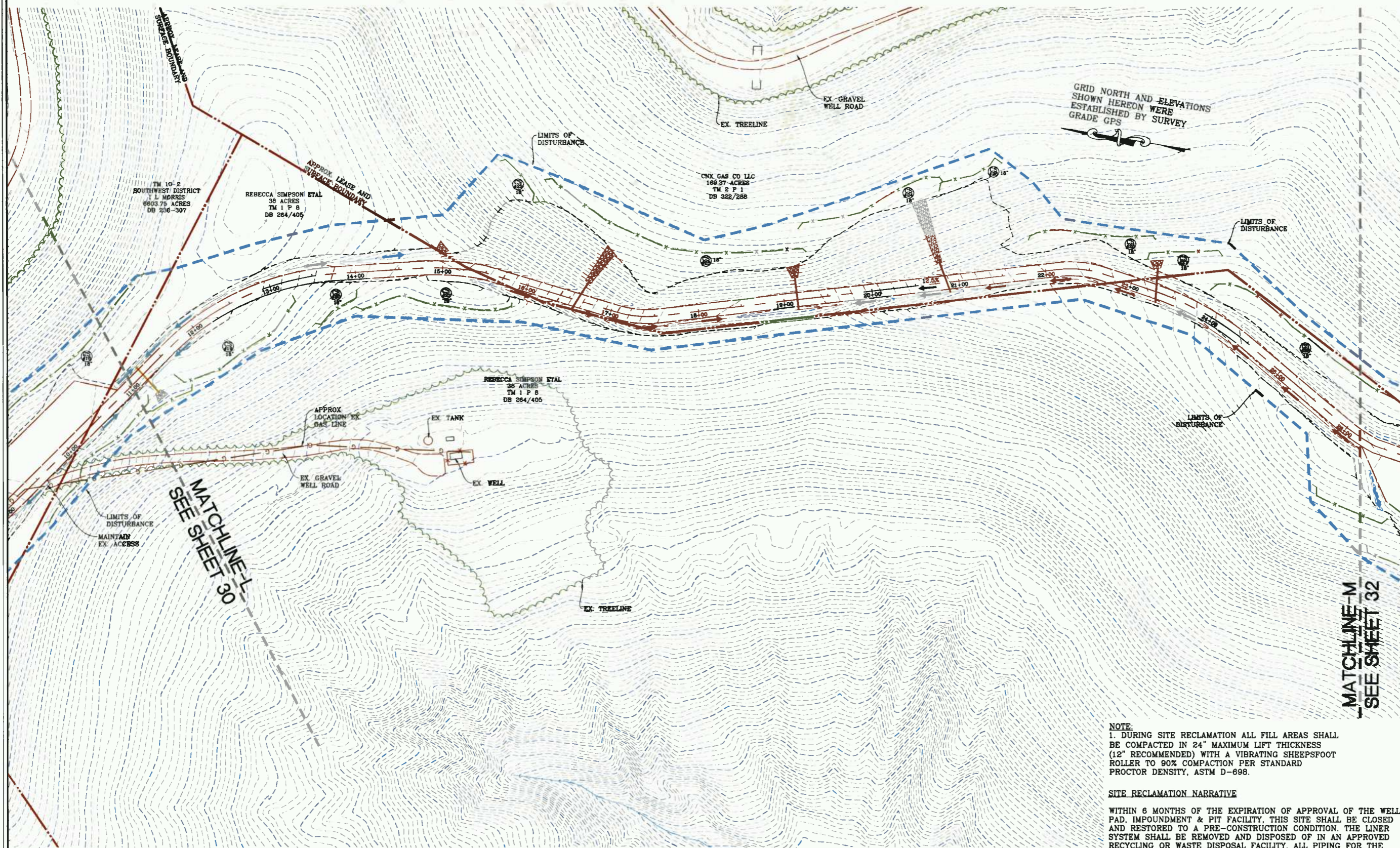


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ACCESS ROAD RECLAMATION PLAN  
**OXFD 10**  
SOUTHWEST & COVE DISTRICTS  
DODDRIDGE COUNTY, WV

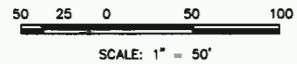
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DESIGNED BY: CSK  
FILE NO. 8031  
SHEET 30 OF 39

# ACCESS ROAD RECLAMATION PLAN



MATCHLINE L  
SEE SHEET 30

MATCHLINE M  
SEE SHEET 32



**NOTE:**  
1. DURING SITE RECLAMATION ALL FILL AREAS SHALL BE COMPACTED IN 24" MAXIMUM LIFT THICKNESS (12" RECOMMENDED) WITH A VIBRATING SHEEPSFOOT ROLLER TO 90% COMPACTION PER STANDARD PROCTOR DENSITY, ASTM D-698.

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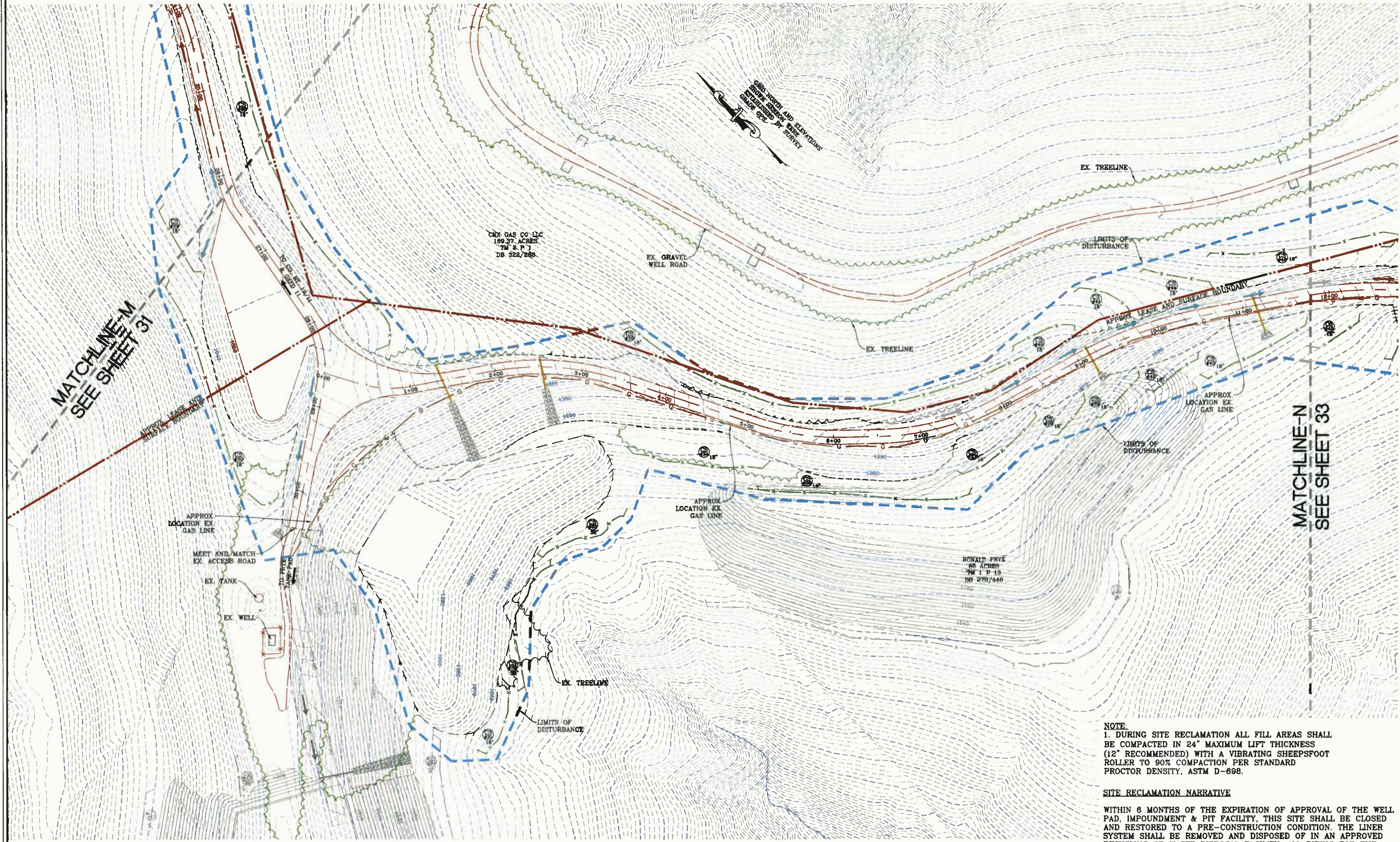


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ACCESS ROAD RECLAMATION PLAN  
**OXFD 10**  
SOUTHWEST & COVE DISTRICTS  
DODDRIDGE COUNTY, WV

DATE: 04/08/2014  
SCALE: 1" = 50'  
DESIGNED BY: CSK  
FILE NO. 8031  
SHEET 31 OF 39

# ACCESS ROAD RECLAMATION PLAN

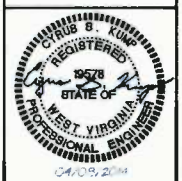


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 1. DURING SITE RECLAMATION ALL FILL AREAS SHALL BE COMPACTED IN 24" MAXIMUM LIFT THICKNESS (12" RECOMMENDED) WITH A VIBRATING SHEEPSFOOT ROLLER TO 90% COMPACTION PER STANDARD PROCTOR DENSITY, ASTM D-698.

**SITE RECLAMATION NARRATIVE**  
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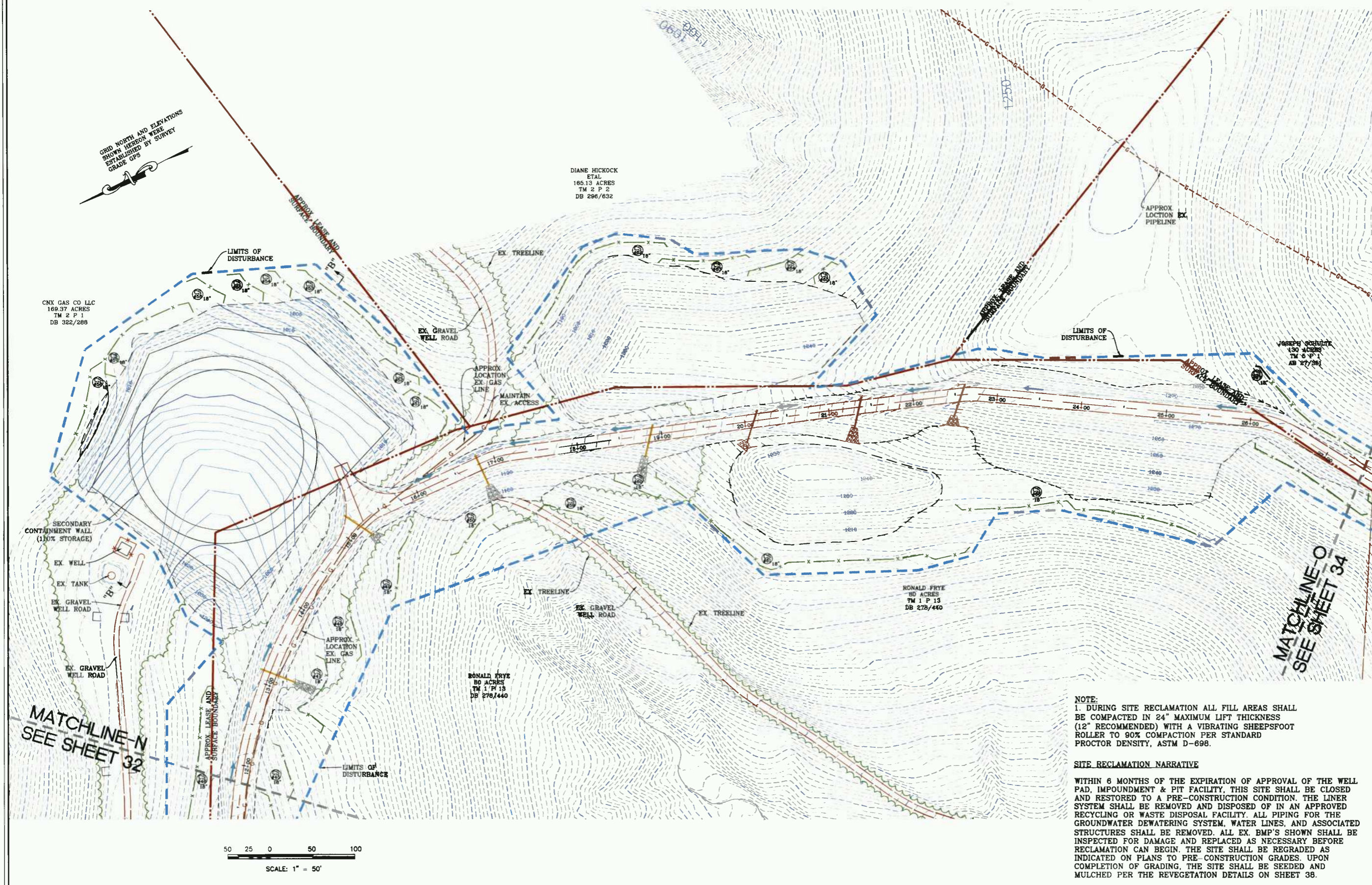


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ACCESS ROAD RECLAMATION PLAN  
**OXFD 10**  
 SOUTHWEST & COVE DISTRICTS  
 DODDRIDGE COUNTY, WV

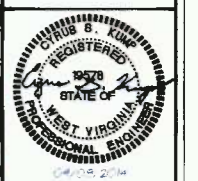
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 FILE NO. 8031  
 SHEET 32 OF 39

# TANK PAD & STOCKPILE RECLAMATION PLAN



**NOTE:**  
 1. DURING SITE RECLAMATION ALL FILL AREAS SHALL BE COMPACTED IN 24" MAXIMUM LIFT THICKNESS (12" RECOMMENDED) WITH A VIBRATING SHEEPSFOOT ROLLER TO 90% COMPACTION PER STANDARD PROCTOR DENSITY, ASTM D-698.

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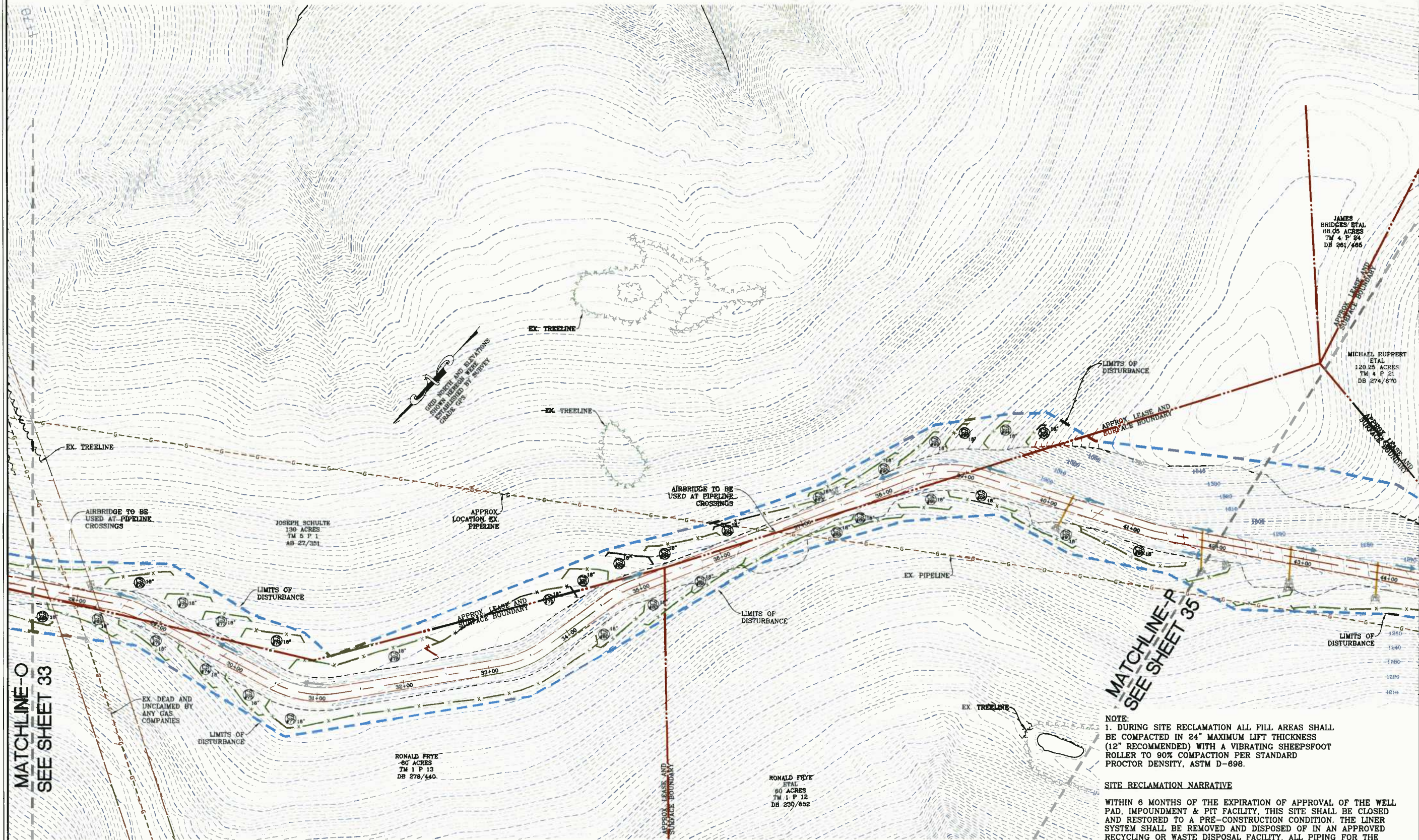
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TANK PAD & STOCKPILE RECLAMATION PLAN  
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 DODDRIDGE COUNTY, WV

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 SHEET 33 OF 39



# ACCESS ROAD RECLAMATION PLAN



MATCHLINE-O  
SEE SHEET 33

MATCHLINE-P  
SEE SHEET 35

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SCALE: 1" = 50'

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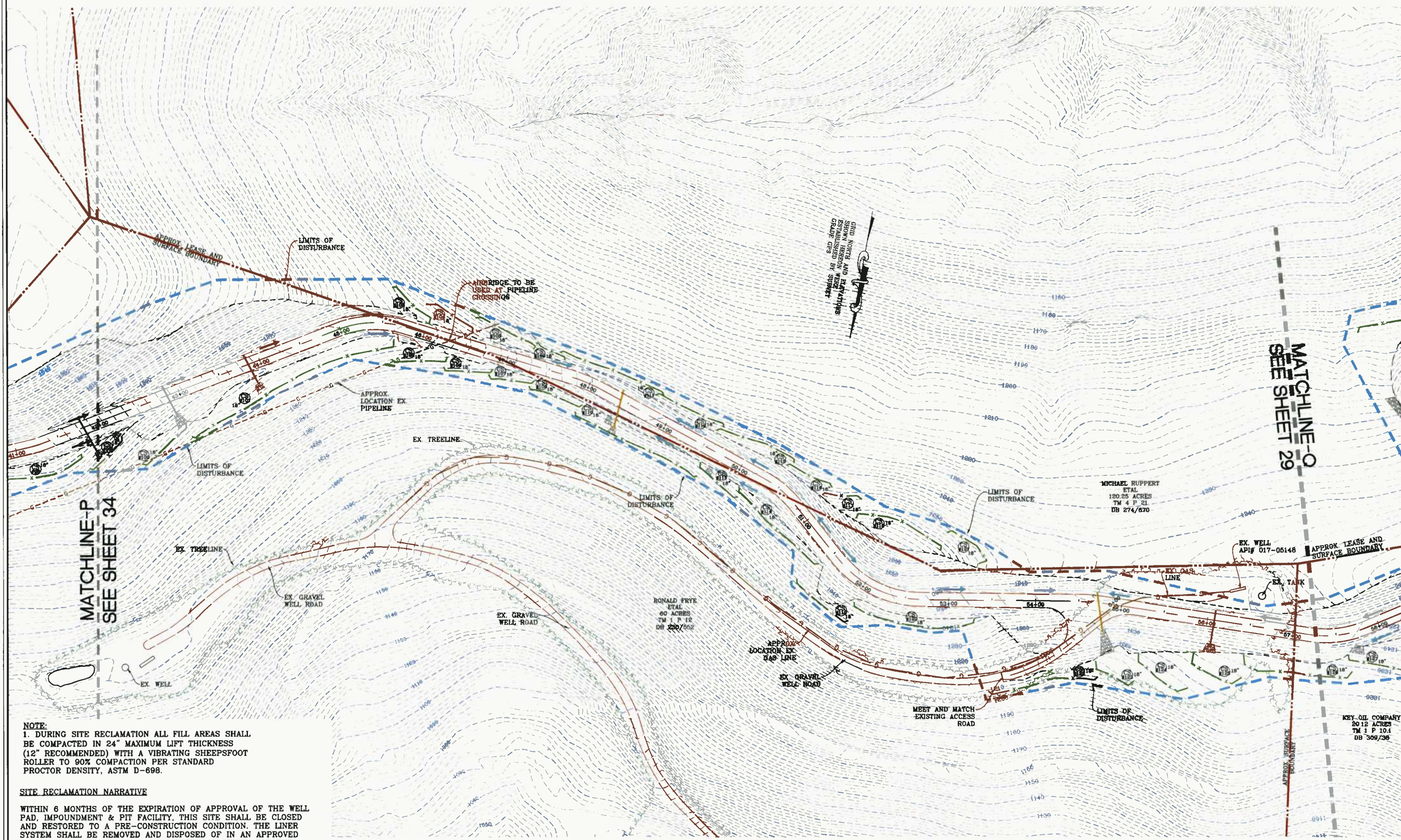


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ACCESS ROAD RECLAMATION PLAN  
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# ACCESS ROAD RECLAMATION PLAN



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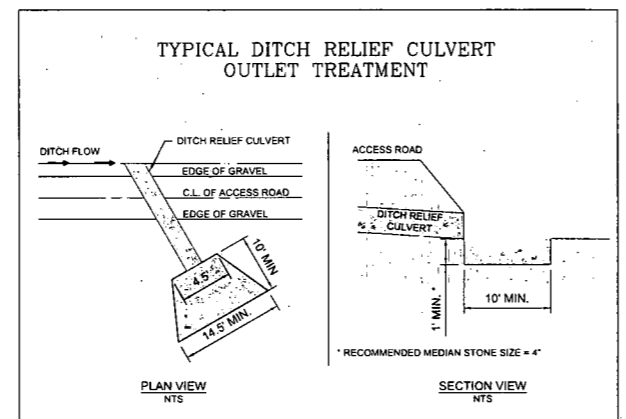
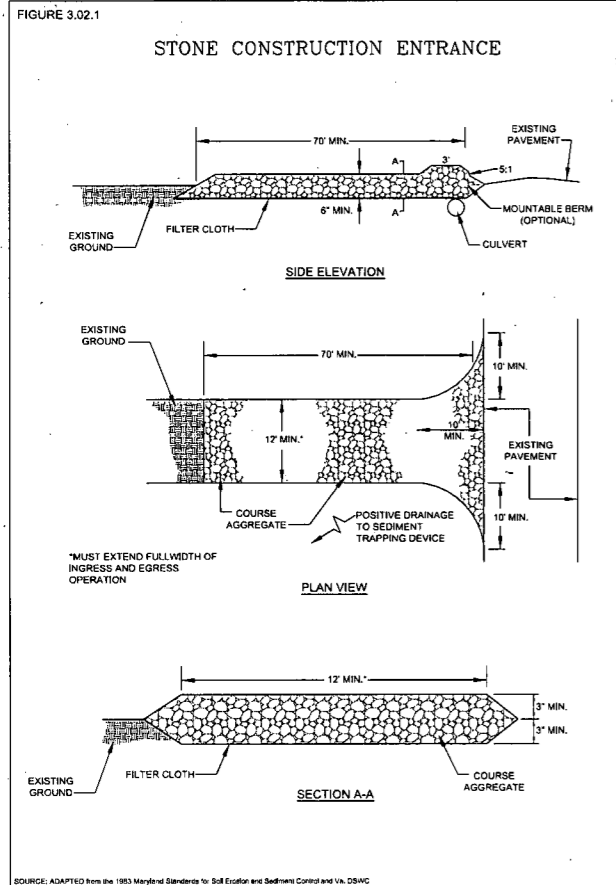
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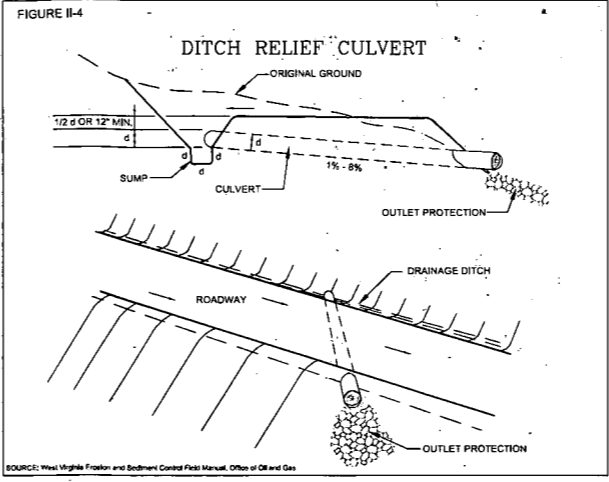
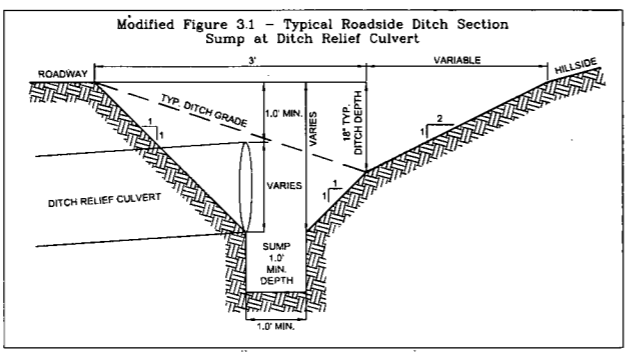
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 DODDRIDGE COUNTY, WV

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 SHEET 35 OF 39



**NOTE:**  
ALL DITCH LINE PROTECTION SHALL BE INSTALLED AS RECOMMENDED IN THE WEST VIRGINIA EROSION AND SEDIMENT CONTROL BEST MANAGEMENT PRACTICE (BMP) MANUAL. DITCH LINE PROTECTION SHALL BE ROCK LINED.  
IF HIGH EROSION SOILS ARE ENCOUNTERED DURING CONSTRUCTION, THE ENGINEER SHOULD BE CONTACTED FOR FURTHER EVALUATION.



**Table II-5**

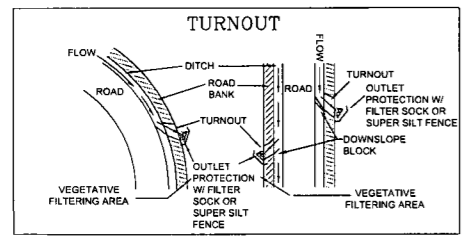
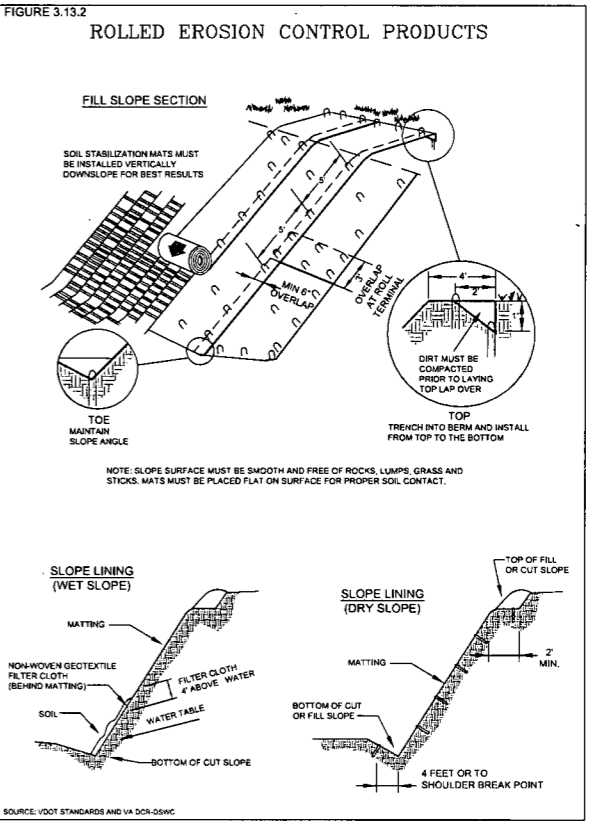
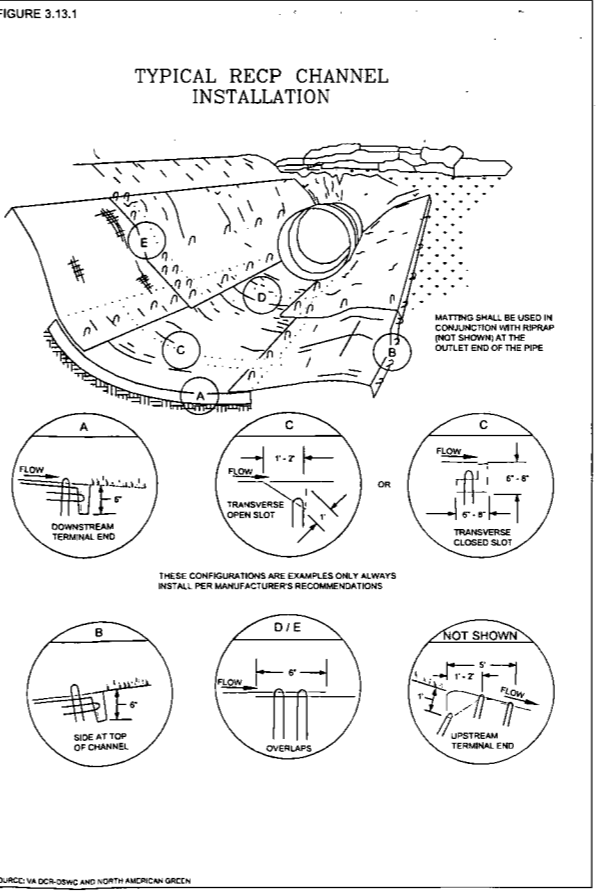
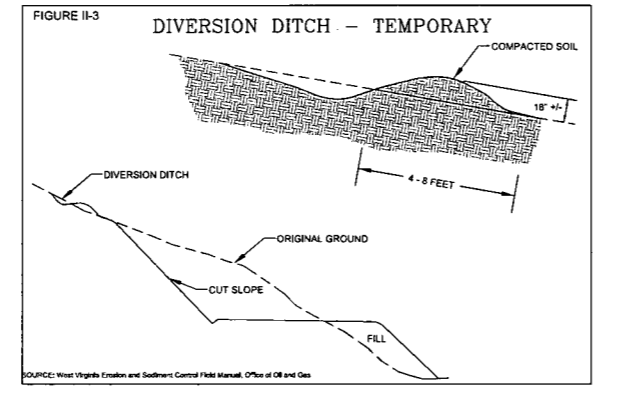
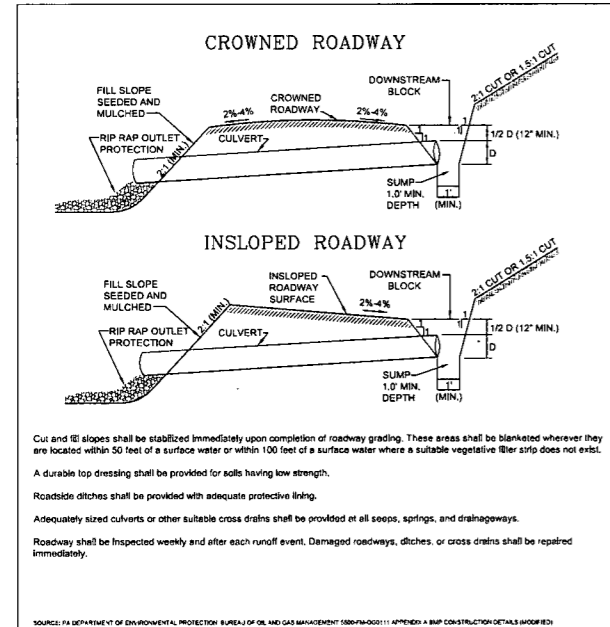
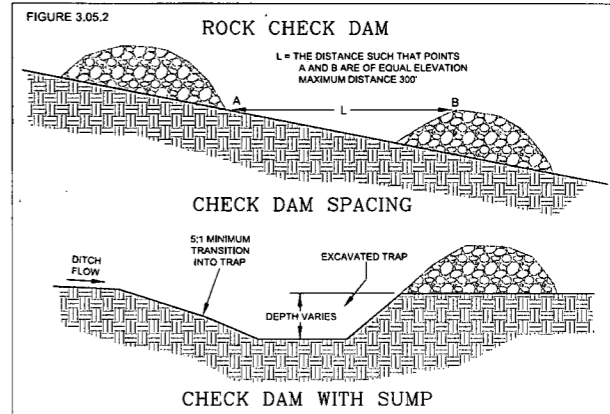
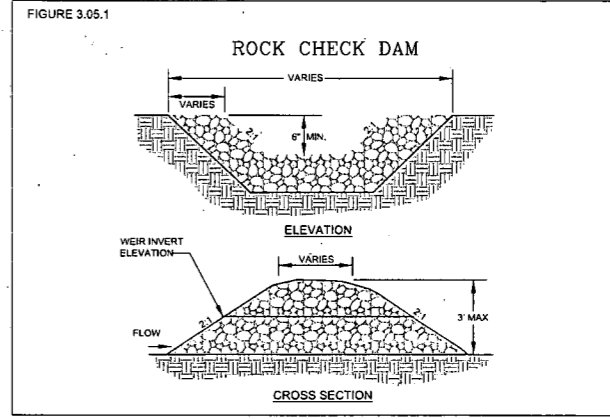
**Pipe Sizes for Culverts Across Roads**

Drainage Area (Ac)	Pipe Diameter (in)	Pipe Capacity (Cfs)
10	15	5
20	18	9
30	21	12
50	24	18
80	27	24
100	30	29
300	36	60
500	42	85

**Table II-6**

**Spacing of Culverts**

Road Grade %	Distance (Ft)
2-5	500-300
6-10	300-200
11-15	200-100
16-20	100



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SHEET 36 OF 39

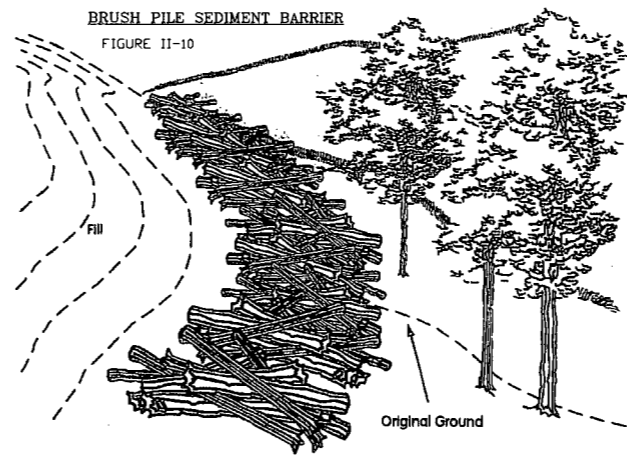
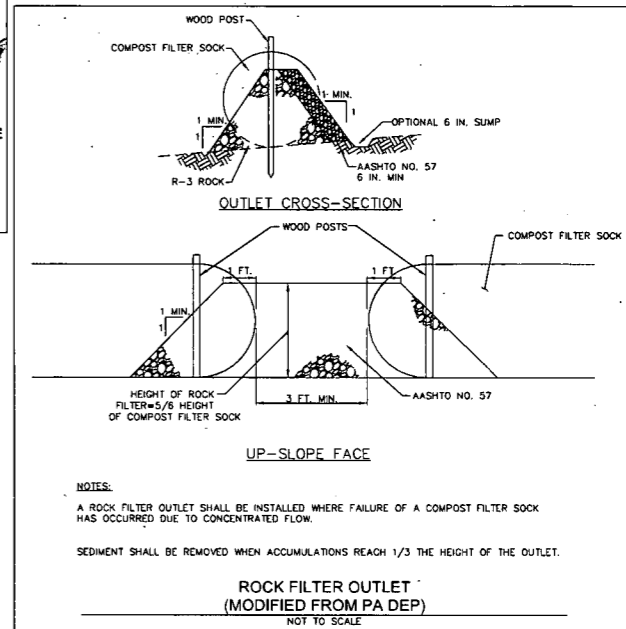
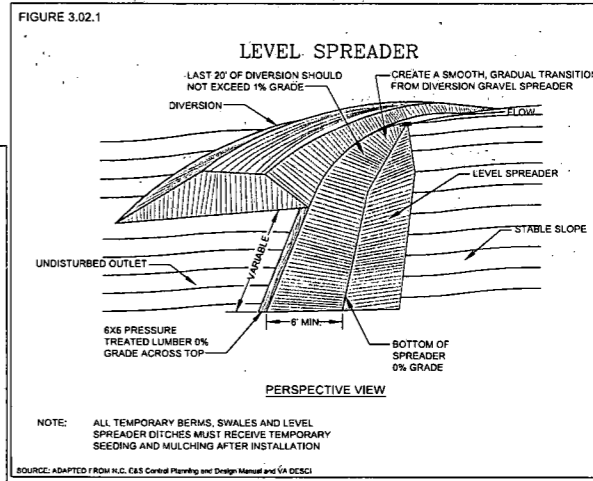
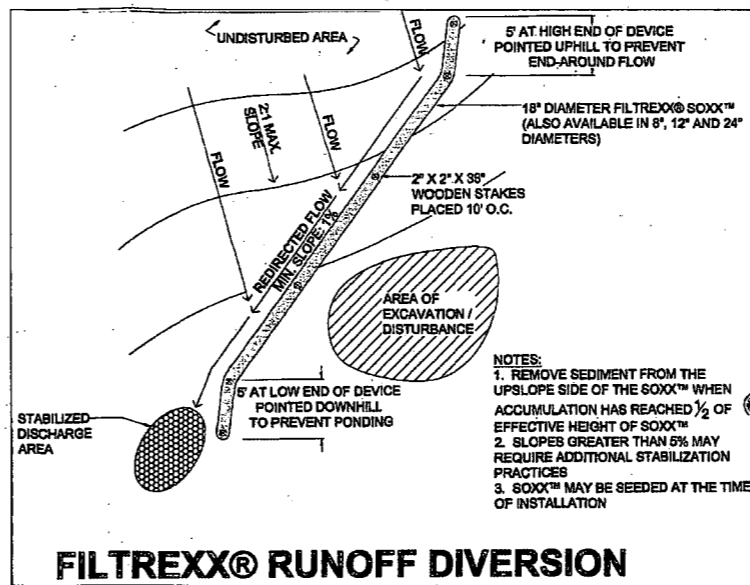
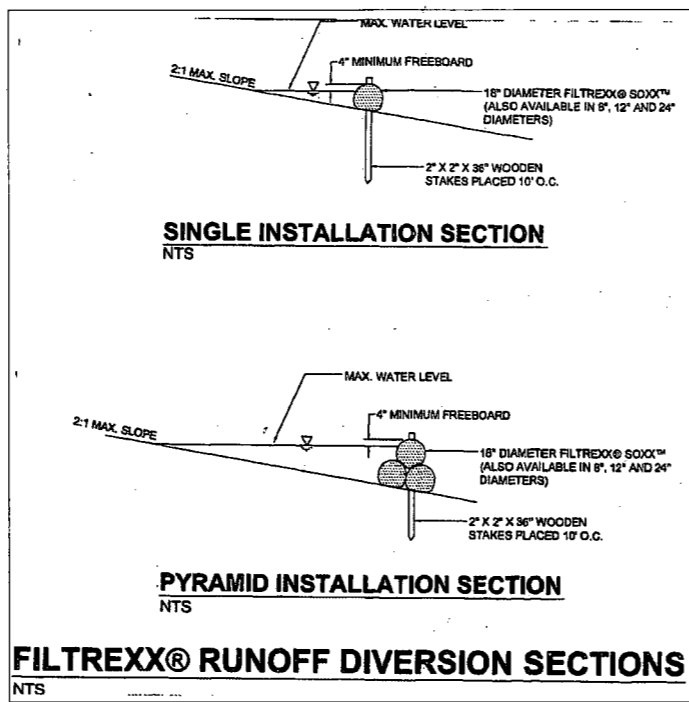
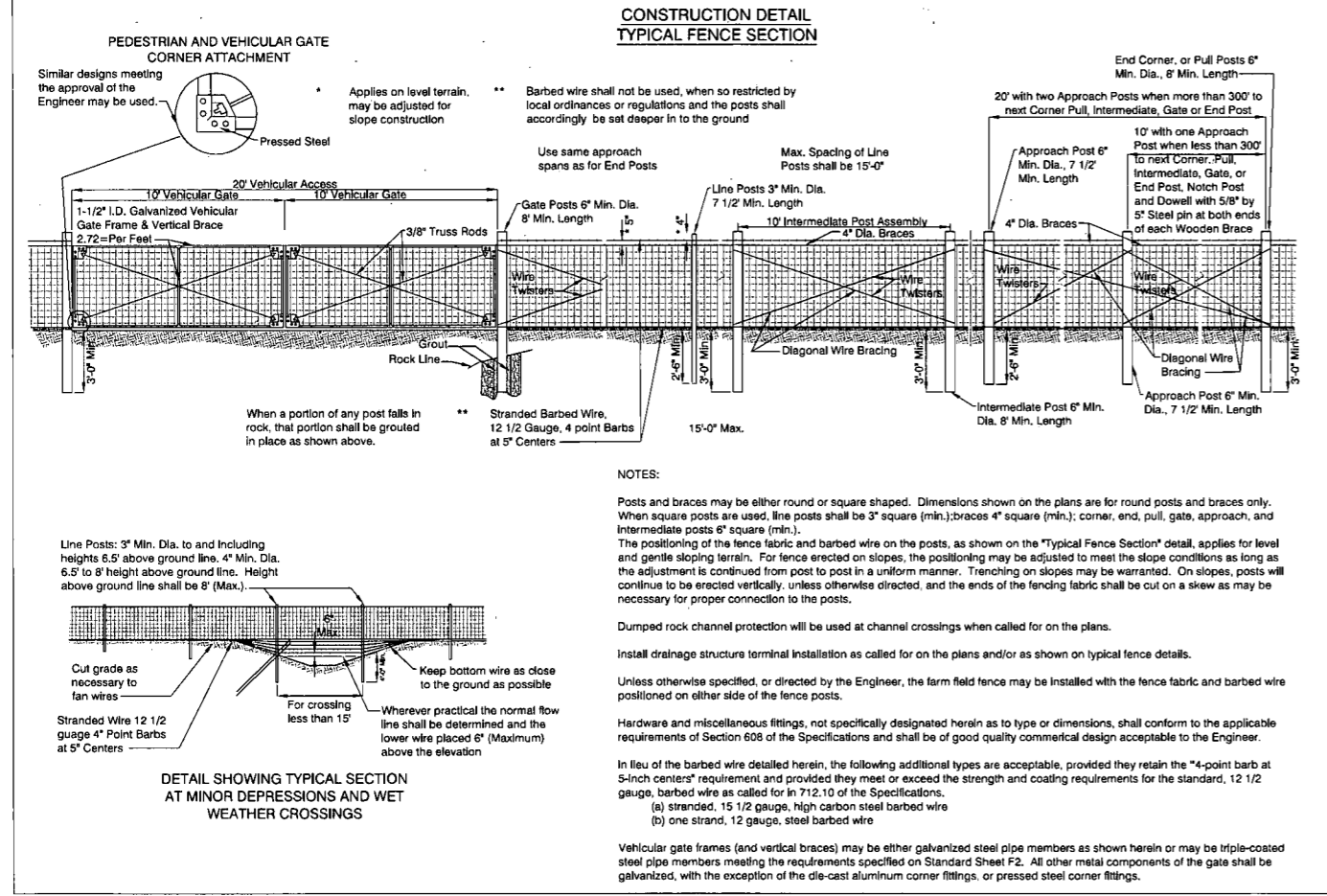
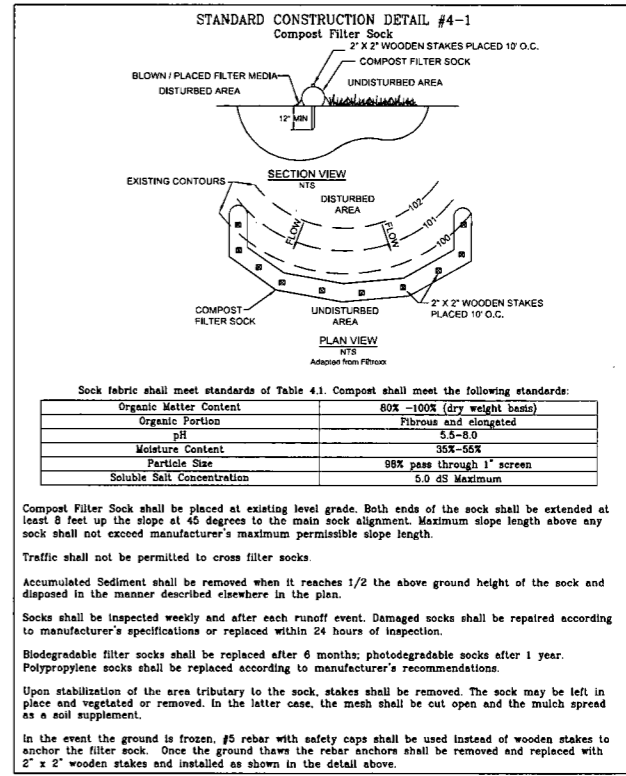


Table 4.1  
Compost Sock Fabric Minimum Specifications

Material Type	3 mil HDPE			Multi-Filament Polypropylene (MPPF)			Heavy Duty Multi-Filament Polypropylene (HDMPPF)
	Photo-degradable	Photo-degradable	Photo-degradable	Photo-degradable	Photo-degradable	Photo-degradable	
Sock Diameters	12" 18"	12" 18" 24"	12" 18" 24"	12" 18" 24"	12" 18" 24"	12" 18" 24"	12" 18" 24"
Mesh Opening	3/8"	3/8"	3/8"	3/8"	3/8"	1/8"	1/8"
Tensile Strength	28 psi	28 psi	28 psi	44 psi	44 psi	202 psi	202 psi
Ultraviolet Stability % Original Strength (ASTM G-155)	23% at 1000 hr.	23% at 1000 hr.	23% at 1000 hr.	100% at 1000 hr.	100% at 1000 hr.	100% at 1000 hr.	100% at 1000 hr.
Minimum Functional Longevity	6 months	6 months	6 months	1 year	1 year	2 years	2 years
Inner Containment Netting	Two-ply systems						
	HDPE biaxial net						
	Continuously wound						
	Fusion-welded junctions						
Outer Filtration Mesh	3/4" x 3/4" Max. aperture size						
	Composite Polypropylene Fabric (Woven layer & non-woven fleece mechanically fused via needle punch)						
	3/16" Max. aperture size						

Sock fabrics composed of burlap may be used on projects lasting 6 months or less.



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**REVEGETATION**  
Taken from the  
West Virginia Erosion and Sediment Control Field Manual  
West Virginia Division of Environmental Protection Office of Oil and Gas  
Charleston, W.Va.  
Section IV

**Temporary Seeding**

**a. General Conditions Where Practice Applies**  
Where exposed soil surfaces are not to be fine-graded or worked for periods longer than 21 days. Temporary vegetative cover with sediment controls must be established where runoff will go directly into a stream. Immediately upon construction of the site (site includes road and location), vegetation must be established on road bank and location slopes. A permanent vegetative cover shall be applied to areas that will be left un-worked for a period of more than six months.

**b. Seed Mixtures and Planting Dates**  
Refer to Tables 2 through 4 for recommended dates to establish vegetative cover and the approved lists of temporary and permanent plant species, and planting rates. Table 3 gives recommended types of temporary vegetation, rates of application, and optimum seeding dates. In situations where another cover is desired, contact the local soil conservation district for seeding recommendations.

**c. Seed Application**  
Apply seed by broadcasting, drilling, or by hydroseed according to the rates indicated in Table IV-3. Perform all planting operations at right angles to the slope. Necessary site preparation and roughening of the soil surface should be done just prior to seeding. Seedbed preparation may not be required on newly disturbed areas.

**Permanent Seeding**

**a. General**  
Permanent vegetative cover will be established where no further soil disturbance is anticipated or needed. Soil fertility and pH level should be tested and adjusted according to seed species planted. Planting of permanent vegetative covers must be performed on all disturbed areas after completion of the drilling process. Any site that contains significant amounts of topsoil shall have the topsoil removed and stockpiled when feasible. Topsoil should not be added to slopes steeper than 2:1 unless a good bonding to the sub-layer can be achieved. After proper grading and seedbed preparation, the vegetation will reestablish ground cover for the control of surface water runoff erosion.

All required seedbed preparation and loosening of soil by disking or dozer tracking should be performed just prior to seeding. If seedbed preparation is not feasible, 50% more seed shall be added to the recommended rates shown in Tables IV-3 and IV-4.

When hydroseeding, seedbed preparation may not be necessary if adequate site preparation was performed. Incorporate the appropriate amount of lime and/or fertilizer in the slurry mix when hydroseeding.

When hydroseeding, first mix the lime, fertilizer, and hydro-mulch in the recommended amount of water. Mix the seed and inoculants together within one hour prior to planting, and add to the slurry just before seeding. Apply the slurry uniformly over the prepared site. Assure that agitation is continuous throughout the seeding operation and the mix is applied within one hour of initial mixing.

**b. Lime and Fertilizer**  
1. Lime shall be applied to all permanent seedings. The pH of the soil is to be determined and lime applied accordingly. Once the pH is known, select the amount of lime to be applied from Table IV-5.  
2. Fertilizer shall be applied in all permanent seedings. Apply the equivalent for 500 lbs. minimum 10-20-20 fertilizer per acre or use the amount of fertilizer and lime recommended by a certified soil test.  
3. Application: For best results and maximum benefits, the lime and fertilizer are to be applied at the time of seedbed preparation.

**c. Permanent Seed Mixtures**  
Planners should take into consideration the species makeup of the existing pasture and the landowner's future pasture management plans when recommending seed mixtures. Selection: From Tables IV 4a and b, Permanent Seeding Mixtures Suitable for Establishment in West Virginia.

**Notes:**  
1. All legumes must be planted with the proper inoculants prior to seeding.  
2. Lathco Flatpea is potentially poisonous to some livestock.  
3. Only endophyte free varieties of Tall Fescue should be used. Tall Fescue and Crownvetch are also very invasive species, non-native to WV.  
4. For unprepared seedbeds or seeding outside the optimum timeframes, add 50% more seed to the specified rate. Mixtures in Table 4b are more wildlife and farm friendly; those listed in bold are suitable for use in shaded woodland settings. Mixtures in italic are suitable for use in filter strips.

**d. Seeding for Wildlife Habitat**  
Consider the use of the native plants or locally adapted plants when selecting cover types and species for wildlife habitat. Wildlife friendly species or mixes that have multiple values should be considered. See wildlife friendly species/mixtures in Table IV-4b. Consider selecting no or low maintenance long-lived plants adaptable to sites which may be difficult to maintain with equipment.

**Mulching**

**a. General Organic Mulches**  
The application of straw, hay or other suitable materials to the soil surface to prevent erosion. Straw made from wheat or oats is the preferred mulch, the use of hay is permissible, but not encouraged due to the risk of spreading invasive species. Mulch must be applied to all temporary and permanent seeding on all disturbed areas. Depending on site conditions, in critical areas such as waterways or steep slopes, additional or substitute soil protective measures may be used if deemed necessary. Examples include jute mesh and soil stabilization blankets or erosion control matting.

Areas that have been temporarily or permanently seeded should be mulched immediately following seeding. Mulches conserve desirable soil properties, reduce soil moisture loss, prevent crusting and sealing of the soil surface and provide a suitable microclimate for seed germination.

Areas that cannot be seeded because of the season should be mulched to provide some protection to the soil surface. An organic mulch, straw or hay should be used and the area then seeded as soon as weather or seasonal conditions permit. Do not use fiber mulch (cellulose-hydroseed) alone for this practice; at normal application rates it will not give the soil protection of other types of mulch.

Wood cellulose fiber mulch is used in hydroseeding operations and applied as part of the slurry. It creates the best seed-soil contact when applied over the top of (as a separate operation) newly seeded areas. Fiber mulch does not alone provide sufficient protection on highly erodible soils, or during less than favorable growing conditions. Fiber mulch should not be used alone during the dry summer months or when used for late fall mulch cover. Use straw mulch during these periods and fiber mulch may be used to tack (anchor) the straw mulch. Fiber mulch is well suited for steep slopes, critical areas and areas susceptible to wind.

**b. Chemical Mulches, Soil Binders and Tackifiers**  
A wide range of synthetic spray on materials are marketed to stabilize and protect the soil surface. These are mixed with water and sprayed over the mulch and to the soil. They may be used alone in some cases as temporary stabilizers, or in conjunction with fiber mulch, straw or hay.

When used alone most chemical mulches do not have the capability to insulate the soil or retain soil moisture that organic mulches have.

**c. Specifications**  
From Table IV-6 select the type of mulch and rate of application that will best suit the conditions at the site.

**d. Anchoring**  
Depending on the field situation, mulch may not stay in place because of wind action or rapid water runoff. In such cases, mulch is to be anchored mechanically or with mulch netting.

**1. Mechanical Anchoring**  
Apply mulch and pull mulch anchoring tool over the mulch. When a disk is used set the disk straight and pull across slope. Mulch material should be tucked into the soil about three inches.  
**2. Mulch netting**  
Follow manufacturer's recommendation when positioning and stapling the mulch netting in the soil.

**Table IV-1  
Recommended Seeding Dates**

Planting Dates	Suitability
March 1 - April 15 and August 1 - October 1	Best Seeding Periods
April 15 - August 1	HIGH RISK - moisture stress likely
October 1 - December 1	HIGH RISK - freeze damage to young seedlings
December 1 - March 1	Good seeding period. Dormant seeding

**Table 2  
Acceptable Fertilization Recommendation**

Species	N (lbs/ac)	P2O5 (lbs/ac)	Example Rec. (per acre)
Cool Season Grass	40	80	400 lbs. 10-20-20
CS Grass & Legume	30	60	300 lbs. 10-20-20
Temporary Cover	40	40	200 lbs. 19-19-19

**Table 3  
Temporary Cover**

Species	Seeding Rate (lbs/acre)	Optimum Seeding Dates	Drainage	pH Range
Annual Ryegrass	40	3/1 - 6/15 or 8/15 - 9/15	Well - Poorly	5.5 - 7.5
Field Bromegrass	40	3/1 - 6/15 or 8/15 - 9/15	Well - Mod. Well	6.0 - 7.0
Spring Oats	96	3/1 - 6/15	Well - Poorly	5.5 - 7.0
Sundangrass	40	5/15 - 8/15	Well - Poorly	5.5 - 7.5
Winter Rye	168	8/15 - 10/15	Well - Poorly	5.5 - 7.5
Winter Wheat	180	8/15 - 11/15	Well - Mod. Well	5.5 - 7.0
Japanese Millet	30	6/15 - 8/15	Well	4.5 - 7.0
Redtop	5	3/1 - 6/15	Well	4.0 - 7.5
Annual Ryegrass	26	3/1 - 6/15	Well - Poorly	5.5 - 7.5
Spring Oats	64	3/1 - 6/15	Well - Poorly	5.5 - 7.5

NOTE: These rates should be increased by 50% if planted April 15 - August 1 and October 1 - March 1.

**Table 4a  
Permanent Seeding Mixture**

Species/Mixture	Seeding Rate (lbs/acre)	Soil Drainage preference	pH Range
Crownvetch / Tall Fescue	10 - 15	Well - Mod. Well	5.0 - 7.5
Crownvetch / Perennial Ryegrass	20	Well - Mod. Well	5.0 - 7.5
Flatpea or Perennial Pea / Tall Fescue	20	Well - Mod. Well	4.0 - 8.0
Ladino Clover / Serecia Lespedeza / Tall Fescue	15	Well - Mod. Well	4.5 - 7.5
Redtop / Tall Fescue	30	Well - Mod. Well	5.0 - 7.5
Ladino Clover / Redtop	3	Well - Mod. Well	5.0 - 7.5
Crownvetch / Tall Fescue	10	Well - Mod. Well	5.0 - 7.5
Redtop / Tall Fescue	20	Well - Mod. Well	5.0 - 7.5
Birdsfoot Trefoil / Redtop	10	Well - Mod. Well	5.0 - 7.5
Serecia Lespedeza / Tall Fescue	25	Well - Mod. Well	4.5 - 7.5
Redtop / Tall Fescue	30	Well - Mod. Well	4.5 - 7.5
Redtop / Tall Fescue	3	Well - Mod. Well	5.0 - 7.5
Creeping Red / Tall Fescue	50	Well - Poorly	4.5 - 7.5
Perennial Ryegrass / Tall Fescue	10	Well - Poorly	5.8 - 8.0
Lathco Flatpea *	15	Well - Poorly	5.8 - 8.0

\* Lathco Flatpea is potentially poisonous to some livestock. All legumes should be planted with proper inoculants prior to seeding. For unprepared seedbeds or seeding outside the optimum timeframe, add 50% more seed to the specified rate.  
Mixtures listed in bold are suitable for use in shaded woodland settings; those in italics are suitable for use in filter strips.

**Table 4b  
Wildlife and Farm Friendly Seed Mixtures**

Species/Mixture	Seeding Rate (lbs/acre)	Soil Drainage preference	pH Range
KY Bluegrass / Redtop	20	Well - Mod. Well	5.5 - 7.5
Ladino Clover or Birdsfoot Trefoil	2 / 10	Well - Mod. Well	6.5 - 8.0
Timothy / Alfalfa	5	Well - Mod. Well	6.5 - 8.0
Timothy / Birdsfoot Trefoil	12	Well - Poorly	5.5 - 7.5
Orchardgrass / Ladino Clover	8	Well - Mod. Well	5.5 - 7.5
Redtop	10	Well - Mod. Well	5.5 - 7.5
Orchardgrass / Ladino Clover	2	Well - Mod. Well	5.5 - 7.5
Orchardgrass / Perennial Ryegrass	10	Well - Mod. Well	5.5 - 7.5
Creeping Red Fescue / Perennial Ryegrass	20	Well - Mod. Well	5.5 - 7.5
Orchardgrass or KY Bluegrass	10	Well - Mod. Well	6.0 - 7.5
Birdsfoot Trefoil / Redtop	10	Well - Mod. Well	5.5 - 7.5
Orchardgrass	5	Well - Mod. Well	5.5 - 7.5
Lathco Flatpea *	20	Well - Mod. Well	5.5 - 7.5
Perennial Ryegrass	30	Well - Mod. Well	5.5 - 7.5
Lathco Flatpea * / Orchardgrass	20	Well - Mod. Well	5.5 - 7.5

\* Lathco Flatpea is potentially poisonous to some livestock. All legumes should be planted with proper inoculants prior to seeding. For unprepared seedbeds or seeding outside the optimum timeframe, add 50% more seed to the specified rate.  
Mixtures listed in bold are suitable for use in shaded woodland settings; those in italics are suitable for use in filter strips.

**Table IV-5  
Lime and Fertilizer Application Table**

pH of Soil	Lime in Tons per Acre	Fertilizer, Lbs., per Acre (10-20-20 or Equivalent)
Above 6.0	2	500
5.0 to 6.0	3	500
Below 5.0	4	500

The pH can be determined with a portable pH testing kit or by sending the soil samples to a soil testing laboratory. When 4 tons of lime per acre are applied it must be incorporated into the soil by disking, backblading or tracking up and down the slope.

**Table IV-6  
Mulch Materials Rates and Uses**

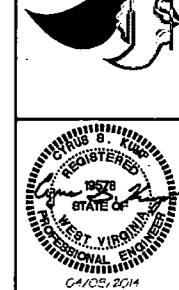
Material	Minimum Rates per acre	Coverage	Remarks
Hay or Straw	2 to 3 Tons	Cover 75% to 90% of Surface	Subject to wind blowing or washing unless tied down
Wood Fiber	100 to 150 bales	Cover all	For hydroseeding
Pulp Fiber	1000 to 1500 lbs	Disturbed Areas	
Wood - Cellulose			
Recirculated Paper			

Tables IV 1-4 taken from Natural Resources Conservation Service Manual 'Critical Area Planting'

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**CONSTRUCTION DETAILS**  
**OXFD 10**  
SOUTHWEST & COVE DISTRICTS  
DODDRIDGE COUNTY, WV

DATE: 04/08/2014

SCALE: N/A

DESIGNED BY: CSK

FILE NO. 8031

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MATERIAL QUANTITIES				
WELL PAD SITE: OXFD 10				
Item Description	Quantity	Unit	Unit Cost	Item Total
<b>1.0 Clearing and Grubbing</b>				
1.a Tree Clearing	38.1	AC	\$	\$
1.b. Mowing	1.6	AC	\$	\$
<b>2.0 Compost Filter Sock</b>				
2.a. 12" Compost Filter Sock		LF	\$	\$
2.b. 18" Compost Filter Sock	16,554	LF	\$	\$
2.c. 24" Compost Filter Sock		LF	\$	\$
2.d. 32" Compost Filter Sock		LF	\$	\$
2.e. Compost Sock Diversion		LF	\$	\$
<b>3.0 Stone &amp; Aggregate Surfacing</b>				
3.a. Pad 12" of 0"-6" Aggregate (Compacted to 10")*	6,972	TONS	\$	\$
3.b. Pad 4" of 3/4" Crusher Run (Compacted to 2")*	1,091	TONS	\$	\$
3.c. Access Road 12" of 0"-6" Aggregate (Compacted to 10")*	11,840	TONS	\$	\$
3.d. Access Road 4" of 3/4" Crusher Run (Compacted to 2")*	4,604	TONS	\$	\$
3.e. Geotextile	34,203	SY	\$	\$
3.f. Rock Level Spreader	11	TONS	\$	\$
<b>4.0 Coconut Slope Matting</b>				
	80,701	SY	\$	\$
<b>5.0 Seed &amp; Mulch</b>				
	35.3	AC	\$	\$
<b>6.0 Ditch Lining</b>				
6.a. Ditch Fabric	9,414	SY	\$	\$
6.b. R-3	1,569	TONS	\$	\$
<b>7.0 CPP Culvert</b>				
7.a. 4"	73	LF	\$	\$
7.b. 15"	1,356	LF	\$	\$
7.c. 18"		LF	\$	\$
7.d. 24"		LF	\$	\$
7.e. 30"		LF	\$	\$
7.f. 36"		LF	\$	\$
7.g. Sump Drains	4	EA	\$	\$
<b>8.0 Excavation</b>				
8.a. Well Pad (Cut w 10% Swell)	40,030	CY	\$	\$
8.b. Access Roads (Cut w 10% Swell)	37,730	CY	\$	\$
8.c. Topsoil (6")	15,116	CY	\$	\$
8.d. Export to Stockpile	36,001	CY	\$	\$
<b>9.0 Ditch Length</b>				
	9,728	LF	\$	\$
<b>10.0 Rip Rap Aprons</b>				
	625	TONS	\$	\$
<b>11.0 Rip Rap Weir</b>				
	74	TONS	\$	\$
<b>12.0 Overexcavation (Toe Key)</b>				
	29,201	CY	\$	\$
<b>13.0 Overexcavation (Bonding Bench)</b>				
	8,077	CY	\$	\$

\*Gravel quantities shown have been increased by 10%

MATERIAL QUANTITIES				
TANK PAD SITE: OXFD 10				
Item Description	Quantity	Unit	Unit Cost	Item Total
<b>1.0 Clearing and Grubbing</b>				
1.a Tree Clearing	2.3	AC	\$	\$
1.b. Mowing	0.6	AC	\$	\$
<b>2.0 Compost Filter Sock</b>				
2.a. 12" Compost Filter Sock		LF	\$	\$
2.b. 18" Compost Filter Sock	834	LF	\$	\$
2.c. 24" Compost Filter Sock		LF	\$	\$
2.d. 32" Compost Filter Sock		LF	\$	\$
2.e. Compost Sock Diversion		LF	\$	\$
<b>3.0 Stone &amp; Aggregate Surfacing</b>				
3.a. Pad 12" of 0"-6" Aggregate (Compacted to 10")*	4,006	TONS	\$	\$
3.b. Pad 4" of 3/4" Crusher Run (Compacted to 2")*	1,558	TONS	\$	\$
3.c. Access Road 12" of 0"-6" Aggregate (Compacted to 10")*		TONS	\$	\$
3.d. Access Road 4" of 3/4" Crusher Run (Compacted to 2")*		TONS	\$	\$
3.e. Geotextile	7,283	SY	\$	\$
3.f. Rock Level Spreader		TONS	\$	\$
<b>4.0 Coconut Slope Matting</b>				
	3,263	SY	\$	\$
<b>5.0 Seed &amp; Mulch</b>				
	1.5	AC	\$	\$
<b>6.0 Ditch Lining</b>				
6.a. Ditch Fabric		SY	\$	\$
6.b. R-3		TONS	\$	\$
<b>7.0 CPP Culvert</b>				
7.a. 4"		LF	\$	\$
7.b. 15"		LF	\$	\$
7.c. 18"		LF	\$	\$
7.d. 24"		LF	\$	\$
7.e. 30"		LF	\$	\$
7.f. 36"		LF	\$	\$
7.g. Sump Drains		EA	\$	\$
<b>8.0 Excavation</b>				
8.a. Tank Pad (Cut w 10% Swell)	10,241	CY	\$	\$
8.b. Access Road (Cut w 10% Swell)		CY	\$	\$
8.c. Topsoil (6")	1,738	CY	\$	\$
<b>9.0 Ditch Length</b>				
		LF	\$	\$
<b>10.0 Rip Rap Aprons</b>				
		TONS	\$	\$
<b>11.0 Rip Rap Weir</b>				
		TONS	\$	\$
<b>12.0 Overexcavation (Toe Key)</b>				
	2,222	CY	\$	\$

\*Gravel quantities shown have been increased by 10%



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MATERIAL QUANTITIES

OXFD 10

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