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west virginia department of environmental protection

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Office of Oil and Gas  
601 57<sup>th</sup> Street, S.E.  
Charleston, WV 25304  
(304) 926-0450  
fax: (304) 926-0452

Harold D. Ward, Cabinet Secretary  
[www.dep.wv.gov](http://www.dep.wv.gov)

Wednesday, April 12, 2023  
PERMIT MODIFICATION APPROVAL  
Horizontal 6A / New Drill

ANTERO RESOURCES CORPORATION  
1615 WYNKOOP STREET

DENVER, CO 80202

Re: Permit Modification Approval for CIDER RUN UNIT 1H  
47-095-02839-00-00

**Expanded LOD for surface owner access**

ANTERO RESOURCES CORPORATION

The Office of Oil and Gas has reviewed the attached permit modification for the above referenced permit. The attached modification has been approved and well work may begin. Please be reminded that the oil and gas inspector is to be notified twenty-four (24) hours before permitted well work is commenced.

If there are any questions, please feel free to contact me at (304) 926- 0450.

A handwritten signature in blue ink, appearing to read 'James A. Martin', is written over a faint blue circular stamp.

James A. Martin  
Chief

Operator's Well Number: CIDER RUN UNIT 1H  
Farm Name: EDWARD YOST ESTATE  
U.S. WELL NUMBER: 47-095-02839-00-00  
Horizontal 6A New Drill  
Date Modification Issued: 4/12/2023

Promoting a healthy environment.

04/14/2023



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west virginia department of environmental protection

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Wednesday, April 12, 2023  
PERMIT MODIFICATION APPROVAL  
Horizontal 6A / New Drill

ANTERO RESOURCES CORPORATION  
1615 WYNKOOP STREET  
  
DENVER, CO 80202

Re: Permit Modification Approval for CIDER RUN UNIT 2H  
47-095-02840-00-00

Expanded LOD for surface owner access

ANTERO RESOURCES CORPORATION

The Office of Oil and Gas has reviewed the attached permit modification for the above referenced permit. The attached modification has been approved and well work may begin. Please be reminded that the oil and gas inspector is to be notified twenty-four (24) hours before permitted well work is commenced.

If there are any questions, please feel free to contact me at (304) 926- 0450.

James A. Martin  
Chief

Operator's Well Number: CIDER RUN UNIT 2H  
Farm Name: EDWARD YOST ESTATE  
U.S. WELL NUMBER: 47-095-02840-00-00  
Horizontal 6A New Drill  
Date Modification Issued: 4/12/2023

Promoting a healthy environment.

04/14/2023



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west virginia department of environmental protection

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Wednesday, April 12, 2023  
PERMIT MODIFICATION APPROVAL  
Horizontal 6A / New Drill

ANTERO RESOURCES CORPORATION  
1615 WYNKOOP STREET

DENVER, CO 80202

Re: Permit Modification Approval for PEACH FORK UNIT 1H  
47-095-02841-00-00

Expanded LOD for surface owner access

ANTERO RESOURCES CORPORATION

The Office of Oil and Gas has reviewed the attached permit modification for the above referenced permit. The attached modification has been approved and well work may begin. Please be reminded that the oil and gas inspector is to be notified twenty-four (24) hours before permitted well work is commenced.

If there are any questions, please feel free to contact me at (304) 926- 0450.

James A. Martin  
Chief

Operator's Well Number: PEACH FORK UNIT 1H  
Farm Name: EDWARD YOST ESTATE  
U.S. WELL NUMBER: 47-095-02841-00-00  
Horizontal 6A New Drill  
Date Modification Issued: 4/12/2023

Promoting a healthy environment.

04/14/2023



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west virginia department of environmental protection

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Wednesday, April 12, 2023  
PERMIT MODIFICATION APPROVAL  
Horizontal 6A / New Drill

ANTERO RESOURCES CORPORATION  
1615 WYNKOOP STREET

DENVER, CO 80202

Re: Permit Modification Approval for PEACH FORK UNIT 2H  
47-095-02842-00-00

**Expanded LOD for surface owner access**

ANTERO RESOURCES CORPORATION

The Office of Oil and Gas has reviewed the attached permit modification for the above referenced permit. The attached modification has been approved and well work may begin. Please be reminded that the oil and gas inspector is to be notified twenty-four (24) hours before permitted well work is commenced.

If there are any questions, please feel free to contact me at (304) 926- 0450.

James A. Martin  
Chief

Operator's Well Number: PEACH FORK UNIT 2H  
Farm Name: EDWARD YOST ESTATE  
U.S. WELL NUMBER: 47-095-02842-00-00  
Horizontal 6A New Drill  
Date Modification Issued: 4/12/2023

Promoting a healthy environment.

04/14/2023



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west virginia department of environmental protection

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Wednesday, April 12, 2023  
PERMIT MODIFICATION APPROVAL  
Horizontal 6A / New Drill

ANTERO RESOURCES CORPORATION  
1615 WYNKOOP STREET

DENVER, CO 80202

Re: Permit Modification Approval for SPILI UNIT 1H  
47-095-02843-00-00

Expanded LOD for surface owner access

ANTERO RESOURCES CORPORATION

The Office of Oil and Gas has reviewed the attached permit modification for the above referenced permit. The attached modification has been approved and well work may begin. Please be reminded that the oil and gas inspector is to be notified twenty-four (24) hours before permitted well work is commenced.

If there are any questions, please feel free to contact me at (304) 926- 0450.

A handwritten signature in blue ink, appearing to read 'James A. Martin', is positioned above the printed name and title.

James A. Martin  
Chief

Operator's Well Number: SPILI UNIT 1H  
Farm Name: EDWARD YOST ESTATE  
U.S. WELL NUMBER: 47-095-02843-00-00  
Horizontal 6A New Drill  
Date Modification Issued: 4/12/2023

Promoting a healthy environment.

04/14/2023



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west virginia department of environmental protection

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Wednesday, April 12, 2023  
PERMIT MODIFICATION APPROVAL  
Horizontal 6A / New Drill

ANTERO RESOURCES CORPORATION  
1615 WYNKOOP STREET

DENVER, CO 80202

Re: Permit Modification Approval for SPILI UNIT 2H  
47-095-02844-00-00

**Expanded LOD for surface owner access**

ANTERO RESOURCES CORPORATION

The Office of Oil and Gas has reviewed the attached permit modification for the above referenced permit. The attached modification has been approved and well work may begin. Please be reminded that the oil and gas inspector is to be notified twenty-four (24) hours before permitted well work is commenced.

If there are any questions, please feel free to contact me at (304) 926- 0450.



James A. Martin  
Chief

Operator's Well Number: SPILI UNIT 2H  
Farm Name: EDWARD YOST ESTATE  
U.S. WELL NUMBER: 47-095-02844-00-00  
Horizontal 6A New Drill  
Date Modification Issued: 4/12/2023

Promoting a healthy environment.

04/14/2023







# LEGEND

LEGEND			
EX. INDEX CONTOUR & CONTOUR LABEL		PR. INDEX CONTOUR (10' INTERVAL) & CONTOUR LABEL	
EX. INTERMEDIATE CONTOUR		PR. INTERMEDIATE CONTOUR (2' INTERVAL)	
EX. PROPERTY LINE		PR. INTERMEDIATE CONTOUR (1' INTERVAL)	
EX. TOP OF BERM		PR. INDEX ROAD CONTOUR (10' INTERVAL) & CONTOUR LABEL	
EX. ROAD EDGE OF GRAVEL/DIRT		PR. INTERMEDIATE ROAD CONTOUR (2' INTERVAL)	
EX. ROAD EDGE OF PAVEMENT		PR. PADS/STOCKPILE TOPO LIMITS	
EX. ROAD CENTERLINE		PERMITTED LIMITS OF DISTURBANCE	
EX. GUARDRAIL		MODIFICATION LIMITS OF DISTURBANCE	
EX. BRIDGE		PR. ROAD/IMPOUNDMENT EDGE OF GRAVEL	
EX. DITCHLINE/DRAINAGE FEATURE		PR. ROAD EDGE OF PAVEMENT	
EX. RIP-RAP		PR. ROAD CENTERLINE	
EX. CULVERT		PR. GUARDRAIL	
EX. TREELINE		PR. ROCK CONSTRUCTION ENTRANCE	
EX. BUILDING		PR. AIR BRIDGE	
EX. MISCELLANEOUS FEATURE		PR. CULVERT	
EX. 100 YR FEMA FLOODPLAIN		PR. DITCH	
EX. DELINEATED STREAM		PR. RIP-RAP TRAPEZOIDAL DITCH	
EX. DELINEATED WETLAND/POND		PR. OUTLET PROTECTION	
100' WETLAND/STREAM BUFFER		PR. ROCK LEVEL SPREADER	
STREAM/WETLAND DELINEATION STUDY AREA		PR. COMPOST FILTER SOCK	
EX. FENCELINE		PR. SMART FENCE HD	
EX. GATE		PR. WELL HEAD	
EX. PERIMETER SAFETY FENCE		PR. PAD DEWATERING SYSTEM	
EX. ACCESS GATE WITH EMERGENCY LIFELINE		PR. TOP OF PAD CONTAINMENT BERM	
EX. WELL HEAD ON DESIGNED PAD		PR. 220' X 320' PAD FOOTPRINT	
EX. GAS WELL		PR. SPOT SHOT	
EX. PIPELINE		PR. PERIMETER SAFETY FENCE	
EX. PIPELINE R/W		PR. ACCESS GATE WITH EMERGENCY LIFELINE	
EX. PIPELINE METER		PR. PIPELINE	
EX. PIPELINE VALVE		PR. PIPELINE R/W	
EX. PIT		PR. OVERHEAD UTILITY	
EX. OVERHEAD UTILITY		PR. POWER POLE/GUY WIRE	
EX. POWER POLE/GUY WIRE		PR. OVERHEAD UTILITY R/W	
EX. UNDERGROUND ELECTRIC		PR. WATERLINE	
EX. UNDERGROUND TELEPHONE		BORING LOCATION	
EX. UNDERGROUND FIBER OPTIC		X-SECTION/PROFILE GRID INDEX	
EX. UTILITY R/W		X-SECTION/PROFILE GRID INTERMEDIATE	
EX. WATERLINE		X-SECTION/PROFILE PROPOSED GRADE	
EX. WATER WELL/EX. SPRING		X-SECTION/PROFILE EXISTING GRADE	
EX. COMPOST SOCK		X-SECTION/PROFILE WATER SURFACE	
EX. SMART FENCE HD		X-SECTION/PROFILE CULVERT	
EX. SILT FENCE		MATCHLINE	
APPROX. LOCATION OF SLIDE AREA		EX. METER	
APPROX. LOCATION OF BORROW/ SPOIL AREA		EX. TANK	
PR. TOE BENCH		EX. COMBUSTOR	
EX. APPROX. SURFACE & SUB-SURFACE ELECTRIC LINE AREA		EX. GPU	
EX. APPROX. SURFACE & SUB-SURFACE DUMP LINE AREA		EX. SEPARATOR	
EX. APPROX. SURFACE & SUB-SURFACE WELL LINE AREA		EX. VRT	
EX. APPROX. SURFACE & SUB-SURFACE SALES LINE AREA		EX. KNOCK-OUT VESSEL	
		EX. STAIRS/CATWALK	
		EX. DEWATERING SYSTEM	
		EX. PIG LAUNCHER	
		EX. SECONDARY CONTAINMENT	
		EX. ABOVE-GND VAPOR LINE	
		EX. ESD	
		EX. MAILBOX	
		EX. CONTROL PT.	
		EX. MUSTER AREA	

**APPROVED**  
**WVDEP OOG**  
MODIFICATION  
4/12/2023

DATE	REVISION
03/13/2023	REVISED PER LANDOWNER ROAD LOD MOD

**Antero**  
Resources  
THIS DOCUMENT  
WAS PREPARED FOR:  
ANTERO RESOURCES  
CORPORATION

**LEGEND**  
**ED YOST**  
WELL PAD & WATER CONTAINMENT PAD  
ELLSWORTH DISTRICT  
TYLER COUNTY, WEST VIRGINIA



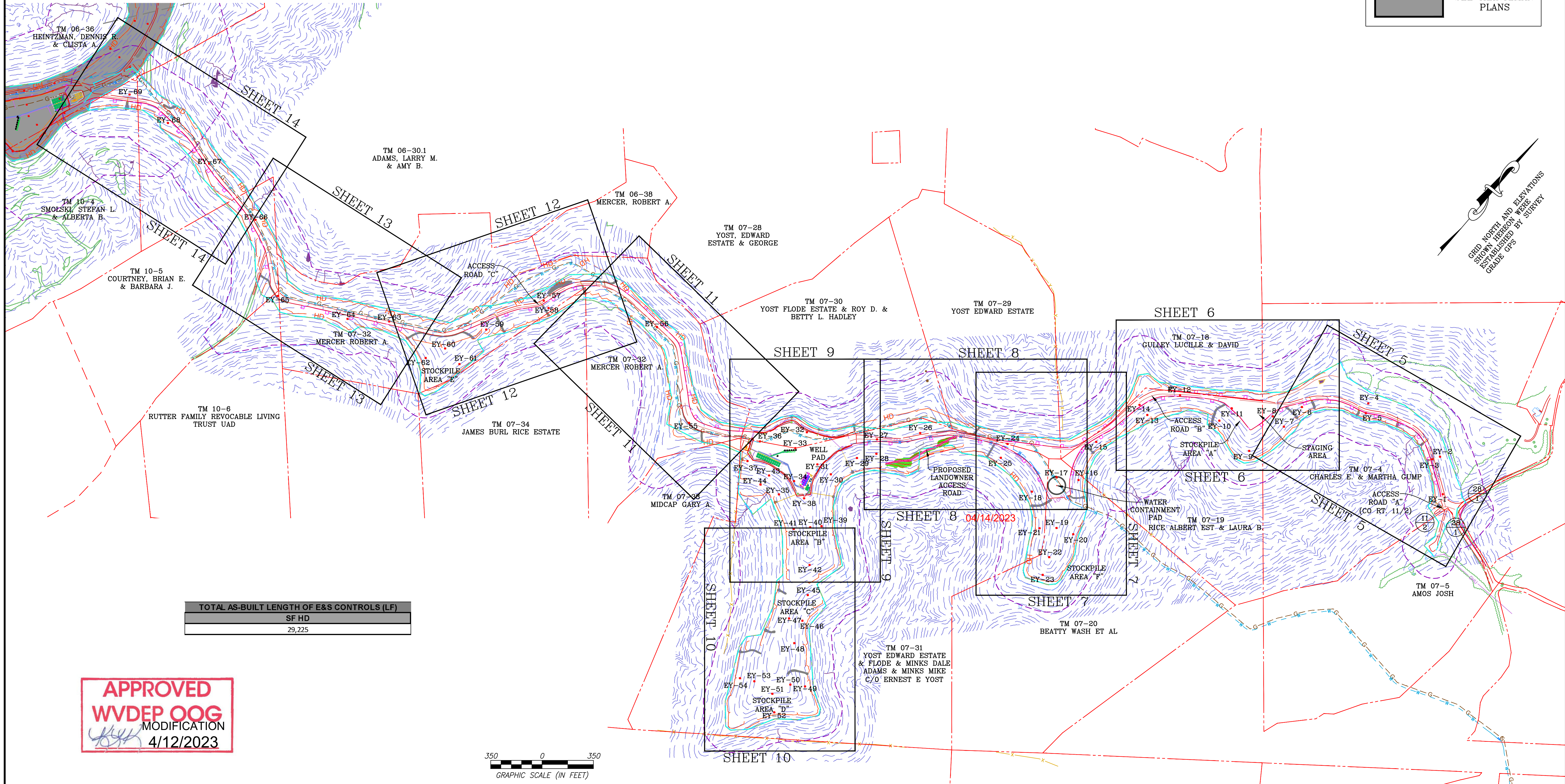
# OVERALL PLAN SHEET INDEX

### GENERAL NOTES:

1. THE TOPOGRAPHIC AND PROPERTY LINE INFORMATION SHOWN HEREON IS BASED ON INFORMATION PROVIDED BY ANTERO MAY, 2021.
2. AS-BUILT INFORMATION SHOWN HEREON IS BASED ON FIELD SURVEY PERFORMED BY NAVITUS ENGINEERING, INC. ON JANUARY 19, 2023.
3. THE PROPERTY LINES SHOWN HEREON DO NOT REPRESENT A BOUNDARY SURVEY ON ANY OF THE PARCELS SHOWN. PROPERTY CORNERS AND LINES PERTINENT TO WELL LOCATION ARE BASED ON A FIELD SURVEY. THE REMAINDER OF THE PROPERTY LINES ARE BASED ON COUNTY REAL ESTATE TAX MAPS, GIS INFORMATION AND DEEDS OF RECORD.
4. 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 NAVITUS ENGINEERING AND B) FIELD MARKINGS PLACED BY UTILITY COMPANIES IN RESPONSE TO THE WV 811 TICKET SUBMITTED BY NAVITUS ENGINEERING. 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. ANY UTILITIES ENCOUNTERED SUBSEQUENT TO PLAN APPROVAL OR DURING CONSTRUCTION THAT ARE NOT SHOWN ON THE PLAN SHOULD BE REPORTED TO NAVITUS ENGINEERING AND ANTERO RESOURCES CORPORATION.

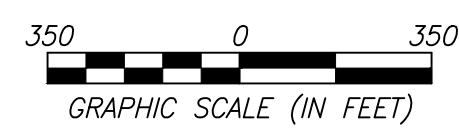
**LIMITS OF DISTURBANCE  
LEGEND**

SEE HEINTZMAN  
PLANS



TOTAL AS-BUILT LENGTH OF E&S CONTROLS (LF)	
SF HD	29,225

**APPROVED**  
**WVDEP OOG**  
MODIFICATION  
4/12/2023



**NAVITUS**  
ENERGY ENGINEERING  
Telephone: (868) 662-4165 | www.NavitusEng.com

DATE	REVISION
03/13/2023	REVISED PER LANDOWNER ROAD LOD MOD

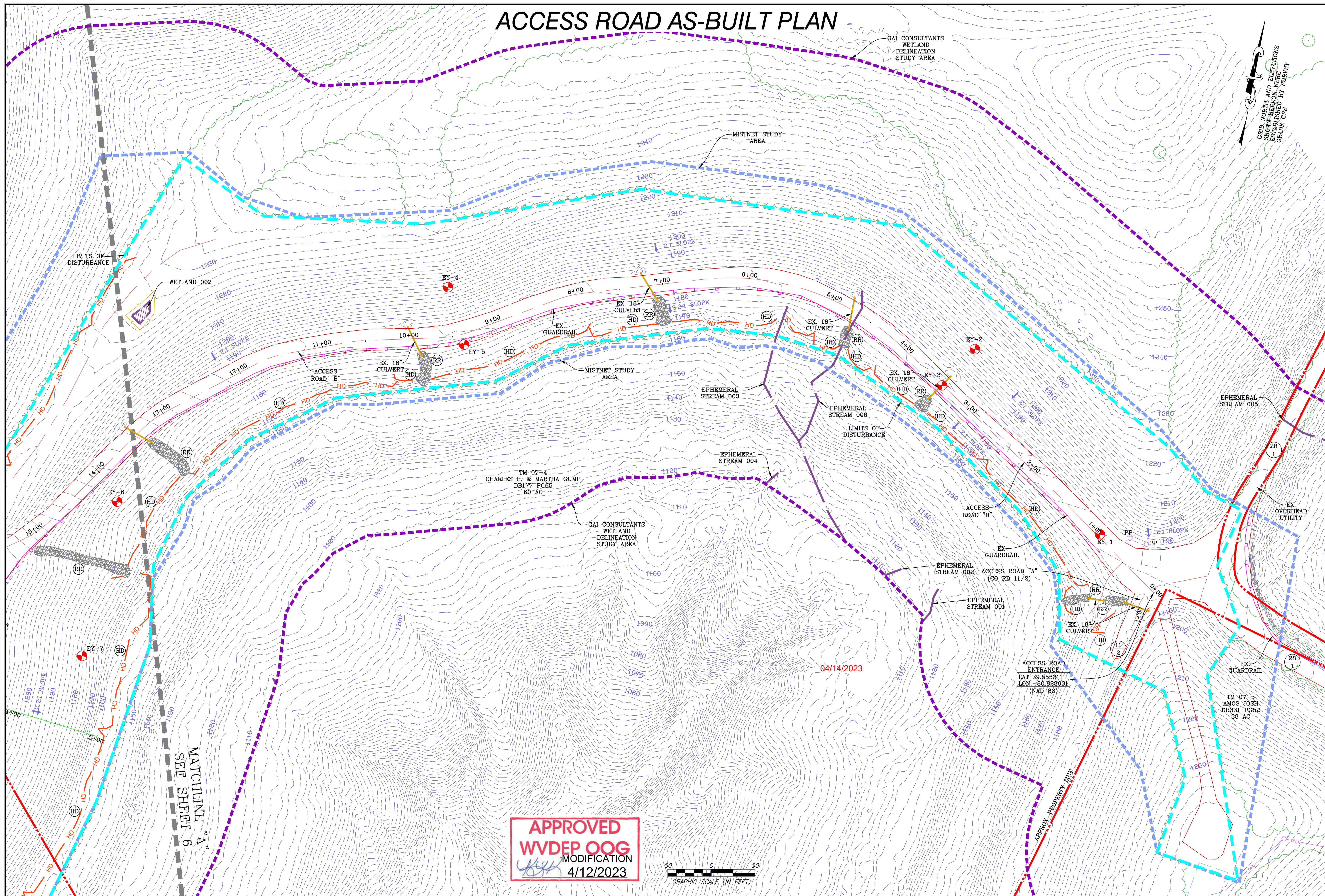
**Antero**  
Resources  
THIS DOCUMENT  
WAS PREPARED FOR:  
ANTERO RESOURCES  
CORPORATION

OVERALL PLAN SHEET INDEX  
**ED YOST**  
WELL PAD & WATER CONTAINMENT PAD  
ELLSWORTH DISTRICT  
TYLER COUNTY, WEST VIRGINIA



DATE: 01/27/2023  
SCALE: 1" = 350'  
SHEET 4 OF 24

# ACCESS ROAD AS-B-BUILT PLAN



GAI CONSULTANTS  
WETLAND  
DELINEATION  
STUDY AREA

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

MISTNET STUDY  
AREA

LIMITS OF  
DISTURBANCE

WETLAND 002

EY-4

EX 18" CULVERT

EX 18" CULVERT

EX 18" CULVERT

EY-2

EX 18" CULVERT

EX GUARDRAIL

EPHEMERAL  
STREAM 003

EPHEMERAL  
STREAM 006

EY-3

EPHEMERAL  
STREAM 005

TM 07-4  
CHARLES E. & MARTHA GUMP  
DB177 PG65  
60 AC

EPHEMERAL  
STREAM 004

GAI CONSULTANTS  
WETLAND  
DELINEATION  
STUDY AREA

ACCESS ROAD "B"

EX OVERHEAD  
UTILITY

ACCESS ROAD "A"  
(CO RD 11/2)

EPHEMERAL  
STREAM 002

EX 18" CULVERT

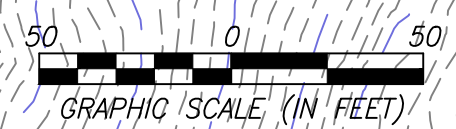
ACCESS ROAD  
ENTRANCE  
LAT: 39.555311  
LON: -80.823601  
(NAD 83)

TM 07-5  
AMOS JOSH  
DB331 PG52  
39 AC

EX GUARDRAIL

MATCHLINE  
A  
SEE SHEET 6

**APPROVED**  
**WVDEP OOG**  
MODIFICATION  
4/12/2023



**NAVITUS**  
ENERGY ENGINEERING  
Telephone: (866) 662-4165 | www.NavitusEng.com

DATE	REVISION
03/13/2023	REVISED PER LANDOWNER ROAD LOD MOD

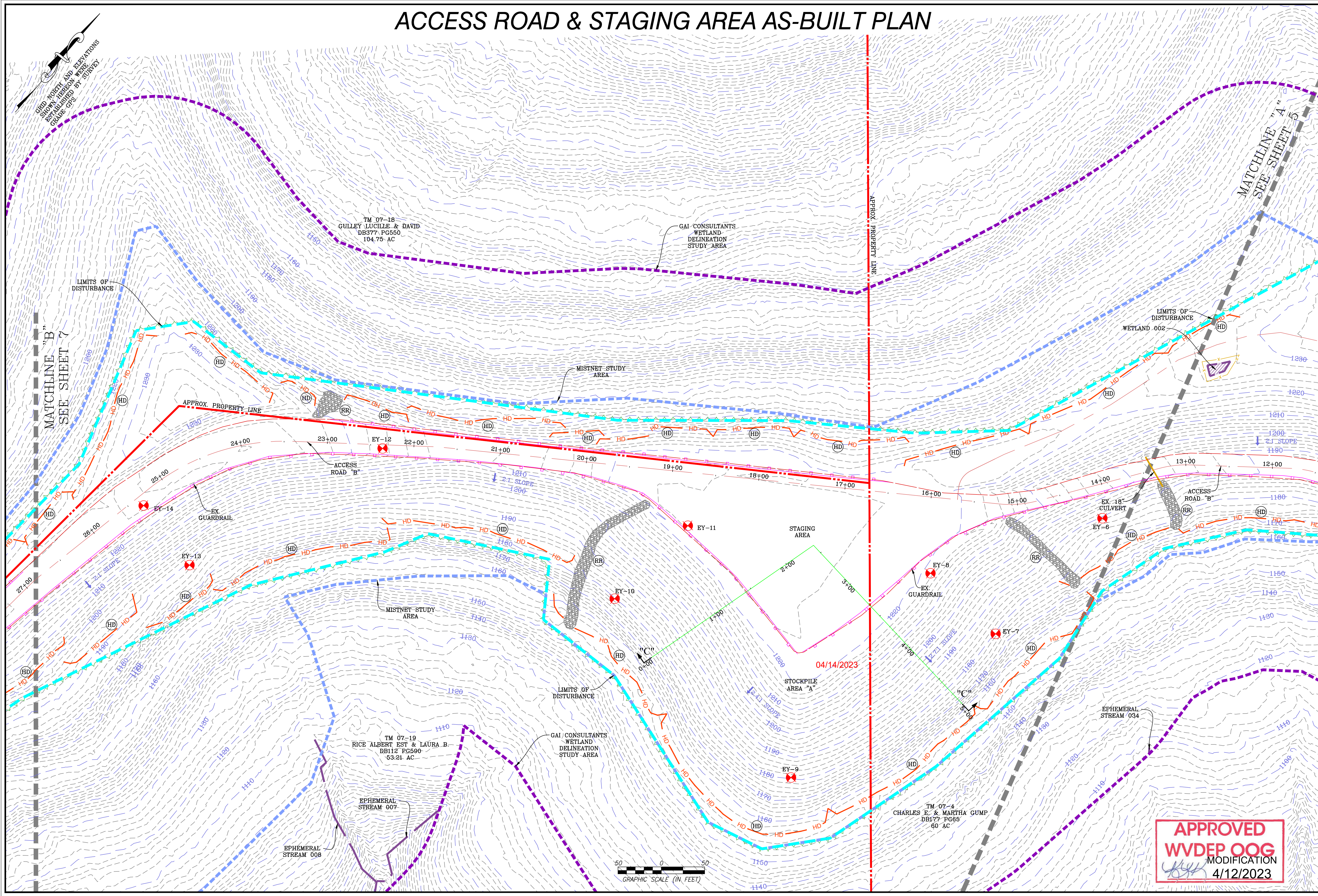
**Antero**  
Resources  
THIS DOCUMENT  
WAS PREPARED FOR:  
ANTERO RESOURCES  
CORPORATION

ACCESS ROAD AS-B-BUILT PLAN  
**ED YOST**  
WELL PAD & WATER CONTAINMENT PAD  
ELLSWORTH DISTRICT  
TYLER COUNTY, WEST VIRGINIA



DATE: 01/27/2023  
SCALE: 1" = 50'  
SHEET 5 OF 24

# ACCESS ROAD & STAGING AREA AS-BUILT PLAN



**NAVITUS**  
ENERGY ENGINEERING

Telephone: (866) 662-4165 | www.NavitusEng.com

DATE	REVISION
03/13/2023	REVISED PER LANDOWNER ROAD LOD MOD

**Antero Resources**

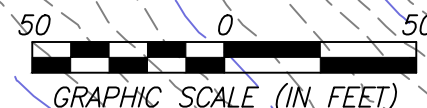
THIS DOCUMENT WAS PREPARED FOR: ANTERO RESOURCES CORPORATION

**ED YOST**  
WELL PAD & WATER CONTAINMENT PAD  
ELLSWORTH DISTRICT  
TYLER COUNTY, WEST VIRGINIA

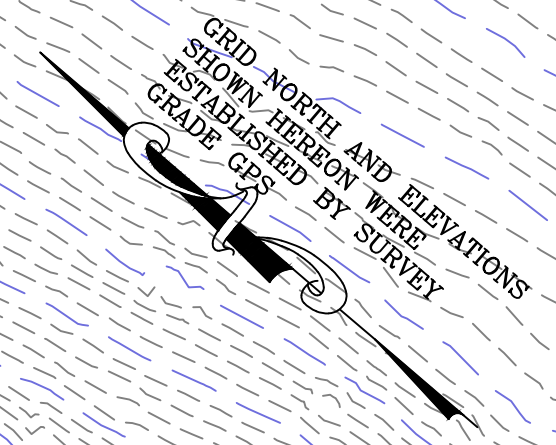


DATE: 01/27/2023
SCALE: 1" = 50'
SHEET 6 OF 24

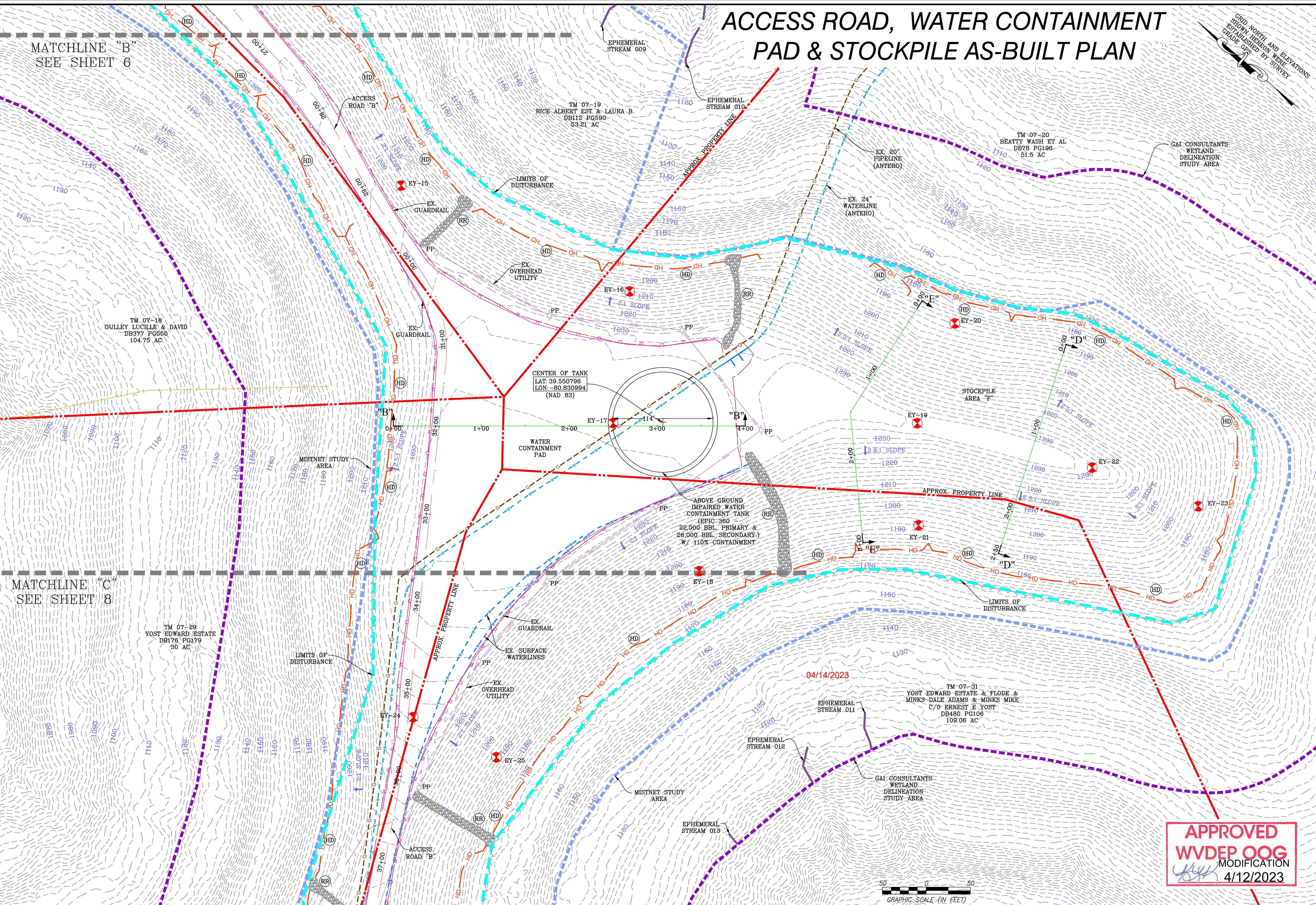
**APPROVED**  
**WVDEP OOG**  
MODIFICATION  
4/12/2023



# ACCESS ROAD, WATER CONTAINMENT PAD & STOCKPILE AS-BUILT PLAN



MATCHLINE "B"  
SEE SHEET 6



MATCHLINE "C"  
SEE SHEET 8

**NAVITUS**  
ENERGY ENGINEERING  
Telephone: (866) 662-4165 | www.NavitusEng.com

DATE	REVISION
03/13/2023	REVISED PER LANDOWNER ROAD LOD MOD

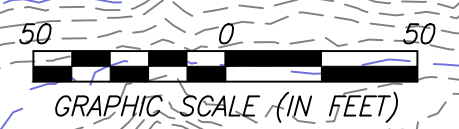
**Antero Resources**  
THIS DOCUMENT WAS PREPARED FOR:  
ANTERO RESOURCES CORPORATION

ACCESS ROAD, WATER CONTAINMENT PAD & STOCKPILE AS-BUILT PLAN  
**ED YOST**  
WELL PAD & WATER CONTAINMENT PAD  
ELLSWORTH DISTRICT  
TYLER COUNTY, WEST VIRGINIA



DATE: 01/27/2023  
SCALE: 1" = 50'  
SHEET 7 OF 24

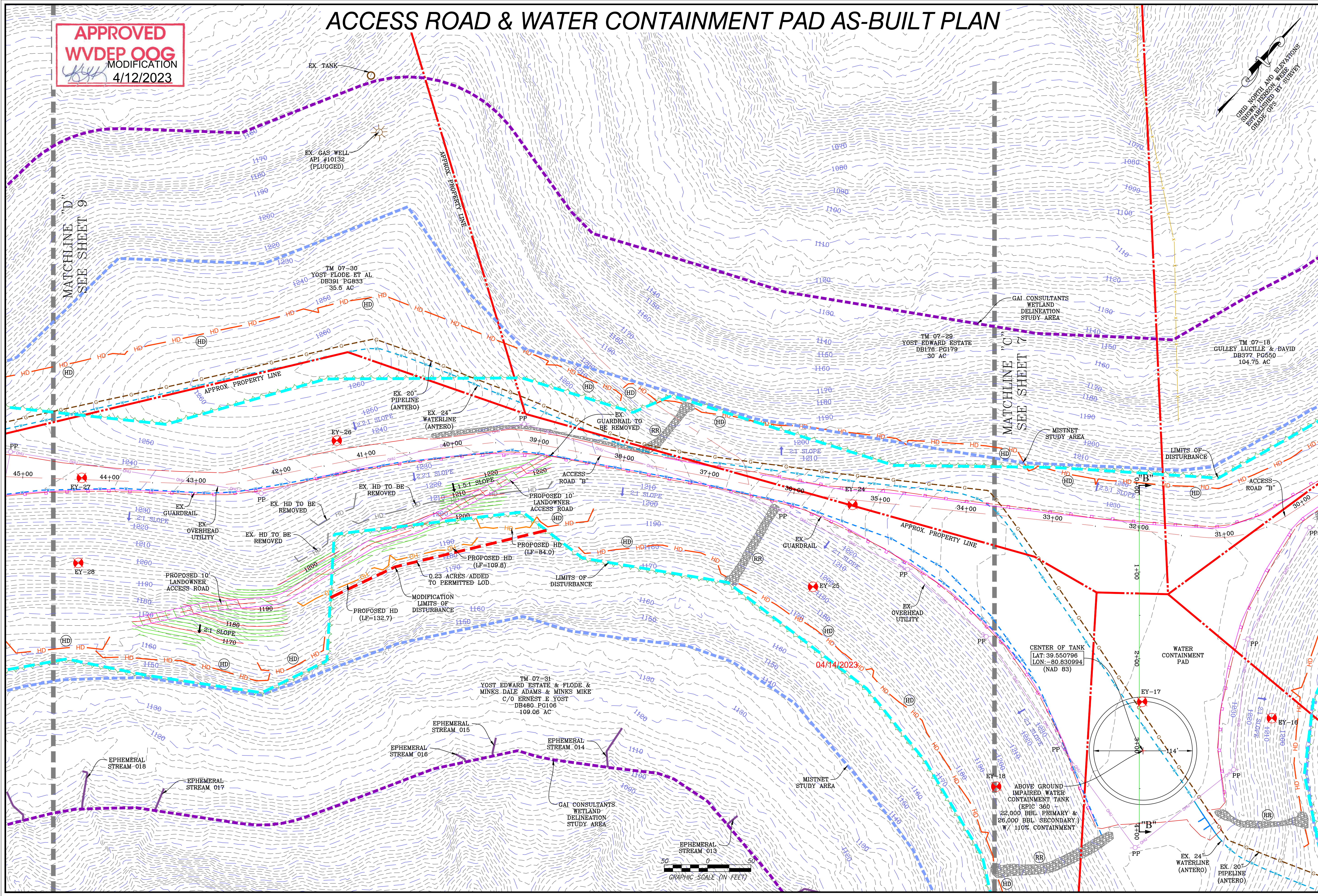
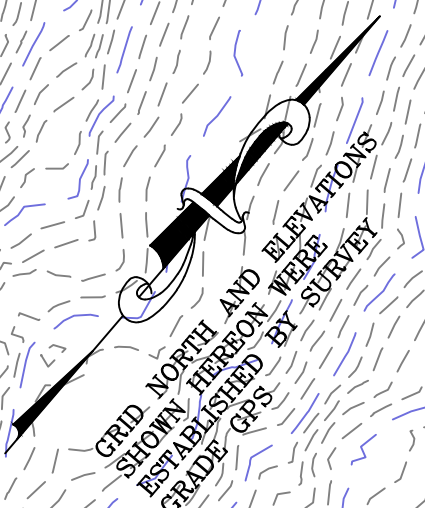
**APPROVED**  
**WVDEP OOG**  
MODIFICATION  
4/12/2023



GRAPHIC SCALE (IN FEET)

# ACCESS ROAD & WATER CONTAINMENT PAD AS-BUILT PLAN

**APPROVED**  
**WVDEP OOG**  
 MODIFICATION  
 4/12/2023



**NAVITUS**  
 ENERGY ENGINEERING  
 Telephone: (866) 662-4165 | www.NavitusEng.com

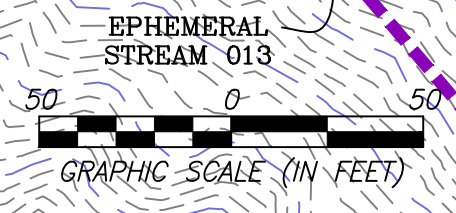
DATE	REVISION
03/13/2023	REVISED PER LANDOWNER ROAD LOD MOD

**Antero Resources**  
 THIS DOCUMENT WAS PREPARED FOR:  
 ANTERO RESOURCES CORPORATION

**ED YOST**  
 WELL PAD & WATER CONTAINMENT PAD  
 ELLSWORTH DISTRICT  
 TYLER COUNTY, WEST VIRGINIA



DATE: 01/27/2023  
 SCALE: 1" = 50'  
 SHEET 8 OF 24



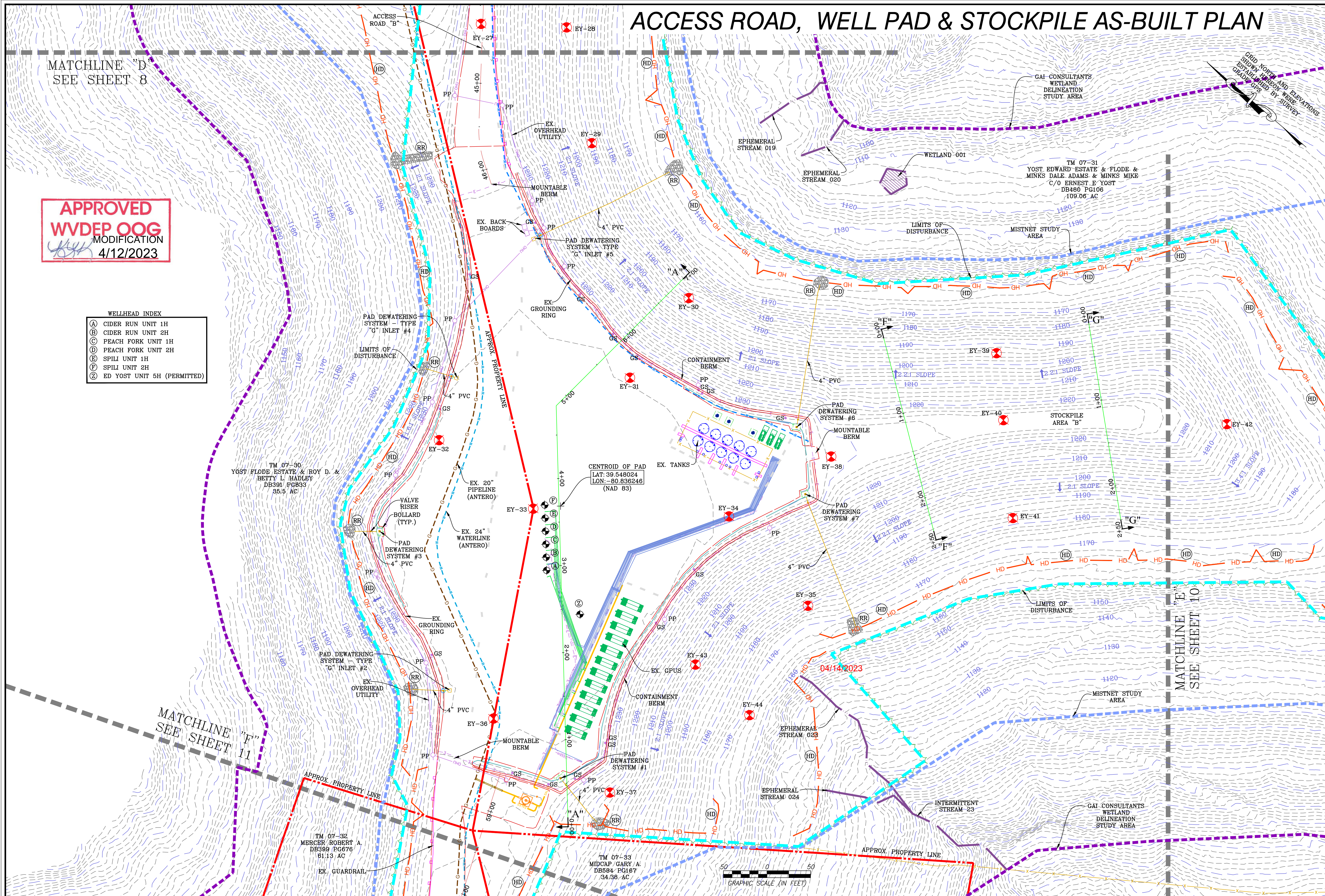
# ACCESS ROAD, WELL PAD & STOCKPILE AS-BUILT PLAN

MATCHLINE "D"  
SEE SHEET 8

**APPROVED**  
**WVDEP OOG**  
MODIFICATION  
4/12/2023

WELLHEAD INDEX

(A)	CIDER RUN UNIT 1H
(B)	CIDER RUN UNIT 2H
(C)	PEACH FORK UNIT 1H
(D)	PEACH FORK UNIT 2H
(E)	SPILL UNIT 1H
(F)	SPILL UNIT 2H
(Z)	ED YOST UNIT 5H (PERMITTED)



**NAVITUS**  
ENERGY ENGINEERING  
Telephone: (866) 662-4165 | www.NavitusEng.com

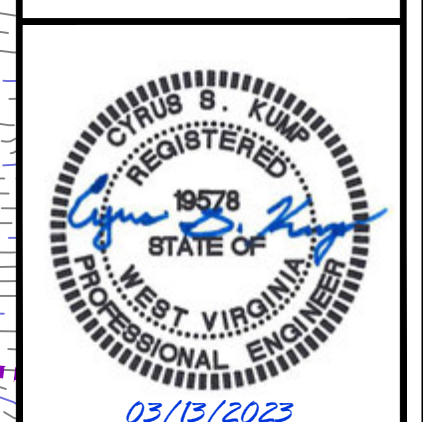
DATE	REVISION
03/13/2023	REVISED PER LANDOWNER ROAD LOD MOD

**Antero Resources**

THIS DOCUMENT WAS PREPARED FOR:  
ANTERO RESOURCES CORPORATION

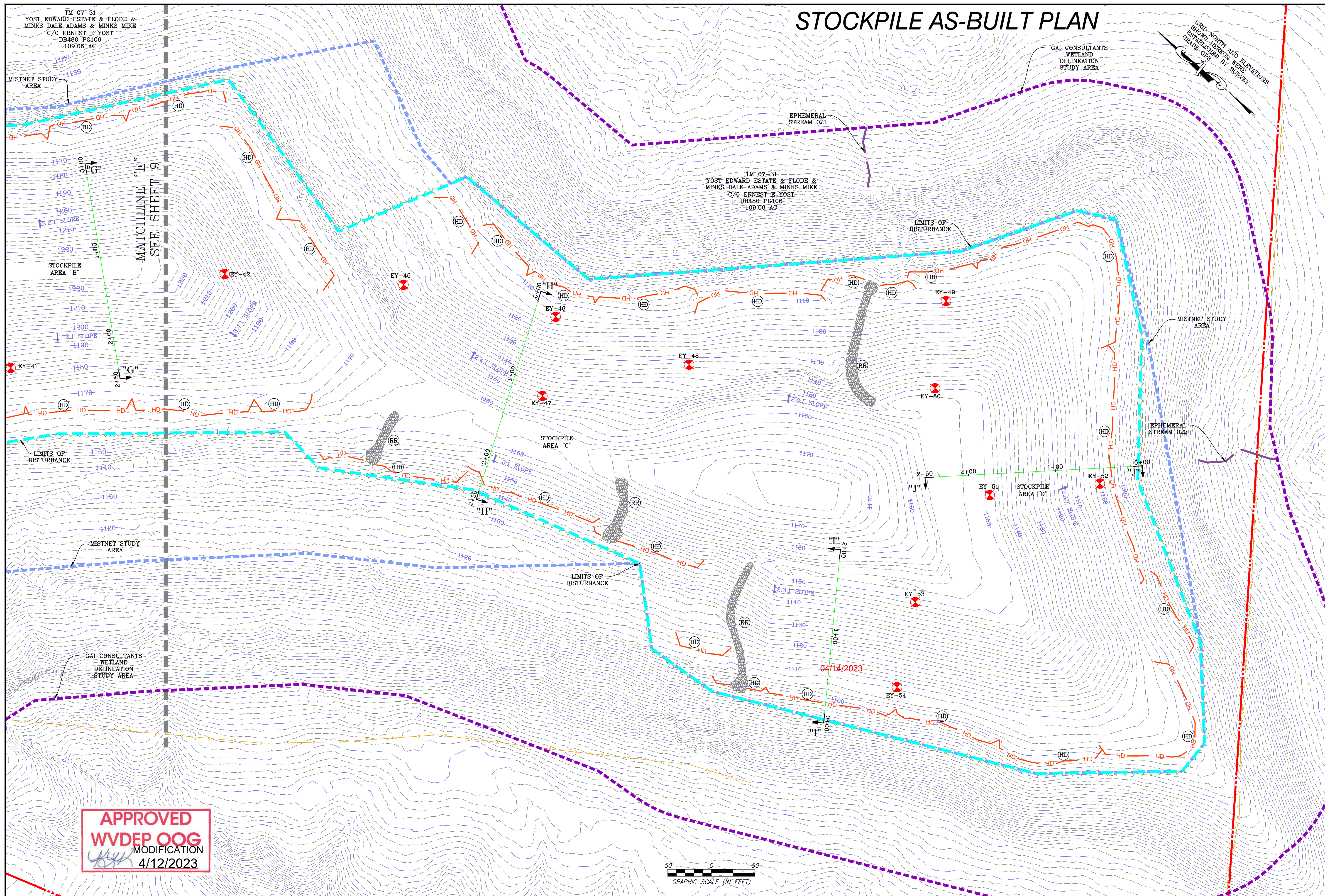
ACCESS ROAD & WELL PAD & STOCKPILE AS-BUILT PLAN

**ED YOST**  
WELL PAD & WATER CONTAINMENT PAD  
ELLSWORTH DISTRICT  
TYLER COUNTY, WEST VIRGINIA



DATE: 01/27/2023  
SCALE: 1" = 50'  
SHEET 9 OF 24

# STOCKPILE AS-BUILT PLAN



**APPROVED**  
**WVDEP OOG**  
 MODIFICATION  
 4/12/2023

**NAVITUS**  
 ENERGY ENGINEERING  
 Telephone: (868) 662-4165 | www.NavitusEng.com

DATE	REVISION
03/13/2023	REVISED PER LANDOWNER ROAD LOD MOD

**Antero Resources**  
 THIS DOCUMENT WAS PREPARED FOR:  
 ANTERO RESOURCES CORPORATION

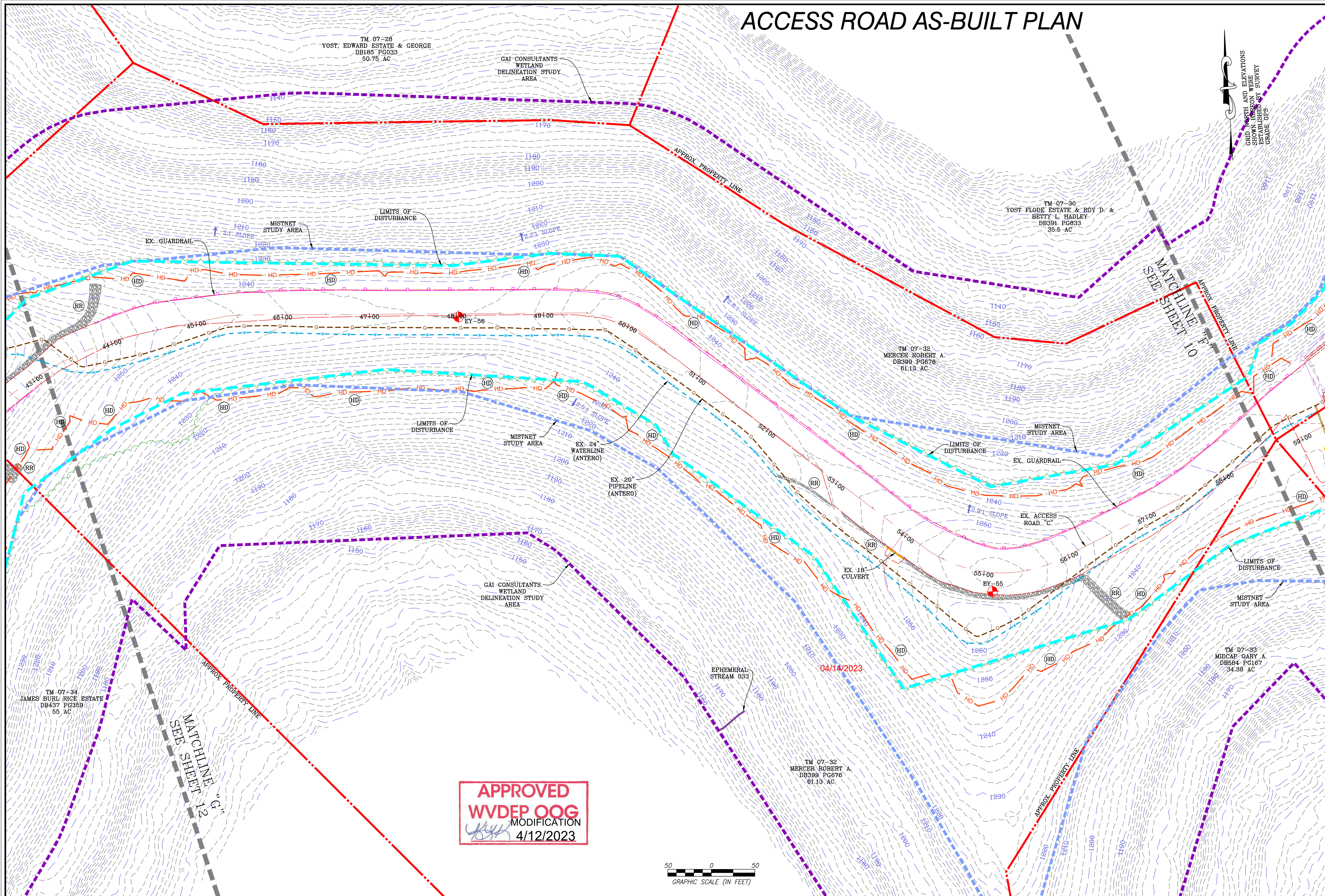
STOCKPILE AS-BUILT PLAN  
**ED YOST**  
 WELL PAD & WATER CONTAINMENT PAD  
 ELLSWORTH DISTRICT  
 TYLER COUNTY, WEST VIRGINIA



DATE: 01/27/2023  
 SCALE: 1" = 50'  
 SHEET 10 OF 24



# ACCESS ROAD AS-B-BUILT PLAN



TM 07-28  
YOST, EDWARD ESTATE & GEORGE  
DB185 PG033  
50.75 AC

GAI CONSULTANTS  
WETLAND  
DELINEATION STUDY AREA

TM 07-30  
YOST FLODE ESTATE & ROY D. &  
BETTY L. HADLEY  
DB391 PG833  
35.6 AC

TM 07-32  
MERCER ROBERT A.  
DB399 PG676  
61.13 AC

GRID NORTH AND ELEVATIONS  
SHOWN HEREON WERE  
ESTABLISHED BY SURVEY  
GRADE C.T.S.

TM 07-34  
JAMES BURL RICE ESTATE  
DB437 PG359  
55 AC

GAI CONSULTANTS  
WETLAND  
DELINEATION STUDY AREA

TM 07-32  
MERCER ROBERT A.  
DB399 PG676  
61.13 AC

TM 07-33  
MIDCAP GARY A.  
DB584 PG167  
34.38 AC

**APPROVED**  
**WVDEP OOG**  
MODIFICATION  
4/12/2023



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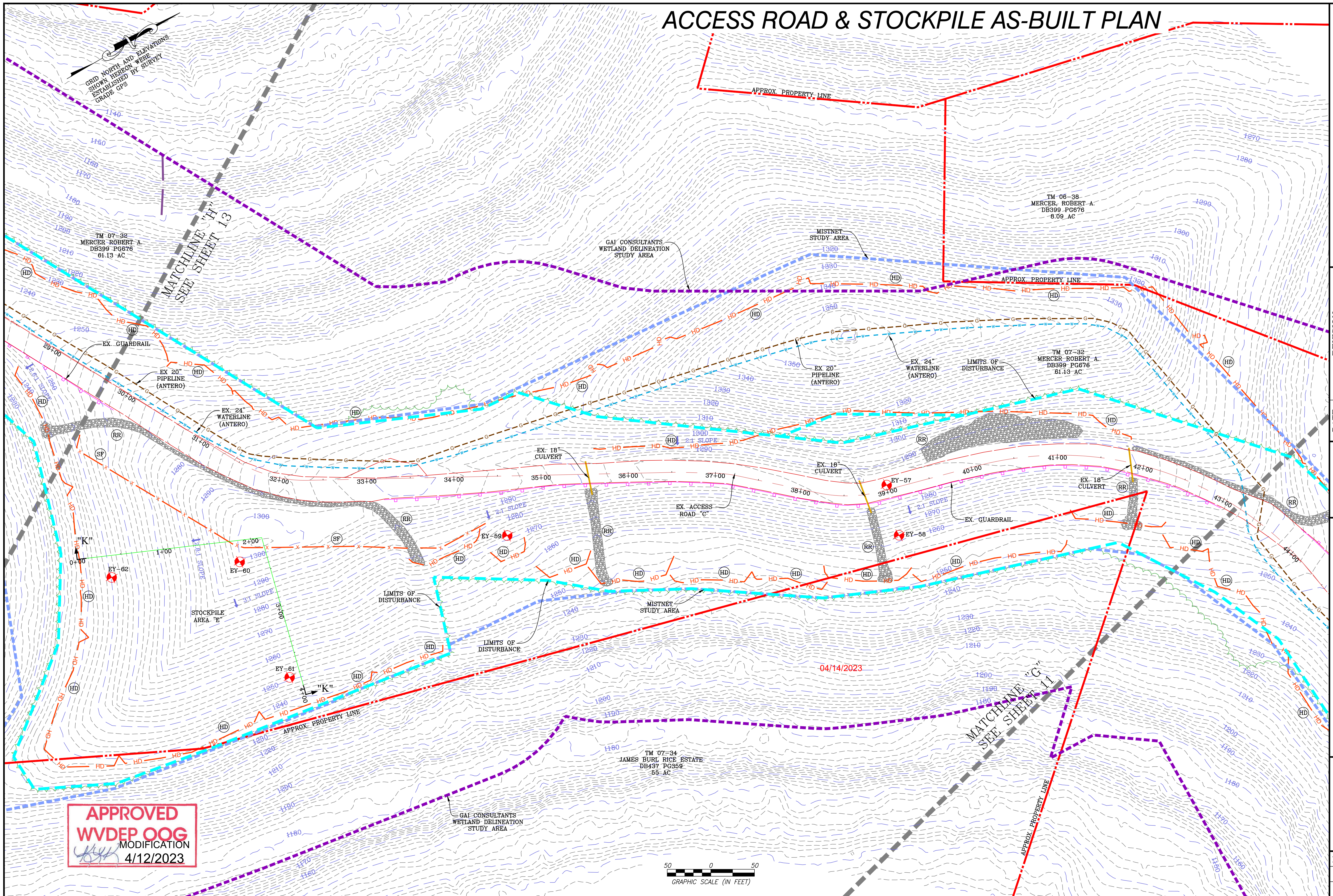
**Antero**  
Resources  
THIS DOCUMENT  
WAS PREPARED FOR:  
ANTERO RESOURCES  
CORPORATION

ACCESS ROAD AS-B-BUILT PLAN  
**ED YOST**  
WELL PAD & WATER CONTAINMENT PAD  
ELLSWORTH DISTRICT  
TYLER COUNTY, WEST VIRGINIA



DATE: 01/27/2023  
SCALE: 1" = 50'  
SHEET 11 OF 24

# ACCESS ROAD & STOCKPILE AS-BUILT PLAN



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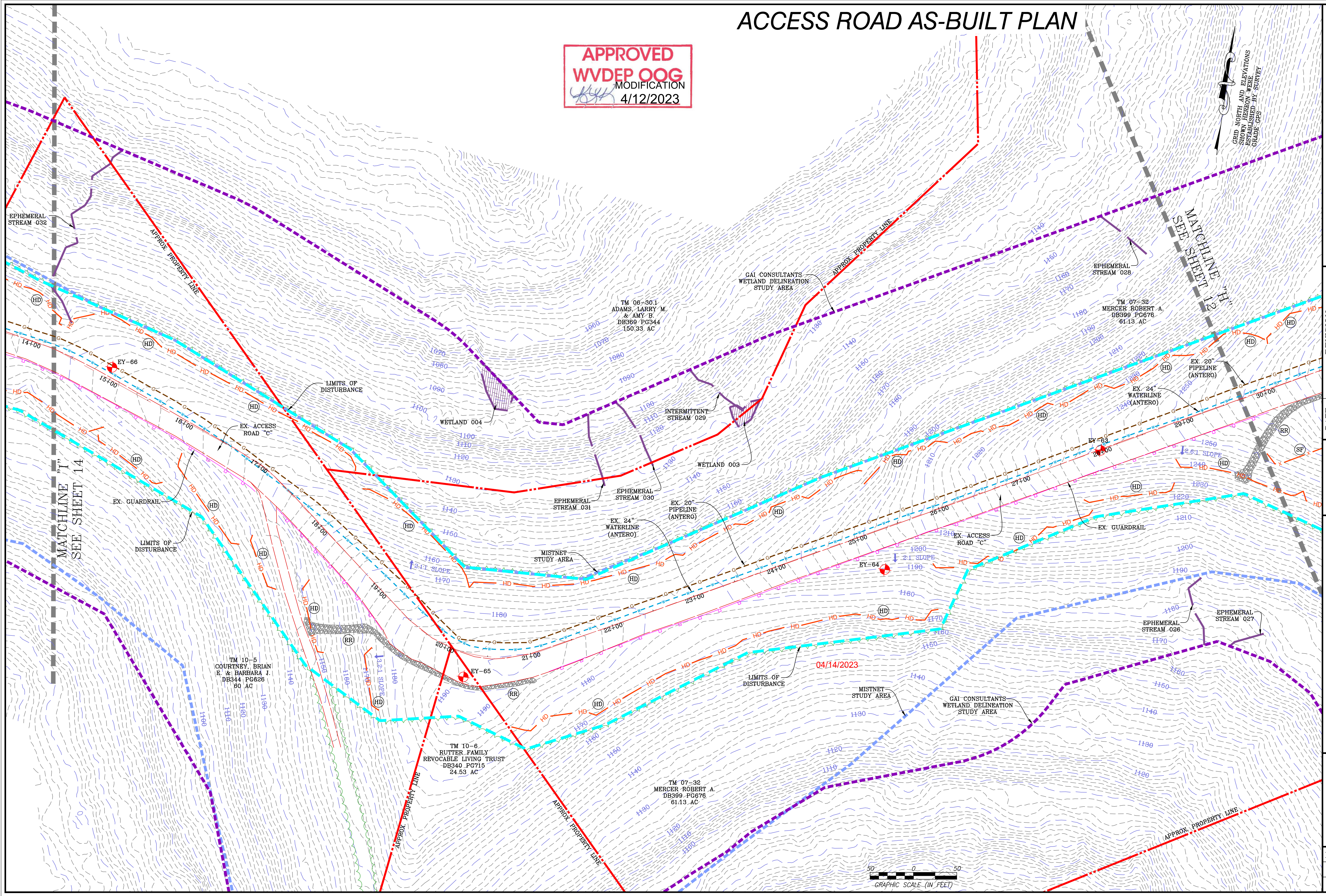


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 SCALE: 1" = 50'  
 SHEET 12 OF 24

# ACCESS ROAD AS-BUILT PLAN

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MODIFICATION  
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GRID NORTH AND ELEVATIONS  
SHOWN HERE AROUND WERE  
ESTABLISHED BY SURVEY  
GRADE GPS



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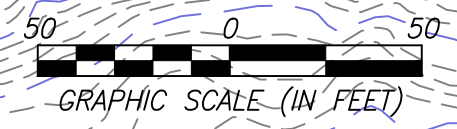
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DATE: 01/27/2023  
SCALE: 1" = 50'  
SHEET 13 OF 24

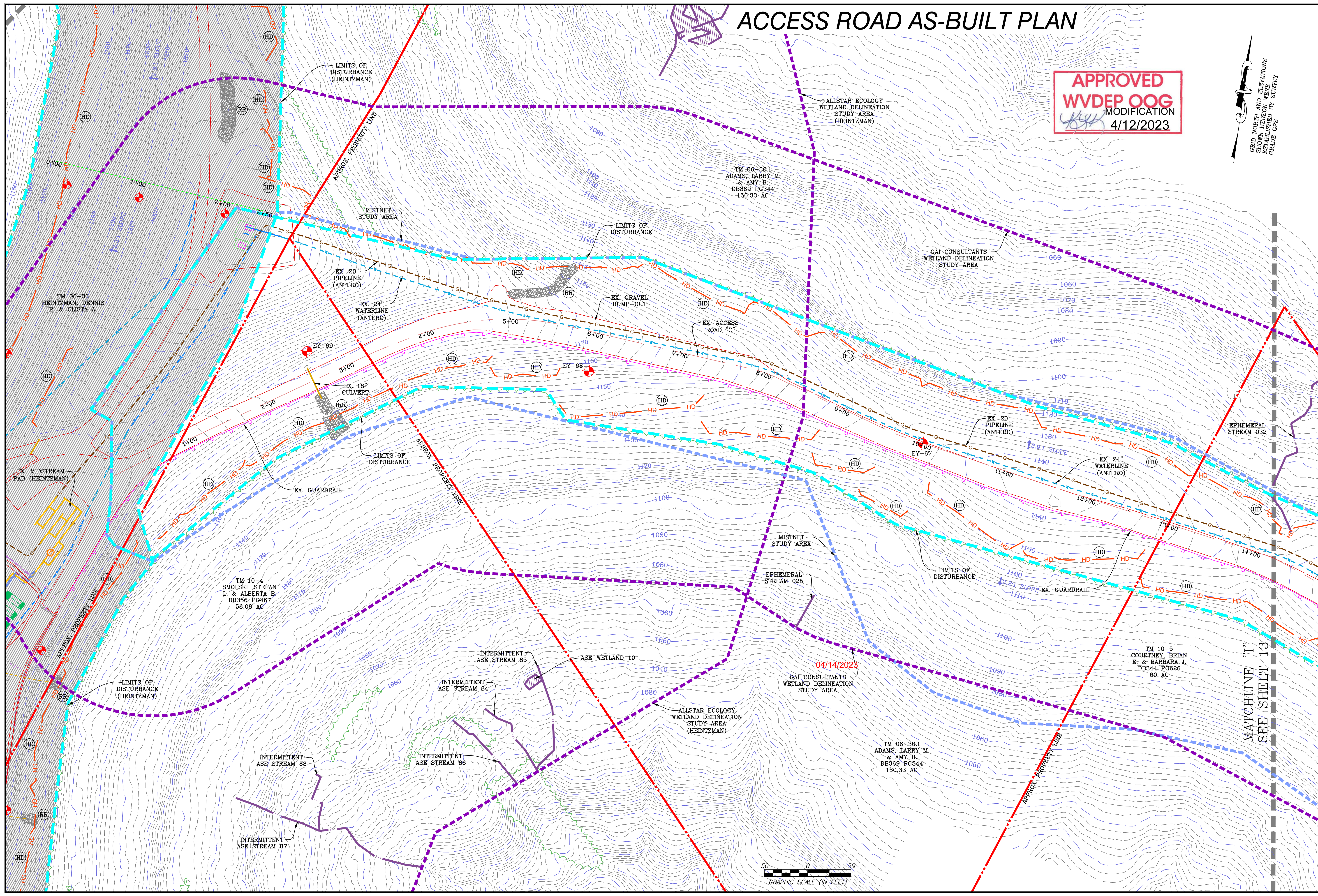


# ACCESS ROAD AS-BUILT PLAN

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GRID NORTH AND ELEVATIONS  
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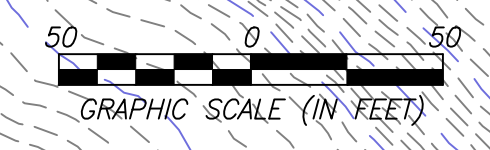
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DATE: 01/27/2023  
 SCALE: 1" = 50'  
 SHEET 14 OF 24

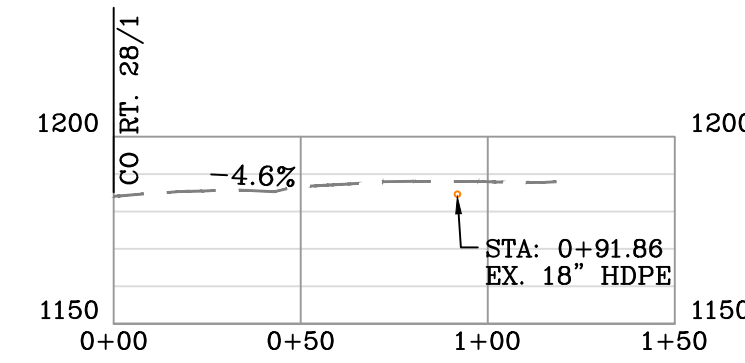


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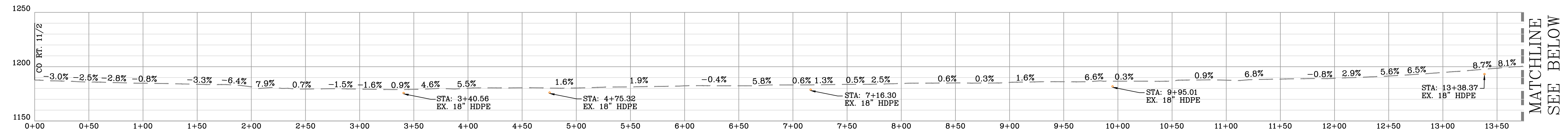
04/14/2023

# ACCESS ROAD AS-BUILT PROFILES

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 4/12/2023

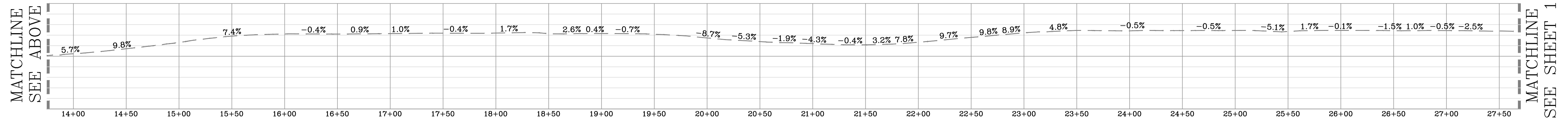


ACCESS ROAD "A" (CO RT. 11/2) AS-BUILT PROFILE  
 SCALE: HORIZ. 1" = 50' VERT. 1" = 50'



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

04/14/2023



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

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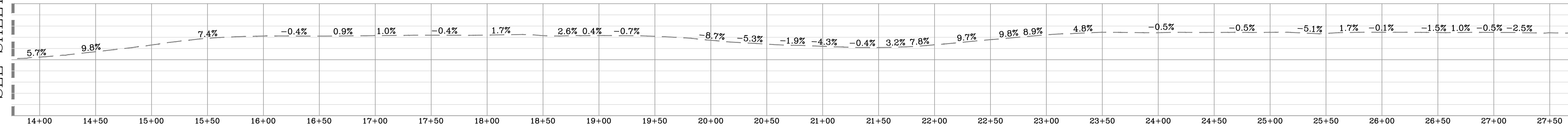
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# ACCESS ROAD AS-BUILT PROFILES

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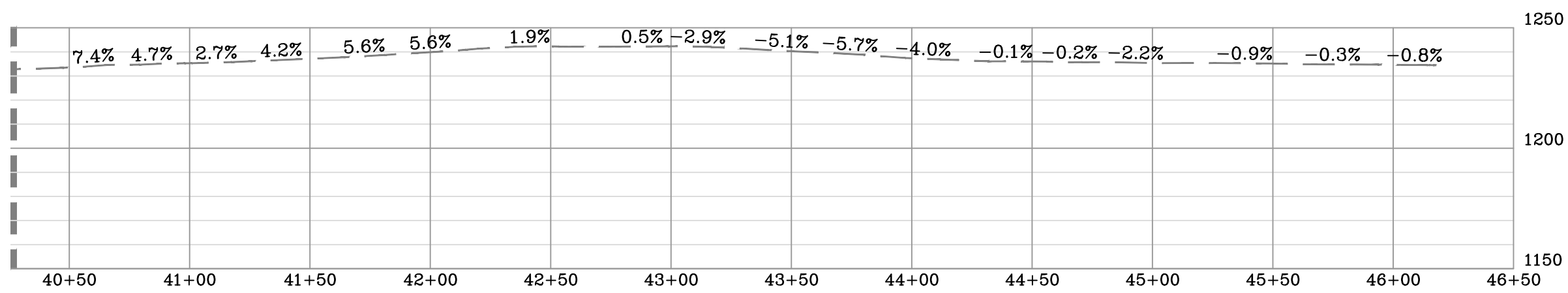
MATCHLINE  
SEE SHEET 15



MATCHLINE  
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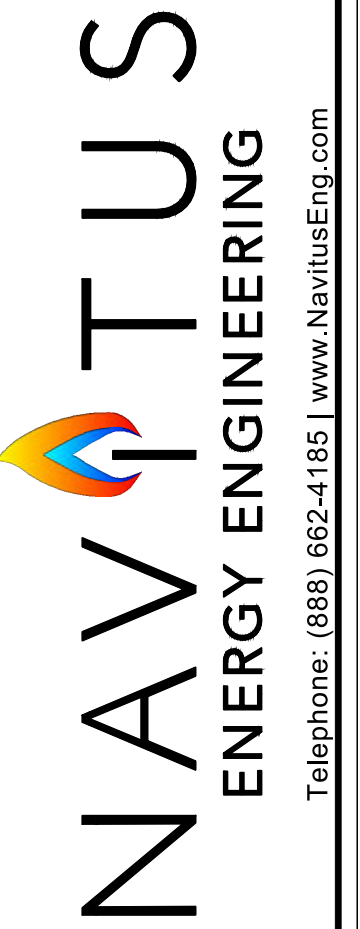
ACCESS ROAD "B" AS-BUILT PROFILE  
 SCALE: HORIZ. 1" = 50' VERT. 1" = 50'

MATCHLINE  
SEE ABOVE



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

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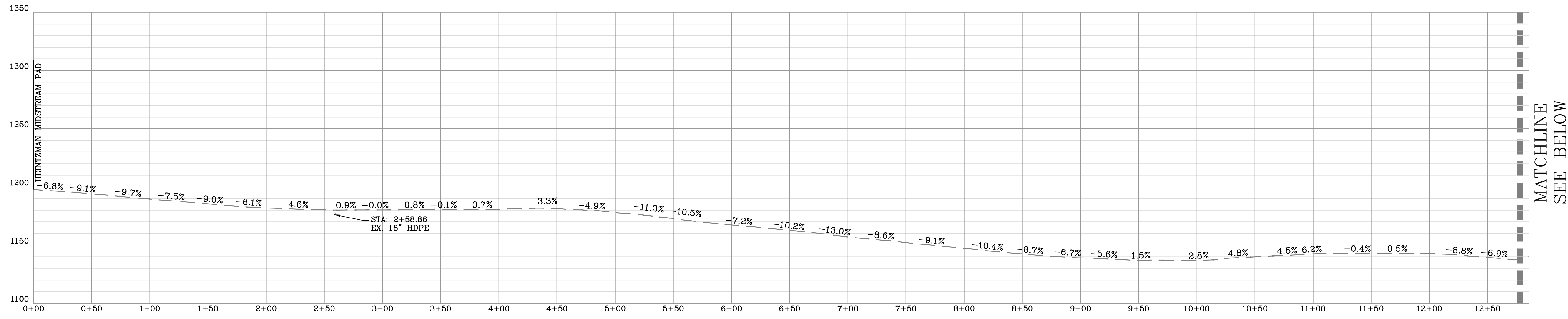
ACCESS ROAD AS-BUILT PROFILES  
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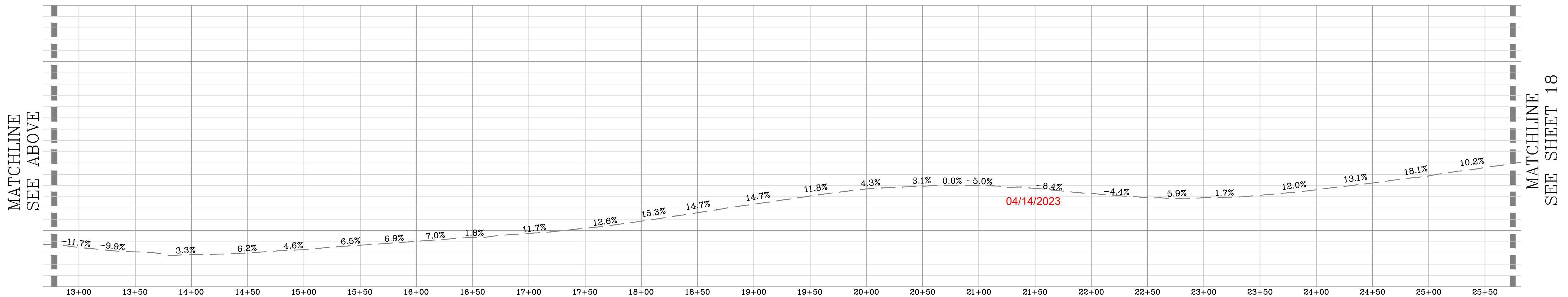
DATE: 01/27/2023  
 SCALE: AS SHOWN  
 SHEET 16 OF 24

# ACCESS ROAD AS-BUILT PROFILES

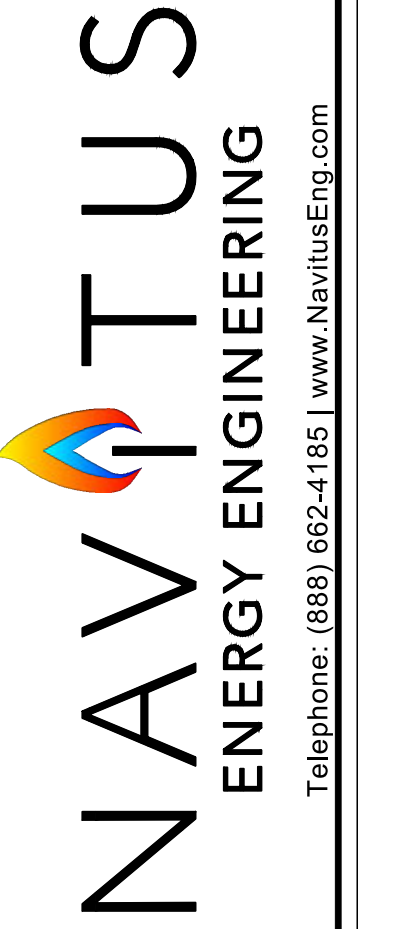
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ACCESS ROAD "C" AS-BUILT PROFILE  
 SCALE: HORIZ. 1" = 50' VERT. 1" = 50'



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



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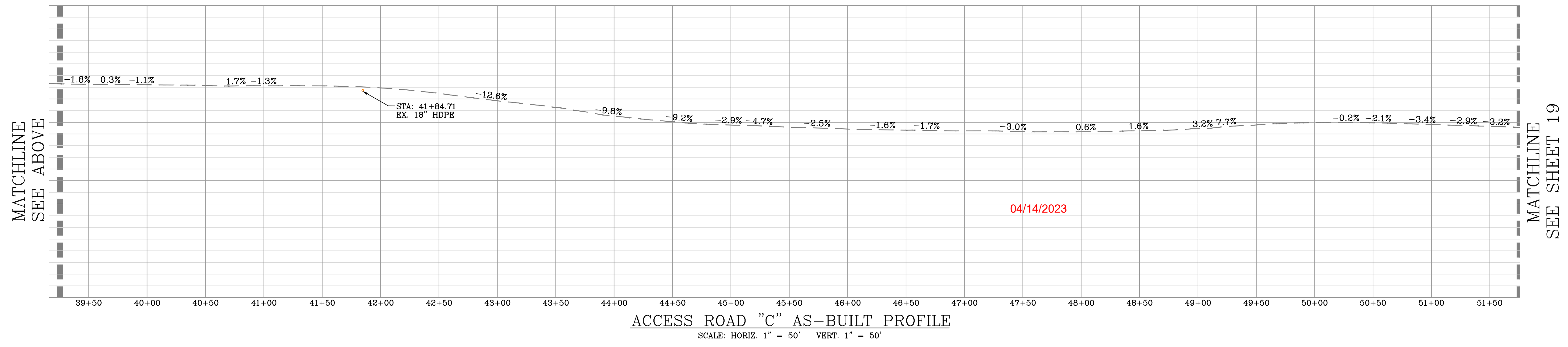
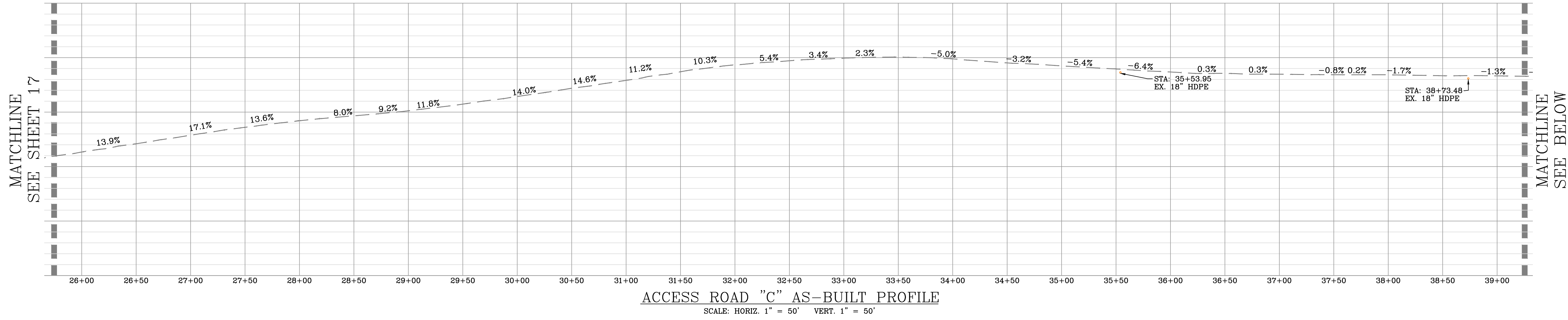
ACCESS ROAD AS-BUILT PROFILES  
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 SCALE: AS SHOWN  
 SHEET 17 OF 24

# ACCESS ROAD AS-BUILT PROFILES

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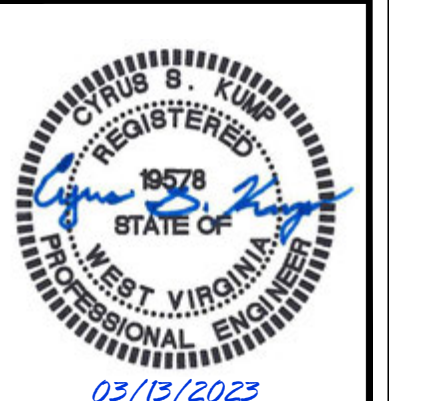


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ACCESS ROAD AS-BUILT PROFILES  
**ED YOST**  
 WELL PAD & WATER CONTAINMENT PAD  
 ELLSWORTH DISTRICT  
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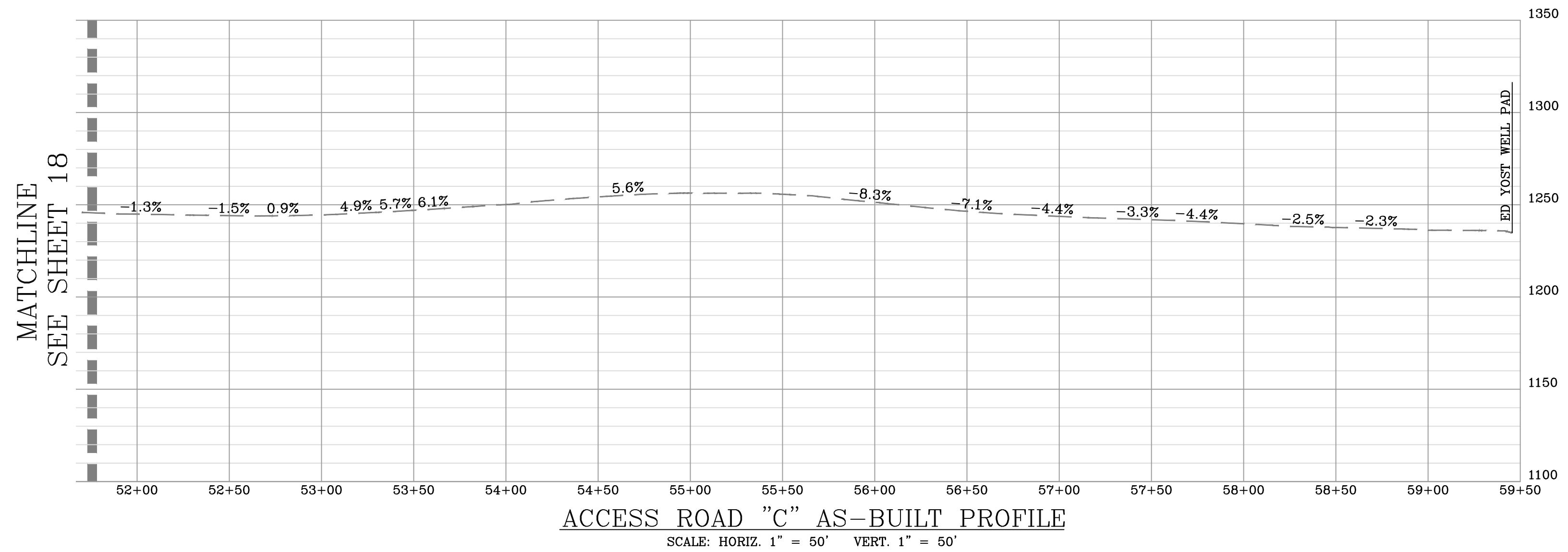


DATE: 01/27/2023  
 SCALE: AS SHOWN  
 SHEET 18 OF 24



# ACCESS ROAD AS-BUILT PROFILES

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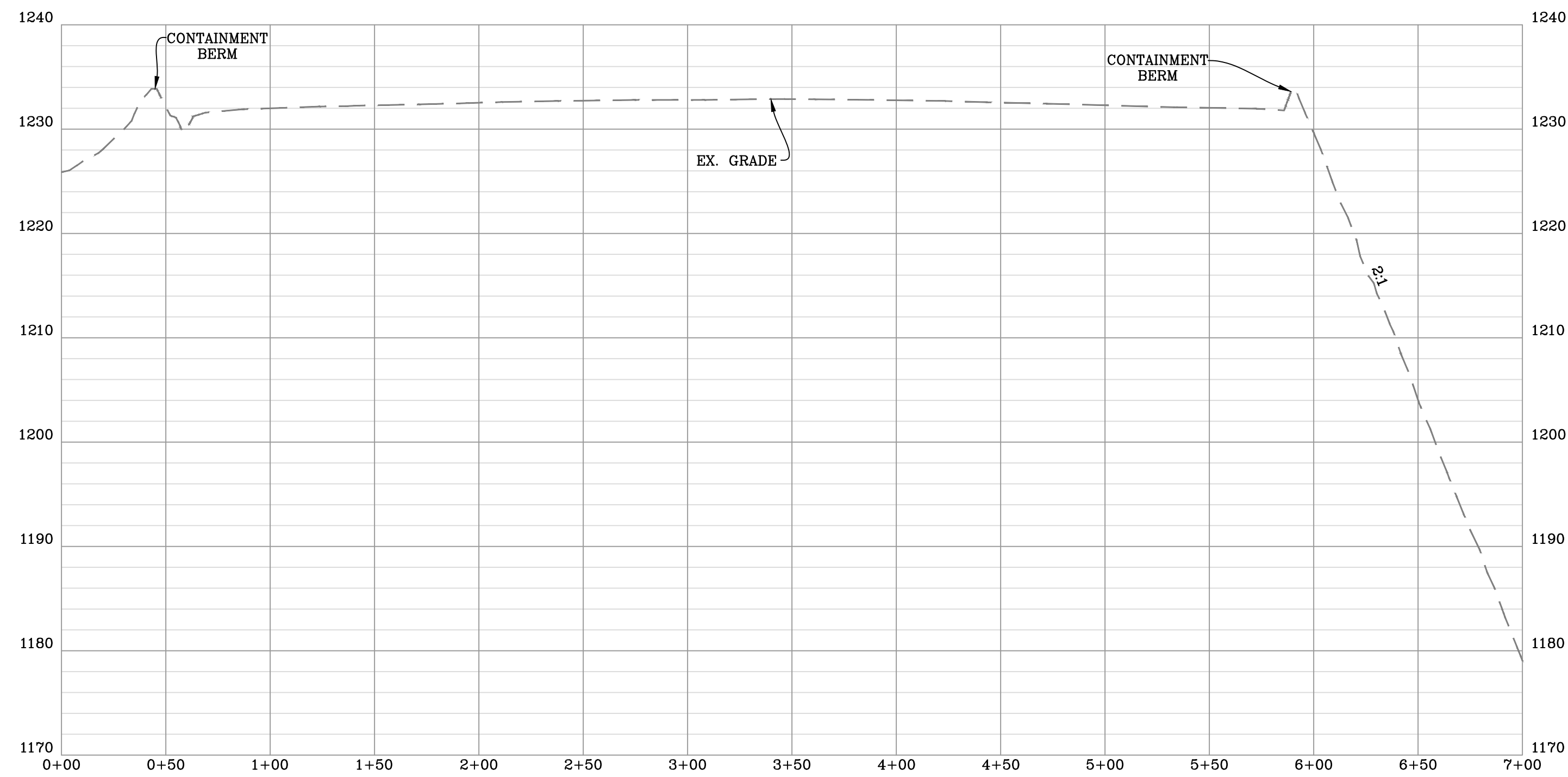
ACCESS ROAD AS-BUILT PROFILES  
**ED YOST**  
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 ELLSWORTH DISTRICT  
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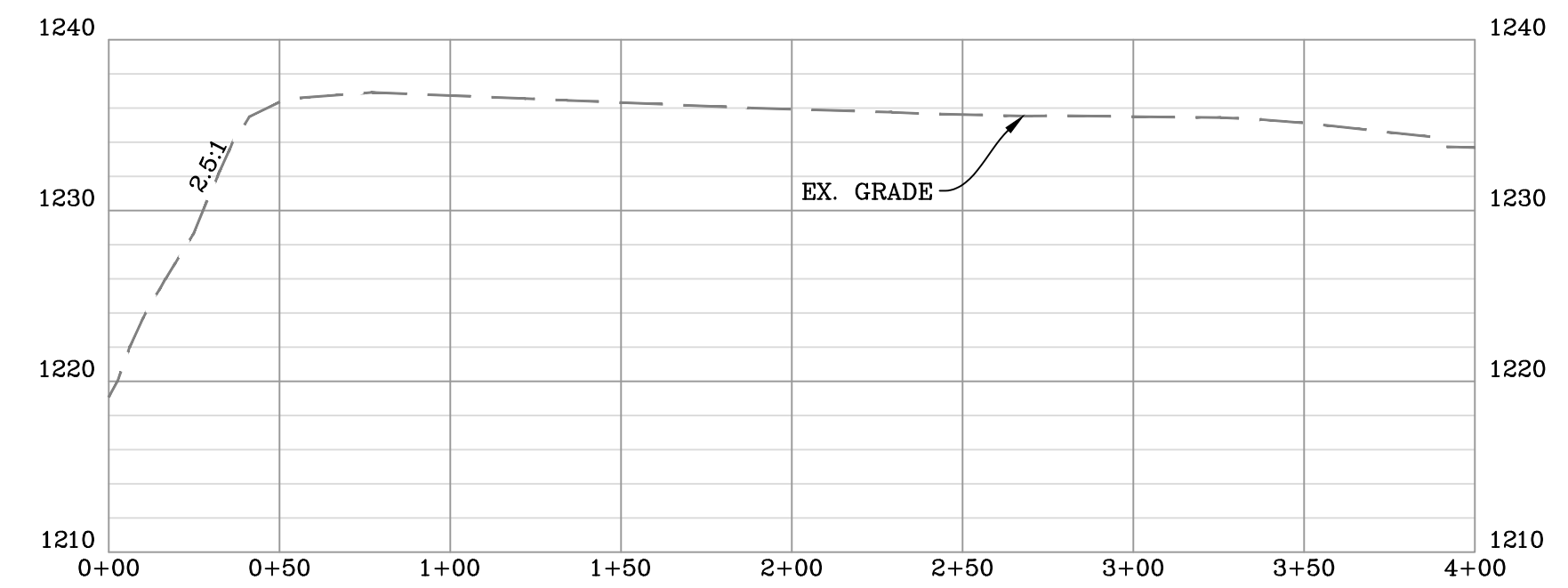
DATE: 01/27/2023  
 SCALE: AS SHOWN  
 SHEET 19 OF 24

# WELL PAD, WATER CONTAINMENT PAD, STAGING AREA & STOCKPILE AS-BUILT SECTIONS

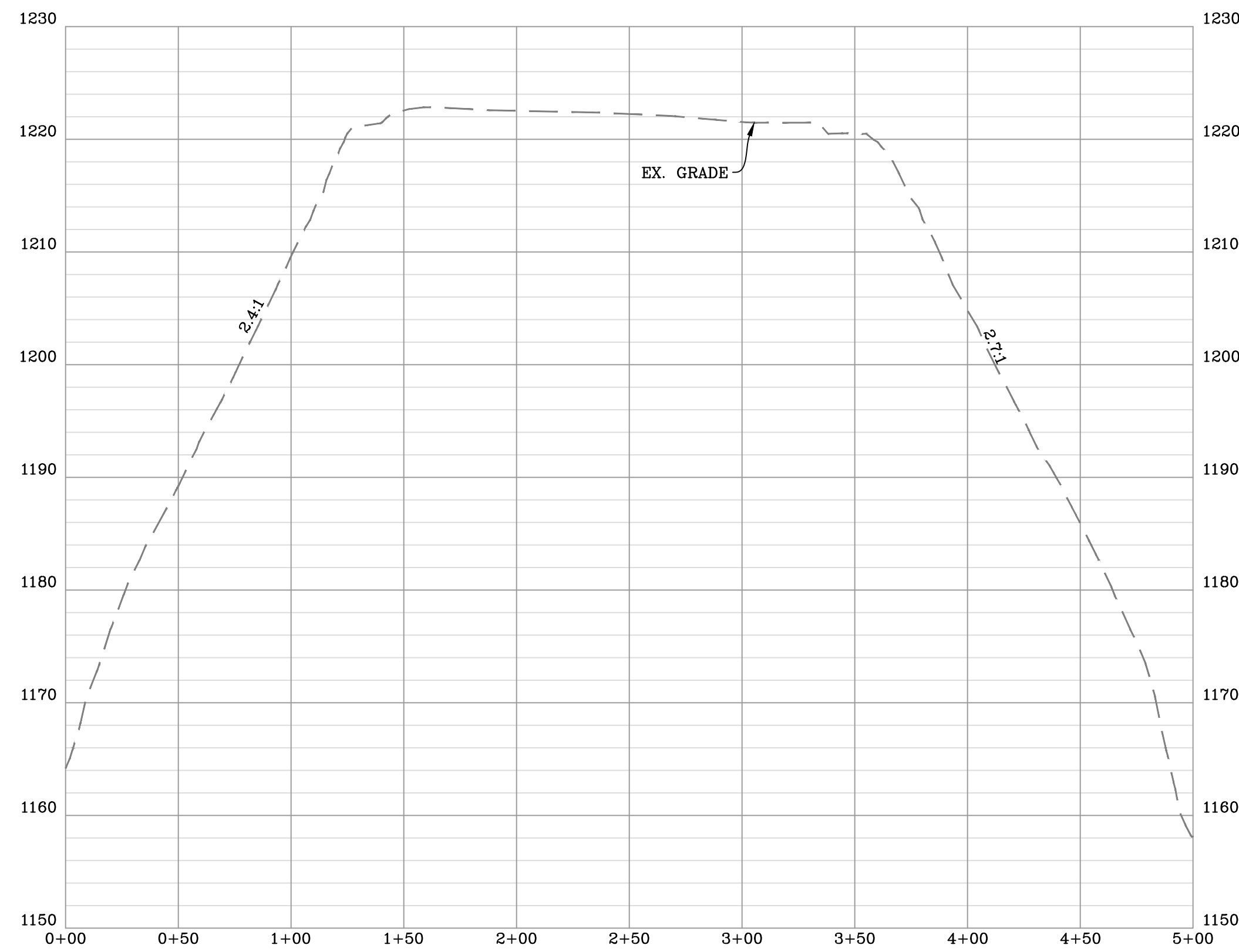
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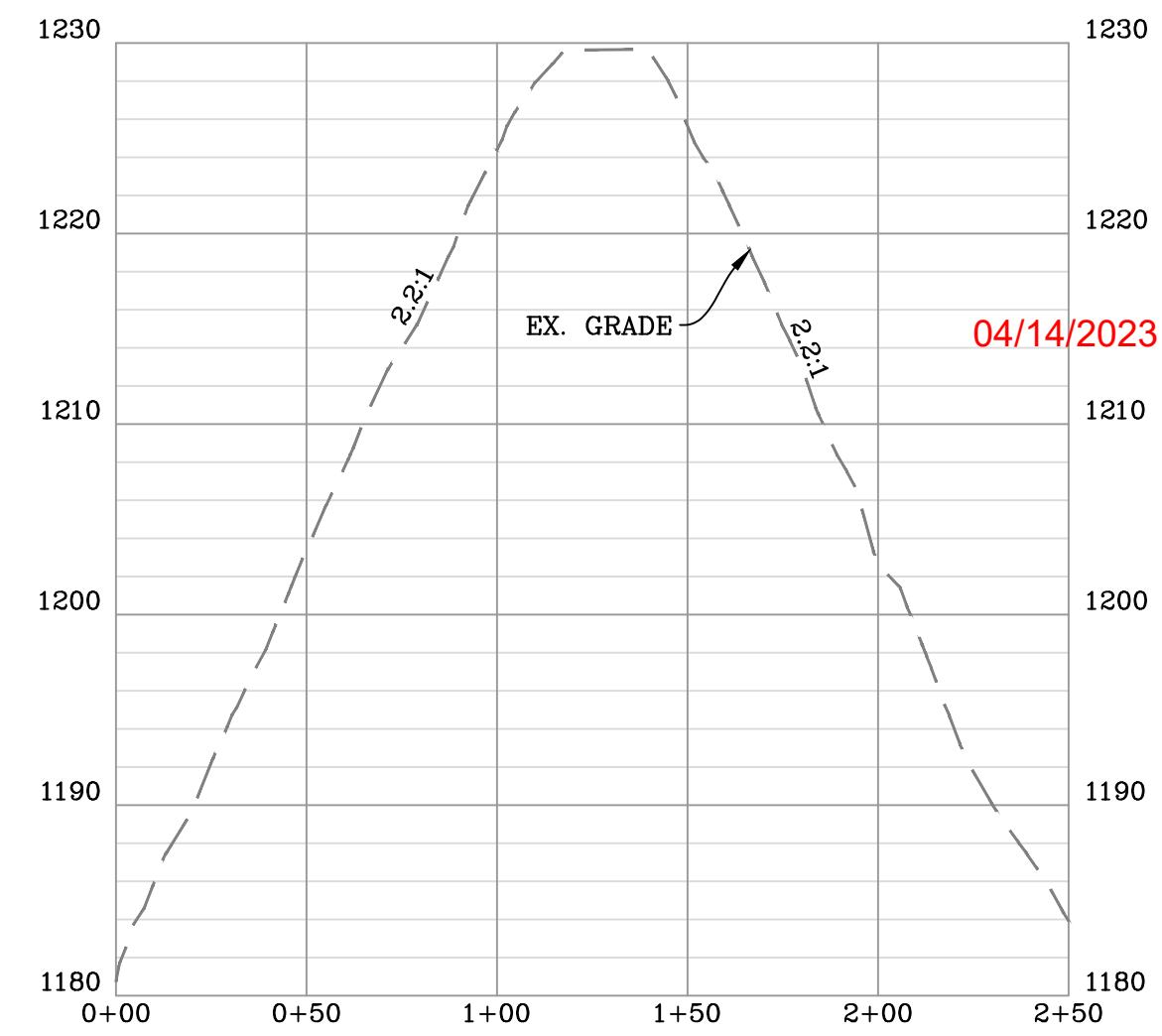
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SCALE: HORIZ. 1" = 50' VERT. 1" = 10'



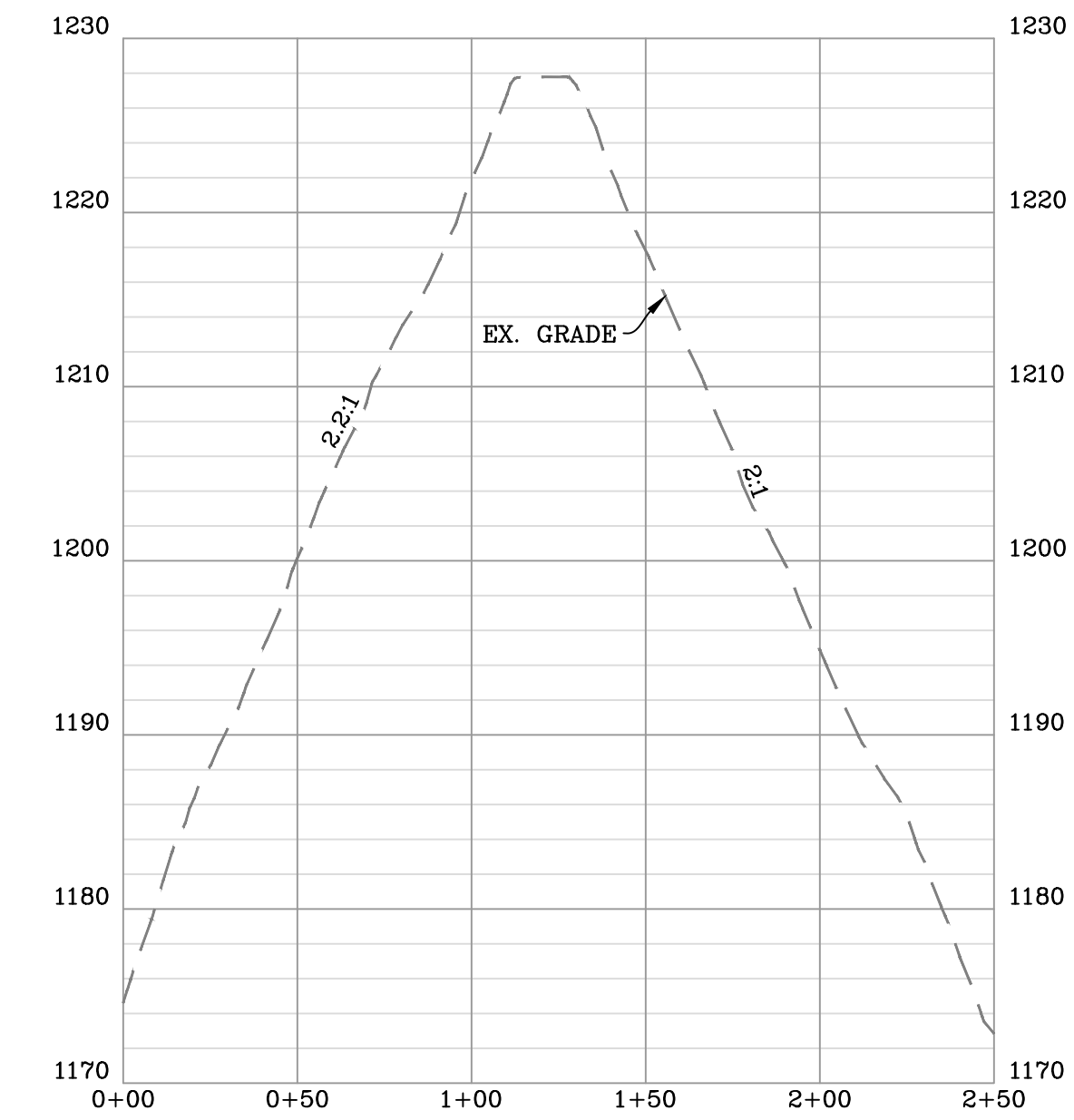
**WATER CONTAINMENT PAD AS-BUILT CROSS-SECTION "B-B"**  
SCALE: HORIZ. 1" = 50' VERT. 1" = 10'



**STOCKPILE AREA "A" & STAGING AREA AS-BUILT CROSS-SECTION "C-C"**  
SCALE: HORIZ. 1" = 50' VERT. 1" = 10'



**STOCKPILE AREA "B" AS-BUILT CROSS-SECTION "F-F"**  
SCALE: HORIZ. 1" = 50' VERT. 1" = 10'



**STOCKPILE AREA "B" AS-BUILT CROSS-SECTION "G-G"**  
SCALE: HORIZ. 1" = 50' VERT. 1" = 10'

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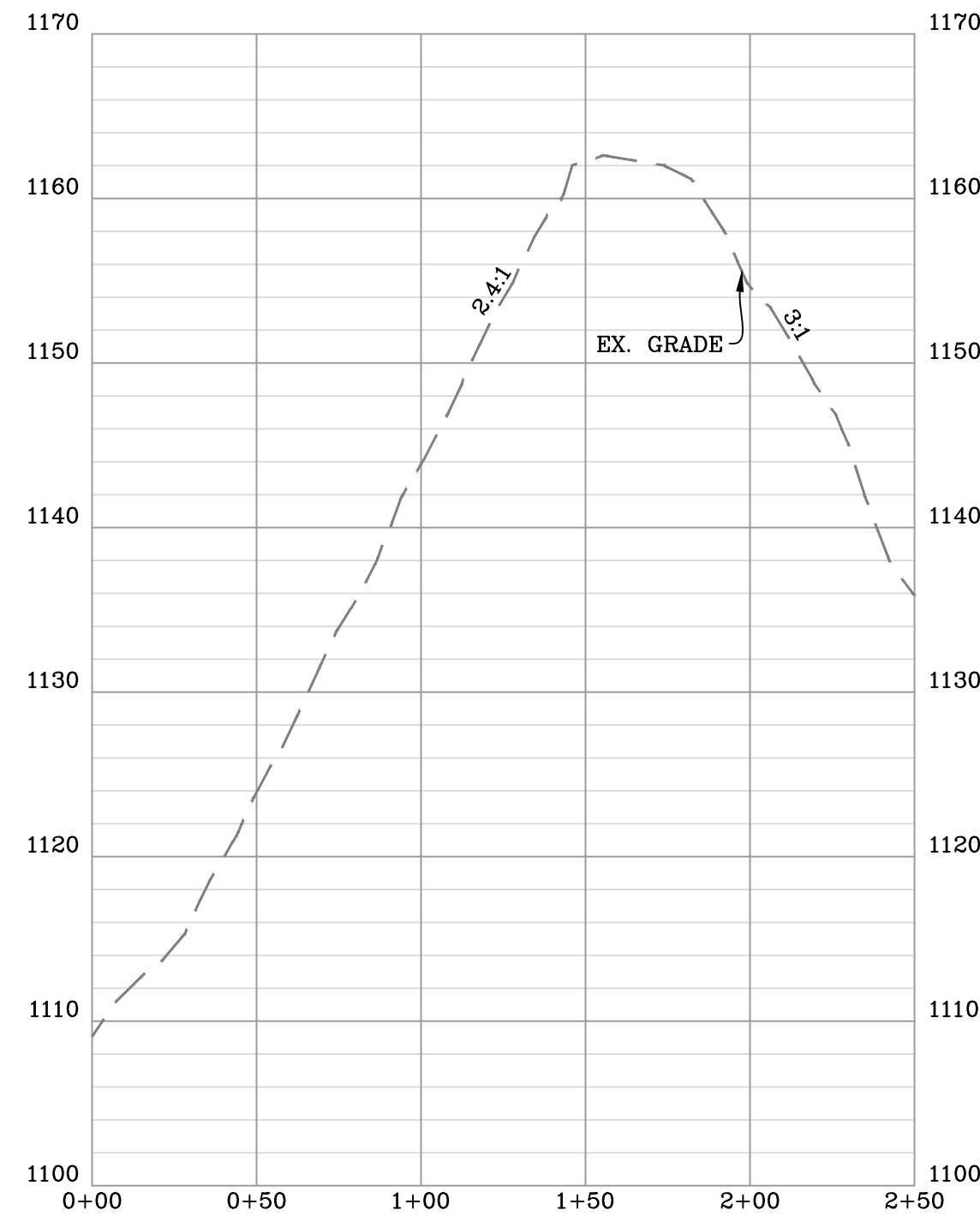
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WELL PAD, WATER CONTAINMENT PAD, STAGING AREA  
& STOCKPILE AS-BUILT SECTIONS  
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WELL PAD & WATER CONTAINMENT PAD  
ELLSWORTH DISTRICT  
TYLER COUNTY, WEST VIRGINIA

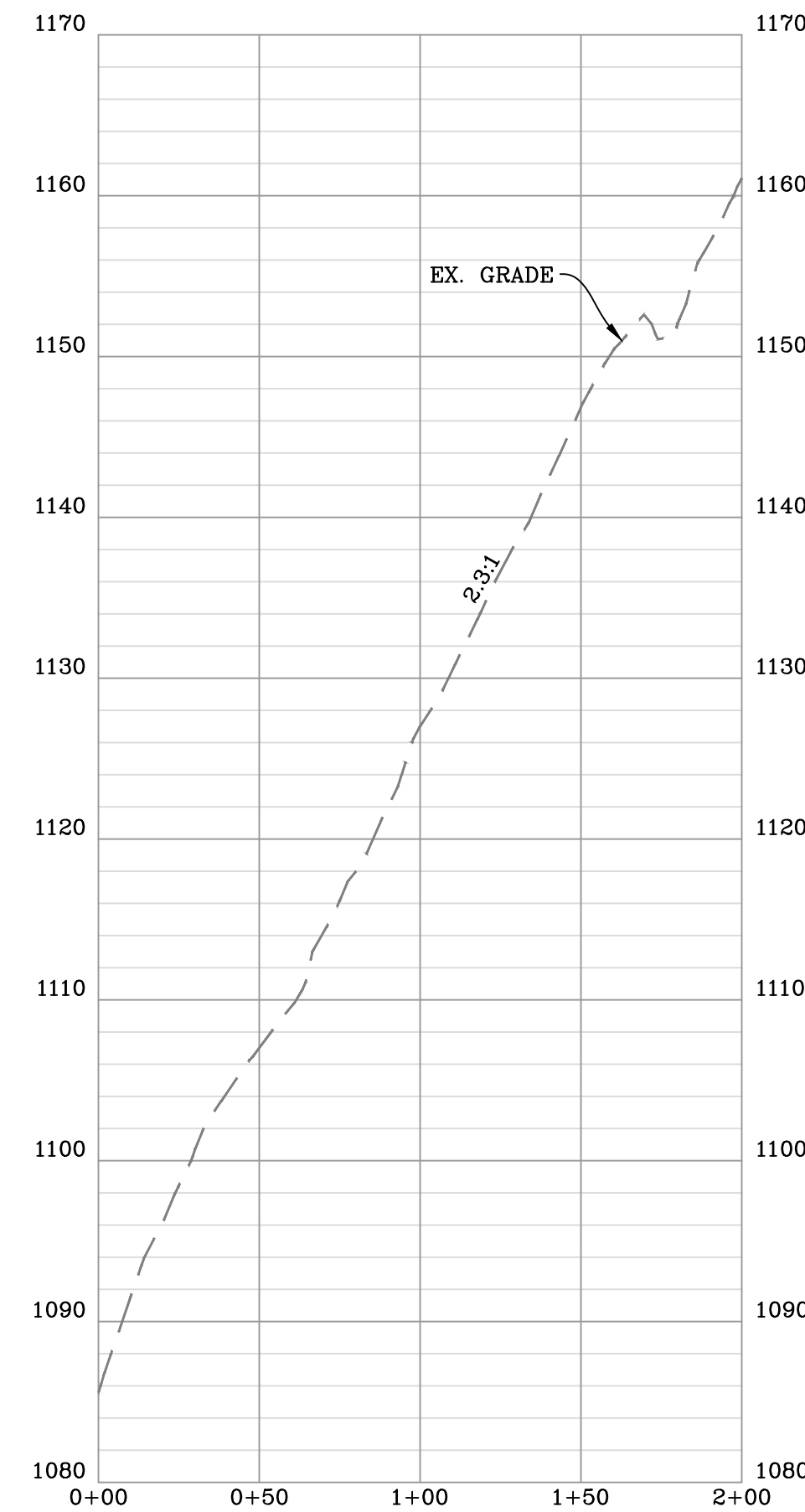


# STOCKPILE AS-BUILT SECTIONS

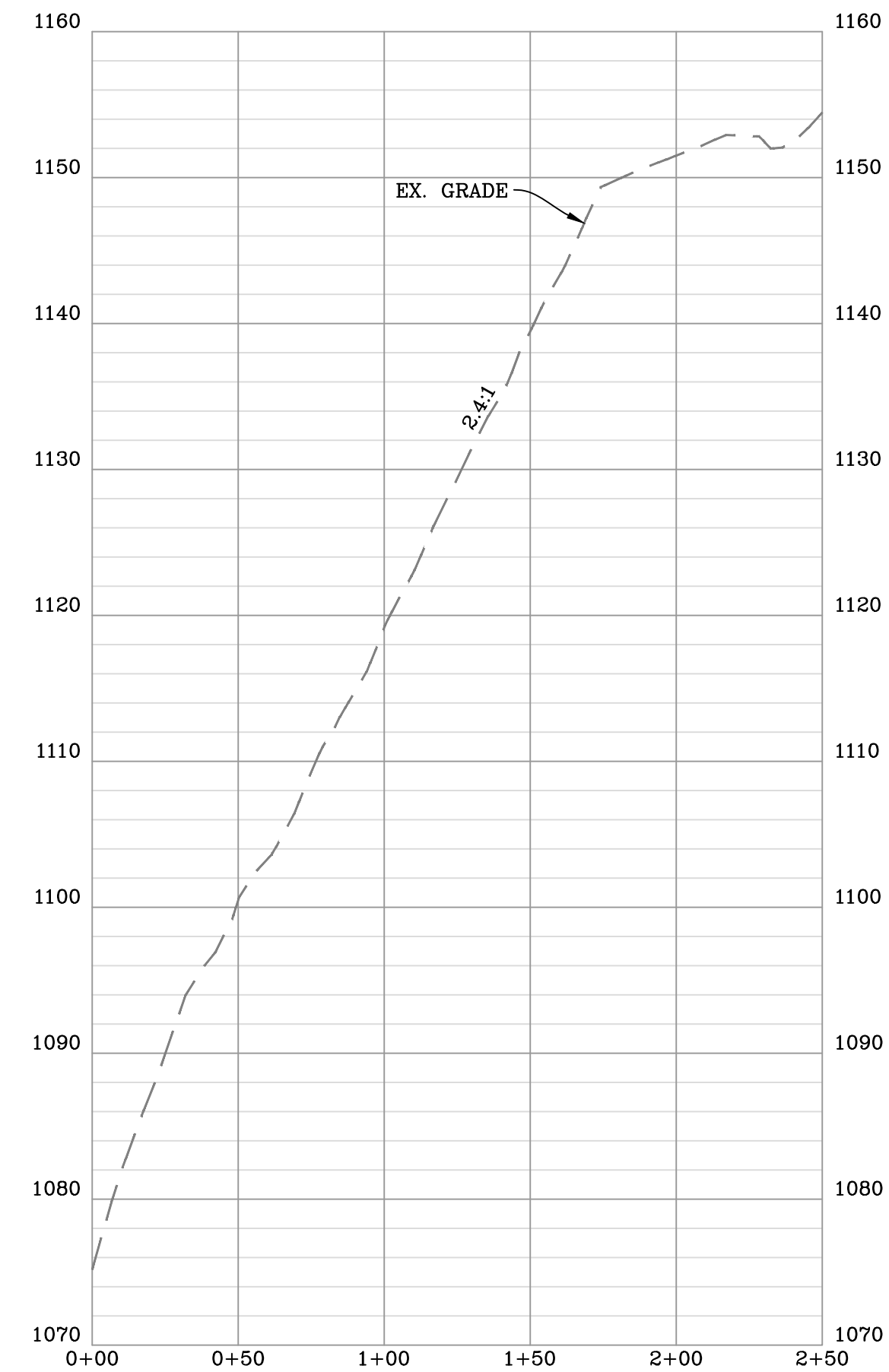
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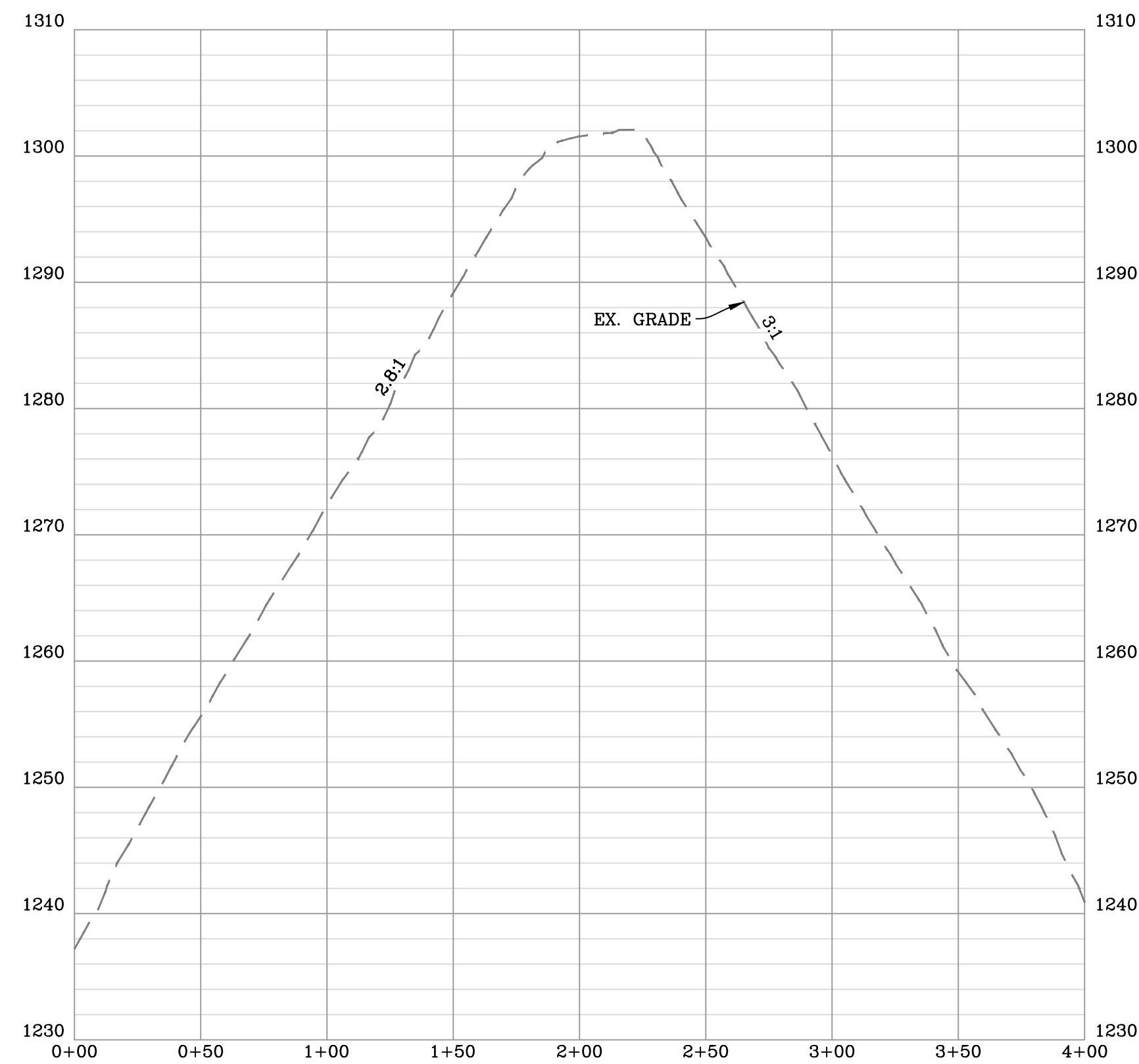
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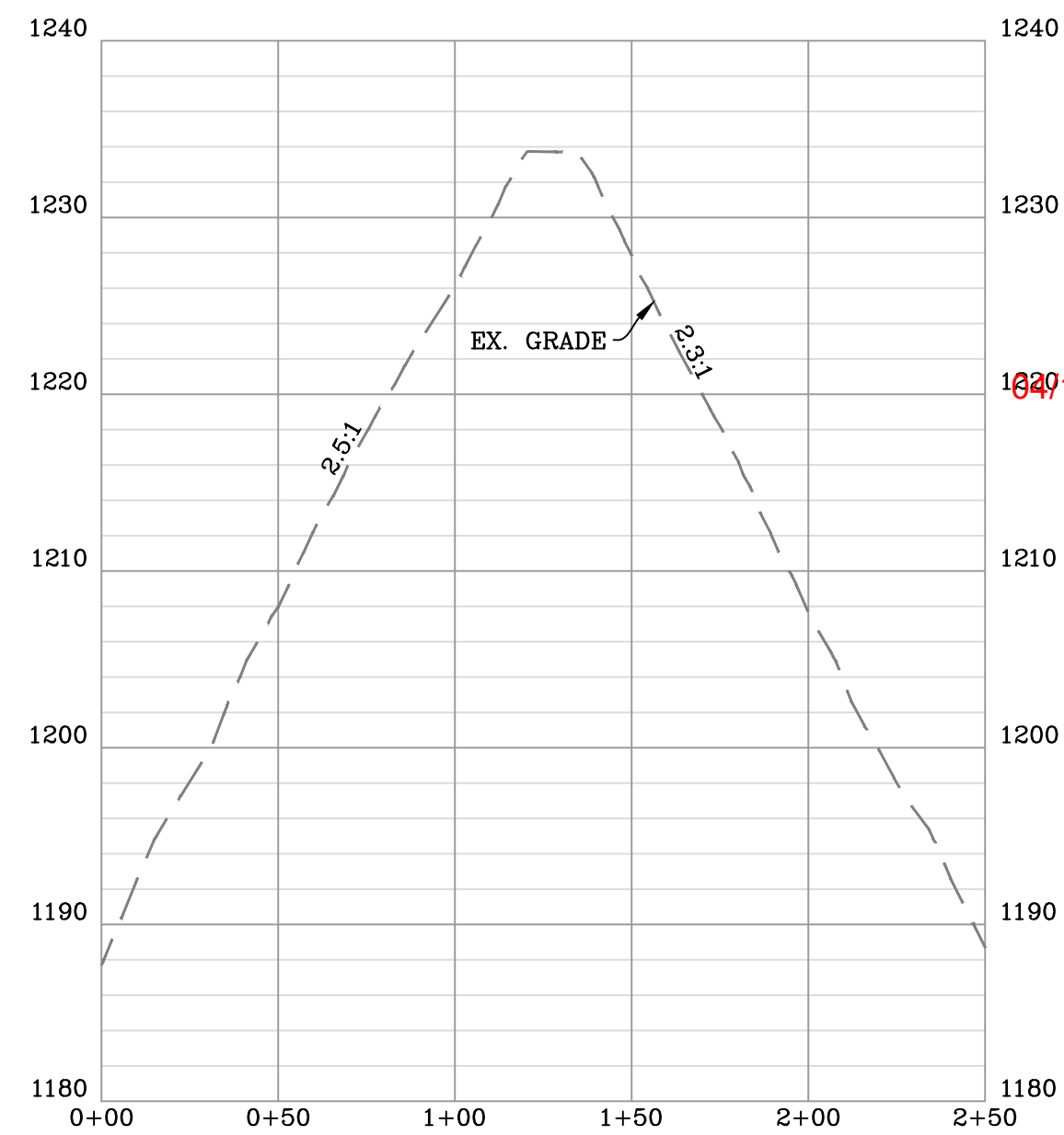
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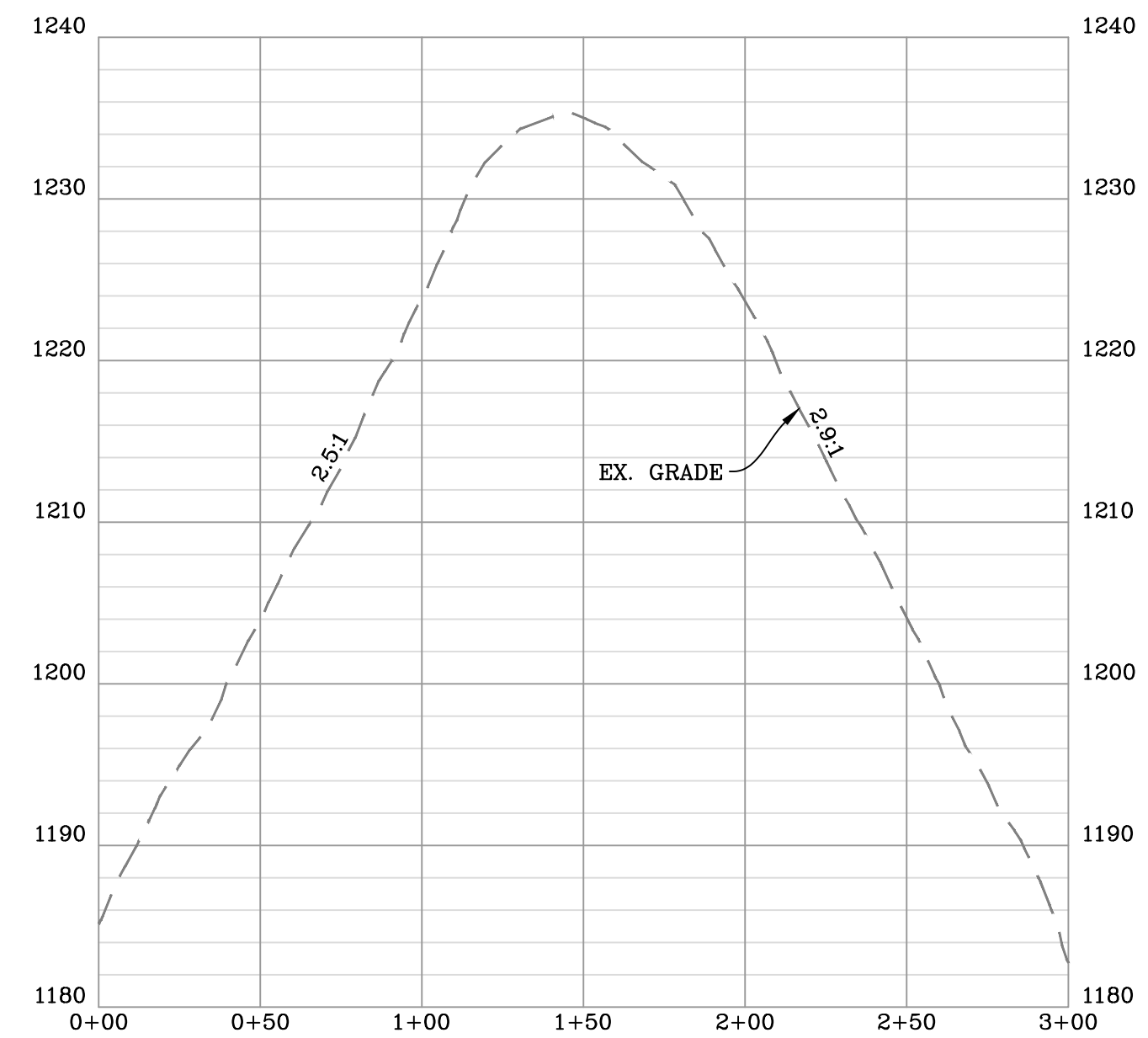
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 SCALE: HORIZ. 1" = 50' VERT. 1" = 10'



STOCKPILE AREA "E" AS-BUILT CROSS-SECTION "K-K"  
 SCALE: HORIZ. 1" = 50' VERT. 1" = 10'



STOCKPILE AREA "F" AS-BUILT CROSS-SECTION "D-D"  
 SCALE: HORIZ. 1" = 50' VERT. 1" = 10'



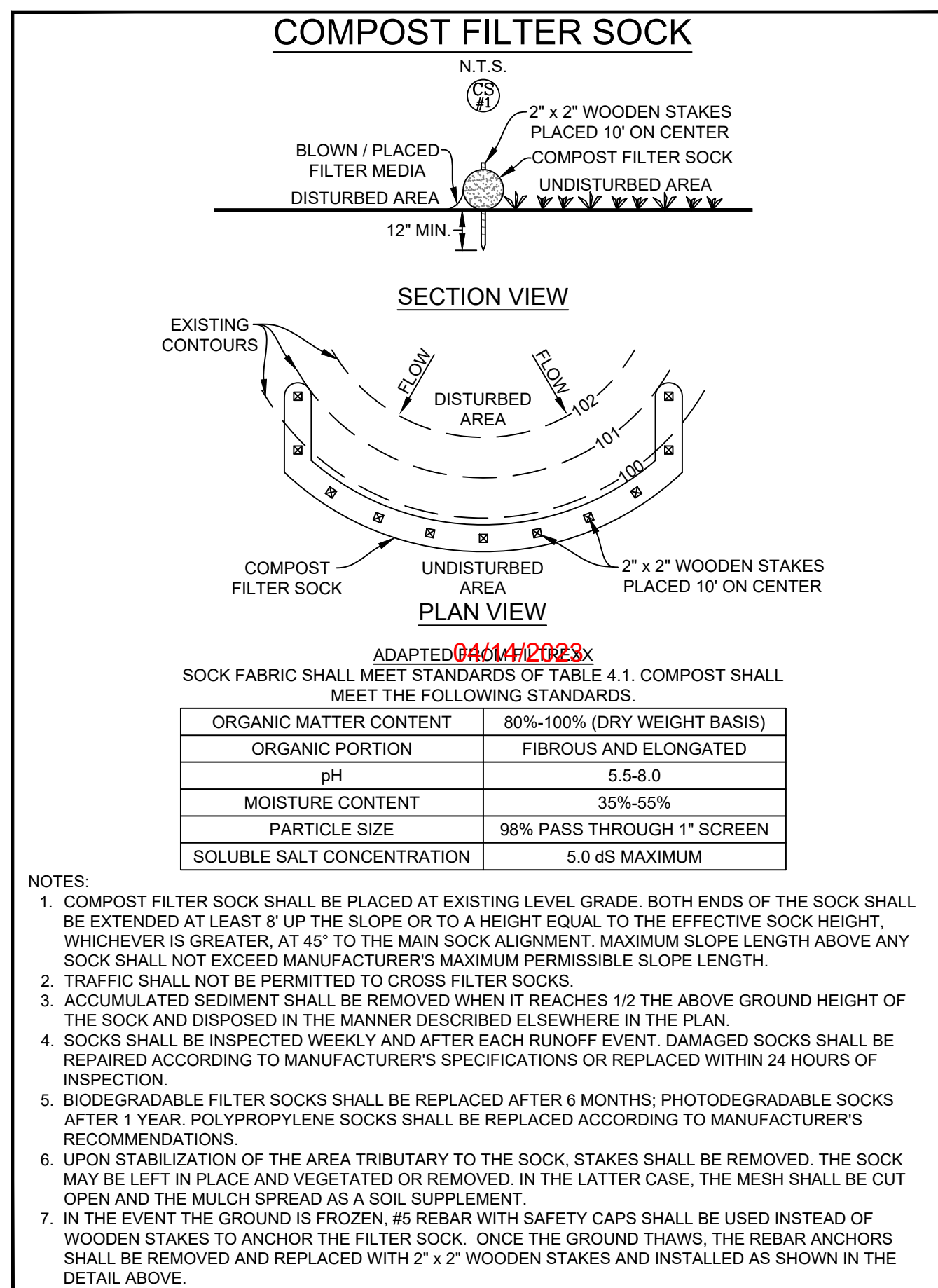
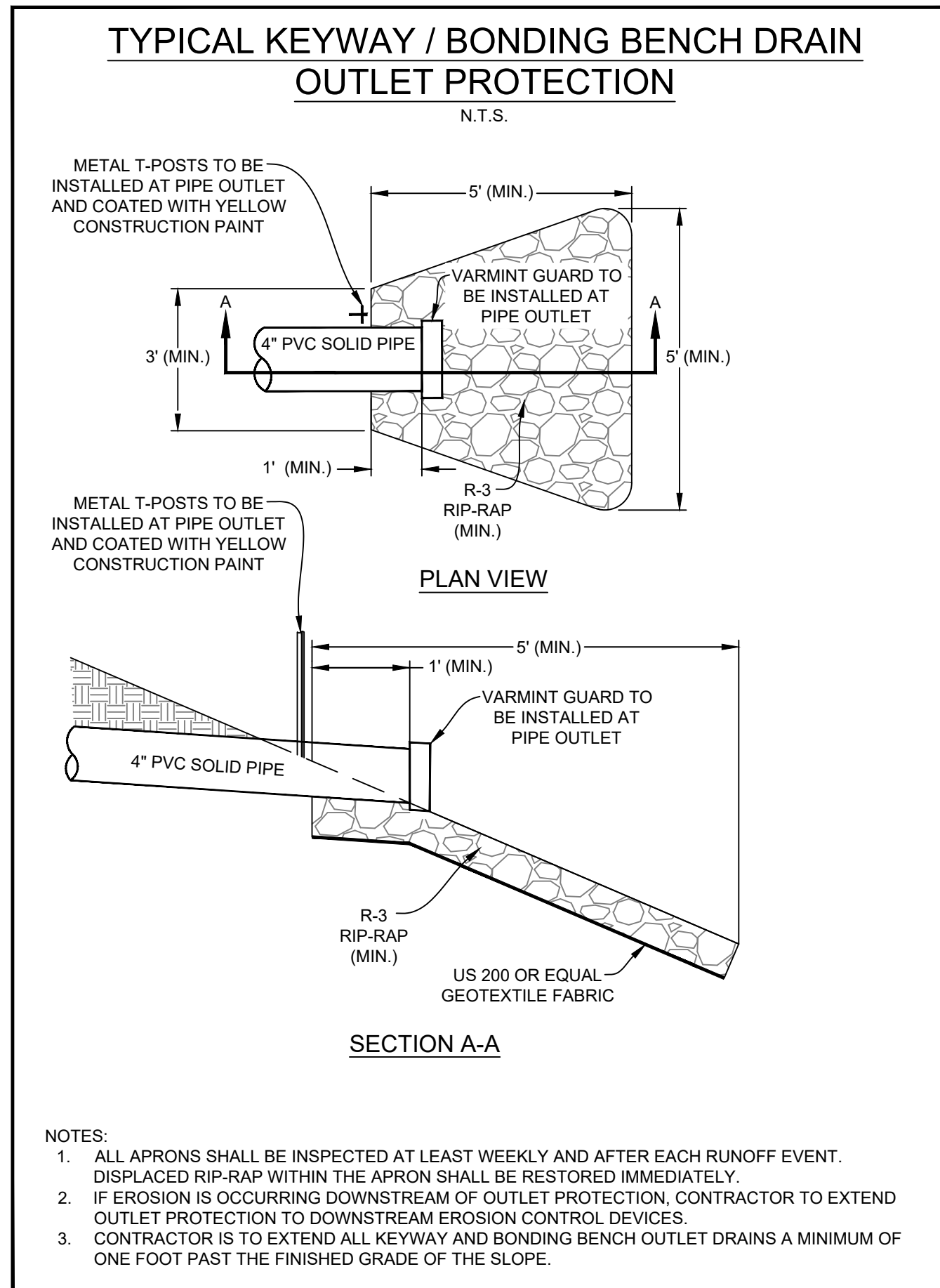
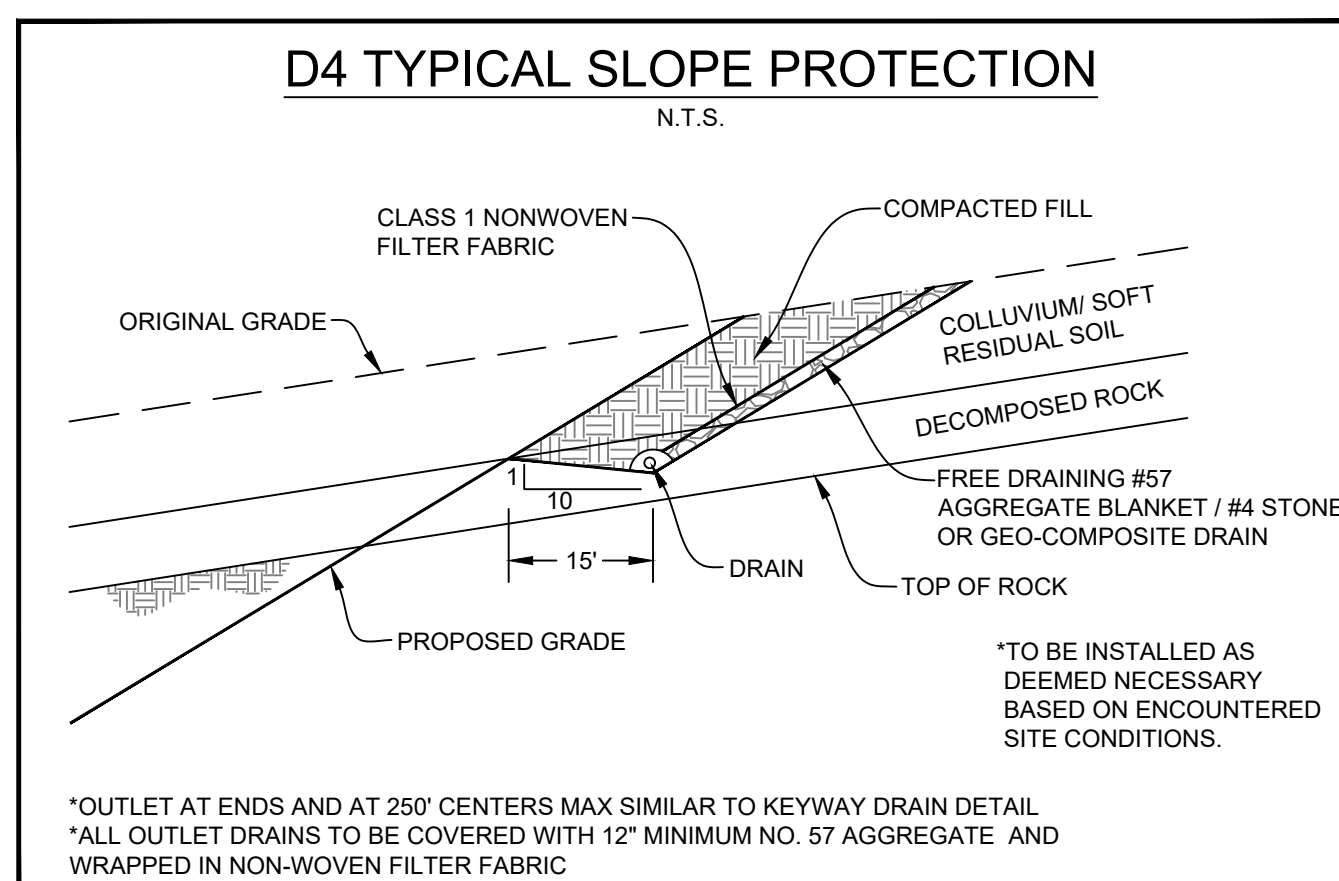
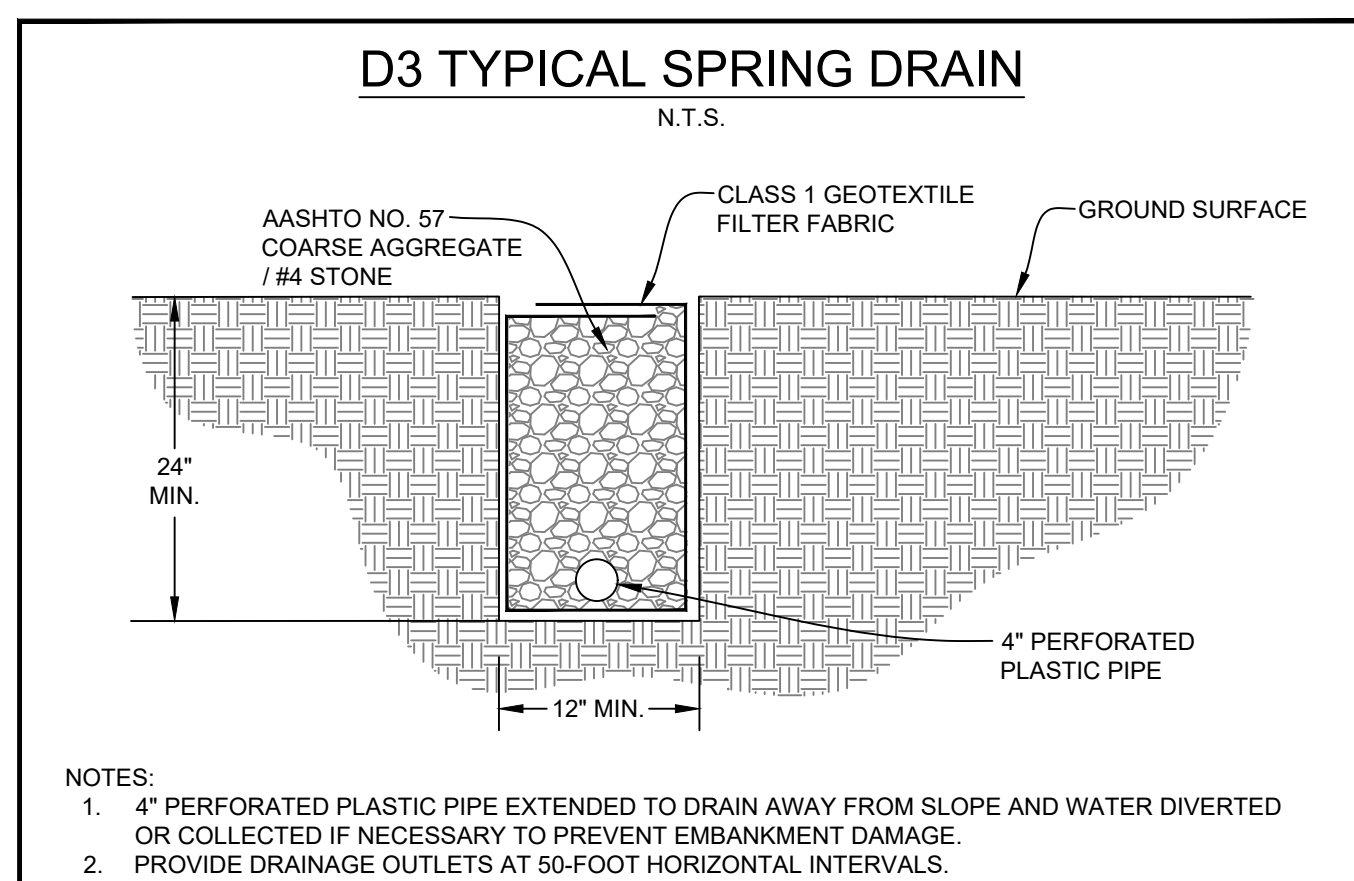
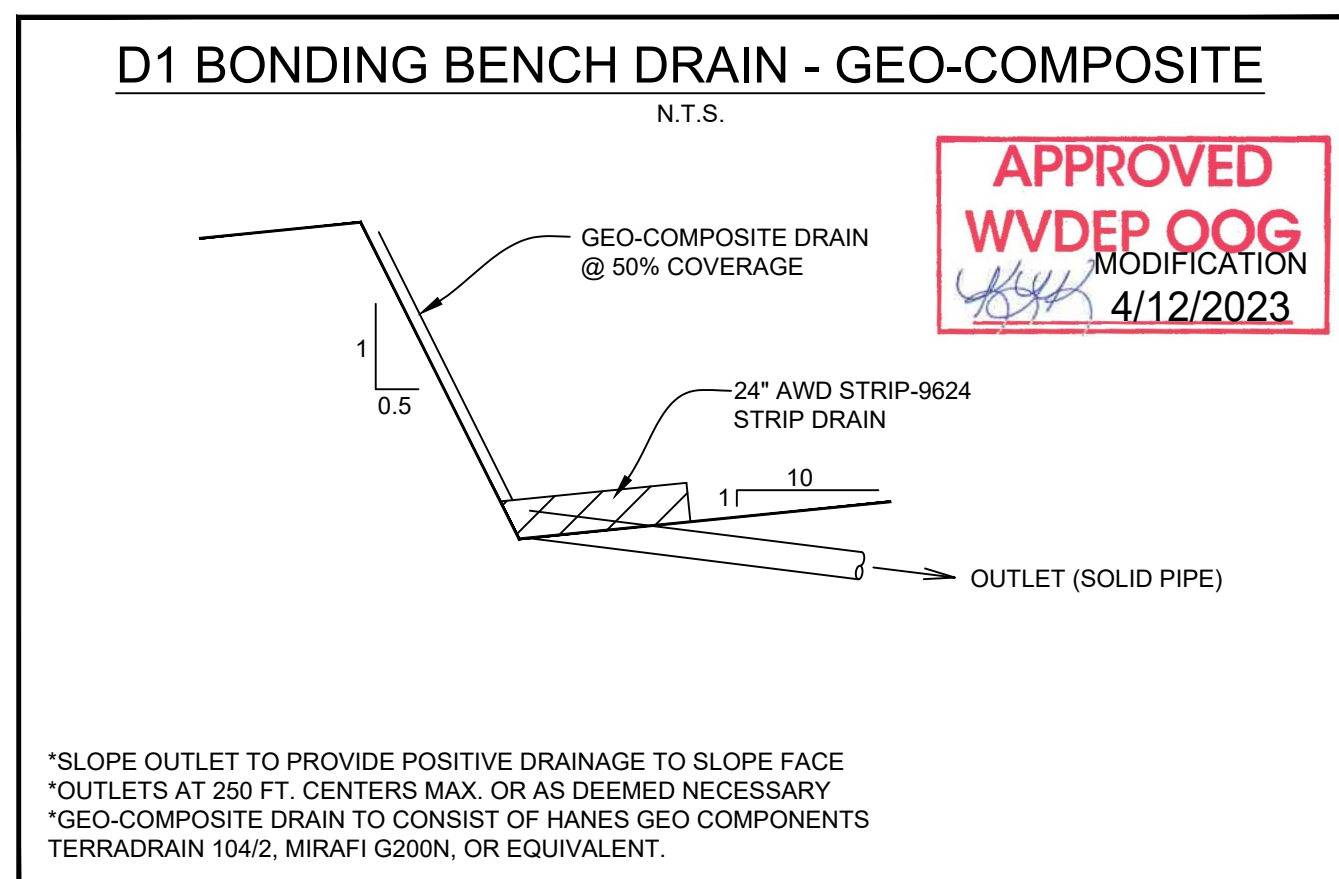
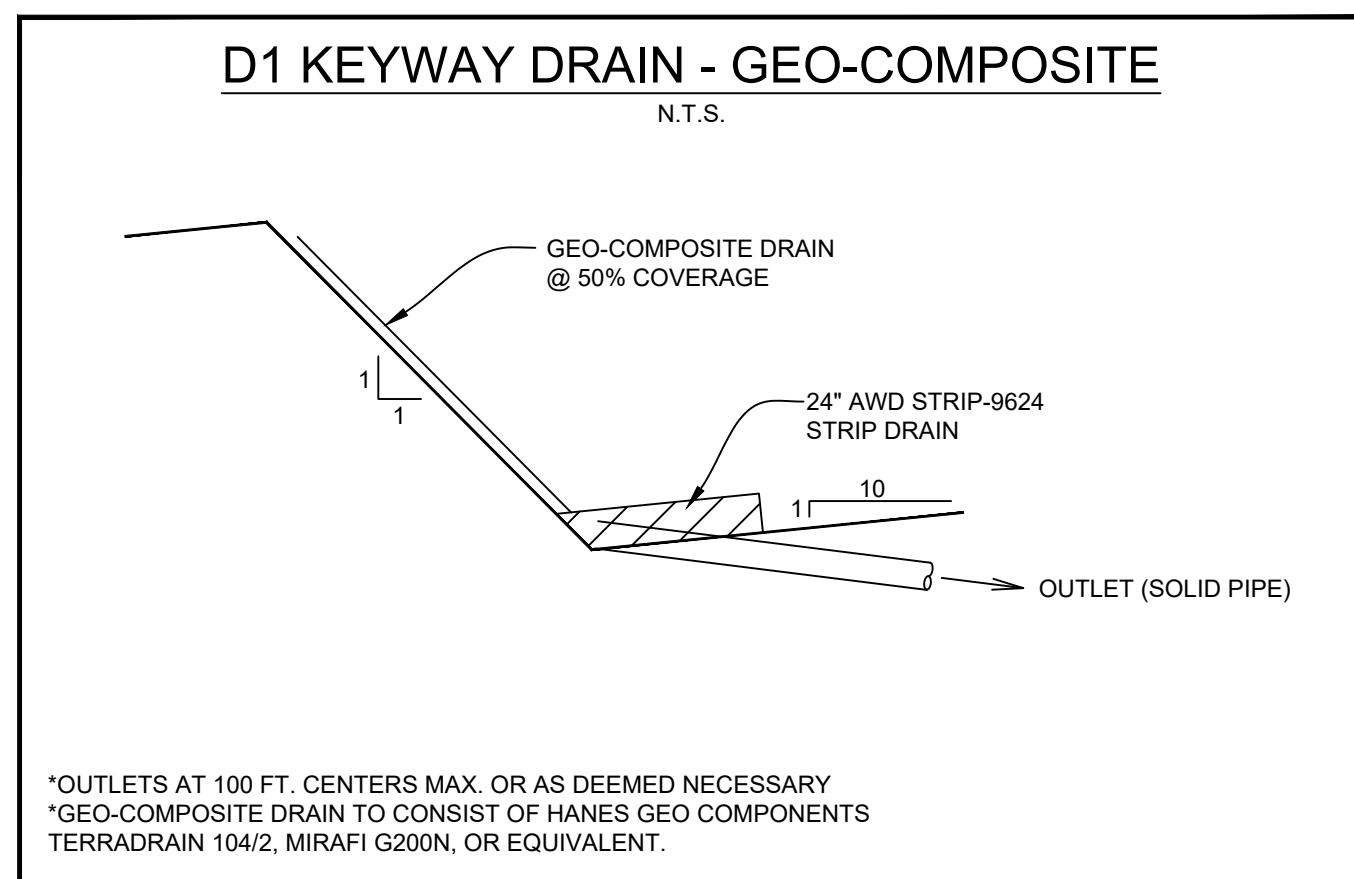
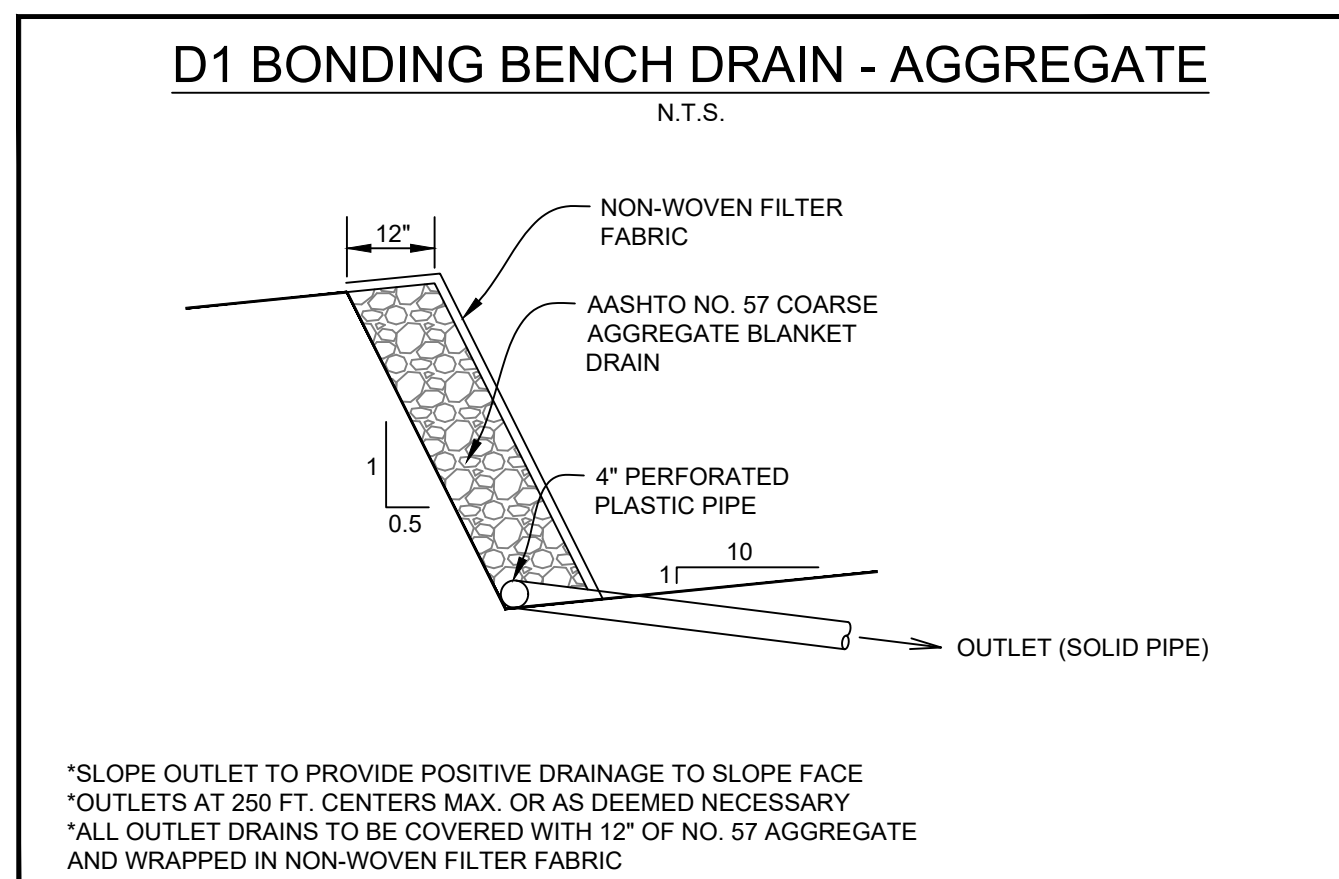
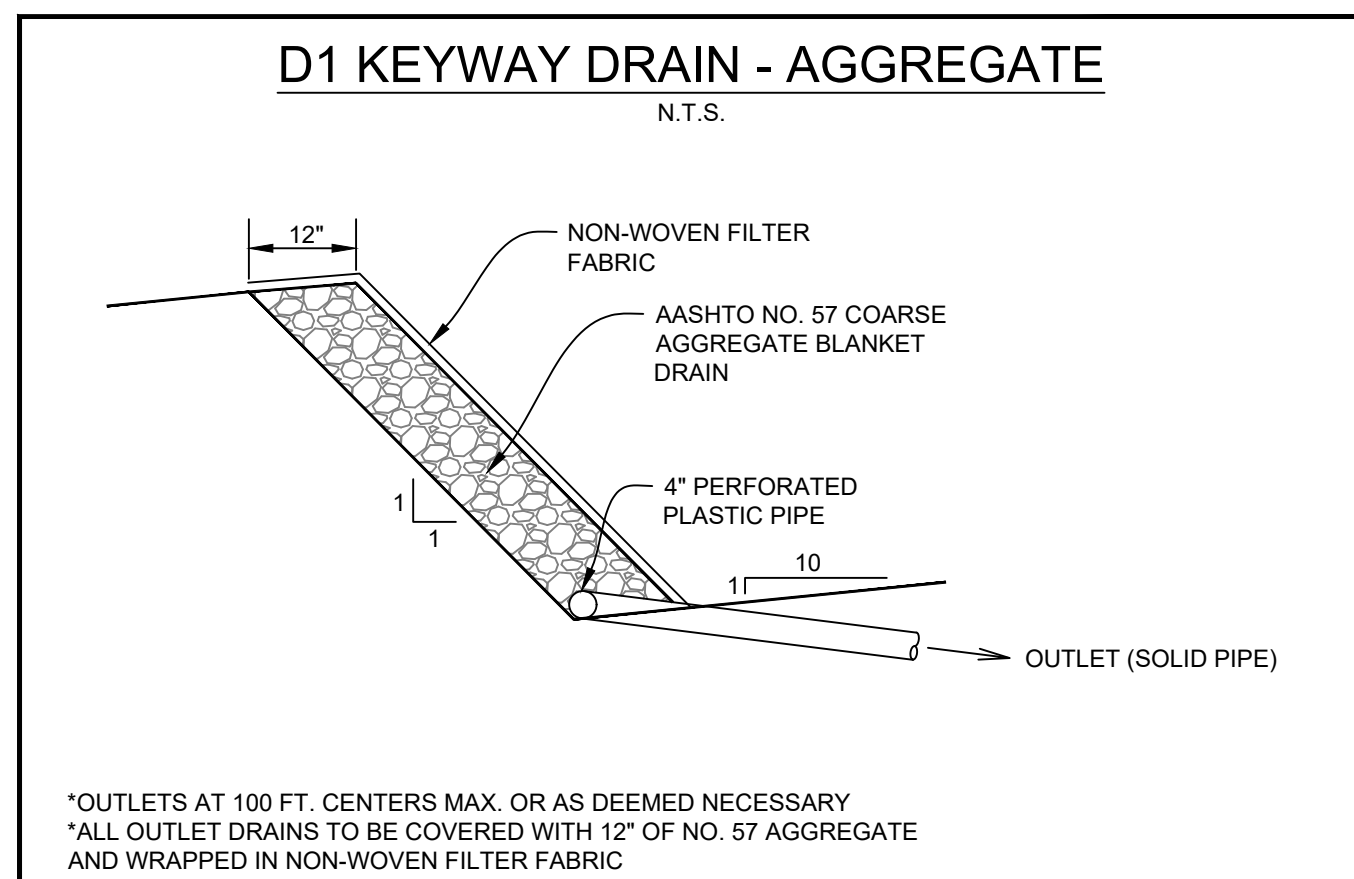
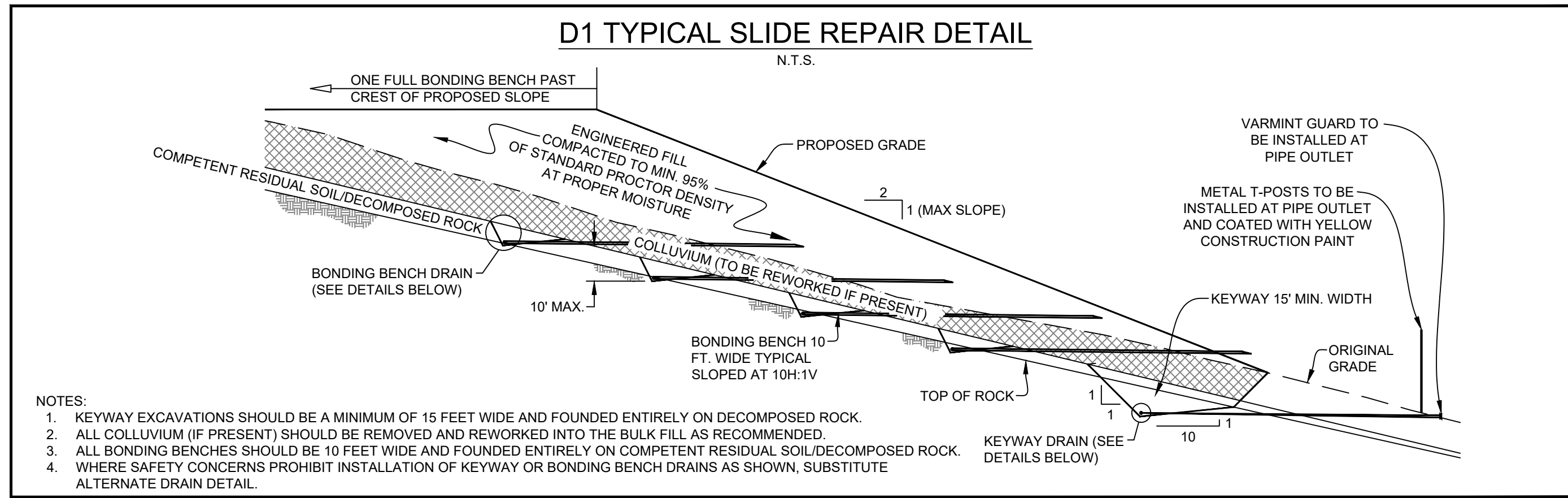
STOCKPILE AREA "F" AS-BUILT CROSS-SECTION "E-E"  
 SCALE: HORIZ. 1" = 50' VERT. 1" = 10'

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STOCKPILE AS-BUILT SECTIONS  
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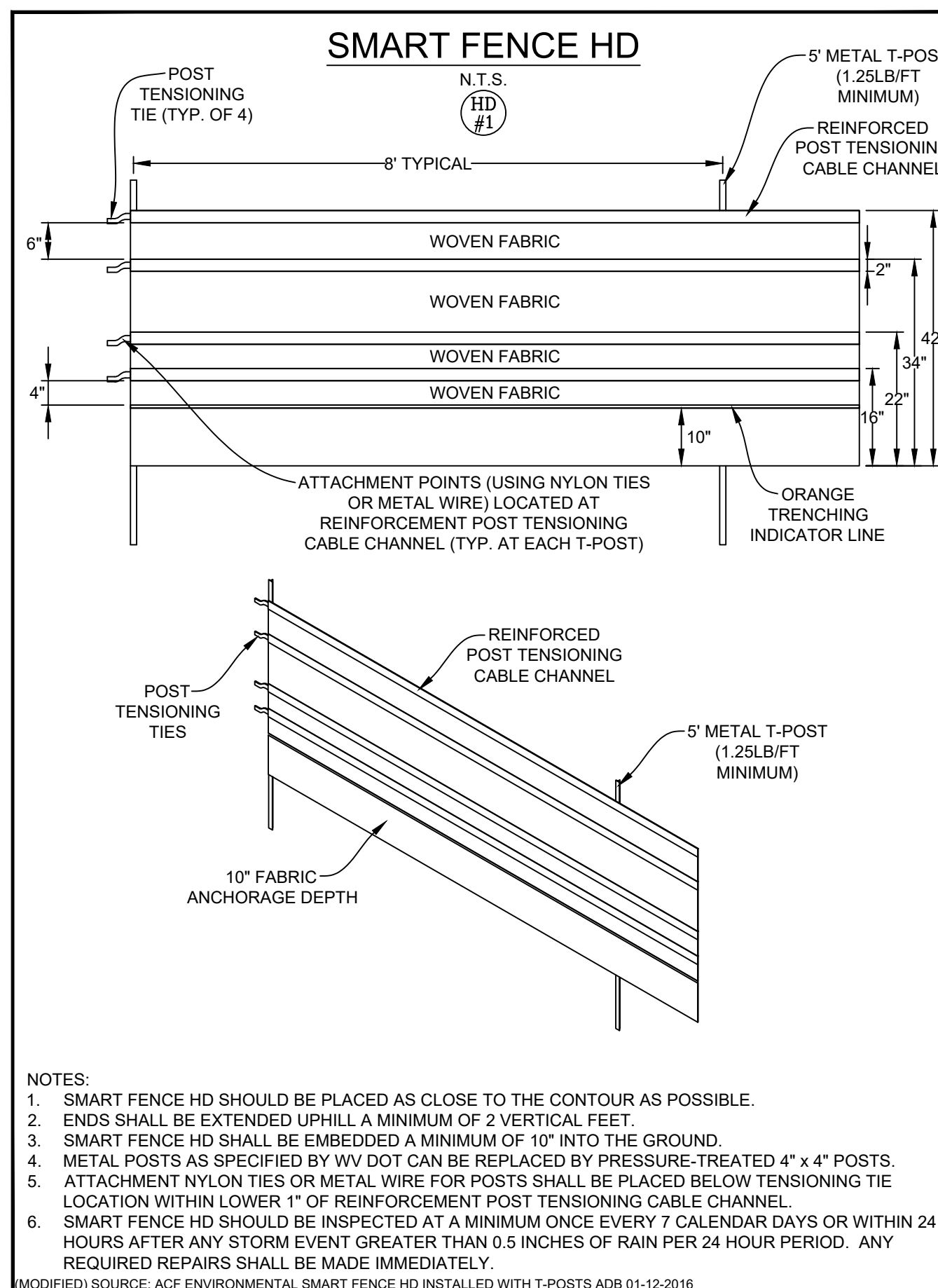




### GENERAL SITE EARTHWORK RECOMMENDATIONS

- ALL FILL AREAS SHOULD BE CLEARED OF TREES, STUMPS, AND VEGETATION AND STRIPPED OF TOPSOIL/ORGANIC SOILS PRIOR TO THE START OF FILL PLACEMENT.
- THE DISTRIBUTION AND GRADATION OF FILL MATERIALS SHALL BE SUCH THAT THE FILL WILL BE FREE OF LENSES, POCKETS, OR LAYERS OF MATERIALS DIFFERING SUBSTANTIALLY IN GRADATION FROM THE SURROUNDING MATERIALS WITHIN THE DESIGNATED FILL AREAS.
- FILL SHALL BE PLACED AND SPREAD IN SUCCESSIVE AND APPROXIMATE HORIZONTAL LAYERS OF UNIFORM THICKNESS BASED ON THE NOMINAL PARTICLE SIZE OF MATERIAL AND THE SIZE AND TYPE OF THE AVAILABLE COMPACTION EQUIPMENT. IN GENERAL, SOIL SHOULD BE PLACED IN NOMINAL 12 INCH MAXIMUM LOOSE LIFTS. LARGER ROCK INCORPORATED INTO THE FILL SHOULD TYPICALLY BE LIMITED TO 12 INCHES THICK X 3 FEET X 3 FEET, WITH ALL VOID SPACE CHOKED WITH SMALLER PARTICLE SIZE MATERIAL.
- ADEQUATE COMPACTIVE EFFORT IS APPLIED BY UTILIZING THE PROPER COMPACTION EQUIPMENT FOR THE COMPOSITION OF THE FILL MATERIALS BEING PLACED. SEGMENTED, SHEEPSFOOT, AND/OR PADFOOT ROLLERS SHOULD BE USED WHEN PLACING PREDOMINATELY CLAYEY (COHESIVE) FILL MATERIALS. THESE TYPES OF ROLLERS ARE ALSO EFFECTIVE ON CLAYEY SHALES, CLAYSTONE, AND SOFTER SANDSTONE TO BREAK DOWN THE ROCK PARTICLES. SMOOTH DRUM VIBRATORY ROLLERS SHOULD BE UTILIZED ON PREDOMINATELY GRANULAR FILL MATERIALS AND TO SEAL CLAYEY SOILS TO HELP PREVENT SURFACE WATER INFILTRATION AND/OR TO PROMOTE DRAINAGE.
- ALL FILL MATERIALS SHALL BE COMPACTED BY A SUFFICIENT NUMBER OF COMPLETE TRIPS (I.E. PASSES) OF THE APPROPRIATE COMPACTION EQUIPMENT TO ATTAIN A MINIMUM OF 95% OF THE MAXIMUM DRY DENSITY AS DETERMINED IN ACCORDANCE WITH ASTM TEST DESIGNATION D698 (STANDARD PROCTOR). MAINTAIN THE MOISTURE CONTENT OF THE FILL MATERIALS AS NECESSARY TO ATTAIN THE DESIRED COMPACTION DENSITY.
- UNDISTURBED AND/OR FILL MATERIALS PLACED WITHIN THE UPPER 12 INCHES OF FINAL GRADE SHOULD BE COMPACTED TO ATTAIN A MINIMUM OF 100% OF THE MAXIMUM DRY DENSITY AS DETERMINED IN ACCORDANCE WITH ASTM TEST DESIGNATION D698 (STANDARD PROCTOR) AT AN IN-PLACE MOISTURE WITHIN 3% OF THE MATERIAL'S OPTIMUM MOISTURE CONTENT. THE ENTIRE SUBGRADE SURFACE SHOULD BE THOROUGHLY SEALED USING A VIBRATORY SMOOTH DRUM ROLLER.
- TO VERIFY THE SPECIFIED DEGREE OF COMPACTION AND TO DETERMINE THE IN-PLACE MOISTURE CONTENT AS STATED ABOVE, IN-PLACE FIELD DENSITY TESTS SHOULD BE PERFORMED IN ACCORDANCE TO THE PROCEDURES OF ASTM D2922 (NUCLEAR DENSOMETER).
- IN ADDITION TO IN-PLACE FIELD DENSITY TESTING, ACCEPTANCE SHOULD ALSO BE PREDICATED ON A VISUAL PERFORMANCE CRITERIA. OBVIOUS SURFACE RUTTING AND/OR DEFLECTION THAT ARE JUDGED TO BE DETRIMENTAL TO THE OVERALL STABILITY OF THE FILL AREA SHOULD BE REMOVED, MOISTURE CONDITIONED AND RECOMPACTED, OR OTHERWISE ADDRESSED PRIOR TO ACCEPTING THE LIFT.
- WHERE PREDOMINATELY "ROCKY" FILL MATERIALS ARE PLACED OR WHERE REPRESENTATIVE NUCLEAR DENSOMETER TESTS CANNOT BE OBTAINED, A VISUAL NON-DEFLECTION CRITERIA SHOULD BE DEVELOPED IN CONJUNCTION WITH AN ADEQUATE NUMBER OF ROLLER PASSES FOR ACCEPTANCE.

**NOTE:**  
 1. THE GEOTECHNICAL NOTES AND DETAILS SHOWN ON THIS SHEET ARE FOR THE GENERAL EARTHWORK AND SUBSURFACE DRAINAGE ASSOCIATED WITH THE CONSTRUCTION OF THIS SITE. THE CONTRACTOR SHALL REFER TO THE GEOTECHNICAL INVESTIGATION REPORT FOR ADDITIONAL GUIDANCE AND RECOMMENDATIONS.



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**CONSTRUCTION DETAILS**

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 ELLSWORTH DISTRICT  
 TYLER COUNTY, WEST VIRGINIA

03/13/2023

DATE: 01/27/2023  
 SCALE: AS SHOWN  
 SHEET 22 OF 24

**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

**APPROVED**  
**WVDEP OOG**  
**MODIFICATION**  
**4/12/2023**

**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 IV-2 THROUGH IV-4 FOR RECOMMENDED DATES TO ESTABLISH VEGETATIVE COVER AND THE APPROVED LISTS OF TEMPORARY AND PERMANENT PLANT SPECIES AND PLANTING RATES. TABLE IV-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 IV-4B. 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 ENDOPHYTIC FREE VARIETIES OF TALL FESCUE SHOULD BE USED. TALL FESCUE AND CROWNVEATCH 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 IV-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 MOISTURE NETS OR EROSION CONTROL MATTING.  
 AREAS THAT HAVE BEEN TEMPORARILY OR PERMANENTLY SEEDING 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 SEEDING 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 SEEDING 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 SEEDING 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 3".  
 2. MULCH NETTING  
 FOLLOW MANUFACTURER'S RECOMMENDATION WHEN POSITIONING AND STAPLING THE MULCH NETTING IN THE SOIL.

**ANTERO'S PREFERRED SEED MIXTURE**

Species/Contains	Pure Seed	Germ	Origin
Bestfor Intermediate Ryegrass	29.95%	90%	OR
Climax Timothy	24.96%	90%	CAN
Annual Ryegrass *	24.92%	90%	OR
Medium Red Clover *	9.99%	90%	OR
Potomac Orchardgrass	9.46%	90%	OR
Other Crop Seeds:	0.01%	* Variety Not Stated	
Inert Matter:	0.69%		
Weed Seeds:	0.02%	AMS: 5143	

Planting Dates	Recommended Seeding 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

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

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
Japanese Millet	180	8/15 - 11/15	Well - Mod. Well	5.5 - 7.0
Redtop	30	6/15 - 8/15	Well	4.5 - 7.0
Annual Ryegrass	5	3/1 - 6/15	Well	4.0 - 7.5
Spring Oats	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.

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	10 - 15	Well - Mod. Well	5.0 - 7.5
<b>Flatpea or Perennial Pea / Tall Fescue</b>	<b>20</b>	<b>Well - Mod. Well</b>	<b>4.0 - 8.0</b>
Ladino Clover / Serecia Lespedeza / Tall Fescue	25 / 2	Well - Mod. Well	4.5 - 7.5
Tall Fescue / Ladino Clover / Redtop	40 / 3 / 3	Well - Mod. Well	5.0 - 7.5
Crownvetch / Tall Fescue / Redtop	10 / 20 / 3	Well - Mod. Well	5.0 - 7.5
Tall Fescue / Birdsfoot Trefoil / Redtop	40 / 10 / 3	Well - Mod. Well	5.0 - 7.5
Serecia Lespedeza / Tall Fescue / Redtop	25 / 30 / 3	Well - Mod. Well	4.5 - 7.5
Redtop / Tall Fescue / Creeping Red	30 / 50 / 50	Well - Mod. Well	5.0 - 7.5
Tall Fescue	50	Well - Poorly	4.5 - 7.5
<b>Perennial Ryegrass / Tall Fescue / Lathco Flatpea *</b>	<b>10 / 15 / 20</b>	<b>Well - Poorly</b>	<b>5.8 - 8.0</b>

\* 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.

Species/Mixture	Seeding Rate (lbs/acre)	Soil Drainage preference	pH Range
KY Bluegrass / Redtop	20 / 3	Well - Mod. Well	5.5 - 7.5
Ladino Clover or Birdsfoot Trefoil	2 / 10		
Timothy / Alfalfa	5 / 12	Well - Mod. Well	6.5 - 8.0
Timothy / Birdsfoot Trefoil	5 / 8	Well - Poorly	5.5 - 7.5
<b>Orchardgrass / Ladino Clover / Redtop</b>	<b>10 / 2 / 3</b>	<b>Well - Mod. Well</b>	<b>5.5 - 7.5</b>
<b>Orchardgrass / Ladino Clover</b>	<b>10 / 2</b>	<b>Well - Mod. Well</b>	<b>5.5 - 7.5</b>
<b>Orchardgrass / Perennial Ryegrass</b>	<b>20 / 10</b>	<b>Well - Mod. Well</b>	<b>5.5 - 7.5</b>
<b>Creeping Red Fescue / Perennial Ryegrass</b>	<b>30 / 10</b>	<b>Well - Mod. Well</b>	<b>5.5 - 7.5</b>
<b>Orchardgrass or KY Bluegrass</b>	<b>20 / 10</b>	<b>Well - Mod. Well</b>	<b>6.0 - 7.5</b>
Birdsfoot Trefoil / Redtop / Orchardgrass	10 / 5 / 20	Well - Mod. Well	5.5 - 7.5
<b>Lathco Flatpea * / Perennial Ryegrass</b>	<b>30 / 20</b>	<b>Well - Mod. Well</b>	<b>5.5 - 7.5</b>
Lathco Flatpea * / Orchardgrass	30 / 20	Well - Mod. Well	5.5 - 7.5

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 Mixtures listed in bold are suitable for use in shaded woodland settings; those in italics are suitable for use in filter strips.

04/14/2023

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.

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

### SLOPE TRACKING

N.T.S.

DOZER TREADS CREATE GROOVES PERPENDICULAR TO THE SLOPE

NOTES:  
 1. TRACKING SLOPES ARE DONE BY RUNNING TRACKED MACHINERY UP AND DOWN THE SLOPE, LEAVING TREAD MARKS PARALLEL TO THE CONTOUR. IF A BULLDOZER IS USED, THE BLADE SHOULD BE UP.

### STANDARD STAKEOUT RIBBON COLOR SCHEME

N.T.S.

	YELLOW RIBBON: YELLOW RIBBON USED TO INDICATE TOP OF CUTS (C) CUT TO BE DETERMINED AT TIME OF STAKEOUT SLOPE DETERMINED BY SITE DESIGN
	YELLOW & ORANGE RIBBON: YELLOW AND ORANGE RIBBON USED TO INDICATE GRADE AT TOP OF PAD/POND/PIT
	ORANGE RIBBON: ORANGE RIBBON USED TO INDICATE TOES OF FILLS (F) FILL TO BE DETERMINED AT TIME OF STAKEOUT SLOPE DETERMINED BY SITE DESIGN
	PINK RIBBON: PINK RIBBON USED TO INDICATE TOP HOLE LOCATION PINK RIBBON USED TO INDICATE SURVEY CONTROL LOCATION
	PINK & BLACK STRIPE RIBBON: PINK & BLACK STRIPE RIBBON USED TO INDICATE VERTICAL CUT (VC) AT PAD/POND/PIT CORNER OR EDGE PINK & BLACK STRIPE RIBBON USED TO INDICATE VERTICAL FILL (VF) AT PAD/POND/PIT CORNER OR EDGE VERTICAL CUT/VERTICAL FILL TO BE DETERMINED AT TIME OF STAKEOUT
	BLUE & WHITE STRIPE RIBBON: BLUE & WHITE STRIPE RIBBON USED TO INDICATE CLEARING LIMITS/CONSTRUCTION LIMITS
	ORANGE & BLACK STRIPE RIBBON: ORANGE & BLACK STRIPE RIBBON USED TO INDICATE VERTICAL CUT (VC) AT CENTERLINE OR EDGE OF ACCESS ROAD ORANGE & BLACK STRIPE RIBBON USED TO INDICATE VERTICAL FILL (VF) AT CENTERLINE OR EDGE OF ACCESS ROAD
	PINK & WHITE STRIPE RIBBON: PINK & WHITE STRIPE RIBBON USED TO INDICATE EROSION AND SEDIMENT CONTROL STRUCTURES SILT FENCE (SF) REINFORCED FILTER FENCE (RFF) SUPER SILT FENCE (SSF) FILTER SOCK (FS)
	ORANGE & WHITE STRIPE RIBBON: ORANGE & WHITE STRIPE RIBBON USED TO INDICATE TOPSOIL STOCKPILE LOCATIONS
	BLUE RIBBON: BLUE RIBBON USED TO INDICATE CENTERLINE (CL) DITCH BLUE RIBBON USED TO INDICATE BOTTOM (BTM) SEDIMENT TRAPS

(MODIFIED) SOURCE: ANTERO RESOURCES CORPORATION.

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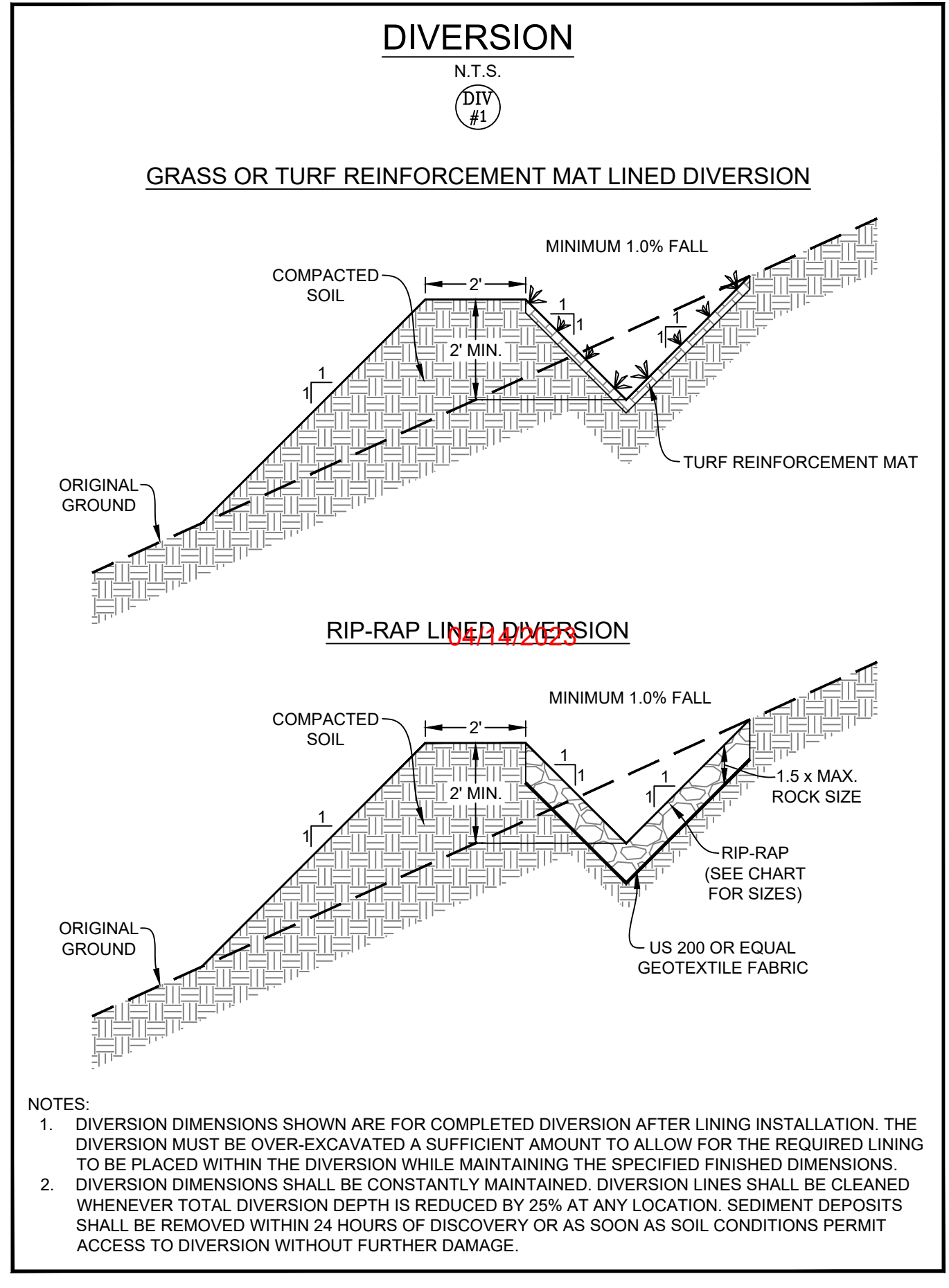
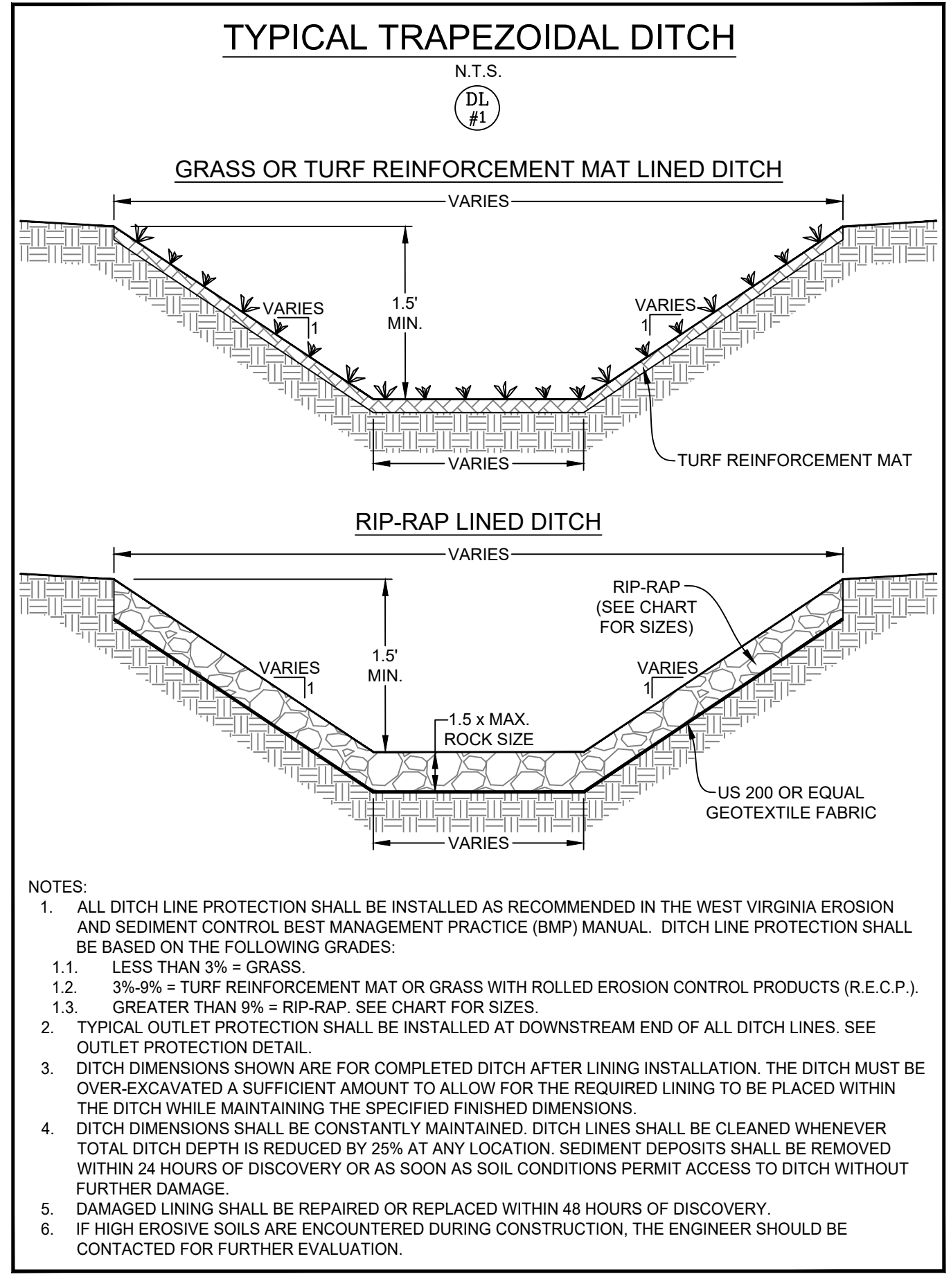
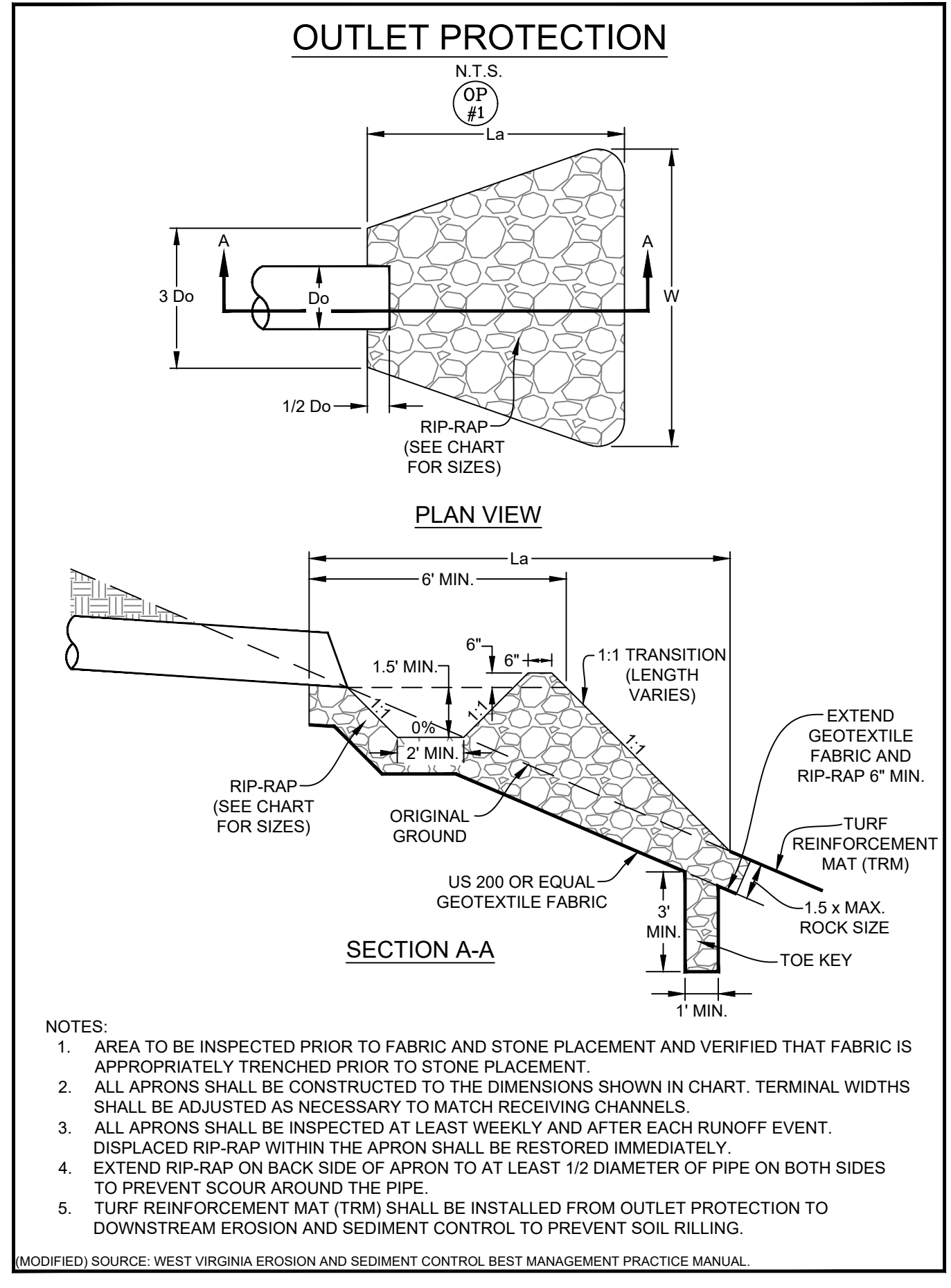
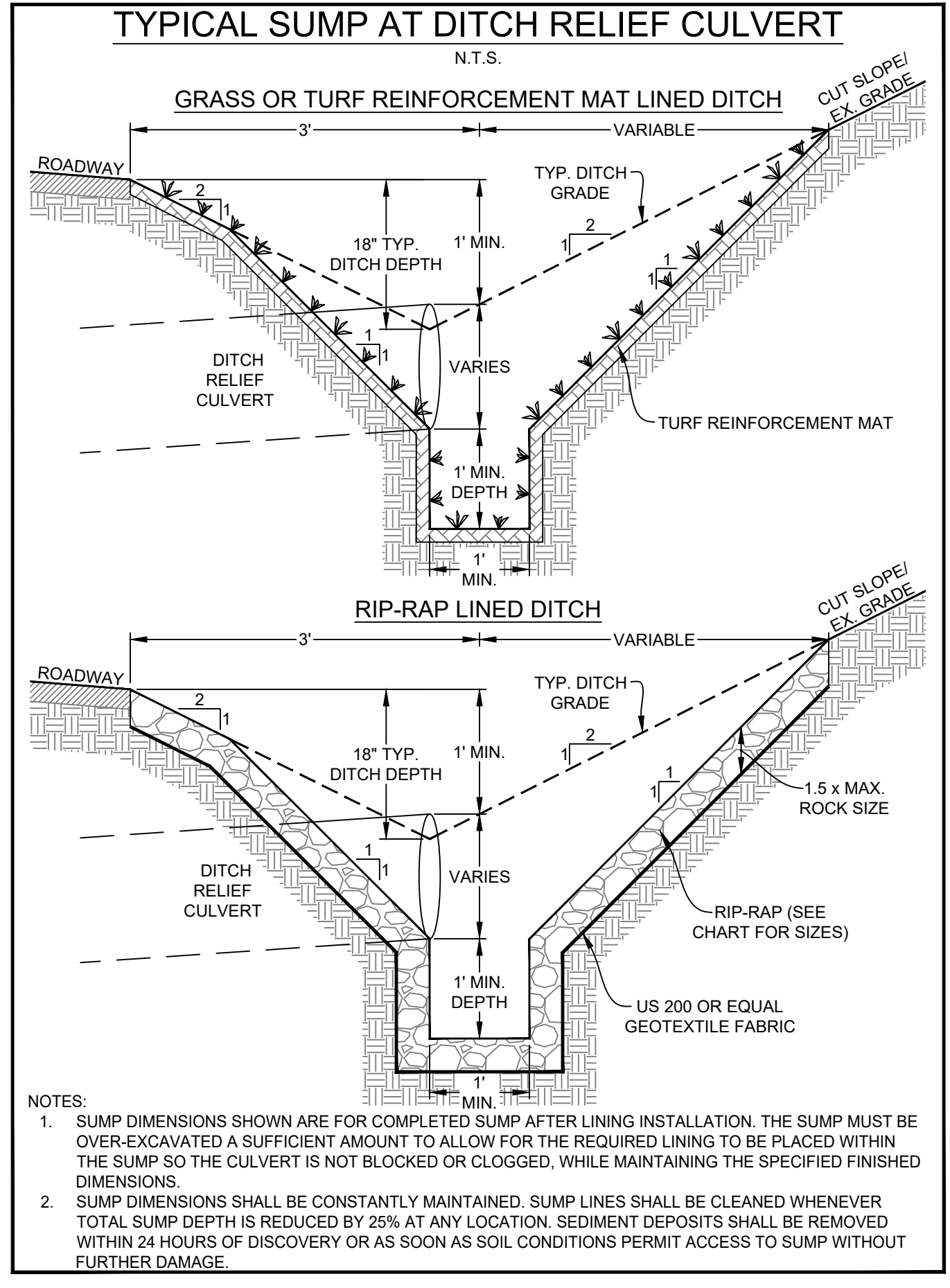
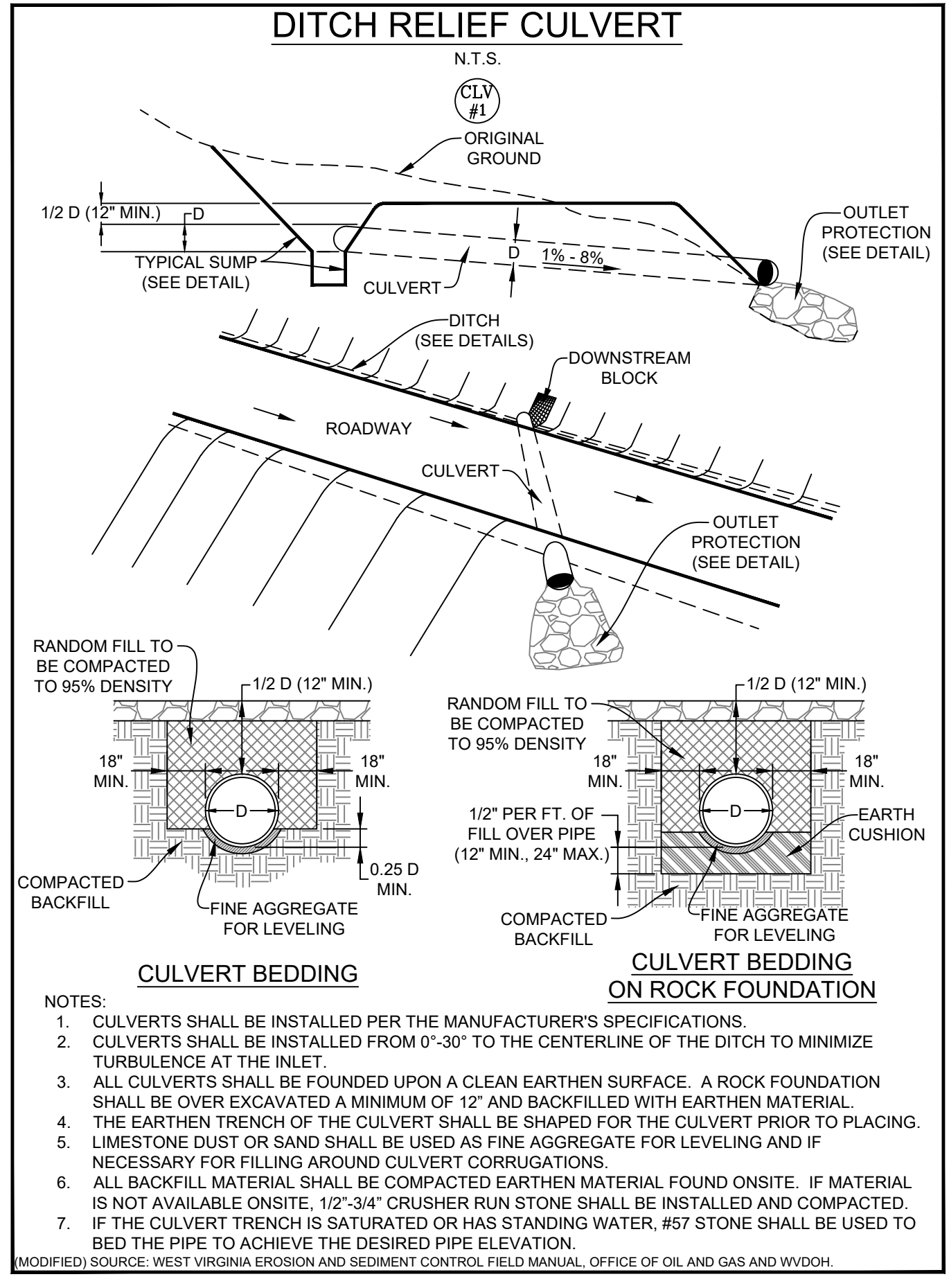
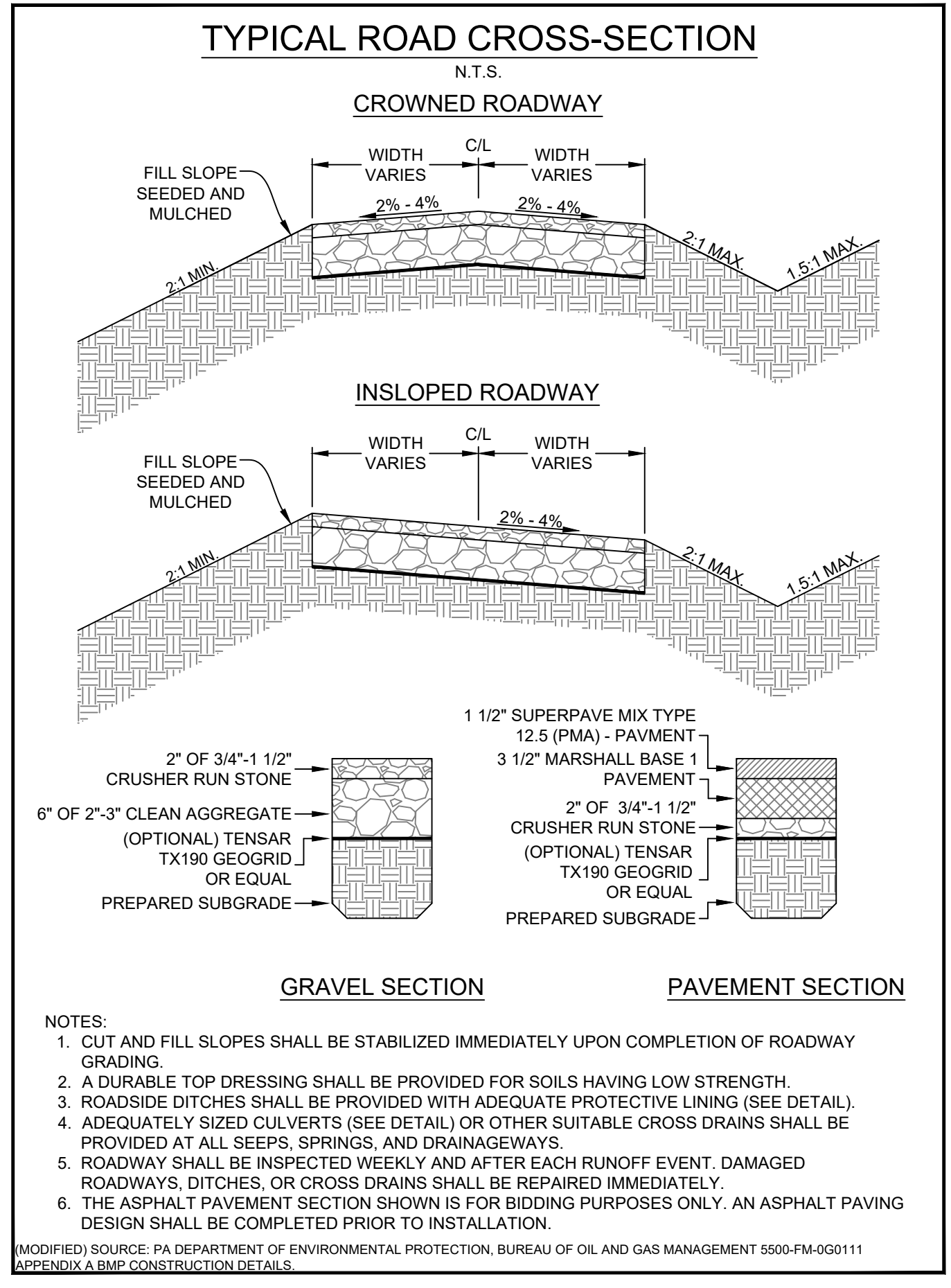
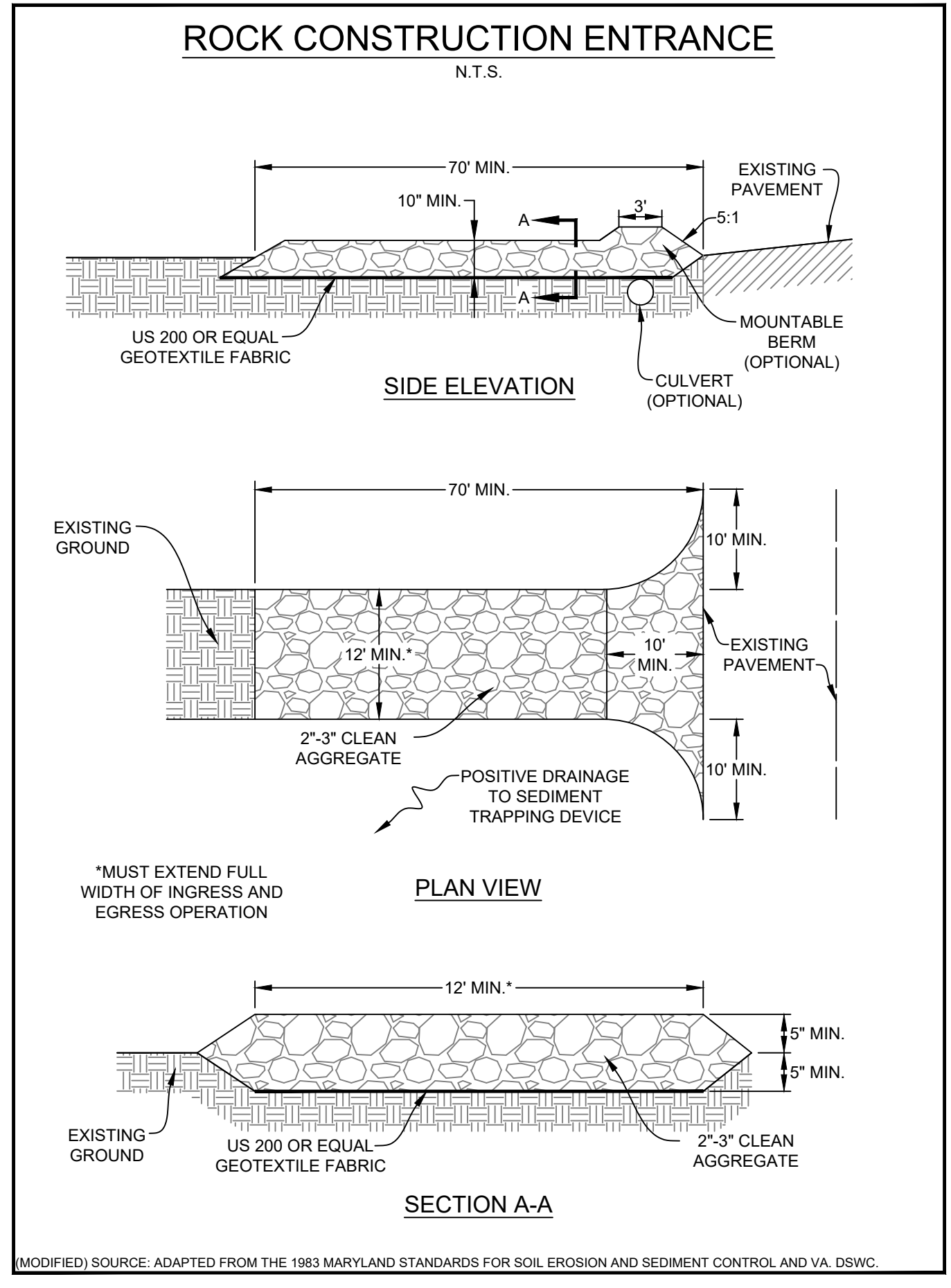
REVISION	DATE	DESCRIPTION
	03/13/2023	REVISED PER LANDOWNER ROAD LOD MOD

THIS DOCUMENT  
 WAS PREPARED FOR:  
 ANTERO RESOURCES  
 CORPORATION

**ED YOST**  
 WELL PAD & WATER CONTAINMENT PAD  
 ELLSWORTH DISTRICT  
 TYLER COUNTY, WEST VIRGINIA



DATE: 01/27/2023  
 SCALE: AS SHOWN  
 SHEET 23 OF 24



**APPROVED**  
**WVDEP OOG**  
MODIFICATION  
4/12/2023

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