



west virginia department of environmental protection

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

Harold D. Ward, Cabinet Secretary
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, larger version of the signature.

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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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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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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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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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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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

LOCATION COORDINATES:

ACCESS ROAD ENTRANCE
LATITUDE: 39.555311 LONGITUDE: -80.823601 (NAD 83)
N 4378417.80 E 515154.61 (UTM ZONE 17 METERS)
LATITUDE: 39.555232 LONGITUDE: -80.823776 (NAD 27)

CENTER OF TANK
LATITUDE: 39.550796 LONGITUDE: -80.830994 (NAD 83)
N 4377915.59 E 514520.37 (UTM ZONE 17 METERS)
LATITUDE: 39.550718 LONGITUDE: -80.831169 (NAD 27)

CENTROID OF PAD
LATITUDE: 39.548024 LONGITUDE: -80.836246 (NAD 83)
N 4377607.01 E 514069.68 (UTM ZONE 17 METERS)
LATITUDE: 39.547945 LONGITUDE: -80.836421 (NAD 27)

GENERAL DESCRIPTION:

THE ACCESS ROAD(S), WATER CONTAINMENT PAD, AND WELL PAD HAVE BEEN CONSTRUCTED TO AID IN THE DEVELOPMENT OF INDIVIDUAL MARCELLUS SHALE GAS WELLS.

FLOODPLAIN NOTES:

THE SITE IS LOCATED WITHIN FEMA FLOOD ZONE "X" PER FEMA FLOOD MAP #540950075C.

MISS UTILITY STATEMENT:

ANTERO RESOURCES CORPORATION HAS NOTIFIED MISS UTILITY OF WEST VIRGINIA FOR THE LOCATING OF UTILITIES PRIOR TO THIS PROJECT DESIGN. IN ADDITION, MISS UTILITY WILL BE CONTACTED BY THE CONTRACTOR PRIOR TO THE START OF CONSTRUCTION FOR THIS PROJECT.

ENTRANCE PERMIT:

ANTERO RESOURCES CORPORATION HAVE OBTAINED AN ENCRoACHMENT PERMIT (FORM MM-109) FROM THE WEST VIRGINIA DEPARTMENT OF TRANSPORTATION DIVISION OF HIGHWAYS, PRIOR TO COMMENCEMENT OF CONSTRUCTION ACTIVITIES.

ENVIRONMENTAL NOTES:

STREAM AND WETLAND DELINEATIONS WERE PERFORMED IN JUNE/JULY, 2021 BY GAI 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 JULY 28, 2021 POTENTIALLY JURISDICTIONAL WATERS MAP WAS PREPARED BY GAI AND SUMMARIZES THE RESULTS OF THE FIELD DELINEATION. THE MAP DOES NOT, IN ANY WAY, REPRESENT A JURISDICTIONAL DETERMINATION OF THE LANDWARD LIMITS OF WATERS AND WETLANDS WHICH MAY BE REGULATED BY THE USAGE OR THE WVDEP.

GEOTECHNICAL NOTES:

A SUBSURFACE INVESTIGATION OF THE PROPOSED SITE WAS PERFORMED BY PENNSYLVANIA SOIL & ROCK, INC. BETWEEN JULY 19, 2021 - AUGUST 04, 2021 AND FEBRUARY 21-22 2022. THE REPORT PREPARED BY PENNSYLVANIA SOIL & ROCK, INC. DATED SEPTEMBER 03, 2021 REVISED MARCH 03, 2022, 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 PENNSYLVANIA SOIL & ROCK, INC. FOR ADDITIONAL INFORMATION, AS NEEDED.

PROJECT CONTACTS:

ROBERT EDDY - UTILITY COORDINATOR
CELL: (304) 719-5199

OPERATOR:
ANTERO RESOURCES CORPORATION
535 WHITE OAKS BLVD.
BRIDGEPORT, WV 26330
PHONE: (304) 842-4100
FAX: (304) 842-4102

MARK HUTSON - LAND AGENT
CELL: (304) 669-8315

ELI WAGONER - ENVIRONMENTAL ENGINEER & REGULATORY MANAGER
OFFICE: (304) 842-4068 CELL: (304) 476-9770

ENGINEER/SURVEYOR:
NAVITUS ENGINEERING, INC.
CYRUS S. KUMP, PE - PROJECT
MANAGER/ENGINEER
OFFICE: (888) 662-4185 CELL: (540) 686-6747

JON McEVERS - SVP OPERATIONS
OFFICE: (303) 357-6799

ENVIRONMENTAL:
GAI CONSULTANTS, INC.
JASON A. COOK - SENIOR ENVIRONMENTAL
SPECIALIST
OFFICE: (304) 926-8100 CELL: (303) 709-3306

AARON KUNZLER - CONSTRUCTION MANAGER
CELL: (304) 842-4191

GEOTECHNICAL:
PENNSYLVANIA SOIL & ROCK, INC.
CHRISTOPHER W. SAMIOS - PROJECT ENGINEER
OFFICE: (412) 372-4000 CELL: (412) 589-0662

ROBERT WIRKS - DESIGN MANAGER
OFFICE: (304) 842-4100 CELL: (304) 627-7405

NOTES:

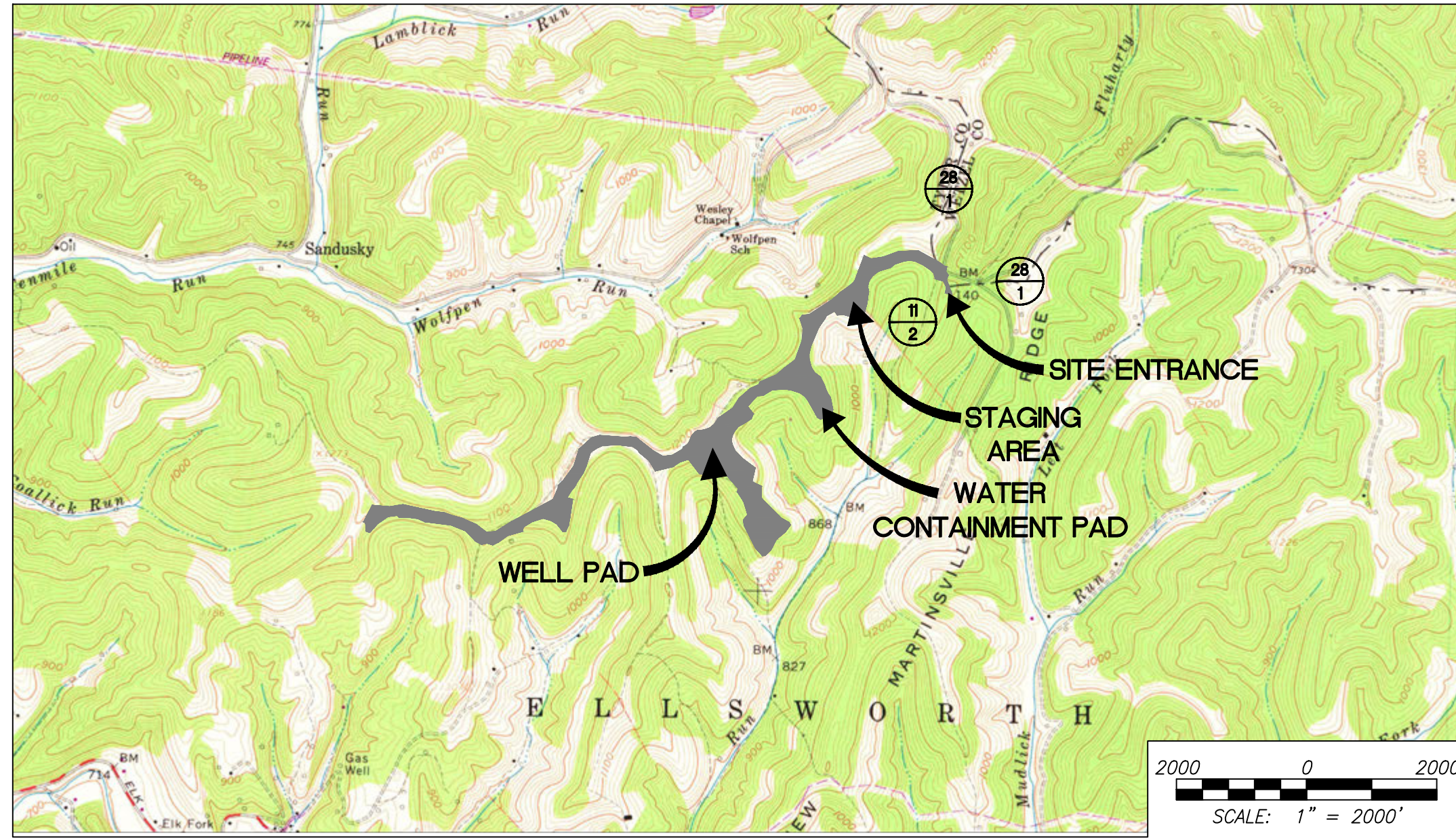
- 1. ALL BMP'S MUST REMAIN IN PLACE AND FUNCTIONAL UNTIL ALL AREAS WITHIN THE LIMIT OF DISTURBANCE ARE COMPLETE AND PERMANENTLY STABILIZED. MAINTENANCE MUST INCLUDE INSPECTION OF ALL EROSION AND SEDIMENT CONTROLS AFTER EACH RUNOFF EVENT IN EXCESS OF 0.5" AND ON A BIWEEKLY BASIS.
2. THE CONSTRUCTION SITE SHOULD BE STABILIZED AS SOON AS POSSIBLE AFTER COMPLETION. ESTABLISHMENT OF FINAL STABILIZATION MUST BE INITIATED NO LATER THAN 7 DAYS AFTER REACHING FINAL GRADE. FINAL STABILIZATION MEANS THAT ALL SOIL-DISTURBING ACTIVITIES ARE COMPLETED, AND THAT EITHER A PERMANENT VEGETATIVE COVER WITH A DENSITY OF 70% OR GREATER HAS BEEN ESTABLISHED OR THAT THE SURFACE HAS BEEN STABILIZED BY HARD COVER SUCH AS PAVEMENT OR BUILDINGS. IT SHOULD BE NOTED THAT THE 70% REQUIREMENT REFERS TO THE TOTAL AREA VEGETATED AND NOT JUST A PERCENT OF THE SITE.
3. ALL PERMANENT SEDIMENT CONTROL MEASURES CAN BE REMOVED AFTER THE SITE IS PERMANENTLY STABILIZED AND APPROVAL IS RECEIVED FROM THE WVDEP.
4. ANY AREAS DISTURBED BY REMOVAL OF CONTROLS SHALL BE REPAIRED, STABILIZED, AND PERMANENTLY SEEDED.
5. THE AS-BUILT INFORMATION SHOWN HEREON REFLECTS FIELD DATA COLLECTED RELATING TO THE FINAL GRADING OF THE DISTURBED AREA AS OF JANUARY 19, 2023. NAVITUS ENGINEERING IS NOT RESPONSIBLE FOR ANY CHANGES MADE TO THE SITE AFTER THE ABOVE MENTIONED DATES.
6. THE EXISTING CONTAINMENT BERM AROUND THE WELL PAD SHALL BE REPAIRED AS NECESSARY TO ENSURE 100% CONTAINMENT OF ALL FLUIDS PRIOR TO DRILLING OPERATIONS
7. THE EXISTING EGREGESSES TO THE WELL PAD SHALL HAVE THE MOUNTABLE BERMS REPAIRED AS NECESSARY TO ENSURE 100% CONTAINMENT OF ALL FLUIDS PRIOR TO DRILLING OPERATIONS.

ED YOST

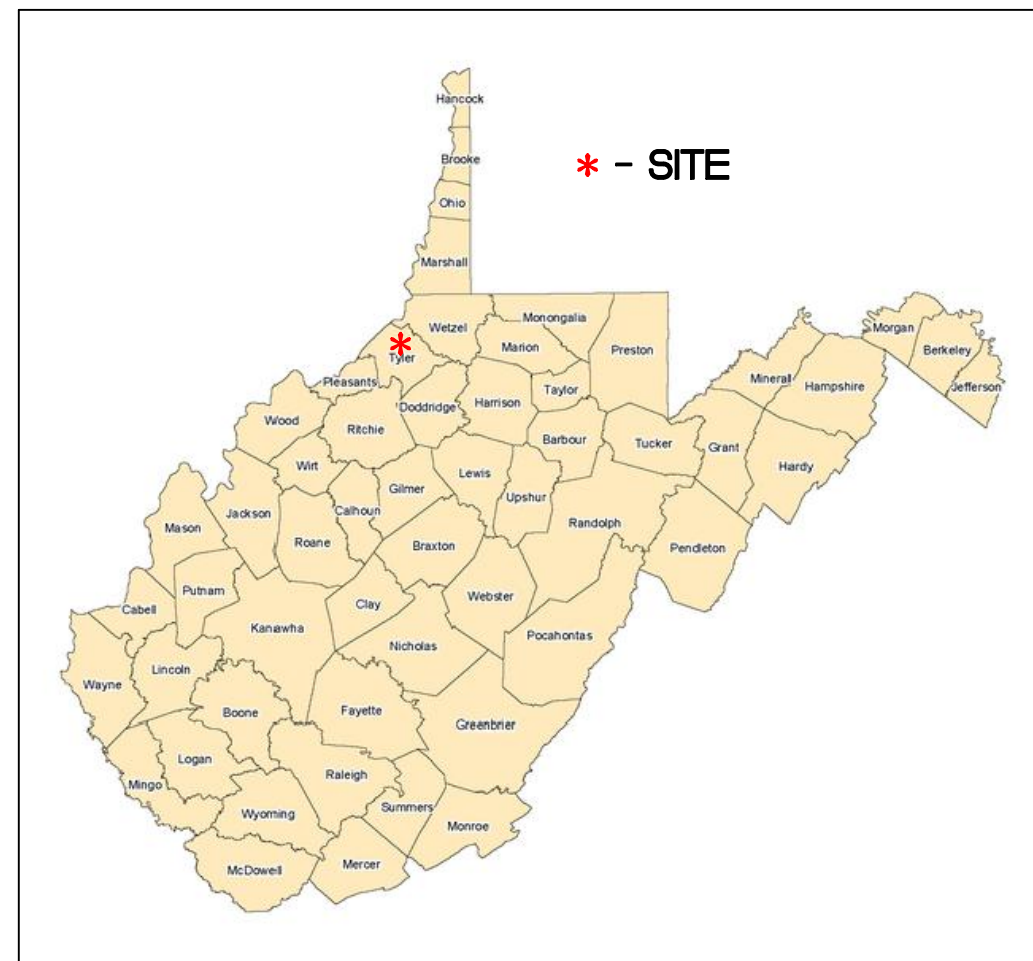
WELL PAD & WATER CONTAINMENT PAD
AS-BUILT EROSION & SEDIMENT
CONTROL IMPROVEMENT PLANS



ELLSWORTH DISTRICT, TYLER COUNTY, WV
POINT PLEASANT CREEK WATERSHED
PORTERS FALLS USGS 7.5 QUAD MAP(S)

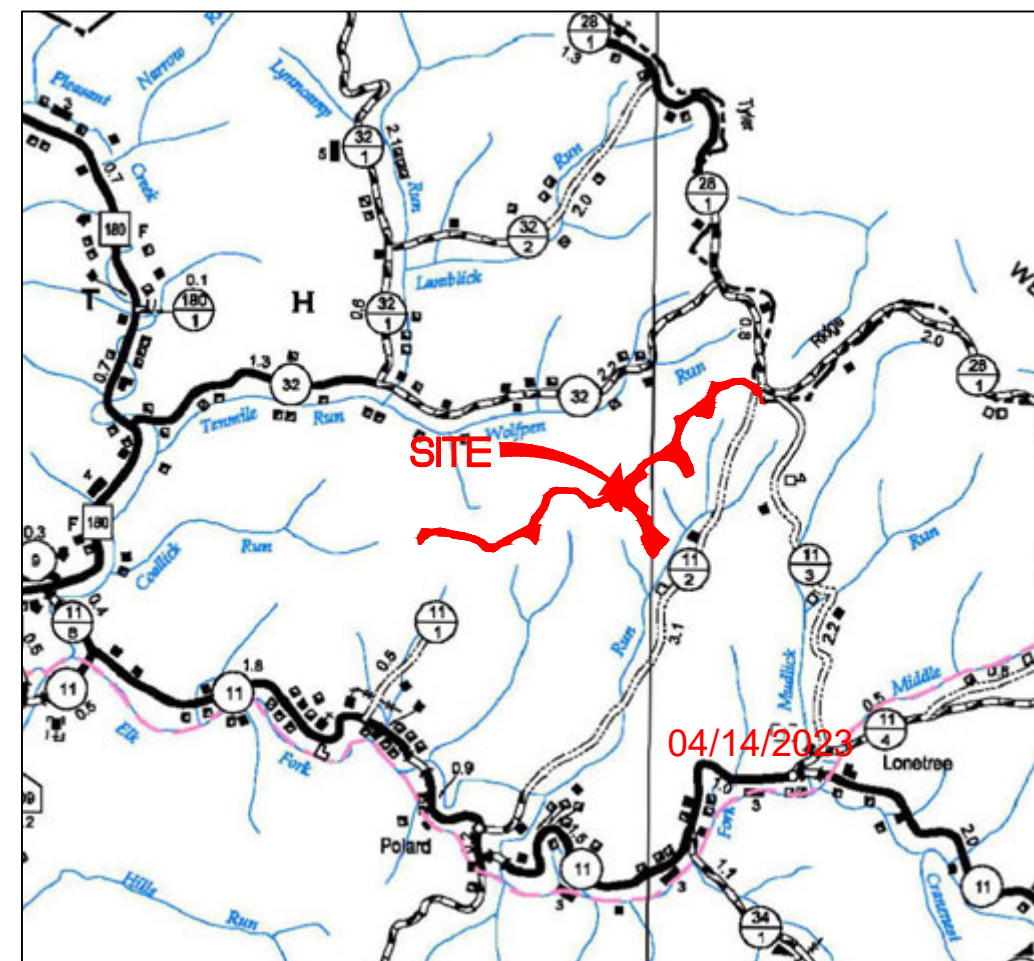


WEST VIRGINIA COUNTY MAP



(NOT TO SCALE)

WVDOH COUNTY ROAD MAP



SCALE: 1" = 5000'

AS-BUILT CERTIFICATIONS:

THE DRAWINGS, CONSTRUCTION NOTES, AND REFERENCE DIAGRAMS ATTACHED HERETO HAVE BEEN PREPARED IN ACCORDANCE WITH THE WEST VIRGINIA CODE OF STATE RULES, DIVISION OF ENVIRONMENTAL PROTECTION, OFFICE OF OIL AND GAS CRS 35-8.

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!!

Table with 5 columns: Stream and Impact Cause, Culvert / Fill (LF), Inlets/Outlets Structures (LF), Temp. Impacts Cofferdam/ E&S Controls (LF), Total Impact (LF). Rows include Stream 006, 003, 023, 024, 032.

WEST VIRGINIA STATE PLANE COORDINATE SYSTEM
NORTH ZONE, NAD83
ELEVATION BASED ON NAVD83
ESTABLISHED BY SURVEY GRADE GPS & OPUS
POST-PROCESSING

SHEET INDEX:

- 1 - COVER SHEET
2 - NOTES
3 - LEGEND
4 - OVERALL PLAN SHEET INDEX
5 - ACCESS ROAD AS-BUILT PLAN
6 - ACCESS ROAD & STAGING AREA AS-BUILT PLAN
7 - ACCESS ROAD, WATER CONTAINMENT PAD & STOCKPILE AS-BUILT PLAN
8 - ACCESS ROAD & WATER CONTAINMENT PAD AS-BUILT PLAN
9 - ACCESS ROAD, WELL PAD & STOCKPILE AS-BUILT PLAN
10 - STOCKPILE AS-BUILT PLAN
11 - ACCESS ROAD AS-BUILT PLAN
12 - ACCESS ROAD & STOCKPILE AS-BUILT PLAN
13-14 - ACCESS ROAD AS-BUILT PLAN
15-19 - ACCESS ROAD AS-BUILT PROFILES
20 - WELL PAD, WATER CONTAINMENT PAD, STAGING AREA & STOCKPILE AS-BUILT SECTIONS
21 - STOCKPILE AS-BUILT SECTIONS
22-24 - CONSTRUCTION DETAILS

Table: ED YOST LIMITS OF DISTURBANCE AREA (AC). Columns: Total Site, Permitted, Modification, Total. Rows: Access Road A, B, C, Staging Area, Well Pad, Water Containment Pad, Excess/Topsoil Material Stockpiles, Total Affected Area, Total Wooded Acres Disturbed.

Table: Impacts to Josh Amos TM 07-5. Columns: Total Site, Permitted, Modification, Total. Rows: Access Road A, Total Affected Area, Total Wooded Acres Disturbed.

Table: Impacts to Charles E. & Martha Gump TM 07-4. Columns: Total Site, Permitted, Modification, Total. Rows: Access Road A, B, Staging Area, Total Affected Area, Total Wooded Acres Disturbed.

Table: Impacts to Lucille & David Guiley TM 07-18. Columns: Total Site, Permitted, Modification, Total. Rows: Access Road B, Water Containment Pad, Total Affected Area, Total Wooded Acres Disturbed.

Table: Impacts to Albert Est & Laura B. Rice TM 07-19. Columns: Total Site, Permitted, Modification, Total. Rows: Access Road B, Staging Area, Water Containment Pad, Total Affected Area, Total Wooded Acres Disturbed.

Table: Impacts to Beatty Wash Et Al TM 07-20. Columns: Total Site, Permitted, Modification, Total. Rows: Water Containment Pad, Excess/Topsoil Material Stockpiles, Total Affected Area, Total Wooded Acres Disturbed.

Table: Impacts to Edward Yost Estate TM 07-29. Columns: Total Site, Permitted, Modification, Total. Rows: Access Road B, Water Containment Pad, Total Affected Area, Total Wooded Acres Disturbed.

Table: Impacts to Yost Edward Estate & Flode & Minks Dale Adams & Minks Mike C/O Ernest E Yost TM 07-31. Columns: Total Site, Permitted, Modification, Total. Rows: Access Road B, C, Well Pad, Water Containment Pad, Excess/Topsoil Material Stockpiles, Total Affected Area, Total Wooded Acres Disturbed.

Table: Impacts to Flode Yost Estate & Roy D. & Betty L. Hadley TM 07-30. Columns: Total Site, Permitted, Modification, Total. Rows: Access Road B, C, Well Pad, Total Affected Area, Total Wooded Acres Disturbed.

Table: Impacts to Gary A. Midcap TM 07-33. Columns: Total Site, Permitted, Modification, Total. Rows: Access Road C, Total Affected Area, Total Wooded Acres Disturbed.

Table: Impacts to Robert A. Mercer TM 07-32. Columns: Total Site, Permitted, Modification, Total. Rows: Access Road C, Excess/Topsoil Material Stockpiles, Total Affected Area, Total Wooded Acres Disturbed.

Table: Impacts to James Burl Rice Estate TM 07-34. Columns: Total Site, Permitted, Modification, Total. Rows: Access Road C, Excess/Topsoil Material Stockpiles, Total Affected Area, Total Wooded Acres Disturbed.

Table: Impacts to Rutter Family Revocable Trust TM 10-6. Columns: Total Site, Permitted, Modification, Total. Rows: Access Road C, Total Affected Area, Total Wooded Acres Disturbed.

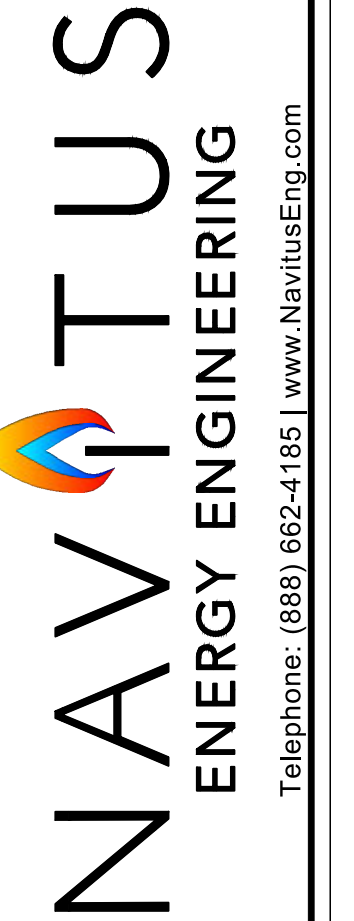
Table: Impacts to Brian E. & Barbara J. Courtney TM 10-5. Columns: Total Site, Permitted, Modification, Total. Rows: Access Road C, Total Affected Area, Total Wooded Acres Disturbed.

Table: Impacts to Larry M. & Amy B. Adams TM 06-30-1. Columns: Total Site, Permitted, Modification, Total. Rows: Access Road C, Total Affected Area, Total Wooded Acres Disturbed.

Table: Impacts to Stefan L. & Alberta B. Smolski TM 10-4. Columns: Total Site, Permitted, Modification, Total. Rows: Access Road C, Total Affected Area, Total Wooded Acres Disturbed.

Table: Impacts to Dennis R. & Clista A. Heintzman TM 06-36. Columns: Total Site, Permitted, Modification, Total. Rows: Access Road C, Total Affected Area, Total Wooded Acres Disturbed.

Table: Well Pad Elevation. Columns: Well Name, WV North NAD 27, NAD 27 Lat & Long, UTM (METERS) ZONE 17, NAD 83 Lat & Long. Rows: CIDER RUN UNIT 1H, CIDER RUN UNIT 2H, PEACH FORK UNIT 1H, PEACH FORK UNIT 2H, SPLI UNIT 1H, SPLI UNIT 2H, ED YOST UNIT 5H (PERMITTED), Well Pad Elevation.



Telephone: (688) 662-4185 | www.NavitusEng.com

Table with columns: DATE, REVISION, and rows for 03/13/2023, REVISED PER LANDOWNER ROAD LOD MOD.



THIS DOCUMENT WAS PREPARED FOR: ANTERO RESOURCES CORPORATION

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



DATE: 01/27/2023

SCALE: AS SHOWN

SHEET 1 OF 24

CONSTRUCTION AND E&S CONTROL NOTES

CONSTRUCTION NOTES:

1. THE CONTRACTOR IS TO VERIFY FIELD CONDITIONS PRIOR TO AND DURING CONSTRUCTION AND WILL NOTIFY NAVITUS ENGINEERING AT (888) 662-4185 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 WV DEP 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 WV DEP 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. CONTRACTOR SHALL ADHERE TO TRAFFIC CONTROL MEASURES AS OUTLINED WITHIN THE APPROVED MM 109 PERMIT.
5. THE LOCATION OF EXISTING UTILITIES SHOWN IN THESE PLANS ARE FROM FIELD LOCATIONS AND/OR GIS DATA. 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 PIPELINES. 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 WITH 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 PLACEMENT REQUIRED DURING THE CONSTRUCTION OF THIS PROJECT. ALL MATERIAL TESTS SHALL BE CONDUCTED BY THE ON-SITE INSPECTOR. ALL TEST RESULTS SHALL BE SUBMITTED TO THE ENGINEER CERTIFYING THE CONSTRUCTED FACILITY. FAILURE TO CONDUCT THE DENSITY TESTS AND/OR NECESSARY REPAIRS TO DEFICIENT AREAS AS A RESULT OF THE DENSITY TESTING 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.
16. IT SHALL BE THE SOLE RESPONSIBILITY OF THE CONTRACTOR TO COMPLY WITH ALL FEDERAL, STATE, AND LOCAL SAFETY REQUIREMENTS, INCLUDING THE 1970 OSHA ACT. PRECAUTIONS FOR THE PROTECTION OF PERSONS INCLUDING EMPLOYEES AND PROPERTY SHALL ALWAYS BE EXERCISED BY THE CONTRACTOR. INITIATION, MAINTENANCE, AND SUPERVISION OF ALL SAFETY REQUIREMENTS, PRECAUTIONS, AND PROGRAMS IN CONNECTION WITH THE WORK, INCLUDING ALL REQUIREMENTS PER CFR 1910.146, SHALL ALSO BE THE SOLE RESPONSIBILITY OF THE CONTRACTOR.
17. CONSTRUCTION ACTIVITIES SHALL BE RESTRICTED TO THE AREAS SHOWN ON THE PLANS WITHIN THE LIMITS OF DISTURBANCE, UNLESS OTHERWISE AUTHORIZED BY ANTERO RESOURCES CORPORATION. MODIFICATION PLAN MUST BE SUBMITTED TO THE WVDEP FOR ANY ACTIVITIES PERFORMED OUTSIDE OF THE LIMITS OF DISTURBANCE.
18. PRESERVATION OF BENCHMARKS, PROPERTY CORNERS, REFERENCE POINTS, STAKES AND OTHER SURVEY REFERENCE MONUMENTS OR MARKERS IS THE RESPONSIBILITY OF THE CONTRACTOR. IN CASES OF WILLFUL OR CARELESS DESTRUCTION THE CONTRACTOR SHALL BE REQUIRED TO REPLACE OR RESTORE SAID MONUMENT OR MARKER. RESETTLEMENT OF MARKERS SHALL BE PERFORMED BY PROFESSIONAL SURVEYOR AS APPROVED BY ANTERO RESOURCES CORPORATION.
19. THE CONTRACTOR SHALL MAINTAIN ADEQUATE CLEARANCE FROM ALL ELECTRIC LINES, IF ANY, IN ACCORDANCE WITH NATIONAL ELECTRICAL SAFETY CODE.
20. THE CONTRACTOR SHALL MINIMIZE ALL CLEARING AND DISTURBANCE TO THE ENVIRONMENT TO THE MAXIMUM EXTENT POSSIBLE. CLEARING, GRUBBING, AND TOPSOIL STRIPPING SHALL BE LIMITED TO THOSE AREAS DESCRIBED IN EACH STAGE OF THE CONSTRUCTION SEQUENCE.
21. ANY DIGITAL FILES PROVIDED TO THE CONTRACTOR BY NAVITUS ENGINEERING, INC. ARE PROVIDED FOR THE CONVENIENCE OF THE CONTRACTOR ONLY. THE CONSTRUCTION OF THE SITE SHALL MEET ALL DESIGN PARAMETERS OF THE WVDEP APPROVED NAVITUS ENGINEERING, INC. DESIGN PLANS. NAVITUS ENGINEERING, INC. WILL NOT BE HELD LIABLE FOR THE CONTRACTOR USING THE DIGITAL FILES TO WAIVER FROM THE APPROVED DESIGN PLANS.
22. ANY CONSTRUCTION ISSUES OR QUESTIONS SHALL BE BROUGHT TO THE ENGINEER IMMEDIATELY. THE CONSTRUCTION INSPECTOR SHALL BE CONTACTED AND MUST RELAY THESE ISSUES OR QUESTIONS TO THE ENGINEER FOR RESOLUTION. TEMPORARY STABILIZATION SHALL BE APPLIED AS NECESSARY.
23. ALL EXISTING AND DESIGNED CULVERTS AND CULVERT SUMPS SHALL BE CLEANED AND CLEARED OF DEBRIS DURING THE COURSE OF CONSTRUCTION. ANY EXCESS EROSION DUE TO THE PLUGGING OF A CULVERT SHALL BE THE SOLE RESPONSIBILITY OF THE CONTRACTOR.

EROSION AND SEDIMENT CONTROL NARRATIVE:

PROJECT DESCRIPTION: THE PURPOSE OF THIS PROJECT IS TO CONSTRUCT A GAS WELL DRILLING PAD AND WATER CONTAINMENT PAD TO AID IN THE DEVELOPMENT OF INDIVIDUAL GAS WELLS. THE ACCESS ROAD ENTRANCE TO THE PROPOSED SITE IS LOCATED ON THE WEST SIDE OF CO. RT. 11/2, 0.01 MILES WEST OF THE INTERSECTION OF CO. RT. 28/1 & CO. RT. 11/2 IN ELLSWORTH DISTRICT, TYLER COUNTY, WEST VIRGINIA. THE TOTAL APPROXIMATE LAND DISTURBANCE ASSOCIATED WITH THIS PROJECT IS 82.05 ACRES.

EXISTING SITE CONDITIONS: THE EXISTING SITE IS APPROXIMATELY 94.2% WOODED. THE TOPOGRAPHY RANGES FROM MODERATE TO STEEP TERRAIN (1% TO 66% SLOPES). PRESENT ON SITE ARE ACCESS ROADS AND OVERHEAD UTILITIES: 31 EPHEMERAL STREAM(S), 2 INTERMITTENT STREAM(S), AND 4 WETLAND(S) ARE LOCATED ONSITE. THE SITE IS LOCATED ON A RIDGE AND DRAINS TO BUFFALO RUN AND TRIBUTARIES OF BUFFALO RUN. NO EROSION WAS NOTICED ON SITE.

ADJACENT PROPERTY: THE SITE IS BORDERED BY FORESTED LANDS ON ALL SIDES.

CRITICAL AREAS: THE AREA(S) SHOWN ALONG THE FIELD DELINEATED STREAMS, WETLANDS, AND PONDS, AS SHOWN ON THE PLANS, ARE DESIGNATED AS CRITICAL AREA(S), IF PRESENT. ALL 3:1 SLOPES AND STEEPER, DITCHES, AND OTHER CONTROLS SHALL BE CONSIDERED CRITICAL EROSION AREAS. THESE AREAS SHALL BE MONITORED AND MAINTAINED DAILY DURING CONSTRUCTION AND AFTER EACH RAINFALL OF 0.5 INCHES OR GREATER. COMPOST FILTER SOCKS ARE TO BE USED TO PROTECT THESE FIELD DELINEATED AREAS(S) FROM SEDIMENT LEAVING THE SITE. ADDITIONALLY, ORANGE SAFETY FENCE IS RECOMMENDED TO BE INSTALLED ABOVE/AROUND THESE AREA(S), TO SERVE AS A PHYSICAL BARRIER, ENSURING THE AREA(S) ARE NOT DISTURBED. THE LOCAL GOVERNING AUTHORITY WILL HAVE THE AUTHORITY TO RECOMMEND THE PLACEMENT OF ADDITIONAL EROSION CONTROL MEASURES IN THESE AREAS IF IT BECOMES EVIDENT DURING CONSTRUCTION THAT THE ONES IN PLACE ARE NOT FUNCTIONING SUFFICIENTLY.

SOILS: A SUBSURFACE INVESTIGATION OF THE PROPOSED SITE WAS PERFORMED BY PENNSYLVANIA SOIL & ROCK, INC. BETWEEN JULY 19, 2021 - AUGUST 04, 2021 AND FEBRUARY 21-22 2022. THE REPORT PREPARED BY PENNSYLVANIA SOIL & ROCK, INC. DATED SEPTEMBER 03, 2021 REVISED MARCH 03, 2022, 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 PENNSYLVANIA SOIL & ROCK, INC. FOR ADDITIONAL INFORMATION, AS NEEDED.

OFF SITE AREAS: THERE ARE NO BORROW AREA(S) OR EXPORT STOCKPILE AREA(S) OUTSIDE OF THE PROPOSED LIMITS OF DISTURBANCE FOR THIS PROJECT.

EROSION AND SEDIMENT CONTROL MEASURES: UNLESS OTHERWISE INDICATED, ALL VEGETATIVE AND STRUCTURAL EROSION AND SEDIMENT CONTROL MEASURES SHALL BE CONSTRUCTED AND MAINTAINED ACCORDING TO MINIMUM STANDARDS AND SPECIFICATIONS OF THE CURRENT WEST VIRGINIA EROSION AND SEDIMENT CONTROL BEST MANAGEMENT PRACTICE MANUAL.

STRUCTURAL PRACTICES:

1. INSTALL ORANGE SAFETY FENCE TO ENSURE NO DISTURBANCE TO THE DELINEATED AREA(S).
2. INSTALL TEMPORARY CONSTRUCTION ENTRANCE.
3. INSTALL COMPOST FILTER SOCKS AND/OR SILT FENCE AS SHOWN ON THE PLANS TO REMOVE SEDIMENT FROM RUNOFF. SELECTIVELY REMOVE TREES REQUIRED TO INSTALL COMPOST FILTER SOCK IN WOODED AREAS. CLEARING AND GRUBBING SHALL BE KEPT AT A MINIMUM TO INSTALL E&S CONTROLS.
4. FILL SLOPE SURFACE SHALL BE LEFT IN A ROUGHENED CONDITION TO REDUCE EROSION. CONTRACTOR SHALL REDIRECT RUNOFF AWAY FROM THE FILL SLOPE BY INSTALLING EARTHEN DIVERSION BERMS AND DIVERTING THE RUNOFF TO SEDIMENT TRAPPING DEVICES.
5. INSTALL V-DITCHES, DITCH RELIEF CULVERTS, AND OUTLET PROTECTION (RIP-RAP APRONS) AS SHOWN ON THE PLANS.

DEVICES LISTED ABOVE ARE CONSIDERED MINIMUM EROSION AND SEDIMENT CONTROLS. ADDITIONAL CONTROL MEASURES MAY BE NECESSARY DUE TO CONTRACTOR PHASING OR OTHER UNFORESEEN CONDITIONS. IMMEDIATELY UPON DISCOVERING UNFORESEEN CIRCUMSTANCES POSING THE POTENTIAL FOR ACCELERATED EROSION AND/OR SEDIMENT POLLUTION, THE CONTRACTOR SHALL IMPLEMENT APPROPRIATE BMP'S TO MINIMIZE THE POTENTIAL FOR EROSION AND SEDIMENT POLLUTION. ALL MEASURES SHALL BE CONSTRUCTED AND MAINTAINED ACCORDING TO MINIMUM STANDARDS AND SPECIFICATIONS OF THE CURRENT WEST VIRGINIA EROSION AND SEDIMENT CONTROL BEST MANAGEMENT PRACTICE MANUAL. ALL RUNOFF FROM DISTURBED AREAS SHALL PASS THROUGH A SEDIMENT FILTERING DEVICE LOCATED BELOW THE DISTURBED AREA. AT NO TIME WILL UNFILTERED SEDIMENT LADEN RUNOFF BE ALLOWED TO LEAVE THE SITE AND ENTER STATE WATERS.

PERMANENT STABILIZATION: ALL AREAS LEFT UNCOVERED BY EITHER BUILDINGS OR PAVEMENT SHALL BE STABILIZED WITH PERMANENT SEEDING IMMEDIATELY FOLLOWING FINISH GRADING AND WITHIN SEVEN (7) DAYS. AT NO TIME SHALL LAND LAY DORMANT LONGER THAN TWENTY-ONE (21) DAYS.

MAINTENANCE PROGRAM: DURING CONSTRUCTION ACTIVITIES, ALL CONTROL MEASURES SHALL BE INSPECTED DAILY BY THE SITE SUPERINTENDENT OR HIS REPRESENTATIVE AND WITHIN TWENTY-FOUR (24) HOURS AFTER ANY SIGNIFICANT RAIN EVENT, WHICH SHALL BE DEFINED AS RAINFALL OF (0.5) INCHES OR MORE IN A TWENTY-FOUR (24) HOUR PERIOD. ONCE CONSTRUCTION ACTIVITIES HAVE CONCLUDED, THE SITE SHALL BE INSPECTED EVERY TWO (2) WEEKS AND WITHIN TWENTY-FOUR (24) HOURS OF A SIGNIFICANT RAIN EVENT AS DEFINED ABOVE. ANY DAMAGED STRUCTURAL MEASURES ARE TO BE REPAIRED, BY THE END OF THE DAY, OR AT THE EARLIEST TIME IN WHICH IT IS SAFE TO DO SO. SEEDED AREAS SHALL BE CHECKED REGULARLY TO ENSURE THAT A GOOD STAND OF GRASS IS MAINTAINED. ALL AREAS SHALL BE FERTILIZED AND RESEDED AS NEEDED UNTIL GRASS IS ESTABLISHED.

TRAPPED SEDIMENT IS TO BE REMOVED AS REQUIRED TO MAINTAIN 50% TRAP AND/OR SOCK EFFICIENCY AND DISPOSED OF AS ENGINEERED FILL ON THE STOCKPILES.

INLETS AND OUTLETS OF DITCH RELIEF CULVERTS SHALL BE CHECKED REGULARLY FOR SEDIMENT BUILD-UP. IF THE INLET AND/OR OUTLET IS CLOGGED BY 50% OR GREATER, IT SHALL BE REMOVED AND CLEANED OR REPLACED IMMEDIATELY.

SEDIMENT TRACKED ONTO ANY PUBLIC ROADWAY OR SIDEWALK SHALL BE RETURNED TO THE CONSTRUCTION SITE IMMEDIATELY AND DISPOSED IN THE MANNER DESCRIBED IN THIS PLAN. IN NO CASE SHALL THE SEDIMENT BE WASHED, SHOVELED OR SWEEPED INTO ANY ROADSIDE DITCH, CULVERT OR SURFACE WATER.

ANY DISTURBED AREAS ALONG THE ACCESS ROAD SHALL BE STABILIZED AS CONSTRUCTION PROCEEDS, PRIOR TO CONTINUING FURTHER ACCESS ROAD CONSTRUCTION, WITH EITHER ROCK STABILIZATION OR SEEDING AND MULCHING METHODS.

SUPER SILT FENCE CAN BE USED IN PLACE OF ANY COMPOST FILTER SOCK.

NOTE: THE WV DEP RETAINS THE RIGHT TO ADD AND/OR MODIFY THESE EROSION AND SEDIMENT CONTROL MEASURES DURING THE CONSTRUCTION PROCESS, WITHIN REASON, TO ENSURE ADEQUATE PROTECTION TO THE PUBLIC AND THE ENVIRONMENT.

SEEDING (SOIL STABILIZATION):

1. CONTRACTOR SHALL APPLY SEED AND STABILIZATION IN ACCORDANCE WITH THE WV DEP EROSION AND SEDIMENT CONTROL BEST MANAGEMENT PRACTICE (BMP) MANUAL, BASED UPON SITE SPECIFIC SOIL CHARACTERISTICS.
2. WHEREVER SEEDING IS TO BE APPLIED TO STEEP SLOPES ($\approx 3H:1V$), SEED MIXTURES SHOULD BE SELECTED THAT ARE APPROPRIATE FOR STEEP SLOPES.

DUST CONTROL:

1. TEMPORARY SEEDING SHALL BE APPLIED TO ALL DISTURBED AREAS SUBJECT TO LITTLE OR NO CONSTRUCTION TRAFFIC.
2. ALL HAUL ROADS AND OTHER HEAVY TRAFFIC ROUTES SHALL BE SPRINKLED WITH WATER UNTIL THE SURFACE IS WET AND REPEATED AS NEEDED TO CONTROL DUST.

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 WV DEP OFFICE OF OIL AND GAS SHALL BE NOTIFIED OF ANY AND ALL SUCH DEVIATIONS FROM THE APPROVED PLANS.

1. STAKE THE LIMITS OF CONSTRUCTION AND MARK/FLAG ALL IDENTIFIED WETLANDS, STREAMS, UTILITIES, AND OTHER AREAS OF CONCERN FOR CONSTRUCTION ACTIVITIES. INSTALL SIGNS TO DESIGNATE THE AREAS AND ORANGE SAFETY FENCE TO IDENTIFY IMPORTANT PROJECT ATTRIBUTES SUCH AS APPROVED ACCESS ROADS, NO REFUELING ZONES, WETLANDS/STREAM BOUNDS, ETC.
2. 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.
3. CONSTRUCT THE ROCK CONSTRUCTION ENTRANCE. ALL VEHICLES ENTERING AND EXITING THE SITE SHALL DO SO VIA THE ROCK CONSTRUCTION ENTRANCE.
4. CONSTRUCT ALL BMP'S AS SOON AS CLEARING AND GRUBBING OPERATIONS ALLOW. ONCE INSTALLED, THE AREA ENCOMPASSING THE BMP'S OUTSIDE OF THE GRADING LIMITS SHALL BE SEDED AND MULCHED IMMEDIATELY.
5. IF APPLICABLE, CONVEY UPSLOPE DRAINAGE AROUND THE ACCESS ROAD, WELL PAD, AND WATER CONTAINMENT PAD AREAS BY CONSTRUCTING ALL DIVERSION BERM(S) AND/OR COMPOST FILTER SOCK DIVERSION(S) AS SHOWN ON THE PLANS.
6. CLEAR AND GRUB THE SITE. 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, BRUSH, AND STUMPS SHALL BE CUT AND/OR GRUBBED AND BURNED (AS PER WV FOREST FIRE LAWS), REMOVED FROM SITE, OR DISPOSED OF BY OTHER METHODS APPROVED BY WV DEP.
7. IF APPLICABLE, INSTALL ALL WETLAND OR STREAM CROSSINGS AS SHOWN ON THE PLANS.
8. STRIP THE TOPSOIL FROM THE ACCESS ROAD. TOPSOIL STRIPPING SHALL BE KEPT TO A MINIMUM NECESSARY TO CONSTRUCT ACCESS ROAD. PRIOR TO PLACING ANY FILL, THE EXPOSED SUBGRADE SHALL BE COMPACTED AND PROOF ROLLED TO PRODUCE A STABLE AND UNYIELDING SITE. ALL STRIPPED TOPSOIL SHALL BE STOCKPILED IN AREAS SHOWN IN THE PLANS, OR RE-SPREAD AT AN APPROXIMATE DEPTH OF 2-4 INCHES ON ALL PROPOSED 2:1 OR FLATTER SLOPES, AND IMMEDIATELY STABILIZED. ADDITIONAL BMP MEASURES SHALL BE CONSTRUCTED AROUND TOPSOIL STOCKPILES, IF NECESSARY.
9. CONSTRUCT THE ACCESS ROAD. ALL FILL AREAS, INCLUDING EXCESS MATERIAL STOCKPILES, SHALL BE "KEYED IN" AND COMPACTED IN HORIZONTAL LIFTS WITH A MAXIMUM LOOSE LIFT THICKNESS OF 12" AND MAXIMUM PARTICLE SIZE AS OUTLINED IN THE GEOTECHNICAL REPORT. ALL FILL SHALL BE COMPACTED BY A VIBRATING SHEEPSFOOT ROLLER TO 95% PER THE STANDARD PROCTOR TEST (ASTM-D698). MOISTURE CONTENT WILL BE CONTROLLED IN ACCORDANCE WITH THE STANDARD PROCTOR TEST (ASTM-D698) RESULTS. IT IS ALSO RECOMMENDED THAT EACH LIFT BE PROOF ROLLED WITH A LOADED HAUL TRUCK WHERE APPLICABLE. DITCH RELIEF CULVERTS SHALL BE INSTALLED AT A GRADE OF 1-8% TO MINIMIZE OUTLET VELOCITIES TO THE EXTENT POSSIBLE. INSTALL OUTLET PROTECTION ONCE DITCH RELIEF CULVERTS ARE INSTALLED, AS SHOWN ON PLANS. STABILIZE THE ROAD WITH GEOTEXTILE FABRIC & STONE AND SIDE SLOPES AS SPECIFIED WITH PERMANENT SEEDING. EXCESS MATERIAL SHALL BE STOCKPILED (IF NECESSARY) IN AREAS SHOWN IN THE PLANS AND IMMEDIATELY STABILIZED. TOPSOIL SHALL BE STRIPPED FROM ALL STOCKPILE AREAS PRIOR TO CONSTRUCTION OF STOCKPILES. AFTER STOCKPILES ARE CONSTRUCTED, TOPSOIL IS TO BE REAPPLIED AT A DEPTH OF 2"-4". SLOPES SHALL BE TRACKED BY RUNNING TRACKED MACHINERY UP AND DOWN THE SLOPE, LEAVING TREAD MARKS PARALLEL TO THE CONTOUR. ALL DITCH LINES SHALL BE CLEANED PRIOR TO INSTALLATION OF LINED PROTECTION.
10. STRIP THE TOPSOIL FROM THE WELL PAD AND WATER CONTAINMENT PAD. TOPSOIL STRIPPING SHALL BE KEPT TO A MINIMUM NECESSARY TO CONSTRUCT WELL PAD AND WATER CONTAINMENT PAD. PRIOR TO PLACING ANY FILL, THE EXPOSED SUBGRADE SHALL BE COMPACTED AND PROOF ROLLED TO PRODUCE A STABLE AND UNYIELDING SITE. ALL STRIPPED TOPSOIL SHALL BE STOCKPILED IN AREAS SHOWN IN THE PLANS, OR RE-SPREAD AT AN APPROXIMATE DEPTH OF 2-4 INCHES ON ALL PROPOSED 2:1 OR FLATTER SLOPES, AND IMMEDIATELY STABILIZED. ADDITIONAL BMP MEASURES SHALL BE CONSTRUCTED AROUND TOPSOIL STOCKPILES, IF NECESSARY.
11. GRADE THE WELL PAD AND WATER CONTAINMENT PAD AREAS AS SHOWN ON THE PLANS. INSTALL PAD SUMPS (WITH 4" PVC DRAIN PIPE AND OUTLET PROTECTION) AND CONTAINMENT BERM LINER SYSTEM. IMMEDIATELY STABILIZE THE OUTER AREAS OF THE WELL PAD AND WATER CONTAINMENT PAD. THE WELL PAD AND WATER CONTAINMENT PAD AREAS SHALL BE STABILIZED WITH GEOTEXTILE FABRIC & STONE AND THE SIDE SLOPES WITH SEED AND MULCH. INSTALL ALL STRAW WATTLES AS SHOWN ON PLANS. 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.
12. THE CONSTRUCTION SITE SHOULD BE STABILIZED AS SOON AS POSSIBLE AFTER COMPLETION. ESTABLISHMENT OF FINAL STABILIZATION MUST BE INITIATED NO LATER THAN 7 DAYS AFTER REACHING FINAL GRADE. FINAL STABILIZATION MEANS THAT ALL SOIL-DISTURBING ACTIVITIES ARE COMPLETED, AND THAT EITHER A PERMANENT VEGETATIVE COVER WITH A DENSITY OF 70% OR GREATER HAS BEEN ESTABLISHED OR THAT THE SURFACE HAS BEEN STABILIZED BY HARD COVER SUCH AS PAVEMENT OR BUILDINGS. IT SHOULD BE NOTED THAT THE 70% REQUIREMENT REFERS TO THE TOTAL AREA VEGETATED AND NOT JUST A PERCENT OF THE SITE.
13. COMMENCE WELL DRILLING ACTIVITY. **04/14/2023**
14. ALL BMP'S MUST REMAIN IN PLACE AND FUNCTIONAL UNTIL ALL AREAS WITHIN THE LIMIT OF DISTURBANCE ARE COMPLETE AND PERMANENTLY STABILIZED. MAINTENANCE MUST INCLUDE INSPECTION OF ALL EROSION AND SEDIMENT CONTROLS AFTER EACH RUNOFF EVENT IN EXCESS OF 0.5" IN A TWENTY-FOUR (24) HOUR PERIOD.
15. ALL PERMANENT SEDIMENT CONTROL MEASURES CAN BE REMOVED AFTER THE SITE IS PERMANENTLY STABILIZED AND APPROVAL IS RECEIVED FROM THE WVDEP.
16. ANY AREAS DISTURBED BY REMOVAL OF CONTROLS SHALL BE REPAIRED, STABILIZED, AND PERMANENTLY SEEDED.

CONSTRUCTION STANDARDS:

THE DESIGN, CONSTRUCTION, AND REMOVAL OF FILL FOR OIL AND GAS SITES MUST BE ACCOMPLISHED IN SUCH A MANNER AS TO PROTECT THE HEALTH AND SAFETY OF THE PEOPLE, THE NATURAL RESOURCES, AND ENVIRONMENT OF THE STATE. THE SITE SHALL BE DESIGNED, CONSTRUCTED, AND MAINTAINED TO BE STRUCTURALLY SOUND AND REASONABLY PROTECTED FROM UNAUTHORIZED ACTS OF THIRD PARTIES.

1. ALL FILL AREAS SHOULD BE CLEARED OF TREES, STUMPS, AND ANY VEGETATION AND STRIPPED OF TOPSOIL/ORGANIC SOILS PRIOR TO THE START OF FILL PLACEMENT.
2. ANY GROUNDWATER ENCOUNTERED DURING CONSTRUCTION SHALL BE DRAINED TO THE OUTSIDE/DOWNSTREAM TOE OF THE SLOPE. CONSTRUCTED DRAIN SECTION SHALL BE AN EXCAVATED 2' x 2' TRENCH AND BACK FILLED WITH #57 STONE, COMPACTED BY HAND TAMPER. GEOTEXTILE FABRIC SHALL BE USED TO LINE TRENCH.
3. SATISFACTORY MATERIALS FOR USE AS FILL FOR PAD AREAS INCLUDE MATERIALS CLASSIFIED IN ASTM D-2487 AS GW, GP, GM, GC, SW, SP, SM, SC, ML, AND CL GROUPS.
4. GENERALLY, UNSATISFACTORY MATERIALS INCLUDE MATERIALS CLASSIFIED IN ASTM D-2487 AS PT, CH, MH, OL, OH, AND ANY SOIL TOO WET TO FACILITATE COMPACTION. CH AND MH SOILS MAY BE USED SUBJECT TO APPROVAL OF THE ENGINEER.
5. ALL FILL AREAS SHALL BE "KEYED IN" AND COMPACTED IN HORIZONTAL LIFTS WITH A MAXIMUM LOOSE LIFT THICKNESS OF 12" AND MAXIMUM PARTICLE SIZE AS OUTLINED IN THE GEOTECHNICAL REPORT. ALL FILL SHALL BE COMPACTED BY A VIBRATING SHEEPSFOOT ROLLER TO 95% PER THE STANDARD PROCTOR TEST (ASTM-D698). MOISTURE CONTENT WILL BE CONTROLLED IN ACCORDANCE WITH THE STANDARD PROCTOR TEST (ASTM-D698) RESULTS.
6. ROCK LIFTS ARE NOT PROPOSED FOR THE CONSTRUCTION OF THIS SITE. HOWEVER, LARGER ROCK PARTICLES OR BOULDERS THAT ARE ENCOUNTERED DURING CONSTRUCTION NEED TO BE BROKEN DOWN TO A MANAGEABLE SIZE (MAXIMUM 3'x3'x1' THICK) TO BE PLACED AS FILL. DURING PLACEMENT OF FILL CONTAINING LARGE SIZE ROCK PARTICLES, IT IS CRITICAL THAT NO VOID SPACES BE LEFT BETWEEN THE ROCKS. SMALLER ROCK FRAGMENTS AND SOIL MUST BE WORKED INTO ANY OPENINGS BETWEEN THE BOULDERS AFTER THEY ARE PUT IN PLACE. ADDITIONAL GUIDANCE REGARDING ENCOUNTERED ROCK CAN BE FOUND IN THE GEOTECHNICAL REPORT.
7. THE PLACEMENT OF ALL FILL MATERIAL SHALL BE FREE OF WOOD, STUMPS AND ROOTS, LARGE ROCKS AND BOULDERS, AND ANY OTHER NONCOMPACTABLE SOIL MATERIAL. NO FILL SHALL CONTAIN OR BE PLACED ON FROZEN MATERIAL. THE FILL SHALL BE COMPACTED TO A MINIMUM OF VISIBLE NON-MOVEMENT, HOWEVER, THE COMPACTION EFFORT SHALL NOT EXCEED THE OPTIMUM MOISTURE LIMITS.
8. ALL EXPOSED AREAS, NOT COVERED BY COMPACTED GRAVEL OR RIP-RAP SHALL BE LIMED, FERTILIZED, SEDED AND MULCHED. PERMANENT VEGETATIVE GROUND COVER IN COMPLIANCE WITH THE WV DEP EROSION AND SEDIMENT CONTROL FIELD MANUAL MUST BE ESTABLISHED UPON THE COMPLETION OF CONSTRUCTION. SLOPES SHALL BE MAINTAINED WITH A GRASSY VEGETATIVE COVER AND FREE OF BRUSH AND/OR TREES.
9. IF STANDING WATER IS PRESENT ON SITE, CONTRACTOR TO CORRECT DRAINAGE ISSUES BY DIRECTING WATER TO PROPER E&S CONTROLS OR OUTLET WITH POSITIVE DRAINAGE. IF NECESSARY, CONTACT ENGINEER FOR GUIDANCE IN CORRECTING DRAINAGE ISSUES.
10. ALL DRAINAGE DITCHES, DIVERSIONS, AND CULVERTS SHALL HAVE POSITIVE DRAINAGE AND OUTFALL INTO THE PROPER OUTLET PROTECTION OR LEVEL SPREADING DEVICE. SUPER SILT FENCE, OR APPROVED ALTERNATIVE, SHALL BE INSTALLED WITHIN 5 FEET OF THE OUTLET PROTECTION OR LEVEL SPREADING DEVICE TO PREVENT EROSION DOWNSTREAM. IF EROSION IS PRESENT DOWNSTREAM OF AN EROSION CONTROL DEVICE, CONTRACTOR TO INSTALL ADDITIONAL EROSION CONTROLS AND STABILIZATION TO PREVENT FURTHER EROSION.
11. ALL DRAINAGE DITCHES AND DIVERSIONS THAT ARE ROCK LINED SHALL BE INSTALLED PER THE DETAILS ON THIS PLAN INCLUDING THE NECESSARY INSTALLATION OF ANY GEOTEXTILE FABRIC UNDERNEATH THE ROCK LINING.
12. IF THE EROSION CONTROL DEVICES SHOW EVIDENCE OF BEING INADEQUATE DUE TO CONSTRUCTION MEANS AND METHODS, THE CONTRACTOR IS TO INSTALL ADDITIONAL DRAINAGE DEVICES OR EROSION CONTROLS TO PREVENT FURTHER EROSION FROM OCCURRING.
13. CONTRACTOR IS TO EXTEND ALL KEYWAY AND BONDING BENCH OUTLET DRAINS A MINIMUM OF ONE FOOT PAST THE FINISHED GRADE OF THE SLOPE AND INSTALL THE PROPER OUTLET PROTECTION PER THE DETAIL ON THESE PLANS. ALL OUTLET DRAINS ARE TO BE CLEARLY VISIBLE AND MARKED WITH YELLOW T-POSTS.
14. ALL SLOPES SHALL BE TRACKED IN PER THE DETAILS ON THESE PLANS. CONTRACTOR SHALL REPEAT THIS METHOD ANY TIME AN AREA HAS BEEN DISTURBED PRIOR TO THAT AREA BEING STABILIZED.
15. ALL MAINTENANCE OF EROSION AND SEDIMENT CONTROLS MUST BE PERFORMED IMMEDIATELY ONCE THE CONTRACTOR IS NOTIFIED OF THE DISCREPANCY. CONTRACTOR TO PERFORM MAINTENANCE OR IMMEDIATELY NOTIFY THE SUB-CRITICAL CONTRACTOR PERFORMING THE E&S TASKS. ANY EROSION CONTROL MAINTENANCE THAT IS DEEMED TO BE AN EMERGENCY SHALL BE PERFORMED IMMEDIATELY UPON THE CLIENT, ENGINEER, OR STATE'S REQUEST.
16. ALL LANDOWNER ACCESS ROADS AND EXISTING WELL ROADS THAT ARE BEING MAINTAINED SHALL BE KEPT OPEN DURING THE ENTIRE COURSE OF CONSTRUCTION TO PROVIDE CONTINUOUS ACCESS. IF CLOSURE IS NECESSARY, THE CONTRACTOR SHALL PROVIDE AN EQUIVALENT DETOUR ROUTE TO THE SATISFACTION OF THE LANDOWNER OR WELL OWNER.
17. ANY WATER INFILTRATING AROUND THE WELL PAD DEWATERING SYSTEM SHALL BE CORRECTED IMMEDIATELY TO PREVENT THE FAILURE OF THE SOILS AND DESIGN ASPECTS OF THE DEWATERING SYSTEM. ANY EXCESS EROSION OR SLOPE FAILURES DUE TO THE WATER INFILTRATION IN THE SUMP AREA SHALL BE THE SOLE RESPONSIBILITY OF THE CONTRACTOR.
18. ALL DITCH RELIEF AND STREAM CROSSING CULVERTS SHALL MEET ALL MANUFACTURER SPECIFICATIONS INCLUDING THE MINIMUM AND MAXIMUM COVER. IF MANUFACTURER SPECIFICATIONS CANNOT BE MET, CONTRACTOR SHALL CONSULT THE ENGINEER OR MANUFACTURER FOR ALTERNATIVES.

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 SEDED AND MULCHED, AS NECESSARY. ALTERNATIVELY, THE REMOVED SEDIMENT CAN BE TRANSPORTED TO A SITE WITH AN APPROVED PERMIT.
5. ALL POLLUTION AND EMERGENCY SPILLS SHALL BE IMMEDIATELY REPORTED TO ANTERO RESOURCES CORPORATION AND THE WVDEP OFFICE OF OIL AND GAS. (EMERGENCY #1-800-642-3074)

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

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



THIS DOCUMENT WAS PREPARED FOR: ANTERO RESOURCES CORPORATION

CONSTRUCTION AND E&S CONTROL NOTES
ED YOST
WELL PAD & WATER CONTAINMENT PAD
ELLSWORTH DISTRICT
TYLER COUNTY, WEST VIRGINIA



DATE: 01/27/2023

SCALE: N/A

SHEET 2 OF 24



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	

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



APPROVED
WVDEP OOG
MODIFICATION
4/12/2023

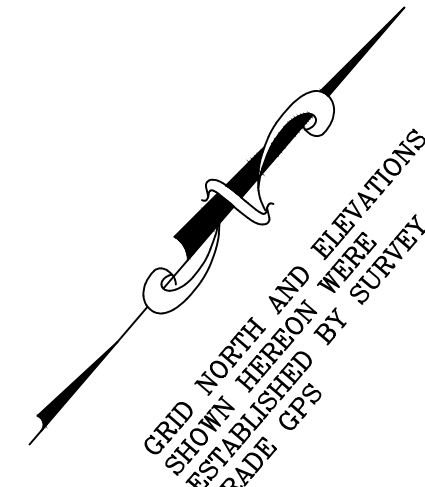
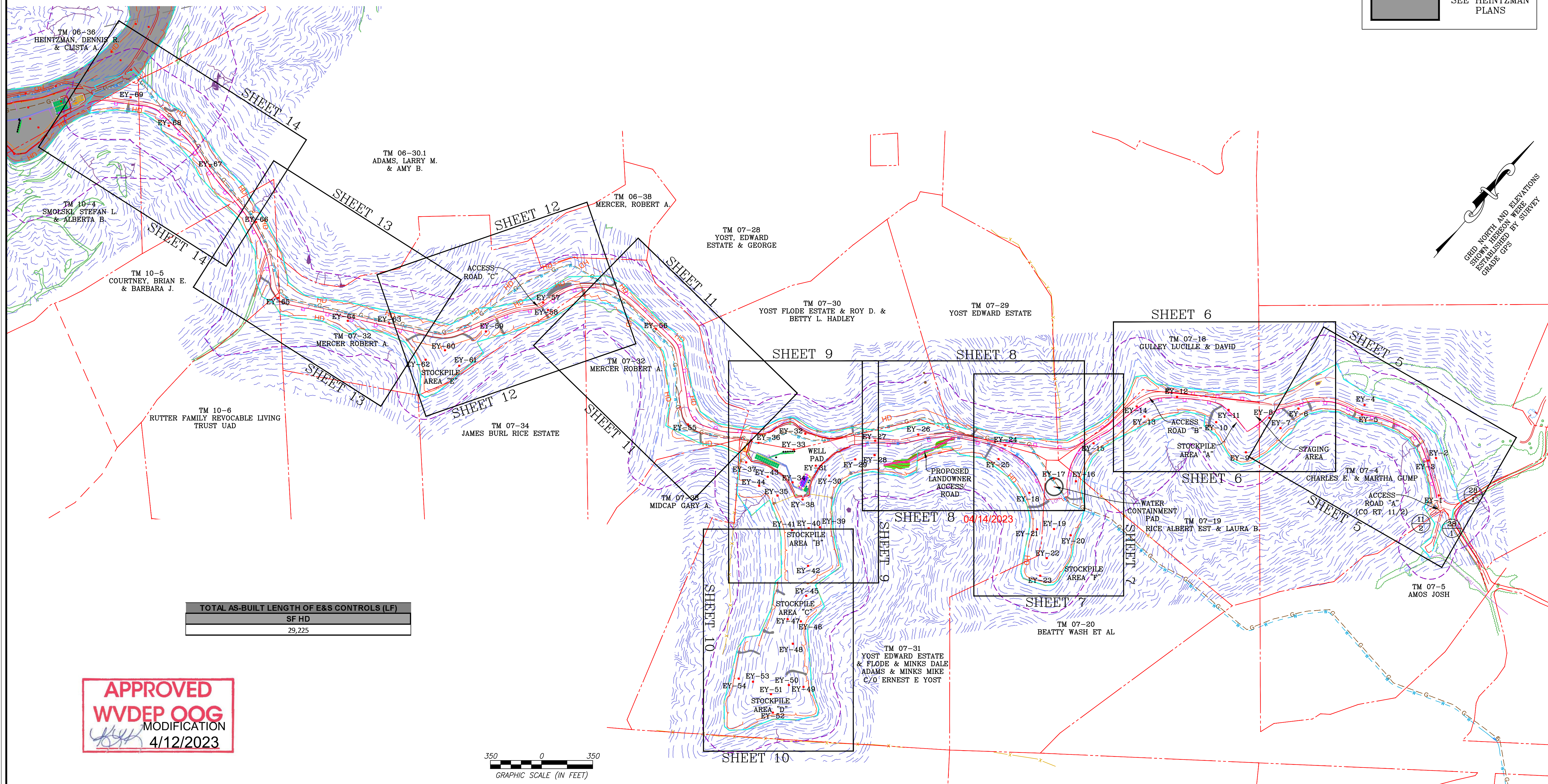
OVERALL PLAN SHEET INDEX

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.

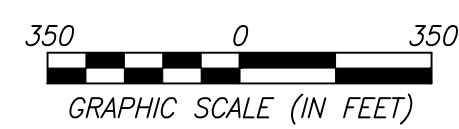
**LIMITS OF DISTURBANCE
LEGEND**

SEE HEINTZMAN PLANS



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

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WVDEP OOG
MODIFICATION
4/12/2023



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

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OVERALL PLAN SHEET INDEX

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

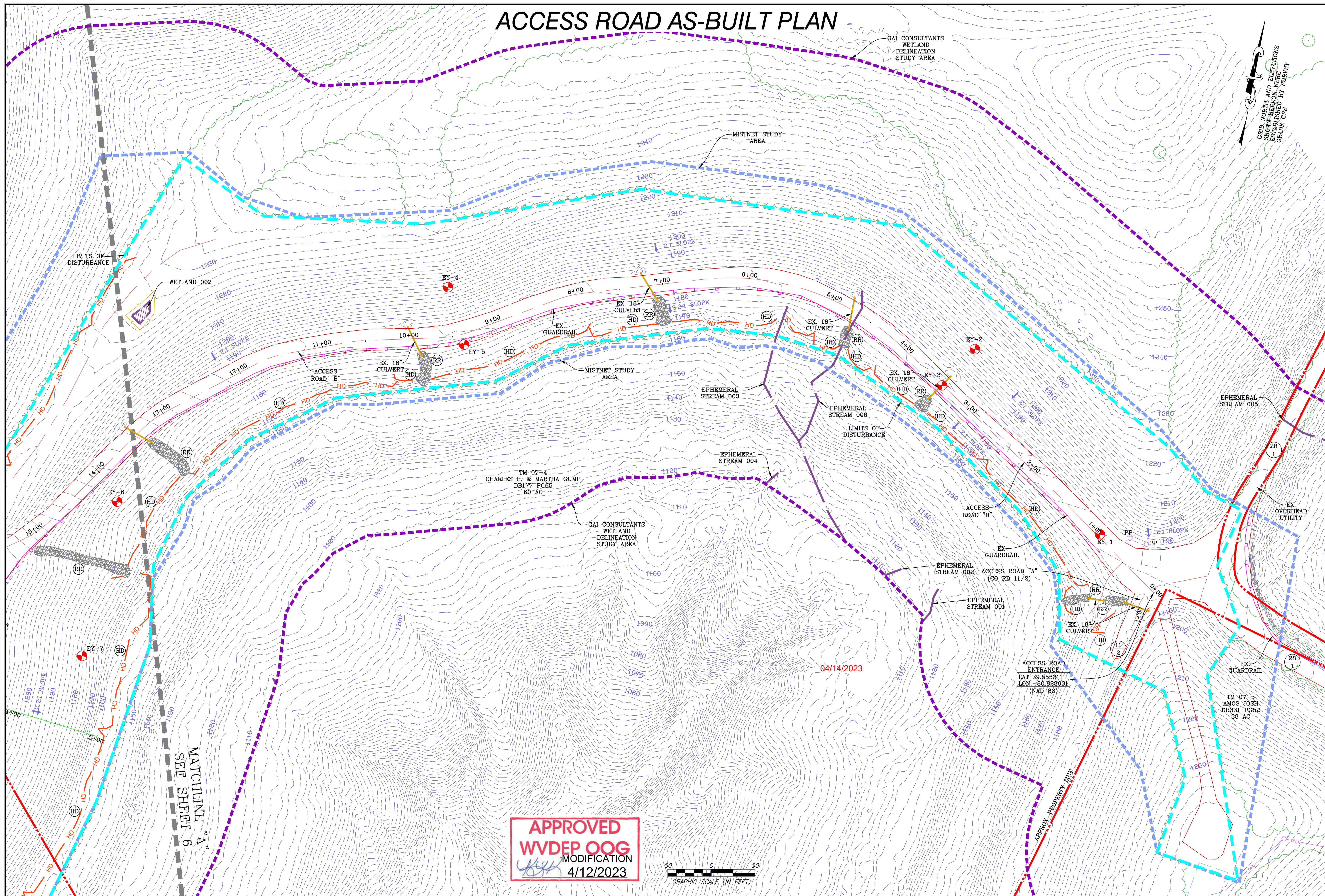


DATE: 01/27/2023
SCALE: 1" = 350'
SHEET 4 OF 24

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ENERGY ENGINEERING

Telephone: (868) 662-4165 | www.NavitusEng.com

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-3

EY-2

EX 18" CULVERT

EX GUARDRAIL

EPHEMERAL STREAM 003

EPHEMERAL STREAM 006

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

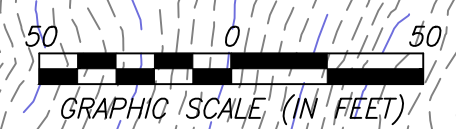
EX 18" CULVERT

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

TM 07-5
AMOS JOSH
DB331 PG52
39 AC

MATCHLINE
SEE SHEET 6

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WVDEP OOG
MODIFICATION
4/12/2023



DATE	REVISION
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CORPORATION

ACCESS ROAD AS-B-BUILT PLAN

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

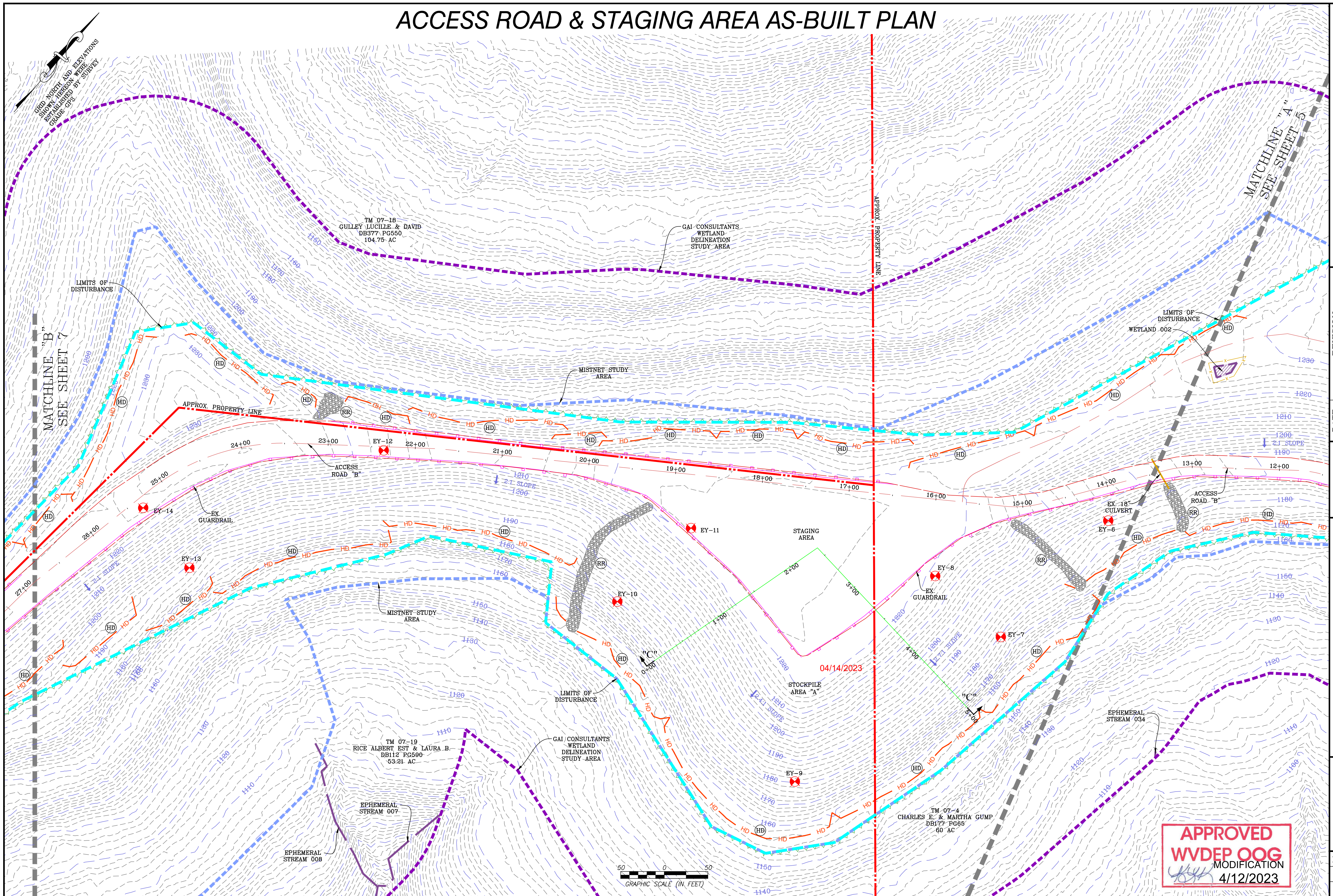


DATE: 01/27/2023
SCALE: 1" = 50'
SHEET 5 OF 24

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ACCESS ROAD & STAGING AREA AS-BUILT PLAN



GRID NORTH AND ELEVATIONS
SHOWN THROUGHOUT THIS
DRAWING WERE OBTAINED BY SURVEY
GRADE CPS

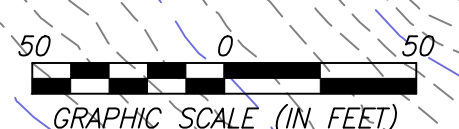
TM 07-18
GULLEY LUCILLE & DAVID
DB377 PG550
104.75 AC

GAI CONSULTANTS
WETLAND
DELINEATION
STUDY AREA

TM 07-19
RICE ALBERT EST & LAURA B.
DB112 PG590
63.21 AC

TM 07-4
CHARLES E. & MARTHA GUMP
DB177 PG85
60 AC

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MODIFICATION
4/12/2023



DATE	REVISION
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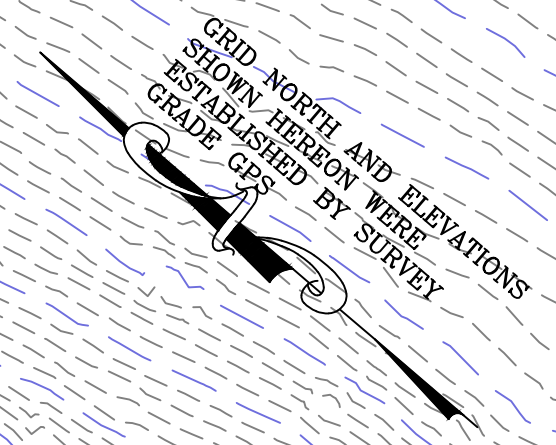
Antero
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ACCESS ROAD & STAGING AREA AS-BUILT PLAN
ED YOST
WELL PAD & WATER CONTAINMENT PAD
ELLSWORTH DISTRICT
TYLER COUNTY, WEST VIRGINIA

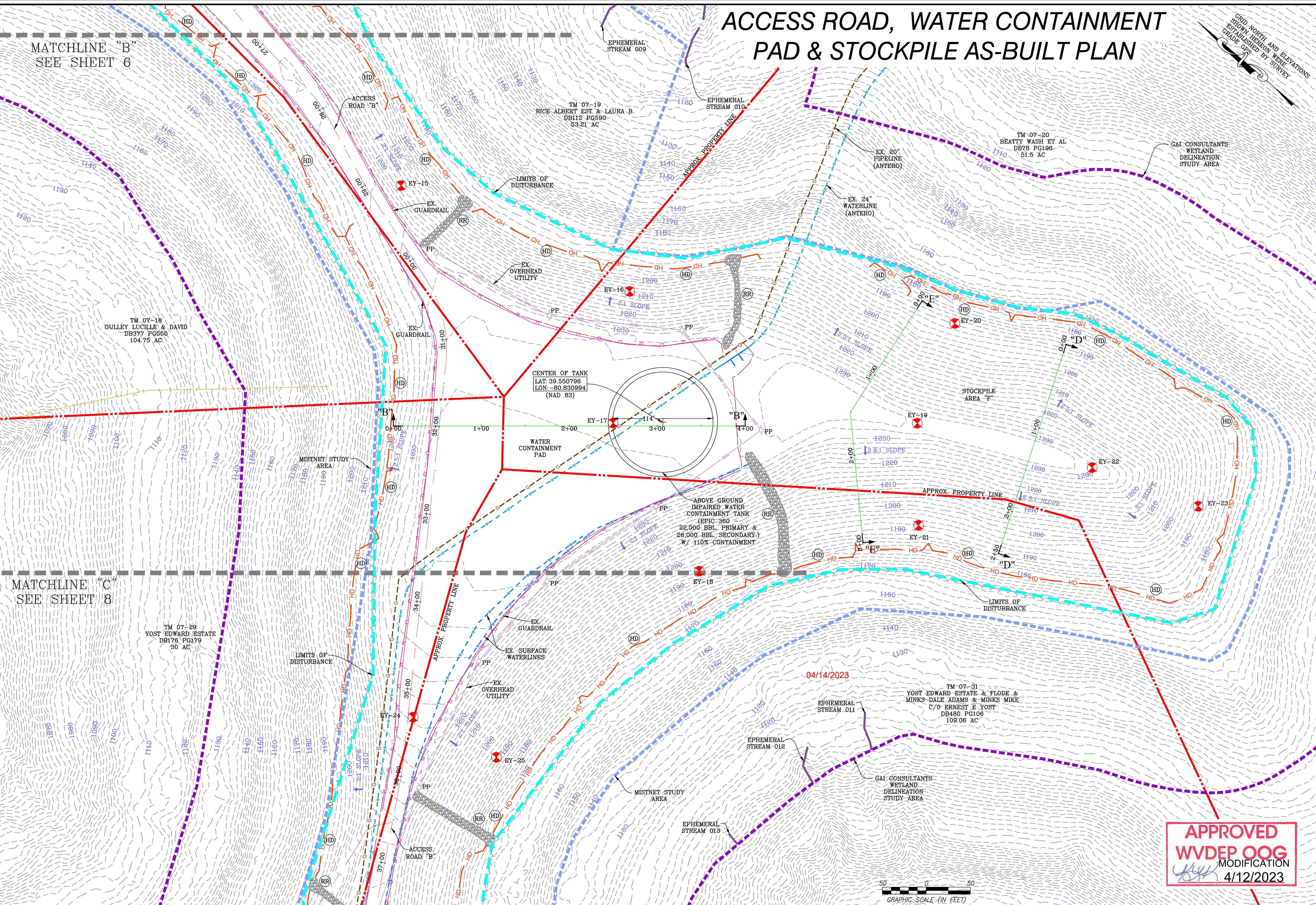


DATE: 01/27/2023
SCALE: 1" = 50'
SHEET 6 OF 24

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



MATCHLINE "B"
SEE SHEET 6



MATCHLINE "C"
SEE SHEET 8

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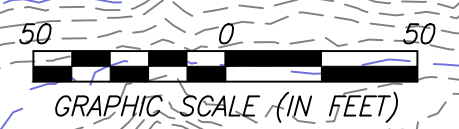
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ACCESS ROAD, WATER CONTAINMENT PAD & STOCKPILE AS-BUILT PLAN
ED YOST
WELL PAD & WATER CONTAINMENT PAD
ELLSWORTH DISTRICT
TYLER COUNTY, WEST VIRGINIA



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

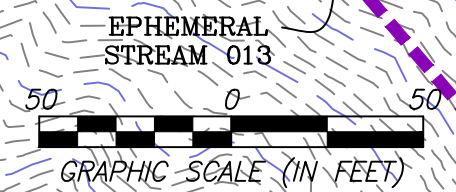
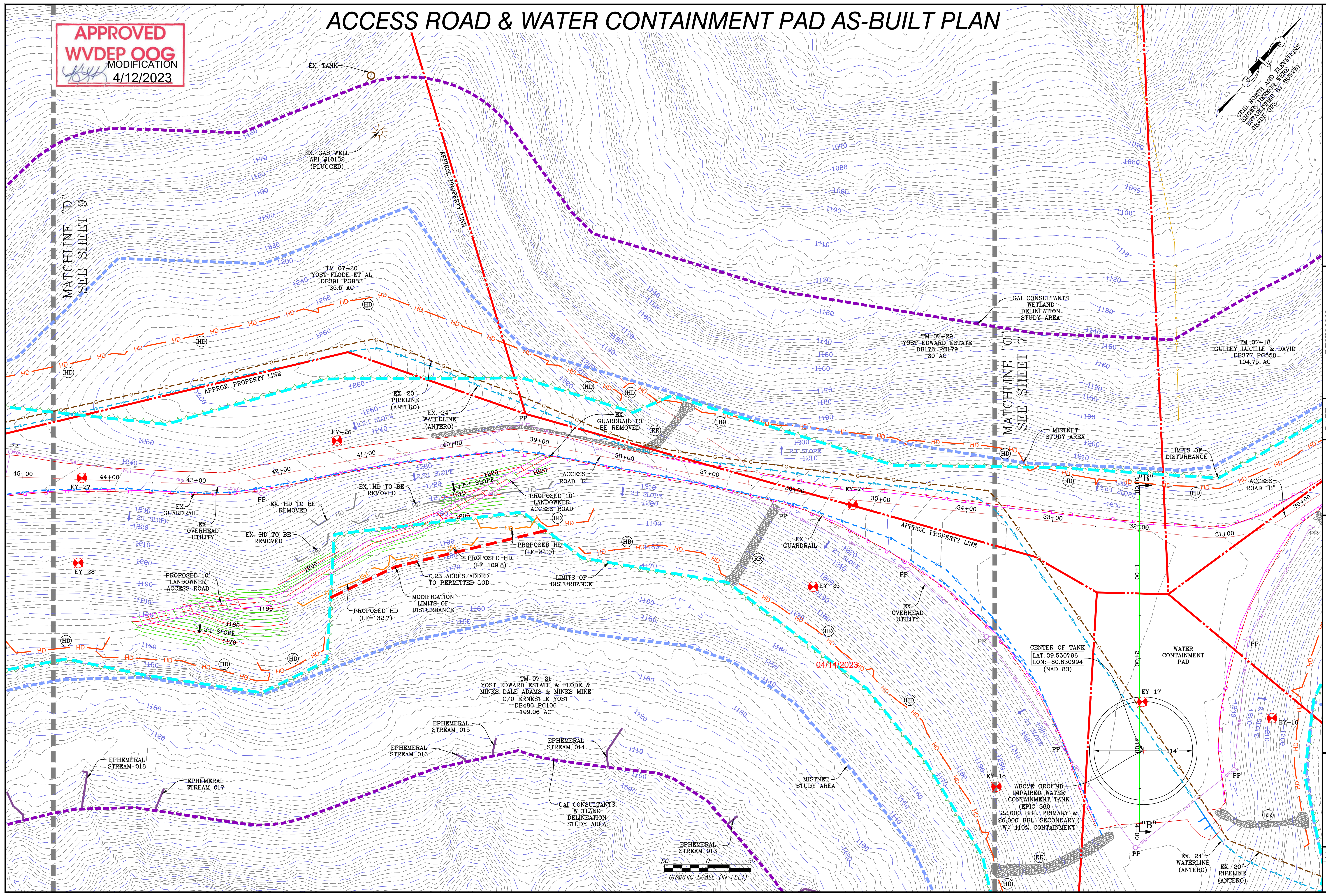
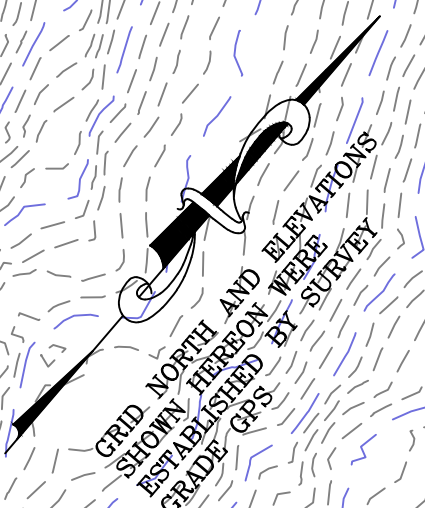
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WVDEP OOG
MODIFICATION
4/12/2023



GRAPHIC SCALE (IN FEET)

ACCESS ROAD & WATER CONTAINMENT PAD AS-BUILT PLAN

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



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

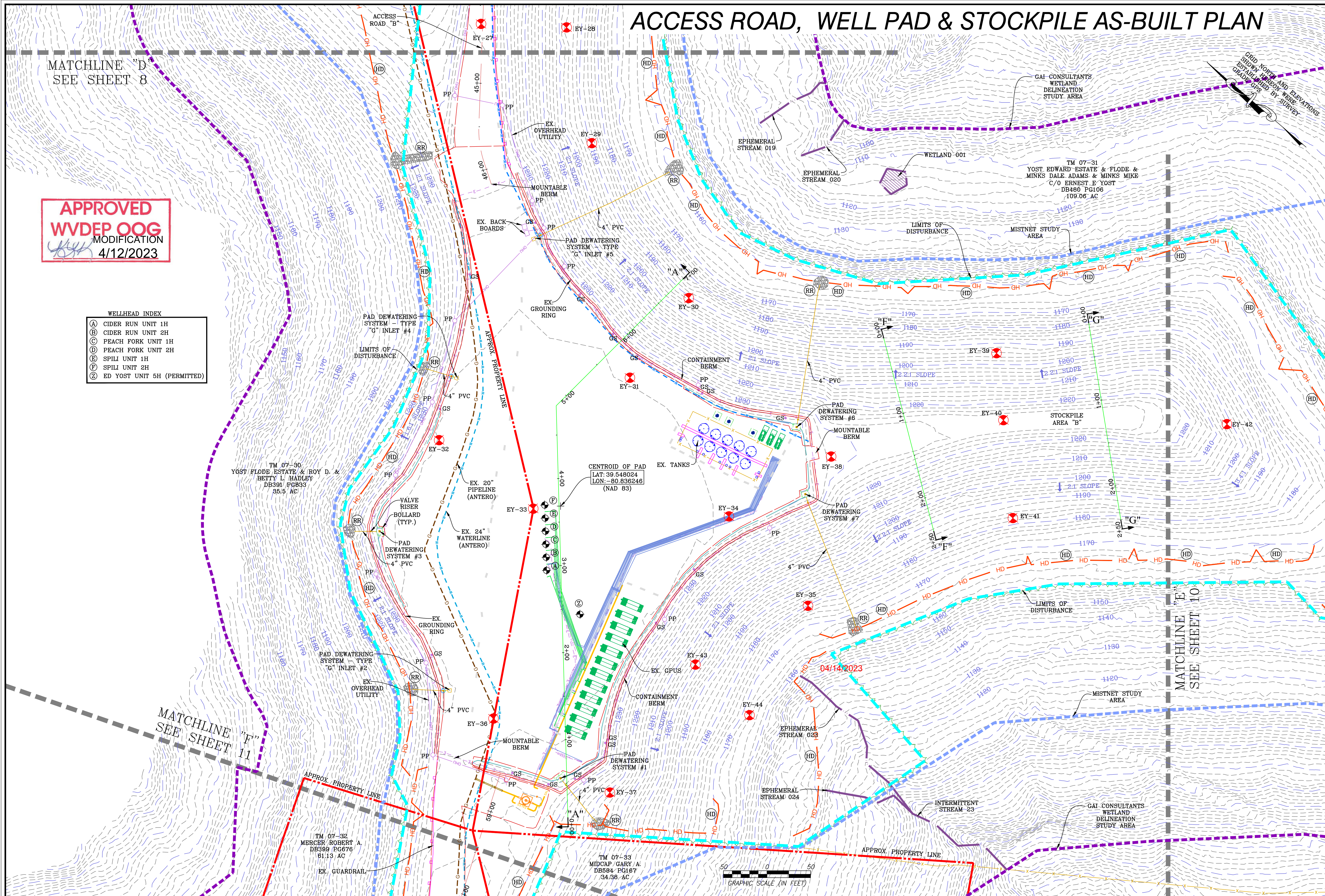
ACCESS ROAD, WELL PAD & STOCKPILE AS-BUILT PLAN

MATCHLINE "D"
SEE SHEET 8

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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)

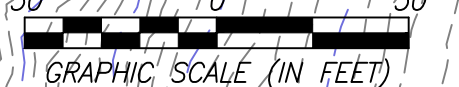


TM 07-80
YOST FLODE ESTATE & ROY D. &
BETTY L. HADLEY
DB391 PG833
35.5 AC

CENTROID OF PAD
LAT: 39.548024
LON: -80.836246
(NAD 83)

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

TM 07-33
MIDCAP GARY A.
DB584 PG187
34.38 AC



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03/13/2023	REVISED PER LANDOWNER ROAD LOD MOD

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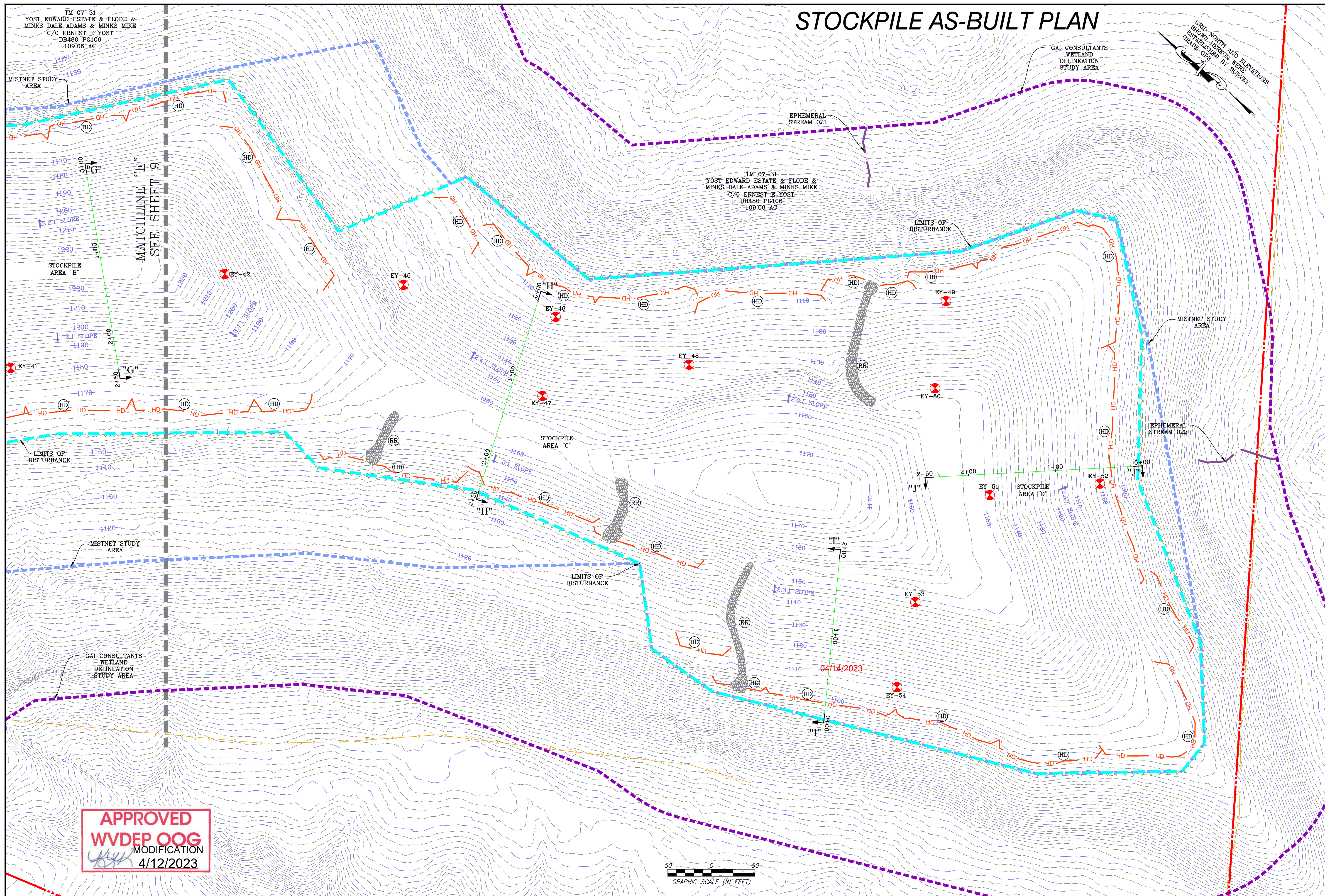
ACCESS ROAD & WELL PAD & STOCKPILE AS-BUILT PLAN

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



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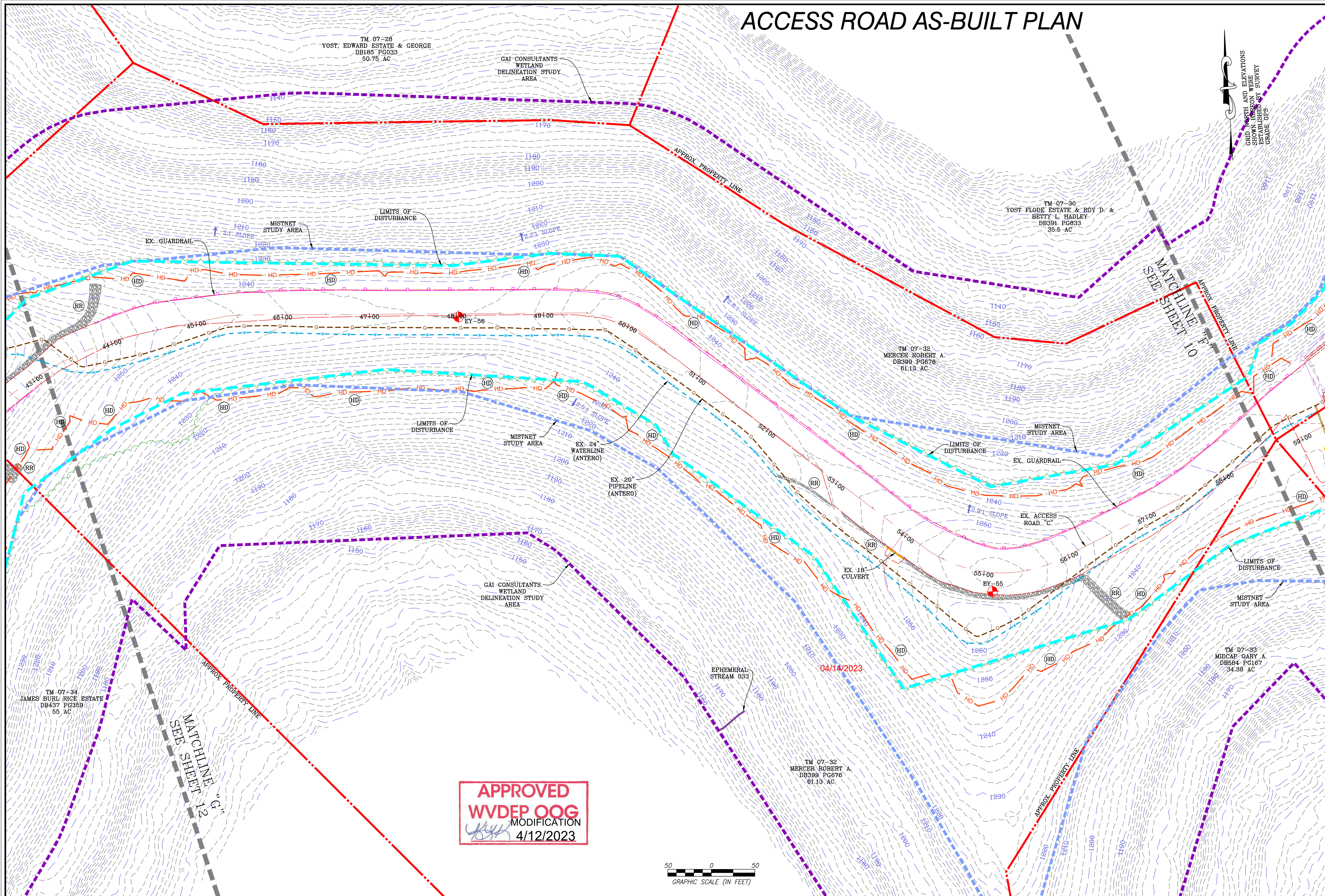
STOCKPILE AS-BUILT PLAN
ED YOST
WELL PAD & WATER CONTAINMENT PAD
ELLSWORTH DISTRICT
TYLER COUNTY, WEST VIRGINIA



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

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MODIFICATION
4/12/2023

ACCESS ROAD AS-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

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4/12/2023



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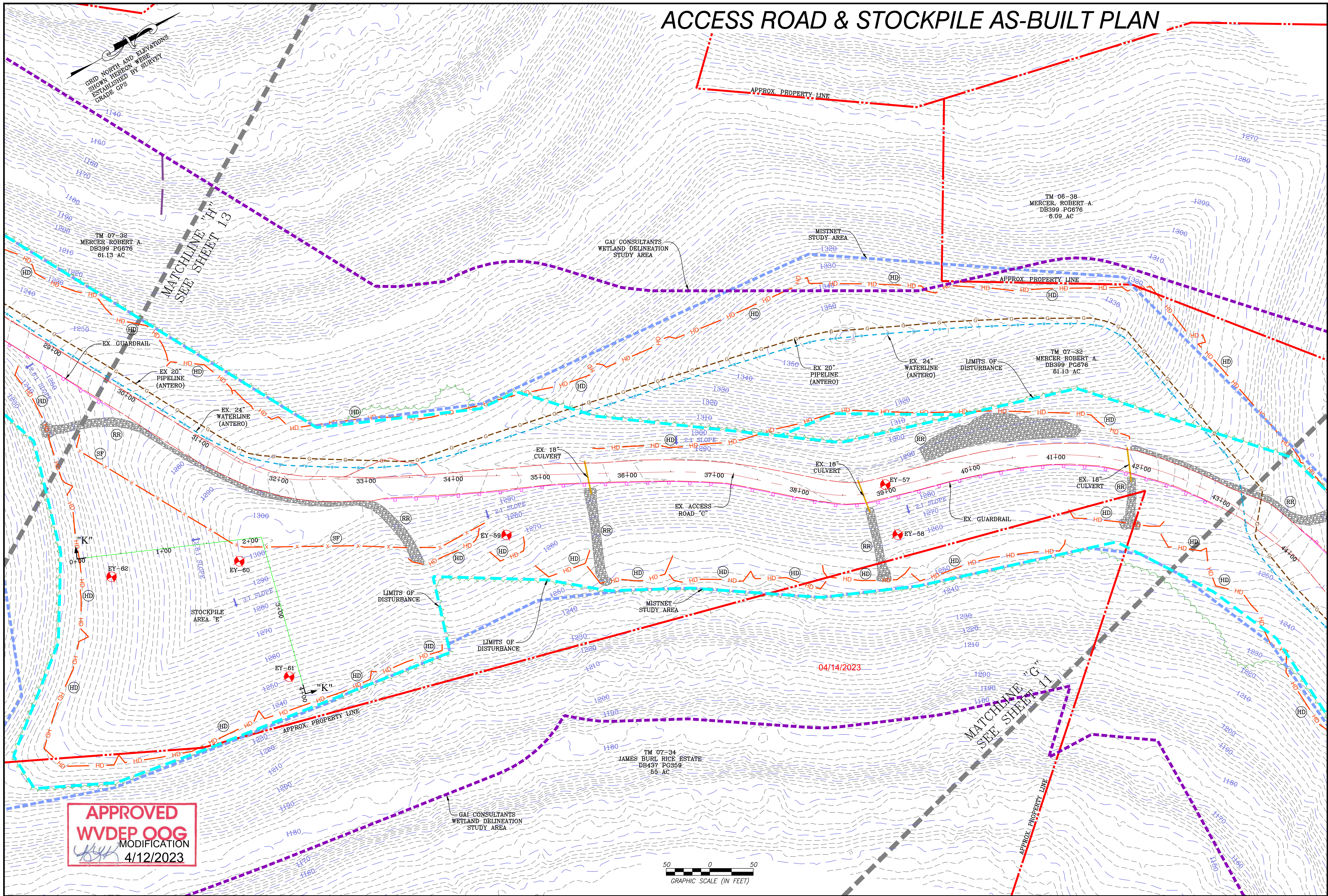
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CORPORATION

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

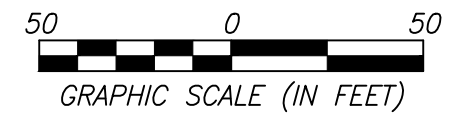


DATE: 01/27/2023
SCALE: 1" = 50'
SHEET 11 OF 24

ACCESS ROAD & STOCKPILE AS-BUILT PLAN



APPROVED WVDEP OOG MODIFICATION
 4/12/2023



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

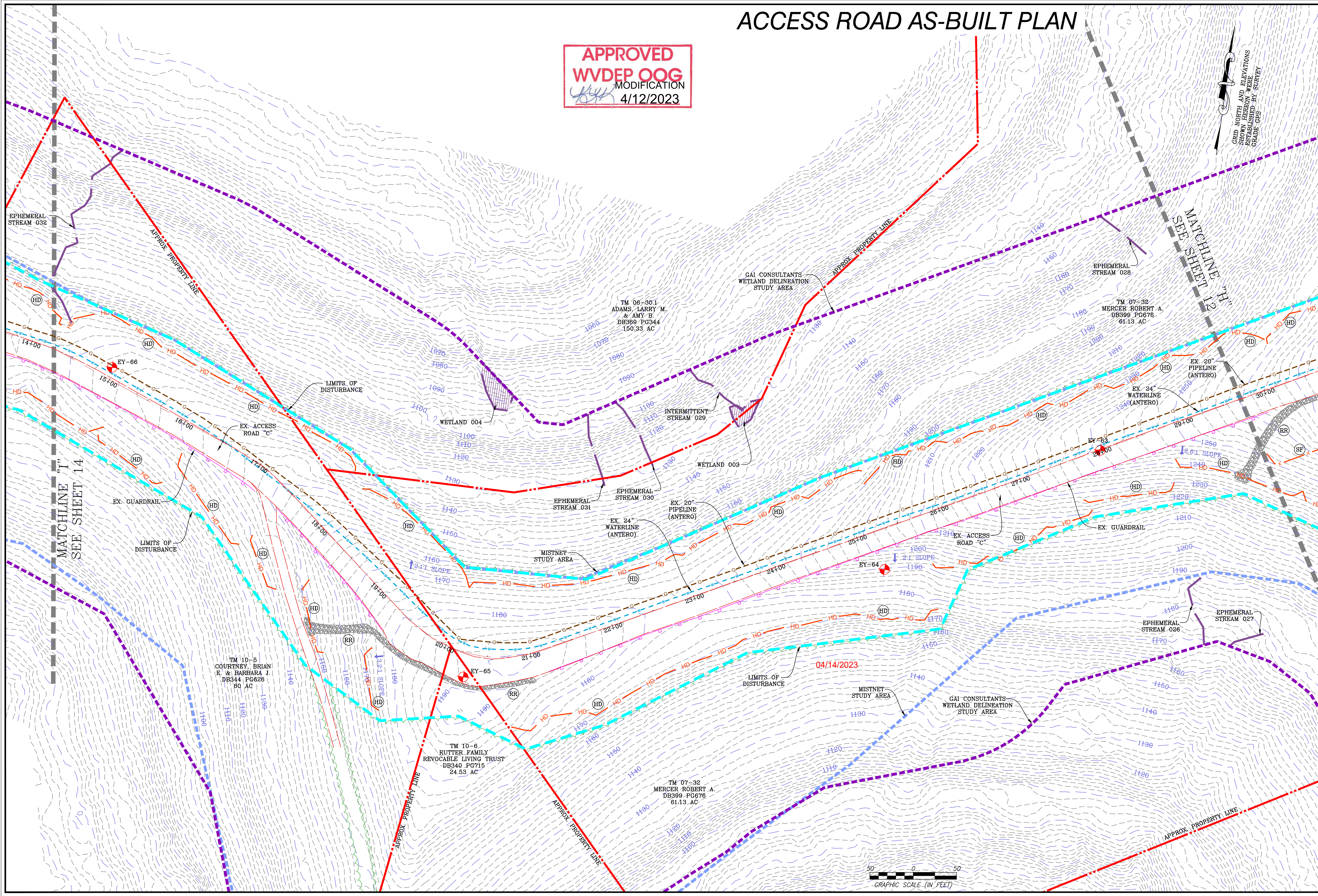


DATE: 01/27/2023
 SCALE: 1" = 50'
 SHEET 12 OF 24

ACCESS ROAD AS-BUILT PLAN

APPROVED
WVDEP OOG
 MODIFICATION
 4/12/2023

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



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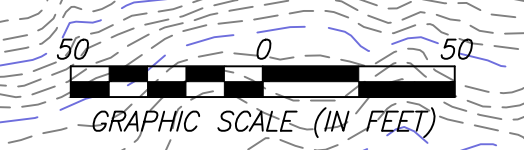
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ACCESS ROAD AS-BUILT PLAN

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

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

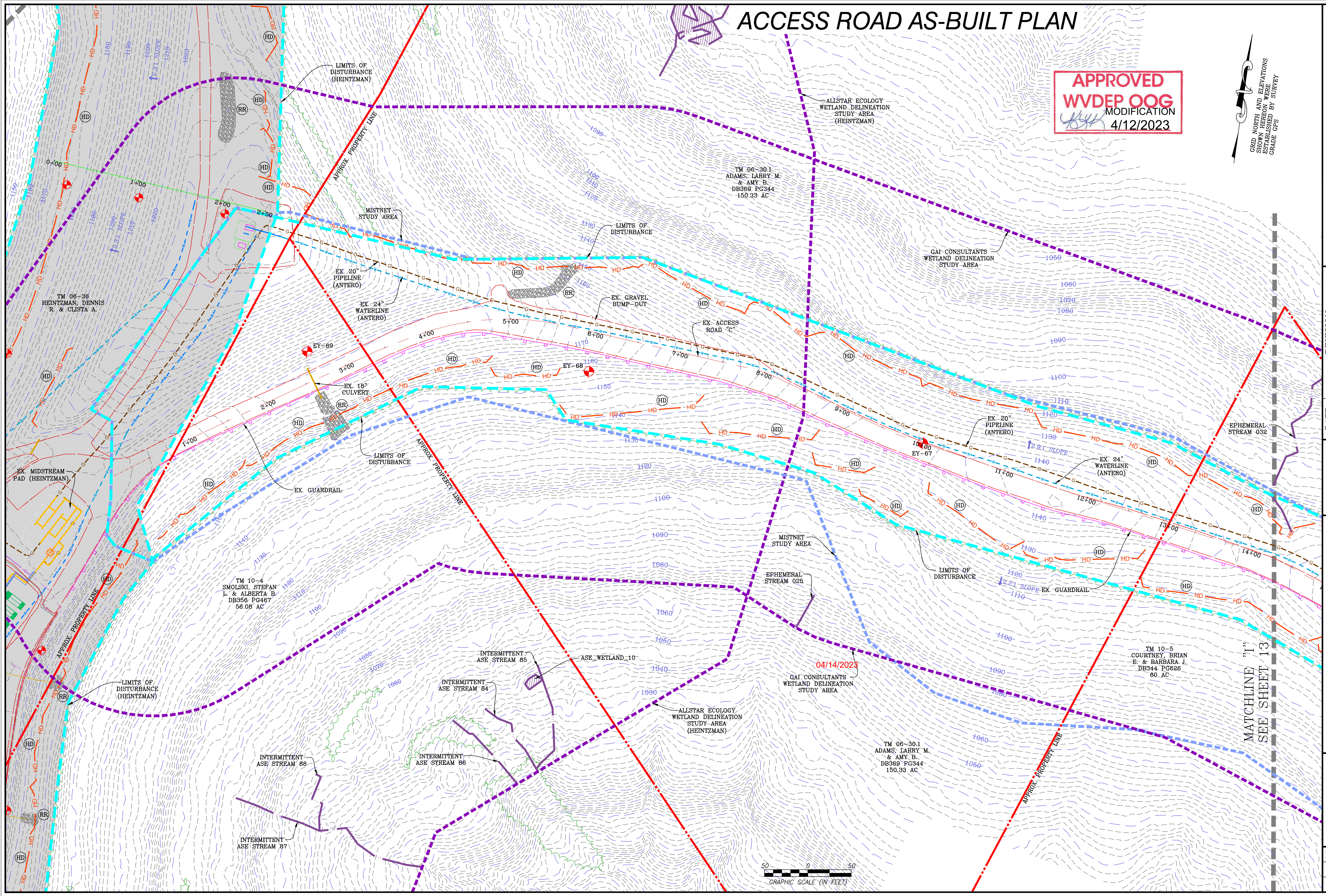


ACCESS ROAD AS-BUILT PLAN

APPROVED
WVDEP OOG
 MODIFICATION
 4/12/2023

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

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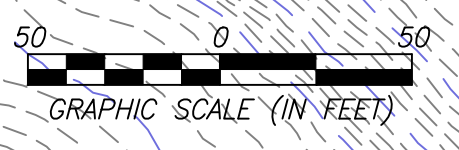
DATE	REVISION
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 WAS PREPARED FOR:
 ANTERO RESOURCES
 CORPORATION

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



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

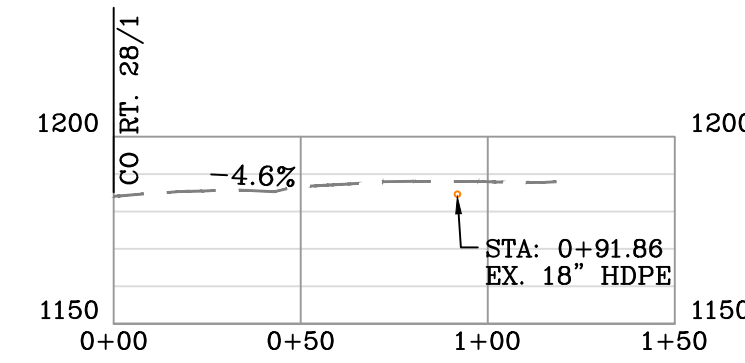


MATCHLINE "1"
 SEE SHEET 13

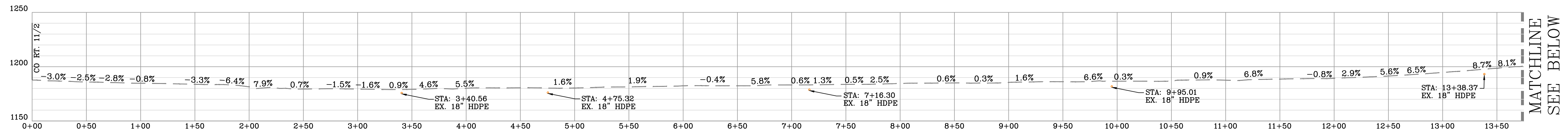
04/14/2023

ACCESS ROAD AS-BUILT PROFILES

APPROVED
WVDEP OOG
 MODIFICATION
 4/12/2023

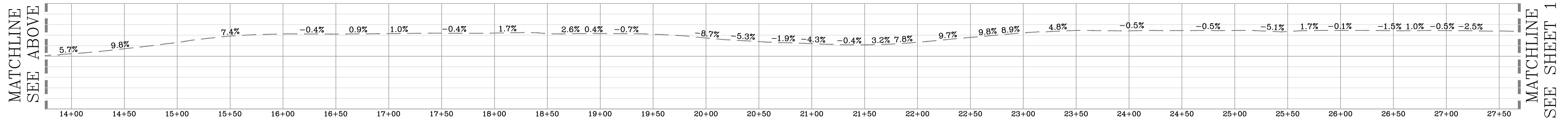


ACCESS ROAD "A" (CO RT. 11/2) AS-BUILT PROFILE
 SCALE: HORIZ. 1" = 50' VERT. 1" = 50'



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'

DATE	REVISION
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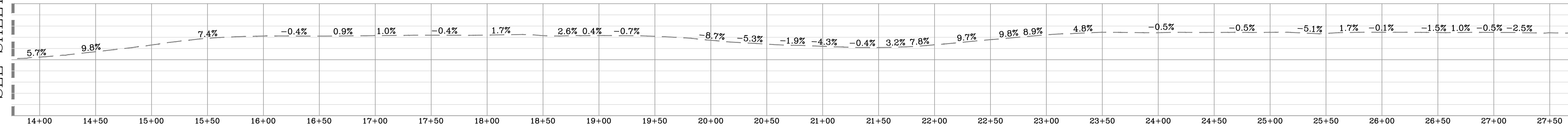
ACCESS ROAD AS-BUILT PROFILES
ED YOST
 WELL PAD & WATER CONTAINMENT PAD
 ELLSWORTH DISTRICT
 TYLER COUNTY, WEST VIRGINIA



ACCESS ROAD AS-BUILT PROFILES

APPROVED
WVDEP OOG
 MODIFICATION
[Signature] 4/12/2023

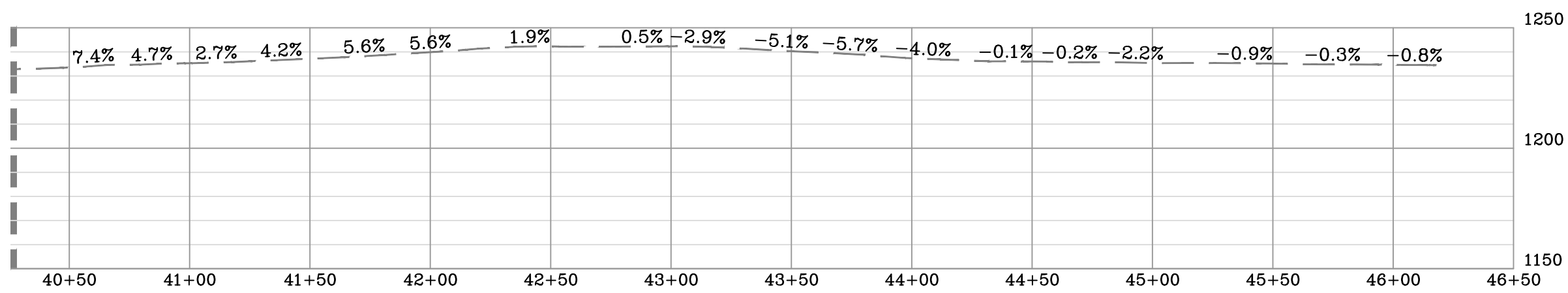
MATCHLINE
SEE SHEET 15



MATCHLINE
SEE BELOW

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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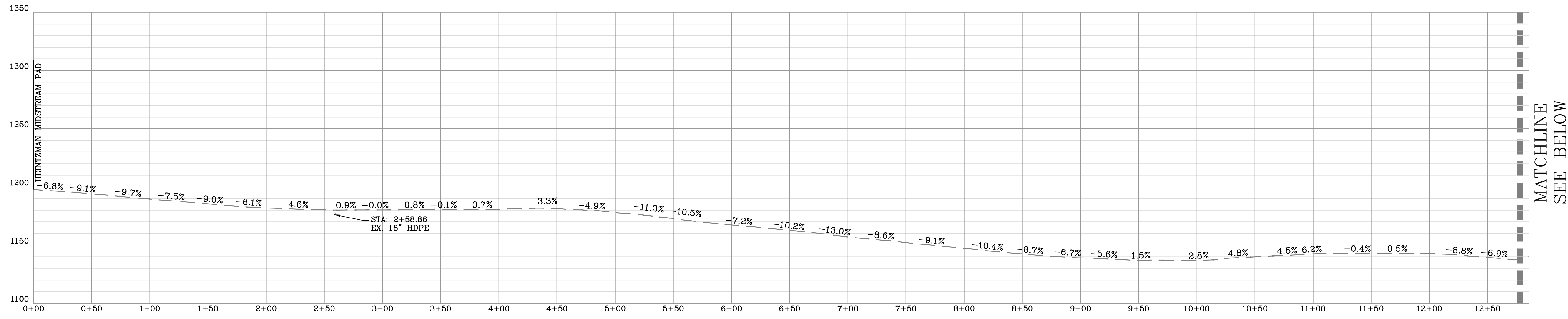
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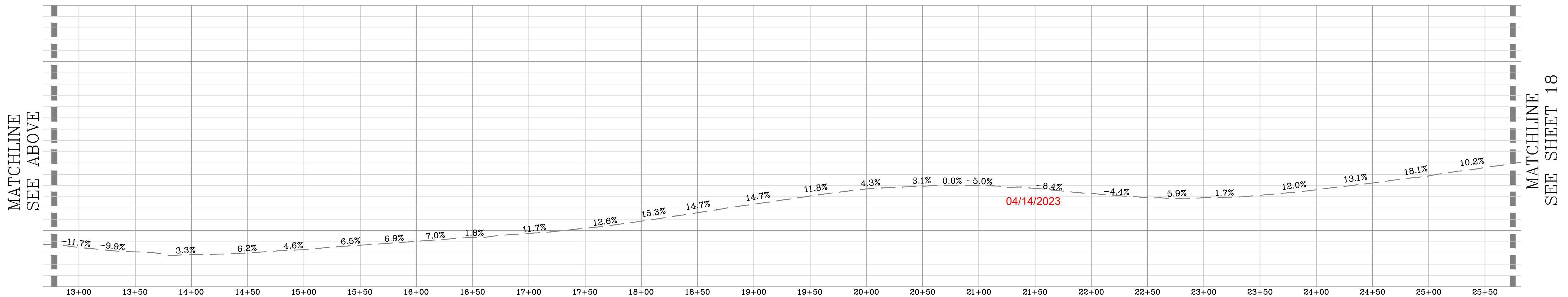
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 SHEET 16 OF 24

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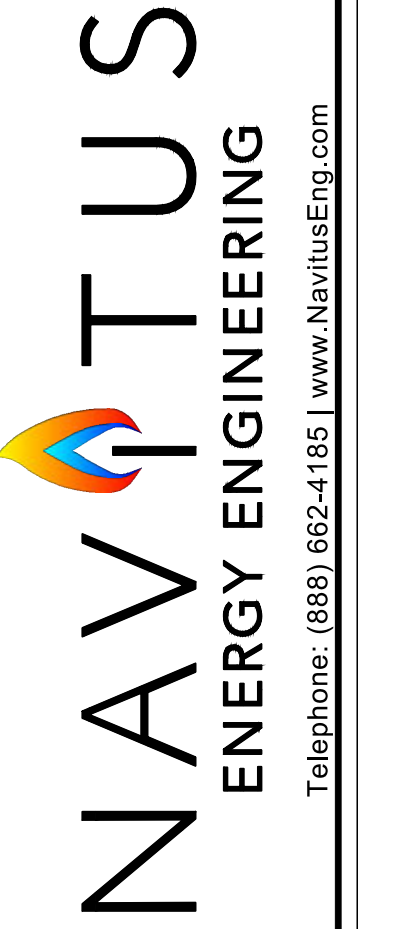
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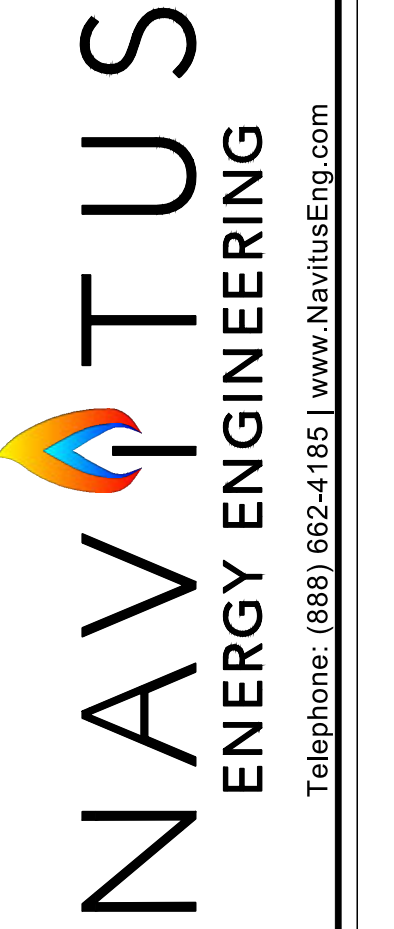
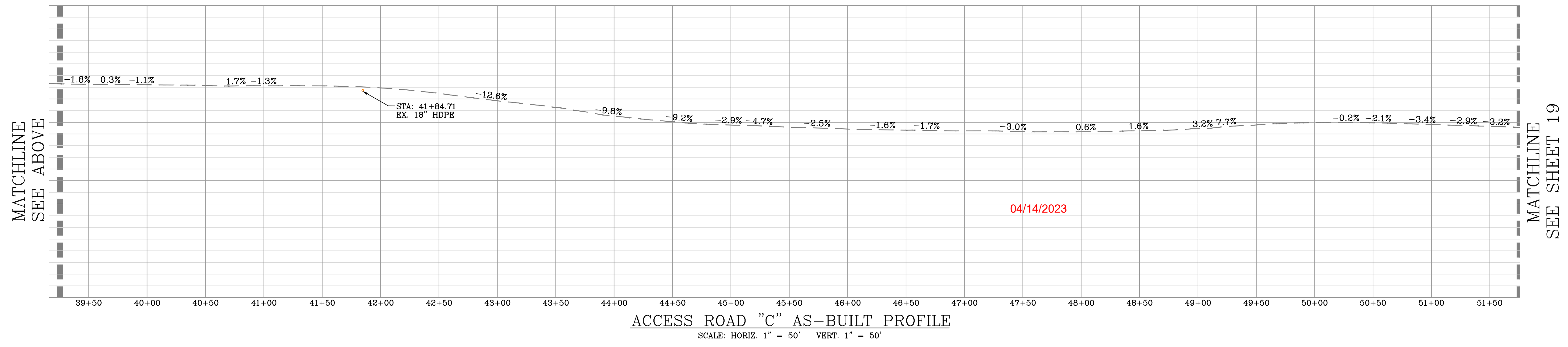
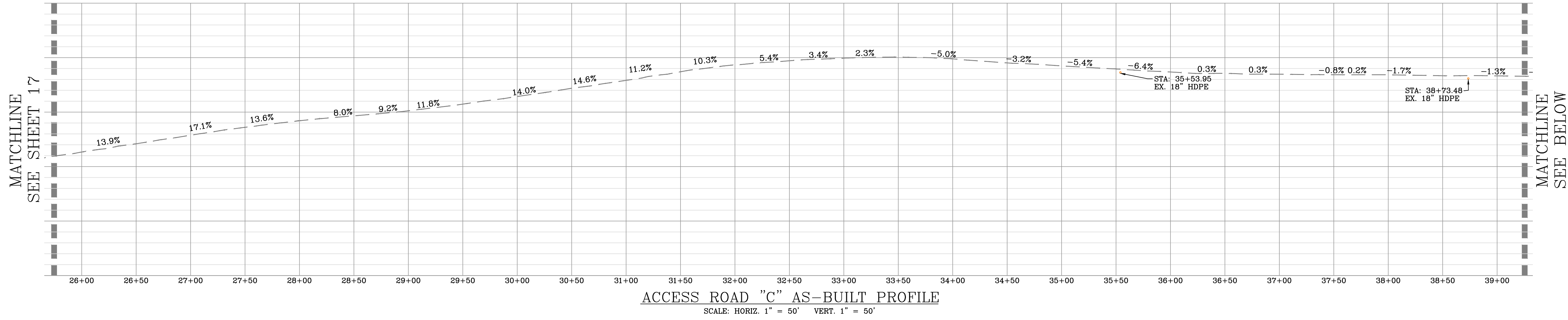
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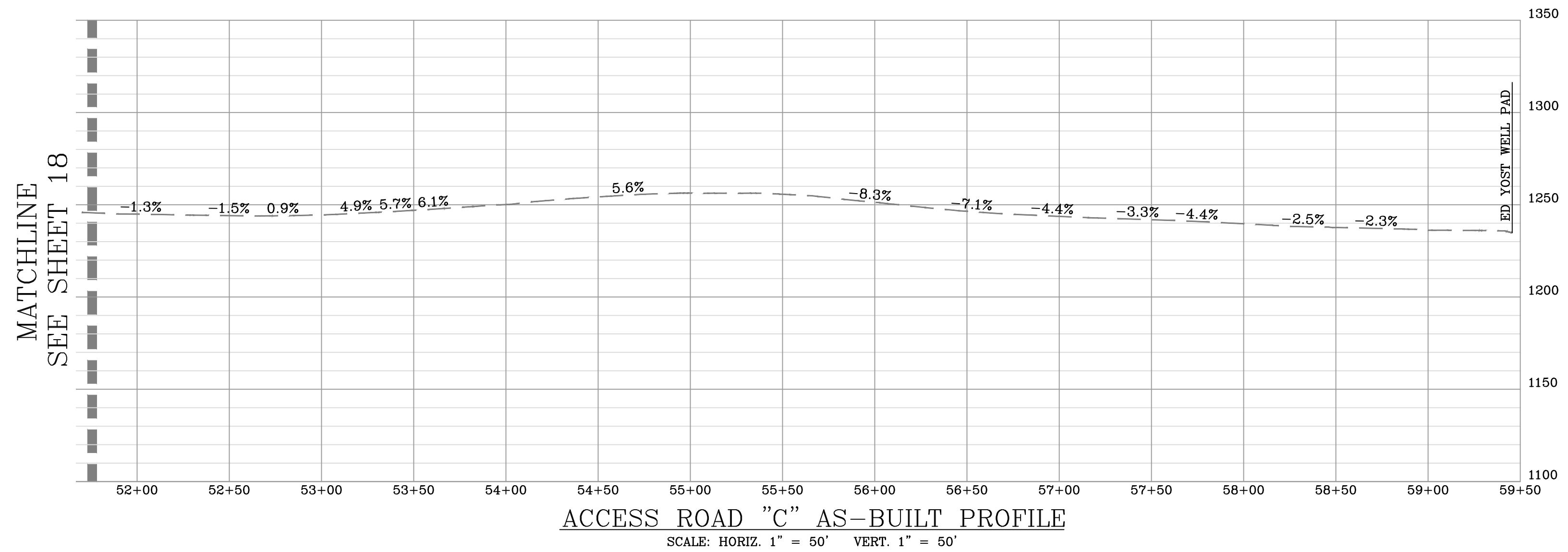
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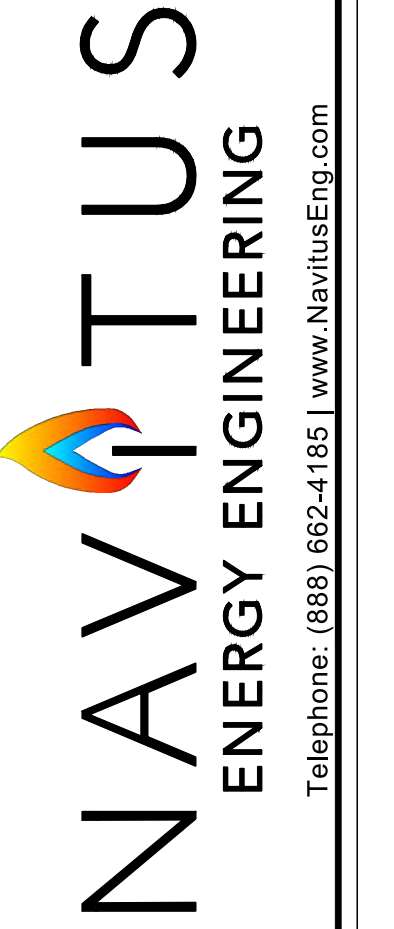
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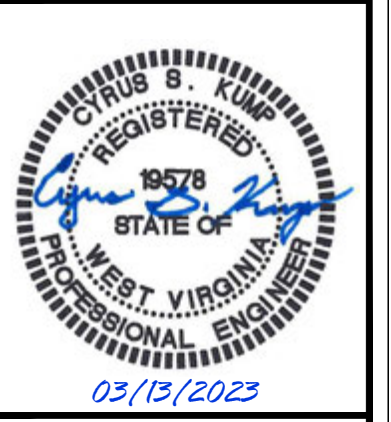
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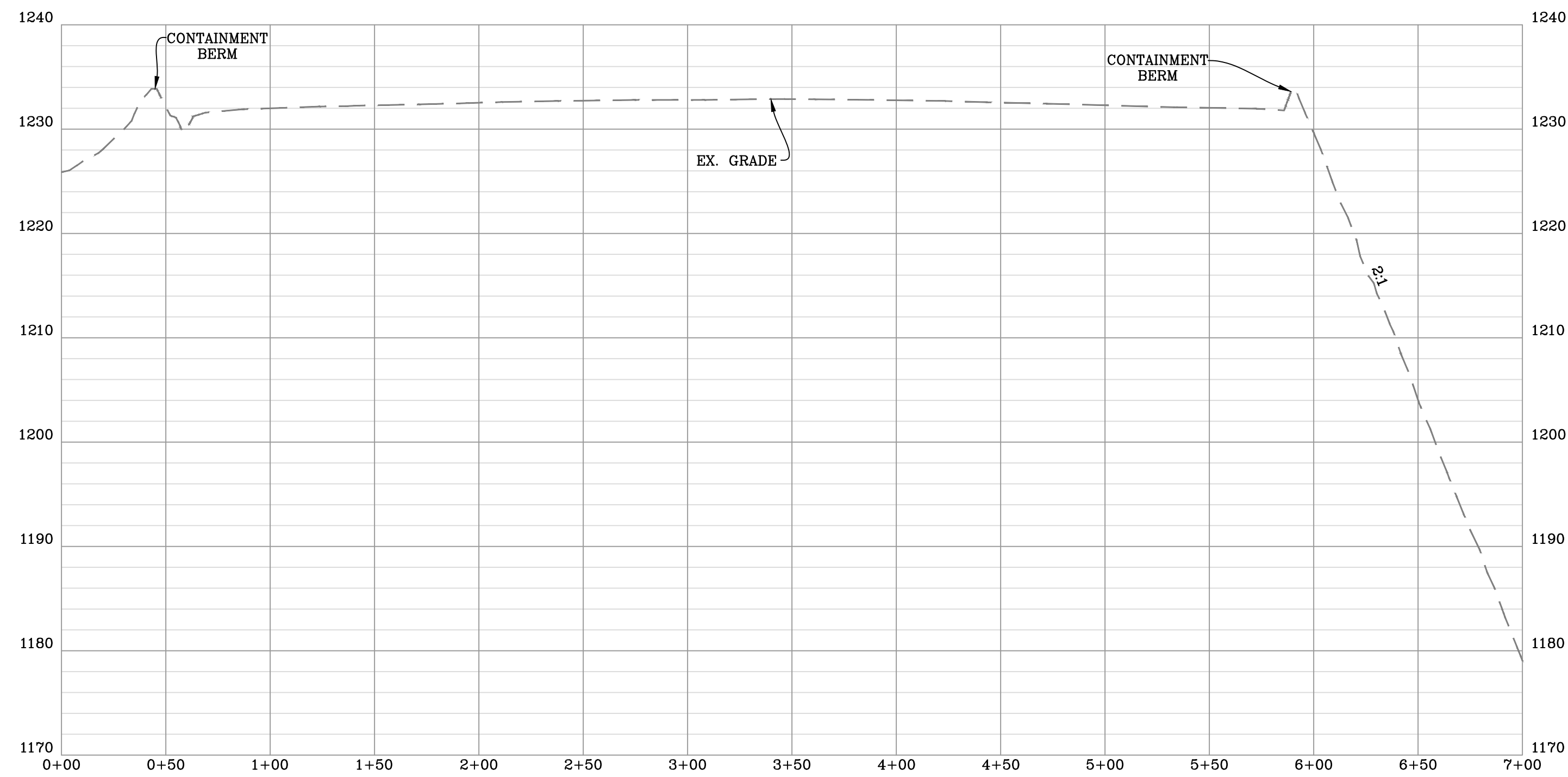
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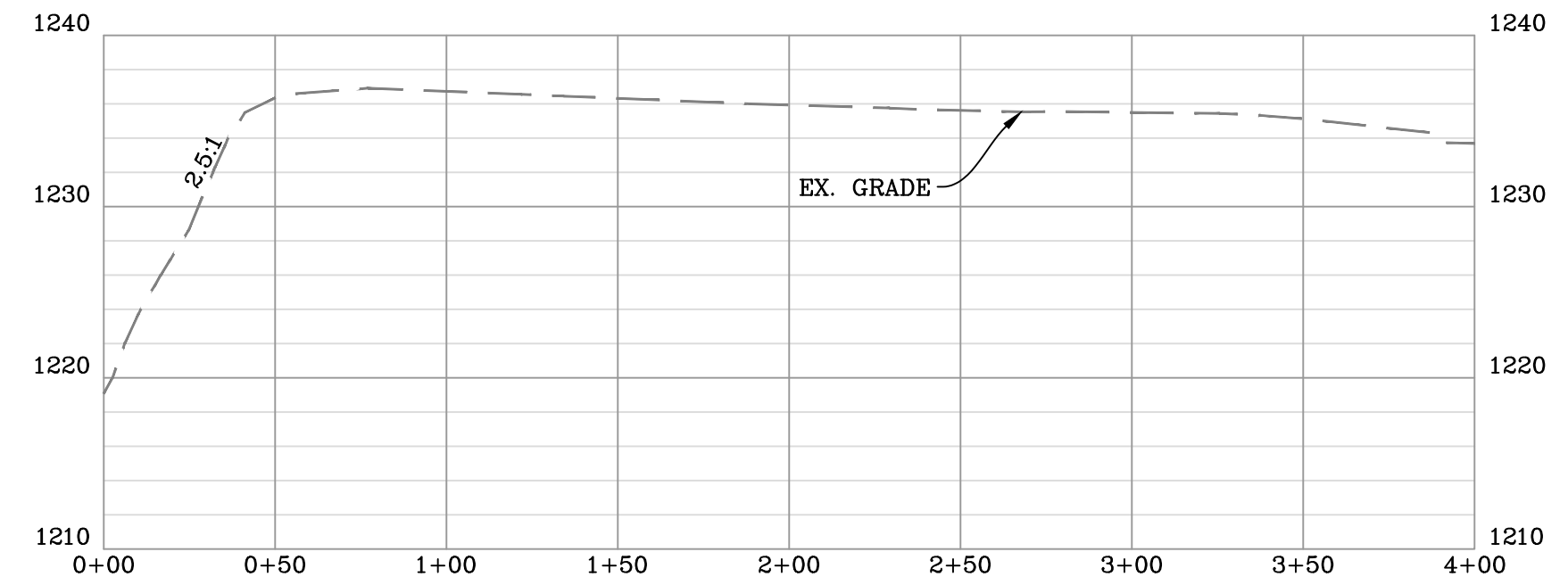
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WELL PAD, WATER CONTAINMENT PAD, STAGING AREA & STOCKPILE AS-BUILT SECTIONS

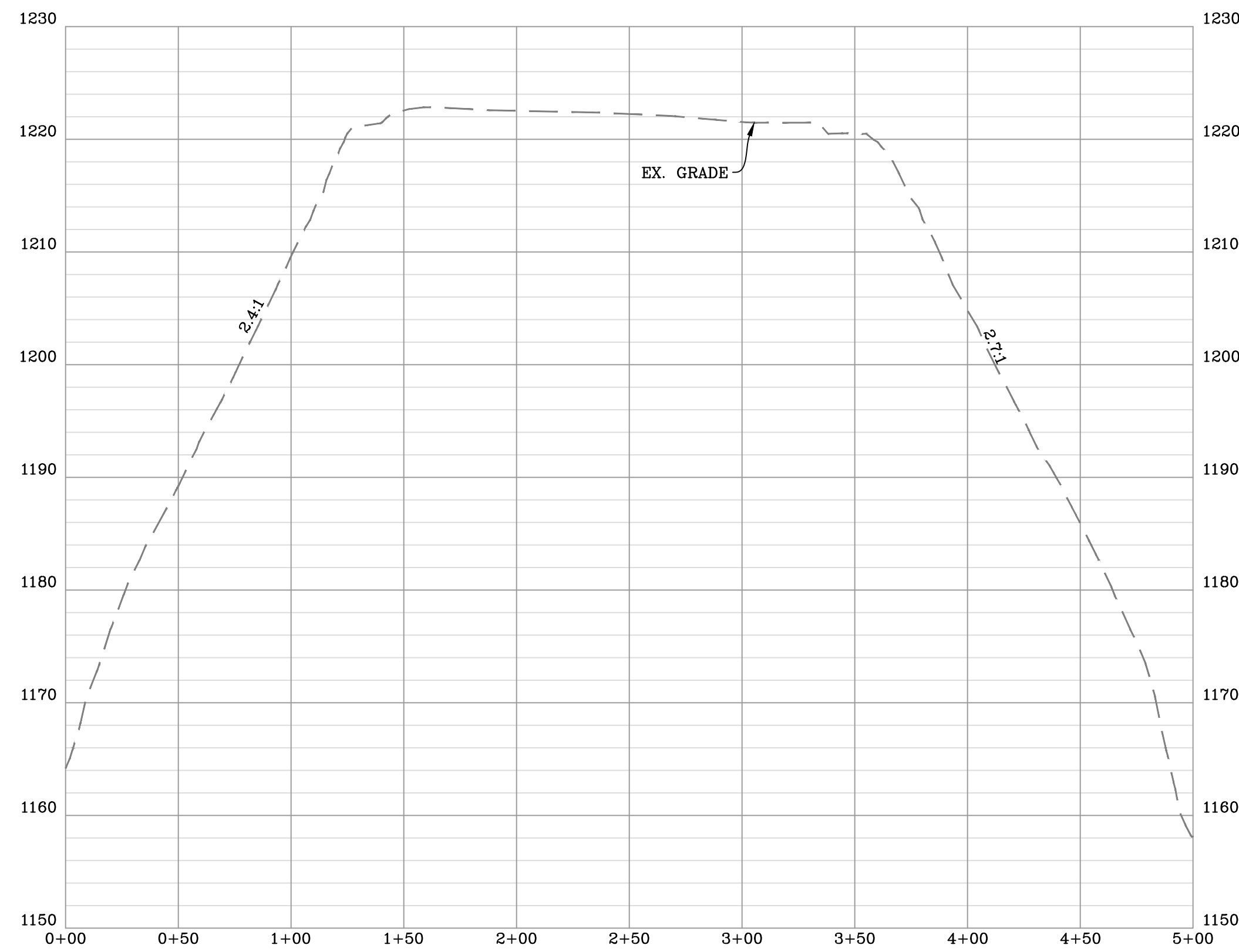
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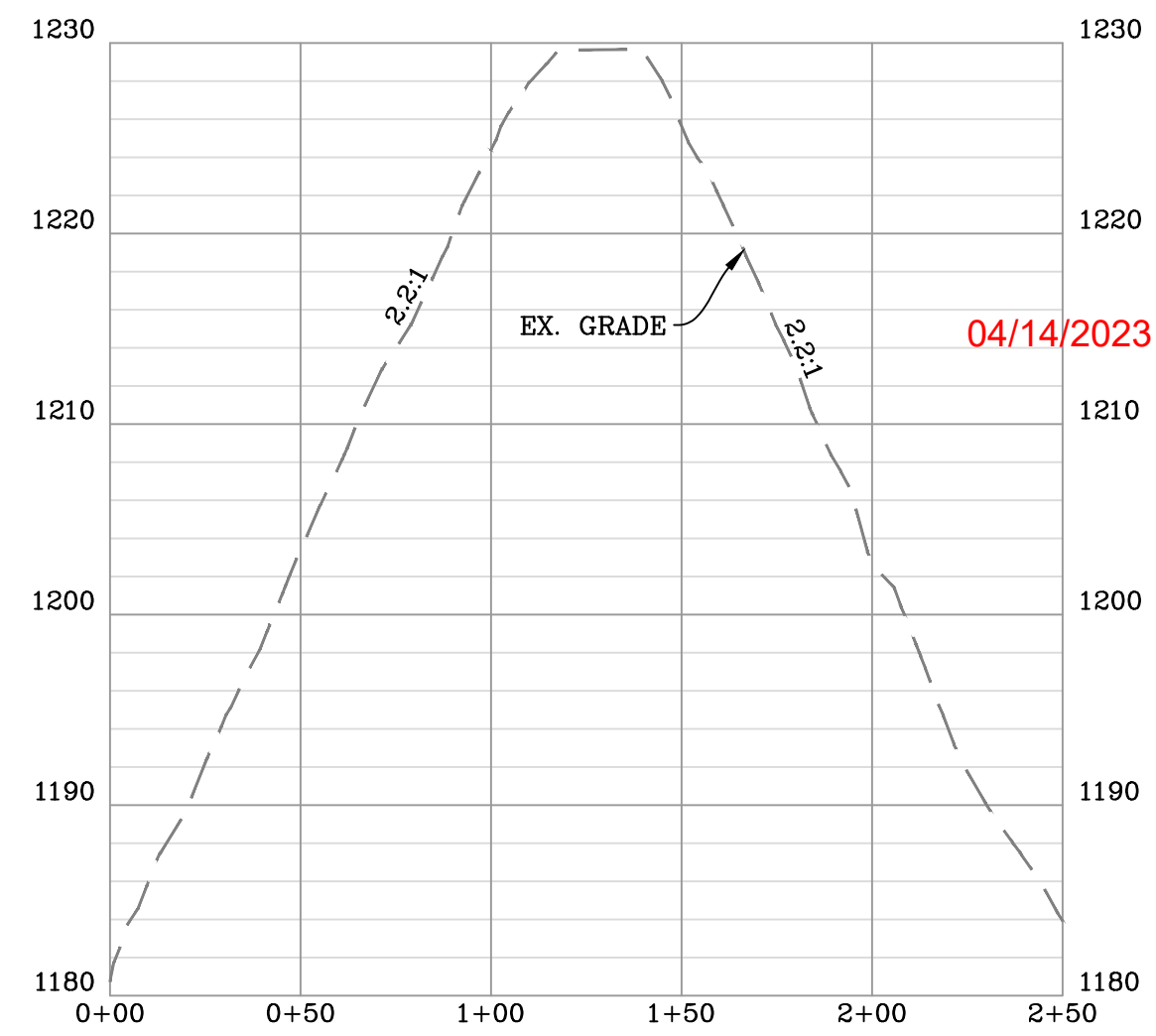
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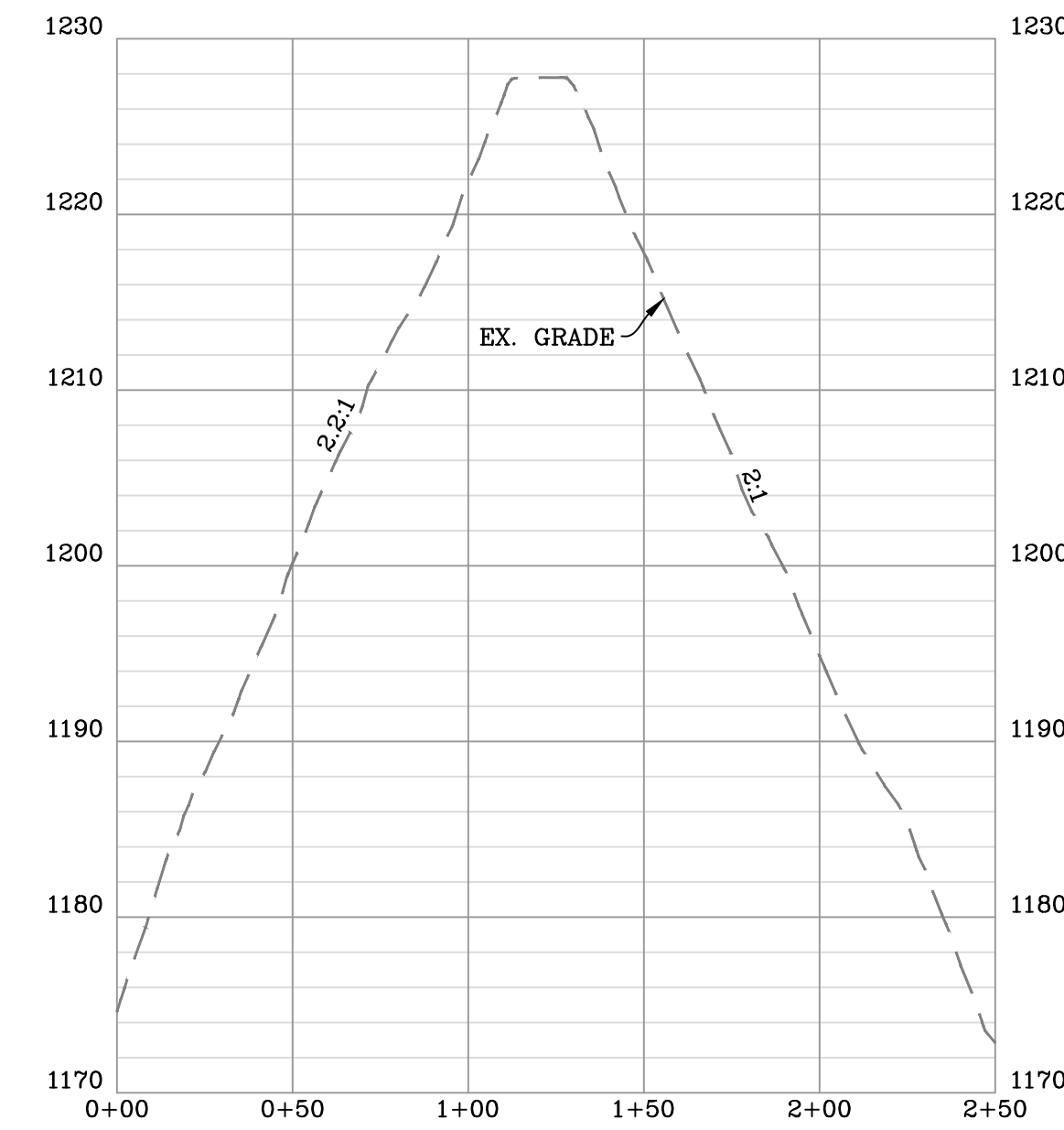
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STOCKPILE AREA "A" & STAGING AREA AS-BUILT CROSS-SECTION "C-C"
SCALE: HORIZ. 1" = 50' VERT. 1" = 10'



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

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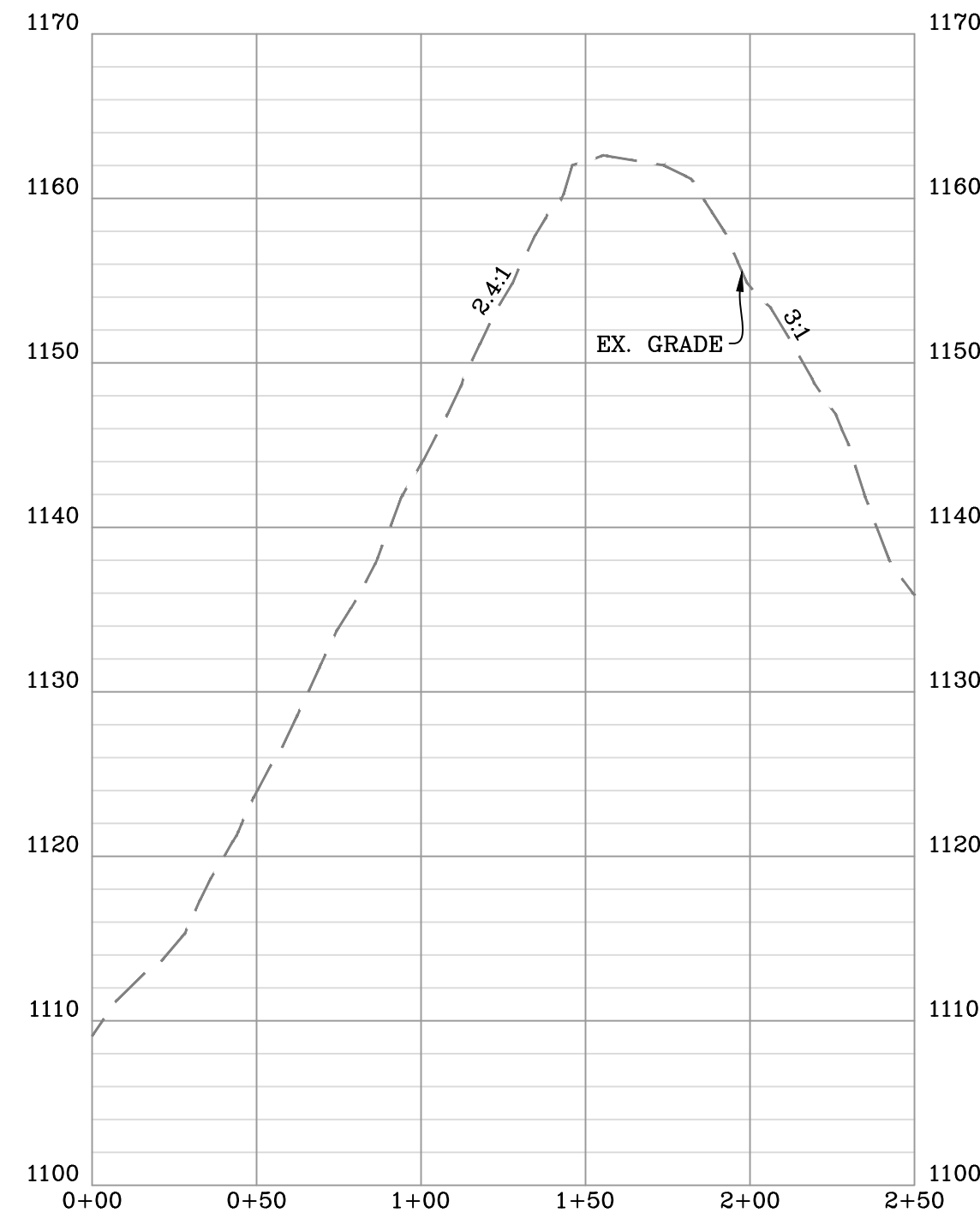
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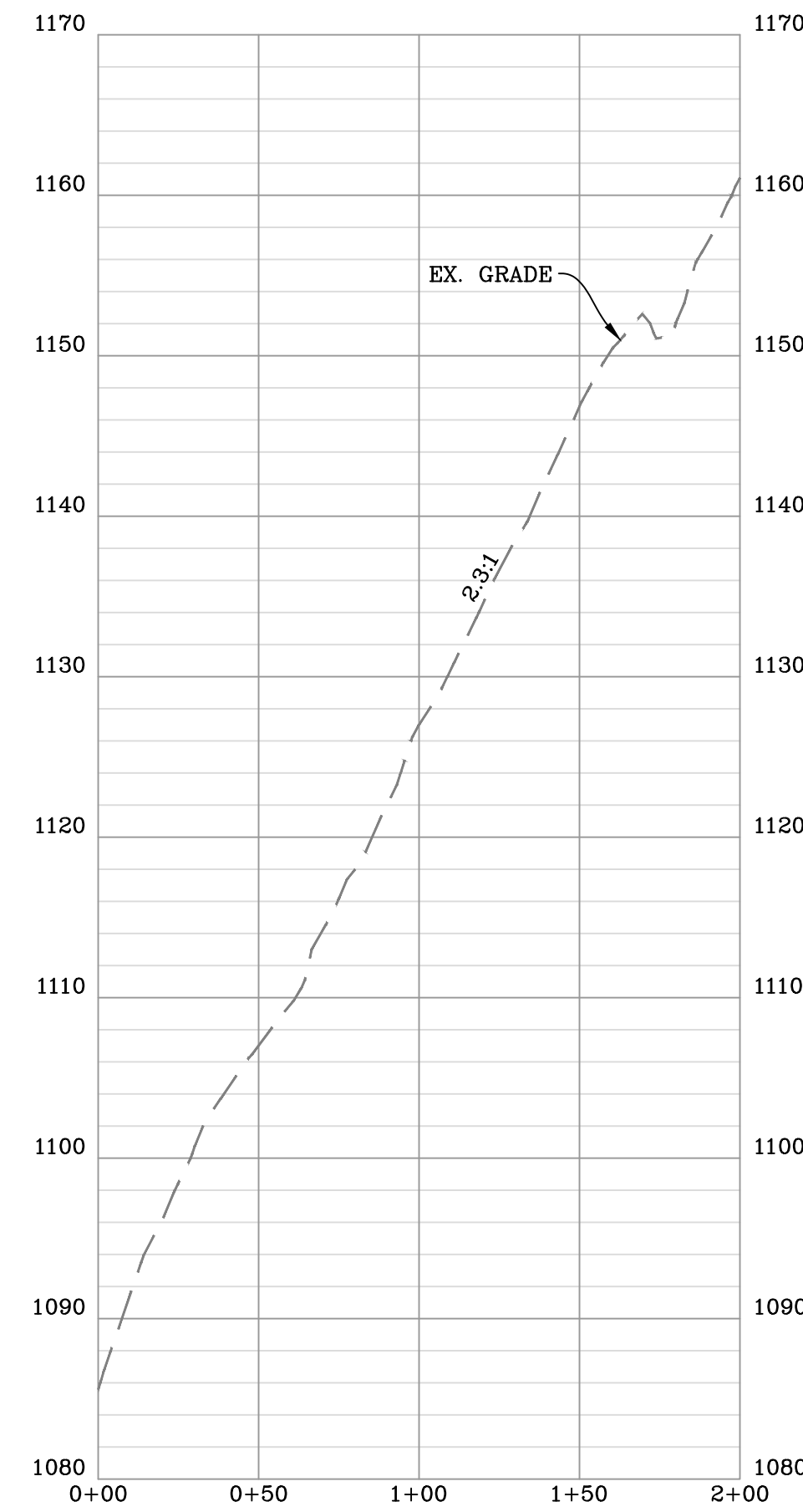
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SHEET 20 OF 24

STOCKPILE AS-BUILT SECTIONS

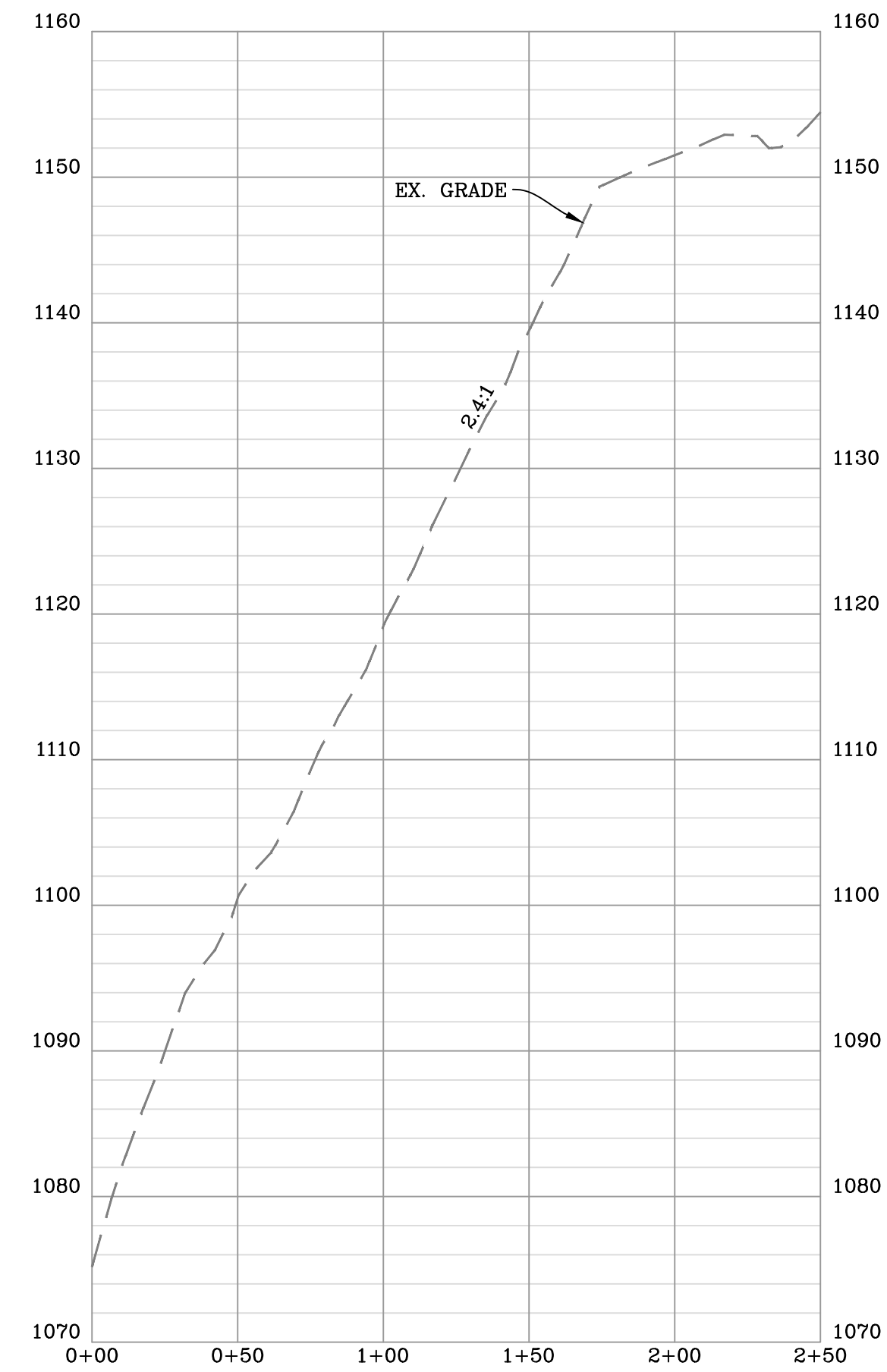
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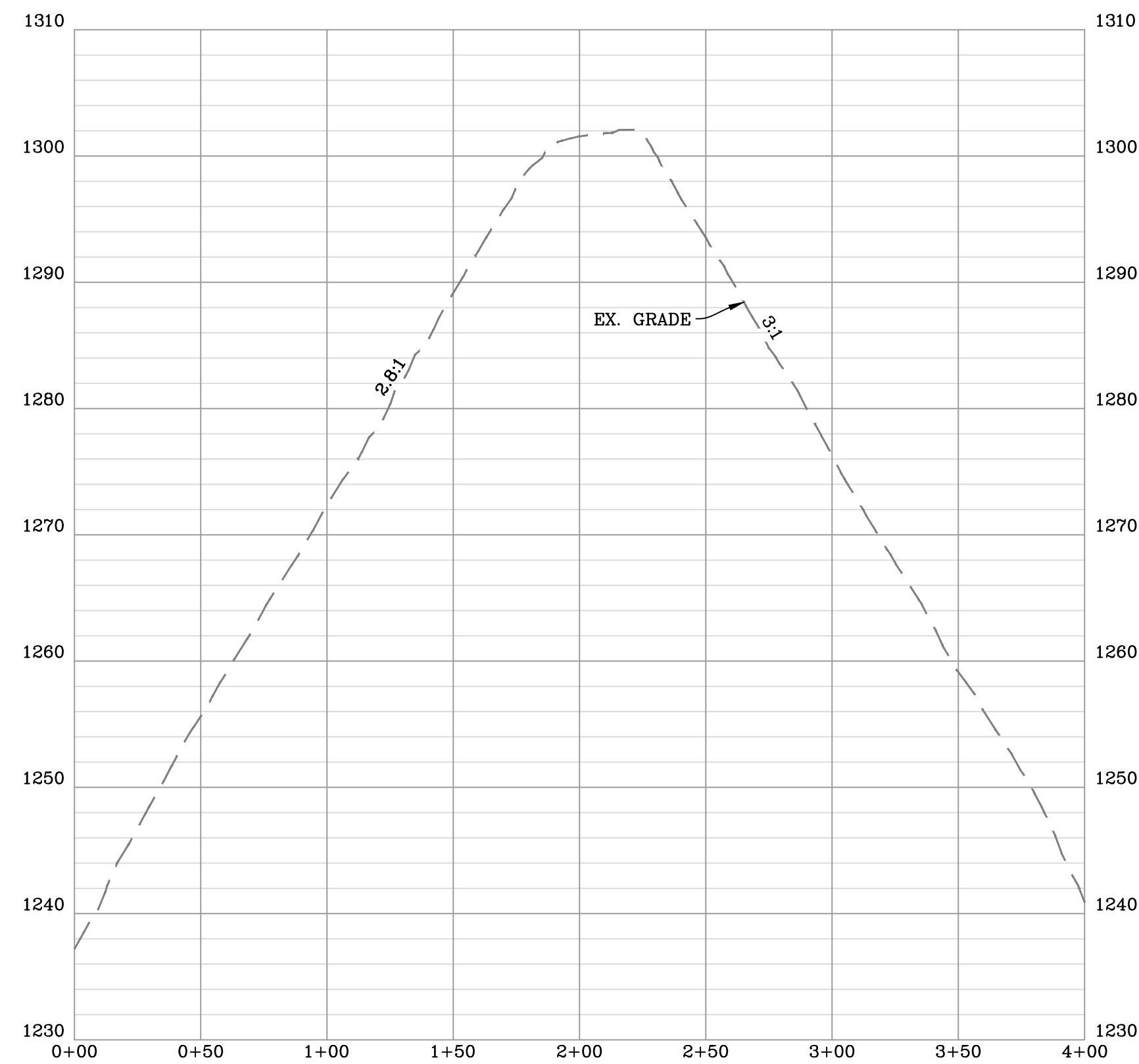
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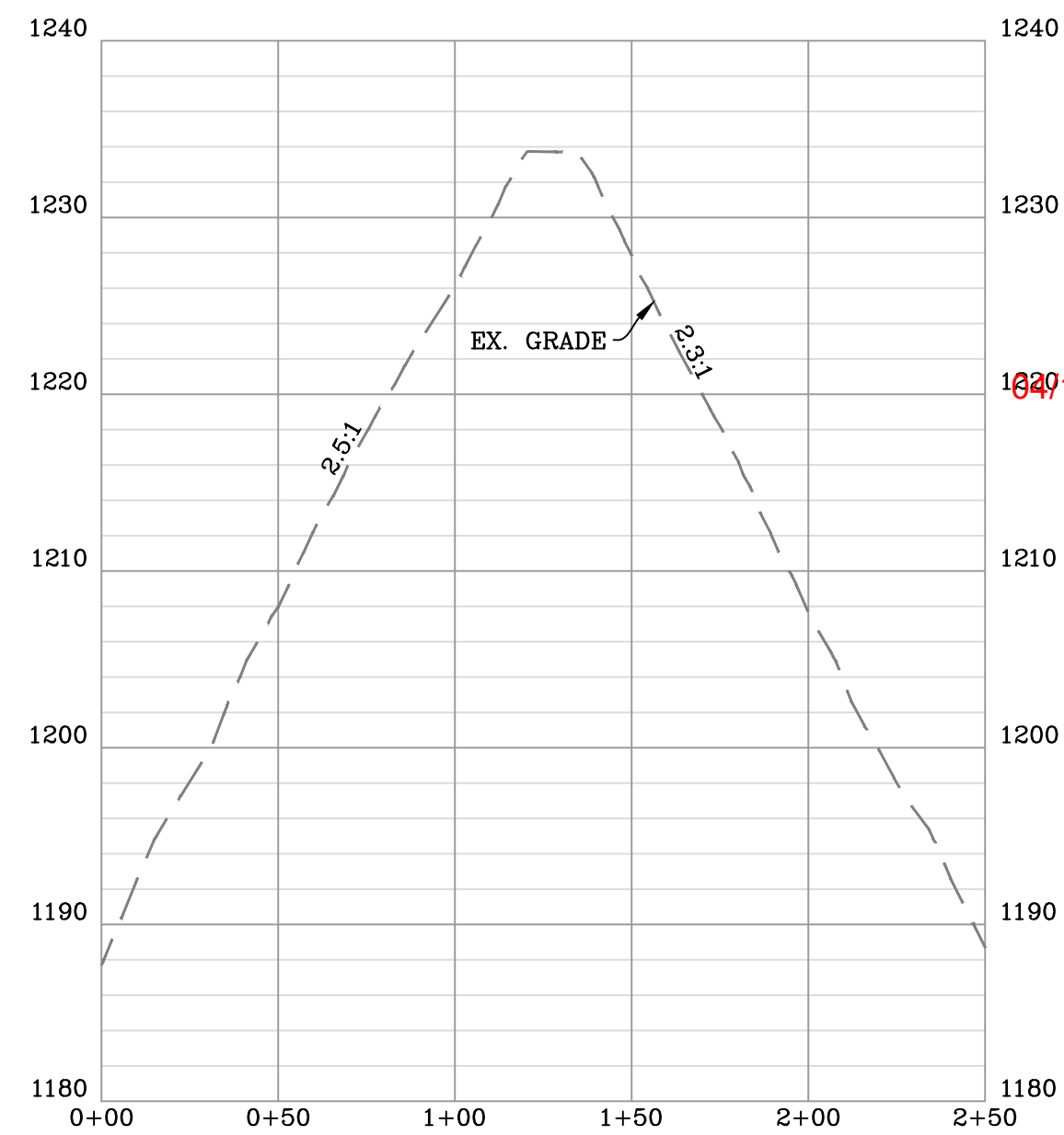
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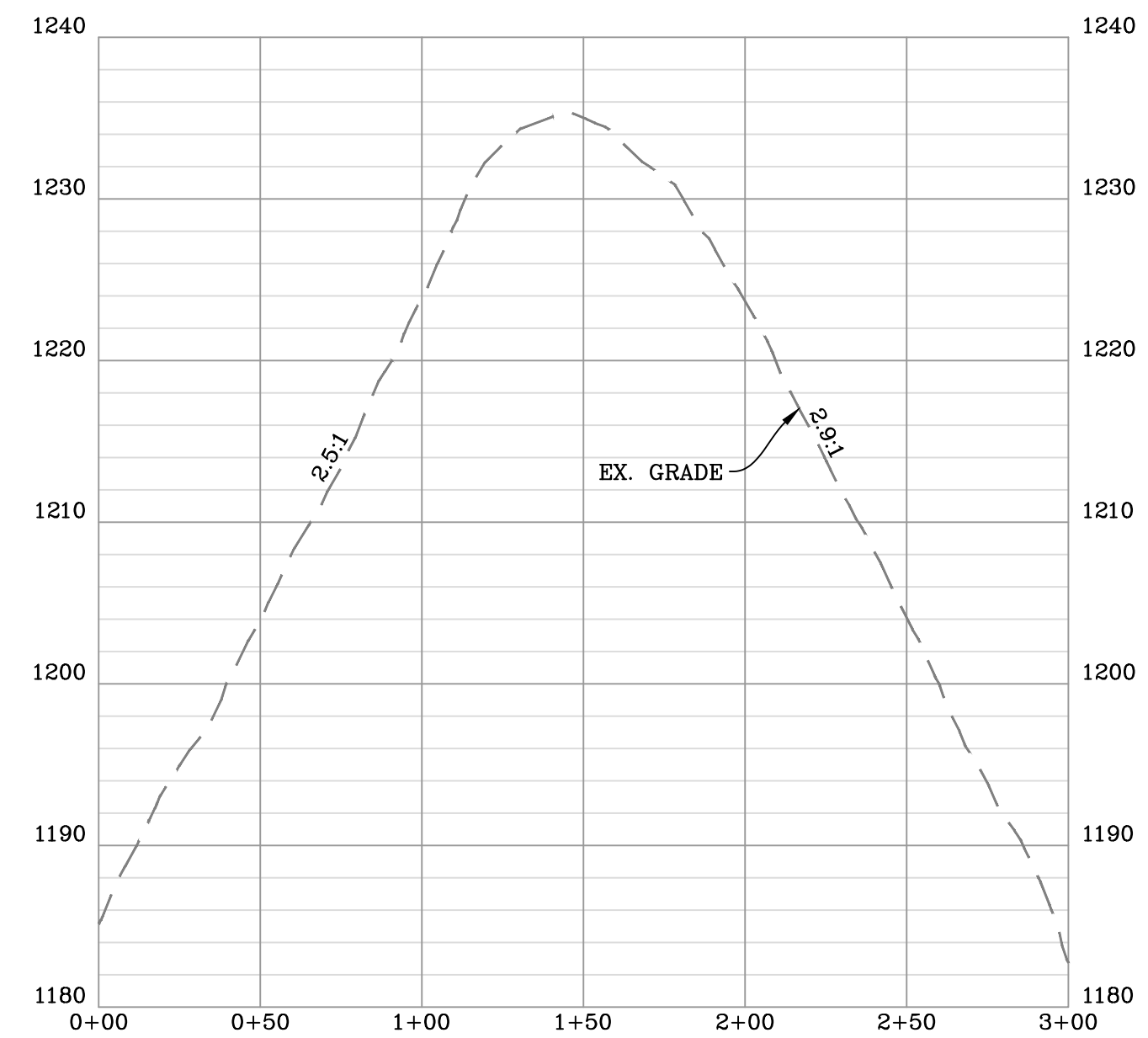
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STOCKPILE AREA "E" AS-BUILT CROSS-SECTION "K-K"
 SCALE: HORIZ. 1" = 50' VERT. 1" = 10'



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



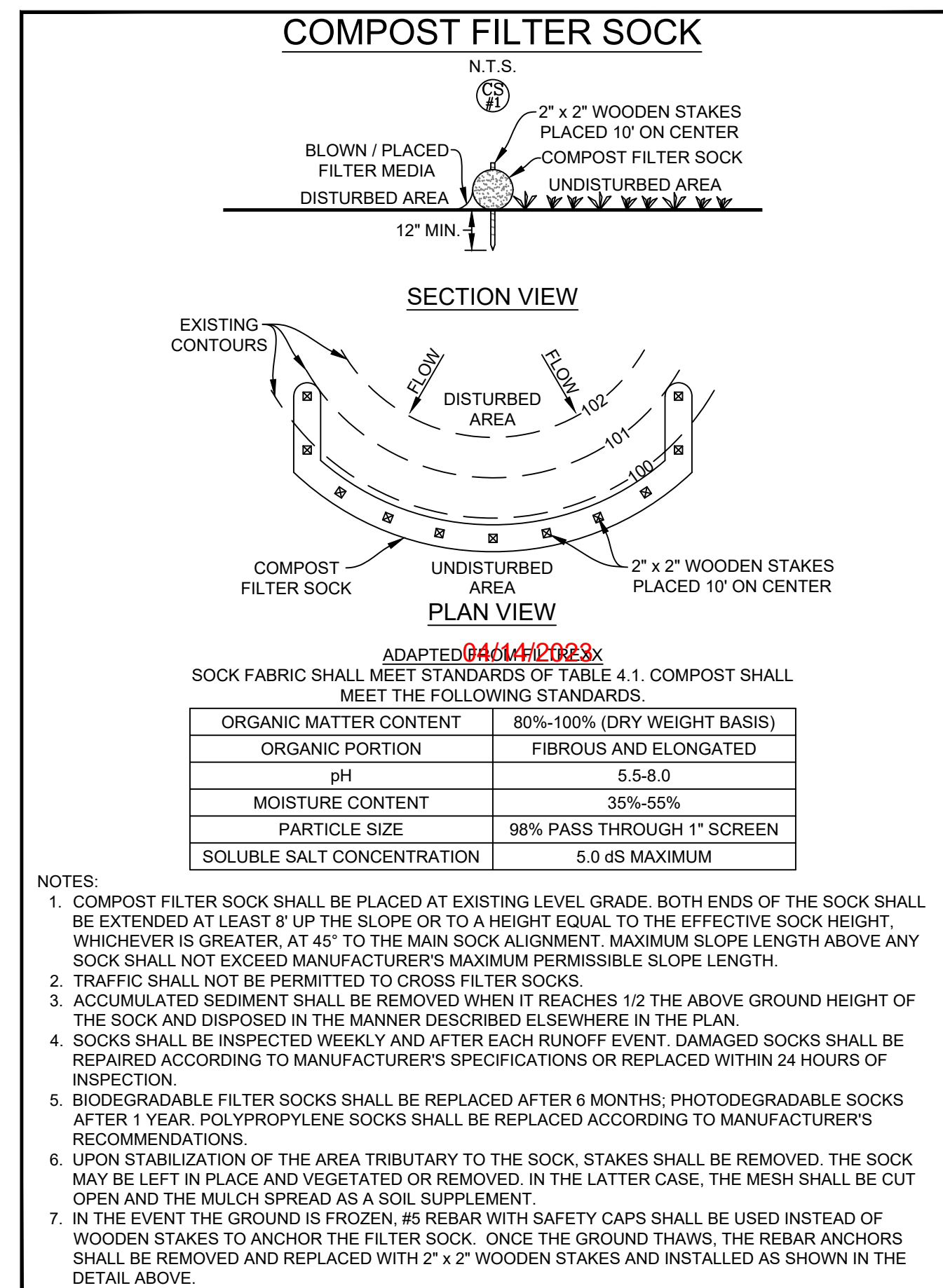
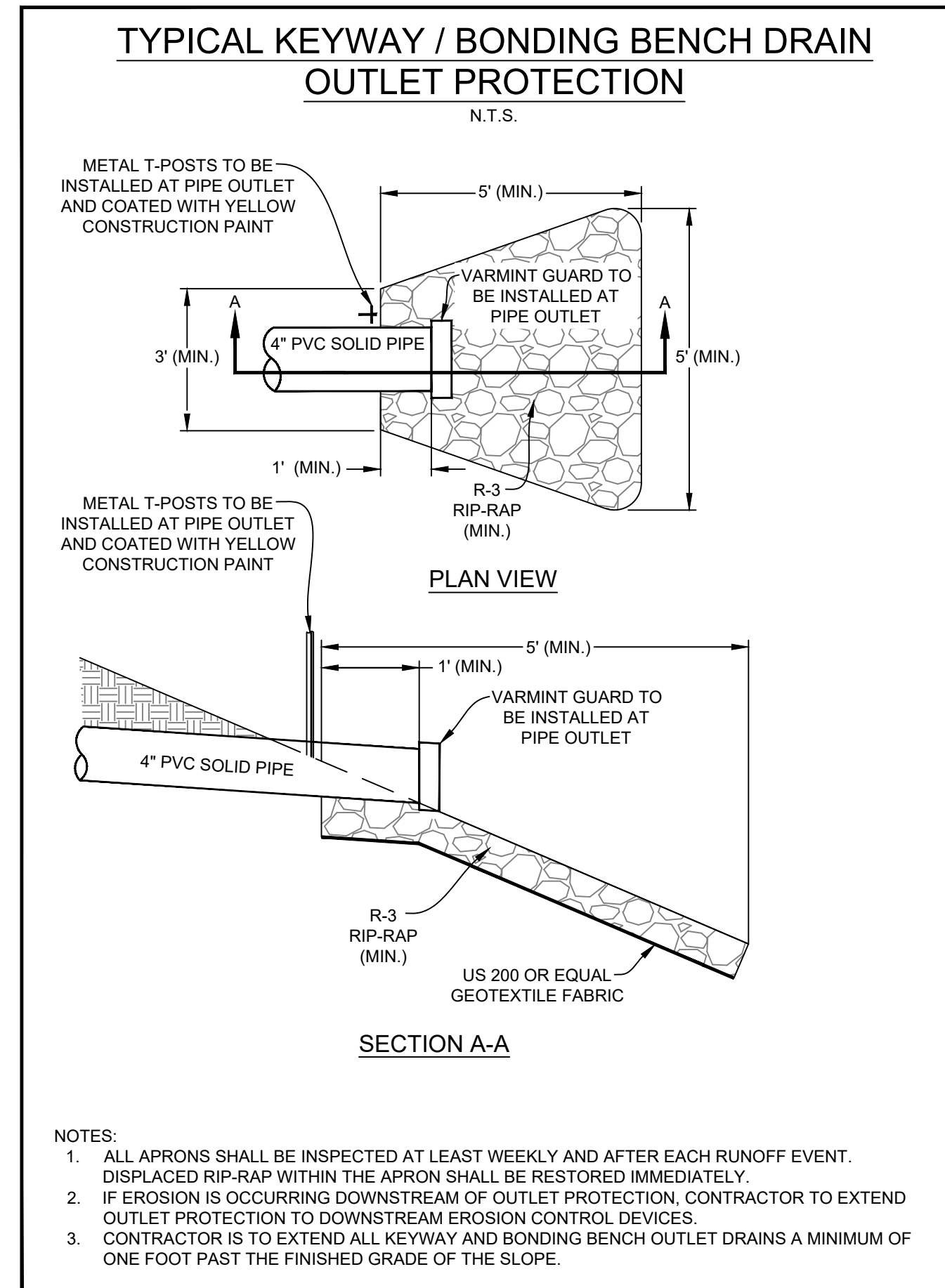
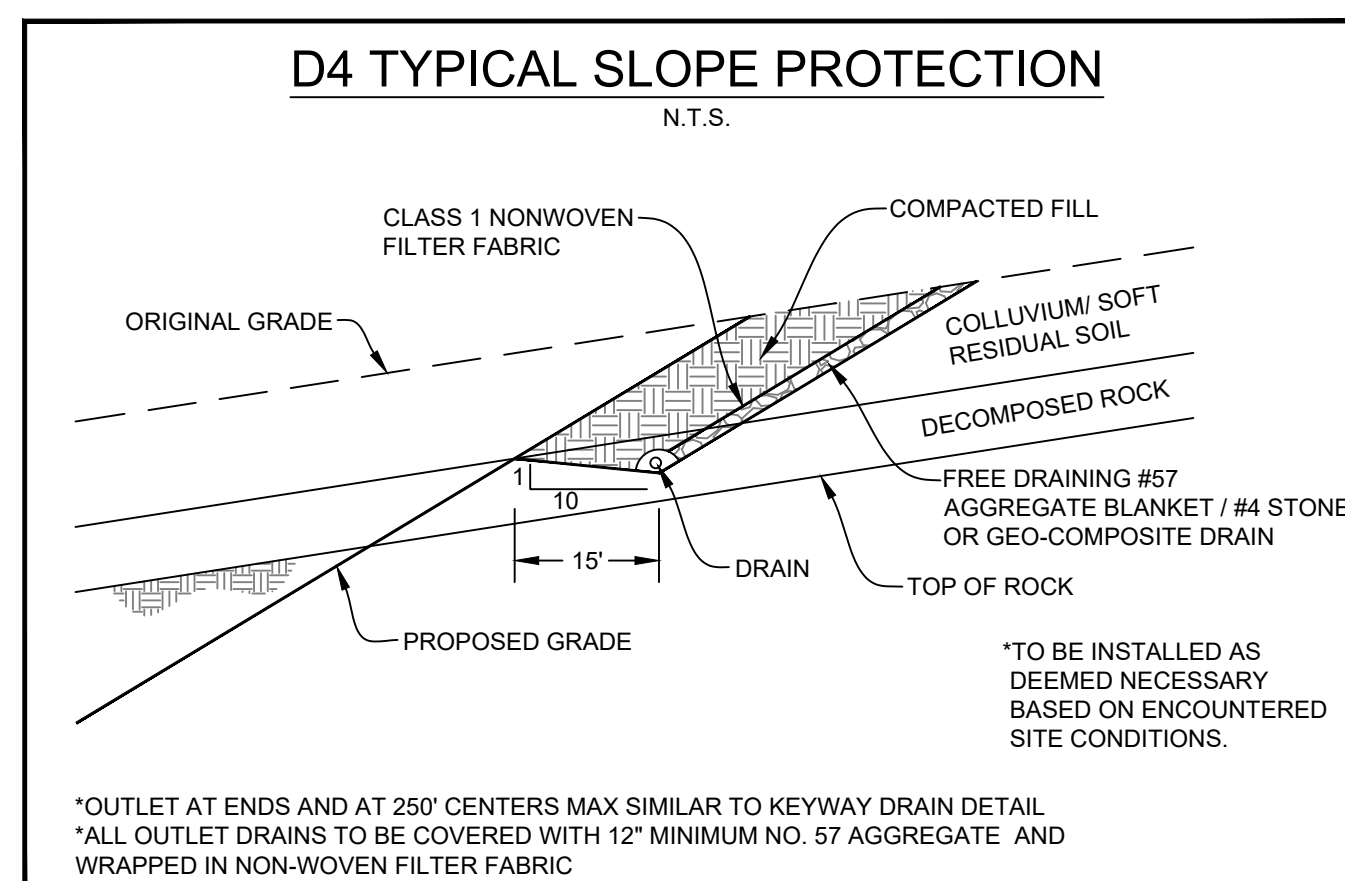
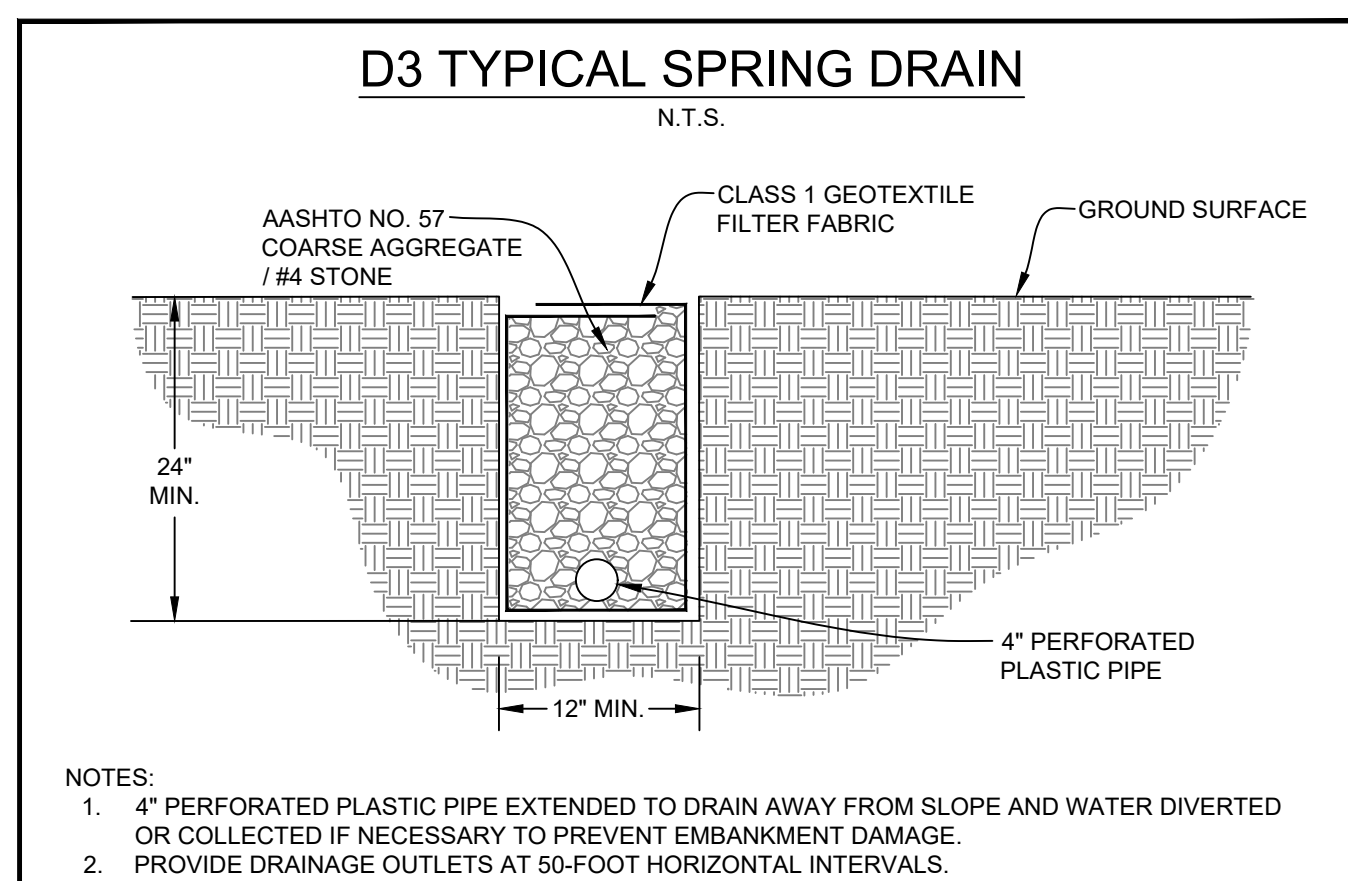
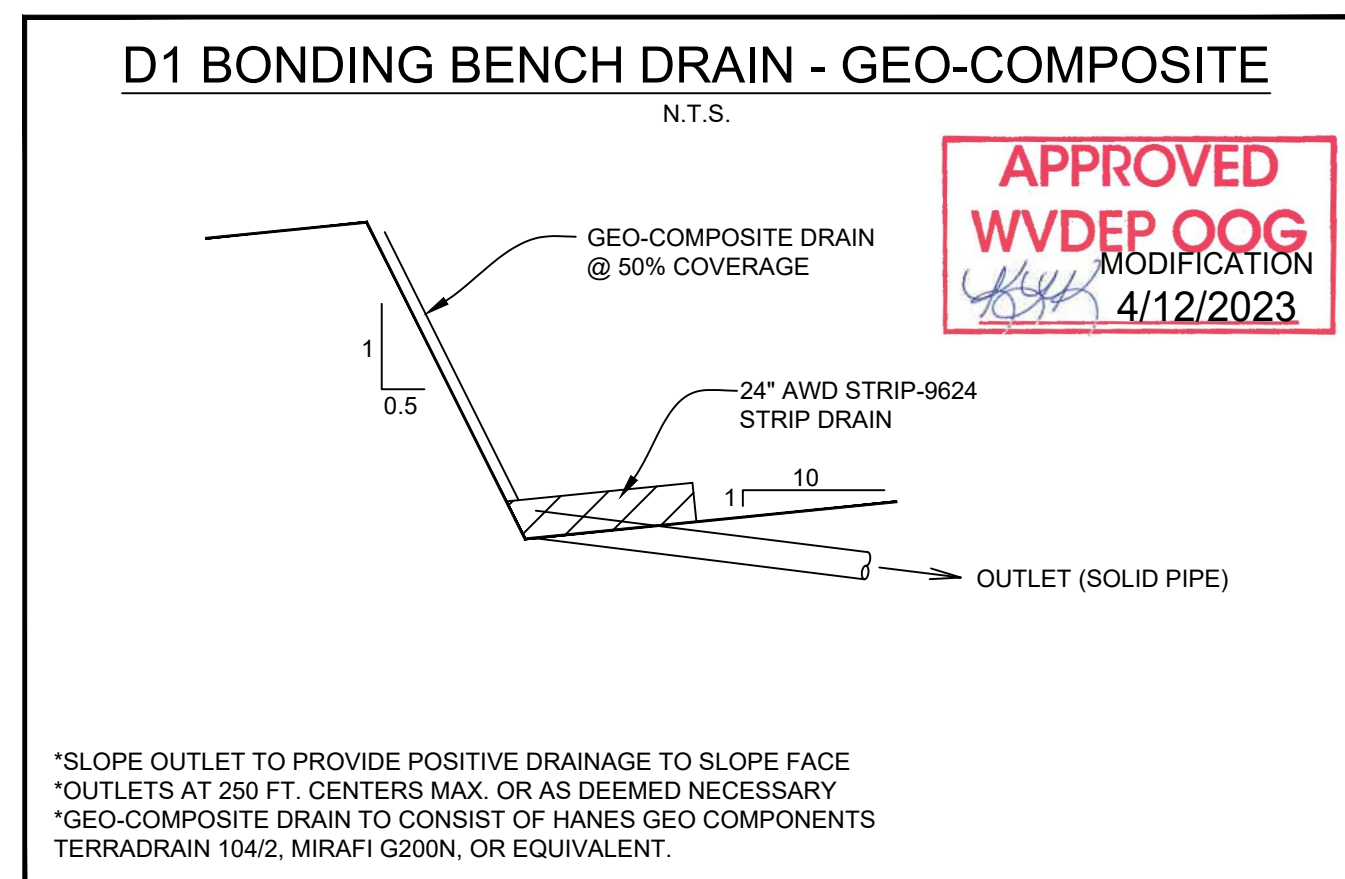
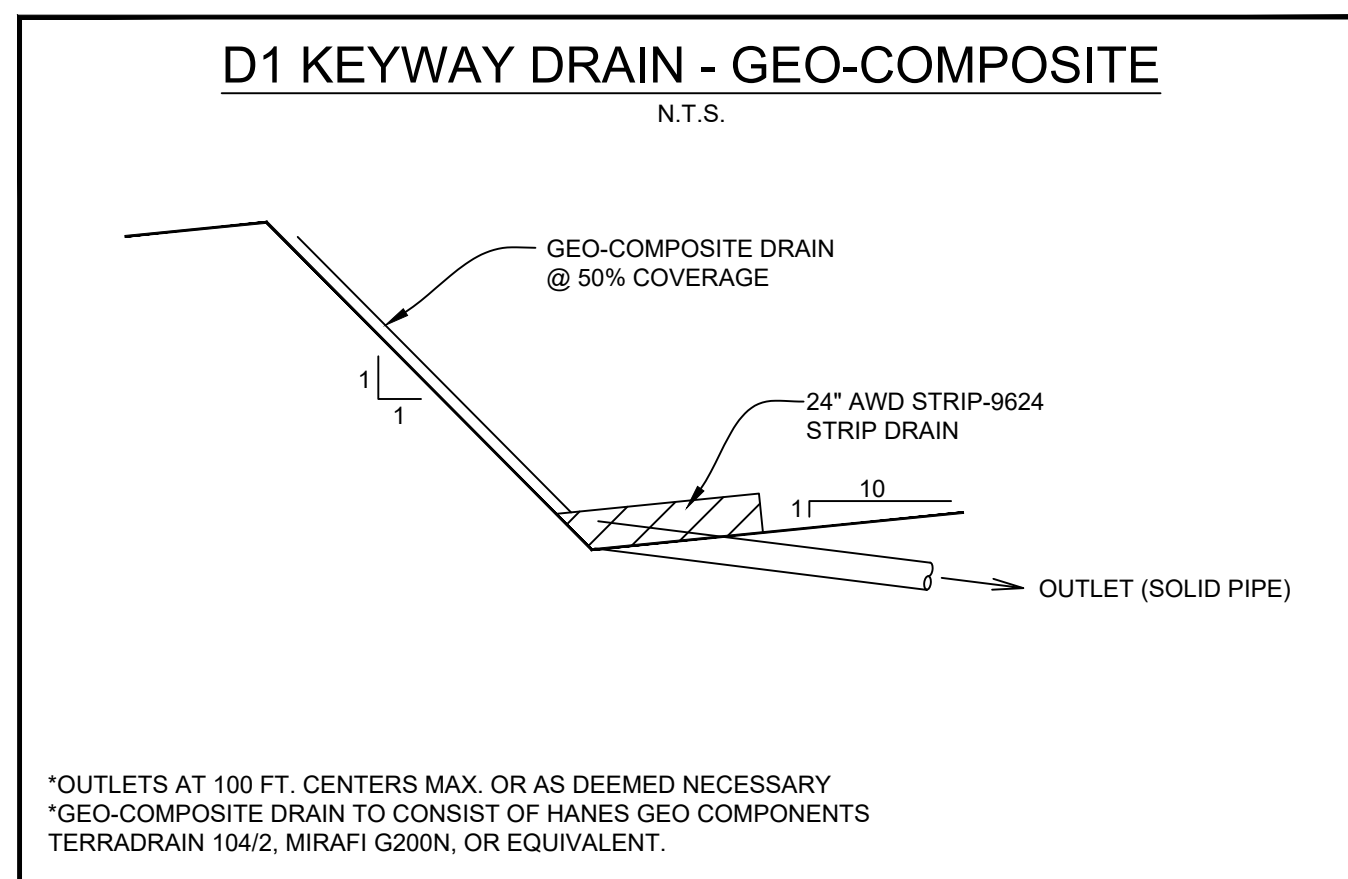
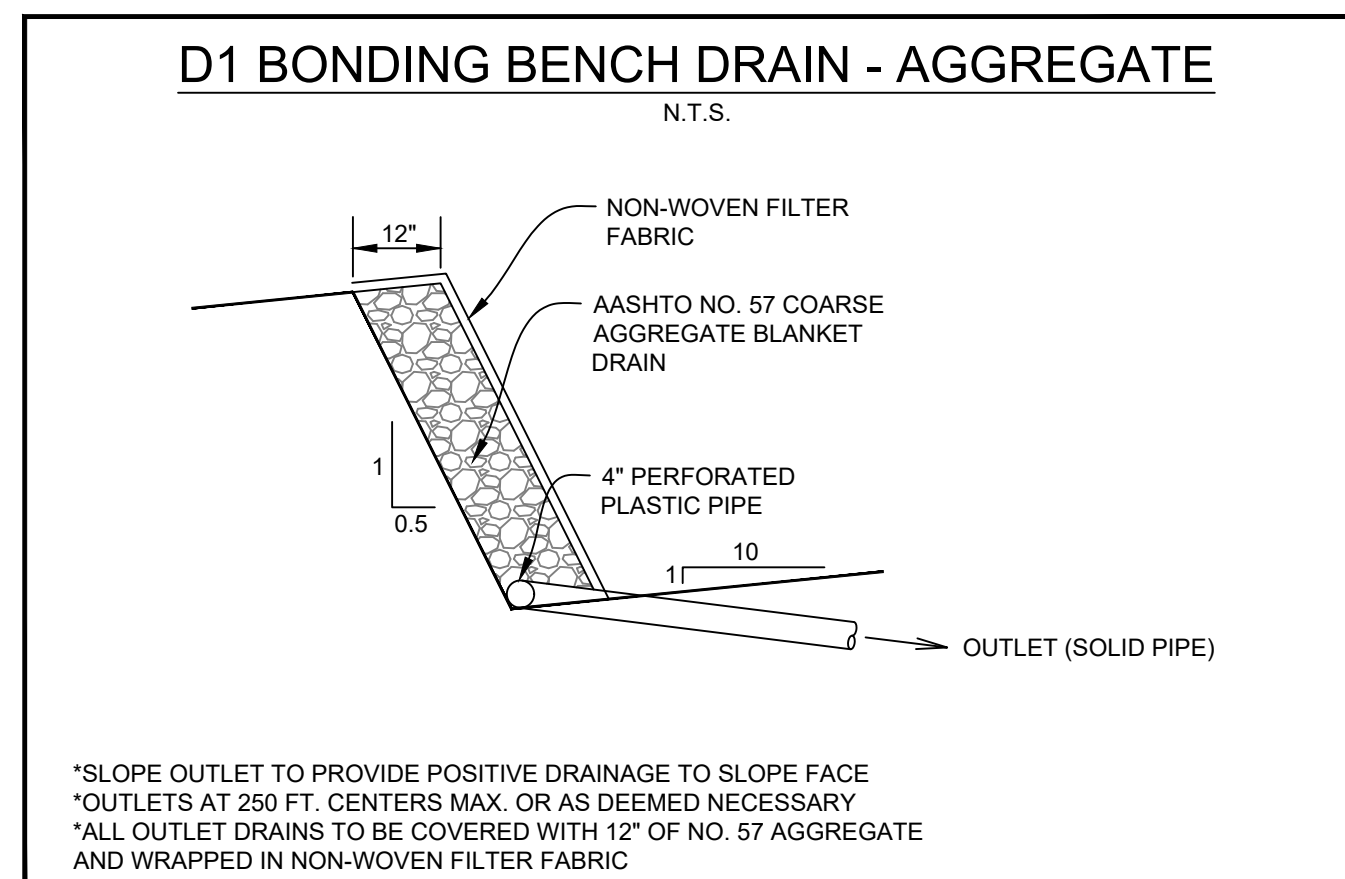
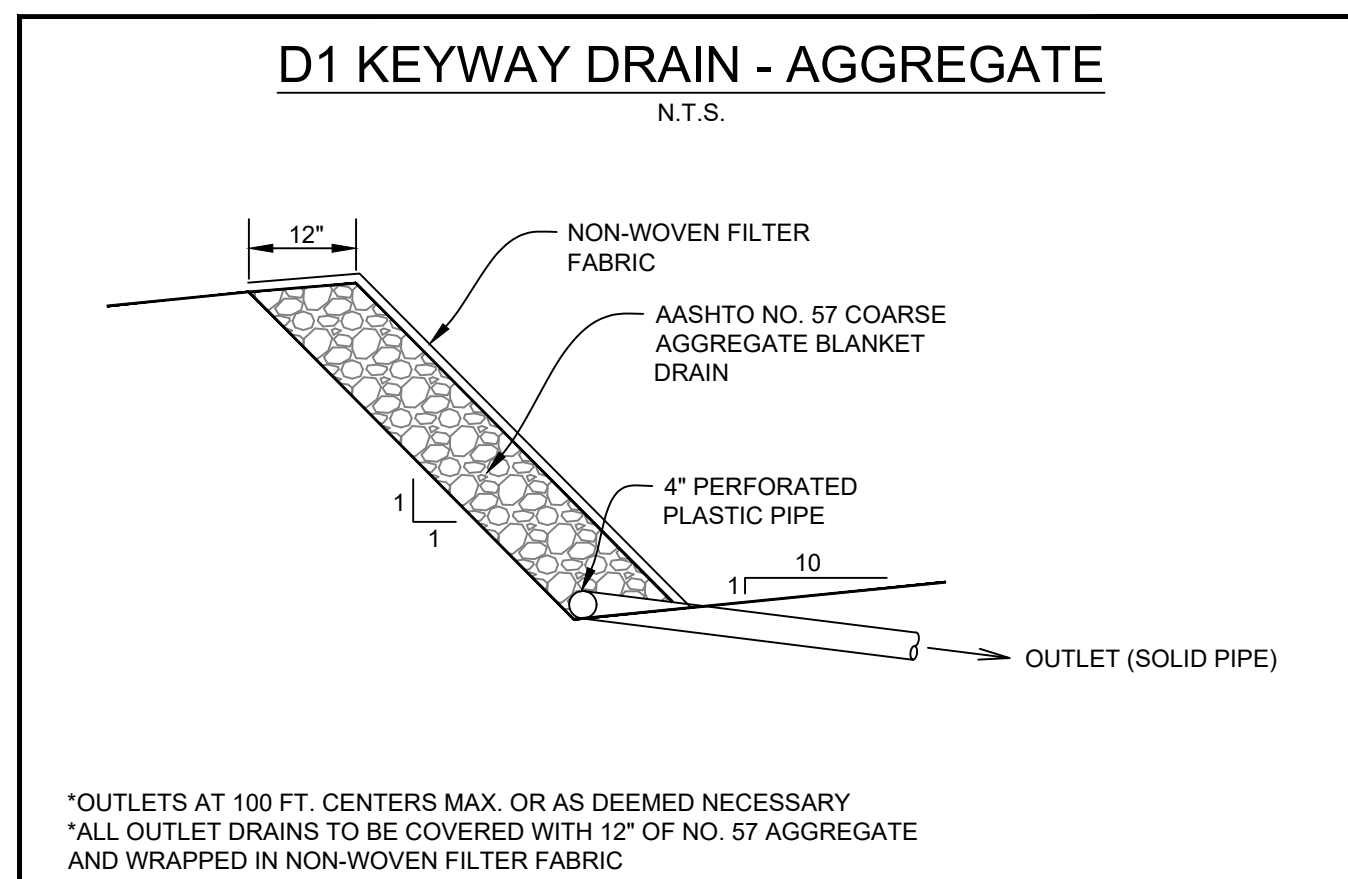
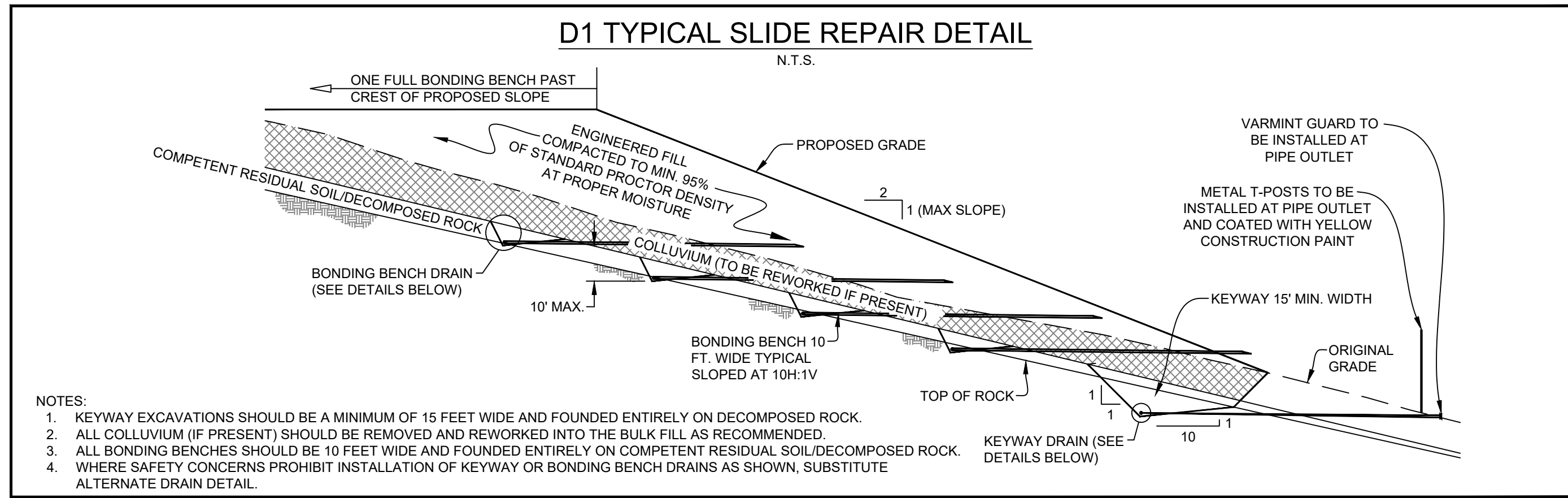
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STOCKPILE AS-BUILT SECTIONS
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 ELLSWORTH DISTRICT
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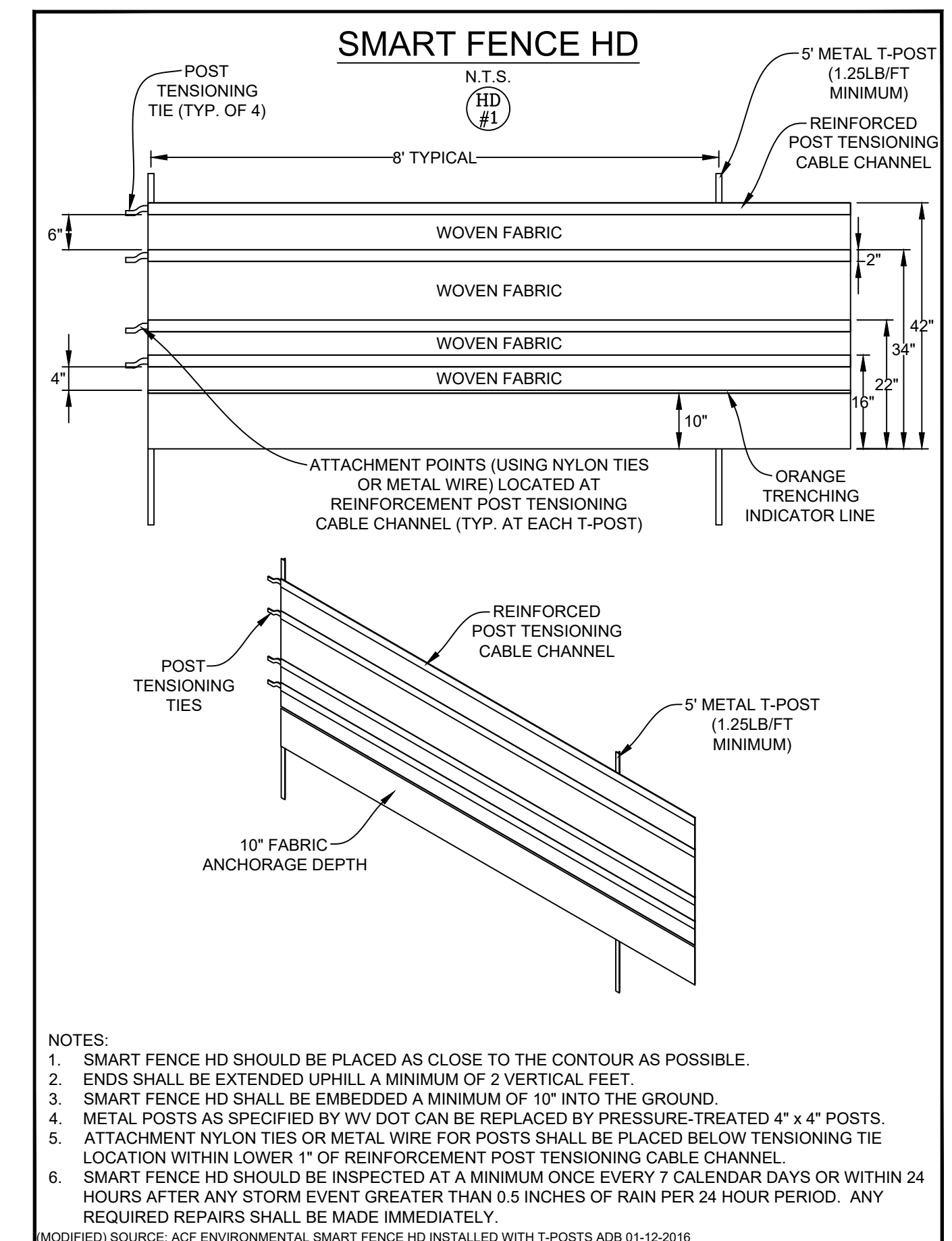


GENERAL SITE EARTHWORK RECOMMENDATIONS

- 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 COMPACTION 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 COMPACTIONED 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 COMPACTIONED 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 RECOMPACTIONED, 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:

- 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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REVEGETATION
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 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 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 ENDOPHYTE FREE VARIETIES OF TALL FESCUE SHOULD BE USED. TALL FESCUE AND CROWNVELTCH 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 MOISTNETS 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 3".
 2. MULCH NETTING
 FOLLOW MANUFACTURER'S RECOMMENDATION WHEN POSITIONING AND STAPLING THE MULCH NETTING IN THE SOIL.

ANTERO'S PREFERRED SEED MIXTURE

HALL'S #1 PASTURE 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%		
Seed Contaminants:	0.02%		AMS: 5143

Table IV-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 IV-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
Sundagrass	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 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 IV-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	10 - 15	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	25	Well - Mod. Well	4.5 - 7.5
Tall Fescue / Ladino Clover / Redtop	3	Well - Mod. Well	5.0 - 7.5
Crownvetch / Tall Fescue / Redtop	10	Well - Mod. Well	5.0 - 7.5
Tall Fescue / Birdsfoot Trefoil / Redtop	20	Well - Mod. Well	5.0 - 7.5
Serecia Lespedeza / Tall Fescue / Redtop	25	Well - Mod. Well	4.5 - 7.5
Tall Fescue / Redtop	30	Well - Mod. Well	4.5 - 7.5
Tall Fescue / Creeping Red	3	Well - Mod. Well	5.0 - 7.5
Tall Fescue / Perennial Ryegrass / Lathco Flatpea *	50 / 10 / 20	Well - Poorly	4.5 - 7.5 / 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. Mixture listed in bold are suitable for use in shaded woodland settings; those in italics are suitable for use in filter strips.

Table IV-4B
Wildlife and Farm Friendly Seed Mixtures

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
Orchardgrass / Ladino Clover / Redtop	10 / 2 / 3	Well - Mod. Well	5.5 - 7.5
Orchardgrass / Ladino Clover	10 / 2	Well - Mod. Well	5.5 - 7.5
Orchardgrass / Perennial Ryegrass	20 / 10	Well - Mod. Well	5.5 - 7.5
Creeping Red Fescue / Perennial Ryegrass	30 / 10	Well - Mod. Well	5.5 - 7.5
Orchardgrass or KY Bluegrass	20	Well - Mod. Well	6.0 - 7.5
Birdsfoot Trefoil / Redtop / Orchardgrass	10 / 5 / 20	Well - Mod. Well	5.5 - 7.5
Lathco Flatpea * / Perennial Ryegrass	30 / 20	Well - Mod. Well	5.5 - 7.5
Lathco Flatpea * / Orchardgrass	30 / 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. Mixture listed in bold are suitable for use in shaded woodland settings; those in italics are suitable for use in filter strips.

04/14/2023

Table IV-5
Lime and Fertilizer Application Table

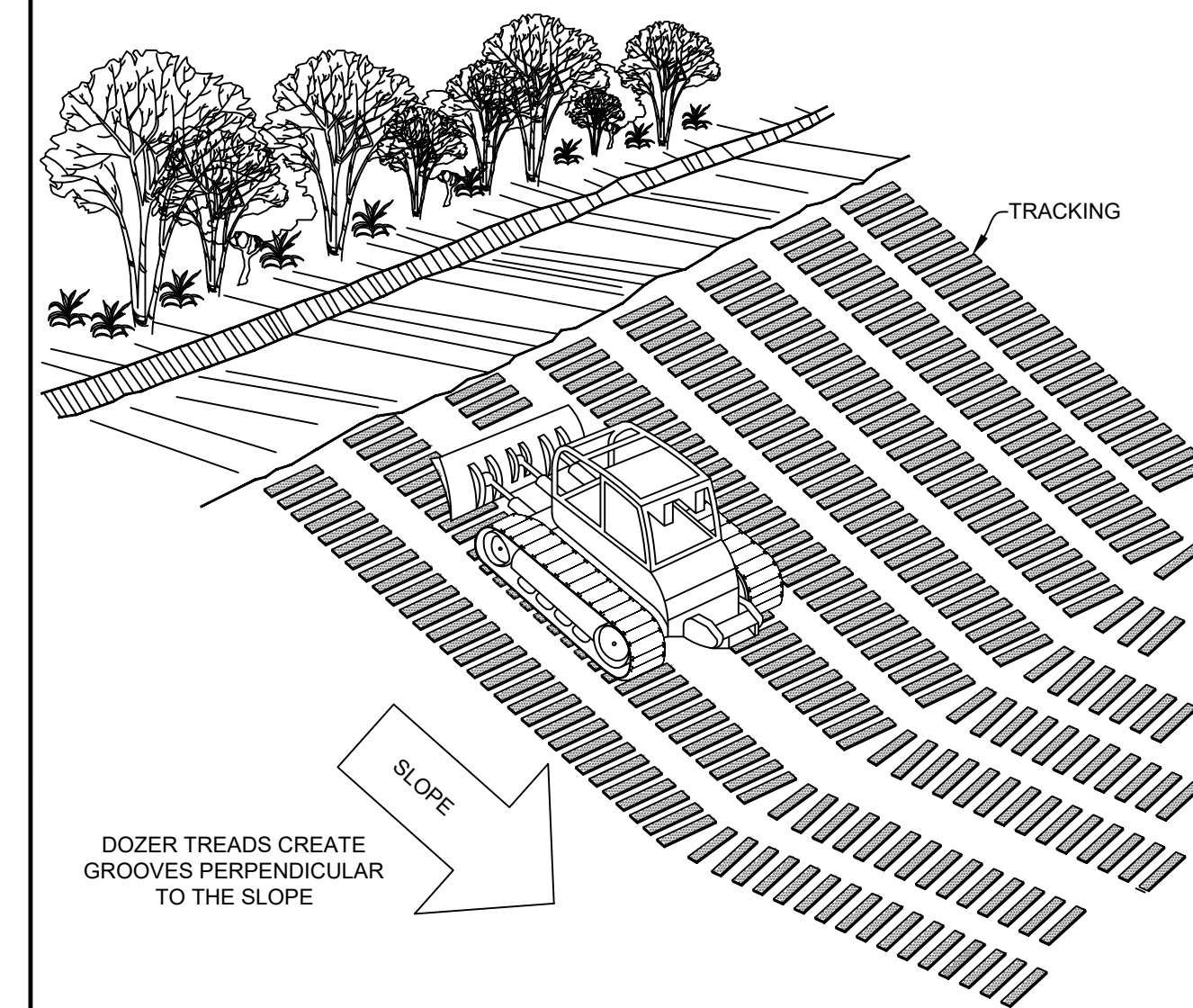
pH of Soil	Lime in Tons per Acre	Fertilizer, Lbs. per Acre (10-20-20 or Equivalent)
Above 6.0	2	500
5.0 to 6.0	3	500
Below 5.0	4	500

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 100% 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.



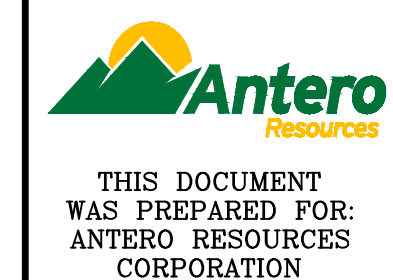
NOTES:
 1. TRACKING SLOPES ARE DONE BY RUNNING TRACKED MACHINERY UP AND DOWN THE SLOPE, LEAVING TREAD MARKS PARALLEL TO THE CONTOUR. IF A BULLDOZER IS USED, THE BLADE SHOULD BE UP.

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

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



THIS DOCUMENT WAS PREPARED FOR:
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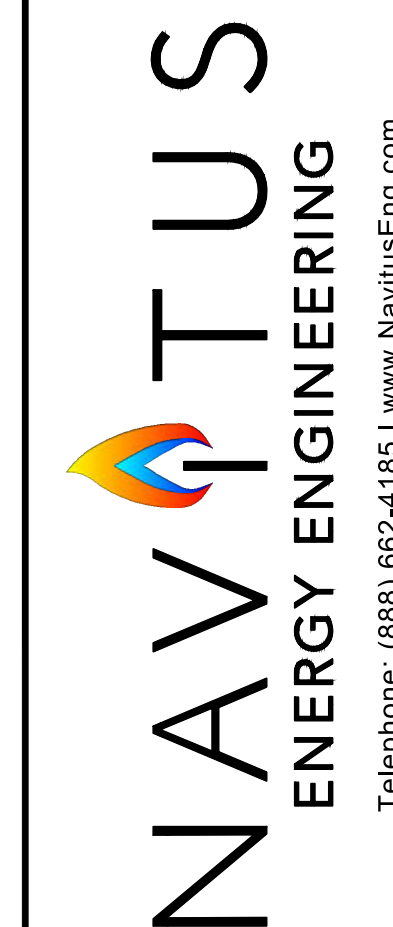
CONSTRUCTION DETAILS
ED YOST
 WELL PAD & WATER CONTAINMENT PAD
 ELLSWORTH DISTRICT
 TYLER COUNTY, WEST VIRGINIA



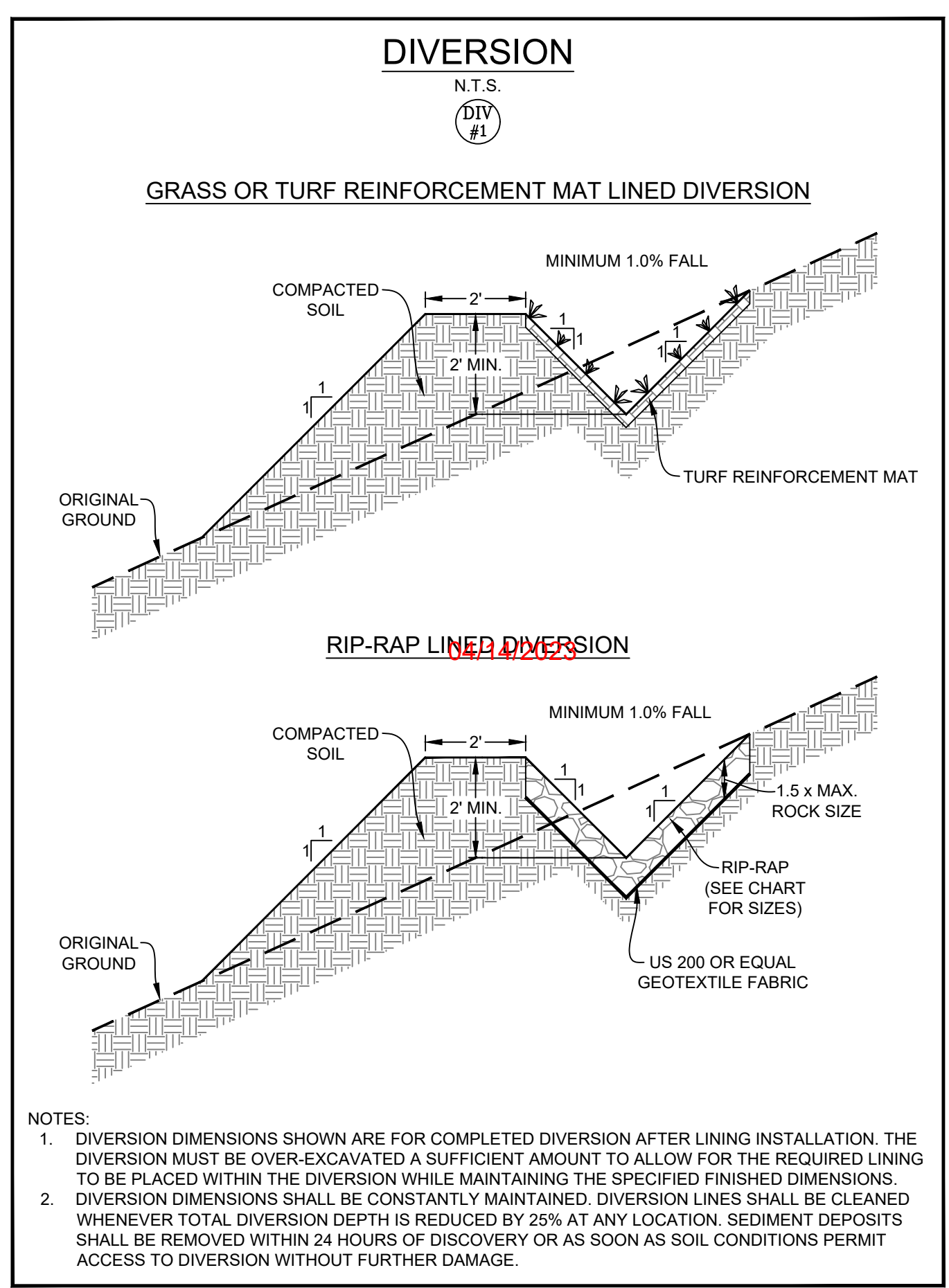
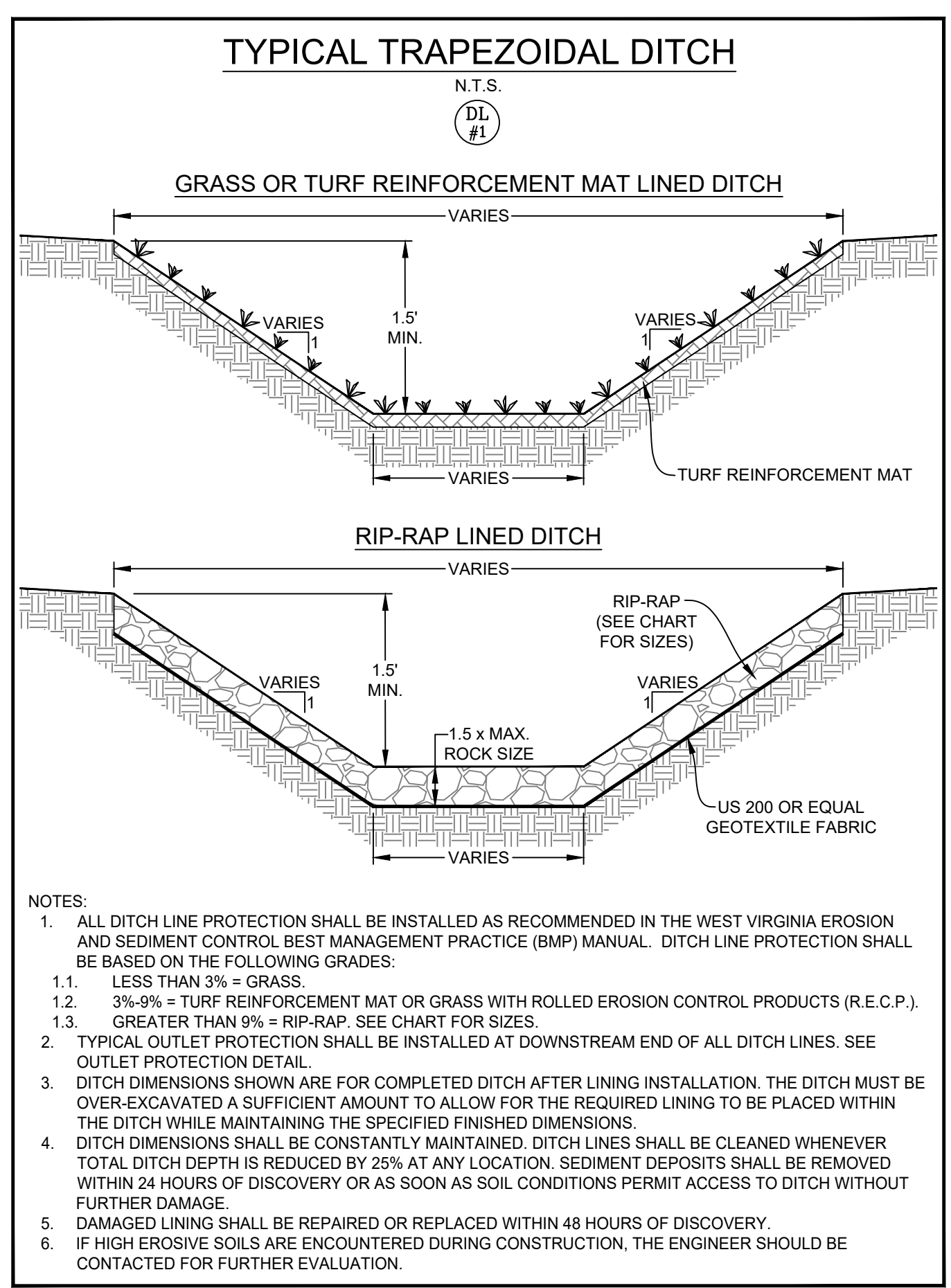
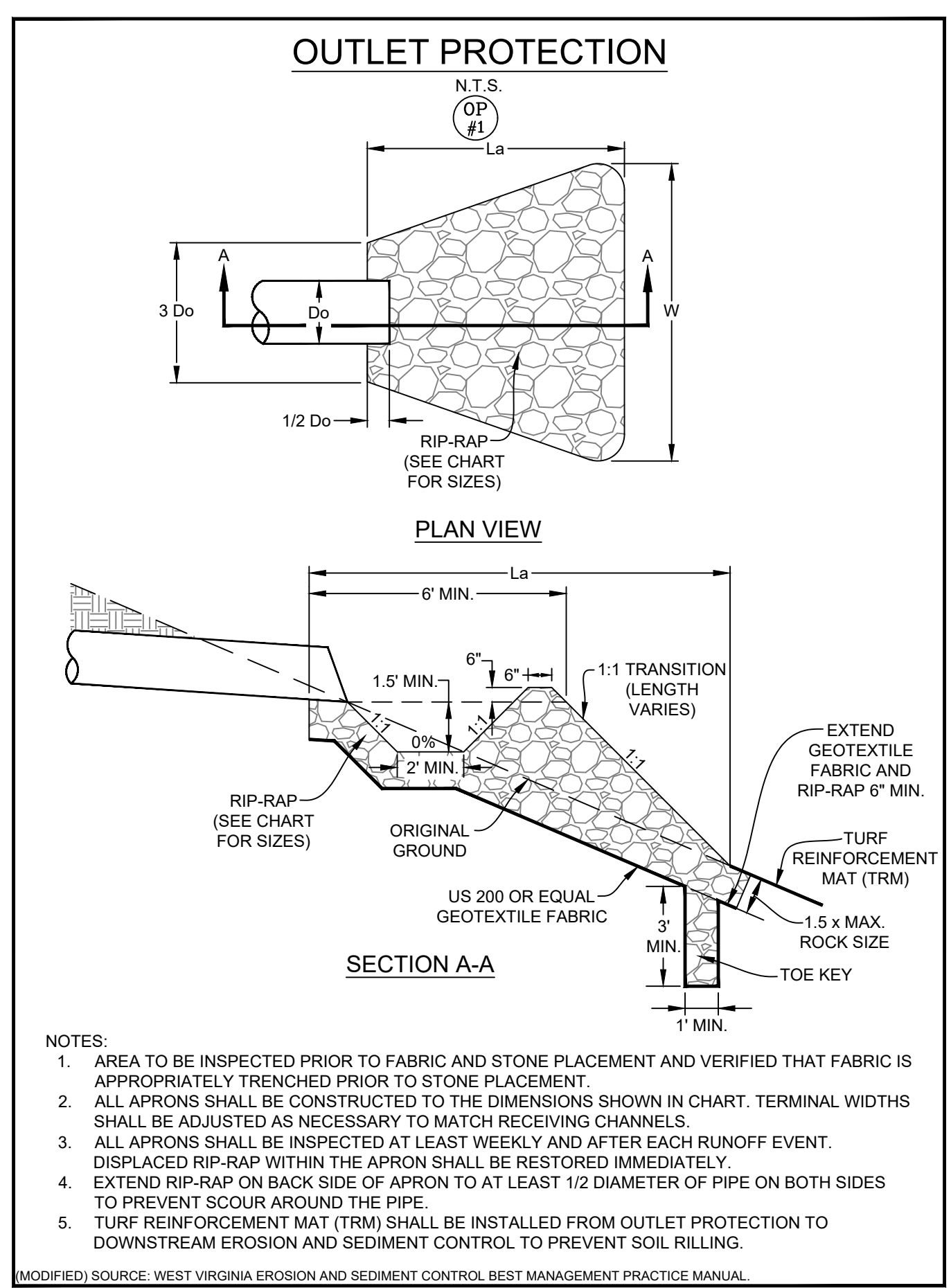
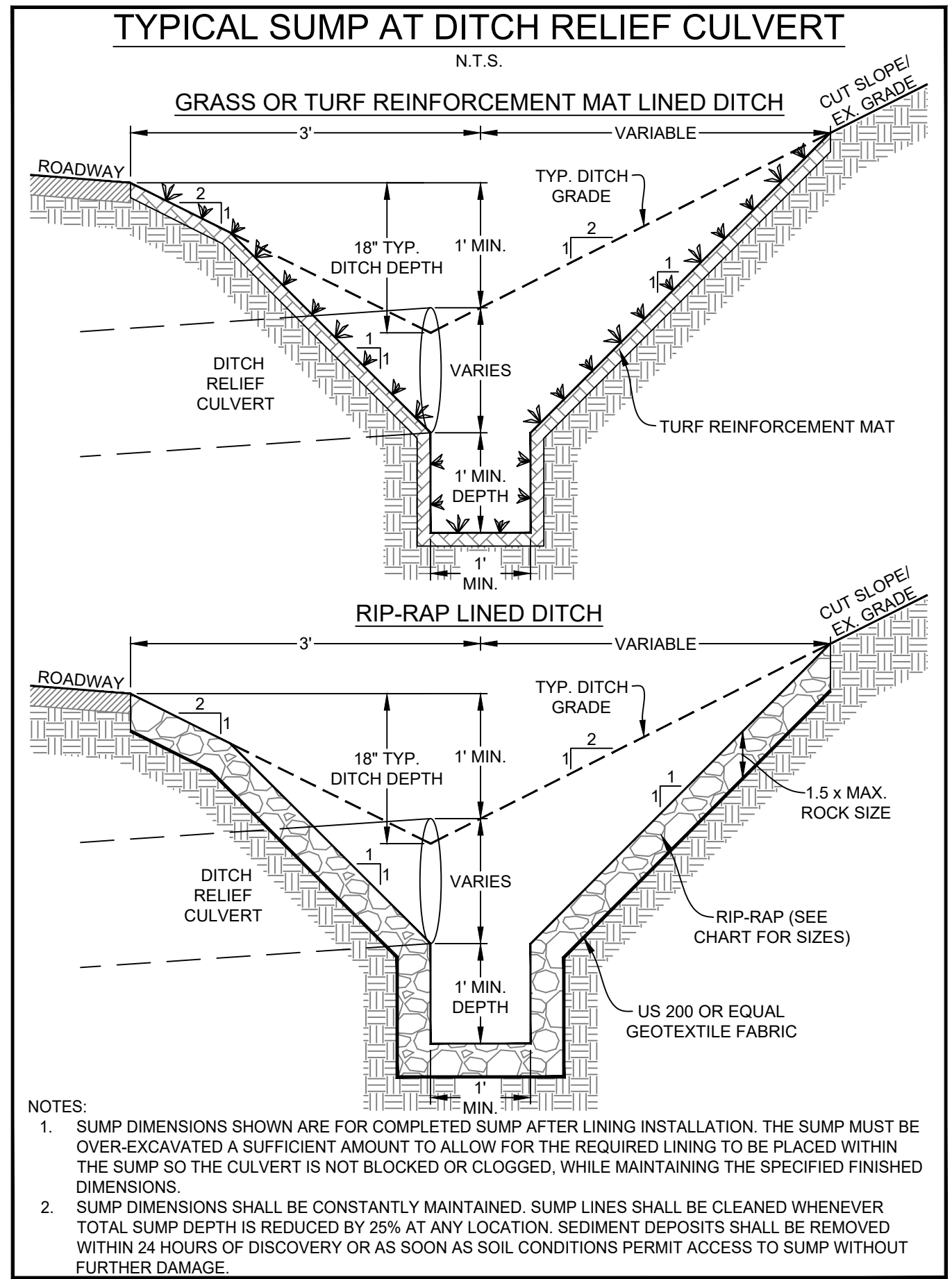
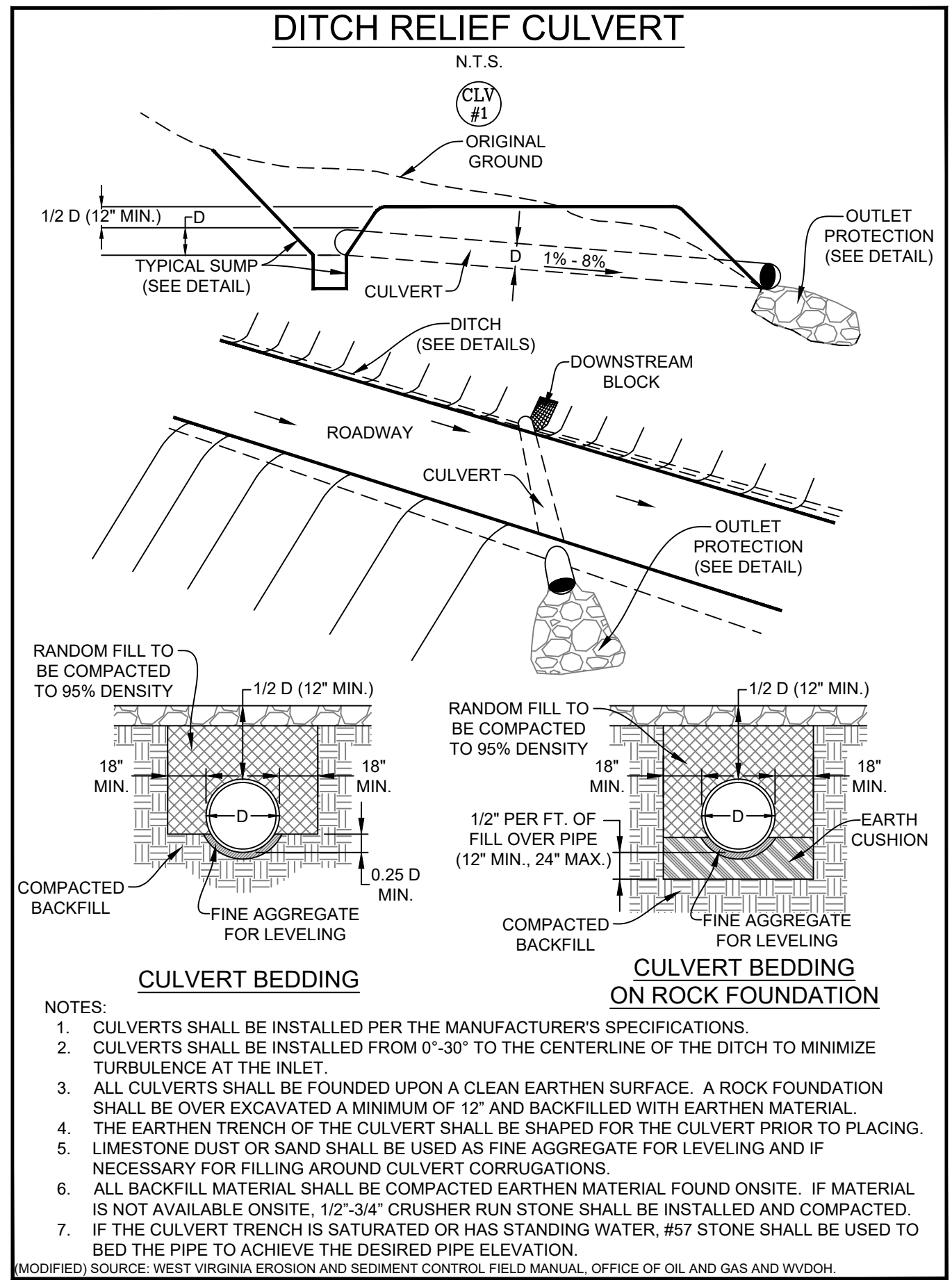
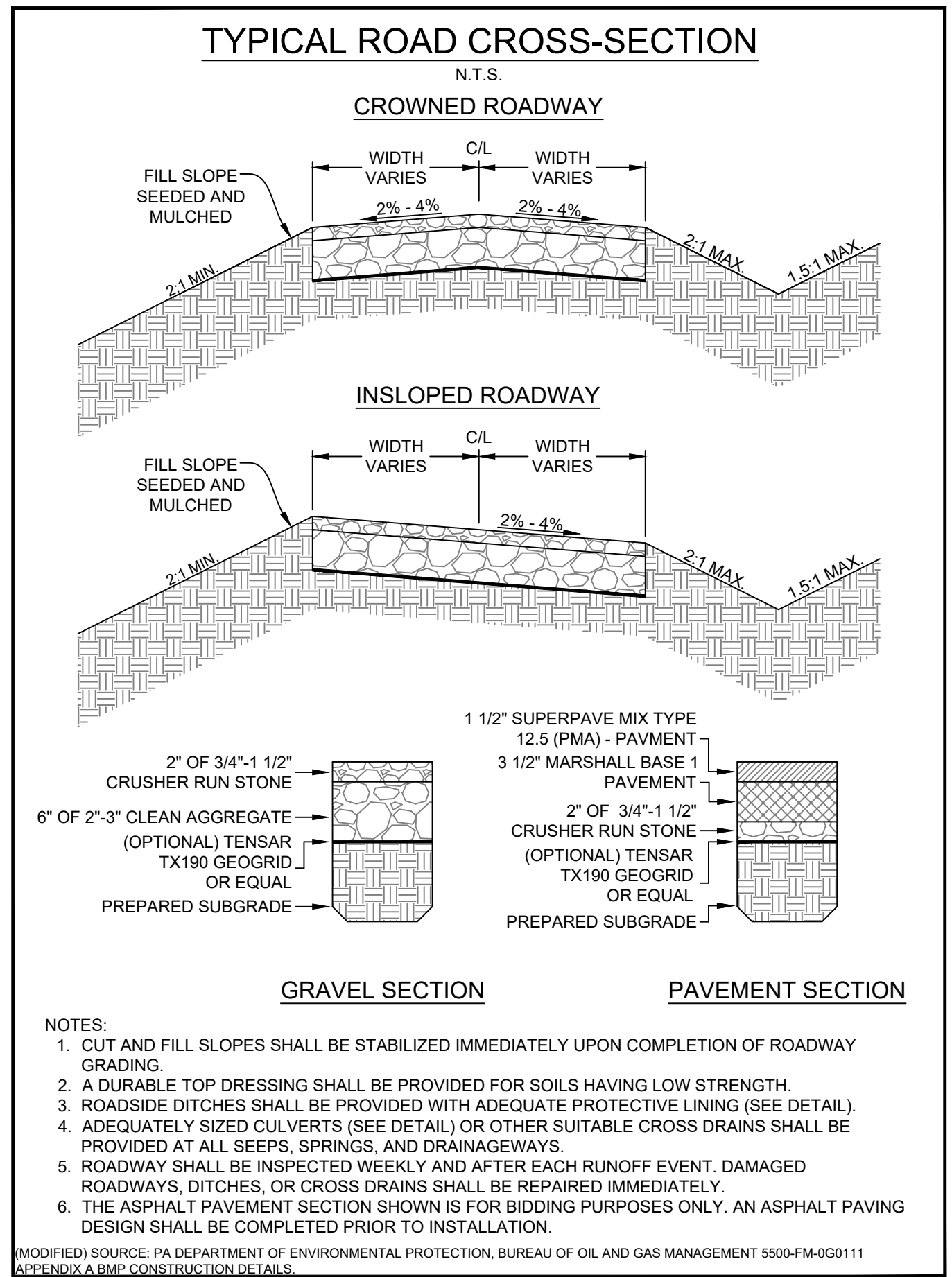
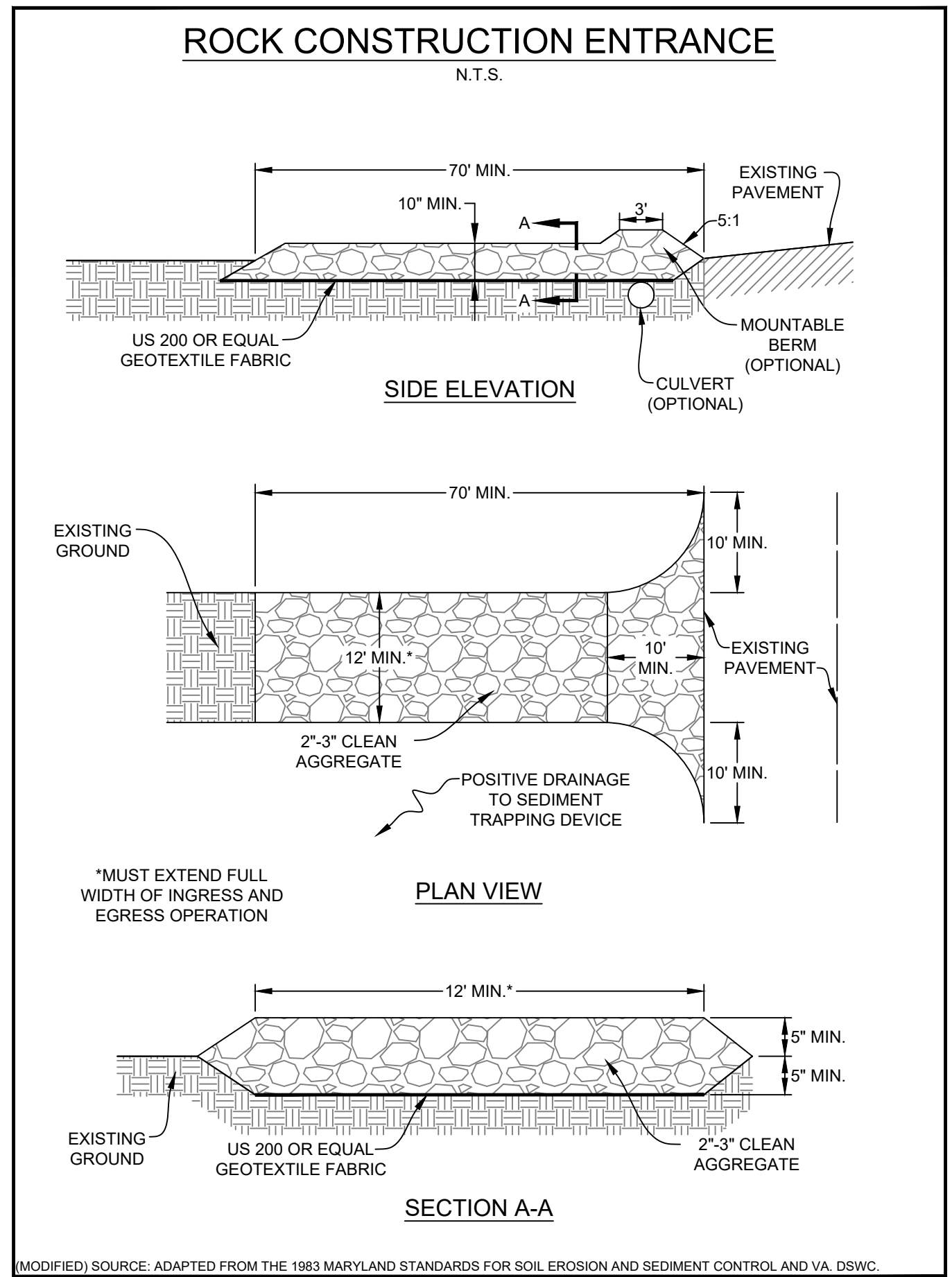
DATE: 01/27/2023

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