



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

Monday, March 27, 2023
PERMIT MODIFICATION APPROVAL
Horizontal 6A / New Drill

ANTERO RESOURCES CORPORATION
1615 WYNKOOP STREET

DENVER, CO 80202

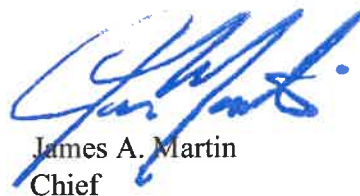
Re: Permit Modification Approval for GALMISH 5V
47-103-03543-00-00

Slip repair to access road.

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 blue ink signature of James A. Martin, written in a cursive style.

James A. Martin
Chief

Operator's Well Number: GALMISH 5V
Farm Name: DALLISON LUMBER INC
U.S. WELL NUMBER: 47-103-03543-00-00
Horizontal 6A New Drill
Date Modification Issued: 3/27/2023

Promoting a healthy environment.

03/31/2023

P:\300-0001\300-8871-C000\Draw\001\300887-C001-C000.dwg(0000) 15/12/21/2023 - cec@wv - LP: 2/2/2023 3:03 PM

LOCATION COORDINATES				
SITE LOCATIONS	WV83-NF (NORTH ZONE)		UTM83-17	
	LATITUDE	LONGITUDE	NORTHING	EASTING
EXISTING ACCESS ROAD ENTRANCE	39.586601	-80.704527	4381917.2888	525372.9600
PROPOSED ACCESS ROAD ENTRANCE	39.579483	-80.700355	4381128.4850	525733.8350
CENTROID OF WELL PAD	39.577687	-80.695634	4380930.6012	526139.2308

GALMISH WELL LEGEND						
WELL HEAD LETTER	WELL NAME	ELEVATION	WV NORTH NAD 27	WV NORTH NAD 83	NAD83 UTM-17M	NAD 83
	GALMISH SV	1100.39	N: 394988.807 E: 1662828.107	N: 395025.113 E: 1631388.404	N: 4381008.658 E: 526103.741	39° 34' 42.21" -80° 41' 45.79"
						39° 34' 41.92" -80° 41' 46.44"

GENERAL DESCRIPTION:
THE ACCESS ROAD, TANK PAD AND WELL PAD ARE BEING CONSTRUCTED TO AID IN THE DEVELOPMENT OF INDIVIDUAL MARCELLUS SHALE GAS WELLS.

FLOODPLAIN NOTES:
THE PROPOSED SITE LOCATION IS **NOT WITHIN** ANY IDENTIFIED FLOOD ZONES. PER FEMA MAP NUMBER(S) **#54103C0180C**.

MISS UTILITY STATEMENT:
ANTERO RESOURCES CORPORATION WILL NOTIFY MISS UTILITY OF WEST VIRGINIA FOR THE LOCATION OF UTILITIES PRIOR TO THIS PROJECT DESIGN; TICKET **#2021252839**. IN ADDITION, MISS UTILITY WILL BE CONTACTED BY THE CONTRACTOR PRIOR TO THE START OF CONSTRUCTION FOR THIS PROJECT.

ENTRANCE PERMIT:
CIVIL AND ENVIRONMENTAL CONSULTANTS AND ANTERO RESOURCES WILL OBTAIN 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 **AUGUST 2020** BY CIVIL & ENVIRONMENTAL, INC 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 STREAM AND WETLAND DELINEATION MAP WAS PREPARED BY **CIVIL & ENVIRONMENTAL, INC** 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 USACE OR THE WVDEP. IT IS STRONGLY RECOMMENDED THAT THE AFOREMENTIONED AGENCIES BE CONSULTED IN AN EFFORT TO GAIN WRITTEN CONFIRMATION OF THE DELINEATION SHOWN ON THE EXHIBIT PRIOR TO ENGAGING IN CONSTRUCTION ON THE PROPERTIES DESCRIBED HEREIN. THE DEVELOPER SHALL OBTAIN THE APPROPRIATE PERMITS FROM THE FEDERAL AND/OR STATE REGULATORY AGENCIES PRIOR TO ANY PROPOSED IMPACTS TO WATER OF THE U.S., INCLUDING WETLAND FILLS AND STREAM CROSSINGS.

GEOTECHNICAL NOTES:
THE PROPOSED 2:1 SLOPES SHALL BE FIELD VERIFIED BY A CERTIFIED GEOTECHNICAL ENGINEER TO ENSURE THE PROPOSED SLOPES ARE ADEQUATE PRIOR TO CONSTRUCTION. ACCESS ROAD CONSTRUCTION SHALL BE MONITORED BY A REPRESENTATIVE OF THE GEOTECHNICAL ENGINEER OR PROJECT DESIGN ENGINEER DURING CONSTRUCTION.

PROJECT CONTACTS:

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

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

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

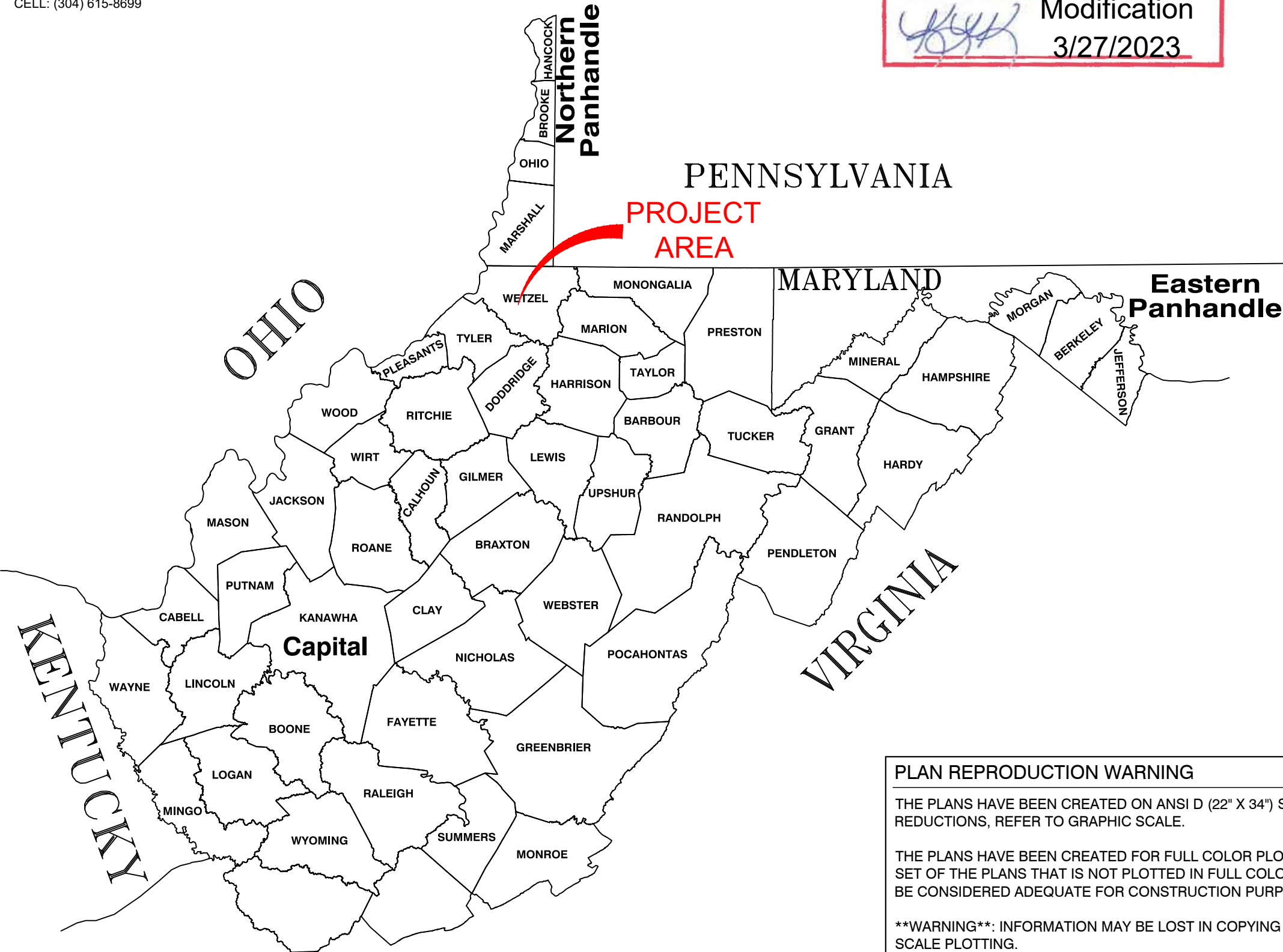
ROBERT WIRKS - DESIGN MANAGER
OFFICE: (304) 842-4100 CELL: (304) 627-7405

SCOTT HOFFER - UTILITY SUPERVISOR
CELL: (304) 615-8699

ENGINEER/SURVEYOR:
CIVIL & ENVIRONMENTAL CONSULTANTS, INC.
JOSEPH D. ROBINSON, PE - PROJECT MANAGER/ENGINEER
OFFICE: (304) 933-3119 FAX: (304) 933-3327 CELL: (443) 366-2606

ENVIRONMENTAL:
CIVIL & ENVIRONMENTAL CONSULTANTS, INC.
JACQULYN D. KESTER - PRINCIPAL
OFFICE: (304) 933-3119 DIRECT: (304) 848-7121

GEOTECHNICAL:
CIVIL & ENVIRONMENTAL CONSULTANTS, INC.
KOW ESHUN, PE - PROJECT MANAGER
OFFICE: (304) 933-3119 FAX: (304) 933-3327 CELL: (310) 774-1716

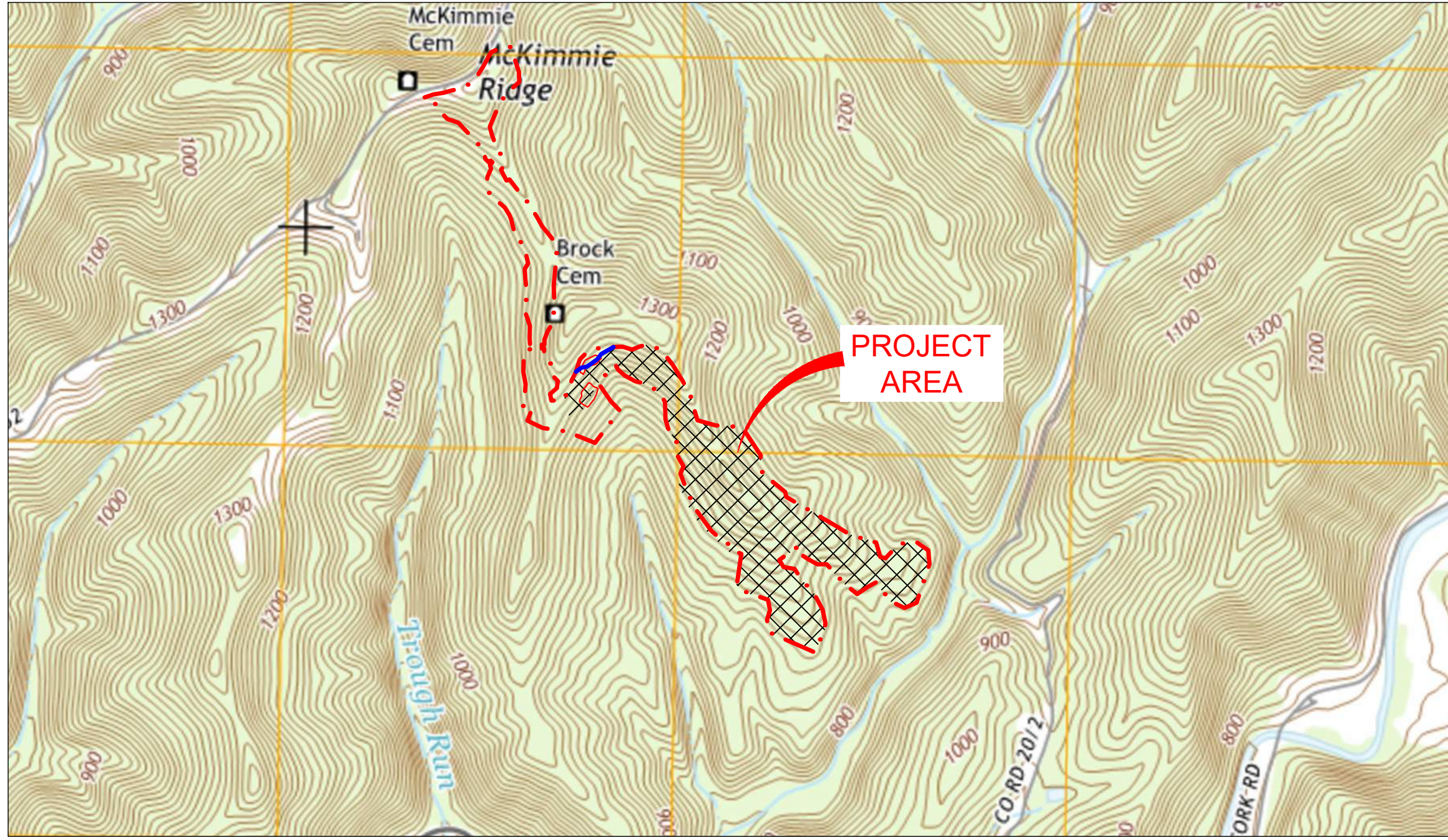


PLAN REPRODUCTION WARNING
THE PLANS HAVE BEEN CREATED ON ANSI D (22" X 34") SHEETS. FOR REDUCTIONS, REFER TO GRAPHIC SCALE.
THE PLANS HAVE BEEN CREATED FOR FULL COLOR PLOTTING. ANY SET OF THE PLANS THAT IS NOT PLOTTED IN FULL COLOR SHALL NOT BE CONSIDERED ADEQUATE FOR CONSTRUCTION PURPOSES.
WARNING: INFORMATION MAY BE LOST IN COPYING AND/OR GRAY SCALE PLOTTING.

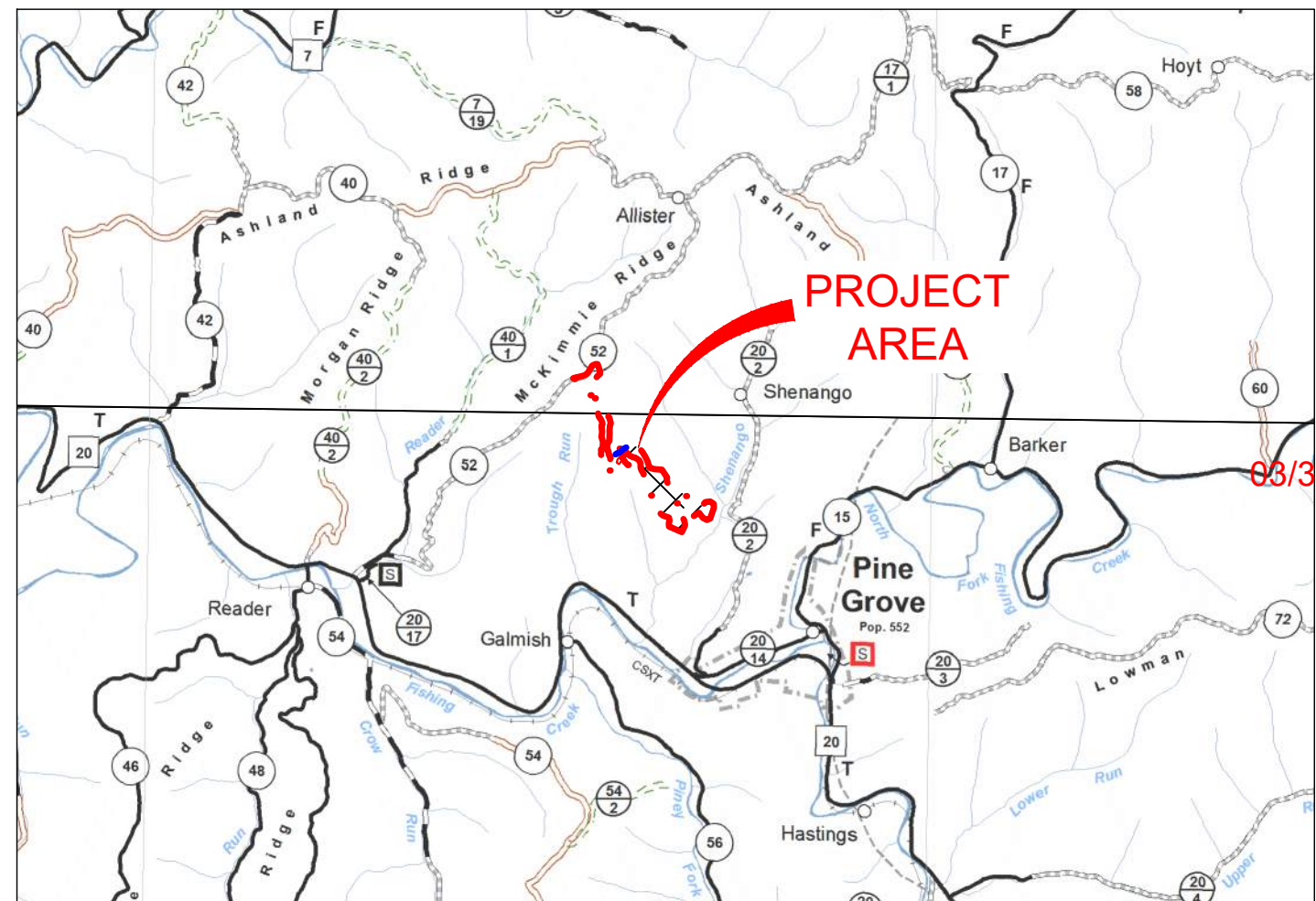
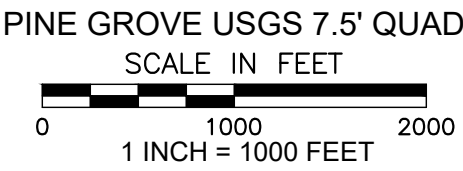
WEST VIRGINIA 811
CALL BEFORE YOU DIG!
WEST VIRGINIA STATE LAW REQUIRES THAT YOU CALL TWO BUSINESS DAYS BEFORE YOU DIG IN THE STATE OF WEST VIRGINIA. IT'S THE LAW!

GALMISH WELL PAD WELL PAD SITE PLAN ANTERO RESOURCES

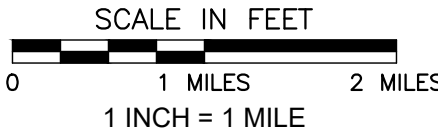
LAT./LONG: N 39.580331° W -80.698147°
(APPROXIMATE CENTER OF PROJECT)



LOCATION MAP



VICINITY MAP



SHEET INDEX

C000 COVER SHEET
C001 GENERAL NOTES
C002 MATERIAL QUANTITIES
C003 MASTER LEGEND
C100 EXISTING CONDITIONS
C200 ISOPACH PLAN
C300 OVERALL SITE PLAN
C301 SITE PLAN
C302 SITE PLAN
C303 SITE PLAN
C304 SITE PLAN
C305 SITE PLAN
C306 SITE PLAN
C600 PROFILES AND SECTIONS

C601 PROFILES AND SECTIONS
C602 PROFILES AND SECTIONS
C603 PROFILES AND SECTIONS
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C621 PROFILES AND SECTIONS
C622 PROFILES AND SECTIONS
C623 PROFILES AND SECTIONS
C624 CULVERT PROFILES
C625 CULVERT PROFILES
C626 CULVERT PROFILES
C800 DETAILS
C801 DETAILS

C802 DETAILS
C803 DETAILS
C804 DETAILS
C805 DETAILS
C806 DETAILS
C900 OVERALL RECLAMATION PLAN
C901 RECLAMATION PLAN
C902 RECLAMATION PLAN
C903 RECLAMATION PLAN
C904 RECLAMATION PLAN
C905 RECLAMATION PLAN
C906 RECLAMATION PLAN

RESTRICTIONS NOTES:

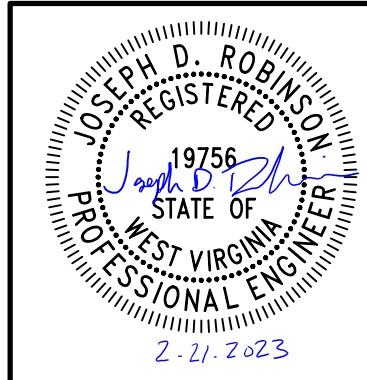
1. THERE ARE NO LAKES OR RESERVOIRS WITHIN 100 FEET OF THE WELL PAD AND LOD.
2. THERE ARE NO EPHEMERAL STREAMS OR WETLANDS THAT WILL BE DISTURBED.
3. THERE ARE NO NATURALLY PRODUCING TROUT STEAMS WITHIN 300 FEET OF THE WELL PAD AND LOD.
4. THERE ARE NO GROUNDWATER INTAKE OR PUBLIC WATER SUPPLY FACILITIES WITHIN 1,000 FEET OF THE WELL PAD AND LOD.
5. THERE ARE NO APPARENT EXISTING WATER WELLS OR DEVELOPED SPRINGS WITHIN 250 FEET OF THE WELL(S) BEING DRILLED.
6. THERE ARE NO OCCUPIED DWELLING STRUCTURES WITHIN 625 FEET OF THE CENTER OF THE WELL PAD.
7. THERE ARE NO AGRICULTURAL BUILDINGS LARGER THAN 2,500 SQUARE FEET WITHIN 625 FEET OF THE CENTER OF THE WELL PAD.

LIMITS OF DISTURBANCE PARCEL BREAK UPS - GALMISH WELL PAD					
WETZEL COUNTY, WEST VIRGINIA					
OWNER	TM-PARCEL	DEED-PAGE	TYPE OF DISTURBANCE	ORIGINAL LOD	MODIFIED LOD
				ACERAGE	ACERAGE
JERRY L. AND KAREN B MASON	9-44	353-216	PARCEL INFORMATION		
			GRAY'S PEAK ACCESS ROAD	4.88	4.88
			PARCEL TOTAL	4.88	4.88
HAUGHT JOHN WILLIAM L/E HAUGHT CAROL SUE	9-46	428-293	PARCEL INFORMATION		
			GRAY'S PEAK ACCESS ROAD	0.40	0.40
			PARCEL TOTAL	0.40	0.40
ANTERO MIDSTREAM, LLC	9-55	491-484	PARCEL INFORMATION		
			GRAY'S PEAK ACCESS ROAD	12.28	12.28
			PARCEL TOTAL	12.33	12.33
ANTERO MIDSTREAM, LLC	14-6	491-484	PARCEL INFORMATION		
			GRAY'S PEAK ACCESS ROAD	0.79	0.79
			PARCEL TOTAL	0.79	0.79
CLARICE ANN BROWN LEMASTERS LEASED TO ANTERO MIDSTREAM, LLC	14-7	143-242	PARCEL INFORMATION		
			GRAY'S PEAK ACCESS ROAD	0.83	0.83
			PARCEL TOTAL	0.83	0.83
CLARICE ANN BROWN LEMASTERS LEASED TO ANTERO MIDSTREAM, LLC	14-8	143-242	PARCEL INFORMATION		
			GRAY'S PEAK ACCESS ROAD	0.58	0.58
			PARCEL TOTAL	0.58	0.58
ANTERO MIDSTREAM, LLC	14-3.X	491-468	PARCEL INFORMATION		
			GRAY'S PEAK ACCESS ROAD	0.06	0.06
			PARCEL TOTAL	2.23	2.25
DALLISON LUMBER COMPANY	14-3	474-290	PARCEL INFORMATION		
			ACCESS ROAD	5.18	5.64
			PARCEL TOTAL	5.18	5.64
DALLISON LUMBER COMPANY	14-9	474-290	PARCEL INFORMATION		
			ACCESS ROAD	0.91	0.91
			PARCEL TOTAL	8.76	8.76
BROWN FREEDA M	14-12	79-104	PARCEL INFORMATION		
			WELL PAD	4.26	4.26
			PARCEL TOTAL	3.00	3.00
			SPOIL PILE 1	2.00	2.00
			SPOIL PILE 2	2.57	2.57
			PARCEL TOTAL	4.02	4.02
			TOPSOIL/STRIPPING PILE	5.53	5.53
			PARCEL TOTAL	21.38	21.38
LEMASTERS CLARICE ANN BROWN	14-8	223-127	PARCEL INFORMATION		
			ACCESS ROAD	0.43	0.43
			PARCEL TOTAL	4.51	4.51
			SPOIL PILE 2	0.06	0.06
			PARCEL TOTAL	5.00	5.00
			TOTAL	63.81	64.29

LOD AREAS		
DESCRIPTION	ORIGINAL LOD ACRES	MODIFIED LOD ACRES
GRAY'S PEAK ACCESS ROAD	19.82	19.82
ACCESS ROAD	9.28	9.76
WELL PAD	17.53	17.53
SPOIL PILE 1	3.00	3.00
SPOIL PILE 2	2.06	2.06
SPOIL PILE 3	2.57	2.57
SPOIL PILE 4	4.02	4.02
TOPSOIL/STRIPPING PILE	5.53	5.53
TOTAL	63.81	64.29
WOODED	42.68	43.16

GALMISH WELL PAD BANK GRADING VOLUMES			
DESCRIPTION	CUT (CY)	FILL (CY)	NET (CY)
ACCESS ROAD STA. 43+00 TO 59+64	39,474	12,514	26,960
WELL PAD	164,586	111,416	53,170
TOTAL	204,060	123,930	80,130
GALMISH WELL PAD STOCKPILE CAPACITY			
NEEDED		PROVIDED	
SPOIL PILE 1	34,577	34,577	
SPOIL PILE 2	9,410	9,410	
SPOIL PILE 3	15,612	15,612	
SPOIL PILE 4	28,544	35,773	
TOTAL EXCESS SPOIL	88,143	95,372	
TOPSOIL / STRIPPING	33,547	45,332	

NOTE: EXCESS SPOIL CAPACITY NEEDED INCLUDES 10% SWELL FACTOR FOR CUT MATERIAL.
CEC RECOMMENDS USING A NEW SWELL FACTOR OF 15% FOR EXCAVATED ROCK, AND A NET SHRINKAGE FACTOR OF 5% FOR EXCAVATED SOIL. THESE FACTORS ARE ESTIMATES, AND ACTUAL CONDITIONS COULD VARY.
TOPSOIL CAPACITY NEEDED INCLUDES 20% SWELL FACTOR.
12" OF TOPSOIL/STRIPPING MATERIAL REMOVED.



REVISION RECORD

NO	DATE	LOG MODIFICATION	DESCRIPTION
1	2/17/2023		

Civil & Environmental Consultants, Inc.

120 Genesis Boulevard - Bridgeport, WV 26330

Ph: 304.933.3119 · 855.488.9539 · Fax: 304.933.3327

www.cecinc.com

ANTERO RESOURCES

GALMISH WELL PAD

WETZEL COUNTY, WEST VIRGINIA

COVER SHEET

DRAWING NO.: **C000**

SHEET 1 OF 54

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H	PDC000	CLEARING & GRUBBING; EROSION & SEDIMENT CONTROLS	GALMISH WELL PAD	
			QUANTITY	UNIT
	PDC010	MOBILIZATION	1.0	LS
	PDC012	CONSTRUCTION ENTRANCE (INCLUDES GRADING, FABRIC, & AGGREGATE)	1.0	LS
	PDC015	CLEARING AND GRUBBING (TREE CUTTING, PROCESSING & STUMPING)	44.20	AC
	PDC016	CONSTRUCTION LAYOUT	1.0	LS
	PDC020	12" COMPOST FILTER SOCK	2,461.0	LF
	PDC021	404 SMARTFENCE HD (PRIOR TO TREE CLEARING)	2,780.0	LF
	PDC022	SMARTFENCE HD (POST TREE CLEARING)	6,913.0	LF
G	PDC200	SITE - UNCLASSIFIED EXCAVATION		
			QUANTITY	UNIT
	PDC205	WELL PAD EXCAVATION	164,586.0	CY
	PDC207	ACCESS ROAD STATION 43+00 TO 59+64 EXCAVATION	39,474.0	CY
	PDC220	TOPSOIL STOCKPILES	33,547.0	CY
	PDC222	ROADSIDE DITCH	1,643.0	LF
	PDC225	TOE KEY/BONDING BENCH/ COLLUVIUM MATERIAL EXCAVATION	146,560.0	CY
	PDC232	RIP RAP OUTLET PROTECTION (R3)	366.0	TN
	PDC250	4" SOLID PLASTIC PIPE (SCH40) (INCLUDES VARMINIT GUARDS & T POST PER DETAIL)	7,940.0	LF
F	PDC255	GEO-COMPOSITE DRAIN (4'X50' - DS 184)	16,575.0	SY
	PDC255	GEO-COMPOSITE DRAIN (24 X 150' - DS 9612)	19,890.0	LF
	PDC300	DRAINAGE STRUCTURES PER ANTERO RESOURCES STANDARD DETAIL		
			QUANTITY	UNIT
	PDC305	INSTALL PRE CAST SUMP	8.0	EA
		** NOTE: SUMP UNIT PRICE TO INCLUDE DELIVERY FROM RITCHIE CONCRETE, INSTALLATION BOLLARDS, POST INDICATOR VALVE, RISER & DISCHARGE OUTLET PIPE TO PIV, INLET PROTECTION & 12"CFS INSTALLED PER THE PLAN DETAIL		
	PDC306	4" PVC CONNECTIVE PIPE (ANTERO SUMP DRAIN DETAIL)	703.0	LF
	PDC400	AGGREGATE SURFACING - SPREADING, COMPACTION, and/or INSTALLATION		
E			QUANTITY	UNIT
	PDC401	WELL PAD #3 CLEAN AGGREGATE (6" THICK COMPACTED)	5,611.0	TN
	PDC402	WELL PAD 1 1/2" OR 3/4" CRUSHER RUN AGGREGATE (2" THICK COMPACTED)	2,871.0	TN
	PDC403	WELL PAD GEOTEXTILE FABRIC (US 200/300)	30,391.0	SY
	PDC404	WELL PAD SOIL CEMENT(12" MIN. @ 110 LB/SY DRY DENSITY W/ 8% CEMENT MIX)	30,391.0	SY
	PDC405	WELL PAD INSTALL GEOGRID (CONSULTANT SPEC - EXAMPLE TENSAR TX190 or EQUIVALENT)	30,391.0	SY
	PDC407	WELL PAD CEMENT MATERIAL	1,203.00	TN
	PDC410	ACCESS ROAD #3 CLEAN AGGREGATE (6" THICK COMPACTED)	1,222.0	TN
	PDC411	ACCESS ROAD 1 1/2" OR 3/4" CRUSHER RUN AGGREGATE (2" THICK COMPACTED)	408.0	TN
D	PDC412	ACCESS ROAD GEOTEXTILE FABRIC (US 200/300)	4,310.0	SY
	PDC413	ACCESS ROAD SOIL CEMENT (12" MIN. @ 110 LB/SY DRY DENSITY W/ 8% CEMENT MIX)	4,310.0	SY
	PDC414	ACCESS ROAD INSTALL GEOGRID (CONSULTANT SPEC - EXAMPLE TENSAR TX190 or EQUIVALENT)	4,310.0	SY
	PDC416	ACCESS ROAD CEMENT MATERIAL	171.00	TN

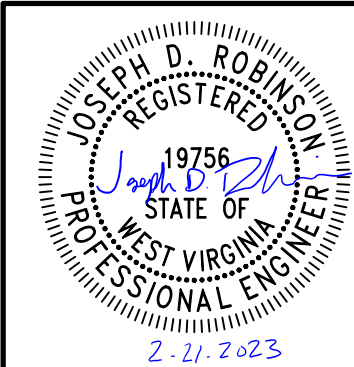
PDC500	ROAD CULVERTS		
		QUANTITY	UNIT
PDC515	18"STORM DRAINAGE PIPE (HDPE/CMP/RCP)	197.0	LF
PDC520	24" STORM DRAINAGE PIPE (HDPE/CMP/RCP)	37.0	LF
PDC550	RIP RAP (INLETS/OUTLETS)	274.0	TN
PDC550	ROCK FILTER OUTLETS	14.0	EA
PDC555	DITCH CHECKS	8.6	TN
PDC560	DITCH LINING - (ACCESS ROAD) JUTE MATTING	245.0	SY
PDC565	DITCH LINING - (ACCESS ROAD) ROCK-LINED DITCH (WV R4)	335.0	TN
PDC600	SEEDING		
		QUANTITY	UNIT
PDC610	SITE SEEDING (HYDRO SEEDING -WITH HAY MULCH w/TACK) ANTERO SPEC	18.65	AC
PDC620	TEMPORARY SEEDING	18.94	AC

Rip Rap Let Down Channel				Rip Rap Apron						Total
Let Down Channel ID	Width (ft)	Length (ft)	Tonnage	D50 (ft)	T (ft)	La (ft)	W1 (ft)	W2 (ft)	Tonnage	Tonnage
Rip Rap Let Down Channel #1	4.5	213	68.20	0.5	1.13	9.0	4.5	10.5	4.80	73.00
Rip Rap Let Down Channel #2	6.0	54	23.05	0.5	1.13	13.0	6.0	15.0	9.71	32.76
Rip Rap Let Down Channel #3	4.5	46	14.73	0.5	1.13	9.0	4.5	10.5	4.80	19.53
Rip Rap Let Down Channel #4	4.5	8	2.56	0.5	1.13	9.0	4.5	10.5	4.80	7.36
Rip Rap Let Down Channel #5	4.5	78	24.97	0.5	1.13	9.0	4.5	10.5	4.80	29.78
Rip Rap Let Down Channel #6	4.5	85	27.21	0.5	1.13	9.0	4.5	10.5	4.80	32.02
Rip Rap Let Down Channel #7	2.0	79	11.24	0.5	1.13	8.0	2.0	9.0	3.13	14.37
Rip Rap Let Down Channel #8	2.0	60	8.54	0.5	1.13	8.0	2.0	9.0	3.13	11.67
Rip Rap Let Down Channel #9	2.0	13	1.85	0.5	1.13	8.0	2.0	9.0	3.13	4.98
Rip Rap Let Down Channel #10	2.0	16	2.28	0.5	1.13	8.0	2.0	9.0	3.13	5.41
Rip Rap Let Down Channel #11	2.0	84	11.95	0.5	1.13	8.0	2.0	9.0	3.13	15.08
Rip Rap Let Down Channel #12	2.0	50	7.11	0.5	1.13	8.0	2.0	9.0	3.13	10.25
Rip Rap Let Down Channel #13	2.0	38	5.41	0.5	1.13	8.0	2.0	9.0	3.13	8.54
Rip Rap Let Down Channel #14	2.0	38	5.41	0.5	1.13	8.0	2.0	9.0	3.13	8.54

Channel Flow												Channel Feature								Outlet Protection					
Channel ID	Woods/Meadow Area (acres)	Runoff Coefficient, C	Impervious Area (acres)	Runoff Coefficient, C	Earthen Area (acres)	Runoff Coefficient, C	Composite C	Time of Concentration (min)	Rainfall Intensity (in/hr)	Total Area (acres)	Peak Flow (cfs)	Average Slope (ft/ft)	Left Side Slope	Right Side Slope	Bottom Width (ft)	Length (ft)	Normal Depth (ft)	Minimum Depth (ft)	Liner	D50 (ft)	T (ft)	La (ft)	W1 (ft)	W2 (ft)	Outlet Protection Tonnage
Roadside Channel #1	0.16	0.35	0.01	0.95	0.00	0.70	0.39	5.00	6.50	0.17	0.43	0.079	2.0	2.0	1.00	32.0	0.13	1.00	S75BN	Discharges to Culvert 1					
Roadside Channel #2	0.96	0.35	0.06	0.95	0.00	0.70	0.39	5.00	6.50	1.02	2.59	0.078	2.0	2.0	1.00	213.0	0.32	1.00	S75BN	Discharges to Culvert 1					
Roadside Channel #3	0.95	0.35	0.05	0.95	0.00	0.70	0.38	5.00	6.50	1.00	2.47	0.005	2.0	2.0	1.00	135.0	0.70	1.20	S75BN	Discharges to Culvert 2					
Roadside Channel #4	4.83	0.35	0.12	0.95	0.00	0.70	0.36	5.00	6.50	4.95	11.58	0.046	2.0	2.0	1.00	404.0	0.87	1.40	P300	Discharges to Culvert 2					
Roadside Channel #5	1.10	0.35	0.07	0.95	0.00	0.70	0.39	5.00	6.50	1.17	2.97	0.110	2.0	2.0	1.00	245.0	0.32	1.00	6" Riprap	Discharges to Culvert 3					
Roadside Channel #6	0.62	0.35	0.03	0.95	0.00	0.70	0.38	5.00	6.50	0.65	1.61	0.150	2.0	2.0	1.00	205.0	0.22	1.00	6" Riprap	Discharges to Culvert 4					
Roadside Channel #7	0.51	0.35	0.03	0.95	0.00	0.70	0.38	5.00	6.50	0.54	1.33	0.153	2.0	2.0	1.00	200.0	0.19	1.00	6" Riprap	Discharges to Culvert 5					
Roadside Channel #8	0.40	0.35	0.06	0.95	0.00	0.70	0.43	5.00	6.50	0.46	1.29	0.112	2.0	2.0	1.00	209.0	0.21	1.00	6" Riprap	Discharges to Culvert 6					

Culvert Flow												Culvert Feature					Outlet Protection					Let Down Channel				
Culvert ID	Woods/Meadow Area (acres)	Runoff Coefficient, C	Impervious Area (acres)	Runoff Coefficient, C	Earthen Area (acres)	Runoff Coefficient, C	Composite C	Time of Concentration (min)	Rainfall Intensity (in/hr)	Total Area (acres)	Peak Flow (cfs)	Culvert Size (in)	Inlet Elevation (ft)	Outlet Elevation (ft)	Length (ft)	Slope (%)	Material	D50 (ft)	T (ft)	La (ft)	W1 (ft)	W2 (ft)	Outlet Protection Tonnage	Width (ft)	Length (ft)	Tonnage
Culvert #1	1.12	0.35	0.07	0.95	0.00	0.70	0.39	5.00	6.50	1.19	3.02	18	1241.51	1240.73	39.0	2.00	HDPE	0.5	1.13	9.0	4.5	10.5	4.80	4.5	213	68.20
Culvert #2	5.77	0.35	0.17	0.95	0.00	0.70	0.37	5.00	6.50	5.94	14.29	24	1257.00	1256.27	37.0	1.97	HDPE	0.5	1.13	13.0	6.0	15.0	9.71	6.0	54	23.05
Culvert #3	1.10	0.35	0.07	0.95	0.00	0.70	0.39	5.00	6.50	1.17	2.97	18	1243.51	1242.81	35.0	2.00	HDPE	0.5	1.13	9.0	4.5	10.5	4.80	4.5	46	14.73
Culvert #4	0.62	0.35	0.03	0.95	0.00	0.70	0.38	5.00	6.50	0.65	1.61	18	1214.02	1212.35	47.0	3.55	HDPE	0.5	1.13	9.0	4.5	10.5	4.80	4.5	8	2.56
Culvert #5	0.51	0.35	0.03	0.95	0.00	0.70	0.38	5.00	6.50	0.54	1.33	18	1183.52	1182.82	35.0	2.00	HDPE	0.5	1.13	9.0	4.5	10.5	4.80	4.5	78	24.97
Culvert #6	0.40	0.35	0.06	0.95	0.00	0.70	0.43	5.00	6.50	0.46	1.29	18	1159.50	1158.68	41.0	2.00	HDPE	0.5	1.13	9.0	4.5	10.5	4.80	4.5	85	27.21

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Modification
3/27/2023



REVISION RECORD

NO	DATE	LOG MODIFICATION	DESCRIPTION
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ANTERO RESOURCES
GALMISH WELL PAD
WETZEL COUNTY, WEST VIRGINIA

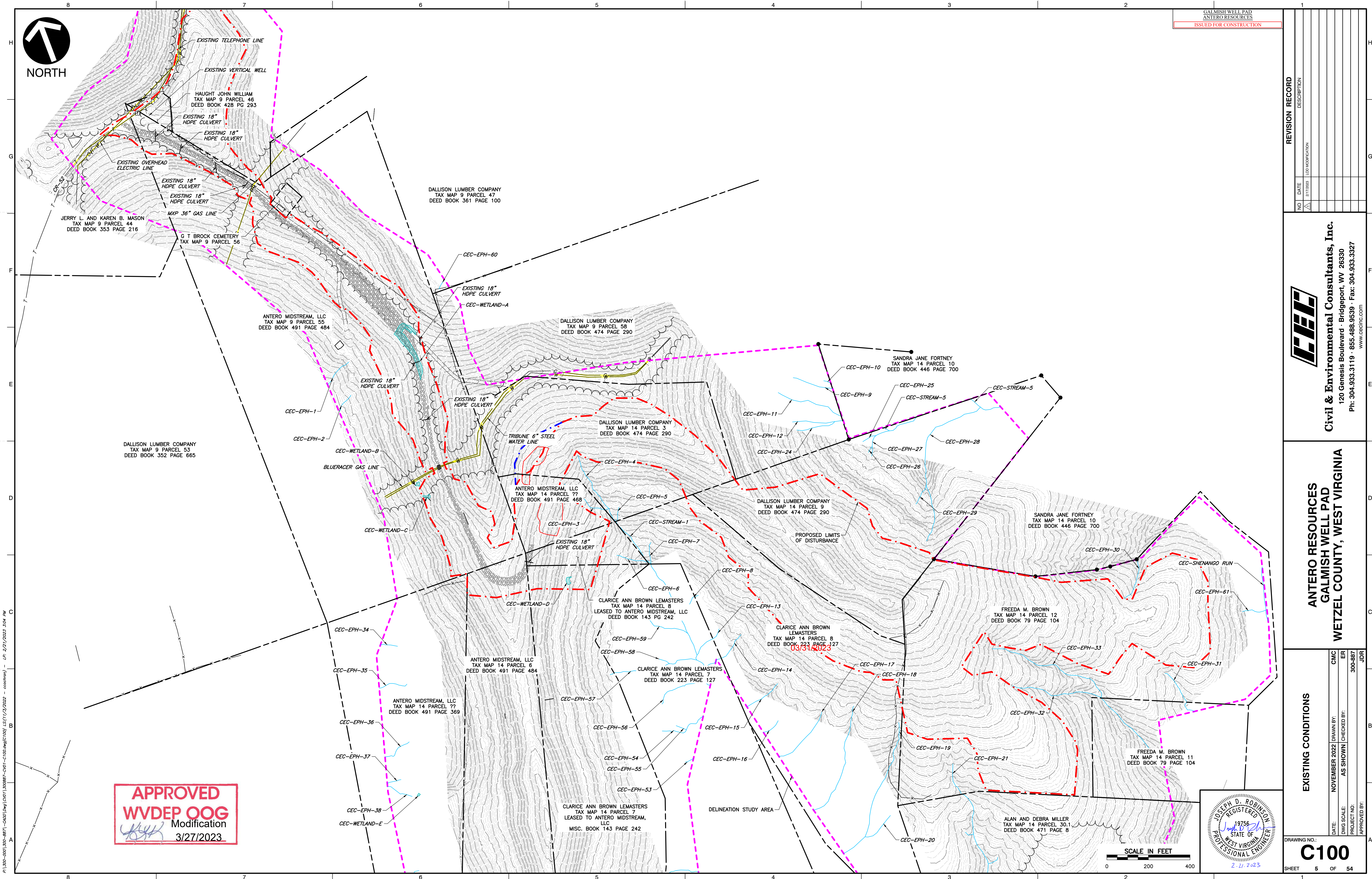
MATERIAL QUANTITIES

DRAWING NO.:
C002

SHEET 3 OF 54

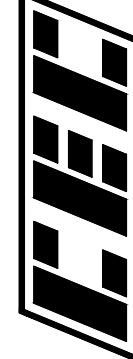
DATE: NOVEMBER 2022
DWG SCALE: AS SHOWN
PROJECT NO: 300-887
APPROVED BY: JDR

CMC
DRAWN BY:
ER
CHECKED BY:
300-887



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REVISION RECORD	
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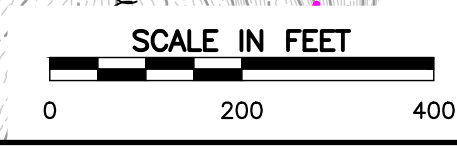
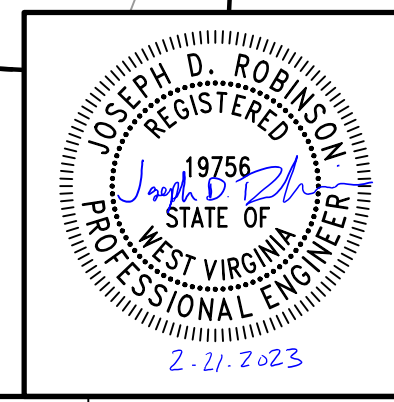
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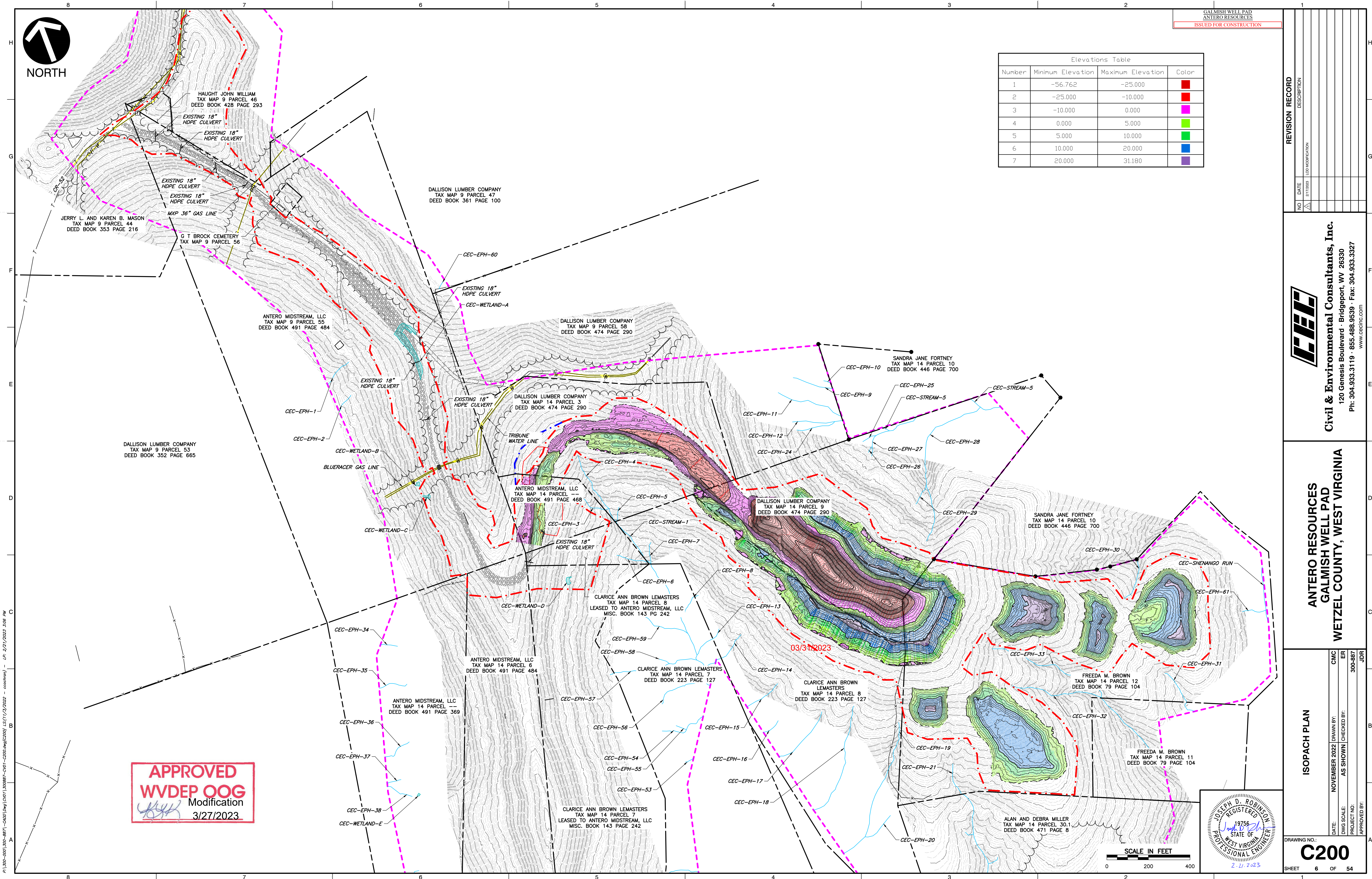
**ANTERO RESOURCES
GALMISH WELL PAD
WETZEL COUNTY, WEST VIRGINIA**

EXISTING CONDITIONS	
DATE: NOVEMBER 2022	DRAWN BY: CMC
DWG SCALE: AS SHOWN	CHECKED BY: ER
PROJECT NO: 300-887	APPROVED BY: JDR

DRAWING NO.: **C100**

SHEET 5 OF 54





GALMISH WELL PAD
ANTERO RESOURCES
ISSUED FOR CONSTRUCTION

Elevations Table			
Number	Minimum Elevation	Maximum Elevation	Color
1	-56.762	-25.000	Red
2	-25.000	-10.000	Red
3	-10.000	0.000	Magenta
4	0.000	5.000	Green
5	5.000	10.000	Green
6	10.000	20.000	Blue
7	20.000	31.180	Purple

REVISION RECORD

NO	DATE	DESCRIPTION
1	2/17/2023	LOG MODIFICATION

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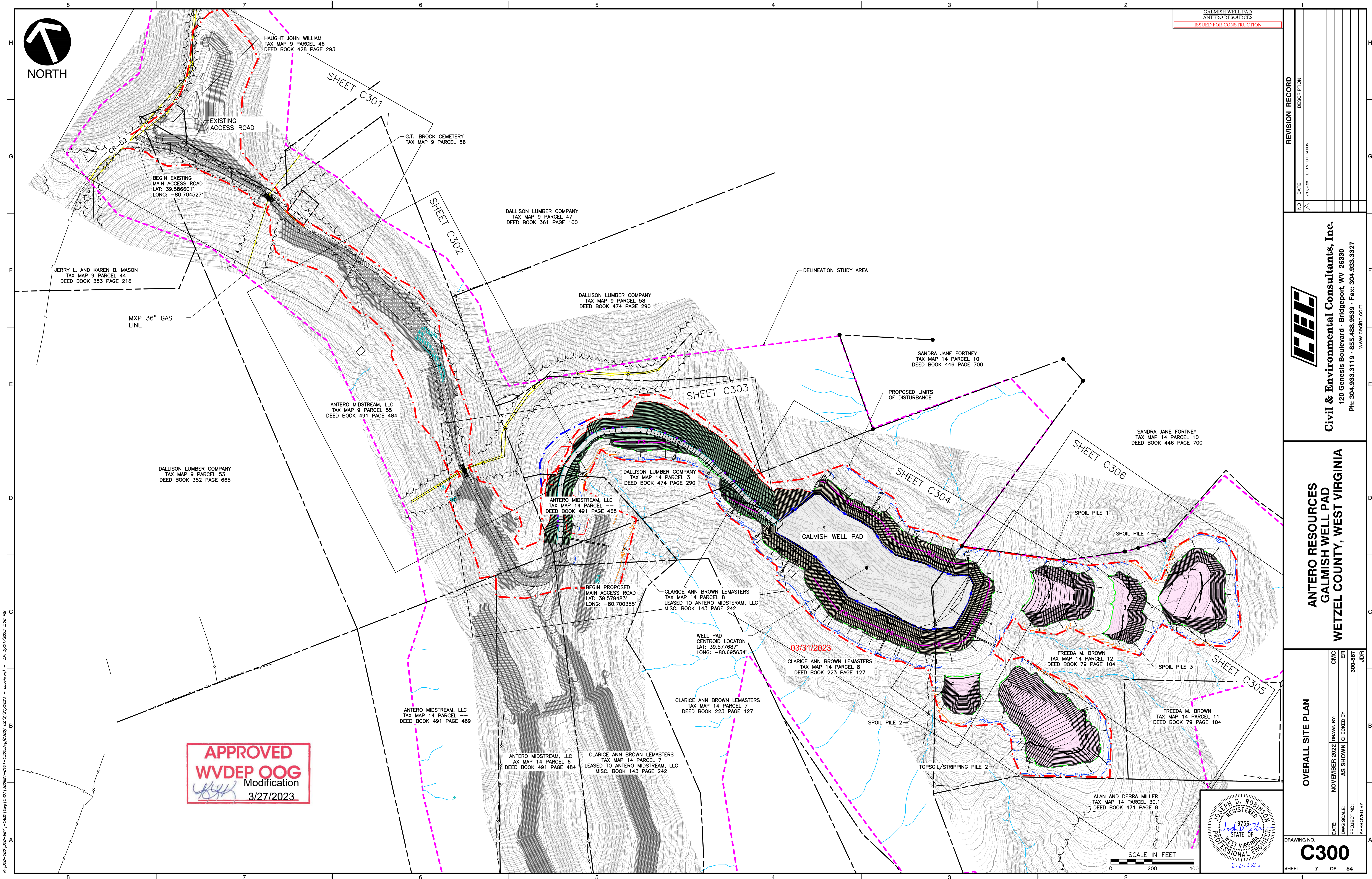
ANTERO RESOURCES
GALMISH WELL PAD
WETZEL COUNTY, WEST VIRGINIA

ISOPACH PLAN

DATE:	NOVEMBER 2022	DRAWN BY:	CNC
DWG SCALE:	AS SHOWN	CHECKED BY:	ER
PROJECT NO:	300-887	APPROVED BY:	JDR

DRAWING NO.: **C200**
SHEET 6 OF 54

JOSEPH D. ROBINSON
19756
REGISTERED
STATE OF
WEST VIRGINIA
PROFESSIONAL ENGINEER
2-21-2023



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WVDEP OOG
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3/27/2023

GALMISH WELL PAD
ANTERO RESOURCES
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ANTERO RESOURCES
GALMISH WELL PAD
WETZEL COUNTY, WEST VIRGINIA

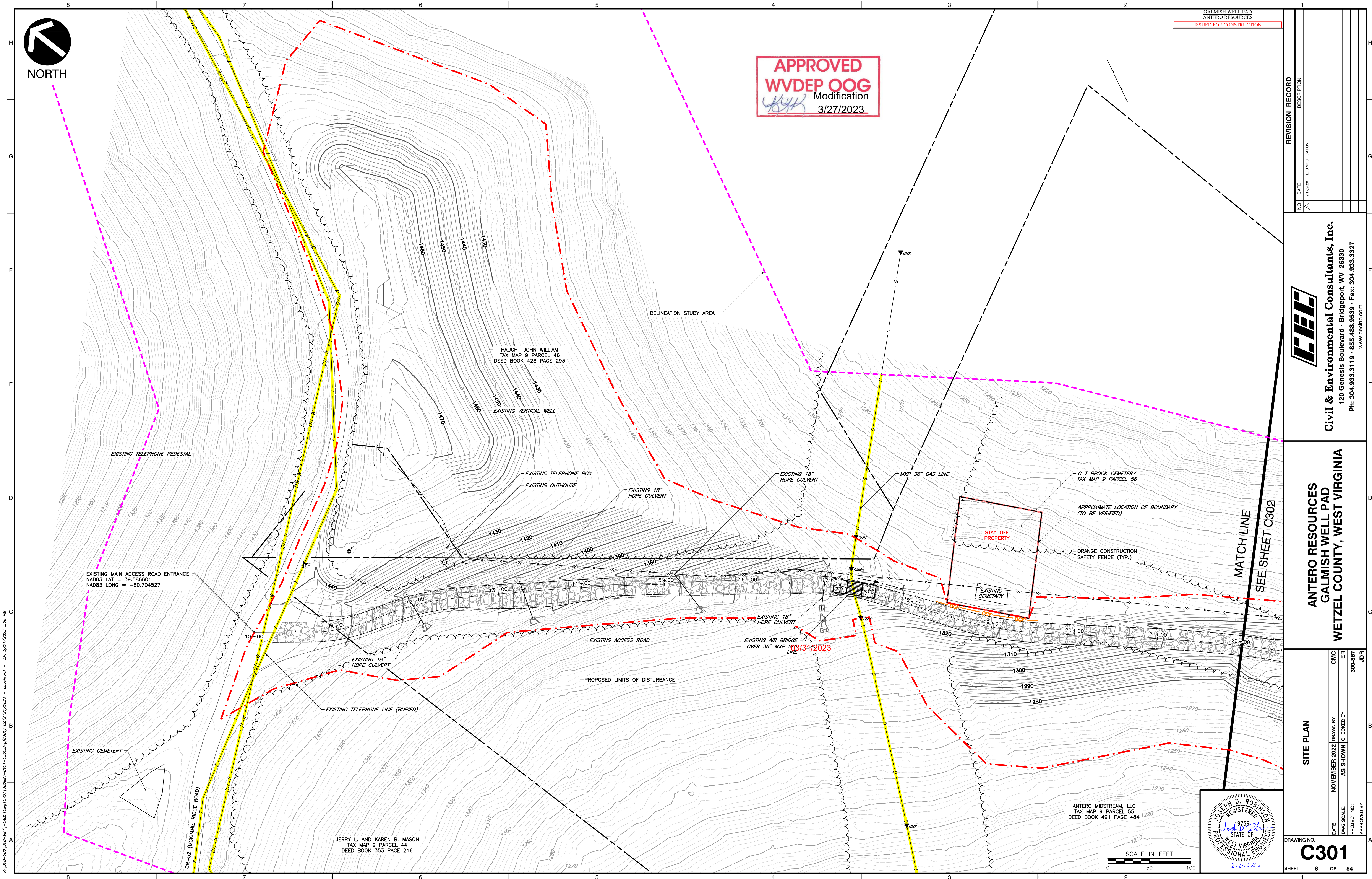
OVERALL SITE PLAN

DATE:	NOVEMBER 2022	DRAWN BY:	CNC
DWG SCALE:	AS SHOWN	CHECKED BY:	ER
PROJECT NO:	300-887	APPROVED BY:	JDR

DRAWING NO.: **C300**

SHEET 7 OF 54

JOSEPH D. ROBINSON
REGISTERED PROFESSIONAL ENGINEER
19756
STATE OF WEST VIRGINIA
2-21-2023



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GALMISH WELL PAD
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3/27/2023

REVISION RECORD	
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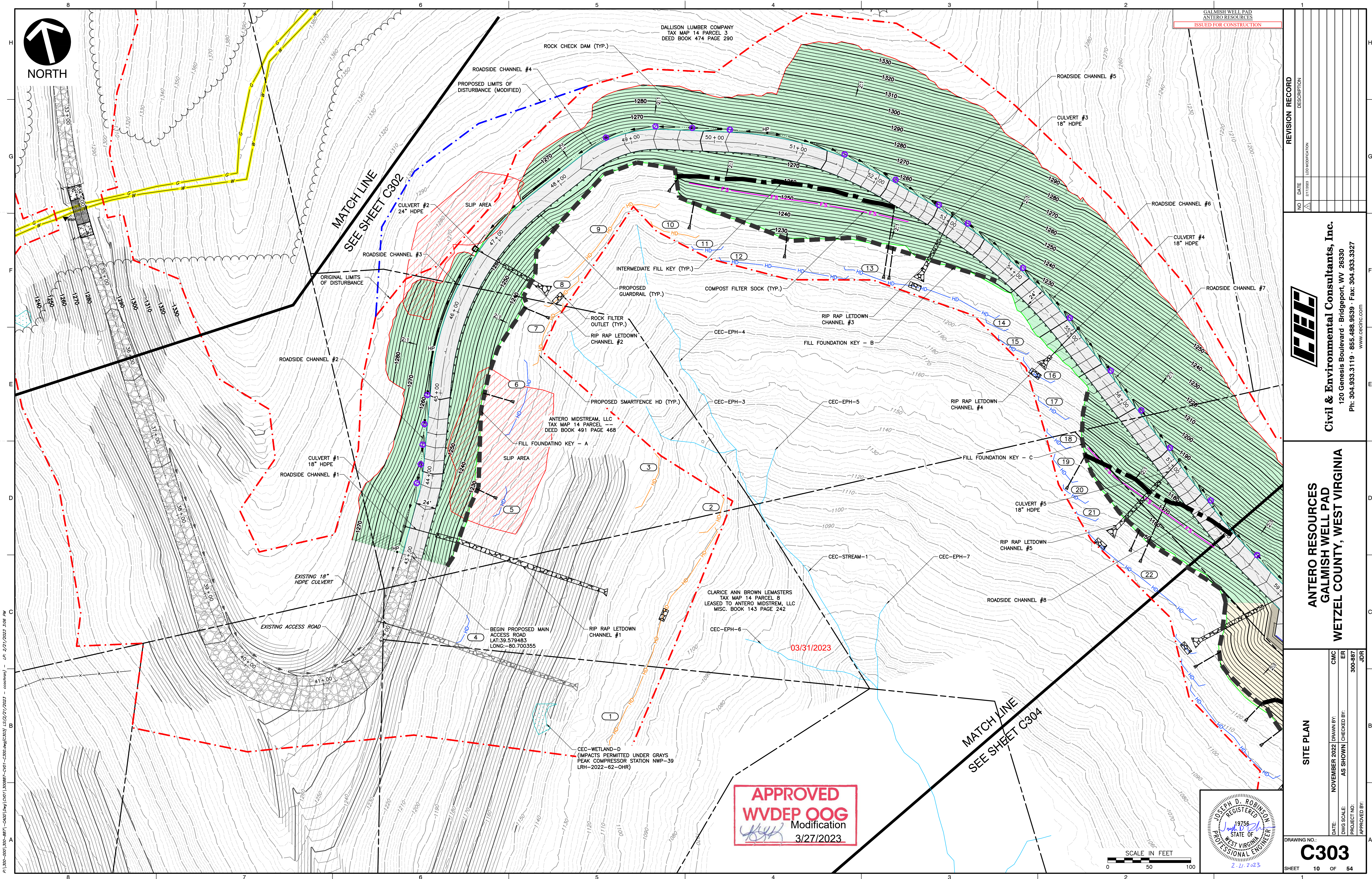
ANTERO RESOURCES
GALMISH WELL PAD
WETZEL COUNTY, WEST VIRGINIA

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DRAWN BY:	CNC
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PROJECT NO:	
APPROVED BY:	JDR
DRAWING NO.:	C301
SHEET	8 OF 54

JOSEPH D. ROBINSON
REGISTERED
19756
STATE OF
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PROFESSIONAL ENGINEER
2-21-2023

ANTERO MIDSTREAM, LLC
TAX MAP 9 PARCEL 55
DEED BOOK 491 PAGE 484

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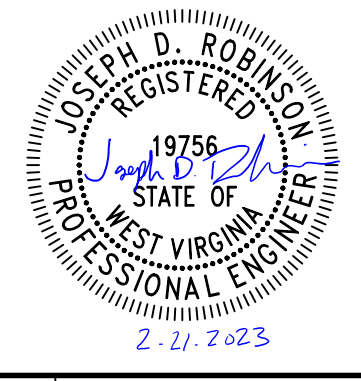
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NORTH

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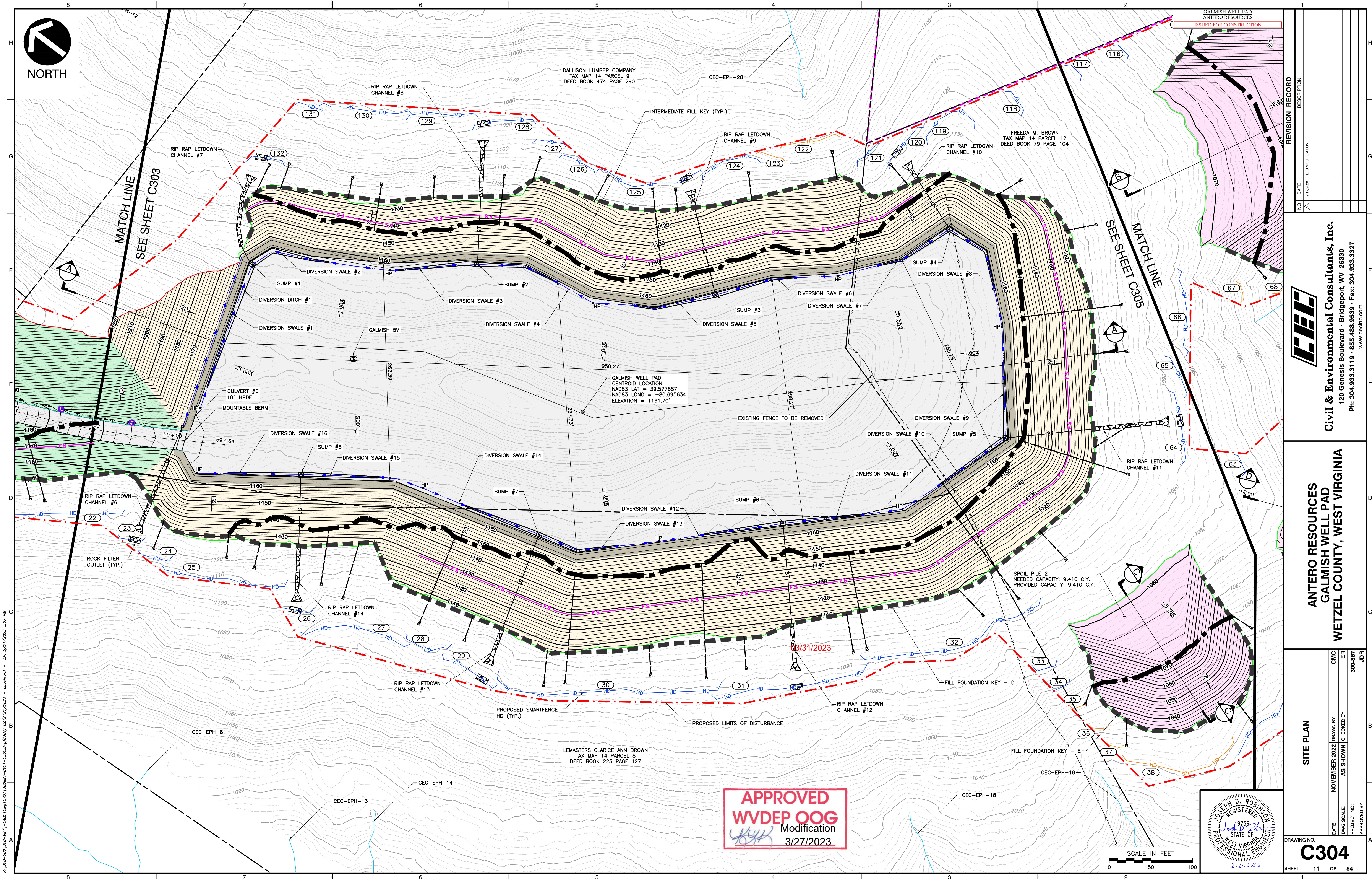


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ANTERO RESOURCES
GALMISH WELL PAD
WETZEL COUNTY, WEST VIRGINIA

SHEET	
10	OF 54
DRAWING NO.: C303	
DATE: NOVEMBER 2022	DRAWN BY: CMC
DWG SCALE: AS SHOWN	CHECKED BY: ER
PROJECT NO: 300-887	APPROVED BY: JDR



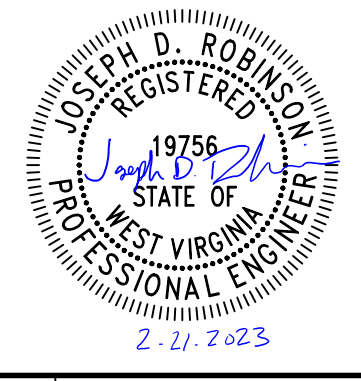
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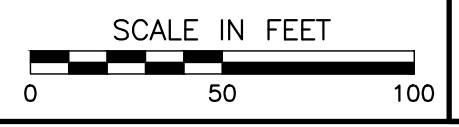
ANTERO RESOURCES
GALMISH WELL PAD
WETZEL COUNTY, WEST VIRGINIA

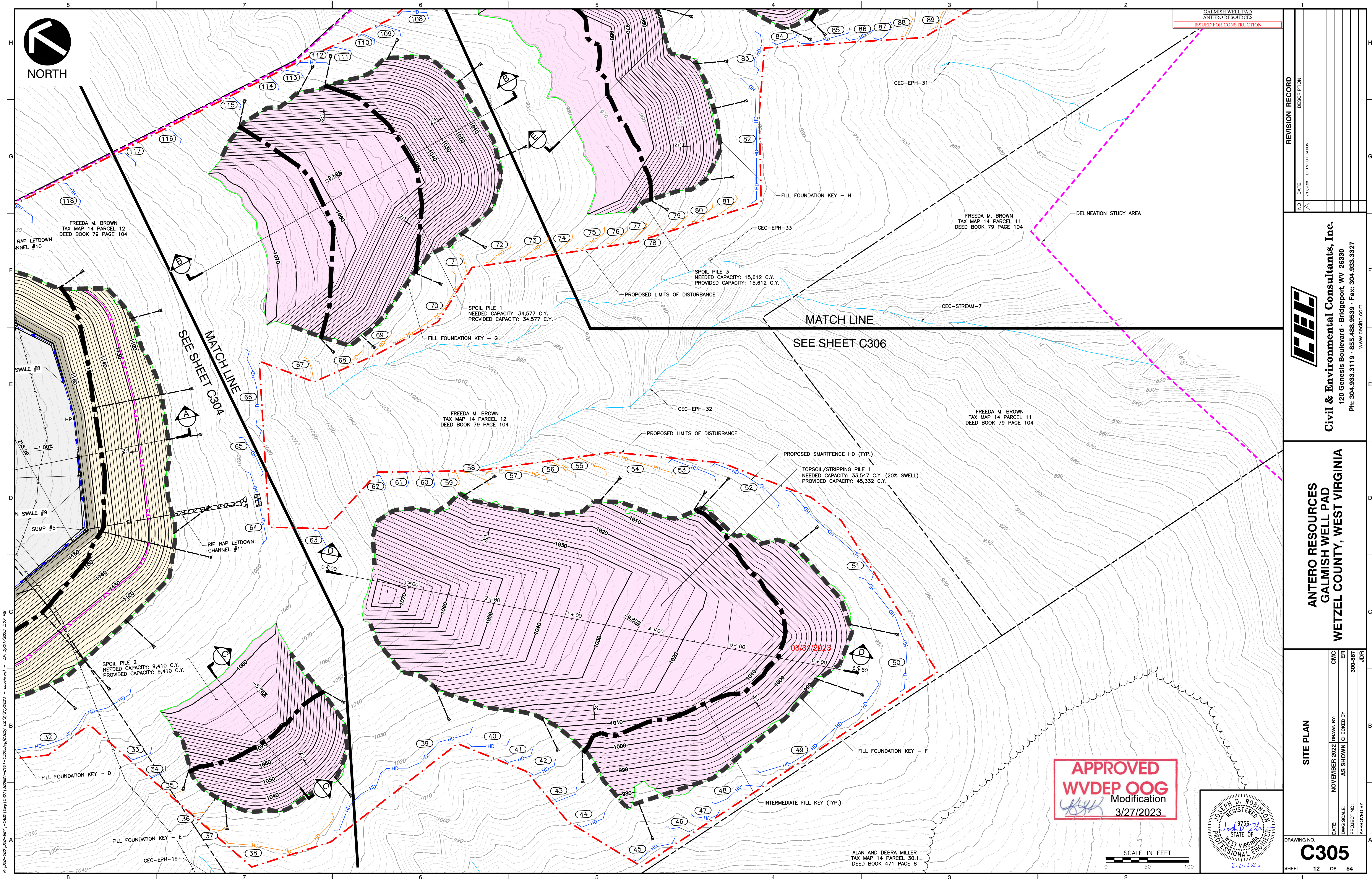
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PROJECT NO: 300-887	APPROVED BY: JDR

DRAWING NO.: **C304**
SHEET 11 OF 54



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ANTERO RESOURCES
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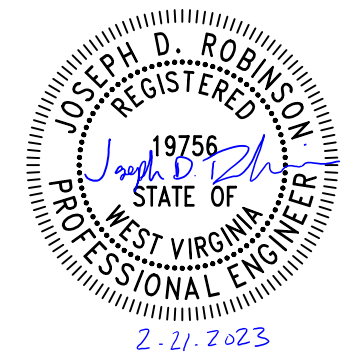
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DATE: NOVEMBER 2022	DRAWN BY: CMC
DWG SCALE: AS SHOWN	CHECKED BY: ER
PROJECT NO: 300-887	APPROVED BY: JDR

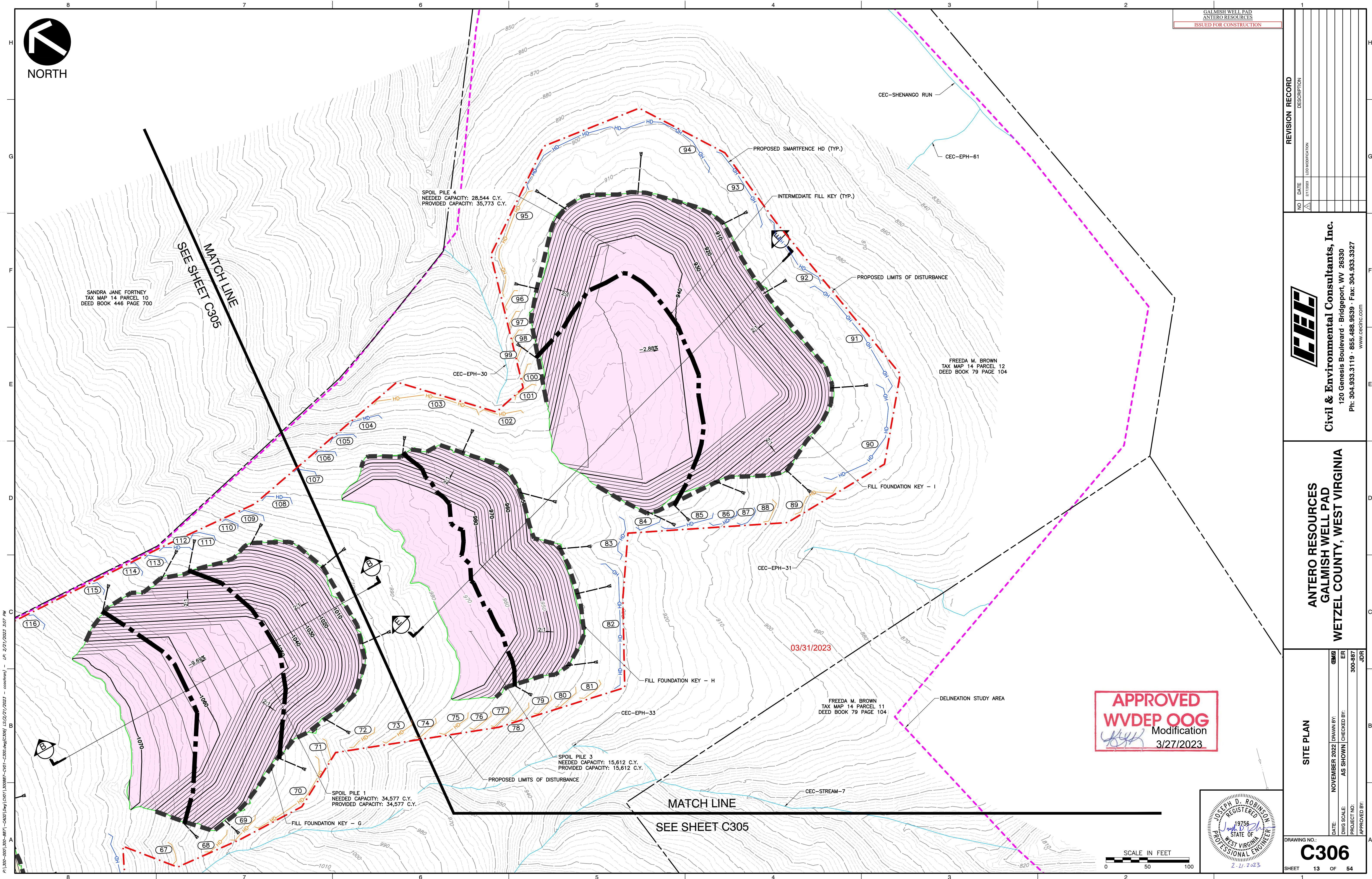
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3/27/2023



SCALE IN FEET
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ALAN AND DEBRA MILLER
TAX MAP 14 PARCEL 30.1
DEED BOOK 471 PAGE 8

DRAWING NO.: **C305**
SHEET 12 OF 54



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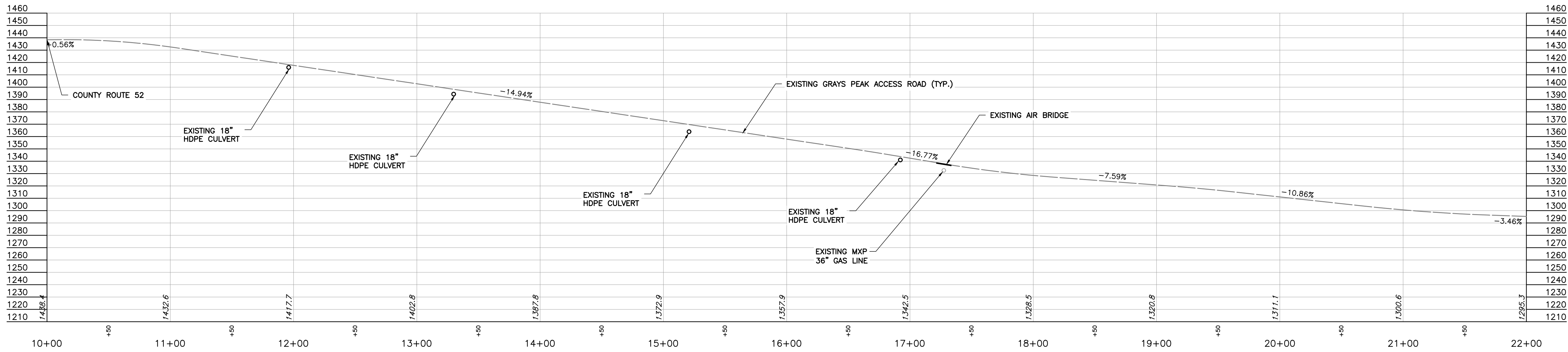
**ANTERO RESOURCES
GALMISH WELL PAD
WETZEL COUNTY, WEST VIRGINIA**

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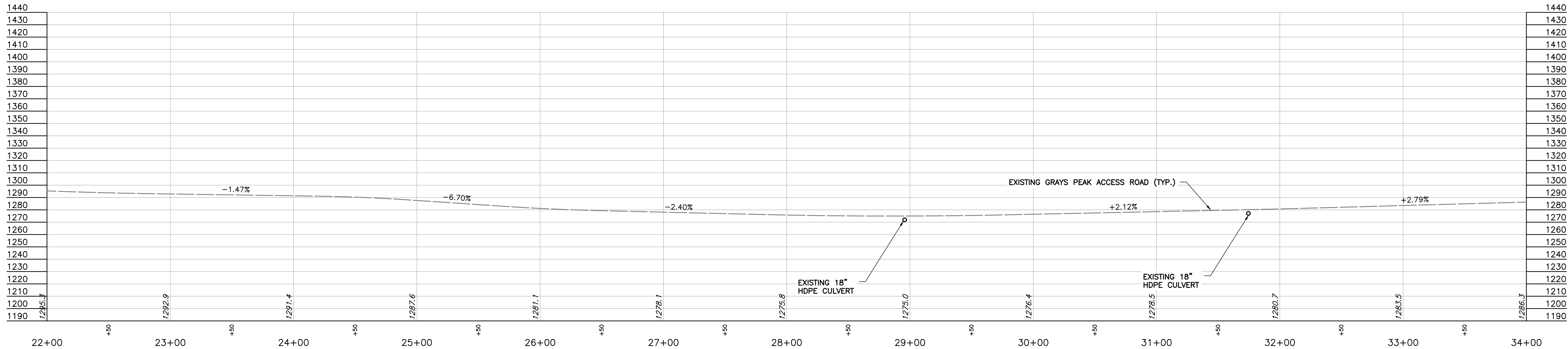
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3/27/2023

JOSEPH D. ROBINSON
REGISTERED
PROFESSIONAL ENGINEER
19756
STATE OF
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2-21-2023

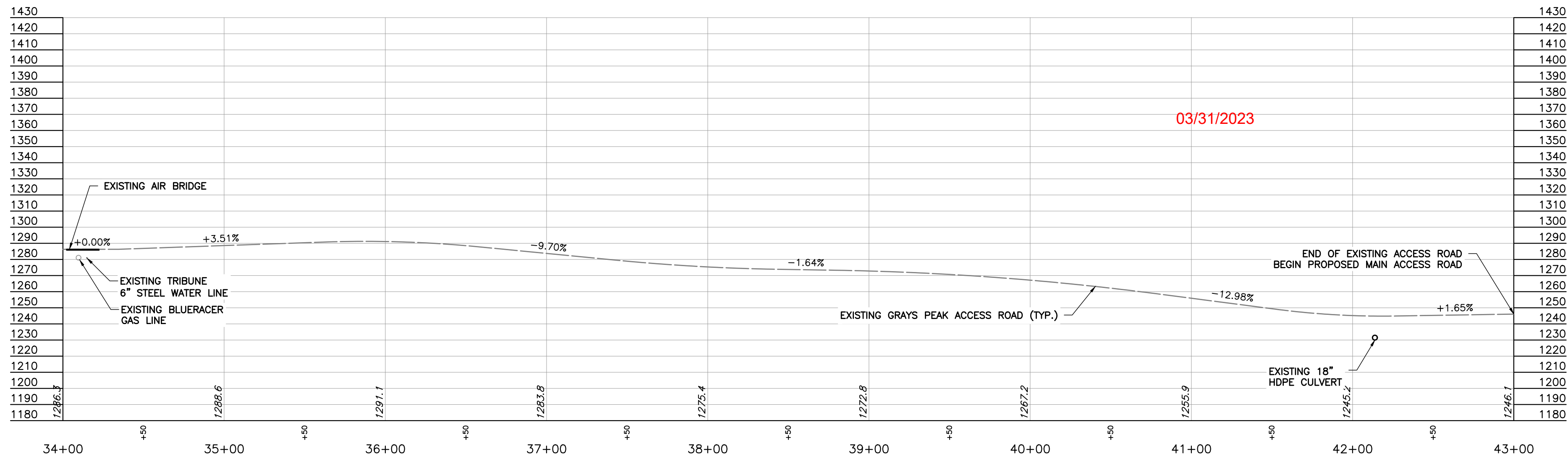
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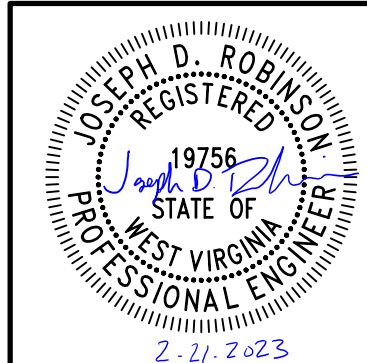
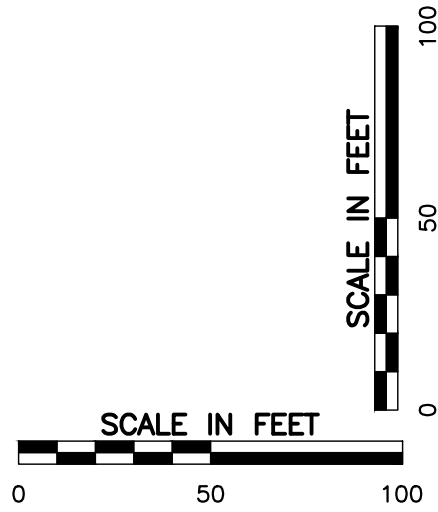


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EXISTING ACCESS ROAD - PROFILE
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3/27/2023



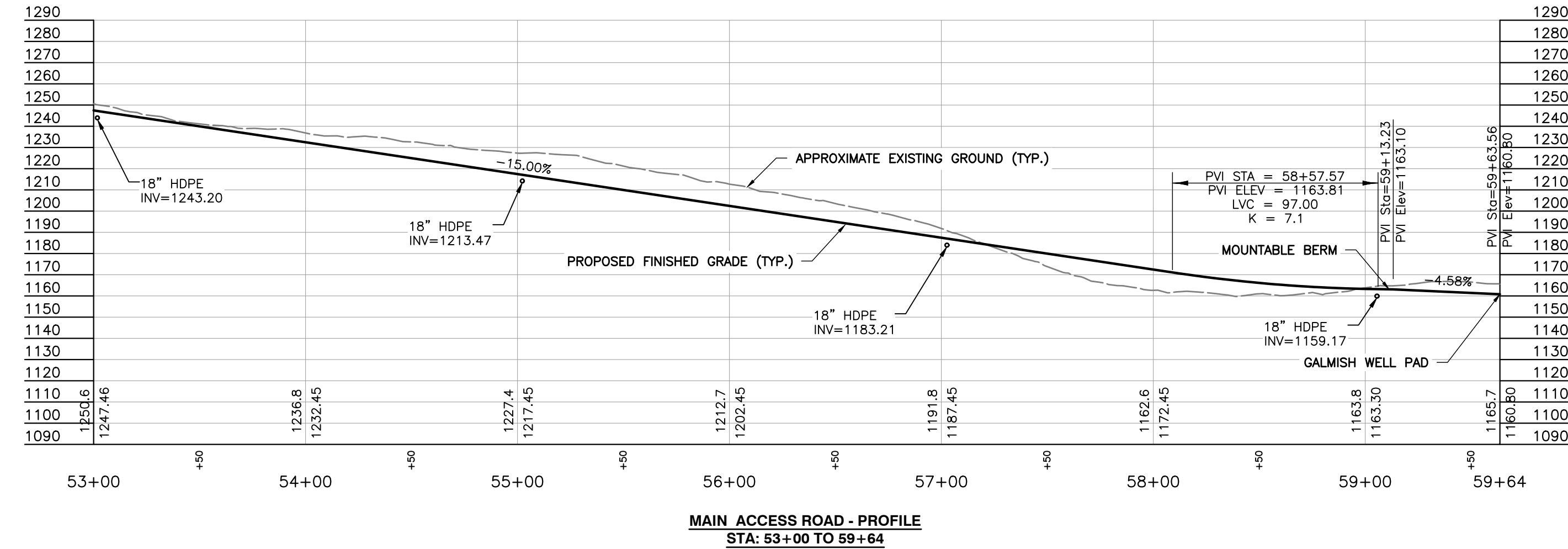
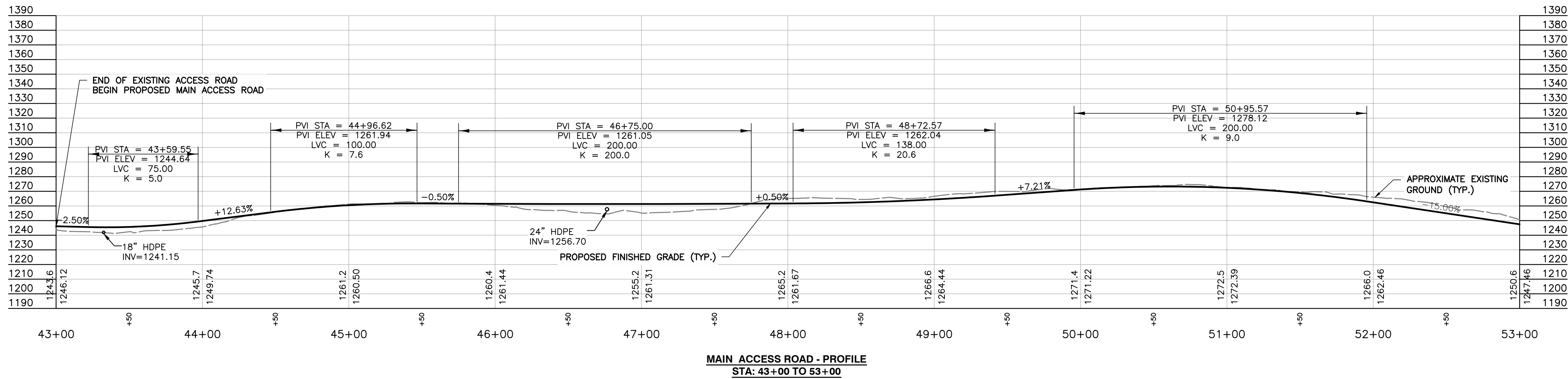
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ANTERO RESOURCES
GALMISH WELL PAD
WETZEL COUNTY, WEST VIRGINIA

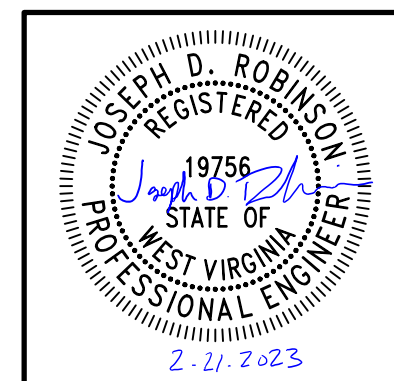
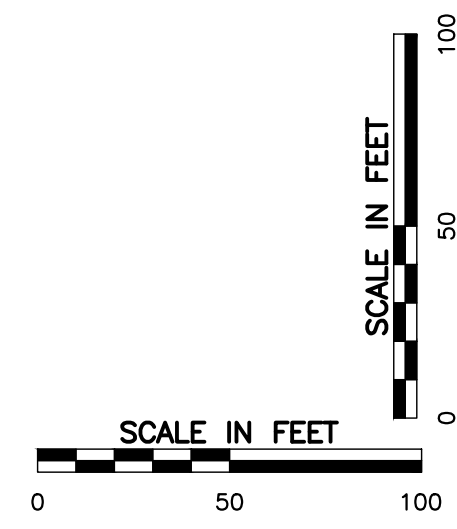
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PROJECT NO:	300-887
APPROVED BY:	JDR
DRAWING NO.:	C600
SHEET	14 OF 54

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PROFILES AND CROSS SECTIONS

DRAWING NO.:
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SHEET 15 OF 54

DATE:	NOVEMBER 2022	DRAWN BY:	CMC
DWG SCALE:	AS SHOWN	CHECKED BY:	ER
PROJECT NO:	300-887	APPROVED BY:	JDR

ANTERO RESOURCES
GALMISH WELL PAD
WETZEL COUNTY, WEST VIRGINIA

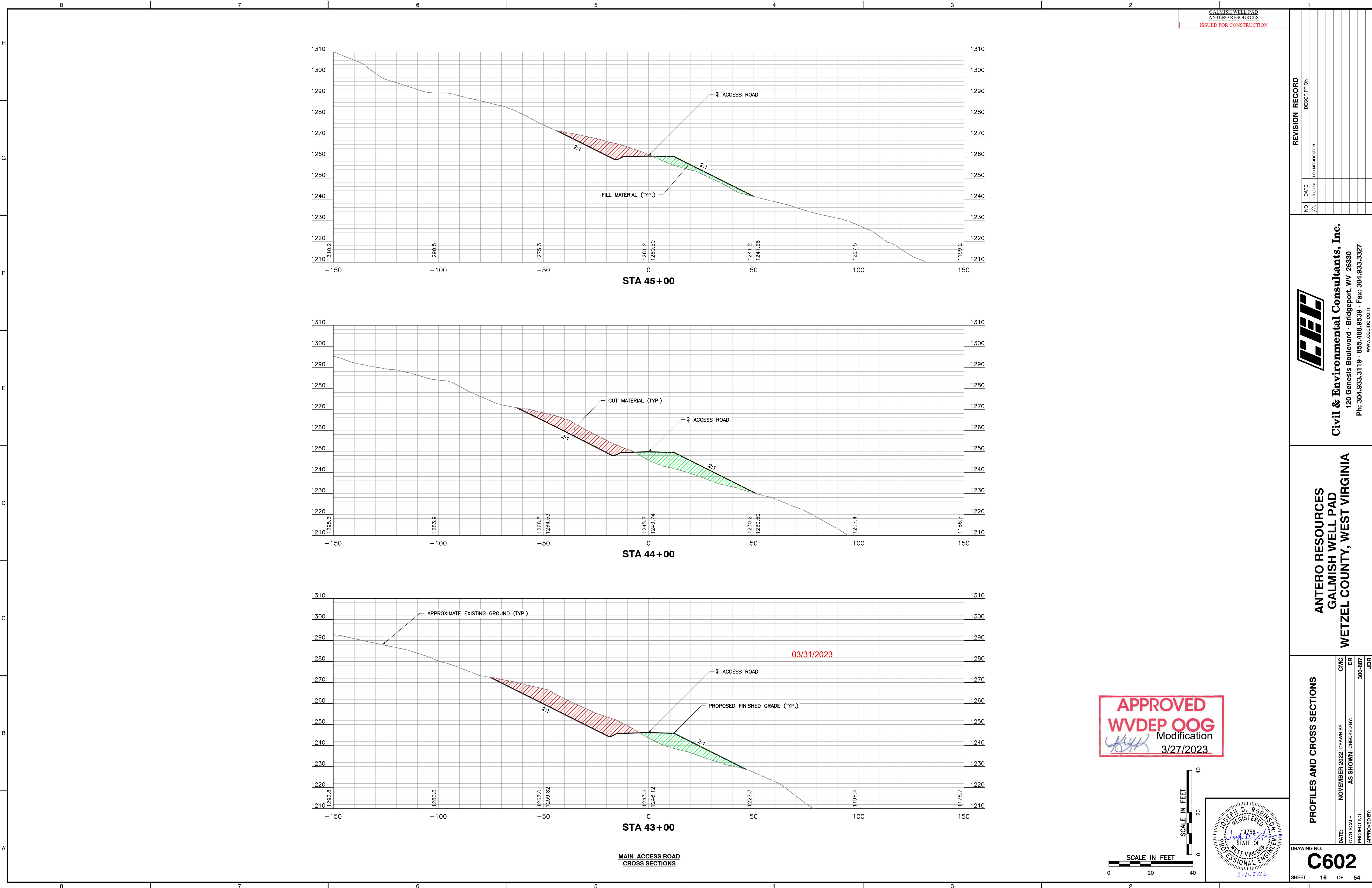
C&E
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120 Genesis Boulevard - Bridgeport, WV 26330
Ph: 304.933.3119 - 855.488.9539 - Fax: 304.933.3327
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REVISION RECORD	
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GALMISH WELL PAD
ANTERO RESOURCES
ISSUED FOR CONSTRUCTION

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GALMISH WELL PAD
ANTERO RESOURCES
ISSUED FOR CONSTRUCTION

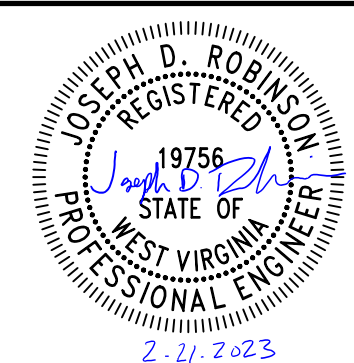
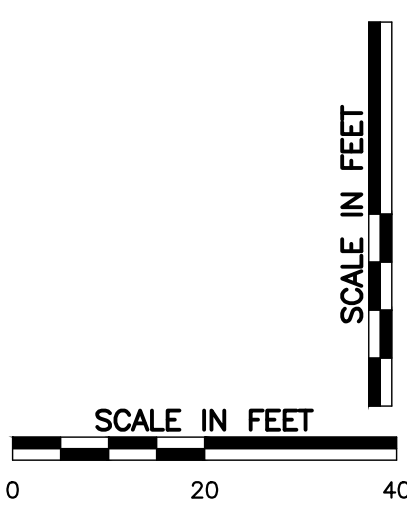
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19	2/7/2023
20	2/7/2023

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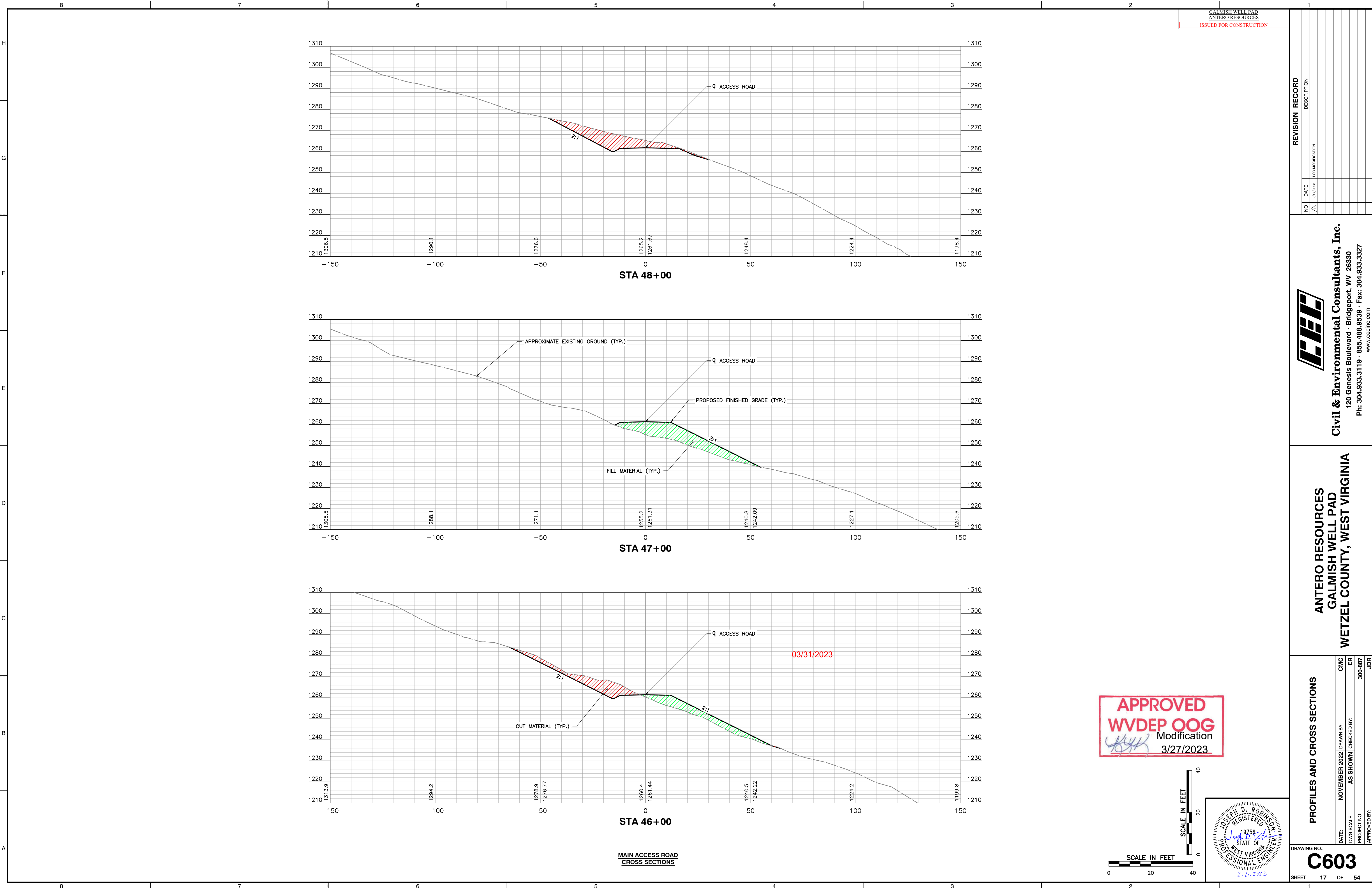
**ANTERO RESOURCES
GALMISH WELL PAD
WETZEL COUNTY, WEST VIRGINIA**

PROFILES AND CROSS SECTIONS	
DATE:	NOVEMBER 2022
DWG SCALE:	AS SHOWN
PROJECT NO:	300-887
APPROVED BY:	JDR
DRAWING NO.:	C602
SHEET	16 OF 54

APPROVED
WVDEP OOG
Modification
3/27/2023



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GALMISH WELL PAD
ANTERO RESOURCES
ISSUED FOR CONSTRUCTION

REVISION RECORD	
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ANTERO RESOURCES
GALMISH WELL PAD
WETZEL COUNTY, WEST VIRGINIA

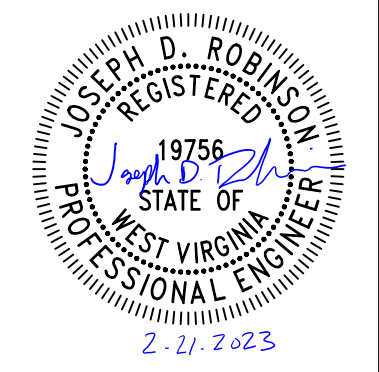
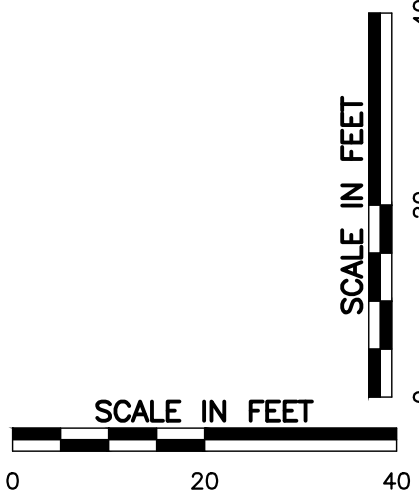
PROFILES AND CROSS SECTIONS

DATE:	NOVEMBER 2022	DRAWN BY:	CNC
DWG SCALE:	AS SHOWN	CHECKED BY:	ER
PROJECT NO:	300-887	APPROVED BY:	JDR

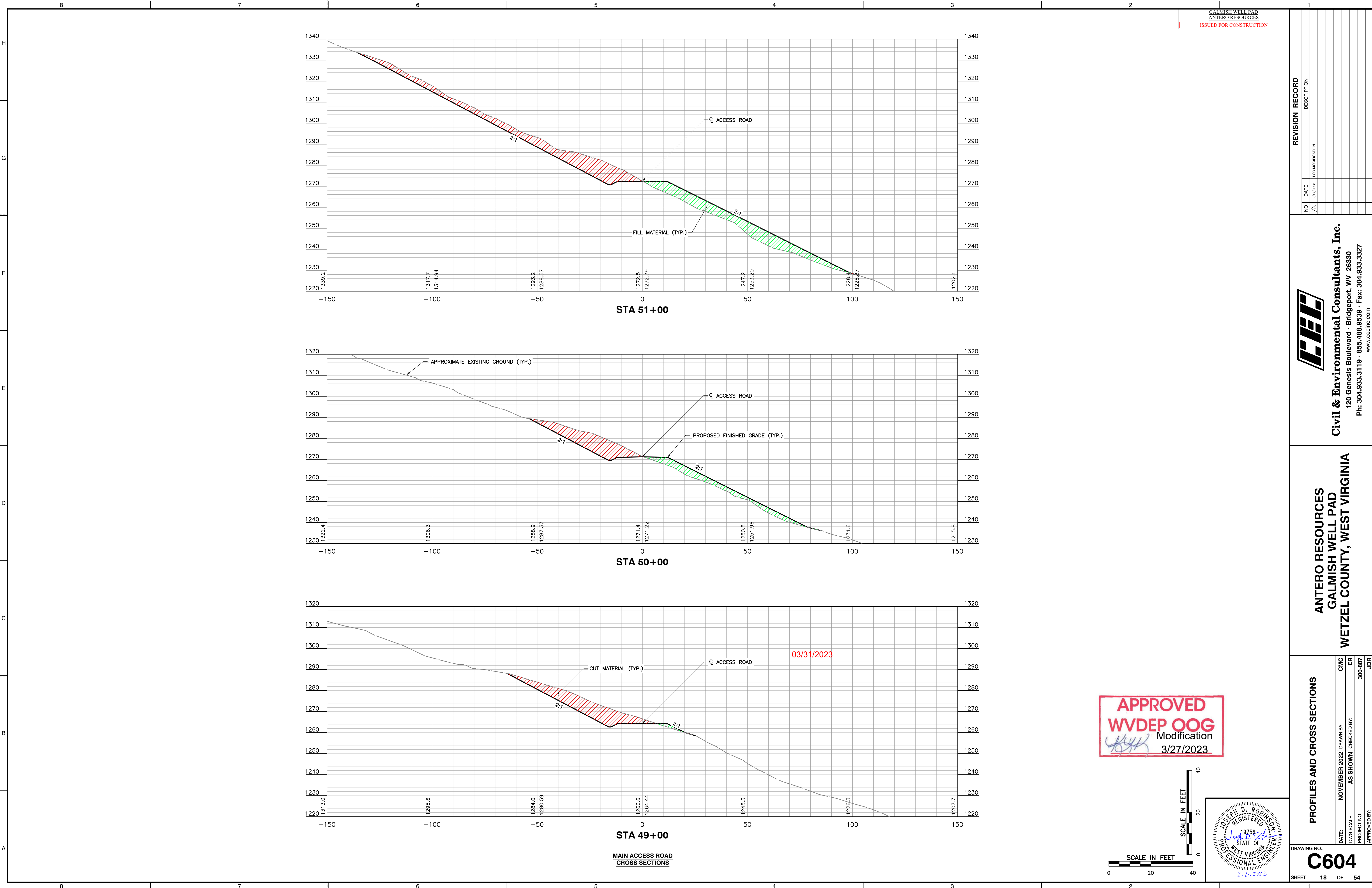
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SHEET 17 OF 54

APPROVED
WVDEP OOG
Modification
3/27/2023

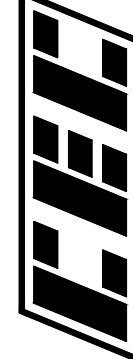


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GALMISH WELL PAD
ANTERO RESOURCES
ISSUED FOR CONSTRUCTION

REVISION RECORD	
NO	DESCRIPTION
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**ANTERO RESOURCES
GALMISH WELL PAD
WETZEL COUNTY, WEST VIRGINIA**

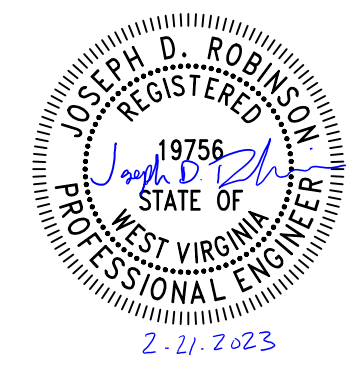
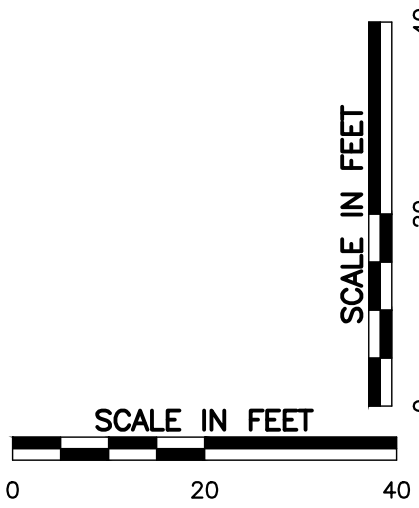
PROFILES AND CROSS SECTIONS

DATE:	NOVEMBER 2022	DRAWN BY:	CMC
DWG SCALE:	AS SHOWN	CHECKED BY:	ER
PROJECT NO:	300-887	APPROVED BY:	JDR

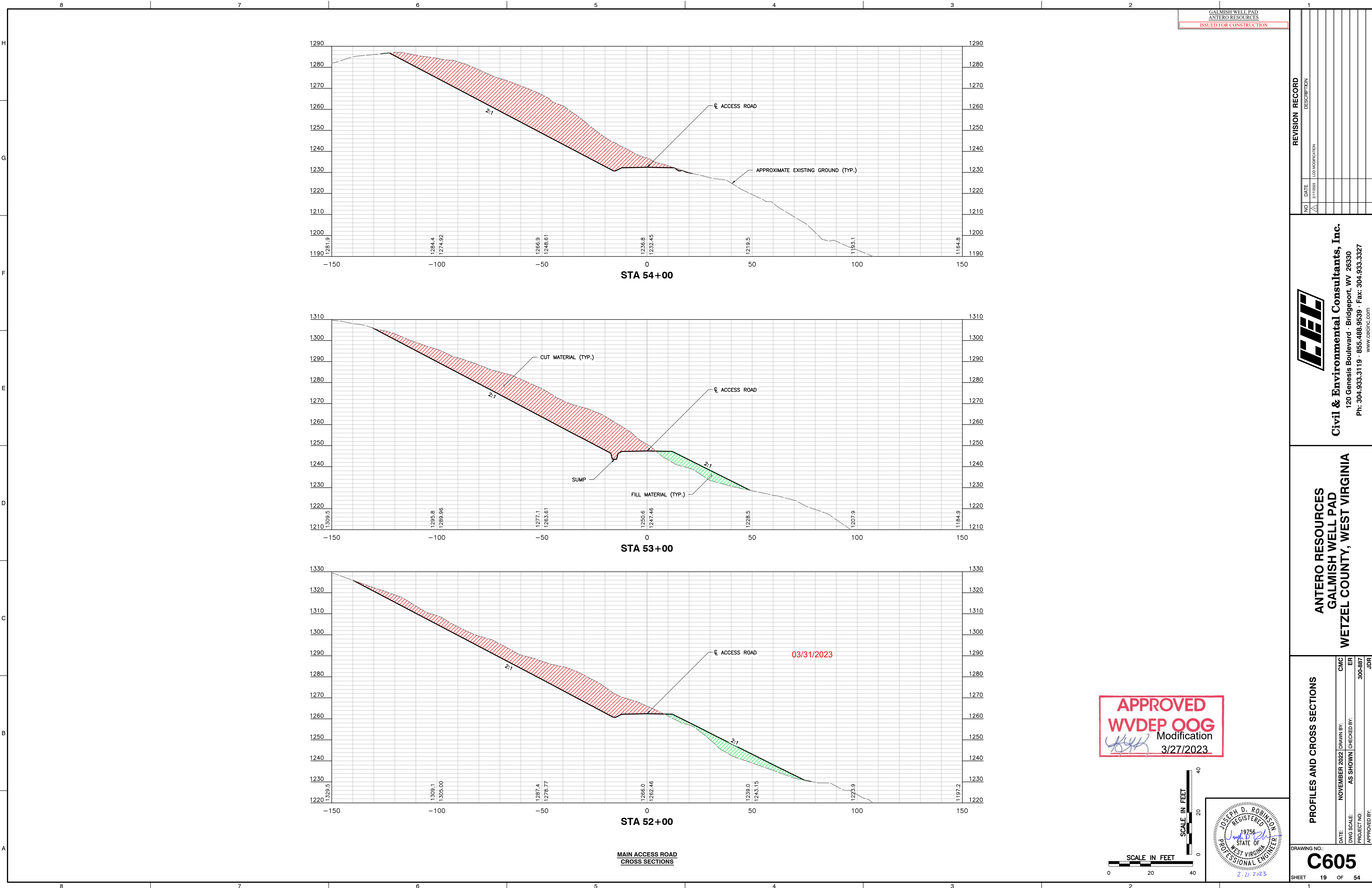
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SHEET 18 OF 54

APPROVED
WVDEP OOG
Modification
3/27/2023



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GALMISH WELL PAD
ANTERO RESOURCES
ISSUED FOR CONSTRUCTION

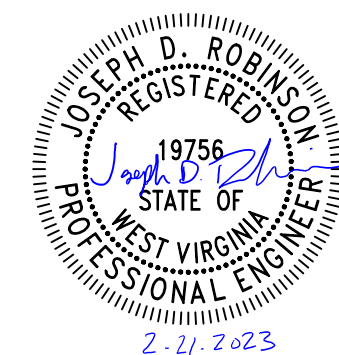
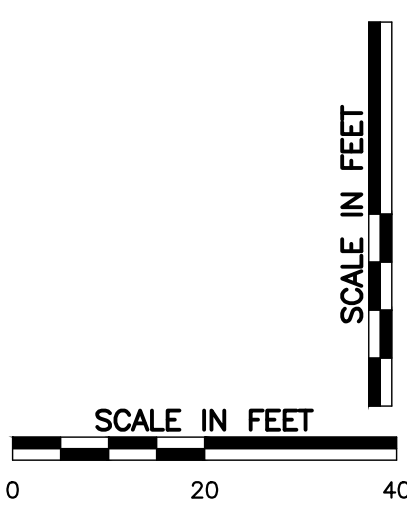
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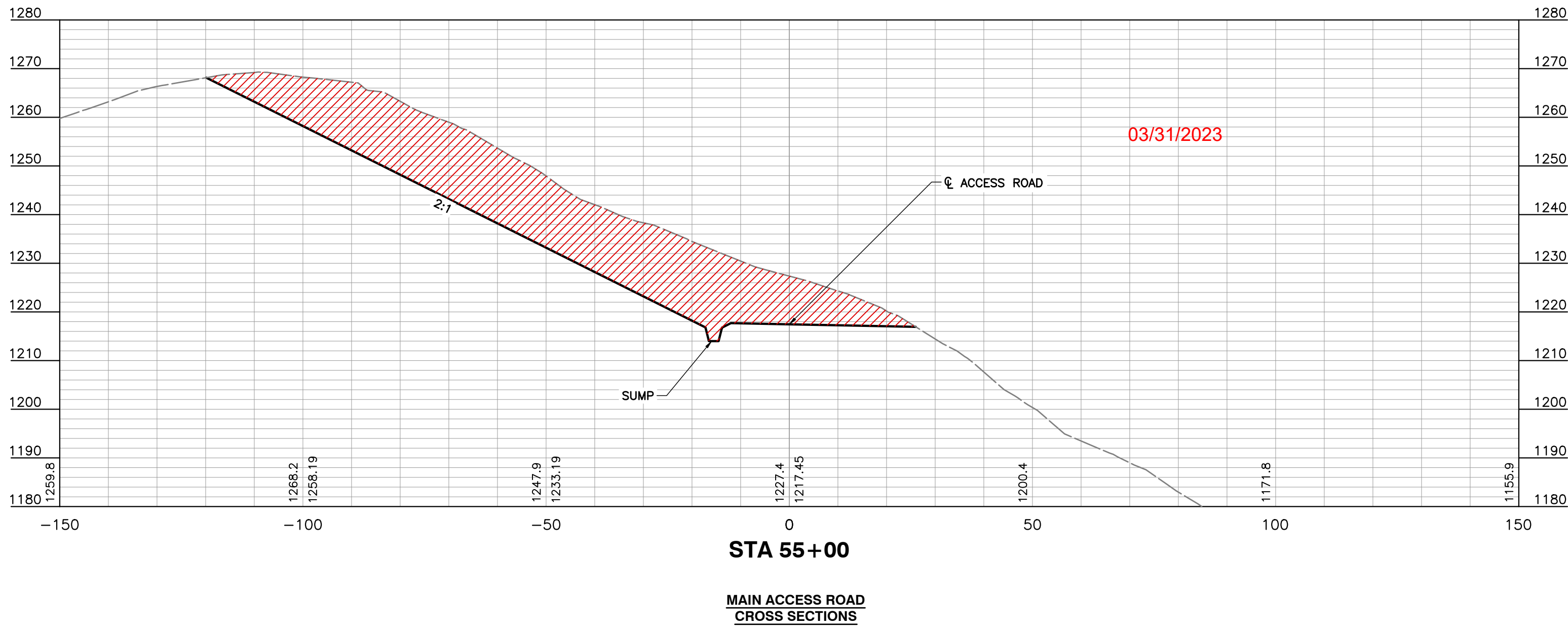
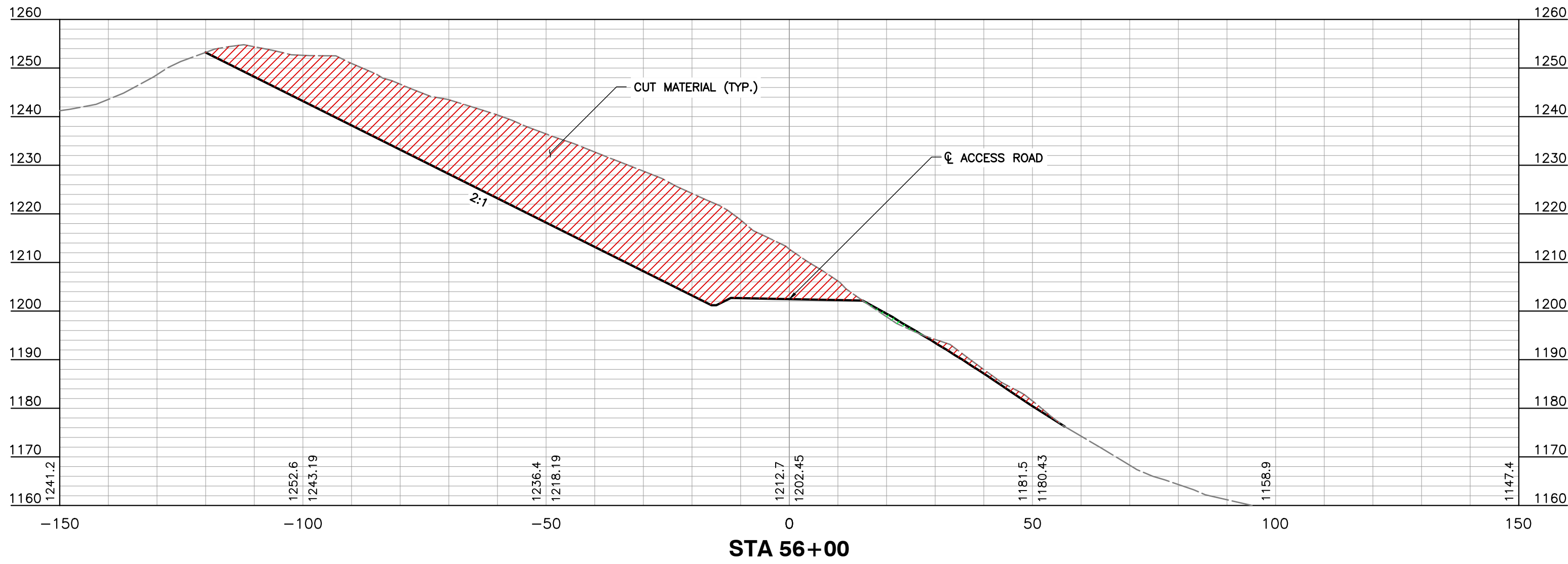
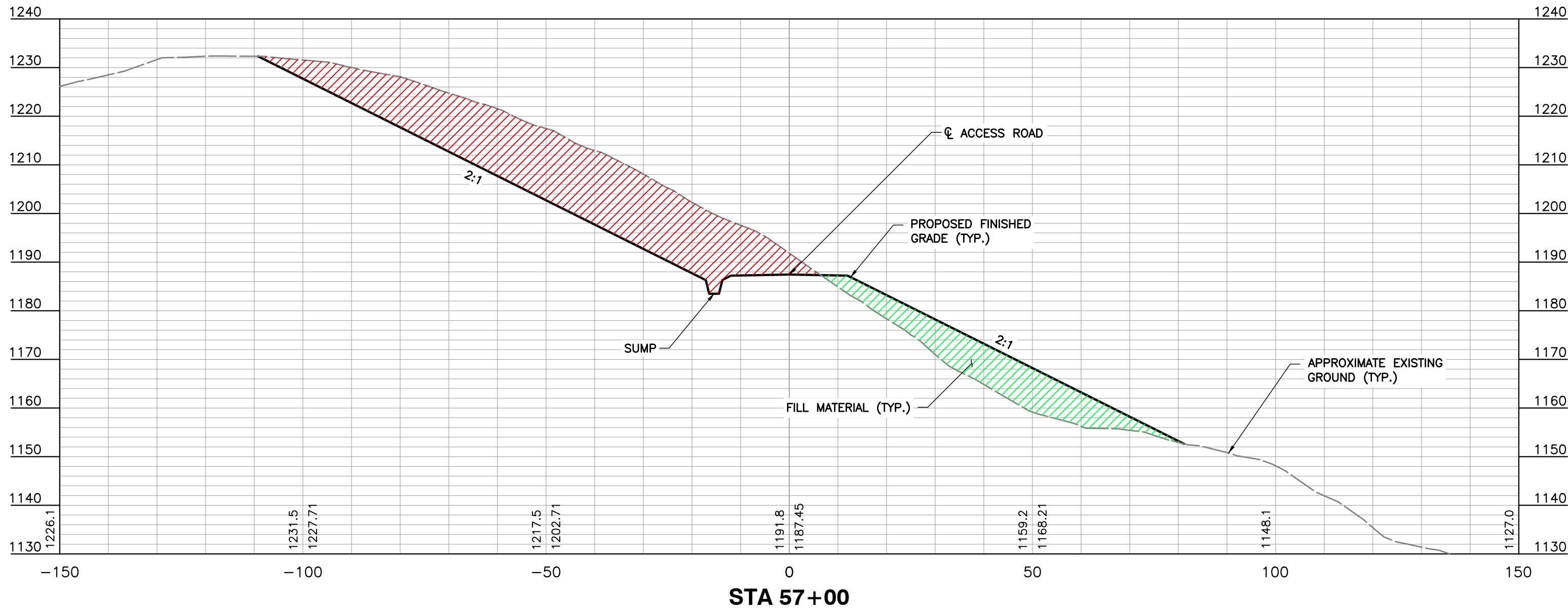
ANTERO RESOURCES
GALMISH WELL PAD
WETZEL COUNTY, WEST VIRGINIA

PROFILES AND CROSS SECTIONS	
DATE:	NOVEMBER 2022
DWG SCALE:	AS SHOWN
PROJECT NO:	300-887
APPROVED BY:	JDR
DRAWING NO.:	C605
SHEET	19 OF 54

APPROVED
WVDEP OOG
Modification
3/27/2023



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MAIN ACCESS ROAD
CROSS SECTIONS

GALMISH WELL PAD
ANTERO RESOURCES
ISSUED FOR CONSTRUCTION

REVISION RECORD

NO	DATE	DESCRIPTION
1	2/7/2023	LOG MODIFICATION

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ANTERO RESOURCES
GALMISH WELL PAD
WETZEL COUNTY, WEST VIRGINIA

PROFILES AND CROSS SECTIONS

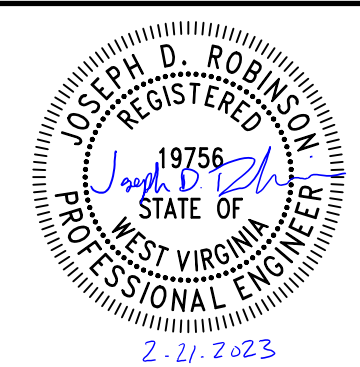
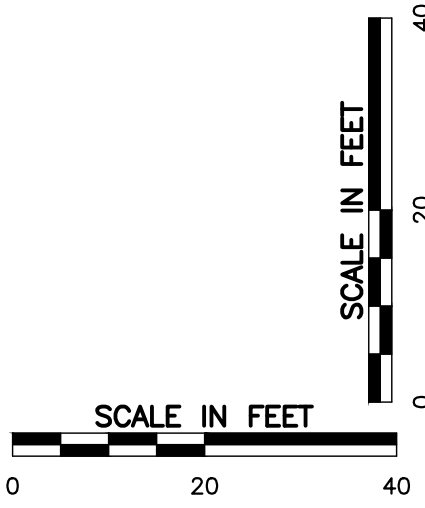
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PROJECT NO:	300-887	APPROVED BY:	JDR

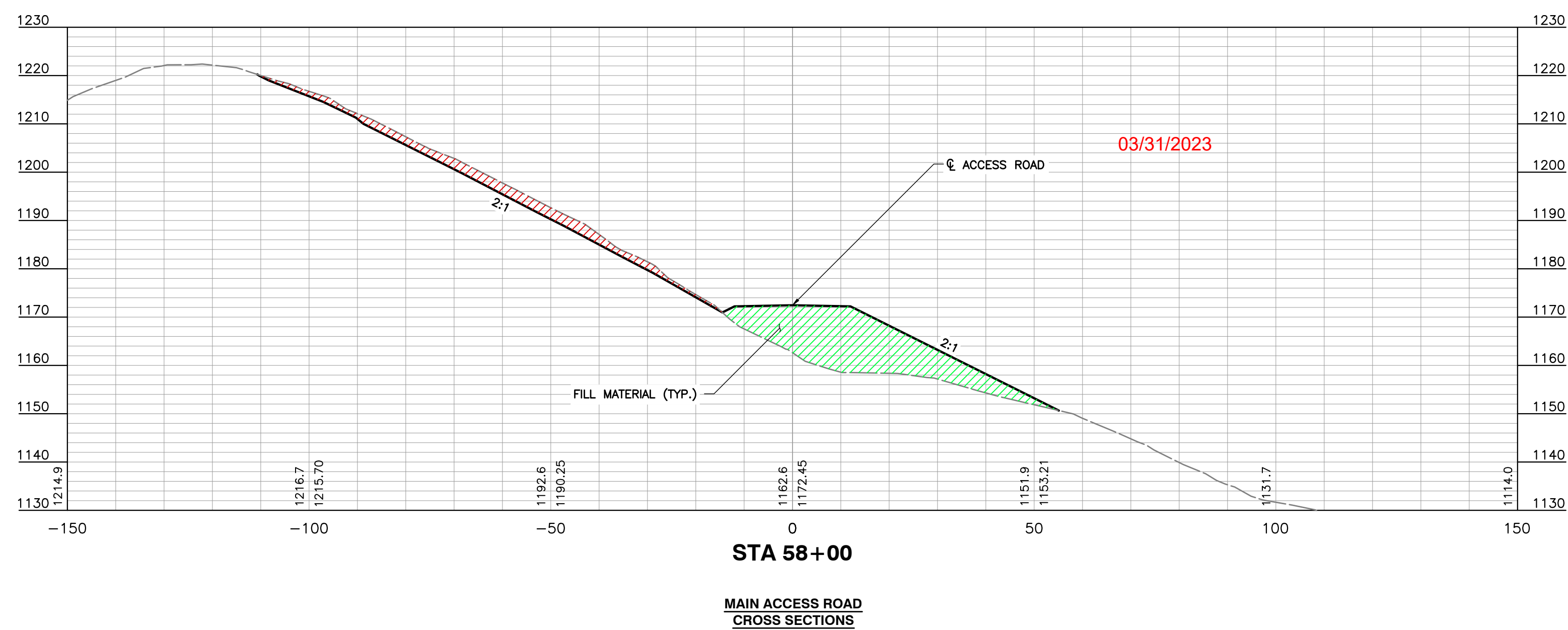
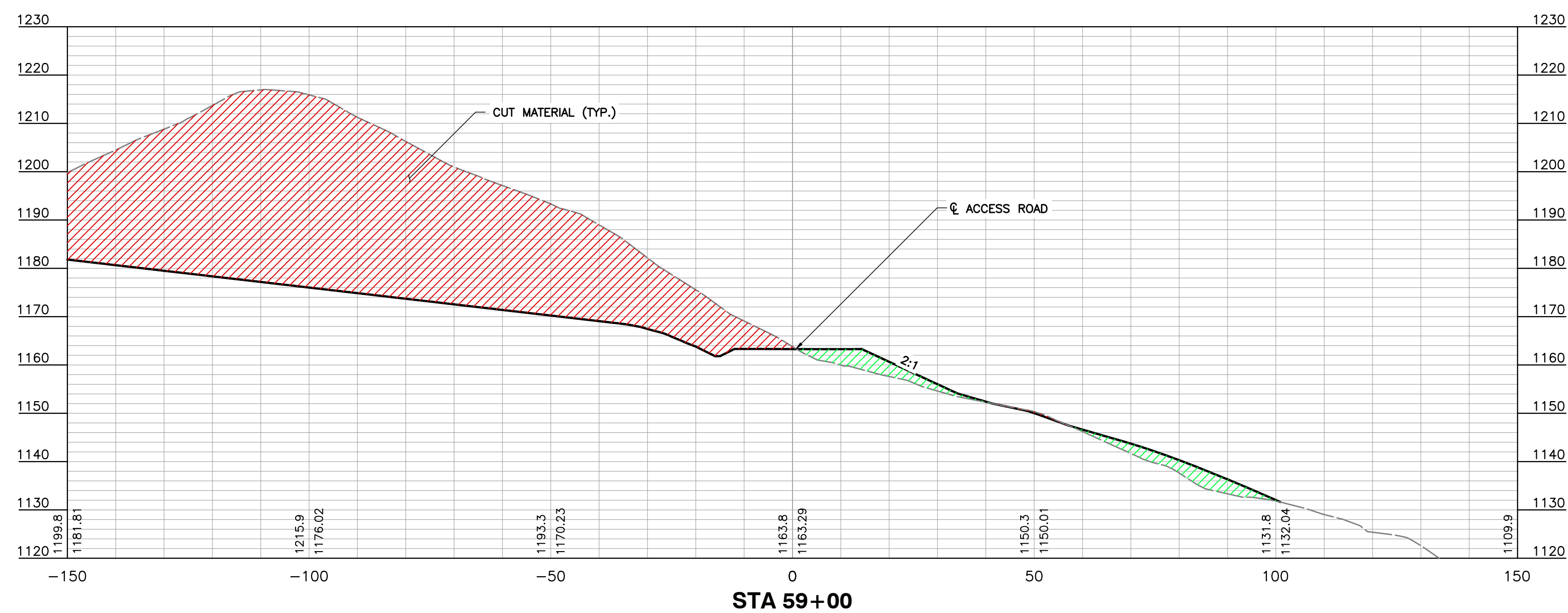
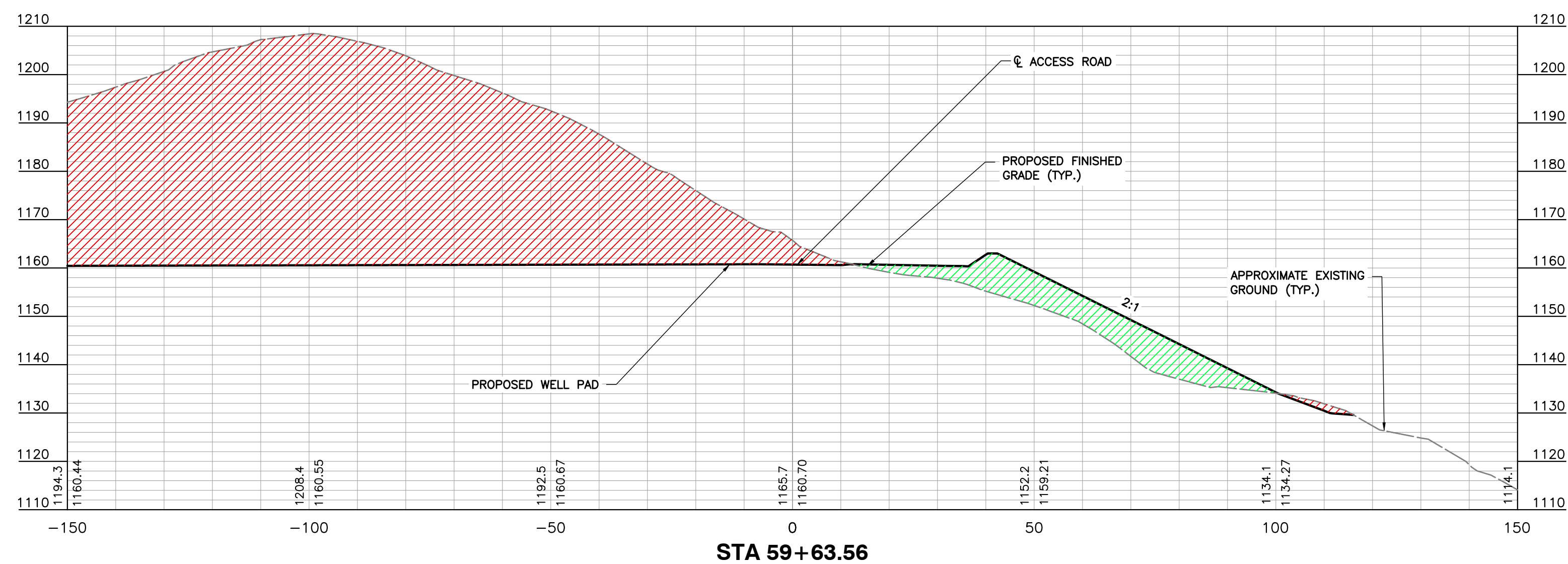
DRAWING NO.:

C606

SHEET 20 OF 54

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WVDEP OOG
Modification
3/27/2023





GALMISH WELL PAD
ANTERO RESOURCES

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**ANTERO RESOURCES
GALMISH WELL PAD
WETZEL COUNTY, WEST VIRGINIA**

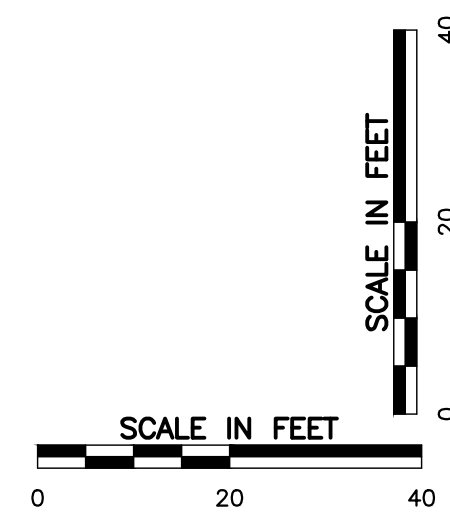
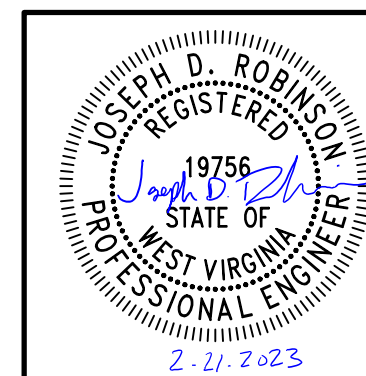
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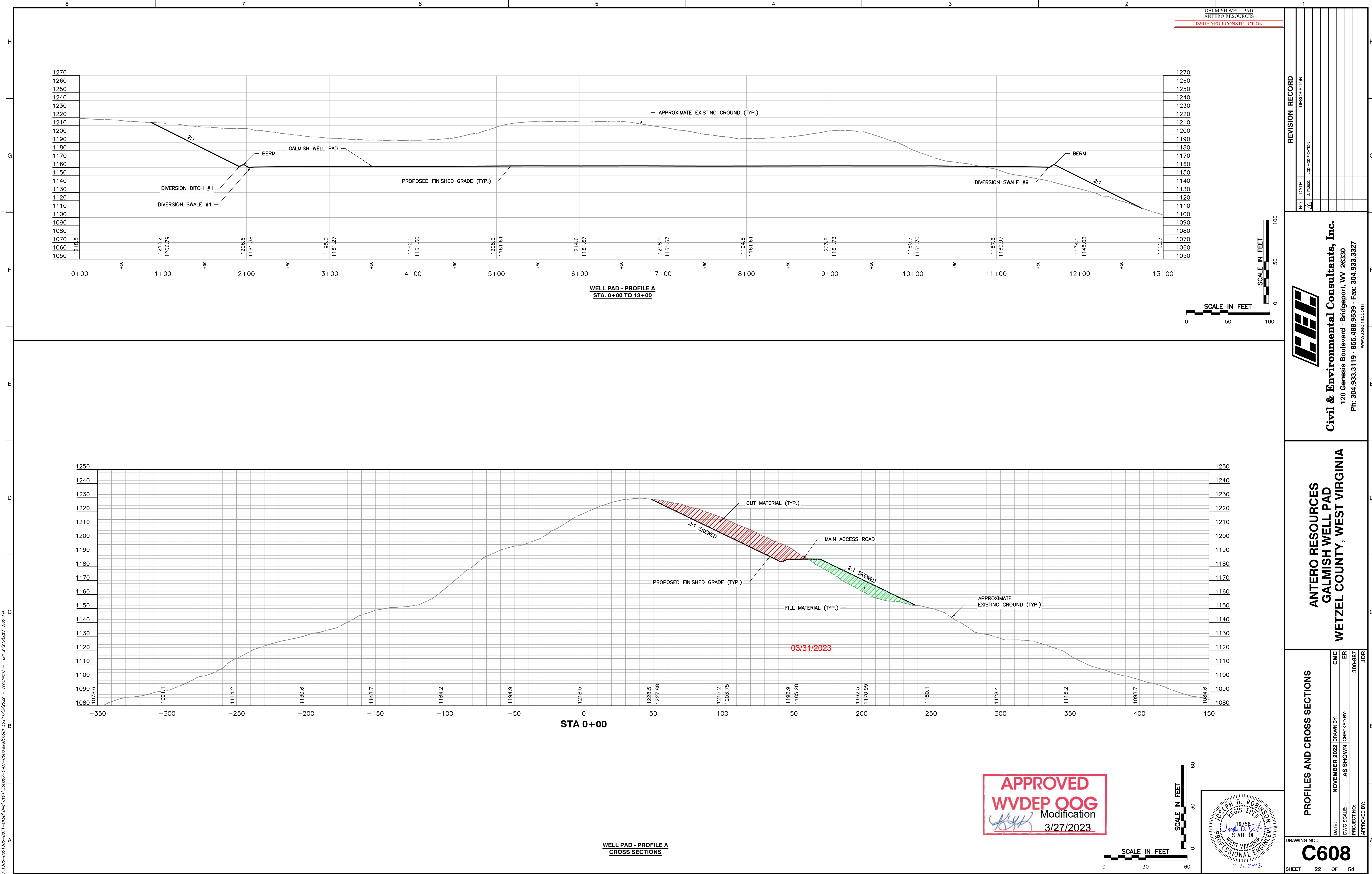
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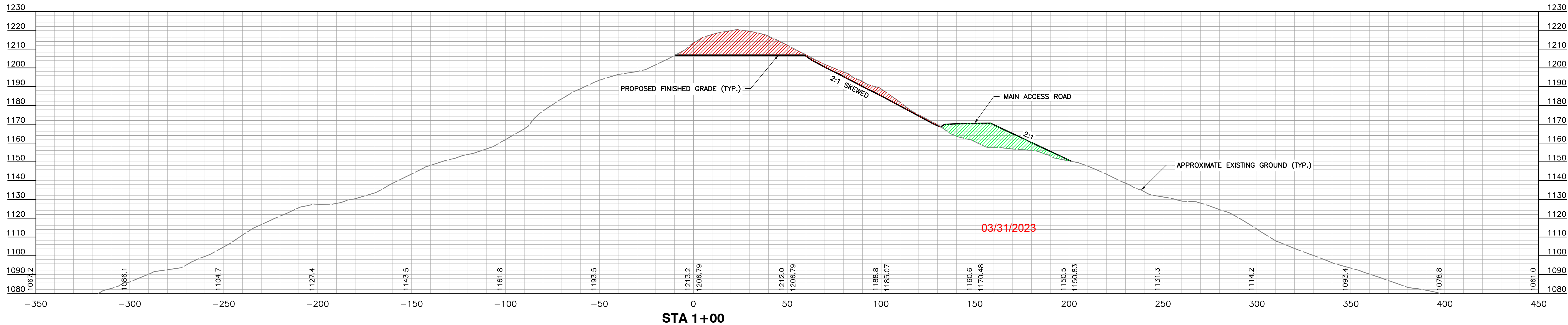
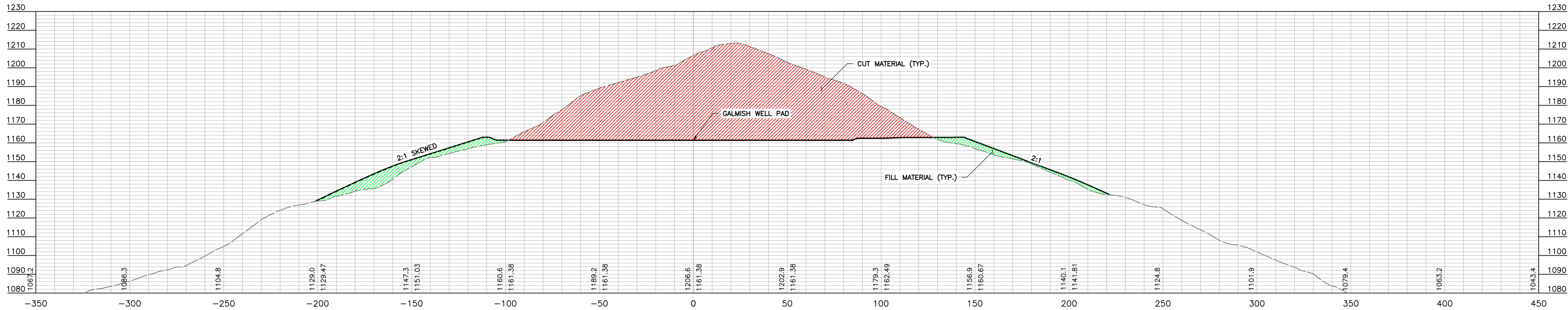
SHEET 21 OF 54

APPROVED
WVDEP OOG
Modification
3/27/2023



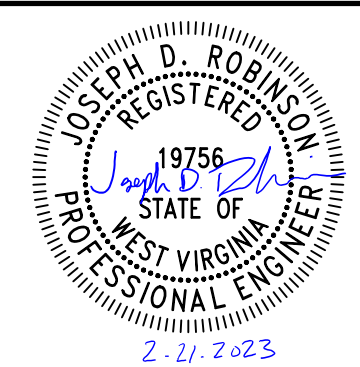
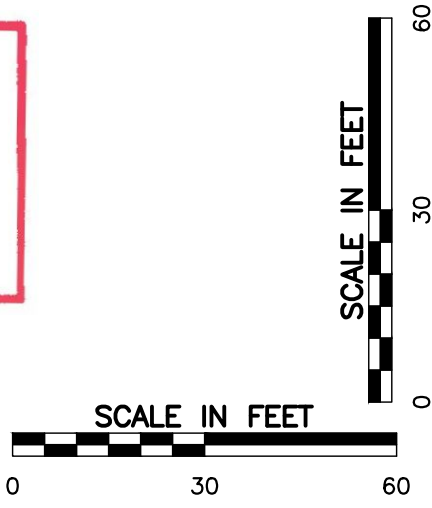


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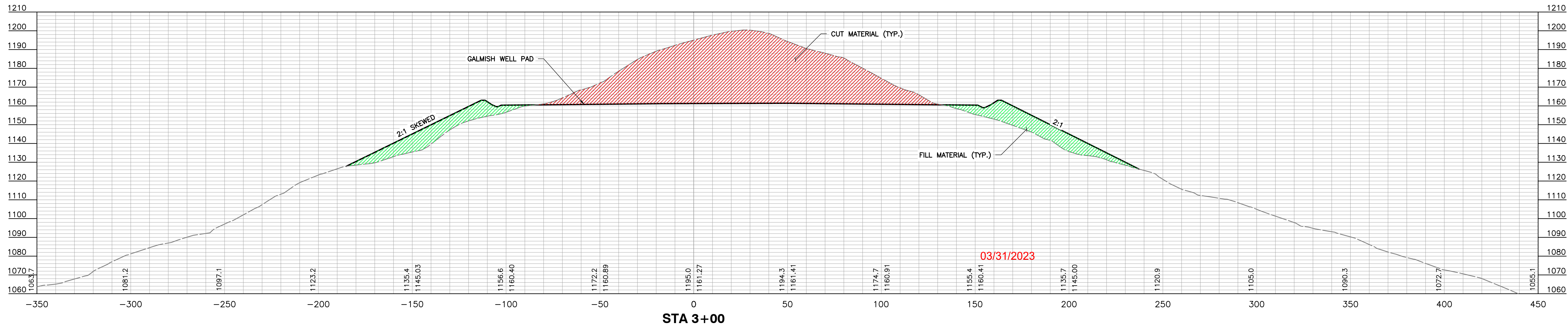
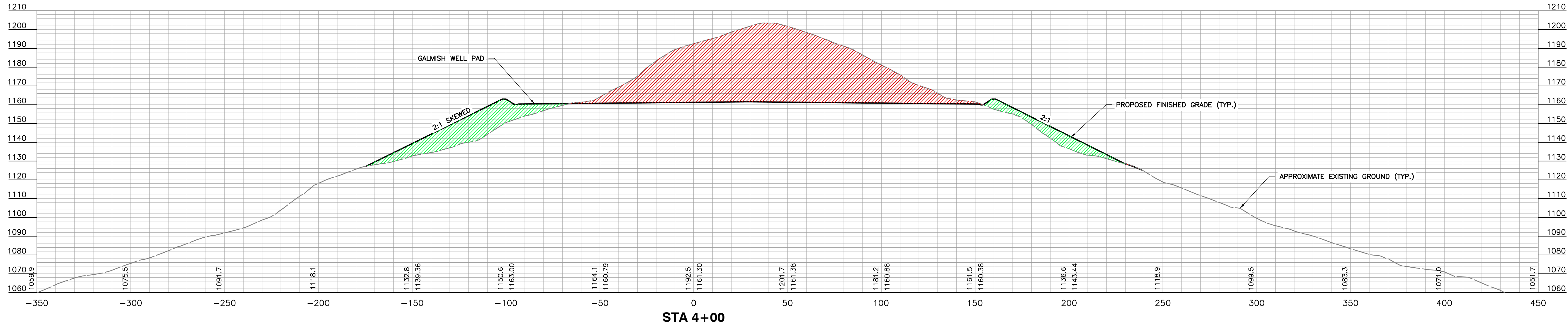
WELL PAD - PROFILE A
CROSS SECTIONS

APPROVED
WVDEP OOG
Modification
3/27/2023



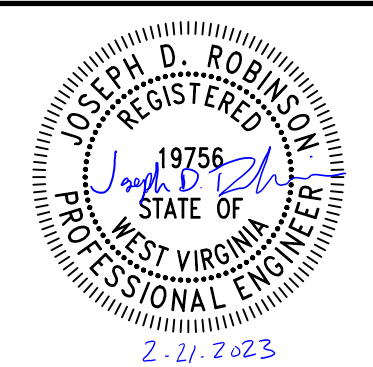
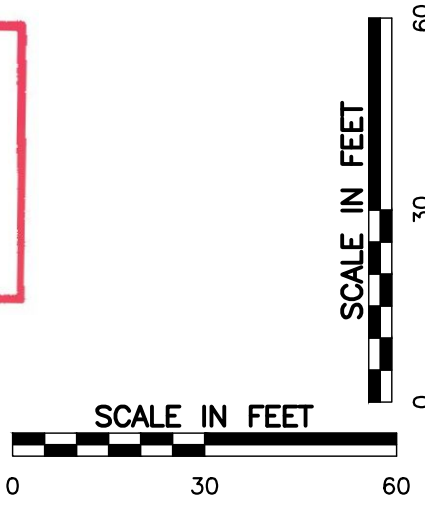
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WELL PAD - PROFILE A
CROSS SECTIONS

APPROVED
WVDEP OOG
Modification
3/27/2023



PROFILES AND CROSS SECTIONS

DATE:	NOVEMBER 2022	DRAWN BY:	CNC
DWG SCALE:	AS SHOWN	CHECKED BY:	ER
PROJECT NO:	300-887	APPROVED BY:	JDR

DRAWING NO.:
C610
SHEET 24 OF 54

ANTERO RESOURCES
GALMISH WELL PAD
WETZEL COUNTY, WEST VIRGINIA



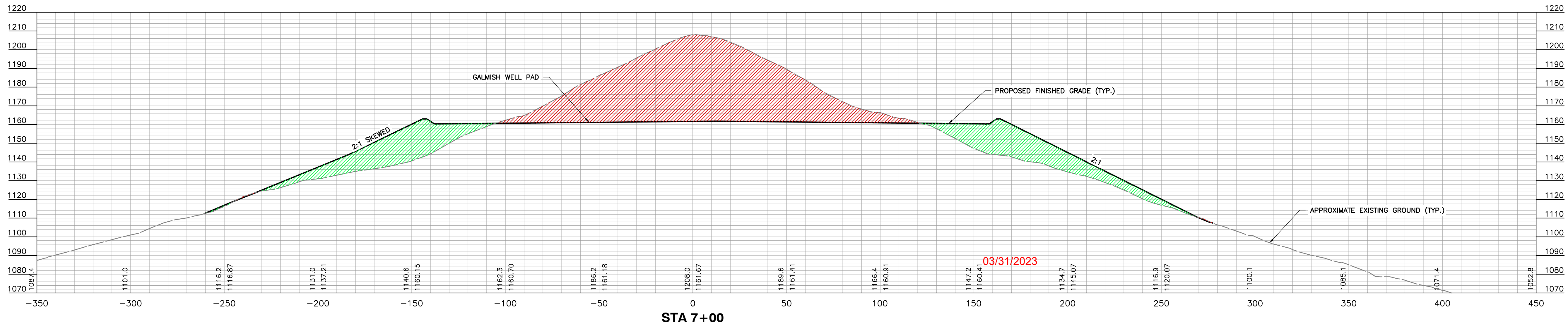
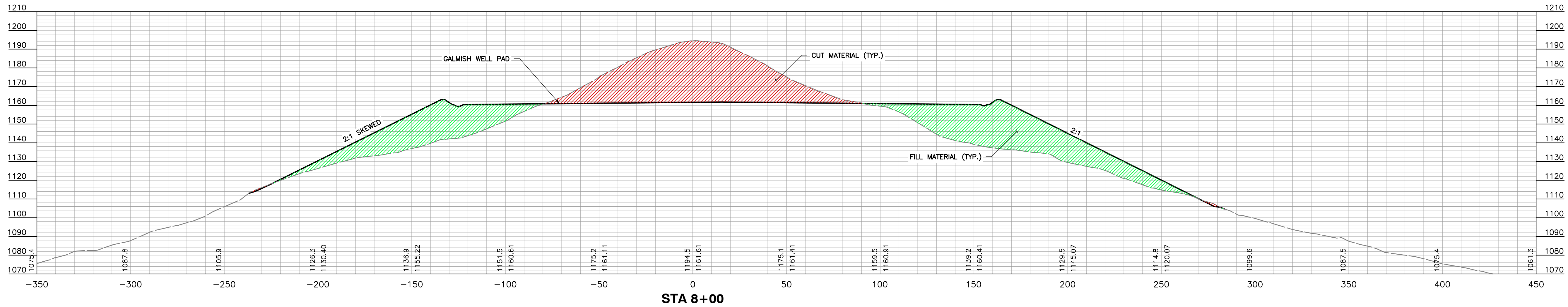
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REVISION RECORD

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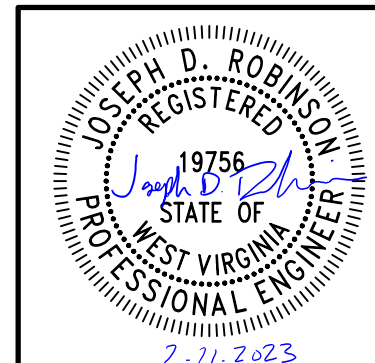
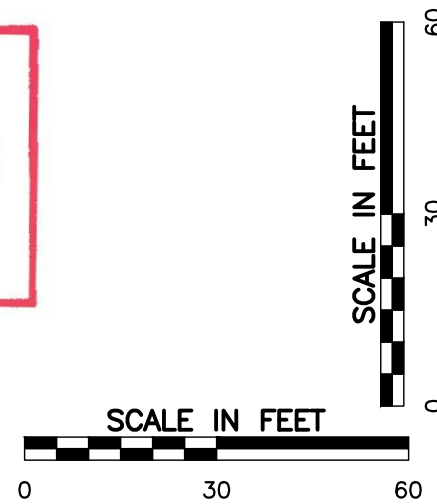
GALMISH WELL PAD
ANTERO RESOURCES
ISSUED FOR CONSTRUCTION

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WELL PAD - PROFILE A
CROSS SECTIONS

APPROVED
WVDEP OOG
Modification
3/27/2023



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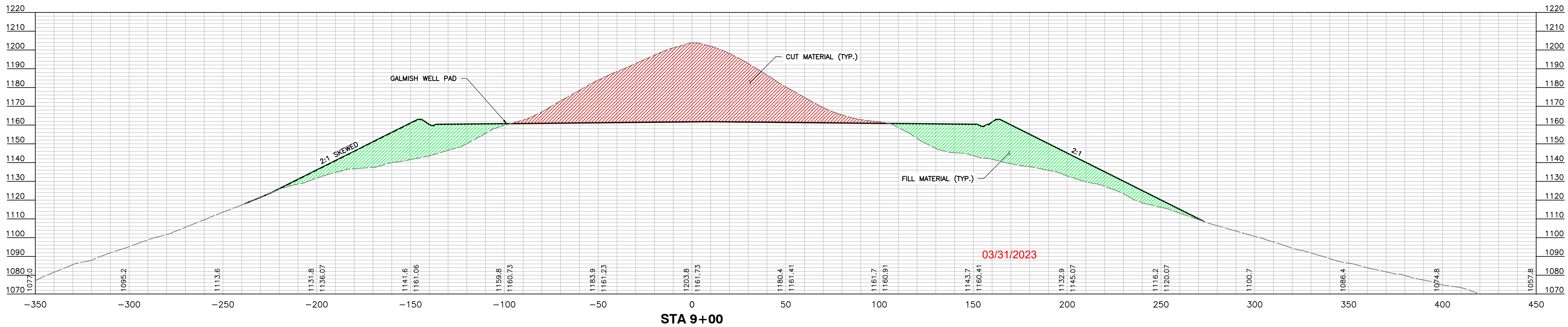
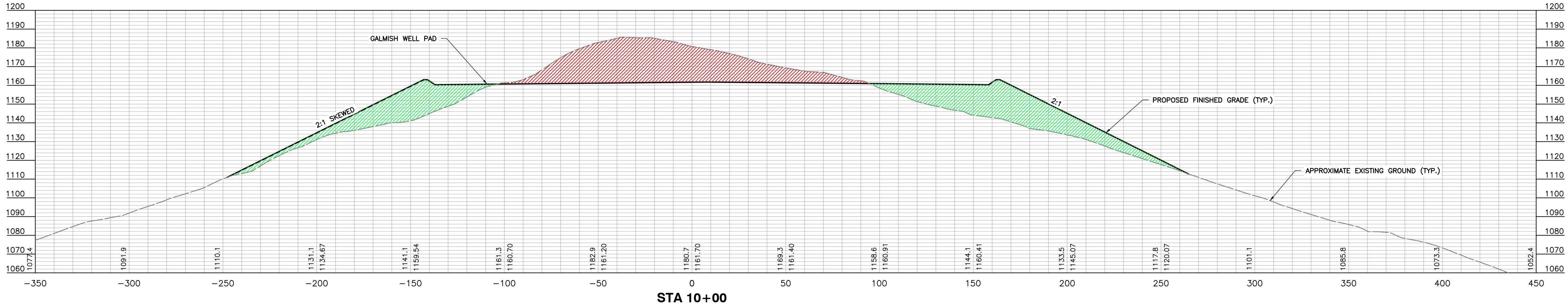
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GALMISH WELL PAD
WETZEL COUNTY, WEST VIRGINIA

PROFILES AND CROSS SECTIONS	
DATE:	NOVEMBER 2022
DWG SCALE:	AS SHOWN
PROJECT NO:	300-887
APPROVED BY:	JDR

DRAWING NO.: **C612**

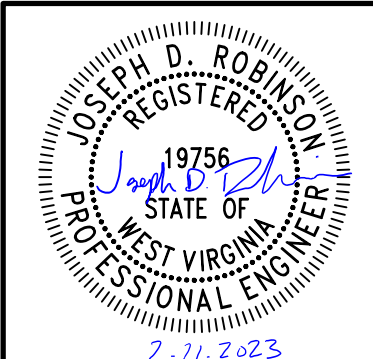
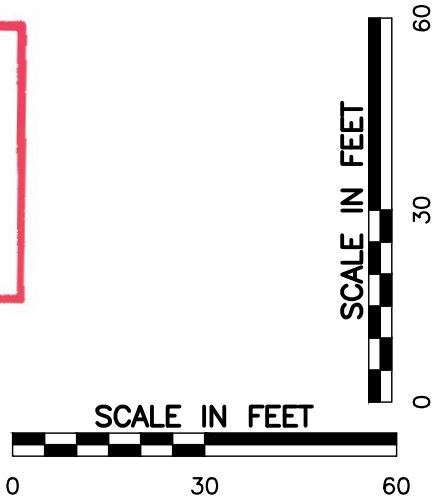
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WELL PAD - PROFILE A
CROSS SECTIONS

APPROVED
WVDEP OOG
Modification
3/27/2023



PROFILES AND CROSS SECTIONS

DATE:	NOVEMBER 2022	DRAWN BY:	CNC
DWG SCALE:	AS SHOWN	CHECKED BY:	ER
PROJECT NO:	300-887	APPROVED BY:	JDR

DRAWING NO.:
C613
SHEET 27 OF 54

ANTERO RESOURCES
GALMISH WELL PAD
WETZEL COUNTY, WEST VIRGINIA

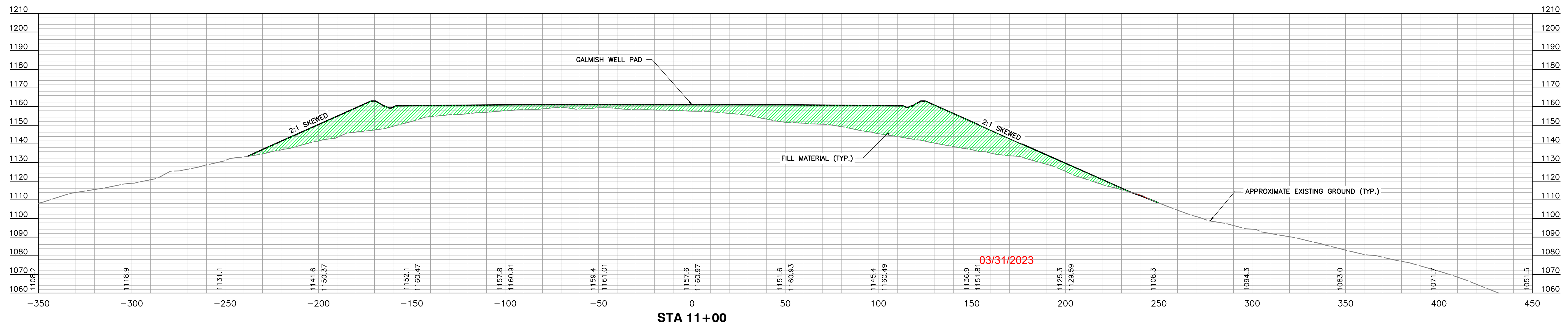
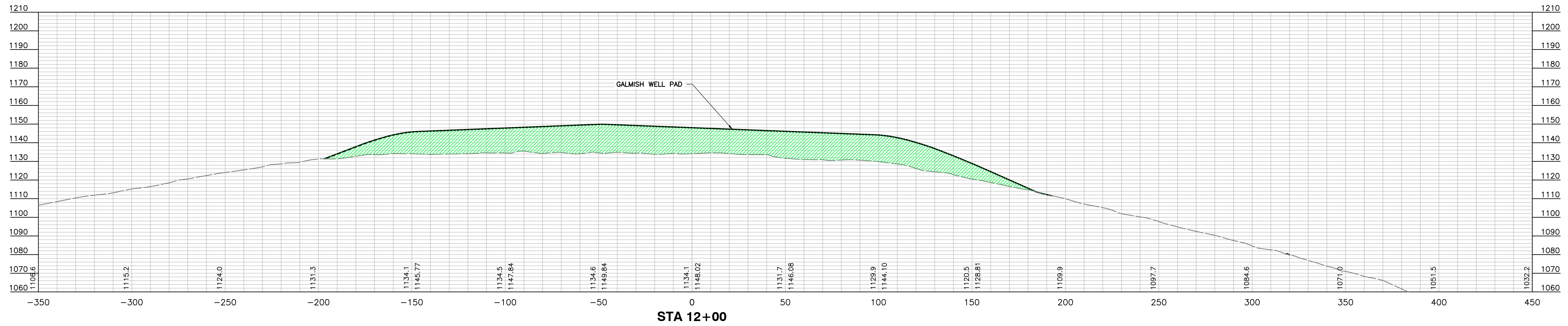


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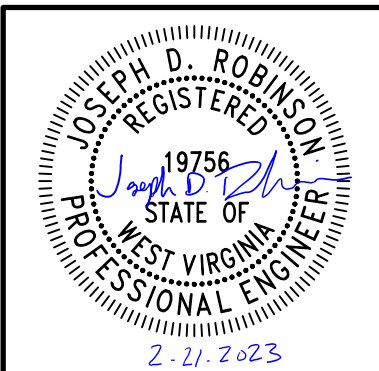
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GALMISH WELL PAD
ANTERO RESOURCES
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WELL PAD - PROFILE A
CROSS SECTIONS

APPROVED
WVDEP OOG
Modification
3/27/2023



PROFILES AND CROSS SECTIONS

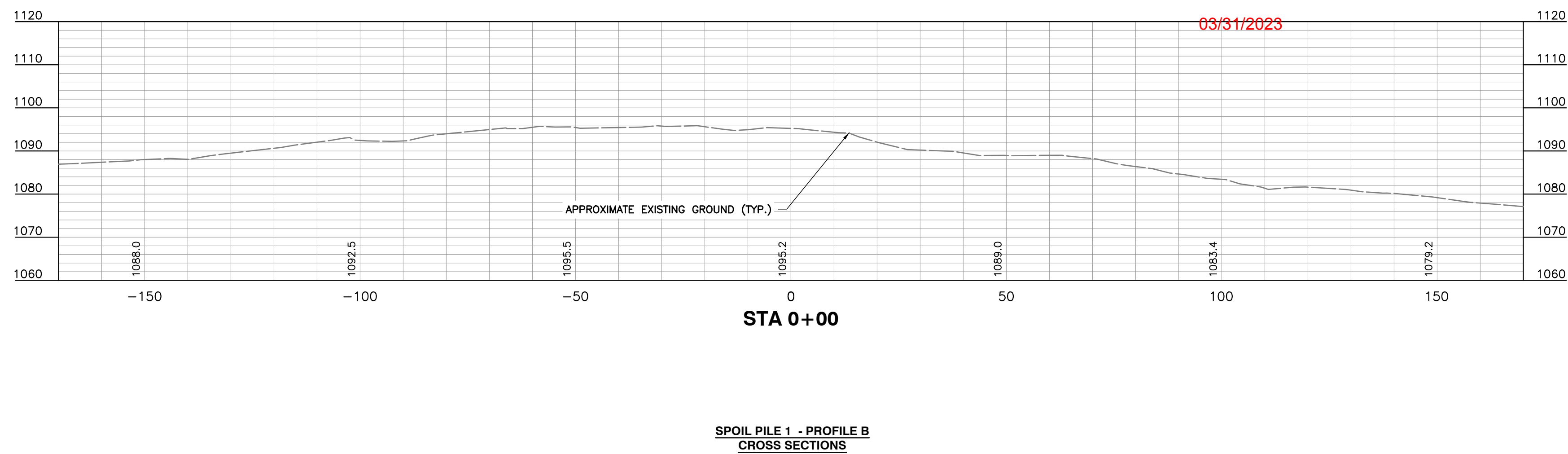
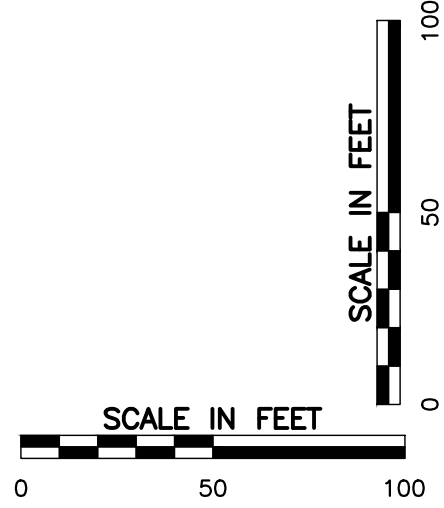
**ANTERO RESOURCES
GALMISH WELL PAD
WETZEL COUNTY, WEST VIRGINIA**

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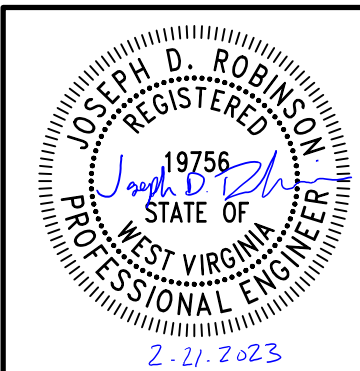
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3/27/2023

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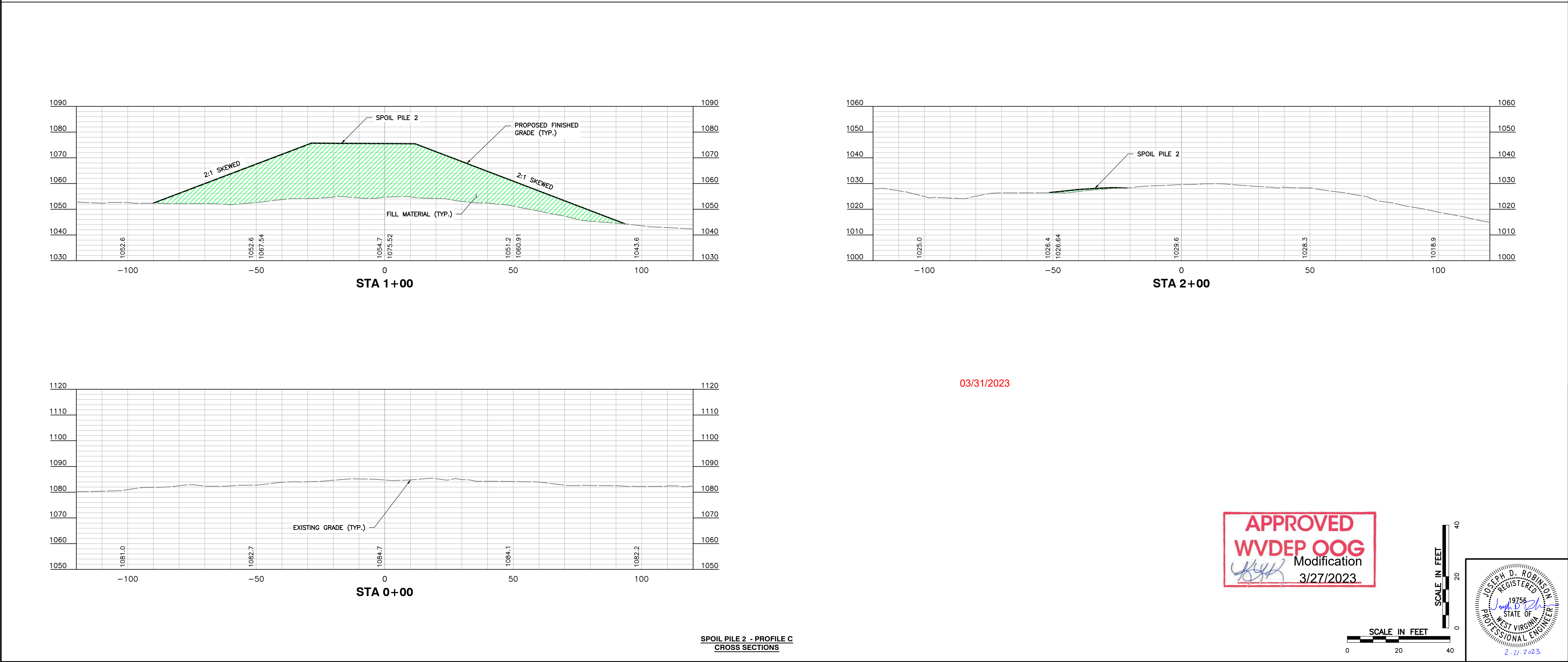
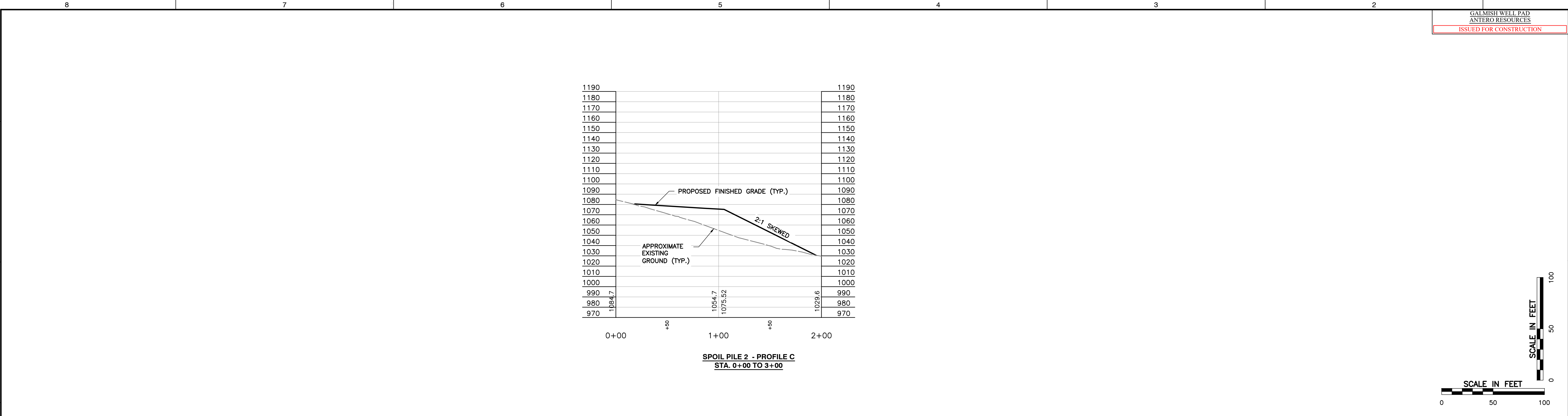
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**ANTERO RESOURCES
GALMISH WELL PAD
WETZEL COUNTY, WEST VIRGINIA**

DATE:	NOVEMBER 2022	DRAWN BY:	CMC
DWG SCALE:	AS SHOWN	CHECKED BY:	ER
PROJECT NO:			300-887
APPROVED BY:			JDR

DRAWING NO.:
C615
SHEET 29 OF 54

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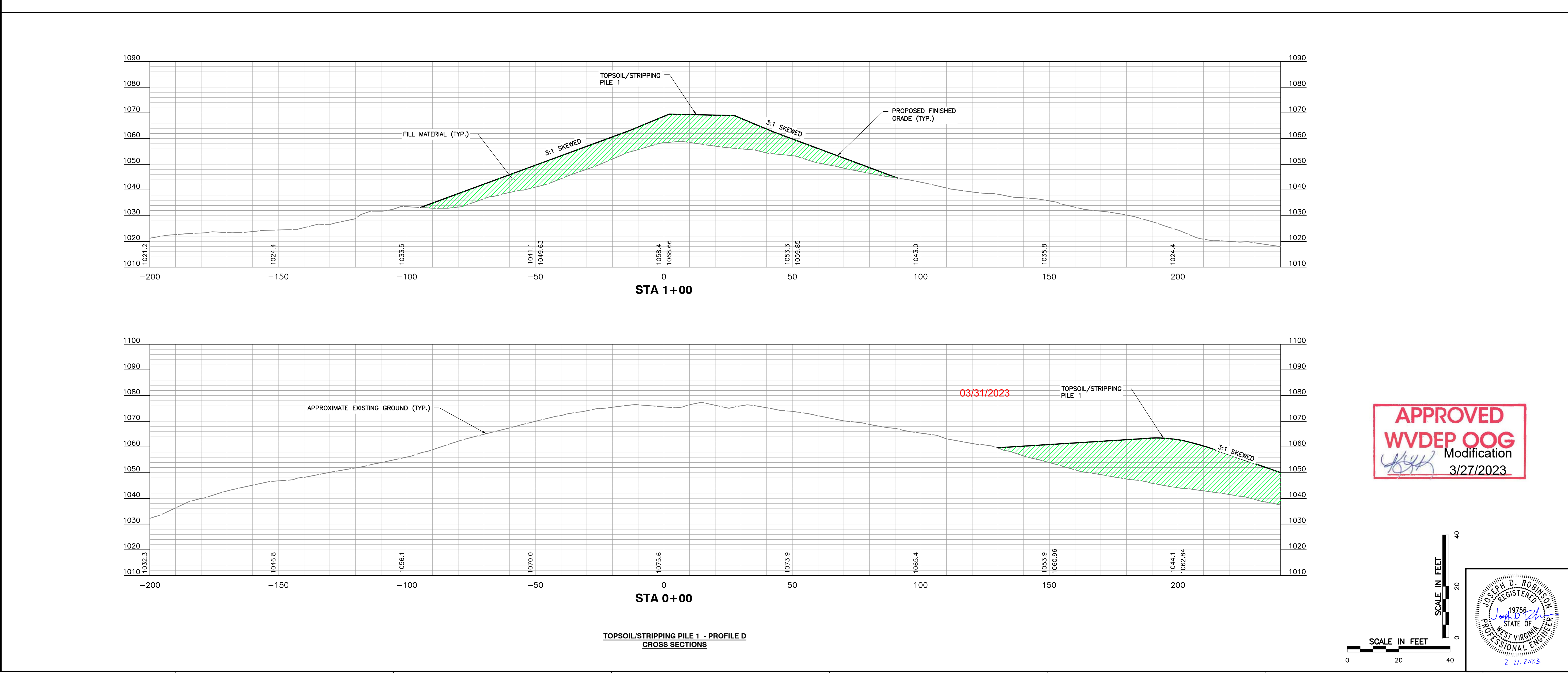
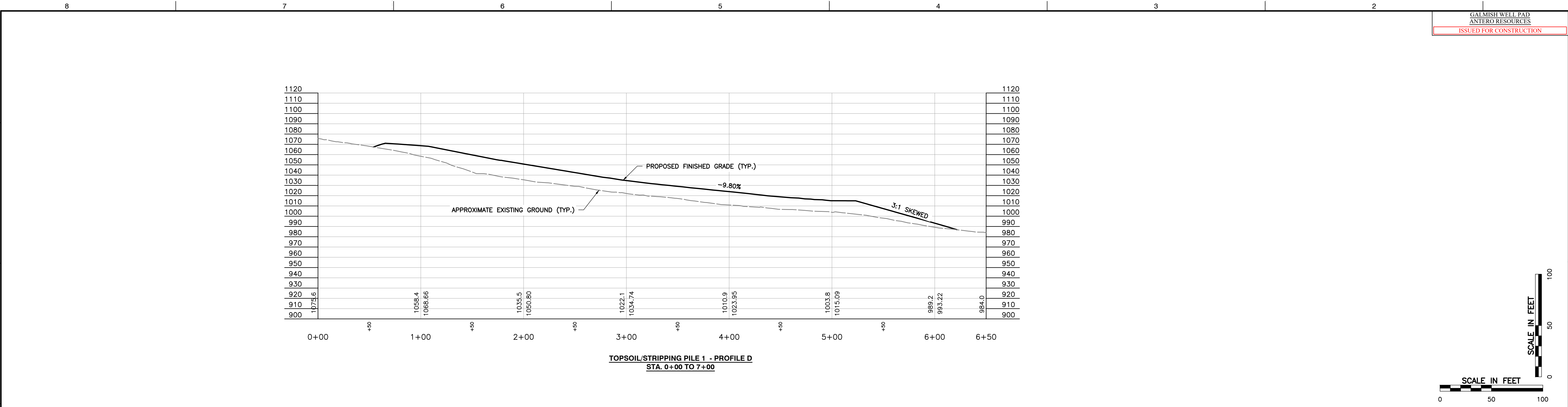
ANTERO RESOURCES
GALMISH WELL PAD
WETZEL COUNTY, WEST VIRGINIA

PROFILES AND CROSS SECTIONS

DRAWING NO.: **C617**
SHEET **31** OF **54**

DATE: NOVEMBER 2022
DRAWN BY: CMC
DWG SCALE: AS SHOWN
CHECKED BY: ER
PROJECT NO: 300-887
APPROVED BY: JDR

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GALMISH WELL PAD
ANTERO RESOURCES
ISSUED FOR CONSTRUCTION

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ANTERO RESOURCES
GALMISH WELL PAD
WETZEL COUNTY, WEST VIRGINIA

PROFILES AND CROSS SECTIONS

DRAWING NO.:
C618

SHEET 32 OF 54

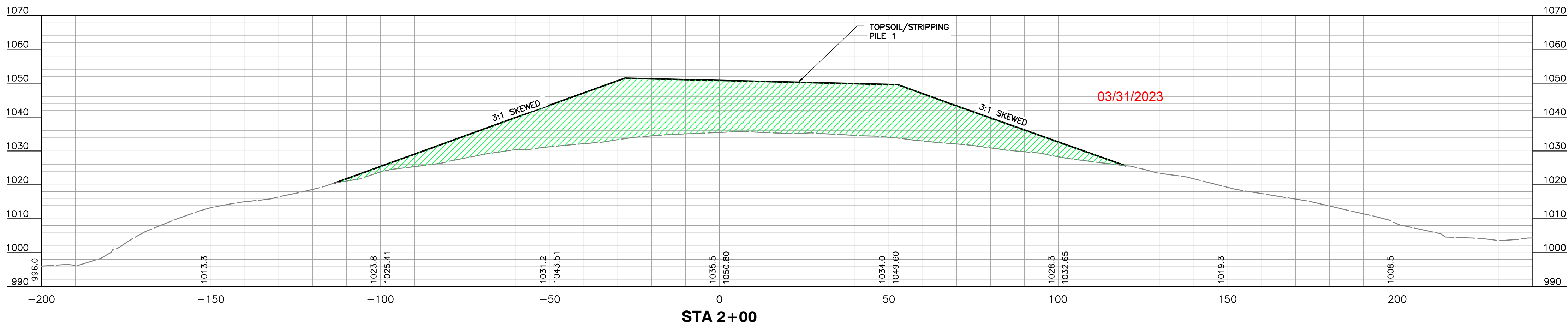
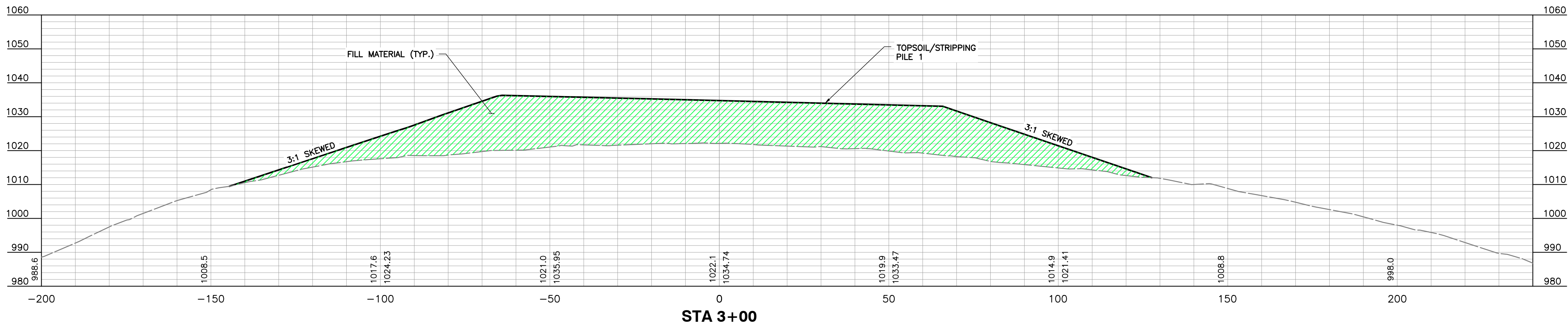
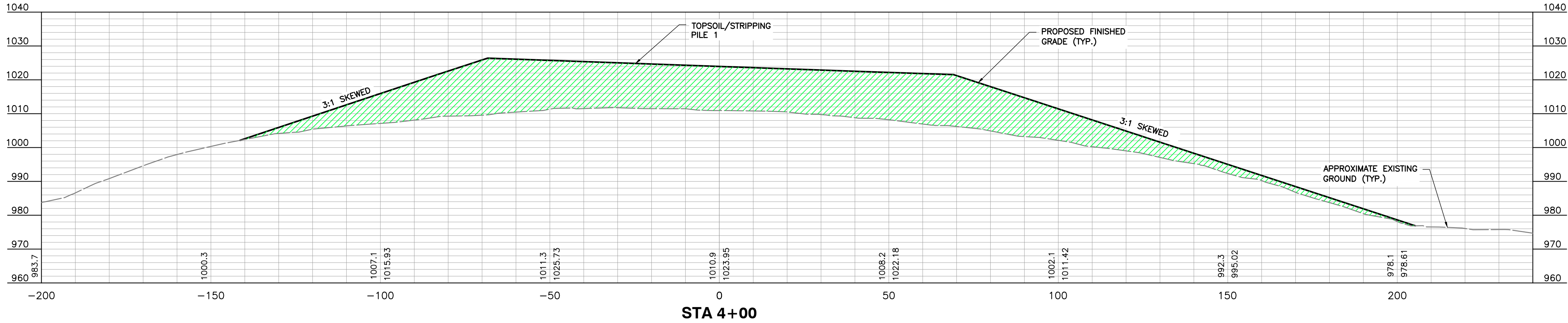
DATE: NOVEMBER 2022
DWG SCALE: AS SHOWN
PROJECT NO: 300-887
APPROVED BY: JDR

DATE: NOVEMBER 2022
DRAWN BY: CMC
ER
300-887

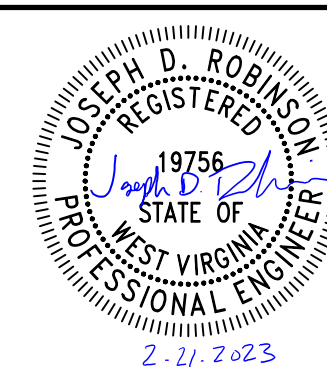
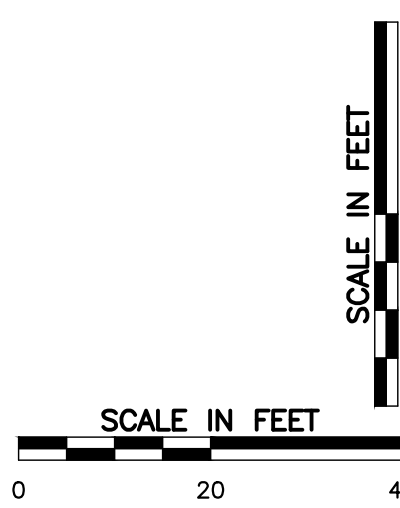
APPROVED WVDEP OOG Modification 3/27/2023

JOSEPH D. ROBINSON
REGISTERED PROFESSIONAL ENGINEER
19756
STATE OF WEST VIRGINIA
2-21-2023

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TOPSOIL/STRIPPING PILE 1 - PROFILE D
CROSS SECTIONS



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Modification
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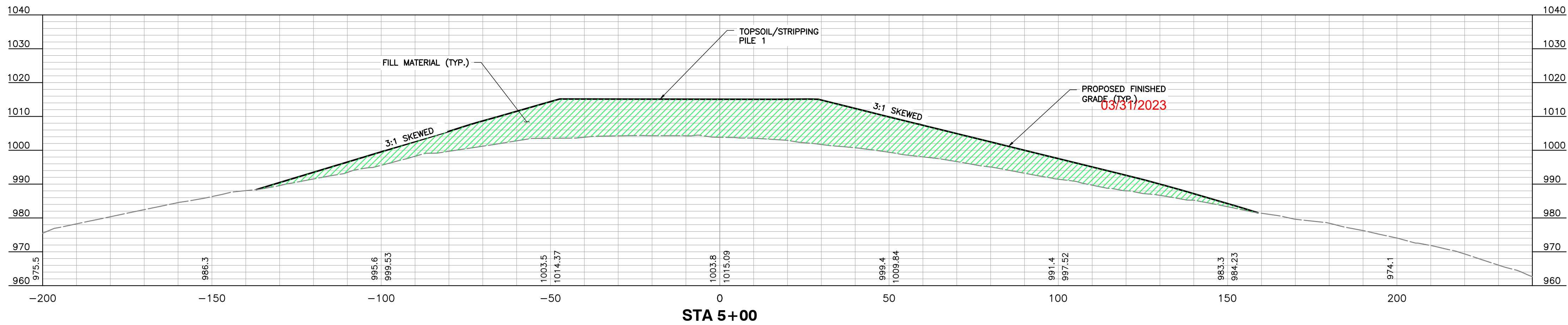
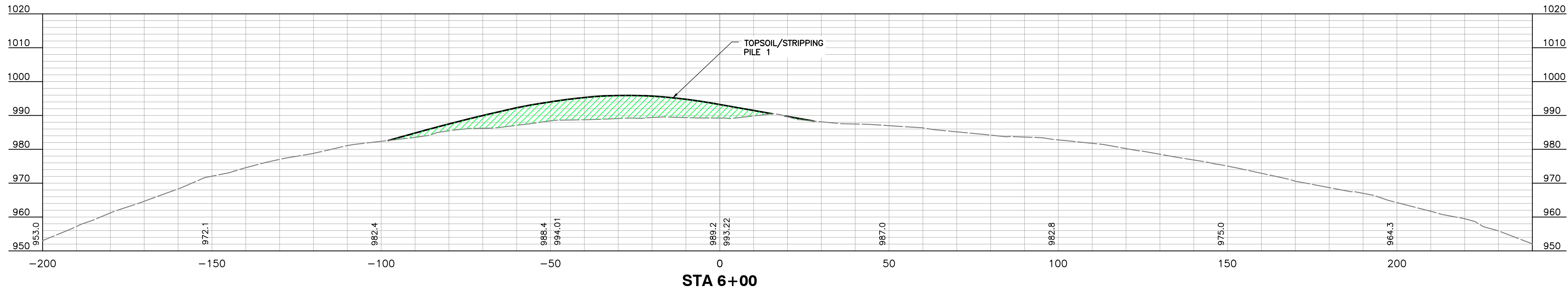
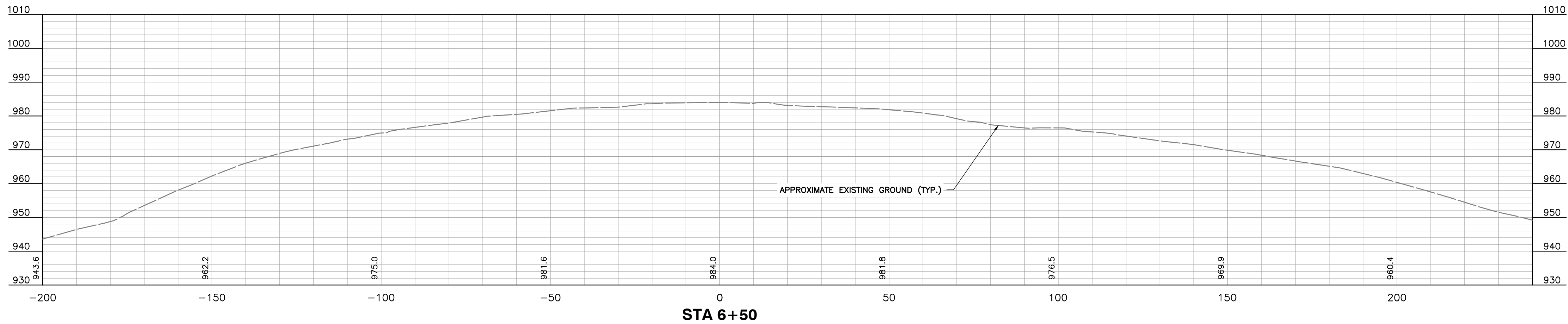
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ANTERO RESOURCES
GALMISH WELL PAD
WETZEL COUNTY, WEST VIRGINIA

PROFILES AND CROSS SECTIONS	
DATE:	NOVEMBER 2022
DWG SCALE:	AS SHOWN
PROJECT NO:	300-887
APPROVED BY:	JDR
DRAWING NO.:	C619
SHEET	33 OF 54

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TOPSOIL/STRIPPING PILE 1 - PROFILE D
CROSS SECTIONS

GALMISH WELL PAD
ANTERO RESOURCES
ISSUED FOR CONSTRUCTION

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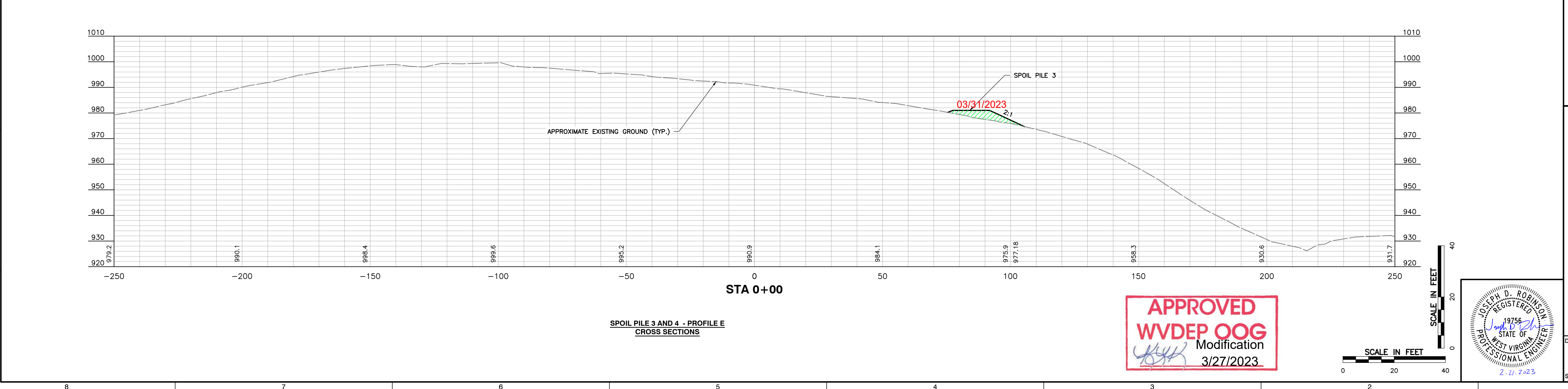
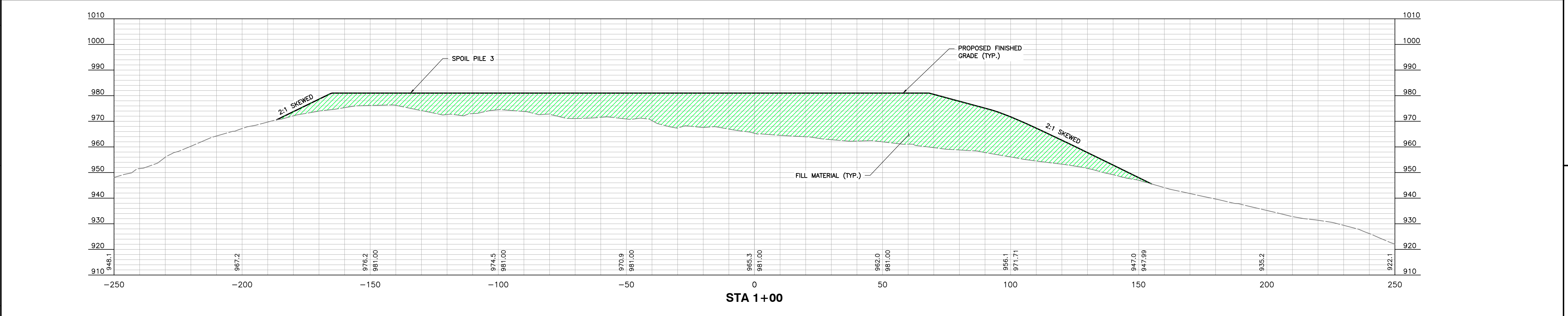
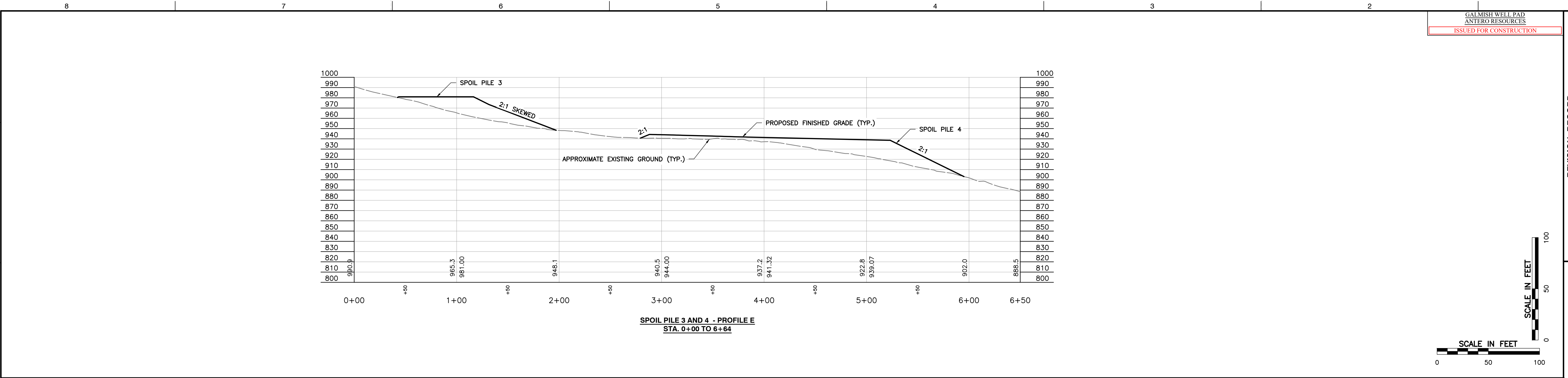
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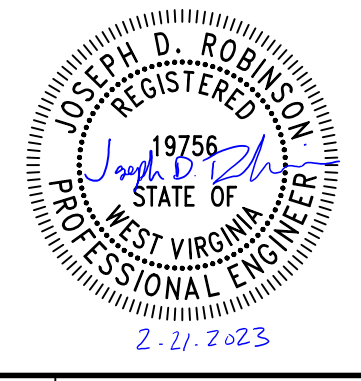
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3/27/2023



REVISION RECORD	
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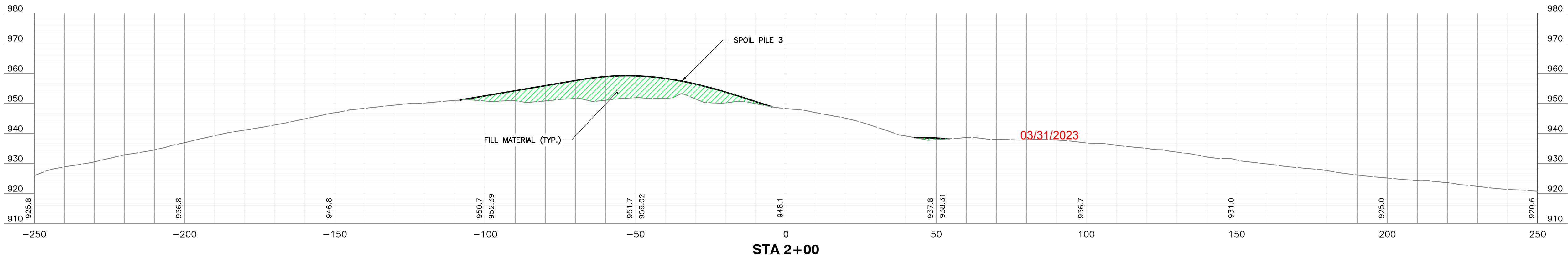
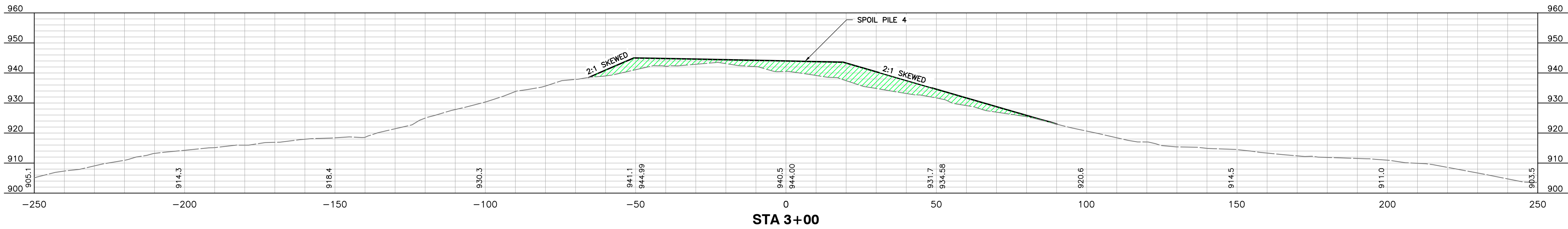
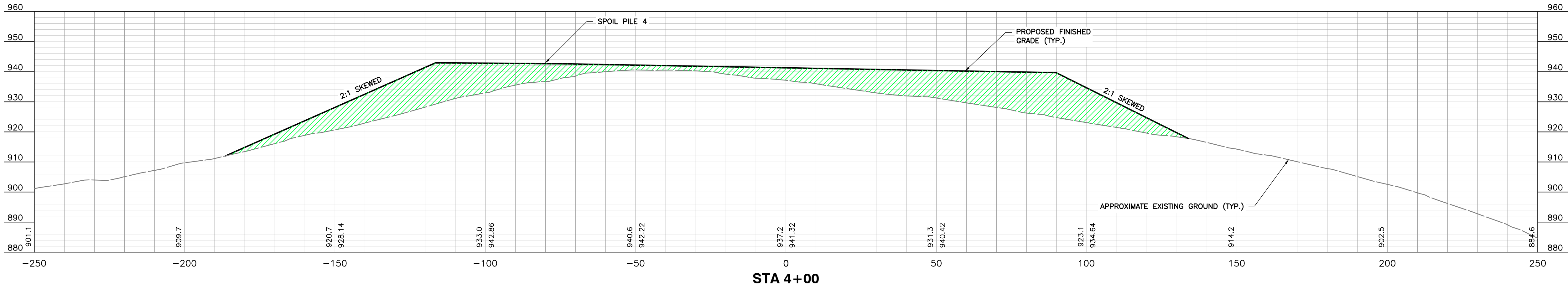
ANTERO RESOURCES
GALMISH WELL PAD
WETZEL COUNTY, WEST VIRGINIA

PROFILES AND CROSS SECTIONS	
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DWG SCALE:	AS SHOWN
PROJECT NO:	300-887
APPROVED BY:	JDR

DRAWING NO.: **C621**

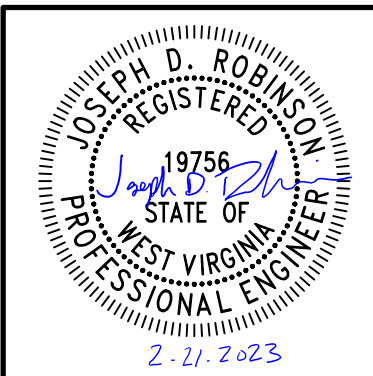
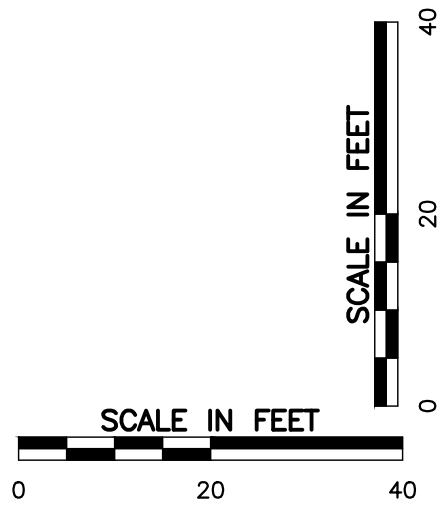
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SPOIL PILE 3 AND 4 - PROFILE E
CROSS SECTIONS

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Modification
3/27/2023



PROFILES AND CROSS SECTIONS

DRAWING NO.:

C622

SHEET 36 OF 54

DATE:	NOVEMBER 2022	DRAWN BY:	CNC
DWG SCALE:	AS SHOWN	CHECKED BY:	ER
PROJECT NO:	300-887	APPROVED BY:	JDR

ANTERO RESOURCES
GALMISH WELL PAD
WETZEL COUNTY, WEST VIRGINIA



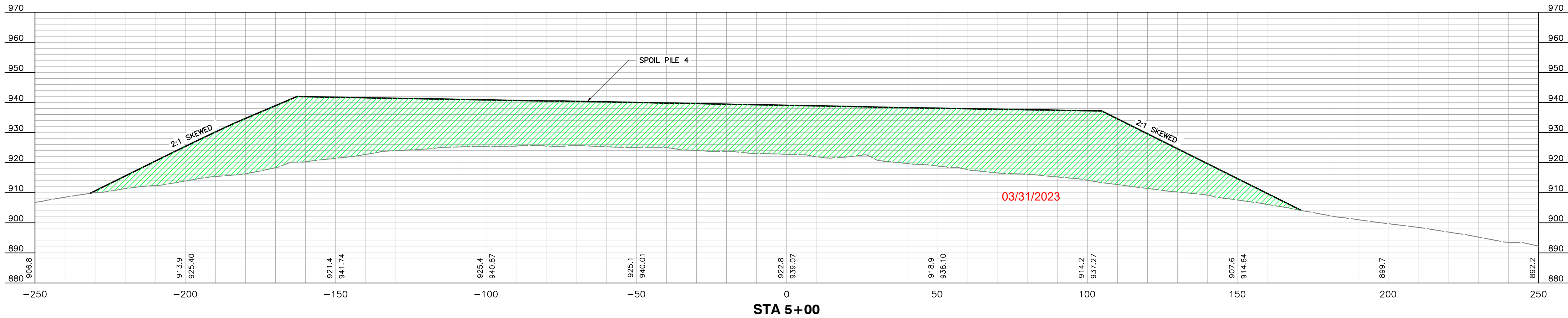
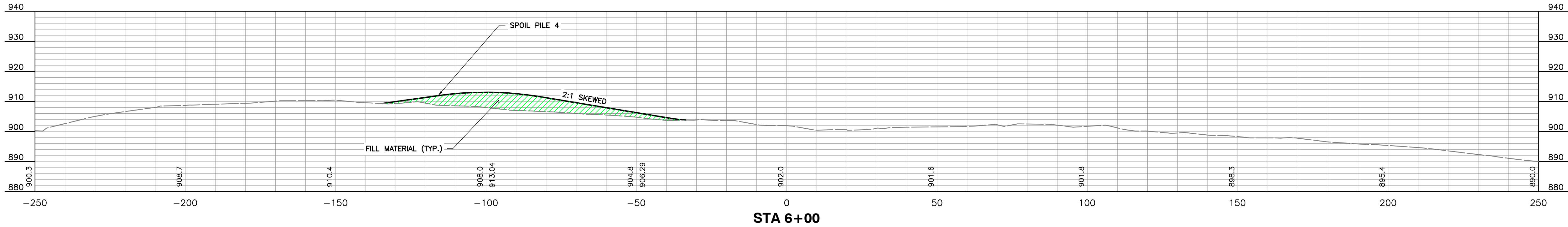
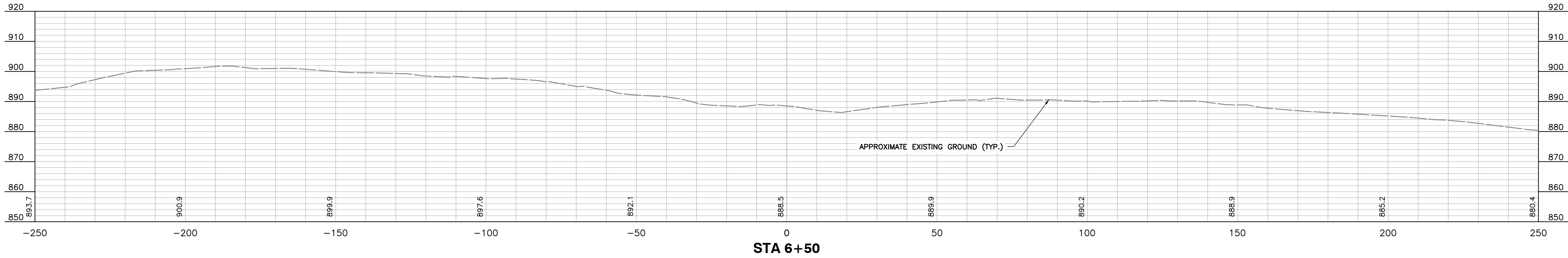
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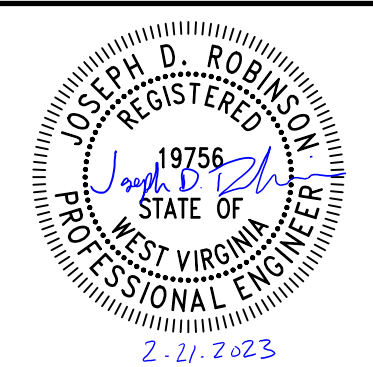
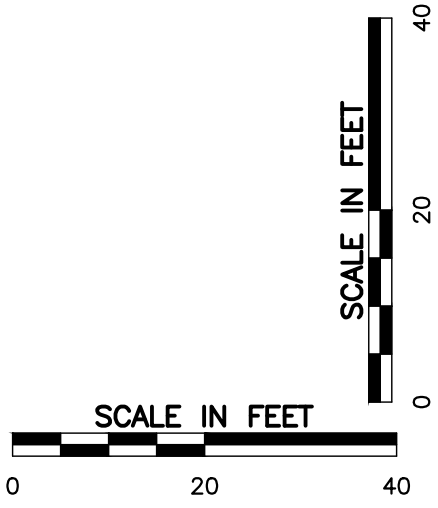
GALMISH WELL PAD
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SPOIL PILE 3 AND 4 - PROFILE E
CROSS SECTIONS

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Modification
3/27/2023

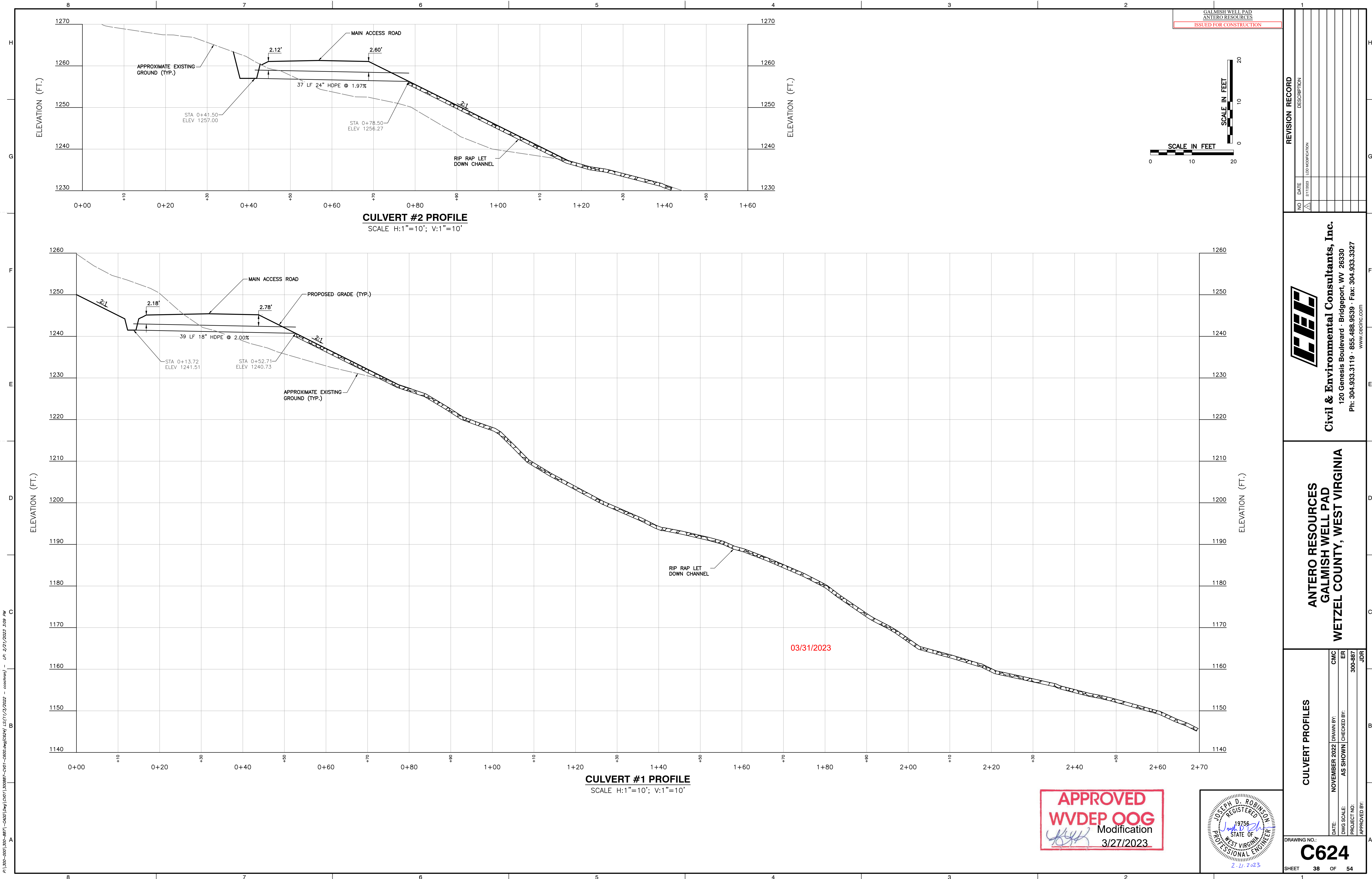


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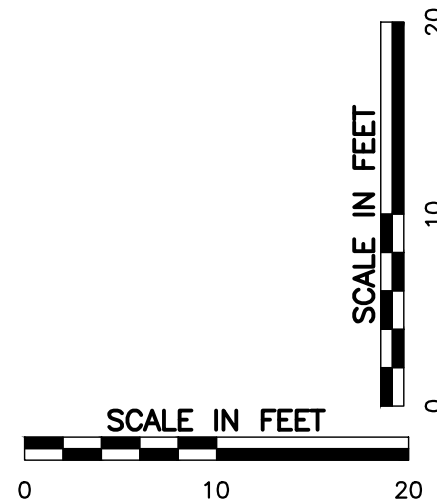
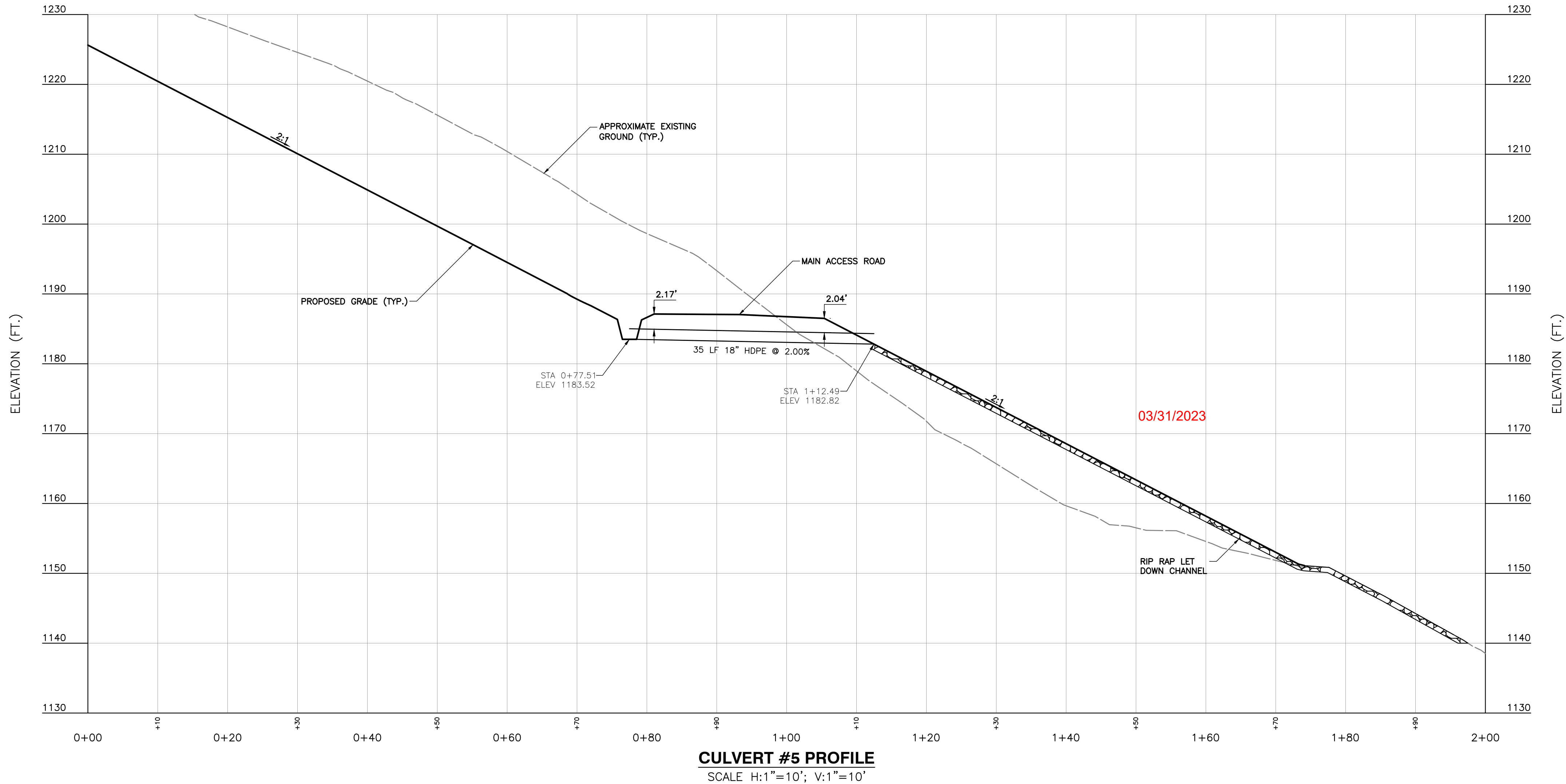
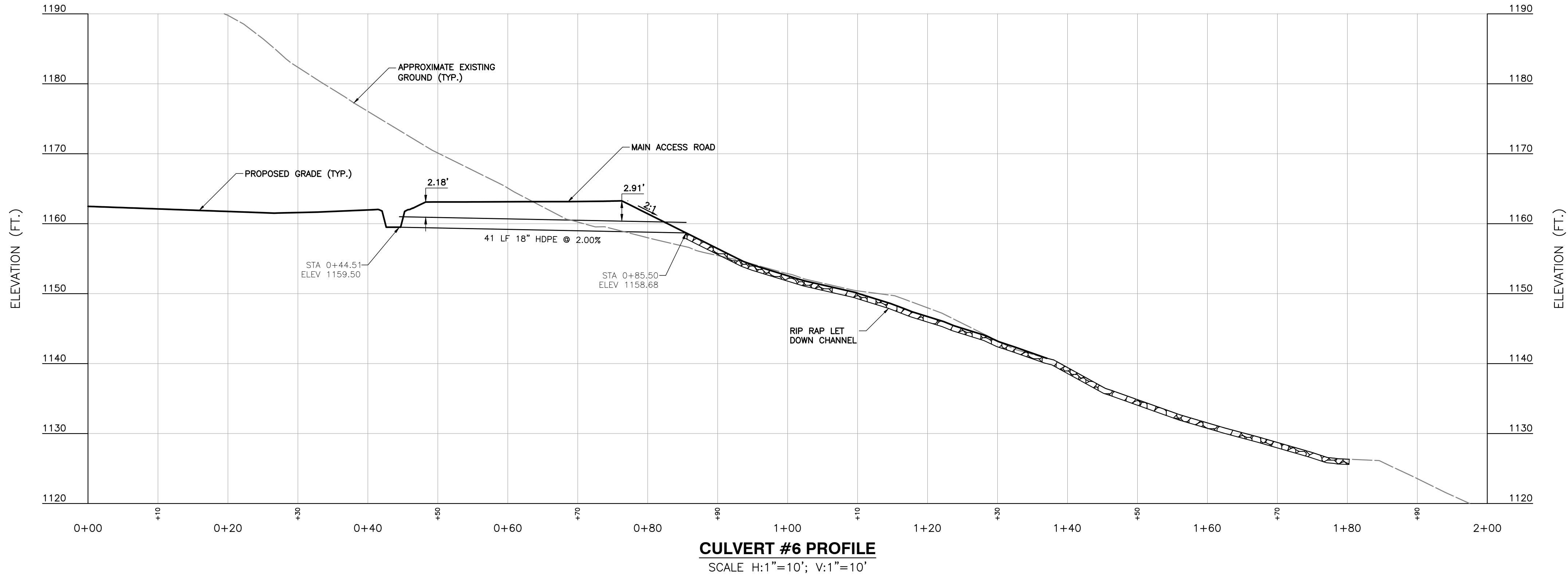
ANTERO RESOURCES
GALMISH WELL PAD
WETZEL COUNTY, WEST VIRGINIA

PROFILES AND CROSS SECTIONS	
DATE:	NOVEMBER 2022
DWG SCALE:	AS SHOWN
PROJECT NO:	300-887
APPROVED BY:	JDR
DRAWING NO.:	C623
SHEET	37 OF 54

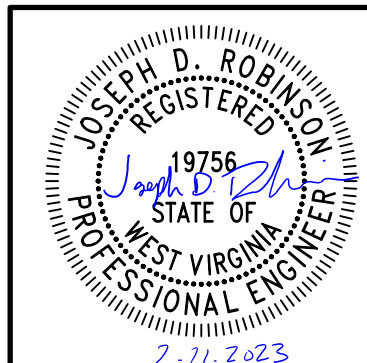


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APPROVED
WVDEP OOG
Modification
3/27/2023



REVISION RECORD	
NO.	DATE
1	2/7/2023
2	2/7/2023
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19	2/7/2023
20	2/7/2023

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ANTERO RESOURCES
GALMISH WELL PAD
WETZEL COUNTY, WEST VIRGINIA

CULVERT PROFILES

DATE:	NOVEMBER 2022	DRAWN BY:	CMC
DWG SCALE:	AS SHOWN	CHECKED BY:	ER
PROJECT NO:	300-887	APPROVED BY:	JDR

DRAWING NO.: **C626**

SHEET **40** OF **54**

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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 6 MONTHS.
- B. SEED MIXTURES AND PLANTING DATES
REFER TO TABLES IV-(2-4) 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 HYDROSEEDING ACCORDING TO THE RATES INDICATED IN TABLE IV-3. PERFORM ALL PLANTING OPERATIONS AT RIGHT ANGLES TO THE SLOPE. NECESSARY SITE PREPARATION, 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 THE 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 AND EROSION.
- ALL REQUIRED SEEDBED PREPARATION, 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-(3-4).
- 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 INOCULANT 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 THAT THE MIX IS APPLIED WITHIN ONE HOUR OF INITIAL MIXING.
- B. LIME AND FERTILIZER
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.
- FERTILIZER SHALL BE APPLIED IN ALL PERMANENT SEEDINGS. APPLY THE EQUIVALENT OF 500 LBS. MINIMUM 10-20-20 FERTILIZER PER ACRE OR USE THE AMOUNT OF FERTILIZER AND LIME RECOMMENDED BY A CERTIFIED SOIL TEST.
- 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 4B. PERMANENT SEEDING MIXTURES SUITABLE FOR ESTABLISHMENT IN WEST VIRGINIA.
- NOTES:
ALL LEGUMES MUST BE PLANTED WITH THE PROPER INOCULANT PRIOR TO SEEDING.
'LATHCO' FLATPEA IS POTENTIALLY POISONOUS TO SOME LIVESTOCK.
- ONLY ENDOPHYTE FREE VARIETIES OF TALL FESCUE SHOULD BE USED. TALL FESCUE AND CROWNWETCH ARE ALSO A VERY INVASIVE SPECIES NON-NATIVE TO WV.
- FOR UNPREPARED SEEDBEDS OR SEEDING OUTSIDE THE OPTIMUM TIMEFRAME, ADD 50% MORE SEED TO THE SPECIFIED MIXTURES IN TABLE 4B ARE MORE WILDLIFE AND FARM-FRIENDLY; THOSE LISTED IN BOLD ARE SUITABLE FOR USE IN SHADED WOODLAND SETTINGS. MIXTURES IN ITALICS ARE SUITABLE FOR USE IN FILTER STRIPS.
- D. SEEDING FOR WILDLIFE HABITAT
CONSIDER THE USE OF NATIVE PLANTS OR LOCALLY ADAPTED PLANTS WHEN SELECTING COVER TYPES AND SPECIES FOR WILDLIFE HABITAT. WILDLIFE FRIENDLY SPECIES OR MIXES THAT HAVE MULTIPLE VALUES SHOULD BE CONSIDERED. SEE WILDLIFE FRIENDLY SPECIES/MIXTURES IN TABLE IV-4B. CONSIDER SELECTING NO OR LOW MAINTENANCE LONG-LIVED PLANTS ADAPTABLE TO SITES WHICH MAY BE DIFFICULT TO MAINTAIN WITH EQUIPMENT.

MULCHING:

- A. GENERAL ORGANIC MULCHES
THE APPLICATION OF STRAW, HAY OR OTHER SUITABLE MATERIALS TO THE SOIL SURFACE TO PREVENT EROSION. STRAW MADE FROM WHEAT OR OATS IS THE PREFERRED MULCH. THE USE OF HAY IS PERMISSIBLE, BUT NOT ENCOURAGED DUE TO THE RISK OF SPREADING INVASIVE SPECIES. MULCH MUST BE APPLIED TO ALL TEMPORARY AND PERMANENT SEEDING ON ALL DISTURBED AREAS. DEPENDING ON SITE CONDITIONS, IN CRITICAL AREAS SUCH AS WATERWAYS, OR STEEP SLOPES, ADDITIONAL OR SUBSTITUTE SOIL PROTECTIVE MEASURES MAY BE USED IF DEEMED NECESSARY. EXAMPLES INCLUDE JUTE MESH, AND SOIL STABILIZATION BLANKETS OR EROSION CONTROL MATING.
- 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 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 IS 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.
- MECHANICAL ANCHORING
APPLY MULCH AND PULL A MULCH ANCHORING TOOL OVER THE MULCH. WHEN A DISK IS USED, SET THE DISK STRAIGHT AND PULL ACROSS THE SLOPE. MULCH MATERIAL SHOULD BE TUCKED INTO THE SOIL ABOUT THREE INCHES.
- MULCH NETTING
FOLLOW MANUFACTURER'S RECOMMENDATIONS WHEN POSITIONING AND STAPLING THE MULCH NETTING IN THE SOIL.

TABLE IV-1 - RECOMMENDED SEEDING DATES FOR PERMANENT AND TEMPORARY COVER	
PLANTING DATES	SUITABILITY
MARCH 1 - APRIL 15 AND AUGUST 1 - OCTOBER 1	BEST SEEDING PRERIODS
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-2 - ACCEPTABLE FERTILIZATION RECOMMENDATION IN ABSENCE OF A SOIL TEST				
SPECIES	N (LBS/AC)	P205 (LBS/AC)	K20 (LBS/AC)	EXAMPLE REC. (PER ACRE)
COOL SEASON GRASS	40	80	80	400 LBS. 10-20-20
CS GRASS & LEGUME	30	60	60	300 LBS. 10-20-20
TEMPORARY COVER	40	40	40	200 LBS. 19-19-19

TABLE IV-3 - TEMPORARY COVER SUITABLE FOR ESTABLISHMENT IN WEST VIRGINIA				
SPECIES	SEEDING RATE (LBS/AC)	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
SUDANGRASS	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	28	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-4A - PERMANENT SEEDING MIXTURES SUITABLE FOR ESTABLISHMENT IN WEST VIRGINIA			
SPECIES/MIXTURE	SEEDING RATE (LBS/AC)	SOIL DRAINAGE PREFERENCE	PH RANGE
CROWNWETCH/ TALL FESCUE	10 - 15 30	WELL - MOD. WELL	5.0 - 7.5
CROWNWETCH/ PERENNIAL RYEGRASS	10 - 15 20	WELL - MOD. WELL	5.0 - 7.5
FLATPEA OR PERENNIAL PEA/ TALL FESCUE	20 15	WELL - MOD. WELL	4.0 - 8.0
LADINO CLOVER/ SERECIA LESPEDeza/ TALL FESCU	30 25 2	WELL - MOD. WELL	4.5 - 7.5
<i>TALL FESCUE/ LADINO CLOVER/ REDTOP</i>	<i>40 3 3</i>	<i>WELL - MOD. WELL</i>	<i>5.0 - 7.5</i>
CROWNWETCH/ 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 3 50	WELL - MOD. WELL	5.0 - 7.5
<i>TALL FESCUE</i>	<i>50</i>	<i>WELL - POORLY</i>	<i>4.5 - 7.5</i>
PERENNIAL RYEGRASS/ TALL FESCUE/ LATHCO FLATPEA *	10 15 20	WELL - POORLY	5.0 - 8.0
ANNUAL RYEGRASS/ CLIMAX TIMOTHY/ BESTFOR INTERMEDIATE RYEGRASS/ POTOMAC ORCHARDGRASS/ MEDIUM RED CLOVER (COATED)	** 30 25 20 15 10	WELL - MOD. WELL	6.0 - 7.0

NOTE: MIXTURES LISTED IN BOLD ARE SUITABLE FOR USE IN SHADED WOODLAND SETTINGS; THOSE IN ITALICS ARE SUITABLE FOR USE IN FILTER STRIPS.

NOTE: FOR UNPREPARED SEEDBEDS OR SEEDING OUTSIDE THE OPTIMUM TIMEFRAMES, ADD 50% MORE SEED TO THE SPECIFIED RATE

* 'LATHCO' FLATPEA IS POTENTIALLY POISONOUS TO SOME LIVESTOCK ALL LEGUMES SHOULD BE PLANTED WITH PROPER INOCULANTS PRIOR TO SEEDING.

** SWISHER MEADOW MIX

TABLE IV-4B - MORE WILDLIFE AND FARM FRIENDLY MIXTURES			
SPECIES/MIXTURE	SEEDING RATE (LBS/AC)	SOIL DRAINAGE PREFERENCE	PH RANGE
KY BLUEGRASS/ REDTOP/ LADINO CLOVER OR BIRDSFOOT TREFOIL	20 3 2/10	WELL - MOD. WELL	5.5 - 7.5
TIMOTHY/ ALFALFA	5 12	WELL - MOD. WELL	6.5 - 8.0
TIMOTHY/ BIRDSFOOT TREFOIL	5 8	WELL - POORLY	5.5 - 7.5/8
<i>ORCHARDGRASS/ LADINO CLOVER/ REDTOP</i>	<i>10 2 3</i>	<i>WELL - MOD. WELL</i>	<i>5.5 - 7.5</i>
<i>ORCHARDGRASS/ LADINO CLOVER</i>	<i>10 2</i>	<i>WELL - MOD. WELL</i>	<i>5.5 - 7.5</i>
<i>ORCHARDGRASS/ PERENNIAL RYEGRASS</i>	<i>20 10</i>	<i>WELL - MOD. WELL</i>	<i>5.5 - 7.5</i>
CREEPING RED FESCUE/ PERENNIAL RYEGRASS	30 10	WELL - MOD. WELL	5.5 - 7.5
ORCHARDGRASS OR KENTUCKY BLUEGRASS	20	WELL - MOD. WELL	6.0 - 7.5
BIRDSFOOT TREFOIL/ REDTOP/ ORCHARDGRASS	10 5 20	WELL - MOD. WELL	5.5 - 7.5
LATHCO FLAT PEA */ PERENNIAL RYEGRASS	30 30	WELL - MOD. WELL	5.5 - 7.5
LATHCO FLAT PEA */ ORCHARDGRASS	30 20	WELL - MOD. WELL	5.5 - 7.5

NOTE: MIXTURES LISTED IN BOLD ARE SUITABLE FOR USE IN SHADED WOODLAND SETTINGS; THOSE IN ITALICS ARE SUITABLE FOR USE IN FILTER STRIPS.

NOTE: * 'LATHCO' FLATPEA IS POTENTIALLY POISONOUS TO SOME LIVESTOCK ALL LEGUMES SHOULD BE PLANTED WITH PROPER INOCULANTS PRIOR TO SEEDING.

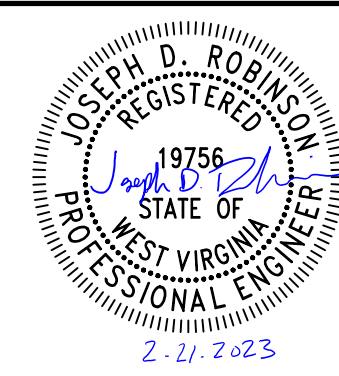
NOTE: FOR UNPREPARED SEEDBEDS OR SEEDING OUTSIDE THE OPTIMUM TIMEFRAMES, ADD 50% MORE SEED TO THE SPECIFIED RATE

TABLE IV-5 LIME AND FERTILIZER APPLICATION		
PH OF SOIL	LIME IN TONS PER ACRE	FERTILIZER, LBS./ACRE 10-20-20 OR EQUIVALENT
ABOVE 6.0	2	500
5.0 TO 6.0	3	500
BELOW 5.0	4	500

NOTE: THE PH CAN BE DETERMINED WITH A PORTABLE PH TESTING KIT OR BY SENDING THE SOIL SAMPLES TO A 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 100 TO 150 BALES	COVER 75% OR 90% OF SURFACE	SUBJECT TO WIND BLOWING OR WASHING UNLESS TIED DOWN
WOOD FIBER PULP FIBER WOOD-CELLULOSE RECIRCULATED PAPER	1000 TO 1500 BALES	COVER ALL DISTURBED AREAS	FOR HYDROSEEDING

HALL'S #1 PASTURE MIXTURE			
SPECIES/CONTAINS	PURE SEED	GERM	ORIGIN
BESTFOR INTERMEDIATE RYEGRASS	29.95%	90.00%	OR
CLIMAX TIMOTHY	24.96%	90.00%	CAN
ANNUAL RYEGRASS *	24.92%	90.00%	OR
MEDIUM RED CLOVER	9.99%	90.00%	OR
POTOMAC ORCHARDGRASS	9.46%	90.00%	OR
OTHER CROP SEEDS	0.01%		* VARIETY NOT STATED
INERT MATTER	0.69%		AMS: 5143
WEED SEEDS	0.02%		



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ANTERO RESOURCES
GALMISH WELL PAD
WETZEL COUNTY, WEST VIRGINIA

DETAILS

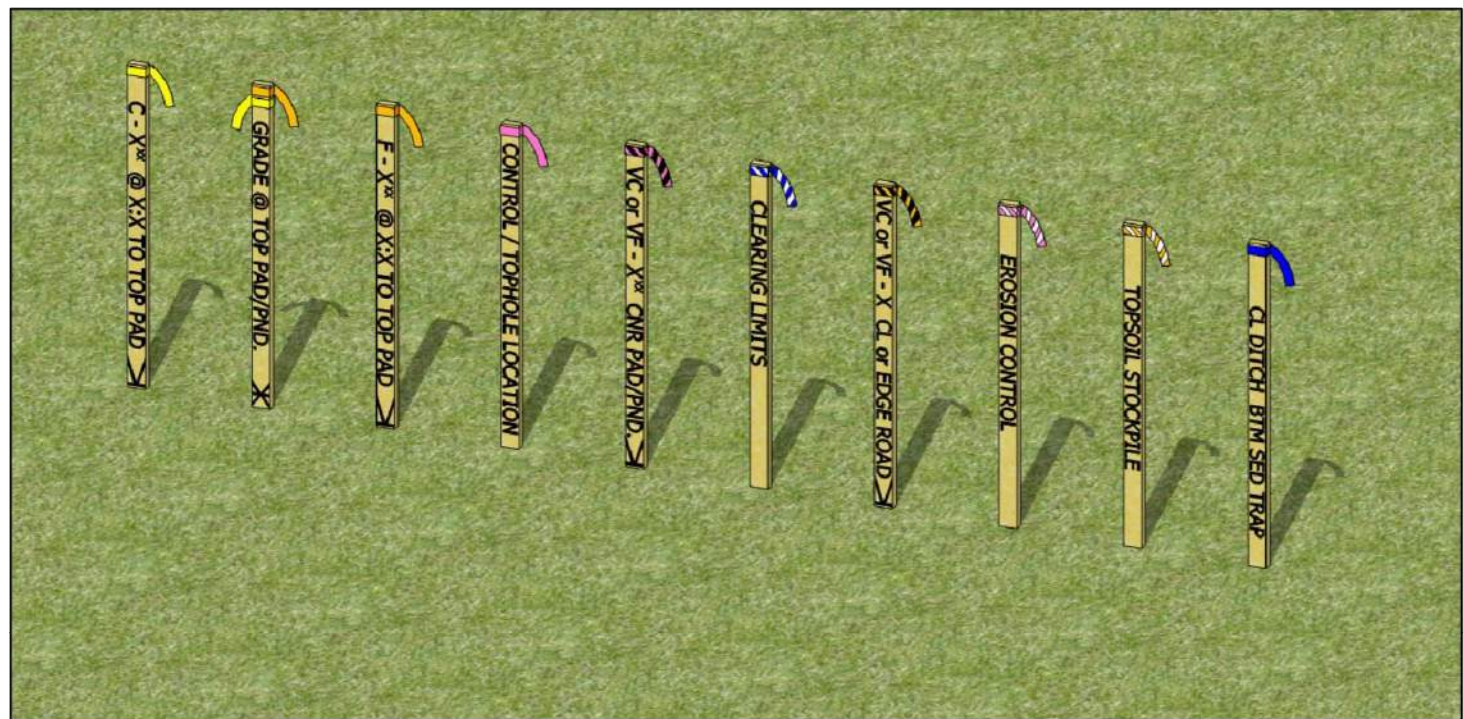
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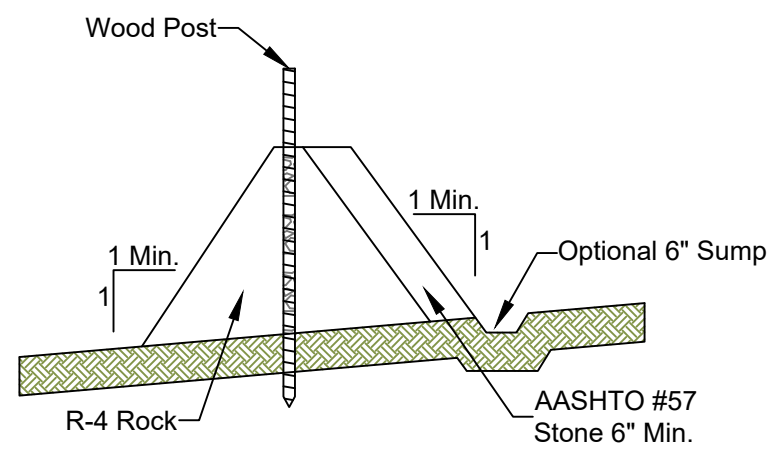
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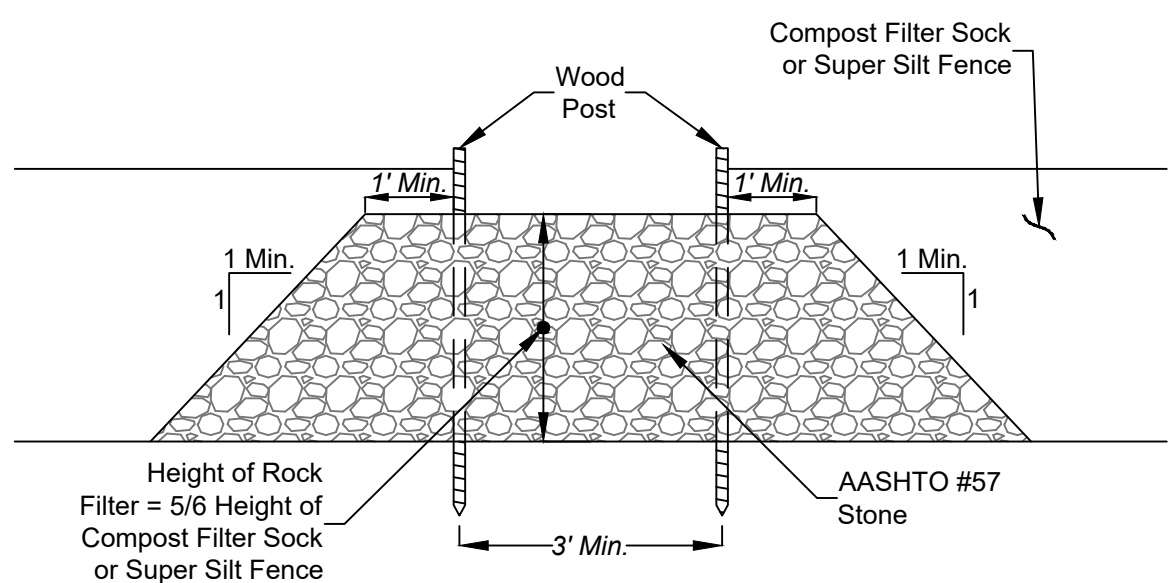
	Yellow Ribbon: Yellow Ribbon used to indicate top of Cuts (C) Cut to be determined at time of stakeout Slope determined by site design
	Yellow & Orange Ribbon: Yellow and Orange Ribbon used to indicate Grade at Top of Pad/Pond/Pit
	Orange Ribbon: Orange Ribbon used to indicate toes of Fills (F) Fill 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

DETAIL 2 STANDARD STAKEOUT RIBBON COLOR SCHEME

NOT TO SCALE



Outlet Cross Section



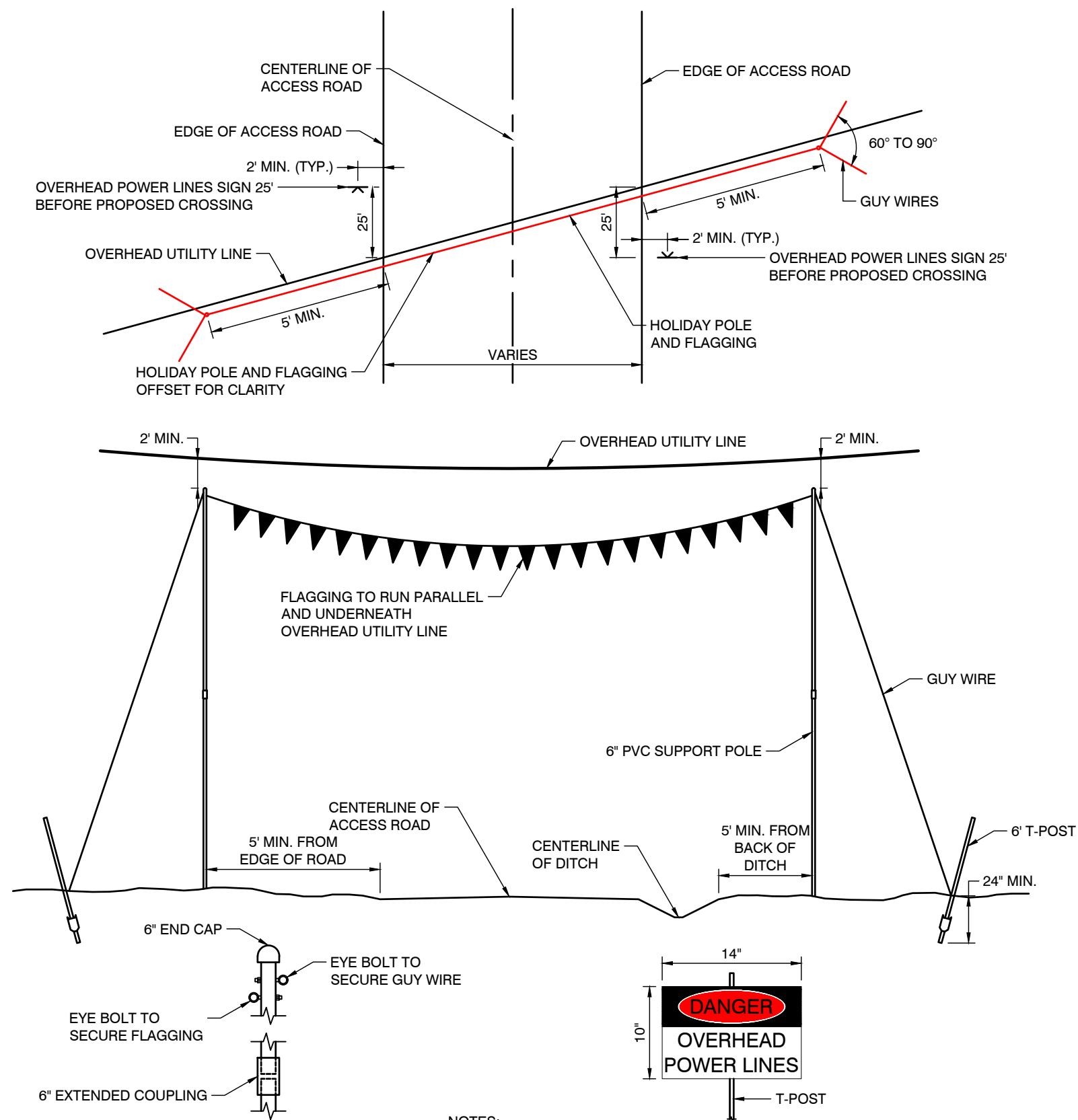
Upslope Face

- Notes:
1. A Rock Filter Outlet shall be installed where failure of Super Silt Fence or Compost Filter Sock has or may occur due to concentrated flow.
 2. Sediment shall be removed when accumulations reach 1/3 the height of the outlet.

(Modified) Source: Pennsylvania Erosion and Sediment Pollution Control Manual.

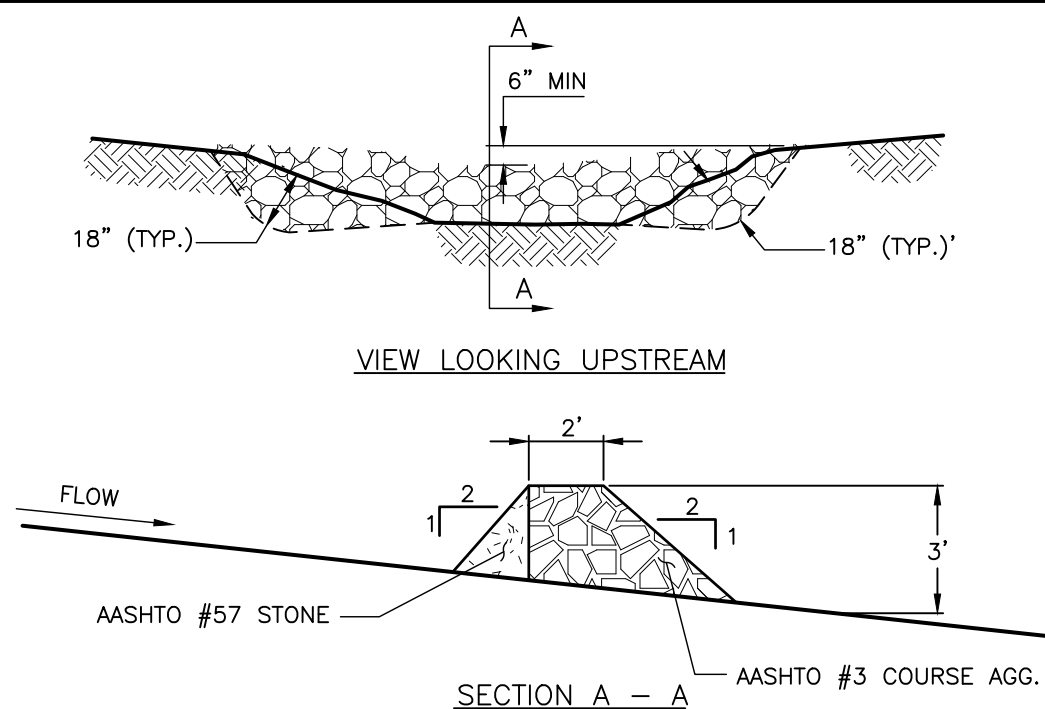
DETAIL 5 ROCK FILTER OUTLET

NOT TO SCALE



DETAIL 3 OVERHEAD UTILITY HOLIDAY POLE DETAIL

NOT TO SCALE



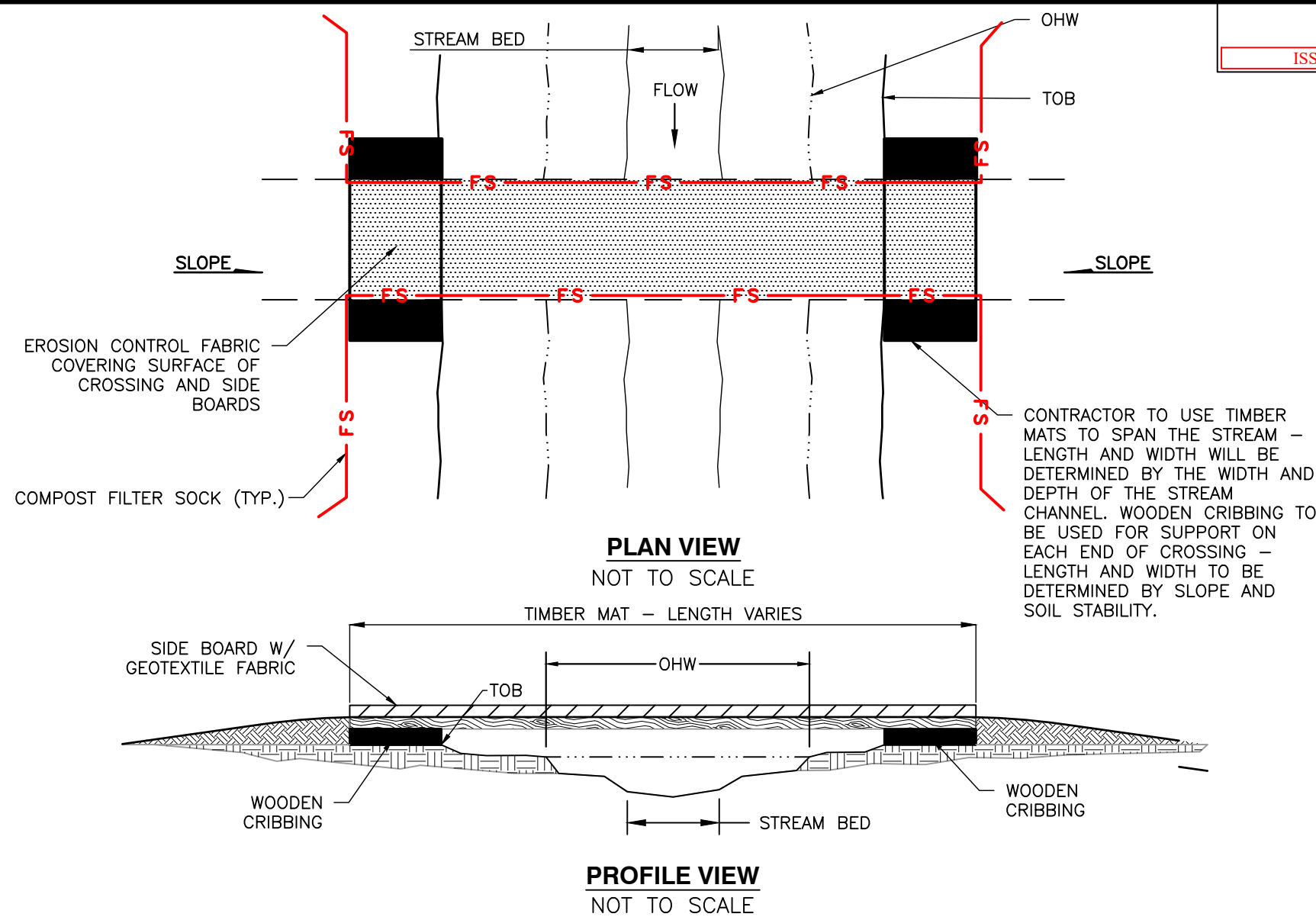
DETAIL 6 ROCK CHECK DAM

NOT TO SCALE

- Notes:
1. KEY STONE INTO THE DITCH BANKS AND EXTEND IT BEYOND THE ABUTMENTS A MINIMUM OF 18" TO PREVENT OVER FLOW AROUND DAM.
 2. SEDIMENT MUST BE REMOVED WHEN ACCUMULATIONS REACH 1/2 THE HEIGHT OF THE FILTERS.
 3. IMMEDIATELY UPON STABILIZATION OF EACH CHANNEL, REMOVE ACCUMULATED SEDIMENT, REMOVAL ROCK FILTER, AND STABILIZE DISTURBED AREAS.
 4. REFER TO WV DEP BEST MANAGEMENT PRACTICES FOR OIL AND GAS WELL SITE CONSTRUCTION MANUAL FOR MORE INFORMATION.

DETAIL 6 ROCK CHECK DAM

NOT TO SCALE

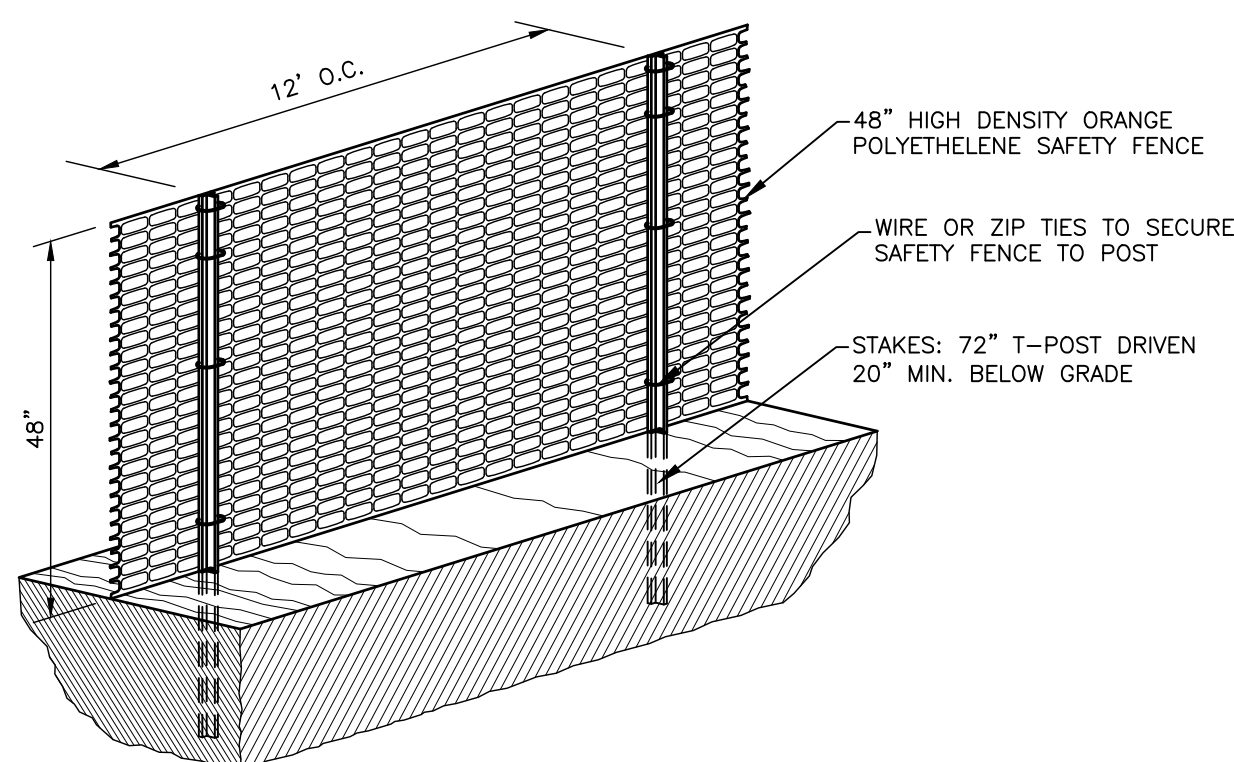


DETAIL 4 TEMPORARY STREAM CROSSING

DETAIL 4 TEMPORARY STREAM CROSSING

NOT TO SCALE

- NOTES
1. WOODEN CRIBBING SUPPORTS TO BE USED TO SUPPORT THE TEMPORARY TIMBER MATS. WOODEN CRIBBING AND TIMBER MATS TO BE AT AN ELEVATION ACROSS STREAM CHANNEL TO KEEP THE PROPOSED EQUIPMENT CROSSING OUT OF THE ORDINARY HIGH WATERMARK. WOODEN CRIBBING WILL BE A MINIMUM OF 8 IN X 8 IN CROSS SECTION WITH A LENGTH THAT EXTENDS AT LEAST ONE FOOT BEYOND THE WIDTH OF THE TIMBER MATS.
 2. DETAIL SHOWS MINIMUM ENVIRONMENTAL REQUIREMENTS, CONTRACTOR NEEDS TO EVALUATE STRUCTURAL ELEMENTS OF BRIDGE DEPENDING UPON THE INTENDED USE.

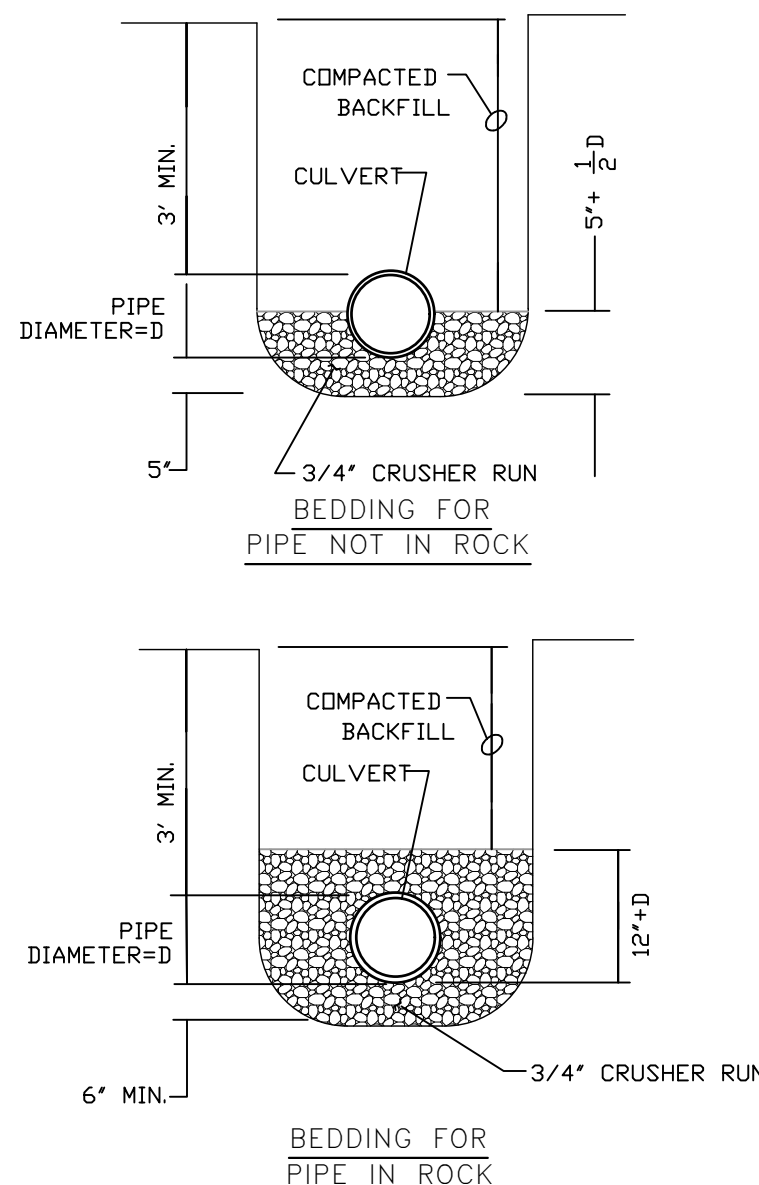


- Notes:
1. ALL SENSITIVE AREAS SHALL BE PROTECTED AS PER PLAN.
 2. SAFETY FENCE SHOULD BE FASTENED SECURELY TO THE T-POSTS.
 3. THE FENCING MUST REMAIN IN PLACE DURING ALL PHASES OF CONSTRUCTION; ANY CHANGE OF THE PROTECTIVE FENCING MUST BE APPROVED BY THE LAND OWNER.



DETAIL 7 ORANGE CONSTRUCTION SAFETY FENCE

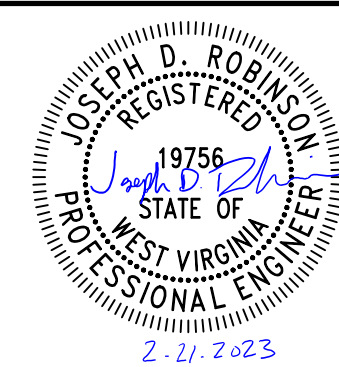
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DETAIL 8 TYPICAL CULVERT BEDDING DETAIL

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- BACKFILL AND COMPACTION NOTES:
1. 3/4" CRUSHER RUN SHALL BE USED AROUND THE PIPE WITH VOIDS ELIMINATED BY KNIFING UNDER AND AROUND PIPE OR ANOTHER APPROVED METHOD.
 2. CLEAN FILL MATERIAL SHALL BE USED FOR FURTHER BACKFILL. THE BACKFILL MATERIAL SHOULD BE COMPACTED TO 90% STANDARD PROCTOR DENSITY.
 3. INORGANIC SILTS AND CLAY MATERIALS ARE NOT SUITABLE FOR BACKFILL MATERIAL.
 4. BACKFILL LAYER HEIGHT SHOULD NOT EXCEED 1/2 THE PIPE DIAMETER.
 5. BACKFILL AND COMPACTION SPECIFICATIONS DETERMINED USING HANCOR CORRUGATED HDPE PIPE.



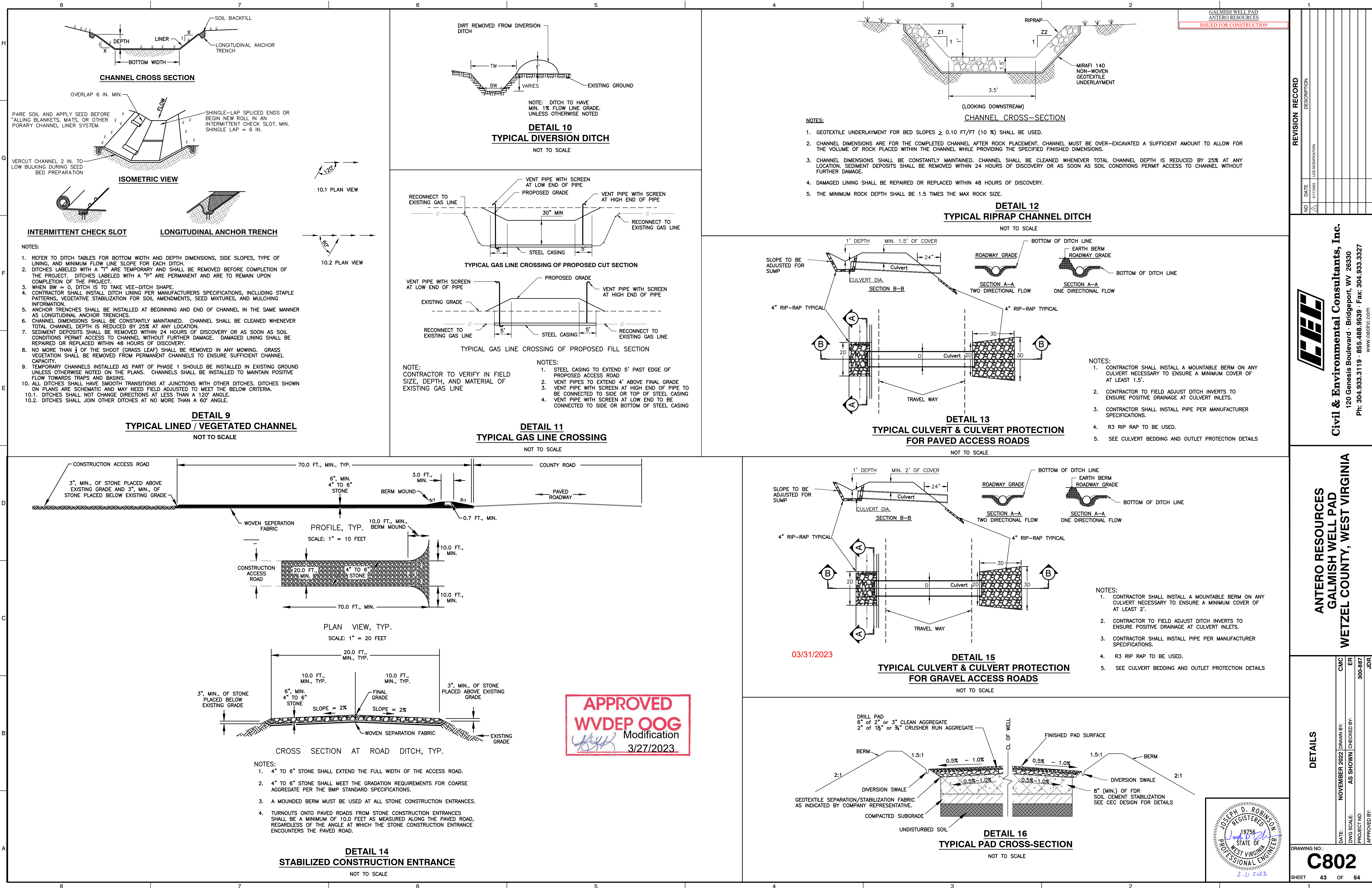
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NO.	DESCRIPTION
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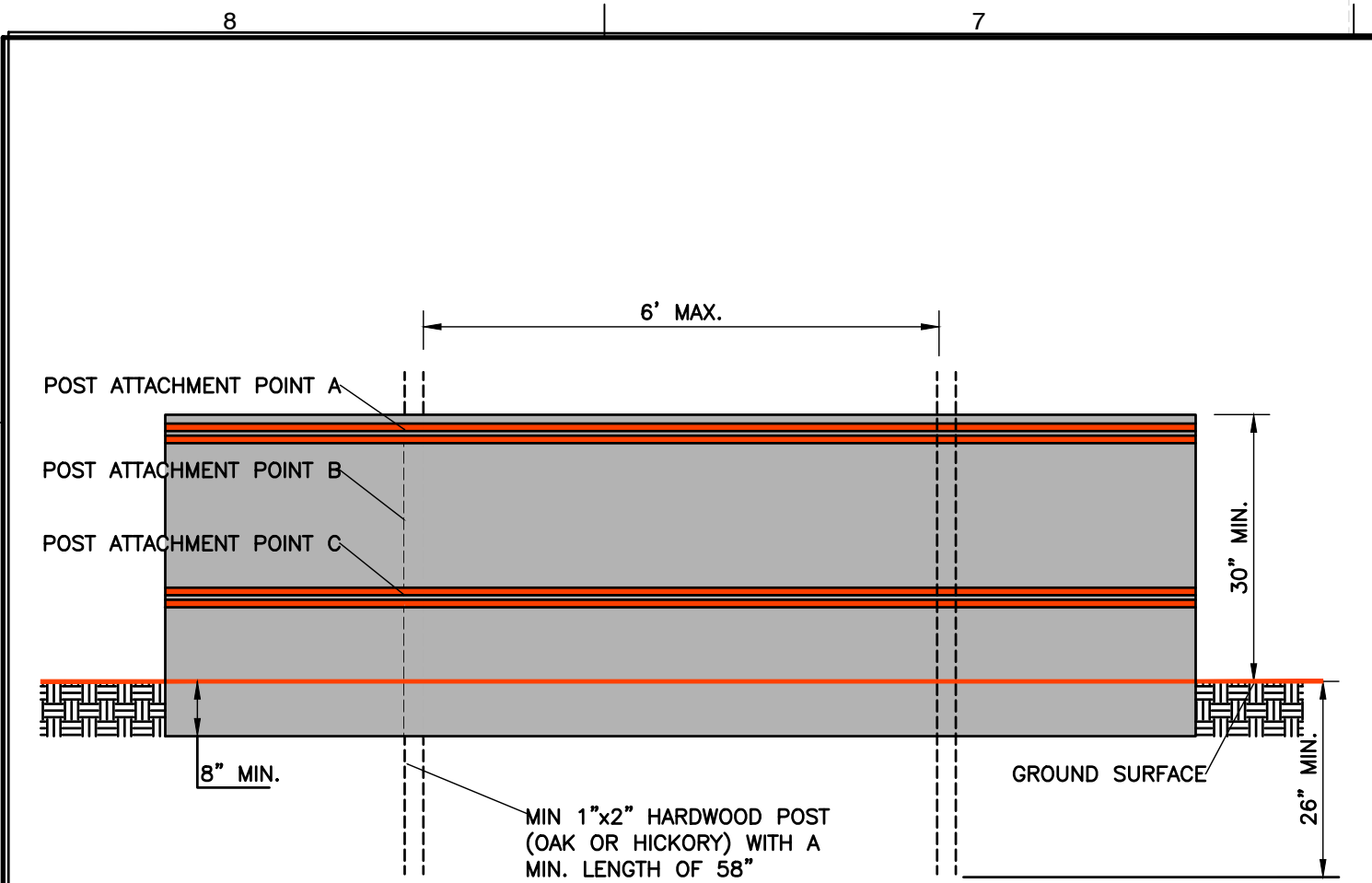
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ANTERO RESOURCES
GALMISH WELL PAD
WETZEL COUNTY, WEST VIRGINIA

DETAILS	
DATE: NOVEMBER 2022	DRAWN BY: CMC
DWG SCALE: AS SHOWN	CHECKED BY: ER
PROJECT NO: 300-887	APPROVED BY: JDR

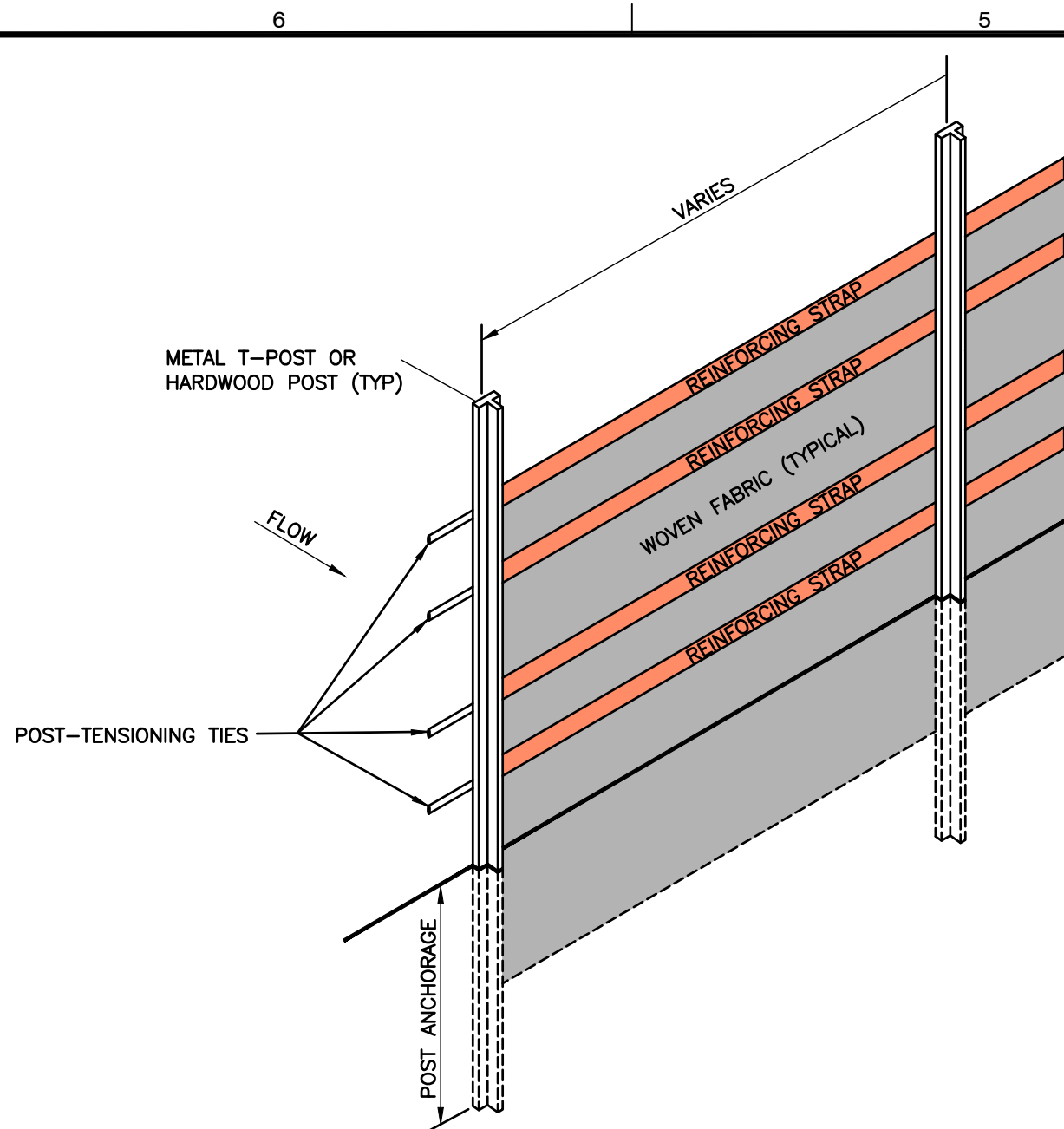
DRAWING NO.: **C801**
SHEET 42 OF 54





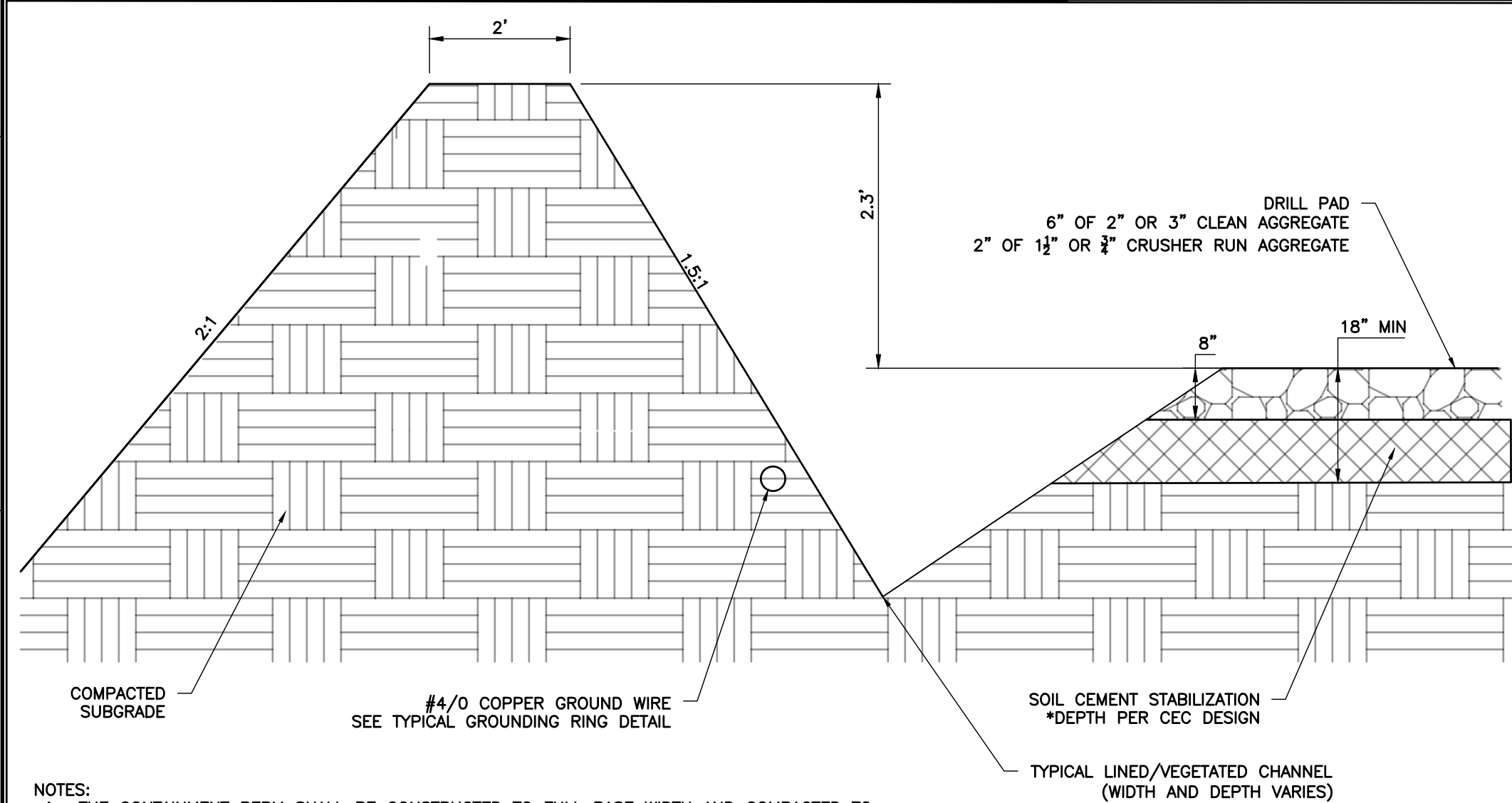
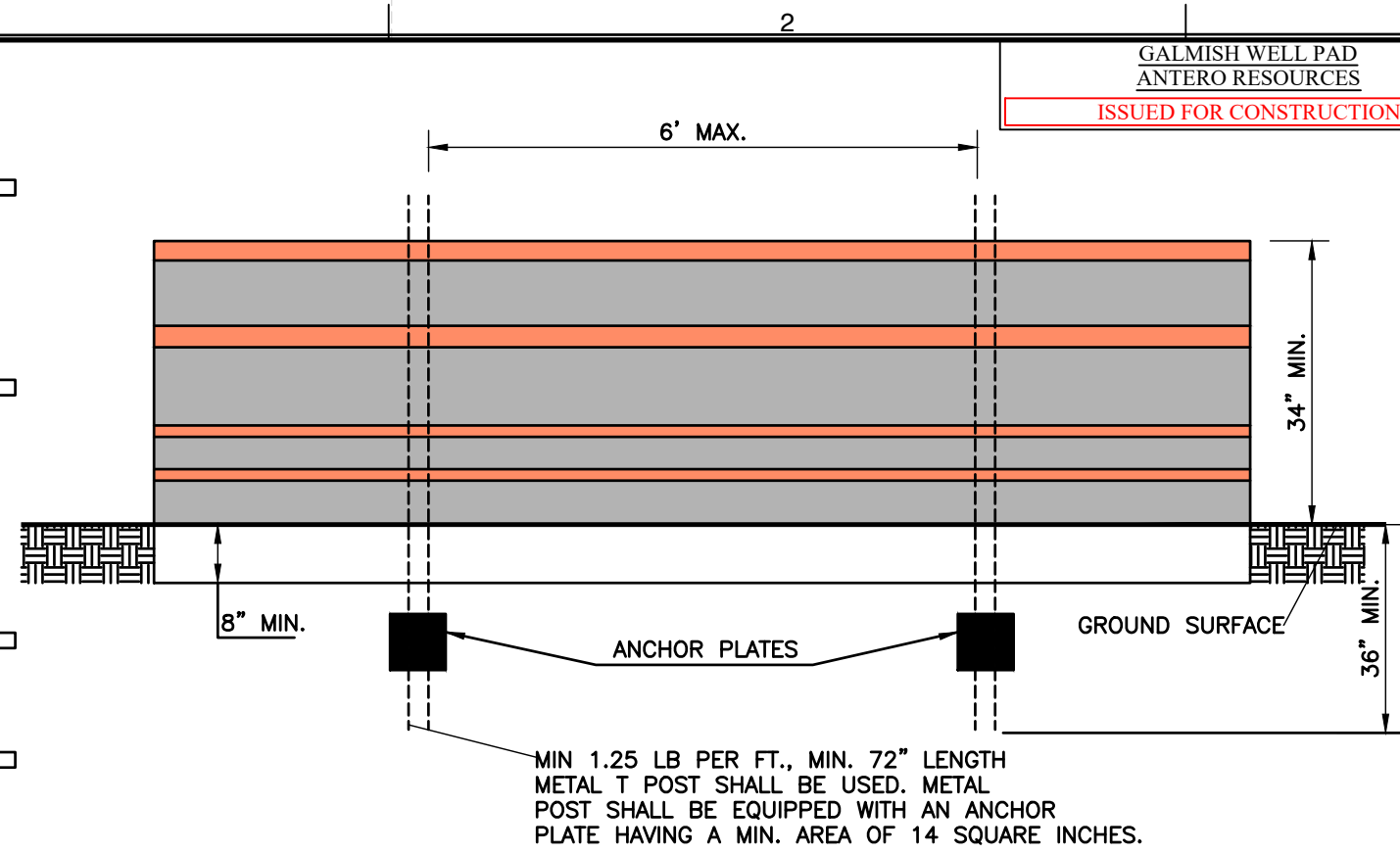
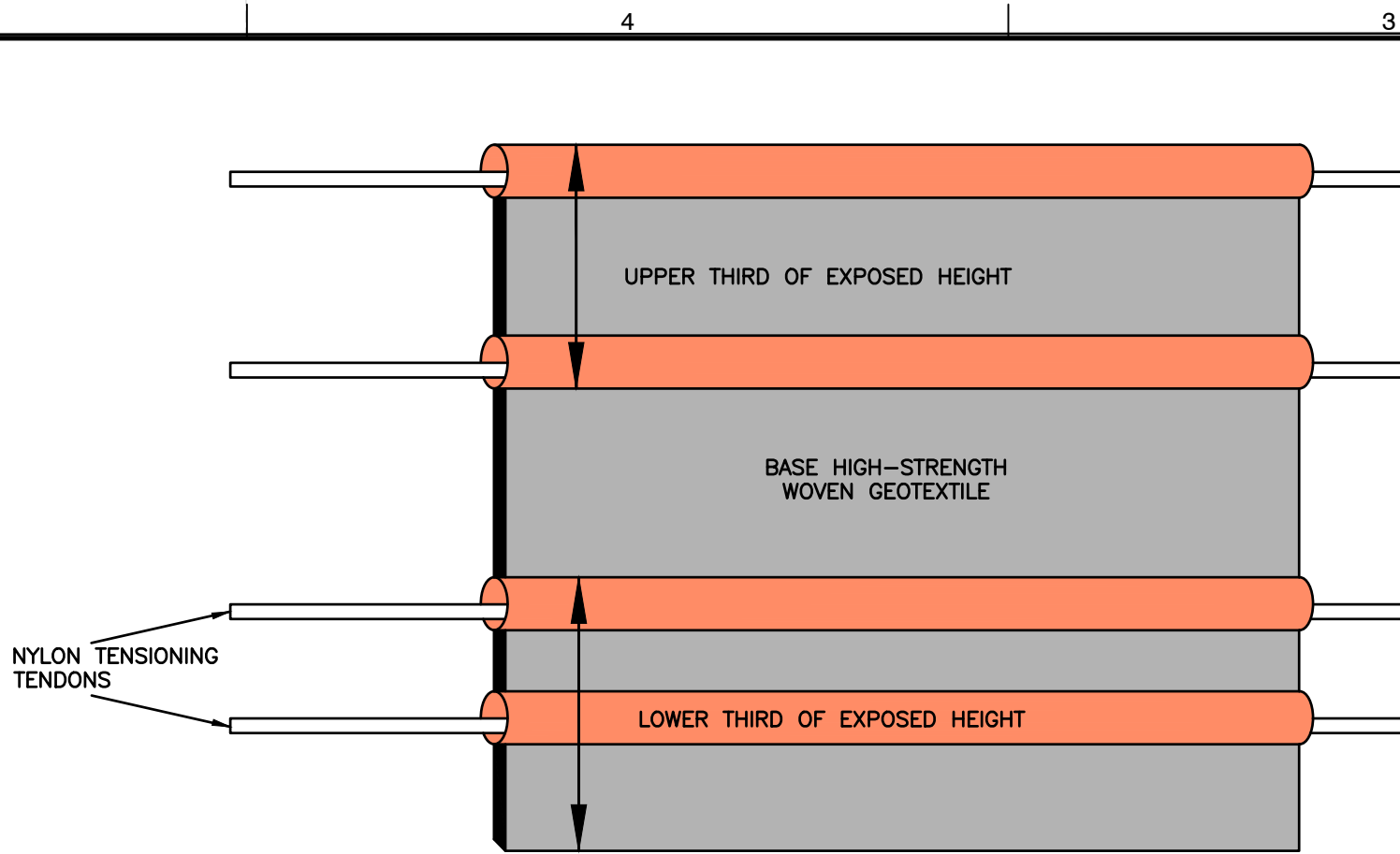
DETAIL 17
SMARTFENCE® SD

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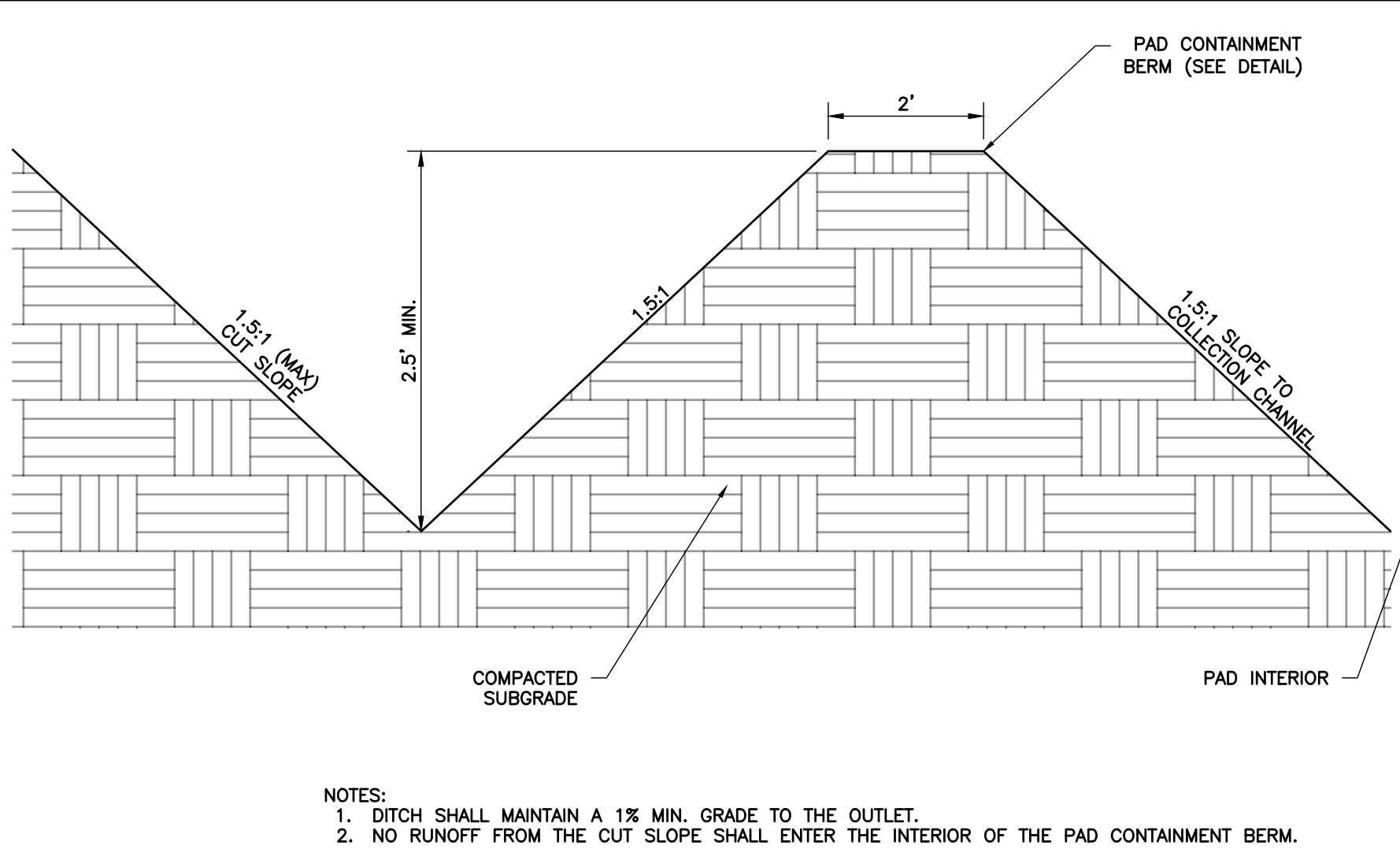
DETAIL 18
SMARTFENCE® HD

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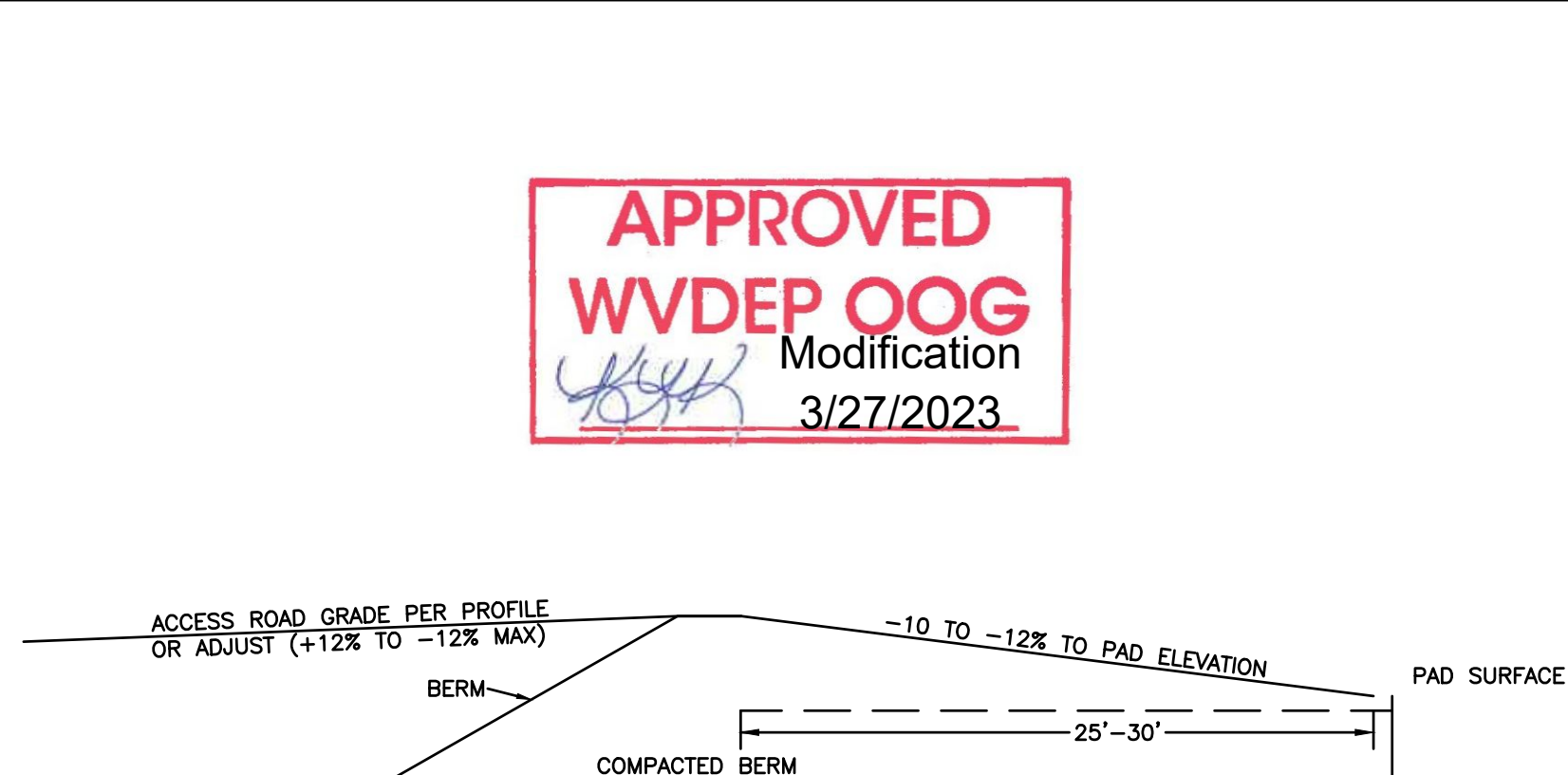
DETAIL 19
PAD CONTAINMENT BERM

NOT TO SCALE



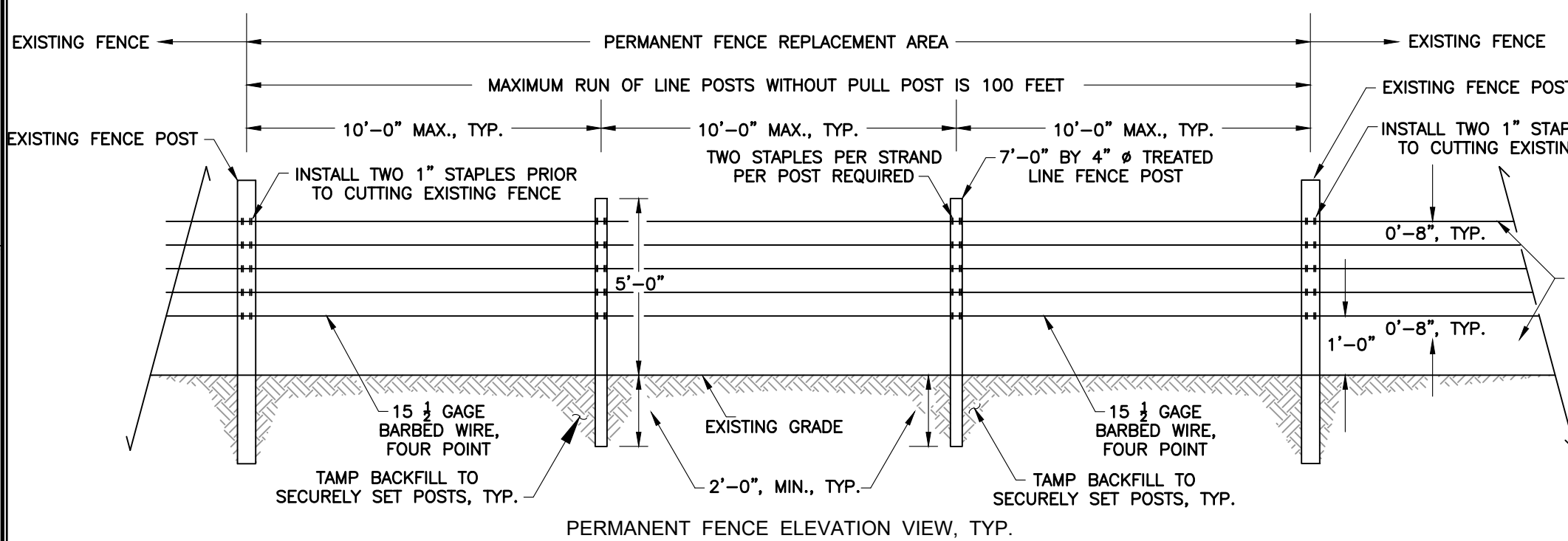
DETAIL 20
PAD CONTAINMENT BERM
DITCH ON CUT SLOPE SIDE

NOT TO SCALE



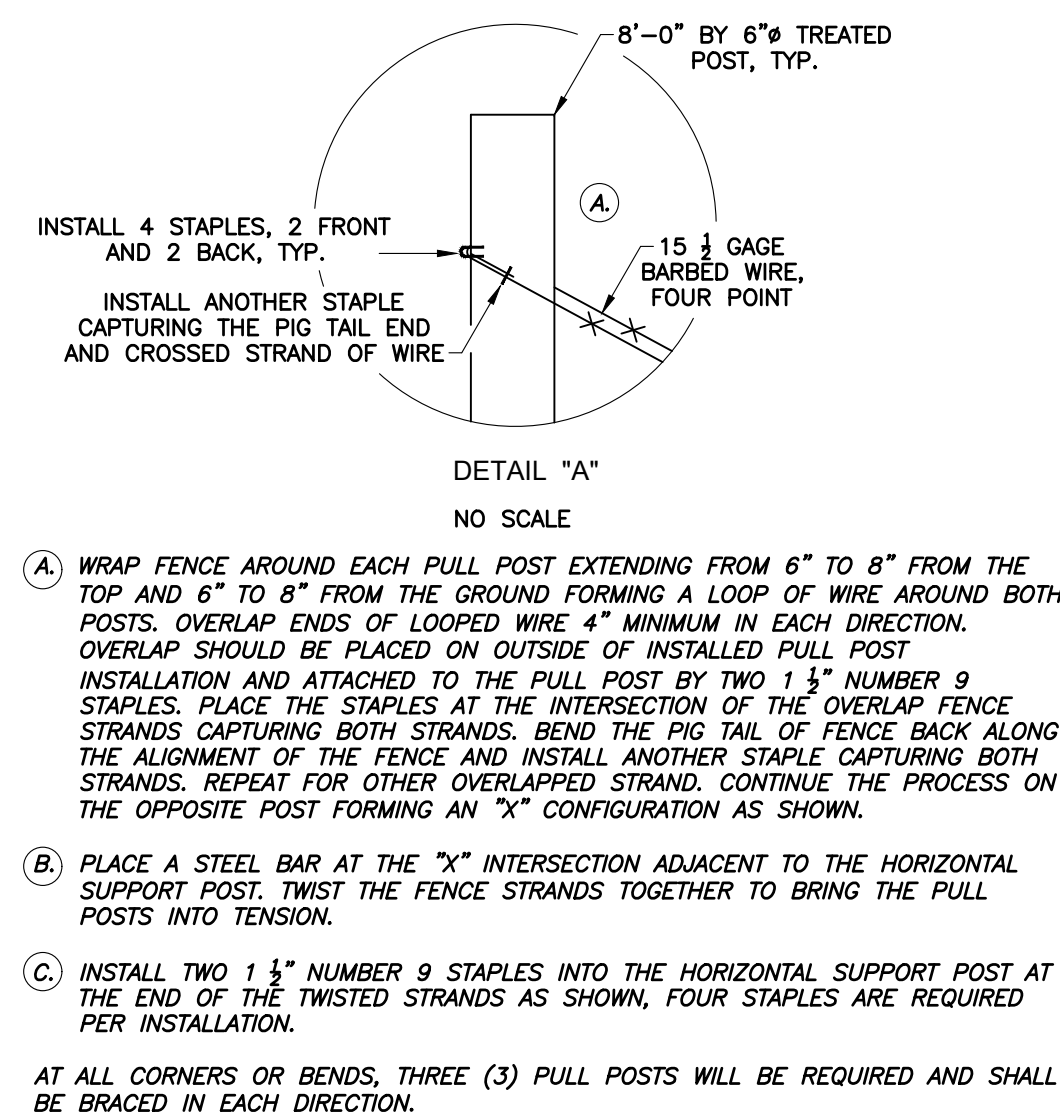
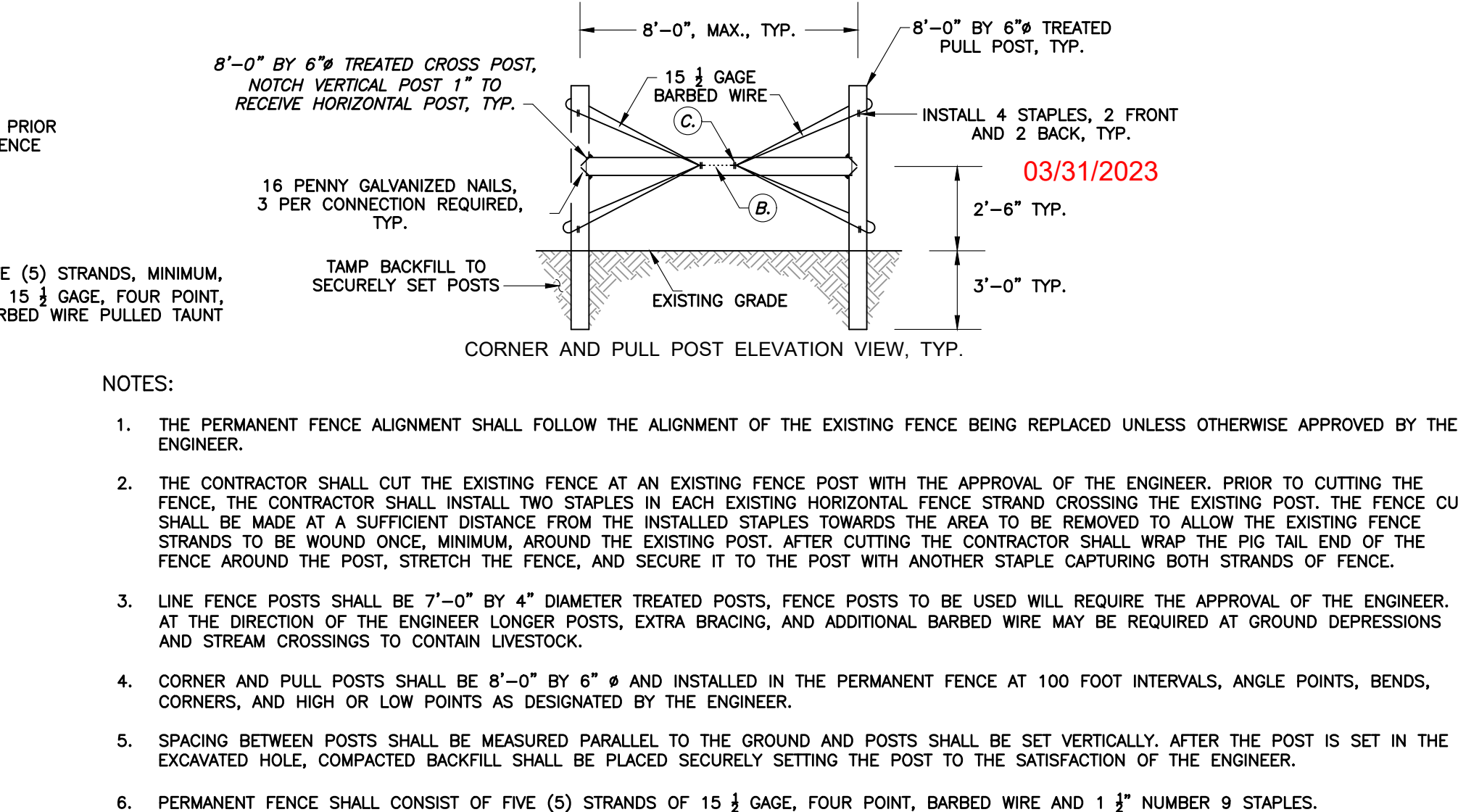
DETAIL 21
TYPICAL MOUNTABLE BERM

NOT TO SCALE



DETAIL 22
TYPICAL PERMANENT FENCE

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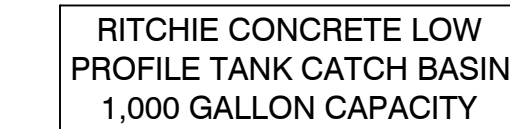
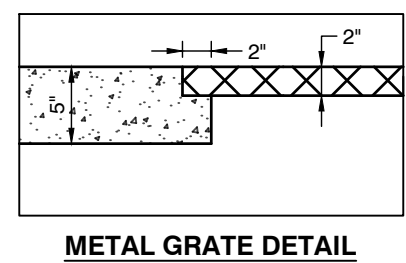
ANTERO RESOURCES
GALMISH WELL PAD
WETZEL COUNTY, WEST VIRGINIA

DETAILS

DATE:	NOVEMBER 2022	DRAWN BY:	CWC
DWG SCALE:	AS SHOWN	CHECKED BY:	ER
PROJECT NO:	300-887	APPROVED BY:	JDR

DRAWING NO.: **C803**

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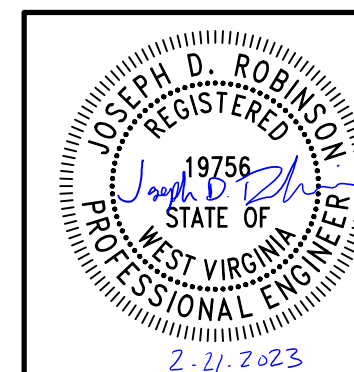
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1. All Stone placed on the pad and around the Cellars shall be Compacted.
2. Top of Cellar shall match Finish Grade elevation.
3. Prior to Backfilling the Cellar(s), they shall be as-built and checked to confirm that they are within a 0.1' tolerance of designed location.
4. Substantial Bouyant Forces exist and it is possible to float the Cellar if not Backfilled properly. Flowable Fill with a Minimum Compressive Strength of 500 PSI around the base of the Cellars is Required.
5. Ladder to be positioned 45-degrees from centerline. Reference production drawings for exact alignment.

DETAIL 24
CELLAR TRENCH - CELLAR TECH

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GALMISH WELL PAD
WETZEL COUNTY, WEST VIRGINIA**

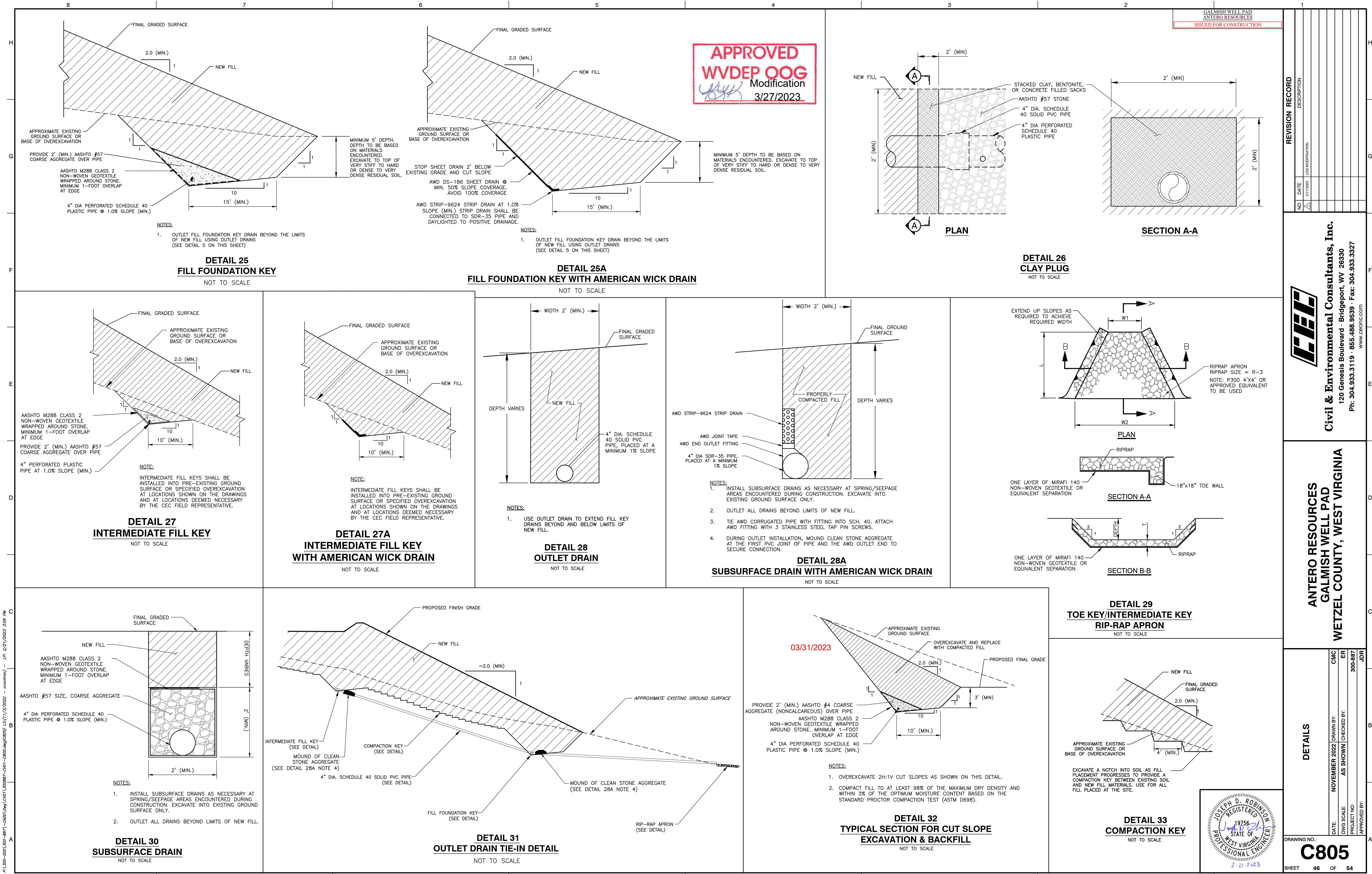
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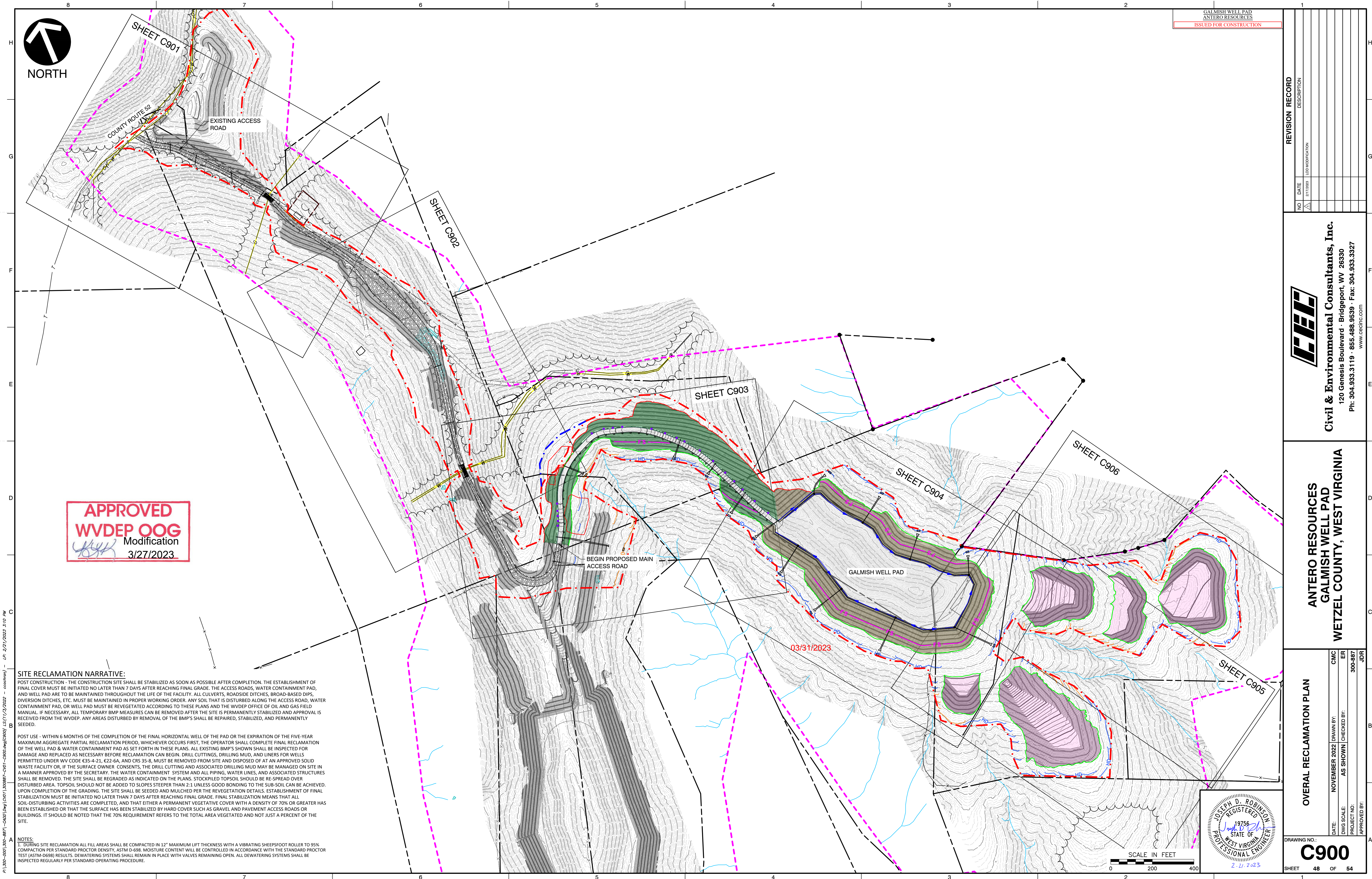
DATE:	NOVEMBER 2022	DRAWN BY:	CMC
DWG SCALE:	AS SHOWN	CHECKED BY:	ER
PROJECT NO:			300-887
APPROVED BY:			JDR

DRAWING NO.:

C804

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SITE RECLAMATION NARRATIVE:

POST CONSTRUCTION - THE CONSTRUCTION SITE SHALL BE STABILIZED AS SOON AS POSSIBLE AFTER COMPLETION. THE ESTABLISHMENT OF FINAL COVER MUST BE INITIATED NO LATER THAN 7 DAYS AFTER REACHING FINAL GRADE. THE ACCESS ROADS, WATER CONTAINMENT PAD, AND WELL PAD ARE TO BE MAINTAINED THROUGHOUT THE LIFE OF THE FACILITY. ALL CULVERTS, ROADSIDE DITCHES, BROAD-BASED DIPS, DIVERSION DITCHES, ETC. MUST BE MAINTAINED IN PROPER WORKING ORDER. ANY SOIL THAT IS DISTURBED ALONG THE ACCESS ROAD, WATER CONTAINMENT PAD, OR WELL PAD MUST BE REVEGETATED ACCORDING TO THESE PLANS AND THE WVDEP OFFICE OF OIL AND GAS FIELD MANUAL. IF NECESSARY, ALL TEMPORARY BMP MEASURES CAN BE REMOVED AFTER THE SITE IS PERMANENTLY STABILIZED AND APPROVAL IS RECEIVED FROM THE WVDEP. ANY AREAS DISTURBED BY REMOVAL OF THE BMP'S SHALL BE REPAIRED, STABILIZED, AND PERMANENTLY SEEDDED.

POST USE - WITHIN 6 MONTHS OF THE COMPLETION OF THE FINAL HORIZONTAL WELL OF THE PAD OR THE EXPIRATION OF THE FIVE-YEAR MAXIMUM AGGREGATE PARTIAL RECLAMATION PERIOD, WHICHEVER OCCURS FIRST, THE OPERATOR SHALL COMPLETE FINAL RECLAMATION OF THE WELL PAD & WATER CONTAINMENT PAD AS SET FORTH IN THESE PLANS. ALL EXISTING BMP'S SHOWN SHALL BE INSPECTED FOR DAMAGE AND REPLACED AS NECESSARY BEFORE RECLAMATION CAN BEGIN. DRILL CUTTINGS, DRILLING MUD, AND LINERS FOR WELLS PERMITTED UNDER WV CODE K35-4-21, K22-6A, AND CRS 35-8, MUST BE REMOVED FROM SITE AND DISPOSED OF AT AN APPROVED SOLID WASTE FACILITY OR, IF THE SURFACE OWNER CONSENTS, THE DRILL CUTTING AND ASSOCIATED DRILLING MUD MAY BE MANAGED ON SITE IN A MANNER APPROVED BY THE SECRETARY. THE WATER CONTAINMENT SYSTEM AND ALL PIPING, WATER LINES, AND ASSOCIATED STRUCTURES SHALL BE REMOVED. THE SITE SHALL BE REGRADED AS INDICATED ON THE PLANS. STOCKPILED TOPSOIL SHOULD BE RE-SPREAD OVER DISTURBED AREA. TOPSOIL SHOULD NOT BE ADDED TO SLOPES STEEPER THAN 2:1 UNLESS GOOD BONDING TO THE SUB-SOIL CAN BE ACHIEVED. UPON COMPLETION OF THE GRADING, THE SITE SHALL BE SEEDDED AND MULCHED PER THE REVEGETATION DETAILS. 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 GRAVEL AND PAVEMENT ACCESS ROADS OR BUILDINGS. IT SHOULD BE NOTED THAT THE 70% REQUIREMENT REFERS TO THE TOTAL AREA VEGETATED AND NOT JUST A PERCENT OF THE SITE.

NOTES:
1. DURING SITE RECLAMATION ALL FILL AREAS SHALL BE COMPACTED IN 12" MAXIMUM LIFT THICKNESS WITH A VIBRATING SHEEPSFOOT ROLLER TO 95% COMPACTION PER STANDARD PROCTOR DENSITY, ASTM D-698. MOISTURE CONTENT WILL BE CONTROLLED IN ACCORDANCE WITH THE STANDARD PROCTOR TEST (ASTM-D698) RESULTS. DEWATERING SYSTEMS SHALL REMAIN IN PLACE WITH VALVES REMAINING OPEN. ALL DEWATERING SYSTEMS SHALL BE INSPECTED REGULARLY PER STANDARD OPERATING PROCEDURE.

GALMISH WELL PAD
ANTERO RESOURCES
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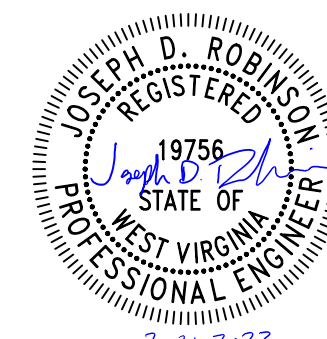
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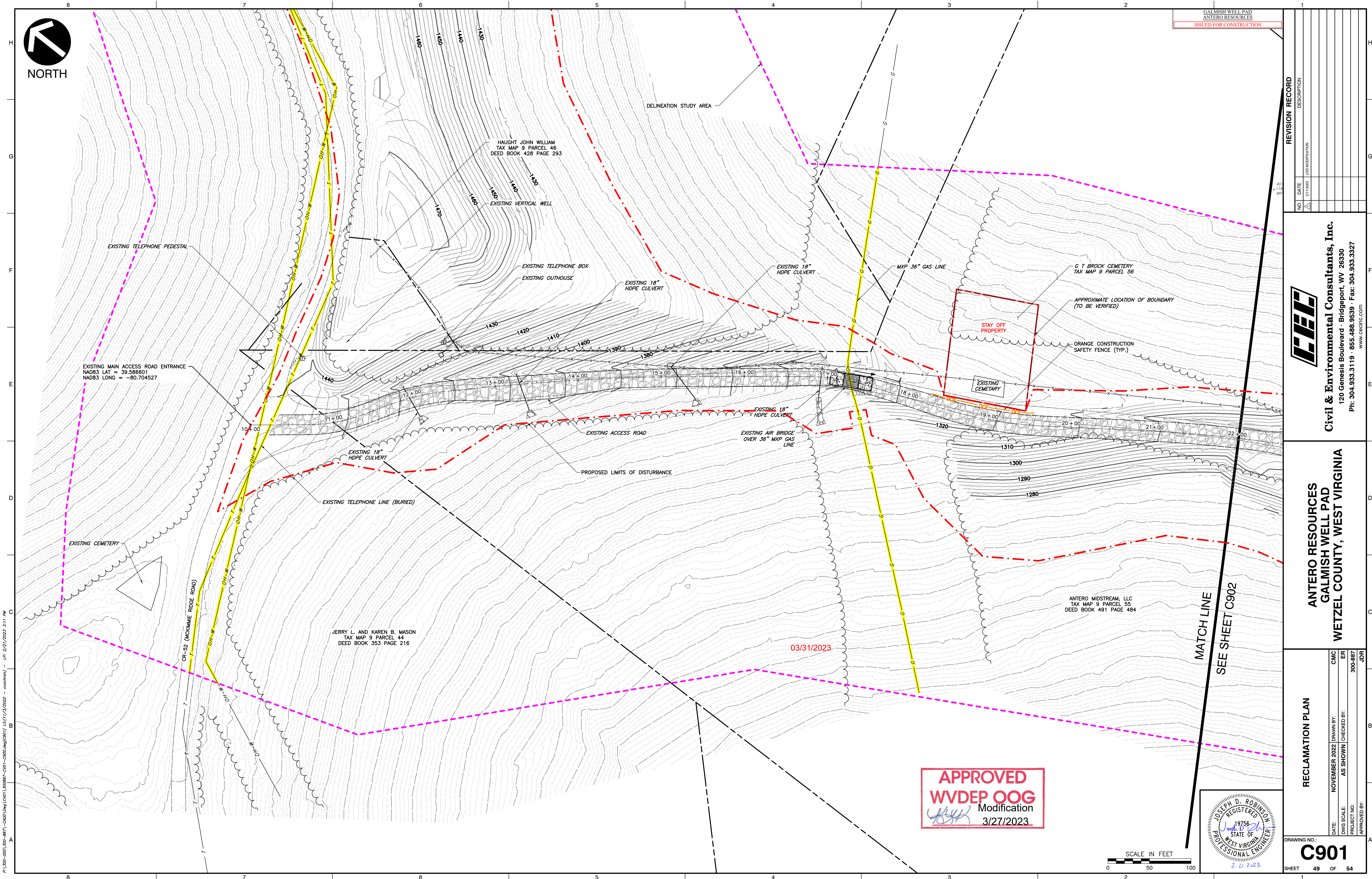
ANTERO RESOURCES
GALMISH WELL PAD
WETZEL COUNTY, WEST VIRGINIA

OVERALL RECLAMATION PLAN

DATE:	NOVEMBER 2022	DRAWN BY:	CNC
DWG SCALE:	AS SHOWN	CHECKED BY:	ER
PROJECT NO:	300-887	APPROVED BY:	JDR

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GALMISH WELL PAD
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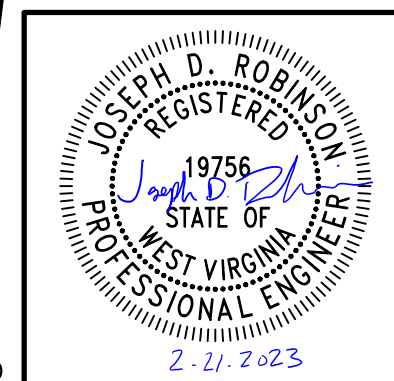
**ANTERO RESOURCES
GALMISH WELL PAD
WETZEL COUNTY, WEST VIRGINIA**

RECLAMATION PLAN

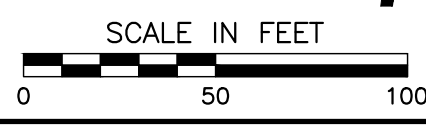
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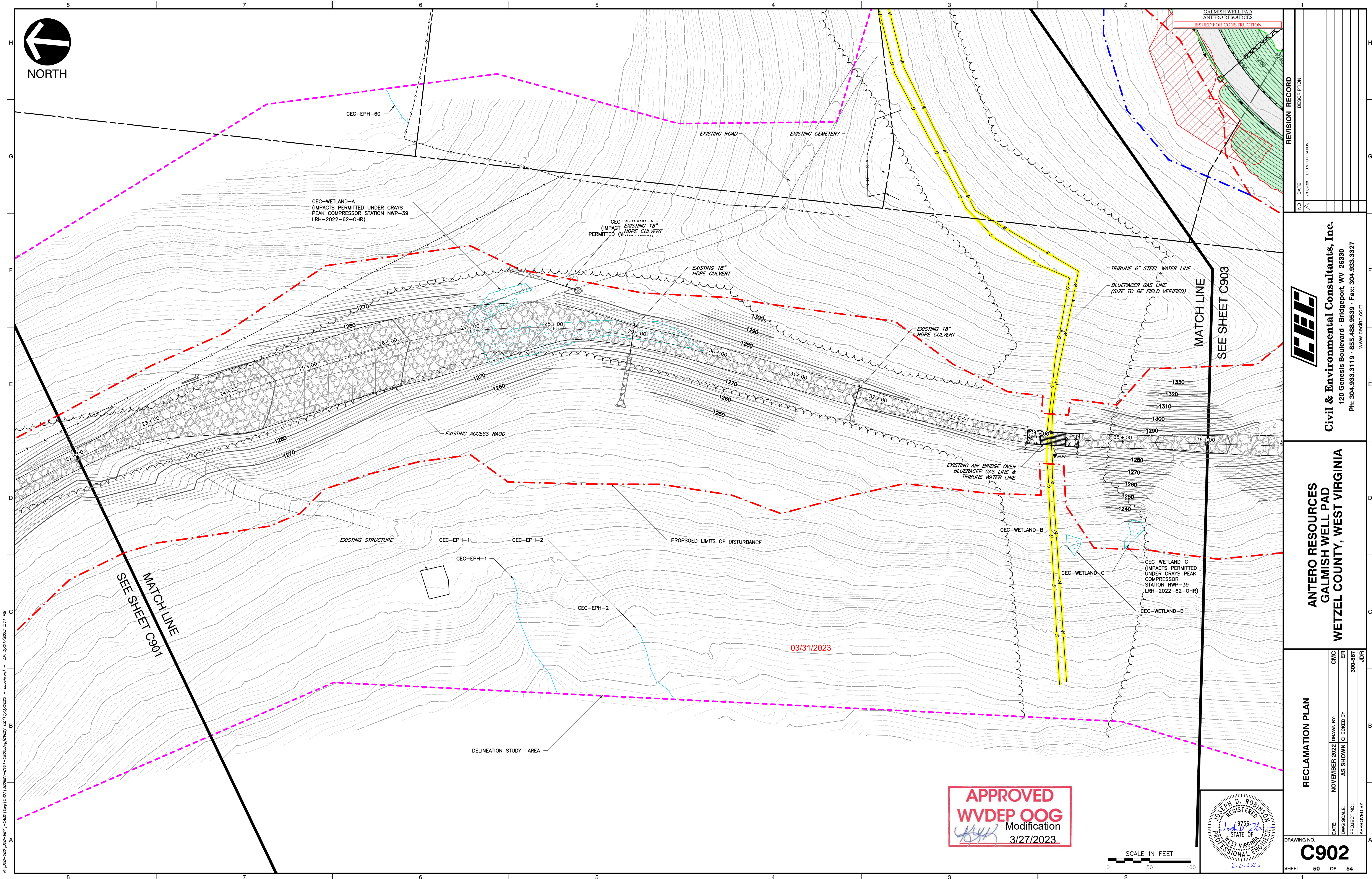
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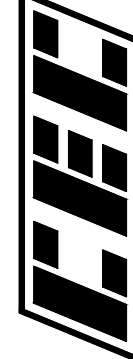


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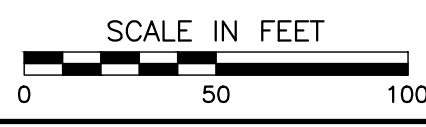
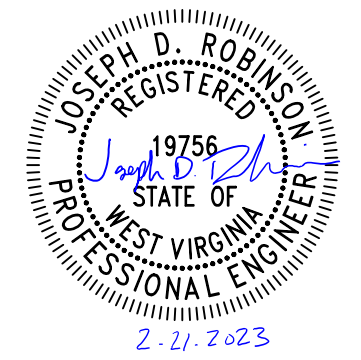


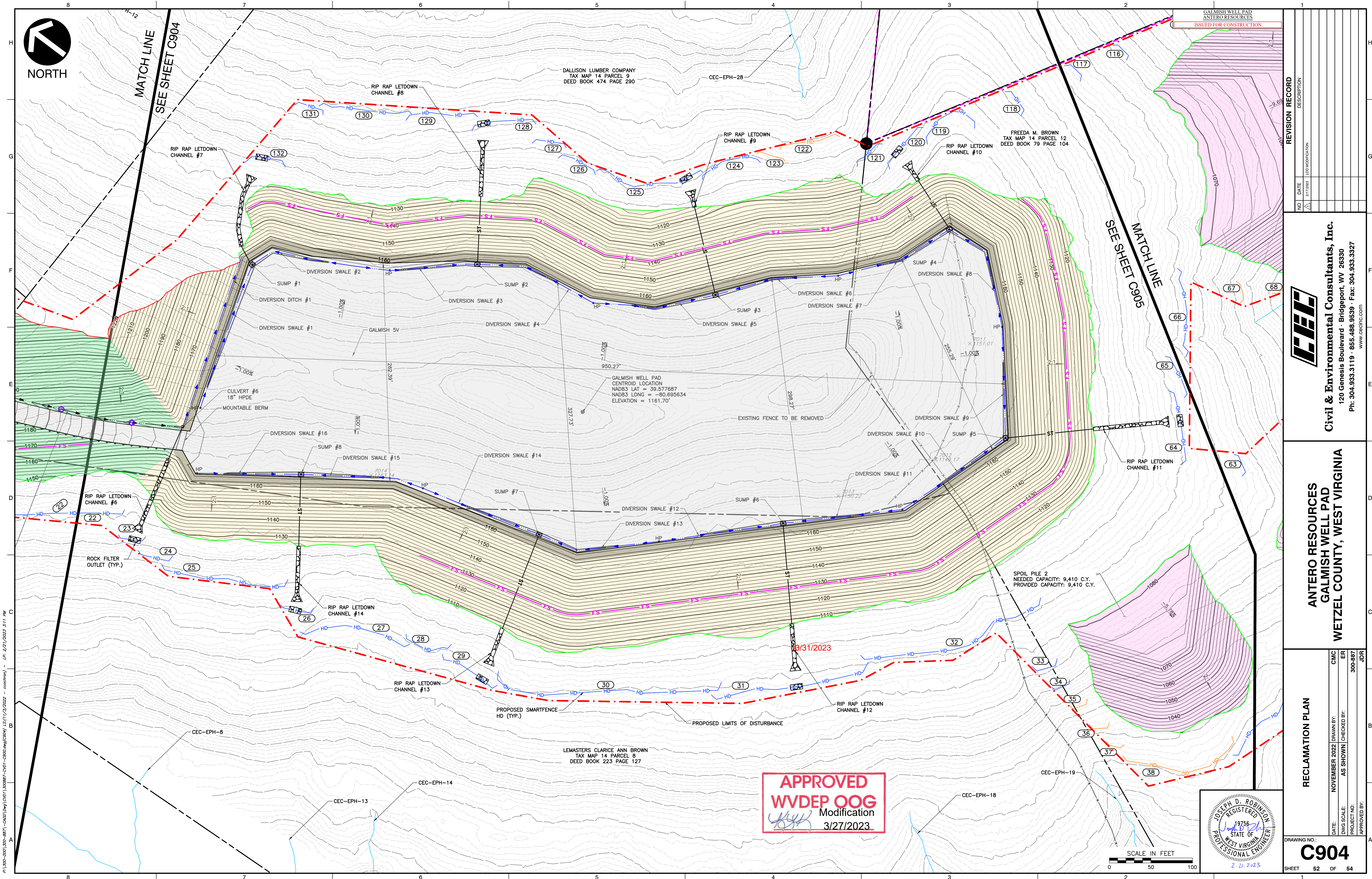
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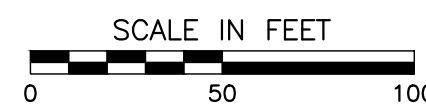
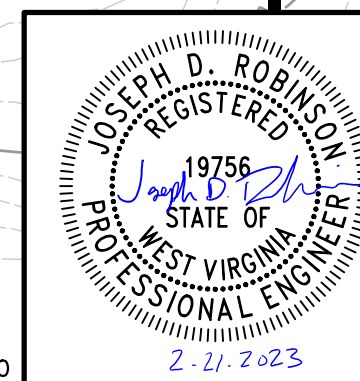
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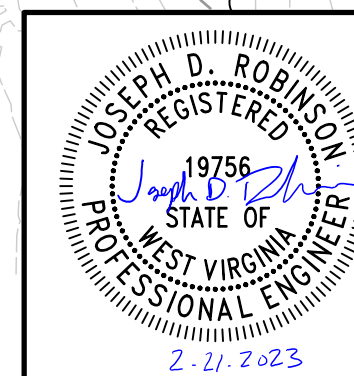
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