

PROJECT: DF18314.2045383

REFERENCE: N/A

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STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
DIVISION OF HIGHWAYS  
GEOTECHNICAL ENGINEERING UNIT

STRUCTURE  
SUBSURFACE INVESTIGATION

COUNTY HENDERSON

PROJECT DESCRIPTION EMERGENCY DESIGN FOR  
SR 1605 (MIDDLE FORK ROAD/TOMS FALLS  
ROAD)

SITE DESCRIPTION SITE 2

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	N/A	1	

CAUTION NOTICE

THE SUBSURFACE INFORMATION AND THE SUBSURFACE INVESTIGATION ON WHICH IT IS BASED WERE MADE FOR THE PURPOSE OF STUDY, PLANNING AND DESIGN, AND NOT FOR CONSTRUCTION OR PAY PURPOSES. THE VARIOUS FIELD BORING LOGS, ROCK CORES AND SOIL TEST DATA AVAILABLE MAY BE REVIEWED OR INSPECTED IN RALEIGH BY CONTACTING THE N.C. DEPARTMENT OF TRANSPORTATION, GEOTECHNICAL ENGINEERING UNIT, AT (919) 707-6850. THE SUBSURFACE PLANS AND REPORTS, FIELD BORING LOGS, ROCK CORES AND SOIL TEST DATA ARE NOT PART OF THE CONTRACT.

GENERAL SOIL AND ROCK STRATA DESCRIPTIONS AND INDICATED BOUNDARIES ARE BASED ON A GEOTECHNICAL INTERPRETATION OF ALL AVAILABLE SUBSURFACE DATA AND MAY NOT NECESSARILY REFLECT THE ACTUAL SUBSURFACE CONDITIONS BETWEEN BORINGS OR BETWEEN SAMPLED STRATA WITHIN THE BOREHOLE. THE LABORATORY SAMPLE DATA AND THE IN SITU (IN-PLACE) TEST DATA CAN BE RELIED ON ONLY TO THE DEGREE OF RELIABILITY INHERENT IN THE STANDARD TEST METHOD. THE OBSERVED WATER LEVELS OR SOIL MOISTURE CONDITIONS INDICATED IN THE SUBSURFACE INVESTIGATIONS ARE AS RECORDED AT THE TIME OF THE INVESTIGATION. THESE WATER LEVELS OR SOIL MOISTURE CONDITIONS MAY VARY CONSIDERABLY WITH TIME ACCORDING TO CLIMATIC CONDITIONS INCLUDING TEMPERATURES, PRECIPITATION AND WIND, AS WELL AS OTHER NON-CLIMATIC FACTORS.

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- NOTES:
- THE INFORMATION CONTAINED HEREIN IS NOT IMPLIED OR GUARANTEED BY THE N.C. DEPARTMENT OF TRANSPORTATION AS ACCURATE NOR IS IT CONSIDERED PART OF THE PLANS, SPECIFICATIONS OR CONTRACT FOR THE PROJECT.
  - BY HAVING REQUESTED THIS INFORMATION, THE CONTRACTOR SPECIFICALLY WAIVES ANY CLAIMS FOR INCREASED COMPENSATION OR EXTENSION OF TIME BASED ON DIFFERENCES BETWEEN THE CONDITIONS INDICATED HEREIN AND THE ACTUAL CONDITIONS AT THE PROJECT SITE.

PERSONNEL

P. PERRY, E.I.T.

P. TOMASIC, P.G.

CG2 EXPLORATION

INVESTIGATED BY CG2, PLLC

DRAWN BY P. PERRY, E.I.T.

CHECKED BY K. DE MONTBRUN, P.E.

SUBMITTED BY CG2, PLLC

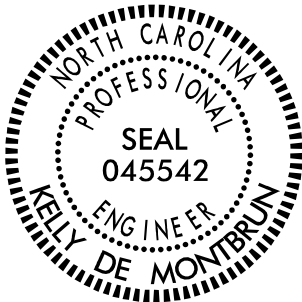
DATE JUNE 2025

Prepared in the Office of:



CAROLINAS  
GEOTECHNICAL  
GROUP

1805 SARDIS ROAD NORTH  
SUITE 100  
CHARLOTTE, NC 28270  
(980) 339-8684



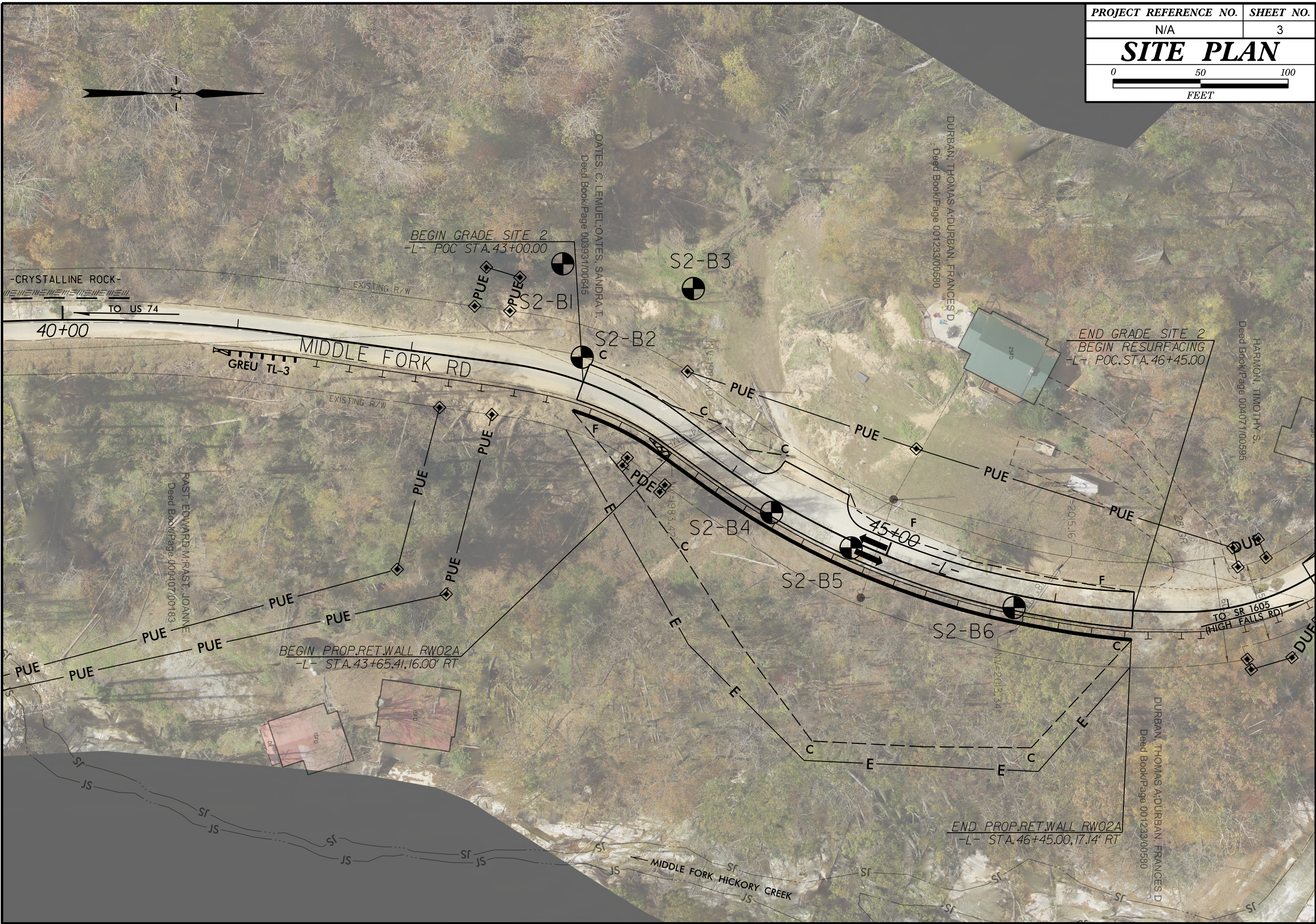
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06/04/2025  
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DATE

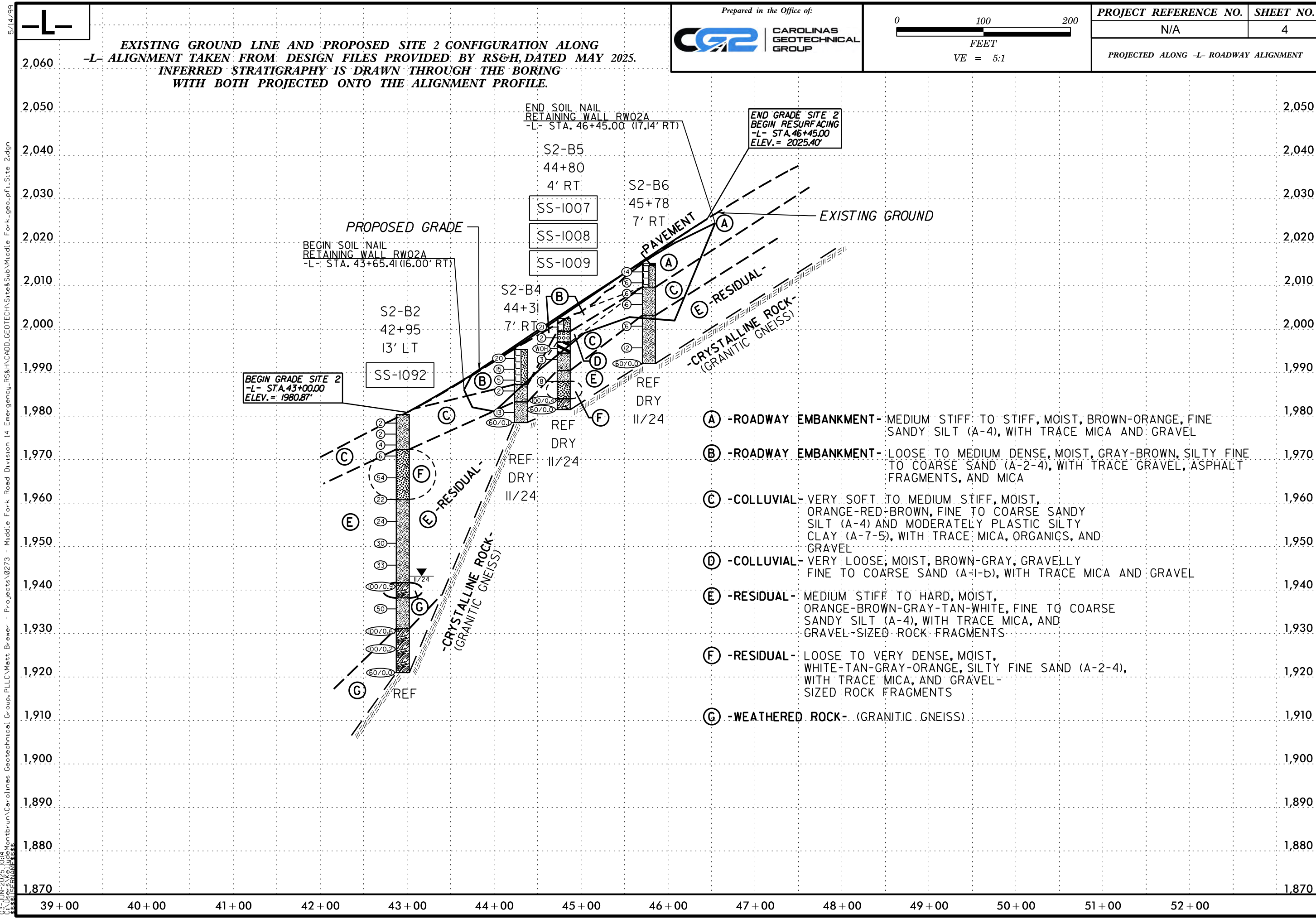
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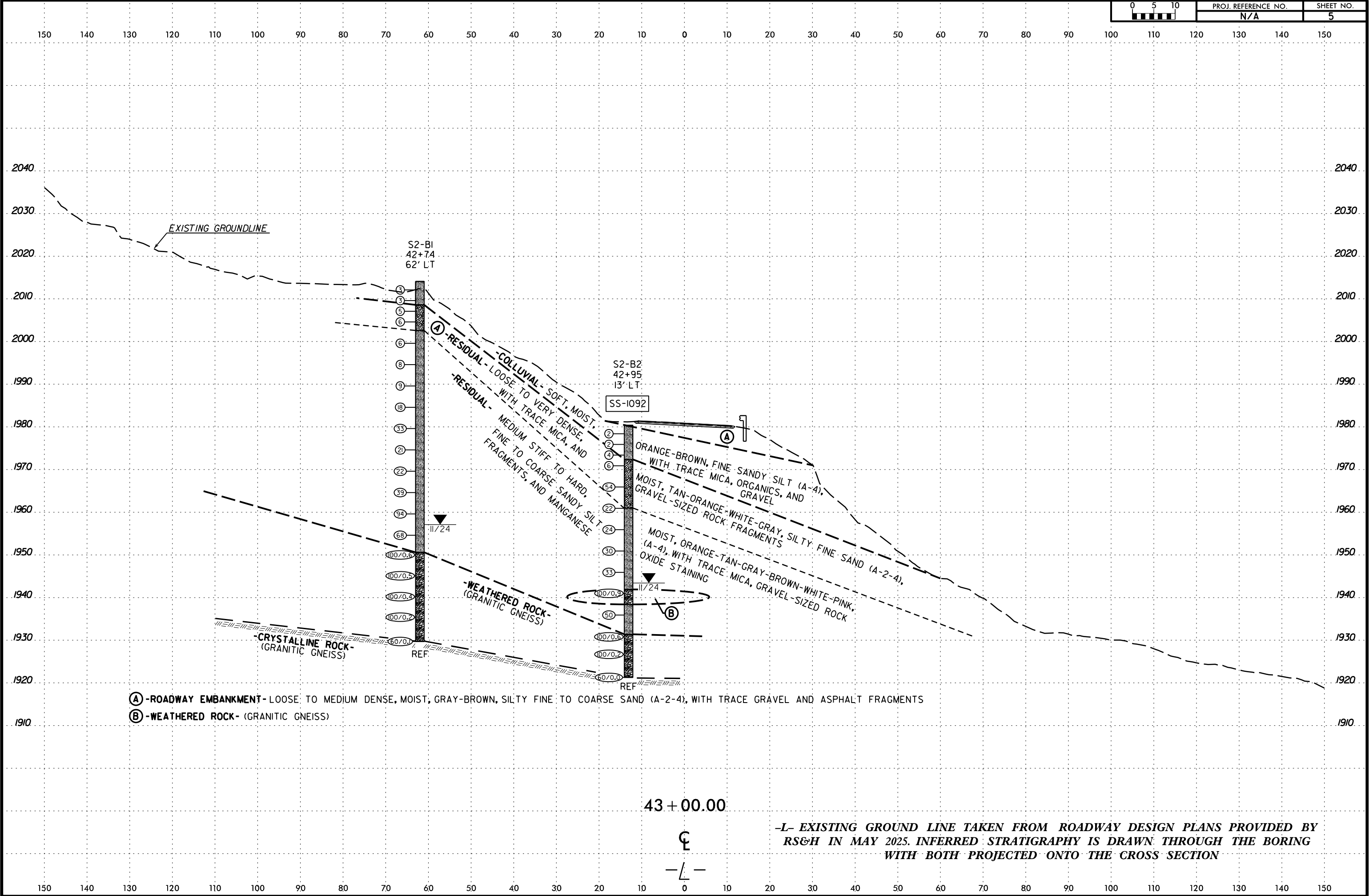


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PROJ. REFERENCE NO.	SHEET NO.
N/A	5



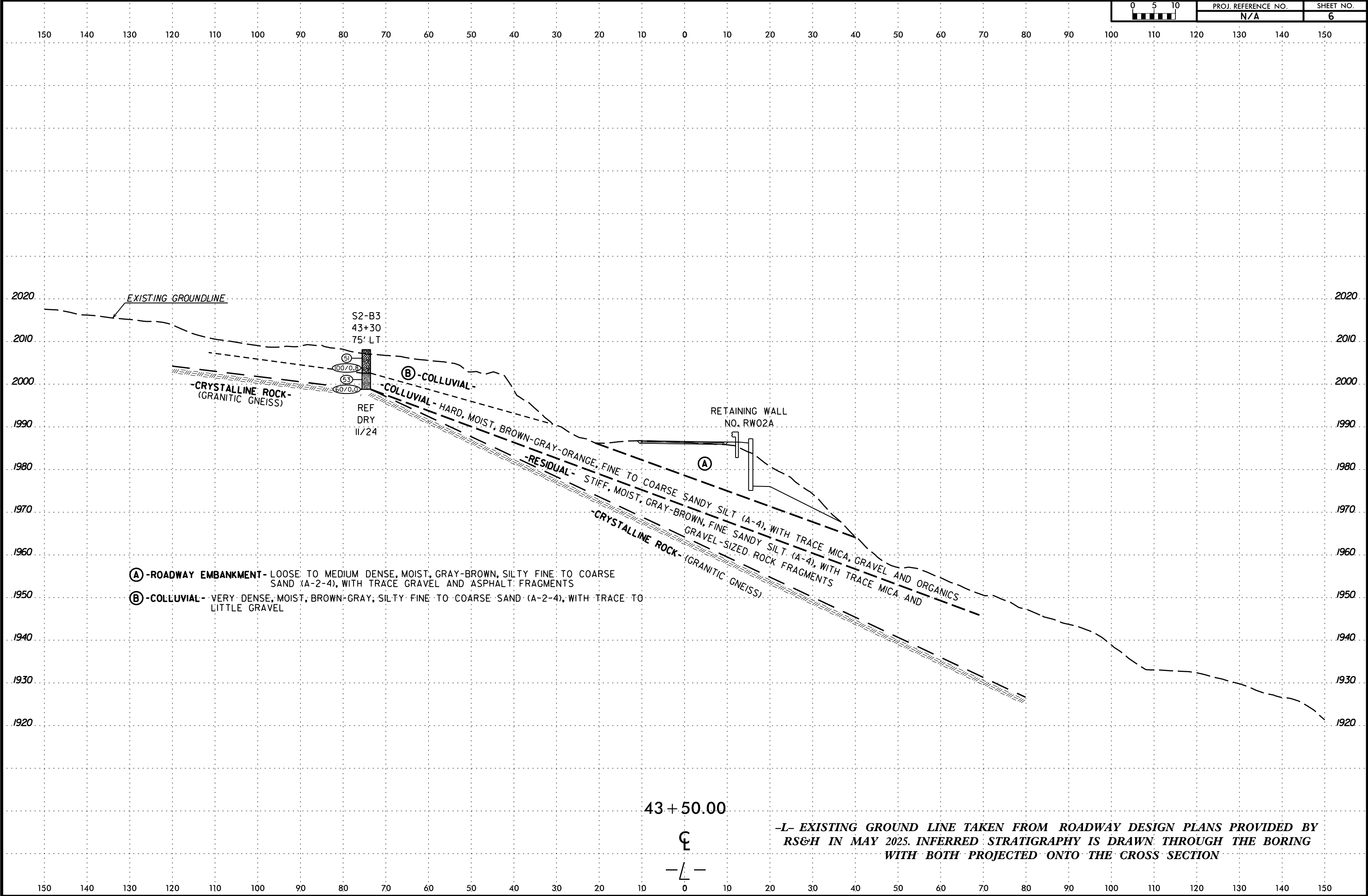
- (A) -ROADWAY EMBANKMENT- LOOSE TO MEDIUM DENSE, MOIST, GRAY-BROWN, SILTY FINE TO COARSE SAND (A-2-4), WITH TRACE GRAVEL AND ASPHALT FRAGMENTS
- (B) -WEATHERED ROCK- (GRANITIC GNEISS)

-L- EXISTING GROUND LINE TAKEN FROM ROADWAY DESIGN PLANS PROVIDED BY  
RS&H IN MAY 2025. INFERRED STRATIGRAPHY IS DRAWN THROUGH THE BORING  
WITH BOTH PROJECTED ONTO THE CROSS SECTION



6/23/16

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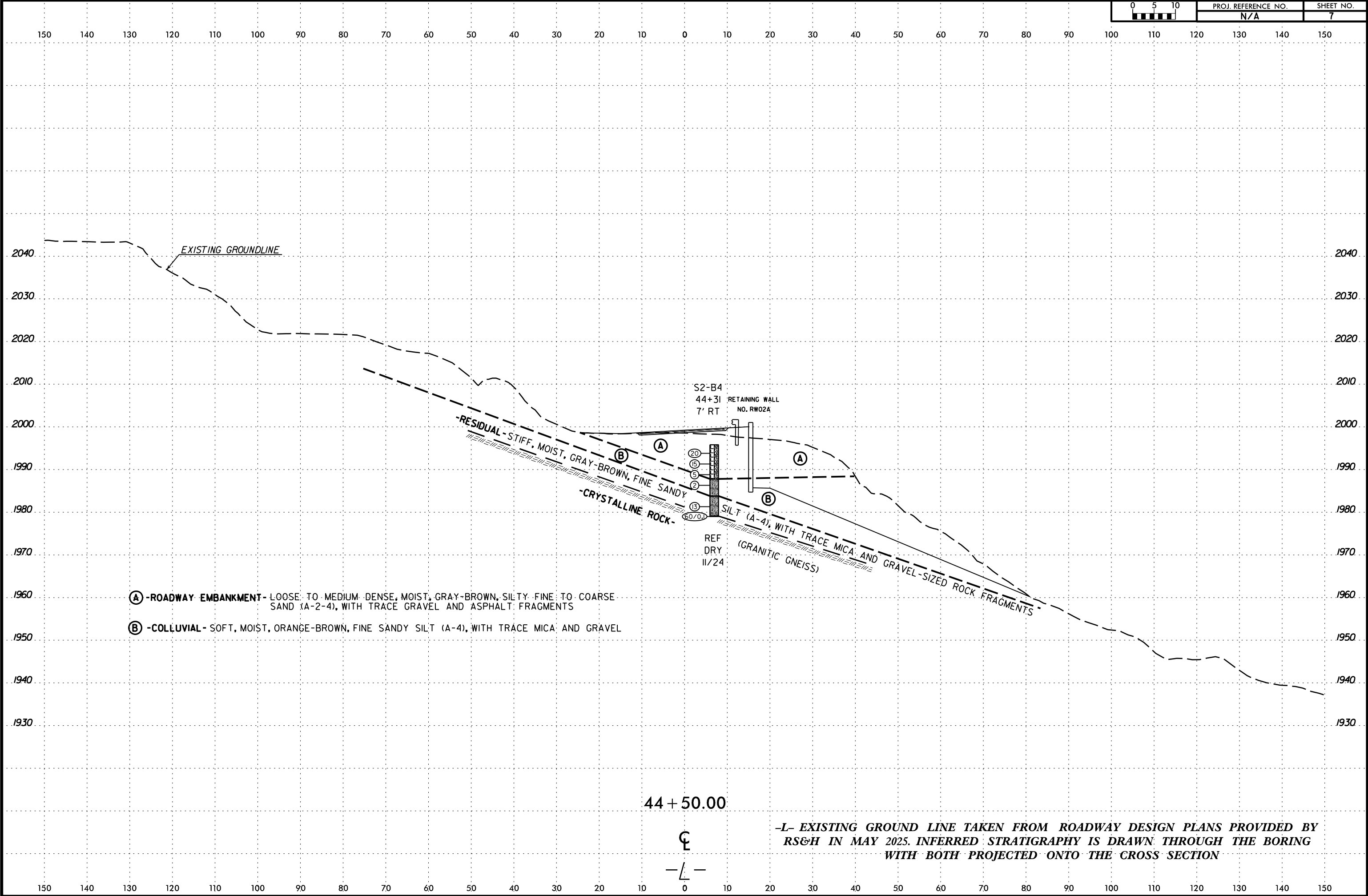




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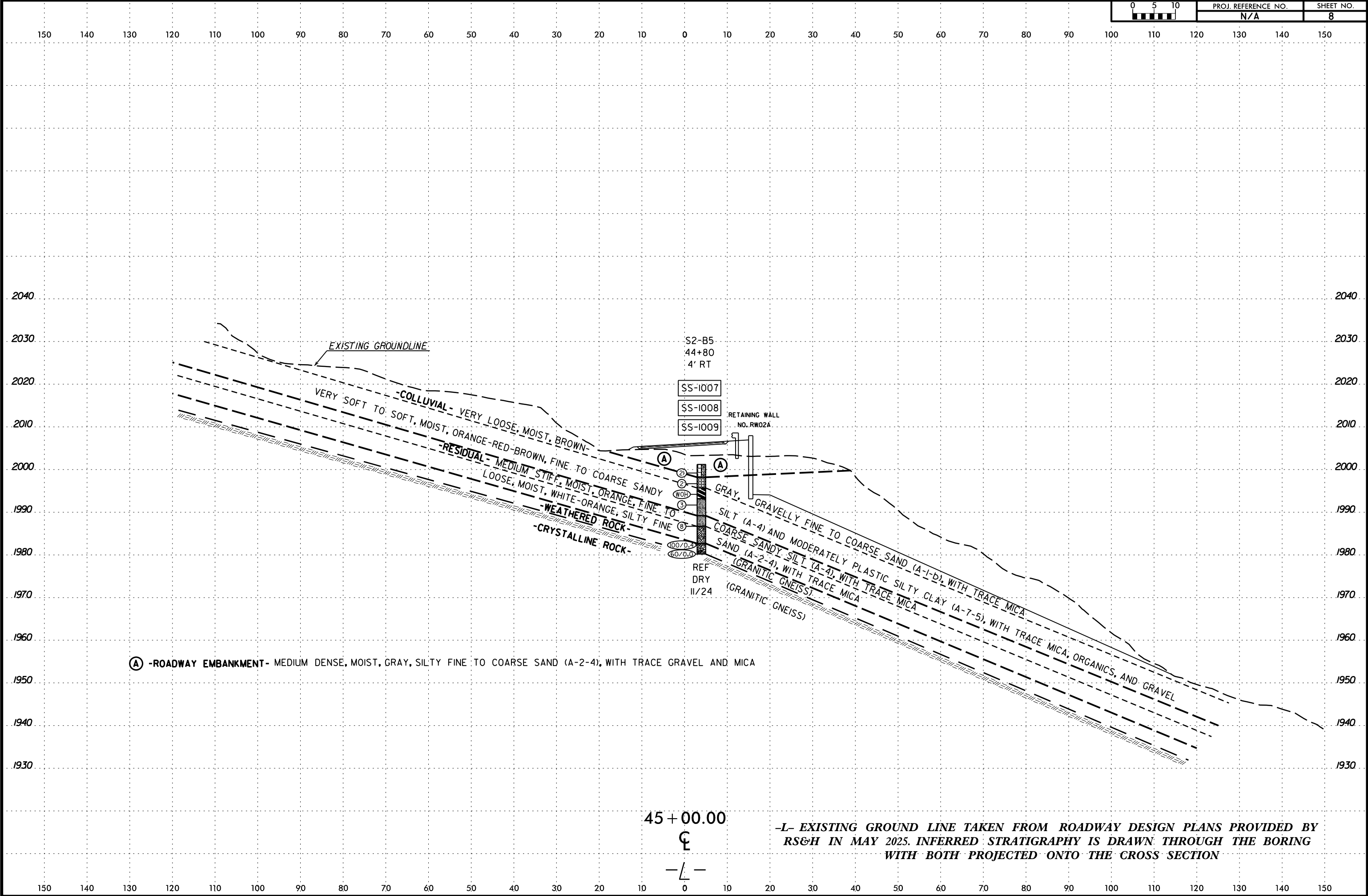


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PROJ. REFERENCE NO.	SHEET NO.
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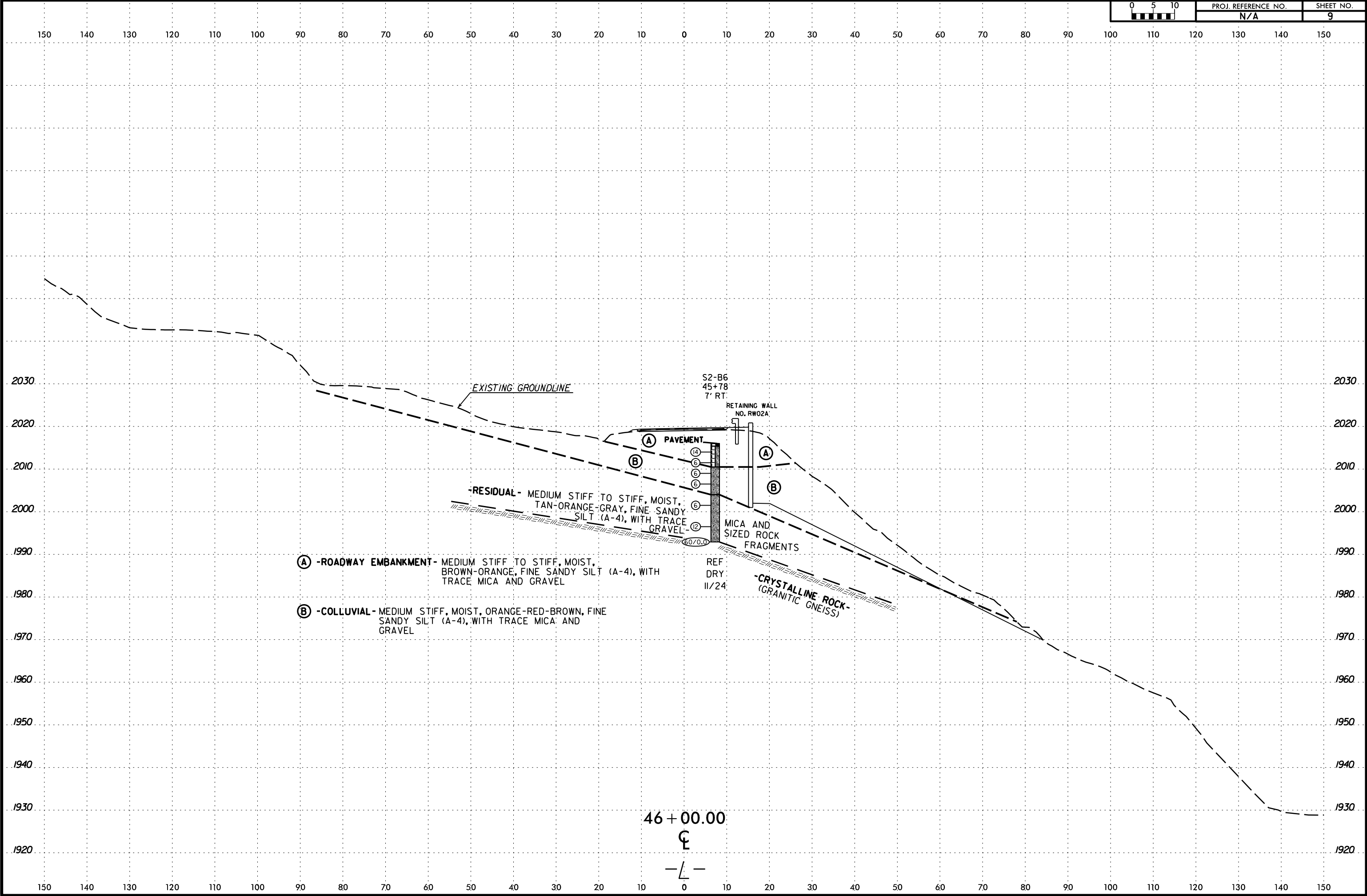
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-L-

L- EXISTING GROUND LINE TAKEN FROM ROADWAY DESIGN PLANS PROVIDED BY  
RS&H IN MAY 2025. INFERRED STRATIGRAPHY IS DRAWN THROUGH THE BORING  
WITH BOTH PROJECTED ONTO THE CROSS SECTION





GEOTECHNICAL BORING REPORT  
BORE LOG

WBS DF18314.2045383				TIP N/A				COUNTY HENDERSON				GEOLOGIST P. Perry					
SITE DESCRIPTION Emergency Design for SR 1605 (Middle Fork Road/Toms Falls Road) - Site 2												GROUND WTR (ft)					
BORING NO. S2-B1				STATION 42+74				OFFSET 62 ft LT				ALIGNMENT -L-				0 HR. 63.1	
COLLAR ELEV. 2,014.1 ft				TOTAL DEPTH 84.4 ft				NORTHING 640,711				EASTING 1,015,486				24 HR. 57.0	
DRILL RIG/HAMMER EFF./DATE CG24113 CME-550X 78% 05/06/2024								DRILL METHOD H.S. Augers				HAMMER TYPE Automatic					
DRILLER L. Ard				START DATE 11/07/24				COMP. DATE 11/07/24				SURFACE WATER DEPTH N/A					
ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT					SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION			
			0.5ft	0.5ft	0.5ft	0	25	50	75	100				ELEV. (ft)	DEPTH (ft)		
2015															2,014.1	GROUND SURFACE 0.0	
2010	2,013.1	1.0	1	2	1	3						M				COLLUVIAL Soft, Orange-Brown, Fine to Coarse Sandy SILT (A-4(0)), with trace organics and mica	
	2,010.6	3.5	1	2	1	3					SS-1106	20%					
	2,008.1	6.0	3	2	3	5						M			2,008.6		
2005	2,008.1	6.0														RESIDUAL Loose, Tan-Orange-White, Silty Fine SAND (A-2-4), with trace mica and gravel-sized rock fragments	
	2,005.6	8.5	3	3	3	6					SS-1108	12%			2,002.6		
2000	2,000.6	13.5	3	3	3	6						M				Medium Stiff to Hard, Orange-Brown-White-Tan-Gray-Pink, Fine to Coarse Sandy SILT (A-4(0)), with trace mica, gravel-sized rock fragments, and Manganese Oxide staining	
1995	1,995.6	18.5	5	3	5	8						SS-1110	18%				
1990	1,990.6	23.5	3	4	5	9						M					
1985	1,985.6	28.5	6	9	9	18						SS-1112	11%				
1980	1,980.6	33.5	12	15	18	33						M					
1975	1,975.6	38.5	5	10	11	21						M					
1970	1,970.6	43.5	6	12	10	22						M					
1965	1,965.6	48.5	11	15	24	39						M					
1960	1,960.6	53.5	30	45	49	94						M					
1955	1,955.6	58.5	31	40	28	68						M					
1950	1,950.6	63.5	25	75/0.1		100/0.6									1,950.6	WEATHERED ROCK Gray-White-Brown, (Granitic Gneiss)	
1945	1,945.6	68.5	100/0.5			100/0.5											
1940	1,940.6	73.5	100/0.4			100/0.4											
1935	1,935.6	78.5				100/0.2											

WBS DF18314.2045383			TIP N/A			COUNTY HENDERSON			GEOLOGIST P. Perry				
SITE DESCRIPTION Emergency Design for SR 1605 (Middle Fork Road/Toms Falls Road) - Site 2									GROUND WTR (ft)				
BORING NO. S2-B1			STATION 42+74			OFFSET 62 ft LT			ALIGNMENT -L-				
COLLAR ELEV. 2,014.1 ft			TOTAL DEPTH 84.4 ft			NORTHING 640,711			EASTING 1,015,486				
DRILL RIG/HAMMER EFF./DATE CG24113 CME-550X 78% 05/06/2024						DRILL METHOD H.S. Augers			HAMMER TYPE Automatic				
DRILLER L. Ard			START DATE 11/07/24			COMP. DATE 11/07/24			SURFACE WATER DEPTH N/A				
ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT					SAMP. NO.	<div><div>MOI</div><div>LOG</div></div>	SOIL AND ROCK DESCRIPTION
			0.5ft	0.5ft	0.5ft	0	25	50	75	100			
1935						Match Line							
1930	1,929.8	84.3											

NCDOT BORE DOUBLE MIDDLE FORK ROAD DIVISION 14 EMERGENCY - SITE 2.GPJ NC\_DOT.GDT 2/3/25



GEOTECHNICAL BORING REPORT  
BORE LOG

WBS DF18314.2045383			TIP N/A			COUNTY HENDERSON			GEOLOGIST P. Perry						
SITE DESCRIPTION Emergency Design for SR 1605 (Middle Fork Road/Toms Falls Road) - Site 2												GROUND WTR (ft)			
BORING NO. S2-B2			STATION 42+95			OFFSET 13 ft LT			ALIGNMENT -L-			0 HR.	37.9		
COLLAR ELEV. 1,980.4 ft			TOTAL DEPTH 59.1 ft			NORTHING 640,721			EASTING 1,015,539			24 HR.	37.0		
DRILL RIG/HAMMER EFF./DATE CG24113 CME-550X 78% 05/06/2024							DRILL METHOD H.S. Augers			HAMMER TYPE Automatic					
DRILLER L. Ard			START DATE 11/07/24			COMP. DATE 11/07/24			SURFACE WATER DEPTH N/A						
ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT					SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION	
			0.5ft	0.5ft	0.5ft	0	25	50	75	100				ELEV. (ft)	DEPTH (ft)
1985															
1980															
	1,979.4	1.0	1	1	1	2						M		1,980.4	GROUND SURFACE 0.0
	1,976.9	3.5	2	1	1	2									
1975	1,974.4	6.0	WOH	WOH	4	4						SS-1092 30%			
	1,971.9	8.5				6						M		1,972.4	8.0
1970			5	4	2							M			
	1,966.9	13.5								54		M			
1965			40	29	25										
	1,961.9	18.5	14	14	8					22		M		1,961.0	19.4
1960															
	1,956.9	23.5	10	12	12					24		M			
1955															
	1,951.9	28.5	16	18	12					30		M			
1950															
	1,946.9	33.5	13	18	15					33		M			
1945															
	1,941.9	38.5	13	87/0.4						100/0.9				1,941.9	38.5
1940															
	1,936.9	43.5	11	21	29					50		M		1,938.4	42.0
1935															
	1,931.9	48.5	19	47	53/0.1									1,931.4	49.0
1930															
	1,926.9	53.5	100/0.2							100/0.2					
1925															
	1,921.3	59.1	60/0.0							60/0.0				1,921.3	59.1

NCDOT BORE DOUBLE MIDDLE FORK ROAD DIVISION 14 EMERGENCY - SITE 2.GPJ NC\_DOT.GDT 2/3/25

WBS DF18314.2045383			TIP N/A			COUNTY HENDERSON			GEOLOGIST P. Tomasic					
SITE DESCRIPTION Emergency Design for SR 1605 (Middle Fork Road/Toms Falls Road) - Site 2									GROUND WTR (ft)					
BORING NO. S2-B3			STATION 43+30			OFFSET 75 ft LT			ALIGNMENT -L-			0 HR.	Dry	
COLLAR ELEV. 2,008.1 ft			TOTAL DEPTH 9.3 ft			NORTHING 640,785			EASTING 1,015,500			24 HR.	Dry	
DRILL RIG/HAMMER EFF./DATE CG24113 CME-550X 78% 05/06/2024						DRILL METHOD H.S. Augers			HAMMER TYPE Automatic					
DRILLER L. Ard			START DATE 11/08/24			COMP. DATE 11/08/24			SURFACE WATER DEPTH N/A					
ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT					SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION
			0.5ft	0.5ft	0.5ft	0	25	50	75	100				
2010														
	2,007.1	1.0												2,008.1 GROUND SURFACE 0.0
2005	2,004.6	3.5	9	41	10						M			COLLUVIAL Very Dense, Brown-Gray, Silty Fine to Coarse SAND (A-2-4), with trace to little gravel
	2,004.6		4	96/0.3							M			
	2,002.1	6.0												2,002.6 5.5
2000			30	42	11						M			Hard, Brown-Gray-Orange, Fine to Coarse Sandy SILT (A-4), with trace mica, gravel, and organics
	1,998.8	9.3												1,998.8 9.3
			60/0.0											Boring Terminated with Standard Penetration Test Refusal at Elevation 1,998.8 ft In Colluvial Sandy SILT (A-4)
														Surficial Organic Soil 0.0 - 0.3'
														Notes: Multiple offsets performed due to Colluvial boulders
														Higher N-values in the Colluvium likely the result of boulders/rock encountered within soil

NCDOT BORE DOUBLE MIDDLE FORK ROAD DIVISION 14 EMERGENCY - SITE 2.GPJ NC\_DOT.GDT 2/3/25

WBS				DF18314.2045383				TIP				N/A				COUNT				HENDERSON				GEOLOGIST				P. Perry																																											
SITE DESCRIPTION																				Emergency Design for SR 1605 (Middle Fork Road/Toms Falls Road) - Site 2																				GROUND WTR (ft)																															
BORING NO.								S2-B5								STATION								44+80								OFFSET								4 ft RT								ALIGNMENT								-L-								0 HR.				Dry			
COLLAR ELEV.								2,001.2 ft								TOTAL DEPTH								21.0 ft								NORTHING								640,875								EASTING								1,015,648								24 HR.				Dry			
DRILL RIG/HAMMER EFF./DATE												CG24113 CME-550X 78% 05/06/2024												DRILL METHOD								H.S. Augers								HAMMER TYPE								Automatic																							
DRILLER								L. Ard								START DATE								11/05/24								COMP. DATE								11/05/24								SURFACE WATER DEPTH																N/A							
ELEV (ft)		DRIVE ELEV (ft)		DEPTH (ft)		BLOW COUNT			BLOWS PER FOOT					SAMP. NO.		MOI		LOG		SOIL AND ROCK DESCRIPTION																																																			
						0.5ft 0.5ft 0.5ft			0 25 50 75 100																																																														
2005																																																																							
		2,000.2		1.0																2,001.2 GROUND SURFACE 0.0																																																			
						8 10 11														ROADWAY EMBANKMENT																																																			
		1,997.7		3.5		1 1 1														Medium Dense, Gray, Silty Fine to Coarse SAND (A-2-4), with trace gravel and mica 3.0																																																			
1995		1,995.2		6.0		WOH WOH WOH														COLLUVIAL																																																			
		1,992.7		8.5		1 1 2														Very Loose, Brown-Gray, Gravelly Fine to Coarse SAND (A-1-b), with trace gravel and mica 5.5																																																			
																				Very Soft, Orange-Brown, Moderately Plastic Silty CLAY (A-7-5(8)), with trace organics and mica 8.0																																																			
1990		1,987.7		13.5		1 5 3														Very Soft, Orange-Brown, Moderately Plastic Silty CLAY (A-7-5(8)), with trace organics and mica 8.0																																																			
																				Soft, Orange-Red, Fine to Coarse Sandy SILT (A-4(0)), with trace mica and gravel 12.0																																																			
		1,982.7		18.5		100/0.4														Soft, Orange-Red, Fine to Coarse Sandy SILT (A-4(0)), with trace mica and gravel 12.0																																																			
1985		1,980.2		21.0		60/0.0														Medium Stiff, Orange, Fine to Coarse Sandy SILT (A-4), with trace mica 14.5																																																			
																				Loose, White-Orange, Silty Fine SAND (A-2-4), with trace mica 18.5																																																			
																				WEATHERED ROCK																																																			
																				Gray, (Granitic Gneiss) 21.0																																																			
																				Boring Terminated with Standard Penetration Test Refusal at Elevation 1,980.2 ft On Crystalline Rock (Granitic Gneiss)																																																			




# GEOTECHNICAL BORING REPORT

## BORE LOG

WBS DF18314.2045383				TIP N/A		COUNTY HENDERSON		GEOLOGIST P. Perry							
SITE DESCRIPTION Emergency Design for SR 1605 (Middle Fork Road/Toms Falls Road) - Site 2								GROUND WTR (ft)							
BORING NO. S2-B6		STATION 45+78		OFFSET 7 ft RT		ALIGNMENT -L-		0 HR. Dry							
COLLAR ELEV. 2,016.0 ft		TOTAL DEPTH 23.1 ft		NORTHING 640,968		EASTING 1,015,682		24 HR. Dry							
DRILL RIG/HAMMER EFF./DATE CG24113 CME-550X 78% 05/06/2024				DRILL METHOD H.S. Augers		HAMMER TYPE Automatic									
DRILLER L. Ard		START DATE 11/05/24		COMP. DATE 11/05/24		SURFACE WATER DEPTH N/A									
ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT					SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION	
			0.5ft	0.5ft	0.5ft	0	25	50	75	100				ELEV. (ft)	DEPTH (ft)
2020															
2015	2,015.0	1.0	7	7	7									2,016.0	0.0
														2,015.4	0.6
	2,012.5	3.5	3	3	3										
2010	2,010.0	6.0	3	3	3									2,010.5	5.5
	2,007.5	8.5	3	3	3										
2005														2,004.0	12.0
	2,002.5	13.5	2	3	3										
2000															
	1,997.5	18.5	3	7	5										
1995															
	1,992.9	23.1												1,992.9	23.1

NCNDOT BORE DOUBLE MIDDLE FORK ROAD DIVISION 14 EMERGENCY - SITE 2.GPJ NC\_DOT.GDT 2/3/25

SOIL TEST RESULTS																		
BORING ID	SAMPLE NO.	OFFSET	STATION	NORTHING	EASTING	DEPTH INTERVAL	AASHTO CLASS.	L.L.	P.I.	% BY WEIGHT				% PASSING (SIEVES)			% MOISTURE	% ORGANIC
										C. SAND	F. SAND	SILT	CLAY	10	40	200		
S2-B1	SS-1106	62' LT	42+74 -L-	640711	1015486	3.5 - 5.0'	A-4(0)	31	5	25.3	40.2	22.4	12.1	99.9	87.9	40.4	19.6	ND
S2-B1	SS-1108	62' LT	42+74 -L-	640711	1015486	8.5 - 10.0'	A-2-4	NP	NP	34.4	43.0	18.6	4.0	97.7	79.9	27.8	11.5	ND
S2-B1	SS-1110	62' LT	42+74 -L-	640711	1015486	18.5 - 12.0'	A-4(0)	NP	NP	10.9	30.5	54.6	4.0	99.7	95.3	63.1	18.1	ND
S2-B1	SS-1112	62' LT	42+74 -L-	640711	1015486	28.5 - 30.0'	A-4(0)	NP	NP	31.9	37.9	26.2	4.0	99.9	80.7	36.0	10.6	ND
S2-B2	SS-1092	13' LT	42+95 -L-	640721	1015539	3.5 - 5.0'	A-4(3)	40	6	16.5	27.3	46.1	10.1	96.3	86.7	57.3	29.5	ND
S2-B5	SS-1007	4' RT	44+80 -L-	640875	1015648	3.5 - 5.0'	A-1-b	NP	NP	35.8	38.2	18.0	8.0	49.7	38.1	16.0	6.6	ND
S2-B5	SS-1108	4' RT	44+80 -L-	640875	1015648	6.0 - 7.5'	A-7-5(8)	47	16	15.2	31.1	35.5	18.2	97.1	89.8	56.8	35.4	ND
S2-B5	SS-1009	4' RT	44+80 -L-	640875	1015648	8.5 - 10.0'	A-4(0)	29	3	21.4	40.7	17.7	20.2	94.7	86.1	40.8	21.5	ND



AUTHORIZED SIGNATURE

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