

REFERENCE: BR-0094

PROJECT: 67094

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

STRUCTURE
SUBSURFACE INVESTIGATION

COUNTY ROCKINGHAM
PROJECT DESCRIPTION BRIDGE 780069 ON NC 770
OVER US 220

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STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	BR-0094	1	11

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 1919 T07-6850. 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.

THE BIDDER OR CONTRACTOR IS CAUTIONED THAT DETAILS SHOWN ON THE SUBSURFACE PLANS ARE PRELIMINARY ONLY AND IN MANY CASES THE FINAL DESIGN DETAILS ARE DIFFERENT. FOR BIDDING AND CONSTRUCTION PURPOSES, REFER TO THE CONSTRUCTION PLANS AND DOCUMENTS FOR FINAL DESIGN INFORMATION ON THIS PROJECT. THE DEPARTMENT DOES NOT WARRANT OR GUARANTEE THE SUFFICIENCY OR ACCURACY OF THE INVESTIGATION MADE, NOR THE INTERPRETATIONS MADE, OR OPINION OF THE DEPARTMENT AS TO THE TYPE OF MATERIALS AND CONDITIONS TO BE ENCOUNTERED. THE BIDDER OR CONTRACTOR IS CAUTIONED TO MAKE SUCH INDEPENDENT SUBSURFACE INVESTIGATIONS AS HE DEEMS NECESSARY TO SATISFY HIMSELF AS TO CONDITIONS TO BE ENCOUNTERED ON THE PROJECT. THE CONTRACTOR SHALL HAVE NO CLAIM FOR ADDITIONAL COMPENSATION OR FOR AN EXTENSION OF TIME FOR ANY REASON RESULTING FROM THE ACTUAL CONDITIONS ENCOUNTERED AT THE SITE DIFFERING FROM THOSE INDICATED IN THE SUBSURFACE INFORMATION.

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

BRECCIA

R. WESSINGER

D. HARRIS

INVESTIGATED BY F&ME CONSULTANTS

DRAWN BY R. LAWRENCE, P.E.

CHECKED BY A. SHANNON, P.E.

SUBMITTED BY A. SHANNON, P.E.

DATE AUGUST 2022

Prepared in the Office of:

F&ME CONSULTANTS, INC.
1825 BLANDING STREET
COLUMBIA, SC 29201



DocuSigned by:

Adam Shannon

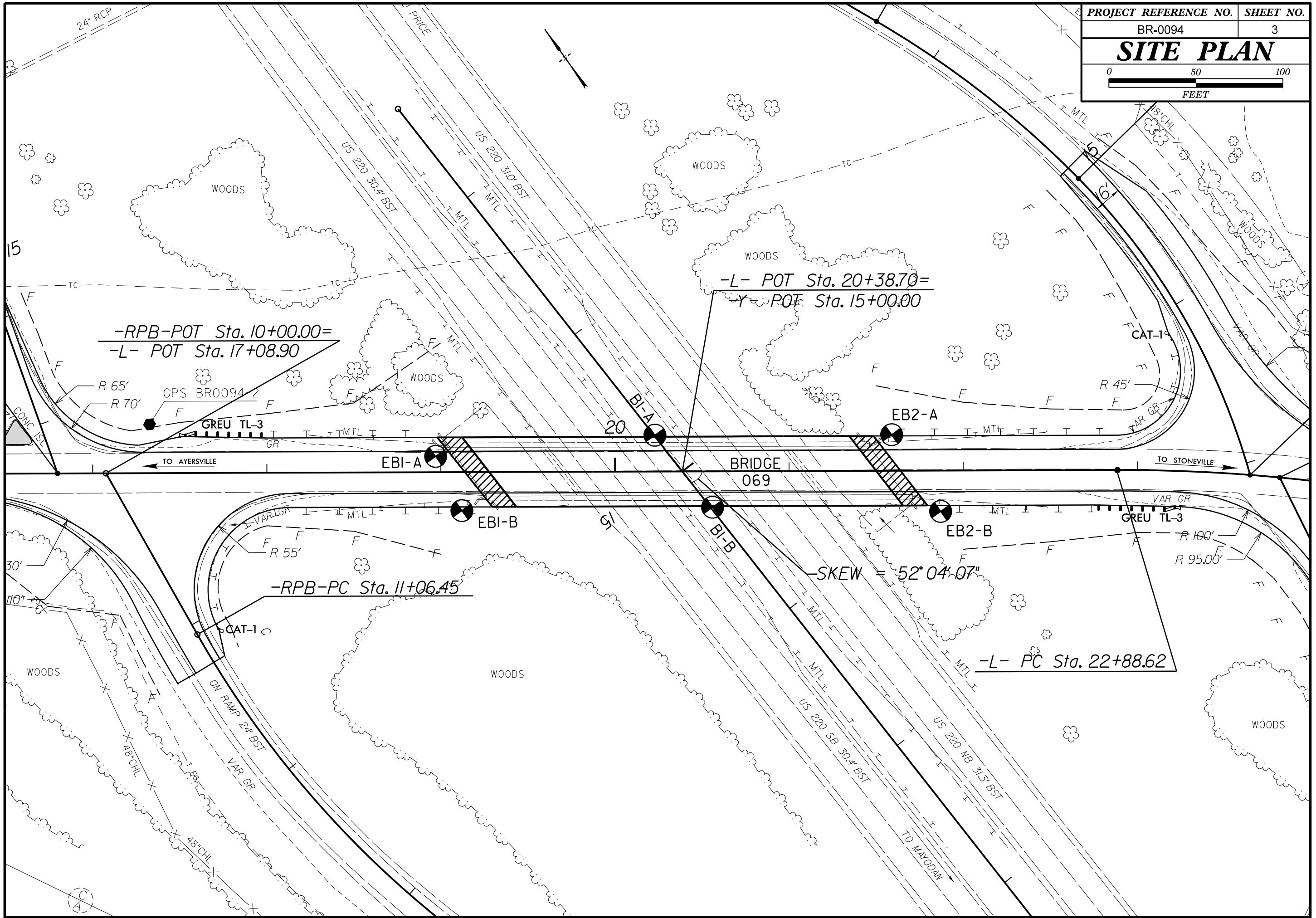
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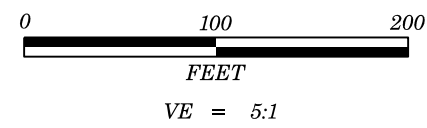
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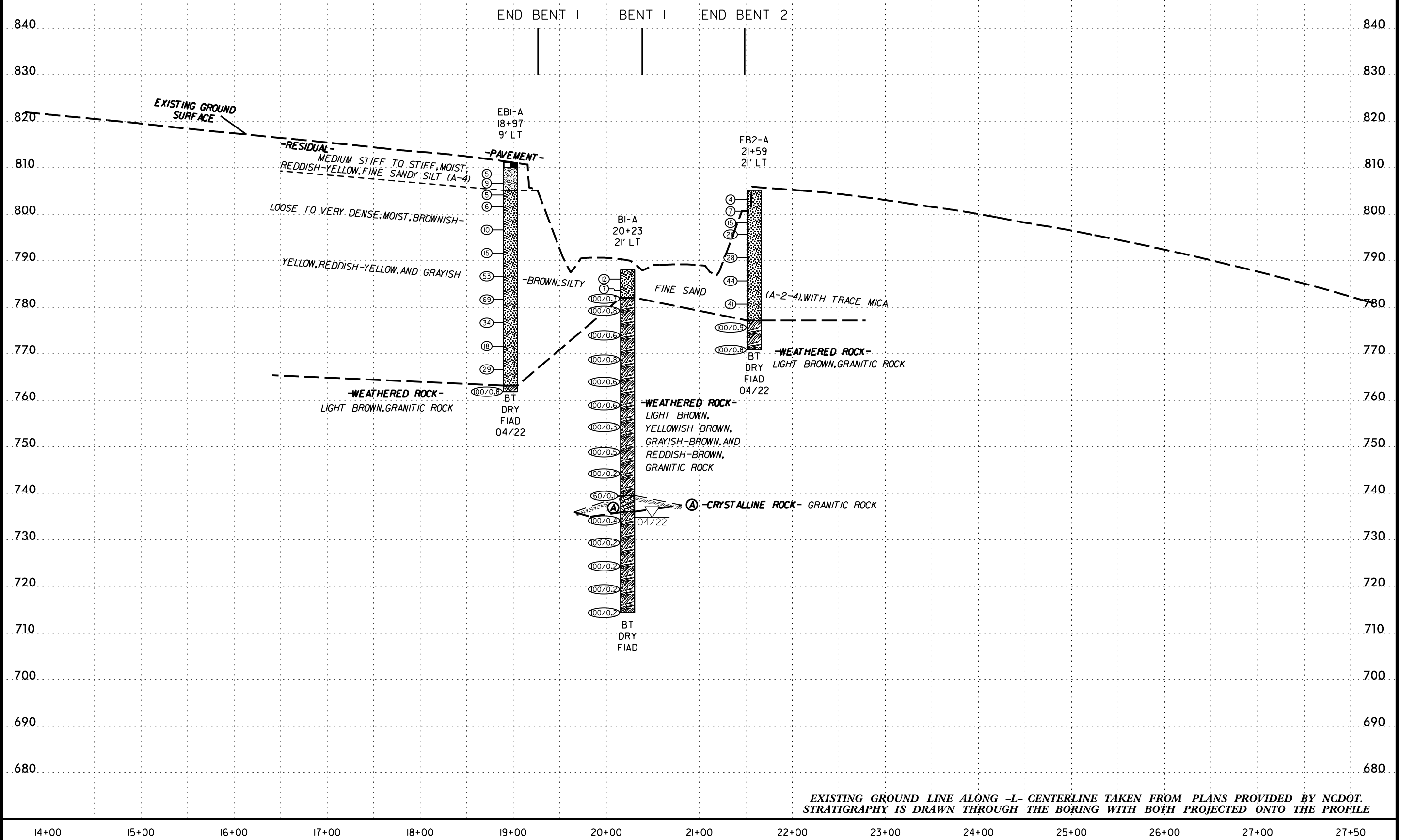
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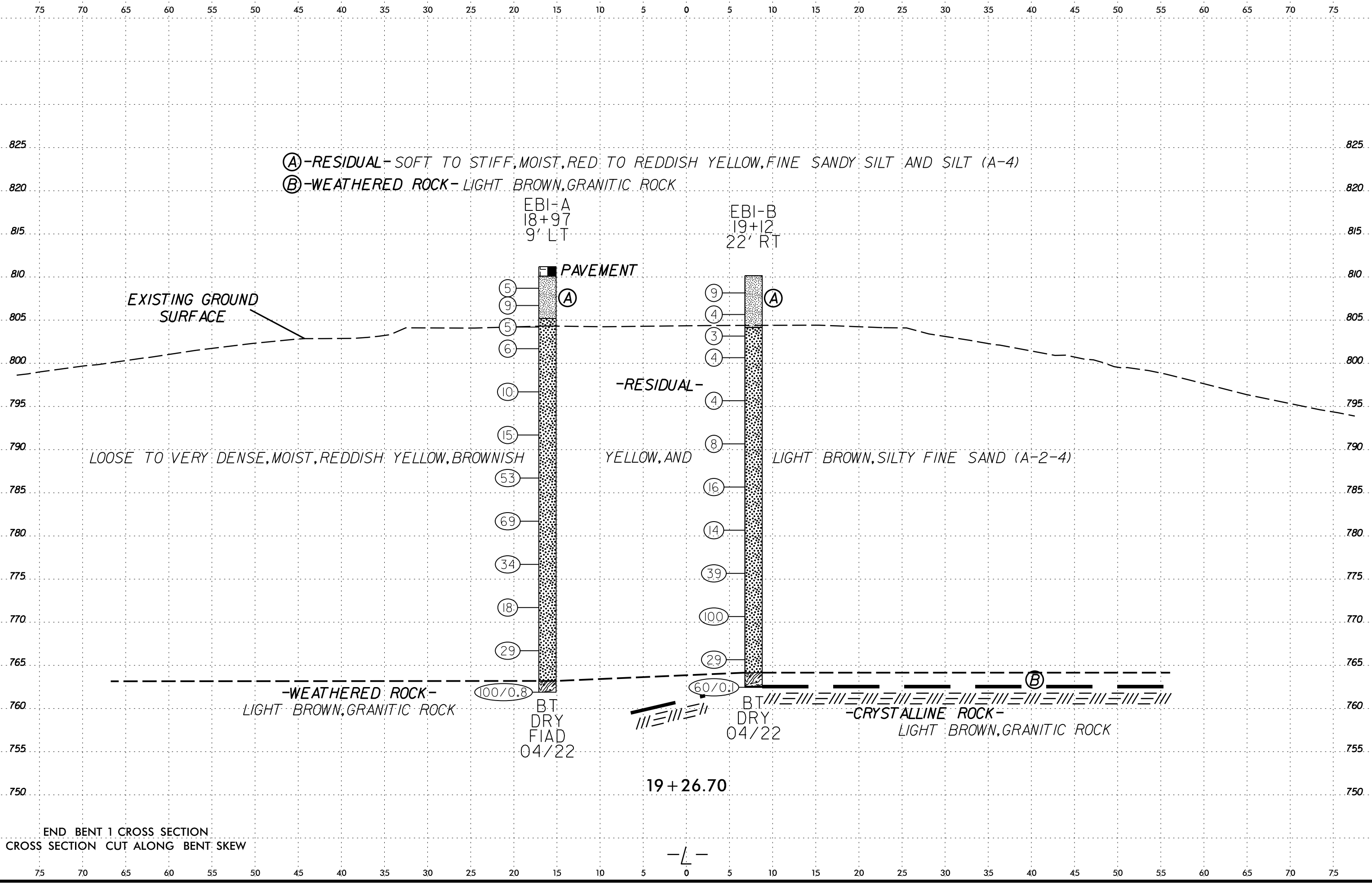


PROJECT REFERENCE NO.	SHEET NO.
BR-0094	4
BRIDGE 780069 ON NC 770 OVER US 220 SKEW = 52 DEGREES	

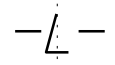


EXISTING GROUND LINE ALONG -L- CENTERLINE TAKEN FROM PLANS PROVIDED BY NCDOT.
STRATIGRAPHY IS DRAWN THROUGH THE BORING WITH BOTH PROJECTED ONTO THE PROFILE

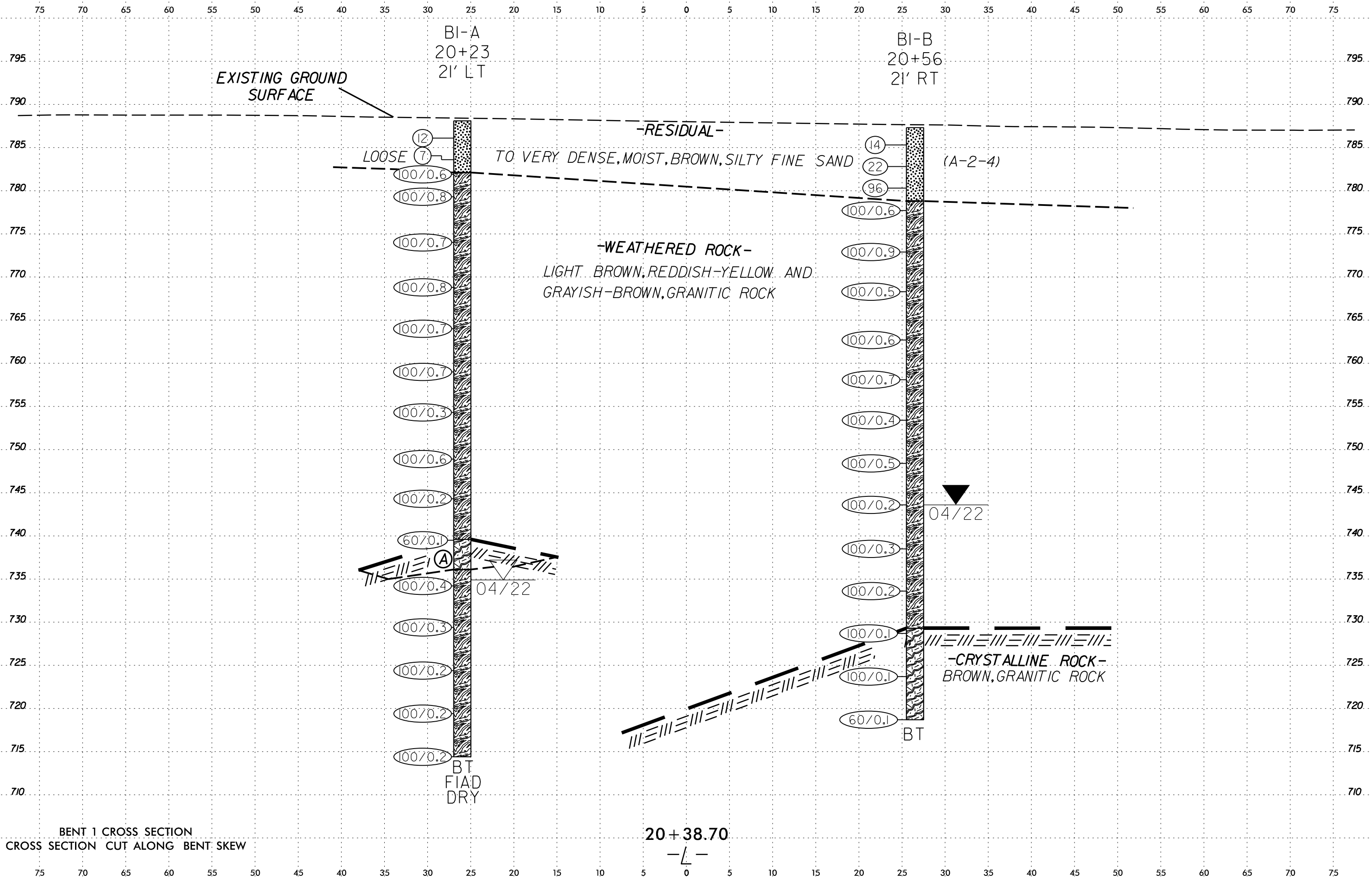
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END BENT 1 CROSS SECTION
CROSS SECTION CUT ALONG BENT SKEW



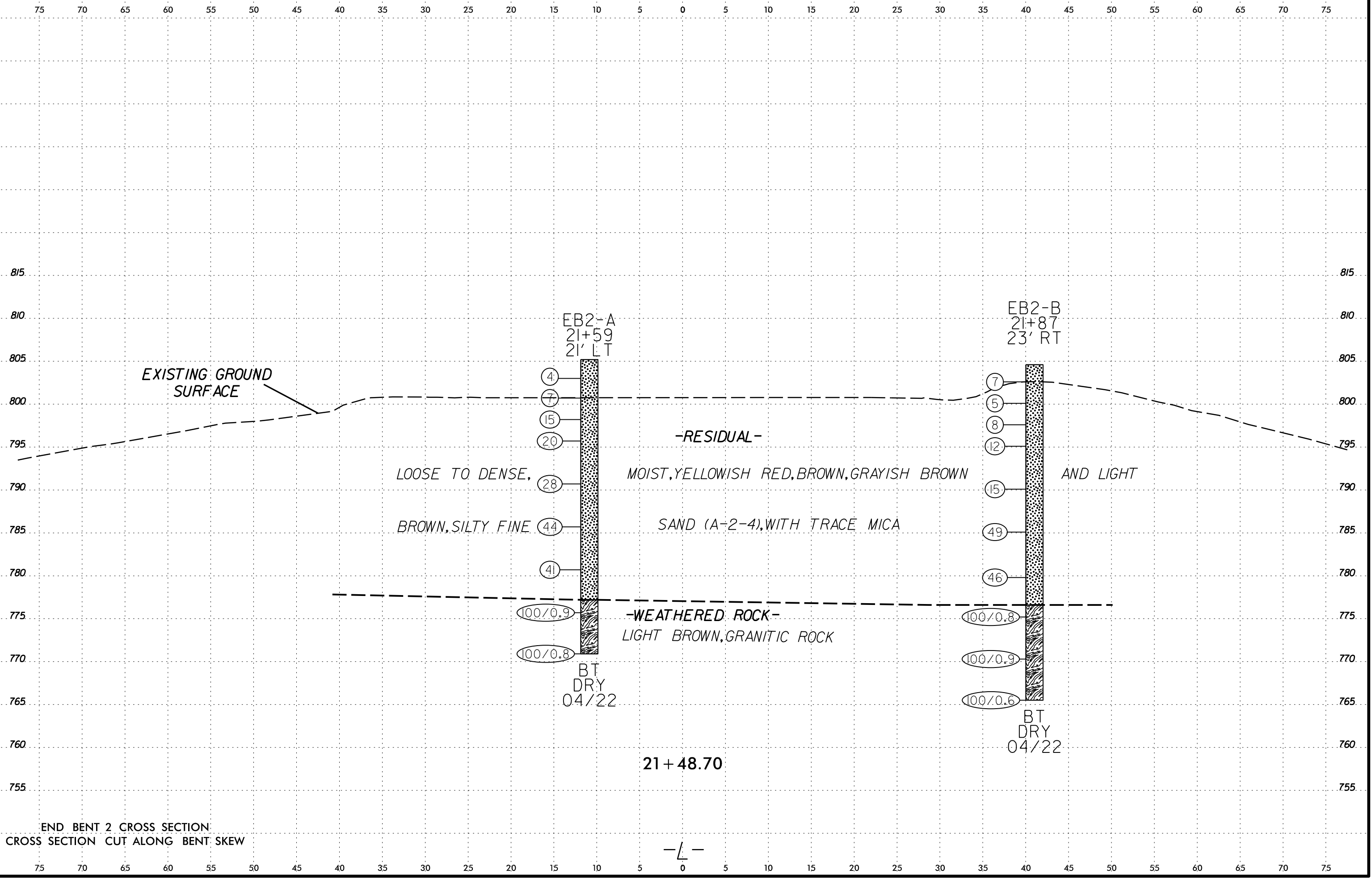
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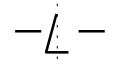
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END BENT 2 CROSS SECTION
CROSS SECTION CUT ALONG BENT SKEW



GEOTECHNICAL BORING REPORT

BORE LOG

WBS 67094.1.1		TIP BR-0094		COUNTY ROCKINGHAM		GEOLOGIST R. Wessinger									
SITE DESCRIPTION Bridge 780069 on NC 770 over US 220							GROUND WTR (ft)								
BORING NO. EB1-A		STATION 18+97		OFFSET 9 ft LT		ALIGNMENT L									
						0 HR.	Dry								
COLLAR ELEV. 811.2 ft		TOTAL DEPTH 49.3 ft		NORTHING 990,429		EASTING 1,727,383									
						24 HR.	FIAD								
DRILL RIG/HAMMER EFF./DATE BRE9553 CME-550X 85% 03/11/2022				DRILL METHOD H.S. Augers		HAMMER TYPE Automatic									
DRILLER D. Harris		START DATE 04/14/22		COMP. DATE 04/14/22		SURFACE WATER DEPTH N/A									
ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT					SAMP. NO.	LOG	SOIL AND ROCK DESCRIPTION	DEPTH (ft)	
			0.5ft	0.5ft	0.5ft	0	25	50	75	100					
815															
810	810.1	1.1	2	3	2									811.2 GROUND SURFACE	0.0
														810.1 ROADWAY EMBANKMENT ASPHALT & ABC	1.1
	807.7	3.5	2	4	5									RESIDUAL	
														Medium Stiff to Stiff, Red, SILT (A-4)	
805	805.2	6.0	2	2	3									805.2	6.0
														Loose to Very Dense, Yellowish-Red to Brownish-Yellow, Silty Fine SAND (A-2-4)	
	802.7	8.5	2	2	4										
800															
	797.7	13.5	4	4	6										
795															
	792.7	18.5	6	5	10										
790															
	787.7	23.5	13	24	29										
785															
	782.7	28.5	26	35	34										
780															
	777.7	33.5	10	14	20										
775															
	772.7	38.5	4	8	10										
770															
	767.7	43.5	15	12	17										
765															
	762.7	48.5	24	76/0.3											
															100/0.8
														763.2 WEATHERED ROCK	48.0
														Light Brown, GRANITIC ROCK	49.3
														Boring Terminated at Elevation 761.9 ft in Weathered Rock (GRANITIC ROCK)	

WBS 67094.1.1		TIP BR-0094		COUNTY ROCKINGHAM		GEOLOGIST R. Wessinger									
SITE DESCRIPTION Bridge 780069 on NC 770 over US 220							GROUND WTR (ft)								
BORING NO. EB1-B		STATION 19+12		OFFSET 22 ft RT		ALIGNMENT L									
						0 HR.	Dry								
COLLAR ELEV. 810.2 ft		TOTAL DEPTH 47.7 ft		NORTHING 990,395		EASTING 1,727,377									
						24 HR.	Dry								
DRILL RIG/HAMMER EFF./DATE BRE9553 CME-550X 85% 03/11/2022				DRILL METHOD H.S. Augers		HAMMER TYPE Automatic									
DRILLER D. Harris		START DATE 04/14/22		COMP. DATE 04/14/22		SURFACE WATER DEPTH N/A									
ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT					SAMP. NO.	LOG	SOIL AND ROCK DESCRIPTION	DEPTH (ft)	
			0.5ft	0.5ft	0.5ft	0	25	50	75	100					
815															
810														810.2 GROUND SURFACE	0.0
	809.2	1.0	3	4	5									RESIDUAL	
														Stiff to Soft, Yellowish-Red, Fine Sandy SILT (A-4)	
805	806.7	3.5	2	2	2									804.2	6.0
														Very Loose to Very Dense, Light Brown and Reddish-Yellow to Brownish-Yellow, Silty Fine SAND (A-2-4)	
	804.2	6.0	1	1	2										
800															
	801.7	8.5	1	1	3										
795															
	796.7	13.5	2	1	3										
790															
	791.7	18.5	3	4	4										
785															
	786.7	23.5	4	7	9										
780															
	781.7	28.5	2	6	8										
775															
	776.7	33.5	11	17	22										
770															
	771.7	38.5	24	42	58										
765															
	766.7	43.5	19	16	13										
															60/0.1
														764.2 WEATHERED ROCK	46.0
														Light Brown, GRANITIC ROCK	47.6
														CRSTALLINE ROCK	47.7
														Light Brown, GRANITIC ROCK	
														Boring Terminated with Standard Penetration Test Refusal at Elevation 762.5 ft in Crystalline Rock (GRANITIC ROCK)	

NCDOT BORE DOUBLE BR0094 GEO_RDY_BL_REV1.GPJ NC_DOT_GDT 8/8/22

GEOTECHNICAL BORING REPORT

BORE LOG

WBS 67094.1.1		TIP BR-0094		COUNTY ROCKINGHAM		GEOLOGIST R. Wessinger										
SITE DESCRIPTION Bridge 780069 on NC 770 over US 220							GROUND WTR (ft)									
BORING NO. B1-A		STATION 20+23		OFFSET 21 ft LT		ALIGNMENT L										
COLLAR ELEV. 788.1 ft		TOTAL DEPTH 73.7 ft		NORTHING 990,366		EASTING 1,727,492										
DRILL RIG/HAMMER EFF./DATE BRE9553 CME-550X 85% 03/11/2022			DRILL METHOD H.S. Augers			HAMMER TYPE Automatic										
DRILLER D. Harris		START DATE 04/19/22		COMP. DATE 04/19/22		SURFACE WATER DEPTH N/A										
ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT					SAMP. NO.	LOG MOI	LOG G	SOIL AND ROCK DESCRIPTION	DEPTH (ft)	
			0.5ft	0.5ft	0.5ft	0	25	50	75	100						
790															788.1	0.0
	787.1	1.0	6	5	7											
785	784.6	3.5	9	3	4											
	782.1	6.0	36	64/0.2												
780	779.6	8.5	34	66/0.3												
	774.6	13.5	54	46/0.1												
775	769.6	18.5	38	62/0.4												
770	764.6	23.5	48	52/0.2												
765	759.6	28.5	42	58/0.2												
760	754.6	33.5	100/0.3													
755	749.6	38.5	86	14/0.1												
750	744.6	43.5	100/0.2													
745	739.6	48.5	60/0.1													
740	734.6	53.5	100/0.4													
735	729.6	58.5	100/0.3													
730	724.6	63.5	100/0.2													
725	719.6	68.5	100/0.2													
720	714.6	73.5	100/0.2													
715																

WBS 67094.1.1		TIP BR-0094		COUNTY ROCKINGHAM		GEOLOGIST R. Wessinger										
SITE DESCRIPTION Bridge 780069 on NC 770 over US 220							GROUND WTR (ft)									
BORING NO. B1-B		STATION 20+56		OFFSET 21 ft RT		ALIGNMENT L										
COLLAR ELEV. 787.3 ft		TOTAL DEPTH 68.6 ft		NORTHING 990,313		EASTING 1,727,495										
DRILL RIG/HAMMER EFF./DATE BRE9553 CME-550X 85% 03/11/2022			DRILL METHOD H.S. Augers			HAMMER TYPE Automatic										
DRILLER D. Harris		START DATE 04/18/22		COMP. DATE 04/19/22		SURFACE WATER DEPTH N/A										
ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT					SAMP. NO.	LOG MOI	LOG G	SOIL AND ROCK DESCRIPTION	DEPTH (ft)	
			0.5ft	0.5ft	0.5ft	0	25	50	75	100						
790															787.3	0.0
	786.3	1.0	4	6	8											
785	783.8	3.5	6	10	12											
	781.3	6.0	16	31	65											
780	778.8	8.5	17	80	20/0.1											
	773.8	13.5	23	71/0.4												
775	768.8	18.5	84	16/0.0												
770	763.8	23.5	30	63	37/0.1											
765	758.8	28.5	49	50/0.2												
760	753.8	33.5	100/0.4													
755	748.8	38.5	100/0.5													
750	743.8	43.5	100/0.2													
745	738.8	48.5	100/0.3													
740	733.8	53.5	100/0.2													
735	728.8	58.5	100/0.1													
730	723.8	63.5	100/0.1													
725	718.8	68.5	60/0.1													
720																

NCDOT BORE DOUBLE BR0094_GEO_RDY_BL_REV1.GPJ NC_DOT.GDT 8/8/22

GEOTECHNICAL BORING REPORT

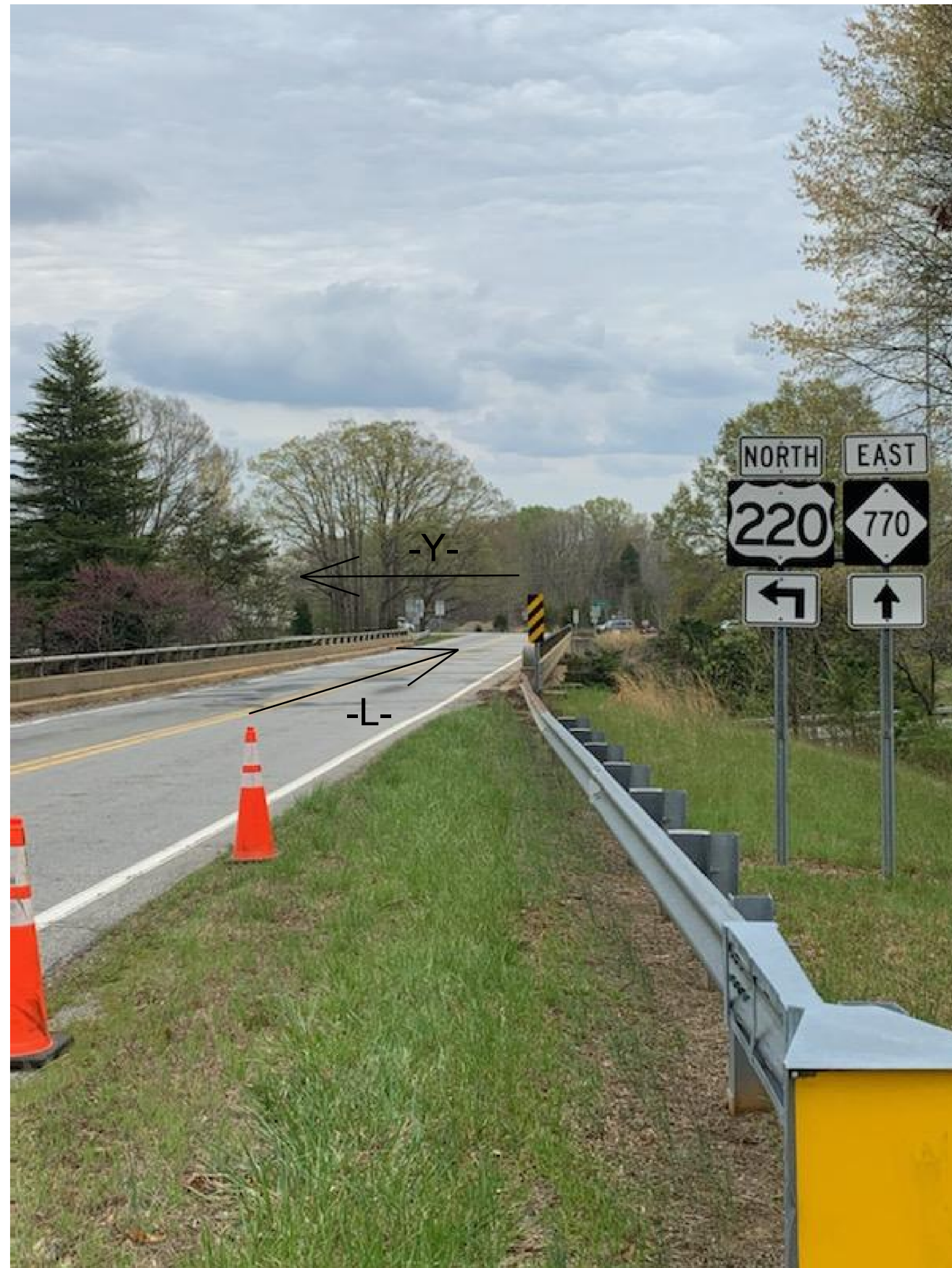
BORE LOG

WBS 67094.1.1		TIP BR-0094		COUNTY ROCKINGHAM		GEOLOGIST R. Wessinger											
SITE DESCRIPTION Bridge 780069 on NC 770 over US 220							GROUND WTR (ft)										
BORING NO. EB2-A		STATION 21+59		OFFSET 21 ft LT		ALIGNMENT L											
COLLAR ELEV. 805.2 ft		TOTAL DEPTH 34.3 ft		NORTHING 990,287		EASTING 1,727,603											
DRILL RIGHAMMER EFF./DATE BRE9553 CME-550X 85% 03/11/2022		DRILL METHOD H.S. Augers		HAMMER TYPE Automatic													
DRILLER D. Harris		START DATE 04/18/22		COMP. DATE 04/18/22		SURFACE WATER DEPTH N/A											
ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT					SAMP. NO.	LOG MOI	LOG G	SOIL AND ROCK DESCRIPTION	DEPTH (ft)		
			0.5ft	0.5ft	0.5ft	0	25	50	75	100							
810																	
805	804.2	1.0	1	1	3								M		805.2	GROUND SURFACE 0.0	
800	801.7	3.5	1	3	4								M	RESIDUAL Loose to Dense, Yellowish-Red to Grayish-Brown, Silty Fine SAND (A-2-4), with Trace Mica			
	799.2	6.0	4	6	9								M				
	796.7	8.5	6	9	11								M				
795	791.7	13.5	9	13	15								M				
790	786.7	18.5	13	19	25								M				
785	781.7	23.5	13	17	24								M				
780	776.7	28.5	18	22	24								M				
775	771.7	33.5	39	61	0.3								M				
																777.2	WEATHERED ROCK 28.0
																770.9	WEATHERED ROCK 34.3
																Boring Terminated at Elevation 770.9 ft In Weathered Rock (GRANITIC ROCK)	

WBS 67094.1.1		TIP BR-0094		COUNTY ROCKINGHAM		GEOLOGIST R. Wessinger										
SITE DESCRIPTION Bridge 780069 on NC 770 over US 220							GROUND WTR (ft)									
BORING NO. EB2-B		STATION 21+87		OFFSET 23 ft RT		ALIGNMENT L										
COLLAR ELEV. 804.6 ft		TOTAL DEPTH 39.1 ft		NORTHING 990,235		EASTING 1,727,600										
DRILL RIGHAMMER EFF./DATE BRE9553 CME-550X 85% 03/11/2022		DRILL METHOD H.S. Augers		HAMMER TYPE Automatic												
DRILLER D. Harris		START DATE 04/14/22		COMP. DATE 04/14/22		SURFACE WATER DEPTH N/A										
ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT					SAMP. NO.	LOG MOI	LOG G	SOIL AND ROCK DESCRIPTION	DEPTH (ft)	
			0.5ft	0.5ft	0.5ft	0	25	50	75	100						
805																
	803.6	1.0	1	2	5								M	RESIDUAL Loose to Dense, Brownish-Yellow to Grayish-Brown, Silty Fine SAND (A-2-4) with Trace Gravel Sized Rock Fragments	804.6	GROUND SURFACE 0.0
800	801.1	3.5	2	2	3								M			
	798.6	6.0	2	4	4								M			
795	796.1	8.5	4	6	6								M			
	791.1	13.5	4	6	9								M			
790	786.1	18.5	7	18	31								M			
785	781.1	23.5	15	18	28								M			
780	776.1	28.5	13	39	61/0.3								M			
775	771.1	33.5	38	62	0.4								M			
	766.1	38.5	68	32	0.1								M			776.6
															765.5	WEATHERED ROCK 39.1
																Boring Terminated at Elevation 765.5 ft In Weathered Rock (GRANITIC ROCK)

NCDOT BORE DOUBLE BR0094_GEO_RDY_BL_REV1.GPJ NC_DOT.GDT 8/8/22

BRIDGE PHOTOS



BRIDGE 780069 ON NC 770 OVER US 220
END BENT 1 LOOKING AT END BENT 2