

REFERENCE: BR-0098

PROJECT: 67098

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2	LEGEND (SOIL & ROCK)
3	SITE PLAN
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STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
GEOTECHNICAL ENGINEERING UNIT

STRUCTURE
SUBSURFACE INVESTIGATION

COUNTY ROCKINGHAM
PROJECT DESCRIPTION MSE ABUTMENT WALLS AT
END BENT NO.1 AND END BENT NO.2 OF
BRIDGE 780183 ON SR 1767 OVER US 29 BYPASS
INVENTORY

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	BR-0098	1	9

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.

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

J. ROWENHORST

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D. STEWART

INVESTIGATED BY WSP E&I

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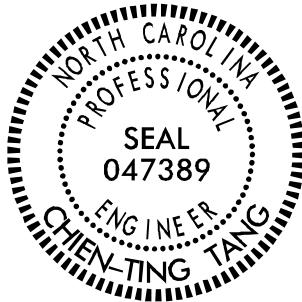
CHECKED BY J. ROWENHORST

SUBMITTED BY C.T. TANG, PE

DATE OCTOBER, 2024



NC Engineering F-1253 NC Geology C-247



DocuSigned by:

Chien-Ting Tang

11/07/2024

4071910370EE41F SIGNATURE

DATE

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

DIVISION OF HIGHWAYS

GEOTECHNICAL ENGINEERING UNIT

SUBSURFACE INVESTIGATION

SOIL AND ROCK LEGEND, TERMS, SYMBOLS, AND ABBREVIATIONS

SOIL DESCRIPTION												GRADATION												ROCK DESCRIPTION												TERMS AND DEFINITIONS											
SOIL IS CONSIDERED UNCONSOLIDATED, SEMI-CONSOLIDATED, OR WEATHERED EARTH MATERIALS THAT CAN BE PENETRATED WITH A CONTINUOUS FLIGHT POWER AUGER AND YIELD LESS THAN 100 BLOWS PER FOOT ACCORDING TO THE STANDARD PENETRATION TEST (AASHTO T 206, ASTM D1586). SOIL CLASSIFICATION IS BASED ON THE AASHTO SYSTEM. BASIC DESCRIPTIONS GENERALLY INCLUDE THE FOLLOWING: CONSISTENCY, COLOR, TEXTURE, MOISTURE, AASHTO CLASSIFICATION, AND OTHER PERTINENT FACTORS SUCH AS MINERALOGICAL COMPOSITION, ANGULARITY, STRUCTURE, PLASTICITY, ETC. FOR EXAMPLE, <i>VERY STIFF, GRAY, SILTY CLAY, MOIST WITH INTERBEDDED FINE SAND LAYERS, HIGHLY PLASTIC, A-7-6</i>												WELL GRADED - INDICATES A GOOD REPRESENTATION OF PARTICLE SIZES FROM FINE TO COARSE. UNIFORMLY GRADED - INDICATES THAT SOIL PARTICLES ARE ALL APPROXIMATELY THE SAME SIZE. GAP-GRADED - INDICATES A MIXTURE OF UNIFORM PARTICLE SIZES OF TWO OR MORE SIZES.												HARD ROCK IS NON-COASTAL PLAIN MATERIAL THAT WOULD YIELD SPT REFUSAL IF TESTED, AN INFERRED ROCK LINE INDICATES THE LEVEL AT WHICH NON-COASTAL PLAIN MATERIAL WOULD YIELD SPT REFUSAL. SPT REFUSAL IS PENETRATION BY A SPLIT SPOON SAMPLER EQUAL TO OR LESS THAN 0.1 FOOT PER 60 BLOWS IN NON-COASTAL PLAIN MATERIAL. THE TRANSITION BETWEEN SOIL AND ROCK IS OFTEN REPRESENTED BY A ZONE OF WEATHERED ROCK. ROCK MATERIALS ARE TYPICALLY DIVIDED AS FOLLOWS:												ALLUVIUM (ALLUV.) - SOILS THAT HAVE BEEN TRANSPORTED BY WATER. AQUIFER - A WATER BEARING FORMATION OR STRATA. ARENACEOUS - APPLIED TO ROCKS THAT HAVE BEEN DERIVED FROM SAND OR THAT CONTAIN SAND. ARGILLACEOUS - APPLIED TO ALL ROCKS OR SUBSTANCES COMPOSED OF CLAY MINERALS, OR HAVING A NOTABLE PROPORTION OF CLAY IN THEIR COMPOSITION, SUCH AS SHALE, SLATE, ETC. ARTESIAN - GROUND WATER THAT IS UNDER SUFFICIENT PRESSURE TO RISE ABOVE THE LEVEL AT WHICH IT IS ENCOUNTERED, BUT WHICH DOES NOT NECESSARILY RISE TO OR ABOVE THE GROUND SURFACE. CALCAREOUS (CALC.) - SOILS THAT CONTAIN APPRECIABLE AMOUNTS OF CALCIUM CARBONATE. COLLUVIUM - ROCK FRAGMENTS MIXED WITH SOIL DEPOSITED BY GRAVITY ON SLOPE OR AT BOTTOM OF SLOPE. CORE RECOVERY (REC.) - TOTAL LENGTH OF ALL MATERIAL RECOVERED IN THE CORE BARREL DIVIDED BY TOTAL LENGTH OF CORE RUN AND EXPRESSED AS A PERCENTAGE. DIKE - A TABULAR BODY OF IGNEOUS ROCK THAT CUTS ACROSS THE STRUCTURE OF ADJACENT ROCKS OR CUTS MASSIVE ROCK. DIP - THE ANGLE AT WHICH A STRATUM OR ANY PLANAR FEATURE IS INCLINED FROM THE HORIZONTAL. DIP DIRECTION (DIP AZIMUTH) - THE DIRECTION OR BEARING OF THE HORIZONTAL TRACE OF THE LINE OF DIP, MEASURED CLOCKWISE FROM NORTH. FAULT - A FRACTURE OR FRACTURE ZONE ALONG WHICH THERE HAS BEEN DISPLACEMENT OF THE SIDES RELATIVE TO ONE ANOTHER PARALLEL TO THE FRACTURE. FISSILE - A PROPERTY OF SPLITTING ALONG CLOSELY SPACED PARALLEL PLANES. FLOAT - ROCK FRAGMENTS ON SURFACE NEAR THEIR ORIGINAL POSITION AND DISLOGGED FROM PARENT MATERIAL. FLOOD PLAIN (FP) - LAND BORDERING A STREAM, BUILT OF SEDIMENTS DEPOSITED BY THE STREAM. FORMATION (FM) - A MAPPABLE GEOLOGIC UNIT THAT CAN BE RECOGNIZED AND TRACED IN THE FIELD. JOINT - FRACTURE IN ROCK ALONG WHICH NO APPRECIABLE MOVEMENT HAS OCCURRED. LEDGE - A SHELF-LIKE RIDGE OR PROJECTION OF ROCK WHOSE THICKNESS IS SMALL COMPARED TO ITS LATERAL EXTENT. LENS - A BODY OF SOIL OR ROCK THAT THINS OUT IN ONE OR MORE DIRECTIONS. MOTTLED (MOT.) - IRREGULARLY MARKED WITH SPOTS OF DIFFERENT COLORS. MOTTLING IN SOILS USUALLY INDICATES POOR AERATION AND LACK OF GOOD DRAINAGE. PERCHED WATER - WATER MAINTAINED ABOVE THE NORMAL GROUND WATER LEVEL BY THE PRESENCE OF AN INTERVENING IMPERVIOUS STRATUM. RESIDUAL (RES.) SOIL - SOIL FORMED IN PLACE BY THE WEATHERING OF ROCK. ROCK QUALITY DESIGNATION (ROD) - A MEASURE OF ROCK QUALITY DESCRIBED BY TOTAL LENGTH OF ROCK SEGMENTS EQUAL TO OR GREATER THAN 4 INCHES DIVIDED BY THE TOTAL LENGTH OF CORE RUN AND EXPRESSED AS A PERCENTAGE. SAPROLITE (SAP.) - RESIDUAL SOIL THAT RETAINS THE RELIC STRUCTURE OR FABRIC OF THE PARENT ROCK. SILL - AN INTRUSIVE BODY OF IGNEOUS ROCK OF APPROXIMATELY UNIFORM THICKNESS AND RELATIVELY THIN COMPARED WITH ITS LATERAL EXTENT, THAT HAS BEEN EMPLACED PARALLEL TO THE BEDDING OR SCHISTOSITY OF THE INTRUDED ROCKS. SLICKENSIDE - POLISHED AND STRIATED SURFACE THAT RESULTS FROM FRICTION ALONG A FAULT OR SLIP PLANE. STANDARD PENETRATION TEST (PENETRATION RESISTANCE) (SPT) - NUMBER OF BLOWS (N OR BPF) OF A 140 LB. HAMMER FALLING 30 INCHES REQUIRED TO PRODUCE A PENETRATION OF 1 FOOT INTO SOIL WITH A 2 INCH OUTSIDE DIAMETER SPLIT SPOON SAMPLER. SPT REFUSAL IS PENETRATION EQUAL TO OR LESS THAN 0.1 FOOT PER 60 BLOWS. STRATA CORE RECOVERY (SREC.) - TOTAL LENGTH OF STRATA MATERIAL RECOVERED DIVIDED BY TOTAL LENGTH OF STRATUM AND EXPRESSED AS A PERCENTAGE. STRATA ROCK QUALITY DESIGNATION (SROD) - A MEASURE OF ROCK QUALITY DESCRIBED BY TOTAL LENGTH OF ROCK SEGMENTS WITHIN A STRATUM EQUAL TO OR GREATER THAN 4 INCHES DIVIDED BY THE TOTAL LENGTH OF STRATA AND EXPRESSED AS A PERCENTAGE. TOPSOIL (TS.) - SURFACE SOILS USUALLY CONTAINING ORGANIC MATTER.											
SOIL LEGEND AND AASHTO CLASSIFICATION												MINERALOGICAL COMPOSITION												WEATHERING																							
GENERAL CLASS.		GRANULAR MATERIALS (≤ 35% PASSING #200)						SILT-CLAY MATERIALS (> 35% PASSING #200)				ORGANIC MATERIALS				CRYSTALLINE ROCK (CR)		NON-COASTAL PLAIN MATERIAL THAT WOULD YIELD SPT N VALUES > 100 BLOWS PER FOOT IF TESTED.		FINE TO COARSE GRAIN IGNEOUS AND METAMORPHIC ROCK THAT WOULD YIELD SPT REFUSAL IF TESTED. ROCK TYPE INCLUDES GRANITE, GNEISS, GABBRO, SCHIST, ETC.																											
GROUP CLASS.		A-1-a		A-1-b		A-3		A-2-4		A-2-5		A-2-6		A-2-7		A-4		A-5		A-6		A-7		A-1-A-2		A-4, A-5		A-6, A-7																			
SYMBOL																																															
% PASSING #10 #40 #200		50 MX 30 MX 15 MX		50 MX 25 MX 10 MX		51 MN 10 MX		35 MX 35 MX		35 MX 35 MX		35 MX 35 MX		36 MN 36 MN		36 MN 36 MN		36 MN 36 MN		36 MN 36 MN		36 MN 36 MN		GRANULAR SOILS		SILT-CLAY SOILS		MUCK, PEAT																			
MATERIAL PASSING #40 LL PI		— 6 MX		— NP		40 MX 10 MX		41 MN 10 MX		40 MX 11 MN		41 MN 11 MN		40 MX 10 MX		41 MN 10 MX		40 MX 11 MN		41 MN 11 MN		41 MN 11 MN		SOILS WITH LITTLE OR MODERATE AMOUNTS OF ORGANIC MATTER		HIGHLY ORGANIC SOILS																					
GROUP INDEX		0		0		0		4 MX		8 MX		12 MX		16 MX		NO MX										FAIR TO POOR		POOR		UNSATURABLE																	
USUAL TYPES OF MAJOR MATERIALS		STONE FRAGS, GRAVEL, AND SAND		FINE SAND		SILT OR CLAYEY GRAVEL AND SAND				SILT SOILS		CLAYEY SOILS																																			
GEN. RATING AS SUBGRADE		EXCELLENT TO GOOD						FAIR TO POOR						FAIR TO POOR		POOR		UNSATURABLE																													
PI OF A-7-5 SUBGROUP IS ≤ LL - 30; PI OF A-7-6 SUBGROUP IS > LL - 30																																															
CONSISTENCY OR DENSENESS												MISCELLANEOUS SYMBOLS												ROCK HARDNESS																							
PRIMARY SOIL TYPE		COMPACTNESS OR CONSISTENCY		RANGE OF STANDARD PENETRATION RESISTANCE (N-VALUE)				RANGE OF UNCONFINED COMPRESSIVE STRENGTH (TONS/FT ²)				ROADWAY EMBANKMENT (RE) WITH SOIL DESCRIPTION		DIP & DIP DIRECTION OF ROCK STRUCTURES		SLOPE INDICATOR INSTALLATION		CONE PENETROMETER TEST		SOUNDING ROD		TEST BORING WITH CORE		SPT N-VALUE																							
GENERALLY GRANULAR MATERIAL (NON-COHESIVE)		VERY LOOSE LOOSE MEDIUM DENSE DENSE VERY DENSE		< 4 4 TO 10 10 TO 30 30 TO 50 > 50				N/A																																							
GENERALLY SILT-CLAY MATERIAL (COHESIVE)		VERY SOFT SOFT MEDIUM STIFF STIFF VERY STIFF HARD		< 2 2 TO 4 4 TO 8 8 TO 15 15 TO 30 > 30				< 0.25 0.25 TO 0.5 0.5 TO 1.0 1 TO 2 2 TO 4 > 4																																							
TEXTURE OR GRAIN SIZE												RECOMMENDATION SYMBOLS												ROCK HARDNESS																							
U.S. STD. SIEVE SIZE OPENING (MM)		4 10 40 60 200 270		4.76 2.00 0.42 0.25 0.075 0.053		COARSE SAND (CSE. SD.)		FINE SAND (F SD.)		SILT (SL.)		CLAY (CL.)																																			
BOULDER (BLDR.)		COBBLE (COB.)		GRAVEL (GR.)		COARSE SAND (CSE. SD.)		FINE SAND (F SD.)		SILT (SL.)		CLAY (CL.)																																			
GRAIN SIZE		305 75 2.0 0.25 0.05 0.005																																													
SOIL MOISTURE - CORRELATION OF TERMS												ABBREVIATIONS												ROCK HARDNESS																							
SOIL MOISTURE SCALE (ATTERBERG LIMITS)		FIELD MOISTURE DESCRIPTION		GUIDE FOR FIELD MOISTURE DESCRIPTION				AR - AUGER REFUSAL		MED. - MEDIUM MICA. - MICACEOUS MOD. - MODERATELY NP - NON PLASTIC ORG. - ORGANIC PMT - PRESSUREMETER TEST		VST - VANE SHEAR TEST		WEA. - WEATHERED		UNIT WEIGHT		DRY UNIT WEIGHT																													
LL - LIQUID LIMIT		- SATURATED - (SAT.)		USUALLY LIQUID; VERY WET, USUALLY FROM BELOW THE GROUND WATER TABLE				BT - BORING TERMINATED		CL. - CLAY		CPT - CONE PENETRATION TEST		CSE. - COARSE DMT - DILATOMETER TEST		DPT - DYNAMIC PENETRATION TEST		e - VOID RATIO		F - FINE		FOSS. - FOSSILIFEROUS		FRAC. - FRACTURED, FRACTURES		FRAGS. - FRAGMENTS		HL. - HIGHLY																			
PL - PLASTIC LIMIT		- WET - (W)		SEMISOLID; REQUIRES DRYING TO ATTAIN OPTIMUM MOISTURE																																											
OM - OPTIMUM MOISTURE SHRINKAGE LIMIT		- MOIST - (M)		SOLID; AT OR NEAR OPTIMUM MOISTURE																																											
SL - SHRINKAGE LIMIT		- DRY - (D)		REQUIRES ADDITIONAL WATER TO ATTAIN OPTIMUM MOISTURE																																											
PLASTICITY												EQUIPMENT USED ON SUBJECT PROJECT												ROCK HARDNESS																							
NON PLASTIC		SLIGHTLY PLASTIC		MODERATELY PLASTIC		HIGHLY PLASTIC		PLASTICITY INDEX (PI)		DRY STRENGTH		DRILL UNITS:		ADVANCING TOOLS:		HAMMER TYPE:		CORE SIZE:		HAND TOOLS:																											
0-5		6-15		16-25		26 OR MORE				VERY LOW		<input type="checkbox"/> CME-45C		<input type="checkbox"/> CLAY BITS		<input type="checkbox"/> AUTOMATIC <input type="checkbox"/> MANUAL		<input type="checkbox"/> -8 <input type="checkbox"/> -H		<input type="checkbox"/> POST HOLE DIGGER																											
SLIGHT		SLIGHT		SLIGHT		SLIGHT				SLIGHT		<input type="checkbox"/> CME-55		<input type="checkbox"/> 6" CONTINUOUS FLIGHT AUGER		<input type="checkbox"/> CASING <input type="checkbox"/> W/ ADVANCER		<input checked="" type="checkbox"/> -N <input type="checkbox"/> -Q		<input checked="" type="checkbox"/> HAND AUGER																											
MODERATE		MODERATE		MODERATE		MODERATE				MODERATE		<input type="checkbox"/> CME-550		<input type="checkbox"/> HARD FACED FINGER BITS		<input type="checkbox"/> TRICONE <input type="checkbox"/> * STEEL TEETH		<input type="checkbox"/> -N <input type="checkbox"/> -Q		<input type="checkbox"/> SOUNDING ROD																											
HIGHLY		HIGHLY		HIGHLY		HIGHLY				HIGHLY		<input type="checkbox"/> VANE SHEAR TEST		<input type="checkbox"/> TUNG.-CARBIDE INSERTS		<input type="checkbox"/> TRICONE <input type="checkbox"/> * TUNG.-CARB.		<input type="checkbox"/> -N <input type="checkbox"/> -Q		<input type="checkbox"/> VANE SHEAR TEST																											
												<input type="checkbox"/> PORTABLE HOIST		<input checked="" type="checkbox"/> CASING <input type="checkbox"/> W/ ADVANCER		<input type="checkbox"/> TRICONE <input type="checkbox"/> * STEEL TEETH		<input type="checkbox"/> -N <input type="checkbox"/> -Q		<input type="checkbox"/> VANE SHEAR TEST																											
												<input checked="" type="checkbox"/> B-57		<input type="checkbox"/> CORE BIT		<input type="checkbox"/> CORE BIT		<input type="checkbox"/> -N <input type="checkbox"/> -Q		<input type="checkbox"/> VANE SHEAR TEST																											
												<input type="checkbox"/>		<input type="checkbox"/>		<input type="checkbox"/>		<input type="checkbox"/>		<input type="checkbox"/>																											
DESCRIPTIONS MAY INCLUDE COLOR OR COLOR COMBINATIONS (TAN, RED, YELLOW-BROWN, BLUE-GRAY). MODIFIERS SUCH AS LIGHT, DARK, STREAKED, ETC. ARE USED TO DESCRIBE APPEARANCE.																								FOR SEDIMENTARY ROCKS, INDURATION IS THE HARDENING OF MATERIAL BY CEMENTING, HEAT, PRESSURE, ETC.																							
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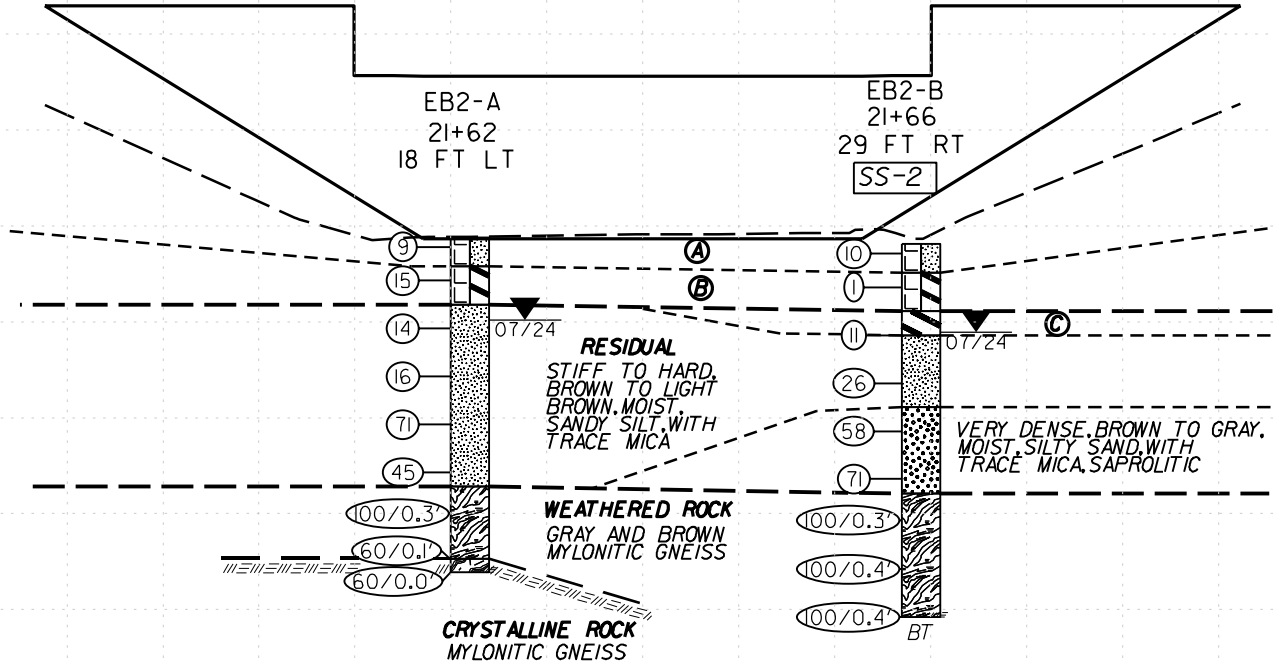
5/28/99

PROJECT REFERENCE NO.	SHEET NO.
BR-0098	4
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
INCOMPLETE PLANS DO NOT USE FOR R/W ACQUISITION	
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	

700
690
680
670
660
650
640
630

- Ⓐ ROADWAY EMBANKMENT
STIFF, BROWN TO RED-BROWN, DRY, SANDY SILT, WITH TRACE MICA, GRAVEL, AND ROOTS
- Ⓑ ROADWAY EMBANKMENT
VERY SOFT TO STIFF, BROWN, MOIST TO WET, CLAY, WITH TRACE MICA, MODERATELY PLASTIC
- Ⓒ RESIDUAL
STIFF, BROWN TO LIGHT BROWN, MOIST, SANDY CLAY, WITH TRACE MICA

RETAINING WALL W2 – END BENT 2 MSE WALL



- GROUND LINE DRAWN FROM PROVIDED ELECTRONIC FILES 74.5 FEET LT OF -L-
- INFERRED STRATIGRAPHY IS DRAWN THROUGH THE BORING WITH BOTH PROJECTED ONTO THE PROFILE

-L-

SCALE:
1" = 20' HORIZONTAL, 1" = 10' VERTICAL
VE = 1.0X

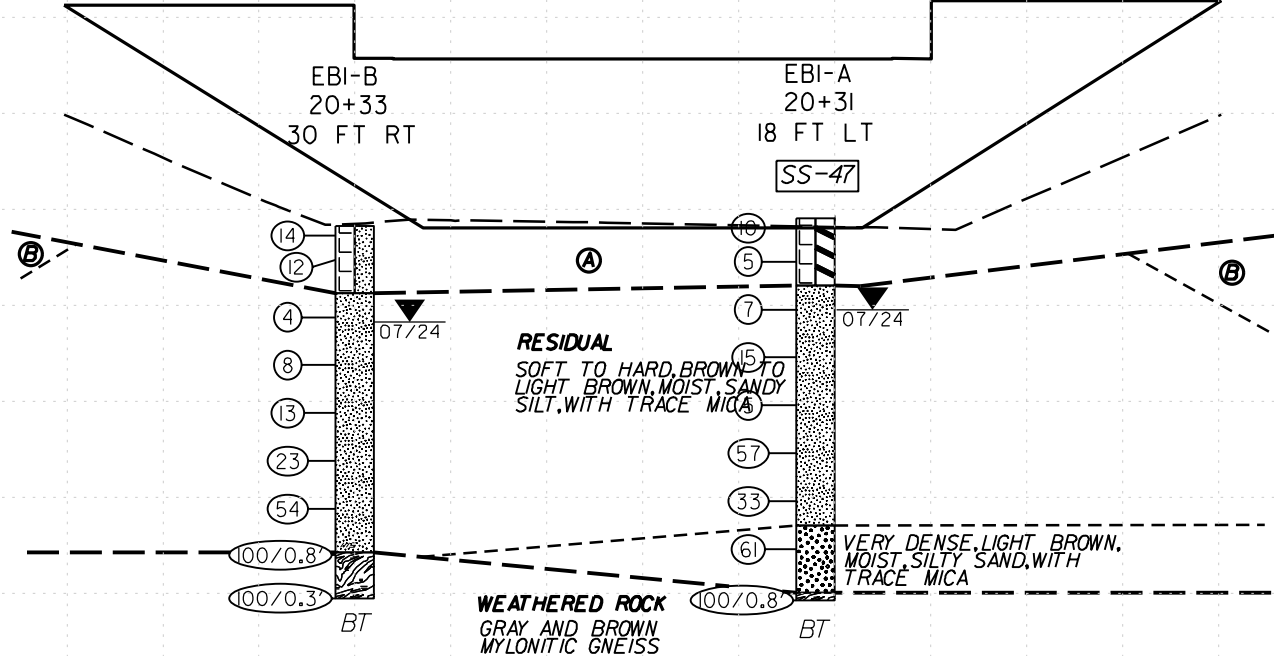
SEE SHEET 3 FOR MSE WALL PLAN

690
680
670
660
650
640
630
710

700
690
680
670
660
650
640
630

- Ⓐ ROADWAY EMBANKMENT
MEDIUM STIFF TO STIFF, LIGHT BROWN AND TAN, DRY TO MOIST, SILTY CLAY AND SANDY SILT, WITH SOME GRAVEL AT TOP 1 FOOT AND TRACE ROCK FRAGMENTS
- Ⓑ RESIDUAL
VERY SOFT TO MEDIUM STIFF, RED-BROWN TO TAN, MOIST TO WET, SILTY CLAY, WITH TRACE MICA

RETAINING WALL W1 – END BENT 1 MSE WALL



- GROUND LINE DRAWN FROM PROVIDED ELECTRONIC FILES 74.5 FEET RT OF -L-
- INFERRED STRATIGRAPHY IS DRAWN THROUGH THE BORING WITH BOTH PROJECTED ONTO THE PROFILE

-L-

SCALE:
1" = 10' HORIZONTAL, 1" = 10' VERTICAL
VE = 1.0X

SEE SHEET 3 FOR MSE WALL PLAN

700
690
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670
660
650
640
630

10/4/2024
BR0098.GEO_WALL-PFI.dgn
12:17:53

GEOTECHNICAL BORING REPORT
BORE LOG

WBS 67098.1.1			TIP BR-0098			COUNTY ROCKINGHAM			GEOLOGIST J. Rowenhorst								
SITE DESCRIPTION Bridge 780183 on SR 1767 (Mayfield Road) over US 29 Bypass										GROUND WTR (ft)							
BORING NO. L_1960			STATION 19+60			OFFSET 3 ft LT			ALIGNMENT -L-		0 HR. Dry						
COLLAR ELEV. 689.5 ft			TOTAL DEPTH 40.0 ft			NORTHING 985,579			EASTING 1,840,060		24 HR. FIAD						
DRILL RIG/HAMMER EFF./DATE CAT2022 Mobile B-57 90% 01/17/2024						DRILL METHOD H.S. Augers				HAMMER TYPE Automatic							
DRILLER J. White			START DATE 07/11/24			COMP. DATE 07/11/24			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)		
690																	
685	688.3	1.2													689.5	GROUND SURFACE	0.0
	686.0	3.5	2	3	2										689.0	Asphalt (0.5 feet)	0.5
680			3	3	3										686.5	ROADWAY EMBANKMENT	3.0
																Medium Stiff, Red-Brown, Moist, Silt (A-5), with Trace Sand and Gravel	
675	681.0	8.5	1	2	2											Medium Stiff, Brown to Tan, Moist, Sandy Silt (A-4), with Trace Mica	
670	676.0	13.5	4	5	21										677.5	Stiff, Red-Brown, Moist, Clay (A-7-6)	12.0
															675.0		14.5
665	671.0	18.5	3	3	5										674.5	Old Asphalt Layer (0.5 feet)	15.0
																RESIDUAL	
660	666.0	23.5	1	0	1											Very Soft to Medium Stiff, Red-Brown to Tan, Moist to Wet, Clay (A-7-6), with Trace Mica	
655	661.0	28.5	1	0	1						SS-59	W					
												W					
650	656.0	33.5	1	1	3							W					
											SS-61	M			652.5	Medium Stiff, Light Brown to Tan, Moist, Sandy Silt (A-4), with Trace Mica	37.0
	651.0	38.5	1	2	3										649.5	Boring Terminated at Elevation 649.5 ft In Residual Soil (A-4)	40.0

NCDOT BORE DOUBLE BR0098_GEO_BRDG_BORINGS.GPJ NC_DOT.GDT 10/3/24

NCDOT BORE DOUBLE BR0098 GEO BRDG BORINGS.GPJ NC_DOT.GDT 10/3/24

WBS 67098.1.1			TIP BR-0098			COUNTY ROCKINGHAM			GEOLOGIST J. Rowenhorst					
SITE DESCRIPTION Bridge 780183 on SR 1767 (Mayfield Road) over US 29 Bypass									GROUND WTR (ft)					
BORING NO. EB1-B			STATION 20+33			OFFSET 30 ft RT			ALIGNMENT -L-			0 HR. Dry		
COLLAR ELEV. 668.4 ft			TOTAL DEPTH 38.8 ft			NORTHING 985,500			EASTING 1,840,055			24 HR. 10.0		
DRILL RIG/HAMMER EFF./DATE CAT2022 Mobile B-57 90% 01/17/2024						DRILL METHOD H.S. Augers			HAMMER TYPE Automatic					
DRILLER J. White			START DATE 07/10/24			COMP. DATE 07/10/24			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				
670														
	668.4	0.0	4	10	4									668.4 GROUND SURFACE 0.0
665	665.9	2.5	4	5	7									ROADWAY EMBANKMENT Stiff, Light Brown and Tan, Dry to Moist, Sandy Silt (A-4), with Some Gravel at top 1 foot
														661.4 7.0
660	659.9	8.5	2	2	2									RESIDUAL Soft to Hard, Light Brown and Brown, Wet to Moist, Sandy Silt (A-4), with Trace Mica and Rock Fragments
655	654.9	13.5	2	2	6									
650	649.9	18.5	3	5	8									with Trace Mica below Approximate Depth of 17 Feet
645	644.9	23.5	6	10	13									
640	639.9	28.5	11	22	32									
635	634.9	33.5	23	77	10.3									634.4 34.0
630	629.9	38.5	00	0.3										WEATHERED ROCK Mylonitic Gneiss
														629.6 38.8
														Boring Terminated at Elevation 629.6 ft In Weathered Rock (Mylonitic Gneiss)

GEOTECHNICAL BORING REPORT








BORE LOG

WBS 67098.1.1			TIP BR-0098			COUNTY ROCKINGHAM			GEOLOGIST J. Rowenhorst					
SITE DESCRIPTION Bridge 780183 on SR 1767 (Mayfield Road) over US 29 Bypass									GROUND WTR (ft)					
BORING NO. EB2-A			STATION 21+62			OFFSET 18 ft LT			ALIGNMENT -L-			0 HR. 12.8		
COLLAR ELEV. 668.8 ft			TOTAL DEPTH 34.9 ft			NORTHING 985,395			EASTING 1,840,145			24 HR. 8.6		
DRILL RIG/HAMMER EFF./DATE CAT2022 Mobile B-57 90% 01/17/2024						DRILL METHOD H.S. Augers			HAMMER TYPE Automatic					
DRILLER J. White			START DATE 07/08/24			COMP. DATE 07/08/24			SURFACE WATER DEPTH N/A					
ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT					SAMP. NO.	LOG	SOIL AND ROCK DESCRIPTION	
			0.5ft	0.5ft	0.5ft	0	25	50	75	100			ELEV. (ft)	DEPTH (ft)
670														
	668.8	0.0											668.8	0.0
			8	5	4									
665	665.3	3.5											665.8	3.0
			3	4	11									
660	660.3	8.5											661.8	7.0
			7	7	7									
655	655.3	13.5												
			11	8	8									
650	650.3	18.5												
			34	31	40									
645	645.3	23.5												
			14	17	28									
640	640.3	28.5											642.8	26.0
			100/0.3											
635	635.3	33.5											635.3	33.5
	633.9	34.9	60/0.1										633.9	34.9
			60/0.0											

WBS 67098.1.1			TIP BR-0098			COUNTY ROCKINGHAM			GEOLOGIST J. Rowenhorst				
SITE DESCRIPTION Bridge 780183 on SR 1767 (Mayfield Road) over US 29 Bypass									GROUND WTR (ft)				
BORING NO. EB2-B			STATION 21+66			OFFSET 29 ft RT			ALIGNMENT -L-			0 HR. 9.8	
COLLAR ELEV. 668.1 ft			TOTAL DEPTH 38.9 ft			NORTHING 985,376			EASTING 1,840,103			24 HR. 9.2	
DRILL RIG/HAMMER EFF./DATE CAT2022 Mobile B-57 90% 01/17/2024						DRILL METHOD H.S. Augers			HAMMER TYPE Automatic				
DRILLER J. White			START DATE 07/08/24			COMP. DATE 07/08/24			SURFACE WATER DEPTH N/A				
ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT					SAMP. NO.	LOG	SOIL AND ROCK DESCRIPTION
			0.5ft	0.5ft	0.5ft	0	25	50	75	100			
670													
	668.1	0.0	4	6	4								668.1 GROUND SURFACE 0.0
665	664.6	3.5	0	0	1							D	ROADWAY EMBANKMENT
												W	Stiff, Brown, Dry, Sandy Silt (A-4), with Trace Mica and Roots
660	659.6	8.5	4	5	6								665.1 3.0
													Very Soft, Brown, Wet, Silty Clay (A-7-6), with Trace Mica
655	654.6	13.5	7	11	15								661.1 7.0
												M	RESIDUAL
650	649.6	18.5	49	35	23								658.6 9.5
													Stiff, Brown to Light Brown, Moist, Silty Clay (A-7-6), with Trace Mica
645	644.6	23.5	32	34	37								651.1 17.0
												M	Stiff to Very Stiff, Brown to Light Brown, Moist, Sandy Silt (A-4), with Trace Mica
640	639.6	28.5	100/0.3										642.1 26.0
													WEATHERED ROCK
635	634.6	33.5	100/0.4										Gray and Brown Mylonitic Gneiss
630	629.6	38.5	100/0.4										629.2 38.9
													Boring Terminated with Standard Penetration Test Refusal at Elevation 629.2 ft On Crystalline Rock (Mylonitic Gneiss)

NCDOT BORE DOUBLE BR0098 GEO_BRDG BORINGS.GPJ NC_DOT.GDT 10/3/24

GEOTECHNICAL BORING REPORT
BORE LOG

WBS 67098.1.1			TIP BR-0098			COUNTY ROCKINGHAM			GEOLOGIST J. Rowenhorst								
SITE DESCRIPTION Bridge 780183 on SR 1767 (Mayfield Road) over US 29 Bypass										GROUND WTR (ft)							
BORING NO. L_2240			STATION 22+44			OFFSET 11 ft RT			ALIGNMENT -L-		0 HR. Dry						
COLLAR ELEV. 689.4 ft			TOTAL DEPTH 35.0 ft			NORTHING 985,308			EASTING 1,840,147		24 HR. FIAD						
DRILL RIG/HAMMER EFF./DATE CAT2022 Mobile B-57 90% 01/17/2024						DRILL METHOD H.S. Augers				HAMMER TYPE Automatic							
DRILLER J. White			START DATE 07/11/24			COMP. DATE 07/11/24			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)		
690																	
685	688.0	1.4	3	2	4							M		GROUND SURFACE		0.0	
	685.9	3.5	2	2	2							SS-64		M	Asphalt (0.5 Feet)		0.5
														ROADWAY EMBANKMENT			
680	680.9	8.5	1	2	3							M		Medium Stiff to Stiff, Brown to Red-Brown, Moist, Silty Clay (A-7), with Trace Mica			
675	675.9	13.5	3	4	5							M					
670	670.9	18.5	3	4	51							M					
665	665.9	23.5	2	2	1							SS-68	M		Old Asphalt Layer (0.5 feet)		19.5
													Soft, Brown, Moist, Sandy Clay (A-7-6), with Trace Mica		20.0		
660	660.9	28.5	4	3	3							W		RESIDUAL		27.0	
														Medium Stiff to Stiff, Brown, Wet, Sandy Silt (A-5), with Trace Mica			
655	655.9	33.5	2	4	5							W					
															Boring Terminated at Elevation 654.4 ft In Residual Soil (A-5)		35.0

NCDOT BORE DOUBLE BR0098_GEO_BRDG_BORINGS.GPJ NC_DOT.GDT 10/3/24

LABORATORY TESTS COMPLETED ON 7-29-2024

SUMMARY OF LABORATORY TEST RESULTS																			
SAMPLE NO.	BORING	STATION	OFFSET	ALIGN-MENT	NORTHING	EASTING	DEPTH INTERVAL	AASHTO CLASS.	L.L.	P.I.	% BY WEIGHT				% BY PASSING SEIVES			% MOISTURE	% ORGANIC
											GRAVEL	SAND	SILT	CLAY	10	40	200		
SS-59	L_1960	19+60	3 FT LT	-L-	985,579	1,840,060	23.5'-25.0'	A-7-6	69	41	0	7	64	29	100	98	93	77.9	-
SS-61	L_1960	19+60	3 FT LT	-L-	985,579	1,840,060	33.5'-35.0'	A-7-6	51	13	0	37	63	0	100	97	63	59.4	-
SS-64	L_2240	22+44	11 FT RT	-L-	985,308	1,840,147	5.0'-5.4'	A-7-5	51	14	0	30	64	6	99	96	70	34.5	-
SS-68	L_2240	22+44	11 FT RT	-L-	985,308	1,840,147	23.5'-25.0'	A-7-6	47	24	2	36	18	44	96	91	62	25.1	-
SS-2	EB2-B	21+66	29 FT RT	-L-	985,376	1,840,103	3.5'-5.0'	A-7-6	45	24	0	37	55	18	100	95	73	26.8	-
SS-47	EB1-A	20+31	18 FT LT	-L-	985,518	1,840,099	3.5'-5.0'	A-7-5	60	14	n/a*	n/a*	n/a*	n/a*	n/a*	n/a*	n/a*	n/a*	-

*DUE TO INSUFFICIENT SAMPLE AMOUNT, ONLY ATTERBERG LIMIT TEST WAS PERFORMED. BASED ON VISUAL CLASSIFICATION THAT INDICATES SS-47 BEING FINE MATERIAL, THE AASHTO SOIL CLASSIFICATION TYPE OF SS-47 IS LIKELY A-7.