

REFERENCE: R-2707C

PROJECT: 34497

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

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	R-2707C	1	12

STRUCTURE
SUBSURFACE INVESTIGATION

CONTENTS

SHEET NO.	DESCRIPTION
1	TITLE SHEET
2	LEGEND
3	SITE PLAN
4-5	PROFILES
6-II	BORE LOGS
12	LABORATORY TEST RESULTS

COUNTY CLEVELAND
PROJECT DESCRIPTION US 74 SHELBY BYPASS FROM
EAST OF NC 226 TO EAST OF NC 150

SITE DESCRIPTION MSE RETAINING WALLS AT
DUAL BRIDGES NO. 474 AND 475 ON -L- (US 74)
OVER -Y14- (NC 150)

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 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:
1. 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.
 2. 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

HPC
C. BUKOVITZ
M. BREWER

INVESTIGATED BY ECS CAROLINAS, LLP
DRAWN BY M. BREWER, P.E.
CHECKED BY M. WALKO, P.E.
SUBMITTED BY ECS CAROLINAS, LLP
DATE SEPTEMBER 2016

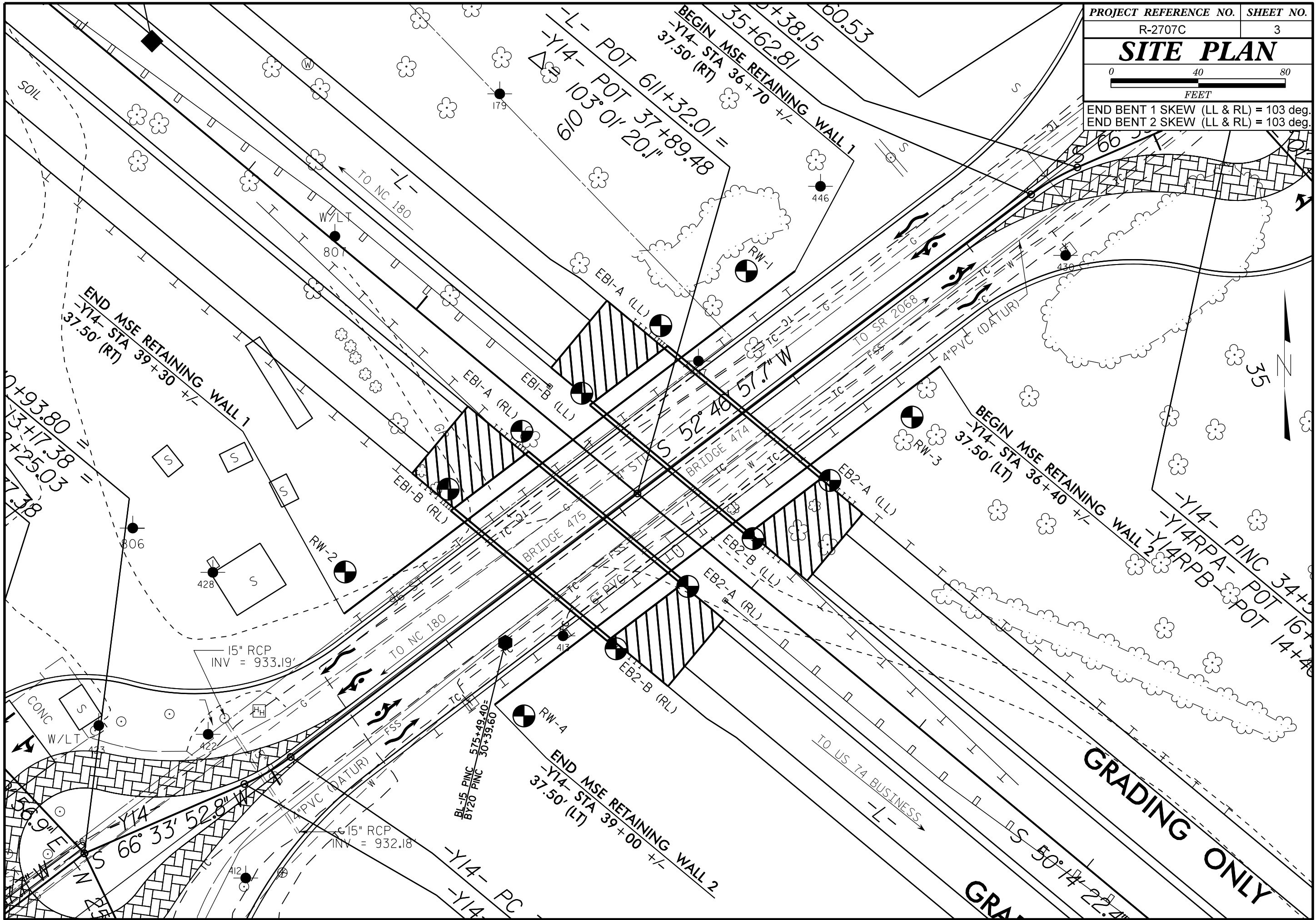


DocuSigned by:
D. Matthew Brewer
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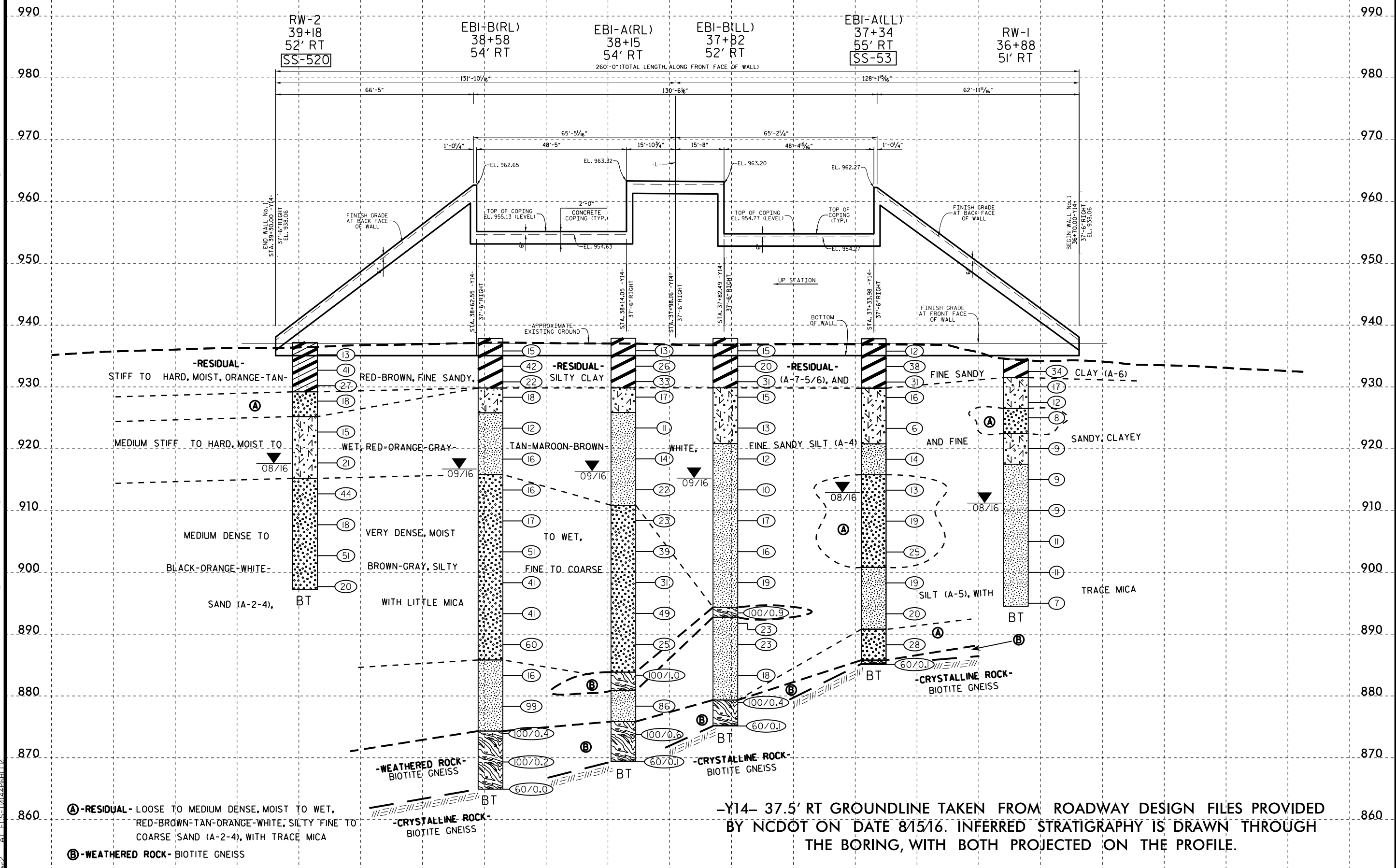
SIGNATURE DATE

**DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED**

END BENT 1 SKEW (LL & RL) = 103 deg.
 END BENT 2 SKEW (LL & RL) = 103 deg.



MSE RETAINING WALL 1 -Y14-

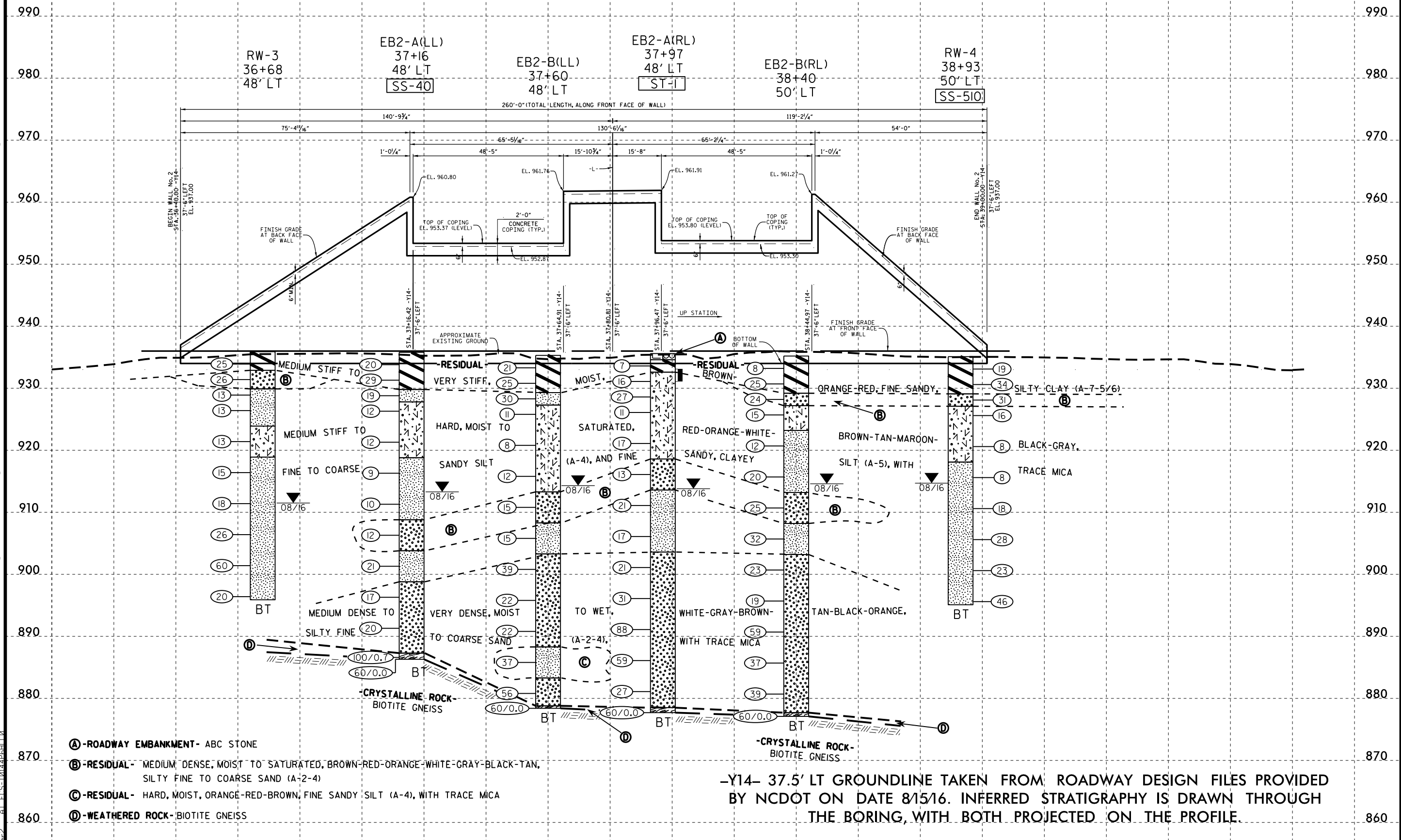


(A) -RESIDUAL- LOOSE TO MEDIUM DENSE, MOIST TO WET, RED-BROWN-TAN-ORANGE-WHITE, SILTY FINE TO COARSE SAND (A-2-4), WITH TRACE MICA
(B) -WEATHERED ROCK- BIOTITE GNEISS

-Y14- 37.5' RT GROUNDLINE TAKEN FROM ROADWAY DESIGN FILES PROVIDED BY NCDOT ON DATE 8/15/16. INFERRED STRATIGRAPHY IS DRAWN THROUGH THE BORING, WITH BOTH PROJECTED ON THE PROFILE.

20-SEP-2016 13:55 PROJECTS\11000-11999\11800\11816-A - R-2707C - Retaining Wall for dual Bridges 474 & 475\CADD\GEO\TECH\Site&Sub\R2707C_GEO_BRD\G474&475_RWAL_PFI_4.dgn

MSE RETAINING WALL 2
-Y14-



- Ⓐ -ROADWAY EMBANKMENT- ABC STONE
- Ⓑ -RESIDUAL- MEDIUM DENSE, MOIST TO SATURATED, BROWN-RED-ORANGE-WHITE-GRAY-BLACK-TAN, SILTY FINE TO COARSE SAND (A-2-4)
- Ⓒ -RESIDUAL- HARD, MOIST, ORANGE-RED-BROWN, FINE SANDY SILT (A-4), WITH TRACE MICA
- Ⓓ -WEATHERED ROCK-BIOTITE GNEISS

-Y14- 37.5' LT GROUNDLINE TAKEN FROM ROADWAY DESIGN FILES PROVIDED BY NCDOT ON DATE 8/15/16. INFERRED STRATIGRAPHY IS DRAWN THROUGH THE BORING, WITH BOTH PROJECTED ON THE PROFILE.

28-SEP-2016 2:19 PM C:\PROJECTS\11000-11999\11800\11816-A - R-2707C - Retaining Wall for dual Bridges 474 & 475\CADD\GEO\TECH\Site&Sub\R2707C_GEO_BRD0474&475_RWAL_PFI_5.dgn
 5/14/99

GEOTECHNICAL BORING REPORT

BORE LOG

WBS 34497.1.2		TIP R-2707C		COUNTY CLEVELAND		GEOLOGIST C. Bukovitz										
SITE DESCRIPTION Bridge No. 475 on -L- (US 74) over -Y14- (NC 150)							GROUND WTR (ft)									
BORING NO. EB1-A(RL)		STATION 38+15		OFFSET 54 ft RT		ALIGNMENT -Y14-										
COLLAR ELEV. 937.9 ft		TOTAL DEPTH 68.5 ft		NORTHING 578,447		EASTING 1,257,243										
DRILL RIG/HAMMER EFF./DATE HPC0279 Diedrich D50 88% 12/09/2015			DRILL METHOD H.S. Augers		HAMMER TYPE Automatic											
DRILLER J. Cain		START DATE 08/31/16		COMP. DATE 08/31/16		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						
940														937.9	GROUND SURFACE	0.0
935	936.9	1.0	6	7	6								M	RESIDUAL Stiff, Red-Brown-Tan, Fine Sandy, Silty CLAY (A-7-5).		
	934.4	3.5	7	11	15								M			
	931.9	6.0	10	15	18								M			
930	929.4	8.5	6	8	9								M	Very Stiff, Red-Orange-Brown, Fine Sandy, Clayey SILT (A-5), with trace mica.	8.0	
	924.4	13.5	5	4	7								M	Stiff to Very Stiff, Red-Orange-Brown-Gray, Fine Sandy SILT (A-4), with trace clay.	12.0	
920	919.4	18.5	5	6	8								M			
915	914.4	23.5	6	8	14								M			
910	909.4	28.5	7	11	12								M	Medium Dense and Dense, Orange-White-Brown, Silty Fine to Coarse SAND (A-2-4), with trace gravel-sized rock fragments.	27.0	
905	904.4	33.5	13	16	23								M			
900	899.4	38.5	11	11	20								M			
895	894.4	43.5	11	20	29								M			
890	889.4	48.5	30	15	10								W			
885	884.4	53.5	7	10	90/0.5								W			
880	879.4	58.5	27	39	47								W	RESIDUAL Hard, Gray-Brown, Fine Sandy SILT (A-4), with trace to little mica.	57.0	
875	874.4	63.5	69	31/0.1									W	WEATHERED ROCK Brown-Gray (BIOTITE GNEISS).	62.0	
870	869.5	68.4	60/0.1										W	CRYSTALLINE ROCK (BIOTITE GNEISS). Boring Terminated with Standard Penetration Test Refusal at Elevation 869.4 ft IN CRYSTALLINE ROCK (BIOTITE GNEISS)	68.4	

WBS 34497.1.2		TIP R-2707C		COUNTY CLEVELAND		GEOLOGIST C. Bukovitz										
SITE DESCRIPTION Bridge No. 474 on -L- (US 74) over -Y14- (NC 150)							GROUND WTR (ft)									
BORING NO. EB1-B(LL)		STATION 37+82		OFFSET 52 ft RT		ALIGNMENT -Y14-										
COLLAR ELEV. 937.9 ft		TOTAL DEPTH 62.7 ft		NORTHING 578,465		EASTING 1,257,271										
DRILL RIG/HAMMER EFF./DATE HPC0279 Diedrich D50 88% 12/09/2015			DRILL METHOD H.S. Augers		HAMMER TYPE Automatic											
DRILLER J. Cain		START DATE 08/31/16		COMP. DATE 08/31/16		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						
940														937.9	GROUND SURFACE	0.0
935	936.9	1.0	4	6	9								M	RESIDUAL Stiff, Very Stiff, and Hard, Red-Brown, Silty CLAY (A-7-5).		
	934.4	3.5	7	9	11								M			
	931.9	6.0	9	13	18								M			
930	929.4	8.5	6	7	8								M	Stiff, Red-Orange, Fine Sandy, Clayey SILT (A-5 (5)).	8.0	
	924.4	13.5	4	5	8								M			
920	919.4	18.5	6	6	6								M	Stiff to Very Stiff, Red-Orange-Brown-Gray-White, Fine to Coarse Sandy SILT (A-4).	17.0	
915	914.4	23.5	4	6	4								M			
910	909.4	28.5	8	10	7								W			
905	904.4	33.5	4	7	9								W			
900	899.4	38.5	7	8	11								W			
895	894.4	43.5	38	62/0.4									W	WEATHERED ROCK Brown-White (BIOTITE GNEISS).	43.5	
	892.8	45.1	18	15	8								W	RESIDUAL Very Stiff, Brown-White-Gray, Fine Sandy SILT (A-4), with little gravel sized rock fragments.	45.1	
890	889.4	48.5	12	11	12								W			
885	884.4	53.5	4	6	12								W			
880	879.4	58.5	100/0.4										W			
	875.3	62.6	60/0.1										W	WEATHERED ROCK Brown-Orange (BIOTITE GNEISS).	62.6	
	875.2	62.7											W	CRYSTALLINE ROCK (BIOTITE GNEISS). Boring Terminated with Standard Penetration Test Refusal at Elevation 875.2 ft IN CRYSTALLINE ROCK (BIOTITE GNEISS)	62.7	

NCDOT BORE DOUBLE R2707C_GEO_BRDG474&475_RWAL_BORINGLOGS.GPJ_NC_DOT.GDT 9/28/16

GEOTECHNICAL BORING REPORT

BORE LOG

WBS 34497.1.2		TIP R-2707C		COUNTY CLEVELAND		GEOLOGIST M. Brewer									
SITE DESCRIPTION Bridge No. 474 on -L- (US 74) over -Y14- (NC 150)							GROUND WTR (ft)								
BORING NO. EB1-A(LL)		STATION 37+34		OFFSET 55 ft RT		ALIGNMENT -Y14-									
COLLAR ELEV. 937.8 ft		TOTAL DEPTH 52.7 ft		NORTHING 578,496		EASTING 1,257,307									
DRILL RIG/HAMMER EFF./DATE HPC0279 Diedrich D50 88% 12/09/2015				DRILL METHOD H.S. Augers		HAMMER TYPE Automatic									
DRILLER J. Cain		START DATE 08/30/16		COMP. DATE 08/30/16		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					
940															
	936.8	1.0	5	6	6								M	937.8 GROUND SURFACE 0.0	
935	934.3	3.5	7	14	24								M	RESIDUAL Stiff to Hard, Tan-Red-Orange, Fine Sandy, Silty CLAY (A-7-6(10)).	
	931.8	6.0	7	13	18								M		
930	929.3	8.5	5	8	8								M	929.8 Very Stiff to Medium Stiff, Red-Orange-Gray-Maroon, Fine Sandy, Clayey SILT (A-5), with trace mica. 8.0	
	924.3	13.5	3	3	3								M		
925	919.3	18.5	3	7	7								M	920.8 Stiff, Tan-Orange, Fine Sandy SILT (A-4), with trace mica. 17.0	
920	914.3	23.5	4	6	7								M	915.8 Medium Dense, Brown-Tan-Orange-White, Silty Fine to Coarse SAND (A-2-4), with trace gravel-sized rock fragments and mica. 22.0	
915	909.3	28.5	4	9	10								M		
910	904.3	33.5	7	10	15								M		
905	899.3	38.5	7	7	12								W	900.8 Very Stiff, Orange-Tan, Fine Sandy SILT (A-4), with trace mica. 37.0	
900	894.3	43.5	4	9	11								W		
895	889.3	48.5	8	10	18								W	890.8 Medium Dense, White-Brown-Orange, Silty Fine to Coarse SAND (A-2-4), with trace mica. 47.0	
	885.2	52.6	60/0.1											885.8 WEATHERED ROCK (BIOTITE GNEISS) 52.0	
														885.2 CRYSTALLINE ROCK (BIOTITE GNEISS) 52.6	
														885.1 Boring Terminated with Standard Penetration Test Refusal at Elevation 885.1 ft IN CRYSTALLINE ROCK (BIOTITE GNEISS) 52.7	

NCDOT BORE DOUBLE R2707C GEO_BRDG474&475_RWAL_BORINGLOGS.GPJ_NC_DOT.GDT 9/28/16

WBS 34497.1.2		TIP R-2707C		COUNTY CLEVELAND		GEOLOGIST M. Brewer									
SITE DESCRIPTION MSE Wall at Dual Bridge No. 474 and Bridge No. 475 on -L- (US 74) over -Y14- (NC 150)							GROUND WTR (ft)								
BORING NO. RW-1		STATION 36+88		OFFSET 51 ft RT		ALIGNMENT -Y14-									
COLLAR ELEV. 934.5 ft		TOTAL DEPTH 40.0 ft		NORTHING 578,521		EASTING 1,257,346									
DRILL RIG/HAMMER EFF./DATE HPC0279 Diedrich D50 88% 12/09/2015				DRILL METHOD H.S. Augers		HAMMER TYPE Automatic									
DRILLER J. Cain		START DATE 08/30/16		COMP. DATE 08/30/16		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					
935															
	933.5	1.0	9	15	19									934.5 GROUND SURFACE 0.0	
930	931.0	3.5	6	7	10								M	RESIDUAL Hard, Red-Orange, Fine Sandy, Silty CLAY (A-7-5), with trace mica. 3.0	
	928.5	6.0	4	6	6								M	Very Stiff to Stiff, Red-Orange, Fine Sandy, Clayey SILT (A-5), with trace mica.	
925	926.0	8.5	4	3	5								M	926.5 Loose, Red-Brown-Orange, Silty Fine to Coarse SAND (A-2-4), with trace mica. 8.0	
	921.0	13.5	3	4	5								W	922.5 Stiff, Red-Brown-Orange, Fine to Coarse Sandy, Clayey SILT (A-5). 12.0	
920	916.0	18.5	3	4	5								M	917.5 Stiff to Medium Stiff, Red-Brown-Orange-Tan, Fine to Coarse Sandy SILT (A-4), with trace mica and clay. 17.0	
915	911.0	23.5	3	4	5								W		
910	906.0	28.5	5	5	6								W		
905	901.0	33.5	3	4	7								W		
900	896.0	38.5	3	3	4								W	894.5 Boring Terminated at Elevation 894.5 ft IN RESIDUAL SANDY SILT (A-4) 40.0	

GEOTECHNICAL BORING REPORT

BORE LOG

WBS 34497.1.2		TIP R-2707C		COUNTY CLEVELAND		GEOLOGIST M. Brewer										
SITE DESCRIPTION MSE Wall at Dual Bridge No. 474 and Bridge No. 475 on -L- (US 74) over -Y14- (NC 150)							GROUND WTR (ft)									
BORING NO. RW-3		STATION 36+68		OFFSET 48 ft LT		ALIGNMENT -Y14-										
COLLAR ELEV. 935.9 ft		TOTAL DEPTH 40.0 ft		NORTHING 578,454		EASTING 1,257,422										
DRILL RIG/HAMMER EFF./DATE HPC0279 Diedrich D50 88% 12/09/2015			DRILL METHOD H.S. Augers		HAMMER TYPE Automatic											
DRILLER J. Cain		START DATE 08/29/16		COMP. DATE 08/29/16		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						
940																
935	934.9	1.0	8	10	15										935.9	GROUND SURFACE
	932.4	3.5	8	15	11										932.9	RESIDUAL Very Stiff, Red-Orange, Silty, Fine Sandy CLAY (A-7-5), with trace mica.
930	929.9	6.0	5	5	8										929.9	Medium Dense, Brown-Red-White, Silty Fine to Coarse, SAND (A-2-4), with trace mica.
	927.4	8.5	8	6	7										927.9	Stiff, Red-Orange-White, Fine to Coarse Sandy SILT (A-4), with trace mica.
925															923.9	Stiff, Brown-Orange, Fine Sandy, Clayey SILT (A-5).
	922.4	13.5	4	6	7										918.9	Stiff to Hard, Brown-Orange-White-Black-Tan-Gray, Fine to Coarse Sandy SILT (A-4), with trace mica and gravel sized rock fragments.
920																
	917.4	18.5	7	9	6											
915																
	912.4	23.5	5	9	9											
910																
	907.4	28.5	6	9	17											
905																
	902.4	33.5	15	25	35											
900																
	897.4	38.5	6	8	12											
															895.9	Boring Terminated at Elevation 895.9 ft IN RESIDUAL SANDY SILT (A-4)

WBS 34497.1.2		TIP R-2707C		COUNTY CLEVELAND		GEOLOGIST M. Brewer										
SITE DESCRIPTION Bridge No. 474 on -L- (US 74) over -Y14- (NC 150)							GROUND WTR (ft)									
BORING NO. EB2-A(LL)		STATION 37+16		OFFSET 48 ft LT		ALIGNMENT -Y14-										
COLLAR ELEV. 935.8 ft		TOTAL DEPTH 49.5 ft		NORTHING 578,425		EASTING 1,257,384										
DRILL RIG/HAMMER EFF./DATE HPC0279 Diedrich D50 88% 12/09/2015			DRILL METHOD H.S. Augers		HAMMER TYPE Automatic											
DRILLER J. Cain		START DATE 08/30/16		COMP. DATE 08/30/16		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						
940																
935	934.8	1.0	5	8	12										935.8	GROUND SURFACE
	932.3	3.5	10	12	17										932.9	RESIDUAL Very Stiff, Brown-Orange, Fine Sandy, Silty CLAY (A-7-6 (10)).
930	929.8	6.0	6	9	10										929.8	Very Stiff, Red-Brown-Orange, Fine Sandy SILT (A-4).
	927.3	8.5	5	6	6										927.8	Stiff, Orange-Brown-Tan, Fine Sandy, Clayey SILT (A-5), with trace mica.
925																
	922.3	13.5	3	5	7											
920																
	917.3	18.5	5	4	5										918.8	Stiff, Orange-White-Gray-Red, Fine to Coarse Sandy SILT (A-4), with trace mica.
915																
	912.3	23.5	5	5	5											
910																
	907.3	28.5	4	6	6										908.8	Medium Dense, Tan-White-Brown, Silty Fine to Coarse SAND (A-2-4), with trace mica.
905															903.8	Very Stiff, Gray-Orange-Red, Fine Sandy SILT (A-4), with trace mica.
	902.3	33.5	5	9	12										898.8	Medium Dense, White-Gray-Brown, Silty Fine to Coarse SAND (A-2-4), with trace gravel-sized rock fragments and trace mica.
900																
	897.3	38.5	5	5	12											
895																
	892.3	43.5	7	10	10											
890																
	887.3	48.5	10	90/0.2											887.3	WEATHERED ROCK (BIOTITE GNEISS).
	886.3	49.5	60/0.0												886.3	Boring Terminated with Standard Penetration Test Refusal at Elevation 886.3 ft ON CRYSTALLINE ROCK (BIOTITE GNEISS)

NCDOT BORE DOUBLE R2707C_GEO_BRDG474&475_RWAL_BORINGLOGS.GPJ_NC_DOT_GDT_9/28/16

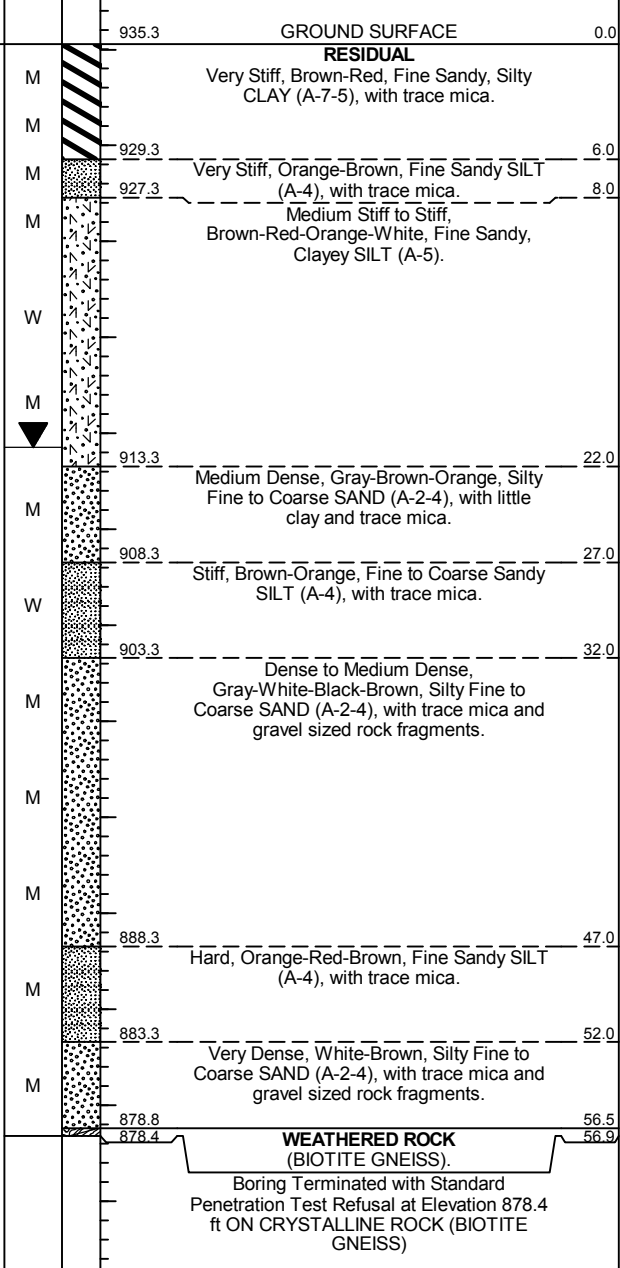
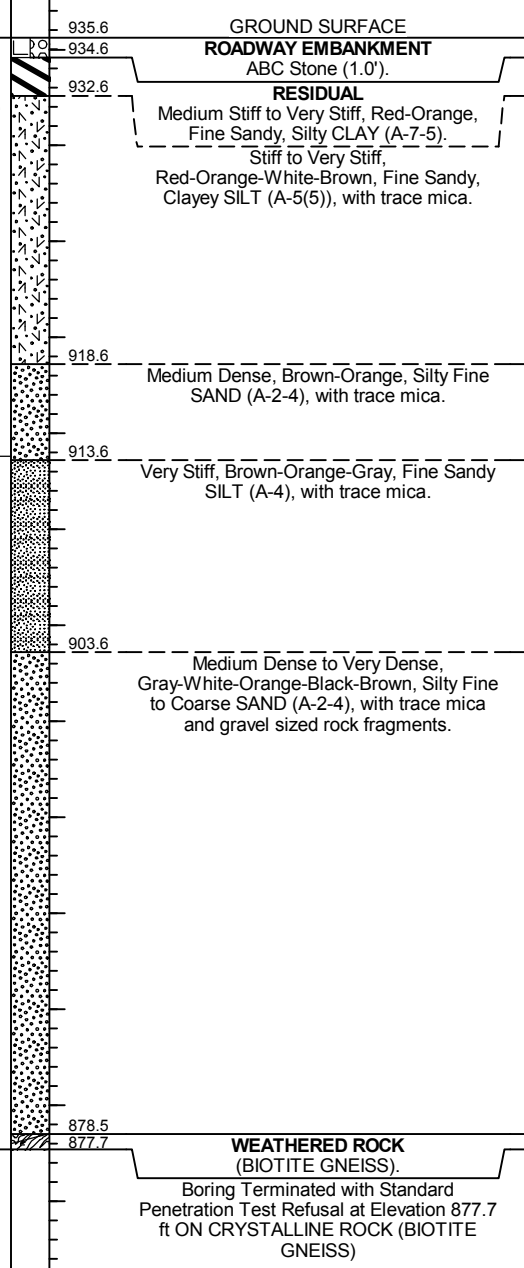
GEOTECHNICAL BORING REPORT

BORE LOG

WBS 34497.1.2		TIP R-2707C		COUNTY CLEVELAND		GEOLOGIST M. Brewer										
SITE DESCRIPTION Bridge No. 475 on -L- (US 74) over -Y14- (NC 150)							GROUND WTR (ft)									
BORING NO. EB2-A(RL)		STATION 37+97		OFFSET 48 ft LT		ALIGNMENT -Y14-										
COLLAR ELEV. 935.6 ft		TOTAL DEPTH 57.9 ft		NORTHING 578,376		EASTING 1,257,319										
DRILL RIG/HAMMER EFF./DATE HPC0279 Diedrich D50 88% 12/09/2015			DRILL METHOD H.S. Augers		HAMMER TYPE Automatic											
DRILLER J. Cain		START DATE 08/29/16		COMP. DATE 08/29/16		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						
940																
935	934.6	1.0	4	3	4										935.6	0.0
															934.6	1.0
															932.6	3.0
	932.1	3.5	5	7	9											
930	929.6	6.0	11	12	15											
	927.1	8.5	6	6	5											
925	922.1	13.5	4	9	8											
920	917.1	18.5	4	5	8										918.6	17.0
915	912.1	23.5	6	11	10										913.6	22.0
910	907.1	28.5	6	8	9											
905	902.1	33.5	6	11	10											
900	897.1	38.5	7	14	17											
895	892.1	43.5	10	29	59											
890	887.1	48.5	7	20	39											
885	882.1	53.5	12	13	14											
880	877.7	57.9	60/0.0												878.5	57.1
															877.7	57.9

WBS 34497.1.2		TIP R-2707C		COUNTY CLEVELAND		GEOLOGIST M. Brewer										
SITE DESCRIPTION Bridge No. 474 on -L- (US 74) over -Y14- (NC 150)							GROUND WTR (ft)									
BORING NO. EB2-B(LL)		STATION 37+60		OFFSET 48 ft LT		ALIGNMENT -Y14-										
COLLAR ELEV. 935.3 ft		TOTAL DEPTH 56.9 ft		NORTHING 578,398		EASTING 1,257,349										
DRILL RIG/HAMMER EFF./DATE HPC0279 Diedrich D50 88% 12/09/2015			DRILL METHOD H.S. Augers		HAMMER TYPE Automatic											
DRILLER J. Cain		START DATE 08/30/16		COMP. DATE 08/30/16		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						
940																
935	934.3	1.0	8	10	11										935.3	0.0
	931.8	3.5	10	11	14											
930	929.3	6.0	7	15	15											
	926.8	8.5	4	4	7											
925	921.8	13.5	2	3	5											
920	916.8	18.5	5	6	6											
915	911.8	23.5	5	4	11											
910	906.8	28.5	8	7	8											
905	901.8	33.5	8	19	20											
900	896.8	38.5	12	7	15											
895	891.8	43.5	6	10	12											
890	886.8	48.5	10	14	23											
885	881.8	53.5	12	31	25											
880	878.4	56.9	60/0.0												878.8	56.5
															878.4	56.9

NCDOT BORE DOUBLE R2707C_GEO_BRDG474&475_RWAL_BORINGLOGS.GPJ_NC_DOT.GDT 9/28/16



Other Samples:
ST-1 (2.5 - 4.5)

Boring Terminated with Standard Penetration Test Refusal at Elevation 878.4 ft ON CRYSTALLINE ROCK (BIOTITE GNEISS)

GEOTECHNICAL BORING REPORT

BORE LOG

WBS 34497.1.2		TIP R-2707C		COUNTY CLEVELAND		GEOLOGIST M. Brewer									
SITE DESCRIPTION Bridge No. 475 on -L- (US 74) over -Y14- (NC 150)							GROUND WTR (ft)								
BORING NO. EB2-B(RL)		STATION 38+40		OFFSET 50 ft LT		ALIGNMENT -Y14-									
COLLAR ELEV. 935.2 ft		TOTAL DEPTH 58.1 ft		NORTHING 578,348		EASTING 1,257,286									
DRILL RIG/HAMMER EFF./DATE HPC0279 Diedrich D50 88% 12/09/2015			DRILL METHOD H.S. Augers		HAMMER TYPE Automatic										
DRILLER J. Cain		START DATE 08/29/16		COMP. DATE 08/29/16		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					
940															
935	934.2	1.0	2	3	5									935.2	0.0
	931.7	3.5	8	10	15										
930	929.2	6.0	8	11	13									929.2	6.0
	926.7	8.5	6	6	9									927.2	8.0
925	921.7	13.5	4	6	6									923.2	12.0
920	916.7	18.5	4	5	15									913.2	22.0
915	911.7	23.5	12	14	11									908.2	27.0
910	906.7	28.5	11	15	17									903.2	32.0
905	901.7	33.5	11	12	11										
900	896.7	38.5	8	11	8										
895	891.7	43.5	8	14	45										
890	886.7	48.5	19	20	17										
885	881.7	53.5	13	15	24										
880	877.1	58.1												877.7	57.5
		60/0.0												877.1	58.1
WEATHERED ROCK (BIOTITE GNEISS) Boring Terminated with Standard Penetration Test Refusal at Elevation 877.1 ft ON CRYSTALLINE ROCK (BIOTITE GNEISS)															

WBS 34497.1.2		TIP R-2707C		COUNTY CLEVELAND		GEOLOGIST M. Brewer									
SITE DESCRIPTION MSE Wall at Dual Bridge No. 474 and Bridge No. 475 on -L- (US 74) over -Y14- (NC 150)							GROUND WTR (ft)								
BORING NO. RW-4		STATION 38+93		OFFSET 50 ft LT		ALIGNMENT -Y14-									
COLLAR ELEV. 935.1 ft		TOTAL DEPTH 40.0 ft		NORTHING 578,317		EASTING 1,257,244									
DRILL RIG/HAMMER EFF./DATE HPC0279 Diedrich D50 88% 12/09/2015			DRILL METHOD H.S. Augers		HAMMER TYPE Automatic										
DRILLER J. Cain		START DATE 08/29/16		COMP. DATE 08/29/16		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					
940															
935	934.1	1.0	6	9	10									935.1	0.0
	931.6	3.5	15	16	18										
930	929.1	6.0	10	15	16									929.1	6.0
	926.6	8.5	5	7	9									927.1	8.0
925	921.6	13.5	4	2	6										
920	916.6	18.5	4	4	4									918.1	17.0
915	911.6	23.5	7	7	11										
910	906.6	28.5	9	9	19										
905	901.6	33.5	5	7	16										
900	896.6	38.5	7	19	27										
Boring Terminated at Elevation 895.1 ft IN RESIDUAL SANDY SILT (A-4)															

NCDOT BORE DOUBLE R2707C_GEO_BRDG474&475_RWAL_BORINGLOGS.GPJ_NC_DOT_GDT_9/28/16

SOIL TEST RESULTS

BORING NO.	SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS.	L.L.	P.I.	% BY WEIGHT				% PASSING (SIEVES)			% MOISTURE	% ORGANIC
								C. SAND	F. SAND	SILT	CLAY	10	40	200		
EB1-A (LL)	SS-53	55' RT	37+34	3.5 - 5.0'	A-7-6 (10)	46	20	19.5	25.7	10.9	44.0	99.0	89.0	58.0	17.2	-
EB2-A (LL)	SS-40	48' LT	37+16	1.0 - 2.5'	A-7-6 (26)	56	32	11.1	12.2	15.0	61.7	99.0	92.0	78.0	25.9	-
EB2-A (RL)	ST-1	48' LT	37+97	3.0 - 3.5'	A-5 (5)	44	8	18.9	24.3	14.6	42.1	100.0	90.0	60.0	22.6	-
RW-2	SS-520	52' RT	39+18	1.0 - 2.5'	A-6 (6)	36	17	19.7	30.0	13.1	37.3	100.0	90.0	55.0	13.5	-
RW-4	SS-510	50' LT	38+93	1.0 - 2.5'	A-7-6 (16)	54	27	16.4	23.8	8.9	50.9	100.0	92.0	63.0	21.4	-

LAB TECHNICIAN: AMANDA R. ROTH

NCDOT CERTIFICATION NO. 112-09-1003

SIGNATURE:  _____