

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	P-5720	1	17

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

**STRUCTURE**  
**SUBSURFACE INVESTIGATION**

COUNTY WAKE

PROJECT DESCRIPTION PROPOSED GRADE-SEPARATION  
OF DURANT ROAD (SR 2006) OVER CSX S LINE  
RAILROAD IN RALEIGH

SITE DESCRIPTION

-W1- -L- STA. 22+00.04, 48.5' LT TO -L- STA. 25+29.95, 48.5' LT

-W2- -Y3- STA. 12+75.00, 42' RT TO -Y3- STA. 15+00.00, 43.54' RT

-WALL 3- -L- STA. 31+11.23, 43.04' RT TO -L- STA. 31+07.73, 43.04' LT

-WALL 4- -L- STA. 33+53.23, 43.04' LT TO -L- STA. 33+45.23, 43.04' RT

**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:

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

CAROLINA DRILLING

LANE, R.W.

\_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

INVESTIGATED BY LANE, R.W.

DRAWN BY CROCKETT, S.C.

CHECKED BY HAMM, J.R.

SUBMITTED BY FALCON ENG.

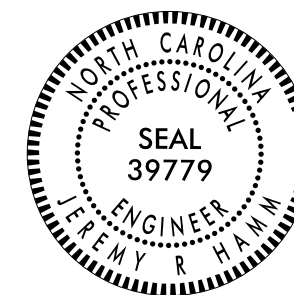
DATE FEBRUARY 2019

**CONTENTS**

<u>SHEET NO.</u>	<u>DESCRIPTION</u>
1	TITLE SHEET
2	LEGEND
3	END BENT MSE WALLS SITE PLAN
4	END BENT 1 MSE WALL SUBSURFACE PROFILE
5	END BENT 2 MSE WALL SUBSURFACE PROFILE
6	WALL #1 SITE PLAN AND SUBSURFACE PROFILE
7	WALL #2 SITE PLAN AND SUBSURFACE PROFILE
8-17	BORE LOGS

**REFERENCE: P-5720**

**PROJECT: 46932**

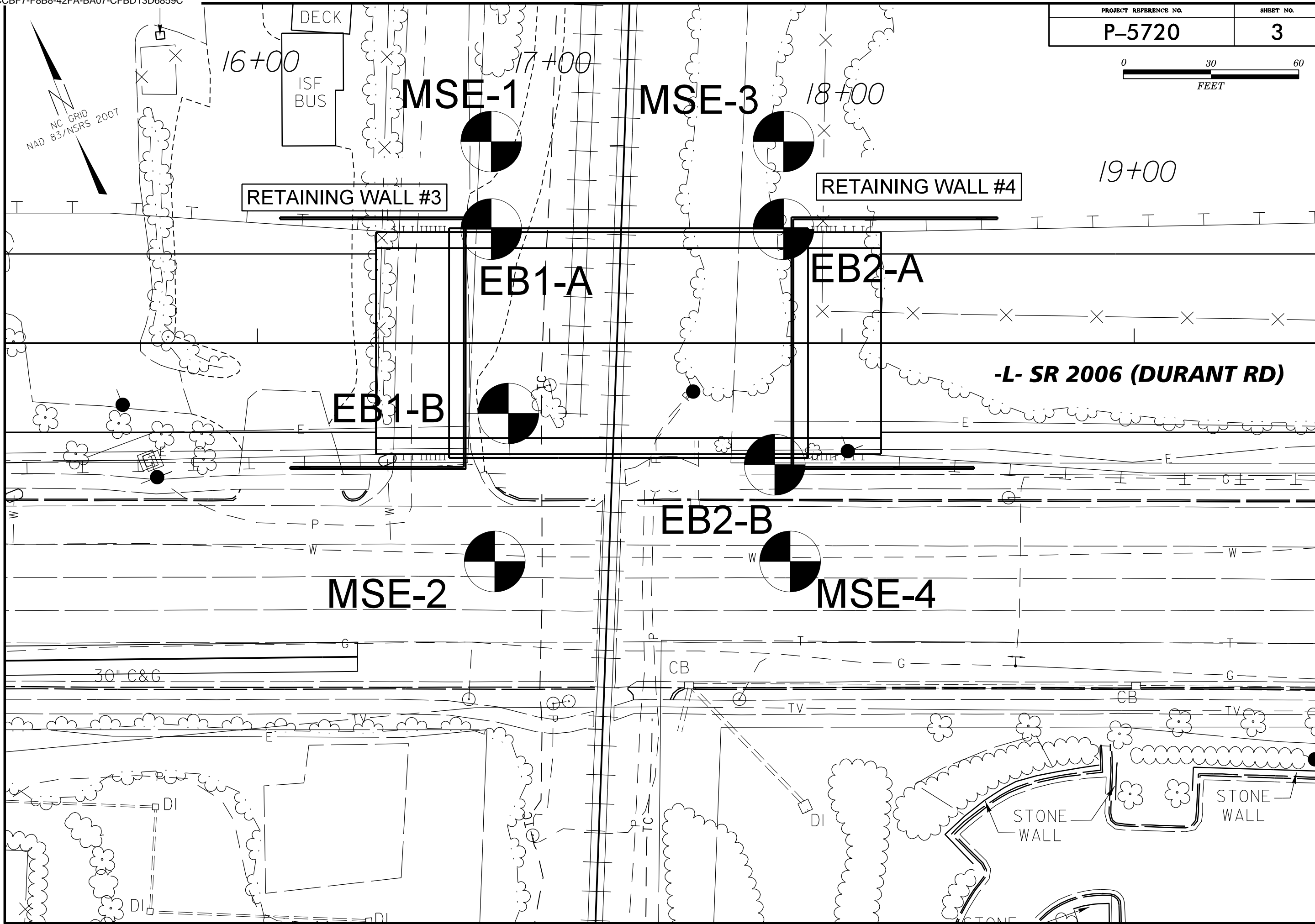


DocuSigned by:  
Jeremy R Hamm 2/5/2019  
 ED7938089E22487...  
 SIGNATURE DATE

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

**NORTH CAROLINA DEPARTMENT OF TRANSPORTATION**  
**DIVISION OF HIGHWAYS**  
**GEOTECHNICAL ENGINEERING UNIT**  
**SUBSURFACE INVESTIGATION**  
**SOIL AND ROCK LEGEND, TERMS, SYMBOLS, AND ABBREVIATIONS**

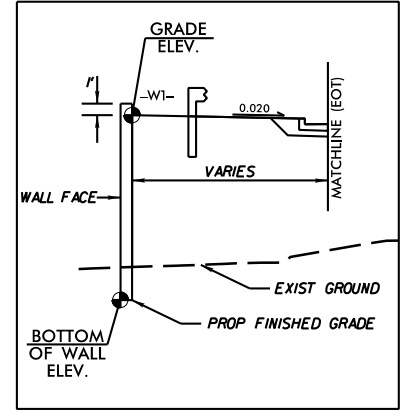
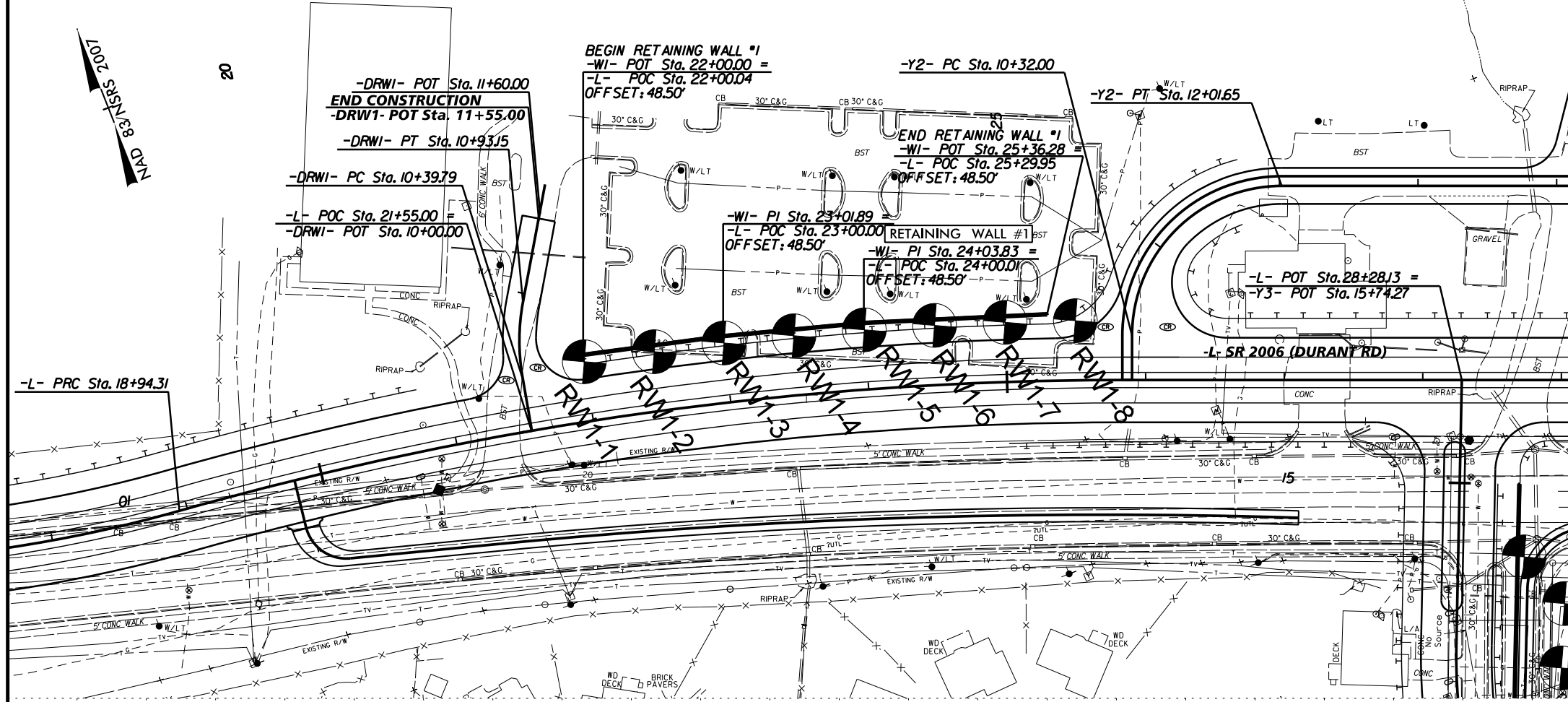
SOIL DESCRIPTION										GRADATION										ROCK DESCRIPTION										TERMS AND DEFINITIONS																			
SOIL IS CONSIDERED UNCONSOLIDATED, SEMI-CONSOLIDATED, OR WEATHERED EARTH MATERIALS THAT CAN BE PENETRATED WITH A CONTINUOUS FLIGHT POWER AUGER AND YIELD LESS THAN 100 BLOWS PER FOOT ACCORDING TO THE STANDARD PENETRATION TEST (AASHTO T 208, 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 DISLODGED 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 (IN 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.																			
<b>SOIL LEGEND AND AASHTO CLASSIFICATION</b>										<b>ANGULARITY OF GRAINS</b>										<b>WEATHERED ROCK (WR)</b>										<b>NON-COASTAL PLAIN MATERIAL THAT WOULD YIELD SPT N VALUES &gt; 100 BLOWS PER FOOT IF TESTED.</b>																			
<b>MINERALOGICAL COMPOSITION</b>										<b>CRYSTALLINE ROCK (CR)</b>										<b>FINE TO COARSE GRAIN IGNEOUS AND METAMORPHIC ROCK THAT WOULD YIELD SPT REFUSAL IF TESTED. ROCK TYPE INCLUDES GRANITE, GNEISS, GABBRO, SCHIST, ETC.</b>										<b>NON-CRYSTALLINE ROCK (NCR)</b>										<b>FINE TO COARSE GRAIN METAMORPHIC AND NON-COASTAL PLAIN SEDIMENTARY ROCK THAT WOULD YIELD SPT REFUSAL IF TESTED. ROCK TYPE INCLUDES PHYLLITE, SLATE, SANDSTONE, ETC.</b>									
<b>COMPRESSIBILITY</b>										<b>NON-COASTAL PLAIN SEDIMENTS CEMENTED INTO ROCK, BUT MAY NOT YIELD SPT REFUSAL. ROCK TYPE INCLUDES LIMESTONE, SANDSTONE, CEMENTED SHELL BEDS, ETC.</b>										<b>COASTAL PLAIN SEDIMENTARY ROCK (CP)</b>										<b>WEATHERING</b>																			
<b>PERCENTAGE OF MATERIAL</b>										<b>ORGANIC MATERIAL</b>										<b>FRESH</b>										<b>ROCK FRESH, CRYSTALS BRIGHT, FEW JOINTS MAY SHOW SLIGHT STAINING. ROCK RINGS UNDER HAMMER IF CRYSTALLINE.</b>																			
<b>GROUND WATER</b>										<b>TRACE OF ORGANIC MATTER</b>										<b>VERY SLIGHT (IV SLI.)</b>										<b>ROCK GENERALLY FRESH, JOINTS STAINED, SOME JOINTS MAY SHOW THIN CLAY COATINGS IF OPEN. CRYSTALS ON A BROKEN SPECIMEN FACE SHINE BRIGHTLY. ROCK RINGS UNDER HAMMER BLOWS IF OF A CRYSTALLINE NATURE.</b>																			
<b>MISCELLANEOUS SYMBOLS</b>										<b>LITTLE ORGANIC MATTER</b>										<b>SLIGHT (SLI.)</b>										<b>ROCK GENERALLY FRESH, JOINTS STAINED AND DISCOLORATION EXTENDS INTO ROCK UP TO 1 INCH. OPEN JOINTS MAY CONTAIN CLAY. IN GRANITOID ROCKS SOME OCCASIONAL FELDSPAR CRYSTALS ARE DULL AND DISCOLORED. CRYSTALLINE ROCKS RING UNDER HAMMER BLOWS.</b>																			
<b>RECOMMENDATION SYMBOLS</b>										<b>MODERATELY ORGANIC</b>										<b>MODERATE (MOD.)</b>										<b>SIGNIFICANT PORTIONS OF ROCK SHOW DISCOLORATION AND WEATHERING EFFECTS. IN GRANITOID ROCKS, MOST FELDSPARS ARE DULL AND DISCOLORED, SOME SHOW CLAY. ROCK HAS DULL SOUND UNDER HAMMER BLOWS AND SHOWS SIGNIFICANT LOSS OF STRENGTH AS COMPARED WITH FRESH ROCK.</b>																			
<b>ABBREVIATIONS</b>										<b>HIGHLY ORGANIC</b>										<b>MODERATELY SEVERE (MOD. SEV.)</b>										<b>ALL ROCK EXCEPT QUARTZ DISCOLORED OR STAINED. IN GRANITOID ROCKS, ALL FELDSPARS DULL AND DISCOLORED AND A MAJORITY SHOW KAOLINIZATION. ROCK SHOWS SEVERE LOSS OF STRENGTH AND CAN BE EXCAVATED WITH A GEOLOGIST'S PICK. ROCK GIVES "CLUNK" SOUND WHEN STRUCK. IF TESTED, WOULD YIELD SPT REFUSAL</b>																			
<b>EQUIPMENT USED ON SUBJECT PROJECT</b>										<b>VERY SEVERE (SEV.)</b>										<b>SEVERE (SEV.)</b>										<b>ALL ROCK EXCEPT QUARTZ DISCOLORED OR STAINED. ROCK FABRIC CLEAR AND EVIDENT BUT REDUCED IN STRENGTH TO STRONG SOIL. IN GRANITOID ROCKS ALL FELDSPARS ARE KAOLINIZED TO SOME EXTENT. SOME FRAGMENTS OF STRONG ROCK USUALLY REMAIN. IF TESTED, WOULD YIELD SPT N VALUES &gt; 100 BPF</b>																			
<b>TEXTURE OR GRAIN SIZE</b>										<b>COMPLETE</b>										<b>VERY HARD</b>										<b>ROCK REDUCED TO SOIL. ROCK FABRIC NOT DISCERNIBLE, OR DISCERNIBLE ONLY IN SMALL AND SCATTERED CONCENTRATIONS. QUARTZ MAY BE PRESENT AS DIKES OR STRINGERS. SAPROLITE IS ALSO AN EXAMPLE.</b>																			
<b>SOIL MOISTURE - CORRELATION OF TERMS</b>										<b>ROCK HARDNESS</b>										<b>HARD</b>										<b>CANNOT BE SCRATCHED BY KNIFE OR SHARP PICK. BREAKING OF HAND SPECIMENS REQUIRES SEVERAL HARD BLOWS OF THE GEOLOGIST'S PICK.</b>																			
<b>PLASTICITY</b>										<b>MODERATELY HARD</b>										<b>MODERATELY HARD</b>										<b>CAN BE SCRATCHED BY KNIFE OR PICK. GOUGES OR GROOVES TO 0.25 INCHES DEEP CAN BE EXCAVATED BY HARD BLOW OF A GEOLOGIST'S PICK. HAND SPECIMENS CAN BE DETACHED BY MODERATE BLOWS.</b>																			
<b>COLOR</b>										<b>VERY HARD</b>										<b>HARD</b>										<b>CAN BE GROOVED OR GOUGED 0.05 INCHES DEEP BY FIRM PRESSURE OF KNIFE OR PICK POINT. CAN BE EXCAVATED IN SMALL CHIPS TO PIECES 1 INCH MAXIMUM SIZE BY HARD BLOWS OF THE POINT OF A GEOLOGIST'S PICK.</b>																			
<b>DESCRIPTIONS MAY INCLUDE COLOR OR COLOR COMBINATIONS (TAN, RED, YELLOW-BROWN, BLUE-BROWN). MODIFIERS SUCH AS LIGHT, DARK, STREAKED, ETC. ARE USED TO DESCRIBE APPEARANCE.</b>										<b>VERY HARD</b>										<b>VERY HARD</b>										<b>CAN BE GROOVED OR GOUGED READILY BY KNIFE OR PICK. CAN BE EXCAVATED IN FRAGMENTS FROM CHIPS TO SEVERAL INCHES IN SIZE BY MODERATE BLOWS OF A PICK POINT. SMALL, THIN PIECES CAN BE BROKEN BY FINGER PRESSURE.</b>																			
										<b>VERY HARD</b>										<b>VERY HARD</b>										<b>CAN BE CARVED WITH KNIFE. CAN BE EXCAVATED READILY WITH POINT OF PICK. PIECES 1 INCH OR MORE IN THICKNESS CAN BE BROKEN BY FINGER PRESSURE. CAN BE SCRATCHED READILY BY FINGER NAIL.</b>																			
										<b>VERY HARD</b>										<b>VERY HARD</b>										<b>FRACURE SPACING</b>										<b>BEDDING</b>									
										<b>VERY HARD</b>										<b>VERY HARD</b>										<b>TERM</b>										<b>THICKNESS</b>									
										<b>VERY HARD</b>										<b>VERY HARD</b>										<b>VERY WIDE</b>										<b>VERY THICKLY BEDDED</b>									
										<b>VERY HARD</b>										<b>VERY HARD</b>										<b>WIDE</b>										<b>THICKLY BEDDED</b>									
										<b>VERY HARD</b>										<b>VERY HARD</b>										<b>MODERATELY CLOSE</b>										<b>THINLY BEDDED</b>									
										<b>VERY HARD</b>										<b>VERY HARD</b>										<b>CLOSE</b>										<b>VERY THINLY BEDDED</b>									
										<b>VERY HARD</b>										<b>VERY HARD</b>										<b>VERY CLOSE</b>										<b>THICKLY LAMINATED</b>									
										<b>VERY HARD</b>										<b>VERY HARD</b>										<b>INDURATION</b>										<b>INDURATION</b>									
										<b>VERY HARD</b>										<b>VERY HARD</b>										<b>FOR SEDIMENTARY ROCKS, INDURATION IS THE HARDENING OF MATERIAL BY CEMENTING, HEAT, PRESSURE, ETC.</b>										<b>INDURATION</b>									
										<b>VERY HARD</b>										<b>VERY HARD</b>										<b>FRIABLE</b>										<b>RUBBING WITH FINGER FREES NUMEROUS GRAINS; GENTLE BLOW BY HAMMER DISINTEGRATES SAMPLE.</b>									
										<b>VERY HARD</b>										<b>VERY HARD</b>										<b>MODERATELY INDURATED</b>										<b>GRAINS CAN BE SEPARATED FROM SAMPLE WITH STEEL PROBE; BREAKS EASILY WHEN HIT WITH HAMMER.</b>									
										<b>VERY HARD</b>										<b>VERY HARD</b>										<b>INDURATED</b>										<b>GRAINS ARE DIFFICULT TO SEPARATE WITH STEEL PROBE; DIFFICULT TO BREAK WITH HAMMER.</b>									
										<b>VERY HARD</b>										<b>VERY HARD</b>										<b>EXTREMELY INDURATED</b>										<b>SHARP HAMMER BLOWS REQUIRED TO BREAK SAMPLE; SAMPLE BREAKS ACROSS GRAINS.</b>									
										<b>VERY HARD</b>										<b>VERY HARD</b>										<b>INDURATION</b>										<b>INDURATION</b>									
										<b>VERY HARD</b>										<b>VERY HARD</b>										<b>INDURATION</b>										<b>INDURATION</b>									



# RETAINING WALL #1 ENVELOPE

**Kimley»Horn**  
 421 FAYETTEVILLE STREET, SUITE 600  
 RALEIGH, N.C. 27601

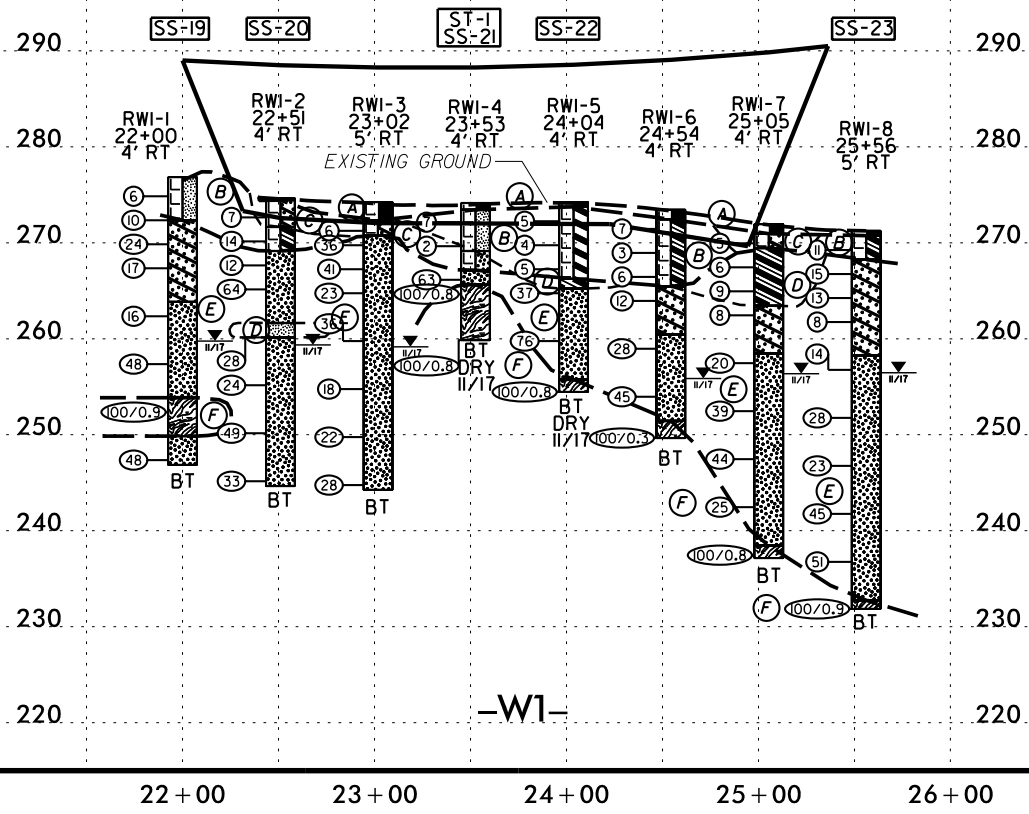
PROJECT REFERENCE NO. P-5720	SHEET NO. 4
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	GEOTECHNICAL ENGINEER
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	



APPROX. WALL FACE AREA = 5800 SF

SOIL TEST RESULTS																
SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS	LL	P.I.	% BY WEIGHT				% PASSING (SIEVES)			% MOISTURE		% ORGANIC
							C. SAND	F. SAND	SILT	CLAY	10	40	200	MOISTURE	ORGANIC	
SS-19	4 FT RT	22+00	1.0'-2.5'	A-4	23	7	-	-	-	-	95	64	36	12	-	-
SS-20	4 FT RT	22+51	3.5'-5.0'	-	-	-	-	-	-	99	87	65	27	-	-	
SS-21	4 FT RT	23+53	3.5'-5.0'	A-4	30	9	-	-	-	85	67	38	20	-	-	
SS-22	4 FT RT	24+04	1.0'-2.5'	A-7-5	62	17	-	-	-	89	74	48	29	-	-	
SS-23	5 FT RT	25+56	1.0'-2.5'	A-6	40	17	-	-	-	93	65	44	14	-	-	
ST-1	4 FT RT	23+53	5.0'-7.0'	A-2-4	24	7	43	26	16	16	89	71	32	17	-	

- (A) ROADWAY EMBANKMENT: BITUMINOUS CONCRETE AND BASE COURSE AGGREGATE
- (B) ROADWAY EMBANKMENT: TAN, BROWN, AND GRAY, MOIST, SOFT TO STIFF, SANDY SILT, SANDY CLAY, AND SILTY CLAY (A-4, A-6, A-7-5)
- (C) ROADWAY EMBANKMENT: BROWN AND TAN, MOIST, VERY LOOSE TO LOOSE, SILTY AND CLAYEY SAND (A-2-4, A-2-6)
- (D) RESIDUAL: GRAY AND ORANGE, DRY TO MOIST, MEDIUM STIFF TO STIFF, SANDY CLAY (A-6)
- (E) RESIDUAL: PINK, BROWN, WHITE, AND GRAY, DRY TO WET, LOOSE TO VERY DENSE, SILTY AND CLAYEY SAND (A-2-4, A-2-6)
- (F) WEATHERED ROCK: PINK, GRAY, AND TAN, GRANITE



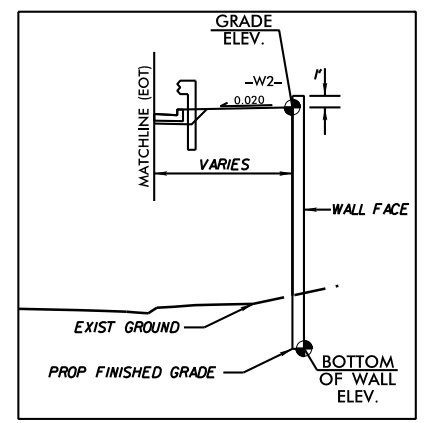
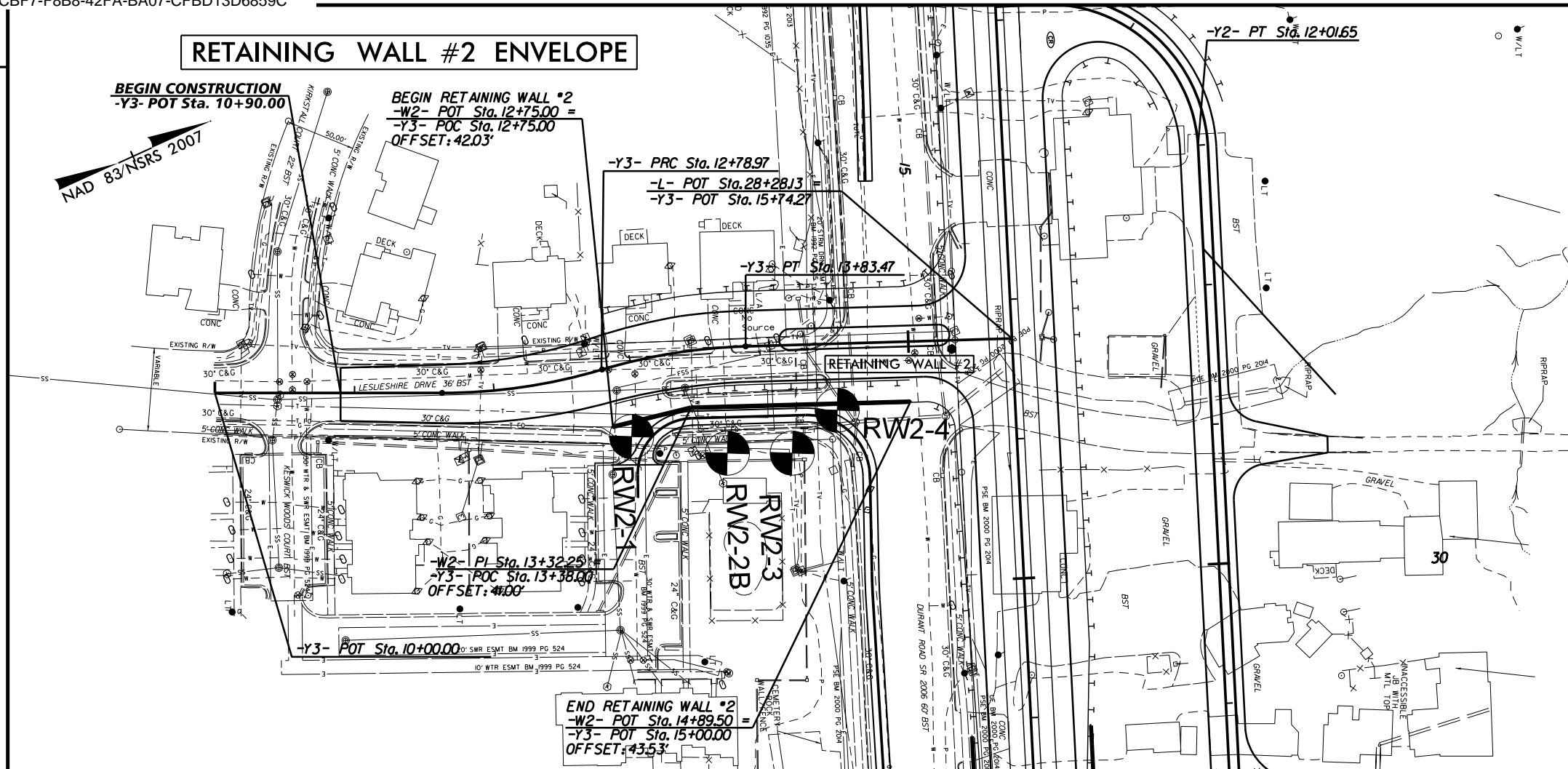
REVISIONS

\$DATE\$

PROJECT REFERENCE NO. P-5720	SHEET NO. 5
RW SHEET NO.	GEOTECHNICAL ENGINEER
ROADWAY DESIGN ENGINEER	

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

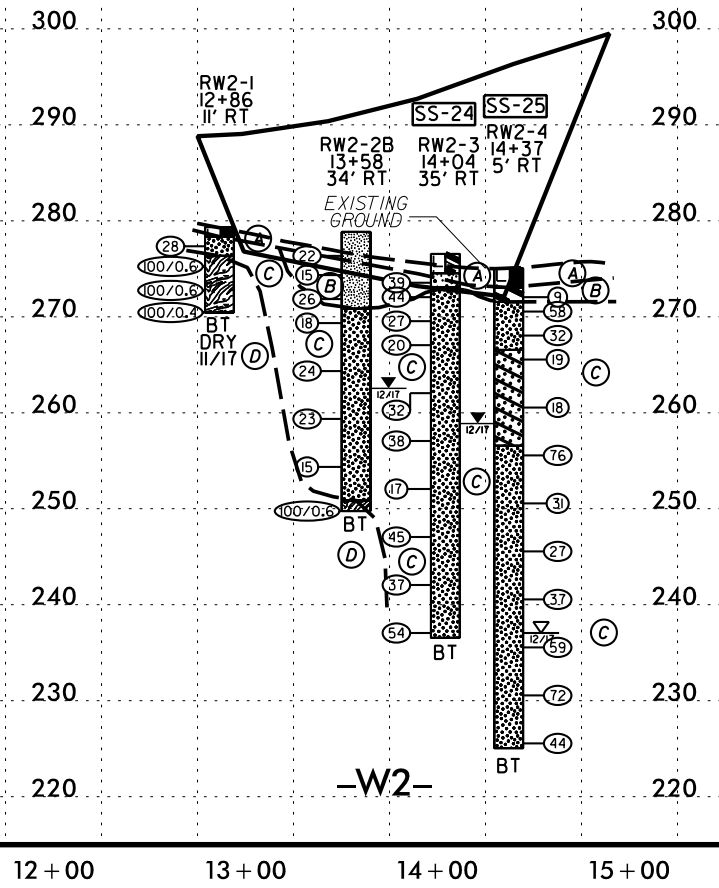
### RETAINING WALL #2 ENVELOPE



APPROX. WALL FACE AREA = 4100 SF

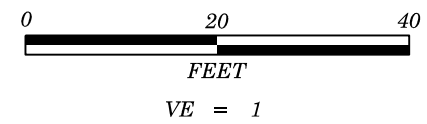
SOIL TEST RESULTS															
SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS	LL	P.I.	% BY WEIGHT				% PASSING (SIEVES)			% MOISTURE	% ORGANIC
							C. SAND	F. SAND	SILT	CLAY	10	40	200		
SS-24	35 FT RT	14+04	2'-3.5'	A-5	41	5	-	-	-	96	72	44	24	-	
SS-25	5 FT RT	14+37	2'-3.5'	A-7-6	59	37	-	-	-	77	51	38	17	-	

- (A) ROADWAY EMBANKMENT: BITUMINOUS CONCRETE AND BASE COURSE AGGREGATE
- (B) RESIDUAL: BROWN AND GRAY, MOIST, STIFF TO HARD, SANDY SILT, CLAYEY SILT, AND SILTY CLAY (A-4, A-5, A-7-6) WITH SOME ROCK FRAGMENTS
- (C) RESIDUAL: TAN, WHITE, AND ORANGE, DRY TO WET, MEDIUM DENSE TO VERY DENSE, SILTY AND CLAYEY SAND (A-2-4, A-2-6) SAPROLITIC WITH ROCK FRAGMENTS
- (D) WEATHERED ROCK: TAN, PINK, AND GRAY, GRANITE



REVISIONS

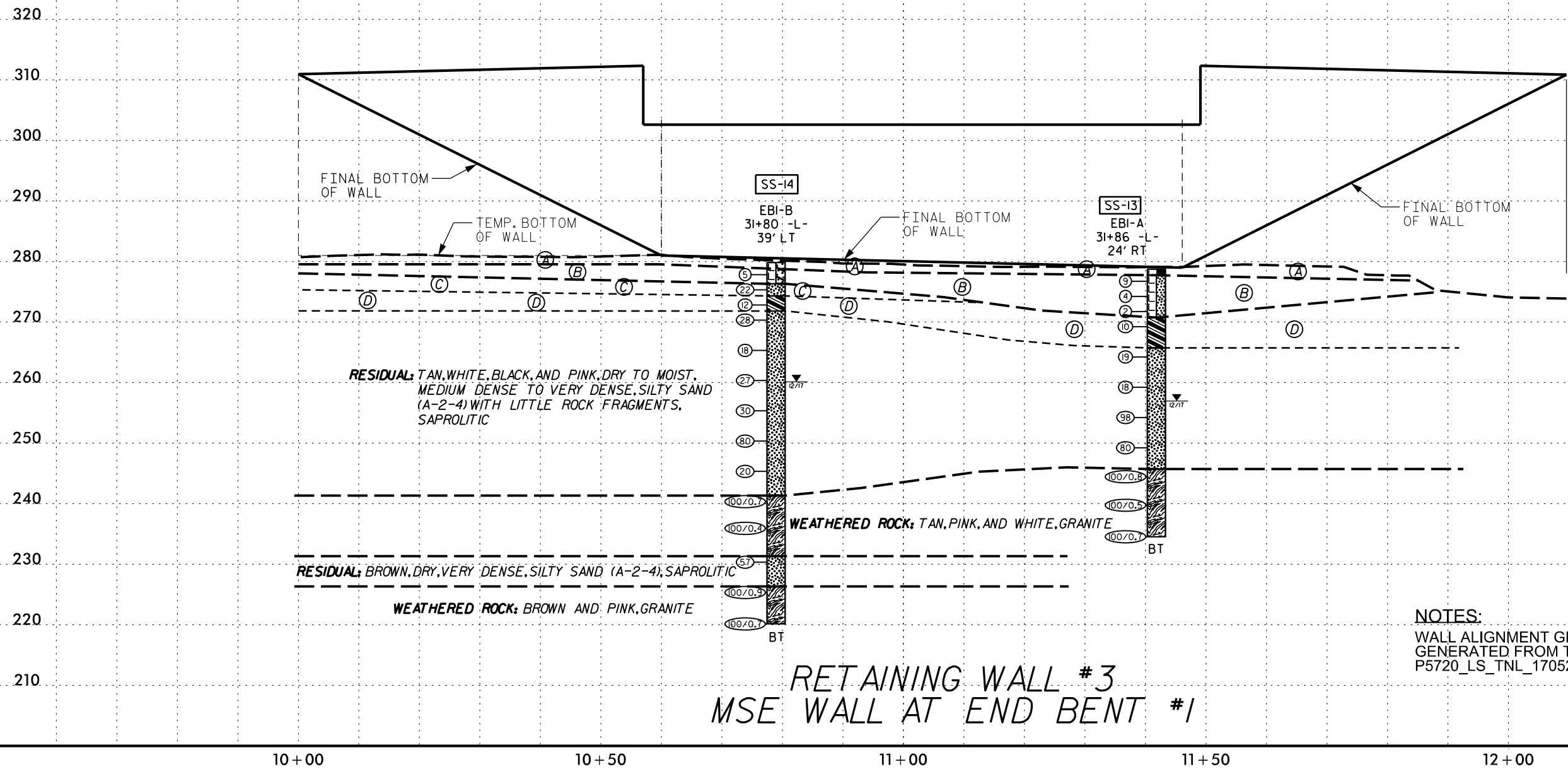
\$DATE\$



<b>PROJECT REFERENCE NO.</b>	<b>SHEET NO.</b>
P-5720	6
<b>RETAINING WALL #3 MSE WALL PROFILE AT END BENT #1</b>	

<b>SOIL TEST RESULTS</b>															
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		
SS-13	39 FT LT	31+80	6.0'-7.5'	A-2-4	35	9	-	-	-	-	87	58	29	23	-
SS-14	24 FT RT	31+86	1.0'-2.5'	A-2-6	28	12	-	-	-	-	87	55	32	14	-

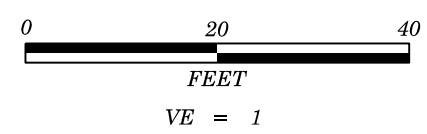
- (A) ROADWAY EMBANKMENT: BASE COURSE AGGREGATE
- (B) ROADWAY EMBANKMENT: BROWN, ORANGE, AND BLACK, MOIST, VERY LOOSE TO LOOSE, SILTY AND CLAYEY SAND (A-2-4, A-2-6)
- (C) RESIDUAL: TAN AND WHITE, MOIST, MEDIUM DENSE, SILTY SAND (A-2-4), SAPROLITIC
- (D) RESIDUAL: GRAY AND ORANGE, MOIST, STIFF, SANDY CLAY (A-6)



**NOTES:**  
 WALL ALIGNMENT GROUNDLINE PROFILE  
 GENERATED FROM TIN FILE  
 P5720\_LS\_TNL\_170522.TIN DATED MAY, 2017.

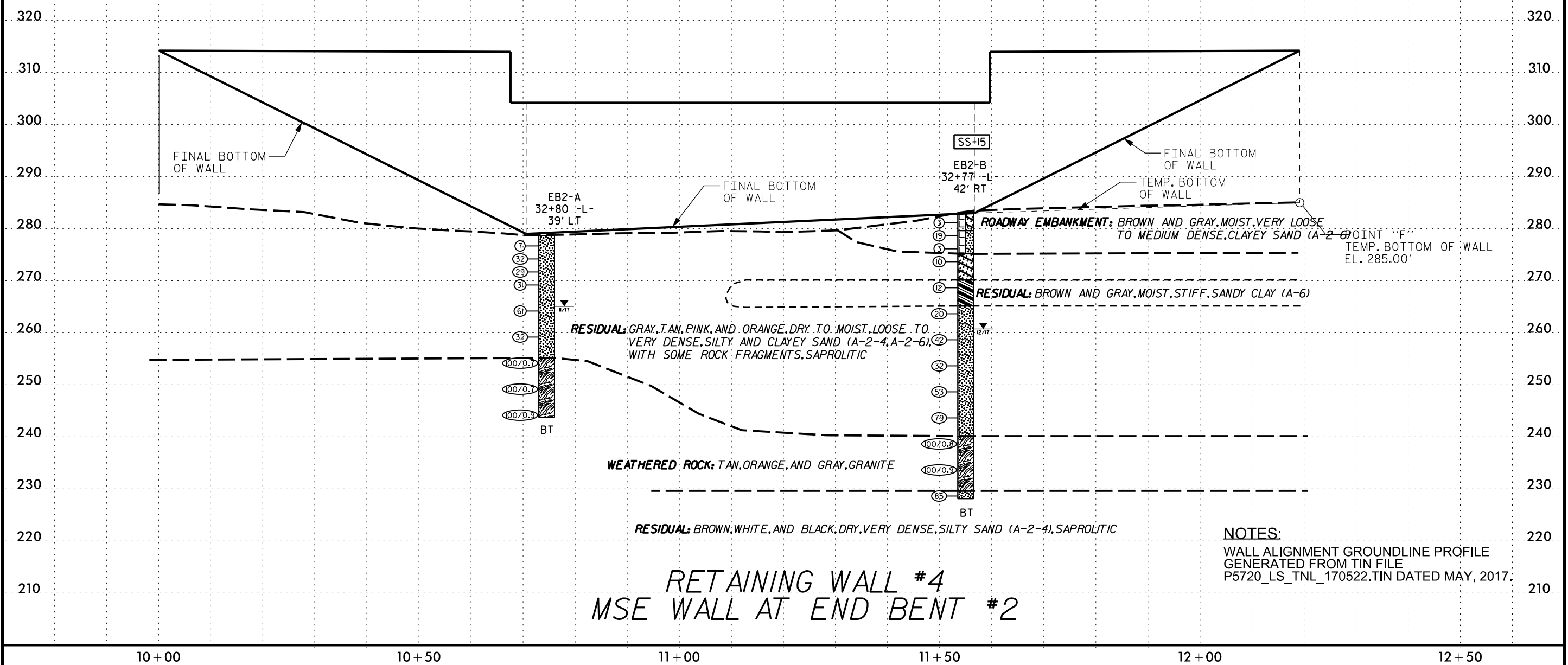
**RETAINING WALL #3  
MSE WALL AT END BENT #1**

10+00                      10+50                      11+00                      11+50                      12+00



<b>PROJECT REFERENCE NO.</b>	<b>SHEET NO.</b>
P-5720	7
<b>RETAINING WALL #4 MSE WALL PROFILE AT END BENT #2</b>	

<b>SOIL TEST RESULTS</b>															
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		
SS-15	42 FT RT	32+77	1.0'-2.5'	A-2-6	35	9	-	-	-	-	91	67	35	20	-



## RETAINING WALL #4 MSE WALL AT END BENT #2

# GEOTECHNICAL BORING REPORT

## BORE LOG

WBS 46932.1.1		TIP P-5720		COUNTY WAKE		GEOLOGIST Lane, R.W.										
SITE DESCRIPTION PROPOSED GRADE-SEPARATION OF DURANT RD (SR 2006) OVER CSX S LINE RAILROAD IN RALEIGH							GROUND WTR (ft)									
BORING NO. RW2-2		STATION 13+57		OFFSET 39 ft RT		ALIGNMENT -Y3-										
COLLAR ELEV. 278.1 ft		TOTAL DEPTH 5.0 ft		NORTHING 781,706		EASTING 2,127,245										
DRILL RIGHAMMER EFF./DATE BRI7893 CME-550 90%06/06/2017				DRILL METHOD H.S. Augers		HAMMER TYPE Automatic										
DRILLER Blackley, D.		START DATE 12/07/17		COMP. DATE 12/07/17		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	DEPTH (ft)	
			0.5ft	0.5ft	0.5ft	0	25	50	75	100						
280																
	277.1	1.0	5	9	14											278.1
	274.6	3.5	8	14	15											273.1
Boring Terminated at 5.0' below ground surface after hitting irrigation line at Elevation 273.1 ft																

WBS 46932.1.1		TIP P-5720		COUNTY WAKE		GEOLOGIST Lane, R.W.										
SITE DESCRIPTION PROPOSED GRADE-SEPARATION OF DURANT RD (SR 2006) OVER CSX S LINE RAILROAD IN RALEIGH							GROUND WTR (ft)									
BORING NO. MSE-1		STATION 31+80		OFFSET 69 ft LT		ALIGNMENT -L-										
COLLAR ELEV. 278.6 ft		TOTAL DEPTH 30.0 ft		NORTHING 781,868		EASTING 2,127,615										
DRILL RIGHAMMER EFF./DATE BRI7893 CME-550 90%06/06/2017				DRILL METHOD H.S. Augers		HAMMER TYPE Automatic										
DRILLER Blackley, D.		START DATE 12/01/17		COMP. DATE 12/01/17		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	DEPTH (ft)	
			0.5ft	0.5ft	0.5ft	0	25	50	75	100						
280																
	277.6	1.0	5	5	3											278.6
	275.1	3.5	5	4	3											271.1
	272.6	6.0	4	2	2											271.1
	270.1	8.5	2	1	2											271.1
	265.1	13.5	3	5	4											265.6
	260.1	18.5	4	4	6											265.6
	255.1	23.5	4	9	12											255.6
	250.1	28.5	10	15	13											248.6
Boring Terminated at Elevation 248.6 ft In RESIDUAL (A-2-4)																

NCDOT BORE DOUBLE P5720\_GEO\_GINT.GPJ NC\_DOT.GDT 2/15/19



# GEOTECHNICAL BORING REPORT

## BORE LOG

WBS 46932.1.1		TIP P-5720		COUNTY WAKE		GEOLOGIST Lane, R.W.									
SITE DESCRIPTION PROPOSED GRADE-SEPARATION OF DURANT RD (SR 2006) OVER CSX S LINE RAILROAD IN RALEIGH							GROUND WTR (ft)								
BORING NO. MSE-2		STATION 31+81		OFFSET 75 ft RT		ALIGNMENT -L-									
COLLAR ELEV. 282.0 ft		TOTAL DEPTH 19.9 ft		NORTHING 781,734		EASTING 2,127,563									
DRILL RIGHAMMER EFF/DATE BRI7893 CME-550 90%06/06/2017			DRILL METHOD H.S. Augers			HAMMER TYPE Automatic									
DRILLER Blackley, D.		START DATE 12/05/17		COMP. DATE 12/05/17		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					
285															
280	280.5	1.5	21	16	12									0.8' BITUMINOUS CONCRETE	1.5
	278.5	3.5	7	12	20									0.7' BASE COURSE AGGREGATE	3.5
	276.0	6.0	5	7	8									ROADWAY EMBANKMENT GRAY AND BLACK, SILTY SAND (A-2-4)	6.0
	273.5	8.5	22	48	52/0.4									RESIDUAL TAN AND WHITE, SILTY SAND (A-2-4), SAPROLITIC	8.0
	268.5	13.5	22	44	54									WEATHERED ROCK TAN, WHITE, AND PINK, GRANITE	13.0
	263.5	18.5	25	16	84/0.4									RESIDUAL TAN AND PINK, SILTY SAND (A-2-4), SAPROLITIC W/ LITTLE ROCK FRAGS.	18.0
														WEATHERED ROCK TAN AND PINK, GRANITE	19.9
														Boring Terminated at Elevation 262.1 ft In WR Granite	

WBS 46932.1.1		TIP P-5720		COUNTY WAKE		GEOLOGIST Lane, R.W.									
SITE DESCRIPTION PROPOSED GRADE-SEPARATION OF DURANT RD (SR 2006) OVER CSX S LINE RAILROAD IN RALEIGH							GROUND WTR (ft)								
BORING NO. MSE-3		STATION 32+80		OFFSET 69 ft LT		ALIGNMENT -L-									
COLLAR ELEV. 278.2 ft		TOTAL DEPTH 30.0 ft		NORTHING 781,831		EASTING 2,127,708									
DRILL RIGHAMMER EFF/DATE BRI7893 CME-550 90%06/06/2017			DRILL METHOD H.S. Augers			HAMMER TYPE Automatic									
DRILLER Blackley, D.		START DATE 11/27/17		COMP. DATE 11/27/17		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					
280															
	277.2	1.0	2	8	10									0.5' TOPSOIL	0.0
	274.7	3.5	7	9	15									RESIDUAL ORANGE, TAN, AND PINK, SILTY SAND (A-2-4), SAPROLITIC, W/ LITTLE ROCK FRAGS.	3.5
	272.2	6.0	5	6	7										6.0
	269.7	8.5	7	9	13										8.5
	264.7	13.5	5	10	11										13.5
	259.7	18.5	12	12	14										18.5
	254.7	23.5	8	16	36										23.5
	249.7	28.5	27	44	51										28.5
															30.0
														Boring Terminated at Elevation 248.2 ft In RESIDUAL (A-2-4)	

NCDOT BORE DOUBLE P5720\_GEO\_GINT.GPJ NC\_DOT.GDT 2/5/19

# GEOTECHNICAL BORING REPORT BORE LOG

WBS 46932.1.1		TIP P-5720		COUNTY WAKE		GEOLOGIST Lane, R.W.										
SITE DESCRIPTION PROPOSED GRADE-SEPARATION OF DURANT RD (SR 2006) OVER CSX S LINE RAILROAD IN RALEIGH							GROUND WTR (ft)									
BORING NO. MSE-4		STATION 32+82		OFFSET 75 ft RT		ALIGNMENT -L-										
COLLAR ELEV. 282.8 ft		TOTAL DEPTH 30.0 ft		NORTHING 781,729		EASTING 2,127,664										
DRILL RIG/HAMMER EFF/DATE BRI7893 CME-550 90%06/06/2017				DRILL METHOD H.S. Augers		HAMMER TYPE Automatic										
DRILLER Blackley, D.		START DATE 12/04/17		COMP. DATE 12/04/17		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						
285																
280	281.3	1.5	6	5	8									282.8	0.0	ROADWAY EMBANKMENT ORANGE AND GRAY, SILTY SAND (A-2-4)
	279.2	3.6	5	5	3									279.3	3.5	GRAY, CLAYEY SAND (A-2-6)
	276.8	6.0	3	4	6									276.8	6.0	ALLUVIAL GRAY, SILTY SAND (A-2-4) W/ TRACE ORGANICS
275	274.3	8.5	4	3	4									274.8	8.0	RESIDUAL GRAY AND BROWN, CLAY (A-7)
270	269.3	13.5	5	10	14									269.8	13.0	BROWN, SANDY SILT (A-4)
265	264.3	18.5	42	33	33									265.8	17.0	TAN, WHITE, AND PINK, SILTY SAND (A-2-4), SAPROLITIC, W/ LITTLE ROCK FRAGS.
260	259.3	23.5	19	16	17											
255	254.3	28.5	13	20	28											
																Boring Terminated at Elevation 252.8 ft In RESIDUAL (A-2-4)

WBS 46932.1.1		TIP P-5720		COUNTY WAKE		GEOLOGIST Lane, R.W.										
SITE DESCRIPTION PROPOSED GRADE-SEPARATION OF DURANT RD (SR 2006) OVER CSX S LINE RAILROAD IN RALEIGH							GROUND WTR (ft)									
BORING NO. RW1-1		STATION 22+00		OFFSET 43 ft LT		ALIGNMENT -L-										
COLLAR ELEV. 276.9 ft		TOTAL DEPTH 30.0 ft		NORTHING 782,178		EASTING 2,126,678										
DRILL RIG/HAMMER EFF/DATE BRI7893 CME-550 90%06/06/2017				DRILL METHOD H.S. Augers		HAMMER TYPE Automatic										
DRILLER Blackley, D.		START DATE 11/29/17		COMP. DATE 11/29/17		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						
280																
275	275.9	1.0	3	3	3									276.9	0.0	0.2' TOPSOIL ROADWAY EMBANKMENT TAN, SANDY SILT (A-4)
	273.4	3.5	3	4	6									272.4	4.5	RESIDUAL PINK, TAN, ORANGE, AND WHITE, CLAYEY SAND (A-2-6), SAPROLITIC W/ LITTLE ROCK FRAGS.
270	270.9	6.0	7	10	14											
	268.4	8.5	5	8	9											
265	263.4	13.5	13	10	6									263.9	13.0	PINK, TAN, AND BLACK, SILTY SAND (A-2-4), SAPROLITIC W/ SOME ROCK FRAGS.
260	258.4	18.5	15	23	25											
255	253.4	23.5	33	67/0.4										253.9	23.0	WEATHERED ROCK PINK, GRANITE
250	248.4	28.5	22	25	23									249.9	27.0	RESIDUAL PINK AND BROWN, SILTY SAND (A-2-4), SAPROLITIC W/ LITTLE ROCK FRAGS.
														246.9	30.0	Boring Terminated at Elevation 246.9 ft In RESIDUAL (A-2-4)

NCDOT BORE DOUBLE P5720\_GEO\_GINT.GPJ NC\_DOT.GDT 2/5/19

# GEOTECHNICAL BORING REPORT

## BORE LOG

WBS 46932.1.1		TIP P-5720		COUNTY WAKE		GEOLOGIST Lane, R.W.											
SITE DESCRIPTION PROPOSED GRADE-SEPARATION OF DURANT RD (SR 2006) OVER CSX S LINE RAILROAD IN RALEIGH							GROUND WTR (ft)										
BORING NO. RW1-2		STATION 22+50		OFFSET 43 ft LT		ALIGNMENT -L-											
COLLAR ELEV. 274.7 ft		TOTAL DEPTH 30.0 ft		NORTHING 782,166		EASTING 2,126,728											
DRILL RIGHAMMER EFF./DATE BRI7893 CME-550 90%06/06/2017			DRILL METHOD H.S. Augers			HAMMER TYPE Automatic											
DRILLER Blackley, D.		START DATE 11/29/17		COMP. DATE 11/29/17		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							
275														274.7	0.0	0.2' TOPSOIL	
	273.7	1.0	6	4	3									271.7	3.0	ROADWAY EMBANKMENT BROWN, CLAYEY SAND (A-2-6)	
	271.2	3.5	3	4	10									269.2	5.5	GRAY, SANDY CLAY (A-6)	
270														261.7	13.0	RESIDUAL TAN, ORANGE, PINK, AND WHITE, SILTY SAND (A-2-4), SAPROLITIC W/ SOME ROCK FRAGS.	
	268.7	6.0	11	8	4									260.2	14.5	BROWN, SANDY SILT (A-4), SAPROLITIC PINK, TAN, WHITE, AND BROWN, SILTY SAND (A-2-4), SAPROLITIC W/ LITTLE ROCK FRAGS.	
	266.2	8.5	12	24	40												
265																	
	261.2	13.5	4	5	23												
260																	
	256.2	18.5	5	5	19												
255																	
	251.2	23.5	6	14	35												
250																	
	246.2	28.5	69	19	14												
245																	
Boring Terminated at Elevation 244.7 ft In RESIDUAL (A-2-4)																	

WBS 46932.1.1		TIP P-5720		COUNTY WAKE		GEOLOGIST Lane, R.W.											
SITE DESCRIPTION PROPOSED GRADE-SEPARATION OF DURANT RD (SR 2006) OVER CSX S LINE RAILROAD IN RALEIGH							GROUND WTR (ft)										
BORING NO. RW1-3		STATION 23+00		OFFSET 43 ft LT		ALIGNMENT -L-											
COLLAR ELEV. 274.3 ft		TOTAL DEPTH 30.0 ft		NORTHING 782,154		EASTING 2,126,777											
DRILL RIGHAMMER EFF./DATE BRI7893 CME-550 90%06/06/2017			DRILL METHOD H.S. Augers			HAMMER TYPE Automatic											
DRILLER Blackley, D.		START DATE 11/28/17		COMP. DATE 11/28/17		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							
275														274.3	0.0	0.3' BITUMINOUS CONCRETE 1.6' BASE COURSE AGGREGATE	
	272.3	2.0	4	3	3									270.8	3.5	ROADWAY EMBANKMENT TAN, CLAYEY SAND (A-2-6)	
270														268.3	6.0	RESIDUAL PINK, BROWN, WHITE, BLuish-GRAY, AND TAN, SILTY SAND (A-2-4), SAPROLITIC W/ SOME ROCK FRAGS.	
	268.3	6.0	12	19	22									265.8	8.5		
265														260.8	13.5		
	260.8	13.5	10	15	21									255.8	18.5		
260														250.8	23.5		
	255.8	18.5	7	8	10									245.8	28.5		
255																	
	250.8	23.5	8	9	13												
250																	
	245.8	28.5	7	13	15												
245																	
Boring Terminated at Elevation 244.3 ft In RESIDUAL (A-2-4)																	

NCDOT BORE DOUBLE P5720\_GEO\_GINT.GPJ NC\_DOT.GDT 2/5/19

# GEOTECHNICAL BORING REPORT

## BORE LOG

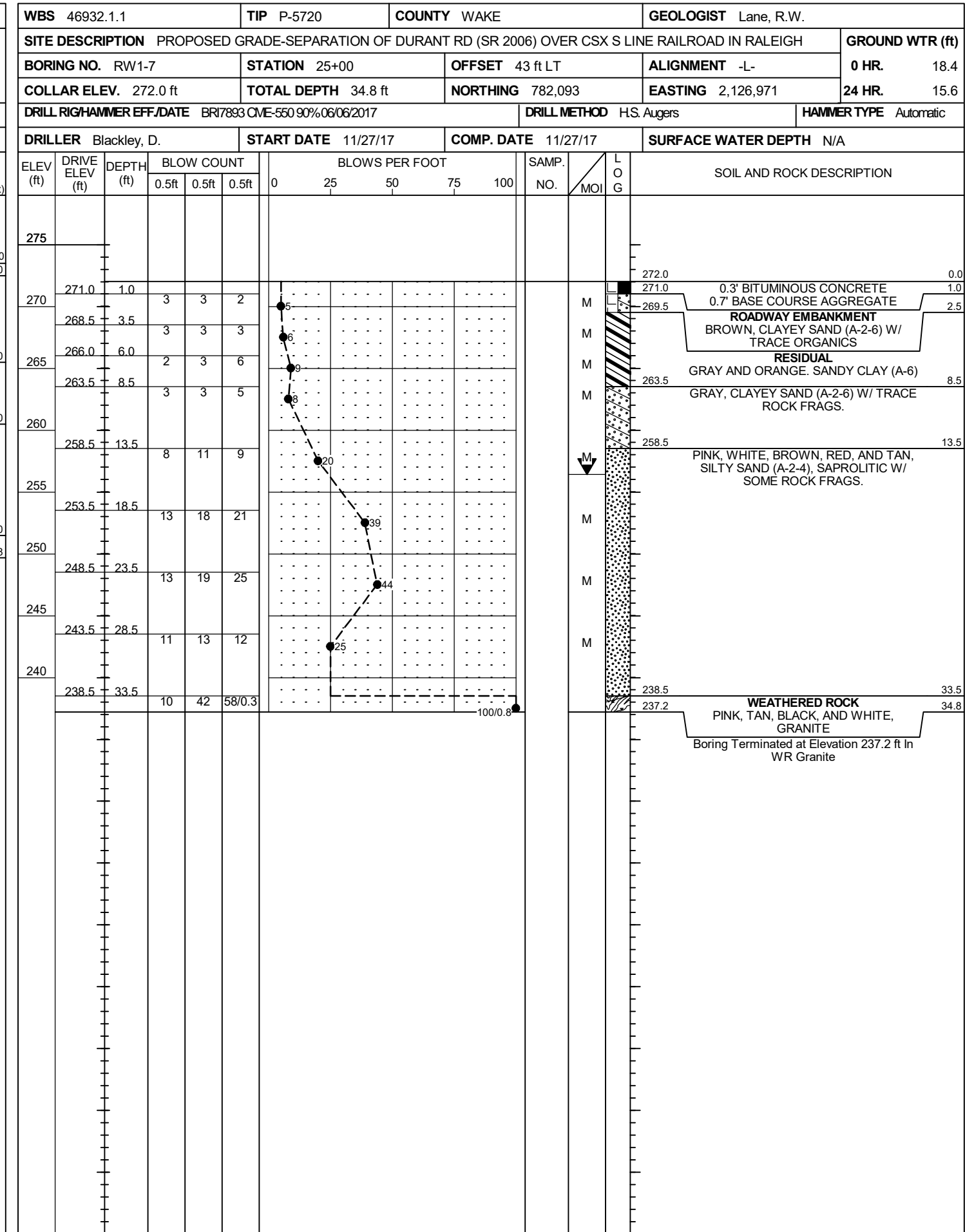
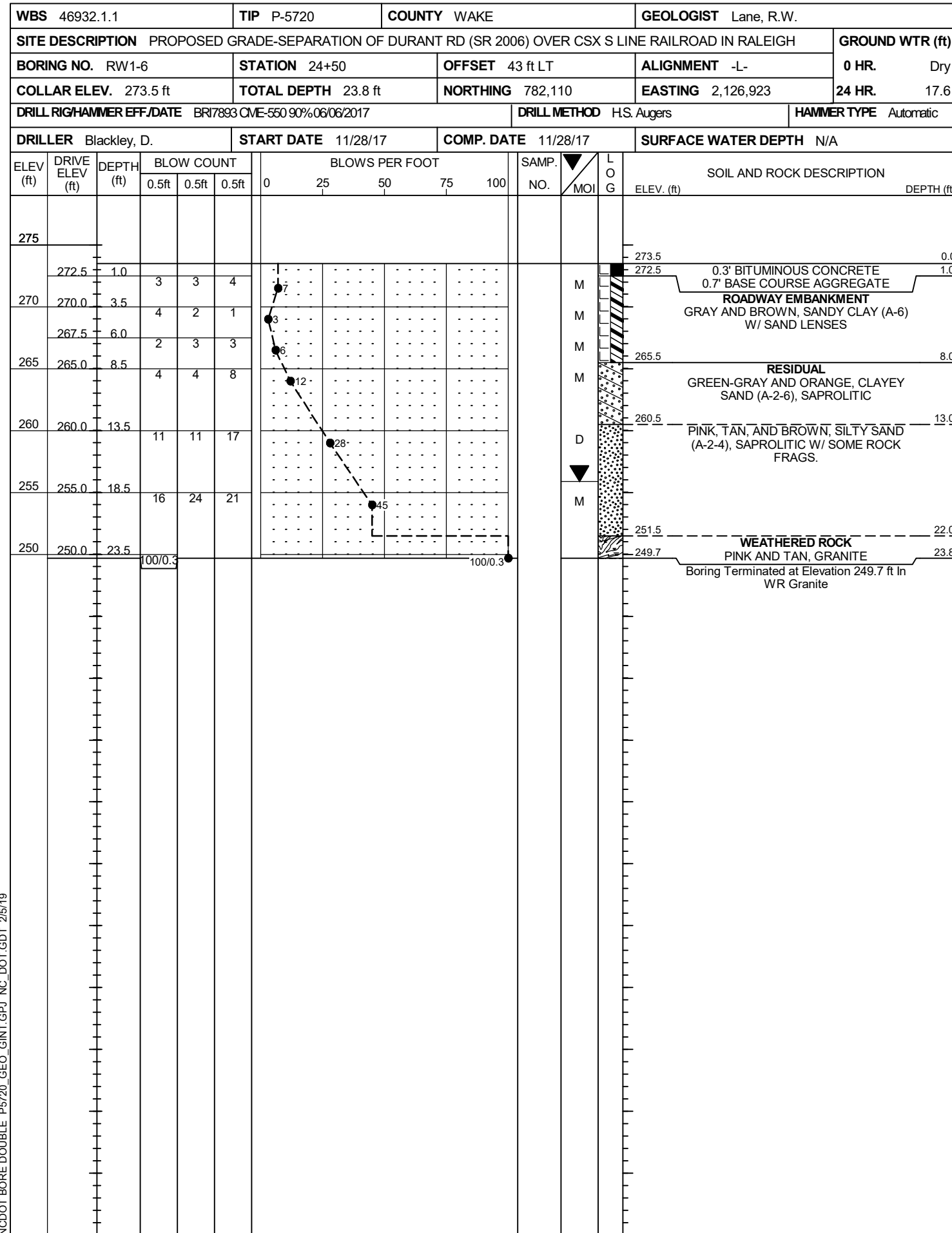
WBS 46932.1.1		TIP P-5720		COUNTY WAKE		GEOLOGIST Lane, R.W.										
SITE DESCRIPTION PROPOSED GRADE-SEPARATION OF DURANT RD (SR 2006) OVER CSX S LINE RAILROAD IN RALEIGH							GROUND WTR (ft)									
BORING NO. RW1-4		STATION 23+50		OFFSET 43 ft LT		ALIGNMENT -L-										
COLLAR ELEV. 274.2 ft		TOTAL DEPTH 14.3 ft		NORTHING 782,140		EASTING 2,126,826										
DRILL RIGHAMMER EFF./DATE BRI7893 CME-550 90%06/06/2017				DRILL METHOD H.S. Augers		HAMMER TYPE Automatic										
DRILLER Blackley, D.		START DATE 11/28/17		COMP. DATE 11/28/17		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						
275																
	273.2	1.0	3	4	3									0.2' BITUMINOUS CONCRETE 0.5' BASE COURSE AGGREGATE"	0.0	
	270.7	3.5	1	1	1									ROADWAY EMBANKMENT BROWN, SANDY SILT (A-4), MICACEOUS	5.0	
	267.2	7.0												BROWN, SILTY SAND (A-2-4) MICACEOUS	7.0	
	265.7	8.5	6	19	44									RESIDUAL GRAY AND TAN, SILTY SAND (A-2-4), SAPROLITIC	8.5	
	260.7	13.5	44	56/0.3										WEATHERED ROCK GRAY AND TAN, GRANITE	14.3	
Boring Terminated at Elevation 259.9 ft In WR Granite																
Other Samples: ST-1 (5.0 - 7.0)																

WBS 46932.1.1		TIP P-5720		COUNTY WAKE		GEOLOGIST Lane, R.W.										
SITE DESCRIPTION PROPOSED GRADE-SEPARATION OF DURANT RD (SR 2006) OVER CSX S LINE RAILROAD IN RALEIGH							GROUND WTR (ft)									
BORING NO. RW1-5		STATION 24+00		OFFSET 43 ft LT		ALIGNMENT -L-										
COLLAR ELEV. 274.3 ft		TOTAL DEPTH 19.8 ft		NORTHING 782,125		EASTING 2,126,874										
DRILL RIGHAMMER EFF./DATE BRI7893 CME-550 90%06/06/2017				DRILL METHOD H.S. Augers		HAMMER TYPE Automatic										
DRILLER Blackley, D.		START DATE 11/28/17		COMP. DATE 11/28/17		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						
275																
	273.3	1.0	2	3	2									0.2' BITUMINOUS CONCRETE 0.3' BASE COURSE AGGREGATE	0.0	
	270.8	3.5	2	2	2									ROADWAY EMBANKMENT ORANGE, GRAY, AND BROWN, CLAY (A-7-5), MICACEOUS W/ SAND LENSES	5.0	
	268.3	6.0	WOH	2	3									RESIDUAL GRAY, SANDY CLAY (A-6)	8.0	
	265.8	8.5	3	15	22									PINK, TAN, WHITE, AND GRAY, SILTY SAND (A-2-4), SAPROLITIC W/ SOME ROCK FRAGS.	9.0	
	260.8	13.5	20	28	48									WEATHERED ROCK RED ORANGE AND TAN, GRANITE	18.5	
	255.8	18.5	44	55	45/0.3									Boring Terminated at Elevation 254.5 ft In WR Granite	19.8	

NCDOT BORE DOUBLE P5720\_GEO\_GINT.GPJ NC\_DOT.GDT 2/5/19

# GEOTECHNICAL BORING REPORT

## BORE LOG



NCDOT BORE DOUBLE P5720\_GEO\_GINT.GPJ NC\_DOT.GDT 2/5/19

# GEOTECHNICAL BORING REPORT

## BORE LOG

WBS 46932.1.1		TIP P-5720		COUNTY WAKE		GEOLOGIST Lane, R.W.										
SITE DESCRIPTION PROPOSED GRADE-SEPARATION OF DURANT RD (SR 2006) OVER CSX S LINE RAILROAD IN RALEIGH							GROUND WTR (ft)									
BORING NO. RW1-8		STATION 25+50		OFFSET 43 ft LT		ALIGNMENT -L-										
COLLAR ELEV. 271.3 ft		TOTAL DEPTH 39.4 ft		NORTHING 782,075		EASTING 2,127,018										
DRILL RIGHAMMER EFF./DATE BRI7893 CME-550 90%06/06/2017				DRILL METHOD H.S. Augers		HAMMER TYPE Automatic										
DRILLER Blackley, D.		START DATE 11/27/17		COMP. DATE 11/27/17		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	DEPTH (ft)	
			0.5ft	0.5ft	0.5ft	0	25	50	75	100						
275																
270	270.3	1.0	8	5	6										271.3	0.0
	267.8	3.5	5	6	9										270.8	0.5
265	265.3	6.0	5	6	7										268.3	3.0
	262.8	8.5	3	4	4											
260																
	257.8	13.5	2	5	9										258.3	13.0
255																
	252.8	18.5	6	12	16											
250																
	247.8	23.5	8	13	10											
245																
	242.8	28.5	17	21	24											
240																
	237.8	33.5	19	24	27											
235																
	232.8	38.5	50	50/0.4											232.8	38.5
															231.9	39.4

WBS 46932.1.1		TIP P-5720		COUNTY WAKE		GEOLOGIST Lane, R.W.										
SITE DESCRIPTION PROPOSED GRADE-SEPARATION OF DURANT RD (SR 2006) OVER CSX S LINE RAILROAD IN RALEIGH							GROUND WTR (ft)									
BORING NO. RW2-1		STATION 12+99		OFFSET 31 ft RT		ALIGNMENT -Y3-										
COLLAR ELEV. 279.4 ft		TOTAL DEPTH 8.9 ft		NORTHING 781,656		EASTING 2,127,213										
DRILL RIGHAMMER EFF./DATE BRI7893 CME-550 90%06/06/2017				DRILL METHOD H.S. Augers		HAMMER TYPE Automatic										
DRILLER Blackley, D.		START DATE 12/07/17		COMP. DATE 12/07/17		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	DEPTH (ft)	
			0.5ft	0.5ft	0.5ft	0	25	50	75	100						
280																
	278.4	1.0	7	8	20										279.4	0.0
	275.9	3.5	81	19/0.1											278.4	1.0
275															276.4	3.0
	273.4	6.0	90	10/0.1												
	270.9	8.5	100/0.4												270.5	8.9

NCDOT BORE DOUBLE P5720\_GEO\_GINT.GPJ NC\_DOT.GDT 2/5/19

# GEOTECHNICAL BORING REPORT

## BORE LOG

<b>WBS</b> 46932.1.1		<b>TIP</b> P-5720		<b>COUNTY</b> WAKE		<b>GEOLOGIST</b> Lane, R.W.	
<b>SITE DESCRIPTION</b> PROPOSED GRADE-SEPARATION OF DURANT RD (SR 2006) OVER CSX S LINE RAILROAD IN RALEIGH							<b>GROUND WTR (ft)</b>
<b>BORING NO.</b> RW2-2B		<b>STATION</b> 13+67		<b>OFFSET</b> 43 ft RT		<b>ALIGNMENT</b> -Y3-	
<b>COLLAR ELEV.</b> 278.9 ft		<b>TOTAL DEPTH</b> 29.1 ft		<b>NORTHING</b> 781,714		<b>EASTING</b> 2,127,252	
<b>DRILL RIGHAMMER EFF./DATE</b> BRI7893 CME-550 90%06/06/2017			<b>DRILL METHOD</b> H.S. Augers			<b>HAMMER TYPE</b> Automatic	
<b>DRILLER</b> Blackley, D.		<b>START DATE</b> 12/08/17		<b>COMP. DATE</b> 12/08/17		<b>SURFACE WATER DEPTH</b> N/A	

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT					SAMP. NO.	LOG MOI	LOG G	SOIL AND ROCK DESCRIPTION	ELEV. (ft)	DEPTH (ft)
			0.5ft	0.5ft	0.5ft	0	25	50	75	100						
280															278.9	0.0
	277.4	1.5														
	275.4	3.5	8	9	13											
	272.9	6.0	5	6	9											
	270.4	8.5	6	10	16											
	265.4	13.5	3	5	13											
	260.4	18.5	10	8	16											
	255.4	23.5	19	13	10											
	250.4	28.5	18	7	8											
			66	34/0.1											250.9	28.0
															249.8	29.1

<b>WBS</b> 46932.1.1		<b>TIP</b> P-5720		<b>COUNTY</b> WAKE		<b>GEOLOGIST</b> Lane, R.W.	
<b>SITE DESCRIPTION</b> PROPOSED GRADE-SEPARATION OF DURANT RD (SR 2006) OVER CSX S LINE RAILROAD IN RALEIGH							<b>GROUND WTR (ft)</b>
<b>BORING NO.</b> RW2-3		<b>STATION</b> 14+14		<b>OFFSET</b> 43 ft RT		<b>ALIGNMENT</b> -Y3-	
<b>COLLAR ELEV.</b> 276.6 ft		<b>TOTAL DEPTH</b> 40.0 ft		<b>NORTHING</b> 781,756		<b>EASTING</b> 2,127,272	
<b>DRILL RIGHAMMER EFF./DATE</b> BRI7893 CME-550 90%06/06/2017			<b>DRILL METHOD</b> H.S. Augers			<b>HAMMER TYPE</b> Automatic	
<b>DRILLER</b> Blackley, D.		<b>START DATE</b> 12/11/17		<b>COMP. DATE</b> 12/11/17		<b>SURFACE WATER DEPTH</b> N/A	

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT					SAMP. NO.	LOG MOI	LOG G	SOIL AND ROCK DESCRIPTION	ELEV. (ft)	DEPTH (ft)
			0.5ft	0.5ft	0.5ft	0	25	50	75	100						
280															276.6	0.0
	274.6	2.0														
	273.1	3.5	8	17	22											
	270.6	6.0	18	21	23											
	268.1	8.5	10	13	14											
	263.1	13.5	7	9	11											
	258.1	18.5	7	12	20											
	253.1	23.5	11	18	20											
	248.1	28.5	8	8	9											
	243.1	33.5	15	18	20											
	238.1	38.5	10	17	20											
			15	23	31											

NCDOT BORE DOUBLE P5720\_GEO\_GINT.GPJ NC\_DOT.GDT 2/5/19

# GEOTECHNICAL BORING REPORT

## BORE LOG

WBS 46932.1.1		TIP P-5720		COUNTY WAKE		GEOLOGIST Lane, R.W.										
SITE DESCRIPTION PROPOSED GRADE-SEPARATION OF DURANT RD (SR 2006) OVER CSX S LINE RAILROAD IN RALEIGH							GROUND WTR (ft)									
BORING NO. RW2-4		STATION 14+46		OFFSET 12 ft RT		ALIGNMENT -Y3-										
COLLAR ELEV. 275.1 ft		TOTAL DEPTH 50.0 ft		NORTHING 781,798		EASTING 2,127,257										
DRILL RIGHAMMER EFF./DATE BRI7893 CME-550 90%06/06/2017				DRILL METHOD H.S. Augers		HAMMER TYPE Automatic										
DRILLER Blackley, D.		START DATE 12/11/17		COMP. DATE 12/11/17		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)		
280																
275														275.1	0.0	
273.1	273.1	2.0	3	3	6									273.1	2.0	1.0' BITUMINOUS CONCRETE
271.6	271.6	3.5	15	25	33									271.6	3.5	1.0' BASE COURSE AGGREGATE
270																<b>RESIDUAL</b>
269.1	269.1	6.0	11	15	17											GRAY, BROWN, AND WHITE, CLAY (A-7-6) W/ SOME ROCK FRAGS.
266.6	266.6	8.5	3	7	12											TAN, SILTY SAND (A-2-4), SAPROLITIC W/ LITTLE QUARTZ FRAGS.
265																
261.6	261.6	13.5	6	7	11											TAN, SILTY SAND (A-2-6), SAPROLITIC
260																
256.6	256.6	18.5	11	27	49											
255																
251.6	251.6	23.5	7	13	18											
250																
246.6	246.6	28.5	6	9	18											
245																
241.6	241.6	33.5	15	18	19											
240																
236.6	236.6	38.5	11	21	38											
235																
231.6	231.6	43.5	18	33	39											
230																
226.6	226.6	48.5	13	21	23											
														225.1	50.0	Boring Terminated at Elevation 225.1 ft In RESIDUAL (A-2-4)

NCDOT BORE DOUBLE P5720\_GEO\_GINT.GPJ NC\_DOT.GDT 2/5/19