

REFERENCE: B-4593

PROJECT: 38422

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

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	B-4593	1	9

**STRUCTURE**  
**SUBSURFACE INVESTIGATION**

COUNTY PAMLICO  
PROJECT DESCRIPTION BRIDGE NO. 38 ON -L- (NC 55)  
OVER TRENT CREEK

**CONTENTS**

SHEET NO.	DESCRIPTION
1	TITLE SHEET
2	LEGEND (SOIL & ROCK)
3	SITE PLAN
4-5	PROFILES
6-9	BORE LOGS

**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.

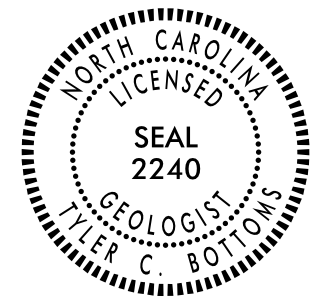
THE BIDDER OR CONTRACTOR IS CAUTIONED THAT DETAILS SHOWN ON THE SUBSURFACE PLANS ARE PRELIMINARY ONLY AND IN MANY CASES THE FINAL DESIGN DETAILS ARE DIFFERENT. FOR BIDDING AND CONSTRUCTION PURPOSES, REFER TO THE CONSTRUCTION PLANS AND DOCUMENTS FOR FINAL DESIGN INFORMATION ON THIS PROJECT. THE DEPARTMENT 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

C.J. CORNETTE  
S.N. ZIMARINO  
R.E. SMITH  
J.M. EDMONDSON

INVESTIGATED BY T.C. BOTTOMS  
DRAWN BY T.C. BOTTOMS  
CHECKED BY D.N. ARGENBRIGHT  
SUBMITTED BY D.N. ARGENBRIGHT  
DATE JUNE 2018



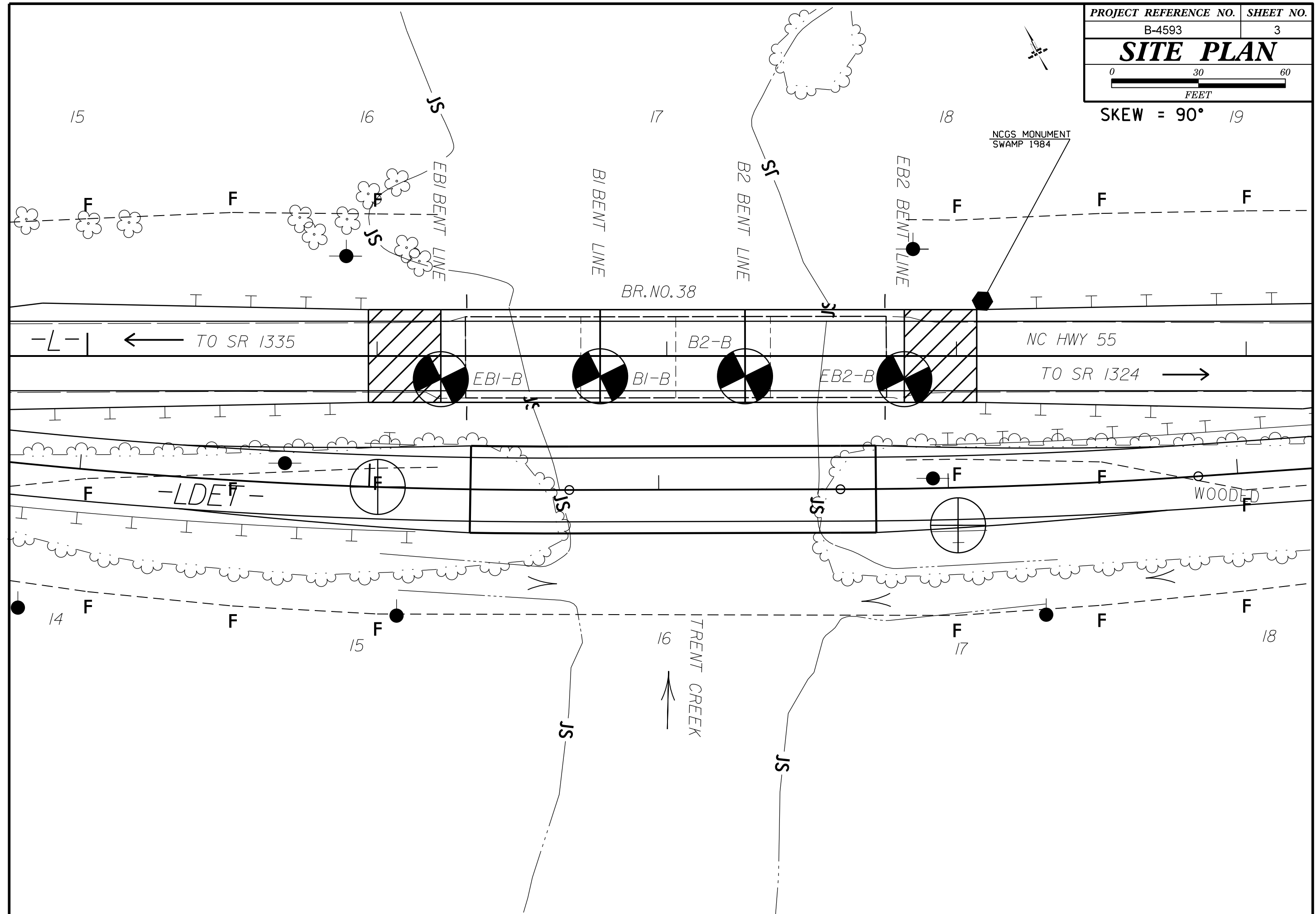
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Tyler C. Bottoms 10/10/2018  
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**DOCUMENT NOT CONSIDERED FINAL  
UNLESS ALL SIGNATURES COMPLETED**

**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 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, VERY STIFF, GRAY, SILTY CLAY, MOIST WITH INTERBEDDED FINE SAND LAYERS, HIGHLY PLASTIC, A-7-6										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 (RQD) - 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 (SRQD) - 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>COMPRESSION</b>										<b>COASTAL PLAIN SEDIMENTARY ROCK (CP)</b>										<b>COASTAL PLAIN SEDIMENTS CEMENTED INTO ROCK, BUT MAY NOT YIELD SPT REFUSAL. ROCK TYPE INCLUDES LIMESTONE, SANDSTONE, CEMENTED SHELL BEDS, ETC.</b>										<b>WEATHERING</b>																													
<b>PERCENTAGE OF MATERIAL</b>										<b>FRESH</b>										<b>ROCK FRESH, CRYSTALS BRIGHT, FEW JOINTS MAY SHOW SLIGHT STAINING. ROCK RINGS UNDER HAMMER IF CRYSTALLINE.</b>										<b>VERY SLIGHT (V SL.)</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>GROUND WATER</b>										<b>SLIGHT (SL)</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>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>MISCELLANEOUS SYMBOLS</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>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>RECOMMENDATION SYMBOLS</b>										<b>VERY SEVERE (V SEV.)</b>										<b>ALL ROCK EXCEPT QUARTZ DISCOLORED OR STAINED. ROCK FABRIC ELEMENTS ARE DISCERNIBLE BUT MASS IS EFFECTIVELY REDUCED TO SOIL STATUS, WITH ONLY FRAGMENTS OF STRONG ROCK REMAINING. SAPROLITE IS AN EXAMPLE OF ROCK WEATHERED TO A DEGREE THAT ONLY MINOR VESTIGES OF ORIGINAL ROCK FABRIC REMAIN. IF TESTED, WOULD YIELD SPT N VALUES &lt; 100 BPF</b>										<b>COMPLETE</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>ABBREVIATIONS</b>										<b>ROCK HARDNESS</b>										<b>VERY 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>SOIL MOISTURE - CORRELATION OF TERMS</b>										<b>HARD</b>										<b>CAN BE SCRATCHED BY KNIFE OR PICK ONLY WITH DIFFICULTY. HARD HAMMER BLOWS REQUIRED TO DETACH HAND SPECIMEN.</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>PLASTICITY</b>										<b>MEDIUM HARD</b>										<b>CAN BE GROVED 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>SOFT</b>										<b>CAN BE GROVED 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>COLOR</b>										<b>VERY SOFT</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>FRACTURE SPACING</b>										<b>BEDDING</b>																			
<b>EQUIPMENT USED ON SUBJECT PROJECT</b>										<b>INDURATION</b>										<b>FOR SEDIMENTARY ROCKS, INDURATION IS THE HARDENING OF MATERIAL BY CEMENTING, HEAT, PRESSURE, ETC.</b>										<b>FRIABLE</b>										<b>RUBBING WITH FINGER FREES NUMEROUS GRAINS; GENTLE BLOW BY HAMMER DISINTEGRATES SAMPLE.</b>																			
<b>DRILL UNITS:</b>										<b>MODERATELY INDURATED</b>										<b>GRAINS CAN BE SEPARATED FROM SAMPLE WITH STEEL PROBE; BREAKS EASILY WHEN HIT WITH HAMMER.</b>										<b>INDURATED</b>										<b>GRAINS ARE DIFFICULT TO SEPARATE WITH STEEL PROBE; DIFFICULT TO BREAK WITH HAMMER.</b>																			
<b>ADVANCING TOOLS:</b>										<b>EXTREMELY INDURATED</b>										<b>SHARP HAMMER BLOWS REQUIRED TO BREAK SAMPLE; SAMPLE BREAKS ACROSS GRAINS.</b>										<b>NOTES:</b>																													
<b>CLAY BITS</b>										<b>HAZARD SYMBOLS</b>										<b>UNDERCUT</b>										<b>UNCLASSIFIED EXCAVATION - UNSUITABLE WASTE</b>										<b>UNCLASSIFIED EXCAVATION - ACCEPTABLE DEGRADABLE ROCK</b>										<b>UNCLASSIFIED EXCAVATION - ACCEPTABLE, BUT NOT TO BE USED IN THE TOP 3 FEET OF EMBANKMENT OR BACKFILL</b>									
<b>6" CONTINUOUS FLIGHT AUGER</b>										<b>HAZARD SYMBOLS</b>										<b>SHALLOW UNDERCUT</b>										<b>UNCLASSIFIED EXCAVATION - ACCEPTABLE DEGRADABLE ROCK</b>										<b>UNCLASSIFIED EXCAVATION - ACCEPTABLE, BUT NOT TO BE USED IN THE TOP 3 FEET OF EMBANKMENT OR BACKFILL</b>																			
<b>8" HOLLOW AUGERS</b>										<b>HAZARD SYMBOLS</b>										<b>UNDERCUT</b>										<b>UNCLASSIFIED EXCAVATION - UNSUITABLE WASTE</b>										<b>UNCLASSIFIED EXCAVATION - ACCEPTABLE DEGRADABLE ROCK</b>										<b>UNCLASSIFIED EXCAVATION - ACCEPTABLE, BUT NOT TO BE USED IN THE TOP 3 FEET OF EMBANKMENT OR BACKFILL</b>									
<b>HARD FACED FINGER BITS</b>										<b>HAZARD SYMBOLS</b>										<b>UNDERCUT</b>										<b>UNCLASSIFIED EXCAVATION - UNSUITABLE WASTE</b>										<b>UNCLASSIFIED EXCAVATION - ACCEPTABLE DEGRADABLE ROCK</b>										<b>UNCLASSIFIED EXCAVATION - ACCEPTABLE, BUT NOT TO BE USED IN THE TOP 3 FEET OF EMBANKMENT OR BACKFILL</b>									
<b>TUNG.-CARBIDE INSERTS</b>										<b>HAZARD SYMBOLS</b>										<b>UNDERCUT</b>										<b>UNCLASSIFIED EXCAVATION - UNSUITABLE WASTE</b>										<b>UNCLASSIFIED EXCAVATION - ACCEPTABLE DEGRADABLE ROCK</b>										<b>UNCLASSIFIED EXCAVATION - ACCEPTABLE, BUT NOT TO BE USED IN THE TOP 3 FEET OF EMBANKMENT OR BACKFILL</b>									
<b>CASING W/ ADVANCER</b>										<b>HAZARD SYMBOLS</b>										<b>UNDERCUT</b>										<b>UNCLASSIFIED EXCAVATION - UNSUITABLE WASTE</b>										<b>UNCLASSIFIED EXCAVATION - ACCEPTABLE DEGRADABLE ROCK</b>										<b>UNCLASSIFIED EXCAVATION - ACCEPTABLE, BUT NOT TO BE USED IN THE TOP 3 FEET OF EMBANKMENT OR BACKFILL</b>									
<b>TRICONE 2 1/8" STEEL TEETH</b>										<b>HAZARD SYMBOLS</b>										<b>UNDERCUT</b>										<b>UNCLASSIFIED EXCAVATION - UNSUITABLE WASTE</b>										<b>UNCLASSIFIED EXCAVATION - ACCEPTABLE DEGRADABLE ROCK</b>										<b>UNCLASSIFIED EXCAVATION - ACCEPTABLE, BUT NOT TO BE USED IN THE TOP 3 FEET OF EMBANKMENT OR BACKFILL</b>									
<b>TRICONE TUNG.-CARB.</b>										<b>HAZARD SYMBOLS</b>										<b>UNDERCUT</b>										<b>UNCLASSIFIED EXCAVATION - UNSUITABLE WASTE</b>										<b>UNCLASSIFIED EXCAVATION - ACCEPTABLE DEGRADABLE ROCK</b>										<b>UNCLASSIFIED EXCAVATION - ACCEPTABLE, BUT NOT TO BE USED IN THE TOP 3 FEET OF EMBANKMENT OR BACKFILL</b>									
<b>CORE BIT</b>										<b>HAZARD SYMBOLS</b>										<b>UNDERCUT</b>										<b>UNCLASSIFIED EXCAVATION - UNSUITABLE WASTE</b>										<b>UNCLASSIFIED EXCAVATION - ACCEPTABLE DEGRADABLE ROCK</b>										<b>UNCLASSIFIED EXCAVATION - ACCEPTABLE, BUT NOT TO BE USED IN THE TOP 3 FEET OF EMBANKMENT OR BACKFILL</b>									
<b>HAZARD SYMBOLS</b>										<b>HAZARD SYMBOLS</b>										<b>UNDERCUT</b>										<b>UNCLASSIFIED EXCAVATION - UNSUITABLE WASTE</b>										<b>UNCLASSIFIED EXCAVATION - ACCEPTABLE DEGRADABLE ROCK</b>										<b>UNCLASSIFIED EXCAVATION - ACCEPTABLE, BUT NOT TO BE USED IN THE TOP 3 FEET OF EMBANKMENT OR BACKFILL</b>									
<b>POST HOLE DIGGER</b>										<b>HAZARD SYMBOLS</b>										<b>UNDERCUT</b>										<b>UNCLASSIFIED EXCAVATION - UNSUITABLE WASTE</b>										<b>UNCLASSIFIED EXCAVATION - ACCEPTABLE DEGRADABLE ROCK</b>										<b>UNCLASSIFIED EXCAVATION - ACCEPTABLE, BUT NOT TO BE USED IN THE TOP 3 FEET OF EMBANKMENT OR BACKFILL</b>									
<b>HAND AUGER</b>										<b>HAZARD SYMBOLS</b>										<b>UNDERCUT</b>										<b>UNCLASSIFIED EXCAVATION - UNSUITABLE WASTE</b>										<b>UNCLASSIFIED EXCAVATION - ACCEPTABLE DEGRADABLE ROCK</b>										<b>UNCLASSIFIED EXCAVATION - ACCEPTABLE, BUT NOT TO BE USED IN THE TOP 3 FEET OF EMBANKMENT OR BACKFILL</b>									
<b>SOUNDING ROD</b>										<b>HAZARD SYMBOLS</b>										<b>UNDERCUT</b>										<b>UNCLASSIFIED EXCAVATION - UNSUITABLE WASTE</b>										<b>UNCLASSIFIED EXCAVATION - ACCEPTABLE DEGRADABLE ROCK</b>										<b>UNCLASSIFIED EXCAVATION - ACCEPTABLE, BUT NOT TO BE USED IN THE TOP 3 FEET OF EMBANKMENT OR BACKFILL</b>									
<b>VANE SHEAR TEST</b>										<b>HAZARD SYMBOLS</b>										<b>UNDERCUT</b>										<b>UNCLASSIFIED EXCAVATION - UNSUITABLE WASTE</b>										<b>UNCLASSIFIED EXCAVATION - ACCEPTABLE DEGRADABLE ROCK</b>										<b>UNCLASSIFIED EXCAVATION - ACCEPTABLE, BUT NOT TO BE USED IN THE TOP 3 FEET OF EMBANKMENT OR BACKFILL</b>									
<b>PUSH PROBE</b>										<b>HAZARD SYMBOLS</b>										<b>UNDERCUT</b>										<b>UNCLASSIFIED EXCAVATION - UNSUITABLE WASTE</b>										<b>UNCLASSIFIED EXCAVATION - ACCEPTABLE DEGRADABLE ROCK</b>										<b>UNCLASSIFIED EXCAVATION - ACCEPTABLE, BUT NOT TO BE USED IN THE TOP 3 FEET OF EMBANKMENT OR BACKFILL</b>									
<b>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.</b>										<b>HAZARD SYMBOLS</b>										<b>UNDERCUT</b>										<b>UNCLASSIFIED EXCAVATION - UNSUITABLE WASTE</b>										<b>UNCLASSIFIED EXCAVATION - ACCEPTABLE DEGRADABLE ROCK</b>										<b>UNCLASSIFIED EXCAVATION - ACCEPTABLE, BUT NOT TO BE USED IN THE TOP 3 FEET OF EMBANKMENT OR BACKFILL</b>									

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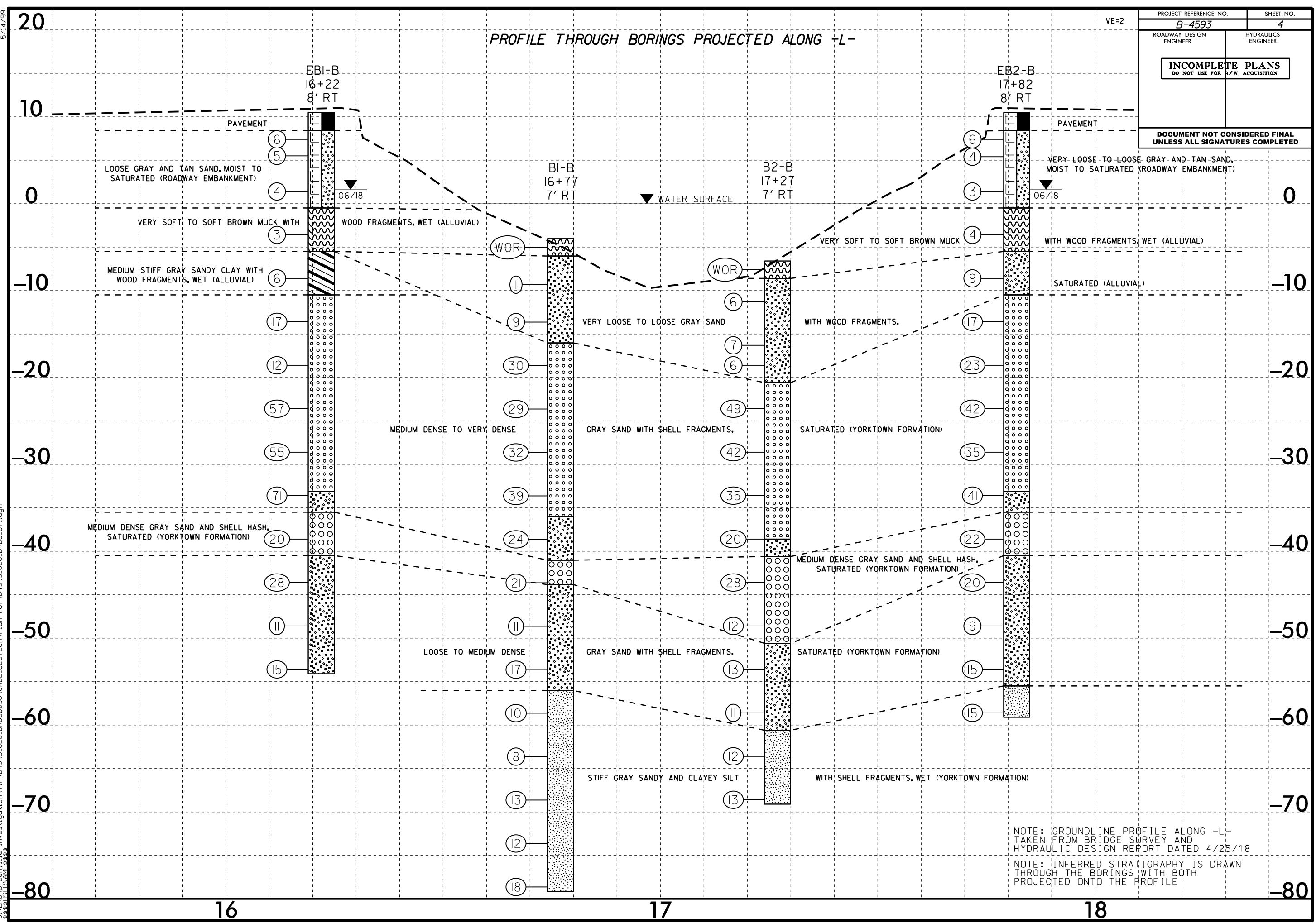


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VE=2

PROJECT REFERENCE NO. B-4593	SHEET NO. 4
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
<b>INCOMPLETE PLANS</b> DO NOT USE FOR R/W ACQUISITION	
<b>DOCUMENT NOT CONSIDERED FINAL</b> UNLESS ALL SIGNATURES COMPLETED	

PROFILE THROUGH BORINGS PROJECTED ALONG -L-



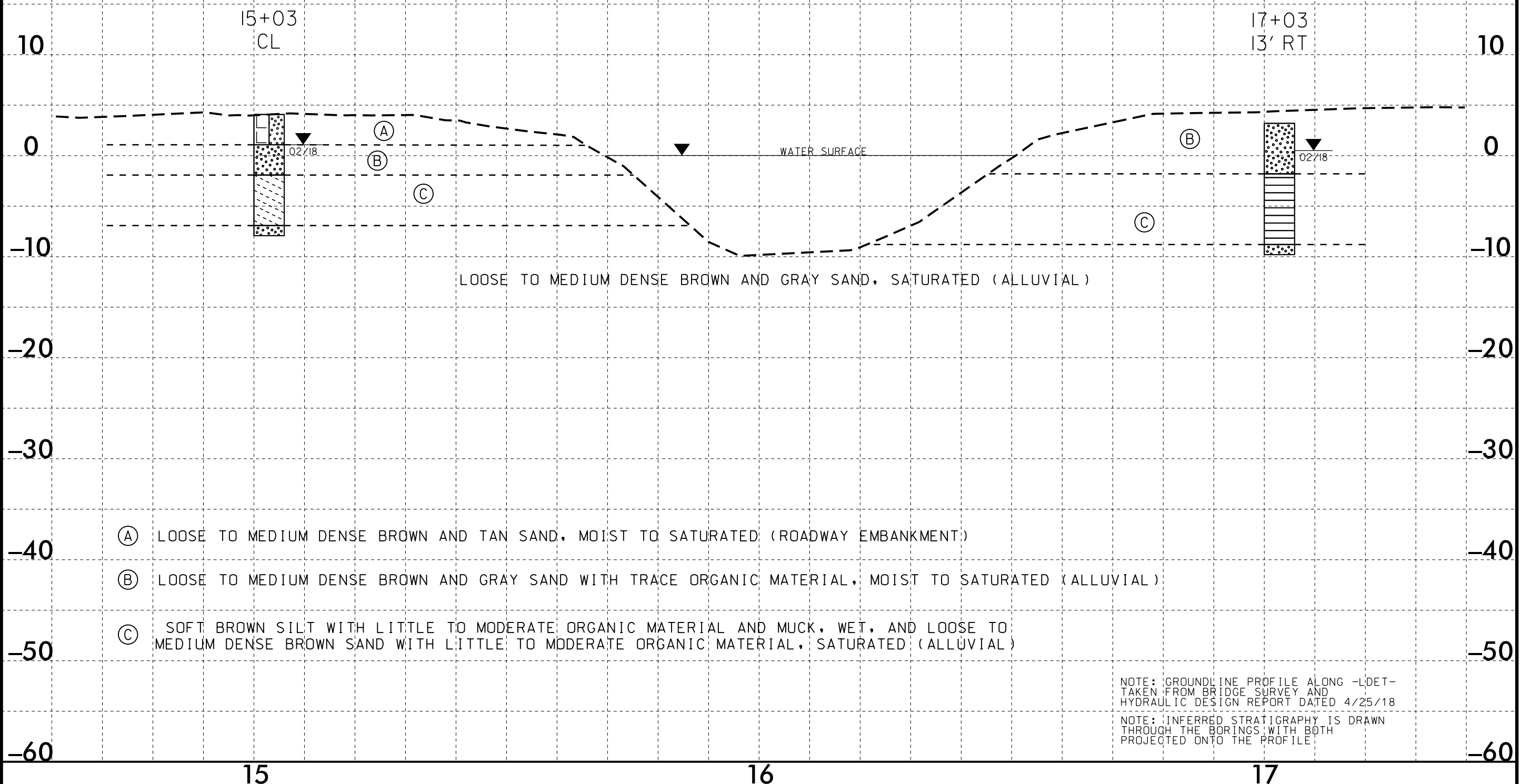
NOTE: GROUNDLINE PROFILE ALONG -L- TAKEN FROM BRIDGE SURVEY AND HYDRAULIC DESIGN REPORT DATED 4/25/18  
 NOTE: INFERRED STRATIGRAPHY IS DRAWN THROUGH THE BORINGS WITH BOTH PROJECTED ONTO THE PROFILE

5/14/99

VE=2

PROJECT REFERENCE NO. B-4593	SHEET NO. 5
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
<b>INCOMPLETE PLANS</b> DO NOT USE FOR R/W ACQUISITION	
<b>DOCUMENT NOT CONSIDERED FINAL</b> UNLESS ALL SIGNATURES COMPLETED	

PROFILE THROUGH BORINGS PROJECTED ALONG -LDET-



- (A) LOOSE TO MEDIUM DENSE BROWN AND TAN SAND, MOIST TO SATURATED (ROADWAY EMBANKMENT)
- (B) LOOSE TO MEDIUM DENSE BROWN AND GRAY SAND WITH TRACE ORGANIC MATERIAL, MOIST TO SATURATED (ALLUVIAL)
- (C) SOFT BROWN SILT WITH LITTLE TO MODERATE ORGANIC MATERIAL AND MUCK, WET, AND LOOSE TO MEDIUM DENSE BROWN SAND WITH LITTLE TO MODERATE ORGANIC MATERIAL, SATURATED (ALLUVIAL)

NOTE: GROUNDLINE PROFILE ALONG -LDET- TAKEN FROM BRIDGE SURVEY AND HYDRAULIC DESIGN REPORT DATED 4/25/18

NOTE: INFERRED STRATIGRAPHY IS DRAWN THROUGH THE BORINGS WITH BOTH PROJECTED ONTO THE PROFILE

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# GEOTECHNICAL BORING REPORT

## BORE LOG

WBS 38422.1.2		TIP B-4593		COUNTY PAMLICO		GEOLOGIST Zimarino, S. N.	
SITE DESCRIPTION BRIDGE NUMBER 38 ON -L- (NC 55) OVER TRENT CREEK							GROUND WTR (ft)
BORING NO. B2-B		STATION 17+27		OFFSET 7 ft RT		ALIGNMENT -L-	
COLLAR ELEV. -6.6 ft		TOTAL DEPTH 62.5 ft		NORTHING 500,744		EASTING 2,682,406	
DRILL RIG/HAMMER EFF./DATE GFO0075 CME-45C 84% 08/21/2017			DRILL METHOD Mud Rotary		HAMMER TYPE Automatic		
DRILLER Edmondson, J. M.		START DATE 06/06/18		COMP. DATE 06/06/18		SURFACE WATER DEPTH 7.2ft	

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					
5															
0															
-5															
-6.6	0.0														
-10	-10.3	3.7	2	2	4										
-15	-15.3	8.7	2	2	5										
-17.6	-11.0		1	2	4										
-20	-22.6	16.0	11	21	28										
-25	-27.6	21.0	9	19	23										
-30	-32.6	26.0	7	15	20										
-35	-37.6	31.0	8	8	12										
-40	-42.6	36.0	5	12	16										
-45	-47.6	41.0	5	5	7										
-50	-52.6	46.0	3	5	8										
-55	-57.6	51.0	4	5	6										
-60	-62.6	56.0	1	5	7										
-65	-67.6	61.0	3	5	8										

ELEV. (ft)	DEPTH (ft)	SOIL AND ROCK DESCRIPTION
		GROUND SURFACE 0.0
		ALLUVIAL BROWN MUCK, WET 2.0
		ALLUVIAL BROWN AND GRAY SAND, SATURATED
		COASTAL PLAIN GRAY SAND, SATURATED (YORKTOWN FORMATION) 14.0
		COASTAL PLAIN GRAY SAND AND SHELL HASH, SATURATED (YORKTOWN FORMATION) 34.0
		COASTAL PLAIN GRAY SILTY SAND, SATURATED (YORKTOWN FORMATION) 44.0
		COASTAL PLAIN GRAY SANDY SILT, WET (YORKTOWN FORMATION) 54.0
		Boring Terminated at Elevation -69.1 ft in Stiff Silt 62.5

WBS 38422.1.2		TIP B-4593		COUNTY PAMLICO		GEOLOGIST Zimarino, S. N.	
SITE DESCRIPTION BRIDGE NUMBER 38 ON -L- (NC 55) OVER TRENT CREEK							GROUND WTR (ft)
BORING NO. EB2-B		STATION 17+82		OFFSET 8 ft RT		ALIGNMENT -L-	
COLLAR ELEV. 10.5 ft		TOTAL DEPTH 69.6 ft		NORTHING 500,719		EASTING 2,682,455	
DRILL RIG/HAMMER EFF./DATE GFO0075 CME-45C 84% 08/21/2017			DRILL METHOD Mud Rotary		HAMMER TYPE Automatic		
DRILLER Edmondson, J. M.		START DATE 06/04/18		COMP. DATE 06/05/18		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				
15														
10														
8.4	2.1		3	2	4									
6.4	4.1		1	2	2									
5														
2.4	8.1		1	2	1									
0														
-2.6	13.1		2	2	2									
-5														
-7.6	18.1		2	7										
-10														
-12.6	23.1		6	8	9									
-15														
-17.6	28.1		7	8	15									
-20														
-22.6	33.1		11	18	24									
-25														
-27.6	38.1		9	15	20									
-30														
-32.6	43.1		11	17	24									
-35														
-37.6	48.1		3	7	15									
-40														
-42.6	53.1		11	9	11									
-45														
-47.6	58.1		3	4	5									
-50														
-52.6	63.1		4	6	9									
-55														
-57.6	68.1		5	6	9									

ELEV. (ft)	DEPTH (ft)	SOIL AND ROCK DESCRIPTION
		GROUND SURFACE 0.0
		PAVEMENT 2.1
		ROADWAY EMBANKMENT GRAY AND TAN SAND, MOIST TO SATURATED
		ALLUVIAL BROWN MUCK WITH WOOD FRAGMENTS, WET 11.0
		ALLUVIAL GRAY SAND WITH WOOD FRAGMENTS, SATURATED 16.0
		COASTAL PLAIN GRAY SAND, SATURATED (YORKTOWN FORMATION) 21.0
		COASTAL PLAIN GRAY SAND AND SHELL HASH, SATURATED (YORKTOWN FORMATION) 43.6
		COASTAL PLAIN GRAY SAND AND SHELL HASH, SATURATED (YORKTOWN FORMATION) 46.0
		COASTAL PLAIN GRAY SAND AND SILTY SAND WITH SHELL FRAGMENTS, SATURATED (YORKTOWN FORMATION) 51.0
		COASTAL PLAIN GRAY SANDY SILT WITH SHELL FRAGMENTS, WET (YORKTOWN FORMATION) 66.0
		Boring Terminated at Elevation -59.1 ft in Very Stiff Silt 69.6

NCDOT BORE DOUBLE B4593\_GEO\_BRDG0038.GPJ NC\_DOT.GDT 6/14/18



# GEOTECHNICAL BORING REPORT

## BORE LOG

WBS 38422.1.2		TIP B-4593		COUNTY PAMLICO		GEOLOGIST Zimarino, S. N.								
SITE DESCRIPTION BRIDGE NUMBER 38 ON -L- (NC 55) OVER TRENT CREEK							GROUND WTR (ft)							
BORING NO. 15+03		STATION 15+03		OFFSET CL		ALIGNMENT -LDET-								
COLLAR ELEV. 4.0 ft		TOTAL DEPTH 12.0 ft		NORTHING 500,766		EASTING 2,682,276								
DRILL RIG/HAMMER EFF./DATE N/A		DRILL METHOD Hand Auger		HAMMER TYPE N/A										
DRILLER Edmondson, J. M.		START DATE 02/19/18		COMP. DATE 02/19/18		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)
5														4.0 GROUND SURFACE 0.0
														ROADWAY EMBANKMENT LOOSE TO MEDIUM DENSE BROWN AND TAN SAND, MOIST TO SATURATED 1.0 -3.0
0														ALLUVIAL LOOSE TO MEDIUM DENSE BROWN AND GRAY SAND WITH TRACE ORGANIC MATERIAL, MOIST TO SATURATED -2.0 -6.0
-5														LOOSE TO MEDIUM DENSE BROWN SAND WITH LITTLE TO MODERATE ORGANIC MATERIAL, SATURATED -7.0 -11.0
														LOOSE TO MEDIUM DENSE BROWN AND GRAY SAND, SATURATED -8.0 -12.0 Boring Terminated at Elevation -8.0 ft in Loose Sand

WBS 38422.1.2		TIP B-4593		COUNTY PAMLICO		GEOLOGIST Zimarino, S. N.								
SITE DESCRIPTION BRIDGE NUMBER 38 ON -L- (NC 55) OVER TRENT CREEK							GROUND WTR (ft)							
BORING NO. 17+03		STATION 17+03		OFFSET 13 ft RT		ALIGNMENT -LDET-								
COLLAR ELEV. 3.2 ft		TOTAL DEPTH 13.0 ft		NORTHING 500,667		EASTING 2,682,450								
DRILL RIG/HAMMER EFF./DATE N/A		DRILL METHOD Hand Auger		HAMMER TYPE N/A										
DRILLER Edmondson, J. M.		START DATE 02/19/18		COMP. DATE 02/19/18		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)
5														3.2 GROUND SURFACE 0.0
														ALLUVIAL LOOSE TO MEDIUM DENSE BROWN AND GRAY SAND WITH TRACE ORGANIC MATERIAL, MOIST TO SATURATED -1.8 -5.0
0														SOFT BROWN SILT WITH LITTLE TO MODERATE ORGANIC MATERIAL, WET
-5														LOOSE TO MEDIUM DENSE BROWN AND GRAY SAND, SATURATED -8.8 -12.0 Boring Terminated at Elevation -9.8 ft in Loose Sand

NCDOT BORE DOUBLE B4593\_GEO\_BRDG0038.GPJ NC\_DOT.GDT 6/14/18