

PROJECT: 34528.1.1 ID: R-3307

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

STRUCTURE
SUBSURFACE INVESTIGATION

PROJ. REFERENCE NO. 34528.1.1 (R-3307) F.A. PROJ. STPNHF-70(43)
 COUNTY CARTERET
 PROJECT DESCRIPTION US 70 FROM EXISTING 4 LANES AT RADIO ISLAND TO NORTH OF SR 1429 (OLGA RD.)
 SITE DESCRIPTION NEW BRIDGE ON -L- OVER GALLANTS CHANNEL AT -L- STA. 46+21

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	34528.1.1 (R-3307)	1	49
STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION	
34528.1.1	STPNHF-70(43)	P.E.	
		RAW & UTIL.	

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) 250-4060. NEITHER THE SUBSURFACE PLANS AND REPORTS, NOR THE FIELD BORING LOGS, ROCK CORES, OR SOIL TEST DATA ARE 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 THIS 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.

PERSONNEL

JPD

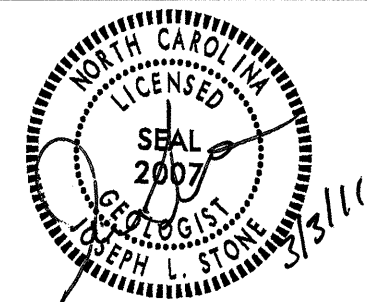
IRS

RES

CMW

MACTEC PERSONNEL

INVESTIGATED BY J.L. STONE
 CHECKED BY D.N. ARGENBRIGHT
 SUBMITTED BY D.N. ARGENBRIGHT
 DATE MARCH 2011



DRAWN BY: C.R. SUMNER

NOTE - THE INFORMATION CONTAINED HEREIN IS NOT IMPLIED OR GUARANTEED BY THE N. C. DEPARTMENT OF TRANSPORTATION AS BEING ACCURATE NOR IS IT CONSIDERED TO BE PART OF THE PLANS, SPECIFICATIONS, OR CONTRACT FOR THE PROJECT.

NOTE - 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.

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																																																									
<p>SOIL IS CONSIDERED TO BE THE 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 STANDARD PENETRATION TEST (ASTM D-1586). SOIL CLASSIFICATION IS BASED ON THE AASHTO SYSTEM. BASIC DESCRIPTIONS GENERALLY SHALL INCLUDE: CONSISTENCY, COLOR, TEXTURE, MOISTURE, AASHTO CLASSIFICATION, AND OTHER PERTINENT FACTORS SUCH AS MINERALOGICAL COMPOSITION, ANGULARITY, STRUCTURE, PLASTICITY, ETC. EXAMPLE:</p> <p align="center"><i>VERY STIFF, GRAY, SILTY CLAY, MOST WITH INTERBEDDED FINE SAND LAYERS, HIGH PLASTIC, A-7-6</i></p>		<p>WELL GRADED - INDICATES A GOOD REPRESENTATION OF PARTICLE SIZES FROM FINE TO COARSE. UNIFORM - INDICATES THAT SOIL PARTICLES ARE ALL APPROXIMATELY THE SAME SIZE. (ALSO POORLY GRADED) GAP-GRADED - INDICATES A MIXTURE OF UNIFORM PARTICLES OF TWO OR MORE SIZES.</p> <p align="center">ANGULARITY OF GRAINS</p> <p>THE ANGULARITY OR ROUNDNESS OF SOIL GRAINS IS DESIGNATED BY THE TERMS: ANGULAR, SUBANGULAR, SUBROUNDED, OR ROUNDED.</p>		<p>HARD ROCK IS NON-COASTAL PLAIN MATERIAL THAT IF TESTED, WOULD YIELD SPT REFUSAL. 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.</p> <p>ROCK MATERIALS ARE TYPICALLY DIVIDED AS FOLLOWS:</p>		<p>ALLUVIUM (ALLUV.) - SOILS THAT HAVE BEEN TRANSPORTED BY WATER.</p> <p>AQUIFER - A WATER BEARING FORMATION OR STRATA.</p> <p>ARENACEOUS - APPLIED TO ROCKS THAT HAVE BEEN DERIVED FROM SAND OR THAT CONTAIN SAND.</p> <p>ARGILLACEOUS - APPLIED TO ALL ROCKS OR SUBSTANCES COMPOSED OF CLAY MINERALS, OR HAVING A NOTABLE PROPORTION OF CLAY IN THEIR COMPOSITION, AS SHALE, SLATE, ETC.</p> <p>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.</p> <p>CALCAREOUS (CALC.) - SOILS THAT CONTAIN APPRECIABLE AMOUNTS OF CALCIUM CARBONATE.</p> <p>COLLUVIUM - ROCK FRAGMENTS MIXED WITH SOIL DEPOSITED BY GRAVITY ON SLOPE OR AT BOTTOM OF SLOPE.</p> <p>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.</p> <p>DIKE - A TABULAR BODY OF IGNEOUS ROCK THAT CUTS ACROSS THE STRUCTURE OF ADJACENT ROCKS OR CUTS MASSIVE ROCK.</p> <p>DIP - THE ANGLE AT WHICH A STRATUM OR ANY PLANAR FEATURE IS INCLINED FROM THE HORIZONTAL.</p> <p>DIP DIRECTION (DIP AZIMUTH) - THE DIRECTION OR BEARING OF THE HORIZONTAL TRACE OF THE LINE OF DIP, MEASURED CLOCKWISE FROM NORTH.</p> <p>FAULT - A FRACTURE OR FRACTURE ZONE ALONG WHICH THERE HAS BEEN DISPLACEMENT OF THE SIDES RELATIVE TO ONE ANOTHER PARALLEL TO THE FRACTURE.</p> <p>FISSILE - A PROPERTY OF SPLITTING ALONG CLOSELY SPACED PARALLEL PLANES.</p> <p>FLOAT - ROCK FRAGMENTS ON SURFACE NEAR THEIR ORIGINAL POSITION AND DISLOADED FROM PARENT MATERIAL.</p> <p>FLOOD PLAIN (FP) - LAND BORDERING A STREAM, BUILT OF SEDIMENTS DEPOSITED BY THE STREAM.</p> <p>FORMATION (FM) - A MAPPABLE GEOLOGIC UNIT THAT CAN BE RECOGNIZED AND TRACED IN THE FIELD.</p> <p>JOINT - FRACTURE IN ROCK ALONG WHICH NO APPRECIABLE MOVEMENT HAS OCCURRED.</p> <p>LEDGE - A SHELF-LIKE RIDGE OR PROJECTION OF ROCK WHOSE THICKNESS IS SMALL COMPARED TO ITS LATERAL EXTENT.</p> <p>LENS - A BODY OF SOIL OR ROCK THAT THINS OUT IN ONE OR MORE DIRECTIONS.</p> <p>MOTTLED (MOT.) - IRREGULARLY MARKED WITH SPOTS OF DIFFERENT COLORS. MOTTLING IN SOILS USUALLY INDICATES POOR AERATION AND LACK OF GOOD DRAINAGE.</p> <p>PERCHED WATER - WATER MAINTAINED ABOVE THE NORMAL GROUND WATER LEVEL BY THE PRESENCE OF AN INTERVENING IMPERVIOUS STRATUM.</p> <p>RESIDUAL (RES.) SOIL - SOIL FORMED IN PLACE BY THE WEATHERING OF ROCK.</p> <p>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.</p> <p>SAPROLITE (SAP.) - RESIDUAL SOIL THAT RETAINS THE RELIC STRUCTURE OR FABRIC OF THE PARENT ROCK.</p> <p>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.</p> <p>SLICKENSIDE - POLISHED AND STRIATED SURFACE THAT RESULTS FROM FRICTION ALONG A FAULT OR SLIP PLANE.</p> <p>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.</p> <p>STRATA CORE RECOVERY (SCREC.) - TOTAL LENGTH OF STRATA MATERIAL RECOVERED DIVIDED BY TOTAL LENGTH OF STRATUM AND EXPRESSED AS A PERCENTAGE.</p> <p>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.</p> <p>TOPSOIL (TS.) - SURFACE SOILS USUALLY CONTAINING ORGANIC MATTER.</p>																																																									
<p align="center">SOIL LEGEND AND AASHTO CLASSIFICATION</p> <table border="1"> <tr> <th>GENERAL CLASS.</th> <th>GRANULAR MATERIALS (< 35% PASSING #200)</th> <th>SILT-CLAY MATERIALS (> 35% PASSING #200)</th> <th>ORGANIC MATERIALS</th> </tr> <tr> <td>GROUP CLASS.</td> <td>A-1, A-1-a, A-1-b, A-3</td> <td>A-2, A-2-1, A-2-2, A-2-3, A-2-4, A-2-5, A-2-6, A-2-7</td> <td>A-4, A-5, A-6, A-7, A-7-a, A-7-b, A-7-c</td> </tr> <tr> <td>SYMBOL</td> <td>[Pattern]</td> <td>[Pattern]</td> <td>[Pattern]</td> </tr> <tr> <td>% PASSING</td> <td>#10, #40, #200</td> <td>#10, #40, #60, #100, #200</td> <td>#10, #40, #60, #100, #200</td> </tr> <tr> <td>LIQUID LIMIT</td> <td>6 MX</td> <td>10 MX, 11 MN, 12 MN, 13 MN, 14 MN, 15 MN, 16 MN, 17 MN, 18 MN, 19 MN, 20 MN, 21 MN, 22 MN, 23 MN, 24 MN, 25 MN, 26 MN, 27 MN, 28 MN, 29 MN, 30 MN, 31 MN, 32 MN, 33 MN, 34 MN, 35 MN, 36 MN, 37 MN, 38 MN, 39 MN, 40 MN, 41 MN, 42 MN, 43 MN, 44 MN, 45 MN, 46 MN, 47 MN, 48 MN, 49 MN, 50 MN, 51 MN, 52 MN, 53 MN, 54 MN, 55 MN, 56 MN, 57 MN, 58 MN, 59 MN, 60 MN, 61 MN, 62 MN, 63 MN, 64 MN, 65 MN, 66 MN, 67 MN, 68 MN, 69 MN, 70 MN, 71 MN, 72 MN, 73 MN, 74 MN, 75 MN, 76 MN, 77 MN, 78 MN, 79 MN, 80 MN, 81 MN, 82 MN, 83 MN, 84 MN, 85 MN, 86 MN, 87 MN, 88 MN, 89 MN, 90 MN, 91 MN, 92 MN, 93 MN, 94 MN, 95 MN, 96 MN, 97 MN, 98 MN, 99 MN, 100 MN</td> <td>GRANULAR SOILS, SILT-CLAY SOILS, MUCK, PEAT</td> </tr> <tr> <td>PLASTIC INDEX</td> <td>6 MX</td> <td>NP, 10 MX, 11 MN, 12 MN, 13 MN, 14 MN, 15 MN, 16 MN, 17 MN, 18 MN, 19 MN, 20 MN, 21 MN, 22 MN, 23 MN, 24 MN, 25 MN, 26 MN, 27 MN, 28 MN, 29 MN, 30 MN, 31 MN, 32 MN, 33 MN, 34 MN, 35 MN, 36 MN, 37 MN, 38 MN, 39 MN, 40 MN, 41 MN, 42 MN, 43 MN, 44 MN, 45 MN, 46 MN, 47 MN, 48 MN, 49 MN, 50 MN, 51 MN, 52 MN, 53 MN, 54 MN, 55 MN, 56 MN, 57 MN, 58 MN, 59 MN, 60 MN, 61 MN, 62 MN, 63 MN, 64 MN, 65 MN, 66 MN, 67 MN, 68 MN, 69 MN, 70 MN, 71 MN, 72 MN, 73 MN, 74 MN, 75 MN, 76 MN, 77 MN, 78 MN, 79 MN, 80 MN, 81 MN, 82 MN, 83 MN, 84 MN, 85 MN, 86 MN, 87 MN, 88 MN, 89 MN, 90 MN, 91 MN, 92 MN, 93 MN, 94 MN, 95 MN, 96 MN, 97 MN, 98 MN, 99 MN, 100 MN</td> <td>SOILS WITH LITTLE OR MODERATE AMOUNTS OF ORGANIC MATTER, HIGHLY ORGANIC SOILS</td> </tr> <tr> <td>GROUP INDEX</td> <td>0</td> <td>0, 4 MX, 8 MX, 12 MX, 16 MX, No MX</td> <td></td> </tr> <tr> <td>USUAL TYPES OF MAJOR MATERIALS</td> <td>STONE FRAGS, GRAVEL AND SAND</td> <td>FINE SAND, SILTY OR CLAYEY GRAVEL AND SAND</td> <td>SILTY SOILS, CLAYEY SOILS</td> </tr> <tr> <td>GEN. 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<p align="center">CONSISTENCY OR DENSENESS</p> <table border="1"> <tr> <th>PRIMARY SOIL TYPE</th> <th>COMPACTNESS OR CONSISTENCY</th> <th>RANGE OF STANDARD PENETRATION RESISTANCE (N-VALUE)</th> <th>RANGE OF UNCONFINED COMPRESSIVE STRENGTH (TONS/FT²)</th> </tr> <tr> <td>GENERALLY GRANULAR MATERIAL (NON-COHESIVE)</td> <td>VERY LOOSE, LOOSE, MEDIUM DENSE, DENSE, VERY DENSE</td> <td><4, 4 TO 10, 10 TO 30, 30 TO 50, >50</td> <td>N/A</td> </tr> <tr> <td>GENERALLY SILT-CLAY MATERIAL (COHESIVE)</td> <td>VERY SOFT, SOFT, MEDIUM STIFF, STIFF, VERY STIFF, HARD</td> <td><2, 2 TO 4, 4 TO 8, 8 TO 15, 15 TO 30, >30</td> <td><0.25, 0.25 TO 0.50, 0.5 TO 1.0, 1 TO 2, 2 TO 4, >4</td> </tr> </table>		PRIMARY SOIL TYPE	COMPACTNESS OR CONSISTENCY	RANGE OF STANDARD PENETRATION RESISTANCE (N-VALUE)	RANGE OF UNCONFINED COMPRESSIVE STRENGTH (TONS/FT ²)	GENERALLY GRANULAR MATERIAL (NON-COHESIVE)	VERY LOOSE, LOOSE, MEDIUM DENSE, DENSE, VERY DENSE	<4, 4 TO 10, 10 TO 30, 30 TO 50, >50	N/A	GENERALLY SILT-CLAY MATERIAL (COHESIVE)	VERY SOFT, SOFT, MEDIUM STIFF, STIFF, VERY STIFF, HARD	<2, 2 TO 4, 4 TO 8, 8 TO 15, 15 TO 30, >30	<0.25, 0.25 TO 0.50, 0.5 TO 1.0, 1 TO 2, 2 TO 4, >4	<p align="center">GROUND WATER</p> <p>▽ WATER LEVEL IN BORE HOLE IMMEDIATELY AFTER DRILLING</p> <p>▽ STATIC WATER LEVEL AFTER 24 HOURS</p> <p>▽ PW PERCHED WATER, SATURATED ZONE, OR WATER BEARING STRATA</p> <p>○ SPRING OR SEEP</p>		<p align="center">WEATHERING</p> <p>FRESH: ROCK FRESH, CRYSTALS BRIGHT, FEW JOINTS MAY SHOW SLIGHT STAINING, ROCK RINGS UNDER HAMMER IF CRYSTALLINE.</p> <p>VERY SLIGHT (V.SL.): 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.</p> <p>SLIGHT (SL.): 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.</p> <p>MODERATE (MOD.): 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.</p> <p>MODERATELY SEVERE (MOD. SEV.): 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. <i>IF TESTED, WOULD YIELD SPT REFUSAL</i></p> <p>SEVERE (SEV.): 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. <i>IF TESTED, YIELDS SPT N VALUES > 100 BPF</i></p> <p>VERY SEVERE (V. SEV.): ALL ROCK EXCEPT QUARTZ DISCOLORED OR STAINED, ROCK FABRIC ELEMENTS ARE DISCERNIBLE BUT THE MASS IS EFFECTIVELY REDUCED TO SOIL STATUS, WITH ONLY FRAGMENTS OF STRONG ROCK REMAINING. SAPROLITE IS AN EXAMPLE OF ROCK WEATHERED TO A DEGREE SUCH THAT ONLY MINOR VESTIGES OF THE ORIGINAL ROCK FABRIC REMAIN. <i>IF TESTED, YIELDS SPT N VALUES < 100 BPF</i></p> <p>COMPLETE: 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.</p>																																															
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REVISIONS

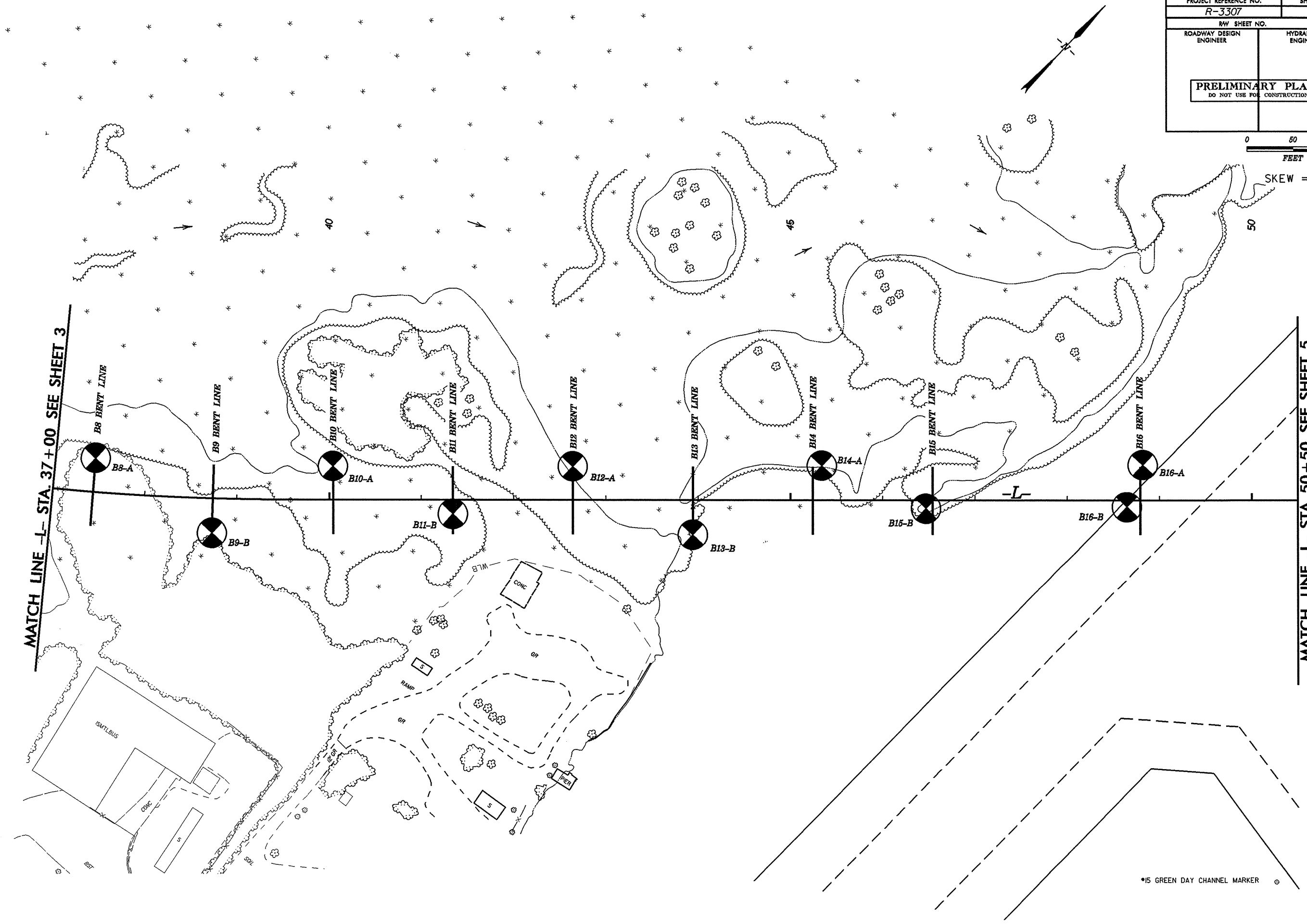
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RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION	



SKEW = 90°

MATCH LINE -L- STA. 37+00 SEE SHEET 3

MATCH LINE -L- STA. 50+50 SEE SHEET 5



*15 GREEN DAY CHANNEL MARKER

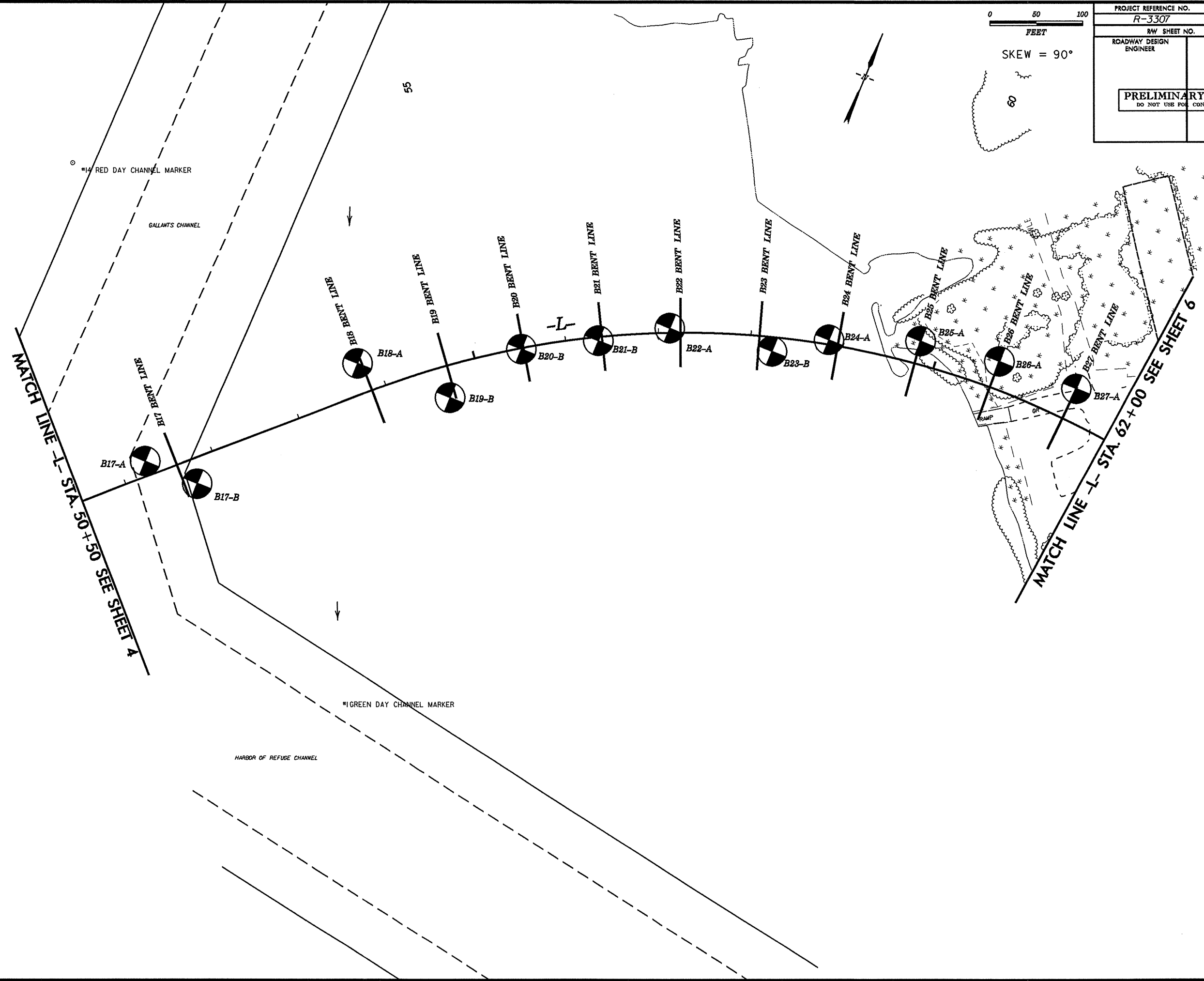
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SKEW = 90°

PROJECT REFERENCE NO. R-3307	SHEET NO. 5
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PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION	

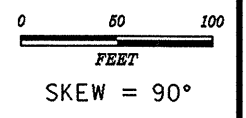
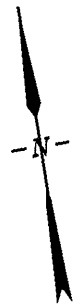
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PROJECT REFERENCE NO. <i>R-3307</i>	SHEET NO. 6
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION	



REVISIONS

MATCH LINE -L- STA. 62+00 SEE SHEET 5

B28-A

B28-BENT LINE

EB2-BENT LINE

EB2-C

SR 170 WEST BEAUFORT RD BR BST

65

B PLASTIC

TO SR 101

PAV LANE

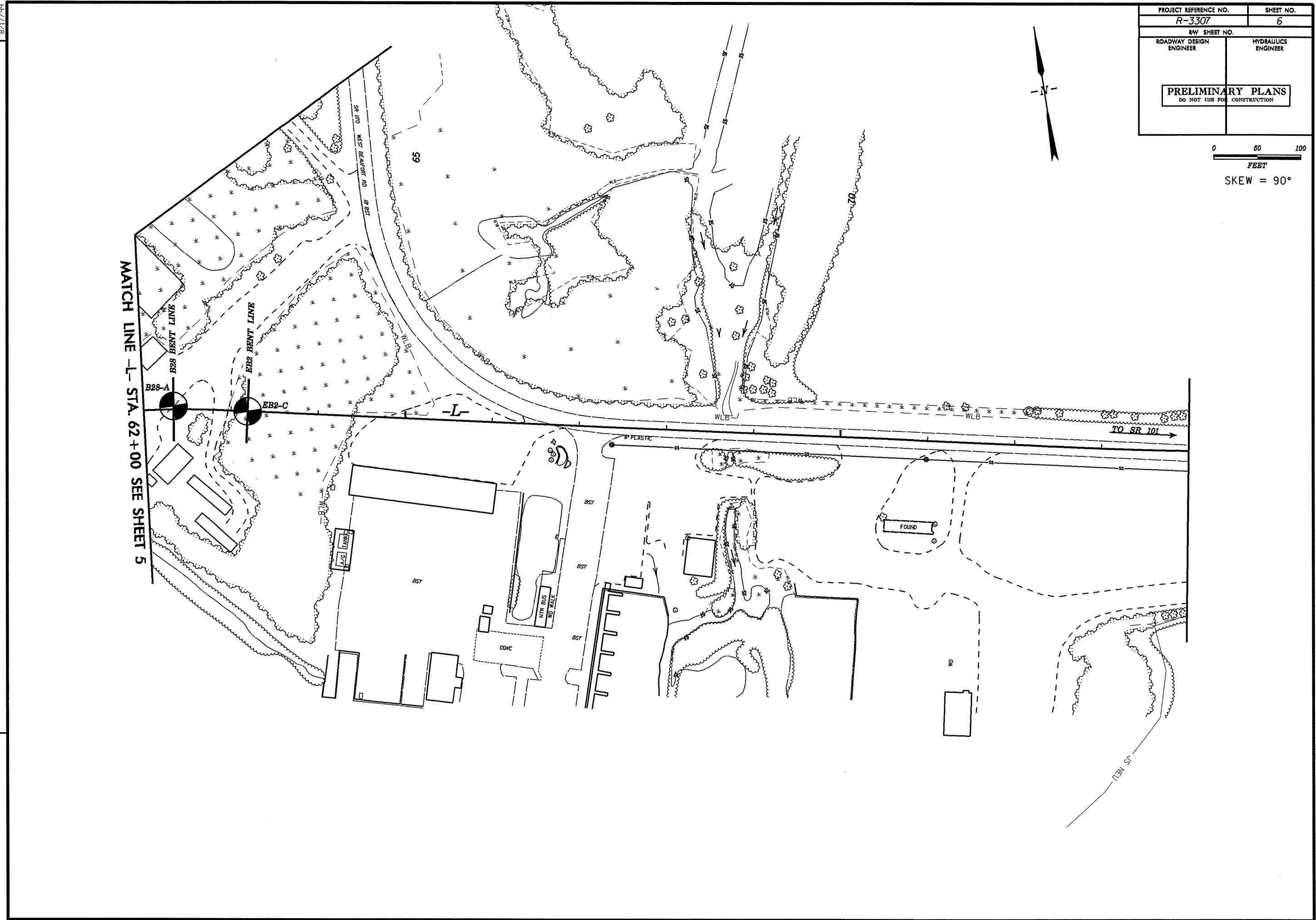
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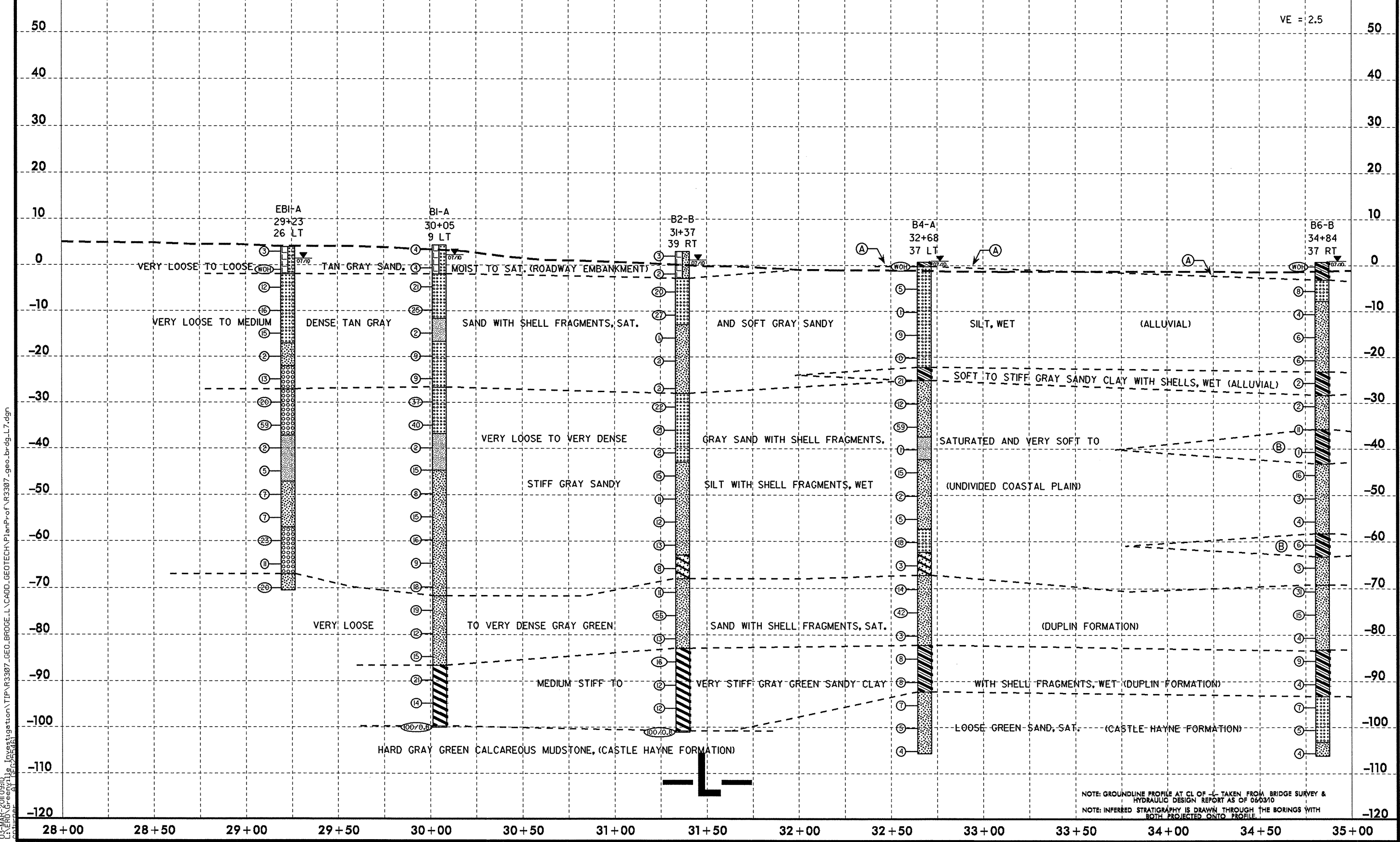
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PROJECT REFERENCE NO. R-3307	SHEET NO. 7
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PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION	

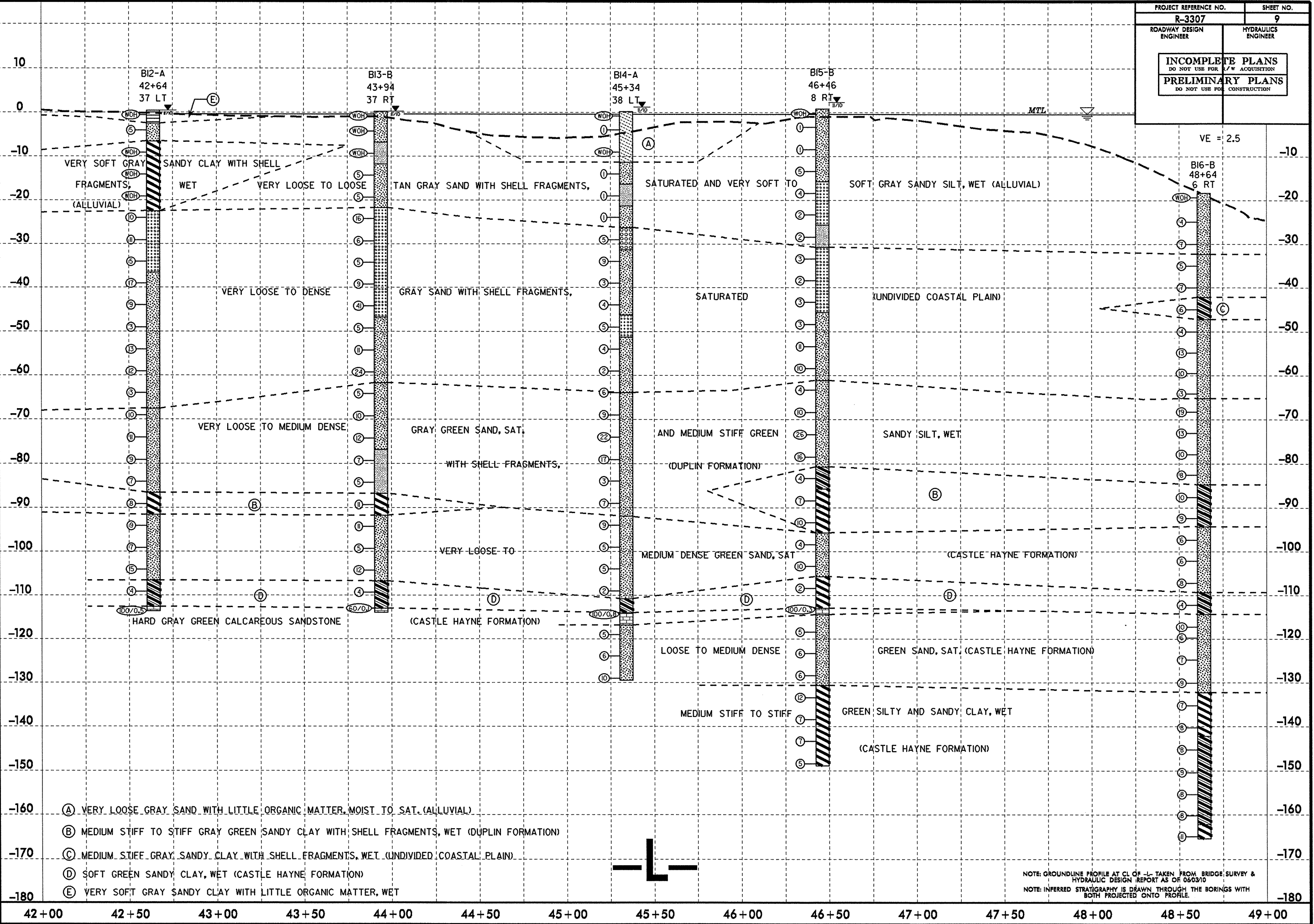


NOTE: GROUNDLINE PROFILE AT CL OF - TAKEN FROM BRIDGE SURVEY &
 HYDRAULIC DESIGN REPORT AS OF 06/03/10
 NOTE: INFERRED STRATIGRAPHY IS DRAWN THROUGH THE BORINGS WITH
 BOTH PROJECTED ONTO PROFILE

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INCOMPLETE PLANS DO NOT USE FOR ACQUISITION	
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION	



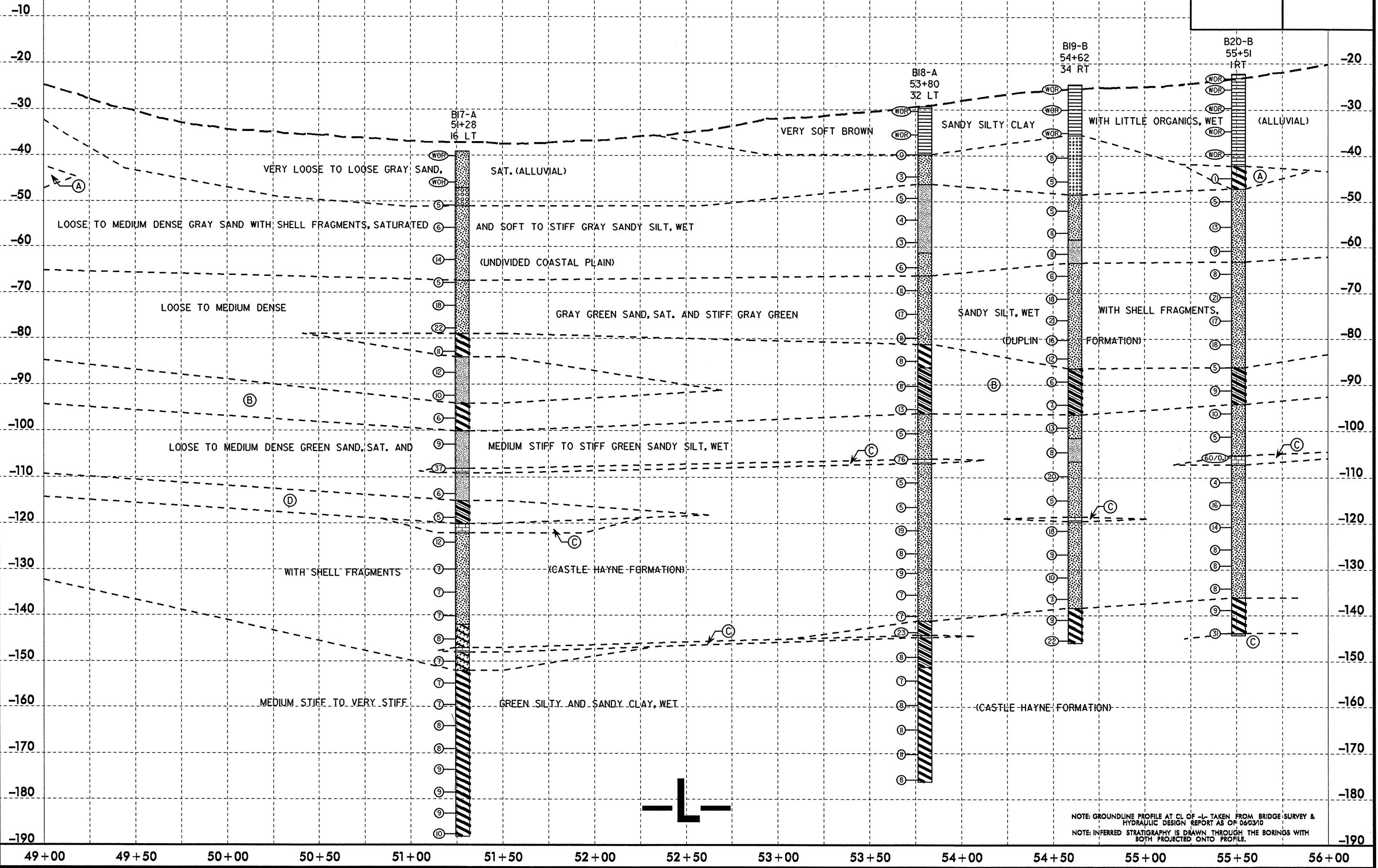
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PROJECT REFERENCE NO. R-3307	SHEET NO. 10
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
INCOMPLETE PLANS DO NOT USE FOR A/W ACQUISITION	
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION	

VE = 2.5

- (A) MEDIUM STIFF GRAY SANDY CLAY WITH SHELL FRAGMENTS, WET (UNDIVIDED COASTAL PLAIN)
- (B) MEDIUM STIFF TO STIFF GRAY GREEN SANDY CLAY WITH SHELL FRAGMENTS, WET (DUPLIN FORMATION)
- (C) SOFT TO VERY HARD GRAY GREEN CALCAREOUS SANDSTONE AND MUDSTONE (CASTLE HAYNE FORMATION)
- (D) MEDIUM STIFF GREEN SANDY CLAY, WET (CASTLE HAYNE FORMATION)

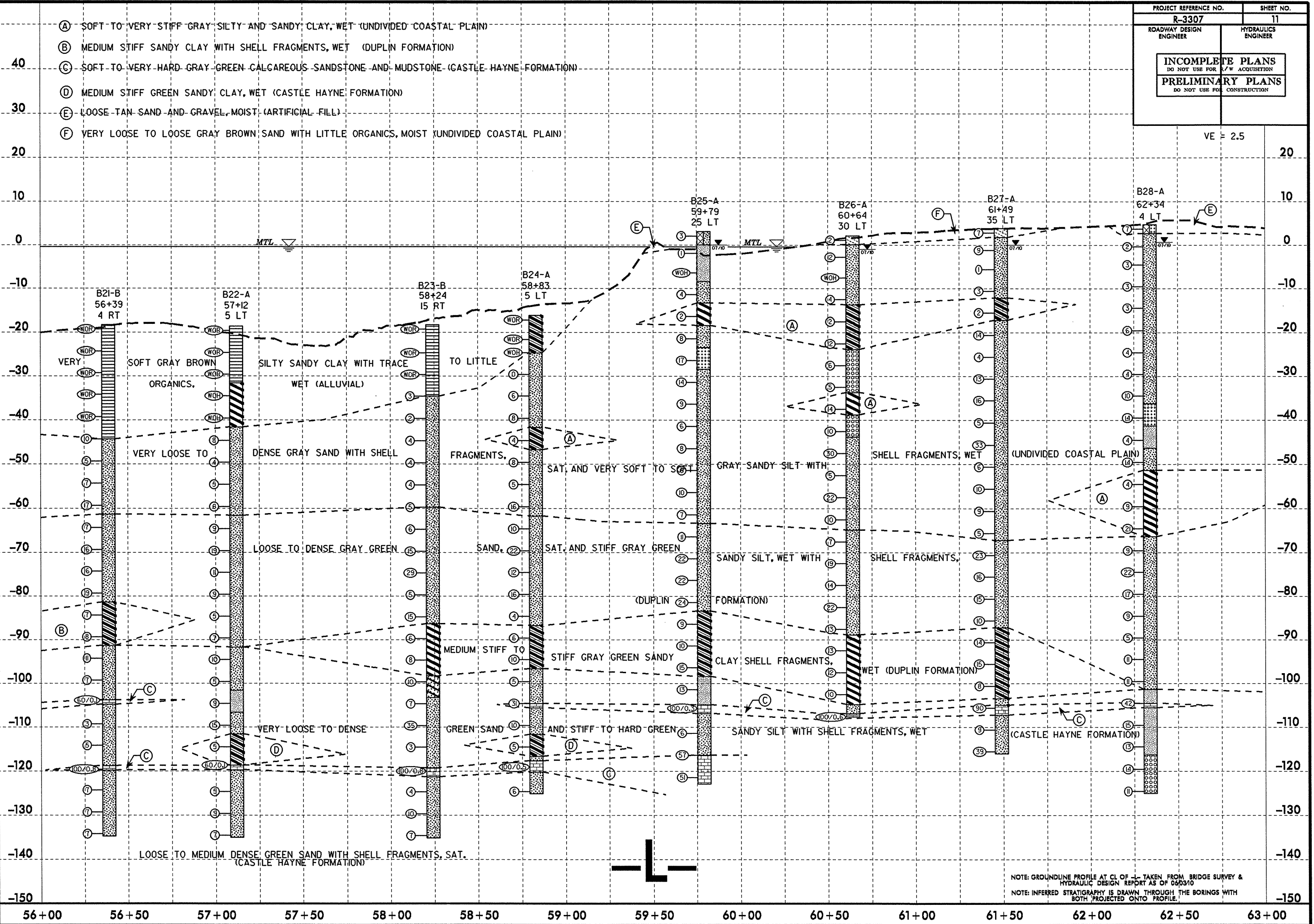


NOTE: GROUNDLINE PROFILE AT CL OF -L- TAKEN FROM BRIDGE SURVEY & HYDRAULIC DESIGN REPORT AS OF 06/03/10
 NOTE: INFERRED STRATIGRAPHY IS DRAWN THROUGH THE BORINGS WITH BOTH PROJECTED ONTO PROFILE.

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PROJECT REFERENCE NO. R-3307	SHEET NO. 11
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INCOMPLETE PLANS DO NOT USE FOR ACQUISITION	
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION	



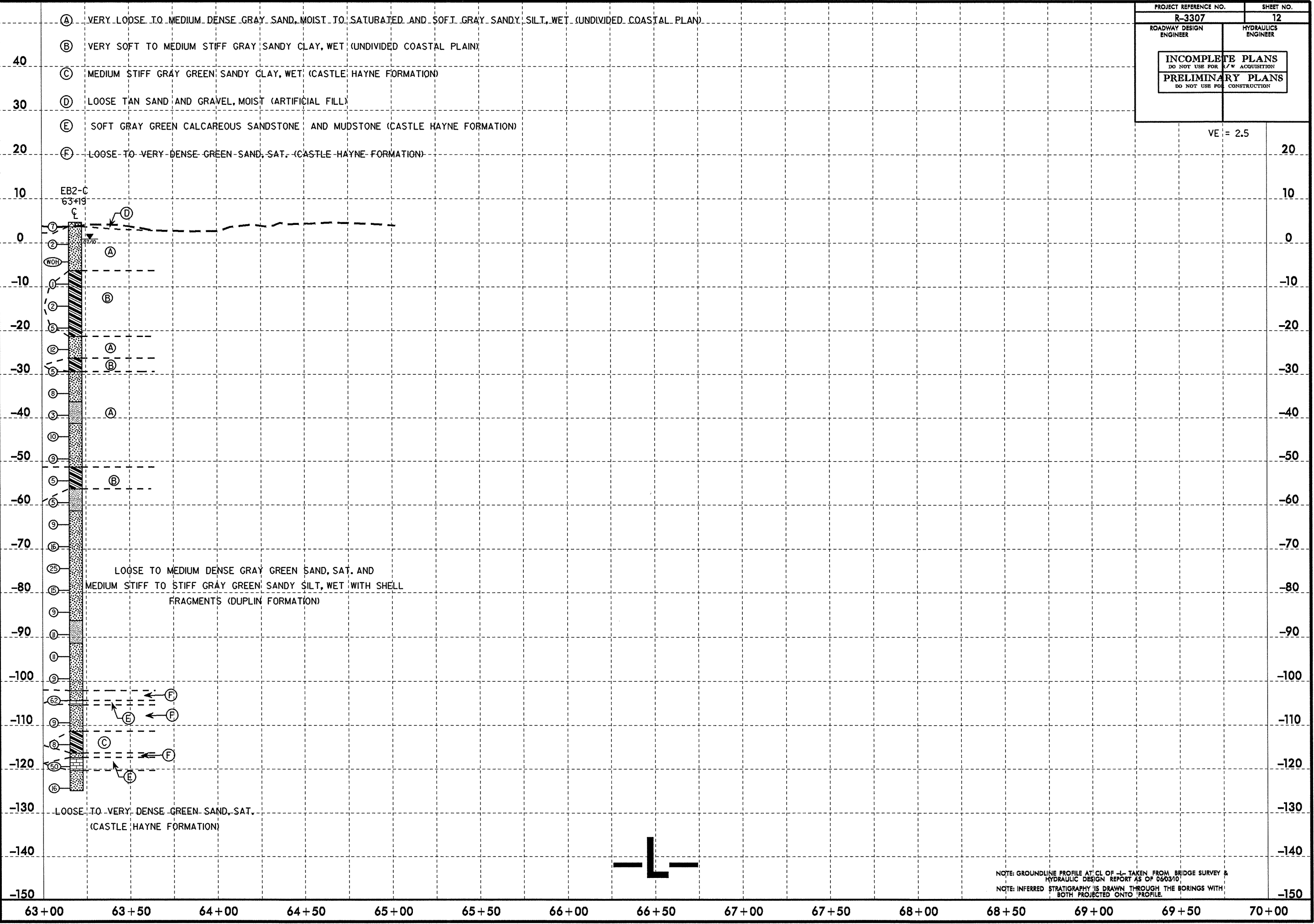
NOTE: GROUNDLINE PROFILE AT CL OF -L- TAKEN FROM BRIDGE SURVEY & HYDRAULIC DESIGN REPORT AS OF 06/03/10
 NOTE: INFERRED STRATIGRAPHY IS DRAWN THROUGH THE BORINGS WITH BOTH PROJECTED ONTO PROFILE

5/14/99

03-MAR-2011 07:52
L:\ERU\Green\116 Investigation\TIP\R3307_GEO_BRIDGE.L\CADD_GEO\TECH\Plan\Prof\R3307_geo.br.dg.L12.dgn

PROJECT REFERENCE NO. R-3307	SHEET NO. 12
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
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PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION	

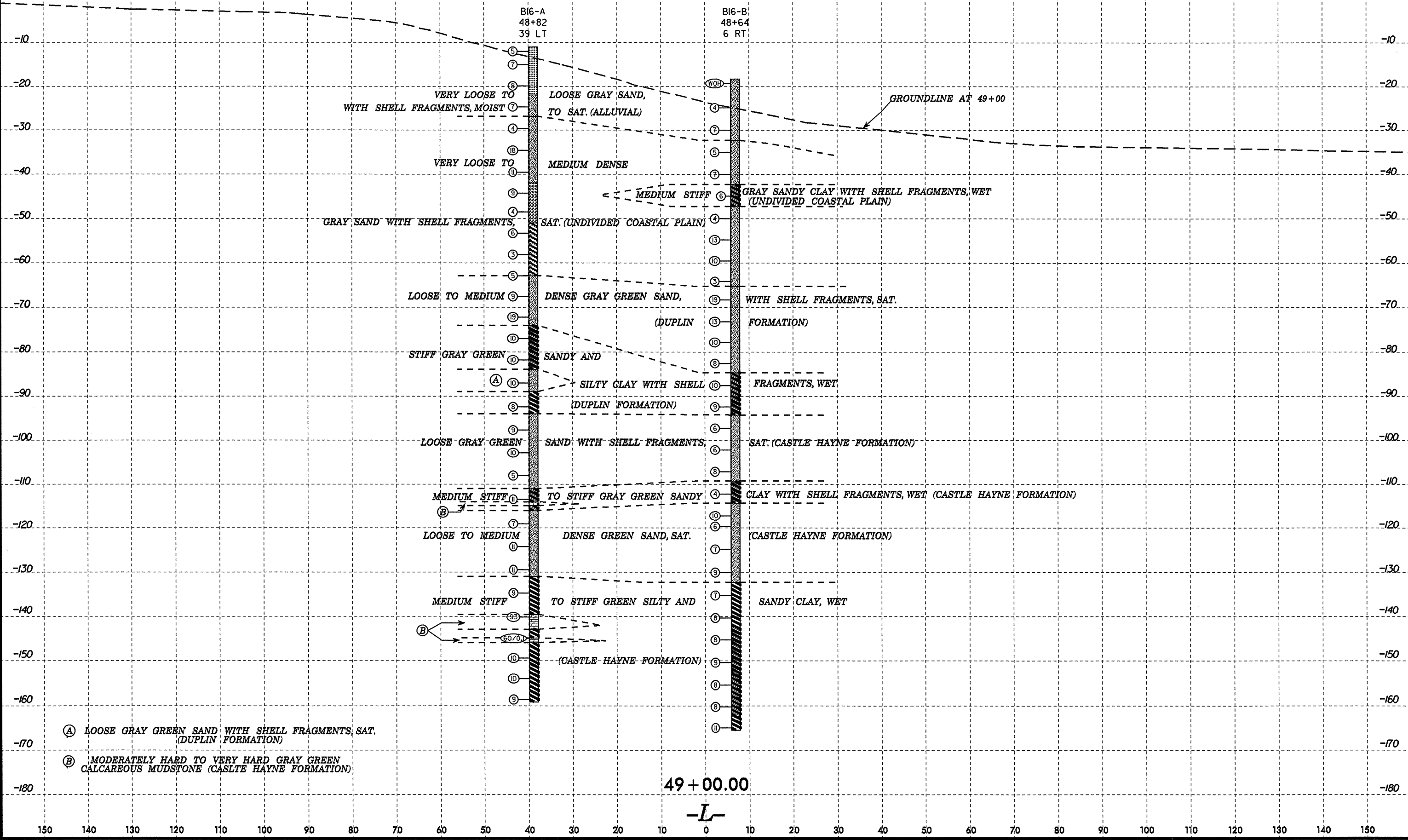
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NOTE: GROUNDLINE PROFILE AT CL OF -L- TAKEN FROM BRIDGE SURVEY & HYDRAULIC DESIGN REPORT AS OF 06/03/10;
 NOTE: INFERRED STRATIGRAPHY IS DRAWN THROUGH THE BORINGS WITH BOTH PROJECTED ONTO PROFILE.

8/23/99

BENT 16 CROSS SECTION



- (A) LOOSE GRAY GREEN SAND WITH SHELL FRAGMENTS, SAT. (DUPLIN FORMATION)
- (B) MODERATELY HARD TO VERY HARD GRAY GREEN CALCAREOUS MUDSTONE (CASTLE HAYNE FORMATION)

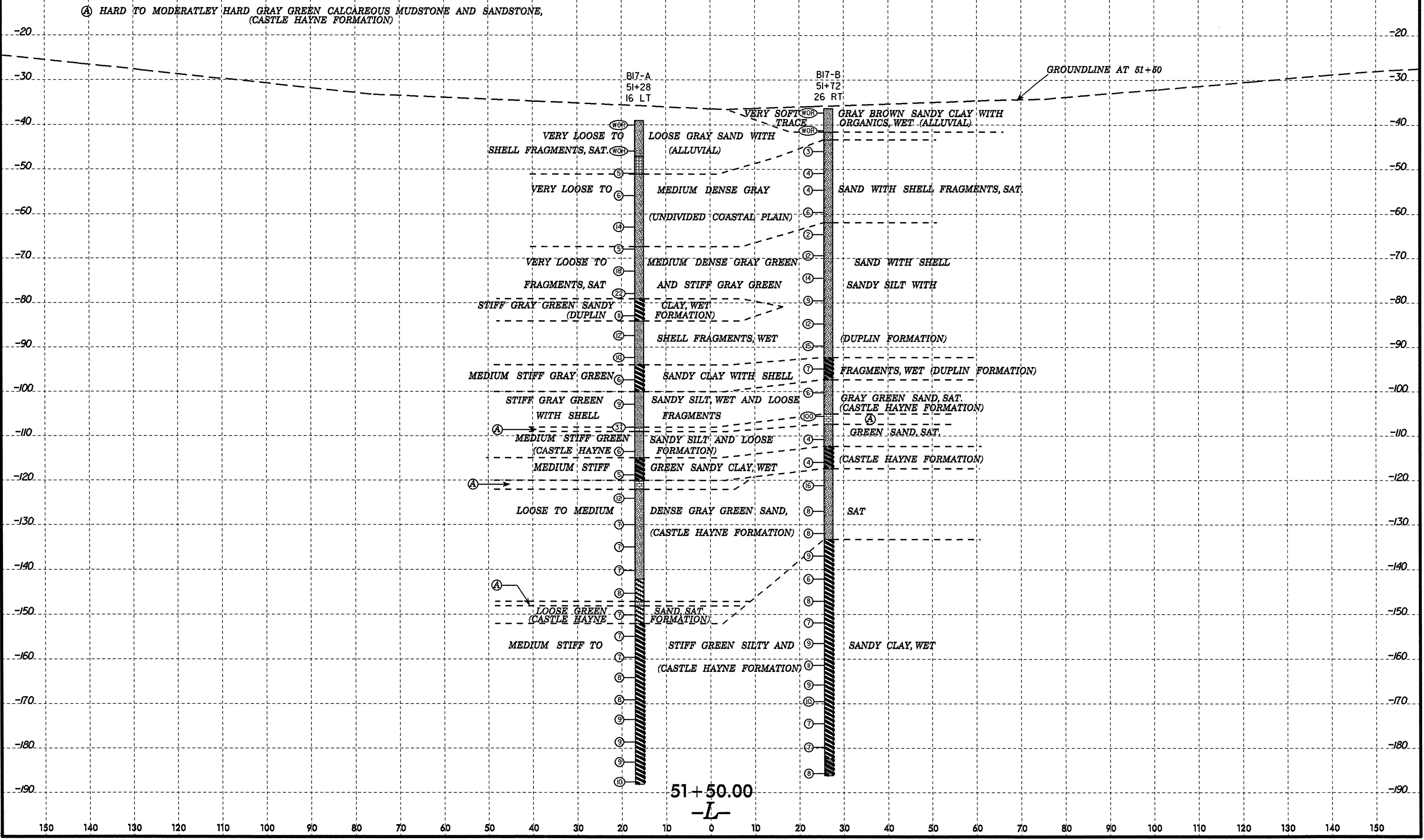
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BENT 17 CROSS SECTION



WBS 34528.1.1		TIP R-3307		COUNTY CARTERET		GEOLOGIST Wrike, C. M.									
SITE DESCRIPTION NEW BRIDGE ON -L- OVER GALLANTS CHANNEL							GROUND WTR (ft)								
BORING NO. EB1-A		STATION 29+23		OFFSET 26 ft LT		ALIGNMENT -L-									
COLLAR ELEV. 3.9 ft		TOTAL DEPTH 74.4 ft		NORTHING 362,190		EASTING 2,698,663									
DRILL RIG/HAMMER EFF./DATE GFO0062 CME-45B 83% 12/12/2005		DRILL METHOD Mud Rotary		HAMMER TYPE Automatic											
DRILLER Smith, R. E.		START DATE 07/13/10		COMP. DATE 07/13/10		SURFACE WATER DEPTH N/A									
ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT					SAMP. NO.	L O G	SOIL AND ROCK DESCRIPTION	DEPTH (ft)	
			0.5ft	0.5ft	0.5ft	0	25	50	75	100					
5	3.9	0.0	1	1	2									GROUND SURFACE	0.0
0	-0.1	4.0	WOH	WOH	WOH									ROADWAY EMBANKMENT TAN SAND, MOIST TO SATURATED	
-5	-4.0	7.9	2	5	7									ALLUVIAL GRAY SAND, SATURATED	6.0
-10	-9.0	12.9	6	7	9										
-15	-14.0	17.9	4	6	9										
-20	-19.0	22.9	WOH	WOH	2										
-25	-24.0	27.9	8	7	6										
-30	-29.0	32.9	7	10	10									UNDIVIDED COASTAL PLAIN GRAY SAND, SATURATED	31.0
-35	-34.0	37.9	13	37	22										
-40	-39.0	42.9	1	1	1									UNDIVIDED COASTAL PLAIN GRAY SANDY SILT, WET	41.0
-45	-44.0	47.9	2	2	3										
-50	-49.0	52.9	3	3	4									UNDIVIDED COASTAL PLAIN GRAY SAND WITH SHELL FRAGMENTS, SATURATED	51.0
-55	-54.0	57.9	5	3	4										
-60	-59.0	62.9	8	11	12										
-65	-64.0	67.9	7	6	5										
-70	-69.0	72.9	12	10	10									COASTAL PLAIN GRAY GREEN SAND WITH SHELL FRAGMENTS, SATURATED (DUPLIN FORMATION)	71.0
														Boring Terminated at Elevation -70.5 ft IN MEDIUM DENSE SAND	74.4

NCDOT BORE DOUBLE BORINGS.GPJ NC_DOT.GDT 3/2/11

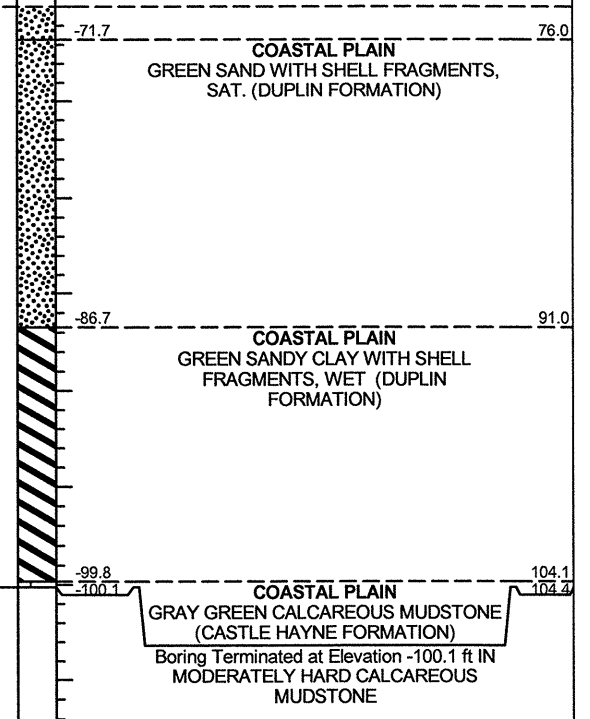
WBS 34528.1.1	TIP R-3307	COUNTY CARTERET	GEOLOGIST Wrike, C. M.
SITE DESCRIPTION NEW BRIDGE ON -L- OVER GALLANTS CHANNEL			GROUND WTR (ft)
BORING NO. B1-A	STATION 30+05	OFFSET 9 ft LT	ALIGNMENT -L-
COLLAR ELEV. 4.3 ft	TOTAL DEPTH 104.4 ft	NORTHING 362,204	EASTING 2,698,745
DRILL RIG/HAMMER EFF./DATE GFO0062 CME-45B 83% 12/12/2005		DRILL METHOD Mud Rotary	HAMMER TYPE Automatic
DRILLER Smith, R. E.	START DATE 07/13/10	COMP. DATE 07/14/10	SURFACE WATER DEPTH N/A

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT					SAMP. NO.	LOG MOI	SOIL AND ROCK DESCRIPTION	DEPTH (ft)	
			0.5ft	0.5ft	0.5ft	0	25	50	75	100					
10															
5	4.3	0.0	1	2	2										
0	0.3	4.0	4	3	1										
-5	-3.9	8.2	5	8	13										
-10	-8.9	13.2	9	12	13										
-15	-13.9	18.2	2	1	1										
-20	-18.9	23.2	3	4	5										
-25	-23.9	28.2	3	6	3										
-30	-28.9	33.2	12	16	21										
-35	-33.9	38.2	5	18	22										
-40	-38.9	43.2	2	1	1										
-45	-43.8	48.1	5	5	10										
-50	-48.8	53.1	7	5	3										
-55	-53.8	58.1	4	7	8										
-60	-58.8	63.1	3	6	10										
-65	-63.8	68.1	4	4	5										
-70	-68.8	73.1	10	9	9										

WBS 34528.1.1	TIP R-3307	COUNTY CARTERET	GEOLOGIST Wrike, C. M.
SITE DESCRIPTION NEW BRIDGE ON -L- OVER GALLANTS CHANNEL			GROUND WTR (ft)
BORING NO. B1-A	STATION 30+05	OFFSET 9 ft LT	ALIGNMENT -L-
COLLAR ELEV. 4.3 ft	TOTAL DEPTH 104.4 ft	NORTHING 362,204	EASTING 2,698,745
DRILL RIG/HAMMER EFF./DATE GFO0062 CME-45B 83% 12/12/2005		DRILL METHOD Mud Rotary	HAMMER TYPE Automatic
DRILLER Smith, R. E.	START DATE 07/13/10	COMP. DATE 07/14/10	SURFACE WATER DEPTH N/A

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT					SAMP. NO.	LOG MOI	SOIL AND ROCK DESCRIPTION	DEPTH (ft)	
			0.5ft	0.5ft	0.5ft	0	25	50	75	100					
-70															
-75	-73.8	78.1	6	7	12										
-80	-78.8	83.1	1	4	8										
-85	-83.8	88.1	5	6	9										
-90	-88.8	93.1	3	5	16										
-95	-93.8	98.1	5	6	8										
-100	-98.8	103.1	5	8	92/0.3										

NCDOT BORE DOUBLE BORINGS.GPJ NC DOT.GDT 3/2/11

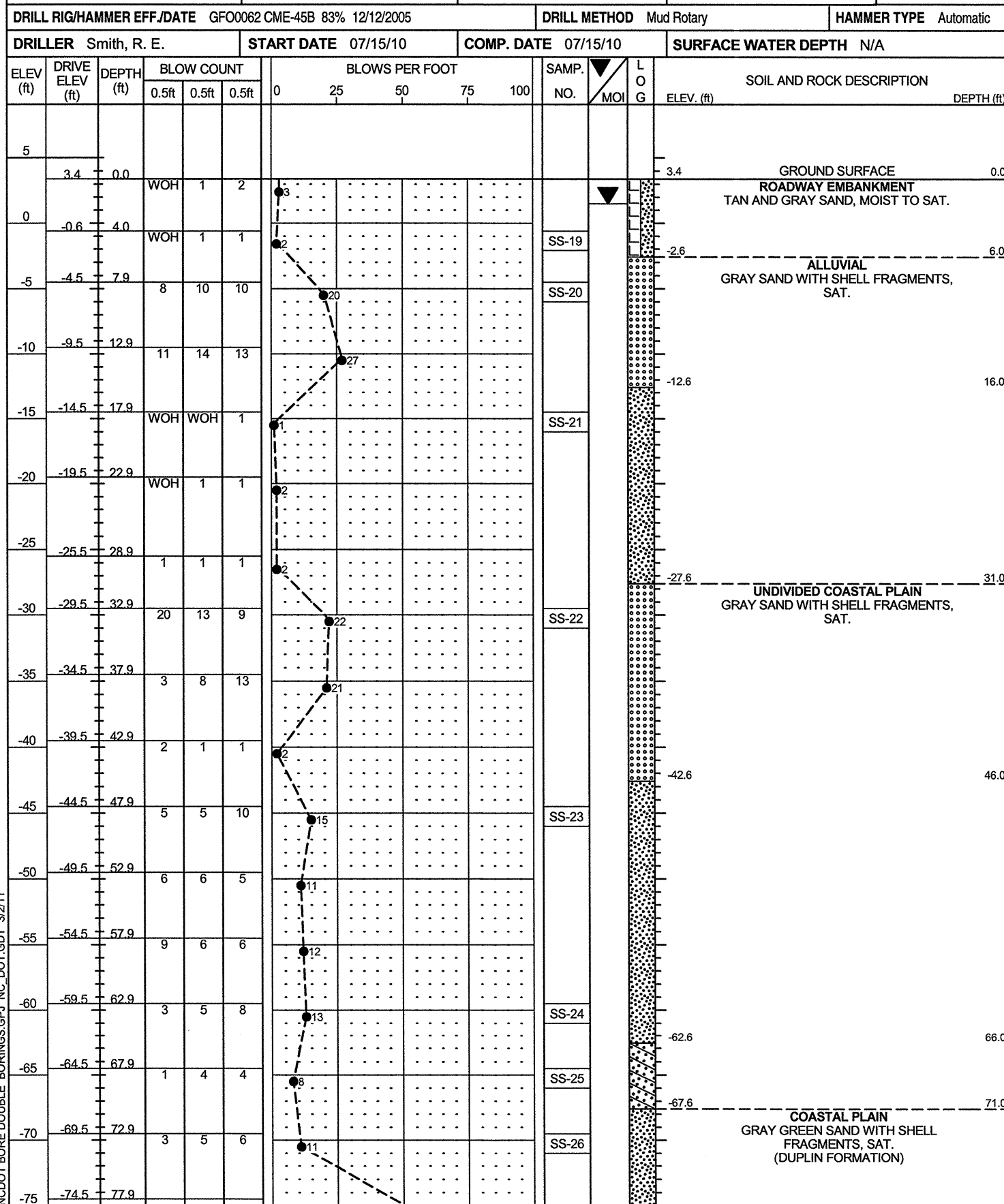




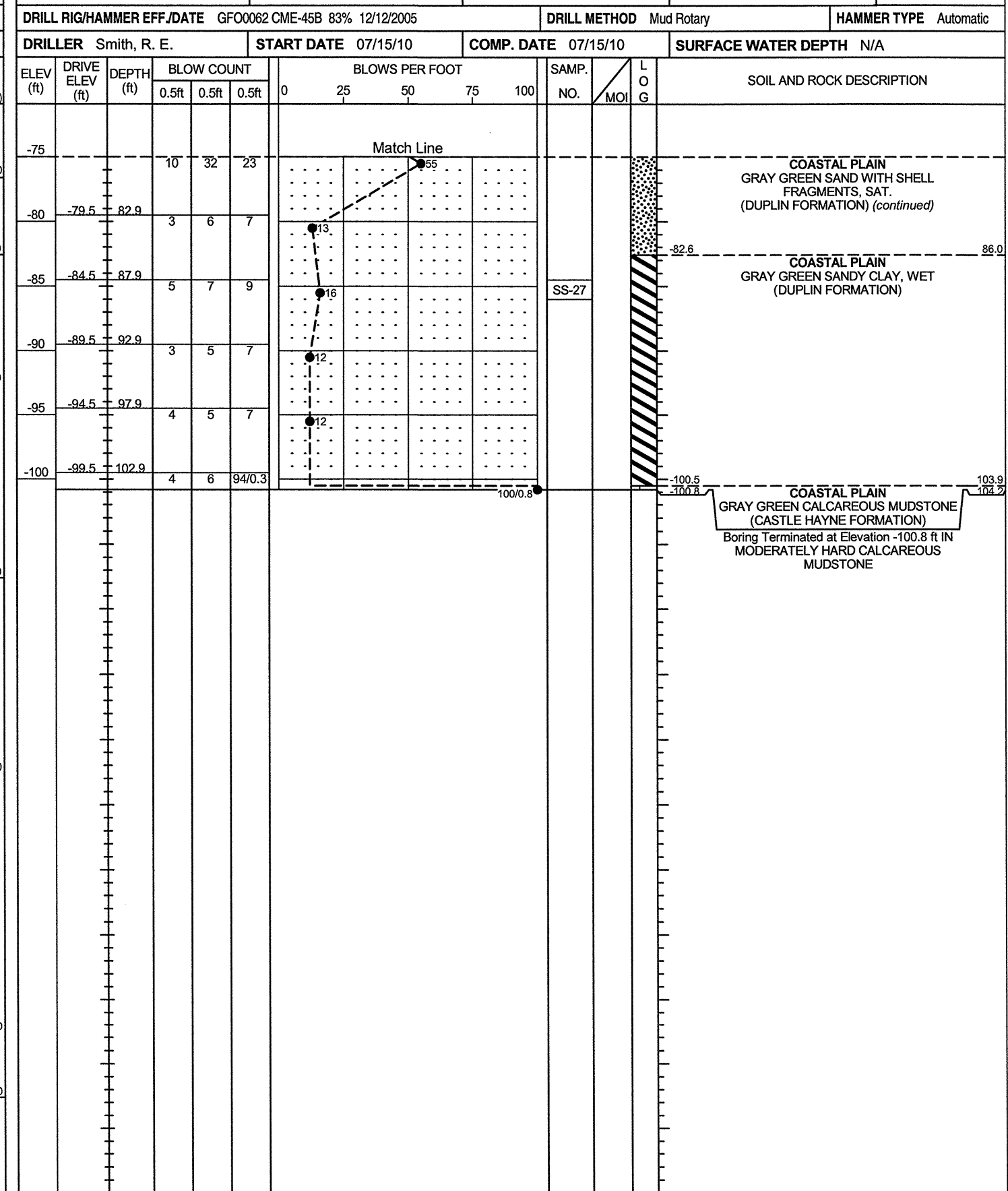
NCDOT GEOTECHNICAL ENGINEERING UNIT

BORELOG REPORT

WBS 34528.1.1	TIP R-3307	COUNTY CARTERET	GEOLOGIST Wrike, C. M.
SITE DESCRIPTION NEW BRIDGE ON -L- OVER GALLANTS CHANNEL			GROUND WTR (ft) 0 HR. N/A
BORING NO. B2-B	STATION 31+37	OFFSET 39 ft RT	ALIGNMENT -L-
COLLAR ELEV. 3.4 ft	TOTAL DEPTH 104.2 ft	NORTHING 362,215	EASTING 2,698,886
DRILL RIG/HAMMER EFF./DATE GFO0062 CME-45B 83% 12/12/2005		DRILL METHOD Mud Rotary	HAMMER TYPE Automatic
DRILLER Smith, R. E.	START DATE 07/15/10	COMP. DATE 07/15/10	SURFACE WATER DEPTH N/A

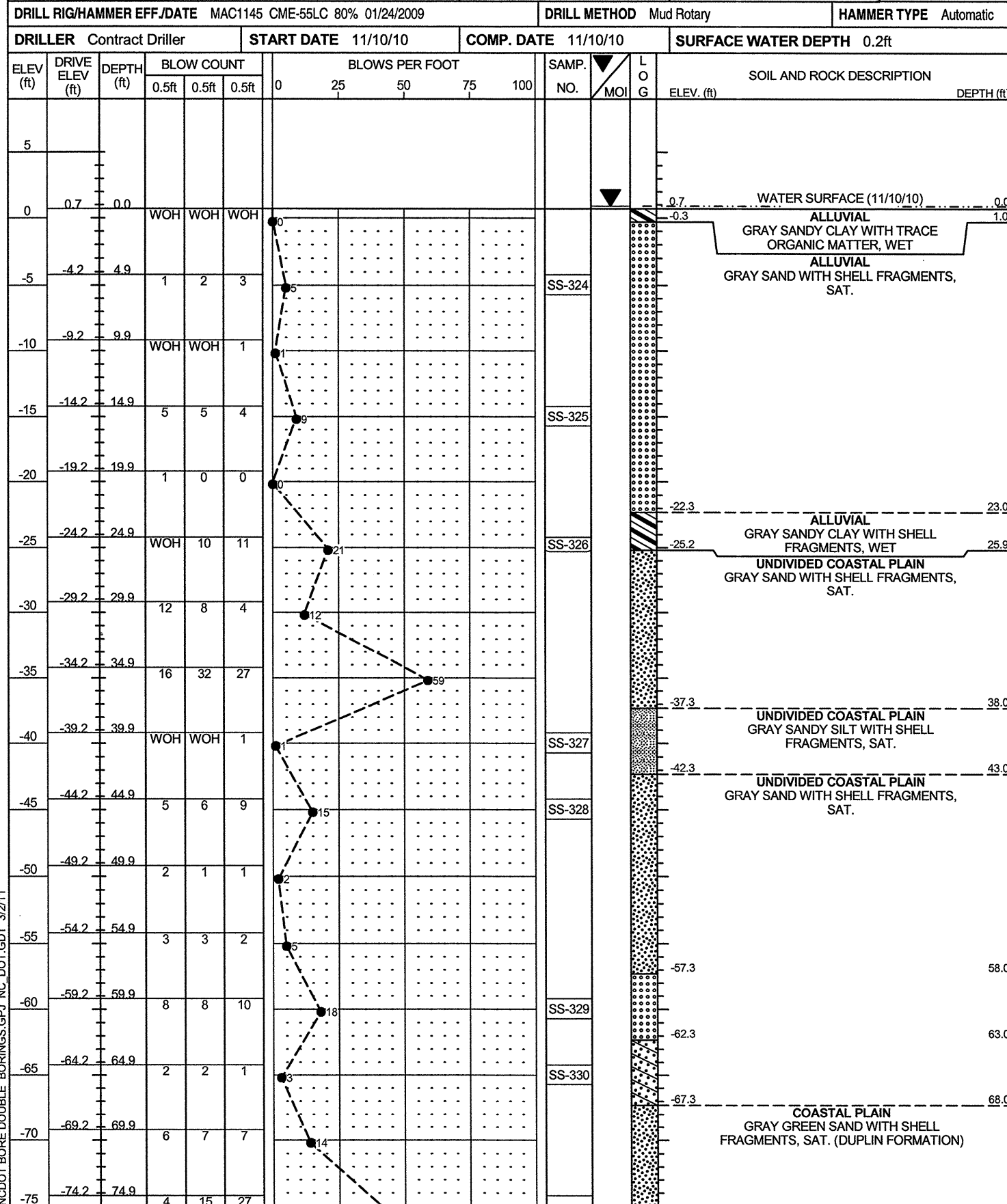


WBS 34528.1.1	TIP R-3307	COUNTY CARTERET	GEOLOGIST Wrike, C. M.
SITE DESCRIPTION NEW BRIDGE ON -L- OVER GALLANTS CHANNEL			GROUND WTR (ft) 0 HR. N/A
BORING NO. B2-B	STATION 31+37	OFFSET 39 ft RT	ALIGNMENT -L-
COLLAR ELEV. 3.4 ft	TOTAL DEPTH 104.2 ft	NORTHING 362,215	EASTING 2,698,886
DRILL RIG/HAMMER EFF./DATE GFO0062 CME-45B 83% 12/12/2005		DRILL METHOD Mud Rotary	HAMMER TYPE Automatic
DRILLER Smith, R. E.	START DATE 07/15/10	COMP. DATE 07/15/10	SURFACE WATER DEPTH N/A

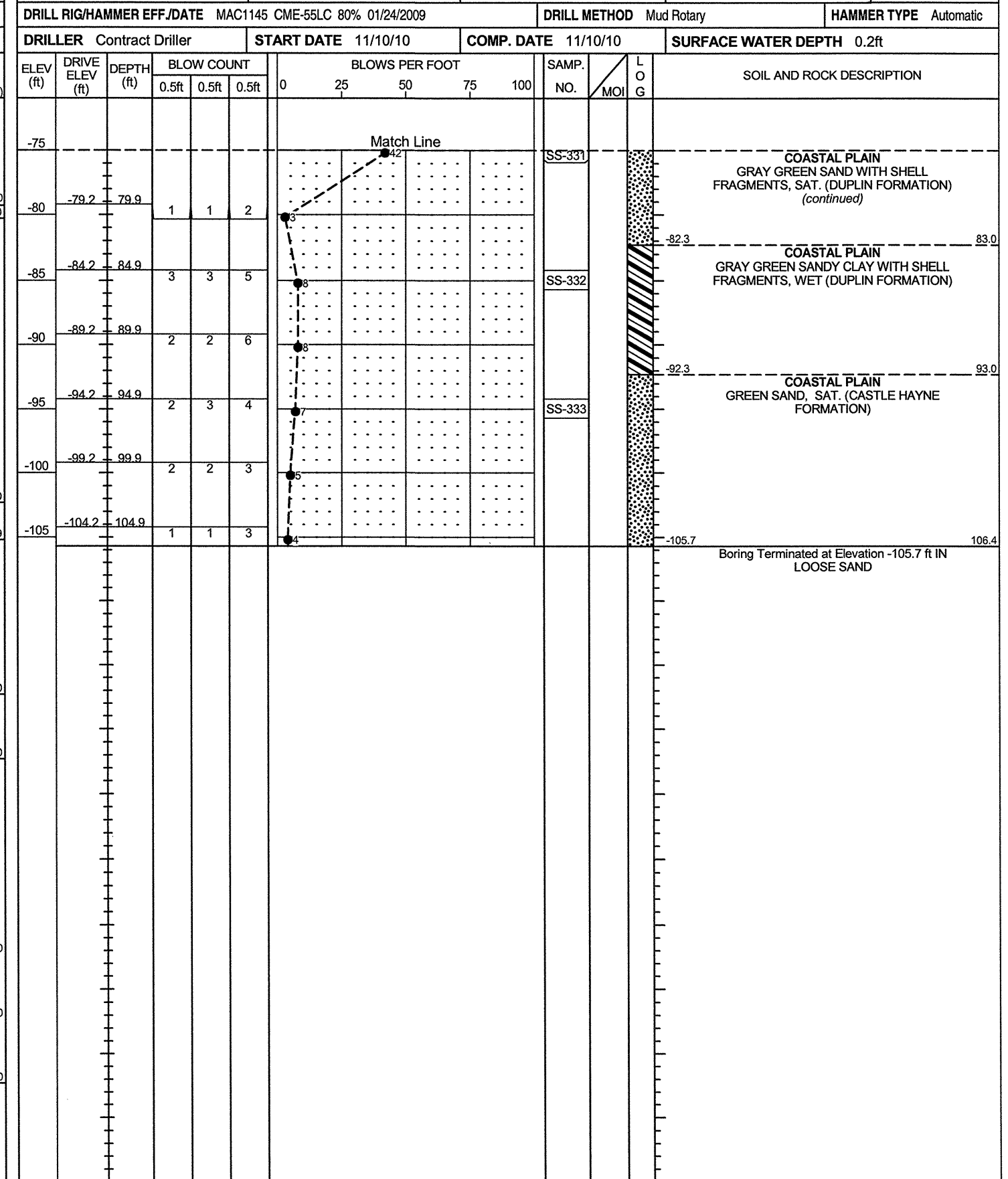


NCDOT BORE DOUBLE BORINGS.GPJ NC_DOT.GDT 3/2/11

WBS 34528.1.1	TIP R-3307	COUNTY CARTERET	GEOLOGIST Swartley, J. R.
SITE DESCRIPTION NEW BRIDGE ON -L- OVER GALLANTS CHANNEL			GROUND WTR (ft)
BORING NO. B4-A	STATION 32+68	OFFSET 37 ft LT	ALIGNMENT -L-
COLLAR ELEV. 0.7 ft	TOTAL DEPTH 106.4 ft	NORTHING 362,342	EASTING 2,698,968
DRILL RIG/HAMMER EFF./DATE MAC1145 CME-55LC 80% 01/24/2009		DRILL METHOD Mud Rotary	HAMMER TYPE Automatic
DRILLER Contract Driller	START DATE 11/10/10	COMP. DATE 11/10/10	SURFACE WATER DEPTH 0.2ft



WBS 34528.1.1	TIP R-3307	COUNTY CARTERET	GEOLOGIST Swartley, J. R.
SITE DESCRIPTION NEW BRIDGE ON -L- OVER GALLANTS CHANNEL			GROUND WTR (ft)
BORING NO. B4-A	STATION 32+68	OFFSET 37 ft LT	ALIGNMENT -L-
COLLAR ELEV. 0.7 ft	TOTAL DEPTH 106.4 ft	NORTHING 362,342	EASTING 2,698,968
DRILL RIG/HAMMER EFF./DATE MAC1145 CME-55LC 80% 01/24/2009		DRILL METHOD Mud Rotary	HAMMER TYPE Automatic
DRILLER Contract Driller	START DATE 11/10/10	COMP. DATE 11/10/10	SURFACE WATER DEPTH 0.2ft



NCDOT BORE DOUBLE BORINGS.GPJ NC_DOT.GDT 3/2/11

WBS 34528.1.1	TIP R-3307	COUNTY CARTERET	GEOLOGIST Swartley, J. R.
SITE DESCRIPTION NEW BRIDGE ON -L- OVER GALLANTS CHANNEL			GROUND WTR (ft)
BORING NO. B6-B	STATION 34+84	OFFSET 37 ft RT	ALIGNMENT -L-
COLLAR ELEV. 0.7 ft	TOTAL DEPTH 106.9 ft	NORTHING 362,382	EASTING 2,699,197
DRILL RIG/HAMMER EFF./DATE MAC1145 CME-55LC 80% 01/24/2009		DRILL METHOD Mud Rotary	HAMMER TYPE Automatic
DRILLER Contract Driller	START DATE 11/09/10	COMP. DATE 11/10/10	SURFACE WATER DEPTH 0.2ft

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT					SAMP. NO.	LOG MOI	LOG	SOIL AND ROCK DESCRIPTION	DEPTH (ft)
			0.5ft	0.5ft	0.5ft	0	25	50	75	100					
5															
0	0.7	0.0	WOH	WOH	WOH									0.7	WATER SURFACE (11/09/10)
-5	-4.7	5.4	WOH	3	5									-3.3	ALLUVIAL GRAY SANDY CLAY WITH TRACE ORGANIC MATTER, WET
-10	-9.7	10.4												-7.8	ALLUVIAL GRAY AND TAN SAND, SAT.
-15	-14.7	15.4	WOH	2	4									-23.3	ALLUVIAL GRAY SANDY CLAY WITH SHELL FRAGMENTS, WET
-20	-19.7	20.4		2	4	2								-28.3	UNDIVIDED COASTAL PLAIN TAN SAND, SAT.
-25	-24.7	25.4		2	1	1								-35.7	UNDIVIDED COASTAL PLAIN GRAY SANDY CLAY, WET
-30	-29.7	30.4		1	1	1								-43.3	UNDIVIDED COASTAL PLAIN GRAY SAND WITH SHELL FRAGMENTS, SAT.
-35	-34.7	35.4		4	7	4								-58.3	UNDIVIDED COASTAL PLAIN GRAY SANDY CLAY, WET
-40	-39.7	40.4		1	0	1								-63.3	UNDIVIDED COASTAL PLAIN GRAY SAND WITH SHELL FRAGMENTS, SAT.
-45	-44.7	45.4		6	8	8								-69.3	COASTAL PLAIN GRAY GREEN SAND WITH SHELL FRAGMENTS, SAT. (DUPLIN FORMATION)
-50	-49.7	50.4		1	1	2									
-55	-54.7	55.4		2	2	2									
-60	-59.7	60.4	WOH	2	4										
-65	-64.7	65.4		3	1	2									
-70	-69.7	70.4		9	15	16									
-75	-74.7	75.4													

WBS 34528.1.1	TIP R-3307	COUNTY CARTERET	GEOLOGIST Swartley, J. R.
SITE DESCRIPTION NEW BRIDGE ON -L- OVER GALLANTS CHANNEL			GROUND WTR (ft)
BORING NO. B6-B	STATION 34+84	OFFSET 37 ft RT	ALIGNMENT -L-
COLLAR ELEV. 0.7 ft	TOTAL DEPTH 106.9 ft	NORTHING 362,382	EASTING 2,699,197
DRILL RIG/HAMMER EFF./DATE MAC1145 CME-55LC 80% 01/24/2009		DRILL METHOD Mud Rotary	HAMMER TYPE Automatic
DRILLER Contract Driller	START DATE 11/09/10	COMP. DATE 11/10/10	SURFACE WATER DEPTH 0.2ft

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT					SAMP. NO.	LOG MOI	LOG	SOIL AND ROCK DESCRIPTION	DEPTH (ft)
			0.5ft	0.5ft	0.5ft	0	25	50	75	100					
-75															
-80	-79.7	80.4		3	2	2								-83.3	COASTAL PLAIN GRAY GREEN SAND WITH SHELL FRAGMENTS, SAT. (DUPLIN FORMATION) (continued)
-85	-84.7	85.4		2	4	5								-83.3	COASTAL PLAIN GRAY GREEN SANDY CLAY WITH SHELL FRAGMENTS, WET (DUPLIN FORMATION)
-90	-89.7	90.4		2	1	3								-93.3	COASTAL PLAIN GREEN SAND, SAT. (CASTLE HAYNE FORMATION)
-95	-94.7	95.4		2	3	4								-103.3	
-100	-99.7	100.4		2	2	3								-106.2	Boring Terminated at Elevation -106.2 ft IN LOOSE SAND
-105	-104.7	105.4	WOR	WOR	4										

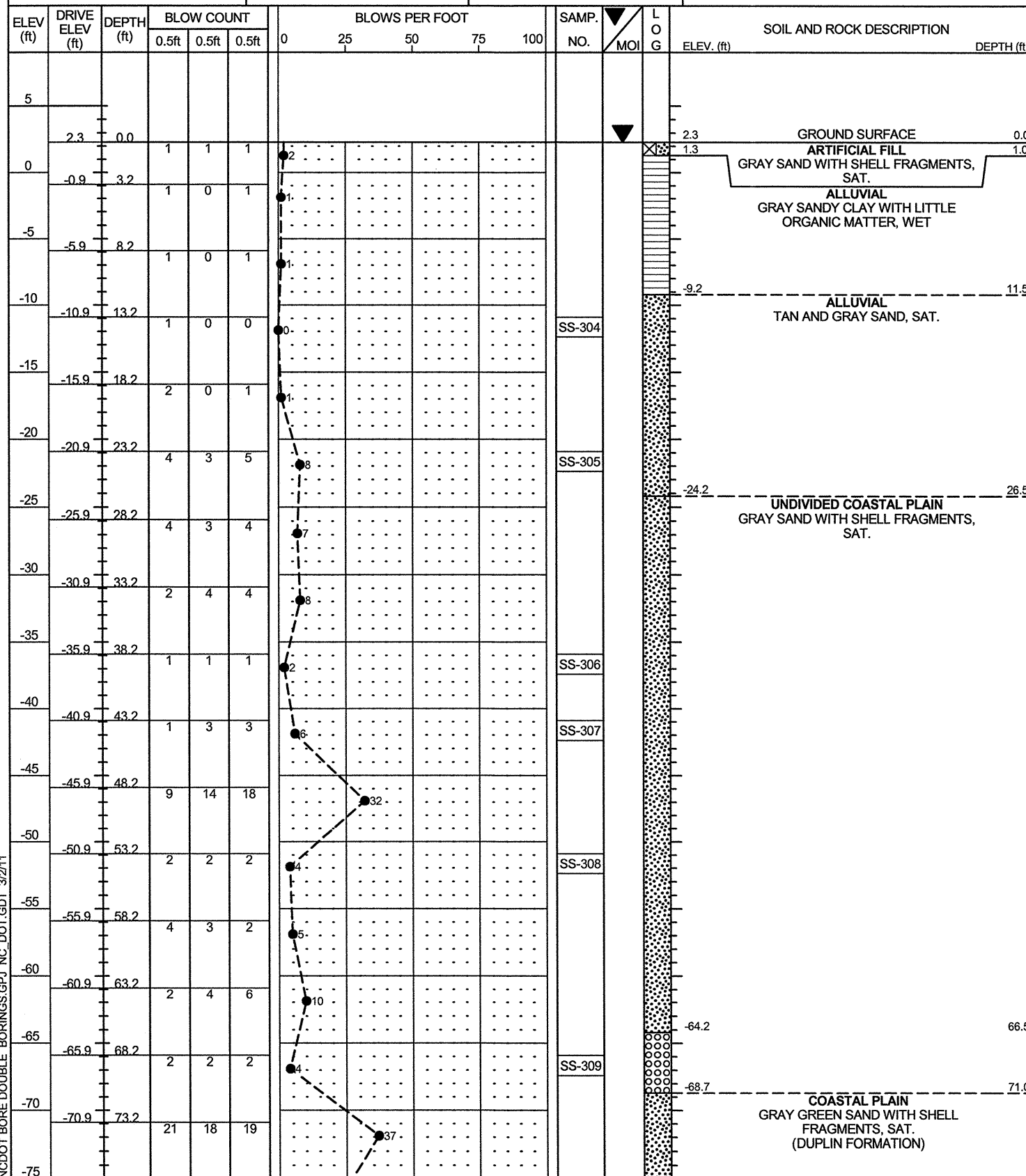
NCDOT BORE DOUBLE BORINGS.GPJ NC_DOT.GDT 3/2/11



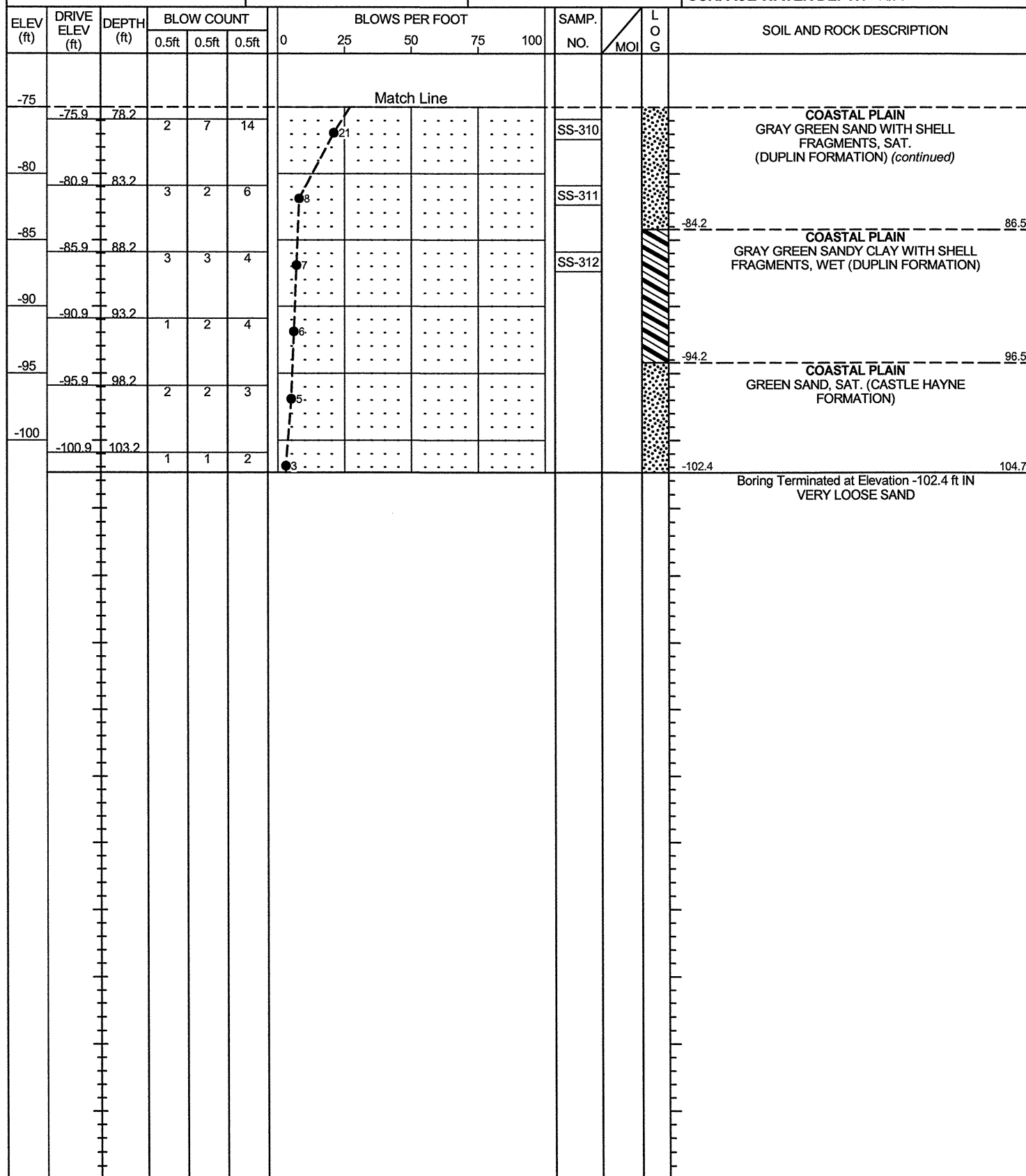
NCDOT GEOTECHNICAL ENGINEERING UNIT

BORELOG REPORT

WBS 34528.1.1	TIP R-3307	COUNTY CARTERET	GEOLOGIST Swartley, J. R.
SITE DESCRIPTION NEW BRIDGE ON -L- OVER GALLANTS CHANNEL			GROUND WTR (ft)
BORING NO. B8-A	STATION 37+44	OFFSET 37 ft LT	ALIGNMENT -L-
COLLAR ELEV. 2.3 ft	TOTAL DEPTH 104.7 ft	NORTHING 362,604	EASTING 2,699,371
DRILL RIG/HAMMER EFF./DATE MAC1145 CME-55LC 80% 01/24/2009		DRILL METHOD Mud Rotary	HAMMER TYPE Automatic
DRILLER Contract Driller	START DATE 11/08/10	COMP. DATE 11/09/10	SURFACE WATER DEPTH N/A

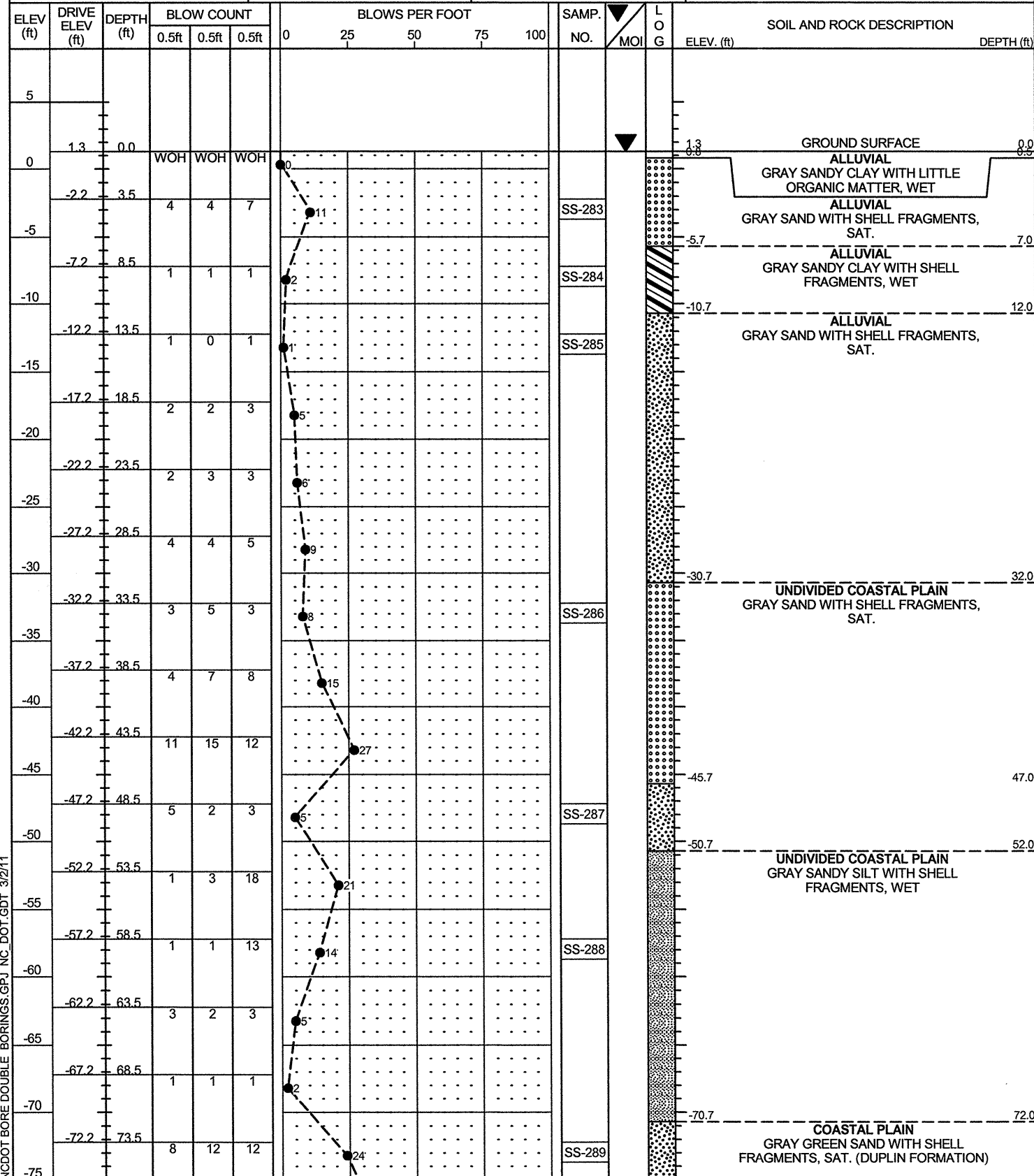


WBS 34528.1.1	TIP R-3307	COUNTY CARTERET	GEOLOGIST Swartley, J. R.
SITE DESCRIPTION NEW BRIDGE ON -L- OVER GALLANTS CHANNEL			GROUND WTR (ft)
BORING NO. B8-A	STATION 37+44	OFFSET 37 ft LT	ALIGNMENT -L-
COLLAR ELEV. 2.3 ft	TOTAL DEPTH 104.7 ft	NORTHING 362,604	EASTING 2,699,371
DRILL RIG/HAMMER EFF./DATE MAC1145 CME-55LC 80% 01/24/2009		DRILL METHOD Mud Rotary	HAMMER TYPE Automatic
DRILLER Contract Driller	START DATE 11/08/10	COMP. DATE 11/09/10	SURFACE WATER DEPTH N/A

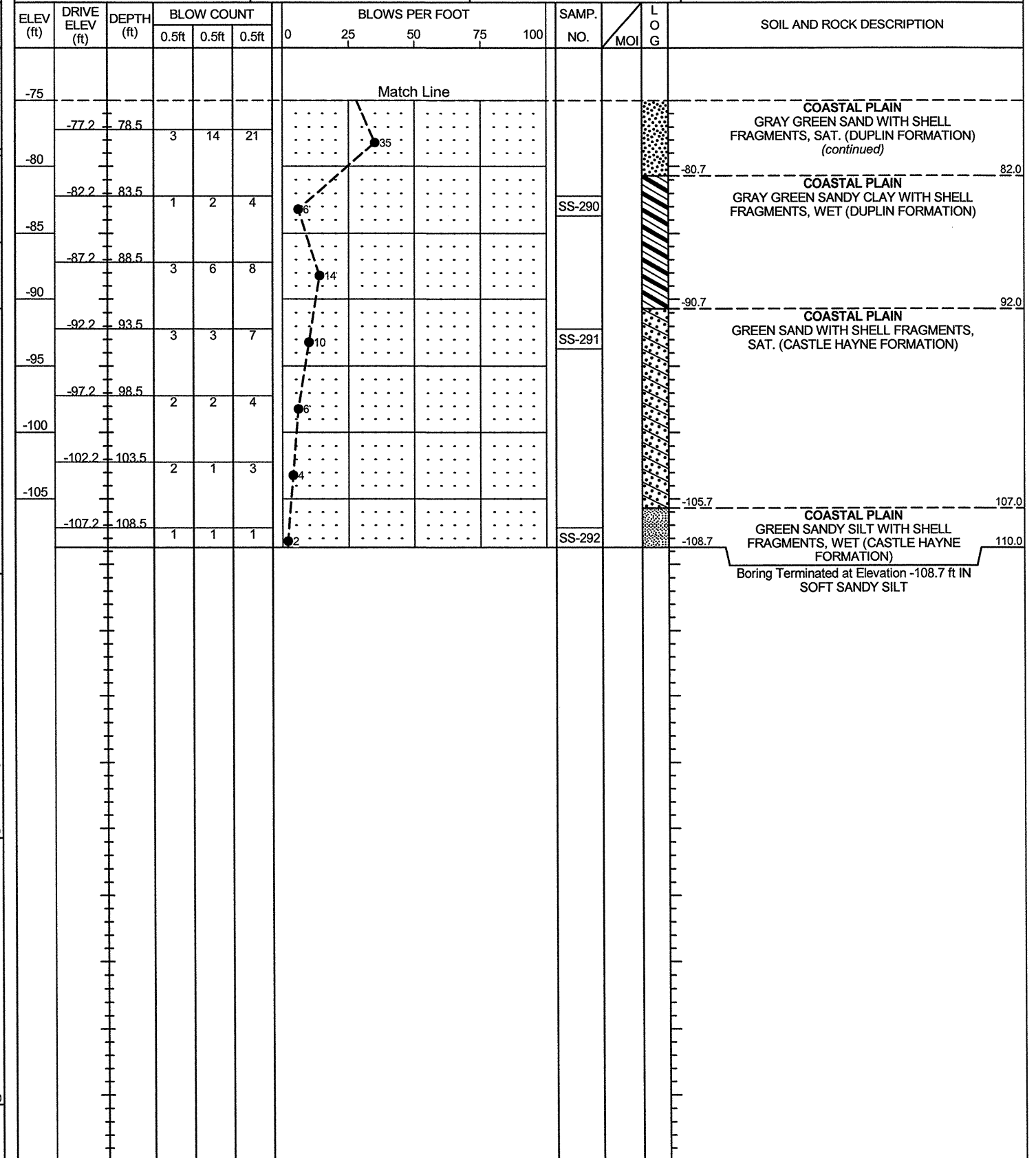


NCDOT BORE DOUBLE BORINGS.GPJ NC_DOT.GDT 3/2/11

WBS 34528.1.1	TIP R-3307	COUNTY CARTERET	GEOLOGIST Swartley, J. R.
SITE DESCRIPTION NEW BRIDGE ON -L- OVER GALLANTS CHANNEL			GROUND WTR (ft)
BORING NO. B10-A	STATION 40+04	OFFSET 37 ft LT	ALIGNMENT -L-
COLLAR ELEV. 1.3 ft	TOTAL DEPTH 110.0 ft	NORTHING 362,773	EASTING 2,699,551
DRILL RIG/HAMMER EFF./DATE MAC1145 CME-55LC 80% 01/24/2009		DRILL METHOD Mud Rotary	HAMMER TYPE Automatic
DRILLER Contract Driller	START DATE 11/04/10	COMP. DATE 11/05/10	SURFACE WATER DEPTH N/A



WBS 34528.1.1	TIP R-3307	COUNTY CARTERET	GEOLOGIST Swartley, J. R.
SITE DESCRIPTION NEW BRIDGE ON -L- OVER GALLANTS CHANNEL			GROUND WTR (ft)
BORING NO. B10-A	STATION 40+04	OFFSET 37 ft LT	ALIGNMENT -L-
COLLAR ELEV. 1.3 ft	TOTAL DEPTH 110.0 ft	NORTHING 362,773	EASTING 2,699,551
DRILL RIG/HAMMER EFF./DATE MAC1145 CME-55LC 80% 01/24/2009		DRILL METHOD Mud Rotary	HAMMER TYPE Automatic
DRILLER Contract Driller	START DATE 11/04/10	COMP. DATE 11/05/10	SURFACE WATER DEPTH N/A



NCDOT BORE DOUBLE BORINGS.GPJ NC.DOT.GDT 3/2/11

WBS 34528.1.1		TIP R-3307		COUNTY CARTERET		GEOLOGIST Swartley, J. R.										
SITE DESCRIPTION NEW BRIDGE ON -L- OVER GALLANTS CHANNEL							GROUND WTR (ft)									
BORING NO. B12-A		STATION 42+64		OFFSET 37 ft LT		ALIGNMENT -L-										
COLLAR ELEV. 0.4 ft		TOTAL DEPTH 114.0 ft		NORTHING 362,957		EASTING 2,699,740										
DRILL RIG/HAMMER EFF./DATE MAC1145 CME-55LC 80% 01/24/2009		DRILL METHOD Mud Rotary		HAMMER TYPE Automatic												
DRILLER Contract Driller		START DATE 10/29/10		COMP. DATE 11/01/10		SURFACE WATER DEPTH N/A										
ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT					SAMP. NO.	LOG MOI	LOG	SOIL AND ROCK DESCRIPTION	DEPTH (ft)	
			0.5ft	0.5ft	0.5ft	0	25	50	75	100						
5																
0	0.4	0.0													0.4	GROUND SURFACE
-5	-3.1	3.5	1	3	2										-2.6	ALLUVIAL GRAY SANDY CLAY WITH LITTLE ORGANIC MATTER, WET
-10	-8.1	8.5	WOH	WOH	WOH										-6.6	ALLUVIAL GRAY SAND WITH SHELL FRAGMENTS, SAT.
-15	-13.1	13.5	WOH	WOH	WOH											ALLUVIAL GRAY SANDY CLAY WITH SHELL FRAGMENTS, WET
-20	-18.1	18.5	WOH	WOH	WOH											
-25	-23.1	23.5	2	4	6											
-30	-28.1	28.5	3	5	6											
-35	-33.1	33.5	2	3	2											
-40	-38.1	38.5	6	11	6											
-45	-43.1	43.5	3	5	4											
-50	-48.1	48.5	1	2	1											
-55	-53.1	53.5	8	6	7											
-60	-58.1	58.5	6	5	7											
-65	-63.1	63.5	3	1	2											
-70	-68.1	68.5	3	4	6											
-75	-73.1	73.5	2	4	7											

WBS 34528.1.1		TIP R-3307		COUNTY CARTERET		GEOLOGIST Swartley, J. R.										
SITE DESCRIPTION NEW BRIDGE ON -L- OVER GALLANTS CHANNEL							GROUND WTR (ft)									
BORING NO. B12-A		STATION 42+64		OFFSET 37 ft LT		ALIGNMENT -L-										
COLLAR ELEV. 0.4 ft		TOTAL DEPTH 114.0 ft		NORTHING 362,957		EASTING 2,699,740										
DRILL RIG/HAMMER EFF./DATE MAC1145 CME-55LC 80% 01/24/2009		DRILL METHOD Mud Rotary		HAMMER TYPE Automatic												
DRILLER Contract Driller		START DATE 10/29/10		COMP. DATE 11/01/10		SURFACE WATER DEPTH N/A										
ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT					SAMP. NO.	LOG MOI	LOG	SOIL AND ROCK DESCRIPTION	DEPTH (ft)	
			0.5ft	0.5ft	0.5ft	0	25	50	75	100						
-75																
-80	-78.1	78.5	3	2	7											
-85	-83.1	83.5	2	2	5											
-90	-88.1	88.5	2	3	5											
-95	-93.1	93.5	2	3	6											
-100	-98.1	98.5	2	3	4											
-105	-103.1	103.5	2	3	12											
-110	-108.1	108.5	1	1	3											
	-113.1	113.5	100/0.5													

NCDOT BORE DOUBLE BORINGS.GPJ NC DOT.GDT 3/2/11

Match Line

SS-268

SS-269

SS-270

SS-271

SS-263 94%

SS-264

SS-265

SS-266

SS-267

COASTAL PLAIN GRAY GREEN SAND WITH SHELL FRAGMENTS, SAT. (DUPLIN FORMATION) (continued)

COASTAL PLAIN GRAY GREEN SANDY CLAY WITH SHELL FRAGMENTS, WET (DUPLIN FORMATION)

COASTAL PLAIN GREEN SAND, SAT. (CASTLE HAYNE FORMATION)

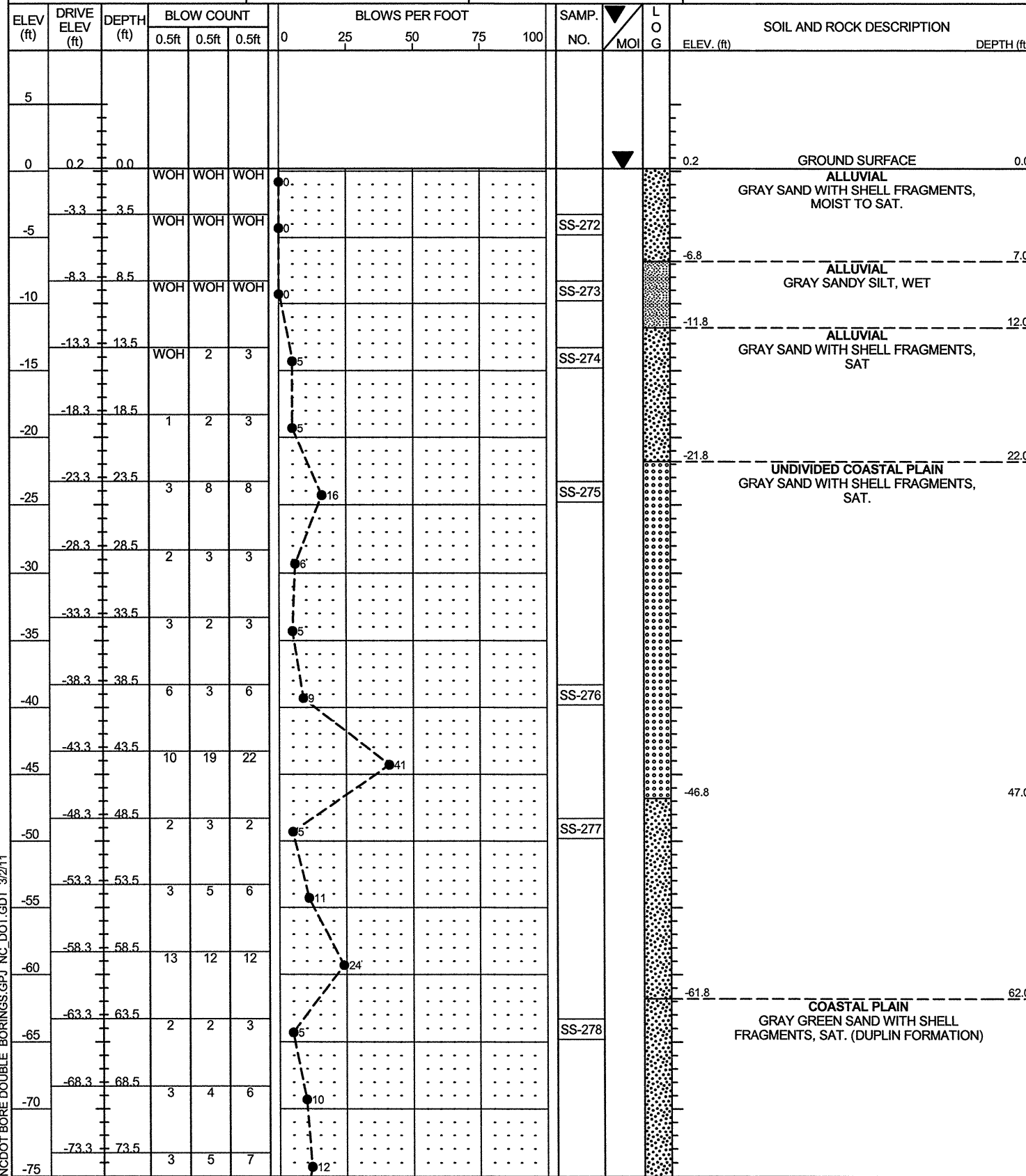
COASTAL PLAIN GRAY GREEN SANDY CLAY, WET (CASTLE HAYNE FORMATION)

COASTAL PLAIN GRAY GREEN CALCAREOUS SANDSTONE (CASTLE HAYNE FORMATION)

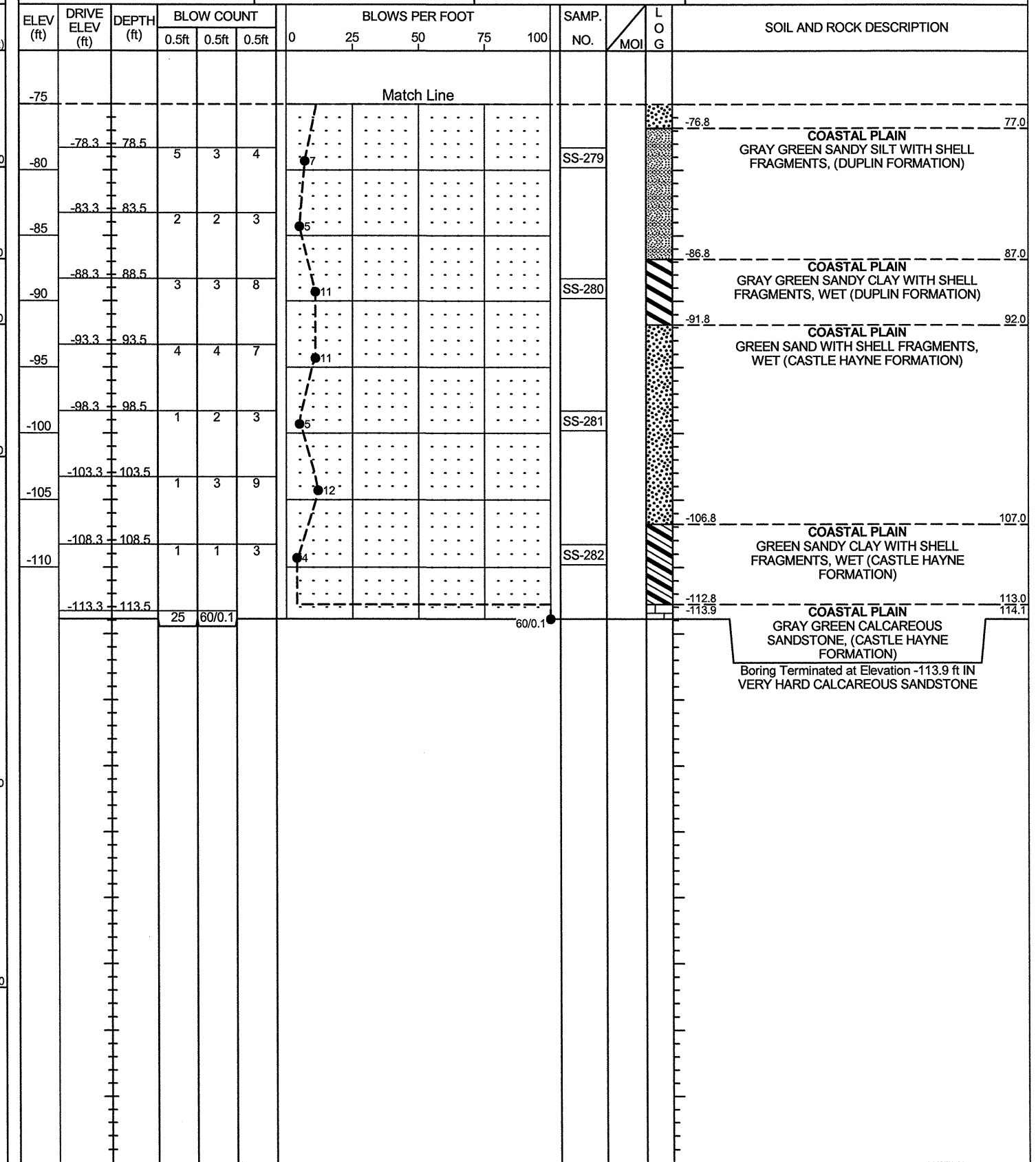
Boring Terminated at Elevation -113.6 ft IN SOFT SANDSTONE



WBS 34528.1.1	TIP R-3307	COUNTY CARTERET	GEOLOGIST Swartley, J. R.	
SITE DESCRIPTION NEW BRIDGE ON -L- OVER GALLANTS CHANNEL				GROUND WTR (ft)
BORING NO. B13-B	STATION 43+94	OFFSET 37 ft RT	ALIGNMENT -L-	0 HR. N/A
COLLAR ELEV. 0.2 ft	TOTAL DEPTH 114.1 ft	NORTHING 362,984	EASTING 2,699,865	24 HR. 0.0
DRILL RIG/HAMMER EFF/DATE MAC1145 CME-55LC 80% 01/24/2009		DRILL METHOD Mud Rotary	HAMMER TYPE Automatic	
DRILLER Contract Driller	START DATE 11/02/10	COMP. DATE 11/03/10	SURFACE WATER DEPTH N/A	



WBS 34528.1.1	TIP R-3307	COUNTY CARTERET	GEOLOGIST Swartley, J. R.	
SITE DESCRIPTION NEW BRIDGE ON -L- OVER GALLANTS CHANNEL				GROUND WTR (ft)
BORING NO. B13-B	STATION 43+94	OFFSET 37 ft RT	ALIGNMENT -L-	0 HR. N/A
COLLAR ELEV. 0.2 ft	TOTAL DEPTH 114.1 ft	NORTHING 362,984	EASTING 2,699,865	24 HR. 0.0
DRILL RIG/HAMMER EFF/DATE MAC1145 CME-55LC 80% 01/24/2009		DRILL METHOD Mud Rotary	HAMMER TYPE Automatic	
DRILLER Contract Driller	START DATE 11/02/10	COMP. DATE 11/03/10	SURFACE WATER DEPTH N/A	



NCDOT BORE DOUBLE BORINGS.GPJ NC_DOT.GDT 3/2/11



NCDOT GEOTECHNICAL ENGINEERING UNIT BORELOG REPORT

WBS 34528.1.1		TIP R-3307		COUNTY CARTERET		GEOLOGIST Swartley, J. R.								
SITE DESCRIPTION NEW BRIDGE ON -L- OVER GALLANTS CHANNEL							GROUND WTR (ft)							
BORING NO. B14-A		STATION 45+34		OFFSET 38 ft LT		ALIGNMENT -L-								
COLLAR ELEV. 0.2 ft		TOTAL DEPTH 129.7 ft		NORTHING 363,146		EASTING 2,699,943								
0 HR. N/A		24 HR. N/A												
DRILL RIG/HAMMER EFF./DATE MAC1145 CME-55LC 80% 01/24/2009				DRILL METHOD Mud Rotary		HAMMER TYPE Automatic								
DRILLER Contract Driller		START DATE 11/12/10		COMP. DATE 11/15/10		SURFACE WATER DEPTH 1.0ft								
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				
5														
0	0.2	0.0	WOH	WOH	WOH									WATER SURFACE (11/12/10) GROUND SURFACE
-5	-3.0	3.2	WOH	WOH	1									ALLUVIAL GRAY SAND WITH LITTLE ORGANIC MATTER, SAT.
-10	-8.0	8.2	WOH	WOH	WOH									
-15	-13.0	13.2	WOH	WOH	1									ALLUVIAL GRAY SAND WITH SHELL FRAGMENTS, SAT.
-20	-18.0	18.2	WOH	WOH	1									ALLUVIAL GRAY SANDY SILT WITH SHELL FRAGMENTS, WET
-25	-23.0	23.2	1	0	1									UNDIVIDED COASTAL PLAIN GRAY SAND WITH SHELL FRAGMENTS, SAT.
-30	-28.0	28.2	2	3	2									
-35	-33.0	33.2	2	4	5									
-40	-38.0	38.2	1	2	1									
-45	-43.0	43.2	2	1	3									
-50	-48.0	48.2	7	3	2									
-55	-53.0	53.2	1	1	3									
-60	-58.0	58.2	1	0	2									
-65	-63.0	63.2	3	3	3									
-70	-68.0	68.2	3	3	6									
-75	-73.0	73.2	6	7	15									

WBS 34528.1.1		TIP R-3307		COUNTY CARTERET		GEOLOGIST Swartley, J. R.								
SITE DESCRIPTION NEW BRIDGE ON -L- OVER GALLANTS CHANNEL							GROUND WTR (ft)							
BORING NO. B14-A		STATION 45+34		OFFSET 38 ft LT		ALIGNMENT -L-								
COLLAR ELEV. 0.2 ft		TOTAL DEPTH 129.7 ft		NORTHING 363,146		EASTING 2,699,943								
0 HR. N/A		24 HR. N/A												
DRILL RIG/HAMMER EFF./DATE MAC1145 CME-55LC 80% 01/24/2009				DRILL METHOD Mud Rotary		HAMMER TYPE Automatic								
DRILLER Contract Driller		START DATE 11/12/10		COMP. DATE 11/15/10		SURFACE WATER DEPTH 1.0ft								
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				
-75														
-80	-78.0	78.2	2	7	10									Match Line
-85	-83.0	83.2	1	1	2									
-90	-88.0	88.2	3	2	5									
-95	-93.0	93.2	2	3	6									
-100	-98.0	98.2	2	2	3									
-105	-103.0	103.2	2	3	2									
-110	-108.0	108.2	1	0	2									
-115	-113.0	113.2	2	13	87/0.3									
-120	-118.0	118.2	2	2	3									
-125	-123.0	123.2	3	3	3									
-129.5	-128.0	128.2	2	4	6									
-129.5														Boring Terminated at Elevation -129.5 ft IN LOOSE SAND

NCDOT BORE DOUBLE BORINGS.GPJ NC_DOT.GDT 3/2/11

WBS 34528.1.1	TIP R-3307	COUNTY CARTERET	GEOLOGIST Swartley, J. R.
SITE DESCRIPTION NEW BRIDGE ON -L- OVER GALLANTS CHANNEL			GROUND WTR (ft)
BORING NO. B15-B	STATION 46+46	OFFSET 8 ft RT	ALIGNMENT -L-
COLLAR ELEV. 0.8 ft	TOTAL DEPTH 149.7 ft	NORTHING 363,181	EASTING 2,700,049
DRILL RIG/HAMMER EFF./DATE MAC1145 CME-55LC 80% 01/24/2009		DRILL METHOD Mud Rotary	HAMMER TYPE Automatic
DRILLER Contract Driller	START DATE 11/16/10	COMP. DATE 11/17/10	SURFACE WATER DEPTH 1.5ft

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	0.8	0.0	WOH	WOH	WOH								WATER SURFACE (11/16/10)	0.8
													GROUND SURFACE	0.0
-5	-2.4	3.2	WOH	1	0						SS-347		ALLUVIAL GRAY SAND WITH SHELL FRAGMENTS, MOIST TO SAT.	
-10	-7.4	8.2	WOH	1	0									
-15	-12.4	13.2	1	3	2									
-20	-17.4	18.2	3	2	2						SS-348			
-25	-22.4	23.2	2	1	1									
-30	-27.4	28.2	WOH	1	1						SS-349		ALLUVIAL GRAY SANDY SILT, WET	
-35	-32.4	33.2	2	1	2								UNDIVIDED COASTAL PLAIN GRAY SAND WITH SHELL FRAGMENTS, SAT.	
-40	-37.4	38.2	1	1	1									
-45	-42.4	43.2	1	1	2									
-50	-47.4	48.2	2	1	2						SS-350			
-55	-52.4	53.2	2	4	7									
-60	-57.4	58.2	2	2	8									
-65	-62.4	63.2	4	1	3						SS-351		COASTAL PLAIN GRAY GREEN SAND WITH SHELL FRAGMENTS, SAT. (DUPLIN FORMATION)	
-70	-67.4	68.2	2	2	8									
-75	-72.4	73.2	9	13	13									

WBS 34528.1.1	TIP R-3307	COUNTY CARTERET	GEOLOGIST Swartley, J. R.
SITE DESCRIPTION NEW BRIDGE ON -L- OVER GALLANTS CHANNEL			GROUND WTR (ft)
BORING NO. B15-B	STATION 46+46	OFFSET 8 ft RT	ALIGNMENT -L-
COLLAR ELEV. 0.8 ft	TOTAL DEPTH 149.7 ft	NORTHING 363,181	EASTING 2,700,049
DRILL RIG/HAMMER EFF./DATE MAC1145 CME-55LC 80% 01/24/2009		DRILL METHOD Mud Rotary	HAMMER TYPE Automatic
DRILLER Contract Driller	START DATE 11/16/10	COMP. DATE 11/17/10	SURFACE WATER DEPTH 1.5ft

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				
-75													Match Line	
-80	-77.4	78.2	5	6	10						SS-352		COASTAL PLAIN GRAY GREEN SAND WITH SHELL FRAGMENTS, SAT. (DUPLIN FORMATION) (continued)	81.5
-85	-82.4	83.2	2	2	2						SS-353		COASTAL PLAIN GRAY GREEN SANDY CLAY WITH SHELL FRAGMENTS, WET (DUPLIN FORMATION)	86.5
-90	-87.4	88.2	3	3	4						SS-354	125%		96.5
-95	-92.4	93.2	3	4	6									
-100	-97.4	98.2	2	2	2								COASTAL PLAIN GREEN SAND WITH SHELL FRAGMENTS, SAT. (CASTLE HAYNE FORMATION)	96.5
-105	-102.4	103.2	5	4	6						SS-355			
-110	-107.4	108.2	1	1	1								COASTAL PLAIN GREEN SANDY CLAY WITH SHELL FRAGMENTS, WET (CASTLE HAYNE FORMATION)	106.5
-115	-112.4	113.2	20	100/0.3	100/0.3									
-120	-117.4	118.2	2	2	3								COASTAL PLAIN GRAY GREEN CALCAREOUS SANDSTONE, (CASTLE HAYNE FORMATION)	113.7
-125	-122.4	123.2	4	3	3						SS-356		COASTAL PLAIN GREEN SAND, SAT. (CASTLE HAYNE FORMATION)	115.2
-130	-127.4	128.2	3	3	3									
-135	-132.4	133.2	2	6	6						SS-357		COASTAL PLAIN GREEN SANDY CLAY, WET (CASTLE HAYNE FORMATION)	131.5
-140	-137.4	138.2	3	3	4									
-145	-142.4	143.2	2	3	4									
-148.9	-147.4	148.2	3	2	3									
													Boring Terminated at Elevation -148.9 ft IN MED. STIFF SANDY CLAY	149.7

NCDOT BORE DOUBLE BORINGS.GPJ NC_DOT.GDT 3/2/11



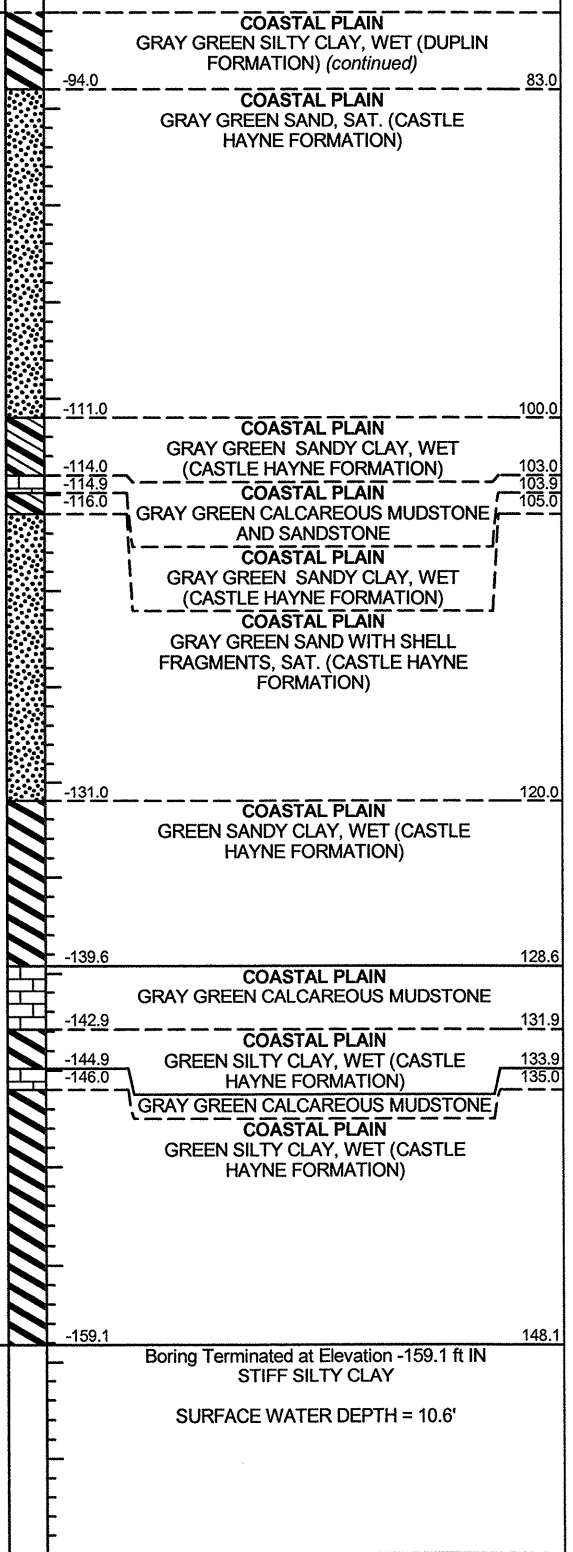
NCDOT GEOTECHNICAL ENGINEERING UNIT

BORELOG REPORT

WBS 34528.1.1		TIP R-3307		COUNTY CARTERET		GEOLOGIST Swartley, J. R.												
SITE DESCRIPTION NEW BRIDGE ON -L- OVER GALLANTS CHANNEL							GROUND WTR (ft)											
BORING NO. B16-A		STATION 48+82		OFFSET 39 ft LT		ALIGNMENT -L-												
COLLAR ELEV. -11.0 ft		TOTAL DEPTH 148.1 ft		NORTHING 363,377		EASTING 2,700,187												
DRILL RIG/HAMMER EFF./DATE MAC1145 CME-55LC 80% 01/24/2009		DRILL METHOD Mud Rotary		HAMMER TYPE Automatic														
DRILLER Contract Driller		START DATE 10/04/10		COMP. DATE 10/05/10		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								
-10	-11.0	0.0	1	2	3											-11.0	GROUND SURFACE	0.0
-15	-14.0	3.0	1	3	4												ALLUVIAL GRAY SAND, SAT.	
-20	-18.9	7.9	1	3	5													
-25	-23.8	12.8	3	2	5													
-30	-28.7	17.7	3	1	3												UNDIVIDED COASTAL PLAIN GRAY SAND WITH SHELL FRAGMENTS, SAT	16.0
-35	-33.6	22.6	4	8	10													
-40	-38.5	27.5	4	6	5													
-45	-43.3	32.3	3	4	5													
-50	-47.5	36.5	2	2	2													
-55	-52.3	41.3	2	1	5													
-60	-57.1	46.1	2	1	2													
-65	-61.9	50.9	3	2	3													
-70	-66.6	55.6	5	3	6													
-75	-71.1	60.1	6	9	10													
-80	-75.9	64.9	4	5	5													
-85	-80.8	69.8	5	4	6													
-90	-86.1	75.1	2	2	8													

WBS 34528.1.1		TIP R-3307		COUNTY CARTERET		GEOLOGIST Swartley, J. R.												
SITE DESCRIPTION NEW BRIDGE ON -L- OVER GALLANTS CHANNEL							GROUND WTR (ft)											
BORING NO. B16-A		STATION 48+82		OFFSET 39 ft LT		ALIGNMENT -L-												
COLLAR ELEV. -11.0 ft		TOTAL DEPTH 148.1 ft		NORTHING 363,377		EASTING 2,700,187												
DRILL RIG/HAMMER EFF./DATE MAC1145 CME-55LC 80% 01/24/2009		DRILL METHOD Mud Rotary		HAMMER TYPE Automatic														
DRILLER Contract Driller		START DATE 10/04/10		COMP. DATE 10/05/10		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								
-90	-91.4	80.4	2	4	4													
-95	-96.7	85.7	3	4	5													
-100	-101.9	90.9	3	4	6													
-105	-107.1	96.1	2	2	3													
-110	-112.4	101.4	2	2	9													
-115	-118.1	107.1	3	3	4													
-120	-123.3	112.3	4	5	6													
-125	-128.5	117.5	3	5	6													
-130	-133.7	122.7	3	4	5													
-135	-139.1	128.1	3	42	51													
-140	-143.9	132.9	4	4	60/0.1													
-145	-148.4	137.4	3	5	5													
-150	-153.0	142.0	3	4	6													
-155	-157.6	146.6	1	5	4													

NCDOT BORE DOUBLE BORINGS.GPJ NC_DOT.GDT 3/2/11



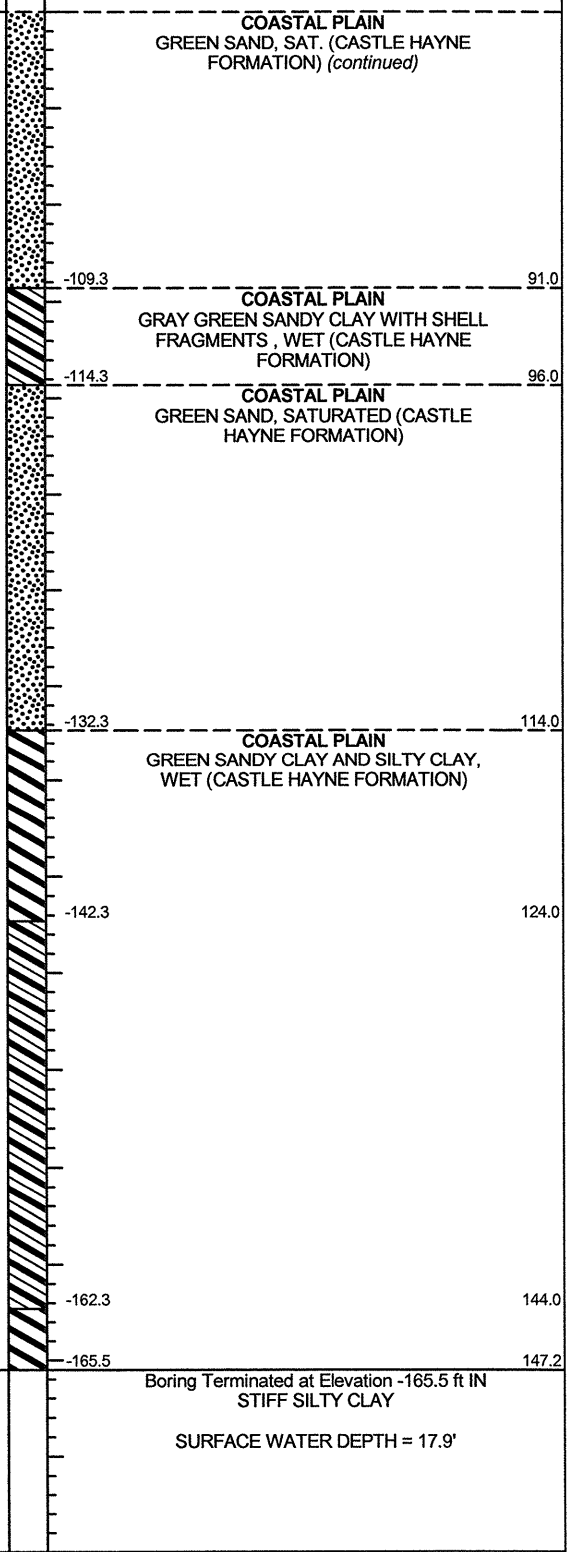
WBS 34528.1.1	TIP R-3307	COUNTY CARTERET	GEOLOGIST Swartley, J. R.	
SITE DESCRIPTION NEW BRIDGE ON -L- OVER GALLANTS CHANNEL				GROUND WTR (ft)
BORING NO. B16-B	STATION 48+64	OFFSET 6 ft RT	ALIGNMENT -L-	0 HR. N/A
COLLAR ELEV. -18.3 ft	TOTAL DEPTH 147.2 ft	NORTHING 363,332	EASTING 2,700,206	24 HR. N/A
DRILL RIG/HAMMER EFF/DATE MAC1145 CME-55LC 80% 01/24/2009		DRILL METHOD Mud Rotary	HAMMER TYPE Automatic	
DRILLER Contract Driller	START DATE 09/16/10	COMP. DATE 09/17/10	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															
-18.3	-18.3	0.0											GROUND SURFACE	0.0	
-20			WOH	WOH	WOH								ALLUVIAL GRAY SAND AND CLAYEY SAND WITH SHELL FRAGMENTS, SAT.		
-24.0		5.7	2	2	2										
-29.0		10.7	1	3	4										
-34.0		15.7	3	2	3										
-39.0		20.7	4	3	4										
-44.0		25.7	1	3	3										
-49.0		30.7	2	2	2										
-53.8		35.5	2	5	8										
-58.5		40.2	3	4	6										
-63.2		44.9	1	2	1										
-67.3		49.0	4	8	11										
-72.1		53.8	3	5	8										
-76.8		58.5	2	4	6										
-81.6		63.3	2	4	4										
-86.6		68.3	3	4	6										
-91.4		73.1	3	3	6										

WBS 34528.1.1	TIP R-3307	COUNTY CARTERET	GEOLOGIST Swartley, J. R.	
SITE DESCRIPTION NEW BRIDGE ON -L- OVER GALLANTS CHANNEL				GROUND WTR (ft)
BORING NO. B16-B	STATION 48+64	OFFSET 6 ft RT	ALIGNMENT -L-	0 HR. N/A
COLLAR ELEV. -18.3 ft	TOTAL DEPTH 147.2 ft	NORTHING 363,332	EASTING 2,700,206	24 HR. N/A
DRILL RIG/HAMMER EFF/DATE MAC1145 CME-55LC 80% 01/24/2009		DRILL METHOD Mud Rotary	HAMMER TYPE Automatic	
DRILLER Contract Driller	START DATE 09/16/10	COMP. DATE 09/17/10	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				
-95														
-96.3		78.0	3	3	3								Match Line	
-101.2		82.9	3	3	3									
-106.2		87.9	3	4	4									
-111.2		92.9	2	2	2									
-116.2		97.9	5	5	5									
-118.7		100.4	3	3	3									
-123.9		105.6	3	3	4									
-129.1		110.8	3	4	5									
-134.2		115.9	3	3	4									
-139.3		121.0	3	4	4									
-144.3		126.0	3	4	4									
-149.4		131.1	3	4	5									
-154.4		136.1	4	3	5									
-159.2		140.9	3	4	4									
-164.0		145.7	3	5	6									

NCDOT BORE DOUBLE BORINGS.GPJ NC_DOT.GDT 3/2/11



Boring Terminated at Elevation -165.5 ft IN STIFF SILTY CLAY
 SURFACE WATER DEPTH = 17.9'

WBS 34528.1.1	TIP R-3307	COUNTY CARTERET	GEOLOGIST Swartley, J. R.
SITE DESCRIPTION NEW BRIDGE ON -L- OVER GALLANTS CHANNEL			GROUND WTR (ft)
BORING NO. B17-A	STATION 51+28	OFFSET 16 ft LT	ALIGNMENT -L-
COLLAR ELEV. -39.1 ft	TOTAL DEPTH 149.0 ft	NORTHING 363,530	EASTING 2,700,382
DRILL RIG/HAMMER EFF./DATE MAC1145 CME-55LC 80% 01/24/2009		DRILL METHOD Mud Rotary	HAMMER TYPE Automatic
DRILLER Contract Driller	START DATE 10/06/10	COMP. DATE 10/22/10	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				
-35														
-40	-39.1	0.0											GROUND SURFACE	0.0
-45	-44.9	5.8	WOR	WOR	WOR								ALLUVIAL GRAY SAND WITH SHELL FRAGMENTS, SAT.	
-50	-49.9	10.8	WOH	WOH	WOH									
-55	-54.9	15.8											UNDIVIDED COASTAL PLAIN GRAY SAND WITH SHELL FRAGMENTS, SAT.	
-60	-61.9	22.8												
-65	-66.9	27.8												
-70	-71.9	32.8											COASTAL PLAIN GRAY GREEN SAND WITH SHELL FRAGMENTS, SAT. (DUPLIN FORMATION)	
-75	-76.9	37.8												
-80	-81.9	42.8											COASTAL PLAIN GRAY GREEN SANDY CLAY WITH SHELL FRAGMENTS, WET (DUPLIN FORMATION)	
-85	-86.4	47.3											COASTAL PLAIN GRAY GREEN SANDY SILT WITH SHELL FRAGMENTS, WET (DUPLIN FORMATION)	
-90	-91.4	52.3												
-95	-96.4	57.3											COASTAL PLAIN GRAY GREEN SANDY CLAY, WET (DUPLIN FORMATION)	
-100	-101.9	62.8											COASTAL PLAIN GREEN SANDY SILT WITH SHELL FRAGMENTS, WET (CASTLE HAYNE FORMATION)	
-105	-107.1	68.0											GRAY GREEN CALCAREOUS MUDSTONE	
-110	-112.6	73.5											COASTAL PLAIN GREEN SANDY SILT WITH SHELL FRAGMENTS, WET (CASTLE HAYNE FORMATION)	
-115														

WBS 34528.1.1	TIP R-3307	COUNTY CARTERET	GEOLOGIST Swartley, J. R.
SITE DESCRIPTION NEW BRIDGE ON -L- OVER GALLANTS CHANNEL			GROUND WTR (ft)
BORING NO. B17-A	STATION 51+28	OFFSET 16 ft LT	ALIGNMENT -L-
COLLAR ELEV. -39.1 ft	TOTAL DEPTH 149.0 ft	NORTHING 363,530	EASTING 2,700,382
DRILL RIG/HAMMER EFF./DATE MAC1145 CME-55LC 80% 01/24/2009		DRILL METHOD Mud Rotary	HAMMER TYPE Automatic
DRILLER Contract Driller	START DATE 10/06/10	COMP. DATE 10/22/10	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				
-115														
-120	-117.8	78.7											Match Line	
-125	-123.1	84.0												
-130	-129.0	89.9												
-135	-134.1	95.0												
-140	-139.2	100.1												
-145	-144.2	105.1												
-150	-149.1	110.0												
-155	-153.9	114.8												
-160	-158.6	119.5												
-165	-163.1	124.0												
-170	-168.1	129.0												
-175	-172.6	133.5												
-180	-177.6	138.5												
-185	-182.1	143.0												
-188.1	-186.6	147.5												
-188.1													Boring Terminated at Elevation -188.1 ft IN STIFF SANDY CLAY	149.0
													SURFACE WATER DEPTH = 36.3'	

NCDOT BORE DOUBLE BORINGS.GPJ NC_DOT.GDT 3/2/11

WBS 34528.1.1	TIP R-3307	COUNTY CARTERET	GEOLOGIST Swartley, J. R.	
SITE DESCRIPTION NEW BRIDGE ON -L- OVER GALLANTS CHANNEL				GROUND WTR (ft)
BORING NO. B17-B	STATION 51+72	OFFSET 26 ft RT	ALIGNMENT -L-	0 HR. N/A
COLLAR ELEV. -36.4 ft	TOTAL DEPTH 149.8 ft	NORTHING 363,529	EASTING 2,700,443	24 HR. N/A
DRILL RIG/HAMMER EFF/DATE MAC1145 CME-55LC 80% 01/24/2009		DRILL METHOD Mud Rotary	HAMMER TYPE Automatic	
DRILLER Contract Driller	START DATE 09/22/10	COMP. DATE 09/22/10	SURFACE WATER DEPTH N/A	

WBS 34528.1.1	TIP R-3307	COUNTY CARTERET	GEOLOGIST Swartley, J. R.	
SITE DESCRIPTION NEW BRIDGE ON -L- OVER GALLANTS CHANNEL				GROUND WTR (ft)
BORING NO. B17-B	STATION 51+72	OFFSET 26 ft RT	ALIGNMENT -L-	0 HR. N/A
COLLAR ELEV. -36.4 ft	TOTAL DEPTH 149.8 ft	NORTHING 363,529	EASTING 2,700,443	24 HR. N/A
DRILL RIG/HAMMER EFF/DATE MAC1145 CME-55LC 80% 01/24/2009		DRILL METHOD Mud Rotary	HAMMER TYPE Automatic	
DRILLER Contract Driller	START DATE 09/22/10	COMP. DATE 09/22/10	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				
-35	-36.4	0.0	WOR	WOR	WOR									0.0
-40	-40.3	3.9	WOR	WOR	WOR									5.2
-45	-45.0	8.6	2	1	2									7.0
-50	-49.9	13.5	1	2	2									
-55	-53.7	17.3	1	2	2									
-60	-58.6	22.2	1	2	4									
-65	-63.6	27.2	2	1	1									25.5
-70	-68.4	32.0	3	4	8									
-75	-73.5	37.1	3	4	10									
-80	-78.5	42.1	3	4	5									
-85	-83.7	47.3	4	6	6									
-90	-88.7	52.3	2	7	8									
-95	-94.0	57.6	2	3	4									
-100	-99.3	62.9	2	2	4									
-105	-104.6	68.2	10	45	55									68.7
-110	-109.8	73.4	1	2	2									71.0
-115														76.0

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				
-115	-115.1	78.7	1	2	2									
-120	-120.2	83.8	5	10	6									81.0
-125	-126.0	89.6	3	4	4									
-130	-131.0	94.6	3	3	5									
-135	-136.1	99.7	3	4	5									
-140	-141.1	104.7	2	3	3									
-145	-146.0	109.6	3	4	4									
-150	-150.9	114.5	3	3	4									
-155	-155.5	119.1	3	4	5									
-160	-160.4	124.0	4	4	7									
-165	-164.8	128.4	3	4	5									
-170	-168.5	132.1	3	5	5									
-175	-173.5	137.1	3	3	4									
-180	-178.8	142.4	2	3	4									
-185	-184.7	148.3	3	4	4									149.8

NCDOT BORE DOUBLE BORINGS.GPJ NC_DOT.GDT 3/2/11

Boring Terminated at Elevation -186.2 ft IN
 STIFF SANDY CLAY
 SURFACE WATER DEPTH = 36.0'



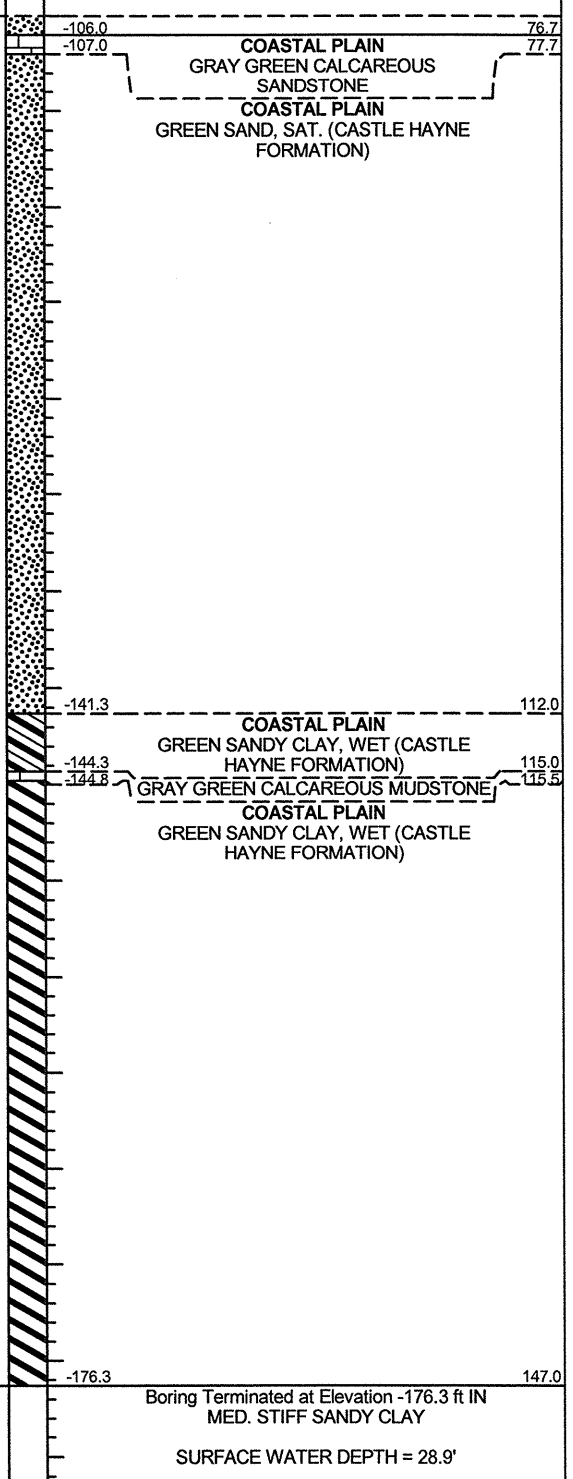
NCDOT GEOTECHNICAL ENGINEERING UNIT

BORELOG REPORT

WBS 34528.1.1		TIP R-3307		COUNTY CARTERET		GEOLOGIST Swartley, J. R.										
SITE DESCRIPTION NEW BRIDGE ON -L- OVER GALLANTS CHANNEL							GROUND WTR (ft)									
BORING NO. B18-A		STATION 53+80		OFFSET 32 ft LT		ALIGNMENT -L-										
COLLAR ELEV. -29.3 ft		TOTAL DEPTH 147.0 ft		NORTHING 363,714		EASTING 2,700,553										
DRILL RIG/HAMMER EFF./DATE MAC1145 CME-55LC 80% 01/24/2009		DRILL METHOD Mud Rotary		HAMMER TYPE Automatic												
DRILLER Contract Driller		START DATE 10/18/10		COMP. DATE 10/20/10		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						
-25																
-30	-29.3	0.0														
-35	-34.4	5.1														
-40	-38.8	9.5	1	0	0											
-45	-43.6	14.3	1	1	2											
-50	-48.3	19.0	2	2	3											
-55	-53.1	23.8	1	1	3											
-60	-58.1	28.8	1	1	2											
-65	-63.5	34.2	2	3	3											
-70	-68.5	39.2	2	5	6											
-75	-73.7	44.4	3	7	10											
-80	-78.9	49.6	4	5	6											
-85	-83.9	54.6	2	4	4											
-90	-89.3	60.0	3	5	6											
-95	-94.3	65.0	2	6	7											
-100	-99.6	70.3	2	2	3											
-105	-105.0	75.7														

WBS 34528.1.1		TIP R-3307		COUNTY CARTERET		GEOLOGIST Swartley, J. R.										
SITE DESCRIPTION NEW BRIDGE ON -L- OVER GALLANTS CHANNEL							GROUND WTR (ft)									
BORING NO. B18-A		STATION 53+80		OFFSET 32 ft LT		ALIGNMENT -L-										
COLLAR ELEV. -29.3 ft		TOTAL DEPTH 147.0 ft		NORTHING 363,714		EASTING 2,700,553										
DRILL RIG/HAMMER EFF./DATE MAC1145 CME-55LC 80% 01/24/2009		DRILL METHOD Mud Rotary		HAMMER TYPE Automatic												
DRILLER Contract Driller		START DATE 10/18/10		COMP. DATE 10/20/10		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						
-105																
-110	-110.1	80.8	2	2	3											
-115	-115.5	86.2	1	3	2											
-120	-120.5	91.2	6	10	9											
-125	-125.5	96.2	3	3	5											
-130	-129.8	100.5	3	4	5											
-135	-134.6	105.3	2	3	4											
-140	-139.2	109.9	2	3	4											
-145	-142.7	113.4	3	12	11											
-150	-148.1	118.8	3	3	5											
-155	-153.3	124.0	3	3	4											
-160	-158.7	129.4	3	3	5											
-165	-163.9	134.6	3	5	6											
-170	-169.2	139.9	4	5	6											
-175	-174.8	145.5	3	3	5											

NCDOT BORE DOUBLE BORINGS.GPJ NC_DOT_GDT_3/2/11



WBS 34528.1.1		TIP R-3307		COUNTY CARTERET		GEOLOGIST Swartley, J. R.										
SITE DESCRIPTION NEW BRIDGE ON -L- OVER GALLANTS CHANNEL							GROUND WTR (ft)									
BORING NO. B19-B		STATION 54+62		OFFSET 34 ft RT		ALIGNMENT -L-										
COLLAR ELEV. -24.5 ft		TOTAL DEPTH 121.5 ft		NORTHING 363,719		EASTING 2,700,658										
DRILL RIG/HAMMER EFF./DATE MAC1145 CME-55LC 80% 01/24/2009		DRILL METHOD Mud Rotary		HAMMER TYPE Automatic												
DRILLER Contract Driller		START DATE 10/13/10		COMP. DATE 10/15/10		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						
-20																
-25	-24.5	0.0														
-30	-29.0	4.5	WOR	WOR	WOR											
-35	-34.0	9.5	WOR	WOR	WOR											
-40	-39.4	14.9														
-45	-44.6	20.1														
-50	-51.0	26.5														
-55	-56.0	31.5														
-60	-60.5	36.0														
-65	-65.3	40.8														
-70	-70.3	45.8														
-75	-75.0	50.5														
-80	-79.3	54.8														
-85	-83.3	58.8														
-90	-88.3	63.8														
-95	-93.3	68.8														
-100	-98.3	73.8														

WBS 34528.1.1		TIP R-3307		COUNTY CARTERET		GEOLOGIST Swartley, J. R.										
SITE DESCRIPTION NEW BRIDGE ON -L- OVER GALLANTS CHANNEL							GROUND WTR (ft)									
BORING NO. B19-B		STATION 54+62		OFFSET 34 ft RT		ALIGNMENT -L-										
COLLAR ELEV. -24.5 ft		TOTAL DEPTH 121.5 ft		NORTHING 363,719		EASTING 2,700,658										
DRILL RIG/HAMMER EFF./DATE MAC1145 CME-55LC 80% 01/24/2009		DRILL METHOD Mud Rotary		HAMMER TYPE Automatic												
DRILLER Contract Driller		START DATE 10/13/10		COMP. DATE 10/15/10		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						
-100																
-105	-103.5	79.0														
-110	-108.7	84.2														
-115	-114.0	89.5														
-120	-120.6	96.1														
-125	-125.7	101.2														
-130	-130.7	106.2														
-135	-135.5	111.0														
-140	-140.0	115.5														
-145	-144.5	120.0														

NCDOT BORE DOUBLE BORINGS.GPJ NC_DOT.GDT 3/2/11

WBS 34528.1.1		TIP R-3307		COUNTY CARTERET		GEOLOGIST Swartley, J. R.											
SITE DESCRIPTION NEW BRIDGE ON -L- OVER GALLANTS CHANNEL							GROUND WTR (ft)										
BORING NO. B20-B	STATION 55+51	OFFSET 1 ft RT	ALIGNMENT -L-	0 HR.	N/A												
COLLAR ELEV. -22.2 ft	TOTAL DEPTH 122.1 ft	NORTHING 363,797	EASTING 2,700,710	24 HR.	N/A												
DRILL RIG/HAMMER EFF./DATE MAC1145 CME-55LC 80% 01/24/2009				DRILL METHOD Mud Rotary		HAMMER TYPE Automatic											
DRILLER Contract Driller		START DATE 09/23/10	COMP. DATE 09/24/10	SURFACE WATER DEPTH N/A													
ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT					SAMP. NO.	LOG MOI	LOG SOIL AND ROCK DESCRIPTION	DEPTH (ft)			
			0.5ft	0.5ft	0.5ft	0	25	50	75	100							
-20	-22.2	0.0	WOR	WOR	WOR	0											
-25	-24.6	2.4	WOR	WOR	WOR	0											
-30	-28.6	6.4	WOR	WOR	WOR	0											
-35	-33.6	11.4	WOR	WOR	WOR	0											
-40	-38.6	16.4	WOR	WOR	WOR	0											
-45	-43.9	21.7	WOH	WOH	1	1											
-50	-48.9	26.7				2	3	2									
-55	-54.6	32.4				4	7	6									
-60	-59.8	37.6				4	5	4									
-65	-64.8	42.6				3	5	3									
-70	-69.9	47.7				5	9	12									
-75	-75.1	52.9				4	7	10									
-80	-80.2	58.0				3	7	11									
-85	-85.2	63.0				1	2	3									
-90	-90.2	68.0				3	4	5									
-95	-95.2	73.0				4	4	6									
-100																	

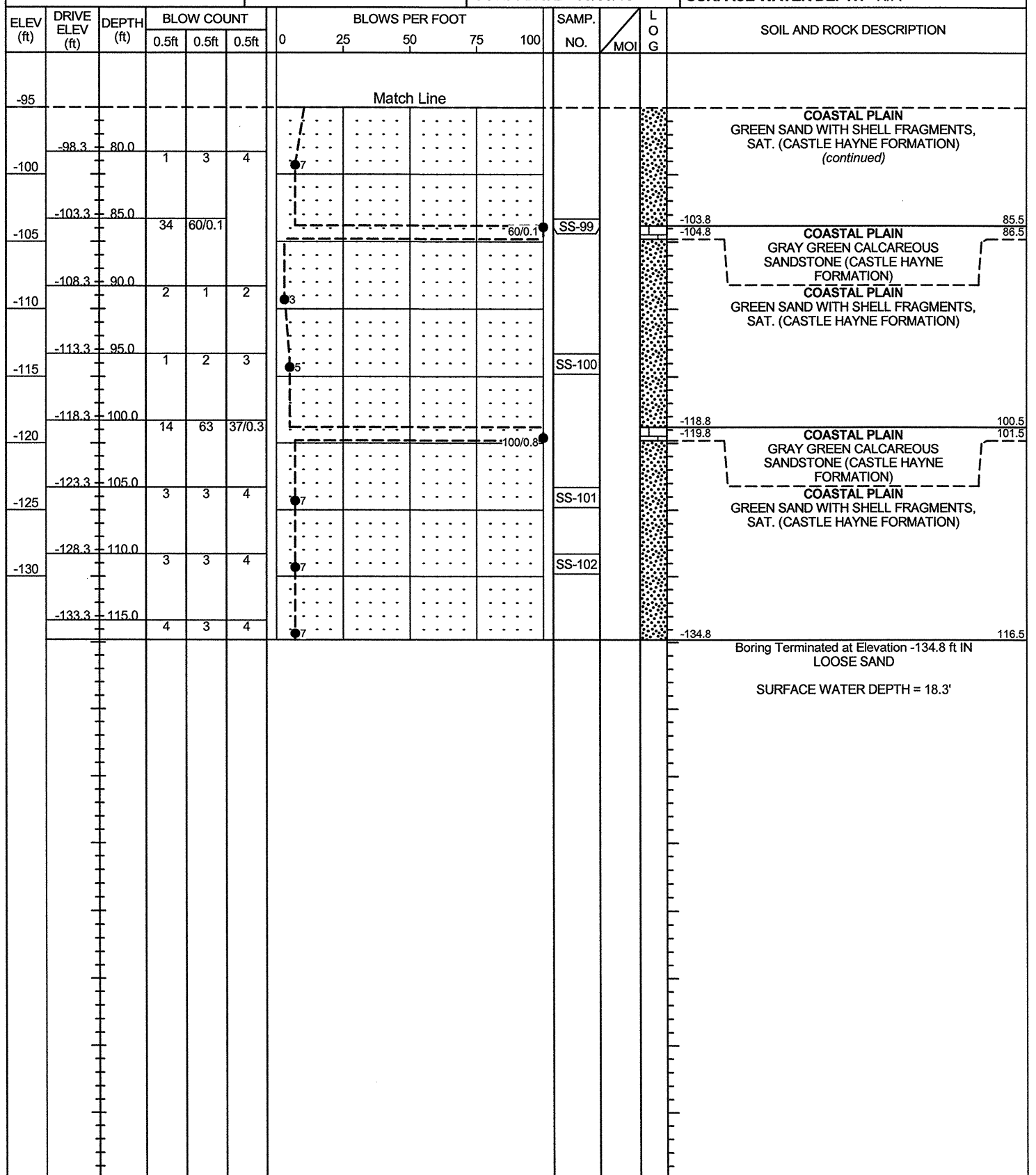
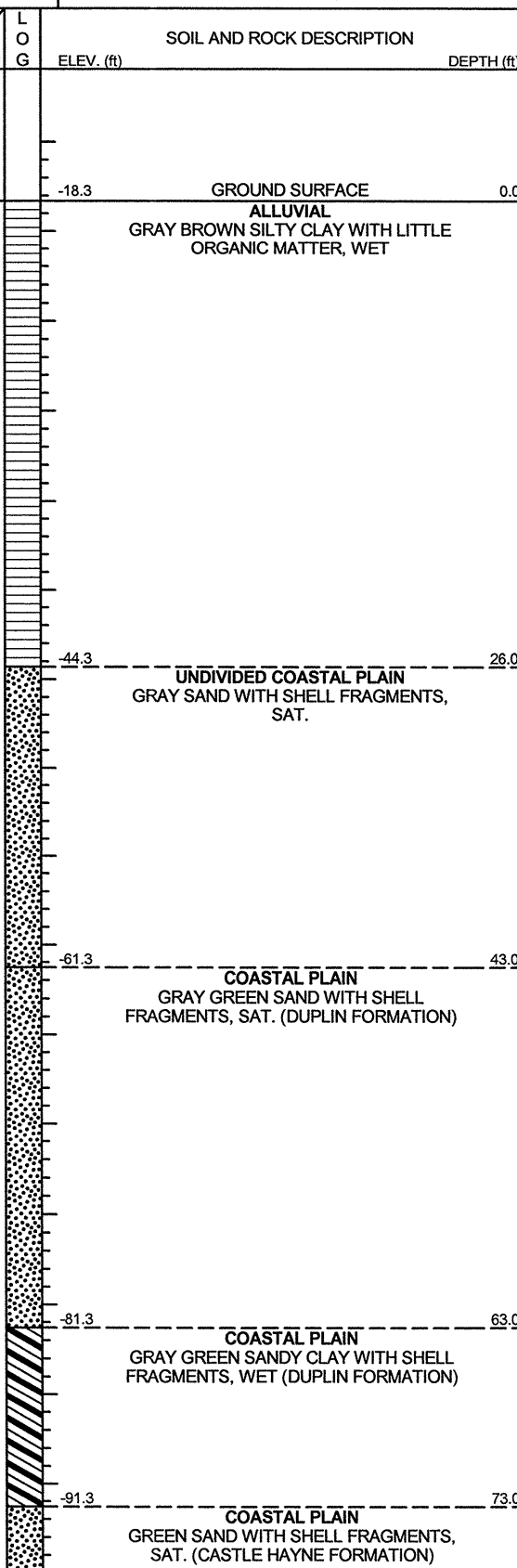
WBS 34528.1.1		TIP R-3307		COUNTY CARTERET		GEOLOGIST Swartley, J. R.											
SITE DESCRIPTION NEW BRIDGE ON -L- OVER GALLANTS CHANNEL							GROUND WTR (ft)										
BORING NO. B20-B	STATION 55+51	OFFSET 1 ft RT	ALIGNMENT -L-	0 HR.	N/A												
COLLAR ELEV. -22.2 ft	TOTAL DEPTH 122.1 ft	NORTHING 363,797	EASTING 2,700,710	24 HR.	N/A												
DRILL RIG/HAMMER EFF./DATE MAC1145 CME-55LC 80% 01/24/2009				DRILL METHOD Mud Rotary		HAMMER TYPE Automatic											
DRILLER Contract Driller		START DATE 09/23/10	COMP. DATE 09/24/10	SURFACE WATER DEPTH N/A													
ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT					SAMP. NO.	LOG MOI	LOG SOIL AND ROCK DESCRIPTION	DEPTH (ft)			
			0.5ft	0.5ft	0.5ft	0	25	50	75	100							
-100	-100.2	78.0	2	2	3												
-105	-105.0	82.8	20	60/0.1													
-110	-110.0	87.8	1	2	2												
-115	-114.9	92.7	2	4	12												
-120	-119.7	97.5	8	7	7												
-125	-124.6	102.4	3	4	4												
-130	-128.1	105.9	3	4	4												
-135	-133.1	110.9	3	4	4												
-140	-137.9	115.7	3	4	5												
	-142.8	120.6	3	9	22												

NC DOT BORE DOUBLE BORINGS.GPJ NC_DOT.GDT 3/2/11

WBS 34528.1.1		TIP R-3307		COUNTY CARTERET		GEOLOGIST Swartley, J. R.										
SITE DESCRIPTION NEW BRIDGE ON -L- OVER GALLANTS CHANNEL							GROUND WTR (ft)									
BORING NO. B21-B		STATION 56+39		OFFSET 4 ft RT		ALIGNMENT -L-										
COLLAR ELEV. -18.3 ft		TOTAL DEPTH 116.5 ft		NORTHING 363,837		EASTING 2,700,783										
DRILL RIG/HAMMER EFF./DATE MAC1145 CME-55LC 80% 01/24/2009		DRILL METHOD Mud Rotary		HAMMER TYPE Automatic												
DRILLER Contract Driller		START DATE 09/08/10		COMP. DATE 09/09/10		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						
-15																
	-18.3	0.0														-18.3
			WOR	WOR	WOR											
	-23.3	5.0														
			WOR	WOR	WOR											
	-28.3	10.0														
			WOR	WOR	WOR											
	-33.3	15.0														
			WOR	WOR	WOR											
	-38.3	20.0														
			WOR	WOR	WOR											
	-43.3	25.0														
			WOR	4	6											
	-48.3	30.0														
			2	2	3											
	-53.3	35.0														
			1	2	5											
	-58.3	40.0														
			7	7	10											
	-63.3	45.0														
			1	3	4											
	-68.3	50.0														
			4	7	9											
	-73.3	55.0														
			3	5	11											
	-78.3	60.0														
			7	9	10											
	-83.3	65.0														
			2	3	4											
	-88.3	70.0														
			2	4	4											
	-93.3	75.0														
			4	5	6											

WBS 34528.1.1		TIP R-3307		COUNTY CARTERET		GEOLOGIST Swartley, J. R.										
SITE DESCRIPTION NEW BRIDGE ON -L- OVER GALLANTS CHANNEL							GROUND WTR (ft)									
BORING NO. B21-B		STATION 56+39		OFFSET 4 ft RT		ALIGNMENT -L-										
COLLAR ELEV. -18.3 ft		TOTAL DEPTH 116.5 ft		NORTHING 363,837		EASTING 2,700,783										
DRILL RIG/HAMMER EFF./DATE MAC1145 CME-55LC 80% 01/24/2009		DRILL METHOD Mud Rotary		HAMMER TYPE Automatic												
DRILLER Contract Driller		START DATE 09/08/10		COMP. DATE 09/09/10		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						
-95																
	-98.3	80.0														
			1	3	4											
	-103.3	85.0														
			34	60/0.1												
	-108.3	90.0														
			2	1	2											
	-113.3	95.0														
			1	2	3											
	-118.3	100.0														
			14	63	37/0.3											
	-123.3	105.0														
			3	3	4											
	-128.3	110.0														
			3	3	4											
	-133.3	115.0														
			4	3	4											

NCDOT BORE DOUBLE BORINGS.GPJ NC_DOT.GDT 3/2/11



WBS 34528.1.1	TIP R-3307	COUNTY CARTERET	GEOLOGIST Swartley, J. R.
SITE DESCRIPTION NEW BRIDGE ON -L- OVER GALLANTS CHANNEL			GROUND WTR (ft)
BORING NO. B22-A	STATION 57+12	OFFSET 5 ft LT	ALIGNMENT -L-
COLLAR ELEV. -18.6 ft	TOTAL DEPTH 116.5 ft	NORTHING 363,879	EASTING 2,700,849
DRILL RIG/HAMMER EFF./DATE MAC1145 CME-55LC 80% 01/24/2009		DRILL METHOD Mud Rotary	HAMMER TYPE Automatic
DRILLER Contract Driller	START DATE 09/15/10	COMP. DATE 09/15/10	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														
-18.6	-18.6	0.0											GROUND SURFACE	0.0
-20			WOR	WOR	WOR						SS-126		ALLUVIAL GRAY SILTY CLAY WITH LITTLE ORGANIC MATTER, WET	
-23.6		5.0	WOR	WOR	WOR									
-25			WOR	WOR	WOR									
-28.6		10.0	WOR	WOR	WOR						SS-127			
-30			WOR	WOR	WOR									
-33.6		15.0	WOH	WOH	WOH						SS-128		ALLUVIAL GRAY SILTY CLAY, WET	13.0
-35			WOH	WOH	WOH									
-38.6		20.0	WOH	WOH	WOH									
-40			WOH	WOH	WOH									
-43.6		25.0									SS-129		UNDIVIDED COASTAL PLAIN GRAY SAND WITH SHELL FRAGMENTS SAT.	23.0
-45			5	6	2									
-48.6		30.0	2	2	2									
-50			2	2	2									
-53.6		35.0	2	3	2									
-55			2	3	2									
-58.6		40.0	4	3	3						SS-130			
-60			4	3	3									
-63.6		45.0	2	3	6								COASTAL PLAIN GRAY GREEN SAND WITH SHELL FRAGMENTS, SAT. (DUPLIN FORMATION)	43.0
-65			2	3	6									
-68.6		50.0	6	8	11						SS-131			
-70			6	8	11									
-73.6		55.0	3	5	6									
-75			3	5	6									
-78.6		60.0	3	3	6									
-80			3	3	6									
-83.6		65.0	3	2	3						SS-132			
-85			3	2	3									
-88.6		70.0	3	3	4									
-90			3	3	4									
-93.6		75.0	3	4	6									
-95			3	4	6									

WBS 34528.1.1	TIP R-3307	COUNTY CARTERET	GEOLOGIST Swartley, J. R.
SITE DESCRIPTION NEW BRIDGE ON -L- OVER GALLANTS CHANNEL			GROUND WTR (ft)
BORING NO. B22-A	STATION 57+12	OFFSET 5 ft LT	ALIGNMENT -L-
COLLAR ELEV. -18.6 ft	TOTAL DEPTH 116.5 ft	NORTHING 363,879	EASTING 2,700,849
DRILL RIG/HAMMER EFF./DATE MAC1145 CME-55LC 80% 01/24/2009		DRILL METHOD Mud Rotary	HAMMER TYPE Automatic
DRILLER Contract Driller	START DATE 09/15/10	COMP. DATE 09/15/10	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				
-95														
-98.6	-98.6	80.0	3	2	3						SS-133		Match Line	
-100			3	2	3									
-103.6		85.0	2	4	5						SS-134		COASTAL PLAIN GRAY GREEN SANDY SILT, WET (DUPLIN FORMATION)	83.0
-105			2	4	5									
-108.6		90.0	6	9	6								COASTAL PLAIN GREEN SAND, SAT. (CASTLE HAYNE FORMATION)	88.0
-110			6	9	6									
-113.6		95.0	2	2	3						SS-135		COASTAL PLAIN GRAY GREEN SANDY CLAY, WET (CASTLE HAYNE FORMATION)	93.0
-115			2	2	3									
-118.6		100.0	60/0.1											
-120			60/0.1											
-123.6		105.0	3	2	3								COASTAL PLAIN GRAY GREEN CALCAREOUS SANDSTONE (CASTLE HAYNE FORMATION)	100.1
-125			3	2	3								COASTAL PLAIN GREEN SAND WITH SHELL FRAGMENTS, SAT. (CASTLE HAYNE FORMATION)	101.1
-128.6		110.0	3	4	5									
-130			3	4	5									
-133.6		115.0	3	3	4						SS-136			
-135			3	3	4									
													Boring Terminated at Elevation -135.1 ft IN LOOSE SAND	116.5
													SURFACE WATER DEPTH = 18.6'	

NCDOT BORE DOUBLE BORINGS GPJ NC_DOT_GDT 3/2/11

WBS 34528.1.1	TIP R-3307	COUNTY CARTERET	GEOLOGIST Swartley, J. R.
SITE DESCRIPTION NEW BRIDGE ON -L- OVER GALLANTS CHANNEL			GROUND WTR (ft)
BORING NO. B23-B	STATION 58+24	OFFSET 15 ft RT	ALIGNMENT -L-
COLLAR ELEV. -18.3 ft	TOTAL DEPTH 116.9 ft	NORTHING 363,898	EASTING 2,700,960
DRILL RIG/HAMMER EFF/DATE MAC1145 CME-55LC 80% 01/24/2009		DRILL METHOD Mud Rotary	HAMMER TYPE Automatic
DRILLER Contract Driller	START DATE 09/09/10	COMP. DATE 09/09/10	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														
-18.3	-18.3	0.0											GROUND SURFACE	0.0
-20			WOR	WOR	WOR						SS-103		ALLUVIAL GRAY BROWN CLAY WITH LITTLE ORGANIC MATTER, WET	
-23.7		5.4	WOR	WOR	WOR									
-25			WOR	WOR	WOR									
-28.7		10.4	WOR	WOR	WOR						SS-104			
-30														
-33.7		15.4	1	1	2									
-35														
-37.7		20.4	1	1	1						SS-105		UNDIVIDED COASTAL PLAIN GRAY SAND WITH SHELL FRAGMENTS, SAT.	16.4
-40														
-43.7		25.4	1	1	3									
-45														
-48.7		30.4	2	2	2									
-50														
-53.7		35.4	2	2	2						SS-106			
-55														
-58.7		40.4	4	3	2									
-60														
-63.7		45.4	1	3	3						SS-107		COASTAL PLAIN GRAY GREEN SAND WITH SHELL FRAGMENTS, SAT. (DUPLIN FORMATION)	41.4
-65														
-68.7		50.4	3	4	11									
-70														
-73.7		55.4	6	13	16						SS-108			
-75														
-78.7		60.4	2	2	3									
-80														
-83.7		65.4	6	8	7									
-85														
-88.7		70.4	2	2	4						SS-109		COASTAL PLAIN GRAY GREEN SANDY CLAY WITH SHELL FRAGMENTS, WET (DUPLIN FORMATION)	68.0
-90														
-93.7		75.4	4	4	4									
-95														

WBS 34528.1.1	TIP R-3307	COUNTY CARTERET	GEOLOGIST Swartley, J. R.
SITE DESCRIPTION NEW BRIDGE ON -L- OVER GALLANTS CHANNEL			GROUND WTR (ft)
BORING NO. B23-B	STATION 58+24	OFFSET 15 ft RT	ALIGNMENT -L-
COLLAR ELEV. -18.3 ft	TOTAL DEPTH 116.9 ft	NORTHING 363,898	EASTING 2,700,960
DRILL RIG/HAMMER EFF/DATE MAC1145 CME-55LC 80% 01/24/2009		DRILL METHOD Mud Rotary	HAMMER TYPE Automatic
DRILLER Contract Driller	START DATE 09/09/10	COMP. DATE 09/09/10	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				
-95														
-98.7		80.4	4	4	6						SS-110		Match Line	
-100														
-103.7		85.4	2	3	4									
-105														
-108.7		90.4	32	19	16									
-110														
-113.7		95.4	1	1	2						SS-111			
-115														
-118.7		100.4	11	41	59/0.3									
-120														
-123.7		105.4	2	2	2						SS-112			
-125														
-128.7		110.4	3	4	6						SS-113			
-130														
-133.7		115.4	3	3	4									
-135														

NCDOT BORE DOUBLE BORINGS.GPJ NC_DOT.GDT 3/2/11

Boring Terminated at Elevation -135.2 ft IN LOOSE SAND
 SURFACE WATER DEPTH = 18.3'

WBS 34528.1.1	TIP R-3307	COUNTY CARTERET	GEOLOGIST Swartley, J. R.	
SITE DESCRIPTION NEW BRIDGE ON -L- OVER GALLANTS CHANNEL				GROUND WTR (ft)
BORING NO. B24-A	STATION 58+83	OFFSET 5 ft LT	ALIGNMENT -L-	0 HR. N/A
COLLAR ELEV. -16.2 ft	TOTAL DEPTH 108.9 ft	NORTHING 363,933	EASTING 2,701,012	24 HR. N/A
DRILL RIG/HAMMER EFF/DATE MAC1145 CME-55LC 80% 01/24/2009		DRILL METHOD Mud Rotary	HAMMER TYPE Automatic	
DRILLER Contract Driller	START DATE 09/13/10	COMP. DATE 09/14/10	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			
-15	-16.2	0.0											GROUND SURFACE ALLUVIAL GRAY BROWN SANDY CLAY, WET
-20	-20.6	4.4	WOR	WOR	WOR						SS-114		
-25	-23.6	7.4	WOH	WOH	WOH								UNDIVIDED COASTAL PLAIN GRAY SAND, SAT.
-30	-28.6	12.4	1	0	0								
-35	-33.6	17.4	5	2	4						SS-115		
-40	-38.6	22.4	2	3	5								
-45	-43.6	27.4	3	2	2						SS-116		UNDIVIDED COASTAL PLAIN GRAY SANDY CLAY, WET
-50	-48.6	32.4	4	5	3								
-55	-53.6	37.4	2	2	3								
-60	-58.6	42.4	6	10	6						SS-118		
-65	-63.6	47.4	3	3	7								COASTAL PLAIN GRAY GREEN SAND WITH SHELL FRAGMENTS, SAT. (DUPLIN FORMATION)
-70	-68.6	52.4	5	8	14						SS-119		
-75	-73.6	57.4	4	4	8								
-80	-78.6	62.4	4	6	10						SS-120		
-85	-83.6	67.4	2	2	2								
-90	-88.6	72.4	2	2	4						SS-121		
-95	-93.6	77.4	3	5	5								

WBS 34528.1.1	TIP R-3307	COUNTY CARTERET	GEOLOGIST Swartley, J. R.	
SITE DESCRIPTION NEW BRIDGE ON -L- OVER GALLANTS CHANNEL				GROUND WTR (ft)
BORING NO. B24-A	STATION 58+83	OFFSET 5 ft LT	ALIGNMENT -L-	0 HR. N/A
COLLAR ELEV. -16.2 ft	TOTAL DEPTH 108.9 ft	NORTHING 363,933	EASTING 2,701,012	24 HR. N/A
DRILL RIG/HAMMER EFF/DATE MAC1145 CME-55LC 80% 01/24/2009		DRILL METHOD Mud Rotary	HAMMER TYPE Automatic	
DRILLER Contract Driller	START DATE 09/13/10	COMP. DATE 09/14/10	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			
-95													Match Line
-100	-98.6	82.4	2	2	3						SS-122		COASTAL PLAIN GREEN SAND, SAT. (CASTLE HAYNE FORMATION)
-105	-103.6	87.4	5	8	23								GRAY GREEN CALCAREOUS SANDSTONE
-110	-108.6	92.4	4	5	5						SS-123		COASTAL PLAIN GRAY GREEN SAND, SAT. (CASTLE HAYNE FORMATION)
-115	-113.6	97.4	2	2	3						SS-124		COASTAL PLAIN GREEN SANDY CLAY, WET (CASTLE HAYNE FORMATION)
-120	-118.6	102.4	100/0.5										GRAY GREEN SAND, SAT. (CASTLE HAYNE FORMATION)
-125	-123.6	107.4	3	3	3						SS-125		COASTAL PLAIN GRAY GREEN CALCAREOUS SANDSTONE
													COASTAL PLAIN GREEN SAND, SAT. (CASTLE HAYNE FORMATION)
													Boring Terminated at Elevation -125.1 ft IN LOOSE SAND
													SURFACE WATER DEPTH = 16.2'

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WBS 34528.1.1	TIP R-3307	COUNTY CARTERET	GEOLOGIST Swartley, J. R.
SITE DESCRIPTION NEW BRIDGE ON -L- OVER GALLANTS CHANNEL			GROUND WTR (ft)
BORING NO. B25-A	STATION 59+79	OFFSET 25 ft LT	ALIGNMENT -L-
COLLAR ELEV. 3.1 ft	TOTAL DEPTH 126.0 ft	NORTHING 363,969	EASTING 2,701,103
DRILL RIG/HAMMER EFF./DATE GFO0062 CME-45B 83% 12/12/2005		DRILL METHOD Mud Rotary	HAMMER TYPE Automatic
DRILLER Smith, R. E.	START DATE 07/26/10	COMP. DATE 07/27/10	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				
5	3.1	0.0	1	1	2									GROUND SURFACE
0	-0.9	4.0	1	0	1									ARTIFICIAL FILL TAN SAND, MOIST TO SAT.
-5	-5.4	8.5	WOH	WOH	WOH									UNDIVIDED COASTAL PLAIN GRAY SANDY SILT, WET.
-10	-10.4	13.5	2	2	2									UNDIVIDED COASTAL PLAIN GRAY SAND WITH SHELL FRAGMENTS, SAT.
-15	-15.4	18.5	1	1	1									UNDIVIDED COASTAL PLAIN GRAY SANDY CLAY, WET.
-20	-20.4	23.5	8	5	3									UNDIVIDED COASTAL PLAIN GRAY SAND WITH SHELL FRAGMENTS, SAT.
-25	-25.4	28.5	2	7	10									UNDIVIDED COASTAL PLAIN GRAY SAND WITH SHELL FRAGMENTS, SAT.
-30	-30.4	33.5	4	8	6									UNDIVIDED COASTAL PLAIN GRAY SAND WITH SHELL FRAGMENTS, SAT.
-35	-35.4	38.5	4	5	4									UNDIVIDED COASTAL PLAIN GRAY SAND WITH SHELL FRAGMENTS, SAT.
-40	-40.4	43.5	3	3	3									UNDIVIDED COASTAL PLAIN GRAY SAND WITH SHELL FRAGMENTS, SAT.
-45	-45.4	48.5	1	5	3									UNDIVIDED COASTAL PLAIN GRAY SAND WITH SHELL FRAGMENTS, SAT.
-50	-50.4	53.5	2	3	3									UNDIVIDED COASTAL PLAIN GRAY SAND WITH SHELL FRAGMENTS, SAT.
-55	-55.4	58.5	3	5	5									UNDIVIDED COASTAL PLAIN GRAY SAND WITH SHELL FRAGMENTS, SAT.
-60	-60.4	63.5	6	4	3									UNDIVIDED COASTAL PLAIN GRAY SAND WITH SHELL FRAGMENTS, SAT.
-65	-65.4	68.5	2	5	6									UNDIVIDED COASTAL PLAIN GRAY SAND WITH SHELL FRAGMENTS, SAT.
-70	-70.4	73.5	6	10	12									UNDIVIDED COASTAL PLAIN GRAY SAND WITH SHELL FRAGMENTS, SAT.
-75														UNDIVIDED COASTAL PLAIN GRAY SAND WITH SHELL FRAGMENTS, SAT.

WBS 34528.1.1	TIP R-3307	COUNTY CARTERET	GEOLOGIST Swartley, J. R.
SITE DESCRIPTION NEW BRIDGE ON -L- OVER GALLANTS CHANNEL			GROUND WTR (ft)
BORING NO. B25-A	STATION 59+79	OFFSET 25 ft LT	ALIGNMENT -L-
COLLAR ELEV. 3.1 ft	TOTAL DEPTH 126.0 ft	NORTHING 363,969	EASTING 2,701,103
DRILL RIG/HAMMER EFF./DATE GFO0062 CME-45B 83% 12/12/2005		DRILL METHOD Mud Rotary	HAMMER TYPE Automatic
DRILLER Smith, R. E.	START DATE 07/26/10	COMP. DATE 07/27/10	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				
-75	-75.4	78.5	6	7	15									Match Line
-80	-80.4	83.5	8	10	14									COASTAL PLAIN GRAY GREEN SAND, SAT. (DUPLIN FORMATION) (continued)
-85	-85.4	88.5	WOR	3	6									COASTAL PLAIN GREEN SANDY CLAY, WET. (DUPLIN FORMATION)
-90	-90.4	93.5	3	3	7									COASTAL PLAIN GREEN SANDY SILT, WET. (CASTLE HAYNE FORMATION)
-95	-95.4	98.5	4	5	10									COASTAL PLAIN GREEN SANDY SILT, WET. (CASTLE HAYNE FORMATION)
-100	-100.4	103.5	2	4	9									COASTAL PLAIN GREEN SANDY SILT, WET. (CASTLE HAYNE FORMATION)
-105	-105.4	108.5	100/0.3											COASTAL PLAIN GRAY GREEN CALCAREOUS SANDSTONE (CASTLE HAYNE FORMATION)
-110	-110.4	113.5	1	2	4									COASTAL PLAIN GREEN SAND WITH SHELL FRAGMENTS, SAT. (CASTLE HAYNE FORMATION)
-115	-115.4	118.5	10	27	30									GRAY GREEN CALCAREOUS SANDSTONE (CASTLE HAYNE FORMATION)
-120	-120.4	123.5	20	30	21									GRAY GREEN CALCAREOUS SANDSTONE (CASTLE HAYNE FORMATION)
														Boring Terminated at Elevation -122.9 ft IN SOFT CALCAREOUS SANDSTONE

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WBS 34528.1.1	TIP R-3307	COUNTY CARTERET	GEOLOGIST Wrike, C. M.	
SITE DESCRIPTION NEW BRIDGE ON -L- OVER GALLANTS CHANNEL				GROUND WTR (ft)
BORING NO. B26-A	STATION 60+64	OFFSET 30 ft LT	ALIGNMENT -L-	0 HR. N/A
COLLAR ELEV. 2.2 ft	TOTAL DEPTH 109.8 ft	NORTHING 363,981	EASTING 2,701,190	24 HR. 3.2
DRILL RIG/HAMMER EFF./DATE GFO0062 CME-45B 83% 12/12/2005		DRILL METHOD Mud Rotary	HAMMER TYPE Automatic	
DRILLER Smith, R. E.	START DATE 07/21/10	COMP. DATE 07/21/10	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				
5	2.2	0.0											GROUND SURFACE	0.0
0	-1.8	4.0	3	5	7						SS-50		UNDIVIDED COASTAL PLAIN GRAY BROWN SAND WITH LITTLE ORGANIC MATTER, MOIST	2.0
-5	-6.5	8.7	WOH	WOH	WOH								UNDIVIDED COASTAL PLAIN BROWN AND GRAY SAND, MOIST TO SAT.	
-10	-11.5	13.7	1	2	2									
-15	-16.5	18.7	2	1	1						SS-52		UNDIVIDED COASTAL PLAIN GRAY SANDY CLAY, WET	16.0
-20	-21.5	23.7	5	8	4									
-25	-26.5	28.7	2	3	3						SS-53		UNDIVIDED COASTAL PLAIN GRAY SAND WITH SHELL FRAGMENTS, SAT.	26.0
-30	-31.5	33.7	2	2	3									
-35	-36.5	38.7	3	6	8						SS-54		UNDIVIDED COASTAL PLAIN GRAY SANDY CLAY, WET	36.0
-40	-41.5	43.7	3	5	5								UNDIVIDED COASTAL PLAIN GRAY SAND WITH SHELL FRAGMENTS, SAT.	41.0
-45	-46.5	48.7	11	15	15						SS-55		UNDIVIDED COASTAL PLAIN GRAY SAND WITH SHELL FRAGMENTS, SAT.	46.0
-50	-51.5	53.7	2	2	3						SS-56			
-55	-56.5	58.7	3	9	13									
-60	-61.5	63.7	4	5	5						SS-57			
-65	-66.5	68.7	2	3	4						SS-58			
-70	-71.5	73.7	5	6	13									
-75														

WBS 34528.1.1	TIP R-3307	COUNTY CARTERET	GEOLOGIST Wrike, C. M.	
SITE DESCRIPTION NEW BRIDGE ON -L- OVER GALLANTS CHANNEL				GROUND WTR (ft)
BORING NO. B26-A	STATION 60+64	OFFSET 30 ft LT	ALIGNMENT -L-	0 HR. N/A
COLLAR ELEV. 2.2 ft	TOTAL DEPTH 109.8 ft	NORTHING 363,981	EASTING 2,701,190	24 HR. 3.2
DRILL RIG/HAMMER EFF./DATE GFO0062 CME-45B 83% 12/12/2005		DRILL METHOD Mud Rotary	HAMMER TYPE Automatic	
DRILLER Smith, R. E.	START DATE 07/21/10	COMP. DATE 07/21/10	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				
-75														
-80	-76.5	78.7	5	7	7								Match Line	
-85	-81.5	83.7	4	10	12						SS-59		COASTAL PLAIN GRAY GREEN SAND WITH SHELL FRAGMENTS, SAT. (DUPLIN FORMATION) (continued)	
-90	-86.5	88.7	2	5	8									
-95	-91.5	93.7	4	5	8						SS-60		COASTAL PLAIN GRAY GREEN SANDY CLAY WITH SHELL FRAGMENTS, WET (DUPLIN FORMATION)	91.0
-100	-96.5	98.7	3	5	7									
-105	-101.5	103.7	2	3	7									
-106.5	-106.5	108.7	27	58	42/0.1						SS-61		COASTAL PLAIN GREEN SAND, SAT. (CASTLE HAYNE FORMATION)	107.0
													COASTAL PLAIN GRAY GREEN CALCAREOUS SANDSTONE	109.0
													Boring Terminated at Elevation -107.6 ft IN SOFT CALCAREOUS SANDSTONE	109.8

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BORELOG REPORT

WBS 34528.1.1	TIP R-3307	COUNTY CARTERET	GEOLOGIST Wrike, C. M.
SITE DESCRIPTION NEW BRIDGE ON -L- OVER GALLANTS CHANNEL			GROUND WTR (ft)
BORING NO. B27-A	STATION 61+49	OFFSET 35 ft LT	ALIGNMENT -L-
COLLAR ELEV. 3.8 ft	TOTAL DEPTH 119.9 ft	NORTHING 363,986	EASTING 2,701,278
DRILL RIG/HAMMER EFF./DATE GFO0062 CME-45B 83% 12/12/2005		DRILL METHOD Mud Rotary	HAMMER TYPE Automatic
DRILLER Smith, R. E.	START DATE 07/20/10	COMP. DATE 07/21/10	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							
5	3.8	0.0	2	2	5										3.8	GROUND SURFACE	0.0
0	-0.2	4.0	2	4	5										1.8	UNDIVIDED COASTAL PLAIN GRAY BROWN SAND WITH LITTLE ORGANIC MATTER, MOIST	2.0
-5	-4.6	8.4	WOH	WOH	1											UNDIVIDED COASTAL PLAIN TAN AND GRAY SAND, MOIST TO SAT.	
-10	-9.6	13.4	WOH		1	2											
-15	-14.6	18.4	1	1	1												
-20	-19.6	23.4	5	6	8												
-25	-24.6	28.4	2	2	2												
-30	-29.6	33.4	5	6	7												
-35	-34.6	38.4	4	8	8												
-40	-39.6	43.4	2	2	3												
-45	-44.6	48.4	4	15	18												
-50	-49.6	53.4	3	3	3												
-55	-54.6	58.4	2	3	7												
-60	-59.6	63.4	2	3	6												
-65	-64.6	68.4	2	2	3												
-70	-69.6	73.4	5	19	14												
-75	-74.6	78.4															

WBS 34528.1.1	TIP R-3307	COUNTY CARTERET	GEOLOGIST Wrike, C. M.
SITE DESCRIPTION NEW BRIDGE ON -L- OVER GALLANTS CHANNEL			GROUND WTR (ft)
BORING NO. B27-A	STATION 61+49	OFFSET 35 ft LT	ALIGNMENT -L-
COLLAR ELEV. 3.8 ft	TOTAL DEPTH 119.9 ft	NORTHING 363,986	EASTING 2,701,278
DRILL RIG/HAMMER EFF./DATE GFO0062 CME-45B 83% 12/12/2005		DRILL METHOD Mud Rotary	HAMMER TYPE Automatic
DRILLER Smith, R. E.	START DATE 07/20/10	COMP. DATE 07/21/10	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						
-75			5	7	9											
-80	-79.6	83.4	4	7	8											
-85	-84.6	88.4	2	4	6											
-90	-89.6	93.4	4	7	7											
-95	-94.6	98.4	4	6	9											
-100	-99.6	103.4	3	3	5											
-105	-104.6	108.4	26	54	36											
-110	-109.6	113.4	5	5	4											
-115	-114.6	118.4	6	15	24											

NCDOT BORE DOUBLE BORINGS.GPJ NC_DOT.GDT 3/2/11

WBS 34528.1.1	TIP R-3307	COUNTY CARTERET	GEOLOGIST Wrike, C. M.
SITE DESCRIPTION NEW BRIDGE ON -L- OVER GALLANTS CHANNEL			GROUND WTR (ft)
BORING NO. B28-A	STATION 62+34	OFFSET 4 ft LT	ALIGNMENT -L-
COLLAR ELEV. 4.7 ft	TOTAL DEPTH 129.7 ft	NORTHING 363,946	EASTING 2,701,361
DRILL RIG/HAMMER EFF./DATE GFO0062 CME-45B 83% 12/12/2005		DRILL METHOD Mud Rotary	HAMMER TYPE Automatic
DRILLER Smith, R. E.	START DATE 07/19/10	COMP. DATE 07/20/10	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				
10														
5	4.7	0.0	4	2	5								GROUND SURFACE	0.0
0	0.7	4.0	1	1	1						SS-28		ARTIFICIAL FILL TAN SAND AND GRAVEL, MOIST	2.0
-5	-3.5	8.2	3	2	1						SS-29	27%	UNDIVIDED COASTAL PLAIN TAN AND GRAY SAND AND CLAYEY SAND WITH SHELL FRAGMENTS, MOIST TO SAT.	
-10	-8.5	13.2	WOH	1	2									
-15	-13.5	18.2	1	1	2						SS-30			
-20	-18.5	23.2	1	2	4									
-25	-23.5	28.2	3	2	2						SS-31	56%		
-30	-28.5	33.2	2	2	2									
-35	-33.5	38.2	3	5	5									
-40	-38.5	43.2	4	6	8						SS-32			
-45	-43.5	48.2	2	2	2						SS-33	42%	UNDIVIDED COASTAL PLAIN GRAY SANDY SILT, WET	46.0
-50	-48.5	53.2	6	7	7						SS-34		UNDIVIDED COASTAL PLAIN GRAY SAND, SAT.	51.0
-55	-53.5	58.2	1	2	2						SS-35		UNDIVIDED COASTAL PLAIN GRAY GREEN SILTY CLAY, WET	56.0
-60	-58.5	63.2	2	2	7									
-65	-63.5	68.2	5	8	13									
-70	-68.5	73.2	3	4	5						SS-36			

WBS 34528.1.1	TIP R-3307	COUNTY CARTERET	GEOLOGIST Wrike, C. M.
SITE DESCRIPTION NEW BRIDGE ON -L- OVER GALLANTS CHANNEL			GROUND WTR (ft)
BORING NO. B28-A	STATION 62+34	OFFSET 4 ft LT	ALIGNMENT -L-
COLLAR ELEV. 4.7 ft	TOTAL DEPTH 129.7 ft	NORTHING 363,946	EASTING 2,701,361
DRILL RIG/HAMMER EFF./DATE GFO0062 CME-45B 83% 12/12/2005		DRILL METHOD Mud Rotary	HAMMER TYPE Automatic
DRILLER Smith, R. E.	START DATE 07/19/10	COMP. DATE 07/20/10	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				
-70														
-75	-73.5	78.2	8	12	10								Match Line	
-80	-78.5	83.2	8	7	10									
-85	-83.5	88.2	3	3	6									
-90	-88.5	93.2	2	2	3									
-95	-93.5	98.2	2	5	6						SS-37			
-100	-98.5	103.2	3	5	6									
-105	-103.5	108.2	8	10	32						SS-38		COASTAL PLAIN GREEN SANDY SILT, WET (CASTLE HAYNE FORMATION)	106.0
-110	-108.5	113.2	7	9	6								COASTAL PLAIN GRAY GREEN CALCAREOUS MUDSTONE	109.2
-115	-113.5	118.2	4	6	7								COASTAL PLAIN GREEN SANDY SILT, WET (CASTLE HAYNE FORMATION)	110.2
-120	-118.5	123.2	14	6	8						SS-39		COASTAL PLAIN GREEN SAND, SAT. (CASTLE HAYNE FORMATION)	121.0
-125.0	-123.5	128.2	2	4	7								COASTAL PLAIN GREEN SAND, SAT. (CASTLE HAYNE FORMATION)	121.0
													Boring Terminated at Elevation -125.0 ft IN MEDIUM DENSE SAND	129.7

NCDOT BORE DOUBLE BORINGS.GPJ NC_DOT.GDT 3/2/11



NCDOT GEOTECHNICAL ENGINEERING UNIT

BORELOG REPORT

WBS 34528.1.1	TIP R-3307	COUNTY CARTERET	GEOLOGIST Swartley, J. R.
SITE DESCRIPTION NEW BRIDGE ON -L- OVER GALLANTS CHANNEL			GROUND WTR (ft)
BORING NO. EB2-C	STATION 63+19	OFFSET CL	ALIGNMENT -L-
COLLAR ELEV. 5.0 ft	TOTAL DEPTH 129.6 ft	NORTHING 363,927	EASTING 2,701,444
DRILL RIG/HAMMER EFF./DATE GFO0062 CME-45B 83% 12/12/2005		DRILL METHOD Mud Rotary	HAMMER TYPE Automatic
DRILLER Smith, R. E.	START DATE 07/28/10	COMP. DATE 07/28/10	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				
10														
5	5.0	0.0	1	4	3								GROUND SURFACE	0.0
0	1.0	4.0	1	1	1								ARTIFICIAL FILL GRAY SAND AND GRAVEL, MOIST	1.0
-5	-3.1	8.1	WOH	WOH	WOH								UNDIVIDED COASTAL PLAIN GRAY SAND, MOIST TO SAT.	
-10	-8.1	13.1	1	0	1								UNDIVIDED COASTAL PLAIN GRAY SANDY CLAY, WET	11.1
-15	-13.1	18.1	WOH	1	1								UNDIVIDED COASTAL PLAIN GRAY SAND, SAT.	26.0
-20	-18.1	23.1	1	2	3								UNDIVIDED COASTAL PLAIN GRAY SANDY CLAY, WET	31.1
-25	-23.1	28.1	4	5	7								UNDIVIDED COASTAL PLAIN GRAY SAND, SAT.	34.1
-30	-28.1	33.1	2	3	2								UNDIVIDED COASTAL PLAIN GRAY SANDY SILT WITH SHELL FRAGMENTS, WET	41.0
-35	-33.1	38.1	2	4	4								UNDIVIDED COASTAL PLAIN GRAY SAND, SAT.	46.0
-40	-38.1	43.1	1	1	2								UNDIVIDED COASTAL PLAIN GRAY SANDY SILT WITH SHELL FRAGMENTS, WET	56.0
-45	-43.1	48.1	3	5	5								UNDIVIDED COASTAL PLAIN GRAY SAND, SAT.	61.0
-50	-48.1	53.1	3	4	5								UNDIVIDED COASTAL PLAIN GRAY SANDY CLAY WITH SHELL FRAGMENTS, WET	66.0
-55	-53.1	58.1	1	2	3								UNDIVIDED COASTAL PLAIN GRAY GREEN SANDY SILT, WET (DUPLIN FORMATION)	
-60	-58.1	63.1	2	2	3								UNDIVIDED COASTAL PLAIN GRAY GREEN SAND WITH SHELL FRAGMENTS, SAT. (DUPLIN FORMATION)	
-65	-63.1	68.1	3	4	5								UNDIVIDED COASTAL PLAIN GRAY SANDY SILT WITH SHELL FRAGMENTS, WET	
-70	-68.1	73.1	3	7	9								UNDIVIDED COASTAL PLAIN GRAY SAND, SAT.	

WBS 34528.1.1	TIP R-3307	COUNTY CARTERET	GEOLOGIST Swartley, J. R.
SITE DESCRIPTION NEW BRIDGE ON -L- OVER GALLANTS CHANNEL			GROUND WTR (ft)
BORING NO. EB2-C	STATION 63+19	OFFSET CL	ALIGNMENT -L-
COLLAR ELEV. 5.0 ft	TOTAL DEPTH 129.6 ft	NORTHING 363,927	EASTING 2,701,444
DRILL RIG/HAMMER EFF./DATE GFO0062 CME-45B 83% 12/12/2005		DRILL METHOD Mud Rotary	HAMMER TYPE Automatic
DRILLER Smith, R. E.	START DATE 07/28/10	COMP. DATE 07/28/10	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				
-70														
-75	-73.1	78.1	7	12	13								Match Line	
-80	-78.1	83.1	6	6	9								COASTAL PLAIN GRAY GREEN SAND WITH SHELL FRAGMENTS, SAT. (DUPLIN FORMATION) (continued)	
-85	-83.1	88.1	4	3	6								COASTAL PLAIN GRAY GREEN SANDY SILT WITH SHELL FRAGMENTS, WET (DUPLIN FORMATION)	91.0
-90	-88.1	93.1	2	5	6								COASTAL PLAIN GRAY GREEN SAND WITH SHELL FRAGMENTS, SAT. (DUPLIN FORMATION)	96.0
-95	-93.1	98.1	3	4	7								COASTAL PLAIN GREEN SAND, SAT. (CASTLE HAYNE FORMATION)	106.8
-100	-98.1	103.1	2	4	5								GRAY GREEN CALCAREOUS SANDSTONE	109.1
-105	-103.1	108.1	18	30	32								COASTAL PLAIN GREEN SAND, SAT. (CASTLE HAYNE FORMATION)	110.1
-110	-108.1	113.1	3	4	5								COASTAL PLAIN GREEN SANDY CLAY, WET (CASTLE HAYNE FORMATION)	116.0
-115	-113.1	118.1	1	3	5								COASTAL PLAIN GREEN SANDY CLAY, WET (CASTLE HAYNE FORMATION)	121.0
-120	-118.1	123.1	30	20	30								COASTAL PLAIN GREEN SAND, SAT. (CASTLE HAYNE FORMATION)	122.0
	-123.1	128.1	6	8	8								GRAY GREEN CALCAREOUS SANDSTONE	125.0
													COASTAL PLAIN GREEN SAND, SAT. (CASTLE HAYNE FORMATION)	129.6

NCDOT BORE DOUBLE BORINGS.GPJ NC_DOT.GDT 3/2/11

Boring Terminated at Elevation -124.6 ft IN MEDIUM DENSE SAND

R-3307
34528.1.1

NEW BRIDGE OVER GALLANTS CHANNEL
AT -L- STA. 46+21

SOIL TEST RESULTS EB1-A

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-1	26 LT	29+23	1.0-1.5	A-3(O)	27	NP	19.8	76.8	1.4	2.0	93	85	4	-	-
SS-2	26 LT	29+23	7.9-9.4	A-3(O)	25	NP	10.9	85.6	2.5	1.0	100	98	5	-	-
SS-3	26 LT	29+23	22.9-24.4	A-2-4(O)	19	NP	12.4	69.3	10.2	8.1	100	98	20	-	-
SS-4	26 LT	29+23	27.9-29.4	A-1-b(O)	16	NP	89.5	7.6	1.9	1.0	100	48	3	-	-
SS-5	26 LT	29+23	42.9-44.4	A-4(O)	21	2	2.2	57.6	28.1	12.1	100	99	65	-	-
SS-6	26 LT	29+23	52.9-54.4	A-2-4(O)	20	2	35.5	44.0	7.4	13.1	98	81	23	-	-
SS-7	26 LT	29+23	57.9-59.4	A-2-4(O)	21	NP	53.1	32.6	5.2	9.1	93	58	15	-	-
SS-8	26 LT	29+23	72.9-74.4	A-2-4(O)	21	NP	19.1	62.0	8.8	10.1	98	89	20	-	-

SOIL TEST RESULTS B4-A

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-324	37 LT	32+68	4.9-6.4	A-3(O)	25	NP	1.4	93.0	3.5	2.0	100	100	9	-	-
SS-325	37 LT	32+68	14.9-16.4	A-3(O)	19	NP	20.6	70.8	2.5	6.1	100	99	9	-	-
SS-326	37 LT	32+68	24.9-25.9	A-6(6)	29	15	9.7	32.6	33.5	24.3	96	94	63	-	-
SS-327	37 LT	32+68	39.9-41.4	A-4(O)	23	3	2.2	58.6	25.0	14.2	100	99	56	-	-
SS-328	37 LT	32+68	44.9-46.4	A-2-4(O)	22	NP	8.9	81.1	6.0	4.0	99	94	13	-	-
SS-329	37 LT	32+68	59.9-61.4	A-3(O)	19	NP	38.6	52.0	3.3	6.1	95	74	10	-	-
SS-330	37 LT	32+68	64.9-66.4	A-2-6(O)	26	12	48.3	26.3	11.2	14.2	76	48	20	-	-
SS-331	37 LT	32+68	74.9-76.4	A-2-4(O)	22	NP	8.1	80.5	7.4	4.0	100	98	13	-	-
SS-332	37 LT	32+68	84.9-86.4	A-6(5)	35	12	9.5	45.7	34.7	10.1	100	98	58	-	-
SS-333	37 LT	32+68	94.9-96.4	A-2-4(O)	24	NP	50.3	38.7	5.0	6.1	93	68	11	-	-

SOIL TEST RESULTS B1-A

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-9	9 LT	30+05	1.0-1.5	A-3(O)	21	NP	42.2	53.0	2.7	2.0	95	76	5	-	-
SS-10	9 LT	30+05	13.2-14.7	A-3(O)	23	NP	16.3	81.1	2.6	0.0	97	93	3	-	-
SS-11	9 LT	30+05	18.2-19.7	A-4(O)	25	4	6.7	66.5	14.7	12.1	98	94	36	-	-
SS-12	9 LT	30+05	23.2-24.7	A-3(O)	20	NP	15.2	78.3	2.5	4.0	94	88	7	-	-
SS-13	9 LT	30+05	33.2-34.7	A-3(O)	17	NP	24.3	70.5	3.1	2.0	96	86	7	-	-
SS-14	9 LT	30+05	43.2-44.7	A-4(O)	22	3	0.6	53.1	24.0	22.2	100	100	66	-	-
SS-15	9 LT	30+05	53.1-54.6	A-2-4(O)	19	NP	30.0	55.9	5.1	9.1	98	82	17	-	-
SS-16	9 LT	30+05	68.1-69.6	A-2-4(O)	24	9	55.2	24.9	4.7	15.2	64	36	13	-	-
SS-17	9 LT	30+05	78.1-79.6	A-2-4(O)	23	NP	7.7	78.8	6.5	7.1	100	98	17	-	-
SS-18	9 LT	30+05	93.1-94.6	A-7-6(24)	56	34	8.7	32.1	37.0	22.2	96	90	71	-	-

SOIL TEST RESULTS B6-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-313	37 RT	34+84	1.0-1.5	A-6(2)	32	12	2.8	58.2	26.8	12.1	100	99	44	83.9	4.2
SS-314	37 RT	34+84	5.4-6.9	A-3(O)	23	NP	6.5	88.2	3.3	2.0	100	99	7	-	-
SS-315	37 RT	34+84	25.4-26.9	A-6(1)	25	12	19.4	42.3	20.1	18.2	98	87	39	-	-
SS-316	37 RT	34+84	30.4-31.9	A-2-4(O)	25	NP	4.0	79.1	12.8	4.0	99	97	23	-	-
SS-317	37 RT	34+84	45.4-46.9	A-2-4(O)	22	NP	9.5	76.2	6.2	8.1	100	97	18	-	-
SS-318	37 RT	34+84	50.4-51.9	A-2-4(O)	23	5	35.6	41.7	10.6	12.1	99	83	25	-	-
SS-319	37 RT	34+84	60.4-61.9	A-6(8)	30	15	9.3	22.9	39.5	28.3	100	96	69	-	-
SS-320	37 RT	34+84	75.4-76.9	A-2-4(O)	23	NP	18.8	67.9	9.2	4.0	100	94	15	-	-
SS-321	37 RT	34+84	85.4-86.9	A-6(3)	34	11	12.3	47.1	26.4	14.2	93	91	48	-	-
SS-322	37 RT	34+84	95.4-96.9	A-3(O)	23	NP	50.6	40.2	5.2	4.0	100	75	10	-	-
SS-323	37 RT	34+84	105.4-106.9	A-2-4(O)	21	3	15.6	56.8	17.5	10.1	100	91	29	-	-

SOIL TEST RESULTS B2-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-19	39 RT	31+37	4.0-5.5	A-2-4(O)	25	NP	19.4	56.6	13.9	10.1	100	96	26	-	-
SS-20	39 RT	31+37	7.9-9.4	A-3(O)	22	NP	25.4	71.4	3.2	0.0	100	87	4	-	-
SS-21	39 RT	31+37	17.9-19.4	A-2-4(O)	22	NP	9.6	76.5	5.9	8.1	100	98	18	-	-
SS-22	39 RT	31+37	32.9-34.4	A-3(O)	17	NP	52.1	41.3	4.5	2.0	93	77	7	-	-
SS-23	39 RT	31+37	47.9-49.4	A-2-4(O)	22	NP	6.9	79.4	6.7	7.1	99	95	17	-	-
SS-24	39 RT	31+37	62.9-64.4	A-2-4(O)	17	NP	27.3	48.4	12.2	12.1	97	84	25	-	-
SS-25	39 RT	31+37	67.9-69.4	A-2-6(O)	32	19	55.5	20.8	6.6	17.2	68	37	17	-	-
SS-26	39 RT	31+37	72.9-74.4	A-2-4(O)	21	NP	11.2	74.5	6.2	8.1	100	96	16	-	-
SS-27	39 RT	31+37	87.9-89.4	A-7-6(18)	48	29	6.5	44.2	29.1	20.3	100	99	67	-	-

SOIL TEST RESULTS B8-A

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-304	37 LT	37+44	13.2-14.7	A-2-4(O)	18	NP	9.3	67.5	9.0	14.2	100	98	25	-	-
SS-305	37 LT	37+44	23.2-24.7	A-2-4(O)	19	NP	16.6	73.0	4.3	6.1	100	98	11	-	-
SS-306	37 LT	37+44	38.2-39.7	A-2-4(O)	25	8	10.1	56.6	17.1	16.2	95	90	35	-	-
SS-307	37 LT	37+44	43.2-44.7	A-2-4(O)	21	3	18.0	54.4	13.4	14.2	100	93	35	-	-
SS-308	37 LT	37+44	53.2-54.7	A-2-4(O)	22	4	33.0	46.5	8.4	12.1	92	77	21	-	-
SS-309	37 LT	37+44	68.2-69.7	A-1-b(O)	24	5	55.8	26.7	7.4	10.1	76	45	14	-	-
SS-310	37 LT	37+44	78.2-79.7	A-2-4(O)	24	NP	15.6	68.1	10.2	6.1	100	94	20	-	-
SS-311	37 LT	37+44	83.2-84.7	A-2-4(O)	27	NP	2.0	74.8	17.1	6.1	100	99	32	-	-
SS-312	37 LT	37+44	88.2-89.7	A-6(6)	36	16	12.9	44.1	32.9	10.1	100	97	56	-	-

R-3307
34528.1.1

NEW BRIDGE OVER GALLANTS CHANNEL
AT -L- STA. 46+21

SOIL TEST RESULTS B19-B

Table with columns: SAMPLE NO., OFFSET, STATION, DEPTH INTERVAL, AASHTO CLASS., L.L., P.I., % BY WEIGHT (C.SAND, F.SAND, SILT, CLAY), % PASSING (SIEVES) (10, 40, 200), % MOISTURE, % ORGANIC. Rows include samples SS-225 to SS-237.

SOIL TEST RESULTS B22-A

Table with columns: SAMPLE NO., OFFSET, STATION, DEPTH INTERVAL, AASHTO CLASS., L.L., P.I., % BY WEIGHT (C.SAND, F.SAND, SILT, CLAY), % PASSING (SIEVES) (10, 40, 200), % MOISTURE, % ORGANIC. Rows include samples SS-126 to SS-136.

SOIL TEST RESULTS B20-B

Table with columns: SAMPLE NO., OFFSET, STATION, DEPTH INTERVAL, AASHTO CLASS., L.L., P.I., % BY WEIGHT (C.SAND, F.SAND, SILT, CLAY), % PASSING (SIEVES) (10, 40, 200), % MOISTURE, % ORGANIC. Rows include samples SS-167 to SS-179.

SOIL TEST RESULTS B23-B

Table with columns: SAMPLE NO., OFFSET, STATION, DEPTH INTERVAL, AASHTO CLASS., L.L., P.I., % BY WEIGHT (C.SAND, F.SAND, SILT, CLAY), % PASSING (SIEVES) (10, 40, 200), % MOISTURE, % ORGANIC. Rows include samples SS-103 to SS-113.

SOIL TEST RESULTS B21-B

Table with columns: SAMPLE NO., OFFSET, STATION, DEPTH INTERVAL, AASHTO CLASS., L.L., P.I., % BY WEIGHT (C.SAND, F.SAND, SILT, CLAY), % PASSING (SIEVES) (10, 40, 200), % MOISTURE, % ORGANIC. Rows include samples SS-90 to SS-102, with some 'NOT ENOUGH SAMPLE' entries.

SOIL TEST RESULTS B24-A

Table with columns: SAMPLE NO., OFFSET, STATION, DEPTH INTERVAL, AASHTO CLASS., L.L., P.I., % BY WEIGHT (C.SAND, F.SAND, SILT, CLAY), % PASSING (SIEVES) (10, 40, 200), % MOISTURE, % ORGANIC. Rows include samples SS-114 to SS-125.

R-3307

34528.1.1

NEW BRIDGE OVER GALLANTS CHANNEL AT -L- STA. 46+21

SOIL TEST RESULTS B25-A

Table with 17 columns: SAMPLE NO., OFFSET, STATION, DEPTH INTERVAL, AASHTO CLASS., L.L., P.I., % BY WEIGHT (C.SAND, F.SAND, SILT, CLAY), % PASSING (SIEVES) (10, 40, 200), % MOISTURE, % ORGANIC. Rows 1-16.

SOIL TEST RESULTS B28-A

Table with 17 columns: SAMPLE NO., OFFSET, STATION, DEPTH INTERVAL, AASHTO CLASS., L.L., P.I., % BY WEIGHT (C.SAND, F.SAND, SILT, CLAY), % PASSING (SIEVES) (10, 40, 200), % MOISTURE, % ORGANIC. Rows 1-16.

SOIL TEST RESULTS B26-A

Table with 17 columns: SAMPLE NO., OFFSET, STATION, DEPTH INTERVAL, AASHTO CLASS., L.L., P.I., % BY WEIGHT (C.SAND, F.SAND, SILT, CLAY), % PASSING (SIEVES) (10, 40, 200), % MOISTURE, % ORGANIC. Rows 1-16.

SOIL TEST RESULTS EB2-C

Table with 17 columns: SAMPLE NO., OFFSET, STATION, DEPTH INTERVAL, AASHTO CLASS., L.L., P.I., % BY WEIGHT (C.SAND, F.SAND, SILT, CLAY), % PASSING (SIEVES) (10, 40, 200), % MOISTURE, % ORGANIC. Rows 1-16.

SOIL TEST RESULTS B27-A

Table with 17 columns: SAMPLE NO., OFFSET, STATION, DEPTH INTERVAL, AASHTO CLASS., L.L., P.I., % BY WEIGHT (C.SAND, F.SAND, SILT, CLAY), % PASSING (SIEVES) (10, 40, 200), % MOISTURE, % ORGANIC. Rows 1-10.



FIELD SCOUR REPORT

WBS: 34528.1.1 TIP: R-3307 COUNTY: CARTERET

DESCRIPTION(1): NEW BRIDGE OVER GALLANTS CHANNEL

EXISTING BRIDGE

Information from: Field Inspection Microfilm _____ (reel _____ pos: _____)
 Other (explain) _____

Bridge No.: NA Length: _____ Total Bents: _____ Bents in Channel: _____ Bents in Floodplain: _____
 Foundation Type: NA

EVIDENCE OF SCOUR(2)

Abutments or End Bent Slopes: NA

Interior Bents: NA

Channel Bed: NA

Channel Bank: NA

EXISTING SCOUR PROTECTION

Type(3): NA

Extent(4): NA

Effectiveness(5): NA

Obstructions(6): NA

INSTRUCTIONS

- 1 Describe the specific site's location, including route number and body of water crossed.
- 2 Note scour evidence at existing end bents or abutments (e.g. undermining, sloughing, degradations).
- 3 Note existing scour protection (e.g. rip rap).
- 4 Describe extent of existing scour protection.
- 5 Describe whether or not the scour protection appears to be working.
- 6 Note obstructions such as dams, fallen trees, debris at bents, etc.
- 7 Describe the channel bed material based on observation and/or samples. Include any lab results with report.
- 8 Describe the channel bank material based on observation and/or samples. Include any lab results with report.
- 9 Describe the material covering the banks (e.g. grass, trees, rip rap, none).
- 10 Determine the approximate floodplain width from field observation or a topographic map.
- 11 Describe the material covering the floodplain (e.g. grass, trees, crops).
- 12 Use professional judgement to specify if the stream is degrading, aggrading, or static.
- 13 Describe potential and direction of the stream to migrate laterally during the bridge's life (approx. 100 years).
- 14 Give the design scour elevation (DSE) expected over the life of the bridge (approx. 100 years). This elevation can be given as a range across the site, or for each bent. Discuss the relationship between the Hydraulics Unit theoretical scour and the DSE. If the DSE is dependent on scour counter measures, explain (e.g. rip rap armoring on slopes). The DSE is based on the erodability of materials, giving consideration to the influence of joints, foliation, bedding characteristics, % core recovery, % RQD, differential weathering, shear strength, observations at existing structures, other tests deemed appropriate, and overall geologic conditions at the site.

DESIGN INFORMATION

Channel Bed Material(7): SAND, SANDY CLAY AND ORGANIC SOILS

Channel Bank Material(8): SAND AND SANDY SILT

Channel Bank Cover(9): MARSH GRASS

Floodplain Width(10): 2,900±

Floodplain Cover(11): MARSH GRASS

Stream is(12): Aggrading _____ Degrading Static _____

Channel Migration Tendency(13): UNLIKELY

Observations and Other Comments: _____

DESIGN SCOUR ELEVATIONS(14)

Feet Meters _____

BENTS

B1	B2	B3	B4	B5	B6	B7	B8	B9	B10	B11
-10.5	-10.1	-9.8	-9.5	-9.1	-8.4	-6.0	-2.5	-3.1	-2.2	-8.0
B12	B13	B14	B15	B16	B17	B18	B19	B20	B21	B22
-8.0	-13.0	-16.5	-17.9	-38.3	-57.2	-47.2	-41.0	-41.0	-37.9	-38.7
B23	B24	B25	B26	B27	B28					
-38.5	-36.0	-24.5	-19.9	-15.8	-14.9					

Comparison of DSE to Hydraulics Unit theoretical scour:

THE DSE AGREES WITH ALL OF THE MAXIMUM THEORETICAL SOUR ELEVATIONS AS OUTLINED IN THE BSR REPORT DATED 6/3/10.

SOIL ANALYSIS RESULTS FROM CHANNEL BED AND BANK MATERIAL

Bed or Bank										
Sample No.										
Retained #4										
Passed #10										
Passed #40										
Passed #200										
Coarse Sand										
Fine Sand										
Silt										
Clay										
LL										
PI										
AASHTO										
Station										
Offset										
Depth										

See Sheet(s) 44-48 "Soil Test Results", for samples:

(CHANNEL BED) SS-180, SS-137, SS-153, SS-238, SS-114

(CHANNEL BANK) SS-347, SS-63

Reported by:

Date: 3/1/2011