

PROJECT: 13201.1028025 ID: B-2500

SHEET NO.:	CONTENTS:
01	TITLE SHEET
02	LEGEND
03	SITE VICINITY MAP
04-10	SITE PLANS
11-18	PROFILES
19-92	SPT BORE LOGS
93-104	CPT BORE LOGS

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

**STRUCTURE**  
**SUBSURFACE INVESTIGATION**

PROJ. REFERENCE NO.: 13201.1028025 F.A. PROJ. N/A

COUNTY: DARE

PROJECT DESCRIPTION: Bridge on NC 12 over Pea Island Breach

SITE DESCRIPTION: Bridge on NC 12 over Pea Island Breach

**REVISED INVENTORY ADDENDUM**

The TIP # for this report was originally B-2500. After this report was finished the TIP # changed to B-2500A. Use B-2500A when referring to this report.

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	B-2500	01	104

**CAUTION NOTICE**

THE SUBSURFACE INFORMATION AND THE SUBSURFACE INVESTIGATION ON WHICH IT IS BASED WERE MADE FOR THE PURPOSE OF STUDY, PLANNING, AND DESIGN, AND NOT FOR CONSTRUCTION OR PAY PURPOSES. THE VARIOUS FIELD BORING LOGS, ROCK CORES, AND SOIL TEST DATA AVAILABLE MAY BE REVIEWED OR INSPECTED IN RALEIGH BY CONTACTING THE N. C. DEPARTMENT OF TRANSPORTATION, GEOTECHNICAL ENGINEERING UNIT AT (919) 707-8850. 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:**

R. L. DENTON, P.E.

T. STETLER

J. HETER

K. FERGUSON

J. WOOD, CWD

D. CHALMERS, CWD

W. DUGGINS, CWD

INVESTIGATED BY: CATLIN ENGINEERS AND SCIENTISTS

TERRACON

CHECKED BY: STEVEN V. HUDSON, P.G., CWD

SUBMITTED BY: STEVEN V. HUDSON, P.G., CWD

DATE: February 29, 2012 / REV. August 29, 2012

DRAWN BY: STEVEN V. HUDSON, P.G., CWD

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

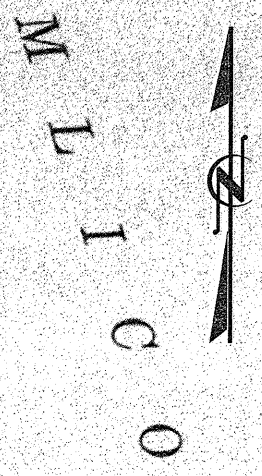
NOTE - BY HAVING REQUESTED THIS INFORMATION THE CONTRACTOR SPECIFICALLY WAIVES ANY CLAIMS FOR INCREASED COMPENSATION OR EXTENSION OF TIME BASED ON DIFFERENCES BETWEEN THE CONDITIONS INDICATED HEREIN AND THE ACTUAL CONDITIONS AT THE PROJECT SITE.



PROJECT REFERENCE NO. <b>B-2500</b>	SHEET NO. <b>3</b>
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER <b>NZA</b>
<b>INCOMPLETE PLANS</b> DO NOT USE FOR ACQUISITION	
<b>PRELIMINARY PLANS</b> DO NOT USE FOR CONSTRUCTION	

8/17/99

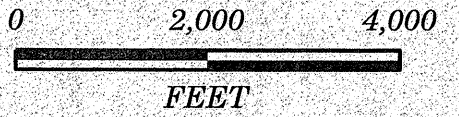
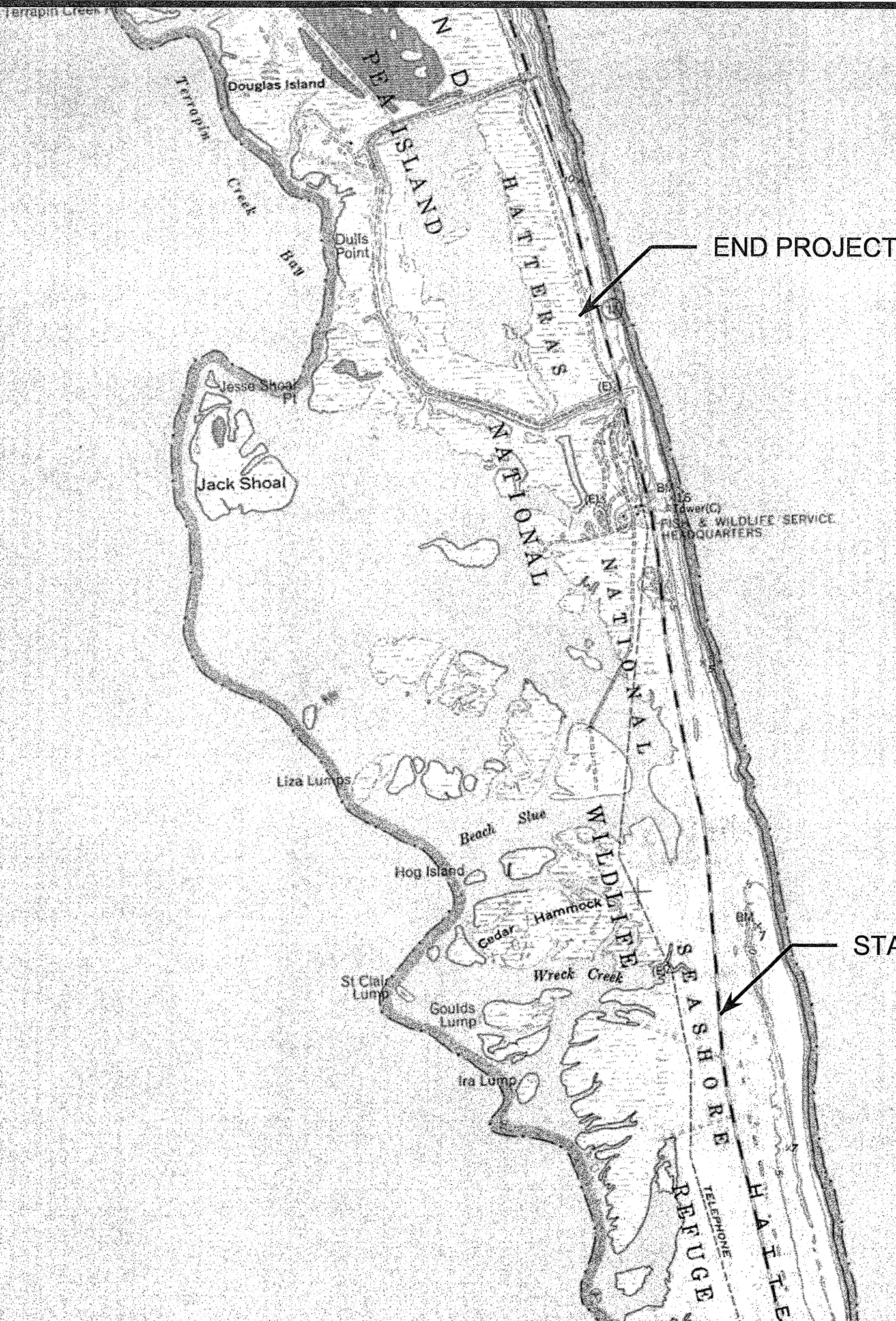
REVISIONS



SOUND

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\*\*\*\*\*SYSTEM TIME\*\*\*\*\*  
\*\*\*\*\*DRAWING DATE\*\*\*\*\*

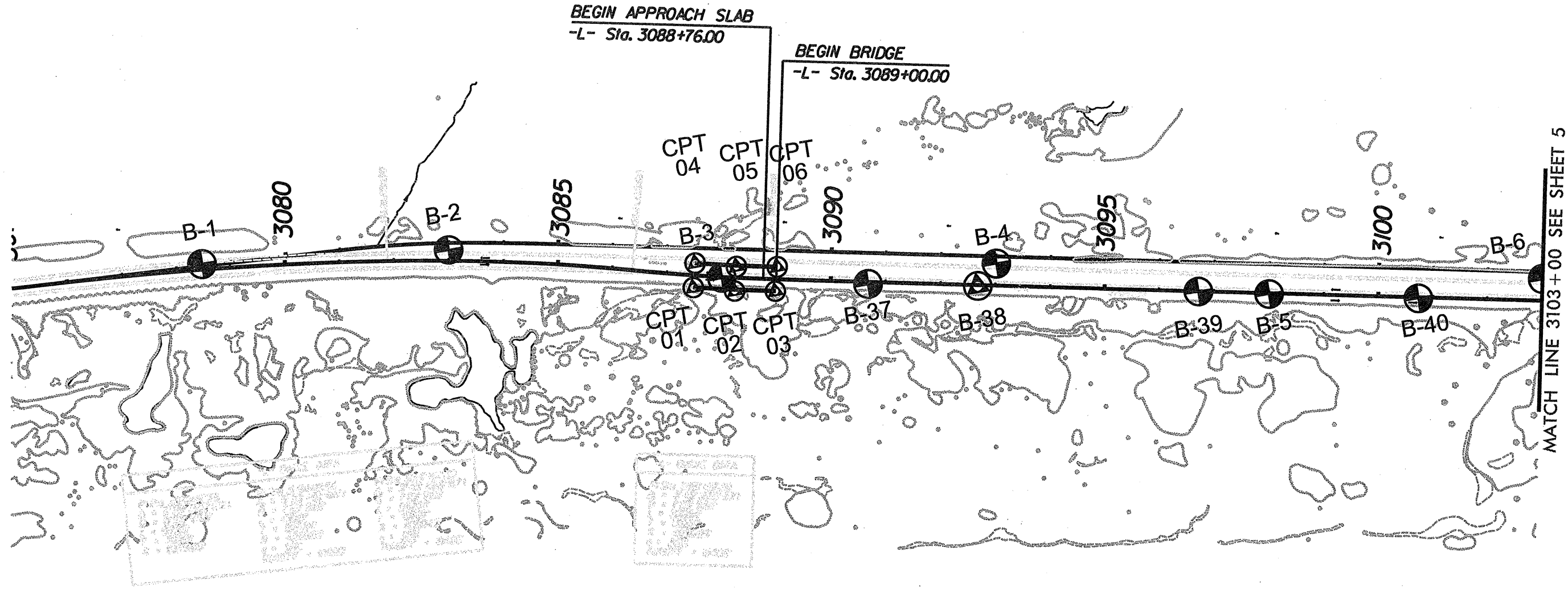


PROJECT REFERENCE NO.	SHEET NO.
B-2500	4
RAW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
<b>INCOMPLETE PLANS</b> DO NOT USE FOR ACQUISITION	
<b>PRELIMINARY PLANS</b> DO NOT USE FOR CONSTRUCTION	



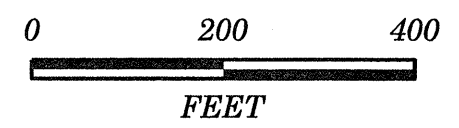
BEGIN APPROACH SLAB  
-L- Sta. 3088+76.00

BEGIN BRIDGE  
-L- Sta. 3089+00.00



REVISIONS

8/17/95  
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 SYSTEMS  
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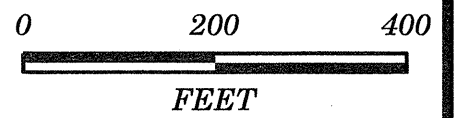
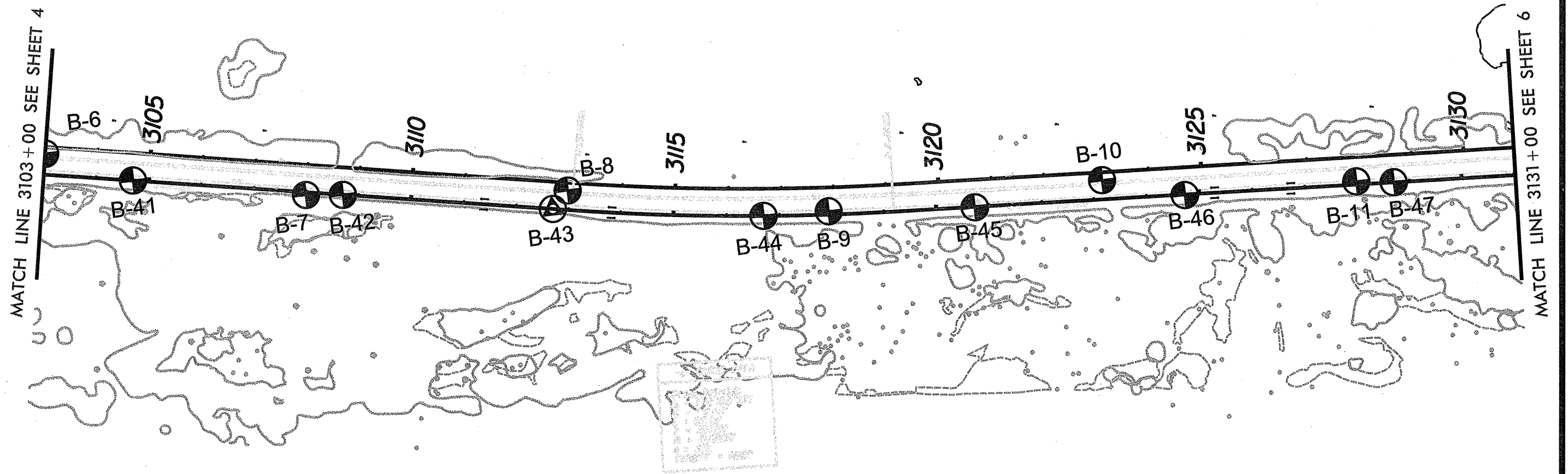


MATCH LINE 3103+00 SEE SHEET 5

PROJECT REFERENCE NO. <b>B-2500</b>	SHEET NO. <b>5</b>
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
<b>INCOMPLETE PLANS</b> DO NOT USE FOR ACQUISITION	
<b>PRELIMINARY PLANS</b> DO NOT USE FOR CONSTRUCTION	

8/17/99

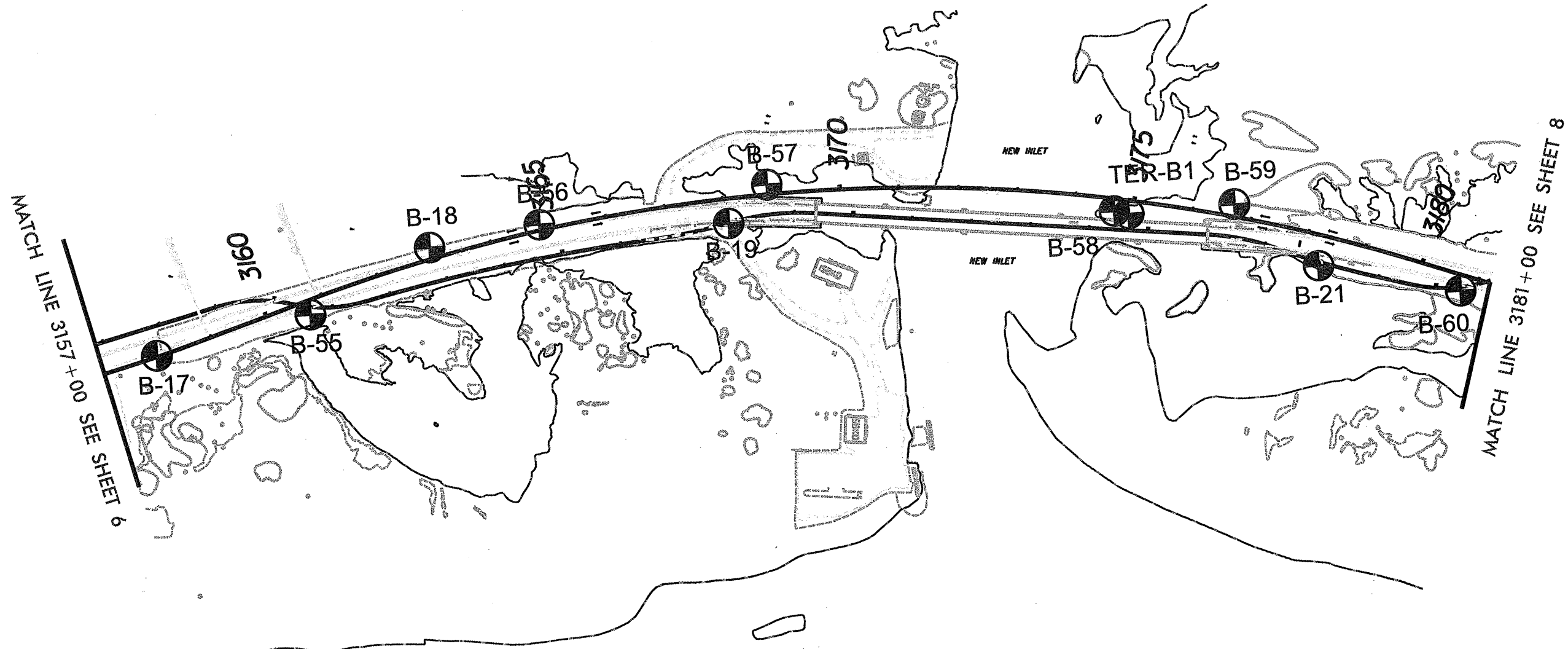
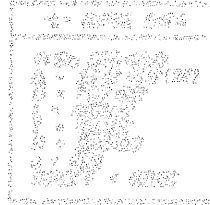
REVISIONS



\*\*\*\*\*SYSTEMS\*\*\*\*\*  
\*\*\*\*\*CADD\*\*\*\*\*  
\*\*\*\*\*PLANS\*\*\*\*\*

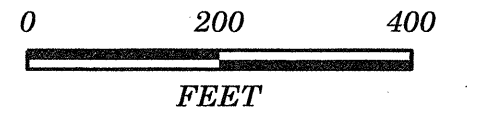


PROJECT REFERENCE NO. <b>B-2500</b>		SHEET NO. <b>7</b>	
RW SHEET NO.			
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER		
<b>INCOMPLETE PLANS</b> <small>DO NOT USE FOR ACQUISITION</small> <b>PRELIMINARY PLANS</b> <small>DO NOT USE FOR CONSTRUCTION</small>			



REVISIONS

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 12/1/99  
 12/1/99  
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8/17/99

PROJECT REFERENCE NO. <b>B-2500</b>	SHEET NO. <b>10</b>
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
<b>INCOMPLETE PLANS</b> DO NOT USE FOR ACQUISITION	
<b>PRELIMINARY PLANS</b> DO NOT USE FOR CONSTRUCTION	

REVISIONS

MATCH LINE 3233+00 SEE SHEET 9

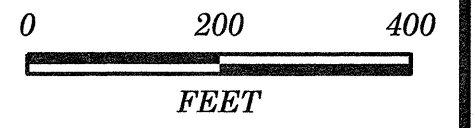
B-32

B-33

B-34

B-35

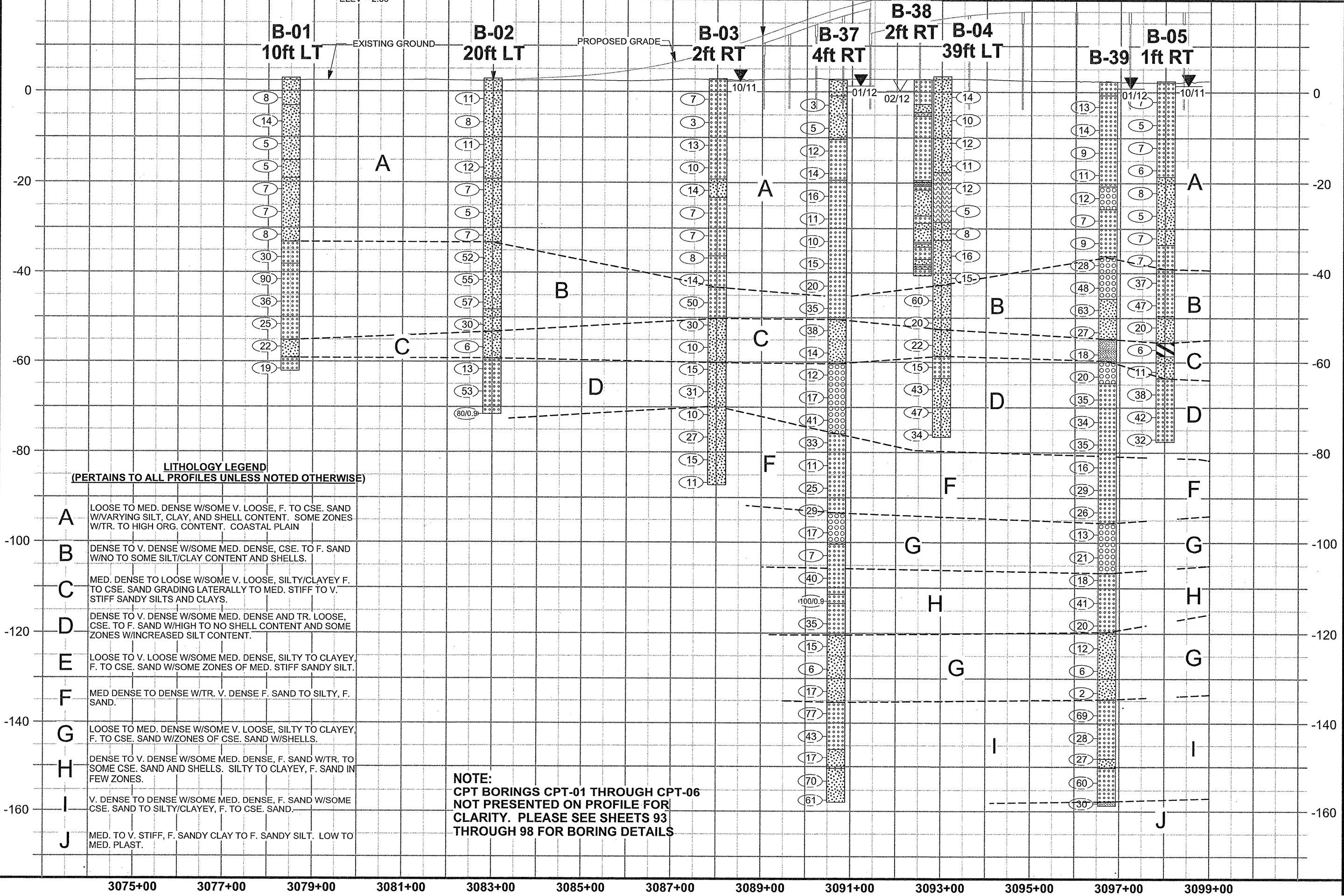
B-36

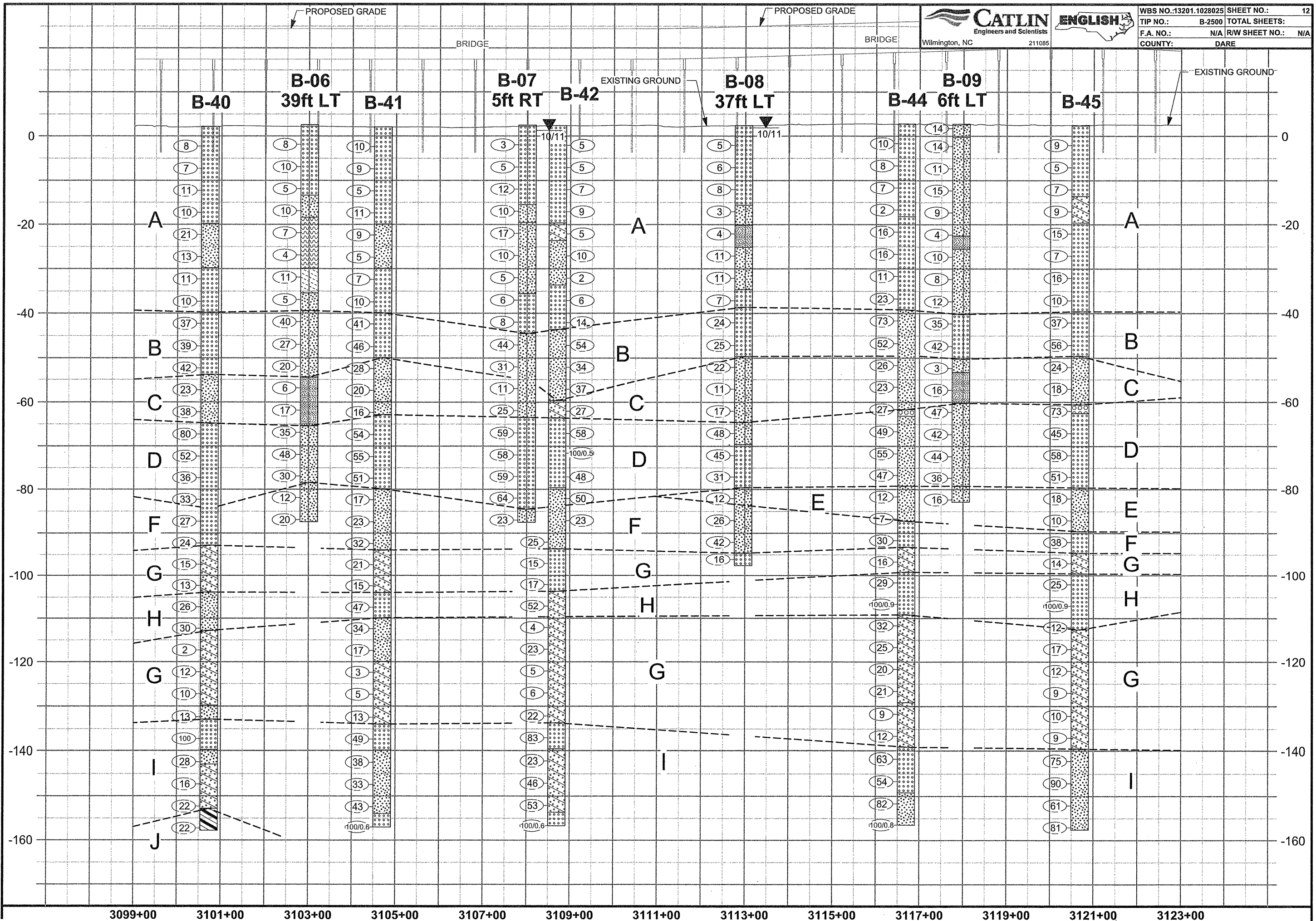


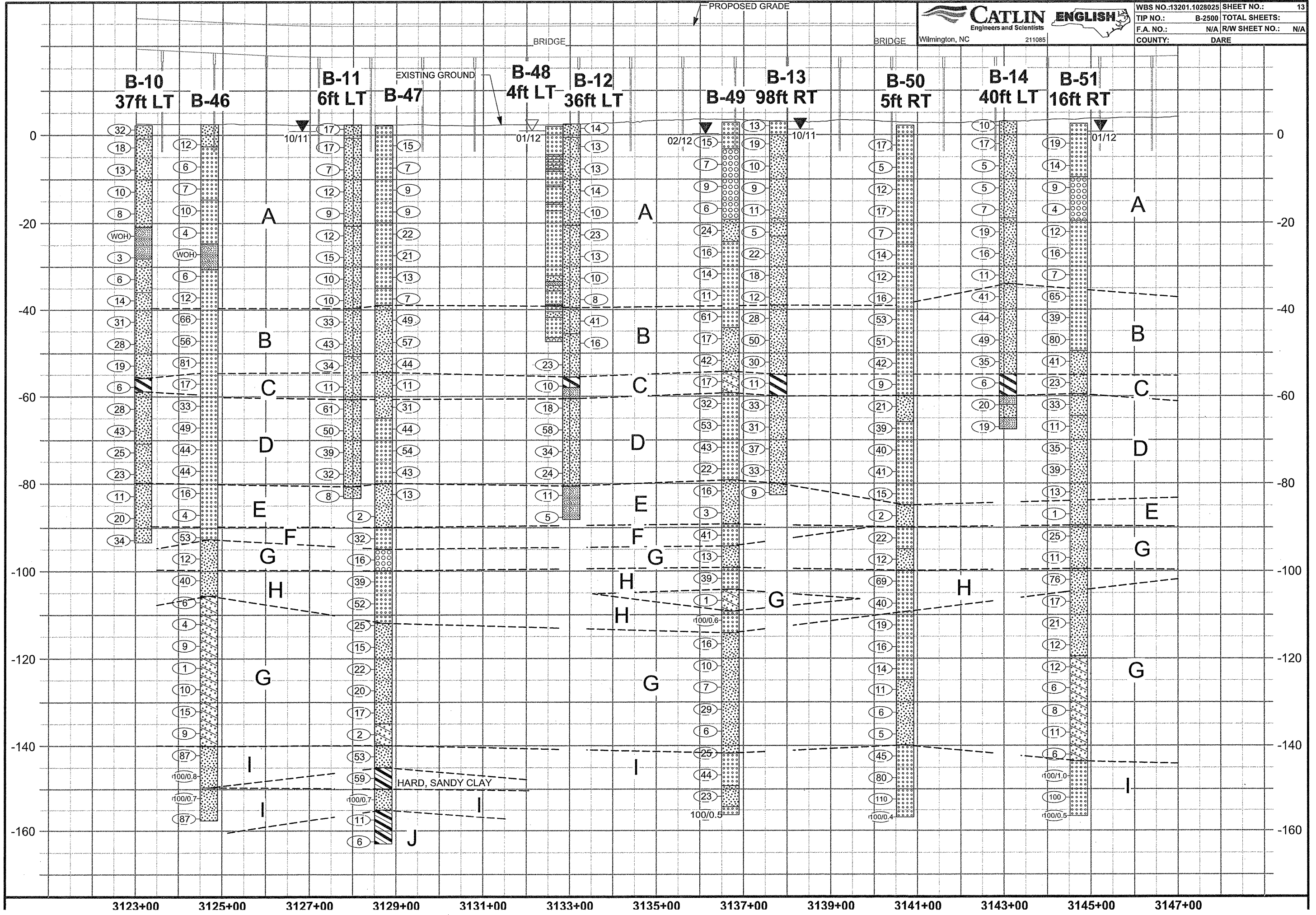
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 SYSTEM \*\*\*\*\*  
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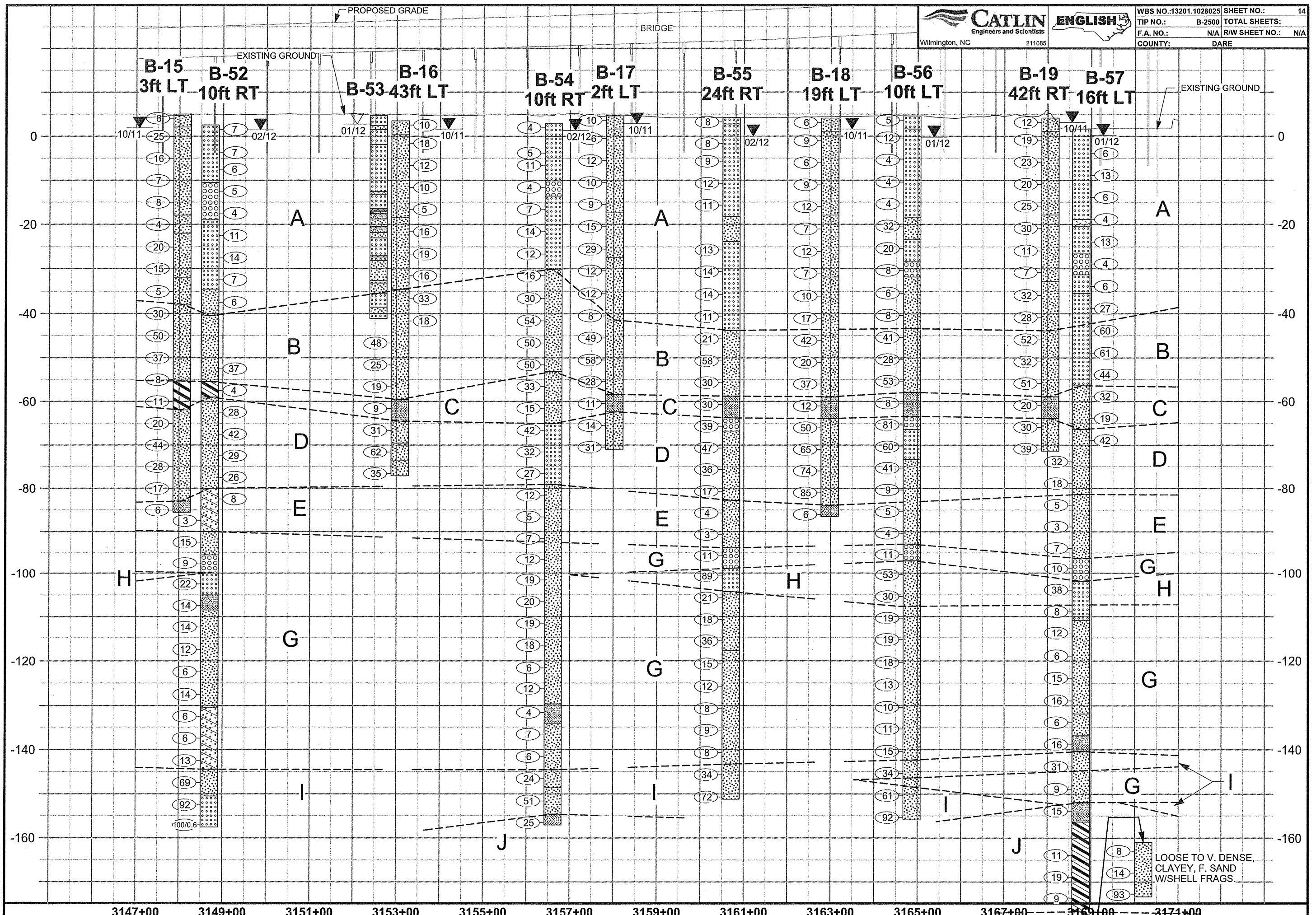
BEGIN PROJECT NC 12 PEA ISLAND BREACH  
 -L- STA. - 3083+00.00  
 ELEV = 2.59'

BEGIN BRIDGE  
 -L- STA. - 3089+00.00



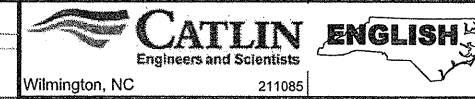






BRIDGE

PROPOSED GRADE



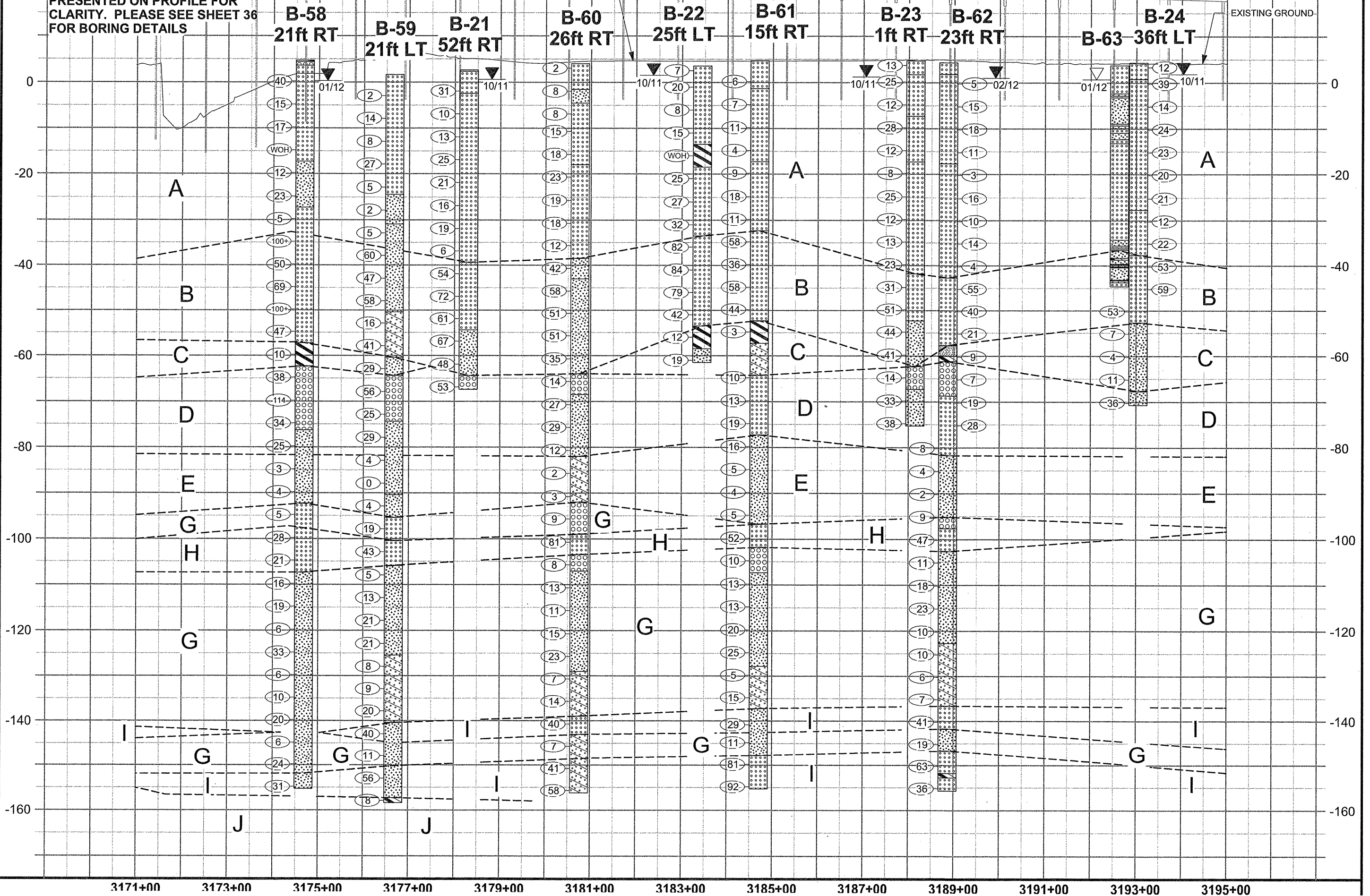
WBS NO.: 13201.1028025 SHEET NO.: 15  
TIP NO.: B-2500 TOTAL SHEETS:  
F.A. NO.: N/A R/W SHEET NO.: N/A  
COUNTY: DARE

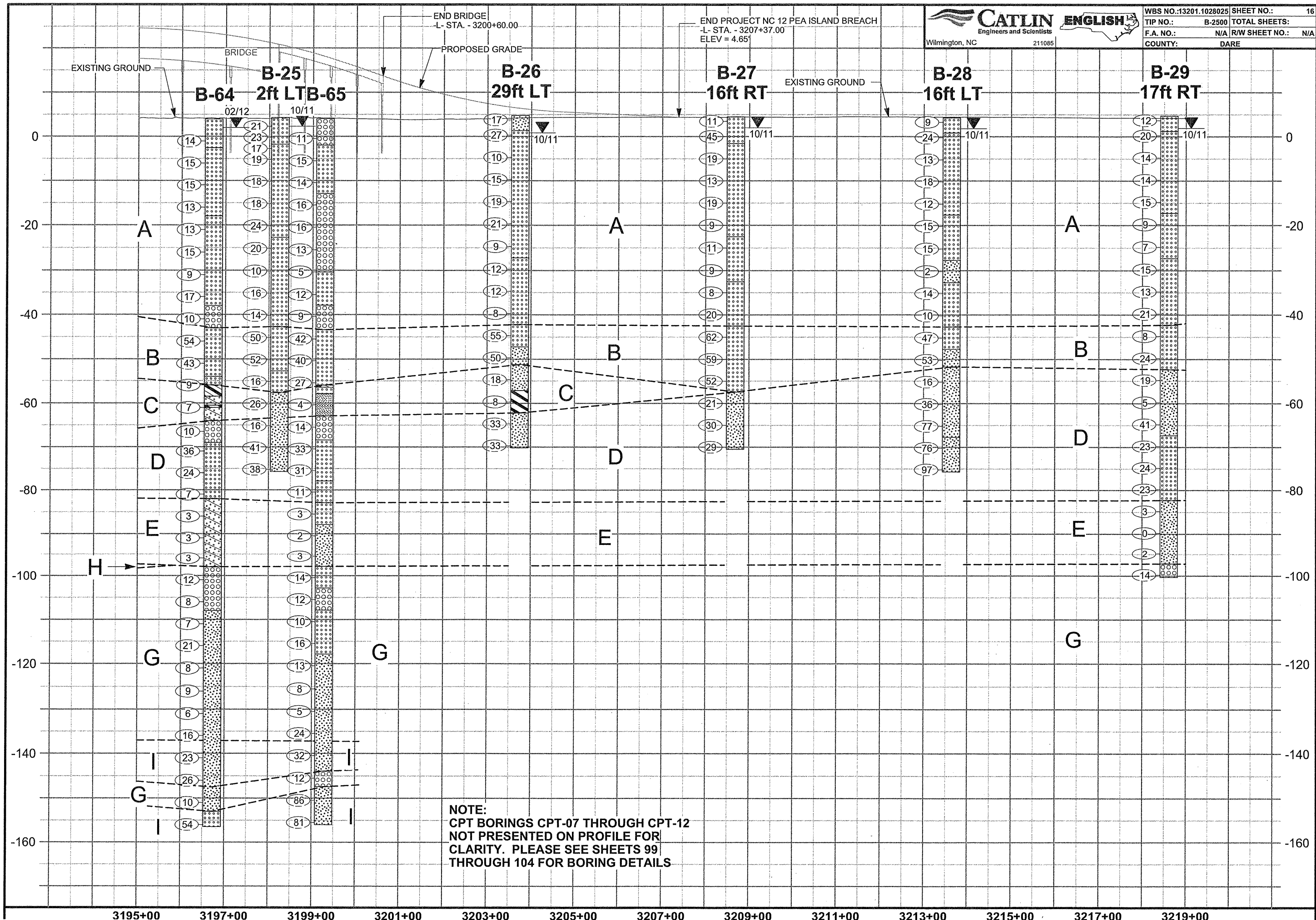
NOTE:  
SPT BORING TER-B1 NOT  
PRESENTED ON PROFILE FOR  
CLARITY. PLEASE SEE SHEET 36  
FOR BORING DETAILS

EXISTING GROUND

BRIDGE

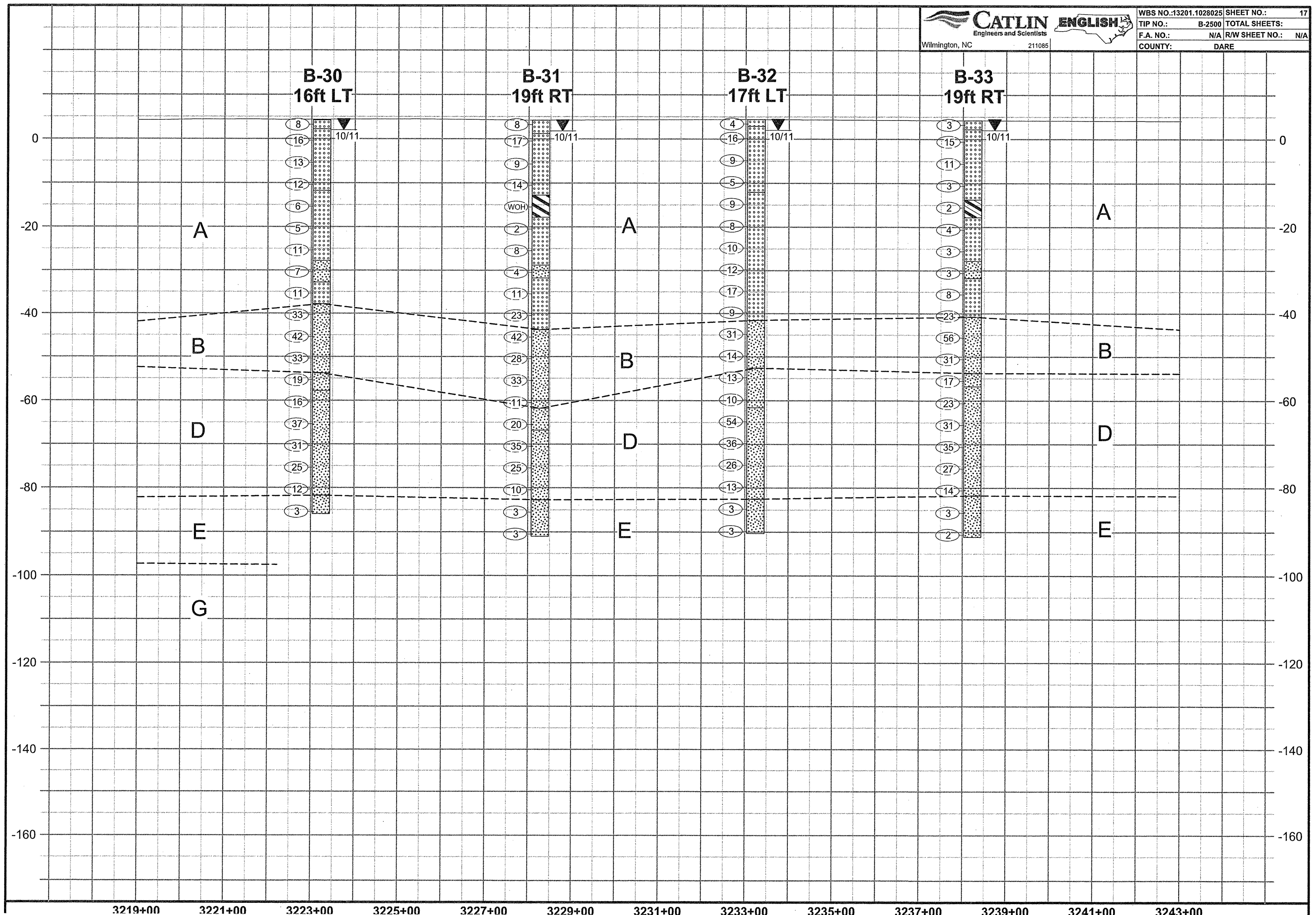
EXISTING GROUND

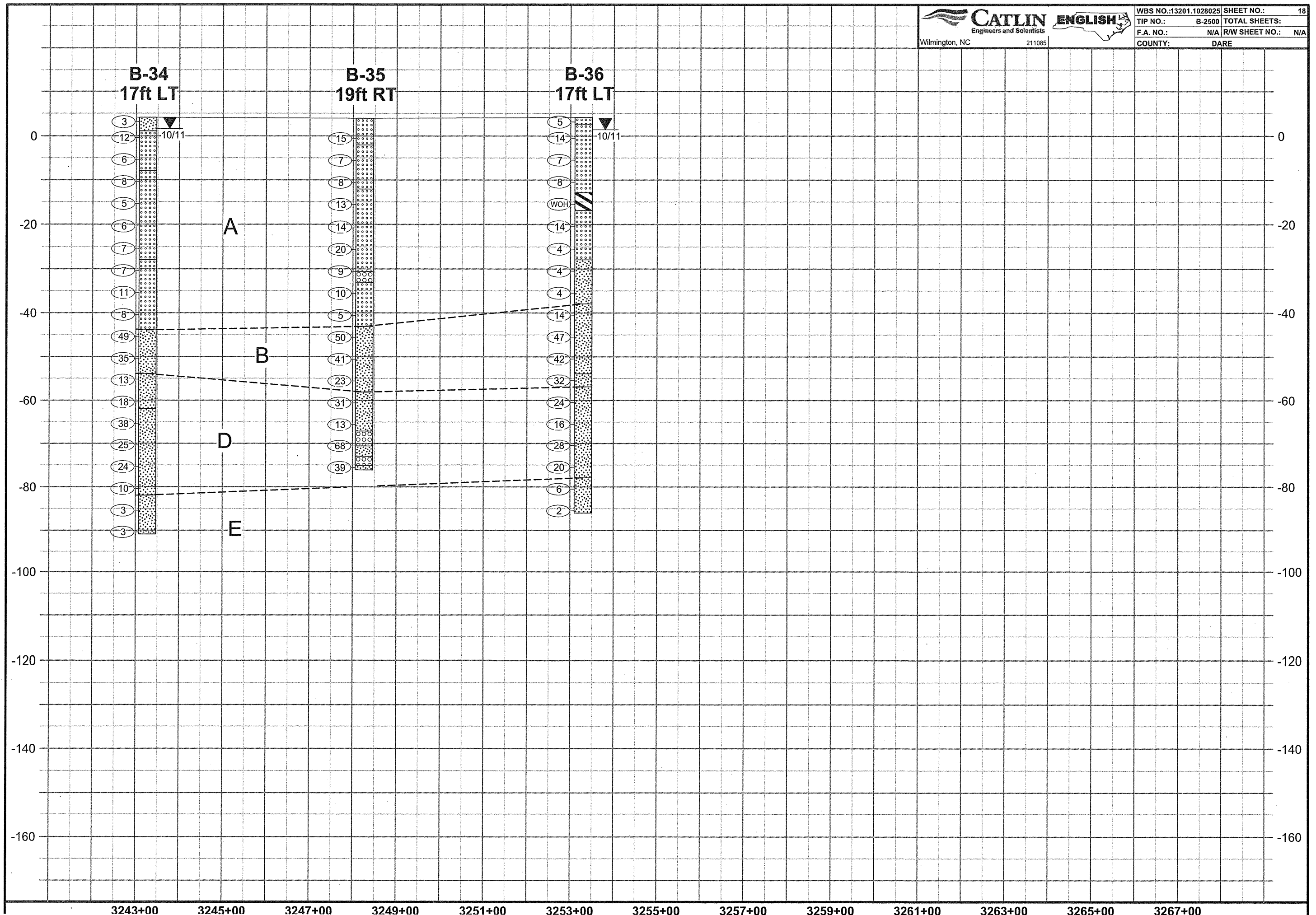




**NOTE:**  
 CPT BORINGS CPT-07 THROUGH CPT-12  
 NOT PRESENTED ON PROFILE FOR  
 CLARITY. PLEASE SEE SHEETS 99  
 THROUGH 104 FOR BORING DETAILS









# NCDOT GEOTECHNICAL ENGINEERING UNIT

## BORELOG REPORT



SHEET NO.: 19  
 PROJ. NO.: 13201.1028025  
 TIP NO.: B-2500  
 COUNTY: DARE

WBS 13201.1028025		TIP B-2500		COUNTY DARE		GEOLOGIST J. Brandsen											
SITE DESCRIPTION Bridge over Pea Island Breach on NC 12							GROUND WTR (ft)										
BORING NO. B-01		STATION 3078+50		OFFSET 10ft LT		ALIGNMENT -L-											
COLLAR ELEV. 2.9 ft		TOTAL DEPTH 65.0 ft		NORTHING 713,251		EASTING 3,045,833											
DRILL RIG/HAMMER EFF./DATE SME R-6 CME-550X 77% 04/01/2010		DRILL METHOD Mud Rotary		HAMMER TYPE Automatic													
DRILLER S&ME		START DATE 10/17/11		COMP. DATE 10/17/11		SURFACE WATER DEPTH N/A											
ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT					SAMP. NO.	LOG MOI	LOG G	SOIL AND ROCK DESCRIPTION	DEPTH (ft)		
			0.5ft	0.5ft	0.5ft	0	25	50	75	100							
5															2.9	LAND SURFACE	0.0
0	-0.6	3.5	2	3	5										-3.1	ROADWAY EMBANKMENT Tan brown, Silty, f. to cse. SAND. Loose.	6.0
-5	-5.6	8.5	7	7	7											COASTAL PLAIN Gray, f. SAND w/tr. silt. Med. dense to loose.	
-10	-10.6	13.5	3	3	2												
-15	-15.6	18.5	2	2	3											Dark gray, Silty, f. SAND. Loose.	18.0
-20	-20.6	23.5	1	2	5											Brown, Silty, f. SAND. Some gravel in middle of strata. Loose.	22.0
-25	-25.6	28.5	3	3	4												
-30	-30.6	33.5	3	3	5												
-35	-35.6	38.5	7	15	15											Gray, f. to cse. SAND. Med. dense.	36.0
-40	-40.6	43.5	20	39	51											Gray, f. SAND. V. dense grading to med. dense.	41.0
-45	-45.6	48.5	13	15	21												
-50	-50.6	53.5	6	10	15												
-55	-55.6	58.5	3	7	15											Black, Silty, f. SAND. Med. dense.	58.0
-60	-60.6	63.5	12	10	9											Gray, f. to cse. SAND w/shell frags. Med. dense.	62.0
																Boring Terminated at Elevation -62.1 ft in gray, f. to cse. SAND w/shell frags. Coastal Plain	65.0

WBS 13201.1028025		TIP B-2500		COUNTY DARE		GEOLOGIST J. Brandsen											
SITE DESCRIPTION Bridge over Pea Island Breach on NC 12							GROUND WTR (ft)										
BORING NO. B-02		STATION 3083+00		OFFSET 20ft LT		ALIGNMENT -L-											
COLLAR ELEV. 2.8 ft		TOTAL DEPTH 74.4 ft		NORTHING 713,696		EASTING 3,045,757											
DRILL RIG/HAMMER EFF./DATE SME R-6 CME-550X 77% 04/01/2010		DRILL METHOD Mud Rotary		HAMMER TYPE Automatic													
DRILLER S&ME		START DATE 10/18/11		COMP. DATE 10/18/11		SURFACE WATER DEPTH N/A											
ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT					SAMP. NO.	LOG MOI	LOG G	SOIL AND ROCK DESCRIPTION	DEPTH (ft)		
			0.5ft	0.5ft	0.5ft	0	25	50	75	100							
5															2.8	LAND SURFACE	0.0
0	-0.7	3.5	2	4	7											COASTAL PLAIN Gray, f. SAND w/tr. silt. Med. dense to loose.	
-5	-5.7	8.5	3	3	5												
-10	-10.7	13.5	2	3	8												
-15	-15.7	18.5	5	6	6												
-20	-20.7	23.5	2	3	4											Brown, Silty, f. SAND w/tr. organics throughout, some shell frags. in middle of strata, and cse. sand at base. Loose.	22.0
-25	-25.7	28.5	2	2	3												
-30	-30.7	33.5	2	2	5												
-35	-35.7	38.5	16	25	27											Gray, Silty, f. SAND. V. dense.	36.0
-40	-40.7	43.5	20	27	28												
-45	-45.7	48.5	21	24	33												
-50	-50.7	53.5	8	13	17												
-55	-55.7	58.5	2	2	4												
-60	-60.7	63.5	7	7	6											Gray, cse. to f. SAND w/tr. to some shell frags. Med. dense grading to v. dense.	62.0
-65	-65.7	68.5	6	20	33												
-70	-70.7	73.5	30	50/0.4													
																Boring Terminated at Elevation -71.6 ft in gray, cse. to f. SAND. Coastal Plain	74.4

NEW NCDOT BORE DOUBLE B2500 GEO BRDG PEASLAND CATIN TEMPLATE.GPJ CATIN.GDT 2/21/12



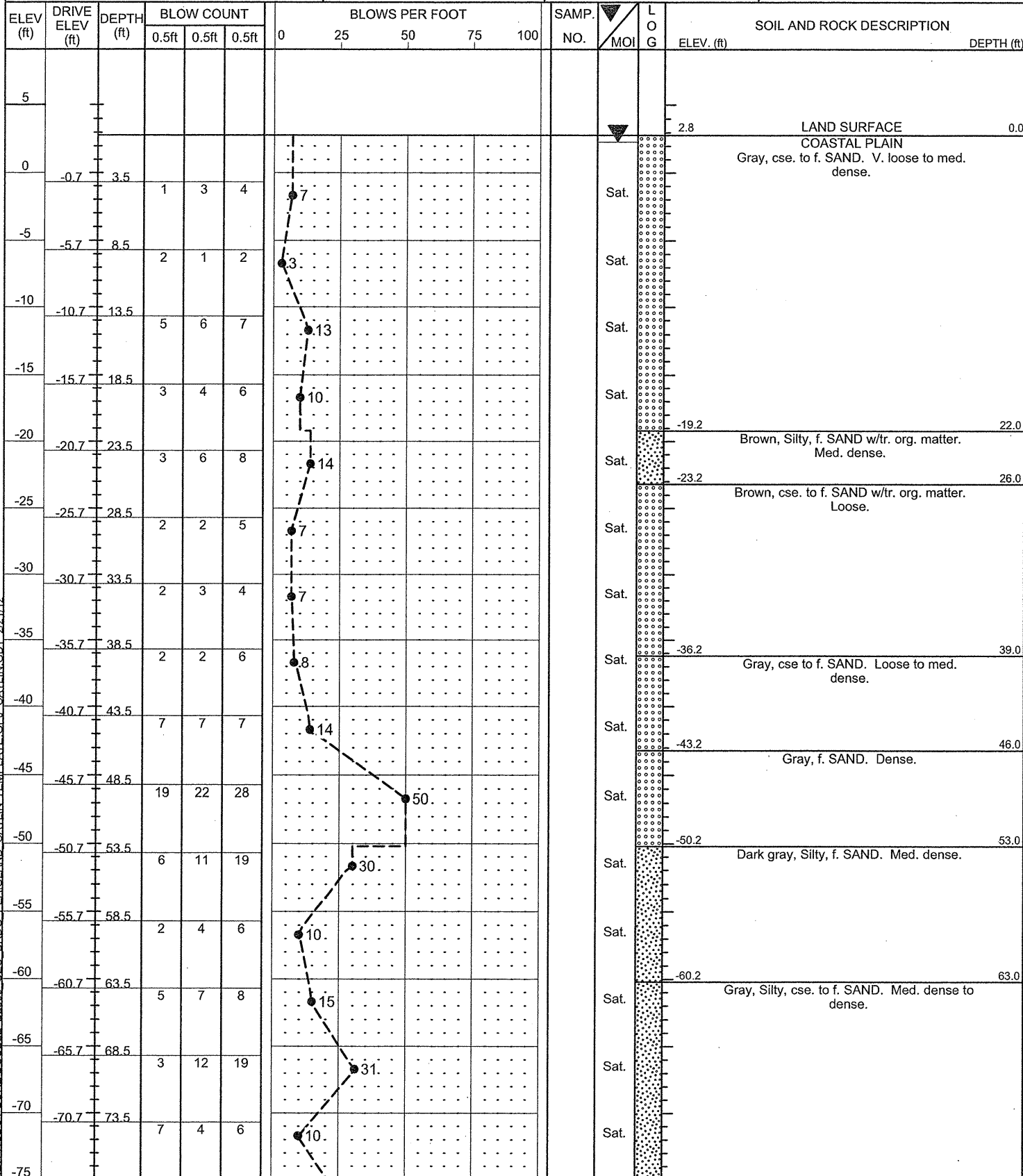
**NCDOT GEOTECHNICAL ENGINEERING UNIT  
BORELOG REPORT**



SHEET NO.: 20  
 PROJ. NO.: 13201.1028025  
 TIP NO.: B-2500  
 COUNTY: DARE

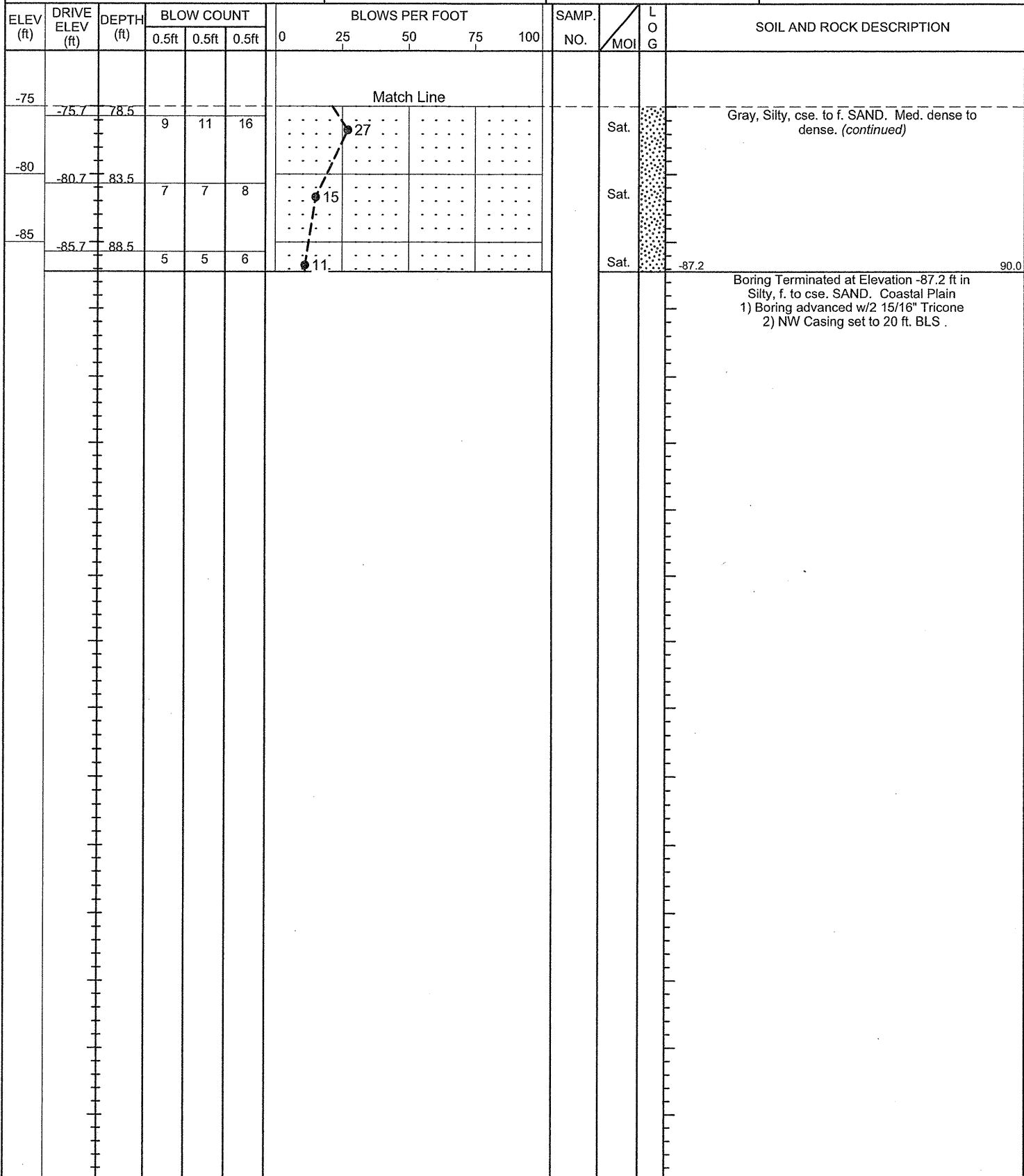
WBS 13201.1028025	TIP B-2500	COUNTY DARE	GEOLOGIST J. Brandsen	<b>GROUND WTR (ft)</b>	
<b>SITE DESCRIPTION</b> Bridge over Pea Island Breach on NC 12				0 HR.	N/A
BORING NO. B-03	STATION 3088+01	OFFSET 2ft RT	ALIGNMENT -L-		
COLLAR ELEV. 2.8 ft	TOTAL DEPTH 90.0 ft	NORTHING 714,198	EASTING 3,045,751	24 HR.	0.5

DRILL RIG/HAMMER EFF./DATE SME R-6 CME-550X 77% 04/01/2010	DRILL METHOD Mud Rotary	HAMMER TYPE Automatic	
DRILLER S&ME	START DATE 10/14/11	COMP. DATE 10/14/11	SURFACE WATER DEPTH N/A



WBS 13201.1028025	TIP B-2500	COUNTY DARE	GEOLOGIST J. Brandsen	<b>GROUND WTR (ft)</b>	
<b>SITE DESCRIPTION</b> Bridge over Pea Island Breach on NC 12				0 HR.	N/A
BORING NO. B-03	STATION 3088+01	OFFSET 2ft RT	ALIGNMENT -L-		
COLLAR ELEV. 2.8 ft	TOTAL DEPTH 90.0 ft	NORTHING 714,198	EASTING 3,045,751	24 HR.	0.5

DRILL RIG/HAMMER EFF./DATE SME R-6 CME-550X 77% 04/01/2010	DRILL METHOD Mud Rotary	HAMMER TYPE Automatic	
DRILLER S&ME	START DATE 10/14/11	COMP. DATE 10/14/11	SURFACE WATER DEPTH N/A



NEW NCDOT BORE DOUBLE\_B2500\_GEO\_BRDG\_PEAISLAND\_CAT.IN.TEMPLATE.GPJ\_CAT.IN.GDT\_2/21/12



**NCDOT GEOTECHNICAL ENGINEERING UNIT**  
**BORELOG REPORT**



SHEET NO.: 21  
PROJ. NO.: 13201.1028025  
TIP NO.: B-2500  
COUNTY: DARE

WBS 13201.1028025		TIP B-2500		COUNTY DARE		GEOLOGIST J. Brandsen	
SITE DESCRIPTION Bridge over Pea Island Breach on NC 12							GROUND WTR (ft)
BORING NO. B-04		STATION 3093+01		OFFSET 39ft LT		ALIGNMENT -L-	
COLLAR ELEV. 3.4 ft		TOTAL DEPTH 80.0 ft		NORTHING 714,693		EASTING 3,045,669	
						0 HR.	N/A
						24 HR.	N/A

WBS 13201.1028025		TIP B-2500		COUNTY DARE		GEOLOGIST J. Brandsen	
SITE DESCRIPTION Bridge over Pea Island Breach on NC 12							GROUND WTR (ft)
BORING NO. B-04		STATION 3093+01		OFFSET 39ft LT		ALIGNMENT -L-	
COLLAR ELEV. 3.4 ft		TOTAL DEPTH 80.0 ft		NORTHING 714,693		EASTING 3,045,669	
						0 HR.	N/A
						24 HR.	N/A

DRILL RIG/HAMMER EFF./DATE SME R-6 CME-550X 77% 04/01/2010  
 DRILL METHOD Mud Rotary  
 HAMMER TYPE Automatic

DRILLER S&ME  
 START DATE 10/18/11  
 COMP. DATE 10/18/11  
 SURFACE WATER DEPTH N/A

DRILL RIG/HAMMER EFF./DATE SME R-6 CME-550X 77% 04/01/2010  
 DRILL METHOD Mud Rotary  
 HAMMER TYPE Automatic

DRILLER S&ME  
 START DATE 10/18/11  
 COMP. DATE 10/18/11  
 SURFACE WATER DEPTH N/A

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT					SAMP. NO.	LOG MOI	L O G ELEV. (ft)	SOIL AND ROCK DESCRIPTION	DEPTH (ft)	
			0.5ft	0.5ft	0.5ft	0	25	50	75	100						
3.4	-0.1	3.5	4	7	7	14								3.4	LAND SURFACE	0.0
															COASTAL PLAIN Gray, Silty, f. SAND w/some cse. near top. Med. dense.	
	-5.1	8.5	4	5	5	10									Sat.	
	-10.1	13.5	4	5	7	12									W	
	-15.1	18.5	5	5	6	11									W	
	-20.1	23.5	3	5	7	12									W	-17.6
	-25.1	28.5	2	2	3	5									W	21.0
	-30.1	33.5	3	4	4	8									W	-28.6
	-35.1	38.5	2	7	9	16									Sat.	32.0
	-40.1	43.5	3	8	7	15									Sat.	36.0
	-45.1	48.5	18	29	31	60									W	-32.6
	-50.1	53.5	7	9	11	20									W	46.0
	-55.1	58.5	3	4	18	22									W	-42.6
	-60.1	63.5	12	8	7	15									W	56.0
	-65.1	68.5	14	19	24	43									W	-52.6
	-70.1	73.5	18	23	24	47									W	62.0
															W	-58.6
															W	67.0

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT					SAMP. NO.	LOG MOI	L O G ELEV. (ft)	SOIL AND ROCK DESCRIPTION	DEPTH (ft)		
			0.5ft	0.5ft	0.5ft	0	25	50	75	100							
-75	-75.1	78.5	11	16	18	34										-75	

NEW NCDOT BORE DOUBLE B2500 GEO BRDG PEASLAND CATLIN TEMPLATE GFL CATLIN.GDT 2/21/12

(continued)

Match Line

Gray, f. SAND w/tr. silt. Dense.  
Boring Terminated at Elevation -76.6 ft in f. SAND w/tr. silt. Coastal Plain



# NCDOT GEOTECHNICAL ENGINEERING UNIT

## BORELOG REPORT



SHEET NO.: 22  
 PROJ. NO.: 13201.1028025  
 TIP NO.: B-2500  
 COUNTY: DARE

WBS 13201.1028025	TIP B-2500	COUNTY DARE	GEOLOGIST J. Brandsen	
SITE DESCRIPTION Bridge over Pea Island Breach on NC 12				GROUND WTR (ft)
BORING NO. B-05	STATION 3098+00	OFFSET 1ft RT	ALIGNMENT -L-	0 HR. N/A
COLLAR ELEV. 2.4 ft	TOTAL DEPTH 80.0 ft	NORTHING 715,194	EASTING 3,045,667	24 HR. 1.0
DRILL RIG/HAMMER EFF./DATE SME R-6 CME-550X 77% 04/01/2010		DRILL METHOD Mud Rotary	HAMMER TYPE Automatic	
DRILLER S&ME	START DATE 10/13/11	COMP. DATE 10/13/11	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														2.4	LAND SURFACE	0.0
0	-1.1	3.5	1	3	4							Sat.	Lt. gray to gray, f. to cse. SAND w/some shell frags. at base. Loose.			
-5	-6.1	8.5	1	2	3							Sat.				
-10	-11.1	13.5	2	3	4							Sat.				
-15	-16.1	18.5	1	3	3							Sat.				
-20	-21.1	23.5	2	3	5							Sat.	Brown to lt. brown, f. SAND w/tr. silt and organics throughout. Tr. gravel at base. Loose.	21.0		
-25	-26.1	28.5	1	2	3							Sat.				
-30	-31.1	33.5	2	3	4							Sat.				
-35	-36.1	38.5	2	3	4							Sat.	Gray, f. to cse. SAND. Loose.	36.0		
-40	-41.1	43.5	13	16	21							Sat.	Gray, f. SAND w/tr. silt. Dense.	41.5		
-45	-46.1	48.5	15	19	28							Sat.				
-50	-51.1	53.5	9	9	11							W	Dk. gray, Silty, f. SAND. Med. dense.	52.0		
-55	-56.1	58.5	2	4	2							W	Dk. gray, Silty CLAY. Med. stiff.	58.0		
-60	-61.1	63.5	6	5	6							Sat.	Dk. gray, Silty, cse. to f. SAND w/some gravel and shell frags. Med. dense.	61.0		
-65	-66.1	68.5	10	19	19							Sat.	Dk. gray, f. SAND w/shell frags. No shell at base. Dense.	66.0		
-70	-71.1	73.5	13	18	24							Sat.				

WBS 13201.1028025	TIP B-2500	COUNTY DARE	GEOLOGIST J. Brandsen	
SITE DESCRIPTION Bridge over Pea Island Breach on NC 12				GROUND WTR (ft)
BORING NO. B-05	STATION 3098+00	OFFSET 1ft RT	ALIGNMENT -L-	0 HR. N/A
COLLAR ELEV. 2.4 ft	TOTAL DEPTH 80.0 ft	NORTHING 715,194	EASTING 3,045,667	24 HR. 1.0
DRILL RIG/HAMMER EFF./DATE SME R-6 CME-550X 77% 04/01/2010		DRILL METHOD Mud Rotary	HAMMER TYPE Automatic	
DRILLER S&ME	START DATE 10/13/11	COMP. DATE 10/13/11	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														
-76.1	-76.1	78.5	9	12	20							Sat.	Dk. gray, f. SAND w/shell frags. No shell at base. Dense. (continued)	80.0
													Boring Terminated at Elevation -77.6 ft in f. SAND. Coastal Plain 1) Boring advanced w/2 15/16" Tricone 2) NW Casing set to 30 ft. BLS	

NEW NCDOT BORE DOUBLE B2500 GEO BRDG PEASLAND CATLIN TEMPLATE.GPJ CATLIN.GDT 2/21/12



# NCDOT GEOTECHNICAL ENGINEERING UNIT

## BORELOG REPORT



SHEET NO.: 23  
 PROJ. NO.: 13201.1028025  
 TIP NO.: B-2500  
 COUNTY: DARE

WBS 13201.1028025	TIP B-2500	COUNTY DARE	GEOLOGIST J. Brandsen	
SITE DESCRIPTION Bridge over Pea Island Breach on NC 12				GROUND WTR (ft)
BORING NO. B-06	STATION 3103+01	OFFSET 39ft LT	ALIGNMENT -L-	0 HR. N/A
COLLAR ELEV. 2.6 ft	TOTAL DEPTH 90.0 ft	NORTHING 715,689	EASTING 3,045,584	24 HR. FIAD

DRILL RIG/HAMMER EFF./DATE SME R-6 CME-550X 77% 04/01/2010 DRILL METHOD Mud Rotary HAMMER TYPE Automatic

DRILLER S&ME START DATE 10/20/11 COMP. DATE 10/20/11 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														2.6	LAND SURFACE	0.0
0	-0.9	3.5	3	4	4							Sat.	COASTAL PLAIN Gray, cse. to f. SAND. Loose.			
-5	-5.9	8.5	4	4	6							Sat.				
-10	-10.9	13.5	3	2	3							Sat.				
-15	-15.9	18.5	3	5	5							Sat.	Gray, f. SAND w/tr. silt. Loose.	16.0		
-20	-20.9	23.5	2	3	4							Sat.	Brown, Silty, f. to cse. SAND. High org. content. Loose.	21.0		
-25	-25.9	28.5	3	2	2							Sat.				
-30	-30.9	33.5	2	5	6							Sat.	SAA w/mod. org. content. Med. dense.	32.5		
-35	-35.9	38.5	4	3	2							Sat.	Gray, Silty, f. SAND. Loose.	38.0		
-40	-40.9	43.5	12	18	22							Sat.	Gray, Silty, f. SAND. Dense to med. dense.	42.0		
-45	-45.9	48.5	10	13	14							Sat.				
-50	-50.9	53.5	8	10	10							Sat.				
-55	-55.9	58.5	4	3	3							W	Gray, Clayey SILT w/some shell frags. at base. Med. to v. stiff.	57.0		
-60	-60.9	63.5	5	7	10							W				
-65	-65.9	68.5	6	17	18							Sat.	Gray, Silty, f. SAND w/some cse. sand and shell frags. at top of strata. Dense.	68.0		
-70	-70.9	73.5	18	26	22							Sat.				

WBS 13201.1028025	TIP B-2500	COUNTY DARE	GEOLOGIST J. Brandsen	
SITE DESCRIPTION Bridge over Pea Island Breach on NC 12				GROUND WTR (ft)
BORING NO. B-06	STATION 3103+01	OFFSET 39ft LT	ALIGNMENT -L-	0 HR. N/A
COLLAR ELEV. 2.6 ft	TOTAL DEPTH 90.0 ft	NORTHING 715,689	EASTING 3,045,584	24 HR. FIAD

DRILL RIG/HAMMER EFF./DATE SME R-6 CME-550X 77% 04/01/2010 DRILL METHOD Mud Rotary HAMMER TYPE Automatic

DRILLER S&ME START DATE 10/20/11 COMP. DATE 10/20/11 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	-75.9	78.5	9	14	16									
-80	-80.9	83.5	6	6	6							Sat.	Gray, Silty, f. SAND w/some cse. sand and shell frags. at top of strata. Dense. (continued)	81.0
-85	-85.9	88.5	6	8	12							Sat.	Gray, Silty, f. SAND w/some cse. sand at base. Med. dense.	
												Sat.	Boring Terminated at Elevation -87.4 ft in gray, f. to cse. SAND. Coastal Plain 1) Boring advanced w/2 15/16" Tricone 2) NW Casing set to 35 ft. BLS	90.0

NEW NCDOT BORE DOUBLE B2500 GEO BRDG PEASLAND CATIN TEMPLATE.GPJ CATIN.GDT 2/21/12



# NCDOT GEOTECHNICAL ENGINEERING UNIT

## BORELOG REPORT



SHEET NO.: 24  
 PROJ. NO.: 13201.1028025  
 TIP NO.: B-2500  
 COUNTY: DARE

WBS 13201.1028025	TIP B-2500	COUNTY DARE	GEOLOGIST J. Brandsen	
SITE DESCRIPTION Bridge over Pea Island Breach on NC 12				GROUND WTR (ft)
BORING NO. B-07	STATION 3108+00	OFFSET 5ft RT	ALIGNMENT -L-	0 HR. N/A
COLLAR ELEV. 2.5 ft	TOTAL DEPTH 90.0 ft	NORTHING 716,190	EASTING 3,045,586	24 HR. 1.2

DRILL RIG/HAMMER EFF./DATE SME R-6 CME-550X 77% 04/01/2010 DRILL METHOD Mud Rotary HAMMER TYPE Automatic

DRILLER S&ME	START DATE 10/13/11	COMP. DATE 10/13/11	SURFACE WATER DEPTH N/A
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ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT					SAMP. NO.	LOG MOI	LOG G	SOIL AND ROCK DESCRIPTION	DEPTH (ft)		
			0.5ft	0.5ft	0.5ft	0	25	50	75	100							
5															2.5	LAND SURFACE	0.0
0	-1.0	3.5	2	1	2									Sat.	Gray, cse. to f. SAND w/some shell frags. in middle of strata and tr. silt at base. V. loose to med. dense.		
-5	-6.0	8.5	2	2	3									Sat.			
-10	-11.0	13.5	3	6	6									Sat.			
-15	-16.0	18.5	5	6	4									Sat.	Gray, Silty, f. to cse. SAND. Med. dense.	18.0	
-20	-21.0	23.5	4	6	11									Sat.	Brown, Silty, f. to cse. SAND w/tr. org. Tr. gravel at base. Med. dense to loose.	22.0	
-25	-26.0	28.5	4	4	6									Sat.			
-30	-31.0	33.5	1	2	3									Sat.			
-35	-36.0	38.5	1	1	5									Sat.	Gray, cse. to f. SAND w/some gravel. Loose.	38.0	
-40	-41.0	43.5	3	3	5									Sat.			
-45	-46.0	48.5	16	18	26									Sat.	Gray, Silty, f. SAND. Dense to med. dense.	47.0	
-50	-51.0	53.5	11	15	16									Sat.			
-55	-56.0	58.5	8	5	6									Sat.			
-60	-61.0	63.5	2	10	15									Sat.			
-65	-66.0	68.5	24	28	31									Sat.	Lt. gray, cse. to f. SAND w/shell frags. V. dense.	66.0	
-70	-71.0	73.5	14	24	34									Sat.			
-75														Sat.			

WBS 13201.1028025	TIP B-2500	COUNTY DARE	GEOLOGIST J. Brandsen	
SITE DESCRIPTION Bridge over Pea Island Breach on NC 12				GROUND WTR (ft)
BORING NO. B-07	STATION 3108+00	OFFSET 5ft RT	ALIGNMENT -L-	0 HR. N/A
COLLAR ELEV. 2.5 ft	TOTAL DEPTH 90.0 ft	NORTHING 716,190	EASTING 3,045,586	24 HR. 1.2

DRILL RIG/HAMMER EFF./DATE SME R-6 CME-550X 77% 04/01/2010 DRILL METHOD Mud Rotary HAMMER TYPE Automatic

DRILLER S&ME	START DATE 10/13/11	COMP. DATE 10/13/11	SURFACE WATER DEPTH N/A
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ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT					SAMP. NO.	LOG MOI	LOG G	SOIL AND ROCK DESCRIPTION	DEPTH (ft)	
			0.5ft	0.5ft	0.5ft	0	25	50	75	100						
-75	-76.0	78.5	31	29	30									Sat.	Lt. gray, cse. to f. SAND w/shell frags. V. dense. (continued)	
-80	-81.0	83.5	24	37	27									Sat.		
-85	-86.0	88.5	7	9	14									Sat.	Gray, Silty, f. to cse. SAND. Med. dense.	87.0
														Sat.	Boring Terminated at Elevation -87.5 ft gray, Silty, f. to cse. SAND. Coastal Plain 1) Boring advanced w/2 15/16" Tricone 2) NW Casing set to 40 ft. BLS	90.0

NEW NCDOT BORE DOUBLE B2500 GEO BRDG PEASLAND CATLIN TEMPLATE.GPJ CATLIN.GDT 2/21/12





# NCDOT GEOTECHNICAL ENGINEERING UNIT

## BORELOG REPORT



SHEET NO.: 25  
 PROJ. NO.: 13201.1028025  
 TIP NO.: B-2500  
 COUNTY: DARE

WBS 13201.1028025	TIP B-2500	COUNTY DARE	GEOLOGIST J. Brandsen	
SITE DESCRIPTION Bridge over Pea Island Breach on NC 12				GROUND WTR (ft)
BORING NO. B-08	STATION 3112+96	OFFSET 37ft LT	ALIGNMENT -L-	0 HR. N/A
COLLAR ELEV. 2.4 ft	TOTAL DEPTH 100.0 ft	NORTHING 716,681	EASTING 3,045,502	24 HR. 0.5

DRILL RIG/HAMMER EFF./DATE SME R-6 CME-550X 77% 04/01/2010 DRILL METHOD Mud Rotary HAMMER TYPE Automatic

DRILLER S&ME START DATE 10/11/11 COMP. DATE 10/12/11 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														2.4	LAND SURFACE	0.0
0	-1.1	3.5	2	2	3							Sat.	Gray, cse. to f. SAND w/tr. silt. Loose.			
-5	-6.1	8.5	2	3	3							Sat.				
-10	-11.1	13.5	3	3	5							Sat.				
-15	-16.1	18.5	2	1	2							Sat.	Gray, cse. to f. SAND w/tr. silt and shell frags. V. loose.	18.0		
-20	-21.1	23.5	2	2	2							W	Brown, f. Sandy SILT w/tr. org. matter. Soft.	22.5		
-25	-26.1	28.5	4	5	6							Sat.	Brown, cse. to f. SAND w/tr. org. matter. Med. dense.	27.5		
-30	-31.1	33.5	4	6	5							Sat.				
-35	-36.1	38.5	3	4	3							Sat.	Brown, f. SAND w/tr. silt. Loose.	37.0		
-40	-41.1	43.5	8	11	13							Sat.	Gray, f. SAND w/tr. silt. Med. dense.	41.0		
-45	-46.1	48.5	12	12	13							Sat.				
-50	-51.1	53.5	6	10	12							Sat.	Dk. gray, Silty, f. SAND w/cse. sand and shell frags. at base. Med. dense.	52.0		
-55	-56.1	58.5	3	4	7							Sat.				
-60	-61.1	63.5	13	12	5							Sat.	Dark gray, Silty, f. to cse. SAND. Dense.	67.0		
-65	-66.1	68.5	16	22	26							Sat.				
-70	-71.1	73.5	12	20	25							Sat.	Dk. gray, f. to cse. SAND w/tr. silt. Dense.	72.0		
-75																

WBS 13201.1028025	TIP B-2500	COUNTY DARE	GEOLOGIST J. Brandsen	
SITE DESCRIPTION Bridge over Pea Island Breach on NC 12				GROUND WTR (ft)
BORING NO. B-08	STATION 3112+96	OFFSET 37ft LT	ALIGNMENT -L-	0 HR. N/A
COLLAR ELEV. 2.4 ft	TOTAL DEPTH 100.0 ft	NORTHING 716,681	EASTING 3,045,502	24 HR. 0.5

DRILL RIG/HAMMER EFF./DATE SME R-6 CME-550X 77% 04/01/2010 DRILL METHOD Mud Rotary HAMMER TYPE Automatic

DRILLER S&ME START DATE 10/11/11 COMP. DATE 10/12/11 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	-76.1	78.5	10	14	17									
-80	-81.1	83.5	6	6	6							Sat.	Dk. gray, f. to cse. SAND w/tr. silt. Dense. (continued)	82.0
-85	-86.1	88.5	8	11	15							Sat.	Dk. gray, Silty, f. SAND grading to f. to cse. SAND w/tr. silt. Med. dense to dense.	
-90	-91.1	93.5	12	17	25							Sat.		
-95	-95.1	97.5	8	8	8							Sat.	Dk. gray, cse. to f. SAND. Med. dense.	97.0
													Boring Terminated at Elevation -97.6 ft in dark gray, cse. to f. SAND. Coastal Plain 1) Boring advanced w/2 15/16" Tricone 2) NW Casing set to 30 ft. BLS	100.0

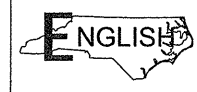
NEW NCDOT BORE DOUBLE B2500 GEO BRDG PEASISLAND CATIN TEMPLATE.GPJ CATIN.GDT 2/21/12





# NCDOT GEOTECHNICAL ENGINEERING UNIT

## BORELOG REPORT



SHEET NO.: 27  
PROJ. NO.: 13201.1028025  
TIP NO.: B-2500  
COUNTY: DARE

WBS 13201.1028025 TIP B-2500 COUNTY DARE GEOLOGIST J. Howard

<b>SITE DESCRIPTION</b> Bridge over Pea Island Breach on NC 12				<b>GROUND WTR (ft)</b>	
<b>BORING NO.</b> B-10	<b>STATION</b> 3123+18	<b>OFFSET</b> 37ft LT	<b>ALIGNMENT</b> -L-	0 HR.	0.5
<b>COLLAR ELEV.</b> 2.2 ft	<b>TOTAL DEPTH</b> 95.5 ft	<b>NORTHING</b> 717,682	<b>EASTING</b> 3,045,328	24 HR.	N/A

DRILL RIG/HAMMER EFF./DATE MAC1145 CME-55LC 87% 10/29/2010 DRILL METHOD Mud Rotary HAMMER TYPE Automatic

DRILLER AMEC START DATE 10/09/11 COMP. DATE 10/09/11 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	0.0	5	6	26								D	LAND SURFACE	0.0
-1.8	4.0	4.0	7	10	8								Sat.	ROADWAY EMBANKMENT Tan to gray, Silty, f. to cse. SAND. Tr. organics. Dense.	3.0
-6.8	9.0	9.0	5	7	6								Sat.	COASTAL PLAIN Gray, Silty, f. to cse. SAND. Tr. shell frags. Med. dense to loose.	
-11.8	14.0	14.0	3	4	6								Sat.		
-16.8	19.0	19.0	3	4	4								Sat.		
-21.8	24.0	24.0	WOH	WOH	WOH								W	Gray, Sandy SILT w/tr. shell frags. Organic odor. V. soft.	23.0
-26.8	29.0	29.0	WOH	1	2								Sat.		
-31.8	34.0	34.0	2	2	4								Sat.	Gray to brown, Silty, f. to cse. SAND w/shell frags. Tr. org. at base. V. loose to loose.	
-36.8	39.0	39.0	7	10	4								Sat.	Gray, Silty, f. SAND and Silty, f. to cse. SAND. Tr. shell frags. Med. dense to dense.	38.0
-41.8	44.0	44.0	10	13	18								Sat.		
-46.8	49.0	49.0	9	12	16								Sat.		
-51.8	54.0	54.0	7	7	12								Sat.		
-56.8	59.0	59.0	1	3	3								W	Dk. gray, Sandy CLAY. Tr. shell frags. Med. stiff.	58.0
-61.8	64.0	64.0	15	16	12								Sat.	Gray, Silty, f. to cse. SAND w/little to tr. shell frags. Med. dense to dense.	61.0
-66.8	69.0	69.0	13	23	20								Sat.		
-71.8	74.0	74.0	8	11	14								Sat.	Gray, Silty, f. SAND. Tr. shell frags. Med. dense.	73.0
-75															

WBS 13201.1028025 TIP B-2500 COUNTY DARE GEOLOGIST J. Howard

<b>SITE DESCRIPTION</b> Bridge over Pea Island Breach on NC 12				<b>GROUND WTR (ft)</b>	
<b>BORING NO.</b> B-10	<b>STATION</b> 3123+18	<b>OFFSET</b> 37ft LT	<b>ALIGNMENT</b> -L-	0 HR.	0.5
<b>COLLAR ELEV.</b> 2.2 ft	<b>TOTAL DEPTH</b> 95.5 ft	<b>NORTHING</b> 717,682	<b>EASTING</b> 3,045,328	24 HR.	N/A

DRILL RIG/HAMMER EFF./DATE MAC1145 CME-55LC 87% 10/29/2010 DRILL METHOD Mud Rotary HAMMER TYPE Automatic

DRILLER AMEC START DATE 10/09/11 COMP. DATE 10/09/11 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															
-76.8	79.0	79.0	9	11	12								Sat.	Gray, Silty, f. SAND. Tr. shell frags. Med. dense. (continued)	
-80													Sat.	Gray, Silty, f. to cse. SAND. Tr. shell frags. Med. dense to dense.	82.0
-81.8	84.0	84.0	5	6	5								Sat.		
-85													Sat.		
-86.8	89.0	89.0	4	7	13								Sat.		
-90													Sat.		
-91.8	94.0	94.0	12	15	19								Sat.		
-93.3													Sat.	Boring Terminated at Elevation -93.3 ft in Silty, f. to cse. SAND w/tr. shell frags. Coastal Plain 1) Boring advanced w/3" Roller Cone 2) Casing set to 29.0 ft. BLS	95.5

NEW NCDOT BORE DOUBLE B2500 GEO BRDG PEASLAND CAT IN TEMPLATE GPL CAT IN GDT 2/21/12





WBS 13201.1028025	TIP B-2500	COUNTY DARE	GEOLOGIST J. Howard
SITE DESCRIPTION Bridge over Pea Island Breach on NC 12			GROUND WTR (ft)
BORING NO. B-13	STATION 3137+80	OFFSET 98ft RT	ALIGNMENT -L-
COLLAR ELEV. 3.0 ft	TOTAL DEPTH 85.6 ft	NORTHING 719,140	EASTING 3,045,152
DRILL RIG/HAMMER EFF./DATE MAC1145 CME-55LC 87% 10/29/2010		DRILL METHOD Mud Rotary	HAMMER TYPE Automatic
DRILLER AMEC	START DATE 10/07/11	COMP. DATE 10/07/11	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	3.0	0.0												3.0	LAND SURFACE	0.0
0	-1.1	4.1	3	5	8									0.0	ROADWAY EMBANKMENT Tan brown, f. to cse. SAND w/silt. Med. dense.	3.0
-5	-6.1	9.1	8	10	9									-5.0	COASTAL PLAIN Gray, Silty, f. to cse. SAND w/tr. shell frags. throughout and tr. gravel to depth of approximately 12 ft. Med. dense to loose.	
-10	-11.1	14.1	5	5	5									-10.0		
-15	-16.1	19.1	3	4	5									-15.0		
-20	-21.1	24.1	6	5	6									-20.0		
-25	-26.1	29.1	2	1	4									-25.0	Brown and gray, Silty, f. to cse. SAND w/tr. organics and shell frags. Loose.	22.0
-30	-31.1	34.1	7	11	11									-30.0	Brown gray to gray brown, Silty, f. SAND w/some cse. at top of strata. Med. dense.	26.0
-35	-36.1	39.1	2	6	12									-35.0		
-40	-41.1	44.1	4	4	8									-40.0		
-45	-46.1	49.1	8	13	15									-45.0	Gray, Silty, f. SAND w/tr. shell frags. in dense material. Med. dense to dense.	42.0
-50	-51.1	54.1	19	22	28									-50.0		
-55	-56.1	59.1	9	14	16									-55.0	Dk. gray, Sandy CLAY w/tr. shell frags. Stiff.	58.0
-60	-61.1	64.1	2	2	9									-60.0		
-65	-66.1	69.1	9	16	17									-65.0	Dk. gray, Silty, f. SAND w/tr. shell frags. cse sand and few shell frags. at top of strata. Dense.	63.0
-70	-71.1	74.1	11	14	17									-70.0		
-75			14	17	20									-75.0		

WBS 13201.1028025	TIP B-2500	COUNTY DARE	GEOLOGIST J. Howard
SITE DESCRIPTION Bridge over Pea Island Breach on NC 12			GROUND WTR (ft)
BORING NO. B-13	STATION 3137+80	OFFSET 98ft RT	ALIGNMENT -L-
COLLAR ELEV. 3.0 ft	TOTAL DEPTH 85.6 ft	NORTHING 719,140	EASTING 3,045,152
DRILL RIG/HAMMER EFF./DATE MAC1145 CME-55LC 87% 10/29/2010		DRILL METHOD Mud Rotary	HAMMER TYPE Automatic
DRILLER AMEC	START DATE 10/07/11	COMP. DATE 10/07/11	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	-76.1	79.1	12	16	17									-75.0		
-80	-81.1	84.1	6	5	4									-80.0	Dk. gray, Silty, f. SAND w/tr. shell frags. cse sand and few shell frags. at top of strata. Dense. (continued)	83.0
														-82.6	Dk. green gray, Silty, f. SAND w/tr. shell frags. Loose.	85.6
Boring Terminated at Elevation -82.6 ft in Silty, f. SAND w/tr. shell frags. Coastal Plain 1) Boring advanced w/3" Roller Cone 2) Casing set to 29.0 ft. BLS																

NEW NCDOT BORE DOUBLE B2500 GEO BRDG PEASLAND CATLIN TEMPLATE.GPJ CATLIN.GDT 2/21/12

WBS 13201.1028025	TIP B-2500	COUNTY DARE	GEOLOGIST J. Howard
SITE DESCRIPTION Bridge over Pea Island Breach on NC 12			GROUND WTR (ft)
BORING NO. B-14	STATION 3143+10	OFFSET 40ft LT	ALIGNMENT -L-
COLLAR ELEV. 3.0 ft	TOTAL DEPTH 70.6 ft	NORTHING 719,629	EASTING 3,044,906
DRILL RIG/HAMMER EFF./DATE MAC1145 CME-55LC 87% 10/29/2010		DRILL METHOD Mud Rotary	HAMMER TYPE Automatic
DRILLER AMEC	START DATE 10/10/11	COMP. DATE 10/10/11	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	3.0	0.0											LAND SURFACE	0.0
0	-1.1	4.1	3	5	5	10						M	ROADWAY EMBANKMENT Tan and brown, Silty, f. to cse. SAND w/tr. org. and gravel. Loose.	3.0
-5	-6.1	9.1	7	10	7	17						Sat.	COASTAL PLAIN Gray w/tan gray at top, Silty, f. to cse. SAND. Grades to include tr. shell frags. Tr. gravel at base of strata. Med. dense to loose.	
-10	-11.1	14.1	2	2	3	5						Sat.		
-15	-16.1	19.1	1	2	3	5						Sat.		
-20	-21.1	24.1	2	3	4	7						Sat.		
-25	-26.1	29.1	4	10	9	19						Sat.	Gray and brown to tan, Silty, f. to cse. SAND. Tr. shell frags. at top of strata. Med. dense.	22.0
-30	-31.1	34.1	5	7	9	16						Sat.		
-35	-36.1	39.1	5	7	4	11						Sat.		
-40	-41.1	44.1	14	19	22	41						Sat.	Tan gray to gray, Silty, f. to cse. SAND w/tr. shell frags. Dense.	37.0
-45	-46.1	49.1	4	15	29	44						Sat.		
-50	-49.1	49.1	14	23	26	49						Sat.		
-55	-51.1	54.1	11	16	19	35						Sat.		
-60	-56.1	59.1	1	4	2	6						W	Gray, Sandy CLAY w/tr. shell frags. Med. stiff.	58.0
-65	-61.1	64.1	1	5	15	20						Sat.	Gray, Sandy SILT.	63.0
-70	-66.1	69.1	4	9	10	19						Sat.	Gray, Silty, f. to cse. SAND w/little shell frags.	65.0
												Sat.	Green gray, Sandy SILT w/little shell frags. V. stiff.	68.0
												Sat.	Boring Terminated at Elevation -67.6 ft in Sandy SILT w/little shell frags Coastal Plain 1) Boring advanced w/3" Roller Cone 2) Casing set to 29.0 ft. BLS	70.6

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NEW NCDOT BORE DOUBLE B2500 GEO BRDG PEASLAND CATLIN TEMPLATE.GPJ CATLIN.GDI 2/21/12



# NCDOT GEOTECHNICAL ENGINEERING UNIT

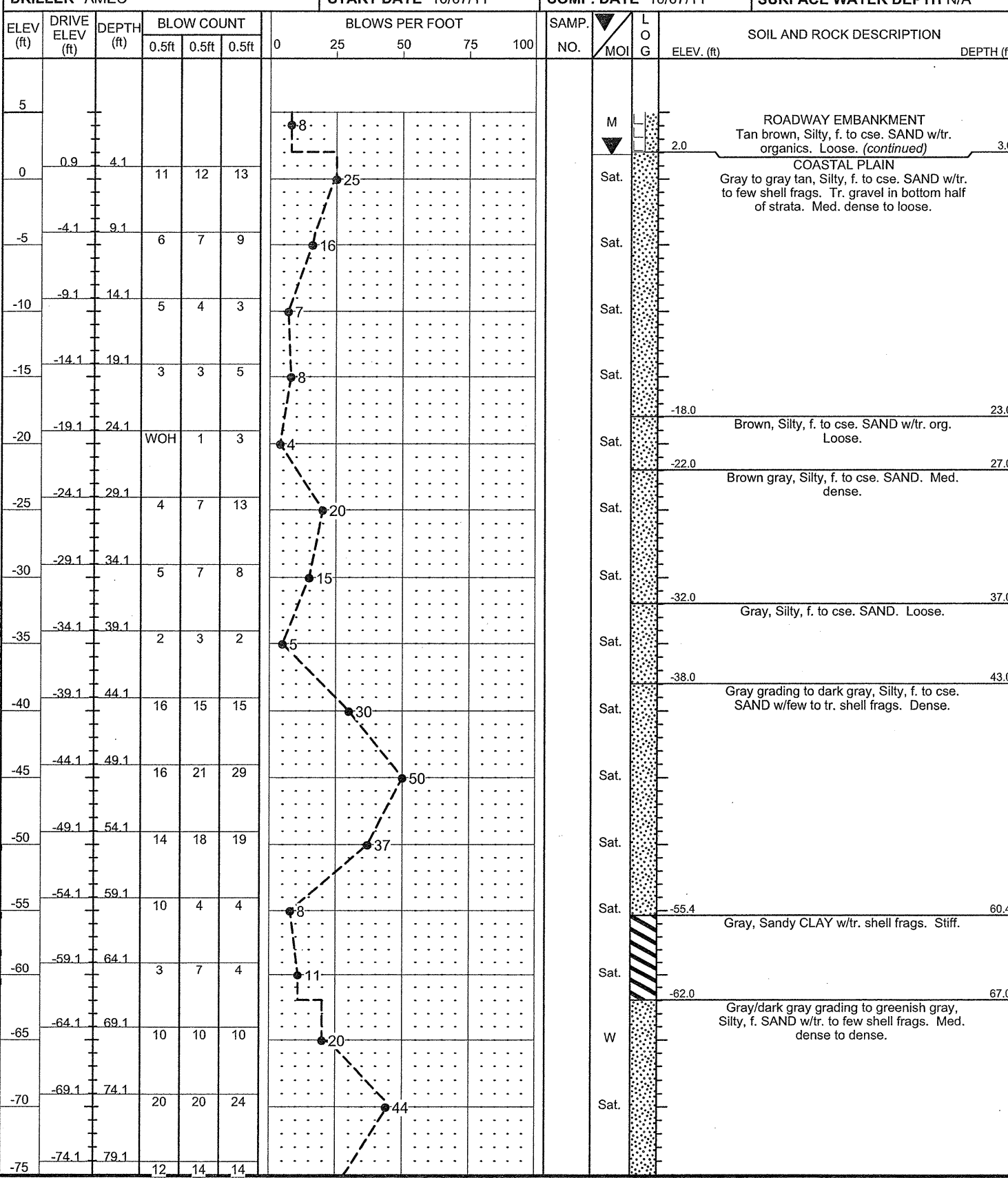
## BORELOG REPORT



SHEET NO.: 32  
 PROJ. NO.: 13201.1028025  
 TIP NO.: B-2500  
 COUNTY: DARE

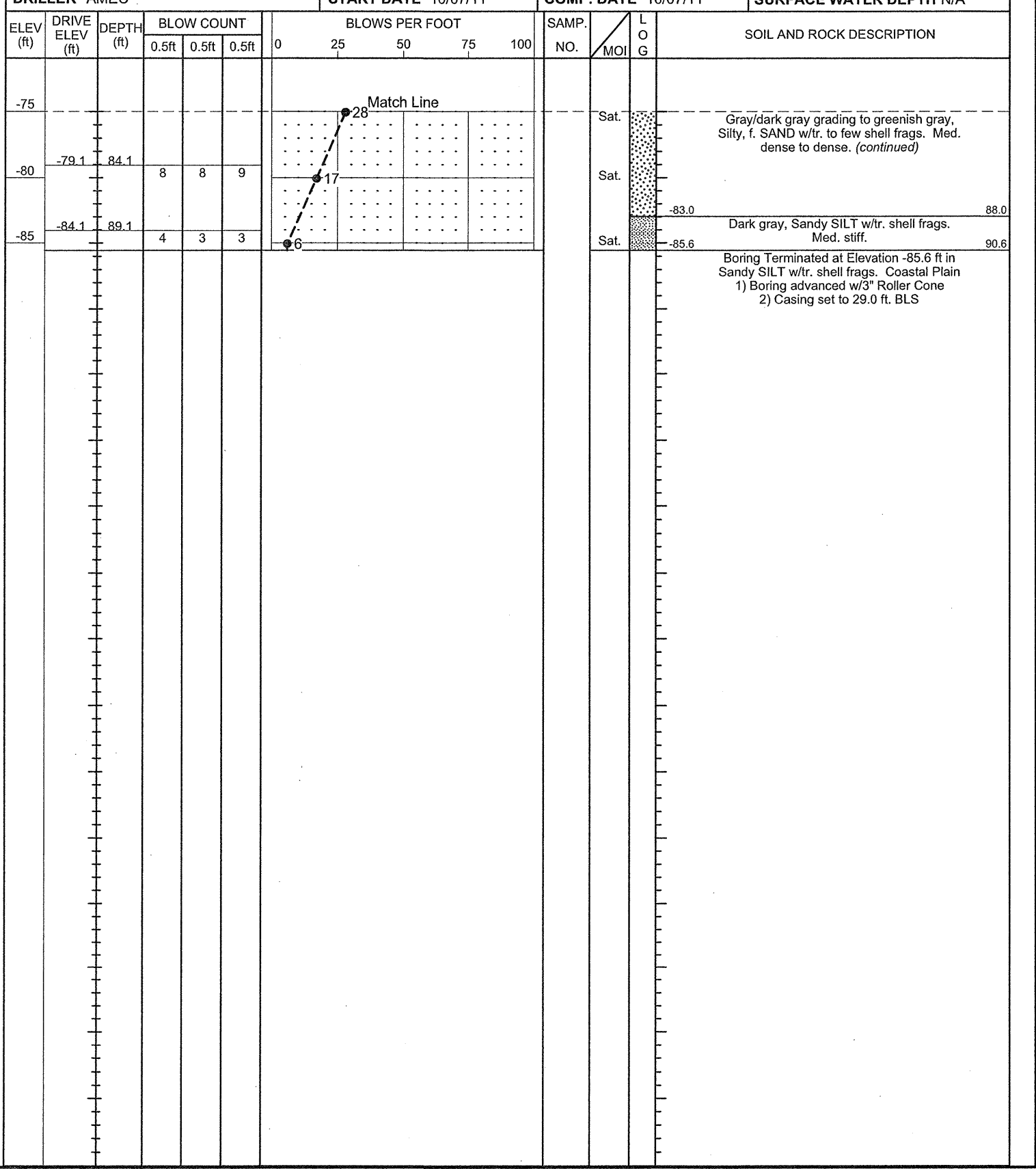
WBS 13201.1028025	TIP B-2500	COUNTY DARE	GEOLOGIST J. Howard	
SITE DESCRIPTION Bridge over Pea Island Breach on NC 12				GROUND WTR (ft) 0 HR. 0.5
BORING NO. B-15	STATION 3148+06	OFFSET 3ft LT	ALIGNMENT -L-	
COLLAR ELEV. 5.0 ft	TOTAL DEPTH 90.6 ft	NORTHING 720,122	EASTING 3,044,838	24 HR. 3.2 Caved

DRILL RIG/HAMMER EFF./DATE MAC1145 CME-55LC 87% 10/29/2010	DRILL METHOD Mud Rotary	HAMMER TYPE Automatic
DRILLER AMEC	START DATE 10/07/11	COMP. DATE 10/07/11
SURFACE WATER DEPTH N/A		



WBS 13201.1028025	TIP B-2500	COUNTY DARE	GEOLOGIST J. Howard	
SITE DESCRIPTION Bridge over Pea Island Breach on NC 12				GROUND WTR (ft) 0 HR. 0.5
BORING NO. B-15	STATION 3148+06	OFFSET 3ft LT	ALIGNMENT -L-	
COLLAR ELEV. 5.0 ft	TOTAL DEPTH 90.6 ft	NORTHING 720,122	EASTING 3,044,838	24 HR. 3.2 Caved

DRILL RIG/HAMMER EFF./DATE MAC1145 CME-55LC 87% 10/29/2010	DRILL METHOD Mud Rotary	HAMMER TYPE Automatic
DRILLER AMEC	START DATE 10/07/11	COMP. DATE 10/07/11
SURFACE WATER DEPTH N/A		



NEW NCDOT BORE DOUBLE B-2500 GEO BRDG PEASLAND CATLIN TEMPLATE.GPJ CATLIN.GDT 2/21/12





# NCDOT GEOTECHNICAL ENGINEERING UNIT

## BORELOG REPORT



SHEET NO.: 33  
 PROJ. NO.: 13201.1028025  
 TIP NO.: B-2500  
 COUNTY: DARE

WBS 13201.1028025	TIP B-2500	COUNTY DARE	GEOLOGIST J. Howard
SITE DESCRIPTION Bridge over Pea Island Breach on NC 12			GROUND WTR (ft)
BORING NO. B-16	STATION 3153+09	OFFSET 43ft LT	ALIGNMENT -L-
COLLAR ELEV. 3.5 ft	TOTAL DEPTH 80.6 ft	NORTHING 720,588	EASTING 3,044,658
DRILL RIG/HAMMER EFF./DATE MAC1145 CME-55LC 87% 10/29/2010			DRILL METHOD Mud Rotary
DRILLER AMEC			HAMMER TYPE Automatic
START DATE 10/12/11		COMP. DATE 10/12/11	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	3.5	0.0											LAND SURFACE	0.0
			4	3	7								ROADWAY EMBANKMENT	
													Tan brown, Silty, f. to cse. SAND w/tr. organics. Loose.	3.0
0	-0.6	4.1	7	9	9								COASTAL PLAIN	
													Gray, Silty, f. to cse. SAND w/tr. to few shell frags. Med. dense grading to loose.	
-5	-5.6	9.1	5	6	6									
-10	-10.6	14.1	4	6	4									
-15	-15.6	19.1	3	3	2									
-20	-20.6	24.1	3	5	11									
-25	-25.6	29.1	4	9	10									
-30	-30.6	34.1	4	6	10									
-35	-35.6	39.1	8	13	20									
-40	-40.6	44.1	5	10	8									
-45	-45.6	49.1	14	22	26									
-50	-50.6	54.1	13	10	15									
-55	-55.6	59.1	6	9	10									
-60	-60.6	64.1	6	5	4									
-65	-65.6	69.1	7	13	18									
-70	-70.6	74.1	15	21	41									
-75														

WBS 13201.1028025	TIP B-2500	COUNTY DARE	GEOLOGIST J. Howard
SITE DESCRIPTION Bridge over Pea Island Breach on NC 12			GROUND WTR (ft)
BORING NO. B-16	STATION 3153+09	OFFSET 43ft LT	ALIGNMENT -L-
COLLAR ELEV. 3.5 ft	TOTAL DEPTH 80.6 ft	NORTHING 720,588	EASTING 3,044,658
DRILL RIG/HAMMER EFF./DATE MAC1145 CME-55LC 87% 10/29/2010			DRILL METHOD Mud Rotary
DRILLER AMEC			HAMMER TYPE Automatic
START DATE 10/12/11		COMP. DATE 10/12/11	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	-75.6	79.1	12	17	18								Green gray, Silty, f. to cse. SAND w/few shell frags. Dense. (continued)	80.6
													Boring Terminated at Elevation -77.1 ft in Silty, f. to cse. SAND w/few shell frags. Coastal Plain	
													1) Boring advanced w/3" Roller Cone 2) Casing set to 29.0 ft. BLS	

NEW NCDOT BORE DOUBLE B2500 GEO BRDG PEAISLAND CATLIN TEMPLATE.GPJ CATLIN.GDT 2/2/12

<b>WBS</b> 13201.1028025		<b>TIP</b> B-2500		<b>COUNTY</b> DARE		<b>GEOLOGIST</b> J. Howard									
<b>SITE DESCRIPTION</b> Bridge over Pea Island Breach on NC 12								<b>GROUND WTR (ft)</b>							
<b>BORING NO.</b> B-17		<b>STATION</b> 3158+03		<b>OFFSET</b> 2ft LT		<b>ALIGNMENT</b> -L-		0 HR. 1.0							
<b>COLLAR ELEV.</b> 4.6 ft		<b>TOTAL DEPTH</b> 75.6 ft		<b>NORTHING</b> 721,045		<b>EASTING</b> 3,044,477		24 HR. 1.8 Caved							
<b>DRILL RIG/HAMMER EFF./DATE</b> MAC1145 CME-55LC 87% 10/29/2010						<b>DRILL METHOD</b> Mud Rotary		<b>HAMMER TYPE</b> Automatic							
<b>DRILLER</b> AMEC				<b>START DATE</b> 10/13/11		<b>COMP. DATE</b> 10/13/11		<b>SURFACE WATER DEPTH</b> 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					ELEV. (ft)
5	4.6	0.0	3	4	6									LAND SURFACE	0.0
														ROADWAY EMBANKMENT	
														Tan, Silty, f. to cse. SAND w/tr. organics. Loose.	3.0
0	0.5	4.1	5	8	8									COASTAL PLAIN	
														Tan gray to gray, Silty, f. to cse. SAND w/tr. to few shell frags. Shell content increases w/depth. Med. dense grading to loose.	
-5	-4.5	9.1	5	7	5								Sat.		
-10	-9.5	14.1	4	5	5								Sat.		
-15	-14.5	19.1	3	4	5								Sat.		
-20	-19.5	24.1	2	6	9								Sat.		
-25	-24.5	29.1	8	11	18								Sat.		
-30	-29.5	34.1	5	6	6								Sat.		
-35	-34.5	39.1	2	5	7								Sat.		
-40	-39.5	44.1	2	3	5								Sat.		
-45	-44.5	49.1	17	24	25								Sat.		
-50	-49.5	54.1	18	27	31								Sat.		
-55	-54.5	59.1	8	11	17								Sat.		
-60	-59.5	64.1	4	4	7								Sat.		
-65	-64.5	69.1	7	7	7								Sat.		
-70	-69.5	74.1	13	14	17								Sat.		
													Sat.		

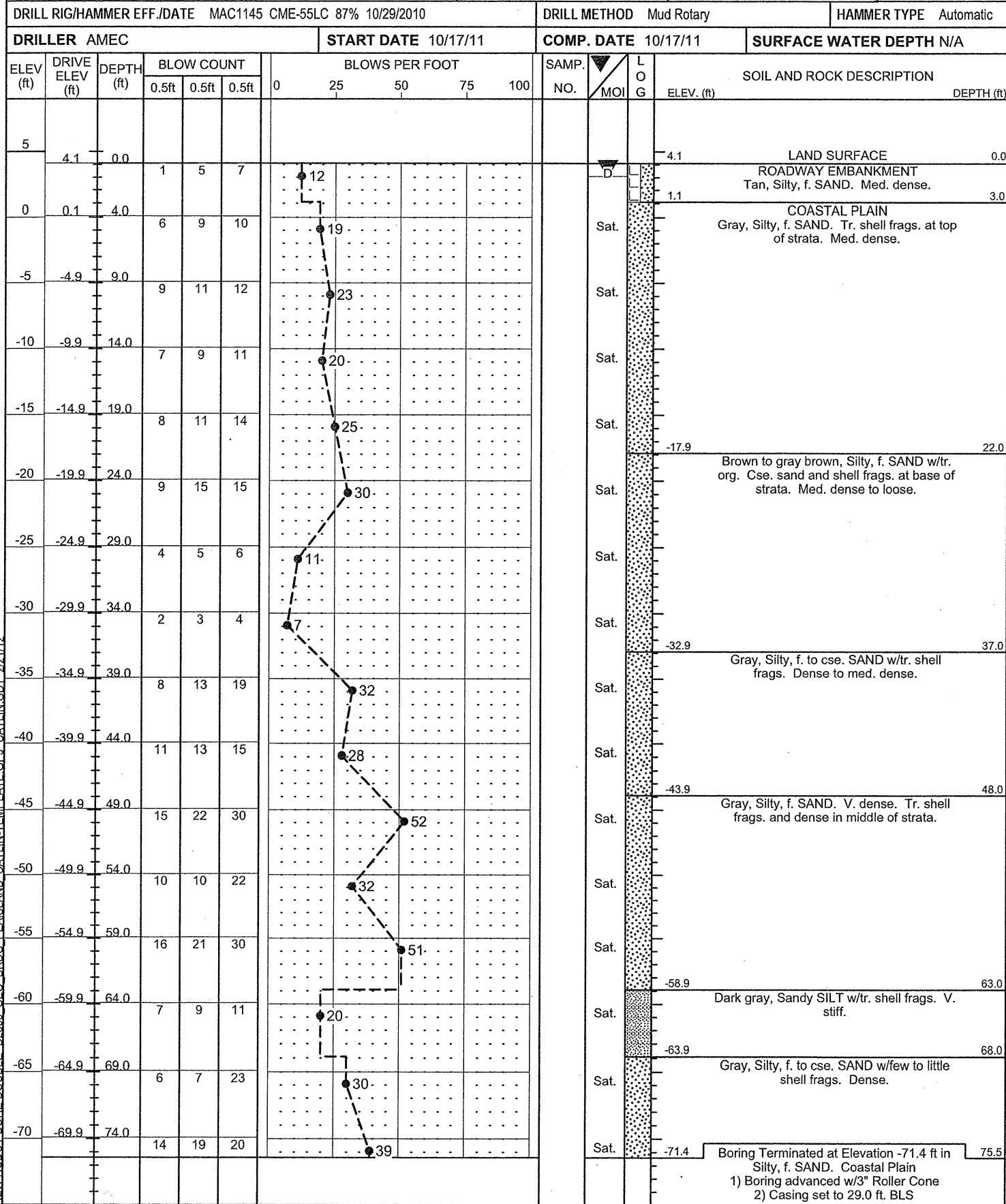
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NEW NCDOT BORE DOUBLE B2500 GEO BRDG PEASISLAND CATLIN TEMPLATE.GPI CATLIN.GDI 2/21/12

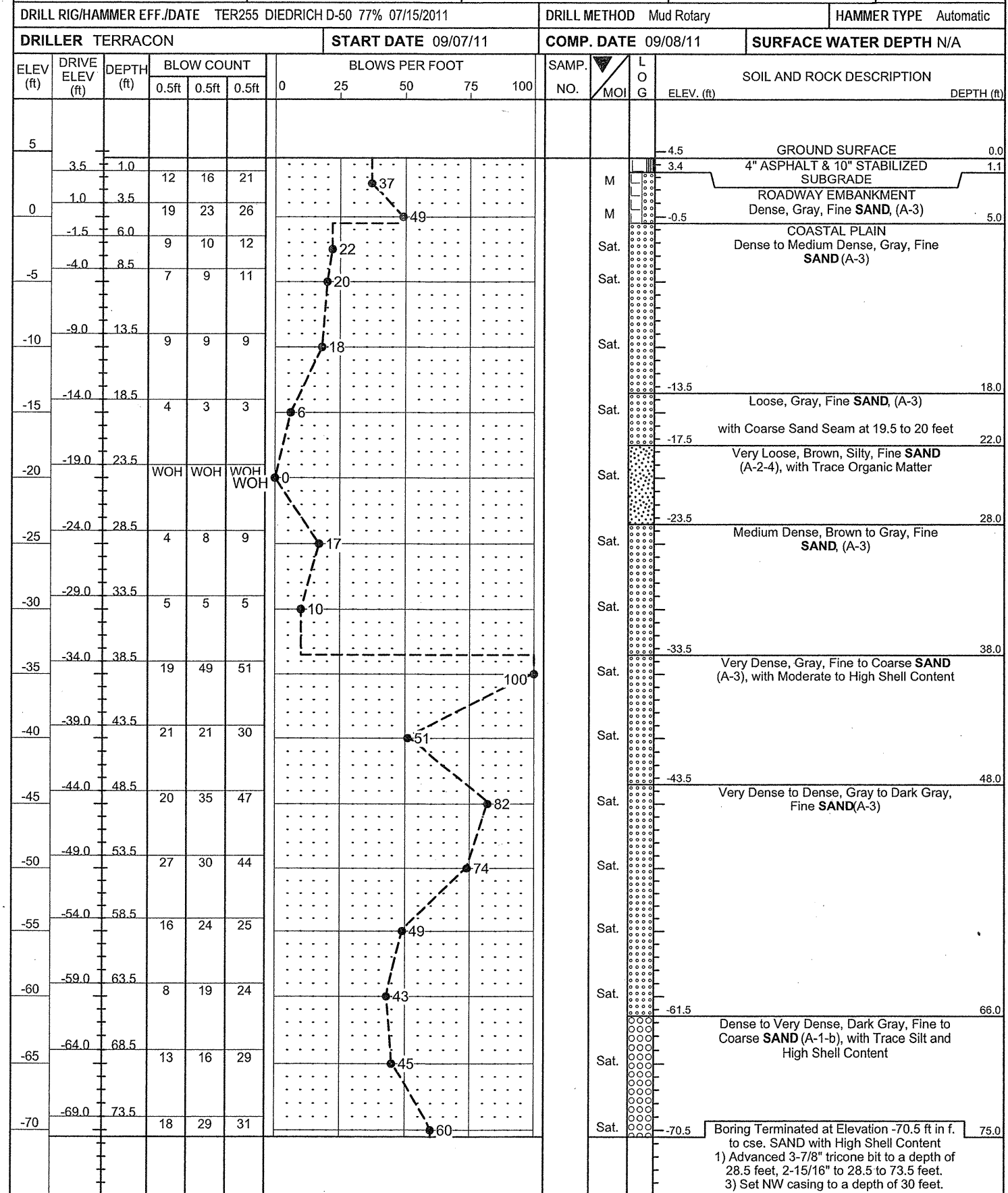
Boring Terminated at Elevation -71.0 ft Silty, f. to cse. SAND. Coastal Plain  
1) Boring advanced w/3" Roller Cone  
2) Casing set to 29.0 ft. BLS



WBS 13201.1028025	TIP B-2500	COUNTY DARE	GEOLOGIST J. Howard
SITE DESCRIPTION Bridge over Pea Island Breach on NC 12			GROUND WTR (ft) 0 HR. 0.8
BORING NO. B-19	STATION 3168+06	OFFSET 42ft RT	ALIGNMENT -L-
COLLAR ELEV. 4.1 ft	TOTAL DEPTH 75.5 ft	NORTHING 721,942	EASTING 3,044,049
DRILL RIG/HAMMER EFF./DATE MAC1145 CME-55LC 87% 10/29/2010			DRILL METHOD Mud Rotary
DRILLER AMEC			HAMMER TYPE Automatic
START DATE 10/17/11		COMP. DATE 10/17/11	SURFACE WATER DEPTH N/A



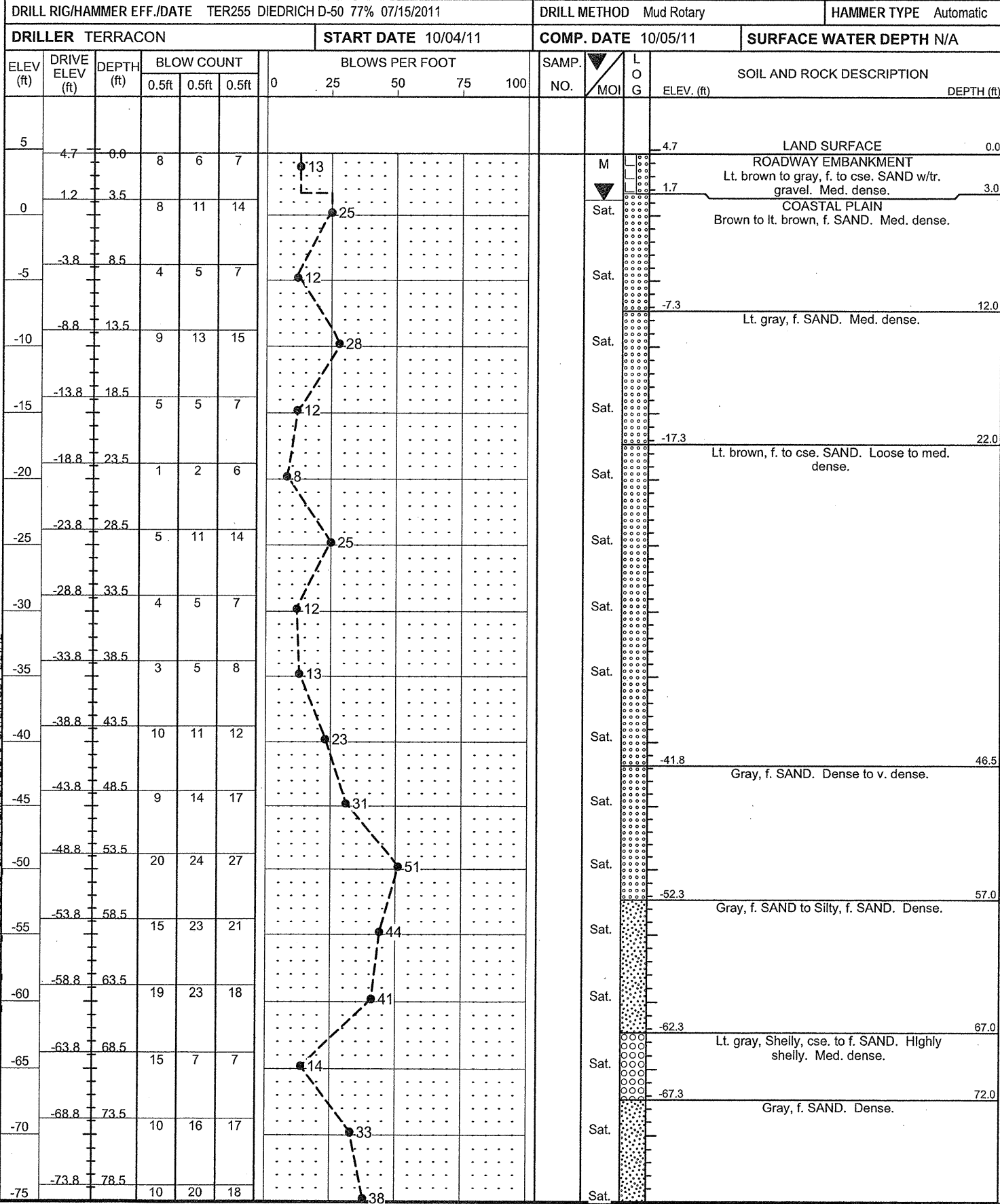
WBS 13201.1028025	TIP B-2500	COUNTY DARE	GEOLOGIST Alexander, M.J.
SITE DESCRIPTION Emergency Mabey Bridge at Pea Island Breach			GROUND WTR (ft) 0 HR. 4.0
BORING NO. TER-B1	STATION 3174+93	OFFSET 22ft RT	ALIGNMENT -L-
COLLAR ELEV. 4.5 ft	TOTAL DEPTH 75.0 ft	NORTHING 722,601	EASTING 3,043,887
DRILL RIG/HAMMER EFF./DATE TER255 DIEDRICH D-50 77% 07/15/2011			DRILL METHOD Mud Rotary
DRILLER TERRACON			HAMMER TYPE Automatic
START DATE 09/07/11		COMP. DATE 09/08/11	SURFACE WATER DEPTH N/A



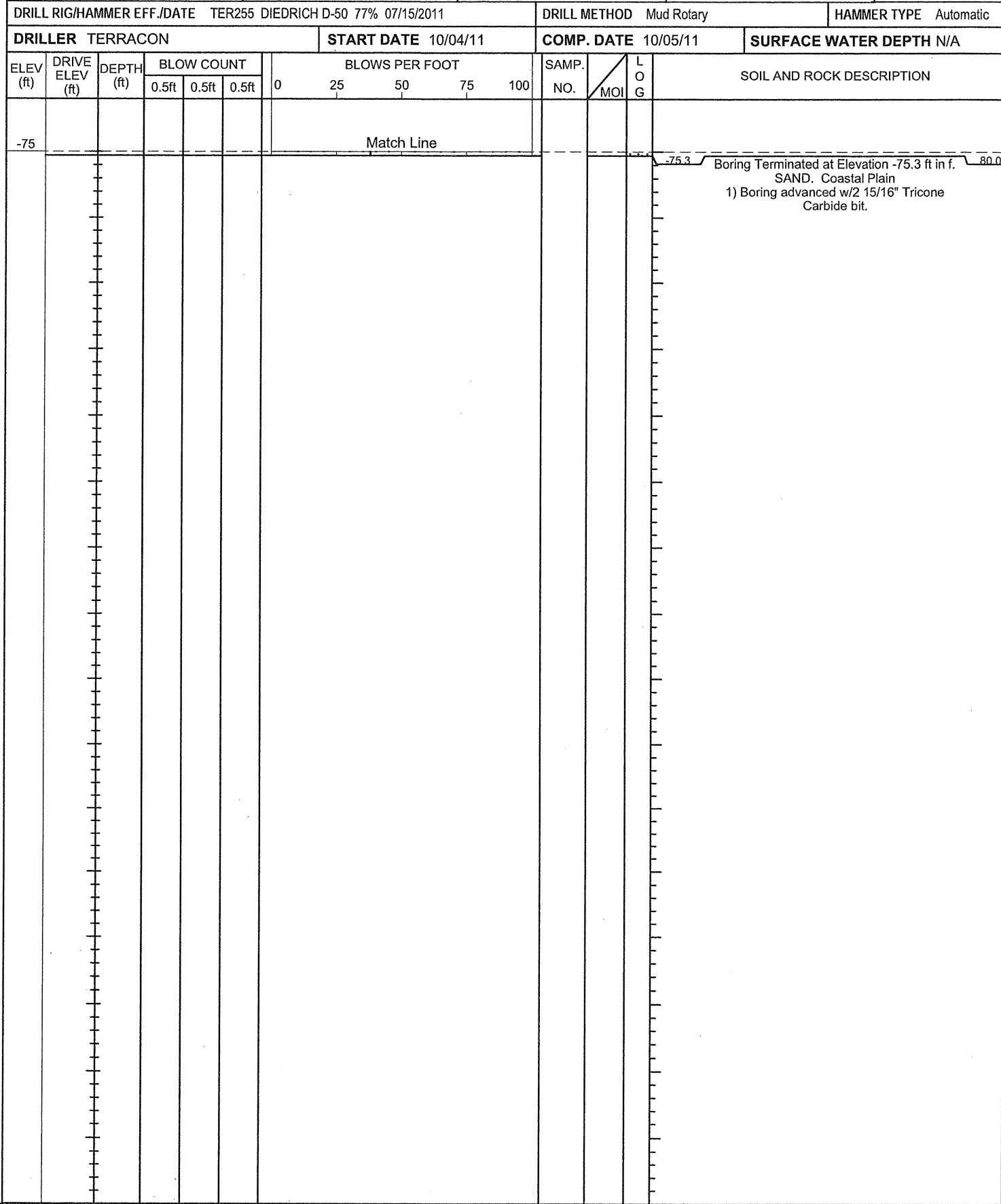
NEW NCDOT BORE DOUBLE B2500 GEO BRDG PEASLAND CATIN TEMPLATE.GPJ CATIN.GDT 2/21/12



WBS 13201.1028025	TIP B-2500	COUNTY DARE	GEOLOGIST A. Ezzell
SITE DESCRIPTION Bridge over Pea Island Breach on NC 12			GROUND WTR (ft)
BORING NO. B-23	STATION 3188+14	OFFSET 1ft RT	ALIGNMENT -L-
COLLAR ELEV. 4.7 ft	TOTAL DEPTH 80.0 ft	NORTHING 723,916	EASTING 3,043,827
DRILL RIG/HAMMER EFF./DATE TER255 DIEDRICH D-50 77% 07/15/2011			DRILL METHOD Mud Rotary
DRILLER TERRACON			HAMMER TYPE Automatic
START DATE 10/04/11		COMP. DATE 10/05/11	SURFACE WATER DEPTH N/A



WBS 13201.1028025	TIP B-2500	COUNTY DARE	GEOLOGIST A. Ezzell
SITE DESCRIPTION Bridge over Pea Island Breach on NC 12			GROUND WTR (ft)
BORING NO. B-23	STATION 3188+14	OFFSET 1ft RT	ALIGNMENT -L-
COLLAR ELEV. 4.7 ft	TOTAL DEPTH 80.0 ft	NORTHING 723,916	EASTING 3,043,827
DRILL RIG/HAMMER EFF./DATE TER255 DIEDRICH D-50 77% 07/15/2011			DRILL METHOD Mud Rotary
DRILLER TERRACON			HAMMER TYPE Automatic
START DATE 10/04/11		COMP. DATE 10/05/11	SURFACE WATER DEPTH N/A



NEW NCDOT BORE DOUBLE B2500 GEO BRDG PEASISLAND CATIN TEMPLATE.GPJ CATIN.GDT 2/21/12



WBS 13201.1028025	TIP B-2500	COUNTY DARE	GEOLOGIST A. Ezzell
SITE DESCRIPTION Bridge over Pea Island Breach on NC 12			GROUND WTR (ft)
BORING NO. B-24	STATION 3193+04	OFFSET 36ft LT	ALIGNMENT -L-
COLLAR ELEV. 4.3 ft	TOTAL DEPTH 75.0 ft	NORTHING 724,382	EASTING 3,043,673
DRILL RIG/HAMMER EFF./DATE TER255 DIEDRICH D-50 77% 07/15/2011		DRILL METHOD Mud Rotary	HAMMER TYPE Automatic
DRILLER TERRACON		START DATE 10/04/11	COMP. DATE 10/04/11
		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	4.3	0.0											LAND SURFACE	0.0
			9	6	6							M	ROADWAY EMBANKMENT	
0	0.8	3.5	17	24	15							Sat.	Lt. brown to brown, f. to cse. SAND w/gravel. Med. dense.	3.5
													COASTAL PLAIN	
-5	-4.2	8.5	7	6	8							Sat.	Gray grading to lt. gray, f. to cse. SAND w/shells in middle of strata. Dense to med. dense.	
-10	-9.2	13.5	9	11	13							Sat.		
-15	-14.2	18.5	8	11	12							Sat.		
-20	-19.2	23.5	7	10	10							Sat.		
-25	-24.2	28.5	7	9	12							Sat.		
-30	-29.2	33.5	4	5	7							Sat.	Brown to lt. brown, f. to cse. SAND. Med. dense.	32.0
-35	-34.2	38.5	8	11	11							Sat.		
-40	-39.2	43.5	12	21	32							Sat.	Lt. gray to gray, f. SAND w/some cse. sand and shells at top of strata. V. dense.	42.0
-45	-44.2	48.5	22	29	30							Sat.		
-50	-49.2	53.5	18	26	27							Sat.		
-55	-54.2	58.5	6	5	2							Sat.	Dark gray, Silty to Clayey, f. SAND. V. shelly at base. Loose.	57.0
-60	-59.2	63.5	5	2	2							Sat.		
-65	-64.2	68.5	4	4	7							Sat.		
-70	-69.2	73.5	8	15	21							Sat.	Dark gray, f. to cse. SAND. Dense.	72.0
												Sat.	Boring Terminated at Elevation -70.7 ft in f. to cse. SAND. Coastal Plain 1) Boring advanced w/2 15/16" Tricone Carbide bit.	75.0

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NEW NCDOT BORE DOUBLE B2500 GEO BRDG PEASLAND CATLIN TEMPLATE.GPI CATLIN.GDT 2/21/12







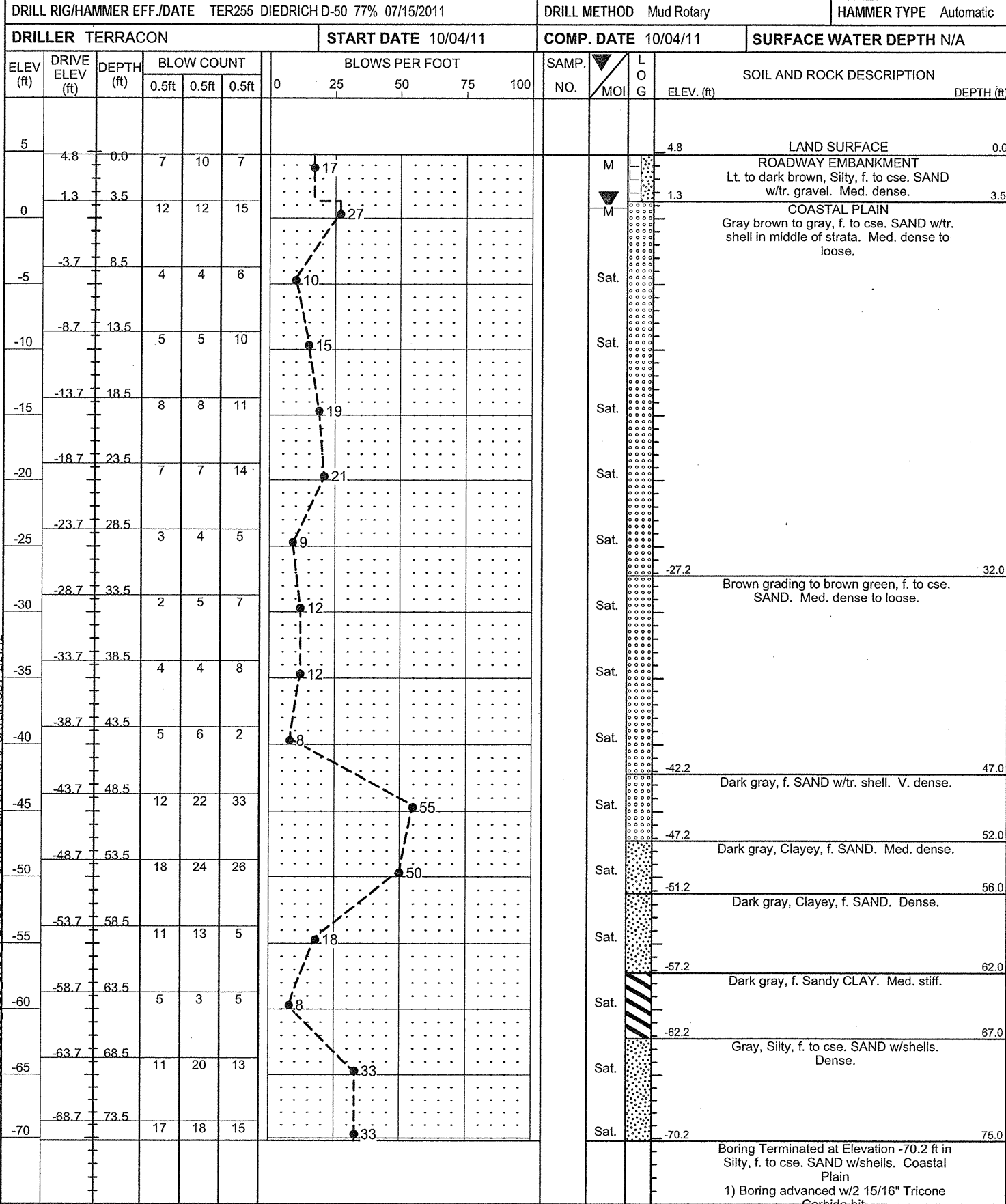
# NCDOT GEOTECHNICAL ENGINEERING UNIT

## BORELOG REPORT

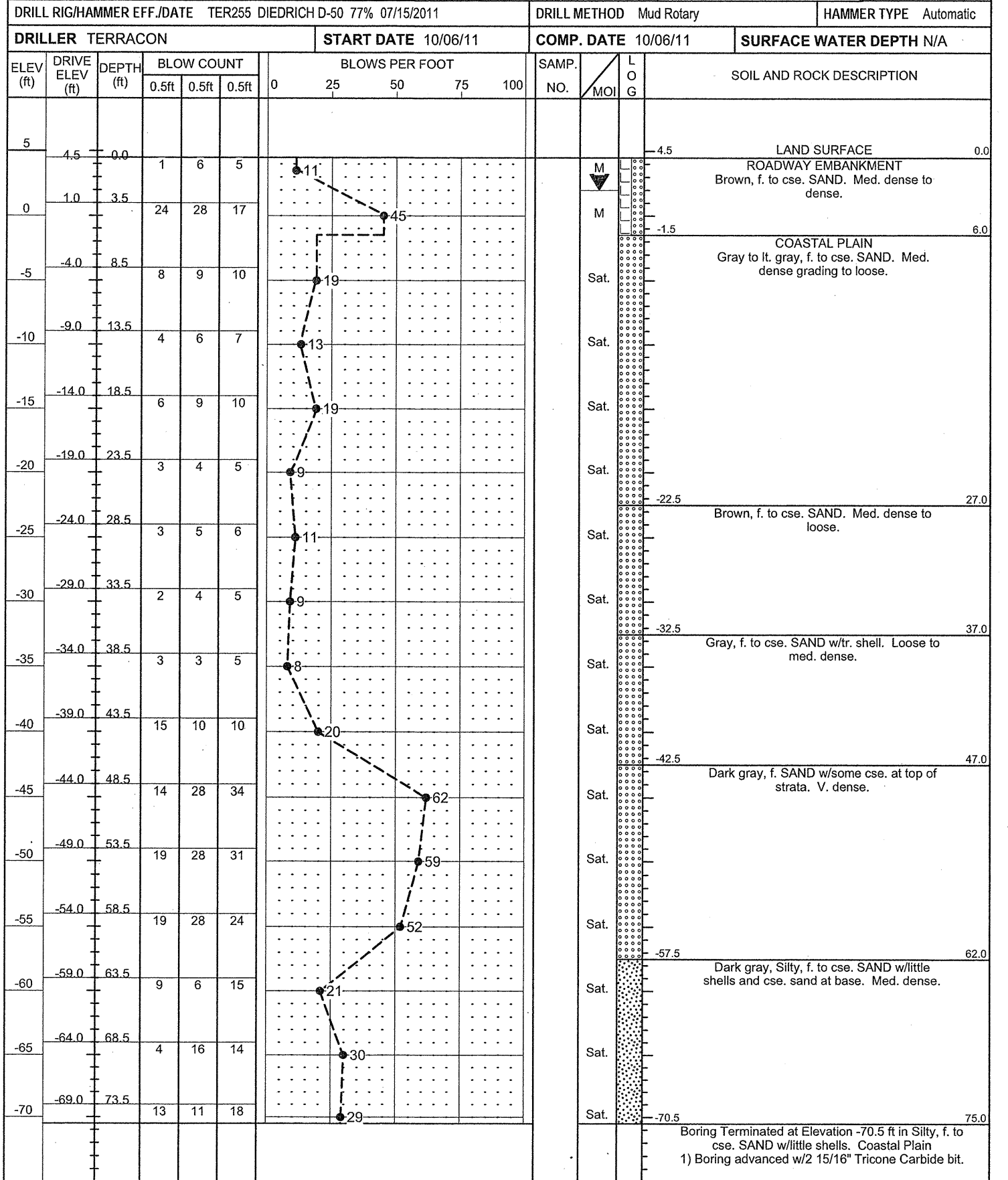


SHEET NO.: 41  
 PROJ. NO.: 13201.1028025  
 TIP NO.: B-2500  
 COUNTY: DARE

WBS 13201.1028025	TIP B-2500	COUNTY DARE	GEOLOGIST A. Ezzell
SITE DESCRIPTION Bridge over Pea Island Breach on NC 12			GROUND WTR (ft)
BORING NO. B-26	STATION 3203+74	OFFSET 29ft LT	ALIGNMENT -L-
COLLAR ELEV. 4.8 ft	TOTAL DEPTH 75.0 ft	NORTHING 725,414	EASTING 3,043,399
DRILL RIG/HAMMER EFF./DATE TER255 DIEDRICH D-50 77% 07/15/2011		DRILL METHOD Mud Rotary	HAMMER TYPE Automatic
DRILLER TERRACON	START DATE 10/04/11	COMP. DATE 10/04/11	SURFACE WATER DEPTH N/A



WBS 13201.1028025	TIP B-2500	COUNTY DARE	GEOLOGIST A. Ezzell
SITE DESCRIPTION Bridge over Pea Island Breach on NC 12			GROUND WTR (ft)
BORING NO. B-27	STATION 3208+68	OFFSET 16ft RT	ALIGNMENT -L-
COLLAR ELEV. 4.5 ft	TOTAL DEPTH 75.0 ft	NORTHING 725,904	EASTING 3,043,315
DRILL RIG/HAMMER EFF./DATE TER255 DIEDRICH D-50 77% 07/15/2011		DRILL METHOD Mud Rotary	HAMMER TYPE Automatic
DRILLER TERRACON	START DATE 10/06/11	COMP. DATE 10/06/11	SURFACE WATER DEPTH N/A



NEW NCDOT BORE DOUBLE B2500\_GEO\_BRDG\_PEAISLAND\_CATINTEMPLATE.GPI CATIN.GDT 2/21/12

Boring Terminated at Elevation -70.2 ft in Silty, f. to cse. SAND w/shells. Coastal Plain  
 1) Boring advanced w/2 15/16" Tricone Carbide bit.

Boring Terminated at Elevation -70.5 ft in Silty, f. to cse. SAND w/little shells. Coastal Plain  
 1) Boring advanced w/2 15/16" Tricone Carbide bit.





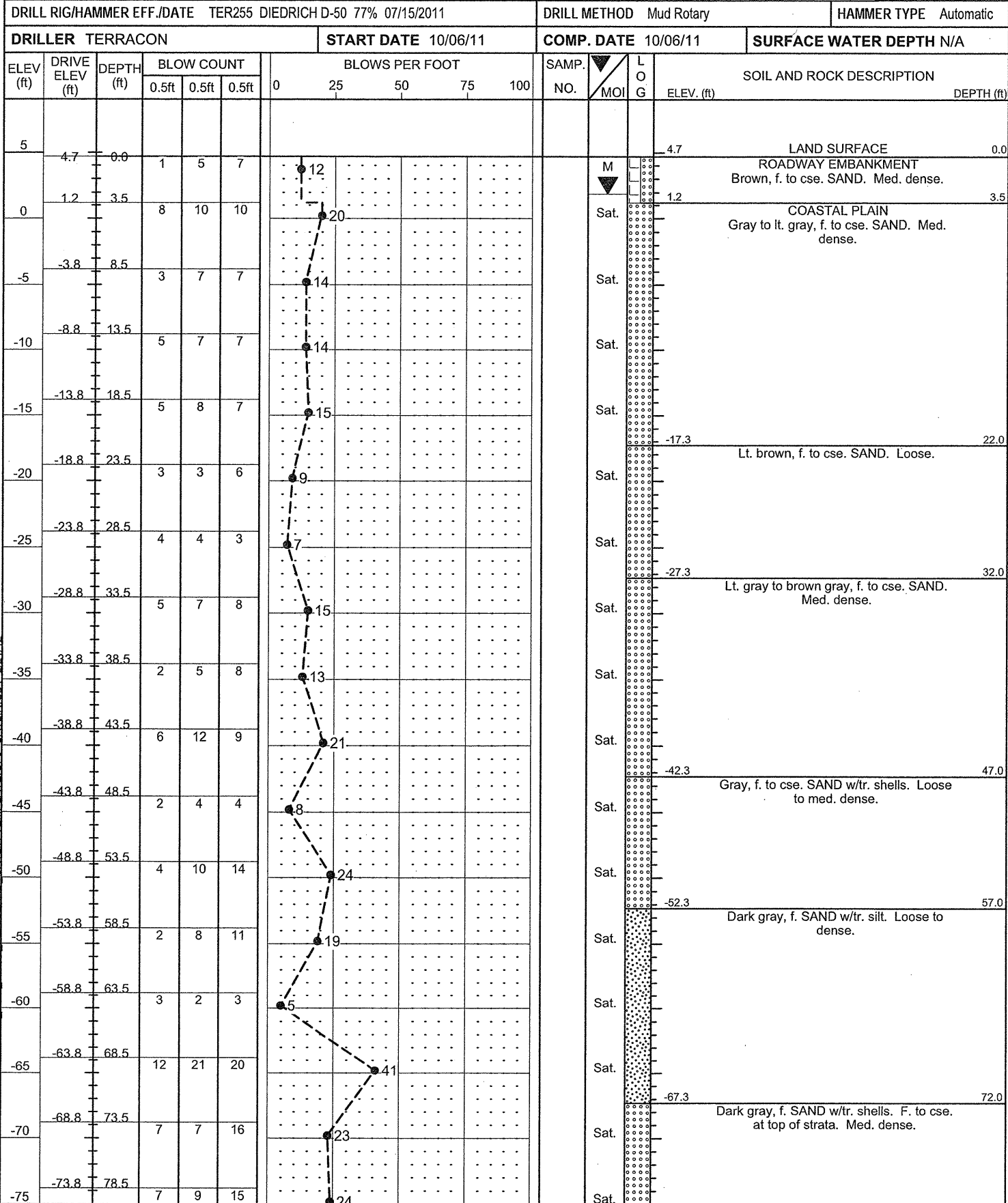
# NCDOT GEOTECHNICAL ENGINEERING UNIT

## BORELOG REPORT

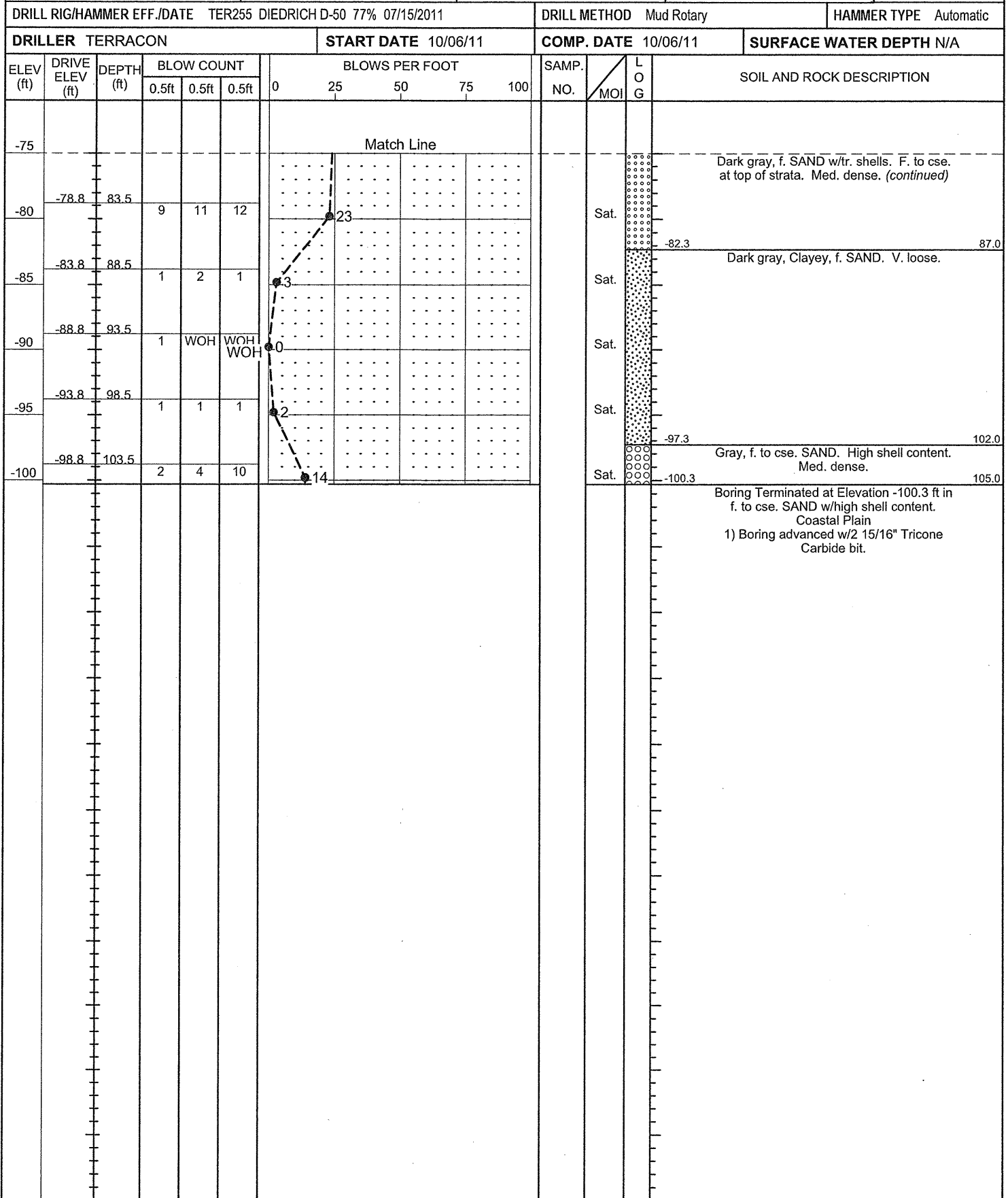


SHEET NO.: 43  
 PROJ. NO.: 13201.1028025  
 TIP NO.: B-2500  
 COUNTY: DARE

WBS 13201.1028025	TIP B-2500	COUNTY DARE	GEOLOGIST A. Ezzell
SITE DESCRIPTION Bridge over Pea Island Breach on NC 12			GROUND WTR (ft)
BORING NO. B-29	STATION 3218+61	OFFSET 17ft RT	ALIGNMENT -L-
COLLAR ELEV. 4.7 ft	TOTAL DEPTH 105.0 ft	NORTHING 726,868	EASTING 3,043,074
DRILL RIG/HAMMER EFF./DATE TER255 DIEDRICH D-50 77% 07/15/2011		DRILL METHOD Mud Rotary	HAMMER TYPE Automatic
DRILLER TERRACON		START DATE 10/06/11	COMP. DATE 10/06/11
		SURFACE WATER DEPTH N/A	



WBS 13201.1028025	TIP B-2500	COUNTY DARE	GEOLOGIST A. Ezzell
SITE DESCRIPTION Bridge over Pea Island Breach on NC 12			GROUND WTR (ft)
BORING NO. B-29	STATION 3218+61	OFFSET 17ft RT	ALIGNMENT -L-
COLLAR ELEV. 4.7 ft	TOTAL DEPTH 105.0 ft	NORTHING 726,868	EASTING 3,043,074
DRILL RIG/HAMMER EFF./DATE TER255 DIEDRICH D-50 77% 07/15/2011		DRILL METHOD Mud Rotary	HAMMER TYPE Automatic
DRILLER TERRACON		START DATE 10/06/11	COMP. DATE 10/06/11
		SURFACE WATER DEPTH N/A	



NEW NCDOT BORE DOUBLE\_B2500\_GEO\_BRDG\_PEAISLAND\_CATLIN.GDT 2/21/12

<b>WBS</b> 13201.1028025	<b>TIP</b> B-2500	<b>COUNTY</b> DARE	<b>GEOLOGIST</b> Tom Stetler	
<b>SITE DESCRIPTION</b> Bridge over Pea Island Breach on NC 12				<b>GROUND WTR (ft)</b>
<b>BORING NO.</b> B-30	<b>STATION</b> 3223+23	<b>OFFSET</b> 16ft LT	<b>ALIGNMENT</b> -L-	<b>0 HR.</b> 1.6
<b>COLLAR ELEV.</b> 4.2 ft	<b>TOTAL DEPTH</b> 90.1 ft	<b>NORTHING</b> 727,298	<b>EASTING</b> 3,042,902	<b>24 HR.</b> 2.2

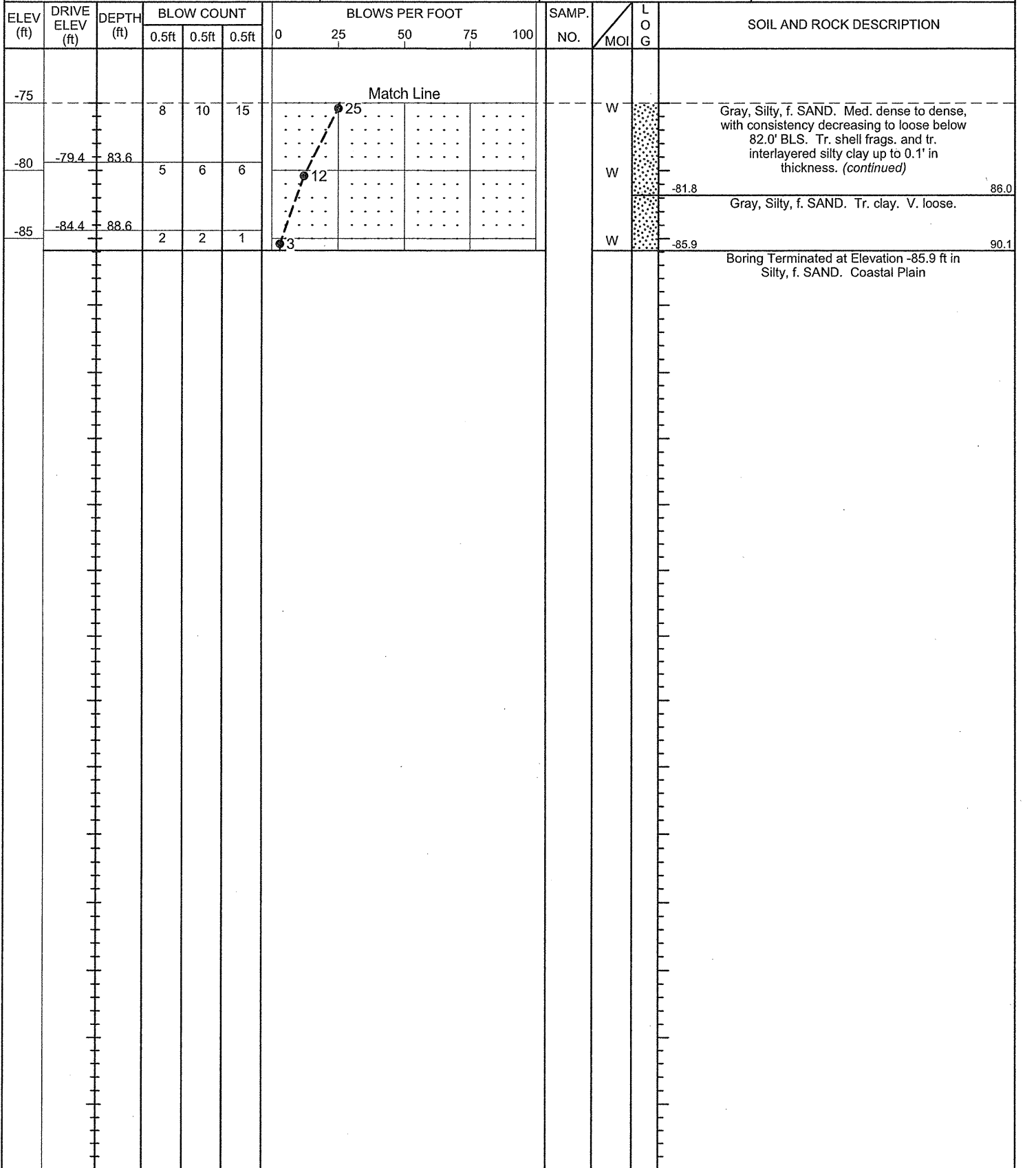
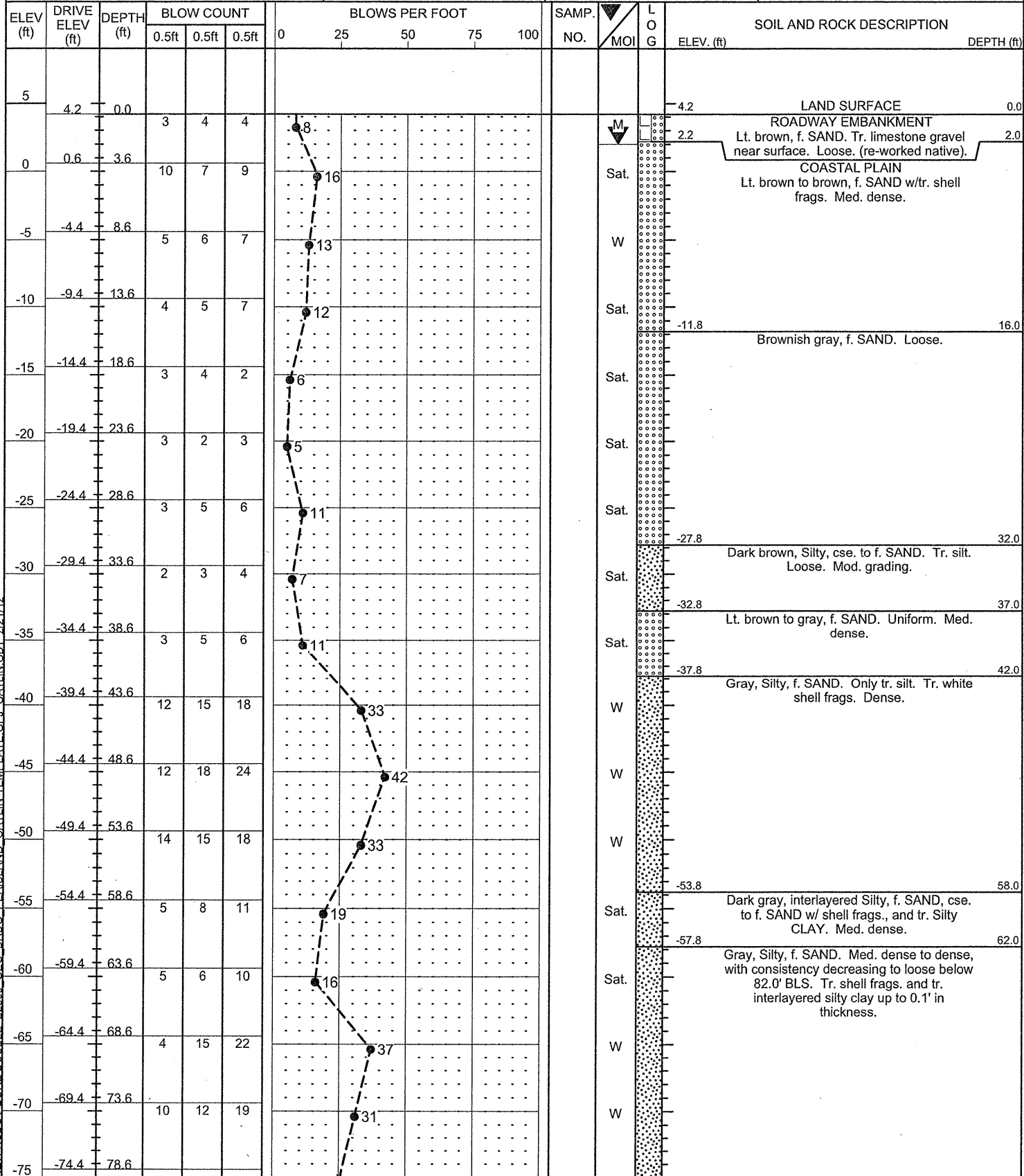
<b>WBS</b> 13201.1028025	<b>TIP</b> B-2500	<b>COUNTY</b> DARE	<b>GEOLOGIST</b> Tom Stetler	
<b>SITE DESCRIPTION</b> Bridge over Pea Island Breach on NC 12				<b>GROUND WTR (ft)</b>
<b>BORING NO.</b> B-30	<b>STATION</b> 3223+23	<b>OFFSET</b> 16ft LT	<b>ALIGNMENT</b> -L-	<b>0 HR.</b> 1.6
<b>COLLAR ELEV.</b> 4.2 ft	<b>TOTAL DEPTH</b> 90.1 ft	<b>NORTHING</b> 727,298	<b>EASTING</b> 3,042,902	<b>24 HR.</b> 2.2

**DRILL RIG/HAMMER EFF./DATE** CAT6394 CME-45B 91% 02/19/2010  
**DRILL METHOD** Mud Rotary  
**HAMMER TYPE** Automatic

**DRILL RIG/HAMMER EFF./DATE** CAT6394 CME-45B 91% 02/19/2010  
**DRILL METHOD** Mud Rotary  
**HAMMER TYPE** Automatic

**DRILLER** CATLIN  
**START DATE** 10/10/11  
**COMP. DATE** 10/11/11  
**SURFACE WATER DEPTH** N/A

**DRILLER** CATLIN  
**START DATE** 10/10/11  
**COMP. DATE** 10/11/11  
**SURFACE WATER DEPTH** N/A



# NCDOT GEOTECHNICAL ENGINEERING UNIT BORELOG REPORT

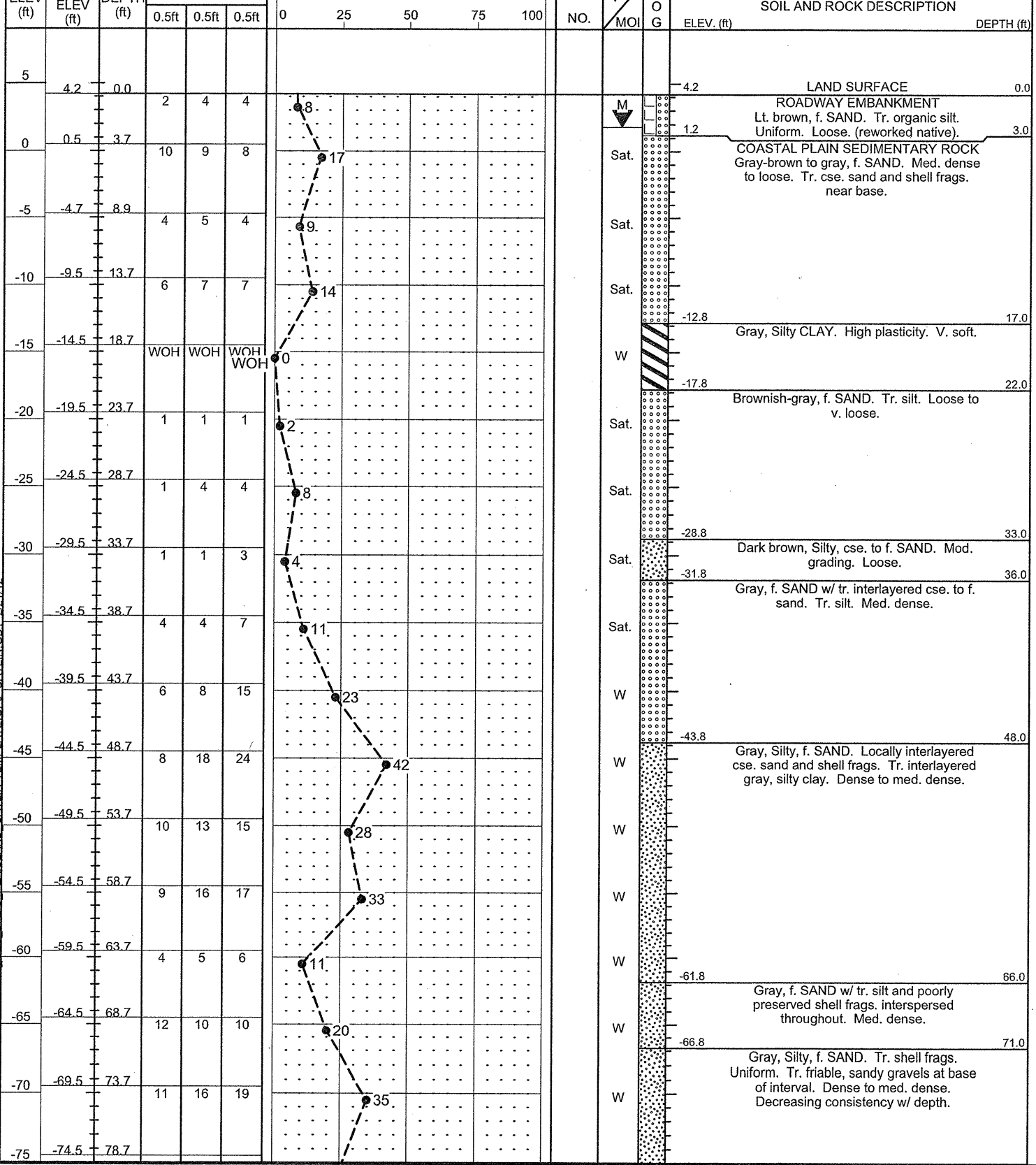
WBS 13201.1028025 TIP B-2500 COUNTY DARE GEOLOGIST Tom Stetler

SITE DESCRIPTION Bridge over Pea Island Breach on NC 12 GROUND WTR (ft)

BORING NO. B-31 STATION 3228+27 OFFSET 19ft RT ALIGNMENT -L- 0 HR. 1.8  
COLLAR ELEV. 4.2 ft TOTAL DEPTH 95.2 ft NORTHING 727,784 EASTING 3,042,765 24 HR. 2.4

DRILL RIG/HAMMER EFF./DATE CAT6394 CME-45B 91% 02/19/2010 DRILL METHOD Mud Rotary HAMMER TYPE Automatic

DRILLER CATLIN START DATE 10/10/11 COMP. DATE 10/10/11 SURFACE WATER DEPTH N/A



NEW NCDOT BORE DOUBLE B2500 GEO BRDG PEASLAND CATLIN TEMPLATE GPL CATLIN.GDT 2/21/12

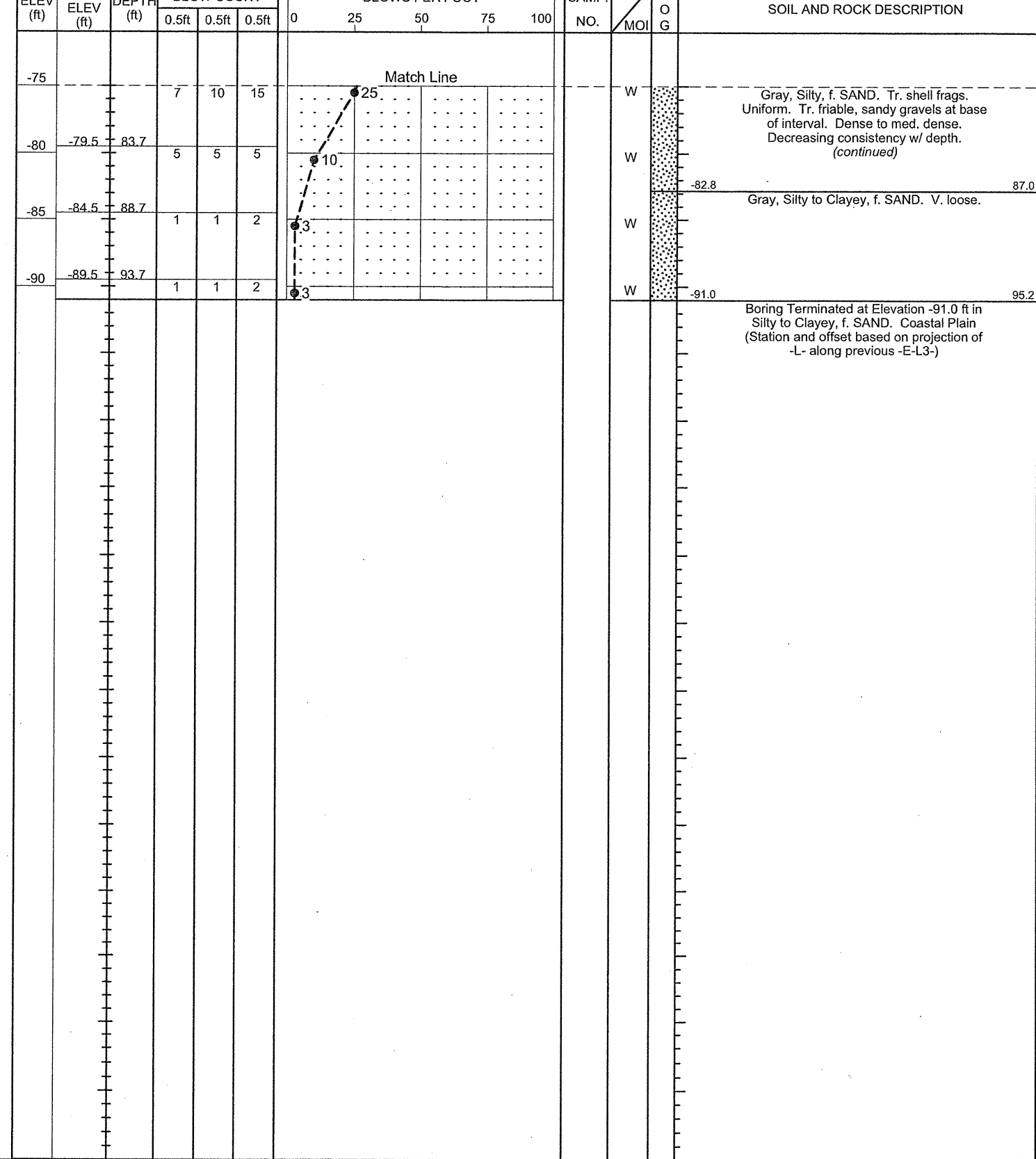
WBS 13201.1028025 TIP B-2500 COUNTY DARE GEOLOGIST Tom Stetler

SITE DESCRIPTION Bridge over Pea Island Breach on NC 12 GROUND WTR (ft)

BORING NO. B-31 STATION 3228+27 OFFSET 19ft RT ALIGNMENT -L- 0 HR. 1.8  
COLLAR ELEV. 4.2 ft TOTAL DEPTH 95.2 ft NORTHING 727,784 EASTING 3,042,765 24 HR. 2.4

DRILL RIG/HAMMER EFF./DATE CAT6394 CME-45B 91% 02/19/2010 DRILL METHOD Mud Rotary HAMMER TYPE Automatic

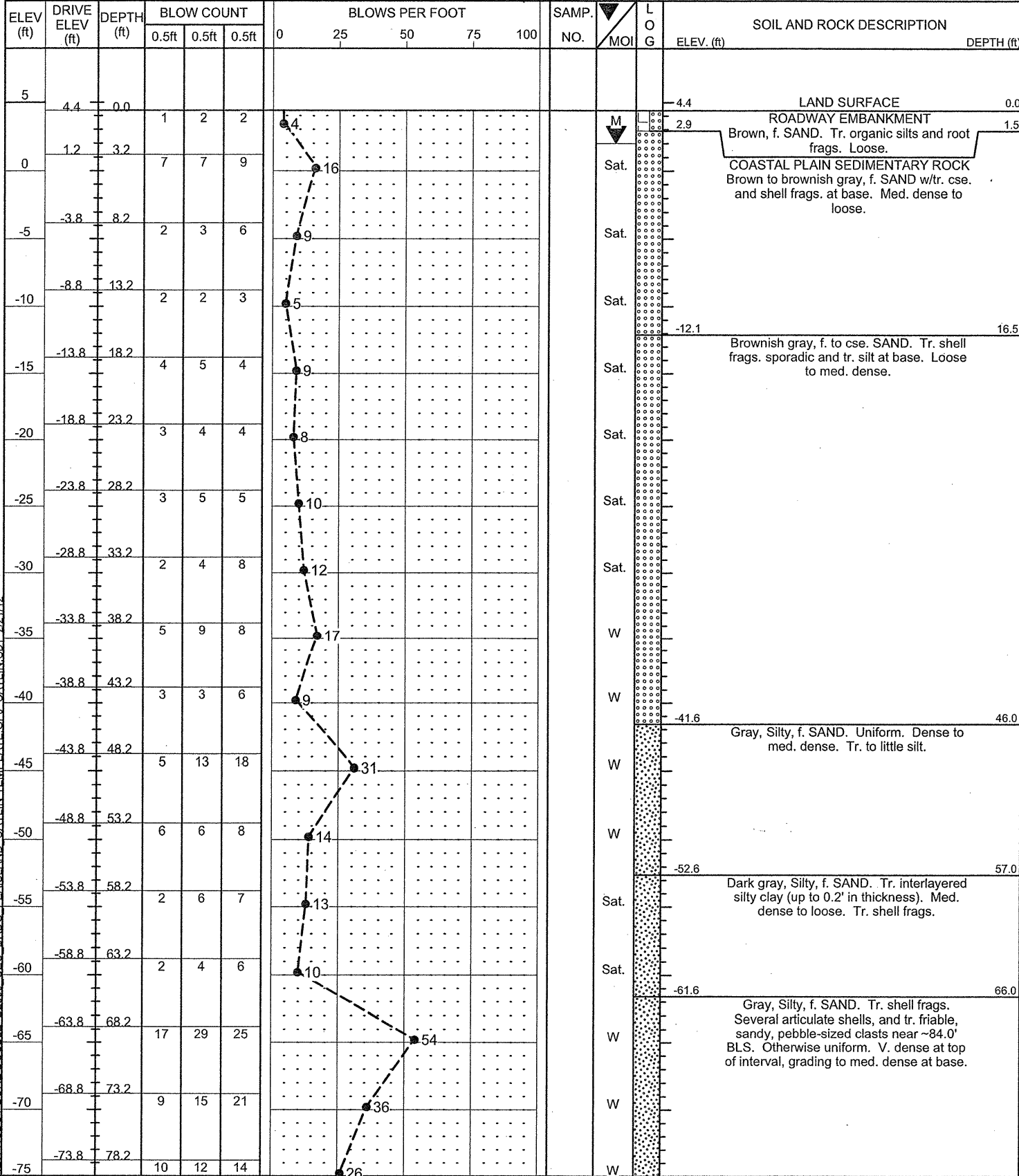
DRILLER CATLIN START DATE 10/10/11 COMP. DATE 10/10/11 SURFACE WATER DEPTH N/A



WBS 13201.1028025	TIP B-2500	COUNTY DARE	GEOLOGIST Tom Stetler	
SITE DESCRIPTION Bridge over Pea Island Breach on NC 12				GROUND WTR (ft)
BORING NO. B-32	STATION 3233+23	OFFSET 17ft LT	ALIGNMENT -L-	0 HR. 2.4
COLLAR ELEV. 4.4 ft	TOTAL DEPTH 94.7 ft	NORTHING 728,239	EASTING 3,042,562	24 HR. 2.4

DRILL RIG/HAMMER EFF./DATE CAT6394 CME-45B 91% 02/19/2010 DRILL METHOD Mud Rotary HAMMER TYPE Automatic

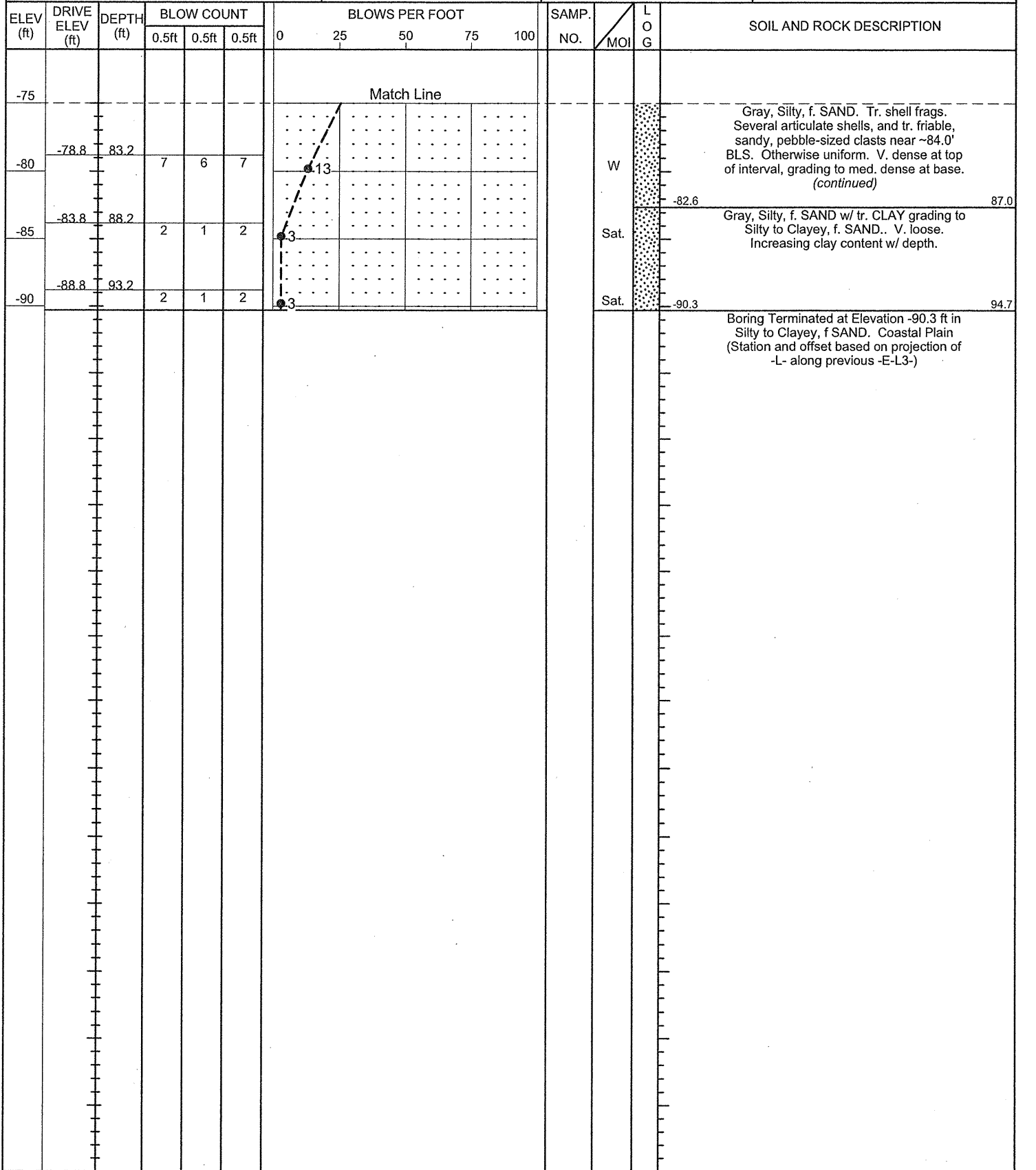
DRILLER CATLIN START DATE 10/11/11 COMP. DATE 10/12/11 SURFACE WATER DEPTH N/A



WBS 13201.1028025	TIP B-2500	COUNTY DARE	GEOLOGIST Tom Stetler	
SITE DESCRIPTION Bridge over Pea Island Breach on NC 12				GROUND WTR (ft)
BORING NO. B-32	STATION 3233+23	OFFSET 17ft LT	ALIGNMENT -L-	0 HR. 2.4
COLLAR ELEV. 4.4 ft	TOTAL DEPTH 94.7 ft	NORTHING 728,239	EASTING 3,042,562	24 HR. 2.4

DRILL RIG/HAMMER EFF./DATE CAT6394 CME-45B 91% 02/19/2010 DRILL METHOD Mud Rotary HAMMER TYPE Automatic

DRILLER CATLIN START DATE 10/11/11 COMP. DATE 10/12/11 SURFACE WATER DEPTH N/A

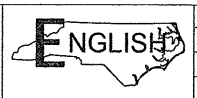


NEW NCDOT BORE DOUBLE B2500 GEO BRDG PEASLAND CATLIN TEMPLATE.GPJ CATLIN.GDT 2/21/12



# NCDOT GEOTECHNICAL ENGINEERING UNIT

## BORELOG REPORT



SHEET NO.: 47  
 PROJ. NO.: 13201.1028025  
 TIP NO.: B-2500  
 COUNTY: DARE

WBS 13201.1028025		TIP B-2500		COUNTY DARE		GEOLOGIST Tom Stetler											
SITE DESCRIPTION Bridge over Pea Island Breach on NC 12							GROUND WTR (ft)										
BORING NO. B-33		STATION 3238+23		OFFSET 19ft RT		ALIGNMENT -L-											
						0 HR.	2.5										
COLLAR ELEV. 4.2 ft		TOTAL DEPTH 95.3 ft		NORTHING 728,720		EASTING 3,042,426											
						24 HR.	2.2										
DRILL RIG/HAMMER EFF./DATE CAT6394 CME-45B 91% 02/19/2010				DRILL METHOD Mud Rotary		HAMMER TYPE Automatic											
DRILLER CATLIN		START DATE 10/12/11		COMP. DATE 10/12/11		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	4.2	0.0	1	1	2										4.2	LAND SURFACE	0.0
															2.2	ROADWAY EMBANKMENT Brown, f. SAND. Uniform. V. loose. (Reworked native)	2.0
0	0.4	3.8	7	7	8											COASTAL PLAIN Brown to grayish-brown, f. SAND. Interlayered w/ cse. to f. SAND near base of interval. Med. dense to loose.	
-5	-4.6	8.8	4	4	7												
-10	-9.6	13.8	2	1	2												
-15	-14.6	18.8	2	1	1												
-20	-19.6	23.8	4	3	1												
-25	-24.6	28.8	1	1	2												
-30	-29.6	33.8	3	1	2												
-35	-34.6	38.8	1	3	5												
-40	-39.6	43.8	10	11	12												
-45	-44.6	48.8	19	24	32												
-50	-49.6	53.8	12	15	16												
-55	-54.6	58.8	14	8	9												
-60	-59.6	63.8	6	8	15												
-65	-64.6	68.8	18	17	14												
-70	-69.6	73.8	12	16	19												
-75	-74.6	78.8															

WBS 13201.1028025		TIP B-2500		COUNTY DARE		GEOLOGIST Tom Stetler											
SITE DESCRIPTION Bridge over Pea Island Breach on NC 12							GROUND WTR (ft)										
BORING NO. B-33		STATION 3238+23		OFFSET 19ft RT		ALIGNMENT -L-											
						0 HR.	2.5										
COLLAR ELEV. 4.2 ft		TOTAL DEPTH 95.3 ft		NORTHING 728,720		EASTING 3,042,426											
						24 HR.	2.2										
DRILL RIG/HAMMER EFF./DATE CAT6394 CME-45B 91% 02/19/2010				DRILL METHOD Mud Rotary		HAMMER TYPE Automatic											
DRILLER CATLIN		START DATE 10/12/11		COMP. DATE 10/12/11		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							
-75			10	12	15												
-80	-79.6	83.8	6	7	7												
-85	-84.6	88.8	1	2	1												
-90	-89.6	93.8	1	1	1												

NEW NCDOT BORE DOUBLE B2500 GEO BRDG PEASLAND CATLIN TEMPLATE GPT CATLIN GPT 2/21/12

WBS 13201.1028025	TIP B-2500	COUNTY DARE	GEOLOGIST Tom Stetler	
SITE DESCRIPTION Bridge over Pea Island Breach on NC 12				GROUND WTR (ft)
BORING NO. B-34	STATION 3243+25	OFFSET 17ft LT	ALIGNMENT -L-	0 HR. 1.8
COLLAR ELEV. 4.1 ft	TOTAL DEPTH 95.0 ft	NORTHING 729,181	EASTING 3,042,221	24 HR. 2.5

DRILL RIG/HAMMER EFF./DATE CAT6394 CME-45B 91% 02/19/2010	DRILL METHOD Mud Rotary	HAMMER TYPE Automatic
DRILLER CATLIN	START DATE 10/13/11	COMP. DATE 10/13/11
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	4.1	0.0	2	2	1							M	LAND SURFACE	0.0
0	0.6	3.5	9	7	5								ROADWAY EMBANKMENT Brown, Silty, f. SAND. Dark brown wood frags. near base of interval. V. loose.	3.0
-5	-4.4	8.5	3	3	3							Sat.	COASTAL PLAIN Brown to grayish brown, f. SAND. Med dense to loose.	
-10	-9.4	13.5	4	4	4							Sat.		
-15	-14.4	18.5	3	2	3							Sat.		
-20	-19.4	23.5	5	3	3							Sat.		
-25	-24.4	28.5	4	3	4							Sat.		
-30	-29.4	33.5	4	3	4							Sat.		
-35	-34.4	38.5	3	5	6							Sat.		
-40	-39.4	43.5	3	5	3							Sat.		
-45	-44.4	48.5	19	24	25							W		
-50	-49.4	53.5	15	17	18							W		
-55	-54.4	58.5	7	4	9							Sat.		
-60	-59.4	63.5	4	9	9							W		
-65	-64.4	68.5	21	17	21							W		
-70	-69.4	73.5	12	12	13							W		
-75	-74.4	78.5												

WBS 13201.1028025	TIP B-2500	COUNTY DARE	GEOLOGIST Tom Stetler	
SITE DESCRIPTION Bridge over Pea Island Breach on NC 12				GROUND WTR (ft)
BORING NO. B-34	STATION 3243+25	OFFSET 17ft LT	ALIGNMENT -L-	0 HR. 1.8
COLLAR ELEV. 4.1 ft	TOTAL DEPTH 95.0 ft	NORTHING 729,181	EASTING 3,042,221	24 HR. 2.5

DRILL RIG/HAMMER EFF./DATE CAT6394 CME-45B 91% 02/19/2010	DRILL METHOD Mud Rotary	HAMMER TYPE Automatic
DRILLER CATLIN	START DATE 10/13/11	COMP. DATE 10/13/11
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			10	11	13							W		
-80	-79.4	83.5	5	5	5							W	Gray, Silty, f. SAND. Tr. shell frags. Increasing silt content and decreasing consistency w/ depth. Dense to med. dense. (continued)	86.0
-85	-84.4	88.5	2	1	2							Sat.	Gray, Silty, f. SAND. Tr. clay. V. loose.	
-90	-89.4	93.5	2	1	2							Sat.	Boring Terminated at Elevation -90.9 ft in Silty, f. SAND w/tr. clay. Coastal Plain (Station and offset based on projection of -L- along previous -E-L3-)	95.0

NEW/NC DOT BORE DOUBLE B2500 GEO BRDG PEASLAND CATLIN TEMPLATE.GPJ CATLIN.GDT 2/21/12





# NCDOT GEOTECHNICAL ENGINEERING UNIT

## BORELOG REPORT



SHEET NO.: 49  
 PROJ. NO.: 13201.1028025  
 TIP NO.: B-2500  
 COUNTY: DARE

WBS 13201.1028025	TIP B-2500	COUNTY DARE	GEOLOGIST Justin Heter	
SITE DESCRIPTION Bridge over Pea Island Breach on NC 12				GROUND WTR (ft)
BORING NO. B-35	STATION 3248+25	OFFSET 19ft RT	ALIGNMENT -L-	0 HR. N/A
COLLAR ELEV. 3.9 ft	TOTAL DEPTH 80.0 ft	NORTHING 729,663	EASTING 3,042,085	24 HR. N/A

DRILL RIG/HAMMER EFF./DATE CAT1519 DIEDRICH D-50 98% 04/07/2010	DRILL METHOD Mud Rotary	HAMMER TYPE Automatic
DRILLER CATLIN	START DATE 10/10/11	COMP. DATE 10/10/11
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															
0	0.4	3.5	6	8	7									3.9	0.0
-5	-4.6	8.5	2	3	4									-2.1	6.0
-10	-9.6	13.5	2	4	4									-12.1	16.0
-15	-14.6	18.5	3	6	7									-30.6	34.5
-20	-19.6	23.5	4	6	8									-33.1	37.0
-25	-24.6	28.5	5	9	11									-43.1	47.0
-30	-29.6	33.5	3	5	4									-58.1	62.0
-35	-34.6	38.5	2	4	6									-71.0	71.0
-40	-39.6	43.5	2	3	2									-70.6	74.5
-45	-44.6	48.5	15	22	28									-73.1	77.0
-50	-49.6	53.5	18	21	20									-75.1	79.0
-55	-54.6	58.5	12	15	8										
-60	-59.6	63.5	11	13	18										
-65	-64.6	68.5	8	7	6										
-70	-69.6	73.5	12	28	40										
-75	-74.6	78.5													

WBS 13201.1028025	TIP B-2500	COUNTY DARE	GEOLOGIST Justin Heter	
SITE DESCRIPTION Bridge over Pea Island Breach on NC 12				GROUND WTR (ft)
BORING NO. B-35	STATION 3248+25	OFFSET 19ft RT	ALIGNMENT -L-	0 HR. N/A
COLLAR ELEV. 3.9 ft	TOTAL DEPTH 80.0 ft	NORTHING 729,663	EASTING 3,042,085	24 HR. N/A

DRILL RIG/HAMMER EFF./DATE CAT1519 DIEDRICH D-50 98% 04/07/2010	DRILL METHOD Mud Rotary	HAMMER TYPE Automatic
DRILLER CATLIN	START DATE 10/10/11	COMP. DATE 10/10/11
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					
-75															
			15	18	21									Match Line	
														-76.1	80.0

Cse. SAND. Tr. pebbles. Tr. f. sand.  
 Gap-graded. Dense. (continued)  
 Gray, Silty, f. SAND. Uniform. Tr. shells.  
 Dense.  
 Boring Terminated at Elevation -76.1 ft in  
 Silty SAND. Coastal Plain  
 (Station and offset based on projection of  
 -L- along previous -E-L3-)

NEW NCDOT BORE DOUBLE B2500 GEO BRDG PEASLAND CATLIN TEMPLATE.GPJ CATLIN.GDT 2/2/11

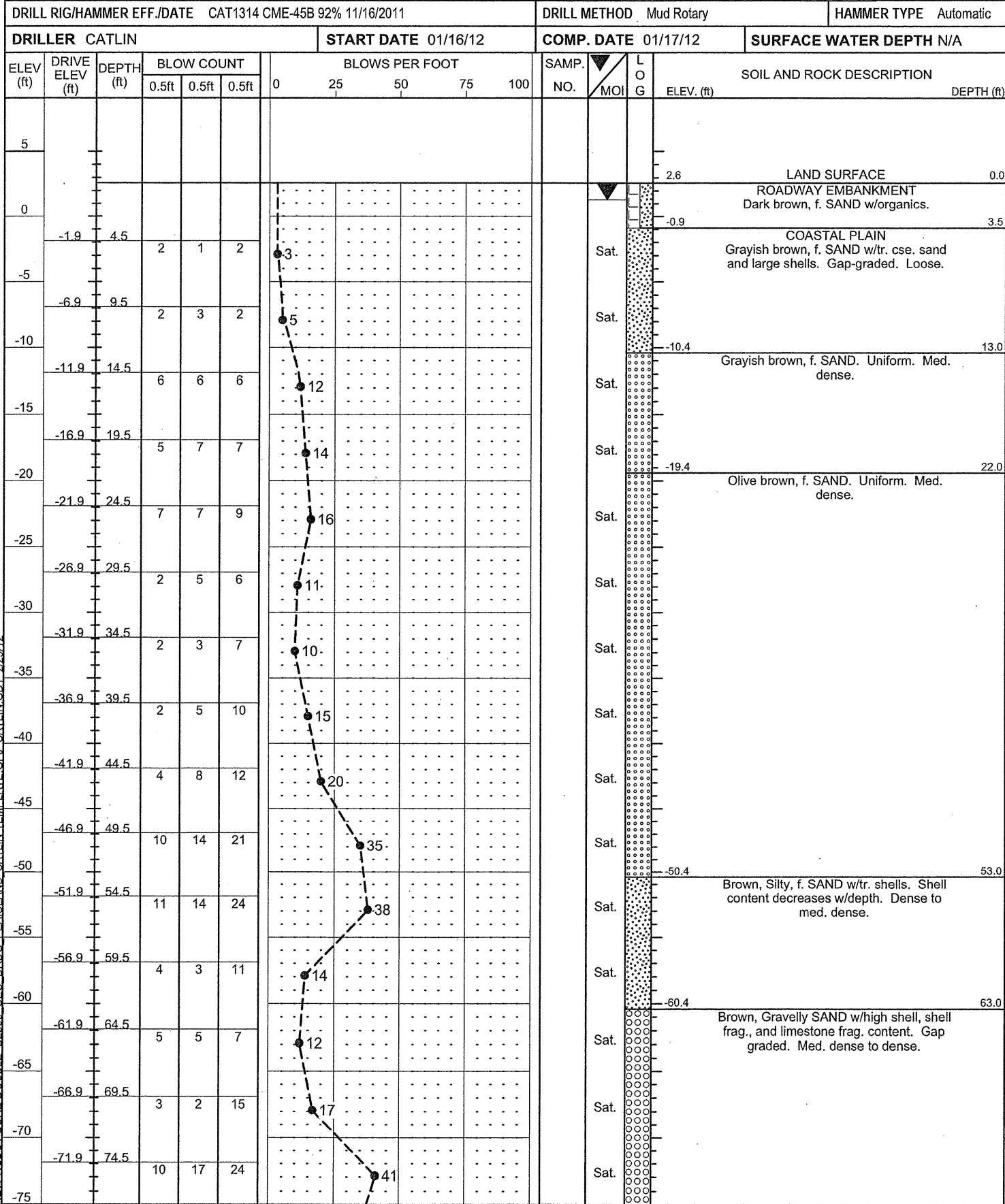


# NCDOT GEOTECHNICAL ENGINEERING UNIT

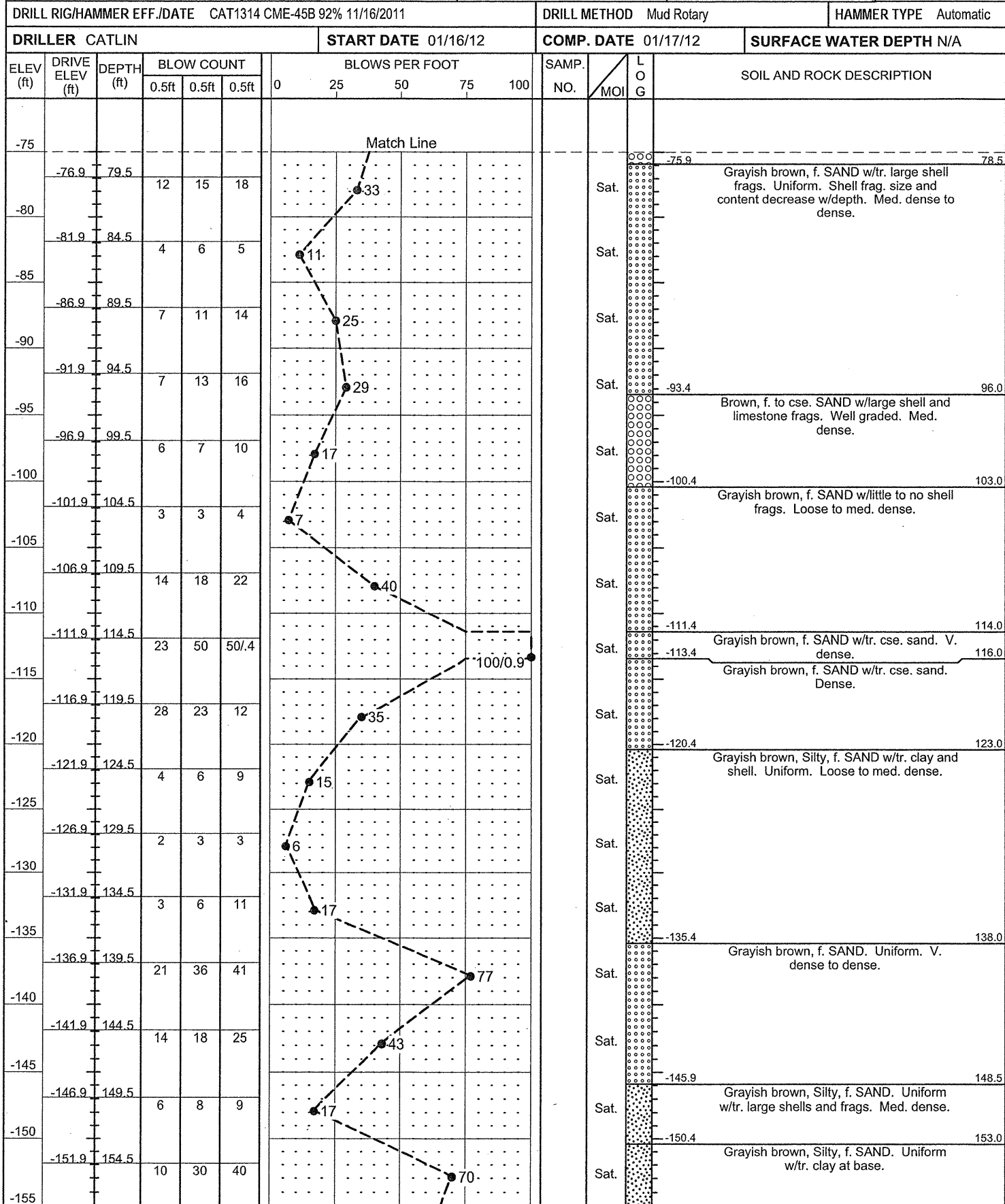
## BORELOG REPORT

SHEET NO.: 51  
 PROJ. NO.: 13201.1028025  
 TIP NO.: B-2500  
 COUNTY: DARE

WBS 13201.1028025	TIP B-2500	COUNTY DARE	GEOLOGIST Justin Heter
SITE DESCRIPTION Bridge on NC 12 over Pea Island Breach			GROUND WTR (ft)
BORING NO. B-37	STATION 3090+70	OFFSET 4ft RT	ALIGNMENT -L-
COLLAR ELEV. 2.6 ft	TOTAL DEPTH 160.5 ft	NORTHING 714,465	EASTING 3,045,732
DRILL RIG/HAMMER EFF./DATE CAT1314 CME-45B 92% 11/16/2011			DRILL METHOD Mud Rotary
DRILLER CATLIN			HAMMER TYPE Automatic
START DATE 01/16/12		COMP. DATE 01/17/12	SURFACE WATER DEPTH N/A



WBS 13201.1028025	TIP B-2500	COUNTY DARE	GEOLOGIST Justin Heter
SITE DESCRIPTION Bridge on NC 12 over Pea Island Breach			GROUND WTR (ft)
BORING NO. B-37	STATION 3090+70	OFFSET 4ft RT	ALIGNMENT -L-
COLLAR ELEV. 2.6 ft	TOTAL DEPTH 160.5 ft	NORTHING 714,465	EASTING 3,045,732
DRILL RIG/HAMMER EFF./DATE CAT1314 CME-45B 92% 11/16/2011			DRILL METHOD Mud Rotary
DRILLER CATLIN			HAMMER TYPE Automatic
START DATE 01/16/12		COMP. DATE 01/17/12	SURFACE WATER DEPTH N/A



NEW NCDOT BORE DOUBLE B-2500 GEO BRDG PEASLAND CATLIN TEMPLATE.GPJ CATLIN.GDT 2/29/12



WBS 13201.1028025	TIP B-2500	COUNTY DARE	GEOLOGIST Justin Heter	
SITE DESCRIPTION Bridge on NC 12 over Pea Island Breach				GROUND WTR (ft)
BORING NO. B-37	STATION 3090+70	OFFSET 4ft RT	ALIGNMENT -L-	0 HR. 2.5
COLLAR ELEV. 2.6 ft	TOTAL DEPTH 160.5 ft	NORTHING 714,465	EASTING 3,045,732	24 HR. 1.3
DRILL RIG/HAMMER EFF./DATE CAT1314 CME-45B 92% 11/16/2011		DRILL METHOD Mud Rotary	HAMMER TYPE Automatic	
DRILLER CATLIN		START DATE 01/16/12	COMP. DATE 01/17/12	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				

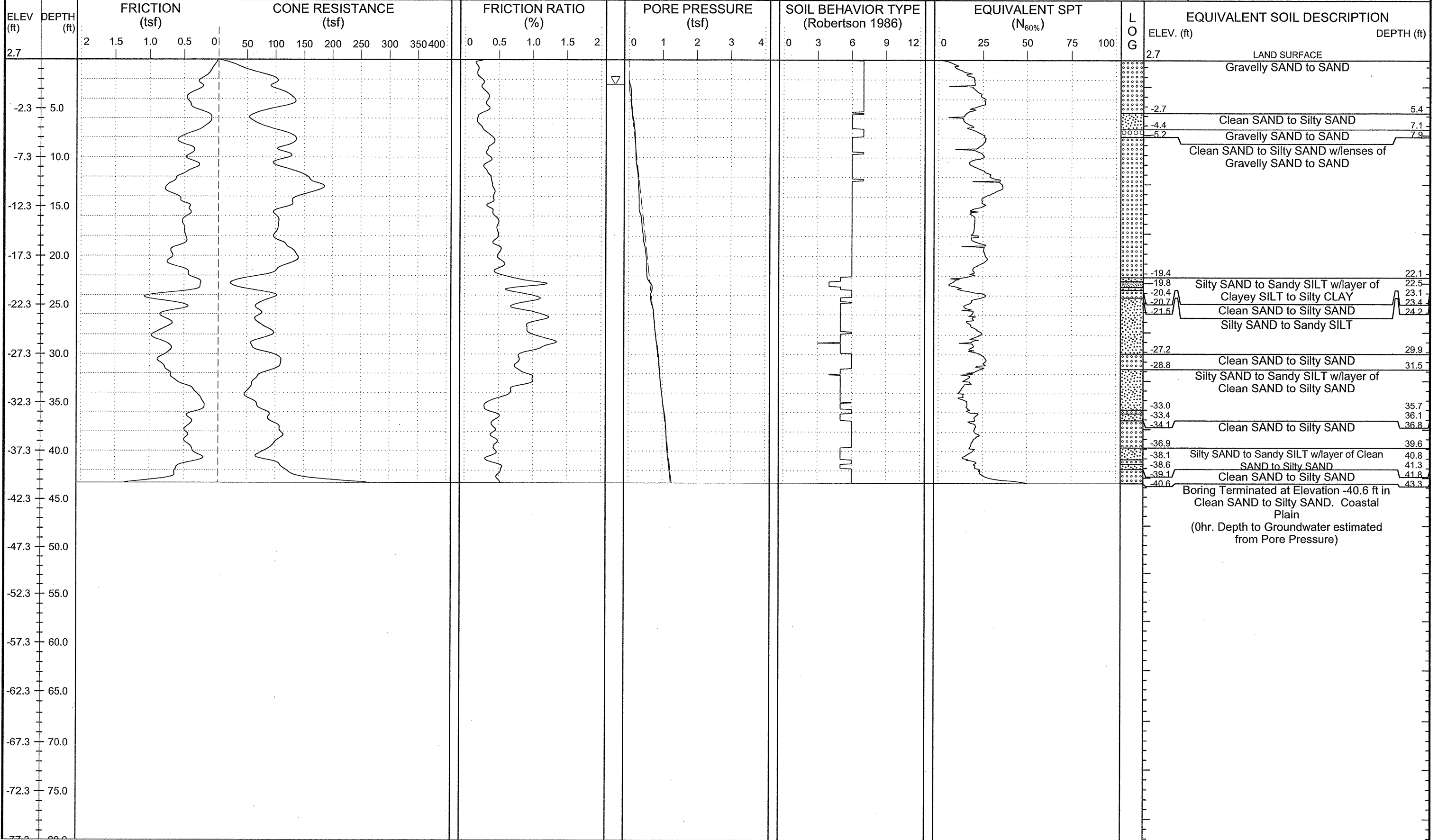
-155  
 Match Line

-156.4	-159.0	36	29	32	.....	.....	.....	.....	.....	.....	.....	Sat.	.....	Grayish brown, Silty, f. SAND. Uniform w/tr. clay at base. (continued)	160.5
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Boring Terminated at Elevation -157.9 ft in Silty, f. SAND w/tr. clay. Coastal Plain

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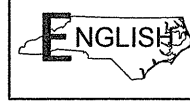
PROJECT NO.: 13201.1028025	ID.: B-2500	COUNTY: DARE	GEOLOGIST: Steven Hudson	DRILL MACHINE: Pagani 73-200	MAX. DOWN PRESSURE: 20 Ton
SITE DESCRIPTION: Bridge over Pea Island Breach on NC 12			GROUND WTR (ft): 0 HR. 2.5	DRILL METHOD: CPT / DPT	CONE TYPE: Geotech AB
BORING NO.: B-38	STATION: 3092+68	OFFSET: 2ft RT	ALIGNMENT: -L-	ROD TYPE: 1.5" Vertek Speeklock	CONE ID: 0
COLLAR ELEV.: 2.7 ft	TOTAL DEPTH: 43.3 ft	NORTHING: 714,664	EASTING: 3,045,713	24 HR. N/A	START DATE: 02/02/12
				COMP. DATE: 02/02/12	SURFACE WATER DEPTH: N/A





# NCDOT GEOTECHNICAL ENGINEERING UNIT

## BORELOG REPORT



SHEET NO.: 54  
 PROJ. NO.: 13201.1028025  
 TIP NO.: B-2500  
 COUNTY: DARE

WBS 13201.1028025		TIP B-2500		COUNTY DARE		GEOLOGIST Justin Heter											
SITE DESCRIPTION Bridge on NC 12 over Pea Island Breach							GROUND WTR (ft)										
BORING NO. B-39		STATION 3096+70		OFFSET 0ft CL		ALIGNMENT -L-											
COLLAR ELEV. 2.3 ft		TOTAL DEPTH 161.0 ft		NORTHING 715,066		EASTING 3,045,677											
DRILL RIG/HAMMER EFF./DATE CAT1314 CME-45B 92% 11/16/2011				DRILL METHOD Mud Rotary		HAMMER TYPE Automatic											
DRILLER CATLIN		START DATE 01/18/12		COMP. DATE 01/19/12		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															2.3	LAND SURFACE	0.0
0															-0.7	ROADWAY EMBANKMENT Dark brown, f. SAND w/tr. silt.	3.0
-5	-2.2	4.5	4	6	7											COASTAL PLAIN Grayish brown, f. SAND w/little to tr. amounts of shell frags. Med. dense to loose.	
-10	-7.2	9.5	5	7	7												
-15	-12.2	14.5	3	3	6												
-20	-17.2	19.5	4	5	6												
-25	-22.2	24.5	2	5	7											Olive brown, f. SAND w/mod. amount of large shell frags. Med. dense.	23.0
-30	-27.2	29.5	2	3	4											Grayish brown, f. SAND w/tr. shell frags. Olive brown at top. Loose.	28.0
-35	-32.2	34.5	4	4	5												
-40	-37.2	39.5	6	11	17											Grayish brown, f. SAND w/mod. to tr. amounts of large shell frags., rounded gravel, and quartz grains. Gap-graded. Med. dense to dense.	38.5
-45	-42.2	44.5	10	23	25												
-50	-47.2	49.5	11	27	36											Grayish brown, Silty, f. SAND w/tr. shells. Uniform. V. to med. dense.	48.0
-55	-52.2	54.5	6	10	17												
-60	-57.2	59.5	2	6	12											Dark gray, SILT w/tr. clay. Low plast. Uniform. Stiff.	57.0
-65	-62.2	64.5	7	9	11											Gray, f. to cse. SAND w/high amount of shell hash and limestone frags. Well graded. Med. dense.	62.0
-70	-67.2	69.5	7	14	21											Grayish brown, f. SAND w/little to tr. amount of shell frags. Gap-graded. Dense to med. dense.	67.0
-75	-72.2	74.5	9	16	18												

WBS 13201.1028025		TIP B-2500		COUNTY DARE		GEOLOGIST Justin Heter											
SITE DESCRIPTION Bridge on NC 12 over Pea Island Breach							GROUND WTR (ft)										
BORING NO. B-39		STATION 3096+70		OFFSET 0ft CL		ALIGNMENT -L-											
COLLAR ELEV. 2.3 ft		TOTAL DEPTH 161.0 ft		NORTHING 715,066		EASTING 3,045,677											
DRILL RIG/HAMMER EFF./DATE CAT1314 CME-45B 92% 11/16/2011				DRILL METHOD Mud Rotary		HAMMER TYPE Automatic											
DRILLER CATLIN		START DATE 01/18/12		COMP. DATE 01/19/12		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							
-75																	
-80	-77.2	79.5	9	14	21												
-85	-82.2	84.5	6	8	8												
-90	-87.2	89.5	13	13	16												
-95	-92.2	94.5	11	12	14												
-100	-97.2	99.5	4	5	8												
-105	-102.2	104.5	6	9	12												
-110	-107.2	109.5	1	5	13												
-115	-112.2	114.5	2	10	31												
-120	-117.2	119.5	4	8	12												
-125	-122.2	124.5	3	5	7												
-130	-127.2	129.5	2	3	3												
-135	-132.2	134.5	1	1	1												
-140	-137.2	139.5	18	29	40												
-145	-142.2	144.5	8	12	16												
-150	-147.2	149.5	10	12	15												
-155	-152.2	154.5	18	29	31												

NEW NCDOT BORE DOUBLE B2500 GEO BRDG PEASLAND CATLIN TEMPLATE.GPJ CATLIN.GDT 2/21/12



WBS 13201.1028025	TIP B-2500	COUNTY DARE	GEOLOGIST K. Ferguson
SITE DESCRIPTION Bridge over Pea Island Breach on NC 12			GROUND WTR (ft)
BORING NO. B-40	STATION 3100+73	OFFSET 0ft CL	ALIGNMENT -L-
COLLAR ELEV. 2.2 ft	TOTAL DEPTH 160.0 ft	NORTHING 715,466	EASTING 3,045,644
DRILL RIG/HAMMER EFF./DATE TER255 DIEDRICH D-50 77% 07/15/2011		DRILL METHOD Mud Rotary	HAMMER TYPE Automatic
DRILLER TERRACON	START DATE 02/14/12	COMP. DATE 02/15/12	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	-76.3	78.5	13	16	20								Gray, f. SAND. Poorly graded w/shells to tr. shells. V. dense dense. (continued)	
-80	-81.3	83.5	12	16	17									
-85	-86.3	88.5	7	11	16									
-90	-91.3	93.5	5	10	14									
-95	-96.3	98.5	4	7	8									
-100	-101.3	103.5	5	7	6									
-105	-106.3	108.5	2	8	18									
-110	-111.3	113.5	11	12	18									
-115	-116.3	118.5	2	1	1									
-120	-121.3	123.5	6	8	4									
-125	-126.3	128.5	2	5	5									
-130	-131.3	133.5	4	5	8									
-135	-136.3	138.5	17	42	58									
-140	-141.3	143.5	12	15	13									
-145	-146.3	148.5	4	6	10									
-150	-151.3	153.5	8	11	11									

WBS 13201.1028025	TIP B-2500	COUNTY DARE	GEOLOGIST K. Ferguson
SITE DESCRIPTION Bridge over Pea Island Breach on NC 12			GROUND WTR (ft)
BORING NO. B-40	STATION 3100+73	OFFSET 0ft CL	ALIGNMENT -L-
COLLAR ELEV. 2.2 ft	TOTAL DEPTH 160.0 ft	NORTHING 715,466	EASTING 3,045,644
DRILL RIG/HAMMER EFF./DATE TER255 DIEDRICH D-50 77% 07/15/2011		DRILL METHOD Mud Rotary	HAMMER TYPE Automatic
DRILLER TERRACON	START DATE 02/14/12	COMP. DATE 02/15/12	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				
-155	-156.3	158.5	26	10	12								Light brownish gray, CLAY. V. stiff. (continued)	160.0
Boring Terminated at Elevation -157.8 ft in v. stiff CLAY. Coastal Plain														
1. Advanced 2 15/16" tricone to 160ft.														
2. Drilling Mud = 1 bag SW101 & 2 bags Bentonite														
3. 90ft. NW Casing														
4. Piezometer set IAD to 120ft bls w/20ft. screen.														

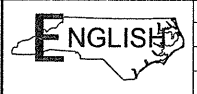
NEW NCDOT BORELOG DOUBLE B2500 GEO BRDG PEASLAND CATLIN TEMPLATE.GPJ CATLIN.GDT 2/21/12





# NCDOT GEOTECHNICAL ENGINEERING UNIT

## BORELOG REPORT



SHEET NO.: 57  
 PROJ. NO.: 13201.1028025  
 TIP NO.: B-2500  
 COUNTY: DARE

WBS 13201.1028025	TIP B-2500	COUNTY DARE	GEOLOGIST K. Ferguson
SITE DESCRIPTION Bridge over Pea Island Breach on NC 12			GROUND WTR (ft)
BORING NO. B-41	STATION 3104+70	OFFSET 0ft CL	ALIGNMENT -L-
COLLAR ELEV. 2.1 ft	TOTAL DEPTH 159.1 ft	NORTHING 715,861	EASTING 3,045,611
DRILL RIG/HAMMER EFF./DATE TER255 DIEDRICH D-50 77% 07/15/2011			DRILL METHOD Mud Rotary
DRILLER TERRACON			HAMMER TYPE Automatic
START DATE 02/13/12		COMP. DATE 02/14/12	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															
0	-1.4	3.5	4	4	6								2.1	LAND SURFACE	0.0
-5	-6.4	8.5	3	4	5									COASTAL PLAIN Gray, f. SAND. Poorly graded w/tr. shell frags. and shells. Med. dense to loose.	
-10	-11.4	13.5	3	3	2										
-15	-16.4	18.5	5	5	6										
-20	-21.4	23.5	2	4	5										
-25	-26.4	28.5	3	3	2										
-30	-31.4	33.5	3	3	4										
-35	-36.4	38.5	2	4	6										
-40	-41.4	43.5	11	19	22										
-45	-46.4	48.5	14	22	24										
-50	-51.4	53.5	10	14	14										
-55	-56.4	58.5	7	11	9										
-60	-61.4	63.5	7	7	9										
-65	-66.4	68.5	17	25	29										
-70	-71.4	73.5	20	25	30										
-75															

WBS 13201.1028025	TIP B-2500	COUNTY DARE	GEOLOGIST K. Ferguson
SITE DESCRIPTION Bridge over Pea Island Breach on NC 12			GROUND WTR (ft)
BORING NO. B-41	STATION 3104+70	OFFSET 0ft CL	ALIGNMENT -L-
COLLAR ELEV. 2.1 ft	TOTAL DEPTH 159.1 ft	NORTHING 715,861	EASTING 3,045,611
DRILL RIG/HAMMER EFF./DATE TER255 DIEDRICH D-50 77% 07/15/2011			DRILL METHOD Mud Rotary
DRILLER TERRACON			HAMMER TYPE Automatic
START DATE 02/13/12		COMP. DATE 02/14/12	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	-76.4	78.5	14	25	26										
-85	-81.4	83.5	7	8	9										
-90	-86.4	88.5	6	9	14										
-95	-91.4	93.5	8	12	20										
-100	-96.4	98.5	8	10	11										
-105	-101.4	103.5	8	9	6										
-110	-106.4	108.5	11	25	22										
-115	-111.4	113.5	14	16	18										
-120	-116.4	118.5	2	4	13										
-125	-121.4	123.5	1	1	2										
-130	-126.4	128.5	3	2	3										
-135	-131.4	133.5	4	4	9										
-140	-136.4	138.5	17	24	25										
-145	-141.4	143.5	12	17	21										
-150	-146.4	148.5	5	12	21										
-155	-151.4	153.5	11	18	25										

NEW NCDOT BORE DOUBLE B-2500 GEO BRDG PEASLAND CATLIN TEMPLATE GDT 2/21/12



# NCDOT GEOTECHNICAL ENGINEERING UNIT

## BORELOG REPORT



SHEET NO.: 58  
 PROJ. NO.: 13201.1028025  
 TIP NO.: B-2500  
 COUNTY: DARE

WBS 13201.1028025	TIP B-2500	COUNTY DARE	GEOLOGIST K. Ferguson
SITE DESCRIPTION Bridge over Pea Island Breach on NC 12			GROUND WTR (ft)
BORING NO. B-41	STATION 3104+70	OFFSET 0ft CL	ALIGNMENT -L-
COLLAR ELEV. 2.1 ft	TOTAL DEPTH 159.1 ft	NORTHING 715,861	EASTING 3,045,611
DRILL RIG/HAMMER EFF./DATE TER255 DIEDRICH D-50 77% 07/15/2011			HAMMER TYPE Automatic
DRILLER TERRACON		START DATE 02/13/12	COMP. DATE 02/14/12
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				
-155													
-156.4	-158.5	90	10/0.1										100/0.6
													-157.0
													159.1

Match Line

Gray, f. to cse. Foss. SAND. V. dense. (continued)

Boring Terminated with Standard Penetration Test Refusal at Elevation -157.0 ft in f. to cse. foss. SAND. Coastal Plain

- Advanced 2 15/16" tricone to 160ft.
- Drilling Mud = 1 bag SW101 & 2 bags Bentonite
- 95ft. NW Casing

WBS 13201.1028025	TIP B-2500	COUNTY DARE	GEOLOGIST K. Ferguson
SITE DESCRIPTION Bridge over Pea Island Breach on NC 12			GROUND WTR (ft)
BORING NO. B-42	STATION 3108+70	OFFSET 0ft CL	ALIGNMENT -L-
COLLAR ELEV. 2.4 ft	TOTAL DEPTH 159.1 ft	NORTHING 716,260	EASTING 3,045,576
DRILL RIG/HAMMER EFF./DATE TER255 DIEDRICH D-50 77% 07/15/2011			HAMMER TYPE Automatic
DRILLER TERRACON		START DATE 02/10/12	COMP. DATE 02/13/12
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				
5													
0	-1.1	3.5	3	2	3					5			2.4
-5	-6.1	8.5	2	2	3					5			
-10	-11.1	13.5	3	4	3					7			
-15	-16.1	18.5	4	4	5					9			
-20	-21.1	23.5	WOH	2	3					5			-19.6
-25	-26.1	28.5	3	3	7					10			-23.6
-30	-31.1	33.5	1	1	1					2			-33.6
-35	-36.1	38.5	3	3	3					6			-43.6
-40	-41.1	43.5	3	5	9					14			-43.6
-45	-46.1	48.5	18	25	29					54			46.0
-50	-51.1	53.5	12	15	19					34			
-55	-56.1	58.5	19	21	16					37			
-60	-61.1	63.5	10	9	18					27			-59.6
-65	-66.1	68.5	24	28	30					58			-63.6
-70	-71.1	73.5	100										62.0
-75													66.0

LAND SURFACE

COASTAL PLAIN

Gray, f. SAND. Poorly graded w/tr. shells. Loose.

Gray, Clayey, f. SAND w/tr. shells. V. loose.

Dark brown, Silty, f. SAND w/tr. org. Odor. Loose to v. loose.

Tan to brown, f. SAND. Poorly graded. Loose to med. dense.

Gray, Silty, f. SAND. V. dense to med. dense.

Gray, Clayey, f. to cse. SAND w/large shell frags. Med. dense.

Light gray, cse. SAND w/shell frags. V. dense.

NEW NCDOT BORE DOUBLE B2500 GEO BRDG PEASLAND\_GEO\_TEMPLATE.GPJ\_CATLIN.GDT 2/21/12



# NCDOT GEOTECHNICAL ENGINEERING UNIT

## BORELOG REPORT



SHEET NO.: 59  
 PROJ. NO.: 13201.1028025  
 TIP NO.: B-2500  
 COUNTY: DARE

WBS 13201.1028025	TIP B-2500	COUNTY DARE	GEOLOGIST K. Ferguson	
SITE DESCRIPTION Bridge over Pea Island Breach on NC 12				GROUND WTR (ft)
BORING NO. B-42	STATION 3108+70	OFFSET 0ft CL	ALIGNMENT -L-	0 HR. 0.9
COLLAR ELEV. 2.4 ft	TOTAL DEPTH 159.1 ft	NORTHING 716,260	EASTING 3,045,576	24 HR. N/A

DRILL RIG/HAMMER EFF./DATE TER255 DIEDRICH D-50 77% 07/15/2011	DRILL METHOD Mud Rotary	HAMMER TYPE Automatic	
DRILLER TERRACON	START DATE 02/10/12	COMP. DATE 02/13/12	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				
-75	-76.1	78.5	12	25	23								
-80	-81.1	83.5	24	33	17								
-85	-86.1	88.5	7	11	12								
-90	-91.1	93.5	6	10	15								
-95	-96.1	98.5	6	7	8								
-100	-101.1	103.5	6	8	9								
-105	-106.1	108.5	18	26	26								
-110	-111.1	113.5	3	2	2								
-115	-116.1	118.5	5	10	13								
-120	-121.1	123.5	1	1	4								
-125	-126.1	128.5	3	4	2								
-130	-131.1	133.5	6	6	16								
-135	-136.1	138.5	20	47	36								
-140	-141.1	143.5	11	10	13								
-145	-146.1	148.5	8	22	24								
-150	-151.1	153.5	13	24	29								

WBS 13201.1028025	TIP B-2500	COUNTY DARE	GEOLOGIST K. Ferguson	
SITE DESCRIPTION Bridge over Pea Island Breach on NC 12				GROUND WTR (ft)
BORING NO. B-42	STATION 3108+70	OFFSET 0ft CL	ALIGNMENT -L-	0 HR. 0.9
COLLAR ELEV. 2.4 ft	TOTAL DEPTH 159.1 ft	NORTHING 716,260	EASTING 3,045,576	24 HR. N/A

DRILL RIG/HAMMER EFF./DATE TER255 DIEDRICH D-50 77% 07/15/2011	DRILL METHOD Mud Rotary	HAMMER TYPE Automatic	
DRILLER TERRACON	START DATE 02/10/12	COMP. DATE 02/13/12	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				
-155	-156.1	158.5	80	20/0.1									

Match Line

Gray, f. SAND. Poorly graded. V. dense. (continued)

Boring Terminated with Standard Penetration Test Refusal at Elevation -156.7 ft in f. SAND. Coastal Plain

- Advanced 2 15/16" tricone to 160ft.
- Drilling Mud = 1 bag SW101 & 2 bags Bentonite
- 90ft. NW Casing

NEW NCDOT BORE DOUBLE B-2500 GEO BRDG PEASISLAND CATLIN-TEMPLATE.GPJ CATLIN.GDT 2/21/12



PROJECT NO.: 13201.1028025 ID.: B-2500		COUNTY: DARE		GEOLOGIST: N/A		DRILL MACHINE: N/A		MAX. DOWN PRESSURE: N/A							
SITE DESCRIPTION: Bridge over Pea Island Breach on NC 12				GROUND WTR (ft)		DRILL METHOD: N/A		CONE TYPE: N/A		DRILLER: N/A					
BORING NO.: B-43		STATION: 3102+70		OFFSET: 0ft CL		ALIGNMENT: -L-		0 HR. N/A		ROD TYPE: N/A		CONE ID: N/A		TECHNICIAN: N/A	
COLLAR ELEV.: 2.6 ft		TOTAL DEPTH: N/A		NORTHING: 716,656		EASTING: 3,045,540		24 HR. N/A		START DATE: N/A		COMP. DATE: N/A		SURFACE WATER DEPTH: N/A	

ELEV (ft)	DEPTH (ft)	FRICITION (tsf)										CONE RESISTANCE (tsf)				FRICITION RATIO (%)				PORE PRESSURE (tsf)				SOIL BEHAVIOR TYPE (Robertson 1986)					EQUIVALENT SPT (N <sub>60%</sub> )				LOG	EQUIVALENT SOIL DESCRIPTION	
		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	6	9	12	0	25	50	75	100		ELEV. (ft)	DEPTH (ft)
2.6		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	6	9	12	0	25	50	75	100				
-2.4	5.0																																		
-7.4	10.0																																		
-12.4	15.0																																		
-17.4	20.0																																		
-22.4	25.0																																		
-27.4	30.0																																		
-32.4	35.0																																		
-37.4	40.0																																		
-42.4	45.0																																		
-47.4	50.0																																		
-52.4	55.0																																		
-57.4	60.0																																		
-62.4	65.0																																		
-67.4	70.0																																		
-72.4	75.0																																		

**INTENTIONALLY  
BLANK**  
  
**UNABLE TO ADVANCE BORING DUE TO  
EXCESSIVE RUBBLE IN SHALLOW  
SUBSURFACE.**



# NCDOT GEOTECHNICAL ENGINEERING UNIT

## BORELOG REPORT



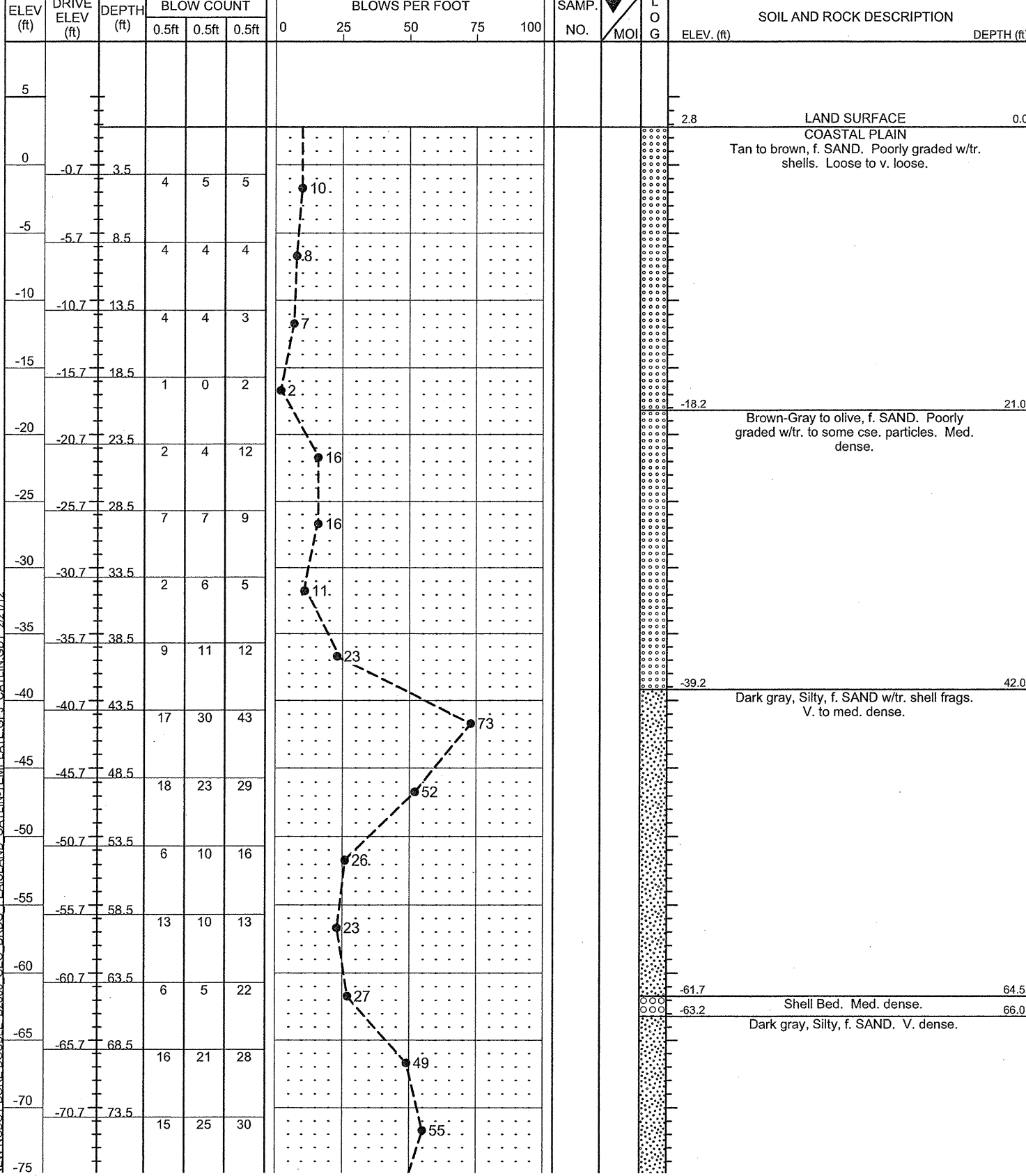
SHEET NO.: 61  
 PROJ. NO.: 13201.1028025  
 TIP NO.: B-2500  
 COUNTY: DARE

WBS 13201.1028025 TIP B-2500 COUNTY DARE GEOLOGIST K. Ferguson

SITE DESCRIPTION Bridge over Pea Island Breach on NC 12 GROUND WTR (ft)  
 BORING NO. B-44 STATION 3116+70 OFFSET 0ft CL ALIGNMENT -L- 0 HR. 1.5  
 COLLAR ELEV. 2.8 ft TOTAL DEPTH 159.3 ft NORTHING 717,055 EASTING 3,045,494 24 HR. N/A

DRILL RIG/HAMMER EFF./DATE TER255 DIEDRICH D-50 77% 07/15/2011 DRILL METHOD Mud Rotary HAMMER TYPE Automatic

DRILLER TERRACON START DATE 02/07/12 COMP. DATE 02/09/12 SURFACE WATER DEPTH N/A



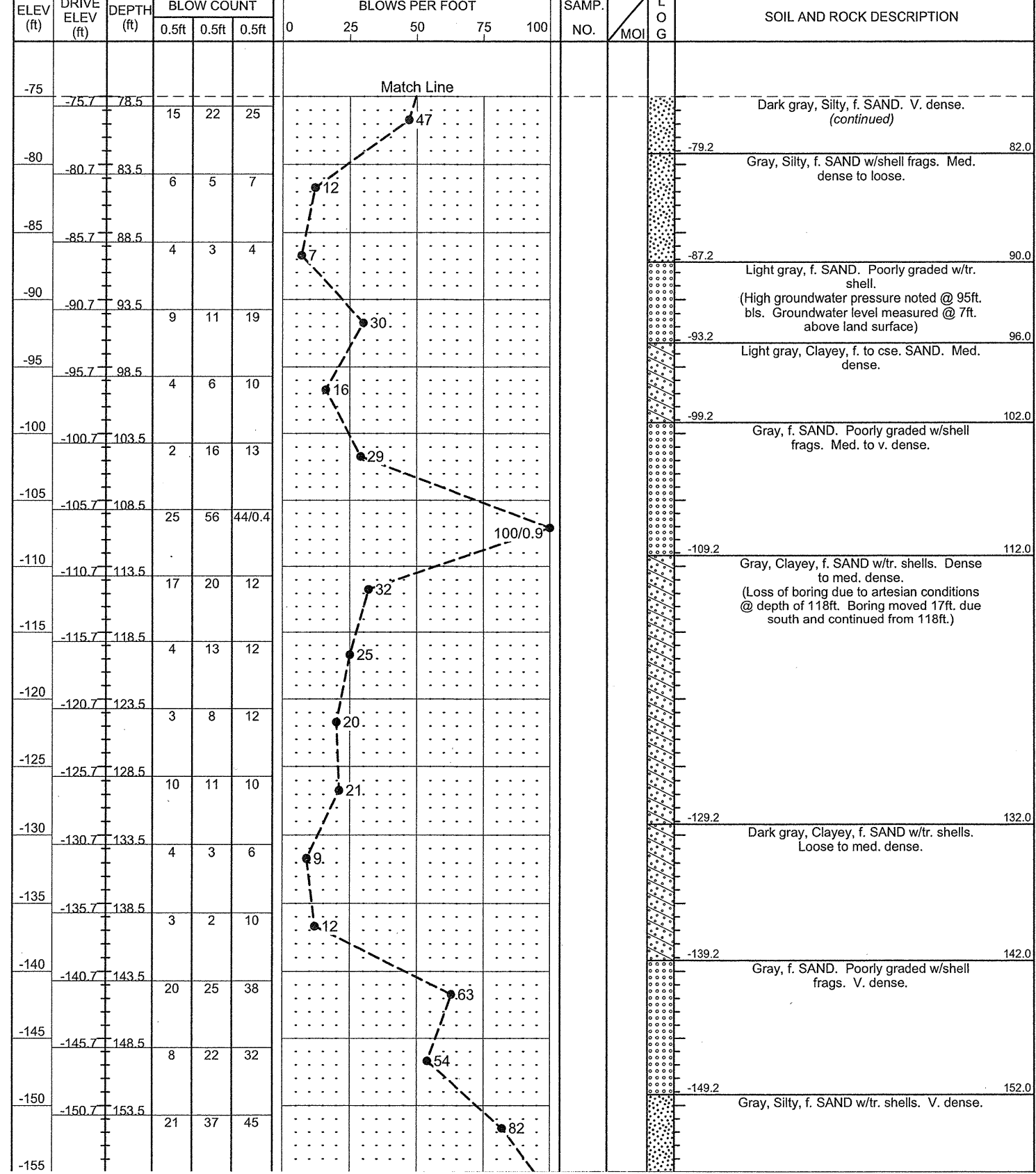
NEW NCDOT BORE DOUBLE B-2500 GEO. BRDG. PEASISLAND.CAT\IN\TEMPLATE.GPJ.CAT\IN.GDT. 2/21/12

WBS 13201.1028025 TIP B-2500 COUNTY DARE GEOLOGIST K. Ferguson

SITE DESCRIPTION Bridge over Pea Island Breach on NC 12 GROUND WTR (ft)  
 BORING NO. B-44 STATION 3116+70 OFFSET 0ft CL ALIGNMENT -L- 0 HR. 1.5  
 COLLAR ELEV. 2.8 ft TOTAL DEPTH 159.3 ft NORTHING 717,055 EASTING 3,045,494 24 HR. N/A

DRILL RIG/HAMMER EFF./DATE TER255 DIEDRICH D-50 77% 07/15/2011 DRILL METHOD Mud Rotary HAMMER TYPE Automatic

DRILLER TERRACON START DATE 02/07/12 COMP. DATE 02/09/12 SURFACE WATER DEPTH N/A



NEW NCDOT BORE DOUBLE B-2500 GEO. BRDG. PEASISLAND.CAT\IN\TEMPLATE.GPJ.CAT\IN.GDT. 2/21/12



# NCDOT GEOTECHNICAL ENGINEERING UNIT

## BORELOG REPORT



SHEET NO.: 62  
 PROJ. NO.: 13201.1028025  
 TIP NO.: B-2500  
 COUNTY: DARE

WBS 13201.1028025	TIP B-2500	COUNTY DARE	GEOLOGIST K. Ferguson	
SITE DESCRIPTION Bridge over Pea Island Breach on NC 12				GROUND WTR (ft)
BORING NO. B-44	STATION 3116+70	OFFSET 0ft CL	ALIGNMENT -L-	0 HR. 1.5
COLLAR ELEV. 2.8 ft	TOTAL DEPTH 159.3 ft	NORTHING 717,055	EASTING 3,045,494	24 HR. N/A

DRILL RIG/HAMMER EFF./DATE TER255 DIEDRICH D-50 77% 07/15/2011 DRILL METHOD Mud Rotary HAMMER TYPE Automatic

DRILLER TERRACON START DATE 02/07/12 COMP. DATE 02/09/12 SURFACE WATER DEPTH N/A

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT					SAMP. NO.	LOG MOI	LOG G	SOIL AND ROCK DESCRIPTION	DEPTH (ft)
			0.5ft	0.5ft	0.5ft	0	25	50	75	100					

-155 Match Line

-155.5 158.5 53 47/0.3 100/0.8 -156.5 Gray, Silty, f. SAND w/tr. shells. V. dense. (continued) 159.3

Boring Terminated with Standard Penetration Test Refusal at Elevation -156.5 ft in Silty, f. SAND. Coastal Plain  
 1. Advanced 2 15/16" tricone to 160ft.  
 2. Drilling Mud = 2 bags SW101 & 3 bags Bentonite  
 3. 120ft. NW Casing

WBS 13201.1028025	TIP B-2500	COUNTY DARE	GEOLOGIST K. Ferguson	
SITE DESCRIPTION Bridge over Pea Island Breach on NC 12				GROUND WTR (ft)
BORING NO. B-45	STATION 3120+70	OFFSET 0ft CL	ALIGNMENT -L-	0 HR. 1.4
COLLAR ELEV. 2.4 ft	TOTAL DEPTH 160.0 ft	NORTHING 717,447	EASTING 3,045,418	24 HR. N/A

DRILL RIG/HAMMER EFF./DATE TER255 DIEDRICH D-50 77% 07/15/2011 DRILL METHOD Mud Rotary HAMMER TYPE Automatic

DRILLER TERRACON START DATE 02/06/12 COMP. DATE 02/07/12 SURFACE WATER DEPTH N/A

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT					SAMP. NO.	LOG MOI	LOG G	SOIL AND ROCK DESCRIPTION	DEPTH (ft)
			0.5ft	0.5ft	0.5ft	0	25	50	75	100					

5

0 -1.1 3.5 4 5 4 9

-5 -6.1 8.5 3 2 3 5

-10 -11.1 13.5 2 3 4 7

-15 -16.1 18.5 4 5 4 9

-20 -21.1 23.5 8 9 6 15

-25 -26.1 28.5 4 4 3 7

-30 -31.1 33.5 4 6 10 16

-35 -36.1 38.5 3 4 6 10

-40 -41.1 43.5 10 16 21 37

-45 -46.1 48.5 20 27 29 56

-50 -51.1 53.5 13 14 10 24

-55 -56.1 58.5 4 6 12 18

-60 -61.1 63.5 12 43 30 73

-65 -66.1 68.5 17 20 25 45

-70 -71.1 73.5 18 25 33 58

-75

2.4 LAND SURFACE COASTAL PLAIN

Light gray to brown, f. SAND. Poorly graded. Loose.

-13.6 Dark gray, Clayey, f. SAND. Loose. 16.0

-19.6 Gray to tan, f. SAND. Poorly graded. Med. dense to loose. 22.0

-39.6 Gray, f. SAND. Poorly graded. Dense to v. dense. 42.0

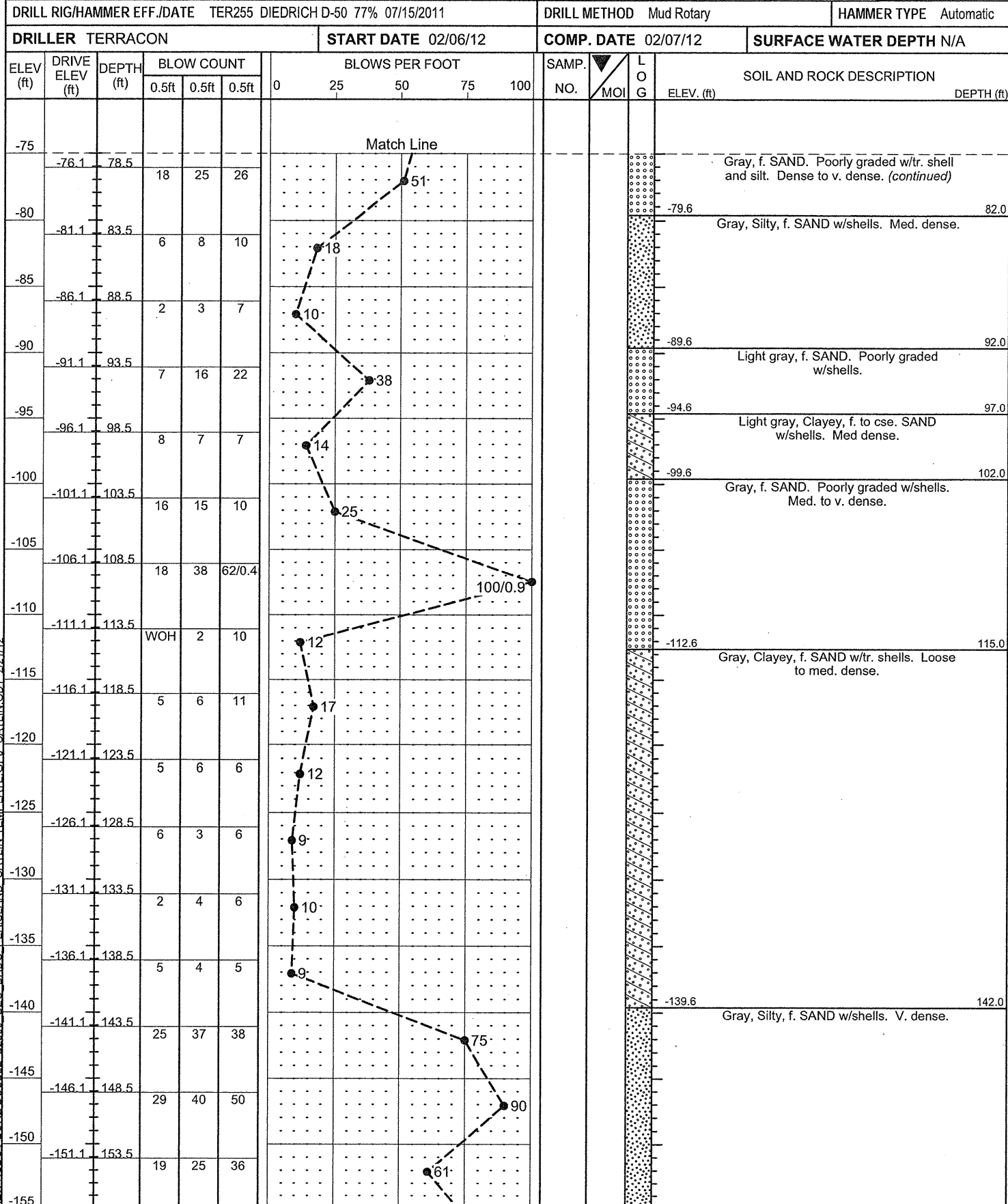
-49.6 Dark gray, Silty, f. SAND. Med. dense. 52.0

-60.6 Shell Bed 63.0

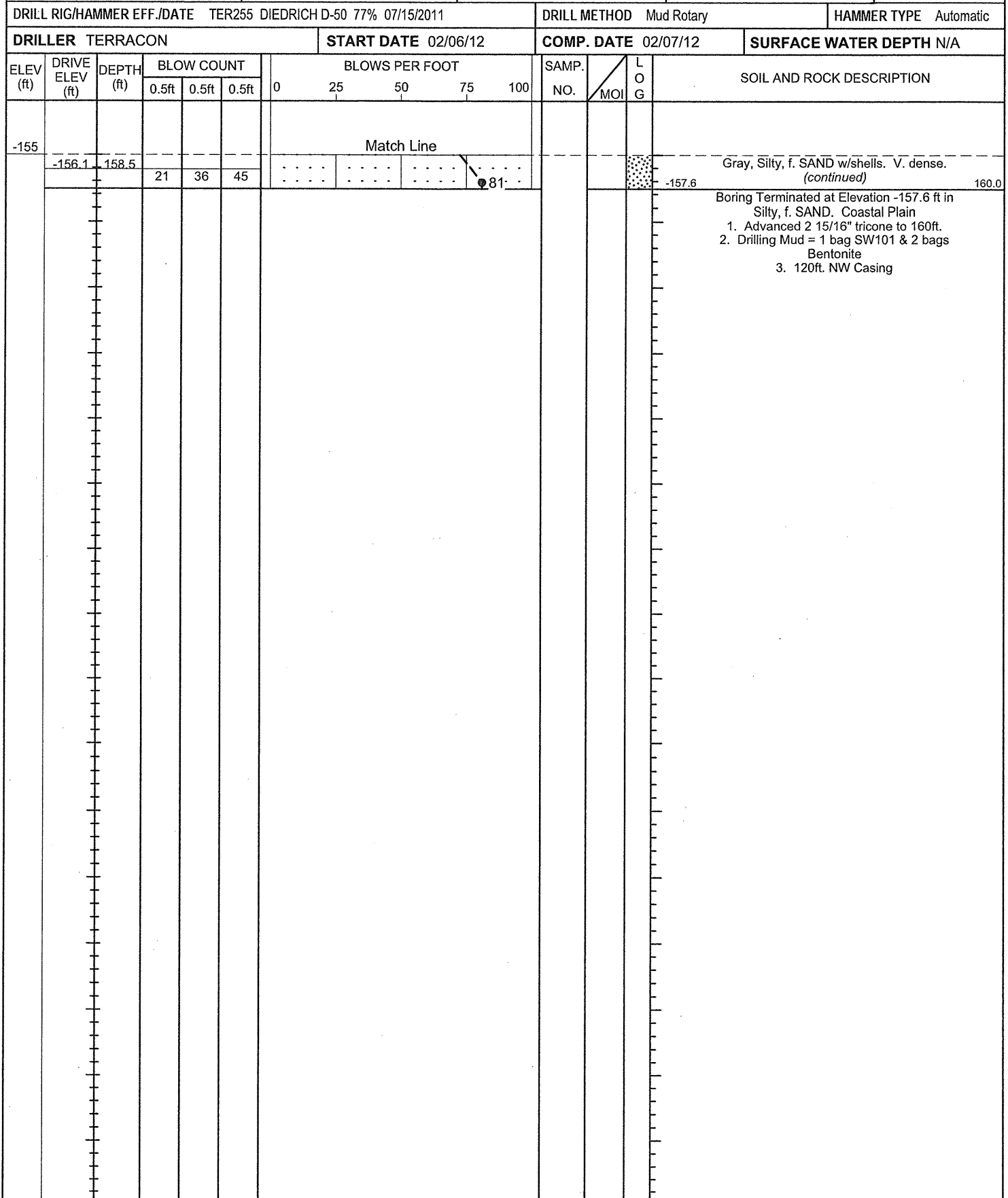
-62.6 Gray, f. SAND. Poorly graded w/tr. shell and silt. Dense to v. dense. 65.0

NEW NCDOT BORE DOUBLE B2500\_GEO\_BRDG\_PEAISLAND\_CATLIN TEMPLATE.GPJ CATLIN.GDT 2/21/12

WBS 13201.1028025	TIP B-2500	COUNTY DARE	GEOLOGIST K. Ferguson
SITE DESCRIPTION Bridge over Pea Island Breach on NC 12			GROUND WTR (ft)
BORING NO. B-45	STATION 3120+70	OFFSET 0ft CL	ALIGNMENT -L-
COLLAR ELEV. 2.4 ft	TOTAL DEPTH 160.0 ft	NORTHING 717,447	EASTING 3,045,418
DRILL RIG/HAMMER EFF./DATE TER255 DIEDRICH D-50 77% 07/15/2011			HAMMER TYPE Automatic
DRILLER TERRACON		START DATE 02/06/12	COMP. DATE 02/07/12
		SURFACE WATER DEPTH N/A	

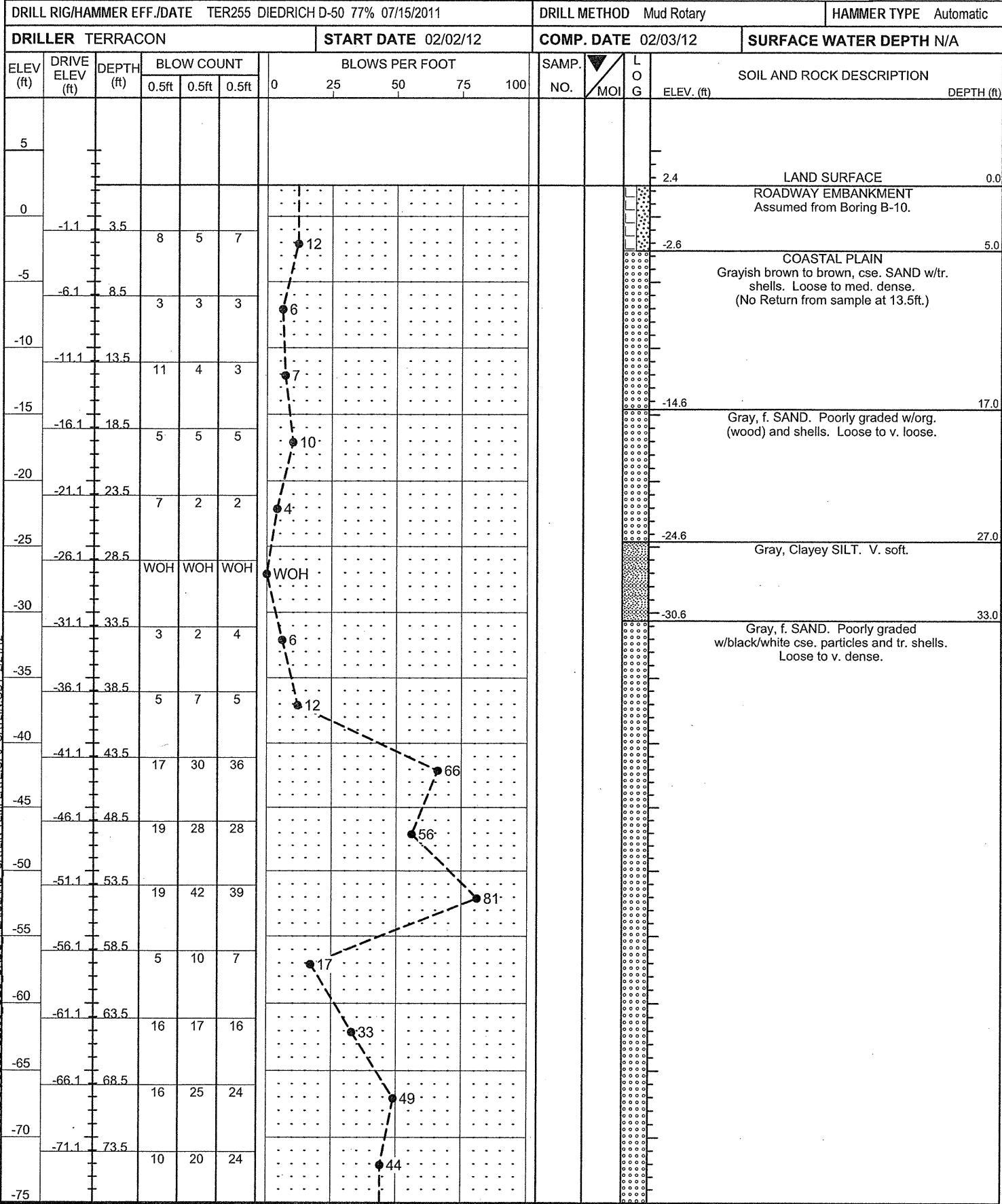


WBS 13201.1028025	TIP B-2500	COUNTY DARE	GEOLOGIST K. Ferguson
SITE DESCRIPTION Bridge over Pea Island Breach on NC 12			GROUND WTR (ft)
BORING NO. B-45	STATION 3120+70	OFFSET 0ft CL	ALIGNMENT -L-
COLLAR ELEV. 2.4 ft	TOTAL DEPTH 160.0 ft	NORTHING 717,447	EASTING 3,045,418
DRILL RIG/HAMMER EFF./DATE TER255 DIEDRICH D-50 77% 07/15/2011			HAMMER TYPE Automatic
DRILLER TERRACON		START DATE 02/06/12	COMP. DATE 02/07/12
		SURFACE WATER DEPTH N/A	

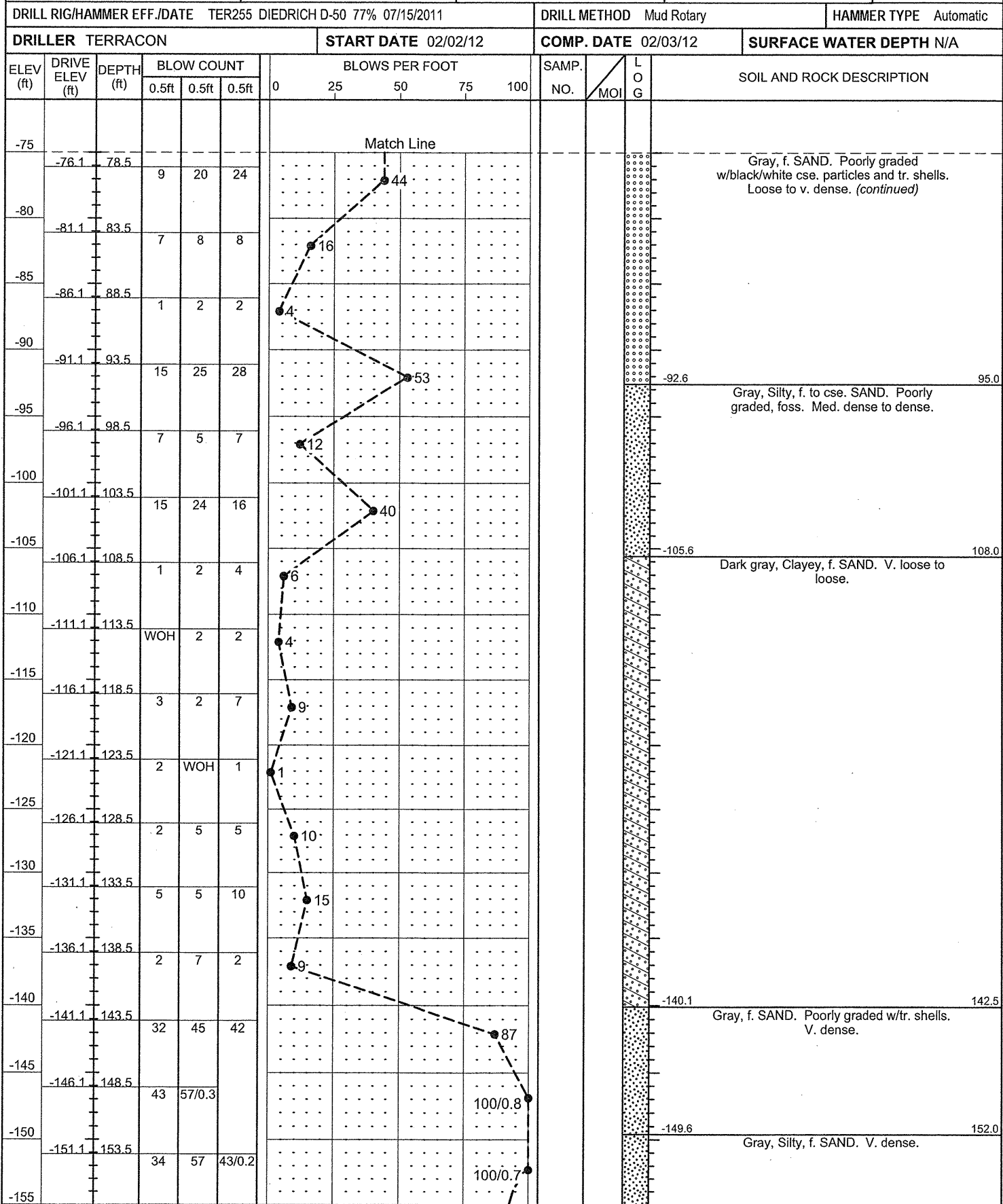


NEW NCDOT BORE DOUBLE B2500 GEO BRDG PEASLAND CATLIN TEMPLATE.GPJ CATLIN.GDT 2/21/12

WBS 13201.1028025	TIP B-2500	COUNTY DARE	GEOLOGIST K. Ferguson
SITE DESCRIPTION Bridge over Pea Island Breach on NC 12			GROUND WTR (ft)
BORING NO. B-46	STATION 3124+70	OFFSET 0ft CL	ALIGNMENT -L-
COLLAR ELEV. 2.4 ft	TOTAL DEPTH 160.0 ft	NORTHING 717,839	EASTING 3,045,332
DRILL RIG/HAMMER EFF./DATE TER255 DIEDRICH D-50 77% 07/15/2011			HAMMER TYPE Automatic
DRILLER TERRACON		START DATE 02/02/12	COMP. DATE 02/03/12
		SURFACE WATER DEPTH N/A	



WBS 13201.1028025	TIP B-2500	COUNTY DARE	GEOLOGIST K. Ferguson
SITE DESCRIPTION Bridge over Pea Island Breach on NC 12			GROUND WTR (ft)
BORING NO. B-46	STATION 3124+70	OFFSET 0ft CL	ALIGNMENT -L-
COLLAR ELEV. 2.4 ft	TOTAL DEPTH 160.0 ft	NORTHING 717,839	EASTING 3,045,332
DRILL RIG/HAMMER EFF./DATE TER255 DIEDRICH D-50 77% 07/15/2011			HAMMER TYPE Automatic
DRILLER TERRACON		START DATE 02/02/12	COMP. DATE 02/03/12
		SURFACE WATER DEPTH N/A	



NEW NCDOT BORE DOUBLE B2500 GEO BRDG PEASLAND CATIN TEMPLATE.GPJ CATIN.GDI 2/21/12





# NCDOT GEOTECHNICAL ENGINEERING UNIT

## BORELOG REPORT



SHEET NO.: 65  
 PROJ. NO.: 13201.1028025  
 TIP NO.: B-2500  
 COUNTY: DARE

WBS 13201.1028025	TIP B-2500	COUNTY DARE	GEOLOGIST K. Ferguson	
SITE DESCRIPTION Bridge over Pea Island Breach on NC 12				GROUND WTR (ft)
BORING NO. B-46	STATION 3124+70	OFFSET 0ft CL	ALIGNMENT -L-	0 HR. 2.0
COLLAR ELEV. 2.4 ft	TOTAL DEPTH 160.0 ft	NORTHING 717,839	EASTING 3,045,332	24 HR. N/A

DRILL RIG/HAMMER EFF./DATE TER255 DIEDRICH D-50 77% 07/15/2011	DRILL METHOD Mud Rotary	HAMMER TYPE Automatic
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DRILLER TERRACON	START DATE 02/02/12	COMP. DATE 02/03/12	SURFACE WATER DEPTH N/A
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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				

-155															
	-156.1	-158.5	37	36	51										

Match Line

Gray, Silty, f. SAND. V. dense. (continued)

Boring Terminated at Elevation -157.6 ft in Silty, f. SAND. Coastal Plain

- Advanced 2 15/16" tricone to 160ft.
- Drilling Mud = 1 bag SW101 & 2 bags Bentonite
- 75ft. NW Casing

WBS 13201.1028025	TIP B-2500	COUNTY DARE	GEOLOGIST K. Ferguson	
SITE DESCRIPTION Bridge over Pea Island Breach on NC 12				GROUND WTR (ft)
BORING NO. B-47	STATION 3128+70	OFFSET 0ft CL	ALIGNMENT -L-	0 HR. 1.4
COLLAR ELEV. 2.1 ft	TOTAL DEPTH 165.0 ft	NORTHING 718,232	EASTING 3,045,251	24 HR. N/A

DRILL RIG/HAMMER EFF./DATE TER255 DIEDRICH D-50 77% 07/15/2011	DRILL METHOD Mud Rotary	HAMMER TYPE Automatic
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DRILLER TERRACON	START DATE 02/01/12	COMP. DATE 02/01/12	SURFACE WATER DEPTH N/A
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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	-1.4	3.5	6	7	8										
-5	-6.4	8.5	2	3	4										
-10	-11.4	13.5	3	4	5										
-15	-16.4	18.5	2	6	3										
-20	-21.4	23.5	7	10	12										
-25	-26.4	28.5	7	10	11										
-30	-31.4	33.5	4	6	7										
-35	-36.4	38.5	3	4	3										
-40	-41.4	43.5	18	23	26										
-45	-46.4	48.5	20	26	31										
-50	-51.4	53.5	20	21	23										
-55	-56.4	58.5	11	7	4										
-60	-61.4	63.5	6	15	16										
-65	-66.4	68.5	18	22	22										
-70	-71.4	73.5	17	25	29										
-75															

2.1 LAND SURFACE

COASTAL PLAIN

Tan to gray, f. SAND. Poorly graded w/tr. shells. Med dense to loose.

15

7

9

9

22

21

13

7

49

57

44

11

31

44

54

-19.9 Dark brown, f. SAND. Poorly graded. Med. dense. 22.0

-34.9 Gray, f. SAND. Poorly graded w/tr. shell. Loose. 37.0

-38.9 Gray, Silty, f. SAND w/tr. shell. Poorly graded. Dense. 41.0

-54.4 Gray, Silty, f. SAND. Poorly graded. Med dense. to dense. 56.5

-64.9 Gray, f. SAND. Poorly graded w/tr. shells. Dense to v. dense. 67.0

NEW NCDOT BORE DOUBLE B2500 GEO BRDG PEASLAND CATLIN TEMPLATE.GPJ CATLIN.GDI 2/21/12

WBS 13201.1028025	TIP B-2500	COUNTY DARE	GEOLOGIST K. Ferguson	
SITE DESCRIPTION Bridge over Pea Island Breach on NC 12				GROUND WTR (ft)
BORING NO. B-47	STATION 3128+70	OFFSET 0ft CL	ALIGNMENT -L-	0 HR. 1.4
COLLAR ELEV. 2.1 ft	TOTAL DEPTH 165.0 ft	NORTHING 718,232	EASTING 3,045,251	24 HR. N/A

DRILL RIG/HAMMER EFF./DATE TER255 DIEDRICH D-50 77% 07/15/2011 DRILL METHOD Mud Rotary HAMMER TYPE Automatic

DRILLER TERRACON START DATE 02/01/12 COMP. DATE 02/01/12 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	-76.4	78.5	13	20	23								Gray, f. SAND. Poorly graded w/tr. shells. Dense to v. dense. (continued)	
-80	-81.4	83.5	6	6	7								Gray, Silty, f. SAND w/tr. shells. Med. dense to v. loose.	82.0
-85	-86.4	88.5	1	1	1								Gray, f. SAND. Poorly graded w/tr. shell. Dense.	92.0
-90	-91.4	93.5	8	15	17								Light gray, Silty SAND. High shell content. Med. dense.	97.0
-95	-96.4	98.5	4	7	9								Gray, f. SAND. Poorly graded w/shell frags. Dense to v. dense.	102.0
-100	-101.4	103.5	18	22	17								Dark gray, Silty, f. SAND w/shell frags. Med. dense.	114.0
-105	-106.4	108.5	15	21	31								Gray, Clayey, f. SAND w/tr. shell frags. V. loose.	137.0
-110	-111.4	113.5	26	14	11								Gray, Silty, f. SAND w/shells. V. dense.	142.0
-115	-116.4	118.5	7	6	9								Grayish brown, Sandy CLAY. Hard.	147.0
-120	-121.4	123.5	5	10	12								Gray, Silty, f. SAND w/shell frags. V. dense.	152.0
-125	-126.4	128.5	3	7	13								Gray, Silty, f. SAND w/shell frags. V. dense.	157.0
-130	-131.4	133.5	6	10	7									
-135	-136.4	138.5	1	0	2									
-140	-141.4	143.5	10	17	36									
-145	-146.4	148.5	28	31	28									
-150	-151.4	153.5	33	65	39/0.2									
-155														100/0.7

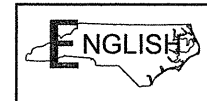
WBS 13201.1028025	TIP B-2500	COUNTY DARE	GEOLOGIST K. Ferguson	
SITE DESCRIPTION Bridge over Pea Island Breach on NC 12				GROUND WTR (ft)
BORING NO. B-47	STATION 3128+70	OFFSET 0ft CL	ALIGNMENT -L-	0 HR. 1.4
COLLAR ELEV. 2.1 ft	TOTAL DEPTH 165.0 ft	NORTHING 718,232	EASTING 3,045,251	24 HR. N/A

DRILL RIG/HAMMER EFF./DATE TER255 DIEDRICH D-50 77% 07/15/2011 DRILL METHOD Mud Rotary HAMMER TYPE Automatic

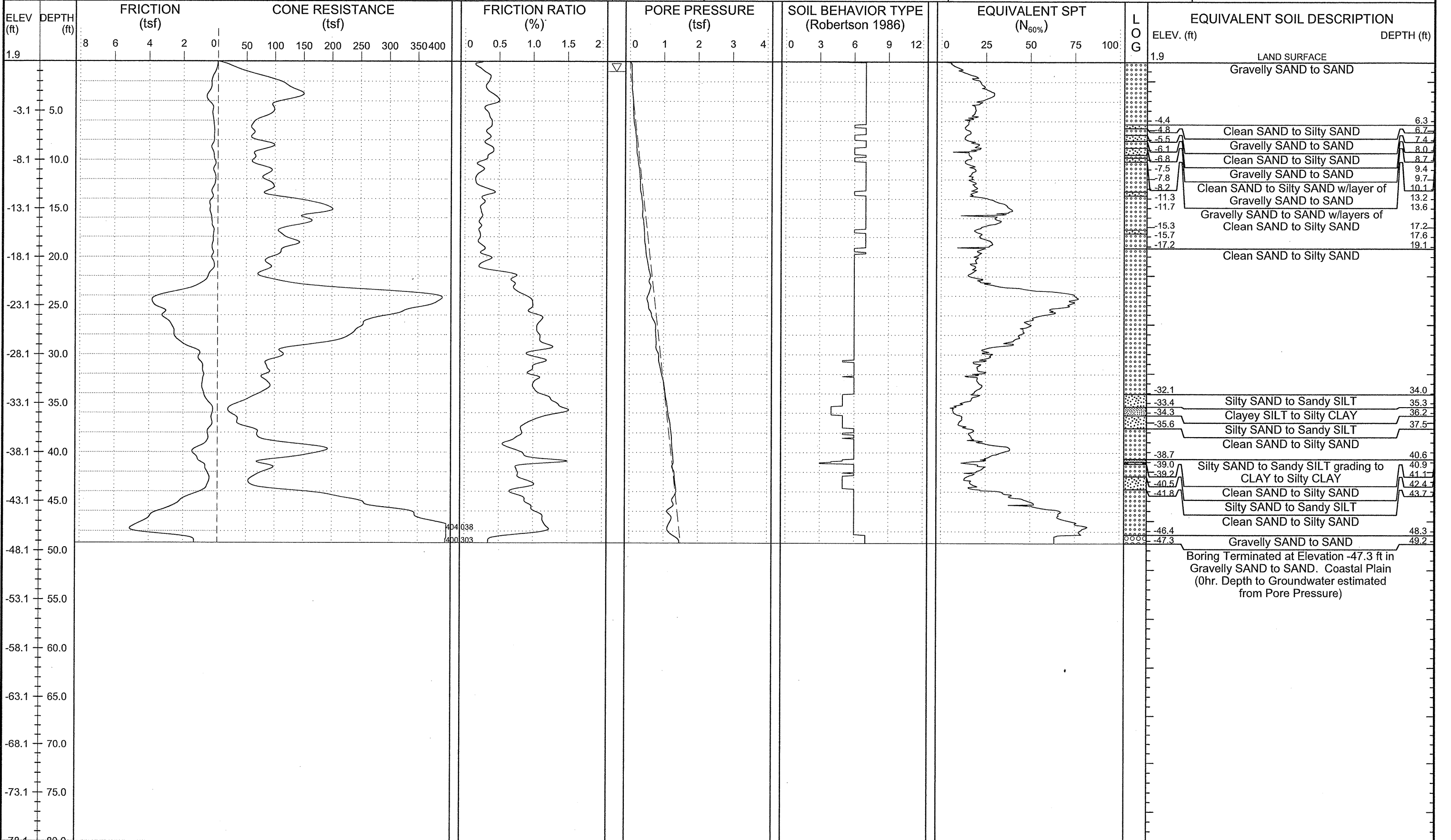
DRILLER TERRACON START DATE 02/01/12 COMP. DATE 02/01/12 SURFACE WATER DEPTH N/A

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				
-155	-156.4	158.5	7	4	7								Gray to grayish brown, CLAY. Stiff to med. stiff. (continued)	
-160	-161.4	163.5	2	2	4								Boring Terminated at Elevation -162.9 ft in med. stiff CLAY. Coastal Plain	165.0
													1. Advanced 2 15/16" tricone to 160ft.	
													2. Drilling Mud = 1 bag SW101 & 2 bags Bentonite	
													3. 85ft. NW Casing	

NEW NCDOT BORE DOUBLE B-2500 GEO. BRDG. PEASLAND CATLIN TEMPLATE.GPJ CATLIN.GDT 2/21/12



PROJECT NO.: 13201.1028025 ID: B-2500		COUNTY: DARE		GEOLOGIST: Steven Hudson		DRILL MACHINE: Pagani 73-200		MAX. DOWN PRESSURE: 20 Ton			
SITE DESCRIPTION: Bridge over Pea Island Breach on NC 12				GROUND WTR (ft)		DRILL METHOD: CPT / DPT		CONE TYPE: Geotech AB		DRILLER: WPC/TERRACON	
BORING NO.: B-48		STATION: 3132+70		OFFSET: 4ft LT		ALIGNMENT: -L-		0 HR. 1.0		ROD TYPE: 1.5" Vertek Speeklock	
COLLAR ELEV.: 1.9 ft		TOTAL DEPTH: 49.2 ft		NORTHING: 718,622		EASTING: 3,045,168		24 HR. N/A		START DATE: 01/31/12	
								COMP. DATE: 01/31/12		SURFACE WATER DEPTH: N/A	





# NCDOT GEOTECHNICAL ENGINEERING UNIT

## BORELOG REPORT



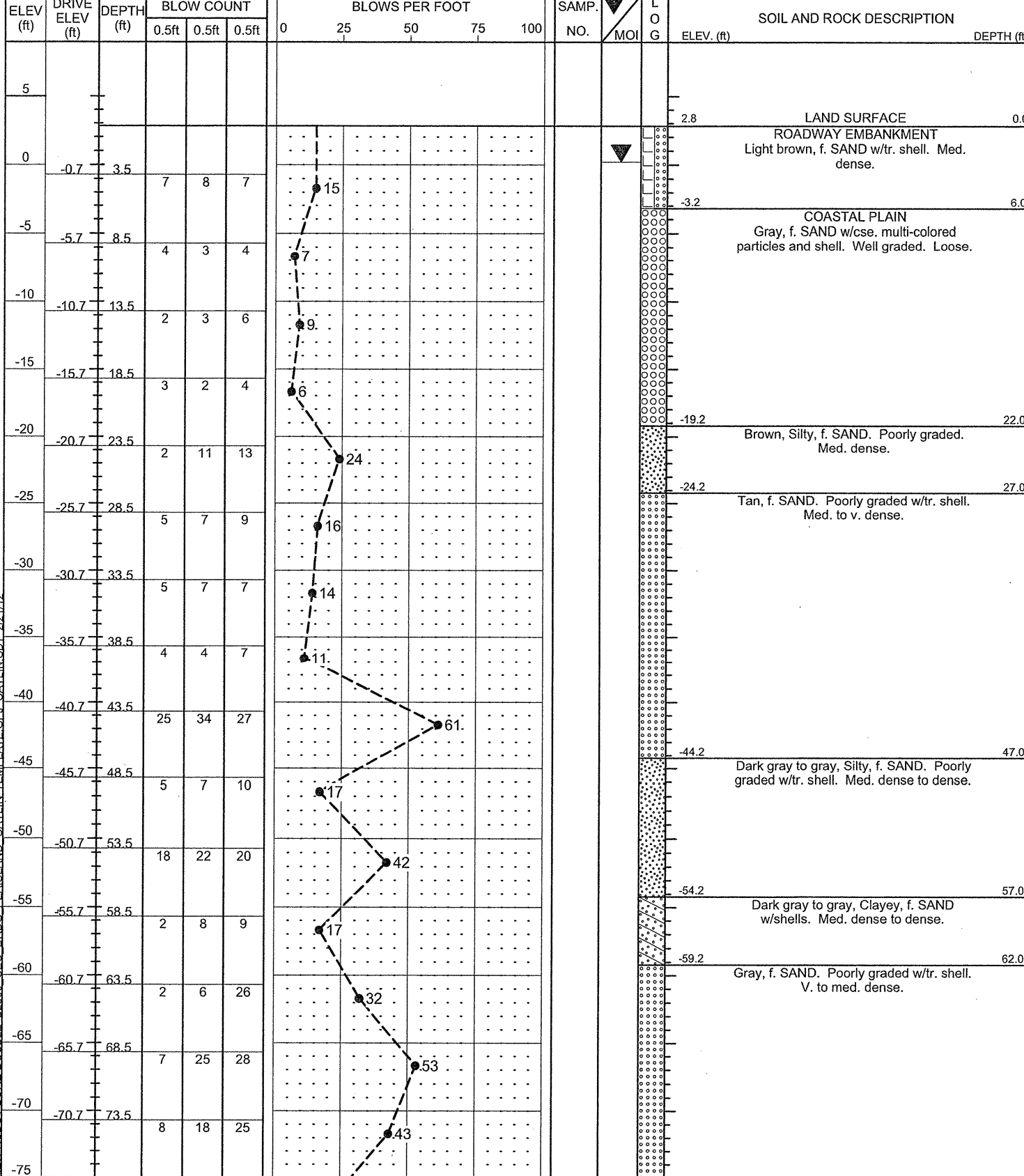
SHEET NO.: 68  
 PROJ. NO.: 13201.1028025  
 TIP NO.: B-2500  
 COUNTY: DARE

WBS 13201.1028025 TIP B-2500 COUNTY DARE GEOLOGIST K. Ferguson

SITE DESCRIPTION Bridge over Pea Island Breach on NC 12 GROUND WTR (ft)  
 BORING NO. B-49 STATION 3136+70 OFFSET 0ft CL ALIGNMENT -L- 0 HR. N/A  
 COLLAR ELEV. 2.8 ft TOTAL DEPTH 159.0 ft NORTHING 719,013 EASTING 3,045,083 24 HR. 2.6 Caved

DRILL RIG/HAMMER EFF./DATE TER255 DIEDRICH D-50 77% 07/15/2011 DRILL METHOD Mud Rotary HAMMER TYPE Automatic

DRILLER TERRACON START DATE 01/30/12 COMP. DATE 02/01/12 SURFACE WATER DEPTH N/A

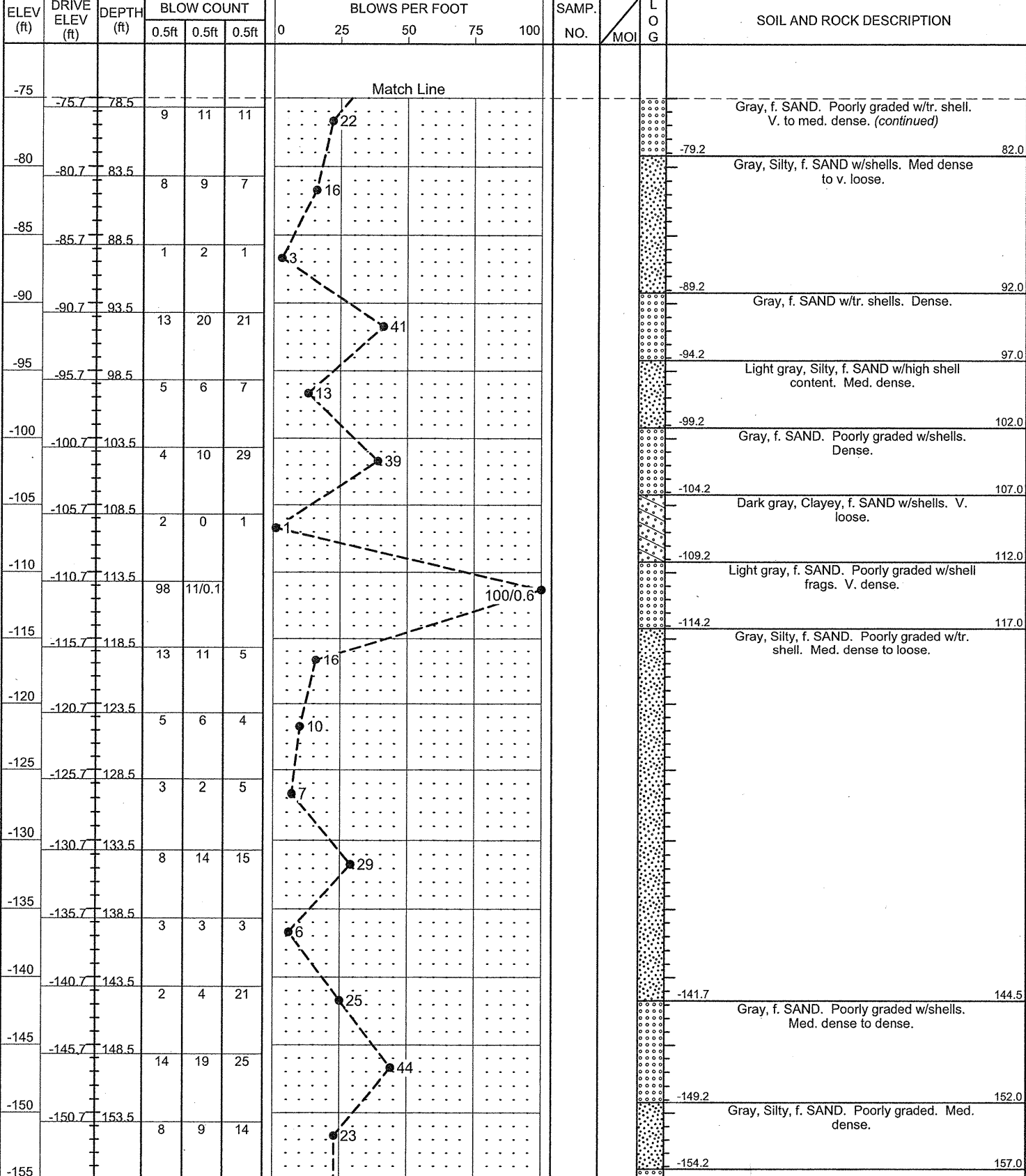


WBS 13201.1028025 TIP B-2500 COUNTY DARE GEOLOGIST K. Ferguson

SITE DESCRIPTION Bridge over Pea Island Breach on NC 12 GROUND WTR (ft)  
 BORING NO. B-49 STATION 3136+70 OFFSET 0ft CL ALIGNMENT -L- 0 HR. N/A  
 COLLAR ELEV. 2.8 ft TOTAL DEPTH 159.0 ft NORTHING 719,013 EASTING 3,045,083 24 HR. 2.6 Caved

DRILL RIG/HAMMER EFF./DATE TER255 DIEDRICH D-50 77% 07/15/2011 DRILL METHOD Mud Rotary HAMMER TYPE Automatic

DRILLER TERRACON START DATE 01/30/12 COMP. DATE 02/01/12 SURFACE WATER DEPTH N/A



NEW NCDOT BORE DOUBLE B-2500 GEO. BRDG. PEASISLAND CATLIN TEMPLATE.GPJ CATLIN.GDT 2/2/12



# NCDOT GEOTECHNICAL ENGINEERING UNIT

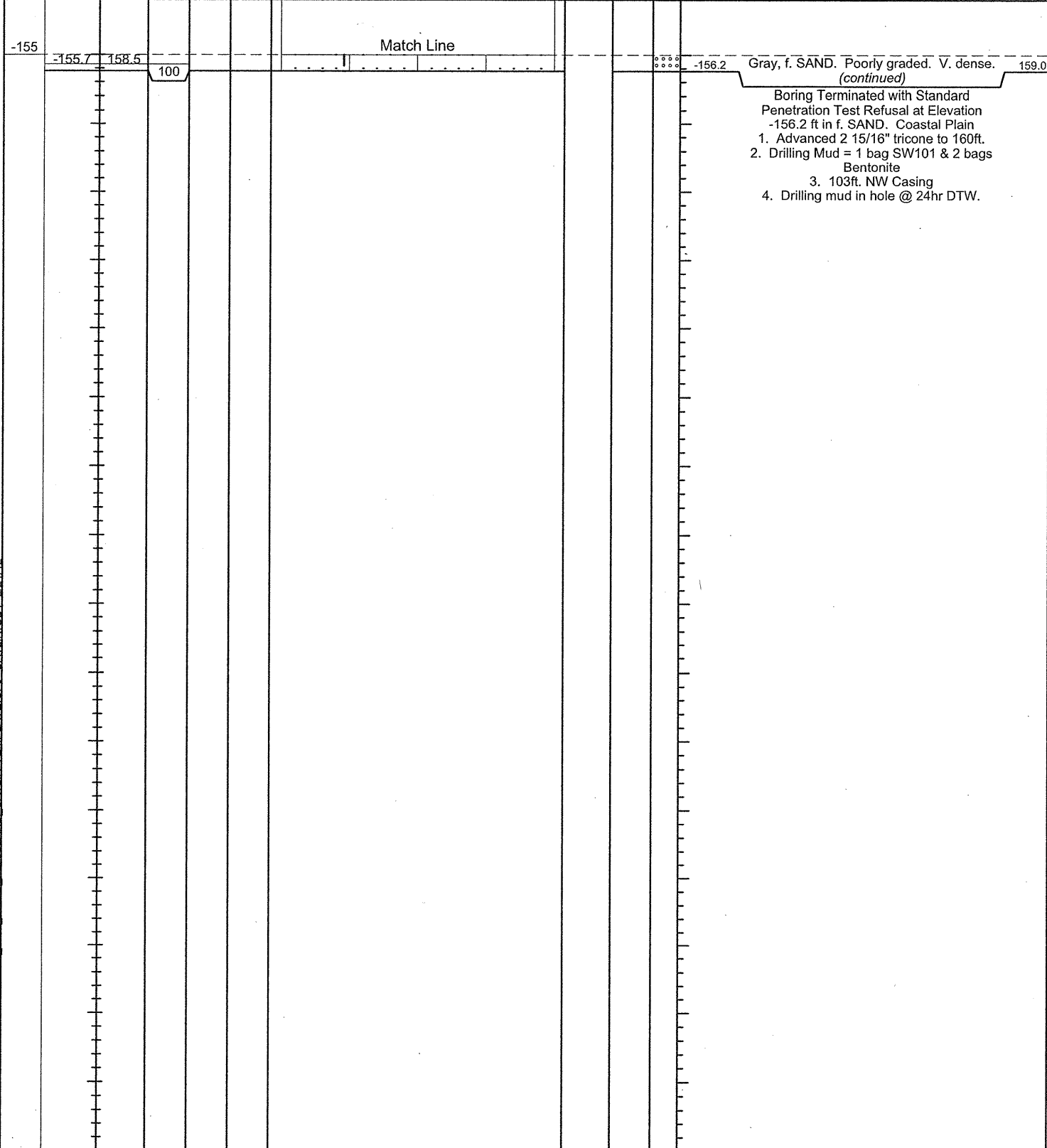
## BORELOG REPORT



SHEET NO.: 69  
 PROJ. NO.: 13201.1028025  
 TIP NO.: B-2500  
 COUNTY: DARE

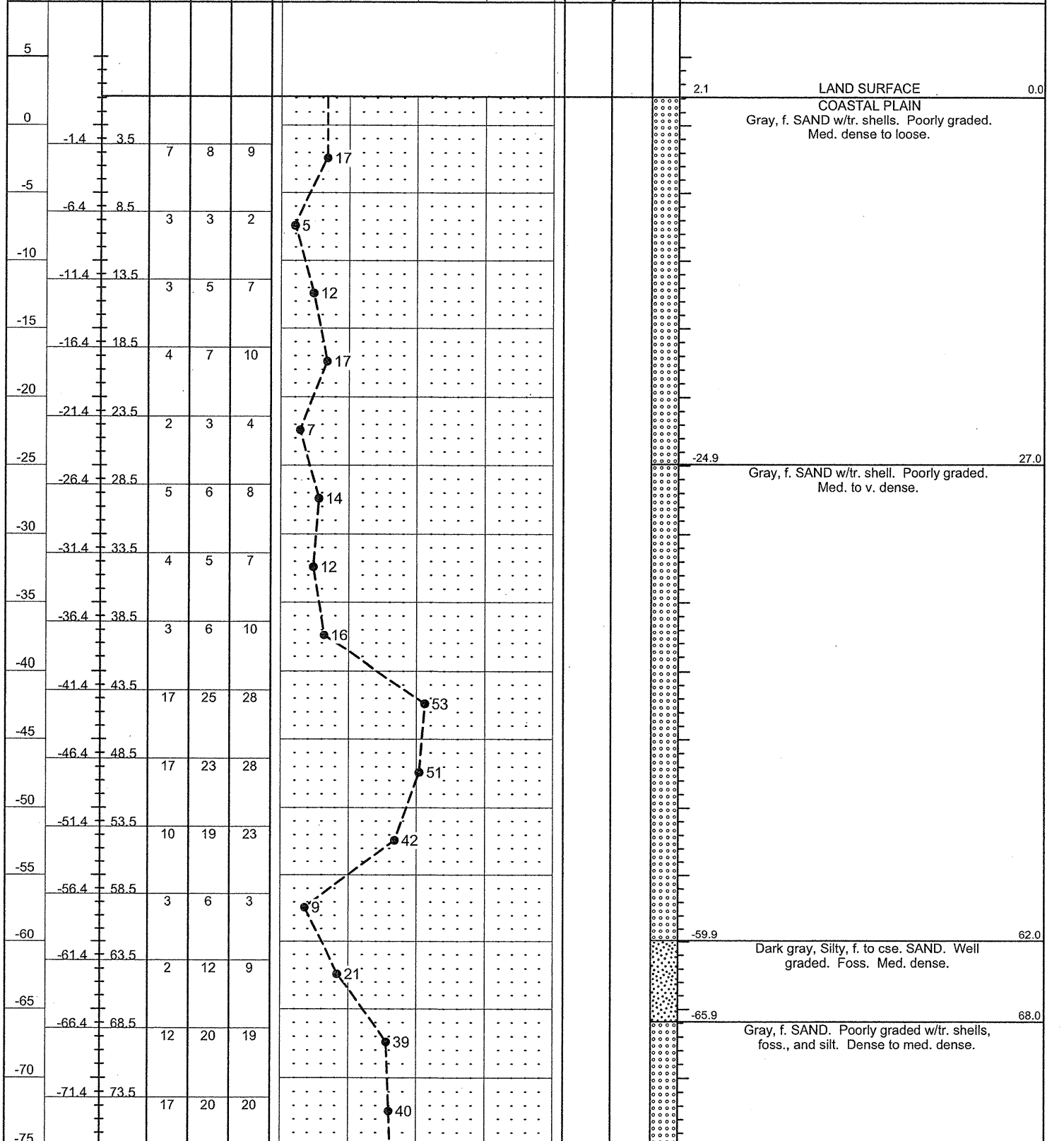
WBS 13201.1028025	TIP B-2500	COUNTY DARE	GEOLOGIST K. Ferguson
SITE DESCRIPTION Bridge over Pea Island Breach on NC 12			GROUND WTR (ft)
BORING NO. B-49	STATION 3136+70	OFFSET 0ft CL	ALIGNMENT -L-
COLLAR ELEV. 2.8 ft	TOTAL DEPTH 159.0 ft	NORTHING 719,013	EASTING 3,045,083
DRILL RIG/HAMMER EFF./DATE TER255 DIEDRICH D-50 77% 07/15/2011			HAMMER TYPE Automatic
DRILLER TERRACON		START DATE 01/30/12	COMP. DATE 02/01/12
SURFACE WATER DEPTH N/A			

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT				SAMP. NO.	MOI	L O G	SOIL AND ROCK DESCRIPTION	DEPTH (ft)
			0.5ft	0.5ft	0.5ft	0	25	50	75					



WBS 13201.1028025	TIP B-2500	COUNTY DARE	GEOLOGIST K. Ferguson
SITE DESCRIPTION Bridge over Pea Island Breach on NC 12			GROUND WTR (ft)
BORING NO. B-50	STATION 3140+72	OFFSET 5ft RT	ALIGNMENT -L-
COLLAR ELEV. 2.1 ft	TOTAL DEPTH 158.9 ft	NORTHING 719,406	EASTING 3,045,000
DRILL RIG/HAMMER EFF./DATE TER255 DIEDRICH D-50 77% 07/15/2011			HAMMER TYPE Automatic
DRILLER TERRACON		START DATE 01/28/12	COMP. DATE 01/30/12
SURFACE WATER DEPTH N/A			

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT				SAMP. NO.	MOI	L O G	SOIL AND ROCK DESCRIPTION	DEPTH (ft)
			0.5ft	0.5ft	0.5ft	0	25	50	75					



NEW NCDOT BORE DOUBLE B2500\_GEO\_BRDG\_PEAISLAND\_CATLIN\_TEMPLATE.GPJ\_CATLIN.GDT 2/21/12







# NCDOT GEOTECHNICAL ENGINEERING UNIT

## BORELOG REPORT



SHEET NO.: 72  
 PROJ. NO.: 13201.1028025  
 TIP NO.: B-2500  
 COUNTY: DARE

WBS 13201.1028025 TIP B-2500 COUNTY DARE GEOLOGIST K. Ferguson

SITE DESCRIPTION Bridge over Pea Island Breach on NC 12 GROUND WTR (ft)

BORING NO. B-51 STATION 3144+72 OFFSET 16ft RT ALIGNMENT -L- 0 HR. 1.5

COLLAR ELEV. 2.5 ft TOTAL DEPTH 159.0 ft NORTHING 719,800 EASTING 3,044,927 24 HR. 1.8

DRILL RIG/HAMMER EFF./DATE TER255 DIEDRICH D-50 77% 07/15/2011 DRILL METHOD Mud Rotary HAMMER TYPE Automatic

DRILLER TERRACON START DATE 01/26/12 COMP. DATE 01/28/12 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				

-155 Match Line

-156.0 -158.5 100/0.5 100/0.5 -156.5 159.0

Boring Terminated with Standard Penetration Test Refusal at Elevation -156.5 ft in f. to cse. SAND w/foss. frags. Coastal Plain  
 1. Advanced 2 15/16" tricone to 160ft.  
 2. Drilling Mud = 1 bag SW101 & 2 bags Bentonite  
 3. 90ft. NW Casing  
 4. Drilling mud in hole @ 0hr. DTW

WBS 13201.1028025 TIP B-2500 COUNTY DARE GEOLOGIST Tom Stetler

SITE DESCRIPTION Bridge over Pea Island Breach on NC 12 GROUND WTR (ft)

BORING NO. B-52 STATION 3148+71 OFFSET 10ft RT ALIGNMENT -L- 0 HR. 0.9

COLLAR ELEV. 2.5 ft TOTAL DEPTH 160.1 ft NORTHING 720,188 EASTING 3,044,837 24 HR. 1.1

DRILL RIG/HAMMER EFF./DATE CAT1314 CME-45B 92% 11/16/2011 DRILL METHOD Mud Rotary HAMMER TYPE Automatic

DRILLER CATLIN START DATE 02/10/12 COMP. DATE 02/13/12 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

2.5 0.0 1 2 5 7

0 -2.7 5.2 3 3 4 7

-5 -6.5 9.0 2 3 3 6

-10 -11.5 14.0 2 3 2 5

-15 -16.5 19.0 2 2 2 4

-20 -21.5 24.0 3 5 6 11

-25 -26.5 29.0 4 5 9 14

-30 -31.5 34.0 2 3 4 7

-35 -36.5 39.0 2 3 3 6

-40

-45

-50 -51.5 54.0 6 15 22 37

-55 -56.5 59.0 2 2 2 4

-60 -61.5 64.0 6 12 16 28

-65 -66.5 69.0 12 17 25 42

-70 -71.5 74.0 13 13 16 29

-75

LAND SURFACE COASTAL PLAIN  
 Brown to dark brownish gray, f. SAND w/tr. silt and shell frags. Loose.

10.5 Brown, cse. to f. SAND w/little mod. rounded quartz gravel and tr. shell frags. Well graded. Loose.

13.0 Dark brown, f. SAND. Poorly graded w/tr. org. silts. Silts increase w/depth. Med. dense to loose.

19.0 Grayish brown to gray, Silty, f. SAND. Loose to dense. (Samples not collected from 44.0 and 49.0 ft. due to over-drill strata breaks estimated from boring B-15 drilled approximately 60ft north)

37.0 Gray, Silty, f. SAND. Poorly graded. Dense.

43.0 Dark gray, f. Sandy CLAY. Med. plast. Tr. shell frags. Soft.

58.0 Gray, Silty, f. SAND w/tr. shell frags. and cse. sand. Mod. to poorly graded. Med. dense to dense.

NEW NCDOT BORE DOUBLE B2500 GEO BRDG PEASLAND CATLIN TEMPLATE GFI CATLIN GDT 2/21/12



WBS 13201.1028025	TIP B-2500	COUNTY DARE	GEOLOGIST Tom Stetler	
SITE DESCRIPTION Bridge over Pea Island Breach on NC 12				GROUND WTR (ft)
BORING NO. B-52	STATION 3148+71	OFFSET 10ft RT	ALIGNMENT -L-	0 HR. 0.9
COLLAR ELEV. 2.5 ft	TOTAL DEPTH 160.1 ft	NORTHING 720,188	EASTING 3,044,837	24 HR. 1.1

DRILL RIG/HAMMER EFF./DATE CAT1314 CME-45B 92% 11/16/2011	DRILL METHOD Mud Rotary	HAMMER TYPE Automatic
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DRILLER CATLIN	START DATE 02/10/12	COMP. DATE 02/13/12	SURFACE WATER DEPTH N/A
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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	-76.5	79.0													
			7	12	14							W	Gray, Silty, f. SAND w/tr. shell frags. and cse. sand. Mod. to poorly graded. Med. dense to dense. (continued)		
-80	-81.5	84.0	4	4	4							Sat.	Gray, Silty, f. SAND w/tr. clay and shell. Loose to v. loose.	82.5	
-85	-86.5	89.0	2	1	2							Sat.			
-90	-91.5	94.0	3	6	9							Sat.	Gray, Silty, f. SAND. Poorly graded. Increase in grain size from above. Med. dense.	92.5	
-95	-96.5	99.0	5	4	5							Sat.	Gray, Silty, cse. to f. SAND w/high shell content. Well graded. Loose.	98.0	
-100	-101.5	104.0	2	7	15							Sat.	Gray, f. SAND. Poorly graded w/tr. silt. Med. dense.	102.5	
-105	-106.5	109.0	4	6	8							M	Brown, f. Sandy SILT. Poorly graded. Low plast. Stiff.	107.5	
-110	-111.5	114.0	5	6	8							W	Gray, Silty to Clayey, f. SAND w/tr. interlayered Clay up to 0.1ft thick and tr. shells. Med. dense to loose.	111.0	
-115	-116.5	119.0	5	3	9							W			
-120	-121.5	124.0	2	3	3							W			
-125	-126.5	129.0	5	6	8							W			
-130	-131.5	134.0	2	2	4							Sat.	Gray, Silty to Clayey, f. SAND w/interlayered Sandy Silt. Loose. (No return from sample @ 144ft.)	133.0	
-135	-136.5	139.0	2	3	3										
-140	-141.5	144.0	3	5	8										
-145	-146.5	149.0	23	34	35							W	Gray, Silty, f. SAND w/tr. interlayered cse. sand and shell frags. V. dense.	147.0	
-150	-151.5	154.0	32	45	47							W	Gray, f. SAND. Poorly graded. V. dense.	153.0	

WBS 13201.1028025	TIP B-2500	COUNTY DARE	GEOLOGIST Tom Stetler	
SITE DESCRIPTION Bridge over Pea Island Breach on NC 12				GROUND WTR (ft)
BORING NO. B-52	STATION 3148+71	OFFSET 10ft RT	ALIGNMENT -L-	0 HR. 0.9
COLLAR ELEV. 2.5 ft	TOTAL DEPTH 160.1 ft	NORTHING 720,188	EASTING 3,044,837	24 HR. 1.1

DRILL RIG/HAMMER EFF./DATE CAT1314 CME-45B 92% 11/16/2011	DRILL METHOD Mud Rotary	HAMMER TYPE Automatic
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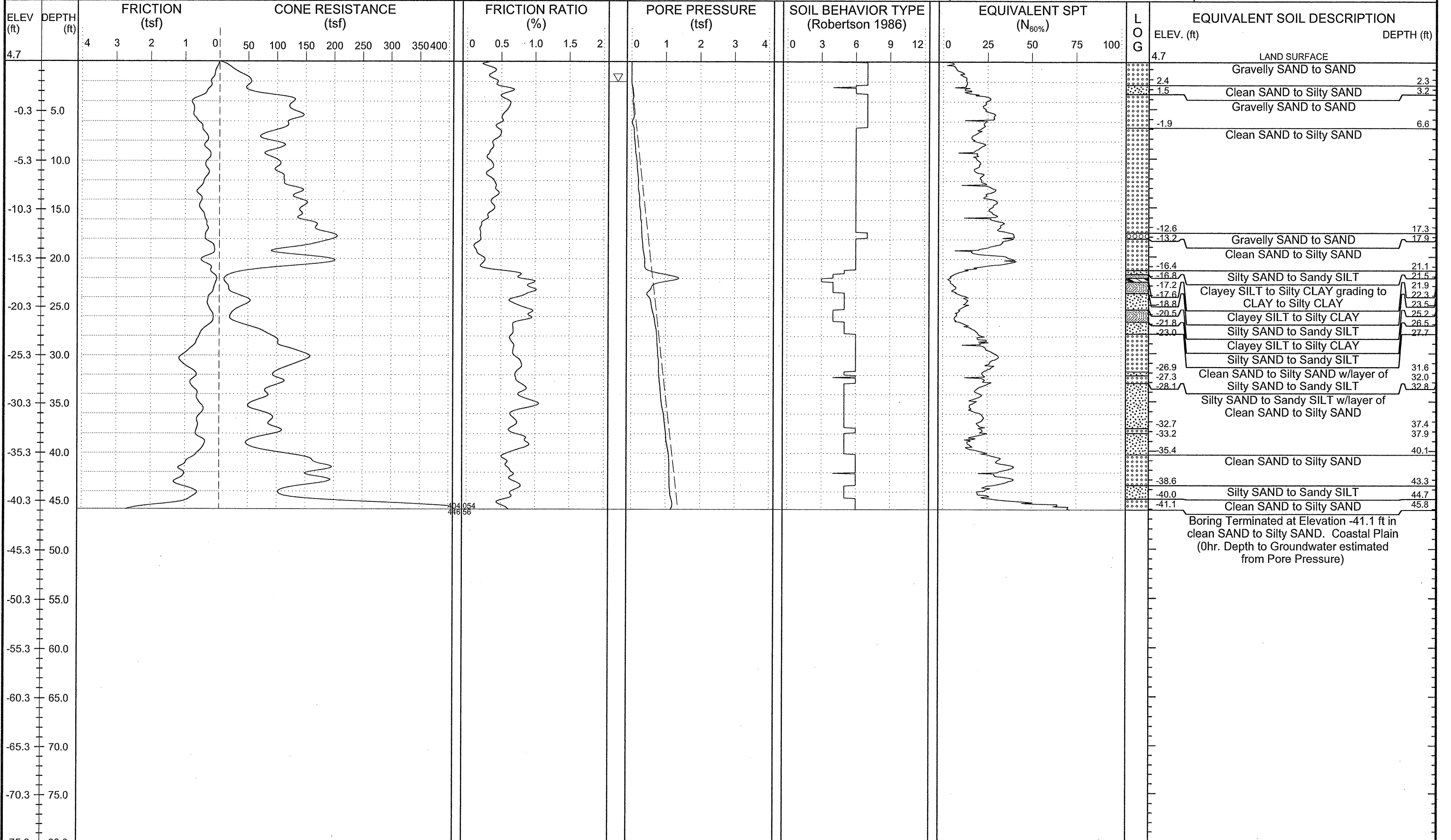
DRILLER CATLIN	START DATE 02/10/12	COMP. DATE 02/13/12	SURFACE WATER DEPTH N/A
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ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT					SAMP. NO.	LOG	SOIL AND ROCK DESCRIPTION	DEPTH (ft)	
			0.5ft	0.5ft	0.5ft	0	25	50	75	100					
-155	-156.5	159.0													
			77	23/0.1								W	Gray, f. SAND. Poorly graded. V. dense. (continued)	160.1	
													Boring Terminated with Standard Penetration Test Refusal at Elevation -157.6 ft in f. SAND. Coastal Plain 1. NW Casing set to 25.2ft. BLS 2. SW101 & Bentonite drilling mud		

NEW NCDOT BORE DOUBLE B2500 GEO BRDG PEASLAND CATLIN TEMPLATE.GPJ CATLIN.GDT 2/21/12



PROJECT NO.: 13201.1028025 ID: B-2500		COUNTY: DARE		GEOLOGIST: Steven Hudson		DRILL MACHINE: Pagni 73-200		MAX. DOWN PRESSURE: 20 Ton			
SITE DESCRIPTION: Bridge over Pea Island Breach on NC 12				GROUND WTR (ft): 0 HR. 2.0, 24 HR. N/A		DRILL METHOD: CPT / DPT		CONE TYPE: Geotech AB		DRILLER: WPC/TERRACON	
BORING NO.: B-53		STATION: 3152+58		OFFSET: 0ft CL		ALIGNMENT: -L-		ROD TYPE: 1.5" Vertek Speeklock		CONE ID: 0	
COLLAR ELEV.: 4.7 ft		TOTAL DEPTH: 45.8 ft		NORTHING: 720,556		EASTING: 3,044,715		START DATE: 01/31/12		COMP. DATE: 01/31/12	
										TECHNICIAN: Jim Bandle	
										SURFACE WATER DEPTH: N/A	



Boring Terminated at Elevation -41.1 ft in clean SAND to Silty SAND. Coastal Plain (0hr. Depth to Groundwater estimated from Pore Pressure)



# NCDOT GEOTECHNICAL ENGINEERING UNIT

## BORELOG REPORT



SHEET NO.: 75  
 PROJ. NO.: 13201.1028025  
 TIP NO.: B-2500  
 COUNTY: DARE

WBS 13201.1028025		TIP B-2500		COUNTY DARE		GEOLOGIST Justin Heter									
SITE DESCRIPTION Bridge over Pea Island Breach on NC 12							GROUND WTR (ft)								
BORING NO. B-54		STATION 3156+61		OFFSET 10ft RT		ALIGNMENT -L-									
COLLAR ELEV. 2.9 ft		TOTAL DEPTH 160.0 ft		NORTHING 720,928		EASTING 3,044,558									
DRILL RIG/HAMMER EFF./DATE CAT1314 CME-45B 92% 11/16/2011		DRILL METHOD Mud Rotary		HAMMER TYPE Automatic											
DRILLER CATLIN		START DATE 02/08/12		COMP. DATE 02/09/12		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	2.9	0.0												LAND SURFACE	0.0
0	-2.8	5.7	3	2	2									ROADWAY EMBANKMENT Light brown to tan, f. SAND. Root frags. at surface. Loose.	3.0
-5	-5.6	8.5	5	6	5									COASTAL PLAIN Grayish brown to gray, f. SAND. Poorly graded. Loose to med. dense.	
-10	-10.6	13.5	4	1	3									Gray to dark gray, cse. to f. SAND w/little shell frags. Well graded. Loose.	13.0
-15	-15.6	18.5	3	3	4									Grayish brown to brown, f. SAND w/tr. silt and shell frags. Tr. rotten wood frags. in middle of strata. Silt content increases w/depth. Loose to med. dense.	16.5
-20	-20.6	23.5	5	6	8										
-25	-25.6	28.5	5	5	7										
-30	-30.6	33.5	4	7	9									Grayish brown to dark gray, Silty, f. SAND. Poorly graded. Med. dense to dense. Driller noted hard layering at 52ft.	33.0
-35	-35.6	38.5	9	13	17										
-40	-40.6	43.5	18	26	28										
-45	-45.6	48.5	17	24	26									Gray, Clayey, f. SAND. Uniform w/interlayered Sandy Clay lenses at top of interval. Tr. shell frags. Dense to med. dense.	56.0
-50	-50.6	53.5	16	24	26										
-55	-55.6	58.5	2	17	16										
-60	-60.6	63.5	4	6	9										
-65	-65.6	68.5	7	11	31									Gray, f. SAND w/tr. silt and shell frags. Dense to med. dense.	68.0
-70	-70.6	73.5	9	14	18										
-75															

WBS 13201.1028025		TIP B-2500		COUNTY DARE		GEOLOGIST Justin Heter									
SITE DESCRIPTION Bridge over Pea Island Breach on NC 12							GROUND WTR (ft)								
BORING NO. B-54		STATION 3156+61		OFFSET 10ft RT		ALIGNMENT -L-									
COLLAR ELEV. 2.9 ft		TOTAL DEPTH 160.0 ft		NORTHING 720,928		EASTING 3,044,558									
DRILL RIG/HAMMER EFF./DATE CAT1314 CME-45B 92% 11/16/2011		DRILL METHOD Mud Rotary		HAMMER TYPE Automatic											
DRILLER CATLIN		START DATE 02/08/12		COMP. DATE 02/09/12		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					
-75	-75.6	78.5	9	12	15									Gray, f. SAND w/tr. silt and shell frags. Dense to med. dense. (continued)	
-80	-80.6	83.5	5	5	7									Gray, Silty, f. SAND w/tr. clay and shell frags. Some layers w/f. to cse. sand. Fines content increases w/depth. Med. dense to loose. (Sample not collected from 98.5ft. due to loss of circulation and hole.)	82.0
-85	-85.6	88.5	2	2	3										
-90	-90.6	93.5	2	3	4										
-95	-95.6	98.5													
-100	-100.6	103.5	2	4	15										
-105	-105.6	108.5	9	11	9										
-110	-110.6	113.5	4	6	13										
-115	-115.6	118.5	5	8	10										
-120	-120.6	123.5	3	3	3										
-125	-125.6	128.5	5	5	7										
-130	-130.6	133.5	2	2	2									Gray, f. Sandy SILT w/tr. shell. Low plast. Gradational contact w/above. Soft.	132.5
-135	-135.6	138.5	3	3	4									Gray, Silty, f. SAND w/little interlayered sandy silt and tr. clay and shell frags. Loose.	137.0
-140	-140.6	143.5	3	3	3										
-145	-145.6	148.5	6	9	15									Brown to gray, Silty, cse. to f. SAND w/tr. clay and shell frags. Mod. grading. Med. dense.	147.5
-150	-150.6	153.5	13	28	23									Gray, Silty, f. SAND w/little gravel size shell frags. V. dense.	151.5
-155															

NEW NCDOT BORE DOUBLE B2500 GEO BRDG PEASLAND CATLIN TEMPLATE G.P.L. CATLIN.GDT 2/21/12





**NCDOT GEOTECHNICAL ENGINEERING UNIT**  
**BORELOG REPORT**



SHEET NO.: 77  
PROJ. NO.: 13201.1028025  
TIP NO.: B-2500  
DARE

WBS 13201.1028025		TIP B-2500		COUNTY DARE		GEOLOGIST Tom Stetler									
SITE DESCRIPTION Bridge over Pea Island Breach on NC 12							GROUND WTR (ft)								
BORING NO. B-55		STATION 3160+71		OFFSET 24ft RT		ALIGNMENT -L-	0 HR. 5.4								
COLLAR ELEV. 4.2 ft		TOTAL DEPTH 155.4 ft		NORTHING 721,284		EASTING 3,044,353	24 HR. 4.2								
DRILL RIG/HAMMER EFF./DATE CAT1314 CME-45B 92% 11/16/2011				DRILL METHOD Mud Rotary		HAMMER TYPE Automatic									
DRILLER CATLIN			START DATE 01/31/12		COMP. DATE 02/01/12		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					
-75															
			10	15	21										
-80	-79.7	83.9	6	8	9										
-85	-84.7	88.9	2	2	2										
-90	-89.7	93.9	1	2	1										
-95	-94.7	98.9	3	5	6										
-100	-99.7	103.9	35	47	42										
-105	-104.7	108.9	4	8	13										
-110	-109.7	113.9	5	8	10										
-115	-114.7	118.9	9	15	21										
-120	-119.7	123.9	2	5	10										
-125	-124.7	128.9	5	4	8										
-130	-129.7	133.9	4	3	5										
-135	-134.7	138.9	2	4	5										
-140	-139.7	143.9	3	3	5										
-145	-144.7	148.9	14	13	21										
-150	-149.7	153.9	12	21	51										

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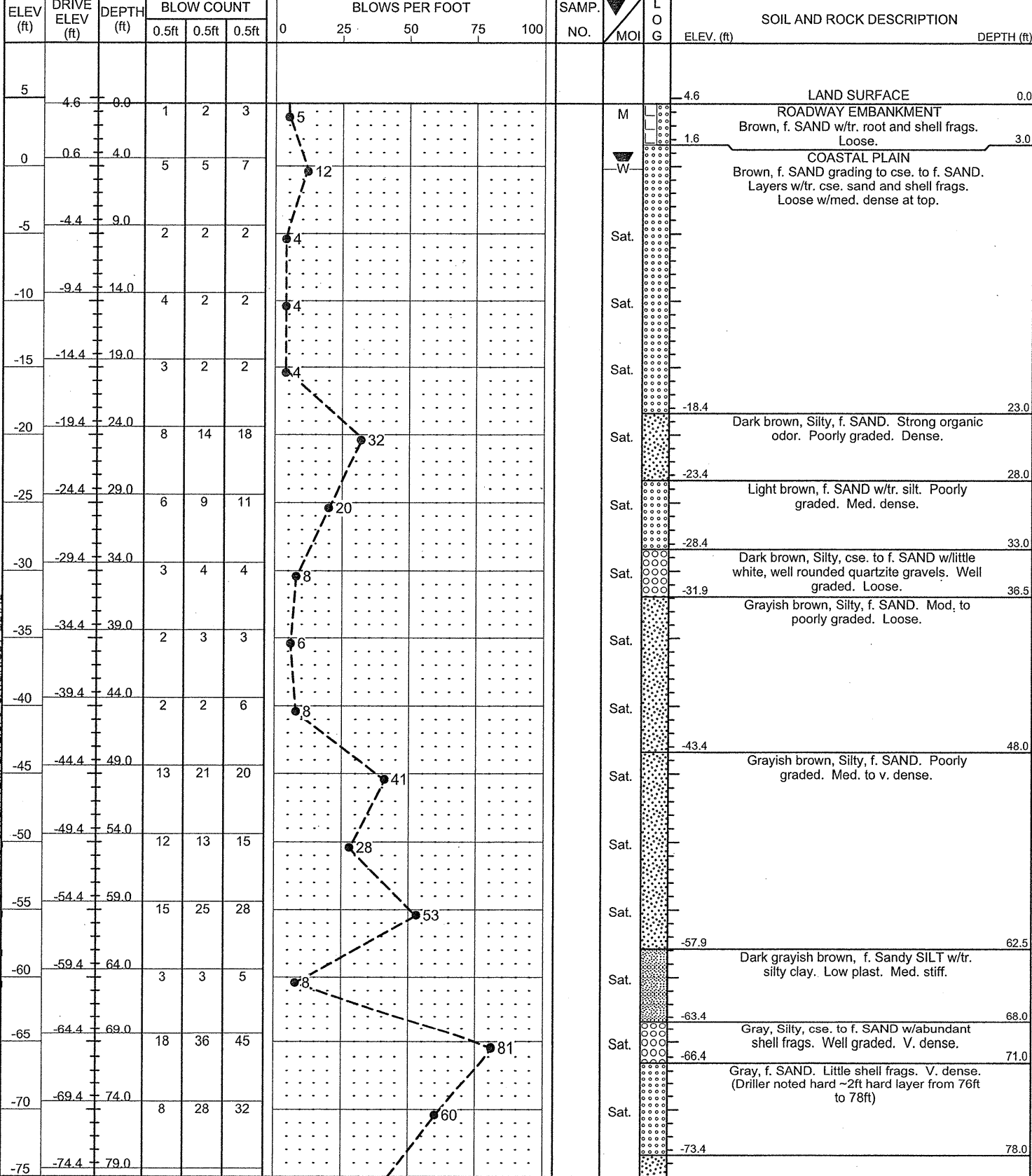
NEW NCDOT BORE DOUBLE B-2500 GEO. BRDG. PEASLAND CATLIN TEMPLATE GDT 2/21/12

Boring Terminated at Elevation -151.2 ft in Silty, cse. to f. SAND. Coastal Plain  
1. NW Casing set to 4.9ft. BLS  
2. SW101 & Bentonite drilling mud

WBS 13201.1028025	TIP B-2500	COUNTY DARE	GEOLOGIST Tom Stetler	
SITE DESCRIPTION Bridge over Pea Island Breach on NC 12				GROUND WTR (ft)
BORING NO. B-56	STATION 3164+87	OFFSET 10ft LT	ALIGNMENT -L-	0 HR. N/A
COLLAR ELEV. 4.6 ft	TOTAL DEPTH 160.5 ft	NORTHING 721,629	EASTING 3,044,120	24 HR. 4.8

DRILL RIG/HAMMER EFF./DATE CAT1314 CME-45B 92% 11/16/2011	DRILL METHOD Mud Rotary	HAMMER TYPE Automatic
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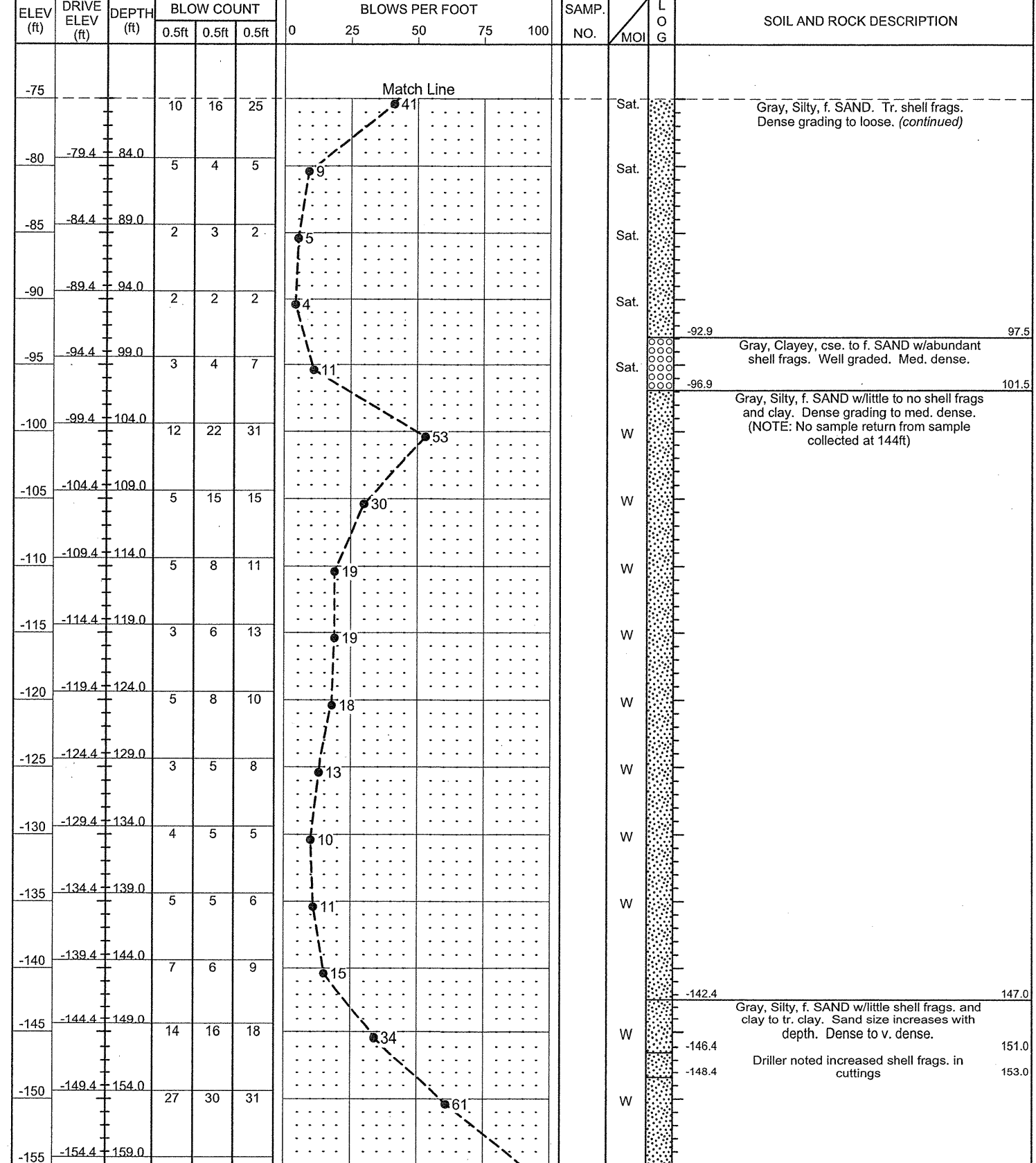
DRILLER CATLIN	START DATE 01/26/12	COMP. DATE 01/31/12	SURFACE WATER DEPTH N/A
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WBS 13201.1028025	TIP B-2500	COUNTY DARE	GEOLOGIST Tom Stetler	
SITE DESCRIPTION Bridge over Pea Island Breach on NC 12				GROUND WTR (ft)
BORING NO. B-56	STATION 3164+87	OFFSET 10ft LT	ALIGNMENT -L-	0 HR. N/A
COLLAR ELEV. 4.6 ft	TOTAL DEPTH 160.5 ft	NORTHING 721,629	EASTING 3,044,120	24 HR. 4.8

DRILL RIG/HAMMER EFF./DATE CAT1314 CME-45B 92% 11/16/2011	DRILL METHOD Mud Rotary	HAMMER TYPE Automatic
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DRILLER CATLIN	START DATE 01/26/12	COMP. DATE 01/31/12	SURFACE WATER DEPTH N/A
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NEW NCDOT BOREDOUBLE B2500 GEO BRDG PEASISLAND CATLIN TEMPLATE.GPJ CATLIN.GDT 2/21/12



# NCDOT GEOTECHNICAL ENGINEERING UNIT

## BORELOG REPORT



SHEET NO.: 79  
 PROJ. NO.: 13201.1028025  
 TIP NO.: B-2500  
 COUNTY: DARE

WBS 13201.1028025	TIP B-2500	COUNTY DARE	GEOLOGIST Tom Stetler	
SITE DESCRIPTION Bridge over Pea Island Breach on NC 12				GROUND WTR (ft)
BORING NO. B-56	STATION 3164+87	OFFSET 10ft LT	ALIGNMENT -L-	0 HR. N/A
COLLAR ELEV. 4.6 ft	TOTAL DEPTH 160.5 ft	NORTHING 721,629	EASTING 3,044,120	24 HR. 4.8

DRILL RIG/HAMMER EFF./DATE CAT1314 CME-45B 92% 11/16/2011	DRILL METHOD Mud Rotary	HAMMER TYPE Automatic
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DRILLER CATLIN	START DATE 01/26/12	COMP. DATE 01/31/12	SURFACE WATER DEPTH N/A
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ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT					SAMP. NO.	LOG MOI	L O G	SOIL AND ROCK DESCRIPTION	DEPTH (ft)
			0.5ft	0.5ft	0.5ft	0	25	50	75	100					

-155			15	41	51											
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Match Line

Boring Terminated at Elevation -155.9 ft in Silty, f. SAND. Coastal Plain

- NW Casing set to 30.0ft. BLS
- SW101 & Bentonite drilling mud

WBS 13201.1028025	TIP B-2500	COUNTY DARE	GEOLOGIST Stetler/Heter	
SITE DESCRIPTION Bridge on NC 12 over Pea Island Breach				GROUND WTR (ft)
BORING NO. B-57	STATION 3168+77	OFFSET 16ft LT	ALIGNMENT -L-	0 HR. 1.4
COLLAR ELEV. 1.6 ft	TOTAL DEPTH 191.0 ft	NORTHING 721,991	EASTING 3,043,971	24 HR. 1.4

DRILL RIG/HAMMER EFF./DATE CAT1314 CME-45B 92% 11/16/2011	DRILL METHOD Mud Rotary	HAMMER TYPE Automatic
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DRILLER CATLIN	START DATE 01/20/12	COMP. DATE 01/25/12	SURFACE WATER DEPTH N/A
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ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT					SAMP. NO.	LOG MOI	L O G	SOIL AND ROCK DESCRIPTION	DEPTH (ft)
			0.5ft	0.5ft	0.5ft	0	25	50	75	100					

5																
0																

LAND SURFACE 0.0

COASTAL PLAIN

Brown to dark grayish brown, f. SAND. Uniform. Tr. to little cse. sand and tr. to no shell frags. Loose to med. dense.

-2.9	4.5		3	3	3											
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-5																
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-7.9	9.5		5	6	7											
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-10																
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-12.9	14.5		3	2	4											
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-15																
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-17.9	19.5		2	2	2											
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-20																
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-22.9	24.5		4	6	7											
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-25																
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-27.9	29.5		2	2	2											
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-30																
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-32.9	34.5		3	3	3											
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-35																
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-37.9	39.5		3	8	19											
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-40																
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-42.9	44.5		16	29	31											
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-45																
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-47.9	49.5		8	29	32											
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-50																
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-52.9	54.5		16	23	21											
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-55																
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-57.9	59.5		8	16	16											
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-60																
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-62.9	64.5		4	9	10											
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-65																
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-67.9	69.5		9	19	23											
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-70																
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-72.9	74.5		5	15	17											
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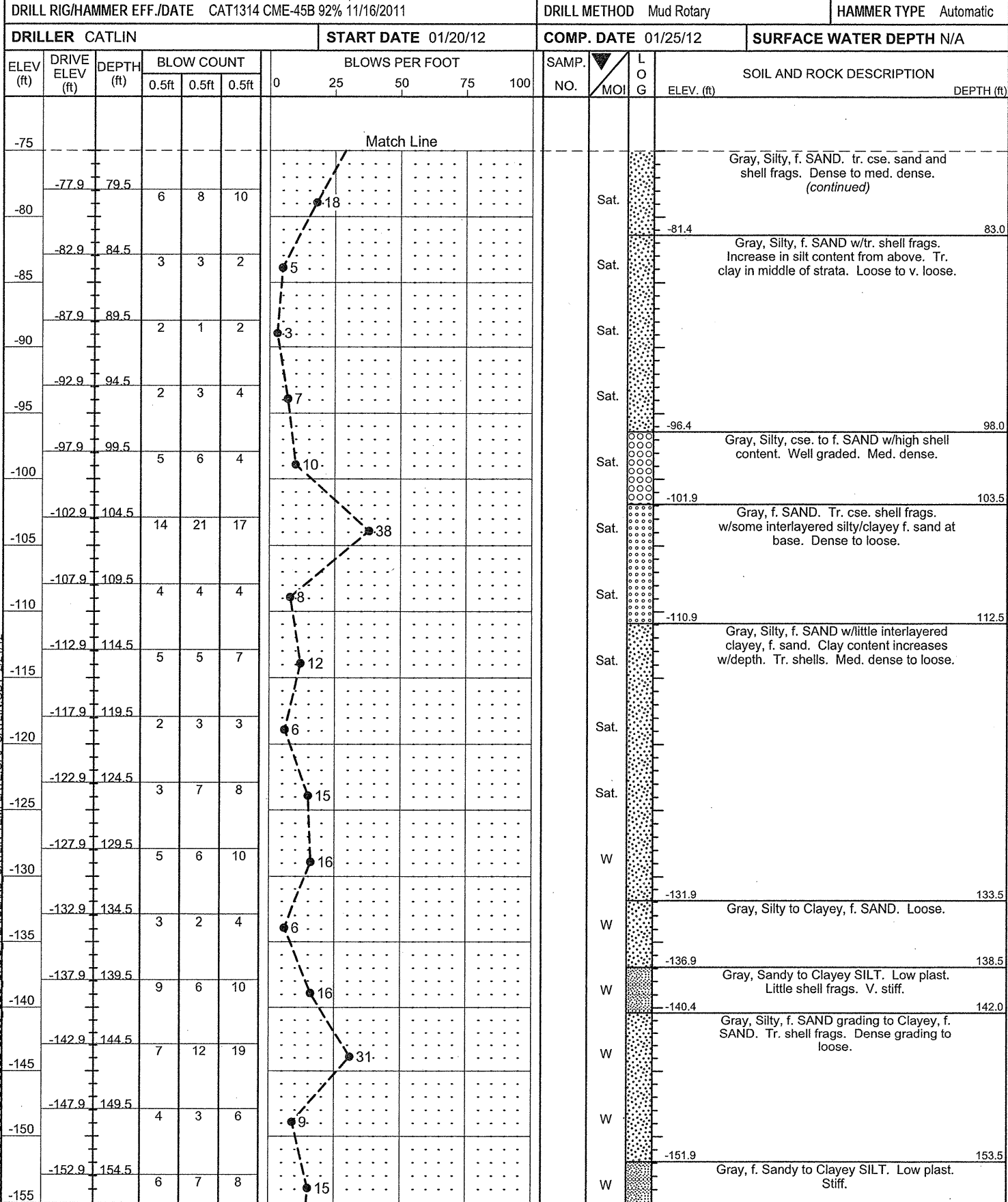
-75																
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Gray, Silty, f. SAND. tr. cse. sand and shell frags. Dense to med. dense.

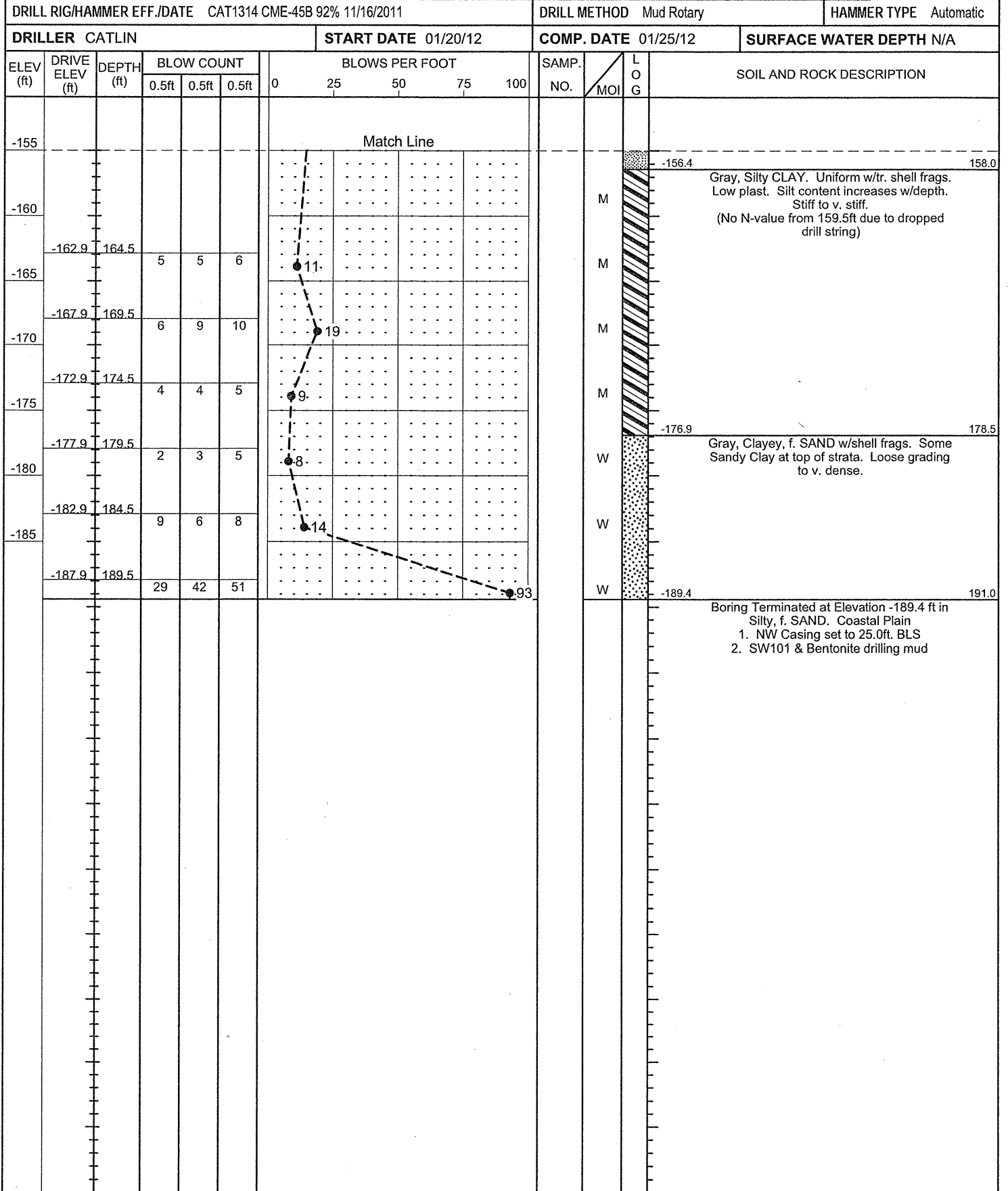
-75																
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NEW NCDOT BORE DOUBLE B2500\_GEO\_BRDG\_PEAISLAND\_CATLINTEMPLATE.GPJ CATLIN.GDT 2/21/12

WBS 13201.1028025	TIP B-2500	COUNTY DARE	GEOLOGIST Stetler/Heter
SITE DESCRIPTION Bridge on NC 12 over Pea Island Breach			GROUND WTR (ft)
BORING NO. B-57	STATION 3168+77	OFFSET 16ft LT	ALIGNMENT -L-
COLLAR ELEV. 1.6 ft	TOTAL DEPTH 191.0 ft	NORTHING 721,991	EASTING 3,043,971
DRILL RIG/HAMMER EFF./DATE CAT1314 CME-45B 92% 11/16/2011			DRILL METHOD Mud Rotary
DRILLER CATLIN			HAMMER TYPE Automatic
START DATE 01/20/12		COMP. DATE 01/25/12	SURFACE WATER DEPTH N/A



WBS 13201.1028025	TIP B-2500	COUNTY DARE	GEOLOGIST Stetler/Heter
SITE DESCRIPTION Bridge on NC 12 over Pea Island Breach			GROUND WTR (ft)
BORING NO. B-57	STATION 3168+77	OFFSET 16ft LT	ALIGNMENT -L-
COLLAR ELEV. 1.6 ft	TOTAL DEPTH 191.0 ft	NORTHING 721,991	EASTING 3,043,971
DRILL RIG/HAMMER EFF./DATE CAT1314 CME-45B 92% 11/16/2011			DRILL METHOD Mud Rotary
DRILLER CATLIN			HAMMER TYPE Automatic
START DATE 01/20/12		COMP. DATE 01/25/12	SURFACE WATER DEPTH N/A



NEW NCDOT BORE DOUBLE B2500 GEO BRDG PEASLAND CATLIN TEMPLATE.GPJ CATLIN.GDT 2/21/12







# NCDOT GEOTECHNICAL ENGINEERING UNIT

## BORELOG REPORT



SHEET NO.: 82  
 PROJ. NO.: 13201.1028025  
 TIP NO.: B-2500  
 COUNTY: DARE

WBS 13201.1028025 TIP B-2500 COUNTY DARE GEOLOGIST N/A

SITE DESCRIPTION Bridge over Pea Island Breach on NC 12 GROUND WTR (ft)

BORING NO. B-58 STATION 3174+68 OFFSET 21ft RT ALIGNMENT -L- 0 HR. N/A

COLLAR ELEV. 4.7 ft TOTAL DEPTH 160.0 ft NORTHING 722,576 EASTING 3,043,888 24 HR. 4.4

DRILL RIG/HAMMER EFF./DATE TER255 DIEDRICH D-50 77% 07/15/2011 DRILL METHOD Mud Rotary HAMMER TYPE Automatic

DRILLER TERRACON START DATE 01/24/12 COMP. DATE 01/25/12 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				

-155 Match Line

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				
-155.3														160.0
Boring Terminated at Elevation -155.3 ft in Silty, f. SAND. Coastal Plain 1. HSA to 5.3ft. 2. 2 15/16" tricone to 178.5ft. 3. NW Casing set to 90ft.														

WBS 13201.1028025 TIP B-2500 COUNTY DARE GEOLOGIST N/A

SITE DESCRIPTION Bridge over Pea Island Breach on NC 12 GROUND WTR (ft)

BORING NO. B-59 STATION 3176+67 OFFSET 21ft LT ALIGNMENT -L- 0 HR. N/A

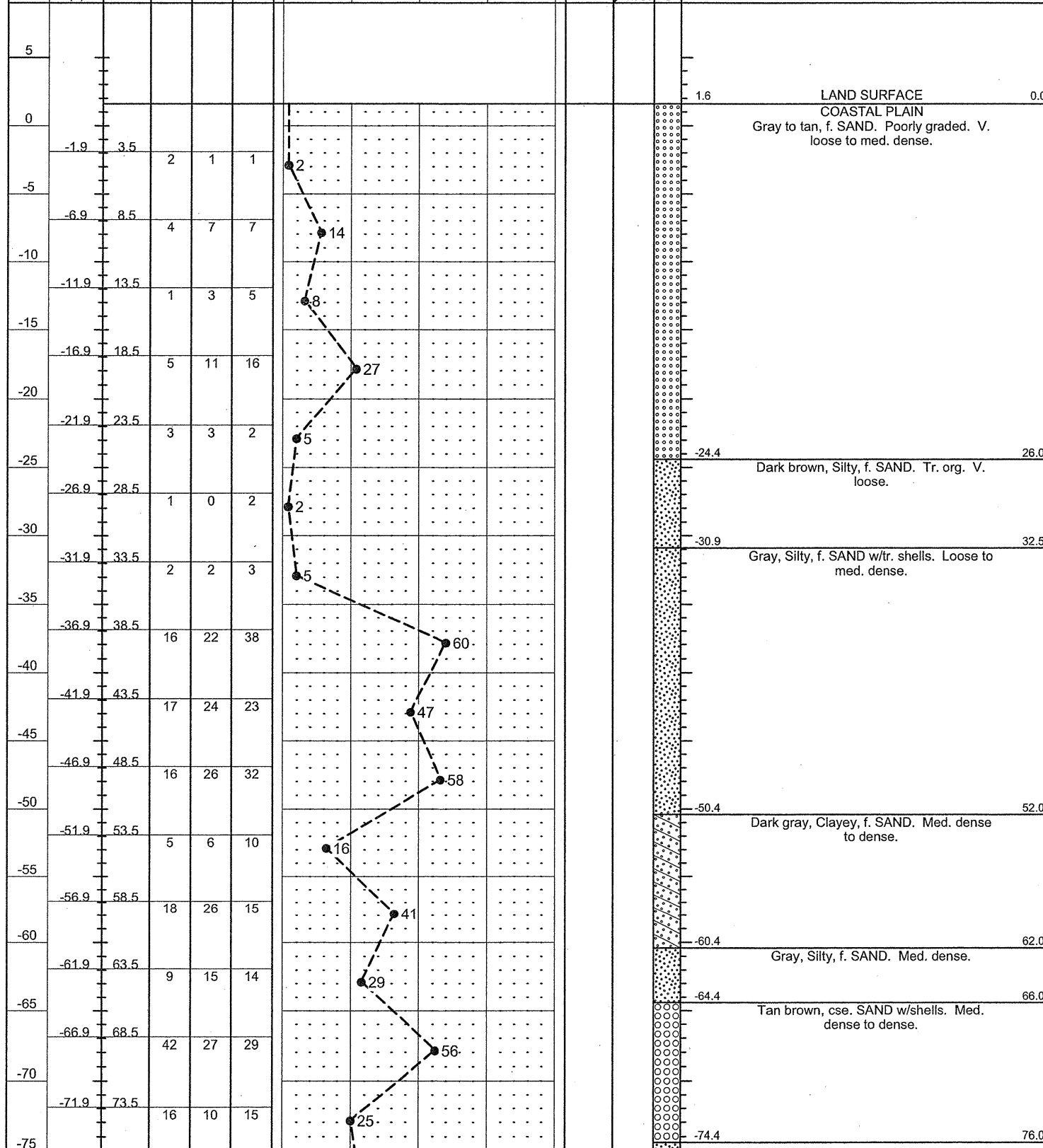
COLLAR ELEV. 1.6 ft TOTAL DEPTH 160.0 ft NORTHING 722,772 EASTING 3,043,833 24 HR. N/A

DRILL RIG/HAMMER EFF./DATE TER255 DIEDRICH D-50 77% 07/15/2011 DRILL METHOD Mud Rotary HAMMER TYPE Automatic

DRILLER TERRACON START DATE 01/25/12 COMP. DATE 01/26/12 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				

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				
5														
0														
-1.9		3.5				2	1	1						0.0
-5														
-6.9		8.5				4	7	7						
-10														
-11.9		13.5				1	3	5						
-15														
-16.9		18.5				5	11	16						
-20														
-21.9		23.5				3	3	2						
-25														
-26.9		28.5				1	0	2						
-30														
-31.9		33.5				2	2	3						
-35														
-36.9		38.5				16	22	38						
-40														
-41.9		43.5				17	24	23						
-45														
-46.9		48.5				16	26	32						
-50														
-51.9		53.5				5	6	10						
-55														
-56.9		58.5				18	26	15						
-60														
-61.9		63.5				9	15	14						
-65														
-66.9		68.5				42	27	29						
-70														
-71.9		73.5				16	10	15						
-75														



NEW NCDOT BORE DOUBLE B2500 GEO BRDG PEASLAND\_CATLIN TEMPLATE.GPJ CATLIN.GDT 2/21/12

WBS 13201.1028025	TIP B-2500	COUNTY DARE	GEOLOGIST N/A
SITE DESCRIPTION Bridge over Pea Island Breach on NC 12			GROUND WTR (ft)
BORING NO. B-59	STATION 3176+67	OFFSET 21ft LT	ALIGNMENT -L-
COLLAR ELEV. 1.6 ft	TOTAL DEPTH 160.0 ft	NORTHING 722,772	EASTING 3,043,833
DRILL RIG/HAMMER EFF./DATE TER255 DIEDRICH D-50 77% 07/15/2011		DRILL METHOD Mud Rotary	HAMMER TYPE Automatic
DRILLER TERRACON		START DATE 01/25/12	COMP. DATE 01/26/12
		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															
-76.9	78.5	78.5	7	12	17										
-81.9	83.5	83.5	4	2	2										
-86.9	88.5	88.5	1	0	0										
-91.9	93.5	93.5	1	1	3										
-96.9	98.5	98.5	4	9	10										
-101.9	103.5	103.5	21	20	23										
-106.9	108.5	108.5	1	2	3										
-111.9	113.5	113.5	5	5	.8										
-116.9	118.5	118.5	6	8	13										
-121.9	123.5	123.5	10	8	13										
-126.9	128.5	128.5	2	3	5										
-131.9	133.5	133.5	4	5	4										
-136.9	138.5	138.5	5	8	12										
-141.9	143.5	143.5	16	20	20										
-146.9	148.5	148.5	2	3	8										
-151.9	153.5	153.5	30	30	26										

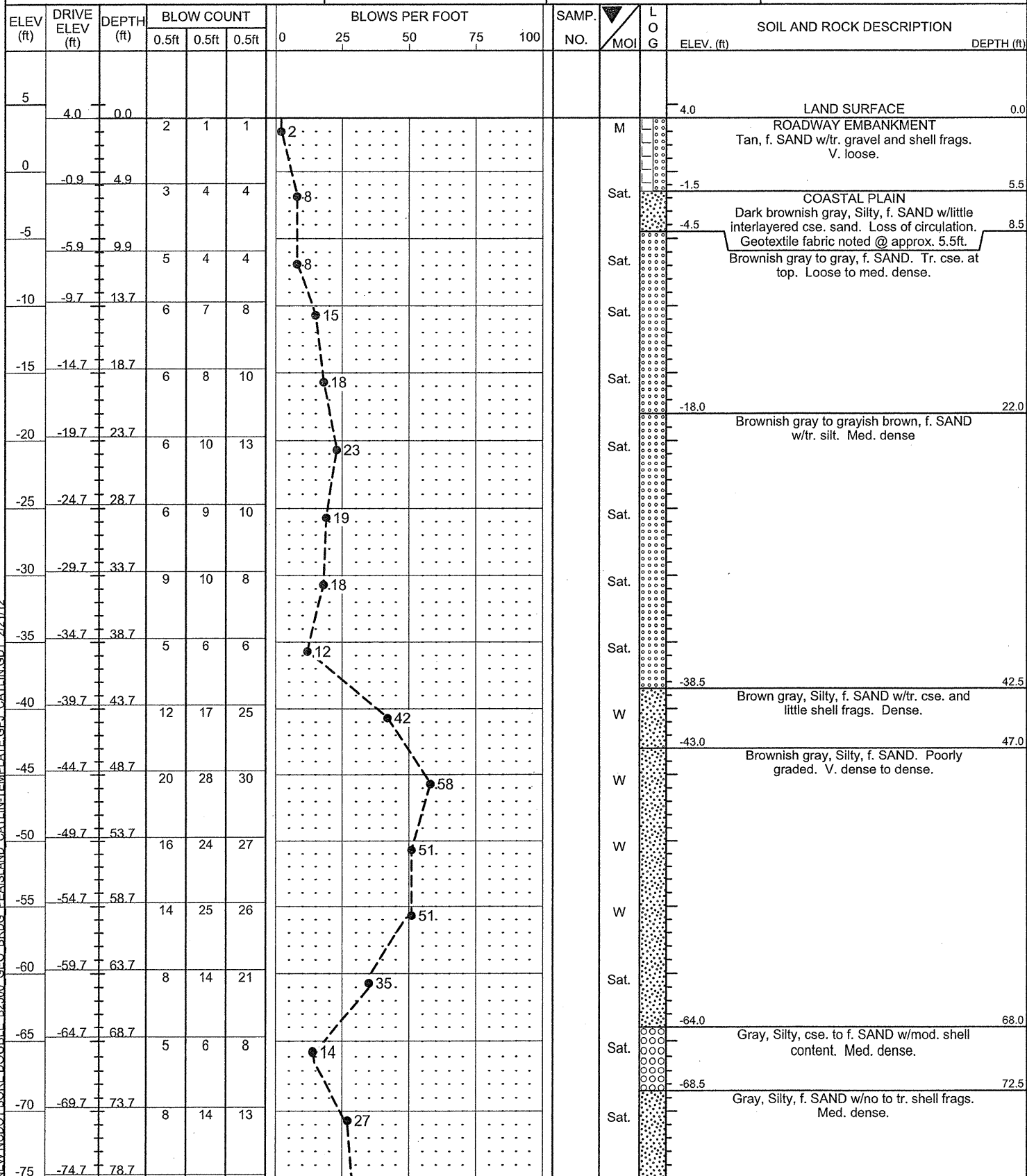
WBS 13201.1028025	TIP B-2500	COUNTY DARE	GEOLOGIST N/A
SITE DESCRIPTION Bridge over Pea Island Breach on NC 12			GROUND WTR (ft)
BORING NO. B-59	STATION 3176+67	OFFSET 21ft LT	ALIGNMENT -L-
COLLAR ELEV. 1.6 ft	TOTAL DEPTH 160.0 ft	NORTHING 722,772	EASTING 3,043,833
DRILL RIG/HAMMER EFF./DATE TER255 DIEDRICH D-50 77% 07/15/2011		DRILL METHOD Mud Rotary	HAMMER TYPE Automatic
DRILLER TERRACON		START DATE 01/25/12	COMP. DATE 01/26/12
		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					
-155															
-156.9	158.5	158.5	13	3	5										
-157.3		158.9													
-158.4		160.0													

NEW NCDOT BORE DOUBLE B2500 GEO BRDG PEASLAND CATIN TEMPLATE.GPJ CATIN.GDT 2/21/12

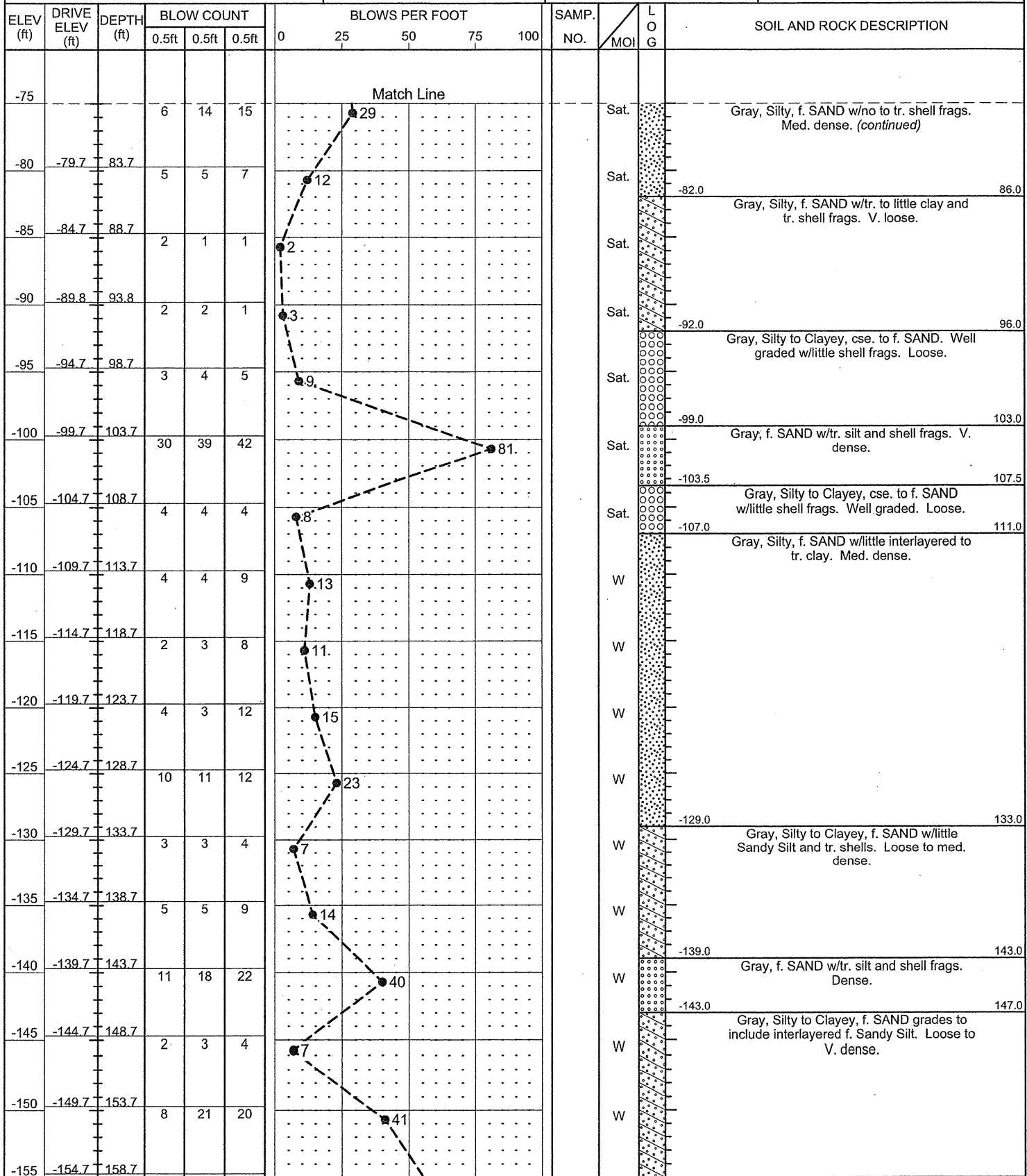
WBS 13201.1028025	TIP B-2500	COUNTY DARE	GEOLOGIST Tom Stetler	
SITE DESCRIPTION Bridge over Pea Island Breach on NC 12				GROUND WTR (ft)
BORING NO. B-60	STATION 3180+76	OFFSET 26ft RT	ALIGNMENT -L-	0 HR. 3.5
COLLAR ELEV. 4.0 ft	TOTAL DEPTH 160.2 ft	NORTHING 723,179	EASTING 3,043,895	24 HR. N/A

DRILL RIG/HAMMER EFF./DATE CAT1314 CME-45B 92% 11/16/2011	DRILL METHOD Mud Rotary	HAMMER TYPE Automatic	
DRILLER CATLIN	START DATE 02/14/12	COMP. DATE 02/15/12	SURFACE WATER DEPTH N/A



WBS 13201.1028025	TIP B-2500	COUNTY DARE	GEOLOGIST Tom Stetler	
SITE DESCRIPTION Bridge over Pea Island Breach on NC 12				GROUND WTR (ft)
BORING NO. B-60	STATION 3180+76	OFFSET 26ft RT	ALIGNMENT -L-	0 HR. 3.5
COLLAR ELEV. 4.0 ft	TOTAL DEPTH 160.2 ft	NORTHING 723,179	EASTING 3,043,895	24 HR. N/A

DRILL RIG/HAMMER EFF./DATE CAT1314 CME-45B 92% 11/16/2011	DRILL METHOD Mud Rotary	HAMMER TYPE Automatic	
DRILLER CATLIN	START DATE 02/14/12	COMP. DATE 02/15/12	SURFACE WATER DEPTH N/A



NEW NCDOT BORE DOUBLE B-2500 GEO. BRDG. PEASISLAND CATLIN GDI 2/21/12

WBS 13201.1028025	TIP B-2500	COUNTY DARE	GEOLOGIST Tom Stetler
SITE DESCRIPTION Bridge over Pea Island Breach on NC 12			GROUND WTR (ft) 0 HR. 3.5
BORING NO. B-60	STATION 3180+76	OFFSET 26ft RT	ALIGNMENT -L-
COLLAR ELEV. 4.0 ft	TOTAL DEPTH 160.2 ft	NORTHING 723,179	EASTING 3,043,895
DRILL RIG/HAMMER EFF./DATE CAT1314 CME-45B 92% 11/16/2011		DRILL METHOD Mud Rotary	HAMMER TYPE Automatic
DRILLER CATLIN	START DATE 02/14/12	COMP. DATE 02/15/12	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					
-155			9	27	31									Match Line	
															58
															156.2
Boring Terminated at Elevation -156.2 ft in Silty, f. SAND. Coastal Plain 1. NW Casing set to 9.9ft. BLS 2. SW101 & Bentonite drilling mud															

WBS 13201.1028025	TIP B-2500	COUNTY DARE	GEOLOGIST Heter/Stetler
SITE DESCRIPTION Bridge over Pea Island Breach on NC 12			GROUND WTR (ft) 0 HR. N/A
BORING NO. B-61	STATION 3184+70	OFFSET 15ft RT	ALIGNMENT -L-
COLLAR ELEV. 4.7 ft	TOTAL DEPTH 160.0 ft	NORTHING 723,576	EASTING 3,043,884
DRILL RIG/HAMMER EFF./DATE CAT6394 CME-45B 91% 11/12/2011		DRILL METHOD Mud Rotary	HAMMER TYPE Automatic
DRILLER CATLIN	START DATE 02/10/12	COMP. DATE 02/16/12	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														4.7	LAND SURFACE	
															6.0	ROADWAY EMBANKMENT Brown, f. SAND w/tr. cse. sand and quartz gravel. Gap-graded. Loose.
															6.0	COASTAL PLAIN Grayish brown, f. SAND. Uniform. Loose to med. dense.
															22.0	Brown, f. SAND. Uniform. Med. dense to loose.
															37.0	Grayish brown, f. SAND w/mod. to tr. shells and tr. to no cse. sand. V. dense to dense.
															57.0	Dark gray, CLAY w/some silt. Uniform. High plast. Soft.
															62.0	Dark gray, Clayey to Silty, f. SAND. Clay w/med. plast. Uniform. Loose.
															69.0	Grayish brown, f. SAND w/mod. shell frags. Uniform sand. Med. dense.

NEW NCDOT BORE DOUBLE B2500 GEO BRDG PEASLAND CATLIN TEMPLATE.GPJ CATLIN.GDT 2/21/12



# NCDOT GEOTECHNICAL ENGINEERING UNIT

## BORELOG REPORT



SHEET NO.: 86  
 PROJ. NO.: 13201.1028025  
 TIP NO.: B-2500  
 COUNTY: DARE

WBS 13201.1028025		TIP B-2500		COUNTY DARE		GEOLOGIST Heter/Stetler										
SITE DESCRIPTION Bridge over Pea Island Breach on NC 12						GROUND WTR (ft)										
BORING NO. B-61		STATION 3184+70		OFFSET 15ft RT		ALIGNMENT -L-										
COLLAR ELEV. 4.7 ft		TOTAL DEPTH 160.0 ft		NORTHING 723,576		EASTING 3,043,884										
DRILL RIG/HAMMER EFF./DATE CAT6394 CME-45B 91% 11/12/2011				DRILL METHOD Mud Rotary		HAMMER TYPE Automatic										
DRILLER CATLIN		START DATE 02/10/12		COMP. DATE 02/16/12		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	-78.8	83.5		6	6	10										
-85	-83.8	88.5		2	3	2										
-90	-88.8	93.5		1	2	2										
-95	-93.8	98.5		2	2	3										
-100	-98.8	103.5		20	25	27										
-105	-103.8	108.5		4	4	6										
-110	-108.8	113.5		4	7	6										
-115	-113.8	118.5		5	5	8										
-120	-118.8	123.5		4	7	13										
-125	-123.8	128.5		7	14	11										
-130	-128.8	133.5		3	2	3										
-135	-133.8	138.5		5	5	10										
-140	-139.8	144.5		7	13	16										
-145	-143.8	148.5		4	4	7										
-150	-148.8	153.5		26	38	43										
-155	-153.8	158.5		36	42	50										

WBS 13201.1028025		TIP B-2500		COUNTY DARE		GEOLOGIST Heter/Stetler										
SITE DESCRIPTION Bridge over Pea Island Breach on NC 12						GROUND WTR (ft)										
BORING NO. B-61		STATION 3184+70		OFFSET 15ft RT		ALIGNMENT -L-										
COLLAR ELEV. 4.7 ft		TOTAL DEPTH 160.0 ft		NORTHING 723,576		EASTING 3,043,884										
DRILL RIG/HAMMER EFF./DATE CAT6394 CME-45B 91% 11/12/2011				DRILL METHOD Mud Rotary		HAMMER TYPE Automatic										
DRILLER CATLIN		START DATE 02/10/12		COMP. DATE 02/16/12		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						
-155																

NEW NCDOT BORE DOUBLE B2500\_GEO BRDG. PEASISLAND\_CATLIN.GDT 2/21/12

-155.3 Boring Terminated at Elevation -155.3 ft in  
 f. SAND. Coastal Plain  
 1. NW Casing set to 24.7ft. BLS  
 2. SW101 & Bentonite drilling mud

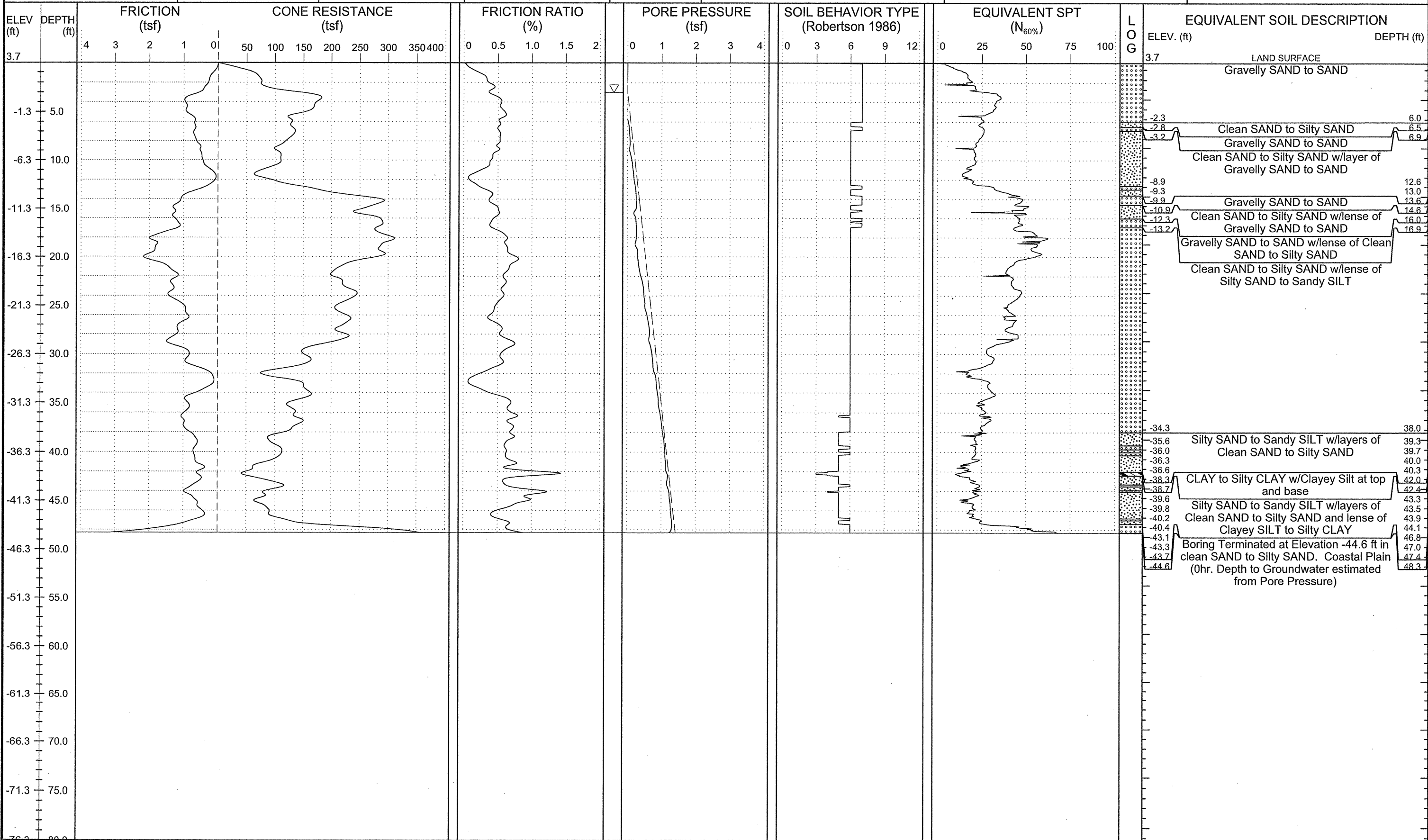








PROJECT NO.: 13201.1028025	ID: B-2500	COUNTY: DARE	GEOLOGIST: Steven Hudson	DRILL MACHINE: Pagani 73-200	MAX. DOWN PRESSURE: 20 Ton
SITE DESCRIPTION: Bridge over Pea Island Breach on NC 12			GROUND WTR (ft)	DRILL METHOD: CPT / DPT	CONE TYPE: Geotech AB
BORING NO.: B-63	STATION: 3192+77	OFFSET: 0ft CL	ALIGNMENT: -L-	0 HR. 3.0	ROD TYPE: 1.5" Vertek Specklock
COLLAR ELEV.: 3.7 ft	TOTAL DEPTH: 48.3 ft	NORTHING: 724,365	EASTING: 3,043,716	24 HR. N/A	START DATE: 01/31/12
				CONC. DATE: 01/31/12	DRILLER: WPC/TERRACON
					TECHNICIAN: Jim Bandle
					SURFACE WATER DEPTH: N/A





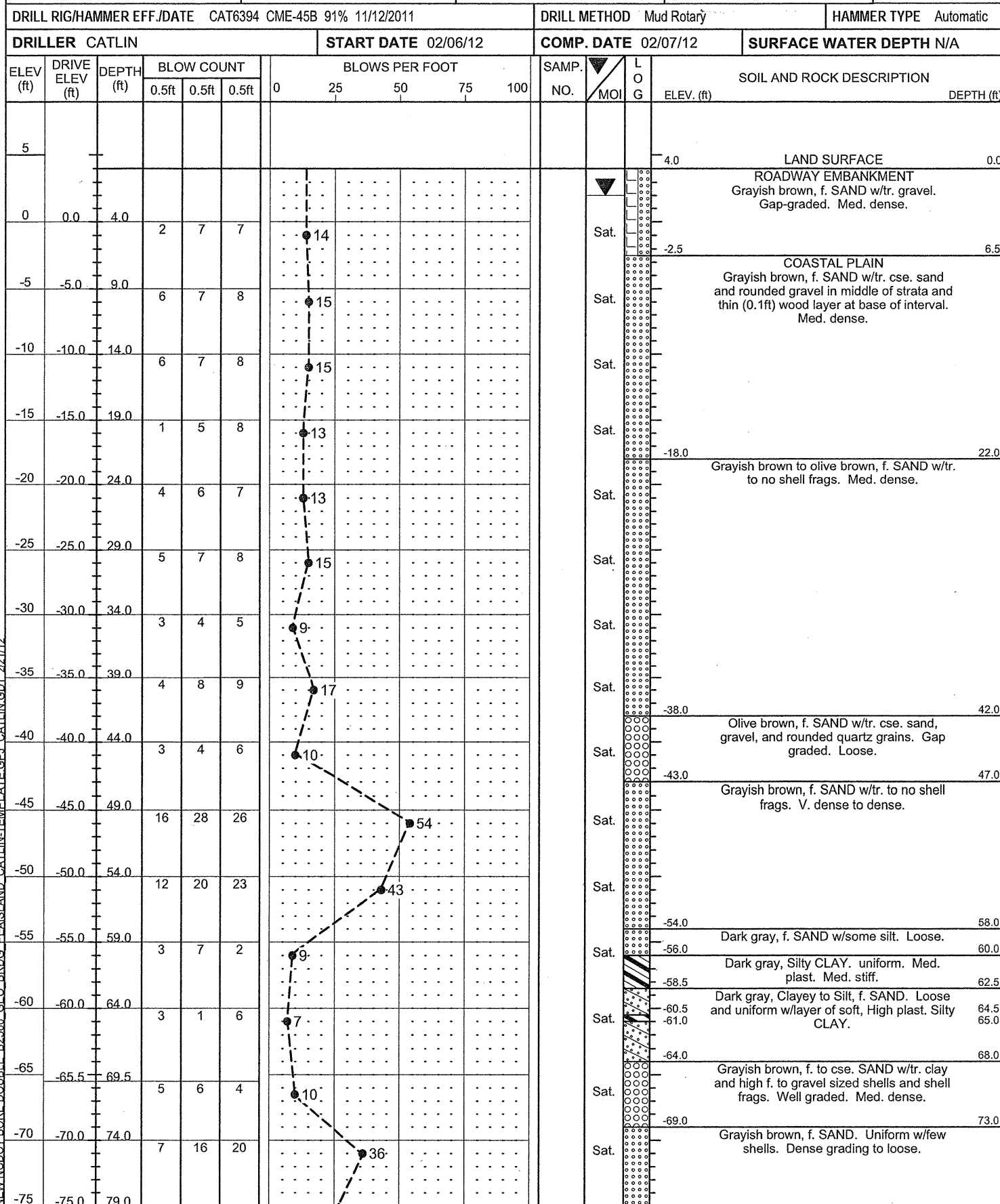
# NCDOT GEOTECHNICAL ENGINEERING UNIT

## BORELOG REPORT

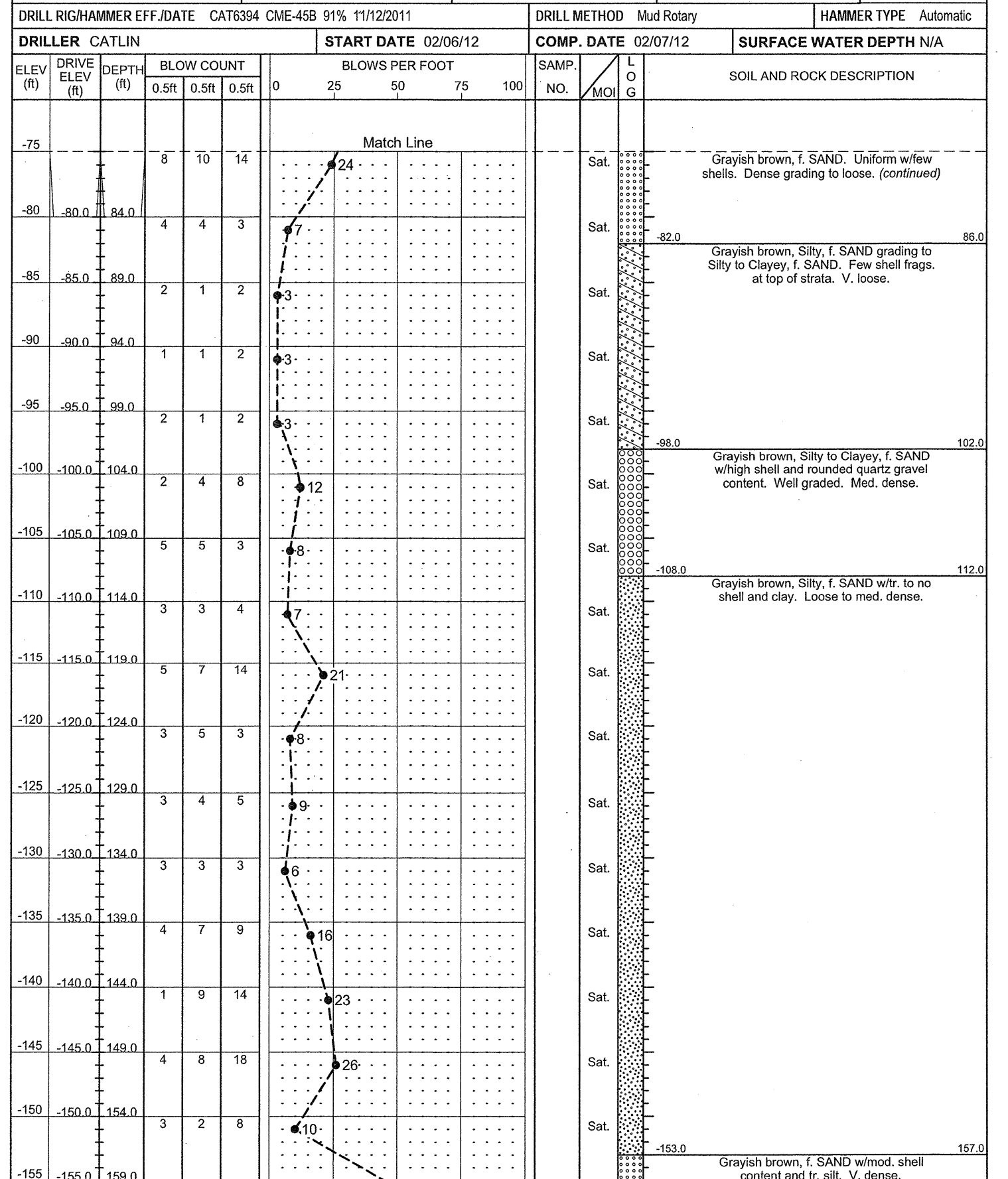


SHEET NO.: 90  
 PROJ. NO.: 13201.1028025  
 TIP NO.: B-2500  
 COUNTY: DARE

WBS 13201.1028025	TIP B-2500	COUNTY DARE	GEOLOGIST Justin Heter
SITE DESCRIPTION Bridge over Pea Island Breach on NC 12			GROUND WTR (ft) 0 HR. 2.2
BORING NO. B-64	STATION 3196+70	OFFSET 0ft CL	ALIGNMENT -L-
COLLAR ELEV. 4.0 ft	TOTAL DEPTH 160.5 ft	NORTHING 724,747	EASTING 3,043,614
DRILL RIG/HAMMER EFF./DATE CAT6394 CME-45B 91% 11/12/2011		DRILL METHOD Mud Rotary	HAMMER TYPE Automatic
DRILLER CATLIN	START DATE 02/06/12	COMP. DATE 02/07/12	SURFACE WATER DEPTH N/A



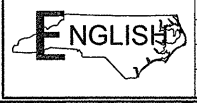
WBS 13201.1028025	TIP B-2500	COUNTY DARE	GEOLOGIST Justin Heter
SITE DESCRIPTION Bridge over Pea Island Breach on NC 12			GROUND WTR (ft) 0 HR. 2.2
BORING NO. B-64	STATION 3196+70	OFFSET 0ft CL	ALIGNMENT -L-
COLLAR ELEV. 4.0 ft	TOTAL DEPTH 160.5 ft	NORTHING 724,747	EASTING 3,043,614
DRILL RIG/HAMMER EFF./DATE CAT6394 CME-45B 91% 11/12/2011		DRILL METHOD Mud Rotary	HAMMER TYPE Automatic
DRILLER CATLIN	START DATE 02/06/12	COMP. DATE 02/07/12	SURFACE WATER DEPTH N/A



NEW NCDOT BORE DOUBLE B2500 GEO BRDG PEAISLAND CATLIN TEMPLATE GRI CATLIN.GDT 2/21/12



**NCDOT GEOTECHNICAL ENGINEERING UNIT**  
**BORELOG REPORT**



SHEET NO.: 91  
 PROJ. NO.: 13201.1028025  
 TIP NO.: B-2500  
 COUNTY: DARE

WBS 13201.1028025		TIP B-2500		COUNTY DARE		GEOLOGIST Justin Heter	
SITE DESCRIPTION Bridge over Pea Island Breach on NC 12							GROUND WTR (ft)
BORING NO. B-64		STATION 3196+70		OFFSET 0ft CL		ALIGNMENT -L-	
COLLAR ELEV. 4.0 ft		TOTAL DEPTH 160.5 ft		NORTHING 724,747		EASTING 3,043,614	
						0 HR.	2.2
						24 HR.	2.0 Caved

DRILL RIG/HAMMER EFF./DATE CAT6394 CME-45B 91% 11/12/2011				DRILL METHOD Mud Rotary		HAMMER TYPE Automatic	
DRILLER CATLIN		START DATE 02/06/12		COMP. DATE 02/07/12		SURFACE WATER DEPTH N/A	

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT					SAMP. NO.	LOG MOI	L O G	SOIL AND ROCK DESCRIPTION	DEPTH (ft)
			0.5ft	0.5ft	0.5ft	0	25	50	75	100					

-155			26	31	23	Match Line									-156.5	160.5
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Boring Terminated at Elevation -156.5 ft in f. SAND. Coastal Plain																
1. NW Casing set to 55ft. BLS																
2. SW101 & Bentonite drilling mud																

WBS 13201.1028025		TIP B-2500		COUNTY DARE		GEOLOGIST Justin Heter	
SITE DESCRIPTION Bridge over Pea Island Breach on NC 12							GROUND WTR (ft)
BORING NO. B-65		STATION 3199+30		OFFSET 0ft CL		ALIGNMENT -L-	
COLLAR ELEV. 4.1 ft		TOTAL DEPTH 160.1 ft		NORTHING 724,993		EASTING 3,043,547	
						0 HR.	4.5
						24 HR.	N/A

DRILL RIG/HAMMER EFF./DATE CAT6394 CME-45B 91% 11/12/2011				DRILL METHOD Mud Rotary		HAMMER TYPE Automatic	
DRILLER CATLIN		START DATE 01/30/12		COMP. DATE 02/02/12		SURFACE WATER DEPTH N/A	

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT					SAMP. NO.	LOG MOI	L O G	SOIL AND ROCK DESCRIPTION	DEPTH (ft)
			0.5ft	0.5ft	0.5ft	0	25	50	75	100					

5															4.1	0.0
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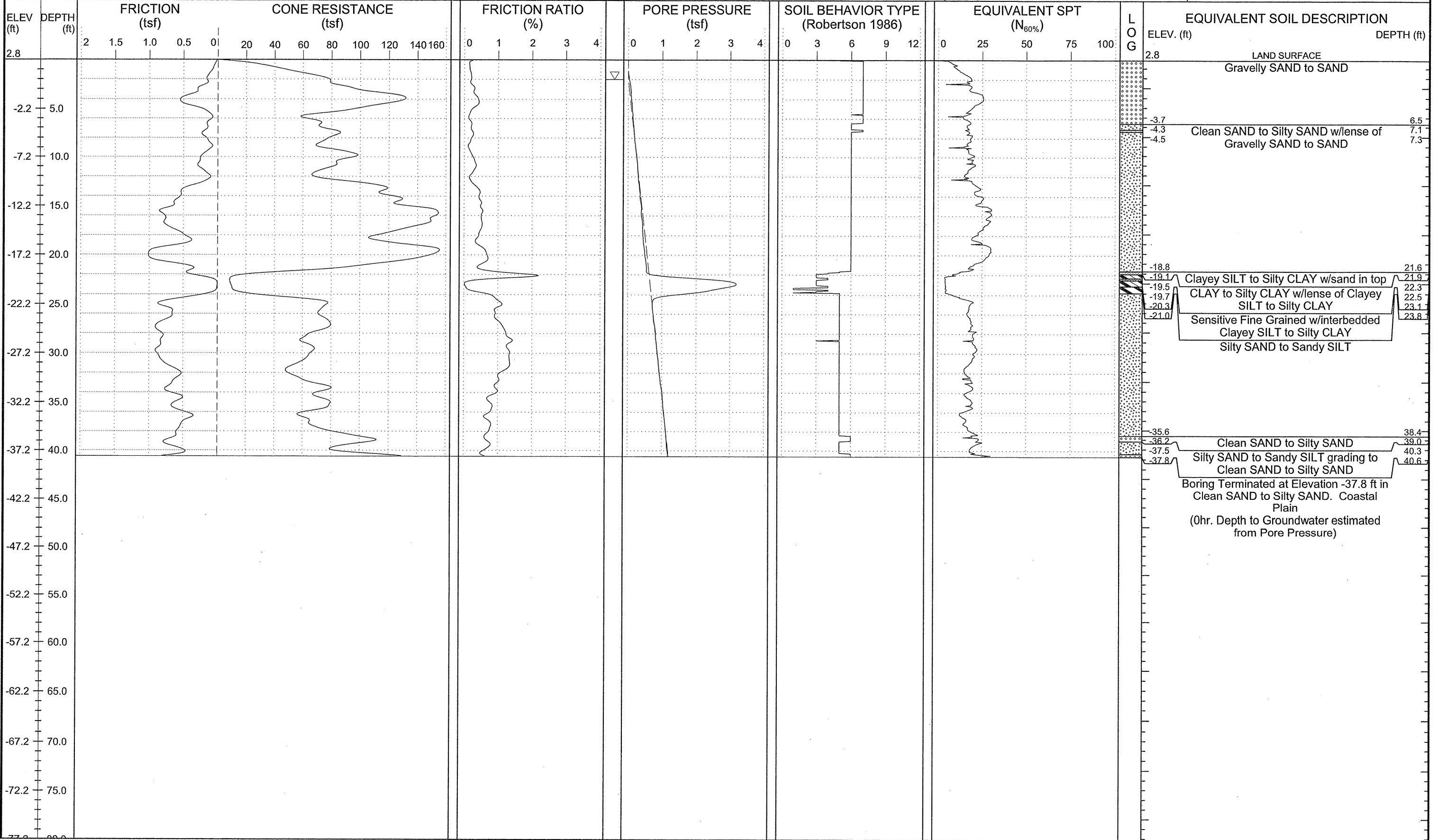
LAND SURFACE ROADWAY EMBANKMENT																
Grayish brown, cse. to f. SAND w/mod. shell and some gravel sized quartz grains.																
0	0.5	3.6	4	4	7										-1.9	6.0
COASTAL PLAIN																
Grayish brown, f. SAND w/shell frags. and tr. gravel grading to tr. shell and no gravel. Med. dense.																
-5	-4.5	8.6	5	6	9										-12.9	17.0
Grayish brown, f. to cse. SAND w/mod. gravels/quartz grains & large shell frags. Well graded. Med. dense.																
-10	-9.5	13.6	5	7	7										-30.4	34.5
Grayish brown, f. SAND w/tr. to no shell frags. Uniform. Loose to med. dense.																
-15	-14.5	18.6	3	8	8										-37.9	42.0
Brown, f. to cse. SAND w/some rounded gravel and quartz grains. Well graded. Loose.																
-20	-19.5	23.6	6	7	9										-43.4	47.5
Grayish brown, f. SAND. Uniform. Dense.																
-25	-24.5	28.6	3	6	7										-56.0	60.1
Dark gray, Sandy CLAY. Med. plast. Uniform.																
-30	-29.4	33.5	2	2	3										-56.5	60.6
Dark gray, f. SAND w/mod. f. shell frags. Uniform. Med. dense.																
-35	-34.5	38.6	2	6	6										-57.9	62.0
Dark gray, Clayey SILT w/high clay content. Mod. plast. Uniform. Soft.																
-40	-39.4	43.5	3	4	5										-62.9	67.0
Grayish brown, f. SAND w/high amount of small to large shells and shell frags. Well graded. Med. dense.																
-45	-44.5	48.6	12	19	23										-68.4	72.5
Grayish brown, f. SAND w/shells. Dense.																
-50	-49.4	53.5	10	18	22											
-55	-54.5	58.6	4	7	20											
-60	-59.4	63.5	2	2	2											
-65	-64.5	68.6	4	7	7											
-70	-69.5	73.6	7	13	20											
-75	-74.5	78.6														

NEW NCDOT BORE DOUBLE B2500 GEO BRDG PEASLAND\_CATLIN TEMPLATE.GPJ\_CATLIN.GDT 2/21/12



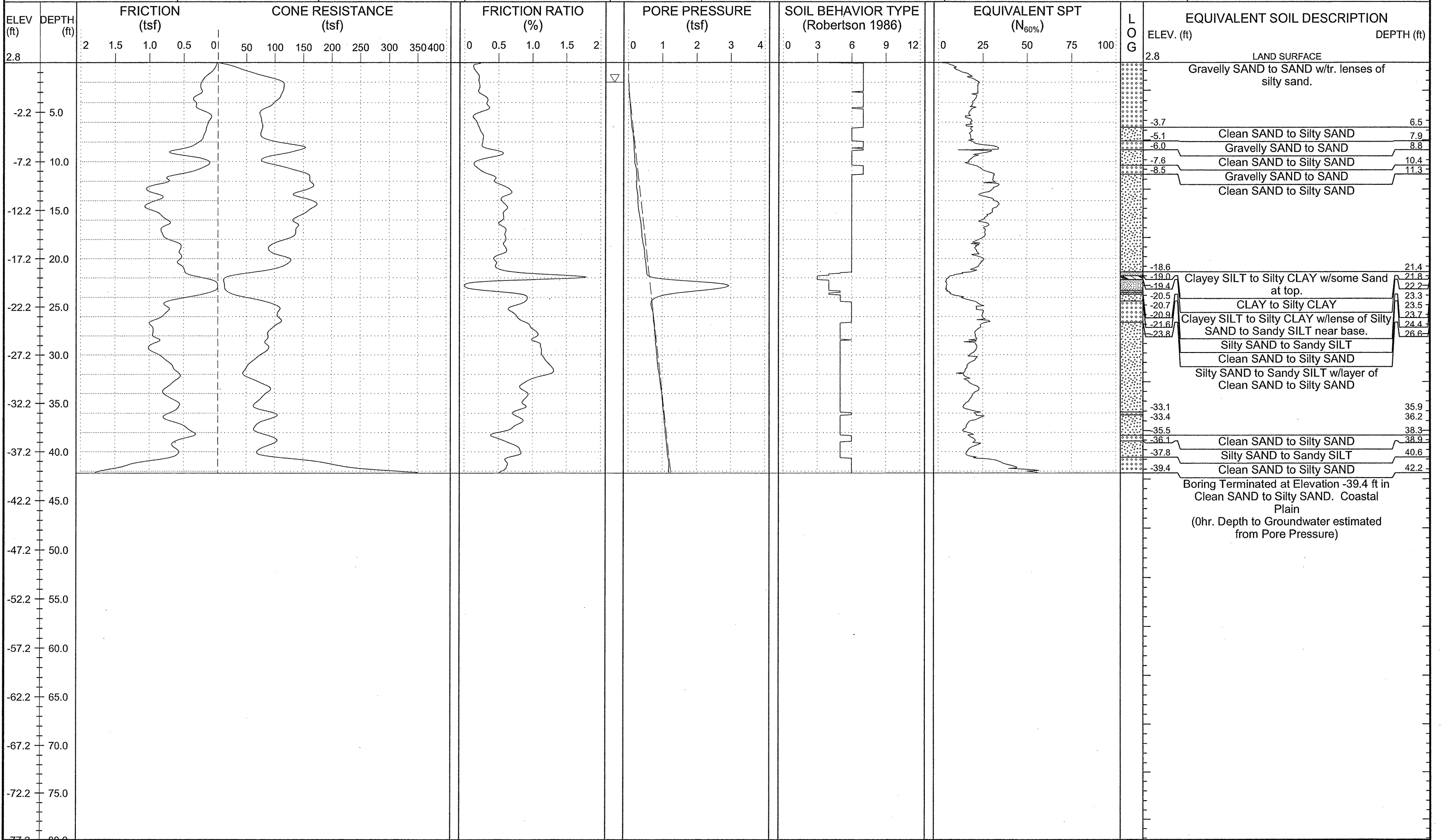


WBS: 13201.1028025	TIP: B-2500	COUNTY: DARE	GEOLOGIST: Steven Hudson	DRILL MACHINE: Pagani 73-200	MAX. DOWN PRESSURE: 20 Ton
SITE DESCRIPTION: Bridge over Pea Island Breach on NC 12			GROUND WTR (ft): 0 HR. 2.0	DRILL METHOD: CPT / DPT	CONE TYPE: Geotech AB
BORING NO.: CPT-01	STATION: 3087+50	OFFSET: 22ft RT	ALIGNMENT: -L-	ROD TYPE: 1.5" Vertek Speeklock	DRILLER: WPC/TERRACON
COLLAR ELEV.: 2.8 ft	TOTAL DEPTH: 40.6 ft	NORTHING: 714,148	EASTING: 3,045,774	24 HR. N/A	START DATE: 02/01/12
				COMP. DATE: 02/01/12	TECHNICIAN: Jim Bandle
					SURFACE WATER DEPTH: N/A

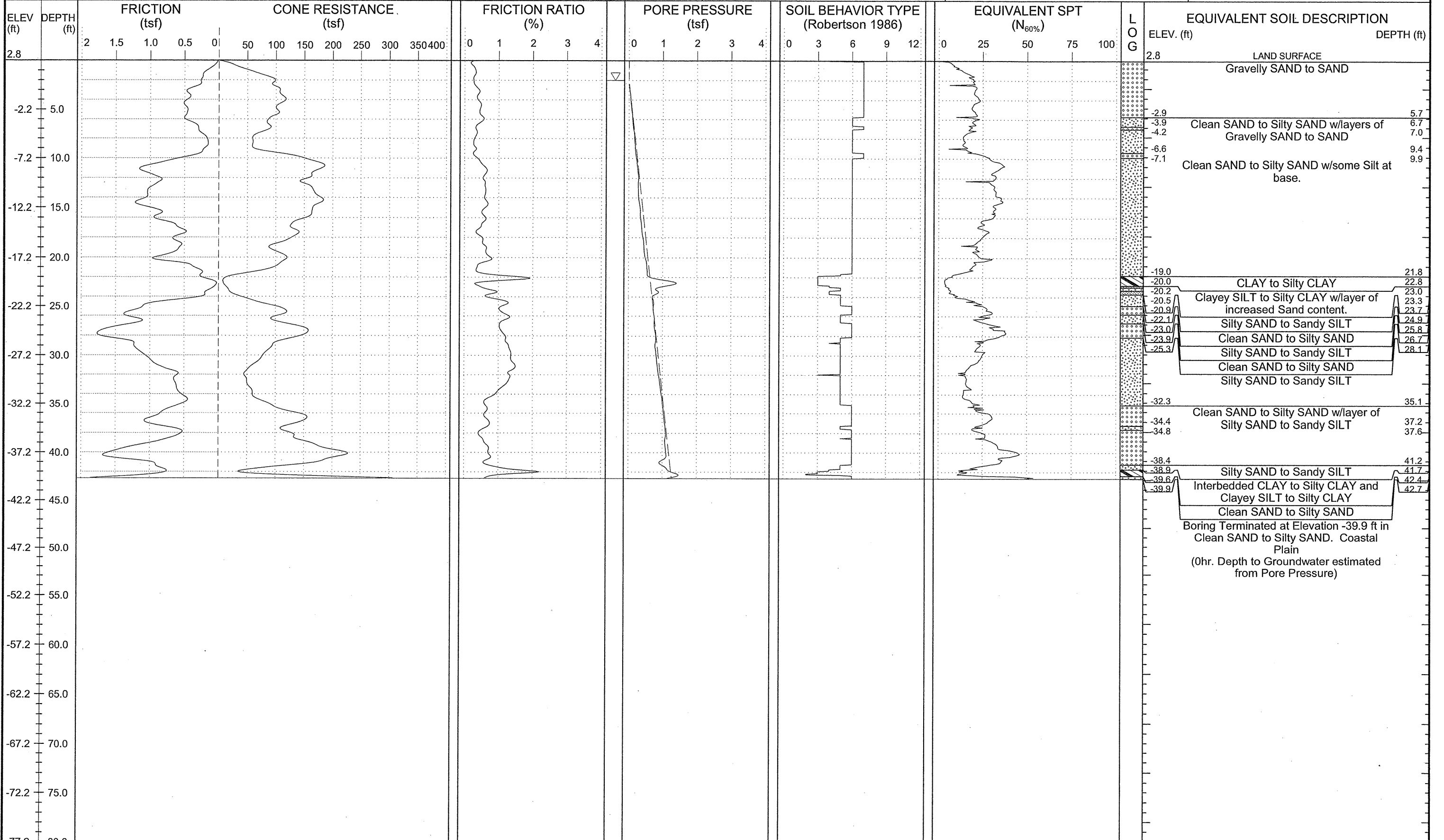




WBS: 13201.1028025	TIP: B-2500	COUNTY: DARE	GEOLOGIST: Steven Hudson	DRILL MACHINE: Pagani 73-200	MAX. DOWN PRESSURE: 20 Ton
SITE DESCRIPTION: Bridge over Pea Island Breach on NC 12			GROUND WTR (ft)	DRILL METHOD: CPT / DPT	CONE TYPE: Geotech AB
BORING NO.: CPT-02	STATION: N/A	OFFSET: N/A	ALIGNMENT: -L-	ROD TYPE: 1.5" Vertek Speeklock	CONE ID: 0
COLLAR ELEV.: 2.8 ft	TOTAL DEPTH: 42.2 ft	NORTHING: 714,224	EASTING: 3,045,772	START DATE: 02/01/12	COMP. DATE: 02/01/12
					DRILLER: WPC/TERRACON
					TECHNICIAN: Jim Bandle
					SURFACE WATER DEPTH: N/A

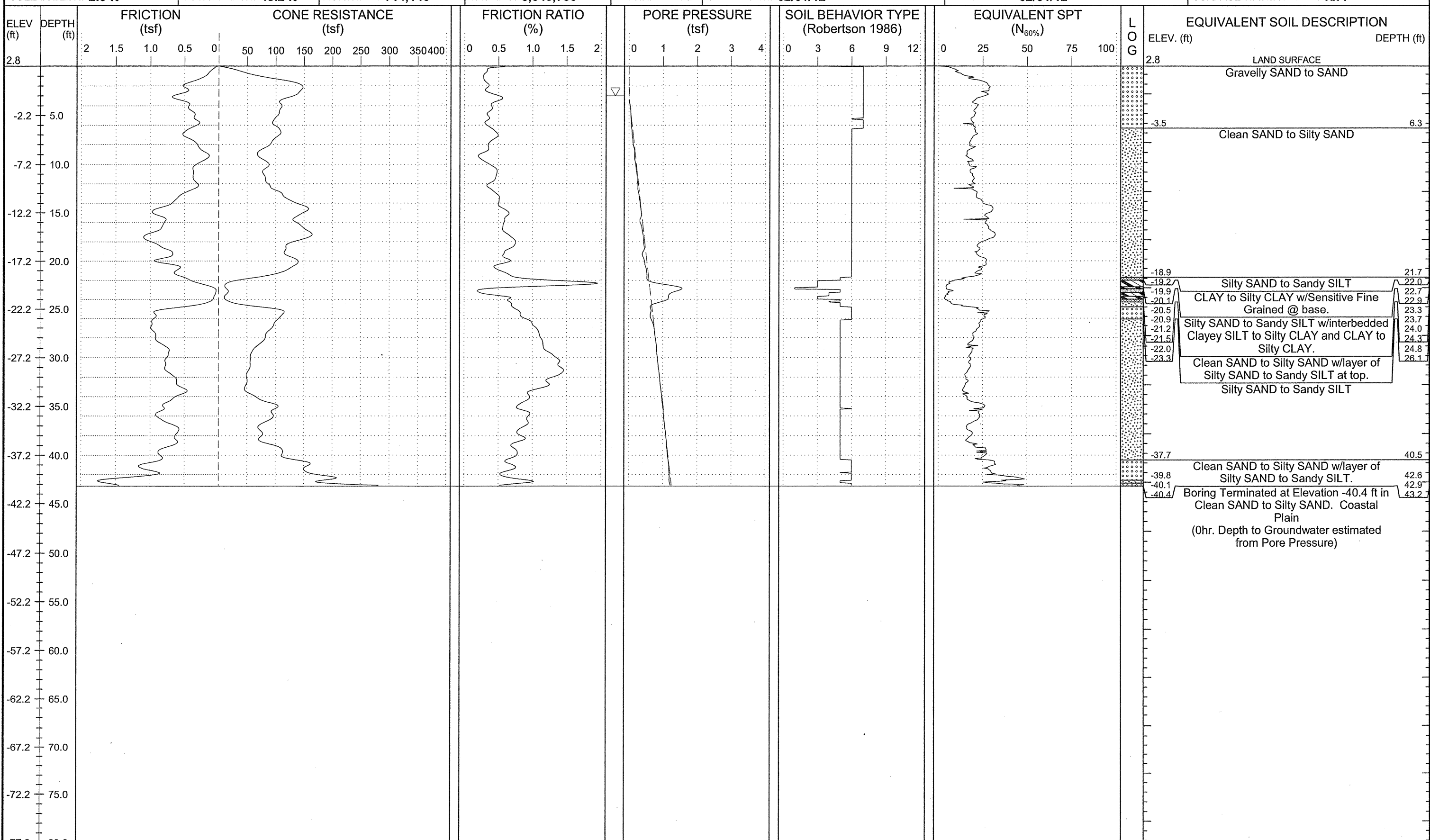


WBS: 13201.1028025	TIP: B-2500	COUNTY: DARE	GEOLOGIST: Steven Hudson	DRILL MACHINE: Pagani 73-200	MAX. DOWN PRESSURE: 20 Ton
SITE DESCRIPTION: Bridge over Pea Island Breach on NC 12			GROUND WTR (ft)	DRILL METHOD: CPT / DPT	CONE TYPE: Geotech AB
BORING NO.: CPT-03	STATION: N/A	OFFSET: N/A	ALIGNMENT: -L-	0 HR. 2.0	ROD TYPE: 1.5" Vertek Speeklock
COLLAR ELEV.: 2.8 ft	TOTAL DEPTH: 42.7 ft	NORTHING: 714,298	EASTING: 3,045,764	24 HR. N/A	START DATE: 02/01/12
				COMP. DATE: 02/01/12	DRILLER: WPC/TERRACON
					TECHNICIAN: Jim Bandle
					SURFACE WATER DEPTH: N/A

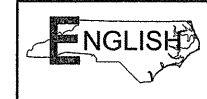




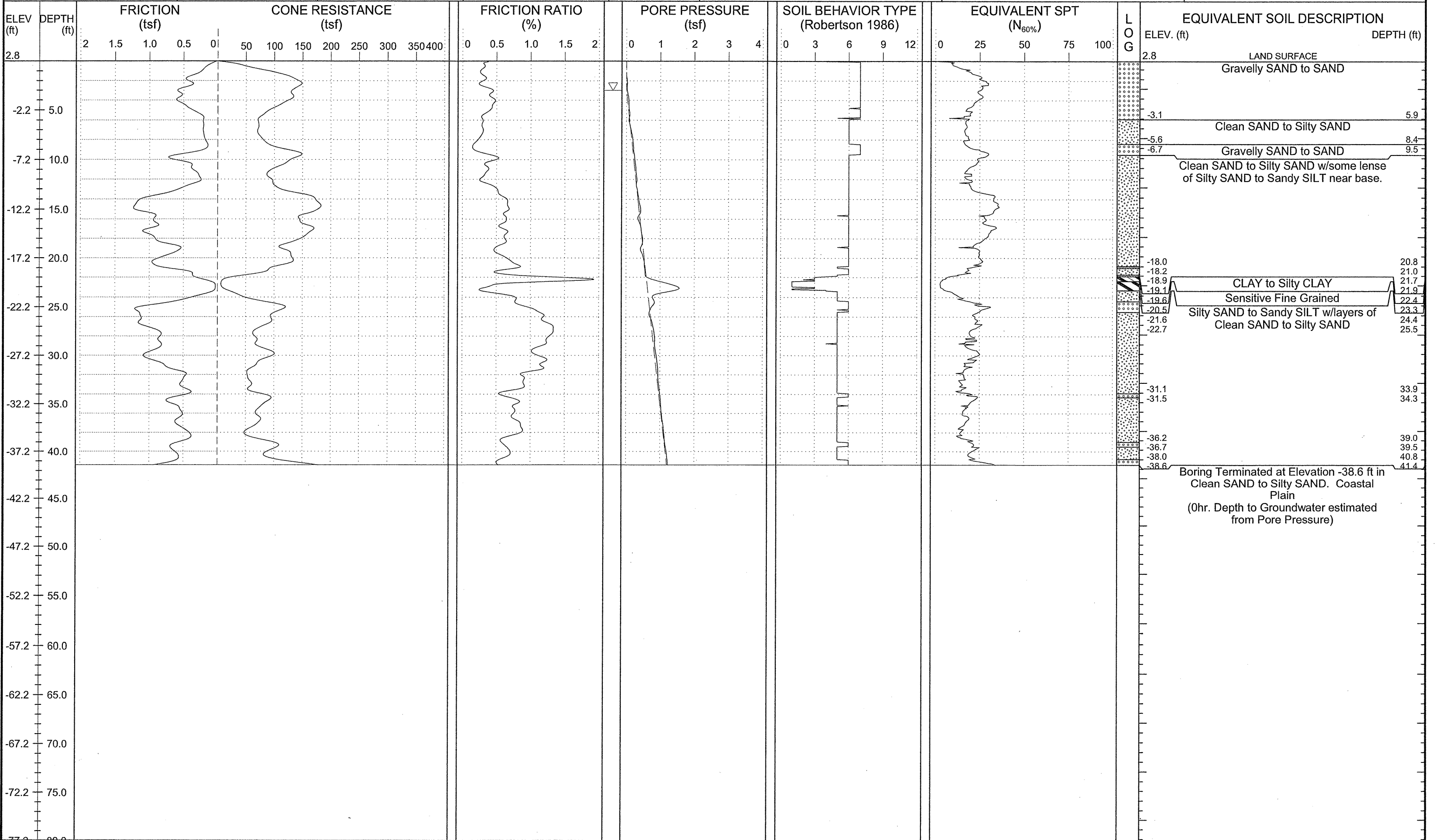
WBS: 13201.1028025	TIP: B-2500	COUNTY: DARE	GEOLOGIST: Steven Hudson	DRILL MACHINE: Pagani 73-200	MAX. DOWN PRESSURE: 20 Ton
SITE DESCRIPTION: Bridge over Pea Island Breach on NC 12			GROUND WTR (ft)	DRILL METHOD: CPT / DPT	CONE TYPE: Geotech AB
BORING NO.: CPT-04	STATION: N/A	OFFSET: N/A	ALIGNMENT: -L-	ROD TYPE: 1.5" Vertek Speeklock	CONE ID: 0
COLLAR ELEV.: 2.8 ft	TOTAL DEPTH: 43.2 ft	NORTHING: 714,146	EASTING: 3,045,730	START DATE: 02/01/12	COMP. DATE: 02/01/12
					DRILLER: WPC/TERRACON
					TECHNICIAN: Jim Bandle
					SURFACE WATER DEPTH: N/A



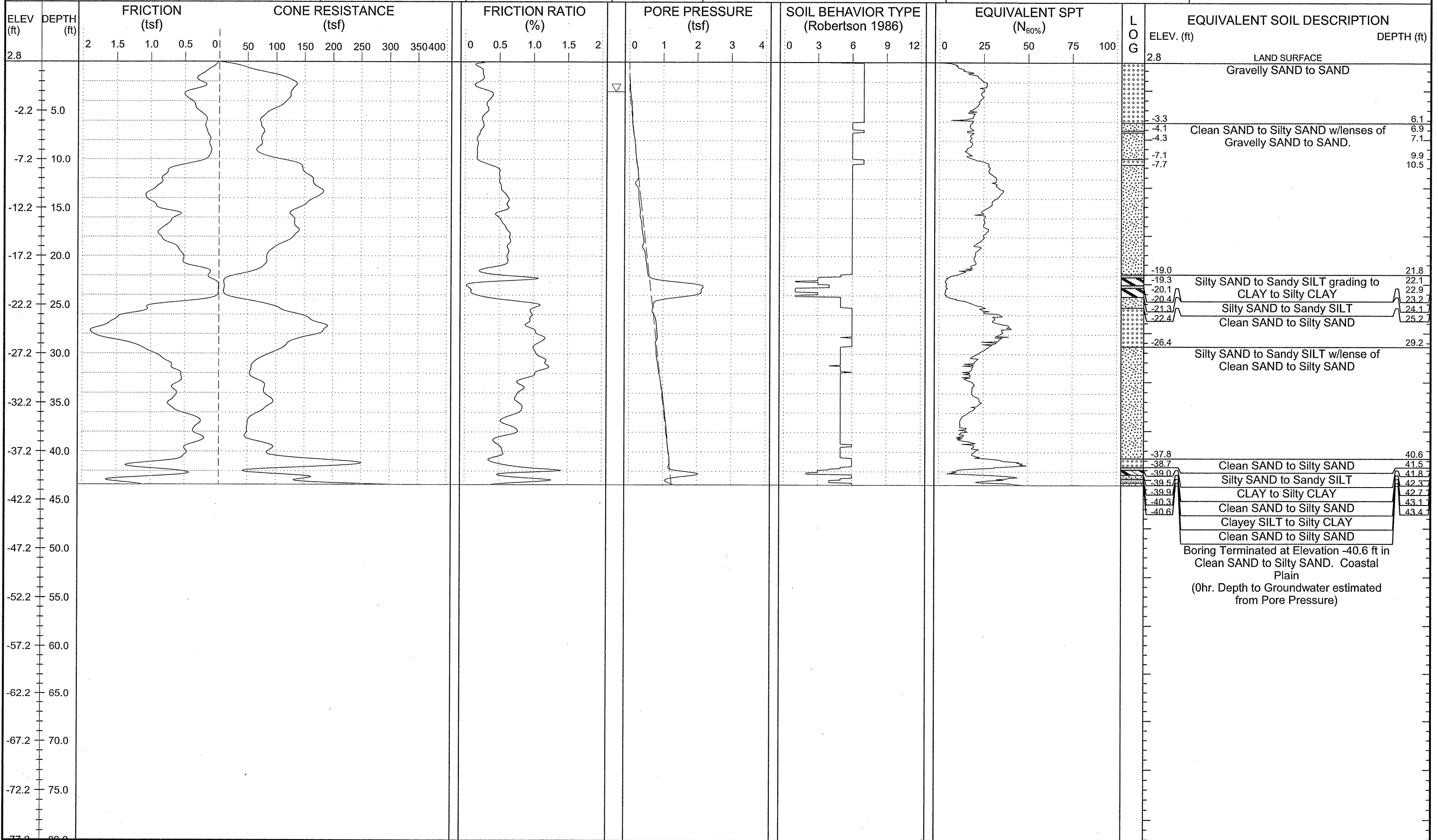




WBS: 13201.1028025	TIP: B-2500	COUNTY: DARE	GEOLOGIST: Steven Hudson	DRILL MACHINE: Pagani 73-200	MAX. DOWN PRESSURE: 20 Ton
SITE DESCRIPTION: Bridge over Pea Island Breach on NC 12			GROUND WTR (ft): 0 HR. 3.0, 24 HR. N/A	DRILL METHOD: CPT / DPT	CONE TYPE: Geotech AB
BORING NO.: CPT-05	STATION: N/A	OFFSET: N/A	ALIGNMENT: -L-	ROD TYPE: 1.5" Vertek Speeklock	CONE ID: 0
COLLAR ELEV.: 2.8 ft	TOTAL DEPTH: 41.4 ft	NORTHING: 714,222	EASTING: 3,045,728	START DATE: 02/01/12	COMP. DATE: 02/01/12
					DRILLER: WPC/TERRACON
					TECHNICIAN: Jim Bandle
					SURFACE WATER DEPTH: N/A

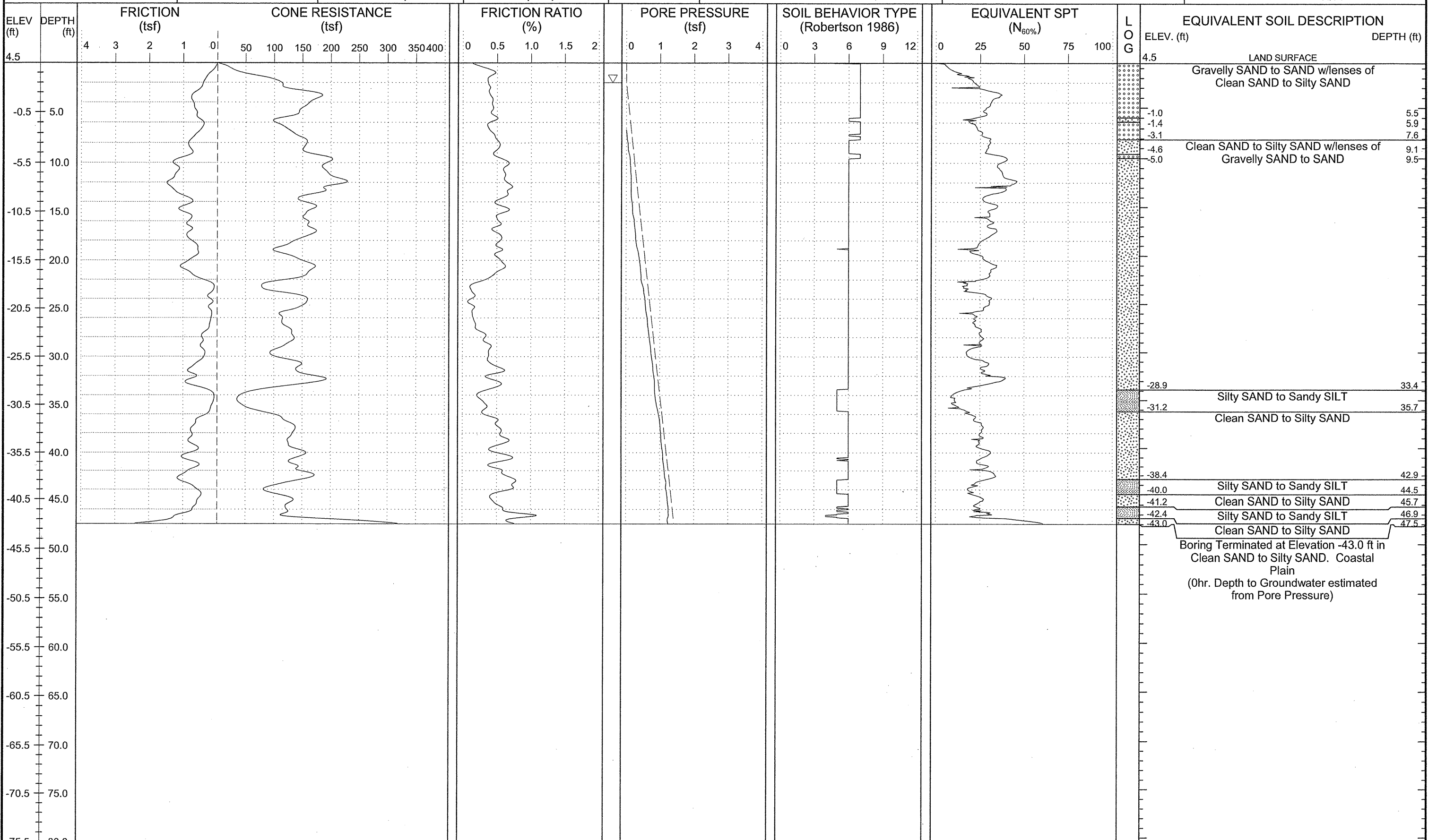


WBS: 13201.1028025	TIP: B-2500	COUNTY: DARE	GEOLOGIST: Steven Hudson	DRILL MACHINE: Pagani 73-200	MAX. DOWN PRESSURE: 20 Ton
SITE DESCRIPTION: Bridge over Pea Island Breach on NC 12			GROUND WTR (ft): 0 HR. 3.0	DRILL METHOD: CPT / DPT	CONE TYPE: Geotech AB
BORING NO.: CPT-06	STATION: N/A	OFFSET: N/A	ALIGNMENT: -L-	ROD TYPE: 1.5" Vertek Specklock	CONE ID: 0
COLLAR ELEV.: 2.8 ft	TOTAL DEPTH: 43.4 ft	NORTHING: 714,296	EASTING: 3,045,720	24 HR. N/A	START DATE: 02/01/12
				COMP. DATE: 02/01/12	DRILLER: WPC/TERRACON
				TECHNICIAN: Jim Bandle	
				SURFACE WATER DEPTH: N/A	



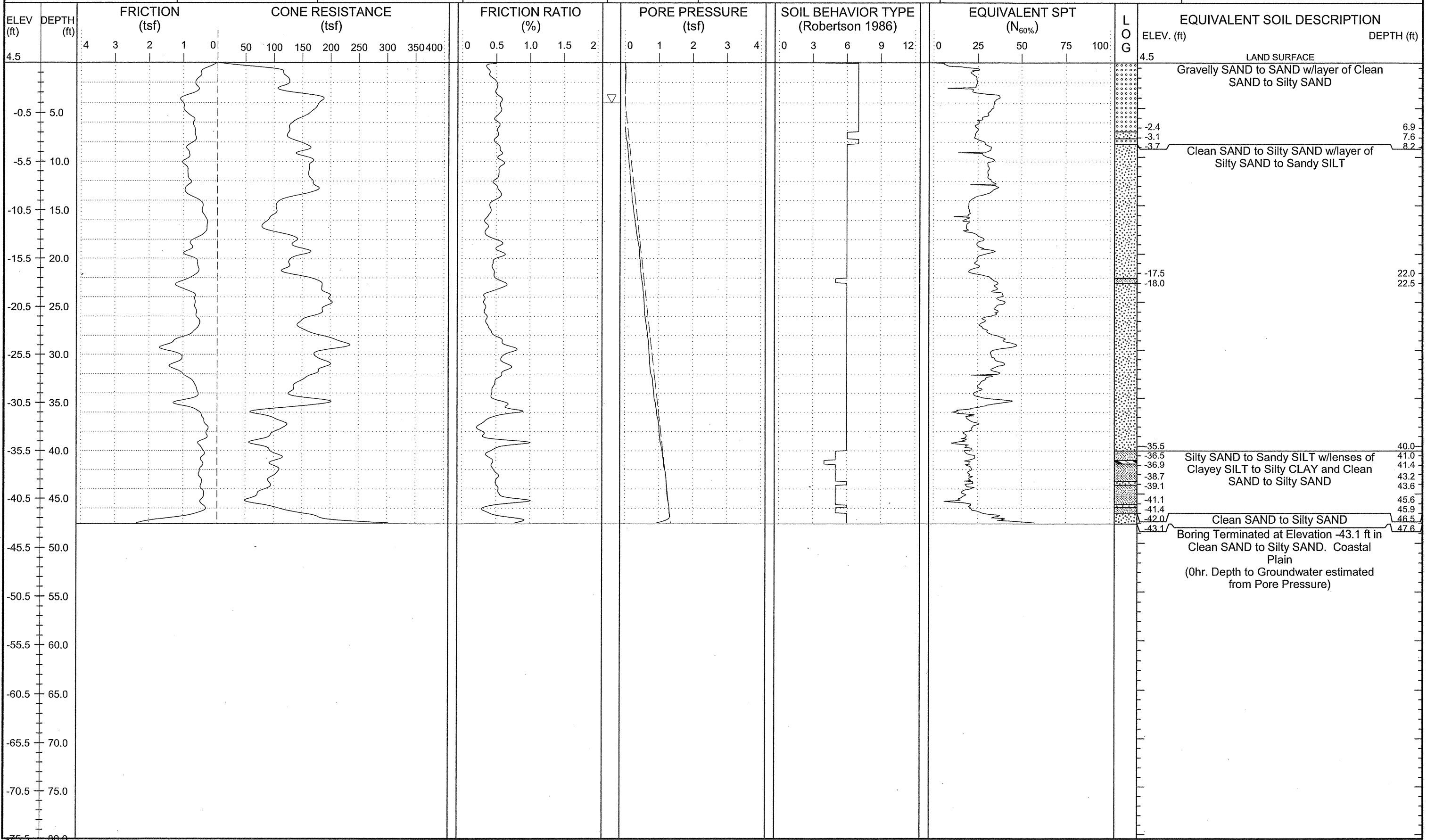


WBS: 13201.1028025	TIP: B-2500	COUNTY: DARE	GEOLOGIST: Steven Hudson	DRILL MACHINE: Pagani 73-200	MAX. DOWN PRESSURE: 20 Ton
SITE DESCRIPTION: Bridge over Pea Island Breach on NC 12			GROUND WTR (ft): 0 HR. 2.0	DRILL METHOD: CPT / DPT	CONE TYPE: Geotech AB
BORING NO.: CPT-07	STATION: N/A	OFFSET: N/A	ALIGNMENT: -L-	ROD TYPE: 1.5" Vertek Specklock	CONE ID: 0
COLLAR ELEV.: 4.5 ft	TOTAL DEPTH: 47.5 ft	NORTHING: 725,147	EASTING: 3,043,530	24 HR. N/A	START DATE: 02/02/12
				COMP. DATE: 02/02/12	DRILLER: WPC/TERRACON
				TECHNICIAN: Jim Bandle	
				SURFACE WATER DEPTH: N/A	

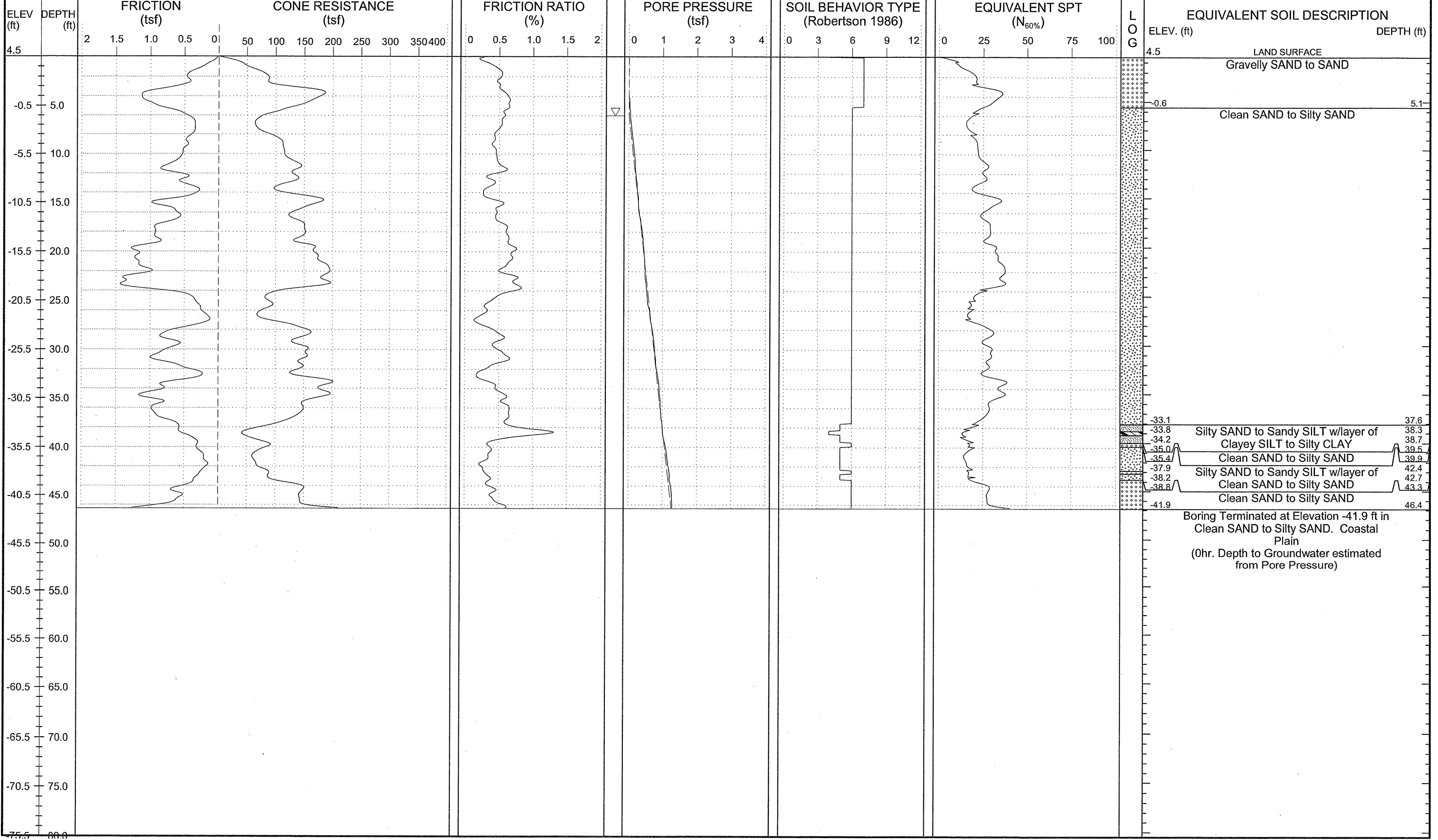


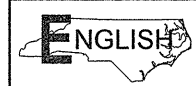


WBS: 13201.1028025	TIP: B-2500	COUNTY: DARE	GEOLOGIST: Steven Hudson	DRILL MACHINE: Pagani 73-200	MAX. DOWN PRESSURE: 20 Ton
SITE DESCRIPTION: Bridge over Pea Island Breach on NC 12			GROUND WTR (ft)	DRILL METHOD: CPT / DPT	CONE TYPE: Geotech AB
BORING NO.: CPT-08	STATION: N/A	OFFSET: N/A	ALIGNMENT: -L-	ROD TYPE: 1.5" Vertek Speeklock	CONE ID: 0
COLLAR ELEV.: 4.5 ft	TOTAL DEPTH: 47.6 ft	NORTHING: 725,219	EASTING: 3,043,511	START DATE: 02/02/12	COMP. DATE: 02/02/12
					DRILLER: WPC/TERRACON
					TECHNICIAN: Jim Bandle
					SURFACE WATER DEPTH: N/A

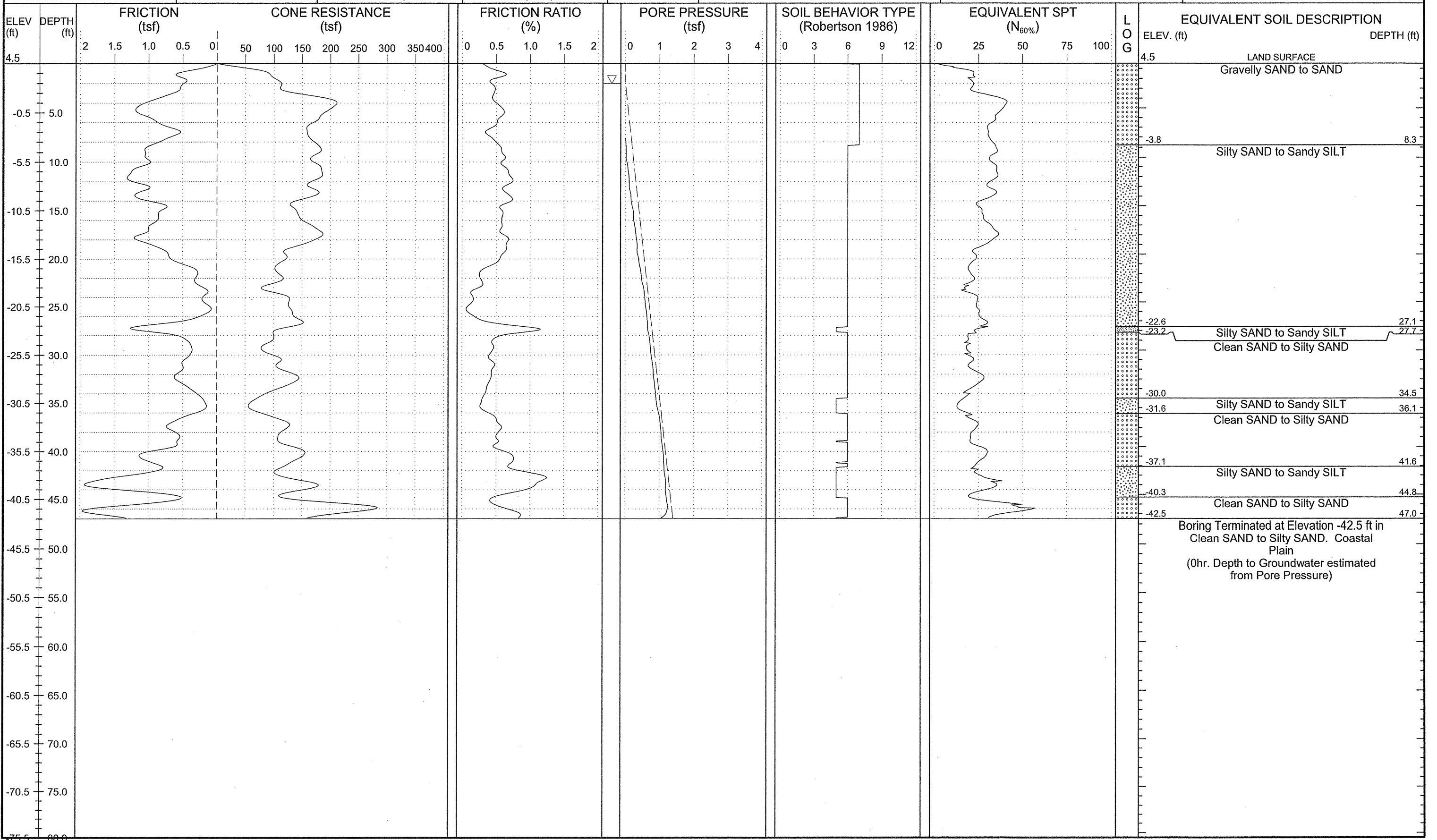


WBS: 13201.1028025	TIP: B-2500	COUNTY: DARE	GEOLOGIST: Steven Hudson	DRILL MACHINE: Pagani 73-200	MAX. DOWN PRESSURE: 20 Ton
SITE DESCRIPTION: Bridge over Pea Island Breach on NC 12			GROUND WTR (ft): 0 HR. 6.0	DRILL METHOD: CPT / DPT	CONE TYPE: Geotech AB
BORING NO.: CPT-09	STATION: N/A	OFFSET: N/A	ALIGNMENT: -L-	ROD TYPE: 1.5" Vertek Specklock	CONE ID: 0
COLLAR ELEV.: 4.5 ft	TOTAL DEPTH: 46.4 ft	NORTHING: 725,282	EASTING: 3,043,493	24 HR. N/A	START DATE: 02/02/12
				COMP. DATE: 02/02/12	SURFACE WATER DEPTH: N/A



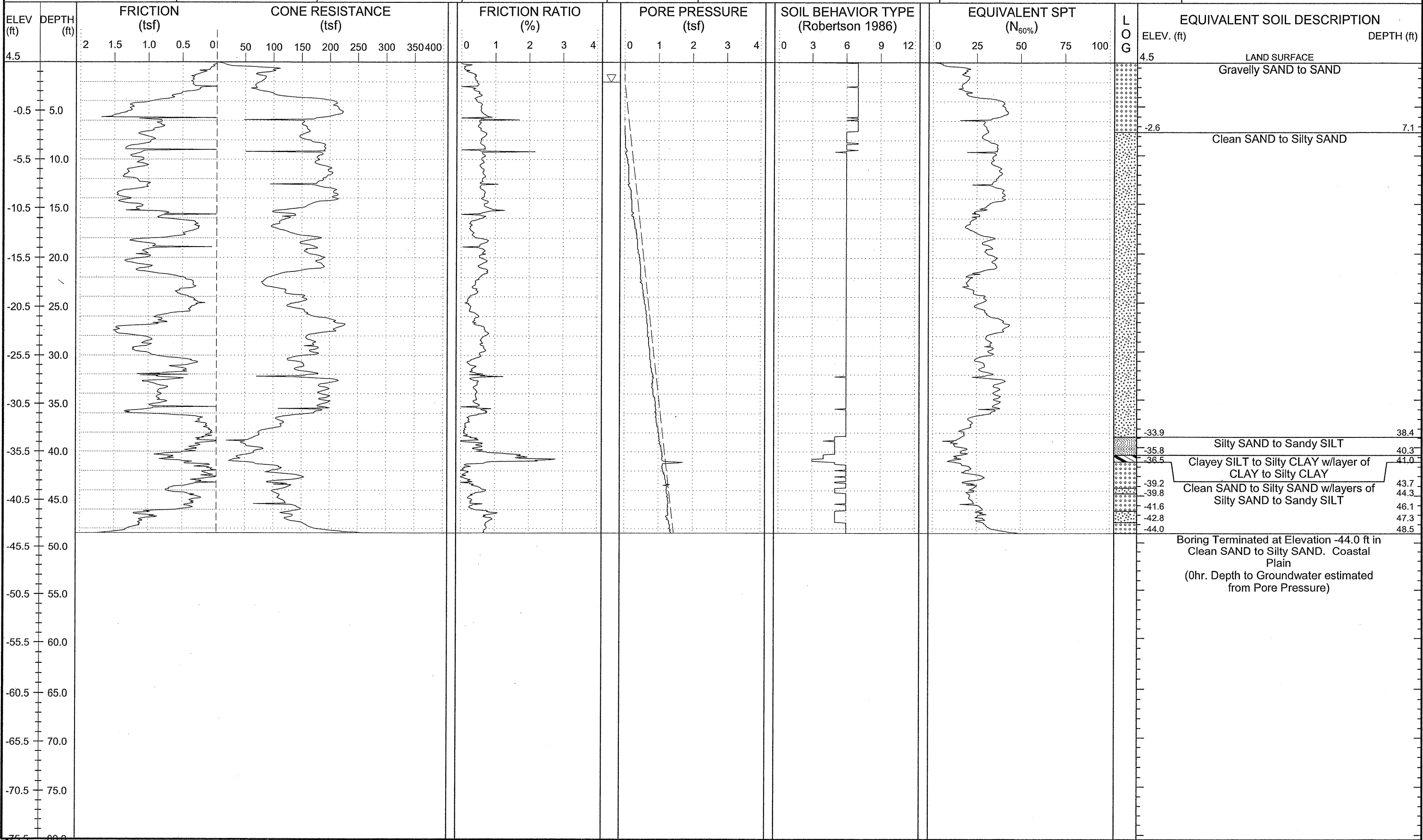


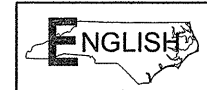
WBS: 13201.1028025	TIP: B-2500	COUNTY: DARE	GEOLOGIST: Steven Hudson	DRILL MACHINE: Pagani 73-200	MAX. DOWN PRESSURE: 20 Ton
SITE DESCRIPTION: Bridge over Pea Island Breach on NC 12			GROUND WTR (ft)	DRILL METHOD: CPT / DPT	CONE TYPE: Geotech AB
BORING NO.: CPT-10	STATION: N/A	OFFSET: N/A	ALIGNMENT: -L-	0 HR. 2.0	ROD TYPE: 1.5" Vertek Speeklock
COLLAR ELEV.: 4.5 ft	TOTAL DEPTH: 47.0 ft	NORTHING: 725,135	EASTING: 3,043,488	24 HR. N/A	START DATE: 02/02/12
				COMP. DATE: 02/02/12	SURFACE WATER DEPTH: N/A





WBS: 13201.1028025	TIP: B-2500	COUNTY: DARE	GEOLOGIST: Steven Hudson	DRILL MACHINE: Pagani 73-200	MAX. DOWN PRESSURE: 20 Ton
SITE DESCRIPTION: Bridge over Pea Island Breach on NC 12			GROUND WTR (ft): 2.0	DRILL METHOD: CPT / DPT	CONE TYPE: Geotech AB
BORING NO.: CPT-11	STATION: N/A	OFFSET: N/A	ALIGNMENT: -L-	ROD TYPE: 1.5" Vertek Speeklock	CONE ID: 0
COLLAR ELEV.: 4.5 ft	TOTAL DEPTH: 48.5 ft	NORTHING: 725,208	EASTING: 3,043,468	START DATE: 02/02/12	COMP. DATE: 02/02/12
					DRILLER: WPC/TERRACON
					TECHNICIAN: Jim Bandle
					SURFACE WATER DEPTH: N/A





WBS: 13201.1028025	TIP: B-2500	COUNTY: DARE	GEOLOGIST: Steven Hudson	DRILL MACHINE: Pagani 73-200	MAX. DOWN PRESSURE: 20 Ton
SITE DESCRIPTION: Bridge over Pea Island Breach on NC 12			GROUND WTR (ft): 0 HR. 2.0	DRILL METHOD: CPT / DPT	CONE TYPE: Geotech AB
BORING NO.: CPT-12	STATION: N/A	OFFSET: N/A	ALIGNMENT: -L-	ROD TYPE: 1.5" Vertek Speeklock	DRILLER: WPC/TERRACON
COLLAR ELEV.: 4.5 ft	TOTAL DEPTH: 47.2 ft	NORTHING: 725,270	EASTING: 3,043,451	START DATE: 02/02/12	TECHNICIAN: Jim Bandle
				COMP. DATE: 02/02/12	SURFACE WATER DEPTH: N/A

