

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	33714.1.1 (B-4465)	1	15

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

STRUCTURE
SUBSURFACE INVESTIGATION

PROJ. REFERENCE NO. 33714.1.1 (B-4465) F.A. NO. BRZ-1208(1)
COUNTY CHOWAN
PROJECT DESCRIPTION BRIDGE NO. 5 ON SR 1208 OVER
PEMBROKE CREEK AT -L- STA. 22+92

CONTENTS

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CAUTION NOTICE

THE SUBSURFACE INFORMATION AND THE SUBSURFACE INVESTIGATION ON WHICH IT IS BASED WERE MADE FOR THE PURPOSE OF STUDY, PLANNING, AND DESIGN, AND NOT FOR CONSTRUCTION OR PAY PURPOSES. THE VARIOUS FIELD BORING LOGS, ROCK CORES, AND SOIL TEST DATA AVAILABLE MAY BE REVIEWED OR INSPECTED IN RALEIGH BY CONTACTING THE N. C. DEPARTMENT OF TRANSPORTATION, GEOTECHNICAL ENGINEERING UNIT AT (919) 250-4088. 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.

PROJECT: 33714.1.1 ID: B-4465

PERSONNEL

T.C. BOTTOMS

S.C. DILLARD

R. SMITH

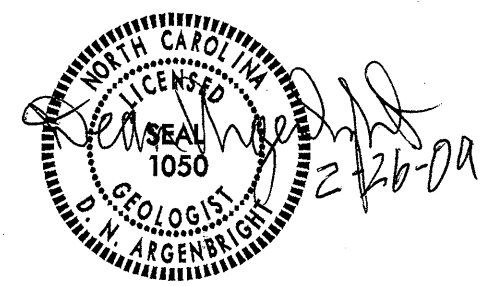
J. EDMONDSON

INVESTIGATED BY T.C. BOTTOMS

CHECKED BY D.N. ARGENBRIGHT

SUBMITTED BY D.N. ARGENBRIGHT

DATE FEBRUARY, 2009



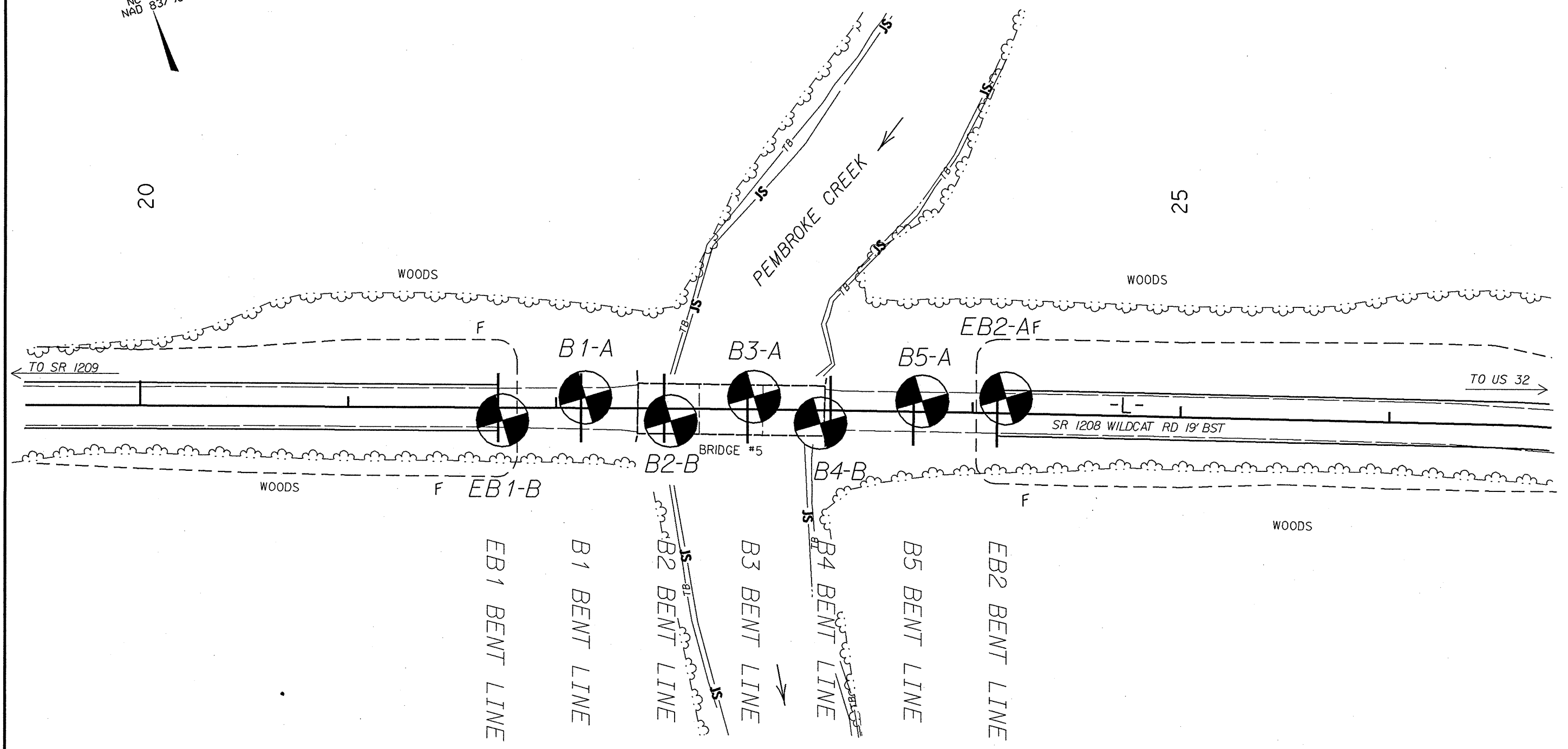
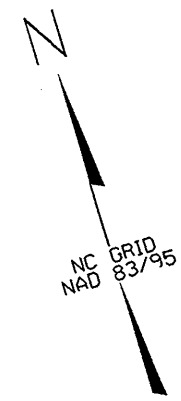
DRAWN BY: T.C. BOTTOMS, C.P. TURNER

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.	SHEET
B-4465	3 OF 15
SITE PLAN	

SKEW = 90°

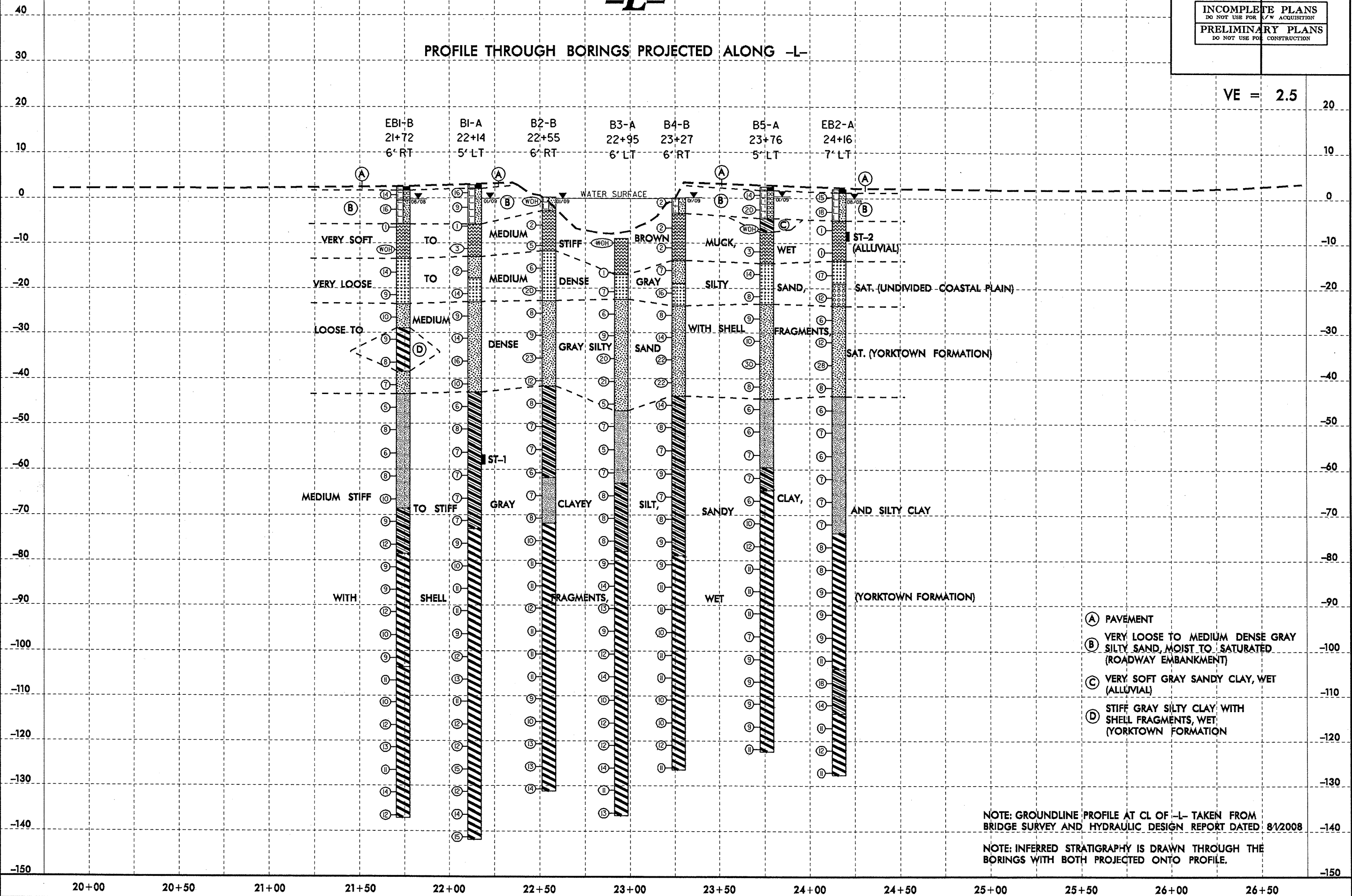


-L-

PROJECT REFERENCE NO. B-4465	SHEET NO. 4 OF 15
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
INCOMPLETE PLANS DO NOT USE FOR R/W ACQUISITION PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION	

PROFILE THROUGH BORINGS PROJECTED ALONG -L-

VE = 2.5 20



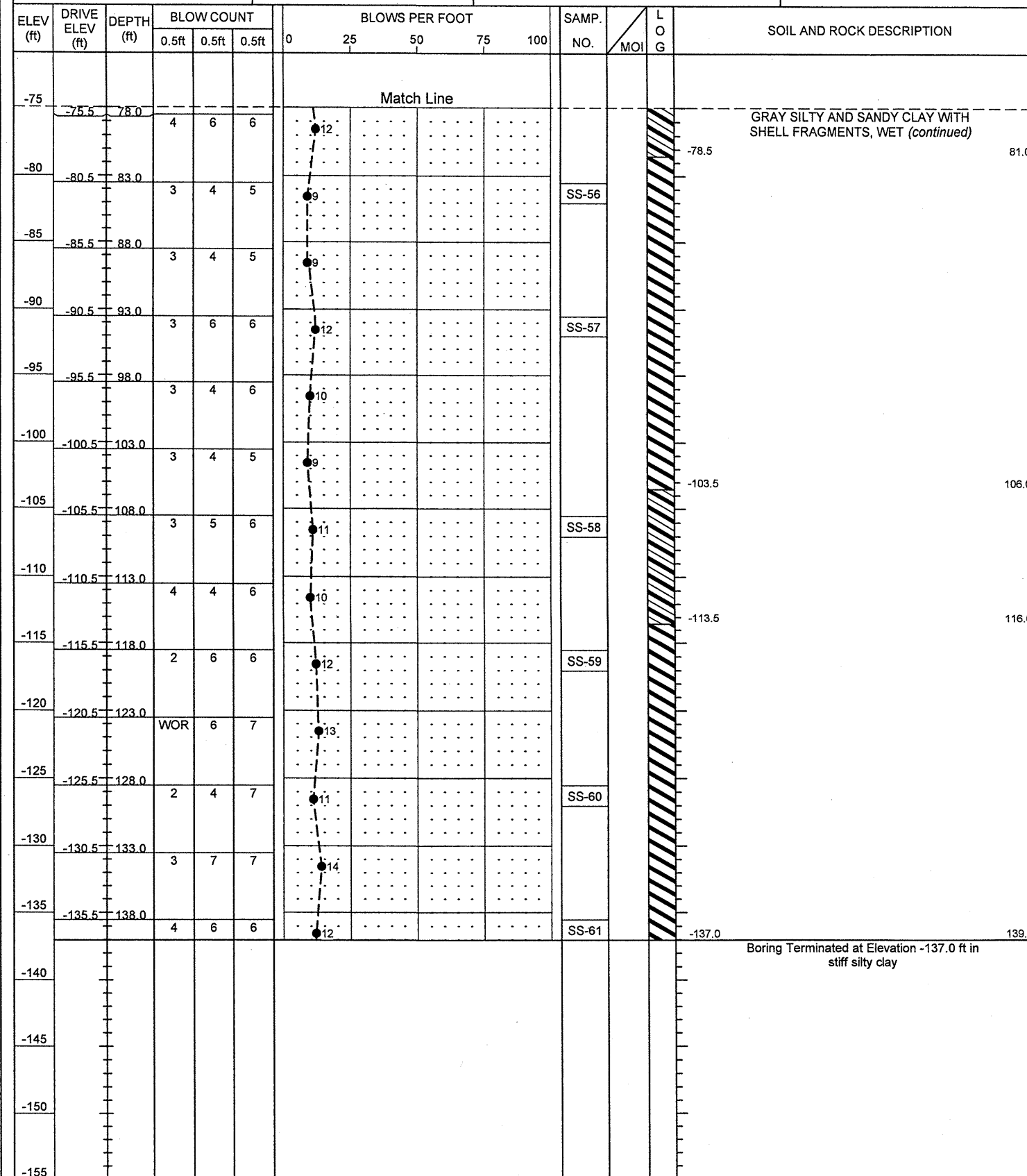
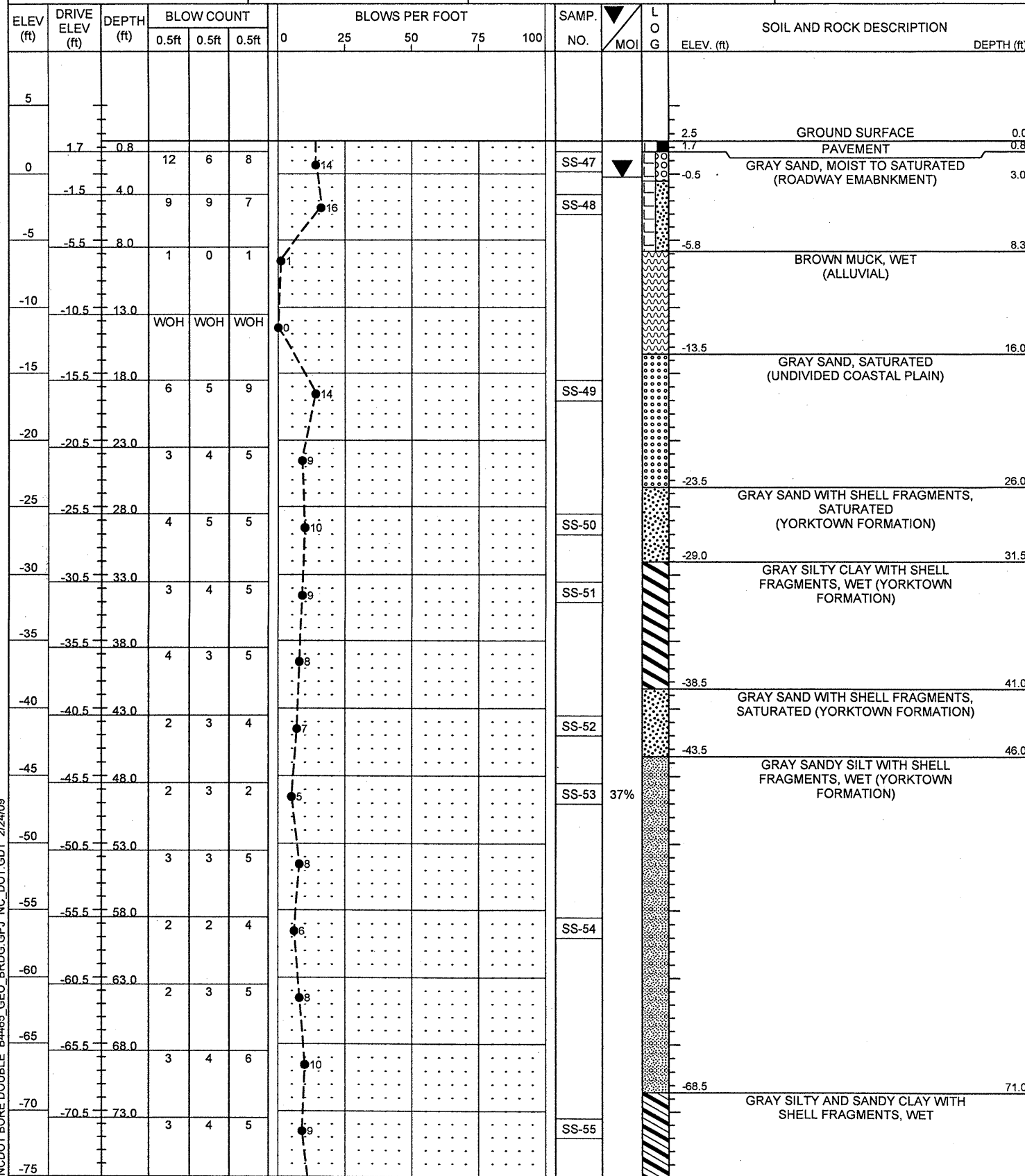
40
30
20
10
0
-10
-20
-30
-40
-50
-60
-70
-80
-90
-100
-110
-120
-130
-140
-150

20
10
0
-10
-20
-30
-40
-50
-60
-70
-80
-90
-100
-110
-120
-130
-140
-150

20+00 20+50 21+00 21+50 22+00 22+50 23+00 23+50 24+00 24+50 25+00 25+50 26+00 26+50

PROJECT NO. 33714.1.1	ID. B-4465	COUNTY CHOWAN	GEOLOGIST Swartley, J. R.
SITE DESCRIPTION BRIDGE NO. 5 ON -L- (SR 1208) OVER PEMBROKE CREEK			GROUND WTR (ft)
BORING NO. EB1-B	STATION 21+74	OFFSET 6ft RT	ALIGNMENT -L-
COLLAR ELEV. 2.5 ft	TOTAL DEPTH 139.5 ft	NORTHING 859,341	EASTING 2,696,734
DRILL MACHINE CME-45B		DRILL METHOD Mud Rotary	HAMMER TYPE Automatic
START DATE 08/25/08	COMP. DATE 08/25/08	SURFACE WATER DEPTH N/A	DEPTH TO ROCK N/A

PROJECT NO. 33714.1.1	ID. B-4465	COUNTY CHOWAN	GEOLOGIST Swartley, J. R.
SITE DESCRIPTION BRIDGE NO. 5 ON -L- (SR 1208) OVER PEMBROKE CREEK			GROUND WTR (ft)
BORING NO. EB1-B	STATION 21+74	OFFSET 6ft RT	ALIGNMENT -L-
COLLAR ELEV. 2.5 ft	TOTAL DEPTH 139.5 ft	NORTHING 859,341	EASTING 2,696,734
DRILL MACHINE CME-45B		DRILL METHOD Mud Rotary	HAMMER TYPE Automatic
START DATE 08/25/08	COMP. DATE 08/25/08	SURFACE WATER DEPTH N/A	DEPTH TO ROCK N/A



NC DOT BORE DOUBLE B4465_GEO_BRD.GPJ NC_DOT_GDT_2/24/09

PROJECT NO. 33714.1.1		ID. B-4465		COUNTY CHOWAN		GEOLOGIST Dillard, S. C.									
SITE DESCRIPTION BRIDGE NO. 5 ON -L- (SR 1208) OVER PEMBROKE CREEK						GROUND WTR (ft)									
BORING NO. B1-A		STATION 22+14		OFFSET 5ft LT		ALIGNMENT -L-									
COLLAR ELEV. 2.8 ft		TOTAL DEPTH 144.7 ft		NORTHING 859,340		EASTING 2,696,776									
DRILL MACHINE CME-45B		DRILL METHOD Mud Rotary		HAMMER TYPE Automatic											
START DATE 01/07/09		COMP. DATE 01/08/09		SURFACE WATER DEPTH N/A		DEPTH TO ROCK 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					
5															
	2.0	0.8													
0			8	9	7										
	-1.2	4.0													
-5			6	4	5										
	-5.4	8.2													
-10			1												
	-10.4	13.2													
-15			1	1	2										
	-15.4	18.2													
-20			1	1	1										
	-20.4	23.2													
-25			6	5	9										
	-25.4	28.2													
-30			3	4	5										
	-30.4	33.2													
-35			6	7	7										
	-35.4	38.2													
-40			6	7	9										
	-40.4	43.2													
-45			3	5	5										
	-45.4	48.2													
-50			2	3	3										
	-50.4	53.2													
-55			3	3	5										
	-55.4	58.2													
-60			2	3	4										
	-60.4	63.2													
-65			3	5	5										
	-65.4	68.2													
-70			2	4	3										
	-70.4	73.2													
-75			3	3	4										

PROJECT NO. 33714.1.1		ID. B-4465		COUNTY CHOWAN		GEOLOGIST Dillard, S. C.									
SITE DESCRIPTION BRIDGE NO. 5 ON -L- (SR 1208) OVER PEMBROKE CREEK						GROUND WTR (ft)									
BORING NO. B1-A		STATION 22+14		OFFSET 5ft LT		ALIGNMENT -L-									
COLLAR ELEV. 2.8 ft		TOTAL DEPTH 144.7 ft		NORTHING 859,340		EASTING 2,696,776									
DRILL MACHINE CME-45B		DRILL METHOD Mud Rotary		HAMMER TYPE Automatic											
START DATE 01/07/09		COMP. DATE 01/08/09		SURFACE WATER DEPTH N/A		DEPTH TO ROCK 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					
	-75.4	78.2													
-75			3	4	5										
	-80.4	83.2													
-80			4	5	5										
	-85.4	88.2													
-85			4	5	6										
	-90.4	93.2													
-90			5	4	7										
	-95.4	98.2													
-95			3	4	5										
	-100.4	103.2													
-100			4	5	7										
	-105.4	108.2													
-105			4	7	6										
	-110.4	113.2													
-110			4	6	5										
	-115.4	118.2													
-115			4	6	6										
	-120.4	123.2													
-120			4	5	7										
	-125.4	128.2													
-125			5	6	9										
	-130.4	133.2													
-130			5	5	7										
	-135.4	138.2													
-135			5	6	8										
	-140.4	143.2													
-140			5	6	9										
	-141.9	144.7													
-141.9															
-145															
-150															
-155															

NC DOT BORE DOUBLE B4465 GEO BRDG.GPJ NC_DOT.GDT 2/24/09

GRAY SILTY CLAY WITH SHELL FRAGMENTS, WET (YORKTOWN FORMATION) (continued)

Boring Terminated at Elevation -141.9 ft in stiff silty clay
 Note: Log stopped sampler at 8.8 feet depth
 Other Samples:
 ST-1 (59.7 - 61.7)

PROJECT NO. 33714.1.1	ID. B-4465	COUNTY CHOWAN	GEOLOGIST Dillard, S. C.
SITE DESCRIPTION BRIDGE NO. 5 ON -L- (SR 1208) OVER PEMBROKE CREEK			GROUND WTR (ft)
BORING NO. B2-B	STATION 22+55	OFFSET 6ft RT	ALIGNMENT -L-
COLLAR ELEV. 0.2 ft	TOTAL DEPTH 131.4 ft	NORTHING 859,318	EASTING 2,696,811
DRILL MACHINE CME-45B	DRILL METHOD Mud Rotary	HAMMER TYPE Automatic	
START DATE 01/15/09	COMP. DATE 01/26/09	SURFACE WATER DEPTH N/A	DEPTH TO ROCK 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	0.2	0.0	WOH	WOH	WOH								GROUND SURFACE	0.0
-5	-5.1	5.2	WOH	1	1								GRAY SILTY SAND, MOIST TO SATURATED (ROADWAY EMBANKMENT)	3.0
-10	-9.7	9.8	WOH	1	4								BROWN MUCK, WET (ALLUVIAL)	12.0
-15	-14.7	14.8		8	3	3							GRAY SAND, SATURATED (UNDIVIDED COASTAL PLAIN)	23.0
-20	-19.7	19.8		5	11	9							GRAY SILTY SAND WITH SHELL FRAGMENTS, SATURATED (YORKTOWN FORMATION)	42.0
-25	-24.7	24.8		2	3	5							GRAY SANDY CLAY WITH SHELL FRAGMENTS, WET (YORKTOWN FORMATION)	62.0
-30	-29.7	29.8		5	4	5							GRAY CLAYEY SANDY SILT WITH SHELL FRAGMENTS, WET	72.0
-35	-34.7	34.8		9	9	14							GRAY SILTY CLAY WITH SHELL FRAGMENTS, WET	
-40	-39.7	39.8		4	6	6								
-45	-44.7	44.8		3	3	5								
-50	-49.8	49.9		3	3	4								
-55	-54.8	54.9		3	3	4								
-60	-59.8	59.9		3	3	3								
-65	-64.8	64.9		3	3	4								
-70	-69.8	69.9		4	3	5								
-75	-74.8	74.9												

PROJECT NO. 33714.1.1	ID. B-4465	COUNTY CHOWAN	GEOLOGIST Dillard, S. C.
SITE DESCRIPTION BRIDGE NO. 5 ON -L- (SR 1208) OVER PEMBROKE CREEK			GROUND WTR (ft)
BORING NO. B2-B	STATION 22+55	OFFSET 6ft RT	ALIGNMENT -L-
COLLAR ELEV. 0.2 ft	TOTAL DEPTH 131.4 ft	NORTHING 859,318	EASTING 2,696,811
DRILL MACHINE CME-45B	DRILL METHOD Mud Rotary	HAMMER TYPE Automatic	
START DATE 01/15/09	COMP. DATE 01/26/09	SURFACE WATER DEPTH N/A	DEPTH TO ROCK 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	-79.8	79.9		4	5	6							Match Line	
-85	-84.8	84.9		4	6	5							GRAY SILTY CLAY WITH SHELL FRAGMENTS, WET (continued)	
-90	-89.8	89.9		4	5	7								
-95	-94.8	94.9		3	5	6								
-100	-99.8	99.9		4	5	6								
-105	-104.8	104.9		3	5	6								
-110	-109.8	109.9		4	4	5								
-115	-114.8	114.9		3	5	5								
-120	-119.8	119.9		5	6	7								
-125	-124.8	124.9		5	5	8								
-130	-129.8	129.9		5	6	8								
-135														
-140														
-145														
-150														
-155														

NCDOT BORE DOUBLE B4465_GEO_BRDG.GPJ NC_DOT_GDT 2/24/09

Boring Terminated at Elevation -131.3 ft in stiff silty clay

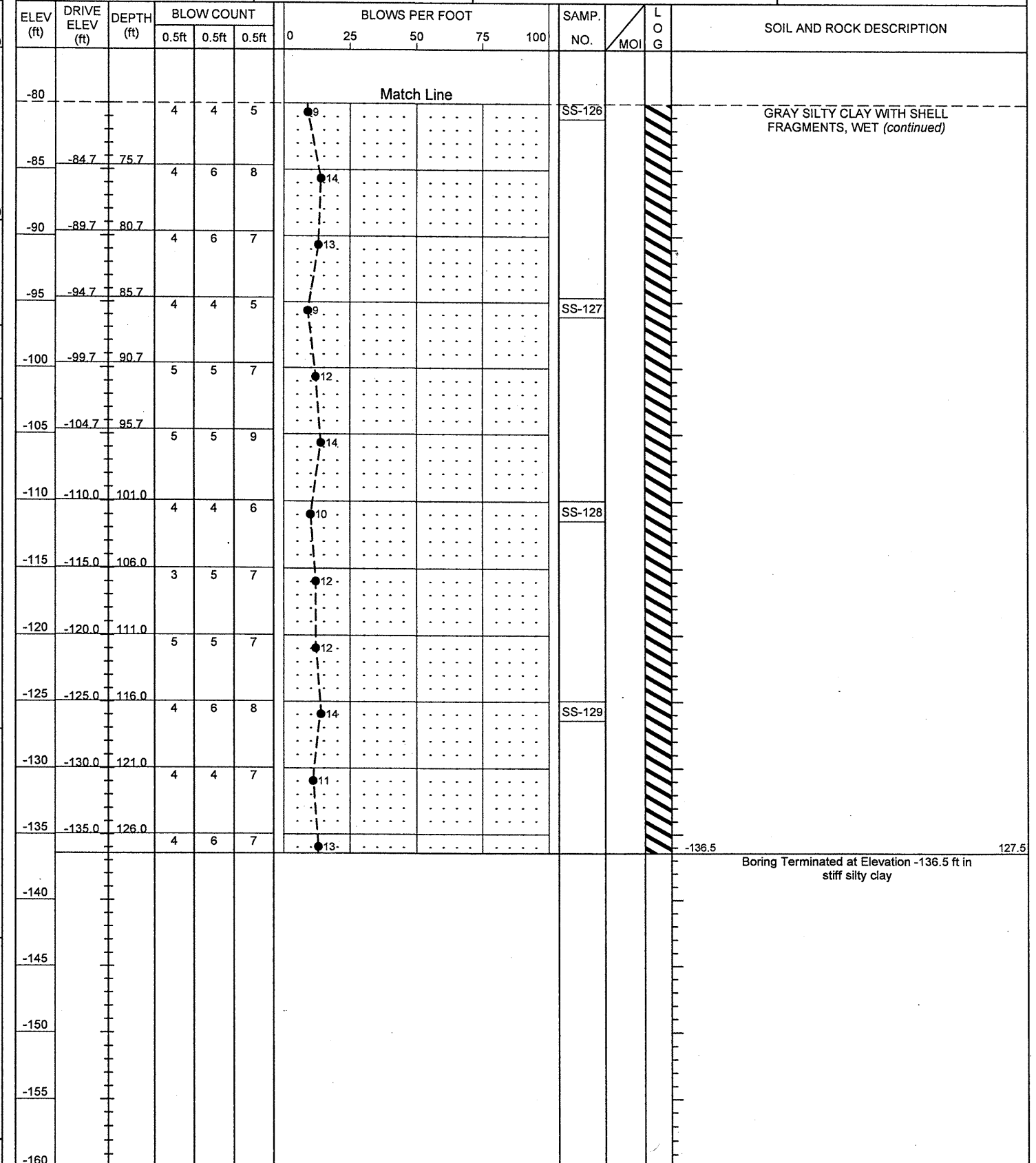
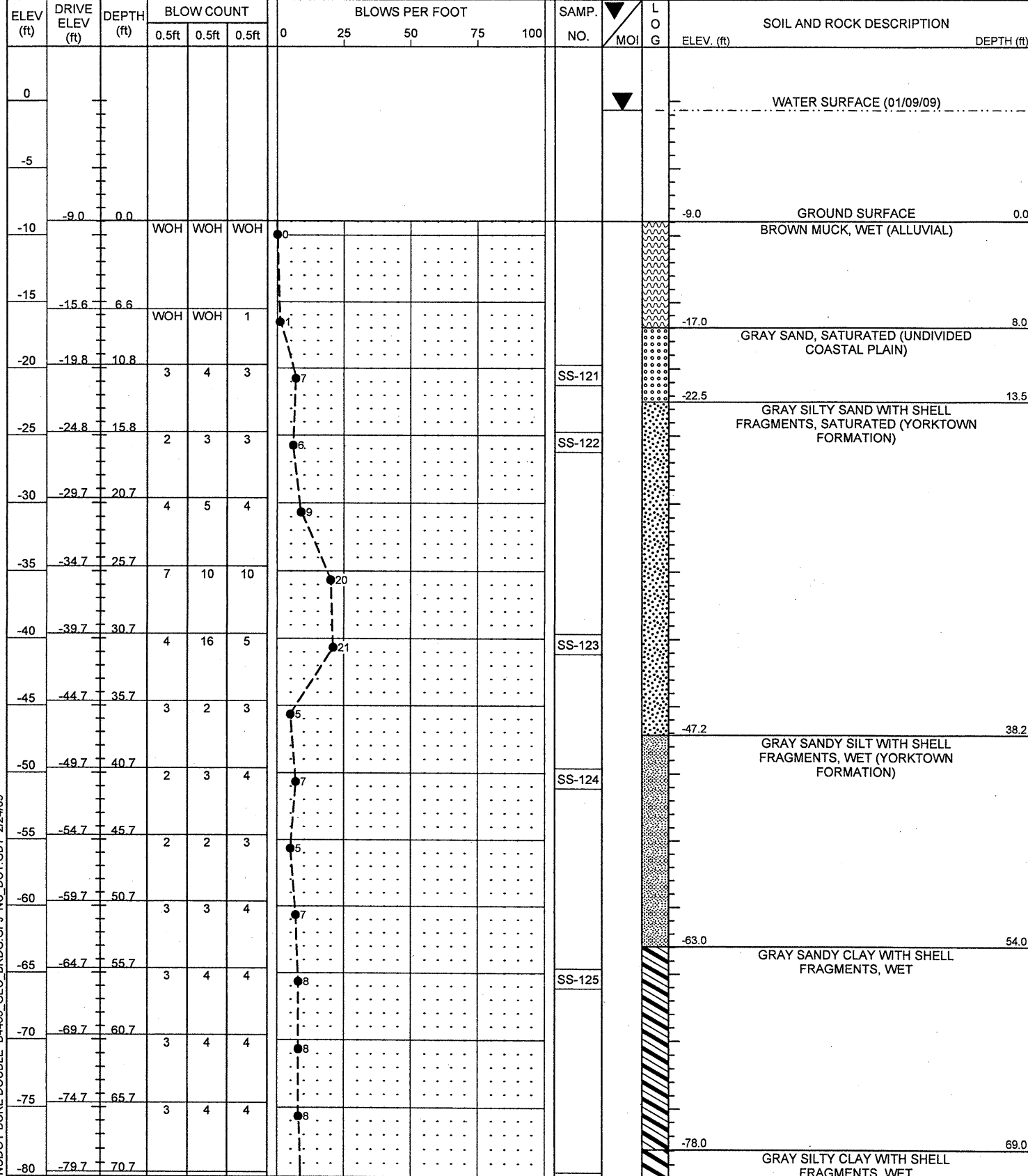


NCDOT GEOTECHNICAL ENGINEERING UNIT

BORELOG REPORT

PROJECT NO. 33714.1.1	ID. B-4465	COUNTY CHOWAN	GEOLOGIST Dillard, S. C.
SITE DESCRIPTION BRIDGE NO. 5 ON -L- (SR 1208) OVER PEMBROKE CREEK			GROUND WTR (ft)
BORING NO. B3-A	STATION 22+95	OFFSET 6ft LT	ALIGNMENT -L-
COLLAR ELEV. -9.0 ft	TOTAL DEPTH 127.5 ft	NORTHING 859,318	EASTING 2,696,853
DRILL MACHINE CME-45B	DRILL METHOD Mud Rotary	HAMMER TYPE Automatic	
START DATE 01/09/09	COMP. DATE 01/14/09	SURFACE WATER DEPTH 8.3ft	DEPTH TO ROCK N/A

PROJECT NO. 33714.1.1	ID. B-4465	COUNTY CHOWAN	GEOLOGIST Dillard, S. C.
SITE DESCRIPTION BRIDGE NO. 5 ON -L- (SR 1208) OVER PEMBROKE CREEK			GROUND WTR (ft)
BORING NO. B3-A	STATION 22+95	OFFSET 6ft LT	ALIGNMENT -L-
COLLAR ELEV. -9.0 ft	TOTAL DEPTH 127.5 ft	NORTHING 859,318	EASTING 2,696,853
DRILL MACHINE CME-45B	DRILL METHOD Mud Rotary	HAMMER TYPE Automatic	
START DATE 01/09/09	COMP. DATE 01/14/09	SURFACE WATER DEPTH 8.3ft	DEPTH TO ROCK N/A



NCDOT BORE DOUBLE B4465_GEO_BRDG.GPJ NC_DOT_GDT 2/24/09

PROJECT NO. 33714.1.1		ID. B-4465		COUNTY CHOWAN		GEOLOGIST Dillard, S. C.							
SITE DESCRIPTION BRIDGE NO. 5 ON -L- (SR 1208) OVER PEMBROKE CREEK						GROUND WTR (ft)							
BORING NO. B4-B		STATION 23+27		OFFSET 6ft RT		ALIGNMENT -L-							
COLLAR ELEV. 0.0 ft		TOTAL DEPTH 126.5 ft		NORTHING 859,295		EASTING 2,696,887							
DRILL MACHINE CME-45B		DRILL METHOD Mud Rotary		HAMMER TYPE Automatic									
START DATE 01/14/09		COMP. DATE 01/15/09		SURFACE WATER DEPTH N/A		DEPTH TO ROCK N/A							
ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT				SAMP. NO.	LOG MOI G	SOIL AND ROCK DESCRIPTION	DEPTH (ft)
			0.5ft	0.5ft	0.5ft	0	25	50	75				
5													
0	0.0	0.0											0.0
-5	-5.7	5.7	WOH	WOH	2								0.0
-10	-10.1	10.1											-3.5
-15	-15.1	15.1	WOH	1	1								-3.5
-20	-20.1	20.1											-14.0
-25	-25.1	25.1	1	2	5								-14.0
-30	-30.1	30.1											-19.0
-35	-35.0	35.0	4	7	9								-19.0
-40	-40.0	40.0											-24.0
-45	-45.0	45.0	2	3	5								-24.0
-50	-50.0	50.0	7	6	8								-44.0
-55	-55.0	55.0	11	11	11								-44.0
-60	-60.0	60.0	6	7	15								-44.0
-65	-65.0	65.0	4	6	8								-44.0
-70	-70.0	70.0	4	4	4								-44.0
-75	-75.0	75.0	2	3	4								-44.0

PROJECT NO. 33714.1.1		ID. B-4465		COUNTY CHOWAN		GEOLOGIST Dillard, S. C.							
SITE DESCRIPTION BRIDGE NO. 5 ON -L- (SR 1208) OVER PEMBROKE CREEK						GROUND WTR (ft)							
BORING NO. B4-B		STATION 23+27		OFFSET 6ft RT		ALIGNMENT -L-							
COLLAR ELEV. 0.0 ft		TOTAL DEPTH 126.5 ft		NORTHING 859,295		EASTING 2,696,887							
DRILL MACHINE CME-45B		DRILL METHOD Mud Rotary		HAMMER TYPE Automatic									
START DATE 01/14/09		COMP. DATE 01/15/09		SURFACE WATER DEPTH N/A		DEPTH TO ROCK N/A							
ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT				SAMP. NO.	LOG MOI G	SOIL AND ROCK DESCRIPTION	DEPTH (ft)
			0.5ft	0.5ft	0.5ft	0	25	50	75				
-75													
-80	-80.0	80.0											-79.0
-85	-85.0	85.0											-79.0
-90	-90.0	90.0											-79.0
-95	-95.0	95.0											-79.0
-100	-100.0	100.0											-79.0
-105	-105.0	105.0											-79.0
-110	-110.0	110.0											-79.0
-115	-115.0	115.0											-79.0
-120	-120.0	120.0											-79.0
-125	-125.0	125.0											-79.0
-130													-126.5
-135													-126.5
-140													-126.5
-145													-126.5
-150													-126.5
-155													-126.5

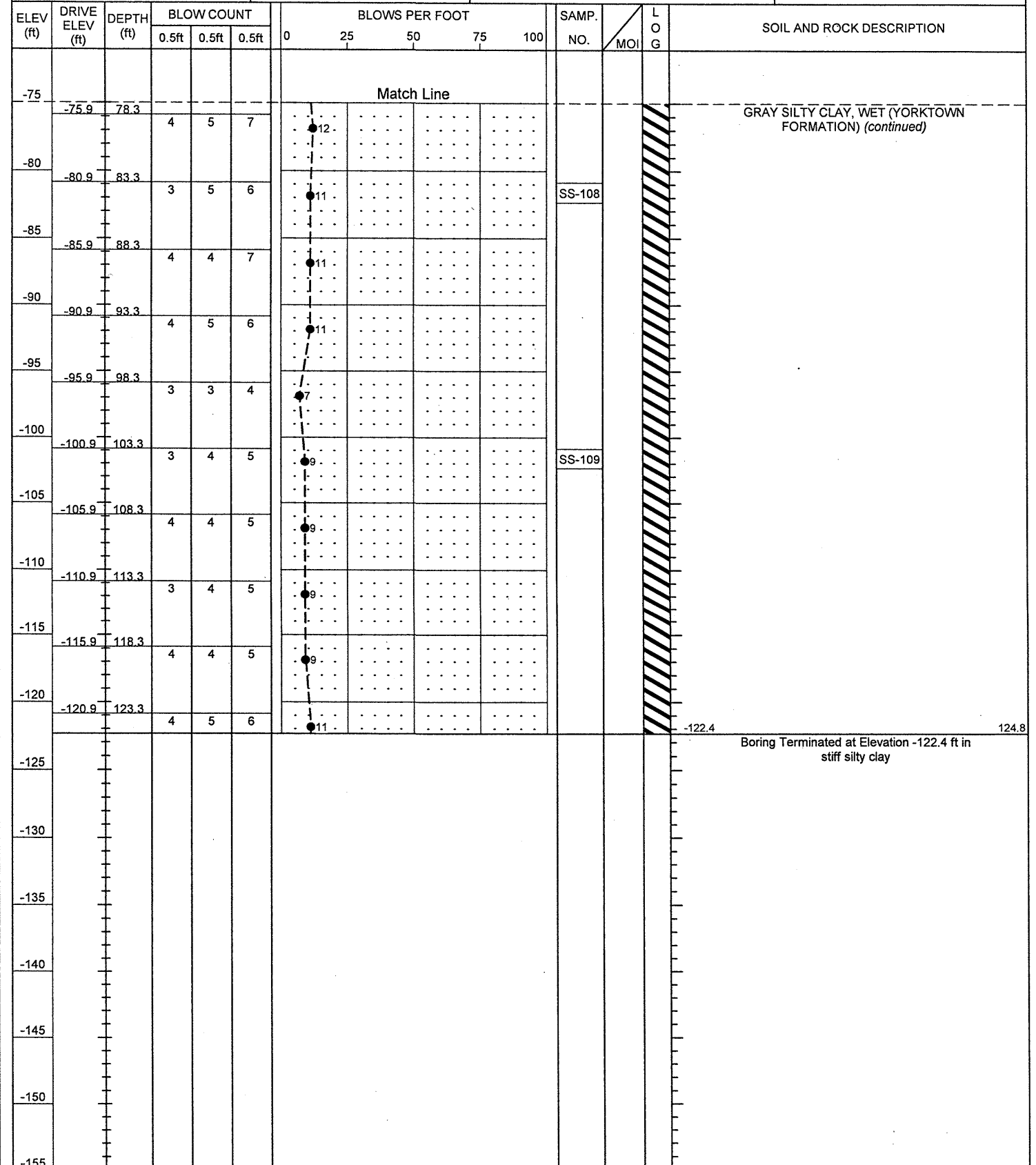
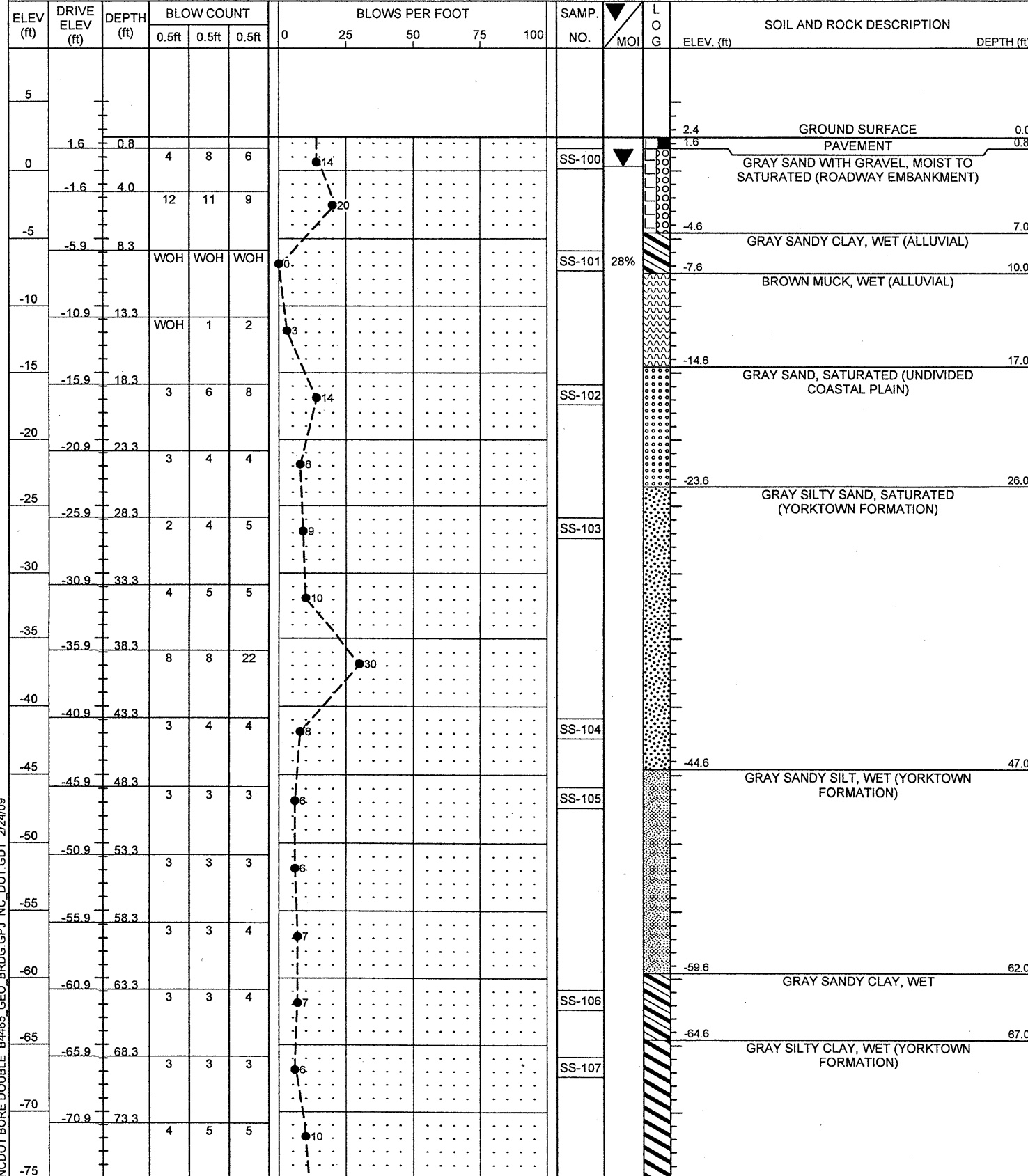
NC DOT BORE DOUBLE B4465_GEO_BRDG.GPJ NC_DOT_GDT_2/24/09

GRAY SANDY AND SILTY CLAY WITH SHELL FRAGMENTS, WET (YORKTOWN FORMATION) (continued)

Boring Terminated at Elevation -126.5 ft in stiff silty clay

PROJECT NO. 33714.1.1	ID. B-4465	COUNTY CHOWAN	GEOLOGIST Dillard, S. C.
SITE DESCRIPTION BRIDGE NO. 5 ON -L- (SR 1208) OVER PEMBROKE CREEK			GROUND WTR (ft)
BORING NO. B5-A	STATION 23+76	OFFSET 5ft LT	ALIGNMENT -L-
COLLAR ELEV. 2.4 ft	TOTAL DEPTH 124.8 ft	NORTHING 859,293	EASTING 2,696,929
DRILL MACHINE CME-45B	DRILL METHOD Mud Rotary	HAMMER TYPE Automatic	
START DATE 01/05/09	COMP. DATE 01/06/09	SURFACE WATER DEPTH N/A	DEPTH TO ROCK N/A

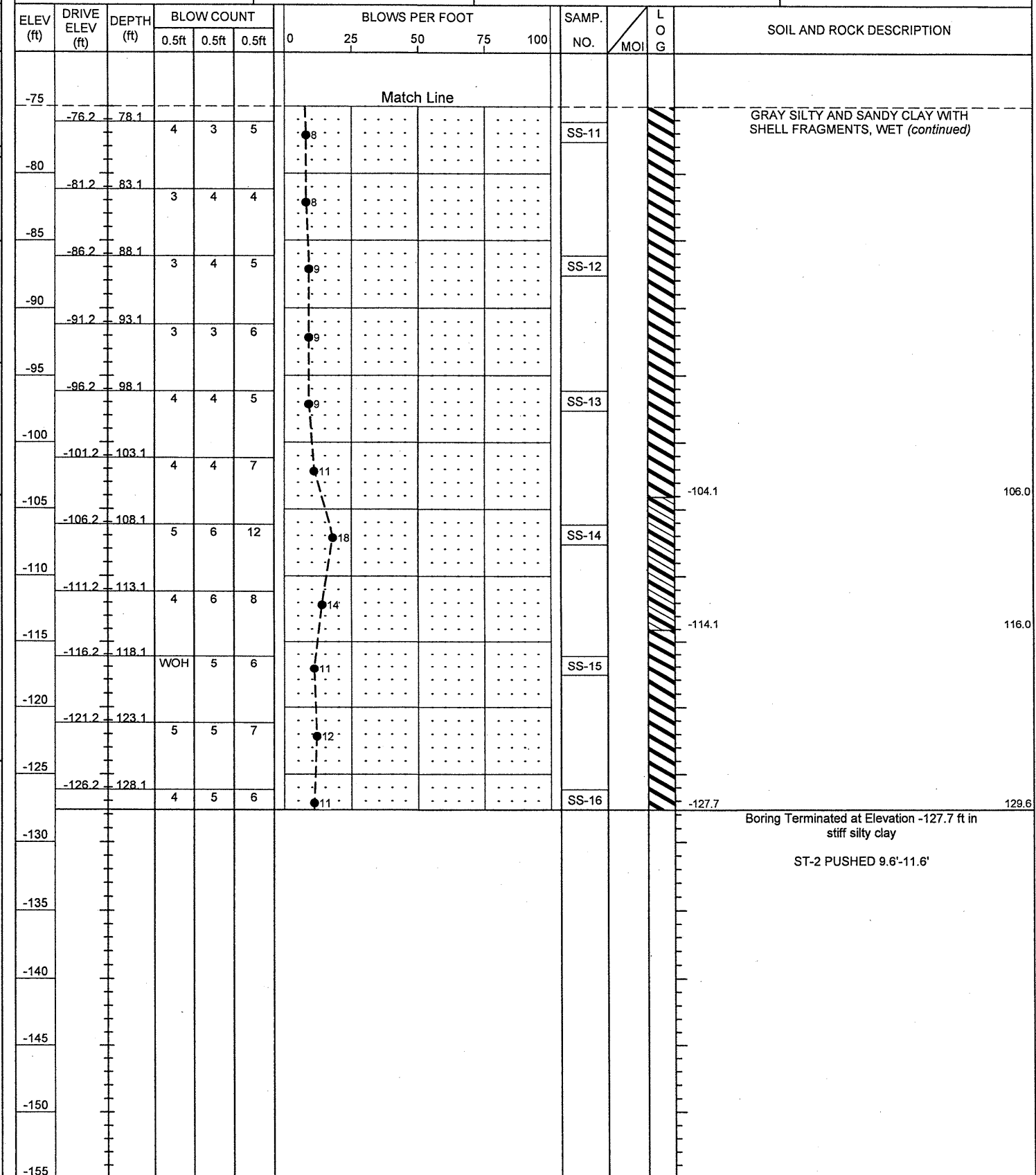
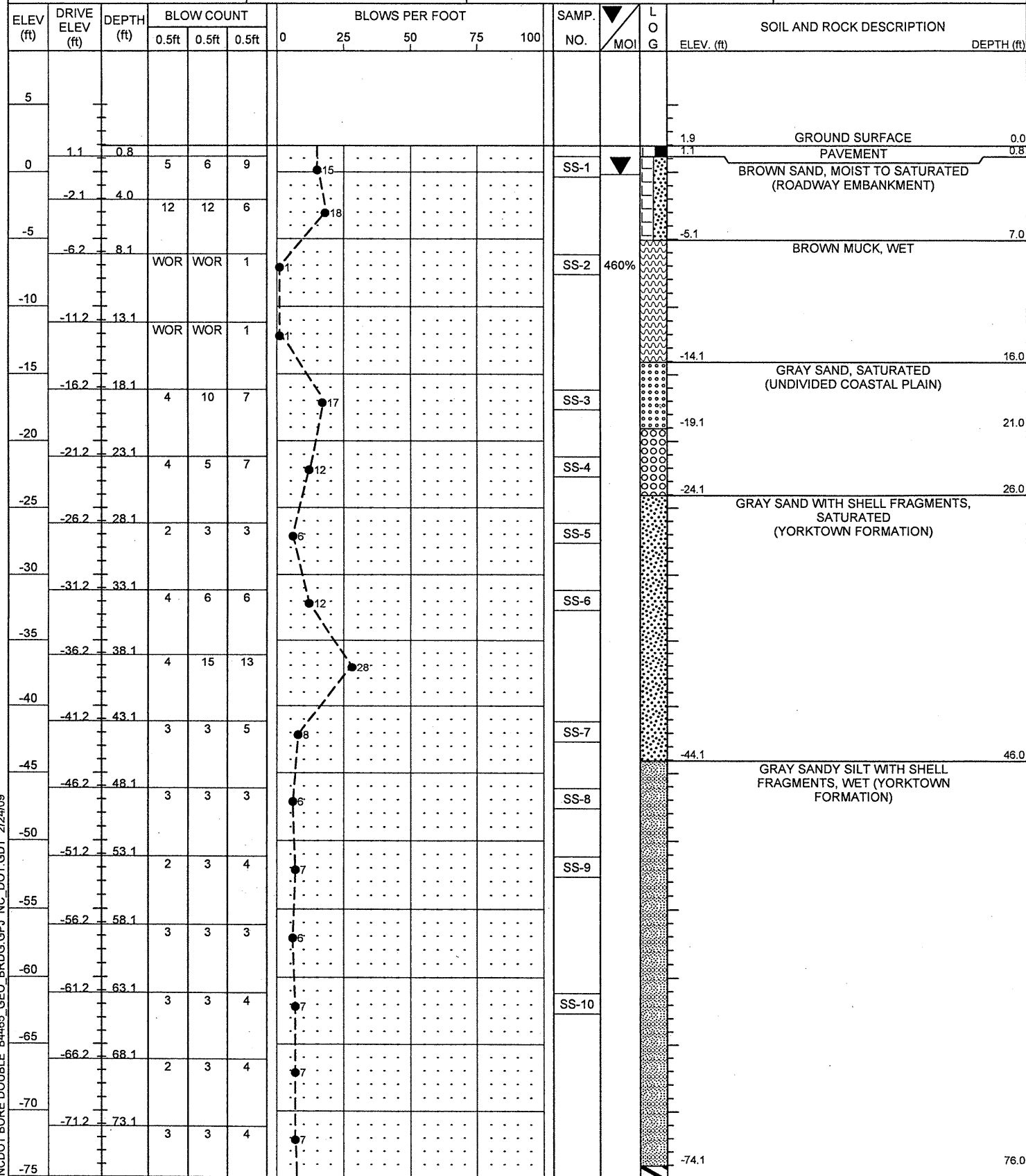
PROJECT NO. 33714.1.1	ID. B-4465	COUNTY CHOWAN	GEOLOGIST Dillard, S. C.
SITE DESCRIPTION BRIDGE NO. 5 ON -L- (SR 1208) OVER PEMBROKE CREEK			GROUND WTR (ft)
BORING NO. B5-A	STATION 23+76	OFFSET 5ft LT	ALIGNMENT -L-
COLLAR ELEV. 2.4 ft	TOTAL DEPTH 124.8 ft	NORTHING 859,293	EASTING 2,696,929
DRILL MACHINE CME-45B	DRILL METHOD Mud Rotary	HAMMER TYPE Automatic	
START DATE 01/05/09	COMP. DATE 01/06/09	SURFACE WATER DEPTH N/A	DEPTH TO ROCK N/A



NCDOT BORE DOUBLE B4465_GEO_BRDG.GPJ NC_DOT.GDT 2/24/09

PROJECT NO. 33714.1.1	ID. B-4465	COUNTY CHOWAN	GEOLOGIST Dillard, S. C.
SITE DESCRIPTION BRIDGE NO. 5 ON -L- (SR 1208) OVER PEMBROKE CREEK			GROUND WTR (ft)
BORING NO. EB2-A	STATION 24+16	OFFSET 7ft LT	ALIGNMENT -L-
COLLAR ELEV. 1.9 ft	TOTAL DEPTH 129.6 ft	NORTHING 859,283	EASTING 2,696,968
DRILL MACHINE CME-45B	DRILL METHOD Mud Rotary	HAMMER TYPE Automatic	
START DATE 08/19/08	COMP. DATE 08/19/08	SURFACE WATER DEPTH N/A	DEPTH TO ROCK N/A

PROJECT NO. 33714.1.1	ID. B-4465	COUNTY CHOWAN	GEOLOGIST Dillard, S. C.
SITE DESCRIPTION BRIDGE NO. 5 ON -L- (SR 1208) OVER PEMBROKE CREEK			GROUND WTR (ft)
BORING NO. EB2-A	STATION 24+16	OFFSET 7ft LT	ALIGNMENT -L-
COLLAR ELEV. 1.9 ft	TOTAL DEPTH 129.6 ft	NORTHING 859,283	EASTING 2,696,968
DRILL MACHINE CME-45B	DRILL METHOD Mud Rotary	HAMMER TYPE Automatic	
START DATE 08/19/08	COMP. DATE 08/19/08	SURFACE WATER DEPTH N/A	DEPTH TO ROCK N/A



NCDOT BORE DOUBLE B4465 GEO_BRDG.GPJ NC_DOT.GDT 2/24/09

B-4465

BRIDGE NO. 5 ON SR 1208 OVER PEMBROKE CREEK

SOIL TEST RESULTS

SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS.	L.L.	P.I.	% BY WEIGHT				% PASSING (SIEVES)			% MOISTURE	% ORGANIC	
							C. SAND	F. SAND	SILT	CLAY	10	40	200			
EB2- A	SS- 1	7 LT	24+12	1.0- 2.3	A- 2- 4(0)	15	2	67.9	14.7	9.3	8.1	95	53	18	-	-
	SS- 2	7 LT	24+12	8.1- 9.6	-	-	-	-	-	-	-	-	-	-	459.6	39.2
	SS- 3	7 LT	24+12	18.1- 19.6	A- 3(0)	23	NP	29.9	66.5	3.6	0.0	100	98	5	-	-
	SS- 4	7 LT	24+12	23.1- 24.6	A- 1- b(0)	20	NP	77.2	19.2	2.6	1.0	96	48	4	-	-
	SS- 5	7 LT	24+12	28.1- 29.6	A- 2- 4(0)	21	NP	33.6	49.9	9.4	7.1	94	73	19	-	-
	SS- 6	7 LT	24+12	33.1- 34.6	A- 2- 4(0)	23	NP	56.4	24.2	10.3	9.1	83	59	17	-	-
	SS- 7	7 LT	24+12	43.1- 44.6	A- 2- 4(0)	23	NP	32.3	48.5	9.1	10.1	98	86	24	-	-
	SS- 8	7 LT	24+12	48.1- 49.6	A- 4(1)	29	5	1.6	56.4	27.9	14.1	100	99	61	36.7	-
	SS- 9	7 LT	24+12	53.1- 54.6	A- 4(6)	32	9	2.2	44.0	33.5	20.2	100	99	77	-	-
	SS- 10	7 LT	24+12	63.1- 64.6	A- 4(6)	32	8	1.2	42.4	36.2	20.2	100	99	82	-	-
	SS- 11	7 LT	24+12	78.1- 79.6	A- 7- 6(27)	51	25	1.8	11.9	47.9	38.4	100	99	95	-	-
	SS- 12	7 LT	24+12	88.1- 89.6	A- 7- 6(26)	50	24	2.2	9.5	49.9	38.4	100	99	95	-	-
	SS- 13	7 LT	24+12	98.1- 99.6	A- 7- 6(24)	48	21	1.8	10.5	55.4	32.3	100	99	96	-	-
	SS- 14	7 LT	24+12	108.1- 109.6	A- 6(15)	40	15	4.2	16.0	53.5	26.3	100	97	92	-	-
	SS- 15	7 LT	24+12	118.1- 119.6	A- 7- 5(27)	54	23	1.8	8.3	51.5	38.4	100	99	95	-	-
	SS- 16	7 LT	24+12	128.1- 129.6	A- 7- 6(36)	61	32	1.0	8.9	51.7	38.4	100	100	95	-	-
EB1- B	SS- 47	6 RT	21+72	0.8- 2.3	A- 1- b(0)	17	NP	77.8	6.9	11.2	4.1	81	30	13	-	-
	SS- 48	6 RT	21+72	4.0- 5.5	A- 2- 4(0)	16	NP	43.7	33.1	10.0	13.2	93	70	25	-	-
	SS- 49	6 RT	21+72	18.0- 19.5	A- 3(0)	15	NP	14.4	80.7	2.8	2.0	100	97	7	-	-
	SS- 50	6 RT	21+72	28.0- 29.5	A- 2- 4(0)	23	NP	48.9	32.8	10.1	8.1	91	62	20	-	-
	SS- 51	6 RT	21+72	33.0- 34.5	A- 7- 5(18)	47	17	2.2	13.8	61.7	22.3	100	99	90	-	-
	SS- 52	6 RT	21+72	43.0- 44.5	A- 2- 4(0)	23	4	32.8	41.7	17.3	8.1	95	84	29	-	-
	SS- 53	6 RT	21+72	48.0- 49.5	A- 4(4)	32	7	0.6	52.7	28.5	18.2	100	100	68	37.1	-
	SS- 54	6 RT	21+72	58.0- 59.5	A- 4(5)	32	8	0.6	49.4	31.7	18.2	100	100	77	-	-
	SS- 55	6 RT	21+72	73.0- 74.5	A- 6(18)	40	18	0.6	23.7	47.3	28.4	100	100	93	-	-
	SS- 56	6 RT	21+72	83.0- 84.5	A- 7- 6(24)	47	21	0.8	15.4	53.4	30.4	100	99	97	-	-
	SS- 57	6 RT	21+72	93.0- 94.5	A- 7- 6(23)	48	20	1.0	13.2	53.4	32.4	100	99	97	-	-
	SS- 58	6 RT	21+72	108.0- 109.5	A- 6(17)	39	17	1.8	19.3	52.6	26.3	100	99	94	-	-
	SS- 59	6 RT	21+72	118.0- 119.5	A- 7- 6(26)	51	23	1.0	8.5	54.0	36.5	100	99	96	-	-
	SS- 60	6 RT	21+72	128.0- 129.5	A- 7- 5(28)	54	24	0.6	8.1	50.8	40.5	100	100	97	-	-
	SS- 61	6 RT	21+72	138.0- 139.5	A- 7- 5(28)	56	24	1.2	9.5	48.8	40.4	100	99	95	-	-

B-4465

BRIDGE NO. 5 ON SR 1208 OVER PEMBROKE CREEK

SOIL TEST RESULTS

B5- A

SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS.	L.L.	P.I.	% BY WEIGHT				% PASSING (SIEVES)			% MOISTURE	% ORGANIC
							C. SAND	F. SAND	SILT	CLAY	10	40	200		
SS- 100	5 LT	23+72	1.0- 2.3	A- 1- b(0)	17	5	65.6	15.5	6.8	12.1	94	49	19	-	-
SS- 101	5 LT	23+72	8.3- 9.8	A- 6(4)	34	18	24.6	33.0	10.2	32.2	100	89	44	28.0	-
SS- 102	5 LT	23+72	18.3- 19.8	A- 3(0)	19	NP	54.7	40.8	2.5	2.0	99	78	6	-	-
SS- 103	5 LT	23+72	28.3- 29.8	A- 2- 4(0)	25	NP	44.6	38.9	8.5	8.1	93	68	18	-	-
SS- 104	5 LT	23+72	43.3- 44.8	A- 2- 4(0)	22	NP	29.4	50.2	10.4	10.1	99	88	27	-	-
SS- 105	5 LT	23+72	48.3- 49.8	A- 4(2)	30	5	1.2	57.0	23.7	18.1	100	99	60	-	-
SS- 106	5 LT	23+72	63.3- 64.8	A- 6(9)	35	12	0.6	43.1	34.1	22.2	100	100	81	-	-
SS- 107	5 LT	23+72	68.3- 69.8	A- 7- 6(23)	45	24	0.6	30.6	40.6	28.2	100	100	90	-	-
SS- 108	5 LT	23+72	83.3- 84.8	A- 7- 6(33)	53	31	1.0	15.5	47.2	36.3	100	99	96	-	-
SS- 109	5 LT	23+72	103.3- 104.8	A- 7- 6(20)	42	20	2.8	17.3	51.7	28.2	100	98	93	-	-
B1- A															
SS- 110	5 LT	22+12	1.0- 2.3	A- 2- 4(0)	23	10	71.5	9.2	6.2	13.1	96	39	19	-	-
SS- 111	5 LT	22+12	18.2- 19.7	A- 2- 4(0)	28	NP	22.2	66.5	7.4	4.0	100	95	15	-	-
SS- 112	5 LT	22+12	23.2- 24.7	A- 3(0)	23	NP	36.2	59.7	2.1	2.0	98	84	6	-	-
SS- 113	5 LT	22+12	28.2- 29.7	A- 2- 4(0)	24	NP	52.2	30.9	7.9	9.1	87	57	17	-	-
SS- 114	5 LT	22+12	43.2- 44.7	A- 2- 4(0)	21	NP	31.1	49.4	10.4	9.1	97	86	25	-	-
SS- 115	5 LT	22+12	48.2- 49.7	A- 6(8)	35	14	0.8	50.4	26.7	22.2	100	100	70	-	-
SS- 116	5 LT	22+12	63.2- 64.7	A- 6(10)	36	11	0.8	40.3	36.8	22.2	100	100	85	-	-
SS- 117	5 LT	22+12	78.2- 79.7	A- 7- 6(35)	54	33	1.6	15.9	46.2	36.3	100	99	95	-	-
SS- 118	5 LT	22+12	93.2- 94.7	A- 7- 6(25)	46	24	1.0	16.1	48.6	34.2	100	100	96	-	-
SS- 119	5 LT	22+12	118.2- 119.7	A- 7- 6(35)	55	32	1.2	8.5	50.1	40.3	100	100	96	-	-
SS- 120	5 LT	22+12	133.2- 134.7	A- 7- 6(38)	60	35	1.8	9.9	48.0	40.3	100	99	95	-	-
B3- A															
SS- 121	6 LT	22+92	10.8- 12.3	A- 3(0)	19	NP	77.2	19.3	1.4	2.0	100	72	5	-	-
SS- 122	6 LT	22+92	15.8- 17.3	A- 2- 4(0)	21	NP	40.6	43.7	7.7	8.1	94	68	18	-	-
SS- 123	6 LT	22+92	30.7- 32.2	A- 2- 4(0)	21	NP	36.5	46.3	7.2	10.1	97	83	22	-	-
SS- 124	6 LT	22+92	40.7- 42.2	A- 4(5)	33	9	0.6	50.4	20.8	28.2	100	100	71	-	-
SS- 125	6 LT	22+92	55.7- 57.2	A- 6(12)	38	14	0.6	40.3	26.9	32.2	100	100	84	-	-
SS- 126	6 LT	22+92	70.7- 72.2	A- 7- 6(31)	51	29	0.6	14.7	40.4	44.3	100	100	97	-	-
SS- 127	6 LT	22+92	85.7- 87.2	A- 7- 6(34)	54	30	0.6	10.3	40.8	48.3	100	100	98	-	-
SS- 128	6 LT	22+92	101.0- 102.5	A- 7- 6(38)	56	34	0.4	7.5	43.8	48.3	100	100	98	-	-
SS- 129	6 LT	22+92	116.0- 117.5	A- 7- 6(40)	60	37	0.6	9.7	37.4	52.4	100	100	96	-	-

B-4465

BRIDGE NO. 5 ON SR 1208 OVER PEMBROKE CREEK

SOIL TEST RESULTS

B4-B

B2-B

SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS.	L.L.	P.I.	% BY WEIGHT				% PASSING (SIEVES)			% MOISTURE	% ORGANIC
							C. SAND	F. SAND	SILT	CLAY	10	40	200		
SS- 130	6 RT	23+32	1.0- 1.5	A- 2- 4(0)	16	NP	52.8	27.9	5.2	14.1	95	63	20	-	-
SS- 131	6 RT	23+32	15.1- 16.6	A- 2- 4(0)	32	NP	7.9	77.8	5.2	9.1	98	96	18	-	-
SS- 132	6 RT	23+32	20.1- 21.6	A- 3(0)	20	NP	34.7	60.0	1.2	4.0	100	95	7	-	-
SS- 133	6 RT	23+32	25.1- 26.6	A- 2- 4(0)	22	NP	44.6	40.6	3.7	11.1	93	68	17	-	-
SS- 134	6 RT	23+32	40.0- 41.5	A- 2- 4(0)	22	NP	29.7	50.1	6.1	14.1	98	86	27	-	-
SS- 135	6 RT	23+32	45.0- 46.5	A- 6(6)	33	11	0.6	50.6	16.6	32.2	100	100	69	-	-
SS- 136	6 RT	23+32	65.0- 66.5	A- 6(16)	40	18	0.8	36.5	26.5	36.3	100	100	87	-	-
SS- 137	6 RT	23+32	80.0- 81.5	A- 7- 6(36)	55	34	1.2	14.9	35.5	48.3	100	100	96	-	-
SS- 138	6 RT	23+32	95.0- 96.5	A- 7- 6(35)	54	32	1.2	9.1	35.3	54.4	100	100	97	-	-
SS- 139	6 RT	23+32	110.0- 111.5	A- 7- 6(38)	58	35	1.0	9.1	35.5	54.4	100	100	96	-	-
SS- 140	6 RT	22+52	5.2- 6.7	A- 5(11)	184	NP	37.5	13.7	40.8	8.1	100	74	51	347.9	58.2
SS- 141	6 RT	22+52	14.8- 16.3	A- 3(0)	23	NP	21.1	71.4	3.4	4.0	100	98	9	-	-
SS- 142	6 RT	22+52	19.8- 21.3	A- 3(0)	20	NP	53.6	40.3	4.1	2.0	97	81	7	-	-
SS- 143	6 RT	22+52	24.8- 26.3	A- 2- 4(0)	24	NP	52.2	30.0	8.8	9.1	91	59	19	-	-
SS- 144	6 RT	22+52	44.8- 46.3	A- 6(7)	34	12	1.4	48.1	30.3	20.1	100	100	71	-	-
SS- 145	6 RT	22+52	64.9- 66.4	A- 4(9)	34	10	0.6	43.5	33.7	22.2	100	100	85	-	-
SS- 146	6 RT	22+52	74.9- 76.4	A- 7- 6(35)	55	32	0.4	17.5	47.8	34.2	100	100	96	-	-
SS- 147	6 RT	22+52	89.9- 91.4	A- 7- 6(29)	49	27	0.6	12.9	52.3	34.2	100	100	97	-	-
SS- 149	6 RT	22+52	104.9- 106.4	A- 7- 6(23)	44	22	0.6	17.5	51.7	30.2	100	100	95	-	-
SS- 149	6 RT	22+52	119.9- 121.4	A- 7- 6(39)	58	36	0.6	9.5	47.6	42.3	100	100	97	-	-



**FIELD
SCOUR REPORT**

WBS: 33714.1.1 TIP: B-4465 COUNTY: CHOWAN

DESCRIPTION(1): BRIDGE NO. 5 ON SR 1208 OVER PEMBROKE CREEK AT -L- STA. 22+92

EXISTING BRIDGE

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

Bridge No.: 5 Length: 91' Total Bents: 4 Bents in Channel: 2 Bents in Floodplain: 2
Foundation Type: WOODEN PILES

EVIDENCE OF SCOUR(2)

Abutments or End Bent Slopes: NONE NOTED

Interior Bents: NONE NOTED

Channel Bed: NONE NOTED

Channel Bank: NONE NOTED

EXISTING SCOUR PROTECTION

Type(3): WOODEN END WALLS

Extent(4): 4' OUTSIDE EDGE OF BRIDGE

Effectiveness(5): EFFECTIVE

Obstructions(6): NONE NOTED

INSTRUCTIONS

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

DESIGN INFORMATION

Channel Bed Material(7): MUCK

Channel Bank Material(8): MUCK

Channel Bank Cover(9): GRASS AND SHRUBS

Floodplain Width(10): APPROX. 1000'

Floodplain Cover(11): TREES AND SHRUBS

Stream is(12): Aggrading _____ Degrading _____ Static

Channel Migration Tendency(13): SLIGHT TO THE WEST TOWARD END BENT 1

Observations and Other Comments: _____

DESIGN SCOUR ELEVATIONS(14)

Feet Meters _____

BENTS

B1	B2	B3	B4	B5						
-2	-6.8	-16	-5	-2						

Comparison of DSE to Hydraulics Unit theoretical scour: _____

SOIL ANALYSIS RESULTS FROM CHANNEL BED AND BANK MATERIAL

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

See Sheet 12,
"Soil Test Results",
for samples:

Channel Bed: SS-140
Channel Bank: SS-140

Reported by: [Signature]

Date: 2/19/09