

2) The following section was found to exhibit organic soils which have the potential to cause embankment/subgrade and or slope stability problems during construction.

<u>Line</u>	<u>Station(±)</u>
-L-	21+60 to 22+45

3) The following sections were found to exhibit cohesive soils which have the potential to cause embankment/subgrade and or slope stability problems during construction.

<u>Line</u>	<u>Station(±)</u>
-L-	11+00 to 23+50

Physiography and Geology

This project corridor is located within the Coastal Plain Physiographic Province. Topography along the project is nearly flat to gently sloping. Natural ground elevations ranged from 4± to 17± feet above sea level along existing SR 1101 to -1± feet below sea level along the bed of Brice Creek.

Surficial soils in this area have been classified as alluvial and undivided coastal plain sediments.

Ground Water

Ground water data was collected in October of 2012, during a time of normal precipitation. Ground water elevations ranged from 6± to 12± feet above sea level.

Soils

Soils encountered within this project area have been divided into four categories, alluvial soils, undivided coastal plain soils, formational soils and roadway embankment.

Roadway embankment soils were found along the existing SR 1101 corridor. They are composed of 1± to 3± feet of loose to medium dense sand (A-2-4) and 2± feet of medium stiff sandy silt (A-4).

Alluvial soils were found near the wetland and consist of 3 to 6 or more feet of loose sand (A-2-4). Organic soils were also encountered and consist of 0.5± feet soft silt (A-4, A-5) with little organic material.



STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION

BEVERLY EAVES PERDUE
GOVERNOR

EUGENE A. CONTI, JR.
SECRETARY

November 5, 2012

STATE PROJECT: 17BP.2.R.24 (SF-240009)
F.A. PROJECT: N/A
COUNTY: Craven
DESCRIPTION: Bridge No. 9 on SR 1101 over Brice Creek

SUBJECT: Geotechnical Inventory Report

Project Description

This project is located at the existing crossing over Brice Creek on SR 1101 in Craven County. The roadway is being slightly realigned toward the north. This geotechnical investigation was confined to the areas of proposed construction.

Fieldwork was conducted in October of 2012. Hand auger borings and SPT tests were completed at various offsets along the project corridor. Representative soil samples were collected for visual classification in the field and for laboratory analysis by the Materials and Tests Unit.

The following alignment was investigated. Subsurface profiles and selected cross sections of this alignment are included in this report.

<u>Line</u>	<u>Station(±)</u>
-L-	11+00 to 23+50

Areas of Special Geotechnical Interest

1) The entire project was found to exhibit seasonal high ground water.

Undivided Coastal Plain soils were encountered at the surface; in the upland sections at the beginning and end of the project. These soils were composed of 6 or more feet of medium stiff clayey sandy silt (A-4) as well as sandy and silty clay (A-6, A-7-6).

This entire project area is underlain by formational soils that belong to the Duplin and River Bend Formation. In this area, the Duplin Formation is composed of 20 to 32 feet of very soft to medium stiff silty clay (A-7-6). The River Bend Formation underlies the Duplin and consists of loose to very dense sand (A-3) and very soft limestone.

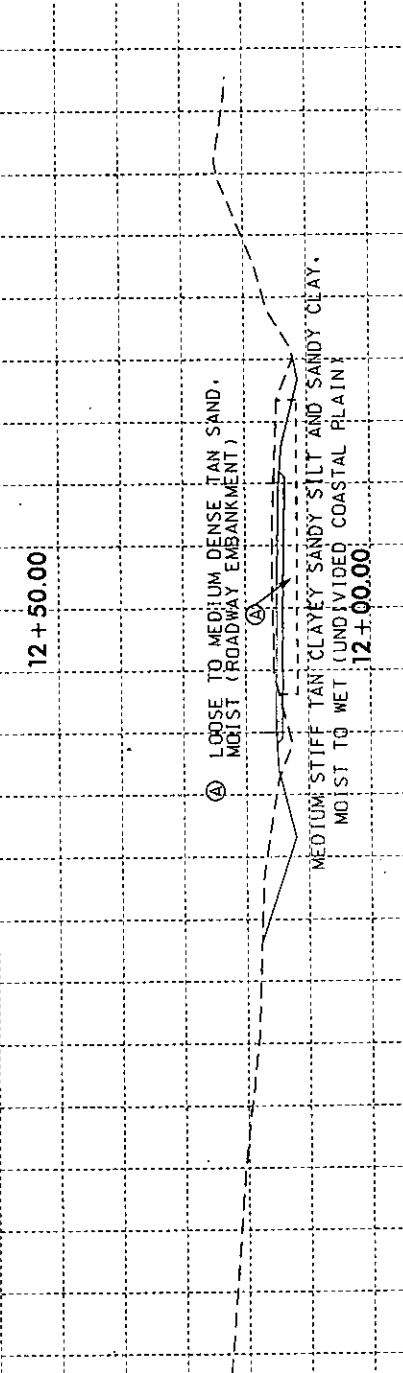
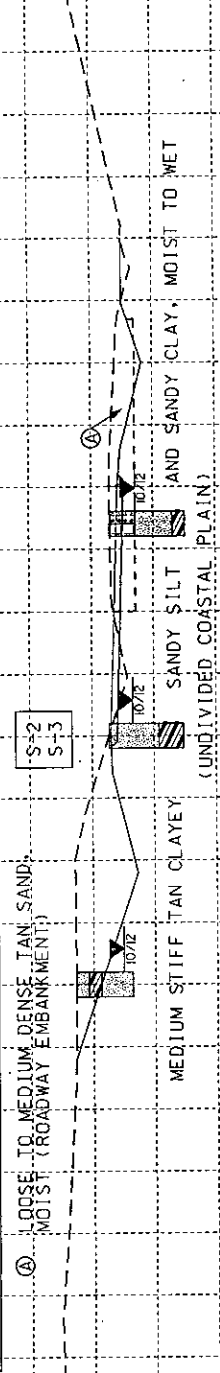
Prepared By,



Dean Argenbright, L. G.
Regional Geological Engineer

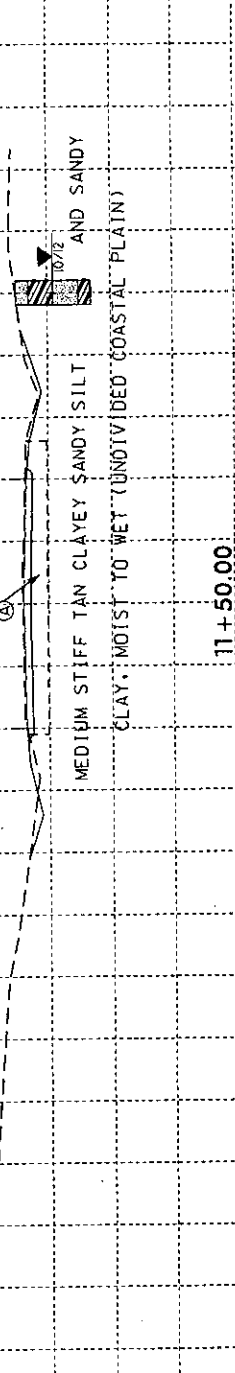
SOIL TEST RESULTS

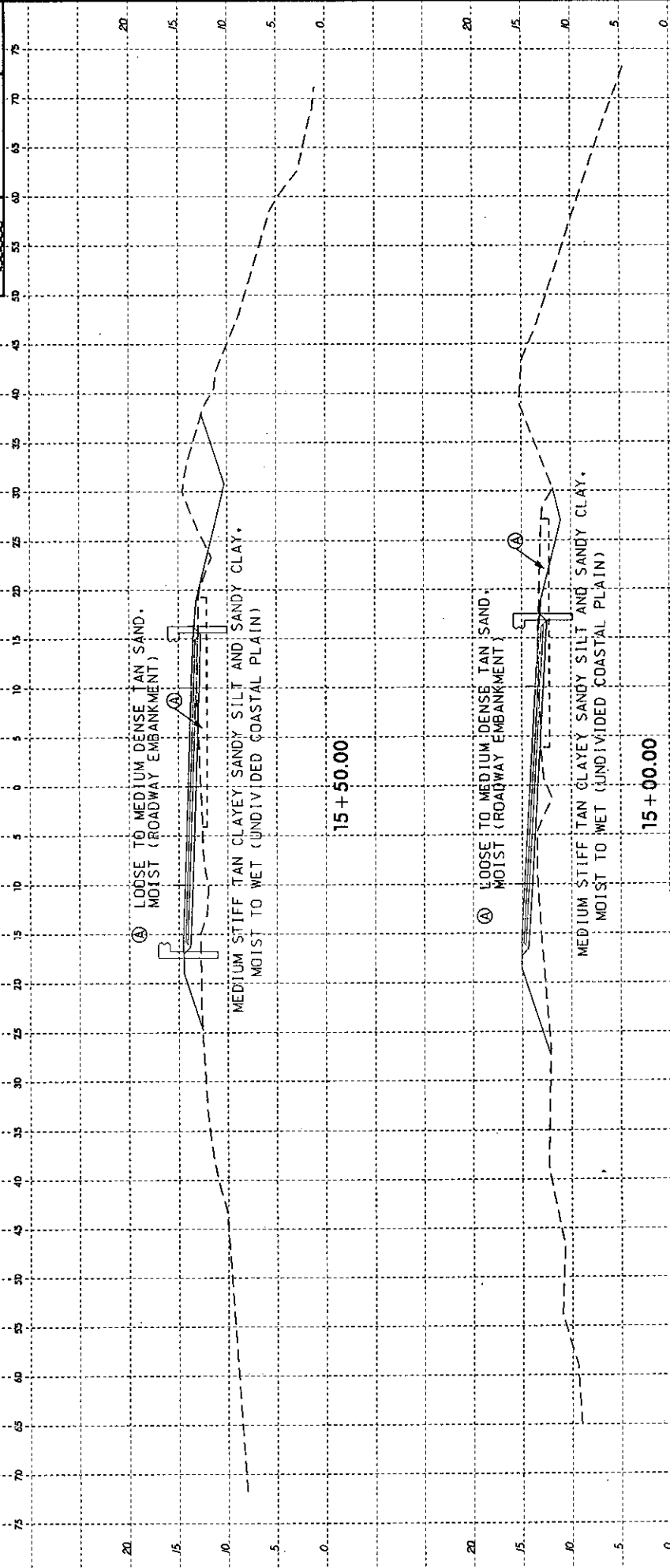
SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS.	L.L.	P.I.	% BY WEIGHT			% PASSING (SIEVES)			% ORGANIC
							C.SAND	F.SAND	SILT	CLAY	10	40	
S-2	10 LT	12+50	0-0-4-0	A-4(4)	26.7	2.2	83.7	41.9	22.2	100	99	179	
S-3	10 LT	12+50	4-0-6-0	A-6(14)	35.18	7.0	32.1	28.6	38.3	100	100	83	



SOIL TEST RESULTS

SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS.	L.L.	P.I.	% BY WEIGHT			% PASSING (SIEVES)			% ORGANIC
							C.SAND	F.SAND	SILT	CLAY	10	40	
S-1	25 RT	11+50	7-0-3-0	A-6(11)	33.13	0.0	50.4	39.3	30.2	100	100	89	





SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS.	L.L.	P.I.	% BY WEIGHT			% PASSING (SIEVES)				
							SAND	SILT	CLAY	10	40	200	MOISTURE	ORGANIC
S-4	10 RT.	14+50	1.0-2.0	A-6(20)	38	21	0.6	17.5	45.6	36.3	100	100	93	-
S-5	10 RT.	14+50	2.0-5.0	A-4(7)	29	9	0.8	26.6	44.4	28.2	100	99	89	-

④ LOOSE TO MEDIUM DENSE TAN SAND, MOIST (ROADWAY EMBANKMENT)

S+4
S+5

MEDIUM STIFF TAN CLAYEY SANDY SILT AND SANDY CLAY, MOIST TO WET (UNDIVIDED COASTAL PLAIN)

MEDIUM STIFF TAN CLAYEY SANDY SILT AND SANDY CLAY, MOIST TO WET (UNDIVIDED COASTAL PLAIN)

15+50.00

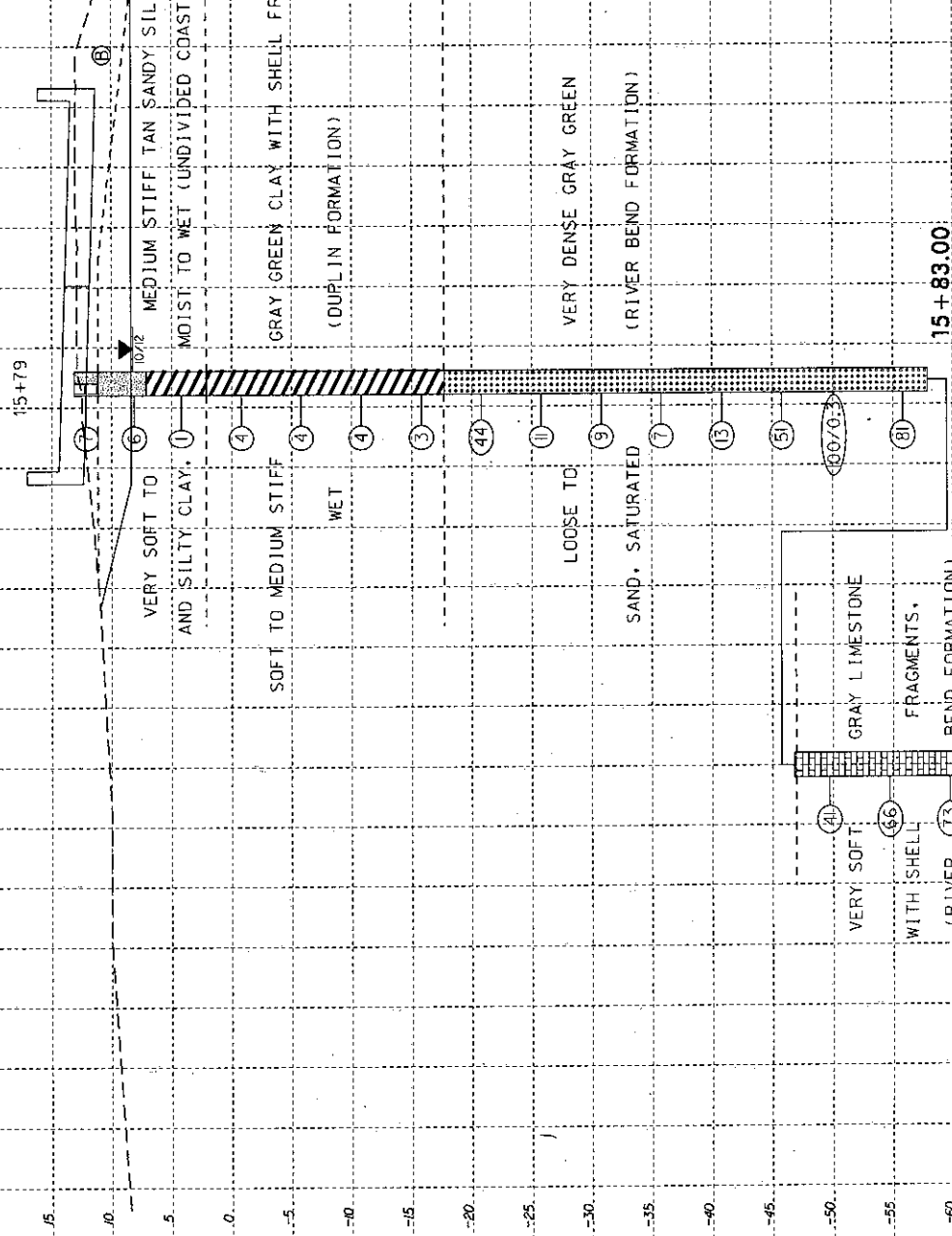
14+50.00

-4-

SOIL TEST RESULTS

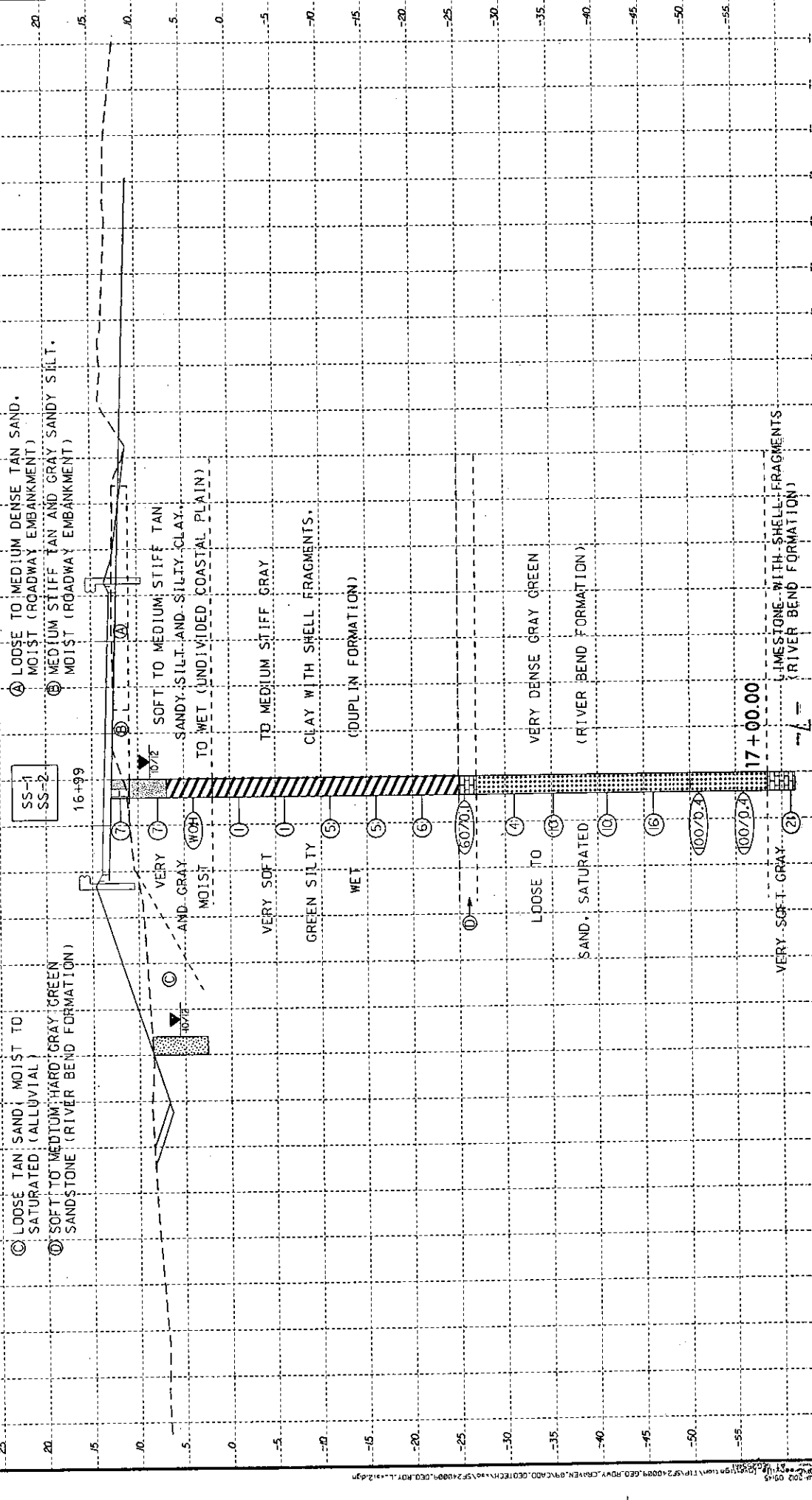
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					L.L.	P.L.	F.BAND	CLAY	18	40	200	280	
SS-3	8.17	15+79	0.0-1.5	A-4(10)	22	1	6.3	39.6	40.0	14.7	100	98	7.3
SS-4	8.17	15+79	7.9-9.4	A-7-6(16)	42	19	2.4	27.7	31.5	38.4	99	97	8.1

⑥ MEDIUM STIFF TAN AND GRAY SANDY SILT, MOIST (ROADWAY EMBANKMENT)



SOIL TEST RESULTS

SAMPLE NO.	DEPTH INTERVAL	STATION	ASHTO CLASS.			L.L.	P.I.	% BY WEIGHT			% PASSING (SIEVES)			% MOISTURE	% ORGANIC
			A-7	U.C.	M.P.			F-SAND	SILT	CLAY	10	40	200		
SS-1	0.0 - 1.5	16+99	A-7	4(0)	20	MP	65.2	16.5	12.2	99	97	44			
SS-2	7.9 - 9.4	16+99	A-7	5(22)	45	27	26.2	38.9	34.5	100	100	83			



- Ⓐ LOOSE TO MEDIUM DENSE TAN SAND, MOIST (ROADWAY EMBANKMENT)
- Ⓑ MEDIUM STIFF TAN AND GRAY SANDY SILT, MOIST (ROADWAY EMBANKMENT)

- Ⓒ LOOSE TAN SAND, MOIST TO SATURATED (ALLUVIAL)
- Ⓓ SOFT TO MEDIUM HARD GRAY GREEN SANDSTONE (RIVER BEND FORMATION)

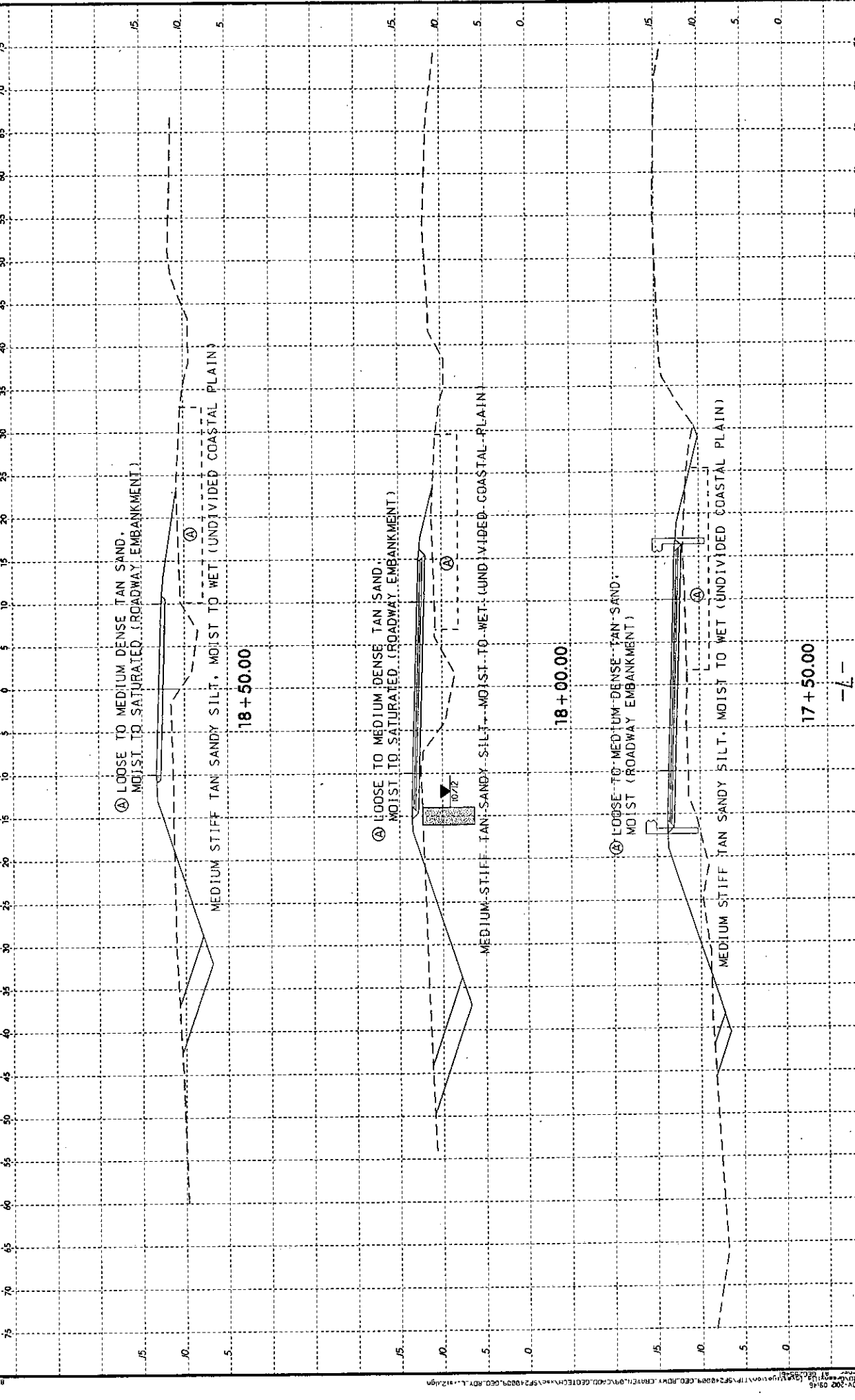
17+00.00

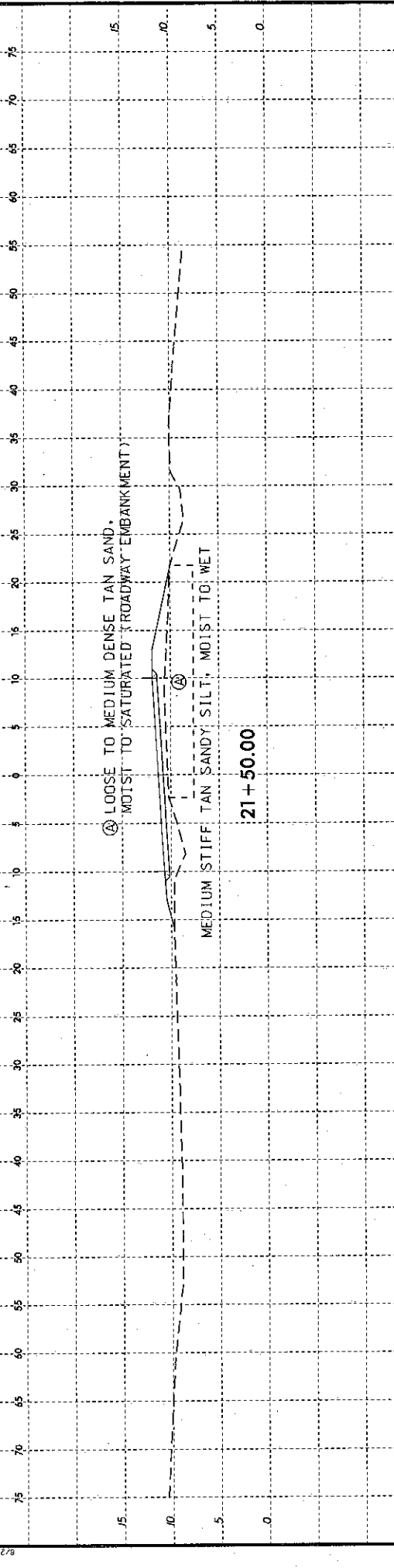
VERY SOFT TO MEDIUM STIFF GRAY CLAY WITH SHELL FRAGMENTS (DUPLIN FORMATION)

VERY DENSE GRAY GREEN (RIVER BEND FORMATION)

SAND, SATURATED (RIVER BEND FORMATION)

VERY SOFT TO MEDIUM HARD GRAY GREEN SANDSTONE WITH SHELL FRAGMENTS (RIVER BEND FORMATION)



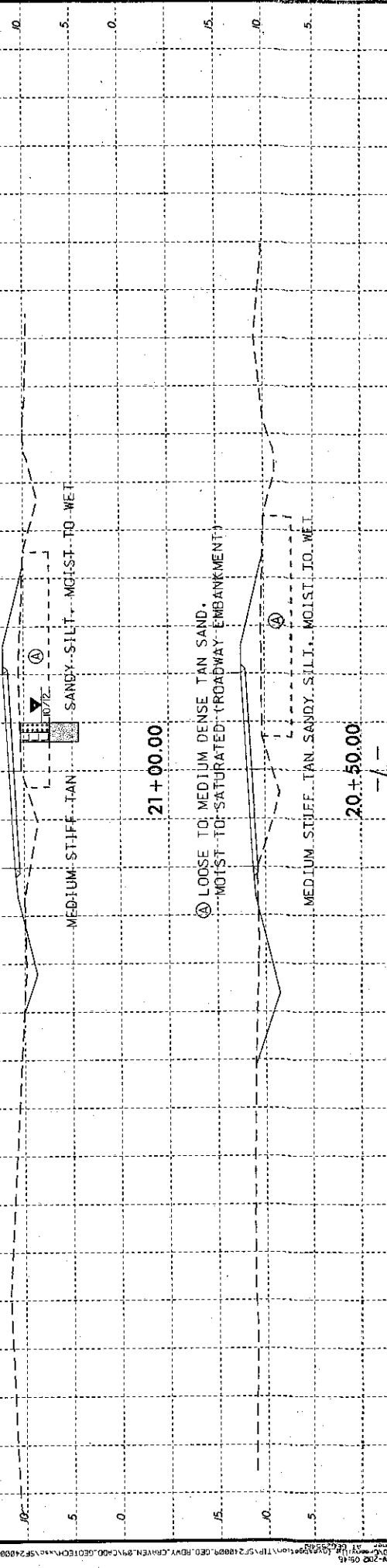


SOIL TEST RESULTS

SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	ASHTO CLASS.	L.L.	P.I.	% BY WEIGHT			% PASSING (SIEVES)			% ORGANIC	
							C.SAND	F.SAND	SILT	CLAY	10..	40..		200..
S-8	4' RT	21+00	0.0-3.0	A-2-4(0)	20	NP	15.1	71.7	6.1	7.1	80	74	15	
S-9	4' RT	21+00	3.0-6.0	A-4(0)	19	NP	4.5	70.3	15.1	10.2	97	97	36	

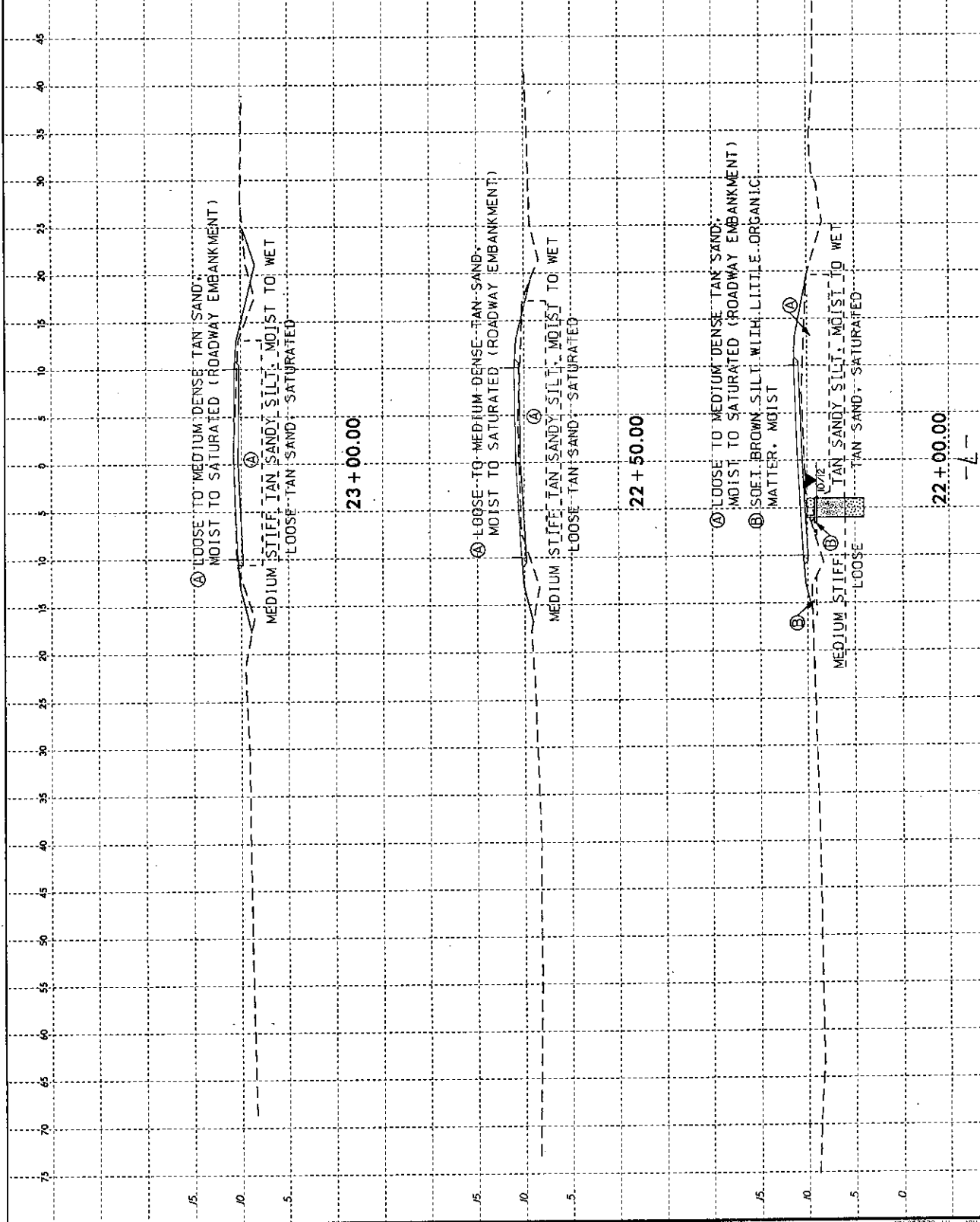
S-8
S-9

(A) LOOSE TO MEDIUM DENSE TAN SAND, MOIST TO SATURATED (ROADWAY EMBANKMENT)



S-8
S-9

(A) LOOSE TO MEDIUM DENSE TAN SAND, MOIST TO SATURATED (ROADWAY EMBANKMENT)



① LOOSE TO MEDIUM-DENSE TAN SAND, MOIST TO SATURATED (ROADWAY EMBANKMENT)
 ② MEDIUM STIFF TAN SANDY SILT, MOIST TO WET
 ③ LOOSE TAN SAND, SATURATED

23 + 00.00

① LOOSE TO MEDIUM-DENSE TAN SAND, MOIST TO SATURATED (ROADWAY EMBANKMENT)
 ② MEDIUM STIFF TAN SANDY SILT, MOIST TO WET
 ③ LOOSE TAN SAND, SATURATED

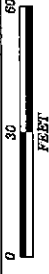
22 + 50.00

① LOOSE TO MEDIUM-DENSE TAN SAND, MOIST TO SATURATED (ROADWAY EMBANKMENT)
 ② SOFT BROWN SILT WITH LITTLE ORGANIC MATTER, MOIST

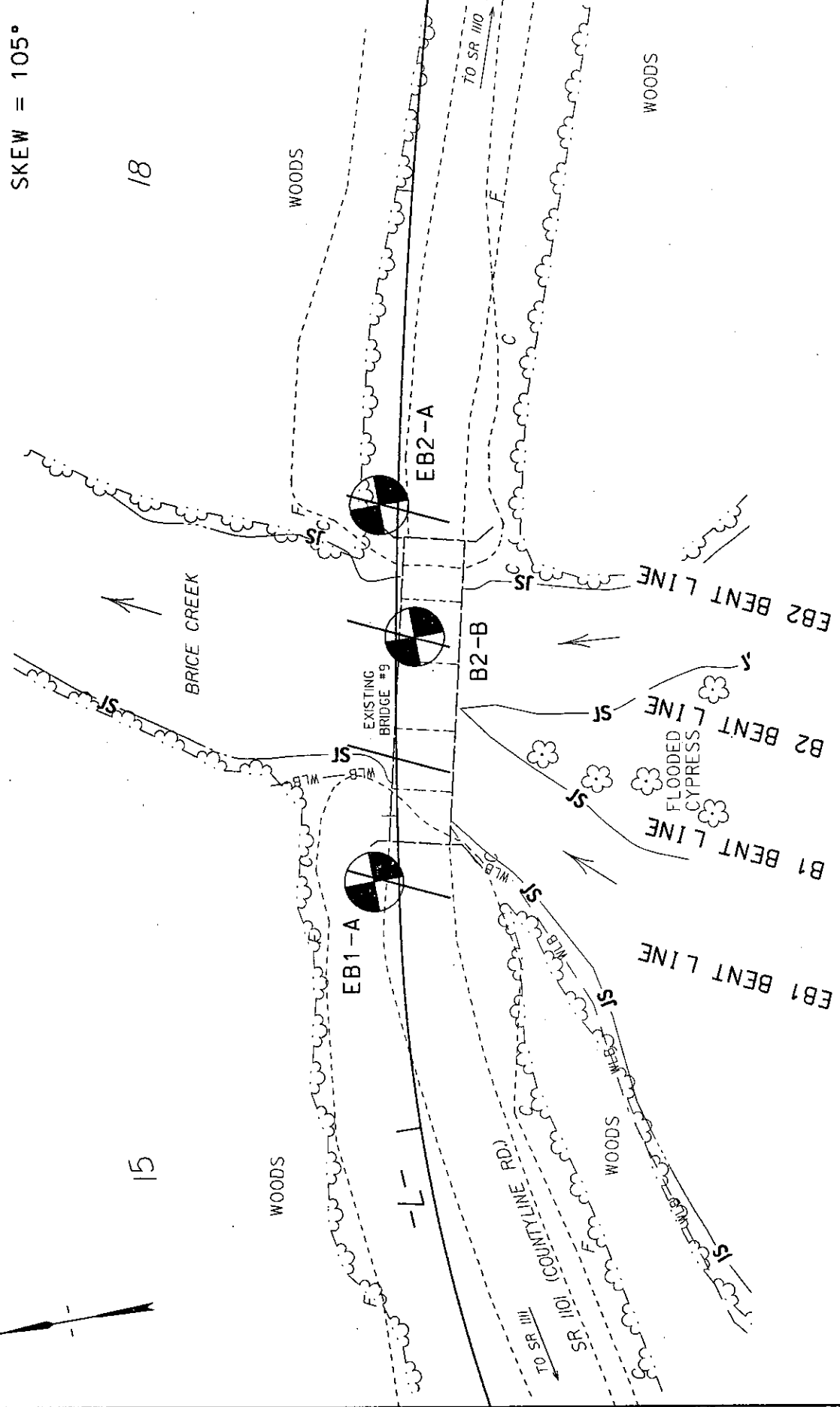
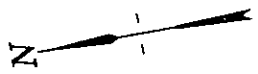
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- 1 -

SITE PLAN



SKEW = 105°

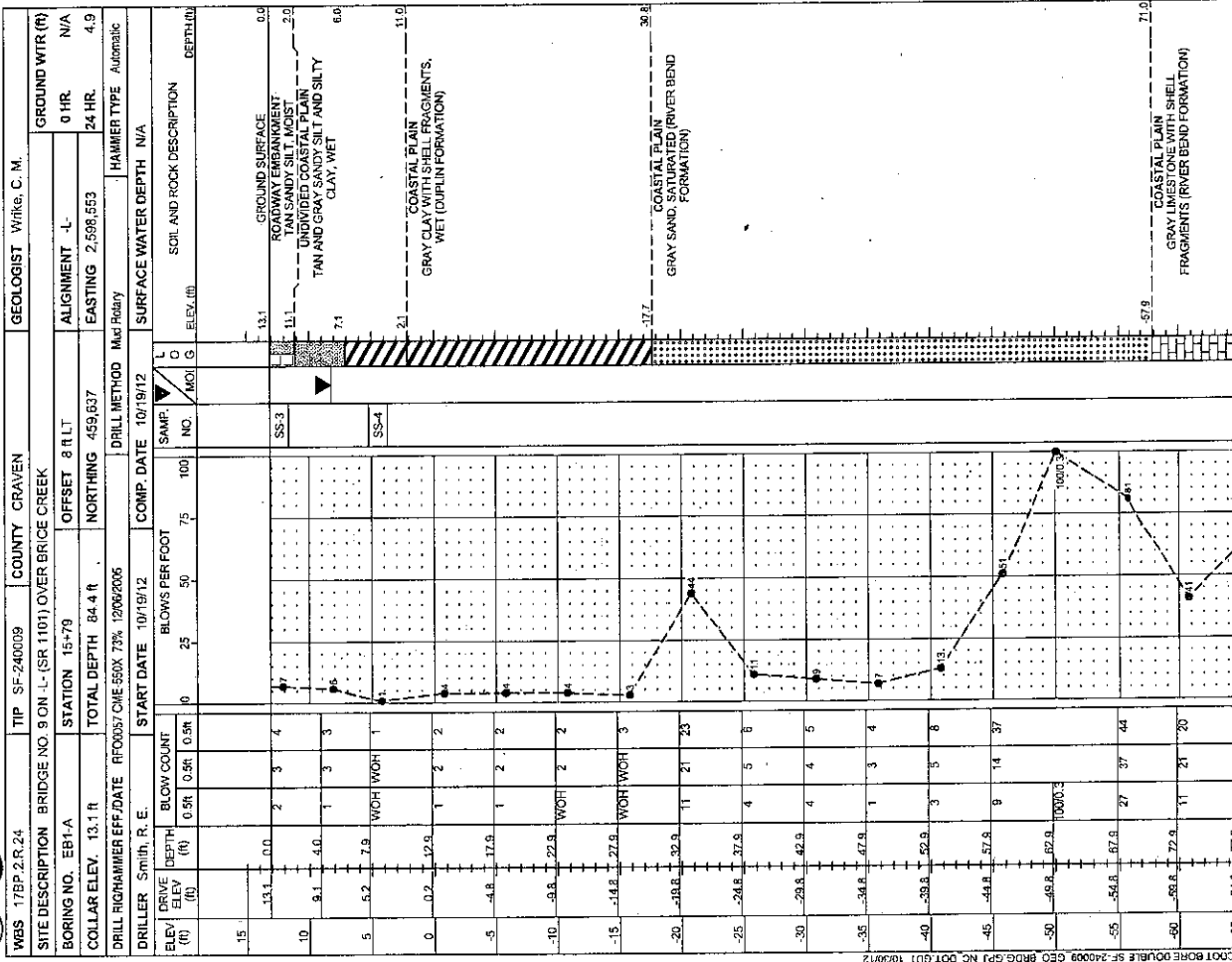


18

15

NCDOT GEOTECHNICAL ENGINEERING UNIT
BORELOG REPORT

WBS: 17BP.2.R.24		TIP: SF-240009		COUNTY: CRAVEN		GEOLOGIST: Wrike, C. M.	
SITE DESCRIPTION: BRIDGE NO. 9 ON L-L (SR 1101) OVER BRICE CREEK							
BORING NO. EB1-A		STATION: 15+79		OFFSET: 8 R/LT		ALIGNMENT: L-	
COLLAR ELEV. 13.1 R		TOTAL DEPTH: 84.4 R		NORTHING: 459,637		EASTING: 2,598,563	
DRILL RICHAMMER EFF. DATE: RFO0057 01E-58X 75% 120622006		DRILL METHOD: Mud Rotary		COMP. DATE: 10/19/12		SURFACE WATER DEPTH: N/A	
DRILLER: Smith, R. E.		START DATE: 10/19/12		BLOWS PER FOOT		SOIL AND ROCK DESCRIPTION	
ELEV. (ft)		BLOW COUNT		SAMP. NO.		L O G	
DEPTH (ft)		0.5R 0.5R 0.5R		0 25 50 75 100			
-15		2 3 4					
-10		1 3 3					
-5		1 2 2					
0		1 2 2					
-5		1 2 2					
-10		1 2 2					
-15		1 2 2					
-20		1 2 2					
-25		1 2 2					
-30		1 2 2					
-35		1 2 2					
-40		1 2 2					
-45		1 2 2					
-50		1 2 2					
-55		1 2 2					
-60		1 2 2					
-65		1 2 2					
-70		1 2 2					
-75		1 2 2					
-80		1 2 2					
-84.4		1 2 2					
GROUND WTR (ft)		0 HR		N/A		N/A	
HAMMER TYPE		Automatic					



NCDOT GEOTECHNICAL ENGINEERING UNIT
BORELOG REPORT

WBS 17BP-2.R.24		TIP SF-240009		COUNTY CRAVEN		GEOLOGIST White, C. M.	
SITE DESCRIPTION BRIDGE NO. 9 ON L- (SR 1101) OVER BRICE CREEK							
BORING NO.	B2-B	STATION	18+57	OFFSET	6 ft RT	ALIGNMENT	L
COLLAR ELEV.	-0.4 ft	TOTAL DEPTH	70.8 ft <th>NORTHING</th> <td>459.610 <th>EASTING</th> <td>2,598.628 </td></td>	NORTHING	459.610 <th>EASTING</th> <td>2,598.628 </td>	EASTING	2,598.628
DRILL HIGHAMMER EFF./DATE RFO0657 OME-550X 75% 12/06/2005							
DRILLER	Smith, R. E. <th>START DATE</th> <td>10/12/12 <th>COMP. DATE</th> <td>10/12/12 <th colspan="2">SURFACE WATER DEPTH 6.3R</th> </td></td>	START DATE	10/12/12 <th>COMP. DATE</th> <td>10/12/12 <th colspan="2">SURFACE WATER DEPTH 6.3R</th> </td>	COMP. DATE	10/12/12 <th colspan="2">SURFACE WATER DEPTH 6.3R</th>	SURFACE WATER DEPTH 6.3R	
DRIVE ELEV (ft)	BLOW COUNT	BLOW COUNT	BLOWS PER FOOT	SAMP. NO.	SOIL AND ROCK DESCRIPTION	GROUND WTR (ft)	0 HR.
DEPTH (ft)	0.5ft	0.5ft	0.5ft	L	O	24 HR.	N/A
				MOI	G		N/A
-10							
-5							
0							
5							
10							
15							
20							
25							
30							
35							
40							
45							
50							
55							
60							
65							

WBS 17BP-2.R.24		TIP SF-240009		COUNTY CRAVEN		GEOLOGIST White, C. M.	
SITE DESCRIPTION BRIDGE NO. 9 ON L- (SR 1101) OVER BRICE CREEK							
BORING NO.	B2-B	STATION	18+57	OFFSET	6 ft RT	ALIGNMENT	L
COLLAR ELEV.	-0.4 ft	TOTAL DEPTH	70.8 ft <th>NORTHING</th> <td>459.610 <th>EASTING</th> <td>2,598.628 </td></td>	NORTHING	459.610 <th>EASTING</th> <td>2,598.628 </td>	EASTING	2,598.628
DRILL HIGHAMMER EFF./DATE RFO0657 OME-550X 75% 12/06/2005							
DRILLER	Smith, R. E. <th>START DATE</th> <td>10/12/12 <th>COMP. DATE</th> <td>10/12/12 <th colspan="2">SURFACE WATER DEPTH 6.3R</th> </td></td>	START DATE	10/12/12 <th>COMP. DATE</th> <td>10/12/12 <th colspan="2">SURFACE WATER DEPTH 6.3R</th> </td>	COMP. DATE	10/12/12 <th colspan="2">SURFACE WATER DEPTH 6.3R</th>	SURFACE WATER DEPTH 6.3R	
DRIVE ELEV (ft)	BLOW COUNT	BLOW COUNT	BLOWS PER FOOT	SAMP. NO.	SOIL AND ROCK DESCRIPTION	GROUND WTR (ft)	0 HR.
DEPTH (ft)	0.5ft	0.5ft	0.5ft	L	O	24 HR.	N/A
				MOI	G		N/A
-10							
-5							
0							
5							
10							
15							
20							
25							
30							
35							
40							
45							
50							
55							
60							
65							

WATER SURFACE (10/12/12)
 GROUND SURFACE
 GRAY SAND WITH WOOD FRAGMENTS, SATURATED
 COASTAL PLAIN LIMESTONE WITH SHELL FRAGMENTS, WET (DUPLIN FORMATION)
 COASTAL PLAIN LIMESTONE (RIVER BEND FORMATION)
 GRAY AND GREEN CLAYEY SAND WITH SHELL FRAGMENTS, SATURATED (DUPLIN FORMATION)
 COASTAL PLAIN LIMESTONE (RIVER BEND FORMATION)
 GRAY AND GREEN CLAY, WET (DUPLIN FORMATION)
 COASTAL PLAIN LIMESTONE (RIVER BEND FORMATION)
 GRAY AND GREEN SANDSTONE (RIVER BEND FORMATION)
 COASTAL PLAIN LIMESTONE (RIVER BEND FORMATION)
 GRAY AND GREEN CLAY WITH SHELL FRAGMENTS, WET (RIVER BEND FORMATION)
 COASTAL PLAIN LIMESTONE (RIVER BEND FORMATION)
 GRAY AND GREEN CLAY WITH SHELL FRAGMENTS, SATURATED (RIVER BEND FORMATION)
 COASTAL PLAIN LIMESTONE WITH SHELL FRAGMENTS (RIVER BEND FORMATION)

SOIL AND ROCK DESCRIPTION
 Boring Terminated at Elevation -71.2 ft in Limestone

Match Line
 -70

70.8

EB1-A 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		
SS-3	8 LT	15+79	0.0-1.5	A-4(0)	22	1	6.3	39.6	40.0	14.1	100	98	73	-
SS-4	8 LT	15+79	7.9-9.4	A-7-6(16)	42	19	2.4	27.7	31.5	38.4	99	97	81	-

EB2-A 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		
SS-1	6 LT	16+99	0.0-1.5	A-4(0)	20	NP	6.1	65.2	16.5	12.2	99	97	44	-
SS-2	6 LT	16+99	7.9-9.4	A-7-6(22)	45	27	0.4	26.2	38.9	34.5	100	100	83	-