

CONTRACT: ID: B-4737

NOTE: SEE SHEET 2A FOR PLAN SHEET LAYOUT AT TIME OF INVESTIGATION

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

CONTENTS

LINE	STATION	PLAN	PROFILE
-LREV-	23+82 TO 30+29	4	5

CROSS SECTIONS

LINE	STATION	PLAN
-LREV-	25+50 TO 26+50	6-7
-LREV-	28+32 TO 29+50	8-9

ROADWAY SUBSURFACE INVESTIGATION

PROJ. REFERENCE NO. 38510.1.1 (B-4737) F.A. PROJ. BRZ-1226(6)
 COUNTY CRAVEN
 PROJECT DESCRIPTION BRIDGE NO. 46 ON SR 1226 (NEW LIBERTY ROAD) OVER BACHELOR CREEK

INVENTORY

STATE	STATE PROJECT REFERENCE NO.	TYPE	SHEET
N.C.	B-4737	1	9
STATE PROJECT NO.	F.A. PROJECT NO.	DESCRIPTION	
		P.E.	
		R.W. & UTIL.	

CAUTION NOTICE

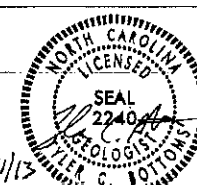
THE SUBSURFACE INFORMATION AND THE SUBSURFACE INVESTIGATION ON WHICH IT IS BASED WERE MADE FOR THE PURPOSES OF STUDY, PLANNING, AND DESIGN AND NOT FOR CONSTRUCTION OR PAY PURPOSES. THE VARIOUS FIELD BORING LOGS, PROXY CORES, AND SOIL TEST DATA AVAILABLE MAY BE REVIEWED ON INSPECTION IN PALMER BY CONTACTING THE N.C. DEPARTMENT OF TRANSPORTATION, GEOTECHNICAL ENGINEERING UNIT, AT 1901 70TH AVE., RENO, THE SUBSURFACE PLANS AND REPORTS, AND THE FIELD BORING LOGS, PROXY CORES, OR SOIL TEST DATA ARE PART OF THE CONTRACT.

GENERAL SOIL AND ROCK STRATA RECONSTRUCTIONS 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 BOUNDARIES. THE LABORATORY SAMPLE DATA AND THE IN-SITU UNPLACED TEST DATA CAN BE RELIED ON ONLY TO THE DEGREE OF RELIABILITY INDICATED IN THE STANDARD TEST METHOD. THE OBSERVED WATER LEVELS OR SOIL MOISTURE CONDITIONS INDICATED IN THE SUBSURFACE INVESTIGATION ARE AS PRESENT AT THE TIME OF THE INVESTIGATION. THESE WATER LEVELS OR SOIL MOISTURE CONDITIONS MAY VARY CONSIDERABLY WITH THE ACCORDING TO CLIMATIC CONDITIONS INCLUDING TEMPERATURES, PRECIPITATION, AND WIND, AS WELL AS OTHER NON-CLIMATIC FACTORS.

THE BROWER OR CONTRACTOR IS CAUTIONED THAT DETAILS SHOWN ON THE SUBSURFACE PLANS ARE PRELIMINARY ONLY AND IN MANY CASES THE FINAL DESIGN DETAILS ARE REQUIRED FOR DESIGN AND CONSTRUCTION PURPOSES. PRIOR TO THE CONSTRUCTION PLANS AND DOCUMENTS FOR FINAL DESIGN INFORMATION ON THIS PROJECT, THE DEPARTMENT DOES NOT WARRANT OR GUARANTEE THE ACCURACY OR ADEQUACY 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 BROWER OR CONTRACTOR IS CAUTIONED TO HAVE SOME PRELIMINARY SUBSURFACE INVESTIGATION AS HE BELIEVES NECESSARY TO SATISFY HIMSELF AS TO CONDITIONS TO BE ENCOUNTERED ON THIS PROJECT. THE CONTRACTOR SHALL HAVE THE CLAIM FOR ADDITIONAL CORRECTION OR PARTIAL EXTENSION OF TIME FOR ANY REASON RESULTING FROM THE ACTUAL CONDITIONS ENCOUNTERED AT THE SITE DIFFERING FROM THOSE INDICATED BY THE SUBSURFACE INFORMATION.

PERSONNEL
C.M. WRIKE
R.E. SMITH
D.G. PINTER

INVESTIGATED BY T.C. BOITOMS
 CHECKED BY D.N. ARGENBRIGHT
 SUBMITTED BY D.N. ARGENBRIGHT
 DATE JANUARY 2013



1/31/13

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

DIVISION OF HIGHWAYS
GEOTECHNICAL ENGINEERING UNIT

SUBSURFACE INVESTIGATION

SOIL AND ROCK LEGEND, TERMS, SYMBOLS, AND ABBREVIATIONS

PROJECT REFERENCE NO. B-4737 SHEET NO. 2

Table with multiple columns: SOIL DESCRIPTION, GRADATION, ROCK DESCRIPTION, TERMS AND DEFINITIONS, CONSISTENCY OR DENSITY, MISCELLANEOUS SYMBOLS, ABBREVIATIONS, EQUIPMENT USED ON SUBJECT PROJECT, FRACTION SPACING, BEDDING, PLASTICITY, COLOR, and INDOURATION. Includes various soil classification charts, symbols for soil types, and definitions for geological terms.



STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION

PAT MCCRORY
GOVERNOR

ANTHONY J. TATA
SECRETARY

January 22, 2013

STATE PROJECT: 38510.1.1 (B-4737)
F.A. PROJECT: BRZ-1226(6)
COUNTY: Craven
DESCRIPTION: Bridge No. 46 on SR 1226 (New Liberty Road) over
Bachelor Creek

SUBJECT: Geotechnical Inventory

Project Description

This project is located in Craven County on SR 1226 west of the intersection of SR 1225. Proposed construction consists of realigning SR 1226 to the south to accommodate the bridge replacement over the Bachelor Creek. This geotechnical investigation was confined to the areas of proposed construction.

Fieldwork for this project was conducted between November of 2012 and January of 2013. Hand auger borings were completed and 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 profile and selected cross sections of this alignment are included in this report.

<u>Line</u>	<u>Station(±)</u>
-LREV-	23+92 to 30+29

Areas of Special Geotechnical Interest

MAILING ADDRESS:
NC DEPARTMENT OF TRANSPORTATION
GEOTECHNICAL ENGINEERING UNIT
1588 MAIL SERVICE CENTER
RALEIGH NC 27699-1588

TELEPHONE: 919-250-4038
FAX: 919-250-4237
Website: www.ncdot.org/doh

LOCATION:
CENTURY CENTER COMPLEX
ENTRANCE #2
1020 BIRCH RIDGE DRIVE
RALEIGH NC

- 1) The following section contains cohesive soils which have the potential to cause embankment stability and/or long term settlement problems:

<u>Line</u>	<u>Station(±)</u>
-LREV-	25+80 to 29+25

- 2) The following section contains organic soils which have the potential for embankment stability and/or subgrade problems during construction.

<u>Line</u>	<u>Station(±)</u>
-LREV-	25+75 to 29+18

- 3) The following section was found to exhibit seasonal high ground water.

<u>Line</u>	<u>Station(±)</u>
-LREV-	25+75 to 30+29

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 range from 2± feet above sea level along the bed of Bachelor Creek to 17± feet above sea level along the existing SR 1226 embankment.

Surficial soils in this area are generally classified as alluvial sediments.

Ground Water

Ground water data was collected between November of 2012 and January of 2013, during a time of normal precipitation. Ground water elevations ranged from 6± to 10± feet above sea level.

Soils

Soils within this project area have been divided into two categories: roadway embankment and alluvial.

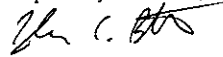
Roadway Embankment soils were encountered along existing SR 1226. These soils are comprised of 1± to 11 or more feet of loose sand (A-2-4).

Alluvial soils were encountered beneath the embankment and within the floodplain of Bachelor Creek. They are comprised of 1± to 11± feet of loose sand (A-2-4, A-3), 1± to 8± feet of soft sandy silt and sandy clay (A-4, A-6), 2± to 8± feet of sandy clay with trace to little organic material and muck (A-5).

Sheet 3A of 9

Laboratory analysis of these soils show organic percentages ranging from 3% to 40% and moisture contents ranging from 25% to 83%. Shear strengths ranged from 63 psf to 3550 psf.

Respectfully Submitted,



Tyler C. Bottoms, L.G.
Project Engineering Geologist

PROJECT REFERENCE NO.	SHEET NO.
B-4737	3B

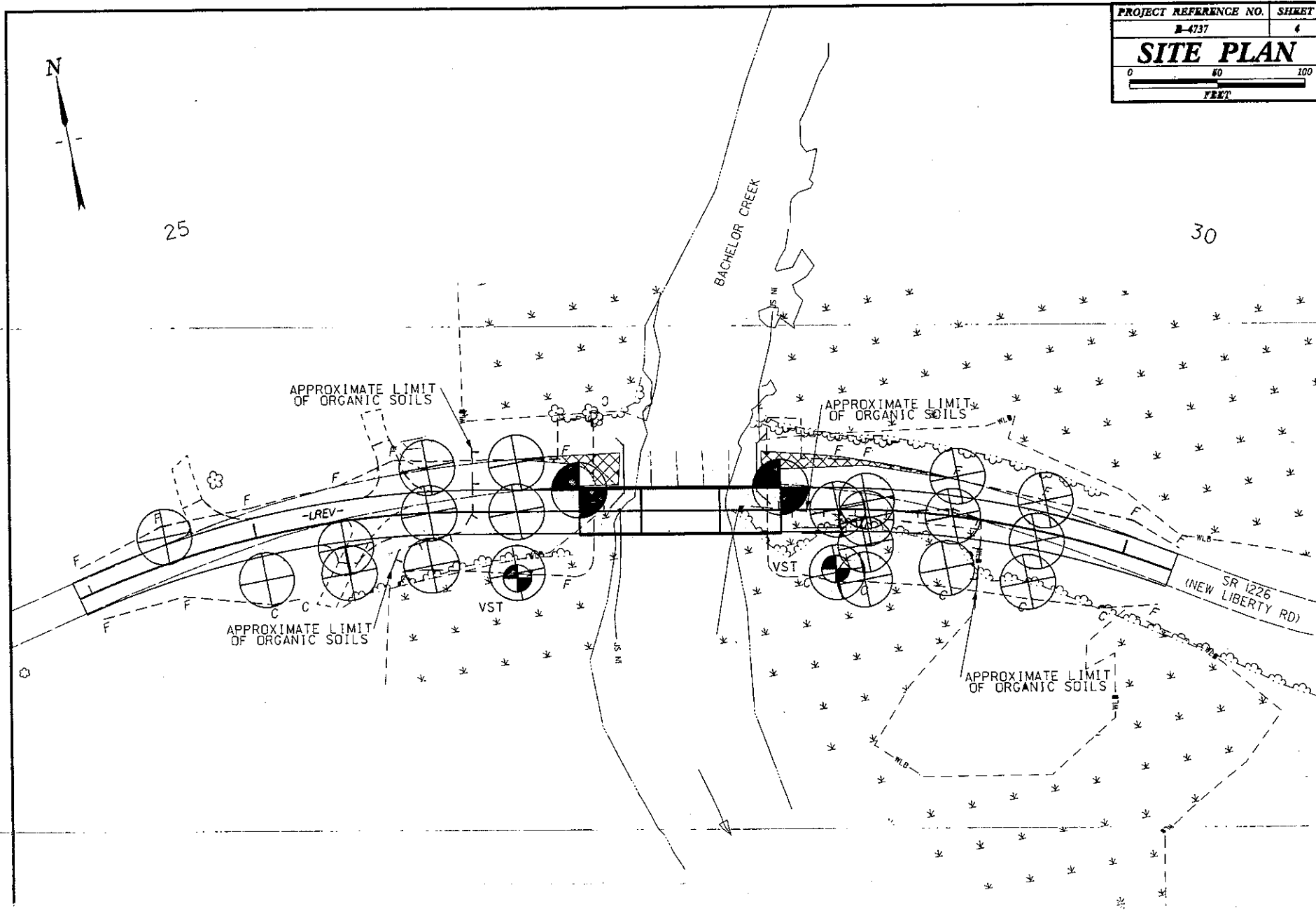
EARTHWORK BALANCE SHEET

PROJECT REFERENCE NO. SHEET

B-4737 4

SITE PLAN

0 60 100
FEET



25

30



APPROXIMATE LIMIT
OF ORGANIC SOILS

APPROXIMATE LIMIT
OF ORGANIC SOILS

APPROXIMATE LIMIT
OF ORGANIC SOILS

APPROXIMATE LIMIT
OF ORGANIC SOILS

BACHELOR CREEK

SR 1226
(NEW LIBERTY RD)

-LREV-

VST

VST

A

C

C

F

F

F

F

F

F

F

F

F

F

F

F

F

F

○

IN SP

W.L.B.

W.L.B.

W.L.B.

W.L.B.

W.L.B.

W.L.B.

W.L.B.

W.L.B.

W.L.B.

W.L.B.

W.L.B.

W.L.B.

W.L.B.

W.L.B.

W.L.B.

W.L.B.

W.L.B.

W.L.B.

W.L.B.

W.L.B.

W.L.B.

W.L.B.

W.L.B.

W.L.B.

W.L.B.

W.L.B.

W.L.B.

W.L.B.

W.L.B.

W.L.B.

W.L.B.

W.L.B.

W.L.B.

W.L.B.

W.L.B.

W.L.B.

W.L.B.

W.L.B.

W.L.B.

W.L.B.

W.L.B.

W.L.B.

W.L.B.

W.L.B.

W.L.B.

W.L.B.

W.L.B.

W.L.B.

W.L.B.

W.L.B.

W.L.B.

W.L.B.

W.L.B.

W.L.B.

W.L.B.

W.L.B.

W.L.B.

W.L.B.

W.L.B.

W.L.B.

W.L.B.

W.L.B.

W.L.B.

W.L.B.

W.L.B.

W.L.B.

W.L.B.

W.L.B.

W.L.B.

W.L.B.

W.L.B.

W.L.B.

W.L.B.

W.L.B.

W.L.B.

W.L.B.

W.L.B.

W.L.B.

W.L.B.

W.L.B.

W.L.B.

W.L.B.

W.L.B.

W.L.B.

W.L.B.

W.L.B.

W.L.B.

W.L.B.

W.L.B.

W.L.B.

W.L.B.

W.L.B.

W.L.B.

W.L.B.

W.L.B.

W.L.B.

W.L.B.

W.L.B.

W.L.B.

W.L.B.

W.L.B.

W.L.B.

W.L.B.

W.L.B.

W.L.B.

W.L.B.

W.L.B.

W.L.B.

W.L.B.

W.L.B.

W.L.B.

W.L.B.

W.L.B.

W.L.B.

W.L.B.

W.L.B.

W.L.B.

W.L.B.

W.L.B.

W.L.B.

W.L.B.

W.L.B.

W.L.B.

W.L.B.

W.L.B.

W.L.B.

W.L.B.

W.L.B.

W.L.B.

W.L.B.

W.L.B.

W.L.B.

W.L.B.

W.L.B.

W.L.B.

W.L.B.

W.L.B.

W.L.B.

W.L.B.

W.L.B.

W.L.B.

W.L.B.

W.L.B.

W.L.B.

W.L.B.

W.L.B.

W.L.B.

W.L.B.

W.L.B.

W.L.B.

W.L.B.

W.L.B.

W.L.B.

W.L.B.

W.L.B.

W.L.B.

W.L.B.

W.L.B.

W.L.B.

W.L.B.

W.L.B.

W.L.B.

W.L.B.

W.L.B.

W.L.B.

W.L.B.

W.L.B.

W.L.B.

W.L.B.

W.L.B.

W.L.B.

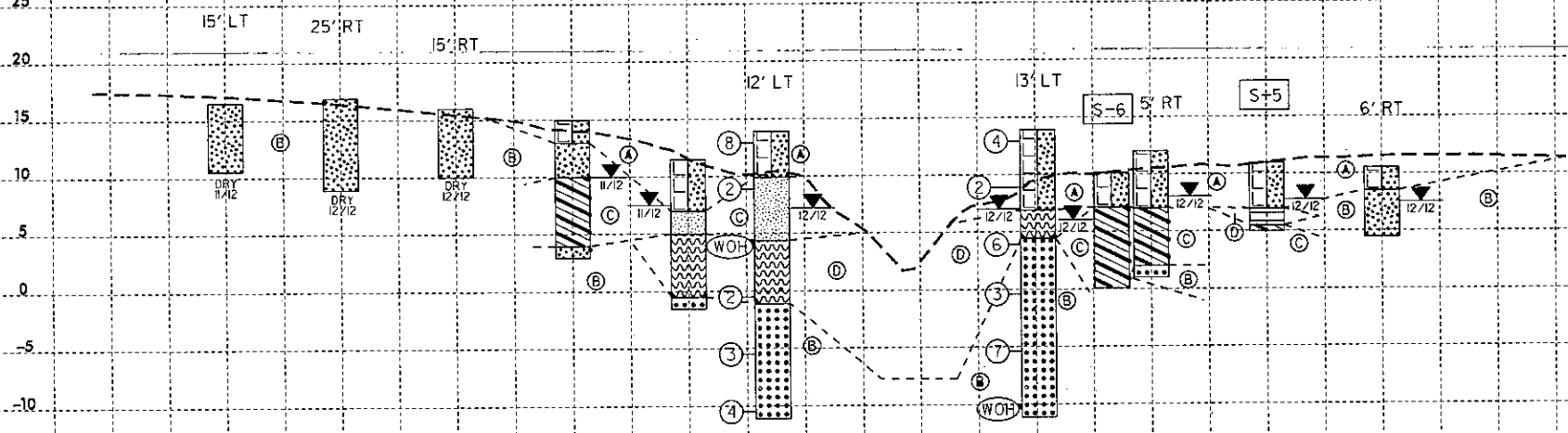
W.L.B.

PROJECT REFERENCE NO.	DRAWING NO.
B-4737	5
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
INCOMPLETE PLANS <small>DO NOT USE FOR CONSTRUCTION</small>	
PRELIMINARY PLANS <small>DO NOT USE FOR CONSTRUCTION</small>	

SOIL TEST RESULTS

SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS.	L.L.	P.I.	% BY WEIGHT				% PASSING (SIZES)			% MOISTURE	% ORGANIC
							C SAND	F SAND	SILT	CLAY	10	40	200		
S-6	CL	28+33	3.0-6.0	A-6(7)	28	14	3.8	33.4	32.4	30.4	100	99	70	26.7	3.7
S-5	CL	29+00	4.0-5.5	A-4(0)	33	NP	10.1	55.3	22.5	12.1	100	96	40	45.6	5.8

- Ⓐ VERY LOOSE TO LOOSE TAN AND GRAY SAND, MOIST TO SATURATED (ROADWAY EMBANKMENT)
- Ⓑ VERY LOOSE TO LOOSE TAN AND GRAY SAND, MOIST TO SATURATED (ALLUVIAL)
- Ⓒ SOFT TAN AND GRAY CLAY AND SANDY SILT WITH WOOD FRAGMENTS, MOIST TO WET (ALLUVIAL)
- Ⓓ VERY SOFT TO SOFT BROWN MUCK AND SILT AND SANDY CLAY WITH LITTLE ORGANIC MATERIAL, WET (ALLUVIAL)



VANE SHEAR TESTS

STATION	OFFSET	DEPTH	S (psf)
26+50	38 RT	0.5	835
26+50	38 RT	1.0	1295
26+50	38 RT	1.5	1002
26+50	38 RT	2.0	1754
26+50	38 RT	2.5	2380
26+50	38 RT	3.0	3424
26+50	38 RT	4.0	376
26+50	38 RT	4.5	522
26+50	38 RT	5.0	752
26+50	38 RT	5.5	1002
26+50	38 RT	6.0	940

VANE SHEAR TESTS

STATION	OFFSET	DEPTH	S (psf)
28+33	34 RT	0.5	63
28+33	34 RT	1.0	188
28+33	34 RT	1.5	376
28+33	34 RT	2.0	522
28+33	34 RT	2.5	1242
28+33	34 RT	3.0	418
28+33	34 RT	3.5	2923
28+33	34 RT	4.0	3299
28+33	34 RT	4.5	2380
28+33	34 RT	5.0	3550

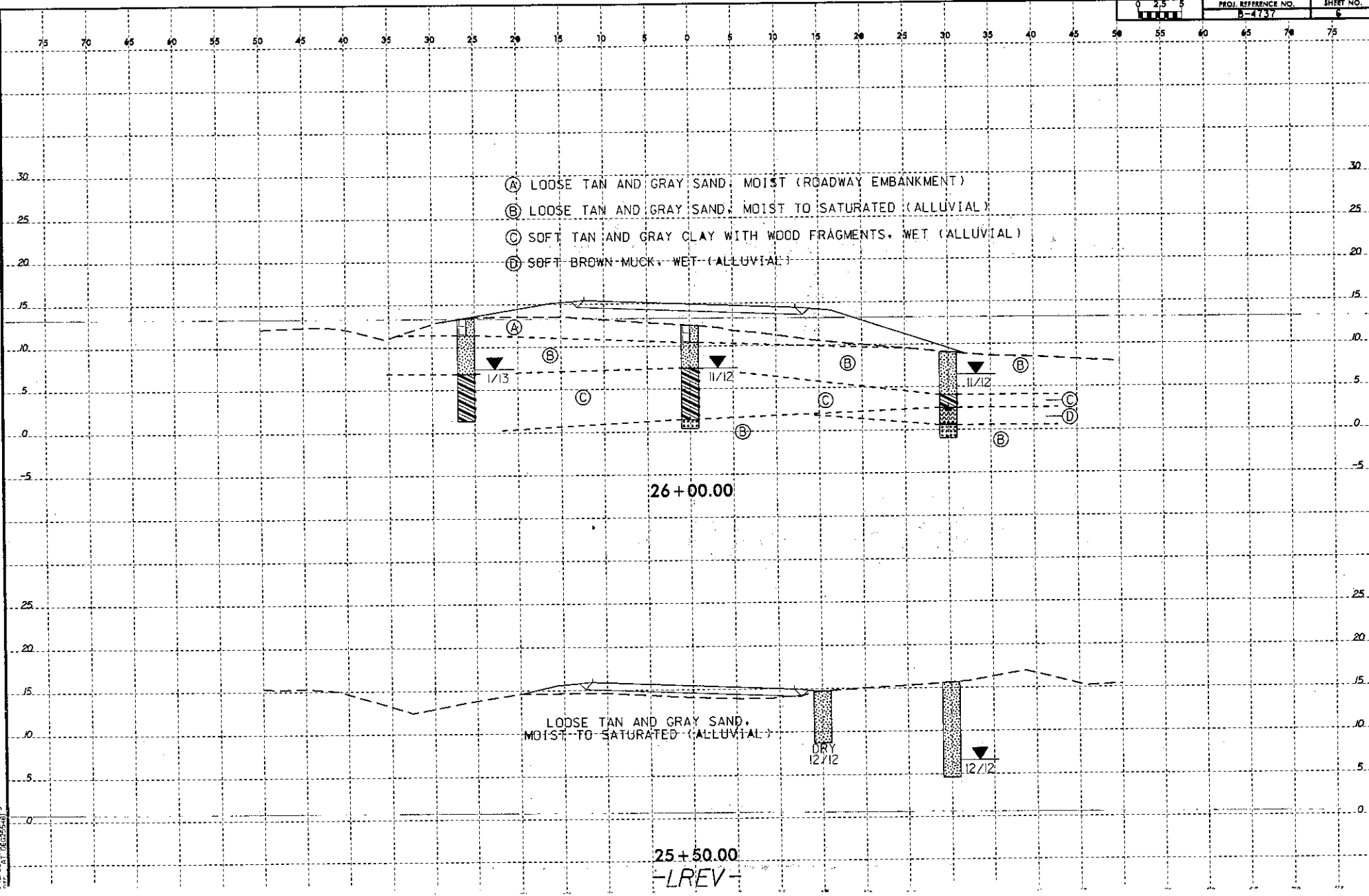
#BX 024 02514 1000 11/24/14 10:58 AM V:\MAG4737.GEO\RDY\DRAWING\CADD\GEO\TECH\MP\14737_GEO_RDY_L\FILIGN

B-4737-6

DATE: 08-05-00
BY: [illegible]
CHECKED BY: [illegible]
SCALE: 1" = 20'-0"

0	2.5	5	PROJ. REFERENCE NO.	SHEET NO.
[Scale bar]			B-4737	6

- (A) LOOSE TAN AND GRAY SAND, MOIST (ROADWAY EMBANKMENT)
- (B) LOOSE TAN AND GRAY SAND, MOIST TO SATURATED (ALLUVIAL)
- (C) SOFT TAN AND GRAY CLAY WITH WOOD FRAGMENTS, WET (ALLUVIAL)
- (D) SOFT BROWN MUCK, WET (ALLUVIAL)



26+00.00

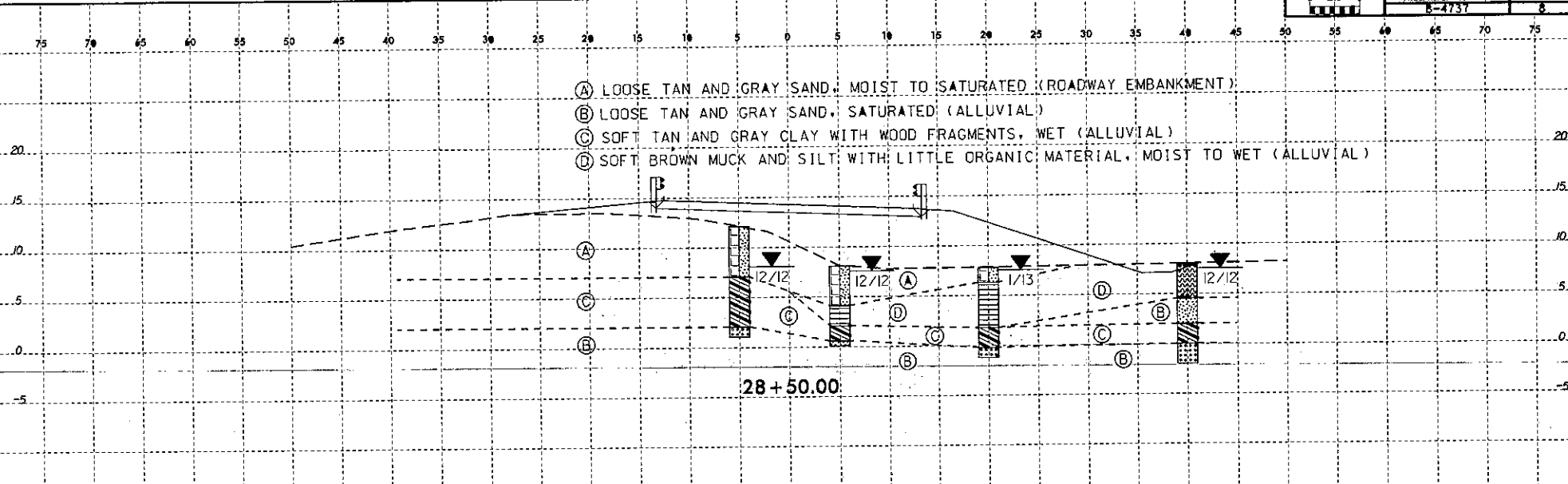
LOOSE TAN AND GRAY SAND,
MOIST TO SATURATED (ALLUVIAL)

DRY
12/12

25+50.00

-LREV-

- (A) LOOSE TAN AND GRAY SAND, MOIST TO SATURATED (ROADWAY EMBANKMENT)
- (B) LOOSE TAN AND GRAY SAND, SATURATED (ALLUVIAL)
- (C) SOFT TAN AND GRAY CLAY WITH WOOD FRAGMENTS, WET (ALLUVIAL)
- (D) SOFT BROWN MUCK AND SILT WITH LITTLE ORGANIC MATERIAL, MOIST TO WET (ALLUVIAL)



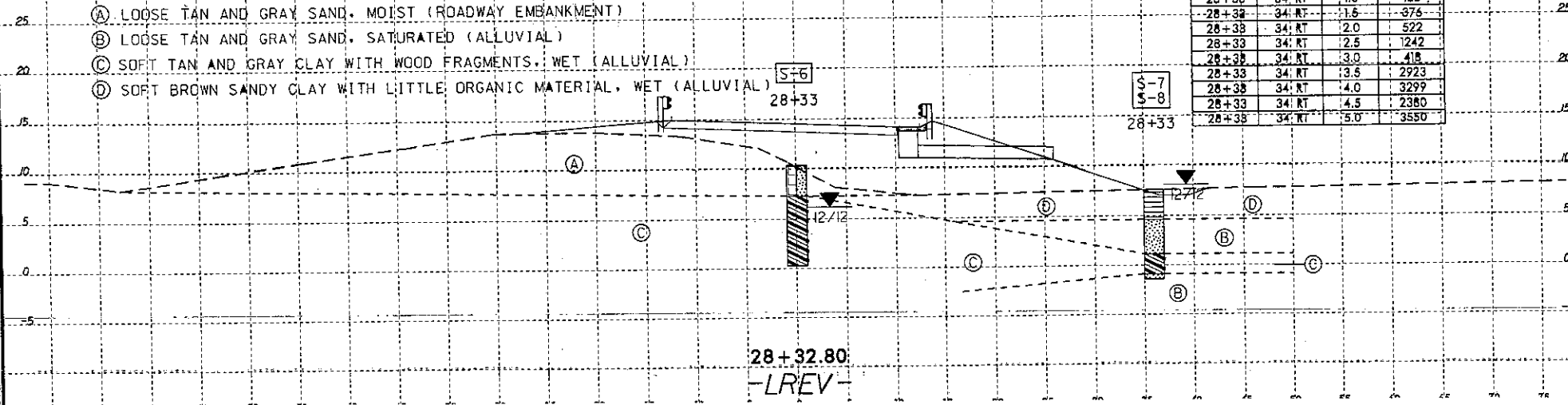
SOIL TEST RESULTS

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		
S-6	CL	28+33	3.0-6.0	A-6(7)	28	14	3.8	33.4	32.4	30.4	100	99	70	26.7	3.7
S-7	36 RT	28+33	0.0-3.0	A-6(3)	35	15	2.3	59.8	14.6	23.3	100	100	42	68.8	6.1
S-8	36 RT	28+33	3.0-6.0	A-2(10)	25	NP	3.8	82.4	5.7	8.1	100	100	17	-	-

VANE SHEAR TESTS

STATION	OFFSET	DEPTH	S (psf)
28+33	34 RT	0.5	63
28+33	34 RT	1.0	188
28+33	34 RT	1.5	376
28+33	34 RT	2.0	522
28+33	34 RT	2.5	1242
28+33	34 RT	3.0	418
28+33	34 RT	3.5	2923
28+33	34 RT	4.0	3299
28+33	34 RT	4.5	2380
28+33	34 RT	5.0	3550

- (A) LOOSE TAN AND GRAY SAND, MOIST (ROADWAY EMBANKMENT)
- (B) LOOSE TAN AND GRAY SAND, SATURATED (ALLUVIAL)
- (C) SOFT TAN AND GRAY CLAY WITH WOOD FRAGMENTS, WET (ALLUVIAL)
- (D) SOFT BROWN SANDY CLAY WITH LITTLE ORGANIC MATERIAL, WET (ALLUVIAL)

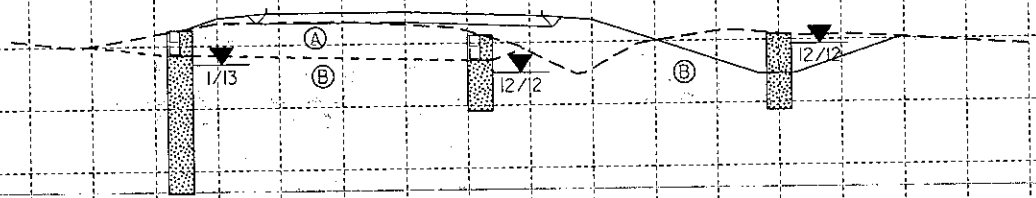


2025 RELEASE UNDER E.O. 14176
 FILED IN: 104 US 517 P 4737
 PROJ. REFERENCE NO. B-4737
 SHEET NO. 8

8/23/88

8/23/88 10:45 AM
 PROJECT: 84737 GEO. INDY. CONVENTION GROUND
 DRAWING: 84737 GEO. INDY. CONVENTION GROUND
 SHEET NO. 9

- (A) LOOSE TAN AND GRAY SAND, MOIST (ROADWAY EMBANKMENT)
- (B) LOOSE TAN AND GRAY SAND, MOIST TO SATURATED (ALLUVIAL)

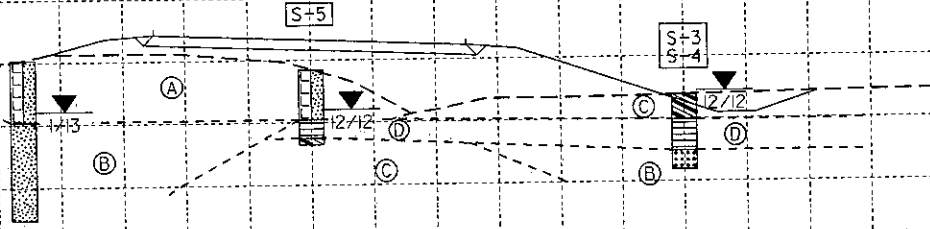


29+50.00

- (A) LOOSE TAN AND GRAY SAND, MOIST TO SATURATED (ROADWAY EMBANKMENT)
- (B) LOOSE TAN AND GRAY SAND, SATURATED (ALLUVIAL)
- (C) SOFT TAN AND GRAY CLAY WITH WOOD FRAGMENTS, WET (ALLUVIAL)
- (D) SOFT BROWN SILT AND CLAY WITH LITTLE ORGANIC MATERIAL, WET (ALLUVIAL)

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		
S-5	CL	29+00	4.0-5.5	A-4(0)	33	NR	10.1	55.3	22.5	12.1	100	96	40	45.6	5.8
S-3	30 RT	29+00	0.0-2.0	A-6(8)	34	19	11.1	34.0	20.4	34.4	99	96	57	25.4	-
S-4	30 RT	29+00	2.0-4.5	A-5(0)	46	NP	8.1	58.3	18.4	15.2	99	95	38	83.4	8.8



29+00.00

-LREV-