

REFERENCE: R-5021

PROJECT: 41582

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

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	R-5021	1	10

STRUCTURE
SUBSURFACE INVESTIGATION

CONTENTS

SHEET NO.	DESCRIPTION
1	TITLE SHEET
2	LEGEND (SOIL & ROCK)
3	SITE PLAN
4	PROFILE
5-6	CROSS SECTIONS
7-10	BORE LOGS

COUNTY BRUNSWICK
PROJECT DESCRIPTION NC 211 FROM SR 1500
(MIDWAY ROAD) TO NC 87

SITE DESCRIPTION BRIDGE ON -YREV- (SR 1500)
OVER -L- (NC 211) AT -YREV- STA. 31+30

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) 707-6850. THE SUBSURFACE PLANS AND REPORTS, FIELD BORING LOGS, ROCK CORES AND SOIL TEST DATA ARE NOT 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 THE 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.

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

PERSONNEL
C.J. CORNETTE
S.N. ZIMARINO
R.E. SMITH
J.M. EDMONDSON

INVESTIGATED BY T.C. BOTTOMS
DRAWN BY T.C. BOTTOMS
CHECKED BY D.N. ARGENBRIGHT
SUBMITTED BY D.N. ARGENBRIGHT
DATE SEPTEMBER 2017



DocuSigned by:
Tyler Bottoms 9/26/2017
48A2D3BD08CF4A6
SIGNATURE DATE

**DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED**

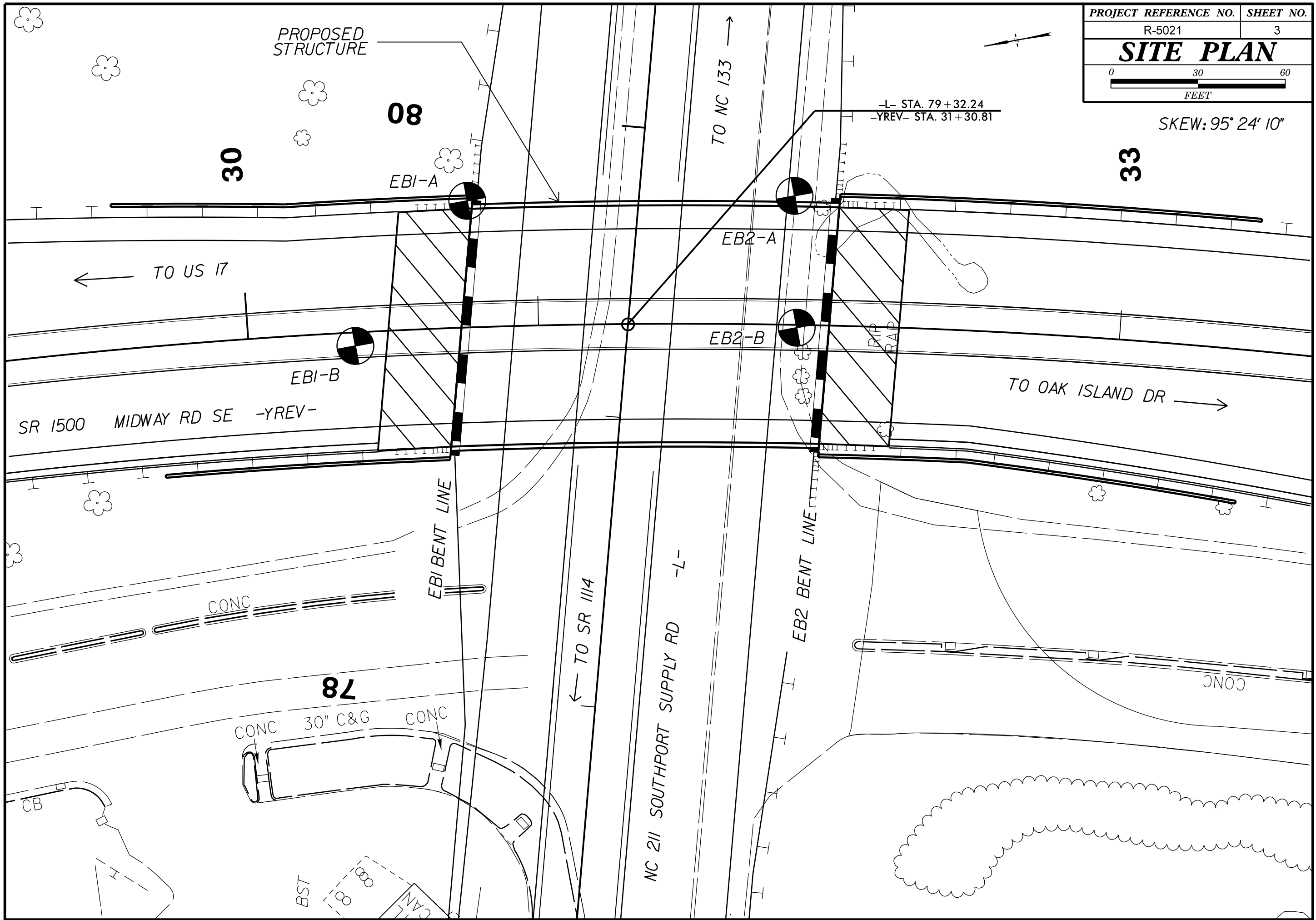
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
GEOTECHNICAL ENGINEERING UNIT

SUBSURFACE INVESTIGATION

SOIL AND ROCK LEGEND, TERMS, SYMBOLS, AND ABBREVIATIONS

Table with multiple columns: SOIL DESCRIPTION, GRADATION, ROCK DESCRIPTION, TERMS AND DEFINITIONS, SOIL LEGEND AND AASHTO CLASSIFICATION, MINERALOGICAL COMPOSITION, COMPRESSIBILITY, PERCENTAGE OF MATERIAL, GROUND WATER, MISCELLANEOUS SYMBOLS, RECOMMENDATION SYMBOLS, ABBREVIATIONS, EQUIPMENT USED ON SUBJECT PROJECT, PLASTICITY, COLOR, FRACTURE SPACING, BEDDING, INDURATION.

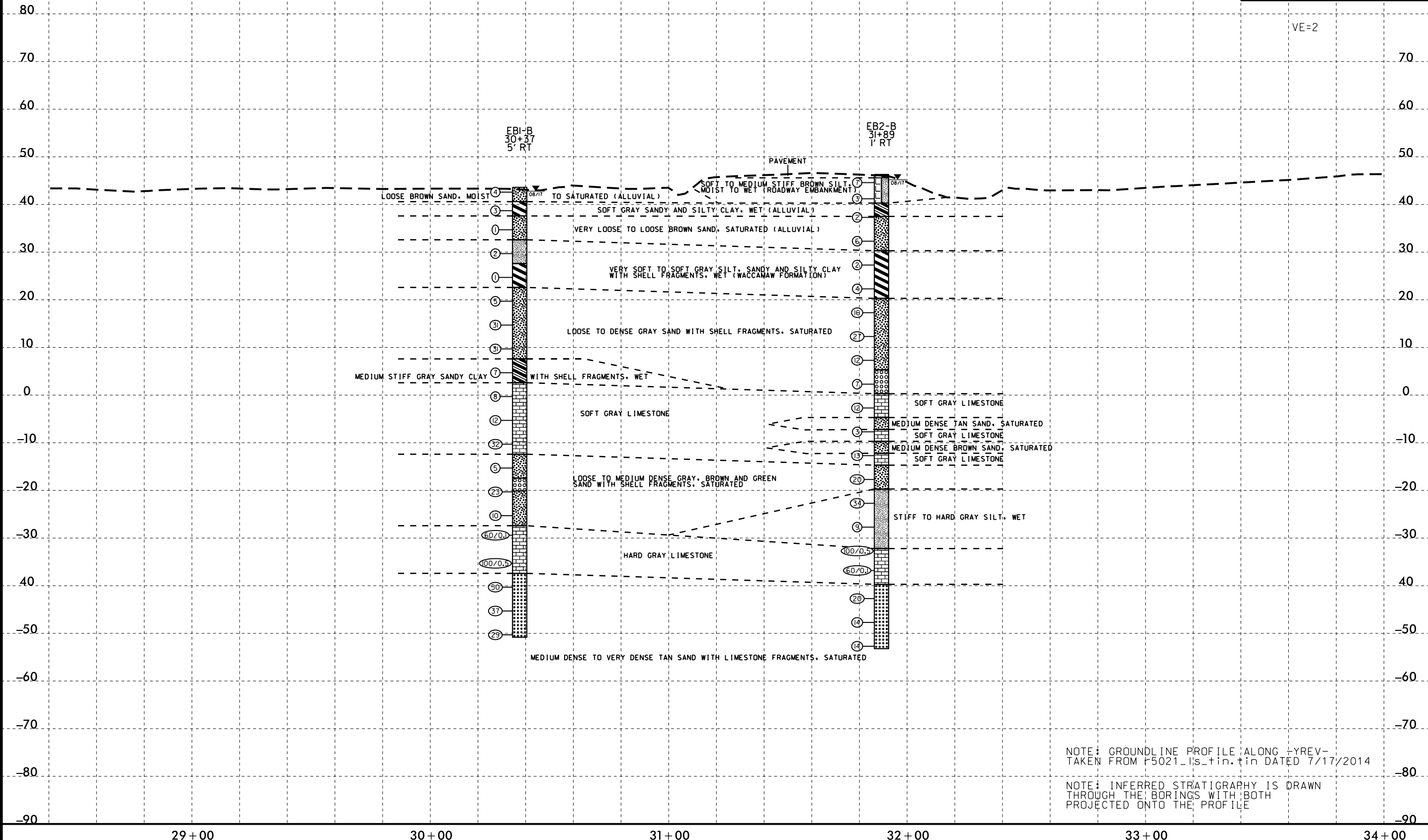
SKEW: 95° 24' 10"



5/14/99

PROJECT REFERENCE NO. R-5021	SHEET NO. 4
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
INCOMPLETE PLANS DO NOT USE FOR R/W ACQUISITION	
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	

PROFILE THROUGH BORINGS PROJECTED ALONG YREV-



VE=2

NOTE: GROUNDLINE PROFILE ALONG YREV- TAKEN FROM R5021-Is_tin.tin DATED 7/17/2014

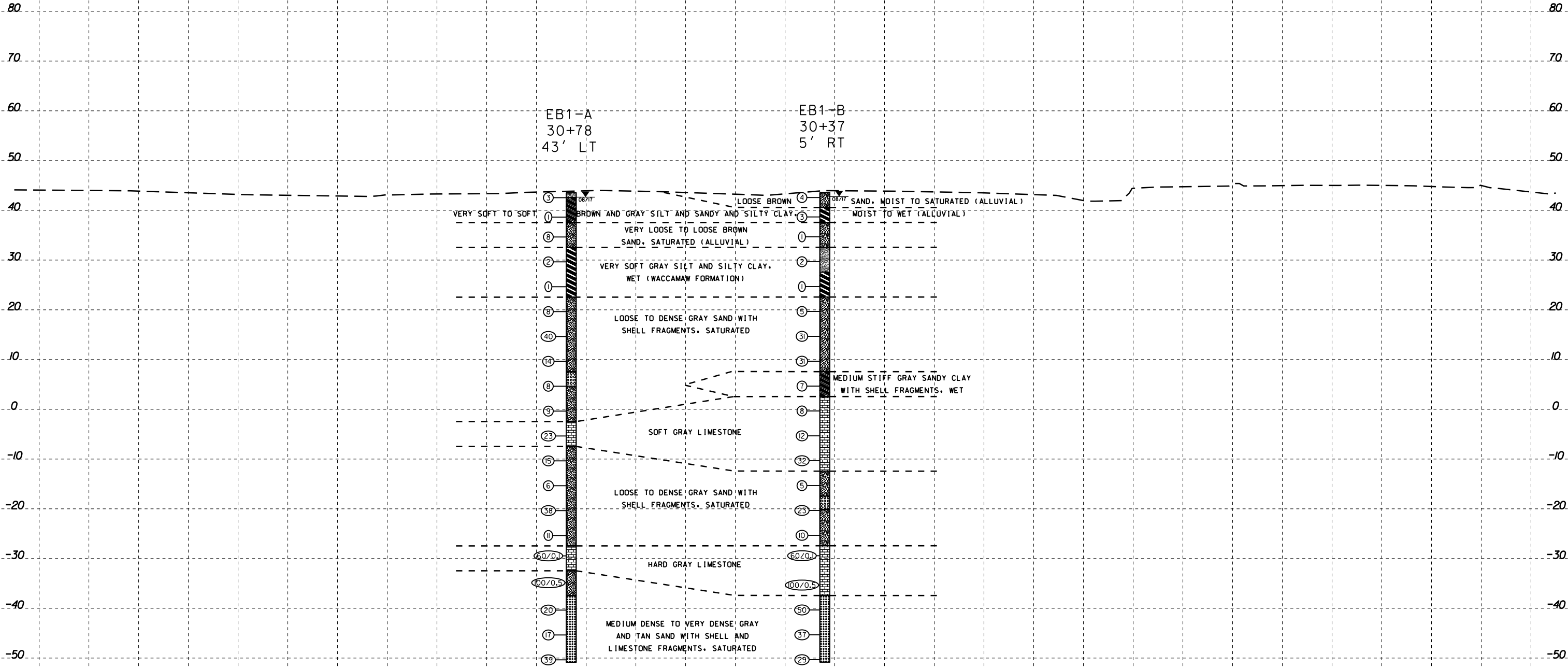
NOTE: INFERRED STRATIGRAPHY IS DRAWN THROUGH THE BORINGS WITH BOTH PROJECTED ONTO THE PROFILE

IL-SEP-2017 15:06 S:\ERC\Upstream\11e_Investigation\TIP_R5021.GEO.BRDG.YREV over L\CADD.GEOTECHN\11e\Prof\R5021.GEO.BRDG.YREV\vrL_pfl.dgn

29+00 30+00 31+00 32+00 33+00 34+00

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

CROSS SECTION THROUGH BORINGS PROJECTED ALONG EB1

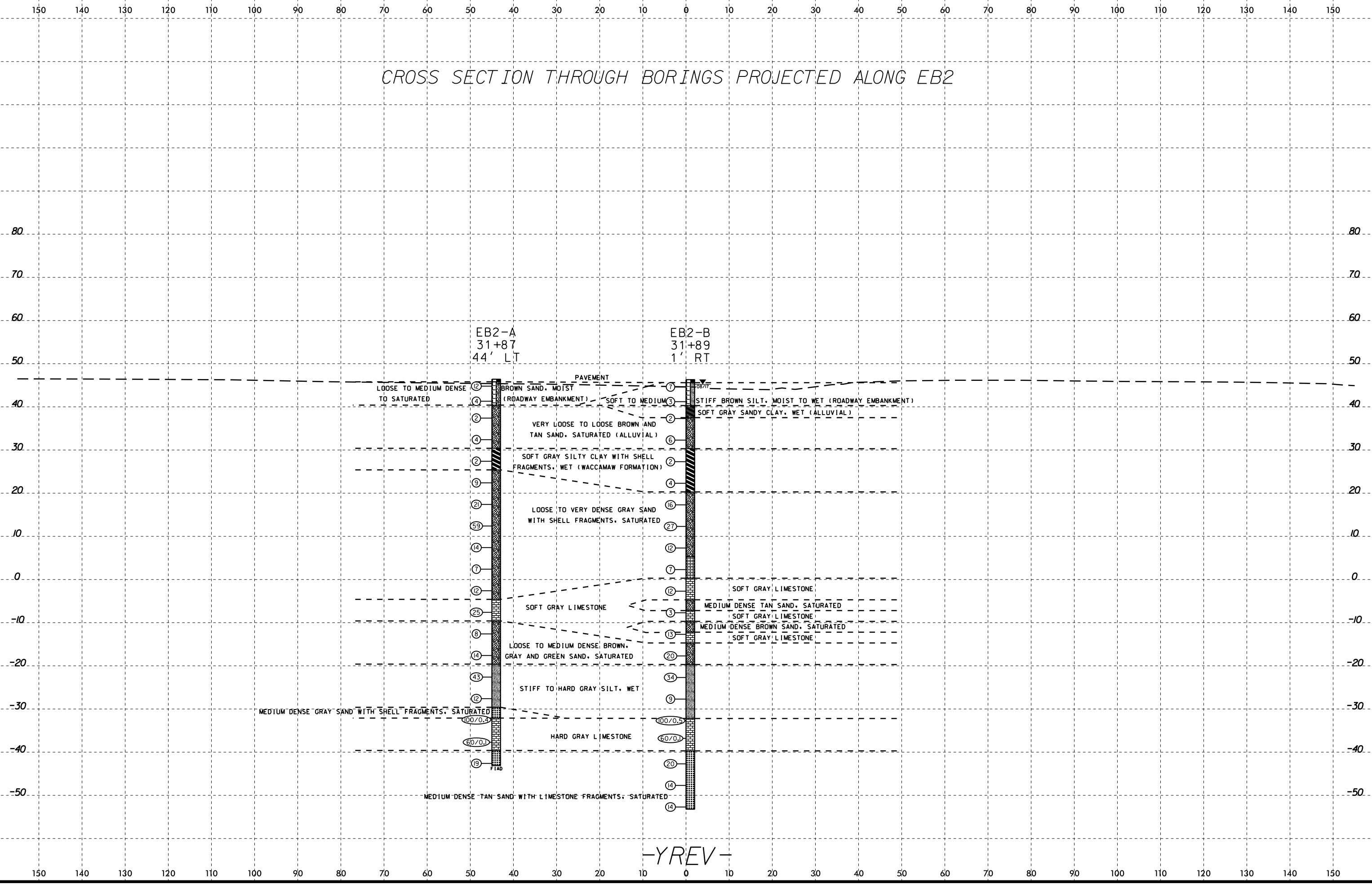


-YREV-

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6/23/16
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\$\$\$\$\$USERNAME\$\$\$\$\$

CROSS SECTION THROUGH BORINGS PROJECTED ALONG EB2



-YREV-

GEOTECHNICAL BORING REPORT

BORE LOG

WBS 41582.1.1		TIP R-5021		COUNTY BRUNSWICK		GEOLOGIST ZIMARINO, S.N.									
SITE DESCRIPTION BRIDGE ON -YREV- (SR 1500) OVER -L- (NC 211) AT -YREV- STA. 31+30							GROUND WTR (ft)								
BORING NO. EB2-A		STATION 31+87		OFFSET 44 ft LT		ALIGNMENT -YREV-									
COLLAR ELEV. 46.4 ft		TOTAL DEPTH 89.5 ft		NORTHING 81,910		EASTING 2,263,782									
DRILL RIG/HAMMER EFF./DATE GFO0057 CME-550X 76% 06/13/2017			DRILL METHOD Mud Rotary		HAMMER TYPE Automatic										
DRILLER Smith, R. E.		START DATE 08/22/17		COMP. DATE 08/31/17		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					
50															
45	45.8	0.6	6	7	5										
40	42.3	4.1	3	2	2										
35	38.4	8.0	WOH	1	1										
30	33.4	13.0	2	2	2										
25	28.4	18.0	WOH	WOH	2										
20	23.4	23.0	3	2	7										
15	18.4	28.0	4	7	14										
10	13.4	33.0	7	19	40										
5	8.4	38.0	6	8	6										
0	3.4	43.0	4	4	3										
-5	-1.6	48.0	6	6	6										
-10	-6.6	53.0	6	11	14										
-15	-11.6	58.0	4	4	4										
-20	-16.6	63.0	3	7	7										
-25	-21.6	68.0	6	26	17										
-30	-26.6	73.0	5	7	5										

NCDOT BORE DOUBLE R5021_GEO_BRDG_YREVOVRLGPJ_NC_DOT.GDT 9/11/17

WBS 41582.1.1		TIP R-5021		COUNTY BRUNSWICK		GEOLOGIST ZIMARINO, S.N.									
SITE DESCRIPTION BRIDGE ON -YREV- (SR 1500) OVER -L- (NC 211) AT -YREV- STA. 31+30							GROUND WTR (ft)								
BORING NO. EB2-A		STATION 31+87		OFFSET 44 ft LT		ALIGNMENT -YREV-									
COLLAR ELEV. 46.4 ft		TOTAL DEPTH 89.5 ft		NORTHING 81,910		EASTING 2,263,782									
DRILL RIG/HAMMER EFF./DATE GFO0057 CME-550X 76% 06/13/2017			DRILL METHOD Mud Rotary		HAMMER TYPE Automatic										
DRILLER Smith, R. E.		START DATE 08/22/17		COMP. DATE 08/31/17		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					
-30															
-35	-31.6	78.0	22	100	0.4										
-40	-36.6	83.0	42	18	60	0.1									
-45	-41.6	88.0	6	11	8										

Match Line

COASTAL PLAIN
GRAY SAND WITH LIMESTONE FRAGMENTS, SATURATED (continued) 78.5

COASTAL PLAIN
HARD GRAY LIMESTONE

COASTAL PLAIN
TAN SAND WITH LIMESTONE FRAGMENTS, SATURATED 86.0

Boring Terminated at Elevation -43.1 ft in Medium Dense Sand 89.5

GEOTECHNICAL BORING REPORT

BORE LOG

WBS 41582.1.1	TIP R-5021	COUNTY BRUNSWICK	GEOLOGIST ZIMARINO, S.N.
SITE DESCRIPTION BRIDGE ON -YREV- (SR 1500) OVER -L- (NC 211) AT -YREV- STA. 31+30			GROUND WTR (ft)
BORING NO. EB2-B	STATION 31+89	OFFSET 1 ft RT	ALIGNMENT -YREV-
COLLAR ELEV. 46.3 ft	TOTAL DEPTH 99.5 ft	NORTHING 81,917	EASTING 2,263,741
DRILL RIG/HAMMER EFF./DATE GFO0057 CME-550X 76% 06/13/2017		DRILL METHOD Mud Rotary	HAMMER TYPE Automatic
DRILLER Smith, R. E.	START DATE 08/22/17	COMP. DATE 08/22/17	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				
50														
45	45.6	0.7	3	4	3								GROUND SURFACE PAVEMENT	0.0
40	42.2	4.1	2	1	2								ROADWAY EMBANKMENT BROWN SILT, MOIST TO WET	0.7
35	38.3	8.0	WOH	1	1								ALLUVIAL GRAY SANDY CLAY, WET	6.0
30	33.3	13.0	2	4	2								ALLUVIAL BROWN AND TAN SAND, SATURATED	8.8
25	28.3	18.0	1	1	1								COASTAL PLAIN GRAY SILTY CLAY WITH SHELL FRAGMENTS, WET (WACCAMAW FORMATION)	18.0
20	23.3	23.0	WOH	WOH	4								COASTAL PLAIN GRAY SAND WITH SHELL FRAGMENTS, SATURATED	26.0
15	18.3	28.0	3	4	12								COASTAL PLAIN GRAY SAND WITH SHELL FRAGMENTS, SATURATED	26.0
10	13.3	33.0	4	7	20								COASTAL PLAIN GRAY SAND WITH SHELL FRAGMENTS, SATURATED	26.0
5	8.3	38.0	4	5	7								COASTAL PLAIN GRAY SAND WITH SHELL FRAGMENTS, SATURATED	26.0
0	3.3	43.0	3	4	3								COASTAL PLAIN GRAY SAND WITH SHELL FRAGMENTS, SATURATED	26.0
-5	-1.7	48.0	6	6	6								COASTAL PLAIN SOFT GRAY LIMESTONE	46.0
-10	-6.7	53.0	13	2	1								COASTAL PLAIN TAN SAND, SATURATED	51.0
-15	-11.7	58.0	5	11	2								COASTAL PLAIN SOFT GRAY LIMESTONE	53.5
-20	-16.7	63.0	8	9	11								COASTAL PLAIN SOFT GRAY LIMESTONE	56.0
-25	-21.7	68.0	22	20	14								COASTAL PLAIN BROWN SAND, SATURATED	58.5
-30	-26.7	73.0	3	4	5								COASTAL PLAIN SOFT GRAY LIMESTONE	61.0
													COASTAL PLAIN BROWN AND GREEN SAND, SATURATED	66.0
													COASTAL PLAIN GRAY SILT, WET	66.0

WBS 41582.1.1	TIP R-5021	COUNTY BRUNSWICK	GEOLOGIST ZIMARINO, S.N.
SITE DESCRIPTION BRIDGE ON -YREV- (SR 1500) OVER -L- (NC 211) AT -YREV- STA. 31+30			GROUND WTR (ft)
BORING NO. EB2-B	STATION 31+89	OFFSET 1 ft RT	ALIGNMENT -YREV-
COLLAR ELEV. 46.3 ft	TOTAL DEPTH 99.5 ft	NORTHING 81,917	EASTING 2,263,741
DRILL RIG/HAMMER EFF./DATE GFO0057 CME-550X 76% 06/13/2017		DRILL METHOD Mud Rotary	HAMMER TYPE Automatic
DRILLER Smith, R. E.	START DATE 08/22/17	COMP. DATE 08/22/17	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				
-30														
-35	-31.7	78.0	18	100	0.5								Match Line	78.5
-40	-36.7	83.0	60	0	0.1								COASTAL PLAIN HARD GRAY LIMESTONE	78.5
-45	-41.7	88.0	11	10	10								COASTAL PLAIN TAN SAND WITH LIMESTONE FRAGMENTS, SATURATED	86.0
-50	-46.7	93.0	13	7	7								COASTAL PLAIN TAN SAND WITH LIMESTONE FRAGMENTS, SATURATED	86.0
-55	-51.7	98.0	6	5	9								COASTAL PLAIN TAN SAND WITH LIMESTONE FRAGMENTS, SATURATED	86.0
													Boring Terminated at Elevation -53.2 ft in Medium Dense Sand	99.5

NCDOT BORE DOUBLE R5021_GEO_BRDG_YREVOVRLGPJ_NC_DOT_GDT_9/11/17