

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	17BP.12.R.40	1	13

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

**STRUCTURE**  
**SUBSURFACE INVESTIGATION**

COUNTY IREDELL  
SITE DESCRIPTION BRIDGE NO. 78 ON SR 1004 OVER  
THIRD CREEK

**CONTENTS**

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**PROJECT: 17BP.12.R.40 REFERENCE: N/A**

**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 RELED 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:
1. 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.
  2. 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

J.K. STICKNEY  
C.L. SMITH  
M.R. MOORE

INVESTIGATED BY J.K. STICKNEY  
DRAWN BY T.T. WALKER  
CHECKED BY J.E. BEVERLY <sup>DR</sup> Jeb  
SUBMITTED BY E.N. WILLIAMS  
DATE MAY 2016



DocuSigned by:  
Eric N. Williams  
A6B874F1197848B... 5/9/2016  
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

SOIL DESCRIPTION SOIL IS CONSIDERED UNCONSOLIDATED, SEMI-CONSOLIDATED, OR WEATHERED EARTH MATERIALS THAT CAN BE PENETRATED WITH A CONTINUOUS FLIGHT POWER AUGER AND YIELD LESS THAN 100 BLOWS PER FOOT ACCORDING TO THE STANDARD PENETRATION TEST (AASHTO T 206, ASTM D1586)...

SOIL LEGEND AND AASHTO CLASSIFICATION Table with columns for GENERAL CLASS., GROUP CLASS., SYMBOL, % PASSING, MATERIAL PASSING, GROUP INDEX, USUAL TYPES OF MAJOR MATERIALS, GEN. RATING AS SUBGRADE.

CONSISTENCY OR DENSENESS Table with columns for PRIMARY SOIL TYPE, COMPACTNESS OR CONSISTENCY, RANGE OF STANDARD PENETRATION RESISTANCE, RANGE OF UNCONFINED COMPRESSIVE STRENGTH.

TEXTURE OR GRAIN SIZE Table with columns for U.S. STD. SIEVE SIZE OPENING (MM), BOLDER (BLDR.), COBBLE (COB.), GRAVEL (GR.), COARSE SAND (CSE, SD.), FINE SAND (F SD.), SILT (SL), CLAY (CL).

SOIL MOISTURE - CORRELATION OF TERMS Table with columns for SOIL MOISTURE SCALE (ATTERBERG LIMITS), FIELD MOISTURE DESCRIPTION, GUIDE FOR FIELD MOISTURE DESCRIPTION.

PLASTICITY Table with columns for PLASTIC RANGE (PI), LIQUID LIMIT, PLASTIC LIMIT, OPTIMUM MOISTURE SHRINKAGE LIMIT, PLASTICITY INDEX (PI), DRY STRENGTH.

COLOR Table with columns for DESCRIPTIONS MAY INCLUDE COLOR OR COLOR COMBINATIONS (TAN, RED, YELLOW-BROWN, BLUE-GRAY), MODIFIERS SUCH AS LIGHT, DARK, STREAKED, ETC.

GRADATION WELL GRADED - INDICATES A GOOD REPRESENTATION OF PARTICLE SIZES FROM FINE TO COARSE. UNIFORMLY GRADED - INDICATES THAT SOIL PARTICLES ARE ALL APPROXIMATELY THE SAME SIZE.

ANGULARITY OF GRAINS THE ANGULARITY OR ROUNDNESS OF SOIL GRAINS IS DESIGNATED BY THE TERMS: ANGULAR, SUBANGULAR, SUBROUNDED, OR ROUNDED.

MINERALOGICAL COMPOSITION MINERAL NAMES SUCH AS QUARTZ, FELDSPAR, MICA, TALC, KAOLIN, ETC. ARE USED IN DESCRIPTIONS WHEN THEY ARE CONSIDERED OF SIGNIFICANCE.

COMPRESSIONS Slightly compressible, Moderately compressible, Highly compressible. PERCENTAGE OF MATERIAL ORGANIC MATERIAL, GRANULAR SOILS, SILT-CLAY SOILS, OTHER MATERIAL.

MISCELLANEOUS SYMBOLS ROADWAY EMBANKMENT (RE) WITH SOIL DESCRIPTION, SOIL SYMBOL, ARTIFICIAL FILL (AF) OTHER THAN ROADWAY EMBANKMENT, INFERRED SOIL BOUNDARY, INFERRED ROCK LINE, ALLUVIAL SOIL BOUNDARY.

RECOMMENDATION SYMBOLS UNDERCUT, SHALLOW UNDERCUT, UNCLASSIFIED EXCAVATION - UNSUITABLE WASTE, UNCLASSIFIED EXCAVATION - ACCEPTABLE DEGRADABLE ROCK, UNCLASSIFIED EXCAVATION - ACCEPTABLE, BUT NOT TO BE USED IN THE TOP 3 FEET OF EMBANKMENT OR BACKFILL.

ABBREVIATIONS AR - AUGER REFUSAL, BT - BORING TERMINATED, CL - CLAY, CPT - CONE PENETRATION TEST, DMT - DILATOMETER TEST, DPT - DYNAMIC PENETRATION TEST, e - VOID RATIO, f - FINE, FOSS. - FOSSILIFEROUS, FRAC. - FRACTURED, FRACTURES, FRAGS. - FRAGMENTS, HI. - HIGHLY, MED. - MEDIUM, MICA. - MICACEOUS, MOD. - MODERATELY, NP - NON PLASTIC, ORG. - ORGANIC, PMT - PRESSUREMETER TEST, SAP. - SAPROLITIC, SD. - SAND, SANDY, SL. - SILT, SILTY, SLI. - SLIGHTLY, TCR - TRICONE REFUSAL, w - MOISTURE CONTENT, v - VERY, VST - VANE SHEAR TEST, WE. - WEATHERED, UNIT WEIGHT, DRY UNIT WEIGHT.

EQUIPMENT USED ON SUBJECT PROJECT DRILL UNITS: CME-45C, CME-55, CME-550, VANE SHEAR TEST, PORTABLE HOIST, CME-550X. ADVANCING TOOLS: CLAY BITS, 6" CONTINUOUS FLIGHT AUGER, 8" HOLLOW AUGERS, HARD FACED FINGER BITS, TUNG-CARBIDE INSERTS, CASING w/ ADVANCER, TRICONE STEEL TEETH, TRICONE TUNG-CARB., CORE BIT.

ROCK DESCRIPTION HARD ROCK IS NON-COASTAL PLAIN MATERIAL THAT WOULD YIELD SPT REFUSAL IF TESTED. AN INFERRED ROCK LINE INDICATES THE LEVEL AT WHICH NON-COASTAL PLAIN MATERIAL WOULD YIELD SPT REFUSAL.

WEATHERED ROCK (WR), CRYSTALLINE ROCK (CR), NON-CRYSTALLINE ROCK (NCR), COASTAL PLAIN SEDIMENTARY ROCK (CP) with associated diagrams and descriptions.

WEATHERING FRESH, VERY SLIGHT (V SL.), SLIGHT (SL.), MODERATE (MOD.), MODERATELY SEVERE (MOD. SEV.), SEVERE (SEV.), VERY SEVERE (V SEV.), COMPLETE. Descriptions of rock weathering effects.

ROCK HARDNESS VERY HARD, HARD, MODERATELY HARD, MEDIUM HARD, SOFT, VERY SOFT. Descriptions of rock hardness levels.

FRACTURE SPACING and BEDDING tables with columns for TERM, SPACING, TERM, THICKNESS.

INDURATION FOR SEDIMENTARY ROCKS, FRIABLE, MODERATELY INDURATED, INDURATED, EXTREMELY INDURATED. Descriptions of induration levels.

TERMS AND DEFINITIONS ALLUVIUM (ALLUV.) - SOILS THAT HAVE BEEN TRANSPORTED BY WATER. AQUIFER - A WATER BEARING FORMATION OR STRATA.

ARENEACEOUS, ARGILLACEOUS, ARTESIAN, CALCAREOUS (CALC.), COLLUVIUM, CORE RECOVERY (REC.), DIKE, DIP, DIP DIRECTION (DIP AZIMUTH), FAULT, FISSILE, FLOAT, FLOOD PLAIN (FP), FORMATION (FM), JOINT, LEDGE, LENS, MOTTLED (MOT.), PERCHED WATER, RESIDUAL (RES.) SOIL, ROCK QUALITY DESIGNATION (ROD), SAPROLITE (SAP.), SILL, SLICKENSIDE, STANDARD PENETRATION TEST (PENETRATION RESISTANCE) (SPT), STRATA CORE RECOVERY (SREC), STRATA ROCK QUALITY DESIGNATION (SRQD), TOPSOIL (TS).

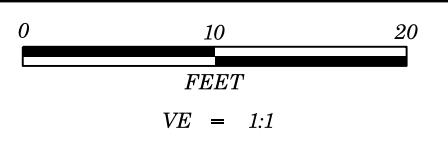
Notes section: F.I.A.D. = FILLED IMMEDIATELY AFTER DRILLING.

BENCH MARK: GPS STATION 48-0078(2); N: 738043.512, E: 1430051.433. ELEVATION: 812.26 FEET.

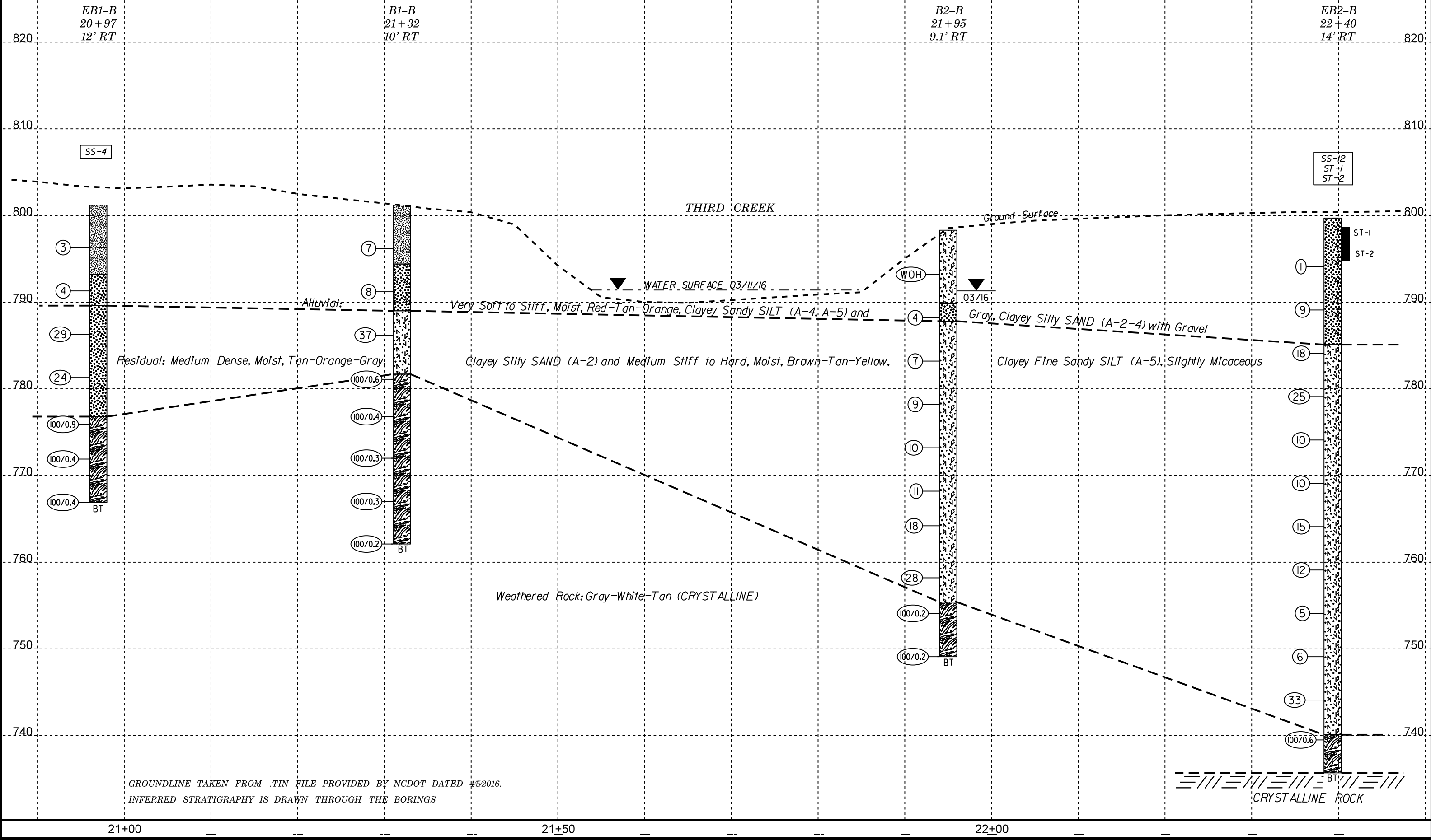
DATE: 8-15-14

PROJECT REFERENCE NO.	SHEET NO.
17BP.12.R.40	3
<b>SITE PLAN</b>	
SKEW = 75 DEGREES	





<b>PROJECT REFERENCE NO.</b>	<b>SHEET NO.</b>
17BP.12.R.40	4
<b>PROFILE BORINGS PROJECTED ALONG -L-</b>	



EB1-B  
20+97  
12' RT

B1-B  
21+32  
10' RT

B2-B  
21+95  
9.1' RT

EB2-B  
22+40  
14' RT

THIRD CREEK

WATER SURFACE 03/11/16

Ground Surface

Alluvial:

Very Soft to Stiff, Moist, Red-Tan-Orange, Clayey Sandy SILT (A-4, A-5) and

Gray, Clayey Silty SAND (A-2-4) with Gravel

Residual: Medium Dense, Moist, Tan-Orange-Gray,

Clayey Silty SAND (A-2) and Medium Stiff to Hard, Moist, Brown-Tan-Yellow,

Clayey Fine Sandy SILT (A-5), Slightly Micaceous

Weathered Rock: Gray-White-Tan (CRYSTALLINE)

GROUNDLINE TAKEN FROM .TIN FILE PROVIDED BY NCDOT DATED 4/5/2016.  
INFERRED STRATIGRAPHY IS DRAWN THROUGH THE BORINGS

CRYSTALLINE ROCK

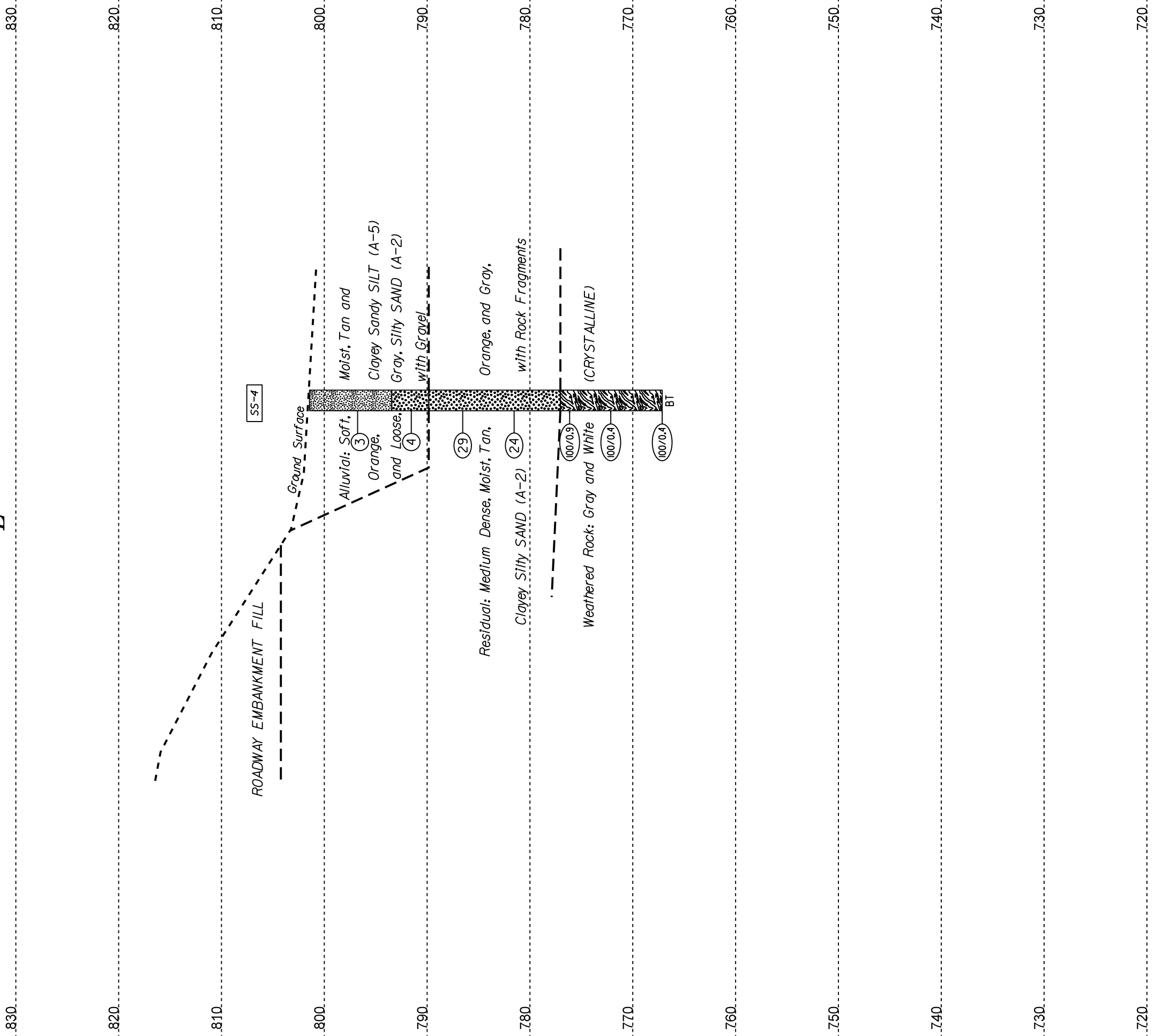
21+00

21+50

22+00

HORIZ. SCALE 0 10 20 (FEET) VE = 1:1

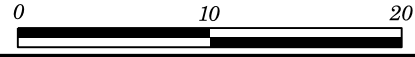
EB1-B  
20+97  
12' RT



PROJECT REFERENCE NO.	SHEET NO.
17BP.12.R.40	5
SECTION THROUGH END BENT 1 STA. 20+99.40 -L- SKEW = 75 DEGREES	

GROUNDLINE TAKEN FROM .TIN FILE PROVIDED BY NCDOT DATED 4/5/2016.  
INFERRED STRATIGRAPHY IS DRAWN THROUGH THE BORINGS

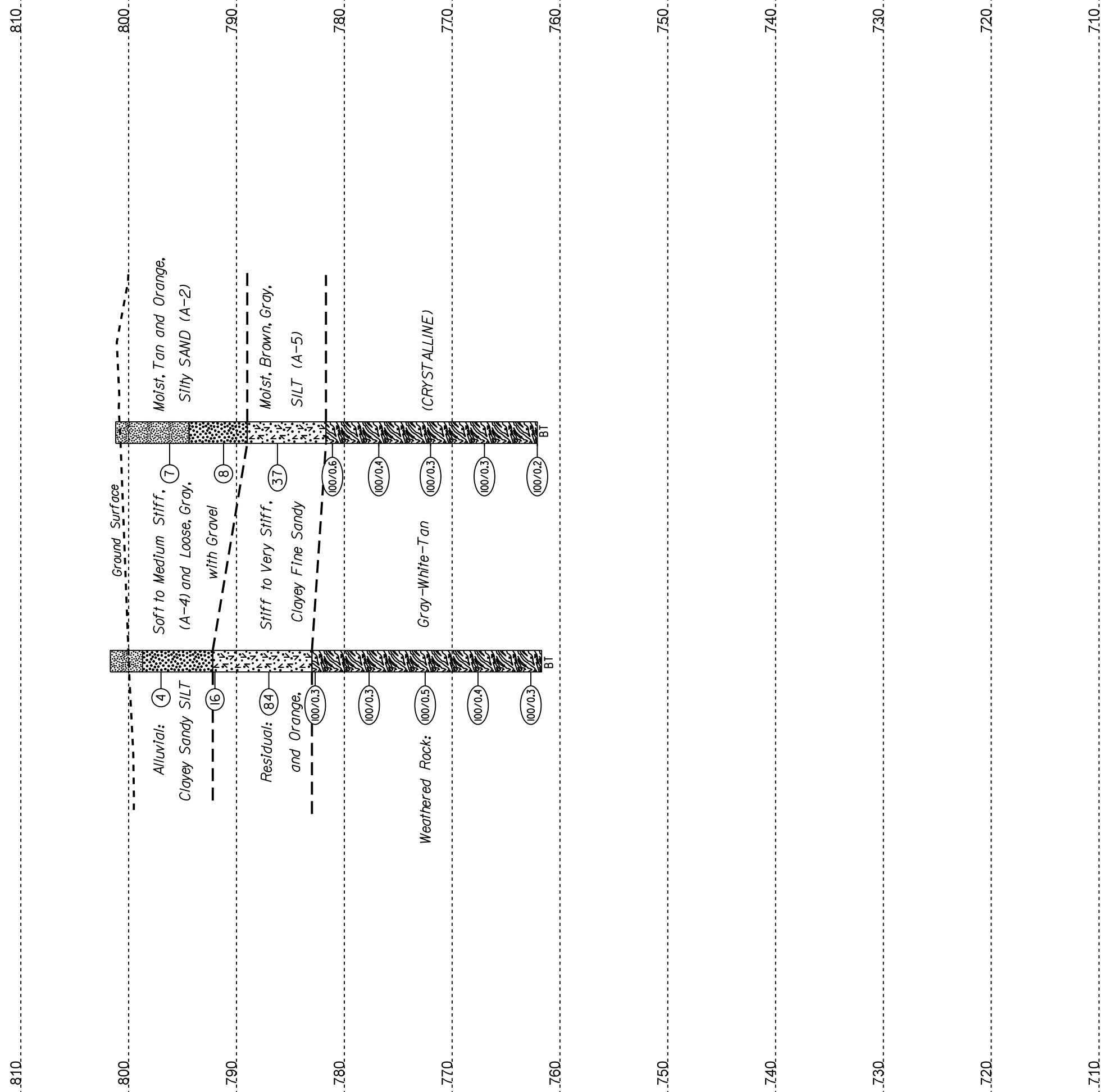
HORIZ. SCALE 0 10 20  
(FEET)



VE = 1:1

B1-A  
21+42  
11.2' LT

B1-B  
21+32  
10' RT



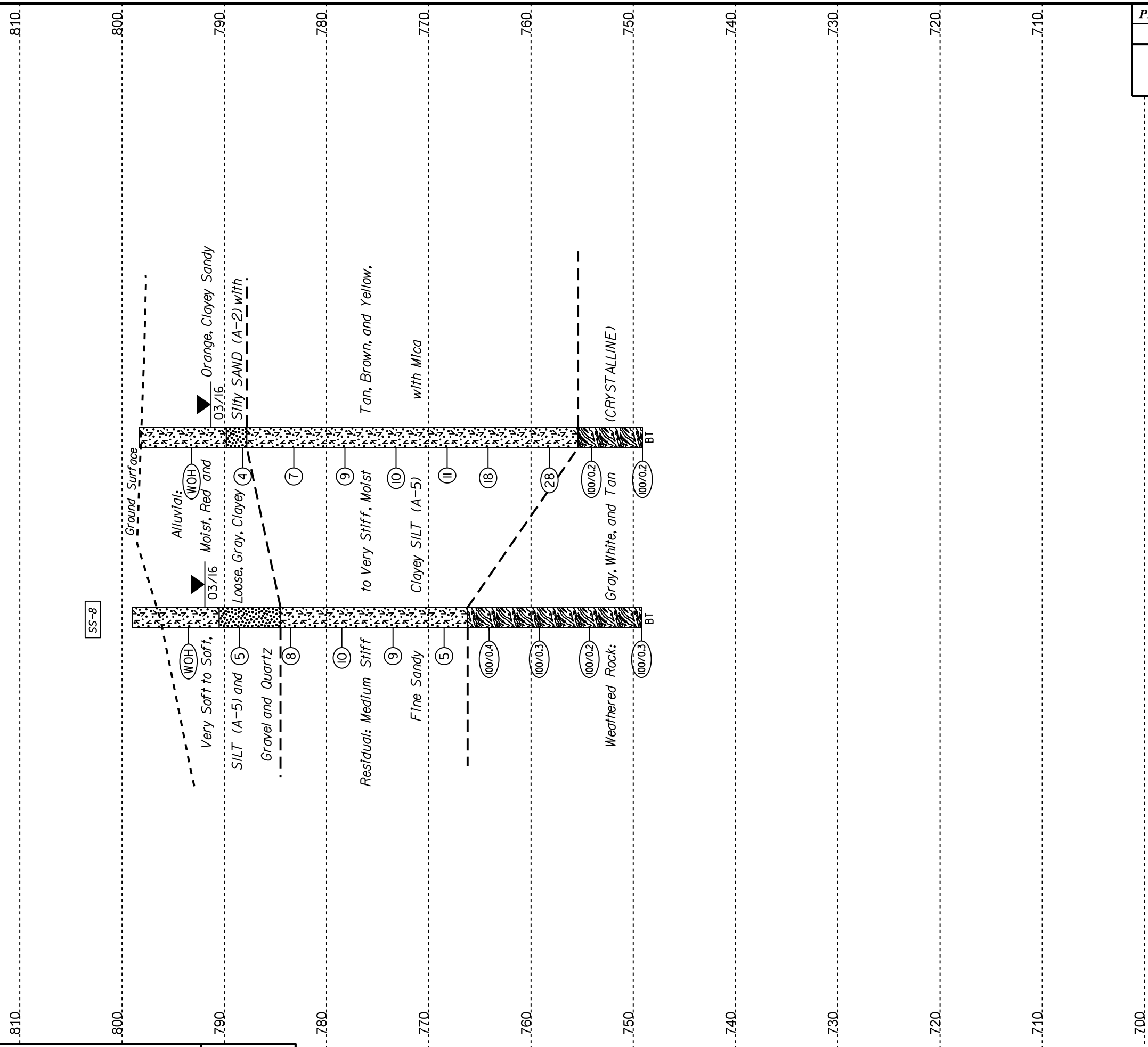
PROJECT REFERENCE NO.	SHEET NO.
17BP.12.R.40	6
SECTION THROUGH BENT 1 STA. 21+39.40 -L- SKEW = 75 DEGREES	

GROUNDLINE TAKEN FROM .TIN FILE PROVIDED BY NCDOT DATED 4/5/2016.  
INFERRED STRATIGRAPHY IS DRAWN THROUGH THE BORINGS



B2-A  
22+02  
8.5' LT

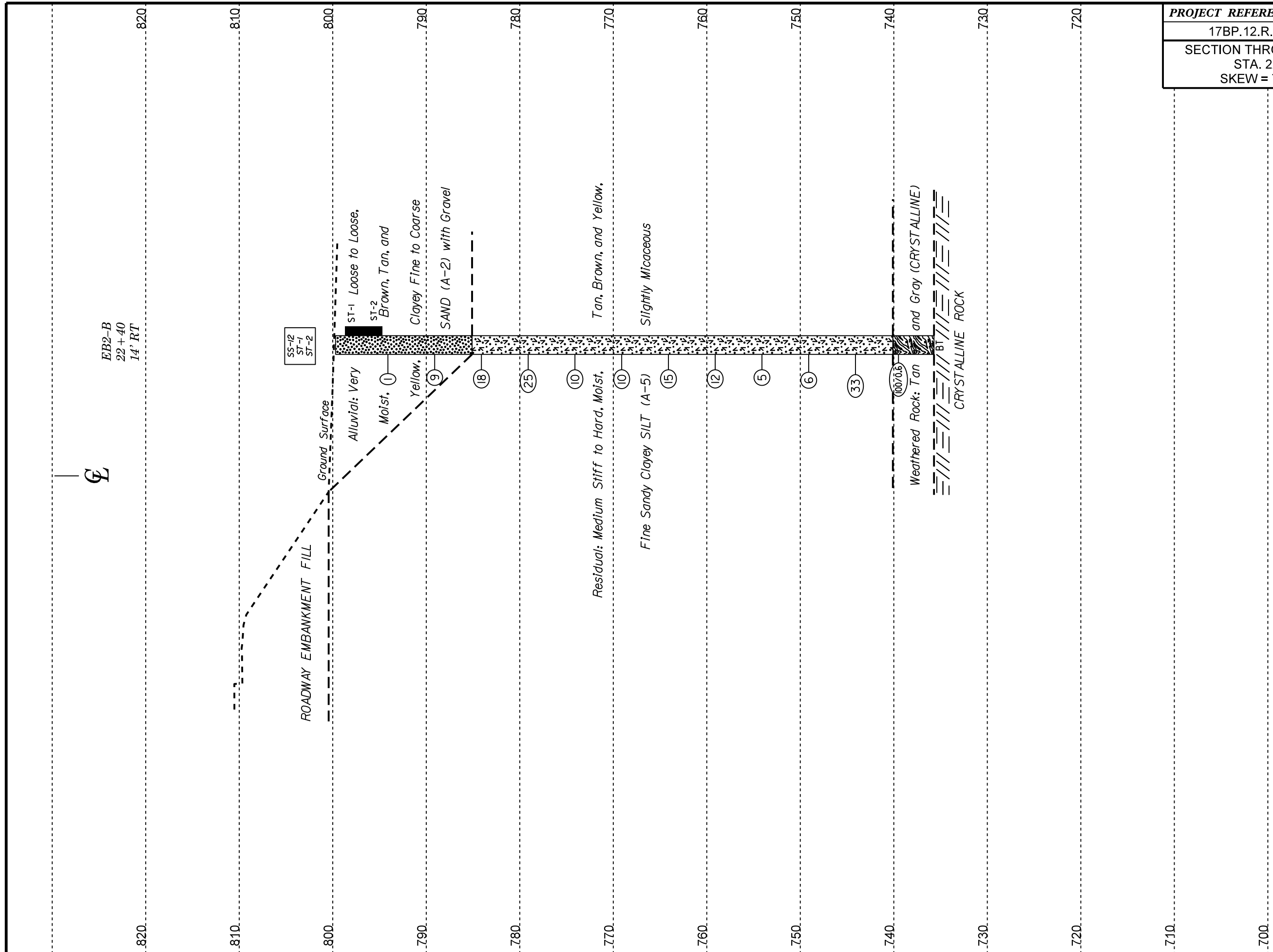
B2-B  
21+95  
9.1' RT



PROJECT REFERENCE NO.	SHEET NO.
17BP.12.R.40	7
SECTION THROUGH BENT 2 STA. 21+94.40 -L- SKEW = 75 DEGREES	

GROUNDLINE TAKEN FROM .TIN FILE PROVIDED BY NCDOT DATED 4/5/2016.  
INFERRED STRATIGRAPHY IS DRAWN THROUGH THE BORINGS

HORIZ. SCALE 0 10 20 (FEET) VE = 1:1



PROJECT REFERENCE NO.	SHEET NO.
17BP.12.R.40	8
SECTION THROUGH END BENT 2 STA. 22+34.40 -L- SKEW = 75 DEGREES	

GROUNDLINE TAKEN FROM .TIN FILE PROVIDED BY NCDOT DATED 4/5/2016.  
INFERRED STRATIGRAPHY IS DRAWN THROUGH THE BORINGS



# GEOTECHNICAL BORING REPORT BORE LOG

WBS 17BP.12.R.40	TIP N/A	COUNTY IREDELL	GEOLOGIST Stickney, J. K.
SITE DESCRIPTION BRIDGE NO. 78 ON SR 1004 OVER THIRD CREEK			GROUND WTR (ft)
BORING NO. EB1-B	STATION 20+97	OFFSET 12 ft RT	ALIGNMENT -L-
COLLAR ELEV. 801.2 ft	TOTAL DEPTH 34.3 ft	NORTHING 737,977	EASTING 1,430,077
DRILL RIG/HAMMER EFF./DATE HFC0072 CME-550X 84% 05/15/2015		DRILL METHOD NW Casing w/ Advancer	HAMMER TYPE Automatic
DRILLER Smith, C.L.	START DATE 03/08/16	COMP. DATE 03/08/16	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						
805																
800														801.2	GROUND SURFACE 0.0	
795	797.3	3.9	1	1	2							SS-4	M		<b>ALLUVIAL</b> Tan and Orange, Clayey Sandy SILT (A-4)	
790	792.3	8.9	1	2	2								M	793.2	8.0	Gray, Silty SAND (A-2) with Gravel
785	787.3	13.9	9	13	16								M	789.6	11.6	<b>RESIDUAL</b> Tan, Orange, and Gray, Clayey Silty SAND (A-2) with Rock Fragments
780	782.3	18.9	30	13	11								M			
775	777.3	23.9	23	29	71/0.4									776.8	24.4	<b>WEATHERED ROCK</b> Gray and White (CRYSTALLINE)
770	772.3	28.9	100/0.4													
	767.3	33.9	100/0.4											766.9	34.3	Boring Terminated at Elevation 766.9 ft in Weathered Rock (CRYSTALLINE)

NCDOT BORE DOUBLE SF480078 GEO\_BH.GPJ NC\_DOT.GDT 4/13/16

# GEOTECHNICAL BORING REPORT BORE LOG

WBS 17BP.12.R.40				TIP N/A			COUNTY IREDELL			GEOLOGIST Stickney, J. K.					
SITE DESCRIPTION BRIDGE NO. 78 ON SR 1004 OVER THIRD CREEK									GROUND WTR (ft)						
BORING NO. B1-A			STATION 21+42		OFFSET 11 ft LT		ALIGNMENT -L-			0 HR. 6.3					
COLLAR ELEV. 801.7 ft			TOTAL DEPTH 40.0 ft		NORTHING 738,021		EASTING 1,430,101			24 HR. FIAD					
DRILL RIG/HAMMER EFF./DATE HFC0072 CME-550X 84% 05/15/2015					DRILL METHOD NW Casing w/ Advancer				HAMMER TYPE Automatic						
DRILLER Smith, C.L.			START DATE 03/08/16		COMP. DATE 03/08/16		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					
805														801.7 GROUND SURFACE 0.0	
800	798.0	3.7	2	2	2									798.7 ALLUVIAL Tan and Orange, Clayey Sandy SILT (A-4) 3.0	
795	793.0	8.7	2	5	11										
790	788.0	13.7	28	41	43									782.2 RESIDUAL Brown and Gray, Fine Sandy Clayey SILT (A-5) 9.5	
785	783.0	18.7	100/0.3											783.0 WEATHERED ROCK Gray and White (CRYSTALLINE) 18.7	
780	778.0	23.7	100/0.3												
775	773.0	28.7	100/0.5												
770	768.0	33.7	100/0.4												
765	763.0	38.7	100/0.3												
														761.7 Boring Terminated at Elevation 761.7 ft in Weathered Rock (CRYSTALLINE) 40.0	

WBS 17BP.12.R.40				TIP N/A			COUNTY IREDELL			GEOLOGIST Stickney, J. K.					
SITE DESCRIPTION BRIDGE NO. 78 ON SR 1004 OVER THIRD CREEK									GROUND WTR (ft)						
BORING NO. B1-B			STATION 21+32		OFFSET 10 ft RT		ALIGNMENT -L-			0 HR. Surface					
COLLAR ELEV. 801.2 ft			TOTAL DEPTH 39.1 ft		NORTHING 737,998		EASTING 1,430,105			24 HR. Dry					
DRILL RIG/HAMMER EFF./DATE HFC0072 CME-550X 84% 05/15/2015					DRILL METHOD NW Casing w/ Advancer				HAMMER TYPE Automatic						
DRILLER Smith, C.L.			START DATE 03/09/16		COMP. DATE 03/09/16		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					
805														801.2 GROUND SURFACE 0.0	
800	797.2	4.0	5	3	4									794.4 ALLUVIAL Tan and Orange, Clayey Sandy SILT (A-4) 6.8	
795															
790														787.2 RESIDUAL Brown, Orange, and Gray, Clayey Fine Sandy SILT (A-5) 14.0	
785														782.2 WEATHERED ROCK Tan, Orange, and Gray (CRYSTALLINE) 19.0	
780															
775															
770															
765															
														762.1 Boring Terminated at Elevation 762.1 ft in Weathered Rock (CRYSTALLINE) 39.1	

# GEOTECHNICAL BORING REPORT

## BORE LOG

WBS 17BP.12.R.40		TIP N/A		COUNTY IREDELL		GEOLOGIST Stickney, J. K.										
SITE DESCRIPTION BRIDGE NO. 78 ON SR 1004 OVER THIRD CREEK							GROUND WTR (ft)									
BORING NO. B2-A		STATION 22+02		OFFSET 9 ft LT		ALIGNMENT -L-										
COLLAR ELEV. 799.0 ft		TOTAL DEPTH 49.8 ft		NORTHING 738,053		EASTING 1,430,152										
DRILL RIG/HAMMER EFF./DATE HFC0072 CME-550X 84% 05/15/2015			DRILL METHOD NW Casing w/ Advancer			HAMMER TYPE Automatic										
DRILLER Smith, C.L.		START DATE 03/10/16		COMP. DATE 03/10/16		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						
800														799.0	0.0	GROUND SURFACE
795	794.5	4.5	WOH	WOH	WOH											ALLUVIAL Red and Orange, Clayey Sandy SILT (A-5), Micaceous
790	789.5	9.5	1	1	4											Gray, Clayey Silty SAND (A-2) with Quartz Rock
785	784.5	14.5	4	3	5											RESIDUAL Tan and Yellow, Clayey Sandy SILT (A-5)
780	779.5	19.5	3	4	6											
775	774.5	24.5	1	2	7											
770	769.5	29.5	1	2	3											
765	764.5	34.5	100/0.4													WEATHERED ROCK Tan and Yellow (CRYSTALLINE)
760	759.5	39.5	100/0.3													
755	754.5	44.5	100/0.2													
750	749.5	49.5	100/0.3													Boring Terminated at Elevation 749.2 ft in Weathered Rock (CRYSTALLINE)

WBS 17BP.12.R.40		TIP N/A		COUNTY IREDELL		GEOLOGIST Stickney, J. K.										
SITE DESCRIPTION BRIDGE NO. 78 ON SR 1004 OVER THIRD CREEK							GROUND WTR (ft)									
BORING NO. B2-B		STATION 21+95		OFFSET 9 ft RT		ALIGNMENT -L-										
COLLAR ELEV. 798.3 ft		TOTAL DEPTH 49.2 ft		NORTHING 738,034		EASTING 1,430,156										
DRILL RIG/HAMMER EFF./DATE HFC0072 CME-550X 84% 05/15/2015			DRILL METHOD NW Casing w/ Advancer			HAMMER TYPE Automatic										
DRILLER Smith, C.L.		START DATE 03/11/16		COMP. DATE 03/11/16		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						
800														798.3	0.0	GROUND SURFACE
795	794.2	4.1	WOH	WOH	WOH											ALLUVIAL Red and Orange, Clayey Sandy SILT (A-5), Micaceous
790	789.2	9.1	3	2	2											Gray, Silty SAND (A-2) and Gravel with Quartz Rock
785	784.2	14.1	3	3	4											RESIDUAL Tan, Brown, and Yellow, Fine Sandy Clayey SILT (A-5) with Some Mica
780	779.2	19.1	2	3	6											
775	774.2	24.1	2	4	6											
770	769.2	29.1	4	5	6											
765	765.2	33.1	5	7	11											
760	759.2	39.1	10	14	14											
755	754.3	44.0	100/0.2													WEATHERED ROCK Gray and White (CRYSTALLINE)
750	749.3	49.0	100/0.2													Boring Terminated at Elevation 749.1 ft in Weathered Rock (CRYSTALLINE)

NCDOT BORE DOUBLE\_SF480078\_GEO\_BH.GPJ\_NC\_DOT.GDT\_4/13/16

# GEOTECHNICAL BORING REPORT BORE LOG

WBS 17BP.12.R.40	TIP N/A	COUNTY IREDELL	GEOLOGIST Stickney, J. K.
SITE DESCRIPTION BRIDGE NO. 78 ON SR 1004 OVER THIRD CREEK			GROUND WTR (ft)
BORING NO. EB2-B	STATION 22+40	OFFSET 14 ft RT	ALIGNMENT -L-
COLLAR ELEV. 799.7 ft	TOTAL DEPTH 64.0 ft	NORTHING 738,055	EASTING 1,430,196
DRILL RIG/HAMMER EFF/DATE HFO0072 CME-550X 84% 05/15/2015		DRILL METHOD NW Casing w/ Advancer	HAMMER TYPE Automatic
DRILLER Smith, C.L.	START DATE 03/10/16	COMP. DATE 03/10/16	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					ELEV. (ft)
800														799.7	0.0
795	795.1	4.6	WOH	1	0										
790	790.1	9.6		4	5										
785	785.1	14.6		4	10										
780	780.1	19.6		7	14										
775	775.1	24.6		3	6										
770	770.1	29.6		2	6										
765	765.1	34.6		2	10										
760	760.1	39.6		2	8										
755	755.1	44.6		1	3										
750	750.1	49.6		3	4										
745	745.1	54.6		5	23										
740	740.1	59.6		38	62/0.1									740.1	59.6
														735.7	64.0

NCDOT BORE DOUBLE SF480078 GEO BH.GPJ NC.DOT.GDT 5/4/16

Other Samples:  
ST-1 (1.0 - 3.0)  
ST-2 (3.0 - 5.0)

**PROJ. NO. - 17BP.12.R.40**  
**ID NO. - N/A**  
**COUNTY - IREDELL**

**EB1-B**

<b>SOIL TEST RESULTS</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-4	12' RT	20+97	4.4-5.4	A-4(3)	36	8	10.1	40.8	20.9	28.3	100	96	57	-	-

**B2-A**

<b>SOIL TEST RESULTS</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-8	8.5' LT	22+02	5.0-6.0	A-5(4)	42	6	3.2	43.4	21.1	32.3	100	99	65	-	-

**EB2-B**

<b>SOIL TEST RESULTS</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-12	14' RT	22+40	5.1-6.1	A-2-4(0)	22	NP	4.6	69.2	8.0	18.2	100	99	34	-	-
ST-1	14' RT	22+40	1.0-3.0	A-2-4(0)	20	NP	56.7	31.8	5.4	6.0	94	63	13	-	-
ST-2	14' RT	22+40	3.0-5.0	A-2-4(0)	26	6	39.8	34.1	11.9	14.1	86	63	26	-	-