

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	33662.1.1 B-4325	1	9

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

STRUCTURE
SUBSURFACE INVESTIGATION

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PROJ. REFERENCE NO. 33662.1.1 B-4325 F.A. PROJ. BRZ-1580(2)
COUNTY WILKES
PROJECT DESCRIPTION BRIDGE NO. 718 ON SR 1580 OVER
MIDDLE FORK REDDIES RIVER

SITE DESCRIPTION _____

CAUTION NOTICE

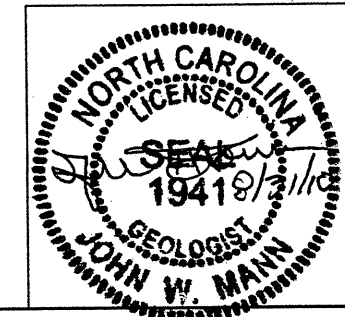
THE SUBSURFACE INFORMATION AND THE SUBSURFACE INVESTIGATION ON WHICH IT IS BASED WERE MADE FOR THE PURPOSE OF STUDY, PLANNING, AND DESIGN, AND NOT FOR CONSTRUCTION OR PAY PURPOSES. THE VARIOUS FIELD BORING LOGS, ROCK CORES, AND SOIL TEST DATA AVAILABLE MAY BE REVIEWED OR INSPECTED IN RALEIGH BY CONTACTING THE N. C. DEPARTMENT OF TRANSPORTATION, GEOTECHNICAL ENGINEERING UNIT AT 1919 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.

PERSONNEL
D.C. ELLIOT
C.J. COFFEY
R.D. CHILDERS

INVESTIGATED BY J.W. MANN
CHECKED BY W.D. FRYE
SUBMITTED BY W.D. FRYE
DATE 08/31/10



PROJECT: 33662.1.1 ID: B-4325

DRAWN BY: J.W. MANN

NOTE - THE INFORMATION CONTAINED HEREIN IS NOT IMPLIED OR GUARANTEED BY THE N. C. DEPARTMENT OF TRANSPORTATION AS BEING ACCURATE NOR IS IT 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.

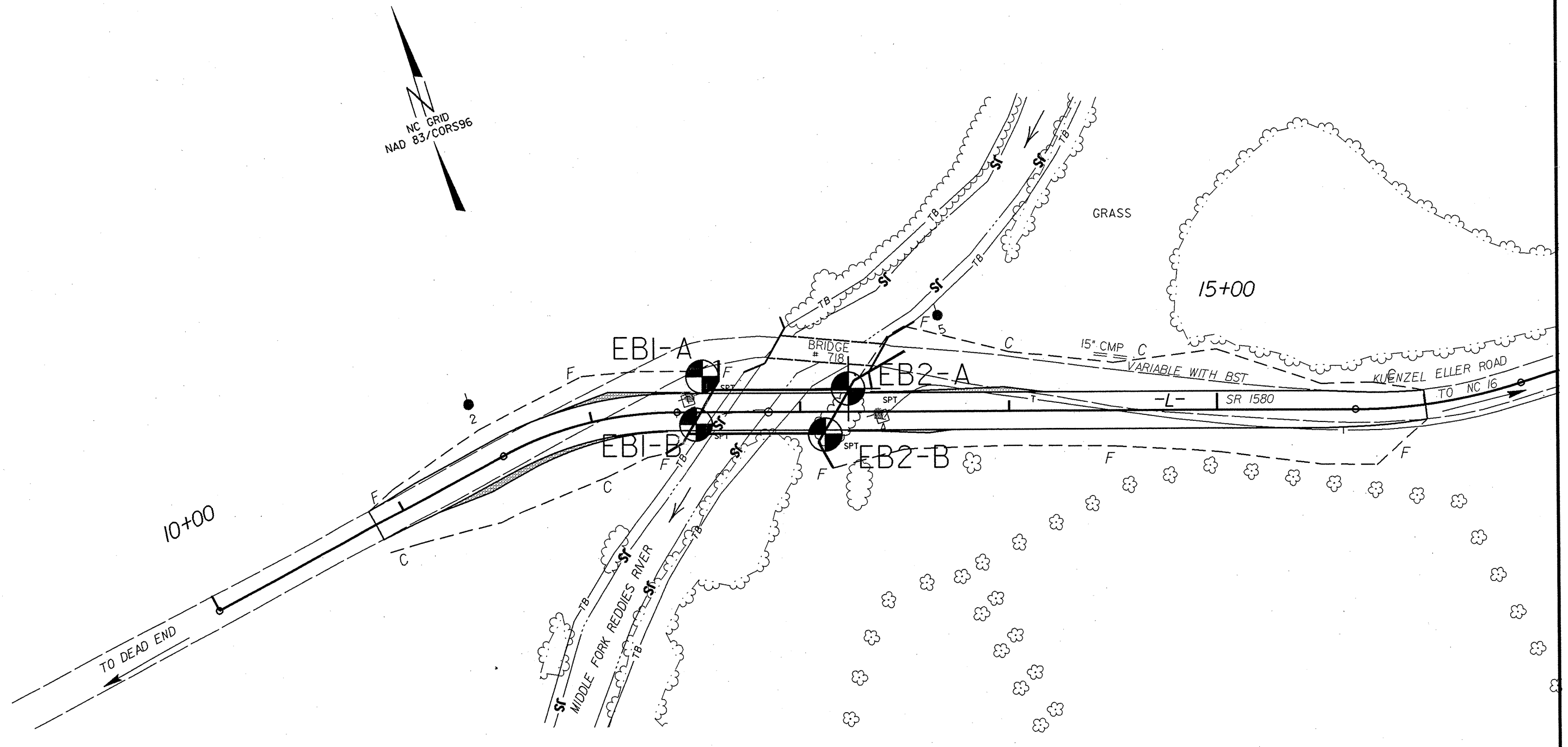
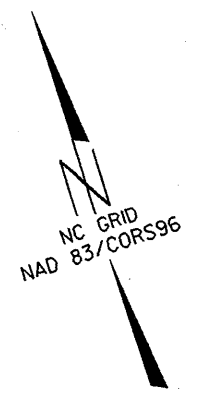
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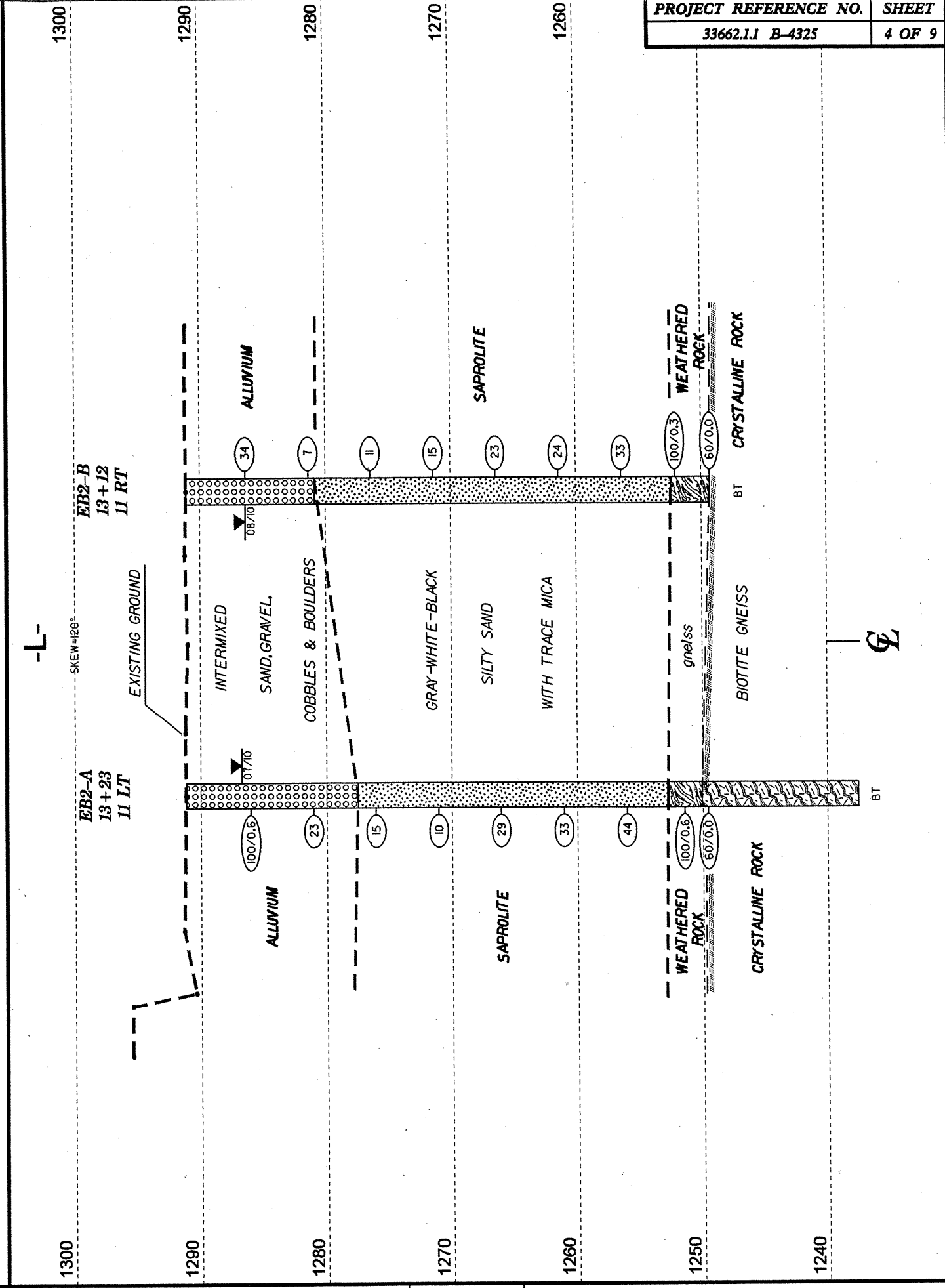
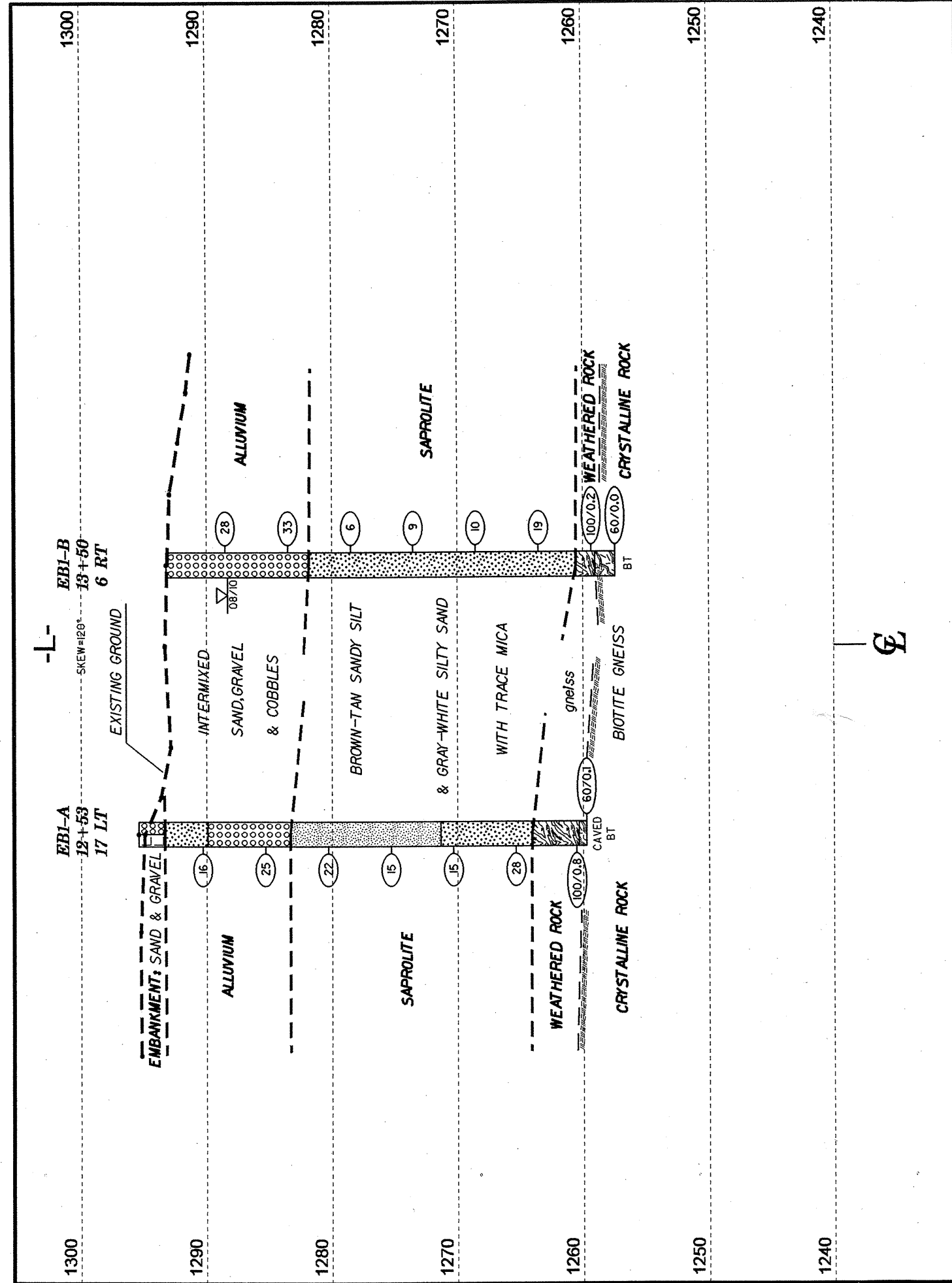
SUBSURFACE INVESTIGATION

SOIL AND ROCK LEGEND, TERMS, SYMBOLS, AND ABBREVIATIONS

SOIL DESCRIPTION				GRADATION				ROCK DESCRIPTION				TERMS AND DEFINITIONS																																																																																																																																																																																		
<p>SOIL IS CONSIDERED TO BE THE 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 STANDARD PENETRATION TEST (ASHTO T208, ASTM D-1586). SOIL CLASSIFICATION IS BASED ON THE ASHTO SYSTEM. BASIC DESCRIPTIONS GENERALLY SHALL INCLUDE: CONSISTENCY, COLOR, TEXTURE, MOISTURE, ASHTO CLASSIFICATION, AND OTHER PERTINENT FACTORS SUCH AS MINERALOGICAL COMPOSITION, ANGULARITY, STRUCTURE, PLASTICITY, ETC. EXAMPLE:</p> <p>VERY STIFF, GRAY, SILTY CLAY, MOST WITH INTERBEDDED FINE SAND LAYERS, HEAVY PLASTIC, A-7-6</p>				<p>WELL GRADED - INDICATES A GOOD REPRESENTATION OF PARTICLE SIZES FROM FINE TO COARSE. UNIFORM - INDICATES THAT SOIL PARTICLES ARE ALL APPROXIMATELY THE SAME SIZE. (ALSO POORLY GRADED) GAP-GRADED - INDICATES A MIXTURE OF UNIFORM PARTICLES OF TWO OR MORE SIZES.</p> <p>ANGULARITY OF GRAINS THE ANGULARITY OR ROUNDNESS OF SOIL GRAINS IS DESIGNATED BY THE TERMS: ANGULAR, SUBANGULAR, SUBROUNDED, OR ROUNDED.</p>				<p>HARD ROCK IS NON-COASTAL PLAIN MATERIAL THAT IF TESTED, WOULD YIELD SPT REFUSAL, AN INFERRED ROCK LINE INDICATES THE LEVEL AT WHICH NON-COASTAL PLAIN MATERIAL WOULD YIELD SPT REFUSAL. SPT REFUSAL IS PENETRATION BY A SPLIT SPOON SAMPLER EQUAL TO OR LESS THAN 60 BLOWS PER FOOT IN NON-COASTAL PLAIN MATERIAL. THE TRANSITION BETWEEN SOIL AND ROCK IS OFTEN REPRESENTED BY A ZONE OF WEATHERED ROCK. ROCK MATERIALS ARE TYPICALLY DIVIDED AS FOLLOWS:</p> <p>WEATHERED ROCK (WR) NON-COASTAL PLAIN MATERIAL THAT WOULD YIELD SPT N VALUES > 100 BLOWS PER FOOT IF TESTED.</p> <p>CRYSTALLINE ROCK (CR) FINE TO COARSE GRAIN IGNEOUS AND METAMORPHIC ROCK THAT WOULD YIELD SPT REFUSAL IF TESTED. ROCK TYPE INCLUDES GRANITE, GNEISS, GABBRO, SCHIST, ETC.</p> <p>NON-CRYSTALLINE ROCK (NCR) FINE TO COARSE GRAIN METAMORPHIC AND NON-COASTAL PLAIN SEDIMENTARY ROCK THAT WOULD YIELD SPT REFUSAL IF TESTED. ROCK TYPE INCLUDES PHYLLITE, SLATE, SANDSTONE, ETC.</p> <p>COASTAL PLAIN SEDIMENTARY ROCK (CP) COASTAL PLAIN SEDIMENTS CEMENTED INTO ROCK, BUT MAY NOT YIELD SPT REFUSAL. ROCK TYPE INCLUDES LIMESTONE, SANDSTONE, CEMENTED SHELL BEDS, ETC.</p>				<p>ALLUVIUM (ALLUV.) - SOILS THAT HAVE BEEN TRANSPORTED BY WATER. AQUIFER - A WATER BEARING FORMATION OR STRATA. ARENACEOUS - APPLIED TO ROCKS THAT HAVE BEEN DERIVED FROM SAND OR THAT CONTAIN SAND. ARGILLACEOUS - APPLIED TO ALL ROCKS OR SUBSTANCES COMPOSED OF CLAY MINERALS, OR HAVING A NOTABLE PROPORTION OF CLAY IN THEIR COMPOSITION, AS SHALE, SLATE, ETC. ARTESIAN - GROUND WATER THAT IS UNDER SUFFICIENT PRESSURE TO RISE ABOVE THE LEVEL AT WHICH IT IS ENCOUNTERED, BUT WHICH DOES NOT NECESSARILY RISE TO OR ABOVE THE GROUND SURFACE. CALCAREOUS (CALC.) - SOILS THAT CONTAIN APPRECIABLE AMOUNTS OF CALCIUM CARBONATE. COLLUVIUM - ROCK FRAGMENTS MIXED WITH SOIL DEPOSITED BY GRAVITY ON SLOPE OR AT BOTTOM OF SLOPE. CORE RECOVERY (REC.) - TOTAL LENGTH OF ALL MATERIAL RECOVERED IN THE CORE BARREL DIVIDED BY TOTAL LENGTH OF CORE RUN AND EXPRESSED AS A PERCENTAGE. DIKE - A TABULAR BODY OF IGNEOUS ROCK THAT CUTS ACROSS THE STRUCTURE OF ADJACENT ROCKS OR CUTS MASSIVE ROCK. DIP - THE ANGLE AT WHICH A STRATUM OR ANY PLANAR FEATURE IS INCLINED FROM THE HORIZONTAL. DIP DIRECTION (DIP AZIMUTH) - THE DIRECTION OR BEARING OF THE HORIZONTAL TRACE OF THE LINE OF DIP, MEASURED CLOCKWISE FROM NORTH. FAULT - A FRACTURE OR FRACTURE ZONE ALONG WHICH THERE HAS BEEN DISPLACEMENT OF THE SIDES RELATIVE TO ONE ANOTHER PARALLEL TO THE FRACTURE. FISSILE - A PROPERTY OF SPLITTING ALONG CLOSELY SPACED PARALLEL PLANES. FLOAT - ROCK FRAGMENTS ON SURFACE NEAR THEIR ORIGINAL POSITION AND DISLOGGED FROM PARENT MATERIAL. FLOOD PLAIN (FP) - LAND BORDERING A STREAM, BUILT OF SEDIMENTS DEPOSITED BY THE STREAM. FORMATION (FM) - A MAPPABLE GEOLOGIC UNIT THAT CAN BE RECOGNIZED AND TRACED IN THE FIELD. JOINT - FRACTURE IN ROCK ALONG WHICH NO APPRECIABLE MOVEMENT HAS OCCURRED. LEDGE - A SHELF-LIKE RIDGE OR PROJECTION OF ROCK WHOSE THICKNESS IS SMALL COMPARED TO ITS LATERAL EXTENT. LENS - A BODY OF SOIL OR ROCK THAT THINS OUT IN ONE OR MORE DIRECTIONS. MOTTLED (MOT.) - IRREGULARLY MARKED WITH SPOTS OF DIFFERENT COLORS. MOTTLING IN SOILS USUALLY INDICATES POOR AERATION AND LACK OF GOOD DRAINAGE. PERCHED WATER - WATER MAINTAINED ABOVE THE NORMAL GROUND WATER LEVEL BY THE PRESENCE OF AN INTERVENING IMPERVIOUS STRATUM. RESIDUAL (RES.) SOIL - SOIL FORMED IN PLACE BY THE WEATHERING OF ROCK. ROCK QUALITY DESIGNATION (RQD) - A MEASURE OF ROCK QUALITY DESCRIBED BY TOTAL LENGTH OF ROCK SEGMENTS EQUAL TO OR GREATER THAN 4 INCHES DIVIDED BY THE TOTAL LENGTH OF CORE RUN AND EXPRESSED AS A PERCENTAGE. SAPROLITE (SAP.) - RESIDUAL SOIL THAT RETAINS THE RELIC STRUCTURE OR FABRIC OF THE PARENT ROCK. SILL - AN INTRUSIVE BODY OF IGNEOUS ROCK OF APPROXIMATELY UNIFORM THICKNESS AND RELATIVELY THIN COMPARED WITH ITS LATERAL EXTENT, THAT HAS BEEN EMPLACED PARALLEL TO THE BEDDING OR SCHISTOSITY OF THE INTRUDED ROCKS. SLICKENSIDE - POLISHED AND STRIATED SURFACE THAT RESULTS FROM FRICTION ALONG A FAULT OR SLIP PLANE. STANDARD PENETRATION TEST (PENETRATION RESISTANCE) (SPT) - NUMBER OF BLOWS IN OR BPF) OF A 140 LB. HAMMER FALLING 30 INCHES REQUIRED TO PRODUCE A PENETRATION OF 1 FOOT INTO SOIL WITH A 2 INCH OUTSIDE DIAMETER SPLIT SPOON SAMPLER. SPT REFUSAL IS PENETRATION EQUAL TO OR LESS THAN 0.1 FOOT PER 60 BLOWS. STRATA CORE RECOVERY (SCREC.) - TOTAL LENGTH OF STRATA MATERIAL RECOVERED DIVIDED BY TOTAL LENGTH OF STRATUM AND EXPRESSED AS A PERCENTAGE. STRATA ROCK QUALITY DESIGNATION (SRQD) - A MEASURE OF ROCK QUALITY DESCRIBED BY TOTAL LENGTH OF ROCK SEGMENTS WITHIN A STRATUM EQUAL TO OR GREATER THAN 4 INCHES DIVIDED BY THE TOTAL LENGTH OF STRATA AND EXPRESSED AS A PERCENTAGE. TOPSOIL (TS) - SURFACE SOILS USUALLY CONTAINING ORGANIC MATTER.</p>																																																																																																																																																																																		
<p>SOIL LEGEND AND AASHTO CLASSIFICATION</p> <table border="1"> <tr> <th>GENERAL CLASS.</th> <th colspan="4">GRANULAR MATERIALS (<= 35% PASSING #200)</th> <th colspan="4">SILT-CLAY MATERIALS (> 35% PASSING #200)</th> <th colspan="4">ORGANIC MATERIALS</th> </tr> <tr> <td>GROUP CLASS.</td> <td>A-1</td> <td>A-3</td> <td colspan="2">A-2</td> <td>A-4</td> <td>A-5</td> <td>A-6</td> <td>A-7</td> <td>A-1, A-2</td> <td>A-4, A-5</td> <td colspan="3"></td> </tr> <tr> <td>SYMBOL</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td colspan="3"></td> </tr> <tr> <td>% PASSING</td> <td>10</td> <td>40</td> <td>200</td> <td>40</td> <td>40</td> <td>40</td> <td>40</td> <td>40</td> <td>40</td> <td>40</td> <td colspan="3"></td> </tr> <tr> <td>LIQUID LIMIT</td> <td>5</td> <td>10</td> <td>15</td> <td>20</td> <td>25</td> <td>30</td> <td>35</td> <td>40</td> <td>40</td> <td>40</td> <td colspan="3"></td> </tr> <tr> <td>PLASTIC INDEX</td> <td>0</td> <td>0</td> <td>0</td> <td>0</td> <td>0</td> <td>0</td> <td>0</td> <td>0</td> <td>0</td> <td>0</td> <td colspan="3"></td> </tr> <tr> <td>USUAL TYPES OF MAJOR MATERIALS</td> <td>STONE FRAGS. 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ARE USED IN DESCRIPTIONS WHENEVER THEY ARE CONSIDERED OF SIGNIFICANCE.</p> <p>COMPRESSIBILITY</p> <p>SLIGHTLY COMPRESSIBLE MODERATELY COMPRESSIBLE HIGHLY COMPRESSIBLE</p> <p>LIQUID LIMIT LESS THAN 31 LIQUID LIMIT EQUAL TO 31-50 LIQUID LIMIT GREATER THAN 50</p> <p>PERCENTAGE OF MATERIAL</p> <table border="1"> <tr> <th>ORGANIC MATERIAL</th> <th>GRANULAR SOILS</th> <th>SILT - CLAY SOILS</th> <th>OTHER MATERIAL</th> </tr> <tr> <td>TRACE OF ORGANIC MATTER</td> <td>2 - 3%</td> <td>3 - 5%</td> <td>TRACE</td> </tr> <tr> <td>LITTLE ORGANIC MATTER</td> <td>3 - 5%</td> <td>5 - 12%</td> <td>LITTLE</td> </tr> <tr> <td>MODERATELY ORGANIC</td> <td>5 - 10%</td> <td>12 - 20%</td> <td>SOME</td> </tr> <tr> <td>HIGHLY ORGANIC</td> <td>>10%</td> <td>>20%</td> <td>HIGHLY</td> </tr> </table> <p>35% AND ABOVE</p> <p>GROUND WATER</p> <p>▽ WATER LEVEL IN BORE HOLE IMMEDIATELY AFTER DRILLING ▽ STATIC WATER LEVEL AFTER 24 HOURS ▽ P.W. 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SKEW=120°





PROJECT NO. 33662.1.1		ID. B-4325		COUNTY WILKES		GEOLOGIST Elliott, D. C.										
SITE DESCRIPTION Bridge No. 718 on SR 1580 over Middle Fork Reddies River							GROUND WTR (ft)									
BORING NO. EB1-A		STATION 12+53		OFFSET 17 ft LT		ALIGNMENT -L-										
COLLAR ELEV. 1,295.4 ft		TOTAL DEPTH 35.7 ft		NORTHING 926,209		EASTING 1,321,453										
DRILL RIG/HAMMER EFF./DATE AFO0071 CME-550X 72% 09/03/2009		DRILL METHOD NW Casing w/ SPT		HAMMER TYPE Automatic												
DRILLER Coffey, Jr., C.		START DATE 08/04/10		COMP. DATE 08/04/10		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						
1300																
1295														1,295.4	GROUND SURFACE	0.0
														1,293.3	ROADWAY EMBANKMENT Sand & Gravel	2.1
1290	1,291.3	4.1	1	4	12									1,289.9	ALLUVIAL Brown silty Sand with trace mica	5.5
	1,286.3	9.1	7	8	17									1,283.3	ALLUVIAL Intermixed Sand, Gravel & Cobbles	12.1
1285														1,281.3	SAPROLITE Brown-tan sandy Silt with trace mica	12.1
1280	1,281.3	14.1	3	9	13									1,271.3	SAPROLITE Gray-white silty Sand	24.1
1275	1,276.3	19.1	2	7	8									1,264.0	WEATHERED ROCK (gneiss)	31.4
1270	1,271.3	24.1	2	7	8									1,260.3	CRYSTALLINE ROCK Biotite Gneiss	35.1
1265	1,266.3	29.1	4	10	18									1,259.7	CRYSTALLINE ROCK Biotite Gneiss	35.7
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NCDOT BORE SINGLE B4325_GEO_BH_BRD0718.GPJ NC_DOT.GDT 8/16/10

PROJECT NO. 33662.1.1		ID. B-4325		COUNTY WILKES		GEOLOGIST Elliott, D. C.										
SITE DESCRIPTION Bridge No. 718 on SR 1580 over Middle Fork Reddies River							GROUND WTR (ft)									
BORING NO. EB1-B		STATION 12+50		OFFSET 6 ft RT		ALIGNMENT -L-										
COLLAR ELEV. 1,293.2 ft		TOTAL DEPTH 35.8 ft		NORTHING 926,188		EASTING 1,321,444										
DRILL RIG/HAMMER EFF./DATE AFO0071 CME-550X 72% 09/03/2009		DRILL METHOD NW Casing w/ SPT		HAMMER TYPE Automatic												
DRILLER Coffey, Jr., C.		START DATE 08/04/10		COMP. DATE 08/04/10		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						
1295																
														1,293.2	GROUND SURFACE	0.0
1290	1,289.5	3.7	20	15	13											
1285	1,284.5	8.7	8	14	19											
1280	1,279.5	13.7	2	3	3											
1275	1,274.5	18.7	3	5	4											
1270	1,269.5	23.7	2	5	5											
1265	1,264.5	28.7	5	8	11											
1260	1,259.5	33.7														
1255	1,257.4	35.8	100/0.2													
1250																
1245																
1240																
1235																
1230																
1225																
1220																
1215																

NCDOT BORE SINGLE B4325_GEO_BH_BRD0718.GPJ NC_DOT.GDT 8/16/10

PROJECT NO. 33662.1.1	ID. B-4325	COUNTY WILKES	GEOLOGIST Elliott, D. C.
SITE DESCRIPTION Bridge No. 718 on SR 1580 over Middle Fork Reddies River			GROUND WTR (ft)
BORING NO. EB2-A	STATION 13+23	OFFSET 11 ft LT	ALIGNMENT -L-
COLLAR ELEV. 1,291.2 ft	TOTAL DEPTH 53.6 ft	NORTHING 926,182	EASTING 1,321,518
DRILL RIG/HAMMER EFF./DATE AFO0071 CME-550X 72% 09/03/2009		DRILL METHOD NW Casing W/SPT & Core	HAMMER TYPE Automatic
DRILLER Coffey, Jr., C.	START DATE 07/14/10	COMP. DATE 07/14/10	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				
1295														0.0
1290													GROUND SURFACE	
1285	1,287.1	4.1	10	10	90/0.1								ALLUVIAL Intermixed Sand, Gravel, Cobbles & Boulders	
1280	1,282.1	9.1	4	8	15									
1275	1,277.1	14.1	5	7	8								SAPROLITE	13.7
1270	1,272.1	19.1	2	5	5								Gray-white silty Sand with trace mica	
1265	1,267.1	24.1	6	12	17									
1260	1,262.1	29.1	11	16	17									
1255	1,257.1	34.1	14	23	21									
1250	1,252.1	39.1	82	18/0.1									WEATHERED ROCK (gneiss)	38.4
1245	1,249.6	41.6	60/0.0										CRYSTALLINE ROCK Biotite Gneiss	41.1
1240													Run 1: 41.6-43.6' REC=100% RQD=100%	
1235													Run 2: 43.6-48.6' REC=96% RQD=96%	
1230													Run 3: 48.6-53.6' REC=98% RQD=80%	
1225														
1220														
1215														

NCDOT BORE SINGLE B4325 GEO BH BRD0718.GPJ NC_DOT.GDT 8/16/10

PROJECT NO. 33662.1.1	ID. B-4325	COUNTY WILKES	GEOLOGIST Elliott, D. C.
SITE DESCRIPTION Bridge No. 718 on SR 1580 over Middle Fork Reddies River			GROUND WTR (ft)
BORING NO. EB2-A	STATION 13+23	OFFSET 11 ft LT	ALIGNMENT -L-
COLLAR ELEV. 1,291.2 ft	TOTAL DEPTH 53.6 ft	NORTHING 926,182	EASTING 1,321,518
DRILL RIG/HAMMER EFF./DATE AFO0071 CME-550X 72% 09/03/2009		DRILL METHOD NW Casing W/SPT & Core	HAMMER TYPE Automatic
DRILLER Coffey, Jr., C.	START DATE 07/14/10	COMP. DATE 07/14/10	SURFACE WATER DEPTH N/A

ELEV (ft)	RUN ELEV (ft)	DEPTH (ft)	RUN (ft)	DRILL RATE (Min/ft)	RUN		SAMP. NO.	STRATA		LOG	DESCRIPTION AND REMARKS	DEPTH (ft)
					REC. (%)	RQD (%)		REC. (%)	RQD (%)			
1249.56											Begin Coring @ 41.6 ft	
1245	1,249.6	41.6	2.0	N=60/0.0	2:17	(2.0)					CRYSTALLINE ROCK	
	1,247.6	43.6	5.0	2:12	100%	100%					Gray-white, very slightly weathered to fresh, hard Biotite Gneiss. Fracture spacing is generally wide. (continued)	
				2:07	(4.8)	(4.8)						
	1,242.6	48.6		2:11	96%	96%						
1240			5.0	2:16	(4.9)	(4.0)						
				2:10	98%	80%						
	1,237.6	53.6		2:08								
				2:17								
				2:11								
1235											Boring Terminated at Elevation 1,237.6 ft in Crystalline Rock: Biotite Gneiss	53.6
1230												
1225												
1220												
1215												
1210												
1205												
1200												
1195												
1190												
1185												
1180												
1175												
1170												

NCDOT CORE SINGLE B4325 GEO BH BRD0718.GPJ NC_DOT.GDT 8/16/10



NCDOT GEOTECHNICAL ENGINEERING UNIT

BORELOG REPORT

PROJECT NO. 33662.1.1	ID. B-4325	COUNTY WILKES	GEOLOGIST Elliott, D. C.
SITE DESCRIPTION Bridge No. 718 on SR 1580 over Middle Fork Reddies River			GROUND WTR (ft)
BORING NO. EB2-B	STATION 13+12	OFFSET 11 ft RT	ALIGNMENT -L-
COLLAR ELEV. 1,291.1 ft	TOTAL DEPTH 41.8 ft	NORTHING 926,165	EASTING 1,321,501
DRILL RIG/HAMMER EFF./DATE AFO0071 CME-550X 72% 09/03/2009		DRILL METHOD NW Casing w/ SPT	HAMMER TYPE Automatic
DRILLER Coffey, Jr., C.	START DATE 08/03/10	COMP. DATE 08/03/10	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						
1295																
														1,291.1	GROUND SURFACE	0.0
1290																
	1,287.4	3.7		57	17	17										
1285																
	1,282.4	8.7		6	4	3										
1280														1,280.9	SAPROLITE	10.2
	1,277.4	13.7		3	5	6										
1275																
	1,272.4	18.7		4	6	9										
1270																
	1,267.4	23.7		5	12	11										
1265																
	1,262.4	28.7		4	14	10										
1260																
	1,257.4	33.7		11	16	17										
1255																
	1,252.4	38.7		100/0.3										1,252.4	WEATHERED ROCK	38.7
1250																
	1,249.3	41.8		60/0.0										1,249.3	CRYSTALLINE ROCK	41.8
1245																
1240																
1235																
1230																
1225																
1220																
1215																

NCDOT BORE SINGLE B4325 GEO. BH. BRDG0718.GPJ NC DOT.GDT. 8/16/10

CRYSTALLINE ROCK
Boring Terminated with Standard Penetration Test Refusal at Elevation 1,249.3 ft on Crystalline Rock: Biotite Gneiss



**FIELD
 SCOUR REPORT**

WBS: 33662.1.1 TIP: B-4325 COUNTY: Wilkes

DESCRIPTION(1): Bridge No. 718 on SR 1580 over Middle Foek Reddies River

EXISTING BRIDGE

Information from: Field Inspection Microfilm _____ (reel _____ pos: _____)
 Other (explain) BSR dated 01/12/10

Bridge No.: 718 Length: ~51' Total Bents: 2 Bents in Channel: 1 Bents in Floodplain: 1
 Foundation Type: Timber post with wooden vertical abutments

EVIDENCE OF SCOUR(2)

Abutments or End Bent Slopes: Probable scour beneath End Bent One
 Scour at upstream wing wall

Interior Bents: n/a

Channel Bed: None noted

Channel Bank: Sloughing downstream of End Bent One

EXISTING SCOUR PROTECTION

Type(3): Boulders

Extent(4): Placed along upstream wing wall & abutment of End Bent Two

Effectiveness(5): Poor to Fair

Obstructions(6): None

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): Sand, gravel, cobbles & boulders

Channel Bank Material(8): Sand, gravel & cobbles

Channel Bank Cover(9): Well vegetated bushes

Floodplain Width(10): ~2000'

Floodplain Cover(11): Grass (pasture), trees, weeds

Stream is(12): Aggrading _____ Degrading Static _____

Channel Migration Tendency(13): Toward End Bent One downstream; Toward End Bent Two upstream

Observations and Other Comments:

DESIGN SCOUR ELEVATIONS(14)

Feet Meters _____

		BENTS																	
		EB1	EB2																
Q5:	1286	1282																	

Comparison of DSE to Hydraulics Unit theoretical scour:
 DSE is in agreement with BSR dated 01/12/10

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																			

Reported by: J.W. Mann

Date: 8/5/2010

33662.1.1 (B-4325)
WILKES COUNTY
BRIDGE # 718 ON SR 1562 OVER MIDDLE FORK REDDIES RIVER

CORE PHOTOS

EB2-A

