

PROJECT: BP12.R011 REFERENCE:

CONTENTS

<u>SHEET NO.</u>	<u>DESCRIPTION</u>
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STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
GEOTECHNICAL ENGINEERING UNIT

STRUCTURE
SUBSURFACE INVESTIGATION

COUNTY IREDELL
 PROJECT DESCRIPTION BRIDGE NO. 480336 OVER SR
2132 (KINDER ROAD) OVER KINDER CREEK

SITE DESCRIPTION STRUCTURE AT -L-
STATION 13+87.50

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	BP12.R011	1	9

CAUTION NOTICE

THE SUBSURFACE INFORMATION AND THE SUBSURFACE INVESTIGATION ON WHICH IT IS BASED WERE MADE FOR THE PURPOSE OF PREPARING THE SCOPE OF WORK TO BE INCLUDED IN THE REQUEST FOR PROPOSAL. 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.

SOIL AND ROCK BOUNDARIES WITHIN A BOREHOLE ARE BASED ON GEOTECHNICAL INTERPRETATION UNLESS ENCOUNTERED IN A SAMPLE. INTERPRETED BOUNDARIES MAY NOT NECESSARILY REFLECT ACTUAL SUBSURFACE CONDITIONS BETWEEN SAMPLED STRATA AND BOREHOLE INFORMATION MAY NOT NECESSARILY REFLECT ACTUAL SUBSURFACE CONDITIONS BETWEEN BORINGS. 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

P.M. WEAVER

P. BARRERA

Summit Design &

Engineering

INVESTIGATED BY ESP Associates, Inc.

DRAWN BY P. BARRERA

CHECKED BY P.M. WEAVER

SUBMITTED BY ESP Associates, Inc.

DATE June 2022

ESP ASSOCIATES, INC.
 7011 ALBERT PICK RD
 SUITE E
 GREENSBORO, NC 27409
 FIRM # C-0587
 WWW.ESPASSOCIATES.COM



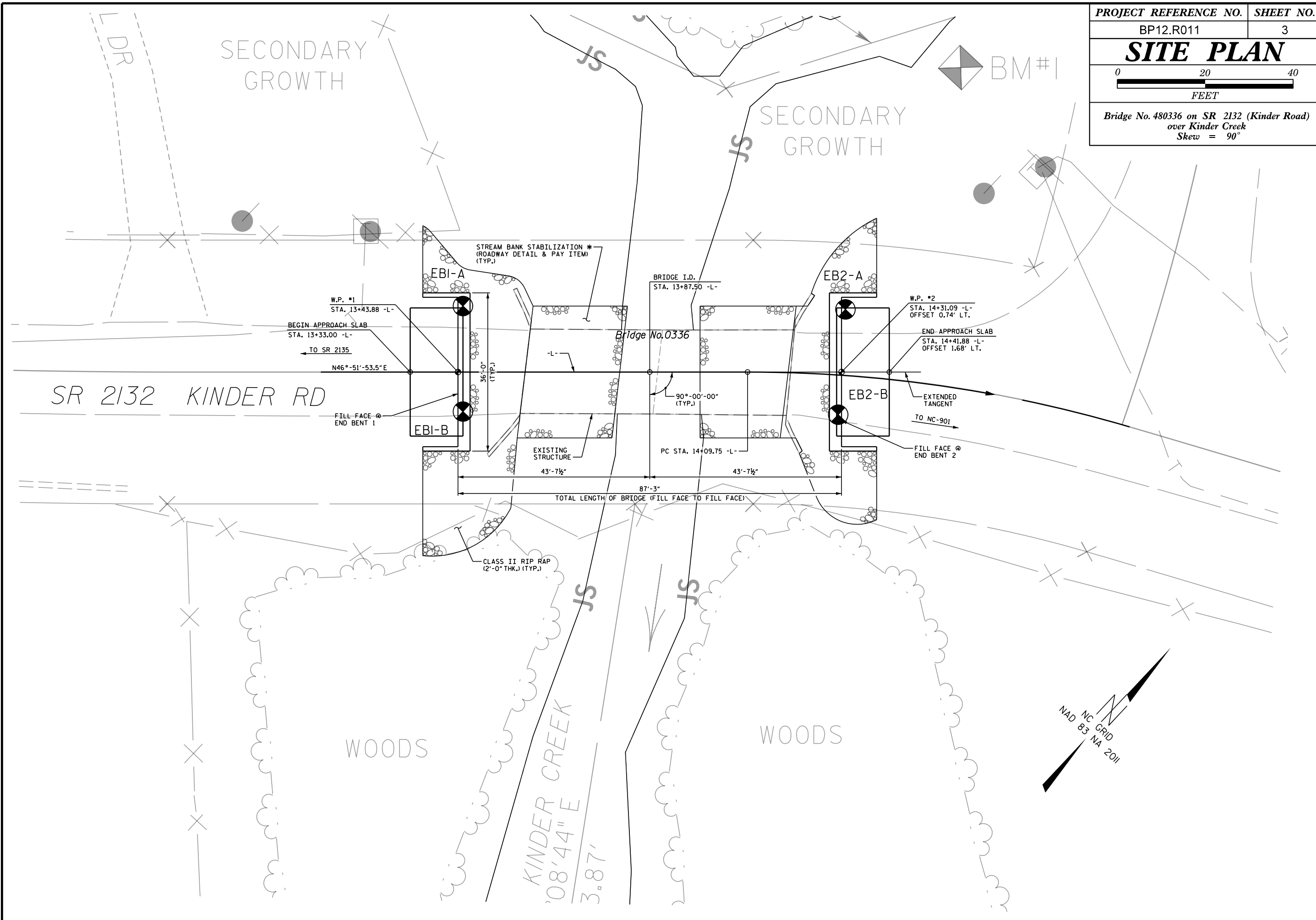
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**DOCUMENT NOT CONSIDERED FINAL
 UNLESS ALL SIGNATURES COMPLETED**

**NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
GEOTECHNICAL ENGINEERING UNIT
SUBSURFACE INVESTIGATION
SOIL AND ROCK LEGEND, TERMS, SYMBOLS, AND ABBREVIATIONS**

SOIL DESCRIPTION										GRADATION										ROCK DESCRIPTION										TERMS AND DEFINITIONS									
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 CLASSIFICATION IS BASED ON THE AASHTO SYSTEM. BASIC DESCRIPTIONS GENERALLY INCLUDE THE FOLLOWING: CONSISTENCY, COLOR, TEXTURE, MOISTURE, AASHTO CLASSIFICATION, AND OTHER PERTINENT FACTORS SUCH AS MINERALOGICAL COMPOSITION, ANGULARITY, STRUCTURE, PLASTICITY, ETC. FOR EXAMPLE, <i>VERY STIFF, GRAY, SILTY CLAY, MOIST WITH INTERBEDDED FINE SAND LAYERS, HIGHLY PLASTIC, A-7-6</i>										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. GAP-GRADED - INDICATES A MIXTURE OF UNIFORM PARTICLE SIZES OF TWO OR MORE SIZES.										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 IS PENETRATION BY A SPLIT SPOON SAMPLER EQUAL TO OR LESS THAN 0.1 FOOT PER 60 BLOWS 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:										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, SUCH 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 DISLODGED 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 (ROD) - 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 (N 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 (SREC.) - TOTAL LENGTH OF STRATA MATERIAL RECOVERED DIVIDED BY TOTAL LENGTH OF STRATUM AND EXPRESSED AS A PERCENTAGE. STRATA ROCK QUALITY DESIGNATION (SROD) - 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.									
SOIL LEGEND AND AASHTO CLASSIFICATION										ANGULARITY OF GRAINS										WEATHERED ROCK (WR)										CRYSTALLINE ROCK (CR)									
GENERAL CLASS. GRANULAR MATERIALS (<= 35% PASSING #200) SILT-CLAY MATERIALS (> 35% PASSING #200) ORGANIC MATERIALS										THE ANGULARITY OR ROUNDNESS OF SOIL GRAINS IS DESIGNATED BY THE TERMS: ANGULAR, SUBANGULAR, SUBROUNDED, OR ROUNDED.										NON-COASTAL PLAIN MATERIAL THAT WOULD YIELD SPT N VALUES > 100 BLOWS PER FOOT IF TESTED.										FINE TO COARSE GRAIN IGNEOUS AND METAMORPHIC ROCK THAT WOULD YIELD SPT REFUSAL IF TESTED. ROCK TYPE INCLUDES GRANITE, GNEISS, GABBRO, SCHIST, ETC.									
MINERALOGICAL COMPOSITION										COMPRESSION										NON-CRYSTALLINE ROCK (NCR)										COASTAL PLAIN SEDIMENTARY ROCK (CP)									
MINERAL NAMES SUCH AS QUARTZ, FELDSPAR, MICA, TALC, KAOLIN, ETC. ARE USED IN DESCRIPTIONS WHEN THEY ARE CONSIDERED OF SIGNIFICANCE.										SLIGHTLY COMPRESSIBLE LL < 31 MODERATELY COMPRESSIBLE LL = 31 - 50 HIGHLY COMPRESSIBLE LL > 50										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.										COASTAL PLAIN SEDIMENTS CEMENTED INTO ROCK, BUT MAY NOT YIELD SPT REFUSAL. ROCK TYPE INCLUDES LIMESTONE, SANDSTONE, CEMENTED SHELL BEDS, ETC.									
PERCENTAGE OF MATERIAL										GROUND WATER										WEATHERING																			
ORGANIC MATERIAL GRANULAR SOILS SILT - CLAY SOILS OTHER MATERIAL										WATER LEVEL IN BORE HOLE IMMEDIATELY AFTER DRILLING										ROCK FRESH, CRYSTALS BRIGHT, FEW JOINTS MAY SHOW SLIGHT STAINING. ROCK RINGS UNDER HAMMER IF CRYSTALLINE.																			
TRACE OF ORGANIC MATTER 2 - 3% LITTLE ORGANIC MATTER 3 - 5% MODERATELY ORGANIC 5 - 10% HIGHLY ORGANIC > 10%										STATIC WATER LEVEL AFTER 24 HOURS										ROCK GENERALLY FRESH, JOINTS STAINED, SOME JOINTS MAY SHOW THIN CLAY COATINGS IF OPEN. CRYSTALS ON A BROKEN SPECIMEN FACE SHINE BRIGHTLY. ROCK RINGS UNDER HAMMER BLOWS IF OF A CRYSTALLINE NATURE.																			
										PERCHED WATER, SATURATED ZONE, OR WATER BEARING STRATA										ROCK GENERALLY FRESH, JOINTS STAINED AND DISCOLORATION EXTENDS INTO ROCK UP TO 1 INCH. OPEN JOINTS MAY CONTAIN CLAY. IN GRANITOID ROCKS SOME OCCASIONAL FELDSPAR CRYSTALS ARE DULL AND DISCOLORED. CRYSTALLINE ROCKS RING UNDER HAMMER BLOWS.																			
										SPRING OR SEEP										SIGNIFICANT PORTIONS OF ROCK SHOW DISCOLORATION AND WEATHERING EFFECTS. IN GRANITOID ROCKS, MOST FELDSPARS ARE DULL AND DISCOLORED, SOME SHOW CLAY. ROCK HAS DULL SOUND UNDER HAMMER BLOWS AND SHOWS SIGNIFICANT LOSS OF STRENGTH AS COMPARED WITH FRESH ROCK.																			
MISCELLANEOUS SYMBOLS										RECOMMENDATION SYMBOLS										ROCK HARDNESS																			
ROADWAY EMBANKMENT (RE) WITH SOIL DESCRIPTION										UNCLASSIFIED EXCAVATION - UNSUITABLE WASTE										CANNOT BE SCRATCHED BY KNIFE OR SHARP PICK. BREAKING OF HAND SPECIMENS REQUIRES SEVERAL HARD BLOWS OF THE GEOLOGIST'S PICK.																			
SOIL SYMBOL										UNCLASSIFIED EXCAVATION - ACCEPTABLE DEGRADABLE ROCK										CAN BE SCRATCHED BY KNIFE OR PICK ONLY WITH DIFFICULTY. HARD HAMMER BLOWS REQUIRED TO DETACH HAND SPECIMEN.																			
ARTIFICIAL FILL (AF) OTHER THAN ROADWAY EMBANKMENT										UNCLASSIFIED EXCAVATION - ACCEPTABLE DEGRADABLE ROCK										CAN BE SCRATCHED BY KNIFE OR PICK. GOUGES OR GROOVES TO 0.25 INCHES DEEP CAN BE EXCAVATED BY HARD BLOW OF A GEOLOGIST'S PICK. HAND SPECIMENS CAN BE DETACHED BY MODERATE BLOWS.																			
INFERRED SOIL BOUNDARY										UNCLASSIFIED EXCAVATION - ACCEPTABLE DEGRADABLE ROCK										CAN BE GROUDED OR GOUGED 0.05 INCHES DEEP BY FIRM PRESSURE OF KNIFE OR PICK POINT. CAN BE EXCAVATED IN SMALL CHIPS TO PIECES 1 INCH MAXIMUM SIZE BY HARD BLOWS OF THE POINT OF A GEOLOGIST'S PICK.																			
INFERRED ROCK LINE										UNCLASSIFIED EXCAVATION - ACCEPTABLE DEGRADABLE ROCK										CAN BE GROUDED OR GOUGED READILY BY KNIFE OR PICK. CAN BE EXCAVATED IN FRAGMENTS FROM CHIPS TO SEVERAL INCHES IN SIZE BY MODERATE BLOWS OF A PICK POINT. SMALL, THIN PIECES CAN BE BROKEN BY FINGER PRESSURE.																			
ALLUVIAL SOIL BOUNDARY										UNCLASSIFIED EXCAVATION - ACCEPTABLE DEGRADABLE ROCK										CAN BE CARVED WITH KNIFE. CAN BE EXCAVATED READILY WITH POINT OF PICK. PIECES 1 INCH OR MORE IN THICKNESS CAN BE BROKEN BY FINGER PRESSURE. CAN BE SCRATCHED READILY BY FINGER NAIL.																			
TEXTURE OR GRAIN SIZE										ABBREVIATIONS										FRACTURE SPACING										BEDDING									
U.S. STD. SIEVE SIZE OPENING (MM) 4 10 40 60 200 270										AR - AUGER REFUSAL MED. - MEDIUM VST - VANE SHEAR TEST										VERY WIDE MORE THAN 10 FEET										VERY THICKLY BEDDED 4 FEET									
BOULDER (BLDR.) COBBLE (COB.) GRAVEL (GR.) COARSE SAND (CSE. SD.) FINE SAND (F SD.) SILT (SL.) CLAY (CL.)										BT - BORING TERMINATED MICA - MICACEOUS WEA. - WEATHERED										WIDE 3 TO 10 FEET										THICKLY BEDDED 1.5 - 4 FEET									
GRAIN SIZE MM 305 75 2.0 0.25 0.05 0.005										CL. - CLAY MOD. - MODERATELY UNIT WEIGHT										MODERATELY CLOSE 1 TO 3 FEET										THINLY BEDDED 0.16 - 1.5 FEET									
SOIL MOISTURE - CORRELATION OF TERMS										CPT - CONE PENETRATION TEST NP - NON PLASTIC										CLOSE 0.16 TO 1 FOOT										VERY THINLY BEDDED 0.03 - 0.16 FEET									
SOIL MOISTURE SCALE (ATTERBERG LIMITS) FIELD MOISTURE DESCRIPTION GUIDE FOR FIELD MOISTURE DESCRIPTION										ORG. - ORGANIC PMT - PRESSUREMETER TEST SAP. - SAPROLITIC										VERY CLOSE LESS THAN 0.16 FEET										THICKLY LAMINATED 0.008 - 0.03 FEET									
LL - LIQUID LIMIT - SATURATED - (SAT.) USUALLY LIQUID; VERY WET, USUALLY FROM BELOW THE GROUND WATER TABLE										SD. - SAND, SANDY SL. - SILT, SILTY																				THINLY LAMINATED < 0.008 FEET									
PL - PLASTIC LIMIT - WET - (W) SEMISOLID; REQUIRES DRYING TO ATTAIN OPTIMUM MOISTURE										S.LI. - SLIGHTLY TCR - TRICONE REFUSAL																													
OM - OPTIMUM MOISTURE SHRINKAGE LIMIT - MOIST - (M) SOLID; AT OR NEAR OPTIMUM MOISTURE										W - MOISTURE CONTENT V - VERY																													
										HI. - HIGHLY																													
PLASTICITY										EQUIPMENT USED ON SUBJECT PROJECT										INDURATION																			
NON PLASTIC 0-5 VERY LOW										DRILL UNITS: CME-45C ADVANCING TOOLS: CLAY BITS										FOR SEDIMENTARY ROCKS, INDURATION IS THE HARDENING OF MATERIAL BY CEMENTING, HEAT, PRESSURE, ETC.																			
SLIGHTLY PLASTIC 6-15 SLIGHT										CME-55 6" CONTINUOUS FLIGHT AUGER										FRIABLE RUBBING WITH FINGER FREES NUMEROUS GRAINS; GENTLE BLOW BY HAMMER DISINTEGRATES SAMPLE.																			
MODERATELY PLASTIC 16-25 MEDIUM										CME-550 8" HOLLOW AUGERS										MODERATELY INDURATED GRAINS CAN BE SEPARATED FROM SAMPLE WITH STEEL PROBE; BREAKS EASILY WHEN HIT WITH HAMMER.																			
HIGHLY PLASTIC 26 OR MORE HIGH										VANE SHEAR TEST HARD FACED FINGER BITS										INDURATED GRAINS ARE DIFFICULT TO SEPARATE WITH STEEL PROBE; DIFFICULT TO BREAK WITH HAMMER.																			
										PORTABLE HOIST TUNG.-CARBIDE INSERTS										EXTREMELY INDURATED SHARP HAMMER BLOWS REQUIRED TO BREAK SAMPLE; SAMPLE BREAKS ACROSS GRAINS.																			
										CME-550X TRICONE *STEEL TEETH																													
										CME-550X TRICONE *TUNG.-CARB.																													
										CORE BIT																													
DESCRIPTIONS MAY INCLUDE COLOR OR COLOR COMBINATIONS (TAN, RED, YELLOW-BROWN, BLUE-GRAY). MODIFIERS SUCH AS LIGHT, DARK, STREAKED, ETC. ARE USED TO DESCRIBE APPEARANCE.																																							

PROJECT REFERENCE NO.	SHEET NO.
BP12.R011	3
SITE PLAN	
 FEET	
<i>Bridge No. 480336 on SR 2132 (Kinder Road) over Kinder Creek Skew = 90°</i>	



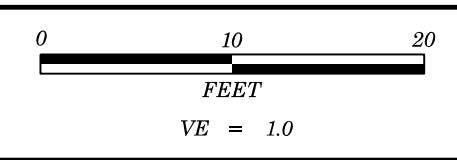
SR 2132 KINDER RD

WOODS

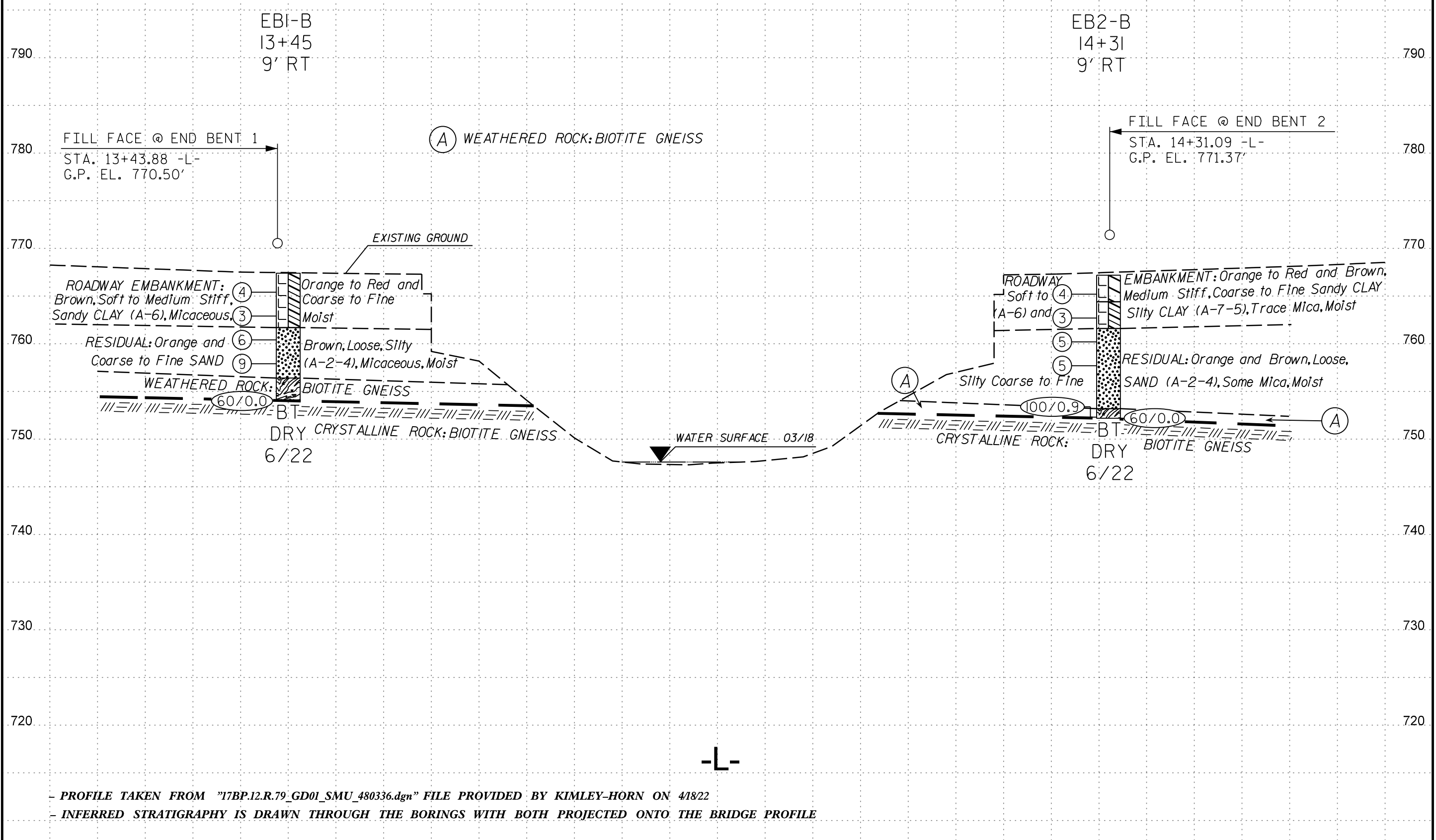
KINDER CREEK
'08'44" E
3.87'

WOODS

NC GRID
NAD 83 NA 2011



PROJECT REFERENCE NO.	SHEET NO.
BP12.R011	4
PROFILE BORINGS PROJECTED ALONG -L-	



EBI-B
13+45
9' RT

EB2-B
14+31
9' RT

FILL FACE @ END BENT 1
STA. 13+43.88 -L-
G.P. EL. 770.50'

FILL FACE @ END BENT 2
STA. 14+31.09 -L-
G.P. EL. 771.37'

(A) WEATHERED ROCK: BIOTITE GNEISS

ROADWAY EMBANKMENT: (4) Orange to Red and
Brown, Soft to Medium Stiff, Coarse to Fine
Sandy CLAY (A-6), Micaceous, (3) Moist

ROADWAY (4) EMBANKMENT: Orange to Red and Brown,
Soft to Medium Stiff, Coarse to Fine Sandy CLAY
(A-6) and (3) Silty CLAY (A-7-5), Trace Mica, Moist

RESIDUAL: Orange and (6) Brown, Loose, Silty
Coarse to Fine SAND (9) (A-2-4), Micaceous, Moist

(5) RESIDUAL: Orange and Brown, Loose,
SAND (A-2-4), Some Mica, Moist

WEATHERED ROCK: BIOTITE GNEISS

(5) Silty Coarse to Fine

CRYSTALLINE ROCK: BIOTITE GNEISS

CRYSTALLINE ROCK: BIOTITE GNEISS

DRY CRYSTALLINE ROCK: BIOTITE GNEISS
6/22

DRY BIOTITE GNEISS
6/22

WATER SURFACE 03/18

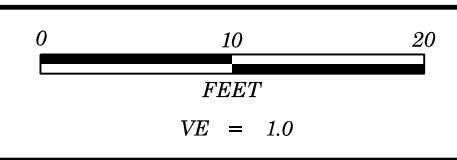
- PROFILE TAKEN FROM "17BP.12.R.79_GD01_SMU_480336.dgn" FILE PROVIDED BY KIMLEY-HORN ON 4/18/22
- INFERRED STRATIGRAPHY IS DRAWN THROUGH THE BORINGS WITH BOTH PROJECTED ONTO THE BRIDGE PROFILE

13+30

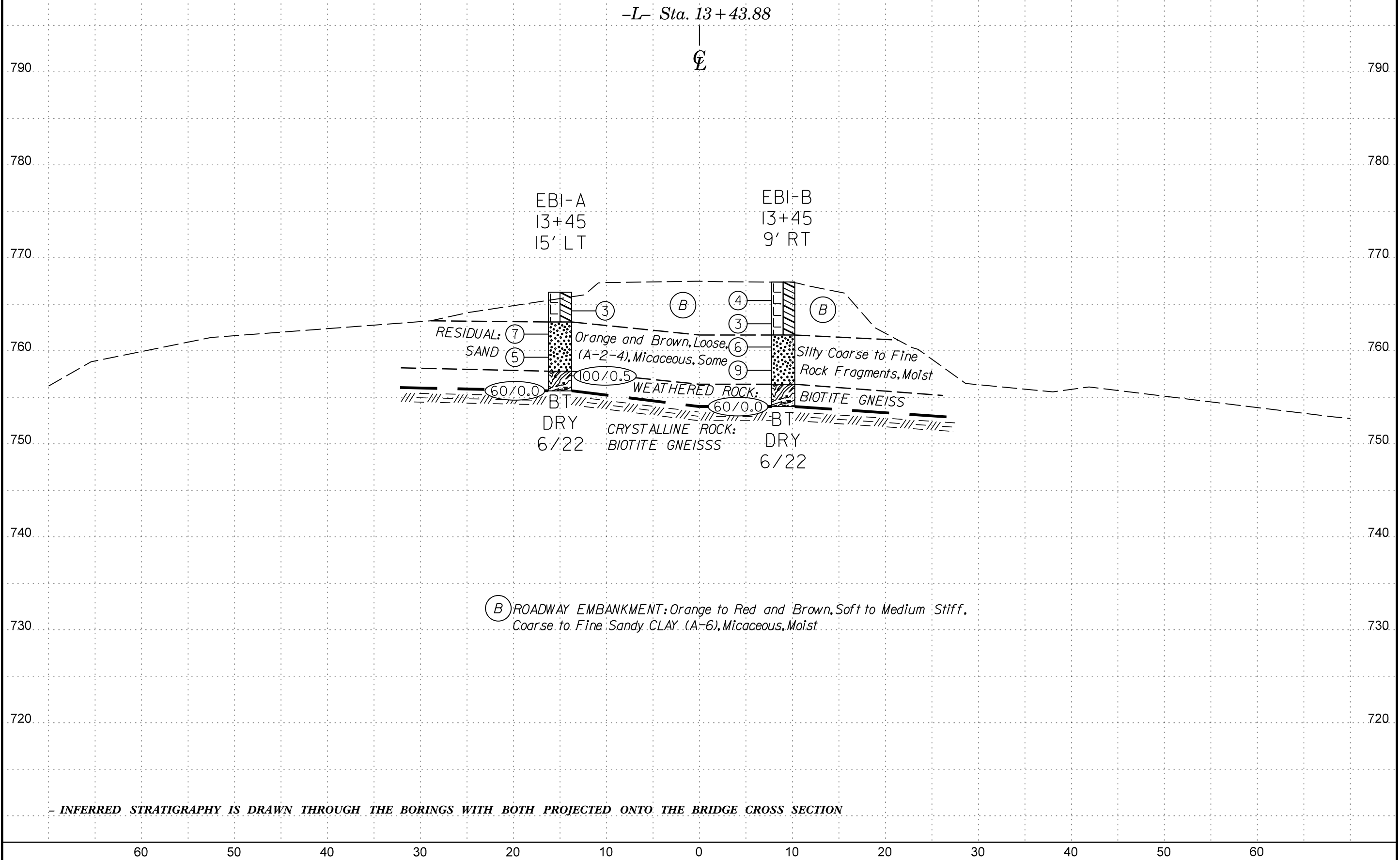
13+50

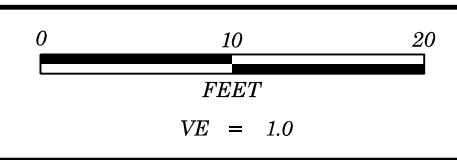
14+00

14+50

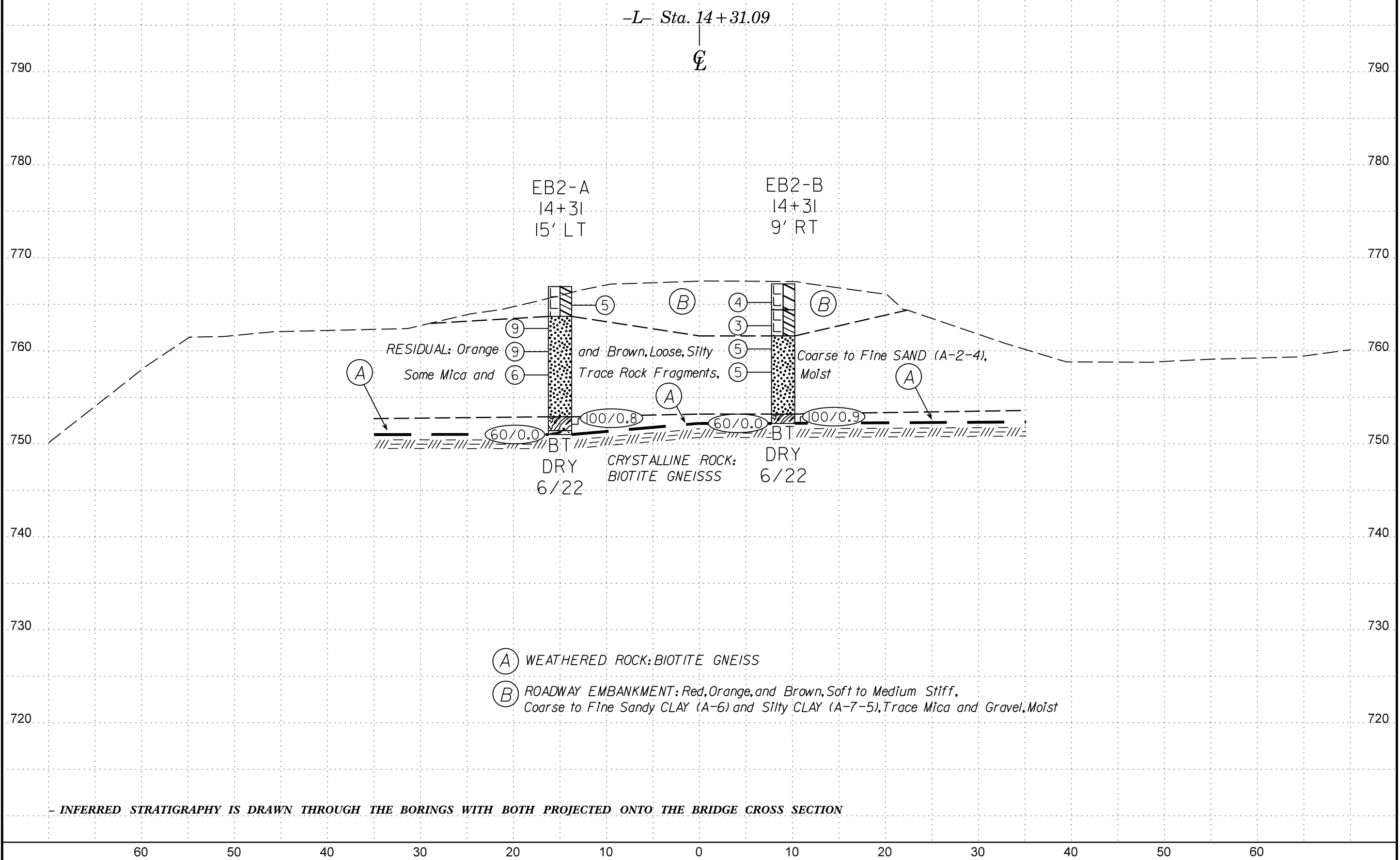


PROJECT REFERENCE NO.	SHEET NO.
BP12.R011	5
CROSS SECTION AT END BENT 1	
-L- STA. 13+43.88	
SKEW = 90°	





PROJECT REFERENCE NO.	SHEET NO.
BP12.R011	6
CROSS SECTION AT END BENT 2	
-L- STA. 14+31.09	
SKEW = 90°	



GEOTECHNICAL BORING REPORT

BORE LOG

WBS BP12.R011.1		TIP N/A		COUNTY IREDELL		GEOLOGIST Gonzales, P.B.									
SITE DESCRIPTION Bridge No. 480336 on SR 2132 (Kinder Road) over Kinder Creek							GROUND WTR (ft)								
BORING NO. EB1-A		STATION 13+45		OFFSET 15 ft LT		ALIGNMENT -L-									
COLLAR ELEV. 766.3 ft		TOTAL DEPTH 10.6 ft		NORTHING 796,054		EASTING 1,480,637									
DRILL RIG/HAMMER EFF./DATE SUM3123 CME-550X 86% 11/2/2021			DRILL METHOD H.S. Augers		HAMMER TYPE Automatic										
DRILLER Moseley, M.		START DATE 05/24/22		COMP. DATE 05/24/22		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					
770															
765	765.3	1.0	2	2	1										
	762.8	3.5	7	4	3										
760	760.3	6.0	3	2	3										
	757.8	8.5	100/0.5												
	755.7	10.6	60/0.0												

WBS BP12.R011.1		TIP N/A		COUNTY IREDELL		GEOLOGIST Gonzales, P.B.									
SITE DESCRIPTION Bridge No. 480336 on SR 2132 (Kinder Road) over Kinder Creek							GROUND WTR (ft)								
BORING NO. EB1-B		STATION 13+45		OFFSET 9 ft RT		ALIGNMENT -L-									
COLLAR ELEV. 767.4 ft		TOTAL DEPTH 13.4 ft		NORTHING 796,036		EASTING 1,480,654									
DRILL RIG/HAMMER EFF./DATE SUM3123 CME-550X 86% 11/2/2021			DRILL METHOD H.S. Augers		HAMMER TYPE Automatic										
DRILLER Moseley, M.		START DATE 05/24/22		COMP. DATE 05/24/22		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					
770															
765	766.4	1.0	3	2	2										
	763.9	3.5	1	1	2										
760	761.4	6.0	1	2	4										
	758.9	8.5	4	5	4										
755	754.0	13.4	60/0.0												

NCDOT BORE DOUBLE BP-12.R011_GEO_BRDG0336_GINT_LOGS.GPJ NC_DOT.GDT 6/20/22

GEOTECHNICAL BORING REPORT

BORE LOG

WBS BP12.R011.1		TIP N/A		COUNTY IREDELL		GEOLOGIST Gonzales, P.B.									
SITE DESCRIPTION Bridge No. 480336 on SR 2132 (Kinder Road) over Kinder Creek							GROUND WTR (ft)								
BORING NO. EB2-A		STATION 14+31		OFFSET 15 ft LT		ALIGNMENT -L-									
COLLAR ELEV. 766.9 ft		TOTAL DEPTH 15.9 ft		NORTHING 796,112		EASTING 1,480,701									
DRILL RIG/HAMMER EFF./DATE SUM3123 CME-550X 86% 11/2/2021			DRILL METHOD H.S. Augers			HAMMER TYPE Automatic									
DRILLER Moseley, M.		START DATE 05/24/22		COMP. DATE 05/24/22		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					
770															
	765.9	1.0	4	3	2									766.9	0.0
	763.4	3.5	2	4	5									763.7	3.2
	760.9	6.0	5	4	5										
	758.4	8.5	2	3	3										
	753.4	13.5	21	43	57/0.3									752.9	14.0
	751.0	15.9	60/0.0											751.4	15.5
														751.0	15.9

WBS BP12.R011.1		TIP N/A		COUNTY IREDELL		GEOLOGIST Gonzales, P.B.									
SITE DESCRIPTION Bridge No. 480336 on SR 2132 (Kinder Road) over Kinder Creek							GROUND WTR (ft)								
BORING NO. EB2-B		STATION 14+31		OFFSET 9 ft RT		ALIGNMENT -L-									
COLLAR ELEV. 767.2 ft		TOTAL DEPTH 15.0 ft		NORTHING 796,094		EASTING 1,480,717									
DRILL RIG/HAMMER EFF./DATE SUM3123 CME-550X 86% 11/2/2021			DRILL METHOD H.S. Augers			HAMMER TYPE Automatic									
DRILLER Moseley, M.		START DATE 05/24/22		COMP. DATE 05/24/22		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					
770															
	766.2	1.0	4	2	2									767.2	0.0
	763.7	3.5	1	1	2									764.4	2.8
	761.2	6.0	2	2	3									761.6	5.6
	758.7	8.5	3	3	2										
	753.7	13.5	10	12	88/0.4									753.2	14.0
	752.2	15.0	60/0.0											752.2	15.0

NCDOT BORE DOUBLE BP-12.R011_GEO_BRDG0336_GINT_LOGS.GPJ NC_DOT.GDT 6/20/22

SITE PHOTOGRAPHS
Bridge No. 336 on SR 2132 (Kinder Road) over Kinder Creek

View of Bridge 336 Looking Upstation



View Looking Downstream from Bridge 336



View of Bridge 336 Looking Downstation



View Looking Upstream from Bridge 336

