

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



STATE	STATE PROJECT REFERENCE NO.	SHEET	TOTAL SHEETS
N.C.	P-5208D	1	20

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STRUCTURE
SUBSURFACE INVESTIGATION

PROJ. REFERENCE NO. P-5208D F.A. PROJ. _____
 COUNTY CABARRUS
 PROJECT DESCRIPTION BRIDGE ON ROBERTA RD. OVER NCNS
RAILROAD BETWEEN SR 1161 AND NC 49

 SITE DESCRIPTION ROBERTA ROAD EXTENSION OVER
NS/NCR FROM STALLINGS RD.
(SR 1161) TO NC 49

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) 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.

PROJECT: 50000.1.STR091B ID: P-5208D

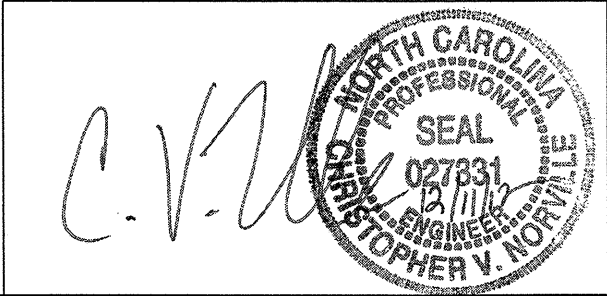
PERSONNEL
C. V. NORVILLE
J. R. HAMM
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INVESTIGATED BY T. EVANS / J. HAMM
 CHECKED BY C. V. NORVILLE
 SUBMITTED BY FALCON ENG.
 DATE DECEMBER, 2012

DRAWN BY: T. E. EVANS

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.



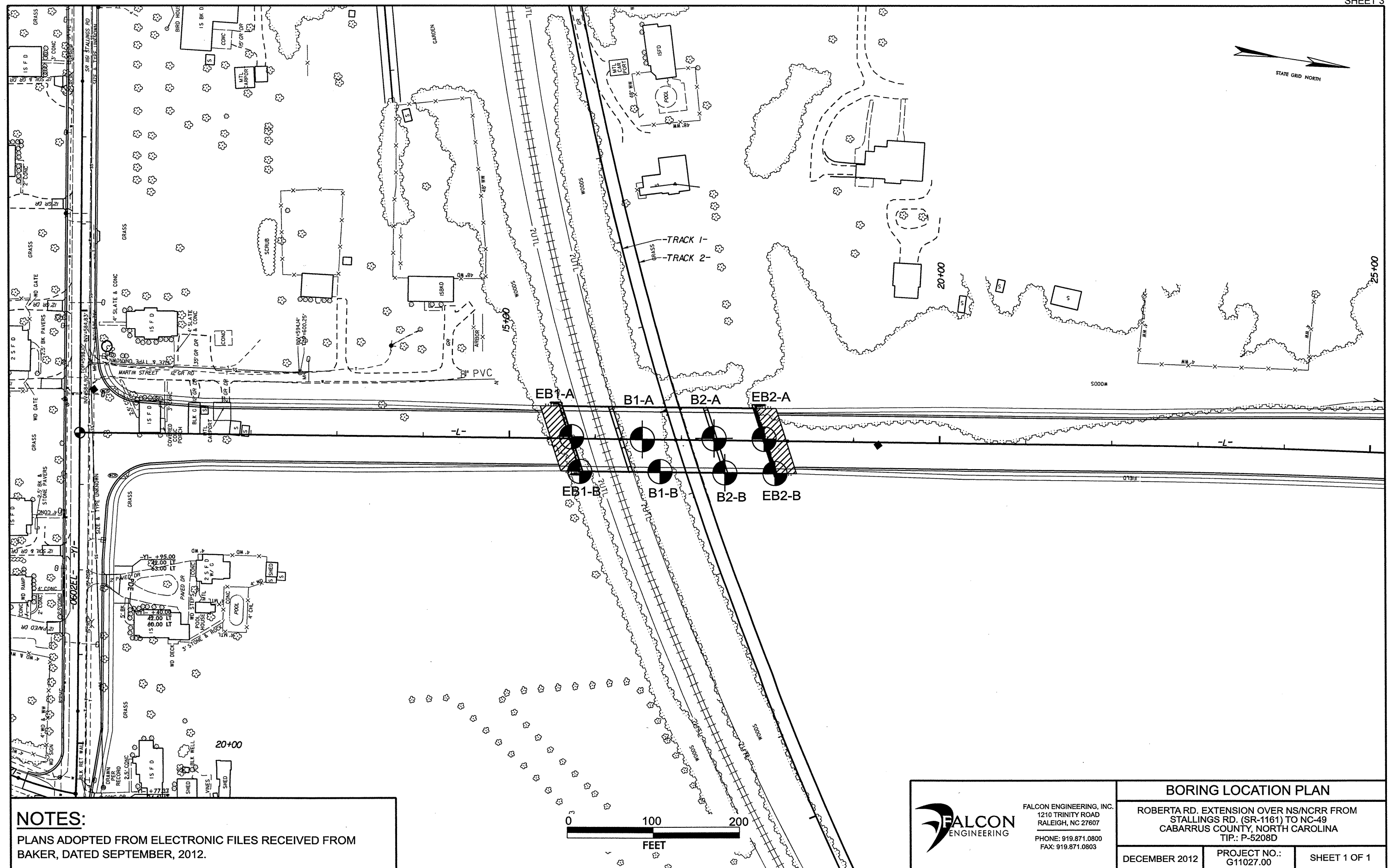
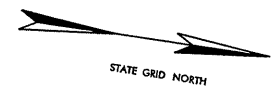
**NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
GEOTECHNICAL ENGINEERING UNIT**

PROJECT REFERENCE NO. P-5208D	SHEET NO. 2
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SUBSURFACE INVESTIGATION

SOIL AND ROCK LEGEND, TERMS, SYMBOLS, AND ABBREVIATIONS

SOIL DESCRIPTION		GRADATION		ROCK DESCRIPTION		TERMS AND DEFINITIONS	
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 THE STANDARD PENETRATION TEST (AASHTO T206, ASTM D-1586). SOIL CLASSIFICATION IS BASED ON THE AASHTO SYSTEM. BASIC DESCRIPTIONS GENERALLY SHALL INCLUDE: CONSISTENCY, COLOR, TEXTURE, MOISTURE, AASHTO CLASSIFICATION, AND OTHER PERTINENT FACTORS SUCH AS MINERALOGICAL COMPOSITION, ANGULARITY, STRUCTURE, PLASTICITY, ETC. EXAMPLE: <i>VERY STIFF, GRAY, SILTY CLAY, MOST WITH INTERBEDDED FINE SAND LAYERS, HIGHLY PLASTIC, A-7-6</i>		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. ANGULARITY OF GRAINS THE ANGULARITY OR ROUNDNESS OF SOIL GRAINS IS DESIGNATED BY THE TERMS: ANGULAR, SUBANGULAR, SUBROUNDED, OR ROUNDED.		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 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: WEATHERED ROCK (WR) CRYSTALLINE ROCK (CR) NON-CRYSTALLINE ROCK (NCR) COASTAL PLAIN SEDIMENTARY ROCK (CP)		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 SLICES 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 TO 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 (SCRC) - 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.	
SOIL LEGEND AND AASHTO CLASSIFICATION		MINERALOGICAL COMPOSITION		WEATHERING			
GENERAL CLASS.	GRANULAR MATERIALS (<= 35% PASSING #200)	SILT-CLAY MATERIALS (> 35% PASSING #200)	MINERAL NAMES SUCH AS QUARTZ, FELDSPAR, MICA, TALC, KAOLIN, ETC. ARE USED IN DESCRIPTIONS WHENEVER THEY ARE CONSIDERED OF SIGNIFICANCE.		ROCK FRESH, CRYSTALLINE FRESH, FEW JOINTS MAY SHOW SLIGHT STAINING, ROCK RINGS UNDER HAMMER IF CRYSTALLINE.		
GROUP CLASS.	A-1, A-3, A-2, A-4, A-5, A-6, A-7	A-1, A-2, A-3, A-4, A-5, A-6, A-7	COMPRESSIBILITY		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.		
SYMBOL	[Symbolic representation of soil groups]		SLIGHTLY COMPRESSIBLE MODERATELY COMPRESSIBLE HIGHLY COMPRESSIBLE		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.		
% PASSING	[Symbolic representation of percentages]		PERCENTAGE OF MATERIAL		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.		
LIQUID LIMIT PLASTIC INDEX	[Symbolic representation of LL and PI]		ORGANIC MATERIAL GRANULAR SOILS SILT-CLAY SOILS OTHER MATERIAL		MODERATELY SEVERE (MOD. SEV.) ALL ROCK EXCEPT QUARTZ DISCOLORED OR STAINED. IN GRANITOID ROCKS, ALL FELDSPARS DULL AND DISCOLORED AND A MAJORITY SHOW KAOLINIZATION. ROCK SHOWS SEVERE LOSS OF STRENGTH AND CAN BE EXCAVATED WITH A GEOLOGIST'S PICK. ROCK GIVES "CLUNK" SOUND WHEN STRUCK. <i>IF TESTED, WOULD YIELD SPT REFUSAL</i>		
GROUP INDEX	[Symbolic representation of GI]		TRACE OF ORGANIC MATTER 2 - 3% LITTLE ORGANIC MATTER 3 - 5% MODERATELY ORGANIC 5 - 10% HIGHLY ORGANIC >10%		SEVERE (SEV.) ALL ROCK EXCEPT QUARTZ DISCOLORED OR STAINED. ROCK FABRIC CLEAR AND EVIDENT BUT REDUCED IN STRENGTH TO STRONG SOIL. IN GRANITOID ROCKS ALL FELDSPARS ARE KAOLINIZED TO SOME EXTENT. SOME FRAGMENTS OF STRONG ROCK USUALLY REMAIN. <i>IF TESTED, YIELDS SPT N VALUES > 100 BPF</i>		
USUAL TYPES OF MAJOR MATERIALS	[Symbolic representation of material types]		GROUND WATER		VERY SEVERE (V. SEV.) ALL ROCK EXCEPT QUARTZ DISCOLORED OR STAINED. ROCK FABRIC ELEMENTS ARE DISCERNIBLE BUT THE MASS IS EFFECTIVELY REDUCED TO SOIL STATUS, WITH ONLY FRAGMENTS OF STRONG ROCK REMAINING. SAPROLITE IS AN EXAMPLE OF ROCK WEATHERED TO A DEGREE SUCH THAT ONLY MINOR VESTIGES OF THE ORIGINAL ROCK FABRIC REMAIN. <i>IF TESTED, YIELDS SPT N VALUES < 100 BPF</i>		
GEN. RATING AS A SUBGRADE	EXCELLENT TO GOOD		FAIR TO POOR		COMPLETE ROCK REDUCED TO SOIL. ROCK FABRIC NOT DISCERNIBLE, OR DISCERNIBLE ONLY IN SMALL AND SCATTERED CONCENTRATIONS. QUARTZ MAY BE PRESENT AS DIKES OR STRINGERS. SAPROLITE IS ALSO AN EXAMPLE.		
PI OF A-7-5 SUBGROUP IS ≤ LL - 30 ; PI OF A-7-6 SUBGROUP IS > LL - 30				MISCELLANEOUS SYMBOLS			
CONSISTENCY OR DENSENESS		RANGE OF UNCONFINED COMPRESSIVE STRENGTH (TONS/FT²)		ROADWAY EMBANKMENT (RE) WITH SOIL DESCRIPTION			
PRIMARY SOIL TYPE	COMPACTNESS OR CONSISTENCY	RANGE OF STANDARD PENETRATION RESISTANCE (N-VALUE)		SOIL SYMBOL	ARTIFICIAL FILL (AF) OTHER THAN ROADWAY EMBANKMENT	TEST BORING W/ CORE	
GENERALLY GRANULAR MATERIAL (NON-COHESIVE)	VERY LOOSE LOOSE MEDIUM DENSE DENSE VERY DENSE	<4 4 TO 10 10 TO 30 30 TO 50 >50	N/A	INFERRED SOIL BOUNDARY	INFERRED ROCK LINE	SPT N-VALUE	
GENERALLY SILT-CLAY MATERIAL (COHESIVE)	VERY SOFT SOFT MEDIUM STIFF STIFF VERY STIFF HARD	<2 2 TO 4 4 TO 8 8 TO 15 15 TO 30 >30	<0.25 0.25 TO 0.50 0.5 TO 1.0 1 TO 2 2 TO 4 >4	ALLUVIAL SOIL BOUNDARY	DIP & DIP DIRECTION OF ROCK STRUCTURES	SPT REFUSAL	
TEXTURE OR GRAIN SIZE				SOUNDING ROD			
U.S. STD. SIEVE SIZE OPENING (MM)	4 10 20 40 60 100 200 270	4.76 2.00 0.85 0.425 0.25 0.15 0.075 0.053		ABBREVIATIONS			
BOULDER (BLDR.)	COBBLE (COB.)	GRAVEL (GR.)	COARSE SAND (C.S.E. SD.)	FINE SAND (F. SD.)	SILT (SL.)	CLAY (CL.)	
GRAIN SIZE	MM 300 IN. 12	75 3	2.0 0.25	0.05	0.005		
SOIL MOISTURE - CORRELATION OF TERMS				AR - AUGER REFUSAL BT - BORING TERMINATED CL - CLAY CPT - CONE PENETRATION TEST CSE - COARSE DMT - DILATOMETER TEST DPT - DYNAMIC PENETRATION TEST e - VOID RATIO F - FINE FOSS. - FOSSILIFEROUS FRAC. - FRACTURED, FRACTURES FRAGS. - FRAGMENTS HL - HIGHLY			
SOIL MOISTURE SCALE (ATTERBERG LIMITS)	FIELD MOISTURE DESCRIPTION	GUIDE FOR FIELD MOISTURE DESCRIPTION		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			
LL - LIQUID LIMIT	- SATURATED - (SAT.)	USUALLY LIQUID; VERY WET, USUALLY FROM BELOW THE GROUND WATER TABLE		VST - VANE SHEAR TEST WEA. - WEATHERED W - UNIT WEIGHT W _d - DRY UNIT WEIGHT			
PL - PLASTIC LIMIT	- WET - (W)	SEMISOLID; REQUIRES DRYING TO ATTAIN OPTIMUM MOISTURE		SAMPLE ABBREVIATIONS S - BULK SS - SPLIT SPOON ST - SHELBY TUBE RS - ROCK RT - RECOMPACTED TRIAXIAL CBR - CALIFORNIA BEARING RATIO			
OM - OPTIMUM MOISTURE	- MOIST - (M)	SOLID; AT OR NEAR OPTIMUM MOISTURE					
SL - SHRINKAGE LIMIT	- DRY - (D)	REQUIRES ADDITIONAL WATER TO ATTAIN OPTIMUM MOISTURE					
PLASTICITY				EQUIPMENT USED ON SUBJECT PROJECT			
NONPLASTIC	PLASTICITY INDEX (PI)	DRY STRENGTH		DRILL UNITS:			
LOW PLASTICITY	0-5	VERY LOW		<input type="checkbox"/> MOBILE B-___			
MED. PLASTICITY	6-15	SLIGHT		<input type="checkbox"/> BK-51			
HIGH PLASTICITY	16-25	MEDIUM		<input type="checkbox"/> CME-45C			
	26 OR MORE	HIGH		<input type="checkbox"/> CME-55B			
COLOR				<input type="checkbox"/> PORTABLE MOIST			
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.				<input checked="" type="checkbox"/> TRI0055 CME-55			
				<input checked="" type="checkbox"/> TRI9435 CME-55			
				<input type="checkbox"/> HAMMER TYPE: <input checked="" type="checkbox"/> AUTOMATIC <input type="checkbox"/> MANUAL			
				CORE SIZE: <input type="checkbox"/> -B <input checked="" type="checkbox"/> -N 02 <input type="checkbox"/> -H			
				HAND TOOLS: <input type="checkbox"/> POST HOLE DIGGER <input type="checkbox"/> HAND AUGER <input type="checkbox"/> SOUNDING ROD <input type="checkbox"/> VANE SHEAR TEST			
				FRACTURE SPACING			
				BEDDING			
				FRIABLE RUBBING WITH FINGER FREES NUMEROUS GRAINS; GENTLE BLOW BY HAMMER DISINTEGRATES SAMPLE.			
				MODERATELY INDURATED GRAINS CAN BE SEPARATED FROM SAMPLE WITH STEEL PROBE; BREAKS EASILY WHEN HIT WITH HAMMER.			
				INDURATED GRAINS ARE DIFFICULT TO SEPARATE WITH STEEL PROBE; DIFFICULT TO BREAK WITH HAMMER.			
				EXTREMELY INDURATED SHARP HAMMER BLOWS REQUIRED TO BREAK SAMPLE; SAMPLE BREAKS ACROSS GRAINS.			
				INDURATION			
				FOR SEDIMENTARY ROCKS, INDURATION IS THE HARDENING OF THE MATERIAL BY CEMENTING, HEAT, PRESSURE, ETC.			
				BENCH MARK: ELEVATION: _____ FT.			
				NOTES: FIAD - FILLED-IN AFTER DRILLING			

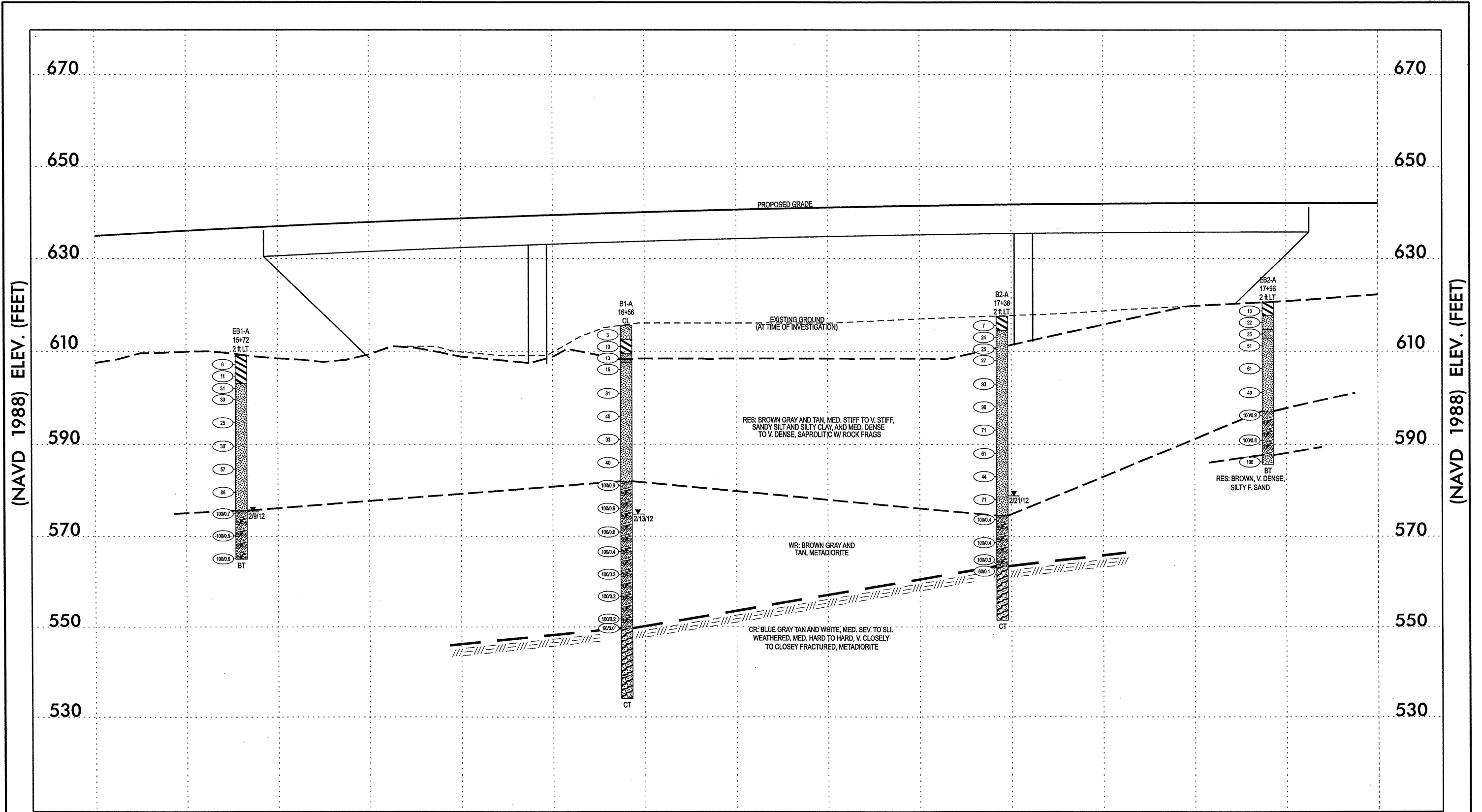


NOTES:
 PLANS ADOPTED FROM ELECTRONIC FILES RECEIVED FROM
 BAKER, DATED SEPTEMBER, 2012.

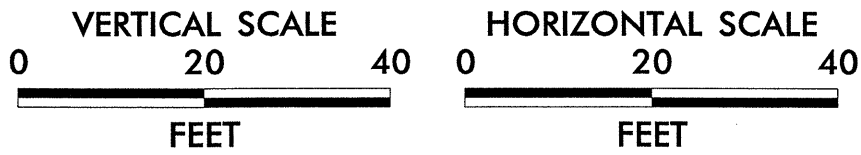


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BORING LOCATION PLAN		
ROBERTA RD. EXTENSION OVER NS/NCRR FROM STALLINGS RD. (SR-1161) TO NC-49 CABARRUS COUNTY, NORTH CAROLINA TIP: P-5208D		
DECEMBER 2012	PROJECT NO.: G11027.00	SHEET 1 OF 1

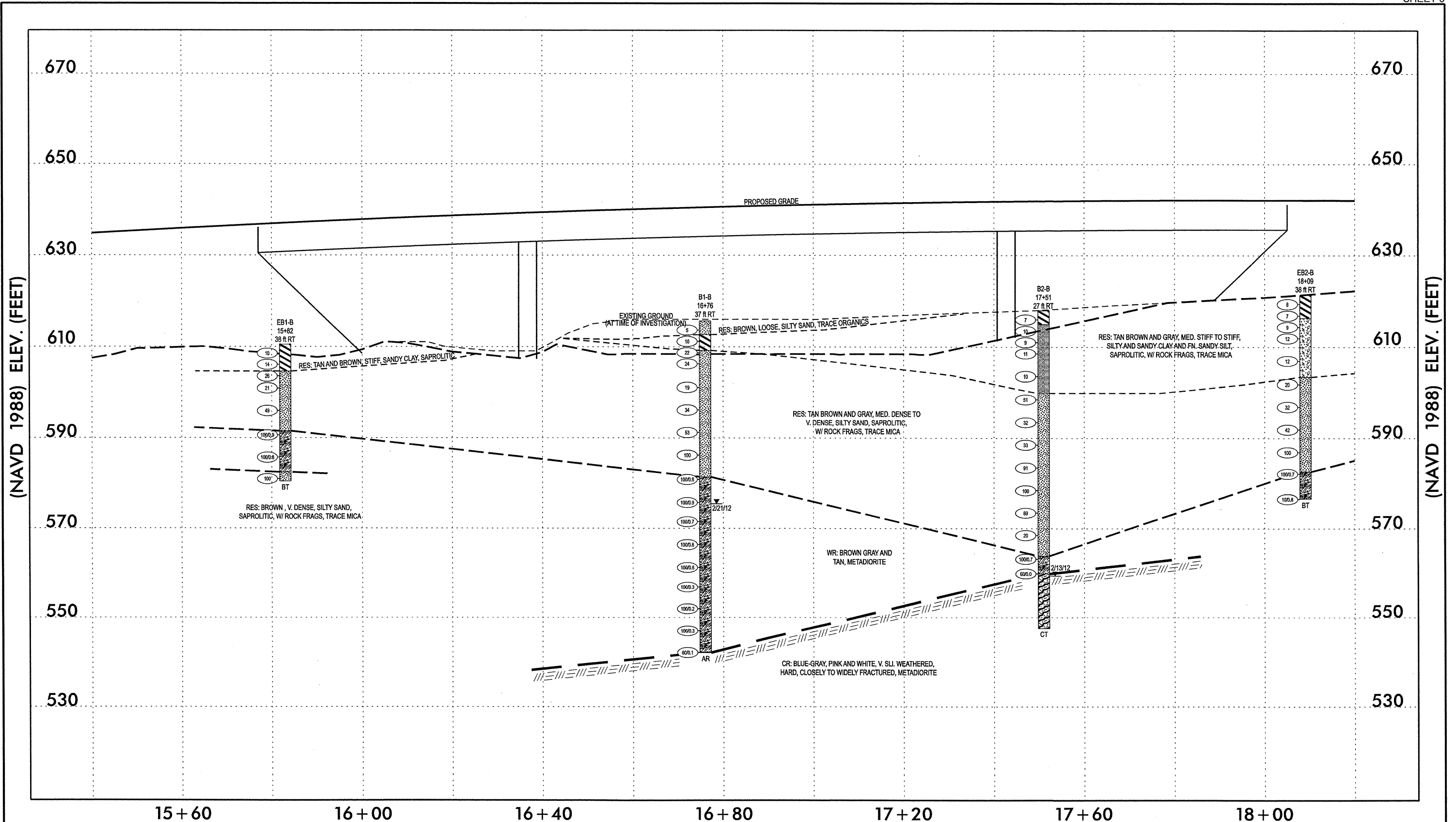


NOTES:
 • GROUNDLINE PROFILE OF TAKEN FROM ELECTRONIC DRAWING FILES PROVIDED BY BAKER, DATED JUNE 28, 2012
 • INFERRED STRATIGRAPHY IS DRAWN THROUGH THE BORINGS WITH BOTH PROJECTED ONTO THE PROFILE



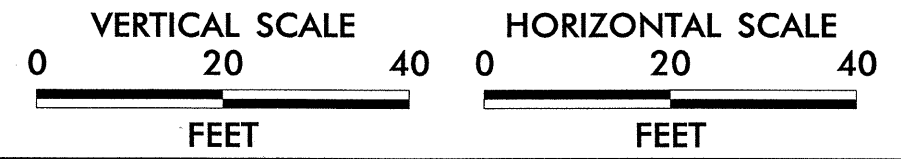
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SUBSURFACE PROFILE LEFT OF -L-		
ROBERTA ROAD EXTENSION OVER NS/NCRR FROM STALLINGS RD. (SR 1161) TO NC 49 CABARRUS COUNTY, NC		
DECEMBER, 2012	PROJECT NO.: G11027.00	SHEET 1 OF 2



NOTES:

- GROUNDLINE PROFILE OF TAKEN FROM ELECTRONIC DRAWING FILES PROVIDED BY BAKER, DATED JUNE 28, 2012
- INFERRED STRATIGRAPHY IS DRAWN THROUGH THE BORINGS WITH BOTH PROJECTED ONTO THE PROFILE

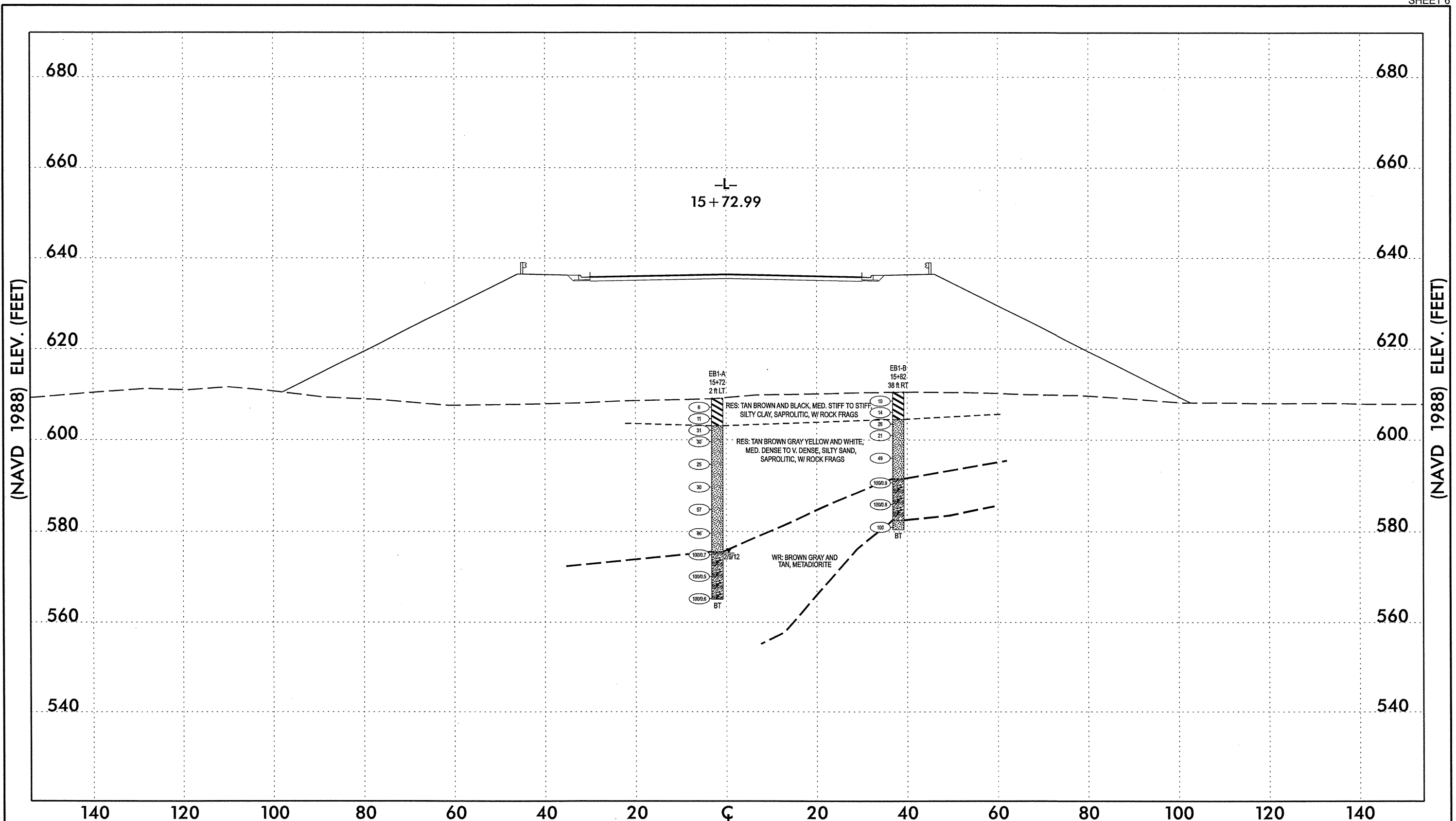


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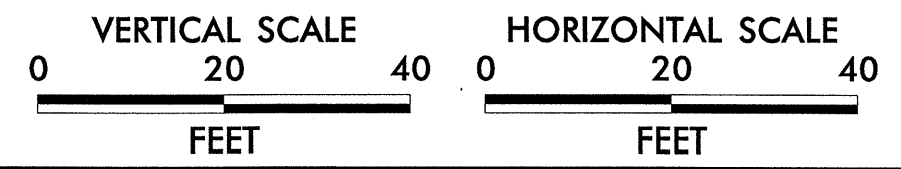
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SUBSURFACE PROFILE RIGHT OF -L-		
ROBERTA ROAD EXTENSION OVER NS/NCRR FROM STALLINGS RD. (SR 1161) TO NC 49 CABARRUS COUNTY, NC		
DECEMBER, 2012	PROJECT NO.: G11027.00	SHEET 2 OF 2



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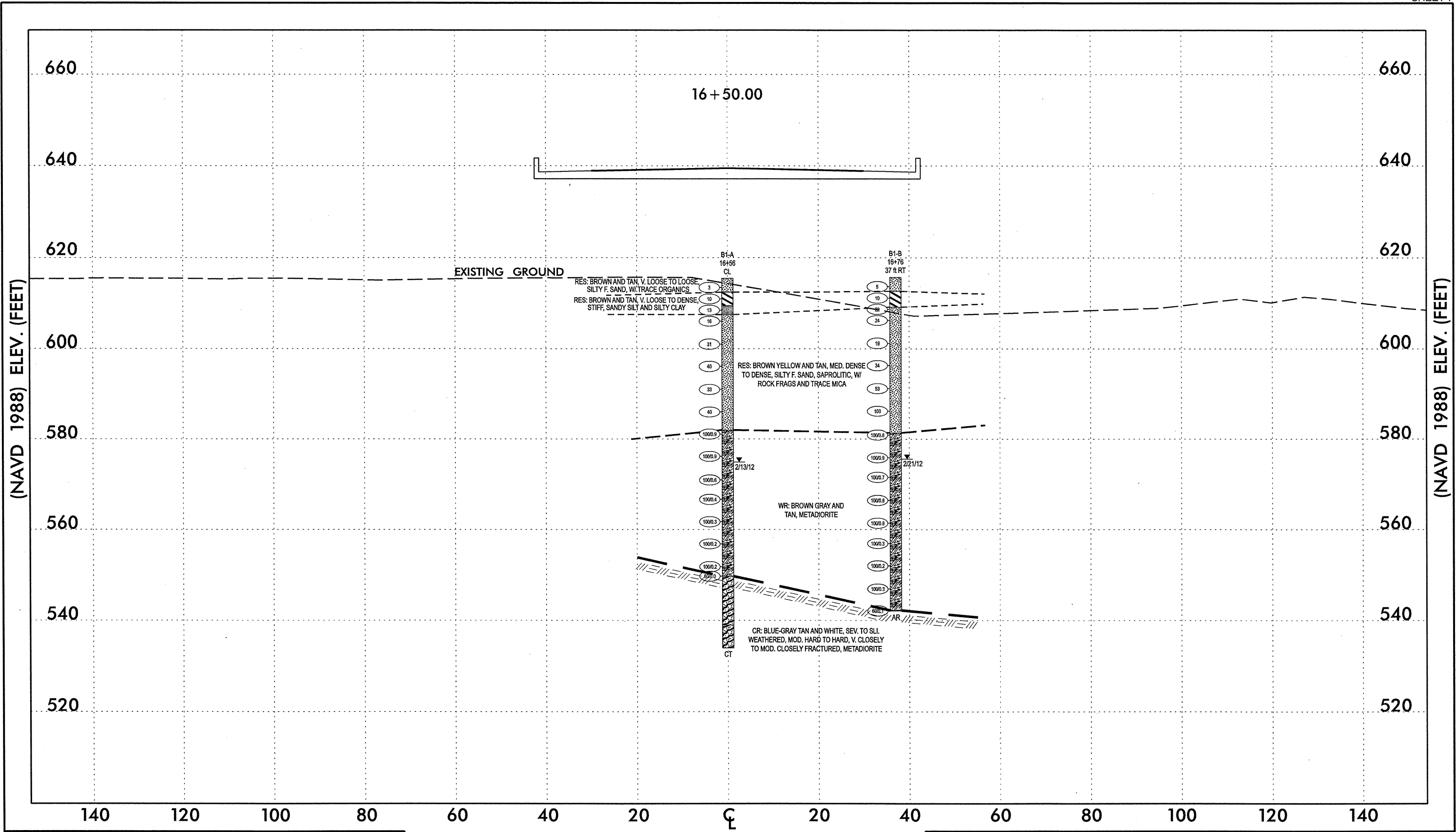
- GROUNDLINE PROFILE OF TAKEN FROM ELECTRONIC DRAWING FILES PROVIDED BY BAKER, DATED JUNE 28, 2012
- INFERRED STRATIGRAPHY IS DRAWN THROUGH THE BORINGS WITH BOTH PROJECTED ONTO THE PROFILE
- BRIDGE SKEW: 90 DEGREES



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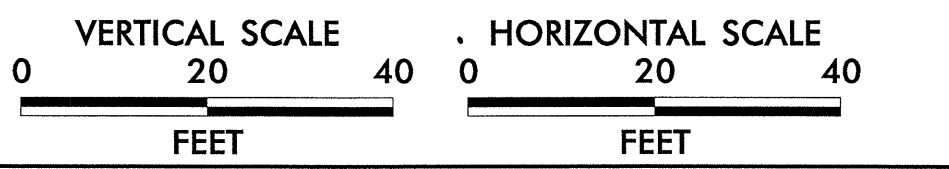
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SUBSURFACE CROSS SECTION END BENT 1		
ROBERTA ROAD EXTENSION OVER NSNCR FROM STALLINGS RD. (SR 1161) TO NC 49 CABARRUS COUNTY, NC		
DECEMBER, 2012	PROJECT NO.: G11027.00	SHEET 1 OF 4



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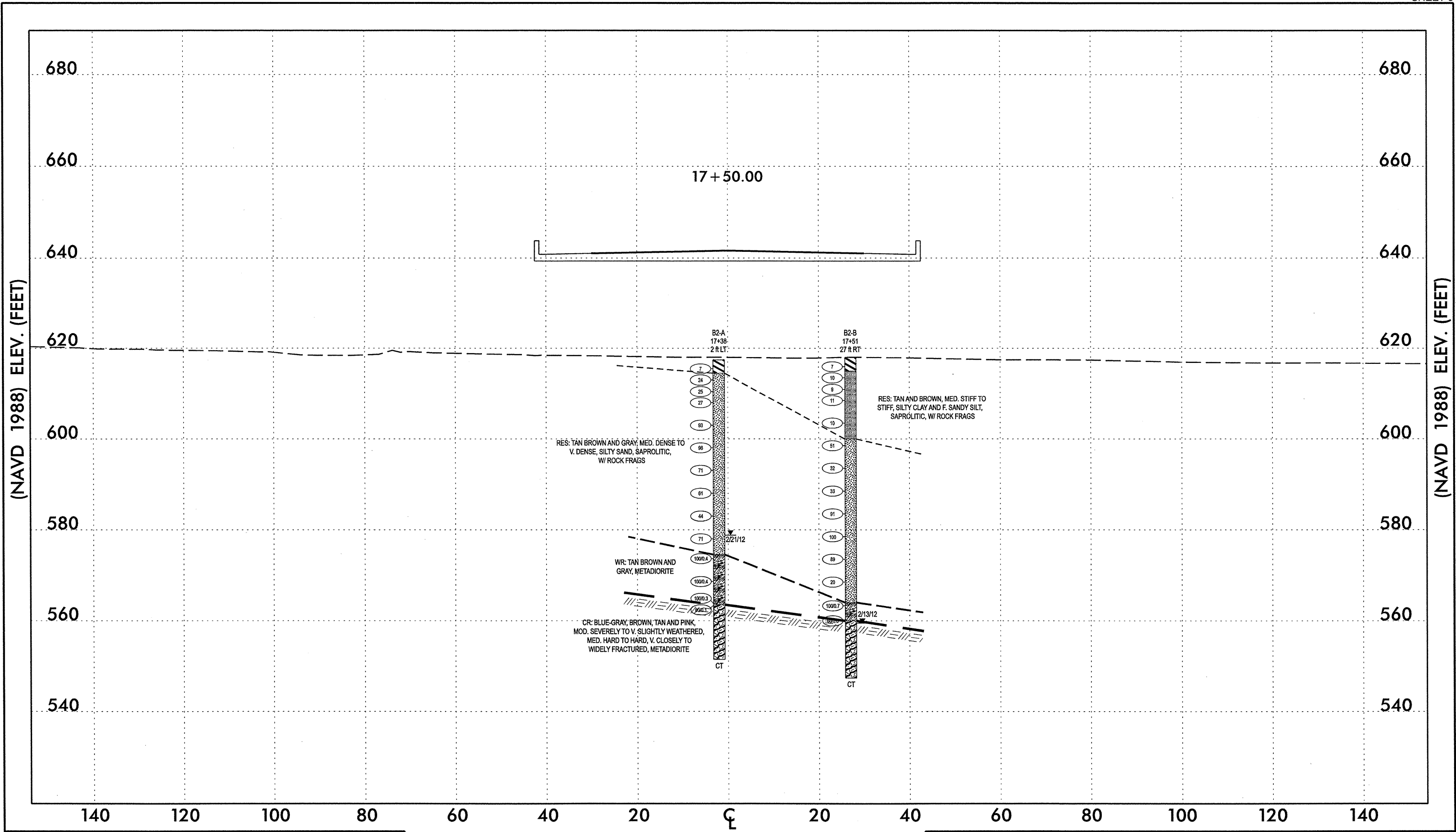
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- INFERRED STRATIGRAPHY IS DRAWN THROUGH THE BORINGS WITH BOTH PROJECTED ONTO THE PROFILE
- BRIDGE SKEW: 90 DEGREES



FALCON ENGINEERING, INC.
1210 TRINITY ROAD, SUITE 110
RALEIGH, NC 27607

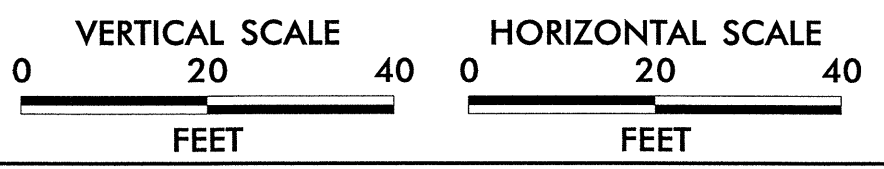
PHONE: 919.871.0800
FAX: 919.871.0803

SUBSURFACE CROSS SECTION INTERIOR BENT 1		
ROBERTA ROAD EXTENSION OVER NSNCRR FROM STALLINGS RD. (SR 1161) TO NC 49 CABARRUS COUNTY, NC		
DECEMBER, 2012	PROJECT NO.: G11027.00	SHEET 2 OF 4



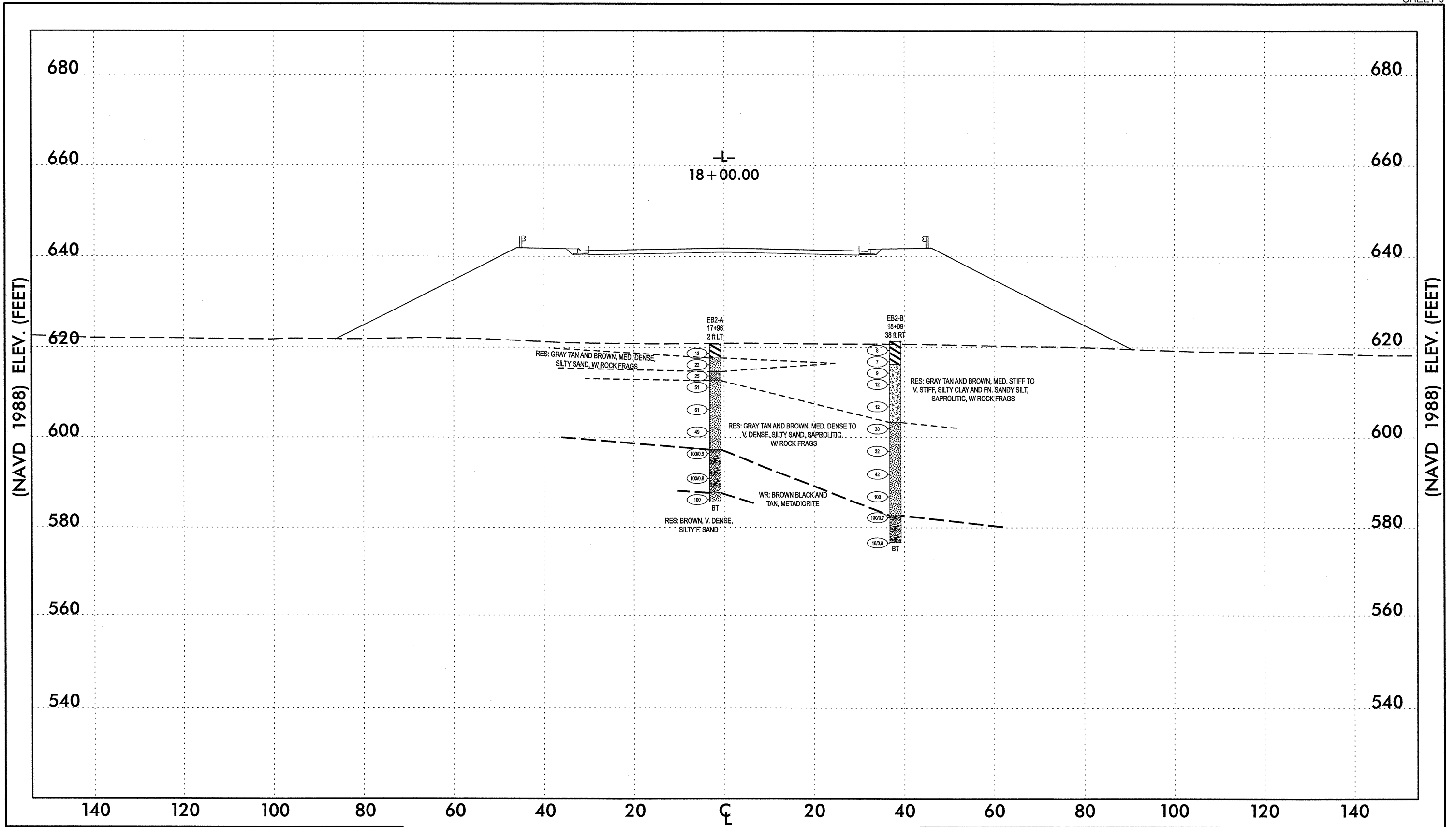
NOTES:

- GROUNDLINE PROFILE OF TAKEN FROM ELECTRONIC DRAWING FILES PROVIDED BY BAKER, DATED JUNE 28, 2012
- INFERRED STRATIGRAPHY IS DRAWN THROUGH THE BORINGS WITH BOTH PROJECTED ONTO THE PROFILE
- BRIDGE SKEW: 90 DEGREES



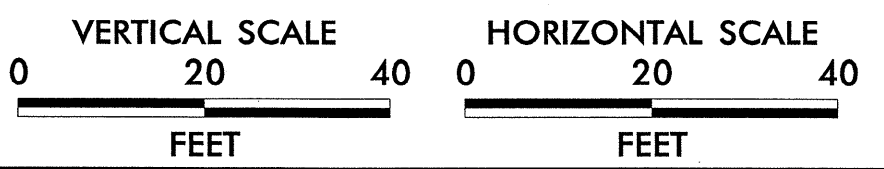
FALCON ENGINEERING, INC.
1210 TRINITY ROAD, SUITE 110
RALEIGH, NC 27607
PHONE: 919.871.0800
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SUBSURFACE CROSS SECTION INTERIOR BENT 2		
ROBERTA ROAD EXTENSION OVER NSNCR FROM STALLINGS RD. (SR 1161) TO NC 49 CABARRUS COUNTY, NC		
DECEMBER, 2012	PROJECT NO.: G11027.00	SHEET 3 OF 4



NOTES:

- GROUNDLINE PROFILE OF TAKEN FROM ELECTRONIC DRAWING FILES PROVIDED BY BAKER, DATED JUNE 28, 2012
- INFERRED STRATIGRAPHY IS DRAWN THROUGH THE BORINGS WITH BOTH PROJECTED ONTO THE PROFILE
- BRIDGE SKEW: 90 DEGREES



FALCON ENGINEERING, INC.
1210 TRINITY ROAD, SUITE 110
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SUBSURFACE CROSS SECTION END BENT 2		
ROBERTA ROAD EXTENSION OVER NSNCRR FROM STALLINGS RD. (SR 1161) TO NC 49 CABARRUS COUNTY, NC		
DECEMBER, 2012	PROJECT NO.: G11027.00	SHEET 2 OF 2



NCDOT GEOTECHNICAL ENGINEERING UNIT
BORELOG REPORT

WBS 50000.1.STR09T1B		TIP P-5208D		COUNTY CABARRUS		GEOLOGIST T. EVANS										
SITE DESCRIPTION ROBERTA RD. EXTENSION OVER NS/NCRR FROM STALLINGS RD. (SR 1161) TO NC 49							GROUND WTR (ft)									
BORING NO.	STATION	OFFSET	ALIGNMENT			0 HR.	34.0									
EB1-A	15+72	2 ft LT	-L-			24 HR.	33.8									
COLLAR ELEV.	TOTAL DEPTH	NORTHING	EASTING													
609.1 ft	44.1 ft	574,388	1,508,508													
DRILL RIG/HAMMER EFF./DATE TRI0055 CME-55 70% 12/08/2011				DRILL METHOD H.S. Augers		HAMMER TYPE Automatic										
DRILLER R. TOOTHMAN		START DATE 02/07/12	COMP. DATE 02/08/12	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						
610														609.1	GROUND SURFACE: 6" TOPSOIL	0.0
605	608.1	1.0	2	3	3									603.1	RESIDUAL BROWN BLACK AND TAN, MED. STIFF TO STIFF, F. SANDY SILTY CLAY (A-7-5) W/ BLACK ROCK FRAGS	6.0
600	605.6	3.5	3	5	6									603.1	TAN BLACK AND YELLOW, MED. DENSE TO V. DENSE, SILTY SAND (A-2-4) W/ ROCK FRAGS	
	603.1	6.0	9	12	19											
	600.6	8.5	7	13	17											
595	595.6	13.5	6	12	13											
590	590.6	18.5	13	13	17											
585	585.6	23.5	13	18	39											
580	580.6	28.5	24	33	53											
575	575.6	33.5	57	43/0.2										575.6	WEATHERED ROCK BROWN GRAY AND TAN, METADIORITE, W/ ROCK FRAGS	33.5
570	570.6	38.5	100/0.5													
565	565.6	43.5	75	25/0.1										565.0	Boring Terminated at Elevation 565.0 ft IN WR: METADIORITE	44.1

WBS 50000.1.STR09T1B		TIP P-5208D		COUNTY CABARRUS		GEOLOGIST T. EVANS										
SITE DESCRIPTION ROBERTA RD. EXTENSION OVER NS/NCRR FROM STALLINGS RD. (SR 1161) TO NC 49							GROUND WTR (ft)									
BORING NO.	STATION	OFFSET	ALIGNMENT			0 HR.	CI @ 25.5									
EB1-B	15+82	38 ft RT	-L-			24 HR.	CI @ 25.3									
COLLAR ELEV.	TOTAL DEPTH	NORTHING	EASTING													
610.5 ft	30.0 ft	574,403	1,508,546													
DRILL RIG/HAMMER EFF./DATE TRI0055 CME-55 70% 12/08/2011				DRILL METHOD H.S. Augers		HAMMER TYPE Automatic										
DRILLER R. TOOTHMAN		START DATE 02/08/12	COMP. DATE 02/08/12	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						
615														610.5	GROUND SURFACE: 6" TOPSOIL	0.0
610	609.5	1.0	3	4	6									604.5	RESIDUAL TAN AND BROWN, STIFF, SANDY CLAY (A-7-5) SAPROLITIC	6.0
605	607.0	3.5	4	6	8									604.5	TAN BROWN AND WHITE, MED. DENSE TO DENSE, SILTY SAND (A-2-4) SAPROLITIC, W/ FAT CLAY LAYERS @ 6.5 FT, ROCK FRAGS.	
600	604.5	6.0	15	11	15											
	602.0	8.5	5	7	14											
595	597.0	13.5	14	18	31											
590	592.0	18.5	25	40	60/0.4									591.5	WEATHERED ROCK BROWN GRAY AND TAN, METADIORITE, W/ ROCK FRAGS.	19.0
585	587.0	23.5	36	60	40/0.3									582.5	RESIDUAL BROWN GRAY AND TAN, V. DENSE, SILTY SAND (A-2-4) SAPROLITIC, W/ ROCK FRAGS.	28.0
	582.0	28.5	33	43	57									580.5	Boring Terminated at Elevation 580.5 ft IN RES: SILTY SAND	30.0

NCDOT BORE DOUBLE P-5208D ROBERTA ROAD GRADE SEPARATION.GPJ NC_DOT_GDT 12/10/12

WBS 50000.1.STR09T1B	TIP P-5208D	COUNTY CABARRUS	GEOLOGIST T. EVANS
SITE DESCRIPTION ROBERTA RD. EXTENSION OVER NS/NCRR FROM STALLINGS RD. (SR 1161) TO NC 49			GROUND WTR (ft)
BORING NO. B1-A	STATION 16+56	OFFSET CL	ALIGNMENT -L-
COLLAR ELEV. 615.5 ft	TOTAL DEPTH 81.5 ft	NORTHING 574,469	EASTING 1,508,498
DRILL RIG/HAMMER EFF./DATE TRI0055 CME-55 70% 12/08/2011		DRILL METHOD Mud Rotary	HAMMER TYPE Automatic
DRILLER R. TOOTHMAN	START DATE 02/08/12	COMP. DATE 02/10/12	SURFACE WATER DEPTH N/A

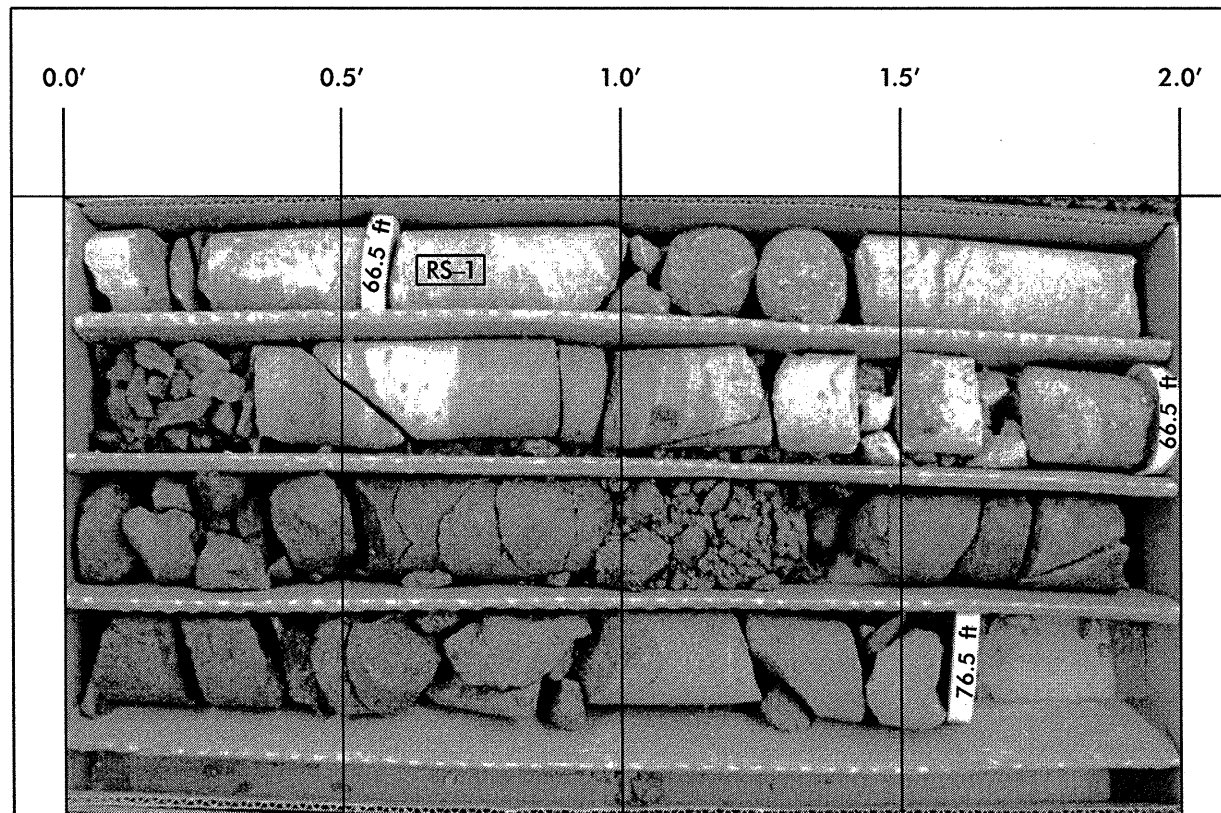
ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT					SAMP. NO.	LOG	SOIL AND ROCK DESCRIPTION	DEPTH (ft)
			0.5ft	0.5ft	0.5ft	0	25	50	75	100				
620														
615	614.5	1.0	2	2	1								615.5 GROUND SURFACE: 12" TOPSOIL	0.0
610	612.0	3.5	2	5	5								RESIDUAL BROWN, V. LOOSE, SILTY F. SAND (A-2-4) W/ TRACE ORGANICS	3.0
605	609.5	6.0	4	5	8								BROWN AND TAN, STIFF, SILTY CLAY (A-7)	6.0
600	607.0	8.5	4	6	10								BROWN AND TAN, SANDY SILT (A-4)	8.0
595	602.0	13.5	10	14	17								BROWN AND TAN, MED. DENSE TO DENSE, SILTY F. SAND (A-2-4) SAPROLITIC, W/ ROCK FRAGS	
590	597.0	18.5	12	17	23									
585	592.0	23.5	9	14	19									
580	587.0	28.5	12	16	24									
575	582.0	33.5	37	63/0.4									WEATHERED ROCK BROWN GRAY AND TAN, METADIORITE, W/ ROCK FRAGS	33.5
570	577.0	38.5	30	70/0.4										
565	572.0	43.5	29	86	14/0.1									
560	567.0	48.5	100/0.4											
555	562.0	53.5	100/0.3											
550	557.0	58.5	100/0.2											
545	552.0	63.5	100/0.2											
540	549.7	65.8	60/0.0										CRYSTALLINE ROCK BLUE-GRAY TAN AND WHITE, MOD. SEV. TO SEV. WEATHERED, MOD. HARD TO HARD, V. CLOSELY TO CLOSELY FRACTURED, METADIORITE	65.8
535													CRYSTALLINE ROCK BLUE-GRAY, SLI. WEATHERED, HARD, CLOSELY TO MOD. CLOSELY FRACTURED, METADIORITE	76.5
													Boring Terminated at Elevation 534.0 ft IN CR: METADIORITE	81.5

NCDOT BORE SINGLE P-5208D ROBERTA ROAD GRADE SEPARATION.GPJ NC_DOT_GDT_12/10/12

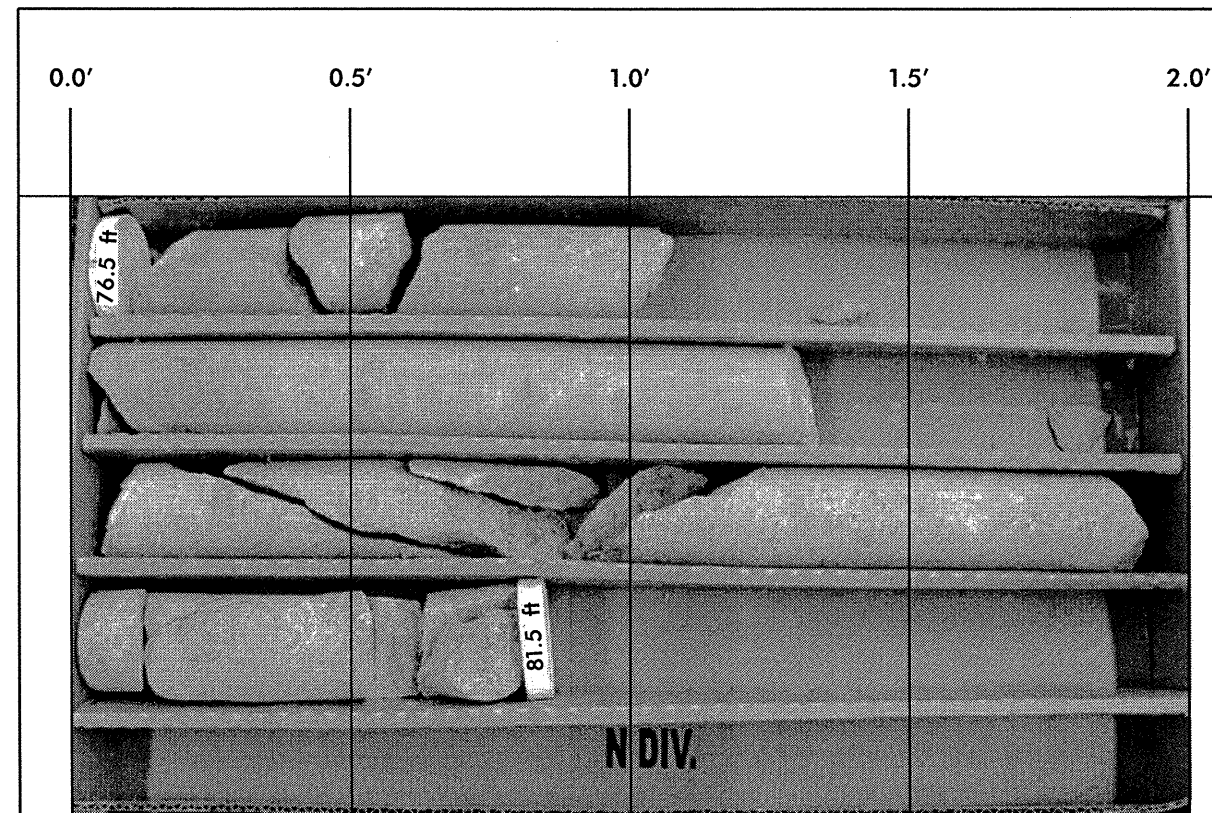
WBS 50000.1.STR09T1B	TIP P-5208D	COUNTY CABARRUS	GEOLOGIST T. EVANS
SITE DESCRIPTION ROBERTA RD. EXTENSION OVER NS/NCRR FROM STALLINGS RD. (SR 1161) TO NC 49			GROUND WTR (ft)
BORING NO. B1-A	STATION 16+56	OFFSET CL	ALIGNMENT -L-
COLLAR ELEV. 615.5 ft	TOTAL DEPTH 81.5 ft	NORTHING 574,469	EASTING 1,508,498
DRILL RIG/HAMMER EFF./DATE TRI0055 CME-55 70% 12/08/2011		DRILL METHOD Mud Rotary	HAMMER TYPE Automatic
DRILLER R. TOOTHMAN	START DATE 02/08/12	COMP. DATE 02/10/12	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. (%)	RCD (ft)		REC. (%)	RCD (ft)			
549.7	549.7	65.8	0.7	2.39/0.7	(0.5)	(0.0)		(7.1)	(0.9)		Begin Coring @ 65.8 ft	
545	544.0	71.5	5.0	5.49/1.0 3.37/1.0 4.26/1.0 3.11/1.0 7.22/1.0	71%	0%	RS-1	66%	8%		CRYSTALLINE ROCK BLUE-GRAY TAN AND WHITE, MOD. SEV. TO SEV. WEATHERED, MOD. HARD TO HARD, V. CLOSELY TO CLOSELY FRACTURED, METADIORITE	65.8
540	539.0	76.5	5.0	2.49/1.0 3.49/1.0 9.01/1.0 3.53/1.0 3.42/1.0	60%	0%		(4.6)	(2.3)		CRYSTALLINE ROCK BLUE-GRAY, SLI. WEATHERED, HARD, CLOSELY TO MOD. CLOSELY FRACTURED, METADIORITE	76.5
535	534.0	81.5	5.0	5.07/1.0 3.31/1.0 3.36/1.0 3.41/1.0 4.43/1.0	92%	46%		92%	46%		Boring Terminated at Elevation 534.0 ft IN CR: METADIORITE	81.5

NCDOT CORE SINGLE P-5208D ROBERTA ROAD GRADE SEPARATION.GPJ NC_DOT_GDT_12/10/12




BORING BI-A, BOX 1 OF 2
65.8 TO 76.5 FT



BORING BI-A, BOX 2 OF 2
76.5 TO 81.5 FT



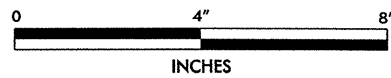
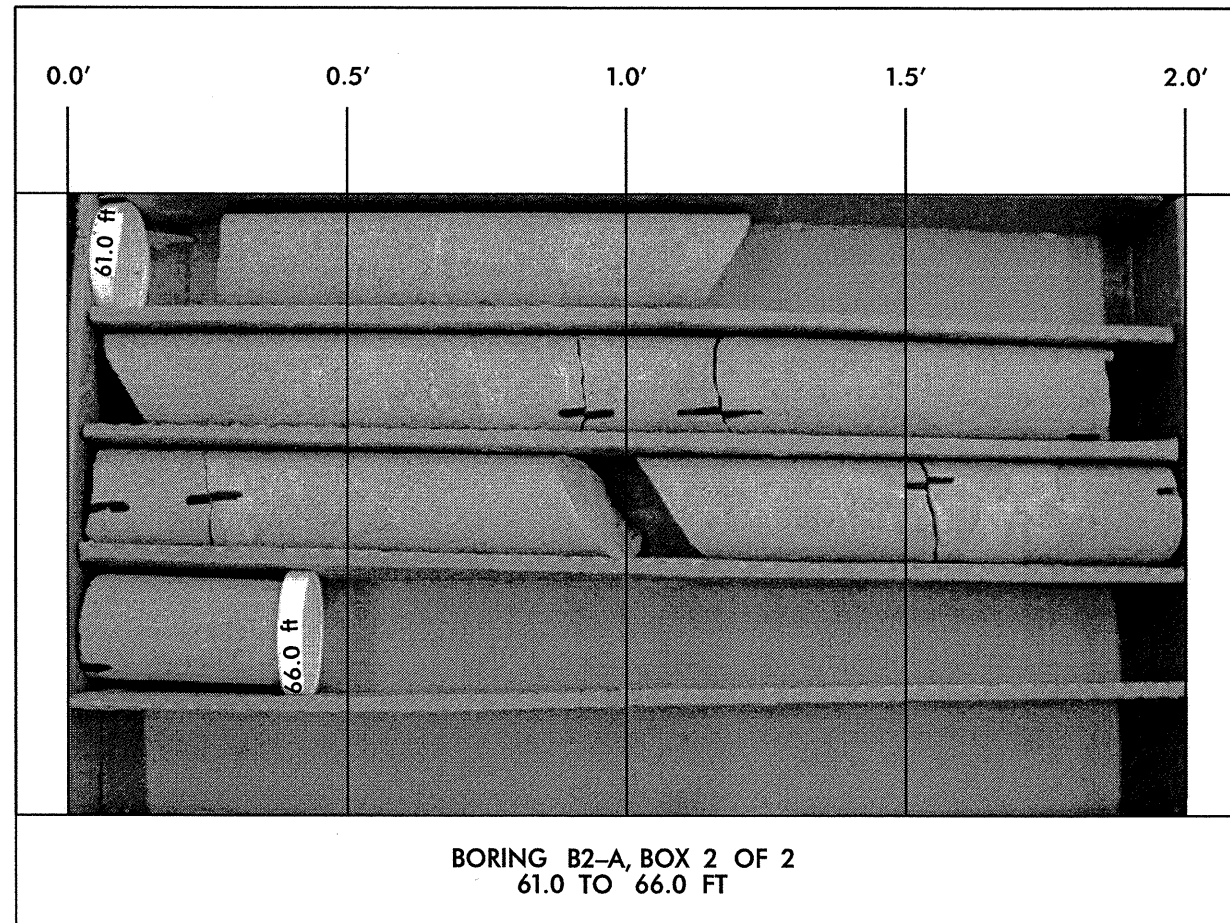
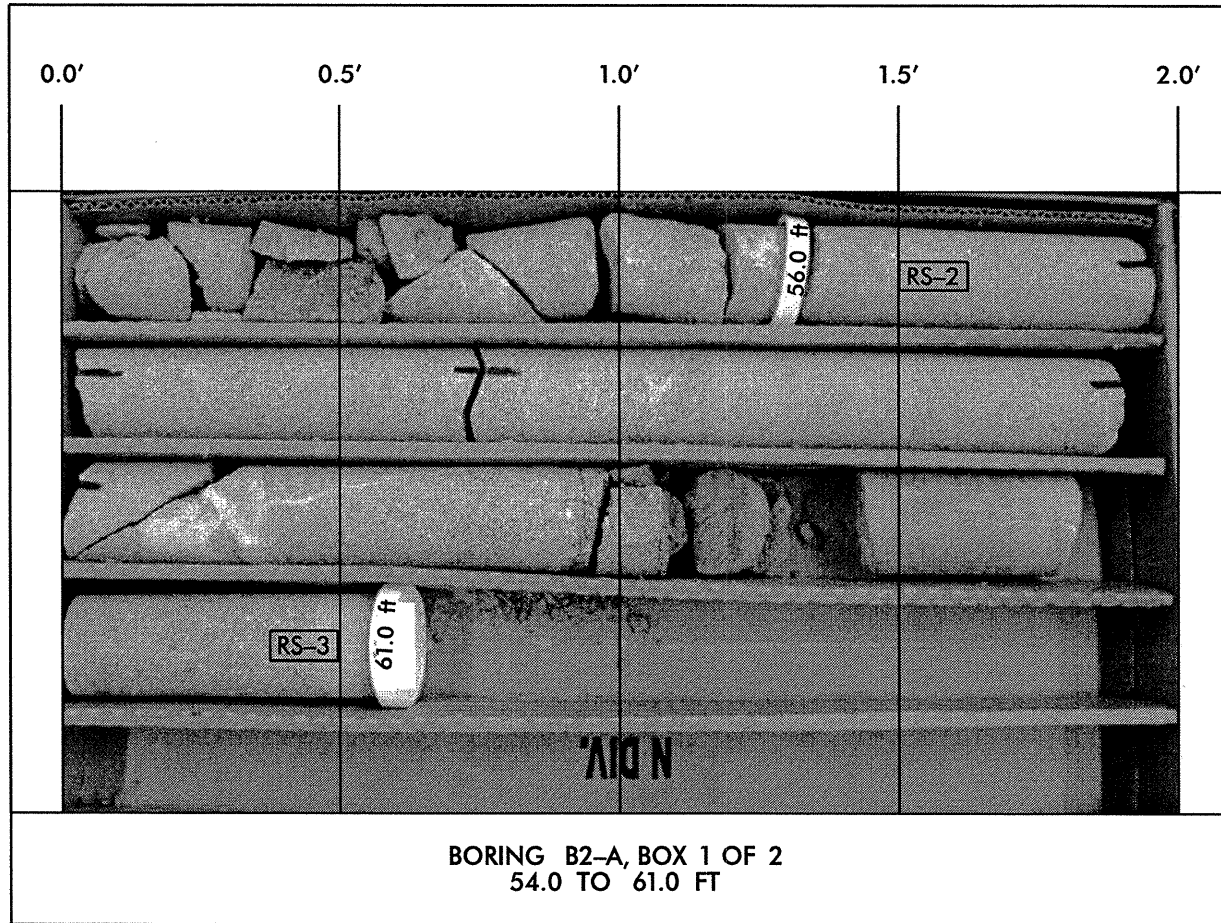
 <p>FALCON ENGINEERING, INC. 1210 TRINITY ROAD RALEIGH, NC 27607 PHONE: 919.871.0800 FAX: 919.871.0803</p>	ROCK CORE PHOTOS	
	ROBERTA RD. EXTENSION OVER NS/NCRR FROM STALLINGS RD. (SR-1161) TO NC-49 CABARRUS COUNTY, NORTH CAROLINA TIP: P-5208D	
DECEMBER 2012	PROJECT NO.: G11027.00	SHEET 2 OF 2




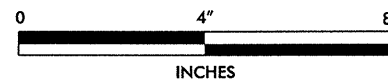
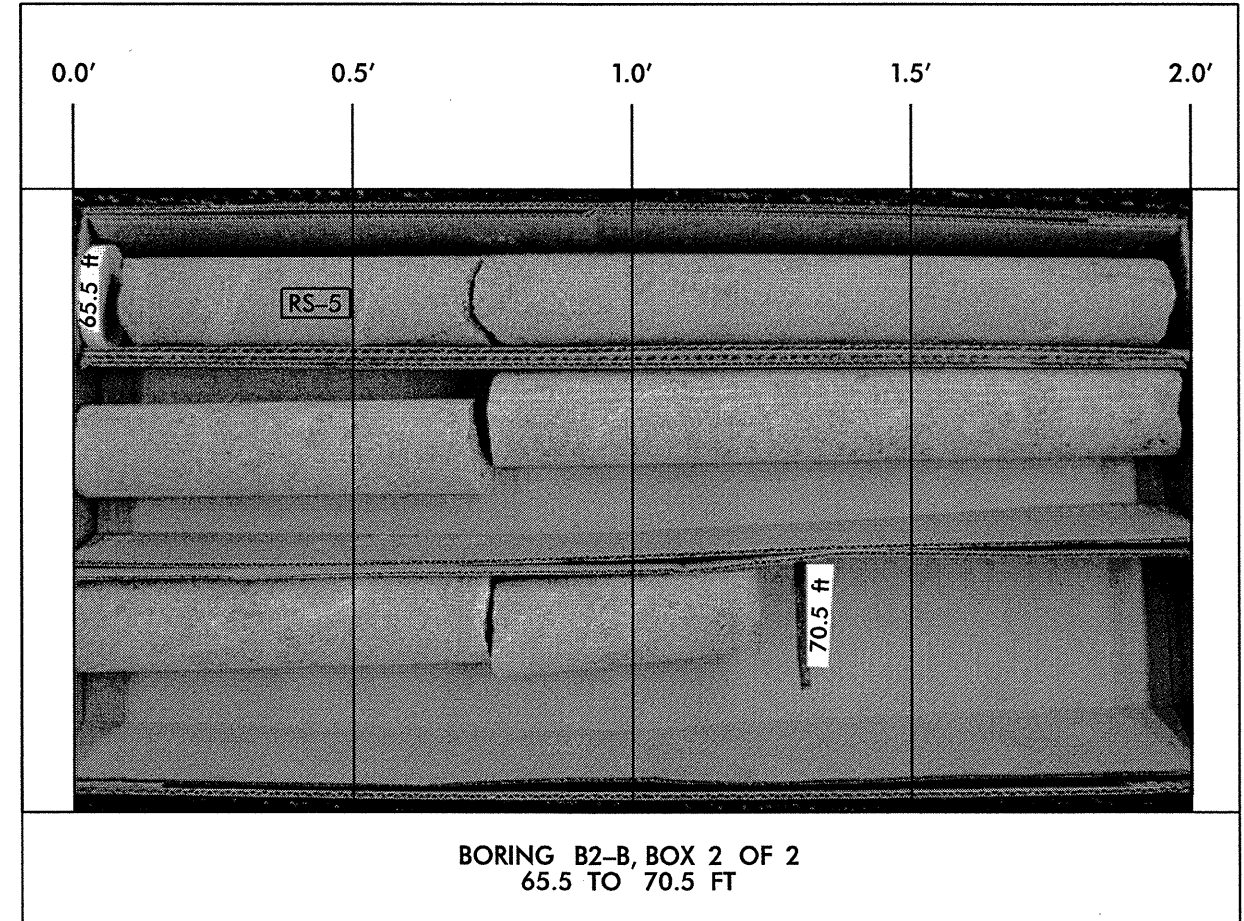
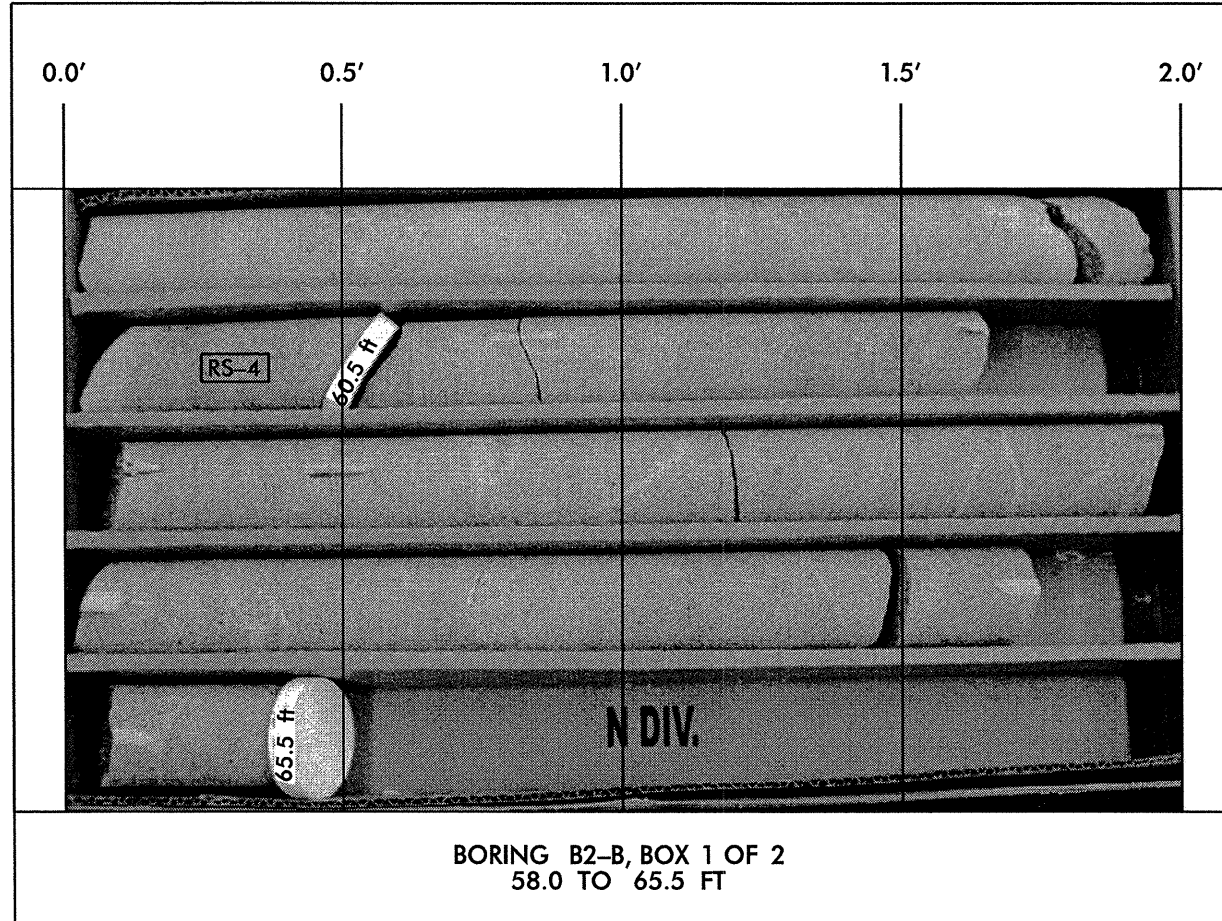
**NCDOT GEOTECHNICAL ENGINEERING UNIT
BORELOG REPORT**


WBS 50000.1.STR09T1B		TIP P-5208D		COUNTY CABARRUS		GEOLOGIST T. EVANS										
SITE DESCRIPTION ROBERTA RD. EXTENSION OVER NS/NCRR FROM STALLINGS RD. (SR 1161) TO NC 49							GROUND WTR (ft)									
BORING NO. B1-B		STATION 16+76		OFFSET 37 ft RT		ALIGNMENT -L-										
COLLAR ELEV. 615.7 ft		TOTAL DEPTH 73.6 ft		NORTHING 574,495		EASTING 1,508,532										
DRILL RIG/HAMMER EFF./DATE TRI0055 CME-55 70% 12/08/2011				DRILL METHOD Mud Rotary		HAMMER TYPE Automatic										
DRILLER R. TOOTHMAN		START DATE 02/10/12		COMP. DATE 02/13/12		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						
620																
615	614.7	1.0	2	2	3									615.7	GROUND SURFACE: 12" TOPSOIL	0.0
	612.2	3.5	3	5	5									612.7	RESIDUAL BROWN, LOOSE, SILTY SAND (A-2-4) W/ TRACE ORGANICS	3.0
610	609.7	6.0	7	10	12									609.2	TAN, STIFF, SILTY CLAY (A-7)	6.5
	607.2	8.5	7	10	14										TAN BROWN AND YELLOW, MED. DENSE TO V. DENSE, SILTY FN. SAND (A-2-4) SAPROLITIC, W/ ROCK FRAGS, TRACE MICA	
605	602.2	13.5	6	9	10											
600	597.2	18.5	9	15	19											
595	592.2	23.5	14	19	34											
590	587.2	28.5	18	38	62											
585	582.2	33.5	23	52	48/0.3									581.7	WEATHERED ROCK BROWN BLACK AND TAN, METADIORITE	34.0
580	577.2	38.5	36	50	50/0.4											
575	572.2	43.5	47	53/0.2												
570	567.2	48.5	35	65/0.3												
565	562.2	53.5	54	46/0.3												
560	557.2	58.5	100/0.3													
555	552.2	63.5	100/0.2													
550	547.2	68.5	100/0.3													
545	542.2	73.5	60/0.1											542.2	CRYSTALLINE ROCK BLUE-GRAY, METADIORITE	73.5
														542.1	Boring Terminated at Elevation 542.1 ft ON CR: METADIORITE	73.6

NCDOT BORE DOUBLE P-5208D ROBERTA ROAD GRADE SEPARATION.GPJ NC DOT.GDT 12/10/12



 <p>FALCON ENGINEERING, INC. 1210 TRINITY ROAD RALEIGH, NC 27607 PHONE: 919.871.0800 FAX: 919.871.0803</p>	ROCK CORE PHOTOS	
	ROBERTA RD. EXTENSION OVER NS/NCRR FROM STALLINGS RD. (SR-1161) TO NC-49 CABARRUS COUNTY, NORTH CAROLINA TIP: P-5208D	
DECEMBER 2012	PROJECT NO.: G11027.00	SHEET 2 OF 2



 <p>FALCON ENGINEERING, INC. 1210 TRINITY ROAD RALEIGH, NC 27607 PHONE: 919.871.0800 FAX: 919.871.0803</p>	ROCK CORE PHOTOS	
	ROBERTA RD. EXTENSION OVER NS/NCRR FROM STALLINGS RD. (SR-1161) TO NC-49 CABARRUS COUNTY, NORTH CAROLINA TIP.: P-5208D	
DECEMBER 2012	PROJECT NO.: G11027.00	SHEET 2 OF 2

AASHTO SOIL CLASSIFICATION AND GRADATION SHEET

**ROBERTA ROAD EXTENSION OVER NS/NCRR FROM
STALLINGS ROAD (SR 1161) TO NC 49**

WBS NO.: 50000.1.STR09T1B, TIP NO.: P-5208D

CABARRUS COUNTY, NORTH CAROLINA

FALCON ENGINEERING, INC. PROJECT NO: G11027.00

BORING			SAMPLE			TOTAL SAMPLE			Atterberg Limit Test Results			Natural Moisture Content
AASHTO Classification			PERCENT PASSING									%
STATION	OFFSET (FEET)	DEPTH (FEET)	#10	#40	#200	LL	PL	PI				
EB1-A		SS-19	98	88	73	67	34	33				34.5
A-7-5												
15+72	2 ft. LT.	1.0 - 2.5										
EB1-B		SS-20	98	86	61	56	30	26				31.4
A-7-5												
15+82	38 ft. RT.	3.5 - 5.0										
EB2-B		SS-21	100	92	62	56	45	11				49.7
A-7-5												
18+09	38 ft. RT.	1.0 - 2.5										
EB2-B		SS-22	99	90	66	48	38	10				34.1
A-5												
18+09	38 ft. RT.	1.0 - 2.5										

LABORATORY SUMMARY SHEET FOR ROCK CORE SAMPLES

**ROBERTA ROAD EXTENSION OVER NS/NCRR FROM
STALLINGS ROAD (SR 1161) TO NC 49**

WBS NO.: 50000.1.STR09T1B, TIP NO.: P-5208D

MECKLENBURG COUNTY, NORTH CAROLINA

FALCON ENGINEERING, INC. PROJECT NO: G11027.00

Sample No.	Boring	Depth (ft)	Rock Type	Geologic Map Unit	Run RQD	Length (ft)	Diameter (ft)	Unit Weight (PCF)	Unconfined Compressive Strength (PSI)	Young's Modulus (PSI)	Splitting Tensile Strength (PSI)
RS-1	B1-A	67.5-69.0	Metadiorite	PzZm	18%	0.37	0.17	175.2	14,673	3,398,013	-
RS-2	B2-A	56.1-56.8	Metadiorite	PzZm	84%	0.36	0.17	183.3	9,649	3,484,859	-
RS-3	B2-A	60.3-61.1	Metadiorite	PzZm	84%	0.36	0.17	186.1	12,051	2,345,641	-
RS-4	B2-B	60.0-60.5	Metadiorite	PzZm	98%	0.34	0.17	178.7	12,305	2,949,611	-
RS-5	B2-B	65.5-66.2	Metadiorite	PzZm	100%	0.37	0.17	180.8	5,665	1,578,093	-



PHOTO TAKEN OF AREA JUST SOUTH OF END BENT 1. BORINGS EB1-A AND EB1-B ARE SHOWN AT TRAFFIC CONE LOCATIONS.



PHOTO IS TAKEN FROM NEAR BENT 1, JUST NORTH OF RR TRACKS. END BENT 1 BORINGS ARE SHOWN IN BACKGROUND.

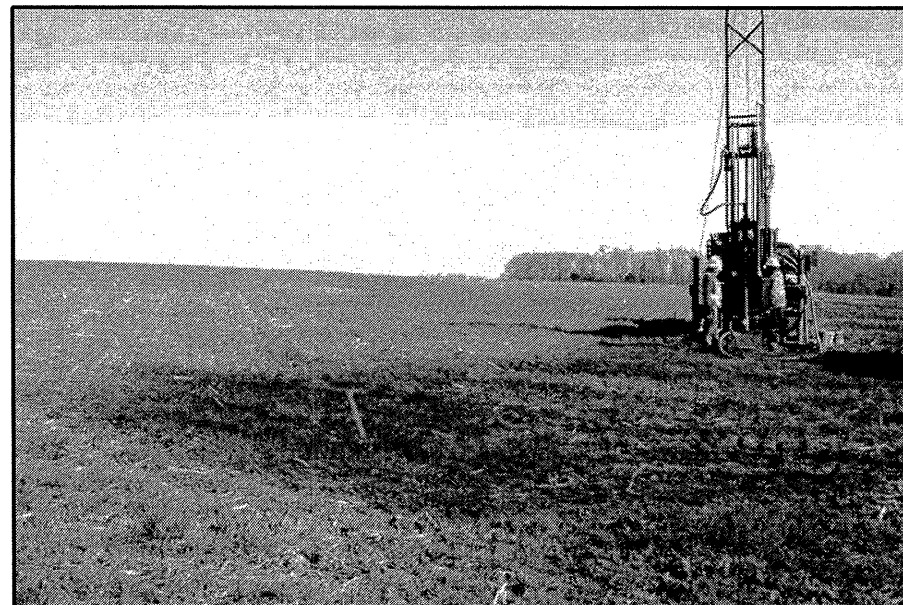



PHOTO IS TAKEN NEAR BENT 2. BORING B2-A IS SHOWN AT STAKE IN FOREGROUND AND BORING B2-B IS BEING DRILLED.



PHOTO TAKEN WITHIN EXISTING FIELD APPROXIMATELY 200 FEET NORTH (UPSTATION) FROM PROPOSED END BENT 2.

	FALCON ENGINEERING, INC. 1210 TRINITY ROAD RALEIGH, NC 27607 PHONE: 919.871.0800 FAX: 919.871.0803	SITE PHOTOS	
		ROBERTA RD. EXTENSION OVER NS/NCRR FROM STALLINGS RD. (SR-1161) TO NC-49 CABARRUS COUNTY, NORTH CAROLINA TIP: P-5208D	
		DECEMBER 2012	PROJECT NO.: G11027.00