

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	BP12.R014	1	8

REFERENCE: BP12.R014

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

STRUCTURE

SUBSURFACE INVESTIGATION

COUNTY IREDELL

PROJECT DESCRIPTION REPLACE BRIDGE NO. 221 ON
ON JOSEY ROAD (SR 1886) OVER PATTERSON
CREEK

SITE DESCRIPTION _____

CONTENTS

<u>SHEET NO.</u>	<u>DESCRIPTION</u>
1	TITLE SHEET
2, 2A	LEGEND
3	BORING LOCATION PLAN
4-7	BORING LOGS

PERSONNEL

GOODNIGHT, D.J.

TRIGON

INVESTIGATED BY GOODNIGHT, D.J.

DRAWN BY LANE, R. W.

CHECKED BY HUNSBERGER, W. S.

SUBMITTED BY FALCON ENG.

DATE JULY 2023

CAUTION NOTICE

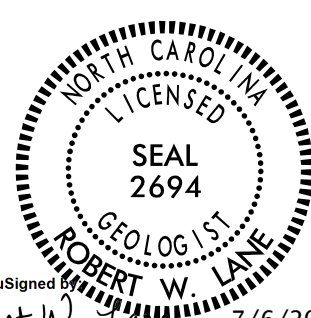
THE SUBSURFACE INFORMATION AND THE SUBSURFACE INVESTIGATION ON WHICH IT IS BASED WERE MADE FOR THE PURPOSE OF PREPARING THE SCOPE OF WORK TO BE INCLUDED IN THE REQUEST FOR PROPOSAL. THE VARIOUS FIELD BORING LOGS, ROCK CORES AND SOIL TEST DATA AVAILABLE MAY BE REVIEWED OR INSPECTED IN RALEIGH BY CONTACTING 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.

PROJECT: NA



DocuSigned by
Robert W. Lane 7/6/2023

12F41BG4B29D44F
 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





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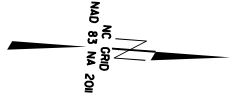
SOIL DESCRIPTION										GRADATION																																																																																																																																						
SOIL IS CONSIDERED UNCONSOLIDATED, SEMI-CONSOLIDATED, OR WEATHERED EARTH MATERIALS THAT CAN BE PENETRATED WITH A CONTINUOUS FLIGHT 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, VERY STIFF, GRAY, SILTY CLAY, MOIST WITH INTERBEDDED FINE SAND LAYERS, HIGHLY PLASTIC, A-7-6										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.																																																																																																																																						
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**NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
GEOTECHNICAL ENGINEERING UNIT**

SUBSURFACE INVESTIGATION

SOIL AND ROCK LEGEND, TERMS, SYMBOLS, AND ABBREVIATIONS (PAGE 2 OF 2)

ROCK DESCRIPTION		TERMS AND DEFINITIONS	
<p>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. 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:</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, 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 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 (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.</p>	
<p>WEATHERED ROCK (WR)</p> 	<p>NON-COASTAL PLAIN MATERIAL THAT WOULD YIELD SPT N VALUES > 100 BLOWS PER FOOT IF TESTED.</p>		
<p>CRYSTALLINE ROCK (CR)</p> 	<p>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)</p> 	<p>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)</p> 	<p>COASTAL PLAIN SEDIMENTS CEMENTED INTO ROCK, BUT MAY NOT YIELD SPT REFUSAL. ROCK TYPE INCLUDES LIMESTONE, SANDSTONE, CEMENTED SHELL BEDS, ETC.</p>		
WEATHERING			
<p>FRESH</p>	<p>ROCK FRESH, CRYSTALS BRIGHT, FEW JOINTS MAY SHOW SLIGHT STAINING. ROCK RINGS UNDER HAMMER IF CRYSTALLINE.</p>		
<p>VERY SLIGHT (V SL.)</p>	<p>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.</p>		
<p>SLIGHT (SL.)</p>	<p>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.</p>		
<p>MODERATE (MOD.)</p>	<p>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.</p>		
<p>MODERATELY SEVERE (MOD. SEV.)</p>	<p>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></p>		
<p>SEVERE (SEV.)</p>	<p>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, WOULD YIELD SPT N VALUES > 100 BPF</i></p>		
<p>VERY SEVERE (V SEV.)</p>	<p>ALL ROCK EXCEPT QUARTZ DISCOLORED OR STAINED. ROCK FABRIC ELEMENTS ARE DISCERNIBLE BUT MASS IS EFFECTIVELY REDUCED TO SOIL STATUS, WITH ONLY FRAGMENTS OF STRONG ROCK REMAINING. SAPROLITE IS AN EXAMPLE OF ROCK WEATHERED TO A DEGREE THAT ONLY MINOR VESTIGES OF ORIGINAL ROCK FABRIC REMAIN. <i>IF TESTED, WOULD YIELD SPT N VALUES < 100 BPF</i></p>		
<p>COMPLETE</p>	<p>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.</p>		
ROCK HARDNESS			
<p>VERY HARD</p>	<p>CANNOT BE SCRATCHED BY KNIFE OR SHARP PICK. BREAKING OF HAND SPECIMENS REQUIRES SEVERAL HARD BLOWS OF THE GEOLOGIST'S PICK.</p>		
<p>HARD</p>	<p>CAN BE SCRATCHED BY KNIFE OR PICK ONLY WITH DIFFICULTY. HARD HAMMER BLOWS REQUIRED TO DETACH HAND SPECIMEN.</p>		
<p>MODERATELY HARD</p>	<p>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.</p>		
<p>MEDIUM HARD</p>	<p>CAN BE GROOVED 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.</p>		
<p>SOFT</p>	<p>CAN BE GROOVED 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.</p>		
<p>VERY SOFT</p>	<p>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.</p>		
FRACTURE SPACING		BEDDING	
TERM	SPACING	TERM	THICKNESS
<p>VERY WIDE</p>	<p>MORE THAN 10 FEET</p>	<p>VERY THICKLY BEDDED</p>	<p>4 FEET</p>
<p>WIDE</p>	<p>3 TO 10 FEET</p>	<p>THICKLY BEDDED</p>	<p>1.5 - 4 FEET</p>
<p>MODERATELY CLOSE</p>	<p>1 TO 3 FEET</p>	<p>THINLY BEDDED</p>	<p>0.16 - 1.5 FEET</p>
<p>CLOSE</p>	<p>0.16 TO 1 FOOT</p>	<p>VERY THINLY BEDDED</p>	<p>0.03 - 0.16 FEET</p>
<p>VERY CLOSE</p>	<p>LESS THAN 0.16 FEET</p>	<p>THICKLY LAMINATED</p>	<p>0.008 - 0.03 FEET</p>
		<p>THINLY LAMINATED</p>	<p>< 0.008 FEET</p>
INDURATION			
<p>FRIABLE</p>	<p>RUBBING WITH FINGER FREES NUMEROUS GRAINS; GENTLE BLOW BY HAMMER DISINTEGRATES SAMPLE.</p>		
<p>MODERATELY INDURATED</p>	<p>GRAINS CAN BE SEPARATED FROM SAMPLE WITH STEEL PROBE; BREAKS EASILY WHEN HIT WITH HAMMER.</p>		
<p>INDURATED</p>	<p>GRAINS ARE DIFFICULT TO SEPARATE WITH STEEL PROBE; DIFFICULT TO BREAK WITH HAMMER.</p>		
<p>EXTREMELY INDURATED</p>	<p>SHARP HAMMER BLOWS REQUIRED TO BREAK SAMPLE; SAMPLE BREAKS ACROSS GRAINS.</p>		
		<p>BENCH MARK: BENCH MARK BL-2; N: 798318, 9769, E: 1453292, 5017</p> <p style="text-align: right;">ELEVATION: 806.99 FEET</p>	
<p>NOTES: - FIAD: FILLED IMMEDIATELY AFTER DRILLING.</p>			
<p>DATE: 8-15-14</p>			



KRISTEN D. BUSHEY
AND HUSBAND
JUSTIN C. BUSHEY
DB 2466 PG 646

HARMON SUSAN MATUSZAK
DB 8E PG 544

WOODS

13+00

14+00

PATTERSON CREEK

EB1-A

EB2-A

-BL- 2

← TO TOMLIN MILL RD
(SR1890)

BRIDGE
221

TO OLIN LOOP RD
(SR 1891) →

-L-

SR 1886 JOSEY RD

EB1-B

EB2-B

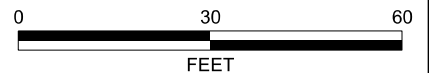
BEGIN BRIDGE
-L- STA.12+95+/-

END BRIDGE
-L- STA.13+85+/-

AND
MS.
HE
AND
TRUST
4

HARMON SUSAN MA
DB 8E PG 544

PATTERSON CREEK



NOTES:

- BRIDGE SKEW: 90°



FALCON ENGINEERING, INC.
1210 TRINITY ROAD, SUITE 110
CARY, NC 27513
PHONE: 919.871.0800
FAX: 919.871.0803

SITE PLAN

REPLACE BRIDGE NO. 221 ON JOSEY ROAD
OVER PATTERSON CREEK
IREDELL COUNTY, NORTH CAROLINA
TIP: BP12.R014
FALCON PROJECT NO.: G18074.04

GEOTECHNICAL BORING REPORT

BORE LOG

WBS N/A	TIP BP12.R014	COUNTY IREDELL	GEOLOGIST GOODNIGHT, D.
SITE DESCRIPTION BRIDGE NO. 221 ON JOSEY RD (SR 1886) OVER PATTERSON CREEK			GROUND WTR (ft)
BORING NO. EB1-A	STATION 12+98	OFFSET 18 ft LT	ALIGNMENT -L-
			0 HR. 12.6
COLLAR ELEV. 807.3 ft	TOTAL DEPTH 38.8 ft	NORTHING 798,215	EASTING 1,453,299
			24 HR. FIAD
DRILL RIG/HAMMER EFF./DATE TRI0055 CME-55 83% 05/09/2022		DRILL METHOD H.S. Augers	HAMMER TYPE Automatic
DRILLER TOOTHMAN, R.	START DATE 04/17/23	COMP. DATE 04/17/23	SURFACE WATER DEPTH N/A

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT					SAMP. NO.	L O G MOI	SOIL AND ROCK DESCRIPTION ELEV. (ft) DEPTH (ft)		
			0.5ft	0.5ft	0.5ft	0	25	50	75	100					
810													807.3	GROUND SURFACE	0.0
805	806.3	1.0											M	ROADWAY EMBANKMENT BROWN, SOFT, SANDY CLAY (A-6) WITH LITTLE GRAVEL	3.0
	803.8	3.5	2	1	1								W	BROWN, SOFT, SANDY SILTY CLAY (A-7) WITH TRACE GRAVEL	5.5
800	801.3	6.0	1	1	1								M	TAN, LOOSE, SILTY SAND (A-2-4) WITH LITTLE GRAVEL AND TRACE CLAY LENSES	8.0
	798.8	8.5	WOH	1	2								M	BROWN, SOFT, SANDY SILTY CLAY (A-7)	12.0
795	793.8	13.5	1	2	3								W	ALLUVIAL TAN-GRAY, MED. STIFF, SANDY SILTY CLAY (A-7)	17.0
	788.8	18.5	5	3	7								Sat.	TAN-BROWN, LOOSE TO MED. DENSE, SLIGHTLY SILTY FINE TO COARSE SAND (A-1-b)	23.0
780	783.8	23.5	10	14	18								M	RESIDUAL TAN AND GRAY, DENSE, SILTY SAND (A-2-4), SAPROLITIC	29.0
	778.8	28.5	24	46	54/0.4									WEATHERED ROCK TAN GRAY AND BROWN, BIOTITE GNEISS	38.8
775	773.8	33.5	60	40/0.2											
	768.8	38.5	100/0.3												

NCDOT BORE SINGLE G18074.04.GPJ NC_DOT.GDT 7/5/23

GEOTECHNICAL BORING REPORT

BORE LOG

WBS N/A	TIP BP12.R014	COUNTY IREDELL	GEOLOGIST GOODNIGHT, D.
SITE DESCRIPTION BRIDGE NO. 221 ON JOSEY RD (SR 1886) OVER PATTERSON CREEK			GROUND WTR (ft)
BORING NO. EB1-B	STATION 12+94	OFFSET 9 ft RT	ALIGNMENT -L-
COLLAR ELEV. 807.8 ft	TOTAL DEPTH 36.9 ft	NORTHING 798,213	EASTING 1,453,327
DRILL RIG/HAMMER EFF./DATE TRI0055 CME-55 83% 05/09/2022	DRILL METHOD H.S. Augers		HAMMER TYPE Automatic
DRILLER TOOTHMAN, R.	START DATE 04/13/23	COMP. DATE 04/13/23	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)
810														807.8	0.0
	806.8	1.0	3	2	2							M	ROADWAY EMBANKMENT BROWN, SOFT TO STIFF, SANDY SILTY CLAY (A-7) WITH TRACE ORGANICS AND TRACE GRAVEL		
805	804.3	3.5	2	2	6							M		802.3	5.5
	801.8	6.0	3	3	9							M	BROWN, MED. DENSE TO LOOSE, SILTY SAND (A-2-4) WITH TRACE GRAVEL & CLAY LENSES		
800	799.3	8.5	2	3	4							M			
	794.3	13.5	1	1	3							M	ALLUVIAL GRAY, SOFT TO MED. STIFF, SANDY SILTY CLAY (A-7)	795.8	12.0
795	789.3	18.5	2	3	4							W	TAN, LOOSE, SILTY SAND (A-2-4)	790.8	17.0
	784.3	23.5	10	17	44							M	COBBLES/GRAVEL LAYER 22'-23'		
790	779.3	28.5	24	32	56							M	RESIDUAL TAN-BROWN AND GRAY, VERY DENSE, SILTY SAND (A-2-4)	784.8	23.0
	774.3	33.5	100/0.2									M		777.8	30.0
785	770.9	36.9	60/0.0									M	WEATHERED ROCK TAN AND GRAY, BIOTITE GNEISS	770.9	36.9
															Boring Terminated with Standard Penetration Test Refusal at Elevation 770.9 ft ON CR: BIOTITE GNEISS

NCDOT BORE SINGLE G18074.04.GPJ NC_DOT.GDT 7/5/23

GEOTECHNICAL BORING REPORT

BORE LOG

WBS N/A	TIP BP12.R014	COUNTY IREDELL	GEOLOGIST GOODNIGHT, D.
SITE DESCRIPTION BRIDGE NO. 221 ON JOSEY RD (SR 1886) OVER PATTERSON CREEK			GROUND WTR (ft)
BORING NO. EB2-A	STATION 13+98	OFFSET 18 ft LT	ALIGNMENT -L-
COLLAR ELEV. 807.3 ft	TOTAL DEPTH 43.3 ft	NORTHING 798,315	EASTING 1,453,292
DRILL RIG/HAMMER EFF./DATE TRI0055 CME-55 83% 05/09/2022		DRILL METHOD H.S. Augers	HAMMER TYPE Automatic
DRILLER TOOTHMAN, R.	START DATE 04/17/23	COMP. DATE 04/17/23	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						
810																
	806.3	1.0	1	2	1									807.3	GROUND SURFACE	0.0
805	803.8	3.5	WOH	WOH	1								M	804.3	ROADWAY EMBANKMENT BROWN, V. LOOSE, SILTY SAND (A-2-4) WITH TRACE GRAVEL AND MICA	3.0
	801.3	6.0											M	801.8	BROWN, V. SOFT, SANDY SILT (A-4) WITH TRACE MICA	5.5
800	798.8	8.5	1	2	1								M		BROWN, SOFT TO MED. STIFF, SANDY CLAY (A-6) WITH TRACE GRAVEL	
	793.8	13.5	WOH	WOH	WOH								M	794.3		13.0
790	788.8	18.5	WOH	WOH	3								Sat.	790.3	ALLUVIAL TAN-GRAY, V. SOFT, SANDY SILT (A-4)	17.0
	783.8	23.5	17	10	14								M	785.3	LIGHT GRAY, V. LOOSE, FINE TO COARSE SAND (A-1-a) WITH TRACE ORGANICS	22.0
785	778.8	28.5	12	24	25								M		RESIDUAL RED-TAN AND GRAY, MED. DENSE, SILTY SAND (A-2-4), SAPROLITIC	
	773.8	33.5	9	36	45								M			
780	768.8	38.5	100/0.4											769.8	WEATHERED ROCK TAN WHITE AND GRAY, BIOTITE GNEISS	37.5
775	764.0	43.3	60/0.0											764.0		43.3
770															Boring Terminated with Standard Penetration Test Refusal at Elevation 764.0 ft ON CR: BIOTITE GNEISS	

NCDOT BORE SINGLE G18074.04.GPJ NC_DOT.GDT 7/5/23

GEOTECHNICAL BORING REPORT

BORE LOG

WBS N/A	TIP BP12.R014	COUNTY IREDELL	GEOLOGIST GOODNIGHT, D.
SITE DESCRIPTION BRIDGE NO. 221 ON JOSEY RD (SR 1886) OVER PATTERSON CREEK			GROUND WTR (ft)
BORING NO. EB2-B	STATION 13+99	OFFSET 9 ft RT	ALIGNMENT -L-
COLLAR ELEV. 807.9 ft	TOTAL DEPTH 43.8 ft	NORTHING 798,318	EASTING 1,453,319
DRILL RIG/HAMMER EFF./DATE TRI0055 CME-55 83% 05/09/2022		DRILL METHOD H.S. Augers	HAMMER TYPE Automatic
DRILLER TOOTHMAN, R.	START DATE 04/13/23	COMP. DATE 04/13/23	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						
810																
	806.9	1.0	2	2	2									807.9	GROUND SURFACE	0.0
805	804.4	3.5	1	2	4									804.9	ROADWAY EMBANKMENT BROWN, SOFT TO MED. STIFF, SANDY, CLAYEY SILT (A-5) WITH TRACE MICA AND GRAVEL	3.0
	801.9	6.0	3	3	3									802.4	BROWN, LOOSE, SILTY SAND (A-2-4) WITH TRACE GRAVEL	5.5
800	799.4	8.5	2	4	5										ALLUVIAL GRAY, V. SOFT, CLAYEY SANDY SILT (A-4) WITH TRACE ORGANICS	
	794.4	13.5	1	1	WOH									795.9	GRAY, LOOSE, FINE TO COARSE SAND (A-1-a) WITH TRACE ORGANICS	12.0
790	789.4	18.5	1	3	3									791.4	RESIDUAL GRAY WHITE TAN AND BLACK, MED. DENSE TO V. DENSE, SILTY SAND (A-2-4), SAPROLITIC, WITH LITTLE MICA	16.5
785	784.4	23.5	8	7	7											
780	779.4	28.5	15	37	33											
775	774.4	33.5	16	18	35											
770	769.4	38.5	100/0.3											771.4	WEATHERED ROCK TAN BLACK BROWN AND GRAY, BIOTITE GNEISS	36.5
765	764.4	43.5	100/0.3											764.1	Boring Terminated at Elevation 764.1 ft IN WR: BIOTITE GNEISS	43.8

NCDOT BORE SINGLE G18074.04.GPJ NC_DOT.GDT 7/5/23