

SEE SHEET 3 FOR PLAN SHEET LAYOUT
AT TIME OF INVESTIGATION

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

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	41153.1.1	1	23

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**ROADWAY
SUBSURFACE INVESTIGATION**

COUNTY GASTON
PROJECT DESCRIPTION I-85/US 321 INTERCHANGE
GEOMETRIC SAFETY IMPROVEMENTS
SPECIAL: STREAM AGGRADATION INVESTIGATION
INVENTORY

CAUTION NOTICE

THE SUBSURFACE INFORMATION AND THE SUBSURFACE INVESTIGATION ON WHICH IT IS BASED WERE MADE FOR THE PURPOSE OF STUDY, PLANNING AND DESIGN, AND NOT FOR CONSTRUCTION OR PAY PURPOSES. THE VARIOUS FIELD BORING LOGS, ROCK CORES AND SOIL TEST DATA AVAILABLE MAY BE REVIEWED OR INSPECTED IN RALEIGH BY CONTACTING THE N.C. DEPARTMENT OF TRANSPORTATION, GEOTECHNICAL ENGINEERING UNIT AT (919) 707-6850. THE SUBSURFACE PLANS AND REPORTS, FIELD BORING LOGS, ROCK CORES AND SOIL TEST DATA ARE NOT PART OF THE CONTRACT.

GENERAL SOIL AND ROCK STRATA DESCRIPTIONS AND INDICATED BOUNDARIES ARE BASED ON A GEOTECHNICAL INTERPRETATION OF ALL AVAILABLE SUBSURFACE DATA AND MAY NOT NECESSARILY REFLECT THE ACTUAL SUBSURFACE CONDITIONS BETWEEN BORINGS OR BETWEEN SAMPLED STRATA WITHIN THE BOREHOLE. THE LABORATORY SAMPLE DATA AND THE IN SITU (IN-PLACE) TEST DATA CAN BE 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.

REFERENCE: I-5000

PROJECT: 41153

PERSONNEL

B. WORLEY, PG

A. STEWART

J. BARE

D. SUTTON

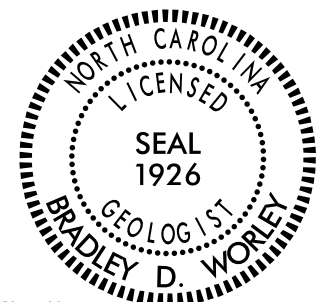
INVESTIGATED BY B. WORLEY, PG

DRAWN BY B. WORLEY, PG

CHECKED BY D. DEWEY, PE

SUBMITTED BY Summit Design and
Engineering Services PLLC

DATE JULY 2016



DocuSigned by:

Bradley D. Worley

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7/25/2016

SIGNATURE

DATE

DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED

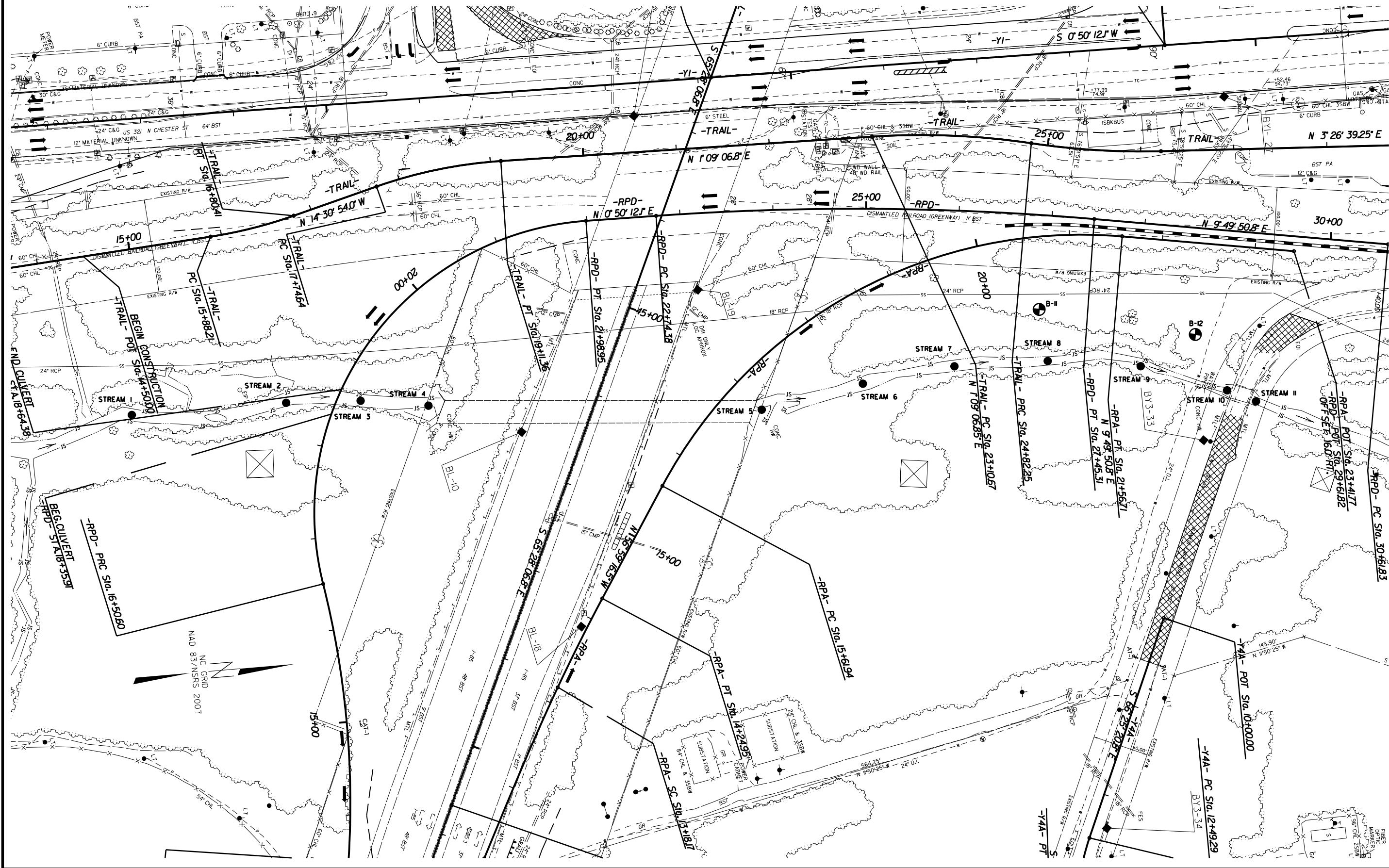
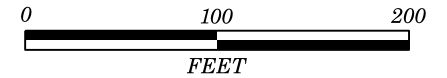
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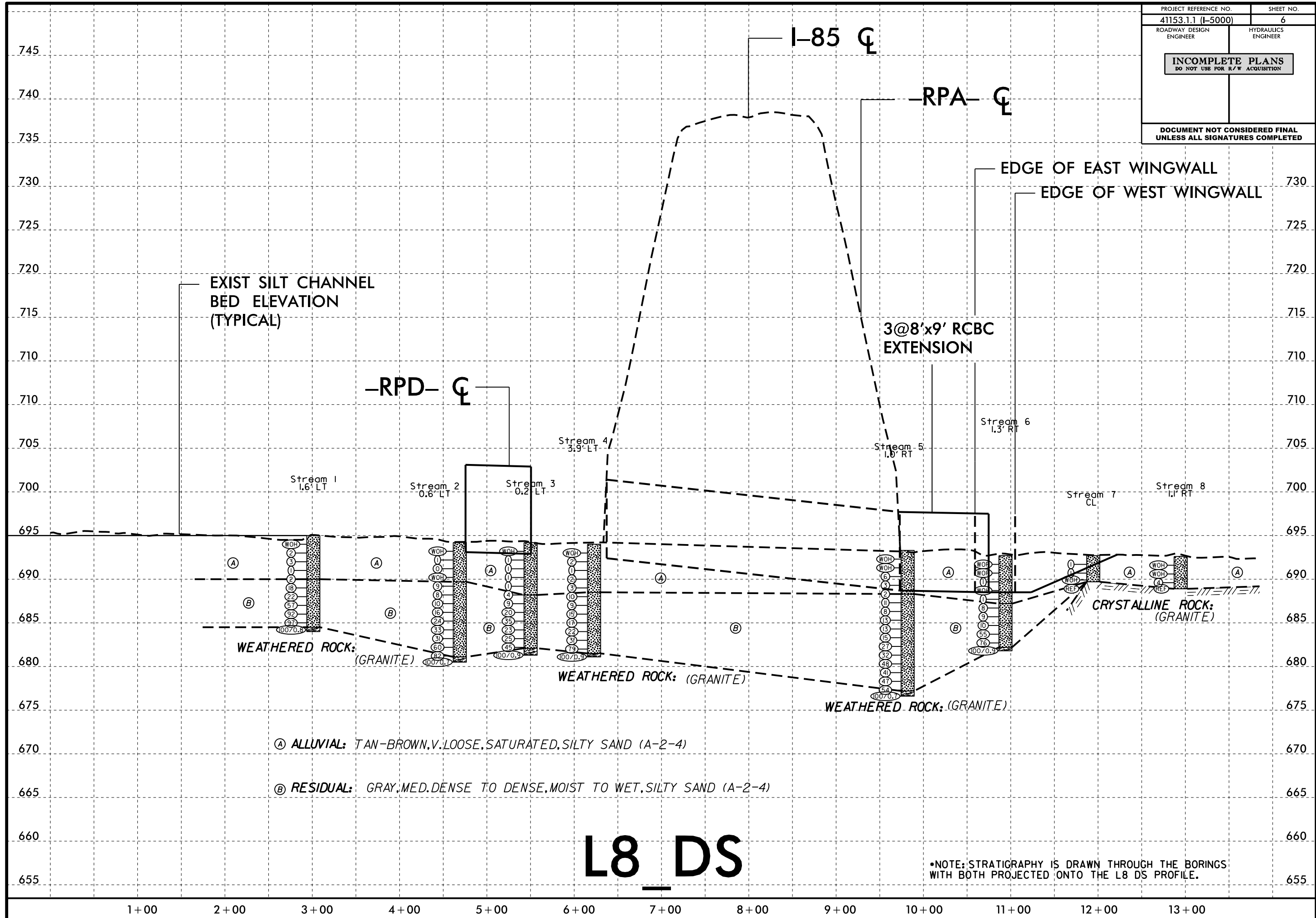
SUBSURFACE INVESTIGATION

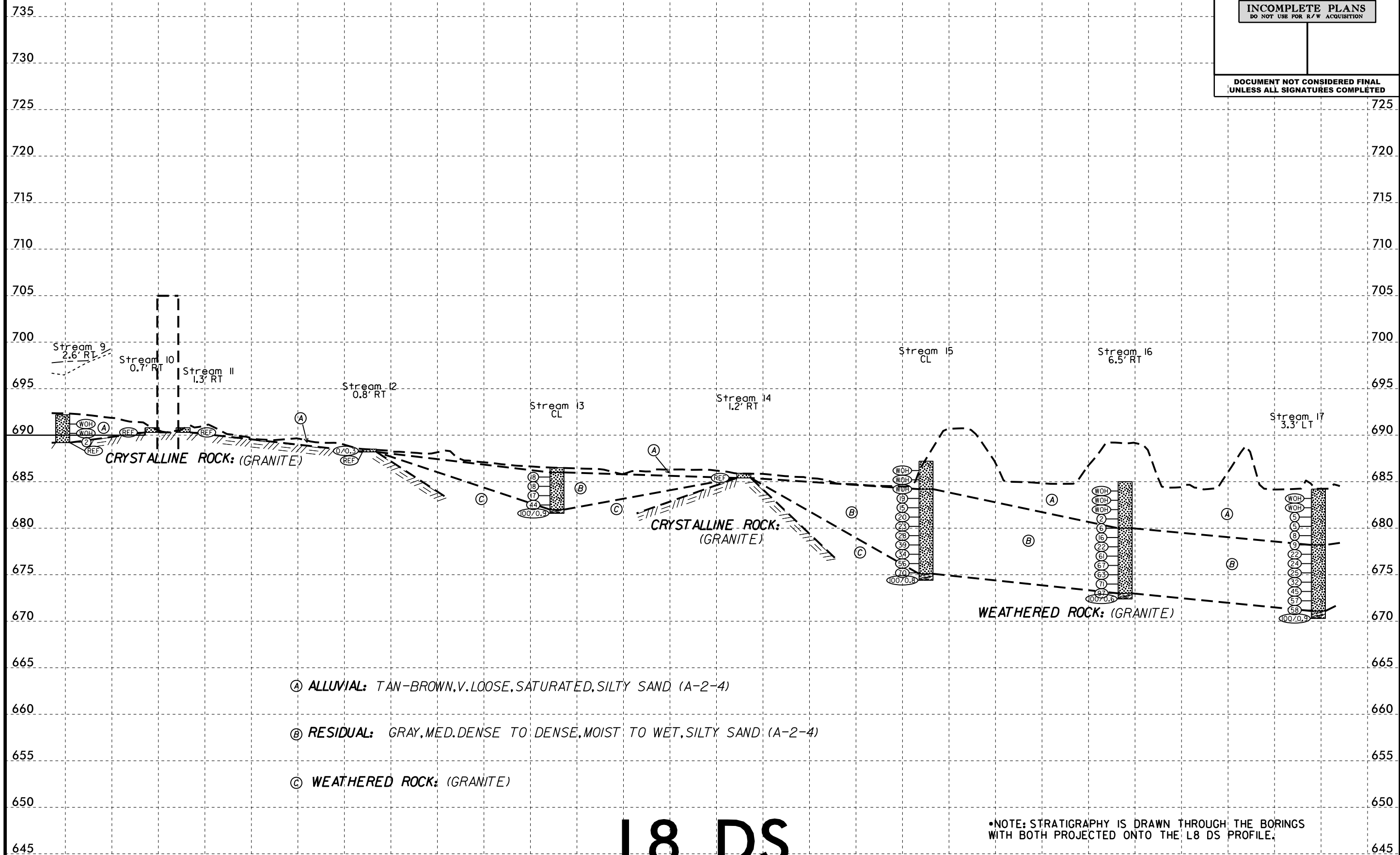
SOIL AND ROCK LEGEND, TERMS, SYMBOLS, AND ABBREVIATIONS

SOIL DESCRIPTION		GRADATION		ROCK DESCRIPTION		TERMS AND DEFINITIONS																																																																																																																																																																																																																													
SOIL IS CONSIDERED 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. 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 (ROQ) - 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 (SRC.) - 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. 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SITE PLAN





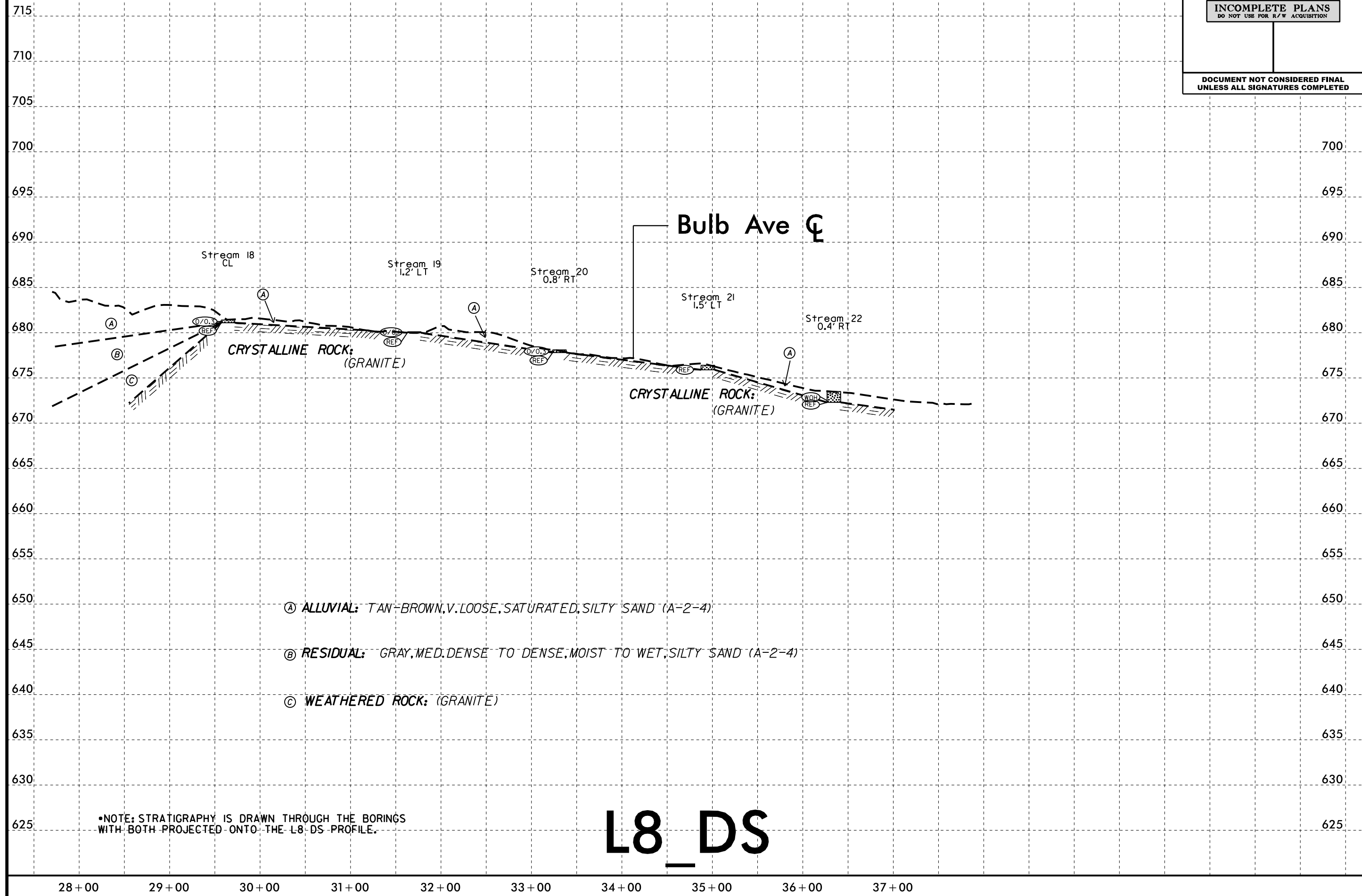


14+00 15+00 16+00 17+00 18+00 19+00 20+00 21+00 22+00 23+00 24+00 25+00 26+00 27+00

L8_DS

•NOTE: STRATIGRAPHY IS DRAWN THROUGH THE BORINGS WITH BOTH PROJECTED ONTO THE L8_DS PROFILE.

PROJECT REFERENCE NO. 41153.1.1 (I-5000)	SHEET NO. 8
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
INCOMPLETE PLANS DO NOT USE FOR R/W ACQUISITION	
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	



GEOTECHNICAL BORING REPORT

BORE LOG

WBS 41153.1.1		TIP I-5000		COUNTY GASTON		GEOLOGIST B. Worley, PG									
SITE DESCRIPTION I-85 / US 321 Interchange Geometric Safety Improvements (Stream Aggradation Study)							GROUND WTR (ft)								
BORING NO. Stream 1		STATION 3+02		OFFSET 2 ft RT		ALIGNMENT L8_DS									
COLLAR ELEV. 695.0 ft		TOTAL DEPTH 11.0 ft		NORTHING 564,719		EASTING 1,347,442									
DRILL RIG/HAMMER EFF./DATE N/A			DRILL METHOD Rod Sounding			HAMMER TYPE Manual									
DRILLER N/A		START DATE 06/06/16		COMP. DATE 06/06/16		SURFACE WATER DEPTH 0.3ft									
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					
695	695.0	0.0	n/a	WOR	WOH								▼	ALLUVIAL	0.0
	694.0	1.0	n/a	1	1								Sat.	Tan-brown, v. loose, Silty v. cse SAND (A-2-4)	
	693.0	2.0	n/a	2	1										
	692.0	3.0	n/a	0	1										
	691.0	4.0	n/a	0	1										
690	690.0	5.0	n/a	0	2									RESIDUAL	5.0
	689.0	6.0	n/a	8	10									(interpreted as)	
	688.0	7.0	n/a	10	12									Gray, Silty SAND (A-2-4)	
	687.0	8.0	n/a	21	36										
	686.0	9.0	n/a	35	57										
685	685.0	10.0	n/a	49	48									WEATHERED ROCK	10.5
			n/a	59	41/0.3									(granite)	11.0
Boring Terminated at Elevation 684.0 ft in WR (granite) *Hand auger boring collapse @ 1.5'. Tried hand auger in both thalweg and sandbar.															

WBS 41153.1.1		TIP I-5000		COUNTY GASTON		GEOLOGIST B. Worley, PG									
SITE DESCRIPTION I-85 / US 321 Interchange Geometric Safety Improvements (Stream Aggradation Study)							GROUND WTR (ft)								
BORING NO. Stream 2		STATION 4+71		OFFSET 1 ft RT		ALIGNMENT L8_DS									
COLLAR ELEV. 694.2 ft		TOTAL DEPTH 13.7 ft		NORTHING 564,885		EASTING 1,347,443									
DRILL RIG/HAMMER EFF./DATE N/A			DRILL METHOD Rod Sounding			HAMMER TYPE Manual									
DRILLER N/A		START DATE 06/07/16		COMP. DATE 06/07/16		SURFACE WATER DEPTH 0.2ft									
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					
695	694.2	0.0	n/a	WOH	WOH								▼	ALLUVIAL	0.0
	693.2	1.0	n/a	0	1								Sat.	Tan-brown, v. loose, Silty v. cse SAND (A-2-4)	
	692.2	2.0	n/a	0	0										
	691.2	3.0	n/a	0	0										
	690.2	4.0	n/a	WOH	WOH									RESIDUAL	4.5
690	689.2	5.0	n/a	2	7									(interpreted as)	
	688.2	6.0	n/a	5	3									Gray, Silty SAND (A-2-4)	
	687.2	7.0	n/a	4	6										
	686.2	8.0	n/a	7	9										
685	685.2	9.0	n/a	10	14									WEATHERED ROCK	10.5
	684.2	10.0	n/a	13	20									(granite)	13.1
	683.2	11.0	n/a	17	14										
	682.2	12.0	n/a	17	43										
	681.2	13.0	n/a	44	38										
			n/a	75	25/0.2										
Boring Terminated at Elevation 680.5 ft in WR (granite) *Hand auger collapse @ 1.5'															

NCDOT BORE DOUBLE I5000_GEO_SPECIAL_STREAMAGGRADATION.GPJ NC_DOT.GDT 6/24/16

GEOTECHNICAL BORING REPORT

BORE LOG

WBS 41153.1.1		TIP I-5000		COUNTY GASTON		GEOLOGIST B. Worley, PG									
SITE DESCRIPTION I-85 / US 321 Interchange Geometric Safety Improvements (Stream Aggradation Study)							GROUND WTR (ft)								
BORING NO. Stream 3		STATION 5+52		OFFSET 0 ft LT		ALIGNMENT L8_DS									
COLLAR ELEV. 692.2 ft		TOTAL DEPTH 12.9 ft		NORTHING 564,965		EASTING 1,347,448									
DRILL RIG/HAMMER EFF./DATE N/A		DRILL METHOD Rod Sounding		HAMMER TYPE Manual											
DRILLER N/A		START DATE 06/07/16		COMP. DATE 06/07/16		SURFACE WATER DEPTH 0.2ft									
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					
695															
	692.2	0.0												692.2	0.0
	691.2	1.0	n/a	WOH	WOH	0									
690	690.2	2.0	n/a	0	1	1									
	689.2	3.0	n/a	0	1	1									
	688.2	4.0	n/a	0	1	1									
	687.2	5.0	n/a	0	1	1									
	686.2	6.0	n/a	0	1	1									
685	685.2	7.0	n/a	1	3	4									
	684.2	8.0	n/a	4	5	9									
	683.2	9.0	n/a	10	10	20									
	682.2	10.0	n/a	15	20	35									
	681.2	11.0	n/a	13	10	25									
680	680.2	12.0	n/a	11	14	45									
			n/a	15	30	100/0.9									
			n/a	37	63/0.4										

WBS 41153.1.1		TIP I-5000		COUNTY GASTON		GEOLOGIST B. Worley, PG									
SITE DESCRIPTION I-85 / US 321 Interchange Geometric Safety Improvements (Stream Aggradation Study)							GROUND WTR (ft)								
BORING NO. Stream 4		STATION 6+24		OFFSET 4 ft LT		ALIGNMENT L8_DS									
COLLAR ELEV. 694.0 ft		TOTAL DEPTH 12.9 ft		NORTHING 565,037		EASTING 1,347,460									
DRILL RIG/HAMMER EFF./DATE N/A		DRILL METHOD Rod Sounding		HAMMER TYPE Manual											
DRILLER N/A		START DATE 06/07/16		COMP. DATE 06/07/16		SURFACE WATER DEPTH 0.3ft									
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					
695															
	694.0	0.0												694.0	0.0
	693.0	1.0	n/a	WOH	WOH	0									
	692.0	2.0	n/a	1	1	1									
	691.0	3.0	n/a	WOH	1	1									
690	690.0	4.0	n/a	1	1	2									
	689.0	5.0	n/a	1	1	3									
	688.0	6.0	n/a	2	1	4									
	687.0	7.0	n/a	7	3	10									
	686.0	8.0	n/a	3	6	9									
685	685.0	9.0	n/a	6	9	15									
	684.0	10.0	n/a	7	10	22									
	683.0	11.0	n/a	8	14	31									
	682.0	12.0	n/a	15	16	79									
			n/a	18	61	100/0.9									
			n/a	52	48/0.4										

NCDOT BORE DOUBLE I5000_GEO_SPECIAL_STREAMAGGRADATION.GPJ NC_DOT.GDT 6/24/16

*Hand auger collapse @ 0.5'

*Located at mouth of existing I-85 culvert

*Hand auger collapse @ 0.5'

GEOTECHNICAL BORING REPORT

BORE LOG

WBS 41153.1.1		TIP I-5000		COUNTY GASTON		GEOLOGIST B. Worley, PG									
SITE DESCRIPTION I-85 / US 321 Interchange Geometric Safety Improvements (Stream Aggradation Study)							GROUND WTR (ft)								
BORING NO. Stream 5		STATION 9+83		OFFSET 1 ft RT		ALIGNMENT L8_DS									
COLLAR ELEV. 693.3 ft		TOTAL DEPTH 16.7 ft		NORTHING 565,393		EASTING 1,347,494									
DRILL RIG/HAMMER EFF./DATE N/A		DRILL METHOD Rod Sounding		HAMMER TYPE Manual											
DRILLER N/A		START DATE 06/07/16		COMP. DATE 06/07/16		SURFACE WATER DEPTH 0.2ft									
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					
695															
	693.3	0.0	n/a	WOH	WOH									693.3	0.0
	692.3	1.0	n/a	WOH	WOH										
	691.3	2.0	n/a	WOH	WOH										
	690.3	3.0	n/a	2	4										
	689.3	4.0	n/a	2	1										
	688.3	5.0	n/a	1	1										
	687.3	6.0	n/a	1	1										
	686.3	7.0	n/a	6	5										
	685.3	8.0	n/a	4	4										
	684.3	9.0	n/a	5	8										
	683.3	10.0	n/a	6	7										
	682.3	11.0	n/a	7	8										
	681.3	12.0	n/a	12	15										
	680.3	13.0	n/a	14	18										
	679.3	14.0	n/a	24	24										
	678.3	15.0	n/a	20	21										
	677.3	16.0	n/a	25	22										
			n/a	28	26										
			n/a	63	47/0.2										

WBS 41153.1.1		TIP I-5000		COUNTY GASTON		GEOLOGIST B. Worley, PG									
SITE DESCRIPTION I-85 / US 321 Interchange Geometric Safety Improvements (Stream Aggradation Study)							GROUND WTR (ft)								
BORING NO. Stream 6		STATION 10+96		OFFSET 1 ft LT		ALIGNMENT L8_DS									
COLLAR ELEV. 692.7 ft		TOTAL DEPTH 10.9 ft		NORTHING 565,503		EASTING 1,347,476									
DRILL RIG/HAMMER EFF./DATE N/A		DRILL METHOD Rod Sounding		HAMMER TYPE Manual											
DRILLER N/A		START DATE 06/07/16		COMP. DATE 06/07/16		SURFACE WATER DEPTH 0.8ft									
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					
695															
	692.7	0.0	n/a	WOR	WOR									692.7	0.0
	691.7	1.0	n/a	WOR	WOR										
	690.7	2.0	n/a	WOR	WOR										
	689.7	3.0	n/a	1	WOH										
	688.7	4.0	n/a	WOH	WOH										
	687.7	5.0	n/a	WOH	1										
	686.7	6.0	n/a	4	4										
	685.7	7.0	n/a	4	4										
	684.7	8.0	n/a	5	4										
	683.7	9.0	n/a	5	5										
	682.7	10.0	n/a	26	29										
			n/a	39	37										
			n/a	38	62/0.4										

NCDOT BORE DOUBLE I5000_GEO_SPECIAL_STREAMAGGRADATION.GPJ NC_DOT.GDT 6/24/16

GEOTECHNICAL BORING REPORT

BORE LOG

WBS 41153.1.1		TIP I-5000		COUNTY GASTON		GEOLOGIST B. Worley, PG										
SITE DESCRIPTION I-85 / US 321 Interchange Geometric Safety Improvements (Stream Aggradation Study)							GROUND WTR (ft)									
BORING NO. Stream 7		STATION 11+96		OFFSET CL		ALIGNMENT L8_DS										
COLLAR ELEV. 692.7 ft		TOTAL DEPTH 3.0 ft		NORTHING 565,603		EASTING 1,347,466										
DRILL RIG/HAMMER EFF./DATE N/A			DRILL METHOD Rod Sounding			HAMMER TYPE Automatic										
DRILLER N/A		START DATE 06/07/16		COMP. DATE 06/07/16		SURFACE WATER DEPTH 0.4ft										
ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT					SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION	DEPTH (ft)	
			0.5ft	0.5ft	0.5ft	0	25	50	75	100						
695																
	692.7	0.0	n/a	WOR	1										692.7	0.0
	691.7	1.0	n/a	WOR	1											
	690.7	2.0	n/a	WOR	0											
690	689.7	3.0	n/a	WOH	0										689.7	3.0
			n/a	REF												
CRYSTALLINE ROCK (granite) Boring Terminated at Elevation 689.7 ft on CR (granite) by sounding rod refusal *Hand auger collapse @ 0.5'																

WBS 41153.1.1		TIP I-5000		COUNTY GASTON		GEOLOGIST B. Worley, PG										
SITE DESCRIPTION I-85 / US 321 Interchange Geometric Safety Improvements (Stream Aggradation Study)							GROUND WTR (ft)									
BORING NO. Stream 8		STATION 12+96		OFFSET 1 ft RT		ALIGNMENT L8_DS										
COLLAR ELEV. 692.6 ft		TOTAL DEPTH 3.7 ft		NORTHING 565,703		EASTING 1,347,469										
DRILL RIG/HAMMER EFF./DATE N/A			DRILL METHOD Rod Sounding			HAMMER TYPE Automatic										
DRILLER N/A		START DATE 06/07/16		COMP. DATE 06/07/16		SURFACE WATER DEPTH 0.2ft										
ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT					SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION	DEPTH (ft)	
			0.5ft	0.5ft	0.5ft	0	25	50	75	100						
695																
	692.6	0.0	n/a	WOH	WOH										692.6	0.0
	691.6	1.0	n/a	WOH	WOH											
	690.6	2.0	n/a	WOH	WOH											
690	689.6	3.0	n/a	1	3										689.6	3.0
			n/a	4	1/0.2											
CRYSTALLINE ROCK (granite) Boring Terminated at Elevation 688.9 ft on CR (granite) by sounding rod refusal *Hand auger collapse @ 0.5' *Moved rod sounding 3 times w/ same refusal depth																

NCDOT BORE DOUBLE I5000_GEO_SPECIAL_STREAMAGGRADATION.GPJ NC_DOT.GDT 6/24/16

GEOTECHNICAL BORING REPORT

BORE LOG

WBS 41153.1.1		TIP I-5000		COUNTY GASTON		GEOLOGIST B. Worley, PG										
SITE DESCRIPTION I-85 / US 321 Interchange Geometric Safety Improvements (Stream Aggradation Study)							GROUND WTR (ft)									
BORING NO. Stream 11		STATION 15+28		OFFSET 1 ft RT		ALIGNMENT L8_DS										
COLLAR ELEV. 690.8 ft		TOTAL DEPTH 0.5 ft		NORTHING 565,922		EASTING 1,347,531										
DRILL RIG/HAMMER EFF./DATE N/A			DRILL METHOD Rod Sounding			HAMMER TYPE Automatic										
DRILLER N/A		START DATE 06/07/16		COMP. DATE 06/07/16		SURFACE WATER DEPTH 1.0ft										
ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT					SAMP. NO.	LOG MOI	LOG G	SOIL AND ROCK DESCRIPTION	DEPTH (ft)	
			0.5ft	0.5ft	0.5ft	0	25	50	75	100						
695																
	690.8	0.0	n/a	2	REF											

WBS 41153.1.1		TIP I-5000		COUNTY GASTON		GEOLOGIST B. Worley, PG										
SITE DESCRIPTION I-85 / US 321 Interchange Geometric Safety Improvements (Stream Aggradation Study)							GROUND WTR (ft)									
BORING NO. Stream 12		STATION 17+28		OFFSET 1 ft RT		ALIGNMENT L8_DS										
COLLAR ELEV. 688.5 ft		TOTAL DEPTH 0.3 ft		NORTHING 566,101		EASTING 1,347,621										
DRILL RIG/HAMMER EFF./DATE N/A			DRILL METHOD Rod Sounding			HAMMER TYPE Automatic										
DRILLER N/A		START DATE 06/07/16		COMP. DATE 06/07/16		SURFACE WATER DEPTH 0.5ft										
ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT					SAMP. NO.	LOG MOI	LOG G	SOIL AND ROCK DESCRIPTION	DEPTH (ft)	
			0.5ft	0.5ft	0.5ft	0	25	50	75	100						
690																
	688.5	0.0	n/a	0	0.3											

NCDOT BORE DOUBLE I5000_GEO_SPECIAL_STREAMAGGRADATION.GPJ NC_DOT.GDT 6/24/16

WATER SURFACE (06/07/16)
GROUND SURFACE

ALLUVIAL
Tan-brown, v. loose, Silty v. cse SAND (A-2-4)

CRYSTALLINE ROCK
(granite)
Boring Terminated at Elevation 690.3 ft on CR (granite) by sounding rod refusal

*Located @ north side of Rankin Lake Rd. bridge/culvert
*Moved to multiple locations with same refusal result

WATER SURFACE (06/07/16)
GROUND SURFACE

ALLUVIAL
Tan-brown, v. loose, Silty v. cse SAND (A-2-4)

CRYSTALLINE ROCK
(granite)
Boring Terminated at Elevation 688.2 ft on CR (granite) by sounding rod refusal

*Moved sounding 4 times w/ same refusal depth.
*In-situ outcrop visible in stream bed near sounding.

GEOTECHNICAL BORING REPORT

BORE LOG

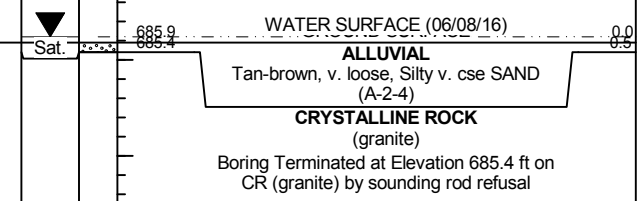
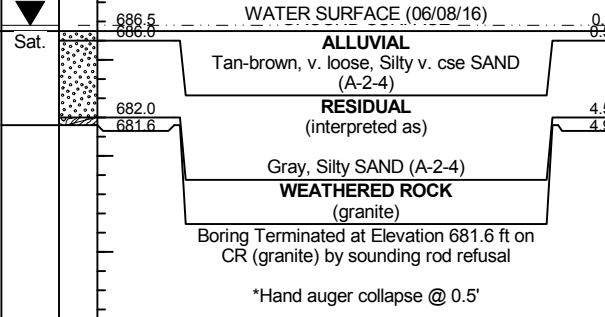
WBS 41153.1.1		TIP I-5000		COUNTY GASTON		GEOLOGIST B. Worley, PG	
SITE DESCRIPTION I-85 / US 321 Interchange Geometric Safety Improvements (Stream Aggradation Study)							GROUND WTR (ft)
BORING NO. Stream 13		STATION 19+30		OFFSET CL		ALIGNMENT L8_DS	
COLLAR ELEV. 686.5 ft		TOTAL DEPTH 4.9 ft		NORTHING 566,264		EASTING 1,347,738	
DRILL RIG/HAMMER EFF./DATE N/A			DRILL METHOD Rod Sounding			HAMMER TYPE Automatic	
DRILLER N/A		START DATE 06/08/16		COMP. DATE 06/08/16		SURFACE WATER DEPTH 0.3ft	

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT					SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION	DEPTH (ft)	
			0.5ft	0.5ft	0.5ft	0	25	50	75	100						
690																
686.5	0.0															686.5
685.5	1.0	n/a	2	16												686.0
684.5	2.0	n/a	10	8												685.5
683.5	3.0	n/a	10	7												685.0
682.5	4.0	n/a	11	33												684.5
		n/a	58	42/0.4												682.0
																681.6
																100/0.9

WBS 41153.1.1		TIP I-5000		COUNTY GASTON		GEOLOGIST B. Worley, PG	
SITE DESCRIPTION I-85 / US 321 Interchange Geometric Safety Improvements (Stream Aggradation Study)							GROUND WTR (ft)
BORING NO. Stream 14		STATION 21+31		OFFSET 1 ft RT		ALIGNMENT L8_DS	
COLLAR ELEV. 685.9 ft		TOTAL DEPTH 0.5 ft		NORTHING 566,405		EASTING 1,347,878	
DRILL RIG/HAMMER EFF./DATE N/A			DRILL METHOD Rod Sounding			HAMMER TYPE Automatic	
DRILLER N/A		START DATE 06/08/16		COMP. DATE 06/08/16		SURFACE WATER DEPTH 0.3ft	

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT					SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION	DEPTH (ft)	
			0.5ft	0.5ft	0.5ft	0	25	50	75	100						
690																
685.9	0.0															685.9
			n/a	3	REF											685.4

NCDOT BORE DOUBLE I5000_GEO_SPECIAL_STREAMAGGRADATION.GPJ NC_DOT.GDT 6/24/16



GEOTECHNICAL BORING REPORT

BORE LOG

WBS 41153.1.1		TIP I-5000		COUNTY GASTON		GEOLOGIST B. Worley, PG									
SITE DESCRIPTION I-85 / US 321 Interchange Geometric Safety Improvements (Stream Aggradation Study)							GROUND WTR (ft)								
BORING NO. Stream 15		STATION 23+27		OFFSET CL		ALIGNMENT L8_DS									
COLLAR ELEV. 687.2 ft		TOTAL DEPTH 12.8 ft		NORTHING 566,493		EASTING 1,348,051									
DRILL RIG/HAMMER EFF./DATE N/A			DRILL METHOD Rod Sounding			HAMMER TYPE Automatic									
DRILLER N/A		START DATE 06/08/16		COMP. DATE 06/08/16		SURFACE WATER DEPTH 0.3ft									
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					
690															
	687.2	0.0												687.2	0.0
	686.2	1.0	n/a	WOH	WOH										
685	685.2	2.0	n/a	WOH	WOH										
	684.2	3.0	n/a	WOH	WOH										
	683.2	4.0	n/a	12	7										
	682.2	5.0	n/a	9	6										
	681.2	6.0	n/a	8	12										
680	680.2	7.0	n/a	10	13										
	679.2	8.0	n/a	12	16										
	678.2	9.0	n/a	20	19										
	677.2	10.0	n/a	16	18										
	676.2	11.0	n/a	25	31										
675	675.2	12.0	n/a	38	32										
			n/a	56	44/0.3										

WBS 41153.1.1		TIP I-5000		COUNTY GASTON		GEOLOGIST B. Worley, PG									
SITE DESCRIPTION I-85 / US 321 Interchange Geometric Safety Improvements (Stream Aggradation Study)							GROUND WTR (ft)								
BORING NO. Stream 16		STATION 25+41		OFFSET 7 ft RT		ALIGNMENT L8_DS									
COLLAR ELEV. 685.0 ft		TOTAL DEPTH 12.6 ft		NORTHING 566,651		EASTING 1,348,180									
DRILL RIG/HAMMER EFF./DATE N/A			DRILL METHOD Rod Sounding			HAMMER TYPE Automatic									
DRILLER N/A		START DATE 06/08/16		COMP. DATE 06/08/16		SURFACE WATER DEPTH 0.2ft									
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					
685															
	685.0	0.0	n/a	WOH	WOH									685.0	0.0
	684.0	1.0	n/a	WOH	WOH										
	683.0	2.0	n/a	WOH	WOH										
	682.0	3.0	n/a	WOH	WOH										
	681.0	4.0	n/a	1	1										
680	680.0	5.0	n/a	1	5										
	679.0	6.0	n/a	10	6										
	678.0	7.0	n/a	5	17										
	677.0	8.0	n/a	30	31										
	676.0	9.0	n/a	33	34										
675	675.0	10.0	n/a	31	32										
	674.0	11.0	n/a	41	30										
	673.0	12.0	n/a	49	48										
			n/a	58	42/0.1										

NCDOT BORE DOUBLE I5000_GEO_SPECIAL_STREAMAGGRADATION.GPJ NC_DOT.GDT 6/24/16

GEOTECHNICAL BORING REPORT

BORE LOG

WBS 41153.1.1		TIP I-5000		COUNTY GASTON		GEOLOGIST B. Worley, PG										
SITE DESCRIPTION I-85 / US 321 Interchange Geometric Safety Improvements (Stream Aggradation Study)							GROUND WTR (ft)									
BORING NO. Stream 19		STATION 31+72		OFFSET 1 ft LT		ALIGNMENT L8_DS										
COLLAR ELEV. 680.1 ft		TOTAL DEPTH 0.1 ft		NORTHING 567,217		EASTING 1,348,253										
DRILL RIG/HAMMER EFF./DATE N/A			DRILL METHOD Rod Sounding			HAMMER TYPE Automatic										
DRILLER N/A		START DATE 06/08/16		COMP. DATE 06/08/16		SURFACE WATER DEPTH 0.3ft										
ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT					SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION	DEPTH (ft)	
			0.5ft	0.5ft	0.5ft	0	25	50	75	100						
685																
680	680.1	0.0	n/a	0/0.1											REF	680.0
WATER SURFACE (06/08/16) 680.0																
ALLUVIAL Tan-brown, v. loose, Silty v. cse SAND (A-2-4)																
CRYSTALLINE ROCK (granite)																
Boring Terminated at Elevation 680.0 ft on CR (granite) by sounding rod refusal																
*Sounding rod performed in thalweg *In-situ outcrop in creek bed all around thalweg																

WBS 41153.1.1		TIP I-5000		COUNTY GASTON		GEOLOGIST B. Worley, PG										
SITE DESCRIPTION I-85 / US 321 Interchange Geometric Safety Improvements (Stream Aggradation Study)							GROUND WTR (ft)									
BORING NO. Stream 20		STATION 33+32		OFFSET 1 ft RT		ALIGNMENT L8_DS										
COLLAR ELEV. 678.1 ft		TOTAL DEPTH 0.3 ft		NORTHING 567,357		EASTING 1,348,330										
DRILL RIG/HAMMER EFF./DATE N/A			DRILL METHOD Rod Sounding			HAMMER TYPE Automatic										
DRILLER N/A		START DATE 06/08/16		COMP. DATE 06/08/16		SURFACE WATER DEPTH 0.2ft										
ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT					SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION	DEPTH (ft)	
			0.5ft	0.5ft	0.5ft	0	25	50	75	100						
680																
	678.1	0.0	n/a	0/0.3											REF	678.1
WATER SURFACE (06/08/16) 678.1																
ALLUVIAL Tan-brown, v. loose, Silty v. cse SAND (A-2-4)																
CRYSTALLINE ROCK (granite)																
Boring Terminated at Elevation 677.8 ft on CR (granite) by sounding rod refusal																
*Sounding rod performed in thalweg *In-situ outcrop in creek bed all around thalweg																

NCDOT BORE DOUBLE I5000_GEO_SPECIAL_STREAMAGGRADATION.GPJ NC_DOT.GDT 6/24/16

GEOTECHNICAL BORING REPORT

BORE LOG

WBS 41153.1.1		TIP I-5000		COUNTY GASTON		GEOLOGIST B. Worley, PG									
SITE DESCRIPTION I-85 / US 321 Interchange Geometric Safety Improvements (Stream Aggradation Study)							GROUND WTR (ft)								
BORING NO. Stream 21		STATION 34+96		OFFSET 2 ft LT		ALIGNMENT L8_DS									
COLLAR ELEV. 676.4 ft		TOTAL DEPTH 0.5 ft		NORTHING 567,510		EASTING 1,348,388									
DRILL RIG/HAMMER EFF./DATE N/A			DRILL METHOD Rod Sounding			HAMMER TYPE Automatic									
DRILLER N/A		START DATE 06/08/16		COMP. DATE 06/08/16		SURFACE WATER DEPTH 0.3ft									
ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT					SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION	
			0.5ft	0.5ft	0.5ft	0	25	50	75	100					
680															
	676.4	0.0	n/a	WOH	REF										WATER SURFACE (06/08/16) 0.0 ALLUVIAL Tan-brown, v. loose, Silty v. cse SAND (A-2-4) CRYSTALLINE ROCK (granite) Boring Terminated at Elevation 675.9 ft on CR (granite) by sounding rod refusal *Sounding rod performed in thalweg

WBS 41153.1.1		TIP I-5000		COUNTY GASTON		GEOLOGIST B. Worley, PG									
SITE DESCRIPTION I-85 / US 321 Interchange Geometric Safety Improvements (Stream Aggradation Study)							GROUND WTR (ft)								
BORING NO. Stream 22		STATION 36+36		OFFSET 0 ft RT		ALIGNMENT L8_DS									
COLLAR ELEV. 673.5 ft		TOTAL DEPTH 1.2 ft		NORTHING 567,648		EASTING 1,348,404									
DRILL RIG/HAMMER EFF./DATE N/A			DRILL METHOD Rod Sounding			HAMMER TYPE Automatic									
DRILLER N/A		START DATE 06/08/16		COMP. DATE 06/08/16		SURFACE WATER DEPTH 0.3ft									
ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT					SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION	
			0.5ft	0.5ft	0.5ft	0	25	50	75	100					
675															
	673.5	0.0	n/a	WOH	WOH										WATER SURFACE (06/08/16) 0.0 ALLUVIAL Tan-brown, v. loose, Silty v. cse SAND (A-2-4) CRYSTALLINE ROCK (granite) Boring Terminated at Elevation 672.3 ft on CR (granite) by sounding rod refusal *Sounding rod performed in thalweg

NCDOT BORE DOUBLE I5000_GEO_SPECIAL_STREAMAGGRADATION.GPJ NC_DOT.GDT 6/24/16

GEOTECHNICAL BORING REPORT

BORE LOG

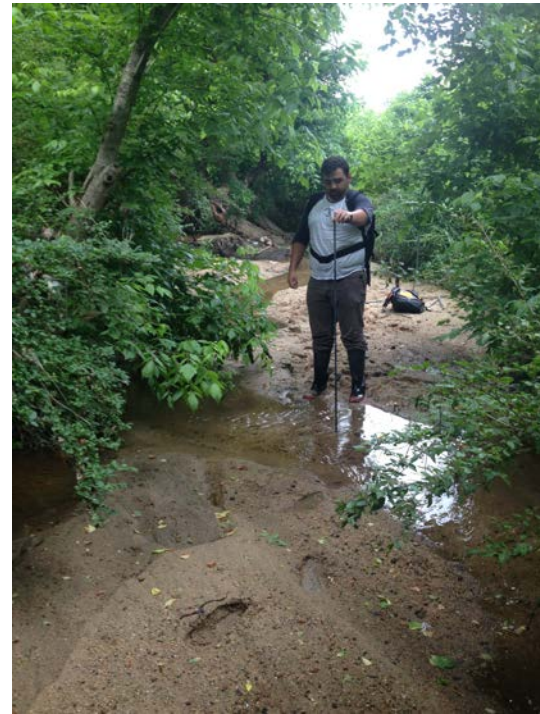
WBS 41153.1.1		TIP I-5000		COUNTY GASTON		GEOLOGIST Worley, B.										
SITE DESCRIPTION I-85 / US 321 Interchange Geometric Safety Improvements (Slope Boring)							GROUND WTR (ft)									
BORING NO. B-11		STATION N/A		OFFSET N/A		ALIGNMENT N/A										
COLLAR ELEV. 697.9 ft		TOTAL DEPTH 11.9 ft		NORTHING 565,698		EASTING 1,347,419										
DRILL RIG/HAMMER EFF./DATE SUM0093 DIEDRICH D-50 88% 11/05/2015			DRILL METHOD H.S. Augers		HAMMER TYPE Automatic											
DRILLER Bare, J.		START DATE 05/25/16		COMP. DATE 05/25/16		SURFACE WATER DEPTH N/A										
ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT					SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION	DEPTH (ft)	
			0.5ft	0.5ft	0.5ft	0	25	50	75	100						
700																
	697.9	0.0	2	3	6										697.9	GROUND SURFACE
	694.3	3.6	1	2	1										694.3	ARTIFICIAL FILL Orange-brown, Clayey SAND (A-2-6) (harder drilling @ 7.5')
	689.3	8.6	41	54	46/0.1										689.3	WEATHERED ROCK (granite)
	686.0	11.9	60/0.0												686.0	CRYSTALLINE ROCK (granite) Boring Terminated at Elevation 686.0 ft On Crystalline Rock (Granite)

WBS 41153.1.1		TIP I-5000		COUNTY GASTON		GEOLOGIST Worley, B.											
SITE DESCRIPTION I-85 / US 321 Interchange Geometric Safety Improvements (Slope Boring)							GROUND WTR (ft)										
BORING NO. B-12		STATION N/A		OFFSET N/A		ALIGNMENT N/A											
COLLAR ELEV. 699.5 ft		TOTAL DEPTH 11.9 ft		NORTHING 565,861		EASTING 1,347,469											
DRILL RIG/HAMMER EFF./DATE SUM0093 DIEDRICH D-50 88% 11/05/2015			DRILL METHOD H.S. Augers		HAMMER TYPE Automatic												
DRILLER Bare, J.		START DATE 05/25/16		COMP. DATE 05/25/16		SURFACE WATER DEPTH N/A											
ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT					SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION	DEPTH (ft)		
			0.5ft	0.5ft	0.5ft	0	25	50	75	100							
700																	
	696.3	3.2	1	2	4										696.3	GROUND SURFACE	
	691.3	8.2	1	1	2										691.3	ARTIFICIAL FILL Brown, Clayey SAND (A-2-6)	
	686.6	12.9	60/0.0												686.6	ALLUVIAL Gray, Silty cse. SAND (A-2-4) (hard drilling @ 11.5')	
																688.0	WEATHERED ROCK (granite)
																686.6	CRYSTALLINE ROCK (granite) Boring Terminated at Elevation 687.6 ft On Crystalline Rock (Granite)

NCDOT BORE DOUBLE I5000_GEO_SPECIAL_STREAMAGGRADATION.GPJ NC_DOT.GDT 6/24/16

SITE PHOTOGRAPHS

Stream Aggradation Study



STREAM 1: View Facing North



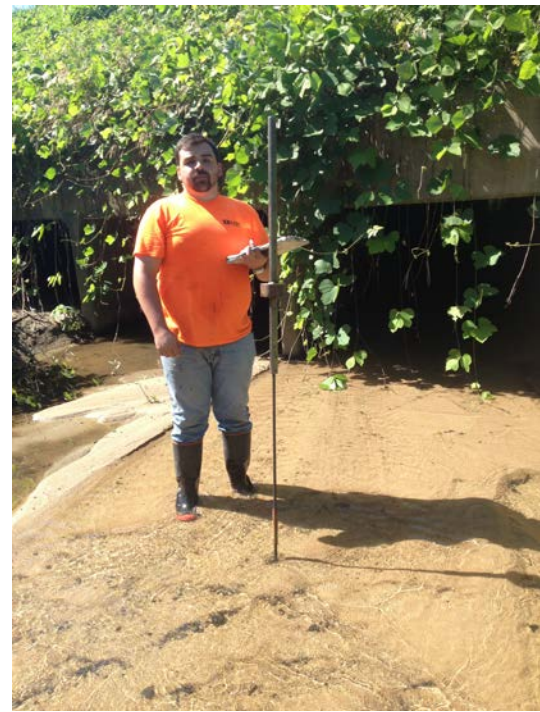
STREAM 2: View Facing North



STREAM 3: View Facing North



STREAM 4: View Facing North



STREAM 5: View Facing South



STREAM 6: View Facing Northeast



STREAM 7: View Facing North



STREAM 8: View Facing North

SITE PHOTOGRAPHS

Stream Aggradation Study



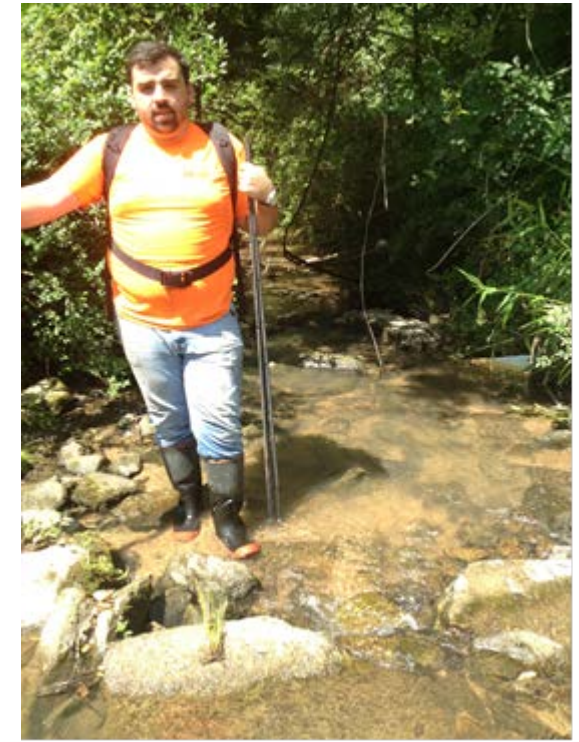
STREAM 9: View Facing North



STREAM 10: View Facing South



STREAM 11: View From Rankin Lake Rd.



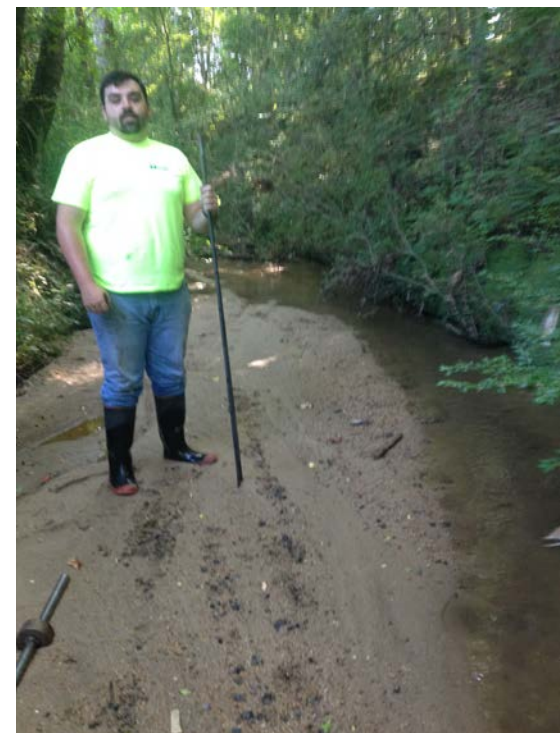
STREAM 12 : View Facing North



STREAM 13: View Facing North



STREAM 14: View Facing North



STREAM 15: View Facing North



STREAM 16: View Facing South

SITE PHOTOGRAPHS

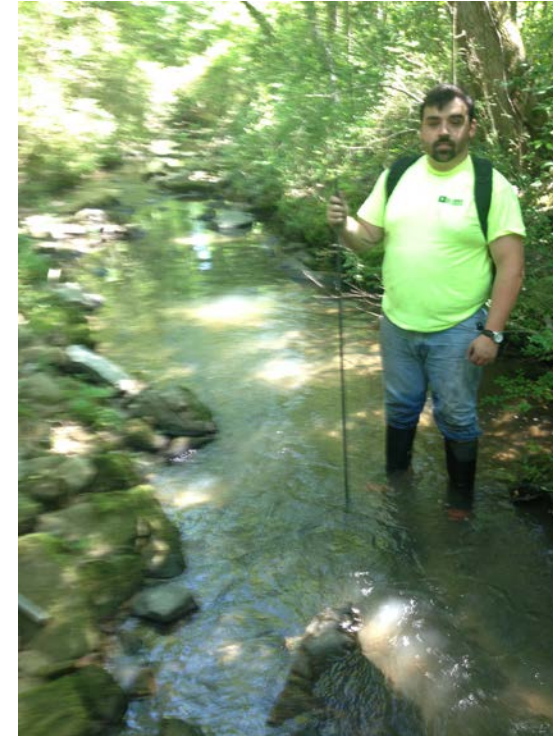
Stream Aggradation Study



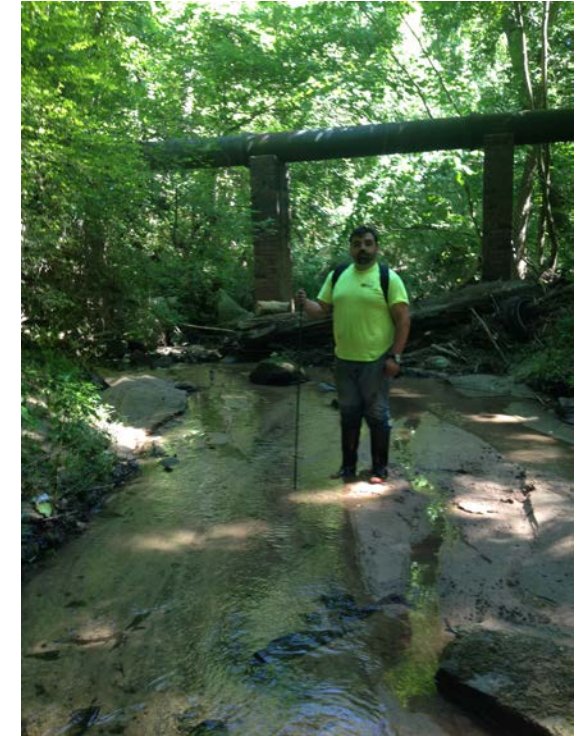
STREAM 17: View Facing North



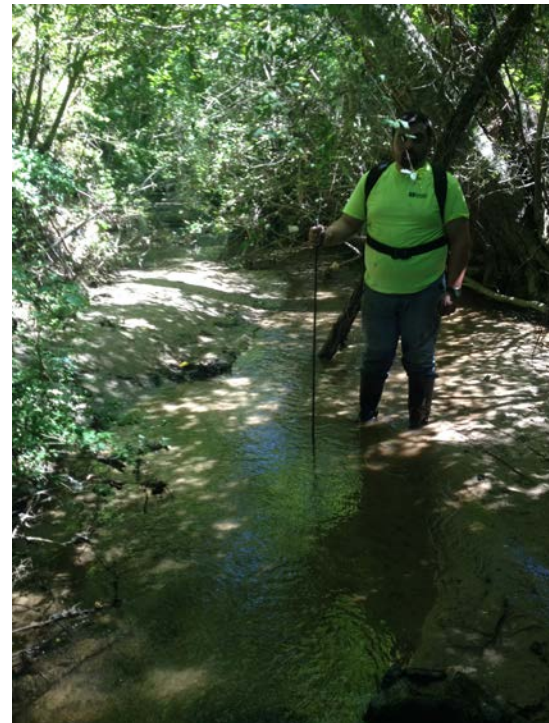
STREAM 18: View Facing North



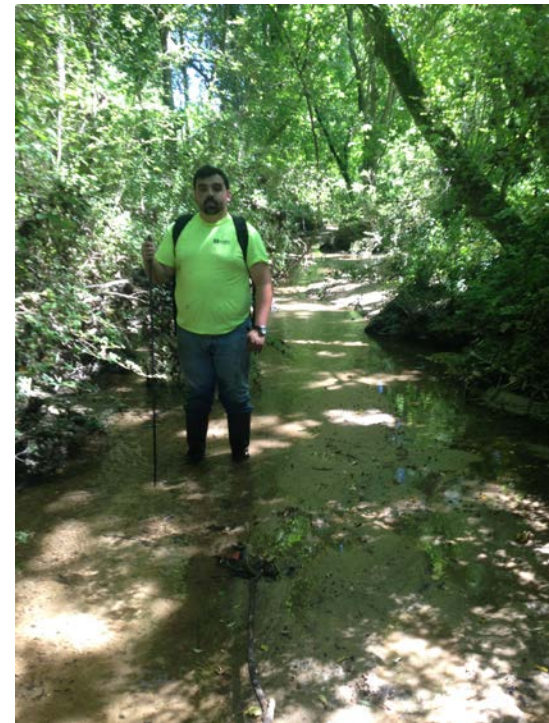
STREAM 19: View Facing North



STREAM 20: View Facing North



STREAM 21: View Facing North



STREAM 22: View Facing North