

PROJECT: 41153 REFERENCE: I-5000

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	10

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STRUCTURE SUBSURFACE INVESTIGATION

COUNTY GASTON

PROJECT DESCRIPTION I-85 /US 321 INTERCHANGE
GEOMETRIC SAFETY IMPROVEMENTS

SITE DESCRIPTION CULVERT AT STA. 22+34 -Y3-

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.

PERSONNEL

B. WORLEY, PG

J. BARE

D. SUTTON

NCDOT GEU HRO

S&ME

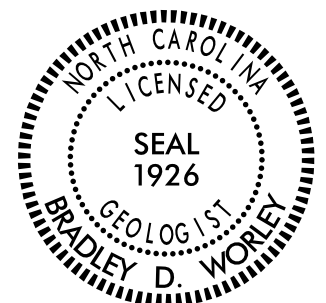
INVESTIGATED BY B. WORLEY, PG

DRAWN BY B. WORLEY, PG

CHECKED BY D. DEWEY, PE

SUBMITTED BY Summit Design and Engineering Services, PLLC

DATE JUNE 2016



DocuSigned by:
Bradley D. Worley
CA8721209FCB476... 10/3/2016

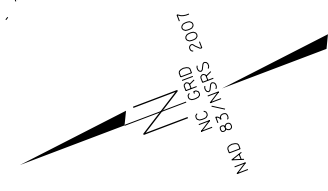
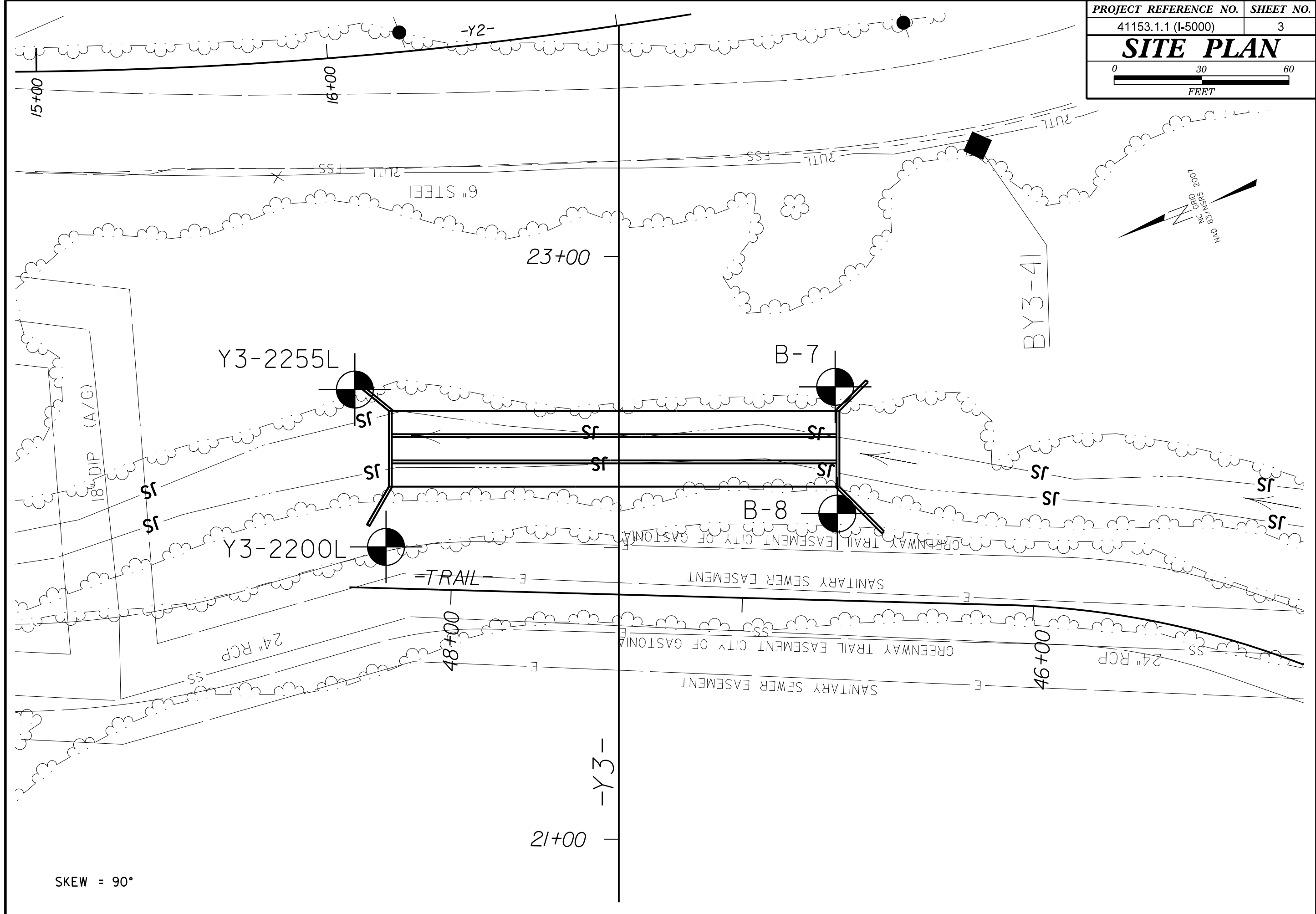
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**DOCUMENT NOT CONSIDERED FINAL
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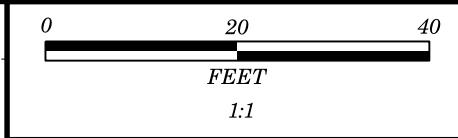
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
GEOTECHNICAL ENGINEERING UNIT
SUBSURFACE INVESTIGATION
SOIL AND ROCK LEGEND, TERMS, SYMBOLS, AND ABBREVIATIONS

Table with multiple columns: SOIL DESCRIPTION, GRADATION, ROCK DESCRIPTION, TERMS AND DEFINITIONS, SOIL LEGEND AND AASHTO CLASSIFICATION, ANGULARITY OF GRAINS, MINERALOGICAL COMPOSITION, COMPRESSIBILITY, PERCENTAGE OF MATERIAL, GROUND WATER, MISCELLANEOUS SYMBOLS, ROCK HARDNESS, RECOMMENDATION SYMBOLS, ABBREVIATIONS, EQUIPMENT USED ON SUBJECT PROJECT, SOIL MOISTURE - CORRELATION OF TERMS, PLASTICITY, COLOR, and INDURATION.

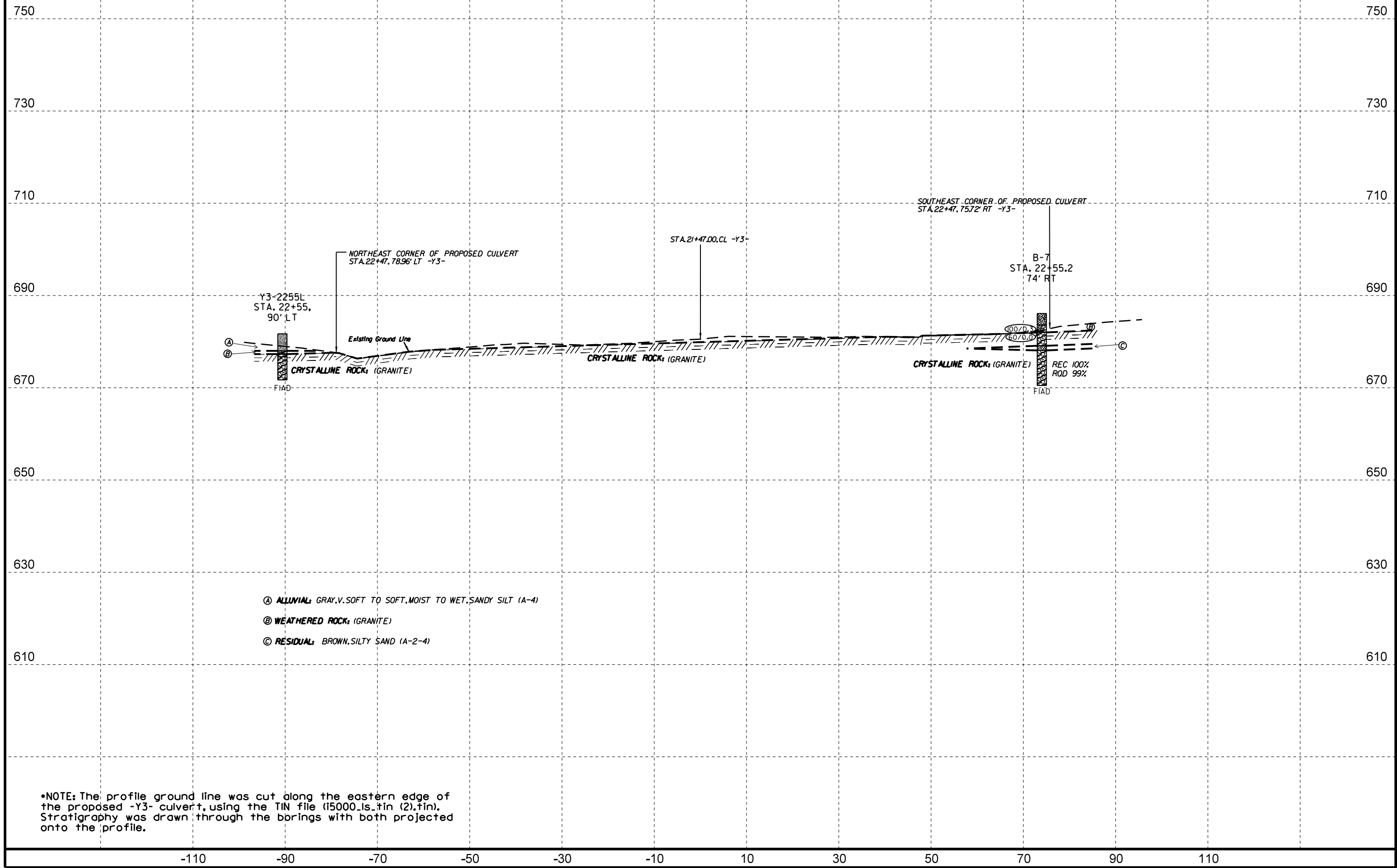
PROJECT REFERENCE NO.	SHEET NO.
41153.1.1 (I-5000)	3
SITE PLAN	
 0 30 60 FEET	



SKEW = 90°



PROJECT REFERENCE NO.	SHEET
41153.1.1 (I-5000)	4
PROFILE ALONG EAST SIDE PROPOSED -Y3- CULVERT	



- Ⓐ **ALLUVIAL:** GRAY, V. SOFT TO SOFT, MOIST TO WET, SANDY SILT (A-4)
- Ⓑ **WEATHERED ROCK:** (GRANITE)
- Ⓒ **RESIDUAL:** BROWN, SILTY SAND (A-2-4)

•NOTE: The profile ground line was cut along the eastern edge of the proposed -Y3- culvert, using the TIN file (I5000_ls_tin (2).tin). Stratigraphy was drawn through the borings with both projected onto the profile.

GEOTECHNICAL BORING REPORT BORE LOG

GEOTECHNICAL BORING REPORT CORE LOG

WBS 41153.1.1		TIP I-5000		COUNTY GASTON		GEOLOGIST Worley, B.										
SITE DESCRIPTION I-85 / US 321 Interchange Geometric Safety Improvements (Culvert @ -Y3-)							GROUND WTR (ft)									
BORING NO. B-7		STATION 22+55		OFFSET 74 ft RT		ALIGNMENT -Y3-										
COLLAR ELEV. 686.1 ft		TOTAL DEPTH 15.6 ft		NORTHING 567,355		EASTING 1,348,353										
DRILL RIG/HAMMER EFF./DATE SUM0093 DIEDRICH D-50 88% 11/05/2015			DRILL METHOD NW Casing W/SPT & Core		HAMMER TYPE Automatic											
DRILLER Bare, J.		START DATE 06/01/16		COMP. DATE 06/01/16		SURFACE WATER DEPTH N/A										
ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT					SAMP. NO.	LOG	SOIL AND ROCK DESCRIPTION			
			0.5ft	0.5ft	0.5ft	0	25	50	75	100			ELEV. (ft)	DEPTH (ft)		
690																
685																
680	682.6 682.0	3.5 4.1	100/0.3 60/0.0							100/0.3 .60/0.0						
675																

WBS 41153.1.1		TIP I-5000		COUNTY GASTON		GEOLOGIST Worley, B.	
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BORING NO. B-7		STATION 22+55		OFFSET 74 ft RT		ALIGNMENT -Y3-	
COLLAR ELEV. 686.1 ft		TOTAL DEPTH 15.6 ft		NORTHING 567,355		EASTING 1,348,353	
DRILL RIG/HAMMER EFF./DATE SUM0093 DIEDRICH D-50 88% 11/05/2015			DRILL METHOD NW Casing W/SPT & Core		HAMMER TYPE Automatic		
DRILLER Bare, J.		START DATE 06/01/16		COMP. DATE 06/01/16		SURFACE WATER DEPTH N/A	
CORE SIZE N/A		TOTAL RUN 11.5 ft		SAMP. NO.		STRATA	
ELEV (ft)	RUN ELEV (ft)	DEPTH (ft)	RUN (ft)	DRILL RATE (Min/ft)	REC. (%)	RQD (%)	LOG
682	682.0	4.1	1.5	N=60/0.0 3:40/1.0 0:45/0.5	(1.4) 93%	(1.3) 87%	
680	680.5	5.6	5.0	1:28/1.0 2:20/1.0 3:41/1.0 4:08/1.0 5:30/1.0	(4.0) 80%	(3.6) 72%	
675	675.5	10.6	5.0	5:32/1.0 3:35/1.0 4:25/1.0 5:25/1.0 5:44/1.0	(5.0) 100%	(4.9) 98%	
	670.5	15.6					

NCDOT BORE DOUBLE I5000_GEO_CULV_CULVERTBORINGS.GPJ NC_DOT.GDT 6/22/16

NCDOT CORE DOUBLE I5000_GEO_CULV_CULVERTBORINGS.GPJ NC_DOT.GDT 6/22/16

GEOTECHNICAL BORING REPORT BORE LOG

GEOTECHNICAL BORING REPORT CORE LOG

WBS 41153.1.1		TIP I-5000		COUNTY GASTON		GEOLOGIST Stickney, J. K.										
SITE DESCRIPTION I-85 AND US 321 INTERCHANGE							GROUND WTR (ft)									
BORING NO. Y3-2200L		STATION 22+00		OFFSET 80 ft LT		ALIGNMENT -Y3-										
COLLAR ELEV. 688.8 ft		TOTAL DEPTH 19.0 ft		NORTHING 567,519		EASTING 1,348,356										
DRILL RIG/HAMMER EFF./DATE CME-550X			DRILL METHOD NW Casing W/SPT & Core			HAMMER TYPE Automatic										
DRILLER Smith, C. L.		START DATE 01/12/06		COMP. DATE 01/12/06		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						
690														688.8	GROUND SURFACE	0.0
685	686.1	2.7	0	1	0						SS-1	M	ARTIFICIAL FILL BROWN-GRAY V. SOFT MOIST CLAYEY SANDY SILT (A-4) WITH BOULDERS			
680	681.1	7.7	3	4	2						SS-2	M	ARTIFICIAL FILL BROWN-GRAY MED. STIFF MED. (PI=20) PLASTIC MOIST SILTY SANDY CLAY (A-7-6) WITH BOULDERS	7.7		
675													CRYSTALLINE ROCK (RUN #1) SLIGHT TO VERY SLIGHTLY WEATHERED GRANITE, REC=100% RQD=58%	12.2		
670													CRYSTALLINE ROCK (RUN #2) SLIGHTLY WEATHERED TO FRESH GRANITE, REC=96% RQD=45%	14.0		
													Boring Terminated at Elevation 669.8 ft IN CRYSTALLINE ROCK (GRANITE)	19.0		
NOTE: THIS BORING WAS EB1-B FROM PROJECT 37870, BULB AVENUE EXTENSION OVER LONG CREEK, GASTON COUNTY																

NCDOT BORE DOUBLE 15000_GEO_CULV_CULVERTBORINGS.GPJ NC_DOT.GDT 6/22/16

NCDOT CORE DOUBLE 15000_GEO_CULV_CULVERTBORINGS.GPJ NC_DOT.GDT 6/22/16

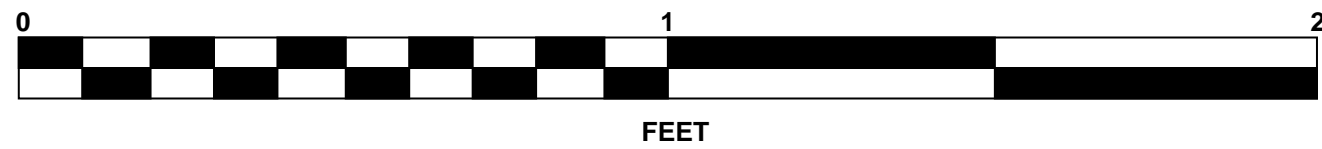
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DRILLER Smith, C. L.		START DATE 01/12/06		COMP. DATE 01/12/06		SURFACE WATER DEPTH N/A			
ELEV (ft)	RUN ELEV (ft)	DEPTH (ft)	RUN (ft)	DRILL RATE (Min/ft)	TOTAL RUN 6.8 ft		LOG	DESCRIPTION AND REMARKS	DEPTH (ft)
					REC. (%)	RQD (%)			
676.6	676.6	12.2	1.8					Continued from previous page	
675	674.8	14.0	5.0					CRYSTALLINE ROCK SLI. TO V. SLI. WEATH. V. HARD GRANITE WITH CLOSE FRACTURE SPACING REC=100% RQD=58%	12.2
670	669.8	19.0						CRYSTALLINE ROCK SLI. WEATH. TO FRESH V. HARD GRANITE WITH CLOSE FRACTURE SPACING REC=96% RQD=45%	14.0
Boring Terminated at Elevation 669.8 ft IN CRYSTALLINE ROCK (GRANITE)									
NOTE: THIS BORING WAS EB1-B FROM PROJECT 37870, BULB AVENUE EXTENSION OVER LONG CREEK, GASTON COUNTY									

NCDOT CORE DOUBLE 15000_GEO_CULV_CULVERTBORINGS.GPJ NC_DOT.GDT 6/22/16

CORE PHOTOGRAPHS

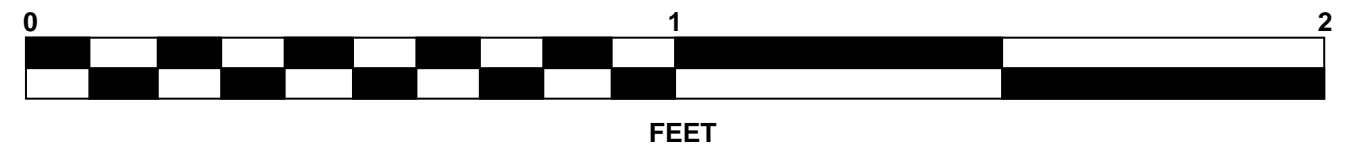
B-7

BOX 1 and 2: 4.1 - 15.6 FEET



B-8

BOX 1 of 1: 8.5 - 17.0 FEET



SITE PHOTOGRAPH

Proposed Culvert At Sta. 22+34 -Y3-



View Facing South (Upstream) Along Tributary L-8 at Proposed -Y3- Culvert Location
(Photo taken from BSR)