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REFERENCE: U-2579AA

PROJECT: 34839

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

STRUCTURE
SUBSURFACE INVESTIGATION

COUNTY FORSYTH
PROJECT DESCRIPTION WINSTON-SALEM NORTHERN
BELTWAY EASTERN SECTION (FUTURE I-74)
FROM US 311 TO I-40
SITE DESCRIPTION BRIDGE NO. 731 ON SR 1003
(Sta. 25 + 32.95) OVER RAMP -Y2RPB-

CONTENTS

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2	LEGEND
3	SITE PLAN
4	PROFILE
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STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	U-2579AA	1	10

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:
1. 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.
 2. 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

HPC

GOODNIGHT, D.W.

INVESTIGATED BY GOODNIGHT, D.W.

DRAWN BY HILL, M.J.

CHECKED BY HAMM, J.R.

SUBMITTED BY FALCON ENG.

DATE AUGUST 2019



Designed by:

W. Scott Hunsberger

5A46978 8/29/2019

SIGNATURE

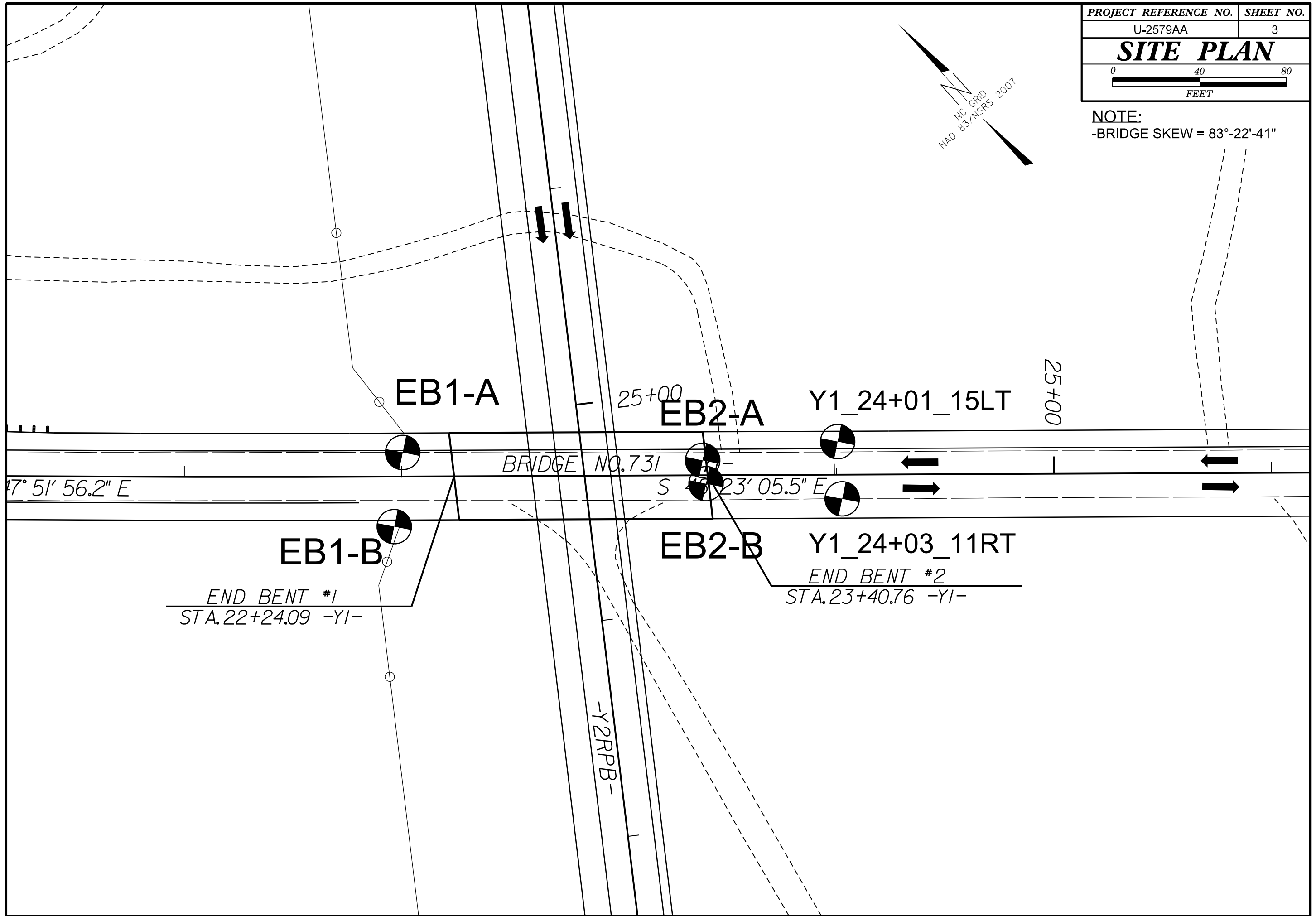
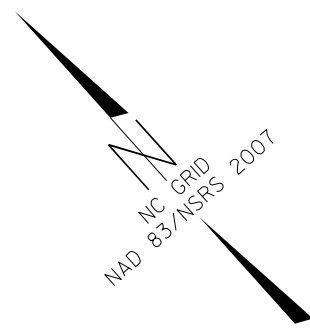
DATE

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

Table with 4 main columns: SOIL DESCRIPTION, GRADATION, ROCK DESCRIPTION, and TERMS AND DEFINITIONS. It contains detailed technical specifications, classification charts, and symbols for geotechnical engineering.

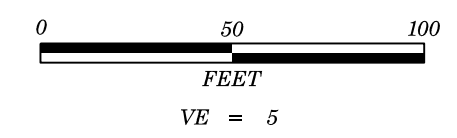
PROJECT REFERENCE NO.	SHEET NO.
U-2579AA	3
SITE PLAN	

NOTE:
-BRIDGE SKEW = 83°-22'-41"

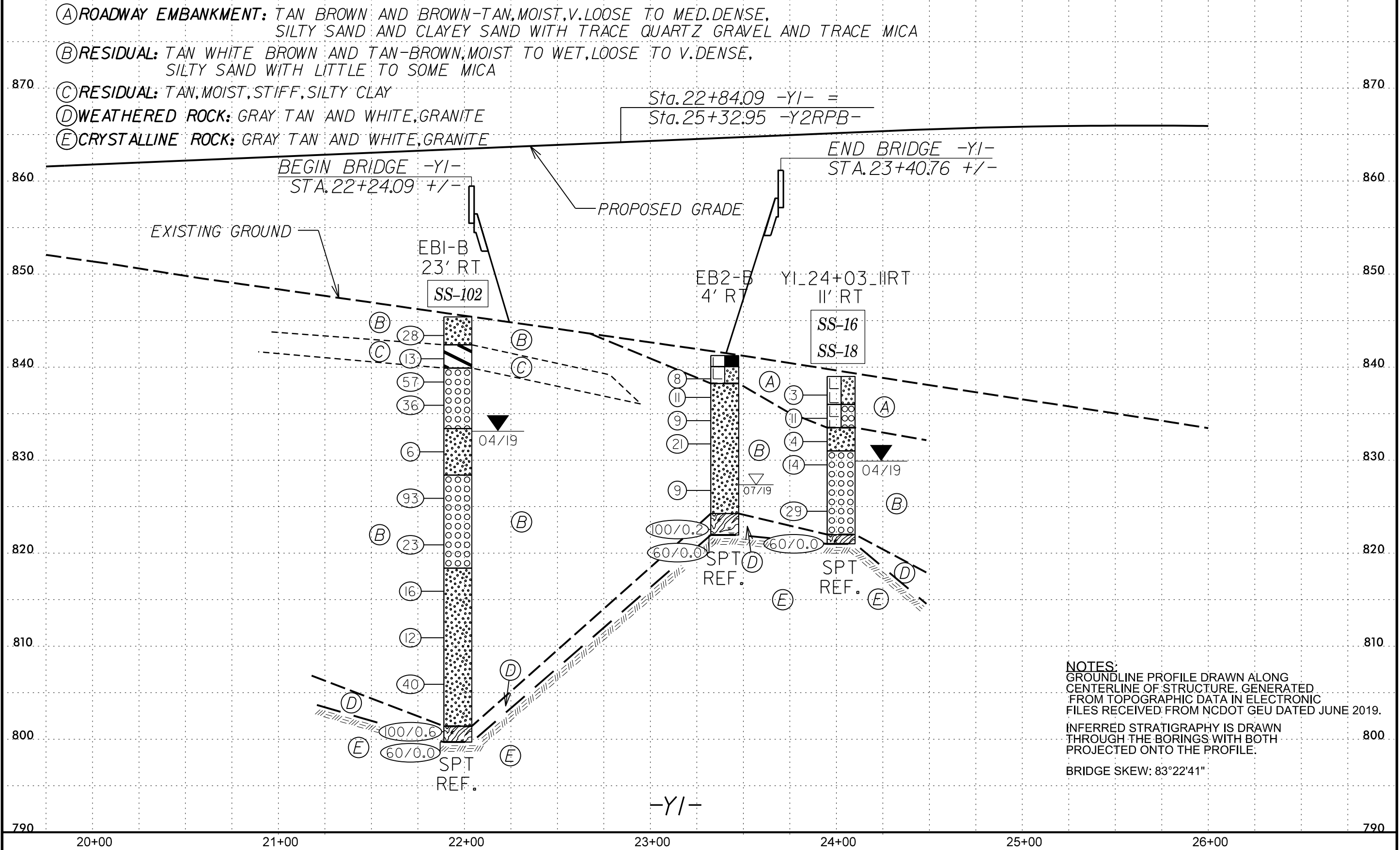


SOIL TEST RESULTS

SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS.	LL.	P.I.	% BY WEIGHT				% PASSING (SIEVES)			% MOISTURE	% ORGANIC
							C. SAND	F. SAND	SILT	CLAY	10	40	200		
SS-102	23' RT	21+96	3.5'-5.0'	A-7-6	67	38	31	14	2	53	91	69	53	25	-
SS-16	11' RT	24+03	1.0'-2.5'	A-2-4	36	6	44	32	4	20	87	64	25	19	-
SS-18	11' RT	24+03	6.0'-7.5'	A-2-5	49	6	37	39	8	16	100	80	30	49	-



PROJECT REFERENCE NO. U-2579AA	SHEET NO. 4
BRIDGE NO. 731 ON SR 1003 OVER RAMP -Y2RPB-	



NOTES:
 GROUNDLINE PROFILE DRAWN ALONG CENTERLINE OF STRUCTURE. GENERATED FROM TOPOGRAPHIC DATA IN ELECTRONIC FILES RECEIVED FROM NCDOT GEU DATED JUNE 2019.
 INFERRED STRATIGRAPHY IS DRAWN THROUGH THE BORINGS WITH BOTH PROJECTED ONTO THE PROFILE.
 BRIDGE SKEW: 83°22'41"

8/23/99

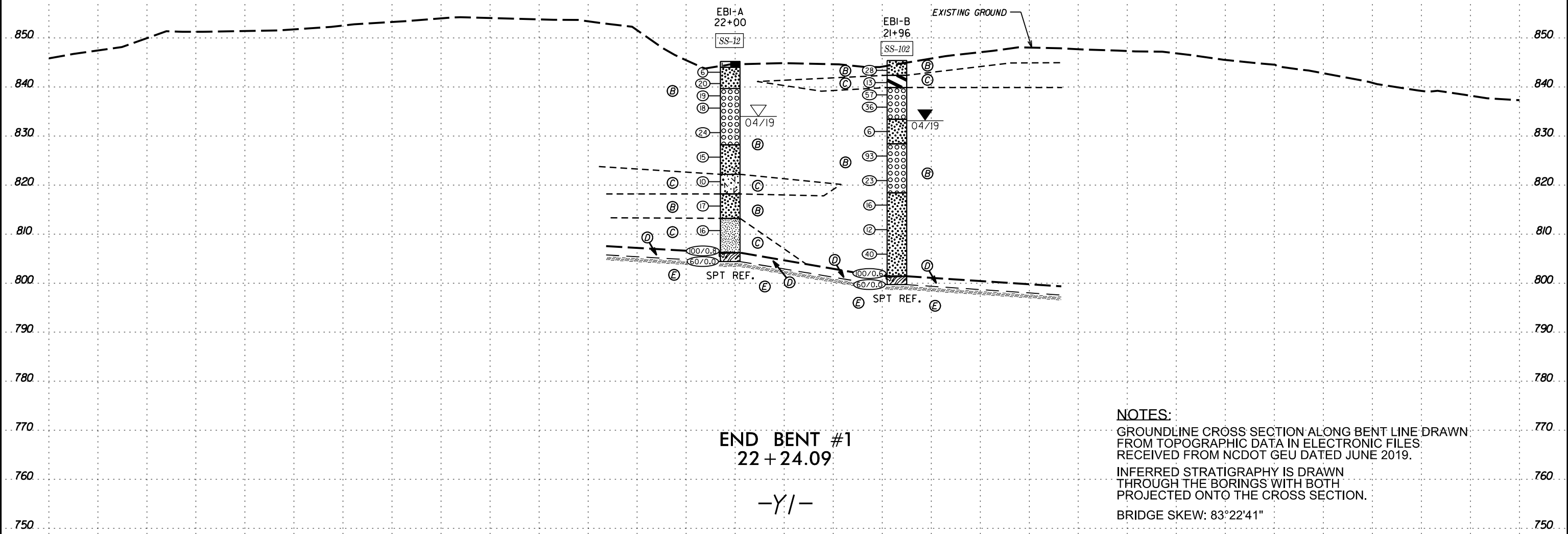
150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150

0 20 40
FEET

SOIL TEST RESULTS

SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS.	L.L.	P.I.	% BY WEIGHT				% PASSING (SIEVES)			% MOISTURE	% ORGANIC
							C. SAND	F. SAND	SILT	CLAY	10	40	200		
SS-12	21' LT	22+00	23.0'-25.0'	A-5	44	4	39	32	16	13	100	74	37	41	-
SS-102	23' RT	21+96	3.5'-5.0'	A-7-6	67	38	31	14	2	53	91	69	53	25	-

- (B) RESIDUAL: TAN WHITE AND BROWN, MOIST TO WET, LOOSE TO V. DENSE, SILTY SAND WITH TRACE TO SOME MICA
- (C) RESIDUAL: BROWN, WET, STIFF TO V. STIFF, SANDY CLAYEY SILT AND SILTY CLAY WITH TRACE TO LITTLE MICA
- (D) WEATHERED ROCK: TAN AND WHITE, GRANITE
- (E) CRYSTALLINE ROCK: TAN AND WHITE, GRANITE



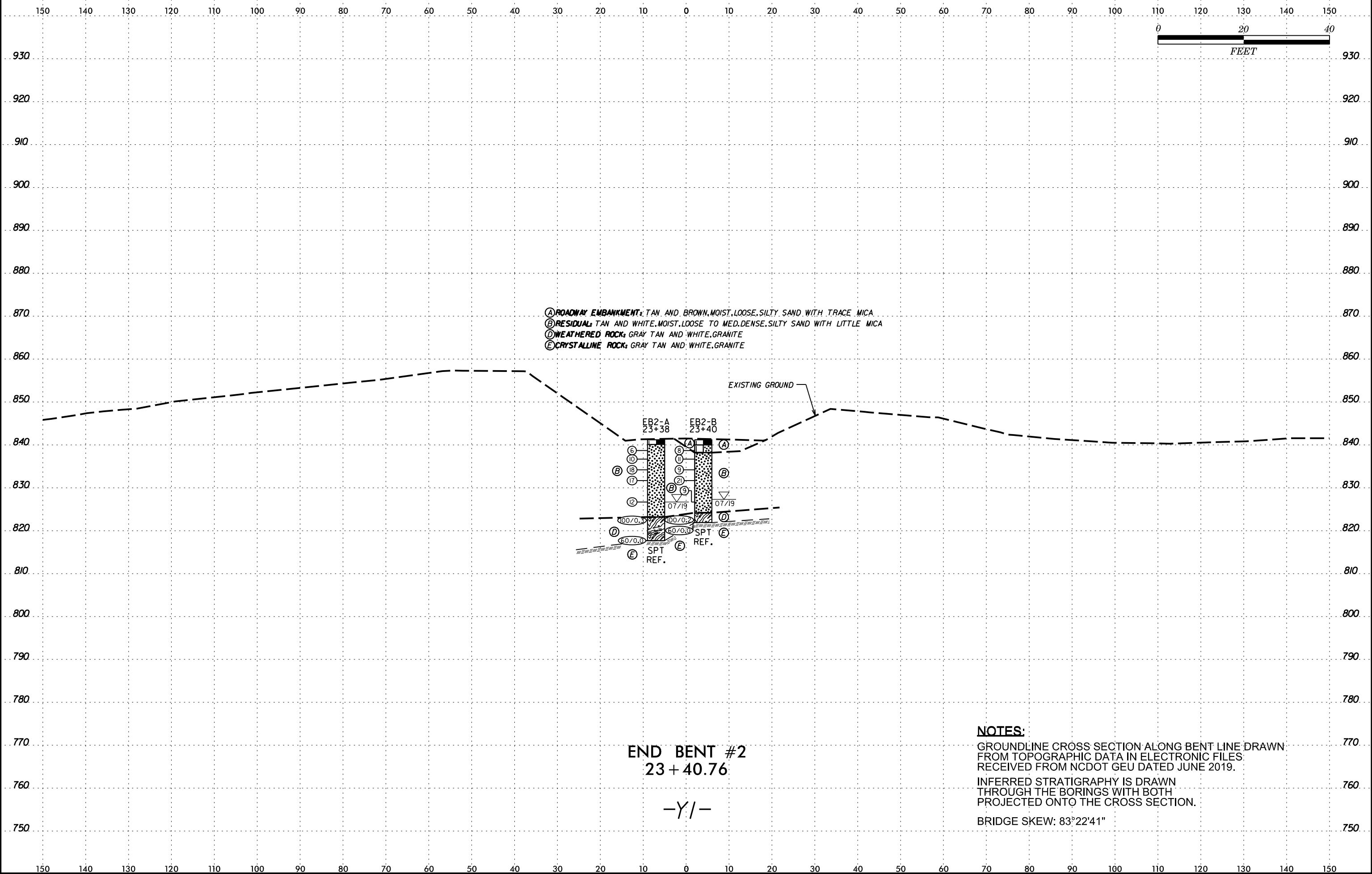
END BENT #1
22+24.09
-Y/-

NOTES:
GROUNDLINE CROSS SECTION ALONG BENT LINE DRAWN FROM TOPOGRAPHIC DATA IN ELECTRONIC FILES RECEIVED FROM NCDOT GEU DATED JUNE 2019.
INFERRED STRATIGRAPHY IS DRAWN THROUGH THE BORINGS WITH BOTH PROJECTED ONTO THE CROSS SECTION.
BRIDGE SKEW: 83°22'41"

SDATES

150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150

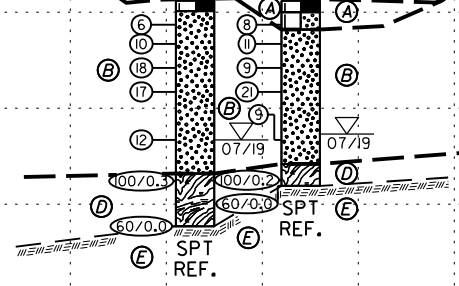
8/23/99



- Ⓐ ROADWAY EMBANKMENT: TAN AND BROWN, MOIST, LOOSE, SILTY SAND WITH TRACE MICA
- Ⓑ RESIDUAL: TAN AND WHITE, MOIST, LOOSE TO MED. DENSE, SILTY SAND WITH LITTLE MICA
- Ⓓ WEATHERED ROCK: GRAY TAN AND WHITE, GRANITE
- Ⓔ CRYSTALLINE ROCK: GRAY TAN AND WHITE, GRANITE

EB2-A
23+38

EB2-B
23+40



END BENT #2
23 + 40.76

-Y/-

NOTES:
 GROUNDLINE CROSS SECTION ALONG BENT LINE DRAWN FROM TOPOGRAPHIC DATA IN ELECTRONIC FILES RECEIVED FROM NCDOT GEU DATED JUNE 2019.
 INFERRED STRATIGRAPHY IS DRAWN THROUGH THE BORINGS WITH BOTH PROJECTED ONTO THE CROSS SECTION.
 BRIDGE SKEW: 83°22'41"

SCALE\$

GEOTECHNICAL BORING REPORT

BORE LOG

WBS 34839.1.7		TIP U-2579AA		COUNTY FORSYTH		GEOLOGIST GOODNIGHT, D. J.									
SITE DESCRIPTION BRIDGE NO. 731 ON SR 1003 OVER RAMP -Y2RPB-						GROUND WTR (ft)									
BORING NO. EB1-A		STATION 22+00		OFFSET 12 ft LT		ALIGNMENT -Y1-									
COLLAR ELEV. 845.2 ft		TOTAL DEPTH 40.8 ft		NORTHING 842,476		EASTING 1,660,478									
DRILL RIG/HAMMER EFF./DATE HPC8513 CME-550 87% 01/10/2018		DRILL METHOD H.S. Augers		HAMMER TYPE Automatic											
DRILLER ODOM, C.		START DATE 04/15/19		COMP. DATE 04/15/19		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					
850															
845	844.0	1.2	2	2	4								M	ROADWAY EMBANKMENT 0.4' BITUMINOUS CONCRETE 0.8' CONCRETE	1.2
840	841.7	3.5	8	11	9								M	RESIDUAL BROWN, LOOSE TO MEDIUM DENSE, SILTY FINE TO COARSE SAND (A-2-4) WITH TRACE MICA	5.5
835	836.7	8.5	7	6	12								M	WHITE AND TAN, MEDIUM DENSE, SAND (A-1-b)	
830	831.7	13.5	13	12	12								M		
825	826.7	18.5	5	7	8								M	BROWN, MEDIUM DENSE, SILTY SAND (A-2-4) WITH LITTLE MICA	17.0
820	821.7	23.5	4	5	5								SS-12 41%	BROWN, STIFF, SANDY SILT (A-5) WITH TRACE MICA	23.0
815	816.7	28.5	5	6	11								W	TAN AND WHITE, MEDIUM DENSE, SILTY FINE TO COARSE SAND (A-2-4) WITH LITTLE MICA	27.0
810	811.7	33.5	5	6	10								M	BROWN, VERY STIFF, SANDY SILT (A-4) WITH LITTLE MICA	32.0
805	806.7	38.5	4	25	75/0.3									WEATHERED ROCK WHITE AND TAN, GRANITE	39.0
	804.4	40.8												Boring Terminated WITH STANDARD PENETRATION TEST REFUSAL at Elevation 804.4 ft ON CRYSTALLINE ROCK: GRANITIC ROCK	40.8

WBS 34839.1.7		TIP U-2579AA		COUNTY FORSYTH		GEOLOGIST GOODNIGHT, D. J.									
SITE DESCRIPTION BRIDGE NO. 731 ON SR 1003 OVER RAMP -Y2RPB-						GROUND WTR (ft)									
BORING NO. EB1-B		STATION 21+96		OFFSET 23 ft RT		ALIGNMENT -Y1-									
COLLAR ELEV. 845.4 ft		TOTAL DEPTH 45.7 ft		NORTHING 842,453		EASTING 1,660,452									
DRILL RIG/HAMMER EFF./DATE HPC8513 CME-550 87% 01/10/2018		DRILL METHOD H.S. Augers		HAMMER TYPE Automatic											
DRILLER ODOM, C.		START DATE 04/29/19		COMP. DATE 04/29/19		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					
850															
845	844.4	1.0	7	13	15								M	0.3' TOPSOIL	0.0
840	841.9	3.5	15	8	5								SS-102 25%	RESIDUAL TAN, MEDIUM DENSE, SILTY FINE TO COARSE SAND (A-2-4)	3.0
835	836.9	8.5	21	19	17								M	TAN, STIFF, SILTY CLAY (A-7-6)	5.5
830	831.9	13.5	4	3	3								M	TAN AND WHITE, MEDIUM TO VERY DENSE, SILTY FINE TO COARSE SAND (A-1-b)	
825	826.9	18.5	5	40	53								W	TAN, LOOSE, SILTY FINE TO COARSE SAND (A-2-4)	12.0
820	821.9	23.5	11	13	10								W	TAN, MEDIUM DENSE, SILTY SAND (A-2-4) WITH LITTLE MICA	17.0
815	816.9	28.5	11	8	8								W	TAN AND BROWN, MEDIUM DENSE TO DENSE, SILTY SAND (A-2-4) WITH SOME MICA	27.0
810	811.9	33.5	4	4	8								W		
805	806.9	38.5	8	15	25								W		
800	799.7	45.7	7	45	55/0.1								W	WEATHERED ROCK TAN AND WHITE, GRANITE	44.0
														Boring Terminated WITH STANDARD PENETRATION TEST REFUSAL at Elevation 799.7 ft ON CRYSTALLINE ROCK: GRANITIC ROCK	45.7

NCDOT BORE DOUBLE U2579AA_BRDG731_BORINGS.GPJ NC_DOT.GDT 7/9/19

GEOTECHNICAL BORING REPORT BORE LOG

WBS 34839.1.7		TIP U-2579AA		COUNTY FORSYTH		GEOLOGIST GOODNIGHT, D. J.										
SITE DESCRIPTION BRIDGE NO. 731 ON SR 1003 OVER RAMP -Y2RPB-						GROUND WTR (ft)										
BORING NO. EB2-A		STATION 23+38		OFFSET 7 ft LT		ALIGNMENT -Y1-										
COLLAR ELEV. 841.2 ft		TOTAL DEPTH 23.5 ft		NORTHING 842,381		EASTING 1,660,578										
DRILL RIG/HAMMER EFF./DATE TRI9435 CME-55 89% 03/21/2019		DRILL METHOD H.S. Augers		HAMMER TYPE Automatic												
DRILLER Estep, J. E.		START DATE 07/30/19		COMP. DATE 07/30/19		SURFACE WATER DEPTH N/A										
ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT					SAMP. NO.	LOG MOI	LOG	SOIL AND ROCK DESCRIPTION	DEPTH (ft)	
			0.5ft	0.5ft	0.5ft	0	25	50	75	100						
845																
840	839.7	1.5	2	3	3								M	841.2	0.0	
	837.7	3.5	3	4	6								M	840.1	1.1	
835	835.2	6.0	6	8	10								M			
	832.7	8.5	8	9	8								M			
830																
	827.7	13.5	3	5	7											
825	822.7	18.5	100/0.3											823.2	18.0	
820	817.7	23.5	60/0.0											817.7	23.5	

WBS 34839.1.7		TIP U-2579AA		COUNTY FORSYTH		GEOLOGIST GOODNIGHT, D. J.									
SITE DESCRIPTION BRIDGE NO. 731 ON SR 1003 OVER RAMP -Y2RPB-						GROUND WTR (ft)									
BORING NO. EB2-B		STATION 23+40		OFFSET 4 ft RT		ALIGNMENT -Y1-									
COLLAR ELEV. 841.2 ft		TOTAL DEPTH 19.3 ft		NORTHING 842,372		EASTING 1,660,572									
DRILL RIG/HAMMER EFF./DATE TRI9435 CME-55 89% 03/21/2019		DRILL METHOD H.S. Augers		HAMMER TYPE Automatic											
DRILLER Estep, J. E.		START DATE 07/30/19		COMP. DATE 07/30/19		SURFACE WATER DEPTH N/A									
ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT					SAMP. NO.	LOG MOI	LOG	SOIL AND ROCK DESCRIPTION	DEPTH (ft)
			0.5ft	0.5ft	0.5ft	0	25	50	75	100					
845															
840	839.7	1.5	5	4	4								M	840.0	1.2
	837.7	3.5	5	6	5								M	838.2	3.0
835	835.2	6.0	3	4	5								M		
	832.7	8.5	4	8	13								M		
830															
	827.7	13.5	4	4	5										
825	822.7	18.5	100/0.2											824.2	17.0
	821.9	19.3	60/0.0										M	821.9	19.3

NCDOT BORE DOUBLE U2579AA_BRDG731_BORINGS.GPJ NC_DOT.GDT 8/1/19

GEOTECHNICAL BORING REPORT

BORE LOG

WBS 34839.1.7		TIP U-2579AA		COUNTY FORSYTH		GEOLOGIST GOODNIGHT, D. J.										
SITE DESCRIPTION BRIDGE NO. 731 ON SR 1003 OVER RAMP -Y2RPB-						GROUND WTR (ft)										
BORING NO. Y1_24+01_10LT		STATION 24+01		OFFSET 10 ft LT		ALIGNMENT -Y1-										
COLLAR ELEV. 845.2 ft		TOTAL DEPTH 18.0 ft		NORTHING 842,343		EASTING 1,660,627										
DRILL RIG/HAMMER EFF./DATE HPC8513 CME-550 87% 01/10/2018		DRILL METHOD H.S. Augers		HAMMER TYPE Automatic												
DRILLER ODOM, C.		START DATE 04/15/19		COMP. DATE 04/15/19		SURFACE WATER DEPTH N/A										
ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT					SAMP. NO.	LOG MOI	LOG	SOIL AND ROCK DESCRIPTION	DEPTH (ft)	
			0.5ft	0.5ft	0.5ft	0	25	50	75	100						
850																
845	844.1	1.1	42	58	0.4										845.2	0.0
	841.7	3.5	63	37	34										844.1	1.1
840	839.2	6.0	10	8	9										841.2	4.0
	836.7	8.5	7	12	16										833.2	12.0
835	831.7	13.5	5	7	9										827.7	17.5
830	827.2	18.0	60	0	0									827.2	18.0	

WBS 34839.1.7		TIP U-2579AA		COUNTY FORSYTH		GEOLOGIST GOODNIGHT, D. J.										
SITE DESCRIPTION BRIDGE NO. 731 ON SR 1003 OVER RAMP -Y2RPB-						GROUND WTR (ft)										
BORING NO. Y1_24+03_11RT		STATION 24+03		OFFSET 11 ft RT		ALIGNMENT -Y1-										
COLLAR ELEV. 839.0 ft		TOTAL DEPTH 18.0 ft		NORTHING 842,325		EASTING 1,660,614										
DRILL RIG/HAMMER EFF./DATE HPC8513 CME-550 87% 01/10/2018		DRILL METHOD H.S. Augers		HAMMER TYPE Automatic												
DRILLER ODOM, C.		START DATE 04/15/19		COMP. DATE 04/15/19		SURFACE WATER DEPTH N/A										
ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT					SAMP. NO.	LOG MOI	LOG	SOIL AND ROCK DESCRIPTION	DEPTH (ft)	
			0.5ft	0.5ft	0.5ft	0	25	50	75	100						
840																
	838.0	1.0	2	1	2										839.0	0.0
835	835.5	3.5	2	4	7										836.0	3.0
	833.0	6.0	2	2	2										833.5	5.5
830	830.5	8.5	2	7	7										831.0	8.0
	825.5	13.5	9	13	16										822.0	17.0
825	821.0	18.0	60	0	0									821.0	18.0	

NCDOT BORE DOUBLE U2579AA_BRDG731_BORINGS.GPJ NC_DOT.GDT 7/9/19



VIEW ALONG END BENT 1 FROM EB1-B TOWARD EB1-A



VIEW UPSTATION FROM END BENT 1 TOWARD END BENT 2



VIEW ALONG END BENT 2 FROM EB2-B TOWARD EB2-A



FALCON ENGINEERING, INC.
1210 TRINITY ROAD, SUITE 110
RALEIGH, NC 27607
PHONE: 919.871.0800
FAX: 919.871.0803

SITE PHOTOGRAPHS

BRIDGE NO. 731 ON SR 1003 (STA. 25+32.95)
OVER RAMP -Y2RPB-
FORSYTH COUNTY, NC
WBS NO.: 34839 & TIP NO.: U-2579AA
FALCON PROJECT NO.: G19002.01