5/26/20

NAD 83/2001

S1_EB2_A

END BENT 2

END BENT 1

S1_EB2_B

S1_EB1_A

S2_B1_A (HDR)

S1_EB1_B

S1_EB1_C

-Y1_RT- PCC 21+18.95

-Y1_RT- PCC 23+59.22

-Y1_RT- PRC 25+14.76

SCS DATA -0.00-
PIscs 6+89.01
Δscs = 6+89.01
Tscs = 0.00, 0.00

SPI DATA -L_LT-
PIs 29+44.47
θs = 03°27'05.6"
Ls = 200
LT = 133.36
ST = 66.69

SUR DATA -L_LT-
PIc 32+96.15
Δc = 26°27'03.5" (RT)
D = 03°27'05.6"
Lc = 756.69
Tc = 385.04
R = 1,660

-L_LT- SC 30+11.11

-L_RT- TS 25+96.55

-L_RT- SC 27+96.55

-L_LT- TS 28+11.11

-L_RT- CS 33+17.57

-L_RT- ST 35+17.57

-L_LT-
N36°29'12.7"E

-L_RT-
N36°29'12.7"E

-L_RT-
N60°05'36.2"E

SAG
26+81.13

GREU_TL-3

B-77

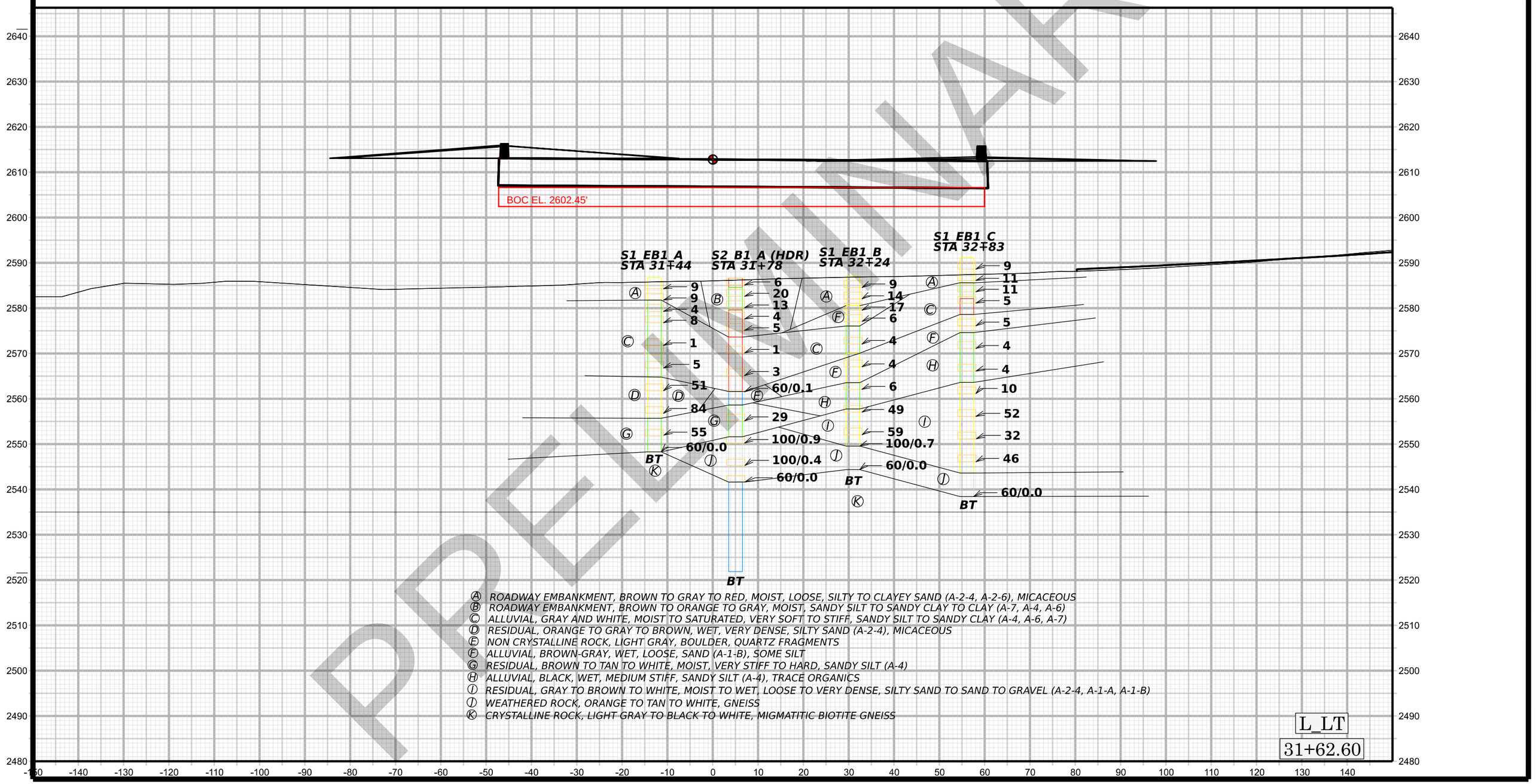
MATCH LINE - - STA 22+89.01 SEE SHEET Plan

MATCH LINE - - STA 36+89.01 SEE SHEET Plan-2

5/26/20

B-5898
X 31+62.60

END BENT 1
STA 31+62.60



Ⓐ ROADWAY EMBANKMENT, BROWN TO GRAY TO RED, MOIST, LOOSE, SILTY TO CLAYEY SAND (A-2-4, A-2-6), MICACEOUS
Ⓑ ROADWAY EMBANKMENT, BROWN TO ORANGE TO GRAY, MOIST, SANDY SILT TO SANDY CLAY TO CLAY (A-7, A-4, A-6)
Ⓒ ALLUVIAL, GRAY AND WHITE, MOIST TO SATURATED, VERY SOFT TO STIFF, SANDY SILT TO SANDY CLAY (A-4, A-6, A-7)
Ⓓ RESIDUAL, ORANGE TO GRAY TO BROWN, WET, VERY DENSE, SILTY SAND (A-2-4), MICACEOUS
Ⓔ NON CRYSTALLINE ROCK, LIGHT GRAY, BOULDER, QUARTZ FRAGMENTS
Ⓕ ALLUVIAL, BROWN-GRAY, WET, LOOSE, SAND (A-1-B), SOME SILT
Ⓖ RESIDUAL, BROWN TO TAN TO WHITE, MOIST, VERY STIFF TO HARD, SANDY SILT (A-4)
Ⓗ ALLUVIAL, BLACK, WET, MEDIUM STIFF, SANDY SILT (A-4), TRACE ORGANICS
Ⓘ RESIDUAL, GRAY TO BROWN TO WHITE, MOIST TO WET, LOOSE TO VERY DENSE, SILTY SAND TO SAND TO GRAVEL (A-2-4, A-1-A, A-1-B)
Ⓙ WEATHERED ROCK, ORANGE TO TAN TO WHITE, GNEISS
Ⓚ CRYSTALLINE ROCK, LIGHT GRAY TO BLACK TO WHITE, MIGMATITIC BIOTITE GNEISS

L_LT
31+62.60

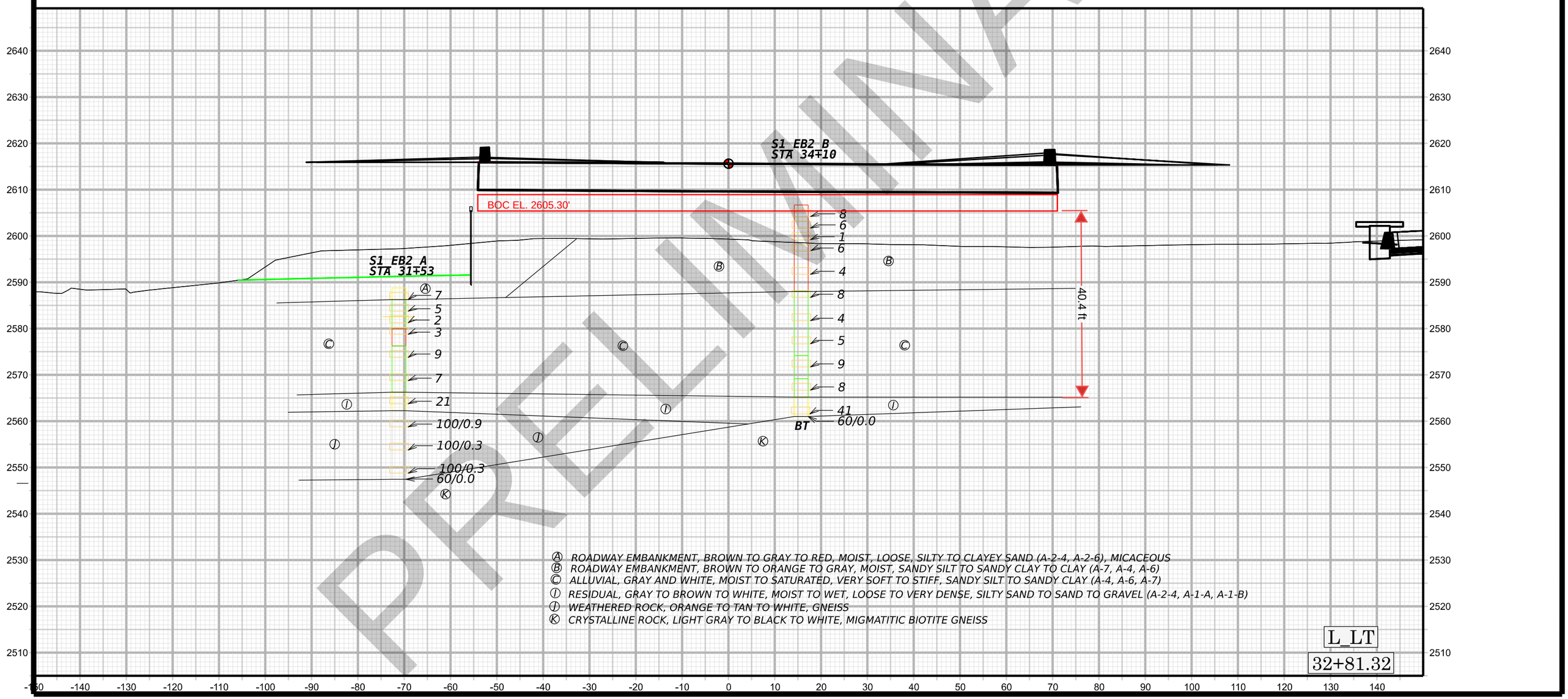
5/26/20

0 10 20

B-0000

X 32+81.32

END BENT 2
STA 32+81.32



GEOTECHNICAL BORING REPORT
BORE LOG

WBS 48030.1.FS1	**TIP** B-5898/B-3186	**COUNTY** WAKE	**GEOLOGIST** Alex Lozada	
SITE DESCRIPTION Bridges 430155 and 430158 over Richland Creek and Bridge 430168 over US 19/23 on US 23-74				**GROUND WTR (ft)**
BORING NO. S1_EB1_A	**STATION** 31+44	**OFFSET** 13 ft LT	**ALIGNMENT** L_LT	**0 HR.** 9.0
COLLAR ELEV. 2,585.9 ft	**TOTAL DEPTH** 38.5 ft	**NORTHING** 666,931	**EASTING** 819,344	**24 HR.** 7.0
DRILL RIG/HAMMER EFF./DATE SUM3123 CME-550X 95% 11/30/2017		**DRILL METHOD** H.S. Augers	**HAMMER TYPE** Automatic	
DRILLER Michael Moseley	**START DATE** 02/14/23	**COMP. DATE** 02/14/23	**SURFACE WATER DEPTH** N/A	

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT 0.5ft	0.5ft	0.5ft	SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION
									ELEV. (ft) / DEPTH (ft)
2590									17 ft of Fill, sand, uw=120 pcf, phi=29
	2,585.9	0.0							GROUND SURFACE
2585	2,584.9	1.0	2	5	4	SS-001	M		**RESIDUAL** Brown to gray, loose, silty sand (A-2-4), micaceous
	2,582.4	3.5	3	5	4	SS-002	M		sand, uw=120 pcf, phi=28
2580	2,580.9	5.0							**ALLUVIAL** Gray and white, soft, fine sandy silt (A-4)
	2,579.9	6.0	2	2	2	SS-003	M		
	2,577.4	8.5	4	4	4	SS-004	M		clay, uw=115 pcf, Su=750 psf
2575	2,572.4	13.5	0	0	1	SS-005	Sat.		
2570									clay, uw=115 pcf, Su=350 psf
	2,567.4	18.5	WOH	2	3	SS-006	M		
2565	2,563.9	22.0							**RESIDUAL** Orange to grey to brown, very dense, silty sand (A-2-4), micaceous
	2,562.4	23.5	46	32	19	SS-007	W		
2560									sand, uw=125 pcf, phi=35
	2,557.4	28.5	10	19	65	SS-008	M		
2555	2,554.8	31.1							**RESIDUAL** Brown to white, very dense, sandy silt (A-4), micaceous
	2,552.4	33.5	30	29	2	SS-009	M		assumed Sand, uw=120 pcf, phi=35
2550	2,547.4	38.5	60/0.0'	-	-	SS-010			assumed Sand, uw=165 pcf, phi=40
									Boring Terminated by Auger Refusal at Elevation 2,547.4 ft on Rock.
									ST-001 had 100% recovery.
									Other Samples: ST-001 (15.0 - 17.0)

BLOWS PER FOOT: 0 25 50 75 100

GEOTECHNICAL BORING REPORT
BORE LOG

WBS 48030.1.FS1	**TIP** B-5898/B-3186	**COUNTY** WAKE	**GEOLOGIST** Alex Lozada	
SITE DESCRIPTION Bridges 430155 and 430158 over Richland Creek and Bridge 430168 over US 19/23 on US 23-74				**GROUND WTR (ft)**
BORING NO. S1_EB1_B	**STATION** 32+24	**OFFSET** 31 ft RT	**ALIGNMENT** L_LT	**0 HR.** Dry
COLLAR ELEV. 2,587.7 ft	**TOTAL DEPTH** 42.7 ft	**NORTHING** 666,954	**EASTING** 819,431	**24 HR.** Dry
DRILL RIG/HAMMER EFF. ≈2587.5 /3123 CME-550X 95% 11/30/2017		**DRILL METHOD** H.S. Augers	**HAMMER TYPE** Automatic	
DRILLER Michael Moseley	**START DATE** 02/14/23	**COMP. DATE** 02/14/23	**SURFACE WATER DEPTH** N/A	

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT 0.5ft	0.5ft	0.5ft	BLOWS PER FOOT 0 25 50 75 100	SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION ELEV. (ft)	DEPTH (ft)
2590						15 ft of Fill, sand, uw=120 pcf, phi=29				2,587.7 GROUND SURFACE	0.0
	2,586.7	1.0								**ROADWAY EMBANKMENT** Brown, loose, clayey sand (A-2-6), micaceous, trace gravel	
2585			4	4	5	9 sand, uw=120 pcf, phi=28	SS-011	M			
	2,584.2	3.5									
			7	6	8	14 sand, uw=120 pcf, phi=29	SS-012	M			
	2,581.7	6.0									
2580			5	7	10	17	SS-013	M		2,581.2	6.5
	2,579.2	8.5								**ALLUVIAL** Gray-brown, medium dense, sand (A-1-B), fine to medium grained sand	
			3	3	3	6	SS-014	W		2,576.7	11.0
2575										**ALLUVIAL** Dark gray, soft, sandy silt (A-4), fine grained sand, micaceous	
	2,574.2	13.5									
			0	2	2	4 sand, uw=115 pcf, phi=26	SS-015	W			
2570										2,570.7	17.0
	2,569.2	18.5								**ALLUVIAL** Brown-gray, loose, sand (A-1-B), some silt	
			0	2	2	4	SS-016	W			
2565											
	2,564.2	23.5								2,564.2	23.5
			2	3	3	6 clay, uw=115 pcf, Su=750 psf	SS-017	W		**ALLUVIAL** Black, medium stiff, sandy silt (A-4), organic, some wood fragments	
2560											
	2,559.2	28.5									
			6	13	36	49	SS-018	W		2,558.4	29.3
						sand, uw=120 pcf, phi=36				**RESIDUAL** Gray and white, very dense, gravel (A-1-A), some coarse sand	
2555											
	2,554.2	33.5									
			22	24	35	59	SS-019	W			
2550										2,550.2	37.5
	2,549.2	38.5								**WEATHERED ROCK** White, migmatitic biotite gneiss	
			87	13/0.2'	-	sand, uw=125 pcf, phi=40	SS-020	W			
	2,545.0	42.7								2,545.0	42.7
			60/0.0'	-	-		SS-021			Boring Terminated by Auger Refusal at Elevation 2,545.0 ft on Rock.	
						sand, uw=165 pcf, phi=40				Hard drilling from 29.3' to 42.7', quartz lenses and WR present.	

GEOTECHNICAL BORING REPORT
BORE LOG

WBS 48030.1.FS1	**TIP** B-5898/B-3186	**COUNTY** WAKE	**GEOLOGIST** Alex Lozada	
SITE DESCRIPTION Bridges 430155 and 430158 over Richland Creek and Bridge 430168 over US 19/23 on US 23-74				**GROUND WTR (ft)**
BORING NO. S1_EB1_C	**STATION** 32+83	**OFFSET** 56 ft RT	**ALIGNMENT** L_LT	**0 HR.** Dry
COLLAR ELEV. 2,591.3 ft	**TOTAL DEPTH** 53.0 ft	**NORTHING** 666,974	**EASTING** 819,491	**24 HR.** 10.2
DRILL RIG/HAMMER EFF./DATE SUM3123 CME-550X 95% 11/30/2017		**DRILL METHOD** H.S. Augers	**HAMMER TYPE** Automatic	
DRILLER Michael Moseley	**START DATE** 02/14/23	**COMP. DATE** 02/14/23	**SURFACE WATER DEPTH** N/A	

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT 0.5ft	0.5ft	0.5ft	SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION
									ELEV. (ft) — DEPTH (ft)
2595									
	2,591.3	0.0							GROUND SURFACE
2590	2,590.3	1.0	4	4	5	SS-022	M		**ROADWAY EMBANKMENT** Brown-red, loose, clayey sand (A-2-6), micaceous
	2,587.8	3.5	4	5	6	SS-023	M		
2585	2,585.8	5.5							
	2,585.3	6.0	7	6	5	SS-024	M		**ALLUVIAL** Gray, loose, sandy silt (A-4), fine grained sand, micaceous
	2,582.8	8.5							
	2,582.3	9.0	3	2	3	SS-025	W		**ALLUVIAL** Brown and gray, medium stiff, sandy clay (A-6)
2580	2,578.8	12.5							
	2,577.8	13.5	3	2	3	SS-026	M		**ALLUVIAL** Brown, loose, sand (A-1-B), fine to medium grained sand
2575	2,574.8	16.5							
	2,572.8	18.5	1	2	2	SS-027	M		**ALLUVIAL** Dark brown-gray, soft, silt (A-4).
2570									
	2,567.8	23.5	0	1	3	SS-028	M		
2565	2,563.8	27.5							
	2,562.8	28.5	25	5	5	SS-029	M		**RESIDUAL** Dark gray to red-brown to orange-brown, loose, silty sand (A-2-4), micaceous.
2560									
	2,557.8	33.5	21	23	29	SS-030	M		
2555									
	2,552.8	38.5	20	16	16	SS-031	M		
2550									
	2,547.8	43.5	12	21	25	SS-032	M		
2545									
	2,543.8	47.5							
	2,542.8	48.5	40	60	-	SS-033	M		**WEATHERED ROCK** White, migmatitic biotite gneiss
2540									
	2,538.3	53.0	60/0.0'	-	-	SS-034	M		Boring Terminated by Auger Refusal at Elevation 2,538.3 ft on Rock.

BLOWS PER FOOT: 0 — 25 — 50 — 75 — 100

GEOTECHNICAL BORING REPORT
BORE LOG

WBS 48030.1.FS1	**TIP** B-5898/B-3186	**COUNTY** WAKE	**GEOLOGIST** Alex Lozada
SITE DESCRIPTION Bridges 430155 and 430158 over Richland Creek and Bridge 430168 over US 19/23 on US 23-74			**GROUND WTR (ft)**
BORING NO. S1_EB2_A	**STATION** 31+53	**OFFSET** 71 ft LT	**ALIGNMENT** L_LT	**0 HR.** Dry
COLLAR ELEV. 2,585.4 ft	**TOTAL DEPTH** 41.3 ft	**NORTHING** 666,978	**EASTING** 819,308	**24 HR.** 6.2
DRILL RIG/HAMMER EFF./DATE SUM3123 CME-550X 95% 11/30/2017		**DRILL METHOD** H.S. Augers	**HAMMER TYPE** Automatic
DRILLER Michael Moseley	**START DATE** 02/15/23	**COMP. DATE** 02/15/23	**SURFACE WATER DEPTH** N/A

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT 0.5ft	0.5ft	0.5ft	BLOWS PER FOOT 0 25 50 75 100	SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION ELEV. (ft)	DEPTH (ft)
2590											
2585										2,585.4 GROUND SURFACE	0.0
	2,584.4	1.0	4	3	4	7	SS-035	M		**ROADWAY EMBANKMENT** Red, loose, clayey sand (A-2-6), fine to coarse grained sand	
	2,581.9	3.5								2,582.9	2.5
2580			3	2	3	5	SS-036	M		**RESIDUAL** Gray, medium stiff, sandy silt (A-4), fine grained sand	
	2,579.4	6.0									
			0	0	2	2	SS-037	M			
	2,576.9	8.5								2,576.6	8.8
2575			0	0	3	3	SS-038	W		**RESIDUAL** Red-brown, soft, sandy clay (A-6), medium plasticity	
	2,571.9	13.5								2,572.9	12.5
2570			4	4	5	9	SS-039	M		**RESIDUAL** Orange to gray, stiff, sandy silt (A-4), fine grained sand	
	2,566.9	18.5									
2565			3	3	4	7	SS-040	M			
	2,561.9	23.5								2,562.9	22.5
2560			4	8	13	21	SS-041	W		**RESIDUAL** Brown to gray, medium dense, silty sand (A-2-4), fine to coarse grained sand	
	2,556.9	28.5								2,558.9	26.5
2555			28	39	61/0.4'		SS-042	M		**WEATHERED ROCK** Orange-brown to white, migmatitic biotite gneiss	
	2,551.9	33.5									
2550			100/0.3'	-	-		SS-043	M			
	2,546.9	38.5									
2545			100/0.3'	-	-		SS-044	M			
	2,544.1	41.3								2,544.1	41.3
			60/0.0'				SS-045			Boring Terminated by Auger Refusal at Elevation 2,544.1 ft on Rock.	

GEOTECHNICAL BORING REPORT
BORE LOG

WBS 48030.1.FS1	**TIP** B-5898/B-3186	**COUNTY** WAKE	**GEOLOGIST** Alex Lozada	
SITE DESCRIPTION Bridges 430155 and 430158 over Richland Creek and Bridge 430168 over US 19/23 on US 23-74				**GROUND WTR (ft)**
BORING NO. S1_EB2_B	**STATION** 34+10	**OFFSET** 16 ft RT	**ALIGNMENT** L_LT	**0 HR.** N/A
COLLAR ELEV. 2,607.3 ft	**TOTAL DEPTH** 45.7 ft	**NORTHING** 667,083	**EASTING** 819,563	**24 HR.** N/A
DRILL RIG/HAMMER EFF./DATE SUM3123 CME-550X 95% 11/30/2017		**DRILL METHOD** H.S. Augers	**HAMMER TYPE** Automatic	
DRILLER Michael Moseley	**START DATE** 02/16/23	**COMP. DATE** 02/16/23	**SURFACE WATER DEPTH** N/A	

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT 0.5ft	0.5ft	0.5ft	BLOWS PER FOOT 0 25 50 75 100	SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION
										ELEV. (ft) DEPTH (ft)
2610										
										2,607.3 GROUND SURFACE 0.0
	2,606.3	1.0								**ROADWAY EMBANKMENT**
2605			5	4	4	8	SS-066	M		Red-brown, very soft to medium stiff, sandy clay (A-6)
	2,603.8	3.5								
			4	3	3	6	SS-067	M		
	2,601.3	6.0								
2600			0	0	1	1	SS-068	M		
	2,598.8	8.5								
			2	3	3	6	SS-069	M		
2595										
	2,593.8	13.5								
			2	2	2	4	SS-070	M		
2590										
	2,588.8	18.5								2,588.6 18.7
			4	3	5	8	SS-071	W		**ALLUVIAL**
2585										Gray, soft to medium stiff, sandy silt (A-4)
	2,583.8	23.5								
			0	2	2	4	SS-072	M		
2580										
	2,578.8	28.5								
			2	2	3	5	SS-073	M		
2575										2,574.8 32.5
	2,573.8	33.5								**ALLUVIAL**
			3	4	5	9	SS-074	M		Gray, medium stiff, sandy silt (A-5), high plasticity
2570										2,569.8 37.5
	2,568.8	38.5								**ALLUVIAL**
			3	4	4	8	SS-075	M		Black, medium stiff, silt (A-4), trace organic matter
2565										2,565.8 41.5
	2,563.8	43.5								**RESIDUAL**
			12	12	29	41	SS-076	M		Gray and white, dense, sand (A-1-B), fine to coarse grained sand
	2,561.6	45.7								2,561.6 45.7
			60/0.0'	-	-		SS-077	M		Boring Terminated by Auger Refusal at Elevation 2,561.6 ft on Rock.

EB2-LT		Average between S1-EB2-A and S1-EB2-B			
Depth from (ft)	Depth to (ft)	Soil Description	unit weight (pcf)	Phi (deg)	Su (psf)
0	9	Fill	120	29	
9	17	Roadway embankment (medium stiff clay, N=5)	115		600
17	23	Residual (soft clay, N=3)	115		300
23	29	Residual (medium stiff clay/silt, N=8)	115		1000
29	40	Alluvial (medium stiff clay/silt, N=6)	115		700
40	44	Residual (medium dense sand, N=30)	120	32	
44	52	PWR	125	40	
52	60	Rock	165	40	

EB2-RT		Average between S1-EB1-C and S1-EB2-B			
Depth from (ft)	Depth to (ft)	Soil Description	unit weight (pcf)	Phi (deg)	Su (psf)
0	7	Fill	120	29	
7	16	Roadway embankment (medium stiff clay, N=5)	115		600
16	38	Alluvial (medium stiff clay/silt, N=6)	115		700
38	41	Residual (m dense/loose sand, N=10)	120	29	
41	50	Residual (dense sand, N=40)	120	34	
50	55	PWR	125	40	
55	60	Rock	165	40	