

REFERENCE: SF-300352

PROJECT: BP3.R008

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

STRUCTURE  
SUBSURFACE INVESTIGATION

COUNTY DUPLIN  
PROJECT DESCRIPTION BRIDGE NO. 352 ON -L-  
(SR 1004) OVER HOOKERS BRANCH  
AT STA 29+35

CONTENTS

SHEET NO.	DESCRIPTION
1	TITLE SHEET
2	LEGEND (SOIL & ROCK)
3	SITE PLAN
4	PROFILE
5-9	BORE LOGS
10	SOIL TEST RESULTS

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	SF-300352	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:
- 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

S.N. ZIMARINO

T.W. MILLER

R.E. SMITH

C.M. WALKER

INVESTIGATED BY T.C. BOTTOMS

DRAWN BY T.W. MILLER

CHECKED BY D.N. ARGENBRIGHT

SUBMITTED BY D.N. ARGENBRIGHT

DATE AUGUST 2022



DocuSigned by:  
Tyler C. Bottoms 10/26/2022

48A2D3BD08CF446 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

Main content table with columns: SOIL DESCRIPTION, GRADATION, ROCK DESCRIPTION, TERMS AND DEFINITIONS, SOIL LEGEND AND AASHTO CLASSIFICATION, MINERALOGICAL COMPOSITION, COMPRESSIBILITY, PERCENTAGE OF MATERIAL, GROUND WATER, MISCELLANEOUS SYMBOLS, RECOMMENDATION SYMBOLS, ABBREVIATIONS, EQUIPMENT USED ON SUBJECT PROJECT, FRACTURE SPACING, BEDDING, INDURATION, PLASTICITY, COLOR.

SKEW: 90°

26+00 -L-      27+00 -L-      28+00 -L-      29+00 -L-      30+00 -L-      31+00 -L-      32+00 -L-

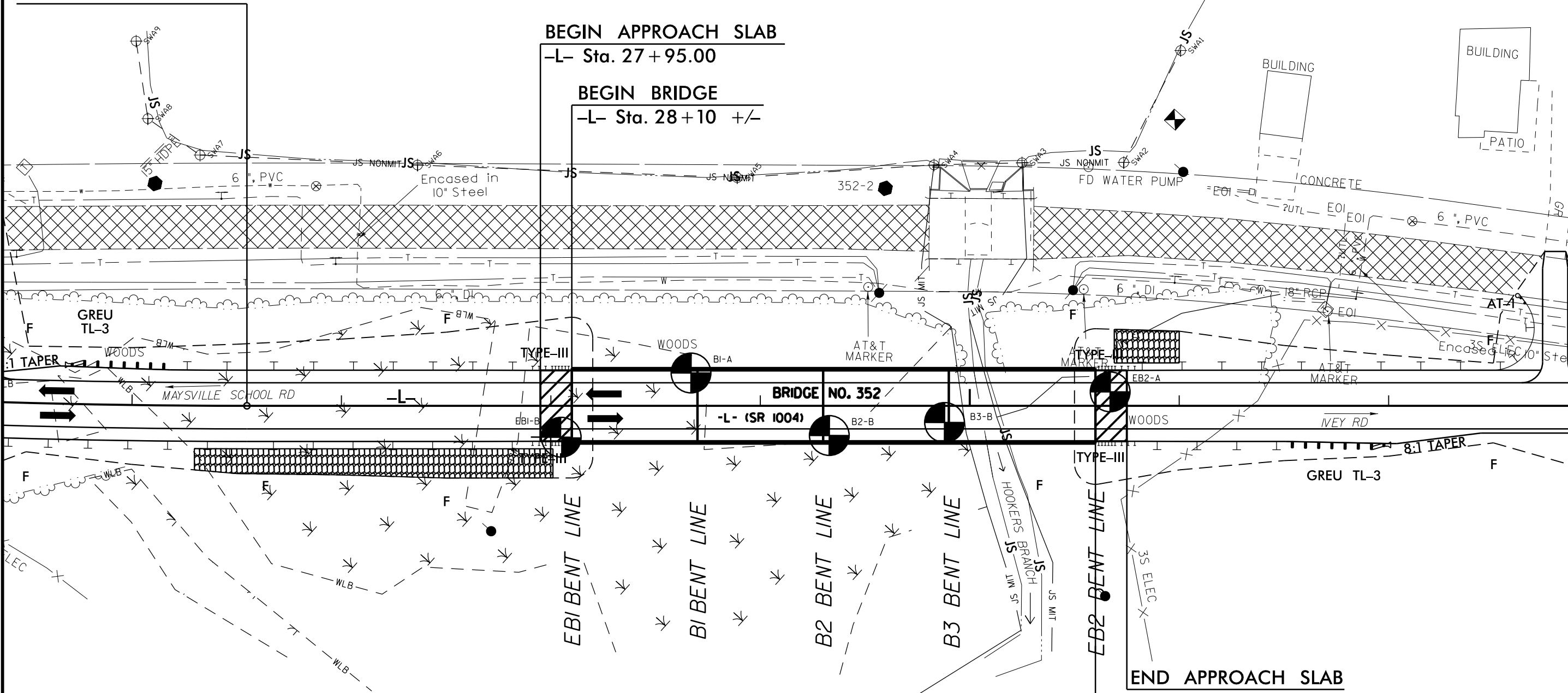
-L- PT Sta. 26+54.88

BEGIN APPROACH SLAB

-L- Sta. 27+95.00

BEGIN BRIDGE

-L- Sta. 28+10 +/-



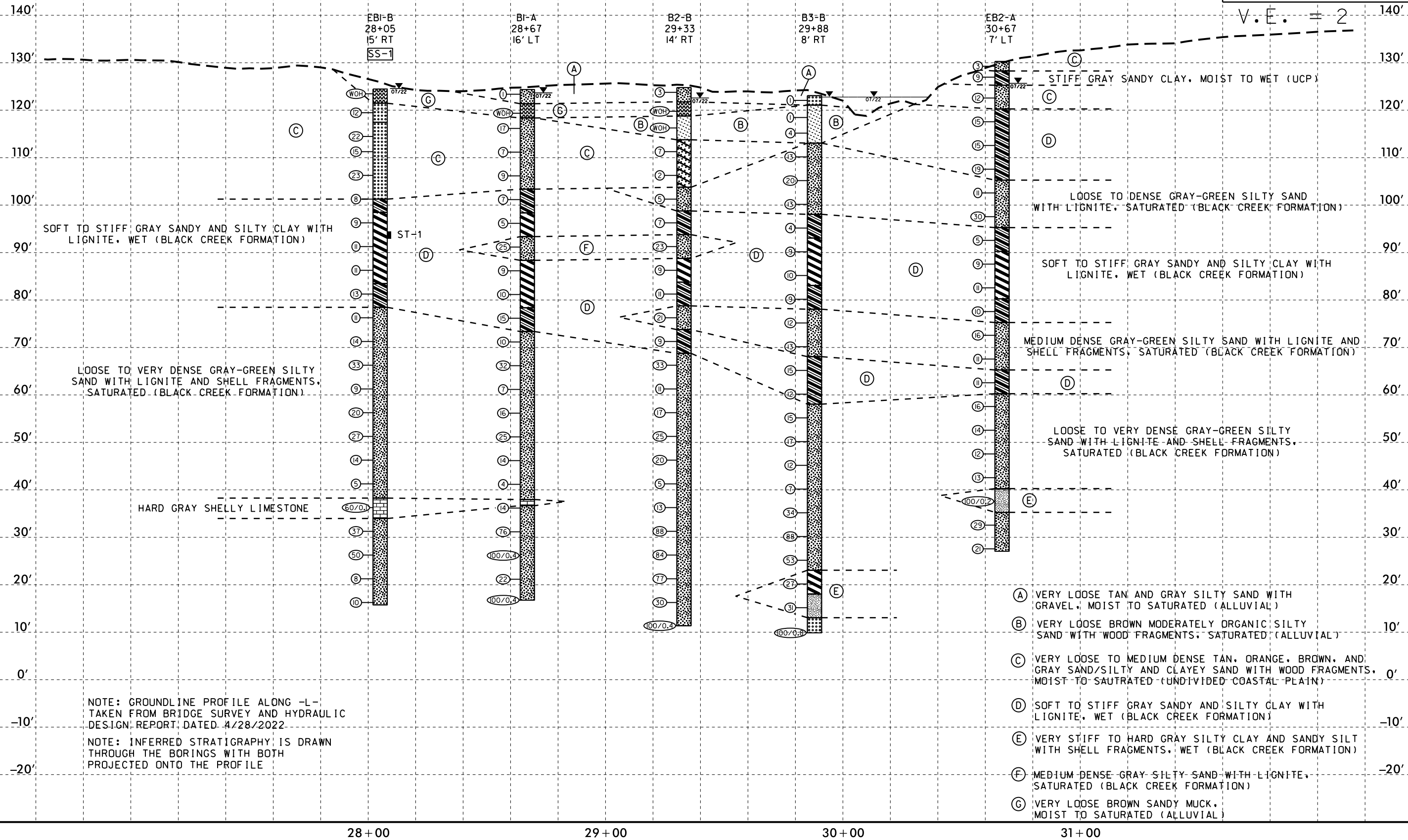
END APPROACH SLAB

-L- Sta. 30+75.00

END BRIDGE

-L- Sta. 30+60 +/-

# PROFILE THROUGH BORINGS PROJECTED ALONG -L-



NOTE: GROUNDLINE PROFILE ALONG -L- TAKEN FROM BRIDGE SURVEY AND HYDRAULIC DESIGN REPORT DATED 4/28/2022

NOTE: INFERRED STRATIGRAPHY IS DRAWN THROUGH THE BORINGS WITH BOTH PROJECTED ONTO THE PROFILE

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## GEOTECHNICAL BORING REPORT

### BORE LOG

WBS BP3.R008.1				TIP SF-300352				COUNTY DUPLIN				GEOLOGIST Miller, T. W.			
SITE DESCRIPTION BRIDGE NO. 352 ON -L- (SR 1004) OVER HOOKERS BRANCH												GROUND WTR (ft)			
BORING NO. B1-A				STATION 28+67				OFFSET 16 ft LT				ALIGNMENT -L-			
COLLAR ELEV. 124.1 ft				TOTAL DEPTH 107.6 ft				NORTHING 498,089				EASTING 2,304,023			
DRILL RIGHAMMER EFF./DATE RFO0074 CME-55 92% 10/12/2020								DRILL METHOD Mud Rotary				HAMMER TYPE Automatic			
DRILLER Walker, C. M.				START DATE 07/18/22				COMP. DATE 07/19/22				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					
125	124.1	0.0	WOH	WOH	1							LOG	124.1 GROUND SURFACE 0.0		
120	120.1	4.0	WOH	WOH	WOH							LOG	121.1 ALLUVIAL GRAY AND TAN SILTY SAND, MOIST TO SATURATED 3.0		
												LOG	118.1 BROWN SANDY MUCK, SATURATED 6.0		
115	116.9	7.2	5	7	10						17	LOG	UNDIVIDED COASTAL PLAIN GRAY AND TAN SILTY SAND, SATURATED		
	111.9	12.2	2	5	2						7	LOG			
	106.9	17.2	4	4	5						9	LOG			
105	101.9	22.2	2	3	4						7	LOG	103.1 COASTAL PLAIN GRAY SANDY AND SILTY CLAY, WET (BLACK CREEK FORMATION) 21.0		
	96.9	27.2	2	2	3						5	LOG	98.1 26.0		
95	91.9	32.2	7	10	15						25	LOG	93.1 GRAY SILTY SAND WITH LIGNITE, SATURATED 31.0		
	86.9	37.2	3	4	5						9	LOG	88.1 GRAY SILTY AND SANDY CLAY WITH LIGNITE, WET 36.0		
85	81.9	42.2	4	4	6						10	LOG	78.1 46.0		
	76.9	47.2	4	8	7						15	LOG			
	71.9	52.2	4	5	5						10	LOG	73.1 GRAY-GREEN SILTY SAND WITH LIGNITE AND SHELL FRAGMENTS, SATURATED 51.0		
65	66.9	57.2	9	14	18						32	LOG			
	61.9	62.2	2	3	4						7	LOG			
60	56.9	67.2	4	7	9						16	LOG			
55	51.9	72.2	12	13	12						25	LOG			
50	46.9	77.2	4	5	9						14	LOG			

NCDOT BORE DOUBLE\_SF300352\_GEO\_BRDG.GPJ\_NC\_DOT.GDT\_8/4/22

WBS BP3.R008.1				TIP SF-300352				COUNTY DUPLIN				GEOLOGIST Miller, T. W.			
SITE DESCRIPTION BRIDGE NO. 352 ON -L- (SR 1004) OVER HOOKERS BRANCH												GROUND WTR (ft)			
BORING NO. B1-A				STATION 28+67				OFFSET 16 ft LT				ALIGNMENT -L-			
COLLAR ELEV. 124.1 ft				TOTAL DEPTH 107.6 ft				NORTHING 498,089				EASTING 2,304,023			
DRILL RIGHAMMER EFF./DATE RFO0074 CME-55 92% 10/12/2020								DRILL METHOD Mud Rotary				HAMMER TYPE Automatic			
DRILLER Walker, C. M.				START DATE 07/18/22				COMP. DATE 07/19/22				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					
45												LOG	Match Line		
	41.9	82.2	2	2	2						4	LOG	GRAY-GREEN SILTY SAND WITH LIGNITE AND SHELL FRAGMENTS, SATURATED (continued)		
	36.9	87.2	31	5	9						14	LOG	37.7 HARD GRAY LIMESTONE 86.4		
	31.9	92.2	16	30	46						76	LOG	36.4 GRAY SILTY SAND WITH LIGNITE AND SHELL FRAGMENTS, SATURATED 87.7		
	26.9	97.2	33	100/0.4							100/0.4	LOG			
	21.9	102.2	6	4	18						22	LOG			
	16.9	107.2	100/0.4		100/0.4						100/0.4	LOG			
												LOG	16.5 Boring Terminated at Elevation 16.5 ft IN VERY DENSE SILTY SAND 107.6		

# GEOTECHNICAL BORING REPORT

## BORE LOG

<b>WBS</b> BP3.R008.1		<b>TIP</b> SF-300352		<b>COUNTY</b> DUPLIN		<b>GEOLOGIST</b> Zimarino, S. N.	
<b>SITE DESCRIPTION</b> BRIDGE NO. 352 ON -L- (SR 1004) OVER HOOKERS BRANCH						<b>GROUND WTR (ft)</b>	
<b>BORING NO.</b> B2-B		<b>STATION</b> 29+33		<b>OFFSET</b> 14 ft RT		<b>ALIGNMENT</b> -L-	
<b>COLLAR ELEV.</b> 124.5 ft		<b>TOTAL DEPTH</b> 113.4 ft		<b>NORTHING</b> 498,020		<b>EASTING</b> 2,304,045	
<b>DRILL RIGHAMMER EFF./DATE</b> RFC0074 CME-55 92% 10/12/2020				<b>DRILL METHOD</b> Mud Rotary		<b>HAMMER TYPE</b> Automatic	
<b>DRILLER</b> Smith, R. E.		<b>START DATE</b> 07/20/22		<b>COMP. DATE</b> 07/20/22		<b>SURFACE WATER DEPTH</b> 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							
125	124.5	0.0													124.5	GROUND SURFACE	0.0
			WOH	1	2										121.5	TAN AND GRAY SILTY SAND, MOIST TO SATURATED	3.0
120	120.5	4.0	WOH	WOH	WOH										118.5	BROWN MUCK, SATURATED	6.0
			WOH	WOH	WOH										113.5	UNDIVIDED COASTAL PLAIN GRAY AND TAN CLAYEY SAND, SATURATED	11.0
115	117.0	7.5	WOH	WOH	WOH										103.5	COASTAL PLAIN GRAY SILTY SAND, SATURATED (BLACK CREEK FORMATION)	21.0
			WOH	WOH	2										98.5	GRAY SANDY CLAY, WET	26.0
110	112.0	12.5		2	3	4									93.5	GRAY SILTY SAND WITH LIGNITE, SATURATED	31.0
			WOH	WOH	2										88.5	GRAY SILTY AND SANDY CLAY, WET	36.0
105	107.0	17.5													83.5		41.0
				2	2	3									78.5	GRAY SILTY SAND WITH LIGNITE, SATURATED	46.0
100	102.0	22.5													73.5	GRAY SANDY CLAY, WET	51.0
			1	3	4										68.5	GREENISH-GRAY SILTY SAND WITH SHELL FRAGMENTS, SATURATED	56.0
95	97.0	27.5															
			8	10	13												
90	92.0	32.5															
			3	4	5												
85	87.0	37.5															
			4	4	7												
80	82.0	42.5															
			9	10	11												
75	77.0	47.5															
			3	4	5												
70	72.0	52.5															
			9	15	18												
65	67.0	57.5															
			2	4	7												
60	62.0	62.5															
			7	7	10												
55	57.0	67.5															
			10	10	15												
50	52.0	72.5															
			3	9	11												
45	47.0	77.5															

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<b>WBS</b> BP3.R008.1		<b>TIP</b> SF-300352		<b>COUNTY</b> DUPLIN		<b>GEOLOGIST</b> Zimarino, S. N.	
<b>SITE DESCRIPTION</b> BRIDGE NO. 352 ON -L- (SR 1004) OVER HOOKERS BRANCH						<b>GROUND WTR (ft)</b>	
<b>BORING NO.</b> B2-B		<b>STATION</b> 29+33		<b>OFFSET</b> 14 ft RT		<b>ALIGNMENT</b> -L-	
<b>COLLAR ELEV.</b> 124.5 ft		<b>TOTAL DEPTH</b> 113.4 ft		<b>NORTHING</b> 498,020		<b>EASTING</b> 2,304,045	
<b>DRILL RIGHAMMER EFF./DATE</b> RFC0074 CME-55 92% 10/12/2020				<b>DRILL METHOD</b> Mud Rotary		<b>HAMMER TYPE</b> Automatic	
<b>DRILLER</b> Smith, R. E.		<b>START DATE</b> 07/20/22		<b>COMP. DATE</b> 07/20/22		<b>SURFACE WATER DEPTH</b> 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						
45																
40	42.0	82.5	WOH	2	3											
35	37.0	87.5		5	6	7										
30	32.0	92.5		16	27	61										
25	27.0	97.5		39	43	41										
20	22.0	102.5		17	32	45										
15	17.0	107.5		7	13	17										
	12.0	112.5		48	100/0.4											

Match Line

GREENISH-GRAY SILTY SAND WITH SHELL FRAGMENTS, SATURATED (continued)

Boring Terminated at Elevation 11.1 ft IN VERY DENSE SILTY SAND





# GEOTECHNICAL BORING REPORT

## BORE LOG

WBS BP3.R008.1		TIP SF-300352		COUNTY DUPLIN		GEOLOGIST Miller, T. W.									
SITE DESCRIPTION BRIDGE NO. 352 ON -L- (SR 1004) OVER HOOKERS BRANCH							GROUND WTR (ft)								
BORING NO. EB2-A		STATION 30+67		OFFSET 7 ft LT		ALIGNMENT -L-									
COLLAR ELEV. 130.0 ft		TOTAL DEPTH 103.2 ft		NORTHING 497,934		EASTING 2,304,151									
DRILL RIGHAMMER EFF./DATE RFO0074 CME-55 92% 10/12/2020				DRILL METHOD Mud Rotary		HAMMER TYPE Automatic									
DRILLER Walker, C. M.		START DATE 07/27/22		COMP. DATE 07/27/22		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					
130	130.0	0.0	1	1	2								130.0	GROUND SURFACE	0.0
	127.7	2.3											128.0	UNDIVIDED COASTAL PLAIN BROWN AND GRAY SILTY SAND, MOIST GRAY SANDY CLAY, MOIST TO WET	2.0
125			5	3	6								125.0	TAN AND GRAY SILTY SAND, SATURATED	5.0
	123.3	6.7											120.0	COASTAL PLAIN GRAY SANDY CLAY WITH LIGNITE, WET (BLACK CREEK FORMATION)	10.0
120			3	5	7										
	118.3	11.7													
115			3	6	9										
	113.3	16.7													
110			3	6	9										
	108.3	21.7													
105			7	8	11										
	103.3	26.7													
100			3	5	6										
	98.3	31.7													
95			7	13	17										
	93.3	36.7													
90			2	2	3										
	88.3	41.7													
85			3	4	5										
	83.3	46.7													
80			4	5	6										
	78.3	51.7													
75			3	4	6										
	73.3	56.7													
70			4	6	10										
	68.3	61.7													
65			3	4	7										
	63.3	66.7													
60			4	4	7										
	58.3	71.7													
55			4	7	9										
	53.3	76.7													
50			3	4	10										

WBS BP3.R008.1		TIP SF-300352		COUNTY DUPLIN		GEOLOGIST Miller, T. W.									
SITE DESCRIPTION BRIDGE NO. 352 ON -L- (SR 1004) OVER HOOKERS BRANCH							GROUND WTR (ft)								
BORING NO. EB2-A		STATION 30+67		OFFSET 7 ft LT		ALIGNMENT -L-									
COLLAR ELEV. 130.0 ft		TOTAL DEPTH 103.2 ft		NORTHING 497,934		EASTING 2,304,151									
DRILL RIGHAMMER EFF./DATE RFO0074 CME-55 92% 10/12/2020				DRILL METHOD Mud Rotary		HAMMER TYPE Automatic									
DRILLER Walker, C. M.		START DATE 07/27/22		COMP. DATE 07/27/22		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					
50															
	48.3	81.7													
45			3	4	8										
	43.3	86.7													
40			3	5	8										
	38.3	91.7													
35			100/0.2												
	33.3	96.7													
30			20	14	15										
	28.3	101.7													
			4	7	14										

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### *SOIL TEST RESULTS*

<i>SAMPLE NO.</i>	<i>OFFSET</i>	<i>STATION</i>	<i>DEPTH INTERVAL</i>	<i>AASHTO CLASS.</i>	<i>L.L.</i>	<i>P.I.</i>	<i>% BY WEIGHT</i>				<i>% PASSING (SIEVES)</i>			<i>% MOISTURE</i>	<i>% ORGANIC</i>
							<i>C. SAND</i>	<i>F. SAND</i>	<i>SILT</i>	<i>CLAY</i>	<i>10</i>	<i>40</i>	<i>200</i>		
SS-1	15' RT	28+05	0.0-1.5	A-2-4(0)	-	NP	44.7	43.5	7.8	4.0	97	79	13	225.1	11.05