

REFERENCE: P-5707

PROJECT: 44643

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

STRUCTURE
SUBSURFACE INVESTIGATION

COUNTY WAKE

PROJECT DESCRIPTION ROGERS ROAD (SR 2052)
GRADE SEPARATION OVER CSX RAILROAD
(CROSSING NO. 633 905 Y) AT MILE POST S 142.53

SITE DESCRIPTION BRIDGE ON ROGERS ROAD
OVER CSX RAILROAD BETWEEN US 1A AND
SR 5144

INVENTORY

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	P-5707	1	13

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
<u>J. MIZE</u>
<u>W. DUGGINS</u>

INVESTIGATED BY RK&K, LLP

DRAWN BY P. CARY

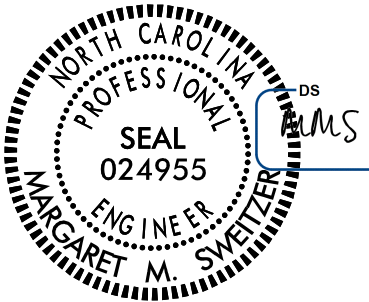
CHECKED BY M. SWEITZER

SUBMITTED BY RK&K, LLP

DATE FEBRUARY 2019

Prepared in the Office of:

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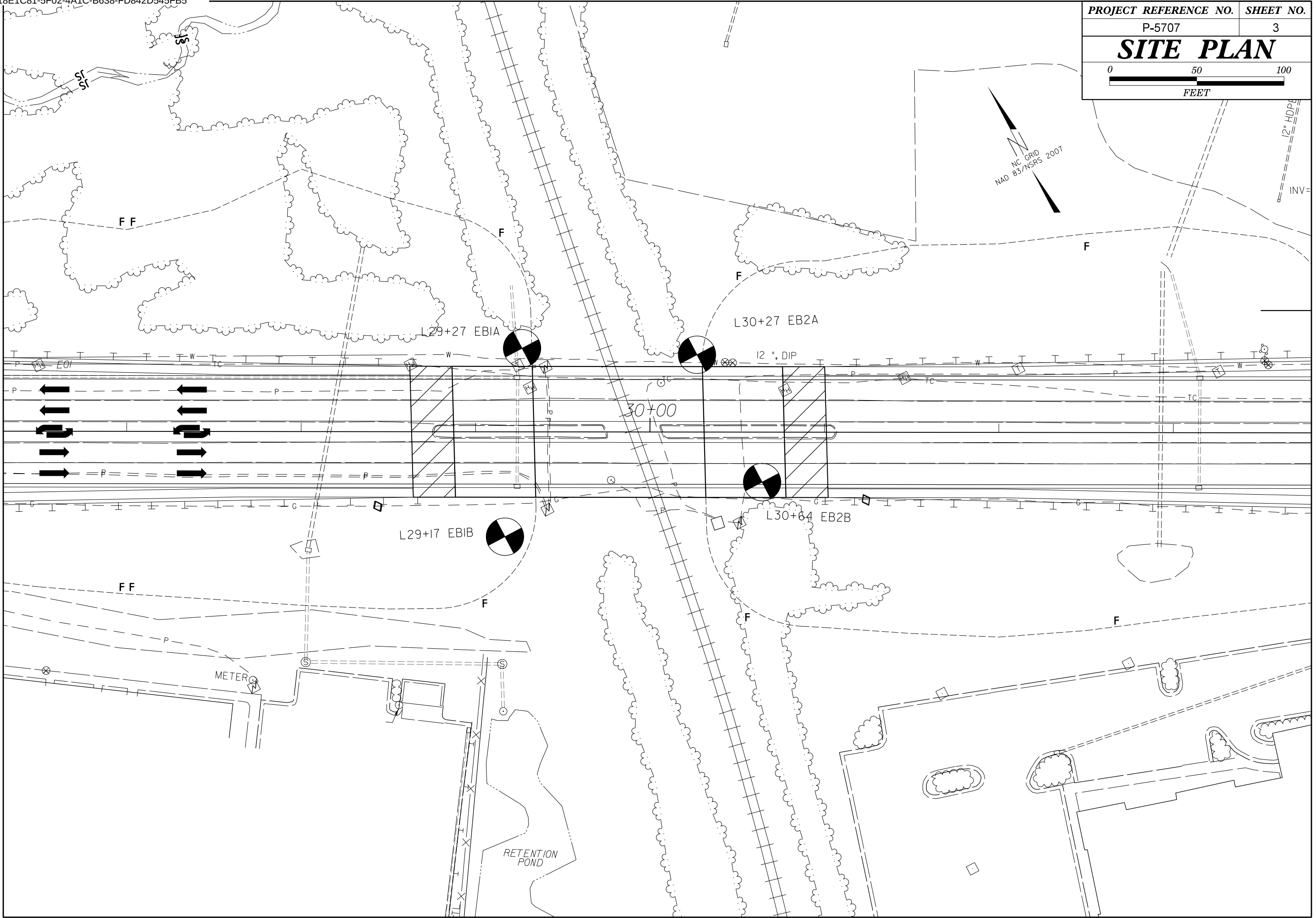
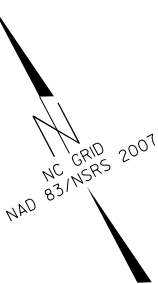


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Margaret M. Sweitzer 2/8/2019

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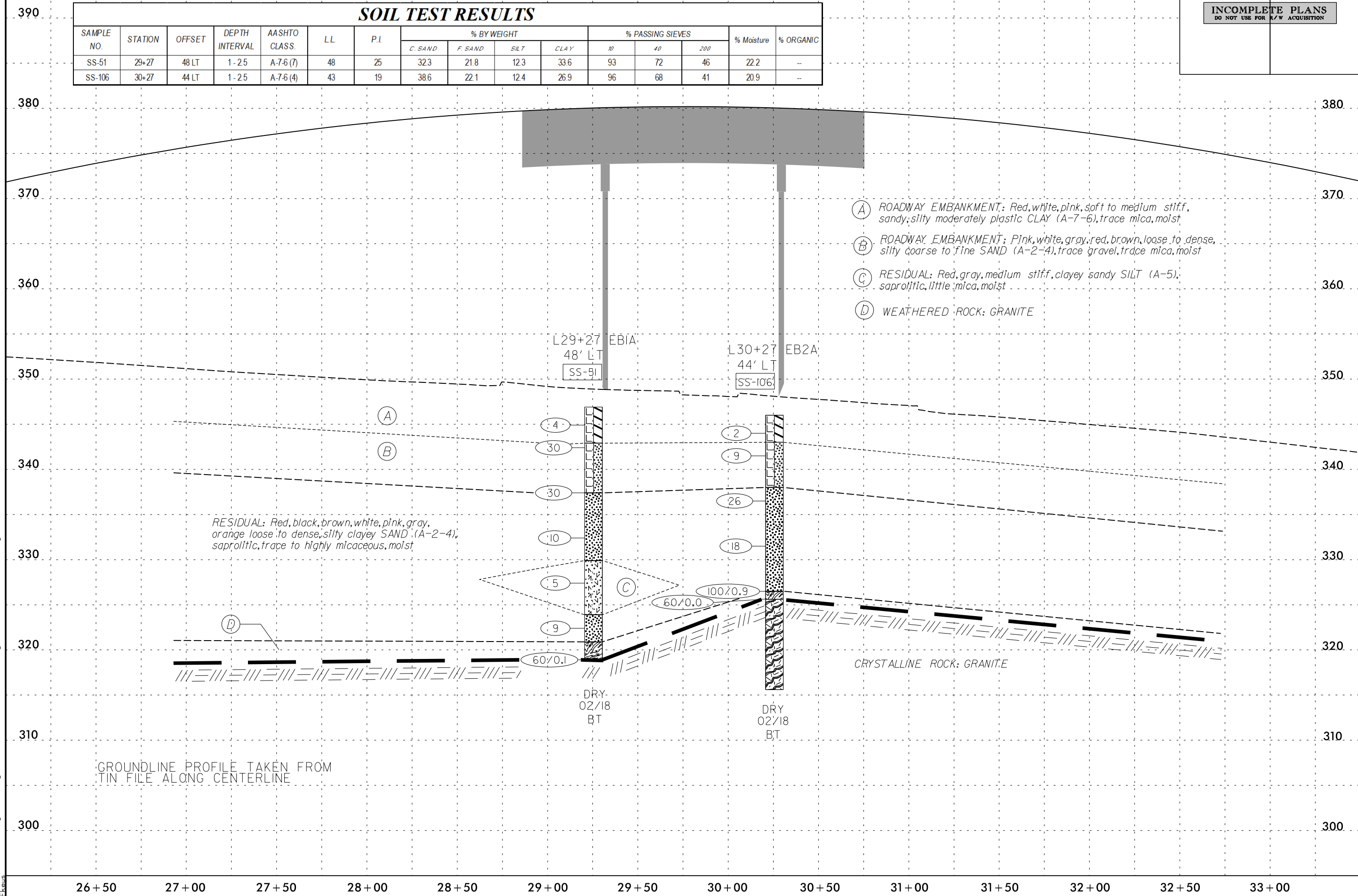
PROJECT REFERENCE NO.	SHEET NO.
P-5707	3
SITE PLAN	
0 50 100 FEET	



INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

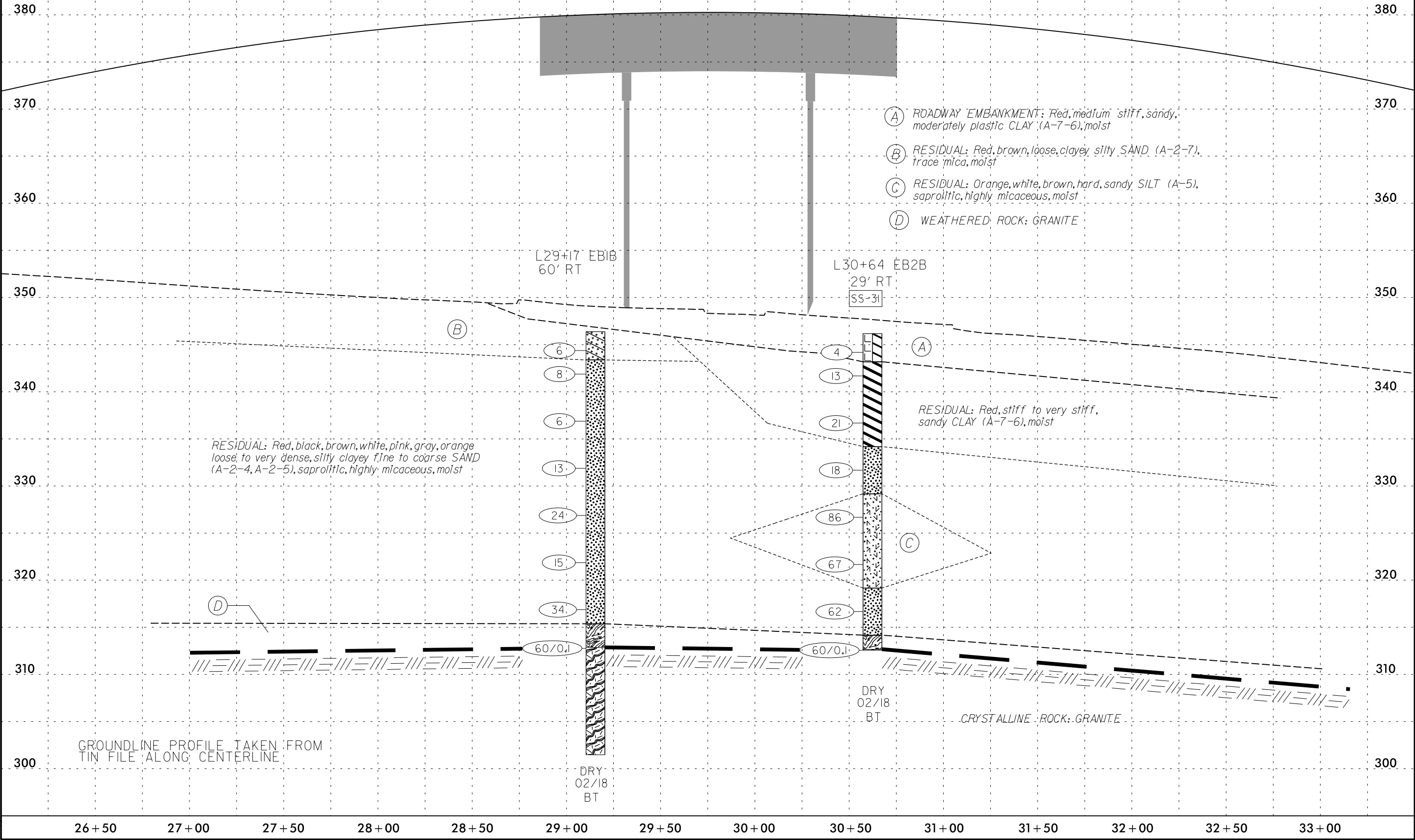
SOIL TEST RESULTS

SAMPLE NO.	STATION	OFFSET	DEPTH INTERVAL	AASHTO CLASS.	LL	P.I.	% BY WEIGHT				% PASSING SIEVES			% Moisture	% ORGANIC
							C. SAND	F. SAND	SILT	CLAY	10	40	200		
SS-51	29+27	48 LT	1 - 2.5	A-7-6 (7)	48	25	32.3	21.8	12.3	33.6	93	72	46	22.2	--
SS-106	30+27	44 LT	1 - 2.5	A-7-6 (4)	43	19	38.6	22.1	12.4	26.9	96	68	41	20.9	--



2/8/2019
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SOIL TEST RESULTS

$$26 + 50$$


6/23/19

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6/23/16

SOIL TEST RESULTS															
SAMPLE NO.	STATION	OFFSET	DEPTH INTERVAL	AASHTO CLASS.	LL	P.I.	% BY WEIGHT				% PASSING SIEVES			% Moisture	% ORGANIC
							C. SAND	F. SAND	SILT	CLAY	10	40	200		
SS-51	29+27	48 LT	1 - 2.5	A-7-6 (7)	48	25	32.3	21.8	12.3	33.6	93	72	46	22.2	--

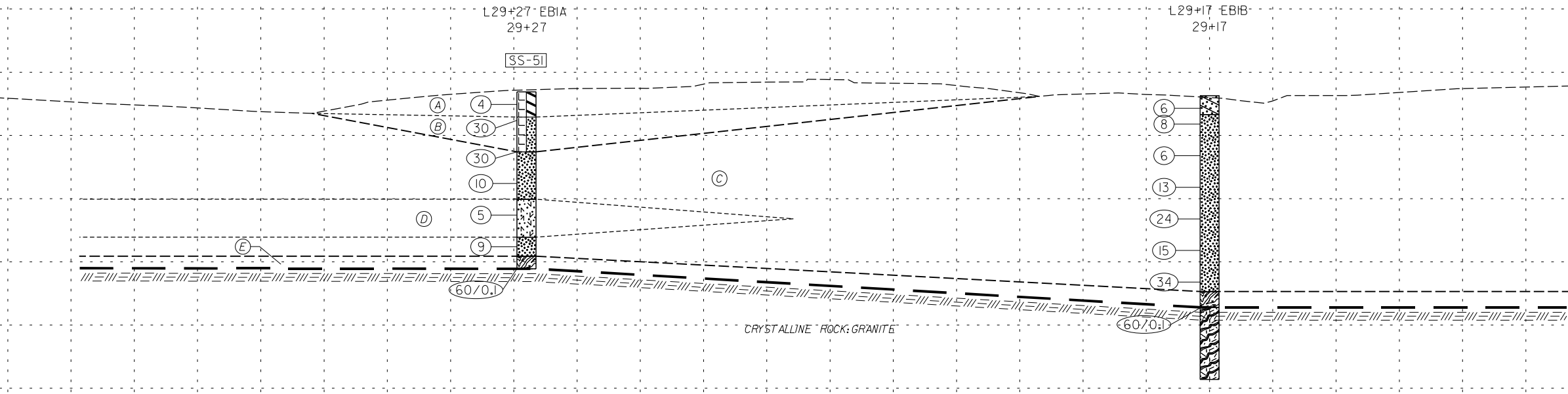
- (A) ROADWAY EMBANKMENT: Red, medium stiff, sandy moderately plastic CLAY (A-7-6), moist

(B) ROADWAY EMBANKMENT: Pink to white to gray, dense, silty SAND. (A-2-4), trace gravel, trace mica, moist

(C) RESIDUAL: Red to brown to black to pink, loose to dense, silty and clayey fine to coarse SAND (A-2-4, A-2-7), trace to little mica, saprolitic, moist, with lenses of highly micaceous sandy SILT

(D) RESIDUAL: Red, gray, medium stiff, clayey sandy SILT (A-5), saprolitic, little mica, moist

(E) WEATHERED ROCK: GRANITE



GROUND LINE DRAWN FROM PROVIDED TIN FILE ALONG LINE OF BENT.

CROSS SECTION FOR INTERIOR BENT 1 (STA. 29+33.50)

6/23/16

SOIL TEST RESULTS															
SAMPLE NO.	STATION	OFFSET	DEPTH INTERVAL	AASHTO CLASS.	LL	P.I.	% BY WEIGHT				% PASSING SIEVES			% Moisture	% ORGANIC
							C. SAND	F. SAND	SILT	CLAY	10	40	200		
SS-31	30+64	29 RT	1 - 2.5	A-7-6 (6)	46	25	39.3	20.7	9.9	30.1	95	67	42	20	—
SS-106	30+27	44 LT	1 - 2.5	A-7-6 (4)	43	19	38.6	22.1	12.4	26.9	96	68	41	20.9	—

- (A)

ROADWAY EMBANKMENT: Red to white to pink, soft to medium stiff, sandy silty moderately plastic CLAY, (A-7-6), trace mica, moist
- (B)

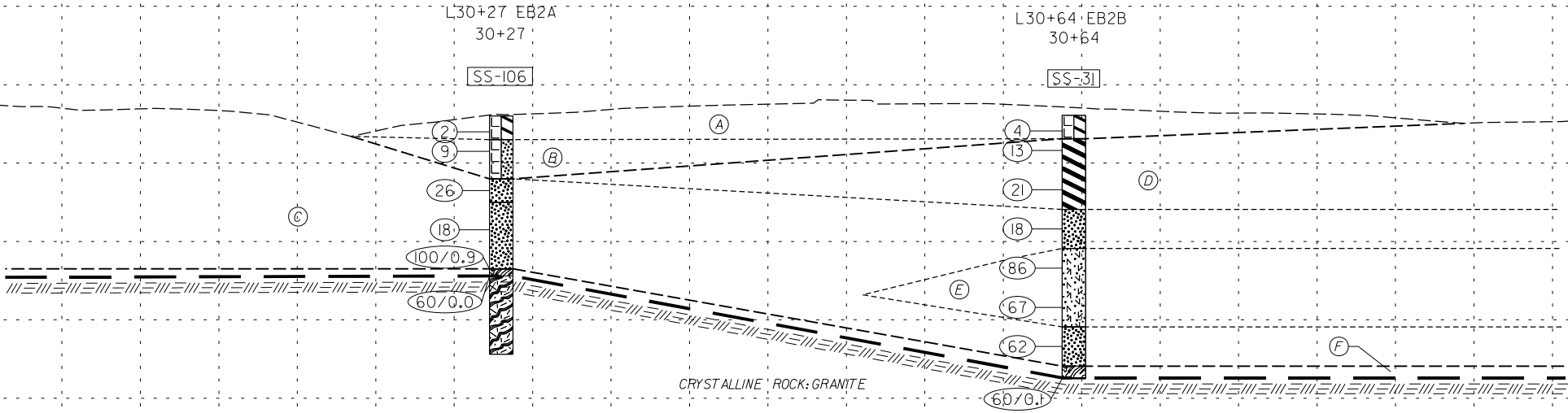
ROADWAY EMBANKMENT: Red to white to brown, loose, silty coarse SAND (A-2-4), trace mica, moist
- (C)

RESIDUAL: Pink, white, gray, brown to orange, black, medium dense to very dense, silty clayey fine to coarse SAND (A-2-4, A-2-5), highly micaceous, saprolitic, moist
- (D)

RESIDUAL: Red, stiff to very stiff, sandy CLAY (A-7-6), moist
- (E)

RESIDUAL: Orange to white, to brown, hard, sandy SILT, (A-5), saprolitic, highly micaceous, moist
- (F)

WEATHERED ROCK: GRANITE



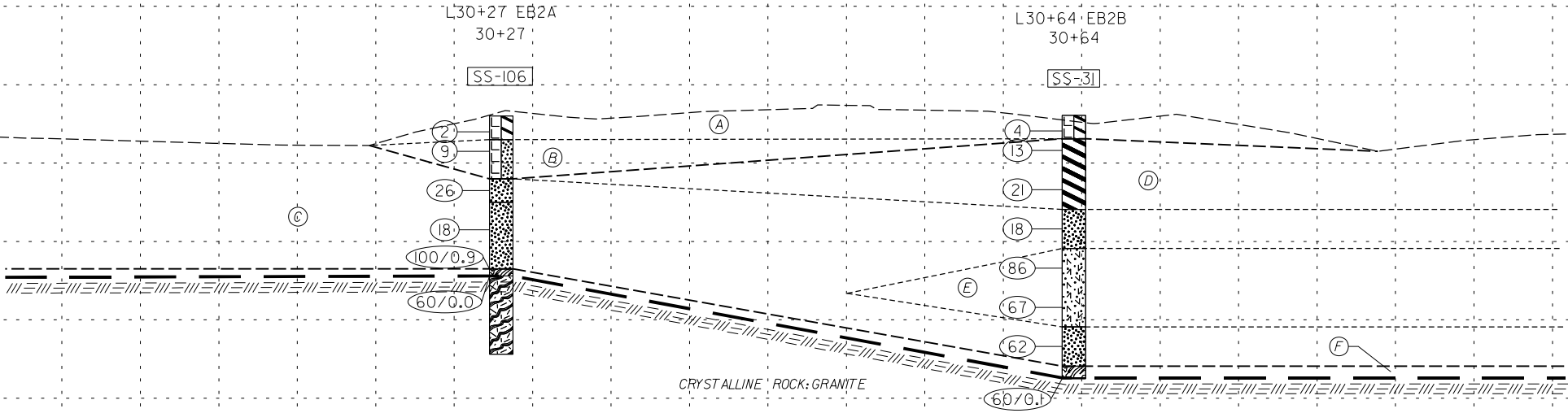
GROUND LINE DRAWN FROM PROVIDED TIN FILE ALONG LINE OF BENT.

CROSS SECTION FOR INTERIOR BENT 2 (STA. 30+31.00)

6/23/16

SOIL TEST RESULTS															
SAMPLE NO.	STATION	OFFSET	DEPTH INTERVAL	AASHTO CLASS.	LL	P.I.	% BY WEIGHT				% PASSING SIEVES			% Moisture	% ORGANIC
							C. SAND	F. SAND	SILT	CLAY	10	40	200		
SS-31	30+64	29 RT	1 - 2.5	A-7-6 (6)	46	25	39.3	20.7	9.9	30.1	95	67	42	20	--
SS-106	30+27	44 LT	1 - 2.5	A-7-6 (4)	43	19	38.6	22.1	12.4	26.9	96	68	41	20.9	--

- (A) ROADWAY EMBANKMENT: Red to white to pink, soft to medium stiff, sandy silty moderately plastic CLAY, (A-7-6), trace mica, moist
- (B) ROADWAY EMBANKMENT: Red to white to brown, loose, silty coarse SAND (A-2-4), trace mica, moist
- (C) RESIDUAL: Pink, white, gray, brown to orange, black, medium dense to very dense, silty clayey fine to coarse SAND (A-2-4, A-2-5), highly micaceous, saprolitic, moist
- (D) RESIDUAL: Red, stiff to very stiff, sandy CLAY (A-7-6), moist
- (E) RESIDUAL: Orange to white, to brown, hard, sandy SILT (A-5), saprolitic, highly micaceous, moist
- (F) WEATHERED ROCK: GRANITE



GROUND LINE DRAWN FROM PROVIDED TIN FILE ALONG LINE OF BENT.

CROSS SECTION FOR END BENT 2 (STA. 30+77.00)

WBS 44643.1.1			TIP P-5707			COUNTY WAKE			GEOLOGIST J Mize						
SITE DESCRIPTION Bridge on Rogers Road over CSX Railroad								GROUND WTR (ft)							
BORING NO. L29+27 EB1A			STATION 29+27			OFFSET 48 ft LT			ALIGNMENT -L-			0 HR. Dry			
COLLAR ELEV. 346.9 ft			TOTAL DEPTH 28.1 ft			NORTHING 801,472			EASTING 2,141,744			24 HR. Dry			
DRILL RIG/HAMMER EFF./DATE TER92-0 ACKER RENEGADE 86% 03/21/2016						DRILL METHOD H.S. Augers			HAMMER TYPE Automatic						
DRILLER W Duggins			START DATE 02/01/18			COMP. DATE 02/01/18			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					
350															
345	345.9	1.0	2	2	2						SS-51	22%		GROUND SURFACE	0.0
	343.4	3.5	1	16	14									ROADWAY EMBANKMENT	
340														Red, medium stiff, sandy high plasticity CLAY (A-7-6)	
	338.4	8.5	15	21	9									Pink, white, gray, dense, silty gravelly SAND (A-2-4), trace mica	4.0
335														RESIDUAL	9.5
	333.4	13.5	2	5	5									Black-brown to white-pink-black, medium dense to dense, silty SAND (A-2-4), trace mica, saprolitic	
330															
	328.4	18.5	2	2	3									Red, gray, medium stiff, clayey sandy SILT (A-5), saprolitic, little mica	17.0
325															
	323.4	23.5	1	3	6									White, pink, brown, loose, silty SAND (A-2-4), little mica	23.0
320														WEATHERED ROCK	26.0
	318.4	28.5												GRANITE	28.0
			60/0.1											CRYSTALLINE ROCK	
														GRANITE	
														Boring Terminated with Standard Penetration Test Refusal at Elevation 318.8 ft on Crystalline Rock (GRANITE)	

WBS 44643.1.1			TIP P-5707			COUNTY WAKE			GEOLOGIST J Mize					
SITE DESCRIPTION Bridge on Rogers Road over CSX Railroad											GROUND WTR (ft)			
BORING NO. L29+17 EB1B			STATION 29+17			OFFSET 60 ft RT			ALIGNMENT -L-			0 HR. N/A		
COLLAR ELEV. 346.3 ft			TOTAL DEPTH 44.9 ft			NORTHING 801,381			EASTING 2,141,685			24 HR. Caved		
DRILL RIG/HAMMER EFF./DATE TER92-0 ACKER RENEGADE 86% 03/21/2016						DRILL METHOD Mud Rotary			HAMMER TYPE Automatic					
DRILLER W Duggins			START DATE 02/06/18			COMP. DATE 02/06/18			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
			0.5ft	0.5ft	0.5ft	0	25	50	75	100				
350														
345	345.3	1.0												346.3 GROUND SURFACE 0.0
340	342.8	3.5	2	3	3									343.3 RESIDUAL Red, brown, loose, clayey silty SAND (A-2-7), trace mica 3.0
			4	3	5									
335	337.8	8.5	3	3	3									White, black, pink, loose to dense, silty fine to coarse SAND (A-2-4), with lenses of highly micaceous sandy SILT
330	332.8	13.5	4	8	5									315.3 WEATHERED ROCK GRANITE 31.0
325	327.8	18.5	12	15	9									312.8 CRYSTALLINE ROCK GRANITE 33.5
320	322.8	23.5	8	8	7									301.4 Boring Terminated with Standard Penetration Test Refusal at Elevation 301.4 ft in Crystalline Rock (GRANITE) 44.9
315	317.8	28.5	12	14	20									
310	312.8	33.5	60/0.1											
305														

NCDOT BORE DOUBLE P5707_GEO_RDY.GPJ NC_DOT.GDT 2/8/19

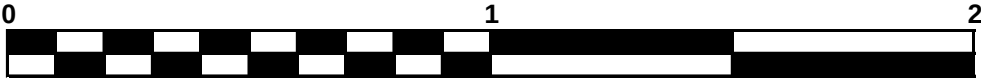
GEOTECHNICAL BORING REPORT
CORE LOG

WBS 44643.1.1				TIP P-5707		COUNTY WAKE		GEOLOGIST J Mize			
SITE DESCRIPTION Bridge on Rogers Road over CSX Railroad										GROUND WTR (ft)	
BORING NO. L29+17 EB1B				STATION 29+17		OFFSET 60 ft RT		ALIGNMENT -L-		0 HR. N/A	
COLLAR ELEV. 346.3 ft				TOTAL DEPTH 44.9 ft		NORTHING 801,381		EASTING 2,141,685		24 HR. Caved	
DRILL RIG/HAMMER EFF./DATE TER92-0 ACKER RENEGADE 86% 03/21/2016						DRILL METHOD Mud Rotary			HAMMER TYPE Automatic		
DRILLER W Duggins				START DATE 02/06/18		COMP. DATE 02/06/18		SURFACE WATER DEPTH N/A			
CORE SIZE N/A				TOTAL RUN 11.0 ft							
ELEV (ft)	RUN ELEV (ft)	DEPTH (ft)	RUN (ft)	DRILL RATE (Min/ft)	RUN REC. (ft) % ROD (ft) %		SAMP. NO.	STRATA REC. (ft) % ROD (ft) %		LOG	DESCRIPTION AND REMARKS
											ELEV. (ft)
312.4											Begin Coring @ 33.9 ft
310	312.4	33.9	1.0	1:57	(1.0)	(0.3)					CRYSTALLINE ROCK Very slight weathering, very hard, very close to moderately close fractures, GRANITE, with layers of very soft, very severely weathered, highly micaceous rock (continued)
	311.4	32.9	5.0	1:13	100%	33%					
				1:23	(5.0)	(4.5)					
305				1:38	100%	90%					
	306.4	39.9		1:01							
				1:38							
			5.0	1:52	(4.6)	(4.2)					
				1:21	92%	84%					
				1:26							
				0:45							
	301.4	44.9		1:03							301.4 44.9
Boring Terminated with Standard Penetration Test Refusal at Elevation 301.4 ft in Crystalline Rock (GRANITE)											

NCDOT CORE DOUBLE P5707_GEO_RDY.GPJ NC_DOT.GDT 2/8/19

CORE PHOTOGRAPHS

L 29+17 EB1B
BOXES 1 AND 2 OF 2: 33.9' TO 44.9'



[illegible]

WBS 44643.1.1			TIP P-5707			COUNTY WAKE			GEOLOGIST J Mize					
SITE DESCRIPTION Bridge on Rogers Road over CSX Railroad												GROUND WTR (ft)		
BORING NO. L30+64 EB2B			STATION 30+64			OFFSET 29 ft RT			ALIGNMENT -L-			0 HR. Dry		
COLLAR ELEV. 346.1 ft			TOTAL DEPTH 33.6 ft			NORTHING 801,340			EASTING 2,141,830			24 HR. Dry		
DRILL RIG/HAMMER EFF./DATE TER92-0 ACKER RENEGADE 86% 03/21/2016						DRILL METHOD H.S. Augers			HAMMER TYPE Automatic					
DRILLER W Duggins			START DATE 01/31/18			COMP. DATE 01/31/18			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
			0.5ft	0.5ft	0.5ft	0	25	50	75	100				
350														
345	345.1	1.0	1	2	2									346.1 GROUND SURFACE 0.0
340	342.6	3.5	3	6	7									343.1 ROADWAY EMBANKMENT 3.0
														CLAY (A-7-6)
335	337.6	8.5	3	9	12									RESIDUAL 3.0
														Red, stiff to very stiff, sandy CLAY (A-7-6)
330	332.6	13.5	4	9	9									334.1 12.0
														Pink, white, gray, medium dense, silty fine to coarse SAND (A-2-5), highly micaceous, saprolitic
325	327.6	18.5	25	33	53									329.1 17.0
														Orange, white, brown, hard, sandy SILT (A-5), saprolitic, highly micaceous
320	322.6	23.5	16	26	41									319.1 27.0
														White, gray, black, orange, very dense, silty fine to coarse SAND (A-2-5), saprolitic, highly micaceous
315	317.6	28.5	16	36	26									314.1 32.0
														WEATHERED ROCK GRANITE 33.5
	312.6	33.5	60/0.1											312.5 33.6
														CRYSTALLINE ROCK GRANITE 33.6
														Boring Terminated with Standard Penetration Test Refusal at Elevation 312.5 ft in Crystalline Rock (GRANITE)

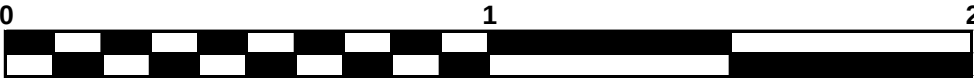
GEOTECHNICAL BORING REPORT

CORE LOG

[illegible]

CORE PHOTOGRAPHS

L 30+27 EB2A
BOXES 1 AND 2 OF 2: 20.4' TO 30.4'



NCDOT CORE DOUBLE P5707_GEO_RDY.GPJ NC_DOT_GDT 2/8/19