

SEE SHEET 3 FOR PLAN SHEET LAYOUT
AT TIME OF INVESTIGATION

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

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	R-5703	1	33

CONTENTS

SHEET	DESCRIPTION
1	TITLE SHEET
2	LEGEND
3	PLAN SHEET
4 - 5	PROFILES
6 - 11	BORING LOGS
12 - 33	LABORATORY TEST RESULTS

STRUCTURE
SUBSURFACE INVESTIGATION

COUNTY LENOIR

PROJECT DESCRIPTION C.F. HARVEY PARKWAY AND NC 58 TO INTERSECTION OF NC 11 AND GRANGER STATION ROAD GRADING, PAVING, DRAINAGE, STRUCTURES AND SIGNALS

SITE DESCRIPTION BRIDGE NO. 216 AND NO. 217 ON -L- (FELIX HARVEY PARKWAY) OVER -Y6- (FERRELL ROAD)

INVENTORY

CAUTION NOTICE

THE SUBSURFACE INFORMATION AND THE SUBSURFACE INVESTIGATION ON WHICH IT IS BASED WERE MADE FOR THE PURPOSE OF PREPARING THE SCOPE OF WORK TO BE INCLUDED IN THE REQUEST FOR PROPOSAL. 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 1919 707-6850. THE SUBSURFACE PLANS AND REPORTS, FIELD BORING LOGS, ROCK CORES AND SOIL TEST DATA ARE NOT PART OF THE CONTRACT.

SOIL AND ROCK BOUNDARIES WITHIN A BOREHOLE ARE BASED ON GEOTECHNICAL INTERPRETATION UNLESS ENCOUNTERED IN A SAMPLE. INTERPRETED BOUNDARIES MAY NOT NECESSARILY REFLECT ACTUAL SUBSURFACE CONDITIONS BETWEEN SAMPLED STRATA AND BOREHOLE INFORMATION MAY NOT NECESSARILY REFLECT ACTUAL SUBSURFACE CONDITIONS BETWEEN BORINGS. 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

S. LANEY

K. HILL

S. MITCHELL

S. TIERNAN

C. CHANDLER

F. WRIGHT

E. BLONSHINE

J. PEELE

M. RAWLS

INVESTIGATED BY S&ME, INC.

DRAWN BY C. CHANDLER

CHECKED BY S. MITCHELL

SUBMITTED BY S&ME, INC.

DATE FEBRUARY, 2017

REFERENCE: R-5703

PROJECT: 46375

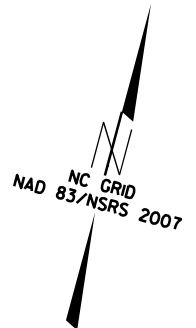


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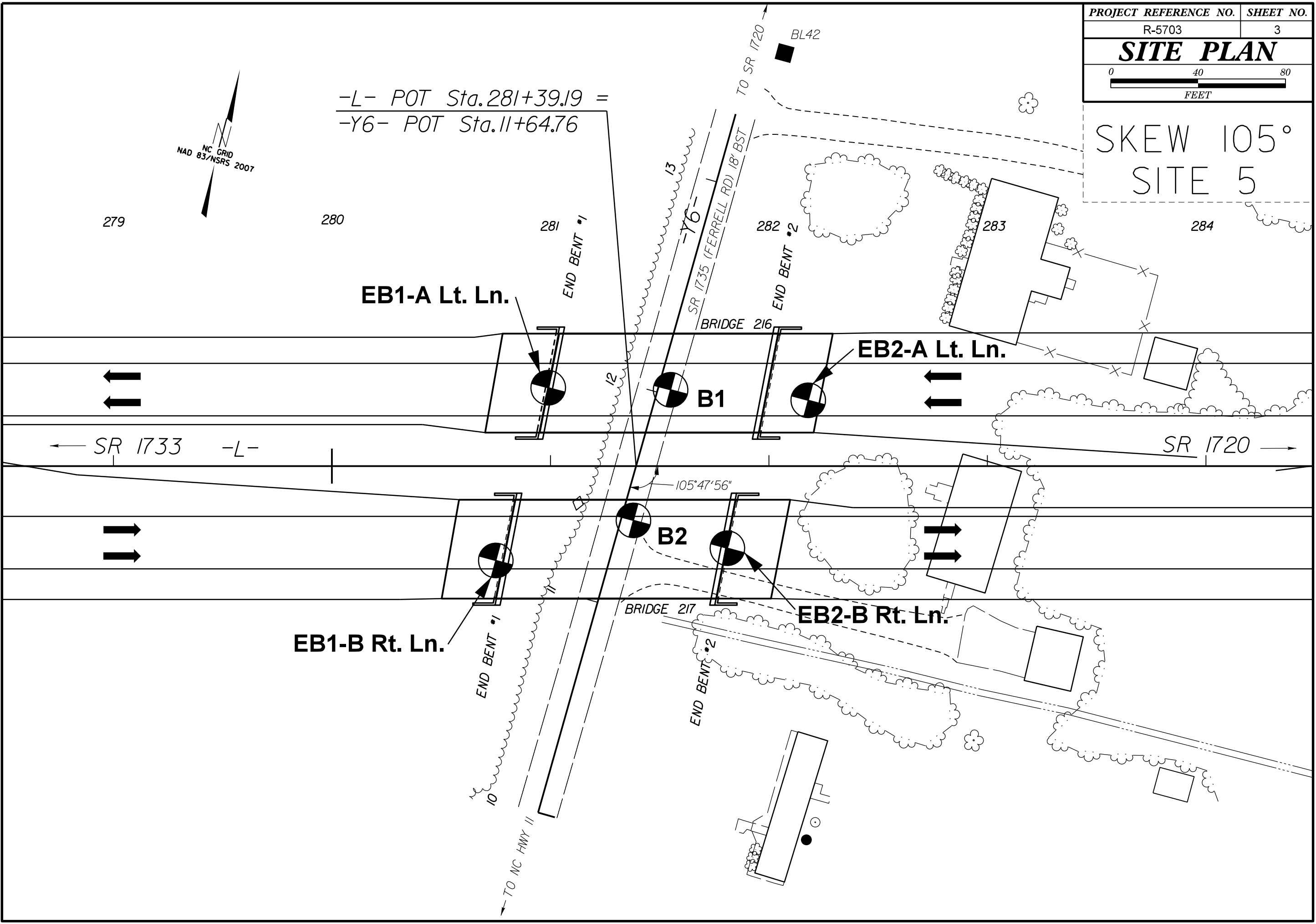
DATE

**DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED**

SKEW 105°
SITE 5



-L- POT Sta. 281+39.19 =
-Y6- POT Sta. 11+64.76



5/14/99

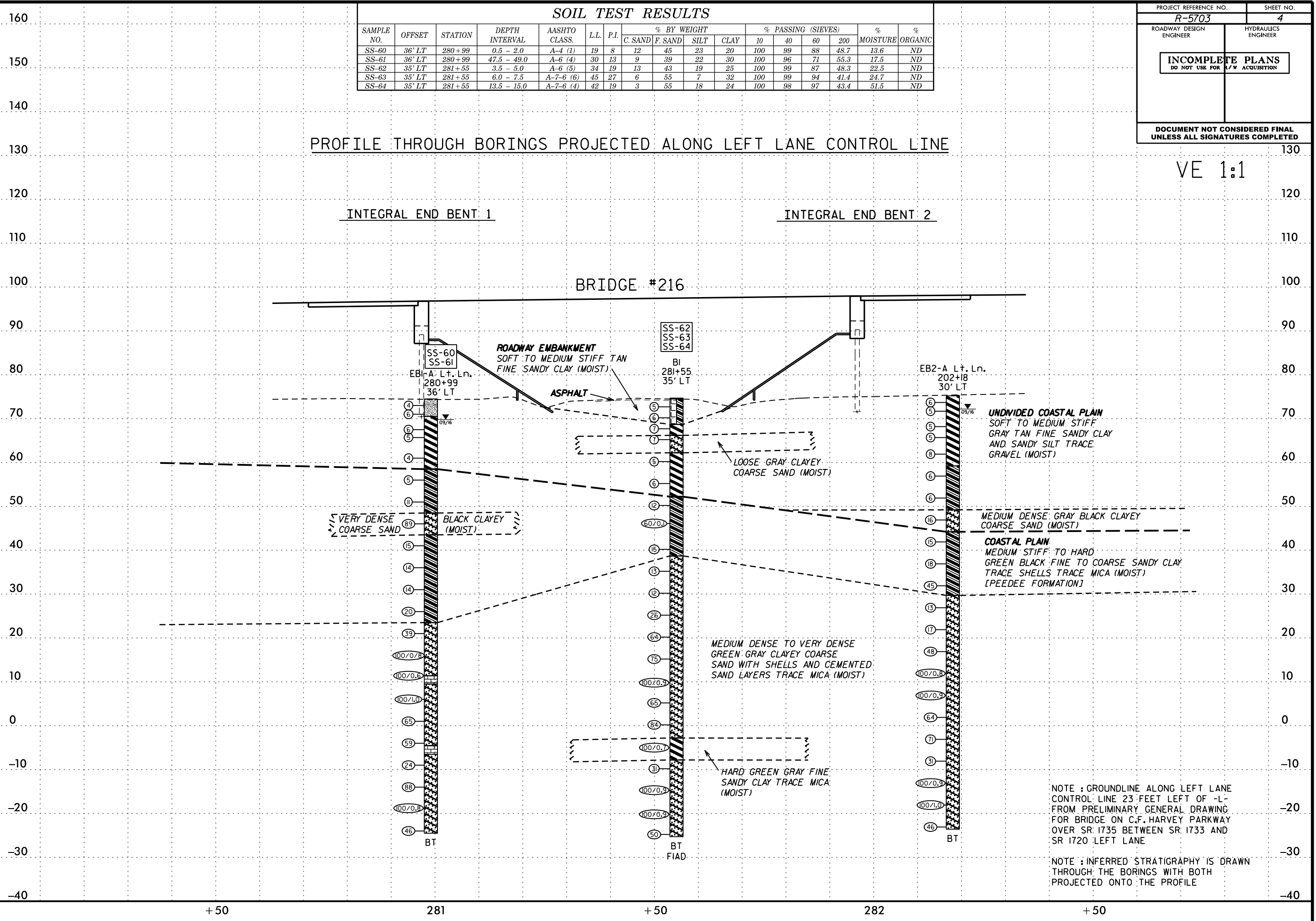
SOIL TEST RESULTS

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	60	200		
SS-60	36' LT	280+99	0.5 - 2.0	A-4 (1)	19	8	12	45	23	20	100	99	88	48.7	13.6	ND
SS-61	36' LT	280+99	47.5 - 49.0	A-6 (4)	30	13	9	39	22	30	100	96	71	55.3	17.5	ND
SS-62	35' LT	281+55	3.5 - 5.0	A-6 (5)	34	19	13	43	19	25	100	99	87	48.3	22.5	ND
SS-63	35' LT	281+55	6.0 - 7.5	A-7-6 (6)	45	27	6	55	7	32	100	99	94	41.4	24.7	ND
SS-64	35' LT	281+55	13.5 - 15.0	A-7-6 (4)	42	19	3	55	18	24	100	98	97	43.4	51.5	ND

PROJECT REFERENCE NO. R-5703	SHEET NO. 4
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
INCOMPLETE PLANS DO NOT USE FOR A/W ACQUISITION	
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	

PROFILE THROUGH BORINGS PROJECTED ALONG LEFT LANE CONTROL LINE

VE 1:1



NOTE : GROUNDLINE ALONG LEFT LANE CONTROL LINE 23 FEET LEFT OF -L- FROM PRELIMINARY GENERAL DRAWING FOR BRIDGE ON C.F. HARVEY PARKWAY OVER SR 1735 BETWEEN SR 1733 AND SR 1720 LEFT LANE

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

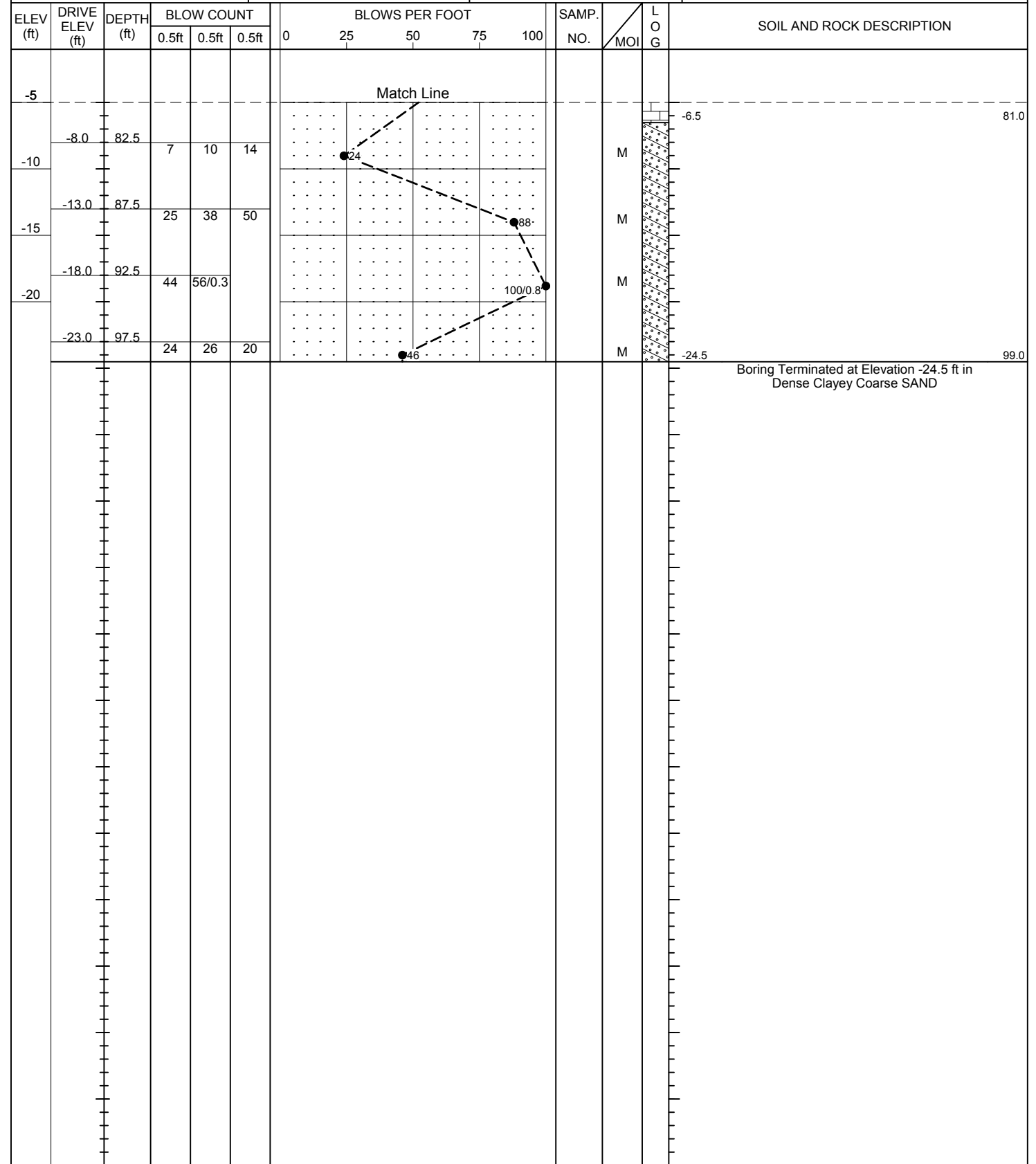
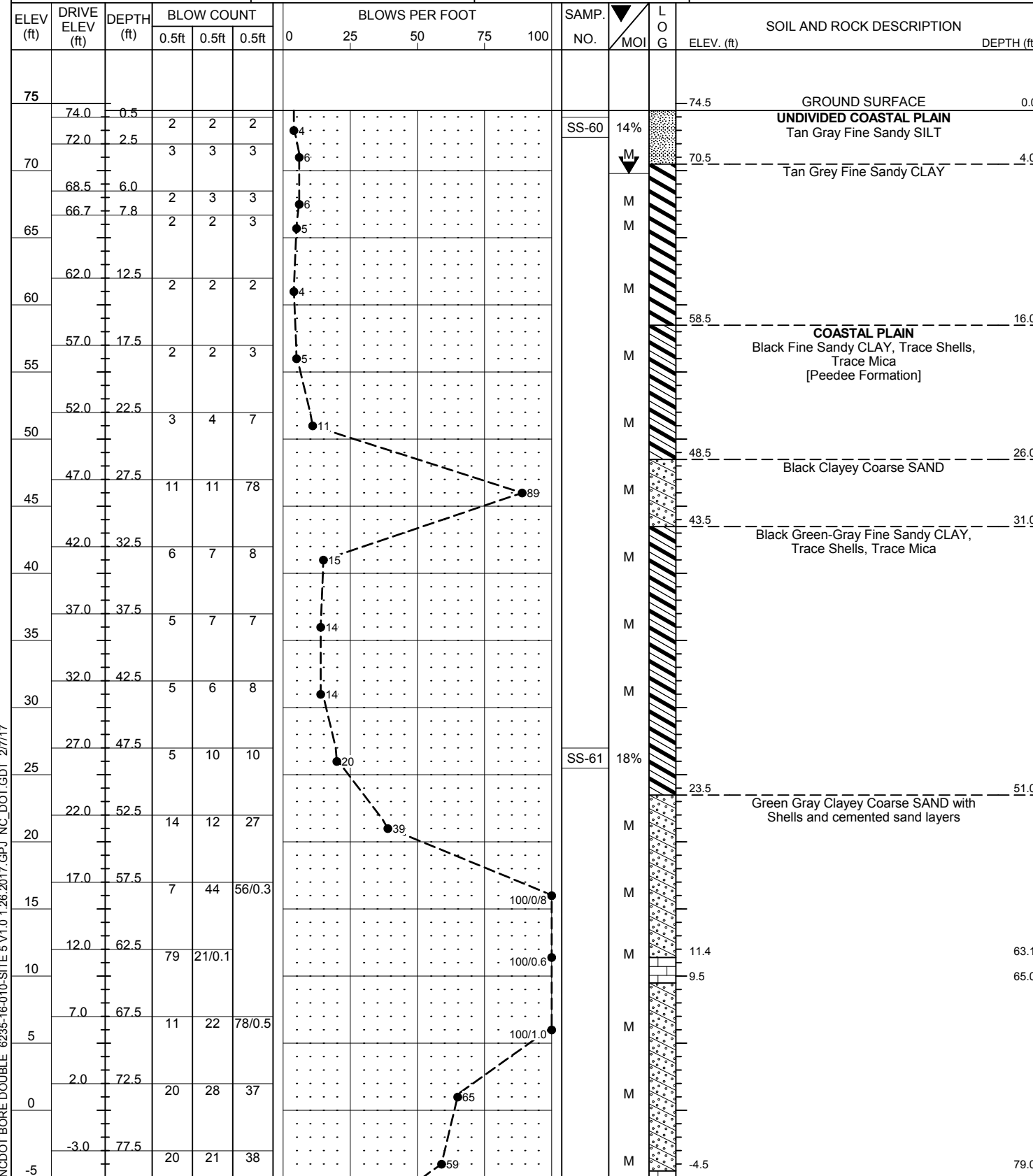
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GEOTECHNICAL BORING REPORT

BORE LOG

WBS 46375.1.1	TIP R-5703	COUNTY LENOIR	GEOLOGIST Blonshine, E.G.
SITE DESCRIPTION Bridge No. 216 on -L- (Felix Harvey Pkwy) over -Y6- (Ferrell Rd)			GROUND WTR (ft)
BORING NO. EB1-A Lt. Ln.	STATION 280+99	OFFSET 36 ft LT	ALIGNMENT -L-
COLLAR ELEV. 74.5 ft	TOTAL DEPTH 99.0 ft	NORTHING 578,803	EASTING 2,441,586
DRILL RIG/HAMMER EFF./DATE SME2938 CME-750 86% 02/11/2016		DRILL METHOD Mud Rotary	HAMMER TYPE Automatic
DRILLER Miller, T.	START DATE 09/13/16	COMP. DATE 09/16/16	SURFACE WATER DEPTH N/A

WBS 46375.1.1	TIP R-5703	COUNTY LENOIR	GEOLOGIST Blonshine, E.G.
SITE DESCRIPTION Bridge No. 216 on -L- (Felix Harvey Pkwy) over -Y6- (Ferrell Rd)			GROUND WTR (ft)
BORING NO. EB1-A Lt. Ln.	STATION 280+99	OFFSET 36 ft LT	ALIGNMENT -L-
COLLAR ELEV. 74.5 ft	TOTAL DEPTH 99.0 ft	NORTHING 578,803	EASTING 2,441,586
DRILL RIG/HAMMER EFF./DATE SME2938 CME-750 86% 02/11/2016		DRILL METHOD Mud Rotary	HAMMER TYPE Automatic
DRILLER Miller, T.	START DATE 09/13/16	COMP. DATE 09/16/16	SURFACE WATER DEPTH N/A



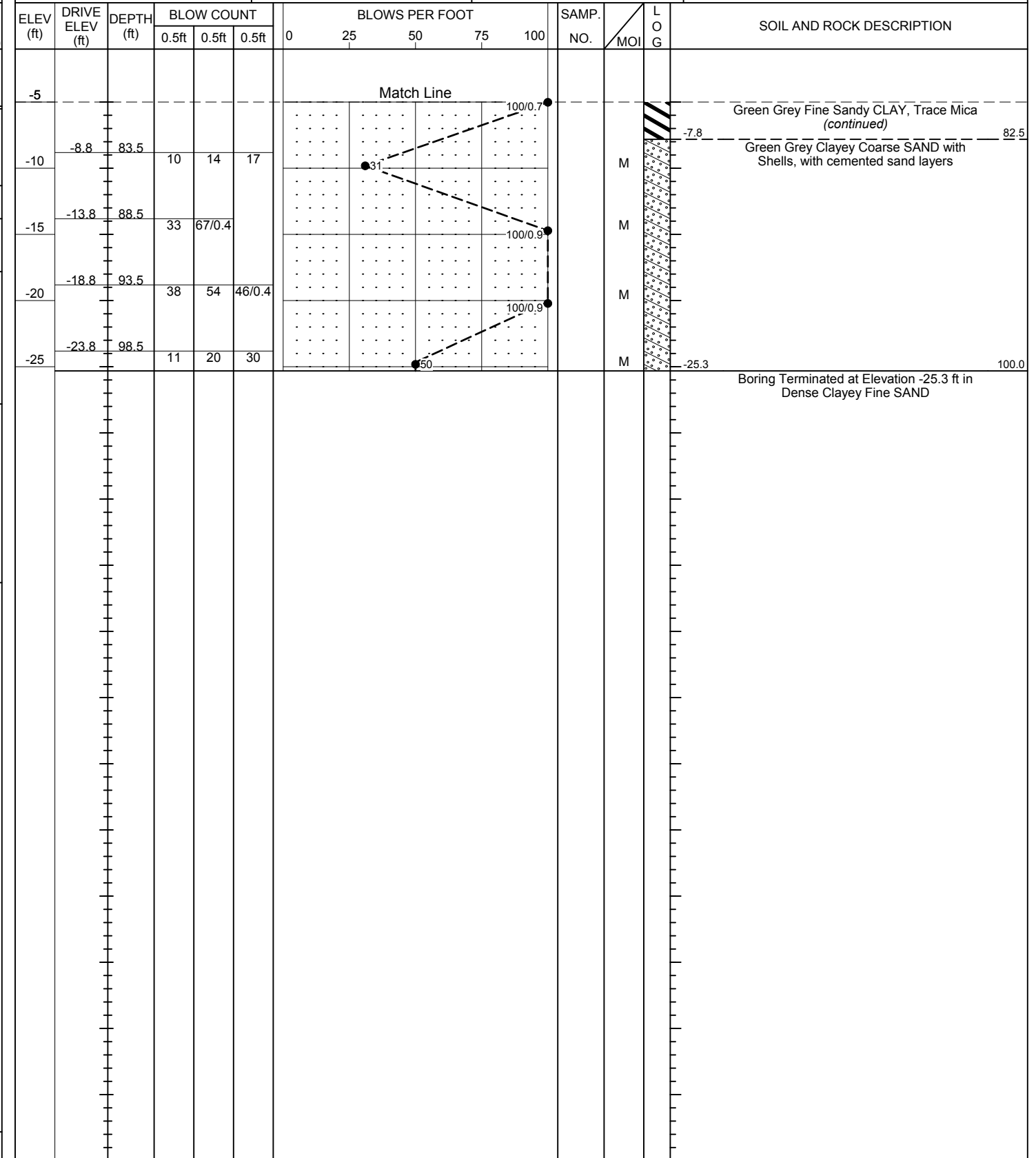
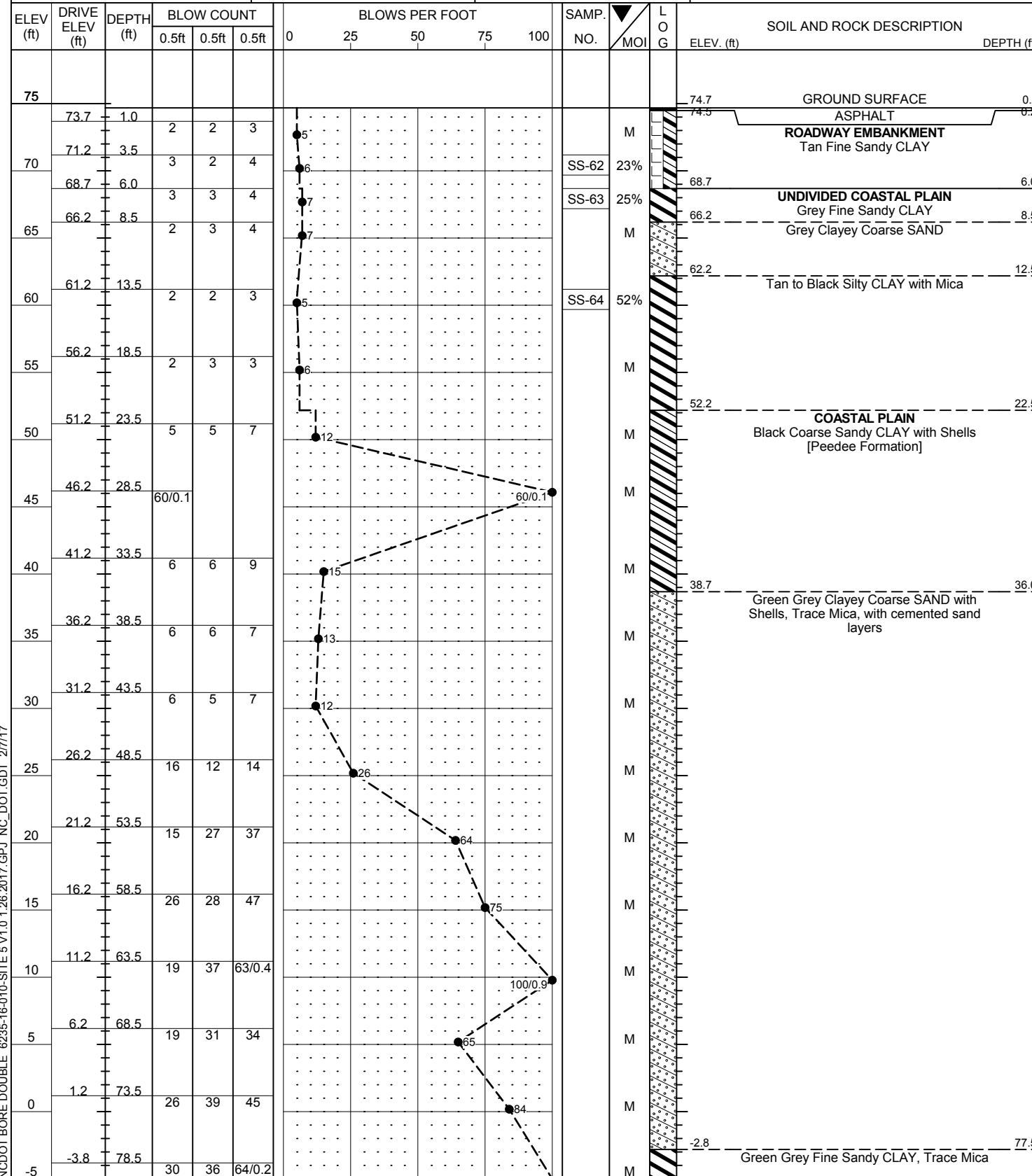
NCDOT BORE DOUBLE 6235-16-010-SITE 5 V1.0 1.26.2017.GPJ NC_DOT_GDT 2/7/17

GEOTECHNICAL BORING REPORT

BORE LOG

WBS 46375.1.1		TIP R-5703		COUNTY LENOIR		GEOLOGIST Blonshine, E.G.	
SITE DESCRIPTION Bridge No. 216 on -L- (Felix Harvey Pkwy) over -Y6- (Ferrell Rd)							GROUND WTR (ft)
BORING NO. B1		STATION 281+55		OFFSET 35 ft LT		ALIGNMENT -L-	
COLLAR ELEV. 74.7 ft		TOTAL DEPTH 100.0 ft		NORTHING 578,817		EASTING 2,441,641	
DRILL RIG/HAMMER EFF./DATE HPC0279 Diedrich D50 88% 12/09/2015		DRILL METHOD Mud Rotary		HAMMER TYPE Automatic			
DRILLER Cain, J.		START DATE 08/17/16		COMP. DATE 08/17/16		SURFACE WATER DEPTH N/A	

WBS 46375.1.1		TIP R-5703		COUNTY LENOIR		GEOLOGIST Blonshine, E.G.	
SITE DESCRIPTION Bridge No. 216 on -L- (Felix Harvey Pkwy) over -Y6- (Ferrell Rd)							GROUND WTR (ft)
BORING NO. B1		STATION 281+55		OFFSET 35 ft LT		ALIGNMENT -L-	
COLLAR ELEV. 74.7 ft		TOTAL DEPTH 100.0 ft		NORTHING 578,817		EASTING 2,441,641	
DRILL RIG/HAMMER EFF./DATE HPC0279 Diedrich D50 88% 12/09/2015		DRILL METHOD Mud Rotary		HAMMER TYPE Automatic			
DRILLER Cain, J.		START DATE 08/17/16		COMP. DATE 08/17/16		SURFACE WATER DEPTH N/A	



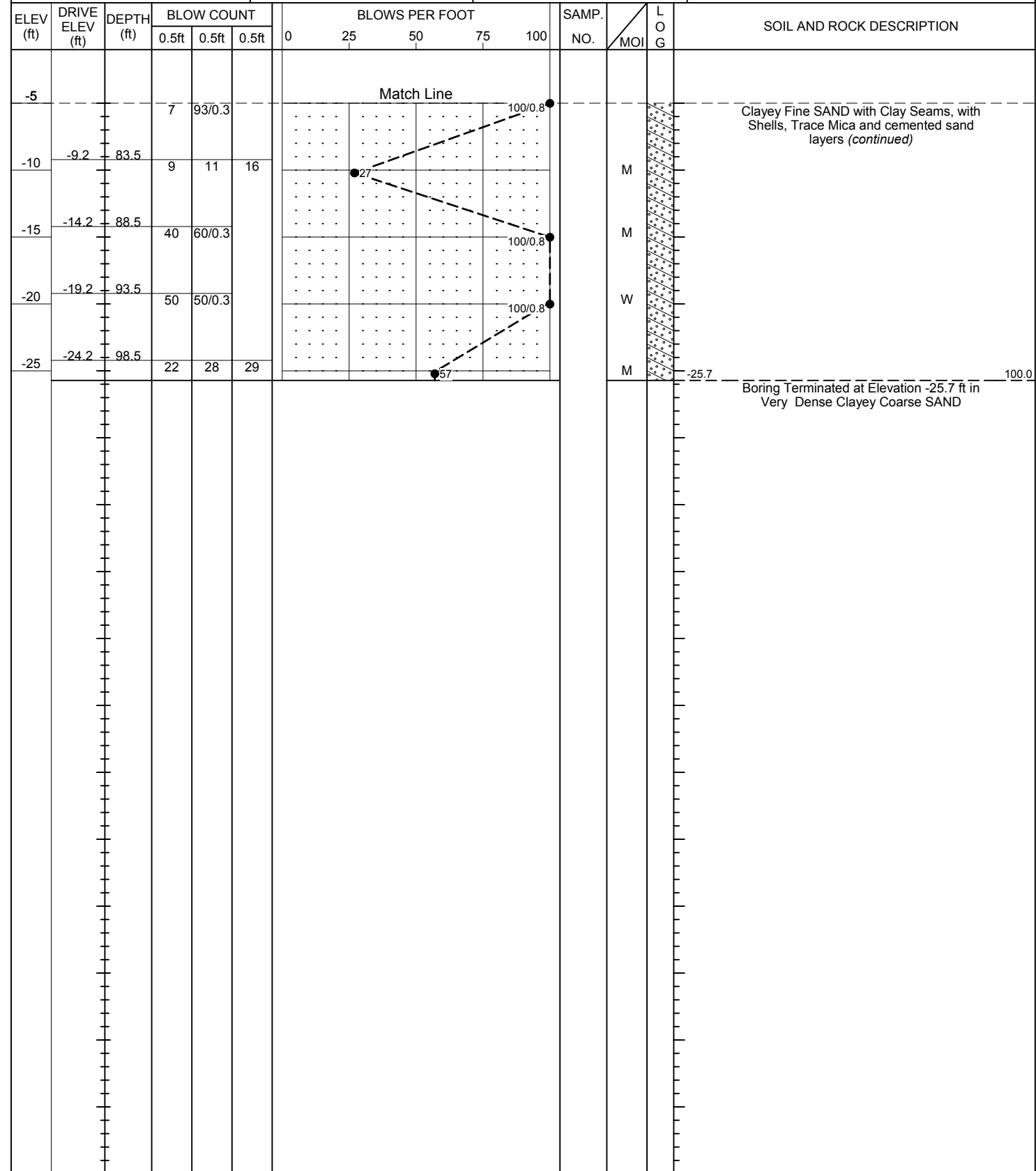
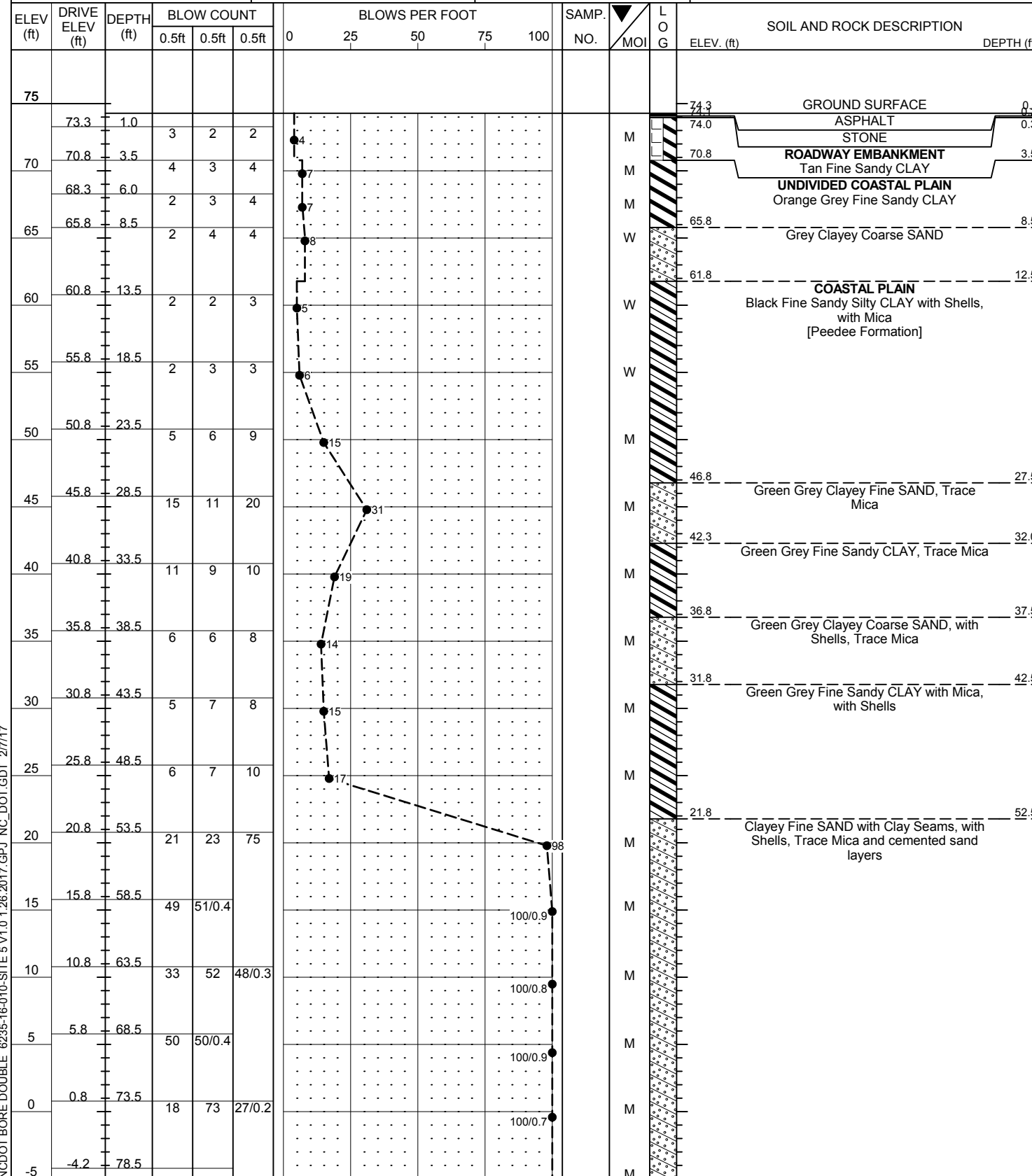
NCDOT BORE DOUBLE 6235-16-010-SITE 5 V1.0 1.26.2017.GPJ NC_DOT_GDT 2/7/17

GEOTECHNICAL BORING REPORT

BORE LOG

WBS 46375.1.1		TIP R-5703		COUNTY LENOIR		GEOLOGIST Blonshine, E.G.	
SITE DESCRIPTION Bridge No. 217 on -L- (Felix Harvey Pkwy) over -Y6- (Ferrell Rd)							GROUND WTR (ft)
BORING NO. B2		STATION 281+38		OFFSET 25 ft RT		ALIGNMENT -L-	
COLLAR ELEV. 74.3 ft		TOTAL DEPTH 100.0 ft		NORTHING 578,755		EASTING 2,441,640	
DRILL RIG/HAMMER EFF./DATE HPC0279 Diedrich D50 88% 12/09/2015				DRILL METHOD Mud Rotary		HAMMER TYPE Automatic	
DRILLER Cain, J.		START DATE 08/17/16		COMP. DATE 08/17/16		SURFACE WATER DEPTH N/A	

WBS 46375.1.1		TIP R-5703		COUNTY LENOIR		GEOLOGIST Blonshine, E.G.	
SITE DESCRIPTION Bridge No. 217 on -L- (Felix Harvey Pkwy) over -Y6- (Ferrell Rd)							GROUND WTR (ft)
BORING NO. B2		STATION 281+38		OFFSET 25 ft RT		ALIGNMENT -L-	
COLLAR ELEV. 74.3 ft		TOTAL DEPTH 100.0 ft		NORTHING 578,755		EASTING 2,441,640	
DRILL RIG/HAMMER EFF./DATE HPC0279 Diedrich D50 88% 12/09/2015				DRILL METHOD Mud Rotary		HAMMER TYPE Automatic	
DRILLER Cain, J.		START DATE 08/17/16		COMP. DATE 08/17/16		SURFACE WATER DEPTH N/A	



NCDOT BORE DOUBLE 6235-16-010-SITE 5 V1.0 1.26.2017.GPJ NC_DOT_GDT_2/7/17

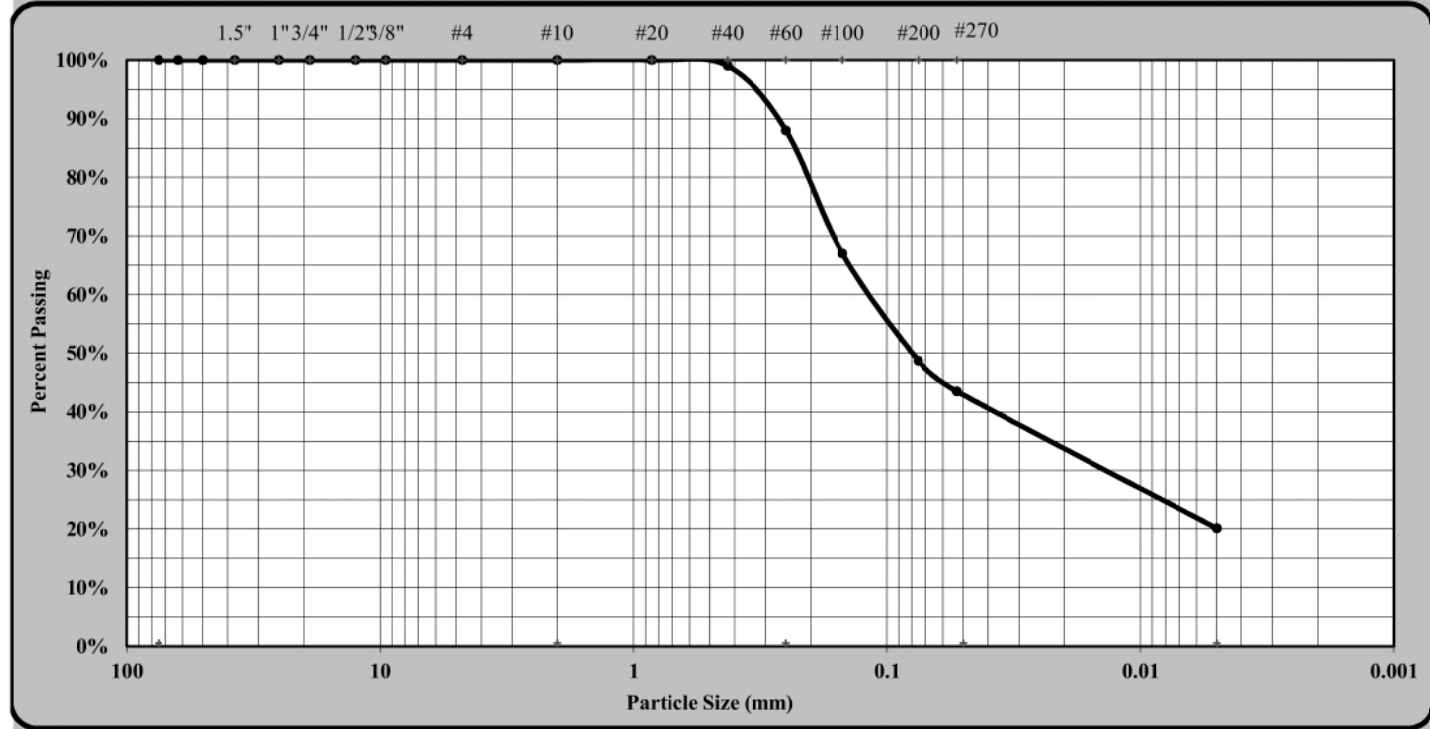
Particle Size Analysis of Soils

AASHTO T88 as Modified by NCDOT



Quality Assurance

S&ME, Inc. Raleigh, 3201 Spring Forest Road, Raleigh, North Carolina 27616			
S&ME Project #:	6235-16-010	Report Date:	11/8/16
Project Name:	C.F. Harvey Parkway Extension R-5703	Test Date(s):	11/1-8/16
State Project #:	N/A	F.A. Project No:	N/A
Client Name:	Michael Baker Engineering	TIP NO:	N/A
Address:	Raleigh, NC		
Boring #:	EBI-A Lt. Ln.	Sample #:	SS-60
Location:	Site-Borehole	Sample Date:	N/A
		Offset:	N/A
		Depth (ft):	0.5-2.0'
Sample Description:	Tan gray fine sandy SILT 0 A-4 (1)		



As Defined by NCDOT		Fine Sand	< 0.25 mm and > 0.05 mm
Gravel	< 75 mm and > 2.00 mm	Silt	< 0.05 and > 0.005 mm
Coarse Sand	< 2.00 mm and > 0.25 mm	Clay	< 0.005 mm
Maximum Particle Size	#20	Coarse Sand	12%
Gravel	0%	Fine Sand	45%
Apparent Relative Density	2.650	Moisture Content	13.6%
Liquid Limit	19	Plastic Limit	11
		Plastic Index	8
		% Passing #200	48.7%
Soil Mortar (-#10 Sieve)			
Coarse Sand	12%	Fine Sand	45%
		Silt	23%
		Clay	20%
Description of Sand & Gravel Particles:	Rounded <input type="checkbox"/>	Angular	<input checked="" type="checkbox"/>
Hard & Durable	<input checked="" type="checkbox"/>	Soft	<input type="checkbox"/>
		Weathered & Friable	<input type="checkbox"/>

References / Comments / Deviations: ND=Not Determined.

Karen Warner 118-06-0305 Laboratory Technician 11/8/2016
Technician Name Certification No. Position Date

Stewart Laney, P.E. _____ Senior Engineer
Technical Responsibility Signature Position Date

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Particle Size Analysis of Soils

AASHTO T88 as Modified by NCDOT



Quality Assurance

S&ME, Inc. Raleigh, 3201 Spring Forest Road, Raleigh, North Carolina 27616			
S&ME Project #:	6235-16-010	Report Date:	11/8/16
Project Name:	C.F. Harvey Parkway Extension R-5703	Test Date(s):	11/1-8/16
State Project #:	N/A	F.A. Project No:	N/A
Client Name:	Michael Baker Engineering	TIP NO:	N/A
Address:	Raleigh, NC		
Boring #:	EBI-A Lt. Ln.	Sample #:	SS-61
Location:	Site-Borehole	Sample Date:	N/A
		Offset:	N/A
		Depth (ft):	47.5-48.0
Sample Description:	Black sandy CLAY 0 A-6 (4)		



As Defined by NCDOT		Fine Sand	< 0.25 mm and > 0.05 mm
Gravel	< 75 mm and > 2.00 mm	Silt	< 0.05 and > 0.005 mm
Coarse Sand	< 2.00 mm and > 0.25 mm	Clay	< 0.005 mm
Maximum Particle Size	#10	Coarse Sand	9%
Gravel	0%	Fine Sand	39%
Apparent Relative Density	2.650	Moisture Content	17.5%
Liquid Limit	30	Plastic Limit	17
		Plastic Index	13
		% Passing #200	55.3%
Soil Mortar (-#10 Sieve)			
Coarse Sand	9%	Fine Sand	39%
		Silt	22%
		Clay	30%
Description of Sand & Gravel Particles:	Rounded <input type="checkbox"/>	Angular	<input checked="" type="checkbox"/>
Hard & Durable	<input checked="" type="checkbox"/>	Soft	<input type="checkbox"/>
		Weathered & Friable	<input type="checkbox"/>

References / Comments / Deviations: ND=Not Determined.

Karen Warner 118-06-0305 Laboratory Technician 11/8/2016
Technician Name Certification No. Position Date

Stewart Laney, P.E. _____ Senior Engineer
Technical Responsibility Signature Position Date

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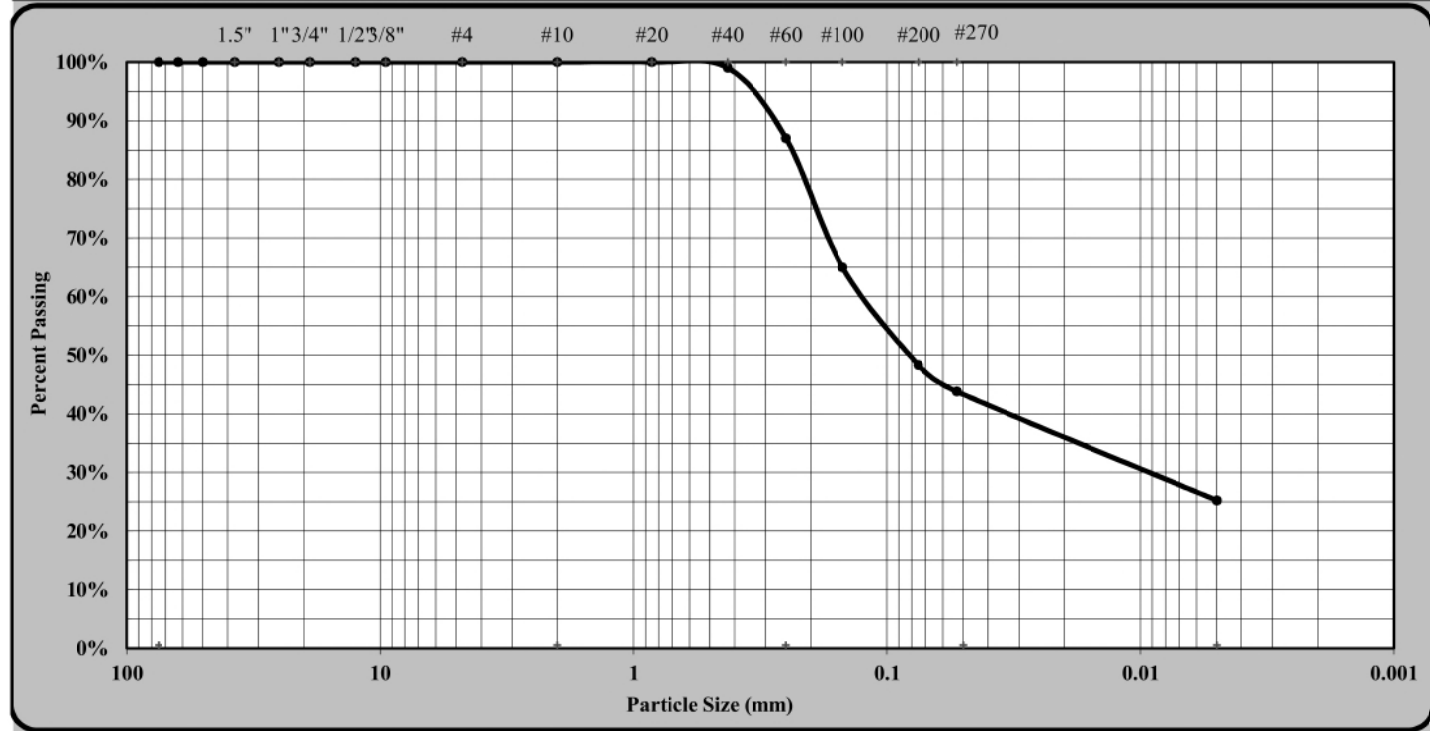
Particle Size Analysis of Soils

AASHTO T88 as Modified by NCDOT



Quality Assurance

S&ME, Inc. Raleigh, 3201 Spring Forest Road, Raleigh, North Carolina 27616			
S&ME Project #:	6235-16-010	Report Date:	11/8/16
Project Name:	C.F. Harvey Parkway Extension R-5703	Test Date(s):	11/1-8/16
State Project #:	N/A	F.A. Project No:	N/A
Client Name:	Michael Baker Engineering	TIP NO:	N/A
Address:	Raleigh, NC		
Boring #:	B-1	Sample #:	SS-62
Location:	Site-Borehole	Sample Date:	N/A
		Offset:	N/A
		Depth (ft):	3.5-5.0'
Sample Description:	Tan fine sandy CLAY 0 A-6 (5)		



As Defined by NCDOT		Fine Sand	< 0.25 mm and > 0.05 mm
Gravel	< 75 mm and > 2.00 mm	Silt	< 0.05 and > 0.005 mm
Coarse Sand	< 2.00 mm and > 0.25 mm	Clay	< 0.005 mm
Maximum Particle Size	#20	Coarse Sand	13%
Gravel	0%	Fine Sand	43%
Apparent Relative Density	2.650	Moisture Content	22.5%
Liquid Limit	34	Plastic Limit	15
		Plastic Index	19
		% Passing #200	48.3%
Soil Mortar (-#10 Sieve)			
Coarse Sand	13%	Fine Sand	43%
		Silt	19%
		Clay	25%
Description of Sand & Gravel Particles:	Rounded <input type="checkbox"/>	Angular	<input checked="" type="checkbox"/>
Hard & Durable	<input checked="" type="checkbox"/>	Soft	<input type="checkbox"/>
		Weathered & Friable	<input type="checkbox"/>

References / Comments / Deviations: ND=Not Determined.

<u>Karen Warner</u> Technician Name	<u>118-06-0305</u> Certification No.	<u>Laboratory Technician</u> Position	<u>11/8/2016</u> Date
<u>Stewart Laney, P.E</u> Technical Responsibility	<u>[Signature]</u> Signature	<u>Senior Engineer</u> Position	<u>[Date]</u> Date

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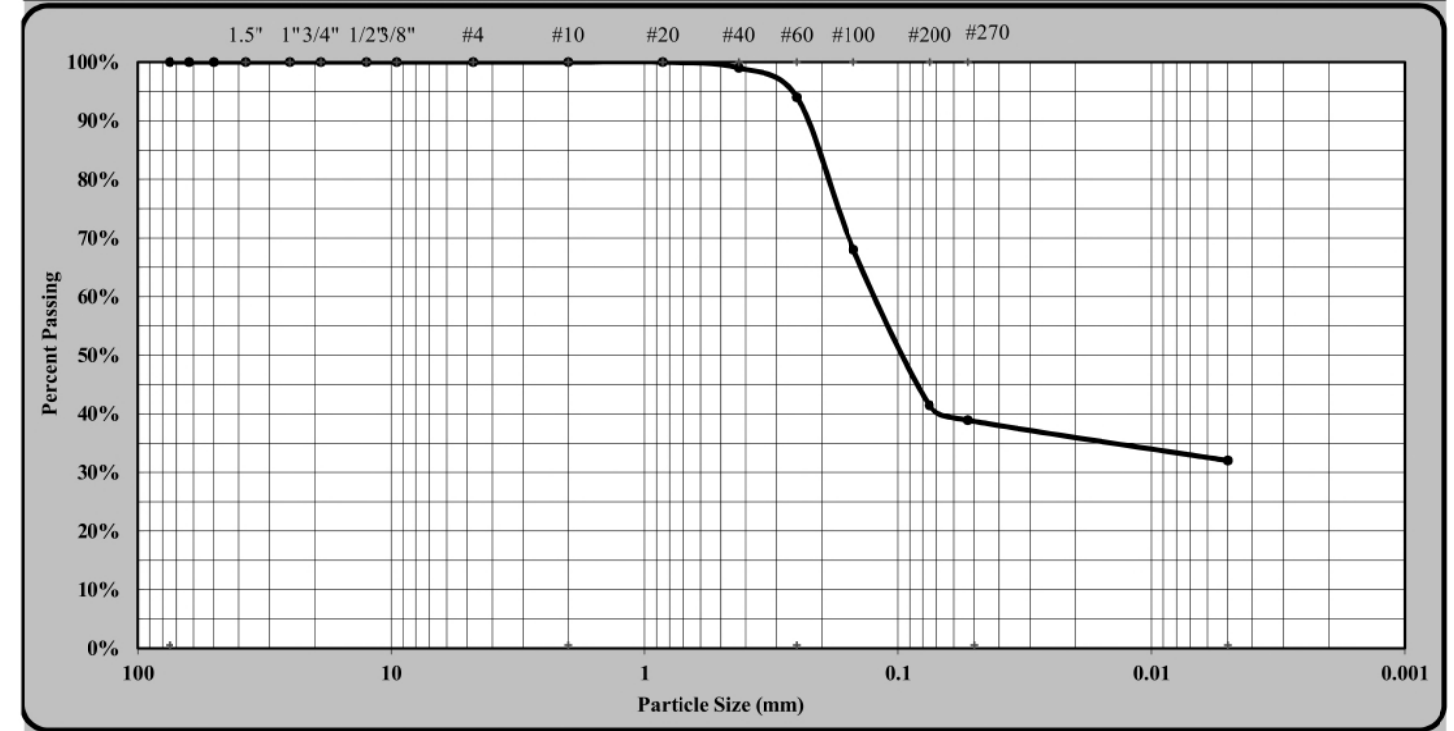
Particle Size Analysis of Soils

AASHTO T88 as Modified by NCDOT



Quality Assurance

S&ME, Inc. Raleigh, 3201 Spring Forest Road, Raleigh, North Carolina 27616			
S&ME Project #:	6235-16-010	Report Date:	9/20/16
Project Name:	C.F. Harvey Parkway Extension R-5703	Test Date(s):	9/12 - 9/20/16
State Project #:	N/A	F.A. Project No:	N/A
Client Name:	Michael Baker Engineering	TIP NO:	N/A
Address:	Raleigh, NC		
Boring #:	B1	Sample #:	SS-63
Location:	Site-Borehole	Sample Date:	N/A
		Offset:	N/A
		Depth (ft):	6 - 7.5
Sample Description:	Light Gray Coarse to Fine Sandy Silty CLAY A-7-6 (6)		



As Defined by NCDOT		Fine Sand	< 0.25 mm and > 0.05 mm
Gravel	< 75 mm and > 2.00 mm	Silt	< 0.05 and > 0.005 mm
Coarse Sand	< 2.00 mm and > 0.25 mm	Clay	< 0.005 mm
Maximum Particle Size	#4	Coarse Sand	6%
Gravel	0%	Fine Sand	55%
Apparent Relative Density	ND	Moisture Content	25%
Liquid Limit	45	Plastic Limit	18
		Plastic Index	27
		% Passing #200	41.4%
Soil Mortar (-#10 Sieve)			
Coarse Sand	6%	Fine Sand	55%
		Silt	7%
		Clay	32%
Description of Sand & Gravel Particles:	Rounded <input type="checkbox"/>	Angular	<input checked="" type="checkbox"/>
Hard & Durable	<input checked="" type="checkbox"/>	Soft	<input checked="" type="checkbox"/>
		Weathered & Friable	<input checked="" type="checkbox"/>

References / Comments / Deviations: ND=Not Determined.

<u>Mal Krajan, ET</u> Technician Name	<u>104-01-0703</u> Certification No.	<u>Laboratory Manager</u> Position	<u>9/12/2016</u> Date
<u>Mal Krajan, ET</u> Technical Responsibility	<u>[Signature]</u> Signature	<u>Laboratory Manager</u> Position	<u>9/26/2016</u> Date

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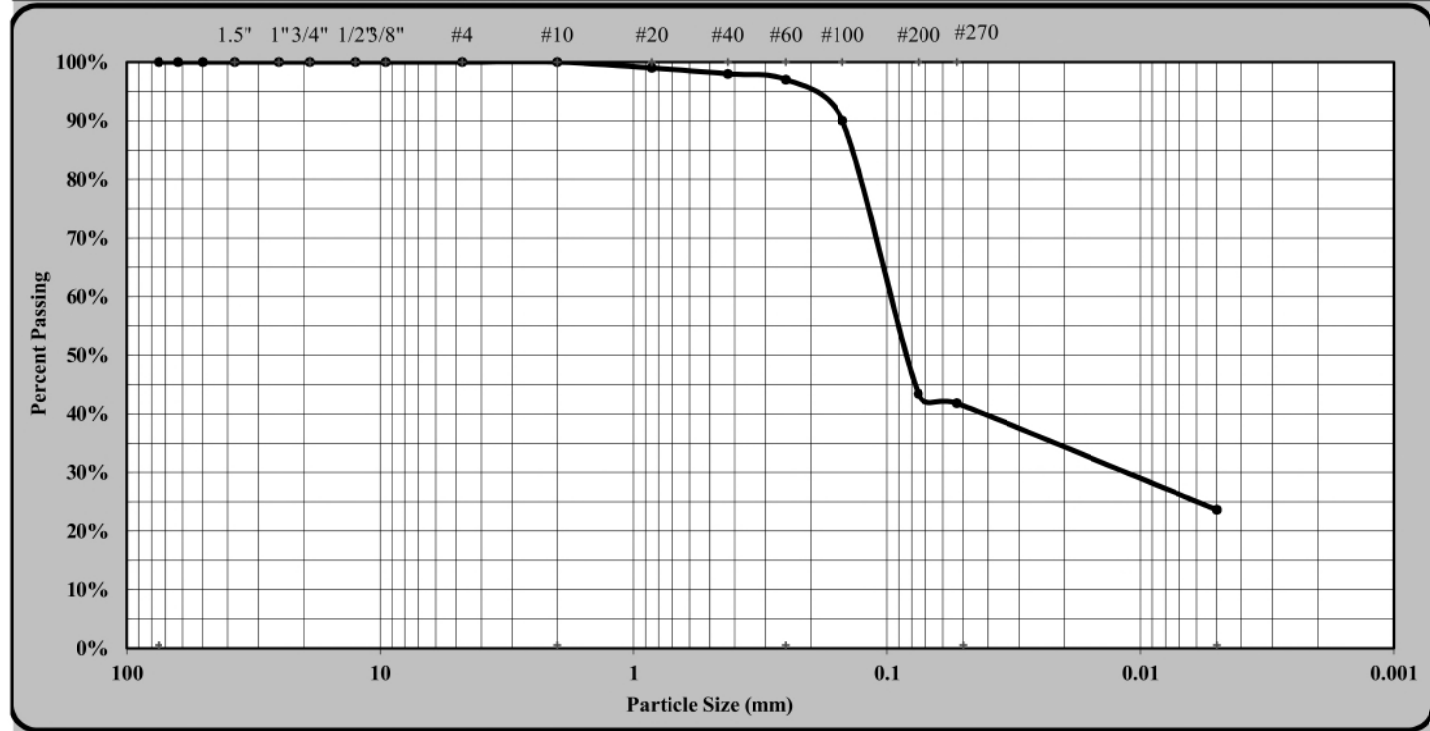
Particle Size Analysis of Soils

AASHTO T88 as Modified by NCDOT



Quality Assurance

S&ME, Inc. Raleigh, 3201 Spring Forest Road, Raleigh, North Carolina 27616			
S&ME Project #:	6235-16-010	Report Date:	11/8/16
Project Name:	C.F. Harvey Parkway Extension R-5703	Test Date(s):	11/1-8/16
State Project #:	N/A	F.A. Project No:	N/A
Client Name:	Michael Baker Engineering	TIP NO:	N/A
Address:	Raleigh, NC		
Boring #:	B-1	Sample #:	SS-64
Location:	Site-Borehole	Sample Date:	N/A
	Offset: N/A	Depth (ft):	13.5-15.0
Sample Description:	Tan Black Silty CLAY 0 A-7-6 (4)		



As Defined by NCDOT		Fine Sand	< 0.25 mm and > 0.05 mm		
Gravel	< 75 mm and > 2.00 mm	Silt	< 0.05 and > 0.005 mm		
Coarse Sand	< 2.00 mm and > 0.25 mm	Clay	< 0.005 mm		
Maximum Particle Size	#20	Coarse Sand	3%	Silt	18%
Gravel	0%	Fine Sand	55%	Clay	24%
Apparent Relative Density	2.650	Moisture Content	51.5%	% Passing #200	43.4%
Liquid Limit	42	Plastic Limit	23	Plastic Index	19
Soil Mortar (-#10 Sieve)					
Coarse Sand	3%	Fine Sand	55%	Silt	18%
				Clay	24%
Description of Sand & Gravel Particles:	Rounded	<input type="checkbox"/>	Angular	<input checked="" type="checkbox"/>	
Hard & Durable	<input checked="" type="checkbox"/>	Soft	<input type="checkbox"/>	Weathered & Friable	<input type="checkbox"/>

References / Comments / Deviations: ND=Not Determined.

<u>Karen Warner</u> Technician Name	<u>118-06-0305</u> Certification No.	<u>Laboratory Technician</u> Position	<u>11/8/2016</u> Date
<u>Stewart Laney, P.E</u> Technical Responsibility	_____ Signature	<u>Senior Engineer</u> Position	_____ Date

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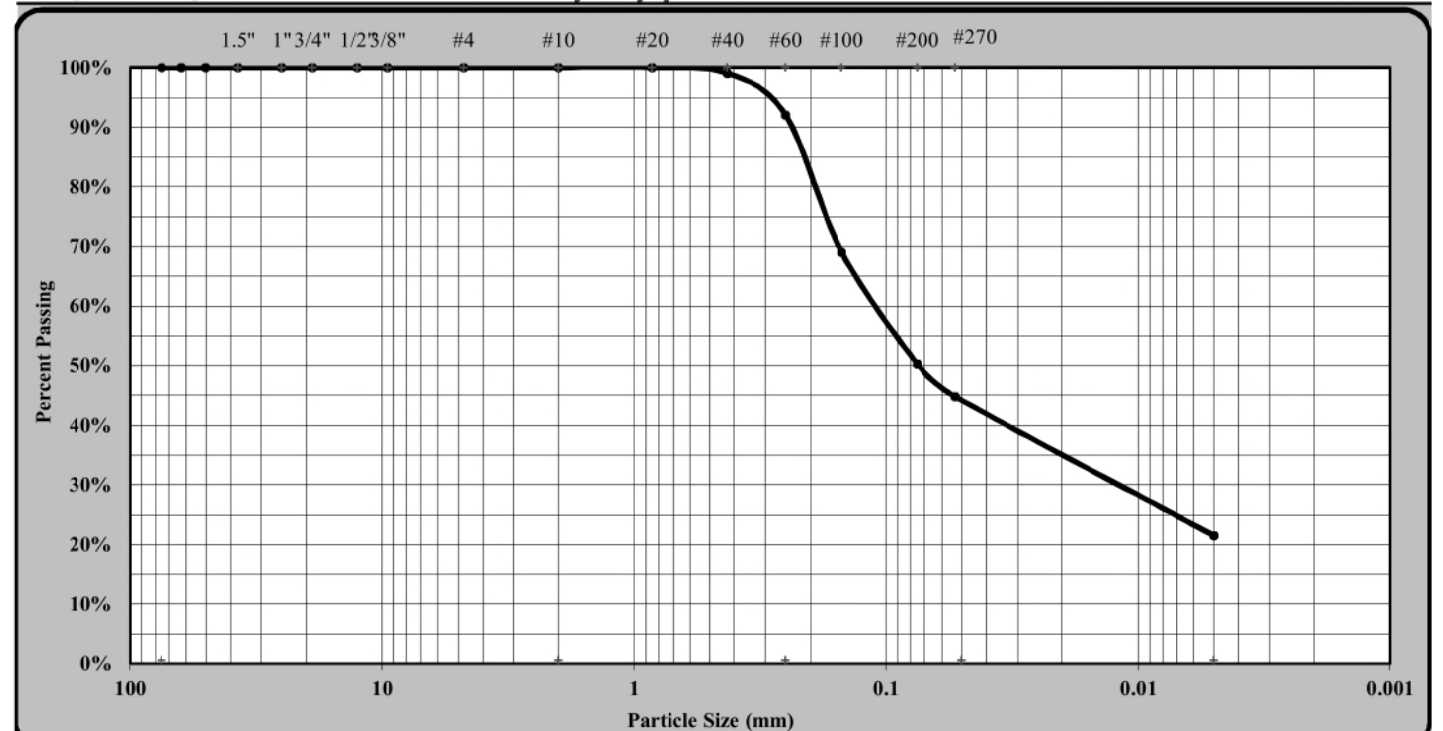
Particle Size Analysis of Soils

AASHTO T88 as Modified by NCDOT



Quality Assurance

S&ME, Inc. Raleigh, 3201 Spring Forest Road, Raleigh, North Carolina 27616			
S&ME Project #:	6235-16-010	Report Date:	11/14/16
Project Name:	C.F. Harvey Parkway Extension R-5703	Test Date(s):	10/7 - 11/14/16
State Project #:	N/A	F.A. Project No:	N/A
Client Name:	Michael Baker Engineering	TIP NO:	N/A
Address:	Raleigh, NC		
Boring #:	EB1-B Rt. Ln.	Sample #:	SS-65
Location:	Site-Borehole	Sample Date:	N/A
	Offset: N/A	Depth (ft):	0.5 - 2
Sample Description:	Tan Coarse to Fine Sandy Clayey SILT A-4 (2)		



As Defined by NCDOT		Fine Sand	< 0.25 mm and > 0.05 mm		
Gravel	< 75 mm and > 2.00 mm	Silt	< 0.05 and > 0.005 mm		
Coarse Sand	< 2.00 mm and > 0.25 mm	Clay	< 0.005 mm		
Maximum Particle Size	#10	Coarse Sand	8%	Silt	23%
Gravel	0%	Fine Sand	47%	Clay	22%
Apparent Relative Density	ND	Moisture Content	15.8%	% Passing #200	50.3%
Liquid Limit	22	Plastic Limit	12	Plastic Index	10
Soil Mortar (-#10 Sieve)					
Coarse Sand	8%	Fine Sand	47%	Silt	23%
				Clay	22%
Description of Sand & Gravel Particles:	Rounded	<input type="checkbox"/>	Angular	<input type="checkbox"/>	
Hard & Durable	<input type="checkbox"/>	Soft	<input type="checkbox"/>	Weathered & Friable	<input type="checkbox"/>

References / Comments / Deviations: ND=Not Determined.

<u>Mal Krajan, ET</u> Technician Name	<u>104-01-0703</u> Certification No.	<u>Laboratory Manager</u> Position	<u>11/14/2016</u> Date
<u>Mal Krajan, ET</u> Technical Responsibility	_____ Signature	<u>Laboratory Manager</u> Position	<u>11/14/2016</u> Date

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Form No: TR-T267
 Revision No. 0
 Revision Date: 07/10/08

Moisture, Ash, and Organic Matter



AASHTO T-267

Quality Assurance

S&ME, Inc. Raleigh, 3201 Spring Forest Road, Raleigh, North Carolina 27616			
Project #:	6235-16-010	Report Date:	10/21/16
Project Name:	C.F. Harvey Parkway Extension R-5703	Test Date(s):	10/18 - 10/21/16
Client Name:	Michael Baker Engineering		
Client Address:	Raleigh, NC		
Boring #:	EB1-B Rt. Ln.	Sample #:	SS-65
		Sample Date:	N/A
Location:	Site-Borehole	Offset:	N/A
		Depth (ft):	0.5 - 2
Sample Description:	Tan Coarse to Fine Sandy Clayey SILT (A-4) (2)		
Equipment:	Balance: 0.01 g. Readability, 500g. Minimum Capacity		
Balance:	S&ME ID #: 1024	Cal. Date:	11/06/16
		Due:	11/06/17

Method A: Moisture Content Determination Required Oven Temperature: 105 ± 5 °C

Oven Temperature: 105 °C		Tare #	p
t	Tare Weight (Dish plus Aluminum Foil Cover)	grams	45.69
a	Mass of As-Received Specimen + Tare Wt.	grams	92.40
b	Mass of Oven Dry Specimen + Tare Wt.	grams	86.03
w	Water Weight	(a-b)	6.37
A	Mass of As-Received Specimen	(a-t)	46.71
B	Mass of Oven Dry Specimen	(b-t)	40.34
% Moisture Content as a % of As Received or Total Mass		(w/A)*100	13.6%
% Moisture Content as a % of Oven-dried Mass		(w/B)*100	15.8%

Oven S&ME ID #: 1454 Cal. Date: 10/7/16 Due: 10/7/17

Method C (440° C) or D (750° C): Ash Content and Organic Matter Determination

Muffle Furnace: 455 °C		Tare #	104
t	Tare Weight (Dish plus Aluminum Foil Cover)	grams	50.17
b	Mass of Oven Dry Specimen + Tare Wt.	grams	86.05
c	Ash Weight + Tare Wt.	grams	85.56
C	Ash Weight	c-t	35.39
B	Mass of Oven Dry Specimen	(b-t)	35.88
D	% Ash Content	(C/B)*100	98.6%
	% Organic Matter	100-D	1.4%

Muffle Furnace: S&ME ID #: 00261

Notes / Deviations / References:

Mal Krajan, ET
 Technical Responsibility

Signature

Laboratory Manager
 Position

11/14/2016
 Date

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Form No: TR-T289-1
 Revision No. 0
 Revision Date: 07/10/08

pH of Soil



AASHTO T289

Quality Assurance

S&ME, Inc. Raleigh, 3201 Spring Forest Road, Raleigh, North Carolina 27616				
Project #:	6235-16-010	Report Date:	11/7/16	
Project Name:	C.F. Harvey Parkway Extension R-5703	Test Date(s):	11/5 - 11/7/16	
Client Name:	Michael Baker Engineering			
Client Address:	Raleigh, NC			
Boring #:	EB1-B Rt. Ln.	Sample #:	SS-65	Sample Date:
				N/A
Location:	Site-Borehole	Offset:	N/A	Depth (ft):
				0.5 - 2
Sample Description:	Tan Coarse to Fine Sandy Clayey SILT (A-4) (2)			
Equipment:	Balance			
Balance:	S&ME ID# 1024	Cal. Date:	11/6/16	Due:
				11/6/17
Sieve:	#10	S&ME ID# 13223	Cal. Date:	6/11/16
				Due: 6/11/17
pH Meter:	S&ME ID# 1365	Cal. Date:	11/7/16	Due:
				NA

pH Meter Calibration

Buffer Solution	Results
pH buffer 7.0	7.02
pH buffer 4.01	4.01
pH buffer 10.0	10.03
Buffer Temperature °C	22.4

Measuring pH of Soil

Measurements	
Weight of Air Dry Soil (g)	30.02
Distilled Water (g)	30.01
Temperature °C	22.4
pH Readings	5.61

Notes / Deviations / References: AASHTO T-289: Determining pH of Soil for Use in Corrosion Testing

Mal Krajan, ET
 Technical Responsibility

Signature

Laboratory Manager
 Position

11/14/2016
 Date

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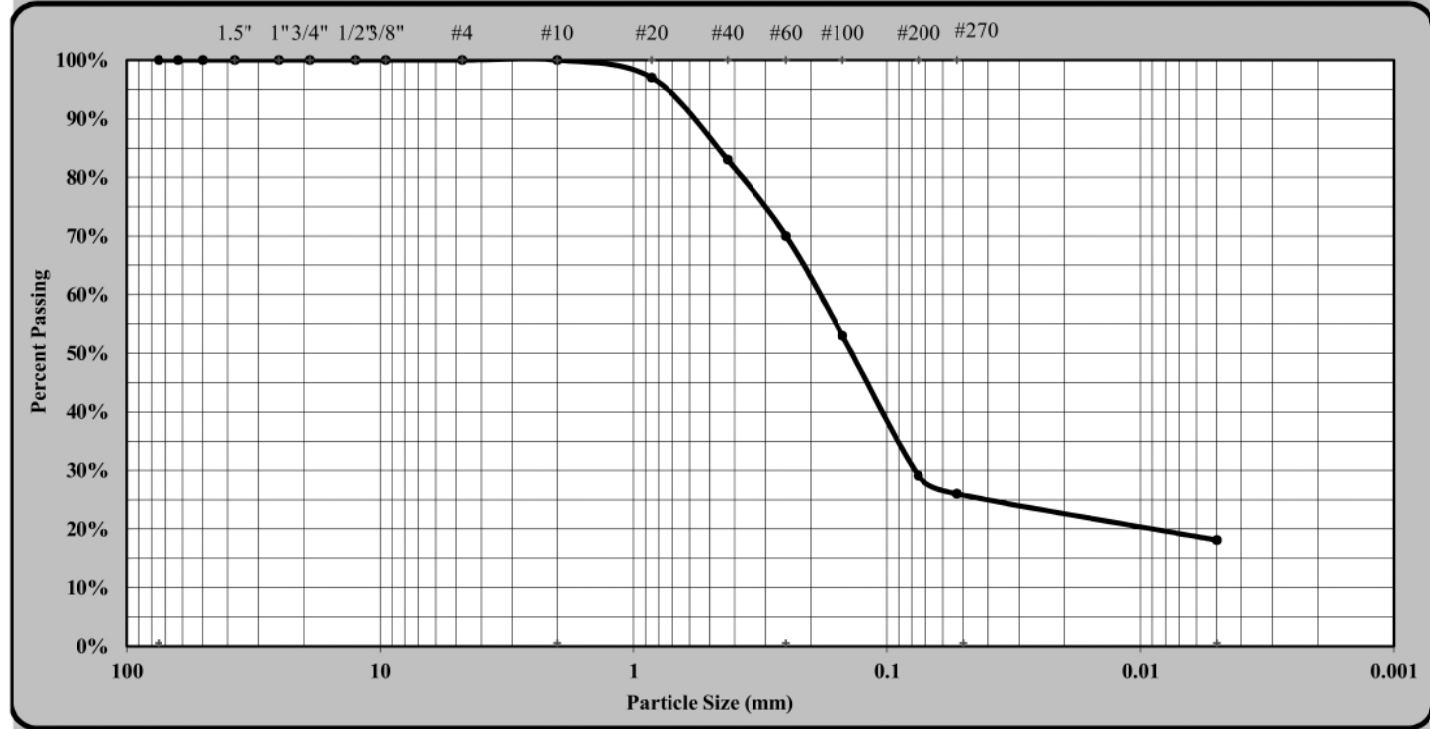
Particle Size Analysis of Soils

AASHTO T88 as Modified by NCDOT



Quality Assurance

S&ME, Inc. Raleigh, 3201 Spring Forest Road, Raleigh, North Carolina 27616			
S&ME Project #:	6235-16-010	Report Date:	11/8/16
Project Name:	C.F. Harvey Parkway Extension R-5703	Test Date(s):	11/1-8/16
State Project #:	N/A	F.A. Project No:	N/A
Client Name:	Michael Baker Engineering	TIP NO:	N/A
Address:	Raleigh, NC		
Boring #:	EB2-B Rt. Ln.	Sample #:	SS-66
Location:	Site-Borehole	Sample Date:	N/A
		Offset:	N/A
		Depth (ft):	0.5-2.0'
Sample Description:	Tan gray fine silty SAND 0 A-2-4 (0)		



As Defined by NCDOT		Fine Sand	< 0.25 mm and > 0.05 mm
Gravel	< 75 mm and > 2.00 mm	Silt	< 0.05 and > 0.005 mm
Coarse Sand	< 2.00 mm and > 0.25 mm	Clay	< 0.005 mm
Maximum Particle Size	#20	Coarse Sand	30%
Gravel	0%	Fine Sand	44%
Apparent Relative Density	2.650	Moisture Content	22.1%
Liquid Limit	21	Plastic Limit	14
		Plastic Index	7
		% Passing #200	29.1%
Soil Mortar (-#10 Sieve)			
Coarse Sand	30%	Fine Sand	44%
		Silt	8%
		Clay	18%
Description of Sand & Gravel Particles:	Rounded <input type="checkbox"/>	Angular	<input checked="" type="checkbox"/>
Hard & Durable	<input checked="" type="checkbox"/>	Soft	<input checked="" type="checkbox"/>
		Weathered & Friable	<input checked="" type="checkbox"/>

References / Comments / Deviations: ND=Not Determined.

Karen Warner 118-06-0305 Laboratory Technician 11/8/2016
Technician Name Certification No. Position Date

Stewart Laney, P.E _____ Senior Engineer
Technical Responsibility Signature Position Date

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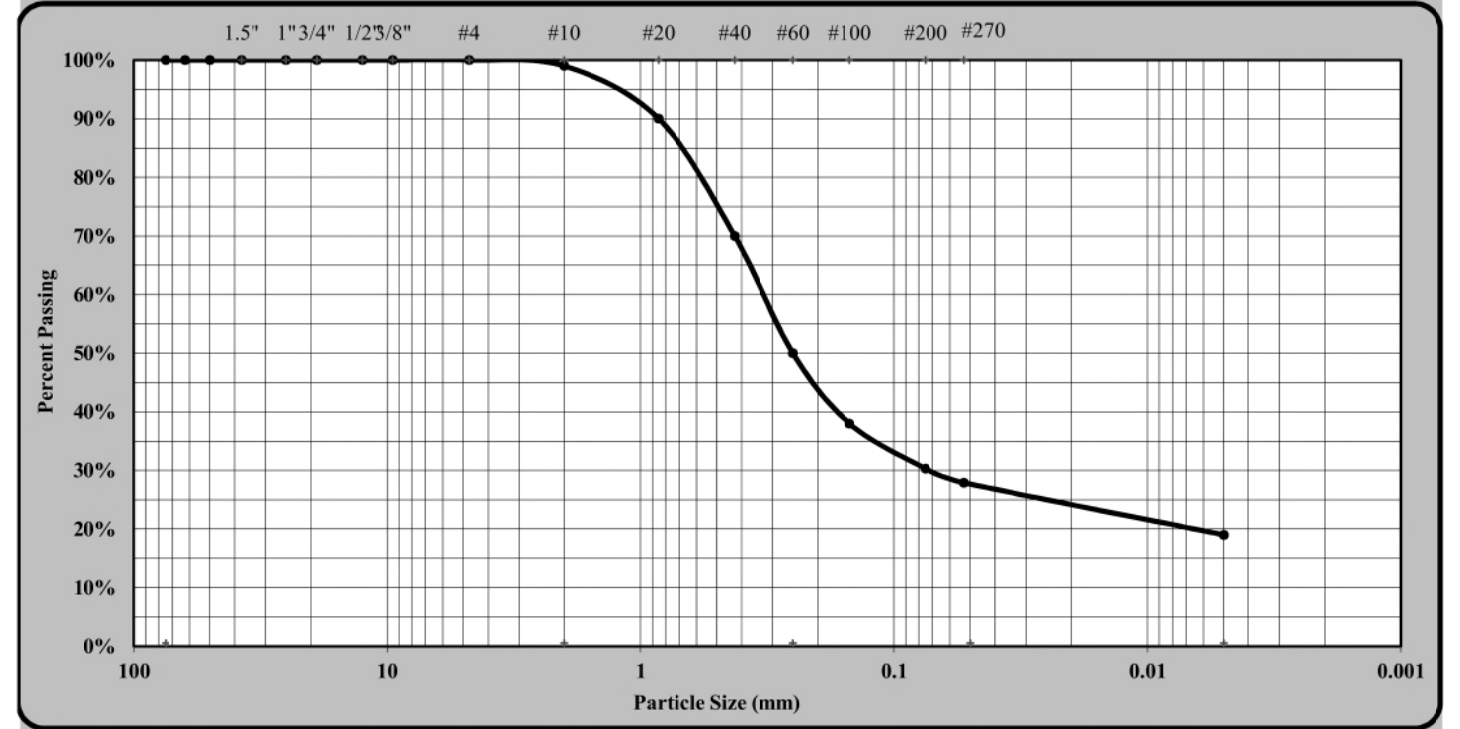
Particle Size Analysis of Soils

AASHTO T88 as Modified by NCDOT



Quality Assurance

S&ME, Inc. Raleigh, 3201 Spring Forest Road, Raleigh, North Carolina 27616			
S&ME Project #:	6235-16-010	Report Date:	11/8/16
Project Name:	C.F. Harvey Parkway Extension R-5703	Test Date(s):	11/1-8/16
State Project #:	N/A	F.A. Project No:	N/A
Client Name:	Michael Baker Engineering	TIP NO:	N/A
Address:	Raleigh, NC		
Boring #:	EB2-B Rt. Ln.	Sample #:	SS-67
Location:	Site-Borehole	Sample Date:	N/A
		Offset:	N/A
		Depth (ft):	32.3-33.7'
Sample Description:	Black clayey coarse SAND 0 A-2-6 (1)		



As Defined by NCDOT		Fine Sand	< 0.25 mm and > 0.05 mm
Gravel	< 75 mm and > 2.00 mm	Silt	< 0.05 and > 0.005 mm
Coarse Sand	< 2.00 mm and > 0.25 mm	Clay	< 0.005 mm
Maximum Particle Size	#10	Coarse Sand	49%
Gravel	1%	Fine Sand	22%
Apparent Relative Density	2.650	Moisture Content	17.9%
Liquid Limit	31	Plastic Limit	13
		Plastic Index	18
		% Passing #200	30.3%
Soil Mortar (-#10 Sieve)			
Coarse Sand	49%	Fine Sand	23%
		Silt	9%
		Clay	19%
Description of Sand & Gravel Particles:	Rounded <input type="checkbox"/>	Angular	<input checked="" type="checkbox"/>
Hard & Durable	<input checked="" type="checkbox"/>	Soft	<input type="checkbox"/>
		Weathered & Friable	<input type="checkbox"/>

References / Comments / Deviations: ND=Not Determined.

Karen Warner 118-06-0305 Laboratory Technician 11/8/2016
Technician Name Certification No. Position Date

Stewart Laney, P.E _____ Senior Engineer
Technical Responsibility Signature Position Date

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Particle Size Analysis of Soils

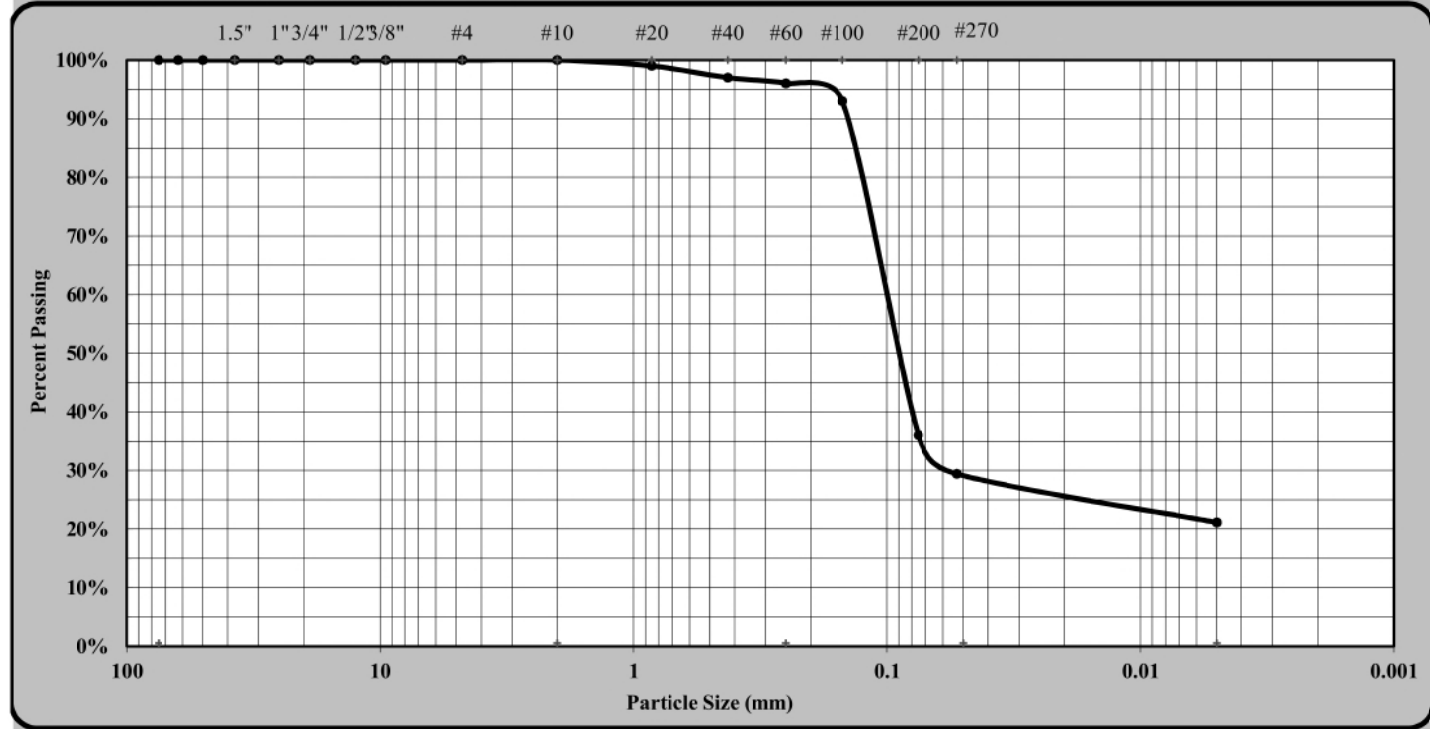
AASHTO T88 as Modified by NCDOT



Quality Assurance

S&ME, Inc. Raleigh, 3201 Spring Forest Road, Raleigh, North Carolina 27616

S&ME Project #:	6235-16-010	Report Date:	12/27/16
Project Name:	C.F. Harvey Parkway Extension R-5703	Test Date(s):	12/24 - 12/27/16
State Project #:	N/A	F.A. Project No:	N/A
Client Name:	Michael Baker Engineering	TIP NO:	N/A
Address:	Raleigh, NC		
Boring #:	EB1-B Rt. Ln.	Sample #:	ST-8
Location:	Site-Borehole	Sample Date:	N/A
Sample Description:	Dark Gray Coarse to Fine Sandy Silty CLAY	Offset:	N/A
		Depth (ft):	15.0 - 17.0 ft.
			A-6 (0)



As Defined by NCDOT		Fine Sand		< 0.25 mm and > 0.05 mm	
Gravel	< 75 mm and > 2.00 mm	Silt	< 0.05 and > 0.005 mm		
Coarse Sand	< 2.00 mm and > 0.25 mm	Clay	< 0.005 mm		
Maximum Particle Size	#4	Coarse Sand	4%	Silt	8%
Gravel	0%	Fine Sand	67%	Clay	21%
Apparent Relative Density	ND	Moisture Content	ND	% Passing #200	36.0%
Liquid Limit	37	Plastic Limit	26	Plastic Index	11
Soil Mortar (-#10 Sieve)					
Coarse Sand	4%	Fine Sand	67%	Silt	8%
				Clay	21%
Description of Sand & Gravel Particles:	Rounded	<input type="checkbox"/>	Angular	<input checked="" type="checkbox"/>	
Hard & Durable	<input checked="" type="checkbox"/>	Soft	<input type="checkbox"/>	Weathered & Friable	<input type="checkbox"/>

References / Comments / Deviations: ND=Not Determined.

Mal Krajan, ET	104-01-0703	Laboratory Manager	12/27/2016
Technician Name	Certification No.	Position	Date
Mal Krajan, ET		Laboratory Manager	9/26/2016
Technical Responsibility	Signature	Position	Date

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Oedometer Settlement Tests

Sample details

Sketch showing specimen location in original Sample



Depth	15.0 - 17.0 ft.
Description:	Dark Gray Coarse to Fine Sandy Silty CLAY (A-6) (0)
Type	Undisturbed
Height H_0 (in)	0.998
Diameter D_0 (in)	2.501
Weight W_0 (gr)	146.57
Bulk Density ρ (PCF)	113.89
Particle Density ρ_s	2.661 (measured)

Initial Conditions

Settlement Channel	1001
Moisture Content w_0 %	34.1
Dry Density ρ_d (PCF)	84.95
Voids Ratio e_0	0.9546
Deg of Saturation S_0 %	94.9
Swelling Pressure S_s (TSF)	0.000

Final Conditions

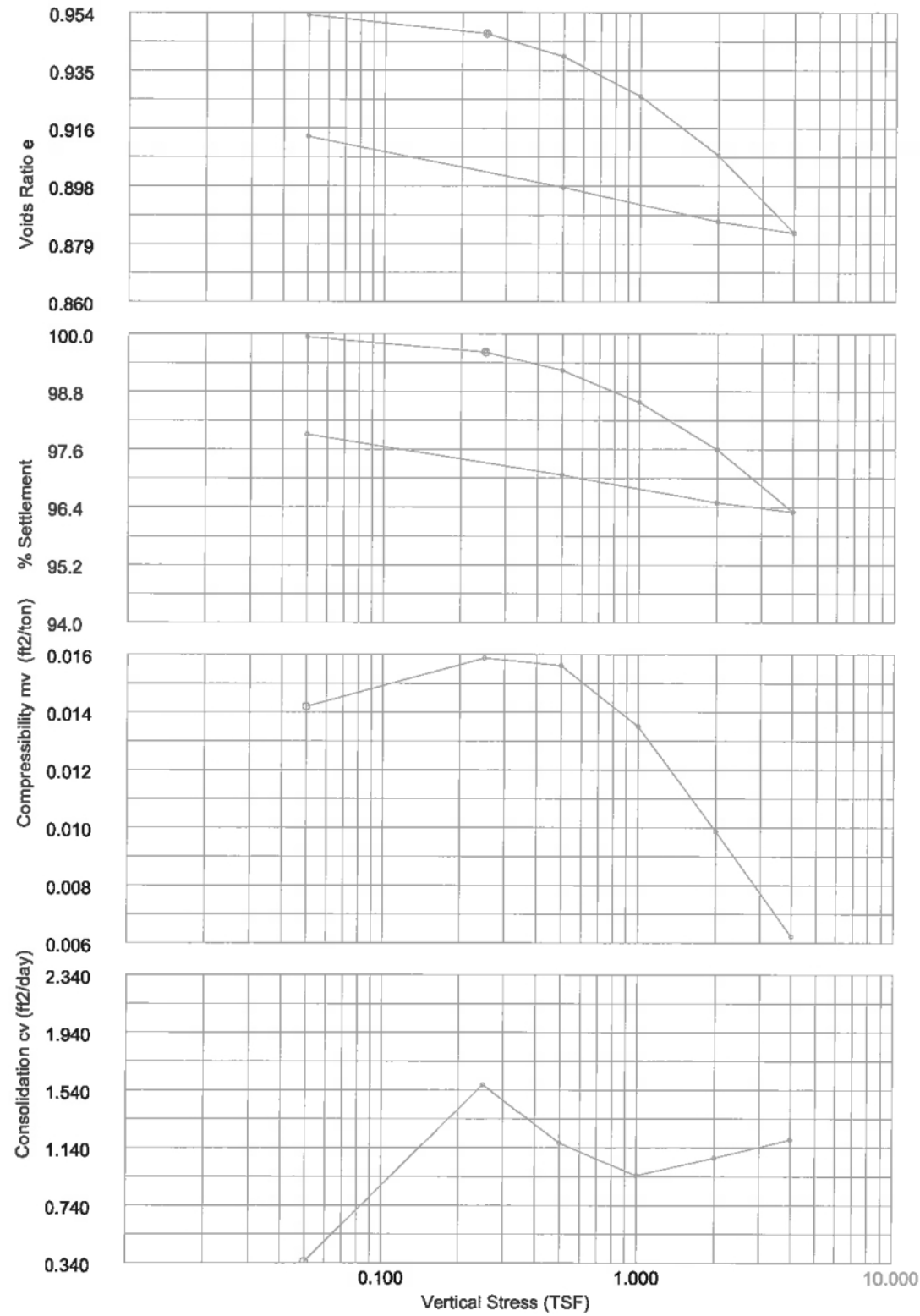
Moisture Content w_f %	33.4
Dry Density ρ_d (PCF)	86.77
Voids Ratio e_f	0.9137
Deg of Saturation S_f %	97.16
Settlement: (in)	0.021
Compression Index C_c	0.085

Notes: Test specimen taken from the middle portion of UD tube.

ASTM D2435-96	Test name	Consolidation
	Date of Test:	12-7-16
Site Reference: C.F. Harvey	Sample:	ST-8
Jobfile: E:\16010.JOB	Borehole:	EB1-B Rt. Ln.
Operator: MK	Checked: MK	Approved:

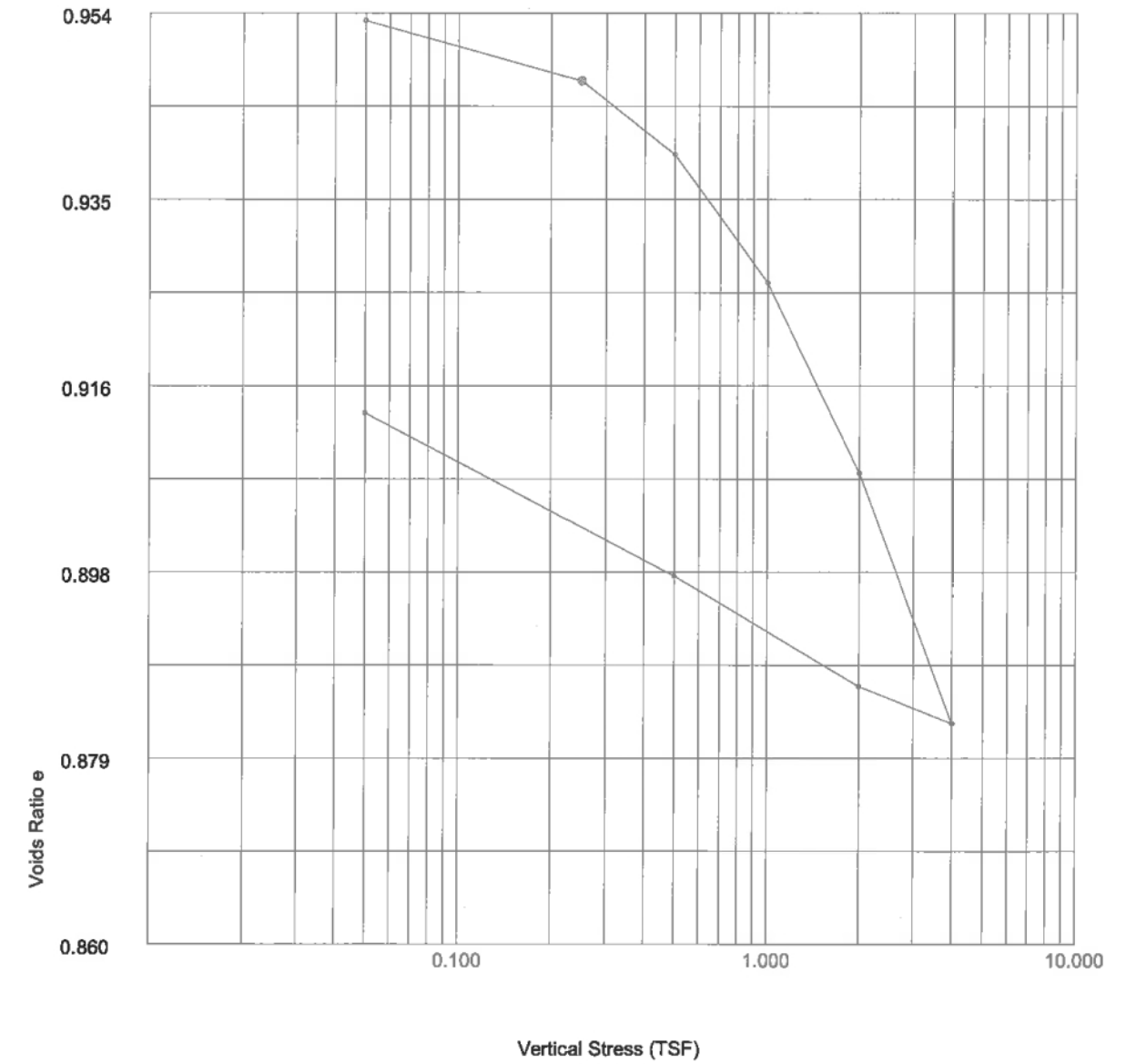


Oedometer Settlement Tests



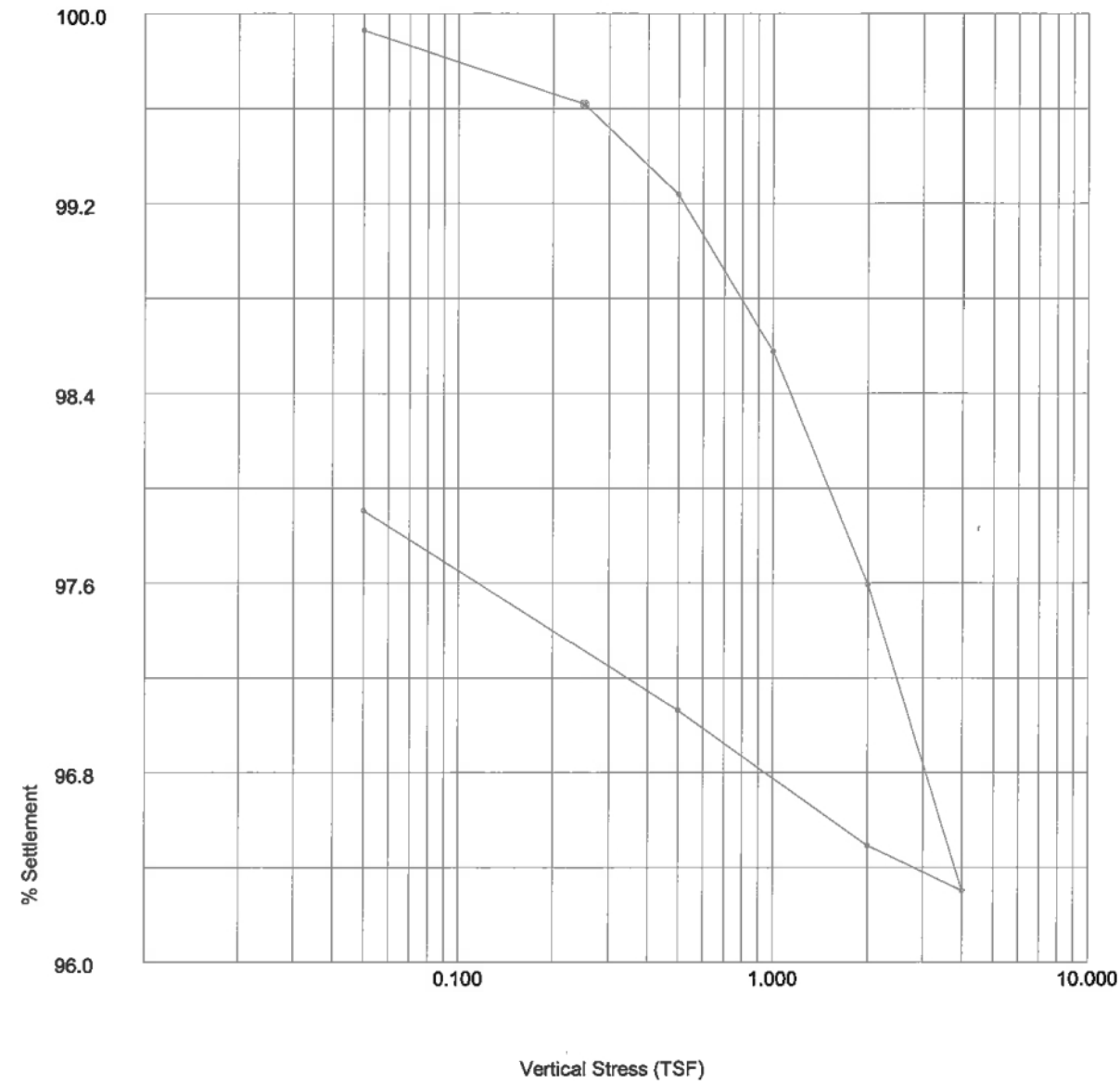
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			Date of Test:	12-7-16
	Site Reference:	C.F. Harvey	Sample:	ST-8
	Jobfile:	E:\16010.JOB	Borehole:	EB1-B Rt. Ln.
Operator: <i>MJC</i>		Checked: <i>MJC</i>	Approved:	

Oedometer Settlement Tests



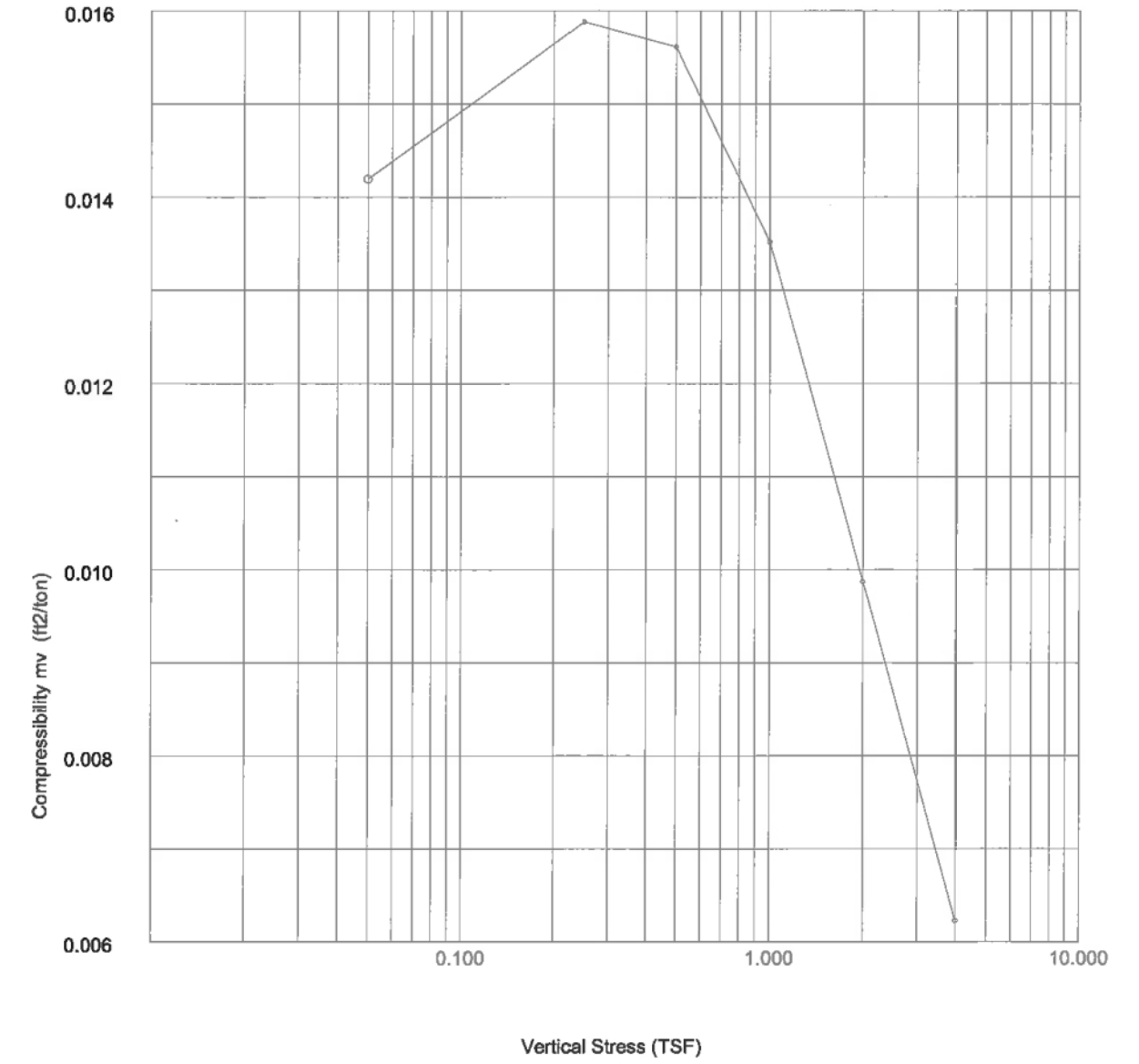
	ASTM D2435-96		Test name	Consolidation
			Date of Test:	12-7-16
	Site Reference:	C.F. Harvey	Sample:	ST-8
	Jobfile:	E:\16010.JOB	Borehole:	EB1-B Rt. Ln.
Operator: <i>MJC</i>		Checked: <i>MJC</i>	Approved:	

Oedometer Settlement Tests



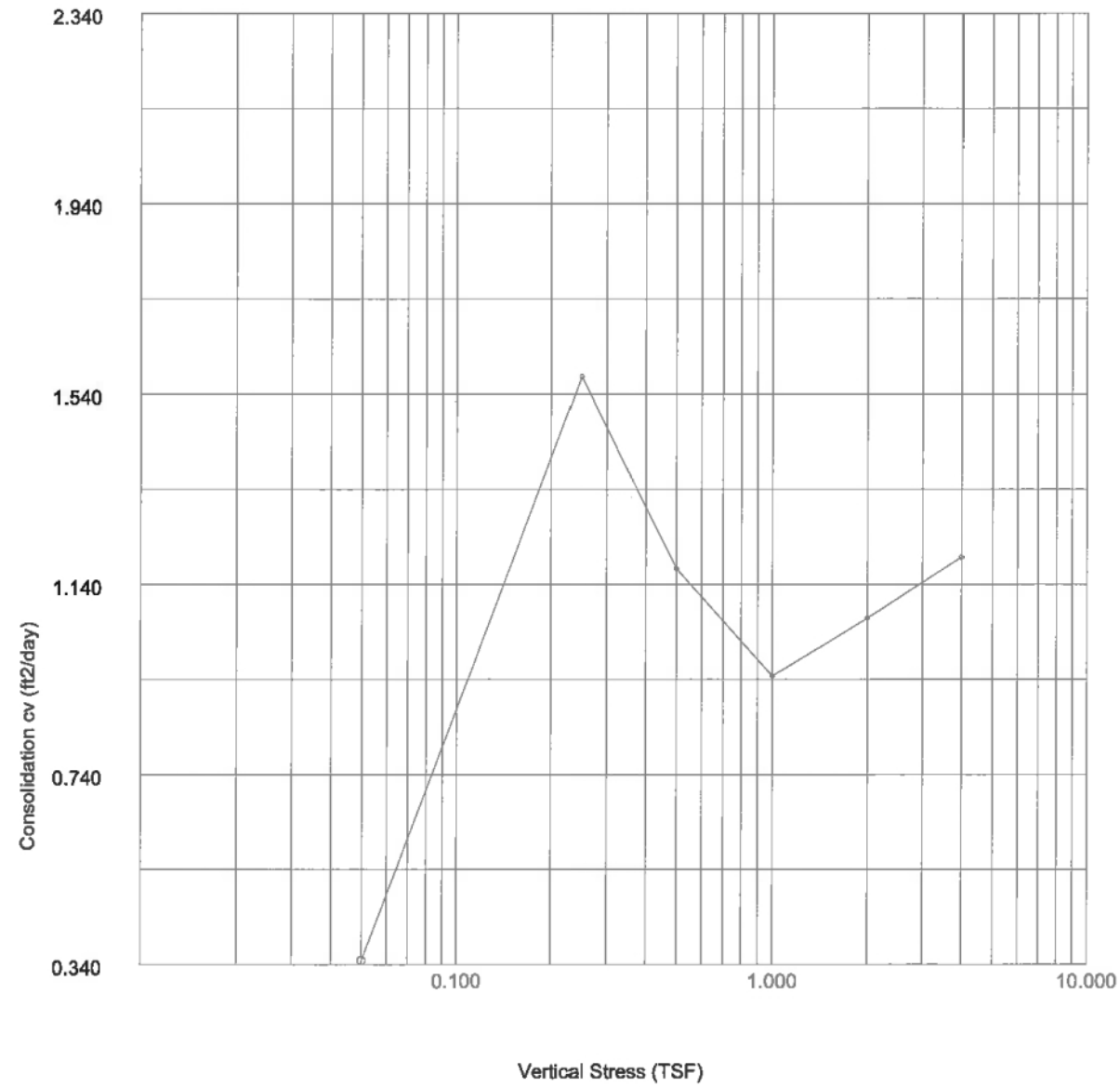
	ASTM D2435-96	Test name: Consolidation
	Site Reference: C.F. Harvey	Date of Test: 12-7-16
	Jobfile: E:\16010.JOB	Sample: ST-8
	Operator: <i>MLC</i>	Borehole: EB1-B Rt. Ln.
	Checked: <i>MLC</i>	Approved:

Oedometer Settlement Tests



	ASTM D2435-96	Test name: Consolidation
	Site Reference: C.F. Harvey	Date of Test: 12-7-16
	Jobfile: E:\16010.JOB	Sample: ST-8
	Operator: <i>MLC</i>	Borehole: EB1-B Rt. Ln.
	Checked: <i>MLC</i>	Approved:

Oedometer Settlement Tests



Oedometer Settlement Tests

Stress (TSF)	Initial Temp. oC	Settlement Total (in)	Cal Corr. (in)	Final Temp. oC	Voids Ratio e_f	t_{50} (mins)	Secondary Compr C_{sec}	c_v (ft ² /day)	m_v (ft ² /ton)
0.050	21.6	0.0007	0.0	21.6	0.9532	1.430	0.00	0.348	0.014
0.250	21.6	0.0038	0.0	21.6	0.9472	0.314	0.0001	1.577	0.016
0.500	21.6	0.0076	0.0	21.6	0.9397	0.420	0.00	1.173	0.015
1.000	21.6	0.0142	0.0	21.6	0.9268	0.514	0.00	0.948	0.013
2.000	21.6	0.0240	0.0	21.6	0.9076	0.448	0.0003	1.069	0.010
4.000	21.6	0.0369	0.0	21.6	0.8823	0.391	0.0004	1.197	0.007
2.000	21.6	0.0350	0.0	21.6	0.8861				0.001
0.500	21.6	0.0293	0.0	21.6	0.8972				0.004
0.050	21.6	0.0209	0.0	21.6	0.9137				0.019

	ASTM D2435-96	Test name: Consolidation
	Site Reference: C.F. Harvey	Date of Test: 12-7-16
	Jobfile: E:\16010.JOB	Sample: ST-8
	Operator: <i>MLK</i>	Borehole: EB1-B Rt. Ln.
Checked: <i>MLK</i>	Approved:	

	ASTM D2435-96	Test name: Consolidation
	Site Reference: C.F. Harvey	Date of Test: 12-7-16
	Jobfile: E:\16010.JOB	Sample: ST-8
	Operator: <i>MLK</i>	Borehole: EB1-B Rt. Ln.
Checked: <i>MLK</i>	Approved:	

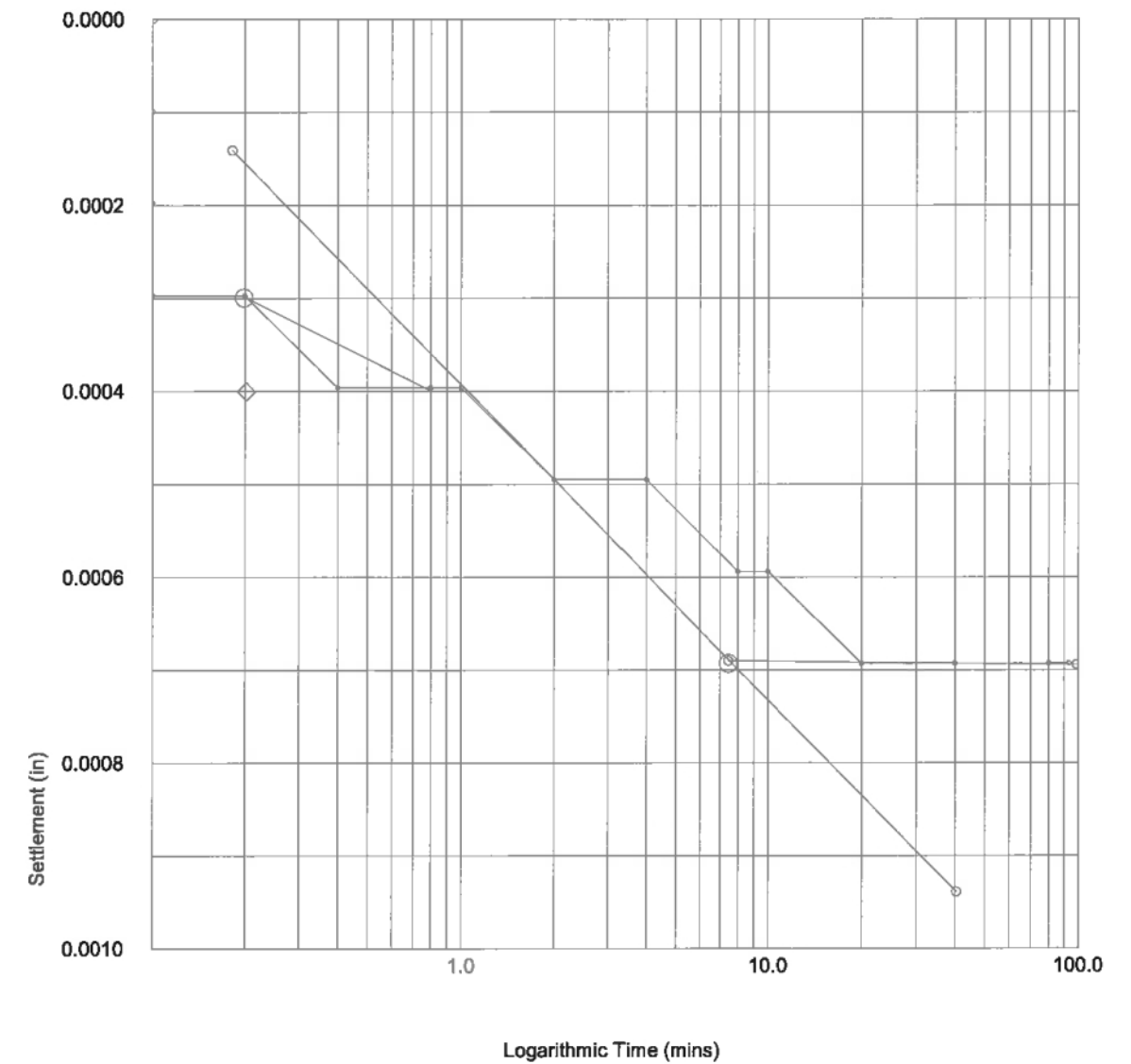
Oedometer Settlement Tests

No.	Time (mins)	Displacement (divs)	Displacement (in)	Settlement (in)
1	0.000	0	0.0000	0.0000
2	0.017	1	0.0001	0.0001
3	0.033	1	0.0001	0.0001
4	0.050	2	0.0002	0.0002
5	0.067	2	0.0002	0.0002
6	0.083	2	0.0002	0.0002
7	0.100	3	0.0003	0.0003
8	0.200	3	0.0003	0.0003
9	0.400	4	0.0004	0.0004
10	0.800	4	0.0004	0.0004
11	1.000	4	0.0004	0.0004
12	2.000	5	0.0005	0.0005
13	4.000	5	0.0005	0.0005
14	8.000	6	0.0006	0.0006
15	10.000	6	0.0006	0.0006
16	20.000	7	0.0007	0.0007
17	40.000	7	0.0007	0.0007
18	80.000	7	0.0007	0.0007
19	93.330	7	0.0007	0.0007

Oedometer Settlement Tests

Settlement Stage Results

Vertical Stress (TSF)	0.050
Initial Temp oC	21.6
Correction (in)	0.0
Settlement (in)	0.0007
Voids Ratio e	0.9532
Final Temp oC	0.0
t ₅₀ (mins)	1.43
c _v (ft ² /day)	0.348
m _v (ft ² /ton)	0.014
Sec Compression C _{sec}	0.00



S&ME	ASTM D2435-96	Test name: Consolidation Load: 0.050 (TSF)
	Site Reference: C.F. Harvey	Date of Test: 12-7-16
	Jobfile: E:\16010.JOB	Sample: ST-8
	Operator: <i>MLC</i>	Borehole: EB1-B Rt. Ln.
	Checked: <i>MLC</i>	Approved:

S&ME	ASTM D2435-96	Test name: Consolidation
	Site Reference: C.F. Harvey	Date of Test: 12-7-16
	Jobfile: E:\16010.JOB	Sample: ST-8
	Operator: <i>MLC</i>	Borehole: EB1-B Rt. Ln.
	Checked: <i>MLC</i>	Approved:

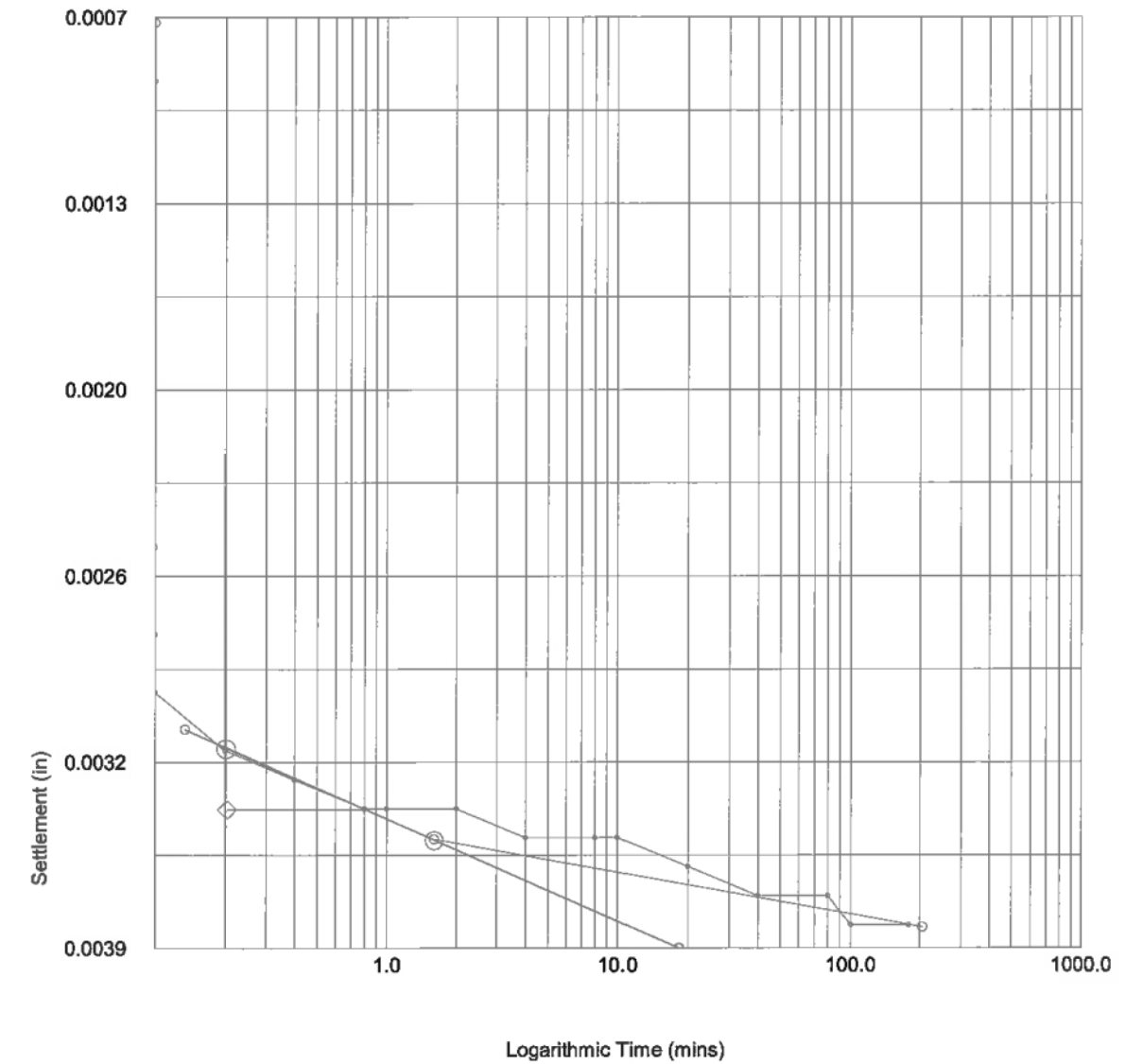
Oedometer Settlement Tests

No.	Time (mins)	Displacement (divs)	Displacement (in)	Settlement (in)
1	0.000	7	0.0007	0.0007
2	0.017	9	0.0009	0.0009
3	0.033	9	0.0009	0.0009
4	0.050	25	0.0025	0.0025
5	0.067	28	0.0028	0.0028
6	0.083	30	0.0030	0.0030
7	0.100	30	0.0030	0.0030
8	0.200	32	0.0032	0.0032
9	0.400	33	0.0033	0.0033
10	0.800	34	0.0034	0.0034
11	1.000	34	0.0034	0.0034
12	2.000	34	0.0034	0.0034
13	4.000	35	0.0035	0.0035
14	8.000	35	0.0035	0.0035
15	10.000	35	0.0035	0.0035
16	20.000	36	0.0036	0.0036
17	40.000	37	0.0037	0.0037
18	80.000	37	0.0037	0.0037
19	100.000	38	0.0038	0.0038
20	178.550	38	0.0038	0.0038

Oedometer Settlement Tests

Settlement Stage Results

Vertical Stress (TSF)	0.250
Initial Temp oC	21.6
Correction (in)	0.0
Settlement (in)	0.0031
Void Ratio e	0.9472
Final Temp oC	0.0
t ₅₀ (mins)	0.31
c _v (ft ² /day)	1.577
m _v (ft ² /ton)	0.016
Sec Compression C _{sec}	0.0001



S&ME	ASTM D2435-96	Test name	Consolidation Load: 0.250 (TSF)
	Site Reference: C.F. Harvey	Date of Test:	12-7-16
	Jobfile: E:\16010.JOB	Sample:	ST-8
	Operator: MK	Borehole:	EB1-B Rt. Ln.
	Checked: MK	Approved:	

S&ME	ASTM D2435-96	Test name	Consolidation
	Site Reference: C.F. Harvey	Date of Test:	12-7-16
	Jobfile: E:\16010.JOB	Sample:	ST-8
	Operator: MK	Borehole:	EB1-B Rt. Ln.
	Checked: MK	Approved:	

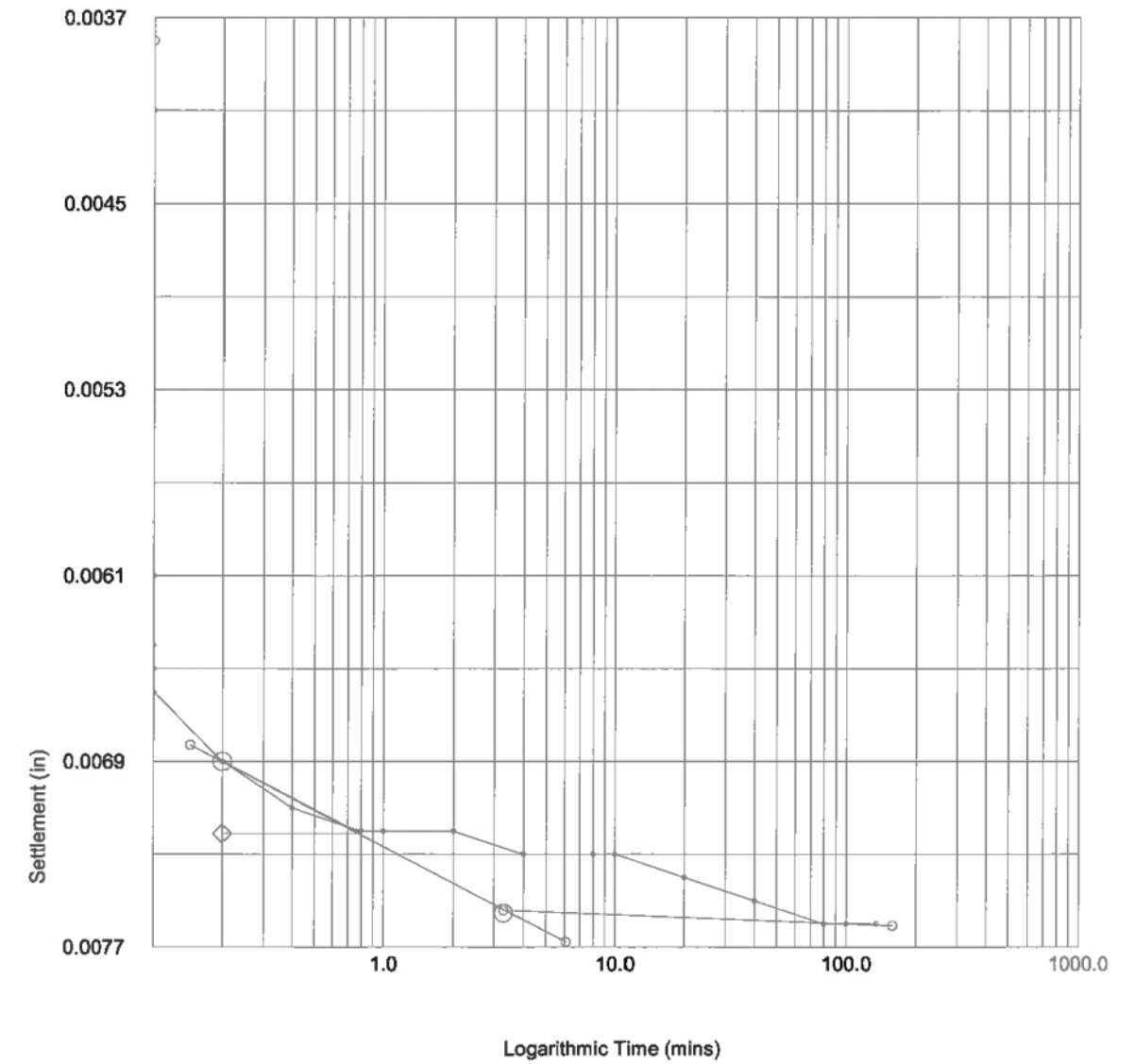
Oedometer Settlement Tests

No.	Time (mins)	Displacement (divs)	Displacement (in)	Settlement (in)
1	0.000	38	0.0038	0.0038
2	0.017	41	0.0041	0.0041
3	0.033	41	0.0041	0.0041
4	0.050	61	0.0061	0.0061
5	0.067	64	0.0064	0.0064
6	0.083	65	0.0065	0.0065
7	0.100	66	0.0066	0.0066
8	0.200	69	0.0069	0.0069
9	0.400	71	0.0071	0.0071
10	0.800	72	0.0072	0.0072
11	1.000	72	0.0072	0.0072
12	2.000	72	0.0072	0.0072
13	4.000	73	0.0073	0.0073
14	8.000	73	0.0073	0.0073
15	10.000	73	0.0073	0.0073
16	20.000	74	0.0074	0.0074
17	40.000	75	0.0075	0.0075
18	80.000	76	0.0076	0.0076
19	100.000	76	0.0076	0.0076
20	135.067	76	0.0076	0.0076

Oedometer Settlement Tests

Settlement Stage Results

Vertical Stress (TSF)	0.500
Initial Temp oC	21.6
Correction (in)	0.0
Settlement (in)	0.0038
Void Ratio e	0.9397
Final Temp oC	0.0
t ₅₀ (mins)	0.42
c _v (ft ² /day)	1.173
m _v (ft ² /ton)	0.015
Sec Compression C _{sec}	0.00



	ASTM D2435-96	Test name: Consolidation Load: 0.500 (TSF)
	Site Reference: C.F. Harvey	Date of Test: 12-7-16
	Jobfile: E:\16010.JOB	Sample: ST-8
Operator: <i>mk</i>	Checked: <i>mk</i>	Approved:
		Borehole: EB1-B Rt. Ln.

	ASTM D2435-96	Test name: Consolidation
	Site Reference: C.F. Harvey	Date of Test: 12-7-16
	Jobfile: E:\16010.JOB	Sample: ST-8
Operator: <i>mk</i>	Checked: <i>mk</i>	Approved:
		Borehole: EB1-B Rt. Ln.

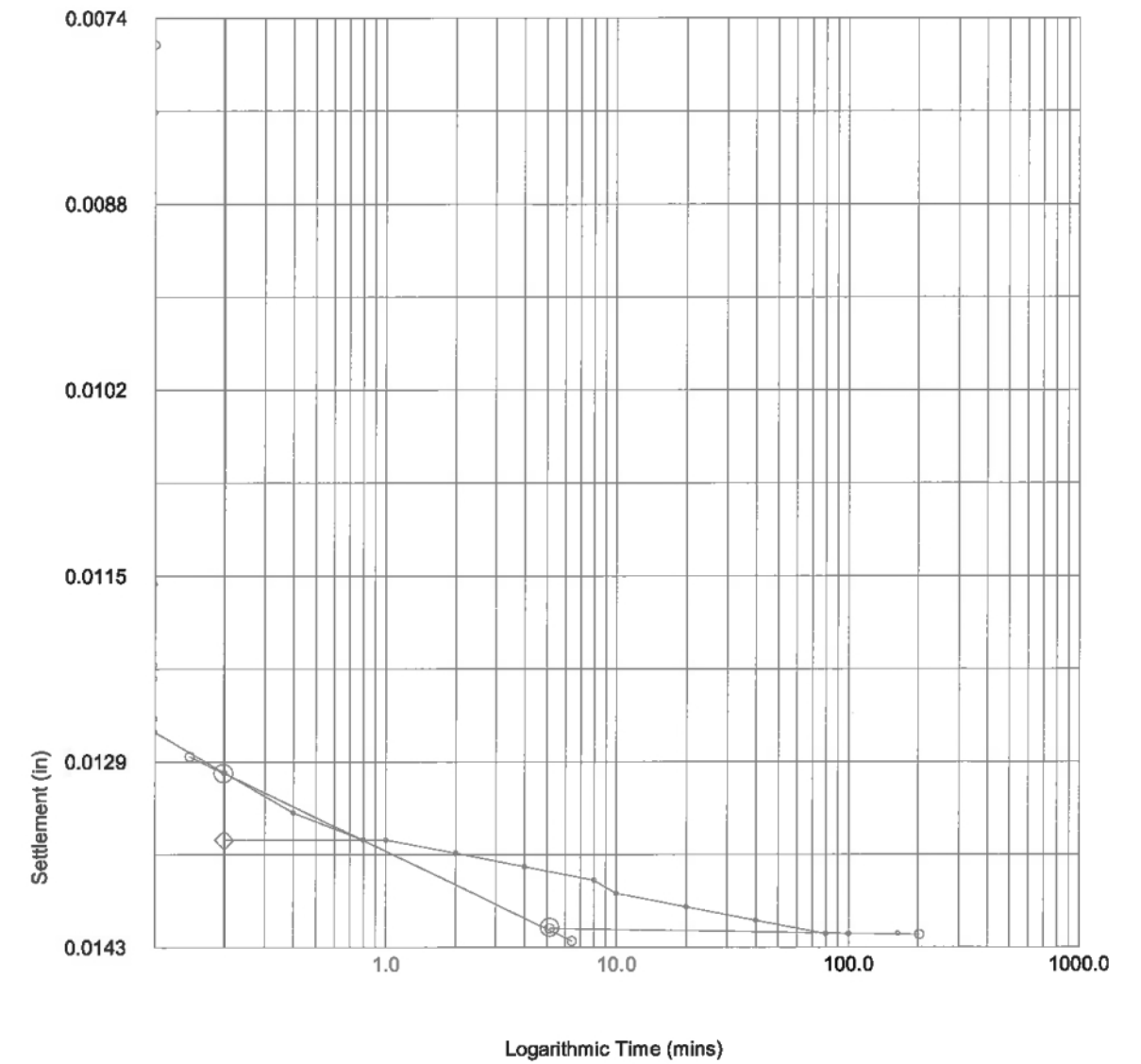
Oedometer Settlement Tests

No.	Time (mins)	Displacement (divs)	Displacement (in)	Settlement (in)
1	0.000	76	0.0076	0.0076
2	0.017	81	0.0081	0.0081
3	0.033	116	0.0116	0.0116
4	0.050	122	0.0122	0.0122
5	0.067	123	0.0123	0.0123
6	0.083	126	0.0126	0.0126
7	0.100	127	0.0127	0.0127
8	0.200	130	0.0130	0.0130
9	0.400	133	0.0133	0.0133
10	0.800	135	0.0135	0.0135
11	1.000	135	0.0135	0.0135
12	2.000	136	0.0136	0.0136
13	4.000	137	0.0137	0.0137
14	8.000	138	0.0138	0.0138
15	10.000	139	0.0139	0.0139
16	20.000	140	0.0140	0.0140
17	40.000	141	0.0141	0.0141
18	80.000	142	0.0142	0.0142
19	100.000	142	0.0142	0.0142
20	163.330	142	0.0142	0.0142

Oedometer Settlement Tests

Settlement Stage Results

Vertical Stress (TSF)	1.000
Initial Temp oC	21.6
Correction (in)	0.0
Settlement (in)	0.0066
Void Ratio e	0.9268
Final Temp oC	0.0
t ₅₀ (mins)	0.51
c _v (ft ² /day)	0.948
m _v (ft ² /ton)	0.013
Sec Compression C _{sec}	0.00



S&ME	ASTM D2435-96	Test name: Consolidation Load: 1.000 (TSF)
	Site Reference: C.F. Harvey	Date of Test: 12-7-16
	Jobfile: E:\16010.JOB	Sample: ST-8
Operator: <i>ML</i>	Checked: <i>ML</i>	Approved:
		Borehole: EB1-B Rt. Ln.

S&ME	ASTM D2435-96	Test name: Consolidation
	Site Reference: C.F. Harvey	Date of Test: 12-7-16
	Jobfile: E:\16010.JOB	Sample: ST-8
Operator: <i>ML</i>	Checked: <i>ML</i>	Approved:
		Borehole: EB1-B Rt. Ln.

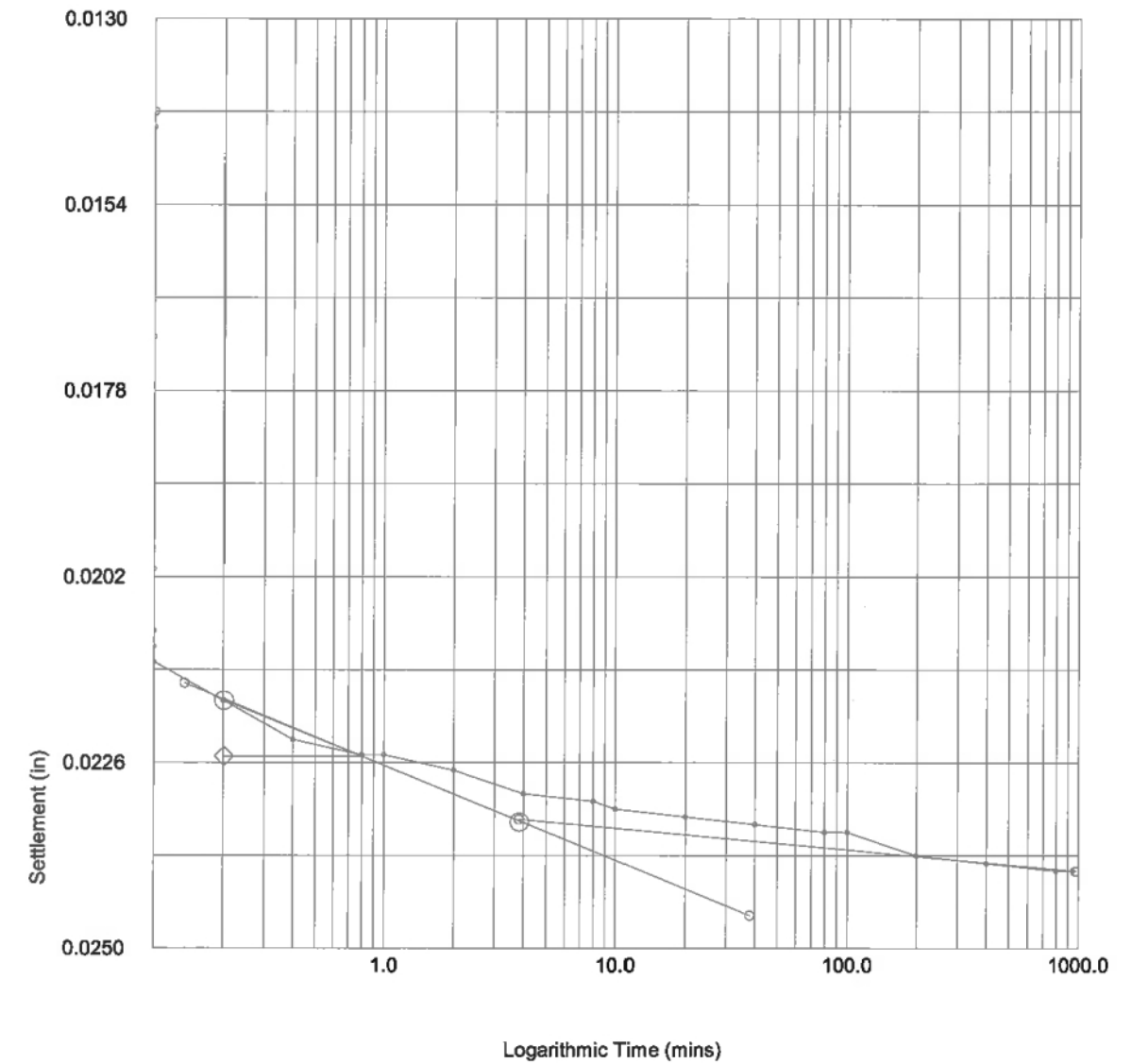
Oedometer Settlement Tests

No.	Time (mins)	Displacement (divs)	Displacement (in)	Settlement (in)
1	0.000	142	0.0142	0.0142
2	0.017	144	0.0144	0.0144
3	0.033	171	0.0171	0.0171
4	0.050	201	0.0201	0.0201
5	0.067	209	0.0209	0.0209
6	0.083	211	0.0211	0.0211
7	0.100	213	0.0213	0.0213
8	0.200	218	0.0218	0.0218
9	0.400	223	0.0223	0.0223
10	0.800	225	0.0225	0.0225
11	1.000	225	0.0225	0.0225
12	2.000	227	0.0227	0.0227
13	4.000	230	0.0230	0.0230
14	8.000	231	0.0231	0.0231
15	10.000	232	0.0232	0.0232
16	20.000	233	0.0233	0.0233
17	40.000	234	0.0234	0.0234
18	80.000	235	0.0235	0.0235
19	100.000	235	0.0235	0.0235
20	200.000	238	0.0238	0.0238
21	400.000	239	0.0239	0.0239
22	800.000	240	0.0240	0.0240
23	948.650	240	0.0240	0.0240

Oedometer Settlement Tests

Settlement Stage Results

Vertical Stress (TSF)	2.000
Initial Temp oC	21.6
Correction (in)	0.0
Settlement (in)	0.0098
Voids Ratio e	0.9076
Final Temp oC	0.0
t ₅₀ (mins)	0.45
c _v (ft ² /day)	1.069
m _v (ft ² /ton)	0.01
Sec Compression C _{sec}	0.0003



	ASTM D2435-96	Test name: Consolidation Load: 2.000 (TSF)
	Site Reference: C.F. Harvey	Date of Test: 12-7-16
	Jobfile: E:\16010.JOB	Sample: ST-8
	Operator: MK	Borehole: EB1-B Rt. Ln.
	Checked: MK	Approved:

	ASTM D2435-96	Test name: Consolidation
	Site Reference: C.F. Harvey	Date of Test: 12-7-16
	Jobfile: E:\16010.JOB	Sample: ST-8
	Operator: MK	Borehole: EB1-B Rt. Ln.
	Checked: MK	Approved:

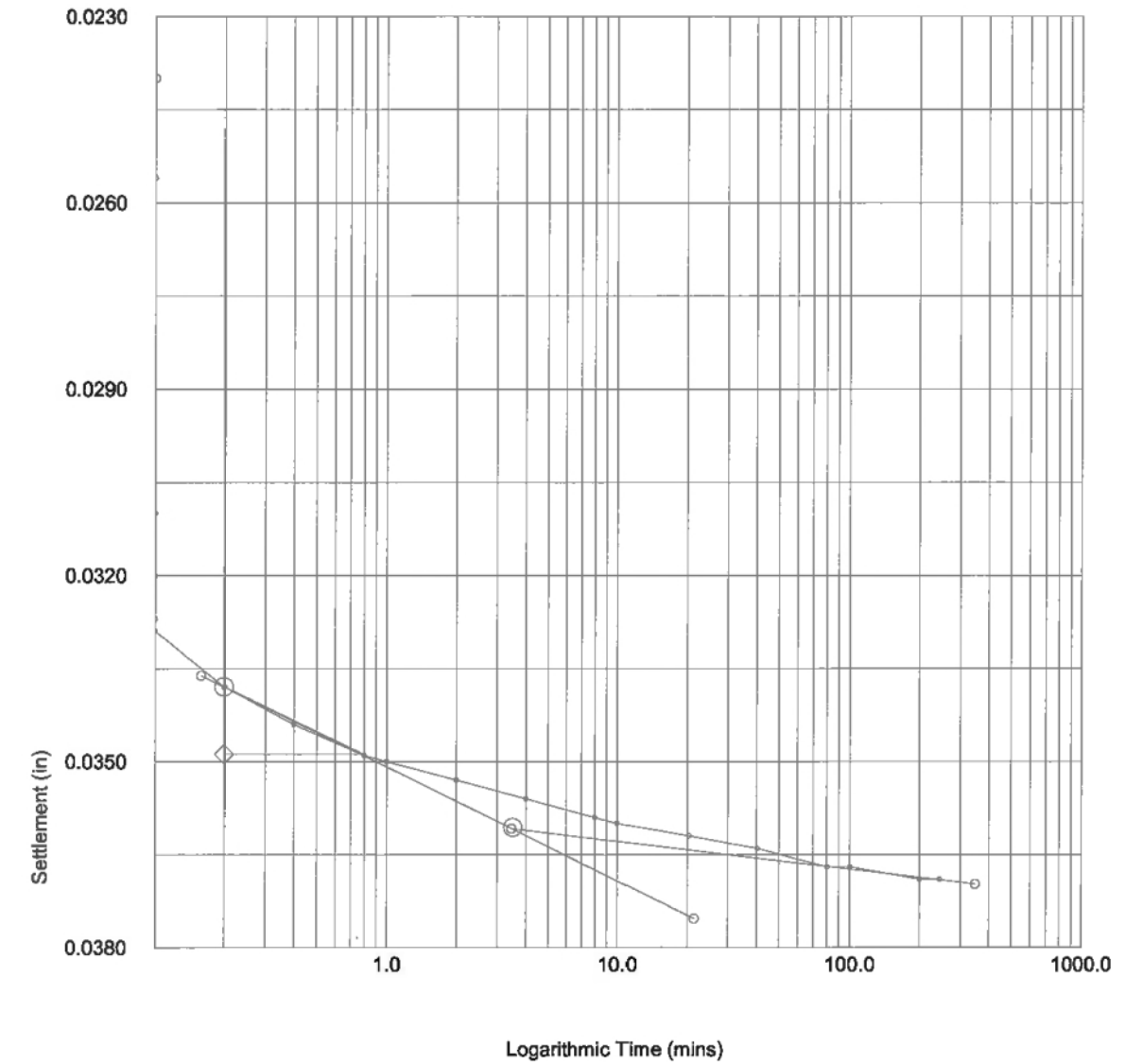
Oedometer Settlement Tests

No.	Time (mins)	Displacement (divs)	Displacement (in)	Settlement (in)
1	0.000	240	0.0240	0.0240
2	0.017	256	0.0256	0.0256
3	0.033	256	0.0256	0.0256
4	0.050	310	0.0310	0.0310
5	0.067	320	0.0320	0.0320
6	0.083	327	0.0327	0.0327
7	0.100	329	0.0329	0.0329
8	0.200	338	0.0338	0.0338
9	0.400	344	0.0344	0.0344
10	0.800	349	0.0349	0.0349
11	1.000	350	0.0350	0.0350
12	2.000	353	0.0353	0.0353
13	4.000	356	0.0356	0.0356
14	8.000	359	0.0359	0.0359
15	10.000	360	0.0360	0.0360
16	20.333	362	0.0362	0.0362
17	40.333	364	0.0364	0.0364
18	80.333	367	0.0367	0.0367
19	100.333	367	0.0367	0.0367
20	200.333	369	0.0369	0.0369
21	244.517	369	0.0369	0.0369

Oedometer Settlement Tests

Settlement Stage Results

Vertical Stress (TSF)	4.000
Initial Temp oC	21.6
Correction (in)	0.0
Settlement (in)	0.0129
Voids Ratio e	0.8823
Final Temp oC	0.0
t ₅₀ (mins)	0.39
c _v (ft ² /day)	1.197
m _v (ft ² /ton)	0.007
Sec Compression C _{sec}	0.0004



	ASTM D2435-96	Test name: Consolidation Load: 4.000 (TSF)
	Site Reference: C.F. Harvey	Date of Test: 12-7-16
	Jobfile: E:\16010.JOB	Sample: ST-8
Operator: MK	Checked: MK	Borehole: EB1-B Rt. Ln.
		Approved:

	ASTM D2435-96	Test name: Consolidation
	Site Reference: C.F. Harvey	Date of Test: 12-7-16
	Jobfile: E:\16010.JOB	Sample: ST-8
Operator: MK	Checked: MK	Borehole: EB1-B Rt. Ln.
		Approved:

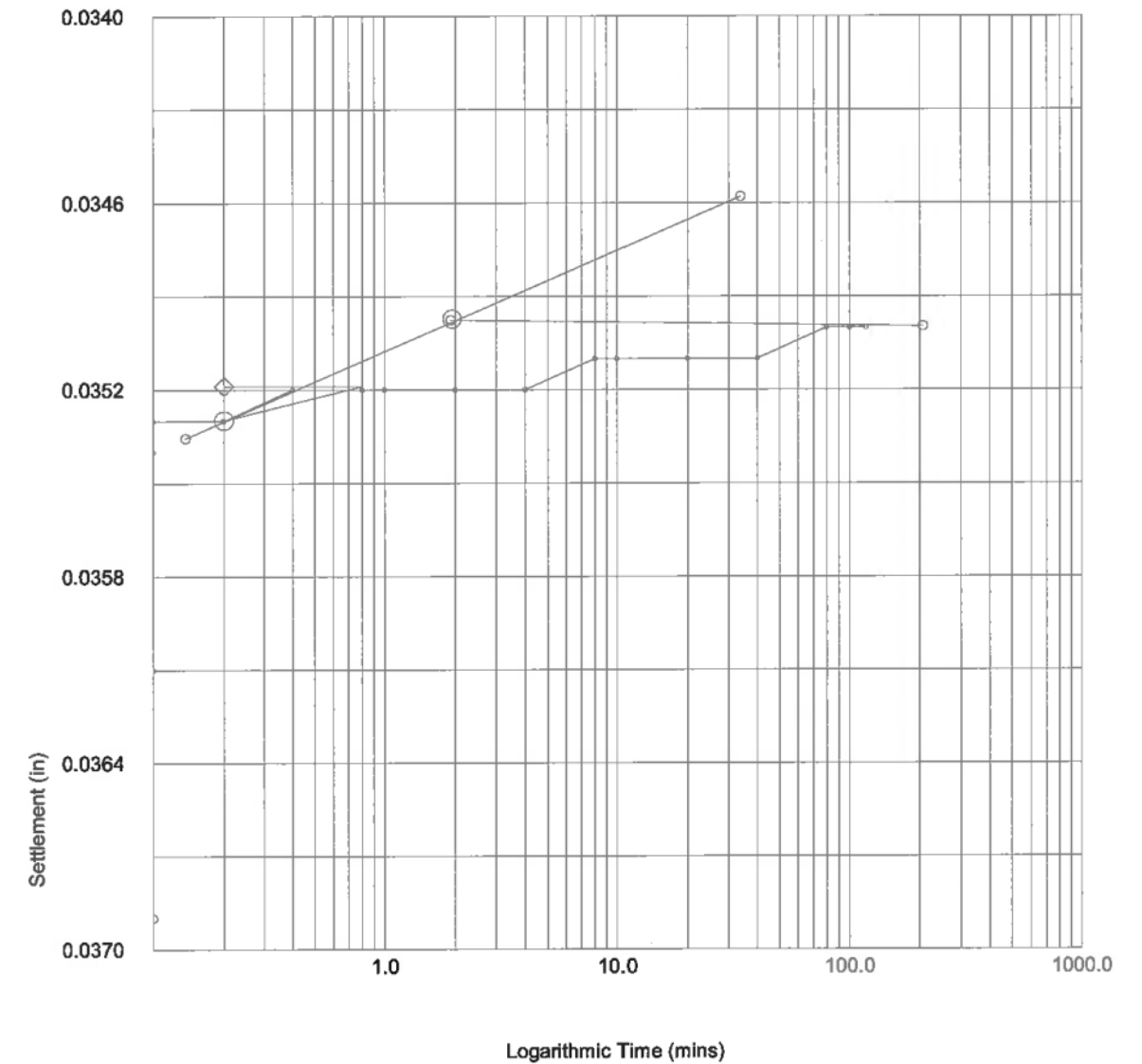
Oedometer Settlement Tests

No.	Time (mins)	Displacement (divs)	Displacement (in)	Settlement (in)
1	0.000	369	0.0369	0.0369
2	0.017	361	0.0361	0.0361
3	0.033	354	0.0354	0.0354
4	0.050	353	0.0353	0.0353
5	0.067	353	0.0353	0.0353
6	0.083	353	0.0353	0.0353
7	0.100	353	0.0353	0.0353
8	0.200	353	0.0353	0.0353
9	0.400	352	0.0352	0.0352
10	0.800	352	0.0352	0.0352
11	1.000	352	0.0352	0.0352
12	2.000	352	0.0352	0.0352
13	4.000	352	0.0352	0.0352
14	8.000	351	0.0351	0.0351
15	10.000	351	0.0351	0.0351
16	20.000	351	0.0351	0.0351
17	40.000	351	0.0351	0.0351
18	80.000	350	0.0350	0.0350
19	100.000	350	0.0350	0.0350
20	117.767	350	0.0350	0.0350

Oedometer Settlement Tests

Settlement Stage Results

Vertical Stress (TSF)	2.000
Initial Temp oC	21.6
Correction (in)	0.0
Settlement (in)	0.0019
Voids Ratio e	0.8861
Final Temp oC	
t ₅₀ (mins)	
c _v (ft ² /day)	
m _v (ft ² /ton)	
Sec Compression C _{sec}	



S&ME	ASTM D2435-96	Test name: Consolidation Load: 2.000 (TSF)
	Site Reference: C.F. Harvey	Date of Test: 12-7-16
	Jobfile: E:\16010.JOB	Sample: ST-8
Operator: <i>ML</i>	Checked: <i>ML</i>	Approved:
		Borehole: EB1-B Rt. Ln.

S&ME	ASTM D2435-96	Test name: Consolidation
	Site Reference: C.F. Harvey	Date of Test: 12-7-16
	Jobfile: E:\16010.JOB	Sample: ST-8
Operator: <i>ML</i>	Checked: <i>ML</i>	Approved:
		Borehole: EB1-B Rt. Ln.

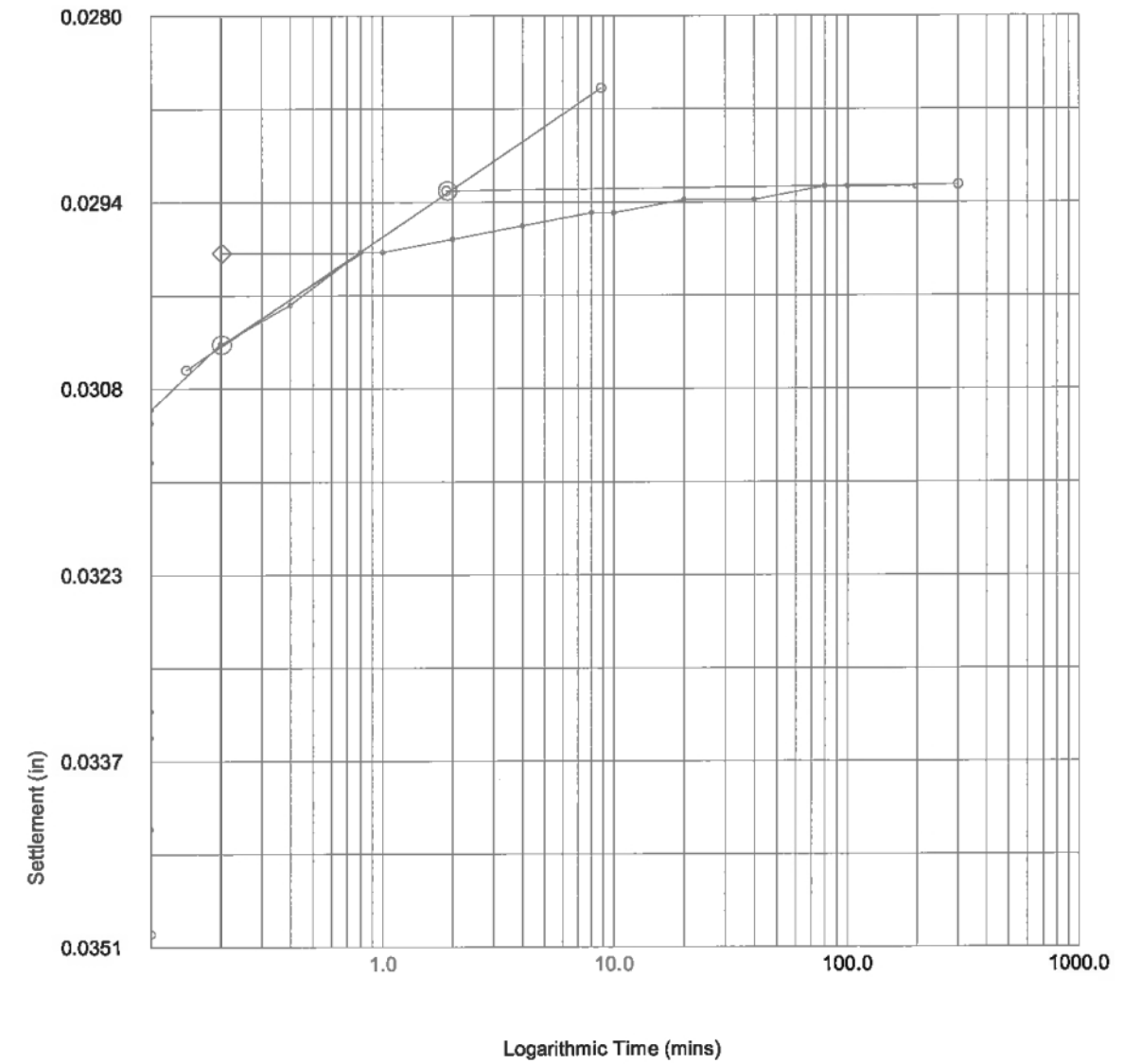
Oedometer Settlement Tests

No.	Time (mins)	Displacement (divs)	Displacement (in)	Settlement (in)
1	0.000	350	0.0350	0.0350
2	0.017	342	0.0342	0.0342
3	0.033	335	0.0335	0.0335
4	0.050	333	0.0333	0.0333
5	0.067	314	0.0314	0.0314
6	0.083	311	0.0311	0.0311
7	0.100	310	0.0310	0.0310
8	0.200	305	0.0305	0.0305
9	0.400	302	0.0302	0.0302
10	0.800	298	0.0298	0.0298
11	1.000	298	0.0298	0.0298
12	2.000	297	0.0297	0.0297
13	4.000	296	0.0296	0.0296
14	8.000	295	0.0295	0.0295
15	10.000	295	0.0295	0.0295
16	20.000	294	0.0294	0.0294
17	40.000	294	0.0294	0.0294
18	80.000	293	0.0293	0.0293
19	100.000	293	0.0293	0.0293
20	196.130	293	0.0293	0.0293

Oedometer Settlement Tests

Settlement Stage Results

Vertical Stress (TSF)	0.500
Initial Temp oC	21.6
Correction (in)	0.0
Settlement (in)	0.0057
Void Ratio e	0.8972
Final Temp oC	
t ₅₀ (mins)	
c _v (ft ² /day)	
m _v (ft ² /ton)	
Sec Compression C _{sec}	



	ASTM D2435-96	Test name: Consolidation Load: 0.500 (TSF)
	Site Reference: C.F. Harvey	Date of Test: 12-7-16
	Jobfile: E:\16010.JOB	Sample: ST-8
	Operator: <i>MLC</i>	Borehole: EB1-B Rt. Ln.
	Checked: <i>MLC</i>	Approved:

	ASTM D2435-96	Test name: Consolidation
	Site Reference: C.F. Harvey	Date of Test: 12-7-16
	Jobfile: E:\16010.JOB	Sample: ST-8
	Operator: <i>MLC</i>	Borehole: EB1-B Rt. Ln.
	Checked: <i>MLC</i>	Approved:

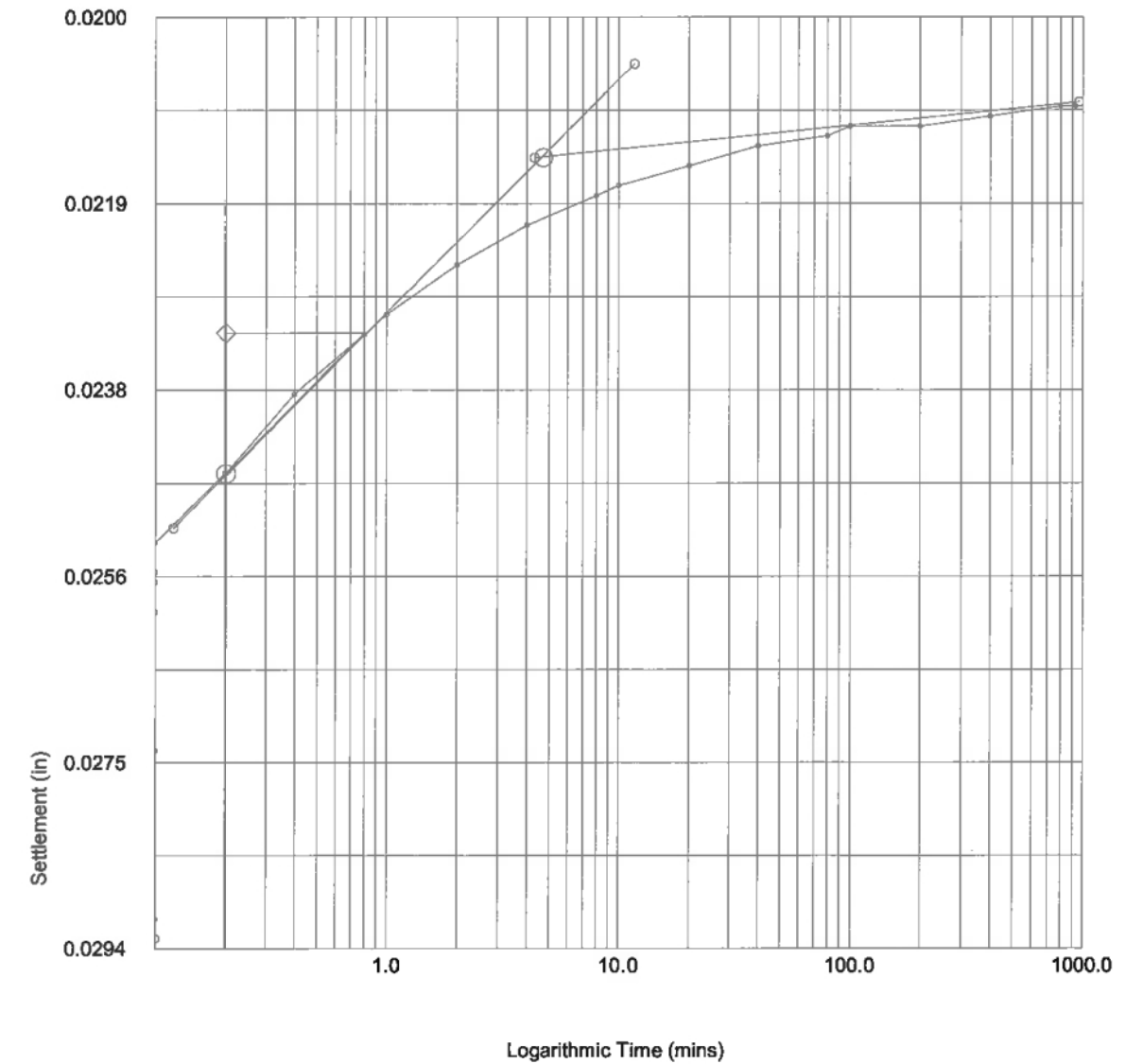
Oedometer Settlement Tests

No.	Time (mins)	Displacement (divs)	Displacement (in)	Settlement (in)
1	0.000	293	0.0293	0.0293
2	0.017	291	0.0291	0.0291
3	0.033	274	0.0274	0.0274
4	0.050	260	0.0260	0.0260
5	0.067	257	0.0257	0.0257
6	0.083	256	0.0256	0.0256
7	0.100	253	0.0253	0.0253
8	0.200	246	0.0246	0.0246
9	0.400	238	0.0238	0.0238
10	0.800	232	0.0232	0.0232
11	1.000	230	0.0230	0.0230
12	2.000	225	0.0225	0.0225
13	4.000	221	0.0221	0.0221
14	8.000	218	0.0218	0.0218
15	10.000	217	0.0217	0.0217
16	20.000	215	0.0215	0.0215
17	40.000	213	0.0213	0.0213
18	80.000	212	0.0212	0.0212
19	100.000	211	0.0211	0.0211
20	200.000	211	0.0211	0.0211
21	400.000	210	0.0210	0.0210
22	800.000	209	0.0209	0.0209
23	930.983	209	0.0209	0.0209

Oedometer Settlement Tests

Settlement Stage Results

Vertical Stress (TSF)	0.050
Initial Temp oC	21.6
Correction (in)	0.0
Settlement (in)	0.0084
Voids Ratio e	0.9137
Final Temp oC	
t ₅₀ (mins)	
c _v (ft ² /day)	
m _v (ft ² /ton)	
Sec Compression C _{sec}	



S&ME	ASTM D2435-96	Test name: Consolidation Load: 0.050 (TSF)
	Site Reference: C.F. Harvey	Date of Test: 12-7-16
	Jobfile: E:\16010.JOB	Sample: ST-8
	Operator: <i>MLC</i>	Checked: <i>MLC</i>
		Borehole: EB1-B Rt. Ln.
		Approved:

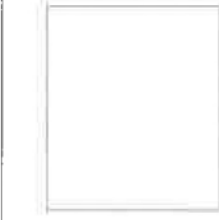
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	Jobfile: E:\16010.JOB	Sample: ST-8
	Operator: <i>MLC</i>	Checked: <i>MLC</i>
		Borehole: EB1-B Rt. Ln.
		Approved:

Effective Stress Triaxial Compression

Consolidated Undrained

Sample details

Sketch showing specimen location in original Sample



Depth: 15.0 - 17.0 ft.
Description: Dark Gray Coarse to Fine Sandy Silty CLAY (A-6) (0)

	Specimen 1	Specimen 2	Specimen 3
Type	Undisturbed	Undisturbed	Undisturbed
Height H_0 (in)	5.974	5.951	5.863
Diameter D_0 (in)	2.864	2.864	2.865
Weight W_0 (gr)	1167.6	1176	1170.8
Bulk Density ρ (PCF)	115.58	116.86	118.00
Particle Density ρ_s	2.661	2.661	2.661
	(measured)	(measured)	(measured)

Initial Conditions

	Specimen 1	Specimen 2	Specimen 3
Cell Pressure σ_3 (lb/in ²)	7.0	16.0	26.0
Pore Pressure u (lb/in ²)	0.0	0.0	0.0
Machine Speed d_r (in/min)	0.0079	0.0091	0.0068
No. of Membranes	1	1	1
Total Thickness (in)	0.012	0.012	0.012
Strain Channel	1798	1798	1798
Load Channel	1776	1776	1776
Pore P. Channel	1779	1779	1779
Volume Channel	Volume Chang	Volume Chang	Volume Chang
Moisture Content w_0 %	36.9	35.7	37.6
Dry Density ρ_{d0} (PCF)	84.45	86.12	85.76
Voids Ratio e_0	0.97	0.93	0.94
Deg of Saturation S_0 %	100.00	100.00	100.00
Final B Value	0.98	0.97	0.98

Final Conditions

	Specimen 1	Specimen 2	Specimen 3
Moisture Content w_f %	33.8	31.8	31.5
Dry Density ρ_d (PCF)	86.50	88.85	89.27
Voids Ratio e_f	0.92	0.87	0.86
Deg of Saturation S_f %	97.93	97.53	97.61
Failure Criteria	Mx Stress Ratio	Mx Stress Ratio	Mx Stress Ratio
Axial Strain ϵ_f %	4.0	4.0	4.0
Corr Dev Stress $(\sigma_1 - \sigma_3)_f$ (lb/in ²)	14.9	30.2	47.1
Minor Stress σ_{3f} (lb/in ²)	3.8	7.3	13.5
Major Stress σ_{1f} (lb/in ²)	18.7	37.5	60.6
Stress Ratio $(\sigma_1/\sigma_3)_f$	4.9	5.1	4.5

Notes:

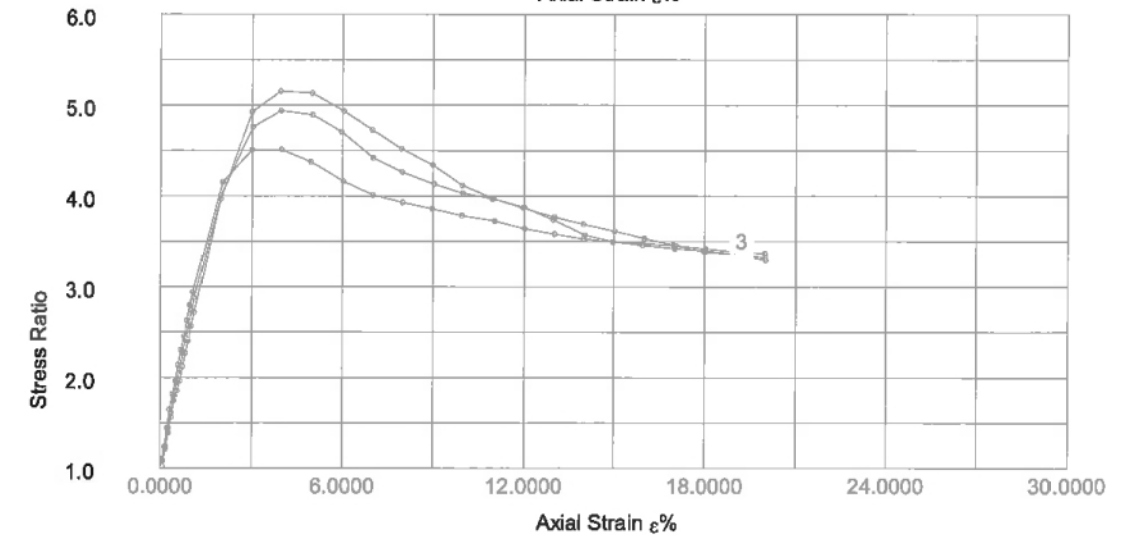
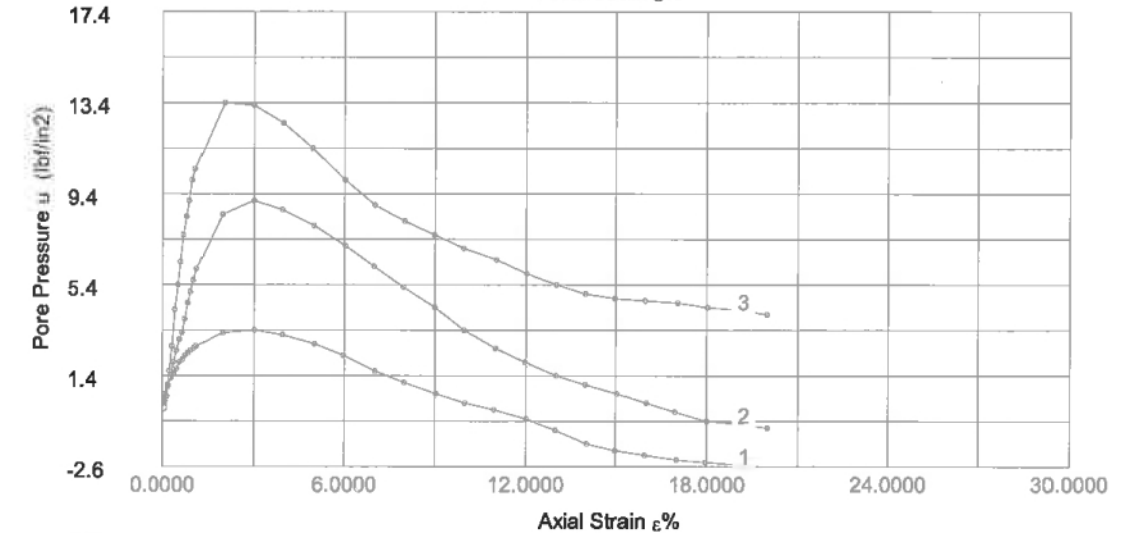
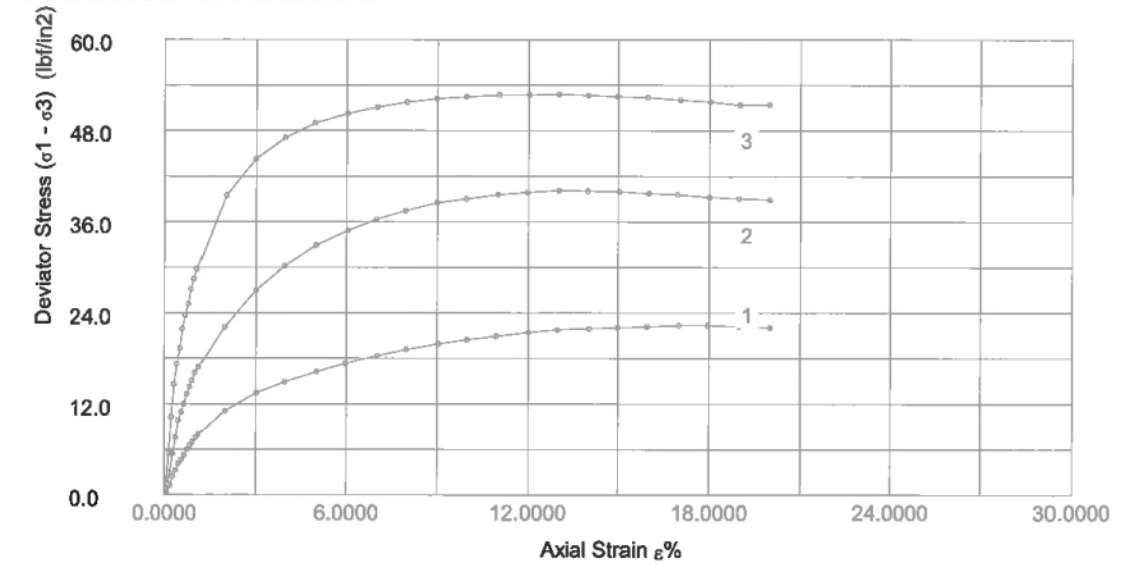
Failure Sketch



Surface Inclination

Effective Stress Triaxial Compression

Consolidated Undrained

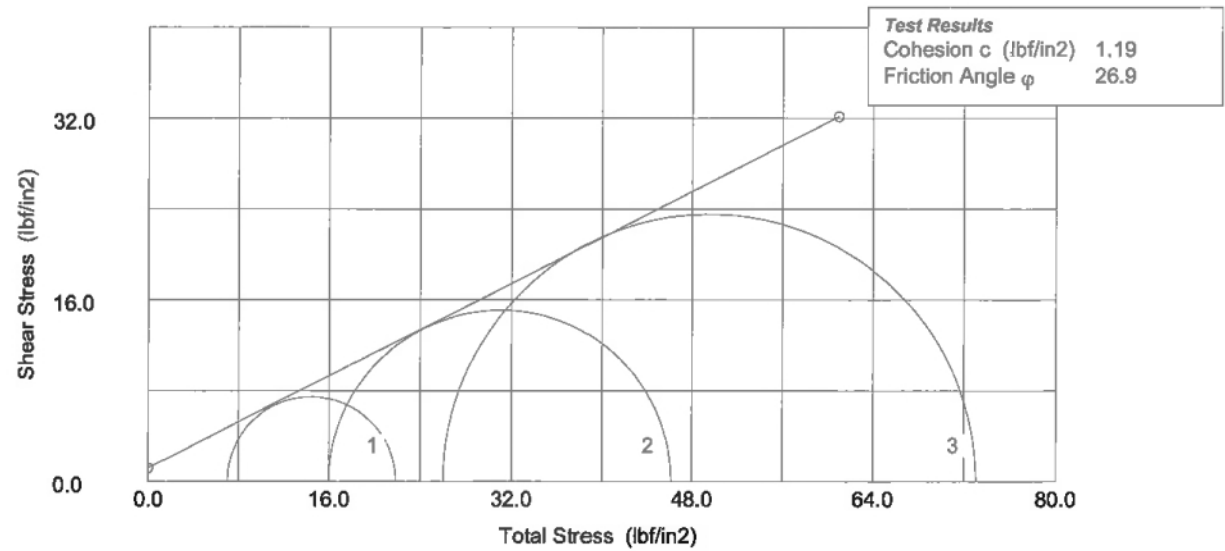
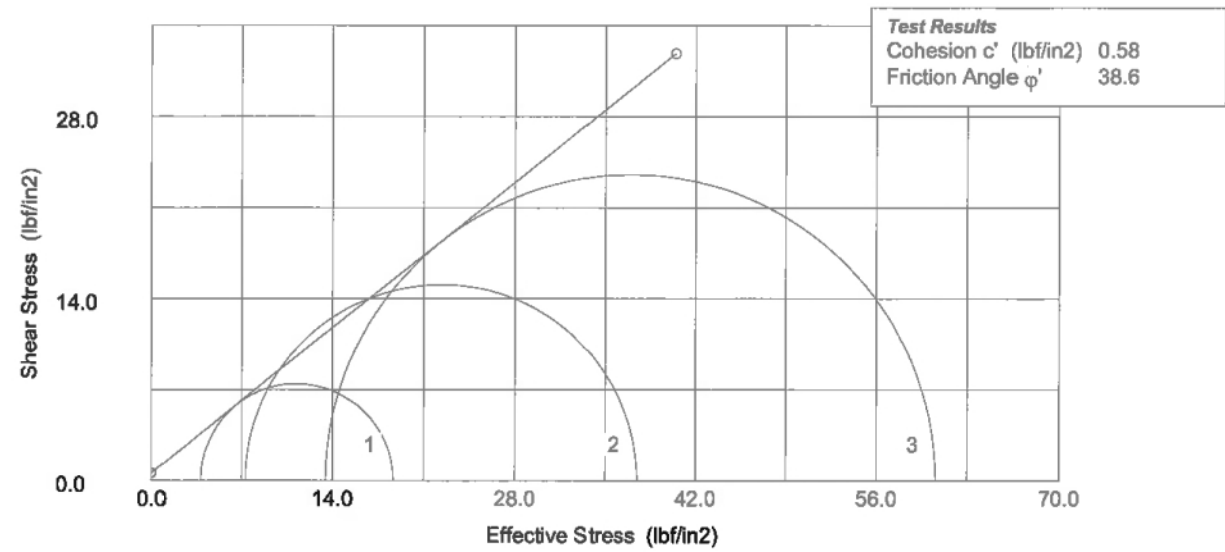


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	Site Reference: C.F. Harvey Jobfile: E:\16010.JOB	Date of Test: 12-7-16
	Operator: MK	Sample: ST-8 Borehole: EB1-B Rt. Ln.
	Checked: MK	Approved:

	Test Method: ASTM D4767-95	Test name: CU Triaxial (SS, MS)
	Site Reference: C.F. Harvey Jobfile: E:\16010.JOB	Date of Test: 12-7-16
	Operator: MK	Sample: ST-8 Borehole: EB1-B Rt. Ln.
	Checked: MK	Approved:

Effective Stress Triaxial Compression

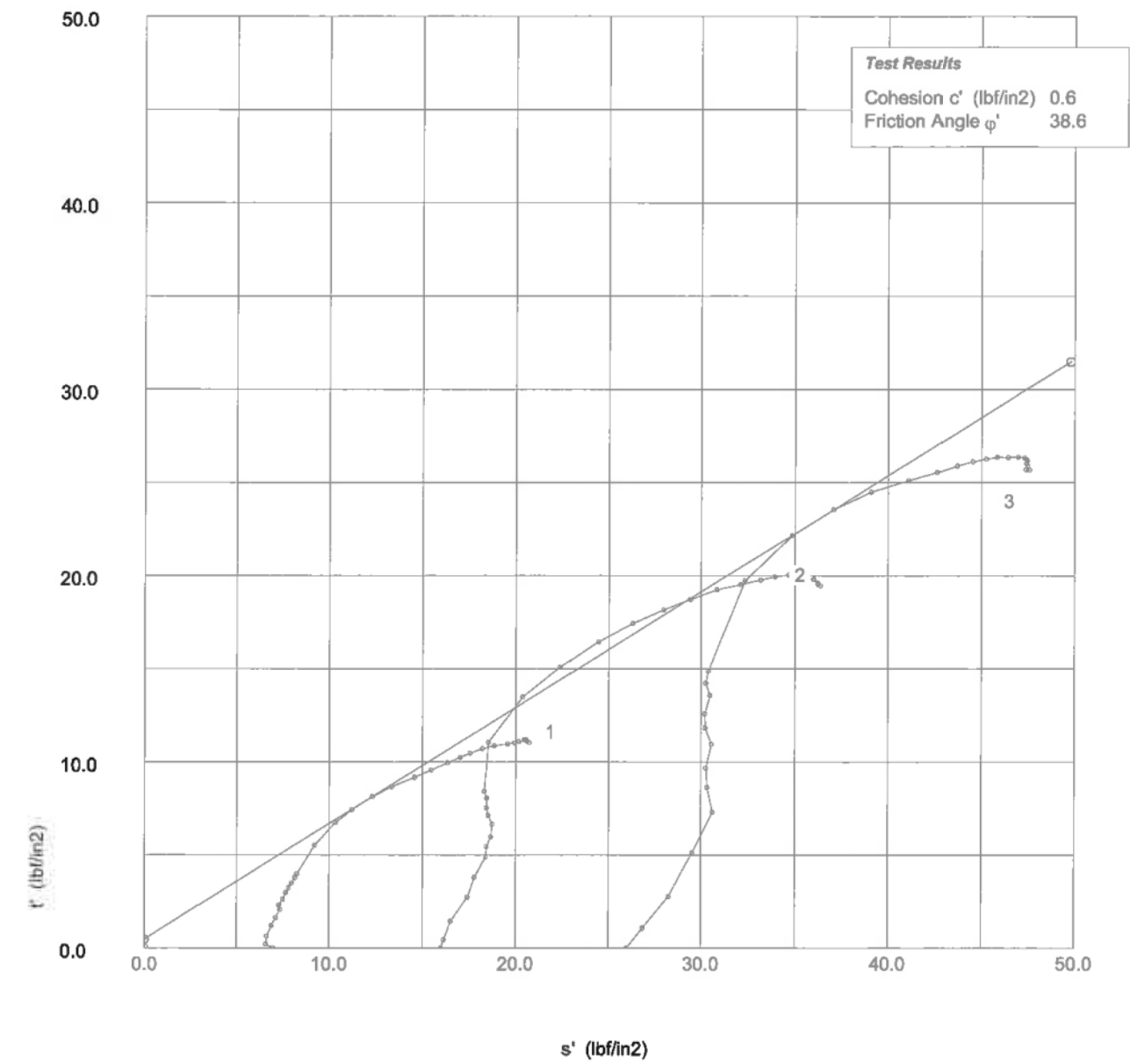
Consolidated Undrained



	Test Method: ASTM D4767-95	Test name: CU Triaxial (SS, MS)
	Site Reference: C.F. Harvey	Date of Test: 12-7-16
	Jobfile: E:\16010.JOB	Sample: ST-8
Operator: <i>MIC</i>	Checked: <i>MIC</i>	Approved:

Effective Stress Triaxial Compression

Consolidated Undrained



	Test Method: ASTM D4767-95	Test name: CU Triaxial (SS, MS)
	Site Reference: C.F. Harvey	Date of Test: 12-7-16
	Jobfile: E:\16010.JOB	Sample: ST-8
Operator: <i>MIC</i>	Checked: <i>MIC</i>	Approved:

Effective Stress Triaxial Compression

Consolidated Undrained Shear (Specimen 1)

No.	Strain (divs)	Strain ε%	Load (divs)	Load (lbs)	Pore Prs (divs)	Pore Prs (lbf/in2)	D. Stress (σ ₁ - σ ₃) _m (lbf/in2)	D. Stress (σ ₁ - σ ₃) _c (lbf/in2)	Minor Str σ ₃ (lbf/in2)	Major Str σ ₁ (lbf/in2)	Ratio σ ₁ /σ ₃
1	95	0.00	503	0.0	0	0.0	0.0	0.0	7.00	7.00	1.00
2	148	0.09	530	2.7	6	0.6	0.4	0.4	6.40	6.83	1.07
3	207	0.19	586	8.3	10	1.0	1.3	1.3	6.00	7.31	1.22
4	260	0.28	658	15.5	13	1.3	2.4	2.4	5.70	8.14	1.43
5	314	0.37	711	20.8	15	1.5	3.3	3.3	5.50	8.77	1.59
6	372	0.47	767	26.4	17	1.7	4.1	4.1	5.30	9.45	1.78
7	426	0.56	808	30.5	20	2.0	4.8	4.6	5.00	9.63	1.93
8	480	0.65	847	34.4	21	2.1	5.4	5.2	4.90	10.13	2.07
9	538	0.75	894	39.1	23	2.3	6.1	6.0	4.70	10.66	2.27
10	593	0.84	928	42.5	24	2.4	6.6	6.5	4.60	11.09	2.41
11	648	0.93	961	45.8	25	2.5	7.2	7.0	4.50	11.50	2.56
12	706	1.03	997	49.4	26	2.6	7.7	7.6	4.40	11.96	2.72
13	760	1.12	1025	52.2	27	2.7	8.1	8.0	4.30	12.29	2.86
14	1263	1.97	1236	73.3	33	3.3	11.3	11.1	3.70	14.76	3.99
15	1883	3.02	1406	90.3	34	3.4	13.8	13.5	3.60	17.06	4.74
16	2444	3.96	1517	101.4	32	3.2	15.4	14.9	3.80	18.69	4.92
17	3067	5.02	1625	112.2	28	2.8	16.8	16.3	4.20	20.46	4.87
18	3633	5.97	1714	121.1	23	2.3	18.0	17.3	4.70	22.03	4.69
19	4258	7.03	1803	130.0	16	1.6	19.1	18.4	5.40	23.76	4.40
20	4825	7.98	1876	137.3	11	1.1	19.9	19.1	5.90	25.04	4.24
21	5449	9.04	1951	144.8	6	0.6	20.8	19.9	6.40	26.31	4.11
22	6017	9.99	2012	150.9	2	0.2	21.4	20.5	6.80	27.28	4.01
23	6584	10.95	2067	156.4	-1	-0.1	22.0	20.9	7.10	28.04	3.95
24	7212	12.01	2126	162.3	-5	-0.5	22.5	21.4	7.50	28.92	3.86
25	7778	12.97	2173	167.0	-10	-1.0	22.9	21.8	8.00	29.76	3.72
26	8409	14.03	2212	170.9	-16	-1.6	23.2	21.9	8.60	30.53	3.55
27	8976	14.99	2245	174.2	-19	-1.9	23.4	22.1	8.90	30.95	3.48
28	9545	15.95	2279	177.6	-21	-2.1	23.6	22.2	9.10	31.28	3.44
29	10174	17.01	2320	181.7	-23	-2.3	23.8	22.3	9.30	31.65	3.40
30	10745	17.97	2348	184.5	-24	-2.4	23.9	22.4	9.40	31.77	3.38
31	11351	19.00	2365	186.2	-25	-2.5	23.8	22.2	9.50	31.75	3.34
32	11958	20.02	2379	187.6	-27	-2.7	23.7	22.1	9.70	31.78	3.28

	Test Method: ASTM D4767-95	Test name: CU Triaxial (SS, MS) Shear (Specimen 1)
	Site Reference: C.F. Harvey	Date of Test: 12-7-16
	Jobfile: E:\16010.JOB	Sample: ST-8
Operator: MK	Checked: MK	Approved:
Borehole: EB1-B Rt. Ln.		

Effective Stress Triaxial Compression

Consolidated Undrained Shear (Specimen 2)

No.	Strain (divs)	Strain ε%	Load (divs)	Load (lbs)	Pore Prs (divs)	Pore Prs (lbf/in2)	D. Stress (σ ₁ - σ ₃) _m (lbf/in2)	D. Stress (σ ₁ - σ ₃) _c (lbf/in2)	Minor Str σ ₃ (lbf/in2)	Major Str σ ₁ (lbf/in2)	Ratio σ ₁ /σ ₃
1	82	0.00	683	0.0	0	0.0	0.0	0.0	16.00	16.00	1.00
2	136	0.09	739	5.6	3	0.3	0.9	0.9	15.70	16.59	1.06
3	190	0.18	864	18.1	9	0.9	2.9	2.9	15.10	17.96	1.19
4	245	0.28	1028	34.5	13	1.3	5.5	5.5	14.70	20.15	1.37
5	297	0.37	1164	48.1	20	2.0	7.6	7.6	14.00	21.60	1.54
6	351	0.46	1303	62.0	25	2.5	9.8	9.8	13.50	23.28	1.72
7	409	0.56	1384	70.1	30	3.0	11.1	10.9	13.00	23.89	1.84
8	461	0.64	1453	77.0	33	3.3	12.1	12.0	12.70	24.67	1.94
9	515	0.74	1539	85.6	39	3.9	13.5	13.3	12.10	25.41	2.10
10	575	0.84	1600	91.7	46	4.6	14.4	14.3	11.40	25.66	2.25
11	626	0.92	1653	97.0	51	5.1	15.2	15.1	10.90	25.98	2.38
12	682	1.02	1720	103.7	56	5.6	16.3	16.1	10.40	26.51	2.55
13	739	1.12	1767	108.4	61	6.1	17.0	16.8	9.90	26.73	2.70
14	1239	1.96	2123	144.0	85	8.5	22.4	22.1	7.50	29.60	3.95
15	1849	3.00	2459	177.6	91	9.1	27.3	27.0	6.90	33.85	4.91
16	2409	3.95	2695	201.2	87	8.7	30.6	30.2	7.30	37.46	5.13
17	3022	4.99	2904	222.1	80	8.0	33.5	32.9	8.00	40.90	5.11
18	3641	6.04	3065	238.2	71	7.1	35.5	34.8	8.90	43.74	4.92
19	4201	6.99	3196	251.3	62	6.2	37.1	36.3	9.80	46.14	4.71
20	4766	7.95	3304	262.1	53	5.3	38.2	37.5	10.70	48.15	4.50
21	5380	9.00	3413	273.0	44	4.4	39.4	38.5	11.60	50.11	4.32
22	5946	9.96	3485	280.2	34	3.4	40.0	39.0	12.60	51.64	4.10
23	6562	11.00	3560	287.7	26	2.6	40.6	39.6	13.40	52.96	3.95
24	7129	11.97	3621	293.8	20	2.0	41.0	39.9	14.00	53.89	3.85
25	7746	13.01	3677	299.4	14	1.4	41.3	40.1	14.60	54.71	3.75
26	8314	13.98	3710	302.7	10	1.0	41.3	40.0	15.00	55.02	3.67
27	8934	15.03	3746	306.3	6	0.6	41.3	39.9	15.40	55.35	3.59
28	9501	15.99	3771	308.8	2	0.2	41.1	39.7	15.80	55.55	3.52
29	10066	16.95	3799	311.6	-2	-0.2	41.0	39.6	16.20	55.78	3.44
30	10689	18.01	3818	313.5	-6	-0.6	40.7	39.2	16.60	55.84	3.36
31	11264	18.99	3846	316.3	-7	-0.7	40.6	39.1	16.70	55.77	3.34
32	11866	20.01	3877	319.4	-9	-0.9	40.5	38.9	16.90	55.81	3.30


	Test Method: ASTM D4767-95	Test name: CU Triaxial (SS, MS) Shear (Specimen 2)
	Site Reference: C.F. Harvey	Date of Test: 12-7-16
	Jobfile: E:\16010.JOB	Sample: ST-8
Operator: MK	Checked: MK	Approved:
Borehole: EB1-B Rt. Ln.		

Effective Stress Triaxial Compression

Page 3 / 3

Consolidated Undrained Shear (Specimen 3)

No.	Strain (divs)	Strain ε%	Load (divs)	Load (lbs)	Pore Prs (divs)	Pore Prs (lb/in ²)	D. Stress (σ ₁ - σ ₃) _m (lb/in ²)	D. Stress (σ ₁ - σ ₃) _c (lb/in ²)	Minor Str σ ₃ (lb/in ²)	Major Str σ ₁ (lb/in ²)	Ratio σ ₁ /σ ₃
1	0	0.00	708	0.0	0	0.0	0.0	0.0	26.00	26.00	1.00
2	41	0.07	842	13.4	2	0.2	2.1	2.1	25.80	27.93	1.08
3	86	0.15	1056	34.8	5	0.5	5.5	5.5	25.50	31.04	1.22
4	136	0.24	1353	64.5	16	1.6	10.3	10.3	24.40	34.66	1.42
5	185	0.32	1628	92.0	27	2.7	14.6	14.6	23.30	37.92	1.63
6	236	0.41	1795	108.7	43	4.3	17.3	17.3	21.70	38.95	1.80
7	293	0.51	1937	122.9	54	5.4	19.5	19.3	20.60	39.93	1.94
8	345	0.60	2101	139.3	64	6.4	22.1	21.9	19.60	41.51	2.12
9	399	0.69	2212	150.4	76	7.6	23.8	23.6	18.40	42.04	2.29
10	456	0.79	2312	160.4	84	8.4	25.4	25.2	17.60	42.80	2.43
11	509	0.88	2437	172.9	91	9.1	27.3	27.2	16.90	44.05	2.61
12	561	0.97	2523	181.5	100	10.0	28.6	28.5	16.00	44.49	2.78
13	619	1.07	2607	189.9	105	10.5	29.9	29.8	15.50	45.28	2.92
14	1175	2.03	3254	254.6	134	13.4	39.8	39.5	12.60	52.07	4.13
15	1735	3.00	3596	288.8	133	13.3	44.6	44.3	12.70	56.99	4.49
16	2302	3.98	3816	310.8	125	12.5	47.6	47.1	13.50	60.58	4.49
17	2866	4.95	3979	327.1	114	11.4	49.5	49.0	14.60	63.59	4.36
18	3488	6.03	4105	339.7	100	10.0	50.9	50.2	16.00	66.24	4.14
19	4053	7.01	4205	349.7	89	8.9	51.8	51.1	17.10	68.21	3.99
20	4624	7.99	4294	358.6	82	8.2	52.6	51.8	17.80	69.59	3.91
21	5191	8.97	4369	366.1	76	7.6	53.1	52.2	18.40	70.63	3.84
22	5756	9.95	4433	372.5	70	7.0	53.5	52.5	19.00	71.50	3.76
23	6384	11.04	4499	379.1	65	6.5	53.8	52.7	19.50	72.22	3.70
24	6950	12.01	4546	383.8	59	5.9	53.8	52.7	20.10	72.80	3.62
25	7524	13.01	4599	389.1	54	5.4	53.9	52.8	20.60	73.37	3.56
26	8092	13.99	4641	393.3	50	5.0	53.9	52.7	21.00	73.66	3.51
27	8661	14.97	4677	396.9	48	4.8	53.8	52.5	21.20	73.67	3.48
28	9232	15.96	4719	401.1	47	4.7	53.7	52.3	21.30	73.65	3.46
29	9858	17.04	4756	404.8	46	4.6	53.5	52.1	21.40	73.47	3.43
30	10433	18.04	4789	408.1	44	4.4	53.3	51.8	21.60	73.40	3.40
31	10996	19.01	4811	410.3	43	4.3	53.0	51.4	21.70	73.11	3.37
32	11561	19.99	4862	415.4	41	4.1	53.0	51.4	21.90	73.28	3.35

	Test Method: ASTM D4767-95	Test name	CU Triaxial (SS, MS) Shear (Specimen 3)
	Site Reference: C.F. Harvey	Date of Test:	12-7-16
	Jobfile: E:\16010.JOB	Sample:	ST-8
Operator: <i>mk</i>	Checked: <i>mk</i>	Borehole:	EB1-B Rt. Ln.
		Approved:	