APPENDIX B

GEOTECHNICAL LABORATORY ANALYSIS REPORTS

Form No. TR-D1883-T193-3
Revision No. 1
Revision Date: 9/29/08

CBR (California Bearing Ratio) of Laboratory Compacted Soil

AASHTO T 193

S&ME

Quality Assurance

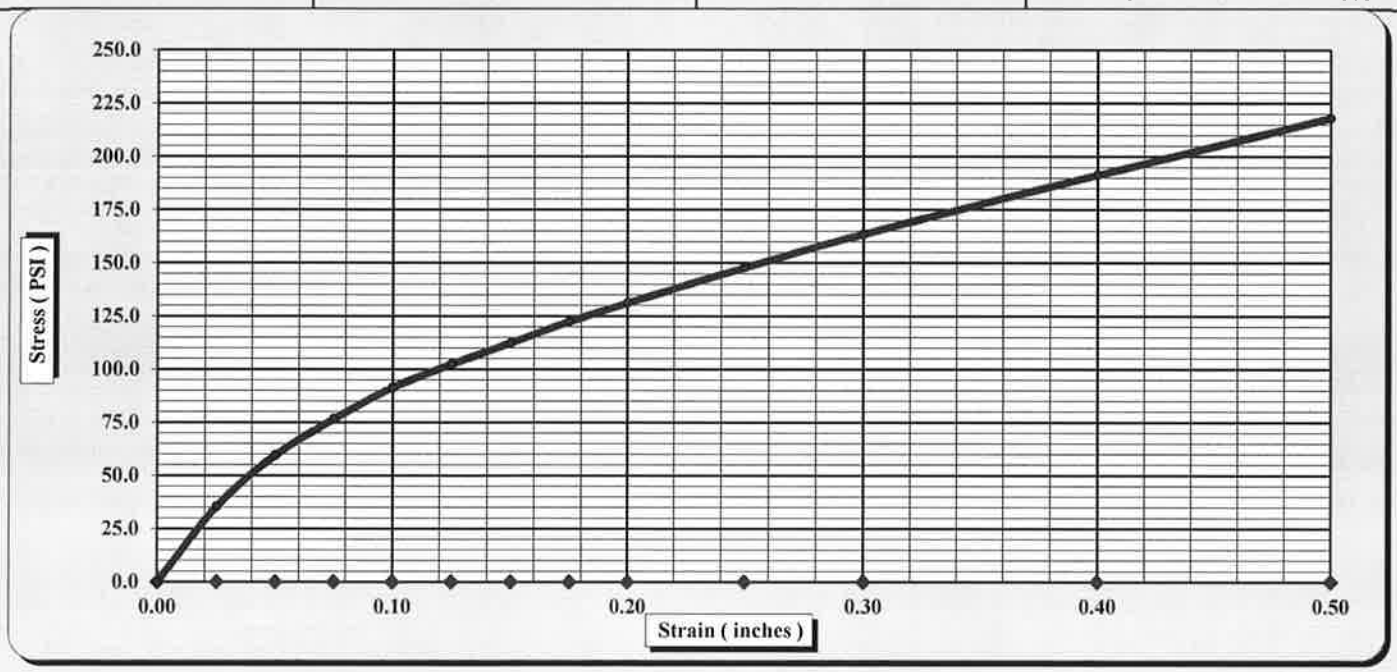
S&ME, Inc. ~ 9751 Southern Pine Boulevard ~ Charlotte, NC 28273

Project #:	**3735-14-001**	Report Date:	3/12/14
Project Name:	Ecusta Mill Site	Test Date(s)	3/6-12/14
Client Name:	Shaw Environmental & Infrastructure, Inc.		
Client Address:	11560 Great Oaks Way, Suite 500, Alpharetta, GA		
Boring #:	Area 1	Sample #: P-2	Sample Date: 2/21-26/14
Location:	On-site	Offset: NI	Elevation: NI
Sample Description:	Red Black Brown Silty Coarse to Fine Sand		

AASHTO T99 ***Method A*** Maximum Dry Density: **101.3 PCF** Optimum Moisture Content: **20.3%**

Compaction Test performed on the Fine Fraction only % Retained on the 3/4" sieve: **0.3%**

Uncorrected CBR Values		Corrected CBR Values	
CBR at 0.1 in. 9.1	**CBR at 0.2 in. 8.7**	**CBR at 0.1 in. 0.0**	**CBR at 0.2 in. 0.0**



CBR Sample Preparation: *Performed on the fine fraction*

Grading was in accordance with the above method and compacted using the 6" diameter CBR mold. AASHTO T 193, Section 5.1.1

Before Soaking		*After Soaking*	
Compactive Effort (Blows per Layer)	30	Final Dry Density (PCF)	93.3
Initial Dry Density (PCF)	96.3	Average Final Moisture Content	23.8%
Moisture Content of the Compacted Specimen	20.6%	Moisture Content (top 1" after soaking)	24.9%
Percent Compaction	95.1%	Percent Swell	0.2%

Soak Time:	96 Hours	Surcharge Weight	30.5	Surcharge Wt. per sq. Ft.	155.0
Liquid Limit	ND	Plastic Index	ND	Apparent Relative Density	ND

Notes/Deviations/References: NI = No information provided. ND = No determined.

Technician: **Jennifer Olsen** Jennifer J Olsen **Date: 3/12/14**

Ron Harris / Ron Rothfuss — *Technical Responsibility*

Signature

Staff Professional I — *Position*

3/17/2014 — *Date*

Form No. TR-D1883-T193-1
Revision No. 1
Revision Date: 9/29/08

CBR Compaction

S&ME

Compaction and Swell Data ASTM D1883 ☐ AASHTO T193 ☒ ***Quality Assurance***

S&ME, Inc. ~ 9751 Southern Pine Boulevard ~ Charlotte, NC 28273

Project #:	**3735-14-001**	Report Date:	3/12/14
Project Name:	Ecusta Mill Site	Test Date(s)	3/6-12/14
Client Name:	Shaw Environmental & Infrastructure, Inc.		
Client Address:	11560 Great Oaks Way, Suite 500, Alpharetta, GA		
Boring #:	Area 1	Sample #: P-2	Sample Date: 2/21-26/14
Location:	On-site	Offset: NI	Elevation: NI
Sample Description:	Red Black Brown Silty Coarse to Fine Sand		

Type and Specification	*S&ME ID #*	*Cal Date:*	*Type and Specification*	*S&ME ID #*	*Cal Date:*
Balance (0.1 g)	22182	6/18/2013	Compaction Mold	3609	7/5/2013
Balance	22182	6/18/2013	Compaction Hammer	20120	10/14/2013
Straightedge	27831	2/5/2014	Oven	22152	1/20/2014

Moisture-Density Relationship ASTM D 698 ☐ ASTM D1557 ☐ AASHTO T99 ☒ AASHTO T180 ☐
Method A ☒ Method B ☐ Method C ☐ Method D ☐
Compaction Test performed on the Fine Fraction only ☒ Compaction Test performed on grading complying with CBR spec. ☐
Maximum Dry Density 101.3 PCF **Optimum Moisture Content 20.3%**

CBR Sample Compaction performed on the Fine Fraction: ☒
ASTM D 1883, Section 6.1.1 ☐ AASHTO T 193 Section 5.1.1 ☒ Entire Sample ☐ Replacement Method ☐
Mechanical Hammer ☒ Manual Hammer ☐ Moist Preparation ☐ Dry Preparation ☒

Water Content ASTM D2216 ☐ AASHTO T265 ☒ ASTM D4959 ☐ ASTM D4643 ☐

Sample Note/Tare No.:		5E	HK	CBR Test 5E
A. Tare Weight (grams)	**A.**	158.0	159.1	158.0
B. Wet Wt + Tare Wt (grams)	**B.**	761.2	1122.3	761.2
C. Dry Wt. + Tare Wt. (grams)	**C.**	658.3	955.4	658.3
D. Water Weight (grams)	**B-C**	102.9	166.9	102.9
E. Dry Weight (grams)	**C-A**	500.3	796.3	500.3
F. Moisture Content (%)	**100*D/E**	**20.6%**	**21.0%**	**20.6%**

Sample Preparation ***Targets:*** *% Compaction* **95.0%** *Moisture Content* **20.3%**

A	Target Dry Density (Lbs./cu.ft.)	96.2	MDD x % Compaction	***Mold #***		**3609**
B	Dry Density (grams/ cu.ft.)	43652.2	453.6 x A	Mold Diameter (in.)		6.005
D	Mold volume Factor (MVF)	**13.37**	1/Volume	Mold Height (in.)		4.583
E	Wet Density (grams/ cu.ft.)	52630.4	B x (1+ Moisture Content)	Mold Height (ft.)		0.3819
F	Wt. of Soil in Mold (grams)	3936.8	E/D	Mold Area (sq.ft.)		0.1967
G	# of Lifts	**3**	used to compact sample	Mold Volume (Linear)		**0.0751**
H	Wt. of Soil per Lift (grams)	1312.3	F/G	Mold Volume (Water)		**0.0748**
	# of Blows per Lift	**30**		Soak	Time	Date
I	Mold Weight (Lbs. or grams)	7008		Start		3/7/2014
J	Mold Wt. + Soil Wt. (Lbs. or g.)	10949	*After Compaction*	End		3/11/2014
K	Soil Weight (Lbs. or grams)	3941.0000	J-I	Total	96 Hours	
L	Wet Soil Wt. (grams)	3941.0	K*453.6 or K	% Swell		
M	Dry Soil Wt. (grams)	3268.7	L/(1+MC)	Reading 1		0.0000
N	**Percent Compaction**	**95.1%**	Percentage of MDD	Reading 2		0.0090
O	Dry Density (Lbs./cu.ft.)	96.3	O = (M/453.6)*D	Difference		0.0090
P	Wet Density (Lbs./cu.ft.)	116.2	O*(1+MC)	**% Swell**		**0.2%**

Notes/Deviations: NI = No information provided. ND = Not determined.

Jennifer Olsen *Technician Name* — Jennifer L Olsen 3/12/2014 *Date*

Ron Harris / Ron Rothfuss *Technical Responsibility* — 3/17/2014 *Date*

CBR Penetration

S&ME

ASTM D 1883 ☐ AASHTO T 193 ☒ *Quality Assurance*

S&ME, Inc. ~ 9751 Southern Pine Boulevard ~ Charlotte, NC 28273

Project #:	**3735-14-001**	Report Date:	3/12/14
Project Name:	Ecusta Mill Site	Test Date(s)	3/6-12/14
Client Name:	Shaw Environmental & Infrastructure, Inc.		
Client Address:	11560 Great Oaks Way, Suite 500, Alpharetta, GA		
Boring #: Area 1	Sample #: P-2	Sample Date:	2/21-26/14
Location: On-site	Offset: NI	Elevation:	NI
Sample Description:	Red Black Brown Silty Coarse to Fine Sand		

Type and Specification	*S&ME ID #*	*Cal Date:*	*Type and Specification*	*S&ME ID #*	*Cal Date:*
Balance (0.1 g)	**22182**	6/18/2013	Penetration Piston	**20227**	6/11/2013
Balance	**22182**	6/18/2013	Strain Gauge		
Oven	**22152**	1/20/2014	Proving Ring		

Moisture Sample After Soaking and Penetration:		Top 1 inch	Average	Volume of Soil after Swell	
	Tare #:	JB	JC	New Height (in.)	4.592
A. Tare Weight (grams)	**A.**	156.5	162.2	New Height (ft.)	0.3827
B. Wet Wt + Tare Wt (grams)	**B.**	842.4	1378.5	New Volume (cu.ft.)	0.0753
C. Dry Wt. + Tare Wt. (grams)	**C.**	705.7	1144.9	Final Wet Density	115.4
D. Water Weight (grams)	**B-C**	136.7	233.6	**Piston #**	**20227**
E. Dry Weight (grams)	**C-A**	549.2	982.7	Piston Diameter (in.)	1.951
F. Moisture Content (%)	**100*D/E**	**24.9%**	**23.8%**	Piston Area (sq.in.)	**2.990**

Sample Parameters		***Before Soaking***	
Maximum Dry Density (PCF)	**101.3**	Initial Dry Density (PCF)	**96.3**
Optimum Moisture Content	**20.3%**	Moisture Content of the Compacted Specimen	**20.6%**
Percent Retained on 3/4 inch sieve	**0.3%**	Percent Compaction	**95.1%**
Soak Time:	**96 Hours**	***After Soaking***	
Surcharge Weight (Lbs.)	**30.5**	Final Dry Density (PCF)	**93.3**
Surcharge Wt. per sq. Ft.	**155.0**	**Percent Swell**	**0.2%**

Strain Rate: .05 inches/minute **Proving Ring Capacity:** **Proving Ring ID #:**

Penetration	Time	Load	Load	Stress	Bearing Ratio
inches	minutes	divisions	Lbs.	PSI	%
0	**0**		**0**	**0.0**	
0.025	**0.5**		**106**	**35.5**	
0.050	**1.0**		**178**	**59.5**	
0.075	**1.5**		**229**	**76.6**	
0.100	**2.0**		**273**	**91.3**	**9.1**
0.125	**2.5**		**306**	**102.4**	
0.150	**3.0**		**336**	**112.4**	
0.175	**3.5**		**366**	**122.4**	
0.200	**4.0**		**392**	**131.1**	**8.7**
0.250	**5.0**		**442**	**147.8**	
0.300	**6.0**		**489**	**163.6**	
0.400	**8.0**		**572**	**191.3**	
0.500	**10.0**		**652**	**218.1**	

Notes/Deviations NI = No information provided. ND = Not determined.

Jennifer Olsen *Technician Name* — Jennifer I Olsen 3/12/2014 *Date*

Ron Harris / Ron Rothfuss *Technical Responsibility* — 3/17/2014 *Date*

CBR (California Bearing Ratio) of Laboratory Compacted Soil

AASHTO T 193

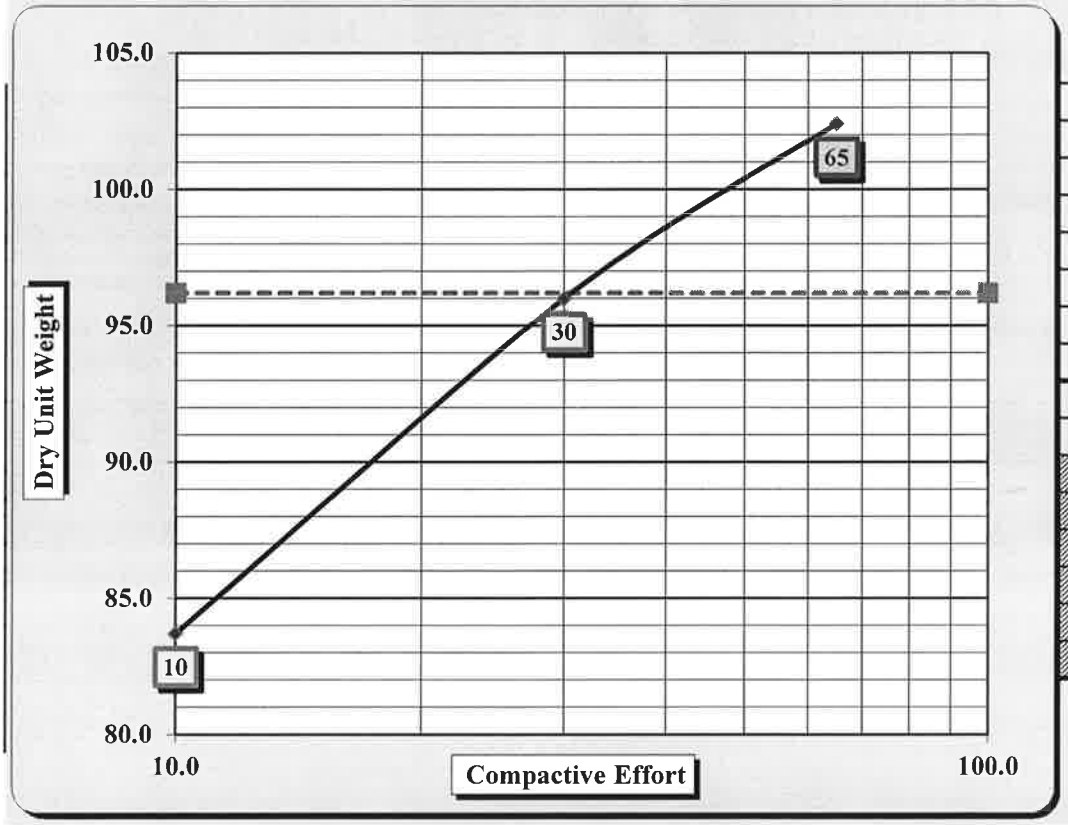
S&ME

Quality Assurance

S&ME, Inc. ~ 9751 Southern Pine Boulevard ~ Charlotte, NC 28273

Project #:	**3735-14-001**	Report Date:	3/12/14
Project Name:	Ecusta Mill Site	Test Date(s)	3/6-12/14
Client Name:	Shaw Environmental & Infrastructure, Inc.		
Client Address:	11560 Great Oaks Way, Suite 500, Alpharetta, GA		
Boring #: Area 1	Sample #: P-2	Sample Date: 2/21-26/14	
Location: On-site	Offset: NI	Elevation: NI	
Sample Description:	Red Black Brown Silty Coarse to Fine Sand		

Compactive Effort vs. Dry Unit weight



Series 1	
Compactive effort	Dry Wt. PCF
10	83.7
30	96.0
65	102.4

Series 2: MDD	
10	96.2
100	96.2

Notes / Deviations / References: NI = No information provided. ND = Not determined.

Technician: **Jennifer Olsen** Jennifer L Olsen **Date: 3/12/14**

Ron Harris / Ron Rothfuss — *Technical Responsibility*

Signature

Staff Professional — *Position*

3/17/2014 — *Date*

This record is for internal use only.

CBR (California Bearing Ratio) of Laboratory Compacted Soil

AASHTO T 193

S&ME

Quality Assurance

S&ME, Inc. ~ 9751 Southern Pine Boulevard ~ Charlotte, NC 28273

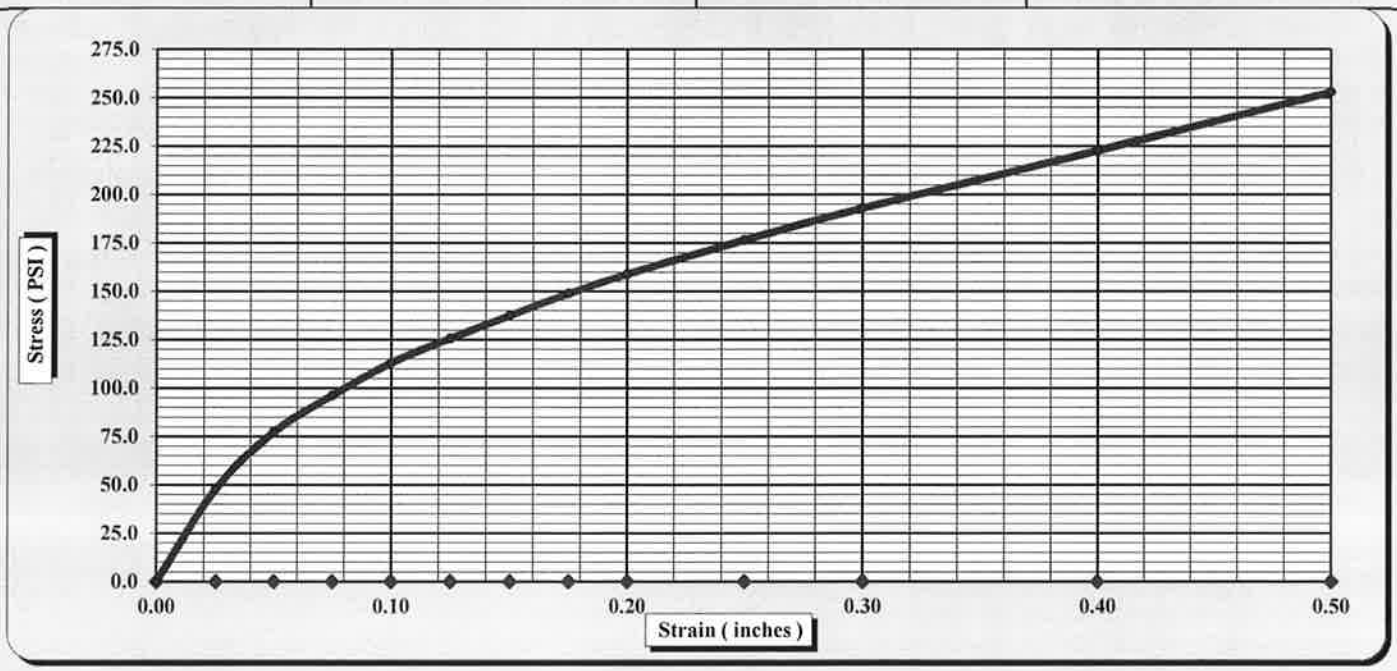
Project #:	**3735-14-001**	Report Date:	3/5/14
Project Name:	Ecusta Mill Site	Test Date(s)	2/27/14-3/5/14
Client Name:	Shaw Environmental & Infrastructure, Inc.		
Client Address:	11560 Great Oaks Way, Suite 500, Alpheretta, GA		
Boring #:	Area 2	Sample #: P-1	Sample Date: 2/19-20/14
Location:	On-site	Offset: NI	Elevation: NI

Sample Description: Black Gray Clayey Silty Coarse to Fine Sand with Gravel

AASHTO T99 ***Method D*** Maximum Dry Density: **108.3 PCF** Optimum Moisture Content: **16.0%**

Compaction Test performed on grading complying with CBR spec. % Retained on the 3/4" sieve: **2.9%**

Uncorrected CBR Values		Corrected CBR Values	
CBR at 0.1 in. 11.3	**CBR at 0.2 in. 10.6**	**CBR at 0.1 in. 0.0**	**CBR at 0.2 in. 0.0**



CBR Sample Preparation: *Performed on the fine fraction*

Grading was in accordance with the above method and compacted using the 6" diameter CBR mold. AASHTO T 193, Section 5.1.1

Before Soaking		*After Soaking*	
Compactive Effort (Blows per Layer)	30	Final Dry Density (PCF)	97.8
Initial Dry Density (PCF)	102.0	Average Final Moisture Content	20.0%
Moisture Content of the Compacted Specimen	15.8%	Moisture Content (top 1" after soaking)	21.1%
Percent Compaction	94.2%	Percent Swell	0.2%

Soak Time:	96 Hours	Surcharge Weight	30.5	Surcharge Wt. per sq. Ft.	155.0
Liquid Limit	ND	Plastic Index	ND	Apparent Relative Density	ND

Notes/Deviations/References: NI = No information provided. ND = Not determined.

Technician: **Jennifer Olsen** Jennifer Olsen **Date: 3/5/14**

Ron Harris / Ron Rothfuss — *Technical Responsibility*

Signature

Staff Professional — *Position*

3/7/14 — *Date*

Form No. TR-D1883-T193-2
Revision No. 1
Revision Date: 9/29/08

CBR Penetration

S&ME

ASTM D 1883 ☐ AASHTO T 193 ☒ *Quality Assurance*

S&ME, Inc. ~ 9751 Southern Pine Boulevard ~ Charlotte, NC 28273

Project #:	**3735-14-001**	Report Date:	3/5/14
Project Name:	Ecusta Mill Site	Test Date(s)	2/27/14-3/5/14
Client Name:	Shaw Environmental & Infrastructure, Inc.		
Client Address:	11560 Great Oaks Way, Suite 500, Alpheretta, GA		
Boring #:	Area 2	Sample #: P-1	Sample Date: 2/19-20/14
Location:	On-site	Offset: NI	Elevation: NI
Sample Description:	Black Gray Clayey Silty Coarse to Fine Sand with Gravel		

Type and Specification	*S&ME ID #*	*Cal Date:*	*Type and Specification*	*S&ME ID #*	*Cal Date:*
Balance (0.1 g)	**22182**	6/18/2013	Penetration Piston	**20227**	6/11/2013
Balance	**22182**	6/18/2013	Strain Gauge		
Oven	**22152**	1/20/2014	Proving Ring		

Moisture Sample After Soaking and Penetration:		Top 1 inch	Average	Volume of Soil after Swell	
	Tare #:	5E	JDM	New Height (in.)	4.591
A. Tare Weight (grams)	**A.**	157.8	159.6	New Height (ft.)	0.3826
B. Wet Wt + Tare Wt (grams)	**B.**	718.1	1602.0	New Volume (cu.ft.)	0.0752
C. Dry Wt. + Tare Wt. (grams)	**C.**	620.6	1361.6	Final Wet Density	117.4
D. Water Weight (grams)	**B-C**	97.5	240.4	**Piston #**	**20227**
E. Dry Weight (grams)	**C-A**	462.8	1202.0	Piston Diameter (in.)	1.951
F. Moisture Content (%)	**100*D/E**	**21.1%**	**20.0%**	Piston Area (sq.in.)	**2.990**

Sample Parameters		***Before Soaking***	
Maximum Dry Density (PCF)	**108.3**	Initial Dry Density (PCF)	**102.0**
Optimum Moisture Content	**16.0%**	Moisture Content of the Compacted Specimen	**15.8%**
Percent Retained on 3/4 inch sieve	**2.9%**	Percent Compaction	**94.2%**
Soak Time:	**96 Hours**	***After Soaking***	
Surcharge Weight (Lbs.)	**30.5**	Final Dry Density (PCF)	**97.8**
Surcharge Wt. per sq. Ft.	**155.0**	**Percent Swell**	**0.2%**

Strain Rate: .05 inches/minute **Proving Ring Capacity:** **Proving Ring ID #:**

Penetration	Time	Load	Load	Stress	Bearing Ratio
inches	minutes	divisions	Lbs.	PSI	%
0	**0**		**0**	**0.0**	
0.025	**0.5**		**143**	**47.8**	
0.050	**1.0**		**231**	**77.3**	
0.075	**1.5**		**288**	**96.3**	
0.100	**2.0**		**338**	**113.1**	**11.3**
0.125	**2.5**		**376**	**125.8**	
0.150	**3.0**		**411**	**137.5**	
0.175	**3.5**		**445**	**148.9**	
0.200	**4.0**		**475**	**158.9**	**10.6**
0.250	**5.0**		**528**	**176.6**	
0.300	**6.0**		**577**	**193.0**	
0.400	**8.0**		**666**	**222.8**	
0.500	**10.0**		**756**	**252.9**	

Notes/Deviations NI = No information provided. ND = Not determined.

Jennifer Olsen *Technician Name* — Jennifer J Olsen — 3/5/2014 *Date*

Ron Harris / Ron Rothfuss *Technical Responsibility* — 3/7/14 *Date*

Form No. TR-D1883-T193-1
Revision No. 1
Revision Date: 9/29/08

CBR Compaction

S&ME

Compaction and Swell Data ASTM D1883 ☐ AASHTO T193 ☒ ***Quality Assurance***

S&ME, Inc. ~ 9751 Southern Pine Boulevard ~ Charlotte, NC 28273

Project #:	**3735-14-001**	Report Date:	3/5/14
Project Name:	Ecusta Mill Site	Test Date(s)	2/27/14-3/5/14
Client Name:	Shaw Environmental & Infrastructure, Inc.		
Client Address:	11560 Great Oaks Way, Suite 500, Alpheretta, GA		
Boring #:	Area 2	Sample #: P-1	Sample Date: 2/19-20/14
Location:	On-site	Offset: NI	Elevation: NI
Sample Description:	Black Gray Clayey Silty Coarse to Fine Sand with Gravel		

Type and Specification	*S&ME ID #*	*Cal Date:*	*Type and Specification*	*S&ME ID #*	*Cal Date:*
Balance (0.1 g)	22182	6/18/2013	Compaction Mold	3609	6/7/2013
Balance	22182	6/18/2013	Compaction Hammer	20120	10/14/2013
Straightedge	27831	2/5/2014	Oven	22152	1/20/2014

Moisture-Density Relationship ASTM D 698 ☐ ASTM D1557 ☐ AASHTO T99 ☒ AASHTO T180 ☐
Method A ☐ Method B ☐ Method C ☐ Method D ☒
Compaction Test performed on the Fine Fraction only ☐ Compaction Test performed on grading complying with CBR spec. ☒
Maximum Dry Density 108.3 PCF **Optimum Moisture Content 16.0%**

CBR Sample Compaction performed on the Fine Fraction: ☒
ASTM D 1883, Section 6.1.1 ☐ AASHTO T 193 Section 5.1.1 ☒ Entire Sample ☐ Replacement Method ☐
Mechanical Hammer ☒ Manual Hammer ☐ Moist Preparation ☐ Dry Preparation ☒

Water Content ASTM D2216 ☐ AASHTO T265 ☒ ASTM D4959 ☐ ASTM D4643 ☐

Sample Note/Tare No.:		initial 5E	adjusted KH	CBR Test KH
A. Tare Weight (grams)	**A.**	157.9	159.5	159.5
B. Wet Wt + Tare Wt (grams)	**B.**	914.9	1331.7	1331.7
C. Dry Wt. + Tare Wt. (grams)	**C.**	811.6	1171.9	1171.9
D. Water Weight (grams)	**B-C**	103.3	159.8	159.8
E. Dry Weight (grams)	**C-A**	653.7	1012.4	1012.4
F. Moisture Content (%)	**100*D/E**	**15.8%**	**15.8%**	**15.8%**

Sample Preparation ***Targets:*** *% Compaction* **95.0%** *Moisture Content* **16.0%**

A	Target Dry Density (Lbs./cu.ft.)	102.9	MDD x % Compaction	***Mold #***		**3609**
B	Dry Density (grams/ cu.ft.)	46668.6	453.6 x A	Mold Diameter (in.)		6.005
D	Mold volume Factor (MVF)	**13.37**	1/Volume	Mold Height (in.)		4.583
E	Wet Density (grams/ cu.ft.)	54034.9	B x (1+ Moisture Content)	Mold Height (ft.)		0.3819
F	Wt. of Soil in Mold (grams)	4041.8	E/D	Mold Area (sq.ft.)		0.1967
G	# of Lifts	**3**	used to compact sample	Mold Volume (Linear)		**0.0751**
H	Wt. of Soil per Lift (grams)	1347.3	F/G	Mold Volume (Water)		**0.0748**
	# of Blows per Lift	**30**		Soak	Time	Date
I	Mold Weight (Lbs. or grams)	7008		Start		2/28/2014
J	Mold Wt. + Soil Wt. (Lbs. or g.)	11014	*After Compaction*	End		3/4/2014
K	Soil Weight (Lbs. or grams)	4006.0000	J-I	Total	96 Hours	
L	Wet Soil Wt. (grams)	4006.0	K*453.6 or K	% Swell		
M	Dry Soil Wt. (grams)	3459.9	L/(1+MC)	Reading 1		0.0000
N	**Percent Compaction**	**94.2%**	Percentage of MDD	Reading 2		0.0080
O	Dry Density (Lbs./cu.ft.)	102.0	O = (M/453.6)*D	Difference		0.0080
P	Wet Density (Lbs./cu.ft.)	118.1	O*(1+MC)	**% Swell**		**0.2%**

Notes/Deviations: NI = No information provided. ND = Not determined.

Jennifer Olsen *Technician Name* — 3/5/2014 *Date*

Ron Harris / Ron Rothfuss *Technical Responsibility* — 3/7/14 *Date*

Form No. TR-D1883-T193-3
Revision No. 1
Revision Date: 9/29/08

CBR (California Bearing Ratio) of Laboratory Compacted Soil

AASHTO T 193

S&ME

Quality Assurance

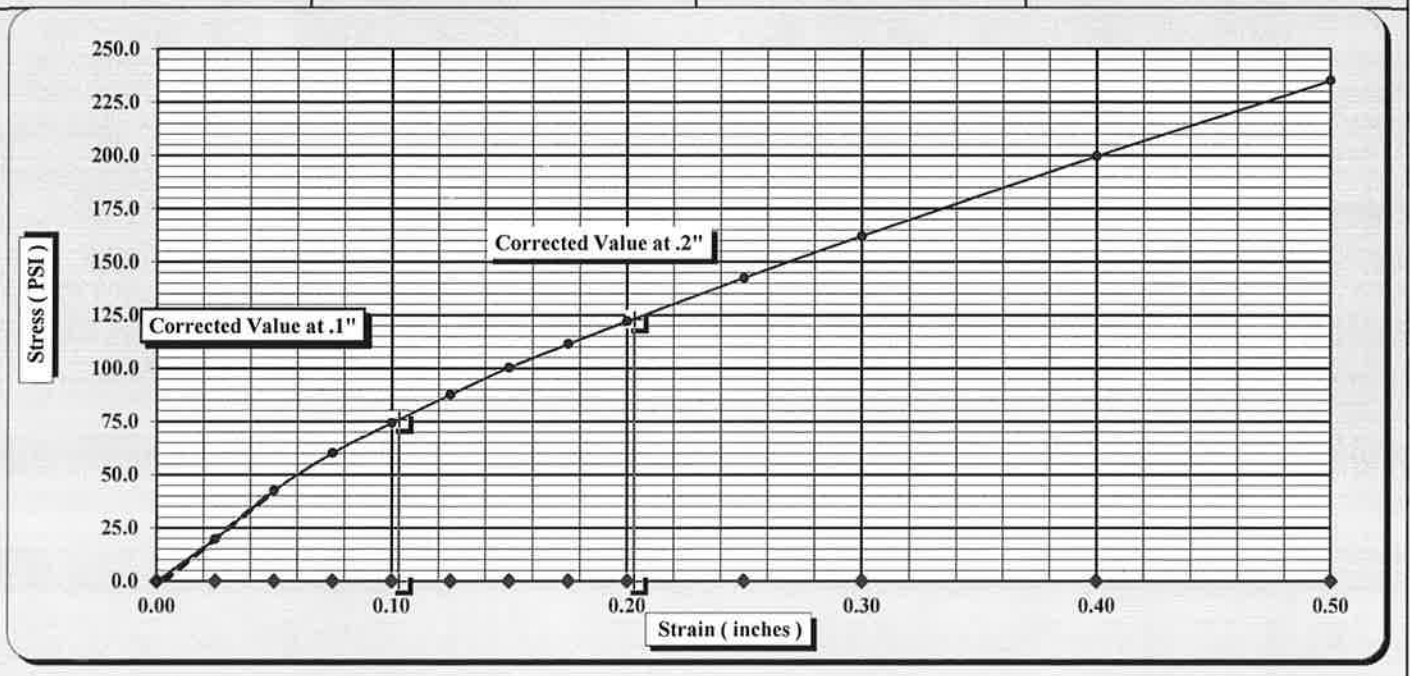
S&ME, Inc. ~ 9751 Southern Pine Boulevard ~ Charlotte, NC 28273

Project #:	**3735-14-001**	Report Date:	4/9/14
Project Name:	Ecusta Mill Site	Test Date(s)	4/3-9/14
Client Name:	NI		
Client Address:	NI		
Boring #:	Area 3	Sample #: P-3	Sample Date: 3/18-27/14
Location:	On-site	Offset: NI	Elevation: NI
Sample Description:	Black Brown Silty Coarse to Fine Sand with Gravel		

AASHTO T99 ***Method D*** Maximum Dry Density: **112.5 PCF** Optimum Moisture Content: **14.9%**

Compaction Test performed on grading complying with CBR spec. % Retained on the 3/4" sieve: **3.5%**

Uncorrected CBR Values		**Corrected CBR Values**	
CBR at 0.1 in. 7.4	**CBR at 0.2 in. 8.1**	**CBR at 0.1 in. 7.6**	**CBR at 0.2 in. 8.2**



CBR Sample Preparation: *Performed on the fine fraction*

Grading was in accordance with the above method and compacted using the 6" diameter CBR mold. AASHTO T 193, Section 5.1.1

Before Soaking		*After Soaking*	
Compactive Effort (Blows per Layer)	22	Final Dry Density (PCF)	104.6
Initial Dry Density (PCF)	107.0	Average Final Moisture Content	17.0%
Moisture Content of the Compacted Specimen	15.0%	Moisture Content (top 1" after soaking)	17.5%
Percent Compaction	95.1%	Percent Swell	0.1%

Soak Time:	96 Hours	Surcharge Weight	30.5	Surcharge Wt. per sq. Ft.	155.0
Liquid Limit	ND	Plastic Index	ND	Apparent Relative Density	ND

Notes/Deviations/References: NI = No information provided. ND = Not determined.

Technician: **Jennifer Olsen** Jennifer L Olsen **Date: 4/9/14**

Ron Harris / Ron Rothfuss
Technical Responsibility

Signature

Staff Professional I
Position

4.10.2014
Date

Form No. TR-D1883-T193-2
Revision No. 1
Revision Date: 9/29/08

CBR Penetration

S&ME

ASTM D 1883 ☐ AASHTO T 193 ☒ *Quality Assurance*

S&ME, Inc. ~ 9751 Southern Pine Boulevard ~ Charlotte, NC 28273

Project #:	**3735-14-001**	Report Date:	4/9/14
Project Name:	Ecusta Mill Site	Test Date(s)	4/3-9/14
Client Name:	NI		
Client Address:	NI		
Boring #:	Area 3	Sample #: P-3	Sample Date: 3/18-27/14
Location:	On-site	Offset: NI	Elevation: NI
Sample Description:	Black Brown Silty Coarse to Fine Sand with Gravel		

Type and Specification	*S&ME ID #*	*Cal Date:*	*Type and Specification*	*S&ME ID #*	*Cal Date:*
Balance (0.1 g)	**22182**	6/18/2013	Penetration Piston	**20227**	6/11/2013
Balance	**22182**	6/18/2013	Strain Gauge		
Oven	**10844**	1/20/2014	Proving Ring		

Moisture Sample After Soaking and Penetration:		Top 1 inch	Average	Volume of Soil after Swell	
	Tare #:	MJD	18	New Height (in.)	4.589
A. Tare Weight (grams)	**A.**	160.6	155.7	New Height (ft.)	0.3824
B. Wet Wt + Tare Wt (grams)	**B.**	692.1	1432.7	New Volume (cu.ft.)	0.0752
C. Dry Wt. + Tare Wt. (grams)	**C.**	613.0	1247.2	Final Wet Density	122.3
D. Water Weight (grams)	**B-C**	79.1	185.5	**Piston #**	**20227**
E. Dry Weight (grams)	**C-A**	452.4	1091.5	Piston Diameter (in.)	1.951
F. Moisture Content (%)	**100*D/E**	**17.5%**	**17.0%**	Piston Area (sq.in.)	**2.990**

Sample Parameters		***Before Soaking***	
Maximum Dry Density (PCF)	**112.5**	Initial Dry Density (PCF)	**107.0**
Optimum Moisture Content	**14.9%**	Moisture Content of the Compacted Specimen	**15.0%**
Percent Retained on 3/4 inch sieve	**3.5%**	Percent Compaction	**95.1%**
Soak Time:	**96 Hours**	***After Soaking***	
Surcharge Weight (Lbs.)	**30.5**	Final Dry Density (PCF)	**104.6**
Surcharge Wt. per sq. Ft.	**155.0**	**Percent Swell**	**0.1%**

Strain Rate: .05 inches/minute **Proving Ring Capacity:** **Proving Ring ID #:**

Penetration	Time	Load	Load	Stress	Bearing Ratio
inches	minutes	divisions	Lbs.	PSI	%
0	**0**		**0**	**0.0**	
0.025	**0.5**		**59**	**19.7**	
0.050	**1.0**		**127**	**42.5**	
0.075	**1.5**		**180**	**60.2**	
0.100	**2.0**		**222**	**74.3**	**7.4**
0.125	**2.5**		**262**	**87.6**	
0.150	**3.0**		**300**	**100.3**	
0.175	**3.5**		**333**	**111.4**	
0.200	**4.0**		**365**	**122.1**	**8.1**
0.250	**5.0**		**426**	**142.5**	
0.300	**6.0**		**485**	**162.2**	
0.400	**8.0**		**597**	**199.7**	
0.500	**10.0**		**703**	**235.2**	

Notes/Deviations NI = No information provided. ND = Not determined.

Jennifer Olsen *Technician Name* — 4/9/2014 *Date*

Ron Harris / Ron Rothfuss *Technical Responsibility* — 4.10.2014 *Date*

Form No. TR-D1883-T193-1
Revision No. 1
Revision Date: 9/29/08

CBR Compaction

S&ME

Compaction and Swell Data ASTM D1883 ☐ AASHTO T193 ☒ ***Quality Assurance***

S&ME, Inc. ~ 9751 Southern Pine Boulevard ~ Charlotte, NC 28273

Project #:	**3735-14-001**	Report Date:	4/9/14
Project Name:	Ecusta Mill Site	Test Date(s)	4/3-9/14
Client Name:	NI		
Client Address:	NI		
Boring #:	Area 3	Sample #: P-3	Sample Date: 3/18-27/14
Location:	On-site	Offset: NI	Elevation: NI
Sample Description:	Black Brown Silty Coarse to Fine Sand with Gravel		

Type and Specification	*S&ME ID #*	*Cal Date:*	*Type and Specification*	*S&ME ID #*	*Cal Date:*
Balance (0.1 g)	22182	6/18/2013	Compaction Mold	3609	7/5/2013
Balance	22182	6/18/2013	Compaction Hammer	20120	10/14/2013
Straightedge	27831	2/5/2014	Oven	10844	1/20/2014

Moisture-Density Relationship ASTM D 698 ☐ ASTM D1557 ☐ AASHTO T99 ☒ AASHTO T180 ☐
Method A ☐ Method B ☐ Method C ☐ Method D ☒
Compaction Test performed on the Fine Fraction only ☐ Compaction Test performed on grading complying with CBR spec. ☒
Maximum Dry Density 112.5 PCF **Optimum Moisture Content 14.9%**

CBR Sample Compaction performed on the Fine Fraction: ☒
ASTM D 1883, Section 6.1.1 ☐ AASHTO T 193 Section 5.1.1 ☒ Entire Sample ☐ Replacement Method ☐
Mechanical Hammer ☒ Manual Hammer ☐ Moist Preparation ☐ Dry Preparation ☒

Water Content ASTM D2216 ☐ AASHTO T265 ☒ ASTM D4959 ☐ ASTM D4643 ☐

		Sample Note/Tare No.: initial 691	adjusted PMB	CBR Test PMB
A. Tare Weight (grams)	**A.**	157.3	160.6	160.6
B. Wet Wt + Tare Wt (grams)	**B.**	789.3	1409.1	1409.1
C. Dry Wt. + Tare Wt. (grams)	**C.**	704.3	1246.5	1246.5
D. Water Weight (grams)	**B-C**	85.0	162.6	162.6
E. Dry Weight (grams)	**C-A**	547.0	1085.9	1085.9
F. Moisture Content (%)	**100*D/E**	**15.5%**	**15.0%**	**15.0%**

Sample Preparation ***Targets:*** *% Compaction* **95.0%** *Moisture Content* **14.9%**

A	Target Dry Density (Lbs./cu.ft.)	106.9	MDD x % Compaction	***Mold #***		**3609**
B	Dry Density (grams/ cu.ft.)	48478.5	453.6 x A	Mold Diameter (in.)		6.005
D	Mold volume Factor (MVF)	**13.37**	1/Volume	Mold Height (in.)		4.583
E	Wet Density (grams/ cu.ft.)	55737.6	B x (1+ Moisture Content)	Mold Height (ft.)		0.3819
F	Wt. of Soil in Mold (grams)	4169.2	E/D	Mold Area (sq.ft.)		0.1967
G	# of Lifts	**3**	used to compact sample	Mold Volume (Linear)		**0.0751**
H	Wt. of Soil per Lift (grams)	1389.7	F/G	Mold Volume (Water)		**0.0748**
	# of Blows per Lift	**22**		Soak	Time	Date
I	Mold Weight (Lbs. or grams)	7007		Start		4/4/2014
J	Mold Wt. + Soil Wt. (Lbs. or g.)	11180	*After Compaction*	End		4/8/2014
K	Soil Weight (Lbs. or grams)	4173.0000	J-I	Total	96 Hours	
L	Wet Soil Wt. (grams)	4173.0	K*453.6 or K	% Swell		
M	Dry Soil Wt. (grams)	3629.5	L/(1+MC)	Reading 1		0.0000
N	**Percent Compaction**	**95.1%**	Percentage of MDD	Reading 2		0.0055
O	Dry Density (Lbs./cu.ft.)	107.0	O = (M/453.6)*D	Difference		0.0055
P	Wet Density (Lbs./cu.ft.)	123.0	O*(1+MC)	**% Swell**		**0.1%**

Notes/Deviations: NI = No information provided. ND = Not determined.

Jennifer Olsen *Technician Name* — 4/9/2014 *Date*

Ron Harris / Ron Rothfuss *Technical Responsibility* — 4.10.2014 *Date*

CBR (California Bearing Ratio) of Laboratory Compacted Soil

AASHTO T 193

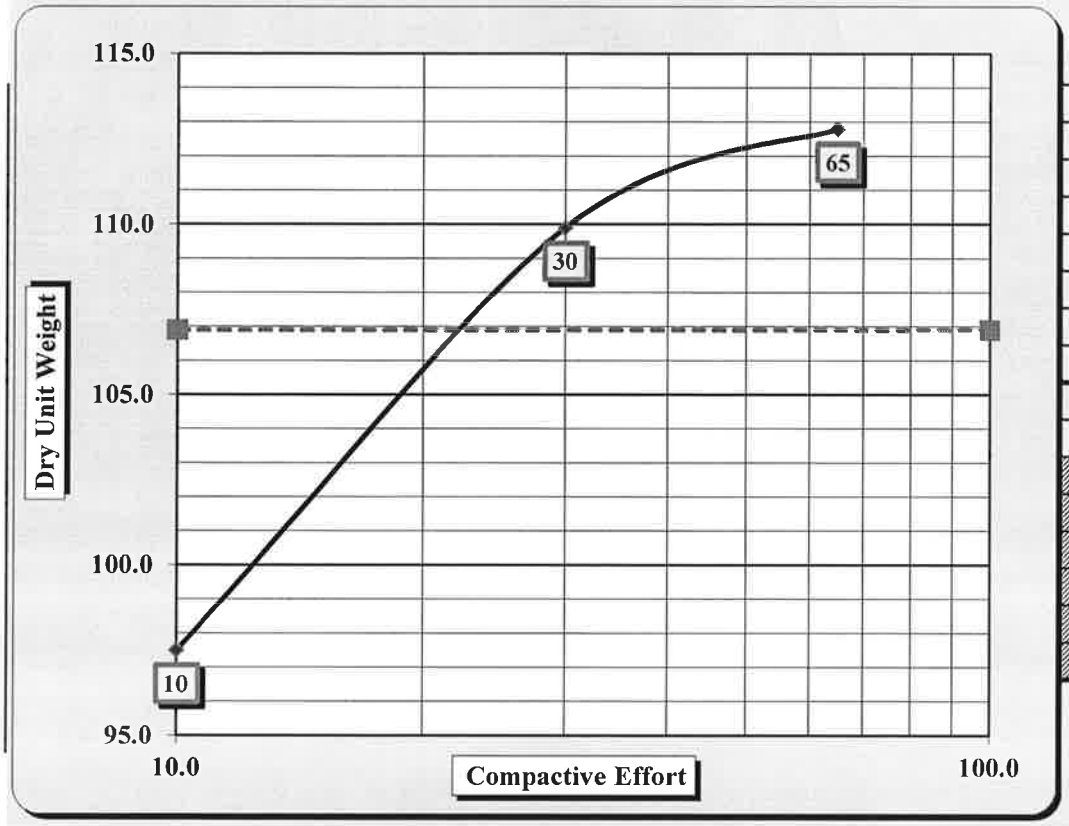
S&ME

Quality Assurance

S&ME, Inc. ~ 9751 Southern Pine Boulevard ~ Charlotte, NC 28273

Project #:	**3735-14-001**	Report Date:	4/9/14
Project Name:	Ecusta Mill Site	Test Date(s)	4/3-9/14
Client Name:	NI		
Client Address:	NI		
Boring #:	Area 3	Sample #: P-3	Sample Date: 3/18-27/14
Location:	On-site	Offset: NI	Elevation: NI
Sample Description:	Black Brown Silty Coarse to Fine Sand with Gravel		

Compactive Effort vs. Dry Unit weight



Series 1	
Compactive effort	Dry Wt. PCF
10	97.5
30	109.9
65	112.8

Series 2: MDD	
10	106.9
100	106.9

Notes / Deviations / References: NI = No information provided. ND = Not determined.

Technician: **Jennifer Olsen** Jennifer J Olsen **Date: 4/9/14**

Ron Harris / Ron Rothfuss
Technical Responsibility

Signature

Staff Professional
Position

4.10.2014
Date

This record is for internal use only.

UNCONFINED COMPRESSION WITH YOUNG'S MODULUS AND POISSON'S RATIO
(ASTM D7012 Method C and D)

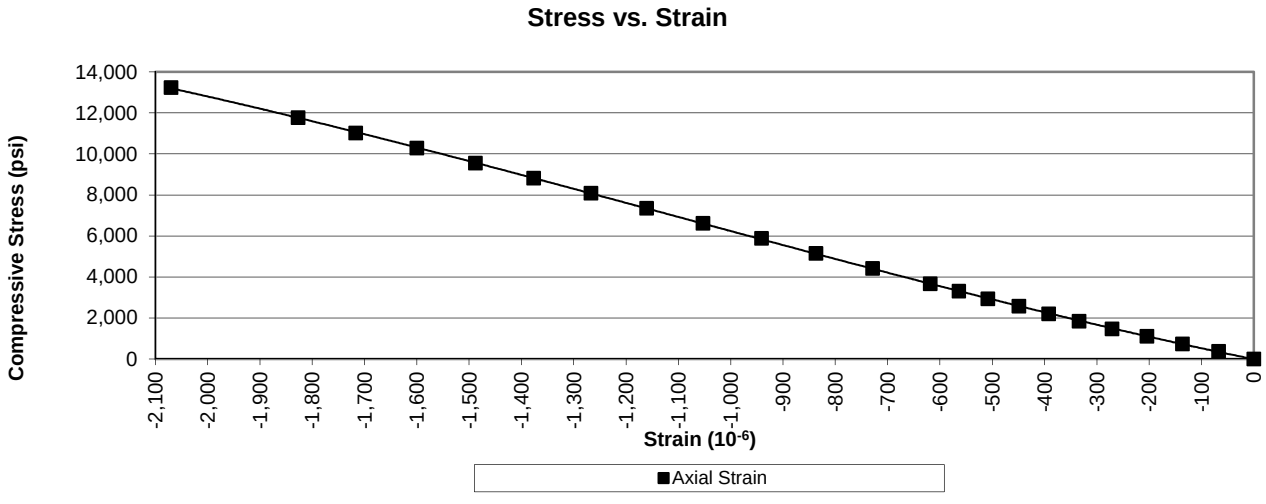
S&ME

1413 Topside Road, Louisville, TN 37777

Project:	Ecusta Mill Site	**Diameter, in.:**	1.86	**Date:**	3/19/2014
Project No.:	3735-14-001	**Length, in.:**	4.21	**Tested by:**	TJW
Boring Id:	PSB-14	**Unit Weight, pcf:**	173.2	**Reviewed by:**	JBP
Sample No:	7039	**Moisture Content, %:**	0.1		
Depth (ft):	44.0 - 44.8	**Load Rate, psi/sec:**	56		

Data Point	Strain (10^{-6})		Load (lb)	Compressive Stress (psi)	Secant Modulus x 10^6 (psi)	Poisson's Ratio	Remarks Failure
	axial	radial					
1	0		0	0	0.00		
2	-67		1,000	368	5.49		
3	-136		2,000	735	5.41		
4	-204		3,000	1,103	5.41		
5	-271		4,000	1,471	5.43		
6	-334		5,000	1,838	5.50		
7	-392		6,000	2,206	5.63		
8	-449		7,000	2,574	5.73		
9	-508		8,000	2,941	5.79		
10	-564		9,000	3,309	5.87		
11	-619		10,000	3,677	5.94		
12	-729		12,000	4,412	6.05		
13	-837		14,000	5,147	6.15		
14	-941		16,000	5,882	6.25		
15	-1,053		18,000	6,618	6.28		
16	-1,161		20,000	7,353	6.33		
17	-1,267		22,000	8,088	6.38		
18	-1,377		24,000	8,824	6.41		
19	-1,488		26,000	9,559	6.42		
20	-1,600		28,000	10,294	6.43		
21	-1,717		30,000	11,029	6.42		
22	-1,827		32,000	11,765	6.44		
23	-2,070		36,000	13,235	6.39		
24			36,730	13,504			Failure

Comments: Loading rate was selected to target reaching failure between 2 and 15 minutes.
Poisson's Ratio was not requested.



Ecusta Mill Site
Project #: 3735-14-001
Sheet 1 of 1

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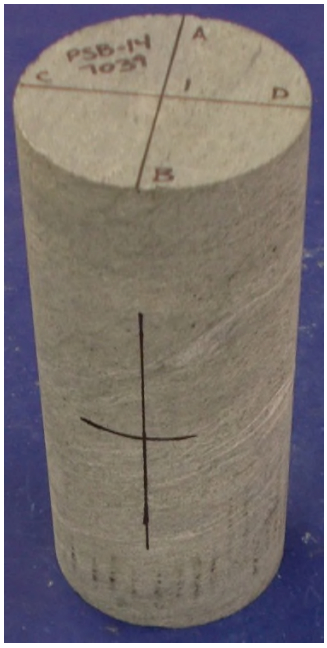
1413 Topside Road
Louisville, TN 37777



1	**Specimen ID**	Boring PSB-14, Sample 7039, (44.0' – 44.8')
	Remarks	Unconfined Compression of Rock with Young's Modulus Specimen Before Test (ASTM D7012, Method D)

2	**Specimen ID**	Boring PSB-14, Sample 7039, (44.0' – 44.8')
	Remarks	Unconfined Compression of Rock with Young's Modulus Specimen After Test (ASTM D7012, Method D)

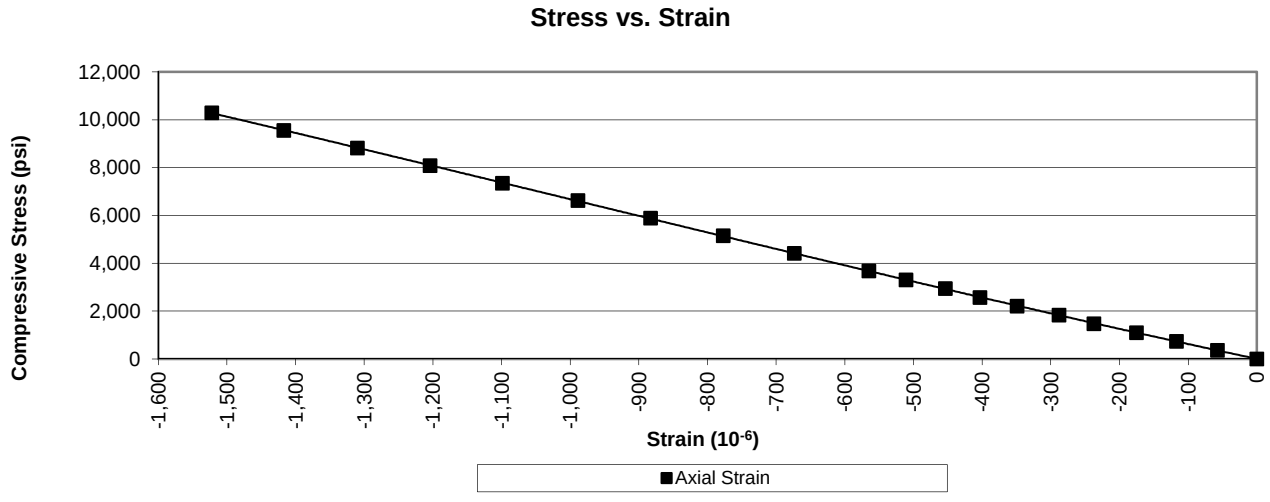
UNCONFINED COMPRESSION WITH YOUNG'S MODULUS AND POISSON'S RATIO
(ASTM D7012 Method C and D)

1413 Topside Road, Louisville, TN 37777

Project:	Ecusta Mill Site	**Diameter, in.:**	1.86	**Date:**	3/19/2014
Project No.:	3735-14-001	**Length, in.:**	4.23	**Tested by:**	TJW
Boring Id:	PSB-15	**Unit Weight, pcf:**	176.2	**Reviewed by:**	JBP
Sample No:	7038	**Moisture Content, %:**	0.0		
Depth (ft):	39.0 - 40.0	**Load Rate, psi/sec:**	48		

Data Point	Strain (10^{-6})		Load (lb)	Compressive Stress (psi)	Secant Modulus x 10^6 (psi)	Poisson's Ratio	Remarks Failure
	axial	radial					
1	0		0	0	0.00		
2	-57		1,000	368	6.45		
3	-117		2,000	735	6.28		
4	-175		3,000	1,103	6.30		
5	-237		4,000	1,471	6.21		
6	-288		5,000	1,838	6.38		
7	-349		6,000	2,206	6.32		
8	-403		7,000	2,574	6.39		
9	-454		8,000	2,941	6.48		
10	-511		9,000	3,309	6.48		
11	-565		10,000	3,677	6.51		
12	-674		12,000	4,412	6.55		
13	-777		14,000	5,147	6.62		
14	-883		16,000	5,882	6.66		
15	-989		18,000	6,618	6.69		
16	-1,099		20,000	7,353	6.69		
17	-1,204		22,000	8,088	6.72		
18	-1,310		24,000	8,824	6.74		
19	-1,417		26,000	9,559	6.75		
20	-1,522		28,000	10,294	6.76		
21			28,340	10,419			Failure

Comments: The deviation from straightness of the as-received core was greater than 0.020 inches.
Loading rate was selected to target reaching failure between 2 and 15 minutes.
Poisson's Ratio was not requested.



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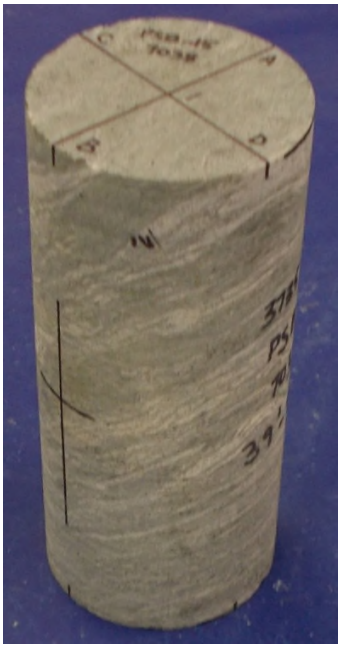
Louisville, TN 37777



1	**Specimen ID**	Boring PSB-15, Sample 7038, (39.0’ – 40.0’)
	Remarks	Unconfined Compression of Rock with Young’s Modulus Specimen Before Test (ASTM D7012, Method D)

2	**Specimen ID**	Boring PSB-15, Sample 7038, (39.0’ – 40.0’)
	Remarks	Unconfined Compression of Rock with Young’s Modulus Specimen After Test (ASTM D7012, Method D)

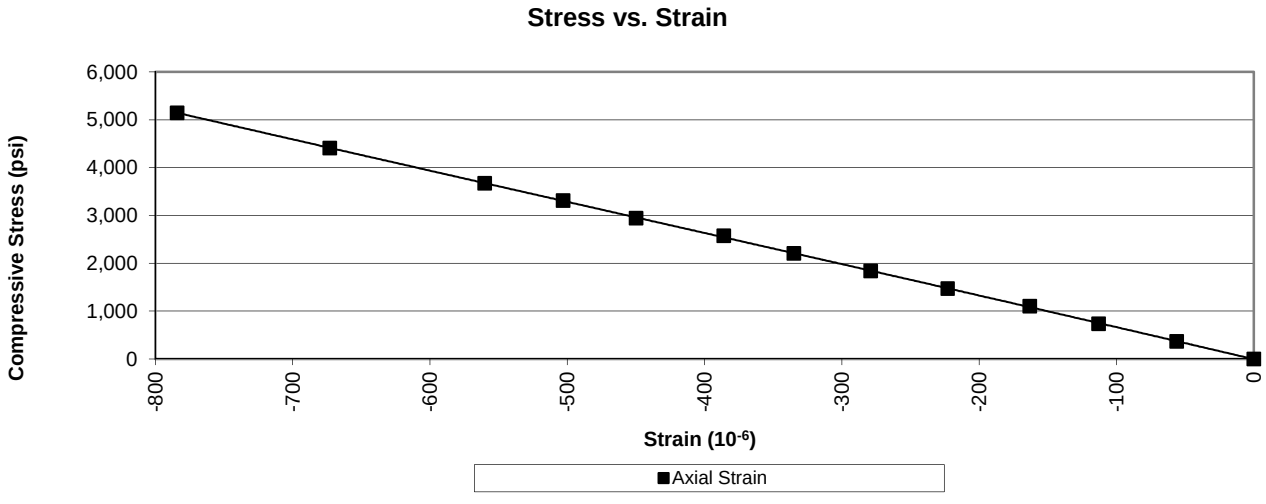
UNCONFINED COMPRESSION WITH YOUNG'S MODULUS AND POISSON'S RATIO
(ASTM D7012 Method C and D)

1413 Topside Road, Louisville, TN 37777

Project:	Ecusta Mill Site	**Diameter, in.:**	1.86	**Date:**	3/19/2014
Project No.:	3735-14-001	**Length, in.:**	4.07	**Tested by:**	TJW
Boring Id:	PSB-26	**Unit Weight, pcf:**	172.7	**Reviewed by:**	JBP
Sample No:	7050	**Moisture Content, %:**	0.0		
Depth (ft):	55.0 - 55.8	**Load Rate, psi/sec:**	40		

Data Point	Strain (10^{-6})		Load (lb)	Compressive Stress (psi)	Secant Modulus x 10^6 (psi)	Poisson's Ratio	Remarks Failure
	axial	radial					
1	0		0	0	0.00		
2	-56		1,000	368	6.56		
3	-113		2,000	735	6.51		
4	-163		3,000	1,103	6.77		
5	-223		4,000	1,471	6.59		
6	-279		5,000	1,838	6.59		
7	-335		6,000	2,206	6.58		
8	-386		7,000	2,574	6.67		
9	-450		8,000	2,941	6.54		
10	-503		9,000	3,309	6.58		
11	-560		10,000	3,677	6.57		
12	-673		12,000	4,412	6.56		
13	-784		14,000	5,147	6.57		
14			15,250	5,607			Failure

Comments: The deviation from the as-received core was greater than 0.020 inches.
Loading rate was selected to target reaching failure between 2 and 15 minutes.
Poisson's Ratio was not requested.



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1413 Topside Road
Louisville, TN 37777

1	**Specimen ID**	Boring PSB-26, Sample 7050, (55.0’ – 55.8’)
	Remarks	Unconfined Compression of Rock with Young’s Modulus Specimen Before Test (ASTM D7012, Method D)

2	**Specimen ID**	Boring PSB-26, Sample 7050, (55.0’ – 55.8’)
	Remarks	Unconfined Compression of Rock with Young’s Modulus Specimen After Test (ASTM D7012, Method D)

UNCONFINED COMPRESSION WITH YOUNG'S MODULUS AND POISSON'S RATIO
(ASTM D7012 Method C and D)

1413 Topside Road, Louisville, TN 37777

Project:	Ecusta Mill Site	**Diameter, in.:**	1.84	**Date:**	3/19/2014
Project No.:	3735-14-001	**Length, in.:**	4.13	**Tested by:**	TJW
Boring Id:	PSB-27	**Unit Weight, pcf:**	173.1	**Reviewed by:**	JBP
Sample No:	7051	**Moisture Content, %:**	0.0		
Depth (ft):	80.7 - 81.3	**Load Rate, psi/sec:**	37		

Data Point	Strain (10^{-6})		Load (lb)	Compressive Stress (psi)	Secant Modulus x 10^6 (psi)	Poisson's Ratio	Remarks Failure
	axial	radial					
1	0		0	0	0.00		
2	-32		500	188	5.88		
3	-63		1,000	376	5.97		
4	-96		1,500	564	5.87		
5	-128		2,000	752	5.87		
6	-160		2,500	940	5.87		
7	-192		3,000	1,128	5.87		
8	-226		3,500	1,316	5.82		
9	-260		4,000	1,504	5.78		
10	-298		4,500	1,692	5.68		
11	-336		5,000	1,880	5.59		
12			5,080	1,910			Failure

Comments: The deviation from straightness of the as-received core was greater than 0.020 inches.
Loading rate was selected to target reaching failure between 2 and 15 minutes. Core reached failure at 52 seconds after loading began due to the low strength of the specimen.
Poisson's Ratio was not requested.

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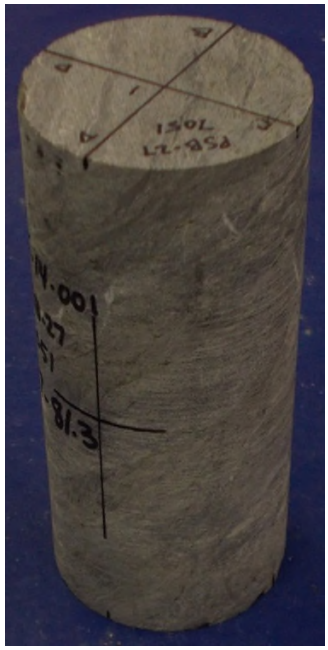
Louisville, TN 37777



1	**Specimen ID**	Boring PSB-27, Sample 7051, (80.7' – 81.3')
	Remarks	Unconfined Compression of Rock with Young's Modulus Specimen Before Test (ASTM D7012, Method D)

2	**Specimen ID**	Boring PSB-27, Sample 7051, (80.7' – 81.3')
	Remarks	Unconfined Compression of Rock with Young's Modulus Specimen After Test (ASTM D7012, Method D)

UNCONFINED COMPRESSION WITH YOUNG'S MODULUS AND POISSON'S RATIO
(ASTM D7012 Method C and D)

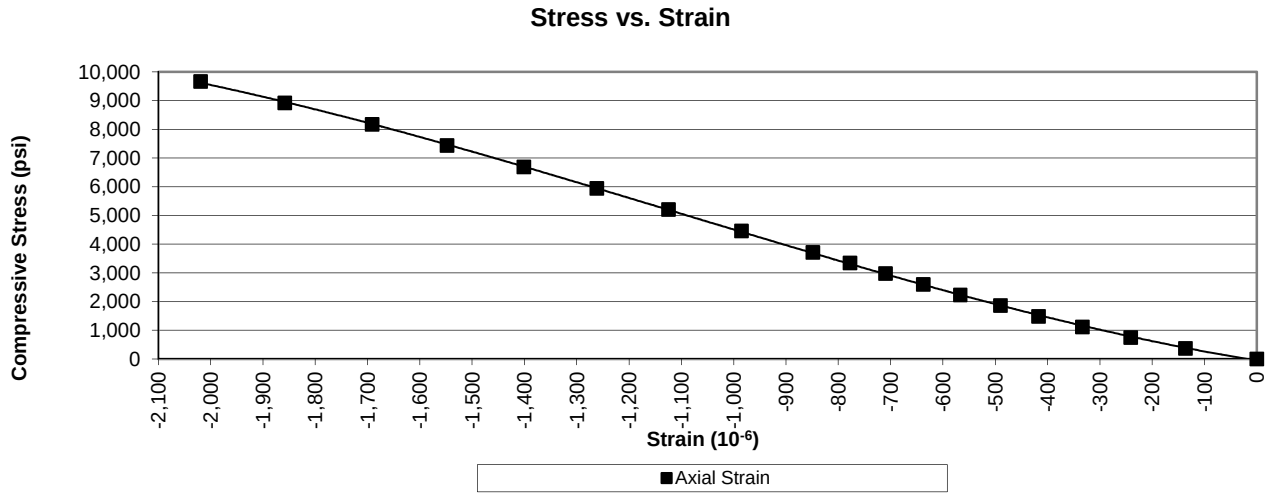
S&ME

1413 Topside Road, Louisville, TN 37777

Project:	Ecusta Mill Site	**Diameter, in.:**	1.85	**Date:**	4/3/2014
Project No.:	3735-14-001	**Length, in.:**	4.19	**Tested by:**	BKP
Boring Id:	PSB-16	**Unit Weight, pcf:**	173.4	**Reviewed by:**	JBB
Sample No:	7040	**Moisture Content, %:**	0.0		
Depth (ft):	45.5 - 46.1	**Load Rate, psi/sec:**	47		

Data Point	Strain (10^{-6})		Load (lb)	Compressive Stress (psi)	Secant Modulus x 10^6 (psi)	Poisson's Ratio	Remarks Failure
	axial	radial					
1	0		0	0	0.00		
2	-136		1,000	372	2.73		
3	-241		2,000	744	3.09		
4	-333		3,000	1,115	3.35		
5	-417		4,000	1,487	3.57		
6	-490		5,000	1,859	3.79		
7	-567		6,000	2,231	3.93		
8	-638		7,000	2,602	4.08		
9	-710		8,000	2,974	4.19		
10	-778		9,000	3,346	4.30		
11	-849		10,000	3,718	4.38		
12	-985		12,000	4,461	4.53		
13	-1,125		14,000	5,205	4.63		
14	-1,262		16,000	5,948	4.71		
15	-1,401		18,000	6,691	4.78		
16	-1,548		20,000	7,435	4.80		
17	-1,691		22,000	8,178	4.84		
18	-1,858		24,000	8,922	4.80		
19	-2,019		26,000	9,665	4.79		
20			27,570	10,249			Failure

Comments: The deviation from straightness of the as-received core was greater than 0.020 inches.
Loading rate was selected to target reaching failure between 2 and 15 minutes.
Poisson's Ratio was not requested.



Ecusta Mill Site
Project #: 3735-14-001
Sheet 1 of 1

1413 Topside Road
Louisville, TN 37777

1	**Specimen ID**	Boring PSB-16, Sample 7040, (44.5' – 46.1')
	Remarks	Unconfined Compression of Rock with Young's Modulus Specimen Before Test (ASTM D7012, Method D)

2	**Specimen ID**	Boring PSB-16, Sample 7040, (44.5' – 46.1')
	Remarks	Unconfined Compression of Rock with Young's Modulus Specimen After Test (ASTM D7012, Method D)

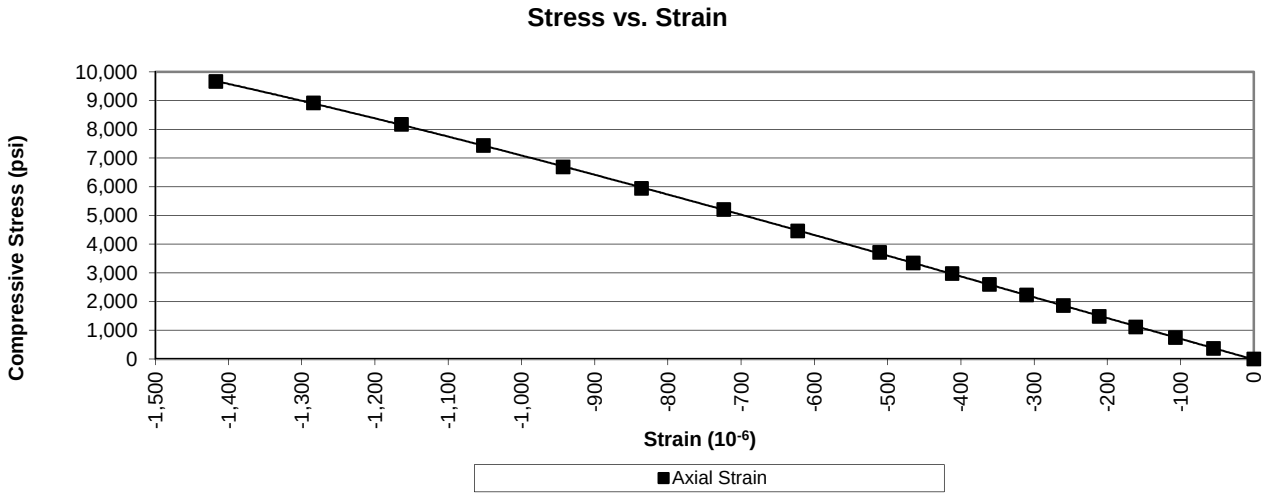
UNCONFINED COMPRESSION WITH YOUNG'S MODULUS AND POISSON'S RATIO
(ASTM D7012 Method C and D)

1413 Topside Road, Louisville, TN 37777

Project:	Ecusta Mill Site	**Diameter, in.:**	1.85	**Date:**	4/3/2014
Project No.:	3735-14-001	**Length, in.:**	4.17	**Tested by:**	BKP
Boring Id:	PSB-17	**Unit Weight, pcf:**	175.4	**Reviewed by:**	JBB
Sample No:	7041	**Moisture Content, %:**	0.0		
Depth (ft):	65.0 - 65.8	**Load Rate, psi/sec:**	60		

Data Point	Strain (10^{-6})		Load (lb)	Compressive Stress (psi)	Secant Modulus x 10^6 (psi)	Poisson's Ratio	Remarks Failure
	axial	radial					
1	0		0	0	0.00		
2	-55		1,000	372	6.76		
3	-107		2,000	744	6.95		
4	-161		3,000	1,115	6.93		
5	-211		4,000	1,487	7.05		
6	-260		5,000	1,859	7.15		
7	-310		6,000	2,231	7.20		
8	-361		7,000	2,602	7.21		
9	-412		8,000	2,974	7.22		
10	-465		9,000	3,346	7.20		
11	-511		10,000	3,718	7.27		
12	-623		12,000	4,461	7.16		
13	-724		14,000	5,205	7.19		
14	-836		16,000	5,948	7.11		
15	-943		18,000	6,691	7.10		
16	-1,052		20,000	7,435	7.07		
17	-1,164		22,000	8,178	7.03		
18	-1,284		24,000	8,922	6.95		
19	-1,417		26,000	9,665	6.82		
20			26,520	9,859			Failure

Comments: Loading rate was selected to target reaching failure between 2 and 15 minutes.
Poisson's Ratio was not requested.



S&ME
1413 Topside Road
Louisville, TN 37777

1	**Specimen ID**	Boring PSB-17, Sample 7041, (65.0' – 65.8')
	Remarks	Unconfined Compression of Rock with Young's Modulus Specimen Before Test (ASTM D7012, Method D)

2	**Specimen ID**	Boring PSB-17, Sample 7041, (65.0' – 65.8')
	Remarks	Unconfined Compression of Rock with Young's Modulus Specimen After Test (ASTM D7012, Method D)

UNCONFINED COMPRESSION WITH YOUNG'S MODULUS AND POISSON'S RATIO
(ASTM D7012 Method C and D)

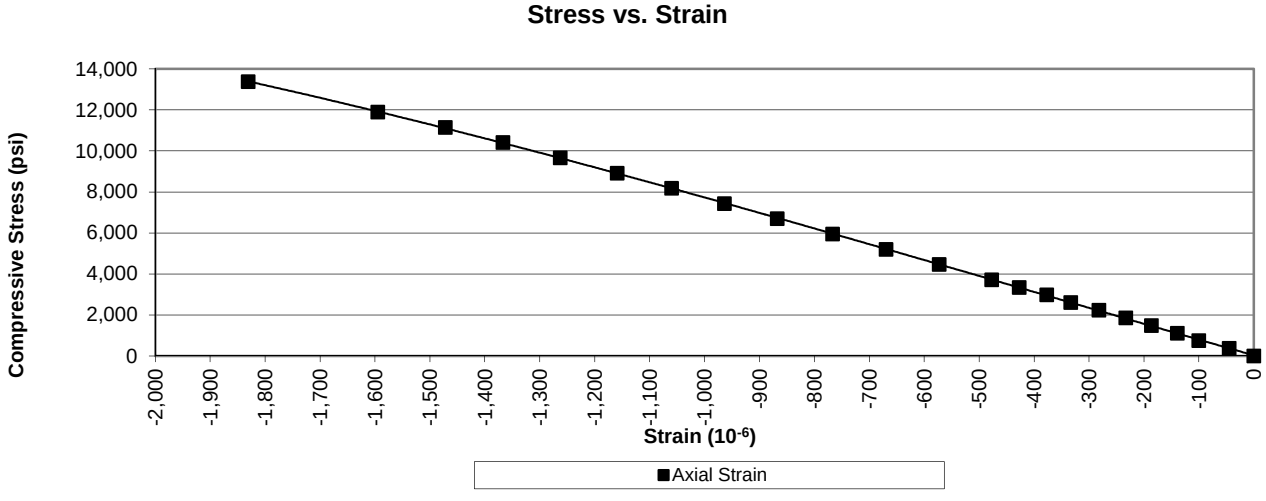
S&ME

1413 Topside Road, Louisville, TN 37777

Project:	Ecusta Mill Site	**Diameter, in.:**	1.85	**Date:**	4/17/2014
Project No.:	3735-14-001	**Length, in.:**	3.92	**Tested by:**	TJW
Boring Id:	PSB-25	**Unit Weight, pcf:**	174.1	**Reviewed by:**	JBB
Sample No:	7048	**Moisture Content, %:**	0.1		
Depth (ft):	82.2 - 83.0	**Load Rate, psi/sec:**	52		

Data Point	Strain (10^{-6})		Load (lb)	Compressive Stress (psi)	Secant Modulus x 10^6 (psi)	Poisson's Ratio	Remarks Failure
	axial	radial					
1	0		0	0	0.00		
2	-45		1,000	372	8.26		
3	-100		2,000	744	7.44		
4	-139		3,000	1,115	8.02		
5	-186		4,000	1,487	7.99		
6	-233		5,000	1,859	7.98		
7	-282		6,000	2,231	7.91		
8	-333		7,000	2,602	7.81		
9	-377		8,000	2,974	7.89		
10	-427		9,000	3,346	7.84		
11	-477		10,000	3,718	7.79		
12	-573		12,000	4,461	7.79		
13	-670		14,000	5,205	7.77		
14	-767		16,000	5,948	7.75		
15	-868		18,000	6,691	7.71		
16	-964		20,000	7,435	7.71		
17	-1,060		22,000	8,178	7.72		
18	-1,159		24,000	8,922	7.70		
19	-1,263		26,000	9,665	7.65		
20	-1,367		28,000	10,409	7.61		
21	-1,472		30,000	11,152	7.58		
22	-1,595		32,000	11,896	7.46		
23	-1,831		36,000	13,383	7.31		
24			37,980	14,119			Failure

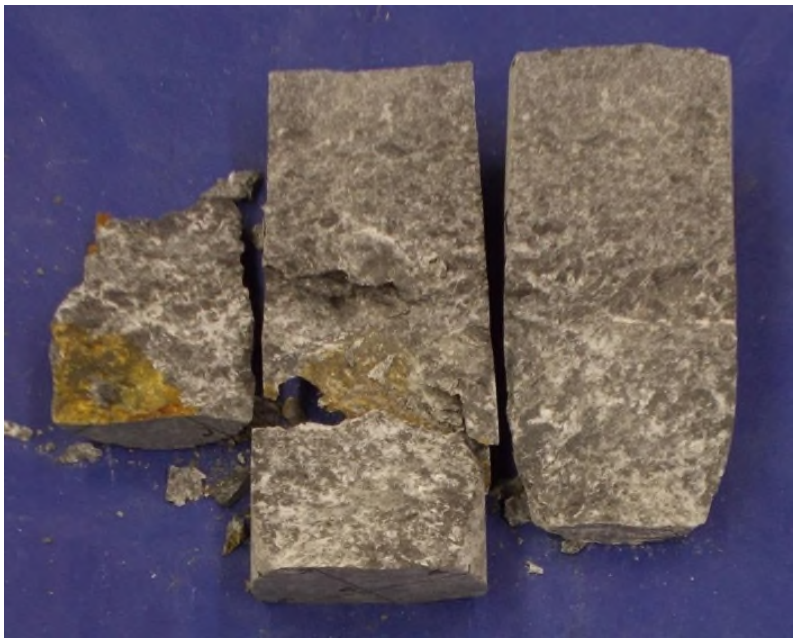
Comments: Loading rate was selected to target reaching failure between 2 and 15 minutes.
Poisson's Ratio was not requested.



Ecusta Mill Site
Project #: 3735-14-001
Sheet 1 of 1

1413 Topside Road
Louisville, TN 37777

1	**Specimen ID**	Boring PSB-25, Sample 7048, (82.2' – 83.0')
	Remarks	Unconfined Compression of Rock with Young's Modulus Specimen Before Test (ASTM D7012, Method D)



2	**Specimen ID**	Boring PSB-25, Sample 7048, (82.2' – 83.0')
	Remarks	Unconfined Compression of Rock with Young's Modulus Specimen After Test (ASTM D7012, Method D)

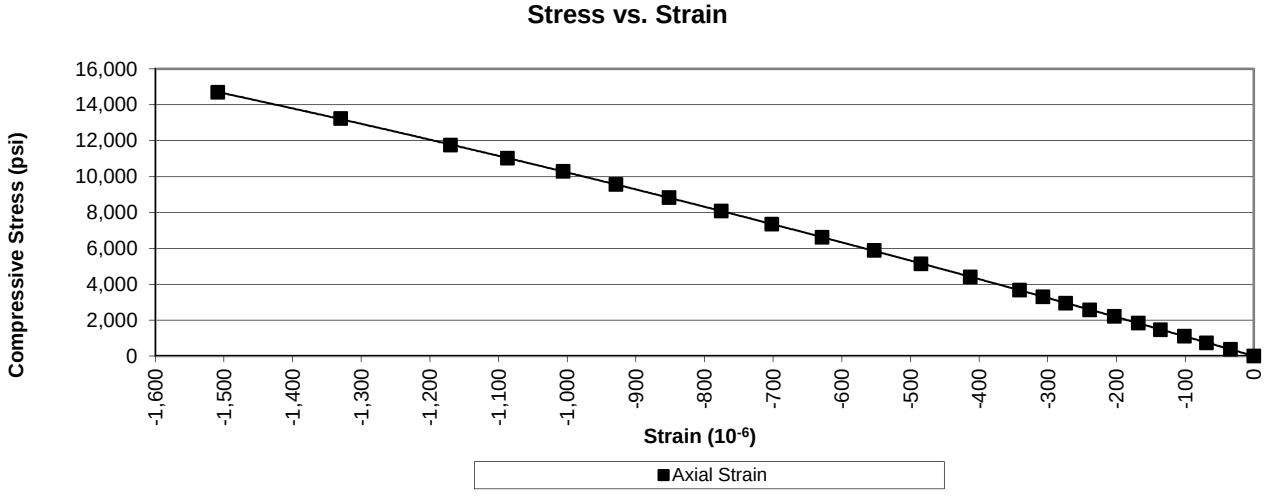
UNCONFINED COMPRESSION WITH YOUNG'S MODULUS AND POISSON'S RATIO
(ASTM D7012 Method C and D)

1413 Topside Road, Louisville, TN 37777

Project:	Ecusta Mill Site	**Diameter, in.:**	1.86	**Date:**	4/17/2014
Project No.:	3735-14-001	**Length, in.:**	4.05	**Tested by:**	TJW
Boring Id:	PSB-24	**Unit Weight, pcf:**	170.6	**Reviewed by:**	JBB
Sample No:	7049	**Moisture Content, %:**	0.0		
Depth (ft):	73.3 - 74.0	**Load Rate, psi/sec:**	66		

Data Point	Strain (10^{-6})		Load (lb)	Compressive Stress (psi)	Secant Modulus x 10^6 (psi)	Poisson's Ratio	Remarks Failure
	axial	radial					
1	0		0	0	0.00		
2	-34		1,000	368	10.81		
3	-69		2,000	735	10.66		
4	-101		3,000	1,103	10.92		
5	-136		4,000	1,471	10.81		
6	-168		5,000	1,838	10.94		
7	-203		6,000	2,206	10.87		
8	-239		7,000	2,574	10.77		
9	-274		8,000	2,941	10.73		
10	-307		9,000	3,309	10.78		
11	-341		10,000	3,677	10.78		
12	-413		12,000	4,412	10.68		
13	-485		14,000	5,147	10.61		
14	-553		16,000	5,882	10.64		
15	-629		18,000	6,618	10.52		
16	-702		20,000	7,353	10.47		
17	-776		22,000	8,088	10.42		
18	-852		24,000	8,824	10.36		
19	-929		26,000	9,559	10.29		
20	-1,006		28,000	10,294	10.23		
21	-1,087		30,000	11,029	10.15		
22	-1,170		32,000	11,765	10.06		
23	-1,330		36,000	13,235	9.95		
24	-1,509		40,000	14,706	9.75		
25			43,910	16,143			Failure

Comments: Loading rate was selected to target reaching failure between 2 and 15 minutes.
Poisson's Ratio was not requested.



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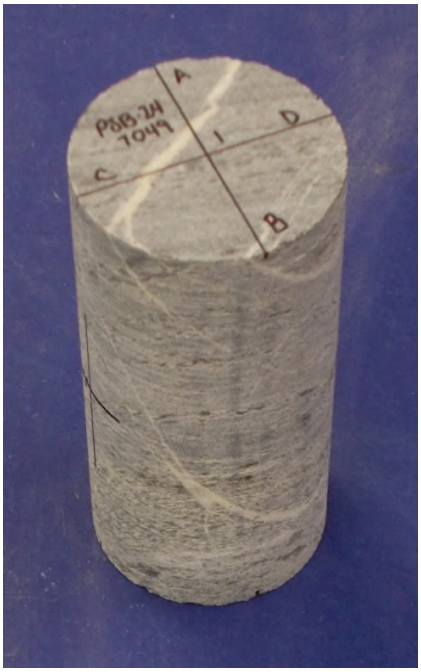
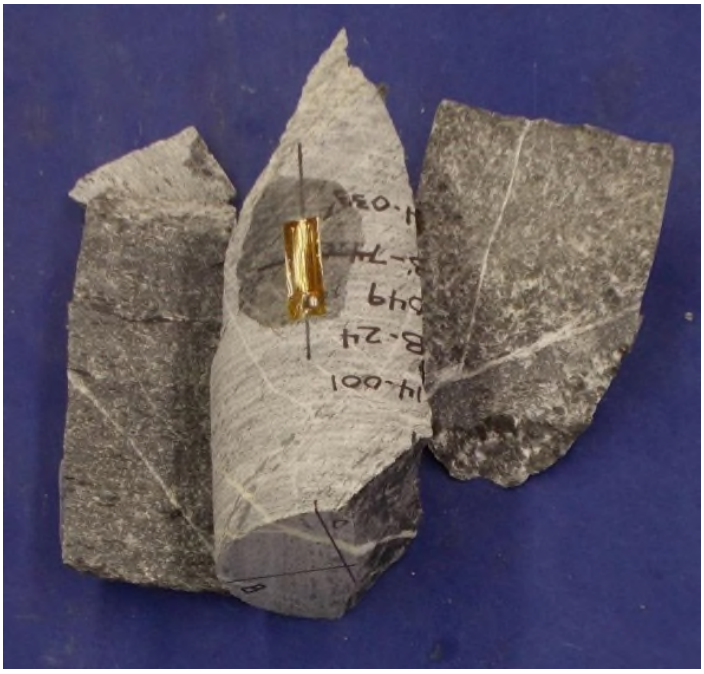
1413 Topside Road
Louisville, TN 37777



1	**Specimen ID**	Boring PSB-24, Sample 7049, (73.3' – 74.0')
	Remarks	Unconfined Compression of Rock with Young's Modulus Specimen Before Test (ASTM D7012, Method D)



2	**Specimen ID**	Boring PSB-24, Sample 7049, (73.3' – 74.0')
	Remarks	Unconfined Compression of Rock with Young's Modulus Specimen After Test (ASTM D7012, Method D)

Form No: TR-D2216-T265-1
Revision No. 0
Revision Date: 02/22/08

Laboratory Determination of Water Content

S&ME

ASTM D 2216 ☐ *AASHTO T 265* ☑ ***Quality Assurance***

9751 Southern Pine Blvd., Charlotte, NC 28273

Project #:	**3735-14-001**	Report Date:	3/24/14
Project Name:	Ecusta Mill Site	Test Date(s):	3/21/-24/14
Client Name:	Shaw Environmental & Infrastructure, Inc.		
Client Address:	11560 Great Oaks Way, Suite 500, Alpheretta, GA		
Sample by:	Shaw	Sample Date(s):	3/18-20/14
Sampling Method:	NA	Drill Rig :	NA

Method: **A (1%)** ☐ **B (0.1%)** ☑ *Balance ID.* ***3222*** *Calibration Date:* ***6/18/13***

Boring No.	Sample No.	Sample Depth	Tare #	Tare Weight	Tare Wt.+ Wet Wt	Tare Wt. + Dry Wt	Water Weight	Percent Moisture	Note
		ft. or m.		grams	grams	grams	grams	%	
PSB-16	7040	1-8'	G-1	83.18	547.06	442.16	104.90	**29.2%**	
PSB-16	7040	8-19'	S-4	81.73	623.20	526.79	96.41	**21.7%**	
PSB-16	7040	19-38'	PAUL	81.83	699.47	591.30	108.17	**21.2%**	
PSB-17	7041	1-11'	G-3	81.42	619.84	437.67	182.17	**51.1%**	
PSB-17	7041	11-18'	G-10	81.70	729.85	552.84	177.01	**37.6%**	
PSB-17	7041	18-38'	T-1	83.65	704.37	616.51	87.86	**16.5%**	
PSB-18	7042	1-10'	S-9	83.13	763.38	660.23	103.15	**17.9%**	*
PSB-19	7043	1-7'	T-8	81.58	717.79	605.77	112.02	**21.4%**	*

Notes / Deviations / References

*PSB-18 Sample contained paper, wood and metal

*PSB-19 Sample contained wood

AASHTO T 265: Laboratory Determination of Moisture Content of Soils

Karen Warner	Karen Warner		3/24/14
Technician Name	*Signature*	*Certification Type / No.*	*Date*
Ron Harris/ Ron Rothfuss		Staff Professional	3/25/2014
Technical Responsibility	*Signature*	*Position*	*Date*

Form No: TR-D2216-T265-1
Revision No. 0
Revision Date: 02/22/08

Laboratory Determination of Water Content

S&ME

ASTM D 2216 ☐ *AASHTO T 265* ☑ ***Quality Assurance***

9751 Southern Pine Blvd., Charlotte, NC 28273

Project #:	**3735-14-001**	Report Date:	3/31/14
Project Name:	Ecusta Mill Site	Test Date(s):	3/30-31/14
Client Name:	Shaw Environmental & Infrastructure, Inc.		
Client Address:	11560 Great Oaks Way, Suite 500, Alpheretta, GA		
Sample by:	Shaw	Sample Date(s):	3/18-27/14
Sampling Method:	NA	Drill Rig :	NA

Method: **A (1%)** ☐ **B (0.1%)** ☑ *Balance ID.* *3222* *Calibration Date:* ***6/18/13***

Boring No.	Sample No.	Sample Depth	Tare #	Tare Weight	Tare Wt.+ Wet Wt	Tare Wt. + Dry Wt	Water Weight	Percent Moisture	Note
		ft. or m.		grams	grams	grams	grams	%	
PSB25	7048	1-9'	T-6	81.46	640.40	560.51	79.89	**16.7%**	
PSB25	7048	9-21'	S-1	81.56	830.38	723.66	106.72	**16.6%**	
PSB25	7048	21-38'	G-1	83.24	708.30	600.93	107.37	**20.7%**	
PSB24	7049	1-8'	T-8	81.59	573.83	513.61	60.22	**13.9%**	
PSB24	7049	8-20'	S-5	82.39	860.19	731.31	128.88	**19.9%**	
PSB24	7049	20-37'	G-2	82.32	939.46	773.08	166.38	**24.1%**	
PSB23	7047	1-11'	G-11	83.30	580.63	506.98	73.65	**17.4%**	
PSB20	7044	1-5'	T-4	81.90	596.91	537.36	59.55	**13.1%**	
PSB21	7045	1-9'	T-9	81.79	599.50	498.91	100.59	**24.1%**	
PSB22	7046	1-7'	T-7	82.00	657.09	563.24	93.85	**19.5%**	

Notes / Deviations / References

AASHTO T 265: Laboratory Determination of Moisture Content of Soils

Karen Warner	Karen Warner		3/31/14
Technician Name	*Signature*	*Certification Type / No.*	*Date*
Ron Harris/ Ron Rothfuss		Staff Professional	3/31/14
Technical Responsibility	*Signature*	*Position*	*Date*

Form No: TR-D2216-T265-1
Revision No. 0
Revision Date: 02/22/08

Laboratory Determination of Water Content

S&ME

ASTM D 2216 ☐ *AASHTO T 265* ☑ ***Quality Assurance***

9751 Southern Pine Blvd., Charlotte, NC 28273

Project #:	**3735-14-001**	Report Date:	2/26/14
Project Name:	Ecusta Mill Site	Test Date(s):	2/25-26/14
Client Name:	Shaw Environmental & Infrastructure, Inc.		
Client Address:	11560 Great Oaks Way, Suite 500, Alpheretta, GA		
Sample by:	Shaw	Sample Date(s):	2/19-20/14
Sampling Method:	NA	Drill Rig :	NA

Method: **A (1%)** ☐ **B (0.1%)** ☑ *Balance ID.* ***3222*** *Calibration Date:* ***6/18/13***

Boring No.	Sample No.	Sample Depth	Tare #	Tare Weight	Tare Wt.+ Wet Wt	Tare Wt. + Dry Wt	Water Weight	Percent Moisture	Note
		ft. or m.		grams	grams	grams	grams	%	
PSB1	7025	0-4'	O	16.84	663.97	567.70	96.27	**17.5%**	
PSB1	7025	4-10'	KT	16.63	873.07	716.30	156.77	**22.4%**	
PSB8	7032	1-9'	RR	16.29	937.47	723.51	213.96	**30.3%**	
PSB8	7032	9-12'	FISH	105.23	689.61	512.64	176.97	**43.4%**	
PSB9	7033	1-5'	BE	16.53	969.30	750.83	218.47	**29.8%**	
PSB9	7033	5-12'	K-18	16.41	892.30	694.65	197.65	**29.1%**	
PSB10	7034	4-11'	L	16.56	970.06	828.17	141.89	**17.5%**	
PSB11	7035	1-7'	K-10	16.47	952.01	765.80	186.21	**24.9%**	
PSB12	7036	1-5'	K-22	16.84	878.75	594.09	284.66	**49.3%**	
PSB12	7036	5-11'	K-23	16.35	1010.65	778.43	232.22	**30.5%**	

Notes / Deviations / References

PSB13-7037 (1-7') Not Tested Due to Strong Unknown Odor.

AASHTO T 265: Laboratory Determination of Moisture Content of Soils

Karen Warner
Technician Name

Signature

Certification Type / No.

3/7/14
Date

Ron Harris/ Ron Rothfuss
Technical Responsibility

Signature

Staff Professional I
Position

3/7/14
Date

Form No: TR-D2216-T265-1
Revision No. 0
Revision Date: 02/22/08

Laboratory Determination of Water Content

S&ME

ASTM D 2216 ☐ *AASHTO T 265* ☑ ***Quality Assurance***

9751 Southern Pine Blvd., Charlotte, NC 28273

Project #:	**3735-14-001**	Report Date:	3/4/14
Project Name:	Ecusta Mill Site	Test Date(s):	3/3-4/14
Client Name:	Shaw Environmental & Infrastructure, Inc.		
Client Address:	11560 Great Oaks Way, Suite 500, Alpheretta, GA		
Sample by:	Shaw	Sample Date(s):	2/21-26/14
Sampling Method:	NA	Drill Rig :	NA

Method: **A (1%)** ☐ **B (0.1%)** ☑ *Balance ID.* ***3222*** *Calibration Date:* ***6/18/13***

Boring No.	Sample No.	Sample Depth	Tare #	Tare Weight	Tare Wt.+ Wet Wt	Tare Wt. + Dry Wt	Water Weight	Percent Moisture	Note
		ft. or m.		grams	grams	grams	grams	%	
PBS15	7038	1-5'	G-3	81.30	701.06	604.36	96.70	**18.5%**	
PSB15	7038	5-10'	G-1	83.14	733.78	580.70	153.08	**30.8%**	
PSB14	7039	1-7'	G-12	83.49	841.85	727.28	114.57	**17.8%**	
PBS14	7039	7-18'	T-4	81.87	1068.77	901.89	166.88	**20.4%**	
PSB7	7031	1-11'	S-4	81.80	764.38	616.72	147.66	**27.6%**	
PSB6	7030	1-11'	POT	113.22	770.99	591.94	179.05	**37.4%**	
PSB5	7029	1-7'	CT	112.06	821.51	648.41	173.10	**32.3%**	
PSB5	7029	7-11'	OX	112.10	876.21	676.22	199.99	**35.5%**	
PSB4	7028	1-7'	P-2	112.72	890.42	666.50	223.92	**40.4%**	
PSB4	7028	7-11'	P-1	112.51	766.31	570.15	196.16	**42.9%**	
PSB3	7027	1-7'	CAT	104.31	880.13	639.85	240.28	**44.9%**	
PSB3	7027	7-11'	ANT	111.38	569.20	459.78	109.42	**31.4%**	
PSB2	7026	1-7'	QQ	112.44	870.92	740.17	130.75	**20.8%**	
PSB2	7026	7-13'	BE	16.46	851.37	605.03	246.34	**41.9%**	

Notes / Deviations / References

AASHTO T 265: Laboratory Determination of Moisture Content of Soils

Karen Warner
Technician Name

Signature

Certification Type / No.

3/4/14
Date

Ron Harris/ Ron Rothfuss
Technical Responsibility

Signature

Staff Professional
Position

3/7/14
Date

Form No: TR-D2216-T265-1
Revision No. 0
Revision Date: 02/22/08

Laboratory Determination of Water Content

S&ME

ASTM D 2216 ☐ *AASHTO T 265* ☑ ***Quality Assurance***

9751 Southern Pine Blvd., Charlotte, NC 28273

Project #:	**3735-14-001**	Report Date:	3/6/14
Project Name:	Ecusta Mill Site	Test Date(s):	3/4-6/14
Client Name:	Shaw Environmental & Infrastructure, Inc.		
Client Address:	11560 Great Oaks Way, Suite 500, Alpheretta, GA		
Sample by:	Shaw	Sample Date(s):	2/27-28/14
Sampling Method:	NA	Drill Rig :	NA

Method: **A (1%)** ☐ **B (0.1%)** ☑ *Balance ID.* ***3222*** *Calibration Date:* ***6/18/13***

Boring No.	Sample No.	Sample Depth	Tare #	Tare Weight	Tare Wt.+ Wet Wt	Tare Wt. + Dry Wt	Water Weight	Percent Moisture	Note
		ft. or m.		grams	grams	grams	grams	%	
PSB26	7050	1-11'	Paul	81.80	619.18	519.97	99.21	**22.6%**	
PSB26	7050	11-17'	T-4	81.88	814.03	625.54	188.49	**34.7%**	
PSB27	7051	1-12'	G-12	83.30	736.42	617.51	118.91	**22.3%**	
PSB27	7051	12-20'	G-12	83.15	855.39	646.37	209.02	**37.1%**	
PSB27	7051	20-25'	G-3	81.30	1001.04	856.33	144.71	**18.7%**	
PSB27	7051	25-35'	S-4	81.81	799.82	690.42	109.40	**18.0%**	

Notes / Deviations / References

AASHTO T 265: Laboratory Determination of Moisture Content of Soils

Karen Warner	Karen Warner		3/6/14
Technician Name	*Signature*	*Certification Type / No.*	*Date*
Ron Harris/ Ron Rothfuss	Ron Harris	Staff Professional	3/13/2014
Technical Responsibility	*Signature*	*Position*	*Date*

Form No. TR-D698-2
Revision No. : 0
Revision Date: 11/21/07

Moisture - Density Report

S&ME

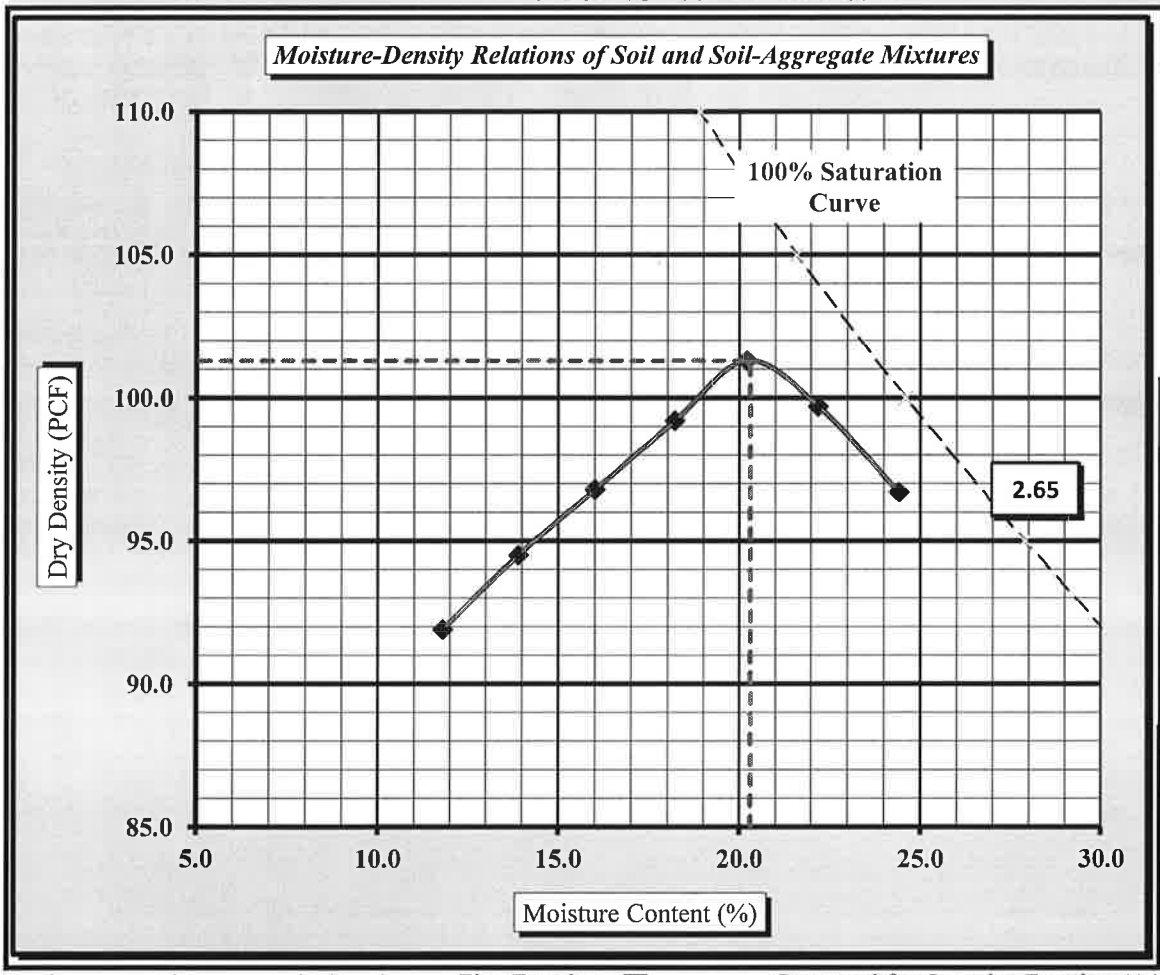
Quality Assurance

S&ME, Inc. ~ 9751 Southern Pine Boulevard ~ Charlotte, NC 28273

S&ME Project #:	**3735-14-001**			Report Date:	3/6/14
Project Name:	Ecusta Mill Site			Test Date(s):	2/28/14-3/6/14
Client Name:	Shaw Environmental & Infrastructure, Inc.				
Client Address:	11560 Great Oaks Way, Suite 550, Alpharetta, GA				
Boring #:	Area 1	Sample #:	P-2	Sample Date:	2/21-26/14
Location:	On-site	Offset:	NI	Depth:	NI
Sample Description:	Red Black Brown Silty Coarse to Fine Sand				

Maximum Dry Density **101.3** **PCF.** **Optimum Moisture Content** **20.3%**

AASHTO T99 -- Method A



Soil Properties	
Natural Moisture Content	**ND**
Specific Gravity of Soil (D854)	**ND**
Liquid Limit	**ND**
Plastic Limit	**ND**
Plastic Index	**ND**

% Passing	
3/4"	99.7%
3/8"	ND
#4	95.7%

Oversize Fraction	
Bulk Gravity	
% Moisture	
% Oversize	
MDD	
Opt. MC	

Moisture-Density Curve Displayed: Fine Fraction ☒ Corrected for Oversize Fraction (ASTM D 4718) ☐

Sieve Size used to separate the Oversize Fraction: #4 Sieve ☒ 3/8 inch Sieve ☐ 3/4 inch Sieve ☐

Mechanical Rammer ☒ Manual Rammer ☐ Moist Preparation ☐ Dry Preparation ☒

References / Comments / Deviations: ND = Not determined NI = Information was not provided

Technician: Jennifer Olsen Jennifer Olsen Date: 3/6/14

ASTM D 2216: Laboratory Determination of Water (Moisture) Content of Soil and Rock by Mass

AASHTO T 99: Moisture-Density Relations of Soil Using a 5.5 lb. Rammer and a 12" Drop

Ron Harris / Ron Rothfuss		Staff Professional	3/7/14
Technical Responsibility	*Signature*	*Position*	*Date*

Form No. TR-D698-2
Revision No. : 0
Revision Date: 11/21/07

Moisture - Density Report

S&ME

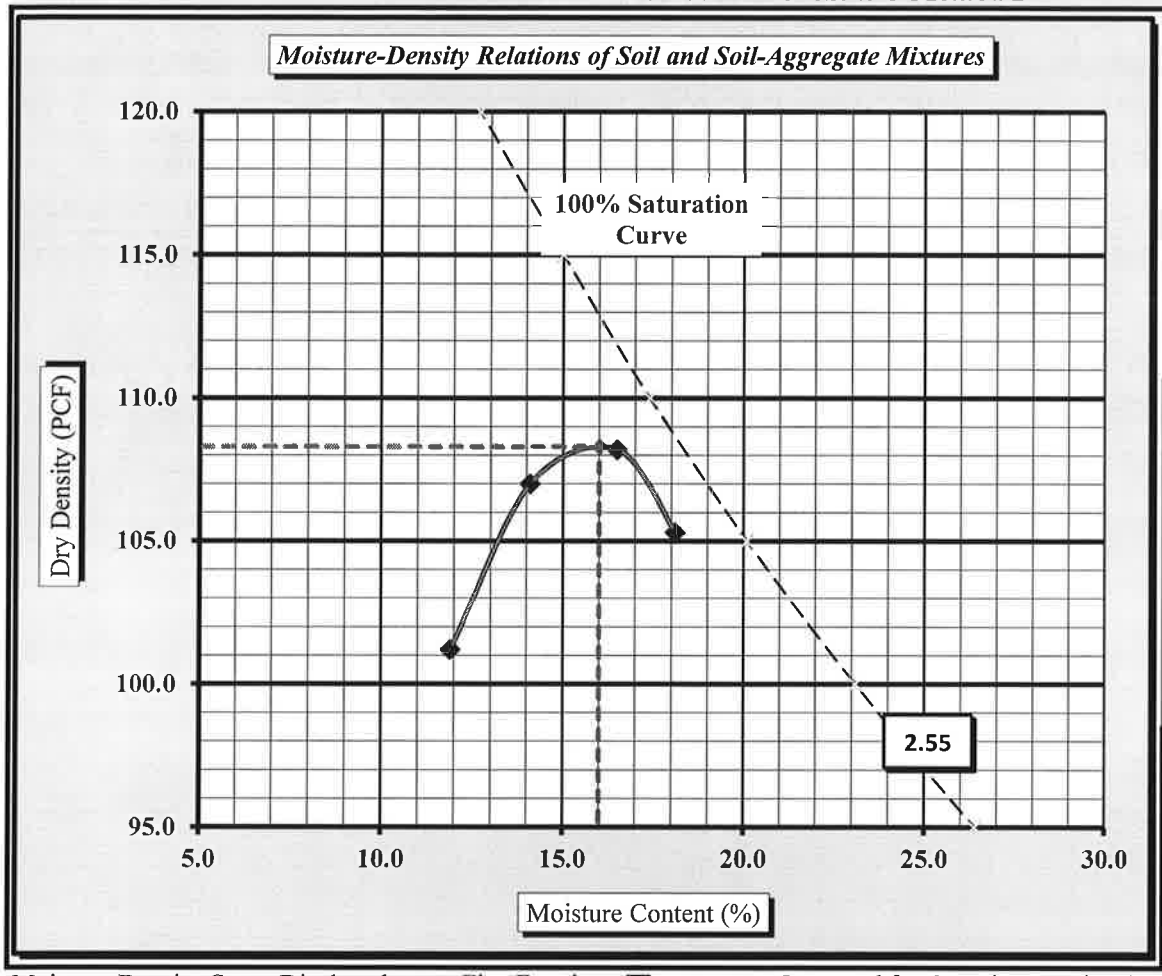
Quality Assurance

S&ME, Inc. ~ 9751 Southern Pine Boulevard ~ Charlotte, NC 28273

S&ME Project #:	**3735-14-001**	Report Date:	2/27/14
Project Name:	Ecusta Mill Site	Test Date(s):	2/24-27/14
Client Name:	Shaw Environmental & Infrastructure, Inc.		
Client Address:	11560 Great Oaks Way, Suite 500, Alpharetta, GA		
Boring #: Area 2	Sample #: P-1	Sample Date:	2/19-20/14
Location: On-site	Offset: NI	Depth:	NI
Sample Description:	Black Gray Clayey Silty Coarse to Fine Sand with Gravel		

Maximum Dry Density 108.3 PCF. **Optimum Moisture Content 16.0%**

AASHTO T99 -- AASHTO Method D



Soil Properties	
Natural Moisture Content	ND
Specific Gravity of Soil (D854)	ND
Liquid Limit	ND
Plastic Limit	ND
Plastic Index	ND

% Passing	
3/4"	97.1%
3/8"	ND
#4	83.8%

Oversize Fraction	
Bulk Gravity	
% Moisture	
% Oversize	
MDD	
Opt. MC	

Moisture-Density Curve Displayed: Fine Fraction ☒ Corrected for Oversize Fraction (ASTM D 4718) ☐

Sieve Size used to separate the Oversize Fraction: #4 Sieve ☐ 3/8 inch Sieve ☐ 3/4 inch Sieve ☒

Mechanical Rammer ☒ Manual Rammer ☐ Moist Preparation ☐ Dry Preparation ☒

References / Comments / Deviations: ND = Not determined NI = Information was not provided

Technician: Jennifer Olsen Jennifer L Olsen Date: 2/27/14

ASTM D 2216: Laboratory Determination of Water (Moisture) Content of Soil and Rock by Mass

AASHTO T 99: Moisture-Density Relations of Soil Using a 5.5 Lb Rammer and a 12" Drop

Ron Harris / Ron Rothfuss — *Technical Responsibility*

Signature

Staff Professional — *Position*

3/7/14 — *Date*

Form No. TR-D698-2
Revision No. : 0
Revision Date: 11/21/07

Moisture - Density Report

S&ME

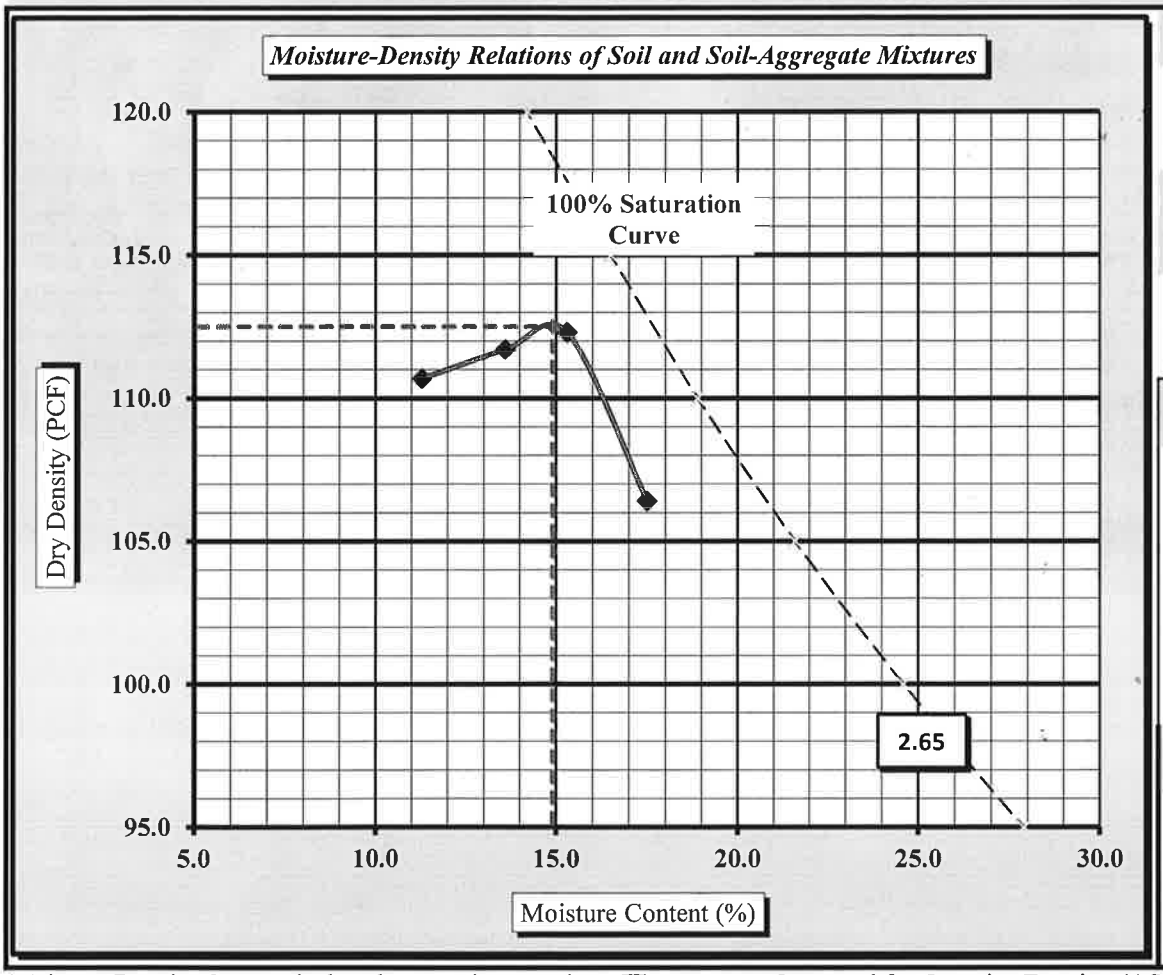
Quality Assurance

S&ME, Inc. ~ 9751 Southern Pine Boulevard ~ Charlotte, NC 28273

S&ME Project #:	**3735-14-001**			Report Date:	4/3/14
Project Name:	Ecusta Mill Site			Test Date(s):	3/28/14-4/3/14
Client Name:	NI				
Client Address:	NI				
Boring #:	Area 3	Sample #:	P-3	Sample Date:	3/18-27/14
Location:	On-site	Offset:	NI	Depth:	NI
Sample Description:	Black Brown Silty Coarse to Fine Sand with Gravel				

Maximum Dry Density 112.5 PCF. **Optimum Moisture Content 14.9%**

AASHTO T99 -- AASHTO Method D



Soil Properties	
Natural Moisture Content	**ND**
Specific Gravity of Soil (D854)	**ND**
Liquid Limit	**ND**
Plastic Limit	**ND**
Plastic Index	**ND**

% Passing	
3/4"	96.5%
3/8"	ND
#4	84.8%

Oversize Fraction	
Bulk Gravity	
% Moisture	
% Oversize	
MDD	
Opt. MC	

Moisture-Density Curve Displayed: Fine Fraction ☒ Corrected for Oversize Fraction (ASTM D 4718) ☐

Sieve Size used to separate the Oversize Fraction: #4 Sieve ☒ 3/8 inch Sieve ☐ 3/4 inch Sieve ☒

Mechanical Rammer ☒ Manual Rammer ☐ Moist Preparation ☐ Dry Preparation ☒

References / Comments / Deviations: ND = Not determined NI = Information was not provided

Technician: Jennifer Olsen Jennifer Olsen Date: 4/3/14

ASTM D 2216: Laboratory Determination of Water (Moisture) Content of Soil and Rock by Mass

AASHTO T 99: Moisture-Density Relations of Soil Using a 5.5 Lb. Hammer and a 12" Drop

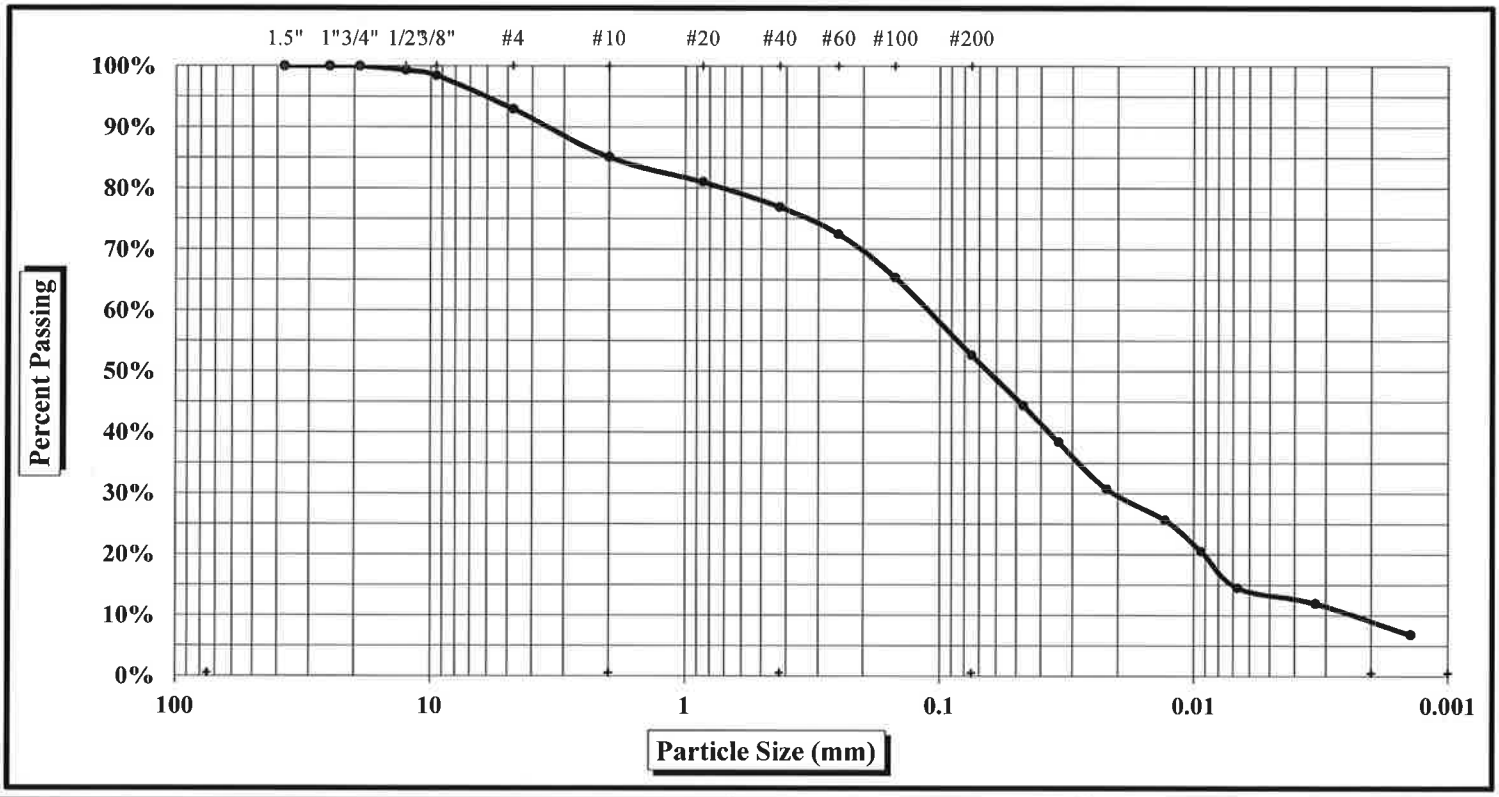
Ron Harris / Ron Rothfuss		Staff Professional	4.4.2014
Technical Responsibility	*Signature*	*Position*	*Date*

Particle Size Analysis of Soils

AASHTO T 88

S&ME Project #:	**3735-14-001**	Report Date:	3/7/14
Project Name:	**Ecusta Mill Site**	Test Date(s):	2/25-3/7/14
Client Name:	Shaw Environmental & Infrastructure, Inc.		
Client Address:	11560 Great Oaks Way, Suite 500, Alpheretta, GA		

Boring #:	PSB1	Sample #: 7025	Sample Date: 2/19-20/14
Location:	On Site	Offset: NA	Depth: 0-4'
Sample Description:	A-4		



As Defined by AASHTO		Fine Sand	< 0.425 mm and > 0.075 mm
Gravel	< 75 mm and > 2.00 mm	Silt	< 0.075 and > 0.002 mm
Coarse Sand	< 2.00 mm and > 0.425 mm	Clay	< 0.002 mm

Gravel	14.9%	Coarse Sand	8.2%	Silt	45%
Maximum Particle Size	1/2"	Fine Sand	24.2%	Clay	8%
Apparent Relative Density(Assumed)	2.650	Moisture Content	17.5%	Silt & Clay (% Passing #200)	52.7%
Liquid Limit	31	Plastic Limit	26	Plastic Index	5

Description of Sand & Gravel Particles: Rounded ☐ Angular ☒ Hard & Durable ☒ Soft ☐ Weathered & Friable ☐

Mechanical Stirring Apparatus (A) Length of Dispersion Period: 1 min. Dispersing Agent: Sodium Hexametaphosphate: 40 g./ Liter

References: AASHTO T88: Particle Size Analysis of Soils AASHTO T87: Dry Preparation of Disturbed Soil and Soil Aggregate Samples for Test

AASHTO T89: Determining the Liquid Limit of Soils AASHTO T90: Determining the Plastic Limit & Plasticity Index of Soils

AASHTO M 145: The Classification of Soils and Soil Aggregate Mixtures for Highway Construction Purposes ASTM D 854: Specific Gravity of Soils

AASHTO T265: Laboratory Determination of Moisture Content of Soils

Technical Responsibility: Ron Harris Signature 3/7/14 Signature

Form No. TR-D4318-T89-90
Revision No. 0
Revision Date: 11/20/07

Liquid Limit, Plastic Limit, and Plastic Index

S&ME

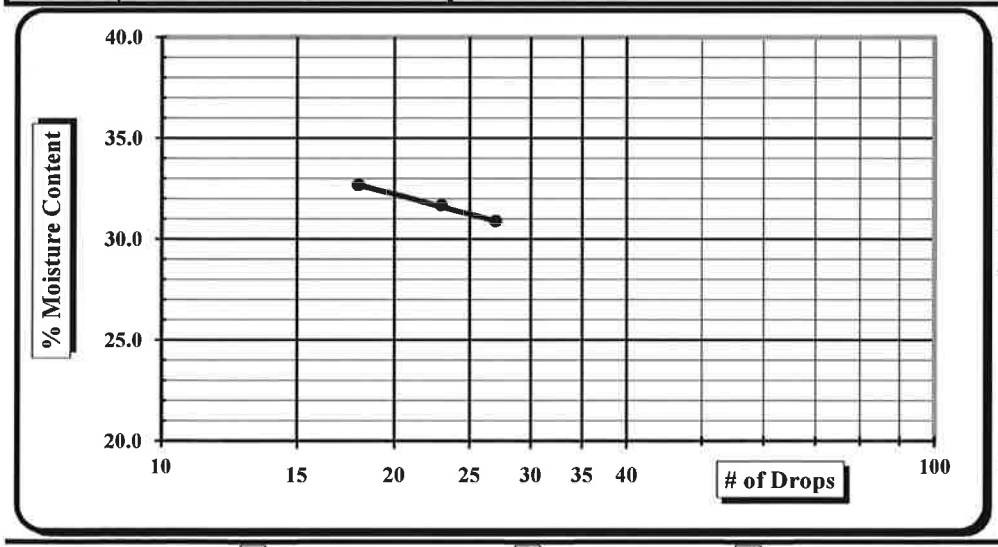
Another code *ASTM D 4318* ☐ *AASHTO T 89* ☒ *AASHTO T 90* ☒ ***Quality Assurance***

S&ME, Inc. ~9751 Southern Pine Boulevard,Charlotte, NC 28273

Project #:	**3735-14-001**	Report Date:	3/7/14
Project Name:	Ecusta Mill Site	Test Date(s)	2/24-3/7/14
Client Name:	Shaw Environmental & Infrastructure, Inc.		
Client Address:	11560 Great Oaks Way, Suite 500, Alpheretta, GA		
Boring #:	PSB1	Sample #: 7025	Sample Date: 2/19-20/14
Location:	On Site	Offset: NA	Elevation: 0-4'
Sample Description:	A-4		

Type and Specification	*S&ME ID #*	*Cal Date:*	*Type and Specification*	*S&ME ID #*	*Cal Date:*
Balance (0.01 g)	3222	6/18/2013	Grooving tool	20835	7/16/2013
LL Apparatus	3653	1/21/2014	Grooving tool		
Oven	11702	1/21/2014	Grooving tool		

Pan #		Liquid Limit						Plastic Limit		
	Tare #:	40	2	17				Z	23	
A	Tare Weight	15.78	15.75	13.96				16.87	14.06	
B	Wet Soil Weight + A	28.66	29.01	28.31				25.44	23.51	
C	Dry Soil Weight + A	25.62	25.82	24.77				23.68	21.61	
D	Water Weight (B-C)	3.04	3.19	3.54				1.76	1.90	
E	Dry Soil Weight (C-A)	9.84	10.07	10.81				6.81	7.55	
F	% Moisture (D/E)*100	30.9%	31.7%	32.7%				25.8%	25.2%	
N	# OF DROPS	27	23	18				*Moisture Contents determined by AASHTO T 245*		
LL	LL = **F** * FACTOR									
Ave.	*Average*							**25.5%**		



One Point Liquid Limit			
N	**Factor**	**N**	**Factor**
20	0.974	26	1.005
21	0.979	27	1.009
22	0.985	28	1.014
23	0.99	29	1.018
24	0.995	30	1.022
25	1.000		

NP, Non-Plastic ☐
Liquid Limit **31**
Plastic Limit **26**
Plastic Index **5**
Group Symbol **A-4**
Multipoint Method ☑
One-point Method ☐

Wet Preparation ☐ Dry Preparation ☑ Air Dried ☑ *Estimate the % Retained on the #40 Sieve:*

Notes / Deviations / References:

AASHTO T90: Determining the Plastic Limit & Plastic Index of Soils *AASHTO T89: Determining the Liquid Limit of Soils*

Karen Warren — *Technician Name* — 3/7/14 *Date*
Technical Responsibility — 3/7/14 *Date*

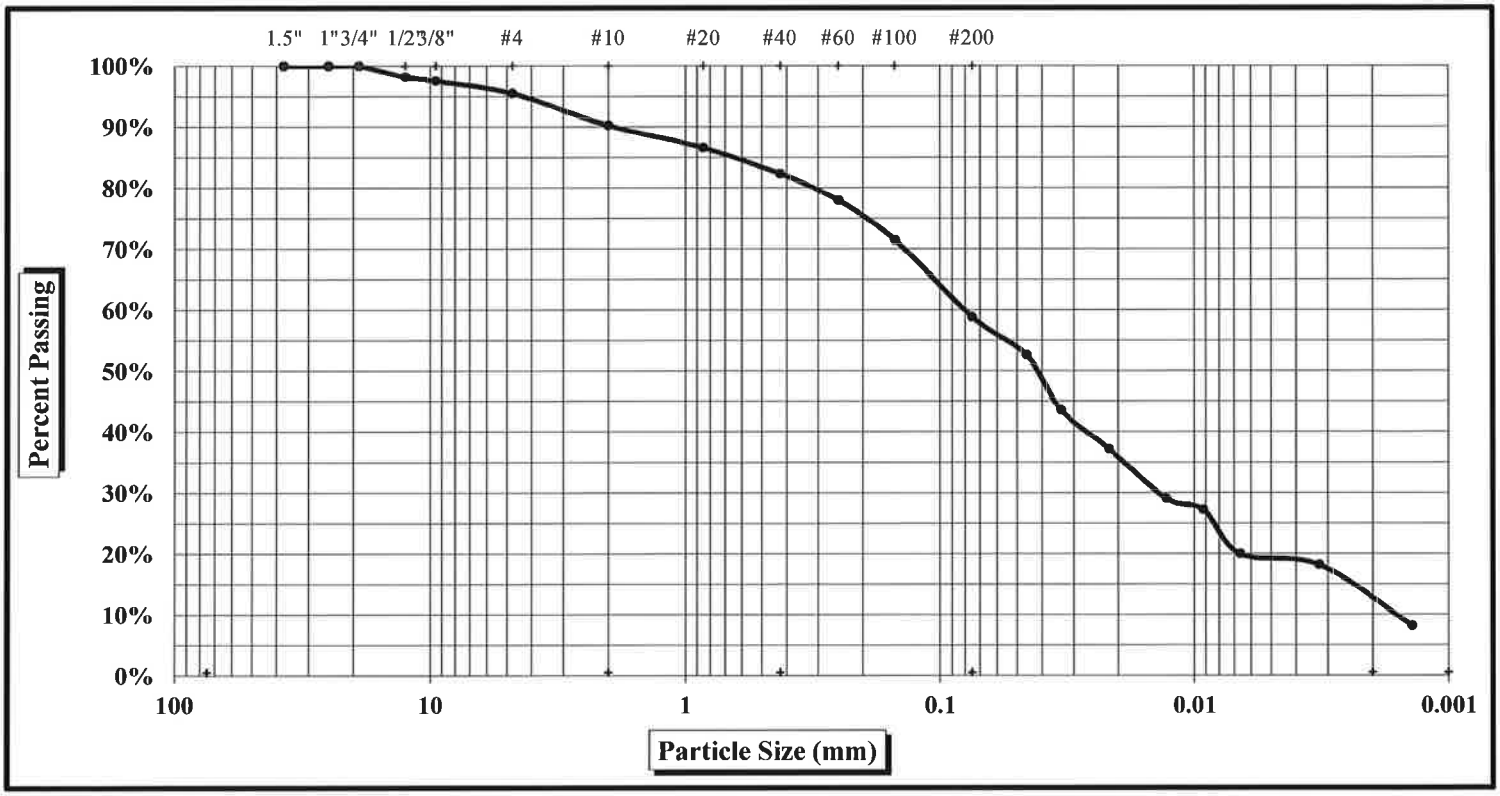
Particle Size Analysis of Soils

AASHTO T 88

S&ME

S&ME Project #:	**3735-14-001**	Report Date:	3/7/14
Project Name:	**Ecusta Mill Site**	Test Date(s):	2/25-3/7/14
Client Name:	Shaw Environmental & Infrastructure, Inc.		
Client Address:	11560 Great Oaks Way, Suite 500, Alpheretta, GA		

Boring #:	PSB1	Sample #:	7025	Sample Date:	2/19-20/14
Location:	On Site	Offset:	NA	Depth:	4-10'
Sample Description:	A-4				



As Defined by AASHTO		Fine Sand	< 0.425 mm and > 0.075 mm
Gravel	< 75 mm and > 2.00 mm	Silt	< 0.075 and > 0.002 mm
Coarse Sand	< 2.00 mm and > 0.425 mm	Clay	< 0.002 mm

Gravel	9.7%	Coarse Sand	7.9%	Silt	46%
Maximum Particle Size	1/2"	Fine Sand	23.5%	Clay	13%
Apparent Relative Density(Assumed)	2.650	Moisture Content	22.4%	Silt & Clay (% Passing #200)	58.8%
Liquid Limit	34	Plastic Limit	27	Plastic Index	7

Description of Sand & Gravel Particles: Rounded ☐ Angular ☒ Hard & Durable ☒ Soft ☐ Weathered & Friable ☐

Mechanical Stirring Apparatus (A) Length of Dispersion Period: 1 min. Dispersing Agent: Sodium Hexametaphosphate: 40 g./ Liter

References: AASHTO T88: Particle Size Analysis of Soils AASHTO T87: Dry Preparation of Disturbed Soil and Soil Aggregate Samples for Test

AASHTO T89: Determining the Liquid Limit of Soils AASHTO T90: Determining the Plastic Limit & Plasticity Index of Soils

AASHTO M 145: The Classification of Soils and Soil Aggregate Mixtures for Highway Construction Purposes ASTM D 854: Specific Gravity of Soils

AASHTO T265: Laboratory Determination of Moisture Content of Soils

Technical Responsibility: Ron Harris Signature 3/7/14 Signature

Form No. TR-D4318-T89-90
Revision No. 0
Revision Date: 11/20/07

Liquid Limit, Plastic Limit, and Plastic Index

S&ME

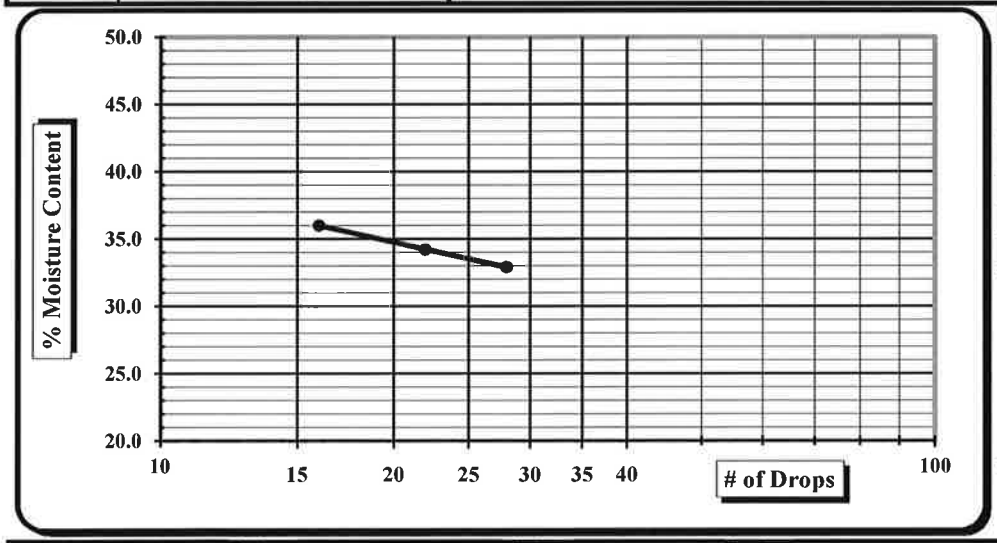
Another code *ASTM D 4318* ☐ *AASHTO T 89* ☒ *AASHTO T 90* ☒ ***Quality Assurance***

S&ME, Inc. ~9751 Southern Pine Boulevard,Charlotte, NC 28273

Project #:	**3735-14-001**	Report Date:	3/7/14
Project Name:	Ecusta Mill Site	Test Date(s)	2/24-3/7/14
Client Name:	Shaw Environmental & Infrastructure, Inc.		
Client Address:	11560 Great Oaks Way, Suite 500, Alpheretta, GA		
Boring #:	PSB1	Sample #: 7025	Sample Date: 2/19-20/14
Location:	On Site	Offset: NA	Elevation: 4-10'
Sample Description:	A-4		

Type and Specification	*S&ME ID #*	*Cal Date:*	*Type and Specification*	*S&ME ID #*	*Cal Date:*
Balance (0.01 g)	3222	6/18/2013	Grooving tool	20835	7/16/2013
LL Apparatus	3653	1/21/2014	Grooving tool		
Oven	11702	1/21/2014	Grooving tool		

Pan #		Liquid Limit						Plastic Limit		
	Tare #:	7	EE	48				27	PP	
A	Tare Weight	15.70	16.86	14.00				13.89	16.16	
B	Wet Soil Weight + A	29.52	29.65	28.76				22.33	24.46	
C	Dry Soil Weight + A	26.10	26.39	24.85				20.56	22.72	
D	Water Weight (B-C)	3.42	3.26	3.91				1.77	1.74	
E	Dry Soil Weight (C-A)	10.40	9.53	10.85				6.67	6.56	
F	% Moisture (D/E)*100	32.9%	34.2%	36.0%				26.5%	26.5%	
N	# OF DROPS	28	22	16				*Moisture Contents determined by AASHTO T 245*		
LL	LL = **F** * FACTOR									
Ave.	*Average*							**26.5%**		



One Point Liquid Limit			
N	**Factor**	**N**	**Factor**
20	0.974	26	1.005
21	0.979	27	1.009
22	0.985	28	1.014
23	0.99	29	1.018
24	0.995	30	1.022
25	1.000		

NP, Non-Plastic	☐
Liquid Limit	**34**
Plastic Limit	**27**
Plastic Index	7
Group Symbol	**A-4**
Multipoint Method	☑
One-point Method	☐

Wet Preparation ☐ Dry Preparation ☑ Air Dried ☑ *Estimate the % Retained on the #40 Sieve:*

Notes / Deviations / References:

AASHTO T90: Determining the Plastic Limit & Plastic Index of Soils *AASHTO T89: Determining the Liquid Limit of Soils*

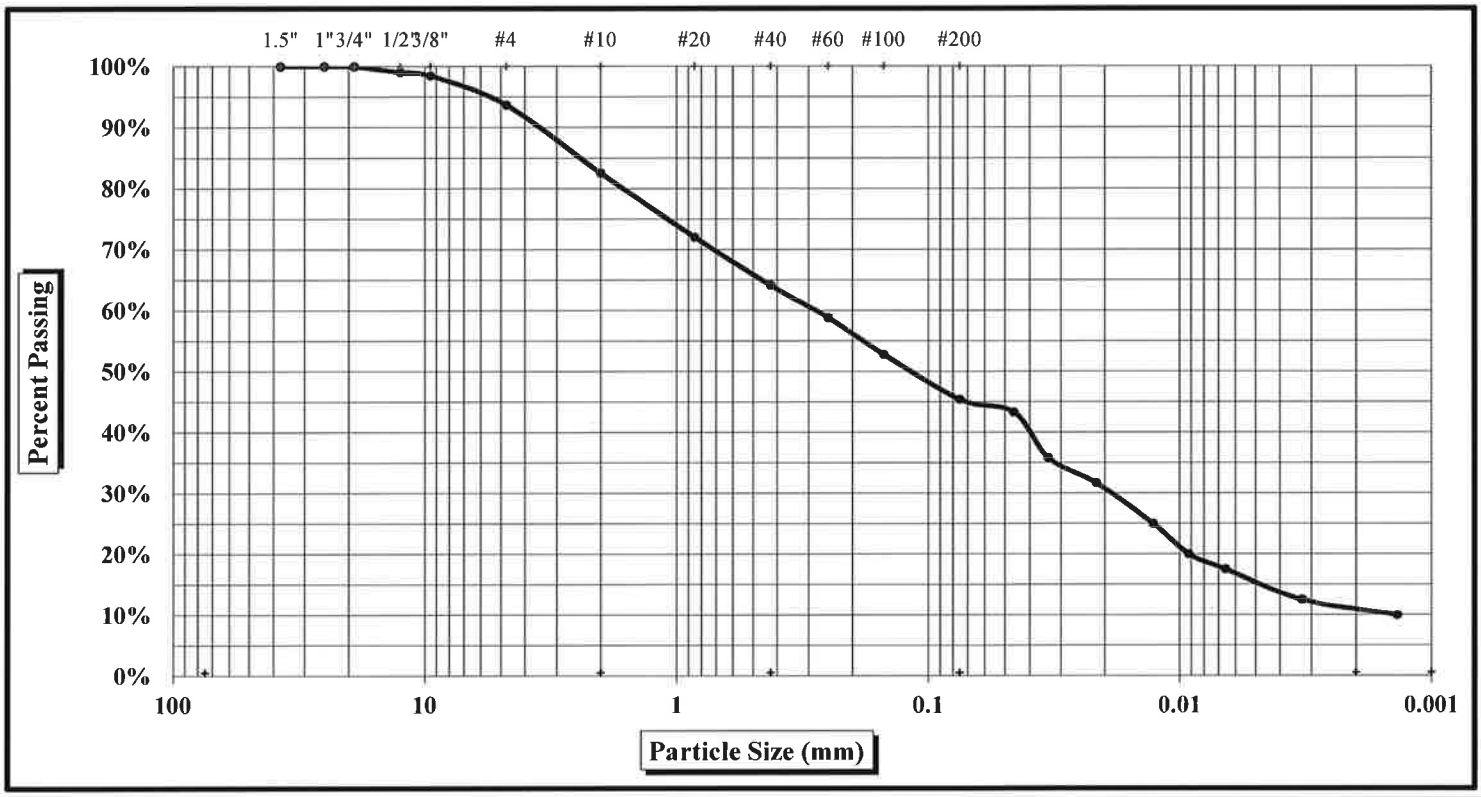
Technician Name — 3/7/14 Date — Technical Responsibility — 3/7/14 Date

Particle Size Analysis of Soils

AASHTO T 88

S&ME Project #:	**3735-14-001**	Report Date:	3/19/14
Project Name:	**Ecusta Mill Site**	Test Date(s):	3/3-10/14
Client Name:	Shaw Environmental & Infrastructure, Inc.		
Client Address:	11560 Great Oaks Way, Suite 500, Alpheretta, GA		

Boring #:	PSB2	Sample #:	7026	Sample Date:	2/21-26/14
Location:	On Site	Offset:	NA	Depth:	1-7'
Sample Description:	A-4				



As Defined by AASHTO		Fine Sand	< 0.425 mm and > 0.075 mm
Gravel	< 75 mm and > 2.00 mm	Silt	< 0.075 and > 0.002 mm
Coarse Sand	< 2.00 mm and > 0.425 mm	Clay	< 0.002 mm

Gravel	17.5%	Coarse Sand	18.4%	Silt	34%
Maximum Particle Size	1/2"	Fine Sand	18.7%	Clay	11%
Apparent Relative Density(Assumed)	2.650	Moisture Content	20.8%	Silt & Clay (% Passing #200)	45.4%
Liquid Limit	40	Plastic Limit	30	Plastic Index	10

Description of Sand & Gravel Particles: Rounded ☐ Angular ☒ Hard & Durable ☒ Soft ☐ Weathered & Friable ☐

Mechanical Stirring Apparatus (A) Length of Dispersion Period: 1 min. Dispersing Agent: Sodium Hexametaphosphate: 40 g / Liter

References: AASHTO T88: Particle Size Analysis of Soils AASHTO T87: Dry Preparation of Disturbed Soil and Soil Aggregate Samples for Test

AASHTO T89: Determining the Liquid Limit of Soils AASHTO T90: Determining the Plastic Limit & Plasticity Index of Soils

AASHTO M 145: The Classification of Soils and Soil Aggregate Mixtures for Highway Construction Purposes ASTM D 854: Specific Gravity of Soils

AASHTO T265: Laboratory Determination of Moisture Content of Soils

Technical Responsibility: Ron Harris *Signature* *Signature* 3.19.2014

Form No. TR-D4318-T89-90
Revision No. 0
Revision Date: 11/20/07

Liquid Limit, Plastic Limit, and Plastic Index

S&ME

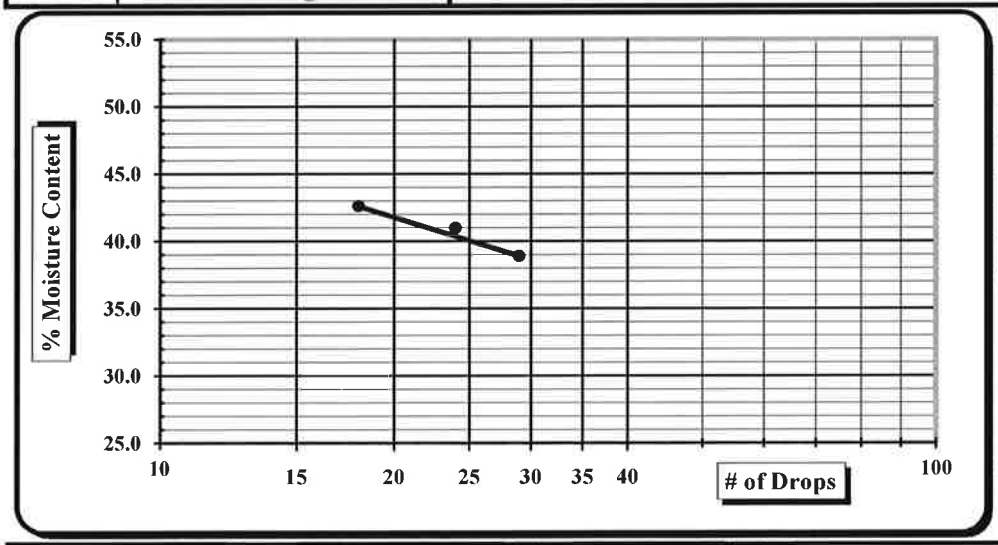
Another code *ASTM D 4318* ☐ *AASHTO T 89* ☒ *AASHTO T 90* ☒ ***Quality Assurance***

S&ME, Inc. ~9751 Southern Pine Boulevard,Charlotte, NC 28273

Project #:	**3735-14-001**	Report Date:	3/19/14
Project Name:	Ecusta Mill Site	Test Date(s)	3/3-19/14
Client Name:	Shaw Environmental & Infrastructure, Inc.		
Client Address:	11560 Great Oaks Way, Suite 500, Alpheretta, GA		
Boring #:	PBS2	Sample #: 7026	Sample Date: 2/21-26/14
Location:	On Site	Offset: NA	Elevation: 1-7'
Sample Description:	A-4		

Type and Specification	*S&ME ID #*	*Cal Date:*	*Type and Specification*	*S&ME ID #*	*Cal Date:*
Balance (0.01 g)	3222	6/18/2013	Grooving tool	20835	7/16/2013
LL Apparatus	3653	1/21/2014	Grooving tool		
Oven	11702	1/21/2014	Grooving tool		

Pan #		Liquid Limit						Plastic Limit		
	Tare #:	49	51	41				39	8	
A	Tare Weight	15.66	15.74	15.76				13.96	13.94	
B	Wet Soil Weight + A	26.76	26.33	24.63				20.39	20.91	
C	Dry Soil Weight + A	23.65	23.25	21.98				18.92	19.30	
D	Water Weight (B-C)	3.11	3.08	2.65				1.47	1.61	
E	Dry Soil Weight (C-A)	7.99	7.51	6.22				4.96	5.36	
F	% Moisture (D/E)*100	38.9%	41.0%	42.6%				29.6%	30.0%	
N	# OF DROPS	29	24	18				*Moisture Contents determined by AASHTO T 245*		
LL	LL = **F** * FACTOR									
Ave.	*Average*							**29.8%**		



One Point Liquid Limit			
N	**Factor**	**N**	**Factor**
20	0.974	26	1.005
21	0.979	27	1.009
22	0.985	28	1.014
23	0.99	29	1.018
24	0.995	30	1.022
25	1.000		

NP, Non-Plastic ☐
Liquid Limit **40**
Plastic Limit **30**
Plastic Index **10**
Group Symbol **A-4**

Multipoint Method ☑
One-point Method ☐

Wet Preparation ☐ Dry Preparation ☑ Air Dried ☑ *Estimate the % Retained on the #40 Sieve:*

Notes / Deviations / References:

AASHTO T90: Determining the Plastic Limit & Plastic Index of Soils *AASHTO T89: Determining the Liquid Limit of Soils*

Karen Warner
Technician Name

3/19/14
Date

Ron Hamm
Technical Responsibility

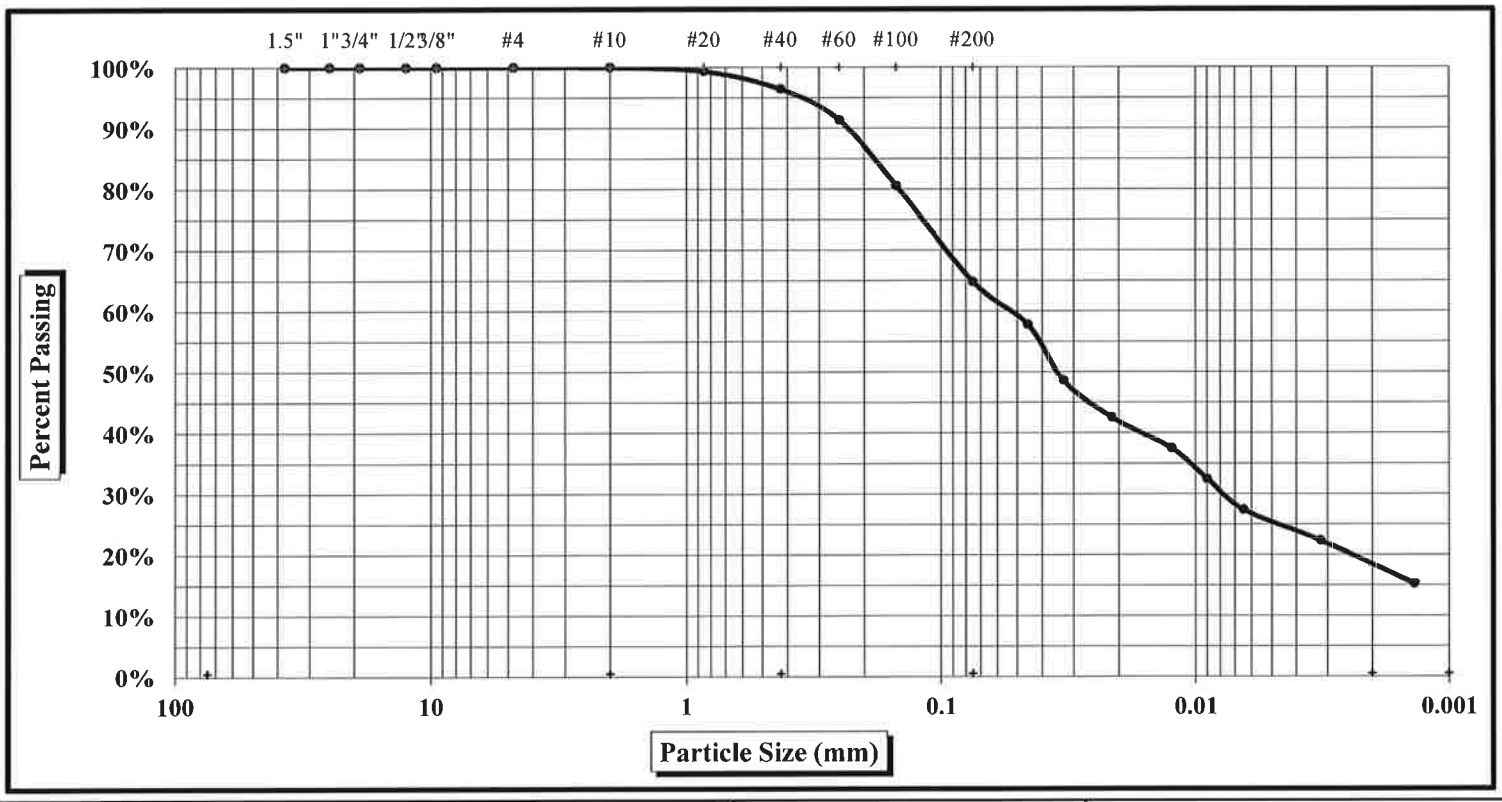
3.19.2014
Date

Particle Size Analysis of Soils

AASHTO T 88

S&ME Project #:	**3735-14-001**	Report Date:	3/19/14
Project Name:	**Ecusta Mill Site**	Test Date(s):	3/3-10/14
Client Name:	Shaw Environmental & Infrastructure, Inc.		
Client Address:	11560 Great Oaks Way, Suite 500, Alpheretta, GA		

Boring #:	PSB2	Sample #: 7027		Sample Date: 2/21-26/14	
Location:	On Site	Offset: NA		Depth: 7-13'	
Sample Description:	A-4				



As Defined by AASHTO		Fine Sand	< 0.425 mm and > 0.075 mm
Gravel	< 75 mm and > 2.00 mm	Silt	< 0.075 and > 0.002 mm
Coarse Sand	< 2.00 mm and > 0.425 mm	Clay	< 0.002 mm

Gravel	0.0%	Coarse Sand	3.6%	Silt	46%
Maximum Particle Size	#20	Fine Sand	31.6%	Clay	19%
Apparent Relative Density(Assumed)	2.650	Moisture Content	41.9%	Silt & Clay (% Passing #200)	64.8%
Liquid Limit	38	Plastic Limit	29	Plastic Index	9

Description of Sand & Gravel Particles: Rounded ☐ Angular ☒ Hard & Durable ☒ Soft ☐ Weathered & Friable ☐

Mechanical Stirring Apparatus (A) Length of Dispersion Period: 1 min. Dispersing Agent: Sodium Hexametaphosphate: 40 g / Liter

References: AASHTO T88: Particle Size Analysis of Soils AASHTO T87: Dry Preparation of Disturbed Soil and Soil Aggregate Samples for Test
AASHTO T89: Determining the Liquid Limit of Soils AASHTO T90: Determining the Plastic Limit & Plasticity Index of Soils
AASHTO M 145: The Classification of Soils and Soil Aggregate Mixtures for Highway Construction Purposes ASTM D 854: Specific Gravity of Soils
AASHTO T265: Laboratory Determination of Moisture Content of Soils

Technical Responsibility: Ron Harris *Signature* 3.19.2014 *Signature*

Form No. TR-D4318-T89-90
Revision No. 0
Revision Date: 11/20/07

Liquid Limit, Plastic Limit, and Plastic Index

S&ME

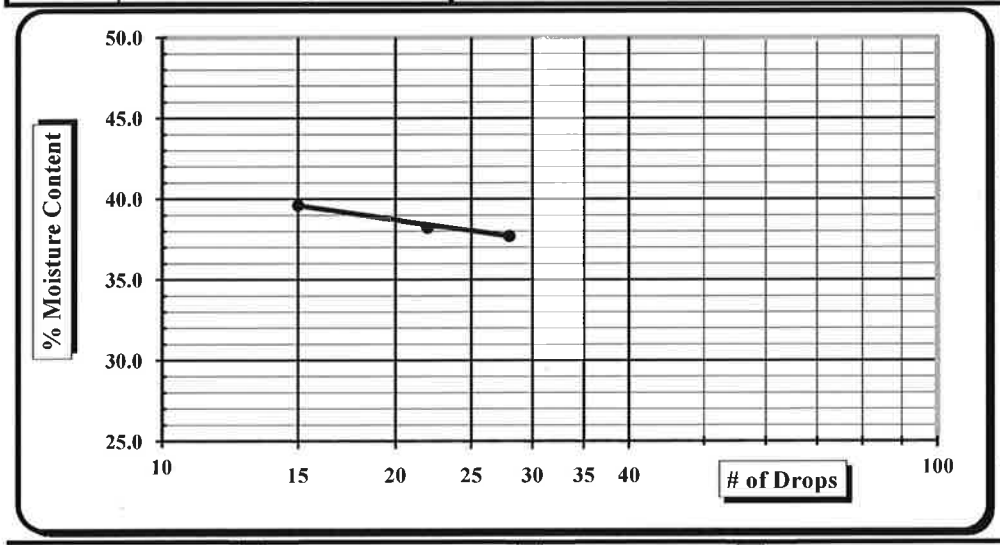
Another code *ASTM D 4318* ☐ *AASHTO T 89* ☒ *AASHTO T 90* ☒ ***Quality Assurance***

S&ME, Inc. ~9751 Southern Pine Boulevard,Charlotte, NC 28273

Project #:	**3735-14-001**	Report Date:	3/19/14
Project Name:	Ecusta Mill Site	Test Date(s)	3/3-19/14
Client Name:	Shaw Environmental & Infrastructure, Inc.		
Client Address:	11560 Great Oaks Way, Suite 500, Alpheretta, GA		
Boring #:	PSB2	Sample #: 7026	Sample Date: 2/21-26/14
Location:	On Site	Offset: NA	Elevation: 7-13'
Sample Description:	A-4		

Type and Specification	*S&ME ID #*	*Cal Date:*	*Type and Specification*	*S&ME ID #*	*Cal Date:*
Balance (0.01 g)	3222	6/18/2013	Grooving tool	20835	7/16/2013
LL Apparatus	3653	1/21/2014	Grooving tool		
Oven	11702	1/21/2014	Grooving tool		

Pan #		Liquid Limit						Plastic Limit		
	Tare #:	XX	RR	NN				KK	6	
A	Tare Weight	16.03	15.30	15.28				16.05	14.02	
B	Wet Soil Weight + A	31.56	27.59	27.06				22.39	20.83	
C	Dry Soil Weight + A	27.31	24.19	23.72				20.99	19.31	
D	Water Weight (B-C)	4.25	3.40	3.34				1.40	1.52	
E	Dry Soil Weight (C-A)	11.28	8.89	8.44				4.94	5.29	
F	% Moisture (D/E)*100	37.7%	38.2%	39.6%				28.3%	28.7%	
N	# OF DROPS	28	22	15				*Moisture Contents determined by AASHTO T 245*		
LL	LL = **F** * FACTOR									
Ave.	*Average*							**28.5%**		



One Point Liquid Limit			
N	**Factor**	**N**	**Factor**
20	0.974	26	1.005
21	0.979	27	1.009
22	0.985	28	1.014
23	0.99	29	1.018
24	0.995	30	1.022
25	1.000		

NP, Non-Plastic ☐
Liquid Limit **38**
Plastic Limit **29**
Plastic Index 9
Group Symbol **A-4**
Multipoint Method ☑
One-point Method ☐

Wet Preparation ☐ Dry Preparation ☑ Air Dried ☑ *Estimate the % Retained on the #40 Sieve:*

Notes / Deviations / References:

AASHTO T90: Determining the Plastic Limit & Plastic Index of Soils *AASHTO T89: Determining the Liquid Limit of Soils*

Karen Warner
Technician Name

3/19/14
Date

Ron Harris
Technical Responsibility

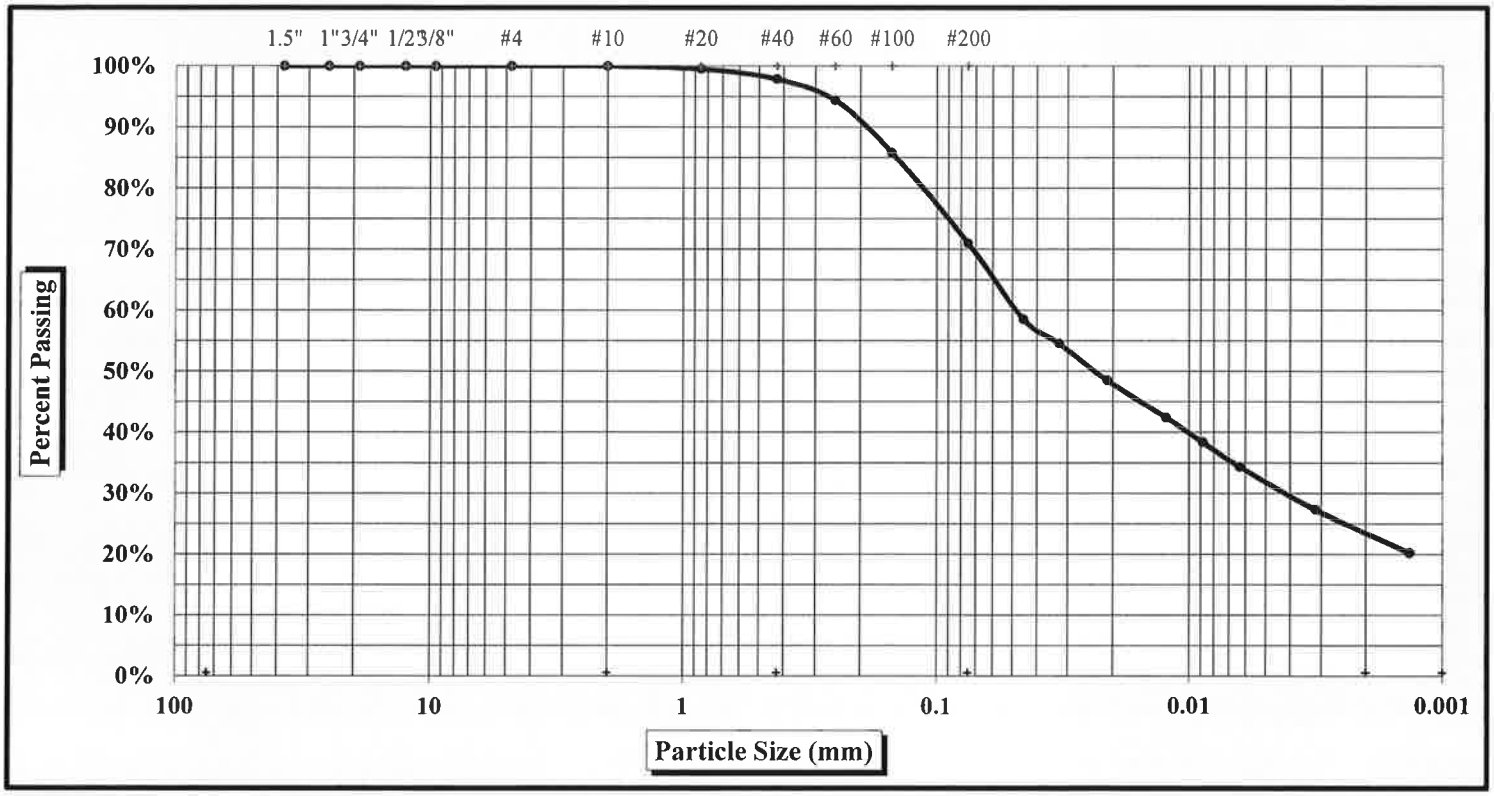
3.19.2014
Date

Particle Size Analysis of Soils

AASHTO T 88

S&ME Project #:	**3735-14-001**	Report Date:	3/19/14
Project Name:	**Ecusta Mill Site**	Test Date(s):	3/3-10/14
Client Name:	Shaw Environmental & Infrastructure, Inc.		
Client Address:	11560 Great Oaks Way, Suite 500, Alpheretta, GA		

Boring #:	PSB3	Sample #: 7027	Sample Date: 2/21-26/14
Location:	On Site	Offset: NA	Depth: 1-7'
Sample Description:	A-4		



As Defined by AASHTO		Fine Sand	< 0.425 mm and > 0.075 mm
Gravel	< 75 mm and > 2.00 mm	Silt	< 0.075 and > 0.002 mm
Coarse Sand	< 2.00 mm and > 0.425 mm	Clay	< 0.002 mm

Gravel	0.0%	Coarse Sand	2.1%	Silt	47%
Maximum Particle Size	#10	Fine Sand	26.9%	Clay	24%
Apparent Relative Density(Assumed)	2.650	Moisture Content	44.9%	Silt & Clay (% Passing #200)	71.0%
Liquid Limit	38	Plastic Limit	30	Plastic Index	8

Description of Sand & Gravel Particles: Rounded ☐ Angular ☒ Hard & Durable ☒ Soft ☐ Weathered & Friable ☐

Mechanical Stirring Apparatus (A) Length of Dispersion Period: 1 min. Dispersing Agent: Sodium Hexametaphosphate: 40 g./ Liter

References: AASHTO T88: Particle Size Analysis of Soils AASHTO T87: Dry Preparation of Disturbed Soil and Soil Aggregate Samples for Test
AASHTO T89: Determining the Liquid Limit of Soils AASHTO T90: Determining the Plastic Limit & Plasticity Index of Soils
AASHTO M 145: The Classification of Soils and Soil Aggregate Mixtures for Highway Construction Purposes ASTM D 854: Specific Gravity of Soils
AASHTO T265: Laboratory Determination of Moisture Content of Soils

Technical Responsibility: Ron Harris *Signature* *Signature* 3.19.2014

Form No. TR-D4318-T89-90
Revision No. 0
Revision Date: 11/20/07

Liquid Limit, Plastic Limit, and Plastic Index

S&ME

Another code *ASTM D 4318* ☐ *AASHTO T 89* ☒ *AASHTO T 90* ☒ ***Quality Assurance***

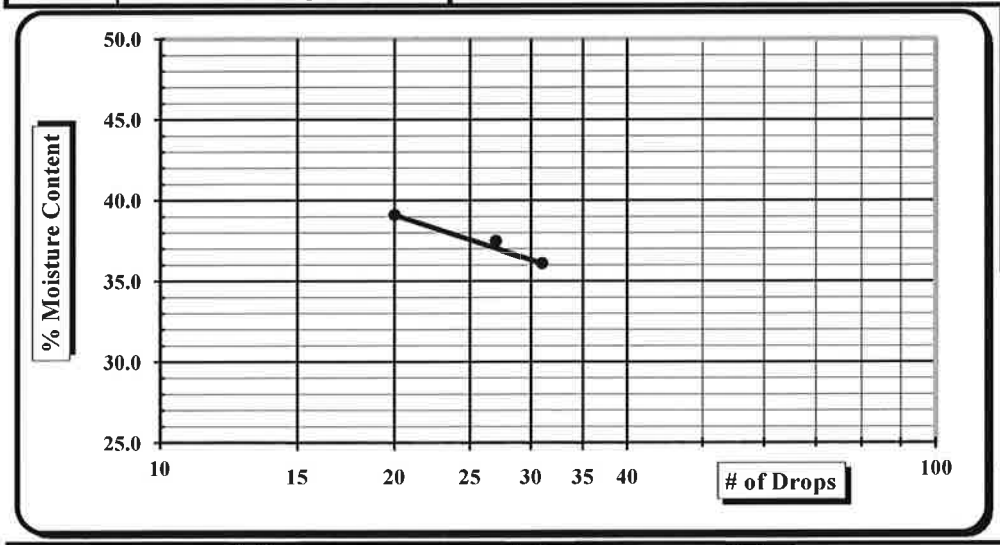
S&ME, Inc. ~9751 Southern Pine Boulevard,Charlotte, NC 28273

Project #:	**3735-14-001**	Report Date:	3/19/14
Project Name:	Ecusta Mill Site	Test Date(s)	3/3-19/14
Client Name:	Shaw Environmental & Infrastructure, Inc.		
Client Address:	11560 Great Oaks Way, Suite 500, Alpheretta, GA		

Boring #:	PSB3	Sample #: 7027	Sample Date: 2/21-26/14
Location:	On Site	Offset: NA	Elevation: 1-7'
Sample Description:	A-4		

Type and Specification	*S&ME ID #*	*Cal Date:*	*Type and Specification*	*S&ME ID #*	*Cal Date:*
Balance (0.01 g)	3222	6/18/2013	Grooving tool	20835	7/16/2013
LL Apparatus	3653	1/21/2014	Grooving tool		
Oven	11702	1/21/2014	Grooving tool		

Pan #		Liquid Limit						Plastic Limit		
	Tare #:	59	TS	52				23	33	
A	Tare Weight	15.78	15.30	15.71				14.08	15.89	
B	Wet Soil Weight + A	27.70	26.18	26.24				21.90	22.27	
C	Dry Soil Weight + A	24.54	23.21	23.28				20.11	20.82	
D	Water Weight (B-C)	3.16	2.97	2.96				1.79	1.45	
E	Dry Soil Weight (C-A)	8.76	7.91	7.57				6.03	4.93	
F	% Moisture (D/E)*100	36.1%	37.5%	39.1%				29.7%	29.4%	
N	# OF DROPS	31	27	20				*Moisture Contents determined by AASHTO T 245*		
LL	LL = F * FACTOR									
Ave.	*Average*							**29.6%**		



One Point Liquid Limit			
N	**Factor**	**N**	**Factor**
20	0.974	26	1.005
21	0.979	27	1.009
22	0.985	28	1.014
23	0.99	29	1.018
24	0.995	30	1.022
25	1.000		

NP, Non-Plastic ☐
Liquid Limit **38**
Plastic Limit **30**
Plastic Index 8
Group Symbol **A-4**
Multipoint Method ☑
One-point Method ☐

Wet Preparation ☐ Dry Preparation ☑ Air Dried ☑ *Estimate the % Retained on the #40 Sieve:*

Notes / Deviations / References:

AASHTO T90: Determining the Plastic Limit & Plastic Index of Soils *AASHTO T89: Determining the Liquid Limit of Soils*

Karen Warner
Technician Name

3/19/14
Date

Ron Harris
Technical Responsibility

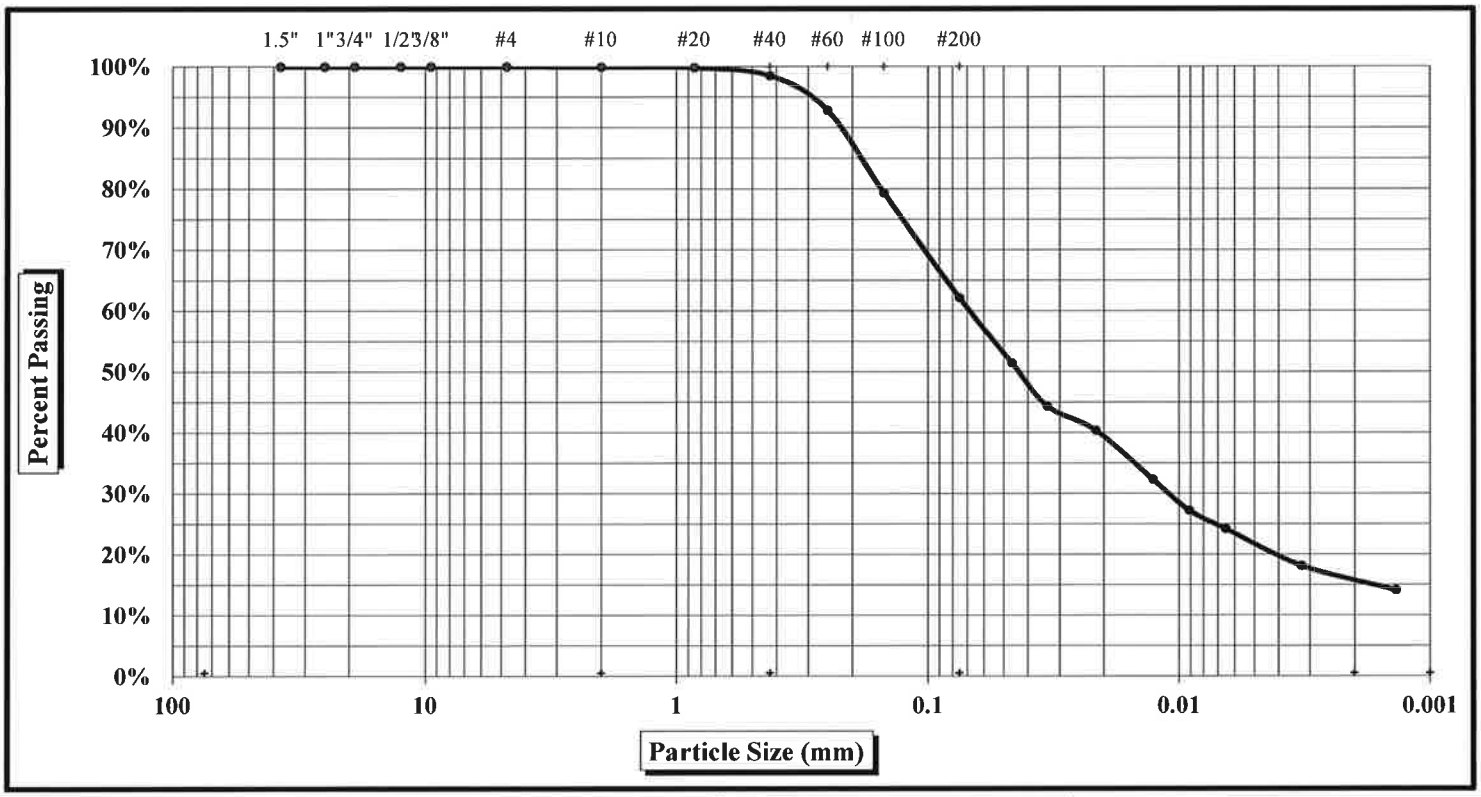
3.19.2014
Date

Particle Size Analysis of Soils

AASHTO T 88

S&ME Project #:	**3735-14-001**	Report Date:	3/19/14
Project Name:	**Ecusta Mill Site**	Test Date(s):	3/3-10/14
Client Name:	Shaw Environmental & Infrastructure, Inc.		
Client Address:	11560 Great Oaks Way, Suite 500, Alpheretta, GA		

Boring #:	PSB3	Sample #:	7027	Sample Date:	2/21-26/14
Location:	On Site	Offset:	NA	Depth:	7-11'
Sample Description:	A-4				



As Defined by AASHTO		Fine Sand	< 0.425 mm and > 0.075 mm
Gravel	< 75 mm and > 2.00 mm	Silt	< 0.075 and > 0.002 mm
Coarse Sand	< 2.00 mm and > 0.425 mm	Clay	< 0.002 mm

Gravel	0.0%	Coarse Sand	1.5%	Silt	46%
Maximum Particle Size	#10	Fine Sand	36.4%	Clay	16%
Apparent Relative Density(Assumed)	2.650	Moisture Content	31.4%	Silt & Clay (% Passing #200)	62.1%
Liquid Limit	36	Plastic Limit	29	Plastic Index	7

Description of Sand & Gravel Particles: Rounded ☐ Angular ☒ Hard & Durable ☒ Soft ☐ Weathered & Friable ☐

Mechanical Stirring Apparatus (A) Length of Dispersion Period: 1 min. Dispersing Agent: Sodium Hexametaphosphate: 40 g./ Liter

References: AASHTO T88: Particle Size Analysis of Soils AASHTO T87: Dry Preparation of Disturbed Soil and Soil Aggregate Samples for Test

AASHTO T89: Determining the Liquid Limit of Soils AASHTO T90: Determining the Plastic Limit & Plasticity Index of Soils

AASHTO M 145: The Classification of Soils and Soil Aggregate Mixtures for Highway Construction Purposes ASTM D 854: Specific Gravity of Soils

AASHTO T265: Laboratory Determination of Moisture Content of Soils

Technical Responsibility: Ron Harris 3.19.2014

Signature Signature

Form No. TR-D4318-T89-90
Revision No. 0
Revision Date: 11/20/07

Liquid Limit, Plastic Limit, and Plastic Index

S&ME

Another code *ASTM D 4318* ☐ *AASHTO T 89* ☒ *AASHTO T 90* ☒ ***Quality Assurance***

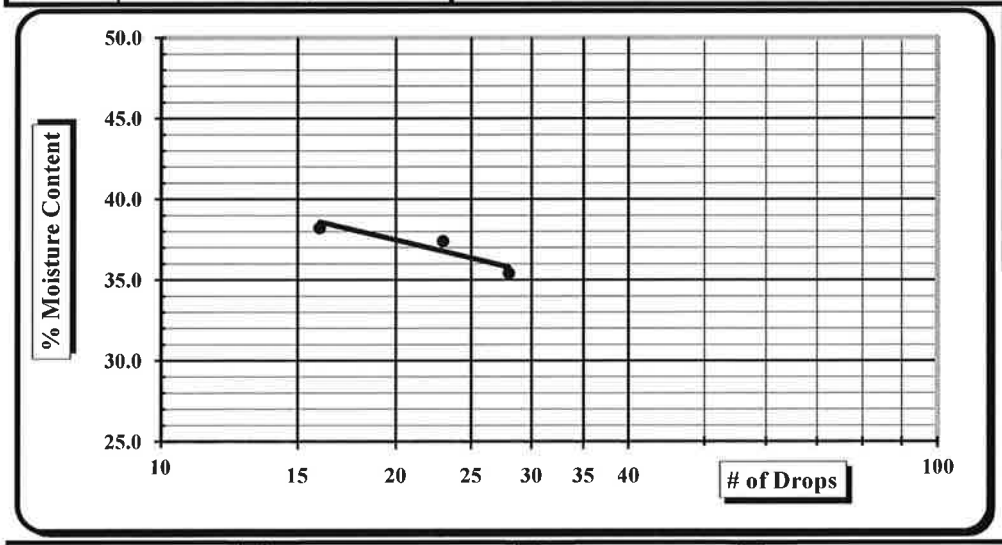
S&ME, Inc. ~9751 Southern Pine Boulevard,Charlotte, NC 28273

Project #:	**3735-14-001**	Report Date:	3/19/14
Project Name:	Ecusta Mill Site	Test Date(s)	3/3-19/14
Client Name:	Shaw Environmental & Infrastructure, Inc.		
Client Address:	11560 Great Oaks Way, Suite 500, Alpheretta, GA		

Boring #:	PSB3	Sample #: 7027		Sample Date: 2/21-26/14	
Location:	On Site	Offset: NA		Elevation: 7-11'	
Sample Description:	A-4				

Type and Specification	*S&ME ID #*	*Cal Date:*	*Type and Specification*	*S&ME ID #*	*Cal Date:*
Balance (0.01 g)	3222	6/18/2013	Grooving tool	20835	7/16/2013
LL Apparatus	3653	1/21/2014	Grooving tool		
Oven	11702	1/21/2014	Grooving tool		

Pan #		Liquid Limit						Plastic Limit		
	Tare #:	Jordi	30	34				Z	MM	
A	Tare Weight	15.93	15.89	13.98				16.87	16.56	
B	Wet Soil Weight + A	28.36	29.40	25.19				24.48	23.39	
C	Dry Soil Weight + A	25.11	25.72	22.09				22.77	21.85	
D	Water Weight (B-C)	3.25	3.68	3.10				1.71	1.54	
E	Dry Soil Weight (C-A)	9.18	9.83	8.11				5.90	5.29	
F	% Moisture (D/E)*100	35.4%	37.4%	38.2%				29.0%	29.1%	
N	# OF DROPS	28	23	16				*Moisture Contents determined by AASHTO T 245*		
LL	LL = **F** * FACTOR									
Ave.	*Average*							**29.1%**		



One Point Liquid Limit			
N	**Factor**	**N**	**Factor**
20	0.974	26	1.005
21	0.979	27	1.009
22	0.985	28	1.014
23	0.99	29	1.018
24	0.995	30	1.022
25	1.000		

NP, Non-Plastic ☐
Liquid Limit **36**
Plastic Limit **29**
Plastic Index 7
Group Symbol **A-4**
Multipoint Method ☑
One-point Method ☐

Wet Preparation ☐ Dry Preparation ☑ Air Dried ☑ *Estimate the % Retained on the #40 Sieve:*

Notes / Deviations / References:

AASHTO T90: Determining the Plastic Limit & Plastic Index of Soils *AASHTO T89: Determining the Liquid Limit of Soils*

Karen Warner
Technician Name

3/19/14
Date

Ron Harris
Technical Responsibility

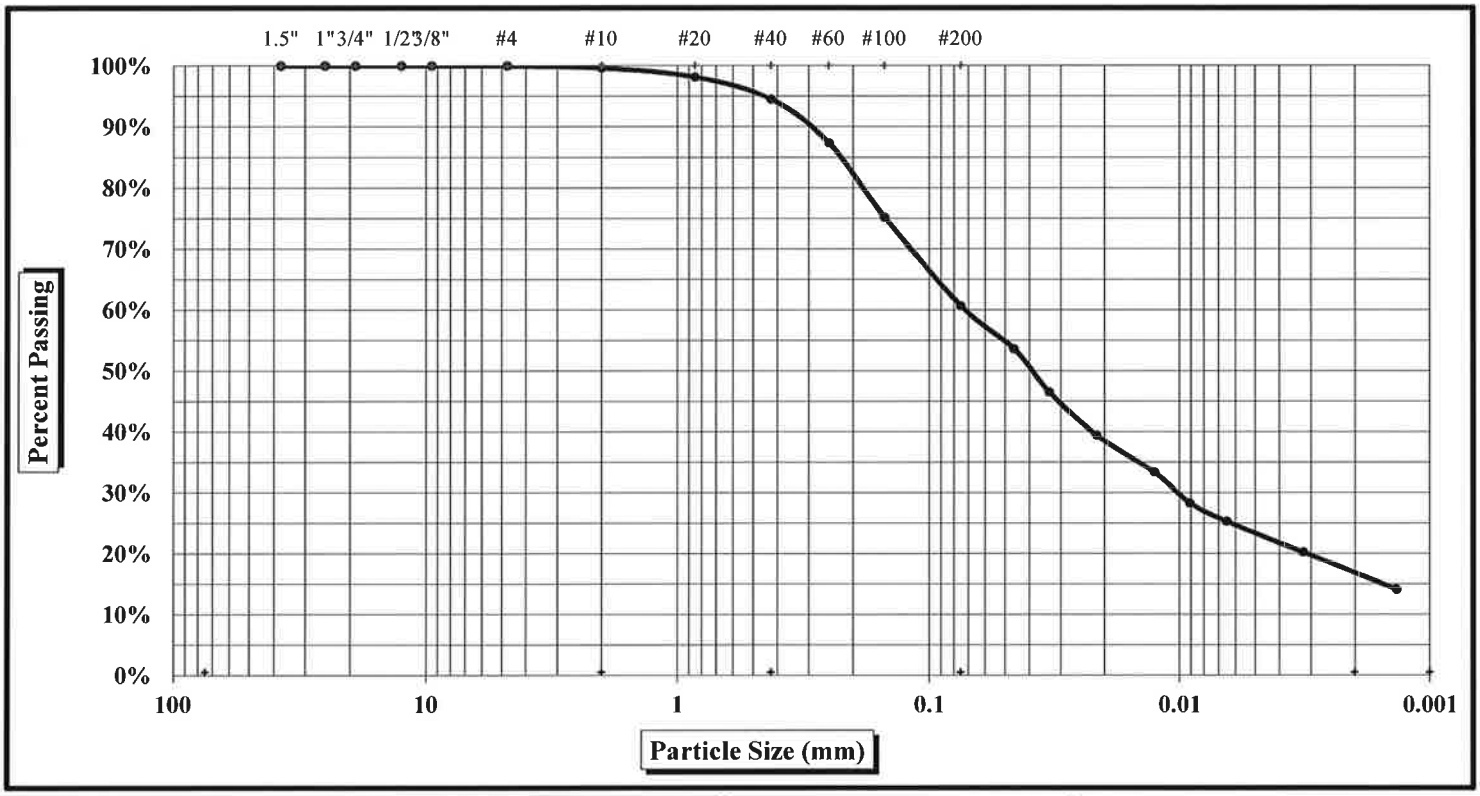
3.19.2014
Date

Particle Size Analysis of Soils

AASHTO T 88

S&ME Project #:	**3735-14-001**	Report Date:	3/19/14
Project Name:	**Ecusta Mill Site**	Test Date(s):	3/3-10/14
Client Name:	Shaw Environmental & Infrastructure, Inc.		
Client Address:	11560 Great Oaks Way, Suite 500, Alpheretta, GA		

Boring #:	PSB4	Sample #:	7028	Sample Date:	2/21-26/14
Location:	On Site	Offset:	NA	Depth:	1-7'
Sample Description:	A-4				



As Defined by AASHTO		Fine Sand	< 0.425 mm and > 0.075 mm
Gravel	< 75 mm and > 2.00 mm	Silt	< 0.075 and > 0.002 mm
Coarse Sand	< 2.00 mm and > 0.425 mm	Clay	< 0.002 mm

Gravel	0.4%	Coarse Sand	5.1%	Silt	44%
Maximum Particle Size	#10	Fine Sand	33.9%	Clay	17%
Apparent Relative Density(Assumed)	2.650	Moisture Content	40.4%	Silt & Clay (% Passing #200)	60.6%
Liquid Limit	32	Plastic Limit	26	Plastic Index	6

Description of Sand & Gravel Particles: Rounded ☐ Angular ☒ Hard & Durable ☒ Soft ☐ Weathered & Friable ☐

Mechanical Stirring Apparatus (A) Length of Dispersion Period: 1 min. Dispersing Agent: Sodium Hexametaphosphate: 40 g./ Liter

References: AASHTO T88: Particle Size Analysis of Soils AASHTO T87: Dry Preparation of Disturbed Soil and Soil Aggregate Samples for Test

AASHTO T89: Determining the Liquid Limit of Soils AASHTO T90: Determining the Plastic Limit & Plasticity Index of Soils

AASHTO M 145: The Classification of Soils and Soil Aggregate Mixtures for Highway Construction Purposes ASTM D 854: Specific Gravity of Soils

AASHTO T265: Laboratory Determination of Moisture Content of Soils

Technical Responsibility: Ron Hamic *Signature* *Signature* 3.19.2014

Form No. TR-D4318-T89-90
Revision No. 0
Revision Date: 11/20/07

Liquid Limit, Plastic Limit, and Plastic Index

S&ME

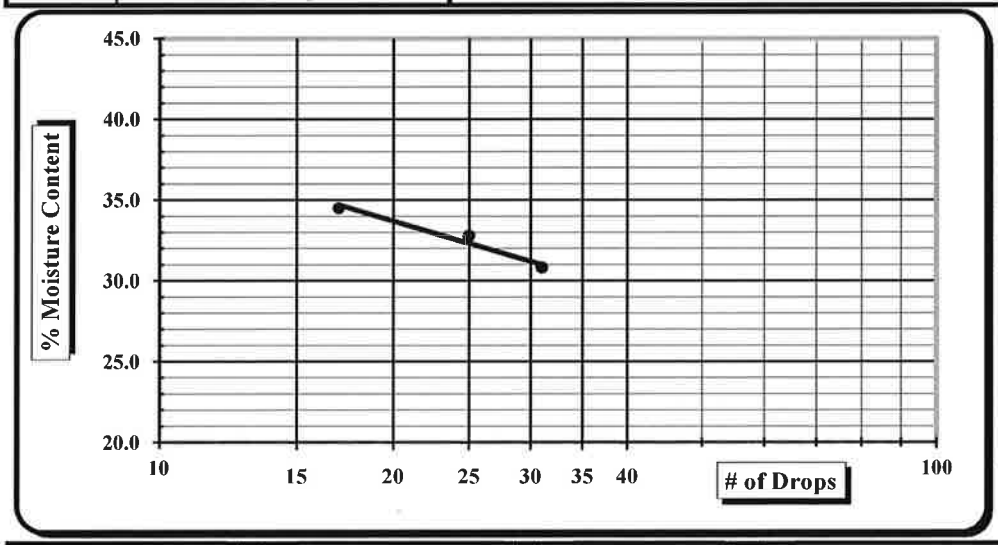
Another code *ASTM D 4318* ☐ *AASHTO T 89* ☒ *AASHTO T 90* ☒ ***Quality Assurance***

S&ME, Inc. ~9751 Southern Pine Boulevard,Charlotte, NC 28273

Project #:	**3735-14-001**	Report Date:	3/19/14
Project Name:	Ecusta Mill Site	Test Date(s)	3/3-19/14
Client Name:	Shaw Environmental & Infrastructure, Inc.		
Client Address:	11560 Great Oaks Way, Suite 500, Alpheretta, GA		
Boring #:	PSB4	Sample #: 7028	Sample Date: 2/21-26/14
Location:	On Site	Offset: NA	Elevation: 1-7'
Sample Description:	A-4		

Type and Specification	*S&ME ID #*	*Cal Date:*	*Type and Specification*	*S&ME ID #*	*Cal Date:*
Balance (0.01 g)	3222	6/18/2013	Grooving tool	20835	7/16/2013
LL Apparatus	3653	1/21/2014	Grooving tool		
Oven	11702	1/21/2014	Grooving tool		

Pan #		Liquid Limit						Plastic Limit		
	Tare #:	12	38	5				W	60	
A	Tare Weight	14.16	15.79	15.68				15.99	13.85	
B	Wet Soil Weight + A	26.15	30.03	29.45				24.20	20.28	
C	Dry Soil Weight + A	23.33	26.51	25.92				22.47	18.98	
D	Water Weight (B-C)	2.82	3.52	3.53				1.73	1.30	
E	Dry Soil Weight (C-A)	9.17	10.72	10.24				6.48	5.13	
F	% Moisture (D/E)*100	30.8%	32.8%	34.5%				26.7%	25.3%	
N	# OF DROPS	31	25	17				*Moisture Contents determined by AASHTO T 245*		
LL	LL = **F** * FACTOR									
Ave.	*Average*							**26.0%**		



One Point Liquid Limit			
N	**Factor**	**N**	**Factor**
20	0.974	26	1.005
21	0.979	27	1.009
22	0.985	28	1.014
23	0.99	29	1.018
24	0.995	30	1.022
25	1.000		

NP, Non-Plastic ☐
Liquid Limit **32**
Plastic Limit **26**
Plastic Index 6
Group Symbol **A-4**
Multipoint Method ☑
One-point Method ☐

Wet Preparation ☐ Dry Preparation ☑ Air Dried ☑ *Estimate the % Retained on the #40 Sieve:*

Notes / Deviations / References:

AASHTO T90: Determining the Plastic Limit & Plastic Index of Soils *AASHTO T89: Determining the Liquid Limit of Soils*

Karen Warner
Technician Name

3/19/14
Date

Ron Harris
Technical Responsibility

3.19.2014
Date

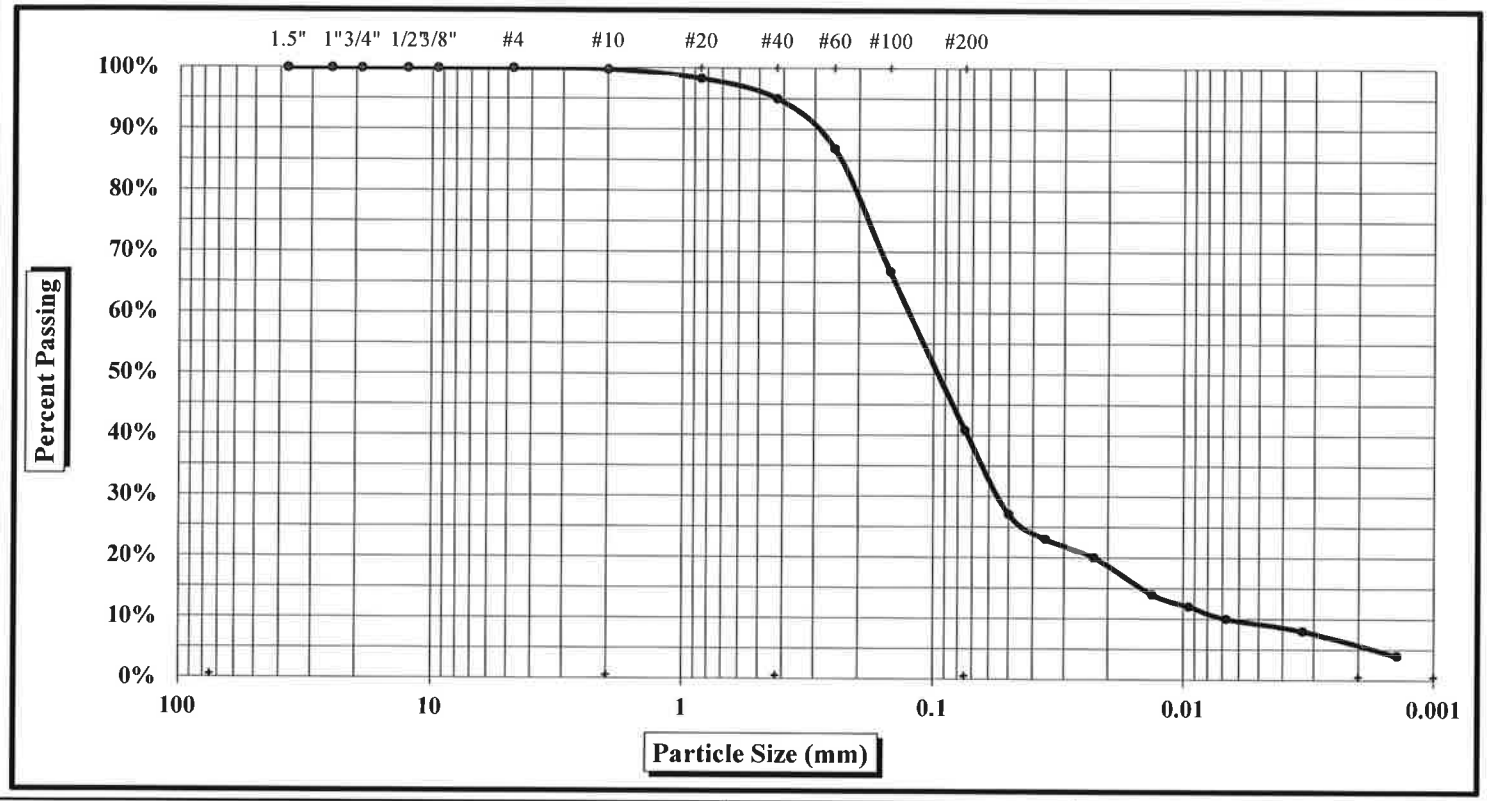
Particle Size Analysis of Soils

AASHTO T 88

S&ME

S&ME Project #:	**3735-14-001**	Report Date:	3/19/14
Project Name:	**Ecusta Mill Site**	Test Date(s):	3/3-10/14
Client Name:	Shaw Environmental & Infrastructure, Inc.		
Client Address:	11560 Great Oaks Way, Suite 500, Alpheretta, GA		

Boring #:	PSB4	Sample #: 7028		Sample Date: 2/21-26/14	
Location:	On Site	Offset: NA		Depth: 7-11'	
Sample Description:	A-4				



As Defined by AASHTO		Fine Sand	< 0.425 mm and > 0.075 mm
Gravel	< 75 mm and > 2.00 mm	Silt	< 0.075 and > 0.002 mm
Coarse Sand	< 2.00 mm and > 0.425 mm	Clay	< 0.002 mm

Gravel	0.2%	Coarse Sand	4.8%	Silt	35%
Maximum Particle Size	#10	Fine Sand	54.2%	Clay	6%
Apparent Relative Density(Assumed)	2.650	Moisture Content	42.9%	Silt & Clay (% Passing #200)	40.8%
Liquid Limit	0	Plastic Limit	0	Plastic Index	0

Description of Sand & Gravel Particles: Rounded ☐ Angular ☒ Hard & Durable ☒ Soft ☐ Weathered & Friable ☐

Mechanical Stirring Apparatus (A) Length of Dispersion Period: 1 min. Dispersing Agent: Sodium Hexametaphosphate: 40 g./ Liter

References: AASHTO T88: Particle Size Analysis of Soils AASHTO T87: Dry Preparation of Disturbed Soil and Soil Aggregate Samples for Test

AASHTO T89: Determining the Liquid Limit of Soils AASHTO T90: Determining the Plastic Limit & Plasticity Index of Soils

AASHTO M 145: The Classification of Soils and Soil Aggregate Mixtures for Highway Construction Purposes ASTM D 854: Specific Gravity of Soils

AASHTO T265: Laboratory Determination of Moisture Content of Soils

Technical Responsibility: Ron Harris *Signature* *Signature* 3.19.2014

Form No. TR-D4318-T89-90
Revision No. 0
Revision Date: 11/20/07

Liquid Limit, Plastic Limit, and Plastic Index

S&ME

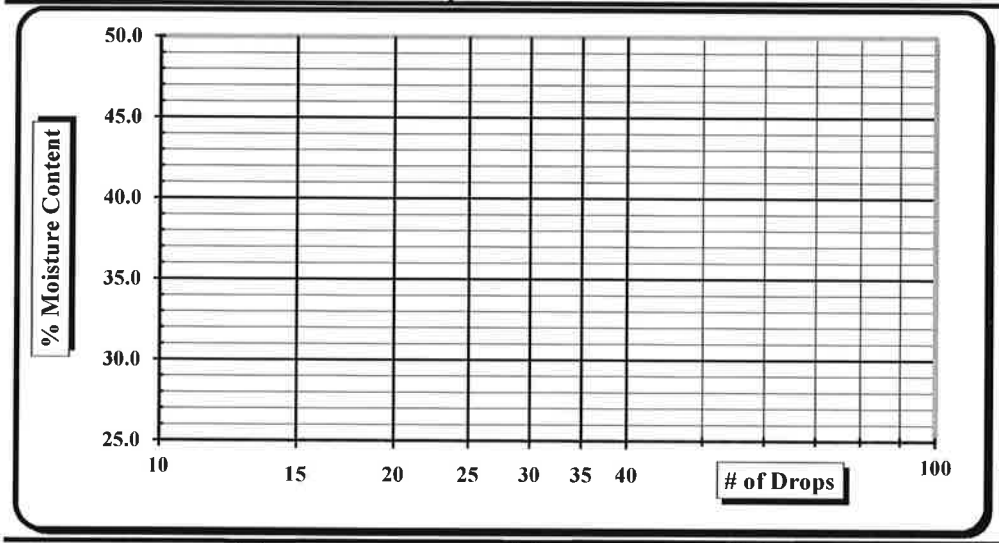
Another code *ASTM D 4318* ☐ *AASHTO T 89* ☒ *AASHTO T 90* ☒ ***Quality Assurance***

S&ME, Inc. ~9751 Southern Pine Boulevard,Charlotte, NC 28273

Project #:	**3735-14-001**	Report Date:	3/19/14
Project Name:	Ecusta Mill Site	Test Date(s)	3/3-19/14
Client Name:	Shaw Environmental & Infrastructure, Inc.		
Client Address:	11560 Great Oaks Way, Suite 500, Alpheretta, GA		
Boring #:	PBS4	Sample #: 7028	Sample Date: 2/21-26/14
Location:	On Site	Offset: NA	Elevation: 7-11'
Sample Description:	A-4		

Type and Specification	*S&ME ID #*	*Cal Date:*	*Type and Specification*	*S&ME ID #*	*Cal Date:*
Balance (0.01 g)	3222	6/18/2013	Grooving tool	20835	7/16/2013
LL Apparatus	3653	1/21/2014	Grooving tool		
Oven	11702	1/21/2014	Grooving tool		

		Liquid Limit						Plastic Limit		
Pan #	Tare #:									
A	Tare Weight									
B	Wet Soil Weight + A									
C	Dry Soil Weight + A									
D	Water Weight (B-C)									
E	Dry Soil Weight (C-A)									
F	% Moisture (D/E)*100									
N	# OF DROPS							*Moisture Contents determined by AASHTO T 245*		
LL	LL = **F** * FACTOR									
Ave.	*Average*									



One Point Liquid Limit			
N	**Factor**	**N**	**Factor**
20	0.974	26	1.005
21	0.979	27	1.009
22	0.985	28	1.014
23	0.99	29	1.018
24	0.995	30	1.022
25	1.000		

NP, Non-Plastic ☒
Liquid Limit
Plastic Limit
Plastic Index
Group Symbol **A-4**
Multipoint Method ☑
One-point Method ☐

Wet Preparation ☐ Dry Preparation ☑ Air Dried ☑ *Estimate the % Retained on the #40 Sieve:*

Notes / Deviations / References:

AASHTO T90: Determining the Plastic Limit & Plastic Index of Soils *AASHTO T89: Determining the Liquid Limit of Soils*

Karen Warner
Technician Name

3/19/14
Date

Ron Harris
Technical Responsibility

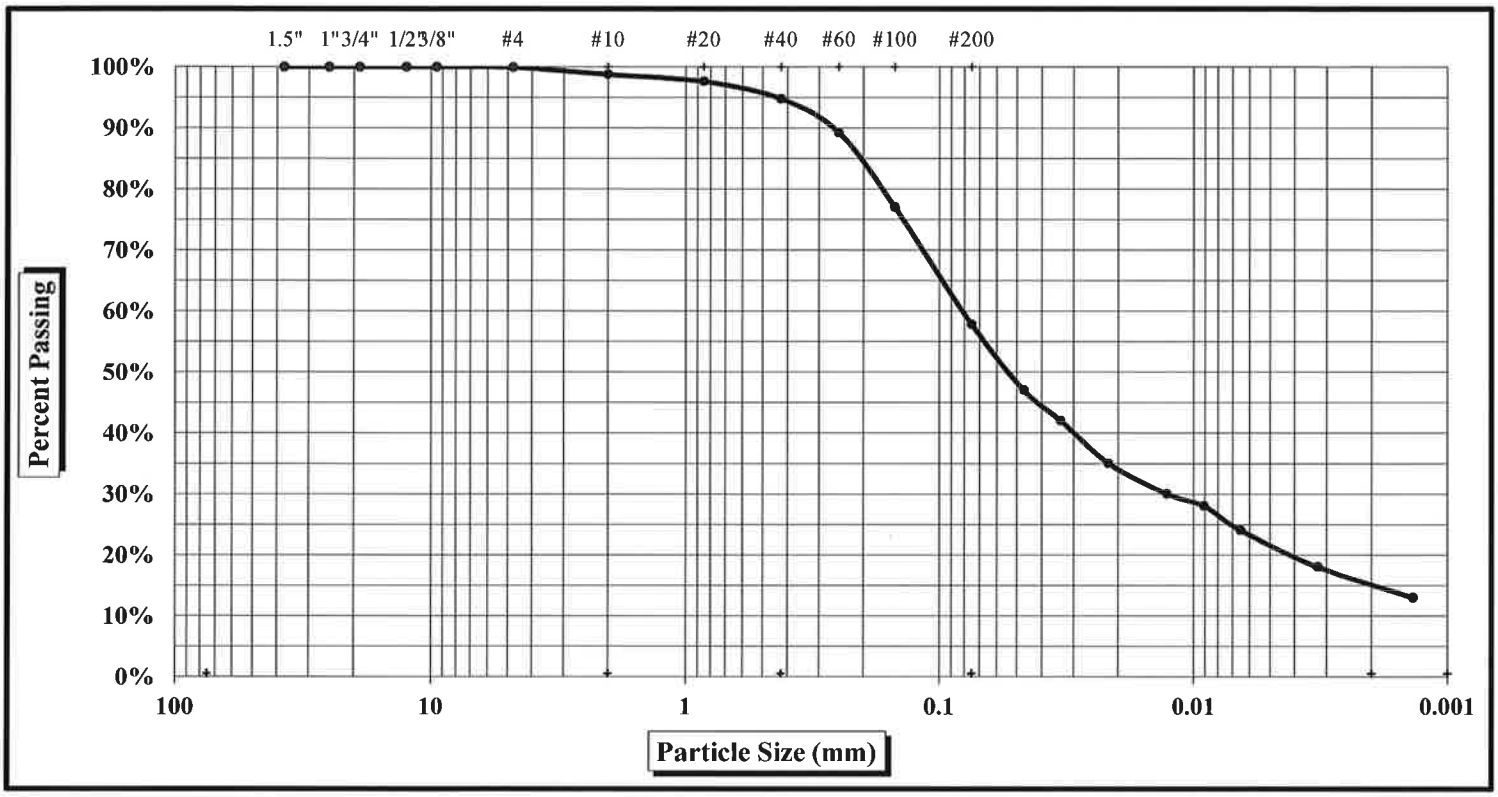
3.19.2014
Date

Particle Size Analysis of Soils

AASHTO T 88

S&ME Project #:	**3735-14-001**	Report Date:	3/18/14
Project Name:	**Ecusta Mill Site**	Test Date(s):	3/3-10/14
Client Name:	Shaw Environmental & Infrastructure, Inc.		
Client Address:	11560 Great Oaks Way, Suite 500, Alpheretta, GA		

Boring #:	PSB5	Sample #:	7029	Sample Date:	2/21-26/14
Location:	On Site	Offset:	NA	Depth:	1-7'
Sample Description:	A-4				



As Defined by AASHTO		Fine Sand	< 0.425 mm and > 0.075 mm
Gravel	< 75 mm and > 2.00 mm	Silt	< 0.075 and > 0.002 mm
Coarse Sand	< 2.00 mm and > 0.425 mm	Clay	< 0.002 mm

Gravel	1.2%	Coarse Sand	4.0%	Silt	43%
Maximum Particle Size	#4	Fine Sand	37.0%	Clay	15%
Apparent Relative Density(Assumed)	2.650	Moisture Content	32.3%	Silt & Clay (% Passing #200)	57.8%
Liquid Limit	33	Plastic Limit	27	Plastic Index	6

Description of Sand & Gravel Particles: Rounded ☐ Angular ☒ Hard & Durable ☒ Soft ☐ Weathered & Friable ☐

Mechanical Stirring Apparatus (A) Length of Dispersion Period: 1 min. Dispersing Agent: Sodium Hexametaphosphate: 40 g / Liter

References: AASHTO T88: Particle Size Analysis of Soils AASHTO T87: Dry Preparation of Disturbed Soil and Soil Aggregate Samples for Test

AASHTO T89: Determining the Liquid Limit of Soils AASHTO T90: Determining the Plastic Limit & Plasticity Index of Soils

AASHTO M 145: The Classification of Soils and Soil Aggregate Mixtures for Highway Construction Purposes ASTM D 854: Specific Gravity of Soils

AASHTO T265: Laboratory Determination of Moisture Content of Soils

Technical Responsibility: Ron Harris *Signature* *Signature* 3/18/2014

Form No. TR-D4318-T89-90
Revision No. 0
Revision Date: 11/20/07

Liquid Limit, Plastic Limit, and Plastic Index

S&ME

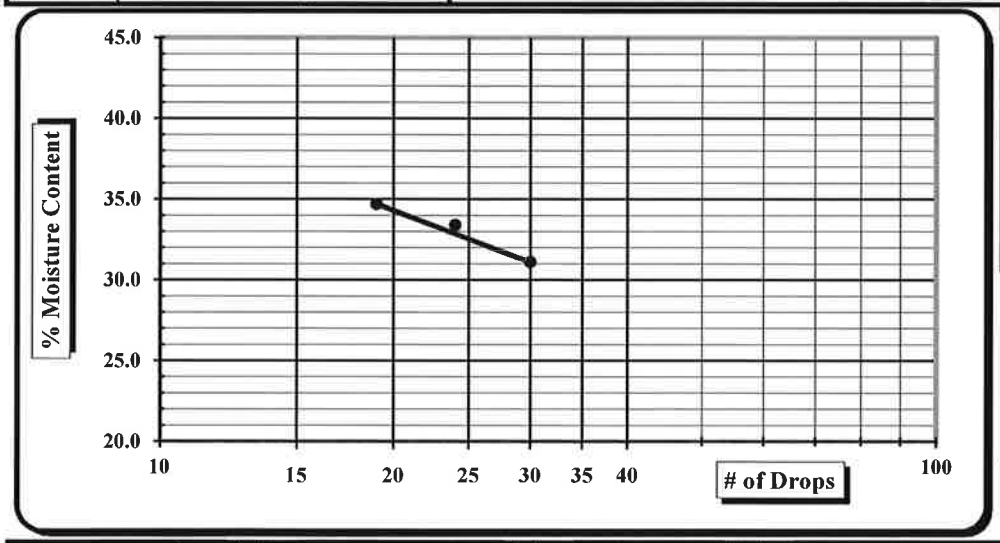
Another code *ASTM D 4318* ☐ *AASHTO T 89* ☒ *AASHTO T 90* ☒ ***Quality Assurance***

S&ME, Inc. ~9751 Southern Pine Boulevard,Charlotte, NC 28273

Project #:	**3735-14-001**	Report Date:	3/18/14
Project Name:	Ecusta Mill Site	Test Date(s)	3/3-18/14
Client Name:	Shaw Environmental & Infrastructure, Inc.		
Client Address:	11560 Great Oaks Way, Suite 500, Alpheretta, GA		
Boring #:	PSB5	Sample #:	Sample Date: 2/21-26/14
Location:	On Site	Offset: 7029	Elevation: 1-7'
Sample Description:	A-4		

Type and Specification	*S&ME ID #*	*Cal Date:*	*Type and Specification*	*S&ME ID #*	*Cal Date:*
Balance (0.01 g)	3222	6/18/2013	Grooving tool	20835	7/16/2013
LL Apparatus	3653	1/21/2014	Grooving tool		
Oven	11702	1/21/2014	Grooving tool		

Pan #		Liquid Limit						Plastic Limit		
	Tare #:	60	TS	MM				54	W	
A	Tare Weight	13.87	15.30	16.56				14.07	16.03	
B	Wet Soil Weight + A	25.46	29.47	29.80				20.73	23.12	
C	Dry Soil Weight + A	22.71	25.92	26.39				19.34	21.58	
D	Water Weight (B-C)	2.75	3.55	3.41				1.39	1.54	
E	Dry Soil Weight (C-A)	8.84	10.62	9.83				5.27	5.55	
F	% Moisture (D/E)*100	31.1%	33.4%	34.7%				26.4%	27.7%	
N	# OF DROPS	30	24	19				*Moisture Contents determined by AASHTO T 245*		
LL	LL = **F** * FACTOR									
Ave.	*Average*							**27.1%**		



One Point Liquid Limit			
N	**Factor**	**N**	**Factor**
20	0.974	26	1.005
21	0.979	27	1.009
22	0.985	28	1.014
23	0.99	29	1.018
24	0.995	30	1.022
25	1.000		

NP, Non-Plastic ☐
Liquid Limit **33**
Plastic Limit **27**
Plastic Index 6
Group Symbol **A-4**
Multipoint Method ☑
One-point Method ☐

Wet Preparation ☐ Dry Preparation ☑ Air Dried ☑ *Estimate the % Retained on the #40 Sieve:*

Notes / Deviations / References:

AASHTO T90: Determining the Plastic Limit & Plastic Index of Soils *AASHTO T89: Determining the Liquid Limit of Soils*

Karen Warner
Technician Name

3/18/14
Date

Ken Harris
Technical Responsibility

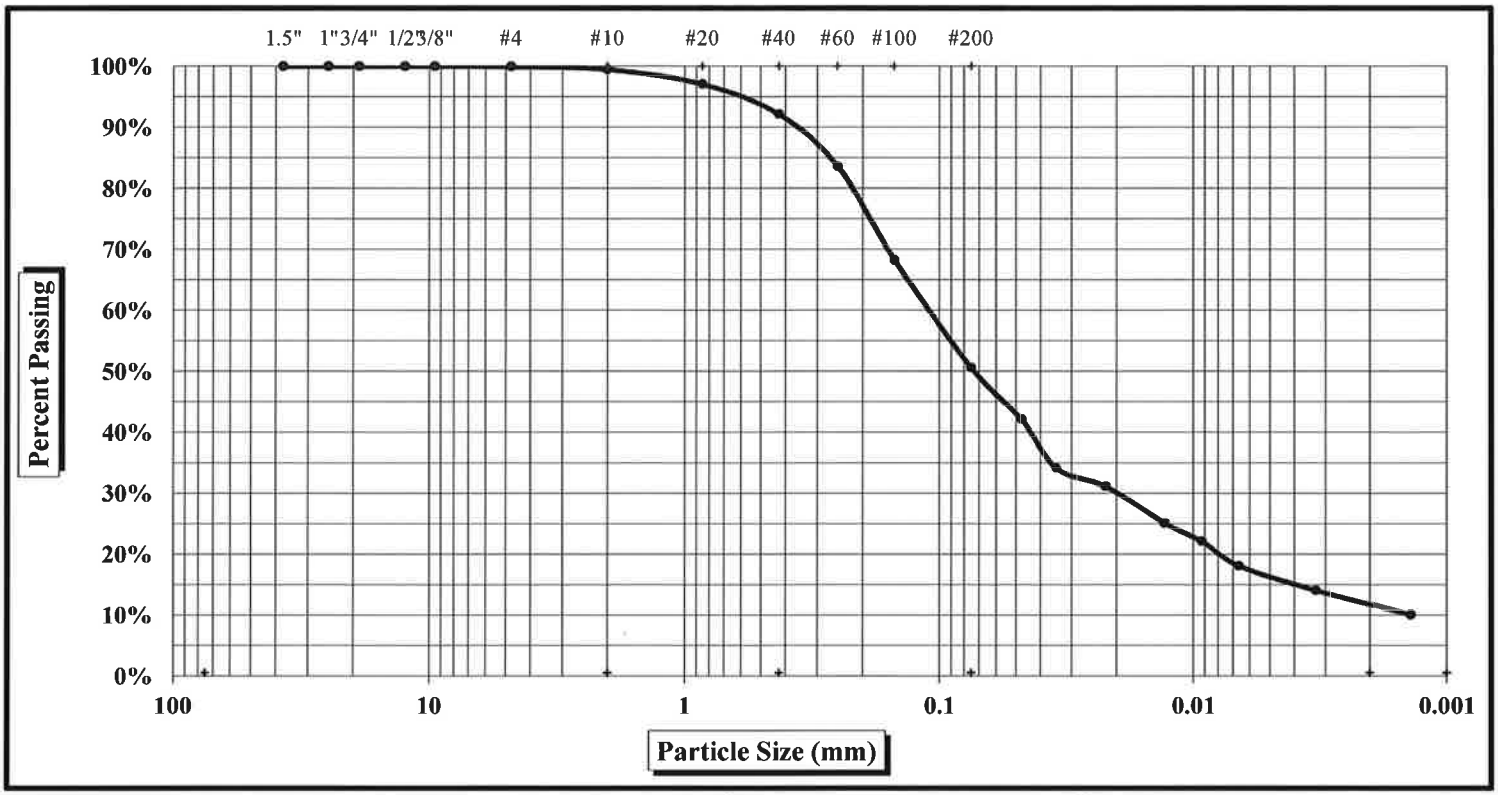
3/18/2014
Date

Particle Size Analysis of Soils

AASHTO T 88

S&ME Project #:	**3735-14-001**	Report Date:	3/18/14
Project Name:	**Ecusta Mill Site**	Test Date(s):	3/5-10/14
Client Name:	Shaw Environmental & Infrastructure, Inc.		
Client Address:	11560 Great Oaks Way, Suite 500, Alpheretta, GA		

Boring #:	PSB5	Sample #: 7029		Sample Date: 2/21-26/14	
Location:	On Site	Offset: NA		Depth: 7-11'	
Sample Description:	A-4				



As Defined by AASHTO		Fine Sand	< 0.425 mm and > 0.075 mm
Gravel	< 75 mm and > 2.00 mm	Silt	< 0.075 and > 0.002 mm
Coarse Sand	< 2.00 mm and > 0.425 mm	Clay	< 0.002 mm

Gravel	0.5%	Coarse Sand	7.3%	Silt	39%
Maximum Particle Size	#4	Fine Sand	41.6%	Clay	12%
Apparent Relative Density(Assumed)	2.650	Moisture Content	35.5%	Silt & Clay (% Passing #200)	50.6%
Liquid Limit	28	Plastic Limit	26	Plastic Index	2

Description of Sand & Gravel Particles: Rounded ☐ Angular ☒ Hard & Durable ☒ Soft ☐ Weathered & Friable ☐

Mechanical Stirring Apparatus (A) Length of Dispersion Period: 1 min. Dispersing Agent: Sodium Hexametaphosphate: 40 g./ Liter

References: AASHTO T88: Particle Size Analysis of Soils AASHTO T87: Dry Preparation of Disturbed Soil and Soil Aggregate Samples for Test

AASHTO T89: Determining the Liquid Limit of Soils AASHTO T90: Determining the Plastic Limit & Plasticity Index of Soils

AASHTO M 145: The Classification of Soils and Soil Aggregate Mixtures for Highway Construction Purposes ASTM D 854: Specific Gravity of Soils

AASHTO T265: Laboratory Determination of Moisture Content of Soils

Technical Responsibility: Ron Harris _____ 3/18/2014
Signature Signature

Form No. TR-D4318-T89-90
Revision No. 0
Revision Date: 11/20/07

Liquid Limit, Plastic Limit, and Plastic Index

S&ME

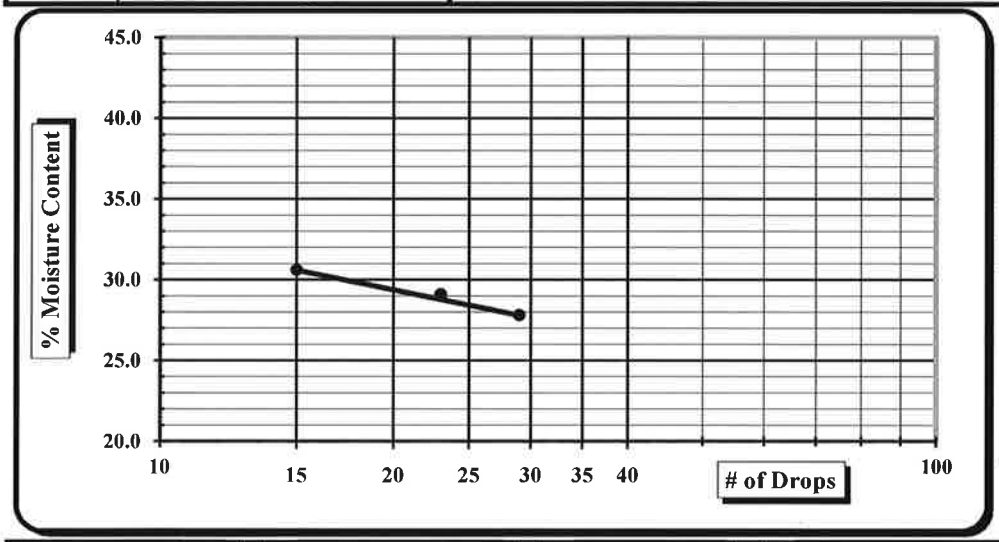
Another code *ASTM D 4318* ☐ *AASHTO T 89* ☒ *AASHTO T 90* ☒ ***Quality Assurance***

S&ME, Inc. ~9751 Southern Pine Boulevard,Charlotte, NC 28273

Project #:	**3735-14-001**	Report Date:	3/18/14
Project Name:	Ecusta Mill Site	Test Date(s)	3/5-18/14
Client Name:	Shaw Environmental & Infrastructure, Inc.		
Client Address:	11560 Great Oaks Way, Suite 500, Alpheretta, GA		
Boring #:	PSB5	Sample #: 7029	Sample Date: 2/21-26/14
Location:	On Site	Offset: NA	Elevation: 7-11'
Sample Description:	A-4		

Type and Specification	*S&ME ID #*	*Cal Date:*	*Type and Specification*	*S&ME ID #*	*Cal Date:*
Balance (0.01 g)	3222	6/18/2013	Grooving tool	20835	7/16/2013
LL Apparatus	3653	1/21/2014	Grooving tool		
Oven	11702	1/21/2014	Grooving tool		

Pan #		Liquid Limit						Plastic Limit		
	Tare #:	38	33	41				Jordi	52	
A	Tare Weight	15.81	15.89	15.77				15.94	15.71	
B	Wet Soil Weight + A	29.11	30.83	28.76				23.89	22.90	
C	Dry Soil Weight + A	26.22	27.46	25.72				22.29	21.39	
D	Water Weight (B-C)	2.89	3.37	3.04				1.60	1.51	
E	Dry Soil Weight (C-A)	10.41	11.57	9.95				6.35	5.68	
F	% Moisture (D/E)*100	27.8%	29.1%	30.6%				25.2%	26.6%	
N	# OF DROPS	29	23	15				*Moisture Contents determined by AASHTO T 245*		
LL	LL = **F** * FACTOR									
Ave.	*Average*							**25.9%**		



One Point Liquid Limit			
N	**Factor**	**N**	**Factor**
20	0.974	26	1.005
21	0.979	27	1.009
22	0.985	28	1.014
23	0.99	29	1.018
24	0.995	30	1.022
25	1.000		

NP, Non-Plastic ☐
Liquid Limit **28**
Plastic Limit **26**
Plastic Index 2
Group Symbol **A-4**
Multipoint Method ☑
One-point Method ☐

Wet Preparation ☐ Dry Preparation ☑ Air Dried ☑ *Estimate the % Retained on the #40 Sieve:*

Notes / Deviations / References:

AASHTO T90: Determining the Plastic Limit & Plastic Index of Soils *AASHTO T89: Determining the Liquid Limit of Soils*

Karen Warner
Technician Name

3/18/14
Date

Technical Responsibility Ron Harris

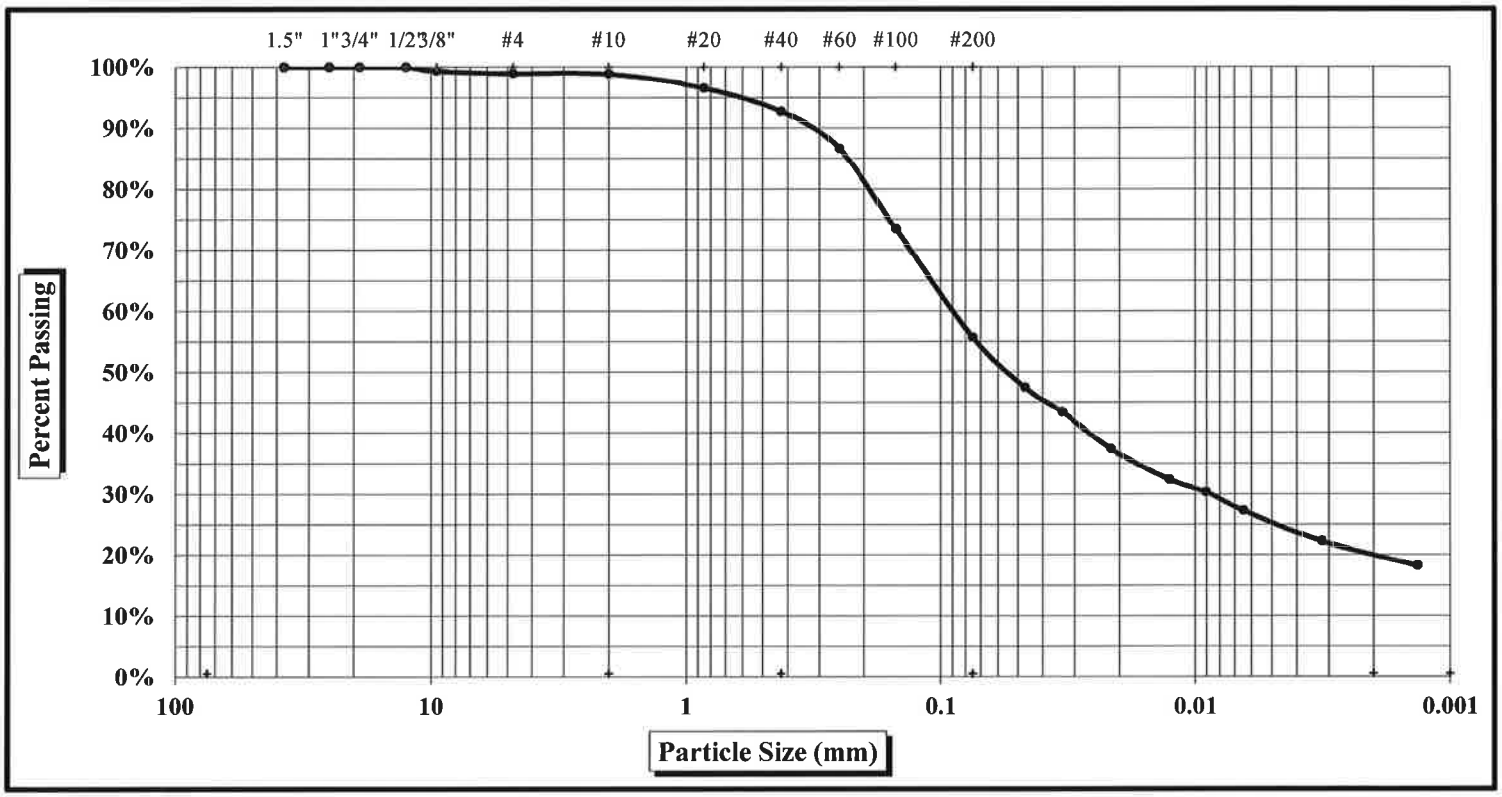
3/18/2014
Date

Particle Size Analysis of Soils

AASHTO T 88

S&ME Project #:	**3735-14-001**	Report Date:	3/18/14
Project Name:	**Ecusta Mill Site**	Test Date(s):	3/3-10/14
Client Name:	Shaw Environmental & Infrastructure, Inc.		
Client Address:	11560 Great Oaks Way, Suite 500, Alpheretta, GA		

Boring #:	PSB6	Sample #: 7030		Sample Date: 2/21-26/14	
Location:	On Site	Offset: NA		Depth: 1-11'	
Sample Description:	A-6				



As Defined by AASHTO		Fine Sand	< 0.425 mm and > 0.075 mm
Gravel	< 75 mm and > 2.00 mm	Silt	< 0.075 and > 0.002 mm
Coarse Sand	< 2.00 mm and > 0.425 mm	Clay	< 0.002 mm

Gravel	1.1%	Coarse Sand	6.1%	Silt	36%
Maximum Particle Size	3/8"	Fine Sand	37.1%	Clay	20%
Apparent Relative Density(Assumed)	2.650	Moisture Content	37.4%	Silt & Clay (% Passing #200)	55.7%
Liquid Limit	35	Plastic Limit	24	Plastic Index	11

Description of Sand & Gravel Particles: Rounded ☐ Angular ☒ Hard & Durable ☒ Soft ☐ Weathered & Friable ☐

Mechanical Stirring Apparatus (A) Length of Dispersion Period: 1 min. Dispersing Agent: Sodium Hexametaphosphate: 40 g./ Liter

References: AASHTO T88: Particle Size Analysis of Soils AASHTO T87: Dry Preparation of Disturbed Soil and Soil Aggregate Samples for Test

AASHTO T89: Determining the Liquid Limit of Soils AASHTO T90: Determining the Plastic Limit & Plasticity Index of Soils

AASHTO M 145: The Classification of Soils and Soil Aggregate Mixtures for Highway Construction Purposes ASTM D 854: Specific Gravity of Soils

AASHTO T265: Laboratory Determination of Moisture Content of Soils

Technical Responsibility: Ron Harris Signature 3/18/2014 Signature

Form No. TR-D4318-T89-90
Revision No. 0
Revision Date: 11/20/07

Liquid Limit, Plastic Limit, and Plastic Index

S&ME

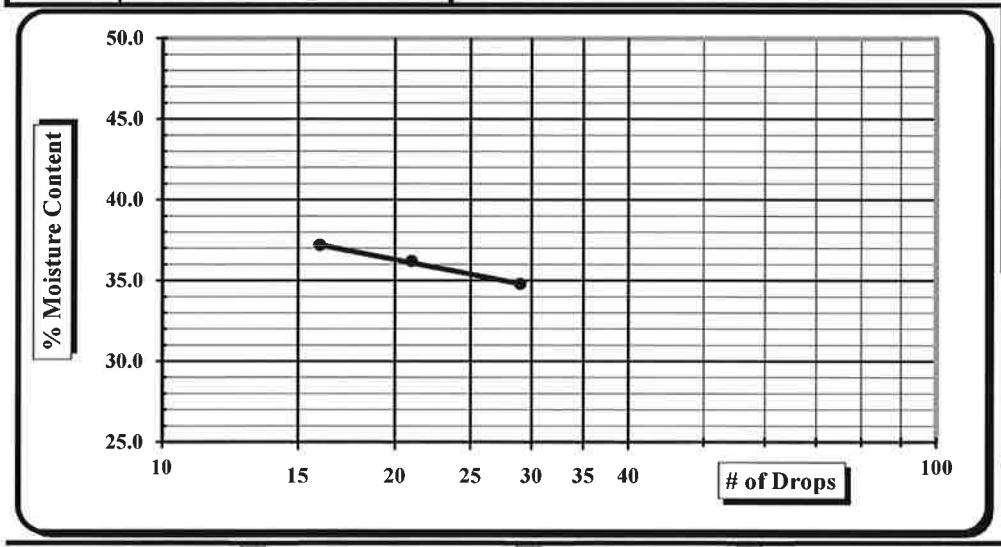
Another code *ASTM D 4318* ☐ *AASHTO T 89* ☒ *AASHTO T 90* ☒ ***Quality Assurance***

S&ME, Inc. ~9751 Southern Pine Boulevard,Charlotte, NC 28273

Project #:	**3735-14-001**	Report Date:	3/18/14
Project Name:	Ecusta Mill Site	Test Date(s)	3/3-18/14
Client Name:	Shaw Environmental & Infrastructure, Inc.		
Client Address:	11560 Great Oaks Way, Suite 500, Alpheretta, GA		
Boring #:	PSB6	Sample #: 7030	Sample Date: 2/21-26/14
Location:	On Site	Offset: NA	Elevation: 1-11'
Sample Description:	A-6		

Type and Specification	*S&ME ID #*	*Cal Date:*	*Type and Specification*	*S&ME ID #*	*Cal Date:*
Balance (0.01 g)	3222	6/18/2013	Grooving tool	20835	7/16/2013
LL Apparatus	3653	1/21/2014	Grooving tool		
Oven	11702	1/21/2014	Grooving tool		

Pan #		Liquid Limit						Plastic Limit		
	Tare #:	12	34	KK				Z	59	
A	Tare Weight	14.17	13.98	16.05				16.87	15.78	
B	Wet Soil Weight + A	28.18	24.25	26.48				23.77	21.97	
C	Dry Soil Weight + A	24.56	21.52	23.65				22.41	20.78	
D	Water Weight (B-C)	3.62	2.73	2.83				1.36	1.19	
E	Dry Soil Weight (C-A)	10.39	7.54	7.60				5.54	5.00	
F	% Moisture (D/E)*100	34.8%	36.2%	37.2%				24.5%	23.8%	
N	# OF DROPS	29	21	16				*Moisture Contents determined by AASHTO T 245*		
LL	LL = **F** * FACTOR									
Ave.	*Average*							**24.2%**		



One Point Liquid Limit			
N	**Factor**	**N**	**Factor**
20	0.974	26	1.005
21	0.979	27	1.009
22	0.985	28	1.014
23	0.99	29	1.018
24	0.995	30	1.022
25	1.000		

NP, Non-Plastic ☐
Liquid Limit **35**
Plastic Limit **24**
Plastic Index **11**
Group Symbol **A-6**
Multipoint Method ☑
One-point Method ☐

Wet Preparation ☐ Dry Preparation ☑ Air Dried ☑ *Estimate the % Retained on the #40 Sieve:*

Notes / Deviations / References:

AASHTO T90: Determining the Plastic Limit & Plastic Index of Soils *AASHTO T89: Determining the Liquid Limit of Soils*

Karen Warner
Technician Name

3/18/14
Date

Technical Responsibility Ron Harris

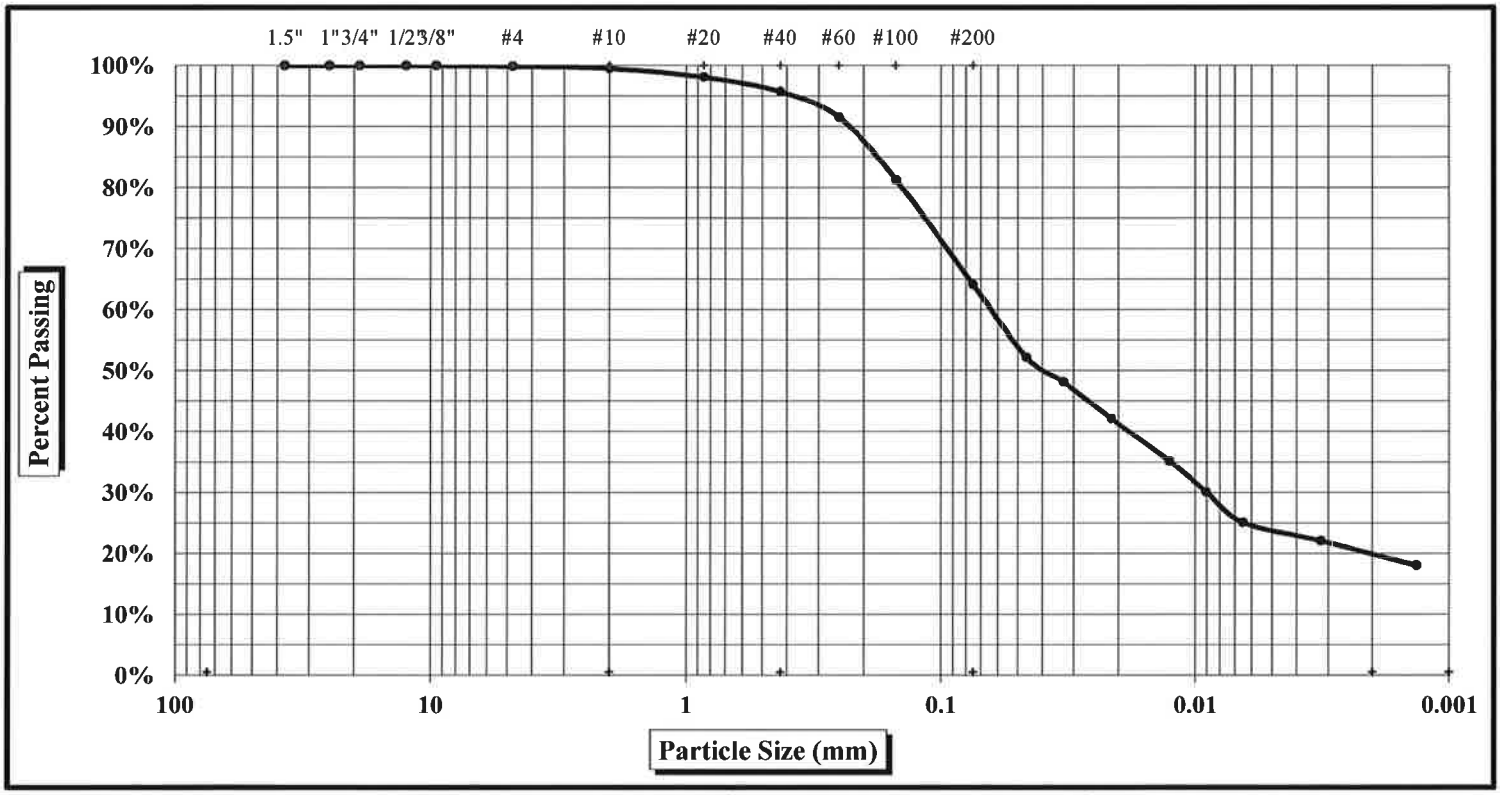
3/18/2014
Date

Particle Size Analysis of Soils

AASHTO T 88

S&ME Project #:	**3735-14-001**	Report Date:	3/18/14
Project Name:	**Ecusta Mill Site**	Test Date(s):	3/3-10/14
Client Name:	Shaw Environmental & Infrastructure, Inc.		
Client Address:	11560 Great Oaks Way, Suite 500, Alpheretta, GA		

Boring #:	PSB7	Sample #: 7031		Sample Date: 2/21-26/14	
Location:	On Site	Offset: NA		Depth: 1-11'	
Sample Description:	A-6				



As Defined by AASHTO		Fine Sand	< 0.425 mm and > 0.075 mm
Gravel	< 75 mm and > 2.00 mm	Silt	< 0.075 and > 0.002 mm
Coarse Sand	< 2.00 mm and > 0.425 mm	Clay	< 0.002 mm

Gravel	0.5%	Coarse Sand	3.8%	Silt	44%
Maximum Particle Size	#4	Fine Sand	31.6%	Clay	20%
Apparent Relative Density(Assumed)	2.650	Moisture Content	27.6%	Silt & Clay (% Passing #200)	64.1%
Liquid Limit	34	Plastic Limit	22	Plastic Index	12

Description of Sand & Gravel Particles: Rounded ☐ Angular ☒ Hard & Durable ☒ Soft ☐ Weathered & Friable ☐

Mechanical Stirring Apparatus (A) Length of Dispersion Period: 1 min. Dispersing Agent: Sodium Hexametaphosphate: 40 g./ Liter

References: AASHTO T88: Particle Size Analysis of Soils AASHTO T87: Dry Preparation of Disturbed Soil and Soil Aggregate Samples for Test
AASHTO T89: Determining the Liquid Limit of Soils AASHTO T90: Determining the Plastic Limit & Plasticity Index of Soils
AASHTO M 145: The Classification of Soils and Soil Aggregate Mixtures for Highway Construction Purposes ASTM D 854: Specific Gravity of Soils
AASHTO T265: Laboratory Determination of Moisture Content of Soils

Technical Responsibility: Ron Harris *Signature* 3/18/2014 *Signature*

Form No. TR-D4318-T89-90
Revision No. 0
Revision Date: 11/20/07

Liquid Limit, Plastic Limit, and Plastic Index

S&ME

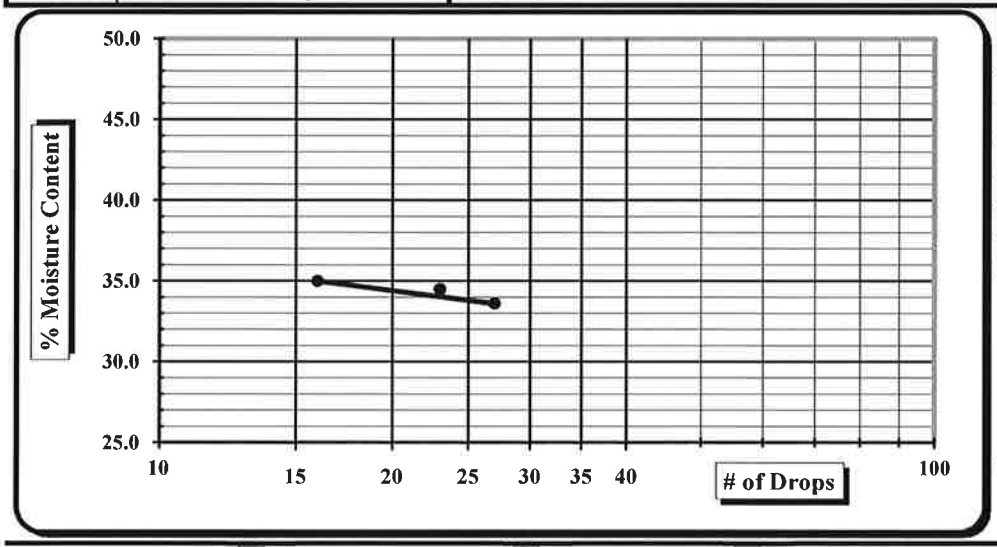
Another code *ASTM D 4318* ☐ *AASHTO T 89* ☒ *AASHTO T 90* ☒ ***Quality Assurance***

S&ME, Inc. ~9751 Southern Pine Boulevard,Charlotte, NC 28273

Project #:	**3735-14-001**	Report Date:	3/18/14
Project Name:	Ecusta Mill Site	Test Date(s)	3/3-18/14
Client Name:	Shaw Environmental & Infrastructure, Inc.		
Client Address:	11560 Great Oaks Way, Suite 500, Alpheretta, GA		
Boring #:	PSB7	Sample #: 7031	Sample Date: 2/21-26/14
Location:	On Site	Offset: NA	Elevation: 1-11'
Sample Description:	A-6		

Type and Specification	*S&ME ID #*	*Cal Date:*	*Type and Specification*	*S&ME ID #*	*Cal Date:*
Balance (0.01 g)	3222	6/18/2013	Grooving tool	20835	7/16/2013
LL Apparatus	3653	1/21/2014	Grooving tool		
Oven	11702	1/21/2014	Grooving tool		

Pan #		Liquid Limit						Plastic Limit		
	Tare #:	4	NN	RR				8	30	
A	Tare Weight	15.67	15.25	15.24				15.74	15.89	
B	Wet Soil Weight + A	25.82	24.95	24.88				22.12	22.47	
C	Dry Soil Weight + A	23.27	22.46	22.38				20.96	21.31	
D	Water Weight (B-C)	2.55	2.49	2.50				1.16	1.16	
E	Dry Soil Weight (C-A)	7.60	7.21	7.14				5.22	5.42	
F	% Moisture (D/E)*100	33.6%	34.5%	35.0%				22.2%	21.4%	
N	# OF DROPS	27	23	16				*Moisture Contents determined by AASHTO T 245*		
LL	LL = **F** * FACTOR									
Ave.	*Average*							**21.8%**		



One Point Liquid Limit			
N	**Factor**	**N**	**Factor**
20	0.974	26	1.005
21	0.979	27	1.009
22	0.985	28	1.014
23	0.99	29	1.018
24	0.995	30	1.022
25	1.000		

NP, Non-Plastic ☐
Liquid Limit **34**
Plastic Limit **22**
Plastic Index 12
Group Symbol **A-6**
Multipoint Method ☑
One-point Method ☐

Wet Preparation ☐ Dry Preparation ☑ Air Dried ☑ *Estimate the % Retained on the #40 Sieve:*

Notes / Deviations / References:

AASHTO T90: Determining the Plastic Limit & Plastic Index of Soils *AASHTO T89: Determining the Liquid Limit of Soils*

Karen Warner
Technician Name

3/18/14
Date

Technical Responsibility Ron Harris

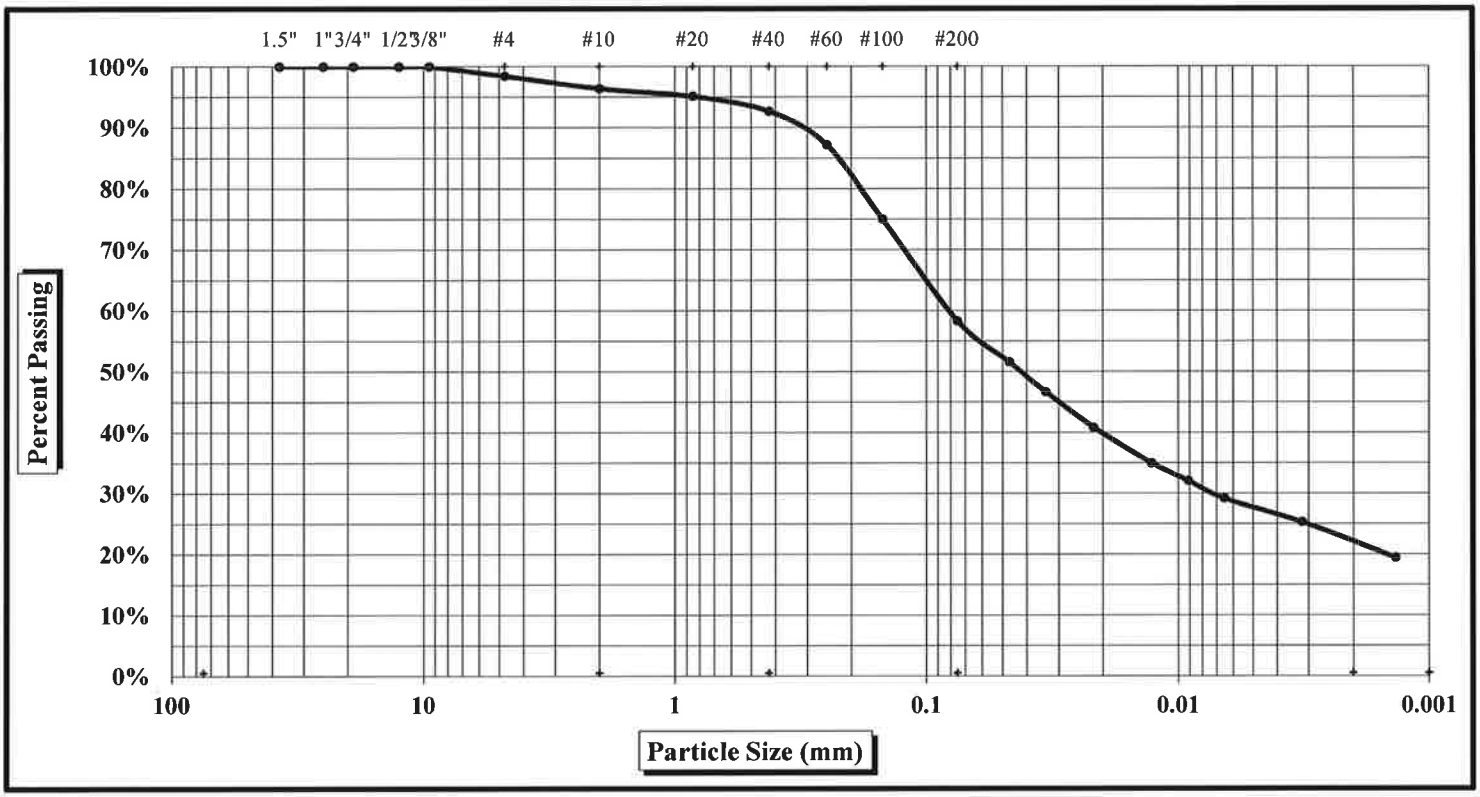
3/18/2014
Date

Particle Size Analysis of Soils

AASHTO T 88

S&ME Project #:	**3735-14-001**	Report Date:	3/7/14
Project Name:	**Ecusta Mill Site**	Test Date(s):	2/25-3/7/14
Client Name:	Shaw Environmental & Infrastructure, Inc.		
Client Address:	11560 Great Oaks Way, Suite 500, Alpheretta, GA		

Boring #:	PSB8	Sample #: 7032		Sample Date: 2/19-20/14	
Location:	On Site	Offset: NA		Depth: 1-9'	
Sample Description:	A-4				



As Defined by AASHTO		Fine Sand	< 0.425 mm and > 0.075 mm
Gravel	< 75 mm and > 2.00 mm	Silt	< 0.075 and > 0.002 mm
Coarse Sand	< 2.00 mm and > 0.425 mm	Clay	< 0.002 mm

Gravel	3.6%	Coarse Sand	3.7%	Silt	35%
Maximum Particle Size	#4	Fine Sand	34.4%	Clay	23%
Apparent Relative Density(Assumed)	2.650	Moisture Content	30.3%	Silt & Clay (% Passing #200)	58.3%
Liquid Limit	32	Plastic Limit	22	Plastic Index	10

Description of Sand & Gravel Particles: Rounded ☐ Angular ☒ Hard & Durable ☒ Soft ☐ Weathered & Friable ☐

Mechanical Stirring Apparatus (A) Length of Dispersion Period: 1 min. Dispersing Agent: Sodium Hexametaphosphate: 40 g / Liter

References: AASHTO T88: Particle Size Analysis of Soils AASHTO T87: Dry Preparation of Disturbed Soil and Soil Aggregate Samples for Test

AASHTO T89: Determining the Liquid Limit of Soils AASHTO T90: Determining the Plastic Limit & Plasticity Index of Soils

AASHTO M 145: The Classification of Soils and Soil Aggregate Mixtures for Highway Construction Purposes ASTM D 854: Specific Gravity of Soils

AASHTO T265: Laboratory Determination of Moisture Content of Soils

Technical Responsibility: Ron Harris Signature 3/7/14 Signature

Form No. TR-D4318-T89-90
Revision No. 0
Revision Date: 11/20/07

Liquid Limit, Plastic Limit, and Plastic Index

S&ME

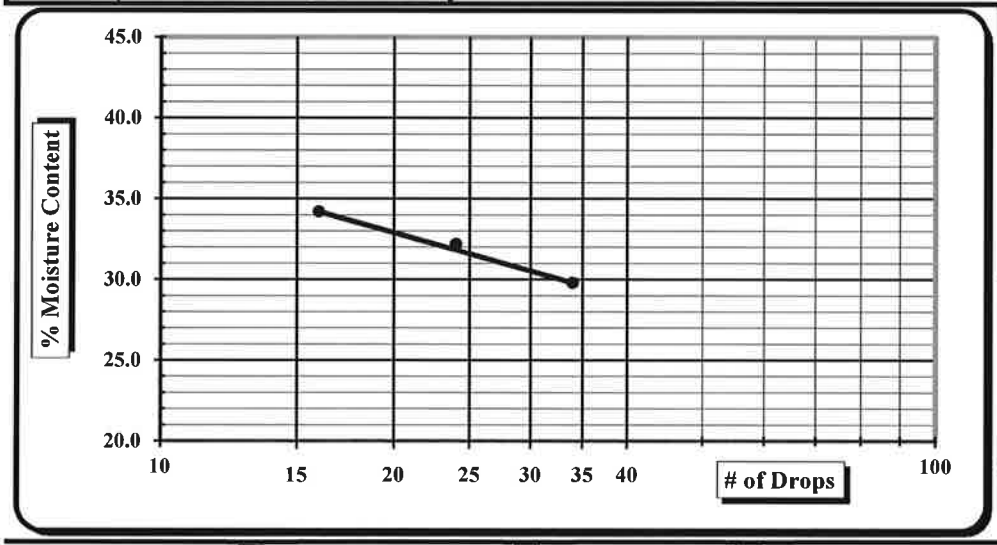
Another code *ASTM D 4318* ☐ *AASHTO T 89* ☒ *AASHTO T 90* ☒ ***Quality Assurance***

S&ME, Inc. ~9751 Southern Pine Boulevard,Charlotte, NC 28273

Project #:	**3735-14-001**	Report Date:	3/7/14
Project Name:	Ecusta Mill Site	Test Date(s)	2/24-3/7/14
Client Name:	Shaw Environmental & Infrastructure, Inc.		
Client Address:	11560 Great Oaks Way, Suite 500, Alpheretta, GA		
Boring #:	PSB8	Sample #: 7032	Sample Date: 2/19-20/14
Location:	On Site	Offset: NA	Elevation: 1-9'
Sample Description:	A-4		

Type and Specification	*S&ME ID #*	*Cal Date:*	*Type and Specification*	*S&ME ID #*	*Cal Date:*
Balance (0.01 g)	3222	6/18/2013	Grooving tool	20835	7/16/2013
LL Apparatus	3653	1/21/2014	Grooving tool		
Oven	11702	1/21/2014	Grooving tool		

Pan #		Liquid Limit						Plastic Limit		
	Tare #:	54	51	FE				MM	29	
A	Tare Weight	14.09	15.73	16.83				16.55	14.11	
B	Wet Soil Weight + A	25.34	27.72	29.97				25.01	22.38	
C	Dry Soil Weight + A	22.76	24.80	26.62				23.51	20.93	
D	Water Weight (B-C)	2.58	2.92	3.35				1.50	1.45	
E	Dry Soil Weight (C-A)	8.67	9.07	9.79				6.96	6.82	
F	% Moisture (D/E)*100	29.8%	32.2%	34.2%				21.6%	21.3%	
N	# OF DROPS	34	24	16				*Moisture Contents determined by AASHTO T 245*		
LL	LL = **F** * FACTOR									
Ave.	*Average*							**21.5%**		



One Point Liquid Limit			
N	**Factor**	**N**	**Factor**
20	0.974	26	1.005
21	0.979	27	1.009
22	0.985	28	1.014
23	0.99	29	1.018
24	0.995	30	1.022
25	1.000		

NP, Non-Plastic ☐
Liquid Limit **32**
Plastic Limit **22**
Plastic Index **10**
Group Symbol **A-4**
Multipoint Method ☑
One-point Method ☐

Wet Preparation ☐ Dry Preparation ☑ Air Dried ☑ *Estimate the % Retained on the #40 Sieve:*

Notes / Deviations / References:

AASHTO T90: Determining the Plastic Limit & Plastic Index of Soils *AASHTO T89: Determining the Liquid Limit of Soils*

Technician Name — 3/7/14 Date — Technical Responsibility — 3/7/14 Date

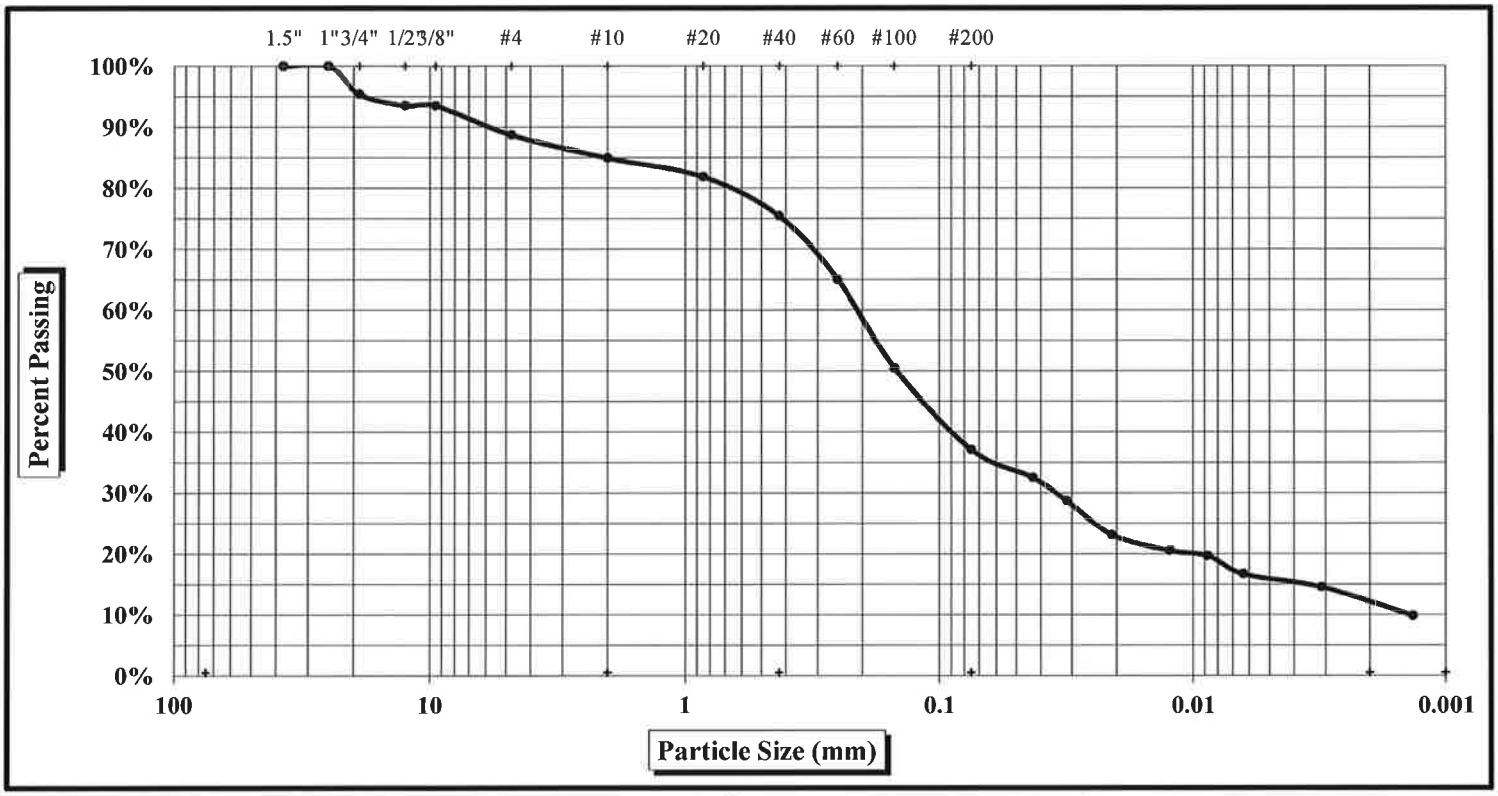
Particle Size Analysis of Soils

AASHTO T 88

S&ME

S&ME Project #:	**3735-14-001**	Report Date:	3/7/14
Project Name:	**Ecusta Mill Site**	Test Date(s):	2/24-3/7/14
Client Name:	Shaw Environmental & Infrastructure, Inc.		
Client Address:	11560 Great Oaks Way, Suite 500, Alpheretta, GA		

Boring #:	PSB8	Sample #: 7032		Sample Date: 2/19-20/14	
Location:	On Site	Offset: NA		Depth: 9-12'	
Sample Description:	A-4				



As Defined by AASHTO		Fine Sand	< 0.425 mm and > 0.075 mm
Gravel	< 75 mm and > 2.00 mm	Silt	< 0.075 and > 0.002 mm
Coarse Sand	< 2.00 mm and > 0.425 mm	Clay	< 0.002 mm

Gravel	15.0%	Coarse Sand	9.5%	Silt	25%
Maximum Particle Size	3/4"	Fine Sand	38.3%	Clay	13%
Apparent Relative Density(Assumed)	2.650	Moisture Content	43.4%	Silt & Clay (% Passing #200)	37.1%
Liquid Limit	32	Plastic Limit	23	Plastic Index	9

Description of Sand & Gravel Particles: Rounded ☐ Angular ☒ Hard & Durable ☒ Soft ☐ Weathered & Friable ☐

Mechanical Stirring Apparatus (A) Length of Dispersion Period: 1 min. Dispersing Agent: Sodium Hexametaphosphate: 40 g./ Liter

References: AASHTO T88: Particle Size Analysis of Soils AASHTO T87: Dry Preparation of Disturbed Soil and Soil Aggregate Samples for Test
AASHTO T89: Determining the Liquid Limit of Soils AASHTO T90: Determining the Plastic Limit & Plasticity Index of Soils
AASHTO M 145: The Classification of Soils and Soil Aggregate Mixtures for Highway Construction Purposes ASTM D 854: Specific Gravity of Soils
AASHTO T265: Laboratory Determination of Moisture Content of Soils

Technical Responsibility: Ron Harris Signature 3/7/14 Signature

Form No. TR-D4318-T89-90
Revision No. 0
Revision Date: 11/20/07

Liquid Limit, Plastic Limit, and Plastic Index

S&ME

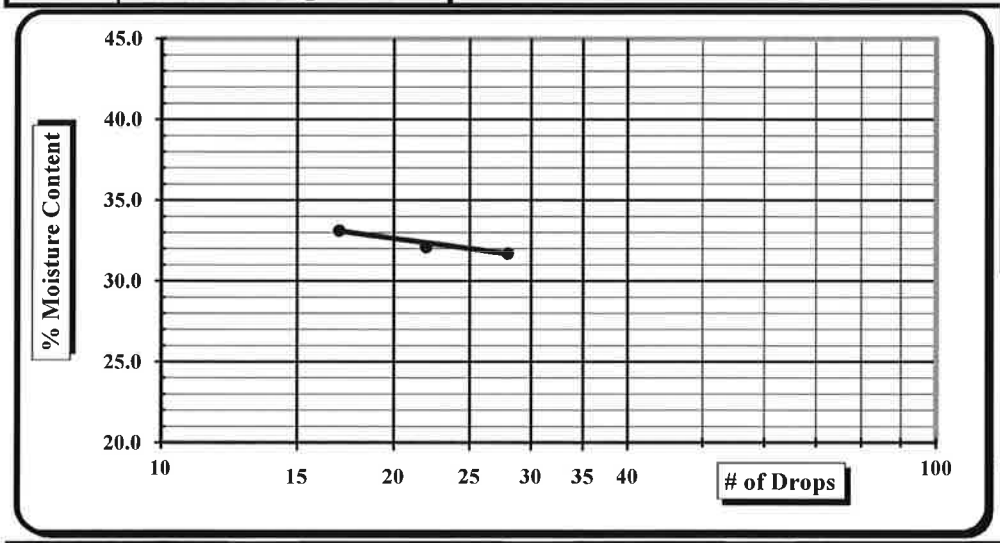
Another code *ASTM D 4318* ☐ *AASHTO T 89* ☒ *AASHTO T 90* ☒ ***Quality Assurance***

S&ME, Inc. ~9751 Southern Pine Boulevard,Charlotte, NC 28273

Project #:	**3735-14-001**	Report Date:	3/7/14
Project Name:	Ecusta Mill Site	Test Date(s)	2/24-3/7/14
Client Name:	Shaw Environmental & Infrastructure, Inc.		
Client Address:	11560 Great Oaks Way, Suite 500, Alpheretta, GA		
Boring #:	PSB8	Sample #: 7032	Sample Date: 2/19-20/14
Location:	On Site	Offset: NA	Elevation: 9-12'
Sample Description:	A-4		

Type and Specification	*S&ME ID #*	*Cal Date:*	*Type and Specification*	*S&ME ID #*	*Cal Date:*
Balance (0.01 g)	3222	6/18/2013	Grooving tool	20835	7/16/2013
LL Apparatus	3653	1/21/2014	Grooving tool		
Oven	11702	1/21/2014	Grooving tool		

Pan #		Liquid Limit						Plastic Limit		
	Tare #:	34	36	XX				10	QQ	
A	Tare Weight	13.97	15.66	16.02				13.98	16.85	
B	Wet Soil Weight + A	26.69	29.31	29.98				22.74	25.79	
C	Dry Soil Weight + A	23.63	25.99	26.51				21.10	24.14	
D	Water Weight (B-C)	3.06	3.32	3.47				1.64	1.65	
E	Dry Soil Weight (C-A)	9.66	10.33	10.49				7.12	7.29	
F	% Moisture (D/E)*100	31.7%	32.1%	33.1%				23.0%	22.6%	
N	# OF DROPS	28	22	17				*Moisture Contents determined by AASHTO T 245*		
LL	LL = **F** * FACTOR									
Ave.	*Average*							**22.8%**		



One Point Liquid Limit			
N	**Factor**	**N**	**Factor**
20	0.974	26	1.005
21	0.979	27	1.009
22	0.985	28	1.014
23	0.99	29	1.018
24	0.995	30	1.022
25	1.000		

NP, Non-Plastic	☐
Liquid Limit	**32**
Plastic Limit	**23**
Plastic Index	9
Group Symbol	**A-4**
Multipoint Method	☑
One-point Method	☐

Wet Preparation ☐ Dry Preparation ☑ Air Dried ☑ *Estimate the % Retained on the #40 Sieve:*

Notes / Deviations / References:

AASHTO T90: Determining the Plastic Limit & Plastic Index of Soils *AASHTO T89: Determining the Liquid Limit of Soils*

Technician Name — 3/7/14 Date — Technical Responsibility — 3/7/14 Date

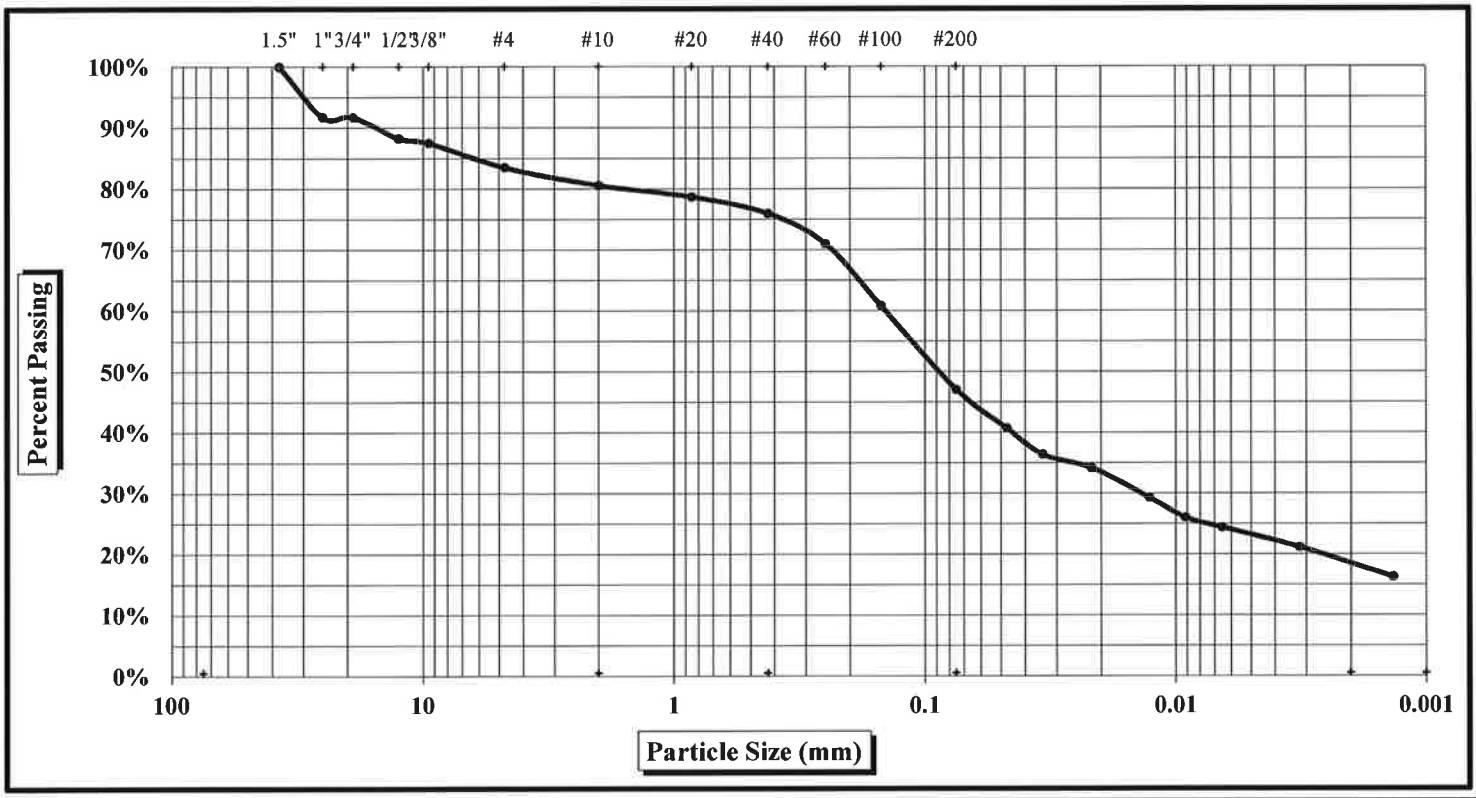
Particle Size Analysis of Soils

AASHTO T 88

S&ME

S&ME Project #:	**3735-14-001**	Report Date:	3/7/14
Project Name:	**Ecusta Mill Site**	Test Date(s):	2/24-3/7/14
Client Name:	Shaw Environmental & Infrastructure, Inc.		
Client Address:	11560 Great Oaks Way, Suite 500, Alpheretta, GA		

Boring #:	PSB9	Sample #: 7033		Sample Date: 2/19-20/14	
Location:	On Site	Offset: NA		Depth: 1-5'	
Sample Description:	A-6				



As Defined by AASHTO		Fine Sand	< 0.425 mm and > 0.075 mm
Gravel	< 75 mm and > 2.00 mm	Silt	< 0.075 and > 0.002 mm
Coarse Sand	< 2.00 mm and > 0.425 mm	Clay	< 0.002 mm

Gravel	19.4%	Coarse Sand	4.6%	Silt	29%
Maximum Particle Size	1"	Fine Sand	28.9%	Clay	19%
Apparent Relative Density(Assumed)	2.650	Moisture Content	29.8%	Silt & Clay (% Passing #200)	47.0%
Liquid Limit	33	Plastic Limit	22	Plastic Index	11

Description of Sand & Gravel Particles: Rounded ☐ Angular ☒ Hard & Durable ☒ Soft ☐ Weathered & Friable ☐

Mechanical Stirring Apparatus (A) Length of Dispersion Period: 1 min. Dispersing Agent: Sodium Hexametaphosphate: 40 g./ Liter

References: AASHTO T88: Particle Size Analysis of Soils AASHTO T87: Dry Preparation of Disturbed Soil and Soil Aggregate Samples for Test

AASHTO T89: Determining the Liquid Limit of Soils AASHTO T90: Determining the Plastic Limit & Plasticity Index of Soils

AASHTO M 145: The Classification of Soils and Soil Aggregate Mixtures for Highway Construction Purposes ASTM D 854: Specific Gravity of Soils

AASHTO T265: Laboratory Determination of Moisture Content of Soils

Technical Responsibility: Ron Hamis Signature 3/7/14 Signature

Form No. TR-D4318-T89-90
Revision No. 0
Revision Date: 11/20/07

Liquid Limit, Plastic Limit, and Plastic Index

S&ME

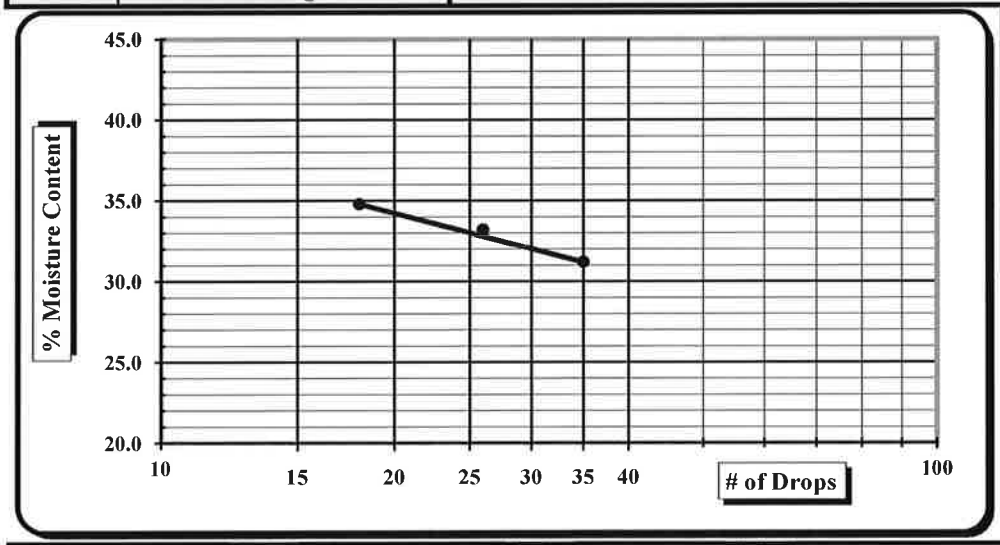
Another code *ASTM D 4318* ☐ *AASHTO T 89* ☒ *AASHTO T 90* ☒ ***Quality Assurance***

S&ME, Inc. ~9751 Southern Pine Boulevard,Charlotte, NC 28273

Project #:	**3735-14-001**	Report Date:	3/7/14
Project Name:	Ecusta Mill Site	Test Date(s)	2/24-3/7/14
Client Name:	Shaw Environmental & Infrastructure, Inc.		
Client Address:	11560 Great Oaks Way, Suite 500, Alpheretta, GA		
Boring #:	PSB9	Sample #: 7033	Sample Date: 2/19-20/14
Location:	On Site	Offset: NA	Elevation: 1-5'
Sample Description:	A-6		

Type and Specification	*S&ME ID #*	*Cal Date:*	*Type and Specification*	*S&ME ID #*	*Cal Date:*
Balance (0.01 g)	3222	6/18/2013	Grooving tool	20835	7/16/2013
LL Apparatus	3653	1/21/2014	Grooving tool		
Oven	11702	1/21/2014	Grooving tool		

Pan #		Liquid Limit						Plastic Limit		
	Tare #:	5	LL	56				KK	38	
A	Tare Weight	15.70	16.92	15.68				16.04	15.79	
B	Wet Soil Weight + A	27.76	29.39	30.22				24.05	24.57	
C	Dry Soil Weight + A	24.89	26.28	26.47				22.60	22.97	
D	Water Weight (B-C)	2.87	3.11	3.75				1.45	1.60	
E	Dry Soil Weight (C-A)	9.19	9.36	10.79				6.56	7.18	
F	% Moisture (D/E)*100	31.2%	33.2%	34.8%				22.1%	22.3%	
N	# OF DROPS	35	26	18				*Moisture Contents determined by AASHTO T 245*		
LL	LL = **F** * FACTOR									
Ave.	*Average*							**22.2%**		



One Point Liquid Limit			
N	**Factor**	**N**	**Factor**
20	0.974	26	1.005
21	0.979	27	1.009
22	0.985	28	1.014
23	0.99	29	1.018
24	0.995	30	1.022
25	1.000		

NP, Non-Plastic	☐
Liquid Limit	**33**
Plastic Limit	**22**
Plastic Index	**11**
Group Symbol	**A-6**
Multipoint Method	☑
One-point Method	☐

Wet Preparation ☐ Dry Preparation ☑ Air Dried ☑ *Estimate the % Retained on the #40 Sieve:*

Notes / Deviations / References:

AASHTO T90: Determining the Plastic Limit & Plastic Index of Soils *AASHTO T89: Determining the Liquid Limit of Soils*

Karen Walker — *Technician Name* — 3/7/14 *Date*

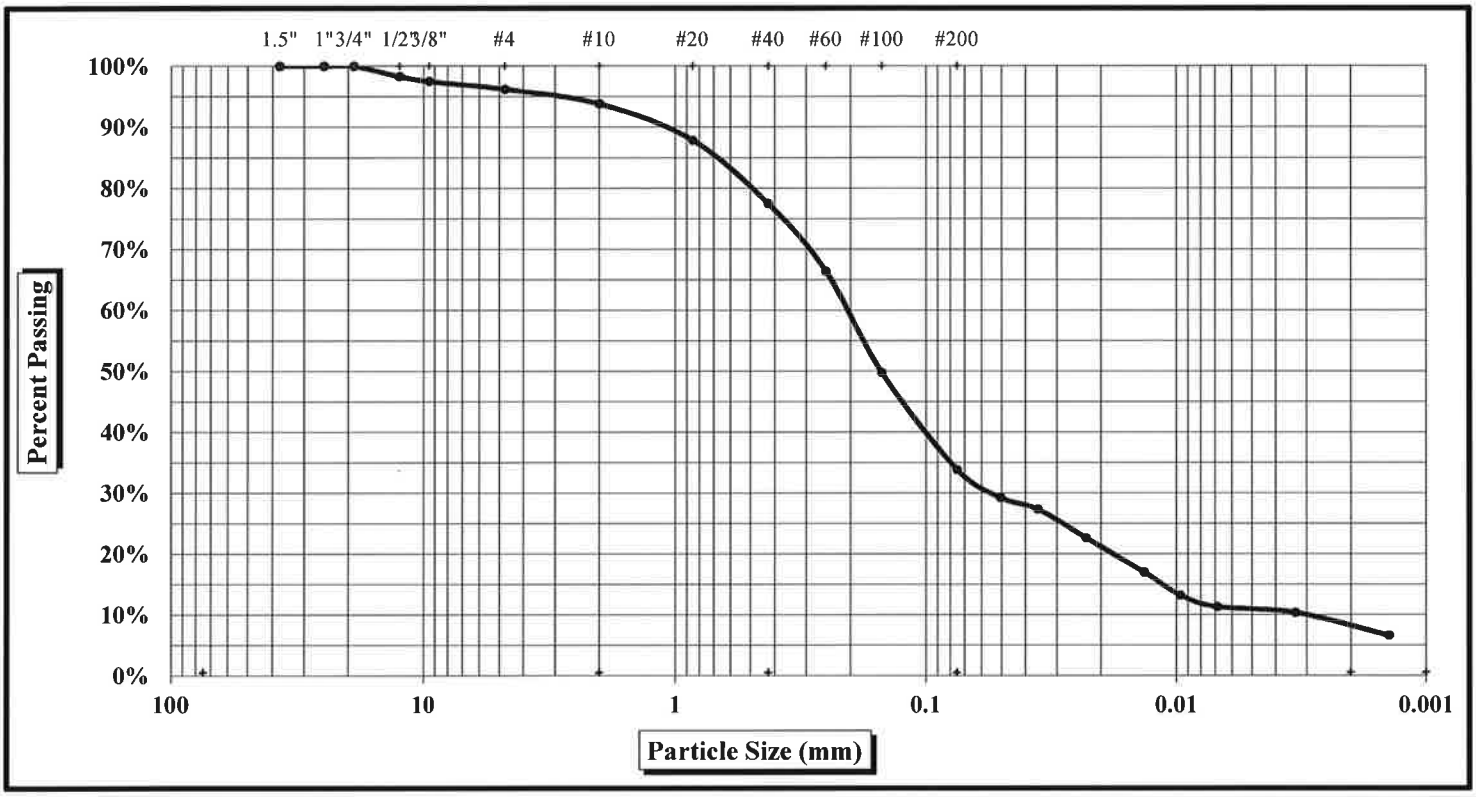
Technical Responsibility — 3/7/14 *Date*

Particle Size Analysis of Soils

AASHTO T 88

S&ME Project #:	**3735-14-001**	Report Date:	3/7/14
Project Name:	**Ecusta Mill Site**	Test Date(s):	2/25-3/7/14
Client Name:	Shaw Environmental & Infrastructure, Inc.		
Client Address:	11560 Great Oaks Way, Suite 500, Alpheretta, GA		

Boring #:	PSB9	Sample #: 7033		Sample Date: 2/19-20/14	
Location:	On Site	Offset: NA		Depth: 5-12'	
Sample Description:	A-2-4				



As Defined by AASHTO		Fine Sand	< 0.425 mm and > 0.075 mm
Gravel	< 75 mm and > 2.00 mm	Silt	< 0.075 and > 0.002 mm
Coarse Sand	< 2.00 mm and > 0.425 mm	Clay	< 0.002 mm

Gravel	6.2%	Coarse Sand	16.4%	Silt	26%
Maximum Particle Size	1/2"	Fine Sand	43.7%	Clay	8%
Apparent Relative Density(Assumed)	2.650	Moisture Content	29.1%	Silt & Clay (% Passing #200)	33.8%
Liquid Limit	28	Plastic Limit	24	Plastic Index	4

Description of Sand & Gravel Particles: Rounded ☐ Angular ☒ Hard & Durable ☒ Soft ☐ Weathered & Friable ☐

Mechanical Stirring Apparatus (A) Length of Dispersion Period: 1 min. Dispersing Agent: Sodium Hexametaphosphate: 40 g./ Liter

References: AASHTO T88: Particle Size Analysis of Soils AASHTO T87: Dry Preparation of Disturbed Soil and Soil Aggregate Samples for Test

AASHTO T89: Determining the Liquid Limit of Soils AASHTO T90: Determining the Plastic Limit & Plasticity Index of Soils

AASHTO M 145: The Classification of Soils and Soil Aggregate Mixtures for Highway Construction Purposes ASTM D 854: Specific Gravity of Soils

AASHTO T265: Laboratory Determination of Moisture Content of Soils

Technical Responsibility: Ron Harris Signature 3/7/14 Signature

Form No. TR-D4318-T89-90
Revision No. 0
Revision Date: 11/20/07

Liquid Limit, Plastic Limit, and Plastic Index

S&ME

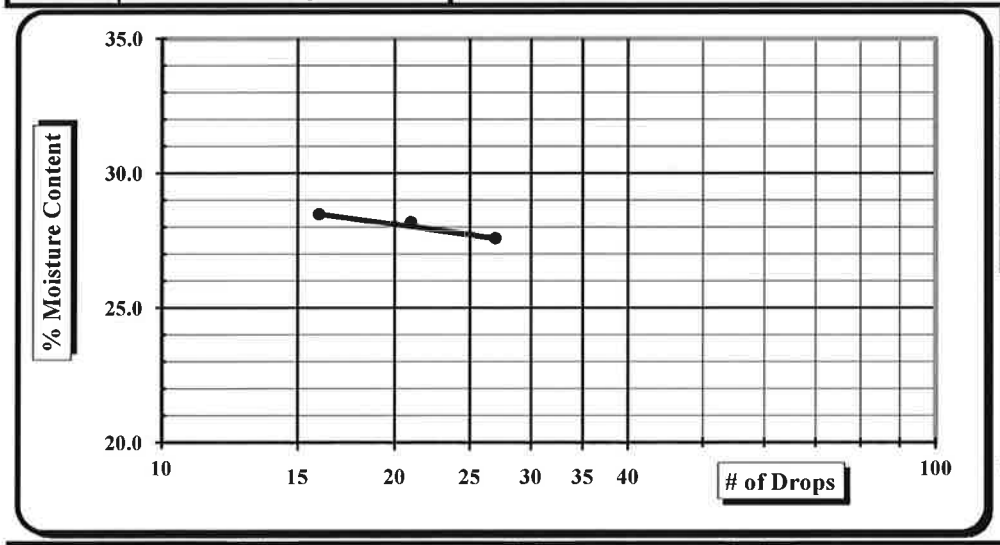
Another code *ASTM D 4318* ☐ *AASHTO T 89* ☒ *AASHTO T 90* ☒ ***Quality Assurance***

S&ME, Inc. ~9751 Southern Pine Boulevard,Charlotte, NC 28273

Project #:	**3735-14-001**	Report Date:	3/7/14
Project Name:	Ecusta Mill Site	Test Date(s)	2/24-3/7/14
Client Name:	Shaw Environmental & Infrastructure, Inc.		
Client Address:	11560 Great Oaks Way, Suite 500, Alpheretta, GA		
Boring #:	PSB9	Sample #: 7033	Sample Date: 2/19-20/14
Location:	On Site	Offset: NA	Elevation: 5-12'
Sample Description:	A-2-4		

Type and Specification	*S&ME ID #*	*Cal Date:*	*Type and Specification*	*S&ME ID #*	*Cal Date:*
Balance (0.01 g)	3222	6/18/2013	Grooving tool	20835	7/16/2013
LL Apparatus	3653	1/21/2014	Grooving tool		
Oven	11702	1/21/2014	Grooving tool		

Pan #		Liquid Limit						Plastic Limit		
	Tare #:	Aa	P3	TT				P12	P-16	
A	Tare Weight	15.19	12.60	15.92				12.76	12.59	
B	Wet Soil Weight + A	30.17	27.14	30.79				21.58	21.00	
C	Dry Soil Weight + A	26.93	23.94	27.49				19.88	19.39	
D	Water Weight (B-C)	3.24	3.20	3.30				1.70	1.61	
E	Dry Soil Weight (C-A)	11.74	11.34	11.57				7.12	6.80	
F	% Moisture (D/E)*100	27.6%	28.2%	28.5%				23.9%	23.7%	
N	# OF DROPS	27	21	16				*Moisture Contents determined by AASHTO T 245*		
LL	LL = **F** * FACTOR									
Ave.	*Average*							**23.8%**		



One Point Liquid Limit			
N	**Factor**	**N**	**Factor**
20	0.974	26	1.005
21	0.979	27	1.009
22	0.985	28	1.014
23	0.99	29	1.018
24	0.995	30	1.022
25	1.000		

NP, Non-Plastic ☐
Liquid Limit **28**
Plastic Limit **24**
Plastic Index 4
Group Symbol **A-2-4**
Multipoint Method ☑
One-point Method ☐

Wet Preparation ☐ Dry Preparation ☑ Air Dried ☑ *Estimate the % Retained on the #40 Sieve:*

Notes / Deviations / References:

AASHTO T90: Determining the Plastic Limit & Plastic Index of Soils *AASHTO T89: Determining the Liquid Limit of Soils*

Technician Name 3/7/14 *Date*

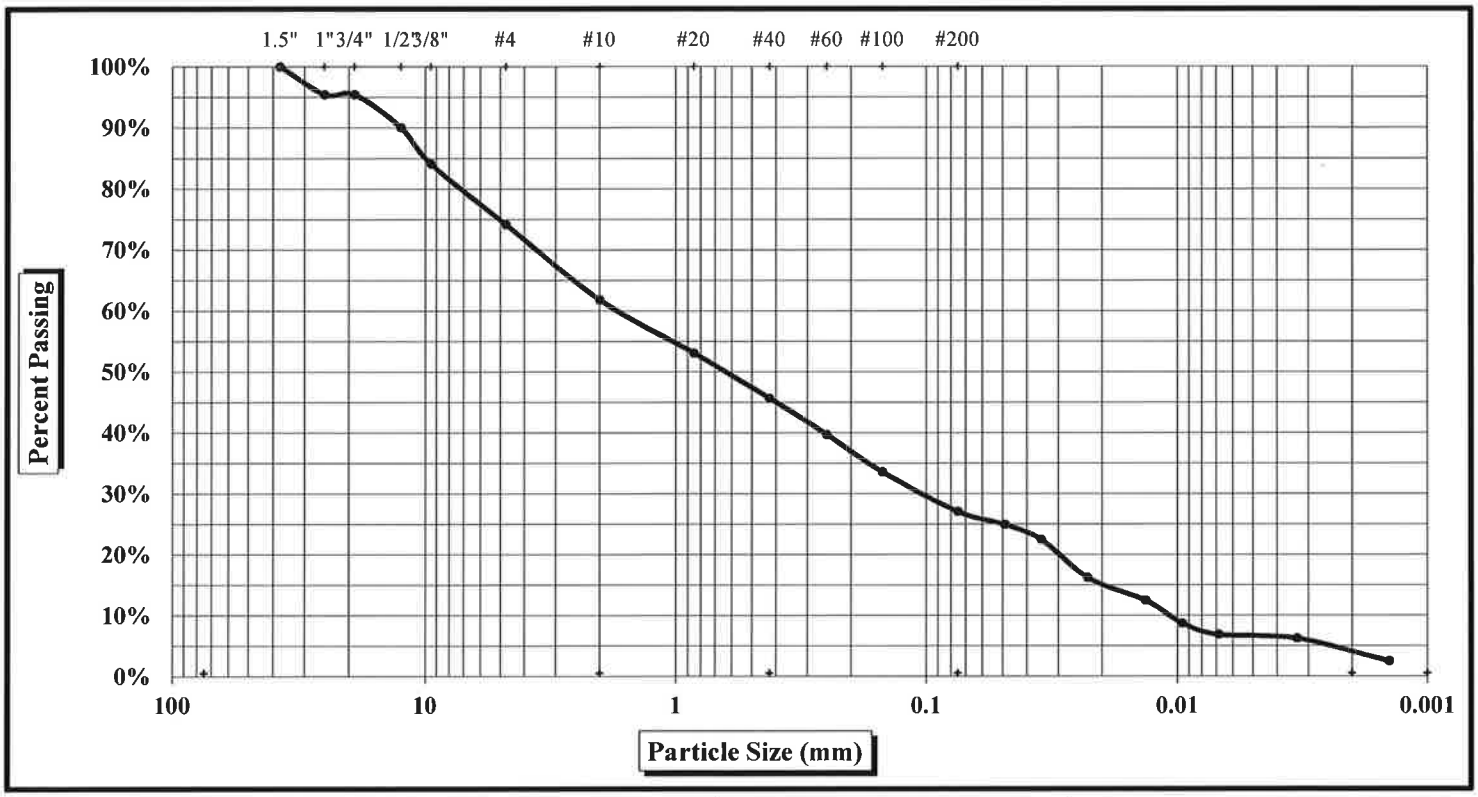
Technical Responsibility 3/7/14 *Date*

Particle Size Analysis of Soils

AASHTO T 88

S&ME Project #:	**3735-14-001**	Report Date:	3/7/14
Project Name:	**Ecusta Mill Site**	Test Date(s):	2/25-3/7/14
Client Name:	Shaw Environmental & Infrastructure, Inc.		
Client Address:	11560 Great Oaks Way, Suite 500, Alpheretta, GA		

Boring #:	PSB10	Sample #: 7034	Sample Date: 2/19-20/14
Location:	On Site	Offset: NA	Depth: 4-11'
Sample Description:	A-2-4		



As Defined by AASHTO		Fine Sand	< 0.425 mm and > 0.075 mm
Gravel	< 75 mm and > 2.00 mm	Silt	< 0.075 and > 0.002 mm
Coarse Sand	< 2.00 mm and > 0.425 mm	Clay	< 0.002 mm

Gravel	38.2%	Coarse Sand	16.1%	Silt	23%
Maximum Particle Size	1"	Fine Sand	18.6%	Clay	4%
Apparent Relative Density(Assumed)	2.650	Moisture Content	17.5%	Silt & Clay (% Passing #200)	27.1%
Liquid Limit	29	Plastic Limit	24	Plastic Index	5

Description of Sand & Gravel Particles: Rounded ☐ Angular ☒ Hard & Durable ☒ Soft ☐ Weathered & Friable ☐

Mechanical Stirring Apparatus (A) Length of Dispersion Period: 1 min. Dispersing Agent: Sodium Hexametaphosphate: 40 g./ Liter

References: AASHTO T88: Particle Size Analysis of Soils AASHTO T87: Dry Preparation of Disturbed Soil and Soil Aggregate Samples for Test
AASHTO T89: Determining the Liquid Limit of Soils AASHTO T90: Determining the Plastic Limit & Plasticity Index of Soils
AASHTO M 145: The Classification of Soils and Soil Aggregate Mixtures for Highway Construction Purposes ASTM D 854: Specific Gravity of Soils
AASHTO T265: Laboratory Determination of Moisture Content of Soils

Technical Responsibility: Ron Harris Signature 3/7/14 Signature

Form No. TR-D4318-T89-90
Revision No. 0
Revision Date: 11/20/07

Liquid Limit, Plastic Limit, and Plastic Index

S&ME

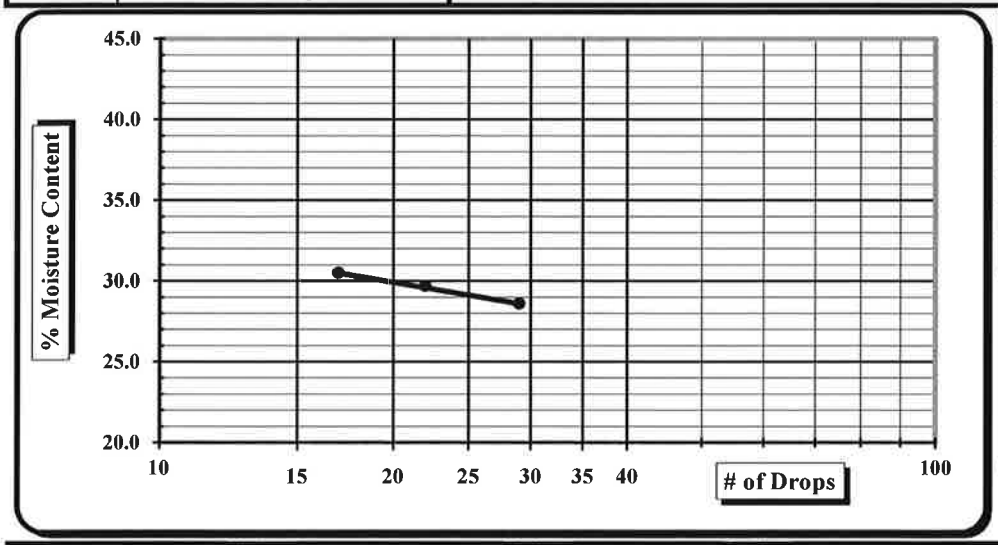
Another code *ASTM D 4318* ☐ *AASHTO T 89* ☒ *AASHTO T 90* ☒ ***Quality Assurance***

S&ME, Inc. ~9751 Southern Pine Boulevard,Charlotte, NC 28273

Project #:	**3735-14-001**	Report Date:	3/7/14
Project Name:	Ecusta Mill Site	Test Date(s)	2/24-3/7/14
Client Name:	Shaw Environmental & Infrastructure, Inc.		
Client Address:	11560 Great Oaks Way, Suite 500, Alpheretta, GA		
Boring #:	PSB10	Sample #: 7034	Sample Date: 2/19-20/14
Location:	On Site	Offset: NA	Elevation: 4-11"
Sample Description:	A-2-4		

Type and Specification	*S&ME ID #*	*Cal Date:*	*Type and Specification*	*S&ME ID #*	*Cal Date:*
Balance (0.01 g)	3222	6/18/2013	Grooving tool	20835	7/16/2013
LL Apparatus	3653	1/21/2014	Grooving tool		
Oven	11702	1/21/2014	Grooving tool		

Pan #		Liquid Limit						Plastic Limit		
	Tare #:	12	Jordi	I				OO	37	
A	Tare Weight	14.17	15.92	13.84				16.29	15.87	
B	Wet Soil Weight + A	28.46	30.65	30.25				25.25	24.69	
C	Dry Soil Weight + A	25.28	27.28	26.41				23.53	23.00	
D	Water Weight (B-C)	3.18	3.37	3.84				1.72	1.69	
E	Dry Soil Weight (C-A)	11.11	11.36	12.57				7.24	7.13	
F	% Moisture (D/E)*100	28.6%	29.7%	30.5%				23.8%	23.7%	
N	# OF DROPS	29	22	17				*Moisture Contents determined by AASHTO T 245*		
LL	LL = F * FACTOR									
Ave.	*Average*							**23.8%**		



One Point Liquid Limit			
N	**Factor**	**N**	**Factor**
20	0.974	26	1.005
21	0.979	27	1.009
22	0.985	28	1.014
23	0.99	29	1.018
24	0.995	30	1.022
25	1.000		

NP, Non-Plastic ☐
Liquid Limit **29**
Plastic Limit **24**
Plastic Index **5**
Group Symbol **A-2-4**
Multipoint Method ☑
One-point Method ☐

Wet Preparation ☐ Dry Preparation ☑ Air Dried ☑ *Estimate the % Retained on the #40 Sieve:*

Notes / Deviations / References:

AASHTO T90: Determining the Plastic Limit & Plastic Index of Soils *AASHTO T89: Determining the Liquid Limit of Soils*

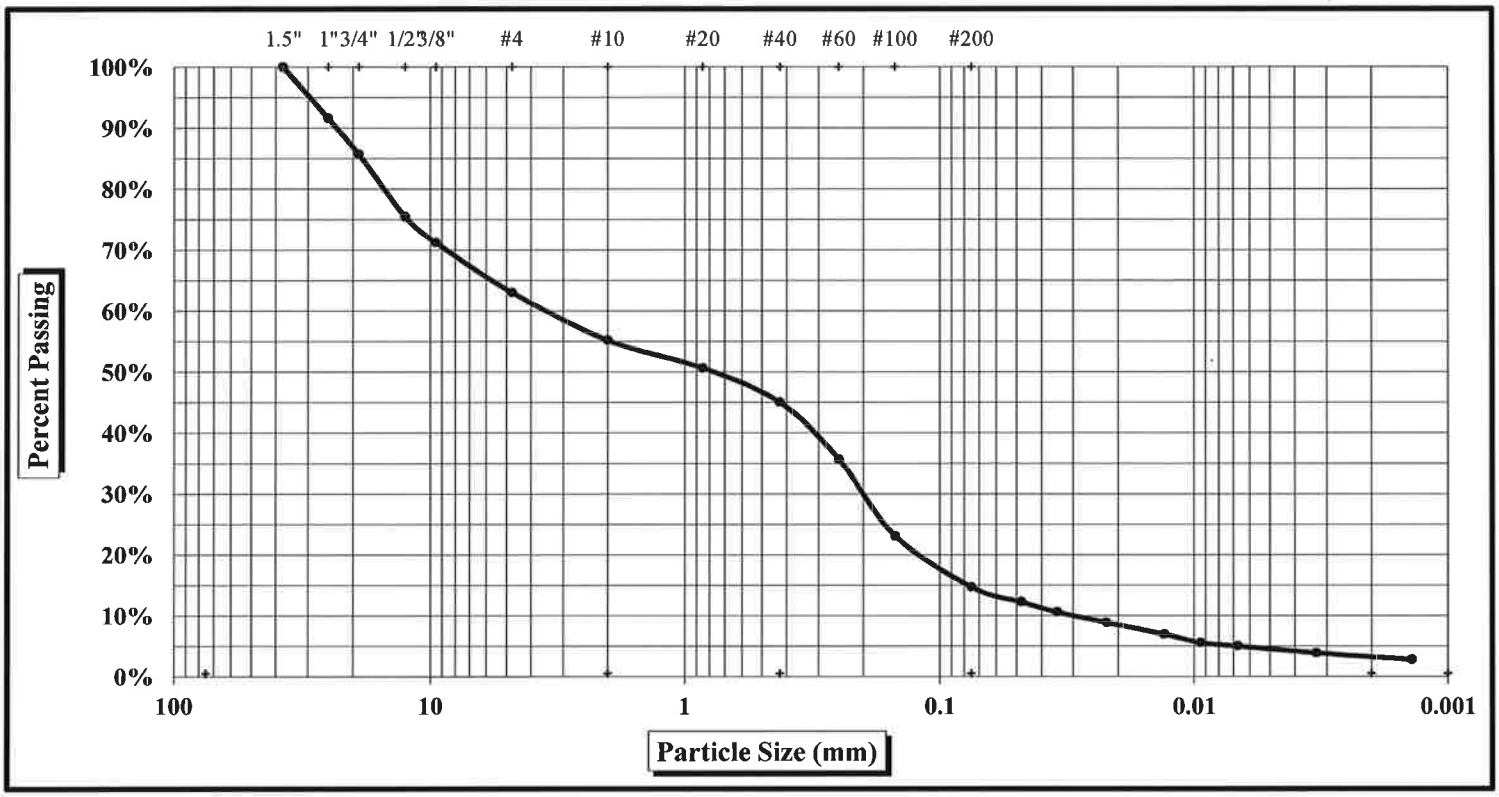
Pam Warren — *Technician Name* — 3/7/14 *Date*
Technical Responsibility — 3/7/14 *Date*

Particle Size Analysis of Soils

AASHTO T 88

S&ME Project #:	**3735-14-001**	Report Date:	3/7/14
Project Name:	**Ecusta Mill Site**	Test Date(s):	2/25-3/7/14
Client Name:	Shaw Environmental & Infrastructure, Inc.		
Client Address:	11560 Great Oaks Way, Suite 500, Alpheretta, GA		

Boring #:	PSB11	Sample #: 7035		Sample Date: 2/19-20/14	
Location:	On Site	Offset: NA		Depth: 1-7'	
Sample Description:	A-1-b				



As Defined by AASHTO		Fine Sand	< 0.425 mm and > 0.075 mm
Gravel	< 75 mm and > 2.00 mm	Silt	< 0.075 and > 0.002 mm
Coarse Sand	< 2.00 mm and > 0.425 mm	Clay	< 0.002 mm

Gravel	44.8%	Coarse Sand	10.2%	Silt	12%
Maximum Particle Size	1"	Fine Sand	30.3%	Clay	3%
Apparent Relative Density(Assumed)	2.650	Moisture Content	24.9%	Silt & Clay (% Passing #200)	14.7%
Liquid Limit	0	Plastic Limit	0	Plastic Index	0

Description of Sand & Gravel Particles: Rounded ☐ Angular ☒ Hard & Durable ☒ Soft ☐ Weathered & Friable ☐

Mechanical Stirring Apparatus (A) Length of Dispersion Period: 1 min. Dispersing Agent: Sodium Hexametaphosphate: 40 g./ Liter

References: AASHTO T88: Particle Size Analysis of Soils AASHTO T87: Dry Preparation of Disturbed Soil and Soil Aggregate Samples for Test

AASHTO T89: Determining the Liquid Limit of Soils AASHTO T90: Determining the Plastic Limit & Plasticity Index of Soils

AASHTO M 145: The Classification of Soils and Soil Aggregate Mixtures for Highway Construction Purposes ASTM D 854: Specific Gravity of Soils

AASHTO T265: Laboratory Determination of Moisture Content of Soils

Technical Responsibility: Rod Harris Signature 3/7/14 Signature

Form No. TR-D4318-T89-90
Revision No. 0
Revision Date: 11/20/07

Liquid Limit, Plastic Limit, and Plastic Index

S&ME

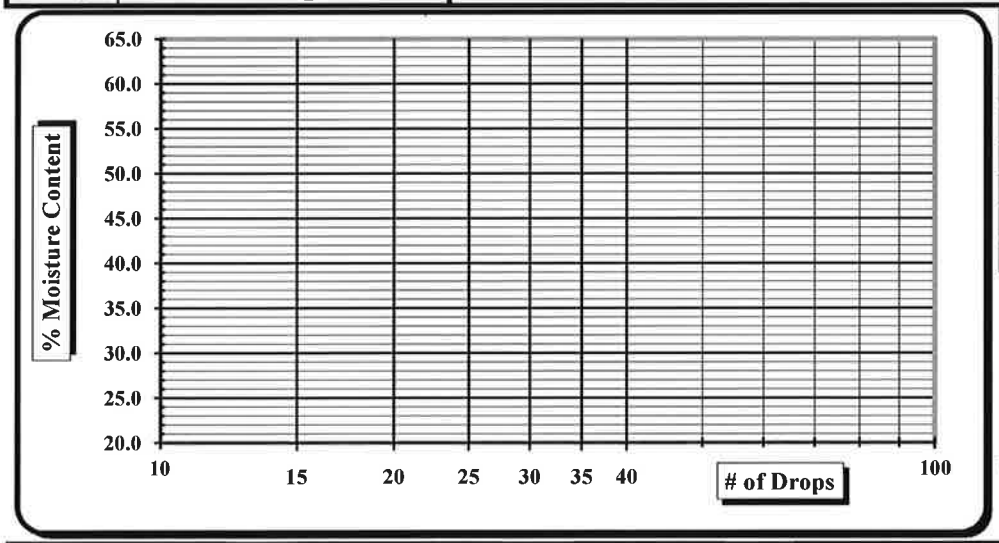
Another code *ASTM D 4318* ☐ *AASHTO T 89* ☒ *AASHTO T 90* ☒ ***Quality Assurance***

S&ME, Inc. ~9751 Southern Pine Boulevard,Charlotte, NC 28273

Project #:	**3735-14-001**	Report Date:	3/7/14
Project Name:	Ecusta Mill Site	Test Date(s)	2/24-3/7/14
Client Name:	Shaw Environmental & Infrastructure, Inc.		
Client Address:	11560 Great Oaks Way, Suite 500, Alpheretta, GA		
Boring #:	PSB11	Sample #: 7035	Sample Date: 2/19-20/14
Location:	On Site	Offset: NA	Elevation: 1-7'
Sample Description:	A-1-b		

Type and Specification	*S&ME ID #*	*Cal Date:*	*Type and Specification*	*S&ME ID #*	*Cal Date:*
Balance (0.01 g)	3222	6/18/2013	Grooving tool	20835	7/16/2013
LL Apparatus	3653	1/21/2014	Grooving tool		
Oven	11702	1/21/2014	Grooving tool		

Pan #		Liquid Limit						Plastic Limit		
	Tare #:									
A	Tare Weight									
B	Wet Soil Weight + A									
C	Dry Soil Weight + A									
D	Water Weight (B-C)									
E	Dry Soil Weight (C-A)									
F	% Moisture (D/E)*100									
N	# OF DROPS							*Moisture Contents determined by AASHTO T 245*		
LL	LL = F * FACTOR									
Ave.	*Average*									



One Point Liquid Limit			
N	**Factor**	**N**	**Factor**
20	0.974	26	1.005
21	0.979	27	1.009
22	0.985	28	1.014
23	0.99	29	1.018
24	0.995	30	1.022
25	1.000		

NP, Non-Plastic ☒
Liquid Limit
Plastic Limit
Plastic Index
Group Symbol **A-1-b**

Multipoint Method ☑
One-point Method ☐

Wet Preparation ☐ Dry Preparation ☑ Air Dried ☑ *Estimate the % Retained on the #40 Sieve:*

Notes / Deviations / References:

AASHTO T90: Determining the Plastic Limit & Plastic Index of Soils *AASHTO T89: Determining the Liquid Limit of Soils*

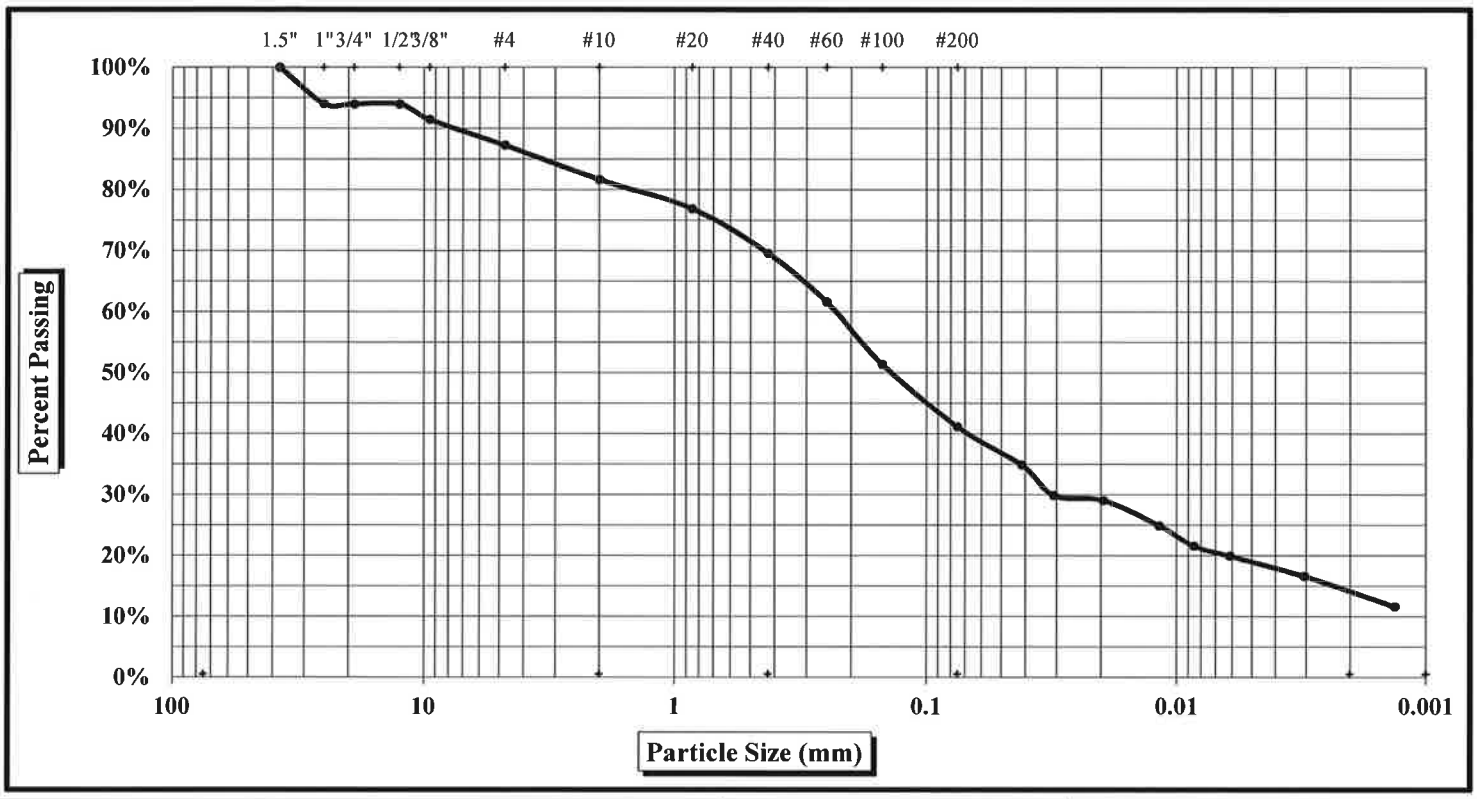
Technician Name — 3/7/14 Date — Technical Responsibility — 3/7/14 Date

Particle Size Analysis of Soils

AASHTO T 88

S&ME Project #:	**3735-14-001**	Report Date:	3/7/14
Project Name:	**Ecusta Mill Site**	Test Date(s):	2/25-3/7/14
Client Name:	Shaw Environmental & Infrastructure, Inc.		
Client Address:	11560 Great Oaks Way, Suite 500, Alpheretta, GA		

Boring #:	PSB12	Sample #: 7036	Sample Date: 2/19-20/14
Location:	On Site	Offset: NA	Depth: 1-5'
Sample Description:	A-5		



As Defined by AASHTO		Fine Sand	< 0.425 mm and > 0.075 mm
Gravel	< 75 mm and > 2.00 mm	Silt	< 0.075 and > 0.002 mm
Coarse Sand	< 2.00 mm and > 0.425 mm	Clay	< 0.002 mm

Gravel	18.4%	Coarse Sand	12.1%	Silt	27%
Maximum Particle Size	1"	Fine Sand	28.4%	Clay	14%
Apparent Relative Density(Assumed)	2.650	Moisture Content	49.3%	Silt & Clay (% Passing #200)	41.1%
Liquid Limit	43	Plastic Limit	35	Plastic Index	8

Description of Sand & Gravel Particles: Rounded ☐ Angular ☒ Hard & Durable ☒ Soft ☐ Weathered & Friable ☐

Mechanical Stirring Apparatus (A) Length of Dispersion Period: 1 min. Dispersing Agent: Sodium Hexametaphosphate: 40 g./ Liter

References: AASHTO T88: Particle Size Analysis of Soils AASHTO T87: Dry Preparation of Disturbed Soil and Soil Aggregate Samples for Test
AASHTO T89: Determining the Liquid Limit of Soils AASHTO T90: Determining the Plastic Limit & Plasticity Index of Soils
AASHTO M 145: The Classification of Soils and Soil Aggregate Mixtures for Highway Construction Purposes ASTM D 854: Specific Gravity of Soils
AASHTO T265: Laboratory Determination of Moisture Content of Soils

Technical Responsibility: Ron Hawis Signature 3/7/14 Signature

Form No. TR-D4318-T89-90
Revision No. 0
Revision Date: 11/20/07

Liquid Limit, Plastic Limit, and Plastic Index

S&ME

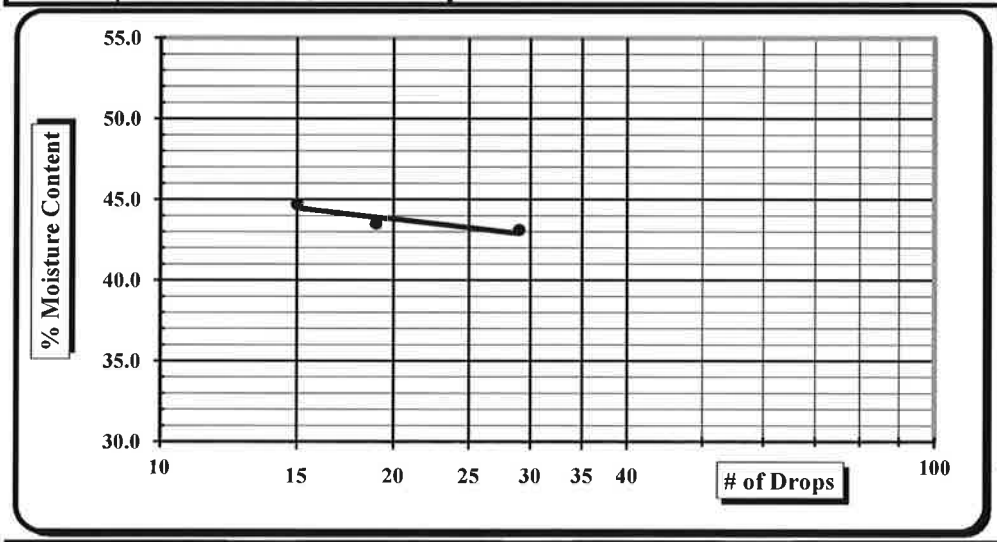
Another code *ASTM D 4318* ☐ *AASHTO T 89* ☒ *AASHTO T 90* ☒ ***Quality Assurance***

S&ME, Inc. ~9751 Southern Pine Boulevard,Charlotte, NC 28273

Project #:	**3735-14-001**	Report Date:	3/7/14
Project Name:	Ecusta Mill Site	Test Date(s)	2/24-3/7/14
Client Name:	Shaw Environmental & Infrastructure, Inc.		
Client Address:	11560 Great Oaks Way, Suite 500, Alpheretta, GA		
Boring #:	PSB12	Sample #: 7036	Sample Date: 2/19-20/14
Location:	On Site	Offset: NA	Elevation: 1-5'
Sample Description:	A-5		

Type and Specification	*S&ME ID #*	*Cal Date:*	*Type and Specification*	*S&ME ID #*	*Cal Date:*
Balance (0.01 g)	3222	6/18/2013	Grooving tool	20835	7/16/2013
LL Apparatus	3653	1/21/2014	Grooving tool		
Oven	11702	1/21/2014	Grooving tool		

Pan #		Liquid Limit						Plastic Limit		
	Tare #:	SMS	P-18	P-6				Tux	U	
A	Tare Weight	15.16	12.68	12.54				15.70	15.47	
B	Wet Soil Weight + A	28.47	26.15	26.72				23.90	24.38	
C	Dry Soil Weight + A	24.46	22.07	22.34				21.76	22.10	
D	Water Weight (B-C)	4.01	4.08	4.38				2.14	2.28	
E	Dry Soil Weight (C-A)	9.30	9.39	9.80				6.06	6.63	
F	% Moisture (D/E)*100	43.1%	43.5%	44.7%				35.3%	34.4%	
N	# OF DROPS	29	19	15				*Moisture Contents determined by AASHTO T 245*		
LL	LL = **F** * FACTOR									
Ave.	*Average*							**34.9%**		



One Point Liquid Limit			
N	**Factor**	**N**	**Factor**
20	0.974	26	1.005
21	0.979	27	1.009
22	0.985	28	1.014
23	0.99	29	1.018
24	0.995	30	1.022
25	1.000		

NP, Non-Plastic ☐
Liquid Limit **43**
Plastic Limit **35**
Plastic Index 8
Group Symbol **A-5**
Multipoint Method ☑
One-point Method ☐

Wet Preparation ☐ Dry Preparation ☑ Air Dried ☑ *Estimate the % Retained on the #40 Sieve:*

Notes / Deviations / References:

Sample swelled after hydration.

AASHTO T90: Determining the Plastic Limit & Plastic Index of Soils *AASHTO T89: Determining the Liquid Limit of Soils*

Karen Walker — *Technician Name* — 3/7/14 *Date*

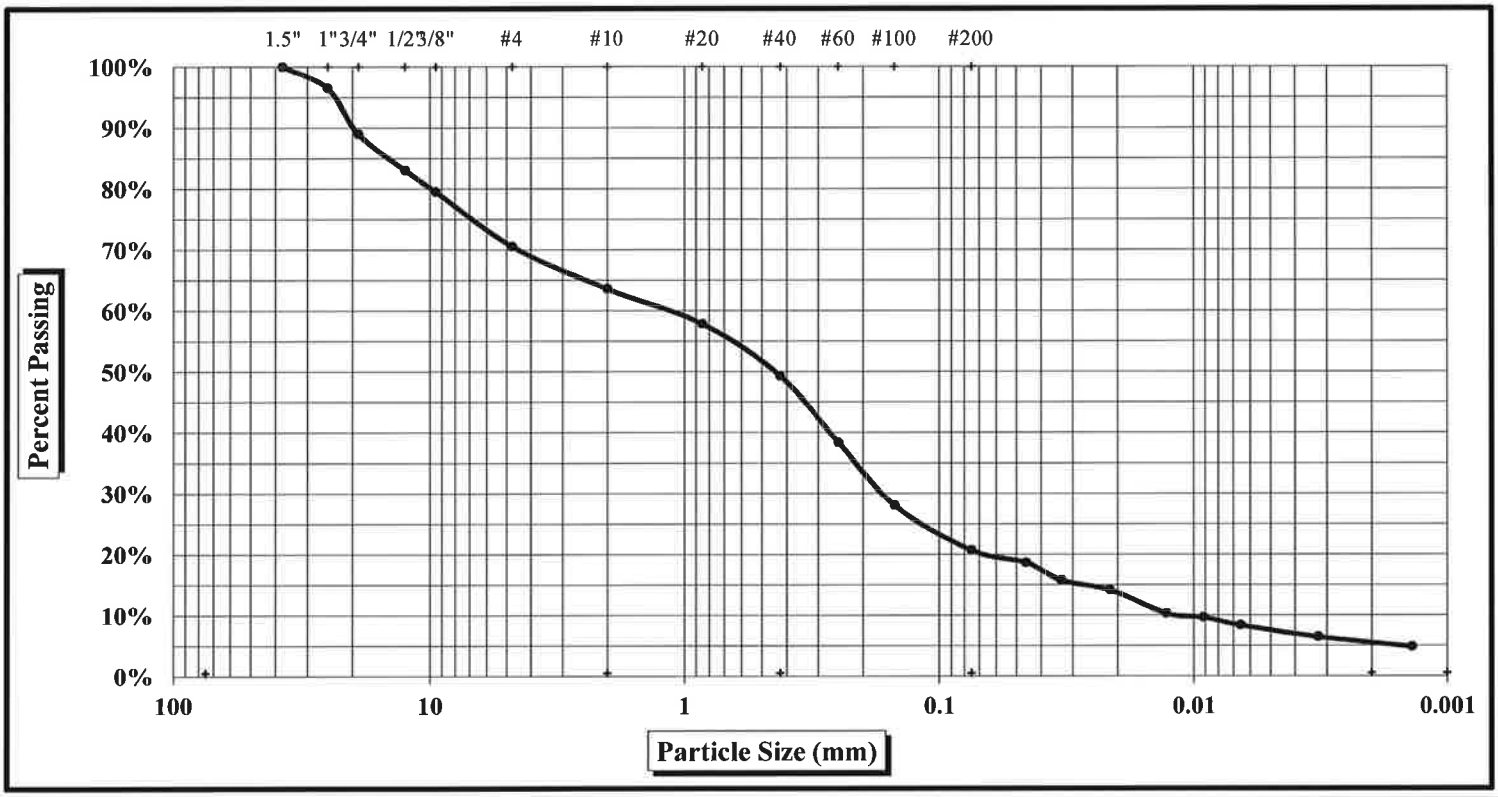
Technical Responsibility — 3/7/14 *Date*

Particle Size Analysis of Soils

AASHTO T 88

S&ME Project #:	**3735-14-001**	Report Date:	3/7/14
Project Name:	**Ecusta Mill Site**	Test Date(s):	2/25-3/7/14
Client Name:	Shaw Environmental & Infrastructure, Inc.		
Client Address:	11560 Great Oaks Way, Suite 500, Alpheretta, GA		

Boring #:	PSB12	Sample #: 7036	Sample Date: 2/19-20/14
Location:	On Site	Offset: NA	Depth: 5-11"
Sample Description:	A-1-b		



As Defined by AASHTO		Fine Sand	< 0.425 mm and > 0.075 mm
Gravel	< 75 mm and > 2.00 mm	Silt	< 0.075 and > 0.002 mm
Coarse Sand	< 2.00 mm and > 0.425 mm	Clay	< 0.002 mm

Gravel	36.4%	Coarse Sand	14.3%	Silt	15%
Maximum Particle Size	1"	Fine Sand	28.6%	Clay	6%
Apparent Relative Density(Assumed)	2.650	Moisture Content	30.5%	Silt & Clay (% Passing #200)	20.7%
Liquid Limit	0	Plastic Limit	0	Plastic Index	0

Description of Sand & Gravel Particles: Rounded ☐ Angular ☒ Hard & Durable ☒ Soft ☐ Weathered & Friable ☐

Mechanical Stirring Apparatus (A) Length of Dispersion Period: 1 min. Dispersing Agent: Sodium Hexametaphosphate: 40 g./ Liter

References: AASHTO T88: Particle Size Analysis of Soils AASHTO T87: Dry Preparation of Disturbed Soil and Soil Aggregate Samples for Test

AASHTO T89: Determining the Liquid Limit of Soils AASHTO T90: Determining the Plastic Limit & Plasticity Index of Soils

AASHTO M 145: The Classification of Soils and Soil Aggregate Mixtures for Highway Construction Purposes ASTM D 854: Specific Gravity of Soils

AASHTO T265: Laboratory Determination of Moisture Content of Soils

Technical Responsibility: Ron Harris Signature 3/7/14 Signature

Form No. TR-D4318-T89-90
Revision No. 0
Revision Date: 11/20/07

Liquid Limit, Plastic Limit, and Plastic Index

S&ME

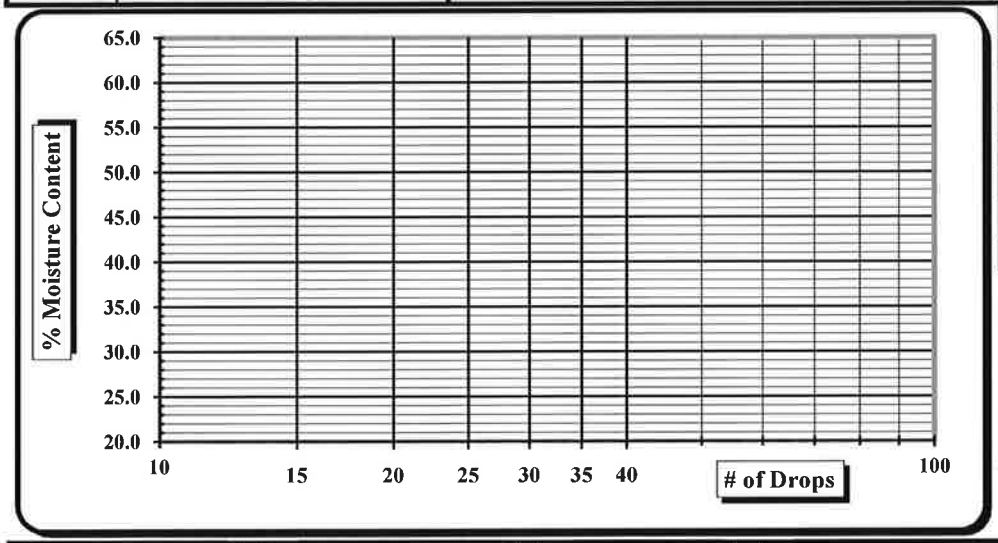
Another code *ASTM D 4318* ☐ *AASHTO T 89* ☒ *AASHTO T 90* ☒ ***Quality Assurance***

S&ME, Inc. ~9751 Southern Pine Boulevard,Charlotte, NC 28273

Project #:	**3735-14-001**	Report Date:	3/7/14
Project Name:	Ecusta Mill Site	Test Date(s)	2/24-3/7/14
Client Name:	Shaw Environmental & Infrastructure, Inc.		
Client Address:	11560 Great Oaks Way, Suite 500, Alpheretta, GA		
Boring #:	PSB12	Sample #: 7036	Sample Date: 2/19-20/14
Location:	On Site	Offset: NA	Elevation: 5-11'
Sample Description:	A-1-b		

Type and Specification	*S&ME ID #*	*Cal Date:*	*Type and Specification*	*S&ME ID #*	*Cal Date:*
Balance (0.01 g)	3222	6/18/2013	Grooving tool	20835	7/16/2013
LL Apparatus	3653	1/21/2014	Grooving tool		
Oven	11702	1/21/2014	Grooving tool		

Pan #		Liquid Limit						Plastic Limit		
	Tare #:									
A	Tare Weight									
B	Wet Soil Weight + A									
C	Dry Soil Weight + A									
D	Water Weight (B-C)									
E	Dry Soil Weight (C-A)									
F	% Moisture (D/E)*100									
N	# OF DROPS							*Moisture Contents determined by AASHTO T 245*		
LL	LL = **F** * FACTOR									
Ave.	*Average*									



One Point Liquid Limit			
N	**Factor**	**N**	**Factor**
20	0.974	26	1.005
21	0.979	27	1.009
22	0.985	28	1.014
23	0.99	29	1.018
24	0.995	30	1.022
25	1.000		

NP, Non-Plastic ☒
Liquid Limit
Plastic Limit
Plastic Index
Group Symbol **A-1-b**

Multipoint Method ☑
One-point Method ☐

Wet Preparation ☐ Dry Preparation ☑ Air Dried ☑ *Estimate the % Retained on the #40 Sieve:*

Notes / Deviations / References:

AASHTO T90: Determining the Plastic Limit & Plastic Index of Soils *AASHTO T89: Determining the Liquid Limit of Soils*

Karen Warren — *Technician Name*
3/7/14 — *Date*
Technical Responsibility
3/7/14 — *Date*