

**US 15 BRIDGE REPLACEMENT OVER INDIAN FIELD SWAMP  
DORCHESTER COUNTY, SOUTH CAROLINA  
F&ME PROJECT NO.: G6100.120; SCDOT PROJECT NO.: P037127**

**SPLIT SPOON SAMPLE LABORATORY RESULTS SUMMARY**

Boring Number	Sample Number	Sample Depth (ft)	Index									Organic Content (%)	Electro-Chemical			
			% Gravel	% Sand	% Fines (Silt/Clay)	LL	PL	PI	Moisture Content	USCS	AASHTO Class		pH	Resistivity (Ohms-cm)	Sulfate (mg/kg)	Chloride (mg/kg)
B-1	SS-2	2.0-4.0	--	--	20.9	NP	NP	NP	9.6	SM	A-2-4	--	--	--	--	--
B-1	SS-3	4.0-6.0	--	--	26.1	NP	NP	NP	35.7	SM	A-2-4	4.7	--	--	--	--
B-1	SS-4	6.0-8.0	0.0	60.2	39.8	27	14	13	21.2	SC	A-6(1)	--	--	--	--	--
B-1	SS-5	8.0-10.0	0.0	66.5	33.6	29	13	16	16.8	SC	A-2-6(1)	--	--	--	--	--
B-1	SS-6	13.5-15.0	--	--	52.5	48	29	19	50.0	ML	A-7-6(8)	--	--	--	--	--
B-1	SS-8	23.5-25.0	--	--	32.8	NP	NP	NP	32.9	SM	A-2-4	--	--	--	--	--
B-1	SS-10	33.5-35.0	--	--	26.5	NP	NP	NP	28.7	SM	A-2-4	--	--	--	--	--
B-1	SS-13	48.5-50.0	--	--	23.1	NP	NP	NP	30.7	SM	A-2-4	--	--	--	--	--
B-1	SS-16	63.5-65.0	--	--	24.8	NP	NP	NP	33.3	SM	A-2-4	--	--	--	--	--
B-1	SS-19	78.5-80.0	--	--	25.2	NP	NP	NP	33.6	SM	A-2-4	--	--	--	--	--
B-2	SS-2	2.0-4.0	--	--	20.4	NP	NP	NP	9.0	SM	A-2-4	--	--	--	--	--
B-2	SS-3	4.0-6.0	--	--	14.9	NP	NP	NP	14.1	SM	A-2-4	--	--	--	--	--
B-2	SS-4	6.0-8.0	0.0	62.3	37.7	31	16	15	16.4	SC	A-6(2)	--	--	--	--	--
B-2	SS-5	8.0-10.0	--	--	36.0	31	13	18	17.0	SC	A-6(2)	--	--	--	--	--
B-2	SS-6	13.5-15.0	0.0	42.7	57.3	41	30	11	38.5	ML	A-7-5(5)	--	--	--	--	--
B-2	SS-8	23.5-25.0	--	--	36.4	NP	NP	NP	31.0	SM	A-4(0)	--	--	--	--	--
B-2	SS-11	38.5-40.0	--	--	27.0	20	15	5	23.4	SC-SM	A-2-4	--	--	--	--	--
B-2	SS-14	53.5-55.0	--	--	22.8	NP	NP	NP	34.5	SM	A-2-4	--	--	--	--	--
B-2	SS-17	68.5-70.0	--	--	27.5	NP	NP	NP	32.6	SM	A-2-4	--	--	--	--	--
B-3	SS-3 & SS-4	4-6 & 6-8	--	--	--	--	--	--	--	--	--	--	7.42	9,247	<10.	<10.
B-3	SS-5	8.0-10.0	0.0	81.0	19.0	NP	NP	NP	20.0	SM	A-2-4	--	--	--	--	--
B-3	SS-6	13.5-15.0	0.0	42.0	58.0	44	36	8	62.1	ML	A-5(4)	--	--	--	--	--
B-3	SS-7	18.5-20.0	--	--	41.7	28	27	1	29.4	SM	A-4(0)	--	--	--	--	--
B-3	SS-10	33.5-35.0	--	--	18.8	NP	NP	NP	27.5	SM	A-2-4	--	--	--	--	--
B-3	SS-12	43.5-45.0	--	--	24.6	21	15	6	22.7	SC-SM	A-2-4	--	--	--	--	--
B-3	SS-17	68.5-70.0	--	--	23.1	NP	NP	NP	28.7	SM	A-2-4	--	--	--	--	--
B-3	SS-20	83.5-85.0	--	--	26.0	NP	NP	NP	33.0	SM	A-2-4	--	--	--	--	--





**F&ME CONSULTANTS**  
**3112 Devine Street**  
**Columbia, South Carolina 29205**

**MOISTURE CONTENT DETERMINATION**  
**(AASHTO T265)**

**PROJECT:** US-15 Replacement Bridge over Indian Field Swamp **PROJECT NO.:** G6100.12  
**SAMPLE NUMBER:** 19-2535 **DATE SAMPLE RECEIVED:** 9/30/2019  
**DESCRIPTION OF SOIL:** VARIOUS  
**TESTED BY:** AA/TA **DATE OF TESTING:** 10/2/2019  
**WEIGHED BY:** AA **DATE OF WEIGHING:** 10/3/2019

<b>BORING NO.</b>	B-1	B-1	B-1	B-1	B-1
<b>SAMPLE NO.</b>	SS-2	SS-3	SS-4	SS-5	SS-6
<b>SAMPLE DEPTH (FT.)</b>	2.0 - 4.0	4.0 - 6.0	6.0 - 8.0	8.0 - 10.0	13.5 - 15.0
<b>WATER CONTENT, W%</b>	9.6	35.7	21.2	16.8	50.0

<b>BORING NO.</b>	B-1	B-1	B-1	B-1	B-1
<b>SAMPLE NO.</b>	SS-8	SS-10	SS-13	SS-16	SS-19
<b>SAMPLE DEPTH (FT.)</b>	23.5 - 25.0	33.5 - 35.0	48.5 - 50.0	63.5 - 65.0	78.5 - 80.0
<b>WATER CONTENT, W%</b>	32.9	28.7	30.7	33.3	33.6

<b>BORING NO.</b>					
<b>SAMPLE NO.</b>					
<b>SAMPLE DEPTH (FT.)</b>					
<b>WATER CONTENT, W%</b>					

<b>BORING NO.</b>					
<b>SAMPLE NO.</b>					
<b>SAMPLE DEPTH (FT.)</b>					
<b>WATER CONTENT, W%</b>					

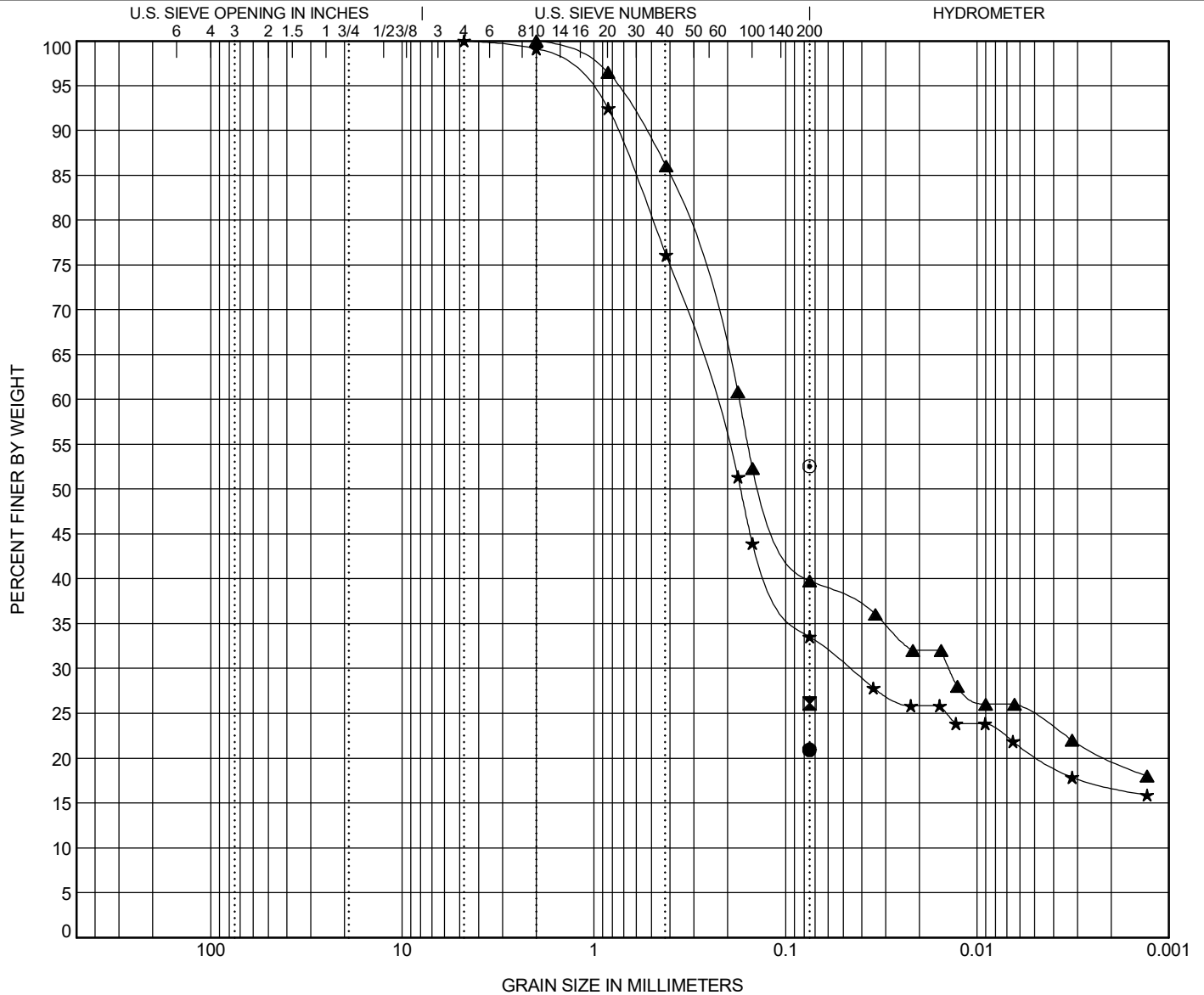


# GRAIN SIZE DISTRIBUTION

PROJECT ID P037127

PROJECT NAME US-15 over Indian Field Swamp

PROJECT COUNTY Dorchester



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

BOREHOLE	DEPTH	Classification	LL	PL	PI	Cc	Cu
● B-1	4.0	Silty SAND (SM)	NP	NP	NP		
☒ B-1	6.0	Silty SAND (SM)	NP	NP	NP		
▲ B-1	8.0	Clayey SAND (SC/A-6(1))	27	14	13		
★ B-1	10.0	Clayey SAND (SC/A-2-6(1))	29	13	16		
◎ B-1	15.0	Sandy SILT (ML)	48	29	19		

BOREHOLE	DEPTH	D100	D95	D50	D10	%Gravel	%Sand	%Silt	%Clay
● B-1	4.0	0.075						20.9	
☒ B-1	6.0	0.075						26.1	
▲ B-1	8.0	2	0.763	0.131		0.0	60.2	15.2	24.6
★ B-1	10.0	4.76	1.169	0.172		0.0	66.5	13.2	20.4
◎ B-1	15.0	0.075						52.5	

GRAIN SIZE G6100.120 - US-15 RBO INDIAN FIELD SWAMP.GPJ FME2017.GDT 10/18/19

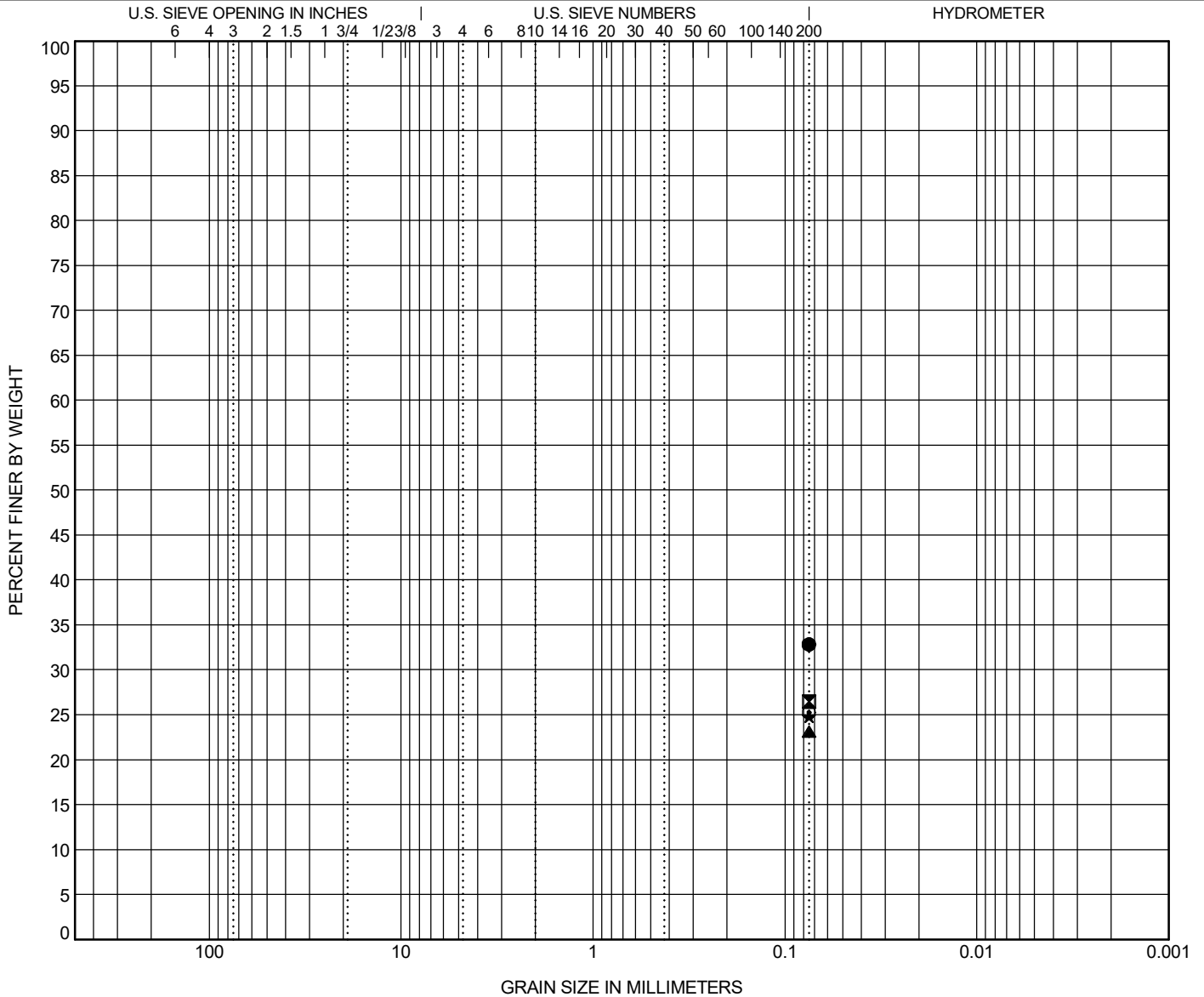


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PROJECT NAME US-15 over Indian Field Swamp

PROJECT COUNTY Dorchester



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

BOREHOLE	DEPTH	Classification	LL	PL	PI	Cc	Cu
● B-1	25.0	<u>Silty SAND (SM)</u>	NP	NP	NP		
☒ B-1	35.0	<u>Silty SAND (SM)</u>	NP	NP	NP		
▲ B-1	50.0	<u>Silty SAND (SM)</u>	NP	NP	NP		
★ B-1	65.0	<u>Silty SAND (SM)</u>	NP	NP	NP		
◎ B-1	80.0	<u>Silty SAND (SM)</u>	NP	NP	NP		

BOREHOLE	DEPTH	D100	D95	D50	D10	%Gravel	%Sand	%Silt	%Clay
● B-1	25.0	0.075						32.8	
☒ B-1	35.0	0.075						26.5	
▲ B-1	50.0	0.075						23.1	
★ B-1	65.0	0.075						24.8	
◎ B-1	80.0	0.075						25.2	

GRAIN SIZE G6100.120 - US-15 RBO INDIAN FIELD SWAMP.GPJ FME2017.GDT 10/18/19



**F&ME CONSULTANTS**  
 3112 Devine Street  
 Columbia, South Carolina 29205

**ORGANIC IMPURITIES DETERMINATION  
 (AASHTO T267)**

Project Name:	<u>US-15 RBO Indian Field Swamp</u>	Project Number:	<u>G6100.12</u>
Sample Location:	<u>B-1</u>	Sample Elevation/Depth:	<u>4.0 ft. - 6.0 ft.</u>
Description of Sample:	<u>Silty SAND (SM)</u>	Date Tested:	<u>10/8/2019</u>
Tested By:	<u>J. Hiers</u>	Date Weighed:	<u>10/9/2019</u>
Weighed By:	<u>A. Abernethy</u>	Ignition Oven Temperature:	<u>455 °C</u>

Boring/Sample No.	B-1			
Crucible No.	A			
Mass of Crucible & Dry Soil (Before Ignition) [g]	172.02			
Mass of Crucible & Dry Soil (After Ignition) [g]	170.13			
Mass of Crucible [g]	132.02			
Mass of Dry Soil (Before Ignition) [g]	40.00			
Mass of Dry Soil (After Ignition) [g]	38.11			
% Organic Impurities	4.7%			

Date Reviewed: 10/9/2019 Reviewed By: A. Abernethy





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**MOISTURE CONTENT DETERMINATION**  
**(AASHTO T265)**

**PROJECT:** US-15 Replacement Bridge over Indian Field Swamp **PROJECT NO.:** G6100.12  
**SAMPLE NUMBER:** 19-2536 **DATE SAMPLE RECEIVED:** 9/30/2019  
**DESCRIPTION OF SOIL:** VARIOUS  
**TESTED BY:** AA/TA **DATE OF TESTING:** 10/2/2019  
**WEIGHED BY:** AA **DATE OF WEIGHING:** 10/3/2019

<b>BORING NO.</b>	B-2	B-2	B-2	B-2	B-2
<b>SAMPLE NO.</b>	SS-2	SS-3	SS-4	SS-5	SS-6
<b>SAMPLE DEPTH (FT.)</b>	2.0 - 4.0	4.0 - 6.0	6.0 - 8.0	8.0 - 10.0	13.5 - 15.0
<b>WATER CONTENT, W%</b>	9.0	14.1	16.4	17.0	38.5

<b>BORING NO.</b>	B-2	B-2	B-2	B-2	
<b>SAMPLE NO.</b>	SS-8	SS-11	SS-14	SS-17	
<b>SAMPLE DEPTH (FT.)</b>	23.5 - 25.0	38.5 - 40.0	53.5 - 55.0	68.5 - 70.0	
<b>WATER CONTENT, W%</b>	31.0	23.4	34.5	32.7	

<b>BORING NO.</b>					
<b>SAMPLE NO.</b>					
<b>SAMPLE DEPTH (FT.)</b>					
<b>WATER CONTENT, W%</b>					

<b>BORING NO.</b>					
<b>SAMPLE NO.</b>					
<b>SAMPLE DEPTH (FT.)</b>					
<b>WATER CONTENT, W%</b>					

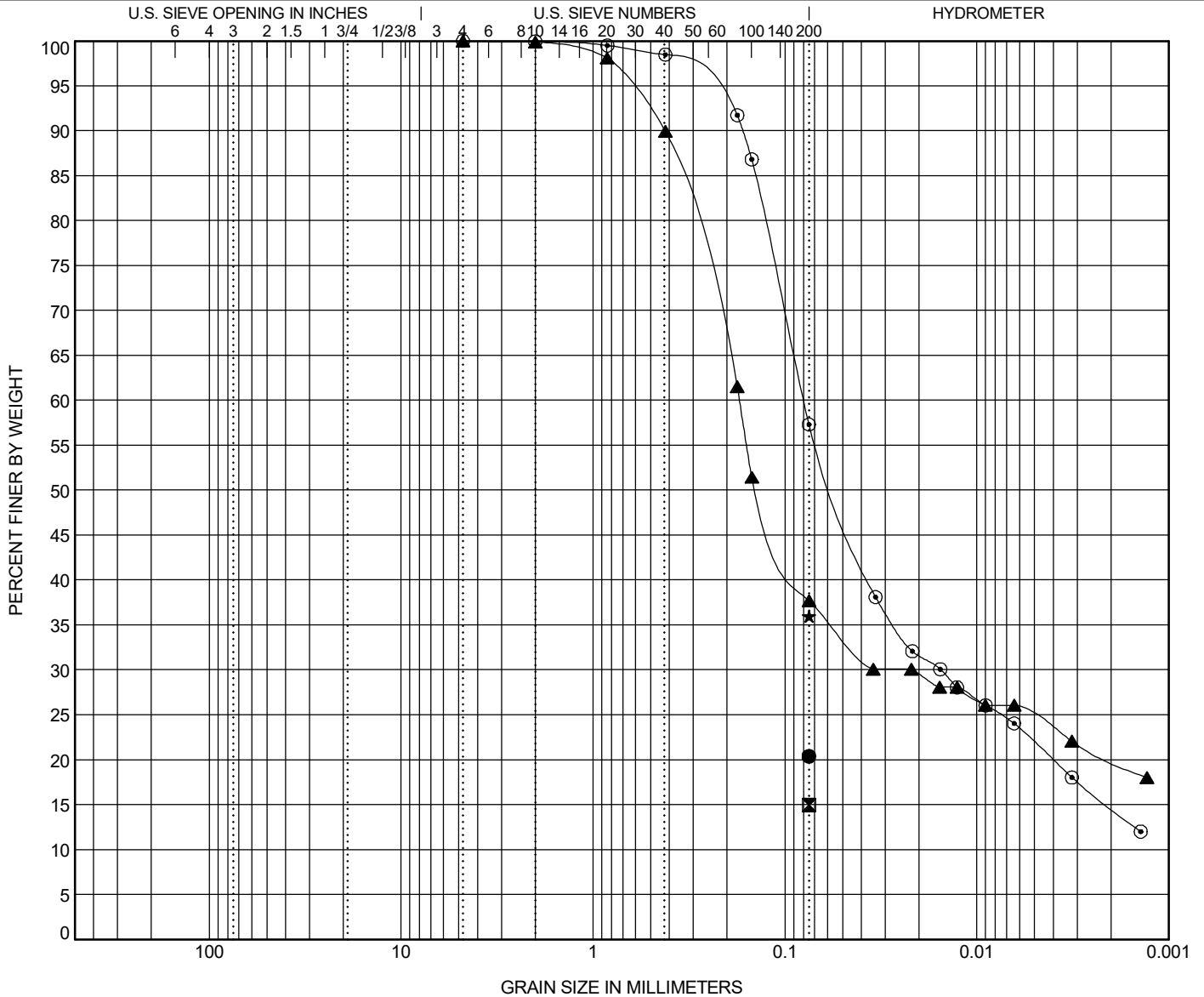


# GRAIN SIZE DISTRIBUTION

PROJECT ID P037127

PROJECT NAME US-15 over Indian Field Swamp

PROJECT COUNTY Dorchester



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

BOREHOLE	DEPTH	Classification	LL	PL	PI	Cc	Cu
● B-2	4.0	<b>Silty SAND (SM)</b>	NP	NP	NP		
☒ B-2	6.0	<b>Silty SAND (SM/A-2-4)</b>	NP	NP	NP		
▲ B-2	8.0	<b>Clayey SAND (SC)</b>	31	16	15		
★ B-2	10.0	<b>Clayey SAND (SC)</b>	31	13	18		
◎ B-2	15.0	<b>Sandy SILT (ML/A-7-5(5))</b>	41	30	11		

BOREHOLE	DEPTH	D100	D95	D50	D10	%Gravel	%Sand	%Silt	%Clay
● B-2	4.0	0.075						20.4	
☒ B-2	6.0	0.075						14.9	
▲ B-2	8.0	4.76	0.646	0.139		0.0	62.3	13.1	24.6
★ B-2	10.0	0.075						36.0	
◎ B-2	15.0	4.76	0.269	0.055		0.0	42.7	35.4	21.9

GRAIN SIZE G6100.120 - US-15 RBO INDIAN FIELD SWAMP.GPJ FME2017.GDT 10/23/19

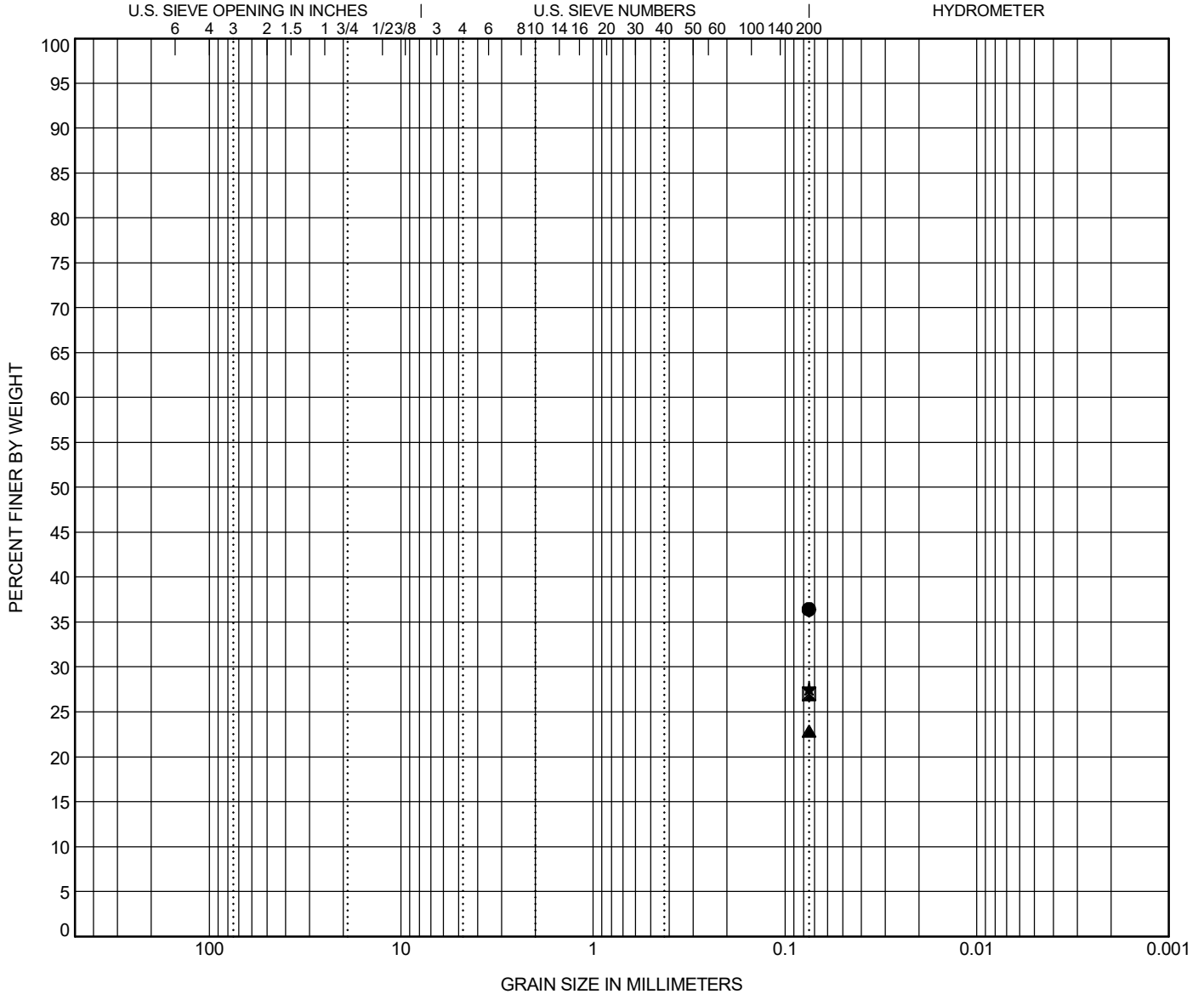


# GRAIN SIZE DISTRIBUTION

PROJECT ID P037127

PROJECT NAME US-15 over Indian Field Swamp

PROJECT COUNTY Dorchester



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

BOREHOLE	DEPTH	Classification	LL	PL	PI	Cc	Cu
● B-2	25.0	<b>Silty SAND (SM)</b>	NP	NP	NP		
☒ B-2	40.0	<b>Silty, Clayey SAND (SC-SM)</b>	20	15	5		
▲ B-2	55.0	<b>Silty SAND (SM)</b>	NP	NP	NP		
★ B-2	70.0	<b>Silty SAND (SM)</b>	NP	NP	NP		

BOREHOLE	DEPTH	D100	D95	D50	D10	%Gravel	%Sand	%Silt	%Clay
● B-2	25.0	0.075						36.4	
☒ B-2	40.0	0.075						27.0	
▲ B-2	55.0	0.075						22.8	
★ B-2	70.0	0.075						27.5	

GRAIN SIZE G6100.120 - US-15 RBO INDIAN FIELD SWAMP.GPJ FME2017.GDT 10/23/19



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**MOISTURE CONTENT DETERMINATION**  
**(AASHTO T265)**

**PROJECT:** US-15 Replacement Bridge over Indian Field Swamp **PROJECT NO.:** G6100.12  
**SAMPLE NUMBER:** 19-2537 **DATE SAMPLE RECEIVED:** 9/30/2019  
**DESCRIPTION OF SOIL:** VARIOUS  
**TESTED BY:** AA/TA **DATE OF TESTING:** 10/2/2019  
**WEIGHED BY:** AA **DATE OF WEIGHING:** 10/3/2019

<b>BORING NO.</b>	B-3	B-3	B-3	B-3	B-3
<b>SAMPLE NO.</b>	SS-5	SS-6	SS-8	SS-10	SS-12
<b>SAMPLE DEPTH (FT.)</b>	8.0 - 10.0	13.5 - 15.0	18.5 - 20.0	33.5 - 35.0	43.5 - 45.0
<b>WATER CONTENT, W%</b>	20.0	62.1	29.4	27.5	22.7

<b>BORING NO.</b>	B-3	B-3			
<b>SAMPLE NO.</b>	SS-17	SS-20			
<b>SAMPLE DEPTH (FT.)</b>	68.5 - 70.0	83.5 - 85.00			
<b>WATER CONTENT, W%</b>	28.7	33.0			

<b>BORING NO.</b>					
<b>SAMPLE NO.</b>					
<b>SAMPLE DEPTH (FT.)</b>					
<b>WATER CONTENT, W%</b>					

<b>BORING NO.</b>					
<b>SAMPLE NO.</b>					
<b>SAMPLE DEPTH (FT.)</b>					
<b>WATER CONTENT, W%</b>					

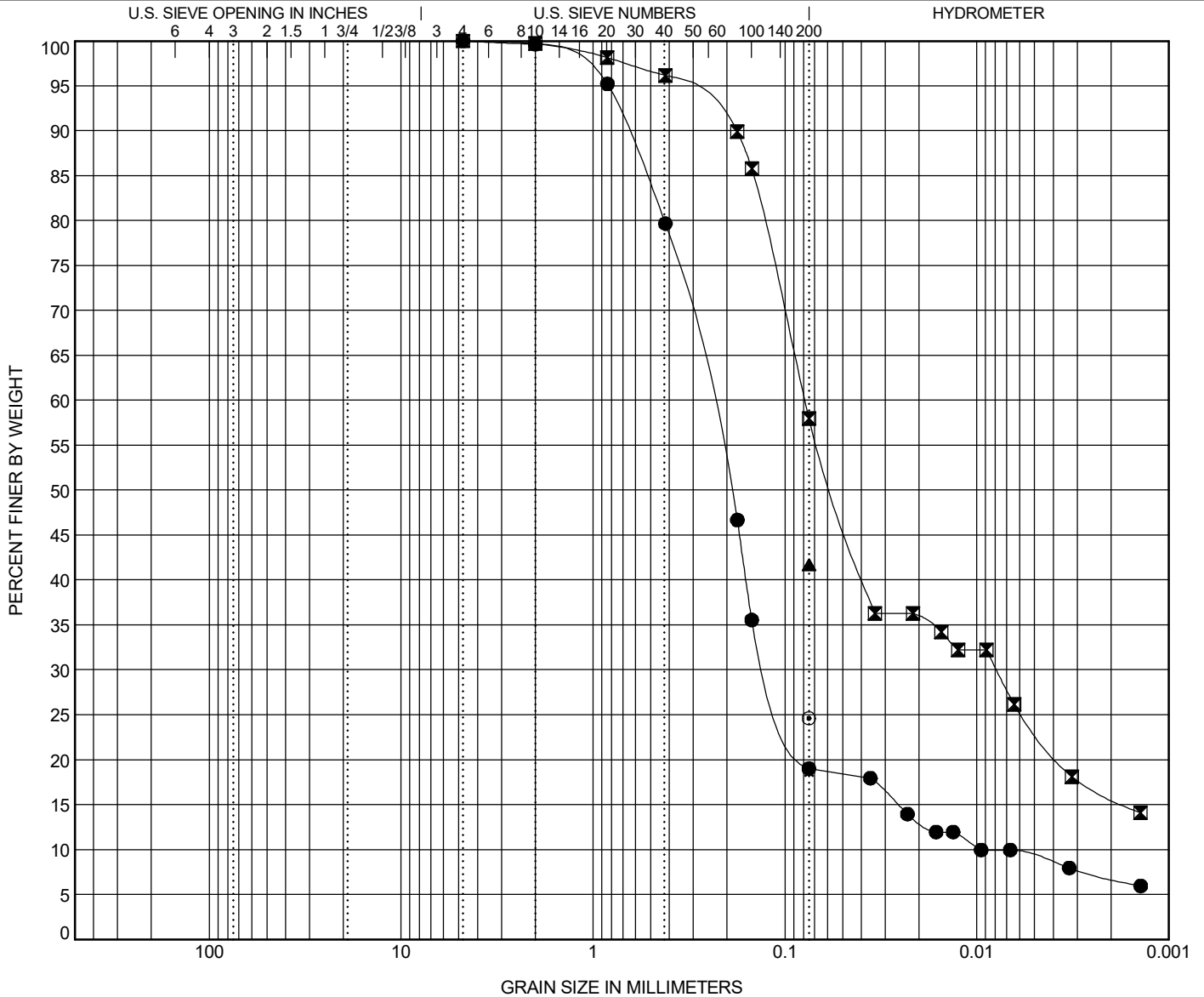


# GRAIN SIZE DISTRIBUTION

PROJECT ID P037127

PROJECT NAME US-15 over Indian Field Swamp

PROJECT COUNTY Dorchester



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

BOREHOLE	DEPTH	Classification	LL	PL	PI	Cc	Cu
● B-3	10.0	Silty SAND (SM/A-2-4)	NP	NP	NP	5.82	26.13
☒ B-3	15.0	Sandy SILT (MLA-5(4))	44	36	8		
▲ B-3	20.0	Silty SAND (SM)	28	27	1		
★ B-3	35.0	Silty SAND (SM)	NP	NP	NP		
◎ B-3	45.0	Silty, Clayey SAND (SC-SM)	21	15	6		

BOREHOLE	DEPTH	D100	D95	D50	D10	%Gravel	%Sand	%Silt	%Clay
● B-3	10.0	4.76	0.833	0.193	0.01	0.0	81.0	9.9	9.1
☒ B-3	15.0	4.76	0.357	0.056		0.0	42.0	34.7	23.3
▲ B-3	20.0	0.075						41.7	
★ B-3	35.0	0.075						18.8	
◎ B-3	45.0	0.075						24.6	

GRAIN SIZE G6100.120 - US-15 INDIAN FIELD SWAMP.GPJ FME2017.GDT 10/18/19

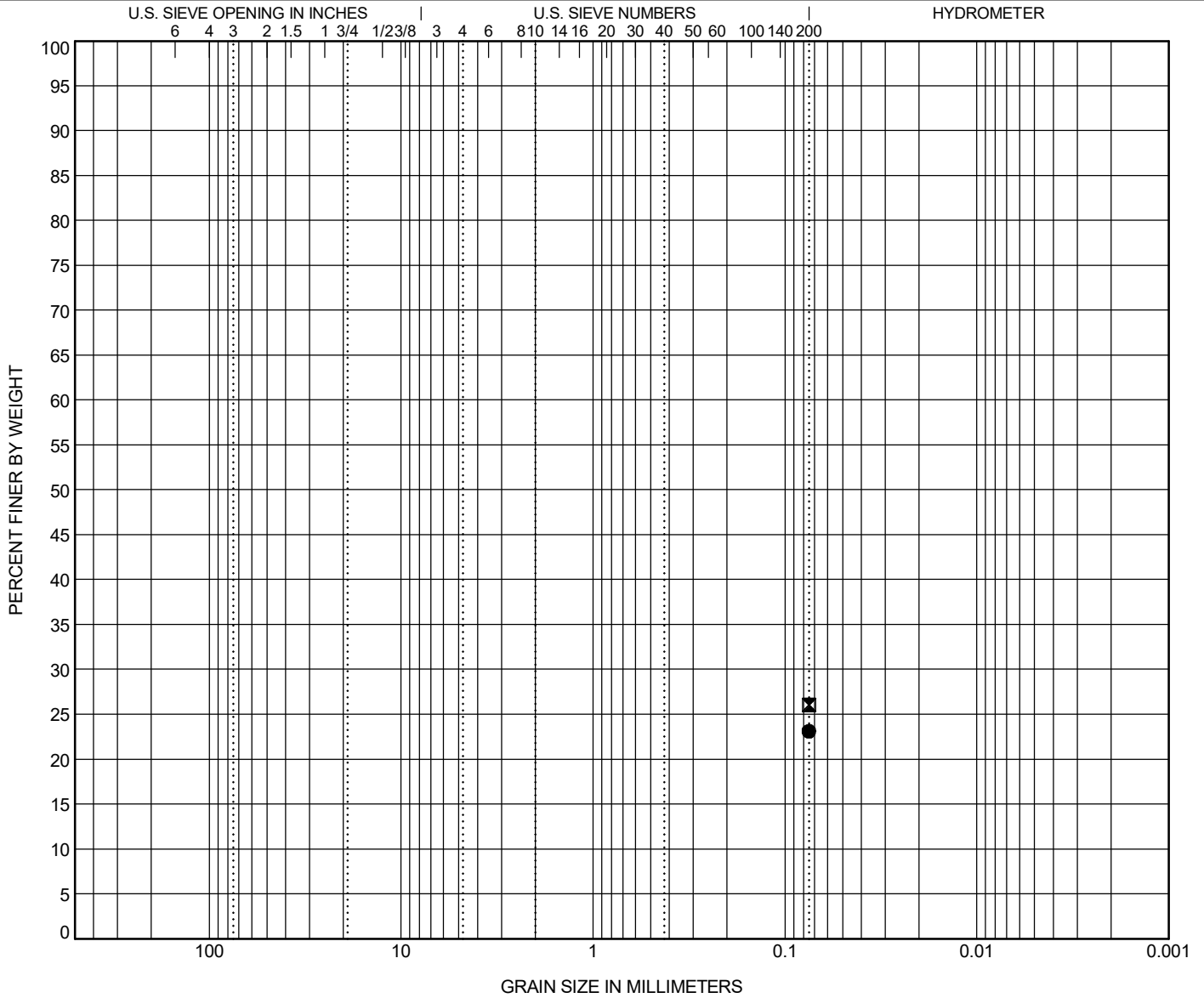


# GRAIN SIZE DISTRIBUTION

PROJECT ID P037127

PROJECT NAME US-15 over Indian Field Swamp

PROJECT COUNTY Dorchester



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

BOREHOLE	DEPTH	Classification	LL	PL	PI	Cc	Cu
● B-3	70.0	<b>Silty SAND (SM)</b>	NP	NP	NP		
■ B-3	85.0	<b>Silty SAND (SM)</b>	NP	NP	NP		

BOREHOLE	DEPTH	D100	D95	D50	D10	%Gravel	%Sand	%Silt	%Clay
● B-3	70.0	0.075						23.1	
■ B-3	85.0	0.075						26.0	

GRAIN SIZE G6100.120 - US-15 RBO INDIAN FIELD SWAMP.GPJ FME2017.GDT 10/18/19





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**MOISTURE CONTENT DETERMINATION**  
**(AASHTO T265)**

**PROJECT:** US-15 Replacement Bridge over Indian Field Swamp **PROJECT NO.:** G6100.12  
**SAMPLE NUMBER:** 19-2510 **DATE SAMPLE RECEIVED:** 9/30/2019  
**DESCRIPTION OF SOIL:** VARIOUS  
**TESTED BY:** AA/TA **DATE OF TESTING:** 10/2/2019  
**WEIGHED BY:** AA **DATE OF WEIGHING:** 10/3/2019

<b>BORING NO.</b>	B-4	B-4	B-4	B-4	B-4
<b>SAMPLE NO.</b>	SS-3	SS-4	SS-6	SS-8	48.5 - 50.0
<b>SAMPLE DEPTH (FT.)</b>	4.0 - 6.0	6.0 - 8.0	13.5 - 15.0	23.5 - 25.0	SS-13
<b>WATER CONTENT, W%</b>	10.4	14.9	46.5	32.8	25.8

<b>BORING NO.</b>	B-4	B-4			
<b>SAMPLE NO.</b>	SS-16	SS-19			
<b>SAMPLE DEPTH (FT.)</b>	63.5 - 65.0	78.5 - 80.0			
<b>WATER CONTENT, W%</b>	27.9	33.6			

<b>BORING NO.</b>					
<b>SAMPLE NO.</b>					
<b>SAMPLE DEPTH (FT.)</b>					
<b>WATER CONTENT, W%</b>					

<b>BORING NO.</b>					
<b>SAMPLE NO.</b>					
<b>SAMPLE DEPTH (FT.)</b>					
<b>WATER CONTENT, W%</b>					

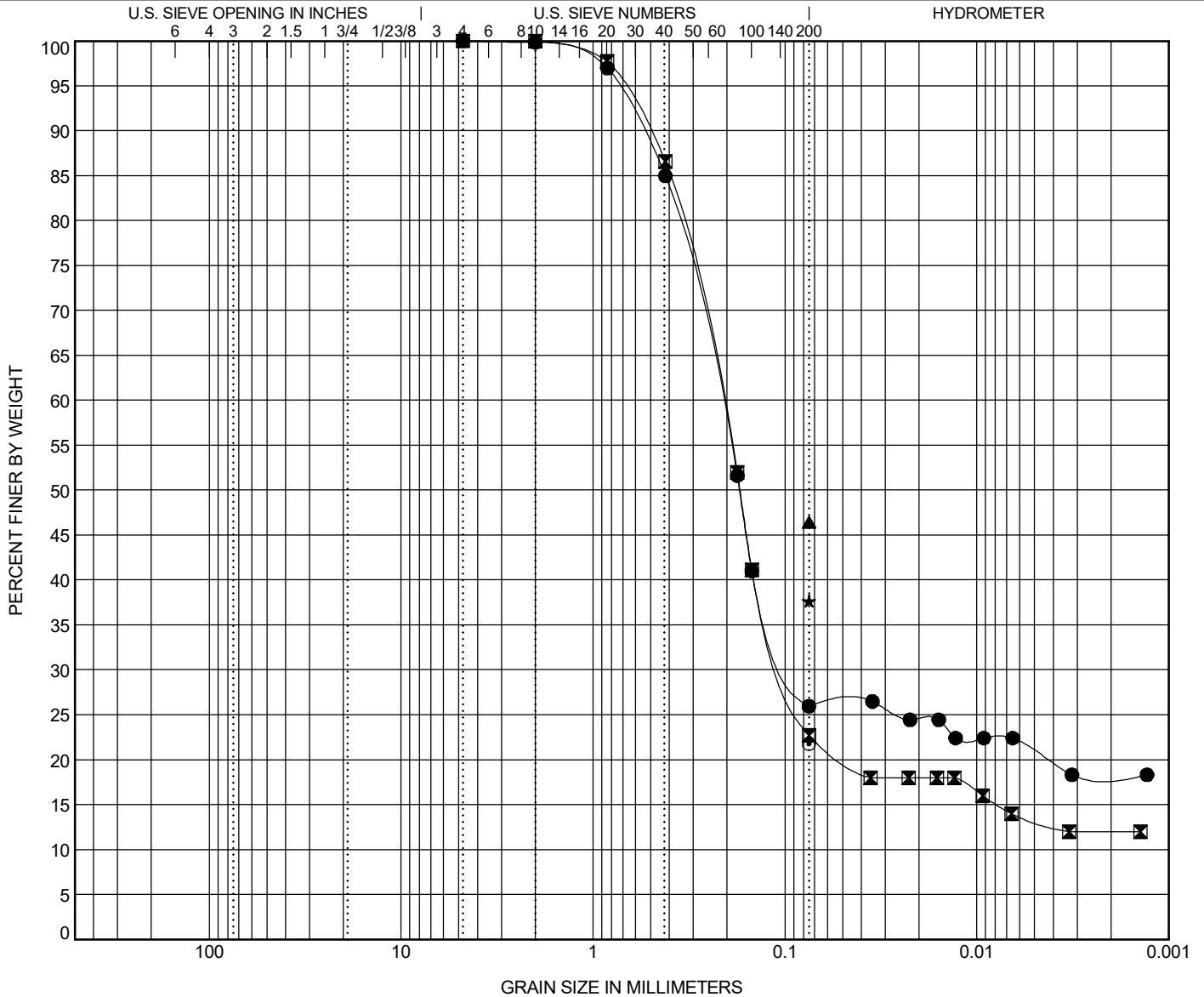


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PROJECT ID P037127

PROJECT NAME US-15 over Indian Field Swamp

PROJECT COUNTY Dorchester



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

BOREHOLE	DEPTH	Classification	LL	PL	PI	Cc	Cu
● B-4	6.0	Silty SAND (SM/A-2-4)	NP	NP	NP		
☒ B-4	8.0	Silty SAND (SM/A-2-4)	NP	NP	NP		
▲ B-4	15.0	Silty SAND (SM)	46	38	8		
★ B-4	25.0	Silty SAND (SM)	NP	NP	NP		
◎ B-4	50.0	Silty SAND (SM)	NP	NP	NP		

BOREHOLE	DEPTH	D100	D95	D50	D10	%Gravel	%Sand	%Silt	%Clay
● B-4	6.0	4.76	0.75	0.172		0.0	74.1	5.1	20.9
☒ B-4	8.0	4.76	0.71	0.172		0.0	77.3	9.5	13.2
▲ B-4	15.0	0.075							46.4
★ B-4	25.0	0.075							37.7
◎ B-4	50.0	0.075							21.8

GRAIN SIZE G6100.120 - US-15 RBO INDIAN FIELD SWAMP.GPJ FME2017.GDT 10/18/19

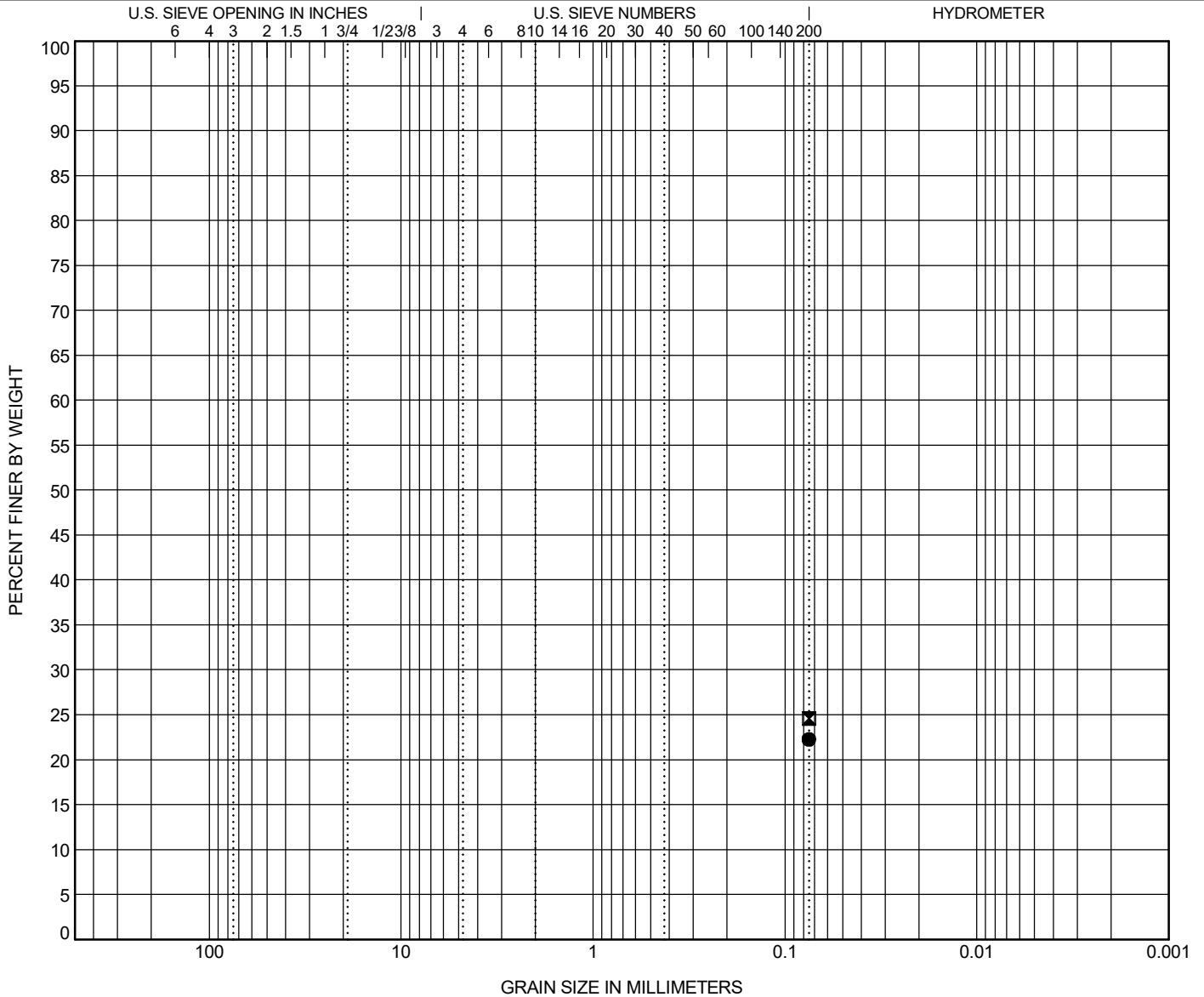


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PROJECT NAME US-15 over Indian Field Swamp

PROJECT COUNTY Dorchester



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

BOREHOLE	DEPTH	Classification					LL	PL	PI	Cc	Cu
● B-4	65.0	<b>Silty SAND (SM)</b>					NP	NP	NP		
■ B-4	80.0	<b>Silty SAND (SM)</b>					NP	NP	NP		
BOREHOLE	DEPTH	D100	D95	D50	D10	%Gravel	%Sand	%Silt	%Clay		
● B-4	65.0	0.075						22.2			
■ B-4	80.0	0.075						24.6			

GRAIN SIZE G6100.120 - US-15 RBO INDIAN FIELD SWAMP.GPJ FME2017.GDT 10/18/19



**F&ME CONSULTANTS**  
 3112 Devine Street  
 Columbia, South Carolina 29205

**ORGANIC IMPURITIES DETERMINATION  
 (AASHTO T267)**

Project Name:	<u>US-15 RBO Indian Field Swamp</u>	Project Number:	<u>G6100.12</u>
Sample Location:	<u>B-4</u>	Sample Elevation/Depth:	<u>4.0 ft. - 6.0 ft.</u>
Description of Sample:	<u>Silty SAND (SM/A-2-4)</u>	Date Tested:	<u>10/8/2019</u>
Tested By:	<u>J. Hiers</u>	Date Weighed:	<u>10/9/2019</u>
Weighed By:	<u>A. Abernethy</u>	Ignition Oven Temperature:	<u>455 °C</u>

Boring/Sample No.	B-4			
Crucible No.	B			
Mass of Crucible & Dry Soil (Before Ignition) [g]	175.63			
Mass of Crucible & Dry Soil (After Ignition) [g]	175.22			
Mass of Crucible [g]	135.63			
Mass of Dry Soil (Before Ignition) [g]	40.00			
Mass of Dry Soil (After Ignition) [g]	39.59			
% Organic Impurities	1.0%			

Date Reviewed: 10/9/2019 Reviewed By: A. Abernethy



**F&ME CONSULTANTS**  
**3112 Devine Street**  
**Columbia, South Carolina 29205**

**MOISTURE CONTENT DETERMINATION**  
**(AASHTO T265)**

**PROJECT:** US-15 Replacement Bridge over Indian Field Swamp **PROJECT NO.:** G6100.12  
**SAMPLE NUMBER:** 19-2533 **DATE SAMPLE RECEIVED:** 9/30/2019  
**DESCRIPTION OF SOIL:** VARIOUS  
**TESTED BY:** AA/TA **DATE OF TESTING:** 10/2/2019  
**WEIGHED BY:** AA **DATE OF WEIGHING:** 10/3/2019

<b>BORING NO.</b>	R-1	R-1	R-1	R-1	R-1
<b>SAMPLE NO.</b>	SS-1	SS-2	SS-3	SS-4	SS-7
<b>SAMPLE DEPTH (FT.)</b>	0.0 - 2.0	2.0 - 4.0	4.0 - 6.0	6.0 - 8.0	18.5 - 20.0
<b>WATER CONTENT, W%</b>	12.6	17.8	16.0	15.5	31.4

<b>BORING NO.</b>					
<b>SAMPLE NO.</b>					
<b>SAMPLE DEPTH (FT.)</b>					
<b>WATER CONTENT, W%</b>					

<b>BORING NO.</b>					
<b>SAMPLE NO.</b>					
<b>SAMPLE DEPTH (FT.)</b>					
<b>WATER CONTENT, W%</b>					

<b>BORING NO.</b>					
<b>SAMPLE NO.</b>					
<b>SAMPLE DEPTH (FT.)</b>					
<b>WATER CONTENT, W%</b>					

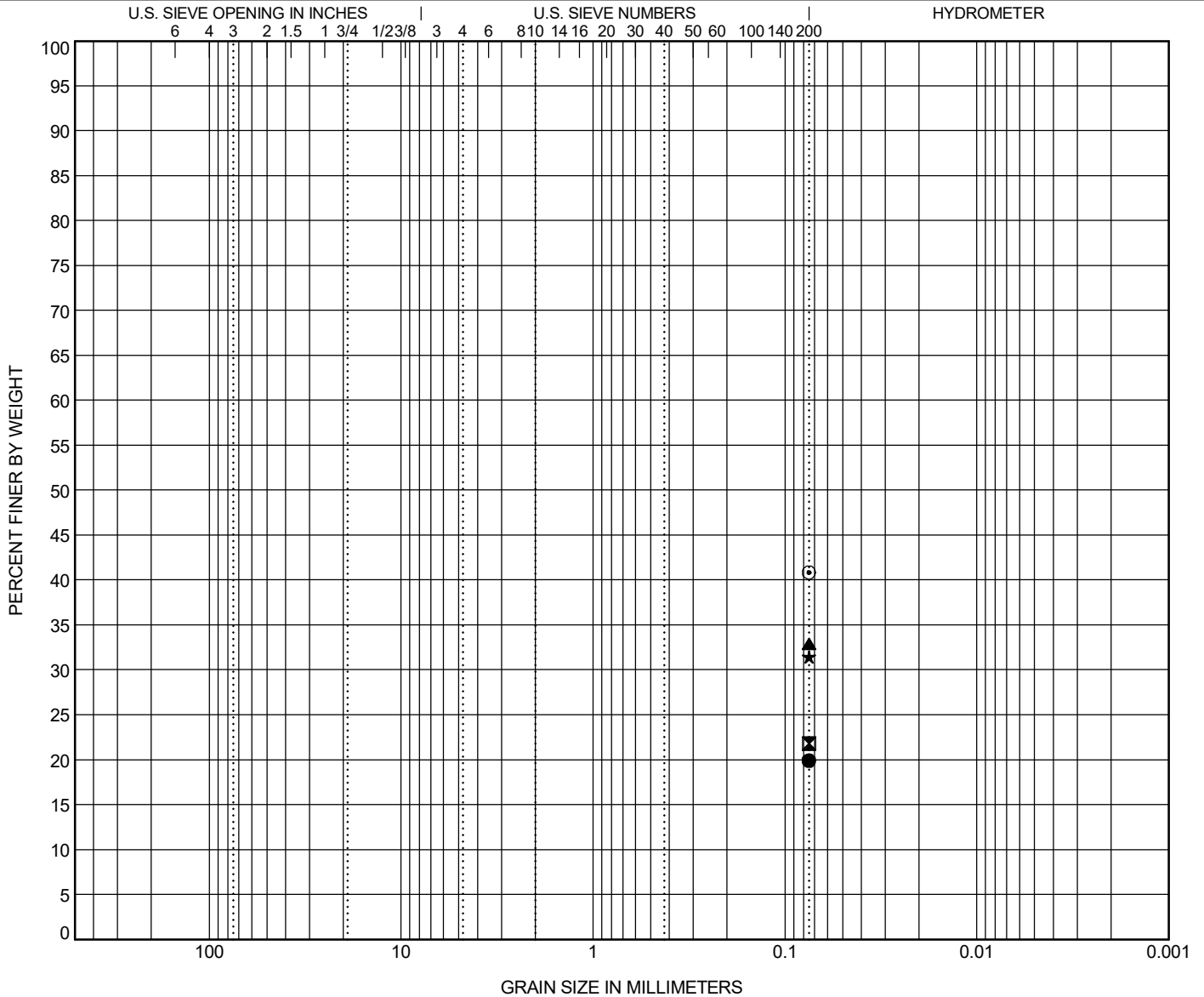


# GRAIN SIZE DISTRIBUTION

PROJECT ID P037127

PROJECT NAME US-15 over Indian Field Swamp

PROJECT COUNTY Dorchester



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

BOREHOLE	DEPTH	Classification	LL	PL	PI	Cc	Cu
● R-1	2.0	Silty SAND (SM)	NP	NP	NP		
☒ R-1	4.0	Silty SAND (SM)	17	15	2		
▲ R-1	6.0	Clayey SAND (SC)	39	15	24		
★ R-1	8.0	Clayey SAND (SC)	39	14	25		
◎ R-1	20.0	Silty SAND (SM)	NP	NP	NP		

BOREHOLE	DEPTH	D100	D95	D50	D10	%Gravel	%Sand	%Silt	%Clay
● R-1	2.0	0.075							19.9
☒ R-1	4.0	0.075							21.8
▲ R-1	6.0	0.075							32.9
★ R-1	8.0	0.075							31.4
◎ R-1	20.0	0.075							40.8

GRAIN SIZE G6100.120 - US-15 RBO INDIAN FIELD SWAMP.GPJ FME2017.GDT 10/18/19





**F&ME CONSULTANTS**  
**3112 Devine Street**  
**Columbia, South Carolina 29205**

**MOISTURE CONTENT DETERMINATION**  
**(AASHTO T265)**

**PROJECT:** US-15 Replacement Bridge over Indian Field Swamp **PROJECT NO.:** G6100.12  
**SAMPLE NUMBER:** 19-2534 **DATE SAMPLE RECEIVED:** 9/30/2019  
**DESCRIPTION OF SOIL:** VARIOUS  
**TESTED BY:** AA/TA **DATE OF TESTING:** 10/2/2019  
**WEIGHED BY:** AA **DATE OF WEIGHING:** 10/3/2019

<b>BORING NO.</b>	R-2	R-2	R-2	R-2	R-2
<b>SAMPLE NO.</b>	SS-1	SS-2	SS-3	SS-5	SS-6
<b>SAMPLE DEPTH (FT.)</b>	0.0 - 2.0	2.0 - 4.0	4.0 - 6.0	8.0 - 10.0	13.5 - 15.0
<b>WATER CONTENT, W%</b>	11.3	8.9	8.6	15.1	43.1

<b>BORING NO.</b>					
<b>SAMPLE NO.</b>					
<b>SAMPLE DEPTH (FT.)</b>					
<b>WATER CONTENT, W%</b>					

<b>BORING NO.</b>					
<b>SAMPLE NO.</b>					
<b>SAMPLE DEPTH (FT.)</b>					
<b>WATER CONTENT, W%</b>					

<b>BORING NO.</b>					
<b>SAMPLE NO.</b>					
<b>SAMPLE DEPTH (FT.)</b>					
<b>WATER CONTENT, W%</b>					

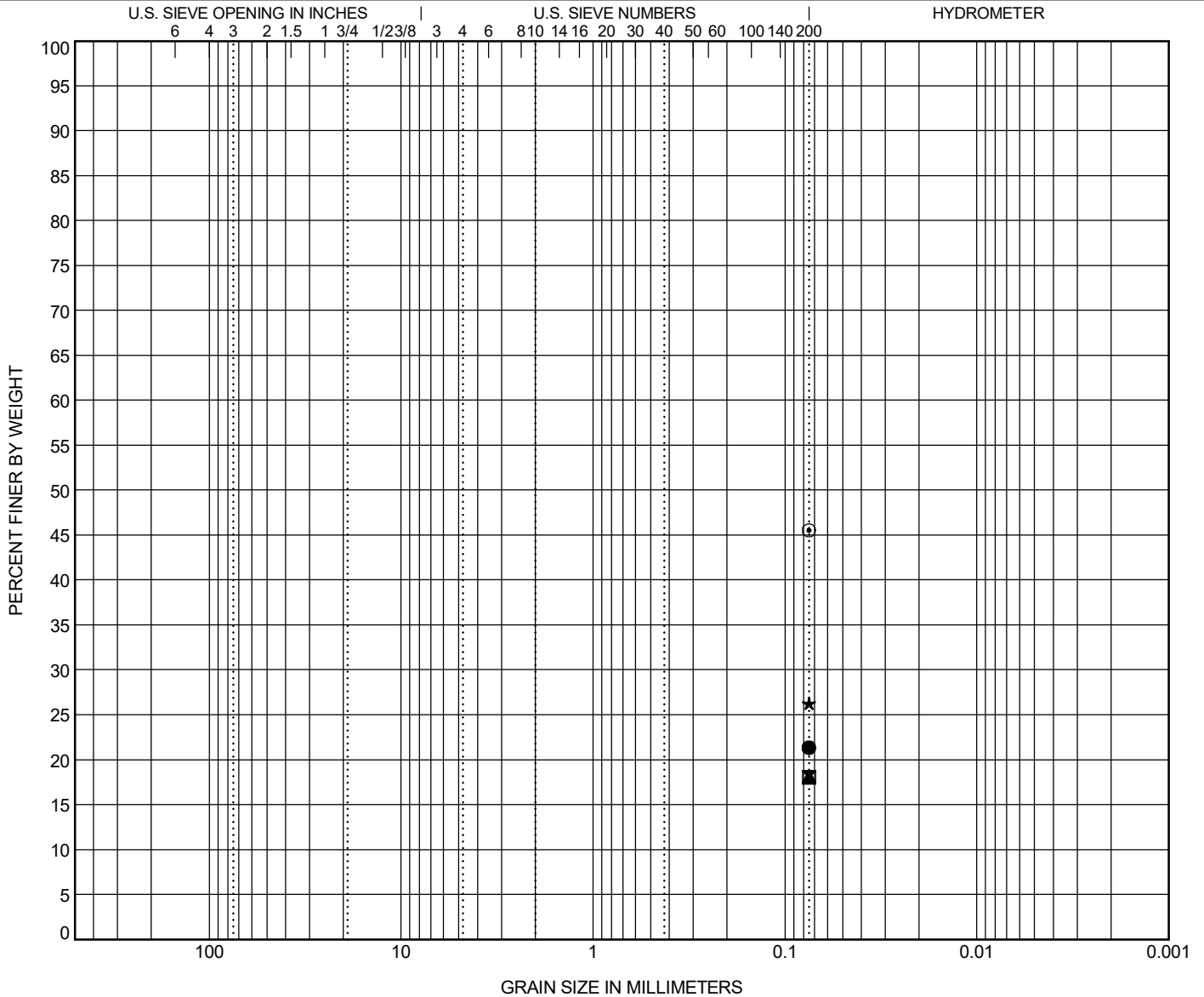


# GRAIN SIZE DISTRIBUTION

PROJECT ID P037127

PROJECT NAME US-15 over Indian Field Swamp

PROJECT COUNTY Dorchester



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

BOREHOLE	DEPTH	Classification	LL	PL	PI	Cc	Cu
● R-2	2.0	<b>Silty SAND (SM)</b>	NP	NP	NP		
☒ R-2	4.0	<b>Silty SAND (SM)</b>	NP	NP	NP		
▲ R-2	6.0	<b>Silty SAND (SM)</b>	NP	NP	NP		
★ R-2	10.0	<b>Clayey SAND (SC)</b>	31	14	17		
◎ R-2	15.0	<b>Silty SAND (SM)</b>	44	31	13		

BOREHOLE	DEPTH	D100	D95	D50	D10	%Gravel	%Sand	%Silt	%Clay
● R-2	2.0	0.075							21.3
☒ R-2	4.0	0.075							18.0
▲ R-2	6.0	0.075							18.1
★ R-2	10.0	0.075							26.3
◎ R-2	15.0	0.075							45.5

GRAIN SIZE G6100.120 - US-15 RBO INDIAN FIELD SWAMP.GPJ FME2017.GDT 10/18/19



**F&ME CONSULTANTS**  
**3112 Devine Street**  
**Columbia, South Carolina 29205**

**MOISTURE CONTENT DETERMINATION**  
**(AASHTO T265)**

**PROJECT:** US-15 Replacement Bridge over Indian Field Swamp **PROJECT NO.:** G6100.12  
**SAMPLE NUMBER:** 19-2511 **DATE SAMPLE RECEIVED:** 9/30/2019  
**DESCRIPTION OF SOIL:** VARIOUS  
**TESTED BY:** AA/TA **DATE OF TESTING:** 10/2/2019  
**WEIGHED BY:** AA **DATE OF WEIGHING:** 10/3/2019

<b>BORING NO.</b>	R-3	R-3	R-3	R-3	R-3
<b>SAMPLE NO.</b>	SS-1	SS-2	SS-3	SS-5	SS-8
<b>SAMPLE DEPTH (FT.)</b>	0.0 - 2.0	2.0 - 4.0	4.0 - 6.0	8.0 - 10.0	23.5 - 25.0
<b>WATER CONTENT, W%</b>	16.4	9.6	11.7	15.6	28.6

<b>BORING NO.</b>					
<b>SAMPLE NO.</b>					
<b>SAMPLE DEPTH (FT.)</b>					
<b>WATER CONTENT, W%</b>					

<b>BORING NO.</b>					
<b>SAMPLE NO.</b>					
<b>SAMPLE DEPTH (FT.)</b>					
<b>WATER CONTENT, W%</b>					

<b>BORING NO.</b>					
<b>SAMPLE NO.</b>					
<b>SAMPLE DEPTH (FT.)</b>					
<b>WATER CONTENT, W%</b>					

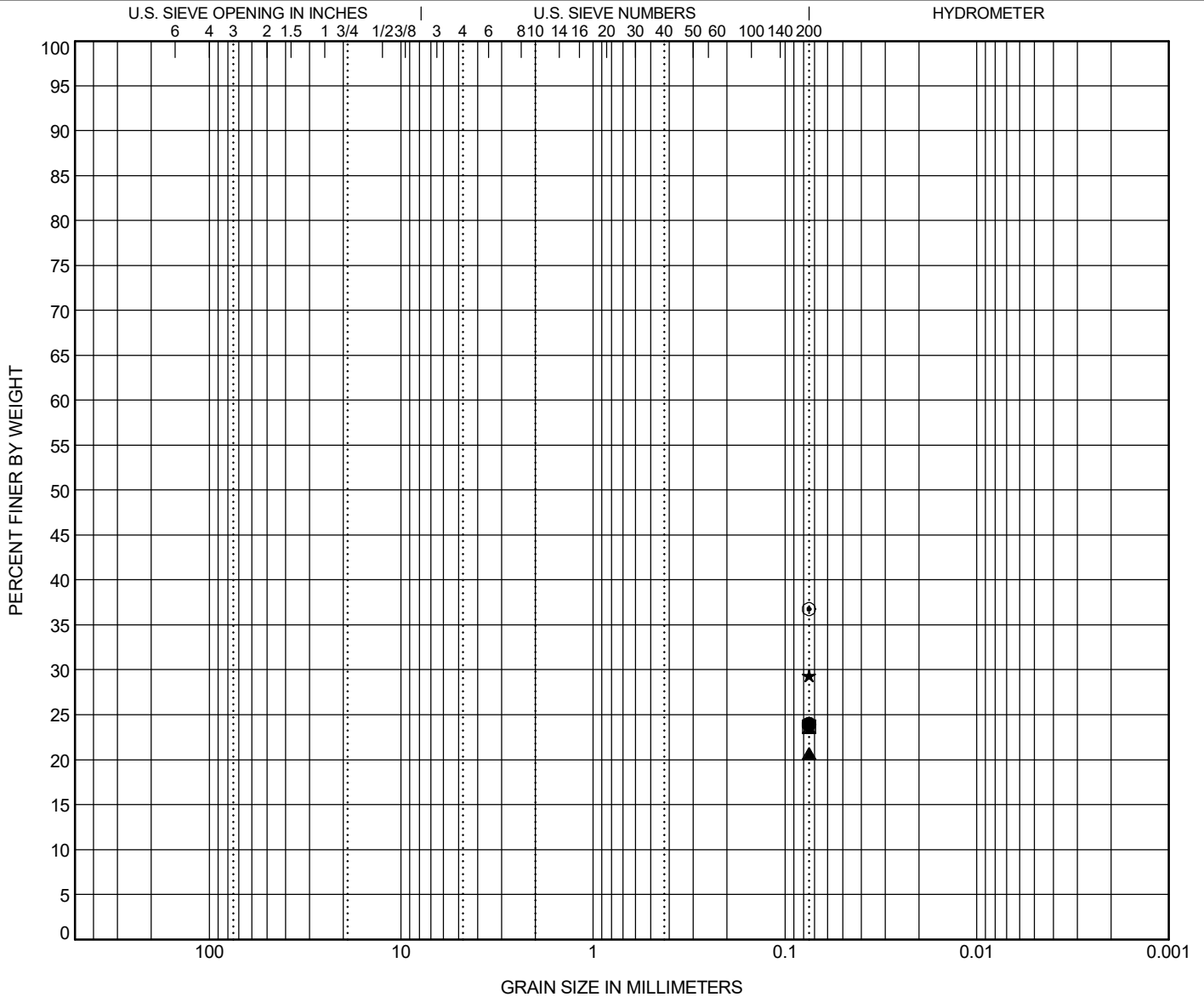


# GRAIN SIZE DISTRIBUTION

PROJECT ID P037127

PROJECT NAME US-15 over Indian Field Swamp

PROJECT COUNTY Dorchester



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

BOREHOLE	DEPTH	Classification	LL	PL	PI	Cc	Cu
● R-3	2.0	Clayey <u>SAND (SC)</u>	25	17	8		
■ R-3	4.0	Silty <u>SAND (SM)</u>	NP	NP	NP		
▲ R-3	6.0	Silty <u>SAND (SM)</u>	NP	NP	NP		
★ R-3	10.0	Clayey <u>SAND (SC)</u>	24	14	10		
◎ R-3	25.0	Silty <u>SAND (SM)</u>	NP	NP	NP		

BOREHOLE	DEPTH	D100	D95	D50	D10	%Gravel	%Sand	%Silt	%Clay
● R-3	2.0	0.075							23.9
■ R-3	4.0	0.075							23.7
▲ R-3	6.0	0.075							20.7
★ R-3	10.0	0.075							29.3
◎ R-3	25.0	0.075							36.8

GRAIN SIZE G6100.120 - US-15 RBO INDIAN FIELD SWAMP.GPJ FME2017.GDT 10/18/19



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**3112 Devine Street**  
**Columbia, South Carolina 29205**

**MOISTURE CONTENT DETERMINATION**  
**(AASHTO T265)**

**PROJECT:** US-15 Replacement Bridge over Indian Field Swamp **PROJECT NO.:** G6100.12  
**SAMPLE NUMBER:** 19-2512 **DATE SAMPLE RECEIVED:** 9/30/2019  
**DESCRIPTION OF SOIL:** VARIOUS  
**TESTED BY:** AA/TA **DATE OF TESTING:** 10/2/2019  
**WEIGHED BY:** AA **DATE OF WEIGHING:** 10/3/2019

<b>BORING NO.</b>	R-4	R-4	R-4	R-4	
<b>SAMPLE NO.</b>	SS-2	SS-3	SS-4	SS-7	
<b>SAMPLE DEPTH (FT.)</b>	2.0 - 4.0	4.0 - 6.0	6.0 - 8.0	18.5 - 20.0	
<b>WATER CONTENT, W%</b>	11.2	6.9	13.2	39.0	

<b>BORING NO.</b>					
<b>SAMPLE NO.</b>					
<b>SAMPLE DEPTH (FT.)</b>					
<b>WATER CONTENT, W%</b>					

<b>BORING NO.</b>					
<b>SAMPLE NO.</b>					
<b>SAMPLE DEPTH (FT.)</b>					
<b>WATER CONTENT, W%</b>					

<b>BORING NO.</b>					
<b>SAMPLE NO.</b>					
<b>SAMPLE DEPTH (FT.)</b>					
<b>WATER CONTENT, W%</b>					

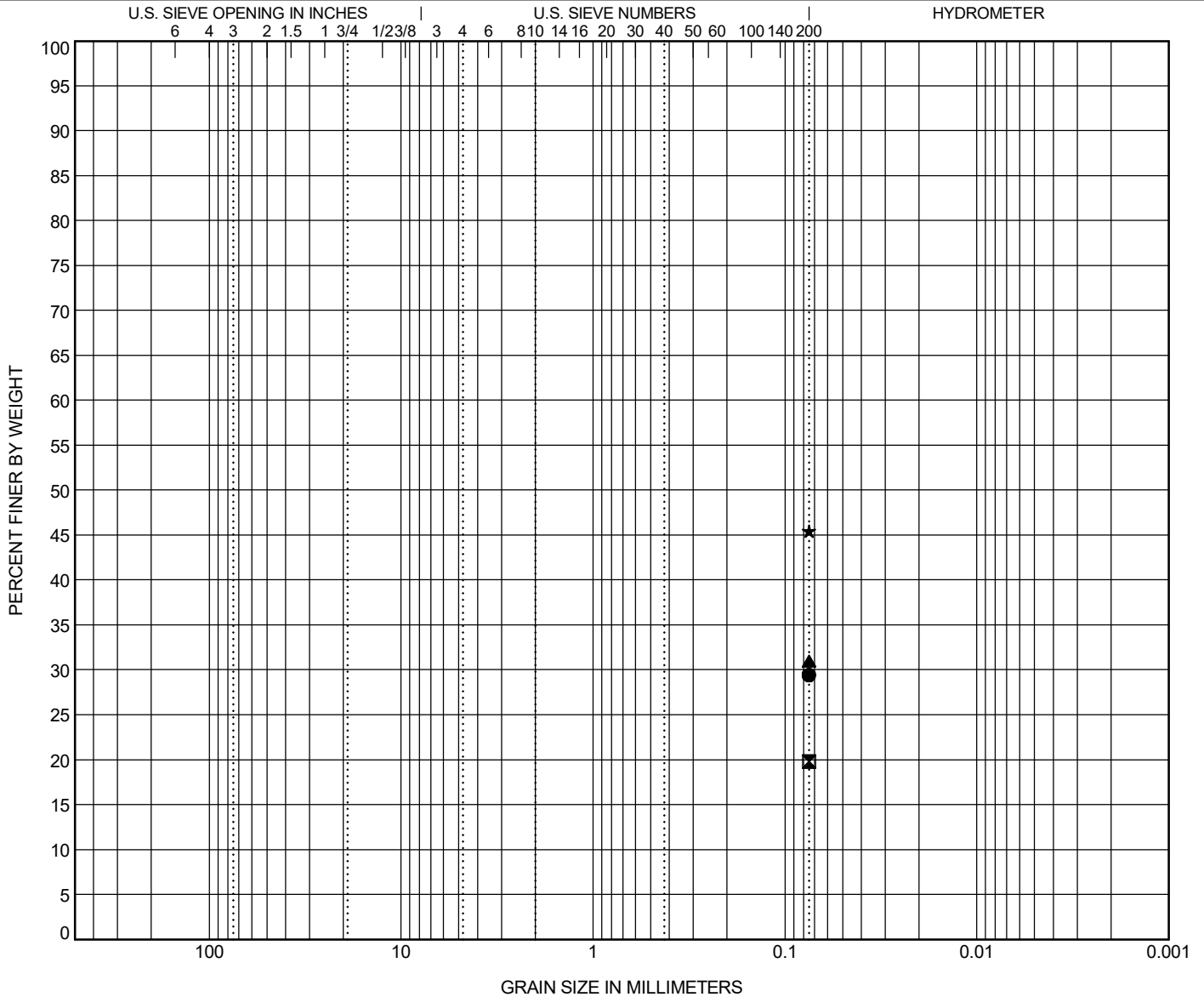


# GRAIN SIZE DISTRIBUTION

PROJECT ID P037127

PROJECT NAME US-15 over Indian Field Swamp

PROJECT COUNTY Dorchester



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

BOREHOLE	DEPTH	Classification	LL	PL	PI	Cc	Cu
● R-4	4.0	<b>Silty SAND (SM)</b>	NP	NP	NP		
■ R-4	6.0	<b>Silty SAND (SM)</b>	NP	NP	NP		
▲ R-4	8.0	<b>Clayey SAND (SC)</b>	29	14	15		
★ R-4	20.0	<b>Silty SAND (SM)</b>	41	36	5		

BOREHOLE	DEPTH	D100	D95	D50	D10	%Gravel	%Sand	%Silt	%Clay
● R-4	4.0	0.075						29.4	
■ R-4	6.0	0.075						19.8	
▲ R-4	8.0	0.075						31.0	
★ R-4	20.0	0.075						45.4	

GRAIN SIZE G6100.120 - US-15 RBO INDIAN FIELD SWAMP.GPJ FME2017.GDT 10/18/19





**F&ME CONSULTANTS**  
**3112 Devine Street**  
**Columbia, South Carolina 29205**

**MOISTURE CONTENT DETERMINATION**  
**(AASHTO T265)**

<b>PROJECT:</b>	US-15 Replacement Bridge over Indian Field Swamp	<b>PROJECT NO.:</b>	G6100.12
<b>SAMPLE NUMBER:</b>	19-2538	<b>DATE SAMPLE RECEIVED:</b>	9/27/2019
<b>DESCRIPTION OF SOIL:</b>	Silty SAND (SM/A-2-4)		
<b>TESTED BY:</b>	AA	<b>DATE OF TESTING:</b>	10/4/2019
<b>WEIGHED BY:</b>	AA	<b>DATE OF WEIGHING:</b>	10/7/2019

<b>BORING NO.</b>	BS-1				
<b>SAMPLE NO.</b>	--				
<b>SAMPLE DEPTH (FT.)</b>	0.0 - 5.0				
<b>WATER CONTENT, W%</b>	12.6				

<b>BORING NO.</b>					
<b>SAMPLE NO.</b>					
<b>SAMPLE DEPTH (FT.)</b>					
<b>WATER CONTENT, W%</b>					

<b>BORING NO.</b>					
<b>SAMPLE NO.</b>					
<b>SAMPLE DEPTH (FT.)</b>					
<b>WATER CONTENT, W%</b>					

<b>BORING NO.</b>					
<b>SAMPLE NO.</b>					
<b>SAMPLE DEPTH (FT.)</b>					
<b>WATER CONTENT, W%</b>					

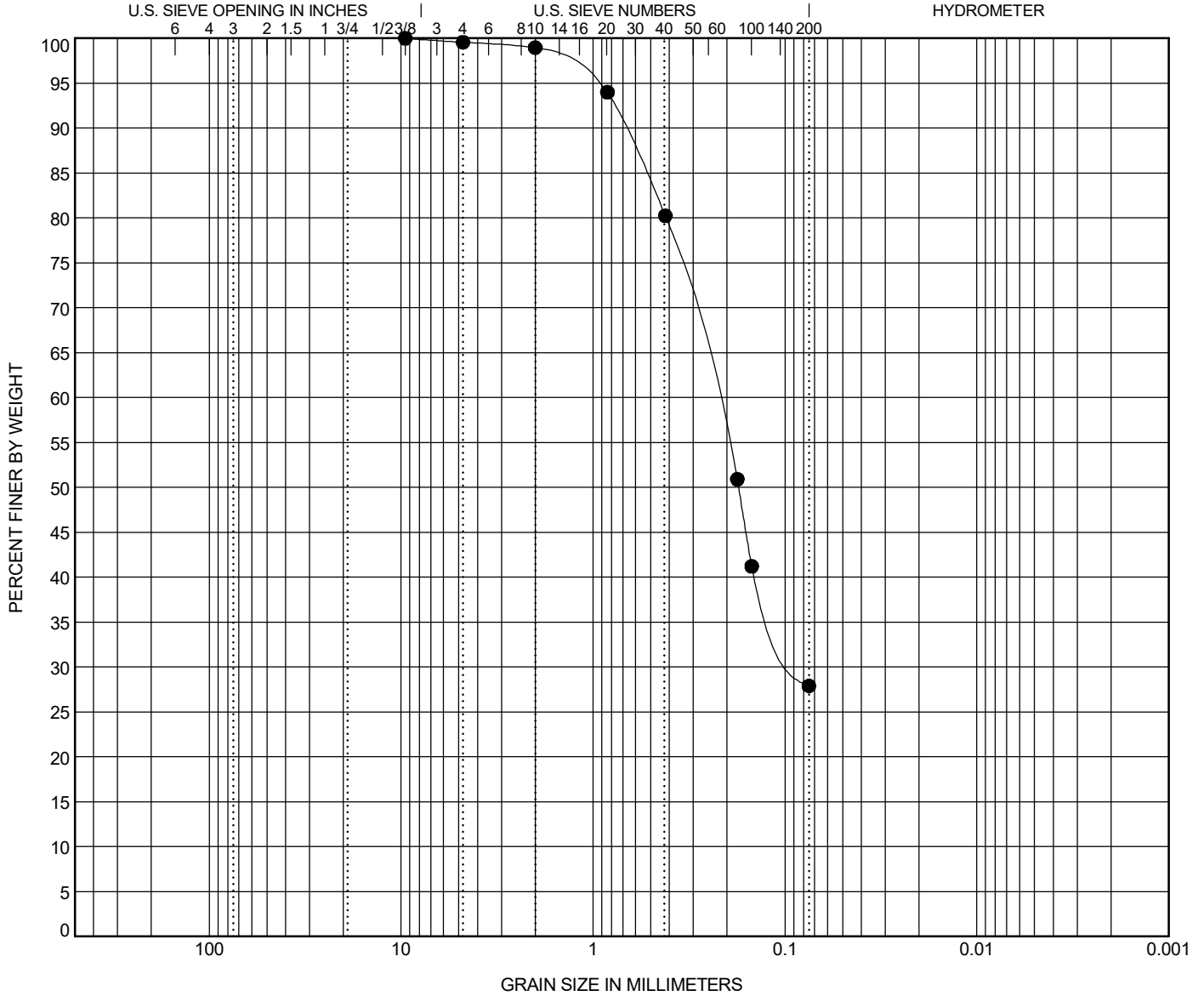


# GRAIN SIZE DISTRIBUTION

PROJECT ID P037127

PROJECT NAME US-15 over Indian Field Swamp

PROJECT COUNTY Dorchester



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

BOREHOLE	DEPTH	Classification					LL	PL	PI	Cc	Cu
● BS-1	5.0	<b>Silty SAND (SM/A-2-4)</b>					<b>NP</b>	<b>NP</b>	<b>NP</b>		

BOREHOLE	DEPTH	D100	D95	D50	D10	%Gravel	%Sand	%Silt	%Clay
● BS-1	5.0	9.51	1	0.174		0.4	71.7	27.9	

GRAIN SIZE G6100.120 - US-15 RBO INDIAN FIELD SWAMP.GPJ FME2017.GDT 10/14/19



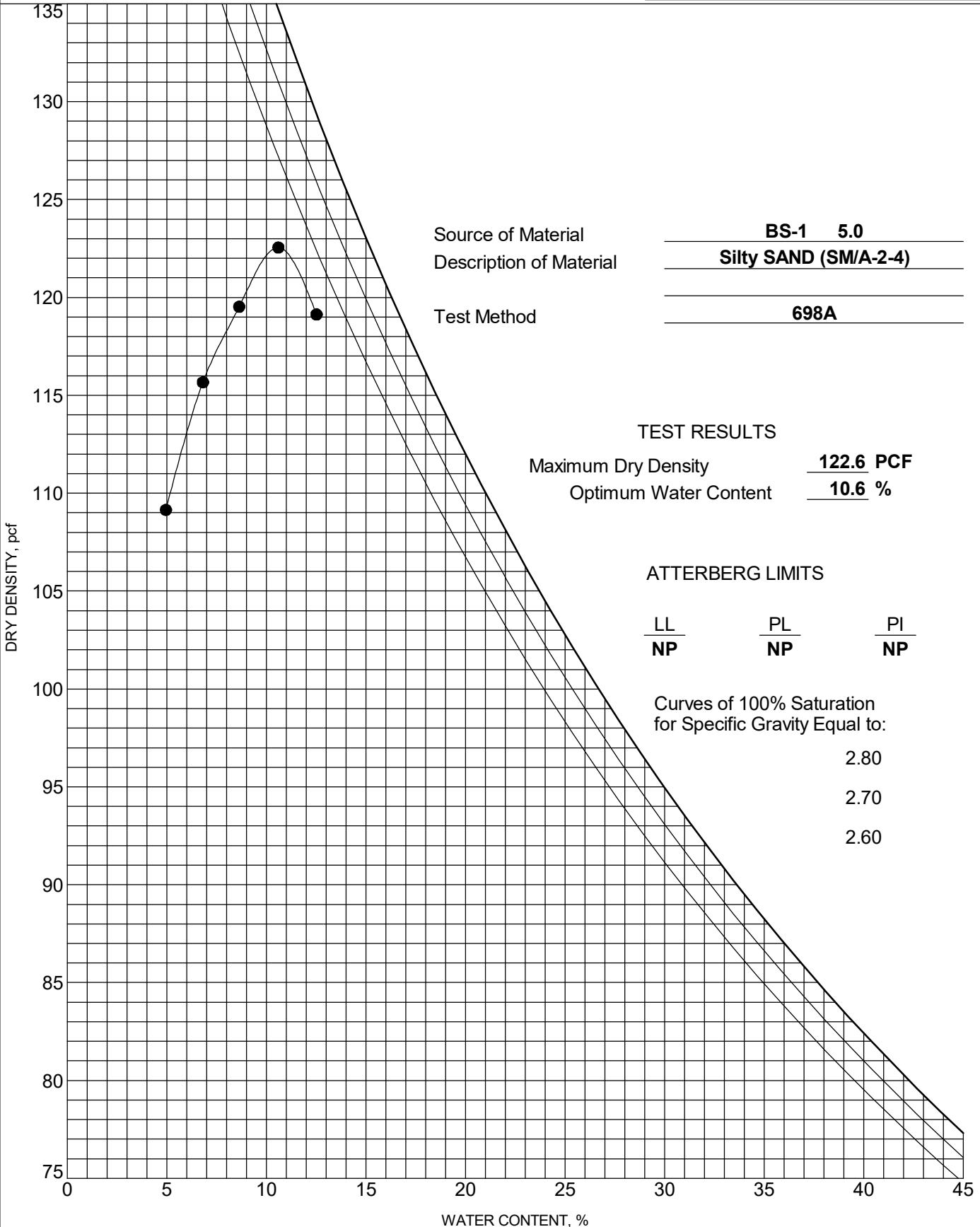


# MOISTURE-DENSITY RELATIONSHIP

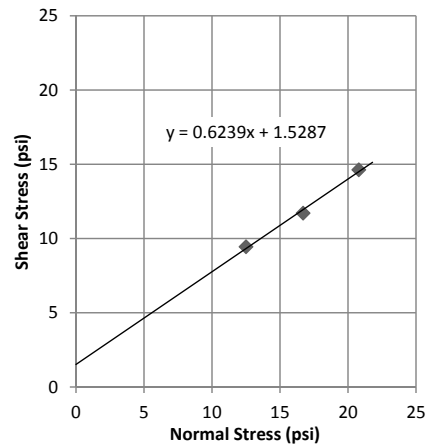
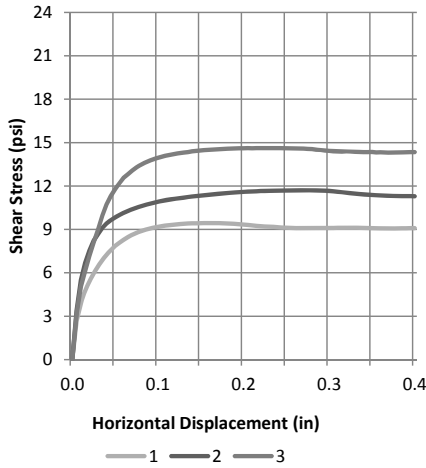
PROJECT ID P037127

PROJECT NAME US-15 over Indian Field Swamp

PROJECT COUNTY Dorchester



**DIRECT SHEAR TEST REPORT**  
**ASTM - D3080 / AASHTO T236**



Sample 1	
Normal Stress (psi)	12.5
Speed (in./min.)	0.01
Sample Width (in.)	4.00
Percent Moisture	12.4%
Wet Density (pcf)	133.0
Dry Density (pcf)	118.4
t50 (min.)	0.2
Saturation (%)	82.7%
Horizontal Displacement (in.)	Shear Stress (psi)
0.000	0.00
0.005	2.67
0.010	3.91
0.015	4.78
0.020	5.41
0.030	6.43
0.040	7.24
0.050	7.86
0.060	8.29
0.070	8.63
0.080	8.88
0.090	9.05
0.100	9.18
0.125	9.37
0.150	9.43
0.175	9.43
0.200	9.33
0.225	9.20
0.250	9.12
0.300	9.11
0.350	9.09
0.400	9.09
Max Shear Stress	<b>9.44</b>

Sample 2	
Normal Stress (psi)	16.7
Speed (in./min.)	0.01
Sample Width (in.)	4.00
Percent Moisture	12.7%
Wet Density (pcf)	133.2
Dry Density (pcf)	118.2
t50 (min.)	0.2
Saturation (%)	84.3%
Horizontal Displacement (in.)	Shear Stress (psi)
0.000	0.00
0.005	3.39
0.010	5.51
0.015	6.69
0.020	7.54
0.030	8.68
0.040	9.41
0.050	9.83
0.060	10.15
0.070	10.41
0.080	10.59
0.090	10.76
0.100	10.91
0.125	11.16
0.150	11.33
0.175	11.48
0.200	11.59
0.225	11.66
0.250	11.69
0.300	11.67
0.350	11.36
0.400	11.29
Max Shear Stress	<b>11.71</b>

Sample 3	
Normal Stress (psi)	20.8
Speed (in./min.)	0.01
Sample Width (in.)	4.00
Percent Moisture	12.2%
Wet Density (pcf)	110.9
Dry Density (pcf)	98.9
t50 (min.)	0.2
Saturation (%)	48.2%
Horizontal Displacement (in.)	Shear Stress (psi)
0.000	0.00
0.005	3.17
0.010	5.06
0.015	6.17
0.020	7.16
0.030	8.99
0.040	10.73
0.050	11.79
0.060	12.57
0.070	13.08
0.080	13.46
0.090	13.74
0.100	13.94
0.125	14.27
0.150	14.45
0.175	14.56
0.200	14.61
0.225	14.62
0.250	14.61
0.300	14.43
0.350	14.35
0.400	14.34
Max Shear Stress	<b>14.63</b>

Project Name US 15 RBO Indian Field Swamp

F&ME Project No. G6100.12 Date 10/14/19

SCDOT Project No. P037127

Location/Sample BS-1 / Sample 19-2538

Depth/Elevation 0' - 5'

Type of Test : Direct Shear - 4" by 4" Square Shear Box

Sample Type : Remolded 1" Thick, Non-Innundated

Description: **Brown Silty Fine to Medium SAND (SM, A-2-4)**

PI= NP                      % Fines= 27.9

SG= 2.65                    Box Gap= 1.5 mm

φ= 32.0°                    C<sub>apparent</sub>= 1.53 psi



3112 Devine Street Columbia, SC 29205

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**3112 Devine Street**  
**Columbia, South Carolina 29205**

**MOISTURE CONTENT DETERMINATION**  
**(AASHTO T265)**

<b>PROJECT:</b>	US-15 Replacement Bridge over Indian Field Swamp	<b>PROJECT NO.:</b>	G6100.12
<b>SAMPLE NUMBER:</b>	19-2513	<b>DATE SAMPLE RECEIVED:</b>	9/25/2019
<b>DESCRIPTION OF SOIL:</b>	Silty SAND (SM/A-2-4)		
<b>TESTED BY:</b>	AA	<b>DATE OF TESTING:</b>	10/4/2019
<b>WEIGHED BY:</b>	AA	<b>DATE OF WEIGHING:</b>	10/7/2019

<b>BORING NO.</b>	BS-2				
<b>SAMPLE NO.</b>	--				
<b>SAMPLE DEPTH (FT.)</b>	0.0 - 5.0				
<b>WATER CONTENT, W%</b>	8.9				

<b>BORING NO.</b>					
<b>SAMPLE NO.</b>					
<b>SAMPLE DEPTH (FT.)</b>					
<b>WATER CONTENT, W%</b>					

<b>BORING NO.</b>					
<b>SAMPLE NO.</b>					
<b>SAMPLE DEPTH (FT.)</b>					
<b>WATER CONTENT, W%</b>					

<b>BORING NO.</b>					
<b>SAMPLE NO.</b>					
<b>SAMPLE DEPTH (FT.)</b>					
<b>WATER CONTENT, W%</b>					

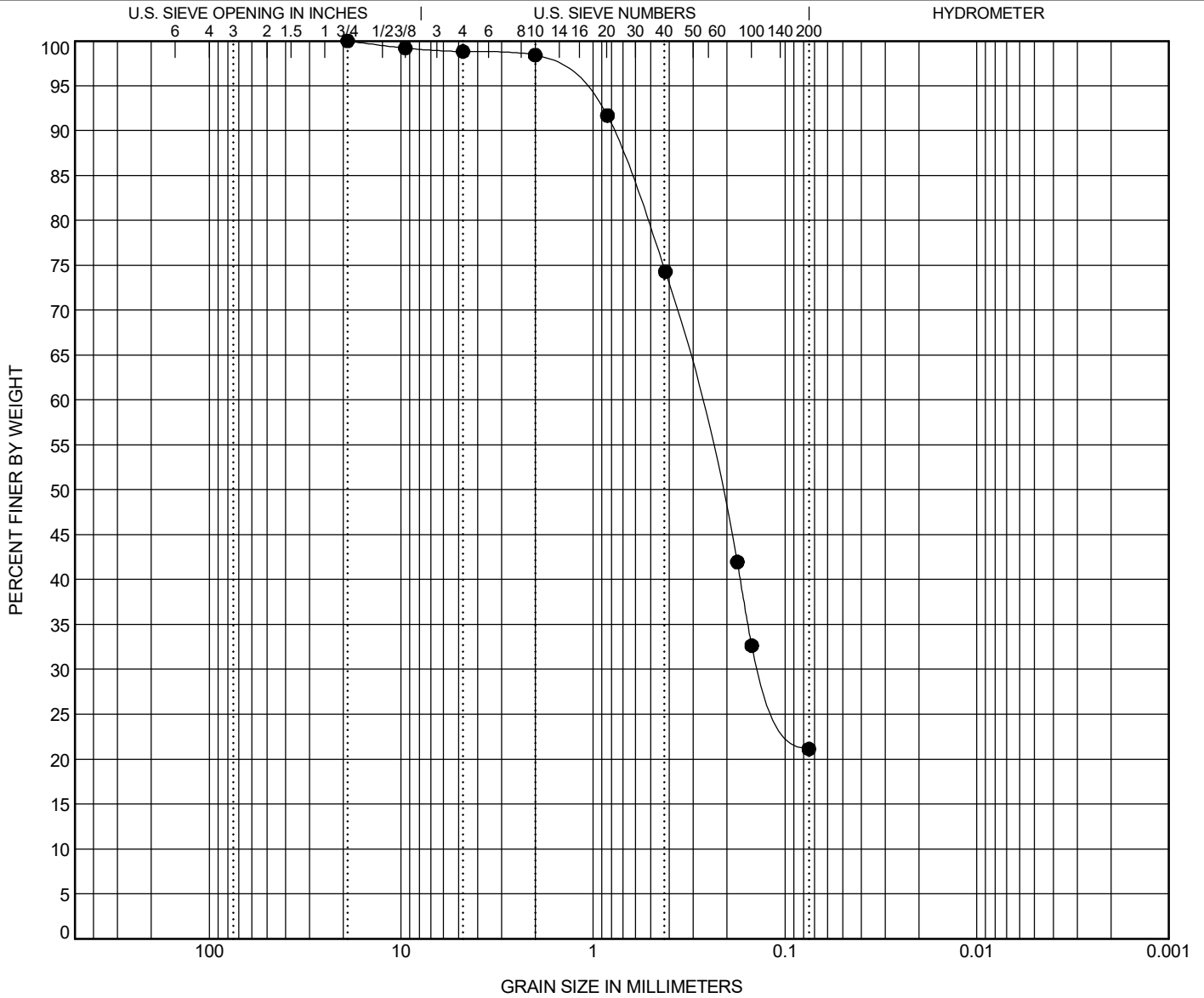


# GRAIN SIZE DISTRIBUTION

PROJECT ID P037127

PROJECT NAME US-15 over Indian Field Swamp

PROJECT COUNTY Dorchester



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

BOREHOLE	DEPTH	Classification					LL	PL	PI	Cc	Cu
● BS-2	5.0	<b>Silty SAND (SM/A-2-4)</b>					<b>NP</b>	<b>NP</b>	<b>NP</b>		

BOREHOLE	DEPTH	D100	D95	D50	D10	%Gravel	%Sand	%Silt	%Clay
● BS-2	5.0	19	1.288	0.219		1.2	77.7	21.1	

GRAIN SIZE G6100.120 - US-15 RBO INDIAN FIELD SWAMP.GPJ FME2017.GDT 10/17/19





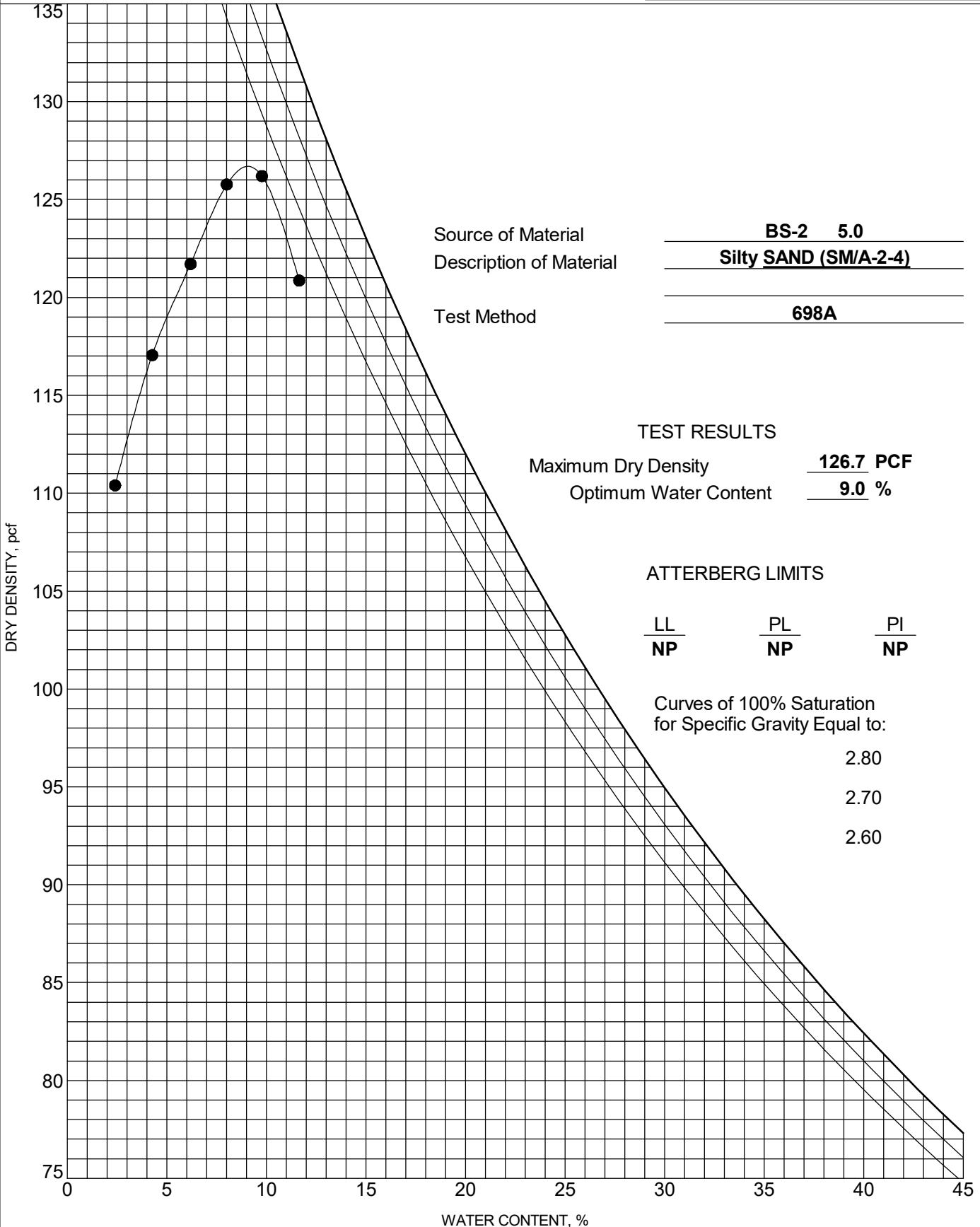


# MOISTURE-DENSITY RELATIONSHIP

PROJECT ID P037127

PROJECT NAME US-15 over Indian Field Swamp

PROJECT COUNTY Dorchester



**California Bearing Ratio Test  
(AASHTO T193 / ASTM D1883)**

<b>PROJECT NAME:</b>	US 15 over Indian Field Swamp	<b>SOIL DESCRIPTION:</b>	Silty SAND
<b>PROJECT NO.:</b>	P037127/G6100.12	<b>USCS CLASSIFICATION:</b>	SM
<b>SAMPLE LOCATION:</b>	BS-2	<b>AASHTO CLASSIFICATION:</b>	A-2-4
<b>SAMPLE DEPTH:</b>	5 ft	<b>LL = NP PL = NP PI = NP</b>	
<b>SAMPLE ID:</b>	19-2513	<b>MAX. DRY DENSITY =</b>	126.7 pcf
<b>SAMPLED BY:</b>	Craig Piercy	<b>OPT. MOISTURE CONTENT =</b>	9.0 %
<b>DATE TEST BEGAN:</b>	10/11/2019		
<b>DATE TEST COMPLETED:</b>	10/15/2019		
<b>DATE SAMPLED:</b>	9/24/2019		
<b>DATE RECEIVED:</b>	9/24/2019		

**Water Content (before compaction)**

Wt. Wet Soil + Tare (g) = 172.10    Wt. Dry Soil + Tare (g) = 158.60    Wt. Can = 7.43    Moisture Content = 8.9 %

**Water Content (after compaction)**

Wt. Wet Soil + Tare (g) = 181.17    Wt. Dry Soil + Tare (g) = 166.99    Wt. Can = 8.44    Moisture Content = 8.9 %

**Unit Weight (before soaking)**

Wt. Mold + Soil = 25.5 lbs    Wt. Mold = 15.6 lbs    Ht. Soil = 4.67 in    Dry Density = 120.0 pcf

**Unit Weight (after soaking)**

Wt. Mold + Soil = 25.7 lbs    Wt. Mold = 15.6 lbs    Ht. Soil = 4.67 in    Dry Density = 119.5 pcf

**Swell Data**

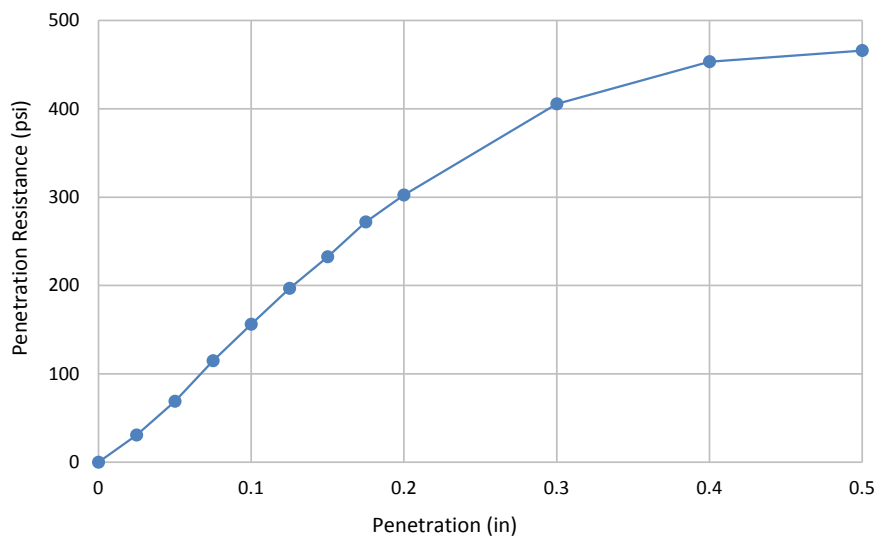
Elapsed Time <i>hrs</i>	Dial Reading <i>in</i>	Swell <i>%</i>
0	0.1	0.0%
96	0.101	0.0%

**Final Water Content**

Wt. Wet Soil + Tare <i>g</i>	Dry Soil + Tare <i>g</i>	Wt. Can <i>g</i>	Moisture Content <i>%</i>
286.79	261.11	8.58	10.8 %

**Penetration Test Data**

Pen. <i>in</i>	Dial Reading <i>in x 1000</i>	Stress <i>psi</i>	CBR <i>%</i>
0	0	0	
0.025	12	30.6	
0.05	27	68.88	
0.075	45	114.8	
0.1	62	156.2	15.6%
0.125	79	196.7	
0.15	94	232.5	
0.175	110	272	
0.2	122	302.2	20.1%
0.3	163	405.5	
0.4	182	453.3	
0.5	187	465.9	



**F&ME CONSULTANTS**  
**3112 Devine Street**  
**Columbia, South Carolina 29205**

**MOISTURE CONTENT DETERMINATION**  
**(AASHTO T265)**

<b>PROJECT:</b>	US-15 Replacement Bridge over Indian Field Swamp	<b>PROJECT NO.:</b>	G6100.12
<b>SAMPLE NUMBER:</b>	19-2494	<b>DATE SAMPLE RECEIVED:</b>	9/24/2019
<b>DESCRIPTION OF SOIL:</b>	Silty SAND (SM/A-2-4)		
<b>TESTED BY:</b>	AA	<b>DATE OF TESTING:</b>	10/4/2019
<b>WEIGHED BY:</b>	AA	<b>DATE OF WEIGHING:</b>	10/7/2019

<b>BORING NO.</b>	BS-3				
<b>SAMPLE NO.</b>	--				
<b>SAMPLE DEPTH (FT.)</b>	0.0 - 5.0				
<b>WATER CONTENT, W%</b>	7.3				

<b>BORING NO.</b>					
<b>SAMPLE NO.</b>					
<b>SAMPLE DEPTH (FT.)</b>					
<b>WATER CONTENT, W%</b>					

<b>BORING NO.</b>					
<b>SAMPLE NO.</b>					
<b>SAMPLE DEPTH (FT.)</b>					
<b>WATER CONTENT, W%</b>					

<b>BORING NO.</b>					
<b>SAMPLE NO.</b>					
<b>SAMPLE DEPTH (FT.)</b>					
<b>WATER CONTENT, W%</b>					

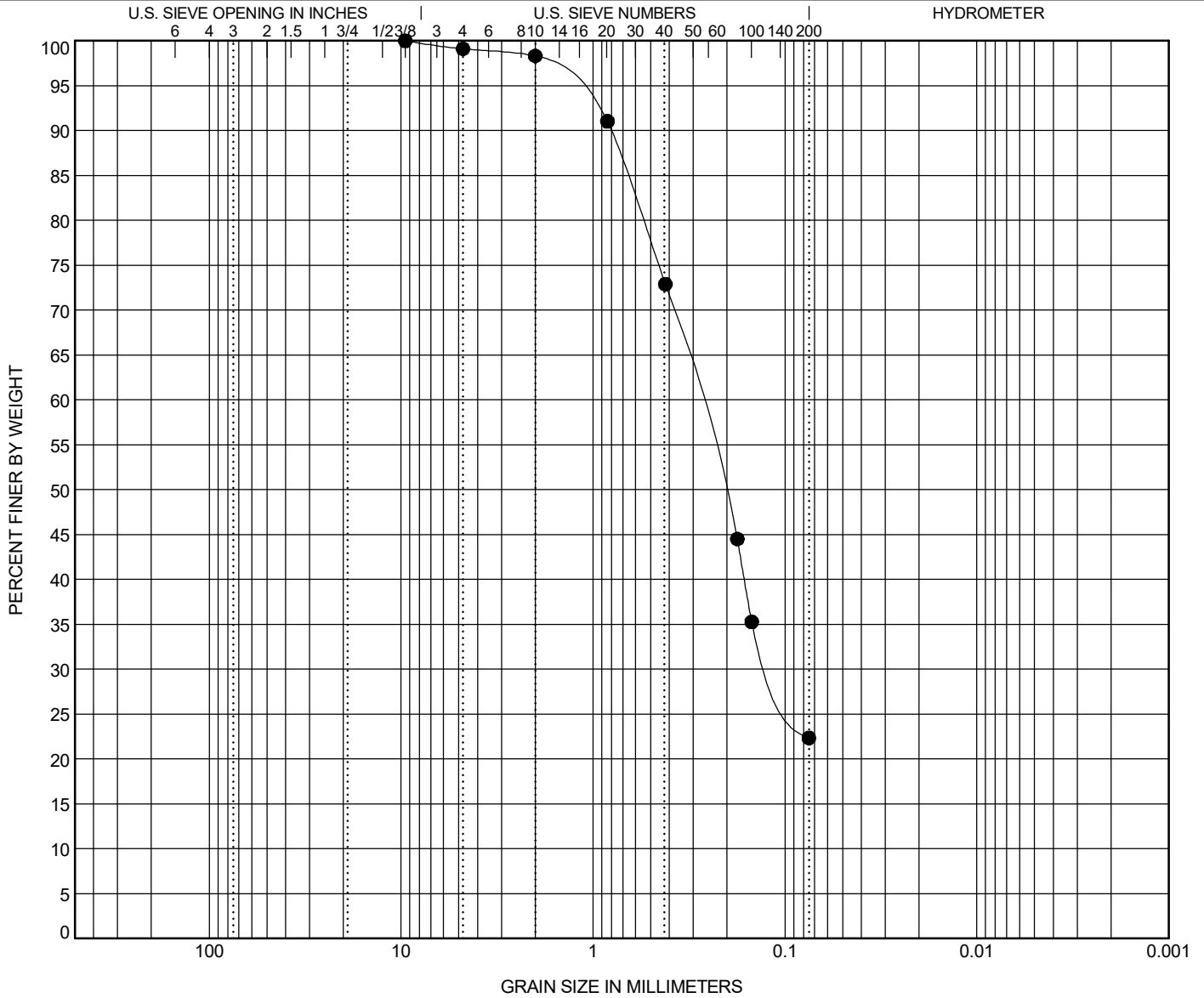


# GRAIN SIZE DISTRIBUTION

PROJECT ID P037127

PROJECT NAME US-15 over Indian Field Swamp

PROJECT COUNTY Dorchester



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

BOREHOLE	DEPTH	Classification					LL	PL	PI	Cc	Cu
● BS-3	5.0	<b>Silty SAND (SM/A-2-4)</b>					<b>NP</b>	<b>NP</b>	<b>NP</b>		

BOREHOLE	DEPTH	D100	D95	D50	D10	%Gravel	%Sand	%Silt	%Clay
● BS-3	5.0	9.51	1.346	0.209		0.9	76.8	22.3	

GRAIN SIZE G6100.120 - US-15 RBO INDIAN FIELD SWAMP.GPJ FME2017.GDT 10/14/19



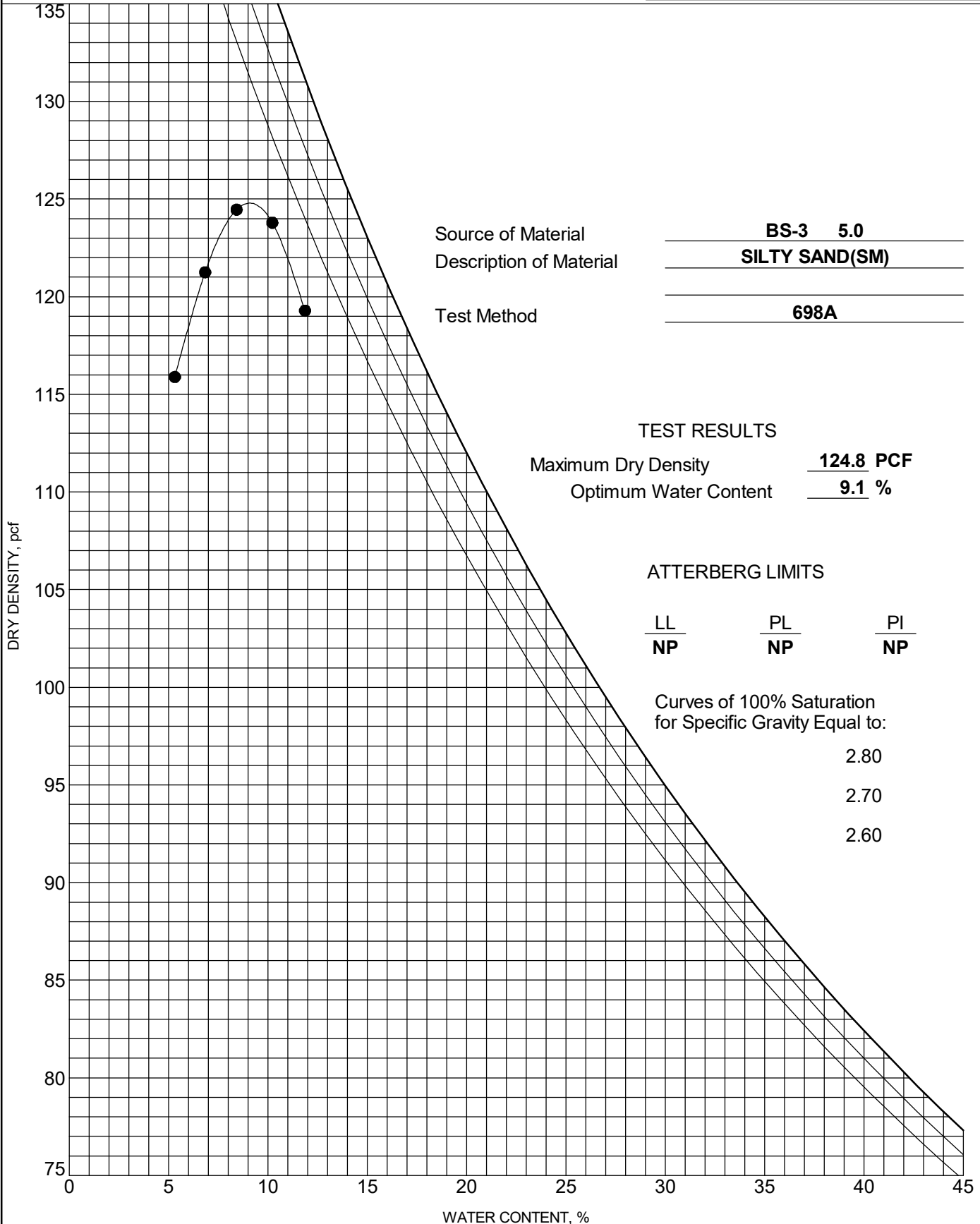


# MOISTURE-DENSITY RELATIONSHIP

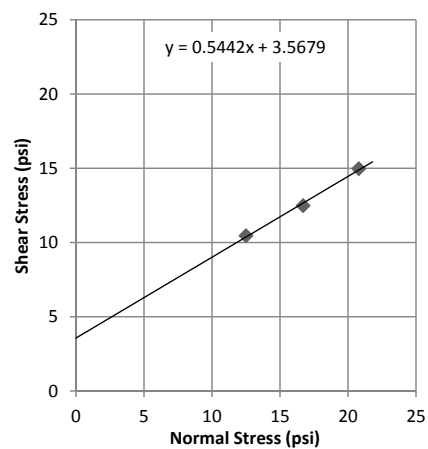
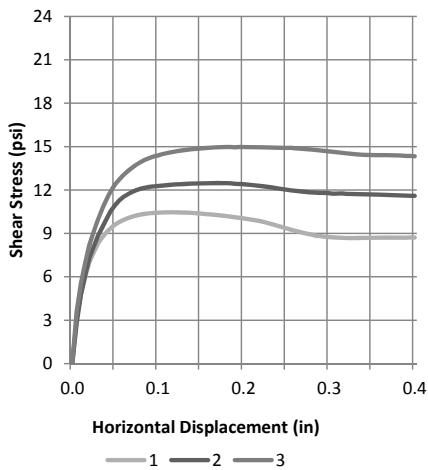
PROJECT ID P037127

PROJECT NAME US-15 over Indian Field Swamp

PROJECT COUNTY Dorchester



**DIRECT SHEAR TEST REPORT**  
**ASTM - D3080 / AASHTO T236**



Sample 1	
Normal Stress (psi)	12.5
Speed (in./min.)	0.01
Sample Width (in.)	4.00
Percent Moisture	9.6%
Wet Density (pcf)	132.6
Dry Density (pcf)	121.0
t50 (min.)	0.2
Saturation (%)	69.5%

Horizontal Displacement (in.)	Shear Stress (psi)
0.000	0.00
0.005	3.05
0.010	4.81
0.015	6.01
0.020	7.01
0.030	8.32
0.040	9.08
0.050	9.61
0.060	9.94
0.070	10.16
0.080	10.31
0.090	10.39
0.100	10.43
0.125	10.46
0.150	10.38
0.175	10.24
0.200	10.04
0.225	9.78
0.250	9.34
0.300	8.75
0.350	8.70
0.400	8.72

Max Shear Stress **10.46**

Sample 2	
Normal Stress (psi)	16.7
Speed (in./min.)	0.01
Sample Width (in.)	4.00
Percent Moisture	10.2%
Wet Density (pcf)	133.9
Dry Density (pcf)	121.6
t50 (min.)	0.2
Saturation (%)	74.8%

Horizontal Displacement (in.)	Shear Stress (psi)
0.000	0.00
0.005	2.78
0.010	4.77
0.015	6.14
0.020	7.33
0.030	8.83
0.040	9.99
0.050	10.96
0.060	11.53
0.070	11.86
0.080	12.09
0.090	12.21
0.100	12.29
0.125	12.40
0.150	12.46
0.175	12.48
0.200	12.40
0.225	12.24
0.250	12.01
0.300	11.78
0.350	11.70
0.400	11.60

Max Shear Stress **12.48**

Sample 3	
Normal Stress (psi)	20.8
Speed (in./min.)	0.01
Sample Width (in.)	4.00
Percent Moisture	9.4%
Wet Density (pcf)	133.4
Dry Density (pcf)	121.9
t50 (min.)	0.2
Saturation (%)	70.0%

Horizontal Displacement (in.)	Shear Stress (psi)
0.000	0.00
0.005	3.58
0.010	5.54
0.015	6.97
0.020	8.20
0.030	9.97
0.040	11.37
0.050	12.40
0.060	13.05
0.070	13.55
0.080	13.94
0.090	14.21
0.100	14.39
0.125	14.71
0.150	14.88
0.175	14.96
0.200	14.96
0.225	14.94
0.250	14.91
0.300	14.66
0.350	14.42
0.400	14.34

Max Shear Stress **14.98**

Project Name US 15 RBO Indian Field Swamp

F&ME Project No. G6100.12 Date 10/14/19

SCDOT Project No. P037127

Location/Sample BS-3 / Sample 19-2494

Depth/Elevation 0' - 5'

Type of Test : Direct Shear - 4" by 4" Square Shear Box

Sample Type : Remolded 1" Thick, Non-Innundated

Description: Brown Silty Fine to Medium SAND (SM, A-2-4)

PI= NP % Fines= 22.3

SG= 2.65 Box Gap= 1.5 mm

φ= 28.6° C<sub>apparent</sub>= 3.57 psi



3112 Devine Street Columbia, SC 29205

Geotechnical · Environmental · Materials



**F&ME CONSULTANTS**  
**3112 Devine Street**  
**Columbia, South Carolina 29205**

**MOISTURE CONTENT DETERMINATION**  
**(AASHTO T265)**

**PROJECT:** US-15 Replacement Bridge over Indian Field Swamp **PROJECT NO.:** G6100.12  
**SAMPLE NUMBER:** 19-2495 **DATE SAMPLE RECEIVED:** 9/25/2019  
**DESCRIPTION OF SOIL:** Silty SAND (SM/A-2-4)  
**TESTED BY:** AA **DATE OF TESTING:** 10/4/2019  
**WEIGHED BY:** AA **DATE OF WEIGHING:** 10/7/2019

<b>BORING NO.</b>	BS-4				
<b>SAMPLE NO.</b>	--				
<b>SAMPLE DEPTH (FT.)</b>	0.0 - 5.0				
<b>WATER CONTENT, W%</b>	5.5				

<b>BORING NO.</b>					
<b>SAMPLE NO.</b>					
<b>SAMPLE DEPTH (FT.)</b>					
<b>WATER CONTENT, W%</b>					

<b>BORING NO.</b>					
<b>SAMPLE NO.</b>					
<b>SAMPLE DEPTH (FT.)</b>					
<b>WATER CONTENT, W%</b>					

<b>BORING NO.</b>					
<b>SAMPLE NO.</b>					
<b>SAMPLE DEPTH (FT.)</b>					
<b>WATER CONTENT, W%</b>					

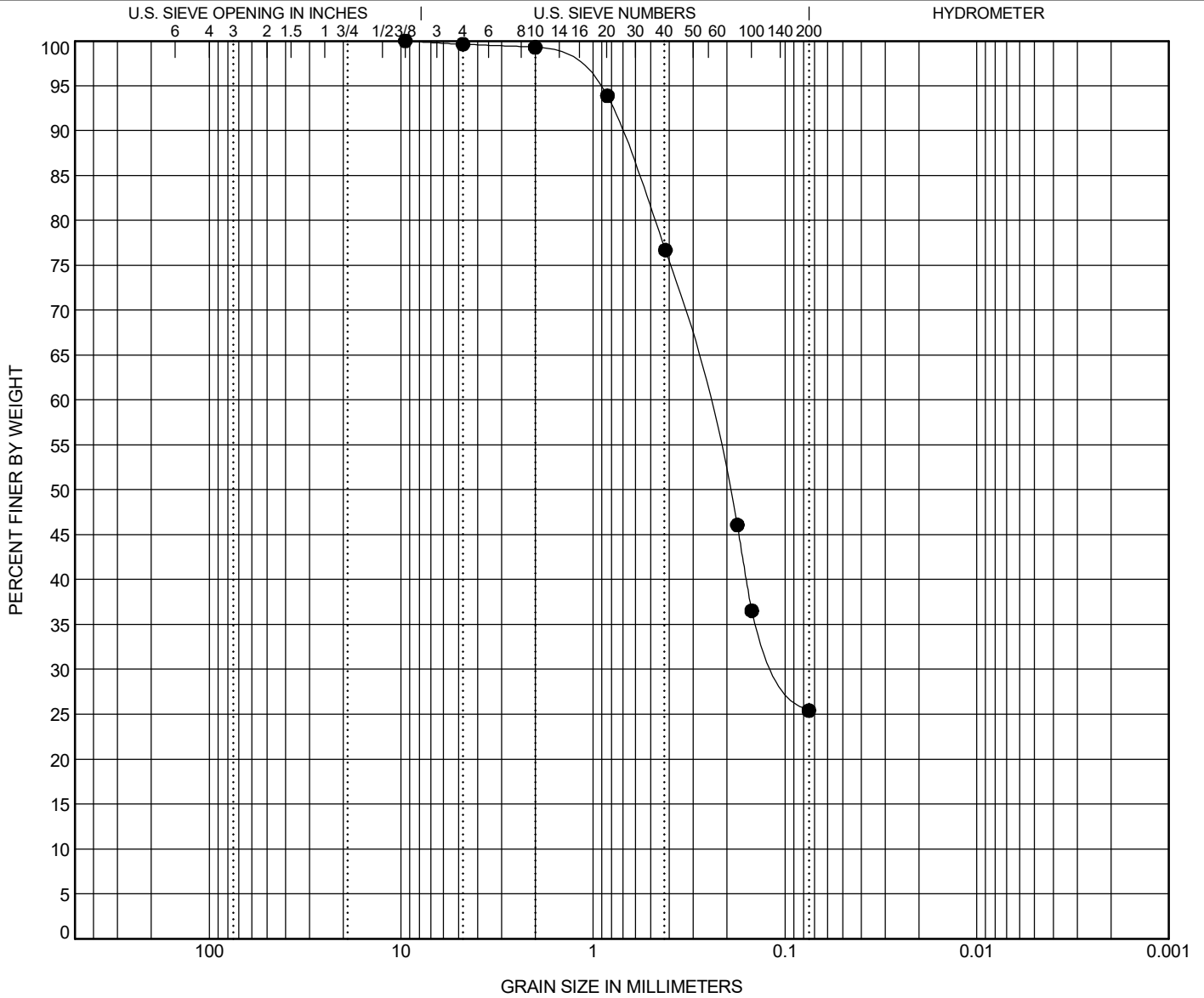


# GRAIN SIZE DISTRIBUTION

PROJECT ID P037127

PROJECT NAME US-15 over Indian Field Swamp

PROJECT COUNTY Dorchester



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

BOREHOLE	DEPTH	Classification	LL	PL	PI	Cc	Cu
● BS-4	5.0	<b>Silty SAND (SM/A-2-4)</b>	<b>NP</b>	<b>NP</b>	<b>NP</b>		

BOREHOLE	DEPTH	D100	D95	D50	D10	%Gravel	%Sand	%Silt	%Clay
● BS-4	5.0	9.51	1.005	0.198		0.4	74.2	25.4	

GRAIN SIZE G6100.120 - US-15 RBO INDIAN FIELD SWAMP.GPJ FME2017.GDT 10/17/19



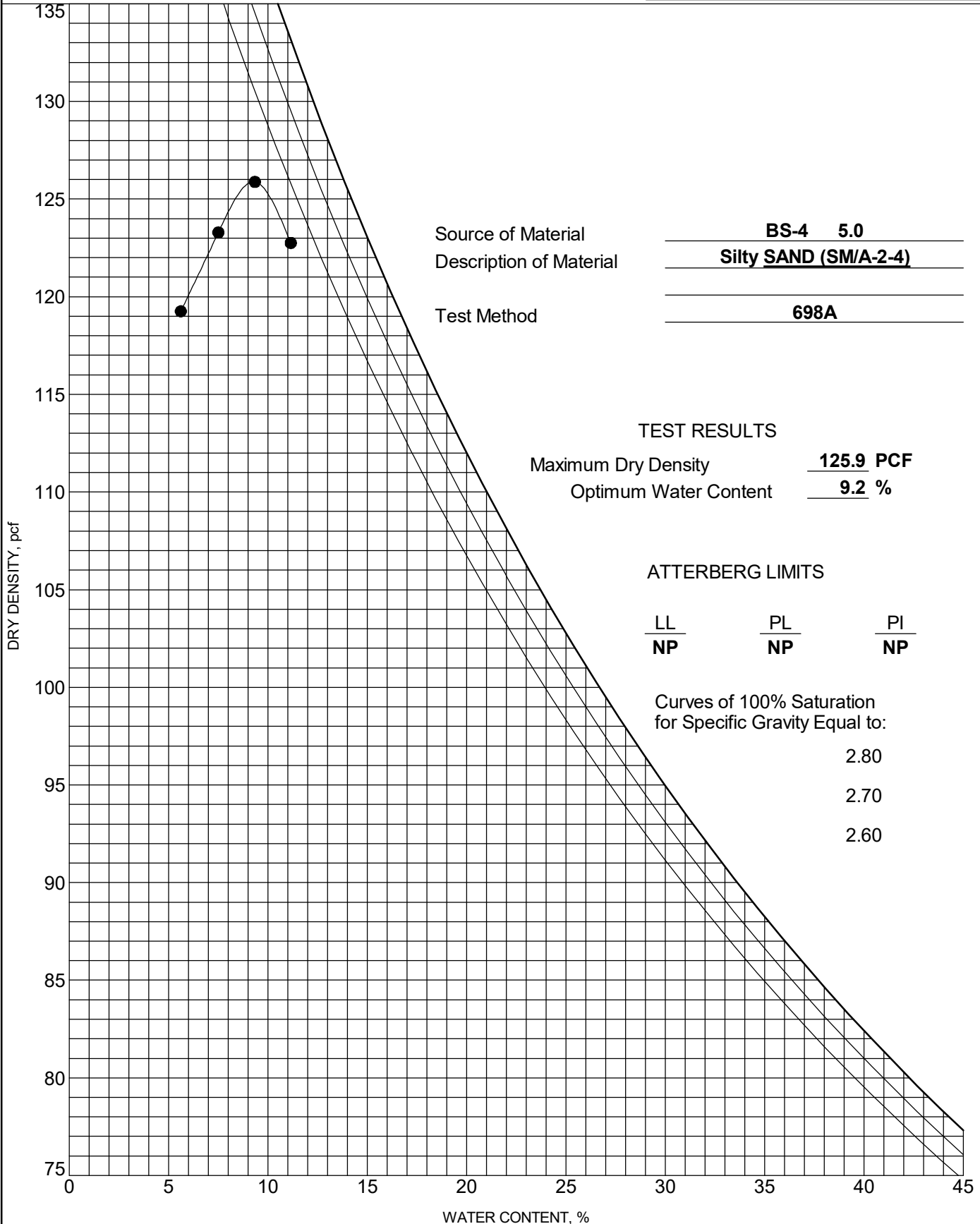


# MOISTURE-DENSITY RELATIONSHIP

PROJECT ID P037127

PROJECT NAME US-15 over Indian Field Swamp

PROJECT COUNTY Dorchester



### California Bearing Ratio Test (AASHTO T193 / ASTM D1883)

<b>PROJECT NAME:</b>	US 15 over Indian Field Swamp	<b>SOIL DESCRIPTION:</b>	Silty SAND
<b>PROJECT NO.:</b>	P037127/G6100.12	<b>USCS CLASSIFICATION:</b>	SM
<b>SAMPLE LOCATION:</b>	BS-4	<b>AASHTO CLASSIFICATION:</b>	A-2-4
<b>SAMPLE DEPTH:</b>	5 ft	<b>LL = NP PL = NP PI = NP</b>	
<b>SAMPLE ID:</b>	19-2513	<b>MAX. DRY DENSITY =</b>	125.9 pcf
<b>SAMPLED BY:</b>	Craig Piercy	<b>OPT. MOISTURE CONTENT =</b>	9.2 %
<b>DATE TEST BEGAN:</b>	10/11/2019		
<b>DATE TEST COMPLETED:</b>	10/15/2019		
<b>DATE SAMPLED:</b>	9/24/2019		
<b>DATE RECEIVED:</b>	9/24/2019		

#### Water Content (before compaction)

Wt. Wet Soil + Tare (g) = 243.91    Wt. Dry Soil + Tare (g) = 224.09    Wt. Can = 9.28    Moisture Content = 9.2 %

#### Water Content (after compaction)

Wt. Wet Soil + Tare (g) = 232.53    Wt. Dry Soil + Tare (g) = 213.84    Wt. Can = 7.08    Moisture Content = 9.0 %

#### Unit Weight (before soaking)

Wt. Mold + Soil = 25.5 lbs    Wt. Mold = 15.4 lbs    Ht. Soil = 4.60 in    Dry Density = 123.8 pcf

#### Unit Weight (after soaking)

Wt. Mold + Soil = 25.6 lbs    Wt. Mold = 15.4 lbs    Ht. Soil = 4.58 in    Dry Density = 123.9 pcf

#### Swell Data

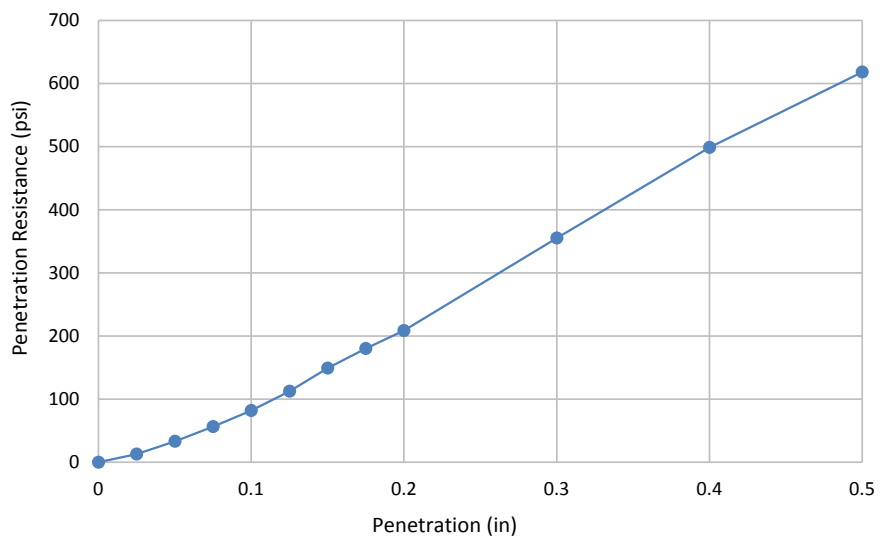
Elapsed Time <i>hrs</i>	Dial Reading <i>in</i>	Swell <i>%</i>
0	0.1	0.0%
96	0.089	-0.2%

#### Final Water Content

Wt. Wet Soil + Tare <i>g</i>	Dry Soil + Tare <i>g</i>	Wt. Can <i>g</i>	Moisture Content <i>%</i>
234.96	214.17	9.27	10.2 %

#### Penetration Test Data

Pen. <i>in</i>	Dial Reading <i>in x 1000</i>	Stress <i>psi</i>	CBR <i>%</i>
0	0	0	
0.025	5	13	
0.05	13	33	
0.075	22	56	
0.1	32	82	8.2%
0.125	44	112	
0.15	59	149	
0.175	72	180	
0.2	84	209	13.9%
0.3	143	355	
0.4	200	499	
0.5	250	618	





Client:	F&ME Consultants
Project Name:	US 15 Over Indian Field Swamp
Project Location:	---
GTX #:	310810
Test Date:	10/23/19
Tested By:	twh
Checked By:	mcm

**Minimum Laboratory Soil Resistivity  
by AASHTO T 288**

Boring ID	Sample ID	Depth, ft.	Sample Description	Minimum Soil Resistivity, ohm-cm
B-3	---	4-8 ft	Moist, grayish brown silty sand	9,247
BS-1	---	0-5 ft	Moist, grayish brown silty sand	21,229

Comments: Test Equipment: Nilsson Model 400 Soil Resistance Meter, MC Miller Soil Box  
 Test conducted in standard laboratory atmosphere: 68-73 F




Client:	F&ME Consultants
Project Name:	US 15 Over Indian Field Swamp
Project Location:	---
GTX #:	310810
Test Date:	10/23/19
Tested By:	twh
Checked By:	mcm

pH by AASHTO T 289

Boring ID	Sample ID	Depth, ft	Description	pH
B-3	---	4-8 ft	Moist, grayish brown silty sand	7.42
BS-1	---	0-5 ft	Moist, grayish brown silty sand	6.9

Notes:



  
 GEOTESTING EXPRESS INCORPORATED  
 2358 PERIMETER PARK DRIVE SUITE 320  
 ATLANTA GA 30341-1315  
 USA

Analysis No. TS-A1908331  
 Report Date 28 October 2019  
 Date Sampled 21 October 2019  
 Date Received 23 October 2019  
 Where Sampled Atlanta, GA USA  
 Sampled By Client

This is to attest that we have examined: Soil for Project Name: US 15 over Indian Field Swamp; Site Location: - ; Job Number: GTX-310810

When examined to the applicable requirements of:

- AASHTO T-291-13 "Standard Method of Test for Determining Water-Soluble Chloride Ion Content in Soil" Method B
- AASHTO T-290-16 "Standard Method of Test for Determining Water-Soluble Sulfate Ion Content in Soil"

Results:

AASHTO T-291 – Chloride Method B

Sample		Results		Detection Limit
		ppm (mg/kg)	% <sup>1</sup>	
BS-1		<10.	<0.0010	10.
-	0 – 5'			
B-3		<10.	<0.0010	
-	4 – 8'			

NOTE: <sup>1</sup>Percent by weight after drying.



CERTIFICATE OF ANALYSIS

AASHTO T-290 - Sulfate (soluble)

Sample		Results		Detection Limit
		ppm (mg/kg)	% <sup>1</sup>	
BS-1		<10.	<0.0010	10.
-	0 – 5'			
B-3		<10.	<0.0010	
-	4 – 8'			

NOTE: <sup>1</sup>Percent by weight after drying.

END OF ANALYSIS

USEPA Laboratory ID UT00930



Merrill Gee P.E. – Engineer in Charge