

Project

Mississippi Barrier Island
Restoration Project

AVS
AMERICAN VIBRACORE
S E R V I C E S

Core Identifier BI-PBS-23-12

Date 11/23/2012

Water Depth 55.7'

Coordinate System

Latitude / Longitude

Start Time 09:00:03

End Time 09:01:03

Penetration 20.0'

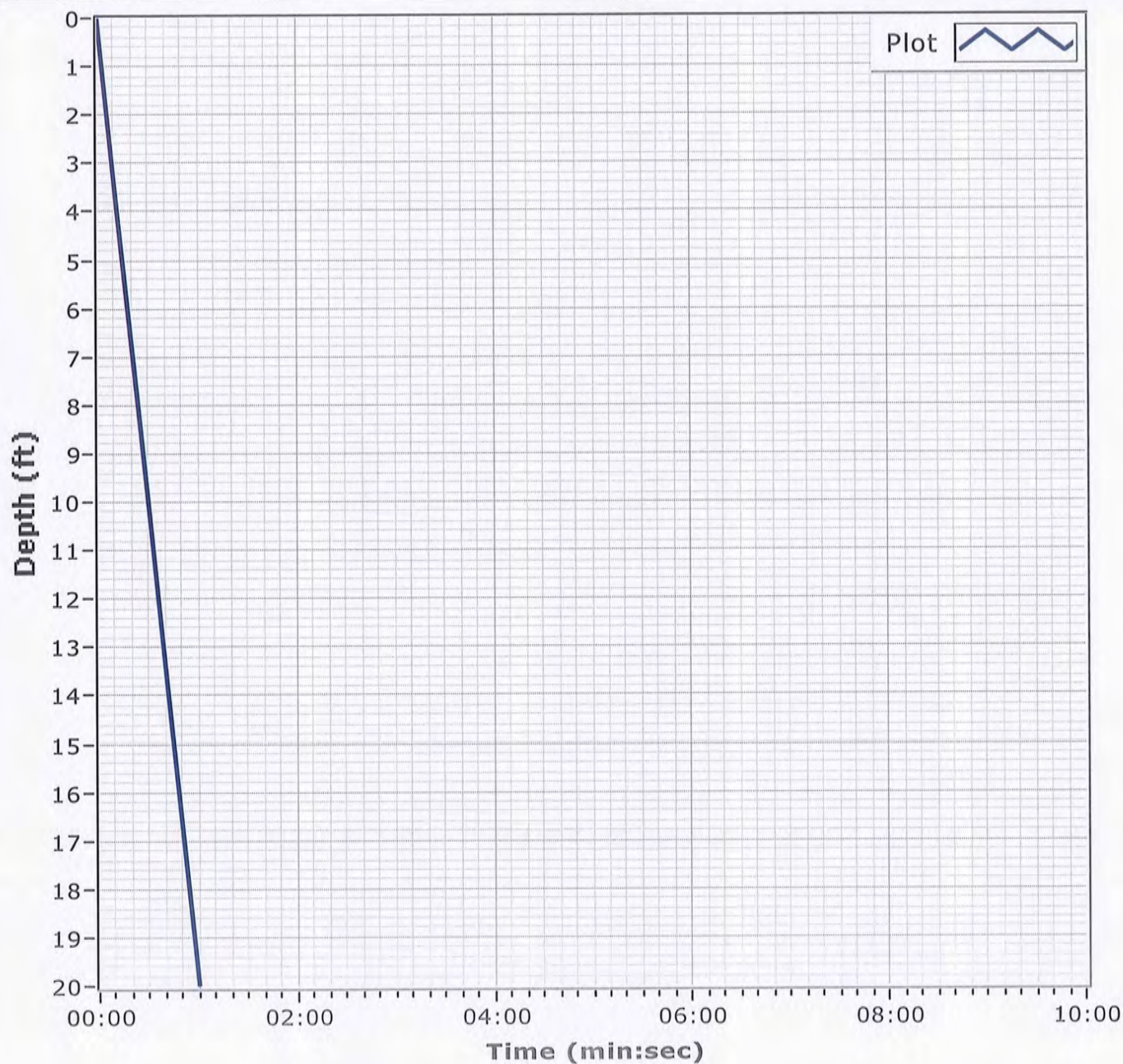
Latitude 30 08.498

Total Time 00:01:00

Recovery 19.7'

Longitude 088 20.176

Comments



Particle Size Distribution Report



GRAIN SIZE - mm.

% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	0.4	1.4	13.4	82.2	2.6	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
1	100.0		
.75	100.0		
.5	100.0		
.375	100.0		
#4	99.6		
#10	98.2		
#20	95.2		
#40	84.8		
#60	24.5		
#100	5.0		
#140	3.1		
#200	2.6		

* (no specification provided)

Material Description

Fine to medium grained, SAND

Atterberg Limits

PL= LL= PI=

Coefficients

D₉₀= 0.5666 D₈₅= 0.4285 D₆₀= 0.3387
D₅₀= 0.3131 D₃₀= 0.2646 D₁₅= 0.2195
D₁₀= 0.1963 C_u= 1.73 C_c= 1.05

Classification

USCS= SP AASHTO=

Remarks

Location: BI-PBS-23-12 A
Sample Number: 6469 (19)

Depth: 0.0'

Date: 11/28/12

Thompson Engineering

Mobile, Alabama

Client: CDM/Thompson Engineering JV
Project: MsCIP Barrier Island Restoration GT

Project No: 1221110095

Figure

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	0.4	0.5	8.2	81.9	9.0	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
1	100.0		
.75	100.0		
.5	100.0		
.375	99.7		
#4	99.6		
#10	99.1		
#20	97.5		
#40	90.9		
#60	69.9		
#100	23.1		
#140	11.8		
#200	9.0		

* (no specification provided)

<u>Material Description</u>		
Fine grained, SLIGHTLY SILTY SAND		
<u>Atterberg Limits</u>		
PL=	LL=	PI=
<u>Coefficients</u>		
D ₉₀ = 0.4032	D ₈₅ = 0.3308	D ₆₀ = 0.2235
D ₅₀ = 0.2021	D ₃₀ = 0.1642	D ₁₅ = 0.1253
D ₁₀ = 0.0882	C _u = 2.53	C _c = 1.37
<u>Classification</u>		
USCS= SP-SM	AASHTO=	
<u>Remarks</u>		

Location: BI-PBS-23-12 B
Sample Number: 6469 (20)

Depth: 7.9'

Date: 11/28/12

Thompson Engineering

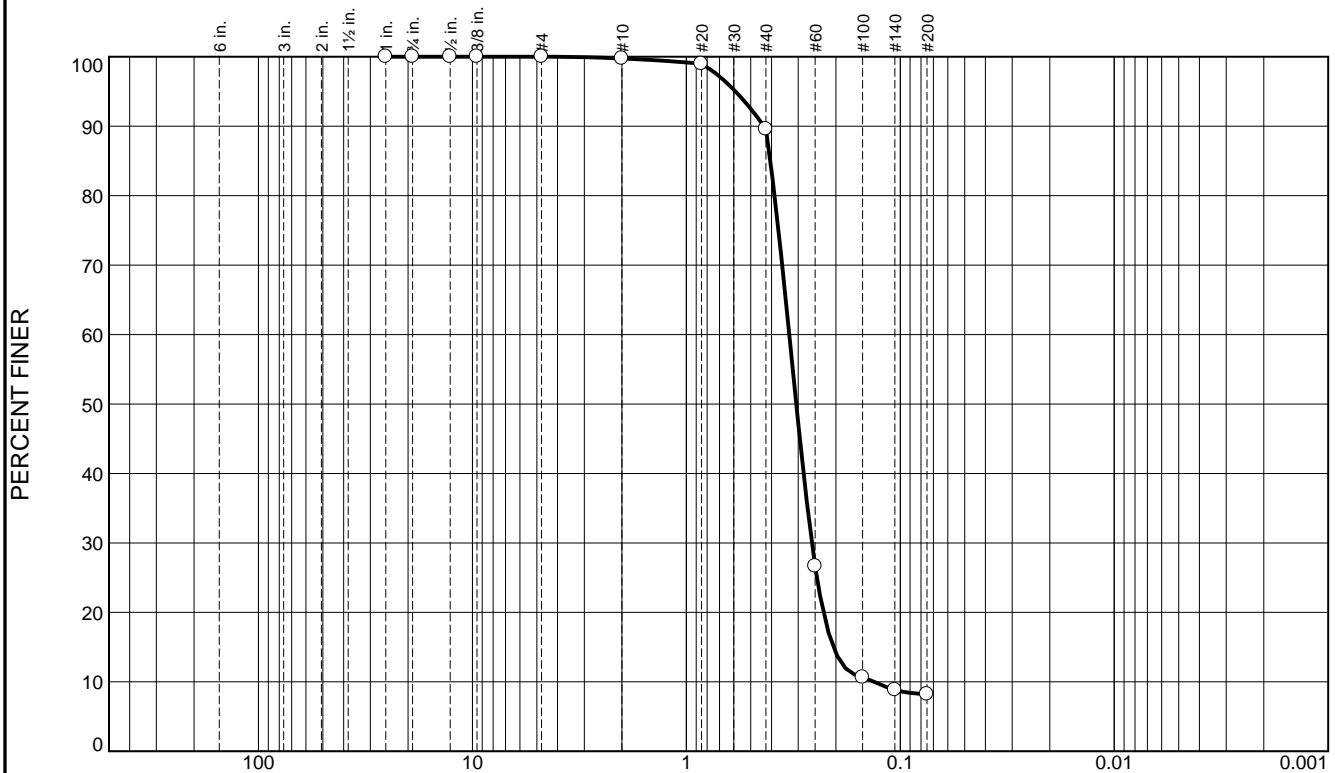
Mobile, Alabama

Client: CDM/Thompson Engineering JV
Project: MsCIP Barrier Island Restoration GT

Project No: 1221110095

Figure

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	0.0	0.3	10.1	81.4	8.2	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
1	100.0		
.75	100.0		
.5	100.0		
.375	100.0		
#4	100.0		
#10	99.7		
#20	99.0		
#40	89.6		
#60	26.6		
#100	10.6		
#140	8.8		
#200	8.2		

* (no specification provided)

Material Description

Fine to medium grained, SLIGHTLY SILTY SAND

Atterberg Limits

PL= LL= PI=

Coefficients

D₉₀= 0.4344 D₈₅= 0.4050 D₆₀= 0.3304
D₅₀= 0.3065 D₃₀= 0.2591 D₁₅= 0.2056
D₁₀= 0.1326 C_u= 2.49 C_c= 1.53

Classification

USCS= SP-SM AASHTO=

Remarks

Location: BI-PBS-23-12 C
Sample Number: 6469 (21)

Depth: 18.7'

Date: 11/28/12

Thompson Engineering

Mobile, Alabama

Client: CDM/Thompson Engineering JV
Project: MsCIP Barrier Island Restoration GT

Project No: 1221110095

Figure

Boring Designation BI-PBS-024-12

DRILLING LOG		DIVISION South Atlantic		INSTALLATION Mobile District		SHEET 1 OF 1 SHEETS	
1. PROJECT MsCIP Barrier Island Restoration Petit Bois Pass-OCS East				9. SIZE AND TYPE OF BIT N/A			
2. BORING DESIGNATION BI-PBS-024-12		LOCATION COORDINATES E = 1,141,846 N = 232,632		10. COORDINATE SYSTEM/DATUM State Plane, MSE (U.S. Ft.)		HORIZONTAL NAD83	
3. DRILLING AGENCY Corps of Engineers - CESAM		CONTRACTOR FILE NO.		11. MANUFACTURER'S DESIGNATION OF DRILL Vibracore		<input type="checkbox"/> AUTO HAMMER <input type="checkbox"/> MANUAL HAMMER	
4. NAME OF DRILLER American Vibracore Systems, Inc.				12. TOTAL SAMPLES		DISTURBED 0	
5. DIRECTION OF BORING <input checked="" type="checkbox"/> VERTICAL <input type="checkbox"/> INCLINED				13. TOTAL NUMBER CORE BOXES		14. WATER DEPTH 55.6 Ft.	
6. THICKNESS OF OVERBURDEN N/A				15. DATE BORING		STARTED 11-21-12	
7. DEPTH DRILLED INTO ROCK N/A				16. ELEVATION TOP OF BORING -56.0 Ft.		COMPLETED 11-21-12	
8. TOTAL DEPTH OF BORING 18.8 Ft.				17. TOTAL RECOVERY FOR BORING 100%			
				18. SIGNATURE AND TITLE OF INSPECTOR John Bass, Geotechnical Engineer			
ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	SAMPLE	LABORATORY RESULTS		
-56.0	0.0						
			SAND, poorly-graded, mostly fine-grained sand-sized quartz, trace fines, trace shell fragments, lt. gray (SP)	A	Classification: SP Color: 5Y 7/2-light gray D50: 0.2906 mm % Fines: 3.4		
-59.6	3.6						
			SAND, clayey, mostly fine-grained sand-sized quartz, some clay, clay lenses through interval, lt. gray mottled with gray and orange (SC)				
-63.5	7.5						
-64.4	8.4		CLAY, silty, mostly clay, trace sand, gray mottled with brown and orange (CL-ML)				
			SAND, silty, mostly fine-grained sand-sized quartz, some silt, trace shell fragments, trace wood debris, gray (SM)	NS			
-68.5	12.5						
-69.8	13.8		CLAY, lean, mostly clay, little fine-grained sand-sized quartz, trace wood debris, gray (CL)				
			SAND, silty, mostly fine-grained sand-sized quartz, trace wood debris, gray (SM)				
-74.8	18.8						
			NOTES: 1. Soils are field visually classified in accordance with the Unified Soils Classification System. 2. NS = Sample not submitted for laboratory analysis from this interval. 3. Seafloor elevation determined from USACE hydrographic survey completed April 2014.				

Project

Mississippi Barrier Island
Restoration Project

AVS
AMERICAN VIBRACORE
S E R V I C E S

Core Identifier BI-PBS-24-12

Date 11/21/2012

Water Depth 55.6

Coordinate System

Start Time 14:55:23

Latitude / Longitude

End Time 14:55:57

Penetration 20.0'

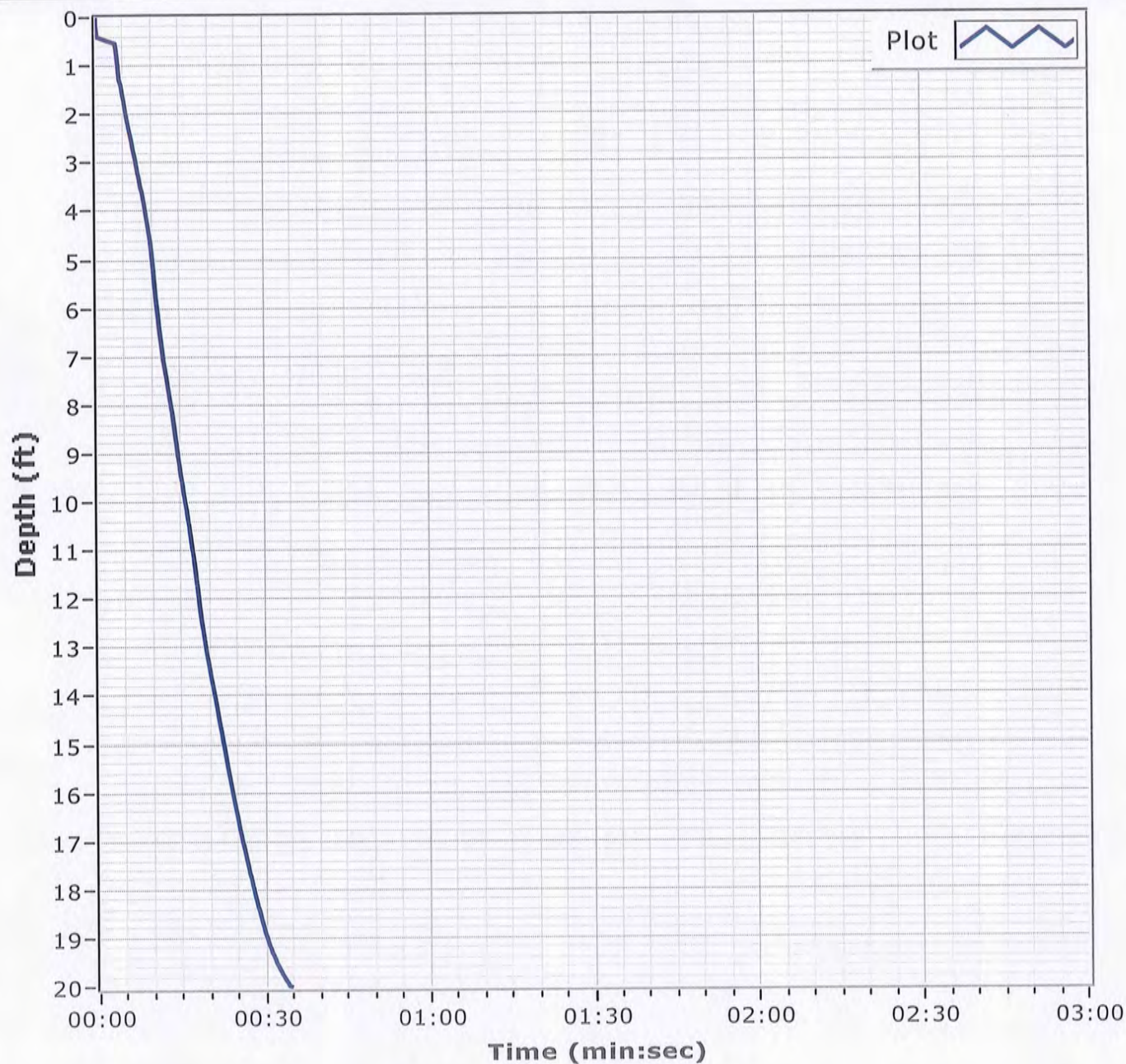
Latitude 30 08.325

Total Time 00:00:34

Recovery 18.8

Longitude 088 20.086

Comments



Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	0.2	0.8	10.4	85.2	3.4	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
1	100.0		
.75	100.0		
.5	100.0		
.375	100.0		
#4	99.8		
#10	99.0		
#20	96.9		
#40	88.6		
#60	34.6		
#100	8.9		
#140	4.3		
#200	3.4		

* (no specification provided)

<u>Material Description</u>		
Fine to medium grained, SAND		
<u>Atterberg Limits</u>		
PL=	LL=	PI=
<u>Coefficients</u>		
D ₉₀ = 0.4637	D ₈₅ = 0.4054	D ₆₀ = 0.3176
D ₅₀ = 0.2906	D ₃₀ = 0.2367	D ₁₅ = 0.1831
D ₁₀ = 0.1568	C _u = 2.02	C _c = 1.13
<u>Classification</u>		
USCS= SP	AASHTO=	
<u>Remarks</u>		

Location: BI-PBS-24-12 A
Sample Number: 6469 (17)

Depth: 0.0'

Date: 11/28/12

Thompson Engineering

Mobile, Alabama

Client: CDM/Thompson Engineering JV
Project: MsCIP Barrier Island Restoration GT

Project No: 1221110095

Figure

Boring Designation BI-PBS-025-12

DRILLING LOG		DIVISION South Atlantic		INSTALLATION Mobile District		SHEET 1 OF 1 SHEETS	
1. PROJECT MsCIP Barrier Island Restoration Petit Bois Pass-OCS East				9. SIZE AND TYPE OF BIT N/A			
2. BORING DESIGNATION BI-PBS-025-12		LOCATION COORDINATES E = 1,136,537 N = 233,755		10. COORDINATE SYSTEM/DATUM State Plane, MSE (U.S. Ft.)		HORIZONTAL NAD83 VERTICAL NAVD88	
3. DRILLING AGENCY Corps of Engineers - CESAM		CONTRACTOR FILE NO.		11. MANUFACTURER'S DESIGNATION OF DRILL Vibracore		<input type="checkbox"/> AUTO HAMMER <input type="checkbox"/> MANUAL HAMMER	
4. NAME OF DRILLER American Vibracore Systems, Inc.				12. TOTAL SAMPLES		DISTURBED UNDISTURBED (UD) 0	
5. DIRECTION OF BORING <input checked="" type="checkbox"/> VERTICAL <input type="checkbox"/> INCLINED		DEG. FROM VERTICAL		13. TOTAL NUMBER CORE BOXES			
		BEARING		14. WATER DEPTH 49.8 Ft.			
6. THICKNESS OF OVERBURDEN N/A				15. DATE BORING 11-24-12		STARTED COMPLETED 11-24-12	
7. DEPTH DRILLED INTO ROCK N/A				16. ELEVATION TOP OF BORING -49.6 Ft.			
8. TOTAL DEPTH OF BORING 18.8 Ft.				17. TOTAL RECOVERY FOR BORING 100%			
				18. SIGNATURE AND TITLE OF INSPECTOR John Bass, Geotechnical Engineer			

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	SAMPLE	LABORATORY RESULTS
-49.6	0.0				
			SAND, poorly-graded, mostly fine-grained sand-sized quartz, little shell fragments, trace fines, lt. gray (SP)	A	Classification: SP Color: 5Y 7/2-light gray D50: 0.3107 mm % Fines: 1.6
-54.8	5.2				
-56.2	6.6		SAND, poorly-graded, mostly fine to medium-grained sand-sized quartz, trace fines, trace shell fragments, lt. gray (SP)	B	Classification: SP-SM Color: 5Y 6/1-gray D50: 0.3415 mm % Fines: 5.7
-58.0	8.4		SAND, silty, mostly fine-grained sand-sized quartz, with clay lenses, gray mottled with lt. gray and orange (SM)		
			CLAY, lean, mostly clay, little fine-grained sand-sized quartz, gray mottled with lt. gray and orange (CL)	NS	
-63.0	13.4				
-65.3	15.7		SAND, poorly-graded with silt, mostly fine-grained sand-sized quartz, little silt, trace shell fragments, gray to light gray (SP-SM)	C	Classification: SP-SM Color: 2.5Y 6/2-light brownish gray D50: 0.2548 mm % Fines: 12.3
-66.3	16.7		SAND, silty, mostly fine-grained sand-sized quartz, some silt, trace shell fragments, silt content increases with depth, gray (SM)		
-68.4	18.8		CLAY, silty, mostly silt, some clay, little fine-grained sand-sized quartz, gray (CL-ML)	NS	
			NOTES: 1. Soils are field visually classified in accordance with the Unified Soils Classification System. 2. NS = Sample not submitted for laboratory analysis from this interval. 3. Seafloor elevation determined from USACE hydrographic survey completed April 2014.		

Project

Mississippi Barrier Island
Restoration Project

AVS
AMERICAN VIBRACORE
S E R V I C E S

Core Identifier BI-PBS-25-12

Date 11/24/2012

Water Depth 49.8'

Coordinate System

Latitude / Longitude

Start Time 11:24:42

End Time 11:26:02

Penetration 20.0'

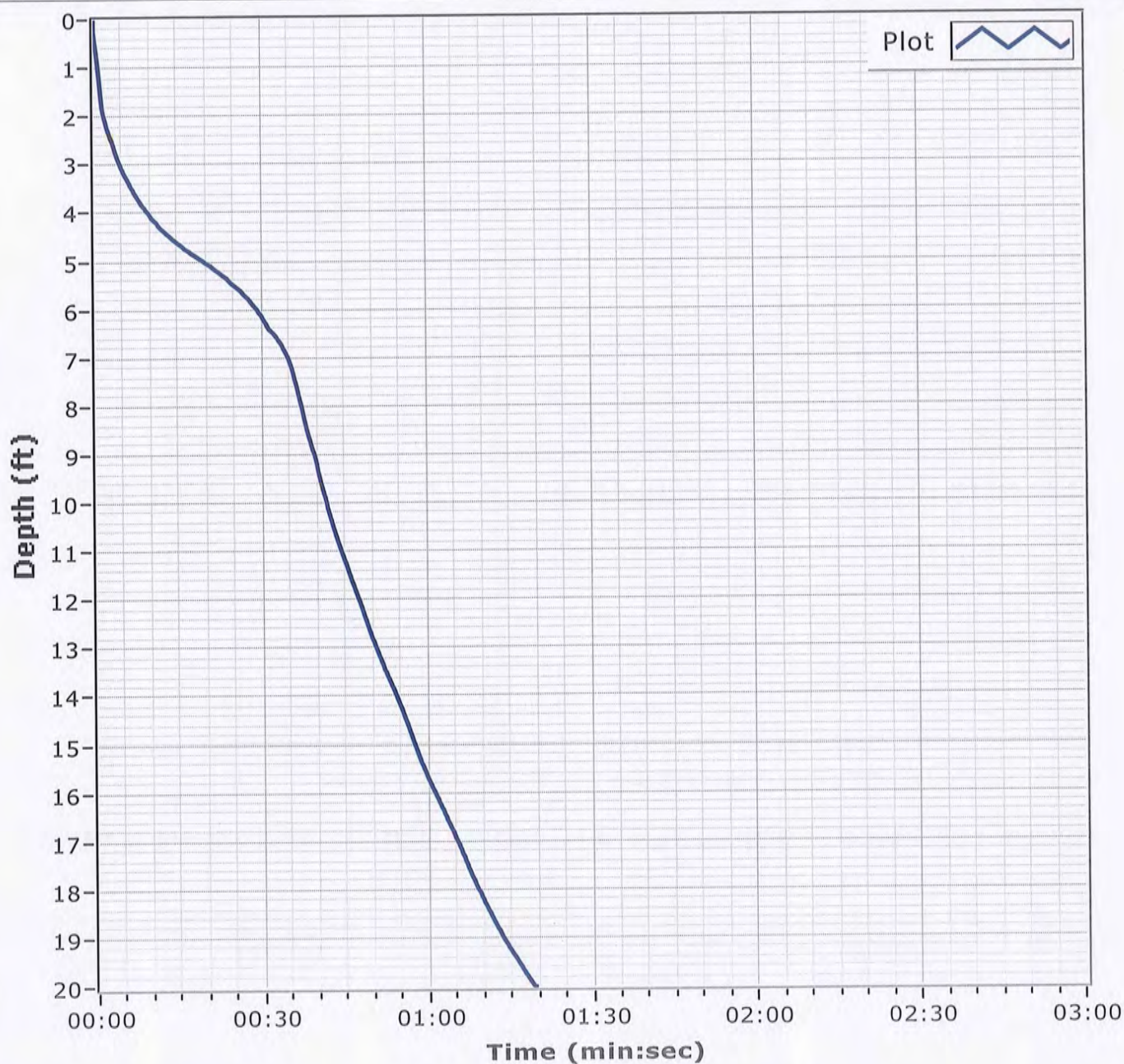
Latitude 30 08.514

Total Time 00:01:19

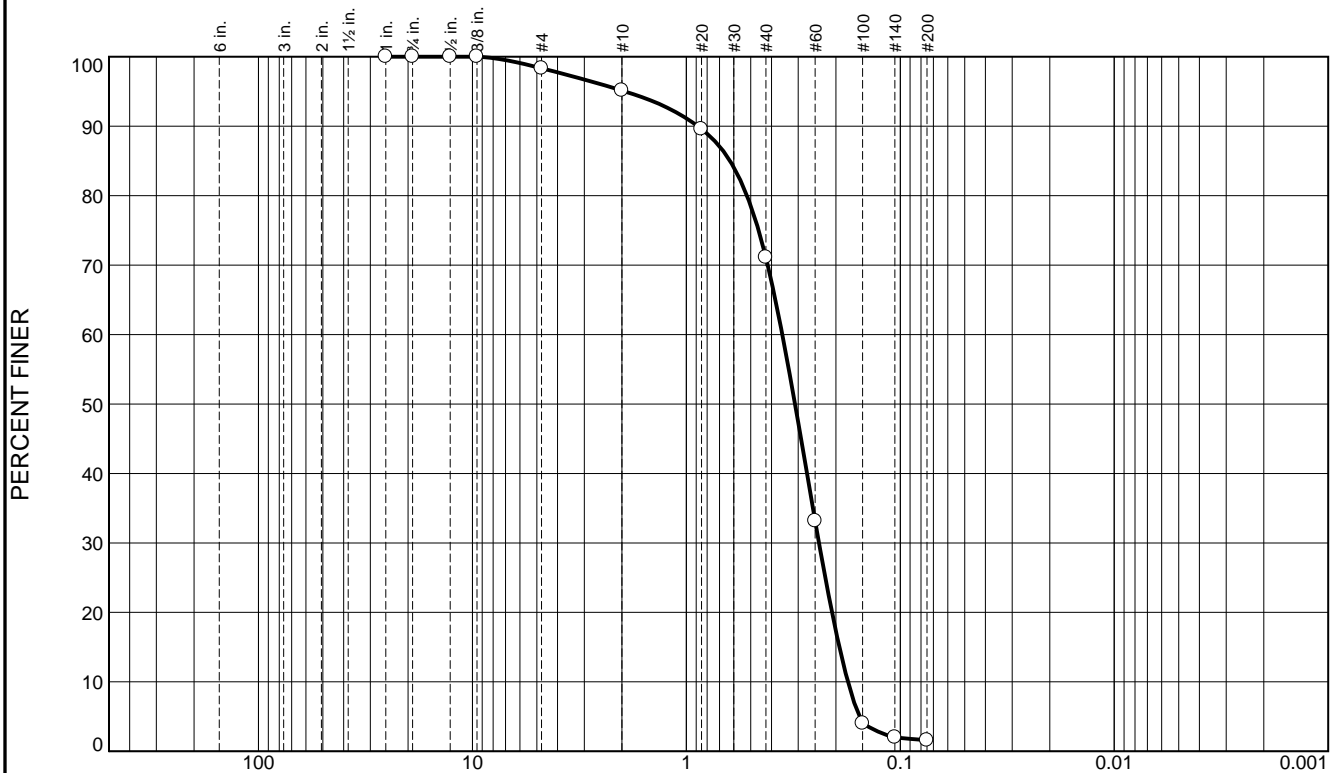
Recovery 18.8'

Longitude 088 21.093

Comments



Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	1.7	3.2	24.0	69.5	1.6	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
1	100.0		
.75	100.0		
.5	100.0		
.375	100.0		
#4	98.3		
#10	95.1		
#20	89.6		
#40	71.1		
#60	33.2		
#100	4.0		
#140	2.0		
#200	1.6		

* (no specification provided)

<u>Material Description</u>		
Fine to medium grained, SAND, with trace SHELL		
<u>Atterberg Limits</u>		
PL=	LL=	PI=
<u>Coefficients</u>		
D ₉₀ = 0.8852	D ₈₅ = 0.6249	D ₆₀ = 0.3560
D ₅₀ = 0.3107	D ₃₀ = 0.2398	D ₁₅ = 0.1927
D ₁₀ = 0.1759	C _u = 2.02	C _c = 0.92
<u>Classification</u>		
USCS= SP	AASHTO=	
<u>Remarks</u>		

Location: BI-PBS-25-12 A
Sample Number: 6469 (40)

Depth: 0.0'

Date: 11/28/12

Thompson Engineering

Mobile, Alabama

Client: CDM/Thompson Engineering JV
Project: MsCIP Barrier Island Restoration GT

Project No: 1221110095

Figure

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	5.9	9.9	25.0	53.5	5.7	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
1	100.0		
.75	100.0		
.5	98.7		
.375	97.9		
#4	94.1		
#10	84.2		
#20	75.4		
#40	59.2		
#60	34.2		
#100	11.2		
#140	7.0		
#200	5.7		

* (no specification provided)

<u>Material Description</u>		
Fine to medium grained, SLIGHTLY SILTY SAND, with trace SHELL		
<u>Atterberg Limits</u>		
PL=	LL=	PI=
<u>Coefficients</u>		
D ₉₀ = 3.2439	D ₈₅ = 2.1444	D ₆₀ = 0.4341
D ₅₀ = 0.3415	D ₃₀ = 0.2310	D ₁₅ = 0.1686
D ₁₀ = 0.1423	C _u = 3.05	C _c = 0.86
<u>Classification</u>		
USCS= SP-SM	AASHTO=	
<u>Remarks</u>		

Location: BI-PBS-25-12 B
Sample Number: 6469 (41)

Depth: 5.2'

Date: 11/28/12

Thompson Engineering

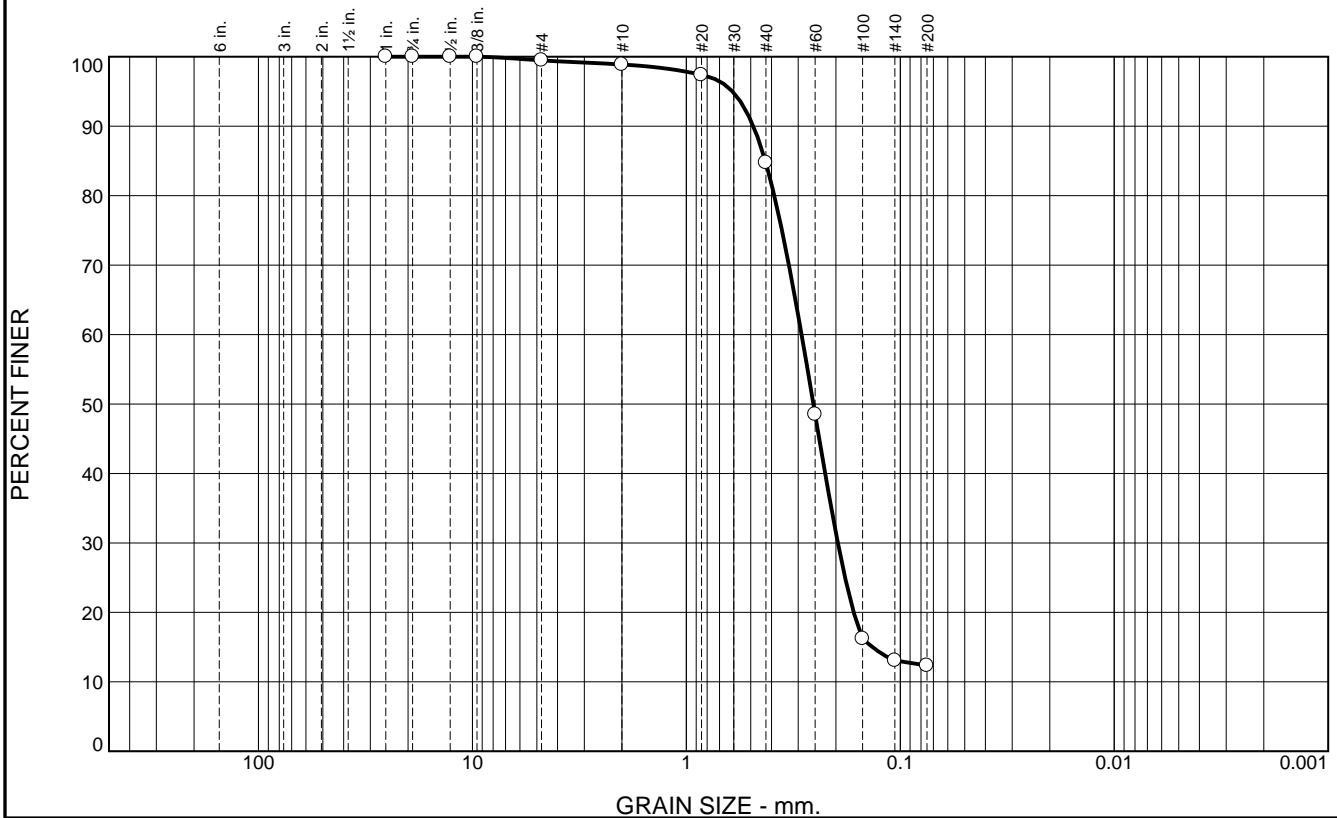
Mobile, Alabama

Client: CDM/Thompson Engineering JV
Project: MsCIP Barrier Island Restoration GT

Project No: 1221110095

Figure

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	0.5	0.6	14.2	72.4	12.3	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
1	100.0		
.75	100.0		
.5	100.0		
.375	100.0		
#4	99.5		
#10	98.9		
#20	97.4		
#40	84.7		
#60	48.5		
#100	16.2		
#140	13.1		
#200	12.3		

* (no specification provided)

<u>Material Description</u>		
Fine to medium grained, SLIGHTLY SILTY SAND		
<u>Atterberg Limits</u>		
PL=	LL=	PI=
<u>Coefficients</u>		
D ₉₀ = 0.4865	D ₈₅ = 0.4275	D ₆₀ = 0.2895
D ₅₀ = 0.2548	D ₃₀ = 0.1959	D ₁₅ = 0.1349
D ₁₀ =	C _u =	C _c =
<u>Classification</u>		
USCS= SP-SM	AASHTO=	
<u>Remarks</u>		

Location: BI-PBS-25-12 C
Sample Number: 6469 (42)

Depth: 13.4'

Date: 11/28/12

Thompson Engineering

Mobile, Alabama

Client: CDM/Thompson Engineering JV
Project: MsCIP Barrier Island Restoration GT

Project No: 1221110095

Figure

Boring Designation BI-PBS-026-12

DRILLING LOG		DIVISION South Atlantic		INSTALLATION Mobile District		SHEET 1 OF 1 SHEETS	
1. PROJECT MsCIP Barrier Island Restoration Petit Bois Pass-OCS East				9. SIZE AND TYPE OF BIT N/A			
2. BORING DESIGNATION BI-PBS-026-12		LOCATION COORDINATES E = 1,140,508 N = 231,310		10. COORDINATE SYSTEM/DATUM State Plane, MSE (U.S. Ft.)		HORIZONTAL NAD83	
3. DRILLING AGENCY Corps of Engineers - CESAM		CONTRACTOR FILE NO.		11. MANUFACTURER'S DESIGNATION OF DRILL Vibracore		<input type="checkbox"/> AUTO HAMMER <input type="checkbox"/> MANUAL HAMMER	
4. NAME OF DRILLER American Vibracore Systems, Inc.				12. TOTAL SAMPLES		DISTURBED 0	
5. DIRECTION OF BORING <input checked="" type="checkbox"/> VERTICAL <input type="checkbox"/> INCLINED				13. TOTAL NUMBER CORE BOXES		14. WATER DEPTH 54.8 Ft.	
6. THICKNESS OF OVERBURDEN N/A				15. DATE BORING		STARTED 11-23-12	
7. DEPTH DRILLED INTO ROCK N/A				16. ELEVATION TOP OF BORING -55.3 Ft.		COMPLETED 11-23-12	
8. TOTAL DEPTH OF BORING 17.6 Ft.				17. TOTAL RECOVERY FOR BORING 100%			
				18. SIGNATURE AND TITLE OF INSPECTOR John Bass, Geotechnical Engineer			
ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	SAMPLE	LABORATORY RESULTS		
-55.3	0.0						
			SAND, poorly-graded, mostly fine to medium-grained sand-sized quartz, trace fines, trace shell fragments, lt. gray (SP)	A	Classification: SP Color: 2.5Y 7/2-light gray D50: 0.3129 mm % Fines: 2.1		
-58.9	3.6			B	Classification: SP-SM Color: 5Y 6/2-light olive gray D50: 0.1923 mm % Fines: 6.2		
-59.6	4.3		SAND, poorly-graded, mostly fine-grained sand-sized quartz, little fines, lt. gray to gray (SP)				
-61.4	6.1		SAND, silty, mostly fine-grained sand-sized quartz, little shell fragments, lt. gray mottled with gray and orange (SM)				
-64.2	8.9		CLAY, lean, mostly clay, little sand, low to medium plasticity, lt. gray mottled with orange (CL)				
-66.8	11.5		SAND, silty, mostly fine-grained sand-sized quartz, trace shell fragments, gray (SM)	NS			
			CLAY, lean, mostly clay, little sand, trace shell fragments, trace wood debris, low plasticity, gray (CL)				
-72.3	17.0						
-72.9	17.6		SAND, silty, mostly fine-grained sand-sized quartz, gray (SM)				
NOTES: 1. Soils are field visually classified in accordance with the Unified Soils Classification System. 2. NS = Sample not submitted for laboratory analysis from this interval. 3. Seafloor elevation determined from USACE hydrographic survey completed April 2014.							

Project

Mississippi Barrier Island
Restoration Project

AVS
AMERICAN VIBRACORE
S E R V I C E S

Core Identifier BI-PBS-26-12

Date 11/23/2012

Water Depth 54.8'

Coordinate System

Latitude / Longitude

Start Time 09:45:40

End Time 09:47:06

Penetration 20.0'

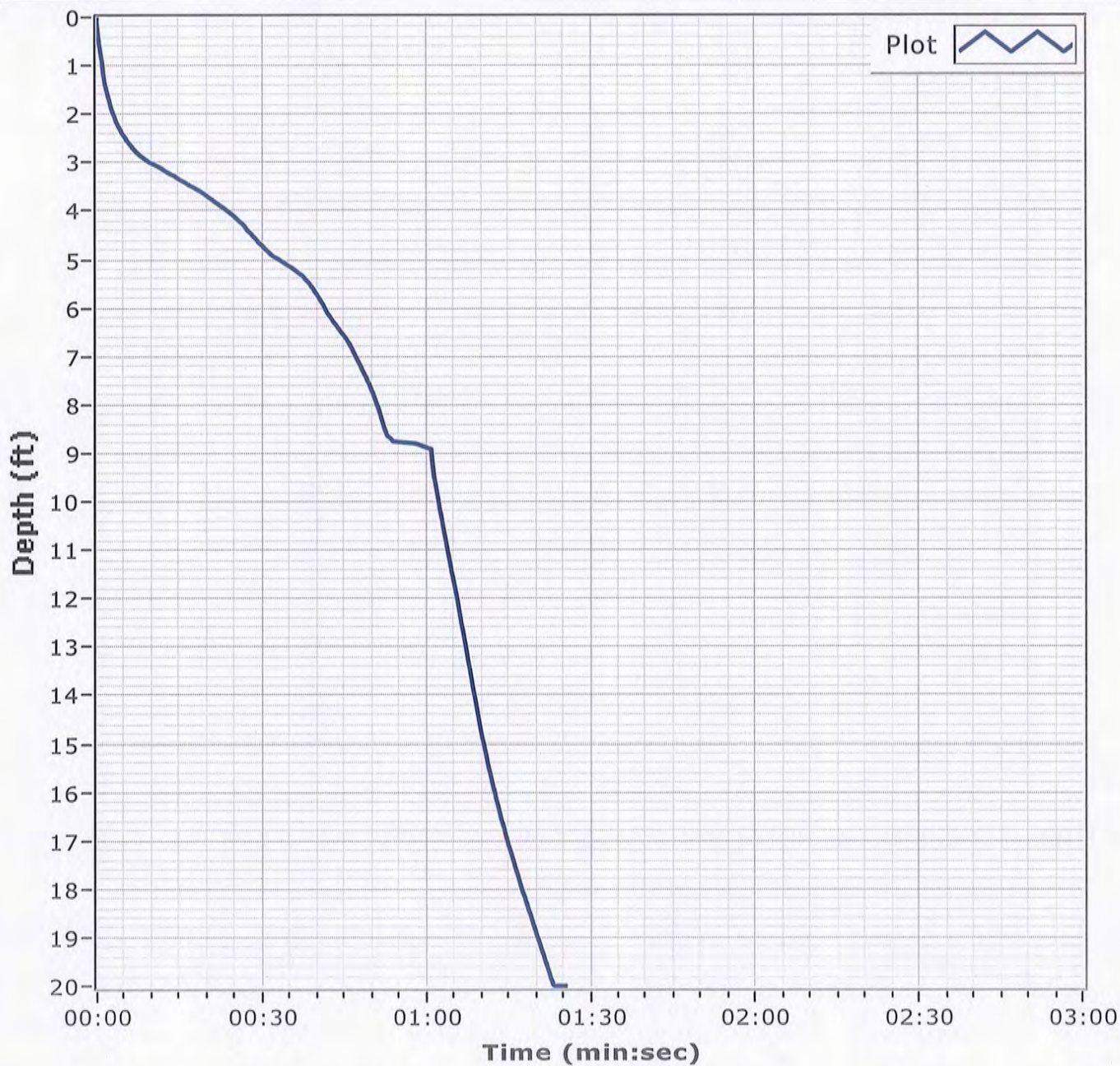
Latitude 30 08.108

Total Time 00:01:25

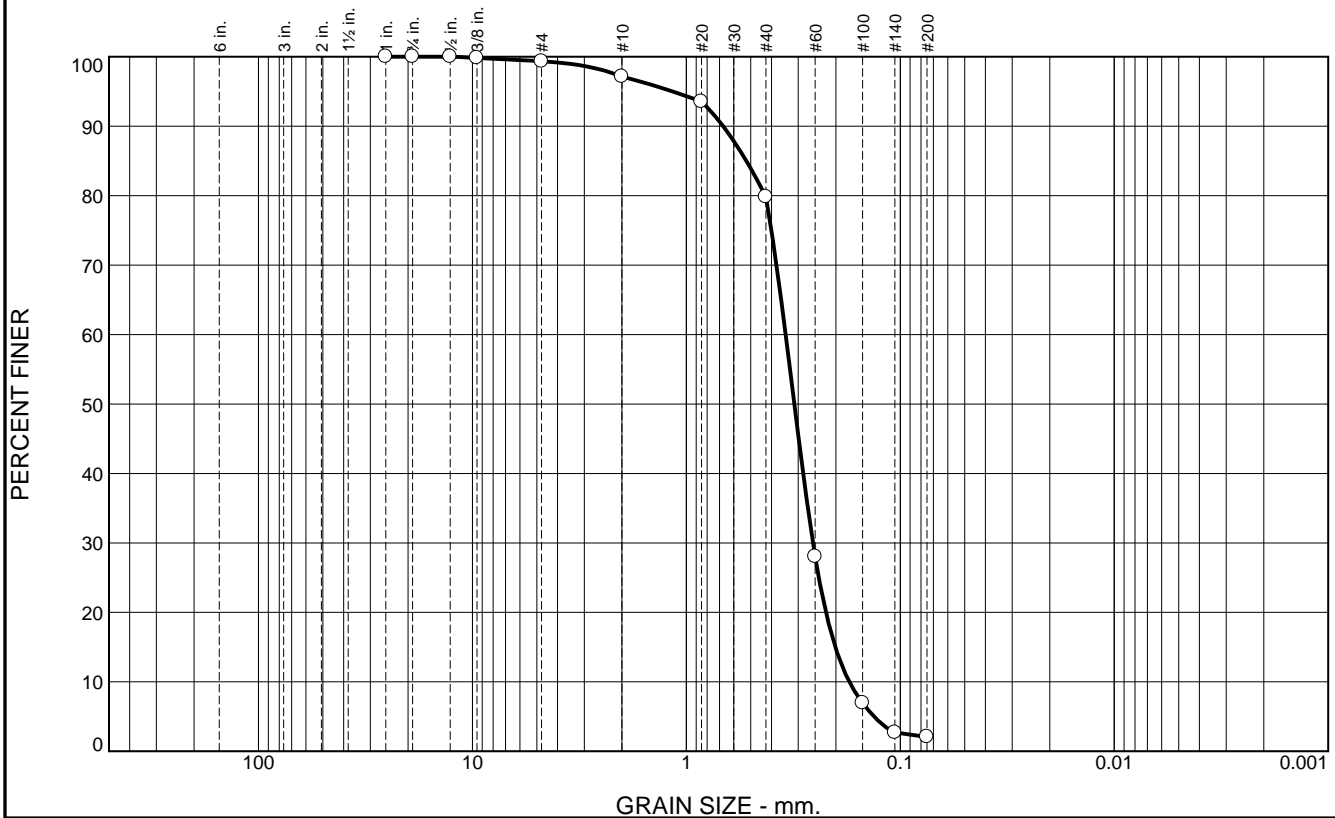
Recovery 17.6'

Longitude 088 20.341

Comments



Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	0.7	2.2	17.3	77.7	2.1	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
1	100.0		
.75	100.0		
.5	100.0		
.375	99.8		
#4	99.3		
#10	97.1		
#20	93.5		
#40	79.8		
#60	28.0		
#100	6.9		
#140	2.7		
#200	2.1		

* (no specification provided)

<u>Material Description</u>		
Fine to medium grained, SAND		
<u>Atterberg Limits</u>		
PL=	LL=	PI=
<u>Coefficients</u>		
D ₉₀ = 0.6733	D ₈₅ = 0.5244	D ₆₀ = 0.3434
D ₅₀ = 0.3129	D ₃₀ = 0.2560	D ₁₅ = 0.2013
D ₁₀ = 0.1733	C _u = 1.98	C _c = 1.10
<u>Classification</u>		
USCS= SP	AASHTO=	
<u>Remarks</u>		

Location: BI-PBS-26-12 A
Sample Number: 6469 (22)

Depth: 0.0'

Date: 11/28/12

Thompson Engineering

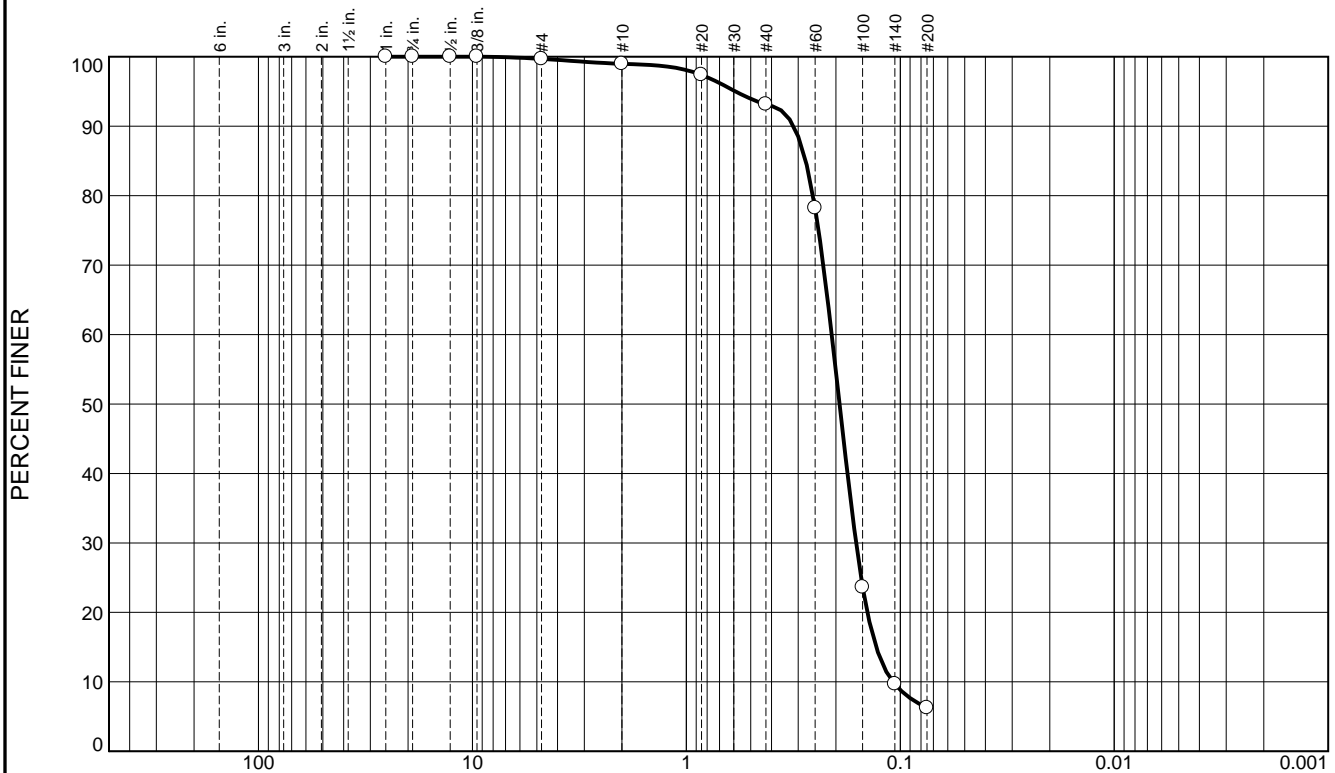
Mobile, Alabama

Client: CDM/Thompson Engineering JV
Project: MsCIP Barrier Island Restoration GT

Project No: 1221110095

Figure

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	0.3	0.7	5.9	86.9	6.2	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
1	100.0		
.75	100.0		
.5	100.0		
.375	100.0		
#4	99.7		
#10	99.0		
#20	97.4		
#40	93.1		
#60	78.2		
#100	23.6		
#140	9.7		
#200	6.2		

* (no specification provided)

<u>Material Description</u>		
Fine grained, SLIGHTLY SILTY SAND		
<u>Atterberg Limits</u>		
PL=	LL=	PI=
<u>Coefficients</u>		
D ₉₀ = 0.3152	D ₈₅ = 0.2770	D ₆₀ = 0.2092
D ₅₀ = 0.1923	D ₃₀ = 0.1610	D ₁₅ = 0.1297
D ₁₀ = 0.1081	C _u = 1.94	C _c = 1.15
<u>Classification</u>		
USCS= SP-SM	AASHTO=	
<u>Remarks</u>		

Location: BI-PBS-26-12 B
Sample Number: 6469 (23)

Depth: 3.6'

Date: 11/28/12

Thompson Engineering

Mobile, Alabama

Client: CDM/Thompson Engineering JV
Project: MsCIP Barrier Island Restoration GT

Project No: 1221110095

Figure

Boring Designation BI-PBS-027-12

DRILLING LOG		DIVISION South Atlantic		INSTALLATION Mobile District		SHEET 1 OF 1 SHEETS	
1. PROJECT MsCIP Barrier Island Restoration Petit Bois Pass-OCS East				9. SIZE AND TYPE OF BIT N/A			
2. BORING DESIGNATION BI-PBS-027-12		LOCATION COORDINATES E = 1,142,169 N = 231,132		10. COORDINATE SYSTEM/DATUM State Plane, MSE (U.S. Ft.)		HORIZONTAL NAD83	
3. DRILLING AGENCY Corps of Engineers - CESAM		CONTRACTOR FILE NO.		11. MANUFACTURER'S DESIGNATION OF DRILL Vibracore		<input type="checkbox"/> AUTO HAMMER <input type="checkbox"/> MANUAL HAMMER	
4. NAME OF DRILLER American Vibracore Systems, Inc.				12. TOTAL SAMPLES		DISTURBED 0	
5. DIRECTION OF BORING <input checked="" type="checkbox"/> VERTICAL <input type="checkbox"/> INCLINED				13. TOTAL NUMBER CORE BOXES		14. WATER DEPTH 55.1 Ft.	
6. THICKNESS OF OVERBURDEN N/A				15. DATE BORING		STARTED 11-21-12	
7. DEPTH DRILLED INTO ROCK N/A				16. ELEVATION TOP OF BORING -56.4 Ft.		COMPLETED 11-21-12	
8. TOTAL DEPTH OF BORING 19.7 Ft.				17. TOTAL RECOVERY FOR BORING 100%		18. SIGNATURE AND TITLE OF INSPECTOR John Bass, Geotechnical Engineer	

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	SAMPLE	LABORATORY RESULTS
-56.4	0.0				
			SAND, poorly-graded, mostly fine to medium-grained quartz, some shell fragments, trace fines, light gray (SP)	A	Classification: SP Color: 5Y 7/1-light gray D50: 0.3658 mm % Fines: 1.5
-62.4	6.0				
-63.7	7.3		SAND, poorly-graded, mostly fine-grained sand-sized quartz, some shell fragments, trace fines, lt. gray (SP)	B	Classification: SP-SM Color: 5Y 7/2-light gray D50: 0.2594 mm % Fines: 5.2
			SAND, silty, mostly fine-grained sand-sized quartz, some silt, some shell fragments, gray (SM) At El. -64.4 Ft., mostly fine-grained sand-sized quartz, little shell fragments, gray	NS	
-67.0	10.6				
-69.0	12.6		SAND, poorly-graded, mostly fine-grained sand-sized quartz, little fines, trace shell fragments, clayey lenses at 11.0' and 12.0', lt. gray (SP)	C	Classification: SP-SM Color: 5Y 7/2-light gray D50: 0.2972 mm % Fines: 9.2
-69.9	13.5		SAND, silty, mostly fine-grained sand-sized quartz, some silt, little shell fragments, gray (SM)		
			CLAY, silty, some silt, some clay, trace fine-grained sand-sized quartz, gray (CL-ML) At El. -74.2 Ft., some silt, some clay, some fine-grained sand-sized quartz, little shell fragments, gray	NS	
-76.1	19.7				
NOTES: 1. Soils are field visually classified in accordance with the Unified Soils Classification System. 2. NS = Sample not submitted for laboratory analysis from this interval. 3. Seafloor elevation determined from USACE hydrographic survey completed April 2014.					

Project

Mississippi Barrier Island
Restoration Project



Core Identifier BI-PBS-27-12

Date 11/21/2012

Water Depth 55.1'

Coordinate System

Start Time 14:11:22

Latitude / Longitude

End Time 14:12:22

Penetration 20.0'

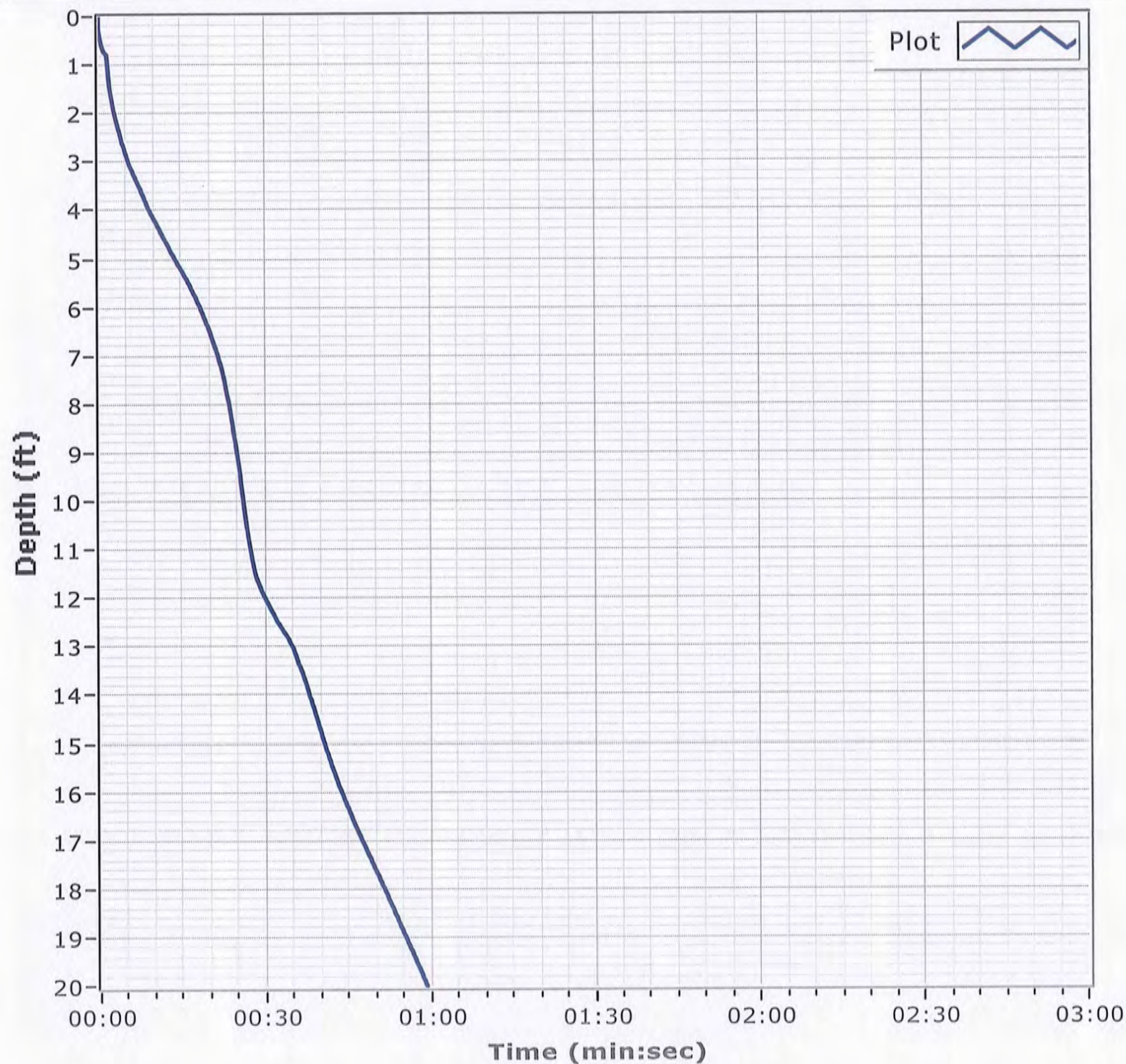
Latitude 30 08.077

Total Time 00:00:59

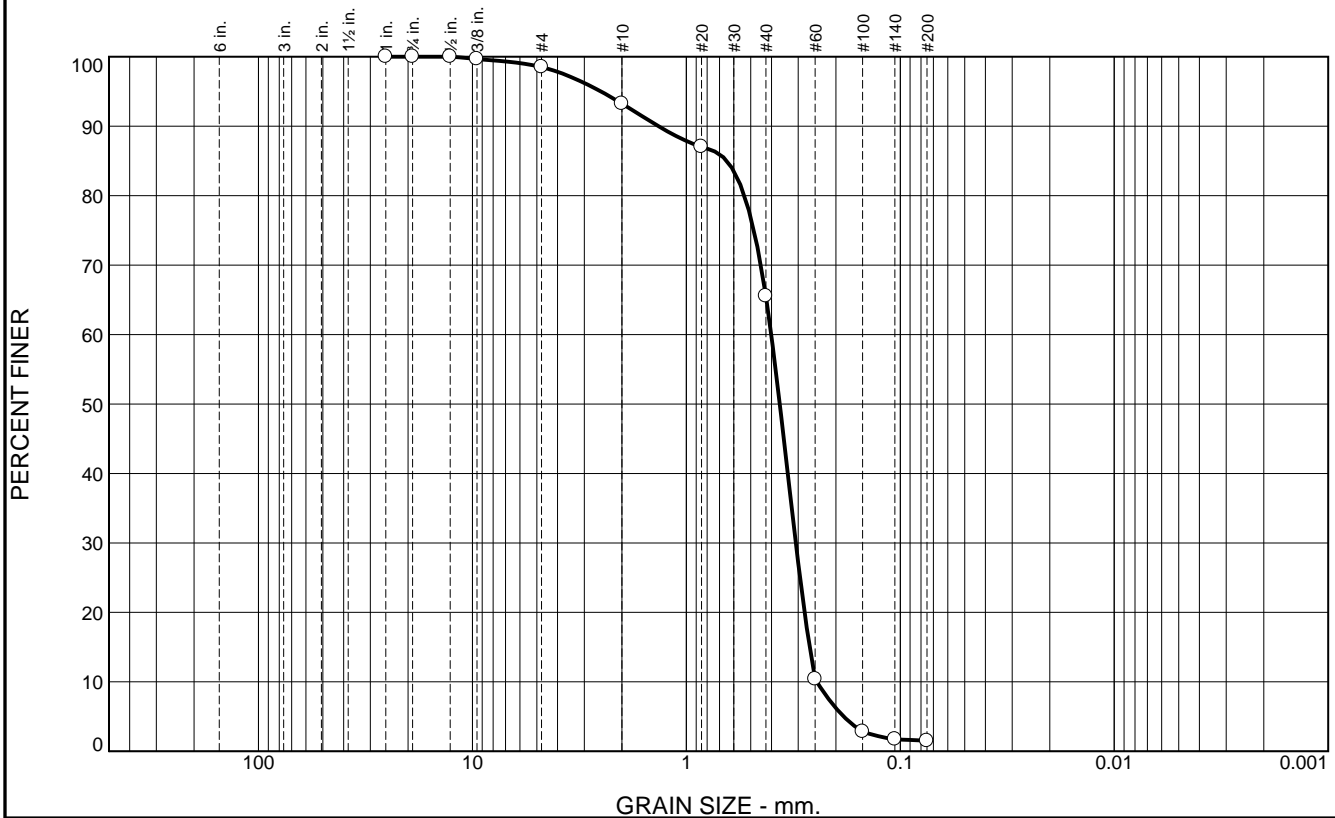
Recovery 19.7'

Longitude 088 20.026

Comments



Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	1.5	5.3	27.7	64.0	1.5	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
1	100.0		
.75	100.0		
.5	100.0		
.375	99.7		
#4	98.5		
#10	93.2		
#20	87.0		
#40	65.5		
#60	10.4		
#100	2.8		
#140	1.7		
#200	1.5		

* (no specification provided)

Material Description

Fine to medium grained, SAND, with trace SHELL

Atterberg Limits

PL= LL= PI=

Coefficients

D₉₀= 1.3510 D₈₅= 0.6468 D₆₀= 0.4010
D₅₀= 0.3658 D₃₀= 0.3080 D₁₅= 0.2656
D₁₀= 0.2455 C_u= 1.63 C_c= 0.96

Classification

USCS= SP AASHTO=

Remarks

Location: BI-PBS-27-12 A
Sample Number: 6469 (14)

Depth: 0.0'

Date: 11/28/12

Thompson Engineering

Mobile, Alabama

Client: CDM/Thompson Engineering JV
Project: MsCIP Barrier Island Restoration GT

Project No: 1221110095

Figure

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	0.8	1.6	9.6	82.8	5.2	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
1	100.0		
.75	100.0		
.5	100.0		
.375	100.0		
#4	99.2		
#10	97.6		
#20	94.6		
#40	88.0		
#60	46.9		
#100	15.8		
#140	7.5		
#200	5.2		

* (no specification provided)

Material Description

Fine grained, SLIGHTLY SILTY SAND

Atterberg Limits

PL= LL= PI=

Coefficients

D₉₀= 0.5050 D₈₅= 0.4022 D₆₀= 0.2914
D₅₀= 0.2594 D₃₀= 0.1982 D₁₅= 0.1470
D₁₀= 0.1232 C_u= 2.37 C_c= 1.09

Classification

USCS= SP-SM AASHTO=

Remarks

Location: BI-PBS-27-12 B
Sample Number: 6469 (15)

Depth: 6.0'

Date: 11/28/12

Thompson Engineering

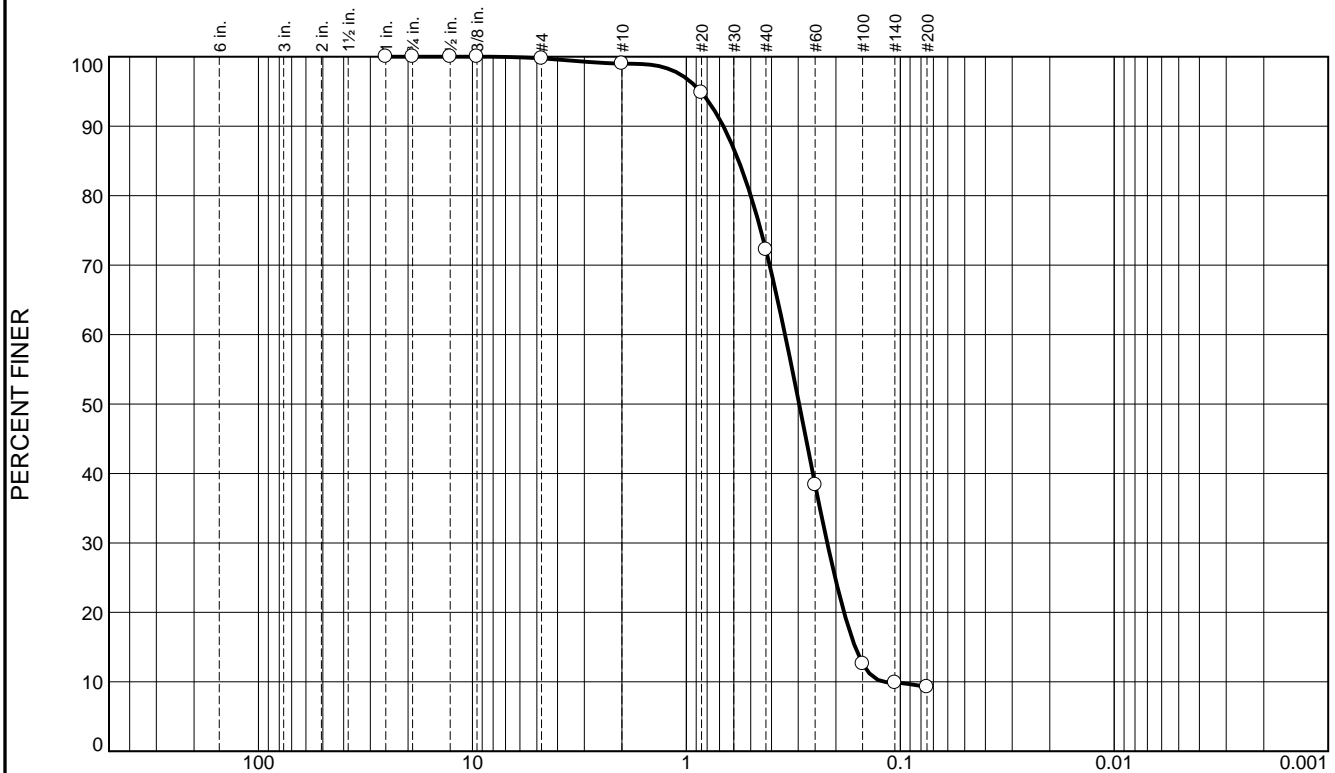
Mobile, Alabama

Client: CDM/Thompson Engineering JV
Project: MsCIP Barrier Island Restoration GT

Project No: 1221110095

Figure

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	0.2	0.8	26.8	63.0	9.2	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
1	100.0		
.75	100.0		
.5	100.0		
.375	100.0		
#4	99.8		
#10	99.0		
#20	94.8		
#40	72.2		
#60	38.4		
#100	12.6		
#140	9.9		
#200	9.2		

* (no specification provided)

<u>Material Description</u>		
Fine to medium grained, SLIGHTLY SILTY SAND		
<u>Atterberg Limits</u>		
PL=	LL=	PI=
<u>Coefficients</u>		
D ₉₀ = 0.6718	D ₈₅ = 0.5694	D ₆₀ = 0.3458
D ₅₀ = 0.2972	D ₃₀ = 0.2195	D ₁₅ = 0.1626
D ₁₀ = 0.1188	C _u = 2.91	C _c = 1.17
<u>Classification</u>		
USCS= SP-SM	AASHTO=	
<u>Remarks</u>		

Location: BI-PBS-27-12 C
Sample Number: 6469 (16)

Depth: 10.6'

Date: 11/28/12

Thompson Engineering

Mobile, Alabama

Client: CDM/Thompson Engineering JV
Project: MsCIP Barrier Island Restoration GT

Project No: 1221110095

Figure

Boring Designation BI-PBS-028-12

DRILLING LOG		DIVISION South Atlantic		INSTALLATION Mobile District		SHEET 1 OF 1 SHEETS	
1. PROJECT MsCIP Barrier Island Restoration Petit Bois Pass-OCS East				9. SIZE AND TYPE OF BIT N/A			
2. BORING DESIGNATION BI-PBS-028-12		LOCATION COORDINATES E = 1,143,084 N = 230,830		10. COORDINATE SYSTEM/DATUM State Plane, MSE (U.S. Ft.)		HORIZONTAL NAD83	
3. DRILLING AGENCY Corps of Engineers - CESAM		CONTRACTOR FILE NO.		11. MANUFACTURER'S DESIGNATION OF DRILL Vibracore		<input type="checkbox"/> AUTO HAMMER <input type="checkbox"/> MANUAL HAMMER	
4. NAME OF DRILLER American Vibracore Systems, Inc.				12. TOTAL SAMPLES		DISTURBED 0	
5. DIRECTION OF BORING <input checked="" type="checkbox"/> VERTICAL <input type="checkbox"/> INCLINED				13. TOTAL NUMBER CORE BOXES		14. WATER DEPTH 56.4 Ft.	
6. THICKNESS OF OVERBURDEN N/A				15. DATE BORING		STARTED 11-21-12	
7. DEPTH DRILLED INTO ROCK N/A				16. ELEVATION TOP OF BORING -56.8 Ft.		COMPLETED 11-21-12	
8. TOTAL DEPTH OF BORING 12.4 Ft.				17. TOTAL RECOVERY FOR BORING 100%		18. SIGNATURE AND TITLE OF INSPECTOR John Bass, Geotechnical Engineer	

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	SAMPLE	LABORATORY RESULTS
-56.8	0.0				
			SAND, poorly-graded, mostly fine-grained sand-sized quartz, trace fines, trace shell fragments, trace wood debris, lt. gray (SP)	A	Classification: SP Color: 5Y 7/2-light gray D50: 0.2984 mm % Fines: 2.9
-63.3	6.5				
-65.3	8.5		SAND, silty, mostly fine-grained sand-sized quartz, little shell fragments, trace wood debris, gray (SM)		
-66.8	10.0		CLAY, silty, some clay, some silt, little fine-grained sand-sized quartz, trace wood debris, gray (CL-ML)	NS	
-67.8	11.0				
-69.2	12.4		SAND, silty, mostly fine-grained sand-sized quartz, some silt, some shell fragments, little wood debris, gray (SM)	B	Classification: SP-SM Color: 5Y 7/2-light gray D50: 0.2837 mm % Fines: 8.5
			SAND, poorly-graded, mostly fine-grained sand-sized quartz, little fines, trace shell fragments, trace wood debris, lt. gray (SP)		
NOTES: 1. Soils are field visually classified in accordance with the Unified Soils Classification System. 2. NS = Sample not submitted for laboratory analysis from this interval. 3. Seafloor elevation determined from USACE hydrographic survey completed April 2014.					

Project

Mississippi Barrier Island
Restoration Project

AVS
AMERICAN VIBRACORE
S E R V I C E S

Core Identifier BI-PBS-28-12

Date 11/21/2012

Water Depth 56.4'

Coordinate System

Latitude / Longitude

Start Time 13:36:59

End Time 13:39:10

Penetration 20.0'

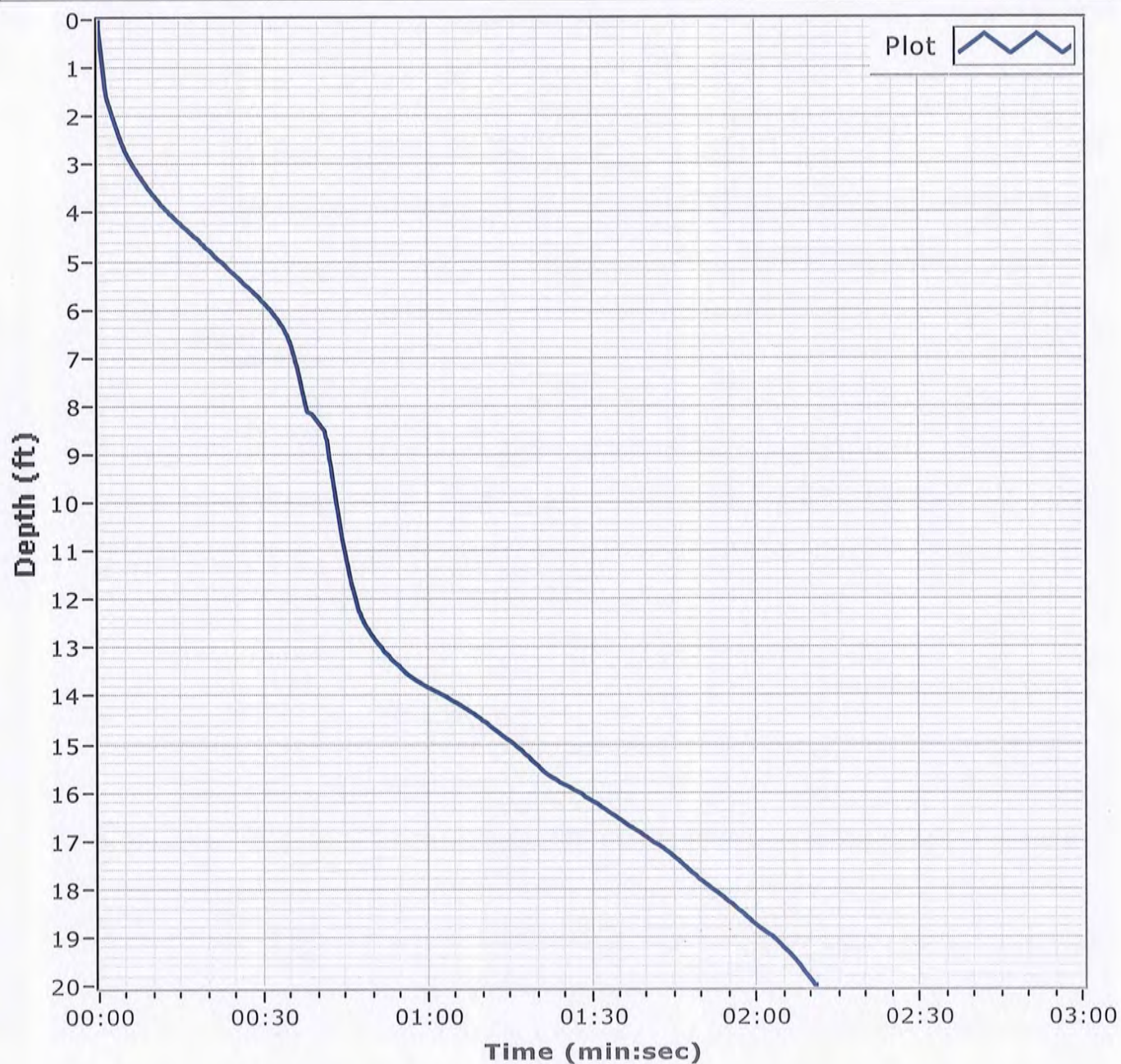
Latitude 30 08.027

Total Time 00:02:11

Recovery 12.4'

Longitude 088 19.853

Comments



Particle Size Distribution Report



GRAIN SIZE - mm.

% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	1.2	2.1	14.3	79.5	2.9	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
1	100.0		
.75	100.0		
.5	100.0		
.375	99.4		
#4	98.8		
#10	96.7		
#20	93.1		
#40	82.4		
#60	33.3		
#100	8.6		
#140	4.2		
#200	2.9		

* (no specification provided)

Material Description

Fine to medium grained, SAND, with trace SHELL

Atterberg Limits

PL= LL= PI=

Coefficients

D₉₀= 0.6592 D₈₅= 0.4861 D₆₀= 0.3292
D₅₀= 0.2984 D₃₀= 0.2398 D₁₅= 0.1847
D₁₀= 0.1588 C_u= 2.07 C_c= 1.10

Classification

USCS= SP AASHTO=

Remarks

Location: BI-PBS-28-12 A
Sample Number: 6469 (12)

Depth: 0.0'

Date: 11/28/12

Thompson Engineering

Mobile, Alabama

Client: CDM/Thompson Engineering JV
Project: MsCIP Barrier Island Restoration GT

Project No: 1221110095

Figure

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	0.4	1.5	20.8	68.8	8.5	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
1	100.0		
.75	100.0		
.5	100.0		
.375	100.0		
#4	99.6		
#10	98.1		
#20	94.5		
#40	77.3		
#60	40.3		
#100	11.0		
#140	9.0		
#200	8.5		

* (no specification provided)

Material Description

Fine to medium grained, SLIGHTLY SILTY SAND

Atterberg Limits

PL= LL= PI=

Coefficients

D₉₀= 0.6111 D₈₅= 0.5091 D₆₀= 0.3242
D₅₀= 0.2837 D₃₀= 0.2173 D₁₅= 0.1683
D₁₀= 0.1305 C_u= 2.49 C_c= 1.12

Classification

USCS= SP-SM AASHTO=

Remarks

Location: BI-PBS-28-12 B
Sample Number: 6469 (13)

Depth: 11.0'

Date: 11/28/12

Thompson Engineering

Mobile, Alabama

Client: CDM/Thompson Engineering JV
Project: MsCIP Barrier Island Restoration GT

Project No: 1221110095

Figure

Boring Designation BI-PBS-029-12

DRILLING LOG		DIVISION South Atlantic		INSTALLATION Mobile District		SHEET 1 OF 1 SHEETS	
1. PROJECT MsCIP Barrier Island Restoration Petit Bois Pass-OCS East				9. SIZE AND TYPE OF BIT N/A			
2. BORING DESIGNATION BI-PBS-029-12		LOCATION COORDINATES E = 1,143,592 N = 230,305		10. COORDINATE SYSTEM/DATUM State Plane, MSE (U.S. Ft.)		HORIZONTAL NAD83 VERTICAL NAVD88	
3. DRILLING AGENCY Corps of Engineers - CESAM		CONTRACTOR FILE NO.		11. MANUFACTURER'S DESIGNATION OF DRILL Vibrocure		<input type="checkbox"/> AUTO HAMMER <input type="checkbox"/> MANUAL HAMMER	
4. NAME OF DRILLER American Vibrocure Systems, Inc.				12. TOTAL SAMPLES		DISTURBED UNDISTURBED (UD) 0	
5. DIRECTION OF BORING <input checked="" type="checkbox"/> VERTICAL <input type="checkbox"/> INCLINED		DEG. FROM VERTICAL		13. TOTAL NUMBER CORE BOXES			
		BEARING		14. WATER DEPTH 62 Ft.			
6. THICKNESS OF OVERBURDEN N/A				15. DATE BORING 11-24-12		STARTED COMPLETED 11-24-12	
7. DEPTH DRILLED INTO ROCK N/A				16. ELEVATION TOP OF BORING -55.2 Ft.			
8. TOTAL DEPTH OF BORING 7.2 Ft.				17. TOTAL RECOVERY FOR BORING 100%			
				18. SIGNATURE AND TITLE OF INSPECTOR John Bass, Geotechnical Engineer			

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	SAMPLE	LABORATORY RESULTS
-55.2	0.0				
			SAND, poorly-graded, mostly fine to medium-grained sand-sized quartz, trace fines, trace shell fragments, lt. gray (SP)	A	Classification: SP Color: 5Y 7/2-light gray D50: 0.2483 mm % Fines: 2.1
-61.2	6.0			B	Classification: SP-SM Color: 5Y 6/2-light olive gray D50: 0.1892 mm % Fines: 10.9
-61.8	6.6		SAND, poorly-graded, mostly fine-grained sand-sized quartz, trace silt, gray (SP)	NS	
-62.4	7.2		CLAY, lean, mostly clay, little fine-grained sand-sized quartz, gray (CL)		
NOTES: 1. Soils are field visually classified in accordance with the Unified Soils Classification System. 2. NS = Sample not submitted for laboratory analysis from this interval. 3. Seafloor elevation determined from USACE hydrographic survey completed April 2014.					

Project

Mississippi Barrier Island
Restoration Project



Core Identifier BI-PBS-29-12

Date 11/24/2012

Water Depth 62.0'

Coordinate System

Start Time 12:53:28

Latitude / Longitude

End Time 12:54:59

Penetration 20.0'

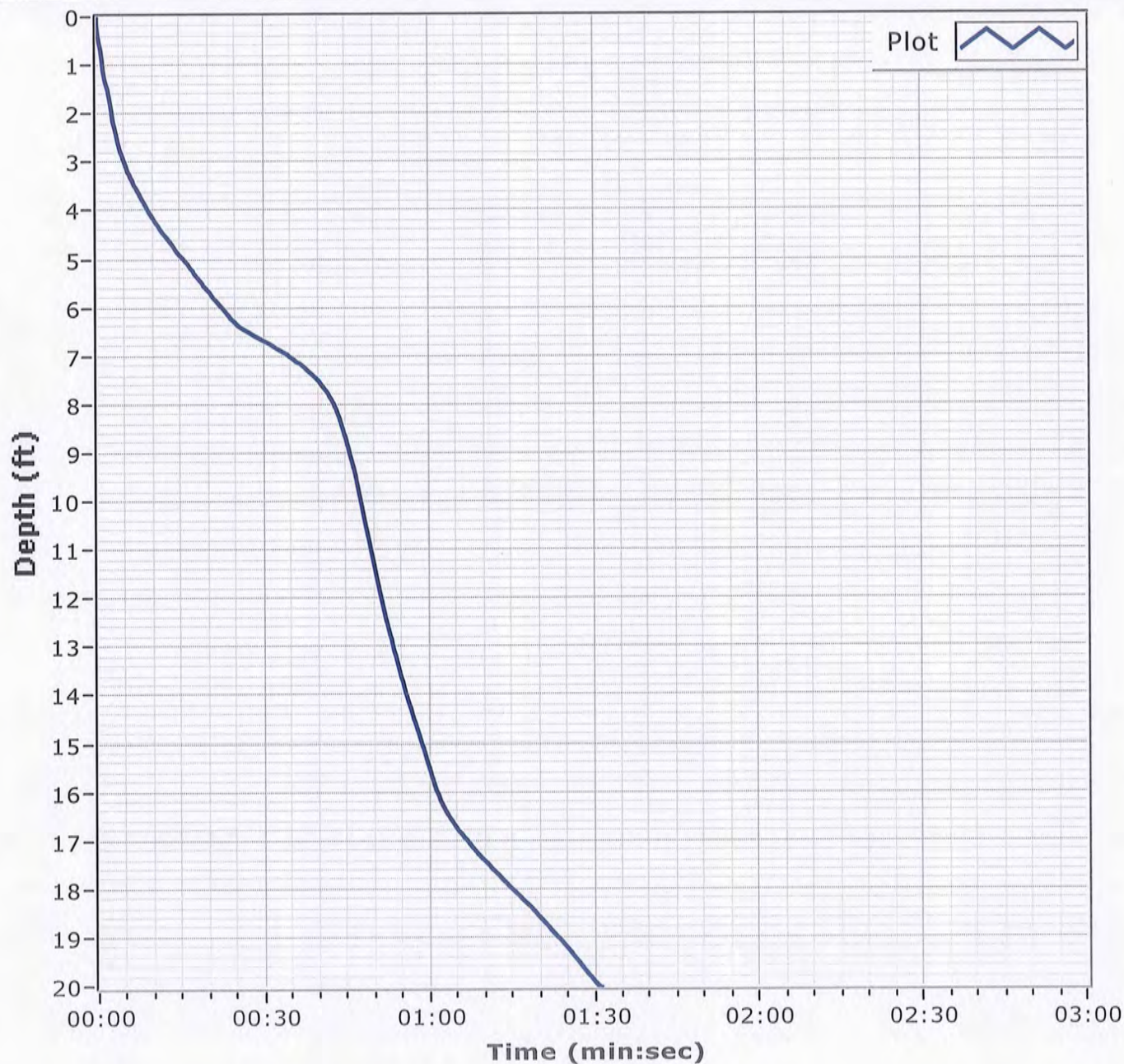
Latitude 30 07.940

Total Time 00:01:31

Recovery 7.2'

Longitude 088 19.757

Comments



Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	0.4	1.5	12.9	83.1	2.1	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
1	100.0		
.75	100.0		
.5	100.0		
.375	100.0		
#4	99.6		
#10	98.1		
#20	95.2		
#40	85.2		
#60	50.6		
#100	7.0		
#140	2.7		
#200	2.1		

* (no specification provided)

Material Description
 Fine to medium grained, SAND

Atterberg Limits
 PL= LL= PI=

Coefficients
 D₉₀= 0.4988 D₈₅= 0.4232 D₆₀= 0.2784
 D₅₀= 0.2483 D₃₀= 0.2025 D₁₅= 0.1710
 D₁₀= 0.1589 C_u= 1.75 C_c= 0.93

Classification
 USCS= SP AASHTO=

Remarks

Location: BI-PBS-29-12 A
 Sample Number: 6469 (45)

Depth: 0.0'

Date: 11/28/12

Thompson Engineering

Mobile, Alabama

Client: CDM/Thompson Engineering JV
 Project: MsCIP Barrier Island Restoration GT

Project No: 1221110095

Figure

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	0.5	1.3	8.5	78.8	10.9	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
1	100.0		
.75	100.0		
.5	100.0		
.375	100.0		
#4	99.5		
#10	98.2		
#20	95.9		
#40	89.7		
#60	73.4		
#100	30.3		
#140	15.0		
#200	10.9		

* (no specification provided)

<u>Material Description</u>		
Fine grained, SLIGHTLY SILTY SAND		
<u>Atterberg Limits</u>		
PL=	LL=	PI=
<u>Coefficients</u>		
D ₉₀ = 0.4341	D ₈₅ = 0.3239	D ₆₀ = 0.2111
D ₅₀ = 0.1892	D ₃₀ = 0.1493	D ₁₅ = 0.1062
D ₁₀ =	C _u =	C _c =
<u>Classification</u>		
USCS= SP-SM	AASHTO=	
<u>Remarks</u>		

Location: BI-PBS-29-12 B
Sample Number: 6469 (46)

Depth: 6.0'

Date: 11/28/12

Thompson Engineering

Mobile, Alabama

Client: CDM/Thompson Engineering JV
Project: MsCIP Barrier Island Restoration GT

Project No: 1221110095

Figure

Boring Designation BI-PBS-030-12

DRILLING LOG		DIVISION South Atlantic		INSTALLATION Mobile District		SHEET 1 OF 1 SHEETS	
1. PROJECT MsCIP Barrier Island Restoration Petit Bois Pass-OCS East				9. SIZE AND TYPE OF BIT N/A			
2. BORING DESIGNATION BI-PBS-030-12		LOCATION COORDINATES E = 1,143,904 N = 229,830		10. COORDINATE SYSTEM/DATUM State Plane, MSE (U.S. Ft.)		HORIZONTAL NAD83 VERTICAL NAVD88	
3. DRILLING AGENCY Corps of Engineers - CESAM		CONTRACTOR FILE NO.		11. MANUFACTURER'S DESIGNATION OF DRILL Vibracore		<input type="checkbox"/> AUTO HAMMER <input type="checkbox"/> MANUAL HAMMER	
4. NAME OF DRILLER American Vibracore Systems, Inc.				12. TOTAL SAMPLES		DISTURBED UNDISTURBED (UD) 0	
5. DIRECTION OF BORING <input checked="" type="checkbox"/> VERTICAL <input type="checkbox"/> INCLINED		DEG. FROM VERTICAL		13. TOTAL NUMBER CORE BOXES			
6. THICKNESS OF OVERBURDEN N/A				14. WATER DEPTH 62.7 Ft.			
7. DEPTH DRILLED INTO ROCK N/A				15. DATE BORING 11-24-12		COMPLETED 11-24-12	
8. TOTAL DEPTH OF BORING 15.6 Ft.				16. ELEVATION TOP OF BORING -60.4 Ft.			
				17. TOTAL RECOVERY FOR BORING 100%			
				18. SIGNATURE AND TITLE OF INSPECTOR John Bass, Geotechnical Engineer			

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	SAMPLE	LABORATORY RESULTS
-60.4	0.0				
-63.5	3.1		SAND, poorly-graded, mostly fine-grained sand-sized quartz, little shell fragments, trace fines, lt. gray (SP)	A	Classification: SP Color: 2.5Y 6/2-light brownish gray D50: 0.2933 mm % Fines: 3
-67.0	6.6		SAND, silty, mostly fine-grained sand-sized quartz, some shell fragments, gray (SM)		
-68.0	7.6		CLAY, lean, mostly clay, little fine-grained sand-sized quartz, trace shell fragments, gray (CL)		
-69.5	9.1		SAND, clayey, mostly fine-grained sand-sized quartz, trace shell fragments, borderline CL, gray (SC)		
-74.7	14.3		CLAY, lean, mostly clay, trace fine-grained sand-sized quartz, trace shell fragments, gray (CL)	NS	
-76.0	15.6		SAND, poorly-graded with silt, mostly fine-grained sand-sized quartz, few silt, trace shell fragments, lt. gray to gray (SP-SM)	B	Classification: SM Color: 2.5Y 6/2-light brownish gray D50: 0.3355 mm % Fines: 22.5
			NOTES: 1. Soils are field visually classified in accordance with the Unified Soils Classification System. 2. NS = Sample not submitted for laboratory analysis from this interval. 3. Seafloor elevation determined from USACE hydrographic survey completed April 2014.		

Project

Mississippi Barrier Island
Restoration Project



Core Identifier BI-PBS-30-12

Date 11/24/2012

Water Depth 62.7'

Coordinate System

Latitude / Longitude

Start Time 12:11:23

End Time 12:12:52

Penetration 19.4'

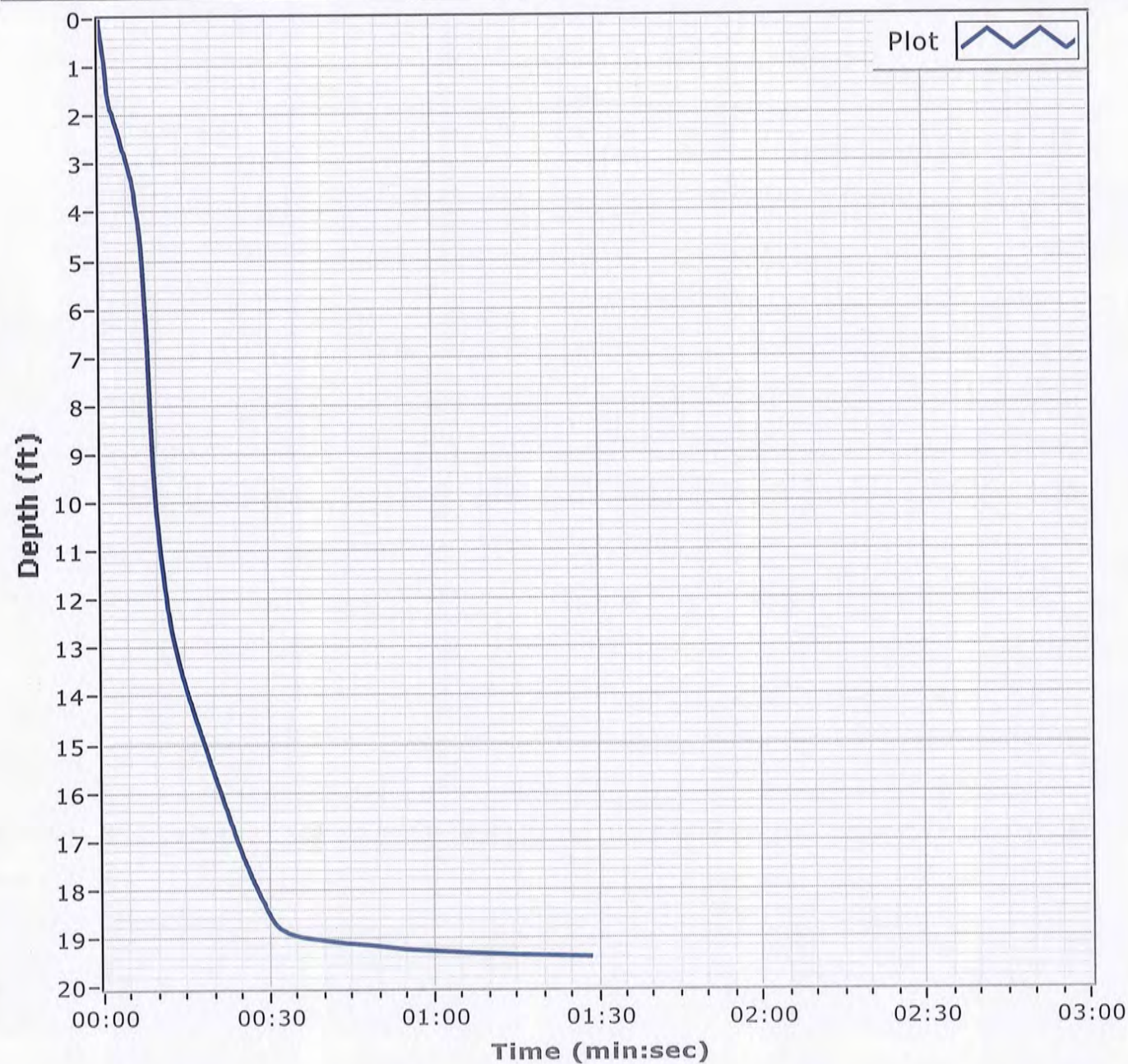
Latitude 30 07.861

Total Time 00:01:28

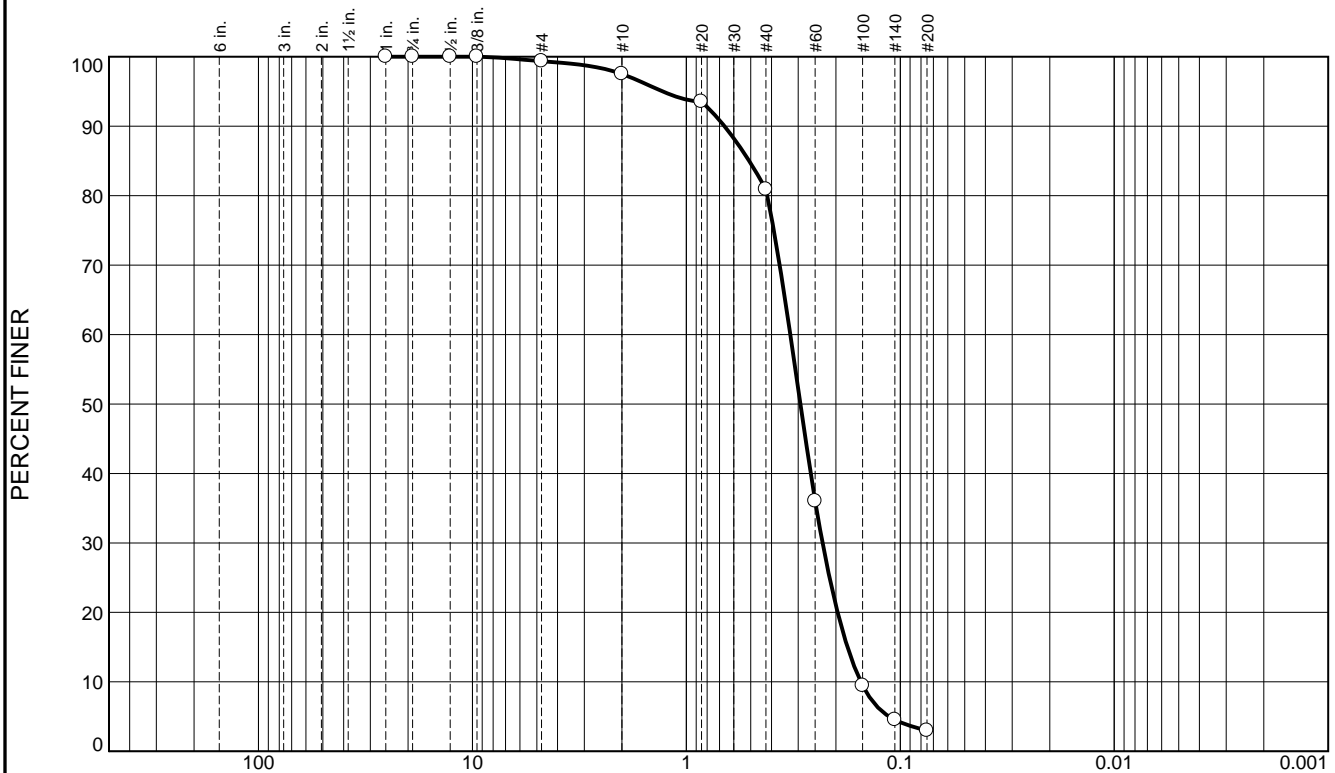
Recovery 15.6'

Longitude 088 19.698

Comments



Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	0.7	1.8	16.6	77.9	3.0	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
1	100.0		
.75	100.0		
.5	100.0		
.375	100.0		
#4	99.3		
#10	97.5		
#20	93.5		
#40	80.9		
#60	36.0		
#100	9.5		
#140	4.6		
#200	3.0		

* (no specification provided)

<u>Material Description</u>		
Fine to medium grained, SAND		
<u>Atterberg Limits</u>		
PL=	LL=	PI=
<u>Coefficients</u>		
D ₉₀ = 0.6638	D ₈₅ = 0.5089	D ₆₀ = 0.3268
D ₅₀ = 0.2933	D ₃₀ = 0.2309	D ₁₅ = 0.1767
D ₁₀ = 0.1530	C _u = 2.14	C _c = 1.07
<u>Classification</u>		
USCS= SP	AASHTO=	
<u>Remarks</u>		

Location: BI-PBS-30-12 A
Sample Number: 6469 (43)

Depth: 0.0'

Date: 11/28/12

Thompson Engineering

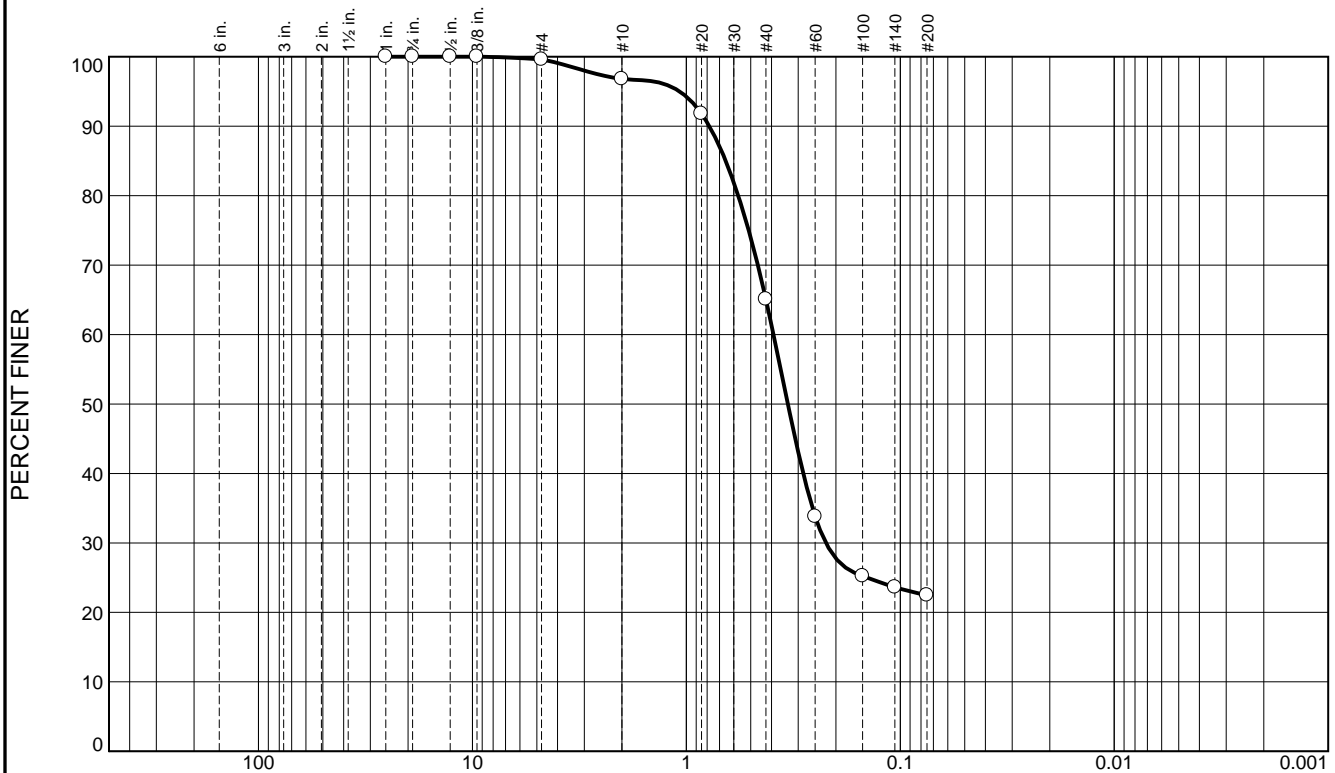
Mobile, Alabama

Client: CDM/Thompson Engineering JV
Project: MsCIP Barrier Island Restoration GT

Project No: 1221110095

Figure

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	0.4	2.8	31.7	42.6	22.5	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
1	100.0		
.75	100.0		
.5	100.0		
.375	100.0		
#4	99.6		
#10	96.8		
#20	91.8		
#40	65.1		
#60	33.8		
#100	25.2		
#140	23.6		
#200	22.5		

* (no specification provided)

Material Description

Fine to medium grained, SILTY SAND

Atterberg Limits

PL= LL= PI=

Coefficients

D₉₀= 0.7814 D₈₅= 0.6548 D₆₀= 0.3915
D₅₀= 0.3355 D₃₀= 0.2227 D₁₅=
D₁₀= C_u= C_c=

Classification

USCS= SM AASHTO=

Remarks

Location: BI-PBS-30-12 B
Sample Number: 6469 (44)

Depth: 14.3'

Date: 11/28/12

Thompson Engineering

Mobile, Alabama

Client: CDM/Thompson Engineering JV
Project: MsCIP Barrier Island Restoration GT

Project No: 1221110095

Figure

Boring Designation BI-PBS-031-12

DRILLING LOG		DIVISION South Atlantic		INSTALLATION Mobile District		SHEET 1 OF 1 SHEETS	
1. PROJECT MsCIP Barrier Island Restoration Petit Bois Pass-OCS East				9. SIZE AND TYPE OF BIT N/A			
2. BORING DESIGNATION BI-PBS-031-12		LOCATION COORDINATES E = 1,139,062 N = 230,856		10. COORDINATE SYSTEM/DATUM State Plane, MSE (U.S. Ft.)		HORIZONTAL NAD83	
3. DRILLING AGENCY Corps of Engineers - CESAM		CONTRACTOR FILE NO.		11. MANUFACTURER'S DESIGNATION OF DRILL Vibracore		<input type="checkbox"/> AUTO HAMMER <input type="checkbox"/> MANUAL HAMMER	
4. NAME OF DRILLER American Vibracore Systems, Inc.				12. TOTAL SAMPLES		DISTURBED 0	
5. DIRECTION OF BORING <input checked="" type="checkbox"/> VERTICAL <input type="checkbox"/> INCLINED				13. TOTAL NUMBER CORE BOXES		14. WATER DEPTH 55.1 Ft.	
6. THICKNESS OF OVERBURDEN N/A				15. DATE BORING		STARTED 11-26-12	
7. DEPTH DRILLED INTO ROCK N/A				16. ELEVATION TOP OF BORING -55.5 Ft.		COMPLETED 11-26-12	
8. TOTAL DEPTH OF BORING 19.7 Ft.				17. TOTAL RECOVERY FOR BORING 100%			
				18. SIGNATURE AND TITLE OF INSPECTOR Mike FitzHarris, Geologist			
ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	SAMPLE	LABORATORY RESULTS		
-55.5	0.0						
			SAND, poorly-graded with silt, mostly fine to medium-grained sand-sized quartz, trace shell fragments, trace clay, gray (SP-SM)	A	Classification: SP Color: 5Y 6/2-light olive gray D50: 0.2707 mm % Fines: 2.4		
-59.2	3.7						
			SAND, clayey, mostly fine to medium-grained sand-sized quartz, little silt, trace shell fragments, clay stringers, gray (SC)				
-62.4	6.9						
			CLAY, fat, mostly clay, trace wood debris, with silty lenses, some fine grained sand-sized quartz intermixed, medium plasticity, trace clayey sand lenses, gray with brown streaks (CH)	NS			
-75.2	19.7						
			NOTES: 1. Soils are field visually classified in accordance with the Unified Soils Classification System. 2. NS = Sample not submitted for laboratory analysis from this interval. 3. Seafloor elevation determined from USACE hydrographic survey completed April 2014.				

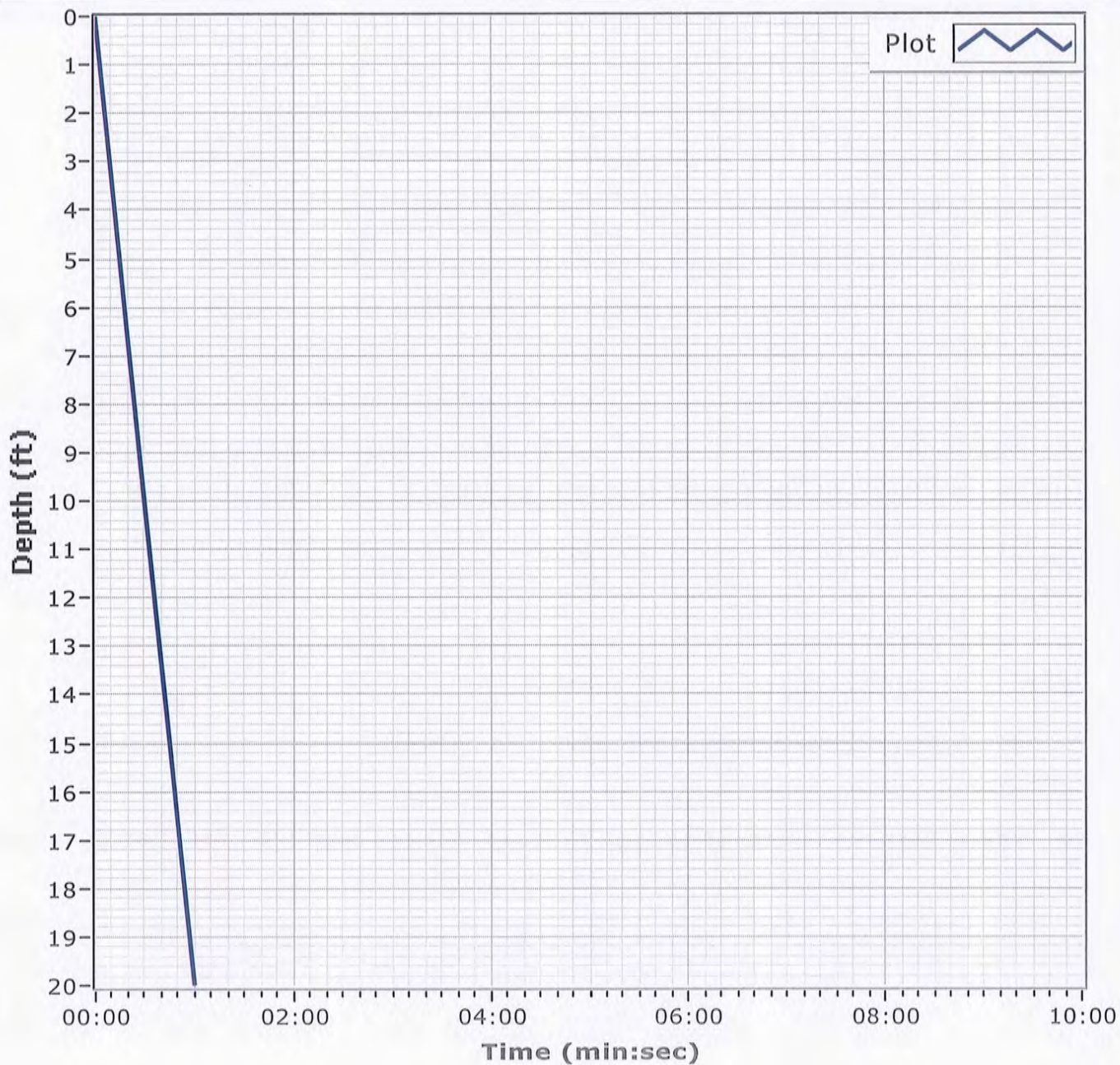
Project

Mississippi Barrier Island
Restoration Project

AVS
AMERICAN VIBRACORE
S E R V I C E S

Core Identifier BI-PBS-31-12**Date** 11/26/2012**Water Depth** 55.1'**Coordinate System**

Latitude / Longitude

Start Time 09:05:03**End Time** 09:06:03**Penetration** 20.0'**Latitude** 30 08.034**Total Time** 00:01:00**Recovery** 19.7'**Longitude** 088 20.616**Comments**

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	0.3	1.1	16.8	79.4	2.4	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
1	100.0		
.75	100.0		
.5	100.0		
.375	100.0		
#4	99.7		
#10	98.6		
#20	95.9		
#40	81.8		
#60	43.3		
#100	8.1		
#140	3.3		
#200	2.4		

* (no specification provided)

<u>Material Description</u>		
Fine to medium grained, SAND		
<u>Atterberg Limits</u>		
PL=	LL=	PI=
<u>Coefficients</u>		
D ₉₀ = 0.5289	D ₈₅ = 0.4558	D ₆₀ = 0.3060
D ₅₀ = 0.2707	D ₃₀ = 0.2131	D ₁₅ = 0.1727
D ₁₀ = 0.1570	C _u = 1.95	C _c = 0.94
<u>Classification</u>		
USCS= SP	AASHTO=	
<u>Remarks</u>		

Location: BI-PBS-31-12 A
Sample Number: 6469 (59)

Depth: 0.0'

Date: 11/28/12

Thompson Engineering

Mobile, Alabama

Client: CDM/Thompson Engineering JV
Project: MsCIP Barrier Island Restoration GT

Project No: 1221110095

Figure

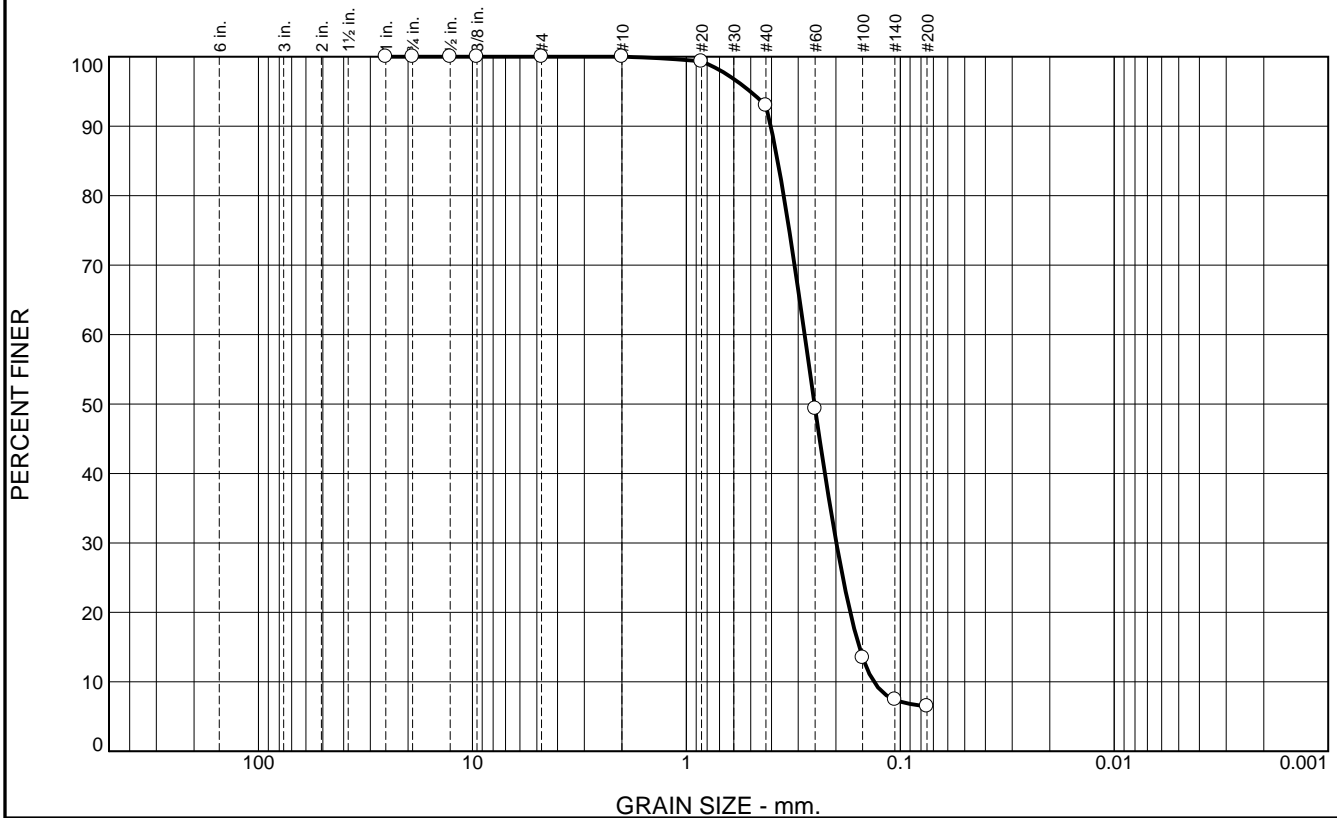
Boring Designation BI-PBS-032-12

DRILLING LOG		DIVISION South Atlantic		INSTALLATION Mobile District		SHEET 1 OF 2 SHEETS	
1. PROJECT MsCIP Barrier Island Restoration Petit Bois Pass-OCS East				9. SIZE AND TYPE OF BIT N/A			
2. BORING DESIGNATION BI-PBS-032-12		LOCATION COORDINATES E = 1,135,889 N = 224,686		10. COORDINATE SYSTEM/DATUM State Plane, MSE (U.S. Ft.)		HORIZONTAL NAD83	
3. DRILLING AGENCY Corps of Engineers - CESAM		CONTRACTOR FILE NO.		11. MANUFACTURER'S DESIGNATION OF DRILL Vibracore		<input type="checkbox"/> AUTO HAMMER <input type="checkbox"/> MANUAL HAMMER	
4. NAME OF DRILLER American Vibracore Systems, Inc.				12. TOTAL SAMPLES		DISTURBED 0	
5. DIRECTION OF BORING <input checked="" type="checkbox"/> VERTICAL <input type="checkbox"/> INCLINED				13. TOTAL NUMBER CORE BOXES		14. WATER DEPTH 62.8 Ft.	
6. THICKNESS OF OVERBURDEN N/A				15. DATE BORING		STARTED 12-01-12	
7. DEPTH DRILLED INTO ROCK N/A				16. ELEVATION TOP OF BORING -62.6 Ft.		COMPLETED 12-01-12	
8. TOTAL DEPTH OF BORING 20.0 Ft.				17. TOTAL RECOVERY FOR BORING 100%		18. SIGNATURE AND TITLE OF INSPECTOR Mike FitzHarris, Geologist	

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	SAMPLE	LABORATORY RESULTS
-62.6	0.0				
-62.8	0.2		SAND, poorly-graded, mostly fine to medium-grained sand-sized quartz, few shells, trace silt, gray (SP)	NS	
-66.6	4.0		SAND, clayey, mostly fine-grained sand-sized quartz, some clay, some silt, trace wood debris, alternating bands of clayey sand and sandy clay, gray (SC)		
-69.1	6.5		SAND, poorly-graded with silt, mostly fine-grained sand-sized quartz, few silt, gray (SP-SM)	A	Classification: SP-SM Color: 2.5Y 7/2-light gray D50: 0.2518 mm % Fines: 6.5
-75.1	12.5		SAND, poorly-graded, mostly fine-grained sand-sized quartz, trace silt, trace shell fragments, trace clay stringers, gray (SP)	B	Classification: SP-SM Color: 2.5Y 7/1-light gray D50: 0.2049 mm % Fines: 6.5
-79.2	16.6		SAND, poorly-graded with silt, mostly fine-grained sand-sized quartz, few silt, gray (SP-SM)	C	Classification: SP-SM Color: 2.5Y 7/1-light gray D50: 0.1877 mm % Fines: 9.7
-80.4	17.8		SAND, silty, mostly fine-grained sand-sized quartz, trace clay, gray (SM)	NS	
-82.6	20.0		CLAY, lean, mostly clay, some silt, trace fine-grained sand-sized quartz, trace shell fragments, gray (CL)		
NOTES: 1. Soils are field visually classified in accordance with the Unified Soils Classification System. 2. NS = Sample not submitted for laboratory analysis from this interval. 3. Seafloor elevation calculated using sampling					

DRILLING LOG (Cont. Sheet)			INSTALLATION Mobile District		SHEET 2 OF 2 SHEETS
PROJECT MsCIP Barrier Island Restoration			COORDINATE SYSTEM/DATUM State Plane, MSE (U.S. Ft.)	HORIZONTAL NAD83	VERTICAL NAVD88
LOCATION COORDINATES X = 1,135,889 Y = 224,686			ELEVATION TOP OF BORING -62.6 Ft.		
ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	SAMPLE	LABORATORY RESULTS
			vessel's fathometer water depth reading and applying NOAA tidal gauge data conversion factor.		

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	0.0	0.0	7.0	86.5	6.5	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
1	100.0		
.75	100.0		
.5	100.0		
.375	100.0		
#4	100.0		
#10	100.0		
#20	99.3		
#40	93.0		
#60	49.3		
#100	13.5		
#140	7.4		
#200	6.5		

* (no specification provided)

<u>Material Description</u>		
Fine grained, SLIGHTLY SILTY SAND		
<u>Atterberg Limits</u>		
PL=	LL=	PI=
<u>Coefficients</u>		
D ₉₀ = 0.4031	D ₈₅ = 0.3742	D ₆₀ = 0.2802
D ₅₀ = 0.2518	D ₃₀ = 0.1990	D ₁₅ = 0.1556
D ₁₀ = 0.1329	C _u = 2.11	C _c = 1.06
<u>Classification</u>		
USCS= SP-SM	AASHTO=	
<u>Remarks</u>		

Location: BI-PBS-32-12 A
Sample Number: 6471 (7)

Depth: 4.0'

Date: 12/03/12

Thompson Engineering

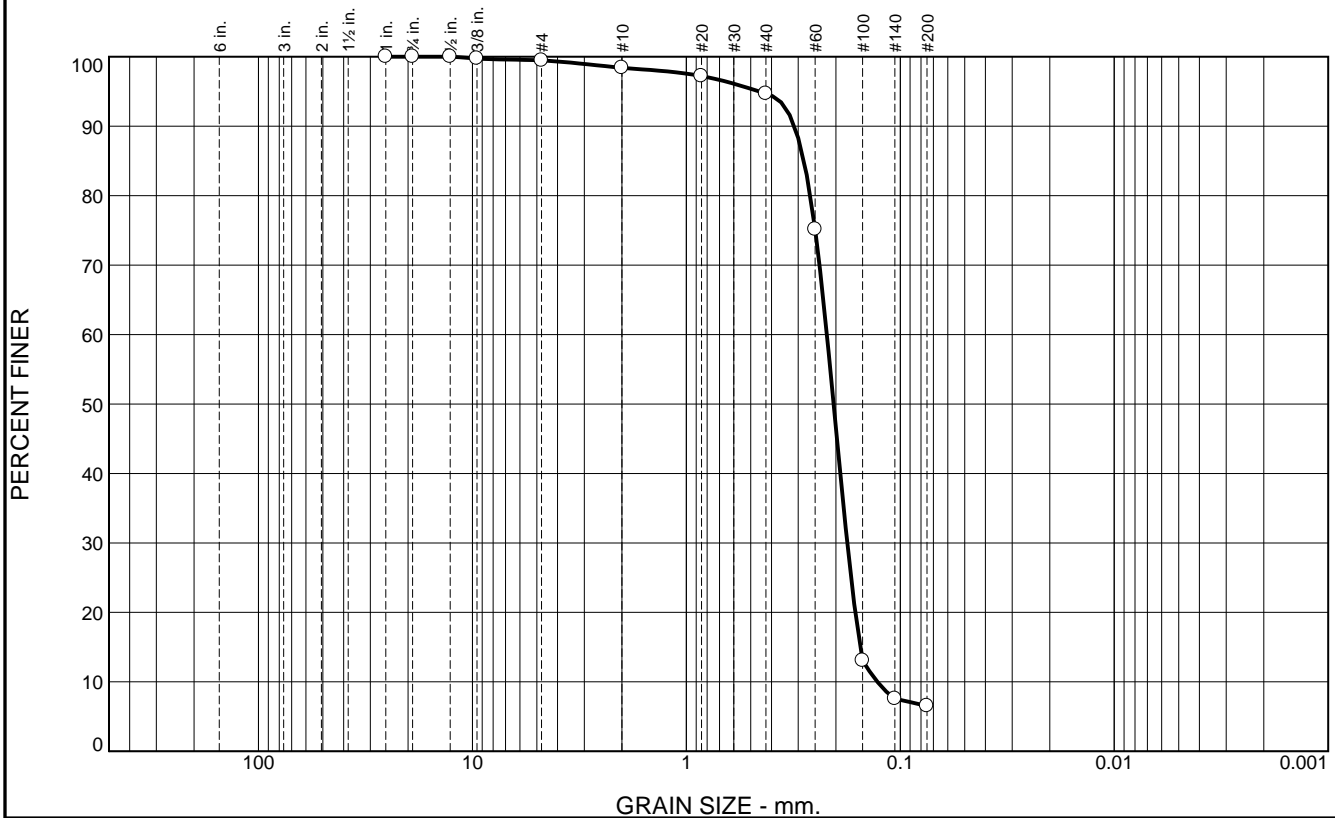
Mobile, Alabama

Client: CDM/Thompson Engineering JV
Project: MsCIP Barrier Island Restoration GT

Project No: 1221110095

Figure

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	0.5	1.1	3.7	88.2	6.5	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
1	100.0		
.75	100.0		
.5	100.0		
.375	99.7		
#4	99.5		
#10	98.4		
#20	97.2		
#40	94.7		
#60	75.2		
#100	13.1		
#140	7.6		
#200	6.5		

* (no specification provided)

<u>Material Description</u>		
Fine grained, SLIGHTLY SILTY SAND		
<u>Atterberg Limits</u>		
PL=	LL=	PI=
<u>Coefficients</u>		
D ₉₀ = 0.3128	D ₈₅ = 0.2824	D ₆₀ = 0.2203
D ₅₀ = 0.2049	D ₃₀ = 0.1771	D ₁₅ = 0.1539
D ₁₀ = 0.1279	C _u = 1.72	C _c = 1.11
<u>Classification</u>		
USCS= SP-SM	AASHTO=	
<u>Remarks</u>		

Location: BI-PBS-32-12 B
Sample Number: 6471 (8)

Depth: 9.0'

Date: 12/03/12

Thompson Engineering

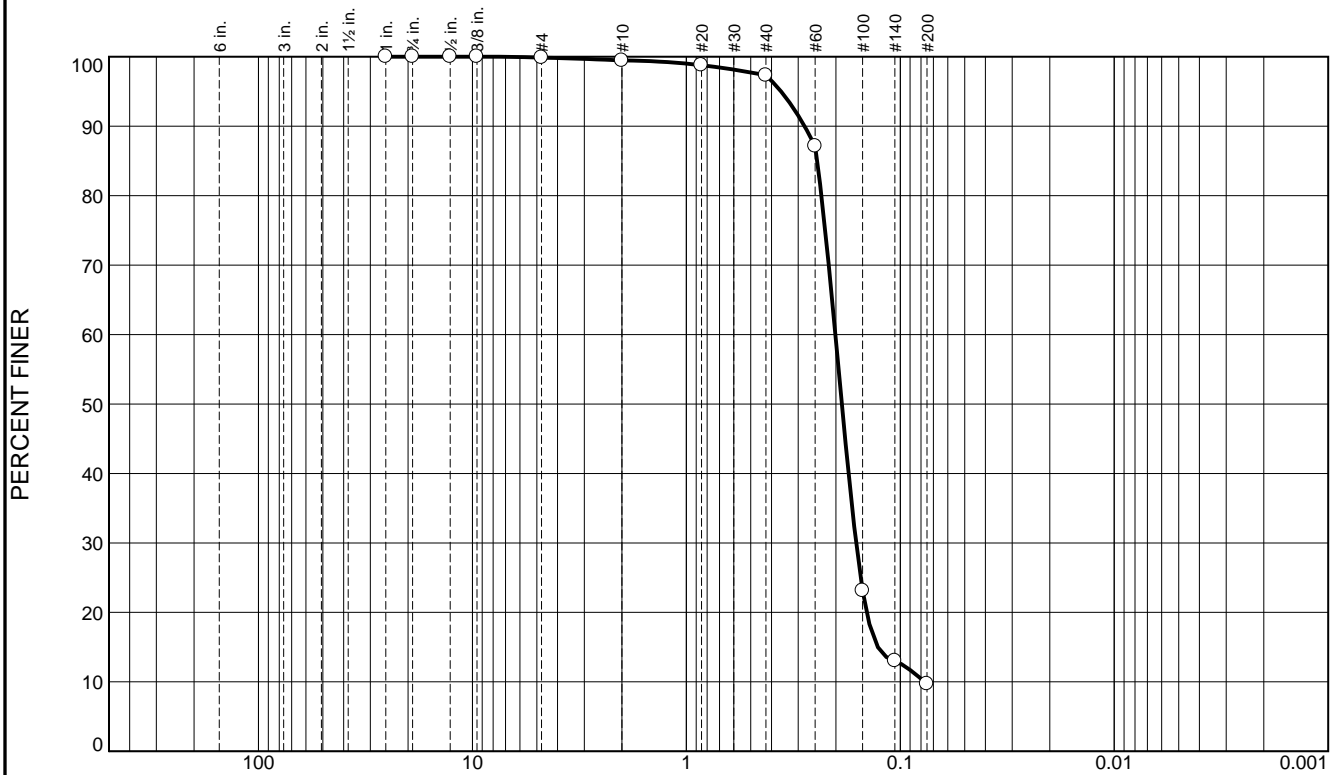
Mobile, Alabama

Client: CDM/Thompson Engineering JV
Project: MsCIP Barrier Island Restoration GT

Project No: 1221110095

Figure

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	0.1	0.4	2.2	87.6	9.7	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
1	100.0		
.75	100.0		
.5	100.0		
.375	100.0		
#4	99.9		
#10	99.5		
#20	98.8		
#40	97.3		
#60	87.1		
#100	23.1		
#140	13.0		
#200	9.7		

* (no specification provided)

<u>Material Description</u>		
Fine grained, SLIGHTLY SILTY SAND		
<u>Atterberg Limits</u>		
PL=	LL=	PI=
<u>Coefficients</u>		
D ₉₀ = 0.2805	D ₈₅ = 0.2445	D ₆₀ = 0.2011
D ₅₀ = 0.1877	D ₃₀ = 0.1610	D ₁₅ = 0.1274
D ₁₀ = 0.0770	C _u = 2.61	C _c = 1.67
<u>Classification</u>		
USCS= SP-SM	AASHTO=	
<u>Remarks</u>		

Location: BI-PBS-32-12 C
Sample Number: 6471 (9)

Depth: 12.5'

Date: 12/03/12

Thompson Engineering

Mobile, Alabama

Client: CDM/Thompson Engineering JV
Project: MsCIP Barrier Island Restoration GT

Project No: 1221110095

Figure

Boring Designation BI-PBS-033-12

DRILLING LOG		DIVISION South Atlantic		INSTALLATION Mobile District		SHEET 1 OF 1 SHEETS	
1. PROJECT MsCIP Barrier Island Restoration Petit Bois Pass-OCS East				9. SIZE AND TYPE OF BIT N/A			
2. BORING DESIGNATION BI-PBS-033-12		LOCATION COORDINATES E = 1,134,464 N = 222,938		10. COORDINATE SYSTEM/DATUM State Plane, MSE (U.S. Ft.)		HORIZONTAL NAD83 VERTICAL NAVD88	
3. DRILLING AGENCY Corps of Engineers - CESAM		CONTRACTOR FILE NO.		11. MANUFACTURER'S DESIGNATION OF DRILL Vibracore		<input type="checkbox"/> AUTO HAMMER <input type="checkbox"/> MANUAL HAMMER	
4. NAME OF DRILLER American Vibracore Systems, Inc.				12. TOTAL SAMPLES		DISTURBED UNDISTURBED (UD) 0	
5. DIRECTION OF BORING <input checked="" type="checkbox"/> VERTICAL <input type="checkbox"/> INCLINED		DEG. FROM VERTICAL		13. TOTAL NUMBER CORE BOXES			
		BEARING		14. WATER DEPTH 64.1 Ft.			
6. THICKNESS OF OVERBURDEN N/A				15. DATE BORING 12-07-12		STARTED COMPLETED 12-07-12	
7. DEPTH DRILLED INTO ROCK N/A				16. ELEVATION TOP OF BORING -63.4 Ft.			
8. TOTAL DEPTH OF BORING 17.0 Ft.				17. TOTAL RECOVERY FOR BORING 100%			
				18. SIGNATURE AND TITLE OF INSPECTOR Mike FitzHarris, Geologist			

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	SAMPLE	LABORATORY RESULTS
-63.4	0.0				
-65.5	2.1		CLAY, fat, mostly clay, trace fine-grained sand-sized quartz, medium to high plasticity, orange, greenish gray, and gray mottle (CH)		
-67.8	4.4		SAND, clayey, mostly fine-grained sand-sized quartz, some clay, clay content decreases with depth, orange, greenish gray, and gray mottle (SC)		
-72.9	9.5		SAND, silty, mostly fine-grained sand-sized quartz, some silt, some shell fragments, little clay nodules, organic content between 4.4' - 4.8 ft., gray (SM)	NS	
-73.6	10.2		CLAY, fat, mostly clay, few shells, medium to high plasticity, gray (CH)		
-75.4	12.0		SAND, clayey, mostly fine-grained sand-sized quartz, some clay, few shell fragments, gray (SC)		
-76.4	13.0		SAND, silty, mostly fine-grained sand-sized quartz, some silt, trace shell fragments, gray (SM)		
-80.4	17.0		SAND, poorly-graded, mostly fine-grained sand-sized quartz, trace shell fragments, gray (SP)		
			NOTES: 1. Soils are field visually classified in accordance with the Unified Soils Classification System. 2. NS = Sample not submitted for laboratory analysis from this interval. 3. Seafloor elevation determined from 2013 USGS geophysical survey.		

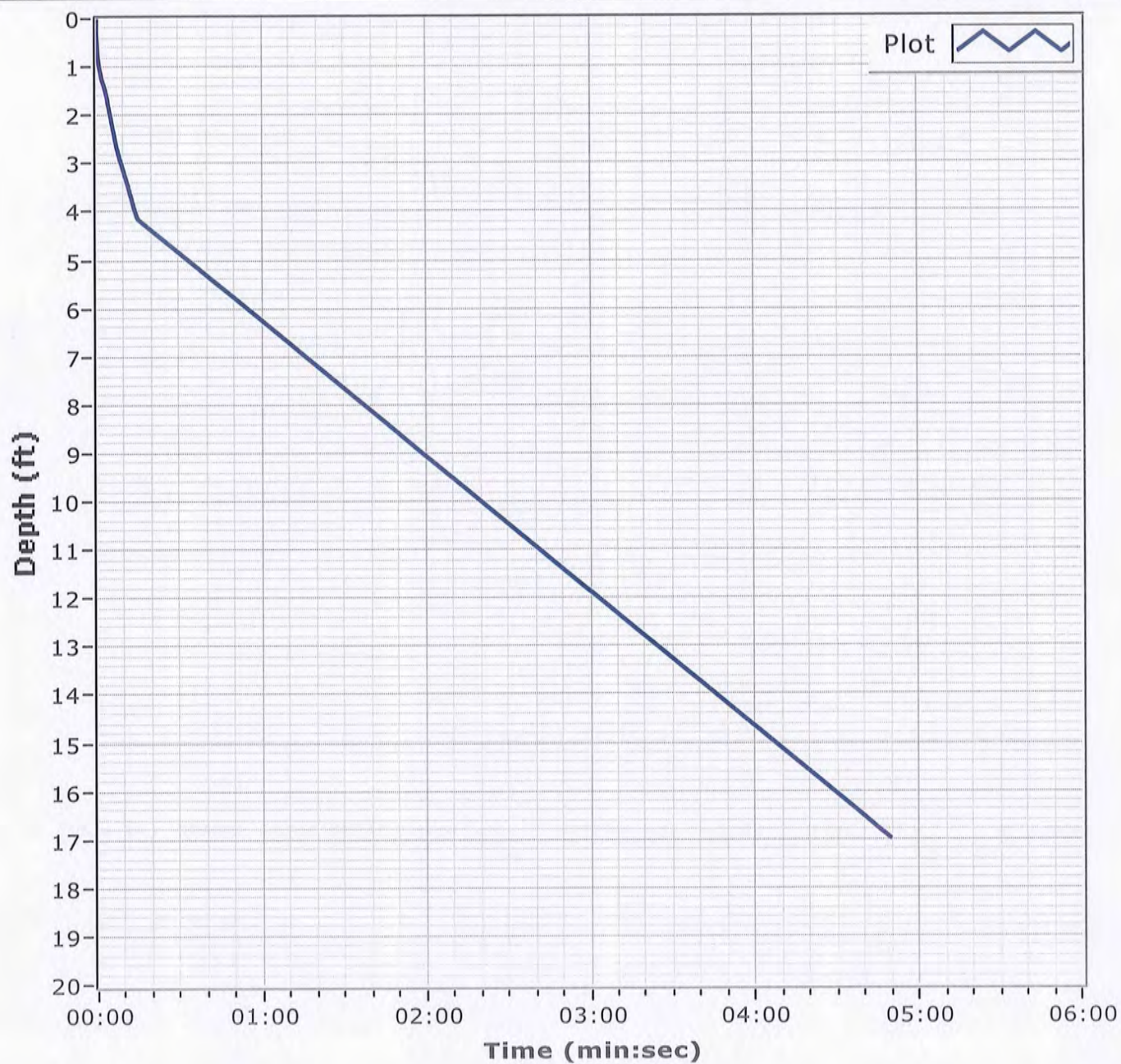
Project

Mississippi Barrier Island
Restoration Project

AVS
AMERICAN VIBRACORE
S E R V I C E S

Core Identifier BI-PBS-33-12**Date** 12/07/2012**Water Depth** 64.1'**Coordinate System**

Latitude / Longitude

Start Time 09:25:30**End Time** 09:30:20**Penetration** 17.0'**Latitude** 30 06.731**Total Time** 00:04:50**Recovery** 17.0'**Longitude** 088 21.495**Comments**

Boring Designation BI-PBS-034-12

DRILLING LOG		DIVISION South Atlantic		INSTALLATION Mobile District		SHEET 1 OF 1 SHEETS	
1. PROJECT MsCIP Barrier Island Restoration Petit Bois Pass-OCS East				9. SIZE AND TYPE OF BIT N/A			
2. BORING DESIGNATION BI-PBS-034-12		LOCATION COORDINATES E = 1,131,178 N = 224,666		10. COORDINATE SYSTEM/DATUM State Plane, MSE (U.S. Ft.)		HORIZONTAL NAD83 VERTICAL NAVD88	
3. DRILLING AGENCY Corps of Engineers - CESAM		CONTRACTOR FILE NO.		11. MANUFACTURER'S DESIGNATION OF DRILL Vibrocure		<input type="checkbox"/> AUTO HAMMER <input type="checkbox"/> MANUAL HAMMER	
4. NAME OF DRILLER American Vibrocure Systems, Inc.				12. TOTAL SAMPLES		DISTURBED UNDISTURBED (UD) 0	
5. DIRECTION OF BORING <input checked="" type="checkbox"/> VERTICAL <input type="checkbox"/> INCLINED		DEG. FROM VERTICAL		13. TOTAL NUMBER CORE BOXES			
		BEARING		14. WATER DEPTH 51.4 Ft.			
6. THICKNESS OF OVERBURDEN N/A				15. DATE BORING 12-09-12		STARTED COMPLETED 12-09-12	
7. DEPTH DRILLED INTO ROCK N/A				16. ELEVATION TOP OF BORING -51.7 Ft.			
8. TOTAL DEPTH OF BORING 16.4 Ft.				17. TOTAL RECOVERY FOR BORING 100%			
				18. SIGNATURE AND TITLE OF INSPECTOR Mike FitzHarris, Geologist			

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	SAMPLE	LABORATORY RESULTS
-51.7	0.0				
			SAND, poorly-graded, mostly fine to medium-grained sand-sized quartz, few shell fragments, trace fines, occasional shelly layers, lt. gray (SP)	A	Classification: SP Color: 5Y 6/2-light olive gray D50: 0.2693 mm % Fines: 1.5
-56.7	5.0				
			SAND, poorly-graded, mostly fine-grained sand-sized quartz, trace fines, trace shell fragments, lt. gray (SP)	B	Classification: SP Color: 5Y 6/2-light olive gray D50: 0.2581 mm % Fines: 2.1
-58.6	6.9				
			SAND, poorly-graded with silt, mostly fine-grained sand-sized quartz, few silt, trace shell fragments, shelly at 6.9 to 7.3 ft., gray (SP-SM)	C	Classification: SP Color: 5Y 6/2-light olive gray D50: 0.2229 mm % Fines: 4.3
-63.0	11.3				
			CLAY, fat, mostly clay, some fine-grained sand-sized quartz, medium to high plasticity, very stiff, gray, greenish gray, orangy brown mottle (CH)	NS	
-66.7	15.0				
			SAND, clayey, mostly fine-grained sand-sized quartz, some clay, little shell fragments, gray (SC)		
-68.1	16.4				
			NOTES: 1. Soils are field visually classified in accordance with the Unified Soils Classification System. 2. NS = Sample not submitted for laboratory analysis from this interval. 3. Seafloor elevation determined from 12/17/2014 USACE survey.		

Project

Mississippi Barrier Island
Restoration Project

AVS
AMERICAN VIBRACORE
S E R V I C E S

Core Identifier BI-PBS-34-12

Date 12/09/2012

Water Depth 51.4'

Coordinate System

Latitude / Longitude

Start Time 10:19:08

End Time 10:21:26

Penetration 20.0'

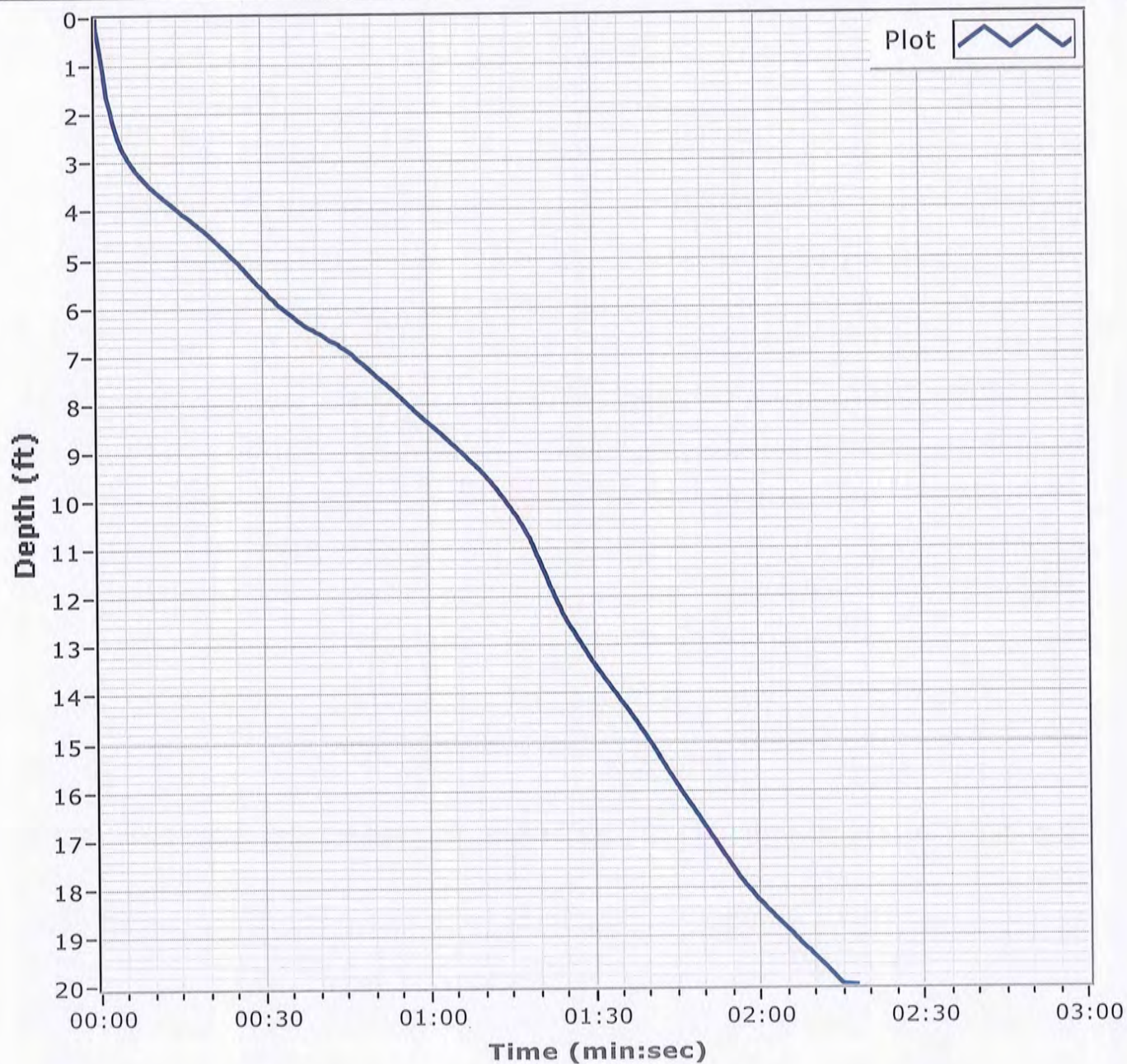
Latitude 30 07.018

Total Time 00:02:17

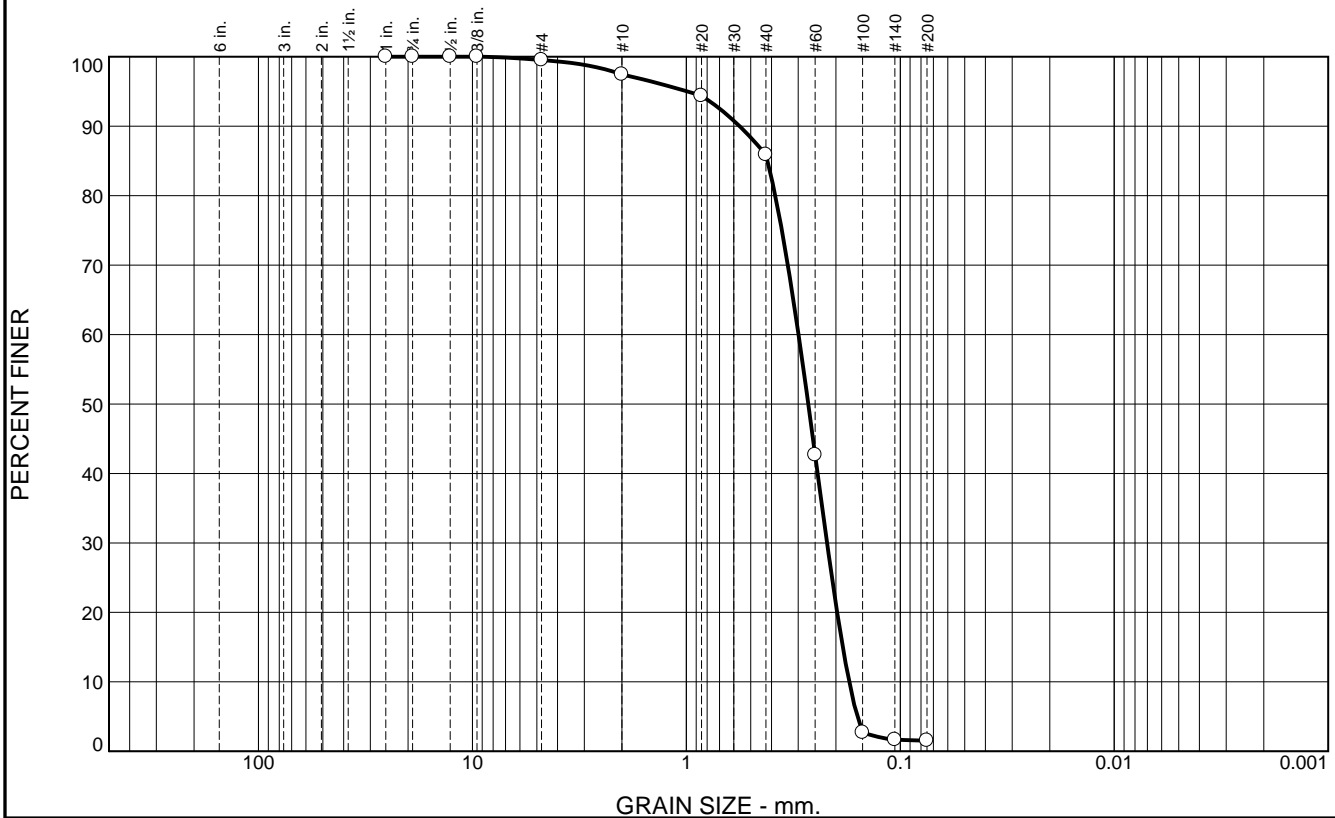
Recovery 16.4'

Longitude 088 22.117

Comments



Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	0.5	2.1	11.5	84.4	1.5	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
1	100.0		
.75	100.0		
.5	100.0		
.375	100.0		
#4	99.5		
#10	97.4		
#20	94.4		
#40	85.9		
#60	42.7		
#100	2.7		
#140	1.7		
#200	1.5		

* (no specification provided)

Material Description		
Fine to medium grained, SAND		
<div> <div> Atterberg Limits </div> <div> PL= </div> <div> LL= </div> <div> PI= </div> </div>		
<div> <div> Coefficients </div> <div> D₉₀= 0.5641 </div> <div> D₅₀= 0.2693 </div> <div> D₁₀= 0.1735 </div> <div> D₈₅= 0.4177 </div> <div> D₃₀= 0.2199 </div> <div> C_u= 1.72 </div> <div> D₆₀= 0.2992 </div> <div> D₁₅= 0.1858 </div> <div> C_c= 0.93 </div> </div>		
<div> <div> Classification </div> <div> USCS= SP </div> <div> AASHTO= </div> </div>		
<div> <div> Remarks </div> </div>		

Location: BI-PBS-34-12 A
Sample Number: 6482 (41)

Depth: 0.0'

Date: 12/12/12

Thompson Engineering

Mobile, Alabama

Client: CDM/Thompson Engineering JV
Project: MsCIP Barrier Island Restoration GT

Project No: 1221110095

Figure

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	0.4	1.3	6.8	89.4	2.1	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
1	100.0		
.75	100.0		
.5	100.0		
.375	100.0		
#4	99.6		
#10	98.3		
#20	96.1		
#40	91.5		
#60	46.7		
#100	4.2		
#140	2.3		
#200	2.1		

* (no specification provided)

Material Description		
Fine grained, SAND		
<div> <div> Atterberg Limits </div> <div> PL= </div> <div> LL= </div> <div> PI= </div> </div>		
<div> <div> Coefficients </div> <div> D₉₀= 0.4127 </div> <div> D₅₀= 0.2581 </div> <div> D₁₀= 0.1681 </div> <div> D₈₅= 0.3802 </div> <div> D₃₀= 0.2128 </div> <div> C_u= 1.69 </div> <div> D₆₀= 0.2846 </div> <div> D₁₅= 0.1802 </div> <div> C_c= 0.95 </div> </div>		
<div> <div> Classification </div> <div> USCS= SP </div> <div> AASHTO= </div> </div>		
<div> <div> Remarks </div> </div>		

Location: BI-PBS-34-12 B
Sample Number: 6482 (42)

Depth: 5.0'

Date: 12/12/12

Thompson Engineering

Mobile, Alabama

Client: CDM/Thompson Engineering JV
Project: MsCIP Barrier Island Restoration GT

Project No: 1221110095

Figure

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	2.1	2.8	11.9	78.9	4.3	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
1	100.0		
.75	100.0		
.5	99.3		
.375	99.0		
#4	97.9		
#10	95.1		
#20	91.0		
#40	83.2		
#60	62.4		
#100	7.5		
#140	4.7		
#200	4.3		

* (no specification provided)

Material Description

Fine to medium grained, SAND, with trace shell

Atterberg Limits

PL= LL= PI=

Coefficients

D₉₀= 0.7613 D₈₅= 0.4931 D₆₀= 0.2440
D₅₀= 0.2229 D₃₀= 0.1897 D₁₅= 0.1655
D₁₀= 0.1559 C_u= 1.56 C_c= 0.95

Classification

USCS= SP AASHTO=

Remarks

Location: BI-PBS-34-12 C
Sample Number: 6482 (43)

Depth: 6.9'

Date: 12/12/12

Thompson Engineering

Mobile, Alabama

Client: CDM/Thompson Engineering JV
Project: MsCIP Barrier Island Restoration GT

Project No: 1221110095

Figure

Boring Designation BI-PBS-035-12

DRILLING LOG		DIVISION South Atlantic	INSTALLATION Mobile District	SHEET 1 OF 2 SHEETS
1. PROJECT MsCIP Barrier Island Restoration Petit Bois Pass-OCS East			9. SIZE AND TYPE OF BIT N/A	
2. BORING DESIGNATION BI-PBS-035-12		10. COORDINATE SYSTEM/DATUM State Plane, MSE (U.S. Ft.)		HORIZONTAL NAD83
3. DRILLING AGENCY Corps of Engineers - CESAM		11. MANUFACTURER'S DESIGNATION OF DRILL Vibrocure		VERTICAL NAVD88
4. NAME OF DRILLER American Vibrocure Systems, Inc.		12. TOTAL SAMPLES		DISTURBED 0
5. DIRECTION OF BORING <input checked="" type="checkbox"/> VERTICAL <input type="checkbox"/> INCLINED		13. TOTAL NUMBER CORE BOXES		UNDISTURBED (UD) 0
6. THICKNESS OF OVERBURDEN N/A		14. WATER DEPTH 62.6 Ft.		
7. DEPTH DRILLED INTO ROCK N/A		15. DATE BORING 12-09-12		STARTED 12-09-12
8. TOTAL DEPTH OF BORING 20.0 Ft.		16. ELEVATION TOP OF BORING -61.4 Ft.		COMPLETED 12-09-12
		17. TOTAL RECOVERY FOR BORING 100%		
		18. SIGNATURE AND TITLE OF INSPECTOR Mike FitzHarris, Geologist		

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	SAMPLE	LABORATORY RESULTS
-61.4	0.0				
-65.8	4.4		CLAY, fat, mostly clay, trace shell fragments, medium to high plasticity, pockets of trace fine-grained, sand-sized quartz, dark gray (CH)		
-68.0	6.6		CLAY, fat, mostly clay, medium to high plasticity, pockets of trace fine-grained, sand-sized quartz, greenish gray, orangy brown, gray mottle (CH)		
-69.8	8.4		SAND, silty, mostly fine-grained sand-sized quartz, some silt, trace wood debris, brownish gray (SM)		
-74.3	12.9		CLAY, lean, mostly clay, some fine-grained sand-sized quartz, some shell fragments, trace wood debris, low to medium plasticity, gray (CL)	NS	
-81.1	19.7		SAND, silty, mostly fine-grained sand-sized quartz, some silt, trace clay, trace shell fragments, gray (SM)		
-81.4	20.0		CLAY, lean, mostly clay, some fine-grained sand-sized quartz, low to medium plasticity, gray (CL)		
			NOTES: 1. Soils are field visually classified in accordance with the Unified Soils Classification System. 2. NS = Sample not submitted for laboratory		

DRILLING LOG (Cont. Sheet)			INSTALLATION Mobile District		SHEET 2 OF 2 SHEETS
PROJECT MsCIP Barrier Island Restoration			COORDINATE SYSTEM/DATUM State Plane, MSE (U.S. Ft.)	HORIZONTAL NAD83	VERTICAL NAVD88
LOCATION COORDINATES X = 1,129,112 Y = 223,570			ELEVATION TOP OF BORING -61.4 Ft.		
ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	SAMPLE	LABORATORY RESULTS
			<p>analysis from this interval.</p> <p>3. Seafloor elevation calculated using sampling vessel's fathometer water depth reading and applying NOAA tidal gauge data conversion factor.</p>		

Project

Mississippi Barrier Island
Restoration Project

AVS
AMERICAN VIBRACORE
S E R V I C E S

Core Identifier BI-PBS-35-12

Date 12/09/2012

Water Depth 62.6'

Coordinate System

Latitude / Longitude

Start Time 15:09:12

End Time 15:10:01

Penetration 20.0'

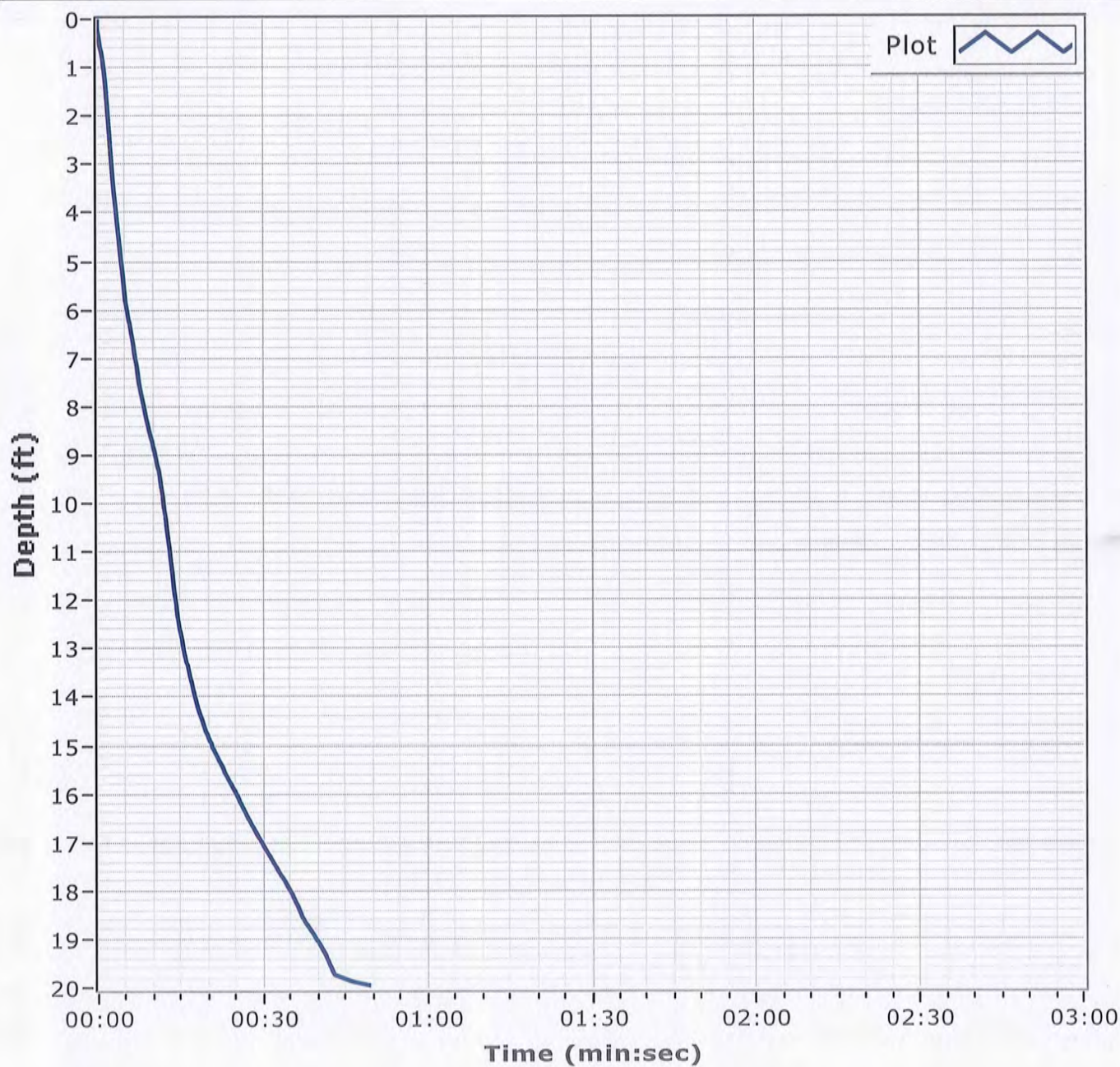
Latitude 30 06.839

Total Time 00:00:49

Recovery 20.0'

Longitude 088 22.510

Comments



Boring Designation BI-PBS-036-12

DRILLING LOG		DIVISION South Atlantic		INSTALLATION Mobile District		SHEET 1 OF 1 SHEETS	
1. PROJECT MsCIP Barrier Island Restoration Petit Bois Pass-OCS East				9. SIZE AND TYPE OF BIT N/A			
2. BORING DESIGNATION BI-PBS-036-12		LOCATION COORDINATES E = 1,134,315 N = 226,116		10. COORDINATE SYSTEM/DATUM State Plane, MSE (U.S. Ft.)		HORIZONTAL NAD83	
3. DRILLING AGENCY Corps of Engineers - CESAM		CONTRACTOR FILE NO.		11. MANUFACTURER'S DESIGNATION OF DRILL Vibracore		<input type="checkbox"/> AUTO HAMMER <input type="checkbox"/> MANUAL HAMMER	
4. NAME OF DRILLER American Vibracore Systems, Inc.				12. TOTAL SAMPLES		DISTURBED 0	
5. DIRECTION OF BORING <input checked="" type="checkbox"/> VERTICAL <input type="checkbox"/> INCLINED				13. TOTAL NUMBER CORE BOXES		14. WATER DEPTH 63.9 Ft.	
6. THICKNESS OF OVERBURDEN N/A				15. DATE BORING		STARTED 12-09-12	
7. DEPTH DRILLED INTO ROCK N/A				16. ELEVATION TOP OF BORING -62.8 Ft.		COMPLETED 12-09-12	
8. TOTAL DEPTH OF BORING 13.7 Ft.				17. TOTAL RECOVERY FOR BORING 100%		18. SIGNATURE AND TITLE OF INSPECTOR Mike FitzHarris, Geologist	
ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	SAMPLE	LABORATORY RESULTS		
-62.8	0.0						
-65.8	3.0		SAND, poorly-graded, mostly fine to medium-grained sand-sized quartz, trace fines, shell hash at 2.6 ft., becomes siltier with depth, lt. gray (SP)	A	Classification: SP Color: 5Y 6/2-light olive gray D50: 0.315 mm % Fines: 2.9		
-66.5	3.7		SAND, poorly-graded with silt, mostly fine-grained sand-sized quartz, few silt, trace clay, dark brown (SP-SM)	NS			
-71.5	8.7		SAND, silty, mostly fine-grained sand-sized quartz, some silt, trace clay, trace shell fragments, gray (SM)				
-73.5	10.7		SAND, poorly-graded with silt, mostly fine-grained sand-sized quartz, few silt, trace shell fragments, gray (SP-SM)				
-76.5	13.7		SAND, poorly-graded, mostly fine-grained sand-sized quartz, trace fines, trace shell fragments, lt. gray (SP)				
NOTES: 1. Soils are field visually classified in accordance with the Unified Soils Classification System. 2. NS = Sample not submitted for laboratory analysis from this interval. 3. Seafloor elevation calculated using sampling vessel's fathometer water depth reading and applying NOAA tidal gauge data conversion factor.							

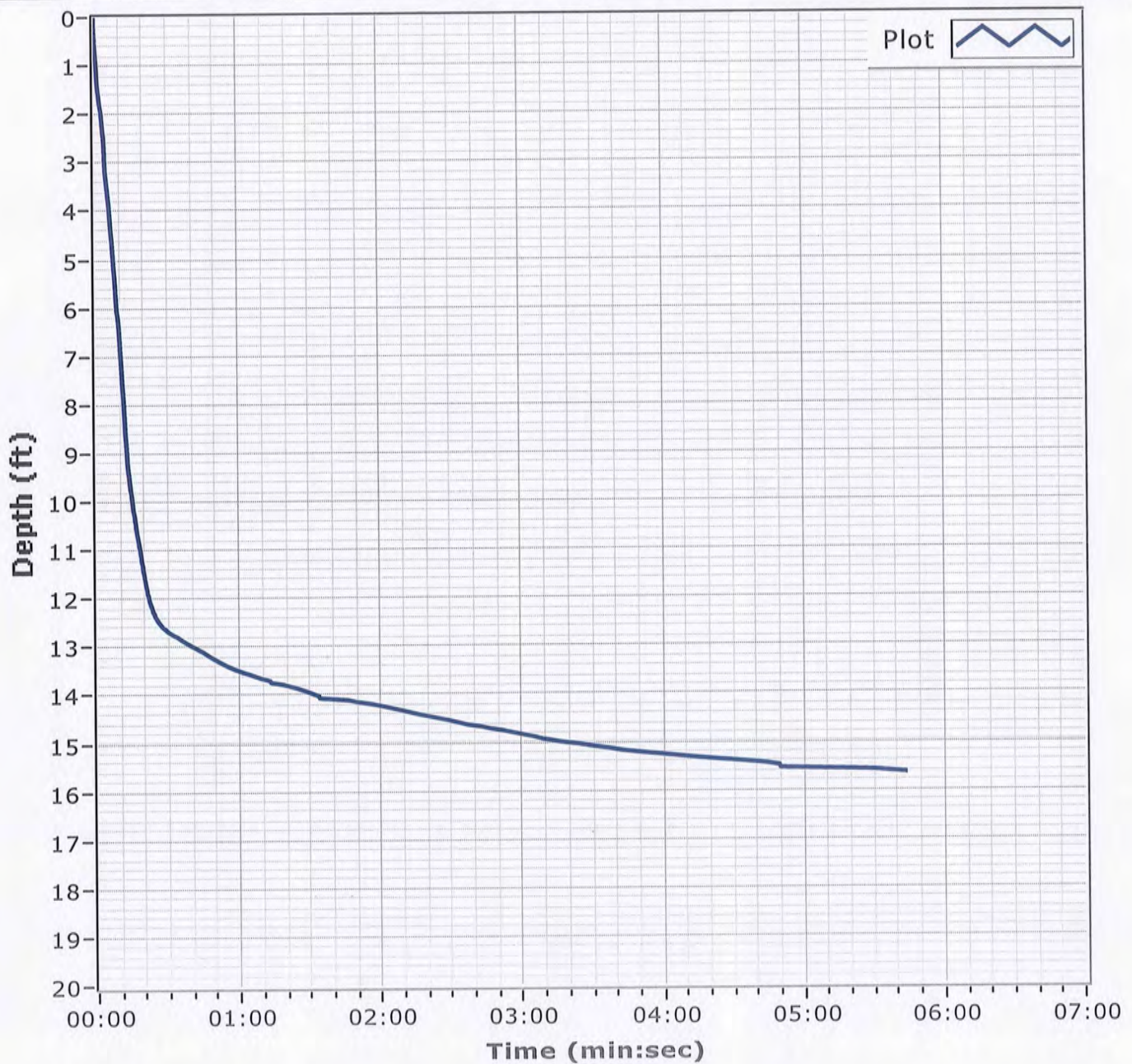
Project

Mississippi Barrier Island
Restoration Project

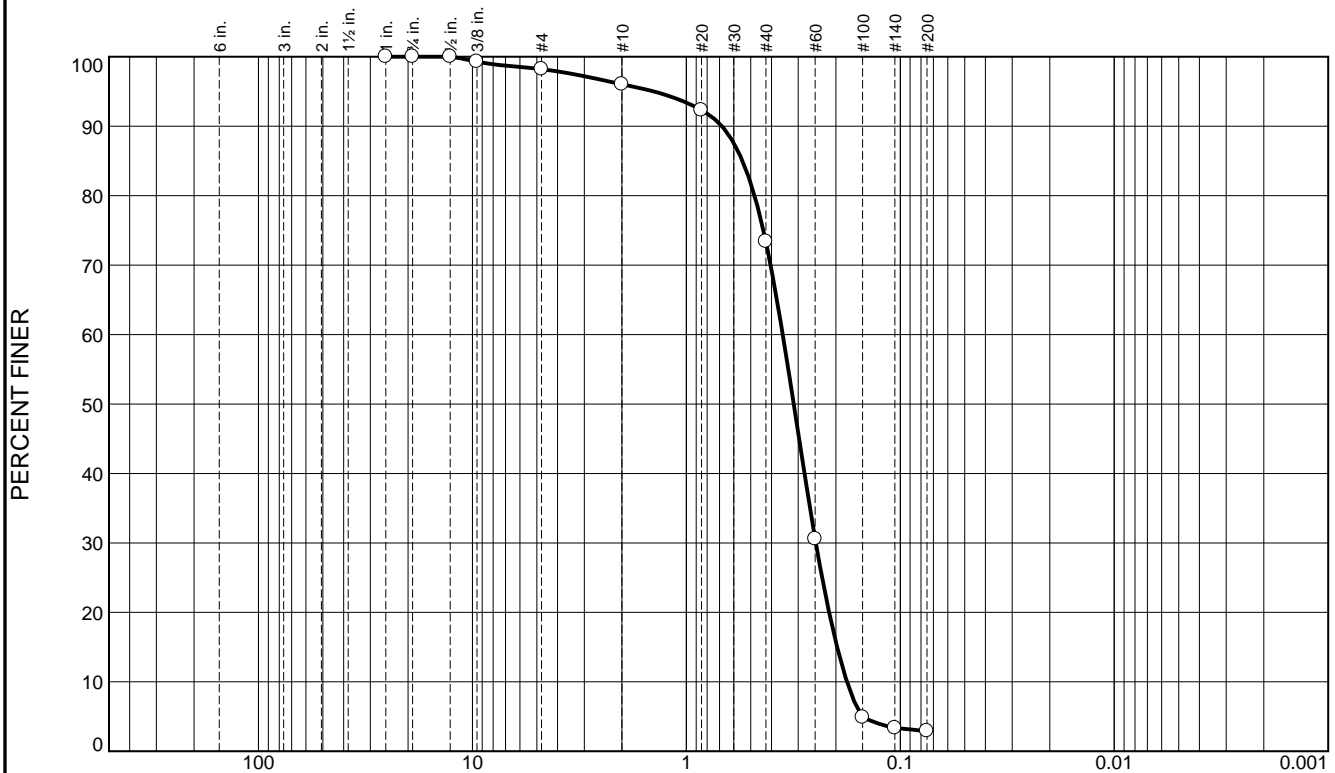
AVS
AMERICAN VIBRACORE
S E R V I C E S

Core Identifier BI-PBS-36-12**Date** 12/09/2012**Water Depth** 63.9'**Coordinate System**

Latitude / Longitude

Start Time 14:36:25**End Time** 14:42:09**Penetration** 15.7'**Latitude** 30 07.255**Total Time** 00:05:44**Recovery** 13.7'**Longitude** 088 21.521**Comments**

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	1.8	2.2	22.6	70.5	2.9	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
1	100.0		
.75	100.0		
.5	100.0		
.375	99.3		
#4	98.2		
#10	96.0		
#20	92.3		
#40	73.4		
#60	30.6		
#100	4.9		
#140	3.4		
#200	2.9		

* (no specification provided)

Material Description

Fine to medium grained, SAND, with trace SHELL

Atterberg Limits

PL= LL= PI=

Coefficients

D₉₀= 0.6821 D₈₅= 0.5464 D₆₀= 0.3543
D₅₀= 0.3150 D₃₀= 0.2482 D₁₅= 0.1974
D₁₀= 0.1776 C_u= 1.99 C_c= 0.98

Classification

USCS= SP AASHTO=

Remarks

Location: BI-PBS-36-12 A
Sample Number: 6482 (44)

Depth: 0.0'

Date: 12/12/12

Thompson Engineering

Mobile, Alabama

Client: CDM/Thompson Engineering JV
Project: MsCIP Barrier Island Restoration GT

Project No: 1221110095

Figure

Boring Designation BI-PBS-037-12

DRILLING LOG		DIVISION South Atlantic		INSTALLATION Mobile District		SHEET 1 OF 2 SHEETS	
1. PROJECT MsCIP Barrier Island Restoration Petit Bois Pass-OCS East				9. SIZE AND TYPE OF BIT N/A			
2. BORING DESIGNATION BI-PBS-037-12		LOCATION COORDINATES E = 1,132,652 N = 225,247		10. COORDINATE SYSTEM/DATUM State Plane, MSE (U.S. Ft.)		HORIZONTAL NAD83	
3. DRILLING AGENCY Corps of Engineers - CESAM		CONTRACTOR FILE NO.		11. MANUFACTURER'S DESIGNATION OF DRILL Vibracore		<input type="checkbox"/> AUTO HAMMER <input type="checkbox"/> MANUAL HAMMER	
4. NAME OF DRILLER American Vibracore Systems, Inc.				12. TOTAL SAMPLES		DISTURBED 0	
5. DIRECTION OF BORING <input checked="" type="checkbox"/> VERTICAL <input type="checkbox"/> INCLINED				13. TOTAL NUMBER CORE BOXES		14. WATER DEPTH 61.7 Ft.	
6. THICKNESS OF OVERBURDEN N/A				15. DATE BORING		STARTED 12-09-12	
7. DEPTH DRILLED INTO ROCK N/A				16. ELEVATION TOP OF BORING -62.3 Ft.		COMPLETED 12-09-12	
8. TOTAL DEPTH OF BORING 20.0 Ft.				17. TOTAL RECOVERY FOR BORING 100%		18. SIGNATURE AND TITLE OF INSPECTOR Mike FitzHarris, Geologist	
ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	SAMPLE	LABORATORY RESULTS		
-62.3	0.0						
-65.3	3.0		CLAY, fat, mostly clay, trace fine-grained sand-sized quartz, medium to high plasticity, gray, brown, greenish gray mottle (CH)	NS			
-67.5	5.2		CLAY, fat, mostly clay, trace fine-grained sand-sized quartz, trace wood debris, medium to high plasticity, dark gray (CH)				
-71.8	9.5		SAND, silty, mostly fine-grained sand-sized quartz, some silt, some shell fragments, gray (SM)				
-82.3	20.0		SAND, poorly-graded with silt, mostly fine-grained sand-sized quartz, few silt, trace shell fragments, silt content decreases with depth, gray (SP-SM)				
NOTES: 1. Soils are field visually classified in accordance with the Unified Soils Classification System. 2. NS = Sample not submitted for laboratory analysis from this interval. 3. Seafloor elevation determined from							

DRILLING LOG (Cont. Sheet)			INSTALLATION Mobile District		SHEET 2 OF 2 SHEETS
PROJECT MsCIP Barrier Island Restoration			COORDINATE SYSTEM/DATUM State Plane, MSE (U.S. Ft.)	HORIZONTAL NAD83	VERTICAL NAVD88
LOCATION COORDINATES X = 1,132,652 Y = 225,247			ELEVATION TOP OF BORING -62.3 Ft.		
ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	SAMPLE	LABORATORY RESULTS
			12/17/2014 USACE survey.		

Project

Mississippi Barrier Island
Restoration Project

AVS
AMERICAN VIBRACORE
S E R V I C E S

Core Identifier BI-PBS-37-12

Date 12/09/2012

Water Depth 61.7'

Coordinate System

Latitude / Longitude

Start Time 09:46:28

End Time 09:50:07

Penetration 20.0'

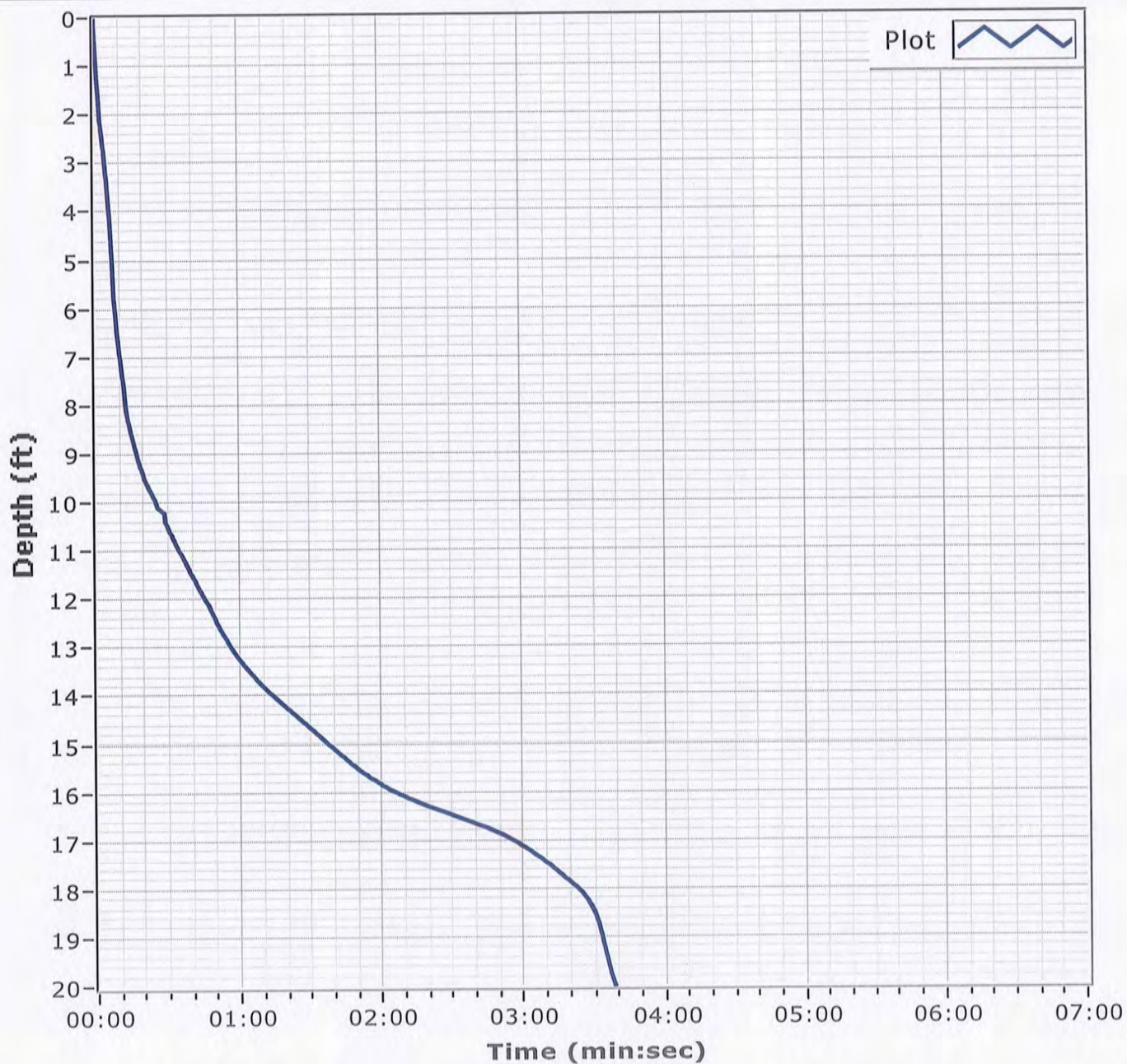
Latitude 30 07.113

Total Time 00:03:39

Recovery 20.0'

Longitude 088 21.837

Comments



Boring Designation BI-PBS-038-12

DRILLING LOG		DIVISION South Atlantic		INSTALLATION Mobile District		SHEET 1 OF 1 SHEETS	
1. PROJECT MsCIP Barrier Island Restoration Petit Bois Pass-OCS East				9. SIZE AND TYPE OF BIT N/A			
2. BORING DESIGNATION BI-PBS-038-12		LOCATION COORDINATES E = 1,130,193 N = 225,226		10. COORDINATE SYSTEM/DATUM State Plane, MSE (U.S. Ft.)		HORIZONTAL NAD83	
3. DRILLING AGENCY Corps of Engineers - CESAM		CONTRACTOR FILE NO.		11. MANUFACTURER'S DESIGNATION OF DRILL Vibrocure		<input type="checkbox"/> AUTO HAMMER <input type="checkbox"/> MANUAL HAMMER	
4. NAME OF DRILLER American Vibrocure Systems, Inc.				12. TOTAL SAMPLES		DISTURBED 0	
5. DIRECTION OF BORING <input checked="" type="checkbox"/> VERTICAL <input type="checkbox"/> INCLINED				13. TOTAL NUMBER CORE BOXES		14. WATER DEPTH 50.6 Ft.	
6. THICKNESS OF OVERBURDEN N/A				15. DATE BORING		STARTED 12-09-12	
7. DEPTH DRILLED INTO ROCK N/A				16. ELEVATION TOP OF BORING -50.1 Ft.		COMPLETED 12-09-12	
8. TOTAL DEPTH OF BORING 19.1 Ft.				17. TOTAL RECOVERY FOR BORING 100%		18. SIGNATURE AND TITLE OF INSPECTOR Mike FitzHarris, Geologist	
ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	SAMPLE	LABORATORY RESULTS		
-50.1	0.0						
			SAND, poorly-graded, mostly fine to medium-grained sand-sized quartz, trace fines, trace shell fragments, dense, lt. gray (SP)	A	Classification: SP Color: 5Y 7/2-light gray D50: 0.2949 mm % Fines: 1.2		
-55.1	5.0		SAND, poorly-graded, mostly fine-grained sand-sized quartz, trace fines, trace shell fragments, dense, lt. gray (SP)	B	Classification: SP Color: 5Y 6/2-light olive gray D50: 0.2214 mm % Fines: 3.7		
-59.2	9.1						
-60.1	10.0		SAND, silty, mostly fine-grained sand-sized quartz, some silt, few shell fragments, gray (SM)				
-63.2	13.1		CLAY, fat, mostly clay, trace fine-grained sand-sized quartz, medium to high plasticity, dark gray (CH)				
			SILT, inorganic-L, mostly silt, some clay, little fine-grained sand-sized quartz, few shell fragments, gray (ML)	NS			
-69.2	19.1						
			NOTES: 1. Soils are field visually classified in accordance with the Unified Soils Classification System. 2. NS = Sample not submitted for laboratory analysis from this interval. 3. Seafloor elevation determined from 12/17/2014 USACE survey.				

Project

Mississippi Barrier Island
Restoration Project

AVS
AMERICAN VIBRACORE
S E R V I C E S

Core Identifier BI-PBS-38-12

Date 12/09/2012

Water Depth 50.6'

Coordinate System

Latitude / Longitude

Start Time 10:55:00

End Time 10:59:46

Penetration 20.0'

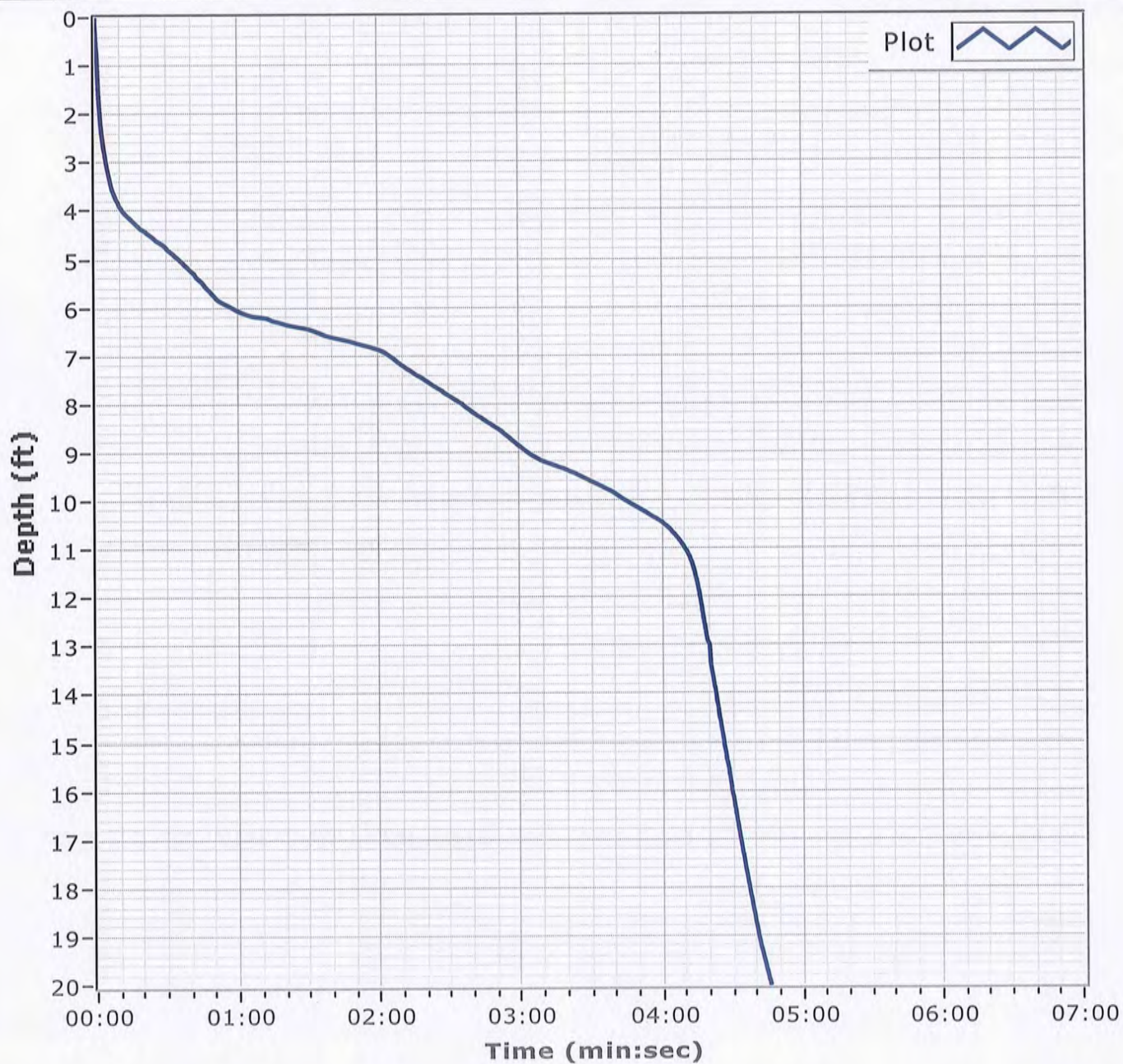
Latitude 30 07.111

Total Time 00:04:46

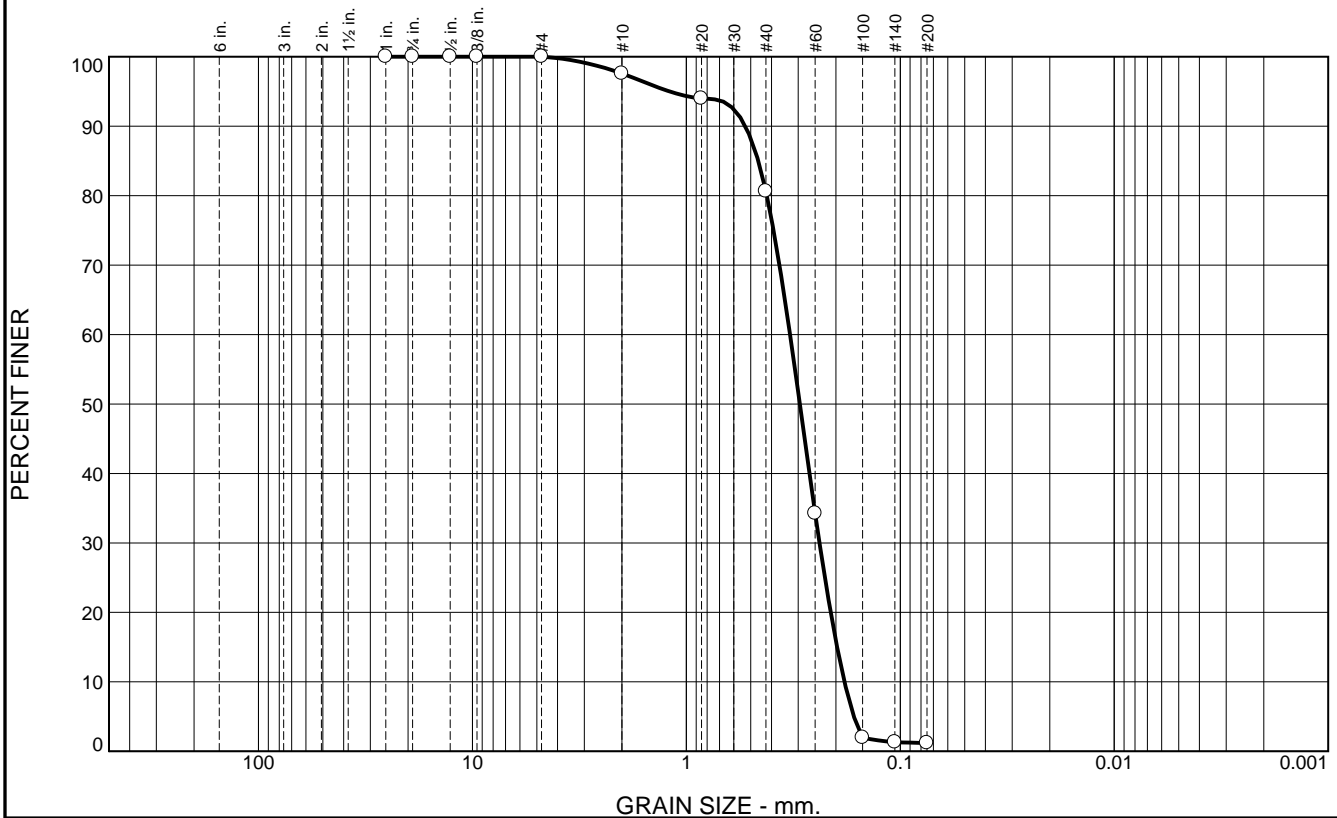
Recovery 19.1'

Longitude 088 22.304

Comments



Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	0.0	2.4	17.0	79.4	1.2	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
1	100.0		
.75	100.0		
.5	100.0		
.375	100.0		
#4	100.0		
#10	97.6		
#20	94.0		
#40	80.6		
#60	34.2		
#100	2.0		
#140	1.3		
#200	1.2		

* (no specification provided)

<u>Material Description</u>		
Fine to medium grained, SAND		
<u>Atterberg Limits</u>		
PL=	LL=	PI=
<u>Coefficients</u>		
D ₉₀ = 0.5300	D ₈₅ = 0.4613	D ₆₀ = 0.3277
D ₅₀ = 0.2949	D ₃₀ = 0.2385	D ₁₅ = 0.1974
D ₁₀ = 0.1824	C _u = 1.80	C _c = 0.95
<u>Classification</u>		
USCS= SP	AASHTO=	
<u>Remarks</u>		

Location: BI-PBS-38-12 A
Sample Number: 6482 (45)

Depth: 0.0'

Date: 12/12/12

Thompson Engineering

Mobile, Alabama

Client: CDM/Thompson Engineering JV
Project: MsCIP Barrier Island Restoration GT

Project No: 1221110095

Figure

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	0.8	1.7	8.4	85.4	3.7	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
1	100.0		
.75	100.0		
.5	100.0		
.375	100.0		
#4	99.2		
#10	97.5		
#20	94.8		
#40	89.1		
#60	64.3		
#100	6.3		
#140	4.1		
#200	3.7		

* (no specification provided)

Material Description
 Fine grained, SAND

Atterberg Limits
 PL= LL= PI=

Coefficients
 D₉₀= 0.4534 D₈₅= 0.3499 D₆₀= 0.2403
 D₅₀= 0.2214 D₃₀= 0.1901 D₁₅= 0.1671
 D₁₀= 0.1582 C_u= 1.52 C_c= 0.95

Classification
 USCS= SP AASHTO=

Remarks

Location: BI-PBS-38-12 B
 Sample Number: 6482 (46)

Depth: 5.0'

Date: 12/12/12

Thompson Engineering

Mobile, Alabama

Client: CDM/Thompson Engineering JV
 Project: MsCIP Barrier Island Restoration GT

Project No: 1221110095

Figure

Boring Designation BI-PBS-039-12

DRILLING LOG		DIVISION South Atlantic		INSTALLATION Mobile District		SHEET 1 OF 1 SHEETS	
1. PROJECT MsCIP Barrier Island Restoration Petit Bois Pass-OCS East				9. SIZE AND TYPE OF BIT N/A			
2. BORING DESIGNATION BI-PBS-039-12		LOCATION COORDINATES E = 1,129,313 N = 226,171		10. COORDINATE SYSTEM/DATUM State Plane, MSE (U.S. Ft.)		HORIZONTAL NAD83 VERTICAL NAVD88	
3. DRILLING AGENCY Corps of Engineers - CESAM		CONTRACTOR FILE NO.		11. MANUFACTURER'S DESIGNATION OF DRILL Vibracore		<input type="checkbox"/> AUTO HAMMER <input type="checkbox"/> MANUAL HAMMER	
4. NAME OF DRILLER American Vibracore Systems, Inc.				12. TOTAL SAMPLES		DISTURBED UNDISTURBED (UD) 0	
5. DIRECTION OF BORING <input checked="" type="checkbox"/> VERTICAL <input type="checkbox"/> INCLINED		DEG. FROM VERTICAL		13. TOTAL NUMBER CORE BOXES			
		BEARING		14. WATER DEPTH 49.2 Ft.			
6. THICKNESS OF OVERBURDEN N/A				15. DATE BORING 12-09-12		STARTED COMPLETED 12-09-12	
7. DEPTH DRILLED INTO ROCK N/A				16. ELEVATION TOP OF BORING -49.4 Ft.			
8. TOTAL DEPTH OF BORING 15.0 Ft.				17. TOTAL RECOVERY FOR BORING 100%			
				18. SIGNATURE AND TITLE OF INSPECTOR Mike FitzHarris, Geologist			

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	SAMPLE	LABORATORY RESULTS
-49.4	0.0				
			SAND, poorly-graded, mostly fine to medium-grained sand-sized quartz, little shell fragments, trace fines, lt. gray (SP)	A	Classification: SP Color: 5Y 6/2-light olive gray D50: 0.3064 mm % Fines: 1.1
-54.4	5.0		SAND, poorly-graded, mostly fine-grained sand-sized quartz, little shell fragments, trace fines, lt. gray (SP)	B	Classification: SP Color: 5Y 6/2-light olive gray D50: 0.2592 mm % Fines: 1.6
-57.5	8.1				
-58.5	9.1		SAND, poorly-graded with clay, mostly fine-grained sand-sized quartz, little shell fragments, few clay, gray (SP-SC)		
			CLAY, fat, mostly clay, trace fine-grained sand-sized quartz, trace pockets of fine-grained, sand-sized quartz, orangy brown, gray, greenish gray mottle (CH)	NS	
-62.1	12.7				
-63.1	13.7		SAND, clayey, mostly fine-grained sand-sized quartz, some clay, some shell fragments, gray (SC)		
-64.0	14.6				
-64.4	15.0		SAND, silty, mostly fine-grained sand-sized quartz, some silt, some shell fragments, gray (SM)		
			SAND, poorly-graded with silt, mostly fine-grained sand-sized quartz, few silt, trace shell fragments, gray (SP-SM)		
			NOTES: 1. Soils are field visually classified in accordance with the Unified Soils Classification System. 2. NS = Sample not submitted for laboratory analysis from this interval. 3. Seafloor elevation determined from 12/17/2014 USACE survey.		

Project

Mississippi Barrier Island
Restoration Project

AVS
AMERICAN VIBRACORE
S E R V I C E S

Core Identifier BI-PBS-39-12

Date 12/09/2012

Water Depth 49.2'

Coordinate System

Latitude / Longitude

Start Time 11:32:37

End Time 11:36:36

Penetration 20.0'

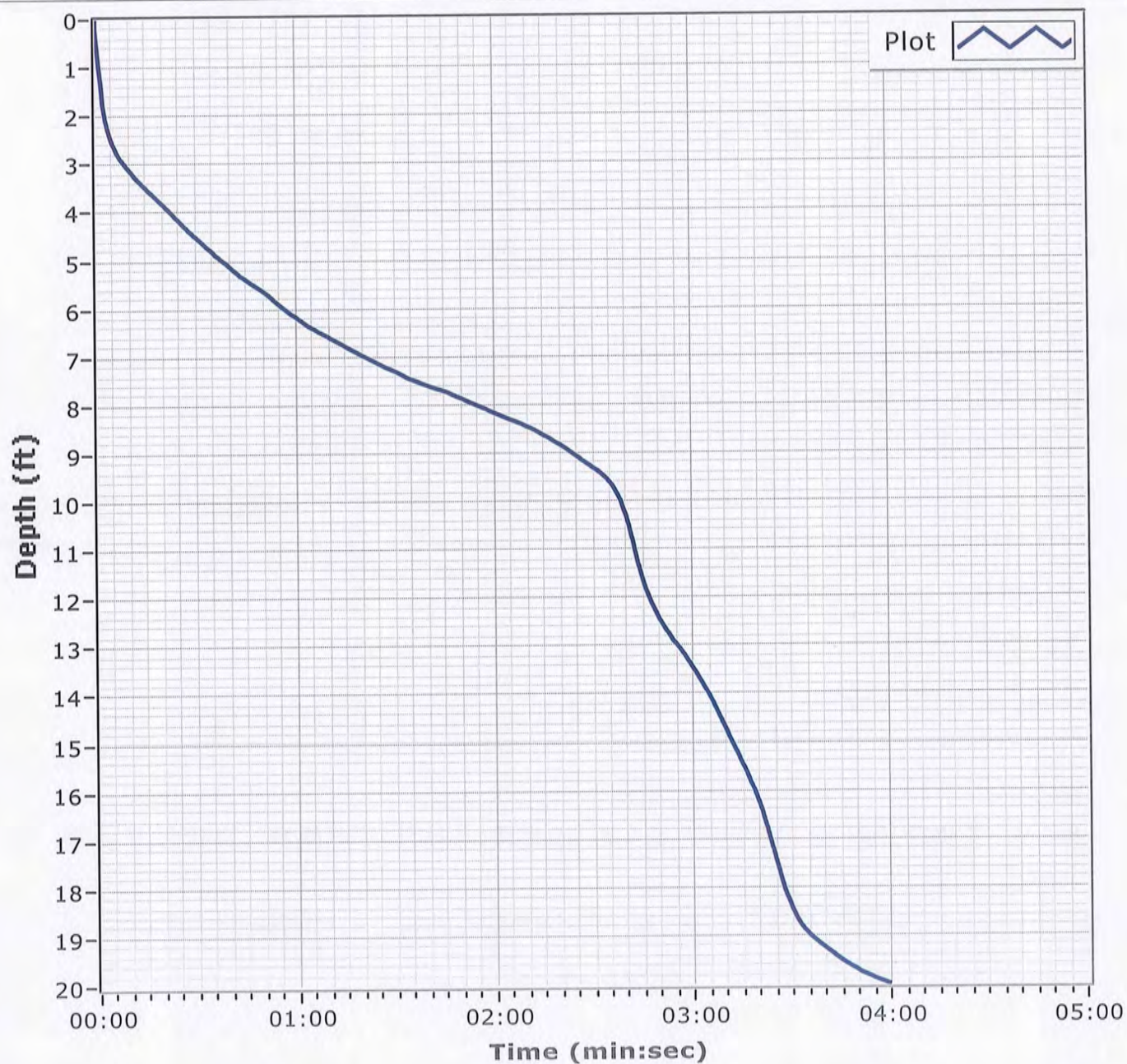
Latitude 30 07.268

Total Time 00:03:59

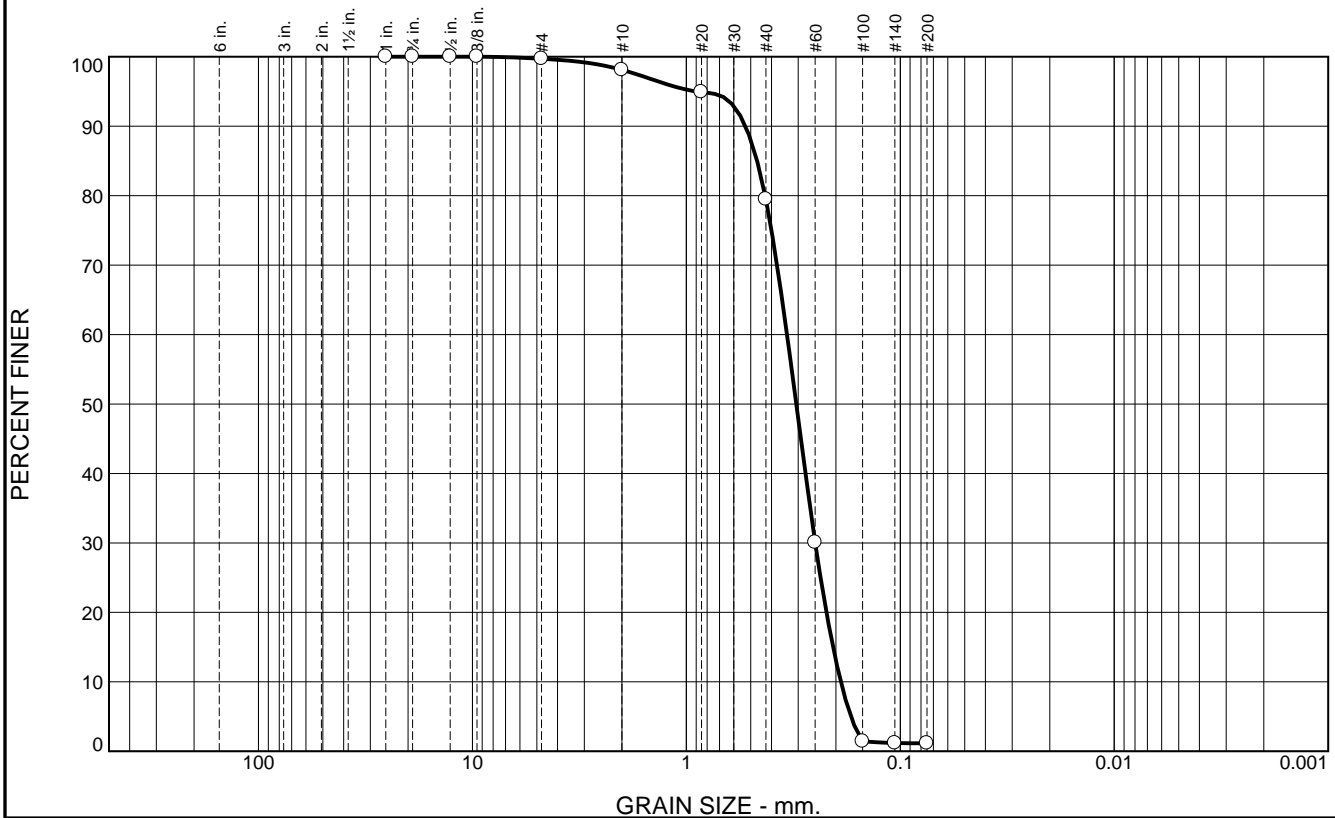
Recovery 15.0'

Longitude 088 22.470

Comments



Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	0.3	1.6	18.6	78.4	1.1	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
1	100.0		
.75	100.0		
.5	100.0		
.375	100.0		
#4	99.7		
#10	98.1		
#20	94.9		
#40	79.5		
#60	30.1		
#100	1.4		
#140	1.2		
#200	1.1		

* (no specification provided)

<u>Material Description</u>		
Fine to medium grained, SAND		
<u>Atterberg Limits</u>		
PL=	LL=	PI=
<u>Coefficients</u>		
D ₉₀ = 0.5294	D ₈₅ = 0.4671	D ₆₀ = 0.3385
D ₅₀ = 0.3064	D ₃₀ = 0.2498	D ₁₅ = 0.2062
D ₁₀ = 0.1898	C _u = 1.78	C _c = 0.97
<u>Classification</u>		
USCS= SP	AASHTO=	
<u>Remarks</u>		

Location: BI-PBS-39-12 A
Sample Number: 6482 (47)

Depth: 0.0'

Date: 12/12/12

Thompson Engineering

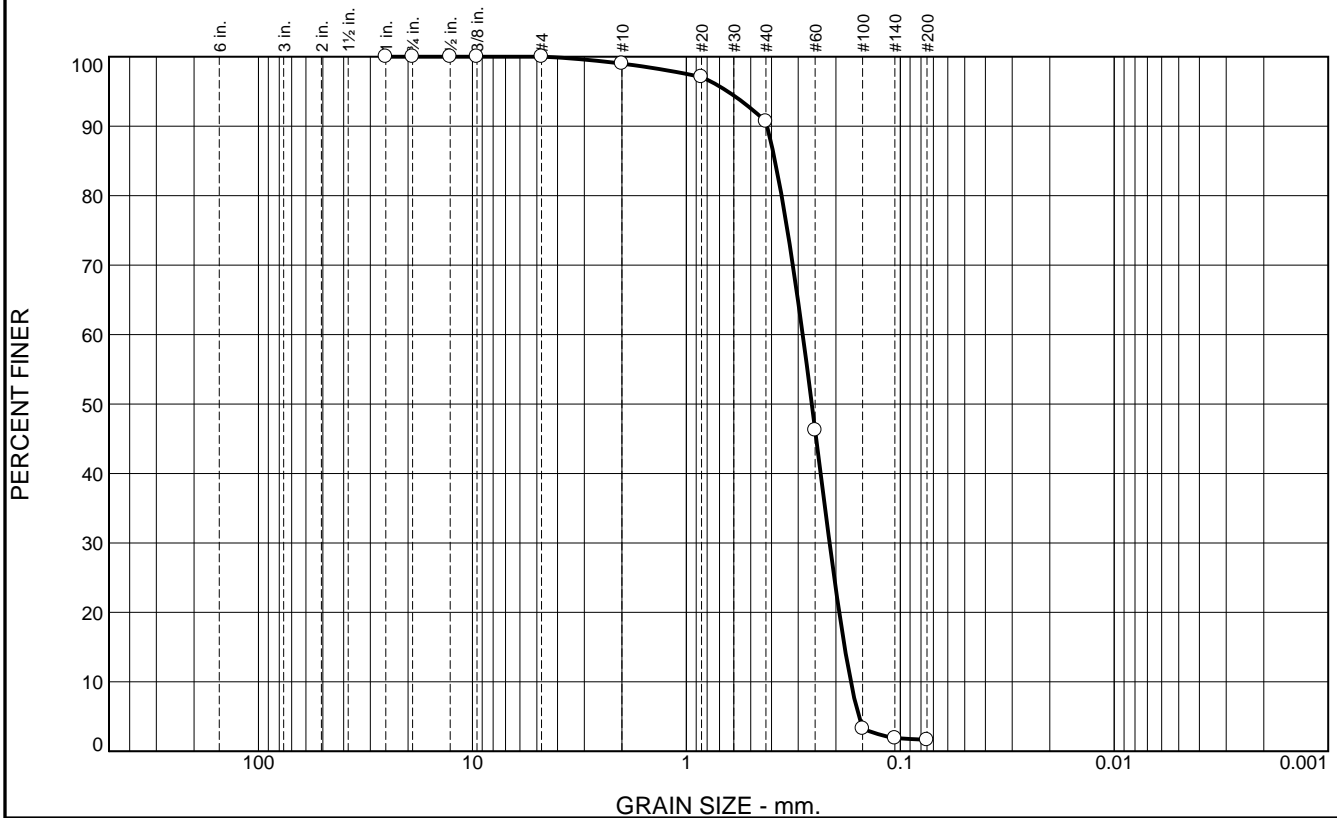
Mobile, Alabama

Client: CDM/Thompson Engineering JV
Project: MsCIP Barrier Island Restoration GT

Project No: 1221110095

Figure

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	0.0	1.0	8.3	89.1	1.6	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
1	100.0		
.75	100.0		
.5	100.0		
.375	100.0		
#4	100.0		
#10	99.0		
#20	97.1		
#40	90.7		
#60	46.2		
#100	3.3		
#140	1.9		
#200	1.6		

* (no specification provided)

Material Description		
Fine grained, SAND		
<div> <div> Atterberg Limits </div> <div> PL= </div> <div> LL= </div> <div> PI= </div> </div>		
<div> <div> Coefficients </div> <div> D₉₀= 0.4193 </div> <div> D₈₅= 0.3849 </div> <div> D₆₀= 0.2860 </div> <div> D₅₀= 0.2592 </div> <div> D₃₀= 0.2141 </div> <div> D₁₅= 0.1822 </div> <div> D₁₀= 0.1705 </div> <div> C_u= 1.68 </div> <div> C_c= 0.94 </div> </div>		
<div> <div> Classification </div> <div> USCS= SP </div> <div> AASHTO= </div> </div>		
<div> <div> Remarks </div> </div>		

Location: BI-PBS-39-12 B
Sample Number: 6482 (48)

Depth: 5.0'

Date: 12/12/12

Thompson Engineering

Mobile, Alabama

Client: CDM/Thompson Engineering JV
Project: MsCIP Barrier Island Restoration GT

Project No: 1221110095

Figure

Boring Designation BI-PBS-040-12

DRILLING LOG		DIVISION South Atlantic		INSTALLATION Mobile District		SHEET 1 OF 1 SHEETS	
1. PROJECT MsCIP Barrier Island Restoration Petit Bois Pass-OCS East				9. SIZE AND TYPE OF BIT N/A			
2. BORING DESIGNATION BI-PBS-040-12		LOCATION COORDINATES E = 1,135,172 N = 223,901		10. COORDINATE SYSTEM/DATUM State Plane, MSE (U.S. Ft.)		HORIZONTAL NAD83 VERTICAL NAVD88	
3. DRILLING AGENCY Corps of Engineers - CESAM		CONTRACTOR FILE NO.		11. MANUFACTURER'S DESIGNATION OF DRILL Vibracore		<input type="checkbox"/> AUTO HAMMER <input type="checkbox"/> MANUAL HAMMER	
4. NAME OF DRILLER American Vibracore Systems, Inc.				12. TOTAL SAMPLES		DISTURBED UNDISTURBED (UD) 0	
5. DIRECTION OF BORING <input checked="" type="checkbox"/> VERTICAL <input type="checkbox"/> INCLINED		DEG. FROM VERTICAL		13. TOTAL NUMBER CORE BOXES			
		BEARING		14. WATER DEPTH 66.9 Ft.			
6. THICKNESS OF OVERBURDEN N/A				15. DATE BORING 12-01-12		STARTED COMPLETED 12-01-12	
7. DEPTH DRILLED INTO ROCK N/A				16. ELEVATION TOP OF BORING -66.7 Ft.			
8. TOTAL DEPTH OF BORING 15.9 Ft.				17. TOTAL RECOVERY FOR BORING 100%			
				18. SIGNATURE AND TITLE OF INSPECTOR Mike FitzHarris, Geologist			

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	SAMPLE	LABORATORY RESULTS
-66.7	0.0				
-67.7	1.0		SHELL, mostly shell fragments, some medium to coarse-grained sand-sized quartz, trace silt, gray		
-68.0	1.3				
-68.8	2.1		CLAY, lean, mostly clay, trace fine-grained sand-sized quartz, trace shell fragments, brown mottled with gray (CL)		
-69.8	3.1				
			SAND, clayey, mostly fine-grained sand-sized quartz, some clay, trace shell fragments, gray mottled with brown (SC)		
-72.6	5.9				
-74.0	7.3		SAND, poorly-graded, mostly fine-grained sand-sized quartz, trace clay, trace shell fragments, lt. gray (SP)		
			SAND, silty, mostly fine-grained sand-sized quartz, some silt, some organic matter, organic staining, dark brown (SM)	NS	
			SAND, poorly-graded with silt, mostly fine-grained sand-sized quartz, few silt, trace shell fragments, clay nodules at 7.2 ft., gray (SP-SM)		
-79.9	13.2		SAND, clayey, mostly fine-grained sand-sized quartz, some clay, little shell fragments, gray (SC)		
-82.6	15.9		SAND, poorly-graded, mostly fine-grained sand-sized quartz, trace silt, trace shell fragments, gray (SP)		
			NOTES: 1. Soils are field visually classified in accordance with the Unified Soils Classification System. 2. NS = Sample not submitted for laboratory analysis from this interval. 3. Seafloor elevation calculated using sampling vessel's fathometer water depth reading and applying NOAA tidal gauge data conversion factor.		

Project

Mississippi Barrier Island
Restoration Project

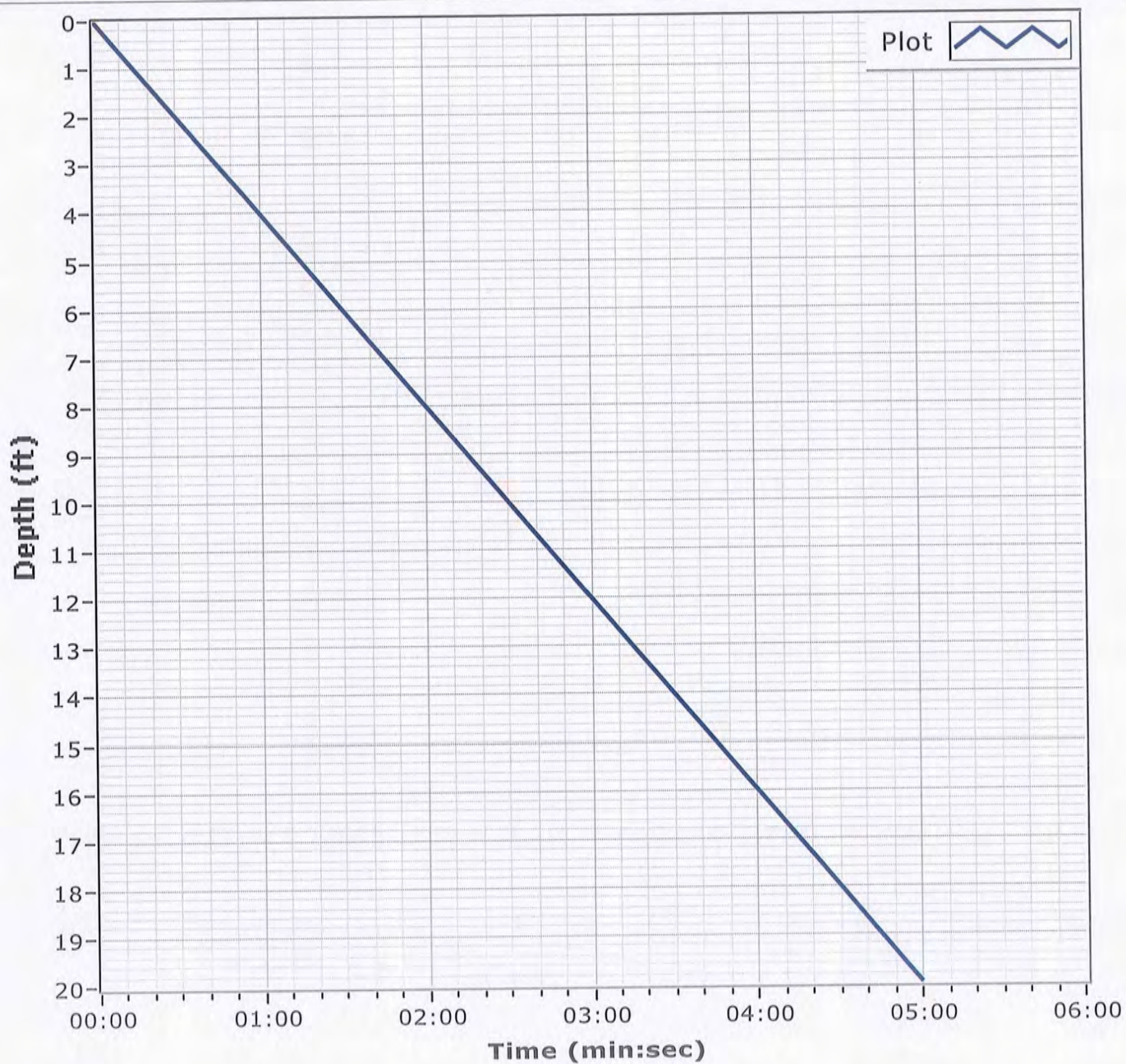
AVS
AMERICAN VIBRACORE
S E R V I C E S

Core Identifier BI-PBS-40-12**Date** 12/01/2012**Water Depth** 66.9'**Coordinate System**

Latitude / Longitude

Start Time 11:57:03**End Time** 12:02:03**Penetration** 20.0'**Latitude** 30 06.889**Total Time** 00:05:00**Recovery** 15.9**Longitude** 088 21.360**Comments**

pentotrometer cable broke. start time was; 1157, stop; 1202. penetration; 20.0'.



Boring Designation BI-PBS-041-12

DRILLING LOG		DIVISION South Atlantic		INSTALLATION Mobile District		SHEET 1 OF 1 SHEETS	
1. PROJECT MsCIP Barrier Island Restoration Petit Bois Pass-OCS East				9. SIZE AND TYPE OF BIT N/A			
2. BORING DESIGNATION BI-PBS-041-12		LOCATION COORDINATES E = 1,133,653 N = 225,724		10. COORDINATE SYSTEM/DATUM State Plane, MSE (U.S. Ft.)		HORIZONTAL NAD83	
3. DRILLING AGENCY Corps of Engineers - CESAM		CONTRACTOR FILE NO.		11. MANUFACTURER'S DESIGNATION OF DRILL Vibracore		<input type="checkbox"/> AUTO HAMMER <input type="checkbox"/> MANUAL HAMMER	
4. NAME OF DRILLER American Vibracore Systems, Inc.				12. TOTAL SAMPLES		DISTURBED 0	
5. DIRECTION OF BORING <input checked="" type="checkbox"/> VERTICAL <input type="checkbox"/> INCLINED				13. TOTAL NUMBER CORE BOXES		14. WATER DEPTH 62 Ft.	
6. THICKNESS OF OVERBURDEN N/A				15. DATE BORING		STARTED 12-09-12	
7. DEPTH DRILLED INTO ROCK N/A				16. ELEVATION TOP OF BORING -61.6 Ft.		COMPLETED 12-09-12	
8. TOTAL DEPTH OF BORING 16.3 Ft.				17. TOTAL RECOVERY FOR BORING 100%			
				18. SIGNATURE AND TITLE OF INSPECTOR Mike FitzHarris, Geologist			
ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	SAMPLE	LABORATORY RESULTS		
-61.6	0.0						
			SAND, poorly-graded, mostly fine to medium-grained sand-sized quartz, trace fines, trace shell fragments, gray (SP)	A	Classification: SP Color: 5Y 6/2-light olive gray D50: 0.2682 mm % Fines: 2.4		
-64.8	3.2						
-65.8	4.2		SAND, silty, mostly fine-grained sand-sized quartz, some silt, trace organic matter, gray grading to brown (SM)	NS			
-66.5	4.9						
-67.2	5.6		SAND, clayey, mostly fine-grained sand-sized quartz, some clay, gray (SC)	B	Classification: SP-SM Color: 2.5Y 5/1-gray D50: 0.2692 mm % Fines: 5.7		
-68.5	6.9						
-69.2	7.6		SAND, silty, mostly fine-grained sand-sized quartz, some silt, gray (SM)	NS			
			SAND, poorly-graded with silt, mostly fine-grained sand-sized quartz, few silt, gray (SP-SM)	C	Classification: SP-SM Color: 5Y 6/2-light olive gray D50: 0.2304 mm % Fines: 7		
-71.8	10.2						
-72.9	11.3		SAND, clayey, mostly fine-grained sand-sized quartz, some clay, trace shell fragments, gray (SC)	D	Classification: SP Color: 5Y 6/2-light olive gray D50: 0.2353 mm % Fines: 4.8		
			SAND, silty, mostly fine-grained sand-sized quartz, some silt, trace shell fragments, gray (SM)	E	Classification: SP Color: 2.5Y 7/1-light gray D50: 0.2128 mm % Fines: 4.6		
			SAND, poorly-graded with silt, mostly fine-grained sand-sized quartz, few silt, few shell fragments, gray (SP-SM)				
-77.9	16.3						
			SAND, poorly-graded, mostly fine-grained sand-sized quartz, trace fines, trace shell fragments, lt. gray (SP)				
NOTES:							
1. Soils are field visually classified in accordance with the Unified Soils Classification System.							
2. NS = Sample not submitted for laboratory analysis from this interval.							
3. Seafloor elevation calculated using sampling vessel's fathometer water depth reading and applying NOAA tidal gauge data conversion factor.							

Project

Mississippi Barrier Island
Restoration Project

AVS
AMERICAN VIBRACORE
S E R V I C E S

Core Identifier BI-PBS-41-12

Date 12/09/2012

Water Depth 62.0'

Coordinate System

Latitude / Longitude

Start Time 08:56:21

End Time 09:01:23

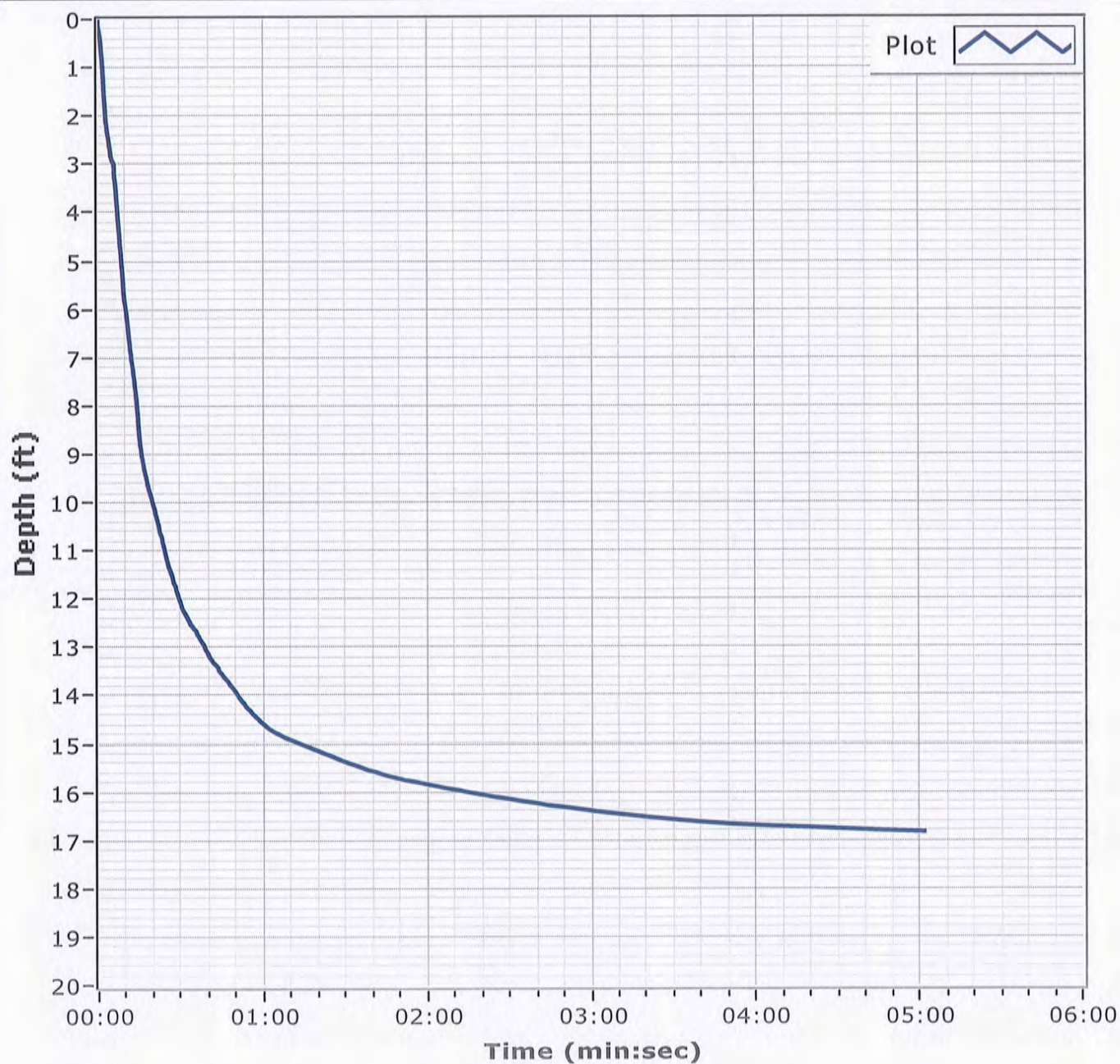
Penetration 16.8'

Latitude 30 07.191

Total Time 00:05:02

Recovery 16.6'

Longitude 088 21.647

Comments

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	0.4	0.6	10.8	85.8	2.4	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
1	100.0		
.75	100.0		
.5	100.0		
.375	100.0		
#4	99.6		
#10	99.0		
#20	97.7		
#40	88.2		
#60	43.1		
#100	4.9		
#140	2.8		
#200	2.4		

* (no specification provided)

<u>Material Description</u>		
Fine to medium grained, SAND		
<u>Atterberg Limits</u>		
PL=	LL=	PI=
<u>Coefficients</u>		
D ₉₀ = 0.4687	D ₈₅ = 0.4026	D ₆₀ = 0.2972
D ₅₀ = 0.2682	D ₃₀ = 0.2180	D ₁₅ = 0.1817
D ₁₀ = 0.1680	C _u = 1.77	C _c = 0.95
<u>Classification</u>		
USCS= SP	AASHTO=	
<u>Remarks</u>		

Location: BI-PBS-41-12 A
Sample Number: 6482 (49)

Depth: 0.0'

Date: 12/12/12

Thompson Engineering

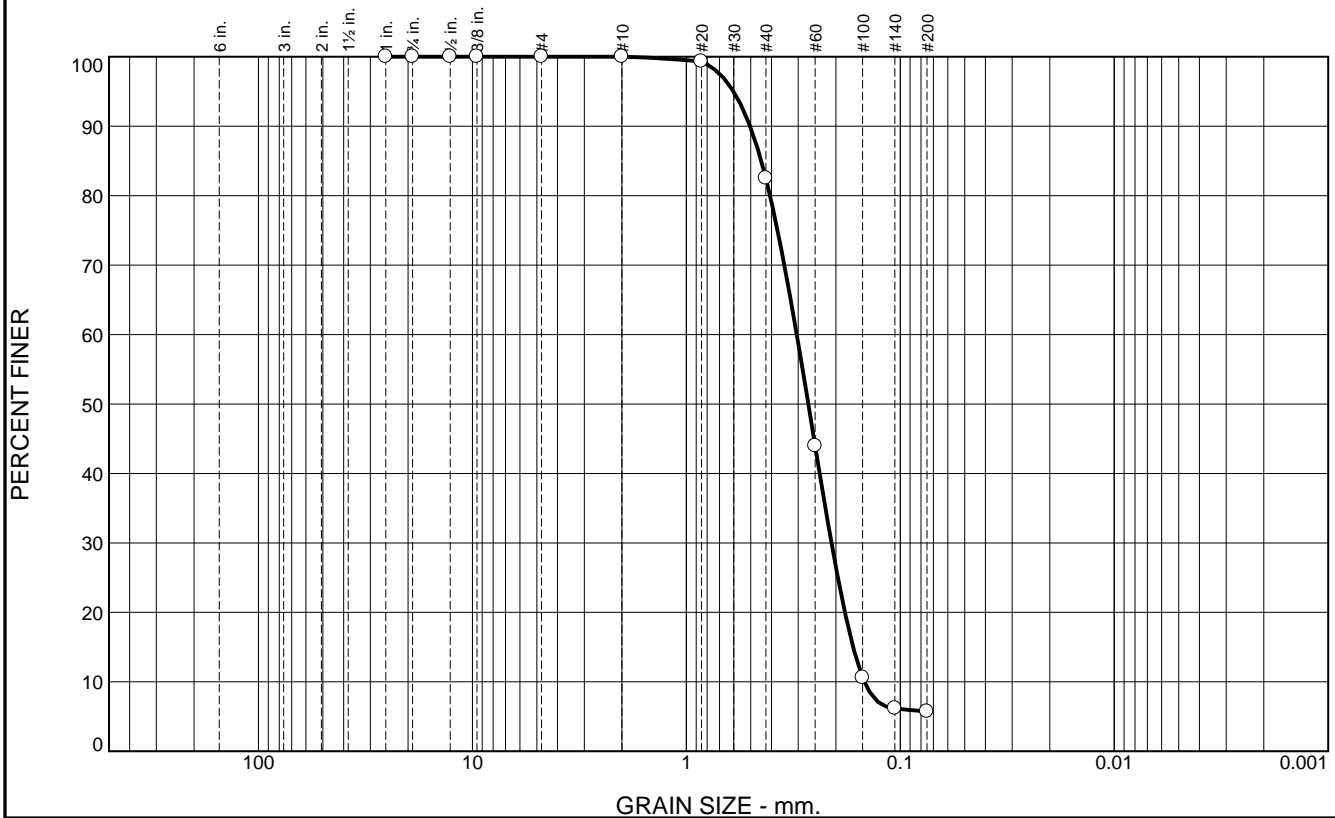
Mobile, Alabama

Client: CDM/Thompson Engineering JV
Project: MsCIP Barrier Island Restoration GT

Project No: 1221110095

Figure

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	0.0	0.0	17.5	76.8	5.7	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
1	100.0		
.75	100.0		
.5	100.0		
.375	100.0		
#4	100.0		
#10	100.0		
#20	99.3		
#40	82.5		
#60	44.0		
#100	10.6		
#140	6.2		
#200	5.7		

* (no specification provided)

Material Description

Fine to medium grained, SLIGHTLY SILTY SAND

Atterberg Limits

PL= LL= PI=

Coefficients

D₉₀= 0.5040 D₈₅= 0.4467 D₆₀= 0.3049
D₅₀= 0.2692 D₃₀= 0.2097 D₁₅= 0.1663
D₁₀= 0.1472 C_u= 2.07 C_c= 0.98

Classification

USCS= SP-SM AASHTO=

Remarks

Location: BI-PBS-41-12 B
Sample Number: 6482 (50)

Depth: 5.6'

Date: 12/12/12

Thompson Engineering

Mobile, Alabama

Client: CDM/Thompson Engineering JV
Project: MsCIP Barrier Island Restoration GT

Project No: 1221110095

Figure

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	0.9	1.3	13.6	77.2	7.0	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
1	100.0		
.75	100.0		
.5	100.0		
.375	100.0		
#4	99.1		
#10	97.8		
#20	95.0		
#40	84.2		
#60	57.0		
#100	14.8		
#140	7.9		
#200	7.0		

* (no specification provided)

Material Description

Fine to medium grained, SLIGHTLY SILTY SAND

Atterberg Limits

PL= LL= PI=

Coefficients

D₉₀= 0.5465 D₈₅= 0.4375 D₆₀= 0.2597
D₅₀= 0.2304 D₃₀= 0.1853 D₁₅= 0.1507
D₁₀= 0.1308 C_u= 1.99 C_c= 1.01

Classification

USCS= SP-SM AASHTO=

Remarks

Location: BI-PBS-41-12 C

Sample Number: 6482 (51)

Depth: 7.6'

Date: 12/12/12

Thompson Engineering

Mobile, Alabama

Client: CDM/Thompson Engineering JV

Project: MsCIP Barrier Island Restoration GT

Project No: 1221110095

Figure

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	1.0	1.4	9.4	83.4	4.8	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
1	100.0		
.75	100.0		
.5	100.0		
.375	99.7		
#4	99.0		
#10	97.6		
#20	95.5		
#40	88.2		
#60	55.9		
#100	9.7		
#140	5.5		
#200	4.8		

* (no specification provided)

Material Description

Fine grained, SAND, with trace SHELL

Atterberg Limits

PL= LL= PI=

Coefficients

D₉₀= 0.4534 D₈₅= 0.3892 D₆₀= 0.2614
D₅₀= 0.2353 D₃₀= 0.1939 D₁₅= 0.1637
D₁₀= 0.1509 C_u= 1.73 C_c= 0.95

Classification

USCS= SP AASHTO=

Remarks

Location: BI-PBS-41-12 D
Sample Number: 6482 (52)

Depth: 10.2'

Date: 12/12/12

Thompson Engineering

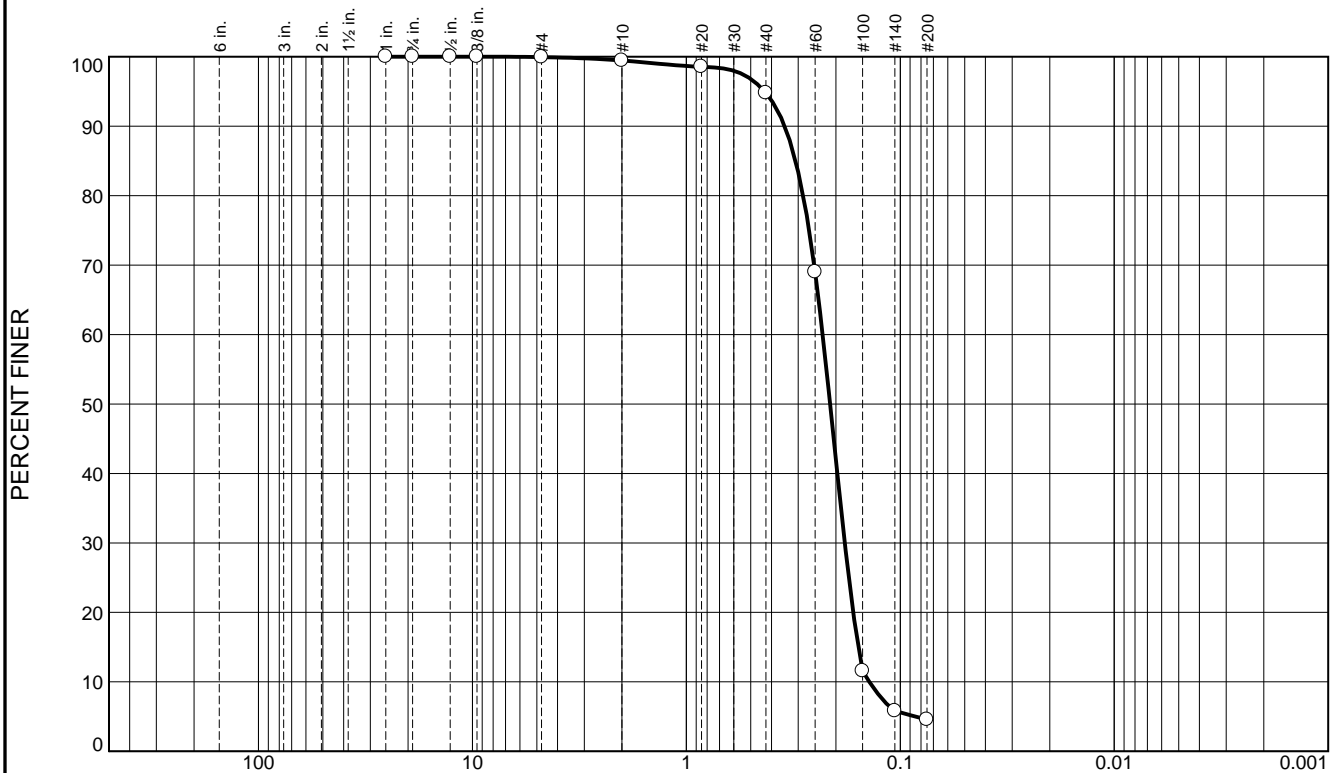
Mobile, Alabama

Client: CDM/Thompson Engineering JV
Project: MsCIP Barrier Island Restoration GT

Project No: 1221110095

Figure

Particle Size Distribution Report



GRAIN SIZE - mm.

% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	0.1	0.5	4.6	90.2	4.6	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
1	100.0		
.75	100.0		
.5	100.0		
.375	100.0		
#4	99.9		
#10	99.4		
#20	98.5		
#40	94.8		
#60	69.0		
#100	11.6		
#140	5.8		
#200	4.6		

* (no specification provided)

Material Description

Fine grained, SAND

Atterberg Limits

PL=

LL=

PI=

Coefficients

D₉₀= 0.3470

D₈₅= 0.3089

D₆₀= 0.2306

D₅₀= 0.2128

D₃₀= 0.1818

D₁₅= 0.1573

D₁₀= 0.1396

C_u= 1.65

C_c= 1.03

Classification

USCS= SP

AASHTO=

Remarks

Location: BI-PBS-41-12 E
Sample Number: 6482 (53)

Depth: 11.3'

Date: 12/12/12

Thompson Engineering

Mobile, Alabama

Client: CDM/Thompson Engineering JV
Project: MsCIP Barrier Island Restoration GT

Project No: 1221110095

Figure

Boring Designation BI-PBS-042-12

DRILLING LOG		DIVISION South Atlantic		INSTALLATION Mobile District		SHEET 1 OF 2 SHEETS	
1. PROJECT MsCIP Barrier Island Restoration Petit Bois Pass-OCS East				9. SIZE AND TYPE OF BIT N/A			
2. BORING DESIGNATION BI-PBS-042-12		LOCATION COORDINATES E = 1,132,353 N = 227,253		10. COORDINATE SYSTEM/DATUM State Plane, MSE (U.S. Ft.)		HORIZONTAL NAD83	
3. DRILLING AGENCY Corps of Engineers - CESAM		CONTRACTOR FILE NO.		11. MANUFACTURER'S DESIGNATION OF DRILL Vibracore		<input type="checkbox"/> AUTO HAMMER <input type="checkbox"/> MANUAL HAMMER	
4. NAME OF DRILLER American Vibracore Systems, Inc.				12. TOTAL SAMPLES		DISTURBED 0	
5. DIRECTION OF BORING <input checked="" type="checkbox"/> VERTICAL <input type="checkbox"/> INCLINED				13. TOTAL NUMBER CORE BOXES		14. WATER DEPTH 61.7 Ft.	
6. THICKNESS OF OVERBURDEN N/A				15. DATE BORING		STARTED 12-09-12	
7. DEPTH DRILLED INTO ROCK N/A				16. ELEVATION TOP OF BORING -60.7 Ft.		COMPLETED 12-09-12	
8. TOTAL DEPTH OF BORING 20.0 Ft.				17. TOTAL RECOVERY FOR BORING 100%			
				18. SIGNATURE AND TITLE OF INSPECTOR Mike FitzHarris, Geologist			

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	SAMPLE	LABORATORY RESULTS
-60.7	0.0				
-62.3	1.6		SAND, poorly-graded with clay, mostly fine to medium-grained sand-sized quartz, few clay, gray mottled with orangy brown (SP-SC)	A	Classification: SP-SM Color: 5Y 6/4-pale olive D50: 0.2201 mm % Fines: 9.7
-62.6	1.9		CLAY, fat, mostly clay, medium to high plasticity, dark gray (CH)	NS	
-65.1	4.4		SILT, inorganic-L, mostly silt, some fine-grained sand-sized quartz, trace clay, dark gray (ML)		
			SAND, poorly-graded with silt, mostly fine-grained sand-sized quartz, few silt, gray (SP-SM)	B	Classification: SP-SM Color: 2.5Y 5/2-grayish brown D50: 0.2199 mm % Fines: 7.9
-68.7	8.0				
-69.1	8.4		CLAY, fat, mostly clay, medium to high plasticity, dark gray (CH)	NS	
-70.2	9.5		SAND, poorly-graded with silt, mostly fine-grained sand-sized quartz, few silt, gray (SP-SM)		
			SAND, poorly-graded, mostly fine-grained sand-sized quartz, trace silt, trace clay, trace shell fragments, gray to lt. gray (SP)	C	Classification: SP-SM Color: 5Y 6/2-light olive gray D50: 0.2062 mm % Fines: 6.1
-75.2	14.5				
			SAND, silty, mostly fine-grained sand-sized quartz, some silt, trace shell fragments, gray (SM)	NS	
-80.7	20.0				
			NOTES: 1. Soils are field visually classified in accordance with the Unified Soils Classification System. 2. NS = Sample not submitted for laboratory analysis from this interval. 3. Seafloor elevation calculated using sampling		

DRILLING LOG (Cont. Sheet)			INSTALLATION Mobile District		SHEET 2 OF 2 SHEETS
PROJECT MsCIP Barrier Island Restoration			COORDINATE SYSTEM/DATUM State Plane, MSE (U.S. Ft.)	HORIZONTAL NAD83	VERTICAL NAVD88
LOCATION COORDINATES X = 1,132,353 Y = 227,253			ELEVATION TOP OF BORING -60.7 Ft.		
ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	SAMPLE	LABORATORY RESULTS
			vessel's fathometer water depth reading and applying NOAA tidal gauge data conversion factor.		

Project

Mississippi Barrier Island
Restoration Project



Core Identifier BI-PBS-42-12

Date 12/09/2012

Water Depth 61.7'

Coordinate System

Start Time 13:50:56

Latitude / Longitude

End Time 13:54:54

Penetration 20.0'

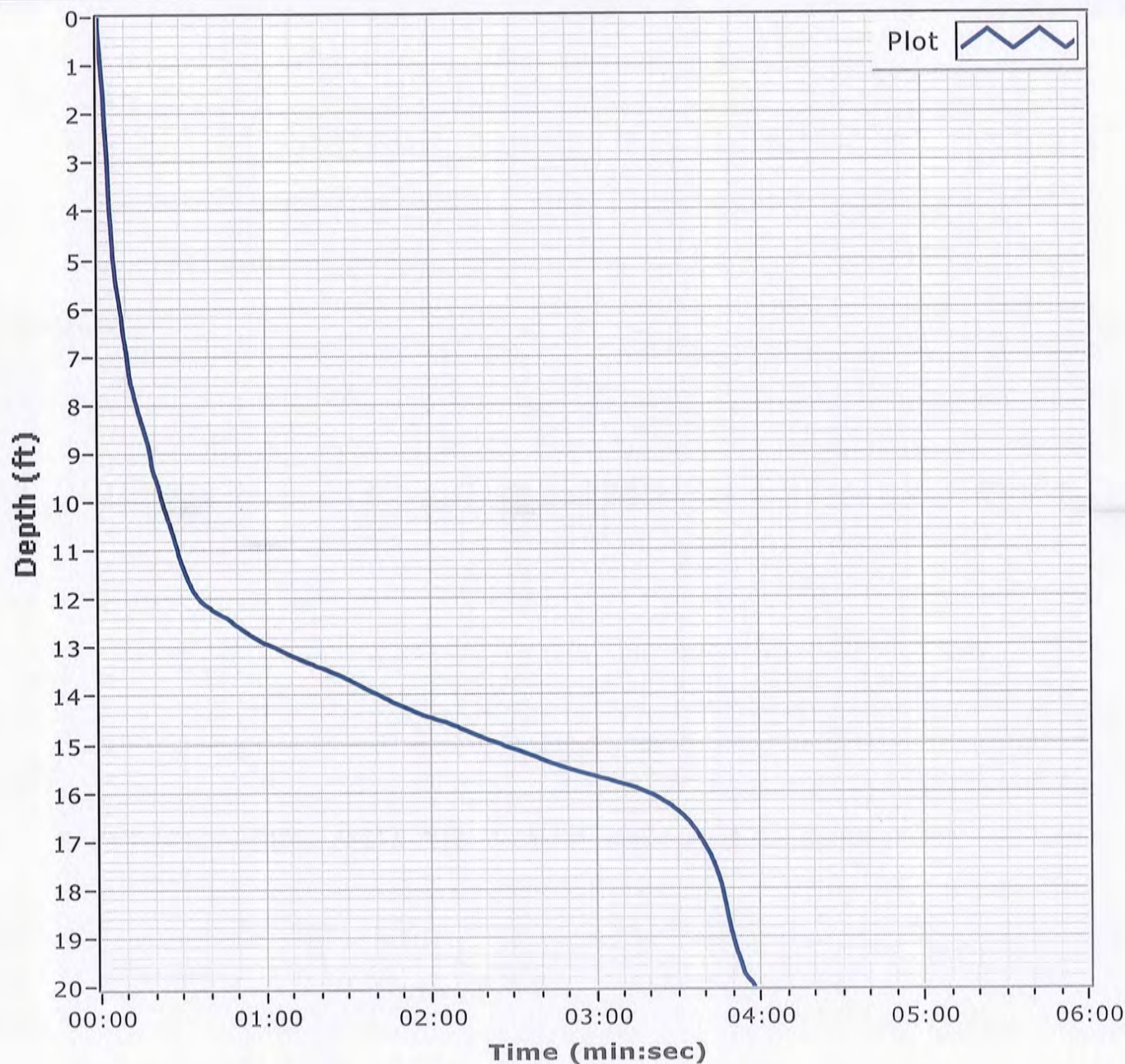
Latitude 30 07.444

Total Time 00:03:57

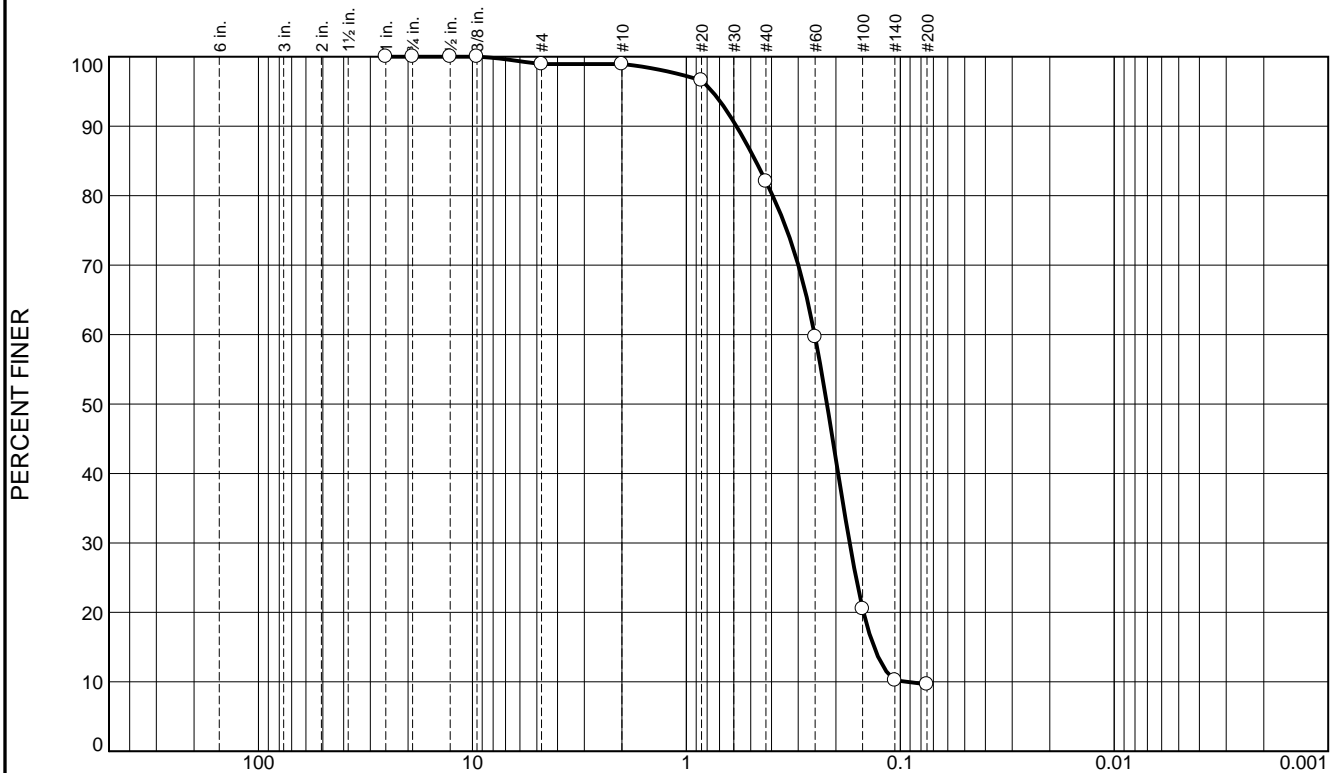
Recovery 20.0'

Longitude 088 21.892

Comments



Particle Size Distribution Report



GRAIN SIZE - mm.

% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	1.1	0.0	16.9	72.3	9.7	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
1	100.0		
.75	100.0		
.5	100.0		
.375	100.0		
#4	98.9		
#10	98.9		
#20	96.6		
#40	82.0		
#60	59.7		
#100	20.5		
#140	10.2		
#200	9.7		

* (no specification provided)

Material Description

Fine to medium grained, SLIGHTLY SILTY SAND, with trace SHELL

Atterberg Limits

PL= LL= PI=

Coefficients

D₉₀= 0.5833 D₈₅= 0.4746 D₆₀= 0.2513
D₅₀= 0.2201 D₃₀= 0.1726 D₁₅= 0.1328
D₁₀= 0.0925 C_u= 2.71 C_c= 1.28

Classification

USCS= SP-SM AASHTO=

Remarks

Location: BI-PBS-42-12 A
Sample Number: 6482 (54)

Depth: 0.0'

Date: 12/12/12

Thompson Engineering

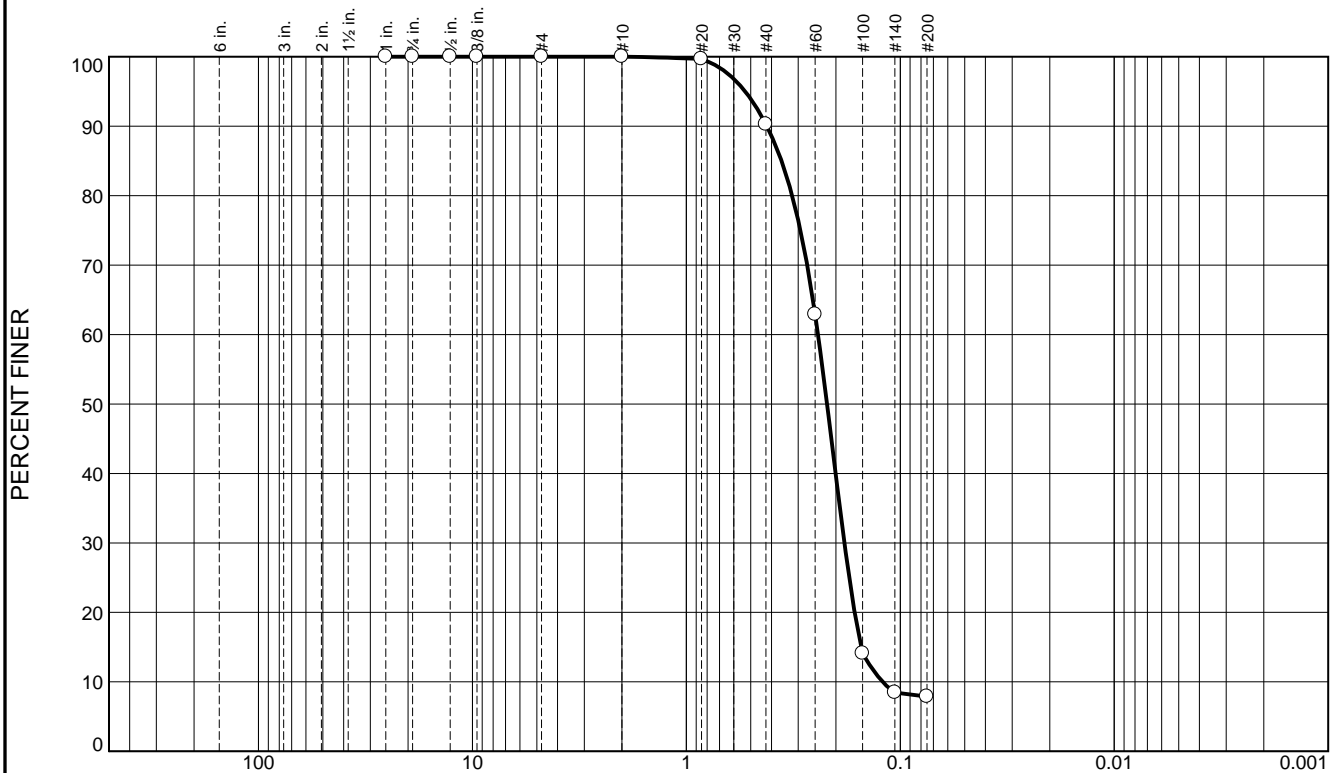
Mobile, Alabama

Client: CDM/Thompson Engineering JV
Project: MsCIP Barrier Island Restoration GT

Project No: 1221110095

Figure

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	0.0	0.0	9.7	82.4	7.9	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
1	100.0		
.75	100.0		
.5	100.0		
.375	100.0		
#4	100.0		
#10	100.0		
#20	99.7		
#40	90.3		
#60	62.9		
#100	14.1		
#140	8.5		
#200	7.9		

* (no specification provided)

<u>Material Description</u>		
Fine grained, SLIGHTLY SILTY SAND		
<u>Atterberg Limits</u>		
PL=	LL=	PI=
<u>Coefficients</u>		
D ₉₀ = 0.4207	D ₈₅ = 0.3589	D ₆₀ = 0.2424
D ₅₀ = 0.2199	D ₃₀ = 0.1825	D ₁₅ = 0.1524
D ₁₀ = 0.1209	C _u = 2.00	C _c = 1.14
<u>Classification</u>		
USCS= SP-SM	AASHTO=	
<u>Remarks</u>		

Location: BI-PBS-42-12 B
 Sample Number: 6482 (55)

Depth: 4.4'

Date: 12/12/12

Thompson Engineering

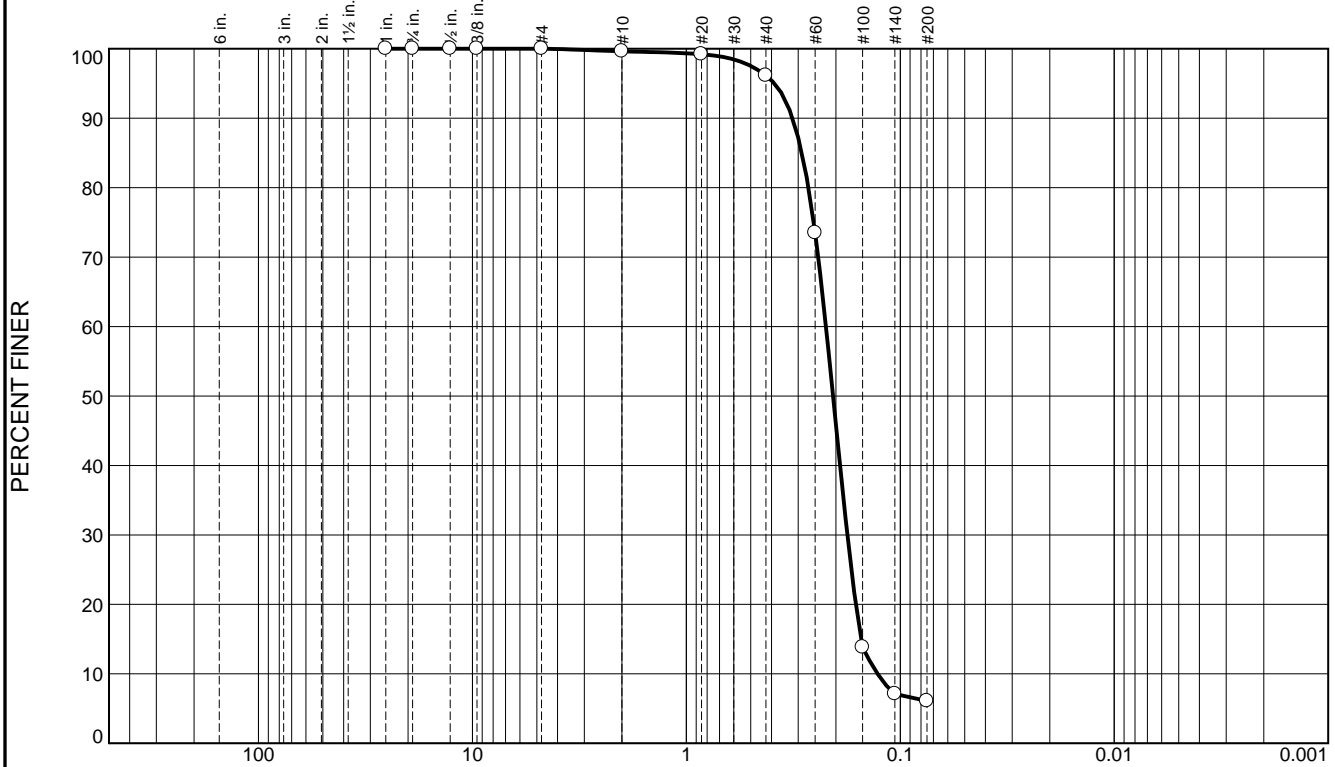
Mobile, Alabama

Client: CDM/Thompson Engineering JV
 Project: MsCIP Barrier Island Restoration GT

Project No: 1221110095

Figure

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	0.0	0.4	3.5	90.0	6.1	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
1	100.0		
.75	100.0		
.5	100.0		
.375	100.0		
#4	100.0		
#10	99.6		
#20	99.2		
#40	96.1		
#60	73.5		
#100	13.8		
#140	7.1		
#200	6.1		

* (no specification provided)

<u>Material Description</u>		
Fine grained, SLIGHTLY SILTY SAND		
<u>Atterberg Limits</u>		
PL=	LL=	PI=
<u>Coefficients</u>		
D ₉₀ = 0.3191	D ₈₅ = 0.2887	D ₆₀ = 0.2225
D ₅₀ = 0.2062	D ₃₀ = 0.1769	D ₁₅ = 0.1525
D ₁₀ = 0.1277	C _u = 1.74	C _c = 1.10
<u>Classification</u>		
USCS= SP-SM	AASHTO=	
<u>Remarks</u>		

Location: BI-PBS-42-12 C
Sample Number: 6482 (56)

Depth: 9.5'

Date: 12/12/12

Thompson Engineering

Mobile, Alabama

Client: CDM/Thompson Engineering JV
Project: MsCIP Barrier Island Restoration GT

Project No: 1221110095

Figure

Boring Designation BI-PBS-043-12

DRILLING LOG		DIVISION South Atlantic		INSTALLATION Mobile District		SHEET 1 OF 1 SHEETS	
1. PROJECT MsCIP Barrier Island Restoration Petit Bois Pass-OCS East				9. SIZE AND TYPE OF BIT N/A			
2. BORING DESIGNATION BI-PBS-043-12		LOCATION COORDINATES E = 1,129,431 N = 228,209		10. COORDINATE SYSTEM/DATUM State Plane, MSE (U.S. Ft.)		HORIZONTAL NAD83 VERTICAL NAVD88	
3. DRILLING AGENCY Corps of Engineers - CESAM		CONTRACTOR FILE NO.		11. MANUFACTURER'S DESIGNATION OF DRILL Vibracore		<input type="checkbox"/> AUTO HAMMER <input type="checkbox"/> MANUAL HAMMER	
4. NAME OF DRILLER American Vibracore Systems, Inc.				12. TOTAL SAMPLES		DISTURBED UNDISTURBED (UD) 0	
5. DIRECTION OF BORING <input checked="" type="checkbox"/> VERTICAL <input type="checkbox"/> INCLINED		DEG. FROM VERTICAL		13. TOTAL NUMBER CORE BOXES			
		BEARING		14. WATER DEPTH 59.3 Ft.			
6. THICKNESS OF OVERBURDEN N/A				15. DATE BORING 12-09-12		STARTED COMPLETED 12-09-12	
7. DEPTH DRILLED INTO ROCK N/A				16. ELEVATION TOP OF BORING -58.1 Ft.			
8. TOTAL DEPTH OF BORING 9.8 Ft.				17. TOTAL RECOVERY FOR BORING 100%			
				18. SIGNATURE AND TITLE OF INSPECTOR Mike FitzHarris, Geologist			
ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	SAMPLE	LABORATORY RESULTS		
-58.1	0.0						
-59.6	1.5		SAND, poorly-graded, mostly fine to medium-grained sand-sized quartz, trace fines, trace shell fragments, gray (SP)	A	Classification: SP Color: 5Y 6/2-light olive gray D50: 0.318 mm % Fines: 1.4		
-64.9	6.8		CLAY, fat, mostly clay, medium to high plasticity, little fine-grained, sand-sized quartz and shells between 1.5 to 2.4 ft., gray, greenish gray, and orangy brown mottle (CH)	NS			
-67.9	9.8		SAND, poorly-graded with silt, mostly fine-grained sand-sized quartz, few fines, dense, gray (SP-SM)				
			NOTES: 1. Soils are field visually classified in accordance with the Unified Soils Classification System. 2. NS = Sample not submitted for laboratory analysis from this interval. 3. Seafloor elevation determined from 12/17/2014 USACE survey.				

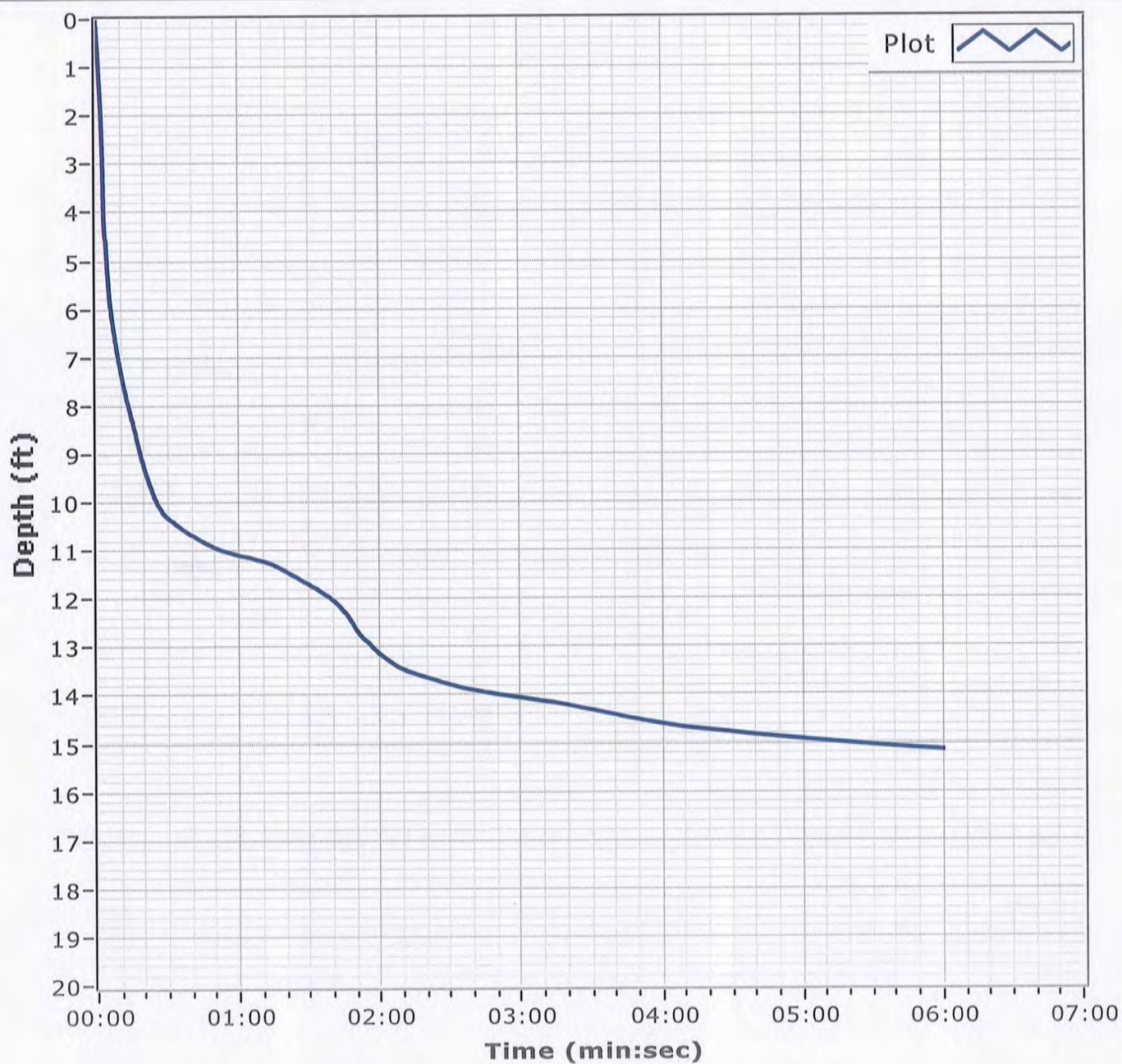
Project

Mississippi Barrier Island
Restoration Project

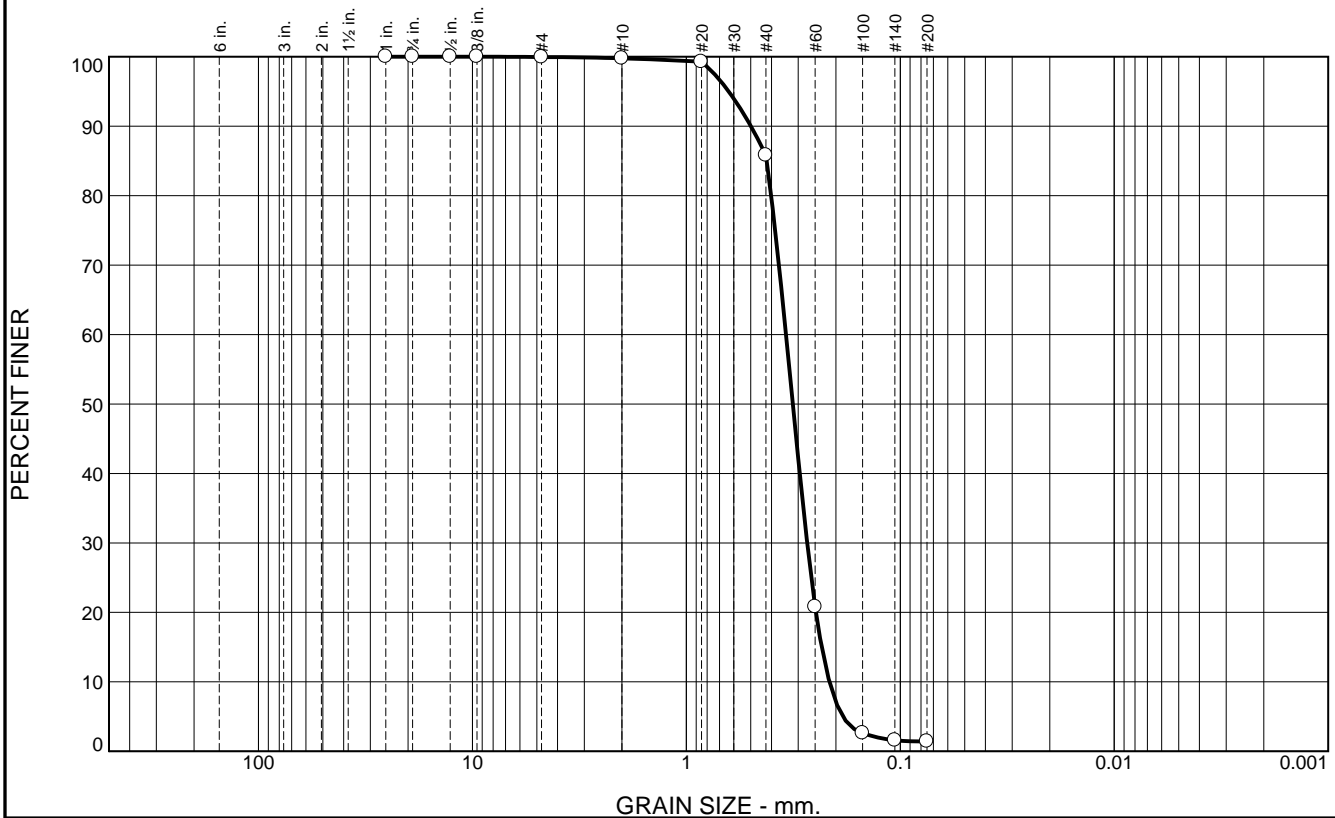
AVS
AMERICAN VIBRACORE
S E R V I C E S

Core Identifier BI-PBS-43-12**Date** 12/09/2012**Water Depth** 59.3'**Coordinate System**

Latitude / Longitude

Start Time 13:15:18**End Time** 13:21:19**Penetration** 15.2'**Latitude** 30 07.604**Total Time** 00:06:00**Recovery** 9.8'**Longitude** 088 22.446**Comments**

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	0.1	0.1	14.0	84.4	1.4	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
1	100.0		
.75	100.0		
.5	100.0		
.375	100.0		
#4	99.9		
#10	99.8		
#20	99.3		
#40	85.8		
#60	20.8		
#100	2.6		
#140	1.6		
#200	1.4		

* (no specification provided)

Material Description
Fine to medium grained, SAND

Atterberg Limits
 PL= LL= PI=

Coefficients
 D₉₀= 0.4996 D₈₅= 0.4213 D₆₀= 0.3421
 D₅₀= 0.3180 D₃₀= 0.2726 D₁₅= 0.2330
 D₁₀= 0.2144 C_u= 1.60 C_c= 1.01

Classification
 USCS= SP AASHTO=

Remarks

Location: BI-PBS-43-12 A
Sample Number: 6482 (57)

Depth: 0.0'

Date: 12/12/12

Thompson Engineering

Mobile, Alabama

Client: CDM/Thompson Engineering JV
Project: MsCIP Barrier Island Restoration GT

Project No: 1221110095

Figure

Boring Designation BI-PBS-044-12

DRILLING LOG		DIVISION South Atlantic		INSTALLATION Mobile District		SHEET 1 OF 1 SHEETS	
1. PROJECT MsCIP Barrier Island Restoration Petit Bois Pass-OCS East				9. SIZE AND TYPE OF BIT N/A			
2. BORING DESIGNATION BI-PBS-044-12		LOCATION COORDINATES E = 1,131,736 N = 226,760		10. COORDINATE SYSTEM/DATUM State Plane, MSE (U.S. Ft.)		HORIZONTAL NAD83 VERTICAL NAVD88	
3. DRILLING AGENCY Corps of Engineers - CESAM		CONTRACTOR FILE NO.		11. MANUFACTURER'S DESIGNATION OF DRILL Vibracore		<input type="checkbox"/> AUTO HAMMER <input type="checkbox"/> MANUAL HAMMER	
4. NAME OF DRILLER American Vibracore Systems, Inc.				12. TOTAL SAMPLES		DISTURBED UNDISTURBED (UD) 0	
5. DIRECTION OF BORING <input checked="" type="checkbox"/> VERTICAL <input type="checkbox"/> INCLINED				13. TOTAL NUMBER CORE BOXES		14. WATER DEPTH 60.1 Ft.	
6. THICKNESS OF OVERBURDEN N/A				15. DATE BORING		STARTED 12-09-12 COMPLETED 12-09-12	
7. DEPTH DRILLED INTO ROCK N/A				16. ELEVATION TOP OF BORING -59.9 Ft.		17. TOTAL RECOVERY FOR BORING 100%	
8. TOTAL DEPTH OF BORING 18.7 Ft.				18. SIGNATURE AND TITLE OF INSPECTOR Mike FitzHarris, Geologist			

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	SAMPLE	LABORATORY RESULTS
-59.9	0.0				
-61.1	1.2		SAND, poorly-graded, mostly fine to medium-grained sand-sized quartz, trace fines, trace shell fragments, lt. gray (SP)	A	Classification: SP Color: 5Y 7/2-light gray D50: 0.2779 mm % Fines: 2.5
-63.4	3.5		SAND, clayey, mostly fine-grained sand-sized quartz, some clay, trace shell fragments, orangy brown, greenish gray, gray mottle (SC)		
-64.1	4.2		CLAY, fat, mostly clay, some fine-grained sand-sized quartz, medium to high plasticity, dark gray (CH)		
-66.2	6.3		SAND, silty, mostly fine-grained sand-sized quartz, some silt, trace clay, gray (SM)		
-67.6	7.7		CLAY, lean, mostly clay, some fine-grained sand-sized quartz, alternating bands of clay and clayey sand, gray (CL)		
-69.8	9.9		SAND, poorly-graded with silt, mostly fine-grained sand-sized quartz, few silt, gray (SP-SM)	NS	
-74.8	14.9		SAND, poorly-graded, mostly fine-grained sand-sized quartz, trace fines, gray (SP)		
-78.6	18.7		SAND, poorly-graded with silt, mostly fine-grained sand-sized quartz, few silt, silt content increases with depth, gray (SP-SM)		
NOTES: 1. Soils are field visually classified in accordance with the Unified Soils Classification System. 2. NS = Sample not submitted for laboratory analysis from this interval. 3. Seafloor elevation determined from 12/17/2014 USACE survey.					

Project

Mississippi Barrier Island
Restoration Project

AVS
AMERICAN VIBRACORE
S E R V I C E S

Core Identifier BI-PBS-44-12

Date 12/09/2012

Water Depth 60.1'

Coordinate System

Latitude / Longitude

Start Time 12:08:39

End Time 12:12:57

Penetration 20.0'

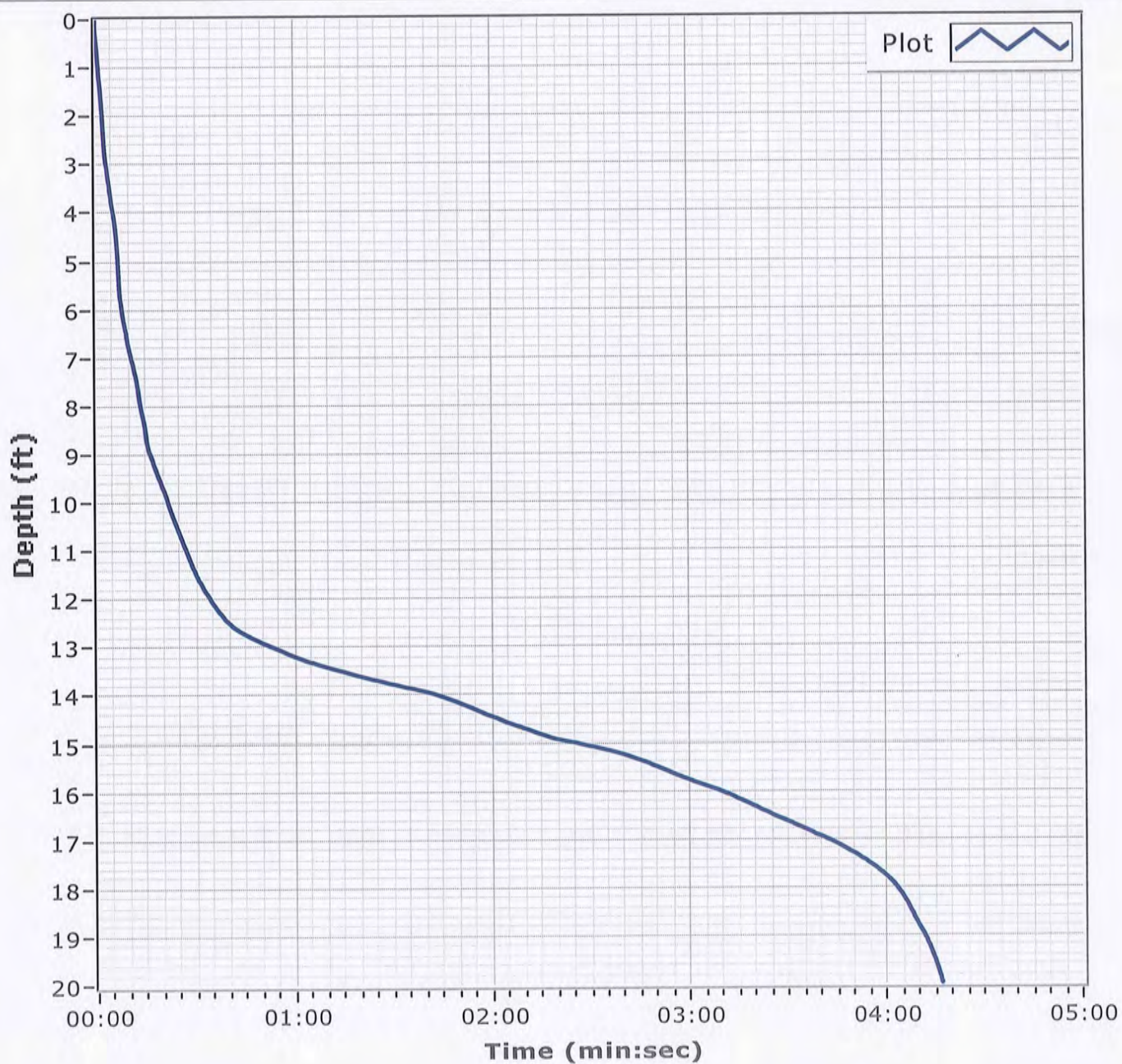
Latitude 30 07.363

Total Time 00:04:17

Recovery 18.7'

Longitude 088 22.010

Comments



Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	0.3	0.8	9.5	86.9	2.5	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
1	100.0		
.75	100.0		
.5	100.0		
.375	100.0		
#4	99.7		
#10	98.9		
#20	97.1		
#40	89.4		
#60	39.2		
#100	5.7		
#140	2.9		
#200	2.5		

* (no specification provided)

Material Description		
Fine grained, SAND		
<div> <div> Atterberg Limits </div> <div> PL= </div> <div> LL= </div> <div> PI= </div> </div>		
<div> <div> Coefficients </div> <div> D₉₀= 0.4435 </div> <div> D₈₅= 0.3988 </div> <div> D₆₀= 0.3056 </div> <div> D₅₀= 0.2779 </div> <div> D₃₀= 0.2262 </div> <div> D₁₅= 0.1848 </div> <div> D₁₀= 0.1684 </div> <div> C_u= 1.81 </div> <div> C_c= 0.99 </div> </div>		
<div> <div> Classification </div> <div> USCS= SP </div> <div> AASHTO= </div> </div>		
<div> <div> Remarks </div> </div>		

Location: BI-PBS-44-12 A
Sample Number: 6482 (58)

Depth: 0.0'

Date: 12/12/12

Thompson Engineering

Mobile, Alabama

Client: CDM/Thompson Engineering JV
Project: MsCIP Barrier Island Restoration GT

Project No: 1221110095

Figure

Boring Designation BI-PBS-045-12

DRILLING LOG		DIVISION South Atlantic		INSTALLATION Mobile District		SHEET 1 OF 1 SHEETS	
1. PROJECT MsCIP Barrier Island Restoration Petit Bois Pass-OCS East				9. SIZE AND TYPE OF BIT N/A			
2. BORING DESIGNATION BI-PBS-045-12		LOCATION COORDINATES E = 1,135,509 N = 224,211		10. COORDINATE SYSTEM/DATUM State Plane, MSE (U.S. Ft.)		HORIZONTAL NAD83	
3. DRILLING AGENCY Corps of Engineers - CESAM		CONTRACTOR FILE NO.		11. MANUFACTURER'S DESIGNATION OF DRILL Vibracore		<input type="checkbox"/> AUTO HAMMER <input type="checkbox"/> MANUAL HAMMER	
4. NAME OF DRILLER American Vibracore Systems, Inc.				12. TOTAL SAMPLES		DISTURBED 0	
5. DIRECTION OF BORING <input checked="" type="checkbox"/> VERTICAL <input type="checkbox"/> INCLINED				13. TOTAL NUMBER CORE BOXES		14. WATER DEPTH 60.5 Ft.	
6. THICKNESS OF OVERBURDEN N/A				15. DATE BORING		STARTED 12-01-12	
7. DEPTH DRILLED INTO ROCK N/A				16. ELEVATION TOP OF BORING -60.3 Ft.		COMPLETED 12-01-12	
8. TOTAL DEPTH OF BORING 17.2 Ft.				17. TOTAL RECOVERY FOR BORING 100%			
				18. SIGNATURE AND TITLE OF INSPECTOR Mike FitzHarris, Geologist			
ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	SAMPLE	LABORATORY RESULTS		
-60.3	0.0						
-63.1	2.8		SAND, poorly-graded, mostly medium-grained sand-sized quartz, little shell fragments, trace silt, lt. gray (SP)	A	Classification: SP Color: 2.5Y 7/1-light gray D50: 0.4972 mm % Fines: 1.4		
-65.3	5.0		SAND, poorly-graded, mostly fine-grained sand-sized quartz, trace silt, trace shell fragments, gray (SP)	B	Classification: SP Color: 2.5Y 6/2-light brownish gray D50: 0.2152 mm % Fines: 3.4		
-68.9	8.6		SAND, silty, mostly fine-grained sand-sized quartz, some silt, some organic matter, organic staining, brown (SM)	NS			
-69.4	9.1						
-74.3	14.0		SAND, poorly-graded, mostly fine-grained sand-sized quartz, trace silt, dense, gray (SP)	NS			
-77.5	17.2						
			NOTES: 1. Soils are field visually classified in accordance with the Unified Soils Classification System. 2. NS = Sample not submitted for laboratory analysis from this interval. 3. Seafloor elevation calculated using sampling vessel's fathometer water depth reading and applying NOAA tidal gauge data conversion factor.				

Project

Mississippi Barrier Island
Restoration Project

AVS
AMERICAN VIBRACORE
S E R V I C E S

Core Identifier BI-PBS-45-12

Date 12/01/2012

Water Depth 60.5'

Coordinate System

Latitude / Longitude

Start Time 10:25:47

End Time 10:29:18

Penetration 17.2'

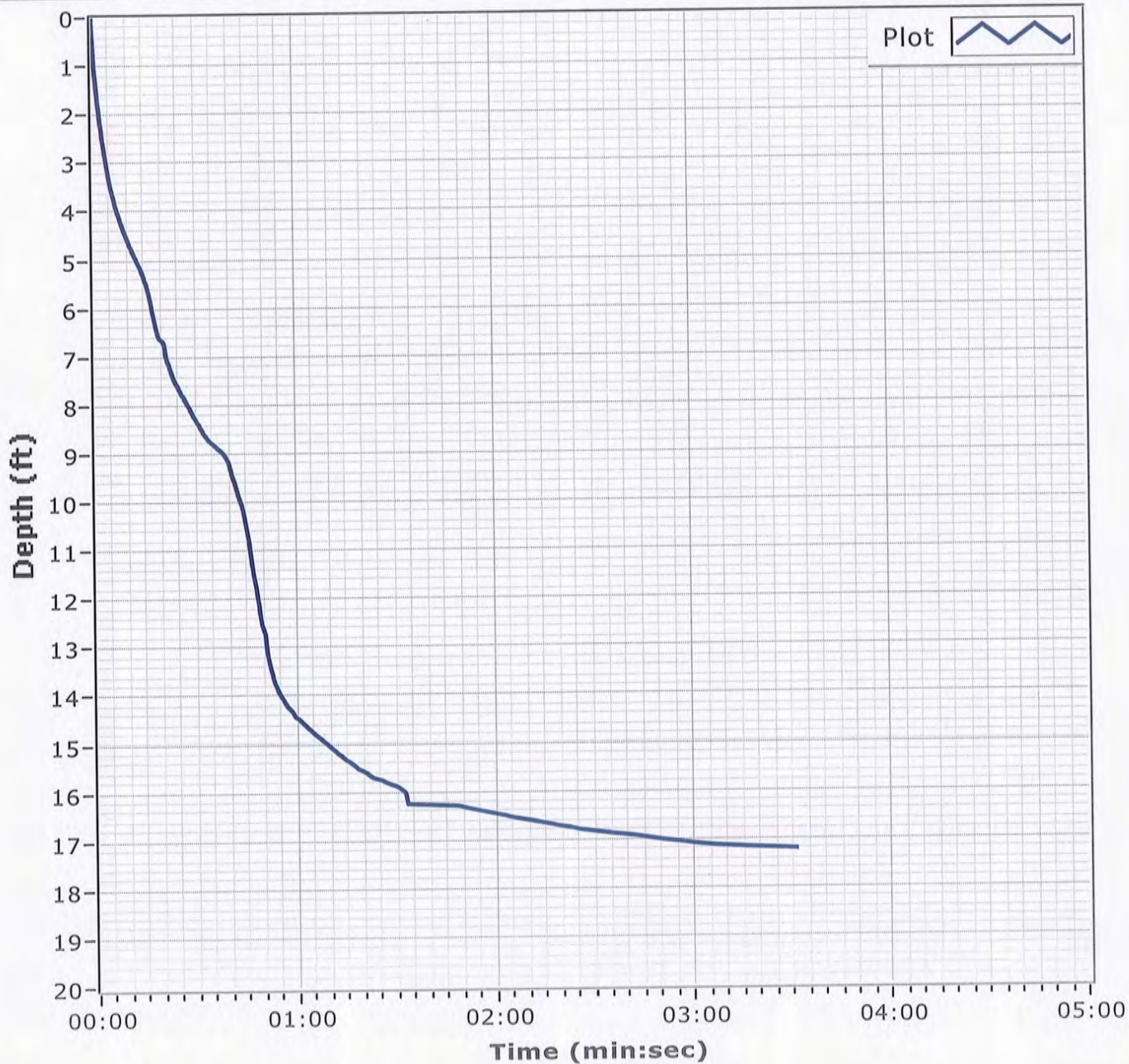
Latitude 30 06.940

Total Time 00:03:31

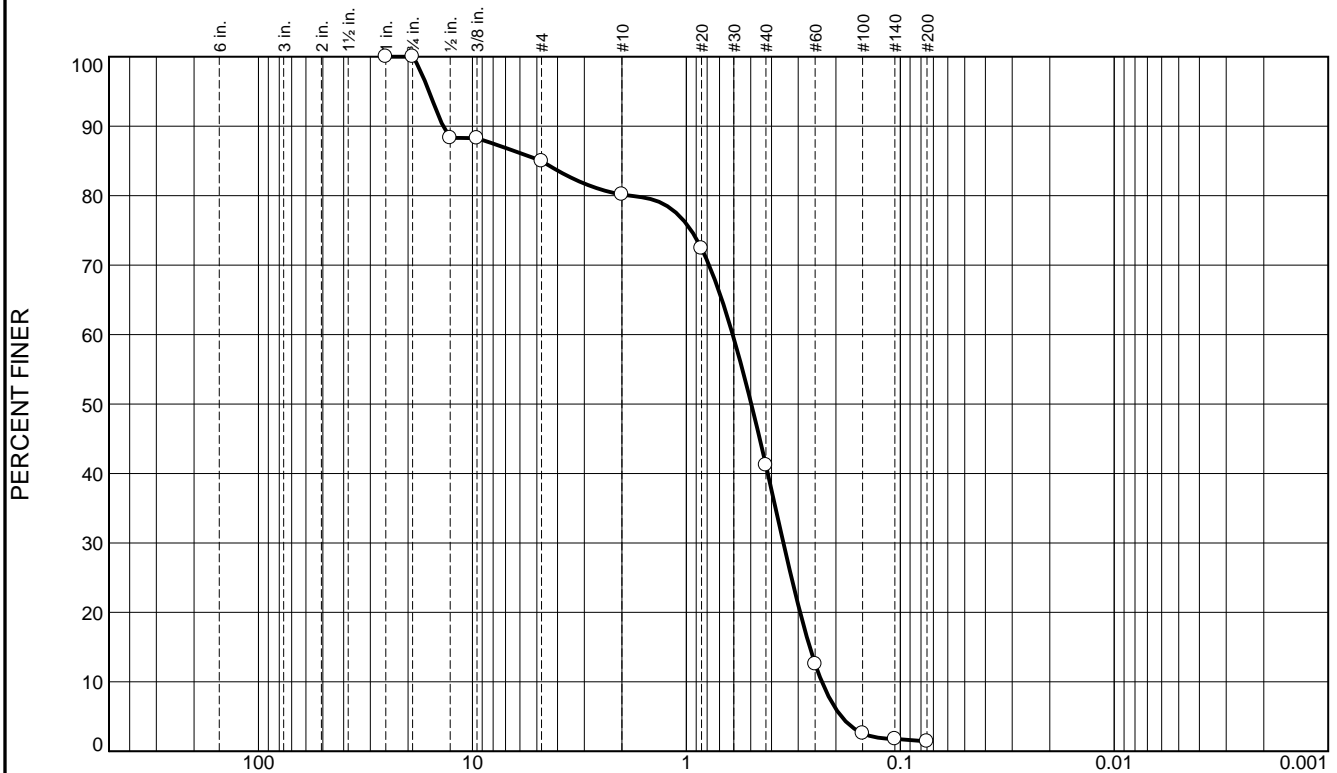
Recovery 17.2'

Longitude 088 21.296

Comments



Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	15.0	4.8	39.0	39.8	1.4	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
1	100.0		
.75	100.0		
.5	88.3		
.375	88.3		
#4	85.0		
#10	80.2		
#20	72.4		
#40	41.2		
#60	12.6		
#100	2.6		
#140	1.8		
#200	1.4		

* (no specification provided)

Material Description

Fine to medium grained, SAND, with some SHELL

Atterberg Limits

PL= LL= PI=

Coefficients

D₉₀= 13.7089 D₈₅= 4.7741 D₆₀= 0.6072
D₅₀= 0.4972 D₃₀= 0.3518 D₁₅= 0.2651
D₁₀= 0.2325 C_u= 2.61 C_c= 0.88

Classification

USCS= SP AASHTO=

Remarks

Location: BI-PBS-45-12 A
Sample Number: 6471 (10)

Depth: 0.0'

Date: 12/03/12

Thompson Engineering

Mobile, Alabama

Client: CDM/Thompson Engineering JV
Project: MsCIP Barrier Island Restoration GT

Project No: 1221110095

Figure

Particle Size Distribution Report



GRAIN SIZE - mm.

% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	0.0	0.0	7.4	89.2	3.4	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
1	100.0		
.75	100.0		
.5	100.0		
.375	100.0		
#4	100.0		
#10	100.0		
#20	98.4		
#40	92.6		
#60	67.5		
#100	10.0		
#140	4.3		
#200	3.4		

* (no specification provided)

Material Description

Fine grained, SAND

Atterberg Limits

PL=

LL=

PI=

Coefficients

D₉₀= 0.3731

D₈₅= 0.3213

D₆₀= 0.2335

D₅₀= 0.2152

D₃₀= 0.1841

D₁₅= 0.1601

D₁₀= 0.1500

C_u= 1.56

C_c= 0.97

Classification

USCS= SP

AASHTO=

Remarks

Location: BI-PBS-45-12 B

Sample Number: 6471 (11)

Depth: 2.8'

Date: 12/03/12

Thompson Engineering

Mobile, Alabama

Client: CDM/Thompson Engineering JV

Project: MsCIP Barrier Island Restoration GT

Project No: 1221110095

Figure

Particle Size Distribution Report



GRAIN SIZE - mm.

% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	1.8	0.9	10.0	82.4	4.9	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
1	100.0		
.75	100.0		
.5	100.0		
.375	99.3		
#4	98.2		
#10	97.3		
#20	96.0		
#40	87.3		
#60	51.3		
#100	11.3		
#140	5.6		
#200	4.9		

* (no specification provided)

Material Description

Fine to medium grained, SAND, with trace SHELL

Atterberg Limits

PL= LL= PI=

Coefficients

D₉₀= 0.5012 D₈₅= 0.4030 D₆₀= 0.2766
D₅₀= 0.2463 D₃₀= 0.1973 D₁₅= 0.1613
D₁₀= 0.1453 C_u= 1.90 C_c= 0.97

Classification

USCS= SP AASHTO=

Remarks

Location: BI-PBS-45-12 C
Sample Number: 6471 (12)

Depth: 14.0'

Date: 12/03/12

Thompson Engineering

Mobile, Alabama

Client: CDM/Thompson Engineering JV
Project: MsCIP Barrier Island Restoration GT

Project No: 1221110095

Figure

Boring Designation BI-PBS-046-12

DRILLING LOG		DIVISION South Atlantic		INSTALLATION Mobile District		SHEET 1 OF 2 SHEETS	
1. PROJECT MsCIP Barrier Island Restoration Petit Bois Pass-OCS East				9. SIZE AND TYPE OF BIT N/A			
2. BORING DESIGNATION BI-PBS-046-12		LOCATION COORDINATES E = 1,134,958 N = 223,463		10. COORDINATE SYSTEM/DATUM State Plane, MSE (U.S. Ft.)		HORIZONTAL NAD83	
3. DRILLING AGENCY Corps of Engineers - CESAM		CONTRACTOR FILE NO.		11. MANUFACTURER'S DESIGNATION OF DRILL Vibracore		<input type="checkbox"/> AUTO HAMMER <input type="checkbox"/> MANUAL HAMMER	
4. NAME OF DRILLER American Vibracore Systems, Inc.				12. TOTAL SAMPLES		DISTURBED 0	
5. DIRECTION OF BORING <input checked="" type="checkbox"/> VERTICAL <input type="checkbox"/> INCLINED				13. TOTAL NUMBER CORE BOXES		14. WATER DEPTH 60.9 Ft.	
6. THICKNESS OF OVERBURDEN N/A				15. DATE BORING		STARTED 12-01-12	
7. DEPTH DRILLED INTO ROCK N/A				16. ELEVATION TOP OF BORING -60.6 Ft.		COMPLETED 12-01-12	
8. TOTAL DEPTH OF BORING 20.0 Ft.				17. TOTAL RECOVERY FOR BORING 100%			
				18. SIGNATURE AND TITLE OF INSPECTOR Mike FitzHarris, Geologist			

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	SAMPLE	LABORATORY RESULTS
-60.6	0.0				
			SAND, poorly-graded, mostly fine to medium-grained sand-sized quartz, trace shell fragments, gray (SP)	A	Classification: SP Color: 2.5Y 7/2-light gray D50: 0.261 mm % Fines: 2.3
-65.1	4.5				
-66.1	5.5		CLAY, lean, mostly clay, little fine-grained sand-sized quartz, medium plasticity, gray mottled with orange (CL)	NS	
-67.0	6.4				
			SAND, clayey, mostly fine-grained sand-sized quartz, some clay, trace shell fragments, gray mottled with orange (SC)	B	Classification: SP-SM Color: 2.5Y 7/2-light gray D50: 0.2571 mm % Fines: 7.8
-69.3	8.7				
-70.6	10.0		SAND, poorly-graded, mostly fine-grained sand-sized quartz, lt. gray (SP)	C	Classification: SP-SM Color: 2.5Y 6/2-light brownish gray D50: 0.2363 mm % Fines: 6.4
-72.0	11.4		SAND, poorly-graded with silt, mostly fine-grained sand-sized quartz, few silt, trace wood debris, gray (SP-SM)	D	Classification: SP-SM Color: 2.5Y 5/2-grayish brown D50: 0.2177 mm % Fines: 7
			SAND, silty, mostly fine-grained sand-sized quartz, some clay, trace shell fragments, dark gray (SM)	E	Classification: SP-SM Color: 2.5Y 6/2-light brownish gray D50: 0.1909 mm % Fines: 6.3
-74.9	14.3				
-75.3	14.7		SAND, poorly-graded with silt, mostly fine-grained sand-sized quartz, few silt, trace shell fragments, gray (SP-SM)	NS	
-75.9	15.3				
-77.3	16.7		SHELL, mostly shell fragments, trace clay, dark gray		
			CLAY, lean, mostly clay, little fine-grained sand-sized quartz, medium plasticity, dark gray (CL)	F	Classification: SP-SM Color: 2.5Y 7/2-light gray D50: 0.2466 mm % Fines: 6.7
-80.6	20.0		SAND, clayey, mostly fine-grained sand-sized quartz, some clay, little shell fragments, dark gray (SC)		
			SAND, poorly-graded with silt, mostly fine to medium-grained sand-sized quartz, few silt, trace shell fragments, gray (SP-SM)		
NOTES: 1. Soils are field visually classified in accordance with the Unified Soils Classification System.					

DRILLING LOG (Cont. Sheet)			INSTALLATION Mobile District		SHEET 2 OF 2 SHEETS
PROJECT MsCIP Barrier Island Restoration			COORDINATE SYSTEM/DATUM State Plane, MSE (U.S. Ft.)	HORIZONTAL NAD83	VERTICAL NAVD88
LOCATION COORDINATES X = 1,134,958 Y = 223,463			ELEVATION TOP OF BORING -60.6 Ft.		
ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	SAMPLE	LABORATORY RESULTS
			2. NS = Sample not submitted for laboratory analysis from this interval. 3. Seafloor elevation calculated using sampling vessel's fathometer water depth reading and applying NOAA tidal gauge data conversion factor.		

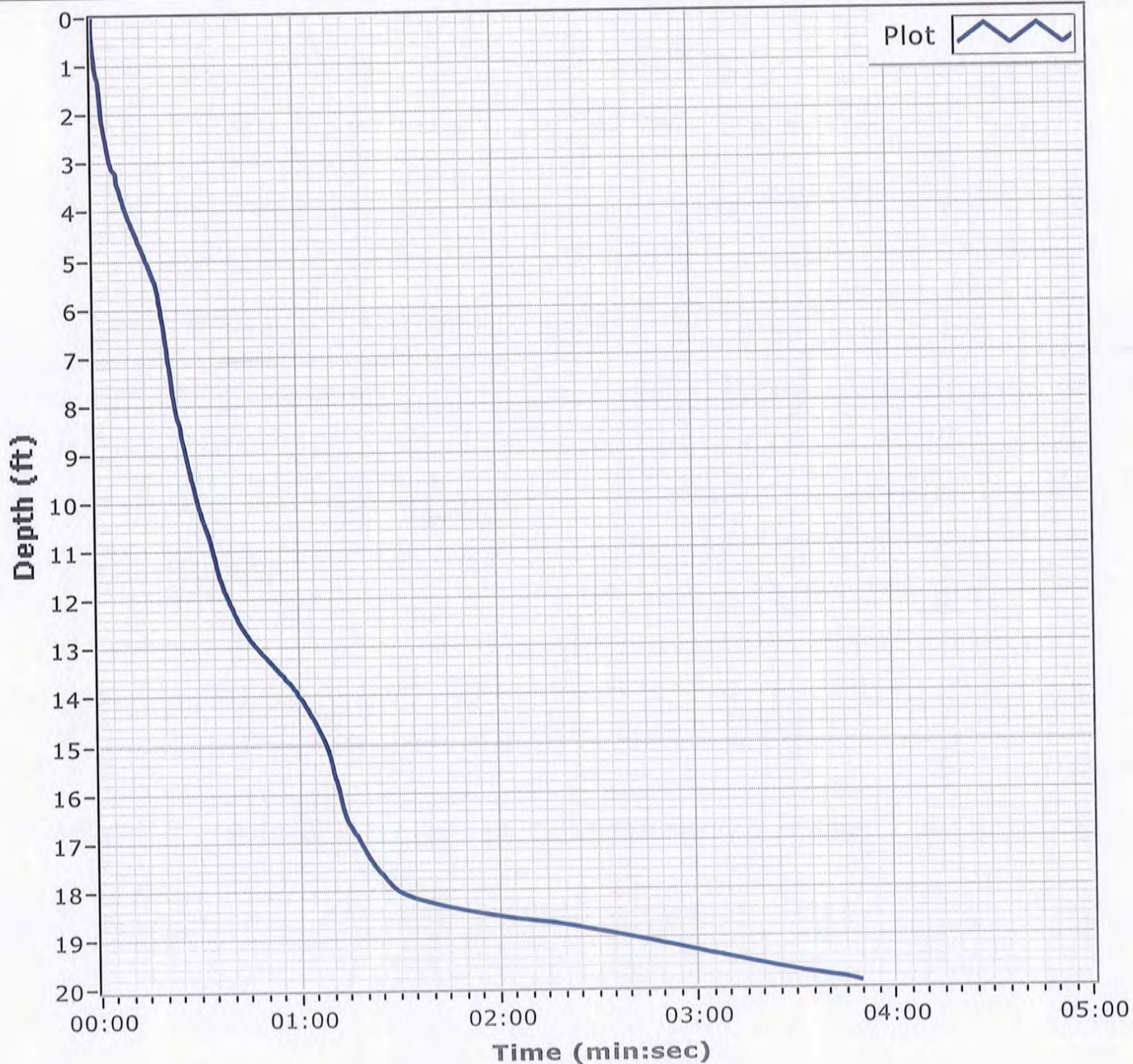
Project

Mississippi Barrier Island
Restoration Project

AVS
AMERICAN VIBRACORE
S E R V I C E S

Core Identifier BI-PBS-46-12**Date** 12/01/2012**Water Depth** 60.9'**Coordinate System**

Latitude / Longitude

Start Time 13:40:35**End Time** 13:44:24**Penetration** 20.0'**Latitude** 30 06.817**Total Time** 00:03:49**Recovery** 20.0'**Longitude** 088 21.401**Comments**

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	1.5	2.4	14.4	79.4	2.3	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
1	100.0		
.75	100.0		
.5	99.2		
.375	99.2		
#4	98.5		
#10	96.1		
#20	92.1		
#40	81.7		
#60	46.1		
#100	4.5		
#140	2.5		
#200	2.3		

* (no specification provided)

<u>Material Description</u>		
Fine to medium grained, SAND, with trace SHELL		
<u>Atterberg Limits</u>		
PL=	LL=	PI=
<u>Coefficients</u>		
D ₉₀ = 0.6016	D ₈₅ = 0.4680	D ₆₀ = 0.2944
D ₅₀ = 0.2610	D ₃₀ = 0.2114	D ₁₅ = 0.1787
D ₁₀ = 0.1667	C _u = 1.77	C _c = 0.91
<u>Classification</u>		
USCS= SP	AASHTO=	
<u>Remarks</u>		

Location: BI-PBS-46-12 A
Sample Number: 6471 (13)

Depth: 0.0'

Date: 12/03/12

Thompson Engineering

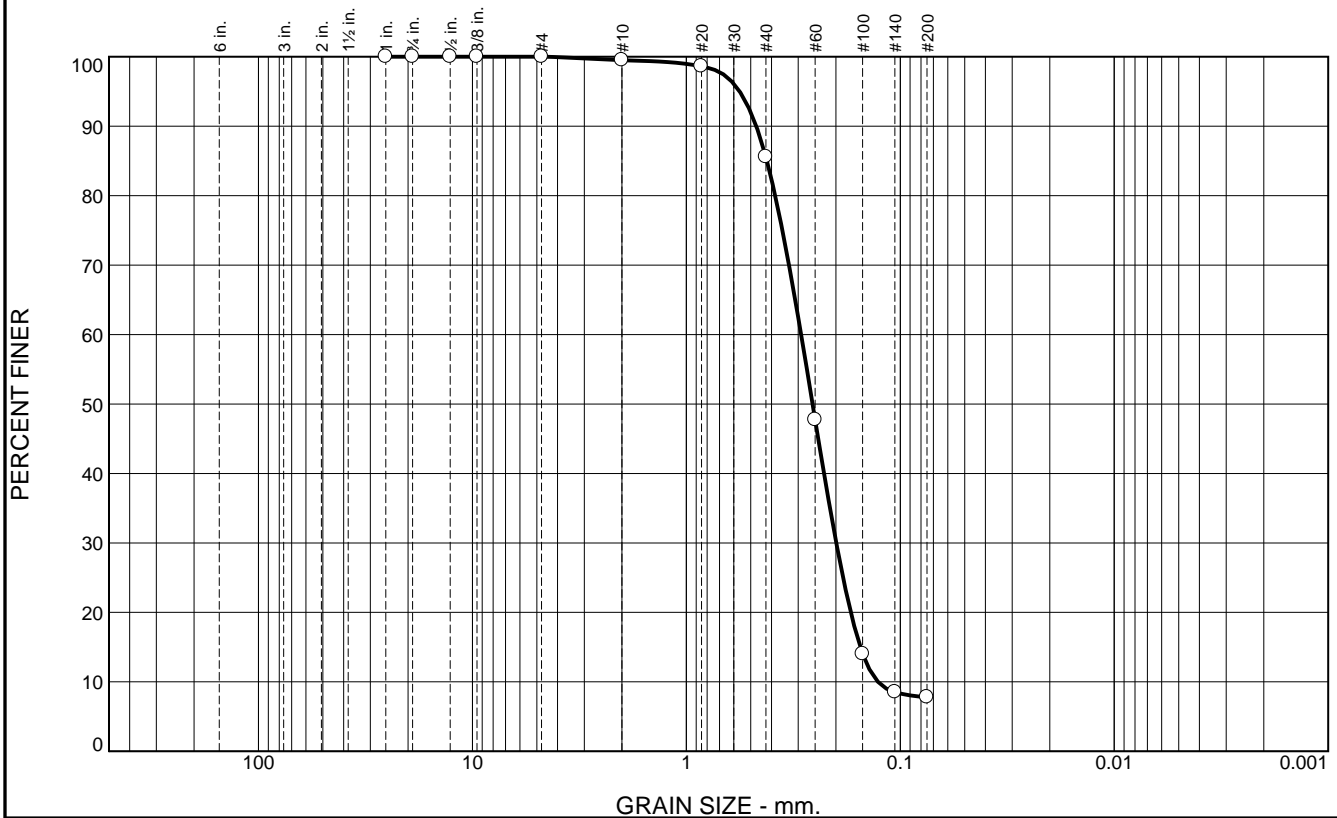
Mobile, Alabama

Client: CDM/Thompson Engineering JV
Project: MsCIP Barrier Island Restoration GT

Project No: 1221110095

Figure

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	0.0	0.5	13.9	77.8	7.8	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
1	100.0		
.75	100.0		
.5	100.0		
.375	100.0		
#4	100.0		
#10	99.5		
#20	98.6		
#40	85.6		
#60	47.7		
#100	14.0		
#140	8.5		
#200	7.8		

* (no specification provided)

Material Description

Fine to medium grained, SLIGHTLY SILTY SAND

Atterberg Limits

PL= LL= PI=

Coefficients

D₉₀= 0.4713 D₈₅= 0.4202 D₆₀= 0.2909
D₅₀= 0.2571 D₃₀= 0.1992 D₁₅= 0.1538
D₁₀= 0.1272 C_u= 2.29 C_c= 1.07

Classification

USCS= SP-SM AASHTO=

Remarks

Location: BI-PBS-46-12 B

Sample Number: 6471 (14)

Depth: 6.4'

Date: 12/03/12

Thompson Engineering

Mobile, Alabama

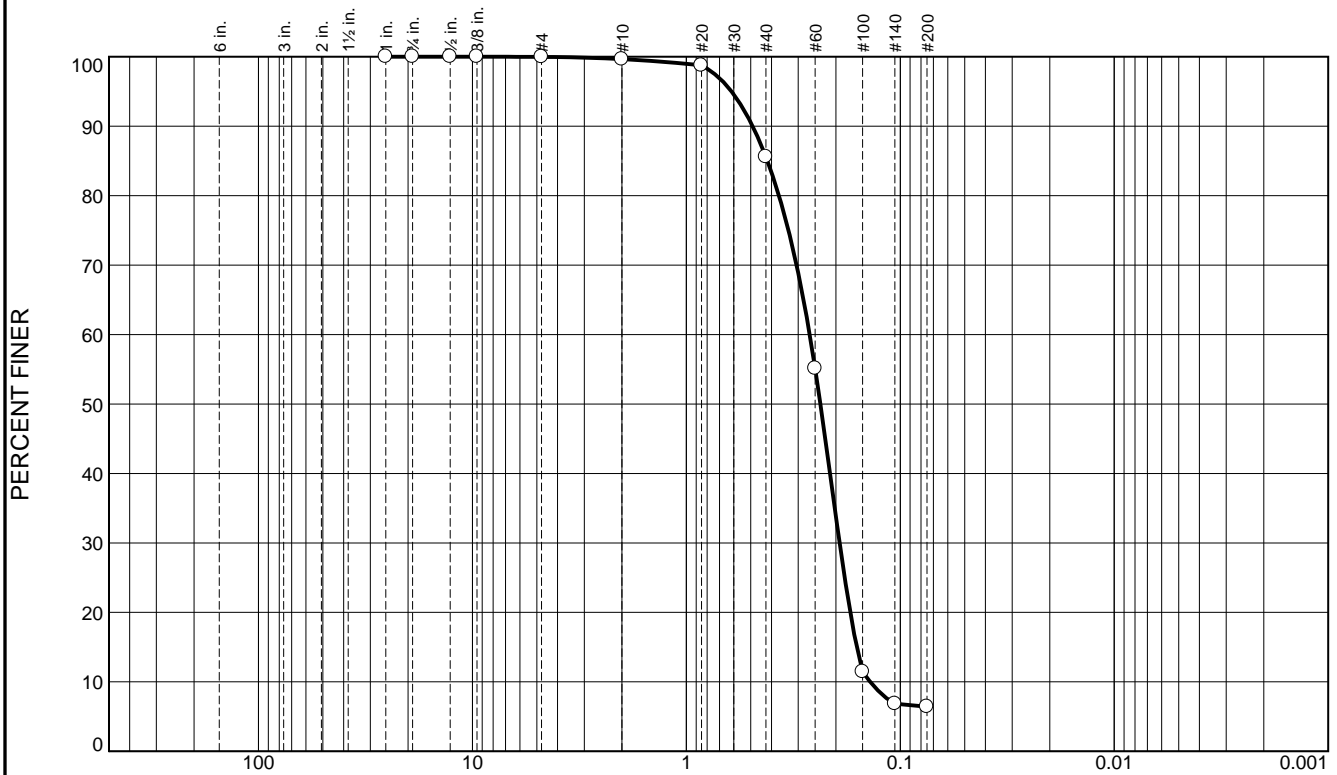
Client: CDM/Thompson Engineering JV

Project: MsCIP Barrier Island Restoration GT

Project No: 1221110095

Figure

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	0.0	0.4	14.0	79.2	6.4	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
1	100.0		
.75	100.0		
.5	100.0		
.375	100.0		
#4	100.0		
#10	99.6		
#20	98.8		
#40	85.6		
#60	55.1		
#100	11.4		
#140	6.9		
#200	6.4		

* (no specification provided)

Material Description

Fine to medium grained, SLIGHTLY SILTY SAND

Atterberg Limits

PL= LL= PI=

Coefficients

D₉₀= 0.4901 D₈₅= 0.4182 D₆₀= 0.2651
D₅₀= 0.2363 D₃₀= 0.1922 D₁₅= 0.1599
D₁₀= 0.1383 C_u= 1.92 C_c= 1.01

Classification

USCS= SP-SM AASHTO=

Remarks

Location: BI-PBS-46-12 C
Sample Number: 6471 (15)

Depth: 8.7'

Date: 12/03/12

Thompson Engineering

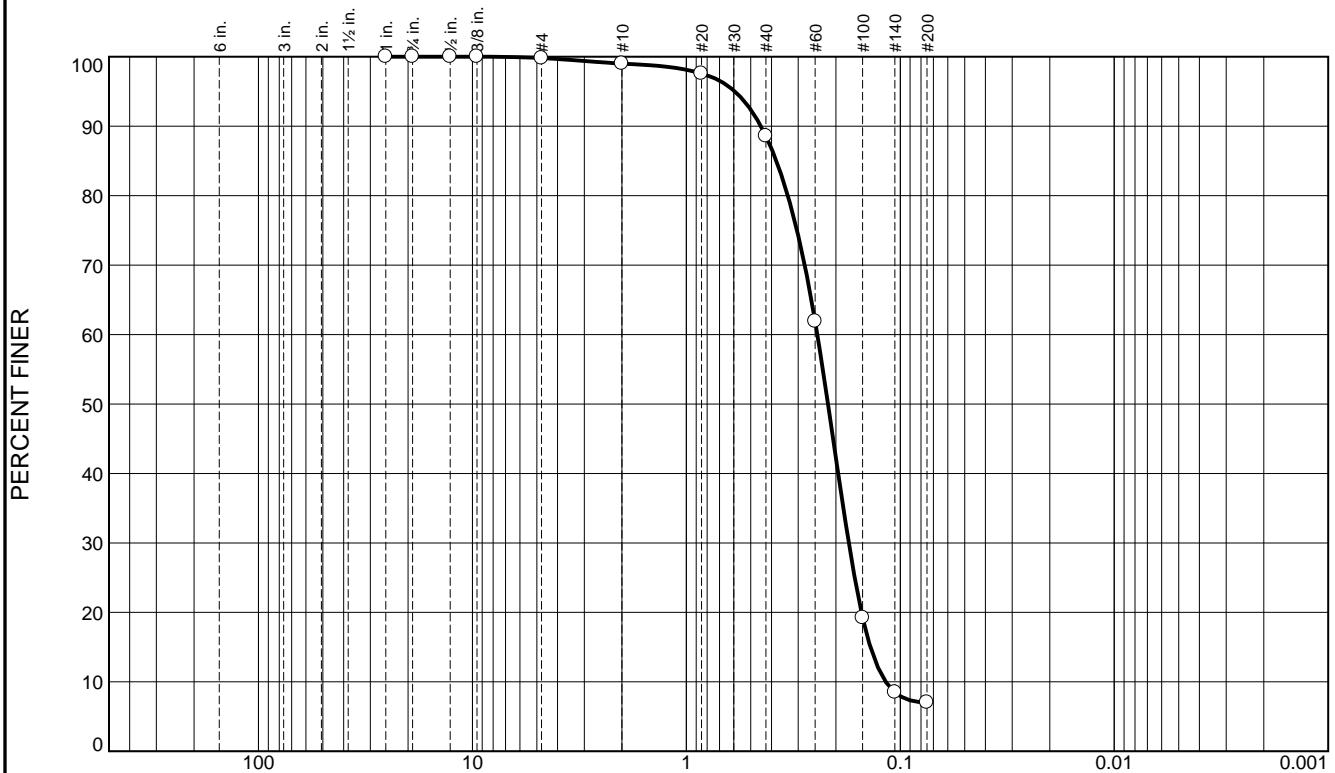
Mobile, Alabama

Client: CDM/Thompson Engineering JV
Project: MsCIP Barrier Island Restoration GT

Project No: 1221110095

Figure

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	0.2	0.8	10.4	81.6	7.0	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
1	100.0		
.75	100.0		
.5	100.0		
.375	100.0		
#4	99.8		
#10	99.0		
#20	97.6		
#40	88.6		
#60	61.9		
#100	19.2		
#140	8.5		
#200	7.0		

* (no specification provided)

<u>Material Description</u>		
Fine to medium grained, SLIGHTLY SILTY SAND		
<u>Atterberg Limits</u>		
PL=	LL=	PI=
<u>Coefficients</u>		
D ₉₀ = 0.4485	D ₈₅ = 0.3795	D ₆₀ = 0.2442
D ₅₀ = 0.2177	D ₃₀ = 0.1742	D ₁₅ = 0.1380
D ₁₀ = 0.1169	C _u = 2.09	C _c = 1.06
<u>Classification</u>		
USCS= SP-SM	AASHTO=	
<u>Remarks</u>		

Location: BI-PBS-46-12 D
Sample Number: 6471 (16)

Depth: 10.0'

Date: 12/03/12

Thompson Engineering

Mobile, Alabama

Client: CDM/Thompson Engineering JV
Project: MsCIP Barrier Island Restoration GT

Project No: 1221110095

Figure

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	1.2	1.1	7.7	83.7	6.3	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
1	100.0		
.75	100.0		
.5	99.4		
.375	99.4		
#4	98.8		
#10	97.7		
#20	96.2		
#40	90.0		
#60	80.7		
#100	22.3		
#140	8.4		
#200	6.3		

* (no specification provided)

<u>Material Description</u>		
Fine grained, SLIGHTLY SILTY SAND, with trace SHELL		
<u>Atterberg Limits</u>		
PL=	LL=	PI=
<u>Coefficients</u>		
D ₉₀ = 0.4248	D ₈₅ = 0.3106	D ₆₀ = 0.2062
D ₅₀ = 0.1909	D ₃₀ = 0.1622	D ₁₅ = 0.1346
D ₁₀ = 0.1168	C _u = 1.77	C _c = 1.09
<u>Classification</u>		
USCS= SP-SM	AASHTO=	
<u>Remarks</u>		

Location: BI-PBS-46-12 E
Sample Number: 6471 (17)

Depth: 11.4'

Date: 12/03/12

Thompson Engineering

Mobile, Alabama

Client: CDM/Thompson Engineering JV
Project: MsCIP Barrier Island Restoration GT

Project No: 1221110095

Figure

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	1.2	1.7	9.2	81.2	6.7	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
1	100.0		
.75	100.0		
.5	99.4		
.375	99.4		
#4	98.8		
#10	97.1		
#20	94.9		
#40	87.9		
#60	51.3		
#100	11.7		
#140	7.5		
#200	6.7		

* (no specification provided)

Material Description

Fine grained, SLIGHTLY SILTY SAND, with trace SHELL

Atterberg Limits

PL= LL= PI=

Coefficients

D₉₀= 0.5026 D₈₅= 0.3986 D₆₀= 0.2764
D₅₀= 0.2466 D₃₀= 0.1977 D₁₅= 0.1607
D₁₀= 0.1343 C_u= 2.06 C_c= 1.05

Classification

USCS= SP-SM AASHTO=

Remarks

Location: BI-PBS-46-12 F
Sample Number: 6471 (18)

Depth: 16.7'

Date: 12/03/12

Thompson Engineering

Mobile, Alabama

Client: CDM/Thompson Engineering JV
Project: MsCIP Barrier Island Restoration GT

Project No: 1221110095

Figure

Boring Designation BI-PBS-047-12

DRILLING LOG		DIVISION South Atlantic		INSTALLATION Mobile District		SHEET 1 OF 1 SHEETS	
1. PROJECT MsCIP Barrier Island Restoration Petit Bois Pass-OCS East				9. SIZE AND TYPE OF BIT N/A			
2. BORING DESIGNATION BI-PBS-047-12		LOCATION COORDINATES E = 1,133,067 N = 234,413		10. COORDINATE SYSTEM/DATUM State Plane, MSE (U.S. Ft.)		HORIZONTAL NAD83	
3. DRILLING AGENCY Corps of Engineers - CESAM		CONTRACTOR FILE NO.		11. MANUFACTURER'S DESIGNATION OF DRILL Vibracore		<input type="checkbox"/> AUTO HAMMER <input type="checkbox"/> MANUAL HAMMER	
4. NAME OF DRILLER American Vibracore Systems, Inc.				12. TOTAL SAMPLES		DISTURBED 0	
5. DIRECTION OF BORING <input checked="" type="checkbox"/> VERTICAL <input type="checkbox"/> INCLINED				13. TOTAL NUMBER CORE BOXES		14. WATER DEPTH 48.4 Ft.	
6. THICKNESS OF OVERBURDEN N/A				15. DATE BORING		STARTED 11-28-12	
7. DEPTH DRILLED INTO ROCK N/A				16. ELEVATION TOP OF BORING -49.2 Ft.		COMPLETED 11-28-12	
8. TOTAL DEPTH OF BORING 16.9 Ft.				17. TOTAL RECOVERY FOR BORING 100%			
				18. SIGNATURE AND TITLE OF INSPECTOR Mike FitzHarris, Geologist			
ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	SAMPLE	LABORATORY RESULTS		
-49.2	0.0						
			SAND, poorly-graded, mostly fine to medium-grained sand-sized quartz, trace shell fragments, gray (SP)	A	Classification: SP Color: 5Y 7/2-light gray D50: 0.2838 mm % Fines: 1.7		
-52.9	3.7						
-54.8	5.6		SAND, poorly-graded with silt, mostly fine-grained sand-sized quartz, few silt, trace clay, trace shell fragments, gray (SP-SM)	B	Classification: SP Color: 5Y 6/2-light olive gray D50: 0.2135 mm % Fines: 0.2		
-57.7	8.5		SAND, poorly-graded with clay, mostly fine-grained sand-sized quartz, few clay, trace silt, trace shell fragments, gray (SP-SC)				
-62.7	13.5		CLAY, fat, mostly clay, trace shell fragments, trace wood debris, trace fine grain sand lenses, soft to moderately hard, med. to high plasticity, gray mottled with brown and greenish gray (CH)	NS			
-64.7	15.5		SAND, clayey, mostly fine-grained sand-sized quartz, some clay, trace shell fragments, sandy lense at 15.0', gray (SC)				
-66.1	16.9		CLAY, fat, mostly clay, trace wood debris, trace shell fragments, medium to high plasticity, gray (CH)				
			NOTES: 1. Soils are field visually classified in accordance with the Unified Soils Classification System. 2. NS = Sample not submitted for laboratory analysis from this interval. 3. Seafloor elevation determined from USACE hydrographic survey completed April 2014.				

Project

Mississippi Barrier Island
Restoration Project

AVS
AMERICAN VIBRACORE
S E R V I C E S

Core Identifier BI-PBS-47-12

Date 11/28/2012

Water Depth 48.4'

Coordinate System

Latitude / Longitude

Start Time 14:21:09

End Time 14:22:41

Penetration 20.0'

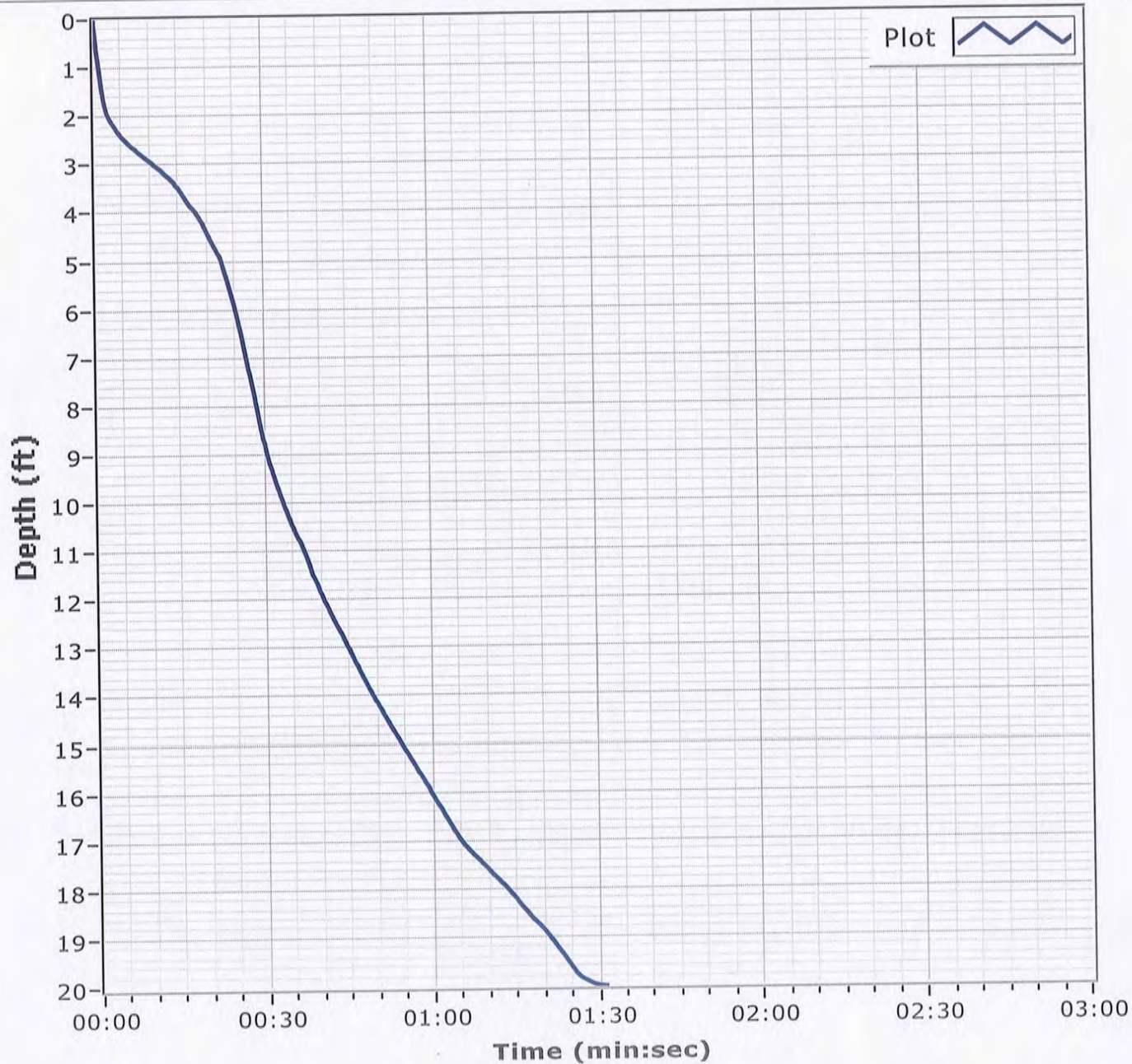
Latitude 30 08.635

Total Time 00:01:31

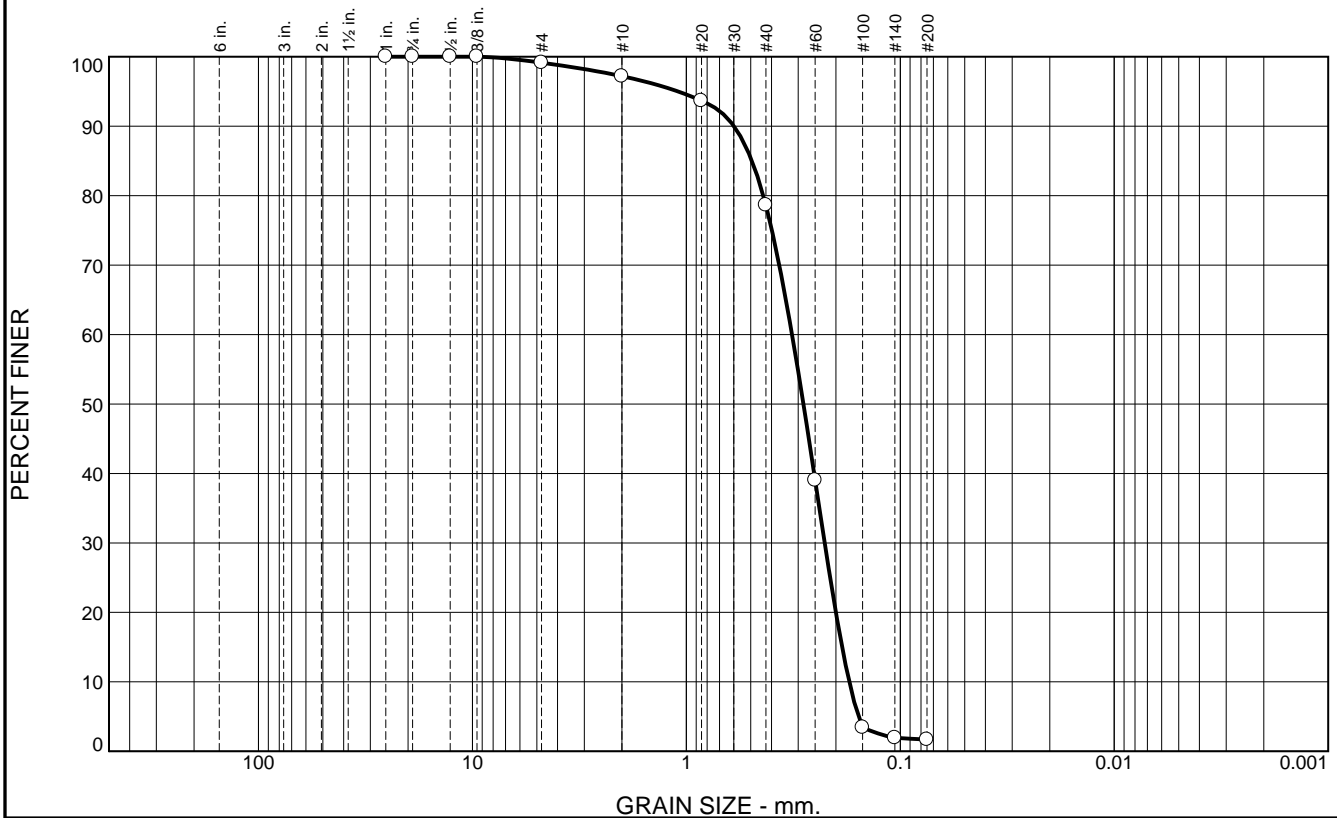
Recovery 16.9'

Longitude 088 21.751

Comments



Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	0.9	1.9	18.6	76.9	1.7	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
1	100.0		
.75	100.0		
.5	100.0		
.375	100.0		
#4	99.1		
#10	97.2		
#20	93.7		
#40	78.6		
#60	39.0		
#100	3.4		
#140	1.9		
#200	1.7		

* (no specification provided)

<u>Material Description</u>		
Fine to medium grained, SAND		
PL=	<u>Atterberg Limits</u> LL=	PI=
<u>Coefficients</u>		
D ₉₀ = 0.5990	D ₈₅ = 0.4938	D ₆₀ = 0.3207
D ₅₀ = 0.2838	D ₃₀ = 0.2256	D ₁₅ = 0.1871
D ₁₀ = 0.1734	C _u = 1.85	C _c = 0.92
<u>Classification</u>		
USCS= SP	AASHTO=	
<u>Remarks</u>		

Location: BI-PBS-47-12 A
Sample Number: 6471 (19)

Depth: 0.0'

Date: 12/03/12

Thompson Engineering

Mobile, Alabama

Client: CDM/Thompson Engineering JV
Project: MsCIP Barrier Island Restoration GT

Project No: 1221110095

Figure

Particle Size Distribution Report



GRAIN SIZE - mm.

% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	0.8	2.2	11.4	85.4	0.2	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
1	100.0		
.75	100.0		
.5	100.0		
.375	100.0		
#4	99.2		
#10	97.0		
#20	93.5		
#40	85.6		
#60	64.6		
#100	16.5		
#140	3.8		
#200	0.2		

* (no specification provided)

Material Description

Fine to medium grained, SAND

Atterberg Limits

PL= LL= PI=

Coefficients

D₉₀= 0.5779 D₈₅= 0.4111 D₆₀= 0.2368
D₅₀= 0.2135 D₃₀= 0.1757 D₁₅= 0.1467
D₁₀= 0.1334 C_u= 1.77 C_c= 0.98

Classification

USCS= SP AASHTO=

Remarks

Location: BI-PBS-47-12 B
Sample Number: 6471 (20)

Depth: 3.7'

Date: 12/03/12

Thompson Engineering

Mobile, Alabama

Client: CDM/Thompson Engineering JV
Project: MsCIP Barrier Island Restoration GT

Project No: 1221110095

Figure

Boring Designation BI-PBS-048-12

DRILLING LOG		DIVISION South Atlantic		INSTALLATION Mobile District		SHEET 1 OF 1 SHEETS	
1. PROJECT MsCIP Barrier Island Restoration Petit Bois Pass-OCS East				9. SIZE AND TYPE OF BIT N/A			
2. BORING DESIGNATION BI-PBS-048-12		LOCATION COORDINATES E = 1,134,712 N = 233,995		10. COORDINATE SYSTEM/DATUM State Plane, MSE (U.S. Ft.)		HORIZONTAL NAD83 VERTICAL NAVD88	
3. DRILLING AGENCY Corps of Engineers - CESAM		CONTRACTOR FILE NO.		11. MANUFACTURER'S DESIGNATION OF DRILL Vibracore		<input type="checkbox"/> AUTO HAMMER <input type="checkbox"/> MANUAL HAMMER	
4. NAME OF DRILLER American Vibracore Systems, Inc.				12. TOTAL SAMPLES		DISTURBED UNDISTURBED (UD) 0	
5. DIRECTION OF BORING <input checked="" type="checkbox"/> VERTICAL <input type="checkbox"/> INCLINED		DEG. FROM VERTICAL		13. TOTAL NUMBER CORE BOXES			
		BEARING		14. WATER DEPTH 48.1 Ft.			
6. THICKNESS OF OVERBURDEN N/A				15. DATE BORING 11-28-12		STARTED COMPLETED 11-28-12	
7. DEPTH DRILLED INTO ROCK N/A				16. ELEVATION TOP OF BORING -50.7 Ft.			
8. TOTAL DEPTH OF BORING 18.4 Ft.				17. TOTAL RECOVERY FOR BORING 100%			
				18. SIGNATURE AND TITLE OF INSPECTOR Mike FitzHarris, Geologist			
ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	SAMPLE	LABORATORY RESULTS		
-50.7	0.0						
-52.0	1.3		SAND, poorly-graded, mostly fine to medium-grained sand-sized quartz, little shell fragments, trace silt, gray (SP)	A	Classification: SP Color: 5Y 7/2-light gray D50: 0.5146 mm % Fines: 1.7		
-54.6	3.9		SAND, poorly-graded, mostly fine to medium-grained sand-sized quartz, trace shell fragments, gray (SP)	B	Classification: SP Color: 5Y 6/2-light olive gray D50: 0.2246 mm % Fines: 0.4		
-57.0	6.3		SAND, silty, mostly fine-grained sand-sized quartz, some silt, trace clay, trace shell fragments, gray (SM)	C	Classification: SM Color: 5Y 5/2-olive gray D50: 0.1863 mm % Fines: 14.9		
-66.0	15.3		SAND, clayey, mostly fine-grained sand-sized quartz, some clay, alternating bands of clayey sand and sandy clay, greenish gray (SC)	NS			
-69.1	18.4		CLAY, lean, mostly clay, trace fine-grained sand-sized quartz, trace wood debris, moderately stiff, gray (CL)				
			NOTES:				
			1. Soils are field visually classified in accordance with the Unified Soils Classification System.				
			2. NS = Sample not submitted for laboratory analysis from this interval.				
			3. Seafloor elevation determined from USACE hydrographic survey completed April 2014.				

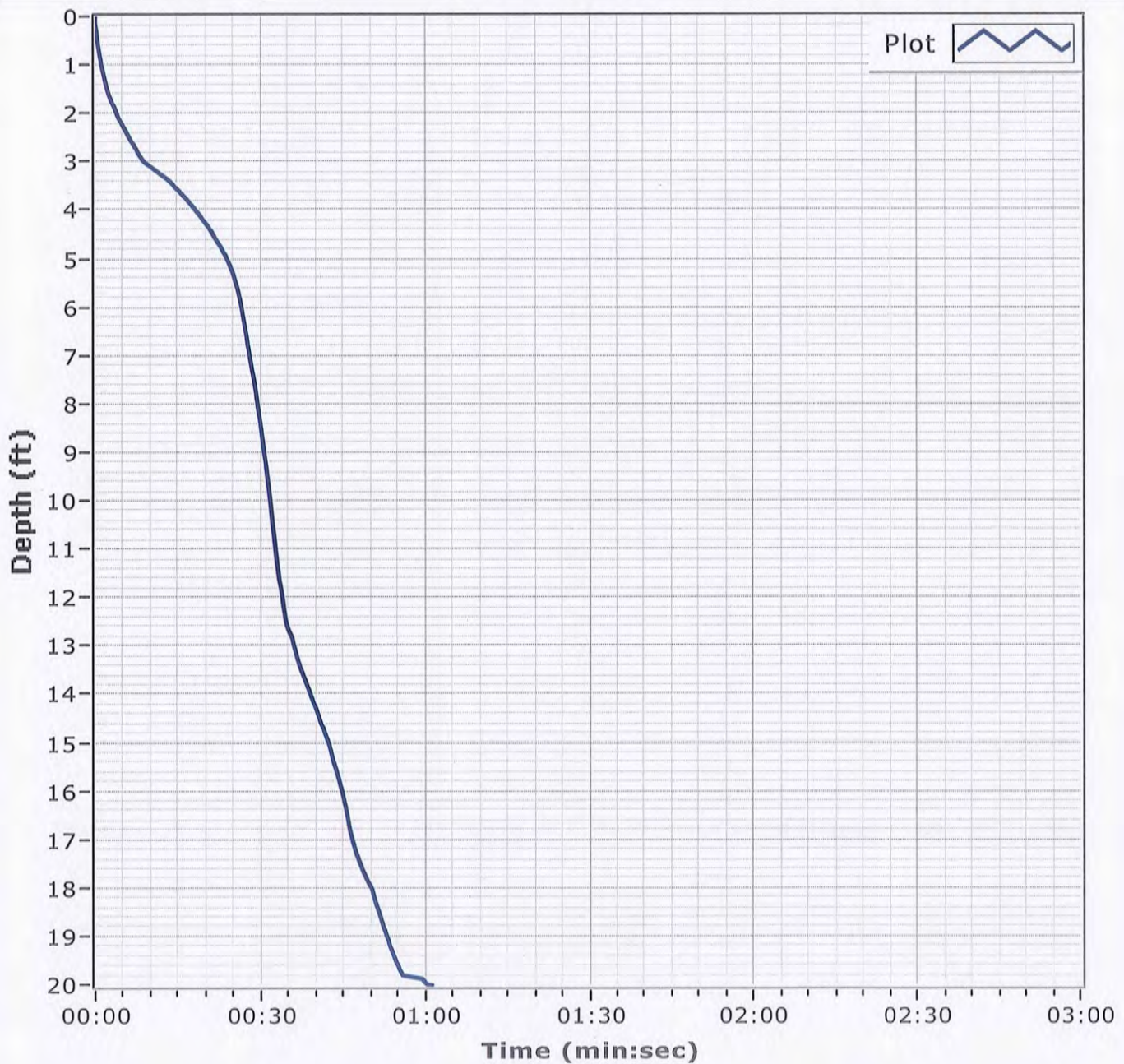
Project

Mississippi Barrier Island
Restoration Project

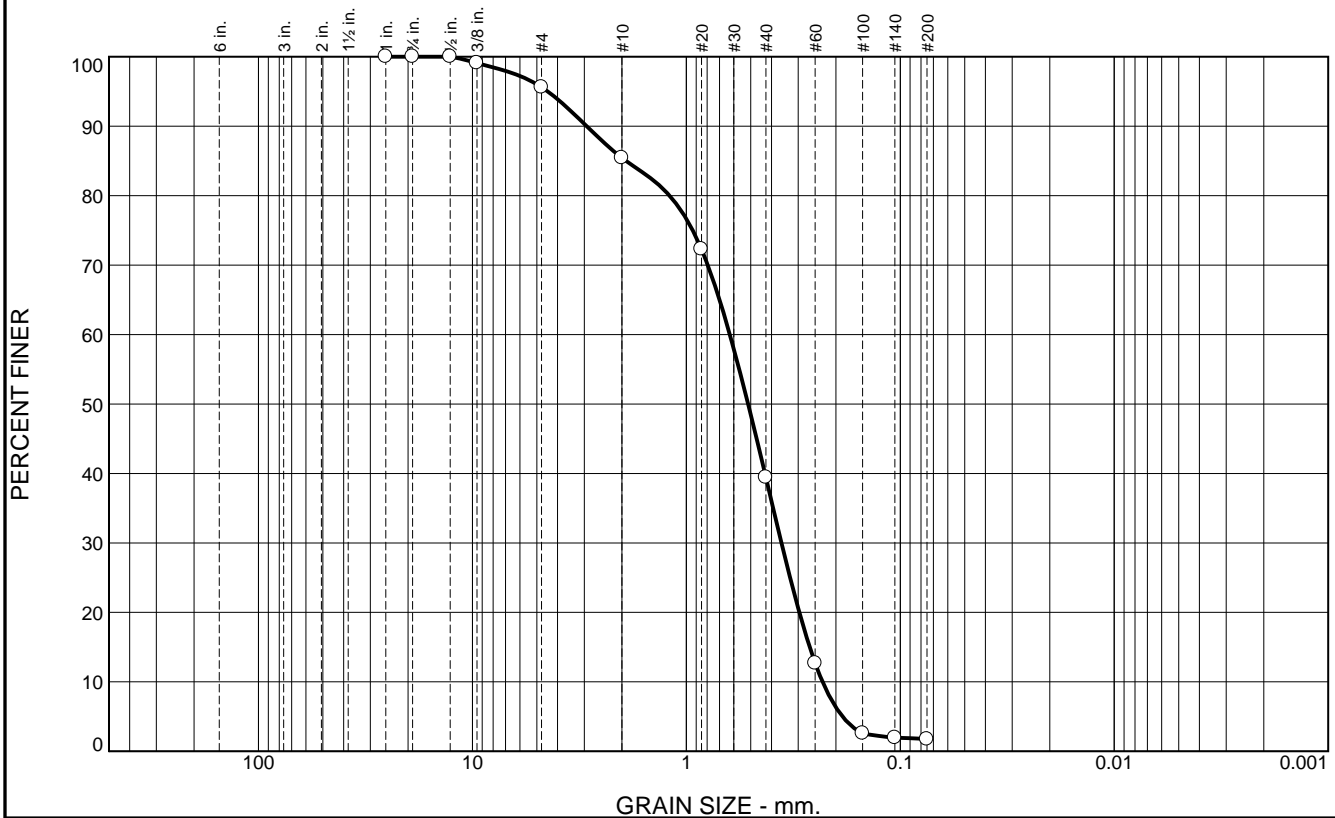
AVS
AMERICAN VIBRACORE
S E R V I C E S

Core Identifier BI-PBS-48-12**Date** 11/28/2012**Water Depth** 48.1'**Coordinate System**

Latitude / Longitude

Start Time 11:20:50**End Time** 11:21:52**Penetration** 20.0'**Latitude** 30 08.555**Total Time** 00:01:01**Recovery** 18.4'**Longitude** 088 21.439**Comments**

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	4.4	10.2	46.0	37.7	1.7	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
1	100.0		
.75	100.0		
.5	100.0		
.375	99.1		
#4	95.6		
#10	85.4		
#20	72.3		
#40	39.4		
#60	12.7		
#100	2.6		
#140	1.9		
#200	1.7		

* (no specification provided)

Material Description

Fine to coarse grained, SAND, with trace SHELL

Atterberg Limits

PL= LL= PI=

Coefficients

D₉₀= 2.9235 D₈₅= 1.9142 D₆₀= 0.6265
D₅₀= 0.5146 D₃₀= 0.3592 D₁₅= 0.2653
D₁₀= 0.2309 C_u= 2.71 C_c= 0.89

Classification

USCS= SP AASHTO=

Remarks

Location: BI-PBS-48-12 A
Sample Number: 6471 (21)

Depth: 0.0'

Date: 12/03/12

Thompson Engineering

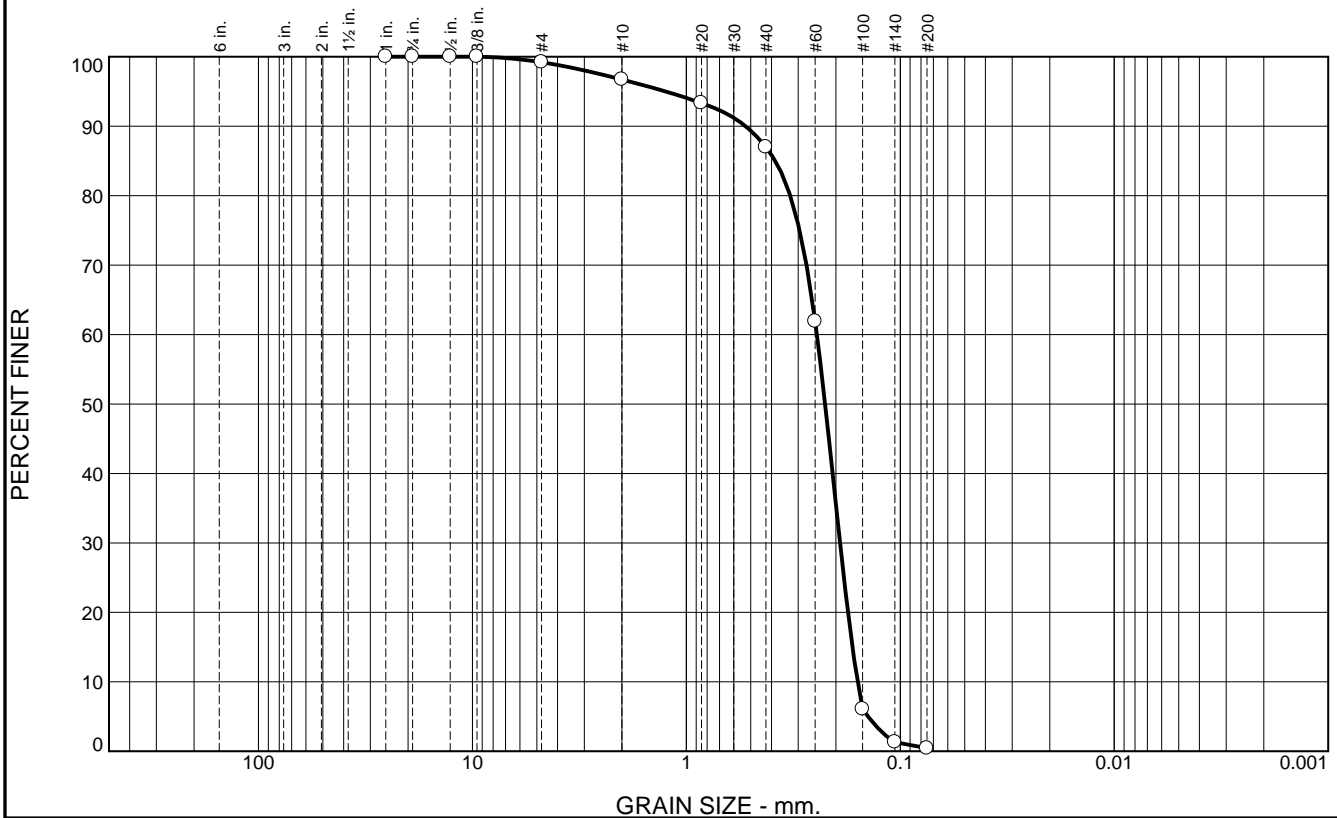
Mobile, Alabama

Client: CDM/Thompson Engineering JV
Project: MsCIP Barrier Island Restoration GT

Project No: 1221110095

Figure

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	0.8	2.5	9.7	86.6	0.4	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
1	100.0		
.75	100.0		
.5	100.0		
.375	100.0		
#4	99.2		
#10	96.7		
#20	93.3		
#40	87.0		
#60	61.9		
#100	6.1		
#140	1.3		
#200	0.4		

* (no specification provided)

Material Description

Fine grained, SAND

Atterberg Limits

PL=

LL=

PI=

Coefficients

D₉₀= 0.5290

D₈₅= 0.3840

D₆₀= 0.2453

D₅₀= 0.2246

D₃₀= 0.1913

D₁₅= 0.1675

D₁₀= 0.1585

C_u= 1.55

C_c= 0.94

Classification

USCS= SP

AASHTO=

Remarks

Location: BI-PBS-48-12 B
Sample Number: 6471 (22)

Depth: 1.3'

Date: 12/03/12

Thompson Engineering

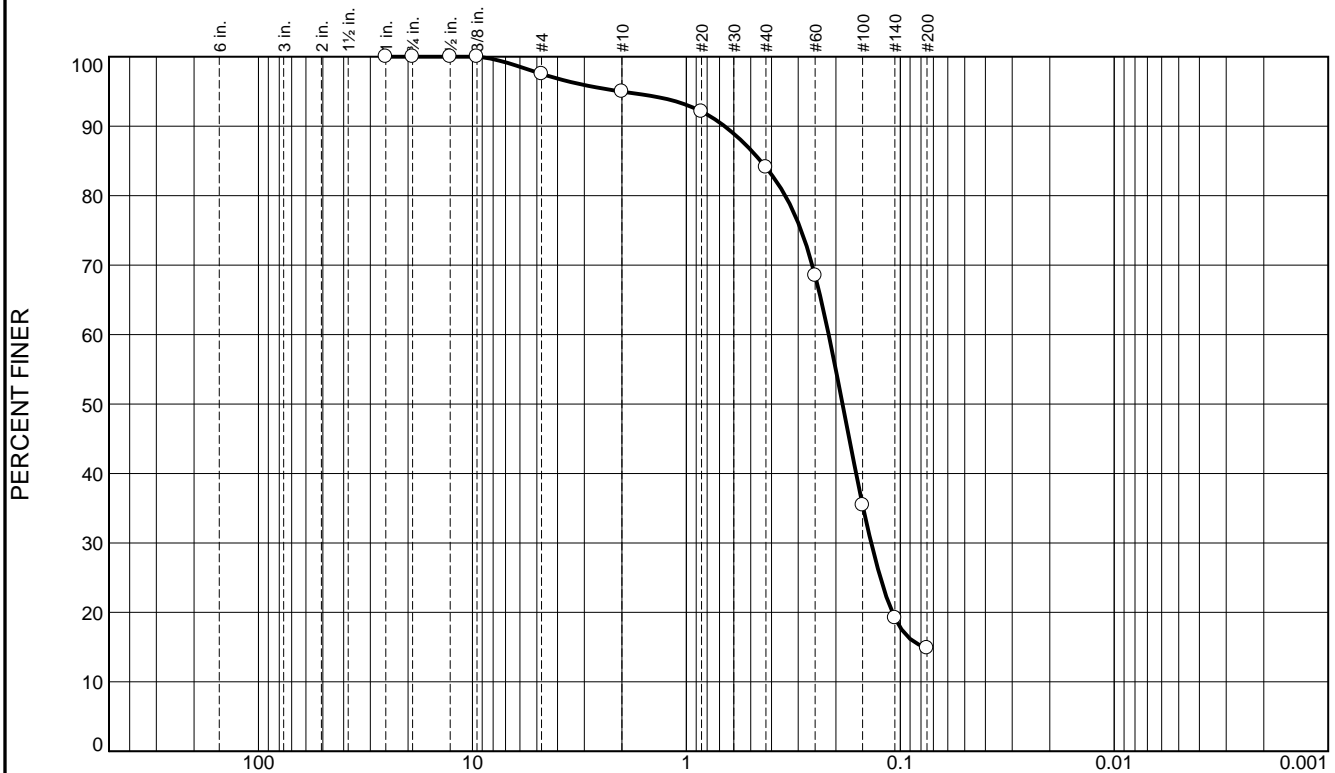
Mobile, Alabama

Client: CDM/Thompson Engineering JV
Project: MsCIP Barrier Island Restoration GT

Project No: 1221110095

Figure

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	2.5	2.5	10.9	69.2	14.9	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
1	100.0		
.75	100.0		
.5	100.0		
.375	100.0		
#4	97.5		
#10	95.0		
#20	92.1		
#40	84.1		
#60	68.5		
#100	35.4		
#140	19.2		
#200	14.9		

* (no specification provided)

Material Description

Fine to medium grained, SILTY SAND, with trace SHELL

Atterberg Limits

PL= LL= PI=

Coefficients

D₉₀= 0.6631 D₈₅= 0.4502 D₆₀= 0.2161
D₅₀= 0.1863 D₃₀= 0.1368 D₁₅= 0.0769
D₁₀= C_u= C_c=

Classification

USCS= SM AASHTO=

Remarks

Location: BI-PBS-48-12 C
Sample Number: 6471 (23)

Depth: 3.9'

Date: 12/03/12

Thompson Engineering

Mobile, Alabama

Client: CDM/Thompson Engineering JV
Project: MsCIP Barrier Island Restoration GT

Project No: 1221110095

Figure

Boring Designation BI-PBS-049-12

DRILLING LOG		DIVISION South Atlantic		INSTALLATION Mobile District		SHEET 1 OF 1 SHEETS	
1. PROJECT MsCIP Barrier Island Restoration Petit Bois Pass-OCS East				9. SIZE AND TYPE OF BIT N/A			
2. BORING DESIGNATION BI-PBS-049-12		LOCATION COORDINATES E = 1,131,364 N = 236,432		10. COORDINATE SYSTEM/DATUM State Plane, MSE (U.S. Ft.)		HORIZONTAL NAD83 VERTICAL NAVD88	
3. DRILLING AGENCY Corps of Engineers - CESAM		CONTRACTOR FILE NO.		11. MANUFACTURER'S DESIGNATION OF DRILL Vibracore		<input type="checkbox"/> AUTO HAMMER <input type="checkbox"/> MANUAL HAMMER	
4. NAME OF DRILLER American Vibracore Systems, Inc.				12. TOTAL SAMPLES		DISTURBED UNDISTURBED (UD) 0	
5. DIRECTION OF BORING <input checked="" type="checkbox"/> VERTICAL <input type="checkbox"/> INCLINED		DEG. FROM VERTICAL		13. TOTAL NUMBER CORE BOXES			
		BEARING		14. WATER DEPTH 50.6 Ft.			
6. THICKNESS OF OVERBURDEN N/A				15. DATE BORING 11-28-12		STARTED COMPLETED 11-28-12	
7. DEPTH DRILLED INTO ROCK N/A				16. ELEVATION TOP OF BORING -50.6 Ft.			
8. TOTAL DEPTH OF BORING 19.2 Ft.				17. TOTAL RECOVERY FOR BORING 100%			
				18. SIGNATURE AND TITLE OF INSPECTOR Mike FitzHarris, Geologist			

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	SAMPLE	LABORATORY RESULTS
-50.6	0.0				
			SAND, poorly-graded, mostly fine to medium-grained sand-sized quartz, trace shell fragments, gray (SP)	A	Classification: SP Color: 5Y 7/2-light gray D50: 0.2387 mm % Fines: 3.6
-54.8	4.2				
-56.5	5.9		SAND, silty, mostly fine-grained sand-sized quartz, some silt, trace shell fragments, wood fragments at 4.3', gray (SM)		
-59.3	8.7		CLAY, lean, mostly clay, some fine-grained sand-sized quartz, trace wood debris, gray (CL)		
-61.3	10.7		SAND, clayey, mostly fine-grained sand-sized quartz, some clay, trace wood debris, gray (SC)		
-65.8	15.2		CLAY, fat, mostly clay, trace fine-grained sand-sized quartz, trace shell fragments, gray (CH)	NS	
-69.8	19.2		SAND, clayey, mostly fine-grained sand-sized quartz, some clay, trace shell fragments, trace wood debris, gray (SC)		
			NOTES: 1. Soils are field visually classified in accordance with the Unified Soils Classification System. 2. NS = Sample not submitted for laboratory analysis from this interval. 3. Seafloor elevation determined from USACE hydrographic survey completed April 2014.		

Project

Mississippi Barrier Island
Restoration Project

AVS
AMERICAN VIBRACORE
S E R V I C E S

Core Identifier BI-PBS-49-12

Date 11/28/2012

Water Depth 50.6'

Coordinate System

Latitude / Longitude

Start Time 15:43:56

End Time 15:44:29

Penetration 20.0'

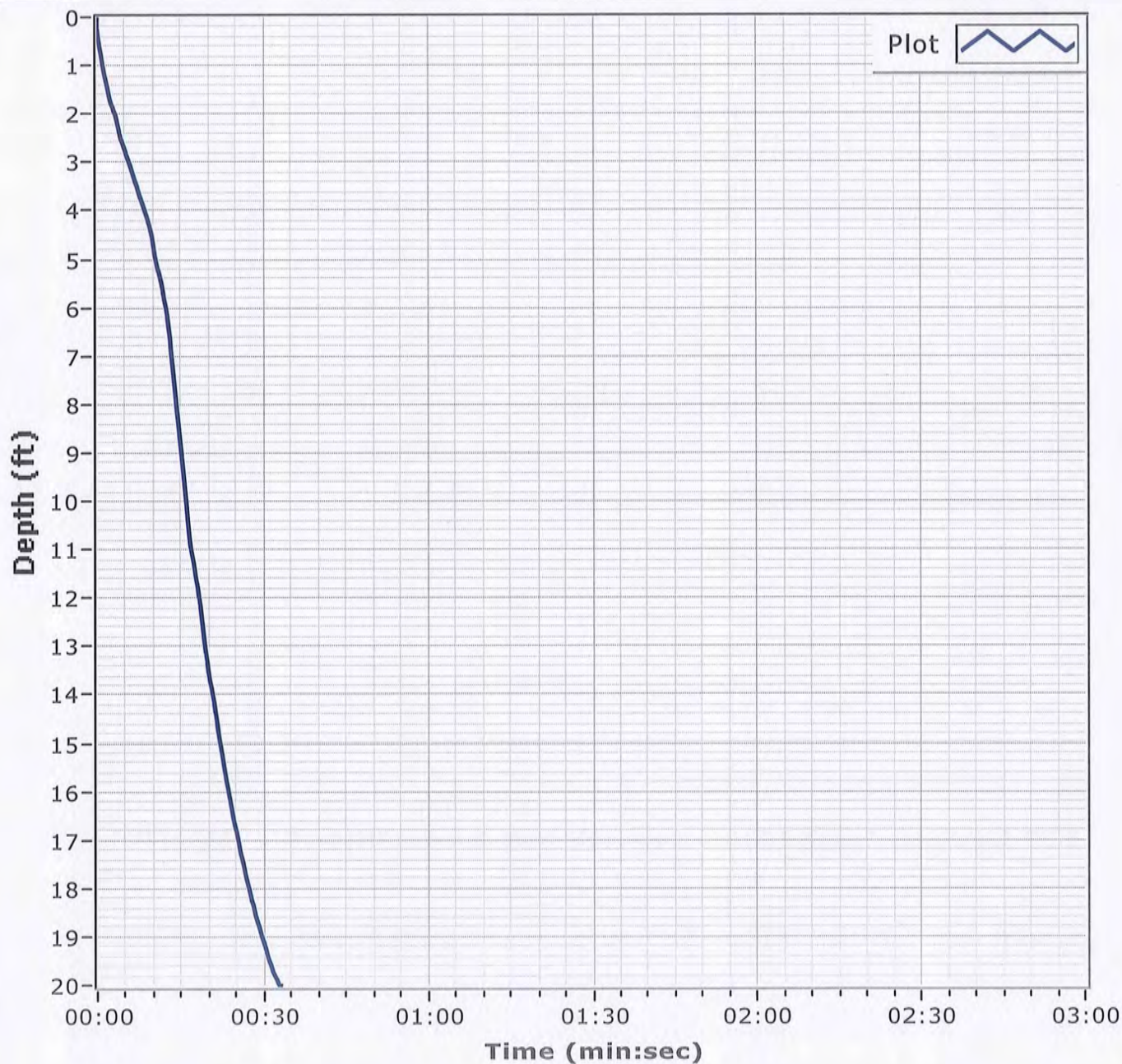
Latitude 30 08.959

Total Time 00:00:33

Recovery 19.2'

Longitude 088 22.073

Comments



Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	0.6	1.8	10.2	83.8	3.6	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
1	100.0		
.75	100.0		
.5	100.0		
.375	100.0		
#4	99.4		
#10	97.6		
#20	94.9		
#40	87.4		
#60	54.6		
#100	7.1		
#140	4.3		
#200	3.6		

* (no specification provided)

Material Description

Fine to medium grained, SAND

Atterberg Limits

PL= LL= PI=

Coefficients

D₉₀= 0.4671 D₈₅= 0.3966 D₆₀= 0.2649
D₅₀= 0.2387 D₃₀= 0.1982 D₁₅= 0.1695
D₁₀= 0.1583 C_u= 1.67 C_c= 0.94

Classification

USCS= SP AASHTO=

Remarks

Location: BI-PBS-49-12 A
Sample Number: 6471 (24)

Depth: 0.0'

Date: 12/03/12

Thompson Engineering

Mobile, Alabama

Client: CDM/Thompson Engineering JV
Project: MsCIP Barrier Island Restoration GT

Project No: 1221110095

Figure

Boring Designation BI-PBS-050-12

DRILLING LOG		DIVISION South Atlantic		INSTALLATION Mobile District		SHEET 1 OF 1 SHEETS	
1. PROJECT MsCIP Barrier Island Restoration Petit Bois Pass-OCS East				9. SIZE AND TYPE OF BIT N/A			
2. BORING DESIGNATION BI-PBS-050-12		LOCATION COORDINATES E = 1,132,205 N = 235,628		10. COORDINATE SYSTEM/DATUM State Plane, MSE (U.S. Ft.)		HORIZONTAL NAD83	
3. DRILLING AGENCY Corps of Engineers - CESAM		CONTRACTOR FILE NO.		11. MANUFACTURER'S DESIGNATION OF DRILL Vibrocure		<input type="checkbox"/> AUTO HAMMER <input type="checkbox"/> MANUAL HAMMER	
4. NAME OF DRILLER American Vibrocure Systems, Inc.				12. TOTAL SAMPLES		DISTURBED 0	
5. DIRECTION OF BORING <input checked="" type="checkbox"/> VERTICAL <input type="checkbox"/> INCLINED				13. TOTAL NUMBER CORE BOXES		14. WATER DEPTH 48.7 Ft.	
6. THICKNESS OF OVERBURDEN N/A				15. DATE BORING		STARTED 11-28-12	
7. DEPTH DRILLED INTO ROCK N/A				16. ELEVATION TOP OF BORING -48.4 Ft.		COMPLETED 11-28-12	
8. TOTAL DEPTH OF BORING 18.9 Ft.				17. TOTAL RECOVERY FOR BORING 100%			
				18. SIGNATURE AND TITLE OF INSPECTOR Mike FitzHarris, Geologist			
ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	SAMPLE	LABORATORY RESULTS		
-48.4	0.0						
			SAND, poorly-graded, mostly fine to medium-grained sand-sized quartz, trace shell fragments, gray (SP)	A	Classification: SP Color: 5Y 7/2-light gray D50: 0.2669 mm % Fines: 3.3		
-53.4	5.0						
-54.7	6.3		SAND, poorly-graded with clay, mostly fine-grained sand-sized quartz, few clay, trace shell fragments, gray (SP-SC)	B	Classification: SP-SM Color: 5Y 6/2-light olive gray D50: 0.2078 mm % Fines: 11.4		
-56.4	8.0		SAND, clayey, mostly fine-grained sand-sized quartz, some clay, trace shell fragments, gray (SC)				
			CLAY, fat, mostly clay, trace shell fragments, trace wood debris, intermittent lenses of sandy clay, gray (CH)	NS			
-67.3	18.9						
NOTES: 1. Soils are field visually classified in accordance with the Unified Soils Classification System. 2. NS = Sample not submitted for laboratory analysis from this interval. 3. Seafloor elevation determined from USACE hydrographic survey completed April 2014.							

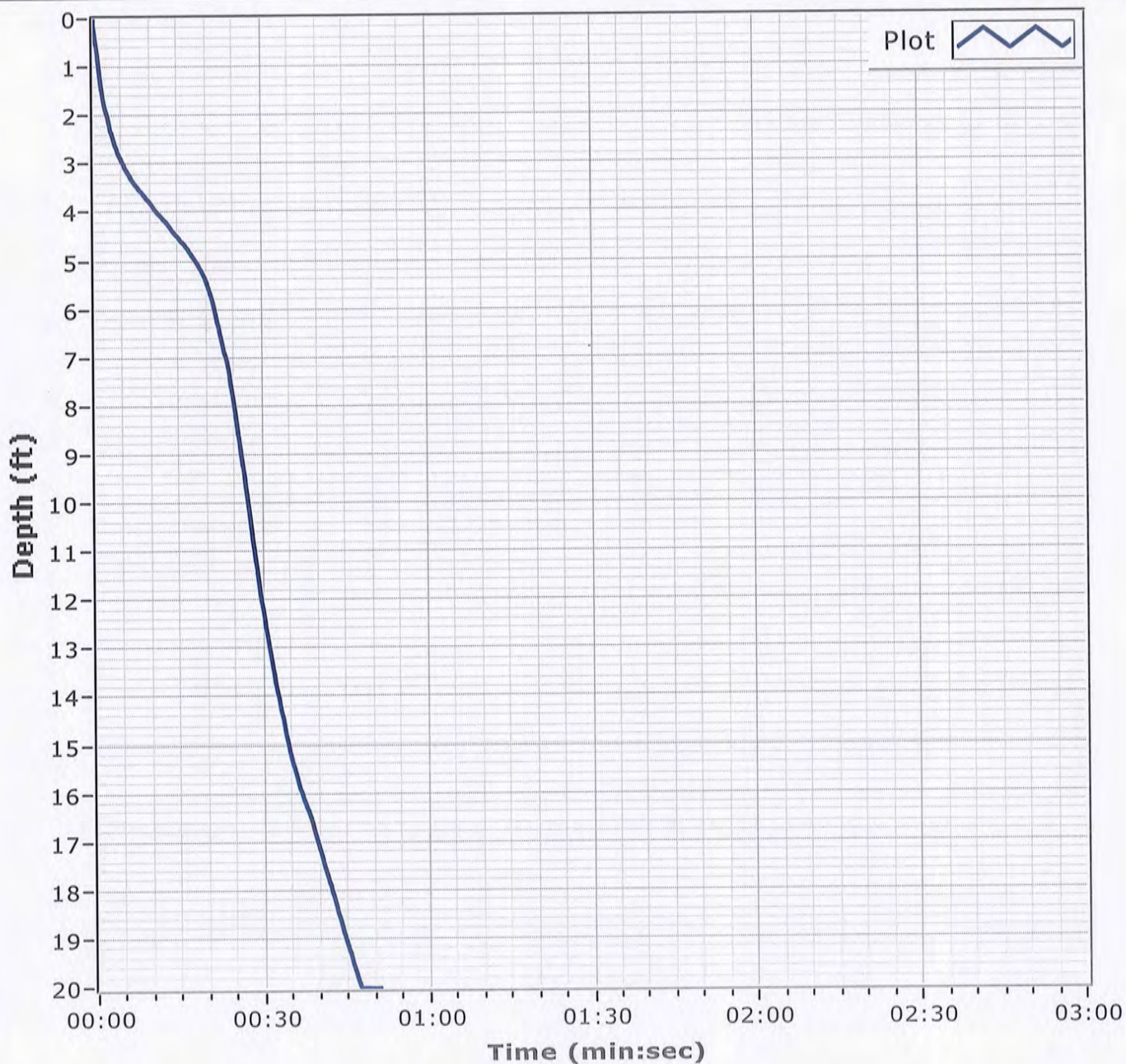
Project

Mississippi Barrier Island
Restoration Project

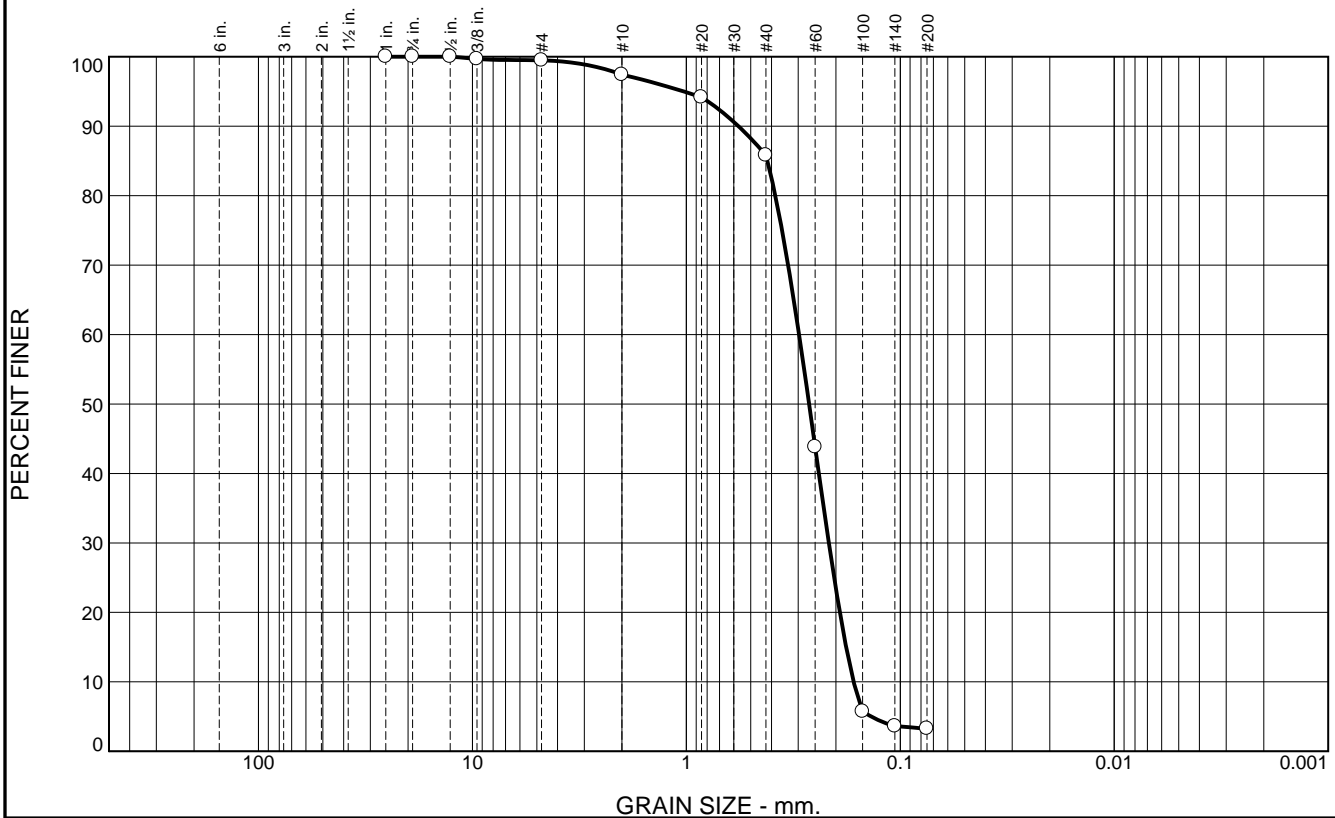
AVS
AMERICAN VIBRACORE
S E R V I C E S

Core Identifier BI-PBS-50-12**Date** 11/28/2012**Water Depth** 48.7'**Coordinate System**

Latitude / Longitude

Start Time 15:02:32**End Time** 15:03:23**Penetration** 20.0'**Latitude** 30 08.826**Total Time** 00:00:51**Recovery** 18.9'**Longitude** 088 21.914**Comments**

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	0.5	2.1	11.6	82.5	3.3	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
1	100.0		
.75	100.0		
.5	100.0		
.375	99.7		
#4	99.5		
#10	97.4		
#20	94.2		
#40	85.8		
#60	43.8		
#100	5.7		
#140	3.6		
#200	3.3		

* (no specification provided)

Material Description		
Fine to medium grained, SAND		
<div> <div> Atterberg Limits </div> <div> PL= LL= PI= </div> </div>		
<div> <div> Coefficients </div> <div> D₉₀= 0.5711 D₈₅= 0.4181 D₆₀= 0.2975 D₅₀= 0.2669 D₃₀= 0.2157 D₁₅= 0.1792 D₁₀= 0.1653 C_u= 1.80 C_c= 0.95 </div> </div>		
<div> <div> Classification </div> <div> USCS= SP AASHTO= </div> </div>		
<div> <div> Remarks </div> </div>		

Location: BI-PBS-50-12 A
Sample Number: 6471 (25)

Depth: 0.0'

Date: 12/03/12

Thompson Engineering

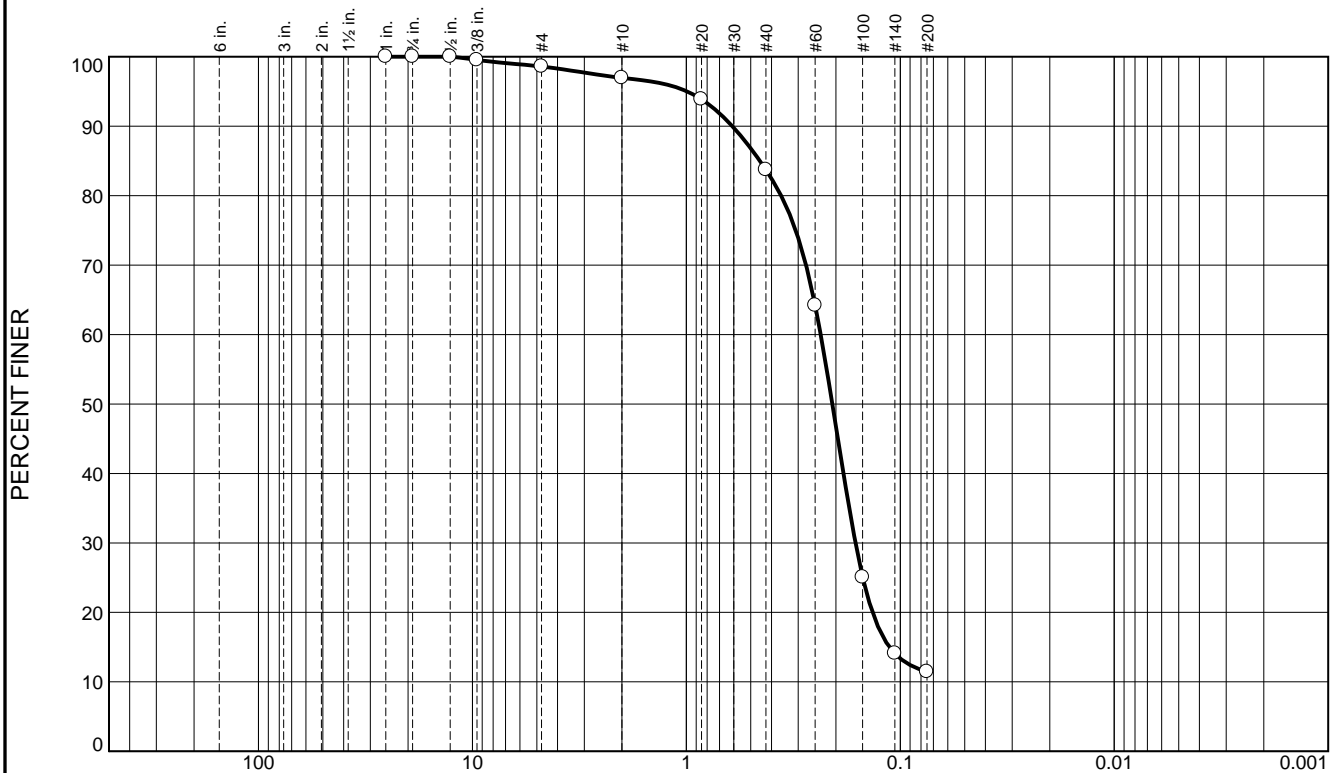
Mobile, Alabama

Client: CDM/Thompson Engineering JV
Project: MsCIP Barrier Island Restoration GT

Project No: 1221110095

Figure

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	1.4	1.7	13.2	72.3	11.4	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
1	100.0		
.75	100.0		
.5	100.0		
.375	99.5		
#4	98.6		
#10	96.9		
#20	93.9		
#40	83.7		
#60	64.2		
#100	25.1		
#140	14.1		
#200	11.4		

* (no specification provided)

Material Description

Fine to medium grained, SLIGHTLY SILTY SAND, with trace SHELL

Atterberg Limits

PL= LL= PI=

Coefficients

D₉₀= 0.6098 D₈₅= 0.4536 D₆₀= 0.2355
D₅₀= 0.2078 D₃₀= 0.1620 D₁₅= 0.1123
D₁₀= C_u= C_c=

Classification

USCS= SP-SM AASHTO=

Remarks

Location: BI-PBS-50-12 B
Sample Number: 6471 (26)

Depth: 5.0'

Date: 12/03/12

Thompson Engineering

Mobile, Alabama

Client: CDM/Thompson Engineering JV
Project: MsCIP Barrier Island Restoration GT

Project No: 1221110095

Figure

Boring Designation BI-PBS-051-12

DRILLING LOG		DIVISION South Atlantic		INSTALLATION Mobile District		SHEET 1 OF 2 SHEETS	
1. PROJECT MsCIP Barrier Island Restoration Petit Bois Pass-OCS East				9. SIZE AND TYPE OF BIT N/A			
2. BORING DESIGNATION BI-PBS-051-12		LOCATION COORDINATES E = 1,132,401 N = 232,439		10. COORDINATE SYSTEM/DATUM State Plane, MSE (U.S. Ft.)		HORIZONTAL NAD83	
3. DRILLING AGENCY Corps of Engineers - CESAM		CONTRACTOR FILE NO.		11. MANUFACTURER'S DESIGNATION OF DRILL Vibracore		<input type="checkbox"/> AUTO HAMMER <input type="checkbox"/> MANUAL HAMMER	
4. NAME OF DRILLER American Vibracore Systems, Inc.				12. TOTAL SAMPLES		DISTURBED 0	
5. DIRECTION OF BORING <input checked="" type="checkbox"/> VERTICAL <input type="checkbox"/> INCLINED				13. TOTAL NUMBER CORE BOXES		14. WATER DEPTH 56.4 Ft.	
6. THICKNESS OF OVERBURDEN N/A				15. DATE BORING		STARTED 11-28-12	
7. DEPTH DRILLED INTO ROCK N/A				16. ELEVATION TOP OF BORING -56.4 Ft.		COMPLETED 11-28-12	
8. TOTAL DEPTH OF BORING 19.8 Ft.				17. TOTAL RECOVERY FOR BORING 100%		18. SIGNATURE AND TITLE OF INSPECTOR Mike FitzHarris, Geologist	
ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	SAMPLE	LABORATORY RESULTS		
-56.4	0.0						
-58.4	2.0		SAND, silty, mostly fine-grained sand-sized quartz, some silt, trace shell fragments, gray (SM)	NS			
-62.8	6.4		SAND, clayey, mostly fine-grained sand-sized quartz, some clay, trace shell fragments, with trace clayey nodules, gray mottled with brown (SC)				
-76.2	19.8		CLAY, fat, mostly clay, little silt, trace shell fragments, trace wood debris, with occasional silty pockets and sandy clay lenses, gray (CH)				
			NOTES: 1. Soils are field visually classified in accordance with the Unified Soils Classification System. 2. NS = Sample not submitted for laboratory analysis from this interval. 3. Seafloor elevation calculated using sampling vessel's fathometer water depth reading and				

DRILLING LOG (Cont. Sheet)			INSTALLATION Mobile District		SHEET 2 OF 2 SHEETS
PROJECT MsCIP Barrier Island Restoration			COORDINATE SYSTEM/DATUM State Plane, MSE (U.S. Ft.)	HORIZONTAL NAD83	VERTICAL NAVD88
LOCATION COORDINATES X = 1,132,401 Y = 232,439			ELEVATION TOP OF BORING -56.4 Ft.		
ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	SAMPLE	LABORATORY RESULTS
			applying NOAA tidal gauge data conversion factor.		

Project

Mississippi Barrier Island
Restoration Project

AVS
AMERICAN VIBRACORE
SERVICES

Core Identifier BI-PBS-51-12

Date 11/28/2012

Water Depth 56.4'

Coordinate System

Latitude / Longitude

Start Time 12:11:35

End Time 12:12:16

Penetration 20.0'

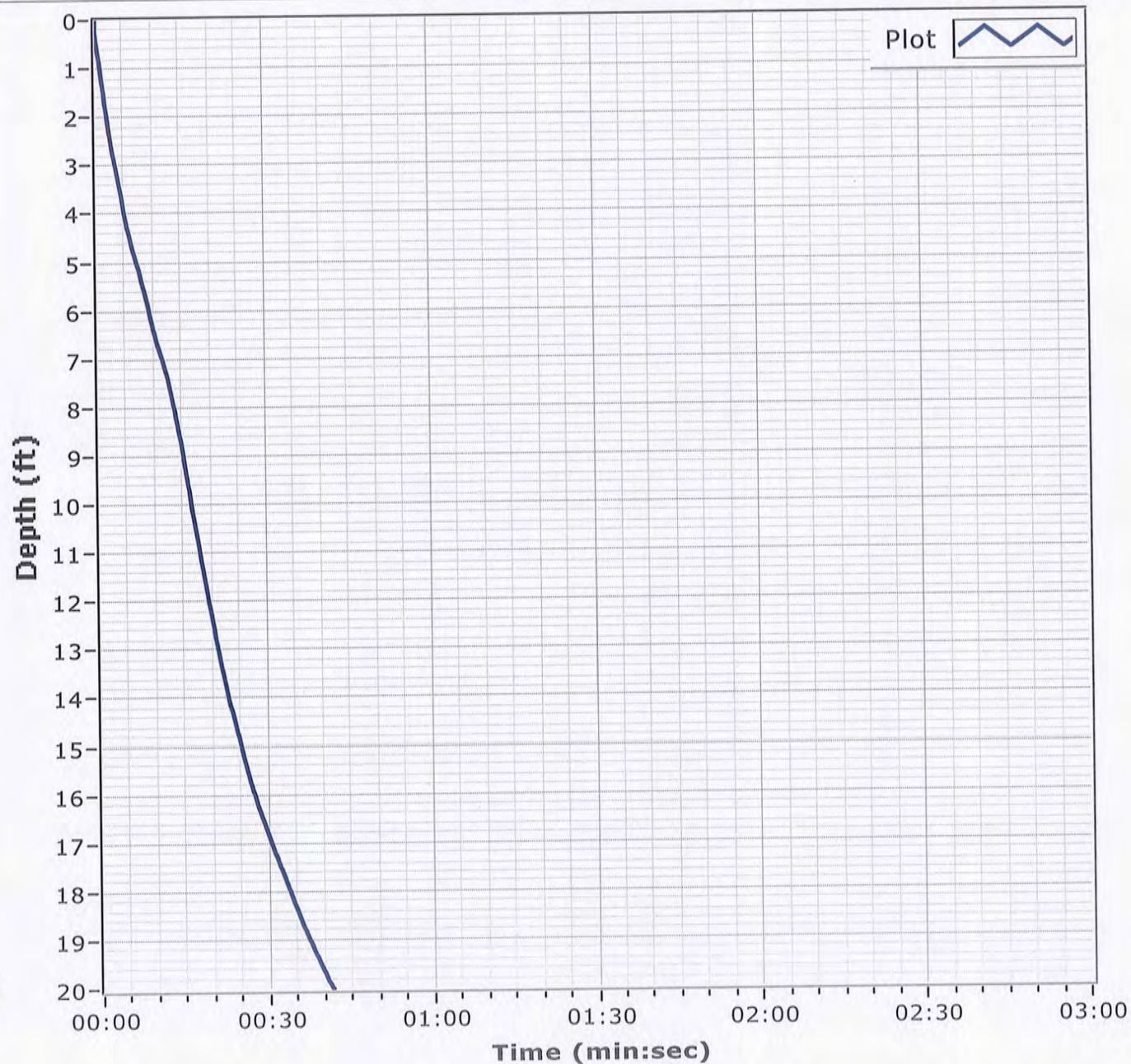
Latitude 30 08.300

Total Time 00:00:41

Recovery 19.8'

Longitude 088 21.879

Comments



Boring Designation BI-PBS-052-12

DRILLING LOG		DIVISION South Atlantic	INSTALLATION Mobile District	SHEET 1 OF 2 SHEETS
1. PROJECT MsCIP Barrier Island Restoration Petit Bois Pass-OCS East		9. SIZE AND TYPE OF BIT N/A		
2. BORING DESIGNATION BI-PBS-052-12		10. COORDINATE SYSTEM/DATUM State Plane, MSE (U.S. Ft.)		HORIZONTAL NAD83
3. DRILLING AGENCY Corps of Engineers - CESAM		11. MANUFACTURER'S DESIGNATION OF DRILL Vibracore		VERTICAL NAVD88
4. NAME OF DRILLER American Vibracore Systems, Inc.		12. TOTAL SAMPLES		
5. DIRECTION OF BORING <input checked="" type="checkbox"/> VERTICAL <input type="checkbox"/> INCLINED		13. TOTAL NUMBER CORE BOXES		DISTURBED 0
6. THICKNESS OF OVERBURDEN N/A		14. WATER DEPTH 46.6 Ft.		
7. DEPTH DRILLED INTO ROCK N/A		15. DATE BORING STARTED 11-30-12 COMPLETED 11-30-12		
8. TOTAL DEPTH OF BORING 20.0 Ft.		16. ELEVATION TOP OF BORING -46.5 Ft.		
		17. TOTAL RECOVERY FOR BORING 100%		
		18. SIGNATURE AND TITLE OF INSPECTOR Mike FitzHarris, Geologist		

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	SAMPLE	LABORATORY RESULTS
-46.5	0.0				
-47.5	1.0		SAND, poorly-graded, mostly fine to medium-grained sand-sized quartz, trace silt, trace shell fragments, gray (SP)		
-50.3	3.8		SAND, clayey, mostly fine-grained sand-sized quartz, little silt, Wood debris at 3 ft., gray (SC)		
-51.2	4.7		CLAY, lean, mostly clay, some silt, trace wood debris, silty clay, brownish gray (CL)		
-53.8	7.3		SAND, poorly-graded, mostly fine to medium-grained sand-sized quartz, trace silt, trace clay, lt. gray (SP)		
			SAND, clayey, mostly fine-grained sand-sized quartz, some clay, little shell fragments, gray (SC)	NS	
-62.2	15.7				
-63.0	16.5		CLAY, lean, mostly clay, little fine-grained sand-sized quartz, low plasticity, gray (CL)		
-65.1	18.6		SAND, clayey, mostly fine-grained sand-sized quartz, some clay, trace silt, gray (SC)		
-66.5	20.0		SAND, poorly-graded, mostly fine-grained sand-sized quartz, trace silt, lt. gray (SP)		
			NOTES: 1. Soils are field visually classified in accordance with the Unified Soils Classification System. 2. NS = Sample not submitted for laboratory analysis from this interval. 3. Seafloor elevation determined from USACE		

DRILLING LOG (Cont. Sheet)			INSTALLATION Mobile District		SHEET 2 OF 2 SHEETS
PROJECT MsCIP Barrier Island Restoration			COORDINATE SYSTEM/DATUM State Plane, MSE (U.S. Ft.)	HORIZONTAL NAD83	VERTICAL NAVD88
LOCATION COORDINATES X = 1,130,058 Y = 241,304			ELEVATION TOP OF BORING -46.5 Ft.		
ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	SAMPLE	LABORATORY RESULTS
			hydrographic survey completed April 2014.		

Project

Mississippi Barrier Island
Restoration Project

AVS
AMERICAN VIBRACORE
S E R V I C E S

Core Identifier BI-PBS-52-12

Date 11/30/2012

Water Depth 46.6'

Coordinate System

Latitude / Longitude

Start Time 11:36:31

End Time 11:37:43

Penetration 20.0'

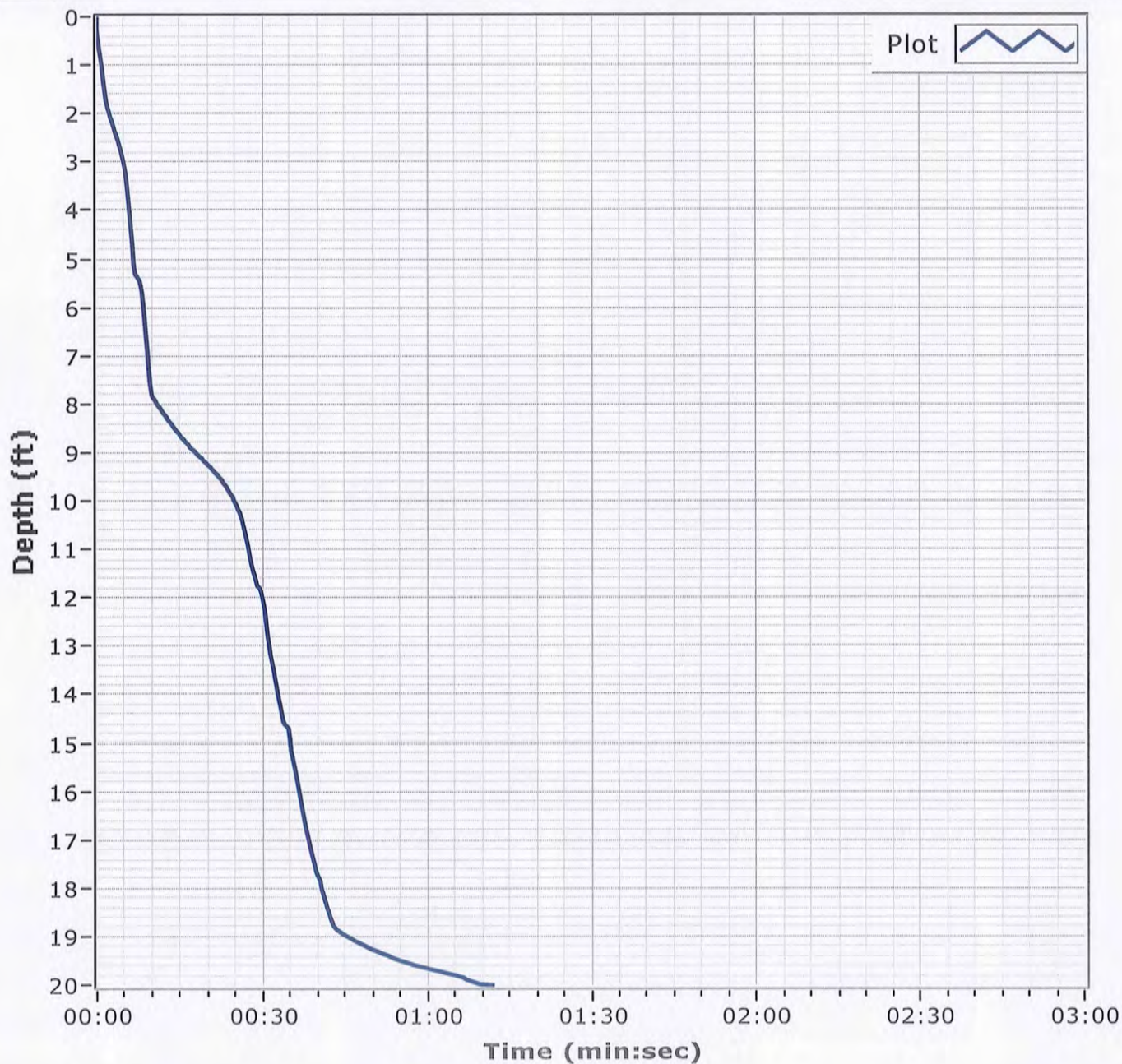
Latitude 30 09.764

Total Time 00:01:12

Recovery 20.0'

Longitude 088 22.317

Comments



Boring Designation BI-PBS-053-12

DRILLING LOG		DIVISION South Atlantic		INSTALLATION Mobile District		SHEET 1 OF 2 SHEETS	
1. PROJECT MsCIP Barrier Island Restoration Petit Bois Pass-OCS East				9. SIZE AND TYPE OF BIT N/A			
2. BORING DESIGNATION BI-PBS-053-12		LOCATION COORDINATES E = 1,131,214 N = 240,705		10. COORDINATE SYSTEM/DATUM State Plane, MSE (U.S. Ft.)		HORIZONTAL NAD83	
3. DRILLING AGENCY Corps of Engineers - CESAM		CONTRACTOR FILE NO.		11. MANUFACTURER'S DESIGNATION OF DRILL Vibracore		<input type="checkbox"/> AUTO HAMMER <input type="checkbox"/> MANUAL HAMMER	
4. NAME OF DRILLER American Vibracore Systems, Inc.				12. TOTAL SAMPLES		DISTURBED 0	
5. DIRECTION OF BORING <input checked="" type="checkbox"/> VERTICAL <input type="checkbox"/> INCLINED				13. TOTAL NUMBER CORE BOXES		14. WATER DEPTH 44.5 Ft.	
6. THICKNESS OF OVERBURDEN N/A				15. DATE BORING		STARTED 11-30-12	
7. DEPTH DRILLED INTO ROCK N/A				16. ELEVATION TOP OF BORING -45.9 Ft.		COMPLETED 11-30-12	
8. TOTAL DEPTH OF BORING 20.0 Ft.				17. TOTAL RECOVERY FOR BORING 100%		18. SIGNATURE AND TITLE OF INSPECTOR Mike FitzHarris, Geologist	
ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	SAMPLE	LABORATORY RESULTS		
-45.9	0.0						
			SAND, poorly-graded, mostly fine to medium-grained sand-sized quartz, trace silt, trace shell fragments, gray (SP)	A	Classification: SP Color: 5Y 7/2-light gray D50: 0.3315 mm % Fines: 2.4		
-51.4	5.5						
-53.3	7.4		SAND, clayey, mostly fine-grained sand-sized quartz, some clay, trace shell fragments, gray (SC)				
-54.3	8.4		SAND, poorly-graded with silt, mostly fine to medium-grained sand-sized quartz, few silt, trace clay, gray (SP-SM)				
-59.5	13.6		SAND, clayey, mostly fine to medium-grained sand-sized quartz, some clay, little shell fragments, gray (SC)	NS			
-60.9	15.0		SHELL, mostly shell fragments, some fine-grained sand-sized quartz, some clay, gray				
-65.9	20.0		SAND, silty, mostly fine-grained sand-sized quartz, little clay, little shell fragments, gray (SM)				
NOTES: 1. Soils are field visually classified in accordance with the Unified Soils Classification System. 2. NS = Sample not submitted for laboratory analysis from this interval. 3. Seafloor elevation determined from USACE							

DRILLING LOG (Cont. Sheet)			INSTALLATION Mobile District		SHEET 2 OF 2 SHEETS
			COORDINATE SYSTEM/DATUM State Plane, MSE (U.S. Ft.)		HORIZONTAL NAD83
PROJECT MsCIP Barrier Island Restoration					
LOCATION COORDINATES X = 1,131,214 Y = 240,705			ELEVATION TOP OF BORING -45.9 Ft.		
ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	SAMPLE	LABORATORY RESULTS
			hydrographic survey completed April 2014.		

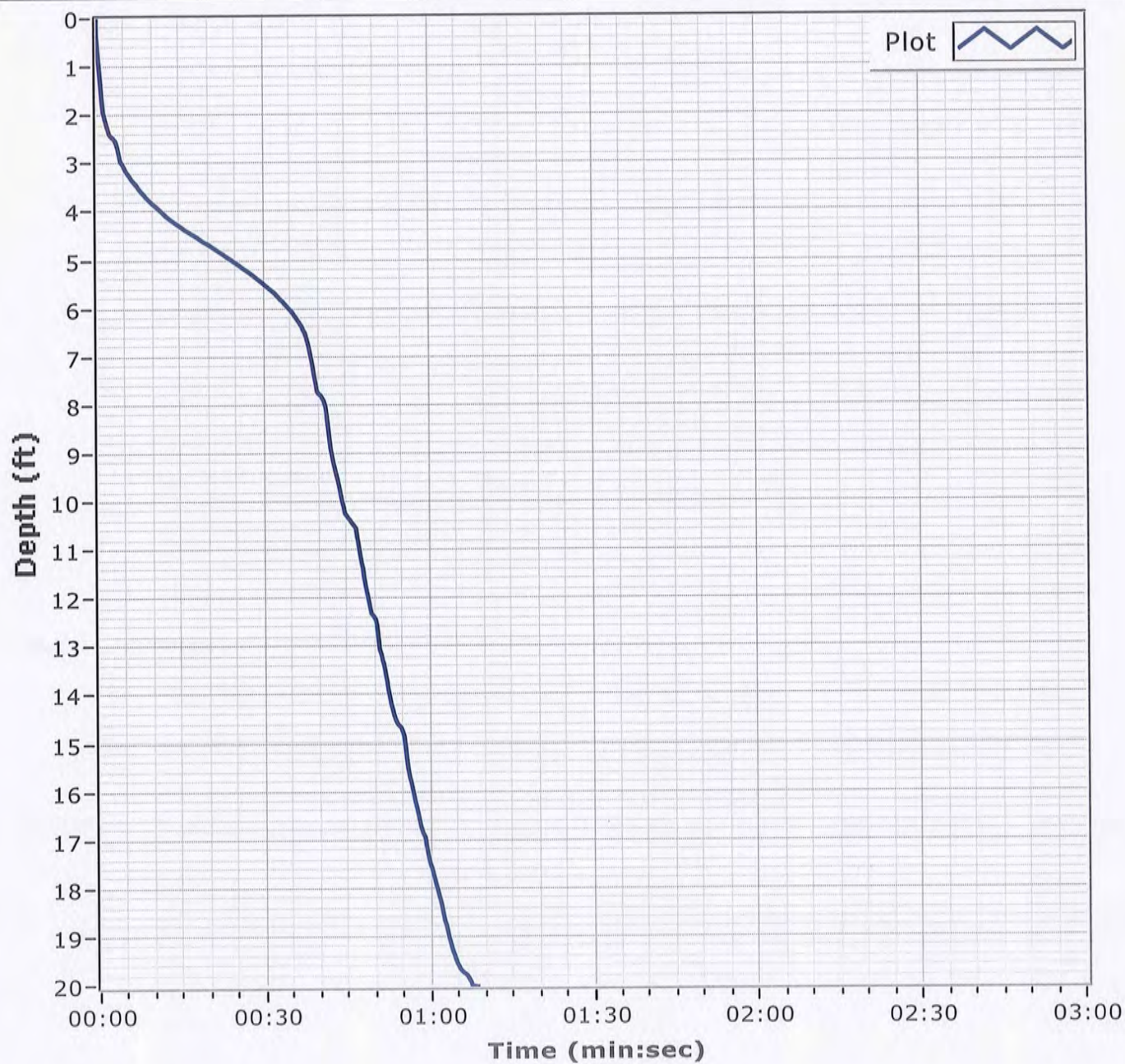
Project

Mississippi Barrier Island
Restoration Project

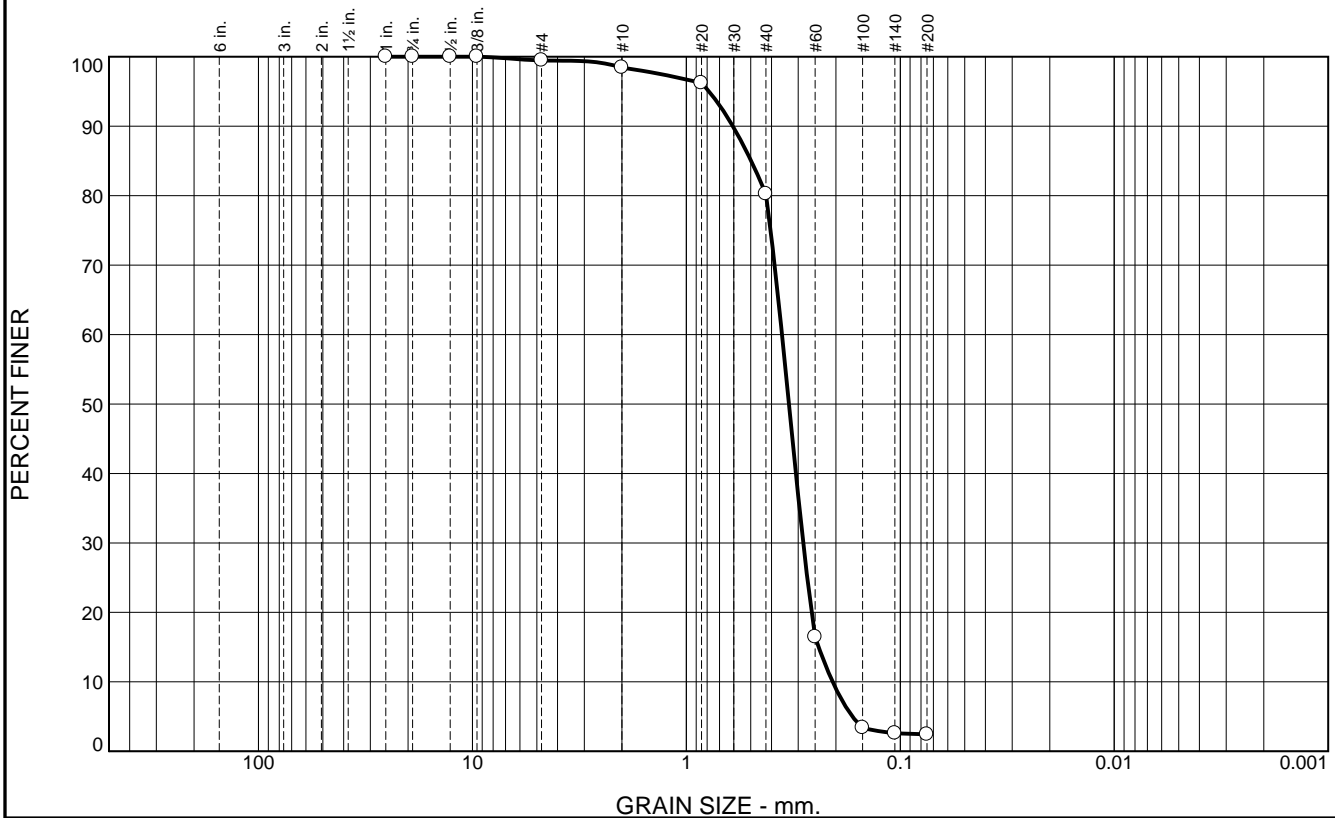
AVS
AMERICAN VIBRACORE
S E R V I C E S

Core Identifier BI-PBS-53-12 A**Date** 11/30/2012**Water Depth** 44.5'**Coordinate System****Start Time** 10:51:05

Latitude / Longitude

End Time 10:52:13**Penetration** 20.0'**Latitude** 30 09.664**Total Time** 00:01:08**Recovery** 20.0'**Longitude** 088 22.098**Comments**

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	0.5	1.1	18.2	77.8	2.4	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
1	100.0		
.75	100.0		
.5	100.0		
.375	100.0		
#4	99.5		
#10	98.4		
#20	96.2		
#40	80.2		
#60	16.5		
#100	3.4		
#140	2.6		
#200	2.4		

* (no specification provided)

<u>Material Description</u>		
Fine to medium grained, SAND		
PL=	<u>Atterberg Limits</u> LL=	PI=
<u>Coefficients</u>		
D ₉₀ = 0.6063	D ₈₅ = 0.4980	D ₆₀ = 0.3571
D ₅₀ = 0.3315	D ₃₀ = 0.2845	D ₁₅ = 0.2407
D ₁₀ = 0.2072	C _u = 1.72	C _c = 1.09
<u>Classification</u>		
USCS= SP	AASHTO=	
<u>Remarks</u>		

Location: BI-PBS-53-12 A
Sample Number: 6471 (27)

Depth: 0.0'

Date: 12/03/12

Thompson Engineering

Mobile, Alabama

Client: CDM/Thompson Engineering JV
Project: MsCIP Barrier Island Restoration GT

Project No: 1221110095

Figure

Boring Designation BI-PBS-054-12

DRILLING LOG		DIVISION South Atlantic		INSTALLATION Mobile District		SHEET 1 OF 2 SHEETS	
1. PROJECT MsCIP Barrier Island Restoration Petit Bois Pass-OCS East				9. SIZE AND TYPE OF BIT N/A			
2. BORING DESIGNATION BI-PBS-054-12		LOCATION COORDINATES E = 1,132,425 N = 239,892		10. COORDINATE SYSTEM/DATUM State Plane, MSE (U.S. Ft.)		HORIZONTAL NAD83	
3. DRILLING AGENCY Corps of Engineers - CESAM		CONTRACTOR FILE NO.		11. MANUFACTURER'S DESIGNATION OF DRILL Vibracore		<input type="checkbox"/> AUTO HAMMER <input type="checkbox"/> MANUAL HAMMER	
4. NAME OF DRILLER American Vibracore Systems, Inc.				12. TOTAL SAMPLES		DISTURBED 0	
5. DIRECTION OF BORING <input checked="" type="checkbox"/> VERTICAL <input type="checkbox"/> INCLINED				13. TOTAL NUMBER CORE BOXES		14. WATER DEPTH 45.7 Ft.	
6. THICKNESS OF OVERBURDEN N/A				15. DATE BORING		STARTED 11-30-12	
7. DEPTH DRILLED INTO ROCK N/A				16. ELEVATION TOP OF BORING -46.5 Ft.		COMPLETED 11-30-12	
8. TOTAL DEPTH OF BORING 20.0 Ft.				17. TOTAL RECOVERY FOR BORING 100%			
				18. SIGNATURE AND TITLE OF INSPECTOR Mike FitzHarris, Geologist			

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	SAMPLE	LABORATORY RESULTS
-46.5	0.0				
			SAND, poorly-graded, mostly fine to medium-grained sand-sized quartz, trace silt, trace shell fragments, gray (SP)	A	Classification: SP Color: 5Y 7/2-light gray D50: 0.3037 mm % Fines: 1.7
-51.5	5.0				
-52.1	5.6		SAND, clayey, mostly fine-grained sand-sized quartz, some clay, gray (SC)	NS	
-53.3	6.8			B	Classification: SP Color: 5Y 7/2-light gray D50: 0.3861 mm % Fines: 3.2
-54.0	7.5		SAND, poorly-graded with silt, mostly fine to medium-grained sand-sized quartz, little shell fragments, few silt, gray (SP-SM)	NS	
-56.0	9.5		SAND, clayey, mostly fine-grained sand-sized quartz, some clay, trace shell fragments, gray (SC)	C	Classification: SP-SM Color: 5Y 7/2-light gray D50: 0.3507 mm % Fines: 6.7
			SAND, silty, mostly fine to medium-grained sand-sized quartz, some silt, trace shell fragments, trace clay, gray (SM)		
			SAND, clayey, mostly fine-grained sand-sized quartz, some clay, trace shell fragments, gray (SC)	NS	
-65.0	18.5				
-66.5	20.0		SAND, silty, mostly fine-grained sand-sized quartz, some silt, trace shell fragments, gray (SM)		
NOTES: 1. Soils are field visually classified in accordance with the Unified Soils Classification System. 2. NS = Sample not submitted for laboratory analysis from this interval.					

DRILLING LOG (Cont. Sheet)			INSTALLATION Mobile District		SHEET 2 OF 2 SHEETS
PROJECT MsCIP Barrier Island Restoration			COORDINATE SYSTEM/DATUM State Plane, MSE (U.S. Ft.)	HORIZONTAL NAD83	VERTICAL NAVD88
LOCATION COORDINATES X = 1,132,425 Y = 239,892			ELEVATION TOP OF BORING -46.5 Ft.		
ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	SAMPLE	LABORATORY RESULTS
			3. Seafloor elevation determined from USACE hydrographic survey completed April 2014.		

Project

Mississippi Barrier Island
Restoration Project

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AMERICAN VIBRACORE
S E R V I C E S

Core Identifier BI-PBS-54-12

Date 11/30/2012

Water Depth 45.7'

Coordinate System

Start Time 09:17:07

Latitude / Longitude

End Time 09:18:50

Penetration 20.0'

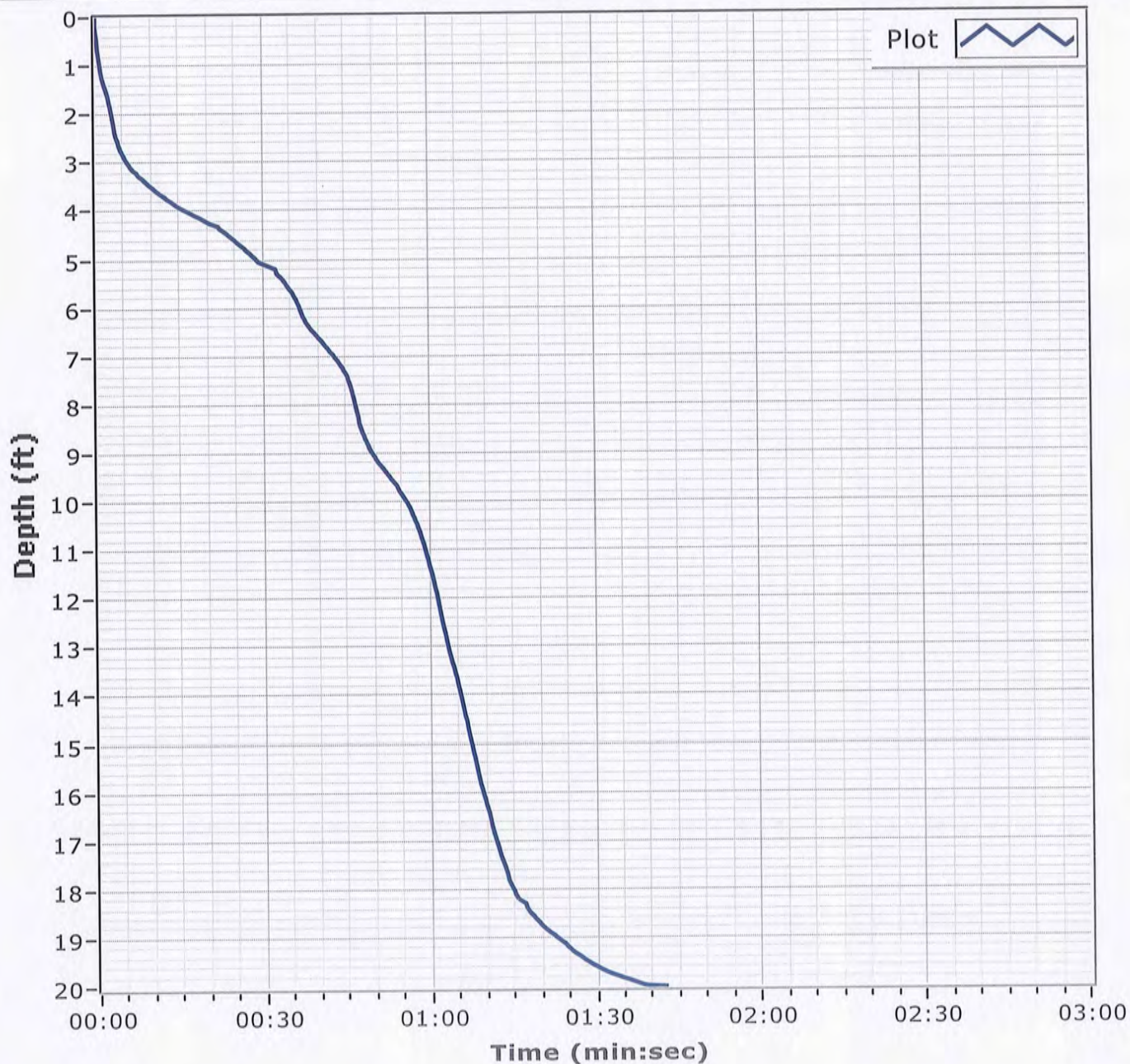
Latitude 30 09.529

Total Time 00:01:42

Recovery 20.0'

Longitude 088 21.869

Comments



Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	0.3	1.6	23.0	73.4	1.7	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
1	100.0		
.75	100.0		
.5	100.0		
.375	100.0		
#4	99.7		
#10	98.1		
#20	94.4		
#40	75.1		
#60	33.7		
#100	3.7		
#140	2.0		
#200	1.7		

* (no specification provided)

Material Description
Fine to medium grained, SAND

Atterberg Limits
PL= LL= PI=

Coefficients
D₉₀= 0.6261 D₈₅= 0.5252 D₆₀= 0.3432
D₅₀= 0.3037 D₃₀= 0.2387 D₁₅= 0.1935
D₁₀= 0.1770 C_u= 1.94 C_c= 0.94

Classification
USCS= SP AASHTO=

Remarks

Location: BI-PBS-54-12 A
Sample Number: 6471 (28)

Depth: 0.0'

Date: 12/03/12

Thompson Engineering

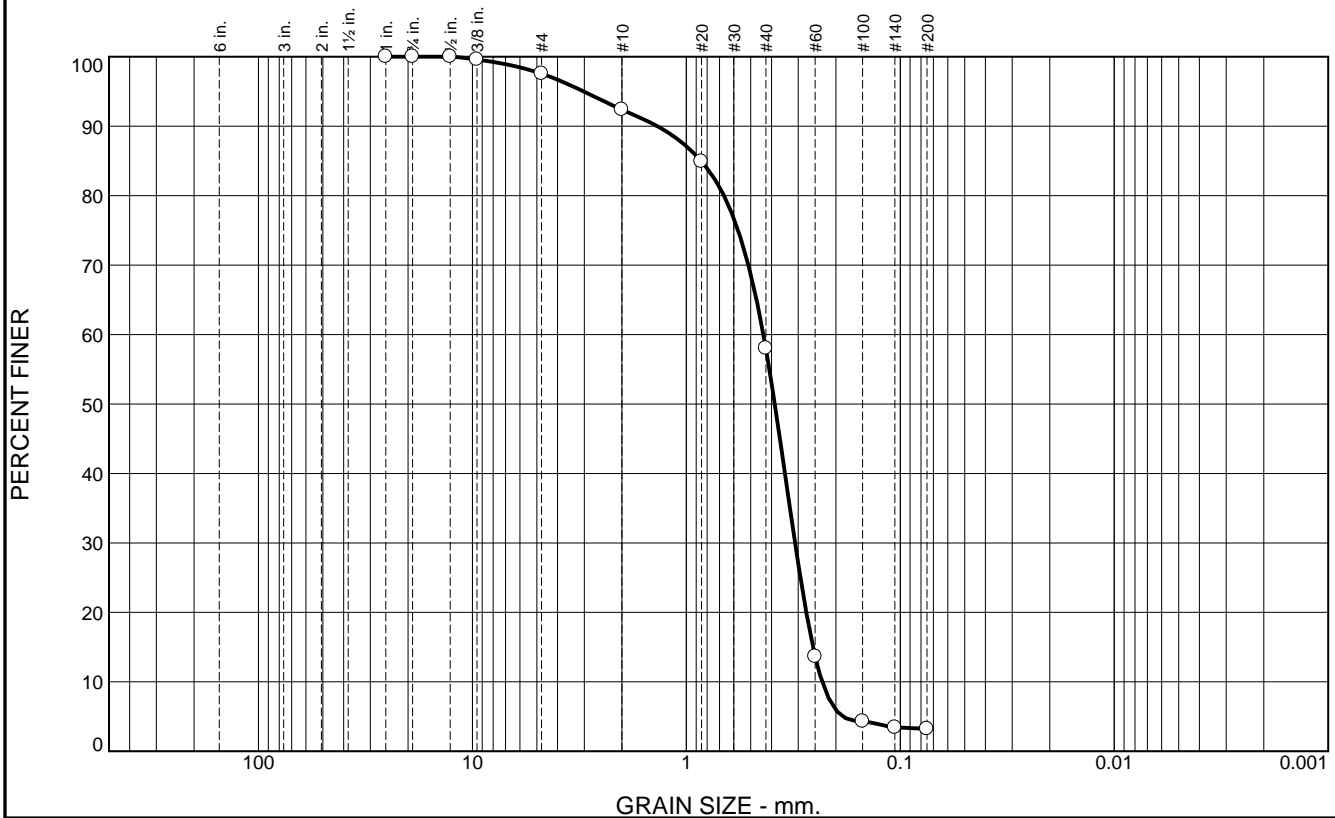
Mobile, Alabama

Client: CDM/Thompson Engineering JV
Project: MsCIP Barrier Island Restoration GT

Project No: 1221110095

Figure

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	2.4	5.2	34.4	54.8	3.2	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
1	100.0		
.75	100.0		
.5	100.0		
.375	99.6		
#4	97.6		
#10	92.4		
#20	84.9		
#40	58.0		
#60	13.6		
#100	4.3		
#140	3.4		
#200	3.2		

* (no specification provided)

Material Description

Fine to medium grained, SAND, with trace SHELL

Atterberg Limits

PL= LL= PI=

Coefficients

D₉₀= 1.3683 D₈₅= 0.8553 D₆₀= 0.4365
D₅₀= 0.3861 D₃₀= 0.3104 D₁₅= 0.2559
D₁₀= 0.2318 C_u= 1.88 C_c= 0.95

Classification

USCS= SP AASHTO=

Remarks

Location: BI-PBS-54-12 B
Sample Number: 6471 (29)

Depth: 5.6'

Date: 12/03/12

Thompson Engineering

Mobile, Alabama

Client: CDM/Thompson Engineering JV
Project: MsCIP Barrier Island Restoration GT

Project No: 1221110095

Figure

Particle Size Distribution Report



GRAIN SIZE - mm.

% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	0.5	1.6	31.3	59.9	6.7	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
1	100.0		
.75	100.0		
.5	100.0		
.375	100.0		
#4	99.5		
#10	97.9		
#20	96.1		
#40	66.6		
#60	22.2		
#100	8.2		
#140	6.9		
#200	6.7		

* (no specification provided)

Material Description

Fine to medium grained, SLIGHTLY SILTY SAND

Atterberg Limits

PL= LL= PI=

Coefficients

D₉₀= 0.6572 D₈₅= 0.5769 D₆₀= 0.3922
D₅₀= 0.3507 D₃₀= 0.2790 D₁₅= 0.2157
D₁₀= 0.1777 C_u= 2.21 C_c= 1.12

Classification

USCS= SP-SM AASHTO=

Remarks

Location: BI-PBS-54-12 C
Sample Number: 6471 (30)

Depth: 7.5'

Date: 12/03/12

Thompson Engineering

Mobile, Alabama

Client: CDM/Thompson Engineering JV
Project: MsCIP Barrier Island Restoration GT

Project No: 1221110095

Figure

Boring Designation BI-PBS-055-12

DRILLING LOG		DIVISION South Atlantic		INSTALLATION Mobile District		SHEET 1 OF 1 SHEETS	
1. PROJECT MsCIP Barrier Island Restoration Petit Bois Pass-OCS East				9. SIZE AND TYPE OF BIT N/A			
2. BORING DESIGNATION BI-PBS-055-12		LOCATION COORDINATES E = 1,132,872 N = 242,421		10. COORDINATE SYSTEM/DATUM State Plane, MSE (U.S. Ft.)		HORIZONTAL NAD83 VERTICAL NAVD88	
3. DRILLING AGENCY Corps of Engineers - CESAM		CONTRACTOR FILE NO.		11. MANUFACTURER'S DESIGNATION OF DRILL Vibracore		<input type="checkbox"/> AUTO HAMMER <input type="checkbox"/> MANUAL HAMMER	
4. NAME OF DRILLER American Vibracore Systems, Inc.				12. TOTAL SAMPLES		DISTURBED UNDISTURBED (UD) 0	
5. DIRECTION OF BORING <input checked="" type="checkbox"/> VERTICAL <input type="checkbox"/> INCLINED		DEG. FROM VERTICAL		13. TOTAL NUMBER CORE BOXES			
		BEARING		14. WATER DEPTH 47.2 Ft.			
6. THICKNESS OF OVERBURDEN N/A				15. DATE BORING 11-30-12		STARTED COMPLETED 11-30-12	
7. DEPTH DRILLED INTO ROCK N/A				16. ELEVATION TOP OF BORING -46.6 Ft.			
8. TOTAL DEPTH OF BORING 15.0 Ft.				17. TOTAL RECOVERY FOR BORING 100%			
				18. SIGNATURE AND TITLE OF INSPECTOR Mike FitzHarris, Geologist			

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	SAMPLE	LABORATORY RESULTS
-46.6	0.0				
			SAND, poorly-graded, mostly fine to medium-grained sand-sized quartz, trace silt, trace shell fragments, lt. gray to gray (SP)	A	Classification: SP Color: 5Y 7/2-light gray D50: 0.3311 mm % Fines: 1.7
-49.8	3.2				
-50.6	4.0		SAND, clayey, mostly fine-grained sand-sized quartz, some clay, trace shell fragments, gray (SC)		
-51.5	4.9				
-53.0	6.4		CLAY, lean, mostly clay, with alternating bands of clayey sand, gray (CL)		
-56.1	9.5		SAND, poorly-graded with clay, mostly fine-grained sand-sized quartz, little clay, few clay stringers, gray (SP-SC)	NS	
			CLAY, lean, mostly clay, trace shell fragments, gray (CL)		
-58.6	12.0		SAND, clayey, mostly fine-grained sand-sized quartz, some clay, some shell fragments, gray (SC)		
-60.9	14.3		SAND, poorly-graded with silt, mostly fine-grained sand-sized quartz, few silt, trace shell fragments, gray (SP-SM)		
-61.6	15.0		SAND, poorly-graded, mostly fine-grained sand-sized quartz, trace silt, lt. gray (SP)		
			NOTES: 1. Soils are field visually classified in accordance with the Unified Soils Classification System. 2. NS = Sample not submitted for laboratory analysis from this interval. 3. Seafloor elevation determined from USACE hydrographic survey completed April 2014.		

Project

Mississippi Barrier Island
Restoration Project

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AMERICAN VIBRACORE
S E R V I C E S

Core Identifier BI-PBS-55-12

Date 11/30/2012

Water Depth 47.2'

Coordinate System

Latitude / Longitude

Start Time 12:49:34

End Time 12:52:32

Penetration 16.4'

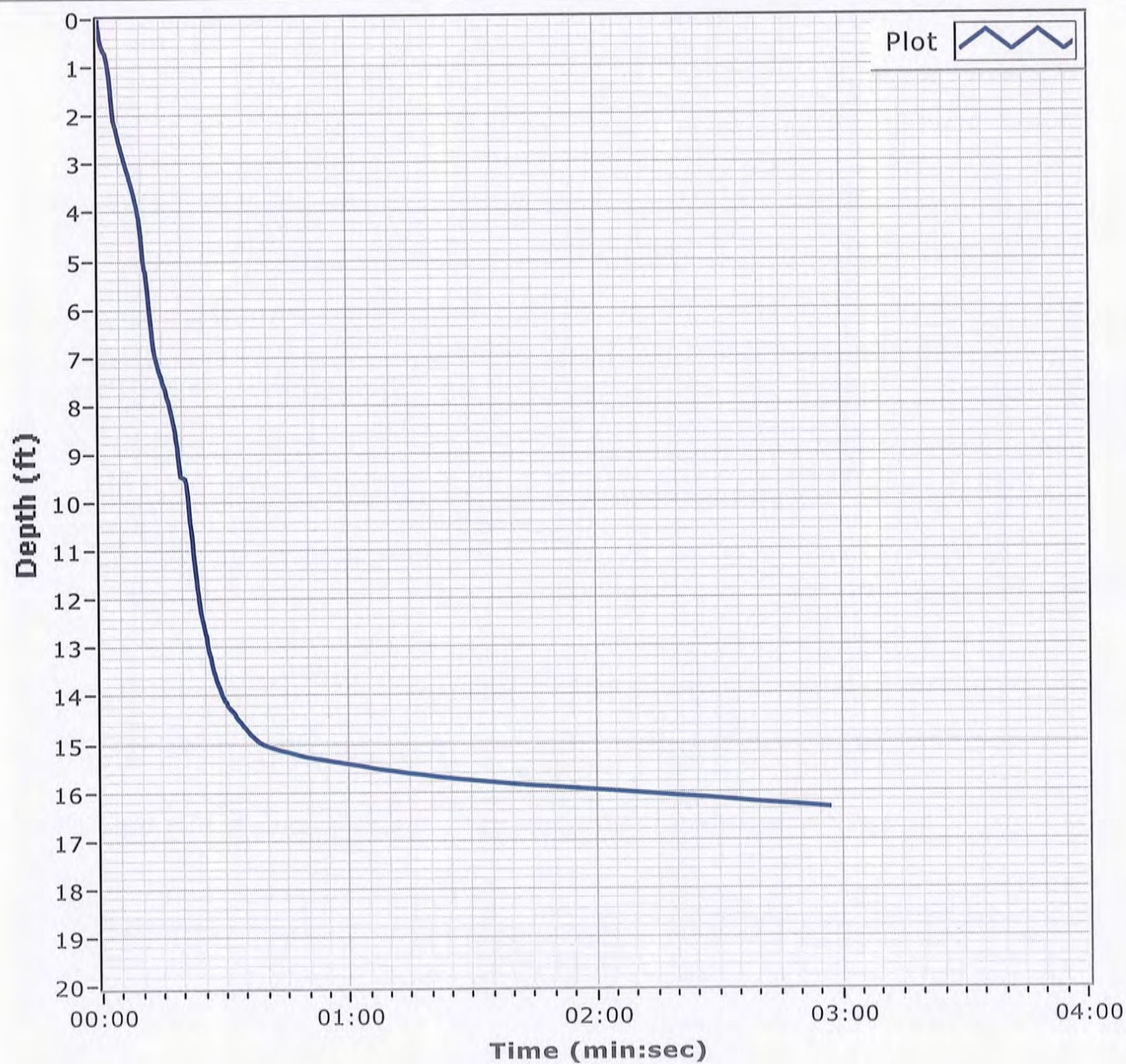
Latitude 30 09.946

Total Time 00:02:57

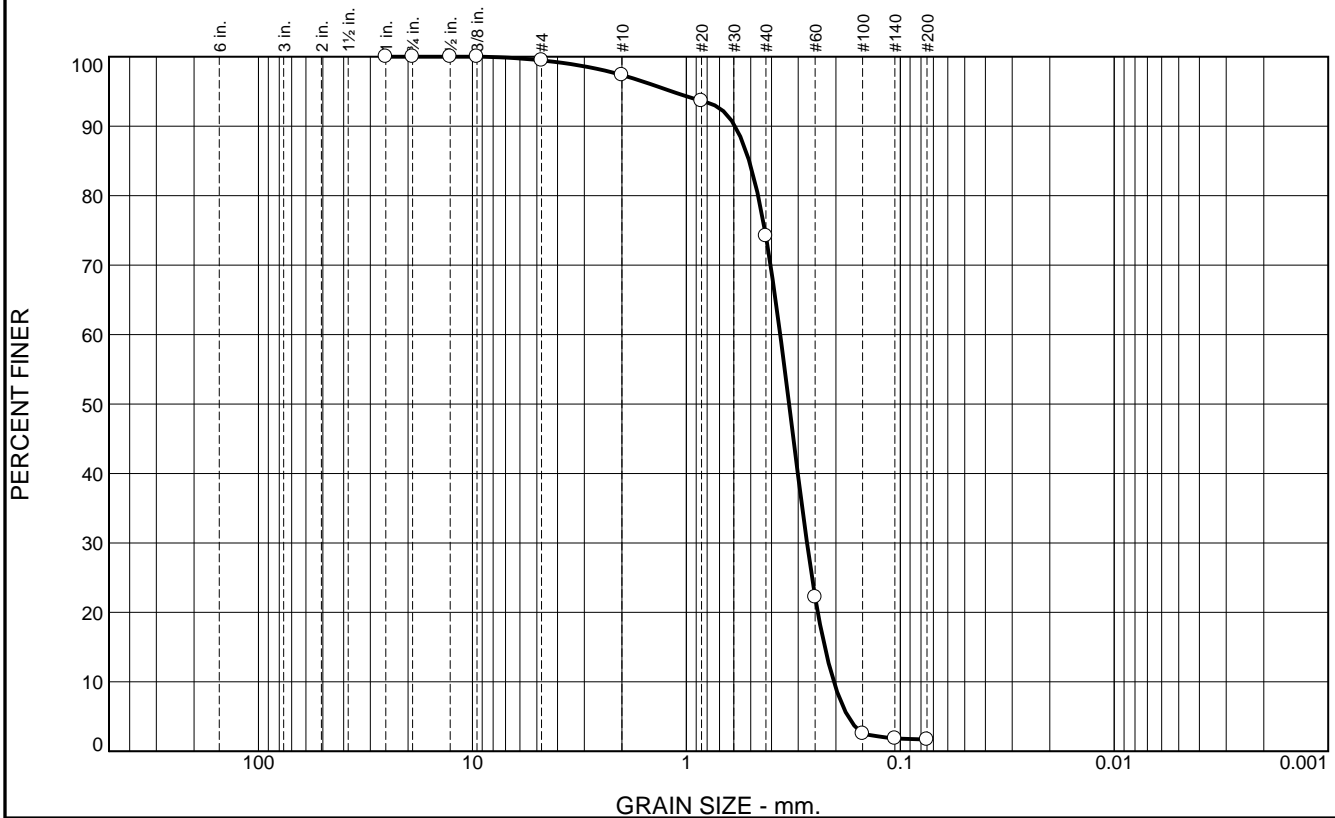
Recovery 15.0'

Longitude 088 21.782

Comments



Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	0.5	2.1	23.2	72.5	1.7	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
1	100.0		
.75	100.0		
.5	100.0		
.375	100.0		
#4	99.5		
#10	97.4		
#20	93.6		
#40	74.2		
#60	22.2		
#100	2.6		
#140	1.8		
#200	1.7		

* (no specification provided)

<u>Material Description</u>		
Fine to medium grained, SAND		
<u>Atterberg Limits</u>		
PL=	LL=	PI=
<u>Coefficients</u>		
D ₉₀ = 0.5917	D ₈₅ = 0.5087	D ₆₀ = 0.3640
D ₅₀ = 0.3311	D ₃₀ = 0.2731	D ₁₅ = 0.2254
D ₁₀ = 0.2045	C _u = 1.78	C _c = 1.00
<u>Classification</u>		
USCS= SP	AASHTO=	
<u>Remarks</u>		

Location: BI-PBS-55-12 A
Sample Number: 6471 (31)

Depth: 0.0'

Date: 12/03/12

Thompson Engineering

Mobile, Alabama

Client: CDM/Thompson Engineering JV
Project: MsCIP Barrier Island Restoration GT

Project No: 1221110095

Figure

Boring Designation BI-PBS-056-12

DRILLING LOG		DIVISION South Atlantic		INSTALLATION Mobile District		SHEET 1 OF 1 SHEETS	
1. PROJECT MsCIP Barrier Island Restoration Petit Bois Pass-OCS East				9. SIZE AND TYPE OF BIT N/A			
2. BORING DESIGNATION BI-PBS-056-12		LOCATION COORDINATES E = 1,131,782 N = 243,108		10. COORDINATE SYSTEM/DATUM State Plane, MSE (U.S. Ft.)		HORIZONTAL NAD83 VERTICAL NAVD88	
3. DRILLING AGENCY Corps of Engineers - CESAM		CONTRACTOR FILE NO.		11. MANUFACTURER'S DESIGNATION OF DRILL Vibracore		<input type="checkbox"/> AUTO HAMMER <input type="checkbox"/> MANUAL HAMMER	
4. NAME OF DRILLER American Vibracore Systems, Inc.				12. TOTAL SAMPLES		DISTURBED UNDISTURBED (UD) 0	
5. DIRECTION OF BORING <input checked="" type="checkbox"/> VERTICAL <input type="checkbox"/> INCLINED				13. TOTAL NUMBER CORE BOXES		14. WATER DEPTH 48.3 Ft.	
6. THICKNESS OF OVERBURDEN N/A				15. DATE BORING		STARTED 11-30-12 COMPLETED 11-30-12	
7. DEPTH DRILLED INTO ROCK N/A				16. ELEVATION TOP OF BORING -46.0 Ft.		17. TOTAL RECOVERY FOR BORING 100%	
8. TOTAL DEPTH OF BORING 14.8 Ft.				18. SIGNATURE AND TITLE OF INSPECTOR Mike FitzHarris, Geologist			

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	SAMPLE	LABORATORY RESULTS
-46.0	0.0				
-48.6	2.6		SAND, poorly-graded, mostly fine to medium-grained sand-sized quartz, trace silt, trace shell fragments, lt. gray (SP)	A	Classification: SP Color: 5Y 7/2-light gray D50: 0.3431 mm % Fines: 1.4
-50.7	4.7		SAND, clayey, mostly fine-grained sand-sized quartz, some clay, trace silt, trace shell fragments, trace wood debris, gray (SC)	B	Classification: SM Color: 5Y 5/2-olive gray D50: 0.2458 mm % Fines: 13.8
-53.4	7.4		SAND, poorly-graded with silt, mostly fine-grained sand-sized quartz, few silt, trace clay, clayey band between 6.3 to 6.5 ft., gray (SP-SM)	C	Classification: SP-SM Color: 2.5Y 6/2-light brownish gray D50: 0.2416 mm % Fines: 7.2
-57.9	11.9		CLAY, lean, mostly clay, some fine-grained sand-sized quartz, trace shell fragments, low to medium plasticity, gray (CL)	NS	
-60.8	14.8		SAND, poorly-graded with silt, mostly fine-grained sand-sized quartz, few silt, trace shell fragments, clayey nodules throughout, lt. gray with dk gray spots (SP-SM)		
NOTES: 1. Soils are field visually classified in accordance with the Unified Soils Classification System. 2. NS = Sample not submitted for laboratory analysis from this interval. 3. Seafloor elevation determined from USACE hydrographic survey completed April 2014.					

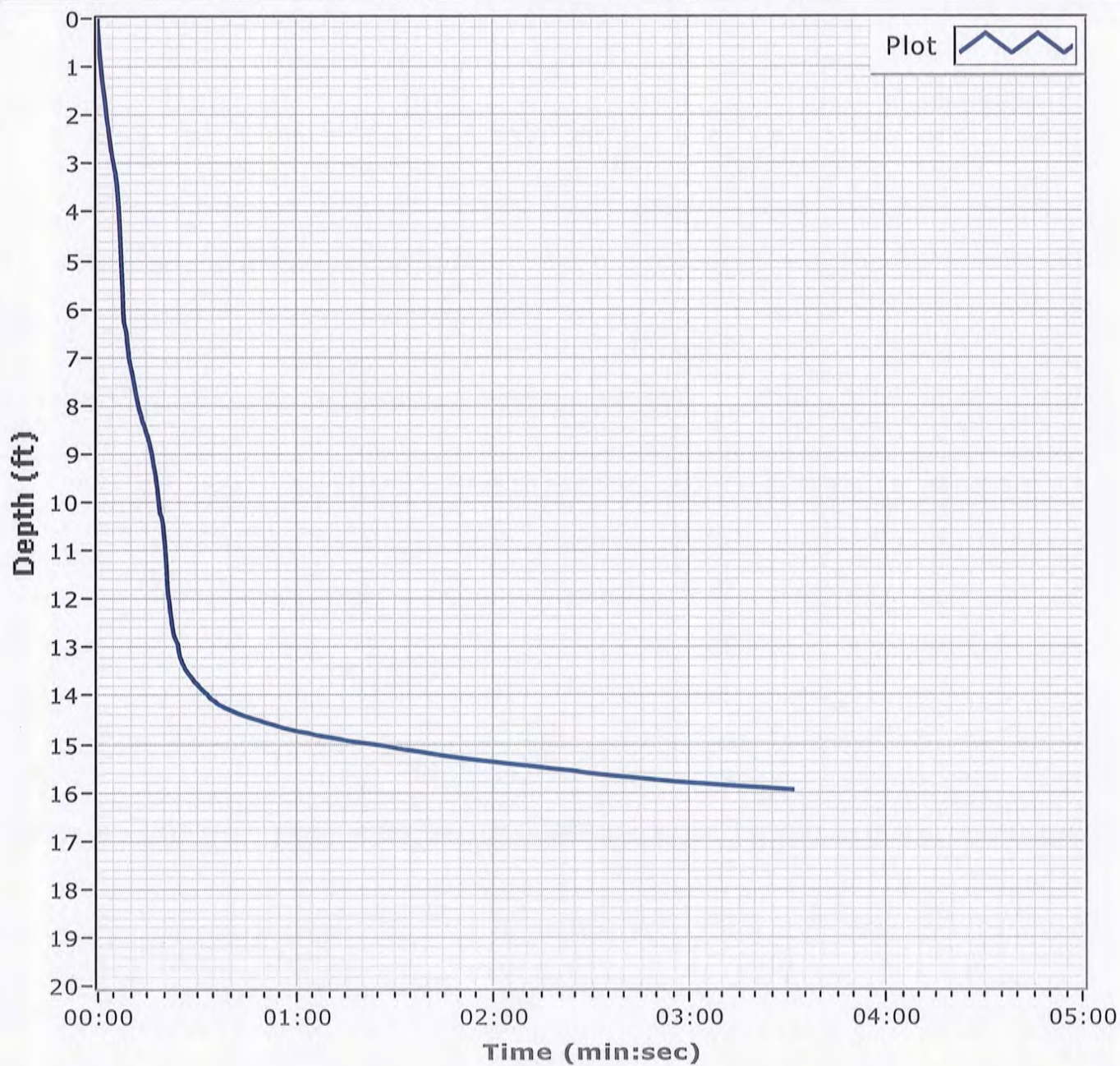
Project

Mississippi Barrier Island
Restoration Project

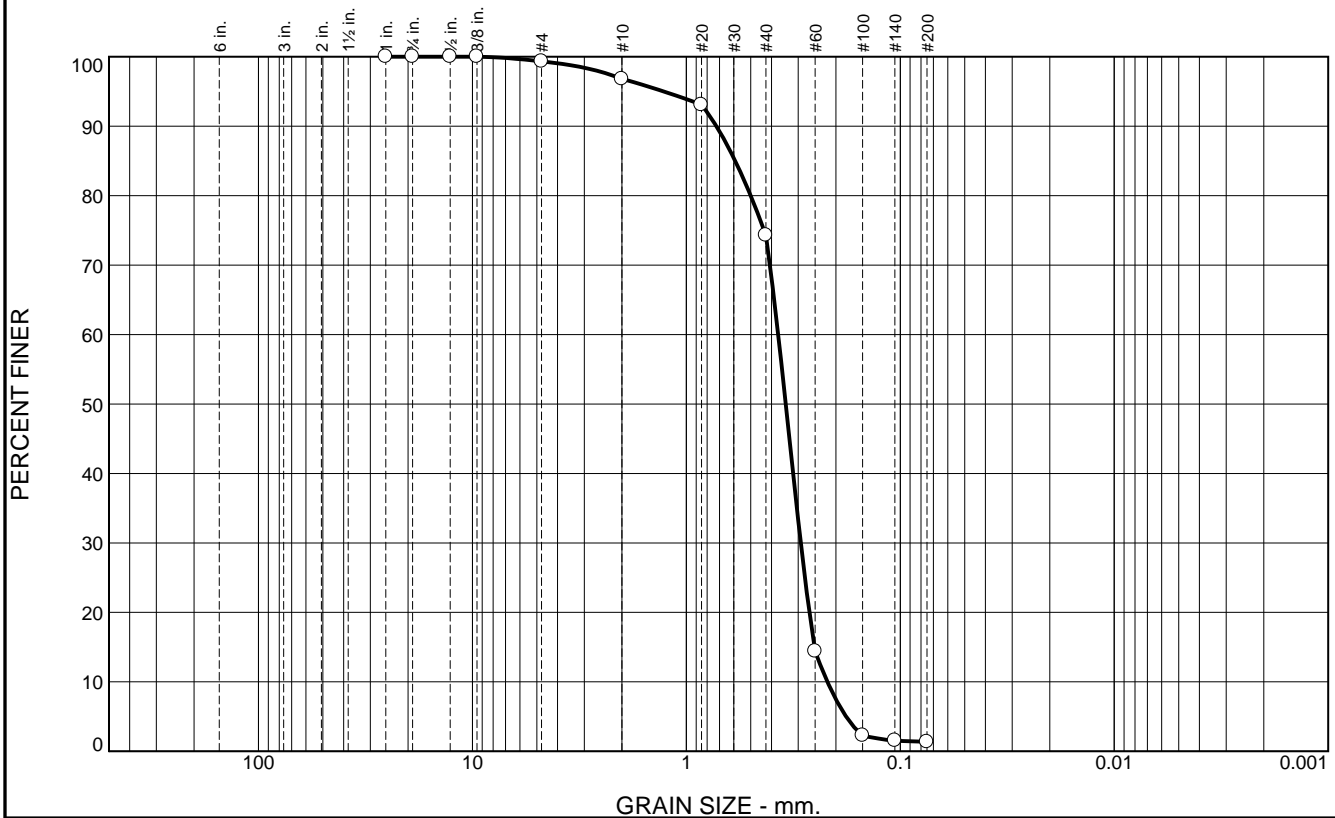
AVS
AMERICAN VIBRACORE
S E R V I C E S

Core Identifier BI-PBS-56-12**Date** 11/30/2012**Water Depth** 48.3'**Coordinate System**

Latitude / Longitude

Start Time 13:48:11**End Time** 13:51:43**Penetration** 16.0'**Latitude** 30 10.060**Total Time** 00:03:31**Recovery** 14.8'**Longitude** 088 21.988**Comments**

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	0.7	2.5	22.5	72.9	1.4	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
1	100.0		
.75	100.0		
.5	100.0		
.375	100.0		
#4	99.3		
#10	96.8		
#20	93.1		
#40	74.3		
#60	14.4		
#100	2.3		
#140	1.5		
#200	1.4		

* (no specification provided)

<u>Material Description</u>		
Fine to medium grained, SAND		
<u>Atterberg Limits</u>		
PL=	LL=	PI=
<u>Coefficients</u>		
D ₉₀ = 0.7245	D ₈₅ = 0.5913	D ₆₀ = 0.3720
D ₅₀ = 0.3431	D ₃₀ = 0.2921	D ₁₅ = 0.2519
D ₁₀ = 0.2191	C _u = 1.70	C _c = 1.05
<u>Classification</u>		
USCS= SP	AASHTO=	
<u>Remarks</u>		

Location: BI-PBS-56-12 A
Sample Number: 6471 (32)

Depth: 0.0'

Date: 12/03/12

Thompson Engineering

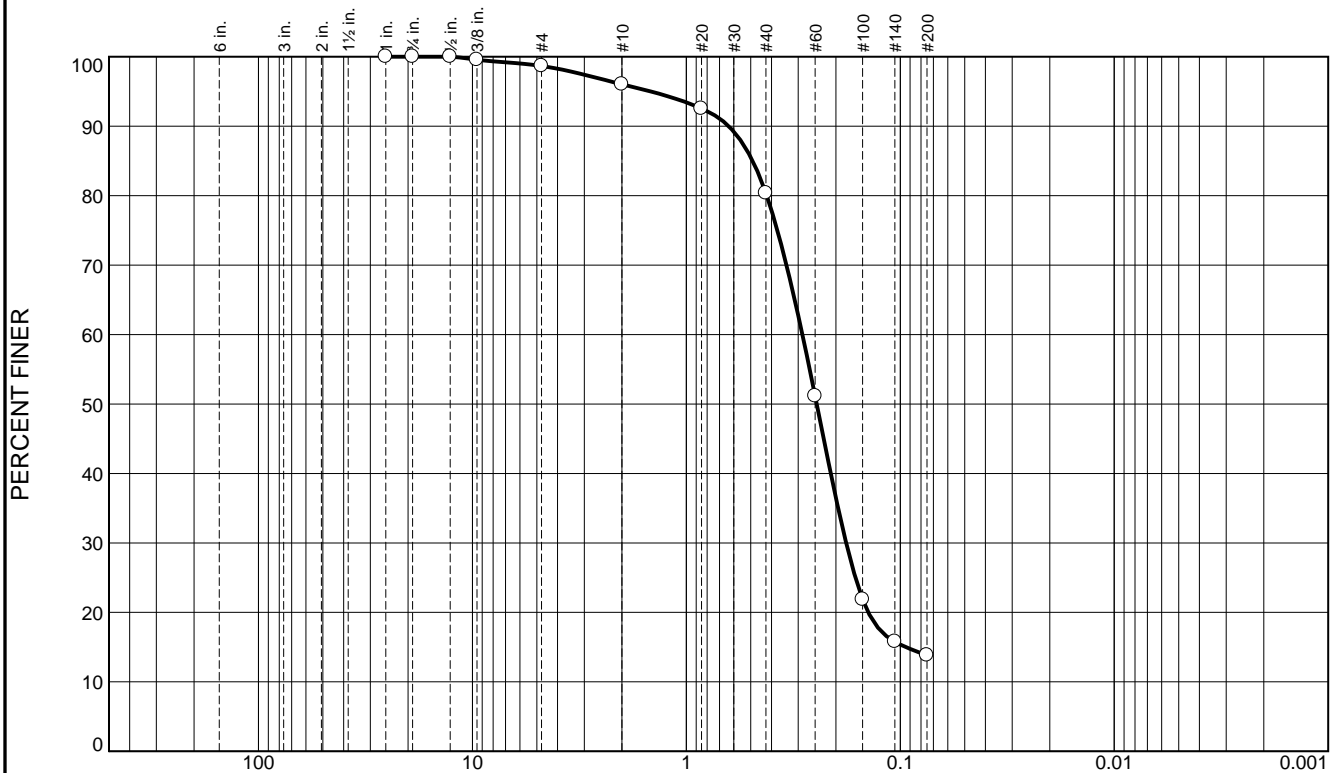
Mobile, Alabama

Client: CDM/Thompson Engineering JV
Project: MsCIP Barrier Island Restoration GT

Project No: 1221110095

Figure

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	1.3	2.7	15.6	66.6	13.8	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
1	100.0		
.75	100.0		
.5	100.0		
.375	99.6		
#4	98.7		
#10	96.0		
#20	92.5		
#40	80.4		
#60	51.1		
#100	21.9		
#140	15.8		
#200	13.8		

* (no specification provided)

<u>Material Description</u>		
Fine to medium grained, SILTY SAND, with trace SHELL		
<u>Atterberg Limits</u>		
PL=	LL=	PI=
<u>Coefficients</u>		
D ₉₀ = 0.6343	D ₈₅ = 0.4902	D ₆₀ = 0.2869
D ₅₀ = 0.2458	D ₃₀ = 0.1792	D ₁₅ = 0.0941
D ₁₀ =	C _u =	C _c =
<u>Classification</u>		
USCS= SM	AASHTO=	
<u>Remarks</u>		

Location: BI-PBS-56-12 B
Sample Number: 6471 (33)

Depth: 2.6'

Date: 12/03/12

Thompson Engineering

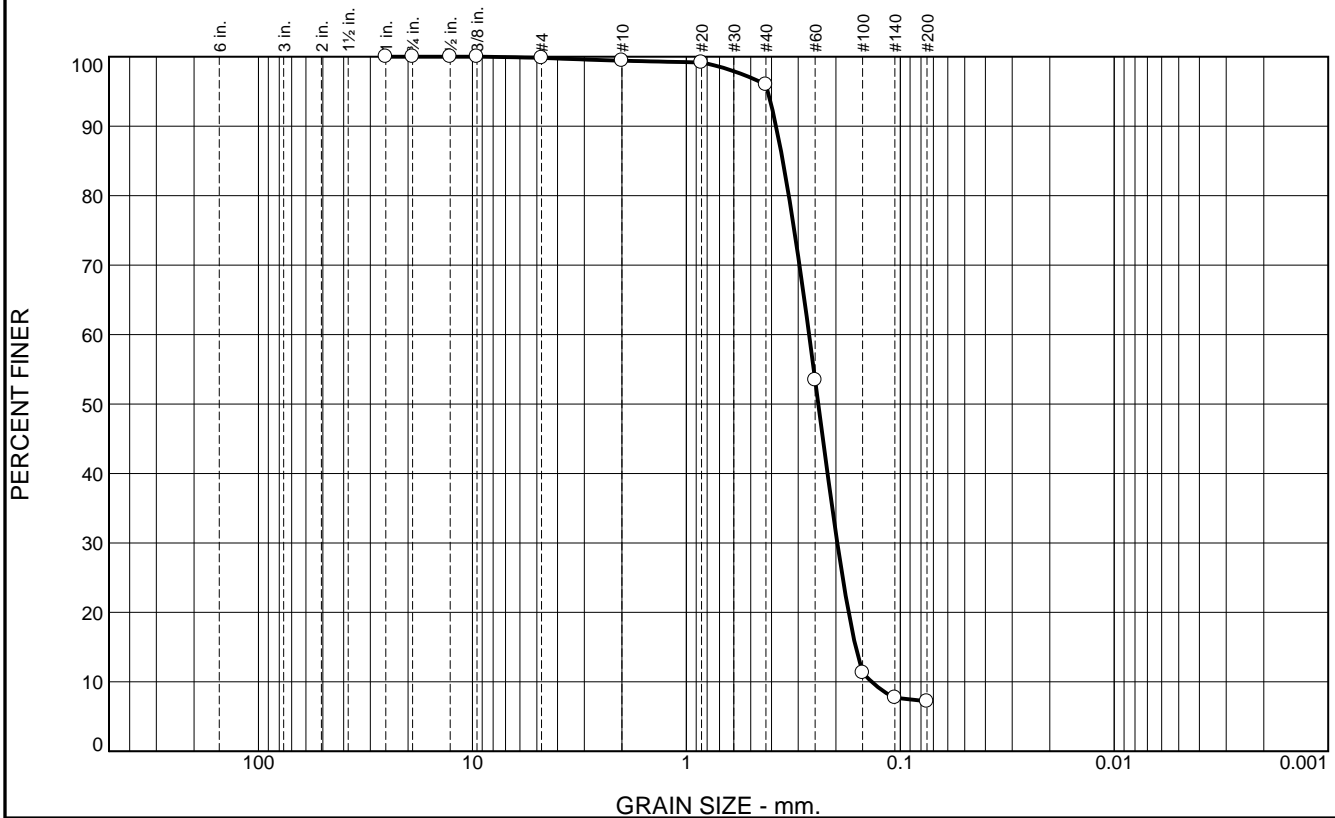
Mobile, Alabama

Client: CDM/Thompson Engineering JV
Project: MsCIP Barrier Island Restoration GT

Project No: 1221110095

Figure

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	0.2	0.4	3.4	88.8	7.2	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
1	100.0		
.75	100.0		
.5	100.0		
.375	100.0		
#4	99.8		
#10	99.4		
#20	99.2		
#40	96.0		
#60	53.5		
#100	11.3		
#140	7.7		
#200	7.2		

* (no specification provided)

Material Description

Fine grained, SLIGHTLY SILTY SAND

Atterberg Limits

PL= LL= PI=

Coefficients

D₉₀= 0.3806 D₈₅= 0.3539 D₆₀= 0.2669
D₅₀= 0.2416 D₃₀= 0.1970 D₁₅= 0.1618
D₁₀= 0.1361 C_u= 1.96 C_c= 1.07

Classification

USCS= SP-SM AASHTO=

Remarks

Location: BI-PBS-56-12 C
Sample Number: 6471 (34)

Depth: 4.7'

Date: 12/03/12

Thompson Engineering

Mobile, Alabama

Client: CDM/Thompson Engineering JV
Project: MsCIP Barrier Island Restoration GT

Project No: 1221110095

Figure

Boring Designation BI-PBS-057-12

DRILLING LOG		DIVISION South Atlantic		INSTALLATION Mobile District		SHEET 1 OF 1 SHEETS	
1. PROJECT MsCIP Barrier Island Restoration Petit Bois Pass-OCS East				9. SIZE AND TYPE OF BIT N/A			
2. BORING DESIGNATION BI-PBS-057-12		LOCATION COORDINATES E = 1,130,570 N = 243,685		10. COORDINATE SYSTEM/DATUM State Plane, MSE (U.S. Ft.)		HORIZONTAL NAD83	
3. DRILLING AGENCY Corps of Engineers - CESAM		CONTRACTOR FILE NO.		11. MANUFACTURER'S DESIGNATION OF DRILL Vibracore		<input type="checkbox"/> AUTO HAMMER <input type="checkbox"/> MANUAL HAMMER	
4. NAME OF DRILLER American Vibracore Systems, Inc.				12. TOTAL SAMPLES		DISTURBED 0	
5. DIRECTION OF BORING <input checked="" type="checkbox"/> VERTICAL <input type="checkbox"/> INCLINED				13. TOTAL NUMBER CORE BOXES		14. WATER DEPTH 47.4 Ft.	
6. THICKNESS OF OVERBURDEN N/A				15. DATE BORING		STARTED 11-30-12	
7. DEPTH DRILLED INTO ROCK N/A				16. ELEVATION TOP OF BORING -45.1 Ft.		COMPLETED 11-30-12	
8. TOTAL DEPTH OF BORING 14.0 Ft.				17. TOTAL RECOVERY FOR BORING 100%			
				18. SIGNATURE AND TITLE OF INSPECTOR Mike FitzHarris, Geologist			
ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	SAMPLE	LABORATORY RESULTS		
-45.1	0.0						
-48.9	3.8		SAND, poorly-graded, mostly fine to medium-grained sand-sized quartz, trace silt, trace shell fragments, lt. gray to gray (SP)	A	Classification: SP Color: 5Y 7/2-light gray D50: 0.3414 mm % Fines: 2.3		
-49.7	4.6		SAND, clayey, mostly fine-grained sand-sized quartz, some clay, trace shell fragments, gray (SC)	NS			
-50.5	5.4		SAND, poorly-graded, mostly fine-grained sand-sized quartz, trace clay, trace wood debris, gray (SP)	B	Classification: SP-SM Color: 5Y 6/2-light olive gray D50: 0.2327 mm % Fines: 8.5		
-54.1	9.0		CLAY, lean, mostly clay, some silt, trace fine-grained sand-sized quartz, gray (CL)	NS			
-56.4	11.3		SAND, clayey, mostly fine-grained sand-sized quartz, some clay, little shells, trace wood debris, gray (SC)	NS			
-59.1	14.0		SAND, poorly-graded, mostly fine-grained sand-sized quartz, trace silt, trace shell fragments, trace wood debris, trace clay nodules, gray to light gray (SP)	NS			
NOTES: 1. Soils are field visually classified in accordance with the Unified Soils Classification System. 2. NS = Sample not submitted for laboratory analysis from this interval. 3. Seafloor elevation determined from USACE hydrographic survey completed April 2014.							

Project

Mississippi Barrier Island
Restoration Project



Core Identifier BI-PBS-57-12

Date 11/30/2012

Water Depth 47.4

Coordinate System

Start Time 14:51:00

Latitude / Longitude

End Time 14:53:28

Penetration 15.4'

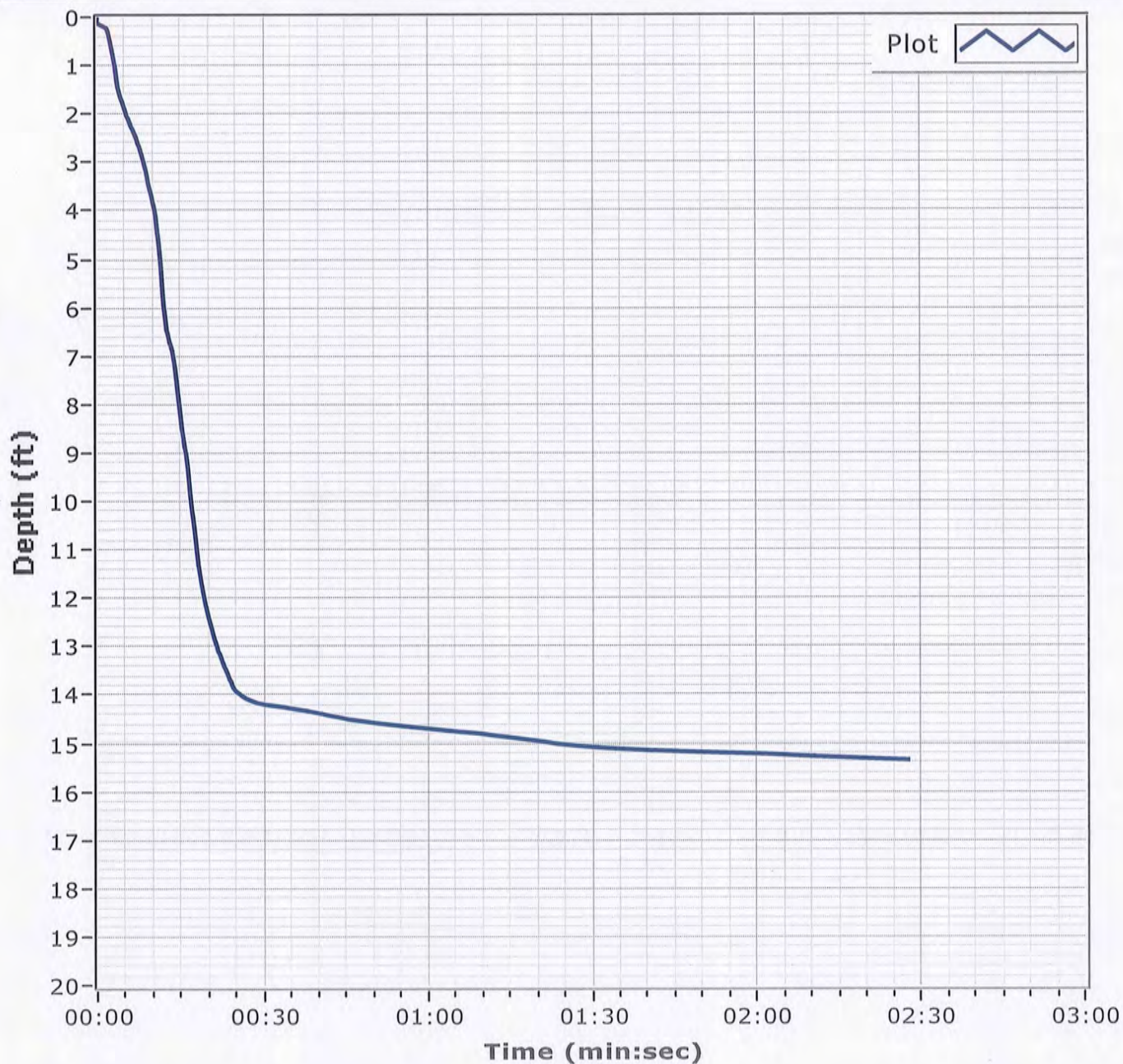
Latitude 30 10.156

Total Time 00:02:28

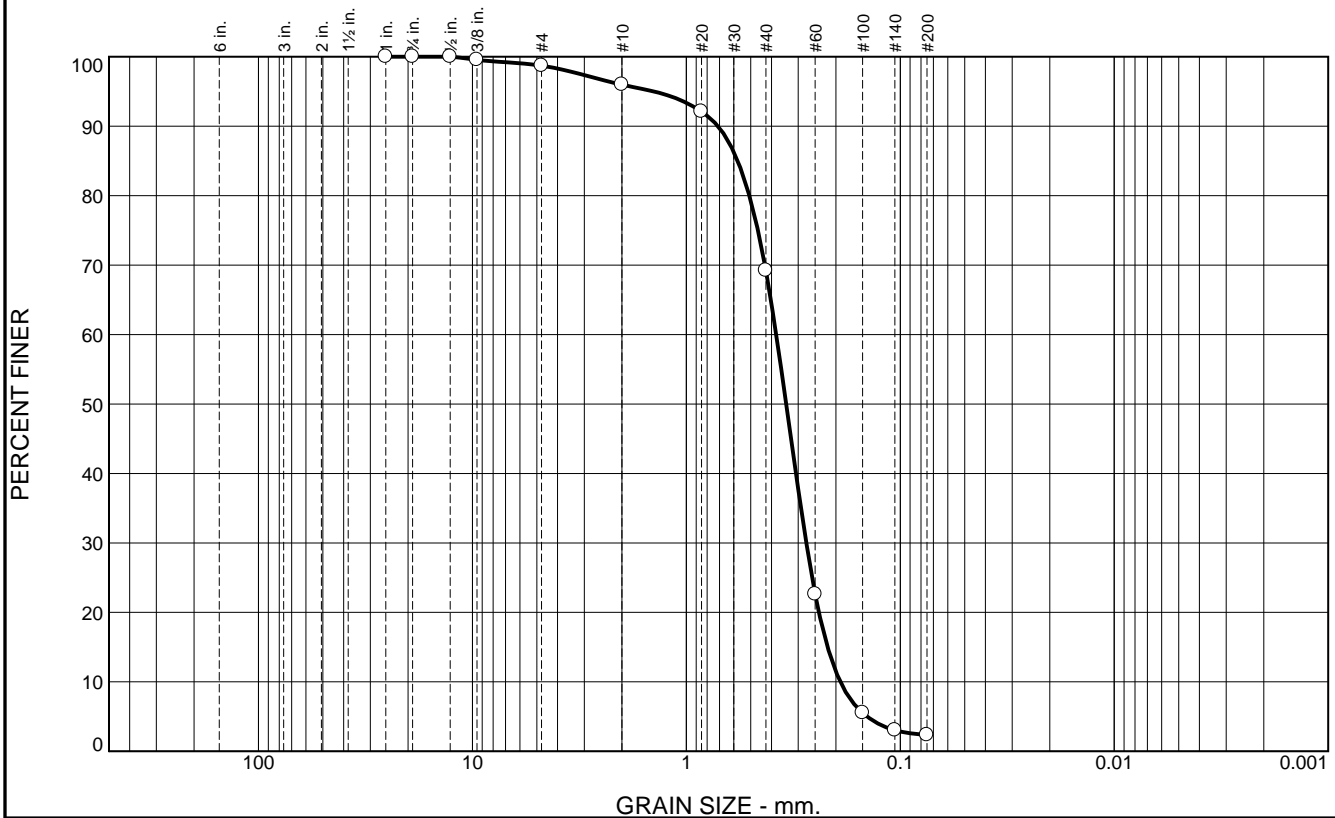
Recovery 14.0'

Longitude 088 22.218

Comments



Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	1.3	2.7	26.8	66.9	2.3	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
1	100.0		
.75	100.0		
.5	100.0		
.375	99.5		
#4	98.7		
#10	96.0		
#20	92.1		
#40	69.2		
#60	22.6		
#100	5.5		
#140	3.0		
#200	2.3		

* (no specification provided)

Material Description
 Fine to medium grained, SAND, with trace SHELL

Atterberg Limits
 PL= LL= PI=

Coefficients
 D₉₀= 0.7121 D₈₅= 0.5755 D₆₀= 0.3801
 D₅₀= 0.3414 D₃₀= 0.2751 D₁₅= 0.2187
 D₁₀= 0.1908 C_u= 1.99 C_c= 1.04

Classification
 USCS= SP AASHTO=

Remarks

Location: BI-PBS-57-12 A
 Sample Number: 6471 (35)

Depth: 0.0'

Date: 12/03/12

Thompson Engineering

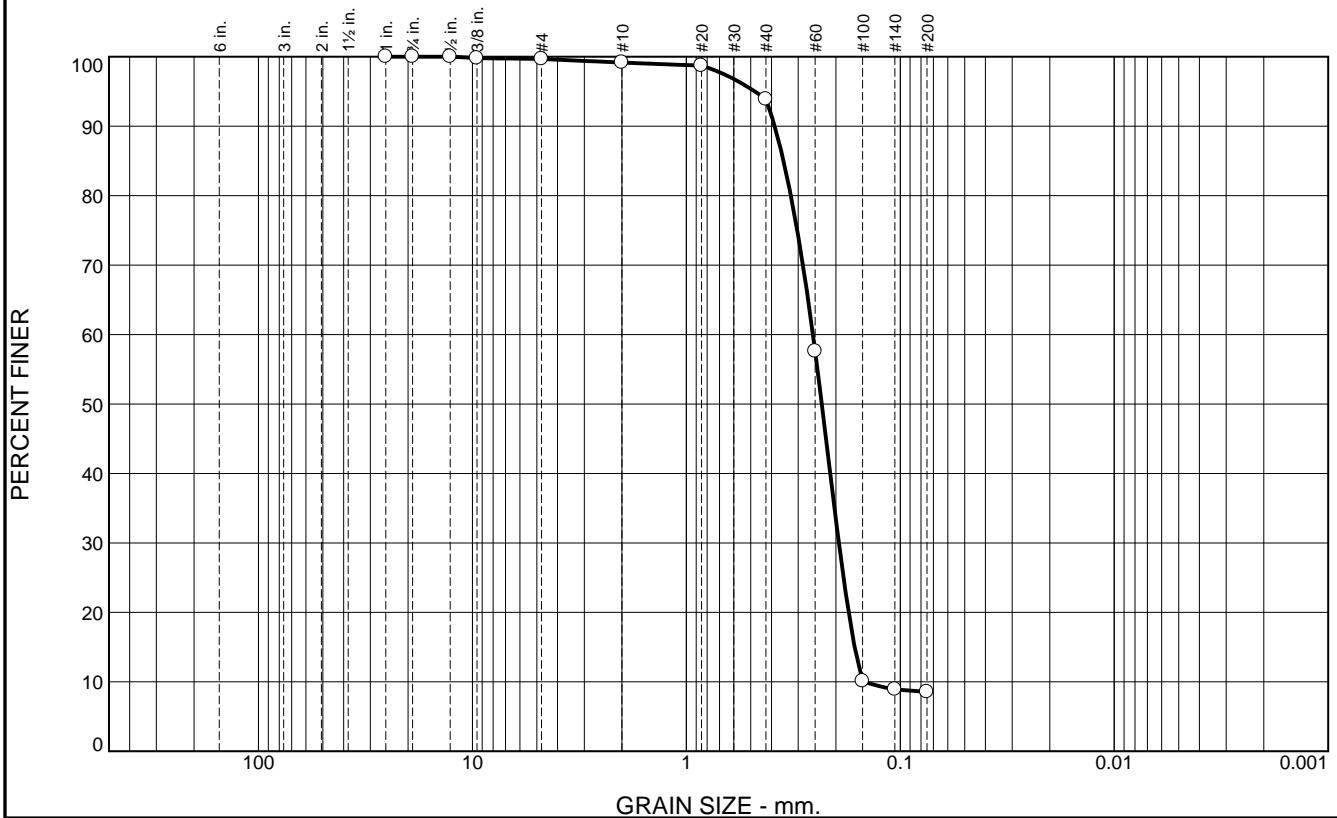
Mobile, Alabama

Client: CDM/Thompson Engineering JV
 Project: MsCIP Barrier Island Restoration GT

Project No: 1221110095

Figure

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	0.3	0.5	5.3	85.4	8.5	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
1	100.0		
.75	100.0		
.5	100.0		
.375	99.8		
#4	99.7		
#10	99.2		
#20	98.7		
#40	93.9		
#60	57.6		
#100	10.1		
#140	8.9		
#200	8.5		

* (no specification provided)

<u>Material Description</u>		
Fine grained, SLIGHTLY SILTY SAND		
<u>Atterberg Limits</u>		
PL=	LL=	PI=
<u>Coefficients</u>		
D ₉₀ = 0.3862	D ₈₅ = 0.3513	D ₆₀ = 0.2560
D ₅₀ = 0.2327	D ₃₀ = 0.1938	D ₁₅ = 0.1637
D ₁₀ = 0.1466	C _u = 1.75	C _c = 1.00
<u>Classification</u>		
USCS= SP-SM	AASHTO=	
<u>Remarks</u>		

Location: BI-PBS-57-12 B
Sample Number: 6471 (36)

Depth: 4.6'

Date: 12/03/12

Thompson Engineering

Mobile, Alabama

Client: CDM/Thompson Engineering JV
Project: MsCIP Barrier Island Restoration GT

Project No: 1221110095

Figure

Boring Designation BI-PBS-058-12

DRILLING LOG		DIVISION South Atlantic		INSTALLATION Mobile District		SHEET 1 OF 2 SHEETS	
1. PROJECT MsCIP Barrier Island Restoration Petit Bois Pass-OCS East				9. SIZE AND TYPE OF BIT N/A			
2. BORING DESIGNATION BI-PBS-058-12		LOCATION COORDINATES E = 1,129,310 N = 244,207		10. COORDINATE SYSTEM/DATUM State Plane, MSE (U.S. Ft.)		HORIZONTAL NAD83 VERTICAL NAVD88	
3. DRILLING AGENCY Corps of Engineers - CESAM		CONTRACTOR FILE NO.		11. MANUFACTURER'S DESIGNATION OF DRILL Vibracore		<input type="checkbox"/> AUTO HAMMER <input type="checkbox"/> MANUAL HAMMER	
4. NAME OF DRILLER American Vibracore Systems, Inc.				12. TOTAL SAMPLES		DISTURBED UNDISTURBED (UD) 0	
5. DIRECTION OF BORING <input checked="" type="checkbox"/> VERTICAL <input type="checkbox"/> INCLINED		DEG. FROM VERTICAL		13. TOTAL NUMBER CORE BOXES			
		BEARING		14. WATER DEPTH 47.2 Ft.			
6. THICKNESS OF OVERBURDEN N/A				15. DATE BORING 11-30-12		STARTED COMPLETED 11-30-12	
7. DEPTH DRILLED INTO ROCK N/A				16. ELEVATION TOP OF BORING -44.3 Ft.			
8. TOTAL DEPTH OF BORING 19.9 Ft.				17. TOTAL RECOVERY FOR BORING 100%			
				18. SIGNATURE AND TITLE OF INSPECTOR Mike FitzHarris, Geologist			
ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	SAMPLE	LABORATORY RESULTS		
-44.3	0.0						
			SAND, poorly-graded, mostly fine to medium-grained sand-sized quartz, trace silt, trace shell fragments, lt. gray (SP)	A	Classification: SP Color: 5Y 7/2-light gray D50: 0.3436 mm % Fines: 1.6		
-47.5	3.2						
-48.9	4.6		SAND, clayey, mostly fine-grained sand-sized quartz, some clay, trace silt, trace shell fragments, trace wood debris, gray (SC)	B	Classification: SM Color: 5Y 5/2-olive gray D50: 0.2437 mm % Fines: 16.5		
			CLAY, fat, mostly clay, trace shell fragments, trace wood debris, few sandy pockets, medium to high plasticity, brownish gray to gray (CH)				
-54.4	10.1						
			SAND, clayey, mostly fine-grained sand-sized quartz, some clay, little shell fragments, large shells intermixed between 11.7 and 13.1 ft., gray (SC)	NS			
-58.2	13.9						
			SAND, poorly-graded with clay, mostly fine-grained sand-sized quartz, some clay, alternating bands of poorly graded, fine-grained sand and clay with some silt and fine grain sand, lt. gray to gray (SP-SC)				
-64.2	19.9						
			NOTES: 1. Soils are field visually classified in accordance with the Unified Soils Classification System. 2. NS = Sample not submitted for laboratory analysis from this interval. 3. Seafloor elevation determined from USACE				

DRILLING LOG (Cont. Sheet)			INSTALLATION Mobile District		SHEET 2
					OF 2 SHEETS
PROJECT MsCIP Barrier Island Restoration			COORDINATE SYSTEM/DATUM State Plane, MSE (U.S. Ft.)	HORIZONTAL NAD83	VERTICAL NAVD88
LOCATION COORDINATES X = 1,129,310 Y = 244,207			ELEVATION TOP OF BORING -44.3 Ft.		
ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	SAMPLE	LABORATORY RESULTS
			hydrographic survey completed April 2014.		

Project

Mississippi Barrier Island
Restoration Project

AVS
AMERICAN VIBRACORE
S E R V I C E S

Core Identifier BI-PBS-58-12

Date 11/30/2012

Water Depth 47.2'

Coordinate System

Latitude / Longitude

Start Time 15:41:36

End Time 15:42:37

Penetration 20.0'

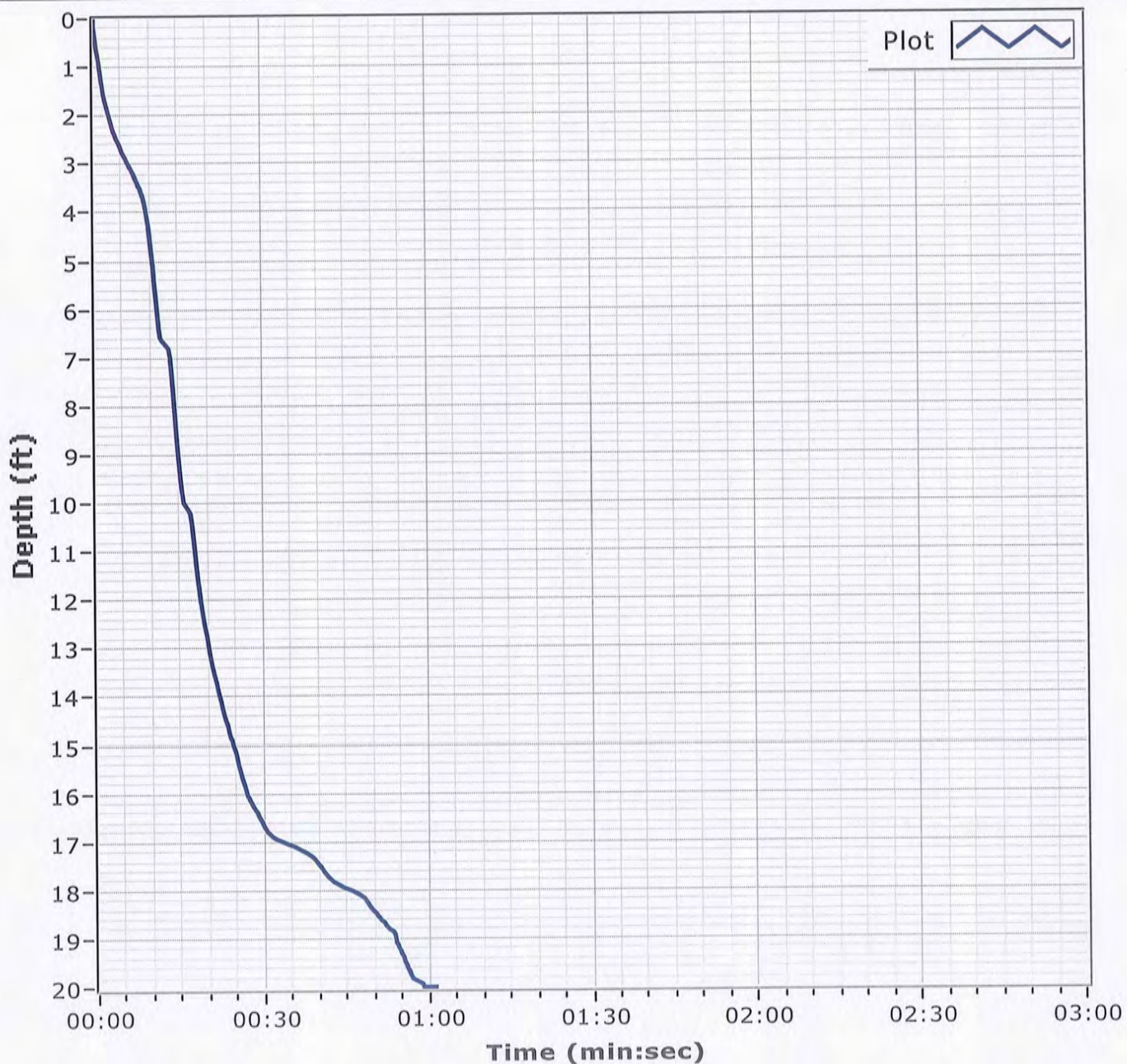
Latitude 30 10.243

Total Time 00:01:01

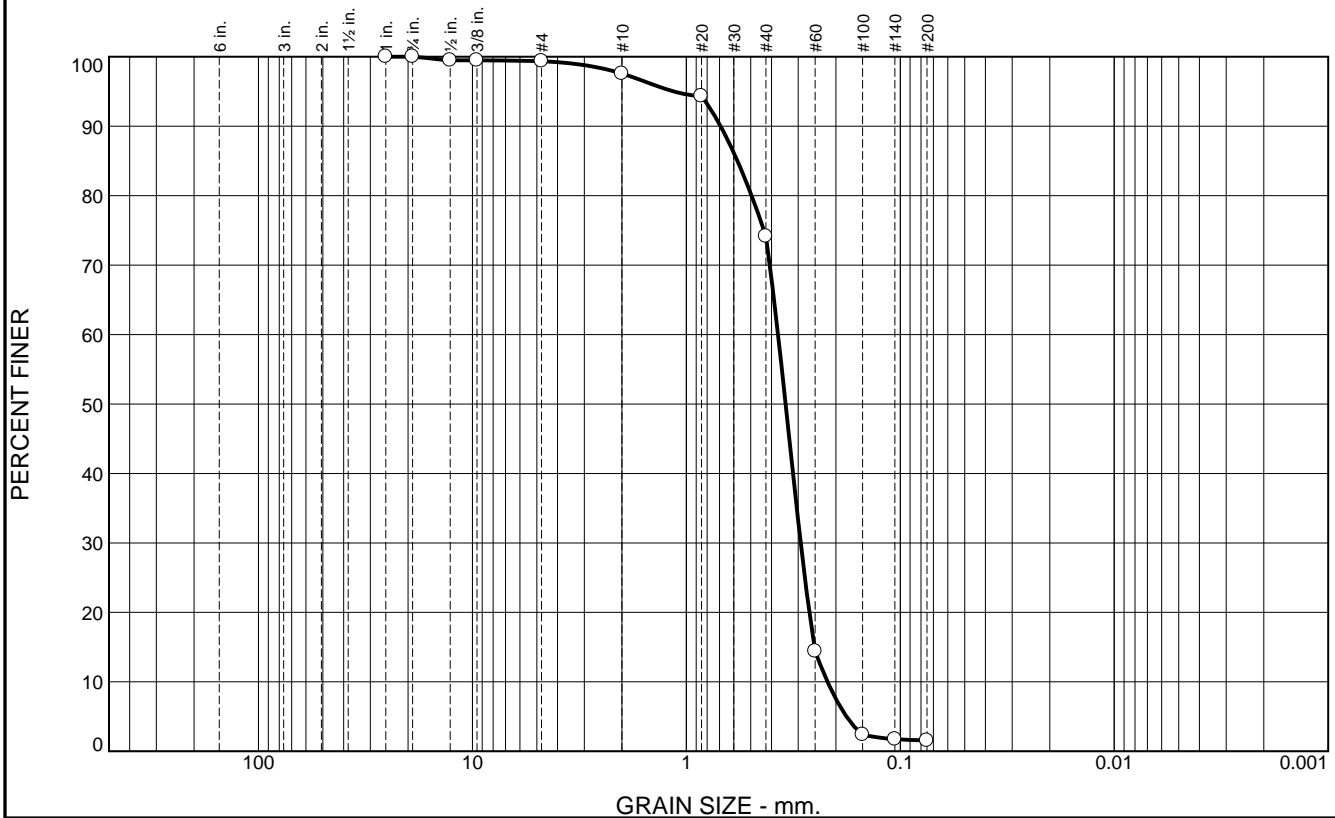
Recovery 19.9'

Longitude 088 22.457

Comments



Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	0.6	1.8	23.5	72.5	1.6	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
1	100.0		
.75	100.0		
.5	99.5		
.375	99.5		
#4	99.4		
#10	97.6		
#20	94.3		
#40	74.1		
#60	14.4		
#100	2.4		
#140	1.7		
#200	1.6		

* (no specification provided)

<u>Material Description</u>		
Fine to medium grained, SAND		
<u>Atterberg Limits</u>		
PL=	LL=	PI=
<u>Coefficients</u>		
D ₉₀ = 0.6921	D ₈₅ = 0.5770	D ₆₀ = 0.3726
D ₅₀ = 0.3436	D ₃₀ = 0.2923	D ₁₅ = 0.2519
D ₁₀ = 0.2189	C _u = 1.70	C _c = 1.05
<u>Classification</u>		
USCS= SP	AASHTO=	
<u>Remarks</u>		

Location: BI-PBS-58.12A
Sample Number: 6471 (37)

Depth: 0.0'

Date: 12/03/12

Thompson Engineering

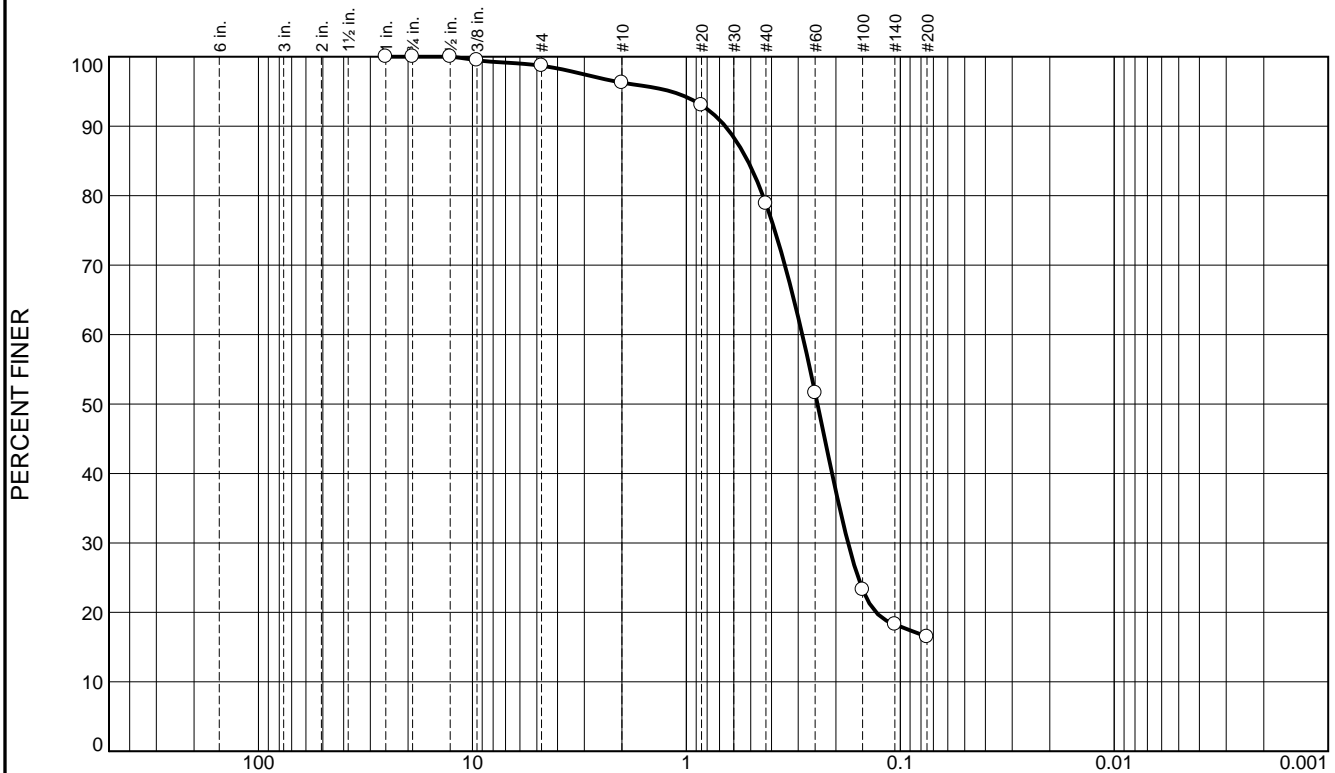
Mobile, Alabama

Client: CDM/Thompson Engineering JV
Project: MsCIP Barrier Island Restoration GT

Project No: 1221110095

Figure

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	1.3	2.4	17.4	62.4	16.5	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
1	100.0		
.75	100.0		
.5	100.0		
.375	99.5		
#4	98.7		
#10	96.3		
#20	93.0		
#40	78.9		
#60	51.6		
#100	23.3		
#140	18.3		
#200	16.5		

* (no specification provided)

Material Description

Fine to medium grained, SILTY SAND, with trace organics and trace SHELL

Atterberg Limits

PL= LL= PI=

Coefficients

D₉₀= 0.6582 D₈₅= 0.5164 D₆₀= 0.2873
D₅₀= 0.2437 D₃₀= 0.1756 D₁₅=
D₁₀= C_u= C_c=

Classification

USCS= SM AASHTO=

Remarks

Location: BI-PBS-58-12 B
Sample Number: 6471 (38)

Depth: 3.2'

Date: 12/03/12

Thompson Engineering

Mobile, Alabama

Client: CDM/Thompson Engineering JV
Project: MsCIP Barrier Island Restoration GT

Project No: 1221110095

Figure

Boring Designation BI-PBS-059-12

DRILLING LOG		DIVISION South Atlantic		INSTALLATION Mobile District		SHEET 1 OF 1 SHEETS	
1. PROJECT MsCIP Barrier Island Restoration Petit Bois Pass-OCS East				9. SIZE AND TYPE OF BIT N/A			
2. BORING DESIGNATION BI-PBS-059-12		LOCATION COORDINATES E = 1,138,239 N = 233,424		10. COORDINATE SYSTEM/DATUM State Plane, MSE (U.S. Ft.)		HORIZONTAL NAD83	
3. DRILLING AGENCY Corps of Engineers - CESAM		CONTRACTOR FILE NO.		11. MANUFACTURER'S DESIGNATION OF DRILL Vibrocure		<input type="checkbox"/> AUTO HAMMER <input type="checkbox"/> MANUAL HAMMER	
4. NAME OF DRILLER American Vibrocure Systems, Inc.				12. TOTAL SAMPLES		DISTURBED 0	
5. DIRECTION OF BORING <input checked="" type="checkbox"/> VERTICAL <input type="checkbox"/> INCLINED				13. TOTAL NUMBER CORE BOXES		14. WATER DEPTH 53.4 Ft.	
6. THICKNESS OF OVERBURDEN N/A				15. DATE BORING		STARTED 11-26-12	
7. DEPTH DRILLED INTO ROCK N/A				16. ELEVATION TOP OF BORING -53.1 Ft.		COMPLETED 11-26-12	
8. TOTAL DEPTH OF BORING 19.5 Ft.				17. TOTAL RECOVERY FOR BORING 100%		18. SIGNATURE AND TITLE OF INSPECTOR Mike FitzHarris, Geologist	
ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	SAMPLE	LABORATORY RESULTS		
-53.1	0.0						
-54.9	1.8		SAND, poorly-graded, mostly fine to medium-grained sand-sized quartz, trace shell fragments, gray (SP)	A	Classification: SP Color: 5Y 7/1-light gray D50: 0.3203 mm % Fines: 1.1		
-55.7	2.6		SAND, silty, mostly fine-grained sand-sized quartz, trace shell fragments, gray (SM)	B	Classification: SP-SM Color: 5Y 5/2-olive gray D50: 0.206 mm % Fines: 11.4		
-61.2	8.1		CLAY, silty, mostly silt, some sand, trace shells, sandy silt with alternating clayey bands, greenish gray mottled with brown (CL-ML)	NS			
-66.4	13.3		SAND, silty, mostly fine-grained sand-sized quartz, some silt, few clay, trace shell fragments, gray (SM)				
-72.6	19.5		CLAY, fat, mostly clay, trace fine-grained sand-sized quartz, trace wood debris, medium stiffness, gray (CH)				
NOTES: 1. Soils are field visually classified in accordance with the Unified Soils Classification System. 2. NS = Sample not submitted for laboratory analysis from this interval. 3. Seafloor elevation determined from USACE hydrographic survey completed April 2014.							

Project

Mississippi Barrier Island
Restoration Project

AVS
AMERICAN VIBRACORE
S E R V I C E S

Core Identifier BI-PBS-59-12

Date 11/26/2012

Water Depth 53.4'

Coordinate System

Latitude / Longitude

Start Time 11:20:29

End Time 11:21:12

Penetration 20.0'

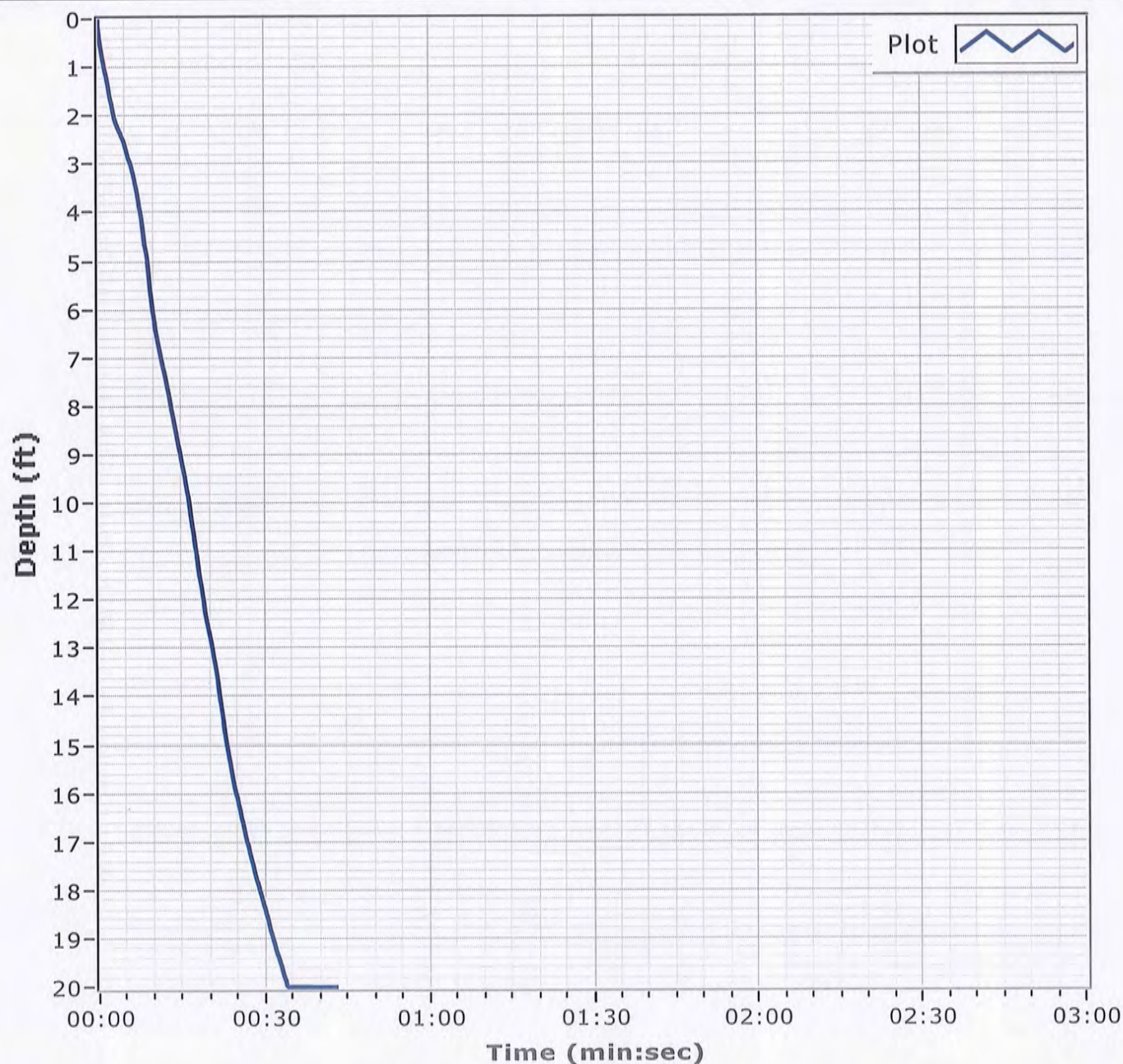
Latitude 30 08.458

Total Time 00:00:43

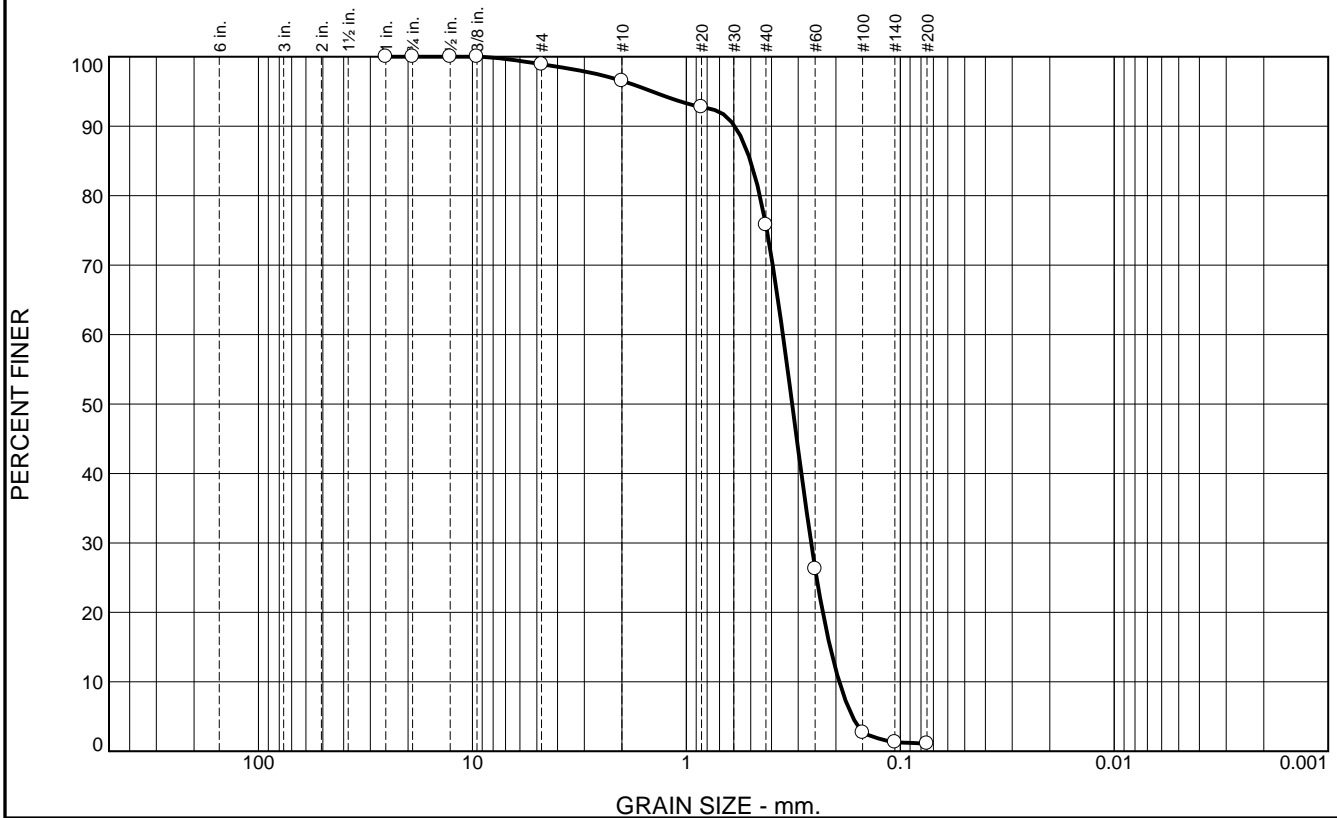
Recovery 19.5'

Longitude 088 20.770

Comments



Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	1.1	2.4	20.7	74.7	1.1	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
1	100.0		
.75	100.0		
.5	100.0		
.375	100.0		
#4	98.9		
#10	96.5		
#20	92.8		
#40	75.8		
#60	26.3		
#100	2.7		
#140	1.3		
#200	1.1		

* (no specification provided)

Material Description

Fine to medium grained, SAND, with trace SHELL

Atterberg Limits

PL= LL= PI=

Coefficients

D₉₀= 0.5938 D₈₅= 0.5015 D₆₀= 0.3539
D₅₀= 0.3203 D₃₀= 0.2611 D₁₅= 0.2128
D₁₀= 0.1930 C_u= 1.83 C_c= 1.00

Classification

USCS= SP AASHTO=

Remarks

Location: BI-PBS-59-12 A
Sample Number: 6469 (60)

Depth: 0.0'

Date: 11/28/12

Thompson Engineering

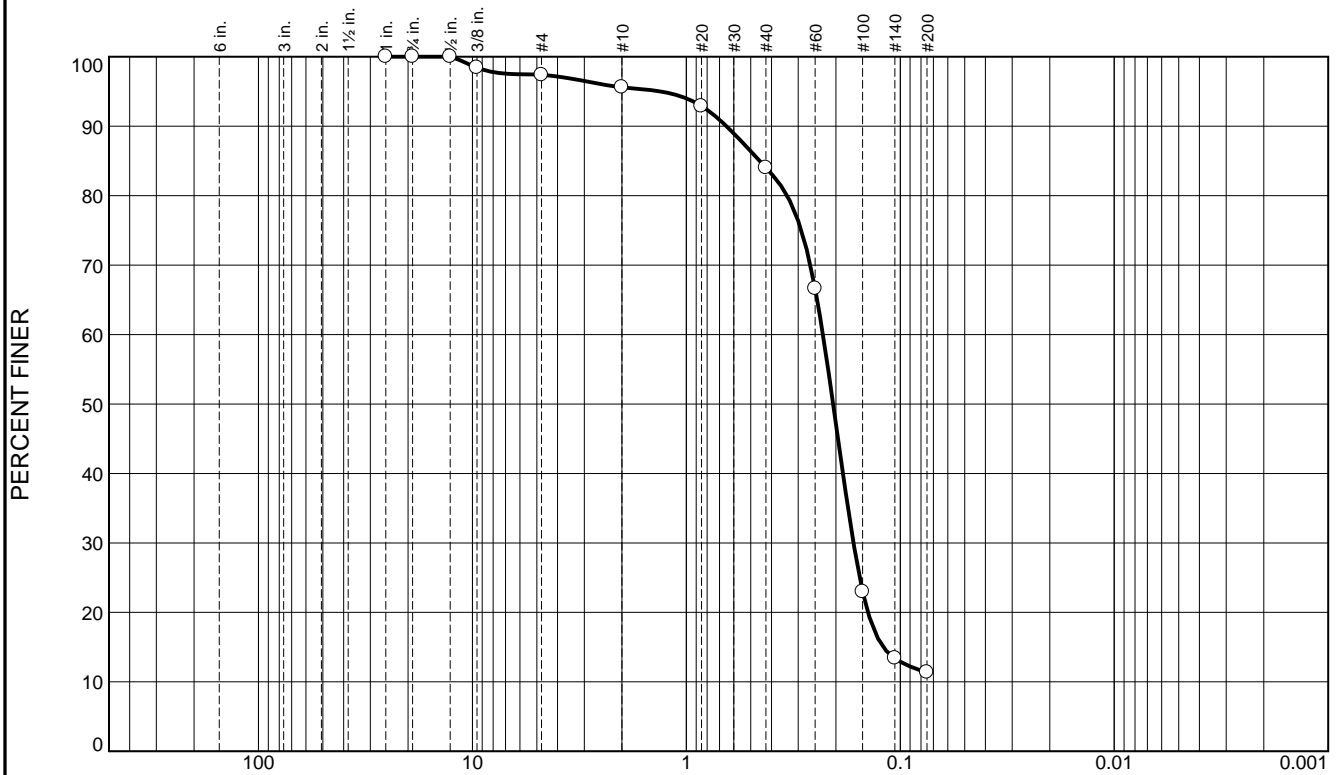
Mobile, Alabama

Client: CDM/Thompson Engineering JV
Project: MsCIP Barrier Island Restoration GT

Project No: 1221110095

Figure

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	2.6	1.8	11.6	72.6	11.4	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
1	100.0		
.75	100.0		
.5	100.0		
.375	98.4		
#4	97.4		
#10	95.6		
#20	92.9		
#40	84.0		
#60	66.6		
#100	23.0		
#140	13.4		
#200	11.4		

* (no specification provided)

<u>Material Description</u>		
Fine to medium grained, SLIGHTLY SILTY SAND, with trace SHELL		
<u>Atterberg Limits</u>		
PL=	LL=	PI=
<u>Coefficients</u>		
D ₉₀ = 0.6502	D ₈₅ = 0.4550	D ₆₀ = 0.2299
D ₅₀ = 0.2060	D ₃₀ = 0.1656	D ₁₅ = 0.1202
D ₁₀ =	C _u =	C _c =
<u>Classification</u>		
USCS= SP-SM	AASHTO=	
<u>Remarks</u>		

Location: BI-PBS-59-12 B
Sample Number: 6469 (61)

Depth: 1.8'

Date: 11/28/12

Thompson Engineering

Mobile, Alabama

Client: CDM/Thompson Engineering JV
Project: MsCIP Barrier Island Restoration GT

Project No: 1221110095

Figure

Boring Designation BI-PBS-060-12

DRILLING LOG		DIVISION South Atlantic		INSTALLATION Mobile District		SHEET 1 OF 1 SHEETS	
1. PROJECT MsCIP Barrier Island Restoration Petit Bois Pass-OCS East				9. SIZE AND TYPE OF BIT N/A			
2. BORING DESIGNATION BI-PBS-060-12		LOCATION COORDINATES E = 1,142,000 N = 234,950		10. COORDINATE SYSTEM/DATUM State Plane, MSE (U.S. Ft.)		HORIZONTAL NAD83 VERTICAL NAVD88	
3. DRILLING AGENCY Corps of Engineers - CESAM		CONTRACTOR FILE NO.		11. MANUFACTURER'S DESIGNATION OF DRILL Vibracore		<input type="checkbox"/> AUTO HAMMER <input type="checkbox"/> MANUAL HAMMER	
4. NAME OF DRILLER American Vibracore Systems, Inc.				12. TOTAL SAMPLES		DISTURBED UNDISTURBED (UD) 0	
5. DIRECTION OF BORING <input checked="" type="checkbox"/> VERTICAL <input type="checkbox"/> INCLINED		DEG. FROM VERTICAL		13. TOTAL NUMBER CORE BOXES			
		BEARING		14. WATER DEPTH 61.3 Ft.			
6. THICKNESS OF OVERBURDEN N/A				15. DATE BORING 11-24-12		STARTED COMPLETED 11-24-12	
7. DEPTH DRILLED INTO ROCK N/A				16. ELEVATION TOP OF BORING -60.5 Ft.			
8. TOTAL DEPTH OF BORING 16.8 Ft.				17. TOTAL RECOVERY FOR BORING 100%			
				18. SIGNATURE AND TITLE OF INSPECTOR John Bass, Geotechnical Engineer			
ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	SAMPLE	LABORATORY RESULTS		
-60.5	0.0						
-62.3	1.8		SILT, inorganic-L, mostly silt, little fine-grained sand-sized quartz, dark gray (ML)	NS			
-63.3	2.8		SAND, silty, mostly fine-grained sand-sized quartz, with clay lenses, dark gray (SM)				
-68.4	7.9		SAND, poorly-graded with silt, mostly fine-grained sand-sized quartz, few silt, trace shell fragments, trace wood debris, dark gray (SP-SM)	A	Classification: SM Color: 2.5Y 6/2-light brownish gray D50: 0.1996 mm % Fines: 17.9		
			SAND, poorly-graded, mostly fine-grained sand-sized quartz, trace fines, gray (SP)	B	Classification: SM Color: 2.5Y 6/2-light brownish gray D50: 0.2138 mm % Fines: 13.5		
			At El. -69.9 Ft., mostly fine-grained sand-sized quartz, trace fines, lt. gray	C	Classification: SP Color: 2.5Y 7/3-pale yellow D50: 0.2462 mm % Fines: 4.3		
			At El. -72.3 Ft., mostly fine-grained sand-sized quartz, tan mottled with light gray	D	Classification: SP Color: 2.5Y 7.5/1.5- D50: 0.2621 mm % Fines: 1.4		
-77.3	16.8						
			NOTES: 1. Soils are field visually classified in accordance with the Unified Soils Classification System. 2. NS = Sample not submitted for laboratory analysis from this interval. 3. Seafloor elevation calculated using sampling vessel's fathometer water depth reading and applying NOAA tidal gauge data conversion factor.				

Project

Mississippi Barrier Island
Restoration Project

AVS
AMERICAN VIBRACORE
S E R V I C E S

Core Identifier BI-PBS-60-12

Date 11/24/2012

Water Depth 61.3'

Coordinate System

Latitude / Longitude

Start Time 15:08:12

End Time 15:12:13

Penetration 17.1'

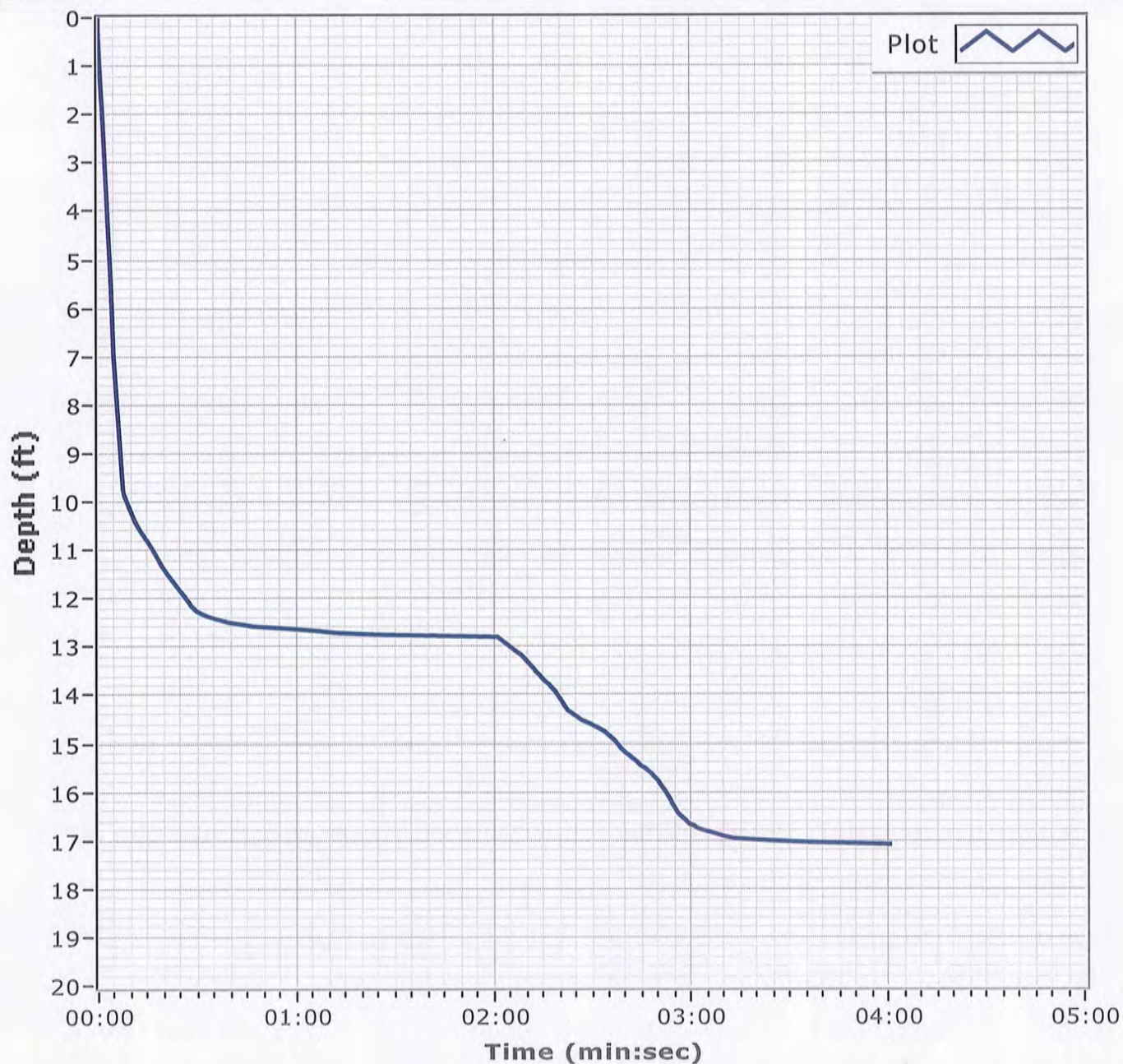
Latitude 30 08.707

Total Time 00:04:01

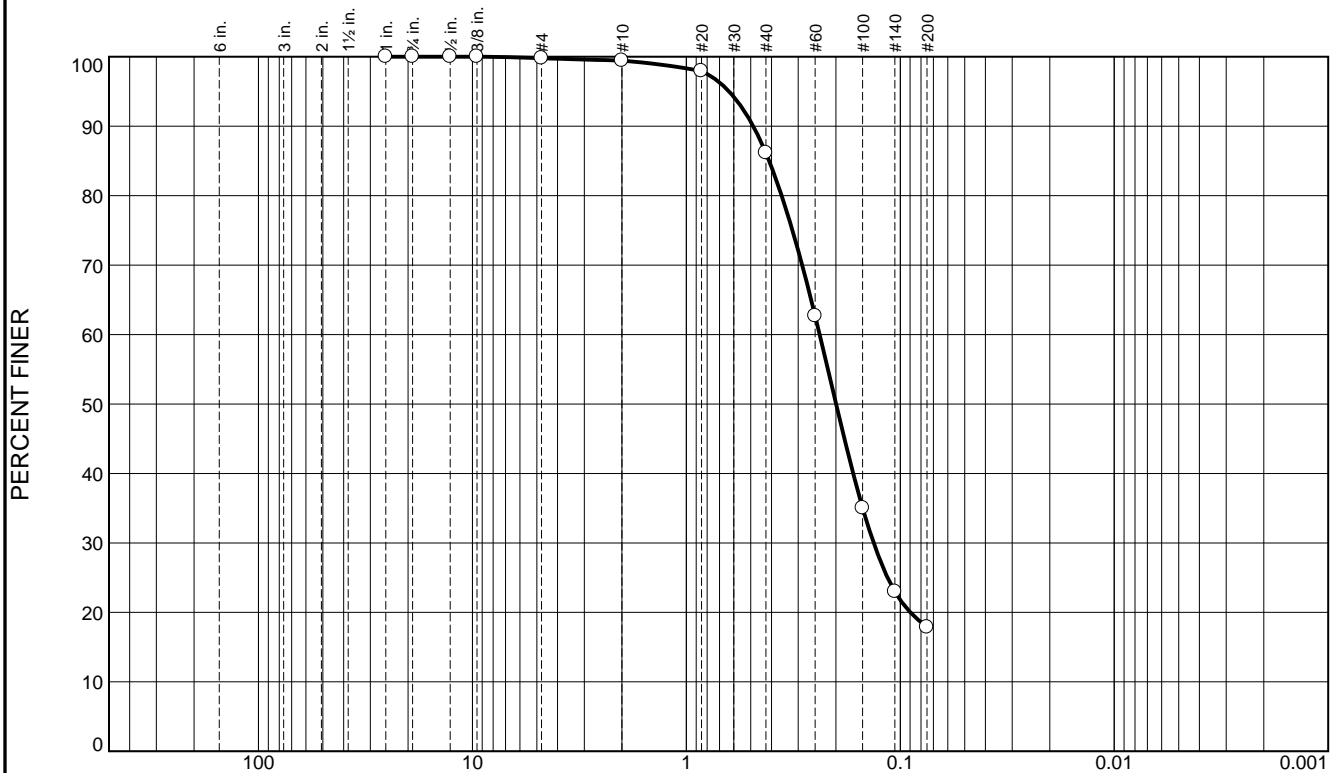
Recovery 16.8'

Longitude 088 20.055

Comments



Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	0.2	0.4	13.2	68.3	17.9	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
1	100.0		
.75	100.0		
.5	100.0		
.375	100.0		
#4	99.8		
#10	99.4		
#20	97.9		
#40	86.2		
#60	62.7		
#100	35.0		
#140	23.0		
#200	17.9		

* (no specification provided)

Material Description
Fine to medium grained, SILTY SAND

Atterberg Limits
PL= LL= PI=

Coefficients
D₉₀= 0.4869 D₈₅= 0.4102 D₆₀= 0.2381
D₅₀= 0.1996 D₃₀= 0.1332 D₁₅=
D₁₀= C_u= C_c=

Classification
USCS= SM AASHTO=

Remarks

Location: BI-PBS-60-12 A
Sample Number: 6469 (50)

Depth: 2.8'

Date: 11/28/12

Thompson Engineering

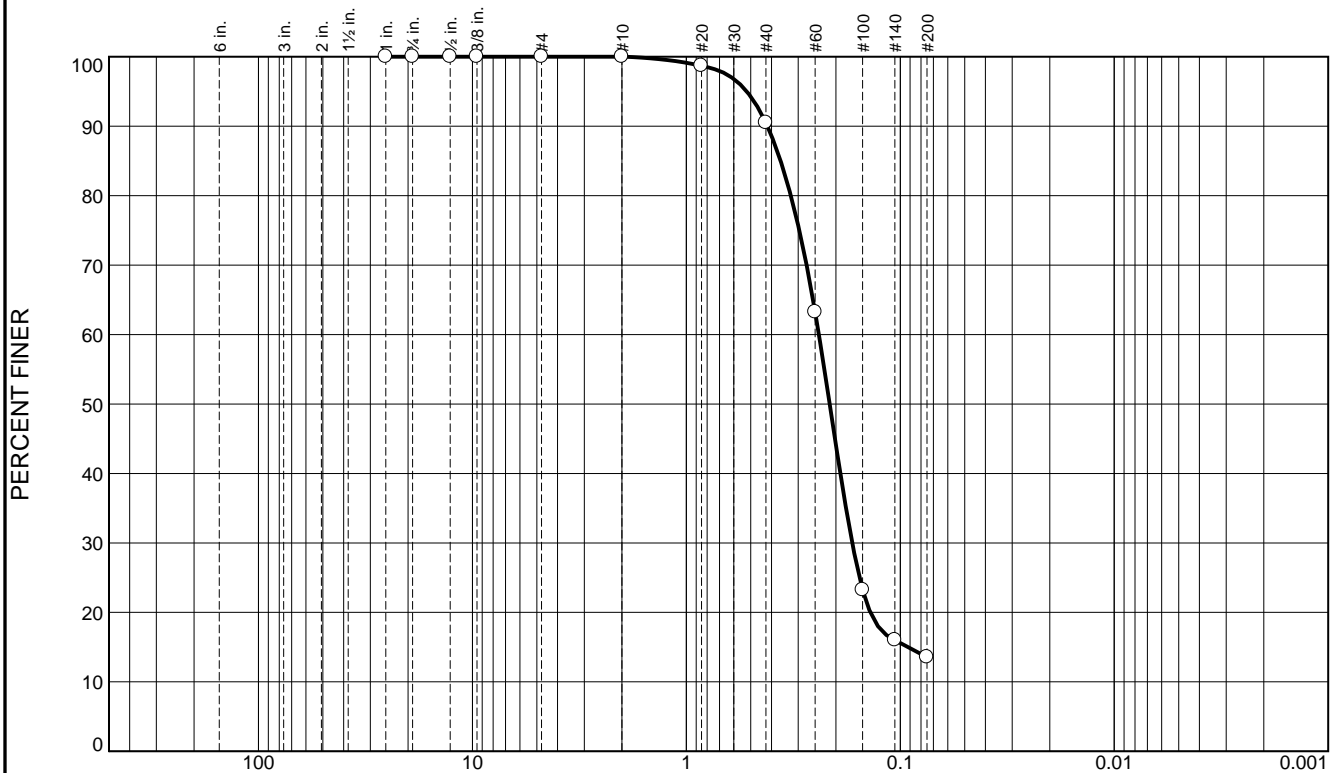
Mobile, Alabama

Client: CDM/Thompson Engineering JV
Project: MsCIP Barrier Island Restoration GT

Project No: 1221110095

Figure

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	0.0	0.0	9.5	77.0	13.5	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
1	100.0		
.75	100.0		
.5	100.0		
.375	100.0		
#4	100.0		
#10	100.0		
#20	98.7		
#40	90.5		
#60	63.2		
#100	23.2		
#140	16.0		
#200	13.5		

* (no specification provided)

<u>Material Description</u>		
Fine grained, SILTY SAND		
PL=	<u>Atterberg Limits</u> LL=	PI=
<u>Coefficients</u>		
D ₉₀ = 0.4181	D ₈₅ = 0.3626	D ₆₀ = 0.2401
D ₅₀ = 0.2138	D ₃₀ = 0.1679	D ₁₅ = 0.0920
D ₁₀ =	C _u =	C _c =
<u>Classification</u>		
USCS= SM	AASHTO=	
<u>Remarks</u>		

Location: BI-PBS-60-12 B
Sample Number: 6469 (51)

Depth: 7.9'

Date: 11/28/12

Thompson Engineering

Mobile, Alabama

Client: CDM/Thompson Engineering JV
Project: MsCIP Barrier Island Restoration GT

Project No: 1221110095

Figure

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	0.0	0.6	12.1	83.0	4.3	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
1	100.0		
.75	100.0		
.5	100.0		
.375	100.0		
#4	100.0		
#10	99.4		
#20	97.8		
#40	87.3		
#60	51.4		
#100	11.2		
#140	5.2		
#200	4.3		

* (no specification provided)

Material Description		
Fine to medium grained, SAND		
<div> <div> Atterberg Limits </div> <div> PL= </div> <div> LL= </div> <div> PI= </div> </div>		
<div> <div> Coefficients </div> <div> D₉₀= 0.4570 </div> <div> D₅₀= 0.2462 </div> <div> D₁₀= 0.1457 </div> <div> D₈₅= 0.4042 </div> <div> D₃₀= 0.1972 </div> <div> C_u= 1.90 </div> <div> D₆₀= 0.2767 </div> <div> D₁₅= 0.1614 </div> <div> C_c= 0.96 </div> </div>		
<div> <div> Classification </div> <div> USCS= SP </div> <div> AASHTO= </div> </div>		
<div> <div> Remarks </div> </div>		

Location: BI-PBS-60-12 C
Sample Number: 6469 (52)

Depth: 9.4'

Date: 11/28/12

Thompson Engineering

Mobile, Alabama

Client: CDM/Thompson Engineering JV
Project: MsCIP Barrier Island Restoration GT

Project No: 1221110095

Figure

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	0.0	0.0	18.3	80.3	1.4	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
1	100.0		
.75	100.0		
.5	100.0		
.375	100.0		
#4	100.0		
#10	100.0		
#20	97.7		
#40	81.7		
#60	46.0		
#100	6.7		
#140	2.3		
#200	1.4		

* (no specification provided)

<u>Material Description</u>		
Fine to medium grained, SAND		
<u>Atterberg Limits</u>		
PL=	LL=	PI=
<u>Coefficients</u>		
D ₉₀ = 0.5334	D ₈₅ = 0.4595	D ₆₀ = 0.2974
D ₅₀ = 0.2621	D ₃₀ = 0.2090	D ₁₅ = 0.1737
D ₁₀ = 0.1605	C _u = 1.85	C _c = 0.92
<u>Classification</u>		
USCS= SP	AASHTO=	
<u>Remarks</u>		

Location: BI-PBS-60-12 D
Sample Number: 6469 (53)

Depth: 11.8'

Date: 11/28/12

Thompson Engineering

Mobile, Alabama

Client: CDM/Thompson Engineering JV
Project: MsCIP Barrier Island Restoration GT

Project No: 1221110095

Figure

Boring Designation BI-PBS-061-12

DRILLING LOG		DIVISION South Atlantic		INSTALLATION Mobile District		SHEET 1 OF 1 SHEETS	
1. PROJECT MsCIP Barrier Island Restoration Petit Bois Pass-OCS East				9. SIZE AND TYPE OF BIT N/A			
2. BORING DESIGNATION BI-PBS-061-12		LOCATION COORDINATES E = 1,150,557 N = 236,916		10. COORDINATE SYSTEM/DATUM State Plane, MSE (U.S. Ft.)		HORIZONTAL NAD83 VERTICAL NAVD88	
3. DRILLING AGENCY Corps of Engineers - CESAM		CONTRACTOR FILE NO.		11. MANUFACTURER'S DESIGNATION OF DRILL Vibracore		<input type="checkbox"/> AUTO HAMMER <input type="checkbox"/> MANUAL HAMMER	
4. NAME OF DRILLER American Vibracore Systems, Inc.				12. TOTAL SAMPLES		DISTURBED UNDISTURBED (UD) 0	
5. DIRECTION OF BORING <input checked="" type="checkbox"/> VERTICAL <input type="checkbox"/> INCLINED		DEG. FROM VERTICAL		13. TOTAL NUMBER CORE BOXES			
		BEARING		14. WATER DEPTH 55 Ft.			
6. THICKNESS OF OVERBURDEN N/A				15. DATE BORING 11-16-12		STARTED COMPLETED 11-16-12	
7. DEPTH DRILLED INTO ROCK N/A				16. ELEVATION TOP OF BORING -54.9 Ft.			
8. TOTAL DEPTH OF BORING 11.2 Ft.				17. TOTAL RECOVERY FOR BORING 100%			
				18. SIGNATURE AND TITLE OF INSPECTOR Mike FitzHarris, Geologist			
ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	SAMPLE	LABORATORY RESULTS		
-54.9	0.0						
-57.1	2.2		SAND, poorly-graded, mostly fine-grained sand-sized quartz, trace shell fragments, gray (SP)	A	Classification: SP-SM Color: 5Y 6.5/1-gray D50: 0.2349 mm % Fines: 5.2		
-60.7	5.8		SAND, silty, mostly fine-grained sand-sized quartz, some silt, trace clay, trace shell fragments, gray (SM)	NS			
-63.1	8.2		CLAY, fat, mostly clay, little fine-grained sand-sized quartz, medium plasticity, gray (CH)				
-64.6	9.7		SAND, silty, mostly fine-grained sand-sized quartz, some silt, brown (SM)				
-66.1	11.2		SAND, poorly-graded, mostly fine-grained sand-sized quartz, trace silt, light brown (SP)				
			NOTES: 1. Soils are field visually classified in accordance with the Unified Soils Classification System. 2. NS = Sample not submitted for laboratory analysis from this interval. 3. Seafloor elevation calculated using sampling vessel's fathometer water depth reading and applying NOAA tidal gauge data conversion factor.				

Project

Mississippi Barrier Island
Restoration Project



Core Identifier BI-PBS-61-12

Date 11/16/2012

Water Depth 55.0'

Coordinate System

Start Time 16:27:41

Latitude / Longitude

End Time 16:30:15

Penetration 14.7'

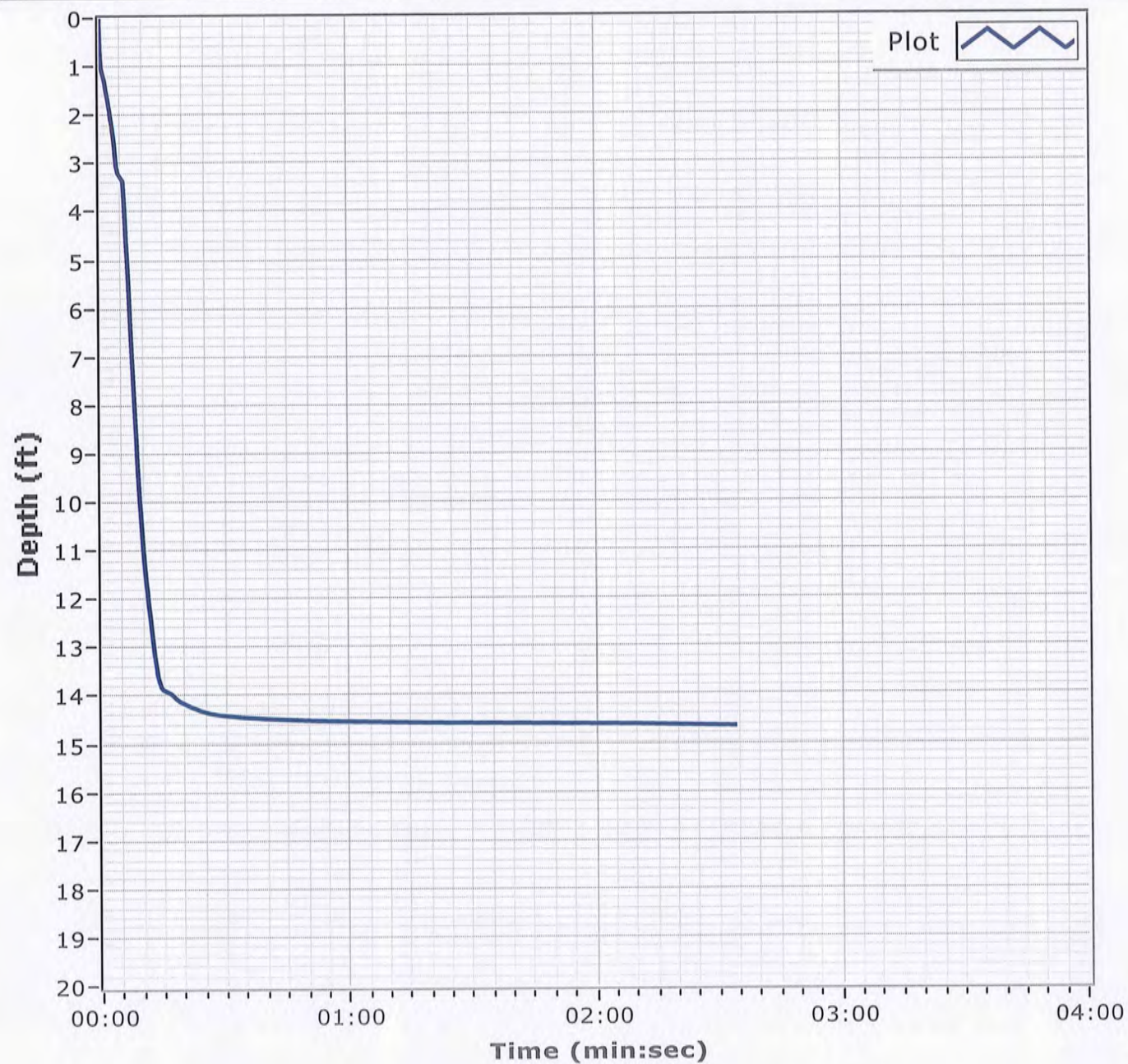
Latitude 30 09.025

Total Time 00:02:34

Recovery 12.3'

Longitude 88 18.429

Comments



Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	0.8	0.8	9.1	84.1	5.2	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
1	100.0		
.75	100.0		
.5	100.0		
.375	100.0		
#4	99.2		
#10	98.4		
#20	96.5		
#40	89.3		
#60	56.1		
#100	10.6		
#140	6.3		
#200	5.2		

* (no specification provided)

<u>Material Description</u>		
Fine grained, SLIGHTLY SILTY SAND		
<u>Atterberg Limits</u>		
PL=	LL=	PI=
<u>Coefficients</u>		
D ₉₀ = 0.4342	D ₈₅ = 0.3805	D ₆₀ = 0.2609
D ₅₀ = 0.2349	D ₃₀ = 0.1930	D ₁₅ = 0.1618
D ₁₀ = 0.1444	C _u = 1.81	C _c = 0.99
<u>Classification</u>		
USCS= SP-SM	AASHTO=	
<u>Remarks</u>		

Location: BI-PBS-61-12 A
Sample Number: 6462

Depth: 0.0'

Date: 11/23/12

Thompson Engineering

Mobile, Alabama

Client: CDM/Thompson Engineering JV
Project: MsCIP Barrier Island Restoration GT

Project No: 1221110095

Figure

Boring Designation BI-PBS-062-12

DRILLING LOG		DIVISION South Atlantic		INSTALLATION Mobile District		SHEET 1 OF 1 SHEETS	
1. PROJECT MsCIP Barrier Island Restoration Petit Bois Pass-OCS East				9. SIZE AND TYPE OF BIT N/A			
2. BORING DESIGNATION BI-PBS-062-12		LOCATION COORDINATES E = 1,150,505 N = 237,945		10. COORDINATE SYSTEM/DATUM State Plane, MSE (U.S. Ft.)		HORIZONTAL NAD83	
3. DRILLING AGENCY Corps of Engineers - CESAM		CONTRACTOR FILE NO.		11. MANUFACTURER'S DESIGNATION OF DRILL Vibracore		<input type="checkbox"/> AUTO HAMMER <input type="checkbox"/> MANUAL HAMMER	
4. NAME OF DRILLER American Vibracore Systems, Inc.				12. TOTAL SAMPLES		DISTURBED 0	
5. DIRECTION OF BORING <input checked="" type="checkbox"/> VERTICAL <input type="checkbox"/> INCLINED				13. TOTAL NUMBER CORE BOXES		14. WATER DEPTH 56 Ft.	
6. THICKNESS OF OVERBURDEN N/A				15. DATE BORING		STARTED 11-16-12	
7. DEPTH DRILLED INTO ROCK N/A				16. ELEVATION TOP OF BORING -56.4 Ft.		COMPLETED 11-16-12	
8. TOTAL DEPTH OF BORING 16.1 Ft.				17. TOTAL RECOVERY FOR BORING 100%		18. SIGNATURE AND TITLE OF INSPECTOR Mike FitzHarris, Geologist	
ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	SAMPLE	LABORATORY RESULTS		
-56.4	0.0						
-57.2	0.8		SAND, poorly-graded, mostly fine to medium-grained sand-sized quartz, trace silt, gray (SP)	A	Classification: SP Color: 5Y 7/2-light gray D50: 0.2417 mm % Fines: 3		
-59.5	3.1		SAND, silty, mostly fine-grained sand-sized quartz, some silt, with clay lenses, gray (SM)	NS			
			SAND, poorly-graded, mostly fine-grained sand-sized quartz, few silt, gray (SP)	B	Classification: SP-SM Color: 2.5Y 7/2-light gray D50: 0.1758 mm % Fines: 11.6		
			At El. -62.3 Ft., mostly fine-grained sand-sized quartz, trace silt, light gray	C	Classification: SP Color: 2.5Y 8/1-white D50: 0.205 mm % Fines: 2.5		
				D	Classification: SP Color: 2.5Y 8/1-white D50: 0.2836 mm % Fines: 2.3		
-72.5	16.1						
NOTES: 1. Soils are field visually classified in accordance with the Unified Soils Classification System. 2. NS = Sample not submitted for laboratory analysis from this interval. 3. Seafloor elevation calculated using sampling vessel's fathometer water depth reading and applying NOAA tidal gauge data conversion factor.							

Project

Mississippi Barrier Island
Restoration Project

AVS
AMERICAN VIBRACORE
S E R V I C E S

Core Identifier BI-PBS-62-12

Date 11/16/2012

Water Depth 56.0'

Coordinate System

Latitude / Longitude

Start Time 13:13:00

End Time 13:18:06

Penetration 17.2'

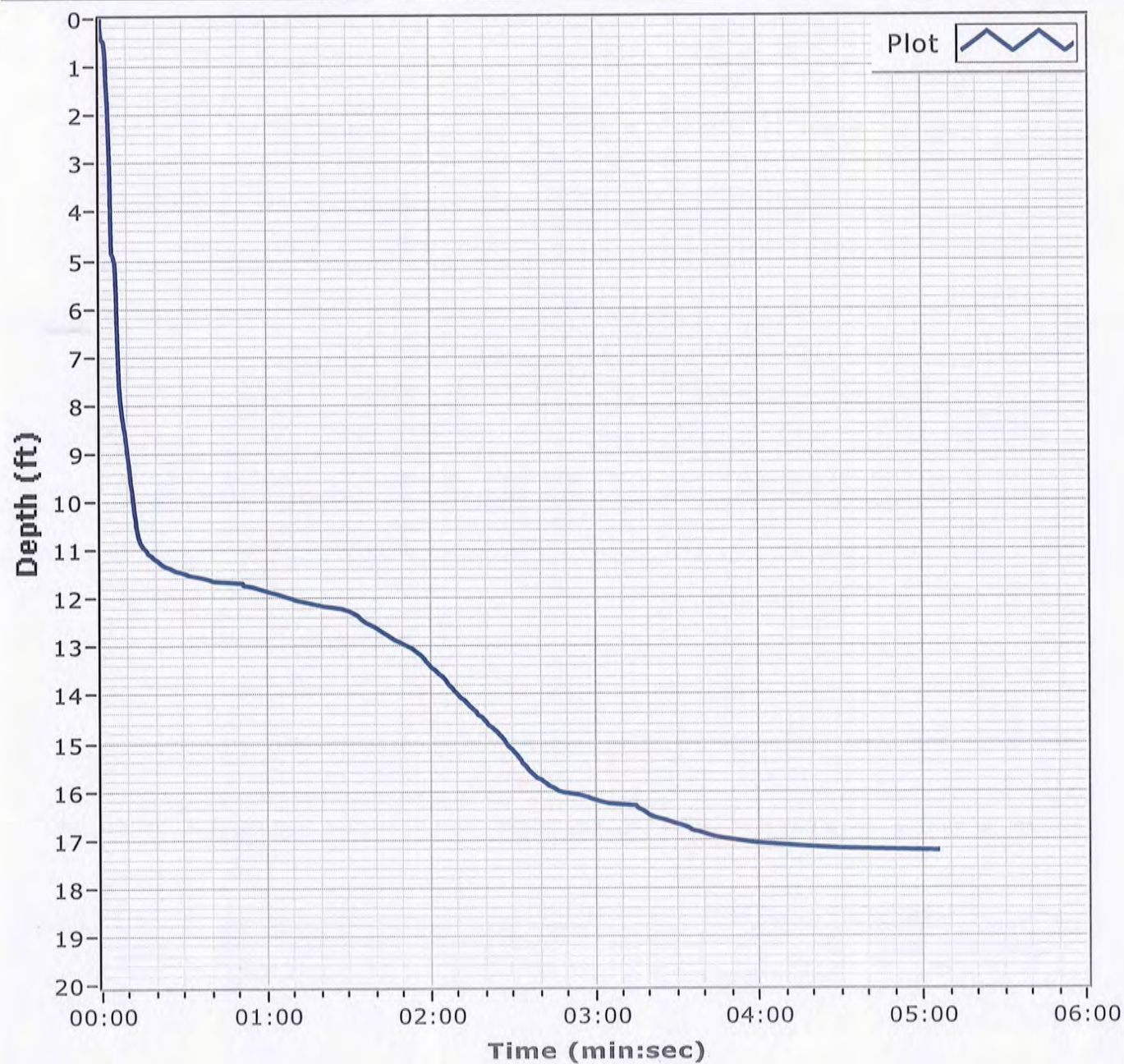
Latitude 30 09.195

Total Time 00:05:06

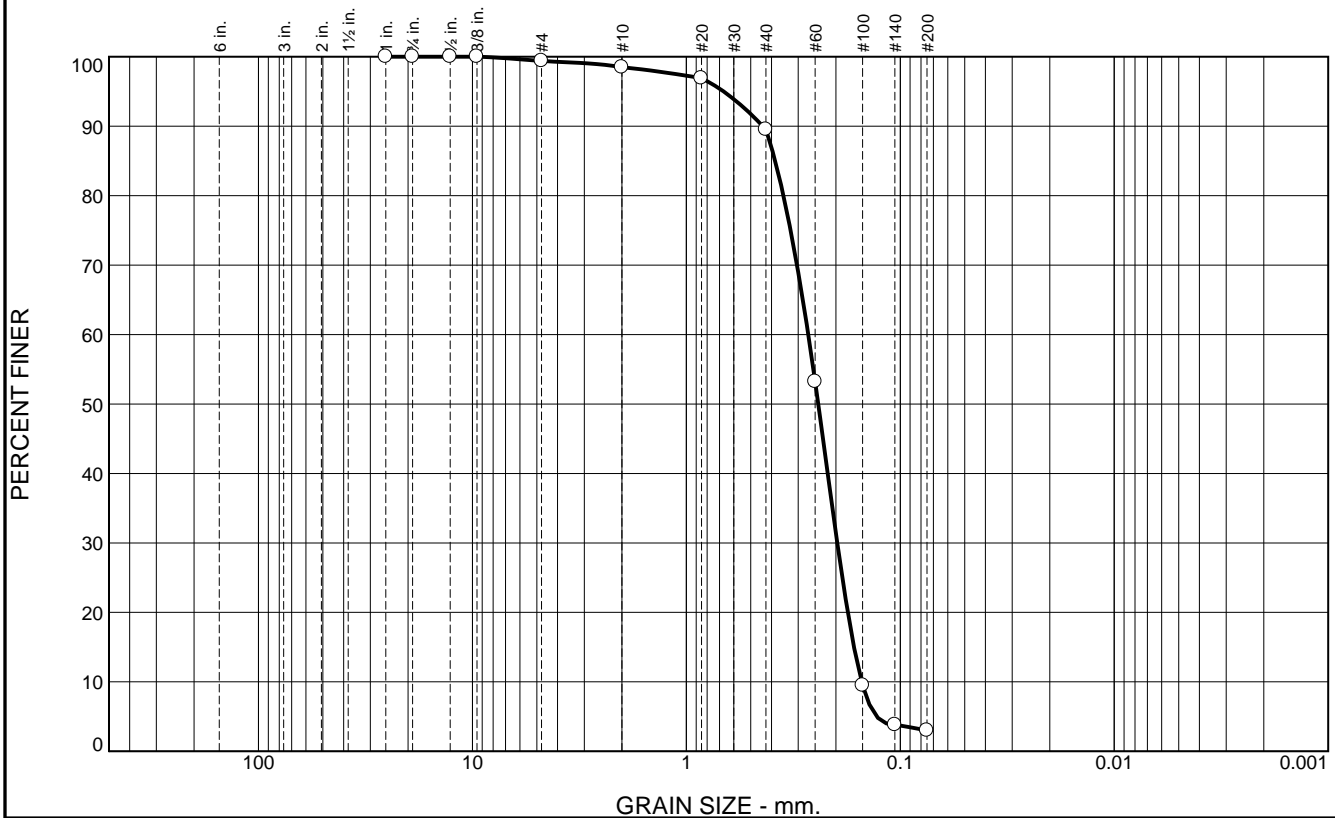
Recovery 16.5'

Longitude 88 18.438

Comments



Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	0.6	0.9	9.0	86.5	3.0	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
1	100.0		
.75	100.0		
.5	100.0		
.375	100.0		
#4	99.4		
#10	98.5		
#20	96.9		
#40	89.5		
#60	53.2		
#100	9.5		
#140	3.8		
#200	3.0		

* (no specification provided)

Material Description

Fine grained, SAND

Atterberg Limits

PL= LL= PI=

Coefficients

D₉₀= 0.4395 D₈₅= 0.3843 D₆₀= 0.2693
D₅₀= 0.2417 D₃₀= 0.1971 D₁₅= 0.1648
D₁₀= 0.1515 C_u= 1.78 C_c= 0.95

Classification

USCS= SP AASHTO=

Remarks

Location: BI-PBS-62-12 A
Sample Number: 6462

Depth: 0.0

Date: 11/23/12

Thompson Engineering

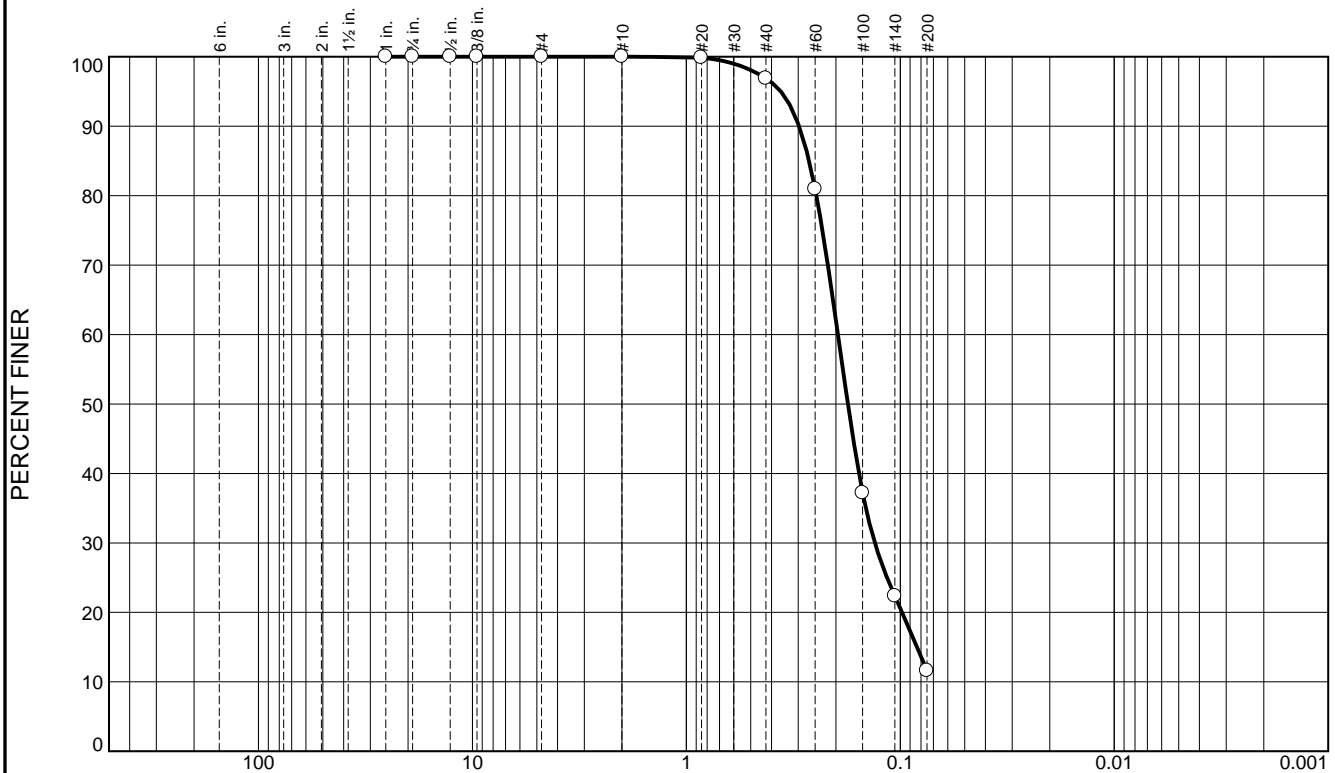
Mobile, Alabama

Client: CDM/Thompson Engineering JV
Project: MsCIP Barrier Island Restoration GT

Project No: 1221110095

Figure

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	0.0	0.0	3.1	85.3	11.6	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
1	100.0		
.75	100.0		
.5	100.0		
.375	100.0		
#4	100.0		
#10	100.0		
#20	99.9		
#40	96.9		
#60	80.9		
#100	37.2		
#140	22.4		
#200	11.6		

* (no specification provided)

<u>Material Description</u>		
Fine grained, SLIGHTLY SILTY SAND		
<u>Atterberg Limits</u>		
PL=	LL=	PI=
<u>Coefficients</u>		
D ₉₀ = 0.2975	D ₈₅ = 0.2670	D ₆₀ = 0.1957
D ₅₀ = 0.1758	D ₃₀ = 0.1316	D ₁₅ = 0.0836
D ₁₀ =	C _u =	C _c =
<u>Classification</u>		
USCS= SP-SM	AASHTO=	
<u>Remarks</u>		

Location: BI-PBS-62-12 B
Sample Number: 6462

Depth: 3.1'

Date: 11/23/12

Thompson Engineering

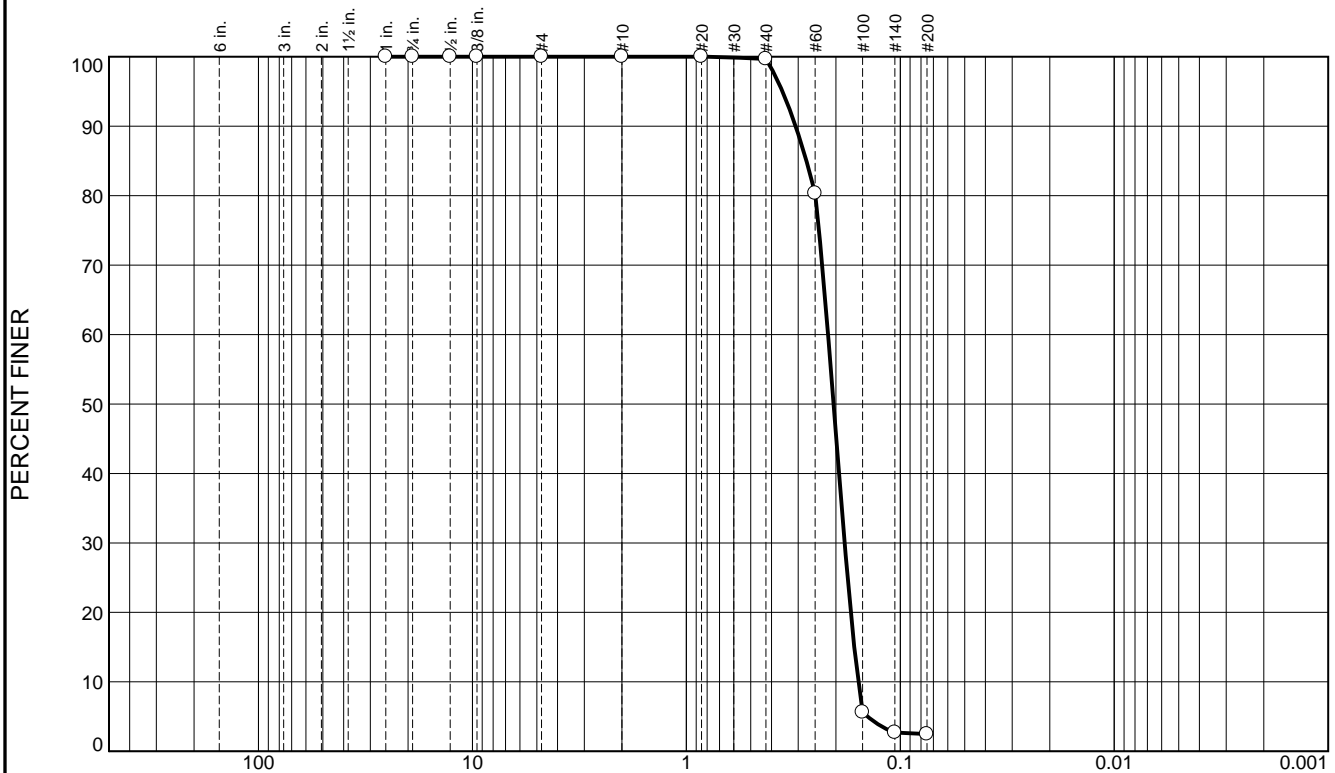
Mobile, Alabama

Client: CDM/Thompson Engineering JV
Project: MsCIP Barrier Island Restoration GT

Project No: 1221110095

Figure

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	0.0	0.0	0.3	97.2	2.5	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
1	100.0		
.75	100.0		
.5	100.0		
.375	100.0		
#4	100.0		
#10	100.0		
#20	100.0		
#40	99.7		
#60	80.3		
#100	5.6		
#140	2.7		
#200	2.5		

* (no specification provided)

Material Description

Fine grained, SAND

Atterberg Limits

PL=

LL=

PI=

Coefficients

D₉₀= 0.3087

D₈₅= 0.2748

D₆₀= 0.2175

D₅₀= 0.2050

D₃₀= 0.1821

D₁₅= 0.1643

D₁₀= 0.1574

C_u= 1.38

C_c= 0.97

Classification

USCS= SP

AASHTO=

Remarks

Location: BI-PBS-62-12 C

Sample Number: 6462

Depth: 5.9'

Date: 11/23/12

Thompson Engineering

Mobile, Alabama

Client: CDM/Thompson Engineering JV

Project: MsCIP Barrier Island Restoration GT

Project No: 1221110095

Figure

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	0.0	0.0	11.1	86.6	2.3	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
1	100.0		
.75	100.0		
.5	100.0		
.375	100.0		
#4	100.0		
#10	100.0		
#20	99.7		
#40	88.9		
#60	36.7		
#100	3.1		
#140	2.3		
#200	2.3		

* (no specification provided)

<u>Material Description</u>		
Fine to medium grained, SAND		
<u>Atterberg Limits</u>		
PL=	LL=	PI=
<u>Coefficients</u>		
D ₉₀ = 0.4475	D ₈₅ = 0.4028	D ₆₀ = 0.3109
D ₅₀ = 0.2836	D ₃₀ = 0.2333	D ₁₅ = 0.1938
D ₁₀ = 0.1788	C _u = 1.74	C _c = 0.98
<u>Classification</u>		
USCS= SP	AASHTO=	
<u>Remarks</u>		

Location: BI-PBS-62-12 D

Sample Number: 6462

Depth: 11.0'

Date: 11/23/12

Thompson Engineering

Mobile, Alabama

Client: CDM/Thompson Engineering JV

Project: MsCIP Barrier Island Restoration GT

Project No: 1221110095

Figure

Boring Designation BI-PBS-063-12

DRILLING LOG		DIVISION South Atlantic		INSTALLATION Mobile District		SHEET 1 OF 1 SHEETS	
1. PROJECT MsCIP Barrier Island Restoration Petit Bois Pass-OCS East				9. SIZE AND TYPE OF BIT N/A			
2. BORING DESIGNATION BI-PBS-063-12		LOCATION COORDINATES E = 1,149,074 N = 238,385		10. COORDINATE SYSTEM/DATUM State Plane, MSE (U.S. Ft.)		HORIZONTAL NAD83	
3. DRILLING AGENCY Corps of Engineers - CESAM		CONTRACTOR FILE NO.		11. MANUFACTURER'S DESIGNATION OF DRILL Vibracore		<input type="checkbox"/> AUTO HAMMER <input type="checkbox"/> MANUAL HAMMER	
4. NAME OF DRILLER American Vibracore Systems, Inc.				12. TOTAL SAMPLES		DISTURBED 0	
5. DIRECTION OF BORING <input checked="" type="checkbox"/> VERTICAL <input type="checkbox"/> INCLINED				13. TOTAL NUMBER CORE BOXES		14. WATER DEPTH 56 Ft.	
6. THICKNESS OF OVERBURDEN N/A				15. DATE BORING		STARTED 11-16-12	
7. DEPTH DRILLED INTO ROCK N/A				16. ELEVATION TOP OF BORING -56.3 Ft.		COMPLETED 11-16-12	
8. TOTAL DEPTH OF BORING 14.0 Ft.				17. TOTAL RECOVERY FOR BORING 100%			
				18. SIGNATURE AND TITLE OF INSPECTOR Mike FitzHarris, Geologist			
ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	SAMPLE	LABORATORY RESULTS		
-56.3	0.0						
-57.8	1.5		SAND, poorly-graded, mostly fine-grained sand-sized quartz, gray (SP)	A	Classification: SP Color: 5Y 7/2-light gray D50: 0.2768 mm % Fines: 2.3		
-61.3	5.0		SAND, clayey, mostly fine-grained sand-sized quartz, some clay, trace medium to coarse-grained shell fragments, with clay lenses, gray (SC)	NS			
-61.8	5.5		CLAY, fat, mostly clay, medium to high plasticity, gray (CH)				
-62.6	6.3		SAND, poorly-graded with clay, mostly fine-grained sand-sized quartz, little clay, trace wood debris, gray (SP-SC)	B	Classification: SP Color: 2.5Y 7/2-light gray D50: 0.2104 mm % Fines: 3		
			SAND, poorly-graded, mostly fine-grained sand-sized quartz, trace silt, dense, lt. gray (SP)	C	Classification: SP Color: 2.5Y 7/2-light gray D50: 0.2398 mm % Fines: 2		
-70.3	14.0						
NOTES: 1. Soils are field visually classified in accordance with the Unified Soils Classification System. 2. NS = Sample not submitted for laboratory analysis from this interval. 3. Seafloor elevation calculated using sampling vessel's fathometer water depth reading and applying NOAA tidal gauge data conversion factor.							

Project

Mississippi Barrier Island
Restoration Project

AVS
AMERICAN VIBRACORE
S E R V I C E S

Core Identifier BI-PBS-63-12

Date 11/16/2012

Water Depth 56.0'

Coordinate System

Latitude / Longitude

Start Time 14:13:22

End Time 14:19:31

Penetration 14.3'

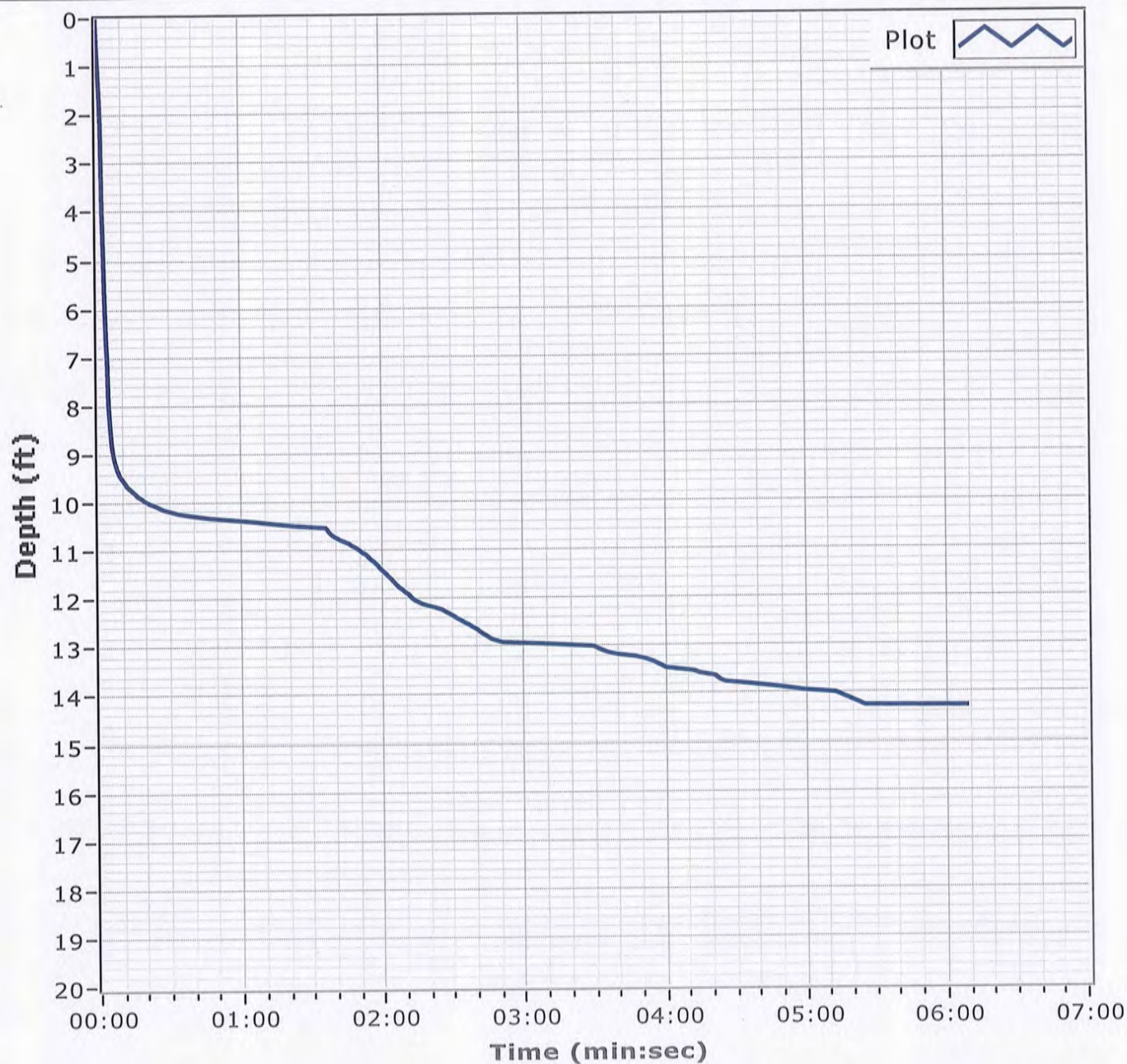
Latitude 30 09.269

Total Time 00:06:09

Recovery 14.0'

Longitude 88 18.709

Comments



Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	3.1	0.6	8.9	85.1	2.3	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
1	100.0		
.75	100.0		
.5	97.5		
.375	97.5		
#4	96.9		
#10	96.3		
#20	95.0		
#40	87.4		
#60	40.0		
#100	5.9		
#140	2.8		
#200	2.3		

* (no specification provided)

Material Description

Fine grained, SAND, with trace SHELL

Atterberg Limits

PL= LL= PI=

Coefficients

D₉₀= 0.5122 D₈₅= 0.4090 D₆₀= 0.3060
D₅₀= 0.2768 D₃₀= 0.2239 D₁₅= 0.1829
D₁₀= 0.1668 C_u= 1.83 C_c= 0.98

Classification

USCS= SP AASHTO=

Remarks

Location: BI-PBS-63-12 A

Sample Number: 6462

Depth: 0.0'

Date: 11/23/12

Thompson Engineering

Mobile, Alabama

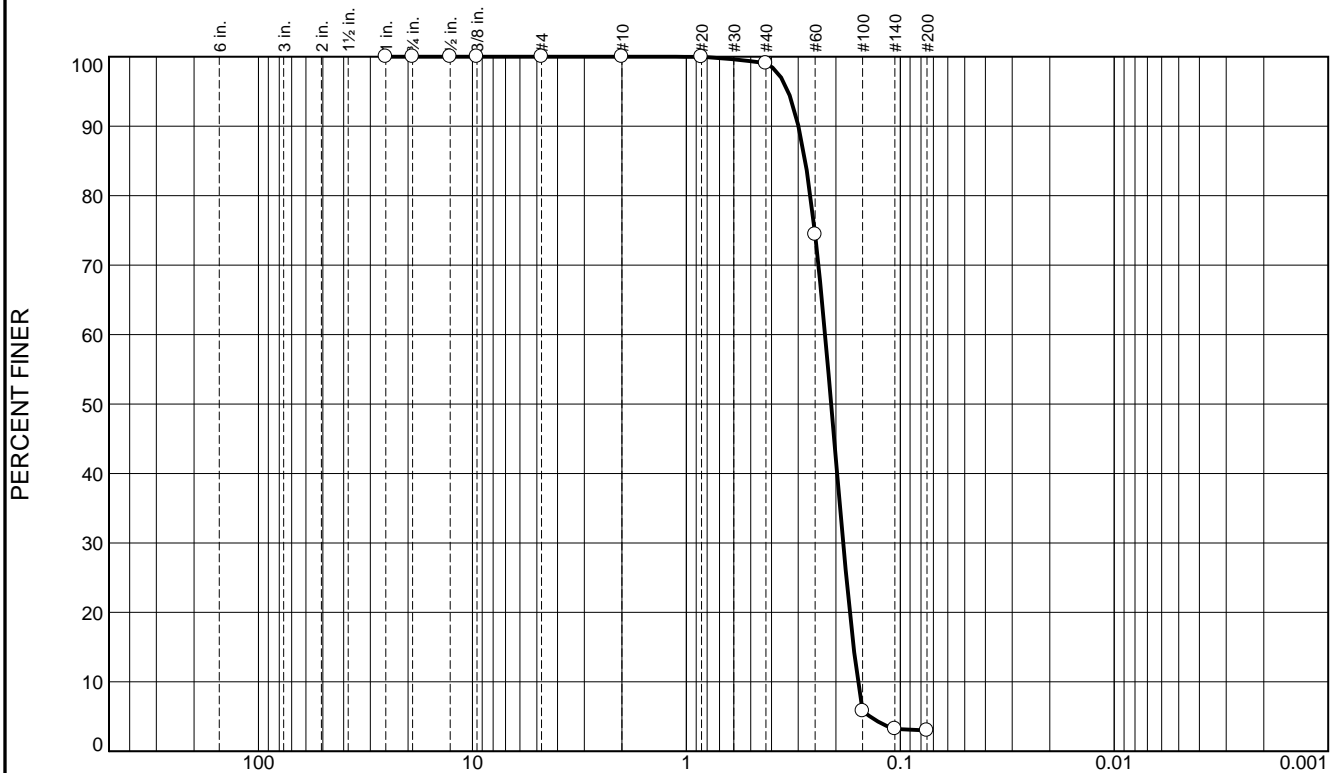
Client: CDM/Thompson Engineering JV

Project: MsCIP Barrier Island Restoration GT

Project No: 1221110095

Figure

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	0.0	0.0	0.9	96.1	3.0	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
1	100.0		
.75	100.0		
.5	100.0		
.375	100.0		
#4	100.0		
#10	100.0		
#20	100.0		
#40	99.1		
#60	74.4		
#100	5.8		
#140	3.2		
#200	3.0		

* (no specification provided)

<u>Material Description</u>		
Fine grained, SAND		
PL=	<u>Atterberg Limits</u> LL=	PI=
<u>Coefficients</u>		
D ₉₀ = 0.2995	D ₈₅ = 0.2785	D ₆₀ = 0.2246
D ₅₀ = 0.2104	D ₃₀ = 0.1850	D ₁₅ = 0.1655
D ₁₀ = 0.1578	C _u = 1.42	C _c = 0.97
<u>Classification</u>		
USCS= SP	AASHTO=	
<u>Remarks</u>		

Location: BI-PBS-63-12 B
Sample Number: 6462

Depth: 6.4'

Date: 11/23/12

Thompson Engineering

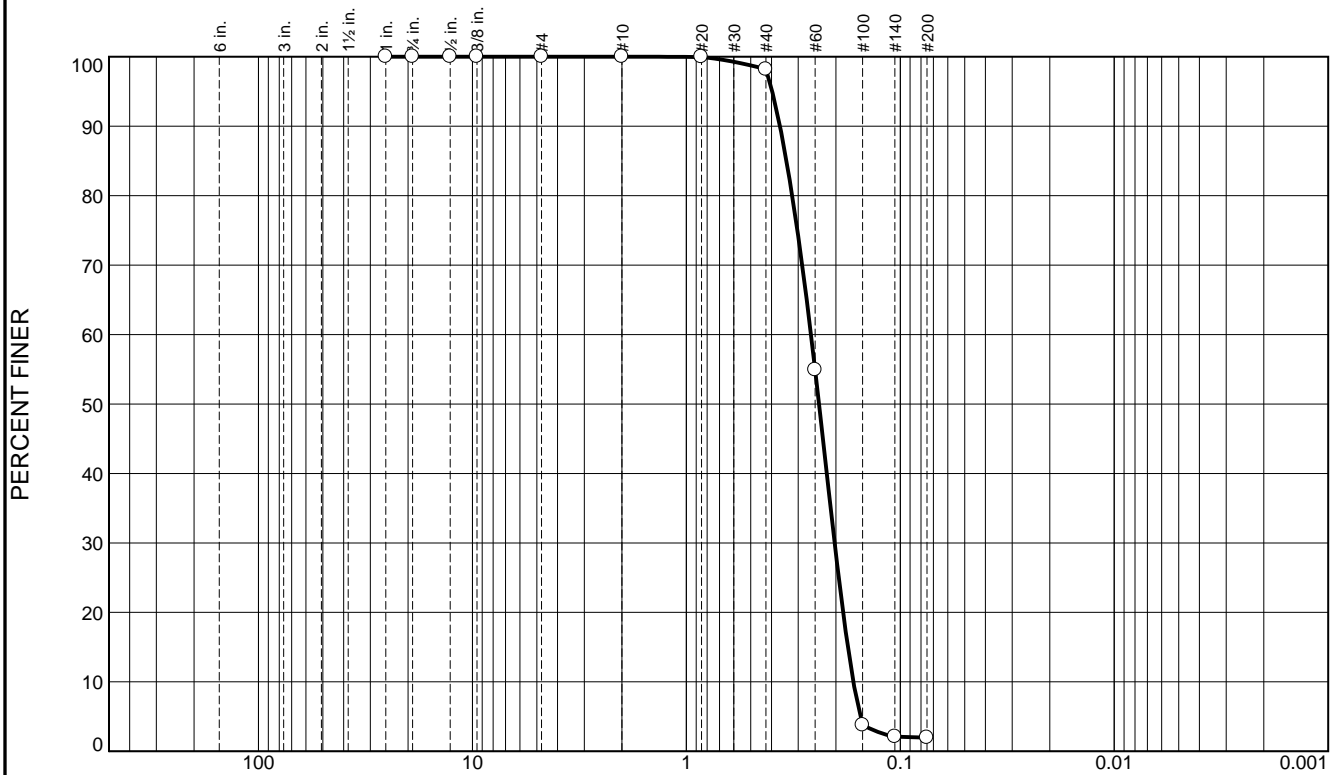
Mobile, Alabama

Client: CDM/Thompson Engineering JV
Project: MsCIP Barrier Island Restoration GT

Project No: 1221110095

Figure

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	0.0	0.0	1.8	96.2	2.0	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
1	100.0		
.75	100.0		
.5	100.0		
.375	100.0		
#4	100.0		
#10	100.0		
#20	100.0		
#40	98.2		
#60	54.9		
#100	3.8		
#140	2.1		
#200	2.0		

* (no specification provided)

Material Description		
Fine grained, SAND		
<div> <div> Atterberg Limits </div> <div> PL= </div> <div> LL= </div> <div> PI= </div> </div>		
<div> <div> Coefficients </div> <div> D₉₀= 0.3649 </div> <div> D₅₀= 0.2398 </div> <div> D₁₀= 0.1659 </div> <div> D₈₅= 0.3404 </div> <div> D₃₀= 0.2028 </div> <div> C_u= 1.58 </div> <div> D₆₀= 0.2615 </div> <div> D₁₅= 0.1759 </div> <div> C_c= 0.95 </div> </div>		
<div> <div> Classification </div> <div> USCS= SP </div> <div> AASHTO= </div> </div>		
<div> <div> Remarks </div> </div>		

Location: BI-PBS-63-12 C
Sample Number: 6462

Depth: 9.0'

Date: 11/23/12

Thompson Engineering

Mobile, Alabama

Client: CDM/Thompson Engineering JV
Project: MsCIP Barrier Island Restoration GT

Project No: 1221110095

Figure

Boring Designation BI-PBS-064-12

DRILLING LOG		DIVISION South Atlantic		INSTALLATION Mobile District		SHEET 1 OF 1 SHEETS	
1. PROJECT MsCIP Barrier Island Restoration Petit Bois Pass-OCS East				9. SIZE AND TYPE OF BIT N/A			
2. BORING DESIGNATION BI-PBS-064-12		LOCATION COORDINATES E = 1,151,592 N = 237,331		10. COORDINATE SYSTEM/DATUM State Plane, MSE (U.S. Ft.)		HORIZONTAL NAD83 VERTICAL NAVD88	
3. DRILLING AGENCY Corps of Engineers - CESAM		CONTRACTOR FILE NO.		11. MANUFACTURER'S DESIGNATION OF DRILL Vibracore		<input type="checkbox"/> AUTO HAMMER <input type="checkbox"/> MANUAL HAMMER	
4. NAME OF DRILLER American Vibracore Services, Inc.				12. TOTAL SAMPLES		DISTURBED UNDISTURBED (UD) 0	
5. DIRECTION OF BORING <input checked="" type="checkbox"/> VERTICAL <input type="checkbox"/> INCLINED				13. TOTAL NUMBER CORE BOXES		14. WATER DEPTH 56 Ft.	
6. THICKNESS OF OVERBURDEN N/A				15. DATE BORING		STARTED 11-16-12 COMPLETED 11-16-12	
7. DEPTH DRILLED INTO ROCK N/A				16. ELEVATION TOP OF BORING -56.5 Ft.		17. TOTAL RECOVERY FOR BORING 100%	
8. TOTAL DEPTH OF BORING 16.2 Ft.				18. SIGNATURE AND TITLE OF INSPECTOR Mike FitzHarris, Geologist			

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	SAMPLE	LABORATORY RESULTS
-56.5	0.0				
-57.5	1.0		SAND, poorly-graded, mostly fine to medium-grained sand-sized quartz, trace medium to coarse-grained shell fragments, lt. gray (SP)	A	Classification: SP Color: 5Y 7/2-light gray D50: 0.2991 mm % Fines: 1.6
-59.5	3.0		SAND, silty, mostly fine-grained sand-sized quartz, some silt, trace shell fragments, gray (SM)		
-62.0	5.5		SAND, clayey, mostly fine-grained sand-sized quartz, some clay, trace shell fragments, gray (SC)		
-62.5	6.0		CLAY, fat, mostly clay, medium to high plasticity, dark gray (CH)		
-65.8	9.3		SAND, silty, mostly fine-grained sand-sized quartz, some silt, trace clay, dark gray (SM)	NS	
-66.1	9.6		SILT, inorganic-L, mostly silt, little fine-grained sand, trace organic matter, brown (ML)		
-68.1	11.6		SAND, silty, mostly fine-grained sand-sized quartz, some silt, trace organic matter, dark brown (SM)		
-68.5	12.0				
-68.8	12.3				
-69.8	13.3		WOOD, mostly wood debris, brown		
			CLAY, lean, mostly clay, some silt, trace sand, dark brown (CL)		
-72.7	16.2		SAND, poorly-graded with silt, mostly fine-grained sand-sized quartz, few silt, gray (SP-SM)	B	Classification: SP Color: 10YR 7/1-light gray D50: 0.2304 mm % Fines: 3.9
			SAND, poorly-graded, mostly fine-grained sand-sized quartz, trace silt, lt. gray (SP)		
NOTES: 1. Soils are field visually classified in accordance with the Unified Soils Classification System. 2. NS = Sample not submitted for laboratory analysis from this interval. 3. Seafloor elevation calculated using sampling vessel's fathometer water depth reading and applying NOAA tidal gauge data conversion factor.					

Project

Mississippi Barrier Island
Restoration Project

AVS
AMERICAN VIBRACORE
S E R V I C E S

Core Identifier BI-PBS-64- 12

Date 11/16/2012

Water Depth 56.0'

Coordinate System

Latitude / Longitude

Start Time 11:50:46

End Time 11:51:46

Penetration 20.0'

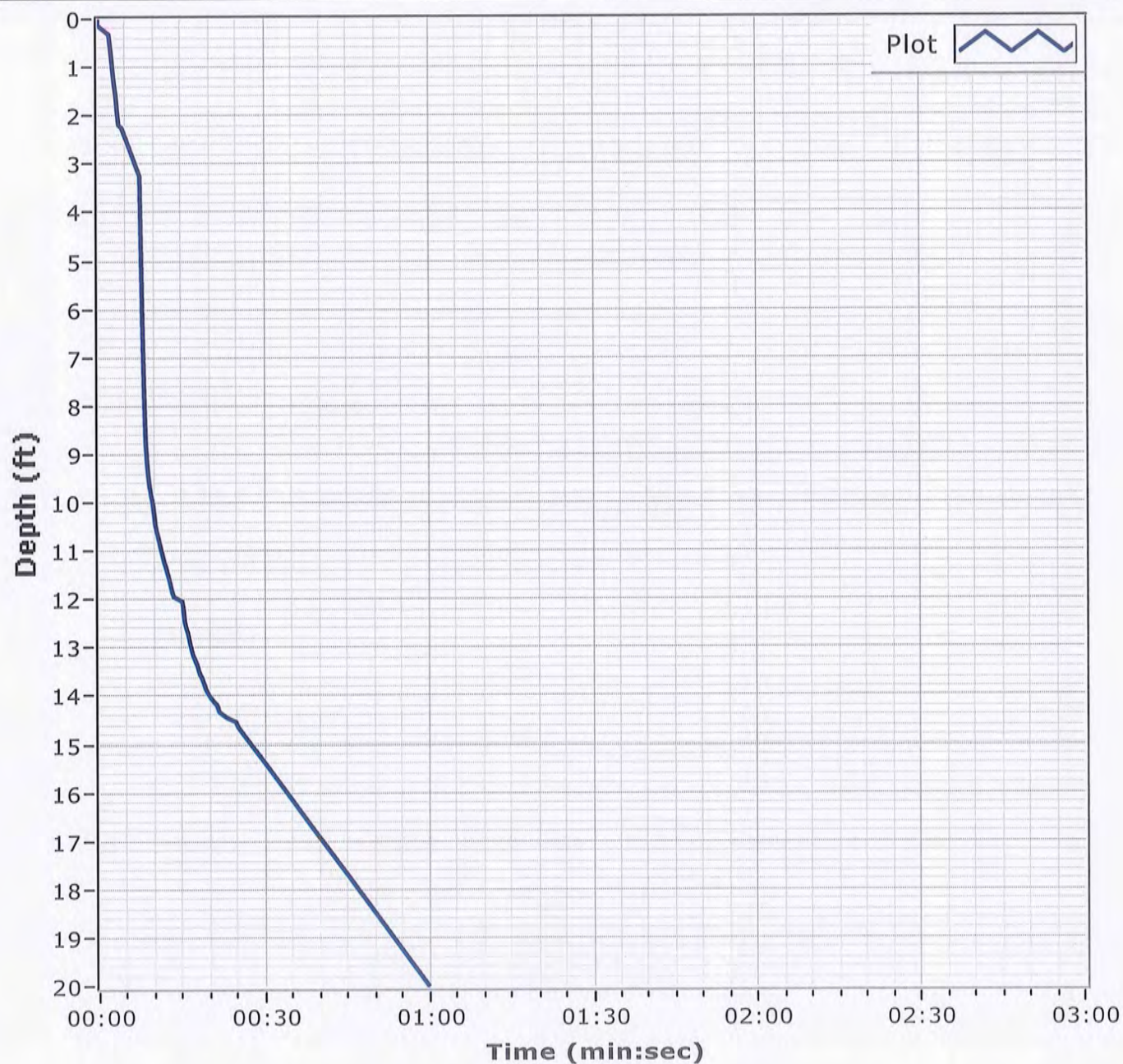
Latitude 30 09.093

Total Time 00:01:00

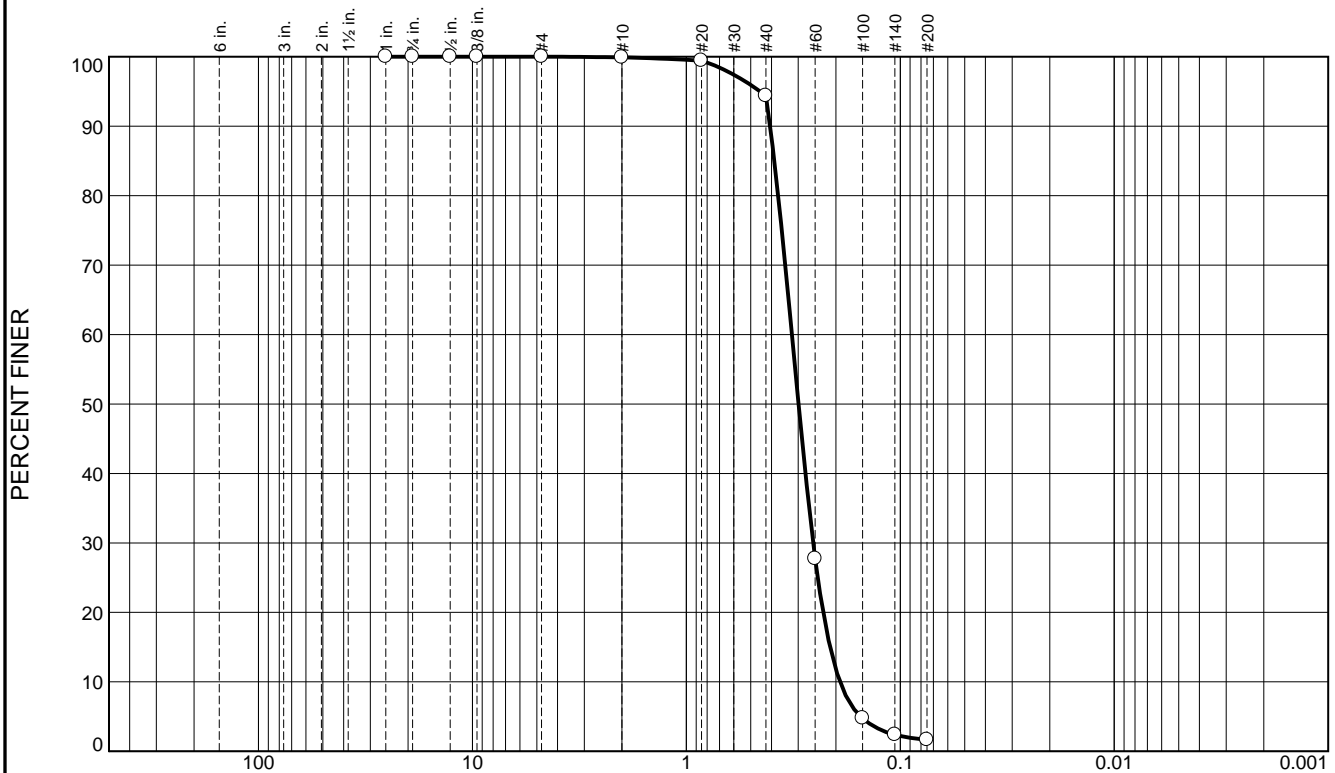
Recovery 17.0'

Longitude 88 18.232

Comments



Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	0.0	0.1	5.5	92.8	1.6	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
1	100.0		
.75	100.0		
.5	100.0		
.375	100.0		
#4	100.0		
#10	99.9		
#20	99.4		
#40	94.4		
#60	27.7		
#100	4.8		
#140	2.4		
#200	1.6		

* (no specification provided)

Material Description		
Fine grained, SAND		
<div> <div> Atterberg Limits </div> <div> PL= LL= PI= </div> </div>		
<div> <div> Coefficients </div> <div> D₉₀= 0.4059 D₈₅= 0.3878 D₆₀= 0.3211 D₅₀= 0.2991 D₃₀= 0.2554 D₁₅= 0.2129 D₁₀= 0.1915 C_u= 1.68 C_c= 1.06 </div> </div>		
<div> <div> Classification </div> <div> USCS= SP AASHTO= </div> </div>		
<div> <div> Remarks </div> </div>		

Location: BI-PBS-64-12 A
Sample Number: 6462

Depth: 0.0'

Date: 11/23/12

Thompson Engineering

Mobile, Alabama

Client: CDM/Thompson Engineering JV
Project: MsCIP Barrier Island Restoration GT

Project No: 1221110095

Figure

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	0.0	0.0	4.4	91.7	3.9	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
1	100.0		
.75	100.0		
.5	100.0		
.375	100.0		
#4	100.0		
#10	100.0		
#20	99.9		
#40	95.6		
#60	57.8		
#100	15.4		
#140	7.5		
#200	3.9		

* (no specification provided)

Material Description		
Fine grained, SAND		
PL=	Atterberg Limits LL=	PI=
D ₉₀ = 0.3784	D ₈₅ = 0.3487	D ₆₀ = 0.2561
D ₅₀ = 0.2304	D ₃₀ = 0.1856	D ₁₅ = 0.1488
D ₁₀ = 0.1275	C _u = 2.01	C _c = 1.06
USCS= SP	Classification AASHTO=	
Remarks		

Location: BI-PBS-64-12 B

Sample Number: 6462

Depth: 15.2'

Date: 11/23/12

Thompson Engineering

Mobile, Alabama

Client: CDM/Thompson Engineering JV

Project: MsCIP Barrier Island Restoration GT

Project No: 1221110095

Figure

Boring Designation BI-PBS-065-12

DRILLING LOG		DIVISION South Atlantic		INSTALLATION Mobile District		SHEET 1 OF 1 SHEETS	
1. PROJECT MsCIP Barrier Island Restoration Petit Bois Pass-OCS East				9. SIZE AND TYPE OF BIT N/A			
2. BORING DESIGNATION BI-PBS-065-12		LOCATION COORDINATES E = 1,149,511 N = 237,566		10. COORDINATE SYSTEM/DATUM State Plane, MSE (U.S. Ft.)		HORIZONTAL NAD83 VERTICAL NAVD88	
3. DRILLING AGENCY Corps of Engineers - CESAM		CONTRACTOR FILE NO.		11. MANUFACTURER'S DESIGNATION OF DRILL Vibracore		<input type="checkbox"/> AUTO HAMMER <input type="checkbox"/> MANUAL HAMMER	
4. NAME OF DRILLER American Vibracore Systems, Inc.				12. TOTAL SAMPLES		DISTURBED UNDISTURBED (UD) 0	
5. DIRECTION OF BORING <input checked="" type="checkbox"/> VERTICAL <input type="checkbox"/> INCLINED				DEG. FROM VERTICAL		BEARING	
6. THICKNESS OF OVERBURDEN N/A				13. TOTAL NUMBER CORE BOXES			
7. DEPTH DRILLED INTO ROCK N/A				14. WATER DEPTH 54 Ft.			
8. TOTAL DEPTH OF BORING 13.4 Ft.				15. DATE BORING STARTED 11-16-12 COMPLETED 11-16-12			
				16. ELEVATION TOP OF BORING -54.1 Ft.			
				17. TOTAL RECOVERY FOR BORING 100%			
				18. SIGNATURE AND TITLE OF INSPECTOR Mike FitzHarris, Geologist			
ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	SAMPLE	LABORATORY RESULTS		
-54.1	0.0						
-56.6	2.5		SAND, poorly-graded, mostly fine to medium-grained sand-sized quartz, trace shell fragments, gray (SP)	A	Classification: SP-SM Color: 5Y 7/1-light gray D50: 0.3177 mm % Fines: 5.8		
-59.3	5.2		SAND, silty, mostly fine-grained sand-sized quartz, some silt, gray (SM)	NS			
-63.0	8.9		CLAY, lean, mostly clay, some sandy clay lenses, gray (CL)				
-64.4	10.3		SAND, poorly-graded with clay, mostly fine-grained sand-sized quartz, little clay, trace shell fragments, gray (SP-SC)				
-67.5	13.4		SAND, poorly-graded, mostly fine-grained sand-sized quartz, trace silt, lt. gray (SP)				
NOTES: 1. Soils are field visually classified in accordance with the Unified Soils Classification System. 2. NS = Sample not submitted for laboratory analysis from this interval. 3. Seafloor elevation calculated using sampling vessel's fathometer water depth reading and applying NOAA tidal gauge data conversion factor.							

Project

Mississippi Barrier Island
Restoration Project

AVS
AMERICAN VIBRACORE
S E R V I C E S

Core Identifier BI-PBS-65-12

Date 11/16/2012

Water Depth 54.0'

Coordinate System

Latitude / Longitude

Start Time 15:46:59

End Time 15:54:01

Penetration 14.8'

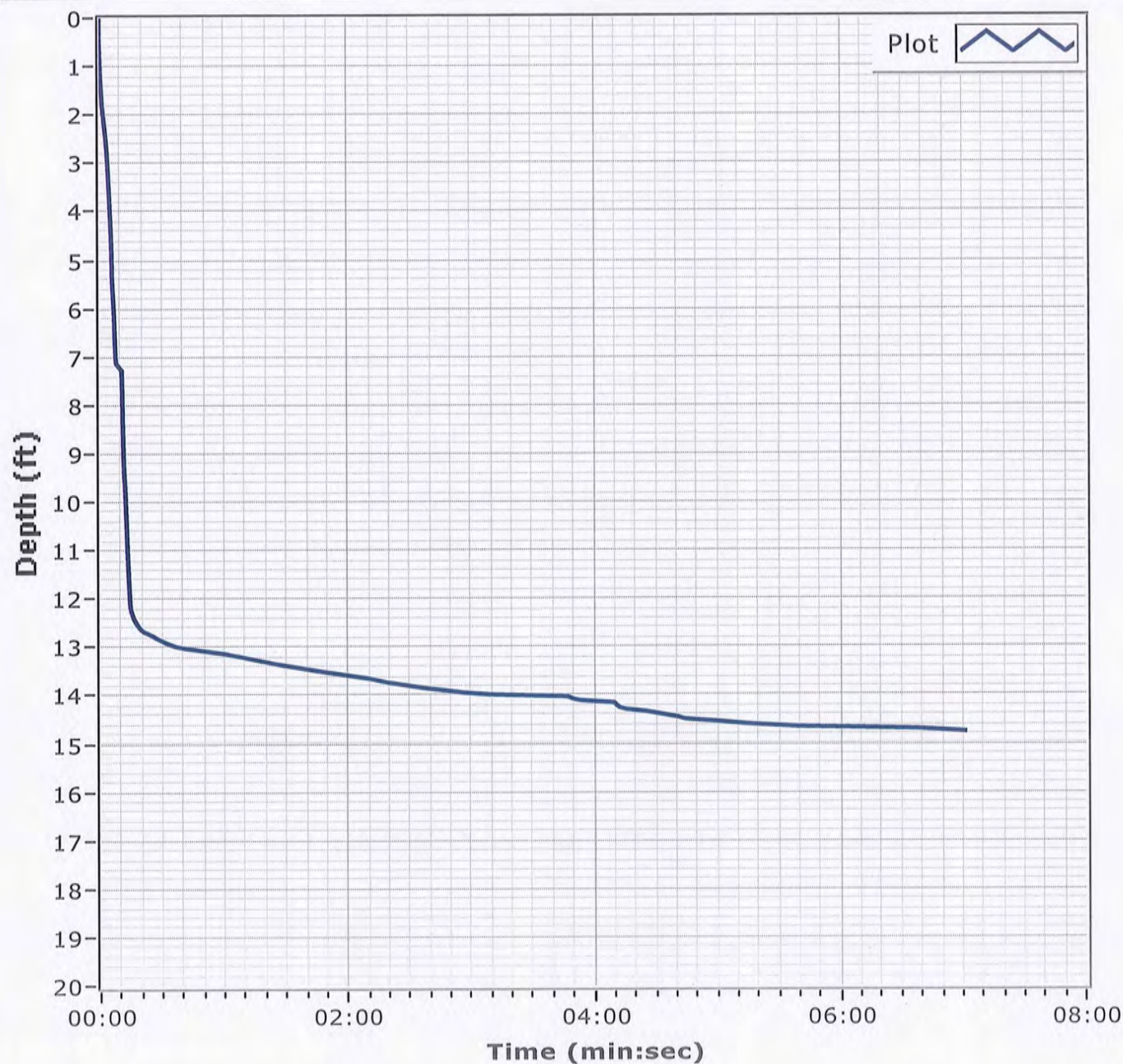
Latitude 30 09.133

Total Time 00:07:01

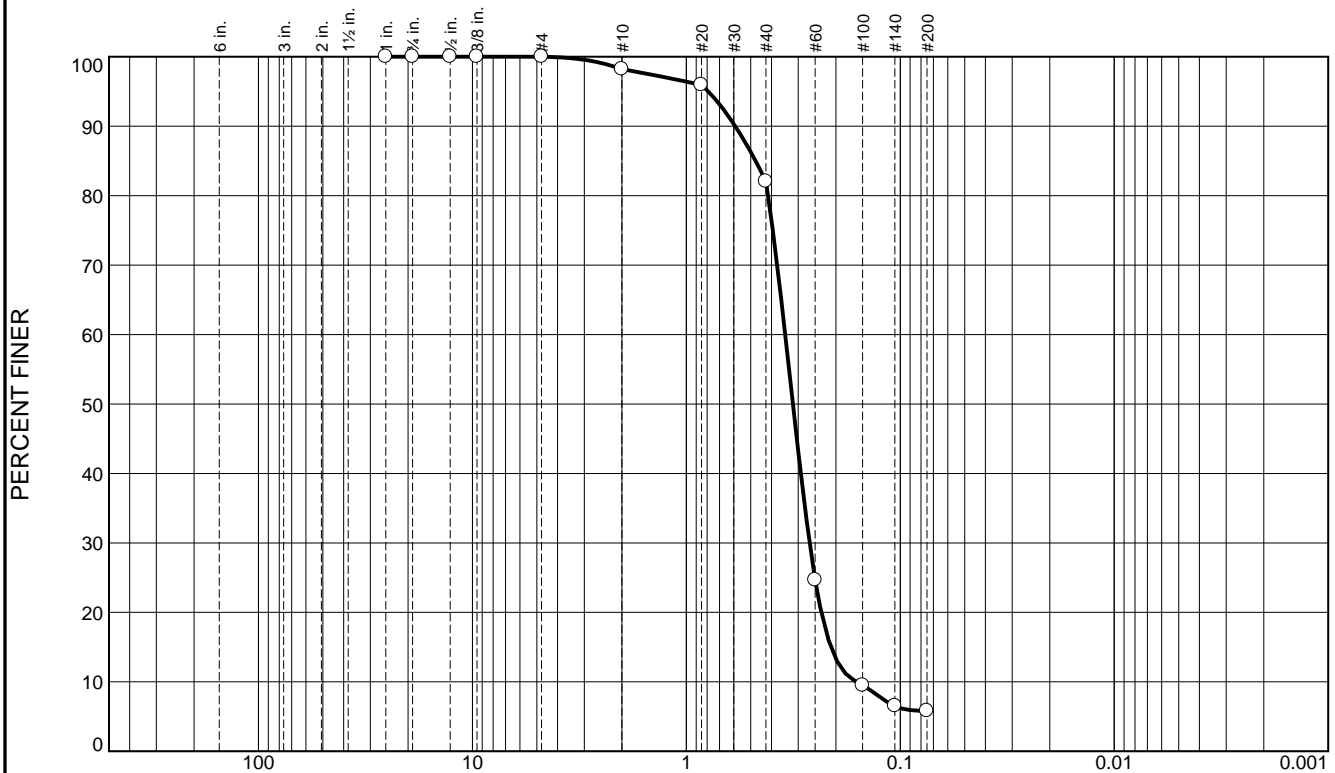
Recovery 13.5'

Longitude 88 18.627

Comments



Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	0.0	1.8	16.2	76.2	5.8	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
1	100.0		
.75	100.0		
.5	100.0		
.375	100.0		
#4	100.0		
#10	98.2		
#20	95.9		
#40	82.0		
#60	24.7		
#100	9.5		
#140	6.5		
#200	5.8		

* (no specification provided)

Material Description

Fine to medium, SLIGHTLY SILTY SAND, with trace SHELL

Atterberg Limits

PL= LL= PI=

Coefficients

D₉₀= 0.5910 D₈₅= 0.4750 D₆₀= 0.3451
D₅₀= 0.3177 D₃₀= 0.2656 D₁₅= 0.2110
D₁₀= 0.1604 C_u= 2.15 C_c= 1.27

Classification

USCS= SP-SM AASHTO=

Remarks

Location: BI-PBS-65-12 A

Sample Number: 6462

Depth: 0.0'

Date: 11/23/12

Thompson Engineering

Mobile, Alabama

Client: CDM/Thompson Engineering JV

Project: MsCIP Barrier Island Restoration GT

Project No: 1221110095

Figure

Boring Designation BI-PBS-066-12

DRILLING LOG		DIVISION South Atlantic		INSTALLATION Mobile District		SHEET 1 OF 1 SHEETS	
1. PROJECT MsCIP Barrier Island Restoration Petit Bois Pass-OCS East				9. SIZE AND TYPE OF BIT N/A			
2. BORING DESIGNATION BI-PBS-066-12		LOCATION COORDINATES E = 1,148,519 N = 238,154		10. COORDINATE SYSTEM/DATUM State Plane, MSE (U.S. Ft.)		HORIZONTAL NAD83 VERTICAL NAVD88	
3. DRILLING AGENCY Corps of Engineers - CESAM		CONTRACTOR FILE NO.		11. MANUFACTURER'S DESIGNATION OF DRILL Vibracore		<input type="checkbox"/> AUTO HAMMER <input type="checkbox"/> MANUAL HAMMER	
4. NAME OF DRILLER American Vibracore Systems, Inc.				12. TOTAL SAMPLES		DISTURBED UNDISTURBED (UD) 0	
5. DIRECTION OF BORING <input checked="" type="checkbox"/> VERTICAL <input type="checkbox"/> INCLINED				13. TOTAL NUMBER CORE BOXES		14. WATER DEPTH 54 Ft.	
6. THICKNESS OF OVERBURDEN N/A				15. DATE BORING		STARTED 11-16-12 COMPLETED 11-16-12	
7. DEPTH DRILLED INTO ROCK N/A				16. ELEVATION TOP OF BORING -54.3 Ft.		17. TOTAL RECOVERY FOR BORING 100%	
8. TOTAL DEPTH OF BORING 12.6 Ft.				18. SIGNATURE AND TITLE OF INSPECTOR Mike FitzHarris, Geologist			

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	SAMPLE	LABORATORY RESULTS
-54.3	0.0				
-56.7	2.4		SAND, poorly-graded, mostly fine to medium-grained sand-sized quartz, trace shell fragments, gray (SP)	A	Classification: SP Color: 2.5Y 7/2-light gray D50: 0.3188 mm % Fines: 1.7
-58.3	4.0		SAND, silty, mostly fine-grained sand-sized quartz, some silt, trace shell fragments, gray (SM)	NS	
-61.1	6.8		SAND, clayey, mostly fine-grained sand-sized quartz, some clay, gray (SC)		
-62.1	7.8		CLAY, lean, mostly clay, little fine-grained sand-sized quartz, gray (CL)		
-63.1	8.8		CLAY, fat, mostly clay, trace fine-grained sand-sized quartz, medium plasticity, gray (CH)		
-63.7	9.4		CLAY, fat, mostly clay, trace fine-grained sand-sized quartz, medium plasticity, gray (CH)		
-64.4	10.1		SAND, clayey, mostly fine-grained sand-sized quartz, some clay, dark gray (SC)		
-66.9	12.6		SAND, silty, mostly fine-grained sand-sized quartz, some silt, dark gray (SM)		
			SAND, poorly-graded, mostly fine to medium-grained sand-sized quartz, trace silt, gray (SP)		
NOTES: 1. Soils are field visually classified in accordance with the Unified Soils Classification System. 2. NS = Sample not submitted for laboratory analysis from this interval. 3. Seafloor elevation calculated using sampling vessel's fathometer water depth reading and applying NOAA tidal gauge data conversion factor.					

Project

Mississippi Barrier Island
Restoration Project

AVS
AMERICAN VIBRACORE
S E R V I C E S

Core Identifier BI-PBS-66-12

Date 11/16/2012

Water Depth 54.0'

Coordinate System

Latitude / Longitude

Start Time 14:59:57

End Time 15:03:37

Penetration 14.1'

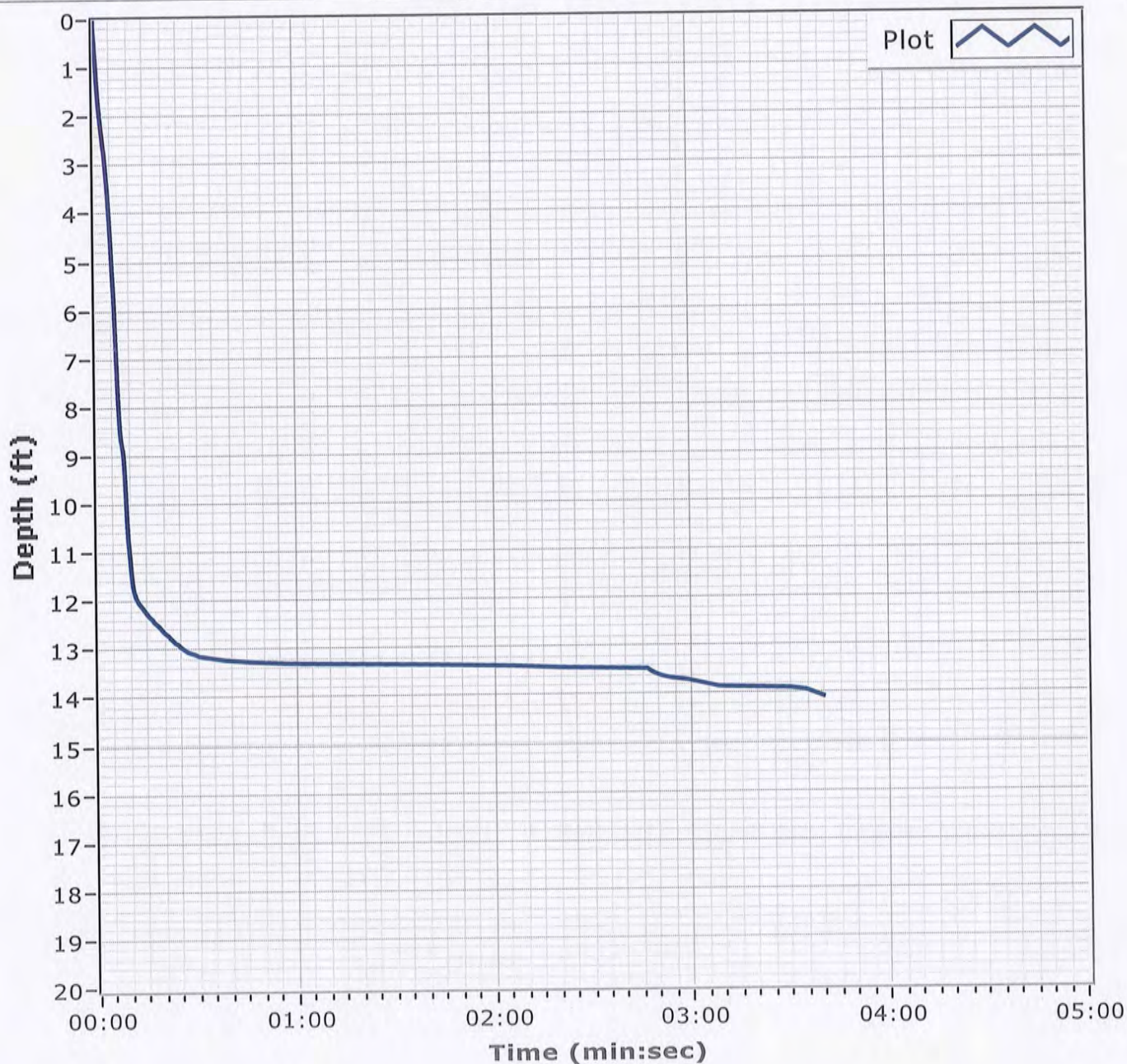
Latitude 30 09.231

Total Time 00:03:40

Recovery 12.8'

Longitude 88 18.851

Comments



Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	0.3	0.7	14.1	83.2	1.7	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
1	100.0		
.75	100.0		
.5	100.0		
.375	100.0		
#4	99.7		
#10	99.0		
#20	97.4		
#40	84.9		
#60	21.1		
#100	4.4		
#140	2.3		
#200	1.7		

* (no specification provided)

<u>Material Description</u>		
Fine to medium grained, SAND		
<u>Atterberg Limits</u>		
PL=	LL=	PI=
<u>Coefficients</u>		
D ₉₀ = 0.5306	D ₈₅ = 0.4263	D ₆₀ = 0.3434
D ₅₀ = 0.3188	D ₃₀ = 0.2725	D ₁₅ = 0.2308
D ₁₀ = 0.2096	C _u = 1.64	C _c = 1.03
<u>Classification</u>		
USCS= SP	AASHTO=	
<u>Remarks</u>		

Location: BI-PBS-66-12 A
Sample Number: 6462

Depth: 0.0'

Date: 11/23/12

Thompson Engineering

Mobile, Alabama

Client: CDM/Thompson Engineering JV
Project: MsCIP Barrier Island Restoration GT

Project No: 1221110095

Figure

Boring Designation BI-PBS-067-12

DRILLING LOG		DIVISION South Atlantic		INSTALLATION Mobile District		SHEET 1 OF 1 SHEETS	
1. PROJECT MsCIP Barrier Island Restoration Petit Bois Pass-OCS East				9. SIZE AND TYPE OF BIT N/A			
2. BORING DESIGNATION BI-PBS-067-12		LOCATION COORDINATES E = 1,146,753 N = 233,891		10. COORDINATE SYSTEM/DATUM State Plane, MSE (U.S. Ft.)		HORIZONTAL NAD83	
3. DRILLING AGENCY Corps of Engineers - CESAM		CONTRACTOR FILE NO.		11. MANUFACTURER'S DESIGNATION OF DRILL Vibracore		<input type="checkbox"/> AUTO HAMMER <input type="checkbox"/> MANUAL HAMMER	
4. NAME OF DRILLER American Vibracore Systems, Inc.				12. TOTAL SAMPLES		DISTURBED 0	
5. DIRECTION OF BORING <input checked="" type="checkbox"/> VERTICAL <input type="checkbox"/> INCLINED				13. TOTAL NUMBER CORE BOXES		14. WATER DEPTH 58.3 Ft.	
6. THICKNESS OF OVERBURDEN N/A				15. DATE BORING		STARTED 11-19-12	
7. DEPTH DRILLED INTO ROCK N/A				16. ELEVATION TOP OF BORING -58.3 Ft.		COMPLETED 11-19-12	
8. TOTAL DEPTH OF BORING 18.8 Ft.				17. TOTAL RECOVERY FOR BORING 100%		18. SIGNATURE AND TITLE OF INSPECTOR John Bass, Geotechnical Engineer	
ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	SAMPLE	LABORATORY RESULTS		
-58.3	0.0						
			SAND, poorly-graded, mostly fine to medium-grained sand-sized quartz, trace clay, gray (SP)	A	Classification: SP-SM Color: 5Y 6/2-light olive gray D50: 0.1928 mm % Fines: 8.3		
-62.5	4.2		SAND, clayey, mostly fine-grained sand-sized quartz, some clay, few shell fragments, gray (SC)				
-65.5	7.2		CLAY, fat, mostly clay, trace fine-grained sand-sized quartz, little sandy lenses, gray (CH)				
			At El. -72.1 Ft., mostly clay, few shell fragments, lt. gray mottled with orange	NS			
-77.1	18.8						
			NOTES: 1. Soils are field visually classified in accordance with the Unified Soils Classification System. 2. NS = Sample not submitted for laboratory analysis from this interval. 3. Seafloor elevation calculated using sampling vessel's fathometer water depth reading and applying NOAA tidal gauge data conversion factor.				

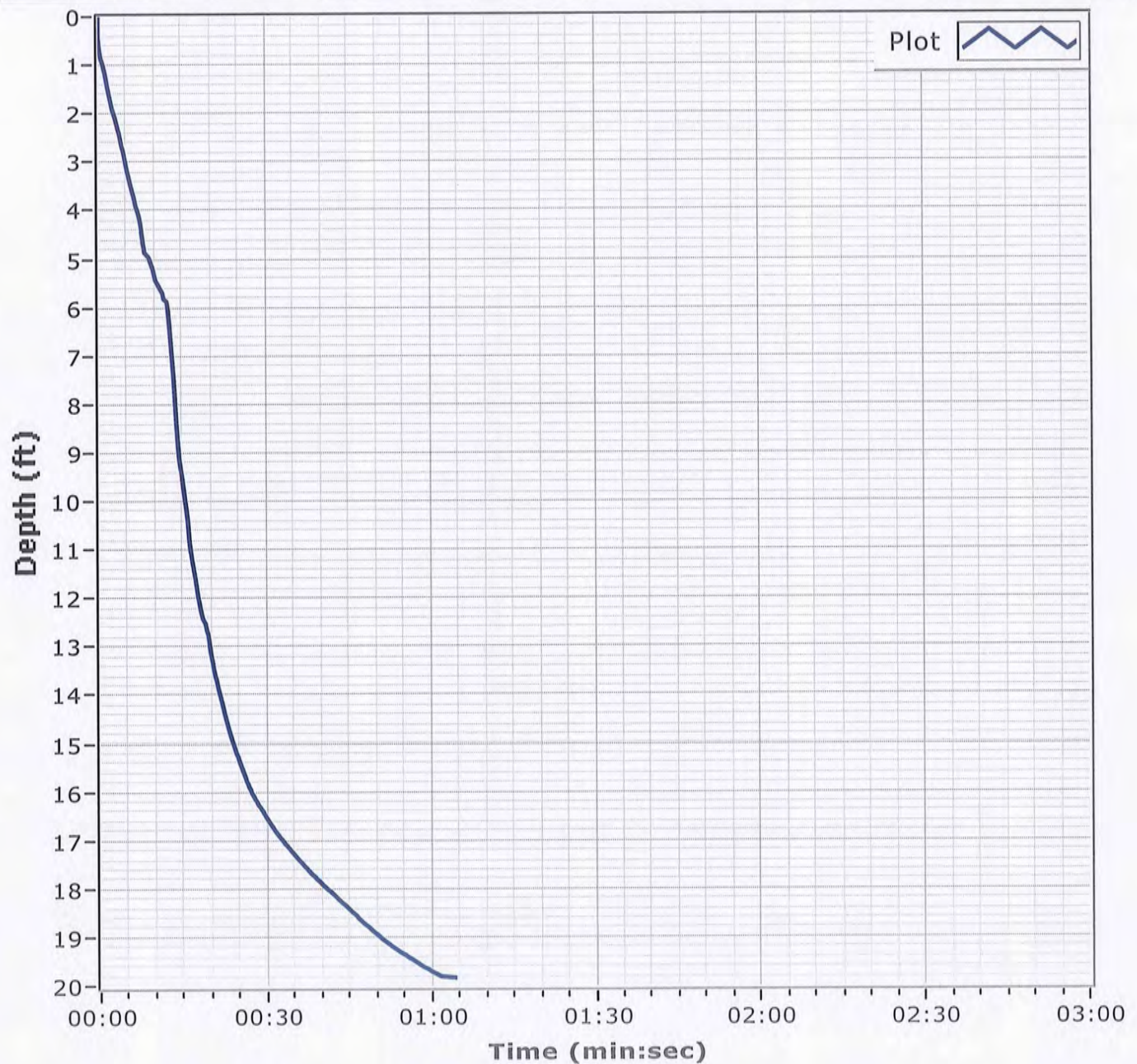
Project

Mississippi Barrier Island
Restoration Project

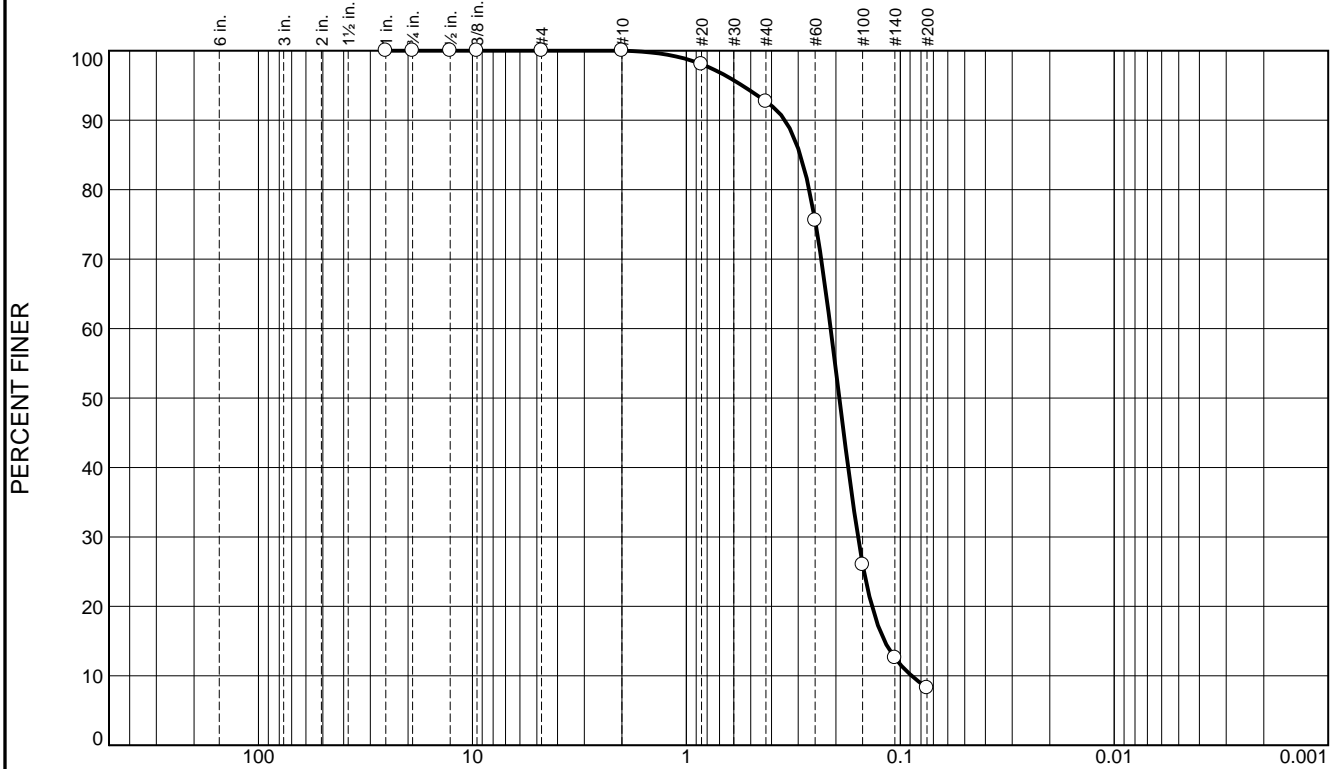
AVS
AMERICAN VIBRACORE
S E R V I C E S

Core Identifier BI-PBS-67-12**Date** 11/19/2012**Water Depth** 58.3'**Coordinate System**

Latitude / Longitude

Start Time 10:57:17**End Time** 10:58:22**Penetration** 19.8'**Latitude** 30 08.529**Total Time** 00:01:04**Recovery** 18.8'**Longitude** 88 19.154**Comments**

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	0.0	0.0	7.3	84.4	8.3	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
1	100.0		
.75	100.0		
.5	100.0		
.375	100.0		
#4	100.0		
#10	100.0		
#20	98.1		
#40	92.7		
#60	75.6		
#100	26.0		
#140	12.6		
#200	8.3		

* (no specification provided)

<u>Material Description</u>		
Fine grained, SLIGHTLY SILTY SAND		
<u>Atterberg Limits</u>		
PL=	LL=	PI=
<u>Coefficients</u>		
D ₉₀ = 0.3461	D ₈₅ = 0.2935	D ₆₀ = 0.2116
D ₅₀ = 0.1928	D ₃₀ = 0.1578	D ₁₅ = 0.1185
D ₁₀ = 0.0885	C _u = 2.39	C _c = 1.33
<u>Classification</u>		
USCS= SP-SM	AASHTO=	
<u>Remarks</u>		

Location: BI-PBS-67-12 A
Sample Number: 6462

Depth: 0.0'

Date: 11/23/12

Thompson Engineering

Mobile, Alabama

Client: CDM/Thompson Engineering JV
Project: MsCIP Barrier Island Restoration GT

Project No: 1221110095

Figure

Boring Designation BI-PBS-068-12

DRILLING LOG		DIVISION South Atlantic		INSTALLATION Mobile District		SHEET 1 OF 2 SHEETS	
1. PROJECT MsCIP Barrier Island Restoration Petit Bois Pass-OCS East				9. SIZE AND TYPE OF BIT N/A			
2. BORING DESIGNATION BI-PBS-068-12		LOCATION COORDINATES E = 1,147,801 N = 232,732		10. COORDINATE SYSTEM/DATUM State Plane, MSE (U.S. Ft.)		HORIZONTAL NAD83 VERTICAL NAVD88	
3. DRILLING AGENCY Corps of Engineers - CESAM		CONTRACTOR FILE NO.		11. MANUFACTURER'S DESIGNATION OF DRILL Vibrocure		<input type="checkbox"/> AUTO HAMMER <input type="checkbox"/> MANUAL HAMMER	
4. NAME OF DRILLER American Vibrocure Systems, Inc.				12. TOTAL SAMPLES		DISTURBED UNDISTURBED (UD) 0	
5. DIRECTION OF BORING <input checked="" type="checkbox"/> VERTICAL <input type="checkbox"/> INCLINED		DEG. FROM VERTICAL		13. TOTAL NUMBER CORE BOXES			
6. THICKNESS OF OVERBURDEN N/A				14. WATER DEPTH 57.8 Ft.			
7. DEPTH DRILLED INTO ROCK N/A				15. DATE BORING 11-19-12		COMPLETED 11-19-12	
8. TOTAL DEPTH OF BORING 19.3 Ft.				16. ELEVATION TOP OF BORING -57.9 Ft.			
				17. TOTAL RECOVERY FOR BORING 100%			
				18. SIGNATURE AND TITLE OF INSPECTOR John Bass, Geotechnical Engineer			
ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	SAMPLE	LABORATORY RESULTS		
-57.9	0.0						
-61.8	3.9		SAND, poorly-graded, mostly fine to medium-grained sand-sized quartz, few shell fragments, trace fines, gray (SP)	A	Classification: SP Color: 2.5Y 7/1-light gray D50: 0.3374 mm % Fines: 2.7		
-68.6	10.7		SAND, clayey, mostly fine-grained sand-sized quartz, some clay, trace shell fragments, gray (SC)				
-77.2	19.3		CLAY, fat, mostly clay, trace fine-grained sand-sized quartz, medium plasticity, gray (CH)	NS			
			At El. -74.9 Ft., mostly clay, few organic matter, gray and brown mottled At El. -75.4 Ft., mostly clay, high plasticity, very stiff, dark gray				
			NOTES: 1. Soils are field visually classified in accordance with the Unified Soils Classification System. 2. NS = Sample not submitted for laboratory analysis from this interval. 3. Seafloor elevation calculated using sampling vessel's fathometer water depth reading and				

DRILLING LOG (Cont. Sheet)			INSTALLATION Mobile District		SHEET 2 OF 2 SHEETS
PROJECT MsCIP Barrier Island Restoration			COORDINATE SYSTEM/DATUM State Plane, MSE (U.S. Ft.)	HORIZONTAL NAD83	VERTICAL NAVD88
LOCATION COORDINATES X = 1,147,801 Y = 232,732			ELEVATION TOP OF BORING -57.9 Ft.		
ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	SAMPLE	LABORATORY RESULTS
			applying NOAA tidal gauge data conversion factor.		

Project

Mississippi Barrier Island
Restoration Project

AVS
AMERICAN VIBRACORE
S E R V I C E S

Core Identifier BI-PBS-68-12

Date 11/19/2012

Water Depth 57.8'

Coordinate System

Latitude / Longitude

Start Time 13:13:12

End Time 13:13:57

Penetration 20.0'

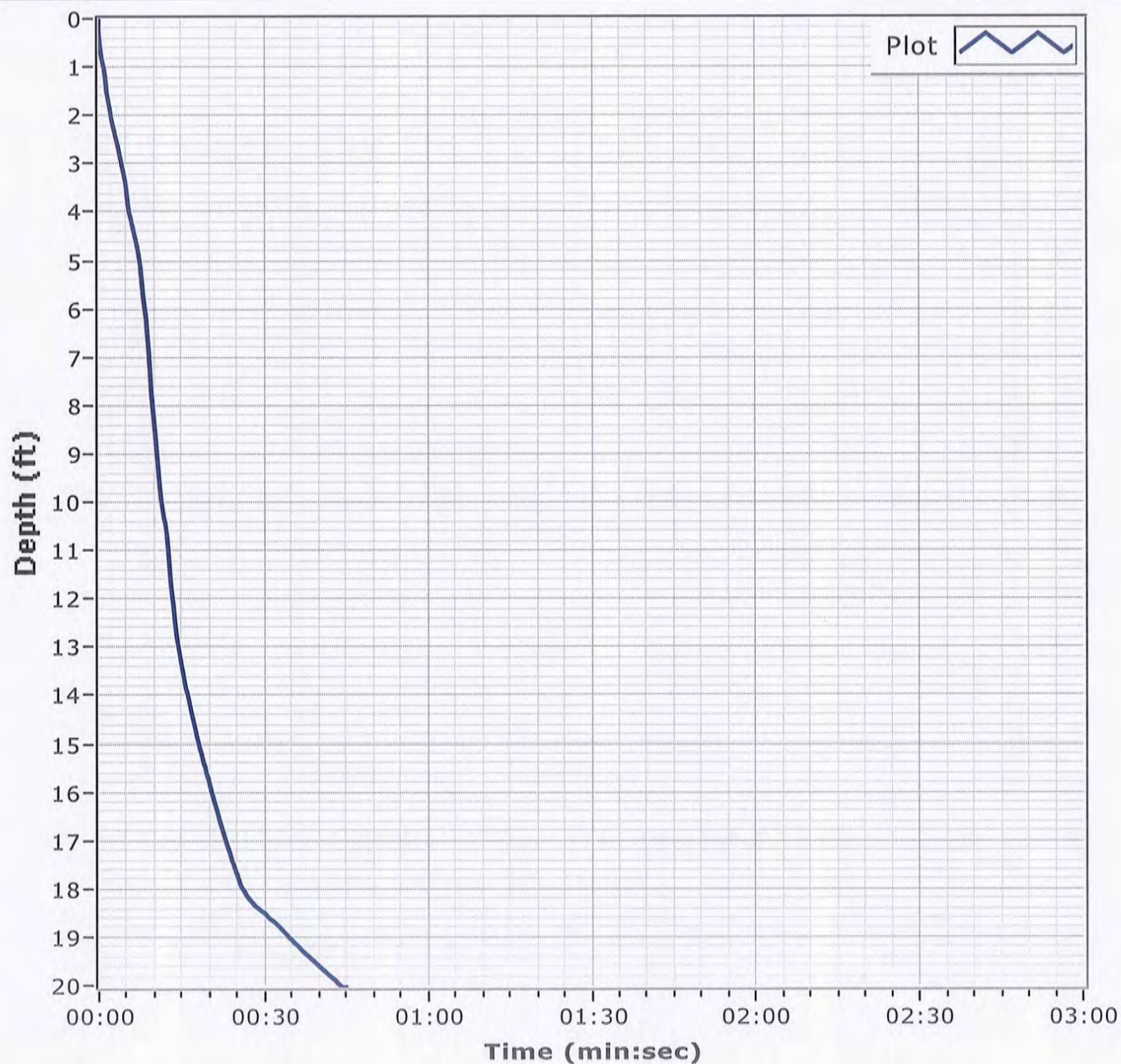
Latitude 30 08.337

Total Time 00:00:45

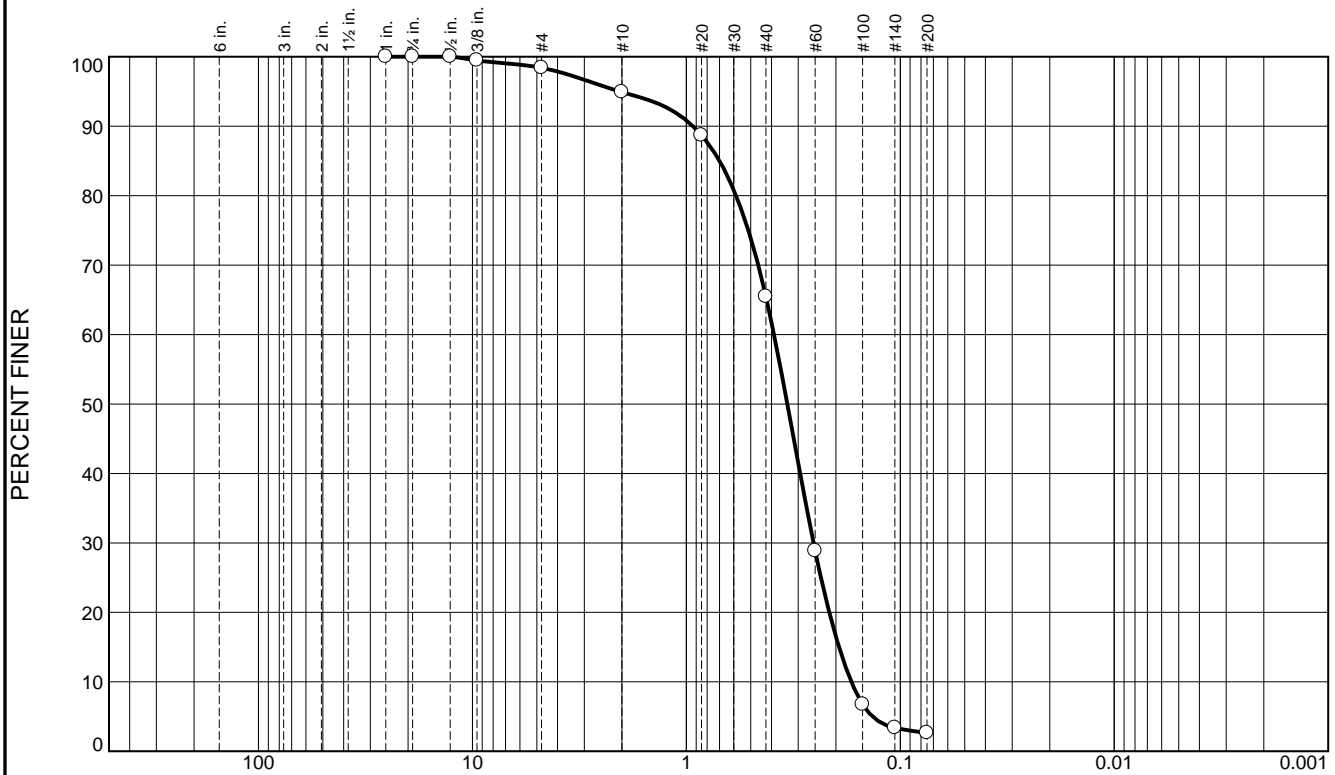
Recovery 19.3'

Longitude 88 18.956

Comments



Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	1.6	3.5	29.4	62.8	2.7	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
1	100.0		
.75	100.0		
.5	100.0		
.375	99.5		
#4	98.4		
#10	94.9		
#20	88.7		
#40	65.5		
#60	28.9		
#100	6.7		
#140	3.4		
#200	2.7		

* (no specification provided)

Material Description Fine to medium grained, SAND, with trace SHELL		
PL=	Atterberg Limits LL=	PI=
D ₉₀ = 0.9331 D ₅₀ = 0.3374 D ₁₀ = 0.1695	Coefficients D ₈₅ = 0.7002 D ₃₀ = 0.2545 C _u = 2.30	D ₆₀ = 0.3894 D ₁₅ = 0.1934 C _c = 0.98
USCS= SP	Classification AASHTO=	
Remarks		

Location: BI-PBS-68-12 A
Sample Number: 6462

Depth: 0.0'

Date: 11/23/12

Thompson Engineering

Mobile, Alabama

Client: CDM/Thompson Engineering JV
Project: MsCIP Barrier Island Restoration GT

Project No: 1221110095

Figure

Boring Designation BI-PBS-069-12

DRILLING LOG		DIVISION South Atlantic		INSTALLATION Mobile District		SHEET 1 OF 1 SHEETS	
1. PROJECT MsCIP Barrier Island Restoration Petit Bois Pass-OCS East				9. SIZE AND TYPE OF BIT N/A			
2. BORING DESIGNATION BI-PBS-069-12		LOCATION COORDINATES E = 1,150,215 N = 233,725		10. COORDINATE SYSTEM/DATUM State Plane, MSE (U.S. Ft.)		HORIZONTAL NAD83 VERTICAL NAVD88	
3. DRILLING AGENCY Corps of Engineers - CESAM		CONTRACTOR FILE NO.		11. MANUFACTURER'S DESIGNATION OF DRILL Vibracore		<input type="checkbox"/> AUTO HAMMER <input type="checkbox"/> MANUAL HAMMER	
4. NAME OF DRILLER American Vibracore Systems, Inc.				12. TOTAL SAMPLES		DISTURBED UNDISTURBED (UD) 0	
5. DIRECTION OF BORING <input checked="" type="checkbox"/> VERTICAL <input type="checkbox"/> INCLINED		DEG. FROM VERTICAL		13. TOTAL NUMBER CORE BOXES			
		BEARING		14. WATER DEPTH 61.8 Ft.			
6. THICKNESS OF OVERBURDEN N/A				15. DATE BORING 11-19-12		STARTED COMPLETED 11-19-12	
7. DEPTH DRILLED INTO ROCK N/A				16. ELEVATION TOP OF BORING -61.9 Ft.			
8. TOTAL DEPTH OF BORING 16.3 Ft.				17. TOTAL RECOVERY FOR BORING 100%			
				18. SIGNATURE AND TITLE OF INSPECTOR John Bass, Geotechnical Engineer			

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	SAMPLE	LABORATORY RESULTS
-61.9	0.0				
-62.3	0.4				
-63.0	1.1		CLAY, fat, mostly clay, trace sand, gray (CH)	NS A	Classification: SP-SM Color: 5Y 7/2-light gray D50: 0.2889 mm % Fines: 6.2
			SAND, poorly-graded, mostly fine to medium-grained sand-sized quartz, trace clay, gray (SP)		
			SAND, clayey, mostly fine-grained sand-sized quartz, trace wood debris, trace shell fragments, gray (SC)	NS	
-77.1	15.2				
-78.2	16.3		SAND, poorly-graded, mostly fine-grained sand-sized quartz, trace fines, dense, lt. gray (SP)	B	Classification: SM Color: 10YR 6/2-light brownish gray D50: 0.1428 mm % Fines: 20.1
NOTES: 1. Soils are field visually classified in accordance with the Unified Soils Classification System. 2. NS = Sample not submitted for laboratory analysis from this interval. 3. Seafloor elevation calculated using sampling vessel's fathometer water depth reading and applying NOAA tidal gauge data conversion factor.					

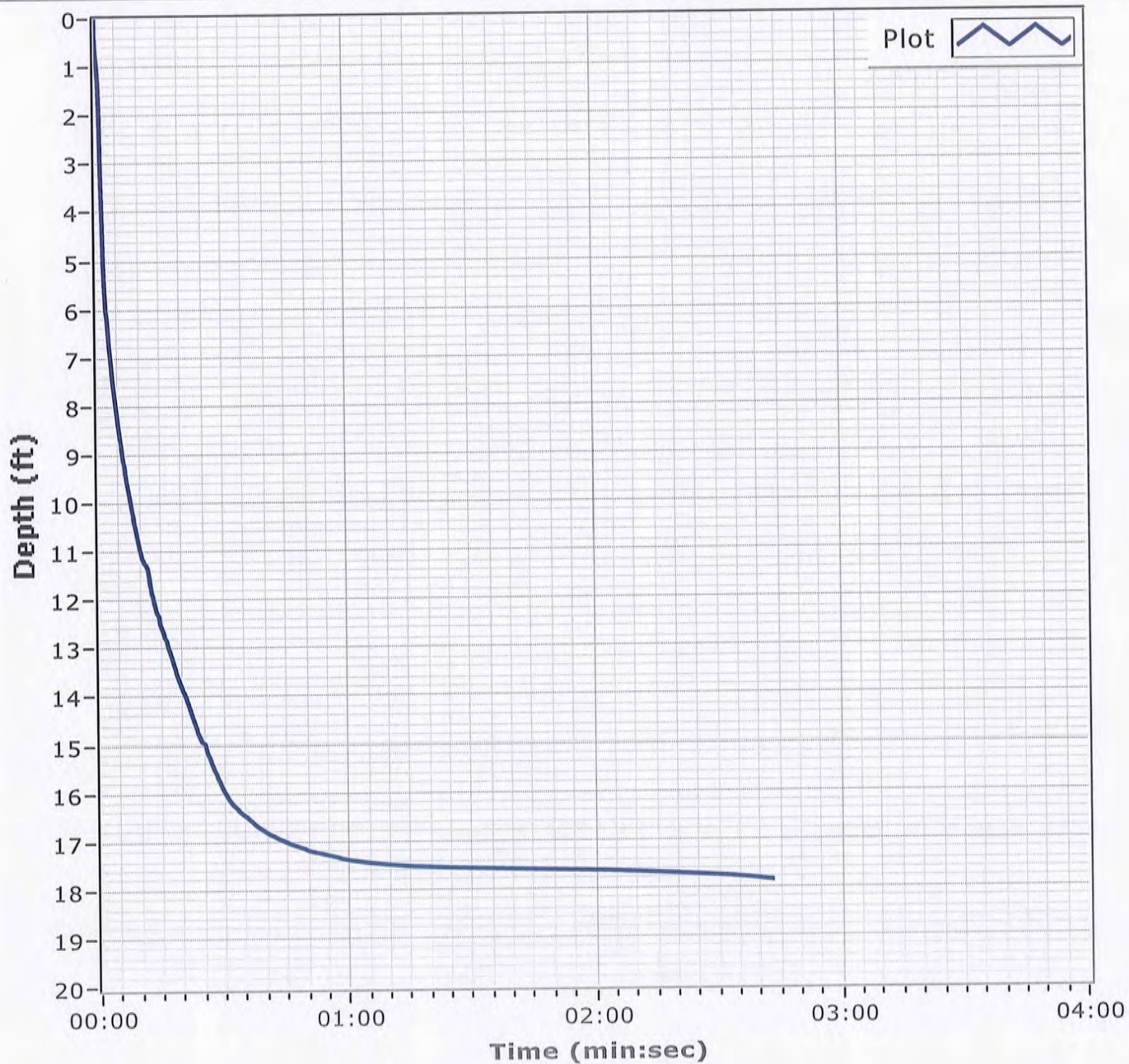
Project

Mississippi Barrier Island
Restoration Project

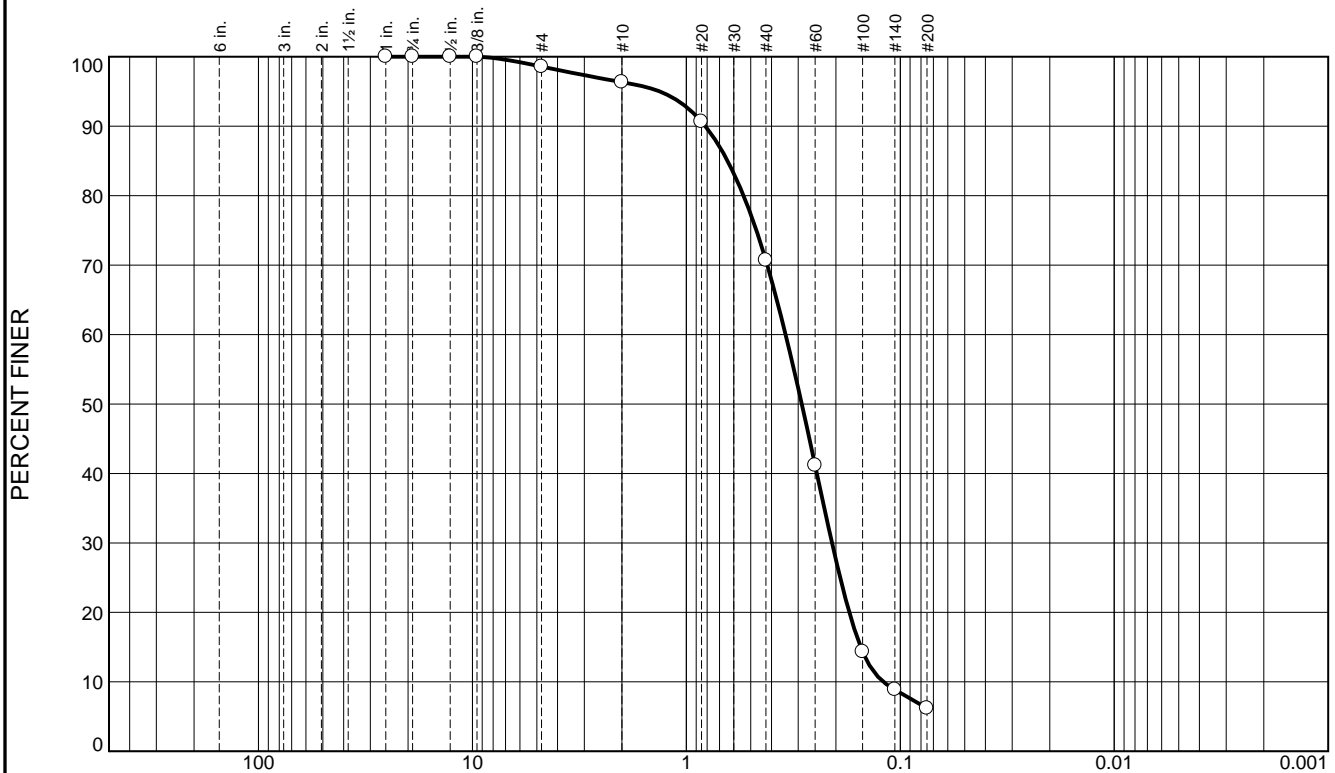
AVS
AMERICAN VIBRACORE
S E R V I C E S

Core Identifier BI-PBS-69-12**Date** 11/19/2012**Water Depth** 61.8'**Coordinate System**

Latitude / Longitude

Start Time 11:47:54**End Time** 11:50:37**Penetration** 17.9'**Latitude** 30 08.499**Total Time** 00:02:43**Recovery** 16.3'**Longitude** 88 18.497**Comments**

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	1.4	2.3	25.6	64.5	6.2	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
1	100.0		
.75	100.0		
.5	100.0		
.375	100.0		
#4	98.6		
#10	96.3		
#20	90.6		
#40	70.7		
#60	41.2		
#100	14.3		
#140	8.9		
#200	6.2		

* (no specification provided)

<u>Material Description</u>		
Fine to medium grained, SLIGHTLY SILTY SAND		
<u>Atterberg Limits</u>		
PL=	LL=	PI=
<u>Coefficients</u>		
D ₉₀ = 0.8163	D ₈₅ = 0.6420	D ₆₀ = 0.3437
D ₅₀ = 0.2889	D ₃₀ = 0.2085	D ₁₅ = 0.1532
D ₁₀ = 0.1201	C _u = 2.86	C _c = 1.05
<u>Classification</u>		
USCS= SP-SM	AASHTO=	
<u>Remarks</u>		

Location: BI-PBS-69-12 A
Sample Number: 6462

Depth: 0.4'

Date: 11/23/12

Thompson Engineering

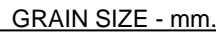
Mobile, Alabama

Client: CDM/Thompson Engineering JV
Project: MsCIP Barrier Island Restoration GT

Project No: 1221110095

Figure

PERCENT FINER



K-310

Boring Designation BI-PBS-070-12

DRILLING LOG		DIVISION South Atlantic		INSTALLATION Mobile District		SHEET 1 OF 2 SHEETS	
1. PROJECT MsCIP Barrier Island Restoration Petit Bois Pass-OCS East				9. SIZE AND TYPE OF BIT N/A			
2. BORING DESIGNATION BI-PBS-070-12		LOCATION COORDINATES E = 1,148,982 N = 235,828		10. COORDINATE SYSTEM/DATUM State Plane, MSE (U.S. Ft.)		HORIZONTAL NAD83 VERTICAL NAVD88	
3. DRILLING AGENCY Corps of Engineers - CESAM		CONTRACTOR FILE NO.		11. MANUFACTURER'S DESIGNATION OF DRILL Vibracore		<input type="checkbox"/> AUTO HAMMER <input type="checkbox"/> MANUAL HAMMER	
4. NAME OF DRILLER American Vibracore Systems, Inc.				12. TOTAL SAMPLES		DISTURBED UNDISTURBED (UD) 0	
5. DIRECTION OF BORING <input checked="" type="checkbox"/> VERTICAL <input type="checkbox"/> INCLINED		DEG. FROM VERTICAL		BEARING		13. TOTAL NUMBER CORE BOXES	
6. THICKNESS OF OVERBURDEN N/A		7. DEPTH DRILLED INTO ROCK N/A		8. TOTAL DEPTH OF BORING 18.3 Ft.		14. WATER DEPTH 60 Ft.	
						15. DATE BORING STARTED 11-19-12 COMPLETED 11-19-12	
						16. ELEVATION TOP OF BORING -59.9 Ft.	
						17. TOTAL RECOVERY FOR BORING 100%	
						18. SIGNATURE AND TITLE OF INSPECTOR John Bass, Geotechnical Engineer	

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	SAMPLE	LABORATORY RESULTS
-59.9	0.0				
-62.0	2.1		SAND, clayey, mostly fine-grained sand-sized quartz, some clay, trace shell fragments, gray (SC)		
			CLAY, fat, mostly clay, trace organic matter, with some sandy clay lenses, gray (CH)		
-67.6	7.7		SAND, clayey, mostly fine-grained sand-sized quartz, some clay, gray (SC)	NS	
-73.2	13.3		SAND, poorly-graded, mostly fine-grained sand-sized quartz, few fines, lt. gray (SP)		
-77.5	17.6		At El. -75.1 Ft., mostly fine-grained sand-sized quartz, trace fines, lt. gray	A	Classification: SP-SM Color: 2.5Y 7/2-light gray D50: 0.2041 mm % Fines: 7.3
-78.2	18.3		SAND, clayey, mostly fine-grained sand-sized quartz, some clay, trace wood debris, gray (SC)		
			NOTES: 1. Soils are field visually classified in accordance with the Unified Soils Classification System. 2. NS = Sample not submitted for laboratory analysis from this interval. 3. Seafloor elevation calculated using sampling vessel's fathometer water depth reading and		

DRILLING LOG (Cont. Sheet)			INSTALLATION Mobile District		SHEET 2
					OF 2 SHEETS
PROJECT MsCIP Barrier Island Restoration			COORDINATE SYSTEM/DATUM State Plane, MSE (U.S. Ft.)	HORIZONTAL NAD83	VERTICAL NAVD88
LOCATION COORDINATES X = 1,148,982 Y = 235,828			ELEVATION TOP OF BORING -59.9 Ft.		
ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	SAMPLE	LABORATORY RESULTS
			applying NOAA tidal gauge data conversion factor.		

Project

Mississippi Barrier Island
Restoration Project



Core Identifier BI-PBS-70-12

Date 11/19/2012

Water Depth 60.0'

Coordinate System

Start Time 09:19:38

Latitude / Longitude

End Time 09:21:13

Penetration 20.0'

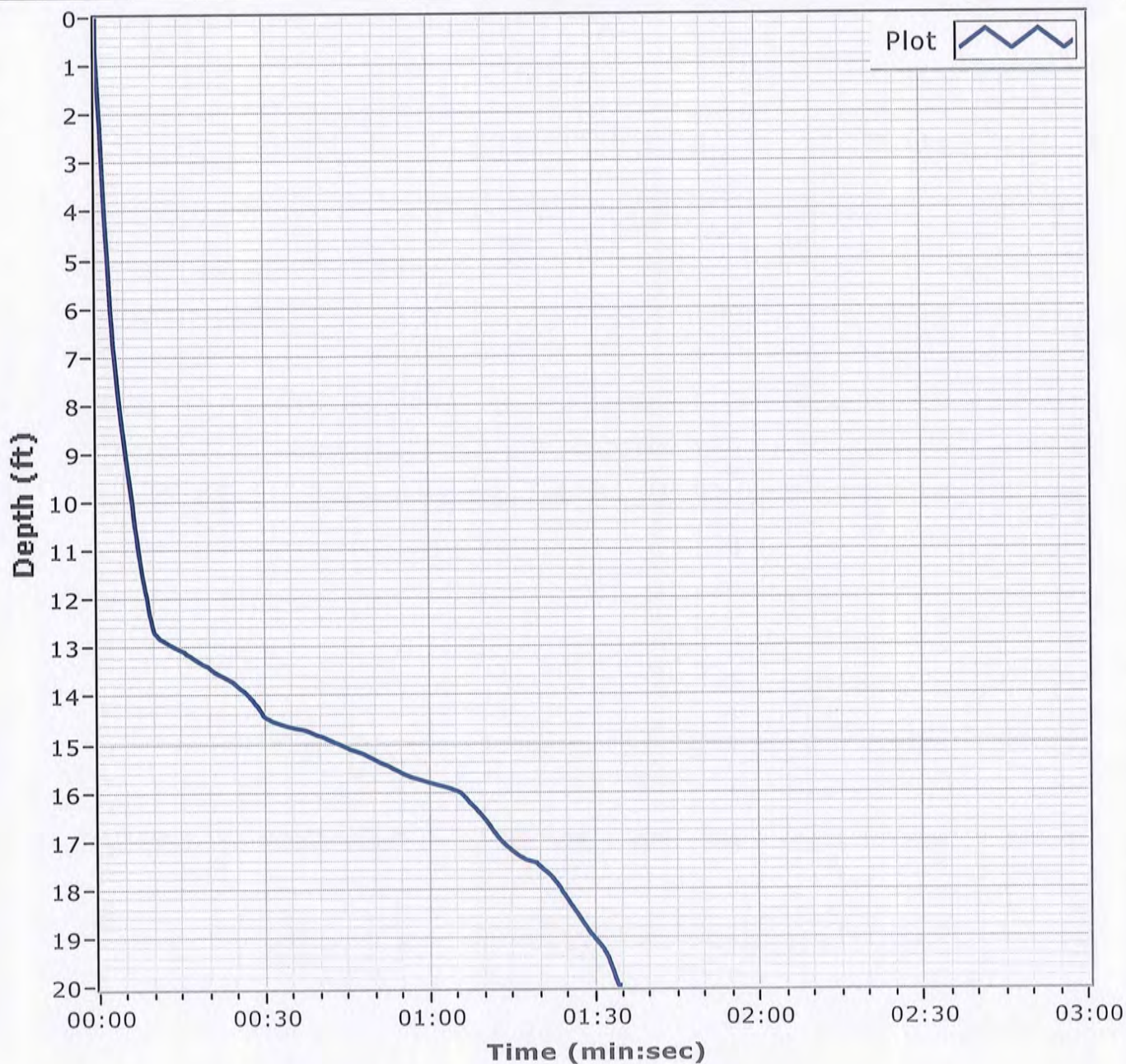
Latitude 30 08.847

Total Time 00:01:34

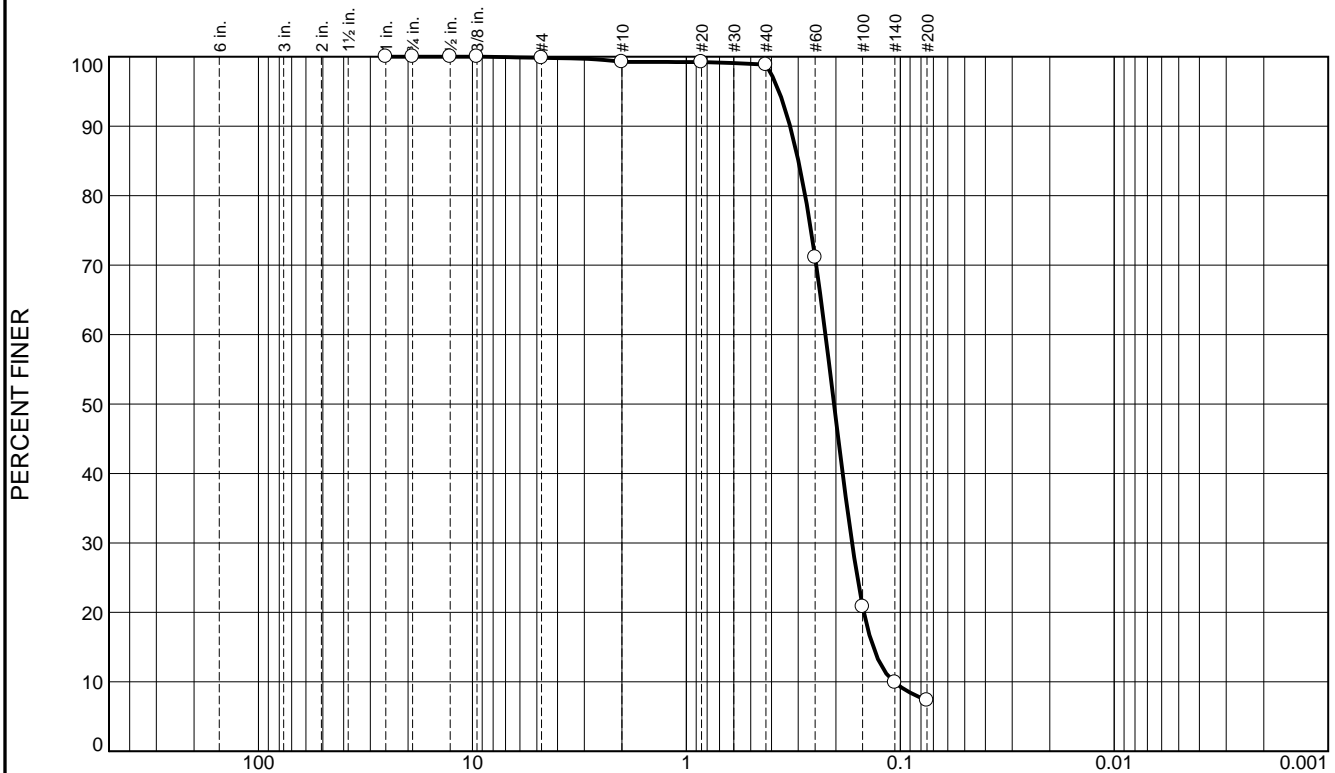
Recovery 18.3'

Longitude 88 18.729

Comments



Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	0.2	0.5	0.5	91.5	7.3	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
1	100.0		
.75	100.0		
.5	100.0		
.375	100.0		
#4	99.8		
#10	99.3		
#20	99.2		
#40	98.8		
#60	71.1		
#100	20.8		
#140	9.9		
#200	7.3		

* (no specification provided)

<u>Material Description</u>		
Fine grained, SLIGHTLY SILTY SAND		
<u>Atterberg Limits</u>		
PL=	LL=	PI=
<u>Coefficients</u>		
D ₉₀ = 0.3276	D ₈₅ = 0.2996	D ₆₀ = 0.2238
D ₅₀ = 0.2041	D ₃₀ = 0.1682	D ₁₅ = 0.1339
D ₁₀ = 0.1068	C _u = 2.09	C _c = 1.18
<u>Classification</u>		
USCS= SP-SM	AASHTO=	
<u>Remarks</u>		

Location: BI-PBS-70-12 A

Sample Number: 6462

Depth: 15.2'

Date: 11/23/12

Thompson Engineering

Mobile, Alabama

Client: CDM/Thompson Engineering JV

Project: MsCIP Barrier Island Restoration GT

Project No: 1221110095

Figure

Boring Designation BI-PBS-071-12

DRILLING LOG		DIVISION South Atlantic		INSTALLATION Mobile District		SHEET 1 OF 1 SHEETS	
1. PROJECT MsCIP Barrier Island Restoration Petit Bois Pass-OCS East				9. SIZE AND TYPE OF BIT N/A			
2. BORING DESIGNATION BI-PBS-071-12		LOCATION COORDINATES E = 1,148,382 N = 232,181		10. COORDINATE SYSTEM/DATUM State Plane, MSE (U.S. Ft.)		HORIZONTAL NAD83	
3. DRILLING AGENCY Corps of Engineers - CESAM		CONTRACTOR FILE NO.		11. MANUFACTURER'S DESIGNATION OF DRILL Vibracore		<input type="checkbox"/> AUTO HAMMER <input type="checkbox"/> MANUAL HAMMER	
4. NAME OF DRILLER American Vibracore Systems, Inc.				12. TOTAL SAMPLES		DISTURBED 0	
5. DIRECTION OF BORING <input checked="" type="checkbox"/> VERTICAL <input type="checkbox"/> INCLINED				13. TOTAL NUMBER CORE BOXES		14. WATER DEPTH 57.6 Ft.	
6. THICKNESS OF OVERBURDEN N/A				15. DATE BORING		STARTED 11-19-12	
7. DEPTH DRILLED INTO ROCK N/A				16. ELEVATION TOP OF BORING -57.7 Ft.		COMPLETED 11-19-12	
8. TOTAL DEPTH OF BORING 18.4 Ft.				17. TOTAL RECOVERY FOR BORING 100%			
				18. SIGNATURE AND TITLE OF INSPECTOR John Bass, Geotechnical Engineer			
ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	SAMPLE	LABORATORY RESULTS		
-57.7	0.0						
			SAND, poorly-graded, mostly fine to medium-grained sand-sized quartz, few fines, few shell fragments, light gray (SP)	A	Classification: SP Color: 5Y 7/2-light gray D50: 0.2468 mm % Fines: 3.4		
-61.1	3.4						
			SAND, clayey, mostly fine-grained sand-sized quartz, some clay, few shell fragments, gray (SC)	B	Classification: SM Color: 5Y 5/2-olive gray D50: 0.209 mm % Fines: 13.2		
-62.9	5.2						
-63.6	5.9			NS			
			CLAY, fat, mostly clay, trace fine-grained sand, medium plasticity, gray (CH)				
			SAND, clayey, mostly fine-grained sand-sized quartz, some clay, few shell fragments, gray (SC)	C	Classification: SM Color: 5Y 6/2-light olive gray D50: 0.1997 mm % Fines: 15.3		
-68.2	10.5						
			CLAY, fat, mostly clay, high plasticity, dark gray mottled with grayish brown (CH)	NS			
-76.1	18.4						
NOTES:							
1. Soils are field visually classified in accordance with the Unified Soils Classification System.							
2. NS = Sample not submitted for laboratory analysis from this interval.							
3. Seafloor elevation calculated using sampling vessel's fathometer water depth reading and applying NOAA tidal gauge data conversion factor.							

Project

Mississippi Barrier Island
Restoration Project

AVS
AMERICAN VIBRACORE
S E R V I C E S

Core Identifier BI-PBS-71-12

Date 11/19/2012

Water Depth 57.6'

Coordinate System

Latitude / Longitude

Start Time 14:05:31

End Time 14:06:16

Penetration 20.0'

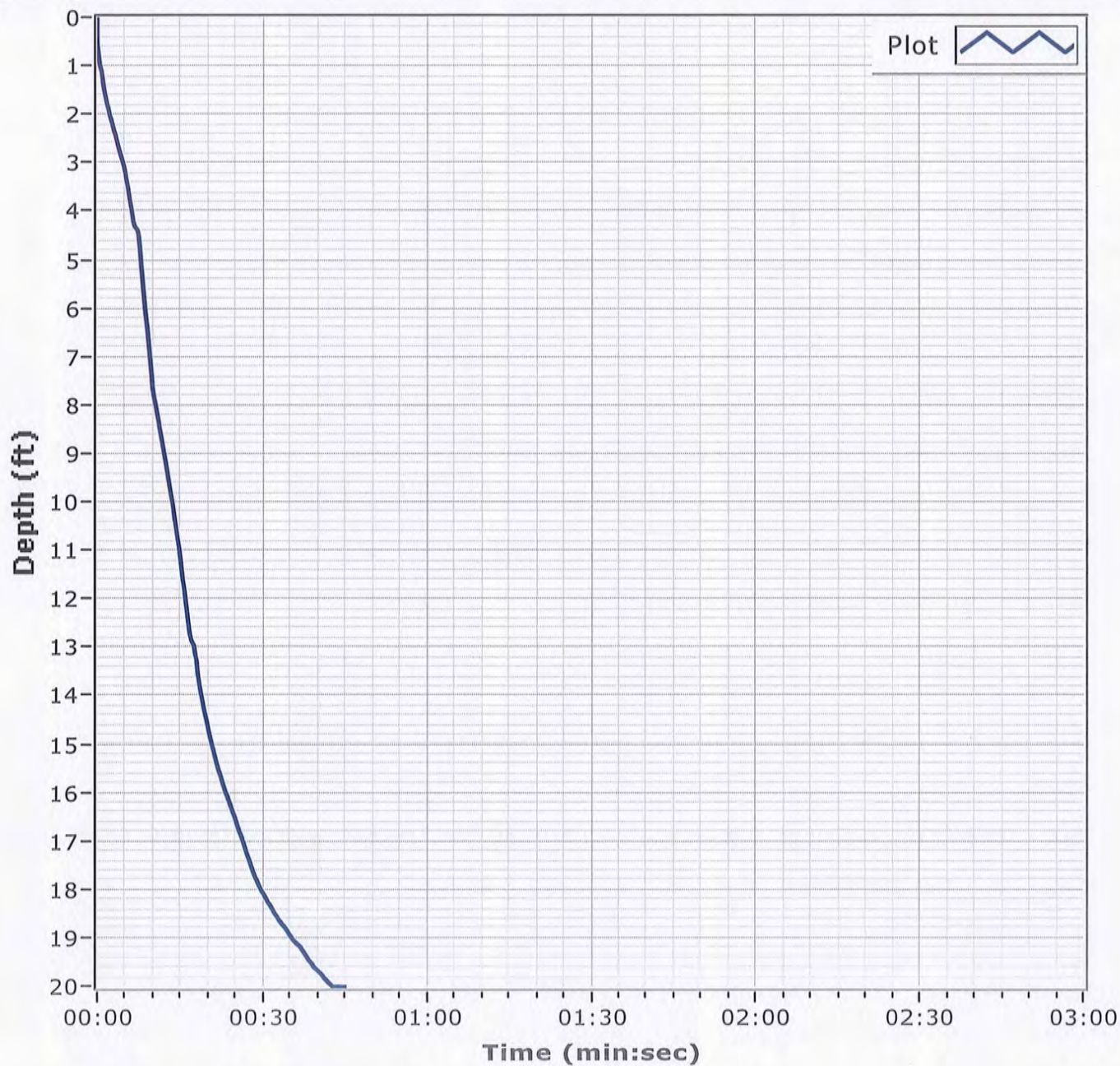
Latitude 30 08.246

Total Time 00:00:45

Recovery 18.4'

Longitude 88 18.846

Comments



Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	1.1	1.2	13.0	81.3	3.4	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
1	100.0		
.75	100.0		
.5	100.0		
.375	100.0		
#4	98.9		
#10	97.7		
#20	95.1		
#40	84.7		
#60	51.1		
#100	11.4		
#140	4.8		
#200	3.4		

* (no specification provided)

Material Description

Fine to medium grained, SAND, with trace SHELL

Atterberg Limits

PL= LL= PI=

Coefficients

D₉₀= 0.5054 D₈₅= 0.4284 D₆₀= 0.2791
D₅₀= 0.2468 D₃₀= 0.1965 D₁₅= 0.1605
D₁₀= 0.1449 C_u= 1.93 C_c= 0.95

Classification

USCS= SP AASHTO=

Remarks

Location: BI-PBS-71-12 A

Sample Number: 6462

Depth: 0.0'

Date: 11/23/12

Thompson Engineering

Mobile, Alabama

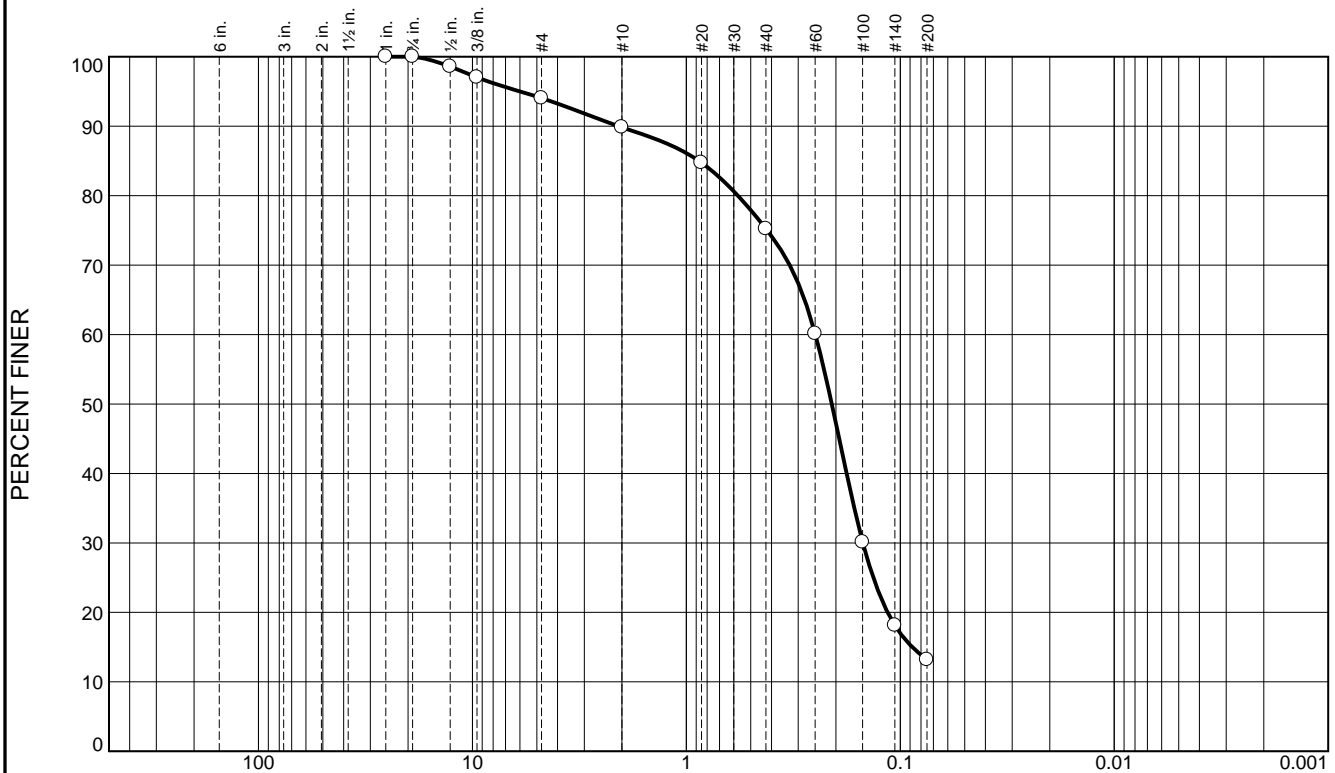
Client: CDM/Thompson Engineering JV

Project: MsCIP Barrier Island Restoration GT

Project No: 1221110095

Figure

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	6.0	4.2	14.6	62.0	13.2	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
1	100.0		
.75	100.0		
.5	98.6		
.375	97.0		
#4	94.0		
#10	89.8		
#20	84.7		
#40	75.2		
#60	60.1		
#100	30.1		
#140	18.1		
#200	13.2		

* (no specification provided)

Material Description

Fine to medium grained, SILTY SAND, with clay nodules and trace SHELL

Atterberg Limits

PL= LL= PI=

Coefficients

D₉₀= 2.0738 D₈₅= 0.8750 D₆₀= 0.2494
D₅₀= 0.2090 D₃₀= 0.1497 D₁₅= 0.0879
D₁₀= C_u= C_c=

Classification

USCS= SM AASHTO=

Remarks

Location: BI-PBS-71-12 B

Sample Number: 6462

Depth: 3.4'

Date: 11/23/12

Thompson Engineering

Mobile, Alabama

Client: CDM/Thompson Engineering JV

Project: MsCIP Barrier Island Restoration GT

Project No: 1221110095

Figure

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	2.3	2.3	15.4	64.7	15.3	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
1	100.0		
.75	100.0		
.5	100.0		
.375	99.4		
#4	97.7		
#10	95.4		
#20	91.1		
#40	80.0		
#60	64.7		
#100	31.1		
#140	19.9		
#200	15.3		

* (no specification provided)

Material Description

Fine to medium grained, SILTY SAND, with clay nodules and trace GRAVEL

Atterberg Limits

PL= LL= PI=

Coefficients

D₉₀= 0.7755 D₈₅= 0.5652 D₆₀= 0.2309
D₅₀= 0.1997 D₃₀= 0.1469 D₁₅=
D₁₀= C_u= C_c=

Classification

USCS= SM AASHTO=

Remarks

Location: BI-PBS-71-12 C

Sample Number: 6462

Depth: 5.9'

Date: 11/23/12

Thompson Engineering

Mobile, Alabama

Client: CDM/Thompson Engineering JV

Project: MsCIP Barrier Island Restoration GT

Project No: 1221110095

Figure

Boring Designation BI-PBS-072-12

DRILLING LOG		DIVISION South Atlantic		INSTALLATION Mobile District		SHEET 1 OF 1 SHEETS	
1. PROJECT MsCIP Barrier Island Restoration Petit Bois Pass-OCS East				9. SIZE AND TYPE OF BIT N/A			
2. BORING DESIGNATION BI-PBS-072-12		LOCATION COORDINATES E = 1,146,277 N = 232,914		10. COORDINATE SYSTEM/DATUM State Plane, MSE (U.S. Ft.)		HORIZONTAL NAD83 VERTICAL NAVD88	
3. DRILLING AGENCY Corps of Engineers - CESAM		CONTRACTOR FILE NO.		11. MANUFACTURER'S DESIGNATION OF DRILL Vibrocure		<input type="checkbox"/> AUTO HAMMER <input type="checkbox"/> MANUAL HAMMER	
4. NAME OF DRILLER American Vibrocure Systems, Inc.				12. TOTAL SAMPLES		DISTURBED UNDISTURBED (UD) 0	
5. DIRECTION OF BORING <input checked="" type="checkbox"/> VERTICAL <input type="checkbox"/> INCLINED		DEG. FROM VERTICAL		13. TOTAL NUMBER CORE BOXES			
		BEARING		14. WATER DEPTH 58.7 Ft.			
6. THICKNESS OF OVERBURDEN N/A				15. DATE BORING 11-19-12		STARTED COMPLETED 11-19-12	
7. DEPTH DRILLED INTO ROCK N/A				16. ELEVATION TOP OF BORING -58.8 Ft.			
8. TOTAL DEPTH OF BORING 16.8 Ft.				17. TOTAL RECOVERY FOR BORING 100%			
				18. SIGNATURE AND TITLE OF INSPECTOR John Bass, Geotechnical Engineer			
ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	SAMPLE	LABORATORY RESULTS		
-58.8	0.0						
-61.1	2.3		SAND, poorly-graded, mostly fine to medium-grained quartz, trace fines, trace shell fragments, lt. gray (SP)	A	Classification: SP Color: 5Y 7/2-light gray D50: 0.3295 mm % Fines: 1.8		
-68.3	9.5		SAND, clayey, mostly fine-grained sand-sized quartz, some clay, gray (SC)	B	Classification: SM Color: 5Y 6/2-light olive gray D50: 0.1997 mm % Fines: 13.6		
-75.6	16.8		CLAY, fat, mostly clay, some silt, trace fine-grained sand-sized quartz, gray (CH) At El. -70.3 Ft., mostly clay, trace sand, medium plasticity, light gray mottled with orange	NS			
			NOTES: 1. Soils are field visually classified in accordance with the Unified Soils Classification System. 2. NS = Sample not submitted for laboratory analysis from this interval. 3. Seafloor elevation calculated using sampling vessel's fathometer water depth reading and applying NOAA tidal gauge data conversion factor.				

Project

Mississippi Barrier Island
Restoration Project

AVS
AMERICAN VIBRACORE
S E R V I C E S

Core Identifier BI-PBS-72-12

Date 11/19/2012

Water Depth 58.7'

Coordinate System

Latitude / Longitude

Start Time 14:44:14

End Time 14:44:49

Penetration 20.0'

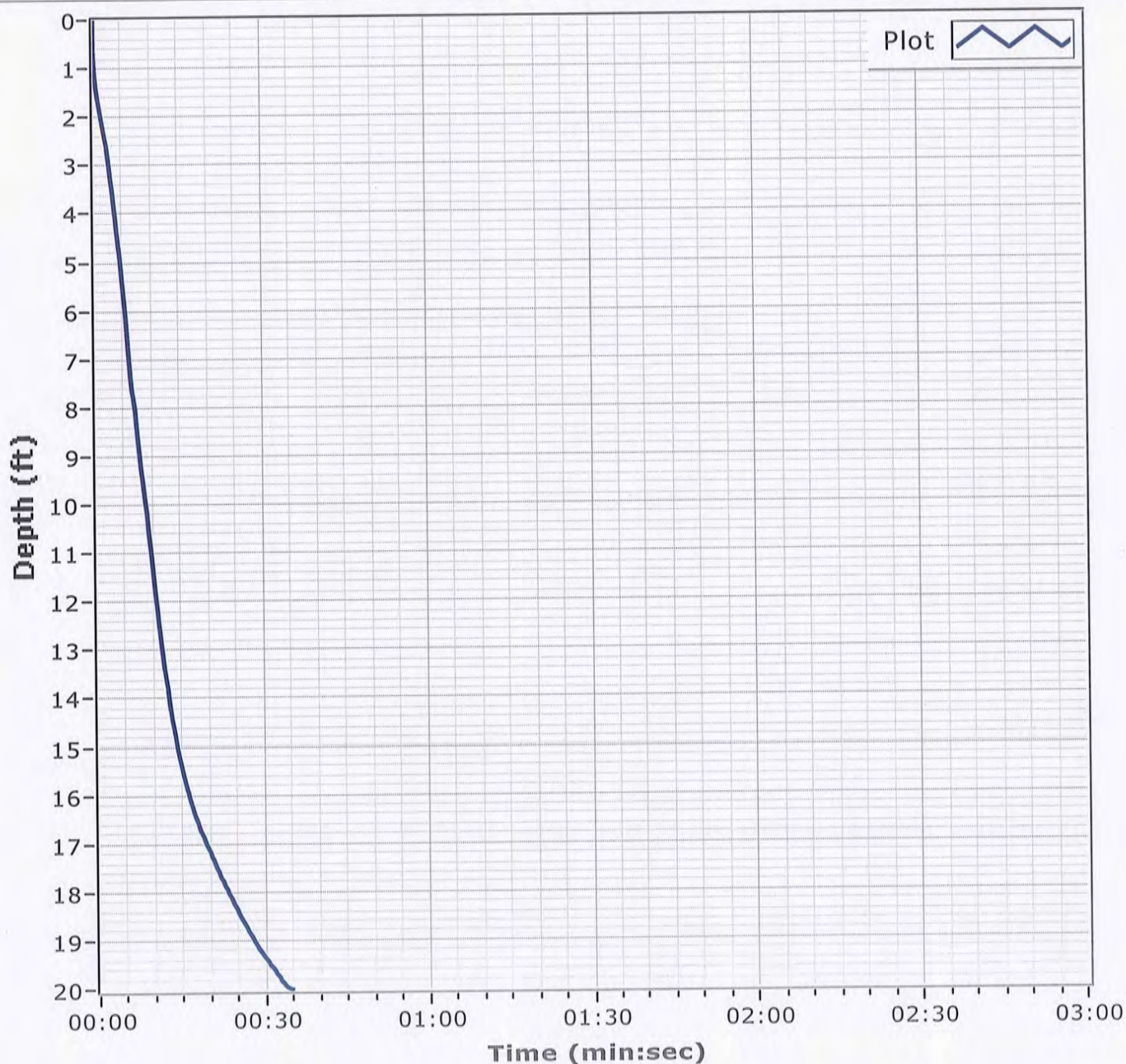
Latitude 30 08.368

Total Time 00:00:35

Recovery 16.8'

Longitude 88 19.245

Comments



Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	2.4	3.8	30.8	61.2	1.8	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
1	100.0		
.75	100.0		
.5	100.0		
.375	100.0		
#4	97.6		
#10	93.8		
#20	87.4		
#40	63.0		
#60	33.6		
#100	5.5		
#140	2.2		
#200	1.8		

* (no specification provided)

Material Description

Fine to medium grained, SILTY SAND, with trace SHELL

Atterberg Limits

PL= LL= PI=

Coefficients

D₉₀= 0.9878 D₈₅= 0.7649 D₆₀= 0.3992
D₅₀= 0.3295 D₃₀= 0.2365 D₁₅= 0.1861
D₁₀= 0.1689 C_u= 2.36 C_c= 0.83

Classification

USCS= SP AASHTO=

Remarks

Location: BI-PBS-72-12-A
Sample Number: 6462

Depth: 0.0'

Date: 11/23/12

Thompson Engineering

Mobile, Alabama

Client: CDM/Thompson Engineering JV
Project: MsCIP Barrier Island Restoration GT

Project No: 1221110095

Figure

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	4.7	3.0	15.8	62.9	13.6	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
1	100.0		
.75	100.0		
.5	100.0		
.375	97.9		
#4	95.3		
#10	92.3		
#20	88.2		
#40	76.5		
#60	62.6		
#100	32.5		
#140	18.9		
#200	13.6		

* (no specification provided)

Material Description

Fine to medium grained, SILTY SAND, with trace SHELL

Atterberg Limits

PL= LL= PI=

Coefficients

D₉₀= 1.0254 D₈₅= 0.6801 D₆₀= 0.2370
D₅₀= 0.1997 D₃₀= 0.1430 D₁₅= 0.0850
D₁₀= C_u= C_c=

Classification

USCS= SM AASHTO=

Remarks

Location: BI-PBS-72-12 B

Sample Number: 6462

Depth: 2.3'

Date: 11/23/12

Thompson Engineering

Mobile, Alabama

Client: CDM/Thompson Engineering JV

Project: MsCIP Barrier Island Restoration GT

Project No: 1221110095

Figure

Boring Designation BI-PBS-073-12

DRILLING LOG		DIVISION South Atlantic		INSTALLATION Mobile District		SHEET 1 OF 2 SHEETS	
1. PROJECT MsCIP Barrier Island Restoration Petit Bois Pass-OCS East				9. SIZE AND TYPE OF BIT N/A			
2. BORING DESIGNATION BI-PBS-073-12		LOCATION COORDINATES E = 1,145,519 N = 234,176		10. COORDINATE SYSTEM/DATUM State Plane, MSE (U.S. Ft.)		HORIZONTAL NAD83 VERTICAL NAVD88	
3. DRILLING AGENCY Corps of Engineers - CESAM		CONTRACTOR FILE NO.		11. MANUFACTURER'S DESIGNATION OF DRILL Vibrocure		<input type="checkbox"/> AUTO HAMMER <input type="checkbox"/> MANUAL HAMMER	
4. NAME OF DRILLER American Vibrocure Systems, Inc.				12. TOTAL SAMPLES		DISTURBED UNDISTURBED (UD) 0	
5. DIRECTION OF BORING <input checked="" type="checkbox"/> VERTICAL <input type="checkbox"/> INCLINED		DEG. FROM VERTICAL		13. TOTAL NUMBER CORE BOXES			
		BEARING		14. WATER DEPTH 55.4 Ft.			
6. THICKNESS OF OVERBURDEN N/A				15. DATE BORING 11-20-12		STARTED COMPLETED 11-20-12	
7. DEPTH DRILLED INTO ROCK N/A				16. ELEVATION TOP OF BORING -55.1 Ft.			
8. TOTAL DEPTH OF BORING 19.4 Ft.				17. TOTAL RECOVERY FOR BORING 100%			
				18. SIGNATURE AND TITLE OF INSPECTOR John Bass, Geotechnical Engineer			
ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	SAMPLE	LABORATORY RESULTS		
-55.1	0.0						
-58.0	2.9		SAND, poorly-graded, mostly fine to medium-grained quartz, trace fines, trace shell fragments, lt. gray (SP)	A	Classification: SP Color: 5Y 6/2-light olive gray D50: 0.2622 mm % Fines: 2.8		
-60.5	5.4		SAND, poorly-graded with silt, mostly fine-grained sand-sized quartz, few silt, few shell fragments, lt. gray (SP-SM)	B	Classification: SM Color: 5Y 5/2-olive gray D50: 0.1993 mm % Fines: 13.4		
-64.1	9.0		SAND, silty, mostly fine-grained sand-sized quartz, some silt, trace shell fragments, trace wood debris, gray (SM)	NS			
-66.1	11.0		SAND, clayey, mostly fine-grained sand-sized quartz, some clay, gray (SC)				
-67.1	12.0		CLAY, fat, mostly clay, stiff, medium to high plasticity, gray (CH)				
-74.5	19.4		CLAY, lean, mostly clay, some fine-grained sand-sized sand, low to medium plasticity, gray to dark gray (CL) At El. -70.1 Ft., mostly clay, stiff, low to medium plasticity, lt. gray mottled with brown				
			NOTES: 1. Soils are field visually classified in accordance with the Unified Soils Classification System. 2. NS = Sample not submitted for laboratory analysis from this interval. 3. Seafloor elevation calculated using sampling vessel's fathometer water depth reading and				

DRILLING LOG (Cont. Sheet)			INSTALLATION Mobile District		SHEET 2 OF 2 SHEETS
PROJECT MsCIP Barrier Island Restoration			COORDINATE SYSTEM/DATUM State Plane, MSE (U.S. Ft.)	HORIZONTAL NAD83	VERTICAL NAVD88
LOCATION COORDINATES X = 1,145,519 Y = 234,176			ELEVATION TOP OF BORING -55.1 Ft.		
ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	SAMPLE	LABORATORY RESULTS
			applying NOAA tidal gauge data conversion factor.		

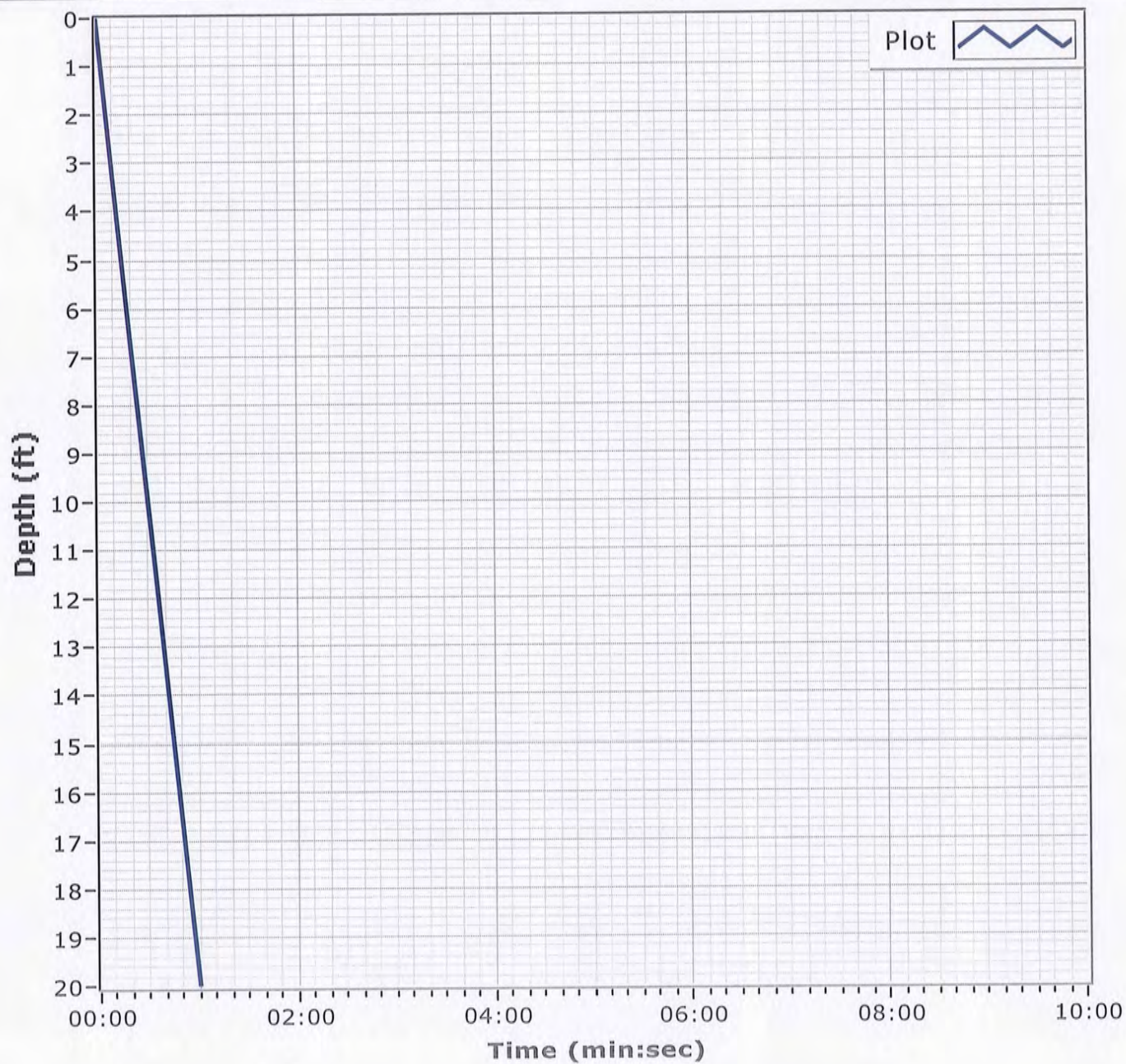
Project

Mississippi Barrier Island
Restoration Project

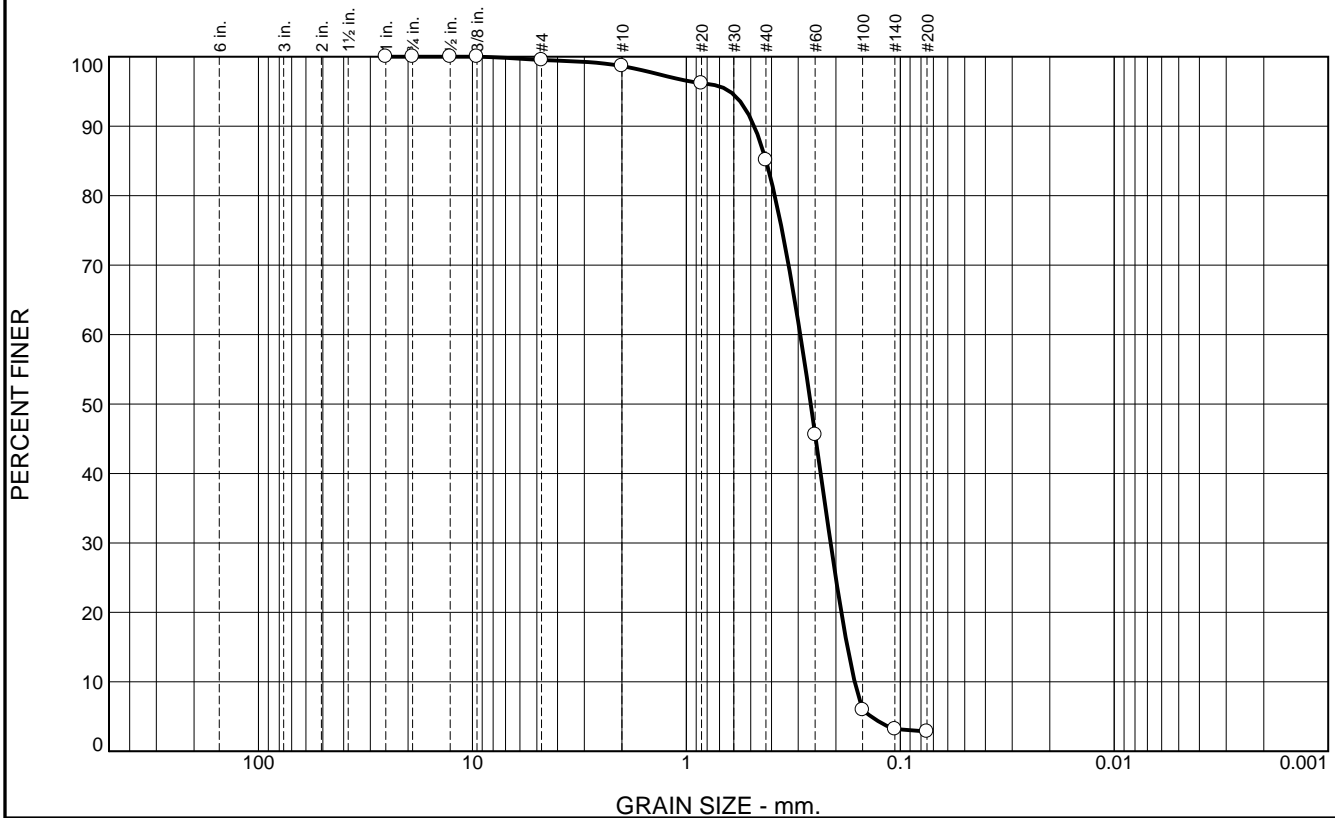
AVS
AMERICAN VIBRACORE
S E R V I C E S

Core Identifier BI-PBS-73-12**Date** 11/20/2012**Water Depth** 55.4'**Coordinate System**

Latitude / Longitude

Start Time 09:50:03**End Time** 09:51:03**Penetration** 20.0'**Latitude** 30 08.577**Total Time** 00:01:00**Recovery** 19.4'**Longitude** 088 19.388**Comments**

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	0.5	0.8	13.6	82.3	2.8	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
1	100.0		
.75	100.0		
.5	100.0		
.375	100.0		
#4	99.5		
#10	98.7		
#20	96.2		
#40	85.1		
#60	45.6		
#100	6.0		
#140	3.2		
#200	2.8		

* (no specification provided)

Material Description

Fine to medium grained, SAND, with trace SHELL

Atterberg Limits

PL= LL= PI=

Coefficients

D₉₀= 0.4819 D₈₅= 0.4239 D₆₀= 0.2937
D₅₀= 0.2622 D₃₀= 0.2117 D₁₅= 0.1768
D₁₀= 0.1635 C_u= 1.80 C_c= 0.93

Classification

USCS= SP AASHTO=

Remarks

Location: BI-PBS-73-12 A
Sample Number: 6462

Depth: 0.0'

Date: 11/23/12

Thompson Engineering

Mobile, Alabama

Client: CDM/Thompson Engineering JV
Project: MsCIP Barrier Island Restoration GT

Project No: 1221110095

Figure

Particle Size Distribution Report



GRAIN SIZE - mm.

% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	1.2	2.6	14.1	68.7	13.4	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
1	100.0		
.75	100.0		
.5	100.0		
.375	100.0		
#4	98.8		
#10	96.2		
#20	91.5		
#40	82.1		
#60	66.6		
#100	29.0		
#140	17.5		
#200	13.4		

* (no specification provided)

Material Description

Fine to medium grained, SILTY SAND, with clay pockets and trace SHELL

Atterberg Limits

PL= LL= PI=

Coefficients

D₉₀= 0.7452 D₈₅= 0.5186 D₆₀= 0.2265
D₅₀= 0.1993 D₃₀= 0.1526 D₁₅= 0.0881
D₁₀= C_u= C_c=

Classification

USCS= SM AASHTO=

Remarks

Location: BI-PBS-73-12 B

Sample Number: 6462

Depth: 2.9'

Date: 11/23/12

Thompson Engineering

Mobile, Alabama

Client: CDM/Thompson Engineering JV

Project: MsCIP Barrier Island Restoration GT

Project No: 1221110095

Figure

Boring Designation BI-PBS-074-12

DRILLING LOG		DIVISION South Atlantic		INSTALLATION Mobile District		SHEET 1 OF 1 SHEETS	
1. PROJECT MsCIP Barrier Island Restoration Petit Bois Pass-OCS East				9. SIZE AND TYPE OF BIT N/A			
2. BORING DESIGNATION BI-PBS-074-12		LOCATION COORDINATES E = 1,143,560 N = 235,957		10. COORDINATE SYSTEM/DATUM State Plane, MSE (U.S. Ft.)		HORIZONTAL NAD83 VERTICAL NAVD88	
3. DRILLING AGENCY Corps of Engineers - CESAM		CONTRACTOR FILE NO.		11. MANUFACTURER'S DESIGNATION OF DRILL Vibrocure		<input type="checkbox"/> AUTO HAMMER <input type="checkbox"/> MANUAL HAMMER	
4. NAME OF DRILLER American Vibrocure Systems, Inc.				12. TOTAL SAMPLES		DISTURBED UNDISTURBED (UD) 0	
5. DIRECTION OF BORING <input checked="" type="checkbox"/> VERTICAL <input type="checkbox"/> INCLINED		DEG. FROM VERTICAL		13. TOTAL NUMBER CORE BOXES			
		BEARING		14. WATER DEPTH 55.9 Ft.			
6. THICKNESS OF OVERBURDEN N/A				15. DATE BORING 11-21-12		STARTED COMPLETED 11-21-12	
7. DEPTH DRILLED INTO ROCK N/A				16. ELEVATION TOP OF BORING -55.5 Ft.			
8. TOTAL DEPTH OF BORING 17.6 Ft.				17. TOTAL RECOVERY FOR BORING 100%			
				18. SIGNATURE AND TITLE OF INSPECTOR John Bass, Geotechnical Engineer			
ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	SAMPLE	LABORATORY RESULTS		
-55.5	0.0						
-57.7	2.2		SAND, poorly-graded, mostly fine-grained sand-sized quartz, little shell fragments, trace fines, lt. gray (SP)	A	Classification: SP Color: 5Y 7/2-light gray D50: 0.2787 mm % Fines: 2.5		
-59.9	4.4		SAND, poorly-graded with silt, mostly fine-grained sand-sized quartz, some silt, little shell fragments, gray (SP-SM)	B	Classification: SM Color: 5Y 6/2-light olive gray D50: 0.1838 mm % Fines: 19.6		
-61.0	5.5		SAND, clayey, mostly fine-grained sand-sized quartz, some clay, trace wood debris, gray (SC)	NS			
-64.0	8.5		CLAY, fat, mostly clay, trace shell fragments, trace wood debris, medium plasticity, gray (CH)				
-66.5	11.0		SAND, silty, mostly fine-grained sand-sized quartz, some silt, gray (SM)				
-73.1	17.6		SAND, clayey, mostly fine-grained sand-sized quartz, some clay, dense, lt. gray mottled with orange (SC)				
			NOTES: 1. Soils are field visually classified in accordance with the Unified Soils Classification System. 2. NS = Sample not submitted for laboratory analysis from this interval. 3. Seafloor elevation calculated using sampling vessel's fathometer water depth reading and applying NOAA tidal gauge data conversion factor.				