ECS GEOTECHNICAL REPORT

FOR

REMOVE DREDGE MATERIALS DMMA CELL "B"

Project No.: G2020-02

Contract No.: C-1737A

BUCK ISLAND

ECS Florida, LLC

Geotechnical Engineering Report

JAXPORT Buck Island DMMA

Fort Caroline Road
Jacksonville, Florida

ECS Project Number 35:28498

April 29, 2020

ECS FLORIDA, LLC

"Setting the Standard for Service"

Geotechnical • Construction Materials • Environmental • Facilities

April 29, 2020

Mr. Frank Proctor, P.E.
HDR Engineering, Inc.
76 South Laura Street
Suite 1600
Jacksonville, Florida 32202

ECS Project No. 35:28498
Client ID: 0756

Reference: Geotechnical Engineering Report
JAXPORT Buck Island DMMA
Fort Caroline Road
Jacksonville, Duval County, Florida

Dear Mr. Proctor:

ECS Florida, LLC. (ECS) has completed the subsurface exploration and laboratory testing for the above-referenced project. Our services were performed in general accordance with your Task Order, dated March 8, 2019. This report presents our understanding of the geotechnical aspects of the project and the results of the field exploration and laboratory testing conducted.

It has been our pleasure to be of service to HDR Engineering, Inc. during the design phase of this project. Should you have any questions concerning the information contained in this report, or if we can be of further assistance to you, please contact us.

Respectfully submitted,

ECS Florida, LLC.

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Distribution: Mr. Frank Prcotor, P.E. – HDR Engineering, Inc. 1 pdf

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1.0 INTRODUCTION

1.1 GENERAL

The purpose of this study was to provide geotechnical information for the design of the toe dike construction and relocation of the existing cell fill material. The project will include the construction of an earthen dike to contain dredge spoils. This report contains the results of our subsurface explorations, laboratory testing programs, and site characterization.

1.2 SCOPE OF SERVICES

To obtain the necessary geotechnical information required for design of the proposed dike, 22 soil test borings were performed at locations selected by ECS and approved by HDR Engineering, Inc. (HDR) and Wood. Note additional borings will be performed within the existing cell and three borings along the toe dike subsequent to the performance of a wetland survey (by others). These borings were located at regular intervals along the new toe dike and offset on both sides of the centerline by approximately 10 feet. A laboratory testing program was also implemented to characterize the physical and engineering properties of the subsurface soils. Additional laboratory testing, including consolidation and triaxial testing on relatively undisturbed Shelby Tube samples was performed on the material within the existing cell.

This report discusses our exploratory and testing procedures, presents our findings and evaluations and includes the following.

- A brief review and description of our field and laboratory test procedures and the results of testing conducted.
- A review of subsurface soil stratigraphy with pertinent available physical properties.
- Copies of our soil test boring logs.

2.0 FIELD EXPLORATION

2.1 FIELD EXPLORATION PROGRAM

We performed a field exploration between March 25, 2019 and May 24, 2019. The approximate boring locations are indicated on the attached Field Exploration Plan (Figure 2). Our personnel determined the boring locations using our handheld GPS receivers and staked the locations so they can be surveyed at a later date (by others). The boring locations on the referenced Field Exploration Plan should be considered accurate only to the degree implied by the method of measurement used.

We located and performed 31 Standard Penetration Test (SPT) borings, drilled to depths between approximately 25 feet and 75 feet below the existing ground surface, in general accordance with the methodology outlined in ASTM D 1586 to explore the subsurface conditions within the area of the proposed toe dike and within the existing fill cell. Split-spoon soil samples recovered during performance of the borings were visually classified in the field and representative portions of the samples were transported to our laboratory for further evaluation. A summary of the field procedures is included in Appendix A.

Shelby tubes were pushed to obtain relatively undisturbed samples at offset locations adjacent to Borings B-4 at a depth of 4 feet to 6 feet, B-10 at depths of 5 feet to 7 feet, 22 feet to 24 feet, and 25 feet to 27 feet, and B-15 from 8.5 feet to 10.5 feet and 10.5 feet to 12.5 feet in general accordance with ASTM D 1587. The tubes were sealed at the site and transported to a laboratory for extrusion, examination, logging, and testing (currently underway).

2.2 SUBSURFACE CHARACTERIZATION

A graphical presentation of the generalized subsurface conditions is presented on Figures 3 through 10. Detailed boring records are included in Appendix A. It should be understood that the soil conditions will vary between the boring locations. The following tables summarize the soil conditions encountered.

Table 2.2.1 Subsurface Stratigraphy (Boring B1)

Approximate Depth Range (ft)	Stratum	Description	Ranges of SPT[(1)] N-values (bpf)
0.5 to 17	I	Very Loose to Dense Fine Sand (SP)	2 to 26
17 to 22	II	Firm Silty Clay (CH)	4
22 to 62	III	Loose to Very Dense Fine Sand (SP), Fine Sand with Silt (SP-SM), and Silty Fine Sand (SM)	5 to 67
62 to 72	IV	Weathered Limestone	50/5" to 50/1.5"
72 to 75	V	Medium Dense Silty Fine Sand (SM), Marl	16

Notes: (1) Standard Penetration Test. N-values were obtained with autohammer.

Table 2.2.2 Subsurface Stratigraphy (Borings B2 through B5 and B14)

Approximate Depth Range (ft)	Stratum	Description	Ranges of SPT[(1)] N-values (bpf)
0 to 0.5	N/A	Borings performed in "undisturbed" or naturally vegetated areas of the site; that is, areas beyond the limits of disturbance due to man-placed FILL, contained an observed thickness of topsoil. Deeper topsoil or organic laden soils are most likely present in wet, poorly drained areas and potentially unexplored areas of the site.	N/A
0.5 to 4-9	I	Very Loose to Medium Dense Fine Sand (SP) or Soft Silty Clay (CH)	2 to 10
4-9 to 6-12	II	Very Loose to Loose Fine Sand (SP-SM) or Silty Fine Sand with some to many organic fines (PT)	WOH/24" to 5
6-12 to 42-62	III	Very Loose to Very Dense Fine Sand (SP), Fine Sand with Silt (SP-SM), Fine Sand with Clay (SP-SC), or Clayey Fine Sand (SC), and Silty Fine Sand (SM)	3 to 59
42-62 to 62-67	IV	Weathered Limestone	69 to 50/2"
62-67 to 75	V	Medium Dense to Very Dense Fine Sand (SP), Fine Sand with Clay (SP-SC), and Silty Fine Sand (SM), Marl	22 to 50/4.5"

Notes: (1) Standard Penetration Test. N-values were obtained with autohammer.

Table 2.2.3 Subsurface Stratigraphy (Borings B6 through B13 and B15 thorugh B23)

Approximate Depth Range (ft)	Stratum	Description	Ranges of SPT[(1)] N-values (bpf)
0 to 0.5	N/A	Borings performed in "undisturbed" or naturally vegetated areas of the site; that is, areas beyond the limits of disturbance due to man-placed FILL, contained an observed thickness of topsoil. Deeper topsoil or organic laden soils are most likely present in wet, poorly drained areas and potentially unexplored areas of the site.	N/A
0.5 to 37-57	I	Very Loose to Very Dense Fine Sand (SP), Fine Sand with Silt (SP-SM), Silty Fine Sand (SM), Some with Soft to Stiff Silty Clay (CH) layers less than 6 feet thick	1 to 50/3"
37-57 to 47-62	IV	Weathered Limestone	8 to 50/1"
47-62 to 75	V	Medium Dense to Very Dense Fine Sand (SP), Fine Sand with Clay (SP-SC), Clayey Fine Sand (SC), Silty Fine Sand (SM) and Sandy Clay (CH), Marl	23 to 50/2.5"

Notes: (1) Standard Penetration Test. N-values were obtained with autohammer.

Table 2.2.4 Subsurface Stratigraphy (Borings C1, C2, C5 through C7, and C9)

Approximate Depth Range (ft)	Stratum	Description	Ranges of SPT[(1)] N-values (bpf)
0 to 12-27	VI	Very Soft to Stiff Clayey Silt with Sand, Many Organic FInes (MH)	WOH/24" to 13
12-27 to 25-30	III	Medium Dense to Very Dense Fine Sand (SP), Fine Sand with Silt (SP-SM), and Silty Fine Sand (SM)	16 to 50/5"

Notes: (1) Standard Penetration Test. N-values were obtained with autohammer.

Table 2.2.5 Subsurface Stratigraphy (Borings C3 and C4)

Approximate Depth Range (ft)	Stratum	Description	Ranges of SPT[(1)] N-values (bpf)
0 to 12	III	Very Loose to Medium Dense Fine Sand (SP), Fine Sand with Silt (SP-SM), and Silty Sand (SM)	2 to 11
12 to 17	VI	Soft to Firm Silt, Many Organic Fines (MH)	2 to 6
17 to 22-25	I	Medium Dense Fine Sand (SP)	17 to 25
22 to 25	VII	Very Stiff Silt (ML)	18

Notes: (1) Standard Penetration Test. N-values were obtained with autohammer.

Table 2.2.6 Subsurface Stratigraphy (Boring C8)

Approximate Depth Range (ft)	Stratum	Description	Ranges of SPT[(1)] N-values (bpf)
0 to 22	I	Very Loose to Dense Fine Sand (SP)	2 to 30
22 to 25	VIII	Very Stiff Clay with Sand (CH)	14

Notes: (1) Standard Penetration Test. N-values were obtained with autohammer.

2.3 GROUNDWATER LEVEL

Measured Groundwater: Groundwater was encountered at each boring location and recorded at the time of drilling at depths varying from approximately 0.5 feet to 9 feet below the existing ground surface within the proposed berm area and 5 feet to 20 feet within the existing cell fill material. As an exception, groundwater was not encountered at Boring C8 to the boring termination depth of 25 feet. We note that groundwater levels will fluctuate due to tidal fluctuations, seasonal climatic variations, surface water runoff patterns, construction operations,

and other interrelated factors. The groundwater depth at each boring location is noted on the Generalized Subsurface Profiles and on the Log of Boring records.

3.0 LABORATORY TESTING

The laboratory testing performed by ECS for this project consisted of selected tests performed on samples obtained during our field exploration operations. The following paragraphs briefly discuss the results of the completed laboratory testing program.

An experienced geotechnical engineer visually classified each soil sample from the test borings on the basis of texture and plasticity in accordance with the Unified Soil Classification System (USCS) in general accordance with ASTM D 2488. A Key to the Soil Classification System is included in Appendix A.

Selected samples of the soils encountered during the field exploration were subjected to quantitative laboratory testing to better define the composition of the soils encountered and to provide data for correlation to their anticipated strength and compressibility characteristics. The index laboratory testing performed determined the organic content, moisture content, and fines content of selected soil samples. The results of the index testing are summarized in the table below. Please note that all depths noted on the laboratory testing are referenced as feet below the existing ground surface.

Selected samples collected from the Shelby tube samples were tested in a laboratory for consolidation and triaxial shear strength. The results of these tests are presented in Appendix B of this report.

Table 3.0.1 Laboratory Test Results

Boring/ Sample No.	Soil Type (USCS)	Sample Depth (ft.)	Organic Content %	Fines Content %	Natural Moisture Content %	Specific Gravity	Liquid Limit %	Plastic Limit %	Plasticity Index
B1 - 14	SP-SM	53.5-55	--	4.7	16	--	--	--	--
B2 - 5	PT	8-10	22.5	16.1	134	--	--	--	--
B2 - 9	SM	28.5-30	--	24.5	55	--	--	--	--
B3 - 5	SP-SM	8-10	--	7.2	27	--	--	--	--
B3 - 9	SP-SM	28.5-30	--	5.3	24	--	--	--	--
B4 - 4	SM	6-8	--	25.6	70	--	--	--	--
B4 - 17	SM	68.5-70	--	17.5	22	--	--	--	--
B5 - 4	CH	6-8	8.0	56.8	100	--	--	--	--
B5 - 9	SP-SM	28.5-30	--	7.3	30	--	--	--	--
B6 - 9	SP-SM	28.5-30	--	8.4	38	--	--	--	--
B6 - 13	SC	48.5-50	--	24.6	51	--	--	--	--
B7 - 3	CH	4-6	--	67.5	231	--	--	--	--
B7 - 6	SM	8-10	--	22.1	55	--	--	--	--
B7 - 8	SP-SM	23.5-25	--	11.2	37	--	--	--	--
B8 - 9	SP-SC	28.5-30	--	5.7	46	--	--	--	--
B8 - 11	SP-SM	38.5-40	--	8.1	39	--	--	--	--
B10 - 4	CH	6-8	--	56.4	104	--	--	--	--
B10 - 7	SP-SC	18.5-20	--	6.3	32	--	--	--	--

Boring/ Sample No.	Soil Type (USCS)	Sample Depth (ft.)	Organic Content %	Fines Content %	Natural Moisture Content %	Specific Gravity	Liquid Limit %	Plastic Limit %	Plasticity Index
B10 - 9	SC	28.5-30	--	25.8	61	--	--	--	--
B10 - 14	CH	53.5-55	--	87.2	69	--	--	--	--
B11 - 5	SM	8-10	--	38.2	78	--	--	--	--
B11 - 6	SP-SM	13.5-15	--	7.5	36	--	--	--	--
B11 - 10	SP-SC	33.5-35	--	12.0	39	--	--	--	--
B12 - 4	SM	6-8	4.3	15.9	74	--	--	--	--
B12 - 6	SP-SM	13.5-15	--	5.9	32	--	--	--	--
B12 - 9	SP	28.5-30	--	2.2	28	--	--	--	--
B13 - 17	CH	68.5-70	--	72.7	58	--	--	--	--
B15 - 5	CH	8-10	--	80.9	121	--	--	--	--
B15 - 10	SP-SM	33.5-35	--	6.0	35	--	--	--	--
B19 - 15	SP-SC	58.5-60	--	2.8	27	--	--	--	--
B20 - 8	SP	23.5-25	--	2.7	38	--	--	--	--
B21 - 4	SP	6-8	--	2.4	6	--	--	--	--
B21 - 6	CH	13.5-15	--	65.4	62	--	--	--	--
B22 - 6	SP	13.5-15	--	3.5	30	--	--	--	--
B23 - 7	SP-SM	18.5-20	--	11.0	45	--	--	--	--
B24 - 9	SP	28.5-30	--	2.4	23	--	--	--	--
B25 - 16	SC	63.5-65	--	22.3	21	--	--	--	--
C1-1&2	MH	0-4	--		153	2.6	--	--	--
C1-5	MH	8-10	9.3	78.3	151	--	--	--	--
C3-8	MH	23.5-25	19.2	74.0	113	--	--	--	--
C4-3	SP-SM	4-6	1.8	5.4	14	--	--	--	--
C5-1&2	SM	0-4	12.3		131	--	--	--	--
C6-6	MH	13.5-15	19.4	84.0	175	--	--	--	--
C7-1&2	MH	0-4	--	--	--	--	95	63	32
C7-5	MH	8-10	16.7	94.6	197	--	--	--	--
C9-1&2	SM	0-4		43.0	116	--	--	--	--
C9-6	MH	13.5-15	20.2	93.0	188	--	--	--	--

4.0 CLOSING

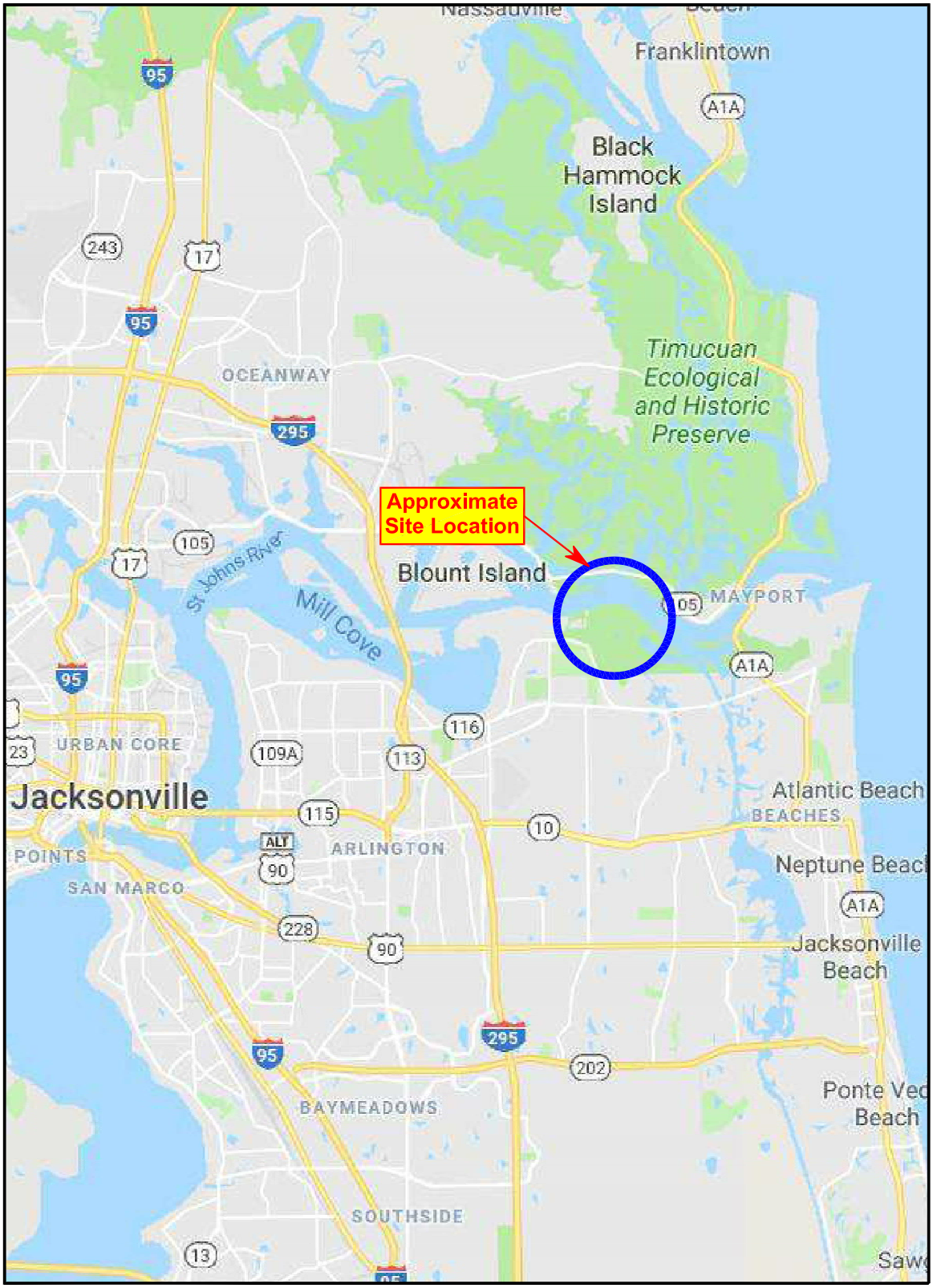
Our geotechnical exploration has been performed and our findings obtained in accordance with generally accepted geotechnical engineering principles and practices. ECS is not responsible for any independent conclusions, interpretation, opinions, or recommendations made by others based on the data contained in this report.

Our scope of services does not address geologic conditions, such as sinkholes or soil conditions existing below the depth of the soil borings.

If any of the project description information discussed in this report is inaccurate, either due to our interpretation of the documents provided or site or design changes that may occur later, ECS should be contacted immediately in order that we can review the report in light of the changes and provide additional or alternate recommendations as may be required to reflect the proposed construction.

FIGURES

Figure 1 – Site Location Plan
Figure 2 – Field Exploration Plan
Figures 3-10 – Generalized Subsurface Profiles



ECS Florida, LLC

Geotechnical ▪ Construction Materials ▪ Environmental ▪ Facilities
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T: (904) 880-0960 • F: (904) 880-0970
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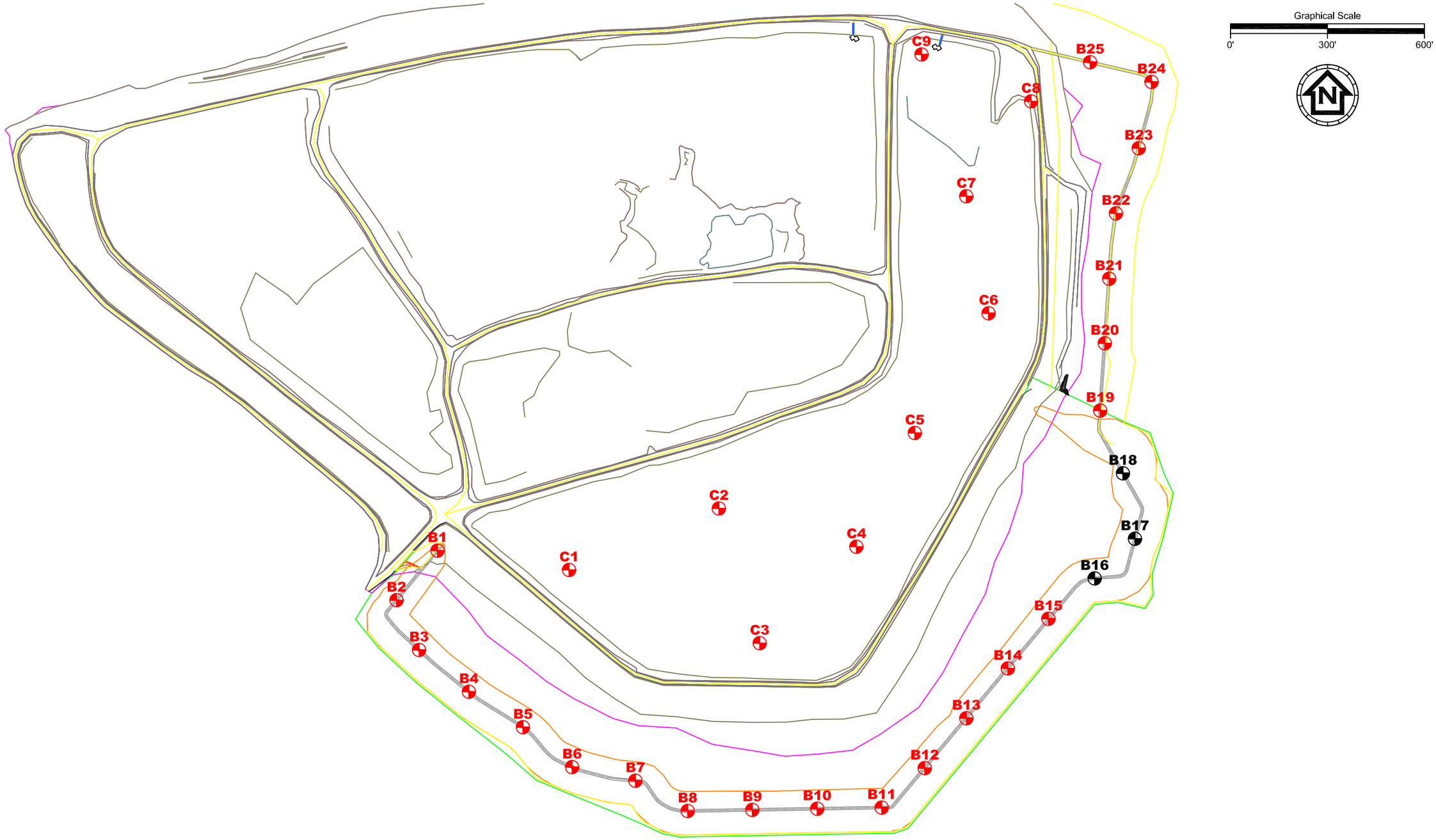
Site Location Plan

JAXPORT Buck Island (DMMA)

Jacksonville, Florida

Date: 04/08/19	Project No.: 35-28498	Figure 1

JAS - 35-28498



LEGEND

- Approximate Location of Standard Penetration Test (SPT) Boring DRILLED
- Approximate Location of Proposed Standard Penetration Test (SPT) Boring NOT DRILLED TO DATE

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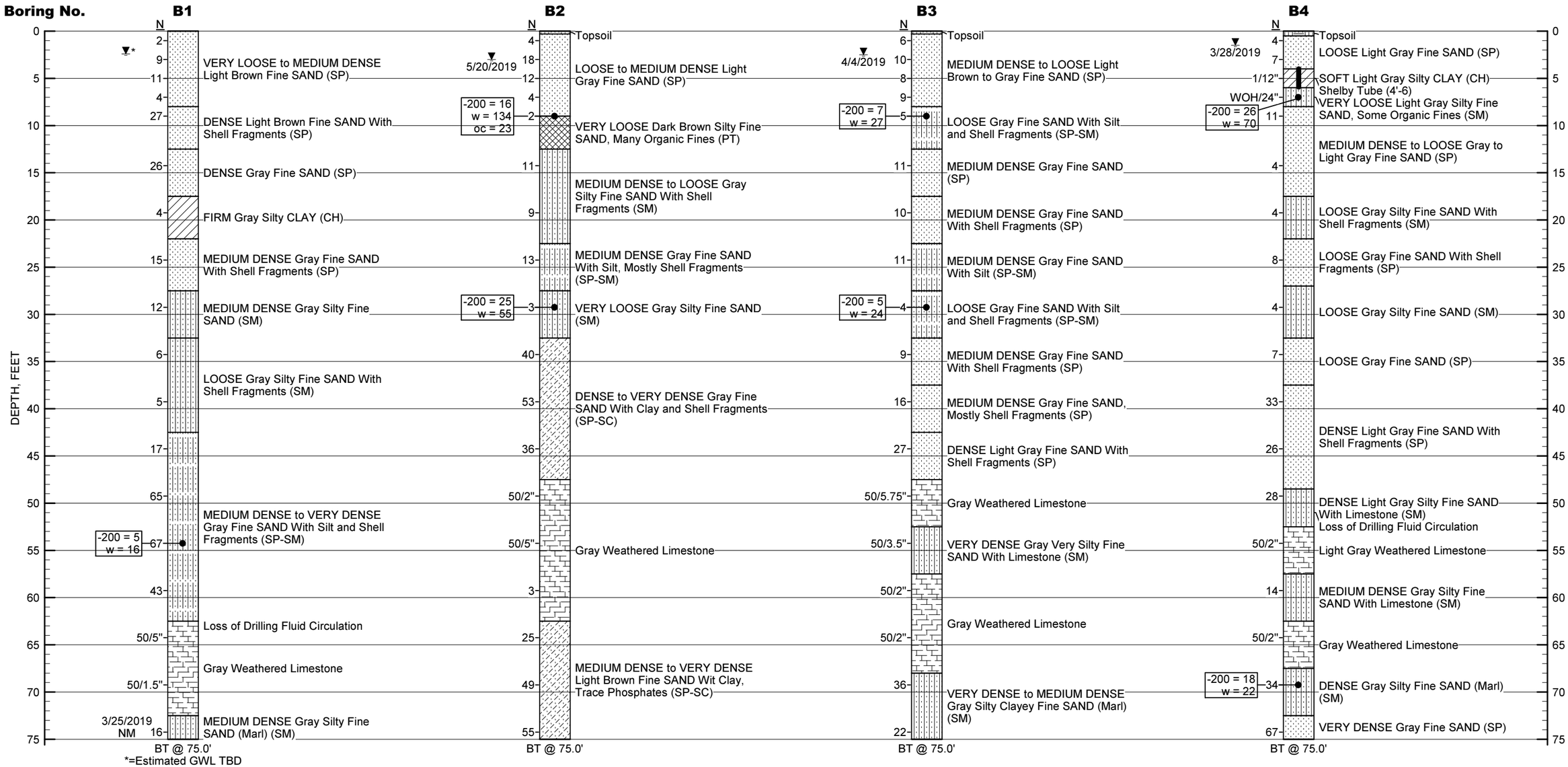
Field Exploration Plan

JAXPORT Buck Island (DMMA)

Jacksonville, Florida

Date: 06/05/19	Project No.: 35-28498	Figure 2

JAS - 35-28498



LEGEND

- Topsoil
- Fine SAND (SP)
- Fine SAND With Silt (SP-SM)
- Fine SAND With Clay (SP-SC)
- Silty Fine SAND (SM)
- Clayey Fine SAND (SC)
- CLAY (CH)
- Fine SAND, Many Organic Fines (PT)
- Weathered Limestone

N	Standard Penetration Resistance, Blows/Foot
SP	Unified Soil Classification System
▼	Groundwater Level at Time of Drilling
NM	Groundwater Level not Measured on Date Drilled
WOH	Distance Split-Spoon Soil Sampler Dropped Under Weight of Drilling Tools and Hammer
1/12"	One Blow to Drive Split Spoon Sample Twelve Inches
50/5"	Number of Blows to Drive Split Spoon Sample in Inches
▮	Relatively Undisturbed Sample (Shelby Tube)
BT	Boring Terminated at Depth Below Grade
-200	% Passing No. 200 U.S. Standard Sieve
w	Natural Moisture Content (%)
oc	Organic Content (%)

Generalized Subsurface Profiles

JAXPORT Buck Island (DMMA)

Jacksonville, Florida

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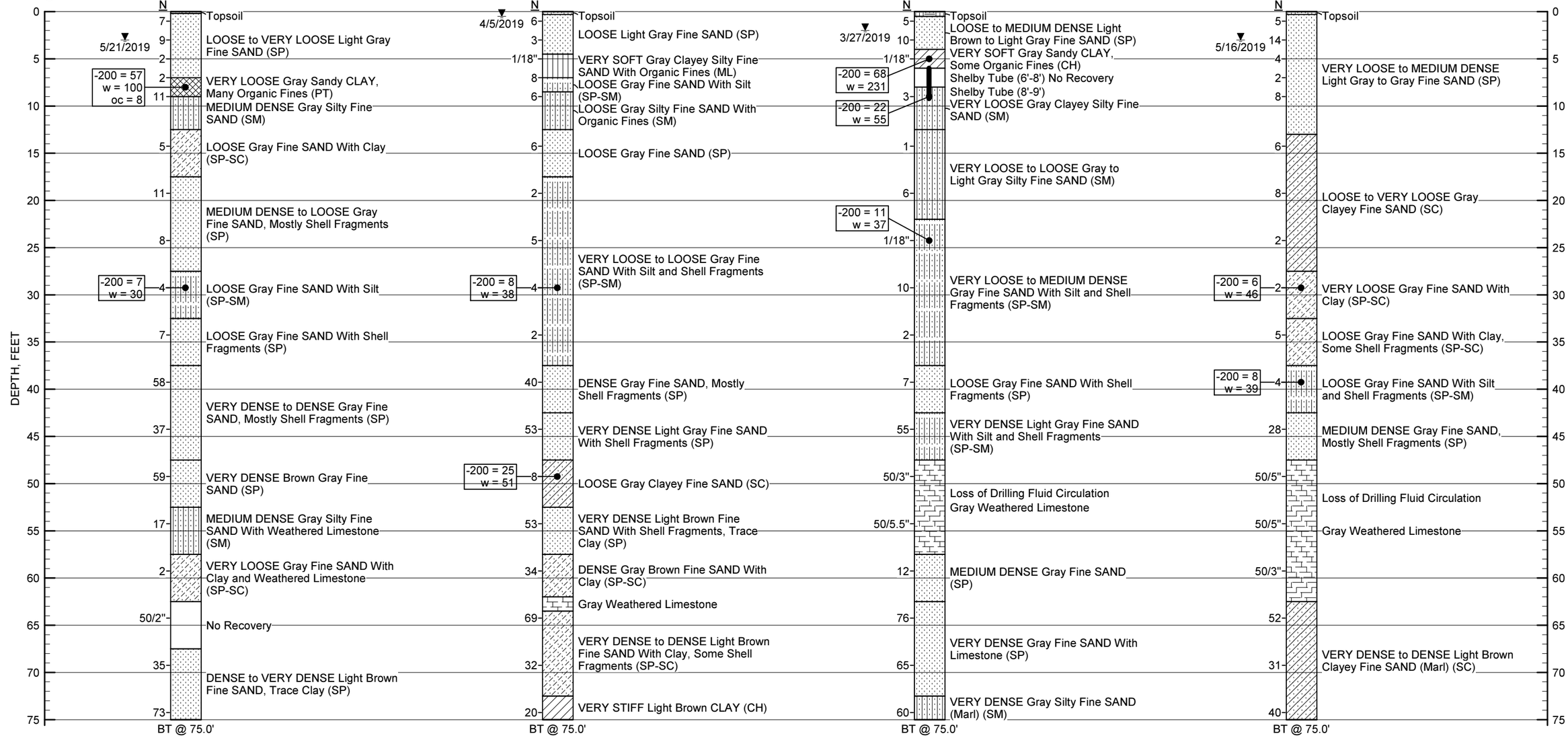
DATE: 5/23/19 | PROJ. NO.: 35-28498 | Figure 3



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Generalized Subsurface Profiles

JAXPORT Buck Island (DMMA)

Jacksonville, Florida

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DATE: 5/23/19 | PROJ. NO.: 35-28498 | Figure 4

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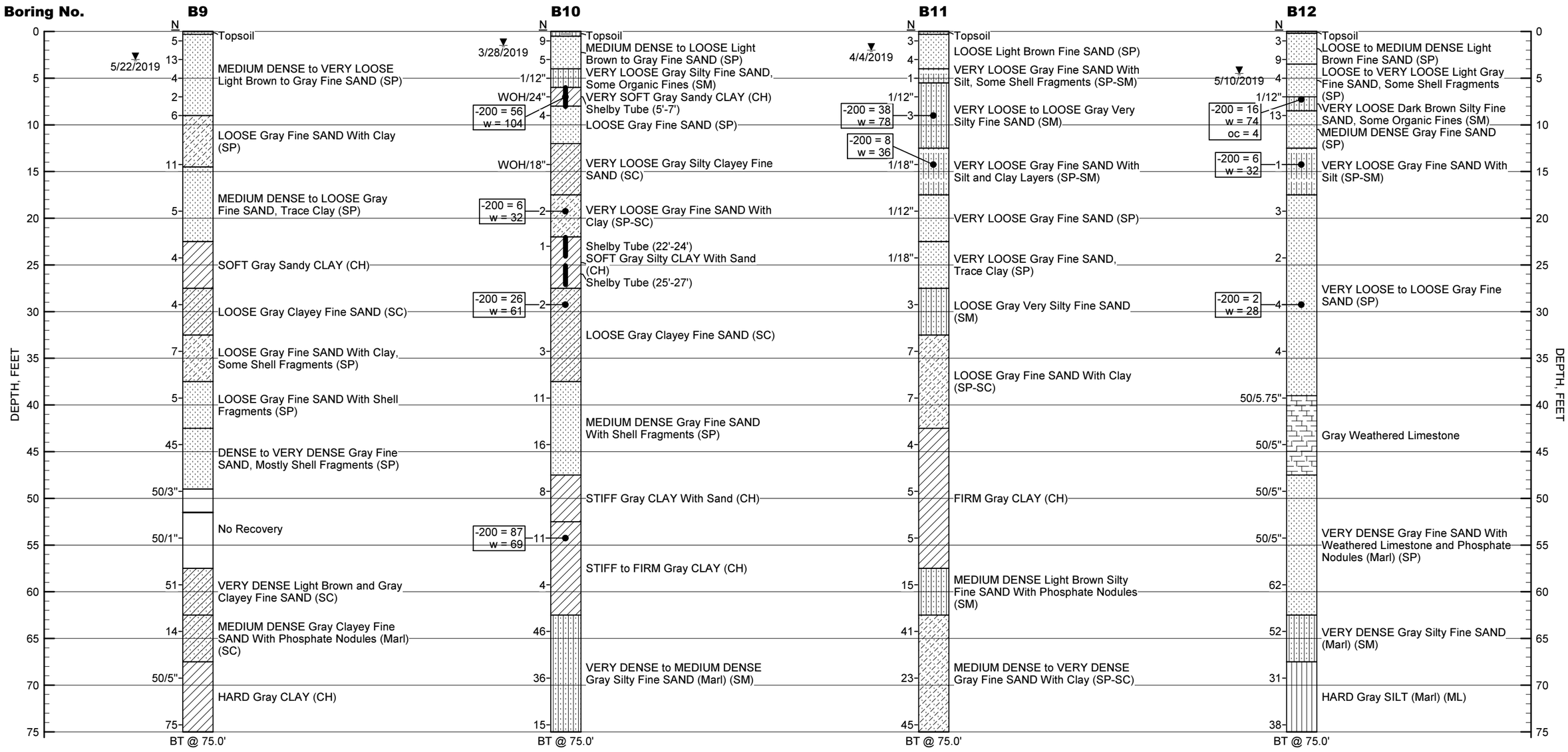

LEGEND

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w	Natural Moisture Content (%)
oc	Organic Content (%)

Generalized Subsurface Profiles

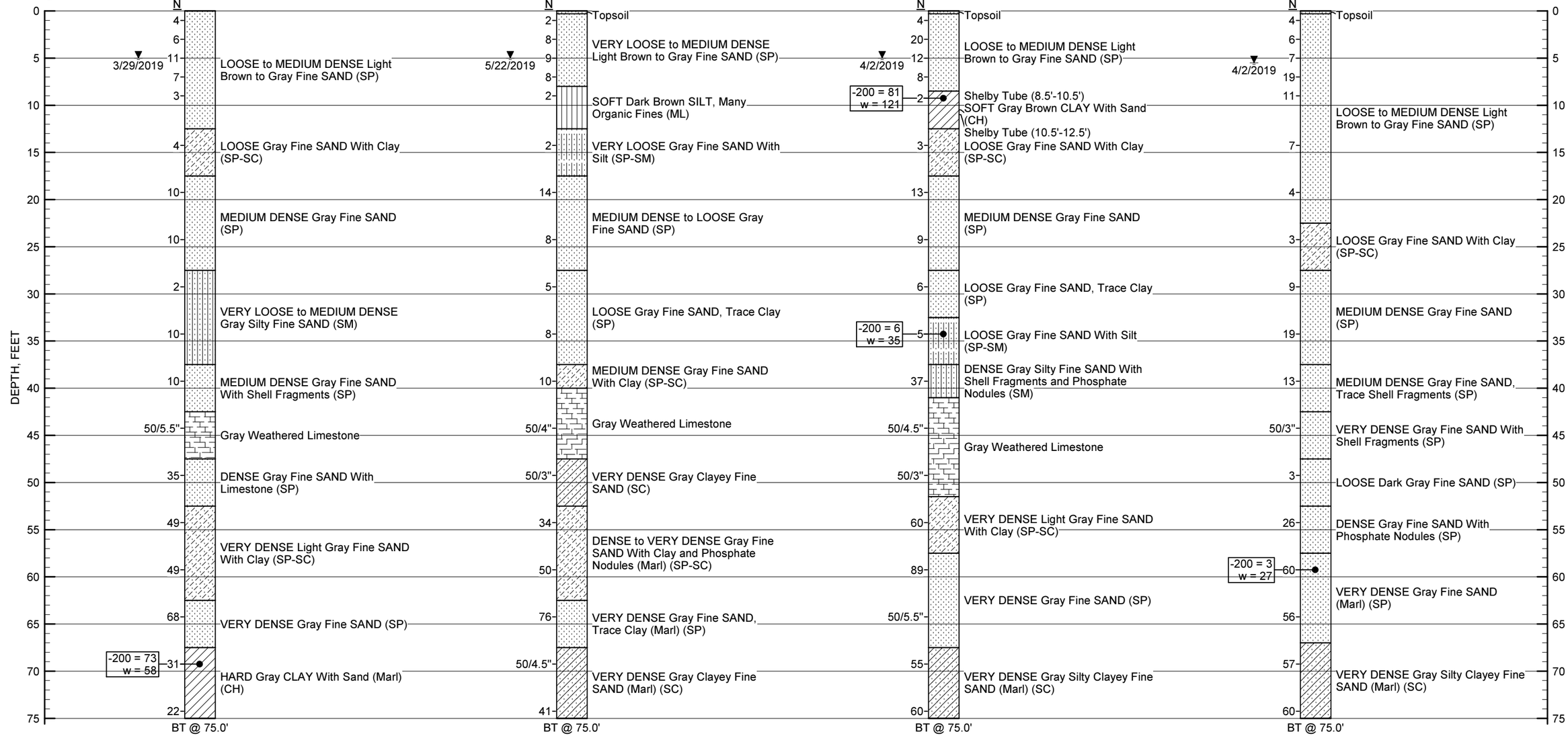
JAXPORT Buck Island (DMMA)

Jacksonville, Florida

ECS

DATE: 5/23/19 | PROJ. NO.: 35-28498 | Figure 5

-3



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Generalized Subsurface Profiles

JAXPORT Buck Island (DMMA)

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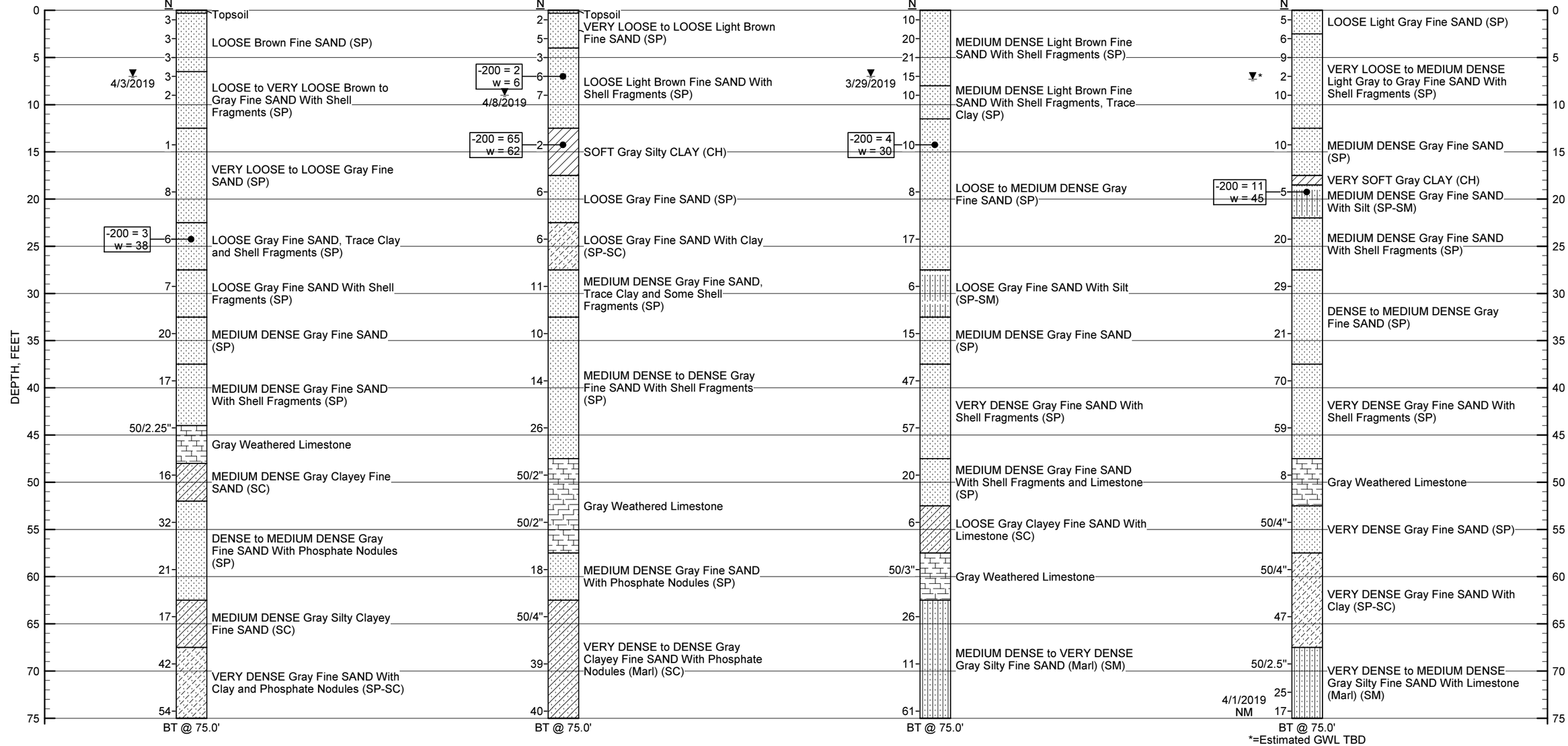
DATE: 5/23/19 | PROJ. NO.: 35-28498 | Figure 6

-4



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Generalized Subsurface Profiles

JAXPORT Buck Island (DMMA)

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DATE: 5/23/19 | PROJ. NO.: 35-28498 | Figure 7

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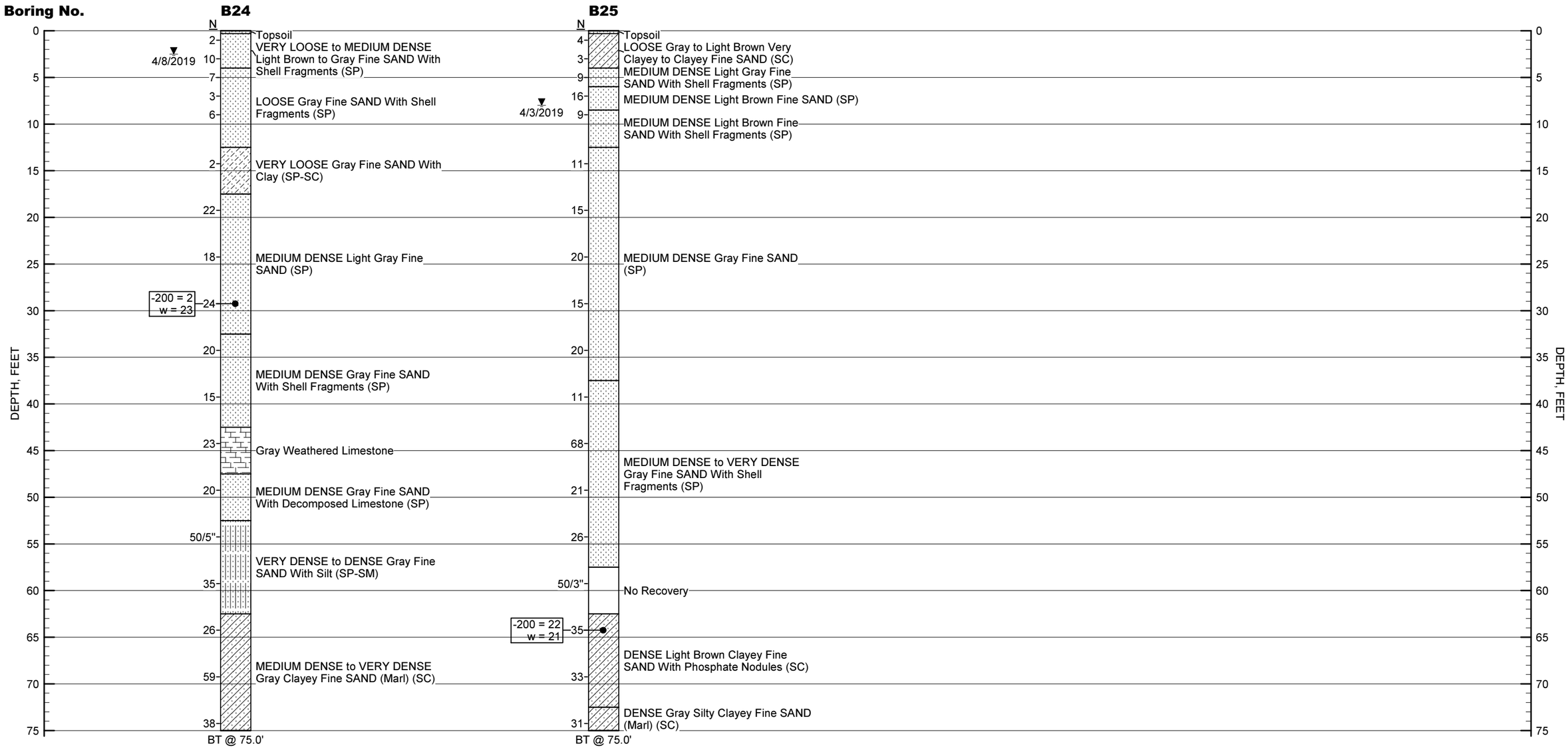

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Generalized Subsurface Profiles

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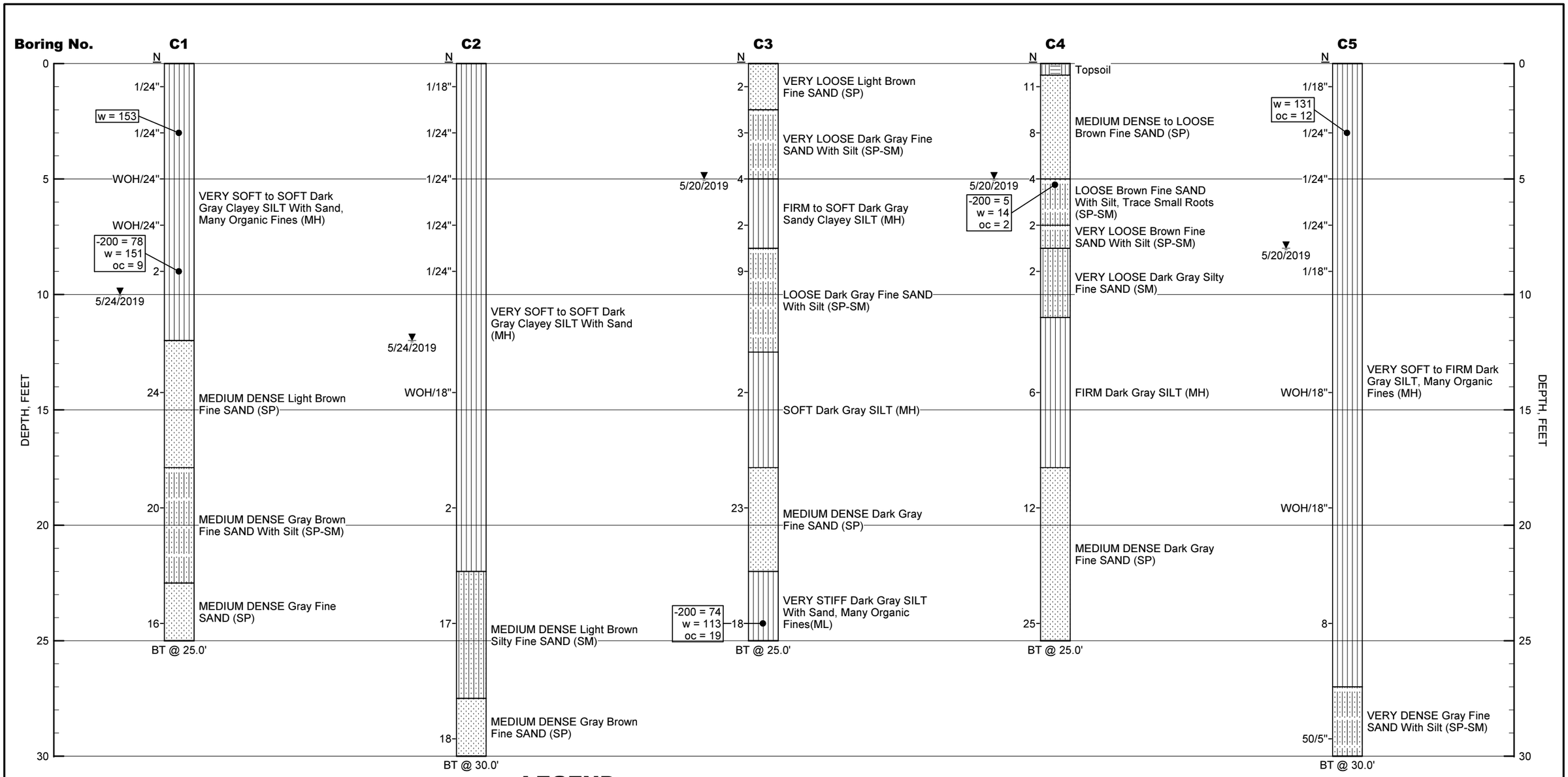
DATE: 5/23/19 | PROJ. NO.: 35-28498 | Figure 8



LEGEND

- Topsoil
- Fine SAND (SP)
- Fine SAND With Silt (SP-SM)
- Fine SAND With Clay (SP-SC)
- Silty Fine SAND (SM)
- Clayey Fine SAND (SC)
- SILT (MH/ML)
- CLAY (CH)

N	Standard Penetration Resistance, Blows/Foot
SP	Unified Soil Classification System
▼	Groundwater Level at Time of Drilling
NM	Groundwater Level not Measured on Date Drilled
WOH	Distance Split-Spoon Soil Sampler Dropped Under Weight of Drilling Tools and Hammer
1/12"	One Blow to Drive Split Spoon Sample Twelve Inches
50/5"	Number of Blows to Drive Split Spoon Sample in Inches
BT	Boring Terminated at Depth Below Grade
-200	% Passing No. 200 U.S. Standard Sieve
w	Natural Moisture Content (%)
oc	Organic Content (%)
PI	Plasticity Index
LL	Liquid Limit

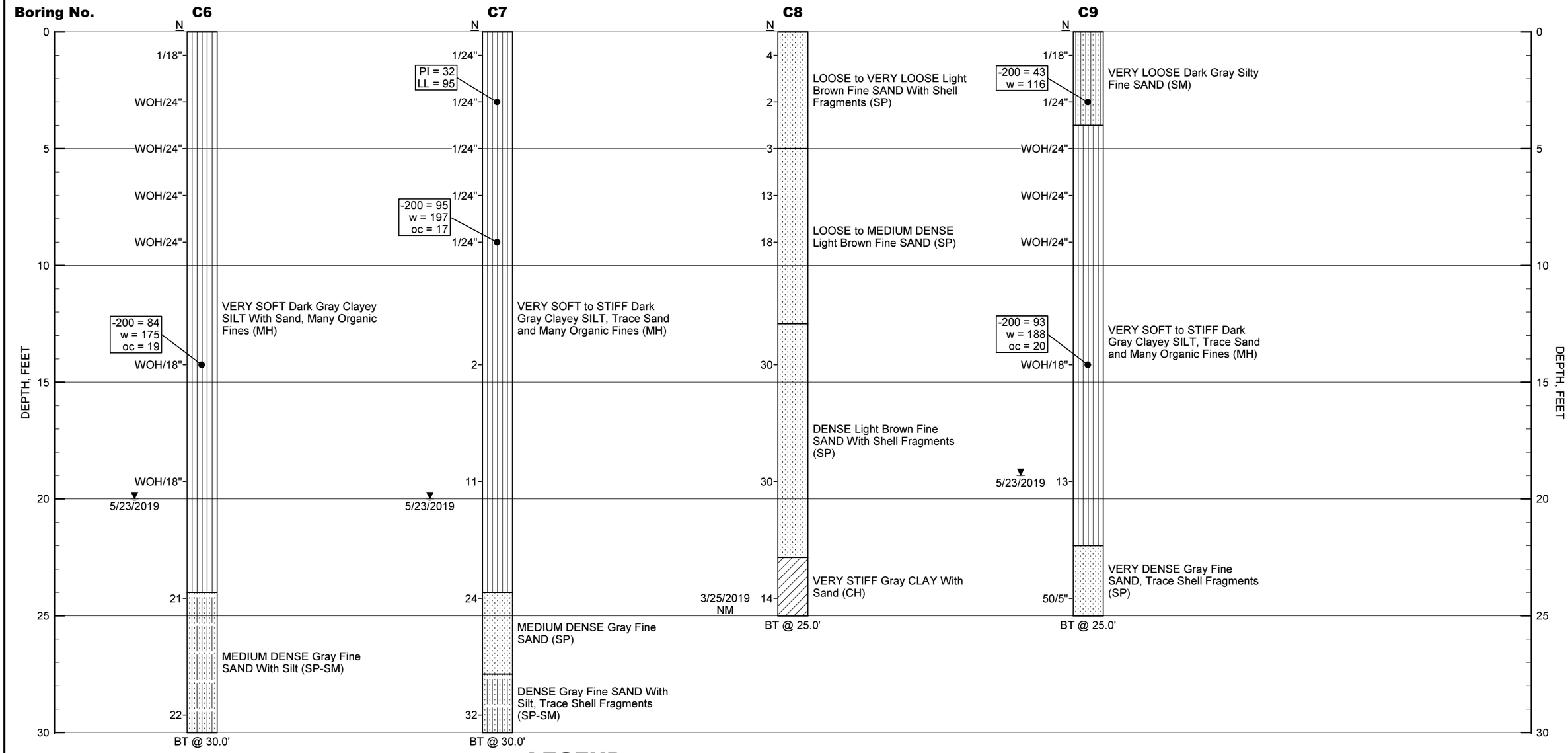
Generalized Subsurface Profiles

JAXPORT Buck Island (DMMA)

Jacksonville, Florida

ECS

DATE: 4/24/20 | PROJ. NO.: 35-28498 | Figure 9



LEGEND

- Topsoil
- Fine SAND With Silt (SP-SM)
- Silty Fine SAND (SM)
- SILT (MH/ML)
- Fine SAND (SP)
- Fine SAND With Clay (SP-SC)
- Clayey Fine SAND (SC)
- CLAY (CH)

N	Standard Penetration Resistance, Blows/Foot
SP	Unified Soil Classification System
▼	Groundwater Level at Time of Drilling
NM	Groundwater Level not Measured on Date Drilled
WOH	Distance Split-Spoon Soil Sampler Dropped Under Weight of Drilling Tools and Hammer
1/12"	One Blow to Drive Split Spoon Sample Twelve Inches
50/5"	Number of Blows to Drive Split Spoon Sample in Inches
BT	Boring Terminated at Depth Below Grade
-200	% Passing No. 200 U.S. Standard Sieve
w	Natural Moisture Content (%)
oc	Organic Content (%)
PI	Plasticity Index
LL	Liquid Limit

Generalized Subsurface Profiles

JAXPORT Buck Island (DMMA)

Jacksonville, Florida

ECS

DATE: 4/24/20 | PROJ. NO.: 35-28498 | Figure 10

APPENDIX A – Drawings & Reports

Soil Boring Logs
Field Exploration Procedures
Key to Soil Classification

Project No.: 35-28498
Boring No.: B1
Sheet 1 of 3

LOG OF BORING

Project: JAXPORT Buck Island (DMMA)
Client: HDR Engineering
Drill Rig: 101A
Driller: M. Foster
Boring Location: See Field Exploration Plan
Drill Rod: AWJ
Drill Mud: Super Gel-X
Casing Size:
Length of Casing:
Groundwater Depth: NM Time: Drilling Date: 3/25/19
Boring Begun: 3/25/19
Boring Completed: 3/25/19

SAMPLE NO.	DEPTH, FEET	SAMPLE TYPE	DESCRIPTION	BLOWS PER 6 IN.	N Value	PERCENT ORGANIC MATERIAL	PERCENT PASSING NO. 200 SIEVE
	0		VERY LOOSE to MEDIUM DENSE Light Brown Fine SAND (SP)	1			
1				1			
				1	2		
				2			
				3			
2				4			
				5	9		
				7			
				5			
3	5			6			
				5	11		
				5			
				3			
4				2			
				2	4		
				2			
			DENSE Light Brown Fine SAND With Shell Fragments (SP)	5			
5				11			
				16	27		
	10			20			
			DENSE Gray Fine SAND (SP)				
				11			
6				13			
	15			13	26		
			FIRM Gray Silty CLAY (CH)				
				2			
7				2			
	20			2	4		
			MEDIUM DENSE Gray Fine SAND With Shell Fragments (SP)				
				4			
8				6			
	25			9	15		

PLASTIC LIMIT ○ | MOISTURE CONTENT + (%) 0 10 20 30 40 | LIQUID LIMIT ◇

SHEAR STRENGTH (ksf)
⊙ Pocket Penetrometer Undisturbed Sample
◕ Pocket Penetrometer Disturbed Sample
▼ Torvane
● Unconfined Compression
⊠ Triaxial Compression
0 1 2

Remarks NM = Groundwater Not Measured at Time of Drilling.

Project No.: 35-28498
Boring No.: B1
Sheet 2 of 3

LOG OF BORING

Project: JAXPORT Buck Island (DMMA)
Client: HDR Engineering
Drill Rig: 101A
Driller: M. Foster
Boring Location: See Field Exploration Plan
Drill Rod: AWJ
Drill Mud: Super Gel-X
Casing Size:
Length of Casing:
Groundwater Depth: NM Time: Drilling Date: 3/25/19
Boring Begun: 3/25/19
Boring Completed: 3/25/19

SAMPLE NO.	DEPTH, FEET	SAMPLE TYPE	DESCRIPTION	BLOWS PER 6 IN.	N Value	PERCENT ORGANIC MATERIAL	PERCENT PASSING NO. 200 SIEVE	PLASTIC LIMIT ○ / MOISTURE CONTENT + / LIQUID LIMIT ◇ (%) 0 10 20 30 40	SHEAR STRENGTH (ksf) 0 1 2
	25		MEDIUM DENSE Gray Fine SAND With Shell Fragments (SP) *(Continued)*						
			MEDIUM DENSE Gray Silty Fine SAND (SM)						
9	30			9 5 7	12				
			LOOSE Gray Silty Fine SAND With Shell Fragments (SM)						
10	35			2 2 4	6				
11	40			2 3 2	5				
			MEDIUM DENSE to VERY DENSE Gray Fine SAND With Silt and Shell Fragments (SP-SM)						
12	45			4 7 10	17				
13	50			21 30 35	65				

Pocket Penetrometer Undisturbed Sample
Pocket Penetrometer Disturbed Sample
Torvane
Unconfined Compression
Triaxial Compression

Remarks

LOG OF BORING NM 35-28498.GPJ ELLIS ASSOCIATES.GDT 4/29/20

Project No.: 35-28498
Boring No.: B1
Sheet 3 of 3

LOG OF BORING

Project: JAXPORT Buck Island (DMMA)
Client: HDR Engineering
Drill Rig: 101A
Driller: M. Foster
Boring Location: See Field Exploration Plan
Drill Rod: AWJ
Drill Mud: Super Gel-X
Casing Size:
Length of Casing:
Groundwater Depth: NM Time: Drilling Date: 3/25/19
Boring Begun: 3/25/19
Boring Completed: 3/25/19

SAMPLE NO.	DEPTH, FEET	SAMPLE TYPE	DESCRIPTION	BLOWS PER 6 IN.	N Value	PERCENT ORGANIC MATERIAL	PERCENT PASSING NO. 200 SIEVE	PLASTIC LIMIT ○ / MOISTURE CONTENT + / LIQUID LIMIT ◇ (%)	SHEAR STRENGTH (ksf)
	50		MEDIUM DENSE to VERY DENSE Gray Fine SAND With Silt and Shell Fragments (SP-SM) *(Continued)*						
14	55			16 27 40	67		5	+	
15	60			12 20 23	43				
16	65		Gray Weathered Limestone Loss of Drilling Fluid Circulation	50/5"	50/5"				
17	70			28 50/1.5"	50/1.5"				
18	75		MEDIUM DENSE Gray Silty Fine SAND (Marl) (SM)	6 8 8	16				

Boring Terminated @ 75 ft.

Remarks

SHEAR STRENGTH (ksf): Pocket Penetrometer Undisturbed Sample; Pocket Penetrometer Disturbed Sample; Torvane; Unconfined Compression; Triaxial Compression

0 10 20 30 40 (%)

0 1 2

LOG OF BORING NM 35-28498.GPJ ELLIS ASSOCIATES.GDT 4/29/20

Project No.: 35-28498
Boring No.: B2
Sheet 1 of 3

LOG OF BORING

Project: JAXPORT Buck Island (DMMA)
Client: HDR Engineering
Drill Rig: 104A
Driller: M. Letchworth
Boring Location: See Field Exploration Plan
Drill Rod: AWJ
Drill Mud: Super Gel-X
Casing Size:
Length of Casing:
Groundwater Depth: 3 ft Time: Drilling Date: 5/20/19
Boring Begun: 5/20/19
Boring Completed: 5/20/19

SAMPLE NO.	DEPTH, FEET	SAMPLE TYPE	DESCRIPTION	BLOWS PER 6 IN.	N Value	PERCENT ORGANIC MATERIAL	PERCENT PASSING NO. 200 SIEVE	PLASTIC LIMIT / MOISTURE CONTENT / LIQUID LIMIT (%)	SHEAR STRENGTH (ksf)
	0		Topsoil	1					
1			LOOSE to MEDIUM DENSE Light Gray Fine SAND (SP)	1 3 4	4				
				7 10					
2				8 4	18				
				3 6					
3	5			6 6	12				
				1 2					
4				2 2	4				
				1 1					
5			VERY LOOSE Dark Brown Silty Fine SAND, Many Organic Fines (PT)	1 1	2	23	16	+	
	10								
			MEDIUM DENSE to LOOSE Gray Silty Fine SAND With Shell Fragments (SM)						
				3 6					
6				5	11				
	15								
				6 5					
7				4	9				
	20								
			MEDIUM DENSE Gray Fine SAND With Silt, Mostly Shell Fragments (SP-SM)						
				5 8					
8				5	13				
	25								

○ PLASTIC LIMIT ◇ LIQUID LIMIT + MOISTURE CONTENT (%)
0 35 70 105 140

SHEAR STRENGTH (ksf)
⊙ Pocket Penetrometer Undisturbed Sample
◔ Pocket Penetrometer Disturbed Sample
▼ Torvane
● Unconfined Compression
⊠ Triaxial Compression
0 1 2

Remarks

LOG OF BORING NM 35-28498.GPJ ELLIS ASSOCIATES.GDT 4/29/20

Project No.: 35-28498
Boring No.: B2
Sheet 2 of 3

LOG OF BORING

Project: JAXPORT Buck Island (DMMA)
Client: HDR Engineering
Drill Rig: 104A
Driller: M. Letchworth
Boring Location: See Field Exploration Plan
Drill Rod: AWJ
Drill Mud: Super Gel-X
Casing Size:
Length of Casing:
Groundwater Depth: 3 ft Time: Drilling Date: 5/20/19
Boring Begun: 5/20/19
Boring Completed: 5/20/19

SAMPLE NO.	DEPTH, FEET	SAMPLE TYPE	DESCRIPTION	BLOWS PER 6 IN.	N Value	PERCENT ORGANIC MATERIAL	PERCENT PASSING NO. 200 SIEVE	PLASTIC LIMIT / MOISTURE CONTENT / LIQUID LIMIT (%)	SHEAR STRENGTH (ksf)
	25		MEDIUM DENSE Gray Fine SAND With Silt, Mostly Shell Fragments (SP-SM) *(Continued)*						
			VERY LOOSE Gray Silty Fine SAND (SM)						
9	30			1 1 2	3		25	+	
			DENSE to VERY DENSE Gray Fine SAND With Clay and Shell Fragments (SP-SC)						
10	35			8 17 23	40				
11	40			14 28 25	53				
12	45			16 16 20	36				
			Gray Weathered Limestone						
13	50			50/2"	50/2"				

SHEAR STRENGTH (ksf): Pocket Penetrometer Undisturbed Sample; Pocket Penetrometer Disturbed Sample; Torvane; Unconfined Compression; Triaxial Compression

PLASTIC LIMIT / MOISTURE CONTENT / LIQUID LIMIT (%): 0 35 70 105 140

SHEAR STRENGTH (ksf): 0 1 2

Remarks

LOG OF BORING NM 35-28498.GPJ ELLIS ASSOCIATES.GDT 4/29/20

Project No.: 35-28498
Boring No.: B2
Sheet 3 of 3

LOG OF BORING

Project: JAXPORT Buck Island (DMMA)
Client: HDR Engineering
Drill Rig: 104A
Driller: M. Letchworth
Boring Location: See Field Exploration Plan
Drill Rod: AWJ
Drill Mud: Super Gel-X
Casing Size:
Length of Casing:
Groundwater Depth: 3 ft Time: Drilling Date: 5/20/19
Boring Begun: 5/20/19
Boring Completed: 5/20/19

SAMPLE NO.	DEPTH, FEET	SAMPLE TYPE	DESCRIPTION	BLOWS PER 6 IN.	N Value	PERCENT ORGANIC MATERIAL	PERCENT PASSING NO. 200 SIEVE	PLASTIC LIMIT ○ / MOISTURE CONTENT + / LIQUID LIMIT ◇ (%) 0 35 70 105 140	SHEAR STRENGTH (ksf) 0 1 2
	50		Gray Weathered Limestone *(Continued)*						
14	55			26 50/5"	50/5"				
15	60			1 1 2	3				
			MEDIUM DENSE to VERY DENSE Light Brown Fine SAND Wit Clay, Trace Phosphates (SP-SC)						
16	65			15 10 15	25				
17	70			14 22 27	49				
18	75			16 25 30	55				

Boring Terminated @ 75 ft.

Remarks

Pocket Penetrometer Undisturbed Sample
Pocket Penetrometer Disturbed Sample
Torvane
Unconfined Compression
Triaxial Compression

LOG OF BORING NM 35-28498.GPJ ELLIS ASSOCIATES.GDT 4/29/20

Project No.: 35-28498
Boring No.: B3
Sheet 1 of 3

LOG OF BORING

Project: JAXPORT Buck Island (DMMA)
Client: HDR Engineering
Drill Rig: 101A
Driller: M. Letchworth
Boring Location: See Field Exploration Plan
Drill Rod: AWJ
Drill Mud: Super Gel-X
Casing Size:
Length of Casing:
Groundwater Depth: 2.5 ft Time: Drilling Date: 4/4/19
Boring Begun: 4/4/19
Boring Completed: 4/4/19

SAMPLE NO.	DEPTH, FEET	SAMPLE TYPE	DESCRIPTION	BLOWS PER 6 IN.	N Value	PERCENT ORGANIC MATERIAL	PERCENT PASSING NO. 200 SIEVE
	0		Topsoil	2			
1			LOOSE Light Brown Fine SAND (SP)	2 4 6	6		
				7			
2			MEDIUM DENSE to LOOSE Gray Fine SAND (SP)	5 5 3	10		
				3			
3	5			4 4	8		
				5			
4				3 4 5	9		
				8			
5			LOOSE Gray Fine SAND With Silt and Shell Fragments (SP-SM)	1 2 3	5		7
	10			3			
			MEDIUM DENSE Gray Fine SAND (SP)				
				4			
6				5 6	11		
	15						
			MEDIUM DENSE Gray Fine SAND With Shell Fragments (SP)				
				2			
7				4 6	10		
	20						
			MEDIUM DENSE Gray Fine SAND With Silt (SP-SM)				
				4			
8				5 6	11		
	25						

PLASTIC LIMIT ○ | MOISTURE CONTENT + (%) | LIQUID LIMIT ◇
0 10 20 30 40

SHEAR STRENGTH (ksf)
⊙ Pocket Penetrometer Undisturbed Sample
◔ Pocket Penetrometer Disturbed Sample
▼ Torvane
● Unconfined Compression
⊠ Triaxial Compression
0 1 2

Remarks

LOG OF BORING NM 35-28498.GPJ ELLIS ASSOCIATES.GDT 4/29/20

Project No.: 35-28498
Boring No.: B3
Sheet 2 of 3

LOG OF BORING

Project: JAXPORT Buck Island (DMMA)
Client: HDR Engineering
Drill Rig: 101A
Driller: M. Letchworth
Boring Location: See Field Exploration Plan
Drill Rod: AWJ
Drill Mud: Super Gel-X
Casing Size:
Length of Casing:
Groundwater Depth: 2.5 ft Time: Drilling Date: 4/4/19
Boring Begun: 4/4/19
Boring Completed: 4/4/19

SAMPLE NO.	DEPTH, FEET	SAMPLE TYPE	DESCRIPTION	BLOWS PER 6 IN.	N Value	PERCENT ORGANIC MATERIAL	PERCENT PASSING NO. 200 SIEVE	PLASTIC LIMIT ○ / MOISTURE CONTENT + / LIQUID LIMIT ◇ (%)	SHEAR STRENGTH (ksf)
	25		MEDIUM DENSE Gray Fine SAND With Silt (SP-SM) *(Continued)*						
9	30		LOOSE Gray Fine SAND With Silt and Shell Fragments (SP-SM)	1 2 2	4		5	+	
10	35		MEDIUM DENSE Gray Fine SAND With Shell Fragments (SP)	2 4 5	9				
11	40		MEDIUM DENSE Gray Fine SAND, Mostly Shell Fragments (SP)	4 2 14	16				
12	45		DENSE Light Gray Fine SAND With Shell Fragments (SP)	4 10 17	27				
13	50		Gray Weathered Limestone	7 50/5.75"	50/5.75"				

Pocket Penetrometer Undisturbed Sample
Pocket Penetrometer Disturbed Sample
Torvane
Unconfined Compression
Triaxial Compression

Remarks

Project No.: 35-28498
Boring No.: B3
Sheet 3 of 3

LOG OF BORING

Project: JAXPORT Buck Island (DMMA)
Client: HDR Engineering
Drill Rig: 101A
Driller: M. Letchworth
Boring Location: See Field Exploration Plan
Drill Rod: AWJ
Drill Mud: Super Gel-X
Casing Size:
Length of Casing:
Groundwater Depth: 2.5 ft Time: Drilling Date: 4/4/19
Boring Begun: 4/4/19
Boring Completed: 4/4/19

SAMPLE NO.	DEPTH, FEET	SAMPLE TYPE	DESCRIPTION	BLOWS PER 6 IN.	N Value	PERCENT ORGANIC MATERIAL	PERCENT PASSING NO. 200 SIEVE	PLASTIC LIMIT ○ / MOISTURE CONTENT + / LIQUID LIMIT ◇ (%)	SHEAR STRENGTH (ksf)
	50		Gray Weathered Limestone *(Continued)*						
14	55		VERY DENSE Gray Very Silty Fine SAND With Limestone (SM)	7 50/3.5"	50/3.5"				
15	60		Gray Weathered Limestone	50/2"	50/2"				
16	65			50/2"	50/2"				
17	70		VERY DENSE to MEDIUM DENSE Gray Silty Clayey Fine SAND (Marl) (SM)	17 17 19	36				
18	75			7 10 12	22				

Boring Terminated @ 75 ft.

Remarks

SHEAR STRENGTH (ksf): Pocket Penetrometer Undisturbed Sample; Pocket Penetrometer Disturbed Sample; Torvane; Unconfined Compression; Triaxial Compression

0 10 20 30 40 (%)
0 1 2

LOG OF BORING NM 35-28498.GPJ ELLIS ASSOCIATES.GDT 4/29/20

Project No.: 35-28498
Boring No.: B4
Sheet 1 of 3

LOG OF BORING

Project: JAXPORT Buck Island (DMMA)
Client: HDR Engineering
Boring Location: See Field Exploration Plan
Drill Rig: 101A
Driller: M. Foster
Drill Rod: AWJ
Drill Mud: Super Gel-X
Casing Size:
Length of Casing:
Groundwater Depth: 1.5 ft Time: Drilling Date: 3/28/19
Boring Begun: 3/28/19
Boring Completed: 3/28/19

SAMPLE NO.	DEPTH, FEET	SAMPLE TYPE	DESCRIPTION	BLOWS PER 6 IN.	N Value	PERCENT ORGANIC MATERIAL	PERCENT PASSING NO. 200 SIEVE	PLASTIC LIMIT / MOISTURE CONTENT / LIQUID LIMIT (%)	SHEAR STRENGTH (ksf)
	0		Topsoil	1					
1			LOOSE Light Gray Fine SAND (SP)	2 2 3	4				
2				4 4 3 2	7				
3	5		SOFT Light Gray Silty CLAY (CH)	1/12"					
			Shelby Tube (4'-6)	1/12"	1/12"				
4			VERY LOOSE Light Gray Silty Fine SAND, Some Organic Fines (SM)	WOH/24"	WOH/24"		26	+	
5			MEDIUM DENSE Gray Fine SAND (SP)	3 5 6	11				
	10			5					
6			LOOSE Light Gray Fine SAND (SP)	3 2 2	4				
	15								
7			LOOSE Gray Silty Fine SAND With Shell Fragments (SM)	1 2 2	4				
	20								
8			LOOSE Gray Fine SAND With Shell Fragments (SP)	4 5 3	8				
	25								

SHEAR STRENGTH (ksf)
- Pocket Penetrometer Undisturbed Sample
- Pocket Penetrometer Disturbed Sample
- Torvane
- Unconfined Compression
- Triaxial Compression

Remarks Groundwater Depth is Tidal Influenced.

LOG OF BORING NM 35-28498.GPJ ELLIS ASSOCIATES.GDT 4/29/20

Project No.: 35-28498
Boring No.: B4
Sheet 2 of 3

LOG OF BORING

Project: JAXPORT Buck Island (DMMA)
Client: HDR Engineering
Drill Rig: 101A
Driller: M. Foster
Boring Location: See Field Exploration Plan
Drill Rod: AWJ
Drill Mud: Super Gel-X
Casing Size:
Length of Casing:
Groundwater Depth: 1.5 ft Time: Drilling Date: 3/28/19
Boring Begun: 3/28/19
Boring Completed: 3/28/19

SAMPLE NO.	DEPTH, FEET	SAMPLE TYPE	DESCRIPTION	BLOWS PER 6 IN.	N Value	PERCENT ORGANIC MATERIAL	PERCENT PASSING NO. 200 SIEVE	PLASTIC LIMIT ○ / MOISTURE CONTENT + (%) / LIQUID LIMIT ◇	SHEAR STRENGTH (ksf)
	25		LOOSE Gray Fine SAND With Shell Fragments (SP) *(Continued)*						
			LOOSE Gray Silty Fine SAND (SM)						
9	30			2 2 2	4				
			LOOSE Gray Fine SAND (SP)						
10	35			2 3 4	7				
			DENSE Light Gray Fine SAND With Shell Fragments (SP)						
11	40			12 15 18	33				
12	45			9 14 12	26				
13	50		DENSE Light Gray Silty Fine SAND With Limestone (SM)	8 9 19	28				

Pocket Penetrometer Undisturbed Sample
Pocket Penetrometer Disturbed Sample
Torvane
Unconfined Compression
Triaxial Compression

Remarks

LOG OF BORING NM 35-28498.GPJ ELLIS ASSOCIATES.GDT 4/29/20

Project No.: 35-28498
Boring No.: B4
Sheet 3 of 3

LOG OF BORING

Project: JAXPORT Buck Island (DMMA)
Client: HDR Engineering
Drill Rig: 101A
Driller: M. Foster
Boring Location: See Field Exploration Plan
Drill Rod: AWJ
Drill Mud: Super Gel-X
Casing Size:
Length of Casing:
Groundwater Depth: 1.5 ft Time: Drilling Date: 3/28/19
Boring Begun: 3/28/19
Boring Completed: 3/28/19

SAMPLE NO.	DEPTH, FEET	SAMPLE TYPE	DESCRIPTION	BLOWS PER 6 IN.	N Value	PERCENT ORGANIC MATERIAL	PERCENT PASSING NO. 200 SIEVE	PLASTIC LIMIT / MOISTURE CONTENT / LIQUID LIMIT (%)	SHEAR STRENGTH (ksf)
	50		DENSE Light Gray Silty Fine SAND With Limestone (SM) *(Continued)* Loss of Drilling Fluid Circulation						
			Light Gray Weathered Limestone	50/2"					
14	55				50/2"				
			MEDIUM DENSE Gray Silty Fine SAND With Limestone (SM)	WOH/6"					
15				1					
	60			13	14				
			Gray Weathered Limestone	50/2"					
16	65				50/2"				
			DENSE Gray Silty Fine SAND (Marl) (SM)	6					
17				13			18	+	
	70			21	34				
			VERY DENSE Gray Fine SAND (SP)						
				24					
18				31					
	75			36	67				

Boring Terminated @ 75 ft.

Remarks

SHEAR STRENGTH (ksf): Pocket Penetrometer Undisturbed Sample; Pocket Penetrometer Disturbed Sample; Torvane; Unconfined Compression; Triaxial Compression

LOG OF BORING NM 35-28498.GPJ ELLIS ASSOCIATES.GDT 4/29/20

Project No.: 35-28498
Boring No.: B5
Sheet 1 of 3

LOG OF BORING

Project: JAXPORT Buck Island (DMMA)
Client: HDR Engineering
Drill Rig: 104A
Driller: M. Letchworth
Boring Location: See Field Exploration Plan
Drill Rod: AWJ
Drill Mud: Super Gel-X
Casing Size:
Length of Casing:
Groundwater Depth: 3 ft Time: Drilling Date: 5/21/19
Boring Begun: 5/21/19
Boring Completed: 5/21/19

SAMPLE NO.	DEPTH, FEET	SAMPLE TYPE	DESCRIPTION	BLOWS PER 6 IN.	N Value	PERCENT ORGANIC MATERIAL	PERCENT PASSING NO. 200 SIEVE
	0		Topsoil	1			
1			LOOSE to VERY LOOSE Light Gray Fine SAND (SP)	2 5	7		
				6 3			
2				4 5	9		
				7 1			
3	5			1 1	2		
				1 1			
4			VERY LOOSE Gray Sandy CLAY, Many Organic Fines (PT)	1 1	2		
				1 6		8	57
5			MEDIUM DENSE Gray Silty Fine SAND (SM)	5 5	11		
	10						
			LOOSE Gray Fine SAND With Clay (SP-SC)				
				2			
6				3 2	5		
	15						
			MEDIUM DENSE to LOOSE Gray Fine SAND, Mostly Shell Fragments (SP)				
				3			
7				4 7	11		
	20						
				3			
8				3 5	8		
	25						

SHEAR STRENGTH (ksf)
- Pocket Penetrometer Undisturbed Sample
- Pocket Penetrometer Disturbed Sample
- Torvane
- Unconfined Compression
- Triaxial Compression

PLASTIC LIMIT ○ | MOISTURE CONTENT + (%) | LIQUID LIMIT ◇
0 25 50 75 100
0 1 2

Remarks

LOG OF BORING NM 35-28498.GPJ ELLIS ASSOCIATES.GDT 4/29/20

Project No.: 35-28498
Boring No.: B5
Sheet 2 of 3

LOG OF BORING

Project: JAXPORT Buck Island (DMMA)
Client: HDR Engineering
Drill Rig: 104A
Driller: M. Letchworth
Boring Location: See Field Exploration Plan
Drill Rod: AWJ
Drill Mud: Super Gel-X
Casing Size:
Length of Casing:
Groundwater Depth: 3 ft Time: Drilling Date: 5/21/19
Boring Begun: 5/21/19
Boring Completed: 5/21/19

SAMPLE NO.	DEPTH, FEET	SAMPLE TYPE	DESCRIPTION	BLOWS PER 6 IN.	N Value	PERCENT ORGANIC MATERIAL	PERCENT PASSING NO. 200 SIEVE	PLASTIC LIMIT / MOISTURE CONTENT / LIQUID LIMIT (%)	SHEAR STRENGTH (ksf)
	25		MEDIUM DENSE to LOOSE Gray Fine SAND, Mostly Shell Fragments (SP) *(Continued)*						
9	30		LOOSE Gray Fine SAND With Silt (SP-SM)	1 2 2	4		7		
10	35		LOOSE Gray Fine SAND With Shell Fragments (SP)	4 4 3	7				
11	40		VERY DENSE to DENSE Gray Fine SAND, Mostly Shell Fragments (SP)	25 28 30	58				
12	45			19 16 21	37				
13	50		VERY DENSE Brown Gray Fine SAND (SP)	36 29 30	59				

SHEAR STRENGTH (ksf): Pocket Penetrometer Undisturbed Sample; Pocket Penetrometer Disturbed Sample; Torvane; Unconfined Compression; Triaxial Compression

MOISTURE CONTENT (%): 0 25 50 75 100

SHEAR STRENGTH (ksf): 0 1 2

Remarks

LOG OF BORING NM 35-28498.GPJ ELLIS ASSOCIATES.GDT 4/29/20

Project No.: 35-28498
Boring No.: B5
Sheet 3 of 3

LOG OF BORING

Project: JAXPORT Buck Island (DMMA)
Client: HDR Engineering
Boring Location: See Field Exploration Plan
Drill Rig: 104A
Driller: M. Letchworth
Drill Rod: AWJ
Drill Mud: Super Gel-X
Casing Size:
Length of Casing:
Groundwater Depth: 3 ft Time: Drilling Date: 5/21/19
Boring Begun: 5/21/19
Boring Completed: 5/21/19

SAMPLE NO.	DEPTH, FEET	SAMPLE TYPE	DESCRIPTION	BLOWS PER 6 IN.	N Value	PERCENT ORGANIC MATERIAL	PERCENT PASSING NO. 200 SIEVE	PLASTIC LIMIT / MOISTURE CONTENT (%) / LIQUID LIMIT
	50		VERY DENSE Brown Gray Fine SAND (SP) *(Continued)*					
			MEDIUM DENSE Gray Silty Fine SAND With Weathered Limestone (SM)	3				
14				6				
	55			11	17			
			VERY LOOSE Gray Fine SAND With Clay and Weathered Limestone (SP-SC)	1				
15				WOH/6"				
	60			2	2			
			No Recovery					
16				50/2"				
	65				50/2"			
			DENSE to VERY DENSE Light Brown Fine SAND, Trace Clay (SP)	7				
17				13				
	70			22	35			
				29				
18				34				
	75			39	73			

Boring Terminated @ 75 ft.

Remarks

SHEAR STRENGTH (ksf)
- Pocket Penetrometer Undisturbed Sample
- Pocket Penetrometer Disturbed Sample
- Torvane
- Unconfined Compression
- Triaxial Compression

0 1 2

LOG OF BORING NM 35-28498.GPJ ELLIS ASSOCIATES.GDT 4/29/20

Project No.: 35-28498
Boring No.: B6
Sheet 1 of 3

LOG OF BORING

Project: JAXPORT Buck Island (DMMA)
Client: HDR Engineering
Drill Rig: 101A
Driller: M. Letchworth
Boring Location: See Field Exploration Plan
Drill Rod: AWJ
Drill Mud: Super Gel-X
Casing Size:
Length of Casing:
Groundwater Depth: 0.5 ft Time: Drilling Date: 4/5/19
Boring Begun: 4/5/19
Boring Completed: 4/5/19

SAMPLE NO.	DEPTH, FEET	SAMPLE TYPE	DESCRIPTION	BLOWS PER 6 IN.	N Value	PERCENT ORGANIC MATERIAL	PERCENT PASSING NO. 200 SIEVE	PLASTIC LIMIT ○ / MOISTURE CONTENT + / LIQUID LIMIT ◇ (%)	SHEAR STRENGTH (ksf)
	0		Topsoil	2					
1			LOOSE Light Gray Fine SAND (SP)	3 3 5	6				
2				2 2 1	3				
3	5		VERY SOFT Gray Clayey Silty Fine SAND With Organic Fines (ML)	1/18"	1/18"				
4			LOOSE Gray Fine SAND With Silt (SP-SM)	3 4 4	8				
5			LOOSE Gray Silty Fine SAND With Organic Fines (SM)	5 7 4 2	6				
	10			2					
			LOOSE Gray Fine SAND (SP)						
6				3 3 3	6				
	15								
			VERY LOOSE to LOOSE Gray Fine SAND With Silt and Shell Fragments (SP-SM)						
7				2 1 1	2				
	20								
8				1 1 4	5				
	25								

SHEAR STRENGTH (ksf)
Pocket Penetrometer Undisturbed Sample
Pocket Penetrometer Disturbed Sample
Torvane
Unconfined Compression
Triaxial Compression

Remarks

Project No.: 35-28498
Boring No.: B6
Sheet 2 of 3

LOG OF BORING

Project: JAXPORT Buck Island (DMMA)
Client: HDR Engineering
Drill Rig: 101A
Driller: M. Letchworth
Boring Location: See Field Exploration Plan
Drill Rod: AWJ
Drill Mud: Super Gel-X
Casing Size:
Length of Casing:
Groundwater Depth: 0.5 ft Time: Drilling Date: 4/5/19
Boring Begun: 4/5/19
Boring Completed: 4/5/19

SAMPLE NO.	DEPTH, FEET	SAMPLE TYPE	DESCRIPTION	BLOWS PER 6 IN.	N Value	PERCENT ORGANIC MATERIAL	PERCENT PASSING NO. 200 SIEVE	PLASTIC LIMIT ○ / MOISTURE CONTENT + / LIQUID LIMIT ◇ (%)	SHEAR STRENGTH (ksf)
	25		VERY LOOSE to LOOSE Gray Fine SAND With Silt and Shell Fragments (SP-SM) *(Continued)*						
9	30			1/12" 4	4		8	+	
10	35			1 1 1	2				
			DENSE Gray Fine SAND, Mostly Shell Fragments (SP)						
11	40			14 22 18	40				
			VERY DENSE Light Gray Fine SAND With Shell Fragments (SP)						
12	45			22 23 30	53				
			LOOSE Gray Clayey Fine SAND (SC)						
13	50			1 2 6	8		25	+	

SHEAR STRENGTH (ksf)
- ⊙ Pocket Penetrometer Undisturbed Sample
- ◔ Pocket Penetrometer Disturbed Sample
- ▼ Torvane
- ● Unconfined Compression
- ⊠ Triaxial Compression

0 1 2

Remarks

LOG OF BORING NM 35-28498.GPJ ELLIS ASSOCIATES.GDT 4/29/20

Project No.: 35-28498
Boring No.: B6
Sheet 3 of 3

LOG OF BORING

Project: JAXPORT Buck Island (DMMA)
Client: HDR Engineering
Drill Rig: 101A
Driller: M. Letchworth
Boring Location: See Field Exploration Plan
Drill Rod: AWJ
Drill Mud: Super Gel-X
Casing Size:
Length of Casing:
Groundwater Depth: 0.5 ft Time: Drilling Date: 4/5/19
Boring Begun: 4/5/19
Boring Completed: 4/5/19

SAMPLE NO.	DEPTH, FEET	SAMPLE TYPE	DESCRIPTION	BLOWS PER 6 IN.	N Value	PERCENT ORGANIC MATERIAL	PERCENT PASSING NO. 200 SIEVE
	50		LOOSE Gray Clayey Fine SAND (SC) *(Continued)*				
			VERY DENSE Light Brown Fine SAND With Shell Fragments, Trace Clay (SP)				
14				16 25 28	53		
	55						
			DENSE Gray Brown Fine SAND With Clay (SP-SC)				
15				9 16 18	34		
	60						
			Gray Weathered Limestone				
			VERY DENSE to DENSE Light Brown Fine SAND With Clay, Some Shell Fragments (SP-SC)	16			
16				41 28	69		
	65						
				11			
17				17 15	32		
	70						
			VERY STIFF Light Brown CLAY (CH)				
				11			
18				8 12	20		
	75		Boring Terminated @ 75 ft.				

PLASTIC LIMIT ○ | MOISTURE CONTENT + (%) 0 15 30 45 60 | LIQUID LIMIT ◇

SHEAR STRENGTH (ksf) 0 1 2
- ⊙ Pocket Penetrometer Undisturbed Sample
- ◒ Pocket Penetrometer Disturbed Sample
- ▼ Torvane
- ● Unconfined Compression
- ⊠ Triaxial Compression

Remarks

LOG OF BORING NM 35-28498.GPJ ELLIS ASSOCIATES.GDT 4/29/20

Project No.: 35-28498
Boring No.: B7
Sheet 1 of 3

LOG OF BORING

Project: JAXPORT Buck Island (DMMA)
Client: HDR Engineering
Drill Rig: 101A
Driller: M. Foster
Boring Location: See Field Exploration Plan
Drill Rod: AWJ
Drill Mud: Super Gel-X
Casing Size:
Length of Casing:
Groundwater Depth: 2 ft Time: Drilling Date: 3/27/19
Boring Begun: 3/27/19
Boring Completed: 3/27/19

SAMPLE NO.	DEPTH, FEET	SAMPLE TYPE	DESCRIPTION	BLOWS PER 6 IN.	N Value	PERCENT ORGANIC MATERIAL	PERCENT PASSING NO. 200 SIEVE	PLASTIC LIMIT / MOISTURE CONTENT / LIQUID LIMIT (%)	SHEAR STRENGTH (ksf)
	0		Topsoil	1					
1			LOOSE Light Brown Fine SAND (SP)	2 3 3	5				
			MEDIUM DENSE Light Gray Fine SAND (SP)	2 5					
2				5 4	10				
			VERY SOFT Gray Sandy CLAY, Some Organic Fines (CH)	1 1/18"					
3	5				1/18"		68		
			Shelby Tube (6'-8') No Recovery						
4									
			VERY LOOSE Gray Clayey Silty Fine SAND (SM)	1 1					
5			Shelby Tube (8'-9')	2 2	3		22		
	10								
			VERY LOOSE Gray Silty Fine SAND (SM)						
				1/12"					
6				1	1				
	15								
			LOOSE Light Gray Silty Fine SAND (SM)						
				2 2					
7				4	6				
	20								
			VERY LOOSE to MEDIUM DENSE Gray Fine SAND With Silt and Shell Fragments (SP-SM)						
				1/18"					
8					1/18"		11		
	25								

SHEAR STRENGTH (ksf): Pocket Penetrometer Undisturbed Sample; Pocket Penetrometer Disturbed Sample; Torvane; Unconfined Compression; Triaxial Compression

Remarks Groundwater Depth is Tidal Influenced.

LOG OF BORING NM 35-28498.GPJ ELLIS ASSOCIATES.GDT 4/29/20

Project No.: 35-28498
Boring No.: B7
Sheet 2 of 3

LOG OF BORING

Project: JAXPORT Buck Island (DMMA)
Client: HDR Engineering
Drill Rig: 101A
Driller: M. Foster
Boring Location: See Field Exploration Plan
Drill Rod: AWJ
Drill Mud: Super Gel-X
Casing Size:
Length of Casing:
Groundwater Depth: 2 ft Time: Drilling Date: 3/27/19
Boring Begun: 3/27/19
Boring Completed: 3/27/19

SAMPLE NO.	DEPTH, FEET	SAMPLE TYPE	DESCRIPTION	BLOWS PER 6 IN.	N Value	PERCENT ORGANIC MATERIAL	PERCENT PASSING NO. 200 SIEVE	PLASTIC LIMIT ○ / MOISTURE CONTENT + / LIQUID LIMIT ◇ (%) 0 60 120 180 240	SHEAR STRENGTH (ksf) 0 1 2
	25		VERY LOOSE to MEDIUM DENSE Gray Fine SAND With Silt and Shell Fragments (SP-SM) *(Continued)*						
9	30			4 5 5	10				
10	35			WOH/6" 1 1	2				
11	40		LOOSE Gray Fine SAND With Shell Fragments (SP)	2 3 4	7				
12	45		VERY DENSE Light Gray Fine SAND With Silt and Shell Fragments (SP-SM)	16 25 30	55				
13	50		Gray Weathered Limestone	7 50/3"	50/3"				

Remarks

Pocket Penetrometer Undisturbed Sample
Pocket Penetrometer Disturbed Sample
Torvane
Unconfined Compression
Triaxial Compression

LOG OF BORING NM 35-28498.GPJ ELLIS ASSOCIATES.GDT 4/29/20

Project No.: 35-28498
Boring No.: B7
Sheet 3 of 3

LOG OF BORING

Project: JAXPORT Buck Island (DMMA)
Client: HDR Engineering
Drill Rig: 101A
Driller: M. Foster
Boring Location: See Field Exploration Plan
Drill Rod: AWJ
Drill Mud: Super Gel-X
Casing Size:
Length of Casing:
Groundwater Depth: 2 ft Time: Drilling Date: 3/27/19
Boring Begun: 3/27/19
Boring Completed: 3/27/19

SAMPLE NO.	DEPTH, FEET	SAMPLE TYPE	DESCRIPTION	BLOWS PER 6 IN.	N Value	PERCENT ORGANIC MATERIAL	PERCENT PASSING NO. 200 SIEVE	PLASTIC LIMIT ○ / MOISTURE CONTENT + (%) / LIQUID LIMIT ◇	SHEAR STRENGTH (ksf)
	50		Gray Weathered Limestone *(Continued)*						
			Loss of Drilling Fluid Circulation						
14	55			50/5.5"	50/5.5"				
			MEDIUM DENSE Gray Fine SAND (SP)						
15	60			4 5 7	12				
			VERY DENSE Gray Fine SAND With Limestone (SP)						
16	65			24 36 40	76				
17	70			12 24 41	65				
			VERY DENSE Gray Silty Fine SAND (Marl) (SM)						
18	75			25 27 33	60				

Boring Terminated @ 75 ft.

Remarks

SHEAR STRENGTH (ksf): Pocket Penetrometer Undisturbed Sample; Pocket Penetrometer Disturbed Sample; Torvane; Unconfined Compression; Triaxial Compression

PLASTIC LIMIT / MOISTURE CONTENT / LIQUID LIMIT: 0 60 120 180 240 (%)

SHEAR STRENGTH (ksf): 0 1 2

LOG OF BORING NM 35-28498.GPJ ELLIS ASSOCIATES.GDT 4/29/20

Project No.: 35-28498
Boring No.: B8
Sheet 1 of 3

LOG OF BORING

Project: JAXPORT Buck Island (DMMA)
Client: HDR Engineering
Drill Rig: 101A
Driller: M. Letchworth
Boring Location: See Field Exploration Plan
Drill Rod: AWJ
Drill Mud: Super Gel-X
Casing Size:
Length of Casing:
Groundwater Depth: 3 ft Time: Drilling Date: 5/16/19
Boring Begun: 5/16/19
Boring Completed: 5/16/19

SAMPLE NO.	DEPTH, FEET	SAMPLE TYPE	DESCRIPTION	BLOWS PER 6 IN.	N Value	PERCENT ORGANIC MATERIAL	PERCENT PASSING NO. 200 SIEVE	PLASTIC LIMIT ○ / MOISTURE CONTENT + (%) / LIQUID LIMIT ◇	SHEAR STRENGTH (ksf)
	0		Topsoil	1					
1			LOOSE Light Gray Fine SAND (SP)	2 3 3	5				
				5					
2			MEDIUM DENSE to VERY LOOSE Gray Fine SAND (SP) ▼	5 9	14				
				7					
3	5			2 2	4				
				2					
4				2 1	2				
				1					
5			LOOSE Gray Fine SAND (SP)	1 2	8				
				6					
	10			6					
			LOOSE to VERY LOOSE Gray Clayey Fine SAND (SC)	4					
6				3 3	6				
	15								
				2					
7				4 4	8				
	20								
				1					
8				1 1	2				
	25								

SHEAR STRENGTH (ksf)
Pocket Penetrometer Undisturbed Sample
Pocket Penetrometer Disturbed Sample
Torvane
Unconfined Compression
Triaxial Compression

PLASTIC LIMIT ○ / MOISTURE CONTENT + (%) / LIQUID LIMIT ◇
0 15 30 45 60

0 1 2

Remarks

LOG OF BORING NM 35-28498.GPJ ELLIS ASSOCIATES.GDT 4/29/20

Project No.: 35-28498
Boring No.: B8
Sheet 2 of 3

LOG OF BORING

Project: JAXPORT Buck Island (DMMA)
Client: HDR Engineering
Drill Rig: 101A
Driller: M. Letchworth
Boring Location: See Field Exploration Plan
Drill Rod: AWJ
Drill Mud: Super Gel-X
Casing Size:
Length of Casing:
Groundwater Depth: 3 ft Time: Drilling Date: 5/16/19
Boring Begun: 5/16/19
Boring Completed: 5/16/19

SAMPLE NO.	DEPTH, FEET	SAMPLE TYPE	DESCRIPTION	BLOWS PER 6 IN.	N Value	PERCENT ORGANIC MATERIAL	PERCENT PASSING NO. 200 SIEVE	PLASTIC LIMIT ○ / MOISTURE CONTENT + / LIQUID LIMIT ◇ (%) 0 15 30 45 60	SHEAR STRENGTH (ksf) 0 1 2
	25		LOOSE to VERY LOOSE Gray Clayey Fine SAND (SC) *(Continued)*						
			VERY LOOSE Gray Fine SAND With Clay (SP-SC)	1					
9				1			6	+	
	30			1	2				
			LOOSE Gray Fine SAND With Clay, Some Shell Fragments (SP-SC)	2					
10				2					
	35			3	5				
			LOOSE Gray Fine SAND With Silt and Shell Fragments (SP-SM)	2					
11				2			8	+	
	40			2	4				
			MEDIUM DENSE Gray Fine SAND, Mostly Shell Fragments (SP)	5					
12				8					
	45			20	28				
			Gray Weathered Limestone						
13				50/5"					
	50				50/5"				

SHEAR STRENGTH (ksf)
- Pocket Penetrometer Undisturbed Sample
- Pocket Penetrometer Disturbed Sample
- Torvane
- Unconfined Compression
- Triaxial Compression

Remarks

LOG OF BORING NM 35-28498.GPJ ELLIS ASSOCIATES.GDT 4/29/20

Project No.: 35-28498
Boring No.: B8
Sheet 3 of 3

LOG OF BORING

Project: JAXPORT Buck Island (DMMA)
Client: HDR Engineering
Drill Rig: 101A
Driller: M. Letchworth
Boring Location: See Field Exploration Plan
Drill Rod: AWJ
Drill Mud: Super Gel-X
Casing Size:
Length of Casing:
Groundwater Depth: 3 ft Time: Drilling Date: 5/16/19
Boring Begun: 5/16/19
Boring Completed: 5/16/19

SAMPLE NO.	DEPTH, FEET	SAMPLE TYPE	DESCRIPTION	BLOWS PER 6 IN.	N Value	PERCENT ORGANIC MATERIAL	PERCENT PASSING NO. 200 SIEVE	PLASTIC LIMIT ○ / MOISTURE CONTENT + (%) / LIQUID LIMIT ◇	SHEAR STRENGTH (ksf)
	50		Gray Weathered Limestone *(Continued)*						
			Loss of Drilling Fluid Circulation						
14	55			50/5"	50/5"				
15	60			50/3"	50/3"				
			VERY DENSE to DENSE Light Brown Clayey Fine SAND (Marl) (SC)						
16	65			33 30 22	52				
17	70			19 19 12	31				
18	75			22 24 16	40				

Boring Terminated @ 75 ft.

Remarks

SHEAR STRENGTH (ksf): Pocket Penetrometer Undisturbed Sample; Pocket Penetrometer Disturbed Sample; Torvane; Unconfined Compression; Triaxial Compression

PLASTIC LIMIT / MOISTURE CONTENT / LIQUID LIMIT: 0 15 30 45 60 (%)

SHEAR STRENGTH (ksf): 0 1 2

LOG OF BORING NM 35-28498.GPJ ELLIS ASSOCIATES.GDT 4/29/20

Project No.: 35-28498
Boring No.: B9
Sheet 1 of 3

LOG OF BORING

Project: JAXPORT Buck Island (DMMA)
Client: HDR Engineering
Drill Rig: 101A
Driller: M. Foster
Boring Location: See Field Exploration Plan
Drill Rod: AWJ
Drill Mud: Super Gel-X
Casing Size:
Length of Casing:
Groundwater Depth: 3 ft Time: Drilling Date: 5/22/19
Boring Begun: 5/22/19
Boring Completed: 5/22/19

SAMPLE NO.	DEPTH, FEET	SAMPLE TYPE	DESCRIPTION	BLOWS PER 6 IN.	N Value	PERCENT ORGANIC MATERIAL	PERCENT PASSING NO. 200 SIEVE	PLASTIC LIMIT ○ / MOISTURE CONTENT + / LIQUID LIMIT ◇ (%)	SHEAR STRENGTH (ksf)
	0		Topsoil	1					
1			LOOSE to MEDIUM DENSE Light Brown Fine SAND (SP)	2 3 5	5				
				5 4					
2			▼	7 6	13				
				5					
			LOOSE to VERY LOOSE Gray Fine SAND (SP)	3 2					
3	5			2 2	4				
				2 1					
4				1 1	2				
				1 1					
5			LOOSE Gray Fine SAND With Clay (SP)	3 3	6				
	10			4					
				1					
6				4					
	15		MEDIUM DENSE to LOOSE Gray Fine SAND, Trace Clay (SP)	7	11				
				1					
7				2 3	5				
	20								
			SOFT Gray Sandy CLAY (CH)						
				1					
8				2					
	25			2	4				

Remarks

LOG OF BORING NM 35-28498.GPJ ELLIS ASSOCIATES.GDT 4/29/20

Project No.: 35-28498
Boring No.: B9
Sheet 2 of 3

LOG OF BORING

Project: JAXPORT Buck Island (DMMA)
Client: HDR Engineering
Drill Rig: 101A
Driller: M. Foster
Boring Location: See Field Exploration Plan
Drill Rod: AWJ
Drill Mud: Super Gel-X
Casing Size:
Length of Casing:
Groundwater Depth: 3 ft Time: Drilling Date: 5/22/19
Boring Begun: 5/22/19
Boring Completed: 5/22/19

SAMPLE NO.	DEPTH, FEET	SAMPLE TYPE	DESCRIPTION	BLOWS PER 6 IN.	N Value	PERCENT ORGANIC MATERIAL	PERCENT PASSING NO. 200 SIEVE	PLASTIC LIMIT ○ / MOISTURE CONTENT + / LIQUID LIMIT ◇ (%)	SHEAR STRENGTH (ksf)
	25		SOFT Gray Sandy CLAY (CH) *(Continued)*						
			LOOSE Gray Clayey Fine SAND (SC)						
9	30			1 2 2	4				
			LOOSE Gray Fine SAND With Clay, Some Shell Fragments (SP)						
10	35			3 3 4	7				
			LOOSE Gray Fine SAND With Shell Fragments (SP)						
11	40			2 3 2	5				
			DENSE to VERY DENSE Gray Fine SAND, Mostly Shell Fragments (SP)						
12	45			10 19 26	45				
				50/3"					
13	50		No Recovery		50/3"				

SHEAR STRENGTH (ksf): Pocket Penetrometer Undisturbed Sample; Pocket Penetrometer Disturbed Sample; Torvane; Unconfined Compression; Triaxial Compression

Remarks

LOG OF BORING NM 35-28498.GPJ ELLIS ASSOCIATES.GDT 4/29/20

Project No.: 35-28498
Boring No.: B9
Sheet 3 of 3

LOG OF BORING

Project: JAXPORT Buck Island (DMMA)
Client: HDR Engineering
Drill Rig: 101A
Driller: M. Foster
Boring Location: See Field Exploration Plan
Drill Rod: AWJ
Drill Mud: Super Gel-X
Casing Size:
Length of Casing:
Groundwater Depth: 3 ft Time: Drilling Date: 5/22/19
Boring Begun: 5/22/19
Boring Completed: 5/22/19

SAMPLE NO.	DEPTH, FEET	SAMPLE TYPE	DESCRIPTION	BLOWS PER 6 IN.	N Value	PERCENT ORGANIC MATERIAL	PERCENT PASSING NO. 200 SIEVE	PLASTIC LIMIT ○ / MOISTURE CONTENT + / LIQUID LIMIT ◇ (%) 0 10 20 30 40	SHEAR STRENGTH (ksf) 0 1 2
	50		No Recovery *(Continued)*						
			Loss of Drilling Fluid Circulation No Recovery						
14	55			50/1"	50/1"				
			VERY DENSE Light Brown and Gray Clayey Fine SAND (SC)	29 21 30	51				
15	60								
			MEDIUM DENSE Gray Clayey Fine SAND With Phosphate Nodules (Marl) (SC)	5 6 8	14				
16	65								
			HARD Gray CLAY (CH)	40 33 50/5"	50/5"				
17	70								
18	75			20 29 46	75				

Boring Terminated @ 75 ft.

Remarks

SHEAR STRENGTH (ksf)
- ⊙ Pocket Penetrometer Undisturbed Sample
- ◔ Pocket Penetrometer Disturbed Sample
- ▼ Torvane
- ● Unconfined Compression
- ⊠ Triaxial Compression

LOG OF BORING NM 35-28498.GPJ ELLIS ASSOCIATES.GDT 4/29/20

Project No.: 35-28498
Boring No.: B10
Sheet 1 of 3

LOG OF BORING

Project: JAXPORT Buck Island (DMMA)
Client: HDR Engineering
Boring Location: See Field Exploration Plan
Drill Rig: 101A
Driller: M. Foster
Drill Rod: AWJ
Drill Mud: Super Gel-X
Casing Size:
Length of Casing:
Groundwater Depth: 1.5 ft Time: Drilling Date: 3/28/19
Boring Begun: 3/28/19
Boring Completed: 3/28/19

SAMPLE NO.	DEPTH, FEET	SAMPLE TYPE	DESCRIPTION	BLOWS PER 6 IN.	N Value	PERCENT ORGANIC MATERIAL	PERCENT PASSING NO. 200 SIEVE	PLASTIC LIMIT / MOISTURE CONTENT / LIQUID LIMIT (%)	SHEAR STRENGTH (ksf)
	0		Topsoil	2					
1			MEDIUM DENSE to LOOSE Light Brown Fine SAND (SP)	4 5	9				
				5					
				4					
2				2					
			LOOSE Gray Fine SAND (SP)	3	5				
				4					
			VERY LOOSE Gray Silty Fine SAND, Some Organic Fines (SM)	1/12"					
3	5			1/12"	1/12"				
			VERY SOFT Gray Sandy CLAY (CH)	WOH/24"					
4			Shelby Tube (5'-7')		WOH/24"		56	+	
			LOOSE Gray Fine SAND (SP)	2					
5				2					
				2	4				
	10			2					
			VERY LOOSE Gray Silty Clayey Fine SAND (SC)						
				WOH/18"					
6					WOH/18"				
	15								
			VERY LOOSE Gray Fine SAND With Clay (SP-SC)						
				1					
7				1			6	+	
	20			1	2				
			SOFT Gray Silty CLAY With Sand (CH)	1/12"					
8			Shelby Tube (22'-24')	1	1				
	25								

SHEAR STRENGTH (ksf)
- Pocket Penetrometer Undisturbed Sample
- Pocket Penetrometer Disturbed Sample
- Torvane
- Unconfined Compression
- Triaxial Compression

PLASTIC LIMIT / MOISTURE CONTENT / LIQUID LIMIT (%): 0 30 60 90 120
SHEAR STRENGTH (ksf): 0 1 2

Remarks Groundwater Depth is Tidal Influenced.

LOG OF BORING NM 35-28498.GPJ ELLIS ASSOCIATES.GDT 4/29/20

Project No.: 35-28498
Boring No.: B10
Sheet 2 of 3

LOG OF BORING

Project: JAXPORT Buck Island (DMMA)
Client: HDR Engineering
Drill Rig: 101A
Driller: M. Foster
Boring Location: See Field Exploration Plan
Drill Rod: AWJ
Drill Mud: Super Gel-X
Casing Size:
Length of Casing:
Groundwater Depth: 1.5 ft Time: Drilling Date: 3/28/19
Boring Begun: 3/28/19
Boring Completed: 3/28/19

SAMPLE NO.	DEPTH, FEET	SAMPLE TYPE	DESCRIPTION	BLOWS PER 6 IN.	N Value	PERCENT ORGANIC MATERIAL	PERCENT PASSING NO. 200 SIEVE	PLASTIC LIMIT / MOISTURE CONTENT / LIQUID LIMIT (%)	SHEAR STRENGTH (ksf)
	25		SOFT Gray Silty CLAY With Sand (CH) *(Continued)* Shelby Tube (25'-27')						
			LOOSE Gray Clayey Fine SAND (SC)						
9	30			1 1 1	2		26		
10	35			1 1 2	3				
			MEDIUM DENSE Gray Fine SAND With Shell Fragments (SP)						
11	40			4 6 5	11				
12	45			7 9 7	16				
			STIFF Gray CLAY With Sand (CH)						
13	50			4 3 5	8				

Pocket Penetrometer Undisturbed Sample
Pocket Penetrometer Disturbed Sample
Torvane
Unconfined Compression
Triaxial Compression

Remarks

LOG OF BORING NM 35-28498.GPJ ELLIS ASSOCIATES.GDT 4/29/20

Project No.: 35-28498
Boring No.: B10
Sheet 3 of 3

LOG OF BORING

Project: JAXPORT Buck Island (DMMA)
Client: HDR Engineering
Drill Rig: 101A
Driller: M. Foster
Boring Location: See Field Exploration Plan
Drill Rod: AWJ
Drill Mud: Super Gel-X
Casing Size:
Length of Casing:
Groundwater Depth: 1.5 ft Time: Drilling Date: 3/28/19
Boring Begun: 3/28/19
Boring Completed: 3/28/19

SAMPLE NO.	DEPTH, FEET	SAMPLE TYPE	DESCRIPTION	BLOWS PER 6 IN.	N Value	PERCENT ORGANIC MATERIAL	PERCENT PASSING NO. 200 SIEVE	PLASTIC LIMIT / MOISTURE CONTENT / LIQUID LIMIT (%)	SHEAR STRENGTH (ksf)
	50		STIFF Gray CLAY With Sand (CH) *(Continued)*						
			STIFF to FIRM Gray CLAY (CH)						
14	55			4 5 6	11		87		
15	60			2 2 2	4				
			VERY DENSE to MEDIUM DENSE Gray Silty Fine SAND (Marl) (SM)						
16	65			5 23 23	46				
17	70			15 16 20	36				
18	75			4 7 8	15				

Boring Terminated @ 75 ft.

Remarks

Pocket Penetrometer Undisturbed Sample
Pocket Penetrometer Disturbed Sample
Torvane
Unconfined Compression
Triaxial Compression

0 30 60 90 120
0 1 2

LOG OF BORING NM 35-28498.GPJ ELLIS ASSOCIATES.GDT 4/29/20

Project No.: 35-28498
Boring No.: B11
Sheet 1 of 3

LOG OF BORING

Project: JAXPORT Buck Island (DMMA)
Client: HDR Engineering
Drill Rig: 101A
Driller: M. Letchworth
Boring Location: See Field Exploration Plan
Drill Rod: AWJ
Drill Mud: Super Gel-X
Casing Size:
Length of Casing:
Groundwater Depth: 2 ft Time: Drilling Date: 4/4/19
Boring Begun: 4/4/19
Boring Completed: 4/4/19

SAMPLE NO.	DEPTH, FEET	SAMPLE TYPE	DESCRIPTION	BLOWS PER 6 IN.	N Value	PERCENT ORGANIC MATERIAL	PERCENT PASSING NO. 200 SIEVE	PLASTIC LIMIT / MOISTURE CONTENT / LIQUID LIMIT (%)	SHEAR STRENGTH (ksf)
	0		Topsoil	1					
1			LOOSE Light Brown Fine SAND (SP)	1					
				2	3				
				2					
				1					
2				1					
				3	4				
				4					
			VERY LOOSE Gray Fine SAND With Silt, Some Shell Fragments (SP-SM)	1/12"					
3	5			1	1				
			VERY LOOSE to LOOSE Gray Very Silty Fine SAND (SM)	1					
				1					
4				1/12"	1/12"				
				1					
				1					
5				1			38	+	
				2	3				
	10			2					
			VERY LOOSE Gray Fine SAND With Silt and Clay Layers (SP-SM)	1/18"					
6					1/18"		8	+	
	15								
			VERY LOOSE Gray Fine SAND (SP)						
				1					
7				1/12"	1/12"				
	20								
			VERY LOOSE Gray Fine SAND, Trace Clay (SP)						
				1/18"					
8					1/18"				
	25								

SHEAR STRENGTH (ksf)
- Pocket Penetrometer Undisturbed Sample
- Pocket Penetrometer Disturbed Sample
- Torvane
- Unconfined Compression
- Triaxial Compression

PLASTIC LIMIT ○ MOISTURE CONTENT + LIQUID LIMIT ◇ (%): 0 20 40 60 80

SHEAR STRENGTH (ksf): 0 1 2

Remarks

LOG OF BORING NM 35-28498.GPJ ELLIS ASSOCIATES.GDT 4/29/20

Project No.: 35-28498
Boring No.: B11
Sheet 2 of 3

LOG OF BORING

Project: JAXPORT Buck Island (DMMA)
Client: HDR Engineering
Drill Rig: 101A
Driller: M. Letchworth
Boring Location: See Field Exploration Plan
Drill Rod: AWJ
Drill Mud: Super Gel-X
Casing Size:
Length of Casing:
Groundwater Depth: 2 ft Time: Drilling Date: 4/4/19
Boring Begun: 4/4/19
Boring Completed: 4/4/19

SAMPLE NO.	DEPTH, FEET	SAMPLE TYPE	DESCRIPTION	BLOWS PER 6 IN.	N Value	PERCENT ORGANIC MATERIAL	PERCENT PASSING NO. 200 SIEVE	PLASTIC LIMIT ○ / MOISTURE CONTENT + / LIQUID LIMIT ◇ (%)	SHEAR STRENGTH (ksf)
	25		VERY LOOSE Gray Fine SAND, Trace Clay (SP) *(Continued)*						
			LOOSE Gray Very Silty Fine SAND (SM)						
9	30			1 1 2	3				
			LOOSE Gray Fine SAND With Clay (SP-SC)						
10	35			1 2 5	7				
11	40			1 3 4	7				
			FIRM Gray CLAY (CH)						
12	45			3 2 2	4				
13	50			2 2 3	5				

SHEAR STRENGTH (ksf): Pocket Penetrometer Undisturbed Sample; Pocket Penetrometer Disturbed Sample; Torvane; Unconfined Compression; Triaxial Compression

0 20 40 60 80 (%) 0 1 2

Remarks

LOG OF BORING NM 35-28498.GPJ ELLIS ASSOCIATES.GDT 4/29/20

Project No.: 35-28498
Boring No.: B11
Sheet 3 of 3

LOG OF BORING

Project: JAXPORT Buck Island (DMMA)
Client: HDR Engineering
Drill Rig: 101A
Driller: M. Letchworth
Boring Location: See Field Exploration Plan
Drill Rod: AWJ
Drill Mud: Super Gel-X
Casing Size:
Length of Casing:
Groundwater Depth: 2 ft Time: Drilling Date: 4/4/19
Boring Begun: 4/4/19
Boring Completed: 4/4/19

SAMPLE NO.	DEPTH, FEET	SAMPLE TYPE	DESCRIPTION	BLOWS PER 6 IN.	N Value	PERCENT ORGANIC MATERIAL	PERCENT PASSING NO. 200 SIEVE	PLASTIC LIMIT ○ / MOISTURE CONTENT + / LIQUID LIMIT ◇ (%)	SHEAR STRENGTH (ksf)
	50		FIRM Gray CLAY (CH) *(Continued)*						
14	55			2 2 3	5				
			MEDIUM DENSE Light Brown Silty Fine SAND With Phosphate Nodules (SM)						
15	60			4 2 13	15				
			MEDIUM DENSE to VERY DENSE Gray Fine SAND With Clay (SP-SC)						
16	65			4 7 34	41				
17	70			9 11 12	23				
18	75			10 15 30	45				
			Boring Terminated @ 75 ft.						

SHEAR STRENGTH (ksf)
Pocket Penetrometer Undisturbed Sample
Pocket Penetrometer Disturbed Sample
Torvane
Unconfined Compression
Triaxial Compression

0 20 40 60 80
0 1 2

Remarks

LOG OF BORING NM 35-28498.GPJ ELLIS ASSOCIATES.GDT 4/29/20

Project No.: 35-28498
Boring No.: B12
Sheet 1 of 3

LOG OF BORING

Project: JAXPORT Buck Island (DMMA)
Client: HDR Engineering
Drill Rig: 101A
Driller: M. Letchworth
Boring Location: See Field Exploration Plan
Drill Rod: AWJ
Drill Mud: Super Gel-X
Casing Size:
Length of Casing:
Groundwater Depth: 4.5 ft Time: Drilling Date: 5/10/19
Boring Begun: 5/15/19
Boring Completed: 5/15/19

SAMPLE NO.	DEPTH, FEET	SAMPLE TYPE	DESCRIPTION	BLOWS PER 6 IN.	N Value	PERCENT ORGANIC MATERIAL	PERCENT PASSING NO. 200 SIEVE	PLASTIC LIMIT / MOISTURE CONTENT / LIQUID LIMIT (%)	SHEAR STRENGTH (ksf)
	0		Topsoil	1					
1			LOOSE to MEDIUM DENSE Light Brown Fine SAND (SP)	1 2 3	3				
				2 3					
2				6	9				
			LOOSE to VERY LOOSE Light Gray Fine SAND, Some Shell Fragments (SP)	5 2					
				2					
3	5			2	4				
				1 1/12"					
4			VERY LOOSE Dark Brown Silty Fine SAND, Some Organic Fines (SM)	1/12"	1/12"	4	16	+	
				3					
5			MEDIUM DENSE Gray Fine SAND (SP)	6 7	13				
	10			10					
			VERY LOOSE Gray Fine SAND With Silt (SP-SM)						
				1/12"					
6				1	1		6	+	
	15								
			VERY LOOSE to LOOSE Gray Fine SAND (SP)						
				1					
7				1 2	3				
	20								
				WOH/6"					
8				1					
	25			1	2				

SHEAR STRENGTH (ksf)
- Pocket Penetrometer Undisturbed Sample
- Pocket Penetrometer Disturbed Sample
- Torvane
- Unconfined Compression
- Triaxial Compression

Remarks

Project No.: 35-28498
Boring No.: B12
Sheet 2 of 3

LOG OF BORING

Project: JAXPORT Buck Island (DMMA)
Client: HDR Engineering
Drill Rig: 101A
Driller: M. Letchworth
Boring Location: See Field Exploration Plan
Drill Rod: AWJ
Drill Mud: Super Gel-X
Casing Size:
Length of Casing:
Groundwater Depth: 4.5 ft Time: Drilling Date: 5/10/19
Boring Begun: 5/15/19
Boring Completed: 5/15/19

SAMPLE NO.	DEPTH, FEET	SAMPLE TYPE	DESCRIPTION	BLOWS PER 6 IN.	N Value	PERCENT ORGANIC MATERIAL	PERCENT PASSING NO. 200 SIEVE	PLASTIC LIMIT ○ / MOISTURE CONTENT + / LIQUID LIMIT ◇ (%)	SHEAR STRENGTH (ksf)
	25		VERY LOOSE to LOOSE Gray Fine SAND (SP) *(Continued)*						
9	30			1 1 3	4		2	+	
10	35			1 1 3	4				
11	40		Gray Weathered Limestone	9 50/5.75"	50/5.75"				
12	45			50/5"	50/5"				
13	50		VERY DENSE Gray Fine SAND With Weathered Limestone and Phosphate Nodules (Marl) (SP)	50/5"	50/5"				

Pocket Penetrometer Undisturbed Sample
Pocket Penetrometer Disturbed Sample
Torvane
Unconfined Compression
Triaxial Compression

0 20 40 60 80
0 1 2

Remarks

LOG OF BORING NM 35-28498.GPJ ELLIS ASSOCIATES.GDT 4/29/20

Project No.: 35-28498
Boring No.: B12
Sheet 3 of 3

LOG OF BORING

Project: JAXPORT Buck Island (DMMA)
Client: HDR Engineering
Drill Rig: 101A
Driller: M. Letchworth
Boring Location: See Field Exploration Plan
Drill Rod: AWJ
Drill Mud: Super Gel-X
Casing Size:
Length of Casing:
Groundwater Depth: 4.5 ft Time: Drilling Date: 5/10/19
Boring Begun: 5/15/19
Boring Completed: 5/15/19

SAMPLE NO.	DEPTH, FEET	SAMPLE TYPE	DESCRIPTION	BLOWS PER 6 IN.	N Value	PERCENT ORGANIC MATERIAL	PERCENT PASSING NO. 200 SIEVE	PLASTIC LIMIT ○ / MOISTURE CONTENT + (%) / LIQUID LIMIT ◇	SHEAR STRENGTH (ksf)
	50		VERY DENSE Gray Fine SAND With Weathered Limestone and Phosphate Nodules (Marl) (SP) *(Continued)*						
			VERY DENSE Gray Fine SAND, Some Phosphate Nodules (Marl) (SP)						
14	55			23 50/5"	50/5"				
15	60			23 25 37	62				
			VERY DENSE Gray Silty Fine SAND (Marl) (SM)						
16	65			6 32 20	52				
			HARD Gray SILT (Marl) (ML)						
17	70			9 10 21	31				
18	75			10 13 25	38				

Boring Terminated @ 75 ft.

Remarks

SHEAR STRENGTH (ksf): Pocket Penetrometer Undisturbed Sample; Pocket Penetrometer Disturbed Sample; Torvane; Unconfined Compression; Triaxial Compression

MOISTURE CONTENT (%): 0 20 40 60 80

SHEAR STRENGTH (ksf): 0 1 2

LOG OF BORING NM 35-28498.GPJ ELLIS ASSOCIATES.GDT 4/29/20

Project No.: 35-28498
Boring No.: B13
Sheet 1 of 3

LOG OF BORING

Project: JAXPORT Buck Island (DMMA)
Client: HDR Engineering
Boring Location: See Field Exploration Plan
Drill Rig: 101A
Driller: M. Foster
Drill Rod: AWJ
Drill Mud: Super Gel-X
Casing Size:
Length of Casing:
Groundwater Depth: 5 ft Time: Drilling Date: 3/29/19
Boring Begun: 3/29/19
Boring Completed: 3/29/19

SAMPLE NO.	DEPTH, FEET	SAMPLE TYPE	DESCRIPTION	BLOWS PER 6 IN.	N Value	PERCENT ORGANIC MATERIAL	PERCENT PASSING NO. 200 SIEVE	PLASTIC LIMIT ○ / MOISTURE CONTENT + / LIQUID LIMIT ◇ (%)	SHEAR STRENGTH (ksf)
	0		LOOSE to MEDIUM DENSE Light Brown Fine SAND (SP)	1 2 2 2 2 3	4			0 15 30 45 60	⊙ Pocket Penetrometer Undisturbed Sample ◔ Pocket Penetrometer Disturbed Sample ▼ Torvane ● Unconfined Compression ⊠ Triaxial Compression 0 1 2
1				3 4 4 5	6				
2				6 7	11				
3	5			4 4 3 5	7				
4			LOOSE Gray Fine SAND (SP)	2 2 1 1	3				
5	10								
			LOOSE Gray Fine SAND With Clay (SP-SC)	4 2 2	4				
6	15								
			MEDIUM DENSE Gray Fine SAND (SP)	4 4 6	10				
7	20								
8	25			3 4 6	10				

Remarks Groundwater Depth is Tidal Influenced.

Project No.: 35-28498
Boring No.: B13
Sheet 2 of 3

LOG OF BORING

Project: JAXPORT Buck Island (DMMA)
Client: HDR Engineering
Drill Rig: 101A
Driller: M. Foster
Boring Location: See Field Exploration Plan
Drill Rod: AWJ
Drill Mud: Super Gel-X
Casing Size:
Length of Casing:
Groundwater Depth: 5 ft Time: Drilling Date: 3/29/19
Boring Begun: 3/29/19
Boring Completed: 3/29/19

SAMPLE NO.	DEPTH, FEET	SAMPLE TYPE	DESCRIPTION	BLOWS PER 6 IN.	N Value	PERCENT ORGANIC MATERIAL	PERCENT PASSING NO. 200 SIEVE	PLASTIC LIMIT ○ / MOISTURE CONTENT + (%) / LIQUID LIMIT ◇	SHEAR STRENGTH (ksf)
	25		MEDIUM DENSE Gray Fine SAND (SP) *(Continued)*						
			VERY LOOSE to MEDIUM DENSE Gray Silty Fine SAND (SM)						
9	30			1 1 1	2				
10	35			5 6 4	10				
			MEDIUM DENSE Gray Fine SAND With Shell Fragments (SP)						
11	40			4 5 5	10				
			Gray Weathered Limestone						
12	45			50/5.5"	50/5.5"				
			DENSE Gray Fine SAND With Limestone (SP)						
13	50			13 17 18	35				

Pocket Penetrometer Undisturbed Sample
Pocket Penetrometer Disturbed Sample
Torvane
Unconfined Compression
Triaxial Compression

0 15 30 45 60 (%)
0 1 2

Remarks

LOG OF BORING NM 35-28498.GPJ ELLIS ASSOCIATES.GDT 4/29/20

Project No.: 35-28498
Boring No.: B13
Sheet 3 of 3

LOG OF BORING

Project: JAXPORT Buck Island (DMMA)
Client: HDR Engineering
Drill Rig: 101A
Driller: M. Foster
Boring Location: See Field Exploration Plan
Drill Rod: AWJ
Drill Mud: Super Gel-X
Casing Size:
Length of Casing:
Groundwater Depth: 5 ft Time: Drilling Date: 3/29/19
Boring Begun: 3/29/19
Boring Completed: 3/29/19

SAMPLE NO.	DEPTH, FEET	SAMPLE TYPE	DESCRIPTION	BLOWS PER 6 IN.	N Value	PERCENT ORGANIC MATERIAL	PERCENT PASSING NO. 200 SIEVE	PLASTIC LIMIT ○ / MOISTURE CONTENT + / LIQUID LIMIT ◇ (%)	SHEAR STRENGTH (ksf)
	50		DENSE Gray Fine SAND With Limestone (SP) *(Continued)*						
			VERY DENSE Light Gray Fine SAND With Clay (SP-SC)						
14	55			15 26 23	49				
15	60			9 21 28	49				
			VERY DENSE Gray Fine SAND (SP)						
16	65			25 35 33	68				
			HARD Gray CLAY With Sand (Marl) (CH)						
17	70			10 14 17	31		73	+	
18	75			9 11 11	22				

Boring Terminated @ 75 ft.

Remarks

SHEAR STRENGTH (ksf)
- Pocket Penetrometer Undisturbed Sample
- Pocket Penetrometer Disturbed Sample
- Torvane
- Unconfined Compression
- Triaxial Compression

MOISTURE CONTENT (%): 0, 15, 30, 45, 60
SHEAR STRENGTH (ksf): 0, 1, 2

LOG OF BORING NM 35-28498.GPJ ELLIS ASSOCIATES.GDT 4/29/20

Project No.: 35-28498
Boring No.: B14
Sheet 1 of 3

LOG OF BORING

Project: JAXPORT Buck Island (DMMA)
Client: HDR Engineering
Drill Rig: 101A
Driller: M. Foster
Boring Location: See Field Exploration Plan
Drill Rod: AWJ
Drill Mud: Super Gel-X
Casing Size:
Length of Casing:
Groundwater Depth: 5 ft Time: Drilling Date: 5/22/19
Boring Begun: 5/22/19
Boring Completed: 5/22/19

SAMPLE NO.	DEPTH, FEET	SAMPLE TYPE	DESCRIPTION	BLOWS PER 6 IN.	N Value	PERCENT ORGANIC MATERIAL	PERCENT PASSING NO. 200 SIEVE	PLASTIC LIMIT ○ / MOISTURE CONTENT + / LIQUID LIMIT ◇ (%)	SHEAR STRENGTH (ksf)
	0		Topsoil	1					
1			VERY LOOSE to LOOSE Light Brown Fine SAND (SP)	1 1 2	2				
2				2 3 5	8				
				8 5					
3	5		MEDIUM DENSE to LOOSE Gray Fine SAND (SP) ▼	6 3 5	9				
4				2 4 4	8				
				4 2					
5			SOFT Dark Brown SILT, Many Organic Fines (ML)	1 1 1	2				
	10								
			VERY LOOSE Gray Fine SAND With Silt (SP-SM)	2					
6				1 1	2				
	15								
			MEDIUM DENSE to LOOSE Gray Fine SAND (SP)	3					
7				6 8	14				
	20								
				2					
8				4 4	8				
	25								

SHEAR STRENGTH (ksf)
Pocket Penetrometer Undisturbed Sample
Pocket Penetrometer Disturbed Sample
Torvane
Unconfined Compression
Triaxial Compression

Remarks

LOG OF BORING NM 35-28498.GPJ ELLIS ASSOCIATES.GDT 4/29/20

Project No.: 35-28498
Boring No.: B14
Sheet 2 of 3

LOG OF BORING

Project: JAXPORT Buck Island (DMMA)
Client: HDR Engineering
Drill Rig: 101A
Driller: M. Foster
Boring Location: See Field Exploration Plan
Drill Rod: AWJ
Drill Mud: Super Gel-X
Casing Size:
Length of Casing:
Groundwater Depth: 5 ft Time: Drilling Date: 5/22/19
Boring Begun: 5/22/19
Boring Completed: 5/22/19

SAMPLE NO.	DEPTH, FEET	SAMPLE TYPE	DESCRIPTION	BLOWS PER 6 IN.	N Value	PERCENT ORGANIC MATERIAL	PERCENT PASSING NO. 200 SIEVE	PLASTIC LIMIT / MOISTURE CONTENT (%) / LIQUID LIMIT
	25		MEDIUM DENSE to LOOSE Gray Fine SAND (SP) *(Continued)*					
			LOOSE Gray Fine SAND, Trace Clay (SP)					
9	30			3 2 3	5			
10	35			4 4 4	8			
			MEDIUM DENSE Gray Fine SAND With Clay (SP-SC)					
11	40			4 4 6	10			
			Gray Weathered Limestone					
12	45			50/4"	50/4"			
			VERY DENSE Gray Clayey Fine SAND (SC)					
13	50			5 3 50/3"	50/3"			

SHEAR STRENGTH (ksf)
- Pocket Penetrometer Undisturbed Sample
- Pocket Penetrometer Disturbed Sample
- Torvane
- Unconfined Compression
- Triaxial Compression

0 10 20 30 40 (%)
0 1 2

Remarks

LOG OF BORING NM 35-28498.GPJ ELLIS ASSOCIATES.GDT 4/29/20

Project No.: 35-28498
Boring No.: B14
Sheet 3 of 3

LOG OF BORING

Project: JAXPORT Buck Island (DMMA)
Client: HDR Engineering
Drill Rig: 101A
Driller: M. Foster
Boring Location: See Field Exploration Plan
Drill Rod: AWJ
Drill Mud: Super Gel-X
Casing Size:
Length of Casing:
Groundwater Depth: 5 ft Time: Drilling Date: 5/22/19
Boring Begun: 5/22/19
Boring Completed: 5/22/19

SAMPLE NO.	DEPTH, FEET	SAMPLE TYPE	DESCRIPTION	BLOWS PER 6 IN.	N Value	PERCENT ORGANIC MATERIAL	PERCENT PASSING NO. 200 SIEVE	PLASTIC LIMIT ○ / MOISTURE CONTENT + / LIQUID LIMIT ◇ (%)	SHEAR STRENGTH (ksf)
	50		VERY DENSE Gray Clayey Fine SAND (SC) *(Continued)*						
			DENSE to VERY DENSE Gray Fine SAND With Clay and Phosphate Nodules (Marl) (SP-SC)						
14	55			8 12 22	34				
15	60			6 14 36	50				
			VERY DENSE Gray Fine SAND, Trace Clay (Marl) (SP)						
16	65			25 36 40	76				
			VERY DENSE Gray Clayey Fine SAND (Marl) (SC)						
17	70			37 50/4.5"	50/4.5"				
18	75			18 20 21	41				

Boring Terminated @ 75 ft.

Remarks

SHEAR STRENGTH (ksf): Pocket Penetrometer Undisturbed Sample; Pocket Penetrometer Disturbed Sample; Torvane; Unconfined Compression; Triaxial Compression

LOG OF BORING NM 35-28498.GPJ ELLIS ASSOCIATES.GDT 4/29/20

Project No.: 35-28498
Boring No.: B15
Sheet 1 of 3

LOG OF BORING

Project: JAXPORT Buck Island (DMMA)
Client: HDR Engineering
Drill Rig: 101A
Driller: M. Letchworth
Boring Location: See Field Exploration Plan
Drill Rod: AWJ
Drill Mud: Super Gel-X
Casing Size:
Length of Casing:
Groundwater Depth: 5 ft Time: Drilling Date: 4/2/19
Boring Begun: 4/2/19
Boring Completed: 4/2/19

SAMPLE NO.	DEPTH, FEET	SAMPLE TYPE	DESCRIPTION	BLOWS PER 6 IN.	N Value	PERCENT ORGANIC MATERIAL	PERCENT PASSING NO. 200 SIEVE	PLASTIC LIMIT / MOISTURE CONTENT / LIQUID LIMIT (%)	SHEAR STRENGTH (ksf)
	0		Topsoil	2					
1			LOOSE to MEDIUM DENSE Light Brown Fine SAND (SP)	1 3 3	4				
				7					
2				10 10	20				
				12					
	5		MEDIUM DENSE to LOOSE Gray Fine SAND (SP) ▼	7 6 6	12				
3				8					
				3					
4				4 4	8				
				2					
			SOFT Gray Brown CLAY With Sand (CH)	1 1					
5			Shelby Tube (8.5'-10.5')	1	2		81	+	
	10			2					
			Shelby Tube (10.5'-12.5')						
			LOOSE Gray Fine SAND With Clay (SP-SC)						
				1					
6				1					
	15			2	3				
			MEDIUM DENSE Gray Fine SAND (SP)						
				4					
7				6					
	20			7	13				
				4					
8				4					
	25			5	9				

SHEAR STRENGTH (ksf)
- Pocket Penetrometer Undisturbed Sample
- Pocket Penetrometer Disturbed Sample
- Torvane
- Unconfined Compression
- Triaxial Compression

PLASTIC LIMIT ○ MOISTURE CONTENT + LIQUID LIMIT ◇
(%) 0 35 70 105 140
0 1 2

Remarks

LOG OF BORING NM 35-28498.GPJ ELLIS ASSOCIATES.GDT 4/29/20

Project No.: 35-28498
Boring No.: B15
Sheet 2 of 3

LOG OF BORING

Project: JAXPORT Buck Island (DMMA)
Client: HDR Engineering
Drill Rig: 101A
Driller: M. Letchworth
Boring Location: See Field Exploration Plan
Drill Rod: AWJ
Drill Mud: Super Gel-X
Casing Size:
Length of Casing:
Groundwater Depth: 5 ft Time: Drilling Date: 4/2/19
Boring Begun: 4/2/19
Boring Completed: 4/2/19

SAMPLE NO.	DEPTH, FEET	SAMPLE TYPE	DESCRIPTION	BLOWS PER 6 IN.	N Value	PERCENT ORGANIC MATERIAL	PERCENT PASSING NO. 200 SIEVE	PLASTIC LIMIT ○ / MOISTURE CONTENT + / LIQUID LIMIT ◇ (%) 0 35 70 105 140	SHEAR STRENGTH (ksf) 0 1 2
	25		MEDIUM DENSE Gray Fine SAND (SP) *(Continued)*						
			LOOSE Gray Fine SAND, Trace Clay (SP)						
9	30			1 2 4	6				
			LOOSE Gray Fine SAND With Silt (SP-SM)						
10	35			1 2 3	5		6	+	
			DENSE Gray Silty Fine SAND With Shell Fragments and Phosphate Nodules (SM)						
11	40			1 1 36	37				
			Gray Weathered Limestone						
12	45			50/4.5"	50/4.5"				
13	50			50/3"	50/3"				

SHEAR STRENGTH (ksf)
- ⊙ Pocket Penetrometer Undisturbed Sample
- ◔ Pocket Penetrometer Disturbed Sample
- ▼ Torvane
- ● Unconfined Compression
- ⊠ Triaxial Compression

Remarks

Project No.: 35-28498
Boring No.: B15
Sheet 3 of 3

LOG OF BORING

Project: JAXPORT Buck Island (DMMA)
Client: HDR Engineering
Drill Rig: 101A
Driller: M. Letchworth
Boring Location: See Field Exploration Plan
Drill Rod: AWJ
Drill Mud: Super Gel-X
Casing Size:
Length of Casing:
Groundwater Depth: 5 ft Time: Drilling Date: 4/2/19
Boring Begun: 4/2/19
Boring Completed: 4/2/19

SAMPLE NO.	DEPTH, FEET	SAMPLE TYPE	DESCRIPTION	BLOWS PER 6 IN.	N Value	PERCENT ORGANIC MATERIAL	PERCENT PASSING NO. 200 SIEVE	PLASTIC LIMIT ○ / MOISTURE CONTENT + / LIQUID LIMIT ◇ (%)	SHEAR STRENGTH (ksf)
	50		Gray Weathered Limestone *(Continued)*						
			VERY DENSE Light Gray Fine SAND With Clay (SP-SC)						
14	55			9 29 31	60				
			VERY DENSE Gray Fine SAND (SP)						
15	60			28 45 44	89				
16	65			16 31 50/5.5"	50/5.5"				
			VERY DENSE Gray Silty Clayey Fine SAND (Marl) (SC)						
17	70			8 24 31	55				
18	75			10 19 41	60				

Boring Terminated @ 75 ft.

Remarks

SHEAR STRENGTH (ksf): Pocket Penetrometer Undisturbed Sample; Pocket Penetrometer Disturbed Sample; Torvane; Unconfined Compression; Triaxial Compression

PLASTIC LIMIT / MOISTURE CONTENT / LIQUID LIMIT (%): 0, 35, 70, 105, 140

SHEAR STRENGTH (ksf): 0, 1, 2

LOG OF BORING NM 35-28498.GPJ ELLIS ASSOCIATES.GDT 4/29/20

Project No.: 35-28498
Boring No.: B19
Sheet 1 of 3

LOG OF BORING

Project: JAXPORT Buck Island (DMMA)
Client: HDR Engineering
Drill Rig: 101A
Driller: M. Letchworth
Boring Location: See Field Exploration Plan
Drill Rod: AWJ
Drill Mud: Super Gel-X
Casing Size:
Length of Casing:
Groundwater Depth: 5.5 ft Time: Drilling Date: 4/2/19
Boring Begun: 4/2/19
Boring Completed: 4/2/19

SAMPLE NO.	DEPTH, FEET	SAMPLE TYPE	DESCRIPTION	BLOWS PER 6 IN.	N Value	PERCENT ORGANIC MATERIAL	PERCENT PASSING NO. 200 SIEVE	PLASTIC LIMIT ○ / MOISTURE CONTENT + / LIQUID LIMIT ◇ (%)	SHEAR STRENGTH (ksf)
	0		Topsoil	1					
1			LOOSE Light Brown Fine SAND (SP)	2 2 4	4				
				3 3					
2				3 4	6				
				3 4					
3	5			3 4	7				
				7 8					
4			MEDIUM DENSE to LOOSE Gray Fine SAND (SP)	11 11	19				
				4 4					
5				7 6	11				
	10								
				4					
6				4 3	7				
	15								
				3					
7				2 2	4				
	20								
			LOOSE Gray Fine SAND With Clay (SP-SC)						
				2					
8				1 2	3				
	25								

SHEAR STRENGTH (ksf)
- Pocket Penetrometer Undisturbed Sample
- Pocket Penetrometer Disturbed Sample
- Torvane
- Unconfined Compression
- Triaxial Compression

Remarks

Project No.: 35-28498
Boring No.: B19
Sheet 2 of 3

LOG OF BORING

Project: JAXPORT Buck Island (DMMA)
Client: HDR Engineering
Drill Rig: 101A
Driller: M. Letchworth
Boring Location: See Field Exploration Plan
Drill Rod: AWJ
Drill Mud: Super Gel-X
Casing Size:
Length of Casing:
Groundwater Depth: 5.5 ft Time: Drilling Date: 4/2/19
Boring Begun: 4/2/19
Boring Completed: 4/2/19

SAMPLE NO.	DEPTH, FEET	SAMPLE TYPE	DESCRIPTION	BLOWS PER 6 IN.	N Value	PERCENT ORGANIC MATERIAL	PERCENT PASSING NO. 200 SIEVE	PLASTIC LIMIT / MOISTURE CONTENT / LIQUID LIMIT (%)	SHEAR STRENGTH (ksf)
	25		LOOSE Gray Fine SAND With Clay (SP-SC) *(Continued)*						
			MEDIUM DENSE Gray Fine SAND (SP)						
9	30			4 4 5	9				
10	35			5 8 11	19				
			MEDIUM DENSE Gray Fine SAND, Trace Shell Fragments (SP)						
11	40			6 6 7	13				
			VERY DENSE Gray Fine SAND With Shell Fragments (SP)						
12	45			13 27 50/3"	50/3"				
			LOOSE Dark Gray Fine SAND (SP)						
13	50			1 1 2	3				

Pocket Penetrometer Undisturbed Sample
Pocket Penetrometer Disturbed Sample
Torvane
Unconfined Compression
Triaxial Compression

Remarks

Project No.: 35-28498
Boring No.: B19
Sheet 3 of 3

LOG OF BORING

Project: JAXPORT Buck Island (DMMA)
Client: HDR Engineering
Drill Rig: 101A
Driller: M. Letchworth
Boring Location: See Field Exploration Plan
Drill Rod: AWJ
Drill Mud: Super Gel-X
Casing Size:
Length of Casing:
Groundwater Depth: 5.5 ft Time: Drilling Date: 4/2/19
Boring Begun: 4/2/19
Boring Completed: 4/2/19

SAMPLE NO.	DEPTH, FEET	SAMPLE TYPE	DESCRIPTION	BLOWS PER 6 IN.	N Value	PERCENT ORGANIC MATERIAL	PERCENT PASSING NO. 200 SIEVE	PLASTIC LIMIT ○ / MOISTURE CONTENT + / LIQUID LIMIT ◇ (%)	SHEAR STRENGTH (ksf)
	50		LOOSE Dark Gray Fine SAND (SP) *(Continued)*						
			DENSE Gray Fine SAND With Phosphate Nodules (SP)						
14	55			8 11 15	26				
			VERY DENSE Gray Fine SAND (Marl) (SP)						
15	60			11 26 34	60		3	+	
16	65			12 26 30	56				
			VERY DENSE Gray Silty Clayey Fine SAND (Marl) (SC)						
17	70			8 25 32	57				
18	75			10 24 36	60				

Boring Terminated @ 75 ft.

Remarks

SHEAR STRENGTH (ksf): Pocket Penetrometer Undisturbed Sample; Pocket Penetrometer Disturbed Sample; Torvane; Unconfined Compression; Triaxial Compression

0 10 20 30 40 (%)

0 1 2

LOG OF BORING NM 35-28498.GPJ ELLIS ASSOCIATES.GDT 4/29/20

Project No.: 35-28498
Boring No.: B20
Sheet 1 of 3

LOG OF BORING

Project: JAXPORT Buck Island (DMMA)
Client: HDR Engineering
Drill Rig: 101A
Driller: M. Letchworth
Boring Location: See Field Exploration Plan
Drill Rod: AWJ
Drill Mud: Super Gel-X
Casing Size:
Length of Casing:
Groundwater Depth: 7 ft Time: Drilling Date: 4/3/19
Boring Begun: 4/3/19
Boring Completed: 4/3/19

SAMPLE NO.	DEPTH, FEET	SAMPLE TYPE	DESCRIPTION	BLOWS PER 6 IN.	N Value	PERCENT ORGANIC MATERIAL	PERCENT PASSING NO. 200 SIEVE	PLASTIC LIMIT / MOISTURE CONTENT / LIQUID LIMIT (%)	SHEAR STRENGTH (ksf)
	0		Topsoil	1					
1			LOOSE Brown Fine SAND (SP)	1 2	3				
				2 1					
2				1 2	3				
				2 1					
3	5			1 2	3				
				3 1					
4			LOOSE Brown Fine SAND With Shell Fragments (SP) ▼	2 1	3				
				2 1					
5			VERY LOOSE Gray Fine SAND With Shell Fragments (SP)	1 1	2				
	10			2					
			VERY LOOSE to LOOSE Gray Fine SAND (SP)	1/12"					
6				1	1				
	15								
				3 3					
7				5	8				
	20								
			LOOSE Gray Fine SAND, Trace Clay and Shell Fragments (SP)	2 2			3	+	
8				4	6				
	25								

Remarks

LOG OF BORING NM 35-28498.GPJ ELLIS ASSOCIATES.GDT 4/29/20

Project No.: 35-28498
Boring No.: B20
Sheet 2 of 3

LOG OF BORING

Project: JAXPORT Buck Island (DMMA)
Client: HDR Engineering
Drill Rig: 101A
Driller: M. Letchworth
Boring Location: See Field Exploration Plan
Drill Rod: AWJ
Drill Mud: Super Gel-X
Casing Size:
Length of Casing:
Groundwater Depth: 7 ft Time: Drilling Date: 4/3/19
Boring Begun: 4/3/19
Boring Completed: 4/3/19

SAMPLE NO.	DEPTH, FEET	SAMPLE TYPE	DESCRIPTION	BLOWS PER 6 IN.	N Value	PERCENT ORGANIC MATERIAL	PERCENT PASSING NO. 200 SIEVE	PLASTIC LIMIT / MOISTURE CONTENT / LIQUID LIMIT (%)	SHEAR STRENGTH (ksf)
	25		LOOSE Gray Fine SAND, Trace Clay and Shell Fragments (SP) *(Continued)*						
			LOOSE Gray Fine SAND With Shell Fragments (SP)						
9	30			3 3 4	7				
			MEDIUM DENSE Gray Fine SAND (SP)						
10	35			5 7 13	20				
			MEDIUM DENSE Gray Fine SAND With Shell Fragments (SP)						
11	40			7 8 9	17				
12	45		Gray Weathered Limestone	43 50/2.25"	50/2.25"				
			MEDIUM DENSE Gray Clayey Fine SAND (SC)						
13	50			4 6 10	16				

SHEAR STRENGTH (ksf): Pocket Penetrometer Undisturbed Sample; Pocket Penetrometer Disturbed Sample; Torvane; Unconfined Compression; Triaxial Compression

Remarks

Project No.: 35-28498
Boring No.: B20
Sheet 3 of 3

LOG OF BORING

Project: JAXPORT Buck Island (DMMA)
Client: HDR Engineering
Drill Rig: 101A
Driller: M. Letchworth
Boring Location: See Field Exploration Plan
Drill Rod: AWJ
Drill Mud: Super Gel-X
Casing Size:
Length of Casing:
Groundwater Depth: 7 ft Time: Drilling Date: 4/3/19
Boring Begun: 4/3/19
Boring Completed: 4/3/19

SAMPLE NO.	DEPTH, FEET	SAMPLE TYPE	DESCRIPTION	BLOWS PER 6 IN.	N Value	PERCENT ORGANIC MATERIAL	PERCENT PASSING NO. 200 SIEVE	PLASTIC LIMIT ○ / MOISTURE CONTENT + / LIQUID LIMIT ◇ (%)	SHEAR STRENGTH (ksf)
	50		MEDIUM DENSE Gray Clayey Fine SAND (SC) *(Continued)*						
			DENSE to MEDIUM DENSE Gray Fine SAND With Phosphate Nodules (SP)						
14	55			7 20 12	32				
15	60			7 8 13	21				
			MEDIUM DENSE Gray Silty Clayey Fine SAND (SC)						
16	65			5 7 10	17				
			VERY DENSE Gray Fine SAND With Clay and Phosphate Nodules (SP-SC)						
17	70			13 20 22	42				
18	75			14 29 25	54				

Boring Terminated @ 75 ft.

Remarks

SHEAR STRENGTH (ksf): Pocket Penetrometer Undisturbed Sample; Pocket Penetrometer Disturbed Sample; Torvane; Unconfined Compression; Triaxial Compression

LOG OF BORING NM 35-28498.GPJ ELLIS ASSOCIATES.GDT 4/29/20

Project No.: 35-28498
Boring No.: B21
Sheet 1 of 3

LOG OF BORING

Project: JAXPORT Buck Island (DMMA)
Client: HDR Engineering
Drill Rig: 101A
Driller: M. Foster
Boring Location: See Field Exploration Plan
Drill Rod: AWJ
Drill Mud: Super Gel-X
Casing Size:
Length of Casing:
Groundwater Depth: 9 ft Time: Drilling Date: 4/8/19
Boring Begun: 4/8/19
Boring Completed: 4/8/19

SAMPLE NO.	DEPTH, FEET	SAMPLE TYPE	DESCRIPTION	BLOWS PER 6 IN.	N Value	PERCENT ORGANIC MATERIAL	PERCENT PASSING NO. 200 SIEVE	PLASTIC LIMIT / MOISTURE CONTENT / LIQUID LIMIT (%)	SHEAR STRENGTH (ksf)
	0		Topsoil	1					
1			VERY LOOSE to LOOSE Light Brown Fine SAND (SP)	1	2				
				1					
				1					
2				2					
				3	5				
				3					
			LOOSE Light Brown Fine SAND With Shell Fragments (SP)	1					
3	5			2					
				1	3				
				2					
				2					
4				3			2	+	
				3	6				
				3					
				3					
5			▼	3					
				4	7				
				5					
	10								
			SOFT Gray Silty CLAY (CH)						
				3					
6				1			65	○	
				1	2				
	15								
			LOOSE Gray Fine SAND (SP)						
				2					
7				3					
				3	6				
	20								
			LOOSE Gray Fine SAND With Clay (SP-SC)						
				3					
8				3					
				3	6				
	25								

SHEAR STRENGTH (ksf)
- Pocket Penetrometer Undisturbed Sample
- Pocket Penetrometer Disturbed Sample
- Torvane
- Unconfined Compression
- Triaxial Compression

PLASTIC LIMIT / MOISTURE CONTENT / LIQUID LIMIT (%): 0 20 40 60 80

SHEAR STRENGTH (ksf): 0 1 2

Remarks

LOG OF BORING NM 35-28498.GPJ ELLIS ASSOCIATES.GDT 4/29/20

Project No.: 35-28498
Boring No.: B21
Sheet 2 of 3

LOG OF BORING

Project: JAXPORT Buck Island (DMMA)
Client: HDR Engineering
Drill Rig: 101A
Driller: M. Foster
Boring Location: See Field Exploration Plan
Drill Rod: AWJ
Drill Mud: Super Gel-X
Casing Size:
Length of Casing:
Groundwater Depth: 9 ft Time: Drilling Date: 4/8/19
Boring Begun: 4/8/19
Boring Completed: 4/8/19

SAMPLE NO.	DEPTH, FEET	SAMPLE TYPE	DESCRIPTION	BLOWS PER 6 IN.	N Value	PERCENT ORGANIC MATERIAL	PERCENT PASSING NO. 200 SIEVE	PLASTIC LIMIT ○ / MOISTURE CONTENT + (%) / LIQUID LIMIT ◇	SHEAR STRENGTH (ksf)
	25		LOOSE Gray Fine SAND With Clay (SP-SC) *(Continued)*						
9	30		MEDIUM DENSE Gray Fine SAND, Trace Clay and Some Shell Fragments (SP)	5 5 6	11				
10	35		MEDIUM DENSE to DENSE Gray Fine SAND With Shell Fragments (SP)	5 6 4	10				
11	40			6 6 8	14				
12	45			12 13 13	26				
13	50		Gray Weathered Limestone	50/2"	50/2"				

Pocket Penetrometer Undisturbed Sample
Pocket Penetrometer Disturbed Sample
Torvane
Unconfined Compression
Triaxial Compression

0 20 40 60 80
0 1 2

Remarks

LOG OF BORING NM 35-28498.GPJ ELLIS ASSOCIATES.GDT 4/29/20

Project No.: 35-28498
Boring No.: B21
Sheet 3 of 3

LOG OF BORING

Project: JAXPORT Buck Island (DMMA)
Client: HDR Engineering
Drill Rig: 101A
Driller: M. Foster
Boring Location: See Field Exploration Plan
Drill Rod: AWJ
Drill Mud: Super Gel-X
Casing Size:
Length of Casing:
Groundwater Depth: 9 ft Time: Drilling Date: 4/8/19
Boring Begun: 4/8/19
Boring Completed: 4/8/19

SAMPLE NO.	DEPTH, FEET	SAMPLE TYPE	DESCRIPTION	BLOWS PER 6 IN.	N Value
	50		Gray Weathered Limestone *(Continued)*		
14	55			50/2"	50/2"
			MEDIUM DENSE Gray Fine SAND With Phosphate Nodules (SP)	5	
15	60			7 11	18
			VERY DENSE to DENSE Gray Clayey Fine SAND With Phosphate Nodules (Marl) (SC)	50/4"	50/4"
16	65				
				2	
17	70			9 30	39
				16	
18	75			20 20	40

Boring Terminated @ 75 ft.

PERCENT ORGANIC MATERIAL
PERCENT PASSING NO. 200 SIEVE
PLASTIC LIMIT ○ | MOISTURE CONTENT + (%) | LIQUID LIMIT ◇
0 20 40 60 80

SHEAR STRENGTH (ksf)
⊙ Pocket Penetrometer Undisturbed Sample
◒ Pocket Penetrometer Disturbed Sample
▼ Torvane
● Unconfined Compression
⊠ Triaxial Compression
0 1 2

Remarks

LOG OF BORING NM 35-28498.GPJ ELLIS ASSOCIATES.GDT 4/29/20

Project No.: 35-28498
Boring No.: B22
Sheet 1 of 3

LOG OF BORING

Project: JAXPORT Buck Island (DMMA)
Client: HDR Engineering
Drill Rig: 101A
Driller: M. Foster
Boring Location: See Field Exploration Plan
Drill Rod: AWJ
Drill Mud: Super Gel-X
Casing Size:
Length of Casing:
Groundwater Depth: 7 ft Time: Drilling Date: 3/29/19
Boring Begun: 3/29/19
Boring Completed: 3/29/19

SAMPLE NO.	DEPTH, FEET	SAMPLE TYPE	DESCRIPTION	BLOWS PER 6 IN.	N Value	PERCENT ORGANIC MATERIAL	PERCENT PASSING NO. 200 SIEVE	PLASTIC LIMIT / MOISTURE CONTENT / LIQUID LIMIT (%)	SHEAR STRENGTH (ksf)
	0		MEDIUM DENSE Light Brown Fine SAND With Shell Fragments (SP)	2 3 7 7 9 10 10 13 9 10 11 12 9 8 7 5	10 20 21 15			○ + ◇ 0 10 20 30 40	⊙ Pocket Penetrometer Undisturbed Sample ◔ Pocket Penetrometer Disturbed Sample ▼ Torvane ● Unconfined Compression ⊠ Triaxial Compression 0 1 2
1									
2									
3	5								
4			▼						
			MEDIUM DENSE Light Brown Fine SAND With Shell Fragments, Trace Clay (SP)	3 6 4 5	10				
5	10								
			LOOSE to MEDIUM DENSE Gray Fine SAND (SP)	1 4 6	10		4	+	
6	15								
				2 4 4	8				
7	20								
				7 8 9	17				
8	25								

Remarks Groundwater Depth is Tidal Influenced.

Project No.: 35-28498
Boring No.: B22
Sheet 2 of 3

LOG OF BORING

Project: JAXPORT Buck Island (DMMA)
Client: HDR Engineering
Drill Rig: 101A
Driller: M. Foster
Boring Location: See Field Exploration Plan
Drill Rod: AWJ
Drill Mud: Super Gel-X
Casing Size:
Length of Casing:
Groundwater Depth: 7 ft Time: Drilling Date: 3/29/19
Boring Begun: 3/29/19
Boring Completed: 3/29/19

SAMPLE NO.	DEPTH, FEET	SAMPLE TYPE	DESCRIPTION	BLOWS PER 6 IN.	N Value	PERCENT ORGANIC MATERIAL	PERCENT PASSING NO. 200 SIEVE	PLASTIC LIMIT ○ / MOISTURE CONTENT + / LIQUID LIMIT ◇ (%)	SHEAR STRENGTH (ksf)
	25		LOOSE to MEDIUM DENSE Gray Fine SAND (SP) *(Continued)*						
			LOOSE Gray Fine SAND With Silt (SP-SM)						
9	30			1 2 4	6				
			MEDIUM DENSE Gray Fine SAND (SP)						
10	35			1 7 8	15				
			VERY DENSE Gray Fine SAND With Shell Fragments (SP)						
11	40			15 22 25	47				
12	45			18 26 31	57				
			MEDIUM DENSE Gray Fine SAND With Shell Fragments and Limestone (SP)						
13	50			17 12 8	20				

Pocket Penetrometer Undisturbed Sample
Pocket Penetrometer Disturbed Sample
Torvane
Unconfined Compression
Triaxial Compression

0 10 20 30 40
0 1 2

Remarks

LOG OF BORING NM 35-28498.GPJ ELLIS ASSOCIATES.GDT 4/29/20

Project No.: 35-28498
Boring No.: B22
Sheet 3 of 3

LOG OF BORING

Project: JAXPORT Buck Island (DMMA)
Client: HDR Engineering
Drill Rig: 101A
Driller: M. Foster
Boring Location: See Field Exploration Plan
Drill Rod: AWJ
Drill Mud: Super Gel-X
Casing Size:
Length of Casing:
Groundwater Depth: 7 ft Time: Drilling Date: 3/29/19
Boring Begun: 3/29/19
Boring Completed: 3/29/19

SAMPLE NO.	DEPTH, FEET	SAMPLE TYPE	DESCRIPTION	BLOWS PER 6 IN.	N Value	PERCENT ORGANIC MATERIAL	PERCENT PASSING NO. 200 SIEVE	PLASTIC LIMIT ○ / MOISTURE CONTENT + / LIQUID LIMIT ◇ (%)	SHEAR STRENGTH (ksf)
	50		MEDIUM DENSE Gray Fine SAND With Shell Fragments and Limestone (SP) *(Continued)*						
			LOOSE Gray Clayey Fine SAND With Limestone (SC)						
14	55			4 2 4	6				
			Gray Weathered Limestone						
15	60			50/3"	50/3"				
			MEDIUM DENSE to VERY DENSE Gray Silty Fine SAND (Marl) (SM)						
16	65			22 13 13	26				
17	70			3 4 7	11				
18	75			14 28 33	61				

Boring Terminated @ 75 ft.

Remarks

SHEAR STRENGTH (ksf)
- Pocket Penetrometer Undisturbed Sample
- Pocket Penetrometer Disturbed Sample
- Torvane
- Unconfined Compression
- Triaxial Compression

0 10 20 30 40 (%)
0 1 2

LOG OF BORING NM 35-28498.GPJ ELLIS ASSOCIATES.GDT 4/29/20

Project No.: 35-28498
Boring No.: B23
Sheet 1 of 3

LOG OF BORING

Project: JAXPORT Buck Island (DMMA)
Client: HDR Engineering
Drill Rig: 101A
Driller: M. Foster
Boring Location: See Field Exploration Plan
Drill Rod: AWJ
Drill Mud: Super Gel-X
Casing Size:
Length of Casing:
Groundwater Depth: NM Time: Drilling Date: 4/1/19
Boring Begun: 4/1/19
Boring Completed: 4/1/19

SAMPLE NO.	DEPTH, FEET	SAMPLE TYPE	DESCRIPTION	BLOWS PER 6 IN.	N Value	PERCENT ORGANIC MATERIAL	PERCENT PASSING NO. 200 SIEVE	PLASTIC LIMIT / MOISTURE CONTENT / LIQUID LIMIT (%)	SHEAR STRENGTH (ksf)
1	0		LOOSE Light Gray Fine SAND (SP)	2 2 3 2 2	5				
2			MEDIUM DENSE to VERY LOOSE Light Gray Fine SAND With Shell Fragments (SP)	2 4 3 4 4	6				
3	5			5 6 3 1 1	9				
4			MEDIUM DENSE Gray Fine SAND With Shell Fragments (SP)	2 3 5 5 6	2				
5	10				10				
6	15		MEDIUM DENSE Gray Fine SAND (SP)	3 4 6	10				
			VERY SOFT Gray CLAY (CH)						
7	20		MEDIUM DENSE Gray Fine SAND With Silt (SP-SM)	1/12" 5	5		11	+	
			MEDIUM DENSE Gray Fine SAND With Shell Fragments (SP)						
8	25			8 9 11	20				

Pocket Penetrometer Undisturbed Sample
Pocket Penetrometer Disturbed Sample
Torvane
Unconfined Compression
Triaxial Compression

Remarks NM = Groundwater Not Measured at Time of Drilling.

Project No.: 35-28498
Boring No.: B23
Sheet 2 of 3

LOG OF BORING

Project: JAXPORT Buck Island (DMMA)
Client: HDR Engineering
Drill Rig: 101A
Driller: M. Foster
Boring Location: See Field Exploration Plan
Drill Rod: AWJ
Drill Mud: Super Gel-X
Casing Size:
Length of Casing:
Groundwater Depth: NM Time: Drilling Date: 4/1/19
Boring Begun: 4/1/19
Boring Completed: 4/1/19

SAMPLE NO.	DEPTH, FEET	SAMPLE TYPE	DESCRIPTION	BLOWS PER 6 IN.	N Value	PERCENT ORGANIC MATERIAL	PERCENT PASSING NO. 200 SIEVE	PLASTIC LIMIT ○ / MOISTURE CONTENT + (%) / LIQUID LIMIT ◇	SHEAR STRENGTH (ksf)
	25		MEDIUM DENSE Gray Fine SAND With Shell Fragments (SP) *(Continued)*						
9	30		DENSE to MEDIUM DENSE Gray Fine SAND (SP)	9 15 14	29				
10	35			6 8 13	21				
			VERY DENSE Gray Fine SAND With Shell Fragments (SP)						
11	40			22 32 38	70				
12	45			23 26 33	59				
			Gray Weathered Limestone						
13	50			4 4 4	8				

Pocket Penetrometer Undisturbed Sample
Pocket Penetrometer Disturbed Sample
Torvane
Unconfined Compression
Triaxial Compression

0 15 30 45 60 (%)
0 1 2

Remarks

LOG OF BORING NM 35-28498.GPJ ELLIS ASSOCIATES.GDT 4/29/20

Project No.: 35-28498
Boring No.: B23
Sheet 3 of 3

LOG OF BORING

Project: JAXPORT Buck Island (DMMA)
Client: HDR Engineering
Drill Rig: 101A
Driller: M. Foster
Boring Location: See Field Exploration Plan
Drill Rod: AWJ
Drill Mud: Super Gel-X
Casing Size:
Length of Casing:
Groundwater Depth: NM Time: Drilling Date: 4/1/19
Boring Begun: 4/1/19
Boring Completed: 4/1/19

SAMPLE NO.	DEPTH, FEET	SAMPLE TYPE	DESCRIPTION	BLOWS PER 6 IN.	N Value
	50		Gray Weathered Limestone *(Continued)*		
			VERY DENSE Gray Fine SAND (SP)		
14	55			25 48 50/4"	50/4"
			VERY DENSE Gray Fine SAND With Clay (SP-SC)		
15	60			50/4"	50/4"
16	65			23 24 23	47
			VERY DENSE to MEDIUM DENSE Gray Silty Fine SAND With Limestone (Marl) (SM)		
16A	70			4 32 50/2.5"	50/2.5"
17				14 9 16	25
18				6 7 10	17
	75		Boring Terminated @ 75 ft.		

PERCENT ORGANIC MATERIAL

PERCENT PASSING NO. 200 SIEVE

PLASTIC LIMIT ○ | MOISTURE CONTENT + (%) | LIQUID LIMIT ◇

0 15 30 45 60

SHEAR STRENGTH (ksf)
- Pocket Penetrometer Undisturbed Sample
- Pocket Penetrometer Disturbed Sample
- Torvane
- Unconfined Compression
- Triaxial Compression

0 1 2

Remarks

LOG OF BORING NM 35-28498.GPJ ELLIS ASSOCIATES.GDT 4/29/20

Project No.: 35-28498
Boring No.: B24
Sheet 1 of 3

LOG OF BORING

Project: JAXPORT Buck Island (DMMA)
Client: HDR Engineering
Drill Rig: 101A
Driller: M. Foster
Boring Location: See Field Exploration Plan
Drill Rod: AWJ
Drill Mud: Super Gel-X
Casing Size:
Length of Casing:
Groundwater Depth: 2.5 ft Time: Drilling Date: 4/8/19
Boring Begun: 4/8/19
Boring Completed: 4/8/19

SAMPLE NO.	DEPTH, FEET	SAMPLE TYPE	DESCRIPTION	BLOWS PER 6 IN.	N Value	PERCENT ORGANIC MATERIAL	PERCENT PASSING NO. 200 SIEVE	PLASTIC LIMIT ○ / MOISTURE CONTENT + / LIQUID LIMIT ◇ (%)	SHEAR STRENGTH (ksf)
	0		Topsoil	1					
1			VERY LOOSE Light Brown Fine SAND With Shell Fragments (SP)	1 1 2	2				
				3					
2			MEDIUM DENSE Gray Fine SAND With Shell Fragments (SP)	5 5 5	10				
			LOOSE Gray Fine SAND With Shell Fragments (SP)	4 4					
3	5			3 3	7				
4				1 1 2	3				
				2 2					
5				3 3 4	6				
	10								
			VERY LOOSE Gray Fine SAND With Clay (SP-SC)						
6				1 1 1	2				
	15								
			MEDIUM DENSE Light Gray Fine SAND (SP)						
7				6 10 12	22				
	20								
				4 8					
8				10	18				
	25								

SHEAR STRENGTH (ksf)
Pocket Penetrometer Undisturbed Sample
Pocket Penetrometer Disturbed Sample
Torvane
Unconfined Compression
Triaxial Compression

Remarks

LOG OF BORING NM 35-28498.GPJ ELLIS ASSOCIATES.GDT 4/29/20

Project No.: 35-28498
Boring No.: B24
Sheet 2 of 3

LOG OF BORING

Project: JAXPORT Buck Island (DMMA)
Client: HDR Engineering
Drill Rig: 101A
Driller: M. Foster
Boring Location: See Field Exploration Plan
Drill Rod: AWJ
Drill Mud: Super Gel-X
Casing Size:
Length of Casing:
Groundwater Depth: 2.5 ft Time: Drilling Date: 4/8/19
Boring Begun: 4/8/19
Boring Completed: 4/8/19

SAMPLE NO.	DEPTH, FEET	SAMPLE TYPE	DESCRIPTION	BLOWS PER 6 IN.	N Value	PERCENT ORGANIC MATERIAL	PERCENT PASSING NO. 200 SIEVE
	25		MEDIUM DENSE Light Gray Fine SAND (SP) *(Continued)*				
9	30			6 12 12	24		2
			MEDIUM DENSE Gray Fine SAND With Shell Fragments (SP)				
10	35			5 7 13	20		
11	40			13 10 5	15		
			Gray Weathered Limestone				
12	45			6 10 13	23		
			MEDIUM DENSE Gray Fine SAND With Decomposed Limestone (SP)				
13	50			10 13 7	20		

PLASTIC LIMIT ○ | MOISTURE CONTENT + (%) | LIQUID LIMIT ◇
0 10 20 30 40

SHEAR STRENGTH (ksf)
⊙ Pocket Penetrometer Undisturbed Sample
◔ Pocket Penetrometer Disturbed Sample
▼ Torvane
● Unconfined Compression
⊠ Triaxial Compression
0 1 2

Remarks

LOG OF BORING NM 35-28498.GPJ ELLIS ASSOCIATES.GDT 4/29/20

Project No.: 35-28498
Boring No.: B24
Sheet 3 of 3

LOG OF BORING

Project: JAXPORT Buck Island (DMMA)
Client: HDR Engineering
Drill Rig: 101A
Driller: M. Foster
Boring Location: See Field Exploration Plan
Drill Rod: AWJ
Drill Mud: Super Gel-X
Casing Size:
Length of Casing:
Groundwater Depth: 2.5 ft Time: Drilling Date: 4/8/19
Boring Begun: 4/8/19
Boring Completed: 4/8/19

SAMPLE NO.	DEPTH, FEET	SAMPLE TYPE	DESCRIPTION	BLOWS PER 6 IN.	N Value	PERCENT ORGANIC MATERIAL	PERCENT PASSING NO. 200 SIEVE	PLASTIC LIMIT / MOISTURE CONTENT / LIQUID LIMIT (%)	SHEAR STRENGTH (ksf)
	50		MEDIUM DENSE Gray Fine SAND With Decomposed Limestone (SP) *(Continued)*						
			VERY DENSE to DENSE Gray Fine SAND With Silt (SP-SM)						
14	55			50/5"	50/5"				
15	60			7 15 20	35				
			MEDIUM DENSE to VERY DENSE Gray Clayey Fine SAND (Marl) (SC)						
16	65			3 9 17	26				
17	70			12 26 33	59				
18	75			20 21 17	38				

Boring Terminated @ 75 ft.

Remarks

SHEAR STRENGTH (ksf): Pocket Penetrometer Undisturbed Sample; Pocket Penetrometer Disturbed Sample; Torvane; Unconfined Compression; Triaxial Compression

PLASTIC LIMIT / MOISTURE CONTENT / LIQUID LIMIT (%): 0 10 20 30 40

SHEAR STRENGTH (ksf): 0 1 2

LOG OF BORING NM 35-28498.GPJ ELLIS ASSOCIATES.GDT 4/29/20

Project No.: 35-28498
Boring No.: B25
Sheet 1 of 3

LOG OF BORING

Project: JAXPORT Buck Island (DMMA)
Client: HDR Engineering
Drill Rig: 101A
Driller: M. Letchworth
Boring Location: See Field Exploration Plan
Drill Rod: AWJ
Drill Mud: Super Gel-X
Casing Size:
Length of Casing:
Groundwater Depth: 8 ft Time: Drilling Date: 4/3/19
Boring Begun: 4/3/19
Boring Completed: 4/3/19

SAMPLE NO.	DEPTH, FEET	SAMPLE TYPE	DESCRIPTION	BLOWS PER 6 IN.	N Value	PERCENT ORGANIC MATERIAL	PERCENT PASSING NO. 200 SIEVE	PLASTIC LIMIT / MOISTURE CONTENT / LIQUID LIMIT (%)	SHEAR STRENGTH (ksf)
	0		Topsoil	1					
1			LOOSE Gray Very Clayey Fine SAND (SC)	2 2 4	4				
			LOOSE Light Brown Clayey Fine SAND (SC)	1 1					
2				2 3	3				
			MEDIUM DENSE Light Gray Fine SAND With Shell Fragments (SP)	3 4					
3	5			5 9	9				
			MEDIUM DENSE Light Brown Fine SAND (SP)	7 8					
4				8 7	16				
				4					
5			MEDIUM DENSE Light Brown Fine SAND With Shell Fragments (SP)	4 5 5	9				
	10								
			MEDIUM DENSE Gray Fine SAND (SP)						
				5					
6				5 6	11				
	15								
				5					
7				6 9	15				
	20								
				7					
8				7 13	20				
	25								

SHEAR STRENGTH (ksf)
- Pocket Penetrometer Undisturbed Sample
- Pocket Penetrometer Disturbed Sample
- Torvane
- Unconfined Compression
- Triaxial Compression

PLASTIC LIMIT ○ MOISTURE CONTENT + LIQUID LIMIT ◇ (%): 0 10 20 30 40
SHEAR STRENGTH (ksf): 0 1 2

Remarks

LOG OF BORING NM 35-28498.GPJ ELLIS ASSOCIATES.GDT 4/29/20

Project No.: 35-28498
Boring No.: B25
Sheet 2 of 3

LOG OF BORING

Project: JAXPORT Buck Island (DMMA)
Client: HDR Engineering
Drill Rig: 101A
Driller: M. Letchworth
Boring Location: See Field Exploration Plan
Drill Rod: AWJ
Drill Mud: Super Gel-X
Casing Size:
Length of Casing:
Groundwater Depth: 8 ft Time: Drilling Date: 4/3/19
Boring Begun: 4/3/19
Boring Completed: 4/3/19

SAMPLE NO.	DEPTH, FEET	SAMPLE TYPE	DESCRIPTION	BLOWS PER 6 IN.	N Value	PERCENT ORGANIC MATERIAL	PERCENT PASSING NO. 200 SIEVE	PLASTIC LIMIT ○ / MOISTURE CONTENT + / LIQUID LIMIT ◇ (%)	SHEAR STRENGTH (ksf)
	25		MEDIUM DENSE Gray Fine SAND (SP) *(Continued)*						
9	30			6 6 9	15				
10	35			4 8 12	20				
			MEDIUM DENSE to VERY DENSE Gray Fine SAND With Shell Fragments (SP)						
11	40			4 4 7	11				
12	45			18 28 40	68				
13	50			8 10 11	21				

SHEAR STRENGTH (ksf)
Pocket Penetrometer Undisturbed Sample
Pocket Penetrometer Disturbed Sample
Torvane
Unconfined Compression
Triaxial Compression

0 10 20 30 40 (%)
0 1 2

Remarks

LOG OF BORING NM 35-28498.GPJ ELLIS ASSOCIATES.GDT 4/29/20

Project No.: 35-28498
Boring No.: B25
Sheet 3 of 3

LOG OF BORING

Project: JAXPORT Buck Island (DMMA)
Client: HDR Engineering
Drill Rig: 101A
Driller: M. Letchworth
Boring Location: See Field Exploration Plan
Drill Rod: AWJ
Drill Mud: Super Gel-X
Casing Size:
Length of Casing:
Groundwater Depth: 8 ft Time: Drilling Date: 4/3/19
Boring Begun: 4/3/19
Boring Completed: 4/3/19

SAMPLE NO.	DEPTH, FEET	SAMPLE TYPE	DESCRIPTION	BLOWS PER 6 IN.	N Value	PERCENT ORGANIC MATERIAL	PERCENT PASSING NO. 200 SIEVE	PLASTIC LIMIT / MOISTURE CONTENT / LIQUID LIMIT (%)	SHEAR STRENGTH (ksf)
	50		MEDIUM DENSE to VERY DENSE Gray Fine SAND With Shell Fragments (SP) *(Continued)*						
14	55			7 13 13	26				
			No Recovery	50/3"	50/3"				
15	60								
			DENSE Light Brown Clayey Fine SAND With Phosphate Nodules (SC)	13 17 18	35		22		
16	65								
				9 12 21	33				
17	70								
			DENSE Gray Silty Clayey Fine SAND (Marl) (SC)	12 14 17	31				
18	75								

Boring Terminated @ 75 ft.

Remarks

SHEAR STRENGTH (ksf): Pocket Penetrometer Undisturbed Sample; Pocket Penetrometer Disturbed Sample; Torvane; Unconfined Compression; Triaxial Compression

PLASTIC LIMIT / MOISTURE CONTENT / LIQUID LIMIT (%): 0 10 20 30 40

SHEAR STRENGTH (ksf): 0 1 2

LOG OF BORING NM 35-28498.GPJ ELLIS ASSOCIATES.GDT 4/29/20

Project No.: 35-28498
Boring No.: C1
Sheet 1 of 1

LOG OF BORING

Project: JAXPORT Buck Island (DMMA)
Client: HDR Engineering
Drill Rig: 108P
Driller: Other
Boring Location: See Field Exploration Plan
Drill Rod: AWJ
Drill Mud: Super Gel-X
Casing Size:
Length of Casing:
Groundwater Depth: 10 ft Time: Drilling Date: 5/24/19
Boring Begun: 5/24/19
Boring Completed: 5/24/19

SAMPLE NO.	DEPTH, FEET	SAMPLE TYPE	DESCRIPTION	BLOWS PER 6 IN.	N Value	PERCENT ORGANIC MATERIAL	PERCENT PASSING NO. 200 SIEVE
	0		VERY SOFT to SOFT Dark Gray Clayey SILT With Sand, Many Organic Fines (MH)	1/24"			
1					1/24"		
				1/24"			
2					1/24"		
				WOH/24"			
3	5				WOH/24"		
				WOH/24"			
4					WOH/24"		
				1			
				1			
5				1	2	9	78
	10			1			
			MEDIUM DENSE Light Brown Fine SAND (SP)				
				12			
6				12			
	15			12	24		
			MEDIUM DENSE Gray Brown Fine SAND With Silt (SP-SM)				
				12			
7				10			
	20			10	20		
			MEDIUM DENSE Gray Fine SAND (SP)				
				8			
8				8			
	25			8	16		

Boring Terminated @ 25 ft.

Remarks

PLASTIC LIMIT ○ | MOISTURE CONTENT + (%) | LIQUID LIMIT ◇
0 40 80 120 160

SHEAR STRENGTH (ksf)
0 1 2
- ⊙ Pocket Penetrometer Undisturbed Sample
- ◒ Pocket Penetrometer Disturbed Sample
- ▼ Torvane
- ● Unconfined Compression
- ⊠ Triaxial Compression

LOG OF BORING NM 35-28498.GPJ ELLIS ASSOCIATES.GDT 4/29/20

Project No.: 35-28498
Boring No.: C2
Sheet 1 of 2

LOG OF BORING

Project: JAXPORT Buck Island (DMMA)
Client: HDR Engineering
Drill Rig: 108P
Driller: Other
Boring Location: See Field Exploration Plan
Drill Rod: AWJ
Drill Mud: Super Gel-X
Casing Size:
Length of Casing:
Groundwater Depth: 12 ft Time: Drilling Date: 5/24/19
Boring Begun: 5/24/19
Boring Completed: 5/24/19

SAMPLE NO.	DEPTH, FEET	SAMPLE TYPE	DESCRIPTION	BLOWS PER 6 IN.	N Value	PERCENT ORGANIC MATERIAL	PERCENT PASSING NO. 200 SIEVE	PLASTIC LIMIT ○ / MOISTURE CONTENT + / LIQUID LIMIT ◇ (%)	SHEAR STRENGTH (ksf)
1	0		VERY SOFT to SOFT Dark Gray Clayey SILT With Sand (MH)	1/18"					
				1	1/18"				
				1/24"					
2					1/24"				
				1/24"					
3	5				1/24"				
				1/24"					
4					1/24"				
				1/24"					
5					1/24"				
	10								
				WOH/18"					
6					WOH/18"				
	15								
				1/12"					
7				2	2				
	20								
			MEDIUM DENSE Light Brown Silty Fine SAND (SM)						
				8					
8				9					
	25			8	17				

Pocket Penetrometer Undisturbed Sample
Pocket Penetrometer Disturbed Sample
Torvane
Unconfined Compression
Triaxial Compression

Remarks

LOG OF BORING NM 35-28498.GPJ ELLIS ASSOCIATES.GDT 4/29/20

Project No.: 35-28498
Boring No.: C2
Sheet 2 of 2

LOG OF BORING

Project: JAXPORT Buck Island (DMMA)
Client: HDR Engineering
Drill Rig: 108P
Driller: Other
Boring Location: See Field Exploration Plan
Drill Rod: AWJ
Drill Mud: Super Gel-X
Casing Size:
Length of Casing:
Groundwater Depth: 12 ft Time: Drilling Date: 5/24/19
Boring Begun: 5/24/19
Boring Completed: 5/24/19

SAMPLE NO.	DEPTH, FEET	SAMPLE TYPE	DESCRIPTION	BLOWS PER 6 IN.	N Value	PERCENT ORGANIC MATERIAL	PERCENT PASSING NO. 200 SIEVE	PLASTIC LIMIT / MOISTURE CONTENT / LIQUID LIMIT (%)	SHEAR STRENGTH (ksf)
	25		MEDIUM DENSE Light Brown Silty Fine SAND (SM) *(Continued)*						
			MEDIUM DENSE Gray Brown Fine SAND (SP)						
9	30			8 8 10	18				
			Boring Terminated @ 30 ft.						
	35								
	40								
	45								
	50								

○ PLASTIC LIMIT + MOISTURE CONTENT ◇ LIQUID LIMIT
0 10 20 30 40

SHEAR STRENGTH (ksf)
⊙ Pocket Penetrometer Undisturbed Sample
◔ Pocket Penetrometer Disturbed Sample
▼ Torvane
● Unconfined Compression
⊠ Triaxial Compression
0 1 2

Remarks

Project No.: 35-28498
Boring No.: C3
Sheet 1 of 1

LOG OF BORING

Project: JAXPORT Buck Island (DMMA)
Client: HDR Engineering
Drill Rig: 108P
Driller: Other
Boring Location: See Field Exploration Plan
Drill Rod: AWJ
Drill Mud: Super Gel-X
Casing Size:
Length of Casing:
Groundwater Depth: 5 ft Time: Drilling Date: 5/20/19
Boring Begun: 5/20/19
Boring Completed: 5/20/19

SAMPLE NO.	DEPTH, FEET	SAMPLE TYPE	DESCRIPTION	BLOWS PER 6 IN.	N Value	PERCENT ORGANIC MATERIAL	PERCENT PASSING NO. 200 SIEVE
	0		VERY LOOSE Light Brown Fine SAND (SP)	1			
1				1			
				1	2		
				1			
			VERY LOOSE Dark Gray Fine SAND With Silt (SP-SM)	1			
2				1			
				2	3		
				2			
				4			
3	5		FIRM to SOFT Dark Gray Sandy Clayey SILT (MH)	2			
				2	4		
				2			
				1			
4				1			
				1	2		
				1			
			LOOSE Dark Gray Fine SAND With Silt (SP-SM)	1			
5				4			
				5	9		
				5			
	10						
			SOFT Dark Gray SILT (MH)				
6				1			
				1			
	15			1	2		
			MEDIUM DENSE Dark Gray Fine SAND (SP)				
7				7			
				12			
	20			11	23		
			VERY STIFF Dark Gray SILT With Sand, Many Oganic Fines (ML)				
				7			
8				6		19	74
	25			12	18		

Boring Terminated @ 25 ft.

Remarks

SHEAR STRENGTH (ksf)
Pocket Penetrometer Undisturbed Sample
Pocket Penetrometer Disturbed Sample
Torvane
Unconfined Compression
Triaxial Compression

PLASTIC LIMIT ○ | MOISTURE CONTENT + (%) | LIQUID LIMIT ◇
0 30 60 90 120
0 1 2

LOG OF BORING NM 35-28498.GPJ ELLIS ASSOCIATES.GDT 4/29/20

Project No.: 35-28498
Boring No.: C4
Sheet 1 of 1

LOG OF BORING

Project: JAXPORT Buck Island (DMMA)
Client: HDR Engineering
Drill Rig: 108P
Driller: Other
Boring Location: See Field Exploration Plan
Drill Rod: AWJ
Drill Mud: Super Gel-X
Casing Size:
Length of Casing:
Groundwater Depth: 5 ft Time: Drilling Date: 5/20/19
Boring Begun: 5/20/19
Boring Completed: 5/20/19

SAMPLE NO.	DEPTH, FEET	SAMPLE TYPE	DESCRIPTION	BLOWS PER 6 IN.	N Value	PERCENT ORGANIC MATERIAL	PERCENT PASSING NO. 200 SIEVE	PLASTIC LIMIT / MOISTURE CONTENT / LIQUID LIMIT (%)	SHEAR STRENGTH (ksf)
	0		Topsoil	3					
1			MEDIUM DENSE to LOOSE Brown Fine SAND (SP)	5 6 6	11				
				4 5					
2				3	8				
				3 3					
	5			2					
3			LOOSE Brown Fine SAND With Silt, Trace Small Roots (SP-SM)	2 2	4	2	5	+	
				2 1					
4			VERY LOOSE Brown Fine SAND With Silt (SP-SM)	1 1	2				
			VERY LOOSE Dark Gray Silty Fine SAND (SM)	1 1					
5				1 2	2				
	10								
			FIRM Dark Gray SILT (ML)						
				2					
6				3 3	6				
	15								
			MEDIUM DENSE Dark Gray Fine SAND (SP)						
				3 4					
7				8	12				
	20								
				12 10					
8				15	25				
	25		Boring Terminated @ 25 ft.						

SHEAR STRENGTH (ksf): Pocket Penetrometer Undisturbed Sample; Pocket Penetrometer Disturbed Sample; Torvane; Unconfined Compression; Triaxial Compression

Remarks

LOG OF BORING NM 35-28498.GPJ ELLIS ASSOCIATES.GDT 4/29/20

Project No.: 35-28498
Boring No.: C5
Sheet 1 of 2

LOG OF BORING

Project: JAXPORT Buck Island (DMMA)
Client: HDR Engineering
Drill Rig: 108P
Driller: Other
Boring Location: See Field Exploration Plan
Drill Rod: AWJ
Drill Mud: Super Gel-X
Casing Size:
Length of Casing:
Groundwater Depth: 8 ft Time: Drilling Date: 5/20/19
Boring Begun: 5/20/19
Boring Completed: 5/20/19

SAMPLE NO.	DEPTH, FEET	SAMPLE TYPE	DESCRIPTION	BLOWS PER 6 IN.	N Value	PERCENT ORGANIC MATERIAL	PERCENT PASSING NO. 200 SIEVE
1	0		VERY SOFT to FIRM Dark Gray SILT, Many Organic Fines (MH)	1/18"			
					1/18"		
				1			
				1/24"			
2					1/24"	12	
				1/24"			
3	5				1/24"		
				1/24"			
4					1/24"		
				1/18"			
5					1/18"		
	10			1			
				WOH/18"			
6					WOH/18"		
	15						
				WOH/18"			
7					WOH/18"		
	20						
				4			
8				4			
	25			4	8		

PLASTIC LIMIT ○ | MOISTURE CONTENT + (%) | LIQUID LIMIT ◇
0 35 70 105 140

SHEAR STRENGTH (ksf)
⊙ Pocket Penetrometer Undisturbed Sample
◔ Pocket Penetrometer Disturbed Sample
▼ Torvane
● Unconfined Compression
⊠ Triaxial Compression
0 1 2

Remarks

LOG OF BORING NM 35-28498.GPJ ELLIS ASSOCIATES.GDT 4/29/20

Project No.: 35-28498
Boring No.: C5
Sheet 2 of 2

LOG OF BORING

Project: JAXPORT Buck Island (DMMA)
Client: HDR Engineering
Drill Rig: 108P
Driller: Other
Boring Location: See Field Exploration Plan
Drill Rod: AWJ
Drill Mud: Super Gel-X
Casing Size:
Length of Casing:
Groundwater Depth: 8 ft Time: Drilling Date: 5/20/19
Boring Begun: 5/20/19
Boring Completed: 5/20/19

SAMPLE NO.	DEPTH, FEET	SAMPLE TYPE	DESCRIPTION	BLOWS PER 6 IN.	N Value	PERCENT ORGANIC MATERIAL	PERCENT PASSING NO. 200 SIEVE	PLASTIC LIMIT ○ / MOISTURE CONTENT + (%) / LIQUID LIMIT ◇	SHEAR STRENGTH (ksf)
	25		VERY SOFT to FIRM Dark Gray SILT, Many Organic Fines (MH) *(Continued)*					0 35 70 105 140	0 1 2
9	30		VERY DENSE Gray Fine SAND With Silt (SP-SM)	50/5"	50/5"				
			Boring Terminated @ 30 ft.						
	35								
	40								
	45								
	50								

SHEAR STRENGTH (ksf)
- ⊙ Pocket Penetrometer Undisturbed Sample
- ◔ Pocket Penetrometer Disturbed Sample
- ▼ Torvane
- ● Unconfined Compression
- ☒ Triaxial Compression

Remarks

LOG OF BORING NM 35-28498.GPJ ELLIS ASSOCIATES.GDT 4/29/20

Project No.: 35-28498
Boring No.: C6
Sheet 1 of 2

LOG OF BORING

Project: JAXPORT Buck Island (DMMA)
Client: HDR Engineering
Drill Rig: 108P
Driller: Other
Boring Location: See Field Exploration Plan
Drill Rod: AWJ
Drill Mud: Super Gel-X
Casing Size:
Length of Casing:
Groundwater Depth: 20 ft Time: Drilling Date: 5/23/19
Boring Begun: 5/23/19
Boring Completed: 5/23/19

SAMPLE NO.	DEPTH, FEET	SAMPLE TYPE	DESCRIPTION	BLOWS PER 6 IN.	N Value	PERCENT ORGANIC MATERIAL	PERCENT PASSING NO. 200 SIEVE
	0		VERY SOFT Dark Gray Clayey SILT With Sand, Many Organic Fines (MH)	1			
1				1/18"	1/18"		
				WOH/24"			
2					WOH/24"		
				WOH/24"			
3	5				WOH/24"		
				WOH/24"			
4					WOH/24"		
				WOH/24"			
5					WOH/24"		
	10						
				WOH/18"			
6					WOH/18"	19	84
	15						
				WOH/18"			
7					WOH/18"		
	20						
				1			
8			MEDIUM DENSE Gray Fine SAND With Silt (SP-SM)	4			
	25			17	21		

PLASTIC LIMIT ○ | MOISTURE CONTENT + (%) 0 45 90 135 180 | LIQUID LIMIT ◇

SHEAR STRENGTH (ksf)
0 1 2
⊙ Pocket Penetrometer Undisturbed Sample
◔ Pocket Penetrometer Disturbed Sample
▼ Torvane
● Unconfined Compression
⊠ Triaxial Compression

Remarks

LOG OF BORING NM 35-28498.GPJ ELLIS ASSOCIATES.GDT 4/29/20

Project No.: 35-28498
Boring No.: C6
Sheet 2 of 2

LOG OF BORING

Project: JAXPORT Buck Island (DMMA)
Client: HDR Engineering
Drill Rig: 108P
Driller: Other
Boring Location: See Field Exploration Plan
Drill Rod: AWJ
Drill Mud: Super Gel-X
Casing Size:
Length of Casing:
Groundwater Depth: 20 ft Time: Drilling Date: 5/23/19
Boring Begun: 5/23/19
Boring Completed: 5/23/19

SAMPLE NO.	DEPTH, FEET	SAMPLE TYPE	DESCRIPTION	BLOWS PER 6 IN.	N Value	PERCENT ORGANIC MATERIAL	PERCENT PASSING NO. 200 SIEVE	PLASTIC LIMIT / MOISTURE CONTENT / LIQUID LIMIT (%)	SHEAR STRENGTH (ksf)
	25		MEDIUM DENSE Gray Fine SAND With Silt (SP-SM) *(Continued)*						
9	30			11 11 11	22				
			Boring Terminated @ 30 ft.						
	35								
	40								
	45								
	50								

SHEAR STRENGTH (ksf)
- Pocket Penetrometer Undisturbed Sample
- Pocket Penetrometer Disturbed Sample
- Torvane
- Unconfined Compression
- Triaxial Compression

PLASTIC LIMIT / MOISTURE CONTENT / LIQUID LIMIT (%): 0 45 90 135 180
SHEAR STRENGTH (ksf): 0 1 2

Remarks

LOG OF BORING NM 35-28498.GPJ ELLIS ASSOCIATES.GDT 4/29/20

Project No.: 35-28498
Boring No.: C7
Sheet 1 of 2

LOG OF BORING

Project: JAXPORT Buck Island (DMMA)
Client: HDR Engineering
Drill Rig: 108P
Driller: Other
Boring Location: See Field Exploration Plan
Drill Rod: AWJ
Drill Mud: Super Gel-X
Casing Size:
Length of Casing:
Groundwater Depth: 20 ft Time: Drilling Date: 5/23/19
Boring Begun: 5/23/19
Boring Completed: 5/23/19

SAMPLE NO.	DEPTH, FEET	SAMPLE TYPE	DESCRIPTION	BLOWS PER 6 IN.	N Value	PERCENT ORGANIC MATERIAL	PERCENT PASSING NO. 200 SIEVE
	0		VERY SOFT to STIFF Dark Gray Clayey SILT, Trace Sand and Many Organic Fines (MH)	1/24"			
1					1/24"		
				1/24"			
2					1/24"		
				1/24"			
3	5				1/24"		
				1/24"			
4					1/24"		
				1/24"			
5					1/24"	17	95
	10						
				1			
6				1			
	15			1	2		
				5			
7				5			
	20			6	11		
				6			
8			MEDIUM DENSE Gray Fine SAND (SP)	6			
	25			18	24		

PLASTIC LIMIT ○ | MOISTURE CONTENT + (%) | LIQUID LIMIT ◇
0 50 100 150 200

SHEAR STRENGTH (ksf)
⊙ Pocket Penetrometer Undisturbed Sample
◕ Pocket Penetrometer Disturbed Sample
▼ Torvane
● Unconfined Compression
⊠ Triaxial Compression
0 1 2

Remarks

LOG OF BORING NM 35-28498.GPJ ELLIS ASSOCIATES.GDT 4/29/20

Project No.: 35-28498
Boring No.: C7
Sheet 2 of 2

LOG OF BORING

Project: JAXPORT Buck Island (DMMA)
Client: HDR Engineering
Drill Rig: 108P
Driller: Other
Boring Location: See Field Exploration Plan
Drill Rod: AWJ
Drill Mud: Super Gel-X
Casing Size:
Length of Casing:
Groundwater Depth: 20 ft Time: Drilling Date: 5/23/19
Boring Begun: 5/23/19
Boring Completed: 5/23/19

SAMPLE NO.	DEPTH, FEET	SAMPLE TYPE	DESCRIPTION	BLOWS PER 6 IN.	N Value	PERCENT ORGANIC MATERIAL	PERCENT PASSING NO. 200 SIEVE	PLASTIC LIMIT / MOISTURE CONTENT / LIQUID LIMIT (%)	SHEAR STRENGTH (ksf)
	25		MEDIUM DENSE Gray Fine SAND (SP) *(Continued)*						
9	30		DENSE Gray Fine SAND With Silt, Trace Shell Fragments (SP-SM)	11 12 20	32				
			Boring Terminated @ 30 ft.						
	35								
	40								
	45								
	50								

SHEAR STRENGTH (ksf): Pocket Penetrometer Undisturbed Sample; Pocket Penetrometer Disturbed Sample; Torvane; Unconfined Compression; Triaxial Compression

PLASTIC LIMIT / MOISTURE CONTENT / LIQUID LIMIT (%): 0 50 100 150 200

SHEAR STRENGTH (ksf): 0 1 2

Remarks

LOG OF BORING NM 35-28498.GPJ ELLIS ASSOCIATES.GDT 4/29/20

Project No.: 35-28498
Boring No.: C8
Sheet 1 of 1

LOG OF BORING

Project: JAXPORT Buck Island (DMMA)
Client: HDR Engineering
Drill Rig: 101A
Driller: M. Foster
Boring Location: See Field Exploration Plan
Drill Rod: AWJ
Drill Mud: Super Gel-X
Casing Size:
Length of Casing:
Groundwater Depth: NM Time: Drilling Date: 3/25/19
Boring Begun: 3/25/19
Boring Completed: 3/25/19

SAMPLE NO.	DEPTH, FEET	SAMPLE TYPE	DESCRIPTION	BLOWS PER 6 IN.	N Value	PERCENT ORGANIC MATERIAL	PERCENT PASSING NO. 200 SIEVE	PLASTIC LIMIT ○ / MOISTURE CONTENT + / LIQUID LIMIT ◇ (%)	SHEAR STRENGTH (ksf)
	0		LOOSE to VERY LOOSE Light Brown Fine SAND With Shell Fragments (SP)	1 2					
1				2 1	4				
				1 1					
2				1 1	2				
				1 1					
3	5		LOOSE to MEDIUM DENSE Light Brown Fine SAND (SP)	1 2	3				
				2 4					
4				6 7	13				
				7 7					
5				9 9	18				
	10			9					
			DENSE Light Brown Fine SAND With Shell Fragments (SP)						
				6					
6				10 20	30				
	15								
				10					
7				12 18	30				
	20								
			VERY STIFF Gray CLAY With Sand (CH)						
				6					
8				6 8	14				
	25		Boring Terminated @ 25 ft.						

Remarks NM = Groundwater Not Measured at Time of Drilling.

SHEAR STRENGTH (ksf): Pocket Penetrometer Undisturbed Sample; Pocket Penetrometer Disturbed Sample; Torvane; Unconfined Compression; Triaxial Compression

LOG OF BORING NM 35-28498.GPJ ELLIS ASSOCIATES.GDT 4/29/20

Project No.: 35-28498
Boring No.: C9
Sheet 1 of 1

LOG OF BORING

Project: JAXPORT Buck Island (DMMA)
Client: HDR Engineering
Drill Rig: 108P
Driller: Other
Boring Location: See Field Exploration Plan
Drill Rod: AWJ
Drill Mud: Super Gel-X
Casing Size:
Length of Casing:
Groundwater Depth: 19 ft Time: Drilling Date: 5/23/19
Boring Begun: 5/23/19
Boring Completed: 5/23/19

SAMPLE NO.	DEPTH, FEET	SAMPLE TYPE	DESCRIPTION	BLOWS PER 6 IN.	N Value	PERCENT ORGANIC MATERIAL	PERCENT PASSING NO. 200 SIEVE
	0		VERY LOOSE Dark Gray Silty Fine SAND (SM)	1			
1				1/18"	1/18"		
				1/24"			
2					1/24"		43
			VERY SOFT to STIFF Dark Gray Clayey SILT, Trace Sand and Many Organic Fines (MH)	WOH/24"			
3	5				WOH/24"		
				WOH/24"			
4					WOH/24"		
				WOH/24"			
5					WOH/24"		
	10						
				WOH/18"			
6					WOH/18"	20	93
	15						
				7			
7				7			
	20			6	13		
			VERY DENSE Gray Fine SAND, Trace Shell Fragments (SP)				
				22			
8				40			
	25			50/5"	50/5"		

Boring Terminated @ 25 ft.

Remarks

PLASTIC LIMIT ○ | MOISTURE CONTENT + (%) | LIQUID LIMIT ◇
0 50 100 150 200

SHEAR STRENGTH (ksf)
⊙ Pocket Penetrometer Undisturbed Sample
◔ Pocket Penetrometer Disturbed Sample
▼ Torvane
● Unconfined Compression
⊠ Triaxial Compression
0 1 2

LOG OF BORING NM 35-28498.GPJ ELLIS ASSOCIATES.GDT 4/29/20

FIELD EXPLORATION PROCEDURES

Standard Penetration Test (SPT) Borings

The Standard Penetration Test (SPT) borings were made in general accordance with the latest revision of ASTM D 1586, "Penetration Test and Split-Barrel Sampling of Soils". The borings were advanced by rotary (or "wash-n-chop") drilling techniques. At 2 ½ to 5 foot intervals, a split-barrel sampler inserted to the borehole bottom and driven 18 inches into the soil using a 140 pound hammer falling on the average 30 inches per hammer blow. The number of hammer blows for the final 12 inches of penetration is termed the "penetration resistance, blow count, or N-value". This value is an index to several in-place geotechnical properties of the material tested, such as relative density and Young's Modulus.

After driving the sampler 18 inches (or less if in hard rock-like material), the sampler was retrieved from the borehole and representative samples of the material within the split-barrel were containerized and sealed. After completing the drilling operations, the samples for each boring were transported to our laboratory where they were examined by our engineer in order to verify the driller's field classification. The retrieved samples will be kept in our facility for a period of six (6) months unless directed otherwise.

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Geotechnical • Construction Materials • Environmental • Facilities

KEY TO SOIL CLASSIFICATION

Description of Compactness or Consistency in Relation
To Standard Penetration Resistance

Granular Materials		
Relative Density	**Safety Hammer SPT N-Value (Blow/Foot)**	**Automatic Hammer SPT N-Value (Blow/Foot)**
Very Loose	Less than 4	Less than 3
Loose	4 – 10	3 – 8
Medium Dense	10 – 30	8 – 24
Dense	30 – 50	24 – 40
Very Dense	Greater than 50	Greater than 40

Silts and Clays		
Consistency	**Safety Hammer SPT N-Value (Blow/Foot)**	**Automatic Hammer SPT N-Value (Blow/Foot)**
Very Soft	Less than 2	Less than 1
Soft	2 – 4	1 – 3
Firm	4 – 8	3 – 6
Stiff	8 – 15	6 – 12
Very Stiff	15 – 30	12 – 24
Hard	Greater than 30	Greater than 24

DESCRIPTION OF SOIL COMPOSITION**

(Unified Soil Classification System)

MAJOR DIVISION		Group Symbol	LABORATORY CLASSIFICATION CRITERIA		SOIL DESCRIPTION
			FINER THAN 200 SIEVE %	SUPPLEMENTARY REQUIREMENTS	
Coarse grained (over 50% by weight coarser than No. 200 sieve)	Gravelly soils (over half of coarse fraction larger than No. 4)	GW	<5*	D_{60}/D_{10} greater than 4, $D_{30}^2/(D_{60} \times D_{10})$ between 1 & 3	Well graded gravels, sandy gravels
		GP	<5*	Not meeting above gradation for GW	Gap graded or uniform gravels, sandy gravels
		GM	>12*	PI less than 4 or below A-line	Silty gravels, silty sandy gravels
		GC	>12*	PI over 7 above A-line	Clayey gravels, clayey sandy gravels
	Sandy soils (over half of coarse fraction finer than No. 4)	SW	<5*	D_{60}/D_{10} greater than 6, $D_{30}^2/(D_{60} \times D_{10})$ between 1 & 3	Well graded sands, gravelly sands
		SP	<5*	Not meeting above gradation requirements	
		SM	>12*	PI less than 4 or below A-line	Silty sands, silty gravelly sands
		SC	>12*	PI over 7 and above A-line	Clayey sands, clayey gravelly sands
Fine grained (over 50% by weight finer than No. 200 sieve)	Low compressibility (liquid limit less than 50)	ML	Plasticity chart		Silts, very fine sands, silty or clayey fine sands, micaceous silts
		CL	Plasticity chart		Low plasticity clays, sandy or silty clays
		OL	Plasticity chart, organic odor or color		Organic silts and clays of low plasticity
	High compressibility (liquid limit more than 50)	MH	Plasticity chart		Micaceous silts, diatomaceous silts, volcanic ash
		CH	Plasticity chart		Highly plastic clays and sandy clays
		OH	Plasticity chart, organic odor or color		Organic silts and clays of high plasticity
Soils with fibrous organic matter		PT	Fibrous organic matter; will char, burn or glow		Peat, sandy peats, and clayey peat

* For soils having 5 to 12 percent passing the No. 200 sieve, use a dual symbol such as SP-SM.
** Standard Classification of Soils for Engineering Purposes (ASTM D 2487)

SAND/GRAVEL DESCRIPTION MODIFIERS	
Modifier	**Sand/Gravel Content**
Trace	<15%
With	15% to 29%
Sandy/Gravelly	>29%

ORGANIC MATERIAL MODIFIERS	
Modifier	**Organic Content**
Trace	1% to 2%
Few	2% to 4%
Some	4% to 8%
Many	>8%

SILT/CLAY DESCRIPTION MODIFIERS	
Modifier	**Silt/Clay Content**
Trace	<5%
With	5% to12%
Silty/Clayey	13% to 35%
Very	>35%

APPENDIX B – Field Operations

Consolidation Test Results
Triaxial Shear Test Results
Laboratory Test Procedures

TIMELY ENGINEERING SOIL TESTS, LLC
1874 Forge Street Tucker, GA 30084
Ph: 770-938-8233
Fax: 770-923-8973
Web: www.test-llc.com

AASHTO ACCREDITED

Tested By	RI
Date	05/16/19
Checked By	

Client Pr. #	35:28498	Lab. PR. #	1920R-01-1
Project Name	Jaxport Buck Island TOE Dike	S. Type	UD
Sample ID	30641/B-10	Depth/Elev.	22-24'
Location	-	Add. Info	-

Standard Test Method for One-Dimensional Consolidation Properties of Soils, ASTM D2435 (Method B)/AASHTO T 216

STEP # 2

Point #	Time, min	Square Root of Time, $min^{1/2}$	Dial Gauge Reading, 10^{-4} in
1	0	0	0.0
2	0.10	0.32	35.5
3	0.37	0.61	44.5
4	0.62	0.79	47.5
5	1.05	1.02	50.0
6	1.80	1.34	52.5
7	2.55	1.60	54.0
8	3.30	1.82	54.5
9	4.05	2.01	55.5
10	5.30	2.30	56.5
11	6.80	2.61	57.0
12	8.8	2.97	57.5
13	11.3	3.36	58.5
14	16.3	4.04	60.5
15	22.3	4.72	61.0
16	32.3	5.68	61.5
17	65.3	8.08	64.0
18	90.3	9.50	65.0
19			
20			

Pressure* on Specimen, lbf/ft^2

500

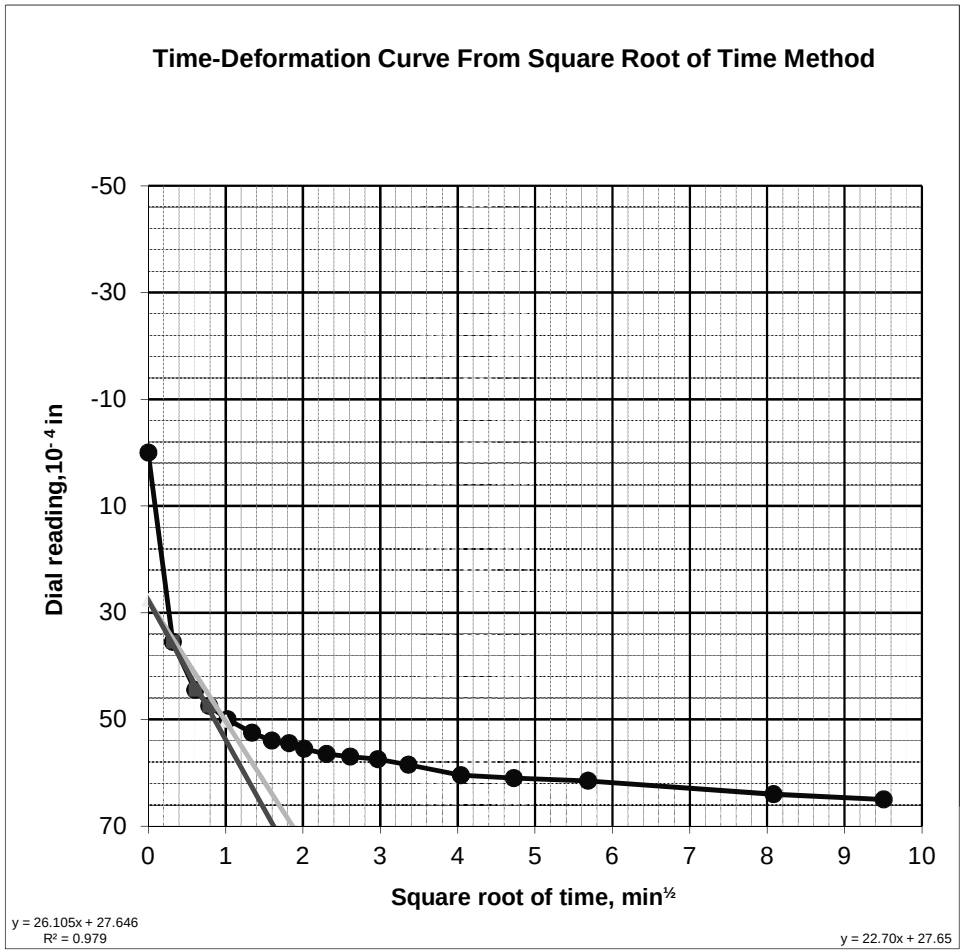
Selection	4
m_1	26.10
m_2	22.70

X	Y
0	27.65
1	50.35

d_0	27.6
d_{90}	50
d_{100}	53
d_{50}	40
sq.root t_{90}	1
t_{90}, *min*	1.00
sq.root t_{50}	0.48
t_{50}, *min*	0.23

d=dial gauge reading, 10^{-4} in

Note: * - Reported Pressure is not including seating pressure of 100 psf and possible additional vertical pressure applied to sample to prevent swell. If swell was observed additional vertical pressure is reported on page 1 of report.



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Tested By	RI
Date	05/16/19
Checked By	

Client Pr. #	35:28498	Lab. PR. #	1920R-01-1
Project Name	Jaxport Buck Island TOE Dike	S. Type	UD
Sample ID	30641/B-10	Depth/Elev.	22-24'
Location	-	Add. Info	-

Standard Test Method for One-Dimensional Consolidation Properties of Soils, ASTM D2435 (Method B)/AASHTO T 216

STEP # 3

Point #	Time, min	Square Root of Time, $min^{1/2}$	Dial Gauge Reading, 10^{-4} in
1	0	0	67.0
2	0.10	0.32	86.0
3	0.38	0.62	91.0
4	0.65	0.81	92.5
5	1.20	1.10	94.5
6	1.97	1.40	95.5
7	2.72	1.65	96.5
8	3.47	1.86	97.0
9	4.22	2.05	97.5
10	5.47	2.34	98.0
11	6.97	2.64	98.5
12	9.0	2.99	99.0
13	11.5	3.39	100.0
14	16.5	4.06	101.0
15	22.5	4.74	102.0
16	32.5	5.70	103.0
17			
18			
19			
20			

Pressure* on Specimen, lbf/ft^2

1000

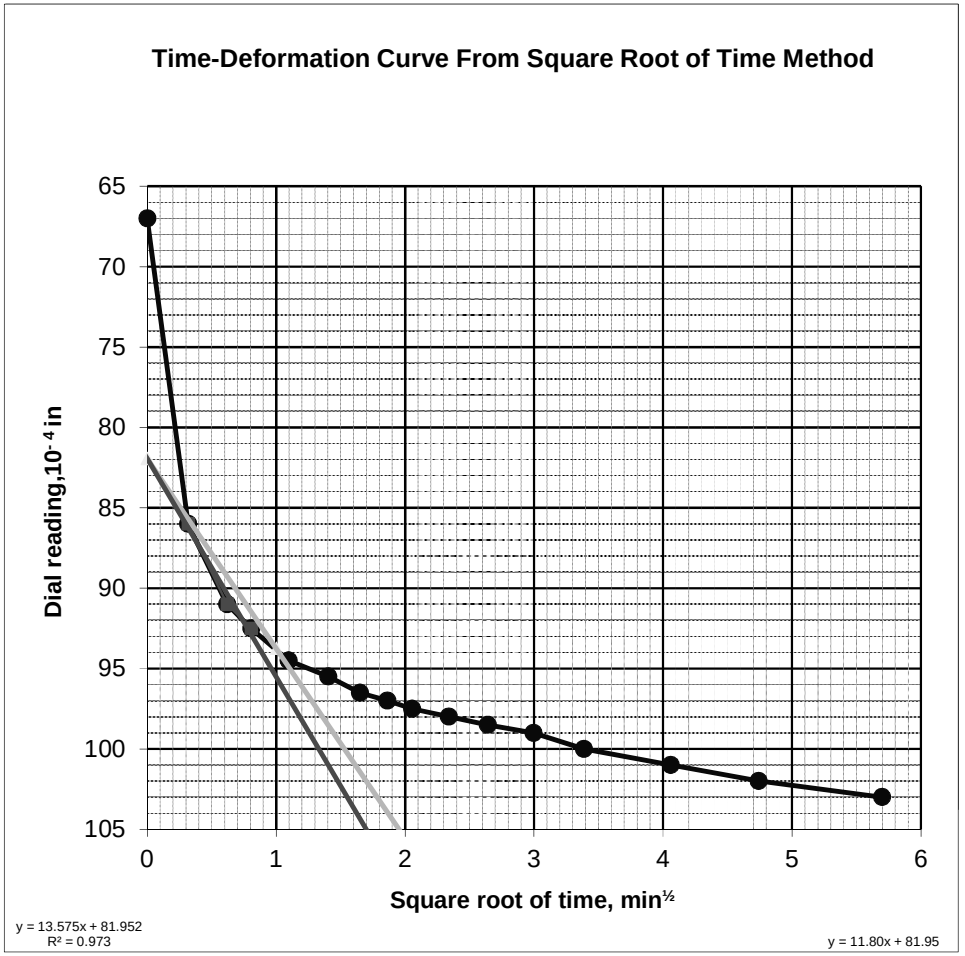
Selection	4
m_1	13.58
m_2	11.80

X	Y
0	81.95
1	93.76

d_0	82.0
d_{90}	95
d_{100}	96
d_{50}	89
$sq.root\ t_{90}$	1.1
t_{90}, min	1.21
$sq.root\ t_{50}$	0.53
t_{50}, min	0.28

d=dial gauge reading, 10^{-4} in

Note: * - Reported Pressure is not including seating pressure of 100 psf and possible additional vertical pressure applied to sample to prevent swell. If swell was observed additional vertical pressure is reported on page 1 of report.



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Tested By	RI
Date	05/16/19
Checked By	

Client Pr. #	35:28498	Lab. PR. #	1920R-01-1
Project Name	Jaxport Buck Island TOE Dike	S. Type	UD
Sample ID	30641/B-10	Depth/Elev.	22-24'
Location	-	Add. Info	-

Standard Test Method for One-Dimensional Consolidation Properties of Soils, ASTM D2435 (Method B)/AASHTO T 216

STEP # 4

Point #	Time, min	Square Root of Time, $min^{1/2}$	Dial Gauge Reading, 10^{-4} in
1	0	0	103.0
2	0.15	0.39	138.0
3	0.42	0.65	143.0
4	0.70	0.84	145.5
5	1.13	1.06	147.5
6	1.92	1.38	149.5
7	2.67	1.63	150.5
8	3.42	1.85	152.0
9	4.17	2.04	153.0
10	5.42	2.33	154.0
11	6.92	2.63	154.5
12	8.9	2.99	156.0
13	11.4	3.38	157.0
14	16.4	4.05	158.5
15	22.4	4.73	159.5
16	32.4	5.69	161.0
17	65.4	8.09	164.0
18	90.4	9.51	166.0
19			
20			

Pressure* on Specimen, lbf/ft^2

2000

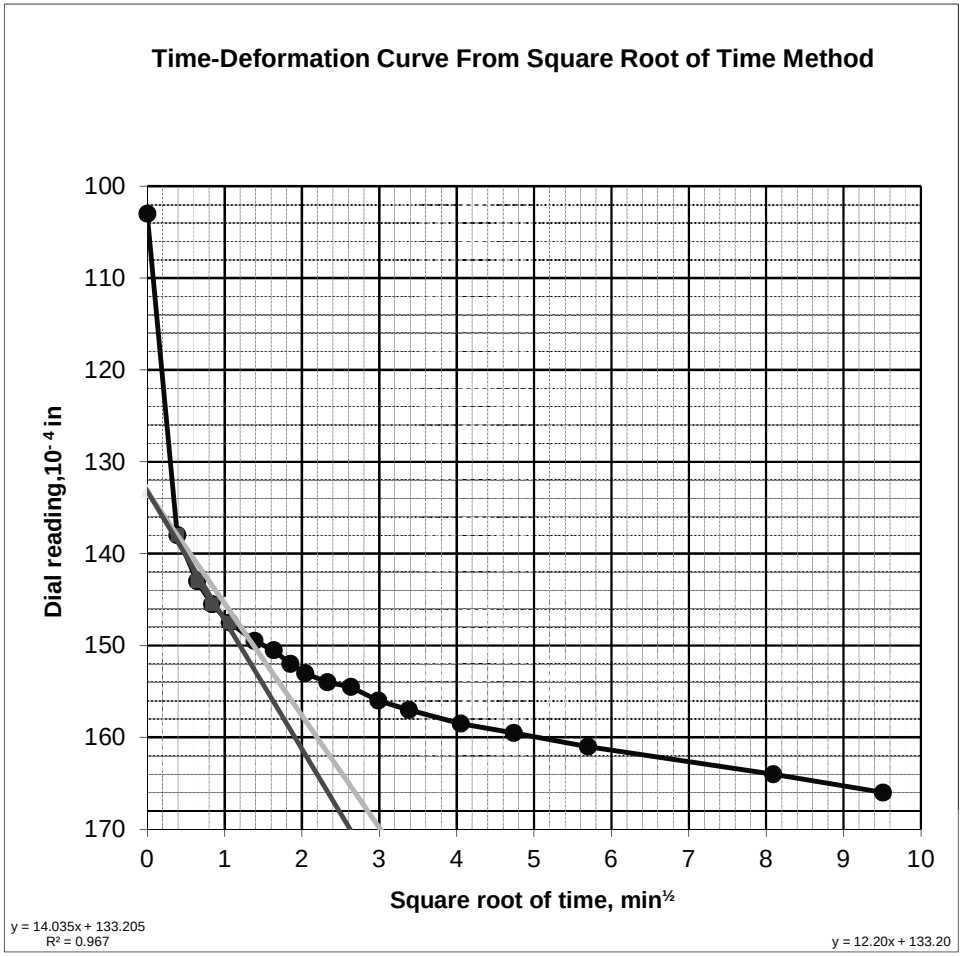
Selection	5
m_1	14.04
m_2	12.20

X	Y
0	133.20
1	145.41

d_0	133.2
d_{90}	149
d_{100}	151
d_{50}	142
$sq.root\ t_{90}$	1.3
t_{90}, min	1.69
$sq.root\ t_{50}$	0.63
t_{50}, min	0.39

d=dial gauge reading, 10^{-4} in

Note: * - Reported Pressure is not including seating pressure of 100 psf and possible additional vertical pressure applied to sample to prevent swell. If swell was observed additional vertical pressure is reported on page 1 of report.



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Tested By	RI
Date	05/16/19
Checked By	

Client Pr. #	35:28498	Lab. PR. #	1920R-01-1
Project Name	Jaxport Buck Island TOE Dike	S. Type	UD
Sample ID	30641/B-10	Depth/Elev.	22-24'
Location	-	Add. Info	-

Standard Test Method for One-Dimensional Consolidation Properties of Soils, ASTM D2435 (Method B)/AASHTO T 216

STEP # 5

Point #	Time, min	Square Root of Time, $min^{1/2}$	Dial Gauge Reading, 10^{-4} in
1	0	0	166.0
2	0.15	0.39	212.0
3	0.43	0.66	217.5
4	0.72	0.85	220.5
5	1.28	1.13	223.0
6	2.03	1.43	225.5
7	2.78	1.67	227.0
8	3.53	1.88	228.0
9	4.28	2.07	229.0
10	5.53	2.35	230.5
11	7.03	2.65	231.5
12	9.0	3.01	232.5
13	11.5	3.40	234.0
14	16.5	4.07	235.5
15	22.5	4.75	237.0
16	32.5	5.70	239.5
17			
18			
19			
20			

Pressure* on Specimen, lbf/ft^2

4000

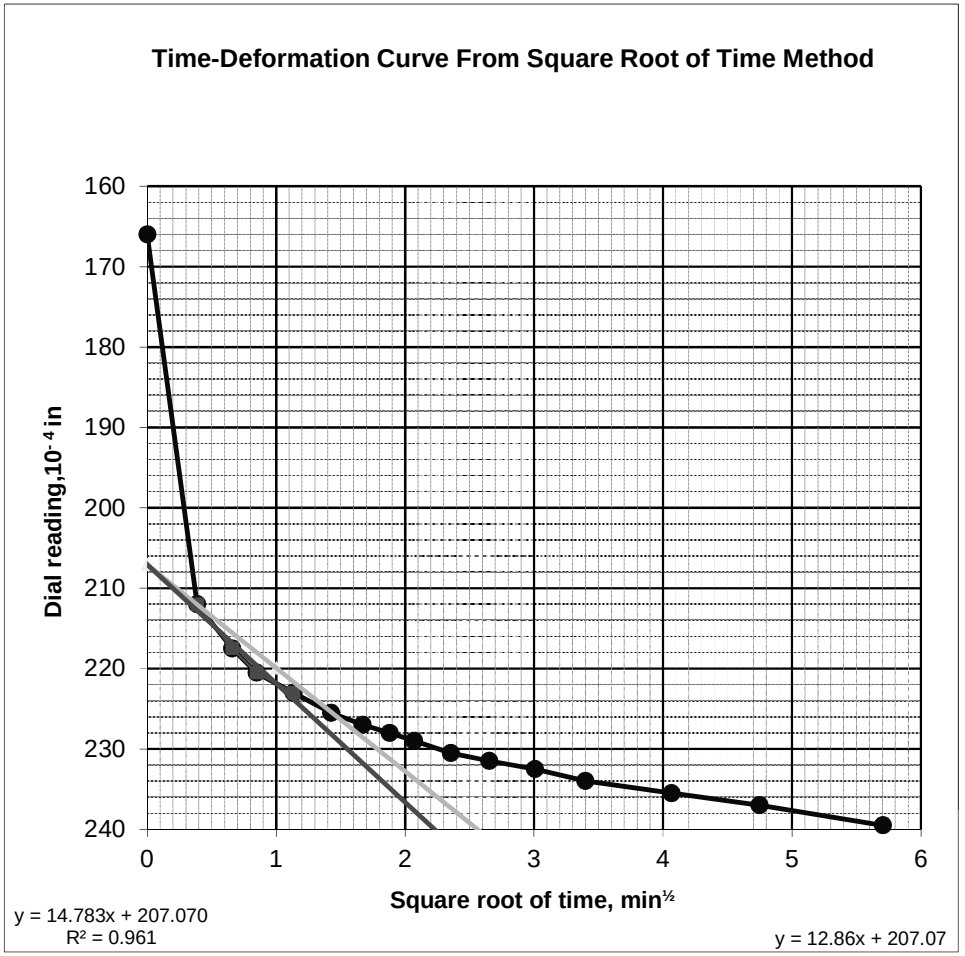
Selection	5
m_1	14.78
m_2	12.86

X	Y
0	207.07
1	219.93

d_0	207.1
d_{90}	226
d_{100}	228
d_{50}	217
$sq.root\ t_{90}$	1.45
t_{90}, min	2.10
$sq.root\ t_{50}$	0.70
t_{50}, min	0.49

d=dial gauge reading, 10^{-4} in

Note: * - Reported Pressure is not including seating pressure of 100 psf and possible additional vertical pressure applied to sample to prevent swell. If swell was observed additional vertical pressure is reported on page 1 of report.



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Tested By	RI
Date	05/16/19
Checked By	

Client Pr. #	35:28498	Lab. PR. #	1920R-01-1
Project Name	Jaxport Buck Island TOE Dike	S. Type	UD
Sample ID	30641/B-10	Depth/Elev.	22-24'
Location	-	Add. Info	-

Standard Test Method for One-Dimensional Consolidation Properties of Soils, ASTM D2435 (Method B)/AASHTO T 216

STEP # 6

Point #	Time, min	Square Root of Time, $min^{1/2}$	Dial Gauge Reading, 10^{-4} in
1	0	0	243.5
2	0.28	0.53	319.0
3	0.87	0.93	325.5
4	1.43	1.20	329.0
5	2.33	1.53	332.0
6	3.55	1.88	334.5
7	4.48	2.12	336.0
8	5.43	2.33	337.0
9	6.32	2.51	338.0
10	7.55	2.75	339.0
11	9.05	3.01	340.0
12	11.1	3.32	341.0
13	13.6	3.68	342.5
14	18.6	4.31	344.5
15	24.6	4.95	346.0
16	34.6	5.88	348.0
17			
18			
19			
20			

Pressure* on Specimen, lbf/ft^2

8000

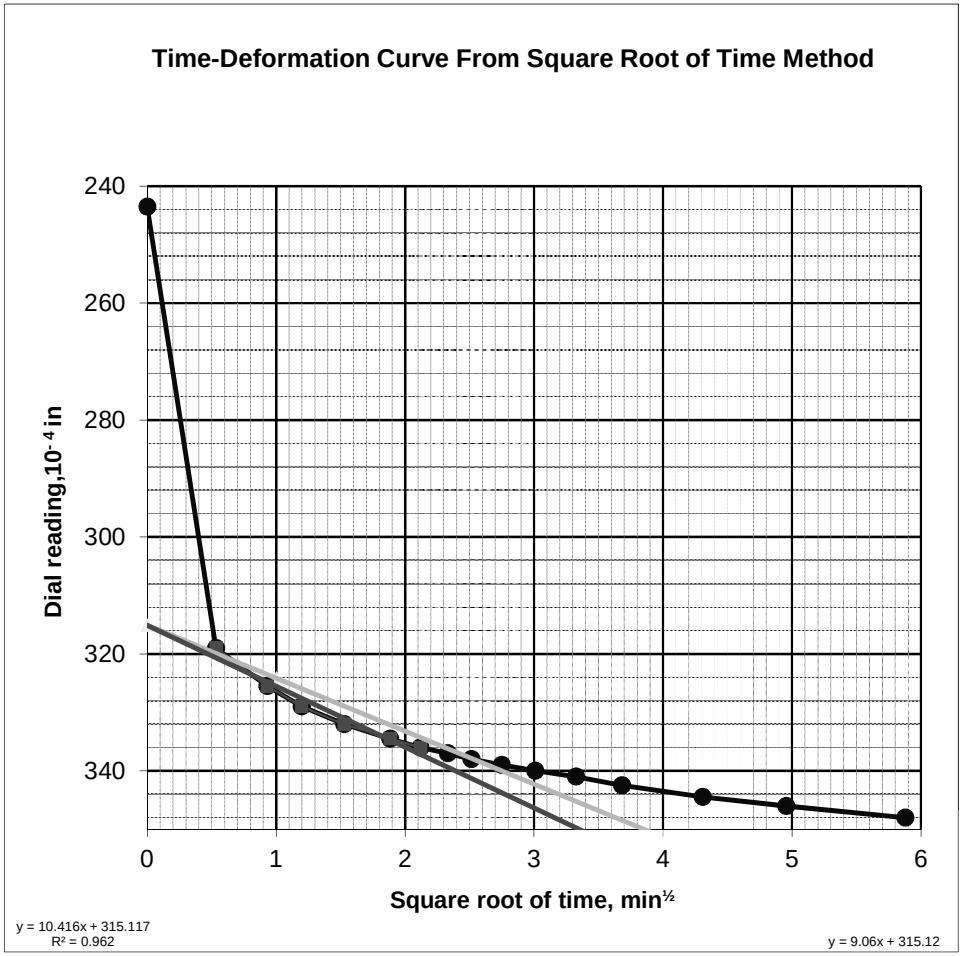
Selection	7
m_1	10.42
m_2	9.06

X	Y
0	315.12
1	324.17

d_0	315.1
d_{90}	338
d_{100}	340
d_{50}	328
sq.root t_{90}	2.5
t_{90}, min	6.25
sq.root t_{50}	1.21
t_{50}, min	1.46

d=dial gauge reading, 10^{-4} in

Note: * - Reported Pressure is not including seating pressure of 100 psf and possible additional vertical pressure applied to sample to prevent swell. If swell was observed additional vertical pressure is reported on page 1 of report.



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AASHTO ACCREDITED

Tested By	RI
Date	05/15/19
Checked By	

Client Pr. #	35:28498	Lab. PR. #	1920R-01-1
Project Name	Jaxport Buck Island TOE Dike	S. Type	UD
Sample ID	30641/B-10	Depth/Elev.	22-24'
Location	-	Add. Info	-

ASTM D2435

Standard Test Method for One-Dimensional Consolidation Properties of Soils (Method B)

Sample Data

	Initial	Final
Mass of Ring, g	194.73	194.73
Mass of Wet Sample and Ring, g	342.91	341.59
Mass of Wet Sample, g	148.18	146.86
Mass of Dry Sample, g	110.32	110.32
Height of Sample, in	0.9970	0.9630
Diameter of Sample, in	2.501	2.501
Area of Sample, in^2	4.91	4.91
Volume of Sample, in^3	4.90	4.73
Specific Gravity (Assumed)	2.650	2.650
Wet Unit Weight, pcf	115.3	118.3
Dry Unit Weight, pcf	85.8	88.8
Height of Solids, in	0.5171	0.5171
Height of Voids, in	0.4799	0.4459
Height of Water, in	0.4703	0.4539
Void Ratio	0.928	0.862
Degree of Saturation, %	98.0	101.8

Initial Seating Pressure, lbf/ft^2	100
Additional Vertical Pressure, lbf/ft^2	0
Total Seating Pressure, lbf/ft^2	100
STATION #	3
Consolidometer Ring ID Number	1
Consolidometer ID Number	1
Frame ID Number	202
Dial Gage ID Number	678
Initial Dial Gauge Reading, 10^{-4} in	0
Final Dial Gauge Reading, 10^{-4} in	340

DESCRIPTION

NA

Condition of Test:

1. Deionized water used for inundation of sample.
2. Saturated porous stones w/t filter paper used

USCS (ASTM D2487;2488)

NA

REMARKS

Portion of sample used for testing was located 9" above the bottom of the shelby tube.

Moisture Content

	Trimmings	Initial	Final
Mass of Wet Sample and Tare, g	500.20	342.91	401.46
Mass of Dry Sample and Tare, g	406.50	305.05	364.92
Mass of Tare, g	124.70	194.73	254.62
Moisture Content, %	33.3	34.3	33.1

LL	-
PL	-
PI	-

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Client Pr. #	35:28498	Lab Pr. #	1920R-01-1
Project Name	Jaxport Buck Island TOE Dike	S. Type	UD
Sample ID	30641/B-10	Depth/Elev.	22-24'
Location	-	Add. Info	-

ASTM D2435

Standard Test Method for One-Dimensional Consolidation Properties of Soils (Method B)

Void Ratio, Strain Information and Coefficient of Consolidation Calculation

Pressure		Uncorrected Dial Reading, in		Apparatus Correction, in	Corrected Dial Reading, in		Change in specimen height, in		Sample Height, in		Height of Voids, in	Void Ratio		Strain, %		Fitting Time, min		Hd_{50}, in	Coefficient of Consolidation	
lbf/ft^2	Ksf	d_{100}	d_{50}		d_{100}	d_{50}	S D H_{100}	S D H_{50}	H_{100}	H_{50}	Hv^{100},in	e_{100}	e_{50}	e_{100}	e_{50}	t_{90}	t_{50}		in^2/min	ft^2/day
100	0.1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.9970	0.9970	0.4799	0.928	0.928	0.00	0.00	-	-	0.4985	-	-
500	0.5	0.0053	0.0040	0.0000	0.0053	0.0040	0.0053	0.0040	0.9917	0.9930	0.4746	0.918	0.920	0.53	0.40	1.00	0.23	0.4965	0.21	2.09
1000	1	0.0096	0.0089	0.0000	0.0096	0.0089	0.0096	0.0089	0.9874	0.9881	0.4703	0.909	0.911	0.97	0.89	1.21	0.28	0.4940	0.17	1.71
2000	2	0.0151	0.0142	0.0000	0.0151	0.0142	0.0151	0.0142	0.9819	0.9828	0.4648	0.899	0.901	1.51	1.42	1.69	0.39	0.4914	0.12	1.21
4000	4	0.0228	0.0217	0.0000	0.0228	0.0217	0.0228	0.0217	0.9742	0.9753	0.4571	0.884	0.886	2.28	2.18	2.10	0.49	0.4876	0.10	0.96
8000	8	0.0340	0.0328	0.0000	0.0340	0.0328	0.0340	0.0328	0.9630	0.9642	0.4459	0.862	0.865	3.41	3.29	6.25	1.46	0.4821	0.03	0.32

Note: d_{100} = Dial gauge reading at 100% primary consolidation, in
d_{50} = Dial gauge reading at 50% primary consolidation, in
H_{100} = Specimen height at 100% primary consolidation, in
H_{50} = Specimen height at 50% primary consolidation, in
Hd_{50} = Length of the drainage path at 50% consolidation, in
e_{100} = Void ratio at 100% primary consolidation
e_{50} = Void ratio at 50% primary consolidation

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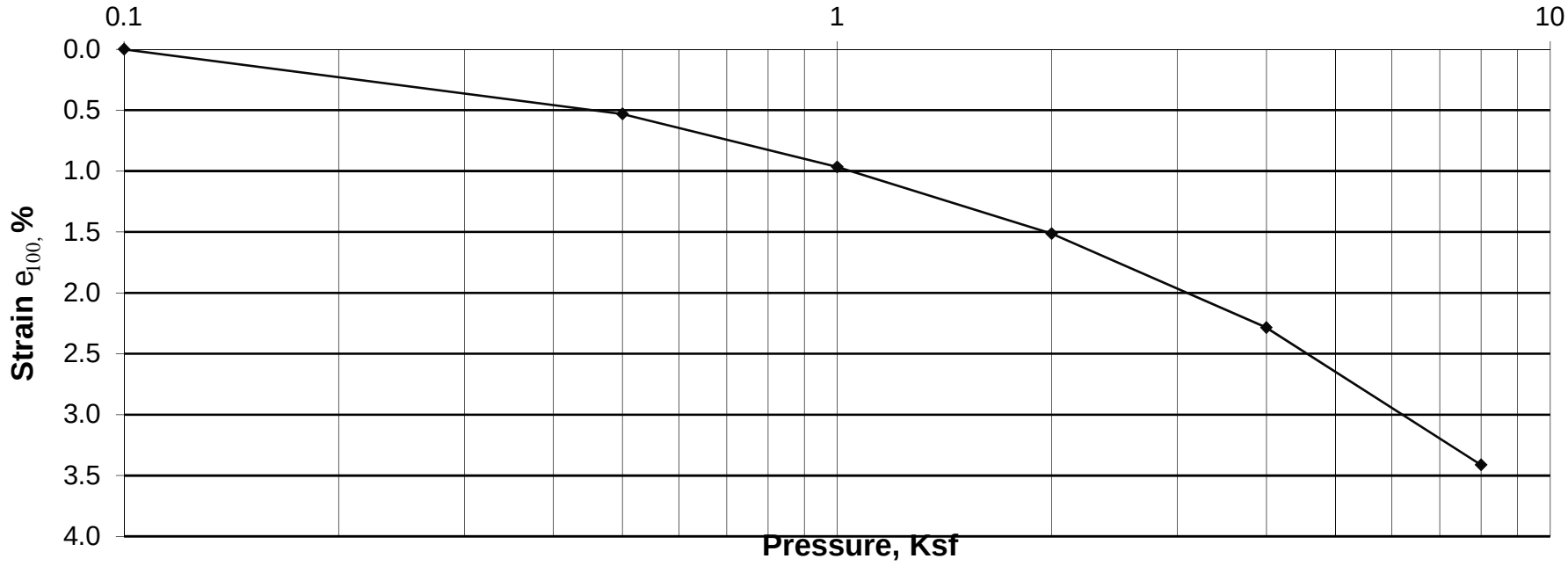
Client Pr. #	35:28498	Lab. PR. #	1920R-01-1
Project Name	Jaxport Buck Island TOE Dike	S. Type	UD
Sample ID	30641/B-10	Depth/Elev.	22-24'
Location	-	Add. Info	-

ASTM D 2435; Standard Test Method for One-Dimensional Consolidation Properties of Soils (Method B)

Strain at the End-of-Primary Consolidation vs. Log of Pressure



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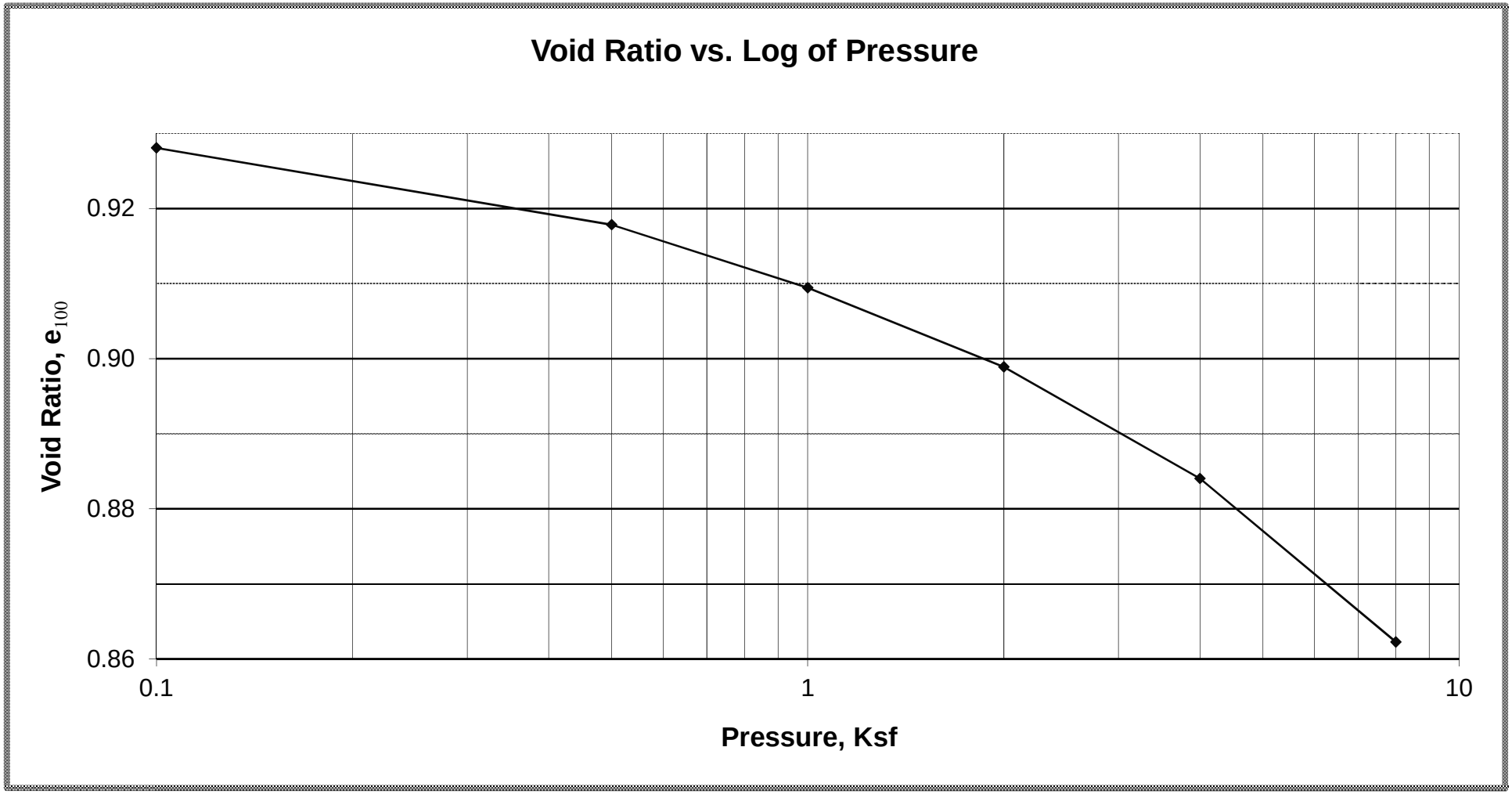
Project Name	Jaxport Buck Island TOE Dike	S. Type	UD
Sample ID	30641/B-10	Depth/Elev.	22-24'
Location	-	Add. Info	-

ASTM D 2435; Standard Test Method for One-Dimensional Consolidation Properties of Soils (Method B)



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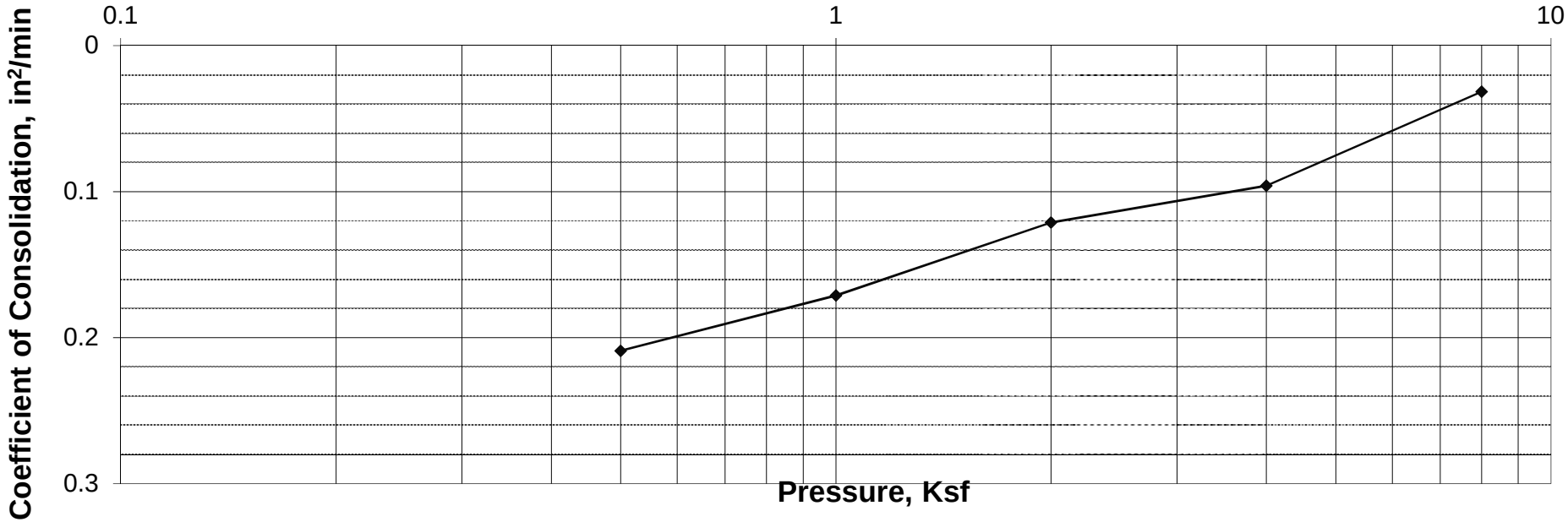
Project Name	Jaxport Buck Island TOE Dike	S. Type	UD
Sample ID	30641/B-10	Depth/Elev.	22-24'
Location	-	Add. Info	-

ASTM D 2435; Standard Test Method for One-Dimensional Consolidation Properties of Soils (Method B)

Coefficient of Consolidation vs. Log of Pressure



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Client Pr. #	35:28498	Lab. PR. #	1920R-01-1
Project Name	Jaxport Buck Island TOE Dike	S. Type	UD
Sample ID	30643/B-15	Depth/Elev.	8.5-10'
Location	-	Add. Info	-

Standard Test Method for One-Dimensional Consolidation Properties of Soils, ASTM D2435 (Method B)/AASHTO T 216

STEP # **2**

Point #	Time, min	Square Root of Time, $min^{1/2}$	Dial Gauge Reading, 10^{-4} in
1	0	0	0.0
2	0.08	0.29	33.0
3	0.30	0.55	42.5
4	0.55	0.74	48.5
5	0.90	0.95	54.5
6	1.65	1.28	63.5
7	2.40	1.55	70.0
8	3.15	1.77	75.5
9	3.90	1.97	80.0
10	5.15	2.27	86.0
11	6.65	2.58	92.5
12	8.7	2.94	99.0
13	11.2	3.34	106.5
14	16.2	4.02	117.5
15	22.2	4.71	126.5
16	32.2	5.67	137.0
17	65.2	8.07	151.5
18	90.2	9.49	156.5
19			
20			
21			
22			
23			
24			
25			
26			

Pressure* on Specimen, lbf/ft^2

500

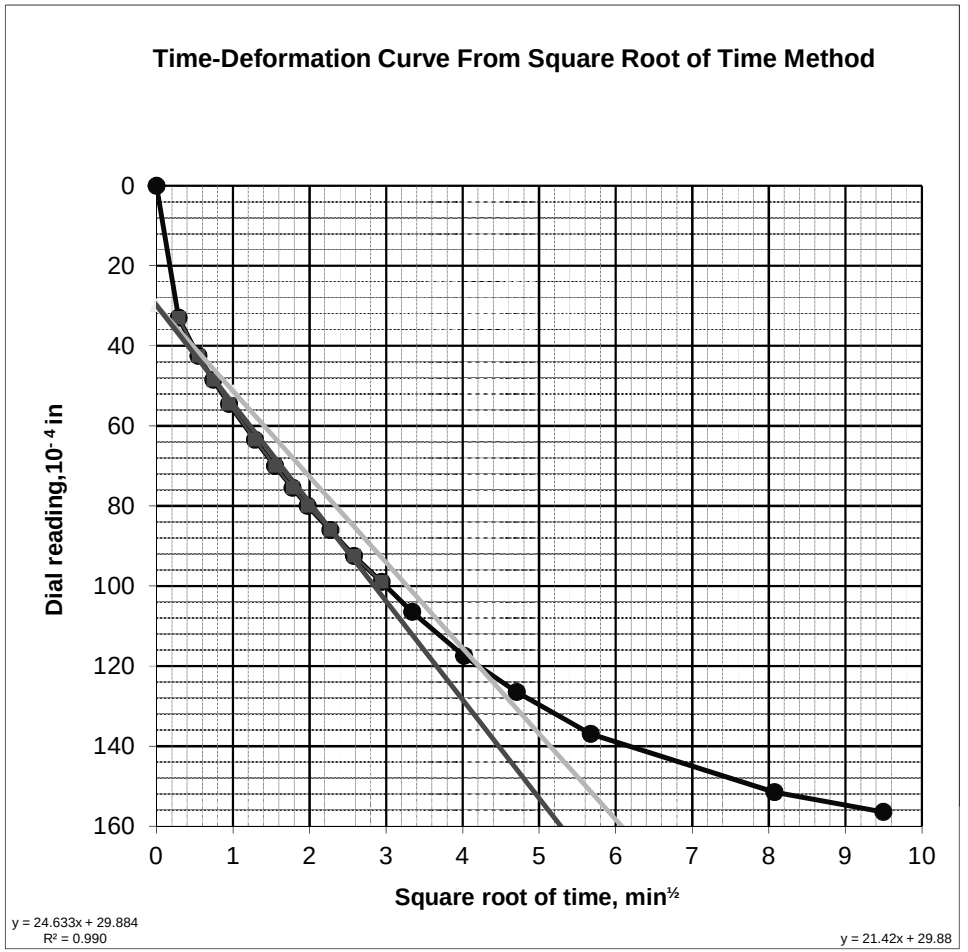
Selection	12
m_1	24.63
m_2	21.42

X	Y
0	29.88
1	51.30

d_0	29.9
d_{90}	120
d_{100}	130
d_{50}	80
sq.root t_{90}	4.2
t_{90}, min	17.64
sq.root t_{50}	2.03
t_{50}, min	17.64

d=dial gauge reading, 10^{-4} in

Note: * - Reported Pressure is not including seating pressure of 100 psf and possible additional vertical pressure applied to sample to prevent swell. If swell was observed additional vertical pressure is reported on page 1 of report.



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Client Pr. #	35:28498	Lab. PR. #	1920R-01-1
Project Name	Jaxport Buck Island TOE Dike	S. Type	UD
Sample ID	30643/B-15	Depth/Elev.	8.5-10'
Location	-	Add. Info	-

Standard Test Method for One-Dimensional Consolidation Properties of Soils, ASTM D2435 (Method B)/AASHTO T 216

STEP # 3

Pressure* on Specimen, lbf/ft²

1000

Point #	Time, min	Square Root of Time, $min^{1/2}$	Dial Gauge Reading, 10^{-4} in
1	0	0	160.0
2	0.13	0.37	177.0
3	0.37	0.61	183.5
4	0.60	0.77	187.5
5	1.00	1.00	193.5
6	1.75	1.32	201.0
7	2.50	1.58	207.0
8	3.25	1.80	212.0
9	4.00	2.00	216.5
10	5.25	2.29	222.5
11	6.75	2.60	229.0
12	8.8	2.96	236.0
13	11.3	3.35	244.0
14	16.3	4.03	255.5
15	22.3	4.72	266.0
16	32.3	5.68	277.5
17	65.3	8.08	295.5
18	90.3	9.50	302.5
19	140.3	11.84	310.0
20	190.3	13.79	315.5
21	240.3	15.50	319.0
22	290.3	17.04	322.0
23	340.3	18.45	324.0
24	460.3	21.45	328.5
25	680.3	26.08	334.0
26			

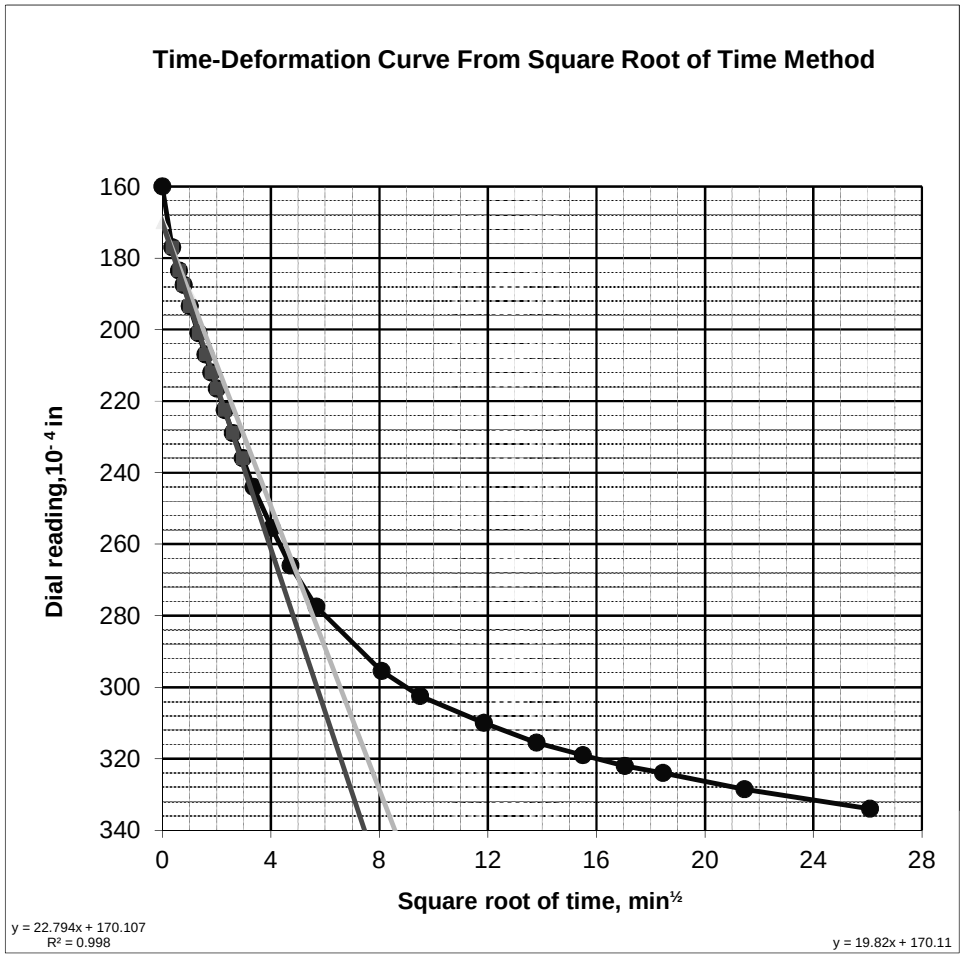
Selection	12
m_1	22.79
m_2	19.82

X	Y
0	170.11
1	189.93

d_0	170.1
d_{90}	268
d_{100}	279
d_{50}	225
$sq.root\ t_{90}$	4.95
t_{90}, min	24.50
$sq.root\ t_{50}$	2.39
t_{50}, min	5.72

d=dial gauge reading, 10^{-4} in

Note: * - Reported Pressure is not including seating pressure of 100 psf and possible additional vertical pressure applied to sample to prevent swell. If swell was observed additional vertical pressure is reported on page 1 of report.



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Client Pr. #	35:28498	Lab. PR. #	1920R-01-1
Project Name	Jaxport Buck Island TOE Dike	S. Type	UD
Sample ID	30643/B-15	Depth/Elev.	8.5-10'
Location	-	Add. Info	-

Standard Test Method for One-Dimensional Consolidation Properties of Soils, ASTM D2435 (Method B)/AASHTO T 216

STEP # 4

Pressure* on Specimen, lbf/ft²

2000

Point #	Time, min	Square Root of Time, $min^{1/2}$	Dial Gauge Reading, 10^{-4} in
1	0	0	336.5
2	0.15	0.39	358.5
3	0.40	0.63	366.5
4	0.65	0.81	372.5
5	1.07	1.03	380.0
6	1.83	1.35	391.0
7	2.58	1.61	399.5
8	3.33	1.83	407.5
9	4.08	2.02	414.0
10	5.33	2.31	424.0
11	6.83	2.61	434.5
12	8.8	2.97	447.0
13	11.3	3.37	460.0
14	16.3	4.04	482.0
15	22.3	4.73	503.0
16	32.3	5.69	529.0
17	65.3	8.08	586.0
18	90.3	9.50	615.5
19	140.3	11.85	653.5
20	190.3	13.80	678.5
21	240.4	15.50	697.0
22	290.4	17.04	713.0
23	340.4	18.45	728.0
24	460.4	21.46	754.5
25			
26			

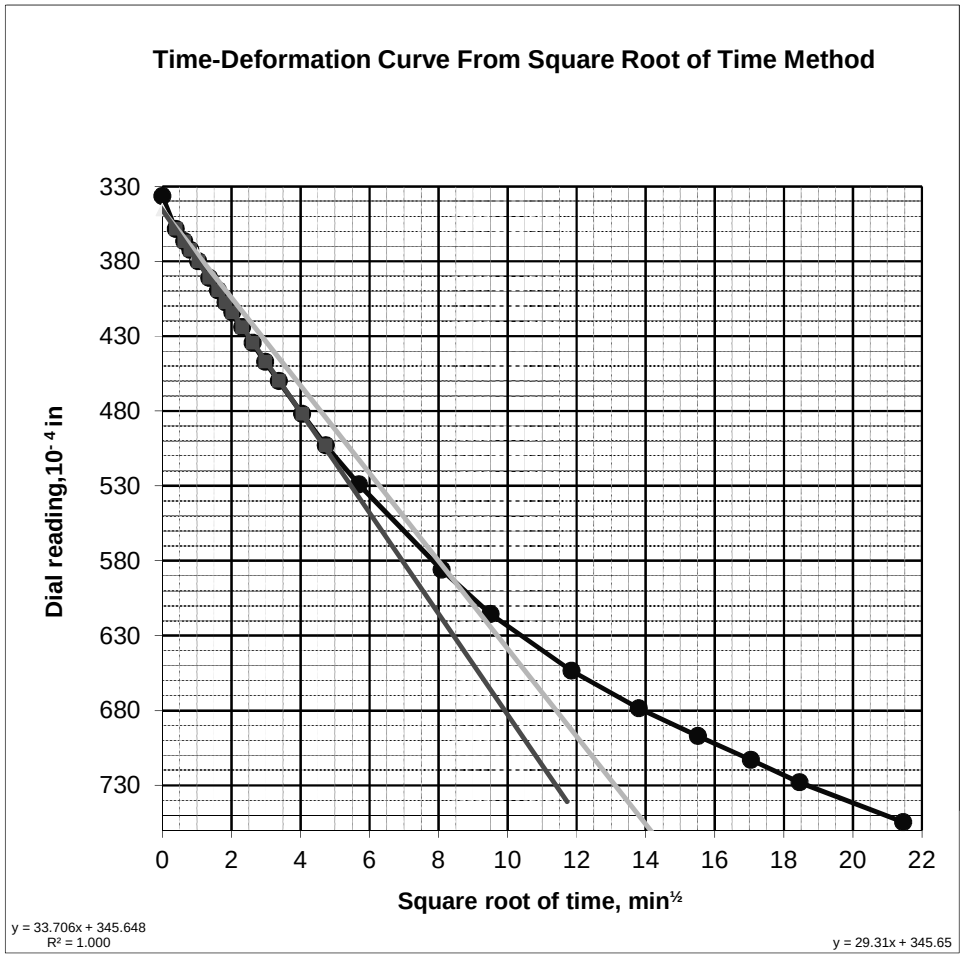
Selection	15
m_1	33.71
m_2	29.31

X	Y
0	345.65
1	374.96

d_0	345.6
d_{90}	590
d_{100}	618
d_{50}	482
$sq.root\ t_{90}$	8.35
t_{90}, min	69.72
$sq.root\ t_{50}$	4.03
t_{50}, min	16.27

d=dial gauge reading, 10^{-4} in

Note: * - Reported Pressure is not including seating pressure of 100 psf and possible additional vertical pressure applied to sample to prevent swell. If swell was observed additional vertical pressure is reported on page 1 of report.



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Date	05/15/19
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Client Pr. #	35:28498	Lab. PR. #	1920R-01-1
Project Name	Jaxport Buck Island TOE Dike	S. Type	UD
Sample ID	30643/B-15	Depth/Elev.	8.5-10'
Location	-	Add. Info	-

Standard Test Method for One-Dimensional Consolidation Properties of Soils, ASTM D2435 (Method B)/AASHTO T 216

STEP # 5

Pressure* on Specimen, lbf/ft² 4000

Point #	Time, min	Square Root of Time, $min^{1/2}$	Dial Gauge Reading, 10^{-4} in
1	0	0	769.0
2	0.15	0.39	797.0
3	0.48	0.70	812.0
4	1.07	1.03	830.0
5	1.92	1.38	850.0
6	3.10	1.76	873.0
7	4.02	2.00	888.0
8	4.95	2.22	902.5
9	5.88	2.43	916.0
10	7.27	2.70	935.0
11	8.77	2.96	953.5
12	10.8	3.28	977.0
13	13.3	3.64	1003.0
14	18.3	4.27	1049.5
15	24.3	4.93	1098.0
16	34.3	5.85	1166.5
17	67.3	8.20	1331.5
18	92.3	9.61	1420.0
19	142.3	11.93	1537.0
20	192.3	13.87	1611.5
21	242.3	15.56	1662.0
22	292.3	17.10	1698.5
23	342.3	18.50	1726.0
24	462.3	21.50	1773.5
25	682.3	26.12	1823.0
26			

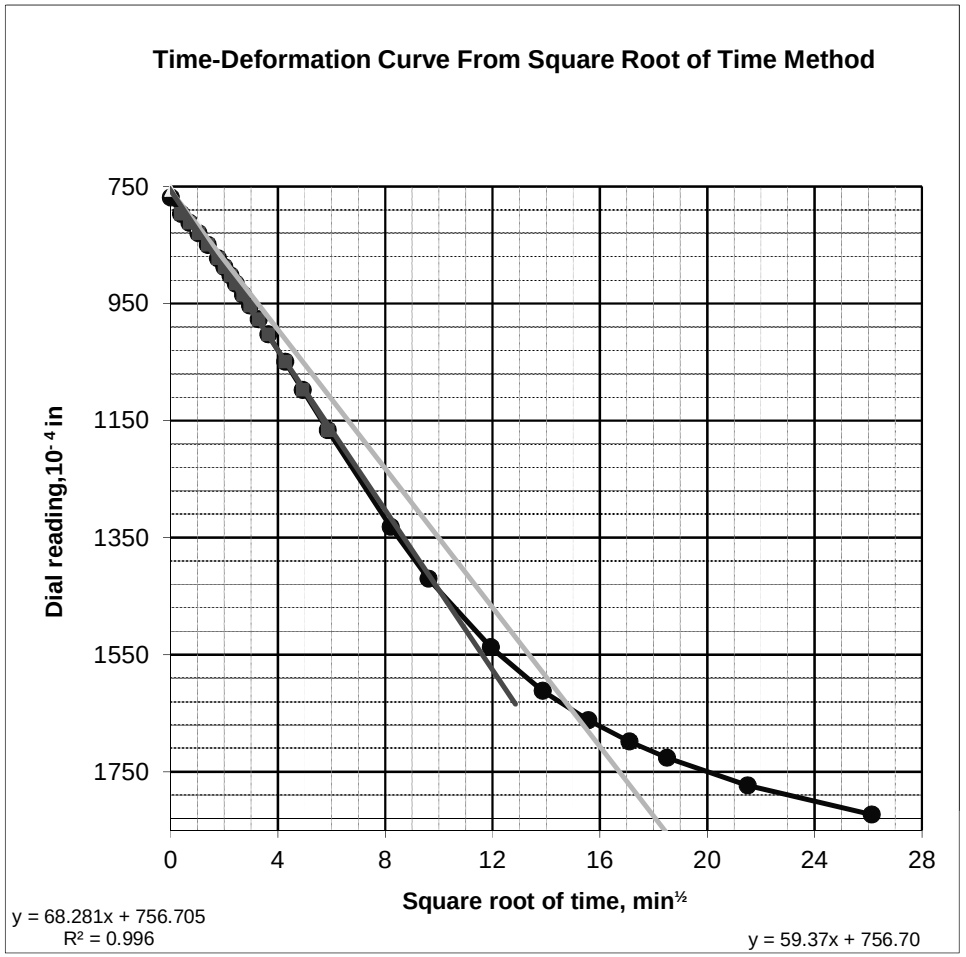
Selection	16
m_1	68.28
m_2	59.37

X	Y
0	756.70
1	816.08

d_0	756.7
d_{90}	1635
d_{100}	1733
d_{50}	1245
sq.root t_{90}	14.8
t_{90}, *min*	219.04
sq.root t_{50}	7.15
t_{50}, *min*	51.12

d=dial gauge reading, 10^{-4} in

Note: * - Reported Pressure is not including seating pressure of 100 psf and possible additional vertical pressure applied to sample to prevent swell. If swell was observed additional vertical pressure is reported on page 1 of report.



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Client Pr. #	35:28498	Lab. PR. #	1920R-01-1
Project Name	Jaxport Buck Island TOE Dike	S. Type	UD
Sample ID	30643/B-15	Depth/Elev.	8.5-10'
Location	-	Add. Info	-

Standard Test Method for One-Dimensional Consolidation Properties of Soils, ASTM D2435 (Method B)/AASHTO T 216

STEP # 6

Point #	Time, min	Square Root of Time, $min^{1/2}$	Dial Gauge Reading, 10^{-4} in
1	0	0	1852.5
2	0.08	0.29	1877.5
3	0.35	0.59	1892.5
4	0.62	0.79	1902.5
5	1.03	1.02	1915.5
6	1.80	1.34	1934.0
7	2.55	1.60	1949.5
8	3.30	1.82	1963.0
9	4.05	2.01	1975.5
10	5.30	2.30	1994.0
11	6.80	2.61	2014.0
12	8.8	2.97	2038.0
13	11.3	3.36	2064.5
14	16.3	4.04	2111.5
15	22.3	4.72	2158.5
16	32.3	5.68	2224.0
17	65.3	8.08	2372.5
18	90.3	9.50	2447.0
19	140.3	11.84	2543.5
20	190.3	13.79	2602.5
21	240.3	15.50	2641.5
22	290.3	17.04	2670.0
23	340.3	18.45	2691.5
24	460.3	21.45	2728.5
25	720.0	26.83	2760.0
26			

Pressure* on Specimen, lbf/ft^2

8000

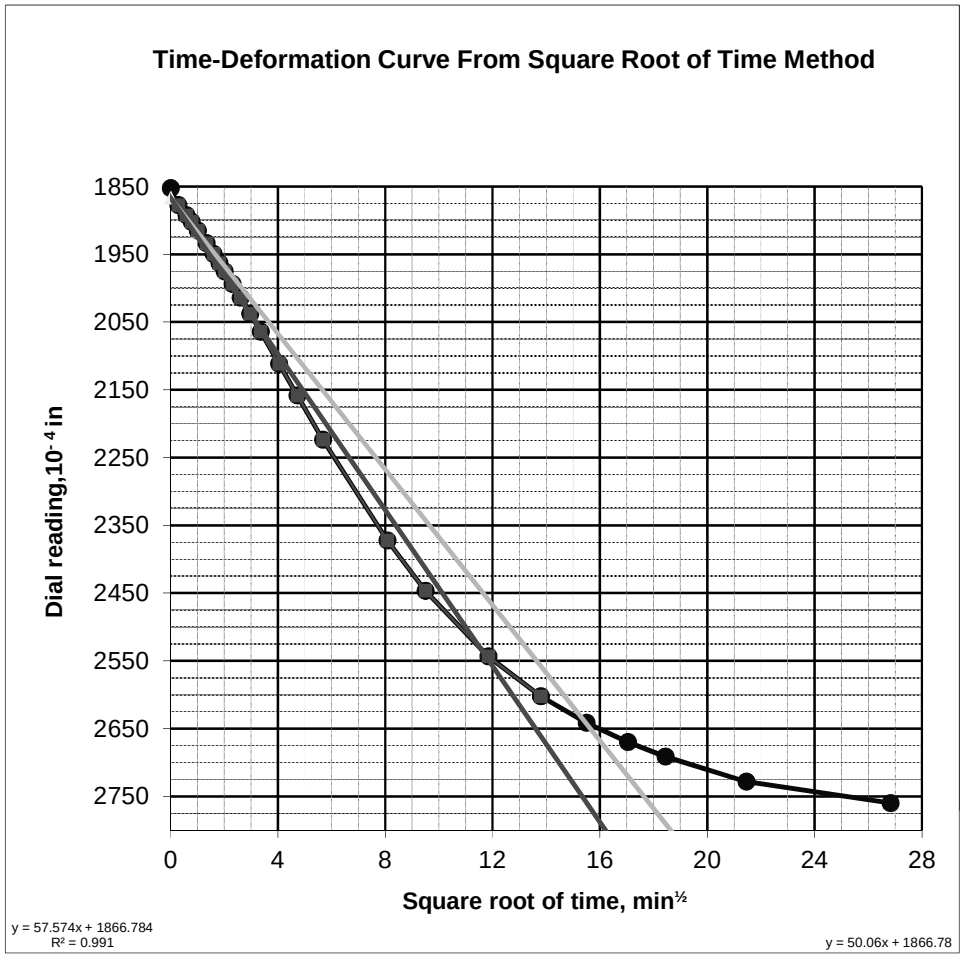
Selection	20
m_1	57.57
m_2	50.06

X	Y
0	1866.78
1	1916.85

d_0	1866.8
d_{90}	2643
d_{100}	2729
d_{50}	2298
sq.root t_{90}	15.5
t_{90}, *min*	240.25
sq.root t_{50}	7.49
t_{50}, *min*	56.07

d=dial gauge reading, 10^{-4} in

Note: * - Reported Pressure is not including seating pressure of 100 psf and possible additional vertical pressure applied to sample to prevent swell. If swell was observed additional vertical pressure is reported on page 1 of report.



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Tested By	RI
Date	05/14/19
Checked By	

Client Pr. #	35:28498	Lab. PR. #	1920R-01-1
Project Name	Jaxport Buck Island TOE Dike	S. Type	UD
Sample ID	30643/B-15	Depth/Elev.	8.5-10'
Location	-	Add. Info	-

ASTM D2435

Standard Test Method for One-Dimensional Consolidation Properties of Soils (Method B)

Sample Data

	Initial	Final
Mass of Ring, g	194.02	194.02
Mass of Wet Sample and Ring, g	309.73	289.87
Mass of Wet Sample, g	115.71	95.85
Mass of Dry Sample, g	59.38	59.38
Height of Sample, in	0.9980	0.7251
Diameter of Sample, in	2.503	2.503
Area of Sample, in^2	4.92	4.92
Volume of Sample, in^3	4.91	3.57
Specific Gravity (Assumed)	2.750	2.750
Wet Unit Weight, pcf	89.8	102.3
Dry Unit Weight, pcf	46.1	63.4
Height of Solids, in	0.2678	0.2678
Height of Voids, in	0.7302	0.4573
Height of Water, in	0.6986	0.4522
Void Ratio	2.727	1.708
Degree of Saturation, %	95.7	98.9

Initial Seating Pressure, lbf/ft^2	100
Additional Vertical Pressure, lbf/ft^2	0
Total Seating Pressure, lbf/ft^2	100
STATION #	2
Consolidometer Ring ID Number	2
Consolidometer ID Number	2
Frame ID Number	66
Dial Gage ID Number	677
Initial Dial Gauge Reading, 10^{-4} in	0
Final Dial Gauge Reading, 10^{-4} in	2729

DESCRIPTION

NA

Condition of Test:

1. Deionized water used for inundation of sample.
2. Saturated porous stones w/t filter paper used

USCS (ASTM D2487;2488)

NA

REMARKS

Portion of sample used for testing was located 12" above the bottom of the shelby tube.

Moisture Content

	Trimmings	Initial	Final
Mass of Wet Sample and Tare, g	276.30	309.73	351.45
Mass of Dry Sample and Tare, g	190.90	253.40	314.99
Mass of Tare, g	101.60	194.02	255.62
Moisture Content, %	95.6	94.9	61.4

LL	-
PL	-
PI	-

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Web: www.test-llc.com

Tested By	RI
Date	05/14/19
Checked By	

Client Pr. #	35:28498	Lab Pr. #	1920R-01-1
Project Name	Jaxport Buck Island TOE Dike	S. Type	UD
Sample ID	30643/B-15	Depth/Elev.	8.5-10'
Location	-	Add. Info	-

ASTM D2435

Standard Test Method for One-Dimensional Consolidation Properties of Soils (Method B)

Void Ratio, Strain Information and Coefficient of Consolidation Calculation

Pressure		Uncorrected Dial Reading, in		Apparatus Correction, in	Corrected Dial Reading, in		Change in specimen height, in		Sample Height, in		Height of Voids, in	Void Ratio		Strain, %		Fitting Time, min		Hd_{50}, in	Coefficient of Consolidation	
lbf/ft^2	Ksf	d_{100}	d_{50}		d_{100}	d_{50}	S D H_{100}	S D H_{50}	H_{100}	H_{50}	Hv^{100},in	e_{100}	e_{50}	e_{100}	e_{50}	t_{90}	t_{50}		in^2/min	ft^2/day
100	0.1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.9980	0.9980	0.7302	2.727	2.727	0.00	0.00	-	-	0.4990	-	-
500	0.5	0.0130	0.0080	0.0000	0.0130	0.0080	0.0130	0.0080	0.9850	0.9900	0.7172	2.678	2.697	1.30	0.80	17.64	4.12	0.4950	0.01	0.12
1000	1	0.0279	0.0225	0.0000	0.0279	0.0225	0.0279	0.0225	0.9701	0.9755	0.7023	2.622	2.643	2.80	2.25	24.50	5.72	0.4878	0.01	0.08
2000	2	0.0618	0.0482	0.0000	0.0618	0.0482	0.0618	0.0482	0.9362	0.9498	0.6684	2.496	2.547	6.19	4.83	69.72	16.27	0.4749	0.00	0.03
4000	4	0.1733	0.1245	0.0000	0.1733	0.1245	0.1733	0.1245	0.8247	0.8735	0.5569	2.079	2.262	17.37	12.47	219.04	51.12	0.4368	0.00	0.01
8000	8	0.2729	0.2298	0.0000	0.2729	0.2298	0.2729	0.2298	0.7251	0.7682	0.4573	1.708	1.869	27.34	23.02	240.25	56.07	0.3841	0.00	0.01

Note: d_{100} = Dial gauge reading at 100% primary consolidation, in
d_{50} = Dial gauge reading at 50% primary consolidation, in
H_{100} = Specimen height at 100% primary consolidation, in
H_{50} = Specimen height at 50% primary consolidation, in
Hd_{50} = Length of the drainage path at 50% consolidation, in
e_{100} = Void ratio at 100% primary consolidation
e_{50} = Void ratio at 50% primary consolidation

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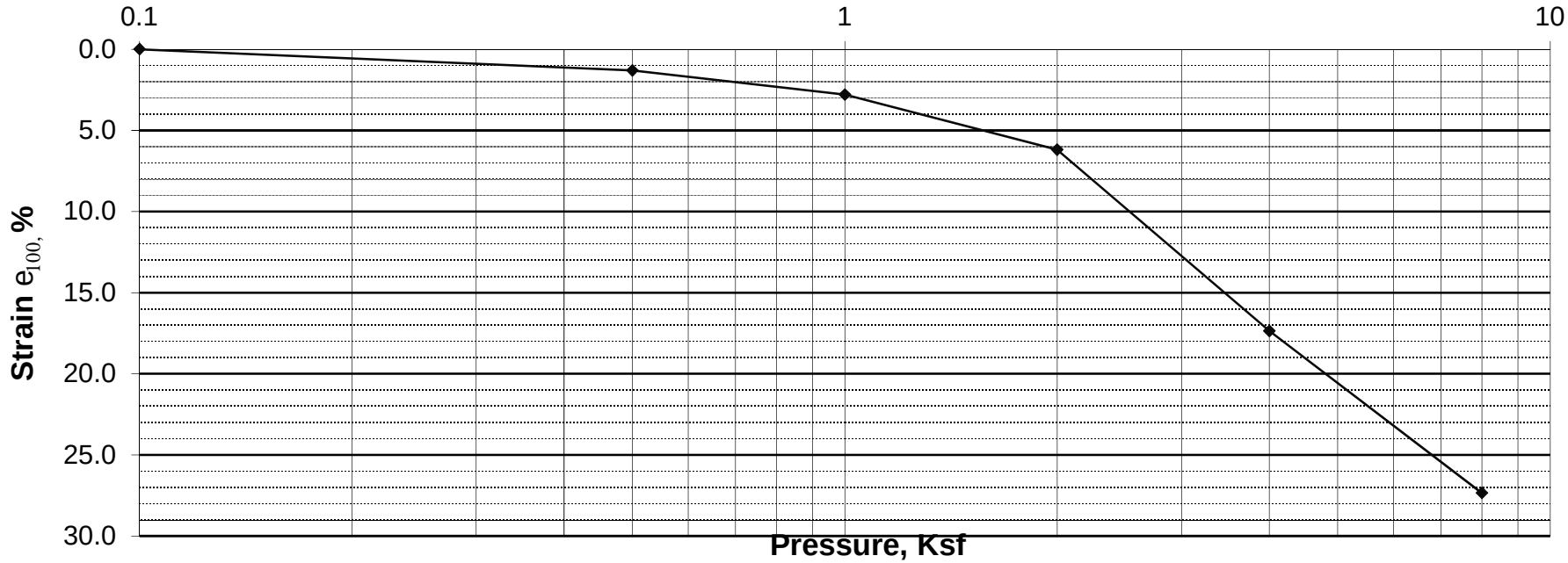
Tested By	RI
Date	05/14/19
Checked By	

Client Pr. #	35:28498	Lab. PR. #	1920R-01-1
Project Name	Jaxport Buck Island TOE Dike	S. Type	UD
Sample ID	30643/B-15	Depth/Elev.	8.5-10'
Location	-	Add. Info	-

ASTM D 2435; Standard Test Method for One-Dimensional Consolidation Properties of Soils (Method B)

Strain at the End-of-Primary Consolidation vs. Log of Pressure



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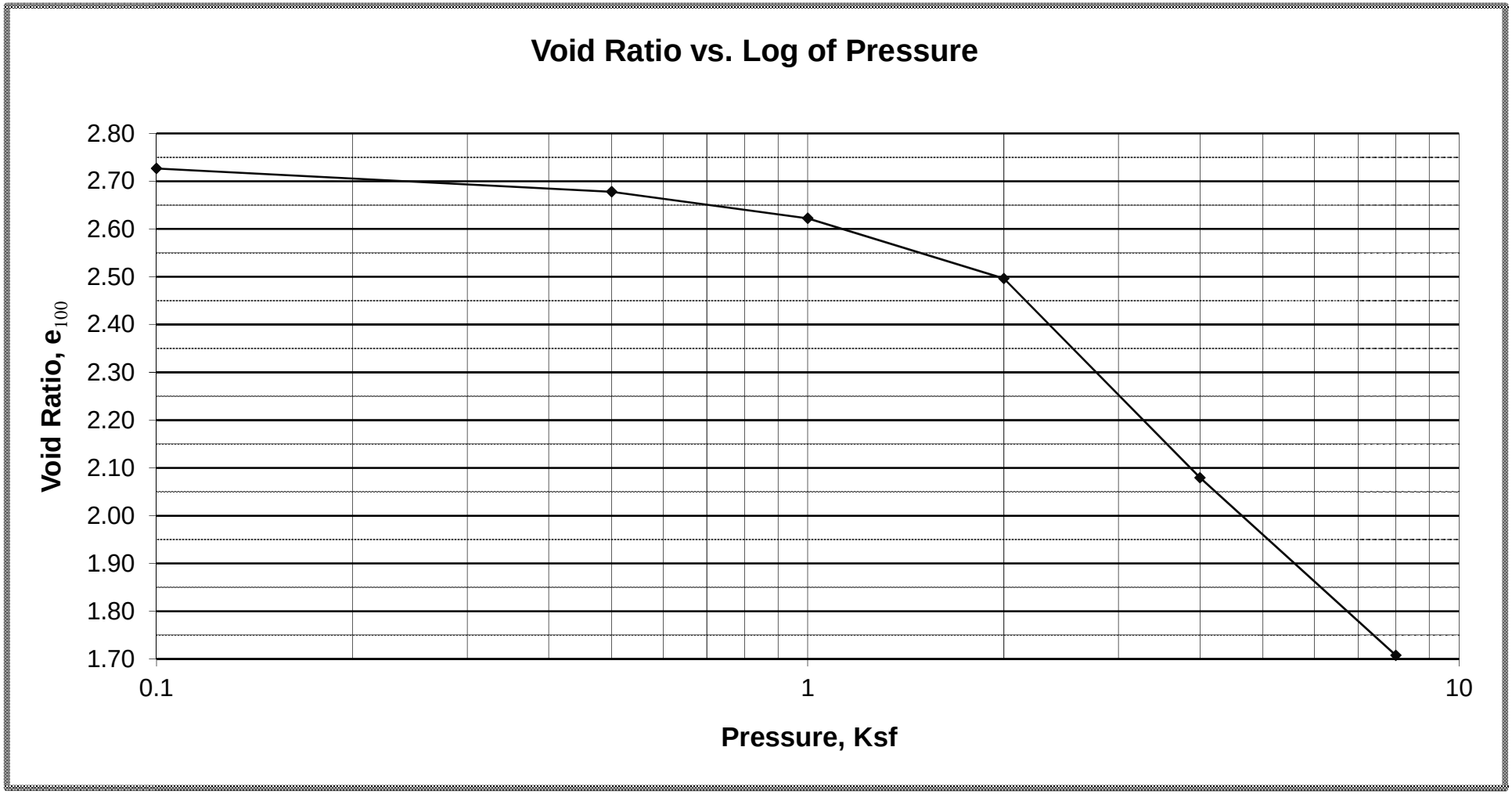
Client Pr. #	35:28498	Lab. PR. #	1920R-01-1
Project Name	Jaxport Buck Island TOE Dike	S. Type	UD
Sample ID	30643/B-15	Depth/Elev.	8.5-10'
Location	-	Add. Info	-

ASTM D 2435; Standard Test Method for One-Dimensional Consolidation Properties of Soils (Method B)



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Tested By	RI
Date	05/14/19
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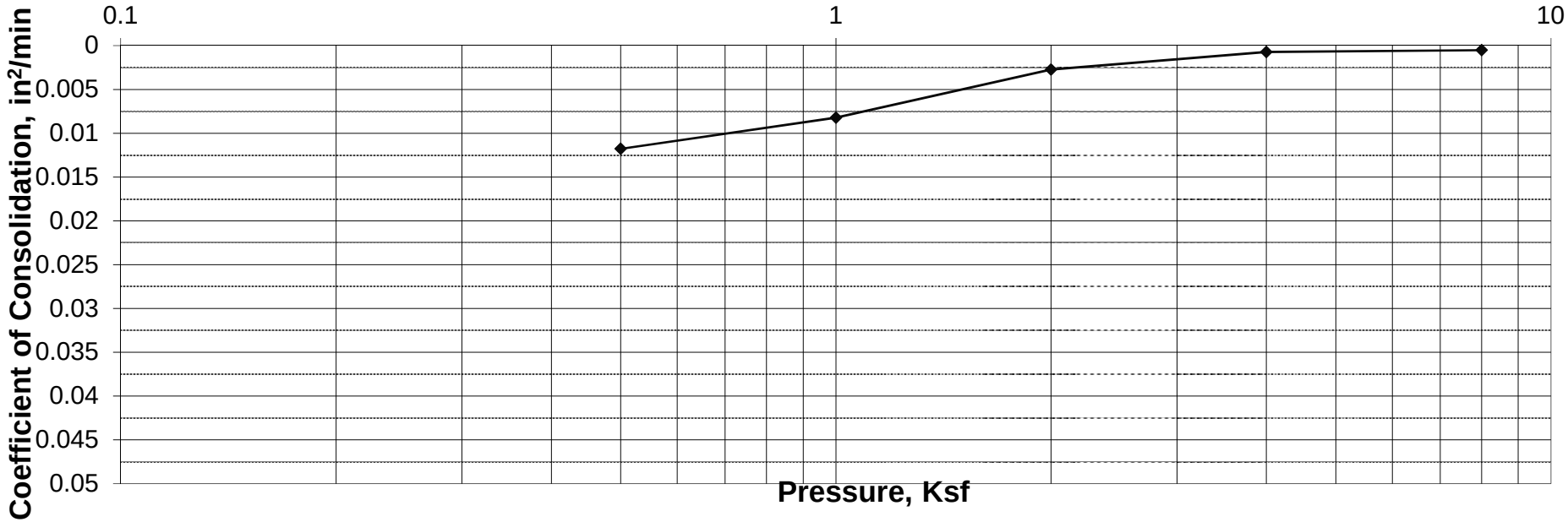
Client Pr. #	35:28498	Lab. PR. #	1920R-01-1
Project Name	Jaxport Buck Island TOE Dike	S. Type	UD
Sample ID	30643/B-15	Depth/Elev.	8.5-10'
Location	-	Add. Info	-

ASTM D 2435; Standard Test Method for One-Dimensional Consolidation Properties of Soils (Method B)

Coefficient of Consolidation vs. Log of Pressure



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Tested By	RI
Date	05/16/19
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Client Pr. #	35:28498	Lab. PR. #	1920R-01-1
Project Name	Jaxport Buck Island TOE Dike	S. Type	UD
Sample ID	30645/B-4	Depth/Elev.	4-6'
Location	-	Add. Info	-

Standard Test Method for One-Dimensional Consolidation Properties of Soils, ASTM D2435 (Method B)/AASHTO T 216

STEP # **2**

Point #	Time, min	Square Root of Time, $min^{1/2}$	Dial Gauge Reading, 10^{-4} in
1	0	0	0.0
2	0.15	0.39	13.0
3	0.38	0.62	14.0
4	0.67	0.82	14.5
5	1.08	1.04	15.0
6	1.80	1.34	15.0
7	2.55	1.60	15.0
8	3.30	1.82	15.0
9	4.05	2.01	15.0
10	5.30	2.30	15.5
11	6.80	2.61	15.5
12	8.9	2.97	15.5
13	11.4	3.37	15.5
14	16.4	4.04	16.0
15	22.4	4.73	16.0
16	32.4	5.69	16.0
17	65.4	8.08	16.5
18	90.4	9.51	16.5
19			
20			

Pressure* on Specimen, lbf/ft^2

500

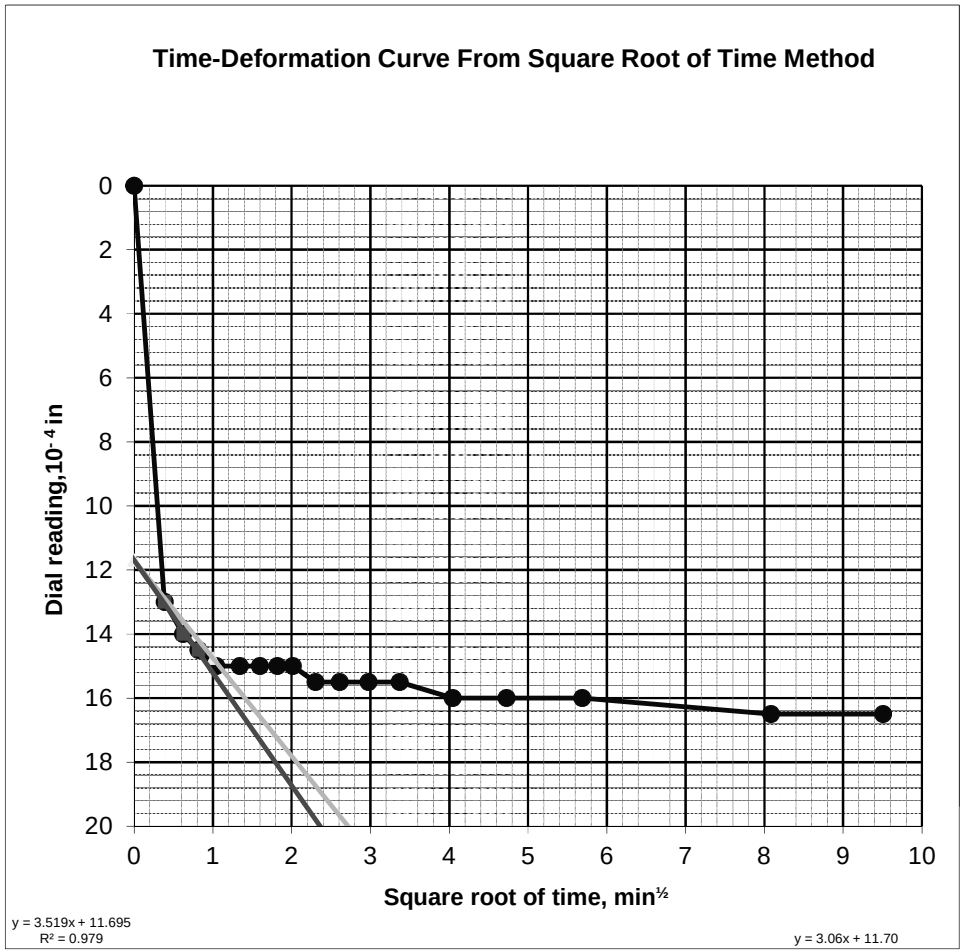
Selection	4
m_1	3.52
m_2	3.06

X	Y
0	11.70
1	14.75

d_0	11.7
d_{90}	15
d_{100}	15
d_{50}	13
sq.root t_{90}	1
t_{90}, *min*	1.00
sq.root t_{50}	0.48
t_{50}, *min*	0.23

d=dial gauge reading, 10^{-4} in

Note: * - Reported Pressure is not including seating pressure of 100 psf and possible additional vertical pressure applied to sample to prevent swell. If swell was observed additional vertical pressure is reported on page 1 of report.



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Tested By	RI
Date	05/16/19
Checked By	

Client Pr. #	35:28498	Lab. PR. #	1920R-01-1
Project Name	Jaxport Buck Island TOE Dike	S. Type	UD
Sample ID	30645/B-4	Depth/Elev.	4-6'
Location	-	Add. Info	-

Standard Test Method for One-Dimensional Consolidation Properties of Soils, ASTM D2435 (Method B)/AASHTO T 216

STEP # 3

Pressure* on Specimen, lbf/ft²

1000

Point #	Time, min	Square Root of Time, $min^{1/2}$	Dial Gauge Reading, 10^{-4} in
1	0	0	16.5
2	0.13	0.37	23.0
3	0.40	0.63	24.0
4	0.75	0.87	25.0
5	1.22	1.10	25.0
6	1.95	1.40	25.0
7	2.70	1.64	25.0
8	3.45	1.86	25.0
9	4.20	2.05	25.0
10	5.45	2.33	25.0
11	6.95	2.64	25.0
12	9.0	2.99	25.0
13	11.5	3.38	25.5
14	16.5	4.06	25.5
15	22.5	4.74	25.5
16	32.5	5.70	26.0
17			
18			
19			
20			

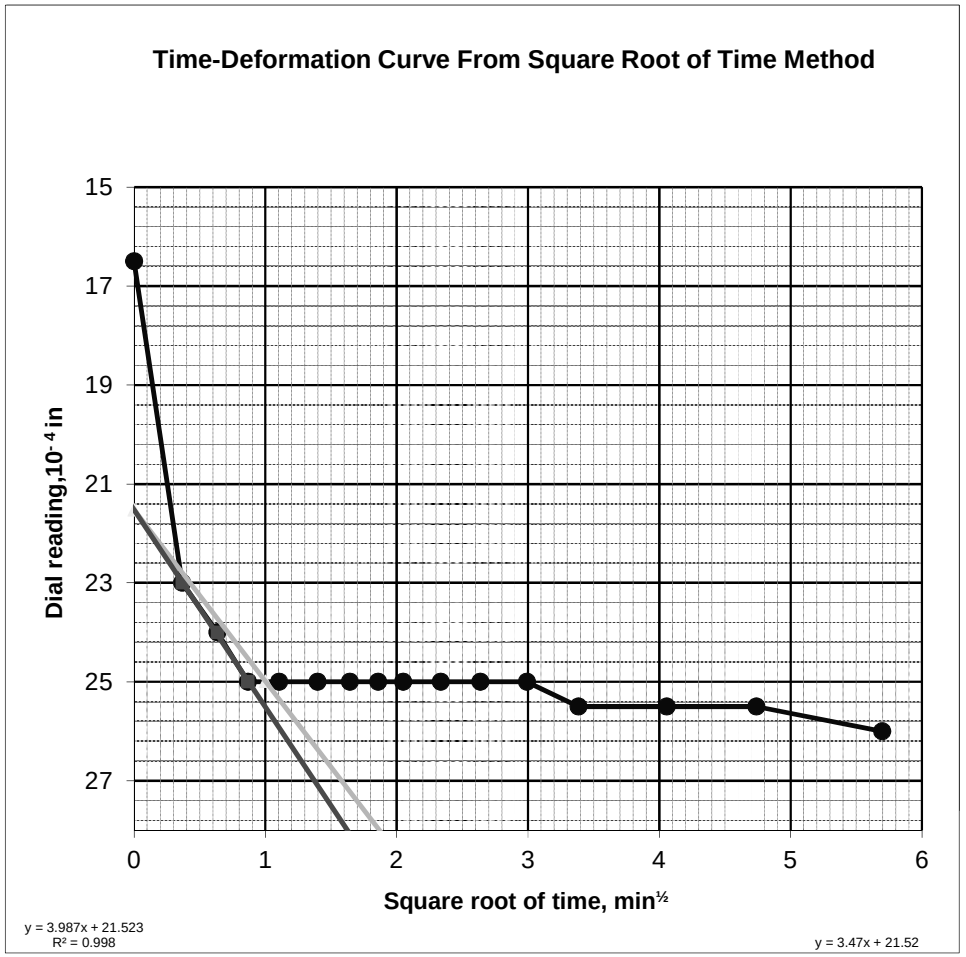
Selection	4
m_1	3.99
m_2	3.47

X	Y
0	21.52
1	24.99

d_0	21.5
d_{90}	25
d_{100}	26
d_{50}	24
sq.root t_{90}	1.05
t_{90}, min	1.10
sq.root t_{50}	0.51
t_{50}, min	0.26

d=dial gauge reading, 10^{-4} in

Note: * - Reported Pressure is not including seating pressure of 100 psf and possible additional vertical pressure applied to sample to prevent swell. If swell was observed additional vertical pressure is reported on page 1 of report.



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Tested By	RI
Date	05/16/19
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Client Pr. #	35:28498	Lab. PR. #	1920R-01-1
Project Name	Jaxport Buck Island TOE Dike	S. Type	UD
Sample ID	30645/B-4	Depth/Elev.	4-6'
Location	-	Add. Info	-

Standard Test Method for One-Dimensional Consolidation Properties of Soils, ASTM D2435 (Method B)/AASHTO T 216

STEP # 4

Point #	Time, min	Square Root of Time, $min^{1/2}$	Dial Gauge Reading, 10^{-4} in
1	0	0	26.0
2	0.13	0.37	38.0
3	0.42	0.65	38.5
4	0.68	0.83	39.0
5	1.12	1.06	39.0
6	1.90	1.38	39.0
7	2.65	1.63	39.0
8	3.40	1.84	39.0
9	4.15	2.04	39.5
10	5.40	2.32	39.5
11	6.90	2.63	40.0
12	8.9	2.98	40.0
13	11.4	3.38	40.0
14	16.4	4.05	40.0
15	22.4	4.73	40.0
16	32.4	5.69	40.5
17	65.4	8.09	41.0
18	90.4	9.51	41.5
19			
20			

Pressure* on Specimen, lbf/ft^2

2000

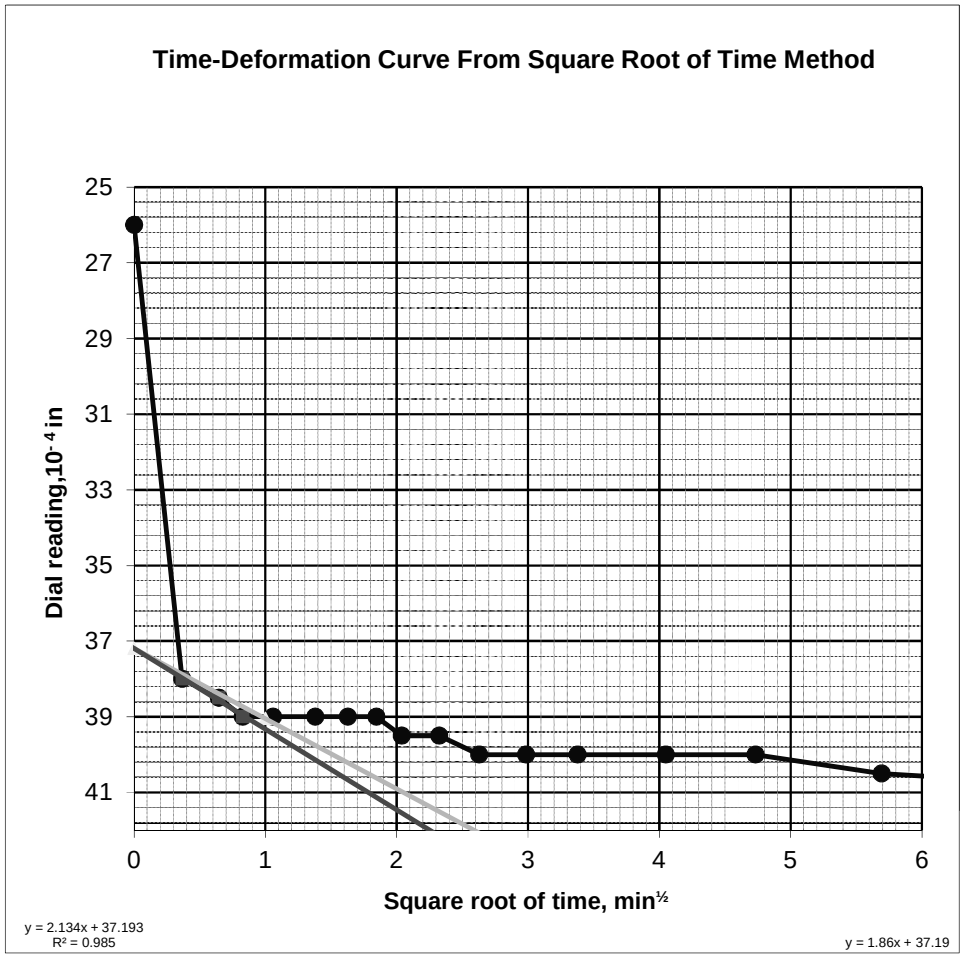
Selection	4
m_1	2.13
m_2	1.86

X	Y
0	37.19
1	39.05

d_0	37.2
d_{90}	39
d_{100}	39
d_{50}	38
$sq.root\ t_{90}$	1.05
t_{90}, min	1.10
$sq.root\ t_{50}$	0.51
t_{50}, min	0.26

d=dial gauge reading, 10^{-4} in

Note: * - Reported Pressure is not including seating pressure of 100 psf and possible additional vertical pressure applied to sample to prevent swell. If swell was observed additional vertical pressure is reported on page 1 of report.



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Tested By	RI
Date	05/16/19
Checked By	

Client Pr. #	35:28498	Lab. PR. #	1920R-01-1
Project Name	Jaxport Buck Island TOE Dike	S. Type	UD
Sample ID	30645/B-4	Depth/Elev.	4-6'
Location	-	Add. Info	-

Standard Test Method for One-Dimensional Consolidation Properties of Soils, ASTM D2435 (Method B)/AASHTO T 216

STEP # 5

Pressure* on Specimen, lbf/ft²

4000

Point #	Time, min	Square Root of Time, $min^{1/2}$	Dial Gauge Reading, 10^{-4} in
1	0	0	41.5
2	0.10	0.32	57.0
3	0.38	0.62	58.5
4	0.67	0.82	59.0
5	1.10	1.05	59.5
6	2.03	1.43	60.0
7	2.78	1.67	60.0
8	3.53	1.88	60.0
9	4.28	2.07	60.0
10	5.53	2.35	61.0
11	7.03	2.65	61.0
12	9.0	3.01	61.0
13	11.5	3.40	61.0
14	16.5	4.07	61.5
15	22.5	4.75	61.5
16	32.5	5.70	62.0
17			
18			
19			
20			

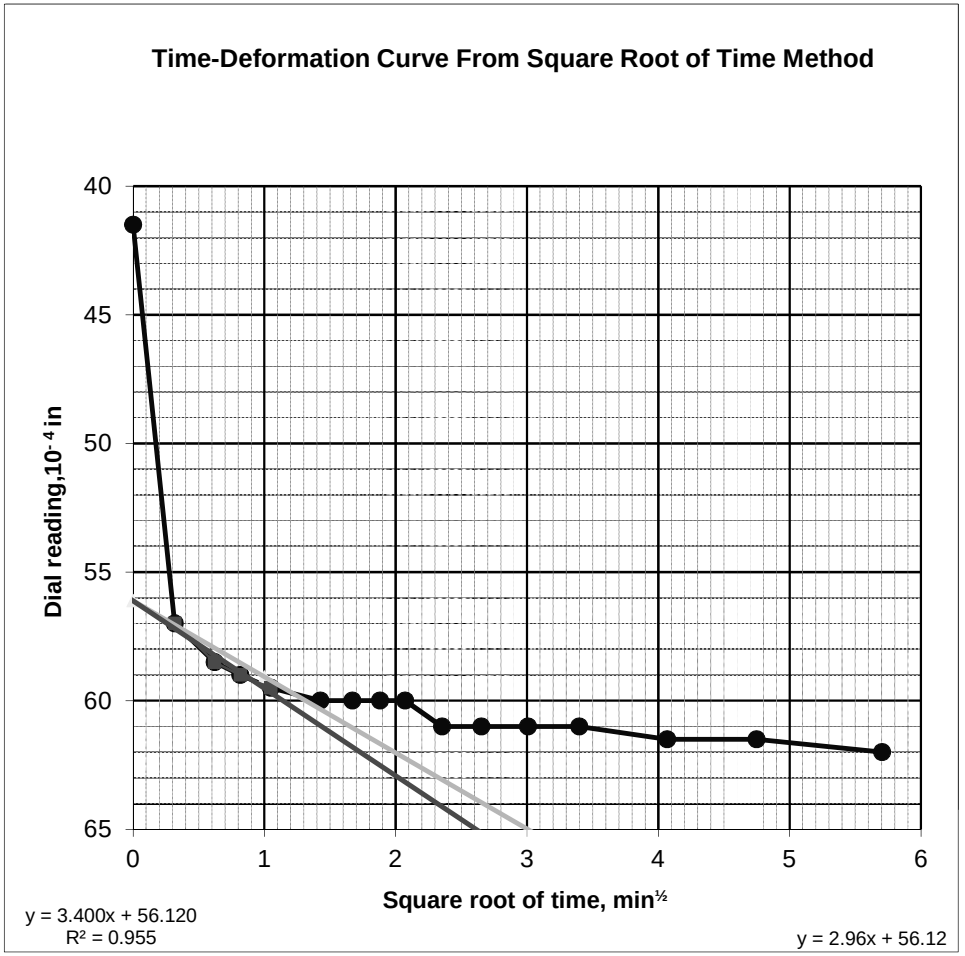
Selection	5
m_1	3.40
m_2	2.96

X	Y
0	56.12
1	59.08

d_0	56.1
d_{90}	60
d_{100}	60
d_{50}	58
sq.root t_{90}	1.3
t_{90}, *min*	1.69
sq.root t_{50}	0.63
t_{50}, *min*	0.39

d=dial gauge reading, 10^{-4} in

Note: * - Reported Pressure is not including seating pressure of 100 psf and possible additional vertical pressure applied to sample to prevent swell. If swell was observed additional vertical pressure is reported on page 1 of report.



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Tested By	RI
Date	05/16/19
Checked By	

Client Pr. #	35:28498	Lab. PR. #	1920R-01-1
Project Name	Jaxport Buck Island TOE Dike	S. Type	UD
Sample ID	30645/B-4	Depth/Elev.	4-6'
Location	-	Add. Info	-

Standard Test Method for One-Dimensional Consolidation Properties of Soils, ASTM D2435 (Method B)/AASHTO T 216

STEP # 6

Pressure* on Specimen, lbf/ft²

8000

Point #	Time, min	Square Root of Time, $min^{1/2}$	Dial Gauge Reading, 10^{-4} in
1	0	0	62.5
2	0.27	0.52	87.0
3	0.85	0.92	88.0
4	1.42	1.19	88.5
5	2.30	1.52	89.0
6	3.52	1.88	89.0
7	4.45	2.11	89.0
8	5.38	2.32	89.0
9	6.27	2.50	89.5
10	7.58	2.75	89.5
11	9.08	3.01	89.5
12	11.1	3.33	90.0
13	13.6	3.69	90.0
14	18.6	4.31	90.5
15	24.6	4.96	90.5
16	34.6	5.88	90.5
17			
18			
19			
20			

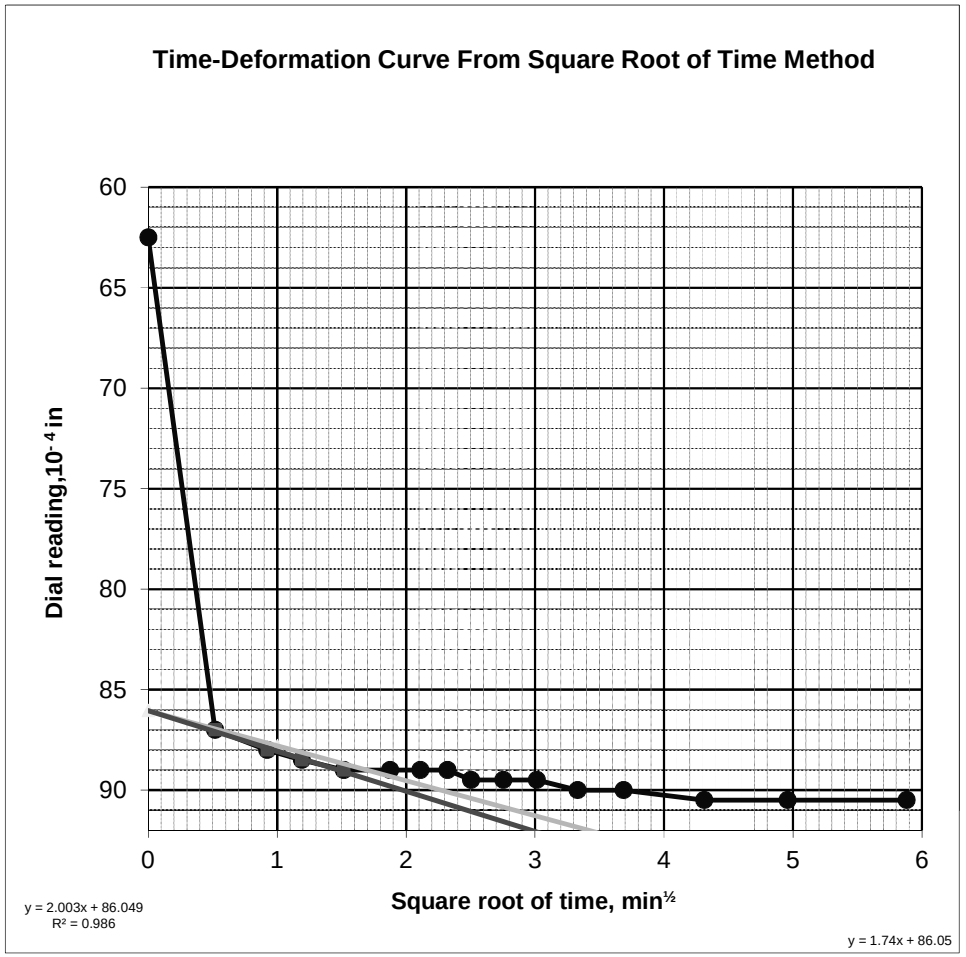
Selection	5
m_1	2.00
m_2	1.74

X	Y
0	86.05
1	87.79

d_0	86.0
d_{90}	89
d_{100}	89
d_{50}	88
sq.root t_{90}	1.6
t_{90}, min	2.56
sq.root t_{50}	0.77
t_{50}, min	0.60

d=dial gauge reading, 10^{-4} in

Note: * - Reported Pressure is not including seating pressure of 100 psf and possible additional vertical pressure applied to sample to prevent swell. If swell was observed additional vertical pressure is reported on page 1 of report.



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Client Pr. #	35:28498	Lab. PR. #	1920R-01-1
Project Name	Jaxport Buck Island TOE Dike	S. Type	UD
Sample ID	30645/B-4	Depth/Elev.	4-6'
Location	-	Add. Info	-

ASTM D2435

Standard Test Method for One-Dimensional Consolidation Properties of Soils (Method B)

Sample Data

	Initial	Final
Mass of Ring, g	194.25	194.25
Mass of Wet Sample and Ring, g	347.28	348.50
Mass of Wet Sample, g	153.03	154.25
Mass of Dry Sample, g	121.29	121.29
Height of Sample, in	0.9970	0.9881
Diameter of Sample, in	2.502	2.502
Area of Sample, in^2	4.92	4.92
Volume of Sample, in^3	4.90	4.86
Specific Gravity (Assumed)	2.650	2.650
Wet Unit Weight, pcf	118.9	121.0
Dry Unit Weight, pcf	94.3	95.1
Height of Solids, in	0.5681	0.5681
Height of Voids, in	0.4289	0.4200
Height of Water, in	0.3940	0.4091
Void Ratio	0.755	0.739
Degree of Saturation, %	91.9	97.4

Initial Seating Pressure, lbf/ft^2	100
Additional Vertical Pressure, lbf/ft^2	0
Total Seating Pressure, lbf/ft^2	100
STATION #	4
Consolidometer Ring ID Number	4
Consolidometer ID Number	4
Frame ID Number	186
Dial Gage ID Number	679
Initial Dial Gauge Reading, 10^{-4} in	0
Final Dial Gauge Reading, 10^{-4} in	89

DESCRIPTION

NA

Condition of Test:

1. Deionized water used for inundation of sample.
2. Saturated porous stones w/t filter paper used

USCS (ASTM D2487;2488)

NA

REMARKS

Portion of sample used for testing was located 10" above the bottom of the shelby tube.

Moisture Content

	Trimmings	Initial	Final
Mass of Wet Sample and Tare, g	509.10	347.28	408.17
Mass of Dry Sample and Tare, g	422.80	315.54	375.21
Mass of Tare, g	90.80	194.25	253.93
Moisture Content, %	26.0	26.2	27.2

LL	-
PL	-
PI	-

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Tested By	RI
Date	05/15/19
Checked By	

Client Pr. #	35:28498	Lab Pr. #	1920R-01-1
Project Name	Jaxport Buck Island TOE Dike	S. Type	UD
Sample ID	30645/B-4	Depth/Elev.	4-6'
Location	-	Add. Info	-

ASTM D2435

Standard Test Method for One-Dimensional Consolidation Properties of Soils (Method B)

Void Ratio, Strain Information and Coefficient of Consolidation Calculation

Pressure		Uncorrected Dial Reading, in		Apparatus Correction, in	Corrected Dial Reading, in		Change in specimen height, in		Sample Height, in		Height of Voids, in	Void Ratio		Strain, %		Fitting Time, min		Hd_{50}, in	Coefficient of Consolidation	
lbf/ft^2	Ksf	d_{100}	d_{50}		d_{100}	d_{50}	S D H_{100}	S D H_{50}	H_{100}	H_{50}	Hv^{100},in	e_{100}	e_{50}	e_{100}	e_{50}	t_{90}	t_{50}		in^2/min	ft^2/day
100	0.1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.9970	0.9970	0.4289	0.755	0.755	0.00	0.00	-	-	0.4985	-	-
500	0.5	0.0015	0.0013	0.0000	0.0015	0.0013	0.0015	0.0013	0.9955	0.9957	0.4274	0.752	0.753	0.15	0.13	1.00	0.23	0.4978	0.21	2.10
1000	1	0.0026	0.0024	0.0000	0.0026	0.0024	0.0026	0.0024	0.9944	0.9946	0.4264	0.751	0.751	0.26	0.24	1.10	0.26	0.4973	0.19	1.90
2000	2	0.0039	0.0038	0.0000	0.0039	0.0038	0.0039	0.0038	0.9931	0.9932	0.4250	0.748	0.748	0.39	0.38	1.10	0.26	0.4966	0.19	1.90
4000	4	0.0060	0.0058	0.0000	0.0060	0.0058	0.0060	0.0058	0.9910	0.9912	0.4229	0.744	0.745	0.61	0.58	1.69	0.39	0.4956	0.12	1.23
8000	8	0.0089	0.0088	0.0000	0.0089	0.0088	0.0089	0.0088	0.9881	0.9882	0.4200	0.739	0.740	0.89	0.88	2.56	0.60	0.4941	0.08	0.81

Note: d_{100} = Dial gauge reading at 100% primary consolidation, in
d_{50} = Dial gauge reading at 50% primary consolidation, in
H_{100} = Specimen height at 100% primary consolidation, in
H_{50} = Specimen height at 50% primary consolidation, in
Hd_{50} = Length of the drainage path at 50% consolidation, in
e_{100} = Void ratio at 100% primary consolidation
e_{50} = Void ratio at 50% primary consolidation

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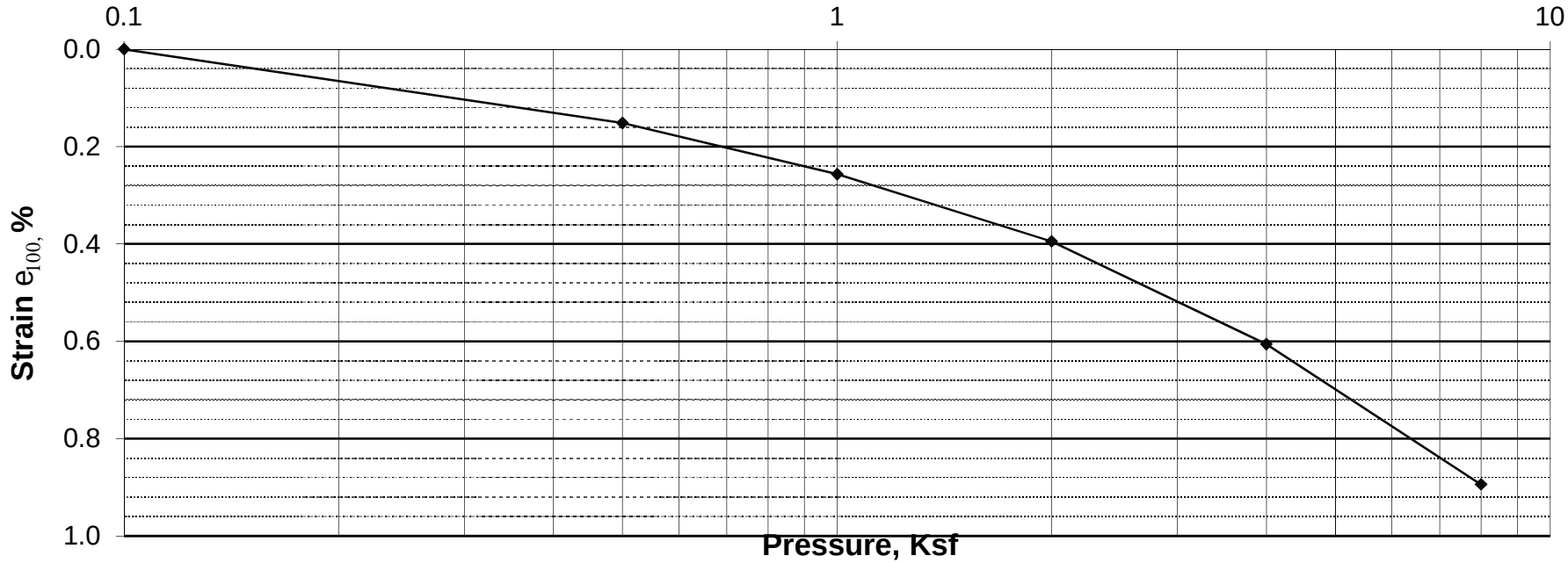
Tested By	RI
Date	05/15/19
Checked By	

Client Pr. #	35:28498	Lab. PR. #	1920R-01-1
Project Name	Jaxport Buck Island TOE Dike	S. Type	UD
Sample ID	30645/B-4	Depth/Elev.	4-6'
Location	-	Add. Info	-

ASTM D 2435; Standard Test Method for One-Dimensional Consolidation Properties of Soils (Method B)

Strain at the End-of-Primary Consolidation vs. Log of Pressure



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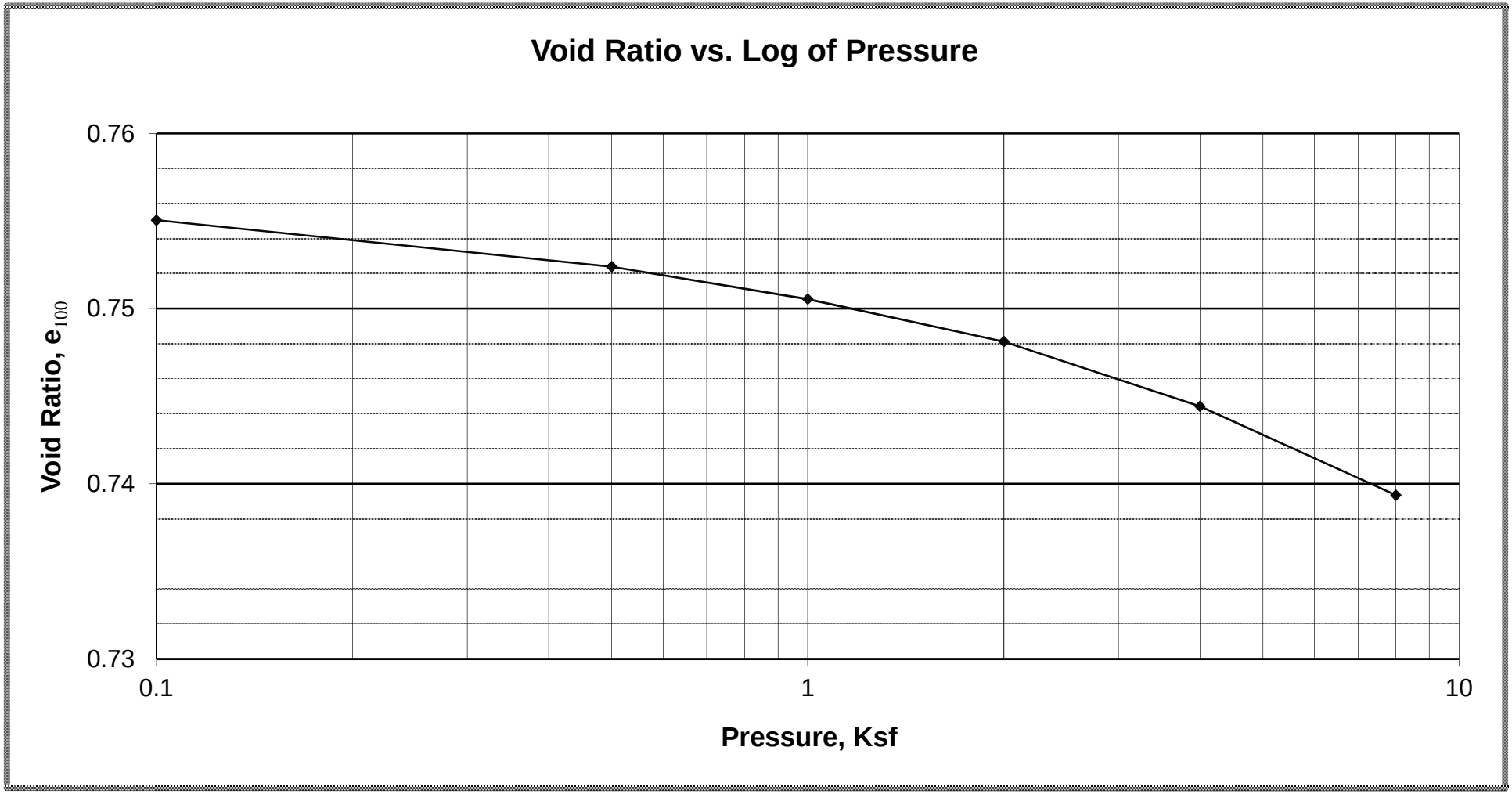
Sample ID	30645/B-4	Depth/Elev.	4-6'
Location	-	Add. Info	-

ASTM D 2435; Standard Test Method for One-Dimensional Consolidation Properties of Soils (Method B)



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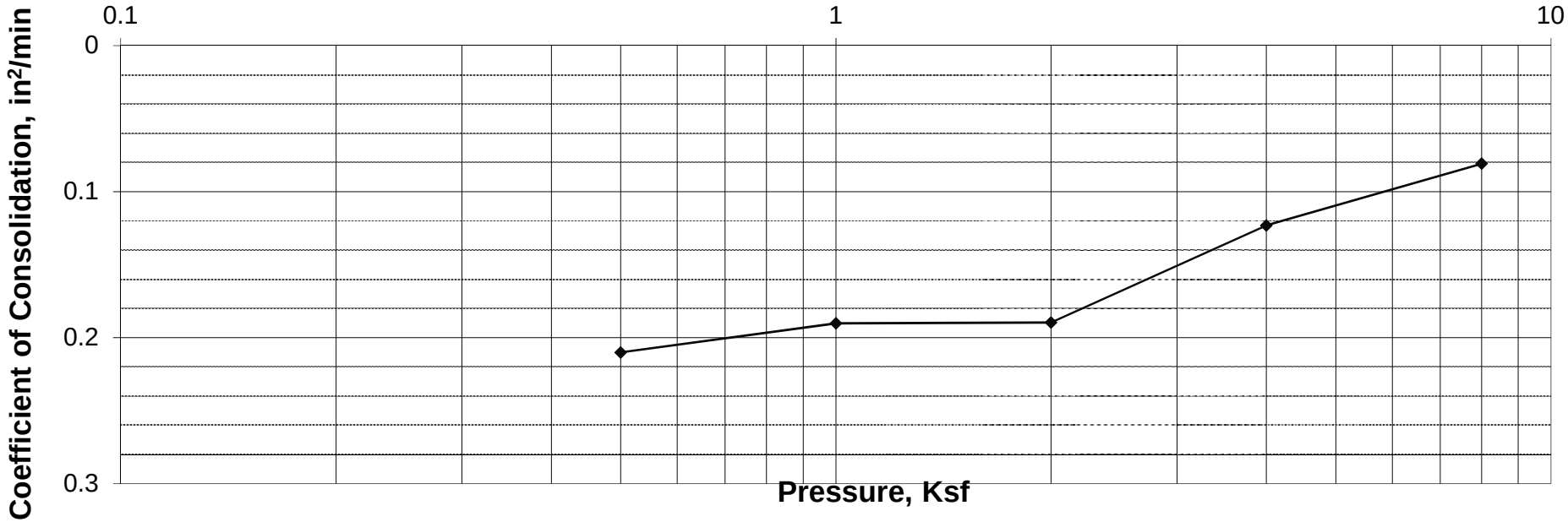
Sample ID	30645/B-4	Depth/Elev.	4-6'
Location	-	Add. Info	-

ASTM D 2435; Standard Test Method for One-Dimensional Consolidation Properties of Soils (Method B)

Coefficient of Consolidation vs. Log of Pressure



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Client Pr. #	35:28498	Lab. PR. #	1920R-01-1
Project Name	Jaxport Buck Island TOE Dike	S. Type	UD
Sample ID	30647/B-10	Depth/Elev.	5-7'
Location	-	Add. Info	-

Standard Test Method for One-Dimensional Consolidation Properties of Soils, ASTM D2435 (Method B)/AASHTO T 216

STEP # 2

Pressure* on Specimen, lbf/ft²

500

Point #	Time, min	Square Root of Time, $min^{1/2}$	Dial Gauge Reading, 10^{-4} in
1	0	0	0.0
2	0.12	0.34	54.5
3	0.37	0.61	66.5
4	0.58	0.76	73.0
5	0.95	0.97	81.5
6	1.67	1.29	93.0
7	2.42	1.55	102.5
8	3.17	1.78	110.0
9	3.92	1.98	116.5
10	5.17	2.27	125.5
11	6.67	2.58	134.5
12	8.7	2.94	144.0
13	11.2	3.34	154.0
14	16.2	4.02	168.5
15	22.2	4.71	180.0
16	32.2	5.67	191.5
17	65.2	8.07	208.0
18	90.2	9.50	213.5
19			
20			
21			
22			
23			
24			
25			
26			

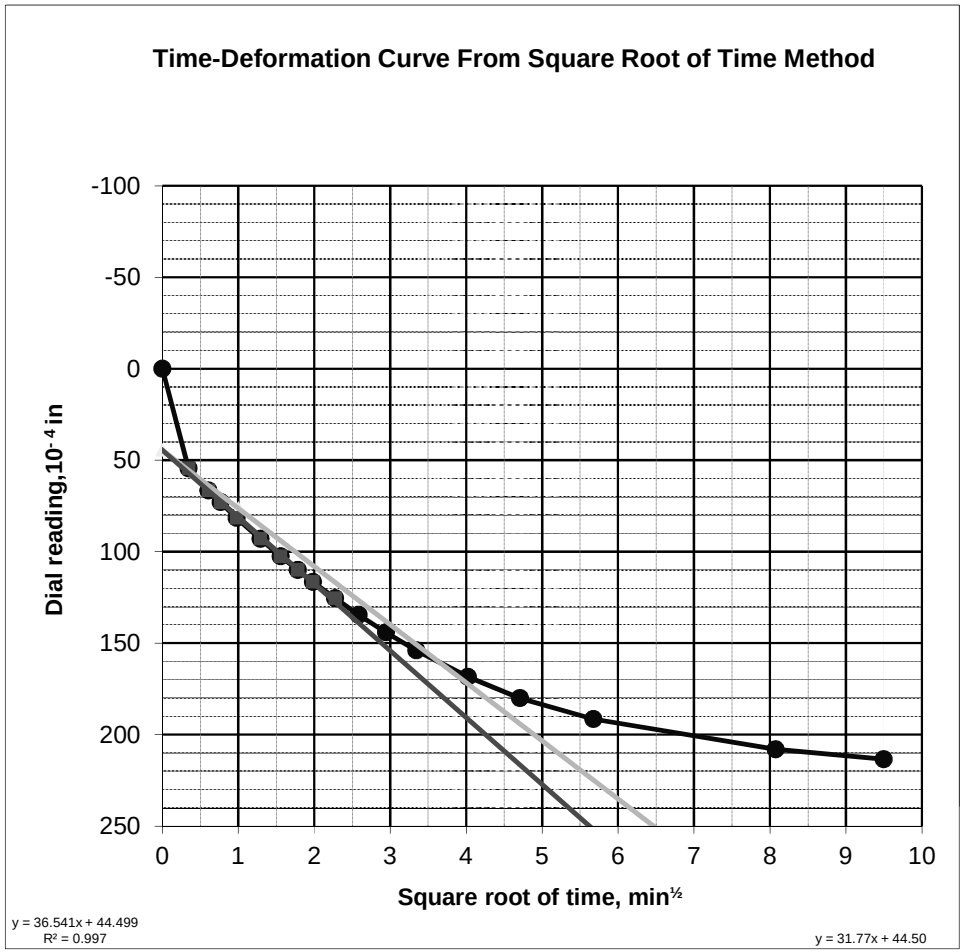
Selection	10
m_1	36.54
m_2	31.77

X	Y
0	44.50
1	76.27

d_0	44.5
d_{90}	159
d_{100}	172
d_{50}	108
sq.root t_{90}	3.6
t_{90}, *min*	12.96
sq.root t_{50}	1.74
t_{50}, *min*	3.02

d=dial gauge reading, 10^{-4} in

Note: * - Reported Pressure is not including seating pressure of 100 psf and possible additional vertical pressure applied to sample to prevent swell. If swell was observed additional vertical pressure is reported on page 1 of report.



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Project Name	Jaxport Buck Island TOE Dike	S. Type	UD
Sample ID	30647/B-10	Depth/Elev.	5-7'
Location	-	Add. Info	-

Standard Test Method for One-Dimensional Consolidation Properties of Soils, ASTM D2435 (Method B)/AASHTO T 216

STEP # 3

Point #	Time, min	Square Root of Time, $min^{1/2}$	Dial Gauge Reading, 10^{-4} in
1	0	0	218.0
2	0.12	0.34	238.5
3	0.37	0.61	248.0
4	0.60	0.77	255.0
5	1.00	1.00	263.0
6	1.75	1.32	275.5
7	2.50	1.58	285.0
8	3.25	1.80	293.5
9	4.00	2.00	300.5
10	5.25	2.29	311.5
11	6.75	2.60	323.0
12	8.8	2.96	336.0
13	11.3	3.35	349.5
14	16.3	4.03	372.0
15	22.3	4.72	393.5
16	32.3	5.68	420.0
17	65.3	8.08	473.0
18	90.3	9.50	497.0
19	140.3	11.84	530.0
20	190.3	13.79	552.0
21	240.3	15.50	568.5
22	290.3	17.04	582.0
23	340.3	18.45	593.0
24	460.3	21.45	614.0
25	680.3	26.08	641.5
26			

Pressure* on Specimen, lbf/ft^2

1000

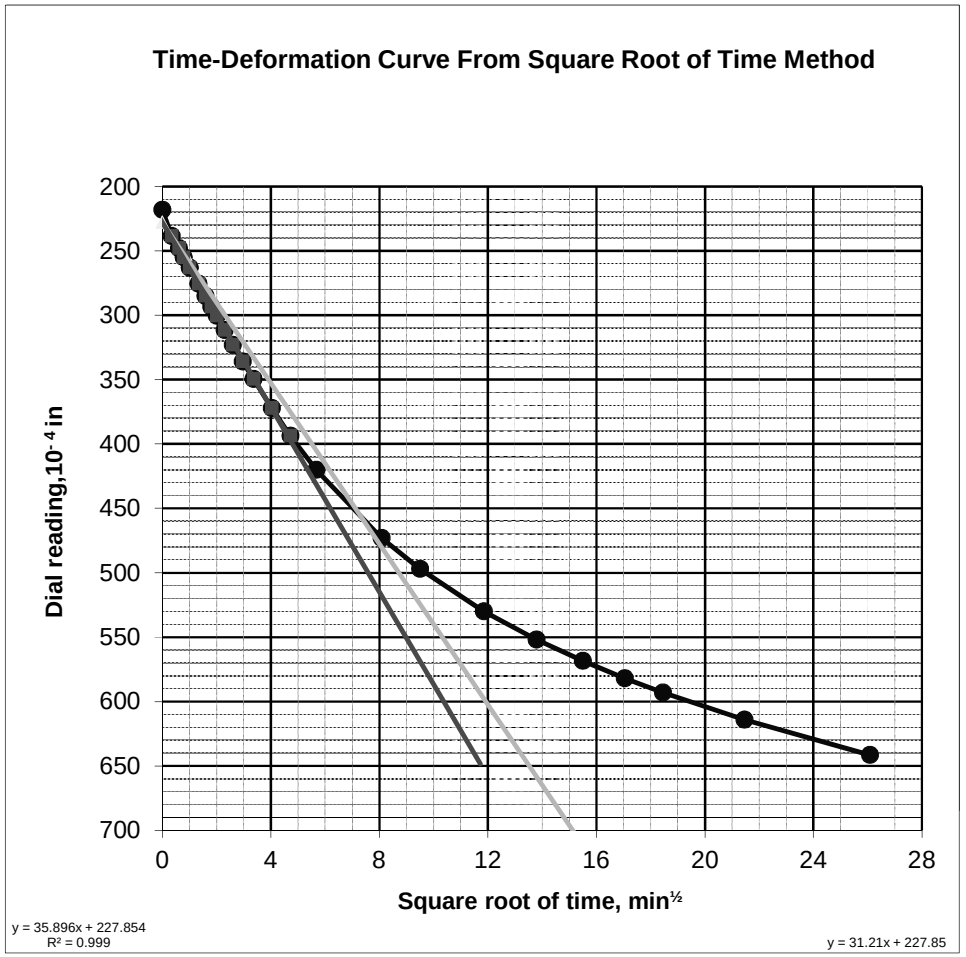
Selection	15
m_1	35.90
m_2	31.21

X	Y
0	227.85
1	259.07

d_0	227.9
d_{90}	449
d_{100}	474
d_{50}	351
$sq.root\ t_{90}$	7.1
t_{90}, min	50.41
$sq.root\ t_{50}$	3.43
t_{50}, min	11.76

d=dial gauge reading, 10^{-4} in

Note: * - Reported Pressure is not including seating pressure of 100 psf and possible additional vertical pressure applied to sample to prevent swell. If swell was observed additional vertical pressure is reported on page 1 of report.



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Project Name	Jaxport Buck Island TOE Dike	S. Type	UD
Sample ID	30647/B-10	Depth/Elev.	5-7'
Location	-	Add. Info	-

Standard Test Method for One-Dimensional Consolidation Properties of Soils, ASTM D2435 (Method B)/AASHTO T 216

STEP # 4

Pressure* on Specimen, lbf/ft²

2000

Point #	Time, min	Square Root of Time, $min^{1/2}$	Dial Gauge Reading, 10^{-4} in
1	0	0	655.5
2	0.12	0.34	679.5
3	0.38	0.62	691.5
4	0.63	0.80	700.0
5	1.05	1.02	711.5
6	1.82	1.35	728.5
7	2.57	1.60	743.0
8	3.32	1.82	755.5
9	4.07	2.02	767.5
10	5.32	2.31	785.5
11	6.82	2.61	804.5
12	8.8	2.97	828.0
13	11.3	3.36	854.5
14	16.3	4.04	901.0
15	22.3	4.72	949.0
16	32.3	5.68	1016.0
17	65.3	8.08	1177.0
18	90.3	9.50	1263.0
19	140.3	11.85	1386.0
20	190.4	13.80	1470.0
21	240.4	15.50	1530.5
22	290.4	17.04	1577.5
23	340.5	18.45	1613.5
24	460.5	21.46	1680.5
25	540.0	23.24	1713.0
26			

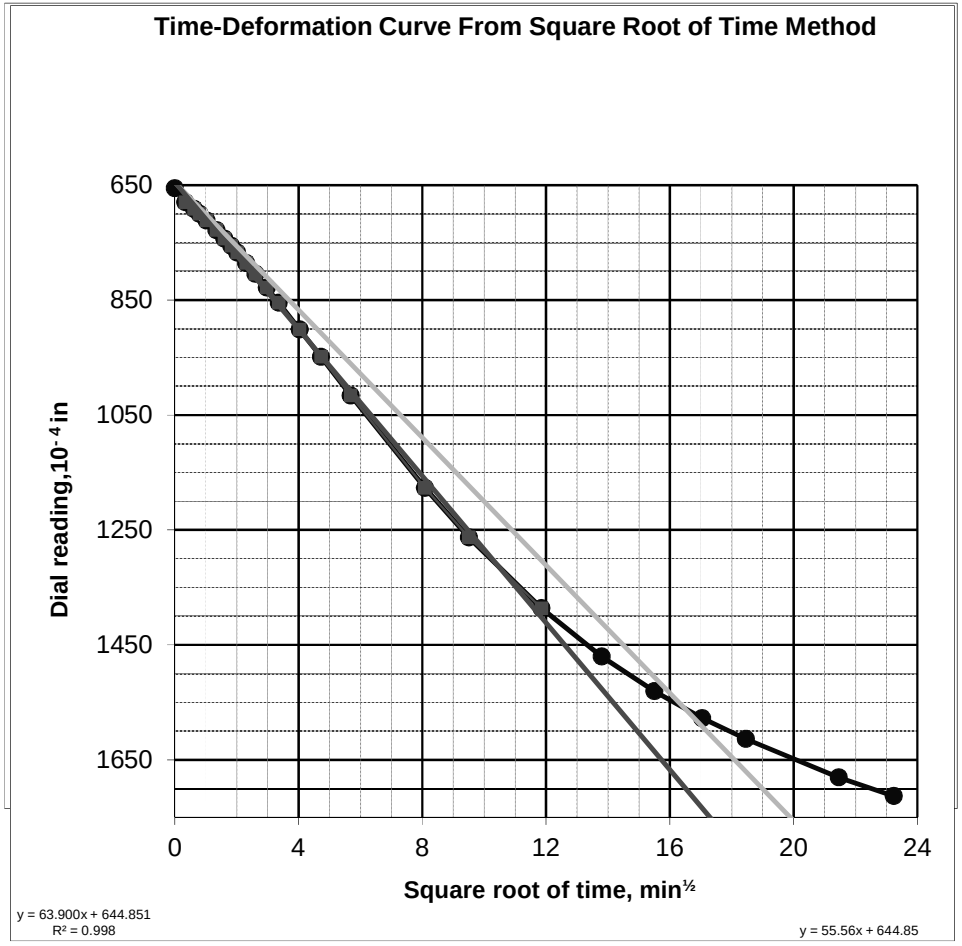
Selection	19
m_1	63.90
m_2	55.56

X	Y
0	644.85
1	700.42

d_0	644.9
d_{90}	1617
d_{100}	1725
d_{50}	1185
sq.root t_{90}	17.5
t_{90}, *min*	306.25
sq.root t_{50}	8.45
t_{50}, *min*	71.47

d=dial gauge reading, 10^{-4} in

Note: * - Reported Pressure is not including seating pressure of 100 psf and possible additional vertical pressure applied to sample to prevent swell. If swell was observed additional vertical pressure is reported on page 1 of report.



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Client Pr. #	35:28498	Lab. PR. #	1920R-01-1
Project Name	Jaxport Buck Island TOE Dike	S. Type	UD
Sample ID	30647/B-10	Depth/Elev.	5-7'
Location	-	Add. Info	-

Standard Test Method for One-Dimensional Consolidation Properties of Soils, ASTM D2435 (Method B)/AASHTO T 216

STEP # 5

Pressure* on Specimen, lbf/ft²

4000

Point #	Time, min	Square Root of Time, $min^{1/2}$	Dial Gauge Reading, 10^{-4} in
1	0	0	1715.0
2	0.13	0.37	1741.5
3	0.48	0.70	1759.5
4	1.03	1.02	1780.5
5	1.90	1.38	1805.0
6	3.10	1.76	1833.0
7	4.00	2.00	1850.5
8	4.93	2.22	1868.0
9	5.88	2.43	1883.5
10	7.27	2.70	1905.0
11	8.75	2.96	1926.0
12	10.8	3.28	1951.5
13	13.3	3.64	1981.5
14	18.3	4.27	2033.0
15	24.3	4.92	2087.0
16	34.3	5.85	2163.0
17	67.3	8.20	2345.0
18	92.3	9.60	2441.0
19	142.3	11.93	2570.5
20	192.3	13.87	2651.5
21	242.3	15.56	2705.5
22	292.3	17.10	2743.5
23	342.3	18.50	2771.5
24	462.3	21.50	2817.0
25	682.3	26.12	2863.5
26			

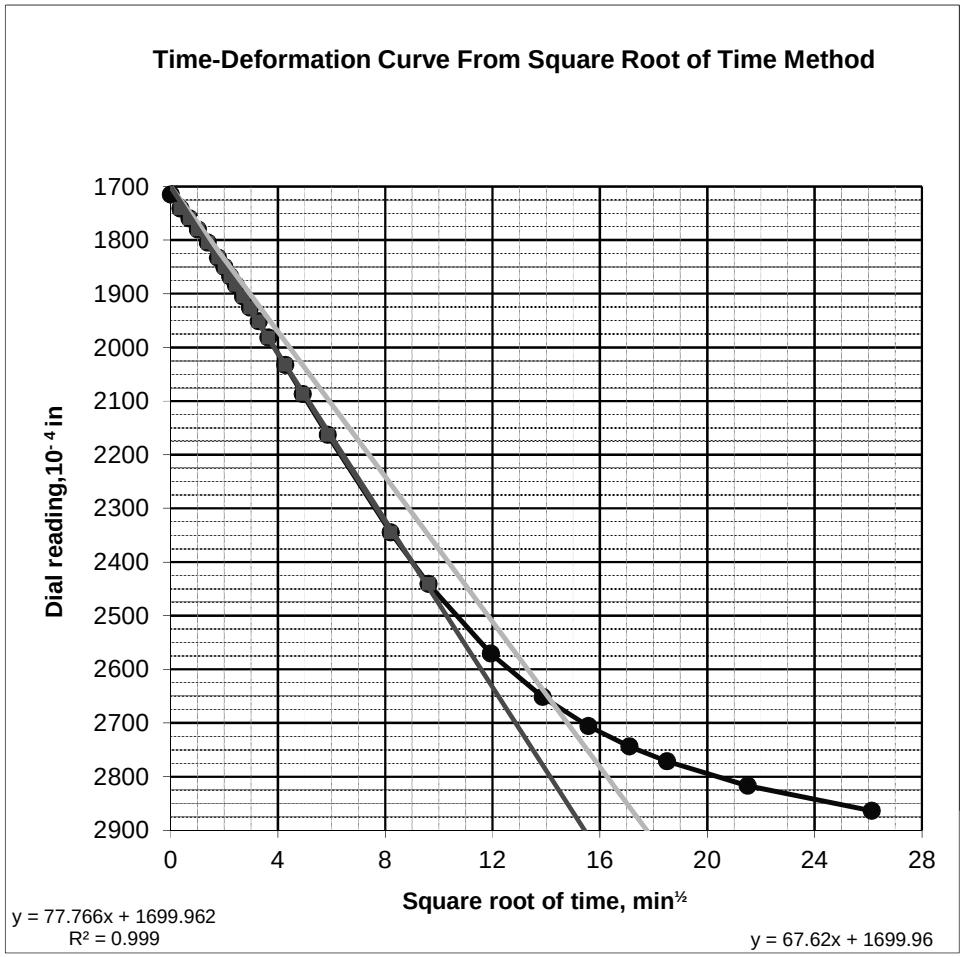
Selection	18
m_1	77.77
m_2	67.62

X	Y
0	1699.96
1	1767.58

d_0	1700.0
d_{90}	2660
d_{100}	2767
d_{50}	2233
$sq.root\ t_{90}$	14.2
t_{90}, min	201.64
$sq.root\ t_{50}$	6.86
t_{50}, min	47.06

d=dial gauge reading, 10^{-4} in

Note: * - Reported Pressure is not including seating pressure of 100 psf and possible additional vertical pressure applied to sample to prevent swell. If swell was observed additional vertical pressure is reported on page 1 of report.



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Client Pr. #	35:28498	Lab. PR. #	1920R-01-1
Project Name	Jaxport Buck Island TOE Dike	S. Type	UD
Sample ID	30647/B-10	Depth/Elev.	5-7'
Location	-	Add. Info	-

Standard Test Method for One-Dimensional Consolidation Properties of Soils, ASTM D2435 (Method B)/AASHTO T 216

STEP # 6

Pressure* on Specimen, lbf/ft²

8000

Point #	Time, min	Square Root of Time, $min^{1/2}$	Dial Gauge Reading, 10^{-4} in
1	0	0	2891.5
2	0.10	0.32	2912.0
3	0.30	0.55	2923.5
4	0.50	0.71	2932.0
5	0.80	0.89	2942.5
6	1.50	1.22	2962.0
7	2.25	1.50	2979.5
8	3.00	1.73	2994.5
9	3.75	1.94	3007.5
10	5.00	2.24	3027.5
11	6.50	2.55	3049.0
12	8.5	2.92	3074.0
13	11.0	3.32	3101.0
14	16.0	4.00	3148.5
15	22.0	4.69	3196.0
16	32.0	5.66	3262.0
17	65.0	8.06	3411.0
18	90.0	9.49	3485.5
19	140.0	11.83	3582.5
20	190.0	13.78	3641.5
21	240.0	15.49	3680.0
22	290.0	17.03	3708.0
23	340.0	18.44	3729.5
24	460.0	21.45	3767.5
25	680.0	26.08	3802.5
26	1400.0	37.42	3865.0

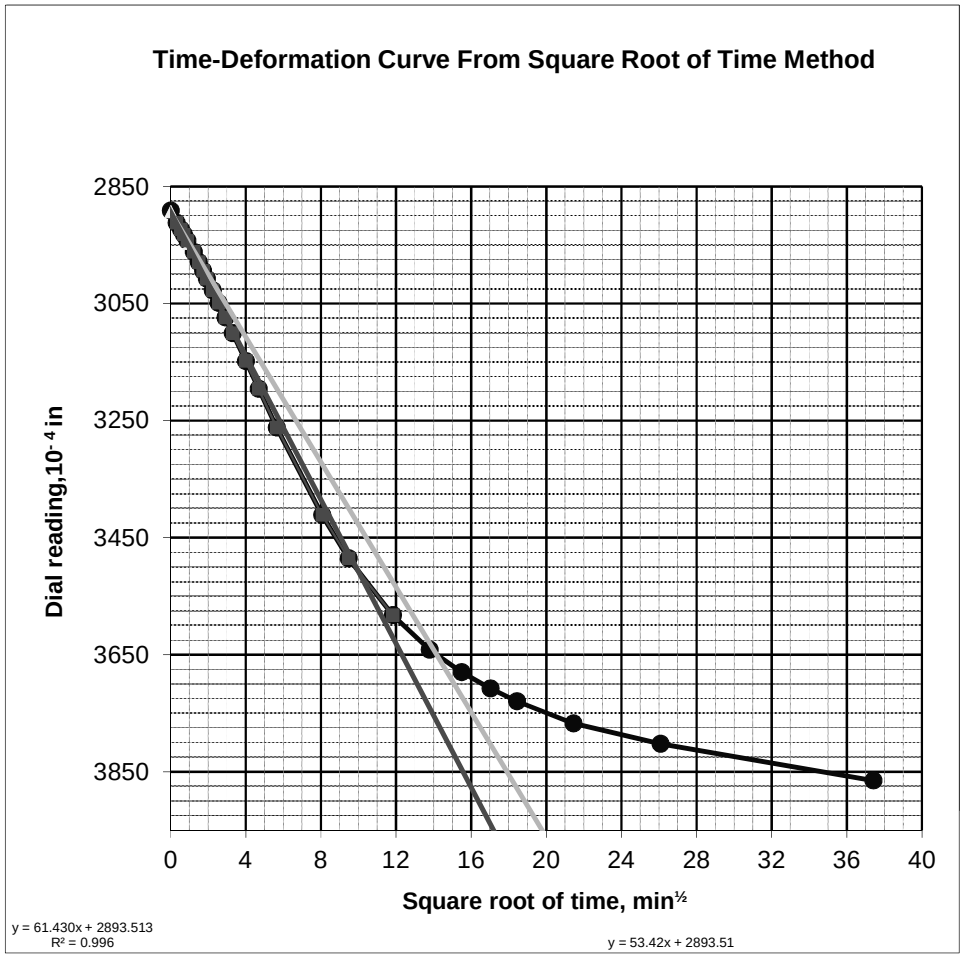
Selection	19
m_1	61.43
m_2	53.42

X	Y
0	2893.51
1	2946.93

d_0	2893.5
d_{90}	3657
d_{100}	3742
d_{50}	3318
sq.root t_{90}	14.3
t_{90}, *min*	204.49
sq.root t_{50}	6.91
t_{50}, *min*	47.72

d=dial gauge reading, 10^{-4} in

Note: * - Reported Pressure is not including seating pressure of 100 psf and possible additional vertical pressure applied to sample to prevent swell. If swell was observed additional vertical pressure is reported on page 1 of report.



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Project Name	Jaxport Buck Island TOE Dike	S. Type	UD
Sample ID	30647/B-10	Depth/Elev.	5-7'
Location	-	Add. Info	-

ASTM D2435

Standard Test Method for One-Dimensional Consolidation Properties of Soils (Method B)

Sample Data

	Initial	Final
Mass of Ring, g	200.90	200.90
Mass of Wet Sample and Ring, g	306.70	279.54
Mass of Wet Sample, g	105.80	78.64
Mass of Dry Sample, g	43.76	43.76
Height of Sample, in	0.9970	0.6228
Diameter of Sample, in	2.502	2.502
Area of Sample, in^2	4.92	4.92
Volume of Sample, in^3	4.90	3.06
Specific Gravity (Assumed)	2.750	2.750
Wet Unit Weight, pcf	82.2	97.8
Dry Unit Weight, pcf	34.0	54.4
Height of Solids, in	0.1975	0.1975
Height of Voids, in	0.7995	0.4253
Height of Water, in	0.7701	0.4322
Void Ratio	4.048	2.153
Degree of Saturation, %	96.3	101.6

Initial Seating Pressure, lbf/ft^2	100
Additional Vertical Pressure, lbf/ft^2	0
Total Seating Pressure, lbf/ft^2	100
STATION #	1
Consolidometer Ring ID Number	3
Consolidometer ID Number	3
Frame ID Number	103
Dial Gage ID Number	676
Initial Dial Gauge Reading, 10^{-4} in	0
Final Dial Gauge Reading, 10^{-4} in	3742

DESCRIPTION

NA

Condition of Test:

1. Deionized water used for inundation of sample.
2. Saturated porous stones w/t filter paper used

USCS (ASTM D2487;2488)

NA

REMARKS

Portion of sample used for testing was located 10" above the bottom of the shelby tube.

Moisture Content

	Trimmings	Initial	Final
Mass of Wet Sample and Tare, g	278.20	306.70	339.16
Mass of Dry Sample and Tare, g	165.90	244.66	304.34
Mass of Tare, g	85.30	200.90	260.66
Moisture Content, %	139.3	141.8	79.7

LL	-
PL	-
PI	-

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Sample ID	30647/B-10	Depth/Elev.	5-7'
Location	-	Add. Info	-

ASTM D2435

Standard Test Method for One-Dimensional Consolidation Properties of Soils (Method B)

Void Ratio, Strain Information and Coefficient of Consolidation Calculation

Pressure		Uncorrected Dial Reading, in		Apparatus Correction, in	Corrected Dial Reading, in		Change in specimen height, in		Sample Height, in		Height of Voids, in	Void Ratio		Strain, %		Fitting Time, min		Hd_{50}, in	Coefficient of Consolidation	
lbf/ft^2	Ksf	d_{100}	d_{50}		d_{100}	d_{50}	S D H_{100}	S D H_{50}	H_{100}	H_{50}	Hv^{100},in	e_{100}	e_{50}	e_{100}	e_{50}	t_{90}	t_{50}		in^2/min	ft^2/day
100	0.1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.9970	0.9970	0.7995	4.048	4.048	0.00	0.00	-	-	0.4985	-	-
500	0.5	0.0172	0.0108	0.0000	0.0172	0.0108	0.0172	0.0108	0.9798	0.9862	0.7823	3.961	3.993	1.72	1.08	12.96	3.02	0.4931	0.02	0.16
1000	1	0.0474	0.0351	0.0000	0.0474	0.0351	0.0474	0.0351	0.9496	0.9619	0.7521	3.808	3.870	4.76	3.52	50.41	11.76	0.4810	0.00	0.04
2000	2	0.1725	0.1185	0.0000	0.1725	0.1185	0.1725	0.1185	0.8245	0.8785	0.6270	3.175	3.448	17.30	11.89	306.25	71.47	0.4392	0.00	0.01
4000	4	0.2767	0.2233	0.0000	0.2767	0.2233	0.2767	0.2233	0.7203	0.7737	0.5228	2.647	2.917	27.75	22.40	201.64	47.06	0.3868	0.00	0.01
8000	8	0.3742	0.3318	0.0000	0.3742	0.3318	0.3742	0.3318	0.6228	0.6652	0.4253	2.153	2.368	37.54	33.28	204.49	47.72	0.3326	0.00	0.00

Note: d_{100} = Dial gauge reading at 100% primary consolidation, in
d_{50} = Dial gauge reading at 50% primary consolidation, in
H_{100} = Specimen height at 100% primary consolidation, in
H_{50} = Specimen height at 50% primary consolidation, in
Hd_{50} = Length of the drainage path at 50% consolidation, in
e_{100} = Void ratio at 100% primary consolidation
e_{50} = Void ratio at 50% primary consolidation

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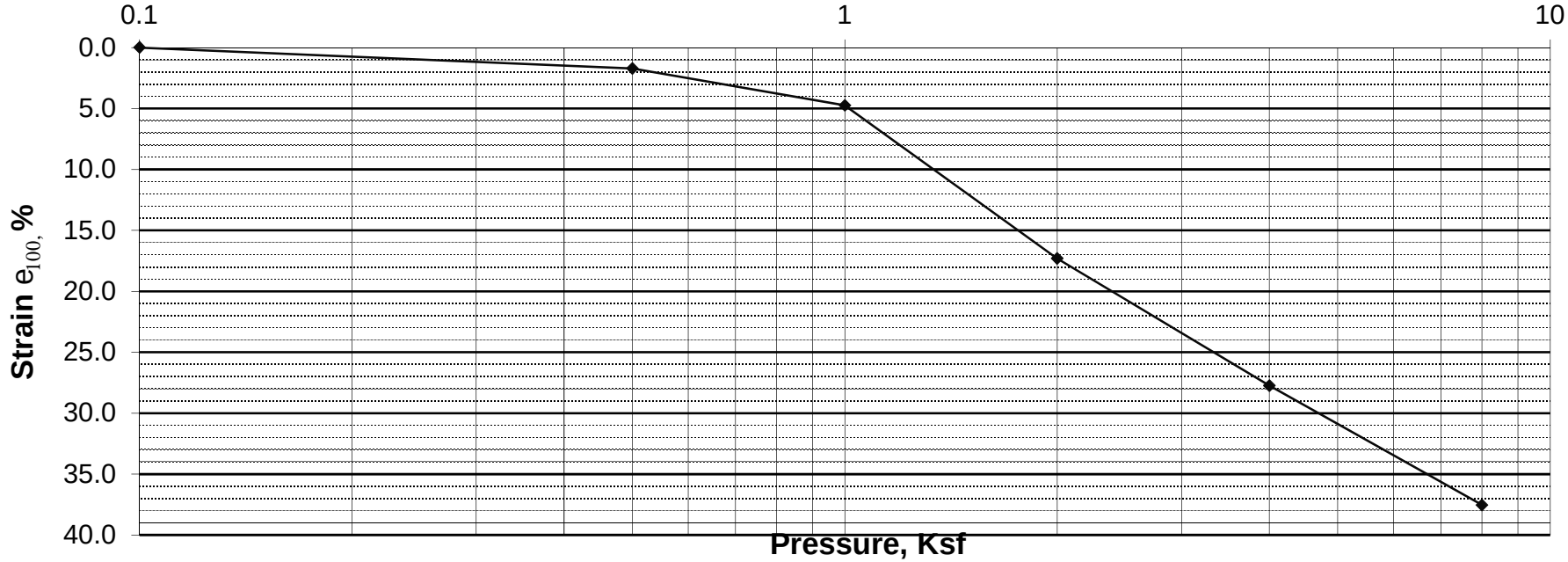
Checked By	

Client Pr. #	35:28498	Lab. PR. #	1920R-01-1
Project Name	Jaxport Buck Island TOE Dike	S. Type	UD
Sample ID	30647/B-10	Depth/Elev.	5-7'
Location	-	Add. Info	-

ASTM D 2435; Standard Test Method for One-Dimensional Consolidation Properties of Soils (Method B)

Strain at the End-of-Primary Consolidation vs. Log of Pressure



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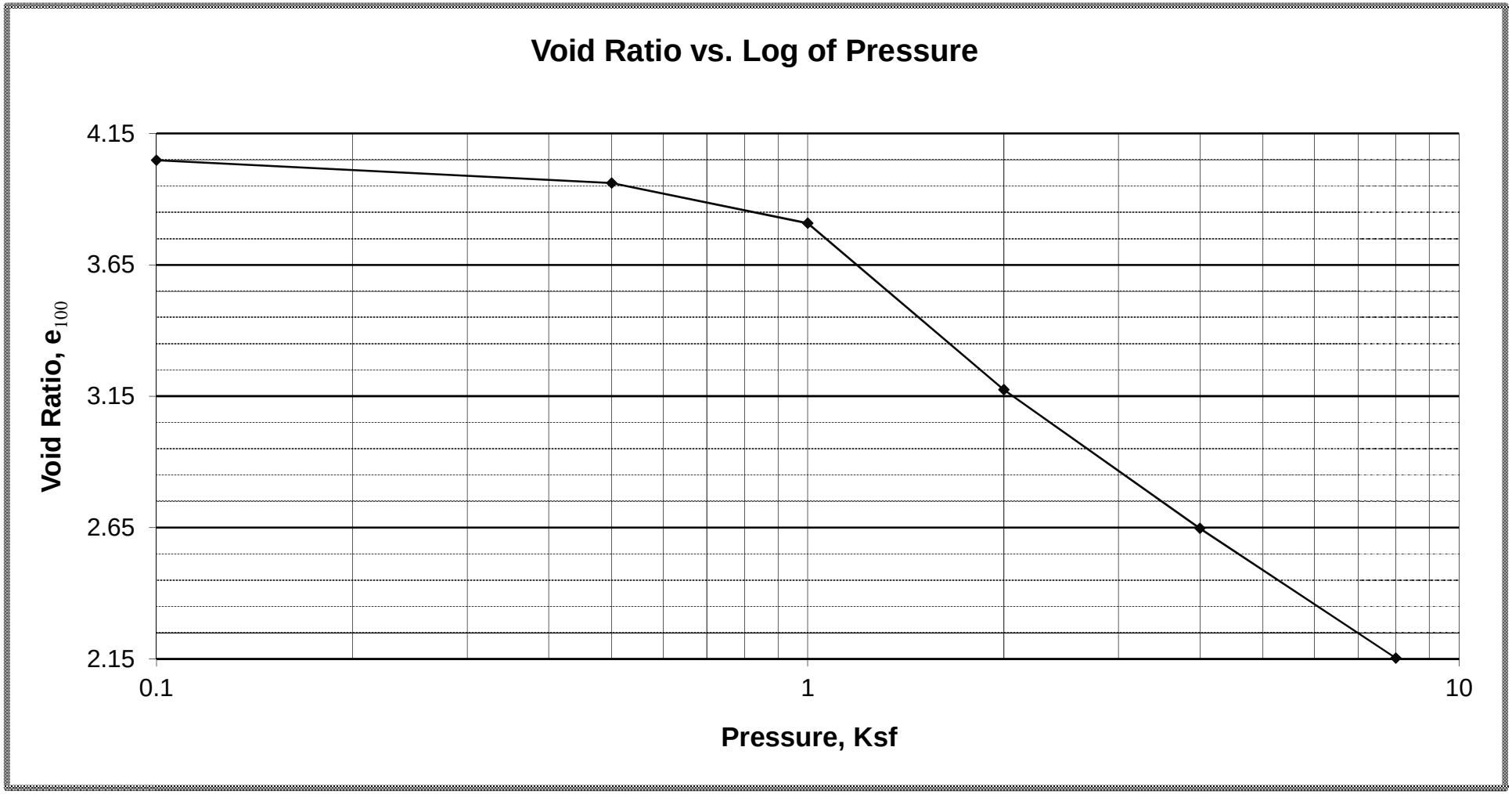
Tested By	RI
Date	05/15/19
Checked By	

Client Pr. #	35:28498	Lab. PR. #	1920R-01-1
Project Name	Jaxport Buck Island TOE Dike	S. Type	UD
Sample ID	30647/B-10	Depth/Elev.	5-7'
Location	-	Add. Info	-

ASTM D 2435; Standard Test Method for One-Dimensional Consolidation Properties of Soils (Method B)



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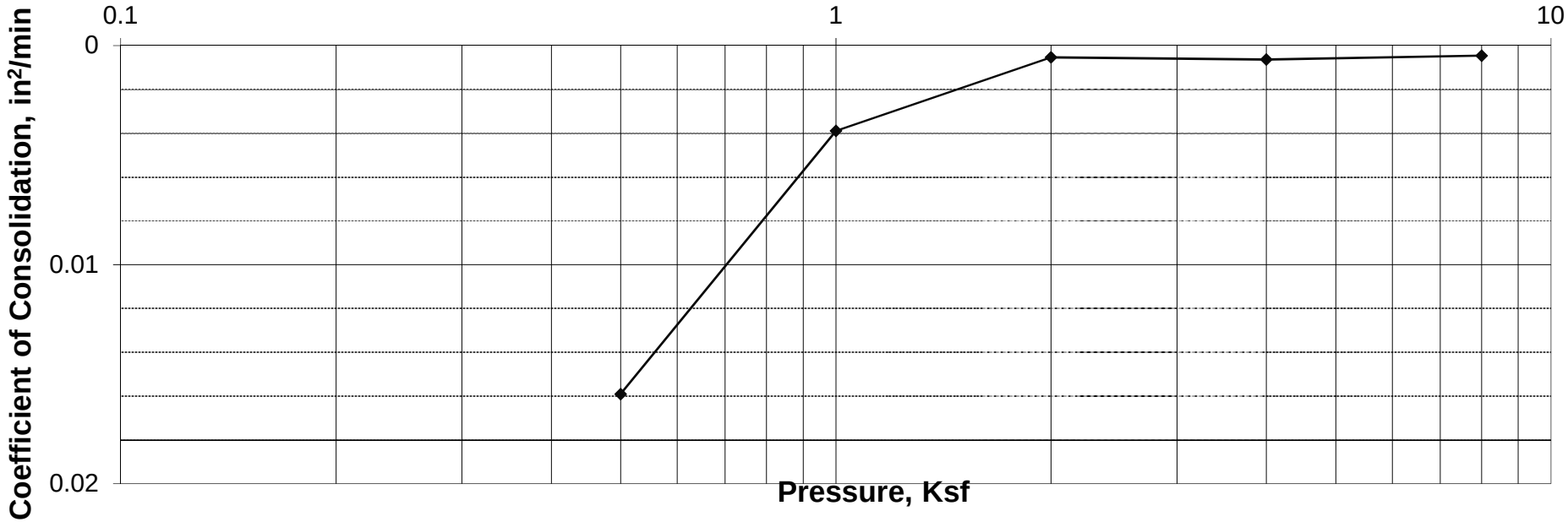
Client Pr. #	35:28498	Lab. PR. #	1920R-01-1
Project Name	Jaxport Buck Island TOE Dike	S. Type	UD
Sample ID	30647/B-10	Depth/Elev.	5-7'
Location	-	Add. Info	-

ASTM D 2435; Standard Test Method for One-Dimensional Consolidation Properties of Soils (Method B)

Coefficient of Consolidation vs. Log of Pressure



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Tested By	EB
Date	05/16/19
Checked By	

ASTM D 4767M / AASHTO T 297M

Standard Test Method for Multistage Consolidated Undrained Triaxial Compression Test for Cohesive Soils

Client Pr. #	35:28498	Lab. PR. #	1920R-01-1
Pr. Name	Jaxport Buck Island TOE Dike	S. Type	UD
Sample ID	30642/B-10	Depth/Elev.	25-27'
Location	-	Add. Info	-

SPECIMEN PROPERTIES

	(initial)	(after consol.)
Height, in	5.705	5.591
Diameter, in	2.860	2.799
Height-to-Diameter Ratio	2.0	2.0
Area, in^2	6.42	6.15
Volume, cm^3	600.59	563.82
Mass of Wet Sample, g	1090.30	1065.80
Mass of Dry Sample, g	797.27	797.27
Wet Density, pcf	113.3	118.0
Dry Density, pcf	82.9	88.3
Specific Gravity (assumed)	2.700	2.700
Volume of Solids, cm^3	295.28	295.28
Volume of Voids, cm^3	305.31	268.53
Void Ratio	1.03	0.91
% Saturation	96.0	100.0

WATER CONTENT DETERMINATION

	(initial)	(final)
Mass of Wet Sample and Tare, g	522.00	1065.80
Mass of Dry Sample and Tare, g	407.40	797.27
Mass of Tare, g	95.60	0.00
Moisture, %	36.75	33.68

TEST DATA PRIOR TO LOADING

Volume change (Consolidation), ml	-24.5
Machine Speed, in / min	0.0100
Strain Rate, % / min	0.18
Chamber Pressure, psi	85.0
Back Pressure, psi	80.0
Eff. Consol. Stress,(Minor pr. stress, s_3),psi	5.0
Change in Height, in	0.114
"B" Value	0.95
t_{50}, min	-

SHEAR DATA

Elapsed Time (min)	Deformation Stage 1 (inch)	Axial Load (lb)	Pore-Water Pressure, psi		Total Strain Stage 1 (%)	Corrected Area (in^2)	Dev.Stress ($Ds=s_1-s_3$)	Major Principal Stress, psi		Eff.Stress Ratio	P' $(s'_1+s'_3)/2$ (psi)	Q $(s_1-s_3)/2$ (psi)	Eff. Minor Pr. Stress
			Total, U	Change,DU			(psi)	Total s_1	Eff. s'_1	s'_1/s'_3			s'_3 (psi)
0.0	0.000	19.0	80.00	0.0	0.00	6.15	0.0	5.0	5.0	1.00	5.0	0.0	5.0
0.5	0.005	31.1	81.09	1.1	0.09	6.16	2.0	7.0	5.9	1.50	4.9	1.0	3.9
1.0	0.010	37.1	81.83	1.8	0.18	6.16	2.9	7.9	6.1	1.93	4.6	1.5	3.2
1.5	0.015	39.9	82.26	2.3	0.27	6.17	3.4	8.4	6.1	2.24	4.4	1.7	2.7
2.0	0.020	41.8	82.48	2.5	0.36	6.18	3.7	8.7	6.2	2.46	4.4	1.8	2.5
2.5	0.025	43.4	82.68	2.7	0.45	6.18	3.9	8.9	6.3	2.70	4.3	2.0	2.3
3.0	0.030	44.8	82.80	2.8	0.54	6.19	4.2	9.2	6.4	2.90	4.3	2.1	2.2
3.5	0.035	46.0	82.90	2.9	0.63	6.19	4.4	9.4	6.5	3.08	4.3	2.2	2.1
4.0	0.040	47.1	82.98	3.0	0.72	6.20	4.5	9.5	6.6	3.24	4.3	2.3	2.0
5.0	0.050	49.2	83.06	3.1	0.89	6.21	4.9	9.9	6.8	3.51	4.4	2.4	1.9
6.0	0.060	50.7	83.10	3.1	1.07	6.22	5.1	10.1	7.0	3.68	4.4	2.5	1.9
7.0	0.070	52.3	83.13	3.1	1.25	6.23	5.3	10.3	7.2	3.86	4.5	2.7	1.9
8.0	0.080	53.7	83.13	3.1	1.43	6.24	5.6	10.6	7.4	3.97	4.6	2.8	1.9
9.0	0.090	55.2	83.13	3.1	1.61	6.25	5.8	10.8	7.7	4.10	4.8	2.9	1.9
10.0	0.100	56.7	83.13	3.1	1.79	6.27	6.0	11.0	7.9	4.22	4.9	3.0	1.9
11.0	0.110	57.8	83.10	3.1	1.97	6.28	6.2	11.2	8.1	4.25	5.0	3.1	1.9
12.0	0.120	59.0	83.08	3.1	2.15	6.29	6.4	11.4	8.3	4.31	5.1	3.2	1.9
13.0	0.130	60.0	83.06	3.1	2.33	6.30	6.5	11.5	8.4	4.35	5.2	3.3	1.9
17.0	0.170	63.5	82.98	3.0	3.04	6.35	7.0	12.0	9.0	4.47	5.5	3.5	2.0
21.0	0.210	66.1	82.92	2.9	3.76	6.39	7.4	12.4	9.4	4.54	5.8	3.7	2.1
25.0	0.250	69.2	82.86	2.9	4.47	6.44	7.8	12.8	9.9	4.64	6.0	3.9	2.1
26.0	0.260	70.1	82.72	2.7	4.65	6.45	7.9	12.9	10.2	4.47	6.2	4.0	2.3
26.5	0.265	70.5	82.70	2.7	4.74	6.46	8.0	13.0	10.3	4.47	6.3	4.0	2.3
Values @ Failure				2.9	4.47	6.44	7.8	12.8	9.9	**4.64**	6.0	3.9	2.1

Failure criteria used* 3

*Note: "1" = Max Deviator Stress; "2" = Deviator Stress @ 15% Strain; "3" = Max Eff.Stress Ratio(s'_1/s'_3)

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Tested By	EB
Date	05/16/19
Checked By	

ASTM D 4767M / AASHTO T 297M

Standard Test Method for Multistage Consolidated Undrained Triaxial Compression Test for Cohesive Soils

Client Pr. #	35:28498	Lab. PR. #	1920R-01-1
Pr. Name	Jaxport Buck Island TOE Dike	S. Type	UD
Sample ID	30642/B-10	Depth/Elev.	25-27'
Location	-	Add. Info	-

SPECIMEN PROPERTIES

		(initial)	(after consol.)
Height, in		5.326	5.371
Diameter, in		2.868	2.817
Height-to-Diameter Ratio		1.9	1.9
Area, in^2		6.46	6.23
Volume, cm^3		563.82	548.54
Mass of Wet Sample, g		1065.80	1050.52
Mass of Dry Sample, g		797.27	797.27
Wet Density, pcf		118.0	119.6
Dry Density, pcf		88.3	90.7
Specific Gravity	(assumed)	2.700	2.700
Volume of Solids, cm^3		295.28	295.28
Volume of Voids, cm^3		268.53	253.25
Void Ratio		0.91	0.86
% Saturation		100.0	100.0

WATER CONTENT DETERMINATION

	(initial)	(final)
Mass of Wet Sample and Tare, g	1065.80	1050.52
Mass of Dry Sample and Tare, g	797.27	797.27
Mass of Tare, g	0.00	0.00
Moisture, %	33.68	31.76

TEST DATA PRIOR TO LOADING

Volume change (Consolidation), ml	-15.3
Machine Speed, in / min	0.0100
Strain Rate, % / min	0.19
Chamber Pressure, psi	90.0
Back Pressure, psi	80.0
Eff. Consol. Stress,(Minor pr. stress, s_3),psi	10.0
Change in Height, in	-0.045
"B" Value	0.95
t_{50}, min	-

SHEAR DATA

Deformation Stage 2 (inch)	Total Deformation ST.1 + ST.2 (inch)	Axial Load (lb)	Pore-Water Pressure, psi		Strain Stage 2 %	Corrected Area (in^2)	Dev.Stress ($D\sigma = \sigma_1 - \sigma_3$)	Major Principal Stress, psi		Effective Stress Ratio	P' $(\sigma'_1+\sigma'_3)/2$ (psi)	Q $(\sigma_1-\sigma_3)/2$ (psi)	Eff. Minor Pr. Stress σ'_3 (psi)	Total Strain ST.1 + ST.2 %
			Total, U	Change,DU			(psi)	Total σ_1	Eff. σ'_1	σ'_1/σ'_3				
0.000	0.220	20.4	80.00	0.0	0.00	6.23	0.0	10.0	10.0	1.00	10.0	0.0	10.0	3.93
0.005	0.225	43.7	82.35	2.3	0.09	6.24	3.7	13.7	11.4	1.49	9.5	1.9	7.7	4.02
0.010	0.230	54.6	83.73	3.7	0.19	6.24	5.5	15.5	11.7	1.87	9.0	2.7	6.3	4.11
0.015	0.235	60.9	84.48	4.5	0.28	6.25	6.5	16.5	12.0	2.17	8.8	3.2	5.5	4.20
0.020	0.240	65.0	84.84	4.8	0.37	6.26	7.1	17.1	12.3	2.38	8.7	3.6	5.2	4.29
0.025	0.245	68.5	85.12	5.1	0.47	6.26	7.7	17.7	12.6	2.57	8.7	3.8	4.9	4.38
0.030	0.250	71.7	85.34	5.3	0.56	6.27	8.2	18.2	12.8	2.76	8.8	4.1	4.7	4.47
0.035	0.255	74.6	85.50	5.5	0.65	6.27	8.6	18.6	13.1	2.92	8.8	4.3	4.5	4.56
0.040	0.260	76.8	85.58	5.6	0.74	6.28	9.0	19.0	13.4	3.03	8.9	4.5	4.4	4.65
0.050	0.270	80.8	85.77	5.8	0.93	6.29	9.6	19.6	13.8	3.27	9.0	4.8	4.2	4.83
0.060	0.280	84.2	85.81	5.8	1.12	6.30	10.1	20.1	14.3	3.42	9.3	5.1	4.2	5.01
0.070	0.290	86.8	85.87	5.9	1.30	6.31	10.5	20.5	14.6	3.55	9.4	5.3	4.1	5.19
0.080	0.300	89.0	85.91	5.9	1.49	6.33	10.8	20.8	14.9	3.65	9.5	5.4	4.1	5.37
0.090	0.310	90.5	85.95	6.0	1.68	6.34	11.1	21.1	15.1	3.73	9.6	5.5	4.1	5.54
0.100	0.320	92.0	85.97	6.0	1.86	6.35	11.3	21.3	15.3	3.80	9.7	5.6	4.0	5.72
0.110	0.330	93.5	85.99	6.0	2.05	6.36	11.5	21.5	15.5	3.87	9.8	5.7	4.0	5.90
0.120	0.340	94.8	86.01	6.0	2.23	6.37	11.7	21.7	15.7	3.93	9.8	5.8	4.0	6.08
0.150	0.370	98.6	85.97	6.0	2.79	6.41	12.2	22.2	16.2	4.03	10.1	6.1	4.0	6.62
0.180	0.400	102.0	85.89	5.9	3.35	6.45	12.7	22.7	16.8	4.08	10.4	6.3	4.1	7.15
0.190	0.410	103.5	85.87	5.9	3.54	6.46	12.9	22.9	17.0	4.11	10.6	6.4	4.1	7.33
0.200	0.420	104.5	85.83	5.8	3.72	6.47	13.0	23.0	17.2	4.12	10.7	6.5	4.2	7.51
0.205	0.425	104.5	85.83	5.8	3.82	6.48	13.0	23.0	17.1	4.11	10.7	6.5	4.2	7.60
Values @ Failure				5.8	3.72	6.47	13.0	23.0	17.2	**4.12**	10.7	6.5	4.2	7.51

Failure criteria used* 3

*Note: "1" = Max Deviator Stress; "2" = Deviator Stress @ 15% Strain; "3" = Max Eff.Stress Ratio(σ'_1/σ'_3)

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ASTM D 4767M / AASHTO T 297M

Standard Test Method for Multistage Consolidated Undrained Triaxial Compression Test for Cohesive Soils

Client Pr. #	35:28498	Lab. PR. #	1920R-01-1
Pr. Name	Jaxport Buck Island TOE Dike	S. Type	UD
Sample ID	30642/B-10	Depth/Elev.	25-27'
Location	-	Add. Info	-

SPECIMEN PROPERTIES

		(initial)	(after consol.)
Height, in		5.166	5.194
Diameter, in		2.872	2.820
Height-to-Diameter Ratio		1.8	1.8
Area, in^2		6.48	6.24
Volume, cm^3		548.54	531.52
Mass of Wet Sample, g		1050.52	1033.60
Mass of Dry Sample, g		797.27	797.42
Wet Density, pcf		119.6	121.4
Dry Density, pcf		90.7	93.7
Specific Gravity	(assumed)	2.700	2.700
Volume of Solids, cm^3		295.28	295.34
Volume of Voids, cm^3		253.25	236.18
Void Ratio		0.86	0.80
% Saturation		100.0	100.0

WATER CONTENT DETERMINATION

	(initial)	(final)
Mass of Wet Sample and Tare, g	1050.52	1367.70
Mass of Dry Sample and Tare, g	797.27	1131.57
Mass of Tare, g	0.00	334.30
Moisture, %	31.76	29.62

TEST DATA PRIOR TO LOADING

Volume change (Consolidation), ml	-16.9
Machine Speed, in / min	0.01000
Strain Rate, % / min	0.19
Chamber Pressure, psi	100.0
Back Pressure, psi	80.0
Eff. Consol. Stress,(Minor pr. stress, s_3),psi	20.0
Change in Height, in	-0.028
"B" Value	0.95
t_{50}, min	-

SHEAR DATA

Deformation Stage 3 (inch)	Total Deformation ST.1 + ST.2 + ST.3 (inch)	Axial Load (lb)	Pore-Water Pressure, psi		Strain Stage 3 %	Corrected Area (in^2)	Deviator Stress ($Ds=s_1-s_3$)	Major Principal Stress, psi		Effective Stress Ratio	P' $(s'_1+s'_3)/2$ (psi)	Q $(s_1-s_3)/2$ (psi)	Eff. Minor Pr. Stress	Total Strain ST.1 + ST.2 + ST.3, %
			Total, U	Change,DU			(psi)	Total s_1	Eff. s'_1	s'_1/s'_3			s'_3 (psi)	
0.000	0.397	25.6	80.00	0.0	0.00	6.24	0.0	20.0	20.0	1.00	20.0	0.0	20.0	7.10
0.010	0.407	91.6	86.75	6.8	0.20	6.26	10.5	30.5	23.8	1.80	18.5	5.3	13.2	7.28
0.020	0.417	113.1	89.31	9.3	0.39	6.27	14.0	34.0	24.6	2.31	17.7	7.0	10.7	7.47
0.031	0.428	125.5	90.50	10.5	0.59	6.28	15.9	35.9	25.4	2.68	17.5	8.0	9.5	7.65
0.041	0.438	134.5	91.13	11.1	0.78	6.29	17.3	37.3	26.2	2.95	17.5	8.6	8.9	7.83
0.051	0.448	140.8	91.49	11.5	0.98	6.31	18.3	38.3	26.8	3.15	17.6	9.1	8.5	8.01
0.071	0.468	150.1	91.85	11.9	1.37	6.33	19.7	39.7	27.8	3.41	18.0	9.8	8.1	8.38
0.102	0.499	158.1	92.08	12.1	1.96	6.37	20.8	40.8	28.7	3.63	18.3	10.4	7.9	8.92
0.122	0.519	162.1	92.08	12.1	2.35	6.40	21.3	41.3	29.3	3.69	18.6	10.7	7.9	9.29
0.153	0.550	168.0	92.04	12.0	2.94	6.43	22.1	42.1	30.1	3.78	19.0	11.1	8.0	9.83
0.173	0.570	171.6	91.98	12.0	3.34	6.46	22.6	42.6	30.6	3.82	19.3	11.3	8.0	10.20
0.204	0.601	176.6	91.96	12.0	3.92	6.50	23.2	43.2	31.3	3.89	19.7	11.6	8.0	10.75
0.234	0.631	181.8	91.77	11.8	4.51	6.54	23.9	43.9	32.1	3.90	20.2	11.9	8.2	11.29
0.265	0.662	186.1	91.63	11.6	5.10	6.58	24.4	44.4	32.8	3.92	20.6	12.2	8.4	11.84
0.285	0.682	189.2	91.53	11.5	5.49	6.61	24.8	44.8	33.2	3.92	20.8	12.4	8.5	12.20
0.316	0.713	193.5	91.33	11.3	6.08	6.65	25.2	45.2	33.9	3.91	21.3	12.6	8.7	12.75
0.336	0.733	192.4	91.25	11.3	6.47	6.68	25.0	45.0	33.7	3.85	21.2	12.5	8.8	13.12
0.357	0.754	192.9	91.25	11.3	6.87	6.71	24.9	44.9	33.7	3.85	21.2	12.5	8.8	13.48
0.367	0.764	194.0	91.25	11.3	7.06	6.72	25.1	45.1	33.8	3.86	21.3	12.5	8.8	13.66
0.397	0.794	197.4	91.11	11.1	7.65	6.76	25.4	45.4	34.3	3.86	21.6	12.7	8.9	14.21
0.418	0.815	200.4	91.01	11.0	8.04	6.79	25.7	45.7	34.7	3.86	21.9	12.9	9.0	14.57
0.438	0.835	202.3	90.93	10.9	8.44	6.82	25.9	45.9	35.0	3.86	22.0	13.0	9.1	14.94
0.450	0.847	203.6	90.85	10.8	8.66	6.84	26.0	46.0	35.2	3.85	22.2	13.0	9.2	15.14
Values @ Failure				11.5	5.49	6.61	24.8	44.8	33.2	**3.92**	20.8	12.4	8.5	12.20

Failure criteria used* 3

*Note: "1" = Max Deviator Stress; "2" = Deviator Stress @ 15% Strain; "3" = Max Eff.Stress Ratio(s'_1/s'_3)

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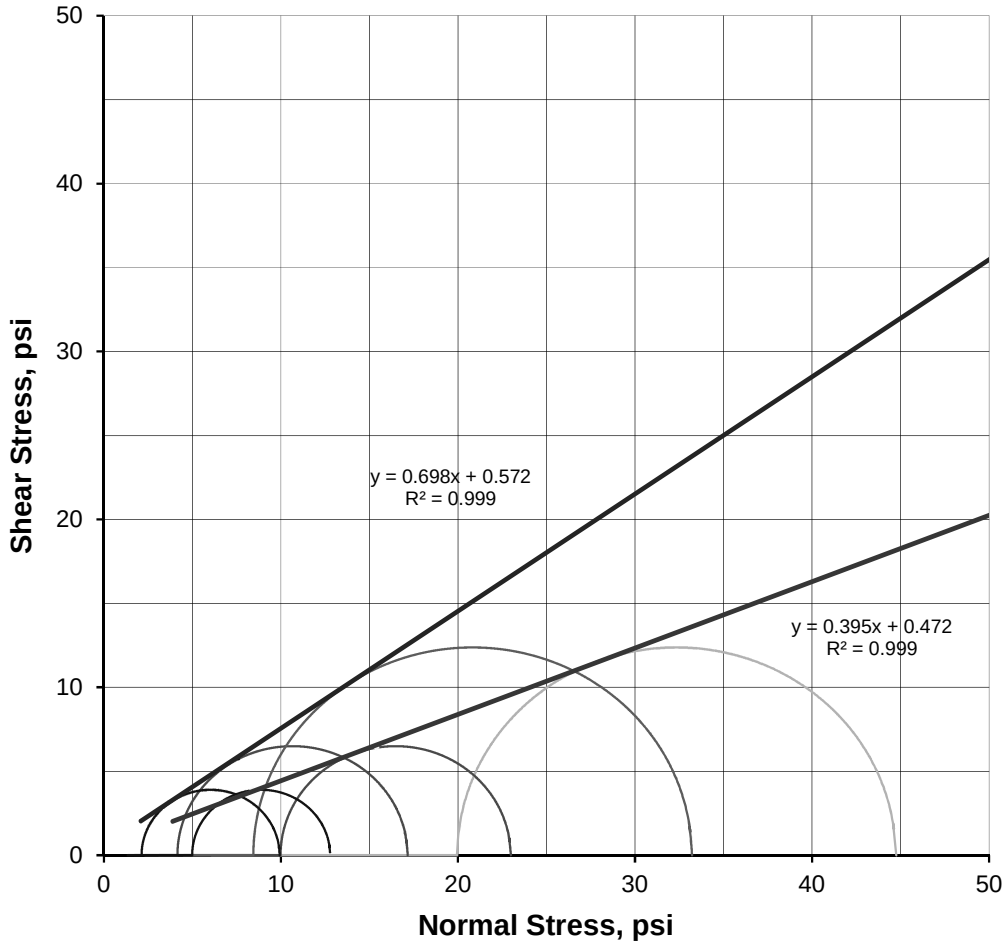
Tested By	0
Date	01/00/00
Check	

ASTM D 4767M / AASHTO T 297M

Standard Test Method for Multistage Consolidated Undrained Triaxial Compression Test for Cohesive Soils

Client Pr. #	35:28498	Lab. PR. #	1920R-01-1
Pr. Name	Jaxport Buck Island TOE Dike	S. Type	UD
Sample ID	30642/B-10	Depth/Elev.	25-27'
Location	-	Add. Info	-

Total and Effective Mohr's Circles



	ST. 1	ST. 2	ST. 3
Effective Consolidation Stress, psi	5.0	10.0	20.0
Deviator Stress at Failure, psi	7.8	13.0	24.8
Effective Minor Principal Stress at Failure, psi	2.1	4.2	8.5
Effective Major Principal Stress at Failure, psi	9.9	17.2	33.2
Axial Strain at Failure, %	4.47	3.72	5.49

STRENGTH PARAMETERS*			
Total		Effective	
f °	21.6	f ' °	34.9
C, psi	0.5	C', psi	0.6

***Valid only for Received Material at Reported Densities and Moisture Contents.**

Multistage Triaxial CU.xls [Mohr's Circles], REV. 1; 10-21-05

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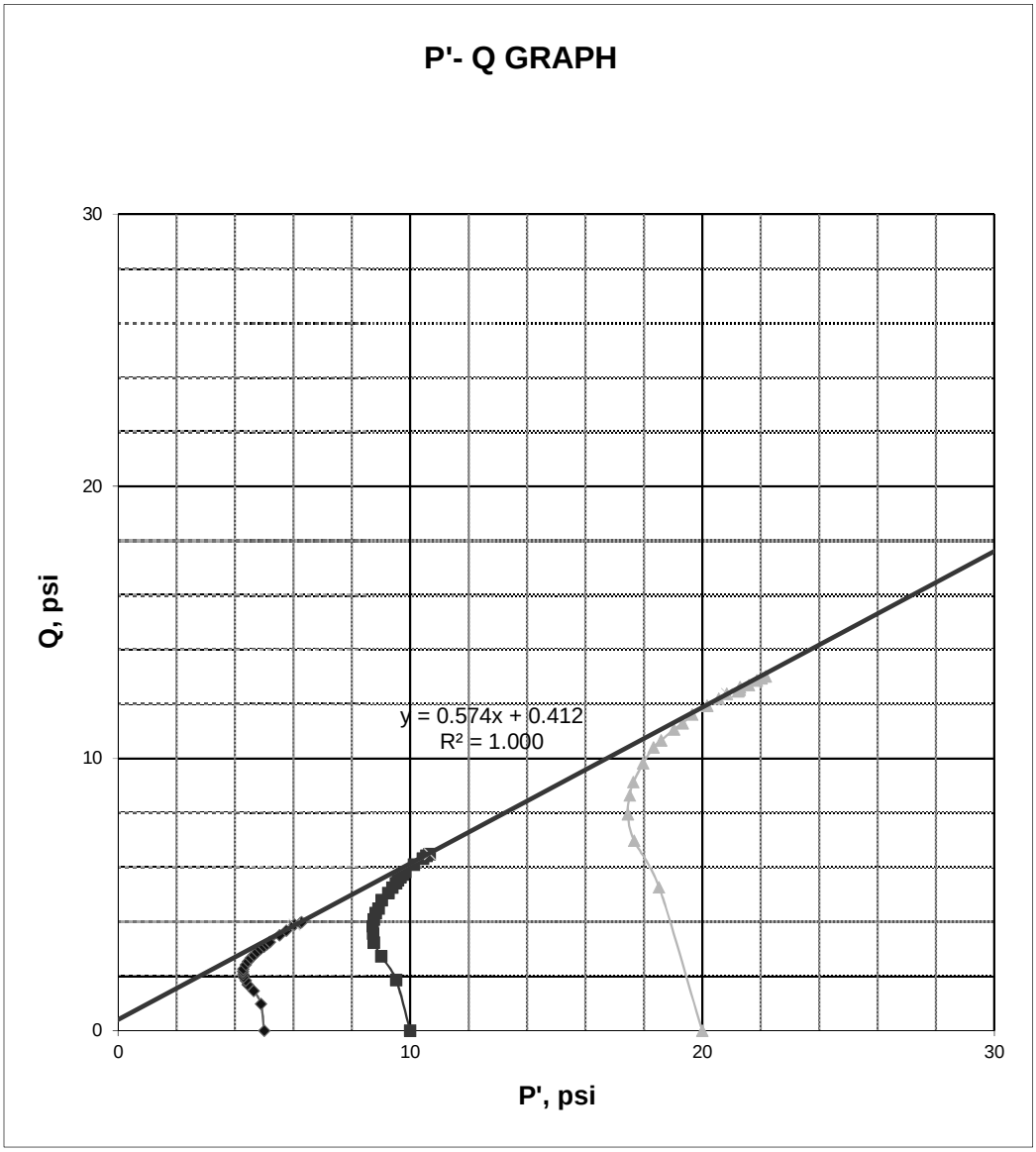
ASTM D 4767M / AASHTO T 297M

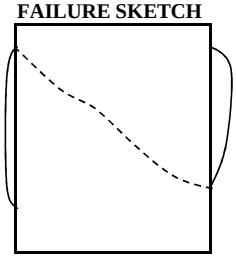
Standard Test Method for Multistage Consolidated Undrained Triaxial Compression Test for Cohesive Soils

Client Pr. #	35:28498	Lab. PR. #	1920R-01-1
Pr. Name	Jaxport Buck Island TOE Dike	S. Type	UD
Sample ID	30642/B-10	Depth/Elev.	25-27'
Location	-	Add. Info	-

P'- Q GRAPH



FAILURE SKETCH



a, psi	0.4
a, degree	29.8

Multistage Triaxial CU.xls [P'-Q Graph], REV. 1; 10-21-05

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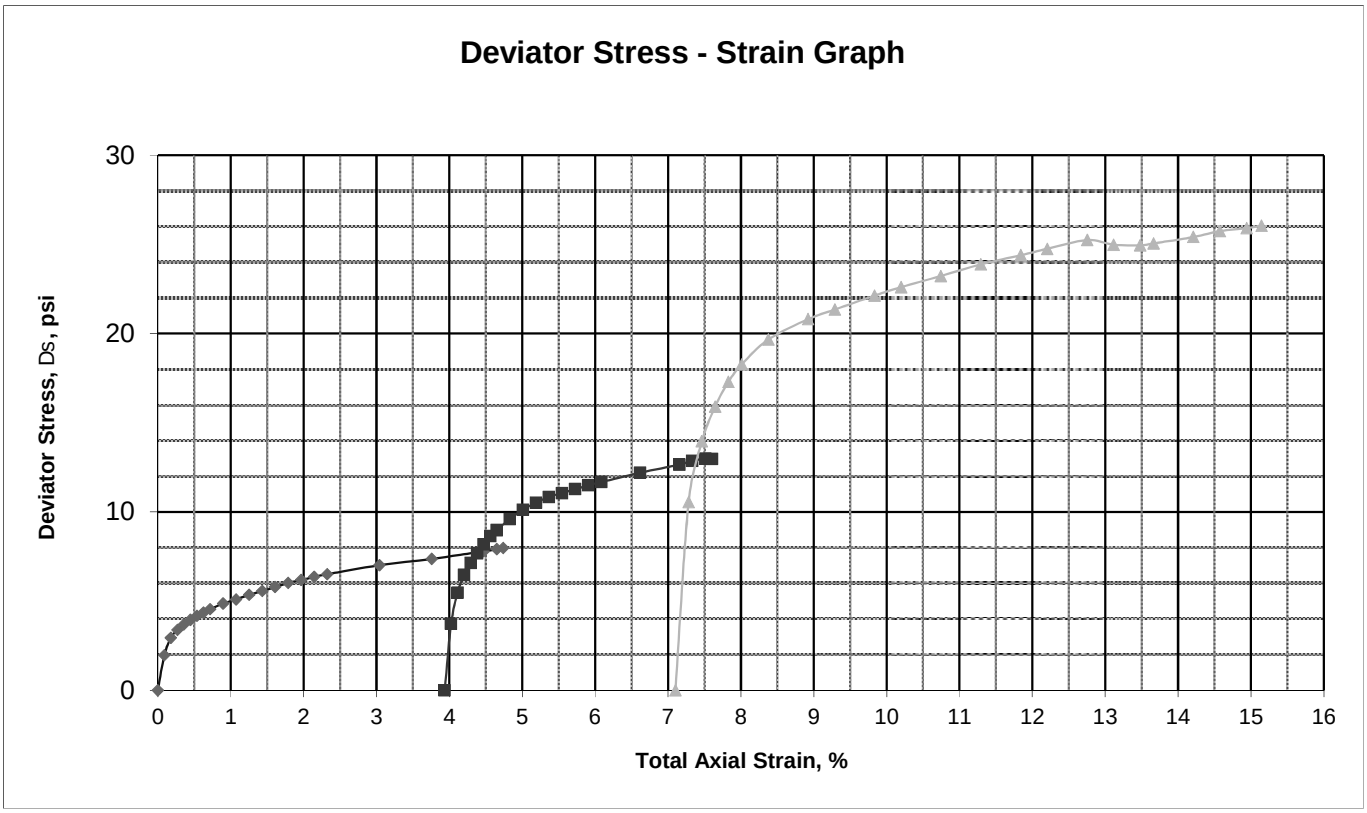
ASTM D 4767M/ AASHTO T 297M

Standard Test Method for Multistage Consolidated Undrained Triaxial Compression Test for Cohesive Soils

Client Pr. #	35:28498	Lab. PR. #	1920R-01-1
Pr. Name	Jaxport Buck Island TOE Dike	S. Type	UD
Sample ID	30642/B-10	Depth/Elev.	25-27'
Location	-	Add. Info	-

Deviator Stress - Strain Graph



		REMARKS	DESCRIPTION
Balance ID Number	563/700	Portion of sample used for testing was located 5" above bottom of shelby tube.	NA
Oven ID Number	496/610		
Deformation Indicator ID #	178/349/689		
Digital Caliper ID #	370/458		
Load Cell ID #	11/347/692		
Apparatus ID #	10/293/693		

NOTES:

1. Method for Saturation — WET
2. Method for determination of cross-sectional area after consol. — B
3. Final moisture content (Stage 3) obtained from entire sample

LL	-
PL	-
PI	-
Gs	-

USCS (ASTM D2487: D2488)

NA

Multistage Triaxial CU.xls [Stress Strain Graph], REV. 1; 10-21-05

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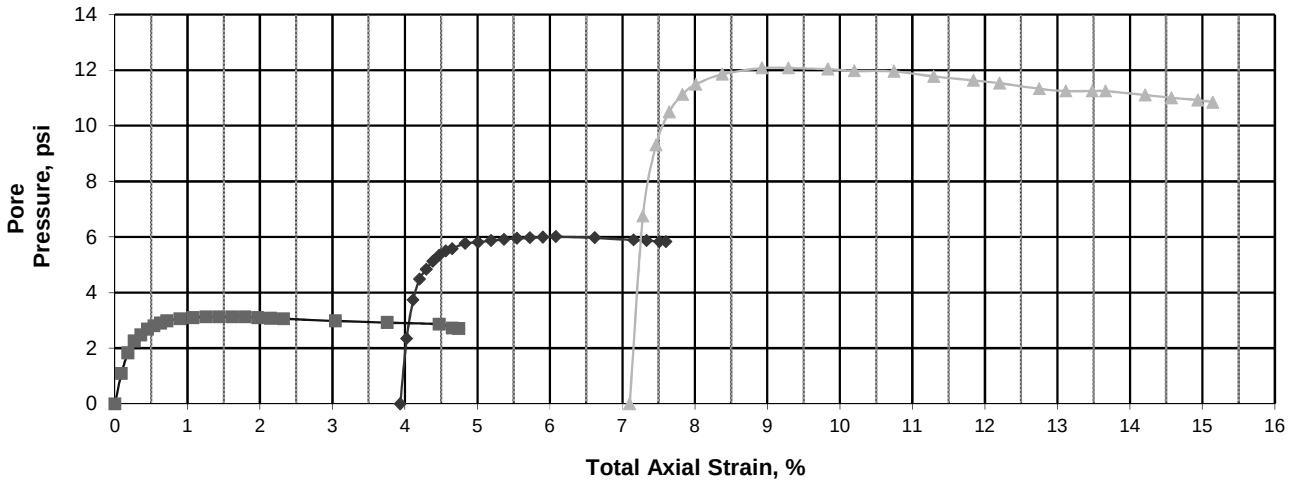
ASTM D 4767M / AASHTO T 297M

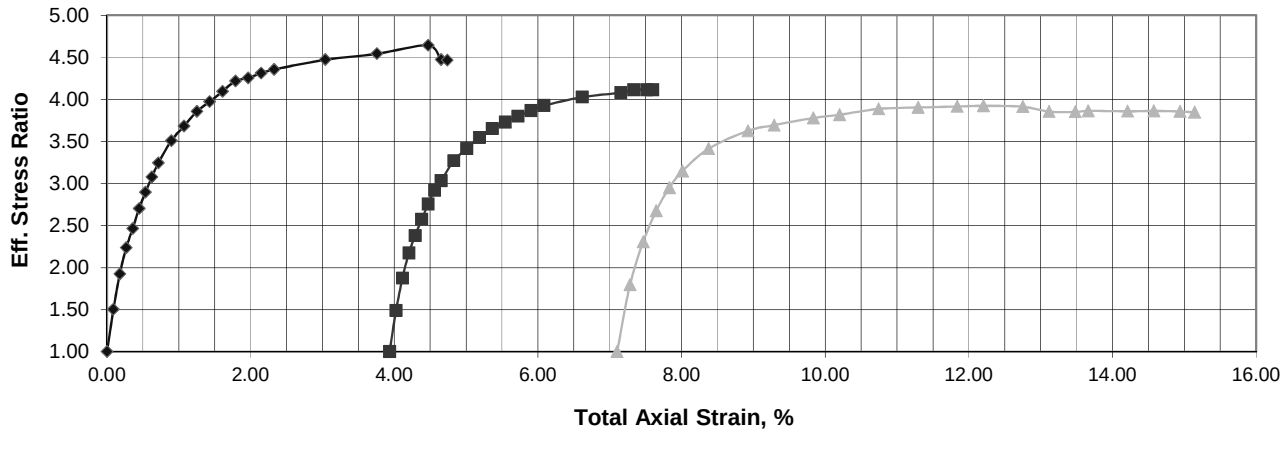
Standard Test Method for Multistage Consolidated Undrained Triaxial Compression Test for Cohesive Soils

Client Pr. #	35:28498	Lab. PR. #	1920R-01-1
Pr. Name	Jaxport Buck Island TOE Dike	S. Type	UD
Sample ID	30642/B-10	Depth/Elev.	25-27'
Location	-	Add. Info	-

Pore Pressure - Strain Graph



Effective Stress Ratio-Strain Graph



Multistage Triaxial CU.xls [Stress Ratio & Pore Water Pr.-Strain Graph], REV. 1; 10-21-05

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Date	05/20/19
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ASTM D 4767M / AASHTO T 297M

Standard Test Method for Multistage Consolidated Undrained Triaxial Compression Test for Cohesive Soils

Client Pr. #	35:28498	Lab. PR. #	1920R-01-1
Pr. Name	Jaxport Buck Island TOE Dike	S. Type	UD
Sample ID	30644/B-15	Depth/Elev.	10.5-12.5
Location	-	Add. Info	-

SPECIMEN PROPERTIES

	(initial)	(after consol.)
Height, in	5.699	5.687
Diameter, in	2.865	2.848
Height-to-Diameter Ratio	2.0	2.0
Area, in^2	6.45	6.37
Volume, cm^3	602.06	593.76
Mass of Wet Sample, g	1154.90	1154.50
Mass of Dry Sample, g	900.58	900.58
Wet Density, pcf	119.8	121.4
Dry Density, pcf	93.4	94.7
Specific Gravity (assumed)	2.650	2.650
Volume of Solids, cm^3	339.84	339.84
Volume of Voids, cm^3	262.22	253.92
Void Ratio	0.77	0.75
% Saturation	97.0	100.0

WATER CONTENT DETERMINATION

	(initial)	(final)
Mass of Wet Sample and Tare, g	438.00	1154.50
Mass of Dry Sample and Tare, g	362.60	900.58
Mass of Tare, g	95.60	0.00
Moisture, %	28.24	28.20

TEST DATA PRIOR TO LOADING

Volume change (Consolidation), ml	-0.4
Machine Speed, in / min	0.0100
Strain Rate, % / min	0.18
Chamber Pressure, psi	85.0
Back Pressure, psi	80.0
Eff. Consol. Stress,(Minor pr. stress, s_3),psi	5.0
Change in Height, in	0.012
"B" Value	0.95
t_{50}, min	-

SHEAR DATA

Elapsed Time (min)	Deformation Stage 1 (inch)	Axial Load (lb)	Pore-Water Pressure, psi		Total Strain Stage 1 (%)	Corrected Area (in^2)	Dev.Stress ($Ds=s_1-s_3$)	Major Principal Stress, psi		Eff.Stress Ratio	P' $(s'_1+s'_3)/2$ (psi)	Q $(s_1-s_3)/2$ (psi)	Eff. Minor Pr. Stress
			Total, U	Change,DU			(psi)	Total s_1	Eff. s'_1	s'_1/s'_3			s'_3 (psi)
0.0	0.000	19.3	80.00	0.0	0.00	6.37	0.0	5.0	5.0	1.00	5.0	0.0	5.0
0.5	0.005	61.8	80.99	1.0	0.09	6.38	6.7	11.7	10.7	2.66	7.3	3.3	4.0
1.0	0.010	80.3	80.97	1.0	0.18	6.38	9.6	14.6	13.6	3.37	8.8	4.8	4.0
1.5	0.015	95.5	80.60	0.6	0.26	6.39	11.9	16.9	16.3	3.71	10.4	6.0	4.4
2.0	0.020	110.8	80.06	0.1	0.35	6.39	14.3	19.3	19.3	3.90	12.1	7.2	4.9
2.5	0.025	125.4	79.50	-0.5	0.44	6.40	16.6	21.6	22.1	4.01	13.8	8.3	5.5
3.0	0.030	141.4	78.87	-1.1	0.53	6.41	19.1	24.1	25.2	4.11	15.7	9.5	6.1
3.5	0.035	157.6	78.18	-1.8	0.62	6.41	21.6	26.6	28.4	4.16	17.6	10.8	6.8
4.0	0.040	176.4	77.36	-2.6	0.70	6.42	24.5	29.5	32.1	4.20	19.9	12.2	7.6
5.0	0.050	208.9	75.95	-4.1	0.88	6.43	29.5	34.5	38.5	4.26	23.8	14.7	9.1
6.0	0.060	245.8	74.34	-5.7	1.06	6.44	35.2	40.2	45.8	4.30	28.2	17.6	10.7
7.0	0.070	284.1	72.51	-7.5	1.23	6.45	41.0	46.0	53.5	4.29	33.0	20.5	12.5
8.0	0.080	324.7	70.51	-9.5	1.41	6.46	47.3	52.3	61.7	4.26	38.1	23.6	14.5
Values @ Failure			-5.7	1.06	6.44	35.2	40.2	45.8	**4.30**	28.2	17.6	10.7	

Failure criteria used* 3

*Note: "1" = Max Deviator Stress; "2" = Deviator Stress @ 15% Strain; "3" = Max Eff.Stress Ratio(s'_1/s'_3)

Multistage Triaxial CU.xls [Stage 1], REV. 1; 10-21-05

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ASTM D 4767M / AASHTO T 297M

Standard Test Method for Multistage Consolidated Undrained Triaxial Compression Test for Cohesive Soils

Client Pr. #	35:28498	Lab. PR. #	1920R-01-1
Pr. Name	Jaxport Buck Island TOE Dike	S. Type	UD
Sample ID	30644/B-15	Depth/Elev.	10.5-12.5
Location	-	Add. Info	-

SPECIMEN PROPERTIES

		(initial)	(after consol.)
Height, in		5.607	5.625
Diameter, in		2.868	2.860
Height-to-Diameter Ratio		2.0	2.0
Area, in^2		6.46	6.42
Volume, cm^3		593.76	592.16
Mass of Wet Sample, g		1154.50	1152.90
Mass of Dry Sample, g		900.58	900.58
Wet Density, pcf		121.4	121.5
Dry Density, pcf		94.7	94.9
Specific Gravity	(assumed)	2.650	2.650
Volume of Solids, cm^3		339.84	339.84
Volume of Voids, cm^3		253.92	252.32
Void Ratio		0.75	0.74
% Saturation		100.0	100.0

WATER CONTENT DETERMINATION

	(initial)	(final)
Mass of Wet Sample and Tare, g	1154.50	1152.90
Mass of Dry Sample and Tare, g	900.58	900.58
Mass of Tare, g	0.00	0.00
Moisture, %	28.20	28.02

TEST DATA PRIOR TO LOADING

Volume change (Consolidation), ml	-1.6
Machine Speed, in / min	0.0100
Strain Rate, % / min	0.18
Chamber Pressure, psi	90.0
Back Pressure, psi	80.0
Eff. Consol. Stress,(Minor pr. stress, s_3),psi	10.0
Change in Height, in	-0.018
"B" Value	0.95
t_{50}, min	-

SHEAR DATA

Deformation Stage 2 (inch)	Total Deformation ST.1 + ST.2 (inch)	Axial Load (lb)	Pore-Water Pressure, psi		Strain Stage 2 %	Corrected Area (in^2)	Dev.Stress ($D_S=s_1-s_3$)	Major Principal Stress, psi		Effective Stress Ratio	P' ($s'_1+s'_3$)/2 (psi)	Q (s_1-s_3)/2 (psi)	Eff. Minor Pr. Stress	Total Strain ST.1 + ST.2 %
			Total, U	Change,DU			(psi)	Total s_1	Eff. s'_1	s'_1/s'_3			s'_3 (psi)	
0.000	0.062	20.4	80.00	0.0	0.00	6.42	0.0	10.0	10.0	1.00	10.0	0.0	10.0	1.09
0.005	0.067	85.6	81.26	1.3	0.09	6.43	10.1	20.1	18.9	2.16	13.8	5.1	8.7	1.18
0.010	0.072	140.0	81.52	1.5	0.18	6.44	18.6	28.6	27.1	3.19	17.8	9.3	8.5	1.27
0.015	0.077	185.0	80.75	0.8	0.27	6.44	25.6	35.6	34.8	3.76	22.0	12.8	9.3	1.35
0.020	0.082	227.3	79.72	-0.3	0.36	6.45	32.1	42.1	42.4	4.12	26.3	16.0	10.3	1.44
0.025	0.087	266.2	78.50	-1.5	0.44	6.45	38.1	48.1	49.6	4.31	30.5	19.0	11.5	1.53
0.030	0.092	302.5	77.14	-2.9	0.53	6.46	43.7	53.7	56.5	4.40	34.7	21.8	12.9	1.62
0.035	0.097	337.8	75.64	-4.4	0.62	6.46	49.1	59.1	63.5	4.42	38.9	24.5	14.4	1.71
0.040	0.102	371.8	74.21	-5.8	0.71	6.47	54.3	64.3	70.1	4.44	42.9	27.2	15.8	1.79
0.050	0.112	433.6	71.42	-8.6	0.89	6.48	63.7	73.7	82.3	4.43	50.5	31.9	18.6	1.97
0.055	0.117	464.2	70.00	-10.0	0.98	6.49	68.4	78.4	88.4	4.42	54.2	34.2	20.0	2.06
Values @ Failure				-5.8	0.71	6.47	54.3	64.3	70.1	**4.44**	42.9	27.2	15.8	1.79

Failure criteria used* 3

*Note: "1" = Max Deviator Stress; "2" = Deviator Stress @ 15% Strain; "3" = Max Eff.Stress Ratio(s'_1/s'_3)

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Standard Test Method for Multistage Consolidated Undrained Triaxial Compression Test for Cohesive Soils

Client Pr. #	35:28498	Lab. PR. #	1920R-01-1
Pr. Name	Jaxport Buck Island TOE Dike	S. Type	UD
Sample ID	30644/B-15	Depth/Elev.	10.5-12.5
Location	-	Add. Info	-

SPECIMEN PROPERTIES

		(initial)	(after consol.)
Height, in		5.570	5.595
Diameter, in		2.874	2.863
Height-to-Diameter Ratio		1.9	2.0
Area, in^2		6.49	6.44
Volume, cm^3		592.16	590.07
Mass of Wet Sample, g		1152.90	1151.30
Mass of Dry Sample, g		900.58	901.36
Wet Density, pcf		121.5	121.8
Dry Density, pcf		94.9	95.4
Specific Gravity	(assumed)	2.650	2.650
Volume of Solids, cm^3		339.84	340.14
Volume of Voids, cm^3		252.32	249.94
Void Ratio		0.74	0.73
% Saturation		100.0	100.0

WATER CONTENT DETERMINATION

	(initial)	(final)
Mass of Wet Sample and Tare, g	1152.90	1453.60
Mass of Dry Sample and Tare, g	900.58	1203.88
Mass of Tare, g	0.00	303.30
Moisture, %	28.02	27.73

TEST DATA PRIOR TO LOADING

Volume change (Consolidation), ml	-1.6
Machine Speed, in / min	0.01000
Strain Rate, % / min	0.18
Chamber Pressure, psi	100.0
Back Pressure, psi	80.0
Eff. Consol. Stress,(Minor pr. stress, s_3),psi	20.0
Change in Height, in	-0.025
"B" Value	0.95
t_{50}, min	-

SHEAR DATA

Deformation Stage 3 (inch)	Total Deformation ST.1 + ST.2 + ST.3 (inch)	Axial Load (lb)	Pore-Water Pressure, psi		Strain Stage 3 %	Corrected Area (in^2)	Deviator Stress ($Ds=s_1-s_3$)	Major Principal Stress, psi		Effective Stress Ratio	P' $(s'_1+s'_3)/2$ (psi)	Q $(s_1-s_3)/2$ (psi)	Eff. Minor Pr. Stress	Total Strain ST.1 + ST.2 + ST.3, %
			Total, U	Change,DU			(psi)	Total s_1	Eff. s'_1	s'_1/s'_3			s'_3 (psi)	
0.000	0.092	27.3	80.00	0.0	0.00	6.44	0.0	20.0	20.0	1.00	20.0	0.0	20.0	1.62
0.010	0.102	220.9	84.22	4.2	0.18	6.45	30.0	50.0	45.8	2.90	30.8	15.0	15.8	1.79
0.020	0.112	356.9	82.11	2.1	0.36	6.46	51.0	71.0	68.9	3.85	43.4	25.5	17.9	1.97
0.030	0.122	467.4	78.55	-1.4	0.54	6.47	68.0	88.0	89.5	4.17	55.5	34.0	21.4	2.15
0.040	0.132	561.4	74.73	-5.3	0.72	6.48	82.4	102.4	107.7	4.26	66.5	41.2	25.3	2.32
0.050	0.142	649.6	70.73	-9.3	0.89	6.49	95.8	115.8	125.1	4.27	77.2	47.9	29.3	2.50
0.060	0.152	731.5	66.72	-13.3	1.07	6.51	108.2	128.2	141.5	4.25	87.4	54.1	33.3	2.67
0.070	0.162	810.3	62.72	-17.3	1.25	6.52	120.1	140.1	157.4	4.22	97.3	60.1	37.3	2.85
0.080	0.172	889.2	58.64	-21.4	1.43	6.53	132.0	152.0	173.4	4.19	107.4	66.0	41.4	3.03
0.090	0.182	968.0	54.46	-25.5	1.61	6.54	143.8	163.8	189.4	4.16	117.4	71.9	45.5	3.20
0.100	0.192	1045.0	50.29	-29.7	1.79	6.55	155.3	175.3	205.0	4.12	127.4	77.6	49.7	3.38
0.110	0.202	1119.6	46.21	-33.8	1.97	6.56	166.4	186.4	220.2	4.09	137.0	83.2	53.8	3.55
0.120	0.212	1194.4	42.11	-37.9	2.15	6.58	177.5	197.5	235.3	4.07	146.6	88.7	57.9	3.73
0.130	0.222	1270.1	37.98	-42.0	2.32	6.59	188.6	208.6	250.6	4.04	156.3	94.3	62.0	3.90
0.140	0.232	1345.2	33.83	-46.2	2.50	6.60	199.7	219.7	265.8	4.02	166.0	99.8	66.2	4.08
0.150	0.242	1418.2	29.72	-50.3	2.68	6.61	210.3	230.3	280.6	3.99	175.4	105.2	70.3	4.26
0.160	0.252	1491.4	25.65	-54.3	2.86	6.63	221.0	241.0	295.3	3.97	184.8	110.5	74.3	4.43
0.170	0.262	1563.5	21.71	-58.3	3.04	6.64	231.4	251.4	309.7	3.96	194.0	115.7	78.3	4.61
0.190	0.282	1705.0	13.79	-66.2	3.40	6.66	251.8	271.8	338.0	3.92	212.1	125.9	86.2	4.96
0.200	0.292	1773.8	9.98	-70.0	3.58	6.67	261.7	281.7	351.7	3.91	220.9	130.8	90.0	5.14
0.220	0.312	1903.3	2.93	-77.1	3.93	6.70	280.0	300.0	377.1	3.88	237.1	140.0	97.1	5.49
0.230	0.322	1961.6	-0.07	-80.1	4.11	6.71	288.2	308.2	388.3	3.88	244.2	144.1	100.1	5.66
0.252	0.344	2060.1	-4.50	-84.5	4.50	6.74	301.6	321.6	406.2	3.89	255.3	150.8	104.5	6.04
Values @ Failure			-9.3		0.89	6.49	95.8	115.8	125.1	**4.27**	77.2	47.9	29.3	2.50

Failure criteria used* 3

*Note: "1" = Max Deviator Stress; "2" = Deviator Stress @ 15% Strain; "3" = Max Eff.Stress Ratio(s'_1/s'_3)

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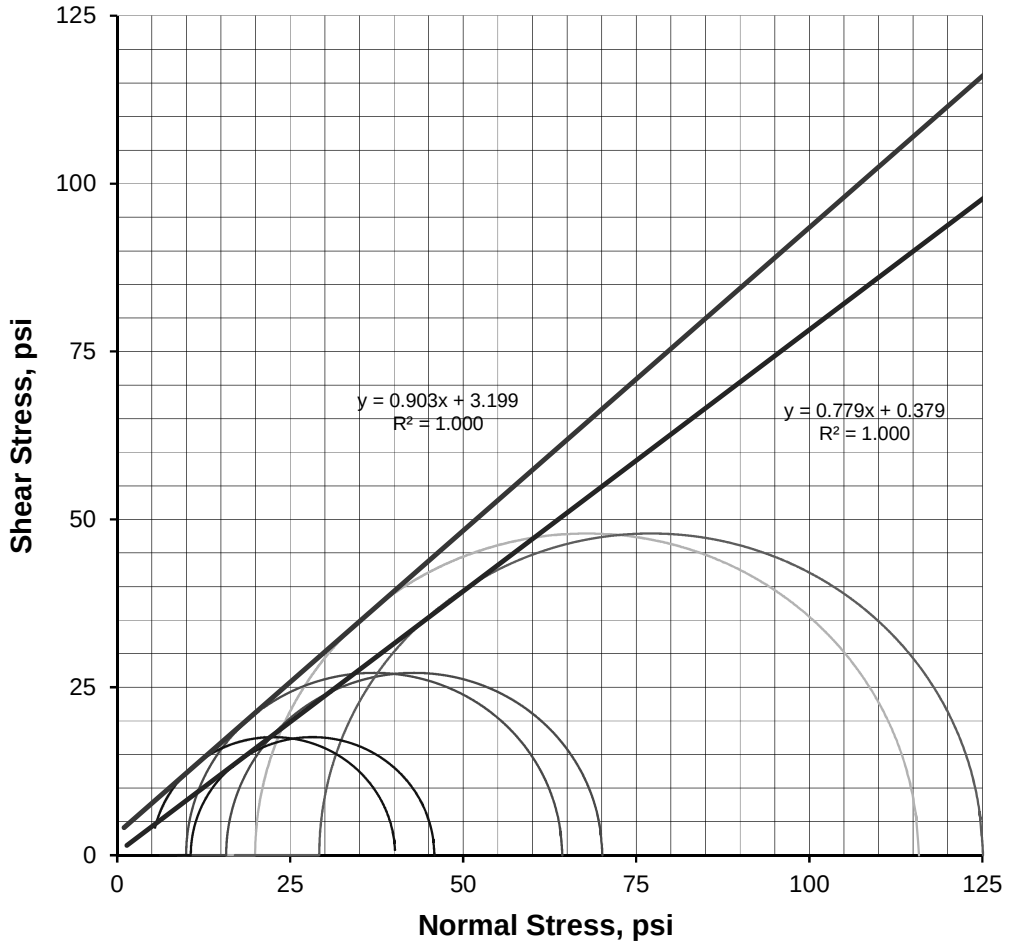
Tested By	EB
Date	05/21/19
Check	

ASTM D 4767M / AASHTO T 297M

Standard Test Method for Multistage Consolidated Undrained Triaxial Compression Test for Cohesive Soils

Client Pr. #	35:28498	Lab. PR. #	1920R-01-1
Pr. Name	Jaxport Buck Island TOE Dike	S. Type	UD
Sample ID	30644/B-15	Depth/Elev.	10.5-12.5
Location	-	Add. Info	-

Total and Effective Mohr's Circles



	ST. 1	ST. 2	ST. 3
Effective Consolidation Stress, psi	5.0	10.0	20.0
Deviator Stress at Failure, psi	35.2	54.3	95.8
Effective Minor Principal Stress at Failure, psi	10.7	15.8	29.3
Effective Major Principal Stress at Failure, psi	45.8	70.1	125.1
Axial Strain at Failure, %	1.06	0.71	0.89

STRENGTH PARAMETERS*			
Total		Effective	
f °	42.1	f ' °	37.9
C, psi	3.2	C', psi	0.4

***Valid only for Received Material at Reported Densities and Moisture Contents.**

Multistage Triaxial CU.xls [Mohr's Circles], REV. 1; 10-21-05

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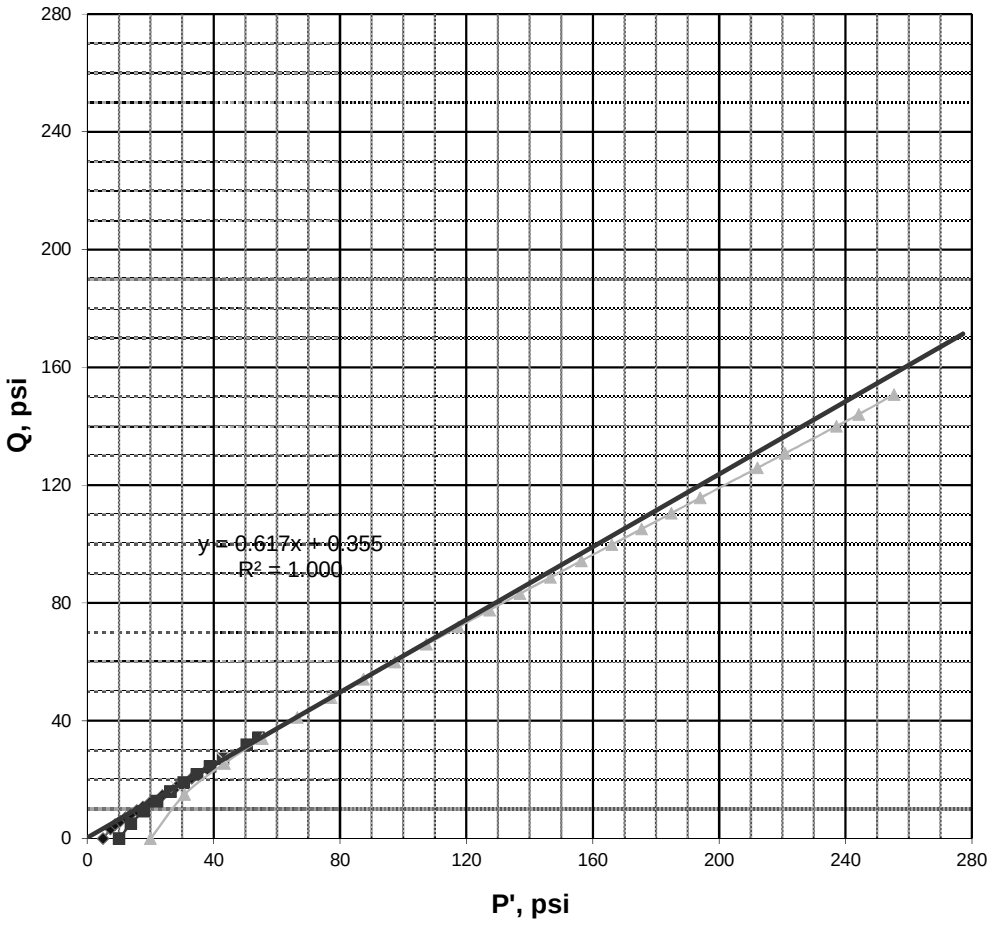
ASTM D 4767M / AASHTO T 297M

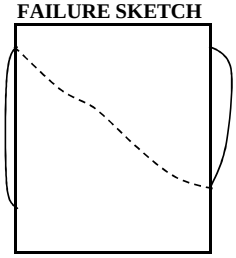
Standard Test Method for Multistage Consolidated Undrained Triaxial Compression Test for Cohesive Soils

Client Pr. #	35:28498	Lab. PR. #	1920R-01-1
Pr. Name	Jaxport Buck Island TOE Dike	S. Type	UD
Sample ID	30644/B-15	Depth/Elev.	10.5-12.5
Location	-	Add. Info	-

P'- Q GRAPH



FAILURE SKETCH



a, psi	0.4
a, degree	31.7

Multistage Triaxial CU.xls [P'-Q Graph], REV. 1; 10-21-05

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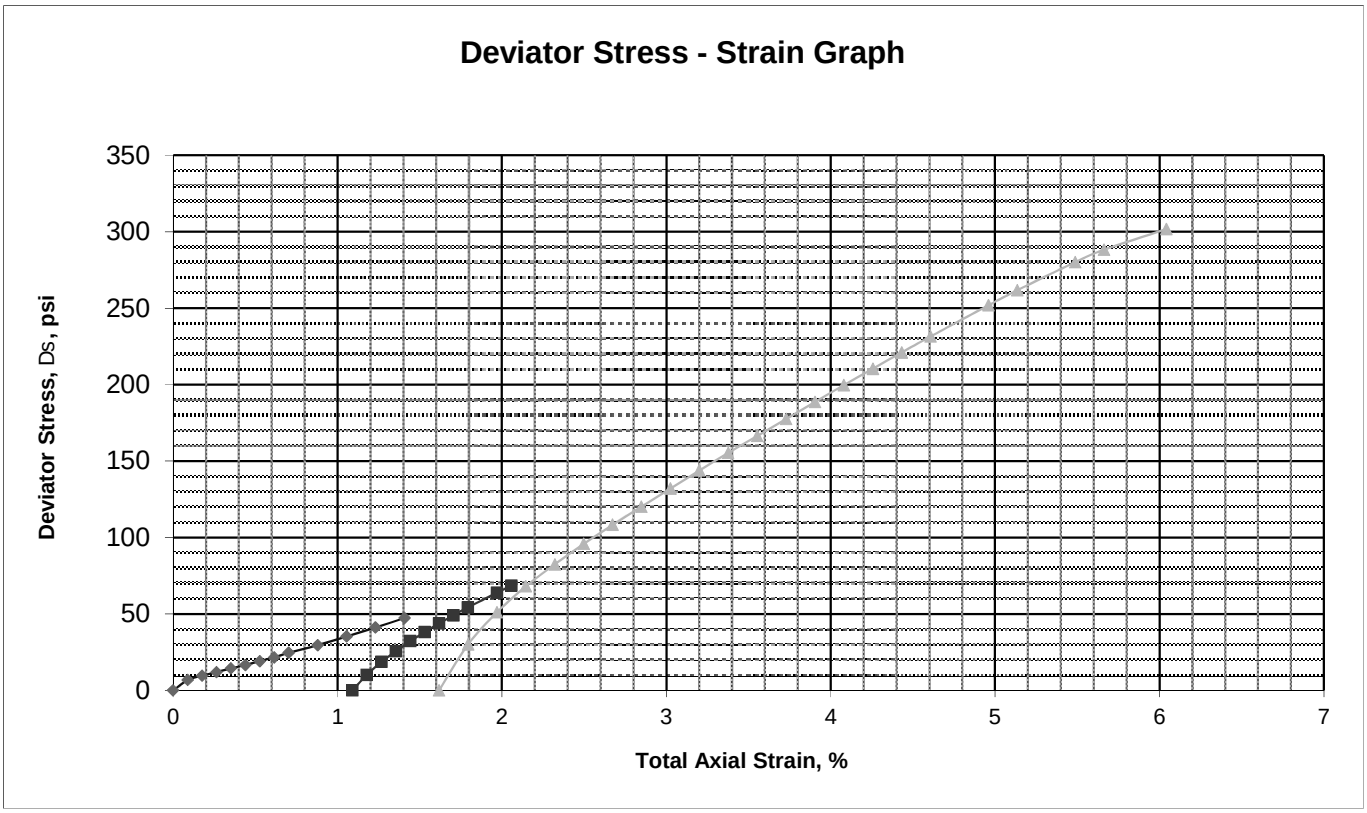
ASTM D 4767M/ AASHTO T 297M

Standard Test Method for Multistage Consolidated Undrained Triaxial Compression Test for Cohesive Soils

Client Pr. #	35:28498	Lab. PR. #	1920R-01-1
Pr. Name	Jaxport Buck Island TOE Dike	S. Type	UD
Sample ID	30644/B-15	Depth/Elev.	10.5-12.5
Location	-	Add. Info	-

Deviator Stress - Strain Graph



		REMARKS	DESCRIPTION
Balance ID Number	563/700	Portion of sample used for testing was located 4" above bottom of shelby tube.	NA
Oven ID Number	496/610		
Deformation Indicator ID #	178/349/689		
Digital Caliper ID #	370/458		
Load Cell ID #	11/347/692		
Apparatus ID #	10/293/693		

NOTES:

1. Method for Saturation — WET
2. Method for determination of cross-sectional area after consol. — B
3. Final moisture content (Stage 3) obtained from entire sample

LL	-
PL	-
PI	-
Gs	-

USCS (ASTM D2487: D2488)

NA

Multistage Triaxial CU.xls [Stress Strain Graph], REV. 1; 10-21-05

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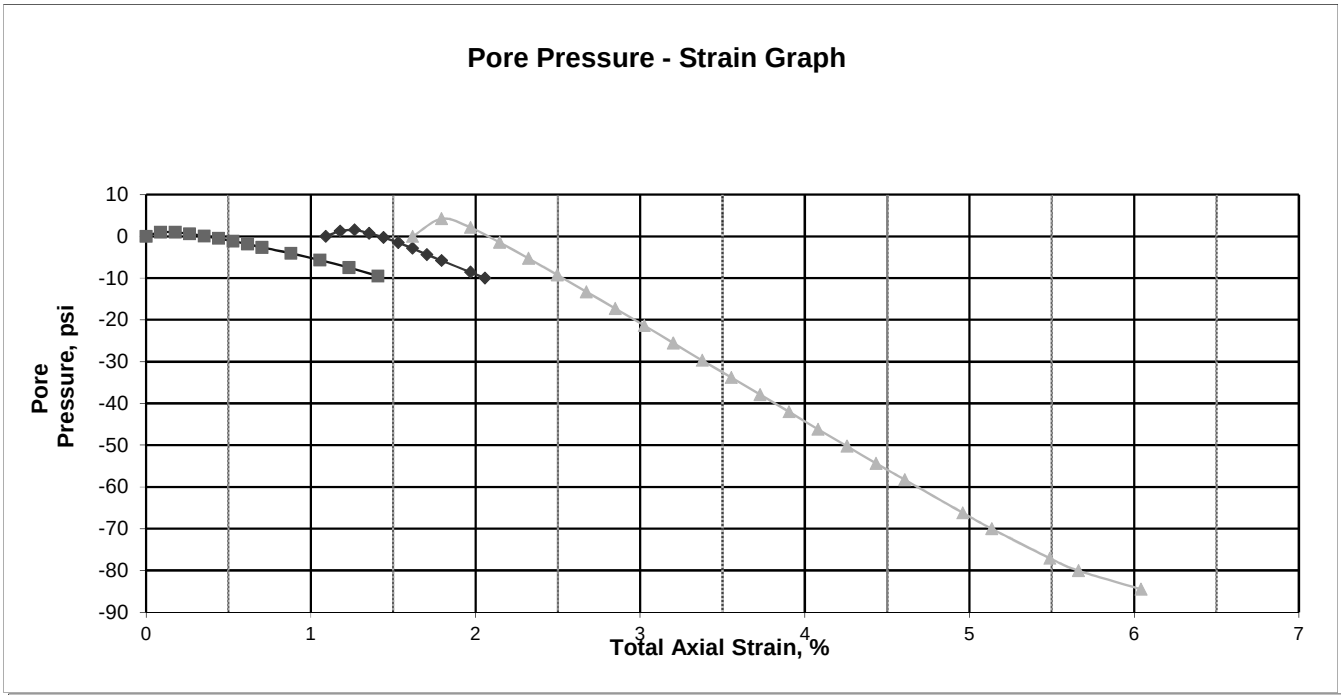
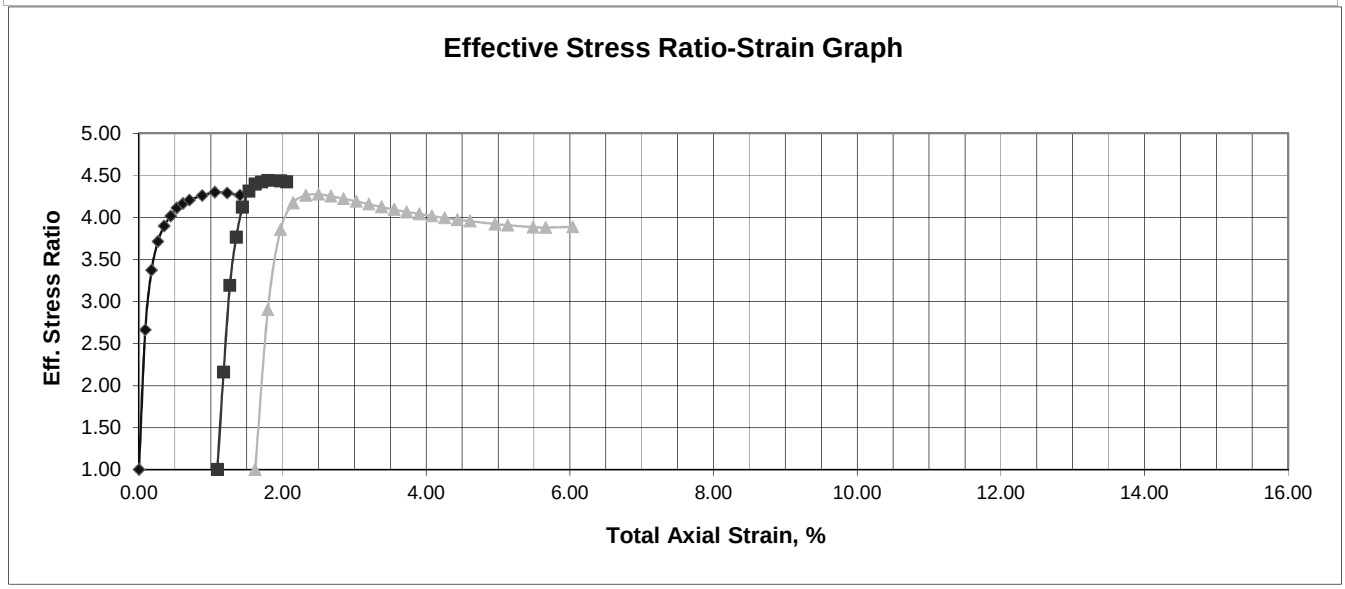
Standard Test Method for Multistage Consolidated Undrained Triaxial Compression Test for Cohesive Soils

Client Pr. #	35:28498	Lab. PR. #	1920R-01-1
Pr. Name	Jaxport Buck Island TOE Dike	S. Type	UD
Sample ID	30644/B-15	Depth/Elev.	10.5-12.5
Location	-	Add. Info	-





Multistage Triaxial CU.xls [Stress Ratio & Pore Water Pr.-Strain Graph], REV. 1; 10-21-05

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Standard Test Method for Multistage Consolidated Undrained Triaxial Compression Test for Cohesive Soils

Client Pr. #	35:28498	Lab. PR. #	1920R-01-1
Pr. Name	Jaxport Buck Island TOE Dike	S. Type	UD
Sample ID	30646/B-4	Depth/Elev.	4-6.5'
Location	-	Add. Info	-

SPECIMEN PROPERTIES

	(initial)	(after consol.)
Height, in	5.721	5.714
Diameter, in	2.865	2.885
Height-to-Diameter Ratio	2.0	2.0
Area, in^2	6.45	6.54
Volume, cm^3	604.38	612.30
Mass of Wet Sample, g	1175.40	1189.60
Mass of Dry Sample, g	927.18	927.18
Wet Density, pcf	121.4	121.3
Dry Density, pcf	95.8	94.5
Specific Gravity (assumed)	2.650	2.650
Volume of Solids, cm^3	349.88	349.88
Volume of Voids, cm^3	254.50	262.42
Void Ratio	0.73	0.75
% Saturation	97.5	100.0

WATER CONTENT DETERMINATION

	(initial)	(final)
Mass of Wet Sample and Tare, g	509.70	1189.60
Mass of Dry Sample and Tare, g	420.90	927.18
Mass of Tare, g	89.20	0.00
Moisture, %	26.77	28.30

TEST DATA PRIOR TO LOADING

Volume change (Consolidation), ml	14.2
Machine Speed, in / min	0.0100
Strain Rate, % / min	0.18
Chamber Pressure, psi	85.0
Back Pressure, psi	80.0
Eff. Consol. Stress,(Minor pr. stress, s_3),psi	5.0
Change in Height, in	0.007
"B" Value	0.95
t_{50}, min	-

SHEAR DATA

Elapsed Time (min)	Deformation Stage 1 (inch)	Axial Load (lb)	Pore-Water Pressure, psi		Total Strain Stage 1 (%)	Corrected Area (in^2)	Dev.Stress ($Ds=s_1-s_3$)	Major Principal Stress, psi		Eff.Stress Ratio	P' $(s'_1+s'_3)/2$ (psi)	Q $(s_1-s_3)/2$ (psi)	Eff. Minor Pr. Stress
			Total, U	Change,DU			(psi)	Total s_1	Eff. s'_1	s'_1/s'_3			s'_3 (psi)
0.0	0.000	19.8	80.00	0.0	0.00	6.54	0.0	5.0	5.0	1.00	5.0	0.0	5.0
0.5	0.005	59.7	81.43	1.4	0.09	6.54	6.1	11.1	9.7	2.71	6.6	3.0	3.6
1.0	0.010	81.8	81.71	1.7	0.18	6.55	9.5	14.5	12.8	3.88	8.0	4.7	3.3
1.5	0.015	100.9	81.47	1.5	0.26	6.56	12.4	17.4	15.9	4.50	9.7	6.2	3.5
2.0	0.020	119.6	81.05	1.1	0.35	6.56	15.2	20.2	19.2	4.85	11.6	7.6	4.0
2.5	0.025	138.6	80.54	0.5	0.44	6.57	18.1	23.1	22.5	5.06	13.5	9.0	4.5
3.0	0.030	160.1	79.92	-0.1	0.53	6.57	21.3	26.3	26.4	5.20	15.8	10.7	5.1
3.5	0.035	182.5	79.21	-0.8	0.61	6.58	24.7	29.7	30.5	5.27	18.2	12.4	5.8
4.0	0.040	206.5	78.47	-1.5	0.70	6.59	28.4	33.4	34.9	5.34	20.7	14.2	6.5
5.0	0.050	255.5	76.90	-3.1	0.88	6.60	35.7	40.7	43.8	5.41	26.0	17.9	8.1
6.0	0.060	312.3	74.96	-5.0	1.05	6.61	44.3	49.3	54.3	5.41	32.2	22.1	10.0
7.0	0.070	369.0	73.13	-6.9	1.23	6.62	52.7	57.7	64.6	5.44	38.2	26.4	11.9
8.0	0.080	433.2	70.83	-9.2	1.40	6.63	62.3	67.3	76.5	5.40	45.3	31.2	14.2
9.0	0.090	497.0	68.57	-11.4	1.58	6.64	71.8	76.8	88.3	5.37	52.3	35.9	16.4
Values @ Failure			-6.9	1.23	6.62	52.7	57.7	64.6		**5.44**	38.2	26.4	11.9

Failure criteria used* 3

*Note: "1" = Max Deviator Stress; "2" = Deviator Stress @ 15% Strain; "3" = Max Eff.Stress Ratio(s'_1/s'_3)

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Standard Test Method for Multistage Consolidated Undrained Triaxial Compression Test for Cohesive Soils

Client Pr. #	35:28498	Lab. PR. #	1920R-01-1
Pr. Name	Jaxport Buck Island TOE Dike	S. Type	UD
Sample ID	30646/B-4	Depth/Elev.	4-6.5'
Location	-	Add. Info	-

SPECIMEN PROPERTIES

		(initial)	(after consol.)
Height, in		5.624	5.644
Diameter, in		2.908	2.899
Height-to-Diameter Ratio		1.9	1.9
Area, in^2		6.64	6.60
Volume, cm^3		612.30	610.42
Mass of Wet Sample, g		1189.60	1187.72
Mass of Dry Sample, g		927.18	927.18
Wet Density, pcf		121.3	121.5
Dry Density, pcf		94.5	94.8
Specific Gravity	(assumed)	2.650	2.650
Volume of Solids, cm^3		349.88	349.88
Volume of Voids, cm^3		262.42	260.54
Void Ratio		0.75	0.74
% Saturation		100.0	100.0

WATER CONTENT DETERMINATION

	(initial)	(final)
Mass of Wet Sample and Tare, g	1189.60	1187.72
Mass of Dry Sample and Tare, g	927.18	927.18
Mass of Tare, g	0.00	0.00
Moisture, %	28.30	28.10

TEST DATA PRIOR TO LOADING

Volume change (Consolidation), ml	-1.9
Machine Speed, in / min	0.0100
Strain Rate, % / min	0.18
Chamber Pressure, psi	90.0
Back Pressure, psi	80.0
Eff. Consol. Stress,(Minor pr. stress, s_3),psi	10.0
Change in Height, in	-0.020
"B" Value	0.95
t_{50}, min	-

SHEAR DATA

Deformation Stage 2 (inch)	Total Deformation ST.1 + ST.2 (inch)	Axial Load (lb)	Pore-Water Pressure, psi		Strain Stage 2 %	Corrected Area (in^2)	Dev.Stress ($D\sigma = \sigma_1 - \sigma_3$)	Major Principal Stress, psi		Effective Stress Ratio	P' $(\sigma'_1+\sigma'_3)/2$ (psi)	Q $(\sigma_1-\sigma_3)/2$ (psi)	Eff. Minor Pr. Stress	Total Strain ST.1 + ST.2 %
			Total, U	Change,ΔU			(psi)	Total σ_1	Eff. σ'_1	σ'_1/σ'_3			σ'_3 (psi)	
0.000	0.070	22.0	80.00	0.0	0.00	6.60	0.0	10.0	10.0	1.00	10.0	0.0	10.0	1.23
0.005	0.075	55.1	81.05	1.1	0.09	6.61	5.0	15.0	14.0	1.56	11.5	2.5	9.0	1.31
0.010	0.080	106.8	82.12	2.1	0.18	6.61	12.8	22.8	20.7	2.63	14.3	6.4	7.9	1.40
0.015	0.085	157.7	82.16	2.2	0.27	6.62	20.5	30.5	28.3	3.62	18.1	10.3	7.8	1.49
0.020	0.090	201.9	81.61	1.6	0.35	6.62	27.2	37.2	35.6	4.24	22.0	13.6	8.4	1.58
0.025	0.095	253.4	80.56	0.6	0.44	6.63	34.9	44.9	44.3	4.70	26.9	17.5	9.4	1.66
0.030	0.100	307.2	79.25	-0.8	0.53	6.64	43.0	53.0	53.7	5.00	32.2	21.5	10.8	1.75
0.035	0.105	358.0	77.86	-2.1	0.62	6.64	50.6	60.6	62.7	5.17	37.4	25.3	12.1	1.84
0.040	0.110	409.8	76.33	-3.7	0.71	6.65	58.3	68.3	72.0	5.27	42.8	29.2	13.7	1.93
0.050	0.120	507.5	73.25	-6.8	0.89	6.66	72.9	82.9	89.7	5.35	53.2	36.5	16.8	2.10
0.060	0.130	606.7	69.94	-10.1	1.06	6.67	87.7	97.7	107.7	5.37	63.9	43.8	20.1	2.28
0.070	0.140	699.2	66.63	-13.4	1.24	6.68	101.3	111.3	124.7	5.34	74.0	50.7	23.4	2.45
0.075	0.145	747.4	65.00	-15.0	1.33	6.69	108.4	118.4	133.4	5.34	79.2	54.2	25.0	2.54
0.080	0.150	794.0	63.17	-16.8	1.42	6.69	115.3	125.3	142.1	5.30	84.5	57.7	26.8	2.63
Values @ Failure			-10.1	1.06	6.67	87.7	97.7	107.7	**5.37**	63.9	43.8	20.1	2.28	

Failure criteria used* 3

*Note: "1" = Max Deviator Stress; "2" = Deviator Stress @ 15% Strain; "3" = Max Eff.Stress Ratio(σ'_1/σ'_3)

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Standard Test Method for Multistage Consolidated Undrained Triaxial Compression Test for Cohesive Soils

Client Pr. #	35:28498	Lab. PR. #	1920R-01-1
Pr. Name	Jaxport Buck Island TOE Dike	S. Type	UD
Sample ID	30646/B-4	Depth/Elev.	4-6.5'
Location	-	Add. Info	-

SPECIMEN PROPERTIES

		(initial)	(after consol.)
Height, in		5.564	5.604
Diameter, in		2.920	2.895
Height-to-Diameter Ratio		1.9	1.9
Area, in^2		6.69	6.58
Volume, cm^3		610.42	604.58
Mass of Wet Sample, g		1187.72	1186.00
Mass of Dry Sample, g		927.18	933.80
Wet Density, pcf		121.5	122.5
Dry Density, pcf		94.8	96.4
Specific Gravity	(assumed)	2.650	2.650
Volume of Solids, cm^3		349.88	352.38
Volume of Voids, cm^3		260.54	252.20
Void Ratio		0.74	0.72
% Saturation		100.0	100.0

WATER CONTENT DETERMINATION

	(initial)	(final)
Mass of Wet Sample and Tare, g	1187.72	1475.90
Mass of Dry Sample and Tare, g	927.18	1225.48
Mass of Tare, g	0.00	298.30
Moisture, %	28.10	27.01

TEST DATA PRIOR TO LOADING

Volume change (Consolidation), ml	-1.7
Machine Speed, in / min	0.01000
Strain Rate, % / min	0.18
Chamber Pressure, psi	100.0
Back Pressure, psi	80.0
Eff. Consol. Stress,(Minor pr. stress, s_3),psi	20.0
Change in Height, in	-0.040
"B" Value	0.95
t_{50}, min	-

SHEAR DATA

Deformation Stage 3 (inch)	Total Deformation ST.1 + ST.2 + ST.3 (inch)	Axial Load (lb)	Pore-Water Pressure, psi		Strain Stage 3 %	Corrected Area (in^2)	Deviator Stress ($Ds=s_1-s_3$)	Major Principal Stress, psi		Effective Stress Ratio	P' $(s'_1+s'_3)/2$ (psi)	Q $(s_1-s_3)/2$ (psi)	Eff. Minor Pr. Stress	Total Strain ST.1 + ST.2 + ST.3, %
			Total, U	Change,DU			(psi)	Total s_1	Eff. s'_1	s'_1/s'_3			s'_3 (psi)	
0.000	0.110	27.5	80.00	0.0	0.00	6.58	0.0	20.0	20.0	1.00	20.0	0.0	20.0	1.93
0.010	0.120	230.7	84.44	4.4	0.18	6.60	30.8	50.8	46.4	2.98	31.0	15.4	15.6	2.10
0.020	0.130	407.3	83.08	3.1	0.36	6.61	57.5	77.5	74.4	4.40	45.7	28.7	16.9	2.28
0.031	0.141	573.5	79.42	-0.6	0.55	6.62	82.5	102.5	103.1	5.01	61.8	41.2	20.6	2.46
0.041	0.151	731.6	74.80	-5.2	0.73	6.63	106.2	126.2	131.4	5.21	78.3	53.1	25.2	2.64
0.051	0.161	870.4	70.22	-9.8	0.91	6.64	126.9	146.9	156.6	5.26	93.2	63.4	29.8	2.82
0.061	0.171	1001.7	65.44	-14.6	1.09	6.66	146.4	166.4	180.9	5.24	107.7	73.2	34.6	3.00
0.071	0.181	1117.5	60.91	-19.1	1.27	6.67	163.5	183.5	202.6	5.18	120.8	81.7	39.1	3.17
0.082	0.192	1234.0	56.25	-23.8	1.45	6.68	180.6	200.6	224.4	5.13	134.1	90.3	43.8	3.35
0.092	0.202	1343.6	51.67	-28.3	1.64	6.69	196.6	216.6	245.0	5.07	146.6	98.3	48.3	3.53
0.102	0.212	1452.2	47.00	-33.0	1.82	6.71	212.5	232.5	265.5	5.01	159.2	106.2	53.0	3.71
0.112	0.222	1555.4	42.48	-37.5	2.00	6.72	227.4	247.4	285.0	4.95	171.2	113.7	57.5	3.89
0.122	0.232	1659.1	37.80	-42.2	2.18	6.73	242.4	262.4	304.6	4.90	183.4	121.2	62.2	4.07
0.132	0.242	1759.7	33.25	-46.8	2.36	6.74	256.9	276.9	323.6	4.85	195.2	128.4	66.8	4.24
0.143	0.253	1856.2	28.87	-51.1	2.55	6.76	270.7	290.7	341.8	4.81	206.5	135.4	71.1	4.42
0.153	0.263	1949.8	24.56	-55.4	2.73	6.77	284.0	304.0	359.5	4.76	217.5	142.0	75.4	4.60
0.153	0.263	1949.8	24.56	-55.4	2.73	6.77	284.0	304.0	359.5	4.76	217.5	142.0	75.4	4.60
0.163	0.273	2038.4	20.46	-59.5	2.91	6.78	296.6	316.6	376.1	4.73	227.8	148.3	79.5	4.78
0.173	0.283	2123.3	16.47	-63.5	3.09	6.79	308.5	328.5	392.0	4.69	237.8	154.3	83.5	4.96
0.183	0.293	2202.0	12.86	-67.1	3.27	6.81	319.5	339.5	406.6	4.67	246.9	159.7	87.1	5.14
0.183	0.293	2202.0	12.86	-67.1	3.27	6.81	319.5	339.5	406.6	4.67	246.9	159.7	87.1	5.14
0.183	0.293	2202.0	12.86	-67.1	3.27	6.81	319.5	339.5	406.6	4.67	246.9	159.7	87.1	5.14
0.185	0.295	2215.4	12.32	-67.7	3.30	6.81	321.3	341.3	409.0	4.66	248.4	160.7	87.7	5.17
Values @ Failure			-9.8		0.91	6.64	126.9	146.9	156.6	**5.26**	93.2	63.4	29.8	2.82

Failure criteria used* 3

*Note: "1" = Max Deviator Stress; "2" = Deviator Stress @ 15% Strain; "3" = Max Eff.Stress Ratio(s'_1/s'_3)

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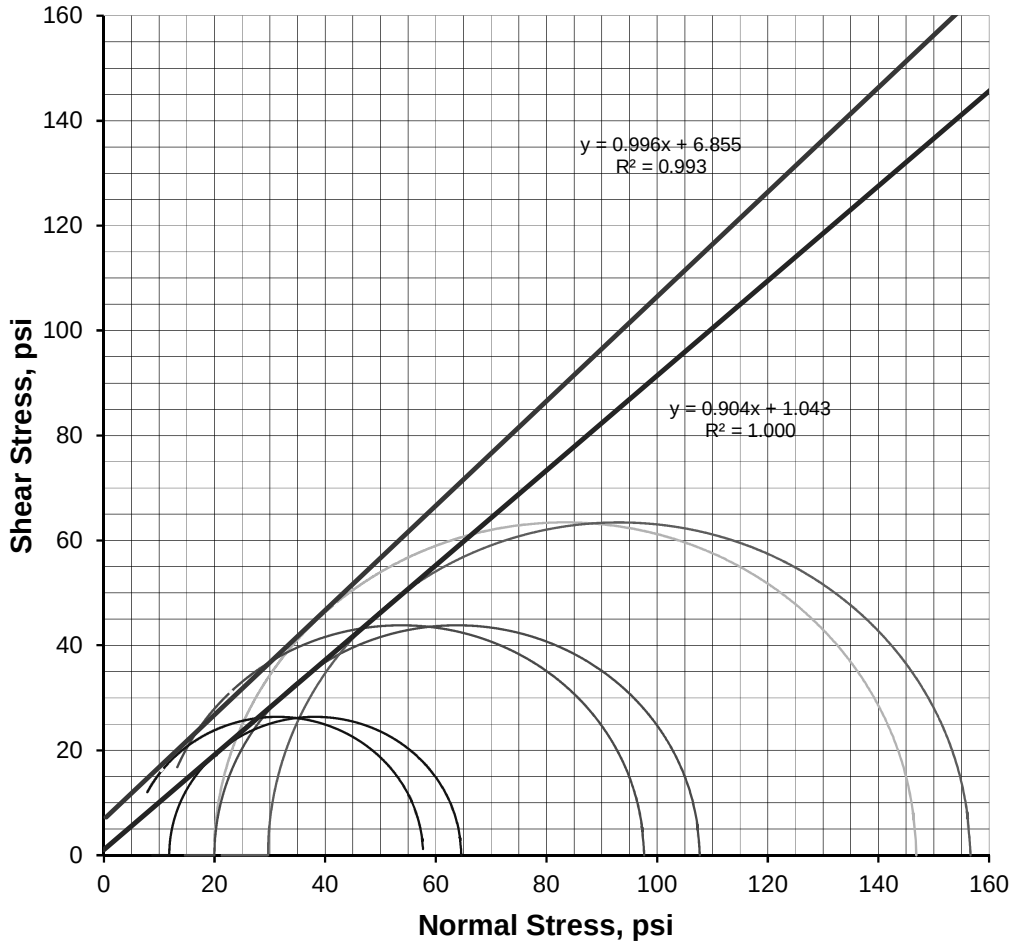
ASTM D 4767M / AASHTO T 297M

Standard Test Method for Multistage Consolidated Undrained Triaxial Compression Test for Cohesive Soils

Client Pr. #	35:28498	Lab. PR. #	1920R-01-1
Pr. Name	Jaxport Buck Island TOE Dike	S. Type	UD
Sample ID	30646/B-4	Depth/Elev.	4-6.5'
Location	-	Add. Info	-

Total and Effective Mohr's Circles



	ST. 1	ST. 2	ST. 3
Effective Consolidation Stress, psi	5.0	10.0	20.0
Deviator Stress at Failure, psi	52.7	87.7	126.9
Effective Minor Principal Stress at Failure, psi	11.9	20.1	29.8
Effective Major Principal Stress at Failure, psi	64.6	107.7	156.6
Axial Strain at Failure, %	1.23	1.06	0.91

STRENGTH PARAMETERS*			
Total		Effective	
f °	44.9	f ' °	42.1
C, psi	6.9	C', psi	1.0

***Valid only for Received Material at Reported Densities and Moisture Contents.**

Multistage Triaxial CU.xls [Mohr's Circles], REV. 1; 10-21-05

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Tech	EB
Date	05/21/19
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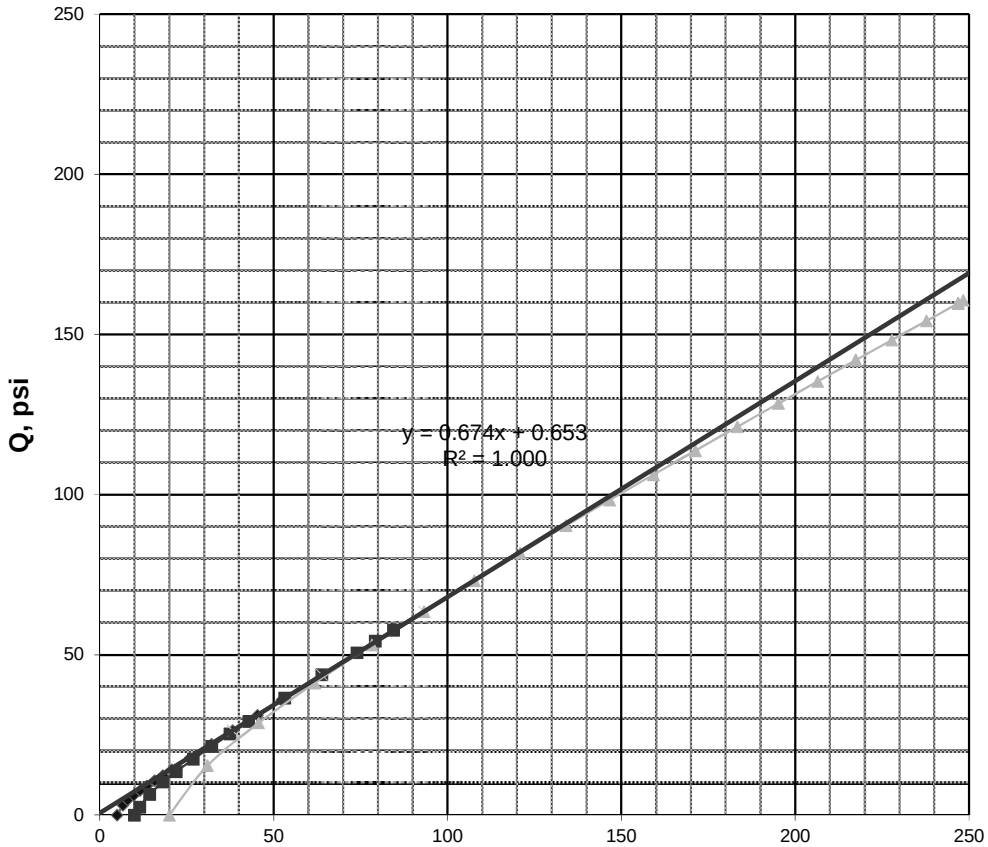
ASTM D 4767M / AASHTO T 297M

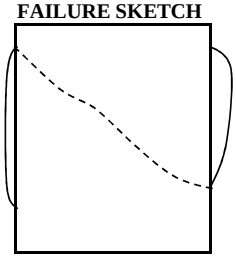
Standard Test Method for Multistage Consolidated Undrained Triaxial Compression Test for Cohesive Soils

Client Pr. #	35:28498	Lab. PR. #	1920R-01-1
Pr. Name	Jaxport Buck Island TOE Dike	S. Type	UD
Sample ID	30646/B-4	Depth/Elev.	4-6.5'
Location	-	Add. Info	-

P'- Q GRAPH



FAILURE SKETCH



a, psi	0.7
a, degree	34.0

Multistage Triaxial CU.xls [P'-Q Graph], REV. 1; 10-21-05

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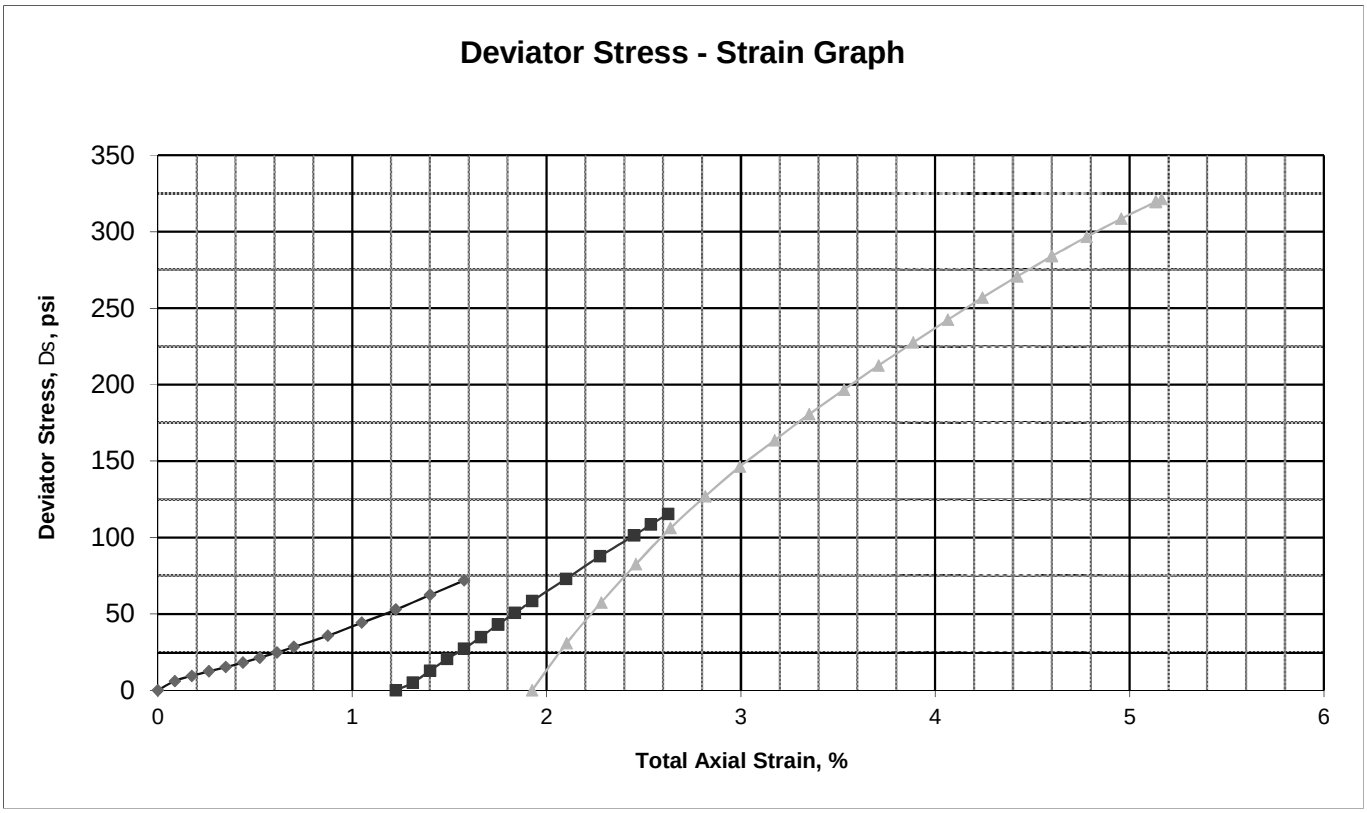
Standard Test Method for Multistage Consolidated Undrained Triaxial Compression Test for Cohesive Soils

Client Pr. #	35:28498	Lab. PR. #	1920R-01-1
Pr. Name	Jaxport Buck Island TOE Dike	S. Type	UD
Sample ID	30646/B-4	Depth/Elev.	4-6.5'
Location	-	Add. Info	-

Deviator Stress - Strain Graph



		REMARKS	DESCRIPTION
Balance ID Number	563/700	Portion of sample used for testing was located 3" above bottom of shelby tube.	NA
Oven ID Number	496/610		
Deformation Indicator ID #	178/349/689		
Digital Caliper ID #	370/458		
Load Cell ID #	11/347/692		
Apparatus ID #	10/293/693		

NOTES:

1. Method for Saturation — WET
2. Method for determination of cross-sectional area after consol. — B
3. Final moisture content (Stage 3) obtained from entire sample

LL	-
PL	-
PI	-
Gs	-

USCS (ASTM D2487: D2488)

NA

Multistage Triaxial CU.xls [Stress Strain Graph], REV. 1; 10-21-05

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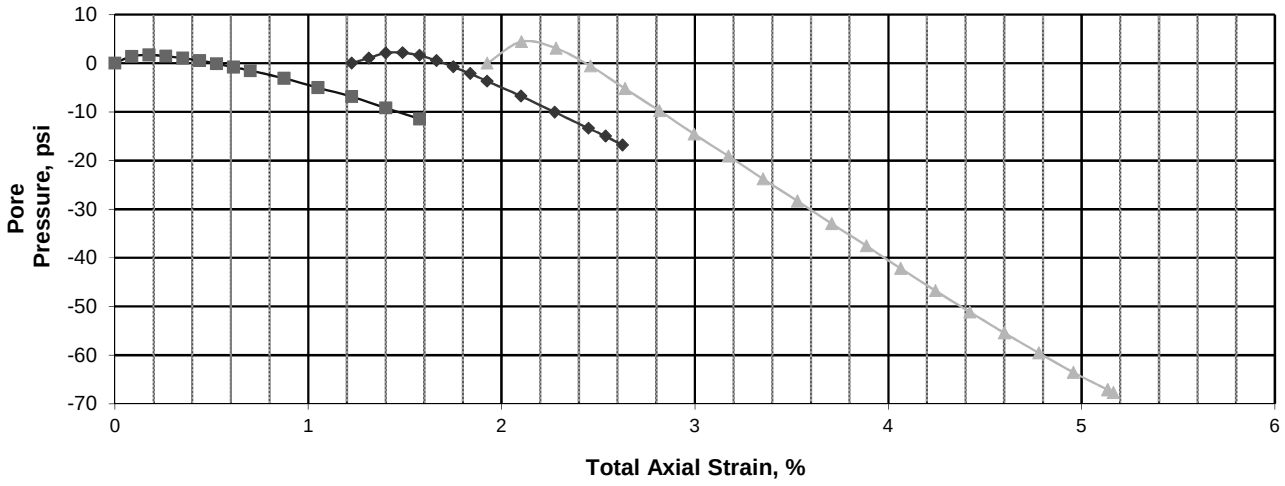
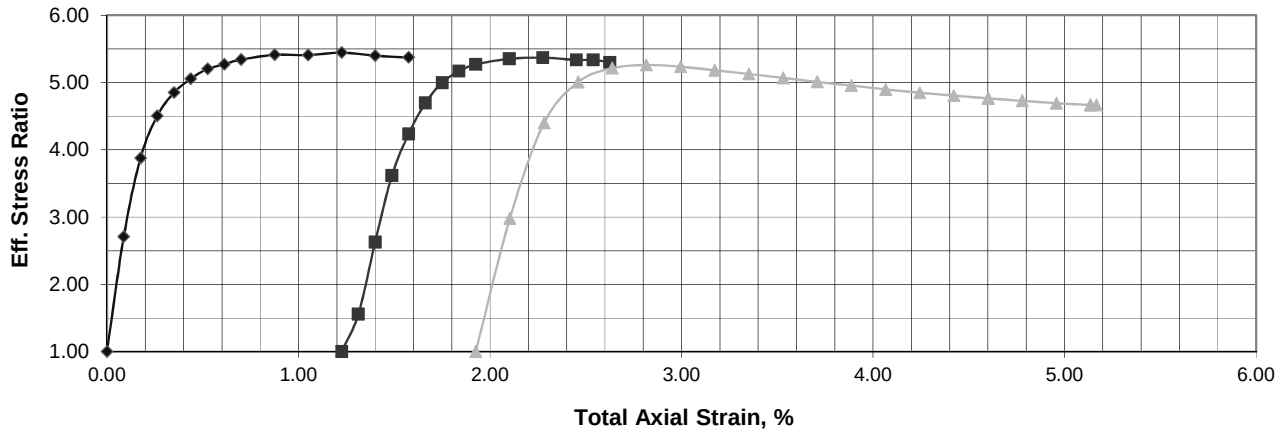
Standard Test Method for Multistage Consolidated Undrained Triaxial Compression Test for Cohesive Soils

Client Pr. #	35:28498	Lab. PR. #	1920R-01-1
Pr. Name	Jaxport Buck Island TOE Dike	S. Type	UD
Sample ID	30646/B-4	Depth/Elev.	4-6.5'
Location	-	Add. Info	-

Pore Pressure - Strain Graph



Effective Stress Ratio-Strain Graph



Multistage Triaxial CU.xls [Stress Ratio & Pore Water Pr.-Strain Graph], REV. 1; 10-21-05

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Standard Test Method for Multistage Consolidated Undrained Triaxial Compression Test for Cohesive Soils

Client Pr. #	35:28498	Lab. PR. #	1920R-01-1
Pr. Name	Jaxport Buck Island TOE Dike	S. Type	UD
Sample ID	30648/B-10	Depth/Elev.	7-9'
Location	-	Add. Info	-

SPECIMEN PROPERTIES

	(initial)	(after consol.)
Height, in	5.702	5.696
Diameter, in	2.860	2.817
Height-to-Diameter Ratio	2.0	2.0
Area, in^2	6.42	6.23
Volume, cm^3	600.28	581.95
Mass of Wet Sample, g	1184.20	1180.60
Mass of Dry Sample, g	961.47	961.47
Wet Density, pcf	123.2	126.6
Dry Density, pcf	100.0	103.1
Specific Gravity (assumed)	2.650	2.650
Volume of Solids, cm^3	362.82	362.82
Volume of Voids, cm^3	237.45	219.13
Void Ratio	0.65	0.60
% Saturation	93.8	100.0

WATER CONTENT DETERMINATION

	(initial)	(final)
Mass of Wet Sample and Tare, g	417.00	1180.60
Mass of Dry Sample and Tare, g	356.40	961.47
Mass of Tare, g	94.80	0.00
Moisture, %	23.17	22.79

TEST DATA PRIOR TO LOADING

Volume change (Consolidation), ml	-3.6
Machine Speed, in / min	0.0100
Strain Rate, % / min	0.18
Chamber Pressure, psi	85.0
Back Pressure, psi	80.0
Eff. Consol. Stress,(Minor pr. stress, s_3),psi	5.0
Change in Height, in	0.006
"B" Value	0.95
t_{50}, min	-

SHEAR DATA

Elapsed Time (min)	Deformation Stage 1 (inch)	Axial Load (lb)	Pore-Water Pressure, psi		Total Strain Stage 1 (%)	Corrected Area (in^2)	Dev.Stress ($Ds=s_1-s_3$)	Major Principal Stress, psi		Eff.Stress Ratio	P' $(s'_1+s'_3)/2$ (psi)	Q $(s_1-s_3)/2$ (psi)	Eff. Minor Pr. Stress
			Total, U	Change,ΔU			(psi)	Total s_1	Eff. s'_1	s'_1/s'_3			s'_3 (psi)
0.0	0.000	17.5	80.00	0.0	0.00	6.23	0.0	5.0	5.0	1.00	5.0	0.0	5.0
0.5	0.005	73.5	81.17	1.2	0.09	6.24	9.0	14.0	12.8	3.34	8.3	4.5	3.8
1.0	0.010	95.0	81.25	1.3	0.18	6.25	12.4	17.4	16.2	4.31	10.0	6.2	3.8
1.5	0.015	112.8	80.93	0.9	0.26	6.25	15.2	20.2	19.3	4.75	11.7	7.6	4.1
2.0	0.020	129.8	80.46	0.5	0.35	6.26	17.9	22.9	22.5	4.95	13.5	9.0	4.5
2.5	0.025	149.7	79.82	-0.2	0.44	6.26	21.1	26.1	26.3	5.08	15.7	10.6	5.2
3.0	0.030	172.1	79.05	-1.0	0.53	6.27	24.7	29.7	30.6	5.15	18.3	12.3	6.0
3.5	0.035	196.1	78.13	-1.9	0.61	6.27	28.5	33.5	35.3	5.14	21.1	14.2	6.9
4.0	0.040	222.8	77.20	-2.8	0.70	6.28	32.7	37.7	40.5	5.19	24.1	16.3	7.8
5.0	0.050	276.3	75.48	-4.5	0.88	6.29	41.1	46.1	50.7	5.32	30.1	20.6	9.5
6.0	0.060	343.7	72.85	-7.2	1.05	6.30	51.8	56.8	63.9	5.26	38.0	25.9	12.2
7.0	0.070	411.1	69.99	-10.0	1.23	6.31	62.4	67.4	77.4	5.15	46.2	31.2	15.0
8.0	0.080	488.0	66.90	-13.1	1.40	6.32	74.4	79.4	92.5	5.11	55.3	37.2	18.1
9.0	0.090	565.0	63.95	-16.1	1.58	6.33	86.4	91.4	107.5	5.11	64.3	43.2	21.1
10.0	0.100	650.6	60.22	-19.8	1.76	6.35	99.8	104.8	124.5	5.03	74.7	49.9	24.8
10.5	0.105	696.0	58.37	-21.6	1.84	6.35	106.8	111.8	133.5	5.01	80.0	53.4	26.6
Values @ Failure			-4.5	0.88	6.29	41.1	46.1	50.7	**5.32**	30.1	20.6	9.5	

Failure criteria used* 3

*Note: "1" = Max Deviator Stress; "2" = Deviator Stress @ 15% Strain; "3" = Max Eff.Stress Ratio(s'_1/s'_3)

Multistage Triaxial CU.xls [Stage 1], REV. 1; 10-21-05

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Date	05/21/19
Checked By	

ASTM D 4767M / AASHTO T 297M

Standard Test Method for Multistage Consolidated Undrained Triaxial Compression Test for Cohesive Soils

Client Pr. #	35:28498	Lab. PR. #	1920R-01-1
Pr. Name	Jaxport Buck Island TOE Dike	S. Type	UD
Sample ID	30648/B-10	Depth/Elev.	7-9'
Location	-	Add. Info	-

SPECIMEN PROPERTIES

		(initial)	(after consol.)
Height, in		5.591	5.616
Diameter, in		2.844	2.837
Height-to-Diameter Ratio		2.0	2.0
Area, in^2		6.35	6.32
Volume, cm^3		581.95	581.59
Mass of Wet Sample, g		1180.60	1180.24
Mass of Dry Sample, g		961.47	961.47
Wet Density, pcf		126.6	126.7
Dry Density, pcf		103.1	103.2
Specific Gravity	(assumed)	2.650	2.650
Volume of Solids, cm^3		362.82	362.82
Volume of Voids, cm^3		219.13	218.77
Void Ratio		0.60	0.60
% Saturation		100.0	100.0

WATER CONTENT DETERMINATION

	(initial)	(final)
Mass of Wet Sample and Tare, g	1180.60	1180.24
Mass of Dry Sample and Tare, g	961.47	961.47
Mass of Tare, g	0.00	0.00
Moisture, %	22.79	22.75

TEST DATA PRIOR TO LOADING

Volume change (Consolidation), ml	-0.4
Machine Speed, in / min	0.0100
Strain Rate, % / min	0.18
Chamber Pressure, psi	90.0
Back Pressure, psi	80.0
Eff. Consol. Stress,(Minor pr. stress, s_3),psi	10.0
Change in Height, in	-0.025
"B" Value	0.95
t_{50}, min	-

SHEAR DATA

Deformation Stage 2 (inch)	Total Deformation ST.1 + ST.2 (inch)	Axial Load (lb)	Pore-Water Pressure, psi		Strain Stage 2 %	Corrected Area (in^2)	Dev.Stress ($D_s=s_1-s_3$)	Major Principal Stress, psi		Effective Stress Ratio	P' ($s'_1+s'_3$)/2 (psi)	Q (s_1-s_3)/2 (psi)	Eff. Minor Pr. Stress	Total Strain ST.1 + ST.2 %
			Total, U	Change,DU			(psi)	Total s_1	Eff. s'_1	s'_1/s'_3			s'_3 (psi)	
0.000	0.080	24.5	80.00	0.0	0.00	6.32	0.0	10.0	10.0	1.00	10.0	0.0	10.0	1.40
0.005	0.085	100.3	81.15	1.2	0.09	6.33	12.0	22.0	20.8	2.35	14.8	6.0	8.8	1.49
0.010	0.090	172.1	80.93	0.9	0.18	6.33	23.3	33.3	32.4	3.57	20.7	11.7	9.1	1.58
0.015	0.095	243.0	79.62	-0.4	0.27	6.34	34.5	44.5	44.9	4.32	27.6	17.2	10.4	1.67
0.020	0.100	306.2	77.88	-2.1	0.36	6.34	44.4	54.4	56.5	4.66	34.3	22.2	12.1	1.76
0.025	0.105	373.3	75.73	-4.3	0.45	6.35	54.9	64.9	69.2	4.85	41.7	27.5	14.3	1.84
0.030	0.110	438.1	73.53	-6.5	0.53	6.35	65.1	75.1	81.6	4.95	49.0	32.5	16.5	1.93
0.035	0.115	500.9	71.29	-8.7	0.62	6.36	74.9	84.9	93.6	5.00	56.2	37.5	18.7	2.02
0.040	0.120	564.1	68.91	-11.1	0.71	6.36	84.8	94.8	105.9	5.02	63.5	42.4	21.1	2.11
0.045	0.125	622.0	66.65	-13.4	0.80	6.37	93.8	103.8	117.1	5.02	70.2	46.9	23.4	2.19
0.050	0.130	682.0	64.31	-15.7	0.89	6.38	103.1	113.1	128.8	5.01	77.2	51.6	25.7	2.28
Values @ Failure				-11.1	0.71	6.36	84.8	94.8	105.9	**5.02**	63.5	42.4	21.1	2.11

Failure criteria used* 3

*Note: "1" = Max Deviator Stress; "2" = Deviator Stress @ 15% Strain; "3" = Max Eff.Stress Ratio(s'_1/s'_3)

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Tested By	EB
Date	05/22/19
Checked By	[signature]

ASTM D 4767M / AASHTO T 297M

Standard Test Method for Multistage Consolidated Undrained Triaxial Compression Test for Cohesive Soils

Client Pr. #	35:28498	Lab. PR. #	1920R-01-1
Pr. Name	Jaxport Buck Island TOE Dike	S. Type	UD
Sample ID	30648/B-10	Depth/Elev.	7-9'
Location	-	Add. Info	-

SPECIMEN PROPERTIES

	(initial)	(after consol.)
Height, in	5.566	5.588
Diameter, in	2.849	2.838
Height-to-Diameter Ratio	2.0	2.0
Area, in^2	6.38	6.32
Volume, cm^3	581.59	579.09
Mass of Wet Sample, g	1180.24	1178.20
Mass of Dry Sample, g	961.47	962.21
Wet Density, pcf	126.7	127.0
Dry Density, pcf	103.2	103.7
Specific Gravity (assumed)	2.650	2.650
Volume of Solids, cm^3	362.82	363.10
Volume of Voids, cm^3	218.77	215.99
Void Ratio	0.60	0.59
% Saturation	100.0	100.0

WATER CONTENT DETERMINATION

	(initial)	(final)
Mass of Wet Sample and Tare, g	1180.24	1383.90
Mass of Dry Sample and Tare, g	961.47	1168.07
Mass of Tare, g	0.00	206.60
Moisture, %	22.75	22.45

TEST DATA PRIOR TO LOADING

Volume change (Consolidation), ml	-2.0
Machine Speed, in / min	0.01000
Strain Rate, % / min	0.18
Chamber Pressure, psi	100.0
Back Pressure, psi	80.0
Eff. Consol. Stress,(Minor pr. stress, s_3),psi	20.0
Change in Height, in	-0.022
"B" Value	0.95
t_{50}, min	-

SHEAR DATA

Deformation Stage 3 (inch)	Total Deformation ST.1 + ST.2 + ST.3 (inch)	Axial Load (lb)	Pore-Water Pressure, psi		Strain Stage 3 %	Corrected Area (in^2)	Deviator Stress ($Ds=s_1-s_3$)	Major Principal Stress, psi		Effective Stress Ratio	P' $(s'_1+s'_3)/2$ (psi)	Q $(s_1-s_3)/2$ (psi)	Eff. Minor Pr. Stress	Total Strain ST.1 + ST.2 + ST.3, %
			Total, U	Change,DU			(psi)	Total s_1	Eff. s'_1	s'_1/s'_3			s'_3 (psi)	
0.000	0.108	26.2	80.00	0.0	0.00	6.32	0.0	20.0	20.0	1.00	20.0	0.0	20.0	1.90
0.010	0.118	279.4	84.20	4.2	0.18	6.34	40.0	60.0	55.8	3.53	35.8	20.0	15.8	2.07
0.020	0.128	477.1	81.00	1.0	0.36	6.35	71.0	91.0	90.0	4.74	54.5	35.5	19.0	2.25
0.030	0.138	660.5	75.50	-4.5	0.54	6.36	99.8	119.8	124.3	5.07	74.4	49.9	24.5	2.42
0.040	0.148	825.8	69.70	-10.3	0.72	6.37	125.5	145.5	155.8	5.14	93.1	62.8	30.3	2.60
0.051	0.159	976.6	63.70	-16.3	0.90	6.38	148.9	168.9	185.2	5.10	110.8	74.5	36.3	2.78
0.071	0.179	1265.8	51.30	-28.7	1.27	6.41	193.5	213.5	242.2	4.97	145.5	96.8	48.7	3.14
0.102	0.210	1689.1	31.80	-48.2	1.82	6.44	258.2	278.2	326.4	4.79	197.3	129.1	68.2	3.68
0.122	0.230	1955.0	19.20	-60.8	2.18	6.46	298.3	318.3	379.1	4.69	230.0	149.2	80.8	4.04
0.122	0.230	1955.0	19.20	-60.8	2.18	6.46	298.3	318.3	379.1	4.69	230.0	149.2	80.8	4.04
0.122	0.230	1955.0	19.20	-60.8	2.18	6.46	298.3	318.3	379.1	4.69	230.0	149.2	80.8	4.04
0.122	0.230	1955.0	19.20	-60.8	2.18	6.46	298.3	318.3	379.1	4.69	230.0	149.2	80.8	4.04
0.122	0.230	1955.0	19.20	-60.8	2.18	6.46	298.3	318.3	379.1	4.69	230.0	149.2	80.8	4.04
0.122	0.230	1955.0	19.20	-60.8	2.18	6.46	298.3	318.3	379.1	4.69	230.0	149.2	80.8	4.04
0.122	0.230	1955.0	19.20	-60.8	2.18	6.46	298.3	318.3	379.1	4.69	230.0	149.2	80.8	4.04
0.122	0.230	1955.0	19.20	-60.8	2.18	6.46	298.3	318.3	379.1	4.69	230.0	149.2	80.8	4.04
0.122	0.230	1955.0	19.20	-60.8	2.18	6.46	298.3	318.3	379.1	4.69	230.0	149.2	80.8	4.04
0.122	0.230	1955.0	19.20	-60.8	2.18	6.46	298.3	318.3	379.1	4.69	230.0	149.2	80.8	4.04
0.122	0.230	1955.0	19.20	-60.8	2.18	6.46	298.3	318.3	379.1	4.69	230.0	149.2	80.8	4.04
0.122	0.230	1955.0	19.20	-60.8	2.18	6.46	298.3	318.3	379.1	4.69	230.0	149.2	80.8	4.04
0.122	0.230	1955.0	19.20	-60.8	2.18	6.46	298.3	318.3	379.1	4.69	230.0	149.2	80.8	4.04
0.122	0.230	1955.0	19.20	-60.8	2.18	6.46	298.3	318.3	379.1	4.69	230.0	149.2	80.8	4.04
0.130	0.238	2054.5	14.40	-65.6	2.32	6.47	313.3	333.3	398.9	4.66	242.2	156.6	85.6	4.18
Values @ Failure				-10.3	0.72	6.37	125.5	145.5	155.8	**5.14**	93.1	62.8	30.3	2.60

Failure criteria used*: 3

*Note: "1" = Max Deviator Stress; "2" = Deviator Stress @ 15% Strain; "3" = Max Eff.Stress Ratio(s'_1/s'_3)

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AASHTO ACCREDITED

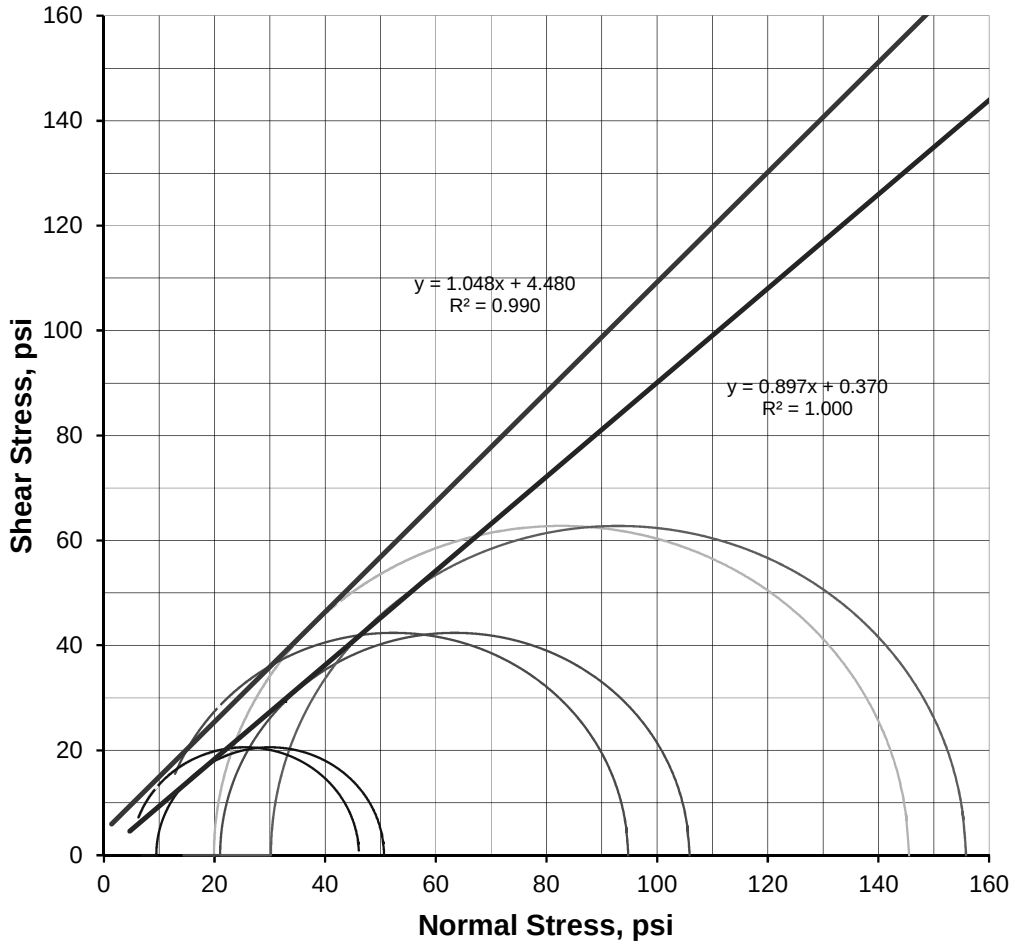
Tested By	EB
Date	05/22/19
Check	

ASTM D 4767M / AASHTO T 297M

Standard Test Method for Multistage Consolidated Undrained Triaxial Compression Test for Cohesive Soils

Client Pr. #	35:28498	Lab. PR. #	1920R-01-1
Pr. Name	Jaxport Buck Island TOE Dike	S. Type	UD
Sample ID	30648/B-10	Depth/Elev.	7-9'
Location	-	Add. Info	-

Total and Effective Mohr's Circles



	ST. 1	ST. 2	ST. 3
Effective Consolidation Stress, psi	5.0	10.0	20.0
Deviator Stress at Failure, psi	41.1	84.8	125.5
Effective Minor Principal Stress at Failure, psi	9.5	21.1	30.3
Effective Major Principal Stress at Failure, psi	50.7	105.9	155.8
Axial Strain at Failure, %	0.88	0.71	0.72

STRENGTH PARAMETERS*			
Total		Effective	
f °	46.3	f ' °	41.9
C, psi	4.5	C', psi	0.4

***Valid only for Received Material at Reported Densities and Moisture Contents.**

Multistage Triaxial CU.xls [Mohr's Circles], REV. 1; 10-21-05

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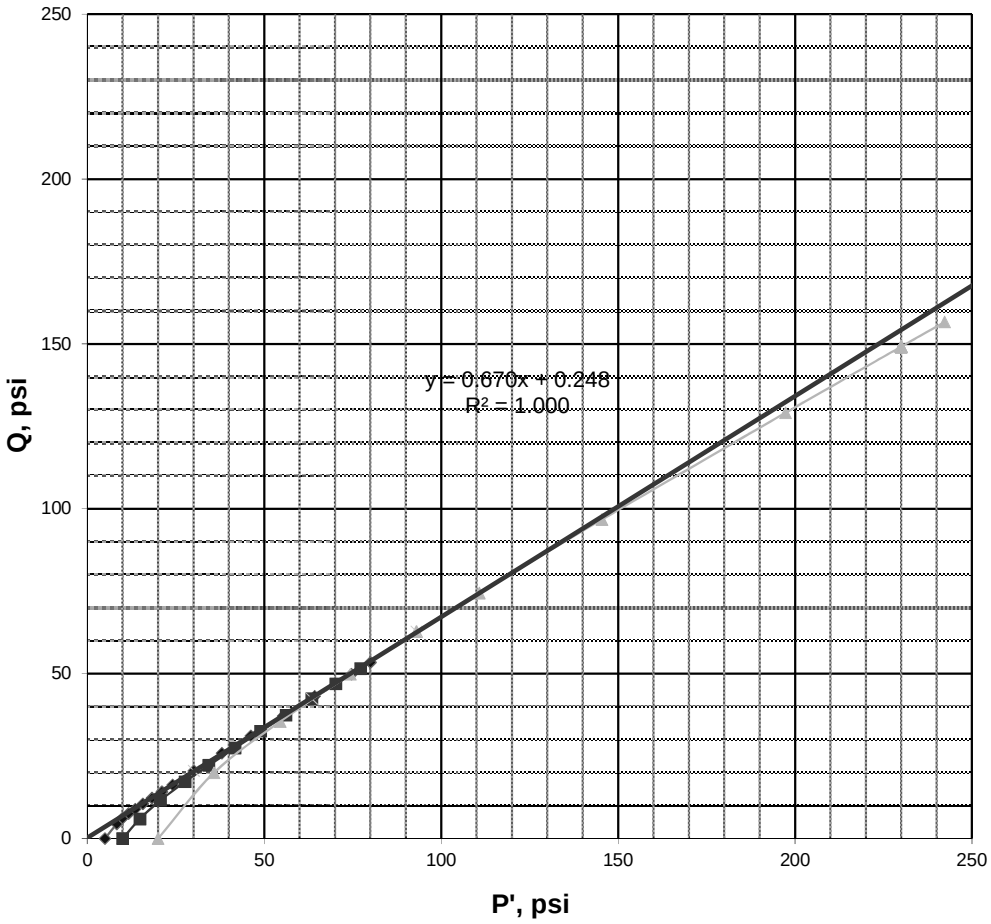
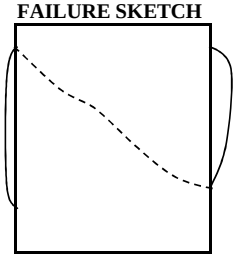
P'- Q GRAPH



FAILURE SKETCH



a, psi	0.2
a, degree	33.8

Multistage Triaxial CU.xls [P'-Q Graph], REV. 1; 10-21-05

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Standard Test Method for Multistage Consolidated Undrained Triaxial Compression Test for Cohesive Soils

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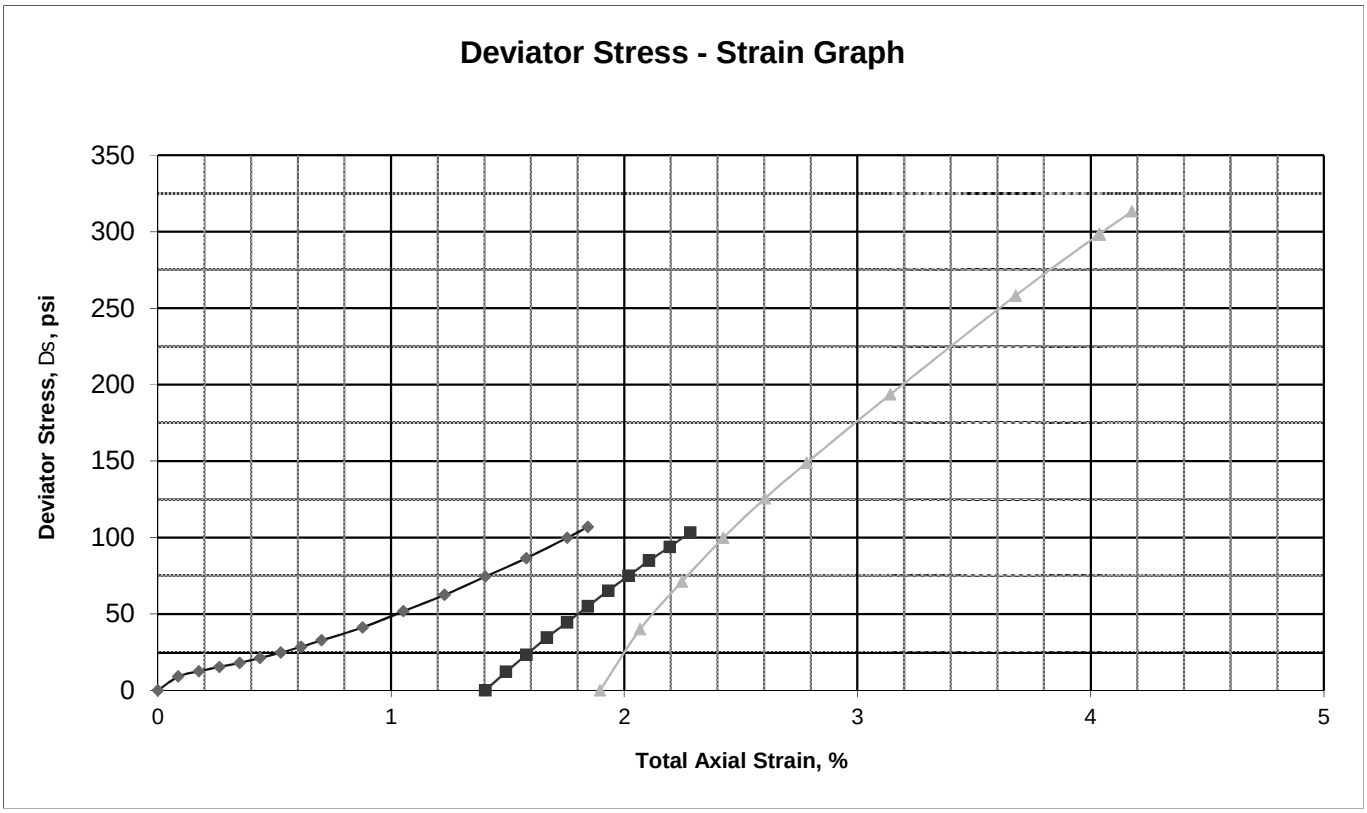
Pr. Name	Jaxport Buck Island TOE Dike	S. Type	UD
Sample ID	30648/B-10	Depth/Elev.	7-9'
Location	-	Add. Info	-

Deviator Stress - Strain Graph



		REMARKS	DESCRIPTION
Balance ID Number	563/700	Portion of sample used for testing was located 1" above bottom of shelby tube.	NA
Oven ID Number	496/610		
Deformation Indicator ID #	178/349/689		
Digital Caliper ID #	370/458		
Load Cell ID #	11/347/692		
Apparatus ID #	10/293/693		

NOTES:

1. Method for Saturation	WET
2. Method for determination of cross-sectional area after consol.	B
3. Final moisture content (Stage 3) obtained from entire sample	

LL	-
PL	-
PI	-
Gs	-

USCS (ASTM D2487: D2488)

NA

Multistage Triaxial CU.xls [Stress Strain Graph], REV. 1; 10-21-05

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Standard Test Method for Multistage Consolidated Undrained Triaxial Compression Test for Cohesive Soils

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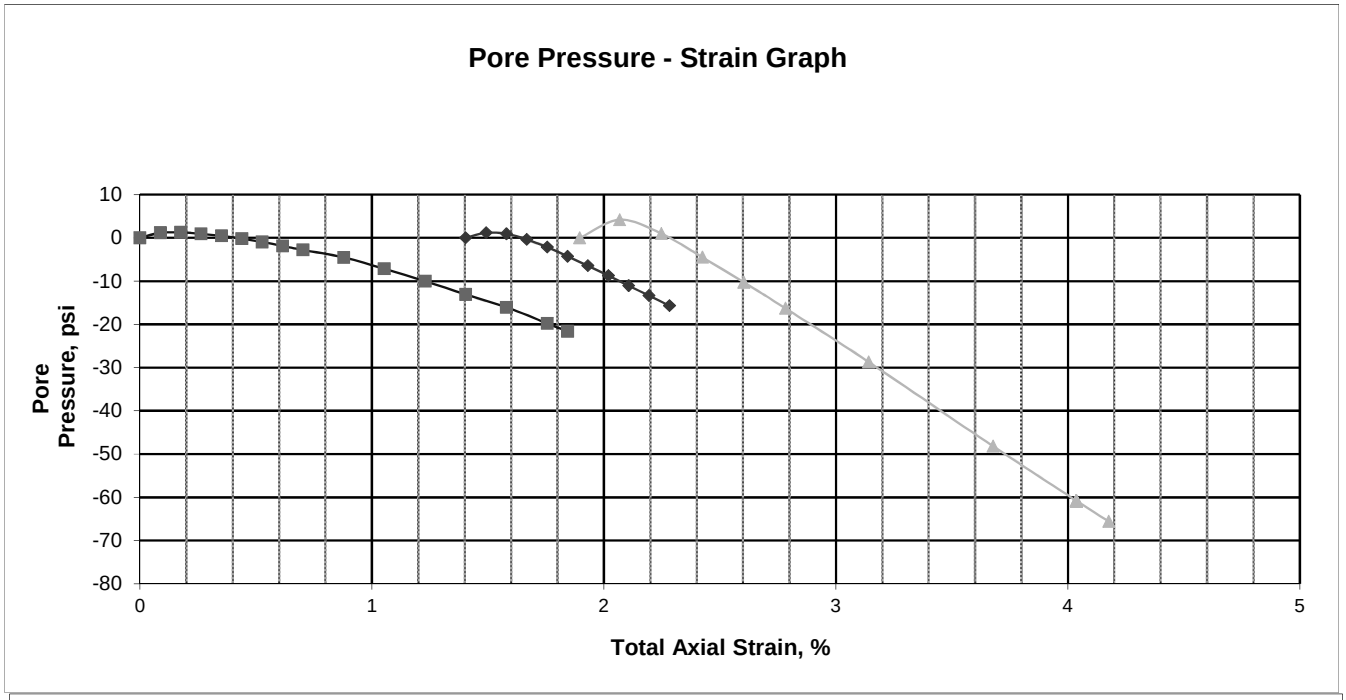
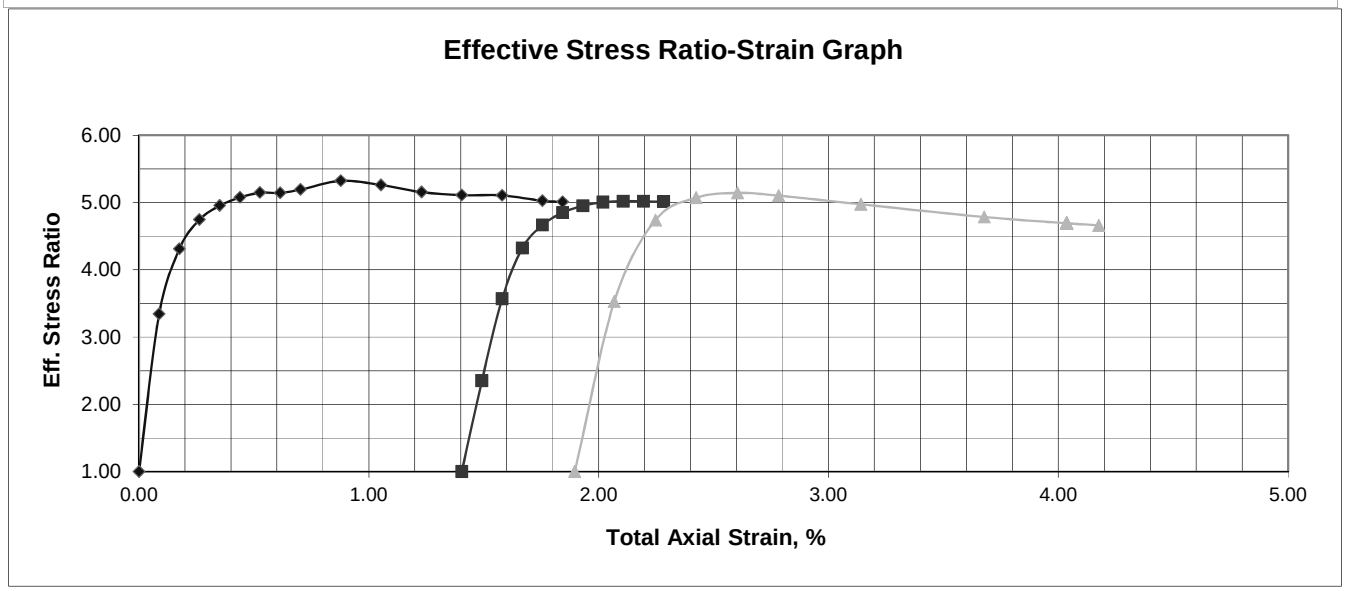
Pr. Name	Jaxport Buck Island TOE Dike	S. Type	UD
Sample ID	30648/B-10	Depth/Elev.	7-9'
Location	-	Add. Info	-





Multistage Triaxial CU.xls [Stress Ratio & Pore Water Pr.-Strain Graph], REV. 1; 10-21-05

SUMMARY OF LABORATORY TEST RESULTS

Project: JAXPORT Buck Island DMMA
Client: HDR Engineering, Inc
Project No.: 28498

Boring/ Sample No.	Sample Depth (ft.)	Organic Content %	Fines Content %	Natural Moisture Content %	Atterberg Limits			Pocket Pen. (tsf)
					Liquid Limit %	Plastic Limit %	Plasticity Index	
B1 - 14	53.5-55		4.7	16				
B2 - 5	8-10	22.5	16.1	134				
B2 - 9	28.5-30		24.5	55				
B3 - 5	8-10		7.2	27				
B3 - 9	28.5-30		5.3	24				
B4 - 17	68.5-70		17.5	22				
B4 - 4	6-8		25.6	70				
B5 - 9	28.5-30		7.3	30				
B5 - 4	6-8	8.0	56.8	100				
B6 - 13	48.5-50		24.6	51				
B6 - 9	28.5-30		8.4	38				
B7 - 3	4-6		67.5	231				
B7 - 6	8-10		22.1	55				
B7 - 8	23.5-25		11.2	37				
B8 - 11	38.5-40		8.1	39				
B8 - 9	28.5-30		5.7	46				
B10 - 14	53.5-55		87.2	69				
B10 - 4	6-8		56.4	104				
B10 - 7	18.5-20		6.3	32				
B10 - 9	28.5-30		25.8	61				
B11 - 10	33.5-35		12.0	39				
B11 - 5	8-10		38.2	78				
B11 - 6	13.5-15		7.5	36				
B12 - 4	6-8	4.3	15.9	74				
B12 - 6	13.5-15		5.9	32				
B12 - 9	28.5-30		2.2	28				
B13 - 17	68.5-70		72.7	58				
B15 - 10	33.5-35		6.0	35				
B15 - 5	8-10		80.9	121				
B19 - 15	58.5-60		2.8	27				
B20 - 8	23.5-25		2.7	38				
B21 - 4	6-8		2.4	6				
B21 - 6	13.5-15		65.4	62				
B22 - 6	13.5-15		3.5	30				

SUMMARY OF LABORATORY TEST RESULTS

Project: JAXPORT Buck Island DMMA
Client: HDR Engineering, Inc
Project No.: 28498

Boring/ Sample No.	Sample Depth (ft.)	Organic Content %	Fines Content %	Natural Moisture Content %	Atterberg Limits			Pocket Pen. (tsf)
					Liquid Limit %	Plastic Limit %	Plasticity Index	
B23 - 7	18.5-20		11.0	45				
B24 - 9	28.5-30		2.4	23				
B25 - 16	63.5-65		22.3	21				

LABORATORY TEST PROCEDURES

Percent Fines Content

The percent fines or material passing the No. 200 mesh sieve of the sample tested was determined in general accordance with the latest revision of ASTM D 1140. The percent fines are the soil particles in the silt and clay size range.

Natural Moisture Content

The water content of the sample tests was determined in general accordance with the latest revision of ASTM D 2216. The water content is defined as the ratio of "pore" or "free" water in a given mass of material to the mass of solid material particles.