

Table 3.4-1: Summary of Soil Laboratory Test Results

Test Boring No.	Depth (ft)	Sample Type	Stratum	Description of Soil Specimen	Sieve Results		Atterberg Limits			Natural Moisture Content (%)
					Percent Retained #4 Sieve	Percent Passing #200 Sieve	LL	PL	PI	
B-5	8.0-10.0	Jar	B1	SANDY SILT (ML)	0.0	50.8	38	26	12	41.9
B-5	18.5-20.0	Jar	B1	SANDY FAT CLAY (CH)	0.0	58.9	51	26	25	49.1
B-7	4.0-6.0	Jar	B1	SANDY LEAN CLAY (CL)	4.5	55.4	43	23	20	35.3
B-7	8.0-10.0	Jar	B2	CLAYEY SAND (SC)	0.0	27.9	44	25	19	48.2
B-7	18.5-20.0	Jar	B2	SILTY SAND (SM)	0.0	40.6	40	26	14	46.1
BC-4	0.0-5.0	Bulk	B1	LEAN CLAY (CL) WITH SAND	1.0	76.0	36	20	16	26.5
EOD-2	18.5-20.0	Jar	B2	SILTY SAND (SM)	0.0	29.6	NP	NP	NP	32.0
EOD-2	28.5-30.0	Jar	B1	SANDY FAT CLAY (CH)	0.0	58.0	51	28	23	58.7
MSA-3	0.0-5.0	Bulk	B2	CLAYEY SAND (SC)	11.2	48.4	34	19	15	18.2
T-2	0.0-5.0	Bulk	B1	SANDY LEAN CLAY (CL)	2.0	69.3	31	18	13	18.7
T-2	40.0-42.0	Tube	B1	ELASTIC SILT (MH) WITH SAND	0.0	80.0	50	29	21	46.0
T-4	50.0-52.0	Tube	B1	SILT (ML) WITH SAND	0.0	75.0	41	27	14	51.0
T-6	10.0-12.0	Tube	B1	SANDY LEAN CLAY (CL)	0.0	63.0	34	22	12	34.0
T-6	51.0-53.0	Tube	B2	SILTY SAND (SM)	0.0	44.0	30	27	3	39.0
T-8	12.0-14.0	Jar	B2	SILTY SAND (SM)	0.0	20.9	NP	NP	NP	26.0
T-8	23.5-25.0	Jar	B2	CLAYEY SAND (SC)	0.0	41.1	46	24	22	47.6
T-8	58.5-60.0	Jar	B1	SANDY SILT (ML)	0.0	56.4	38	28	10	48.1
T-8	73.5-75.0	Jar	B2	CLAYEY SAND (SC)	0.0	23.4	42	26	16	42.4
T-11	0.0-5.0	Bulk	B1	SANDY LEAN CLAY (CL)	8.4	60.5	40	21	19	18.8
T-16	35.0-37.0	Tube	B1	SANDY LEAN CLAY (CL)	0.0	57.0	32	21	11	46.0
MCR-1	0.0-5.0	Bulk	B2	CLAYEY SAND WITH GRAVEL (SC)	33.2	19.9	28	15	13	12.9

Test Boring No.	Depth (ft)	Sample Type	Stratum	Description of Soil Specimen	Sieve Results		Atterberg Limits			Natural Moisture Content (%)
					Percent Retained #4 Sieve	Percent Passing #200 Sieve	LL	PL	PI	
MCR-3	0.0-5.0	Bulk	B2	CLAYEY SAND WITH GRAVEL (SC)	17.2	28.5	25	16	9	15.1
MCR-5	0.0-5.0	Bulk	B1	SANDY LEAN CLAY (CL)	3.7	69.3	42	25	17	21.1
MCR-6	0.0-5.0	Bulk	B1	LEAN CLAY WITH SAND (CL)	2.1	75.3	39	21	18	19.2
MCR-7	0.0-5.0	Bulk	B1	LEAN CLAY WITH SAND (CL)	0.9	82.3	45	21	24	21.7
MCR-8	0.0-5.0	Bulk	B1	SANDY LEAN CLAY (CL)	4.4	66.2	33	17	16	20.9
MCR-10	0.0-5.0	Bulk	B2	CLAYEY SAND WITH GRAVEL (SC)	19.5	29.8	27	15	12	15.1
MSS-1	12.0-14.0	Jar	B2	SILTY SAND (SM)	0	13.4	NP	NP	NP	21.1
MSS-1	25.0-27.0	Jar	B2	SANDY SILT (ML)	0	58.3	38	29	9	53.9
MSS-1	35.0-37.0	Jar	B2	SANDY SILT (ML)	0	62.1	41	26	15	56.2
MSS-2	20.0-22.0	Jar	B2	SILT WITH SAND (ML)	0	72.1	34	25	9	45.5
MSS-2	25.0-27.0	Jar	B2	SANDY SILT (ML)	0	69.6	44	27	17	49.5
NT-1	0.0-5.0	Bulk	B2	POORLY GRADED SAND WITH SILT AND GRAVEL (SP-SM)	27	11.5	17	16	1	10.6
NT-3	0.0-10.0	Bulk	B2	CLAYEY SAND (SC)	9.4	33.3	26	15	11	15.0
NT-6	0.0-5.0	Bulk	B2	CLAYEY SAND (SC)	10.4	45.9	29	17	12	25.0
TCA-3	25.0-27.0	Jar	B2	SILTY SAND (SM)	0	44.9	33	25	8	41.6
TCA-3	33.0-35.0	Jar	B1	SANDY LEAN CLAY (CL)	0	57.4	38	20	18	40.7
TCA-4	55.0-57.0	Jar	B2	SILT WITH SAND (ML)	0	72.9	34	26	8	50.7
TFA-1	14.0-16.0	Jar	B1	SANDY LEAN CLAY (CL)	0	69.0	37	16	21	40.5
TFA-3	12.0-14.0	Jar	B1	LEAN CLAY WITH SAND (CL)	0	72.5	45	23	22	38.1
TFA-3	60.0-62.0	Jar	B2	SILTY SAND (SM)	0	49.3	33	29	4	43.4

Test Boring No.	Depth (ft)	Sample Type	Stratum	Description of Soil Specimen	Sieve Results		Atterberg Limits			Natural Moisture Content (%)
					Percent Retained #4 Sieve	Percent Passing #200 Sieve	LL	PL	PI	
TFA-4	10.0-12.0	Jar	B1	LEAN CLAY WITH SAND (CL)	0	76.0	42	23	19	51.5
TFA-4	18.5-20.0	Jar	B1	LEAN CLAY WITH SAND (CL)	0	78.5	44	25	19	51.4
TFA-4	30.0-32.0	Jar	B2	SANDY SILT (ML)	0	52.6	28	24	4	36.8
TFA-4	40.0-42.0	Jar	B1	LEAN CLAY WITH SAND (CL)	0	74.3	41	23	18	51.0
TFA-5	10.0-12.0	Jar	B1	LEAN CLAY WITH SAND (CL)	0.5	76.7	35	20	15	34.7
TFA-5	23.5-25	Jar	B2	SANDY SILT (ML)	0	65.0	30	24	6	36.8
TFA-5	25.0-27.0	Jar	B1	FAT CLAY WITH SAND (CH)	0	76.3	53	28	25	46.7
TSS-1	20.0-22.0	Jar	B2	CLAYEY SAND (SC)	0	34.7	37	18	18	29.4

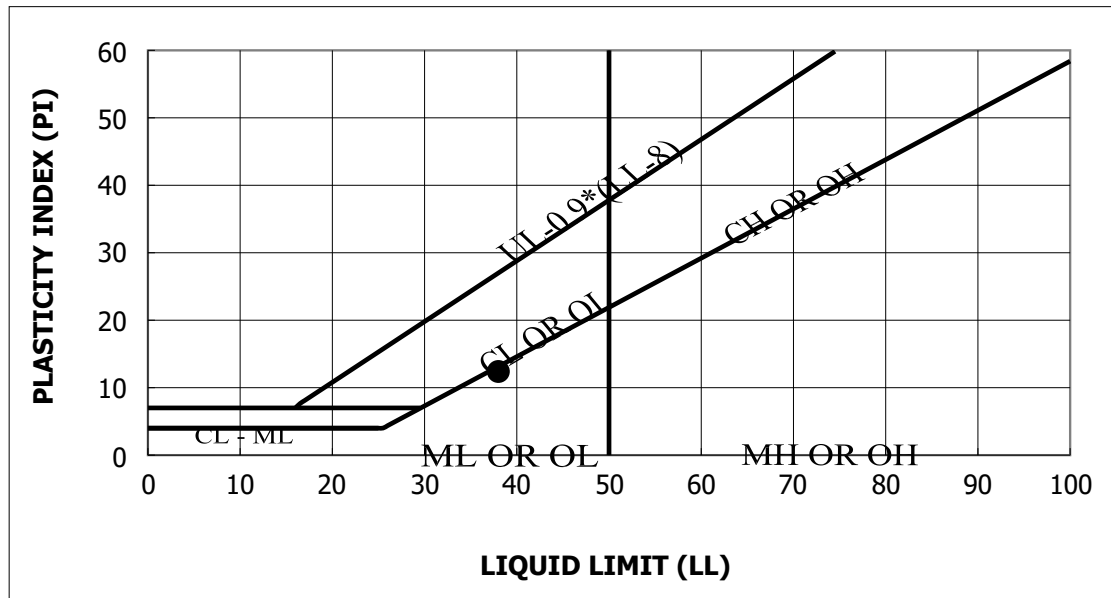
Notes:

1. Soil tests are in accordance with applicable ASTM standards
2. Soil classification symbols are in accordance with Unified Soil Classification System
3. Visual identification of samples is in accordance with ASTM D2488
4. Key to abbreviations: LL = liquid limit; PL = plastic limit; PI = plasticity index; NP = nonplastic



**LIQUID AND PLASTIC LIMIT - ASTM D4318**

<b>Project No.</b>	JD175507	<b>Project Name</b>	JBA HCP & EOD
<b>Sample ID</b>	B-5	<b>Depth (Feet)</b>	8.0-10.0
<b>Lab Order No.</b>	4572-1	<b>Date</b>	2/21/2019



Material Description	LL	PL	PI	% Passing		USCS	w (%)
				#4	#200		
sandy Silt	38	26	12	100.0	50.8	ML	41.9
Color	Light Grey Orange		AASHTO Classification			A-6	

Test Method: ASTM D 4318

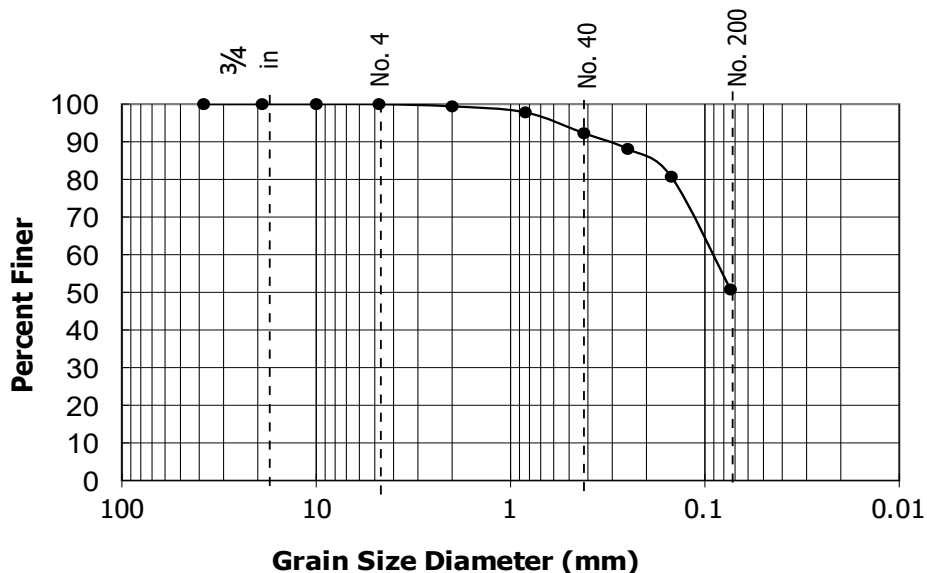
Soil Classification by ASTM D2487 and AASHTO M 145

Reviewed by \_\_\_\_\_



**GRAIN SIZE ANALYSIS - ASTM D422**

<b>Project No.</b>	JD175507	<b>Project Name</b>	JBA HCP & EOD
<b>Sample ID</b>	B-5	<b>Depth (Feet)</b>	8.0-10.0
<b>Lab Order No.</b>	4572-1	<b>Date</b>	2/21/2019



SIEVE	% Passing
1 1/2 "	100
3/4"	100
3/8"	100
#4	100
#10	99
#20	98
#40	92
#60	88
#100	81
#200	51
Pan	--

<b>USCS Group Symbol</b>	<b>ML</b>
<b>USCS Group Name</b>	<b>sandy Silt</b>
<b>Cu</b>	<b>---</b>
<b>Cc</b>	<b>---</b>
<b>LL</b>	<b>38</b>
<b>PI</b>	<b>12</b>
<b>Gravel</b>	<b>0.0</b>
<b>Sand</b>	<b>49.2</b>
<b>Fines</b>	<b>50.8</b>
<b>AASHTO Classification</b>	<b>A-6</b>
<b>Color</b>	<b>Light Grey Orange</b>

Test Method: ASTM D 422

Soil Classification by ASTM D2487 and AASHTO M 145

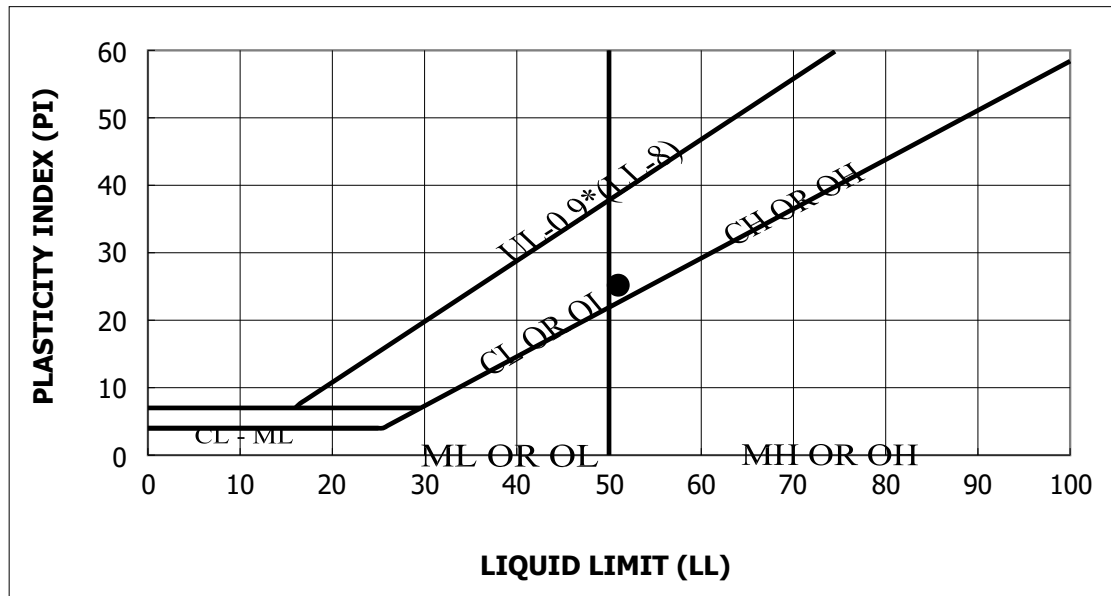
Reviewed by:

*David A. Wiest*



**LIQUID AND PLASTIC LIMIT - ASTM D4318**

<b>Project No.</b>	JD175507	<b>Project Name</b>	JBA HCP & EOD
<b>Sample ID</b>	B-5	<b>Depth (Feet)</b>	18.5-20.0
<b>Lab Order No.</b>	4572-2	<b>Date</b>	2/21/2019



Material Description	LL	PL	PI	% Passing		USCS	w (%)
				#4	#200		
sandy Fat Clay	51	26	25	100.0	58.9	CH	49.1
Color	Dark Grey		AASHTO Classification			A-7-6	

Test Method: ASTM D 4318

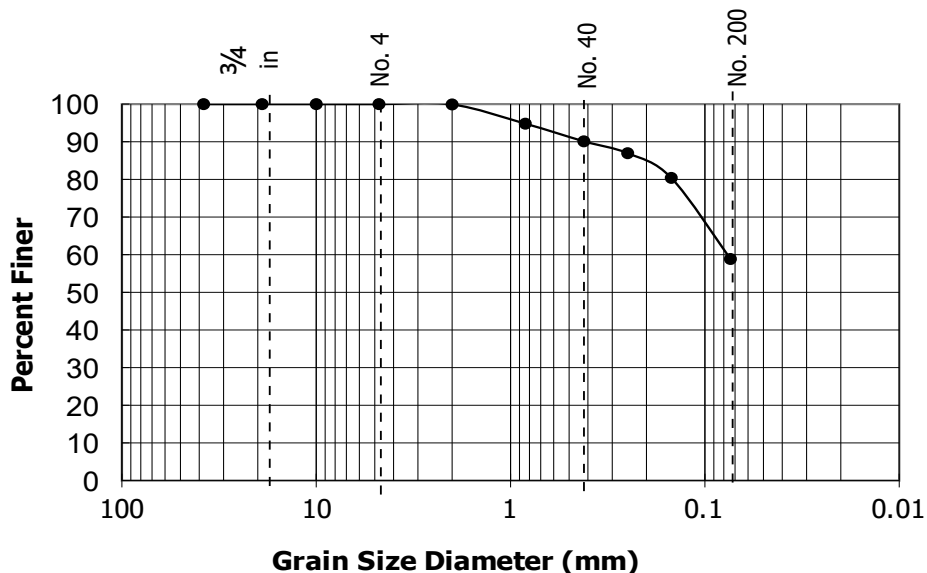
Soil Classification by ASTM D2487 and AASHTO M 145

Reviewed by \_\_\_\_\_



**GRAIN SIZE ANALYSIS - ASTM D422**

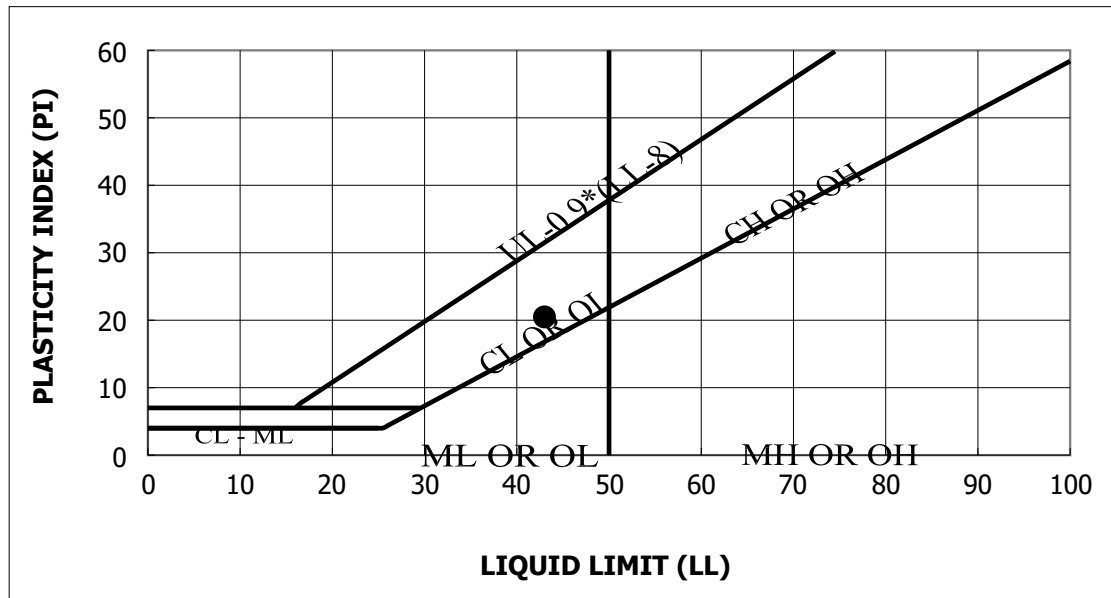
<b>Project No.</b>	JD175507	<b>Project Name</b>	JBA HCP & EOD
<b>Sample ID</b>	B-5	<b>Depth (Feet)</b>	18.5-20.0
<b>Lab Order No.</b>	4572-2	<b>Date</b>	2/21/2019





**LIQUID AND PLASTIC LIMIT - ASTM D4318**

<b>Project No.</b>	JD175507	<b>Project Name</b>	JBA HCP & EOD
<b>Sample ID</b>	B-7	<b>Depth (Feet)</b>	4.0-6.0
<b>Lab Order No.</b>	4572-3	<b>Date</b>	2/21/2019



Material Description	LL	PL	PI	% Passing		USCS	w (%)
				#4	#200		
sandy Lean Clay	43	23	20	95.5	55.4	CL	35.3
Color	Light Grey Tan		AASHTO Classification			A-7-6	

Test Method: ASTM D 4318

Soil Classification by ASTM D2487 and AASHTO M 145

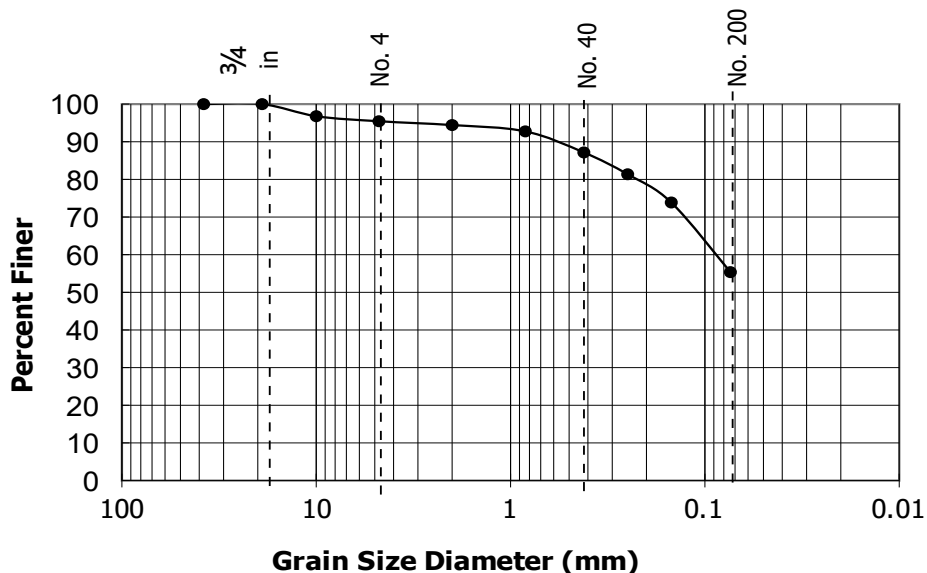
Reviewed by \_\_\_\_\_





**GRAIN SIZE ANALYSIS - ASTM D422**

<b>Project No.</b>	JD175507	<b>Project Name</b>	JBA HCP & EOD
<b>Sample ID</b>	B-7	<b>Depth (Feet)</b>	4.0-6.0
<b>Lab Order No.</b>	4572-3	<b>Date</b>	2/21/2019



SIEVE	% Passing
1 1/2 "	100
3/4"	100
3/8"	97
#4	95
#10	94
#20	93
#40	87
#60	81
#100	74
#200	55
Pan	--

<b>USCS Group Symbol</b>	<b>CL</b>
<b>USCS Group Name</b>	<b>sandy Lean Clay</b>
<b>Cu</b>	<b>---</b>
<b>Cc</b>	<b>---</b>
<b>LL</b>	<b>43</b>
<b>PI</b>	<b>20</b>
<b>Gravel</b>	<b>4.5</b>
<b>Sand</b>	<b>40.1</b>
<b>Fines</b>	<b>55.4</b>
<b>AASHTO Classification</b>	<b>A-7-6</b>
<b>Color</b>	<b>Light Grey Tan</b>

Test Method: ASTM D 422

Soil Classification by ASTM D2487 and AASHTO M 145

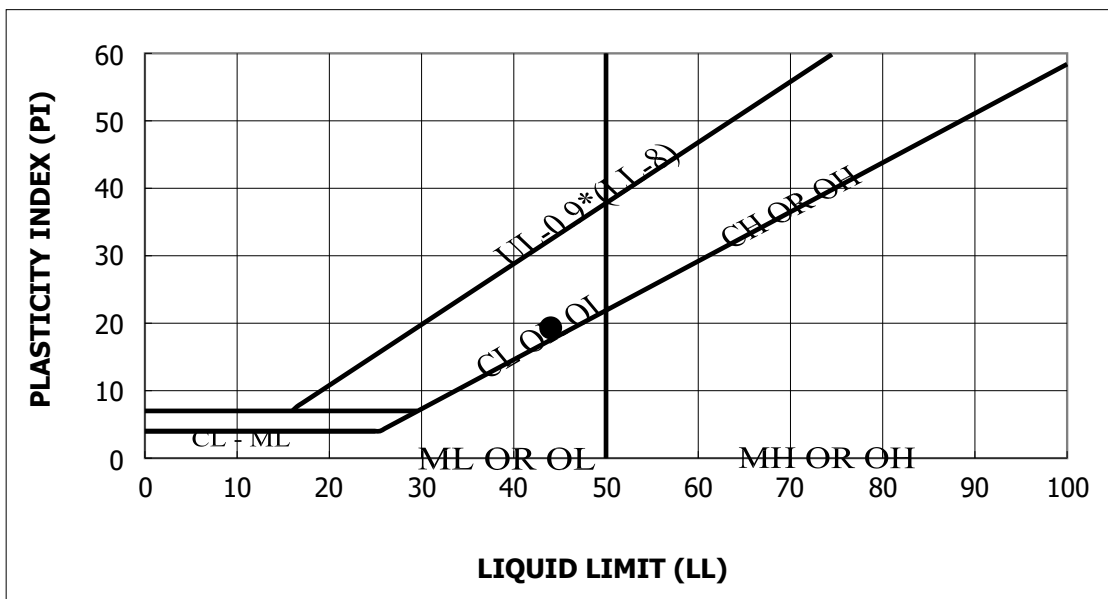
Reviewed by:

*Daniel A. Wiest*



## LIQUID AND PLASTIC LIMIT - ASTM D4318

Project No.	JD175507	Project Name	JBA HCP & EOD
Sample ID	B-7	Depth (Feet)	8.0-10.0
Lab Order No.	4572-4	Date	2/21/2019



Material Description	LL	PL	PI	% Passing		USCS	w (%)
				#4	#200		
CLAYEY SAND	44	25	19	100.0	27.9	SC	48.2
Color	Dark Grey		AASHTO Classification			A-2-7	

Test Method: ASTM D 4318

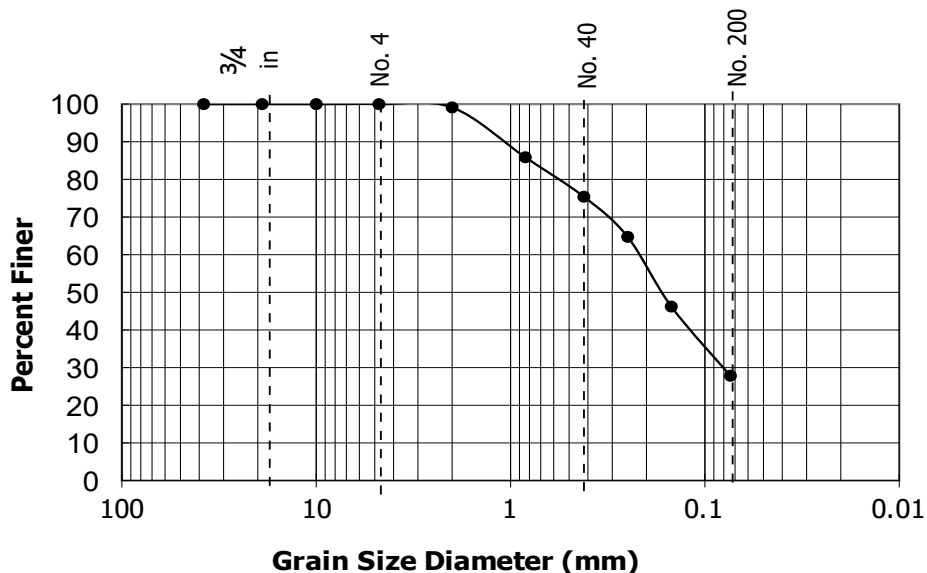
Soil Classification by ASTM D2487 and AASHTO M 145

Reviewed by \_\_\_\_\_



**GRAIN SIZE ANALYSIS - ASTM D422**

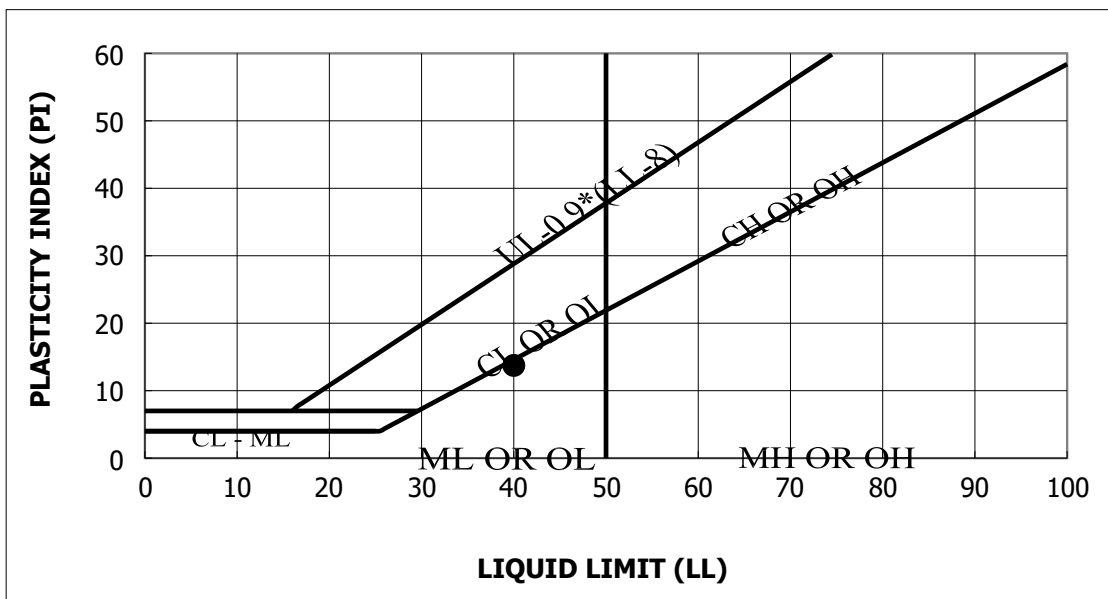
<b>Project No.</b>	JD175507	<b>Project Name</b>	JBA HCP & EOD
<b>Sample ID</b>	B-7	<b>Depth (Feet)</b>	8.0-10.0
<b>Lab Order No.</b>	4572-4	<b>Date</b>	2/21/2019





## LIQUID AND PLASTIC LIMIT - ASTM D4318

Project No.	JD175507	Project Name	JBA HCP & EOD
Sample ID	B-7	Depth (Feet)	18.5-20.0
Lab Order No.	4572-5	Date	2/21/2019



Material Description	LL	PL	PI	% Passing		USCS	w (%)
				#4	#200		
SILTY SAND	40	26	14	100.0	40.6	SM	46.1
Color	Dark Grey		AASHTO Classification			A-6	

Test Method: ASTM D 4318

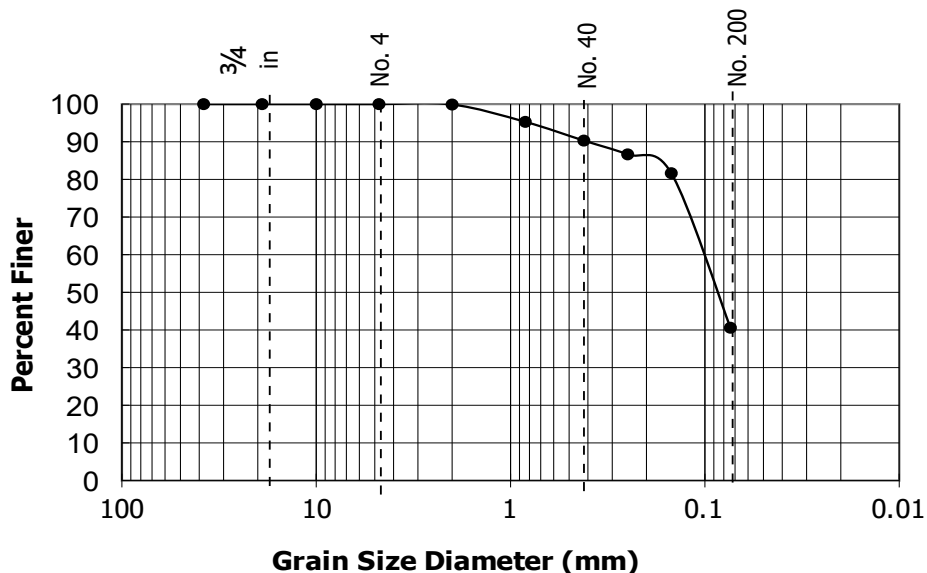
Soil Classification by ASTM D2487 and AASHTO M 145

Reviewed by \_\_\_\_\_

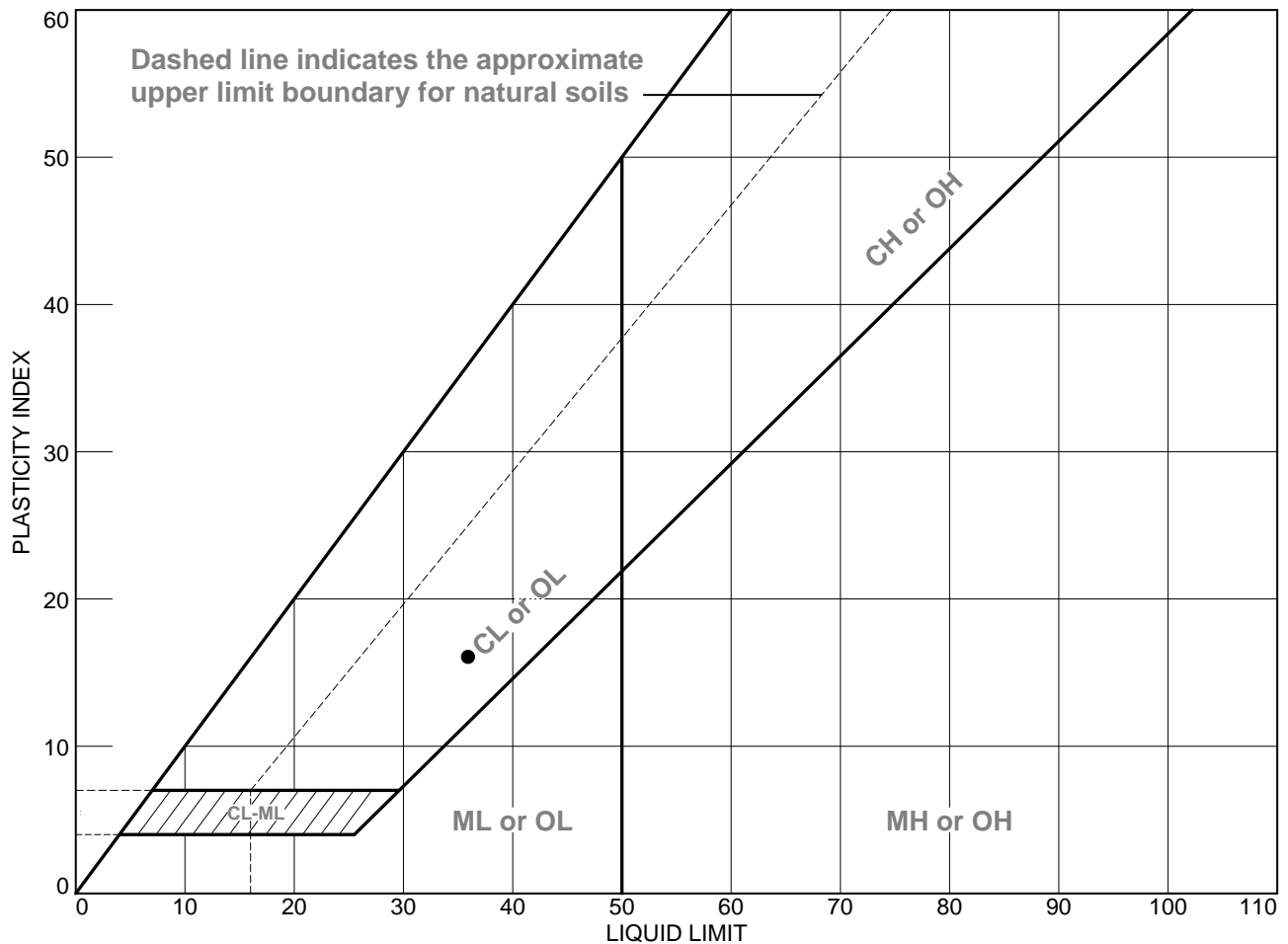


**GRAIN SIZE ANALYSIS - ASTM D422**

<b>Project No.</b>	JD175507	<b>Project Name</b>	JBA HCP & EOD
<b>Sample ID</b>	B-7	<b>Depth (Feet)</b>	18.5-20.0
<b>Lab Order No.</b>	4572-5	<b>Date</b>	2/21/2019



# LIQUID AND PLASTIC LIMITS TEST REPORT



## SOIL DATA

SYMBOL	SOURCE	SAMPLE NO.	DEPTH	NATURAL WATER CONTENT (%)	PLASTIC LIMIT (%)	LIQUID LIMIT (%)	PLASTICITY INDEX (%)	USCS
●	BC-4	1	0.0 - 5.0'	26.5	20	36	16	CL

**Terracon Consultants, Inc.**

**Ashburn, Virginia**

**Client:**

**Project:** JBA HCP & EOD

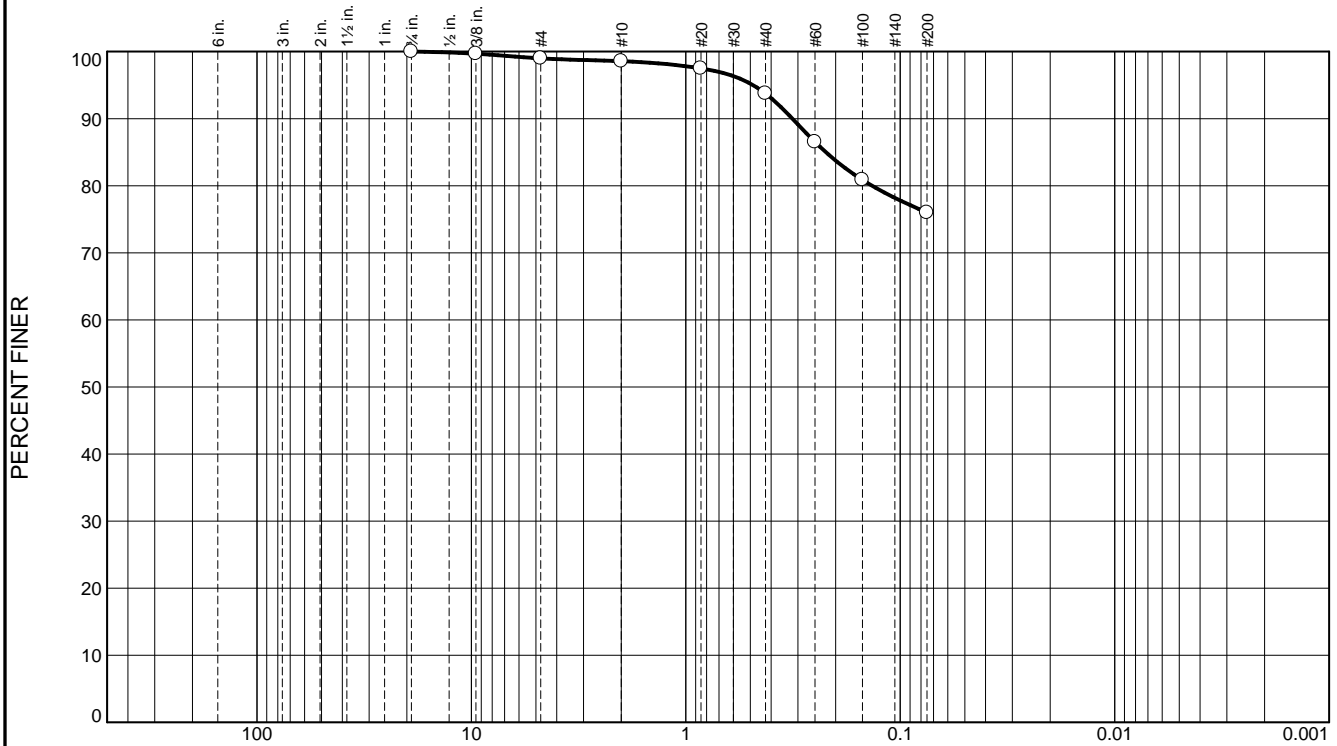
**Project No.:** JD175507

**Figure**

Checked By:

*David A. Winters*

# Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	1.0	0.4	4.8	17.8	76.0	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
3/4	100.0		
3/8	99.7		
#4	99.0		
#10	98.6		
#20	97.5		
#40	93.8		
#60	86.5		
#100	80.9		
#200	76.0		

\* (no specification provided)

**Soil Description**  
Brown, Lean clay with sand

**Atterberg Limits**  
 PL= 20      LL= 36      PI= 16

**Coefficients**  
 D<sub>90</sub>= 0.3187      D<sub>85</sub>= 0.2224      D<sub>60</sub>=  
 D<sub>50</sub>=      D<sub>30</sub>=      D<sub>15</sub>=  
 D<sub>10</sub>=      C<sub>u</sub>=      C<sub>c</sub>=

**Classification**  
 USCS= CL      AASHTO= A-6(11)

**Remarks**

Location: BC-4

Sample Number: 1

Depth: 0.0 - 5.0'

Date: 02-12-19

**Terracon Consultants, Inc.**

**Ashburn, Virginia**

Client:

Project: JBA HCP & EOD

Project No: JD175507

Figure

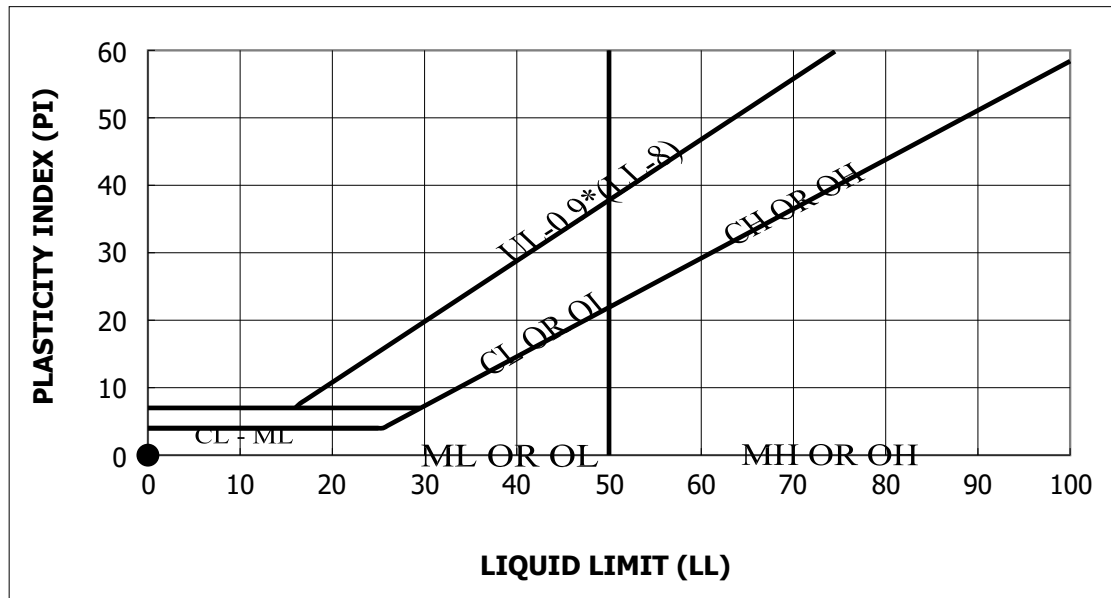
Checked By:

*David A. Winters*



**LIQUID AND PLASTIC LIMIT - ASTM D4318**

<b>Project No.</b>	JD175507	<b>Project Name</b>	JBA HCP & EOD
<b>Sample ID</b>	EOD-2	<b>Depth (Feet)</b>	18.5-20.0
<b>Lab Order No.</b>	4572-6	<b>Date</b>	2/21/2019



Material Description	LL	PL	PI	% Passing		USCS	w (%)
				#4	#200		
<b>SILTY SAND</b>	NP	NP	NP	100.0	29.6	SM	32.0
<b>Color</b>	Light Tan		AASHTO Classification			A-2-4	

Test Method: ASTM D 4318  
Soil Classification by ASTM D2487 and AASHTO M 145

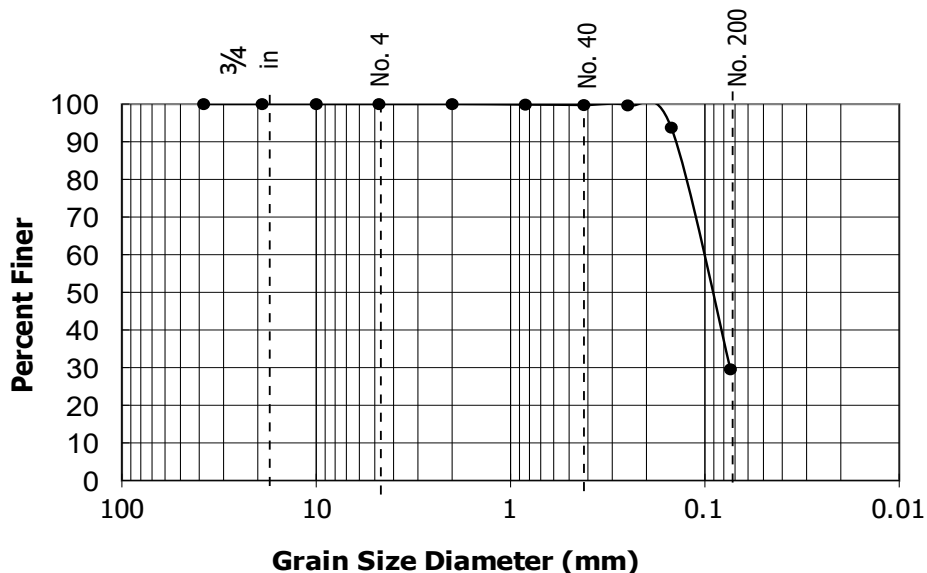
Reviewed by \_\_\_\_\_





## GRAIN SIZE ANALYSIS - ASTM D422

Project No.	JD175507	Project Name	JBA HCP & EOD
Sample ID	EOD-2	Depth (Feet)	18.5-20.0
Lab Order No.	4572-6	Date	2/21/2019



SIEVE	% Passing
1 1/2 "	100
3/4"	100
3/8"	100
#4	100
#10	100
#20	100
#40	100
#60	100
#100	94
#200	30
Pan	--

USCS Group Symbol	SM
USCS Group Name	SILTY SAND
Cu	---
Cc	---
LL	NP
PI	NP
Gravel	0.0
Sand	70.4
Fines	29.6
AASHTO Classification	A-2-4
Color	Light Tan

Test Method: ASTM D 422

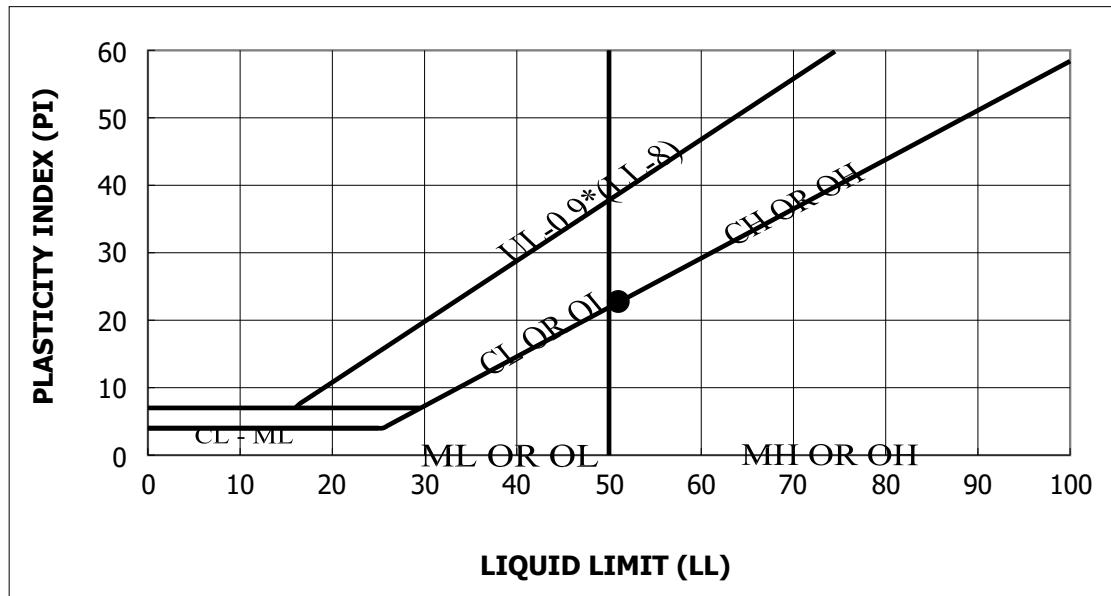
Soil Classification by ASTM D2487 and AASHTO M 145

Reviewed by:



**LIQUID AND PLASTIC LIMIT - ASTM D4318**

<b>Project No.</b>	JD175507	<b>Project Name</b>	JBA HCP & EOD
<b>Sample ID</b>	EOD-2	<b>Depth (Feet)</b>	28.5-30.0
<b>Lab Order No.</b>	4572-7	<b>Date</b>	2/21/2019



Material Description	LL	PL	PI	% Passing		USCS	w (%)
				#4	#200		
sandy Fat Clay	51	28	23	100.0	58.0	CH	58.7
Color	Dark Grey		AASHTO Classification			A-7-6	

Test Method: ASTM D 4318

Soil Classification by ASTM D2487 and AASHTO M 145

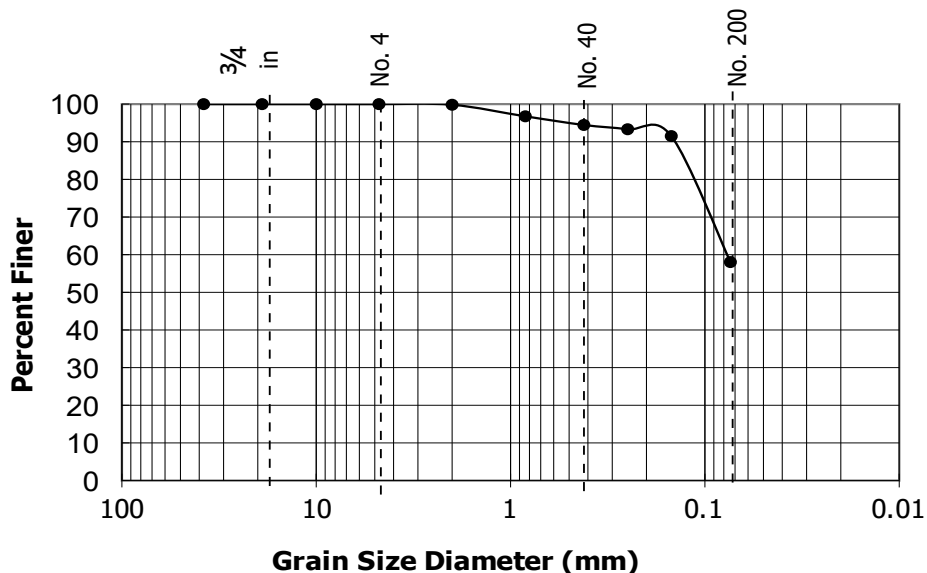
Reviewed by \_\_\_\_\_



19955 Highland Vista Dr., Suite 170  
Ashburn, Virginia 20147  
(703) 726-8030  
[www.geoconcepts-eng.com](http://www.geoconcepts-eng.com)

## GRAIN SIZE ANALYSIS - ASTM D422

<b>Project No.</b>	JD175507	<b>Project Name</b>	JBA HCP & EOD
<b>Sample ID</b>	EOD-2	<b>Depth (Feet)</b>	28.5-30.0
<b>Lab Order No.</b>	4572-7	<b>Date</b>	2/21/2019



<b>SIEVE</b>	<b>% Passing</b>
1 ½ "	<b>100</b>
¾"	<b>100</b>
⅜"	<b>100</b>
#4	<b>100</b>
#10	<b>100</b>
#20	<b>97</b>
#40	<b>94</b>
#60	<b>93</b>
#100	<b>92</b>
#200	<b>58</b>
Pan	<b>--</b>

<b>USCS Group Symbol</b>	<b>CH</b>
<b>USCS Group Name</b>	<b>sandy Fat Clay</b>
<b>Cu</b>	<b>---</b>
<b>Cc</b>	<b>---</b>
<b>LL</b>	<b>51</b>
<b>PI</b>	<b>23</b>
<b>Gravel</b>	<b>0.0</b>
<b>Sand</b>	<b>42.0</b>
<b>Fines</b>	<b>58.0</b>
<b>AASHTO Classification</b>	<b>A-7-6</b>
<b>Color</b>	<b>Dark Grey</b>

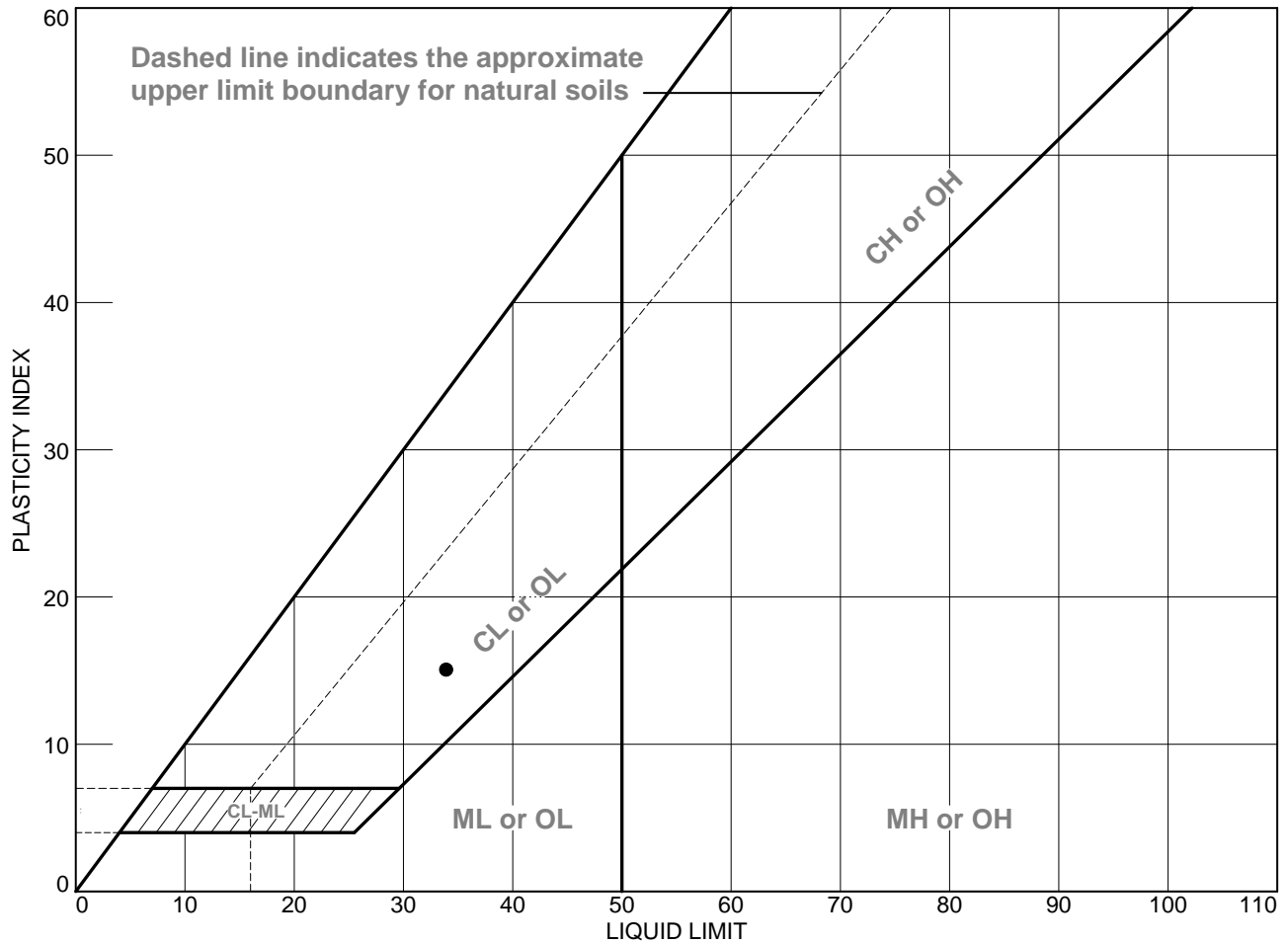
Test Method: ASTM D 422

### Soil Classification by ASTM D2487 and AASHTO M 145

Reviewed by:

Daniel A. Wright

# LIQUID AND PLASTIC LIMITS TEST REPORT



SOIL DATA								
SYMBOL	SOURCE	SAMPLE NO.	DEPTH	NATURAL WATER CONTENT (%)	PLASTIC LIMIT (%)	LIQUID LIMIT (%)	PLASTICITY INDEX (%)	USCS
●	MSA-3	1	0.0 - 5.0'	18.2	19	34	15	SC

**Terracon Consultants, Inc.**

**Ashburn, Virginia**

**Client:**

**Project:** JBA HCP & EOD

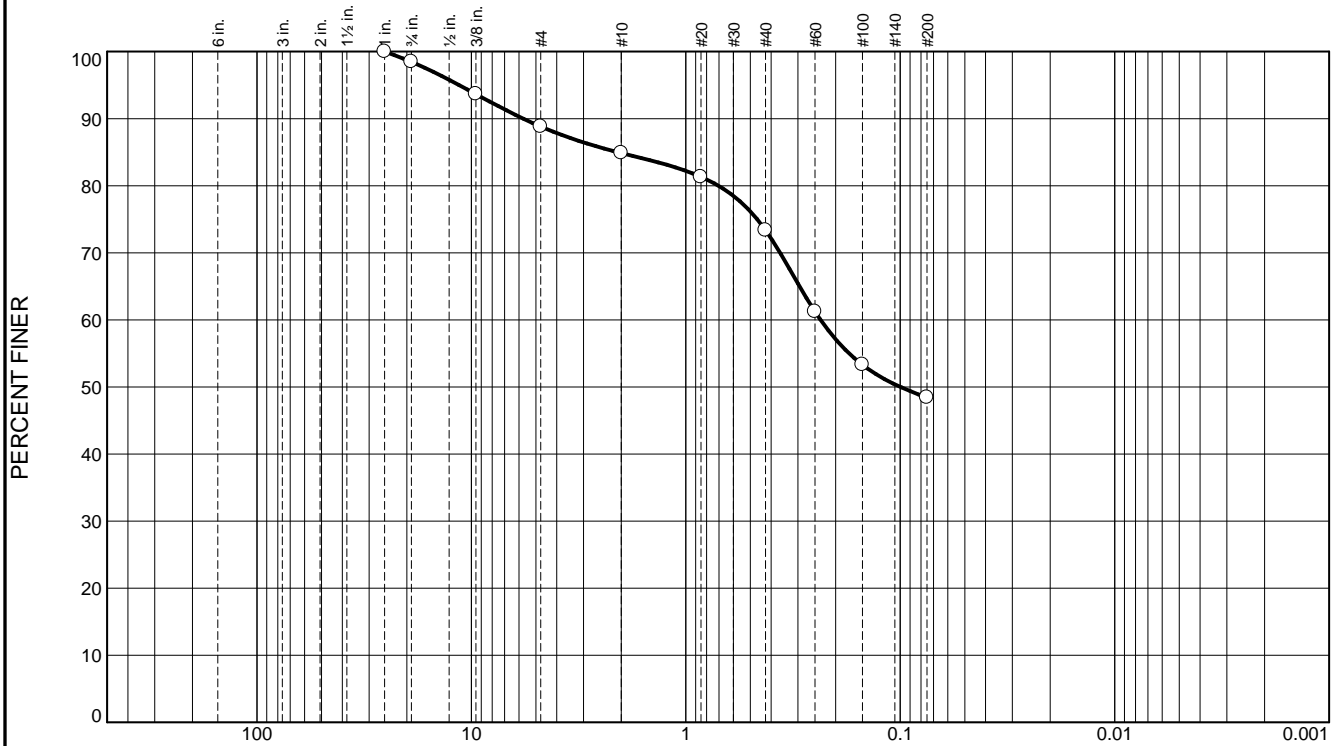
**Project No.:** JD175507

**Figure**

Checked By:

*David A. W. [Signature]*

# Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	1.5	9.7	3.9	11.5	25.0	48.4	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
1.0	100.0		
3/4	98.5		
3/8	93.7		
#4	88.8		
#10	84.9		
#20	81.3		
#40	73.4		
#60	61.2		
#100	53.3		
#200	48.4		

\* (no specification provided)

**Soil Description**  
Brown, Clayey sand

**Atterberg Limits**  
PL= 19      LL= 34      PI= 15

**Coefficients**  
D<sub>90</sub>= 5.7258      D<sub>85</sub>= 2.0762      D<sub>60</sub>= 0.2354  
D<sub>50</sub>= 0.0999      D<sub>30</sub>=      D<sub>15</sub>=  
D<sub>10</sub>=      C<sub>u</sub>=      C<sub>c</sub>=

**Classification**  
USCS= SC      AASHTO= A-6(4)

**Remarks**

Location: MSA-3  
Sample Number: 1

Depth: 0.0 - 5.0'

Date: 02-12-19

**Terracon Consultants, Inc.**

**Ashburn, Virginia**

Client:  
Project: JBA HCP & EOD

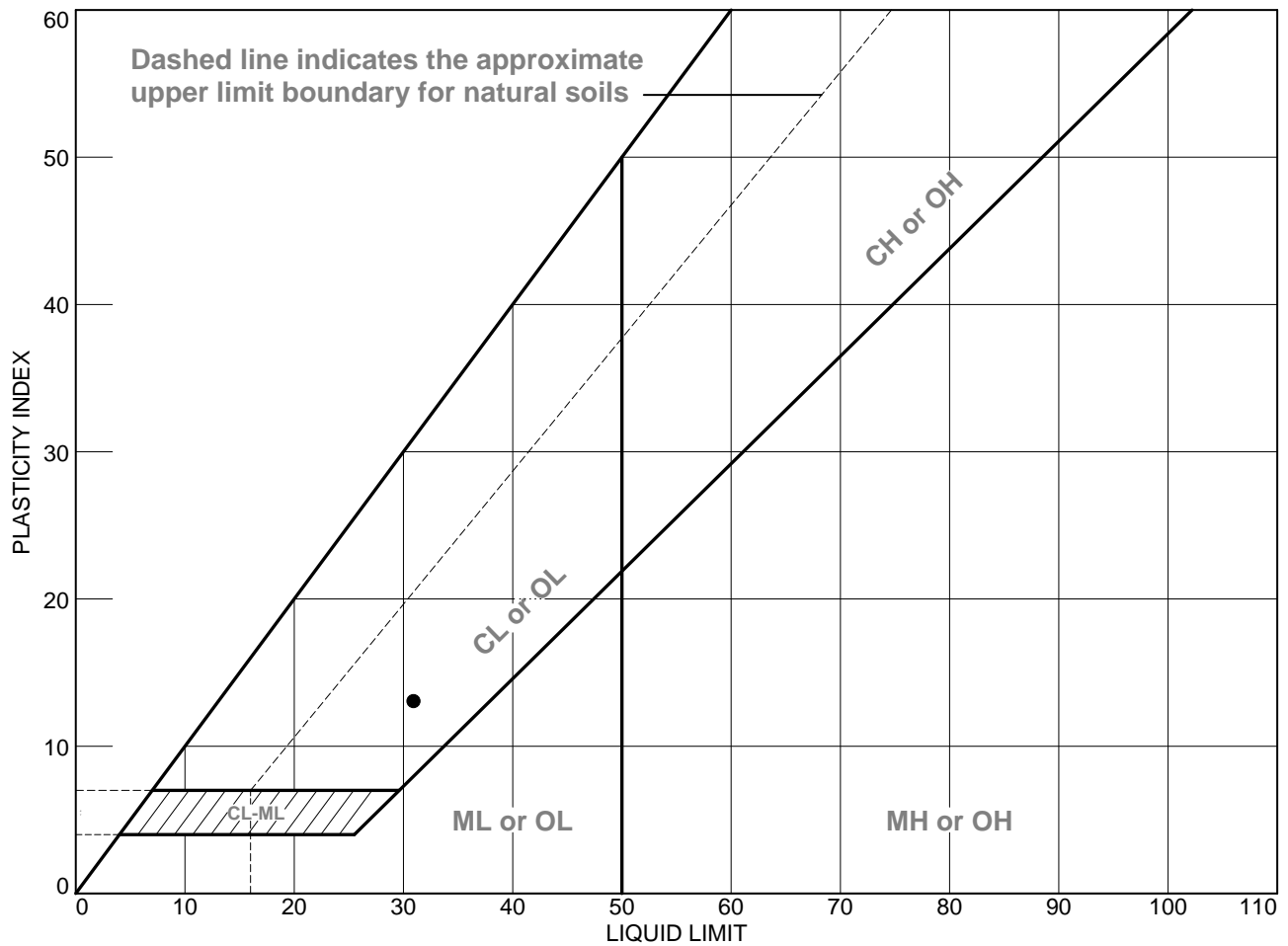
Project No: JD175507

Figure

Checked By:

*Dail A. Wiles*

# LIQUID AND PLASTIC LIMITS TEST REPORT



SOIL DATA								
SYMBOL	SOURCE	SAMPLE NO.	DEPTH	NATURAL WATER CONTENT (%)	PLASTIC LIMIT (%)	LIQUID LIMIT (%)	PLASTICITY INDEX (%)	USCS
●	T-2	1	0.0 - 5.0'	18.7	18	31	13	CL

**Terracon Consultants, Inc.**

**Ashburn, Virginia**

**Client:**

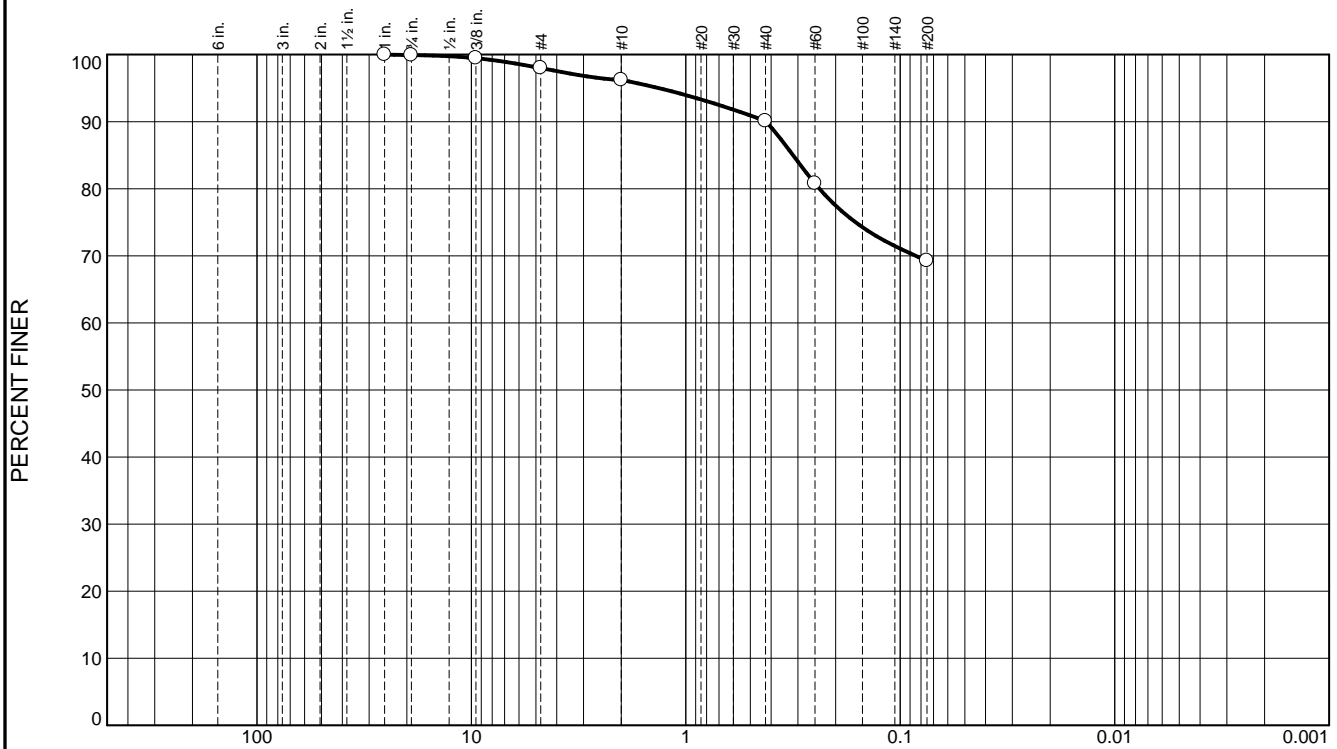
**Project:** JBA HCP & EOD

**Project No.:** JD175507

**Figure**

Checked By: \_\_\_\_\_

# Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.1	1.9	1.8	6.1	20.8	69.3	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
1.0	100.0		
3/4	99.9		
3/8	99.5		
#4	98.0		
#10	96.2		
#40	90.1		
#60	80.8		
#200	69.3		

\* (no specification provided)

**Soil Description**  
Brown, Sandy lean clay

**Atterberg Limits**  
PL= 18      LL= 31      PI= 13

**Coefficients**  
D<sub>90</sub>= 0.4224      D<sub>85</sub>= 0.3165      D<sub>60</sub>=  
D<sub>50</sub>=      D<sub>30</sub>=      D<sub>15</sub>=  
D<sub>10</sub>=      C<sub>u</sub>=      C<sub>c</sub>=

**Classification**  
USCS= CL      AASHTO= A-6(7)

**Remarks**

Location: T-2  
Sample Number: 1      Depth: 0.0 - 5.0'

Date: 03-11-19

**Terracon Consultants, Inc.**

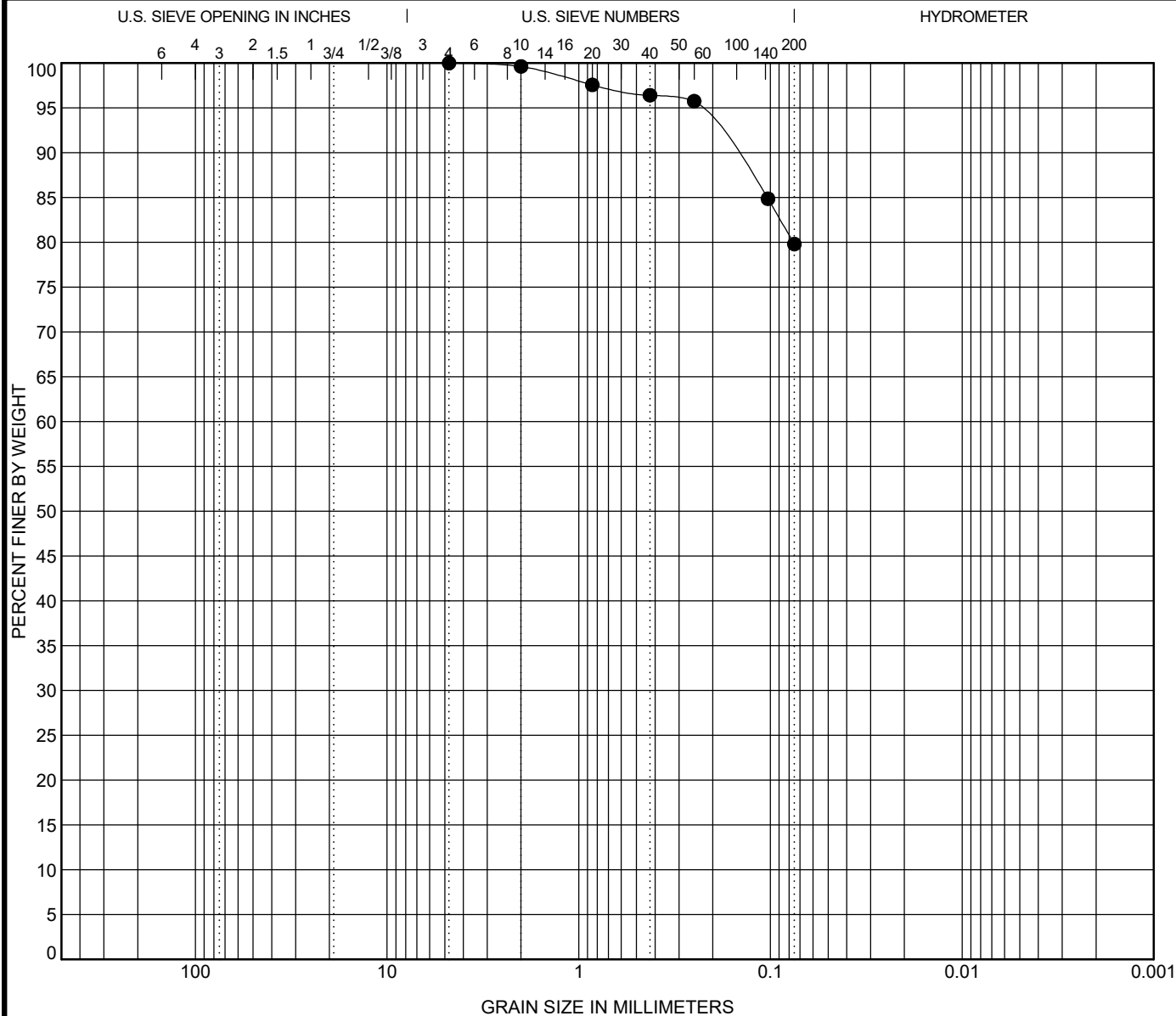
Client:  
Project: JBA HCP & EOD

**Ashburn, Virginia**

Project No: JD175507

Figure

Checked By: \_\_\_\_\_



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

Specimen ID	Sample	Classification					%MC	LL	PL	PI	Cc	Cu
● T-2	40'-42'	ELASTIC SILT with SAND (MH)					46	50	29	21		
Specimen ID	Sample	D100	D60	D50	D30	D10	%Gravel	%Sand	%Silt	%Clay		
● T-2	40'-42'	4.75					0	20				

#### GRAIN SIZE DISTRIBUTION (ASTM D6913, D 7928, D 4318)

Project: Joint Base Andrews HCP & EOD

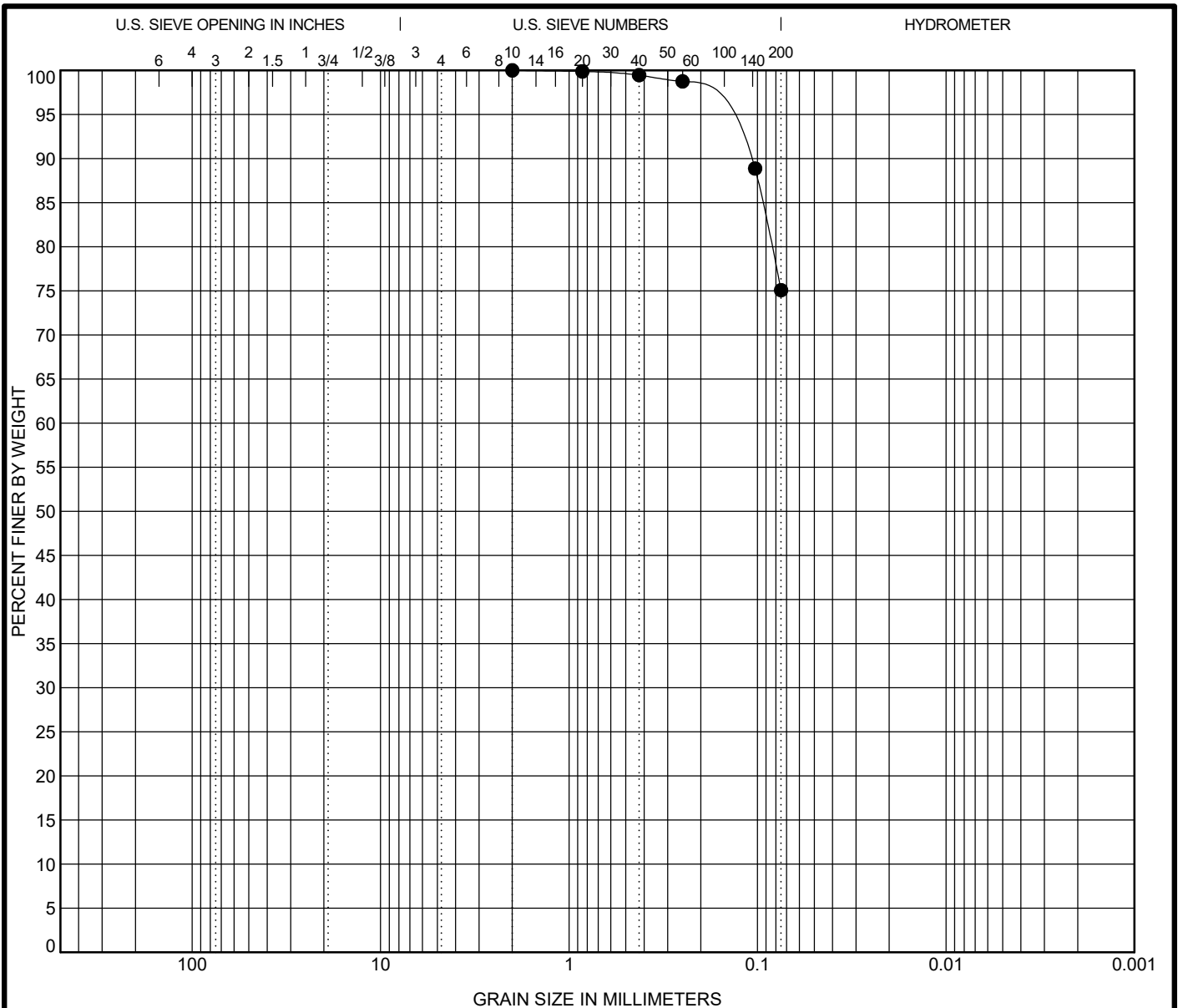
Location: Washington, D.C.

CTL Project Number: 18020002VIR-F



CTL Engineering  
7655 Coppermine Drive  
Manassas, VA 20109  
Telephone: 703.930.7917





COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

Specimen ID	Sample	Classification					%MC	LL	PL	PI	Cc	Cu
● T-4	50'-52'	SILT with SAND (ML)					51	41	27	14		
Specimen ID	Sample	D100	D60	D50	D30	D10	%Gravel	%Sand	%Silt	%Clay		
● T-4	50'-52'	2					0	25				

CTLAB GRAIN SIZE 18020002VIRF.GPJ CTL CORPORATE.GDT 3/18/19



CTL Engineering  
7655 Coppermine Drive  
Manassas, VA 20109  
Telephone: 703.930.7917

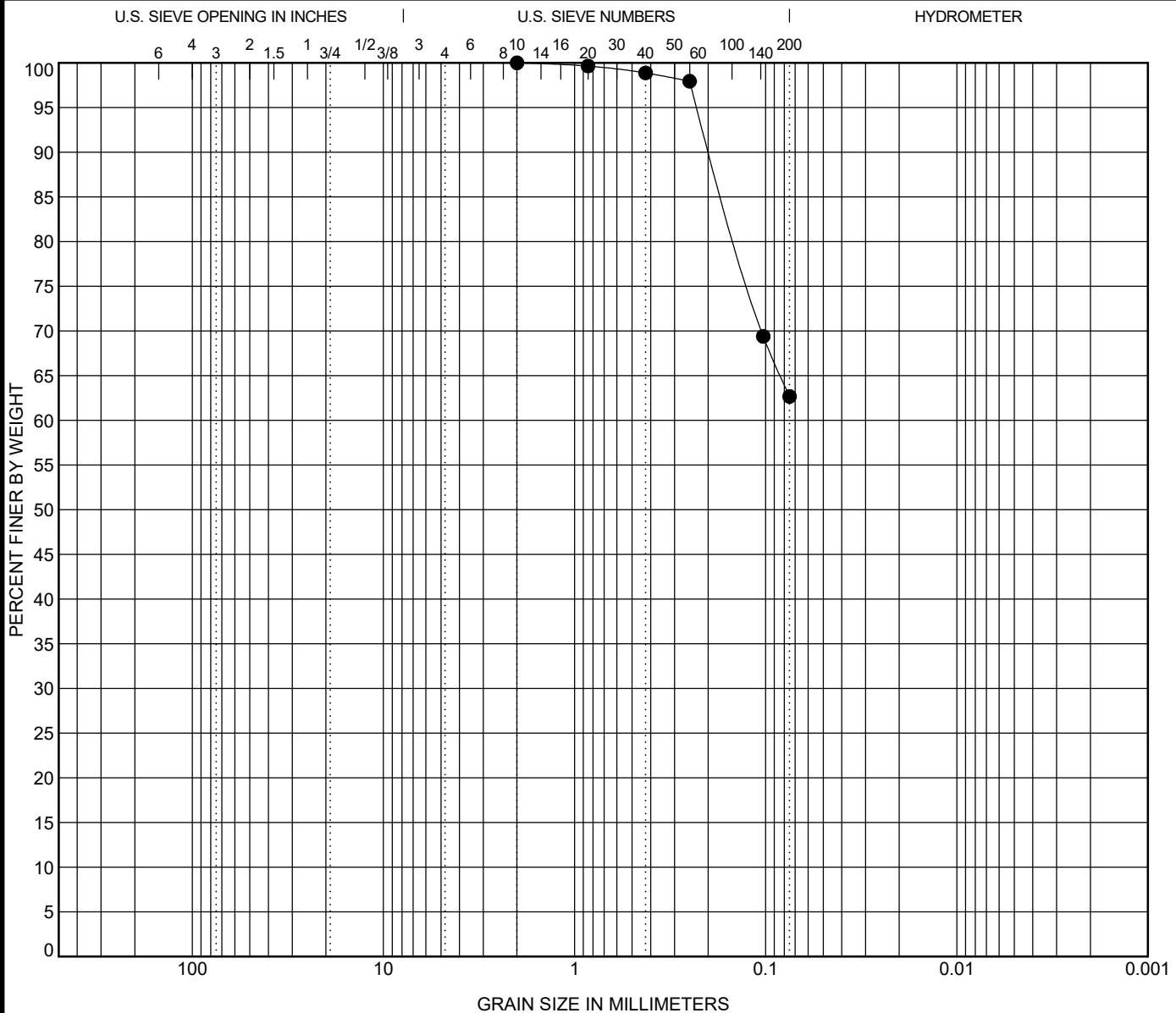
**GRAIN SIZE DISTRIBUTION (ASTM D6913, D 7928, D 4318)**

Project: Joint Base Andrews HCP & EOD

Location: Washington, D.C.

CTL Project Number: 18020002VIR-F

CTLAB GRAIN SIZE 18020002VIRF.GPJ CTL CORPORATE.GDT 3/18/19



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

Specimen ID	Sample	Classification					%MC	LL	PL	PI	Cc	Cu
● T-6	10'-12'	SANDY LEAN CLAY (CL)					34	34	22	12		
Specimen ID	Sample	D100	D60	D50	D30	D10	%Gravel	%Sand	%Silt	%Clay		
● T-6	10'-12'	2					0	37				



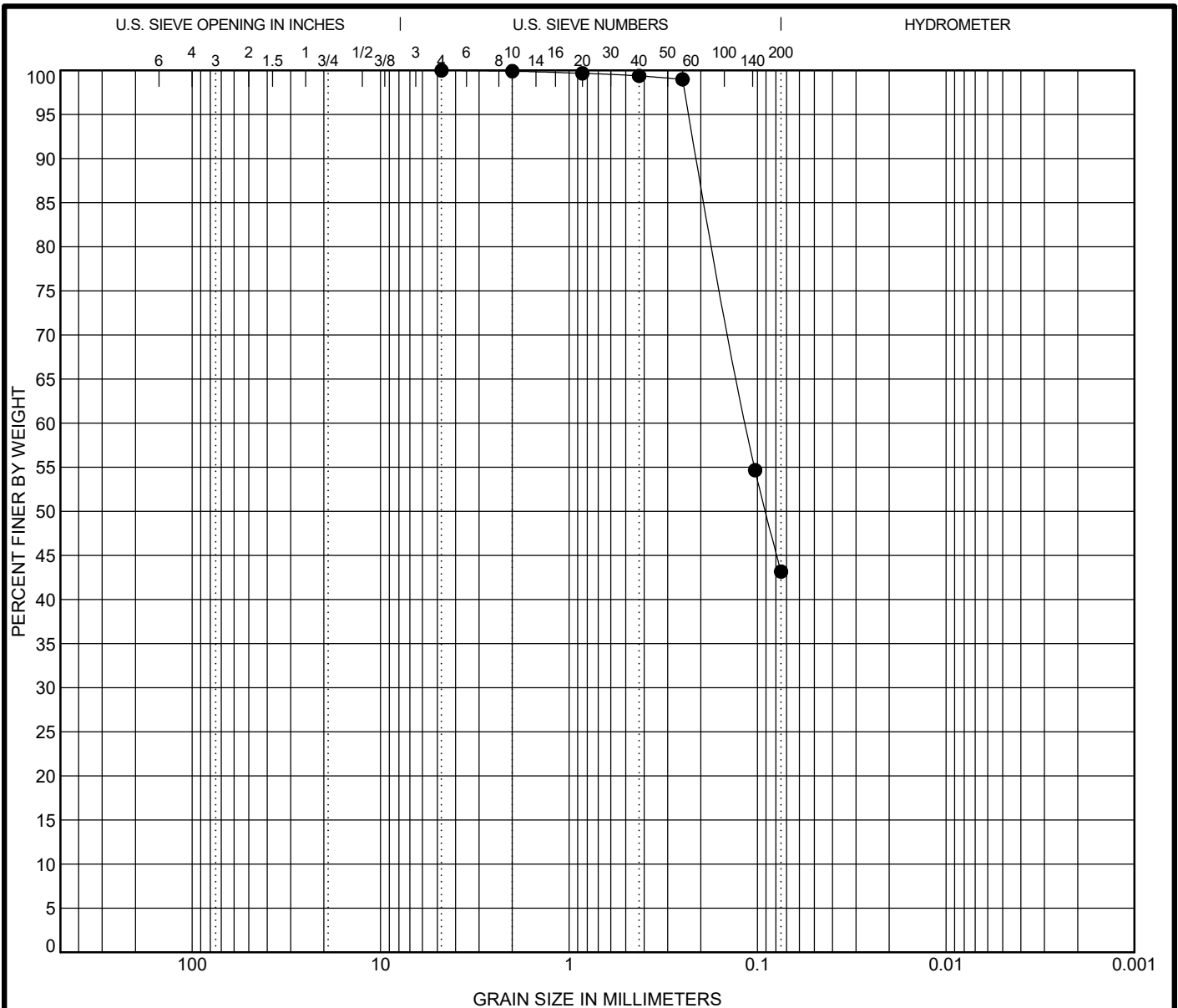
CTL Engineering  
7655 Coppermine Drive  
Manassas, VA 20109  
Telephone: 703.930.7917

#### GRAIN SIZE DISTRIBUTION (ASTM D6913, D 7928, D 4318)

Project: Joint Base Andrews HCP & EOD

Location: Washington, D.C.

CTL Project Number: 18020002VIR-F



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

Specimen ID	Sample	Classification					%MC	LL	PL	PI	Cc	Cu
● T-6	51'-53'	SILTY SAND (SM)					39	30	27	3		
Specimen ID	Sample	D100	D60	D50	D30	D10	%Gravel	%Sand	%Silt	%Clay		
● T-6	51'-53'	4.75	0.115	0.091			0	57				

**GRAIN SIZE DISTRIBUTION (ASTM D6913, D 7928, D 4318)**

Project: Joint Base Andrews HCP & EOD

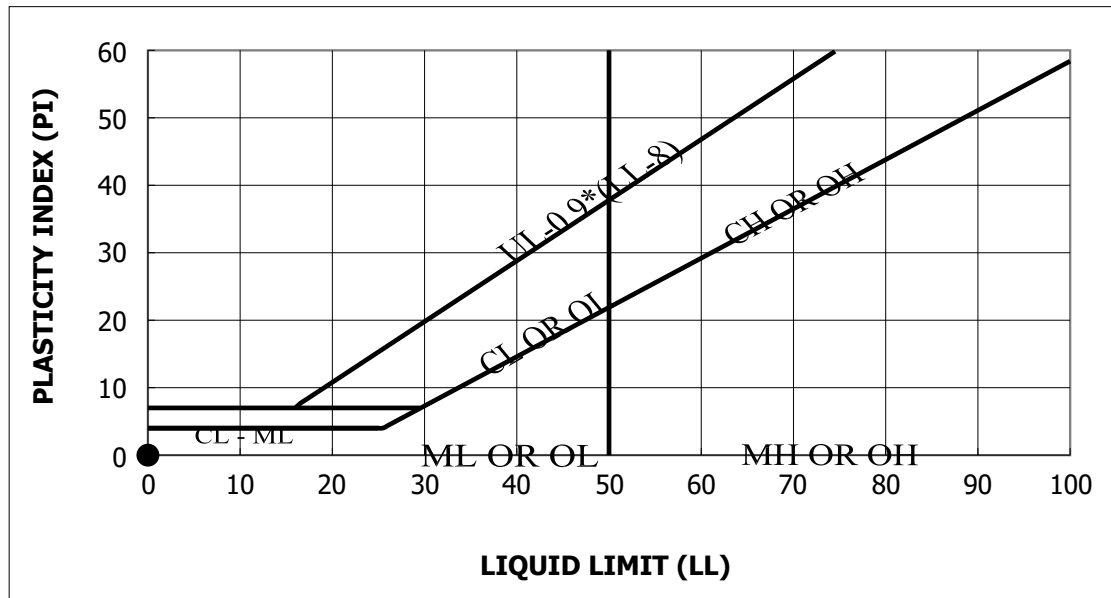
Location: Washington, D.C.

CTL Project Number: 18020002VIR-F



**LIQUID AND PLASTIC LIMIT - ASTM D4318**

<b>Project No.</b>	JD175507	<b>Project Name</b>	JBA HCP & EOD
<b>Sample ID</b>	T-8	<b>Depth (Feet)</b>	12.0-14.0
<b>Lab Order No.</b>	4532-1	<b>Date</b>	01.24.2019



Material Description	LL	PL	PI	% Passing		USCS	w (%)
				#4	#200		
<b>SILTY SAND</b>	NP	NP	NP	100.0	20.9	SM	26.0
<b>Color</b>	Orange Brown		AASHTO Classification			A-2-4	

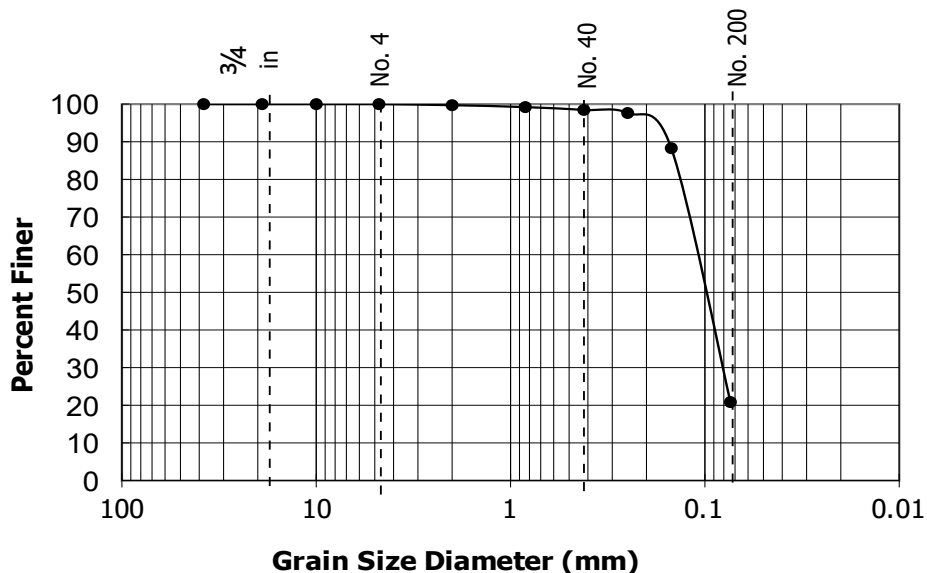
Test Method: ASTM D 4318  
Soil Classification by ASTM D2487 and AASHTO M 145

Reviewed by \_\_\_\_\_



**GRAIN SIZE ANALYSIS - ASTM D422**

<b>Project No.</b>	JD175507	<b>Project Name</b>	JBA HCP & EOD
<b>Sample ID</b>	T-8	<b>Depth (Feet)</b>	12.0-14.0
<b>Lab Order No.</b>	4532-1	<b>Date</b>	01.24.2019



SIEVE	% Passing
1 1/2 "	100
3/4"	100
3/8"	100
#4	100
#10	100
#20	99
#40	98
#60	98
#100	88
#200	21
Pan	--

<b>USCS Group Symbol</b>	<b>SM</b>
<b>USCS Group Name</b>	<b>SILTY SAND</b>
<b>Cu</b>	---
<b>Cc</b>	---
<b>LL</b>	<b>NP</b>
<b>PI</b>	<b>NP</b>
<b>Gravel</b>	<b>0.0</b>
<b>Sand</b>	<b>79.1</b>
<b>Fines</b>	<b>20.9</b>
<b>AASHTO Classification</b>	<b>A-2-4</b>
<b>Color</b>	<b>Orange Brown</b>

Test Method: ASTM D 422

Soil Classification by ASTM D2487 and AASHTO M 145

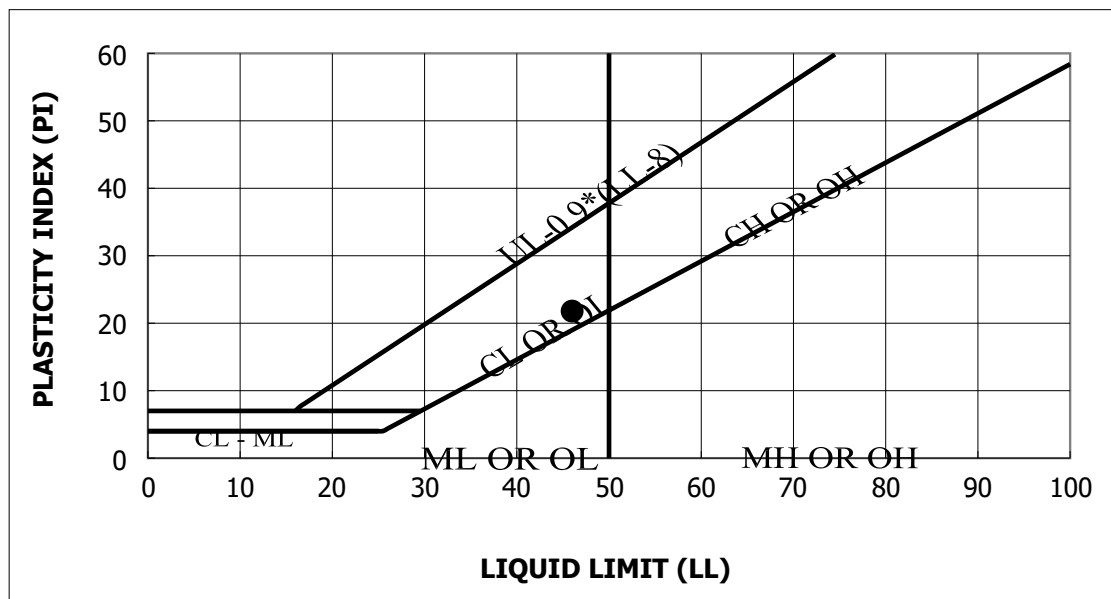
Reviewed by:

*David A. W. Jones*



## LIQUID AND PLASTIC LIMIT - ASTM D4318

Project No.	JD175507	Project Name	JBA HCP & EOD
Sample ID	T-8	Depth (Feet)	23.5-25.0
Lab Order No.	4532-2	Date	01.24.2019



Material Description	LL	PL	PI	% Passing		USCS	w (%)
				#4	#200		
CLAYEY SAND	46	24	22	100.0	41.1	SC	47.6
Color	Dark Gray		AASHTO Classification			A-7-6	

Test Method: ASTM D 4318

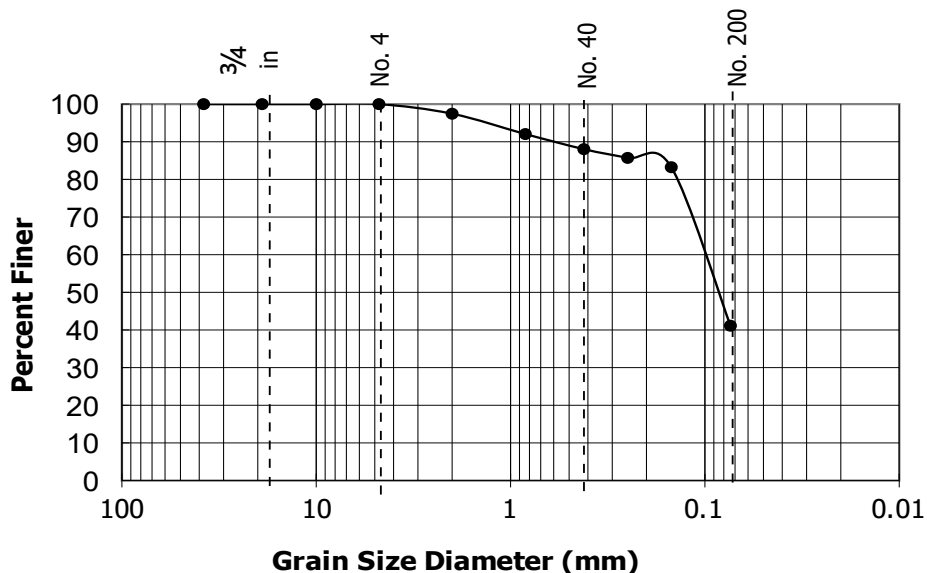
Soil Classification by ASTM D2487 and AASHTO M 145

Reviewed by \_\_\_\_\_



**GRAIN SIZE ANALYSIS - ASTM D422**

<b>Project No.</b>	JD175507	<b>Project Name</b>	JBA HCP & EOD
<b>Sample ID</b>	T-8	<b>Depth (Feet)</b>	23.5-25.0
<b>Lab Order No.</b>	4532-2	<b>Date</b>	01.24.2019



SIEVE	% Passing
1 1/2 "	100
3/4"	100
3/8"	100
#4	100
#10	97
#20	92
#40	88
#60	86
#100	83
#200	41
Pan	--

<b>USCS Group Symbol</b>	<b>SC</b>
<b>USCS Group Name</b>	<b>CLAYEY SAND</b>
<b>Cu</b>	<b>---</b>
<b>Cc</b>	<b>---</b>
<b>LL</b>	<b>46</b>
<b>PI</b>	<b>22</b>
<b>Gravel</b>	<b>0.0</b>
<b>Sand</b>	<b>58.9</b>
<b>Fines</b>	<b>41.1</b>
<b>AASHTO Classification</b>	<b>A-7-6</b>
<b>Color</b>	<b>Dark Gray</b>

Test Method: ASTM D 422

Soil Classification by ASTM D2487 and AASHTO M 145

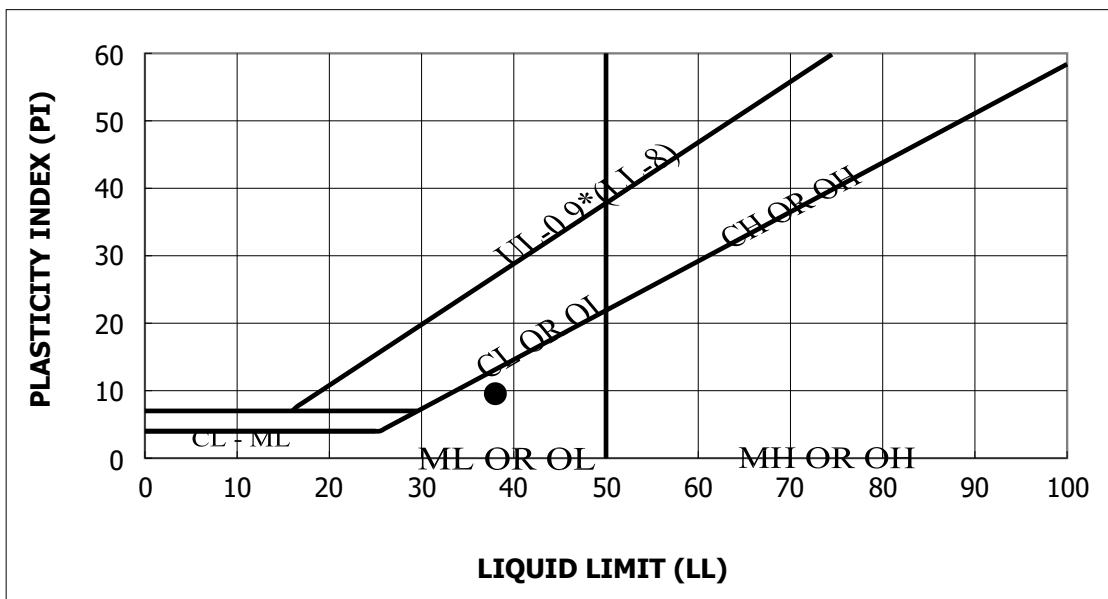
Reviewed by:

*David A. Wiest*



## LIQUID AND PLASTIC LIMIT - ASTM D4318

Project No.	JD175507	Project Name	JBA HCP & EOD
Sample ID	T-8	Depth (Feet)	58.5-60.0
Lab Order No.	4532-3	Date	01.24.2019



Material Description	LL	PL	PI	% Passing		USCS	w (%)
				#4	#200		
sandy Silt	38	28	10	100.0	56.4	ML	48.1
Color	Dark Gray		AASHTO Classification			A-4	

Test Method: ASTM D 4318

Soil Classification by ASTM D2487 and AASHTO M 145

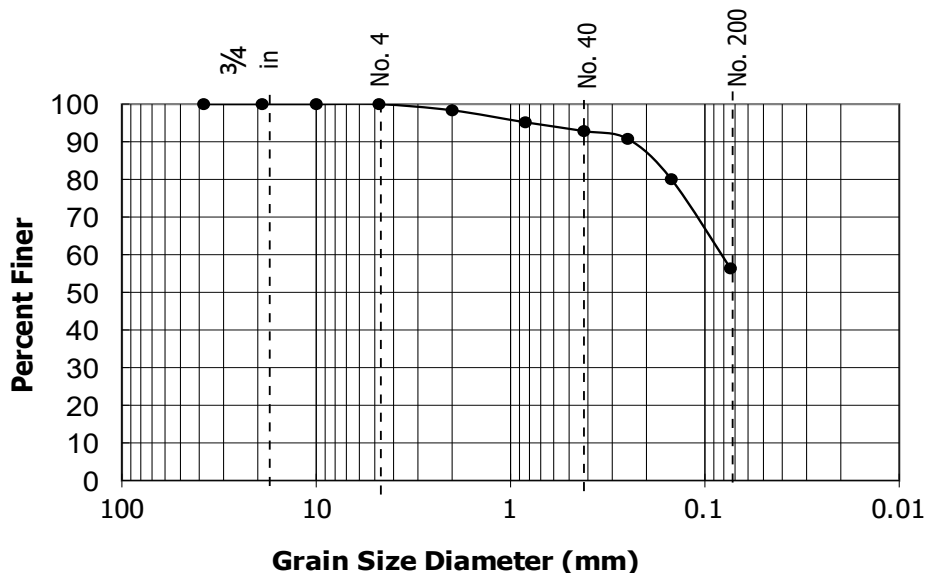
Reviewed by \_\_\_\_\_





## GRAIN SIZE ANALYSIS - ASTM D422

Project No.	JD175507	Project Name	JBA HCP & EOD
Sample ID	T-8	Depth (Feet)	58.5-60.0
Lab Order No.	4532-3	Date	01.24.2019



SIEVE	% Passing
1 1/2 "	100
3/4"	100
3/8"	100
#4	100
#10	98
#20	95
#40	93
#60	91
#100	80
#200	56
Pan	--

USCS Group Symbol	ML
USCS Group Name	sandy Silt
Cu	---
Cc	---
LL	38
PI	10
Gravel	0.0
Sand	43.6
Fines	56.4
AASHTO Classification	A-4
Color	Dark Gray

Test Method: ASTM D 422

Soil Classification by ASTM D2487 and AASHTO M 145

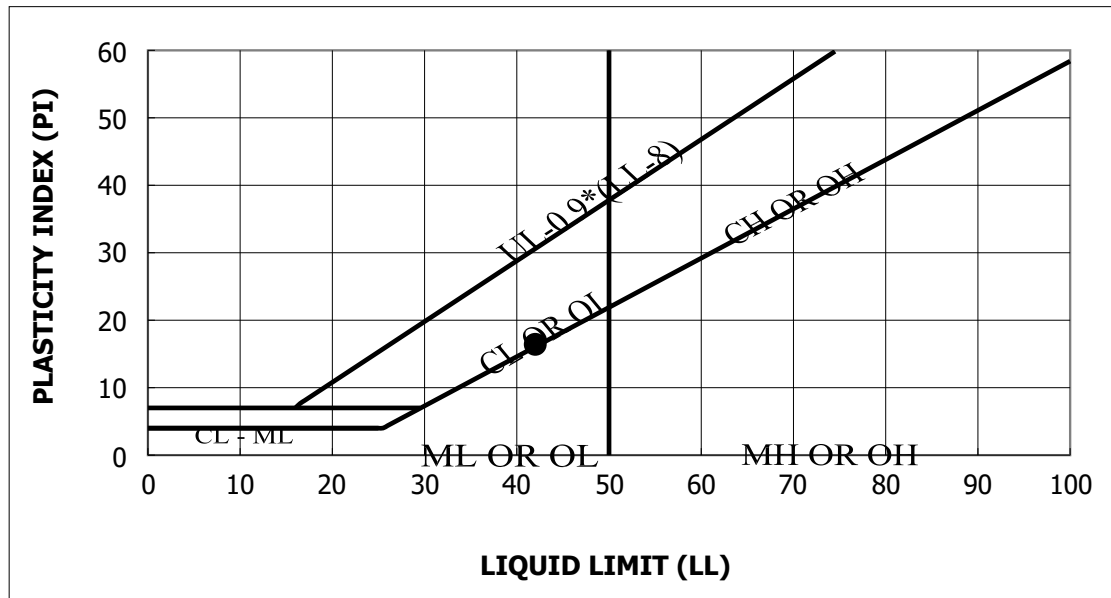
Reviewed by:

*David A. Wiet*



**LIQUID AND PLASTIC LIMIT - ASTM D4318**

<b>Project No.</b>	JD175507	<b>Project Name</b>	JBA HCP & EOD
<b>Sample ID</b>	T-8	<b>Depth (Feet)</b>	73.5-75.0
<b>Lab Order No.</b>	4532-4	<b>Date</b>	01.24.2019



Material Description	LL	PL	PI	% Passing		USCS	w (%)
				#4	#200		
CLAYEY SAND	42	26	16	100.0	23.4	SC	42.4
Color	Dark Gray		AASHTO Classification			A-2-7	

Test Method: ASTM D 4318

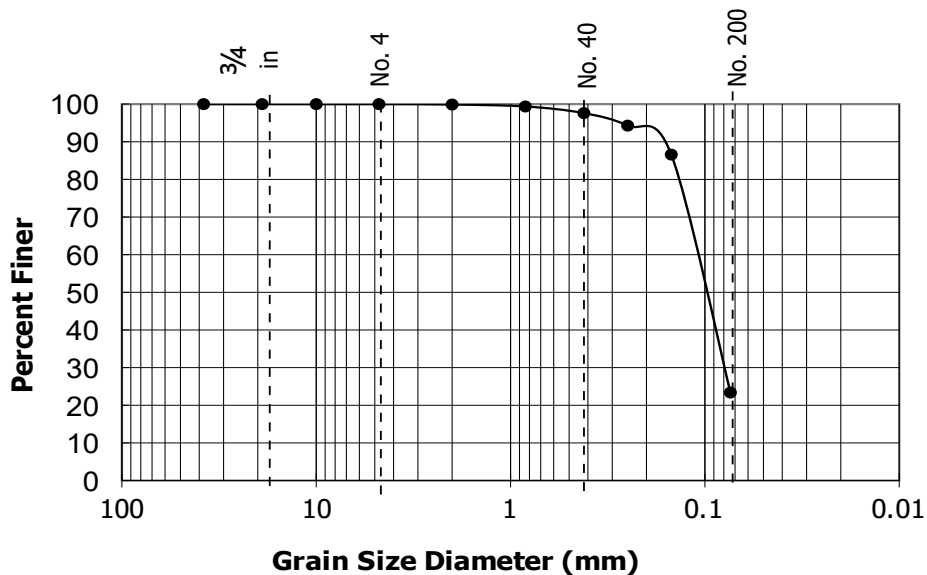
Soil Classification by ASTM D2487 and AASHTO M 145

Reviewed by \_\_\_\_\_



**GRAIN SIZE ANALYSIS - ASTM D422**

<b>Project No.</b>	JD175507	<b>Project Name</b>	JBA HCP & EOD
<b>Sample ID</b>	T-8	<b>Depth (Feet)</b>	73.5-75.0
<b>Lab Order No.</b>	4532-4	<b>Date</b>	01.24.2019



SIEVE	% Passing
1 1/2 "	100
3/4"	100
3/8"	100
#4	100
#10	100
#20	99
#40	98
#60	94
#100	87
#200	23
Pan	--

<b>USCS Group Symbol</b>	<b>SC</b>
<b>USCS Group Name</b>	<b>CLAYEY SAND</b>
<b>Cu</b>	<b>---</b>
<b>Cc</b>	<b>---</b>
<b>LL</b>	<b>42</b>
<b>PI</b>	<b>16</b>
<b>Gravel</b>	<b>0.0</b>
<b>Sand</b>	<b>76.6</b>
<b>Fines</b>	<b>23.4</b>
<b>AASHTO Classification</b>	<b>A-2-7</b>
<b>Color</b>	<b>Dark Gray</b>

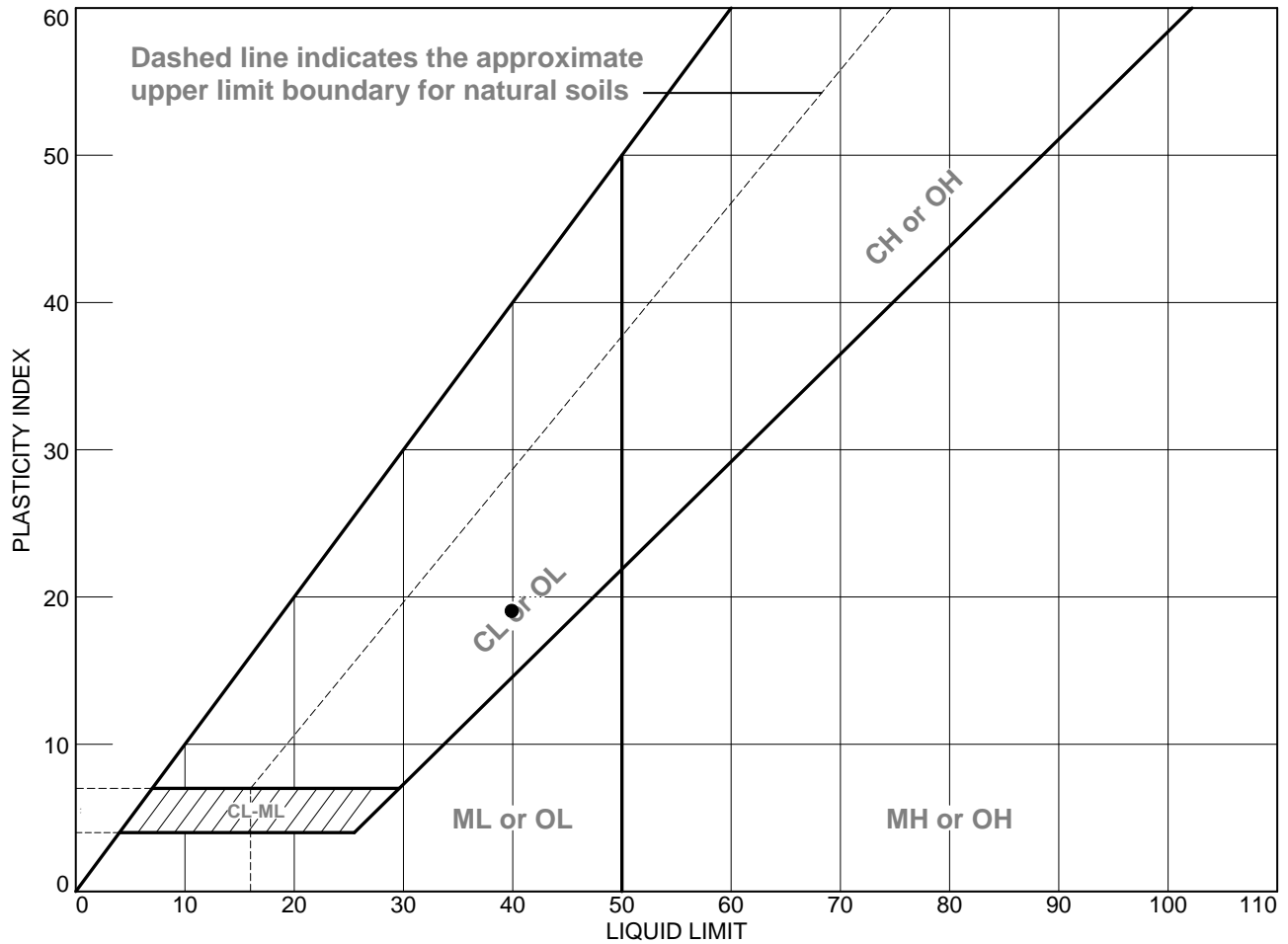
Test Method: ASTM D 422

Soil Classification by ASTM D2487 and AASHTO M 145

Reviewed by:

*David A. Wiest*

# LIQUID AND PLASTIC LIMITS TEST REPORT



## SOIL DATA

SYMBOL	SOURCE	SAMPLE NO.	DEPTH	NATURAL WATER CONTENT (%)	PLASTIC LIMIT (%)	LIQUID LIMIT (%)	PLASTICITY INDEX (%)	USCS
●	T11	1	0.0 - 5.0"	18.8	21	40	19	CL

**Terracon Consultants, Inc.**

**Ashburn, Virginia**

**Client:**

**Project:** JBA HCP & EOD

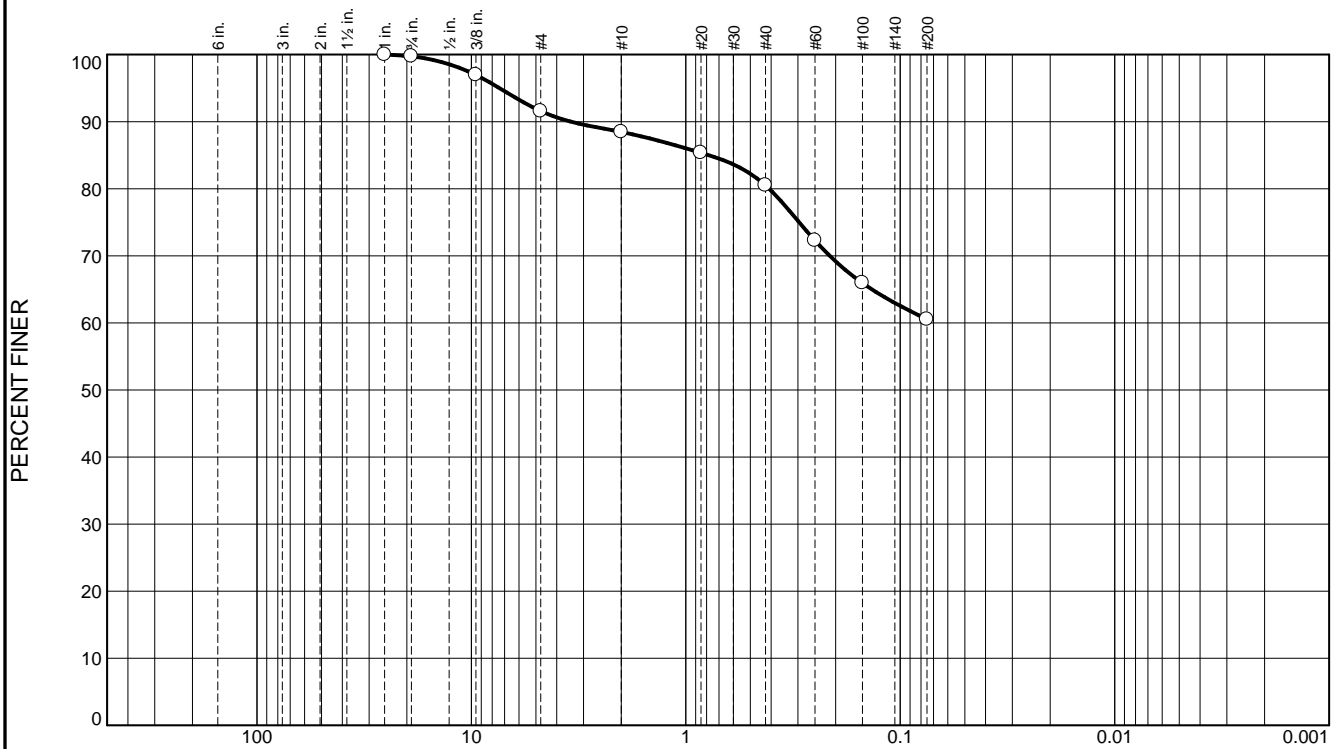
**Project No.:** JD175507

**Figure**

Checked By:

*David A. Winters*

# Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.3	8.1	3.1	8.0	20.0	60.5	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
1.0	100.0		
3/4	99.7		
3/8	97.0		
#4	91.6		
#10	88.5		
#20	85.4		
#40	80.5		
#60	72.3		
#100	65.9		
#200	60.5		

**Soil Description**  
Brown, Sandy lean clay

**Atterberg Limits**  
PL= 21      LL= 40      PI= 19

**Coefficients**  
D<sub>90</sub>= 3.4319      D<sub>85</sub>= 0.7820      D<sub>60</sub>=  
D<sub>50</sub>=      D<sub>30</sub>=      D<sub>15</sub>=  
D<sub>10</sub>=      C<sub>u</sub>=      C<sub>c</sub>=

**Classification**  
USCS= CL      AASHTO= A-6(9)

**Remarks**

\* (no specification provided)

Location: T11  
Sample Number: 1      Depth: 0.0 - 5.0"

Date: 02-12-19

**Terracon Consultants, Inc.**

Client:  
Project: JBA HCP & EOD

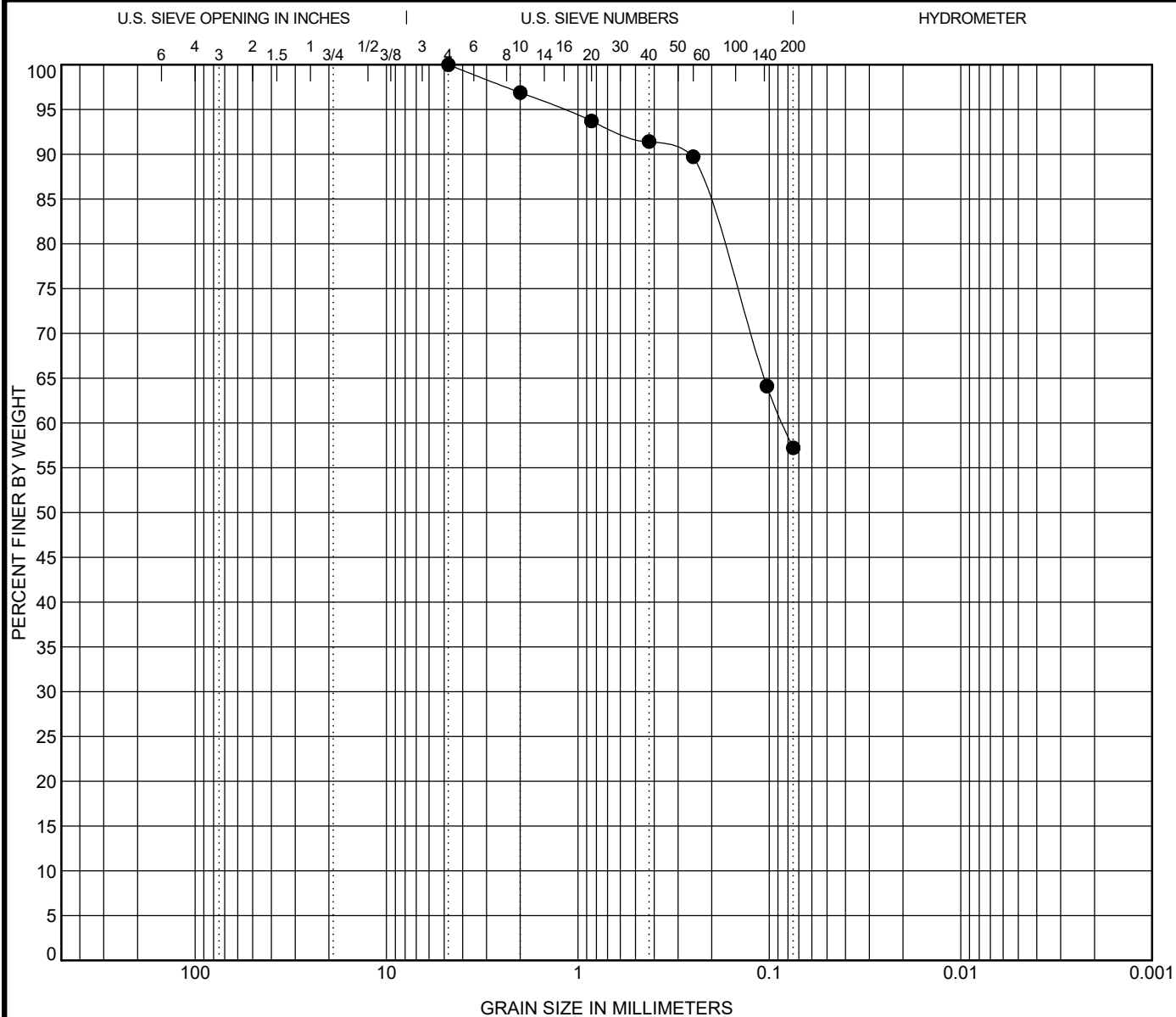
**Ashburn, Virginia**

Project No: JD175507

Figure

Checked By: *Daniel W. Jones*

CTLAB GRAIN SIZE 18020002VIRF.GPJ CTL CORPORATE.GDT 3/18/19



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

Specimen ID	Sample	Classification					%MC	LL	PL	PI	Cc	Cu
● T-16	35'-37'	SANDY LEAN CLAY (CL)					46	32	21	11		
Specimen ID	Sample	D100	D60	D50	D30	D10	%Gravel	%Sand	%Silt	%Clay		
● T-16	35'-37'	4.75	0.085				0	43				



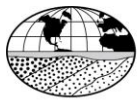
CTL Engineering  
7655 Coppermine Drive  
Manassas, VA 20109  
Telephone: 703.930.7917

**GRAIN SIZE DISTRIBUTION (ASTM D6913, D 7928, D 4318)**

Project: Joint Base Andrews HCP & EOD

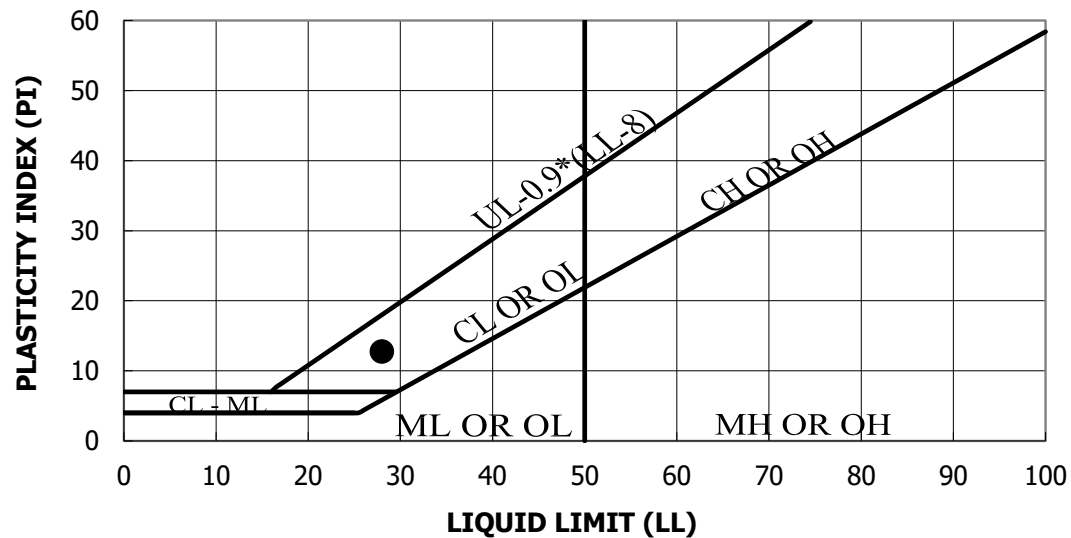
Location: Washington, D.C.

CTL Project Number: 18020002VIR-F



## LIQUID AND PLASTIC LIMIT - ASTM D4318

Project No.	JD175507	Project Name	JBA HCP & EOD
Sample ID	MCR-1	Depth (Feet)	0.0-5.0
Lab Order No.	5317	Date	6/22/2020

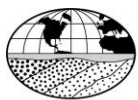


Material Description	LL	PL	PI	% Passing		USCS	w (%)
				#4	#200		
CLAYEY SAND with gravel	28	15	13	66.8	19.9	SC	12.9
Color	Yellow Brown		AASHTO Classification			A-2-6	

Test Method: ASTM D 4318

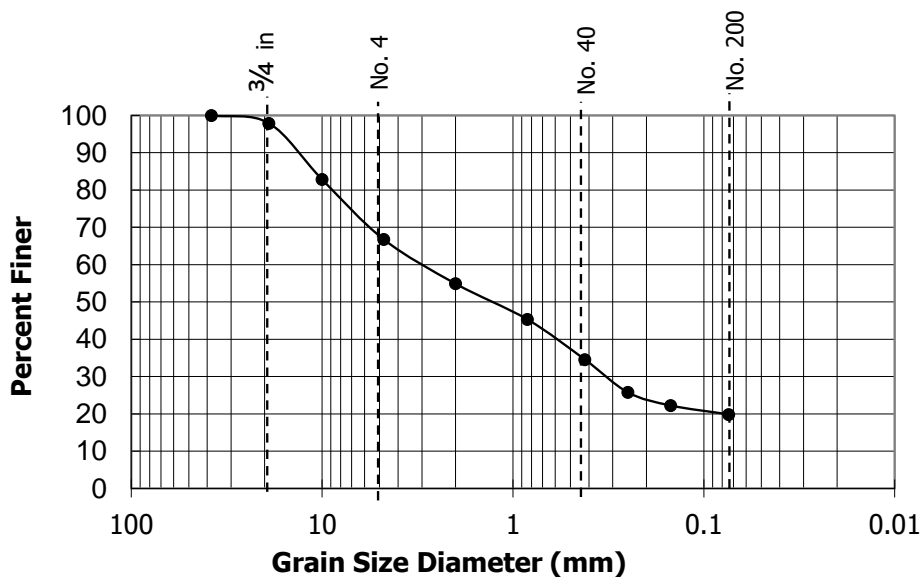
Soil Classification by ASTM D2487 and AASHTO M 145

Reviewed by \_\_\_\_\_ DW



## GRAIN SIZE ANALYSIS - ASTM D422

<b>Project No.</b>	JD175507	<b>Project Name</b>	JBA HCP & EOD
<b>Sample ID</b>	MCR-1	<b>Depth (Feet)</b>	0.0-5.0
<b>Lab Order No.</b>	5317	<b>Date</b>	6/22/2020



SIEVE	% Passing
1 1/2 "	100
3/4"	98
3/8"	83
#4	67
#10	55
#20	45
#40	35
#60	26
#100	22
#200	20
Pan	--

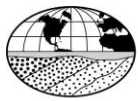
<b>USCS Group Symbol</b>	<b>SC</b>
<b>USCS Group Name</b>	<b>CLAYEY SAND with gravel</b>
<b>Cu</b>	---
<b>Cc</b>	---
<b>LL</b>	<b>28</b>
<b>PI</b>	<b>13</b>
<b>Gravel</b>	<b>33.2</b>
<b>Sand</b>	<b>46.9</b>
<b>Fines</b>	<b>19.9</b>
<b>AASHTO Classification</b>	<b>A-2-6</b>
<b>Color</b>	<b>Yellow Brown</b>

Test Method: ASTM D 422

Soil Classification by ASTM D2487 and AASHTO M 145

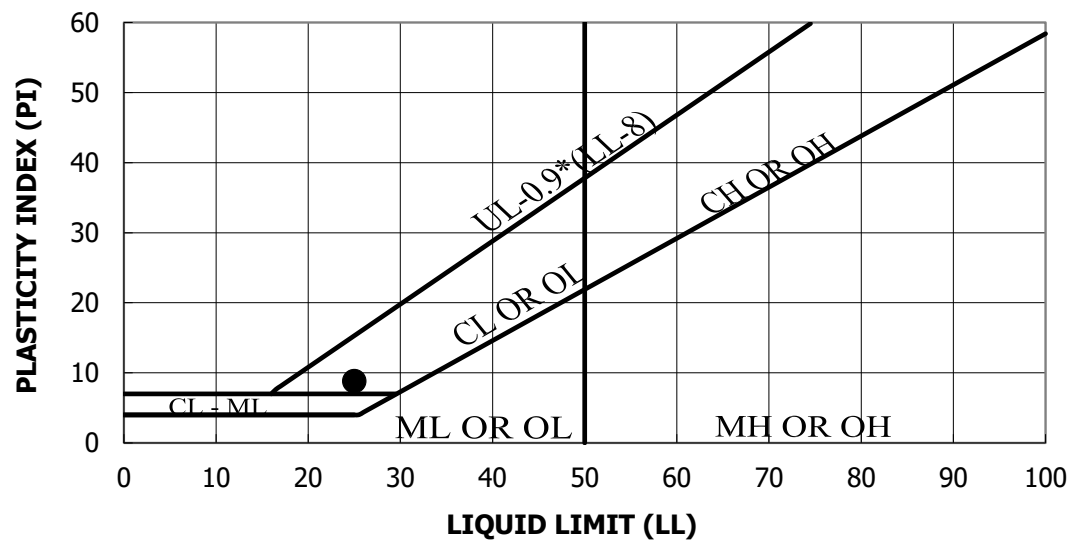
Reviewed by: DW \_\_\_\_\_





## LIQUID AND PLASTIC LIMIT - ASTM D4318

Project No.	JD175507	Project Name	JBA HCP & EOD
Sample ID	MCR-3	Depth (Feet)	0.0-5.0
Lab Order No.	5317	Date	6/22/2020

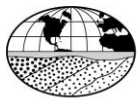


Material Description	LL	PL	PI	% Passing		USCS	w (%)
				#4	#200		
CLAYEY SAND with gravel	25	16	9	82.8	28.5	SC	15.1
Color	Yellow Brown		AASHTO Classification			A-2-4	

Test Method: ASTM D 4318

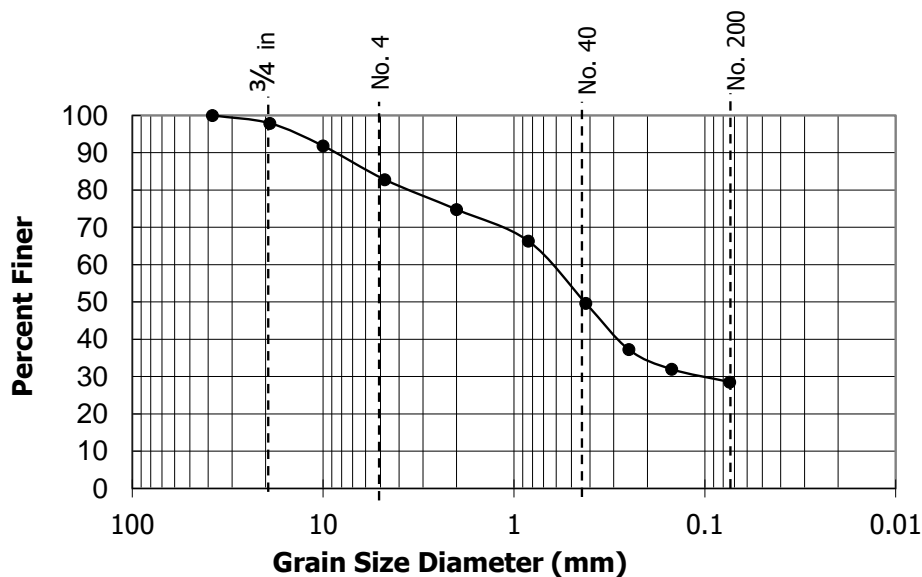
Soil Classification by ASTM D2487 and AASHTO M 145

Reviewed by \_\_\_\_\_ DW



## GRAIN SIZE ANALYSIS - ASTM D422

Project No.	JD175507	Project Name	JBA HCP & EOD
Sample ID	MCR-3	Depth (Feet)	0.0-5.0
Lab Order No.	5317	Date	6/22/2020



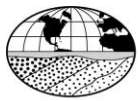
SIEVE	% Passing
1 1/2 "	100
3/4"	98
3/8"	92
#4	83
#10	75
#20	66
#40	50
#60	37
#100	32
#200	29
Pan	--

USCS Group Symbol	SC
USCS Group Name	CLAYEY SAND with gravel
Cu	---
Cc	---
LL	25
PI	9
Gravel	17.2
Sand	54.3
Fines	28.5
AASHTO Classification	A-2-4
Color	Yellow Brown

Test Method: ASTM D 422

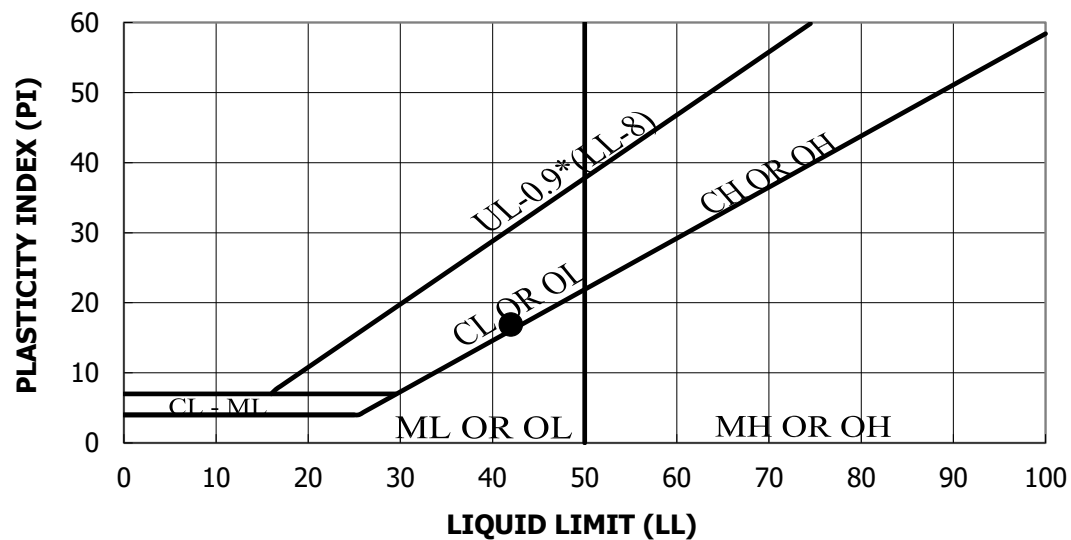
Soil Classification by ASTM D2487 and AASHTO M 145

Reviewed by: DW \_\_\_\_\_



## LIQUID AND PLASTIC LIMIT - ASTM D4318

Project No.	JD175507	Project Name	JBA HCP & EOD
Sample ID	MCR-5	Depth (Feet)	0.0-5.0
Lab Order No.	5317	Date	6/22/2020

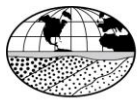


Material Description	LL	PL	PI	% Passing		USCS	w (%)
				#4	#200		
sandy Lean Clay	42	25	17	96.3	69.3	CL	21.1
Color	Yellow Brown		AASHTO Classification			A-7-6	

Test Method: ASTM D 4318

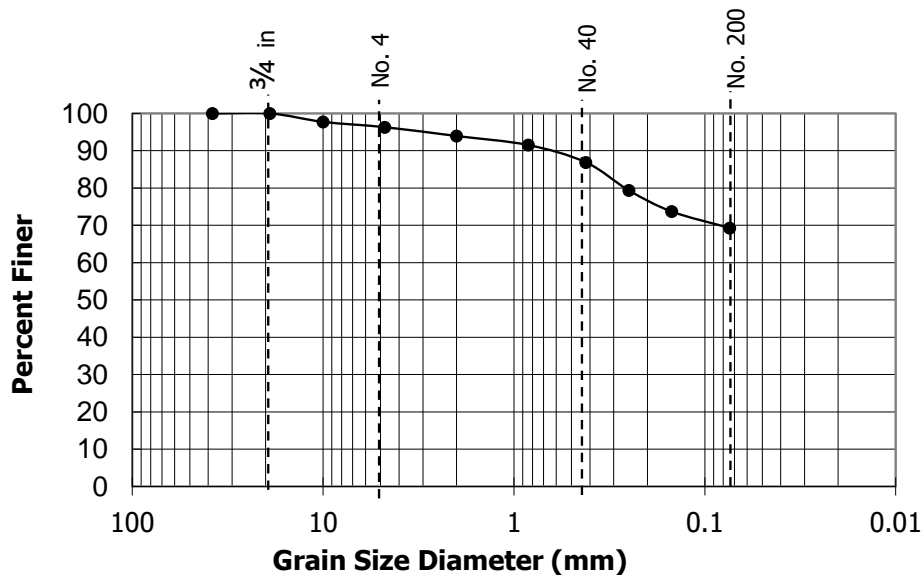
Soil Classification by ASTM D2487 and AASHTO M 145

Reviewed by \_\_\_\_\_ DW



## GRAIN SIZE ANALYSIS - ASTM D422

<b>Project No.</b>	JD175507	<b>Project Name</b>	JBA HCP & EOD
<b>Sample ID</b>	MCR-5	<b>Depth (Feet)</b>	0.0-5.0
<b>Lab Order No.</b>	5317	<b>Date</b>	6/22/2020



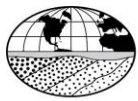
SIEVE	% Passing
1 1/2 "	100
3/4"	100
3/8"	98
#4	96
#10	94
#20	92
#40	87
#60	79
#100	74
#200	69
Pan	--

<b>USCS Group Symbol</b>	<b>CL</b>
<b>USCS Group Name</b>	<b>sandy Lean Clay</b>
<b>Cu</b>	---
<b>Cc</b>	---
<b>LL</b>	<b>42</b>
<b>PI</b>	<b>17</b>
<b>Gravel</b>	<b>3.7</b>
<b>Sand</b>	<b>27.0</b>
<b>Fines</b>	<b>69.3</b>
<b>AASHTO Classification</b>	<b>A-7-6</b>
<b>Color</b>	<b>Yellow Brown</b>

Test Method: ASTM D 422

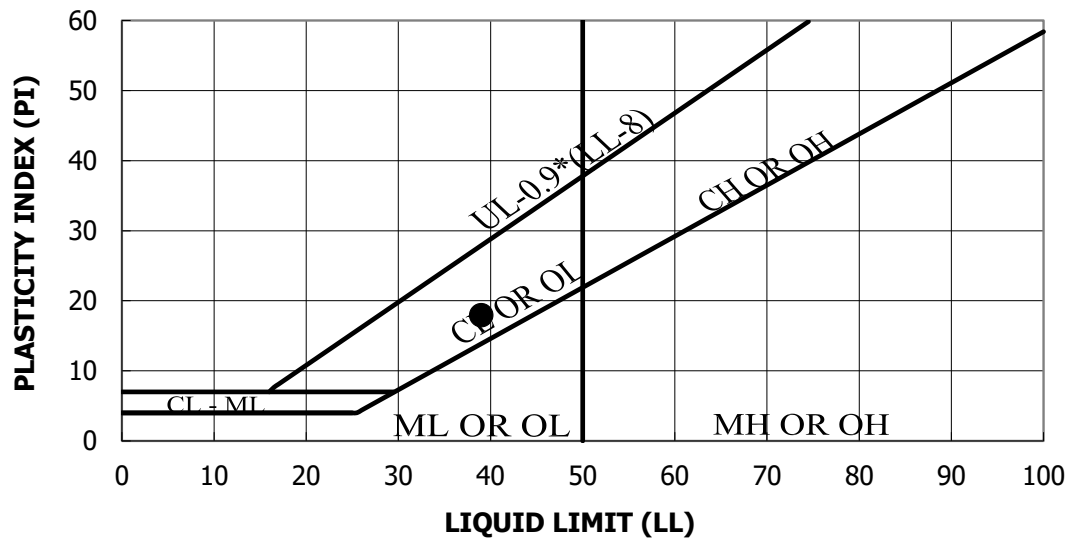
Soil Classification by ASTM D2487 and AASHTO M 145

Reviewed by: DW \_\_\_\_\_



## LIQUID AND PLASTIC LIMIT - ASTM D4318

Project No.	JD175507	Project Name	JBA HCP & EOD
Sample ID	MCR-6	Depth (Feet)	0.0-5.0
Lab Order No.	5317	Date	6/22/2020

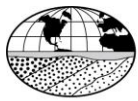


Material Description	LL	PL	PI	% Passing		USCS	w (%)
				#4	#200		
Lean Clay with sand	39	21	18	97.9	75.3	CL	19.2
Color	Yellow Brown		AASHTO Classification			A-6	

Test Method: ASTM D 4318

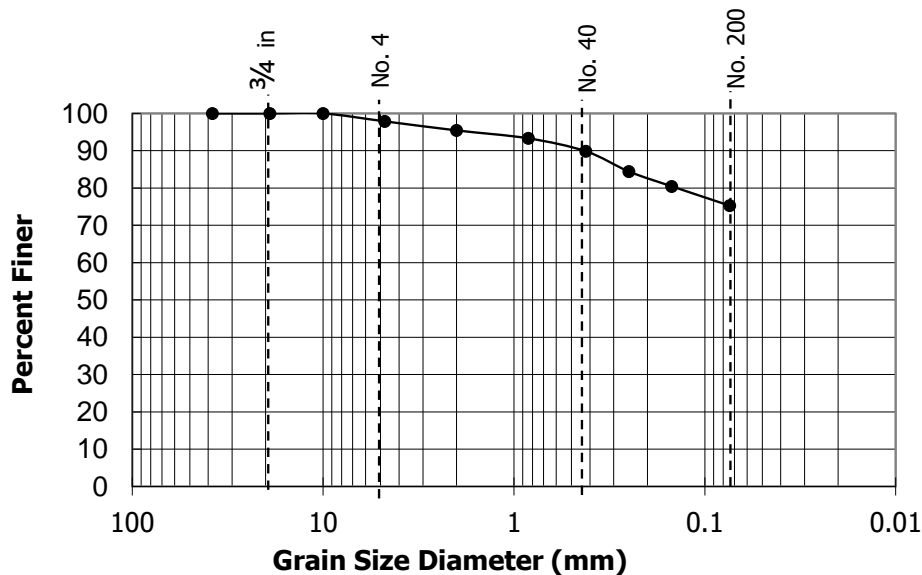
Soil Classification by ASTM D2487 and AASHTO M 145

Reviewed by \_\_\_\_\_ DW



## GRAIN SIZE ANALYSIS - ASTM D422

<b>Project No.</b>	JD175507	<b>Project Name</b>	JBA HCP & EOD
<b>Sample ID</b>	MCR-6	<b>Depth (Feet)</b>	0.0-5.0
<b>Lab Order No.</b>	5317	<b>Date</b>	6/22/2020



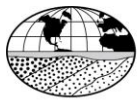
SIEVE	% Passing
1 1/2 "	100
3/4"	100
3/8"	100
#4	98
#10	95
#20	93
#40	90
#60	84
#100	80
#200	75
Pan	--

<b>USCS Group Symbol</b>	<b>CL</b>
<b>USCS Group Name</b>	<b>Lean Clay with sand</b>
<b>Cu</b>	---
<b>Cc</b>	---
<b>LL</b>	<b>39</b>
<b>PI</b>	<b>18</b>
<b>Gravel</b>	<b>2.1</b>
<b>Sand</b>	<b>22.6</b>
<b>Fines</b>	<b>75.3</b>
<b>AASHTO Classification</b>	<b>A-6</b>
<b>Color</b>	<b>Yellow Brown</b>

Test Method: ASTM D 422

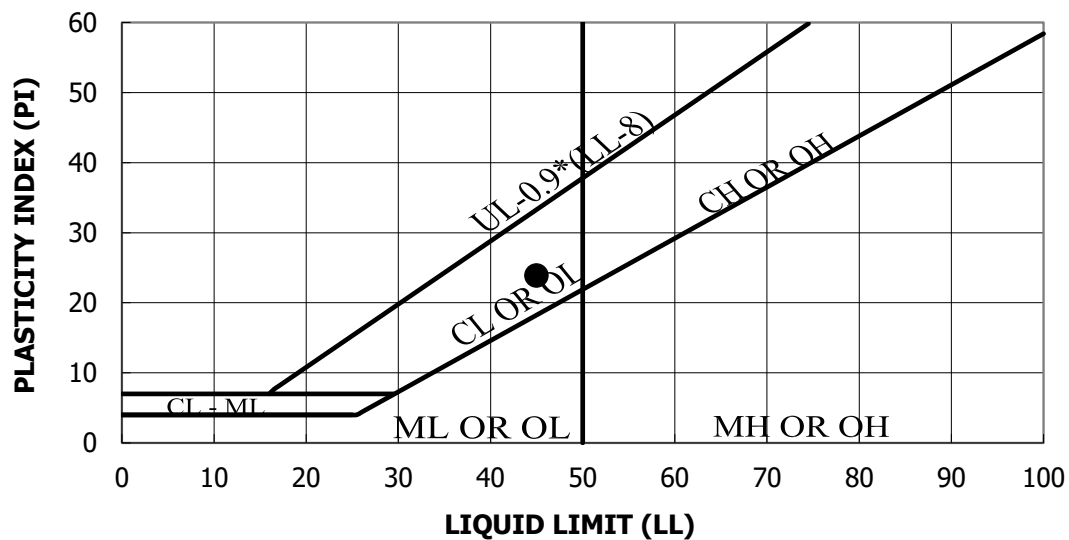
Soil Classification by ASTM D2487 and AASHTO M 145

Reviewed by: DW \_\_\_\_\_



## LIQUID AND PLASTIC LIMIT - ASTM D4318

Project No.	JD175507	Project Name	JBA HCP & EOD
Sample ID	MCR-7	Depth (Feet)	0.0-5.0
Lab Order No.	5317	Date	6/22/2020

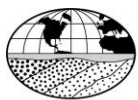


Material Description	LL	PL	PI	% Passing		USCS	w (%)
				#4	#200		
Lean Clay with sand	45	21	24	99.1	82.3	CL	21.7
Color	Light Brown		AASHTO Classification			A-7-6	

Test Method: ASTM D 4318

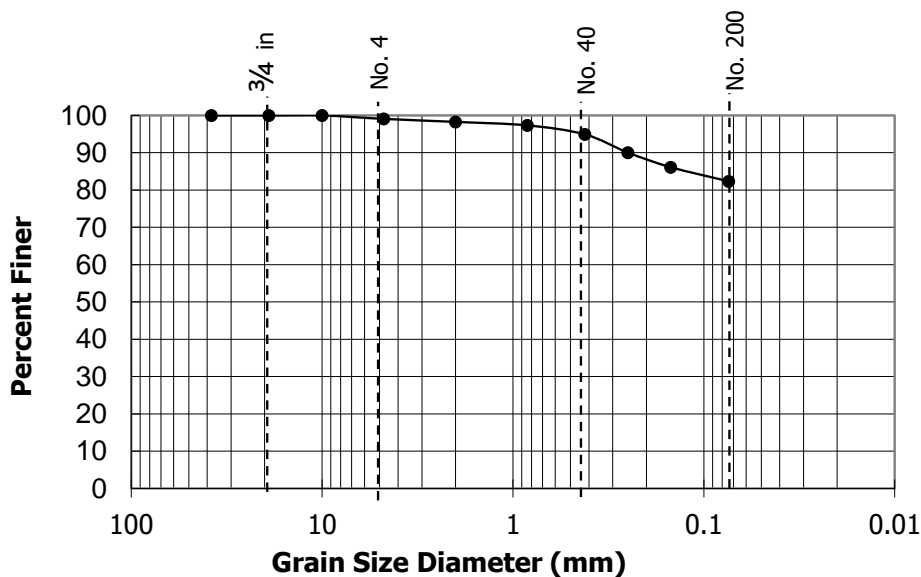
Soil Classification by ASTM D2487 and AASHTO M 145

Reviewed by \_\_\_\_\_ DW



## GRAIN SIZE ANALYSIS - ASTM D422

Project No.	JD175507	Project Name	JBA HCP & EOD
Sample ID	MCR-7	Depth (Feet)	0.0-5.0
Lab Order No.	5317	Date	6/22/2020



SIEVE	% Passing
1 1/2 "	100
3/4"	100
3/8"	100
#4	99
#10	98
#20	97
#40	95
#60	90
#100	86
#200	82
Pan	--

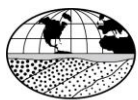
USCS Group Symbol	CL
USCS Group Name	Lean Clay with sand
Cu	---
Cc	---
LL	45
PI	24
Gravel	0.9
Sand	16.7
Fines	82.3
AASHTO Classification	A-7-6
Color	Light Brown

Test Method: ASTM D 422

Soil Classification by ASTM D2487 and AASHTO M 145

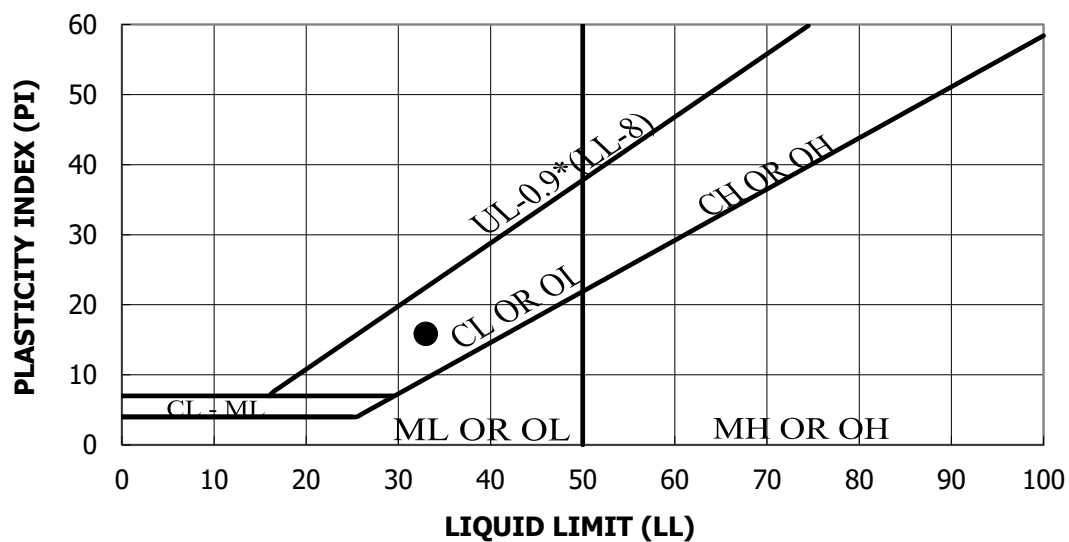
Reviewed by: DW \_\_\_\_\_





## LIQUID AND PLASTIC LIMIT - ASTM D4318

Project No.	JD175507	Project Name	JBA HCP & EOD
Sample ID	MCR-8	Depth (Feet)	0.0-5.0
Lab Order No.	5317	Date	6/22/2020

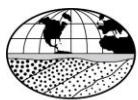


Material Description	LL	PL	PI	% Passing		USCS	w (%)
				#4	#200		
sandy Lean Clay	33	17	16	95.6	66.2	CL	20.9
Color	Yellow Brown		AASHTO Classification			A-6	

Test Method: ASTM D 4318

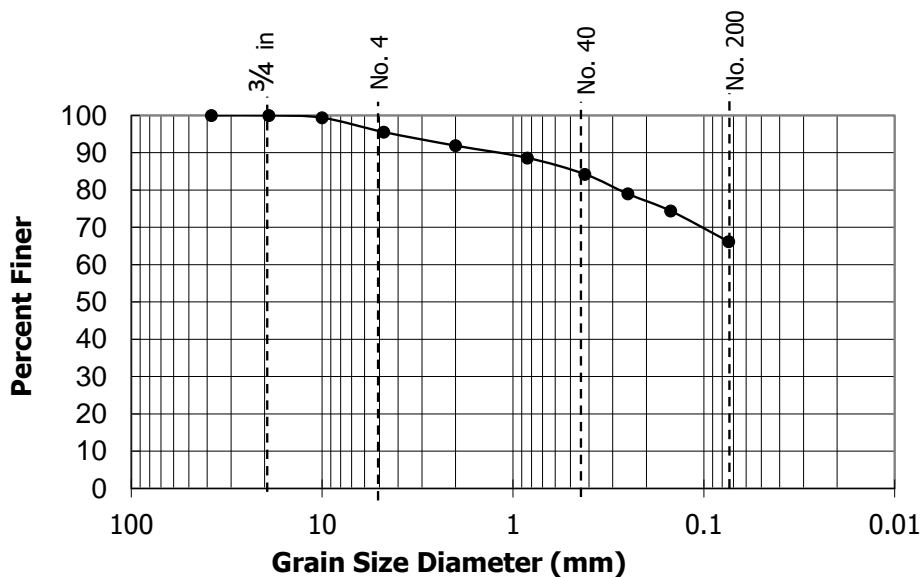
Soil Classification by ASTM D2487 and AASHTO M 145

Reviewed by \_\_\_\_\_ DW



## GRAIN SIZE ANALYSIS - ASTM D422

<b>Project No.</b>	JD175507	<b>Project Name</b>	JBA HCP & EOD
<b>Sample ID</b>	MCR-8	<b>Depth (Feet)</b>	0.0-5.0
<b>Lab Order No.</b>	5317	<b>Date</b>	6/22/2020



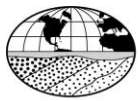
SIEVE	% Passing
1 1/2 "	100
3/4"	100
3/8"	99
#4	96
#10	92
#20	89
#40	84
#60	79
#100	74
#200	66
Pan	--

<b>USCS Group Symbol</b>	<b>CL</b>
<b>USCS Group Name</b>	<b>sandy Lean Clay</b>
<b>Cu</b>	---
<b>Cc</b>	---
<b>LL</b>	<b>33</b>
<b>PI</b>	<b>16</b>
<b>Gravel</b>	<b>4.4</b>
<b>Sand</b>	<b>29.4</b>
<b>Fines</b>	<b>66.2</b>
<b>AASHTO Classification</b>	<b>A-6</b>
<b>Color</b>	<b>Yellow Brown</b>

Test Method: ASTM D 422

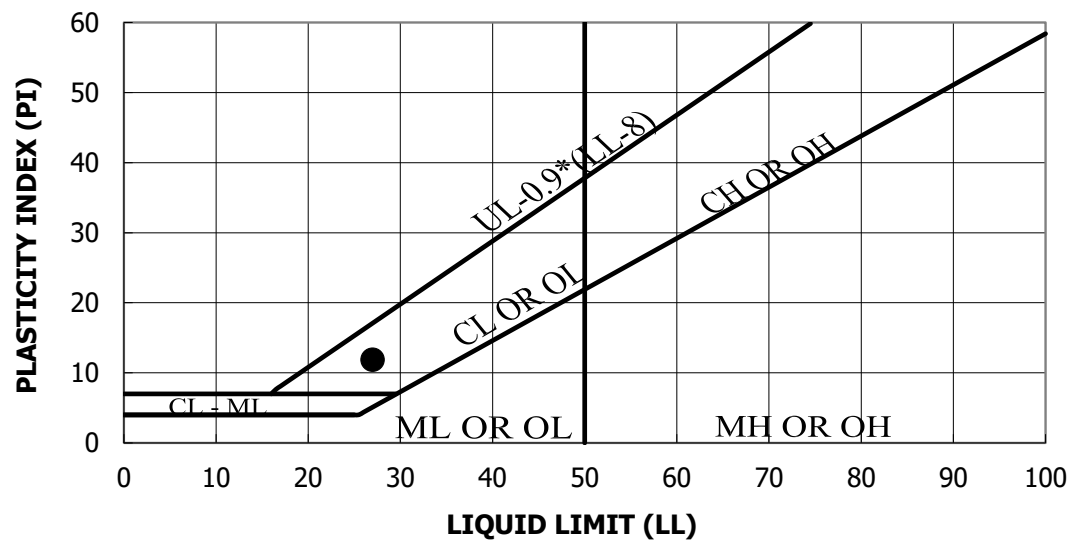
Soil Classification by ASTM D2487 and AASHTO M 145

Reviewed by: DW \_\_\_\_\_



## LIQUID AND PLASTIC LIMIT - ASTM D4318

Project No.	JD175507	Project Name	JBA HCP & EOD
Sample ID	MCR-10	Depth (Feet)	0.0-5.0
Lab Order No.	5317	Date	6/22/2020

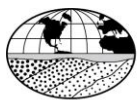


Material Description	LL	PL	PI	% Passing		USCS	w (%)
				#4	#200		
CLAYEY SAND with gravel	27	15	12	80.5	29.8	SC	15.1
Color	Yellow Brown		AASHTO Classification			A-2-6	

Test Method: ASTM D 4318

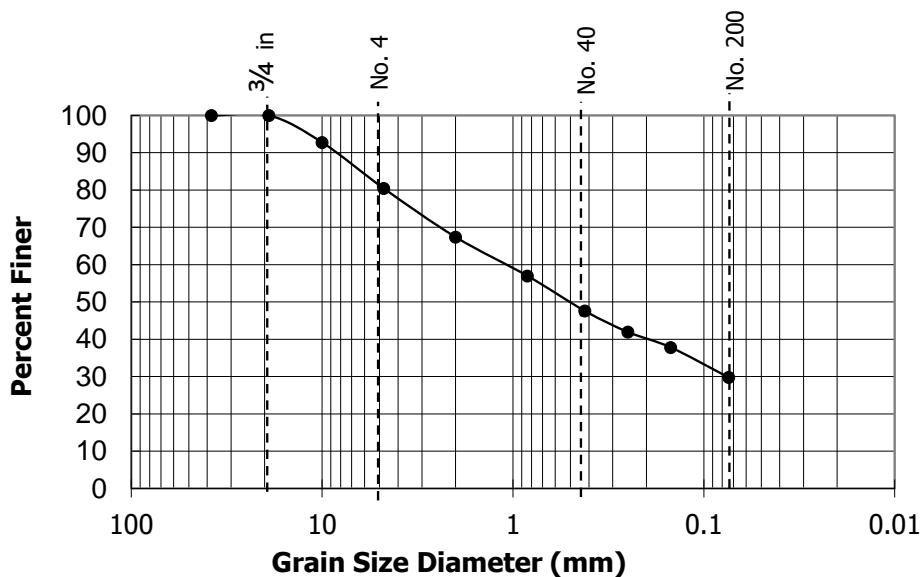
Soil Classification by ASTM D2487 and AASHTO M 145

Reviewed by \_\_\_\_\_ DW



## GRAIN SIZE ANALYSIS - ASTM D422

<b>Project No.</b>	JD175507	<b>Project Name</b>	JBA HCP & EOD
<b>Sample ID</b>	MCR-10	<b>Depth (Feet)</b>	0.0-5.0
<b>Lab Order No.</b>	5317	<b>Date</b>	6/22/2020



SIEVE	% Passing
1 1/2 "	100
3/4"	100
3/8"	93
#4	80
#10	67
#20	57
#40	48
#60	42
#100	38
#200	30
Pan	--

<b>USCS Group Symbol</b>	<b>SC</b>
<b>USCS Group Name</b>	<b>CLAYEY SAND with gravel</b>
<b>Cu</b>	---
<b>Cc</b>	---
<b>LL</b>	<b>27</b>
<b>PI</b>	<b>12</b>
<b>Gravel</b>	<b>19.5</b>
<b>Sand</b>	<b>50.7</b>
<b>Fines</b>	<b>29.8</b>
<b>AASHTO Classification</b>	<b>A-2-6</b>
<b>Color</b>	<b>Yellow Brown</b>

Test Method: ASTM D 422

Soil Classification by ASTM D2487 and AASHTO M 145

Reviewed by: DW \_\_\_\_\_

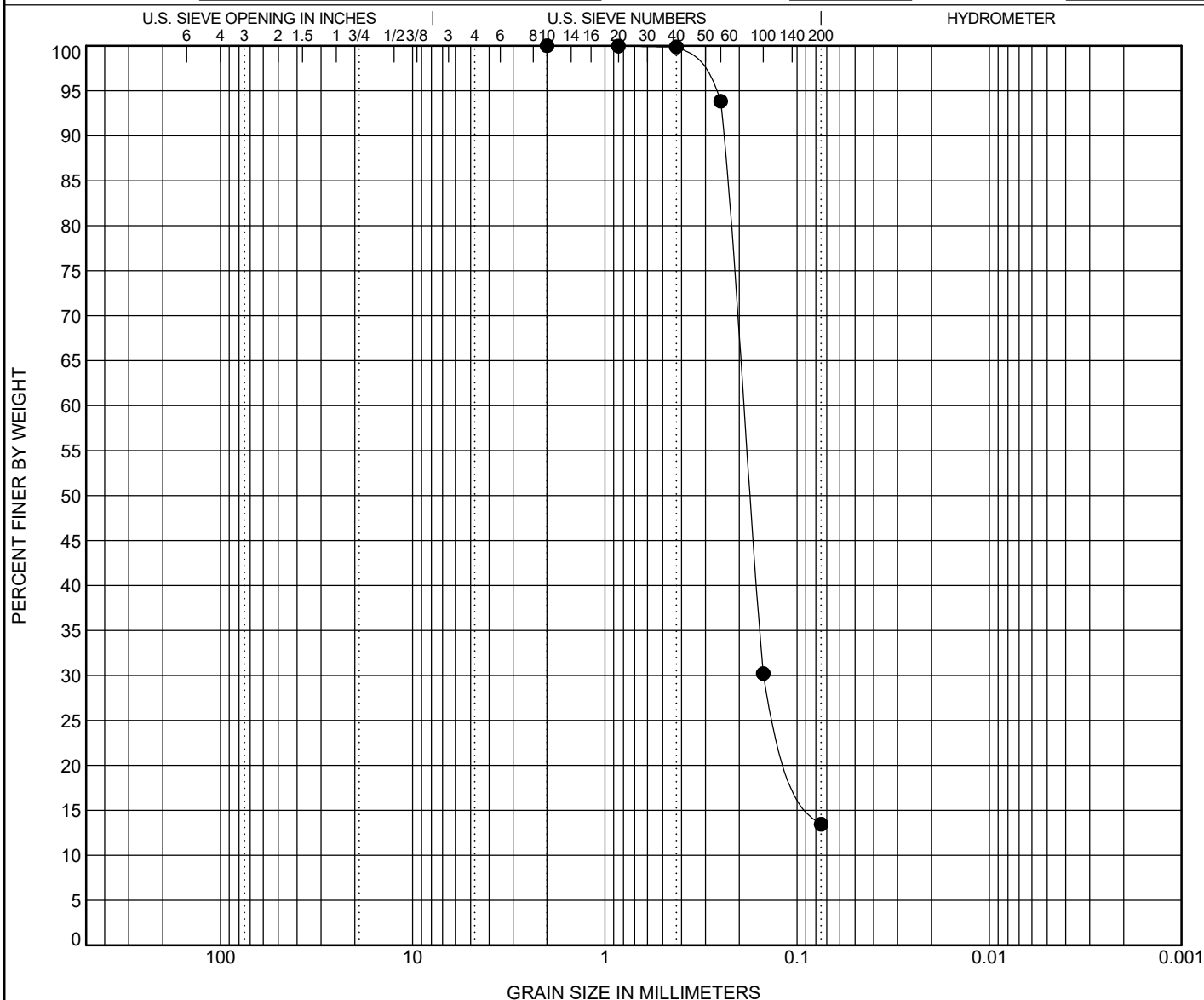
**CLIENT** GeoConcepts Engineering

**PROJECT NAME** JBA EOD

## PROJECT LOCATION

**PROJECT NUMBER** 17337-0

DATE TESTED



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

[illegible]

GRAIN SIZE 17337-0 JBA EOD.GPJ MTA REDLINE.GDT 7/27/20



The Robert B. Balter Company  
Geotechnical and Environmental Engineers  
Materials and Construction Inspection and Testing  
Telephone No. (410) 363-1555  
www.balterco.com

# GRAIN SIZE DISTRIBUTION

TEST METHOD ASTM D422

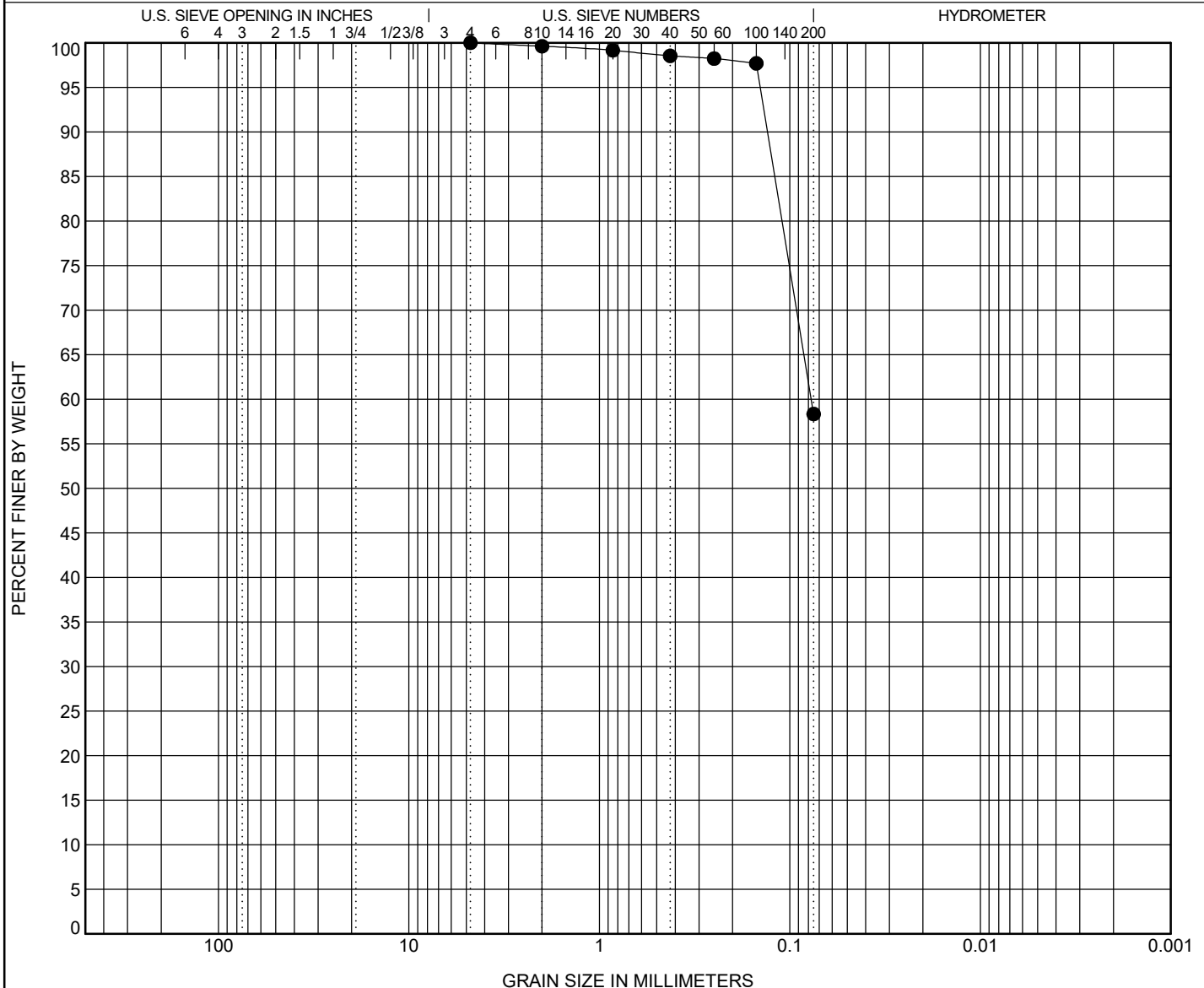
CLIENT GeoConcepts Engineering

PROJECT NAME JBA EOD

PROJECT LOCATION \_\_\_\_\_

PROJECT NUMBER 17337-0

DATE TESTED \_\_\_\_\_





The Robert B. Balter Company  
Geotechnical and Environmental Engineers  
Materials and Construction Inspection and Testing  
Telephone No. (410) 363-1555  
www.balterco.com

# GRAIN SIZE DISTRIBUTION

TEST METHOD ASTM D422

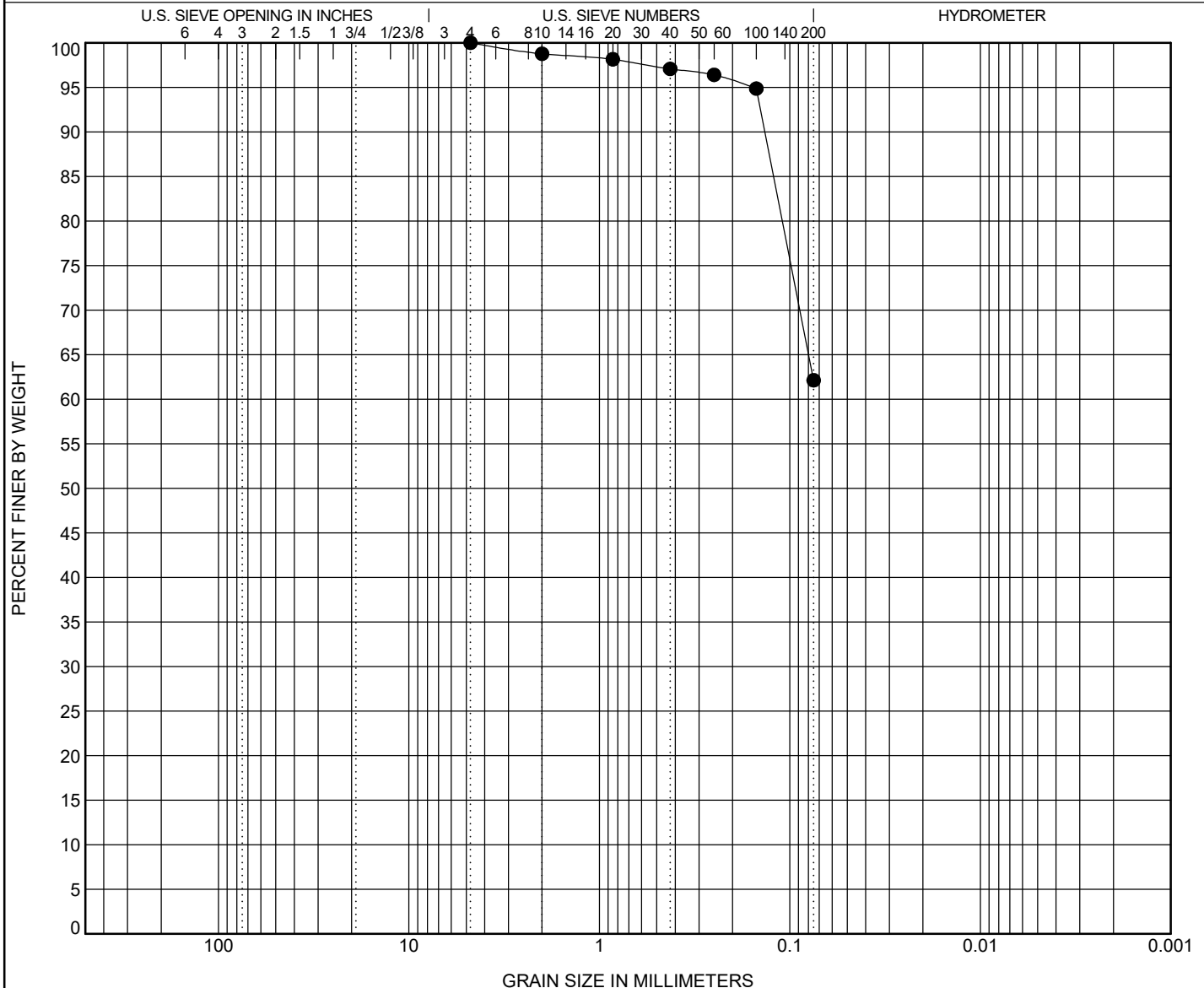
CLIENT GeoConcepts Engineering

PROJECT NAME JBA EOD

PROJECT LOCATION \_\_\_\_\_

PROJECT NUMBER 17337-0

DATE TESTED \_\_\_\_\_



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

Specimen Identification		Classification					LL	PL	PI	Cc	Cu
● MSS-1, ST-3 @ 35.0' - 37.0',		Yellow SANDY SILT(ML)					41	26	15		
Specimen Identification		D100	D60	D30	D10	%Gravel	%Sand	%Silt		%Clay	
● MSS-1, ST-3 @ 35.0' - 37.0',		4.75				0.0	37.9	62.1			

GRAIN SIZE 17337-0 JBA EOD.GPJ MTA REDLINE.GDT 7/27/20



The Robert B. Balter Company  
Geotechnical and Environmental Engineers  
Materials and Construction Inspection and Testing  
Telephone No. (410) 363-1555  
www.balterco.com

# GRAIN SIZE DISTRIBUTION

TEST METHOD ASTM D422

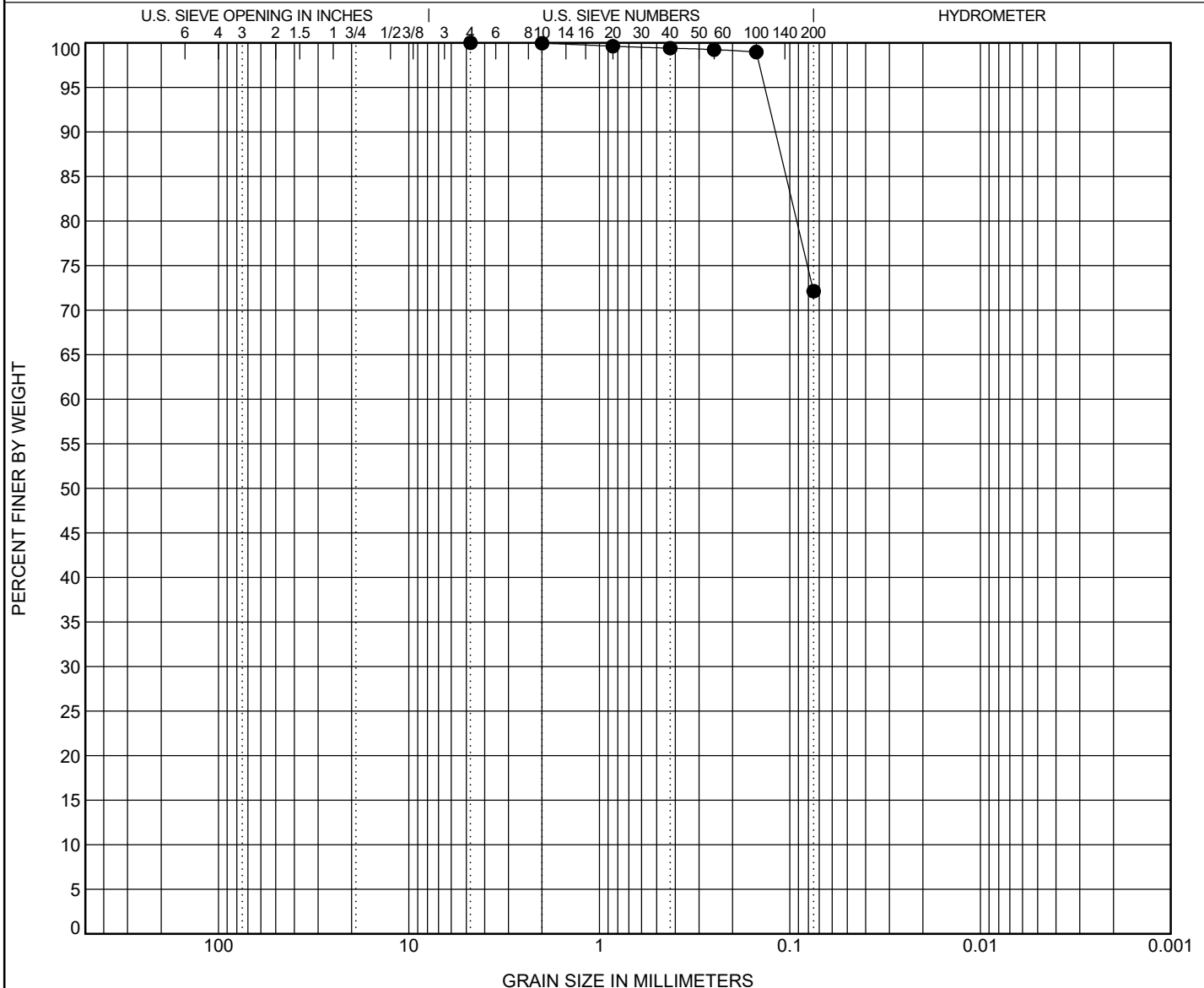
CLIENT GeoConcepts Engineering

PROJECT NAME JBA EOD

PROJECT LOCATION \_\_\_\_\_

PROJECT NUMBER 17337-0

DATE TESTED \_\_\_\_\_



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

Specimen Identification		Classification					LL	PL	PI	Cc	Cu
●	MSS-2, ST-1 @ 20.0' - 22.0',	Olive Gray SILT with SAND(ML)					34	25	9		
Specimen Identification		D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay		
●	MSS-2, ST-1 @ 20.0' - 22.0',	4.75				0.0	27.9	72.1			

GRAIN SIZE 17337-0 JBA EOD.GPJ MTA REDLINE.GDT 7/20/20





The Robert B. Balter Company  
Geotechnical and Environmental Engineers  
Materials and Construction Inspection and Testing  
Telephone No. (410) 363-1555  
www.balterco.com

# GRAIN SIZE DISTRIBUTION

TEST METHOD ASTM D422

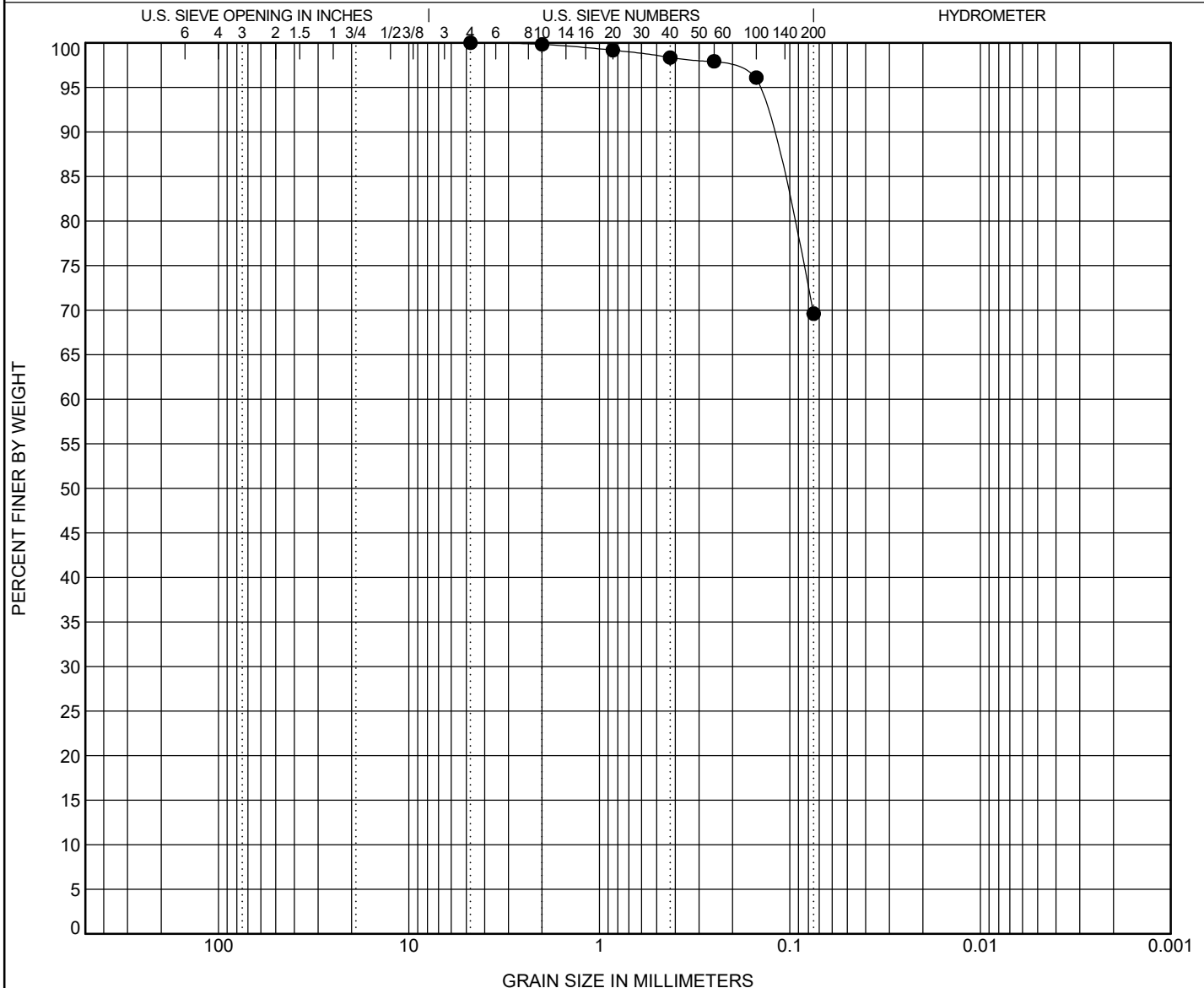
CLIENT GeoConcepts Engineering

PROJECT NAME JBA EOD

PROJECT LOCATION \_\_\_\_\_

PROJECT NUMBER 17337-0

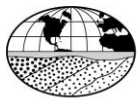
DATE TESTED \_\_\_\_\_



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

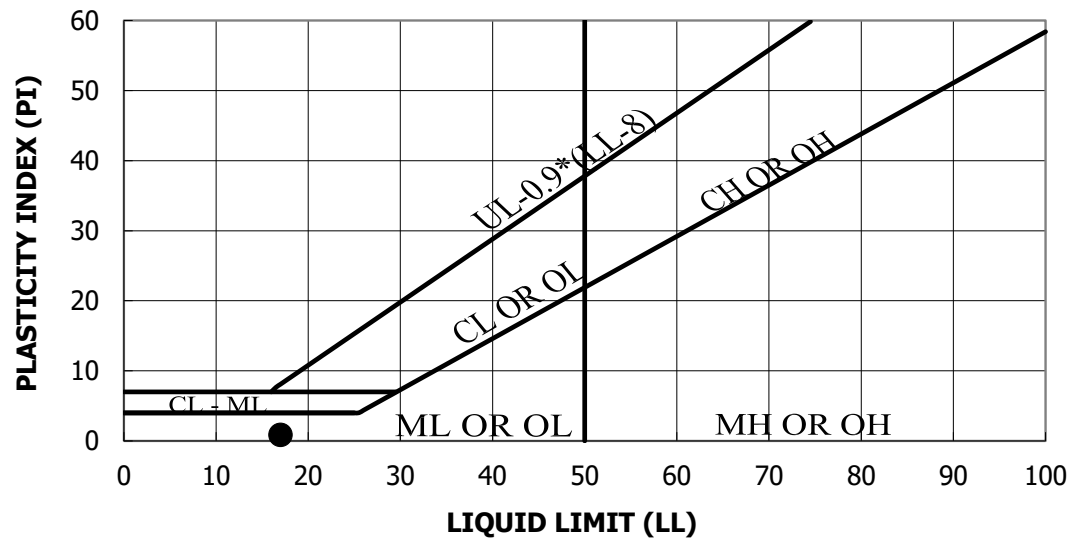
Specimen Identification		Classification					LL	PL	PI	Cc	Cu
●	MSS-2, ST-2 @ 25.0' - 27.0',	Olive SANDY SILT(ML)					44	27	17		
Specimen Identification		D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay		
●	MSS-2, ST-2 @ 25.0' - 27.0',	4.75				0.0	30.4	69.6			

GRAIN SIZE 17337-0 JBA EOD.GPJ MTA REDLINE.GDT 7/27/20



## LIQUID AND PLASTIC LIMIT - ASTM D4318

Project No.	JD175507	Project Name	JBA HCP & EOD
Sample ID	NT-1	Depth (Feet)	0.0-5.0
Lab Order No.	5317	Date	6/22/2020

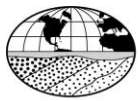


Material Description	LL	PL	PI	% Passing		USCS	w (%)
				#4	#200		
POORLY GRADED SAND with silt and gravel	17	16	1	73.0	11.5	SP-SM	10.6
Color	Light Brown		AASHTO Classification			A-1-b	

Test Method: ASTM D 4318

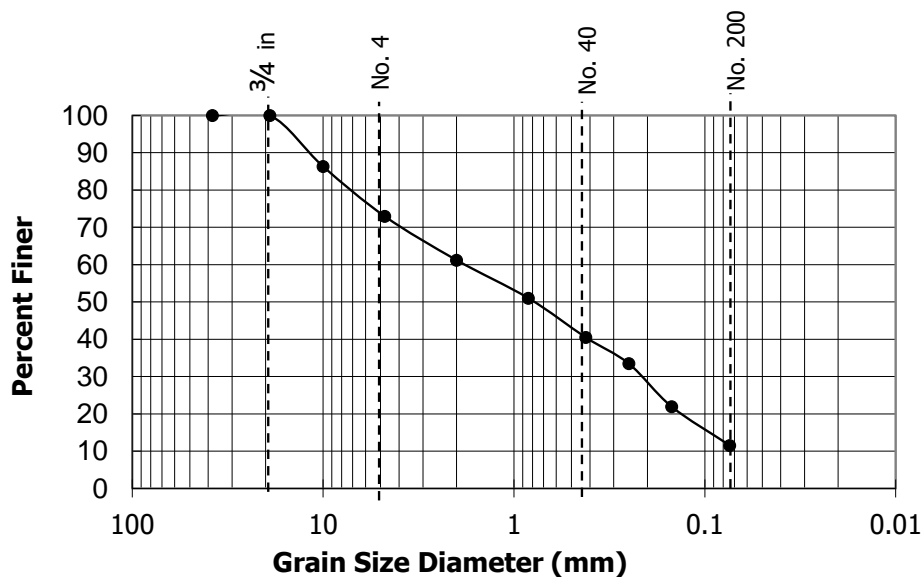
Soil Classification by ASTM D2487 and AASHTO M 145

Reviewed by \_\_\_\_\_ DW



## GRAIN SIZE ANALYSIS - ASTM D422

Project No.	JD175507	Project Name	JBA HCP & EOD
Sample ID	NT-1	Depth (Feet)	0.0-5.0
Lab Order No.	5317	Date	6/22/2020



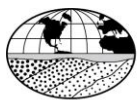
SIEVE	% Passing
1 1/2 "	100
3/4"	100
3/8"	86
#4	73
#10	61
#20	51
#40	40
#60	33
#100	22
#200	12
Pan	--

USCS Group Symbol	SP-SM
USCS Group Name	POORLY GRADED SAND with silt and
Cu	---
Cc	---
LL	17
PI	1
Gravel	27.0
Sand	61.4
Fines	11.5
AASHTO Classification	A-1-b
Color	Light Brown

Test Method: ASTM D 422

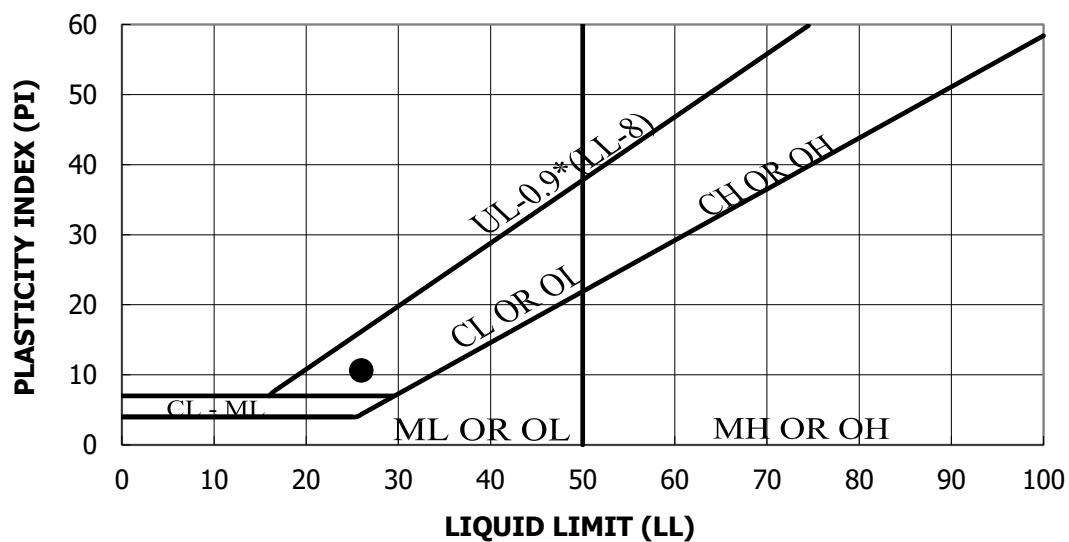
Soil Classification by ASTM D2487 and AASHTO M 145

Reviewed by: DW \_\_\_\_\_



## LIQUID AND PLASTIC LIMIT - ASTM D4318

Project No.	JD175507	Project Name	JBA HCP & EOD
Sample ID	NT-3	Depth (Feet)	0.0-10.0
Lab Order No.	5317	Date	6/22/2020

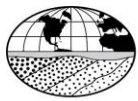


Material Description	LL	PL	PI	% Passing		USCS	w (%)
				#4	#200		
CLAYEY SAND	26	15	11	90.6	33.3	SC	15.0
Color	Yellow Brown		AASHTO Classification			A-2-6	

Test Method: ASTM D 4318

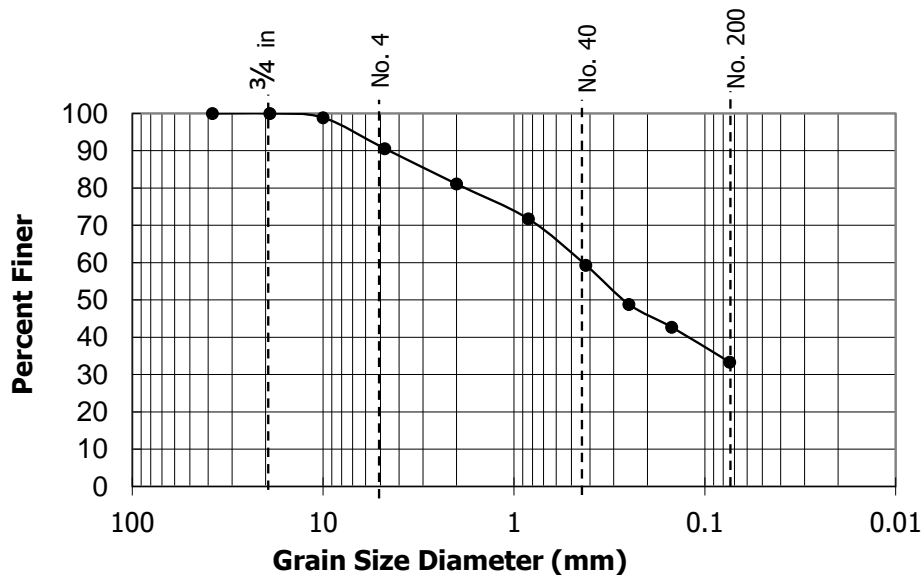
Soil Classification by ASTM D2487 and AASHTO M 145

Reviewed by \_\_\_\_\_ DW



## GRAIN SIZE ANALYSIS - ASTM D422

<b>Project No.</b>	JD175507	<b>Project Name</b>	JBA HCP & EOD
<b>Sample ID</b>	NT-3	<b>Depth (Feet)</b>	0.0-10.0
<b>Lab Order No.</b>	5317	<b>Date</b>	6/22/2020



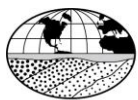
SIEVE	% Passing
1 1/2 "	100
3/4"	100
3/8"	99
#4	91
#10	81
#20	72
#40	59
#60	49
#100	43
#200	33
Pan	--

<b>USCS Group Symbol</b>	<b>SC</b>
<b>USCS Group Name</b>	<b>CLAYEY SAND</b>
<b>Cu</b>	---
<b>Cc</b>	---
<b>LL</b>	<b>26</b>
<b>PI</b>	<b>11</b>
<b>Gravel</b>	<b>9.4</b>
<b>Sand</b>	<b>57.3</b>
<b>Fines</b>	<b>33.3</b>
<b>AASHTO Classification</b>	<b>A-2-6</b>
<b>Color</b>	<b>Yellow Brown</b>

Test Method: ASTM D 422

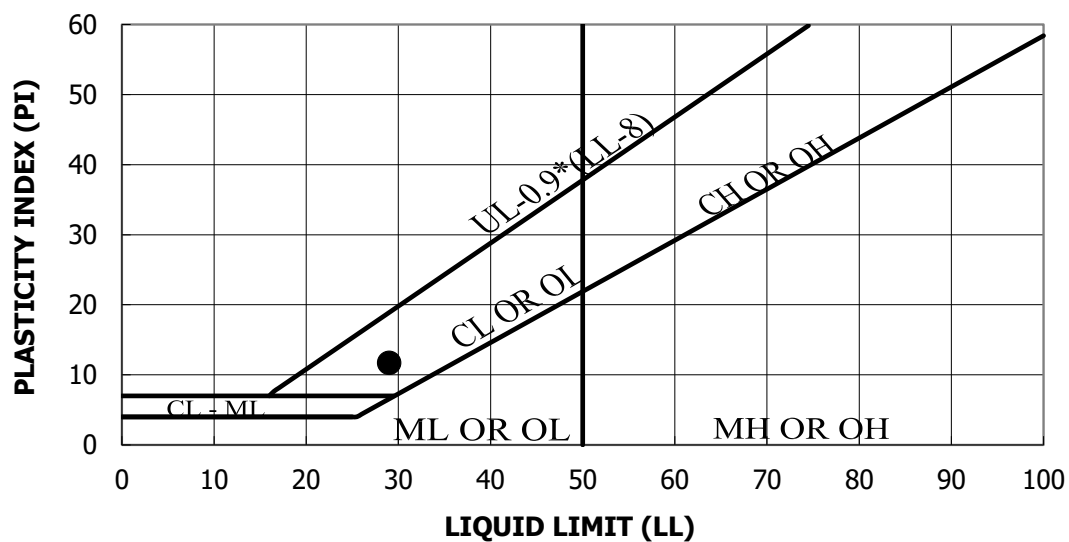
Soil Classification by ASTM D2487 and AASHTO M 145

Reviewed by: DW \_\_\_\_\_



## LIQUID AND PLASTIC LIMIT - ASTM D4318

Project No.	JD175507	Project Name	JBA HCP & EOD
Sample ID	NT-6	Depth (Feet)	0.0-5.0
Lab Order No.	5317	Date	6/22/2020

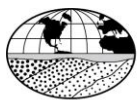


Material Description	LL	PL	PI	% Passing		USCS	w (%)
				#4	#200		
CLAYEY SAND	29	17	12	89.6	45.9	SC	25.0
Color	Dark Gray		AASHTO Classification			A-6	

Test Method: ASTM D 4318

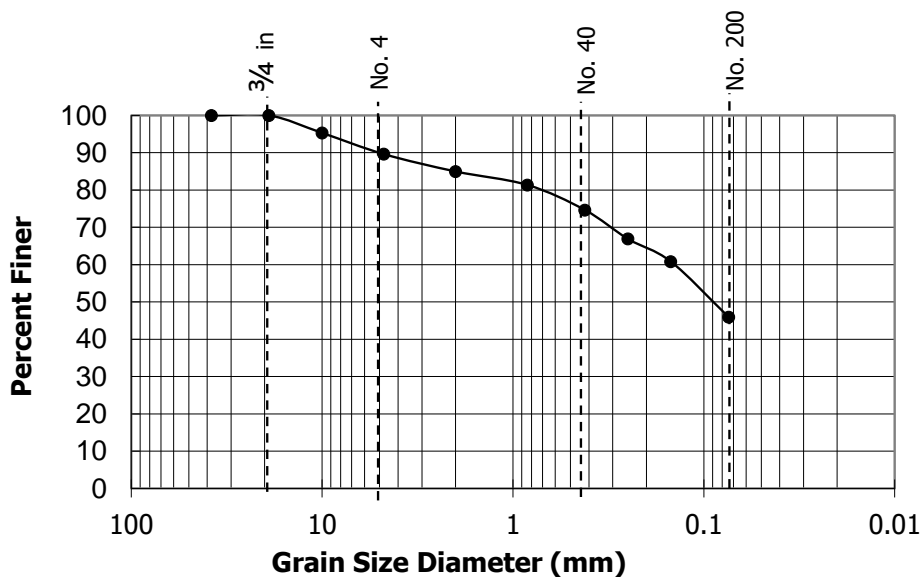
Soil Classification by ASTM D2487 and AASHTO M 145

Reviewed by \_\_\_\_\_ DW



## GRAIN SIZE ANALYSIS - ASTM D422

<b>Project No.</b>	JD175507	<b>Project Name</b>	JBA HCP & EOD
<b>Sample ID</b>	NT-6	<b>Depth (Feet)</b>	0.0-5.0
<b>Lab Order No.</b>	5317	<b>Date</b>	6/22/2020



SIEVE	% Passing
1 1/2 "	100
3/4"	100
3/8"	95
#4	90
#10	85
#20	81
#40	75
#60	67
#100	61
#200	46
Pan	--

<b>USCS Group Symbol</b>	<b>SC</b>
<b>USCS Group Name</b>	<b>CLAYEY SAND</b>
<b>Cu</b>	---
<b>Cc</b>	---
<b>LL</b>	<b>29</b>
<b>PI</b>	<b>12</b>
<b>Gravel</b>	<b>10.4</b>
<b>Sand</b>	<b>43.7</b>
<b>Fines</b>	<b>45.9</b>
<b>AASHTO Classification</b>	<b>A-6</b>
<b>Color</b>	<b>Dark Gray</b>

Test Method: ASTM D 422

Soil Classification by ASTM D2487 and AASHTO M 145

Reviewed by: DW \_\_\_\_\_



The Robert B. Balter Company  
Geotechnical and Environmental Engineers  
Materials and Construction Inspection and Testing  
Telephone No. (410) 363-1555  
www.balterco.com

# GRAIN SIZE DISTRIBUTION

TEST METHOD ASTM D422

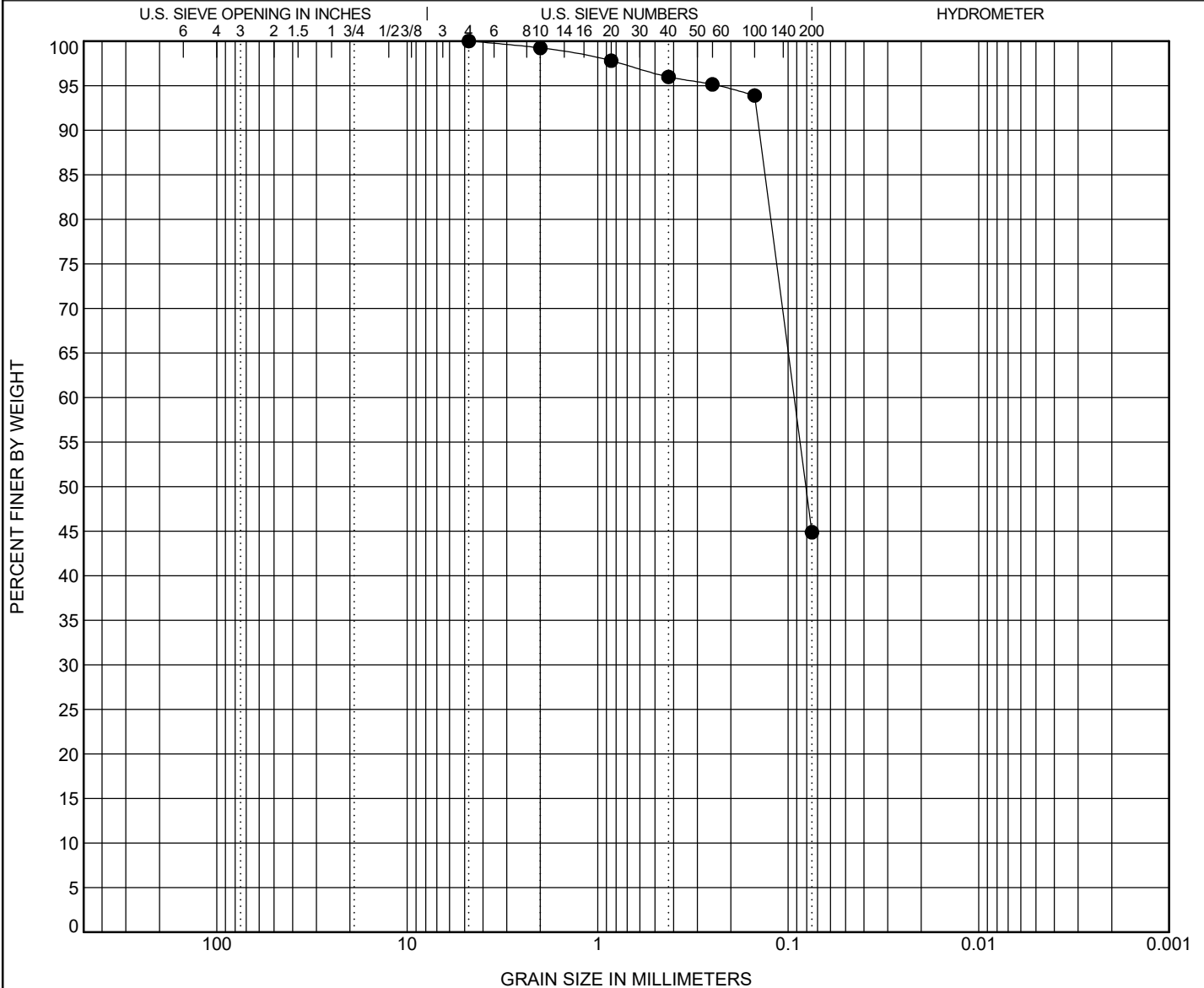
CLIENT GeoConcepts Engineering

PROJECT NAME JBA EOD

PROJECT LOCATION \_\_\_\_\_

PROJECT NUMBER 17337-0

DATE TESTED \_\_\_\_\_



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

Specimen Identification		Classification					LL	PL	PI	Cc	Cu
● TCA-3, ST-1 @ 25.0' - 27.0',		Olive Gray SILTY SAND(SM)					33	25	8		
Specimen Identification		D100	D60	D30	D10	%Gravel	%Sand	%Silt		%Clay	
● TCA-3, ST-1 @ 25.0' - 27.0',		4.75	0.093			0.0	55.1	44.9			

GRAIN SIZE 17337-0 JBA EOD.GPJ MTA REDLINE.GDT 7/27/20





The Robert B. Balter Company  
Geotechnical and Environmental Engineers  
Materials and Construction Inspection and Testing  
Telephone No. (410) 363-1555  
www.balterco.com

# GRAIN SIZE DISTRIBUTION

TEST METHOD ASTM D422

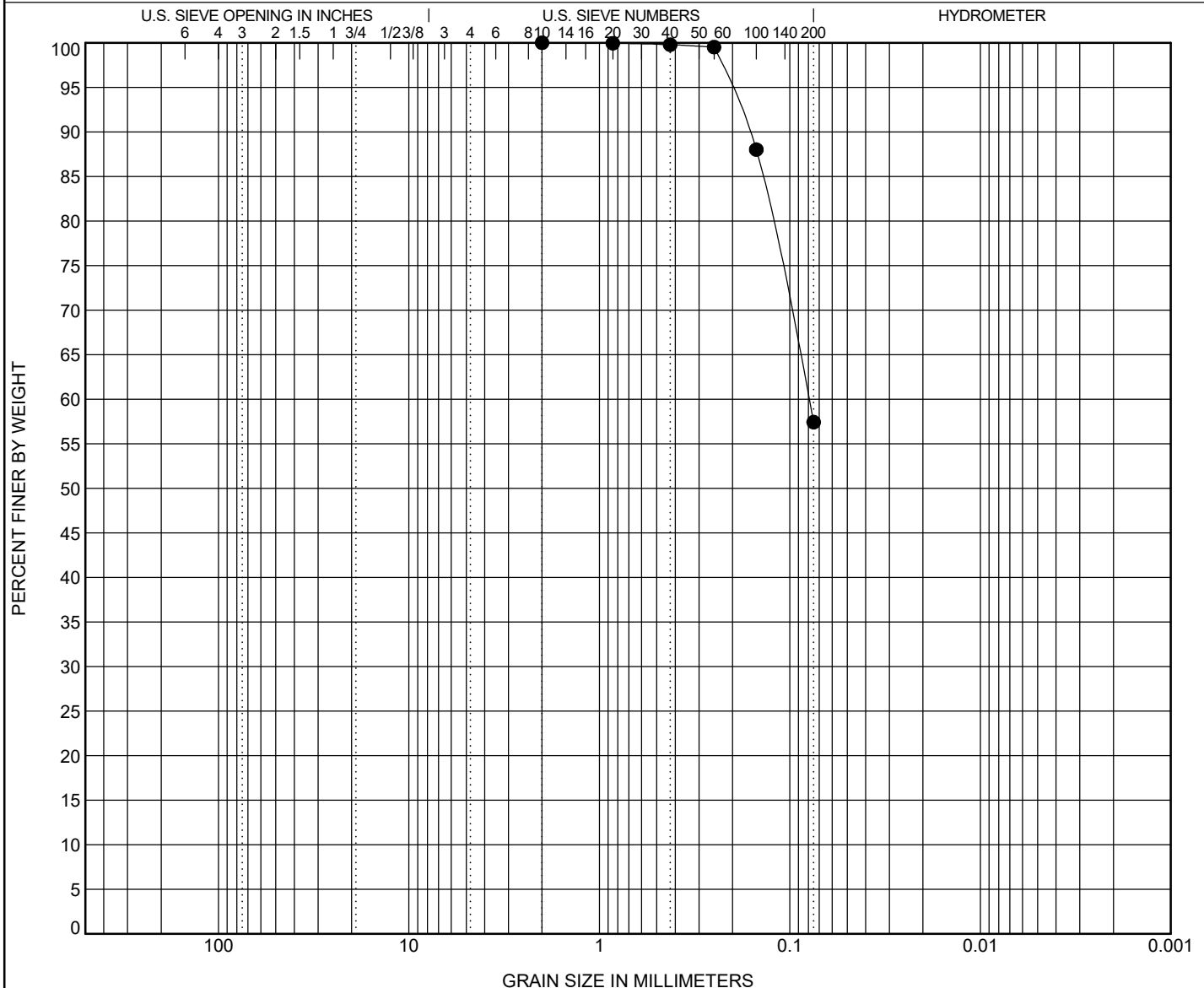
CLIENT GeoConcepts Engineering

PROJECT NAME JBA EOD

PROJECT LOCATION \_\_\_\_\_

PROJECT NUMBER 17337-0

DATE TESTED \_\_\_\_\_



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

Specimen Identification		Classification					LL	PL	PI	Cc	Cu
● TCA-3, ST-2 @ 33.0' - 35.0',		Dark Greenish Gray SANDY LEAN CLAY(CL)					38	20	18		
Specimen Identification		D100	D60	D30	D10	%Gravel	%Sand	%Silt		%Clay	
● TCA-3, ST-2 @ 33.0' - 35.0',		2	0.08			0.0	42.6	57.4			

GRAIN SIZE 17337-0 JBA EOD.GPJ MTA REDLINE.GDT 7/27/20



The Robert B. Balter Company  
Geotechnical and Environmental Engineers  
Materials and Construction Inspection and Testing  
Telephone No. (410) 363-1555  
www.balterco.com

# GRAIN SIZE DISTRIBUTION

TEST METHOD ASTM D422

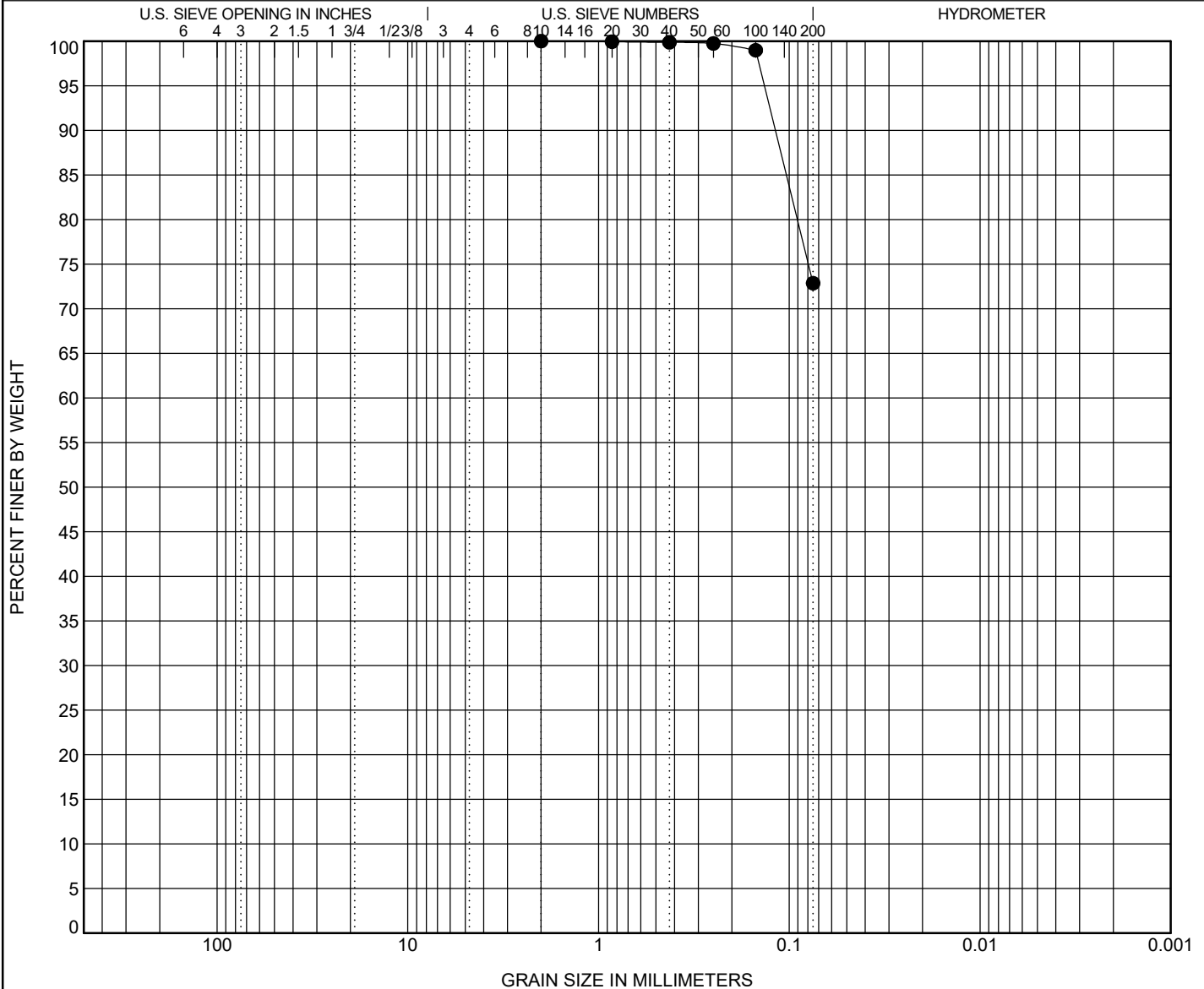
CLIENT GeoConcepts Engineering

PROJECT NAME JBA EOD

PROJECT LOCATION

PROJECT NUMBER 17337-0

DATE TESTED



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

Specimen Identification		Classification					LL	PL	PI	Cc	Cu
● TCA-4, ST-2 @ 55.0' - 57.0',		Olive Gray SILT with SAND(ML)					34	26	8		
Specimen Identification		D100	D60	D30	D10	%Gravel	%Sand	%Silt		%Clay	
● TCA-4, ST-2 @ 55.0' - 57.0',		2				0.0	27.1	72.9			

GRAIN SIZE 17337-0 JBA EOD.GPJ MTA REDLINE.GDT 7/20/20



The Robert B. Balter Company  
Geotechnical and Environmental Engineers  
Materials and Construction Inspection and Testing  
Telephone No. (410) 363-1555  
www.balterco.com

# GRAIN SIZE DISTRIBUTION

TEST METHOD ASTM D422

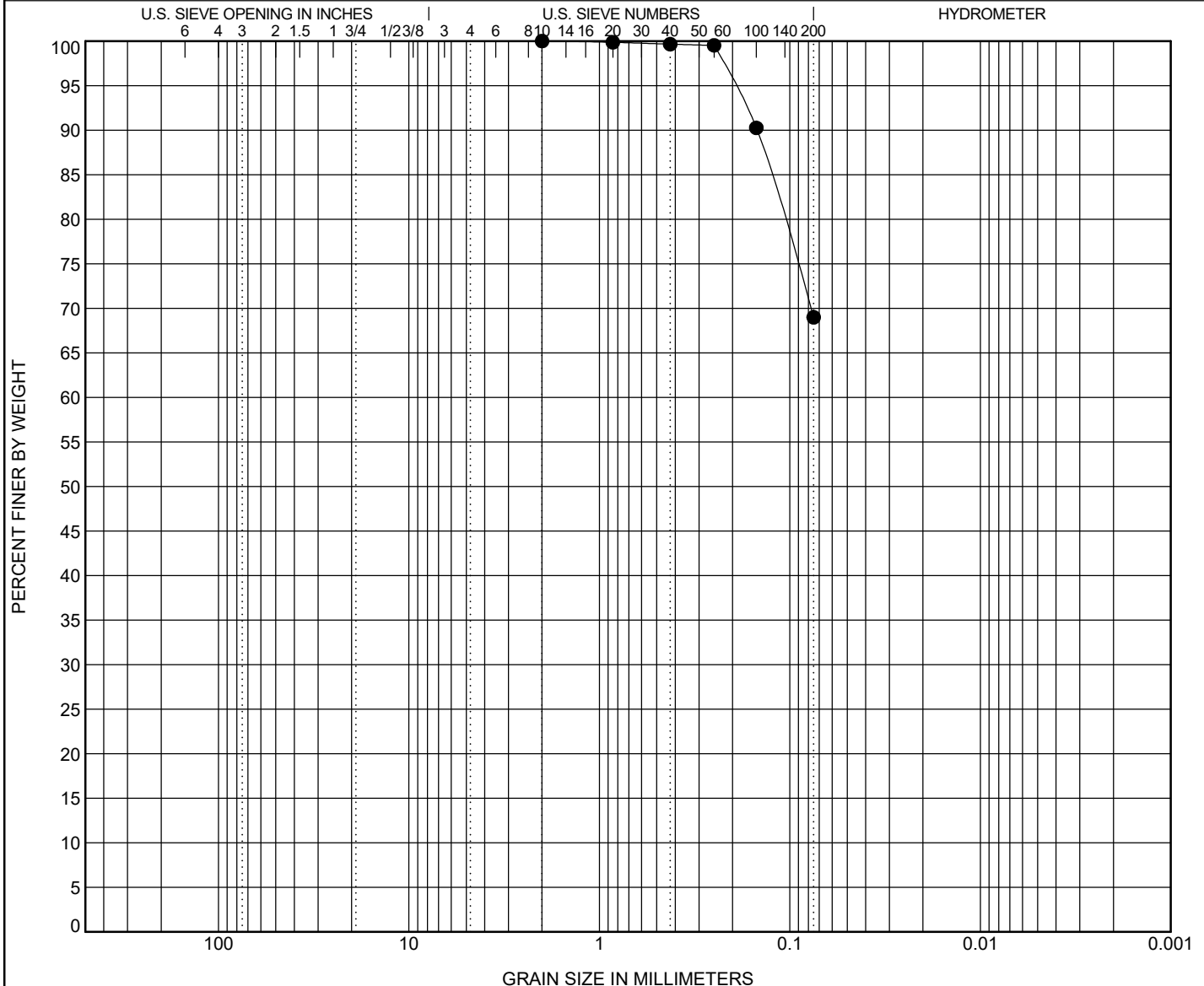
CLIENT GeoConcepts Engineering

PROJECT NAME JBA EOD

PROJECT LOCATION \_\_\_\_\_

PROJECT NUMBER 17337-0

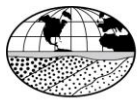
DATE TESTED \_\_\_\_\_



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

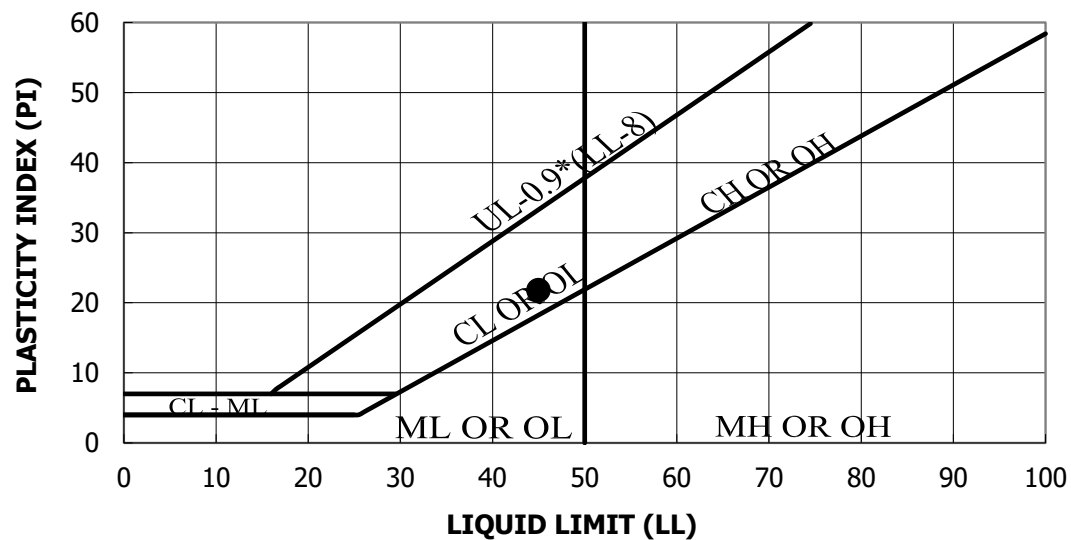
Specimen Identification		Classification					LL	PL	PI	Cc	Cu
● TFA-1, ST-1 @ 14.0' - 16.0';		Olive Gray SANDY LEAN CLAY(CL)					37	16	21		
Specimen Identification		D100	D60	D30	D10	%Gravel	%Sand	%Silt		%Clay	
● TFA-1, ST-1 @ 14.0' - 16.0';		2				0.0	31.0	69.0			

GRAIN SIZE 17337-0 JBA EOD.GPJ MTA REDLINE.GDT 7/20/20



## LIQUID AND PLASTIC LIMIT - ASTM D4318

Project No.	JD175507	Project Name	JBA HCP & EOD
Sample ID	TFA-3	Depth (Feet)	12.0-14.0
Lab Order No.	5321-1	Date	6/25/2020



Material Description	LL	PL	PI	% Passing		USCS	w (%)
				#4	#200		
Lean Clay with sand	45	23	22	100.0	72.5	CL	38.1
Color	Grey		AASHTO Classification			A-7-6	

Test Method: ASTM D 4318

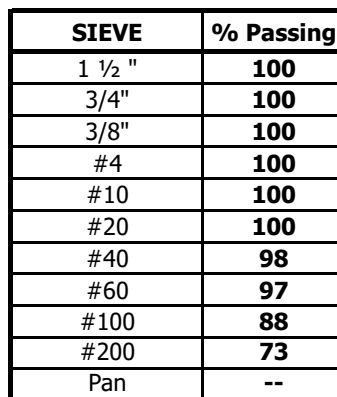
Soil Classification by ASTM D2487 and AASHTO M 145

Reviewed by DW



19955 Highland Vista Dr., Suite 170  
Ashburn, Virginia 20147  
(703) 726-8030  
[www.geoconcepts-eng.com](http://www.geoconcepts-eng.com)

GRAIN SIZE ANALYSIS - ASTM D422			
Project No.	JD175507	Project Name	JBA HCP & EOD
Sample ID	TFA-3	Depth (Feet)	12.0-14.0
Lab Order No.	5321-1	Date	6/25/2020



<b>USCS Group Symbol</b>	<b>CL</b>
<b>USCS Group Name</b>	<b>Lean Clay with sand</b>
<b>Cu</b>	<b>---</b>
<b>Cc</b>	<b>---</b>
<b>LL</b>	<b>45</b>
<b>PI</b>	<b>22</b>
<b>Gravel</b>	<b>0.0</b>
<b>Sand</b>	<b>27.5</b>
<b>Fines</b>	<b>72.5</b>
<b>AASHTO Classification</b>	<b>A-7-6</b>
<b>Color</b>	<b>Grey</b>

Test Method: ASTM D 422

### Soil Classification by ASTM D2487 and AASHTO M 145

Reviewed by: DW



The Robert B. Balter Company  
Geotechnical and Environmental Engineers  
Materials and Construction Inspection and Testing  
Telephone No. (410) 363-1555  
www.balterco.com

# GRAIN SIZE DISTRIBUTION

TEST METHOD ASTM D422

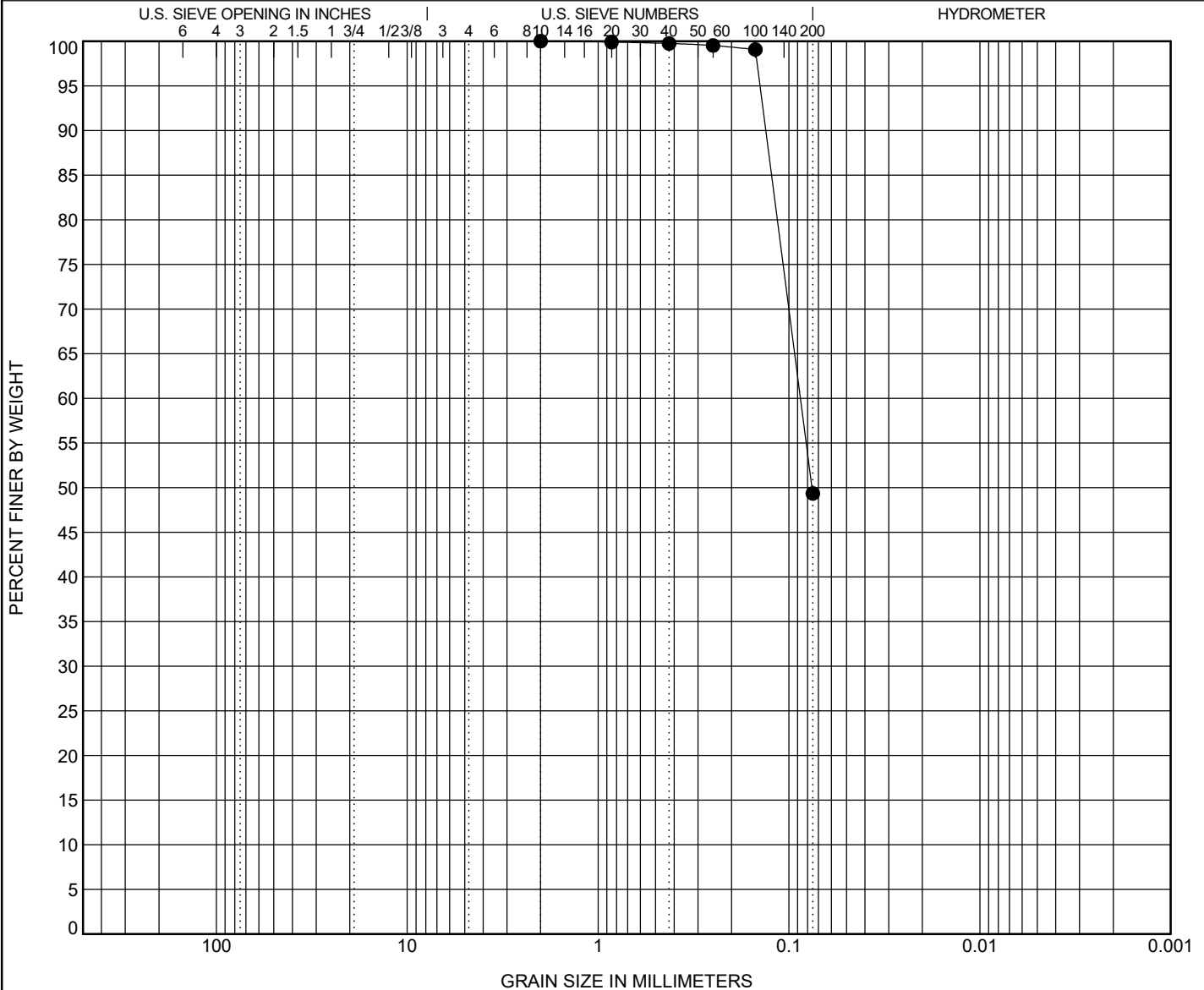
CLIENT GeoConcepts Engineering

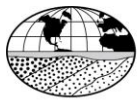
PROJECT NAME JBA EOD

PROJECT LOCATION \_\_\_\_\_

PROJECT NUMBER 17337-0

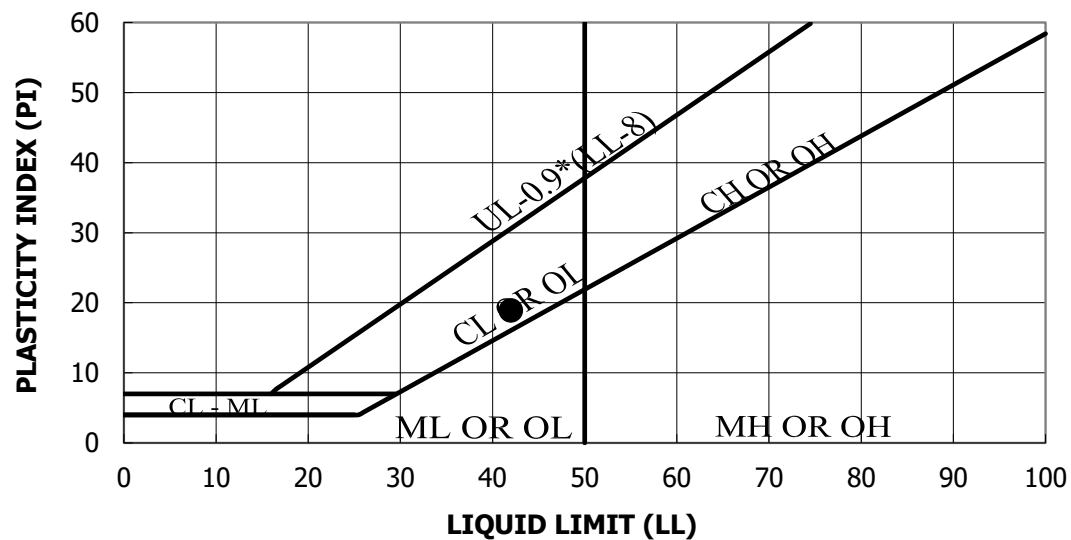
DATE TESTED \_\_\_\_\_





## LIQUID AND PLASTIC LIMIT - ASTM D4318

Project No.	JD175507	Project Name	JBA Hazardous Cargo
Sample ID	TFA-4	Depth (Feet)	10.0-12.0
Lab Order No.	5404-1	Date	8/5/2020

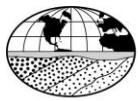


Material Description	LL	PL	PI	% Passing		USCS	w (%)
				#4	#200		
Lean Clay with sand	42	23	19	100.0	76.0	CL	51.5
Color	Dark Grey		AASHTO Classification			A-7-6	

Test Method: ASTM D 4318

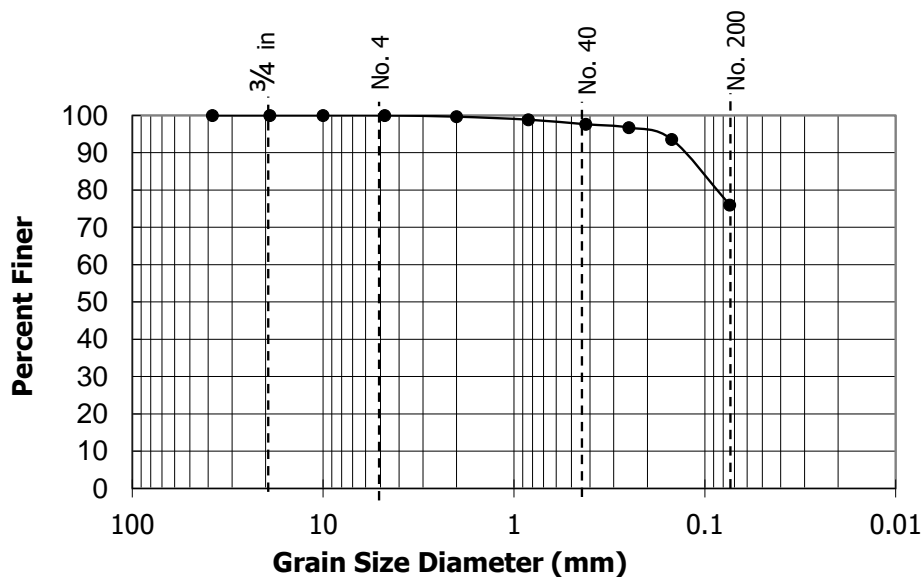
Soil Classification by ASTM D2487 and AASHTO M 145

Reviewed by DW



## GRAIN SIZE ANALYSIS - ASTM D422

<b>Project No.</b>	JD175507	<b>Project Name</b>	JBA Hazardous Cargo
<b>Sample ID</b>	TFA-4	<b>Depth (Feet)</b>	10.0-12.0
<b>Lab Order No.</b>	5404-1	<b>Date</b>	8/5/2020



SIEVE	% Passing
1 1/2 "	100
3/4"	100
3/8"	100
#4	100
#10	100
#20	99
#40	98
#60	97
#100	94
#200	76
Pan	--

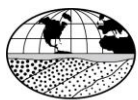
<b>USCS Group Symbol</b>	<b>CL</b>
<b>USCS Group Name</b>	<b>Lean Clay with sand</b>
<b>Cu</b>	---
<b>Cc</b>	---
<b>LL</b>	<b>42</b>
<b>PI</b>	<b>19</b>
<b>Gravel</b>	<b>0.0</b>
<b>Sand</b>	<b>24.0</b>
<b>Fines</b>	<b>76.0</b>
<b>AASHTO Classification</b>	<b>A-7-6</b>
<b>Color</b>	<b>Dark Grey</b>

Test Method: ASTM D 422

Soil Classification by ASTM D2487 and AASHTO M 145

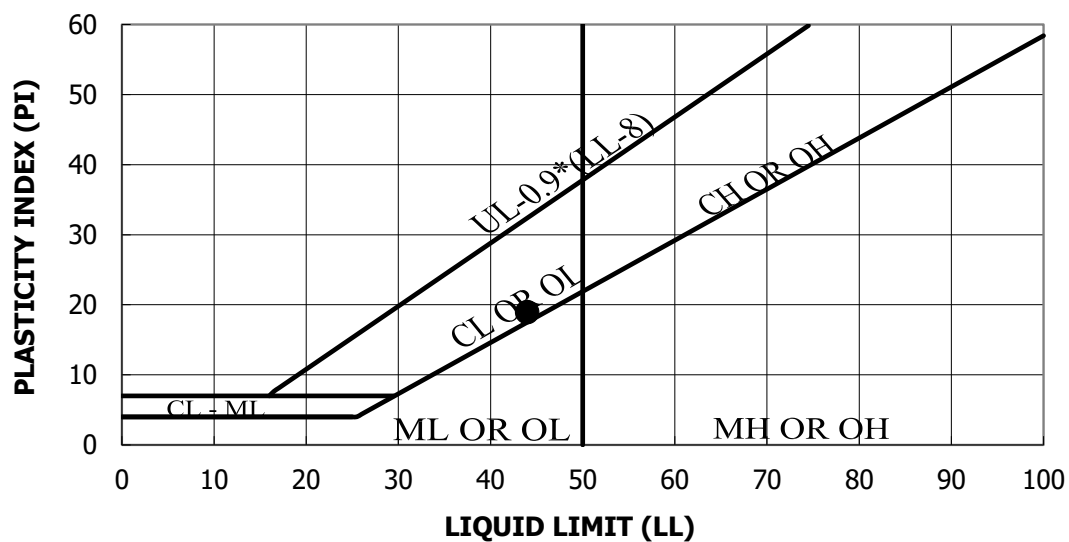
Reviewed by: DW \_\_\_\_\_





## LIQUID AND PLASTIC LIMIT - ASTM D4318

Project No.	JD175507	Project Name	JBA Hazardous Cargo
Sample ID	TFA-4	Depth (Feet)	18.5-20.0
Lab Order No.	5404-2	Date	8/5/2020

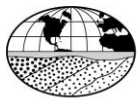


Material Description	LL	PL	PI	% Passing		USCS	w (%)
				#4	#200		
Lean Clay with sand	44	25	19	100.0	78.5	CL	51.4
Color	Dark Grey		AASHTO Classification			A-7-6	

Test Method: ASTM D 4318

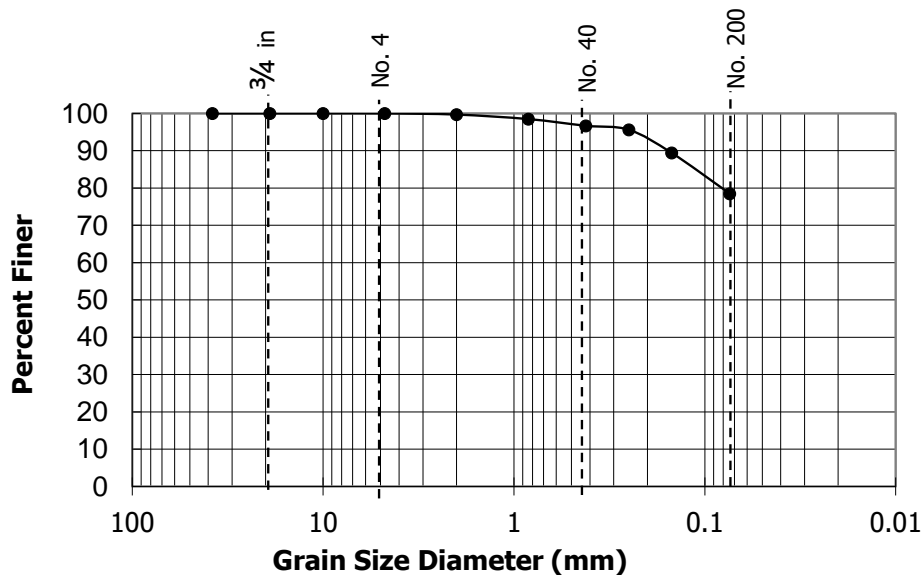
Soil Classification by ASTM D2487 and AASHTO M 145

Reviewed by DW



## GRAIN SIZE ANALYSIS - ASTM D422

<b>Project No.</b>	JD175507	<b>Project Name</b>	JBA Hazardous Cargo
<b>Sample ID</b>	TFA-4	<b>Depth (Feet)</b>	18.5-20.0
<b>Lab Order No.</b>	5404-2	<b>Date</b>	8/5/2020



SIEVE	% Passing
1 1/2 "	100
3/4"	100
3/8"	100
#4	100
#10	100
#20	98
#40	97
#60	96
#100	89
#200	79
Pan	--

<b>USCS Group Symbol</b>	<b>CL</b>
<b>USCS Group Name</b>	<b>Lean Clay with sand</b>
<b>Cu</b>	---
<b>Cc</b>	---
<b>LL</b>	<b>44</b>
<b>PI</b>	<b>19</b>
<b>Gravel</b>	<b>0.0</b>
<b>Sand</b>	<b>21.5</b>
<b>Fines</b>	<b>78.5</b>
<b>AASHTO Classification</b>	<b>A-7-6</b>
<b>Color</b>	<b>Dark Grey</b>

Test Method: ASTM D 422

Soil Classification by ASTM D2487 and AASHTO M 145

Reviewed by: DW \_\_\_\_\_



The Robert B. Balter Company  
Geotechnical and Environmental Engineers  
Materials and Construction Inspection and Testing  
Telephone No. (410) 363-1555  
www.balterco.com

# GRAIN SIZE DISTRIBUTION

TEST METHOD ASTM D422

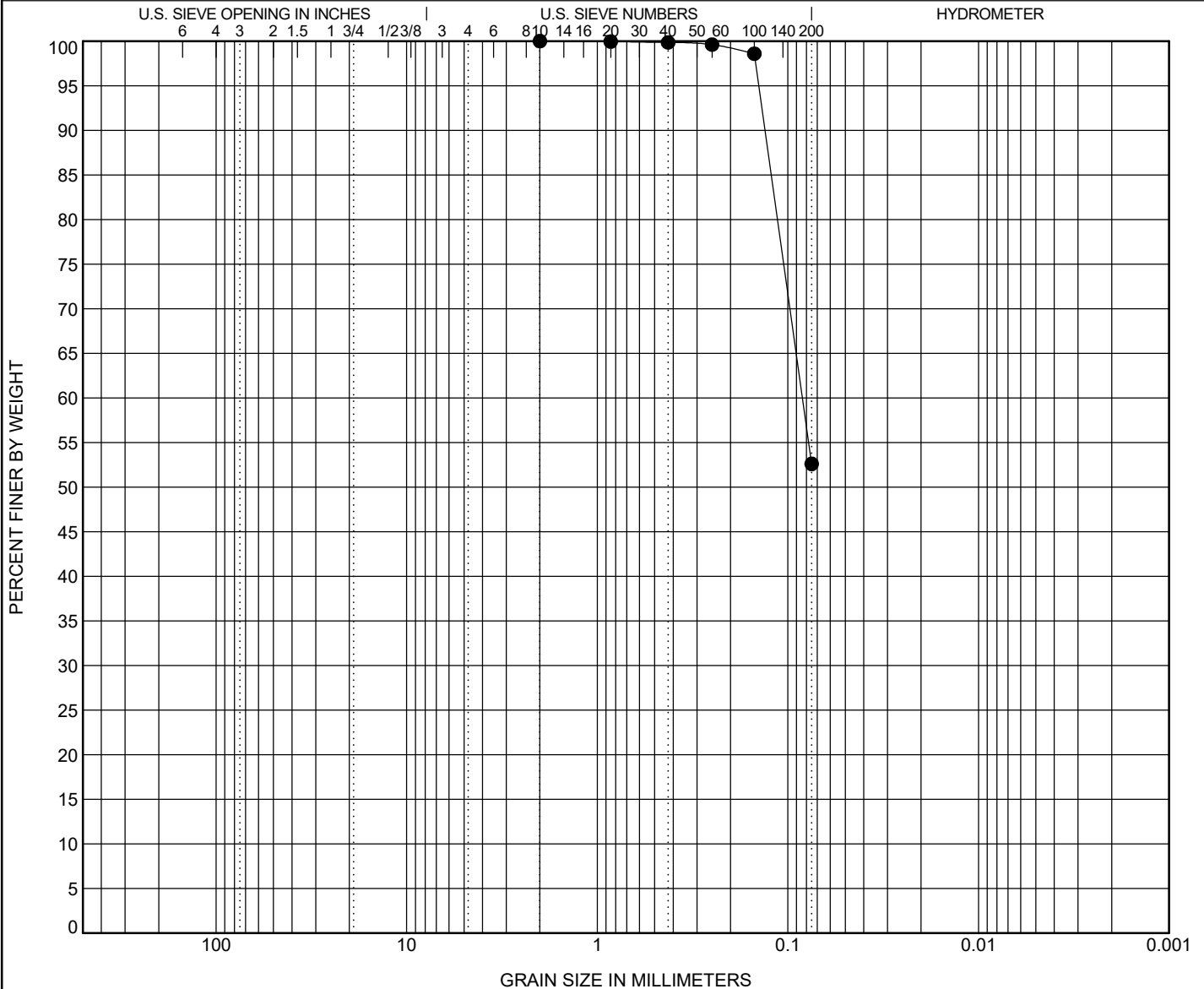
CLIENT GeoConcepts Engineering

PROJECT NAME JBA EOD

PROJECT LOCATION \_\_\_\_\_

PROJECT NUMBER 17337-0

DATE TESTED \_\_\_\_\_





The Robert B. Balter Company  
Geotechnical and Environmental Engineers  
Materials and Construction Inspection and Testing  
Telephone No. (410) 363-1555  
www.balterco.com

# GRAIN SIZE DISTRIBUTION

TEST METHOD ASTM D422

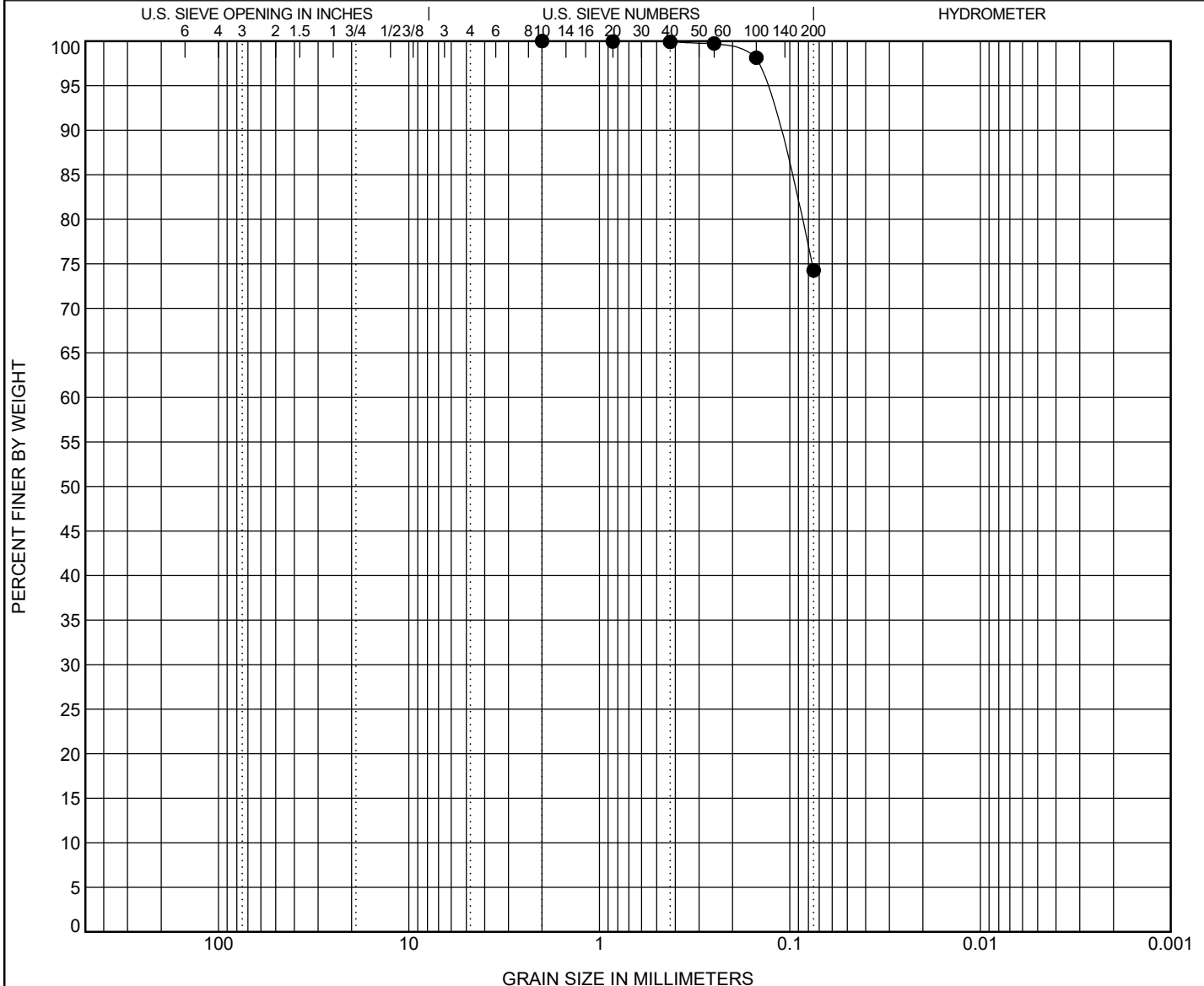
CLIENT GeoConcepts Engineering

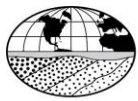
PROJECT NAME JBA EOD

PROJECT LOCATION \_\_\_\_\_

PROJECT NUMBER 17337-0

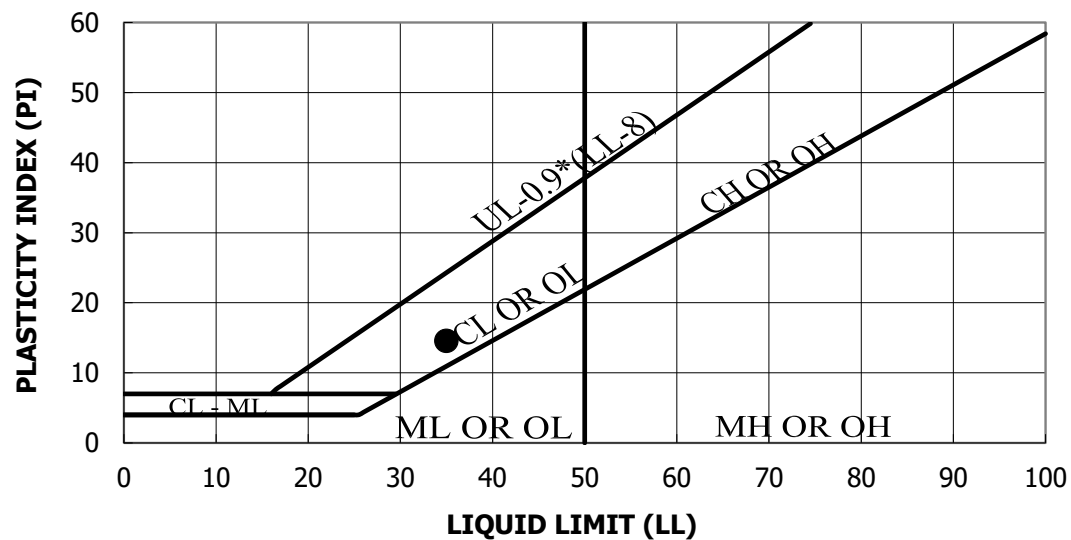
DATE TESTED \_\_\_\_\_





## LIQUID AND PLASTIC LIMIT - ASTM D4318

Project No.	JD175507	Project Name	JBA Hazardous Cargo
Sample ID	TFA-5	Depth (Feet)	10.0-12.0
Lab Order No.	5404-3	Date	8/5/2020

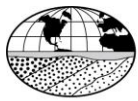


Material Description	LL	PL	PI	% Passing		USCS	w (%)
				#4	#200		
Lean Clay with sand	35	20	15	99.5	76.7	CL	34.7
Color	Light Brown		AASHTO Classification			A-6	

Test Method: ASTM D 4318

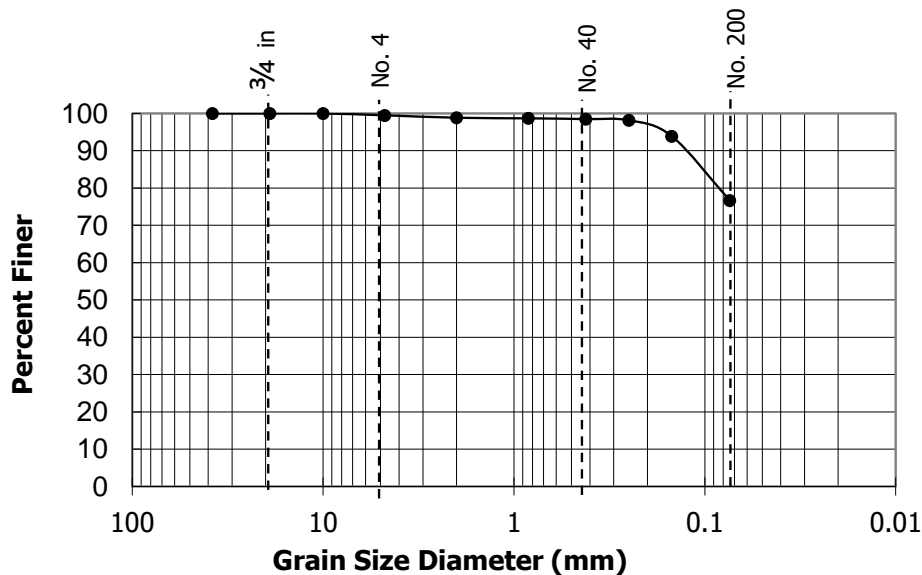
Soil Classification by ASTM D2487 and AASHTO M 145

Reviewed by DW



## GRAIN SIZE ANALYSIS - ASTM D422

<b>Project No.</b>	JD175507	<b>Project Name</b>	JBA Hazardous Cargo
<b>Sample ID</b>	TFA-5	<b>Depth (Feet)</b>	10.0-12.0
<b>Lab Order No.</b>	5404-3	<b>Date</b>	8/5/2020



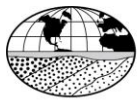
SIEVE	% Passing
1 1/2 "	100
3/4"	100
3/8"	100
#4	100
#10	99
#20	99
#40	98
#60	98
#100	94
#200	77
Pan	--

<b>USCS Group Symbol</b>	<b>CL</b>
<b>USCS Group Name</b>	<b>Lean Clay with sand</b>
<b>Cu</b>	---
<b>Cc</b>	---
<b>LL</b>	<b>35</b>
<b>PI</b>	<b>15</b>
<b>Gravel</b>	<b>0.5</b>
<b>Sand</b>	<b>22.8</b>
<b>Fines</b>	<b>76.7</b>
<b>AASHTO Classification</b>	<b>A-6</b>
<b>Color</b>	<b>Light Brown</b>

Test Method: ASTM D 422

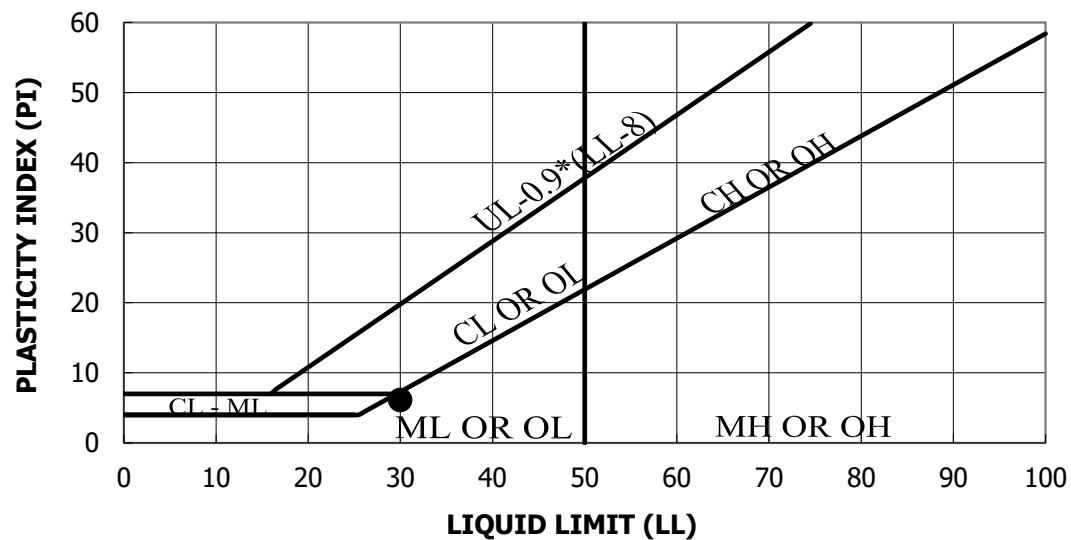
Soil Classification by ASTM D2487 and AASHTO M 145

Reviewed by: DW \_\_\_\_\_



## LIQUID AND PLASTIC LIMIT - ASTM D4318

Project No.	JD175507	Project Name	JBA Hazardous Cargo
Sample ID	TFA-5	Depth (Feet)	23.5-25.0
Lab Order No.	5404-4	Date	8/5/2020



Material Description	LL	PL	PI	% Passing		USCS	w (%)
				#4	#200		
sandy Silt	30	24	6	100.0	65.0	ML	36.8
Color	Olive		AASHTO Classification			A-4	

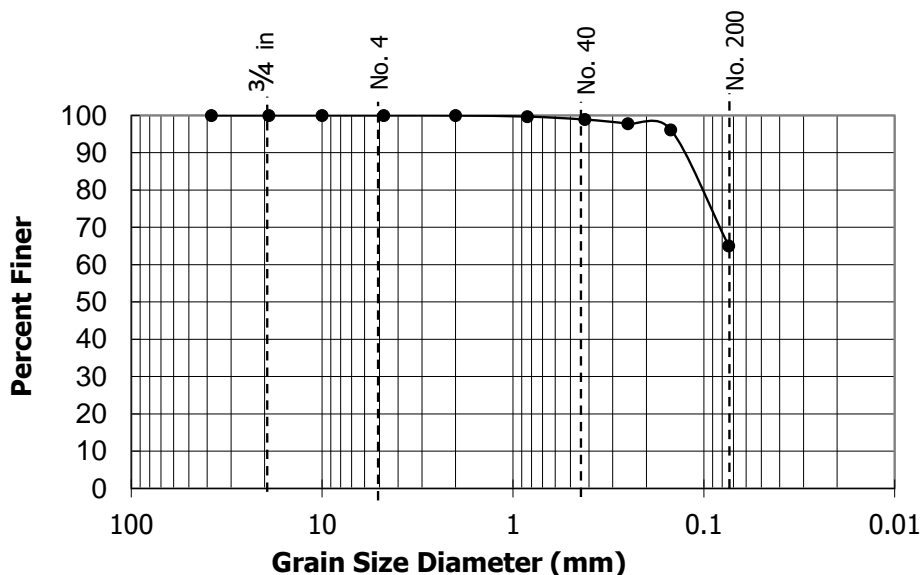
Test Method: ASTM D 4318

Soil Classification by ASTM D2487 and AASHTO M 145

Reviewed by DW

## GRAIN SIZE ANALYSIS - ASTM D422

<b>Project No.</b>	JD175507	<b>Project Name</b>	JBA Hazardous Cargo
<b>Sample ID</b>	TFA-5	<b>Depth (Feet)</b>	23.5-25.0
<b>Lab Order No.</b>	5404-4	<b>Date</b>	8/5/2020



<b>SIEVE</b>	<b>% Passing</b>
1 ½ "	<b>100</b>
3/4"	<b>100</b>
3/8"	<b>100</b>
#4	<b>100</b>
#10	<b>100</b>
#20	<b>100</b>
#40	<b>99</b>
#60	<b>98</b>
#100	<b>96</b>
#200	<b>65</b>
Pan	<b>--</b>

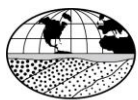
<b>USCS Group Symbol</b>	<b>ML</b>
<b>USCS Group Name</b>	<b>sandy Silt</b>
<b>Cu</b>	<b>---</b>
<b>Cc</b>	<b>---</b>
<b>LL</b>	<b>30</b>
<b>PI</b>	<b>6</b>
<b>Gravel</b>	<b>0.0</b>
<b>Sand</b>	<b>35.0</b>
<b>Fines</b>	<b>65.0</b>
<b>AASHTO Classification</b>	<b>A-4</b>
<b>Color</b>	<b>Olive</b>

Test Method: ASTM D 422

### Soil Classification by ASTM D2487 and AASHTO M 145

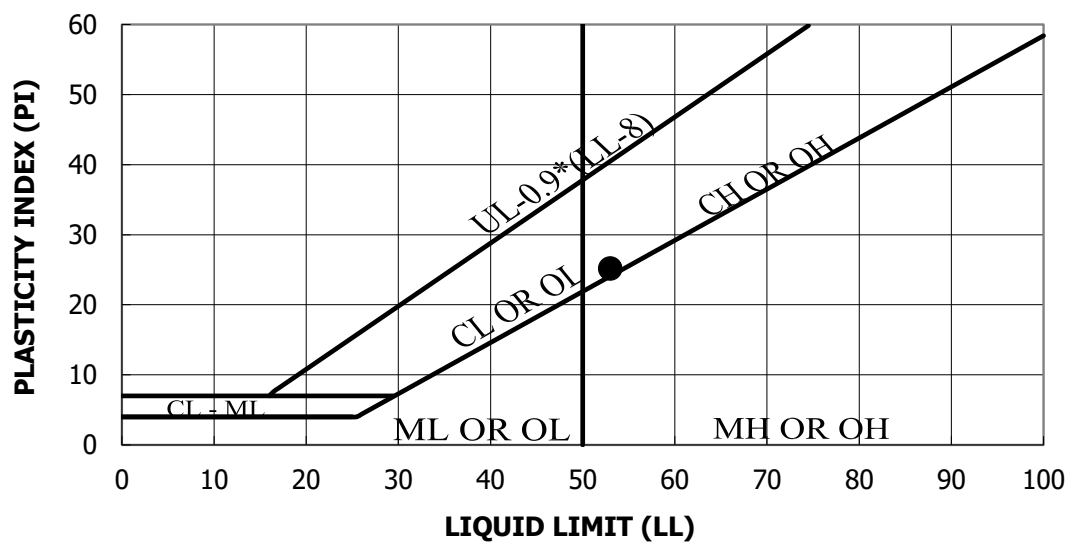
Reviewed by: DW





## LIQUID AND PLASTIC LIMIT - ASTM D4318

Project No.	JD175507	Project Name	JBA HCP & EOD
Sample ID	TFA-5	Depth (Feet)	25.0-27.0
Lab Order No.	5321-2	Date	6/25/2020

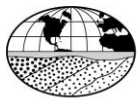


Material Description	LL	PL	PI	% Passing		USCS	w (%)
				#4	#200		
Fat Clay with sand	53	28	25	100.0	76.3	CH	46.7
Color	Grey		AASHTO Classification			A-7-6	

Test Method: ASTM D 4318

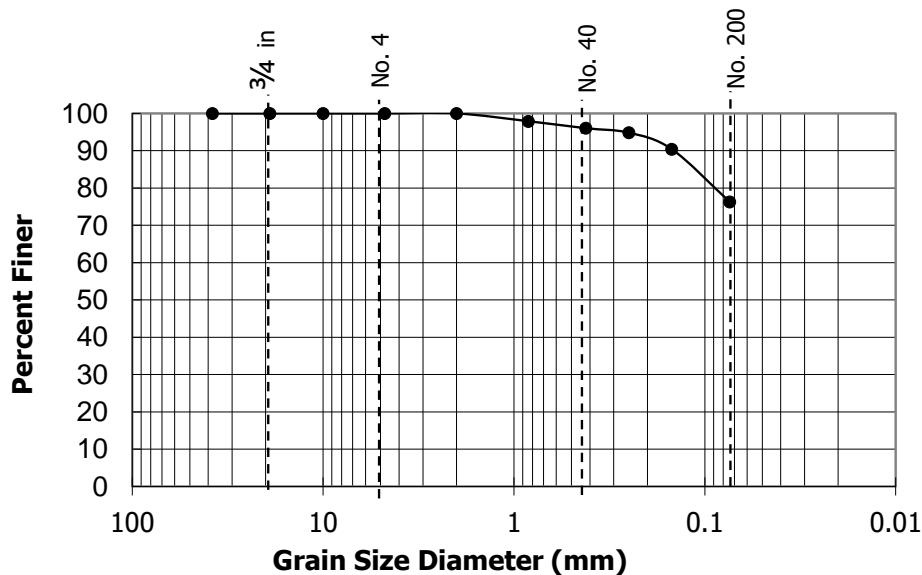
Soil Classification by ASTM D2487 and AASHTO M 145

Reviewed by \_\_\_\_\_ DW



## GRAIN SIZE ANALYSIS - ASTM D422

Project No.	JD175507	Project Name	JBA HCP & EOD
Sample ID	TFA-5	Depth (Feet)	25.0-27.0
Lab Order No.	5321-2	Date	6/25/2020



SIEVE	% Passing
1 1/2 "	100
3/4"	100
3/8"	100
#4	100
#10	100
#20	98
#40	96
#60	95
#100	90
#200	76
Pan	--

USCS Group Symbol	CH
USCS Group Name	Fat Clay with sand
Cu	---
Cc	---
LL	53
PI	25
Gravel	0.0
Sand	23.7
Fines	76.3
AASHTO Classification	A-7-6
Color	Grey

Test Method: ASTM D 422

Soil Classification by ASTM D2487 and AASHTO M 145

Reviewed by: DW \_\_\_\_\_



The Robert B. Balter Company  
Geotechnical and Environmental Engineers  
Materials and Construction Inspection and Testing  
Telephone No. (410) 363-1555  
www.balterco.com

# GRAIN SIZE DISTRIBUTION

TEST METHOD ASTM D422

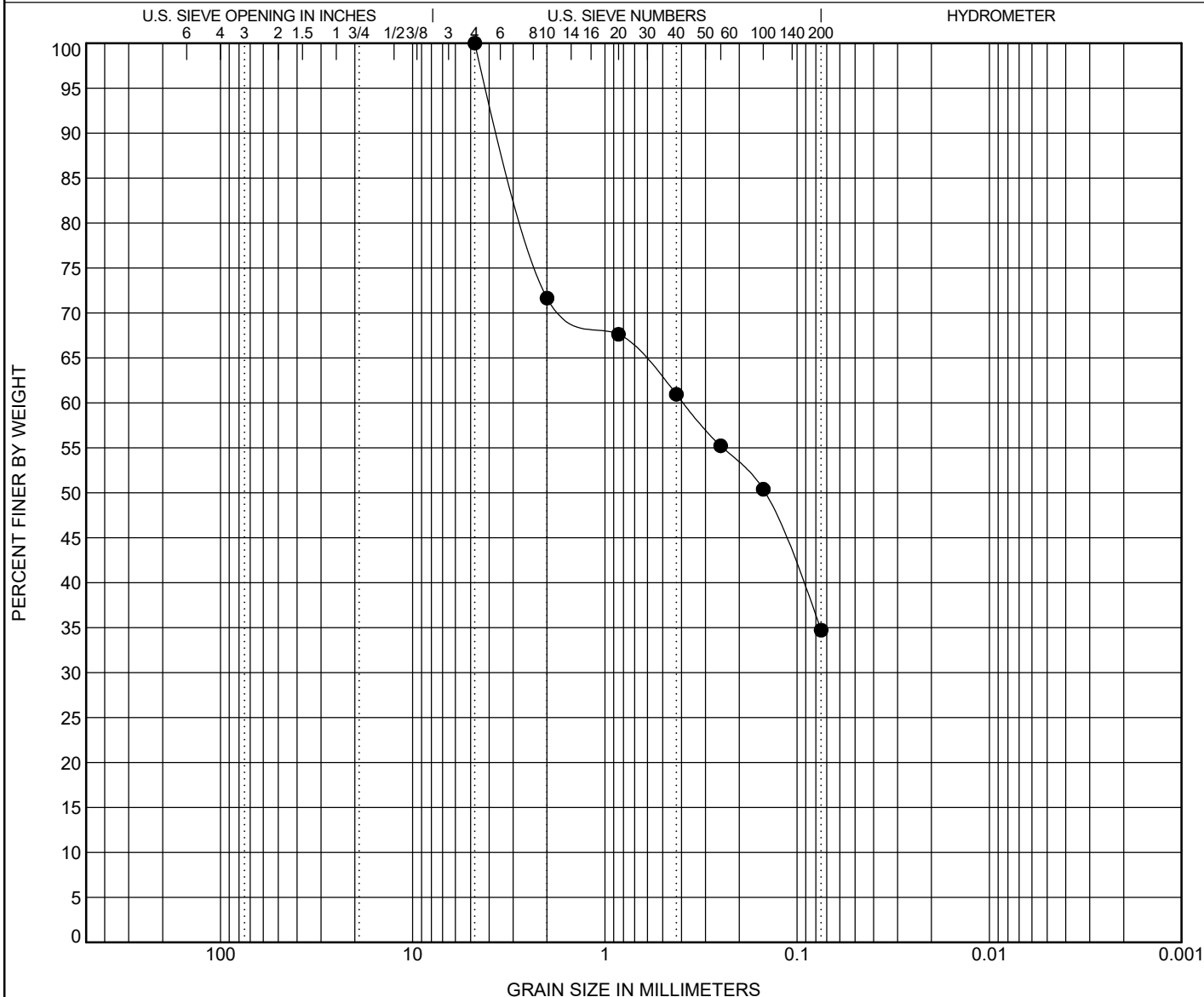
CLIENT GeoConcepts Engineering

PROJECT NAME JBA EOD

PROJECT LOCATION \_\_\_\_\_

PROJECT NUMBER 17337-0

DATE TESTED \_\_\_\_\_

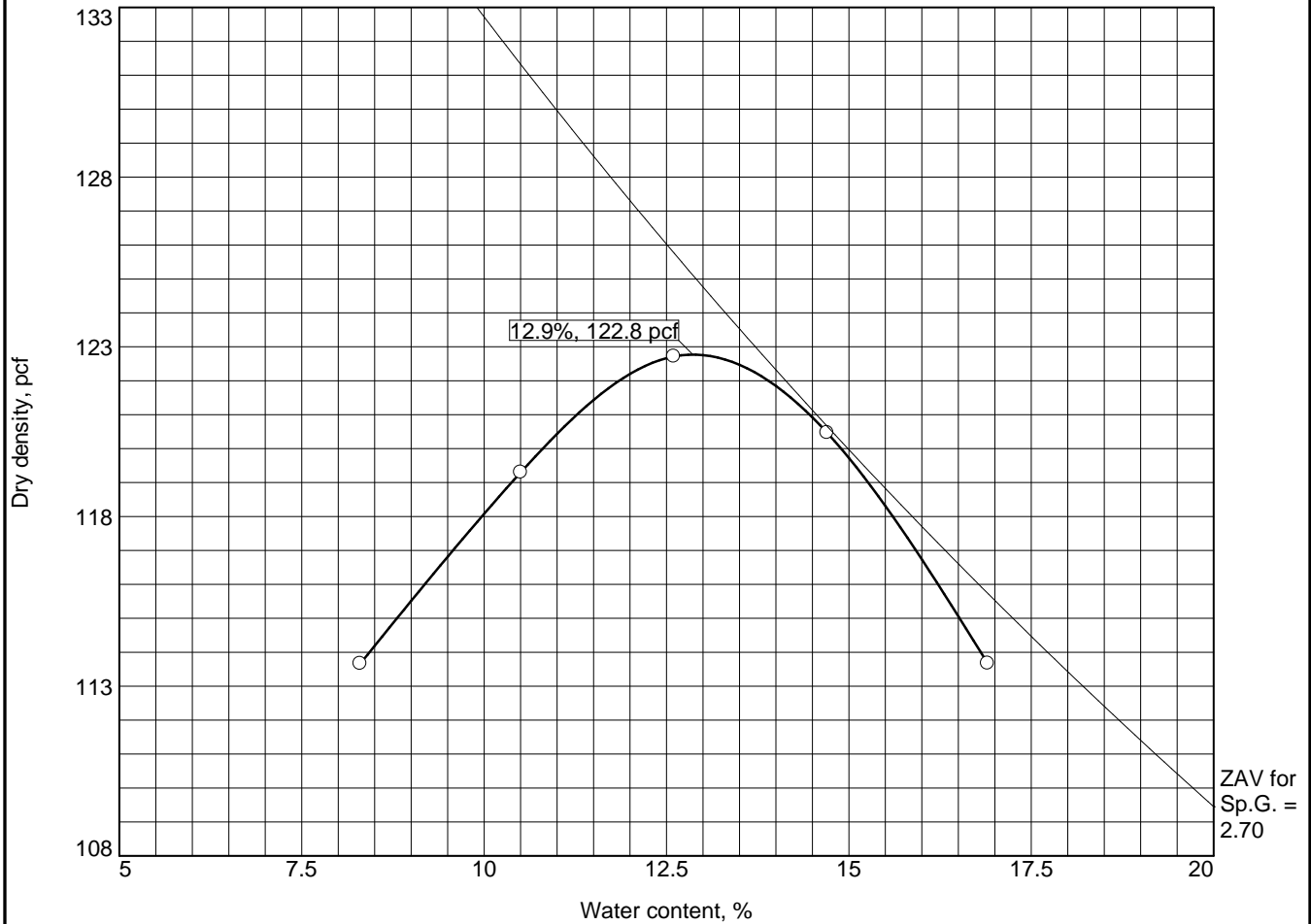


COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

Specimen Identification		Classification					LL	PL	PI	Cc	Cu
● TSS-1, ST-1 @ 20.0' - 22.0',		Olive Gray CLAYEY SAND(SC)					37	18	19		
Specimen Identification		D100	D60	D30	D10	%Gravel	%Sand	%Silt		%Clay	
● TSS-1, ST-1 @ 20.0' - 22.0',		4.75	0.389			0.0	65.3	34.7			

GRAIN SIZE 17337-0 JBA EOD.GPJ MTA REDLINE.GDT 7/20/20

# COMPACTION TEST REPORT



Test specification: ASTM D 1557-12 Method A Modified

Elev/ Depth	Classification		Nat. Moist.	Sp.G.	LL	PI	% > #4	% < No.200
	USCS	AASHTO						
0.0 - 5.0'	CL	A-6(11)	26.5	2.65	36	16	1.0	76.0

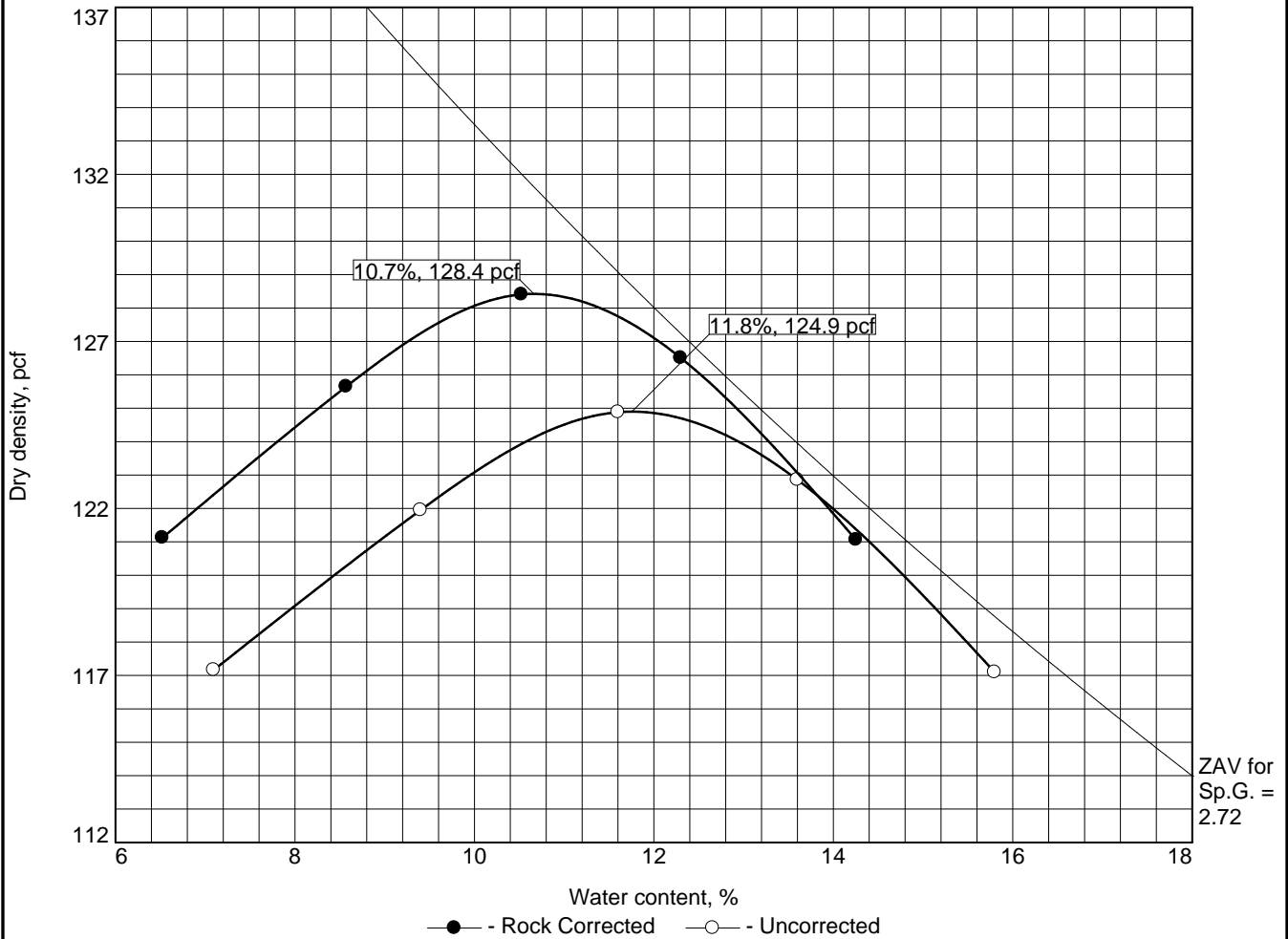
TEST RESULTS		MATERIAL DESCRIPTION
Maximum dry density = 122.8 pcf		Brown, Lean clay with sand
Optimum moisture = 12.9 %		
<b>Project No.</b> JD175507 <b>Client:</b> <b>Project:</b> JBA HCP & EOD <div><b>Date:</b> 02-07-19</div>		<b>Remarks:</b>
<input type="radio"/> <b>Location:</b> BC-4 <b>Sample Number:</b> 1		
<b>Terracon Consultants, Inc.</b>		
<b>Ashburn, Virginia</b>		<b>Figure</b>

Figure

Checked By:

*David A. W. [Signature]*

# COMPACTION TEST REPORT



Test specification: ASTM D 1557-12 Method A Modified  
 ASTM D4718-15 Oversize Corr. Applied to Each Test Point

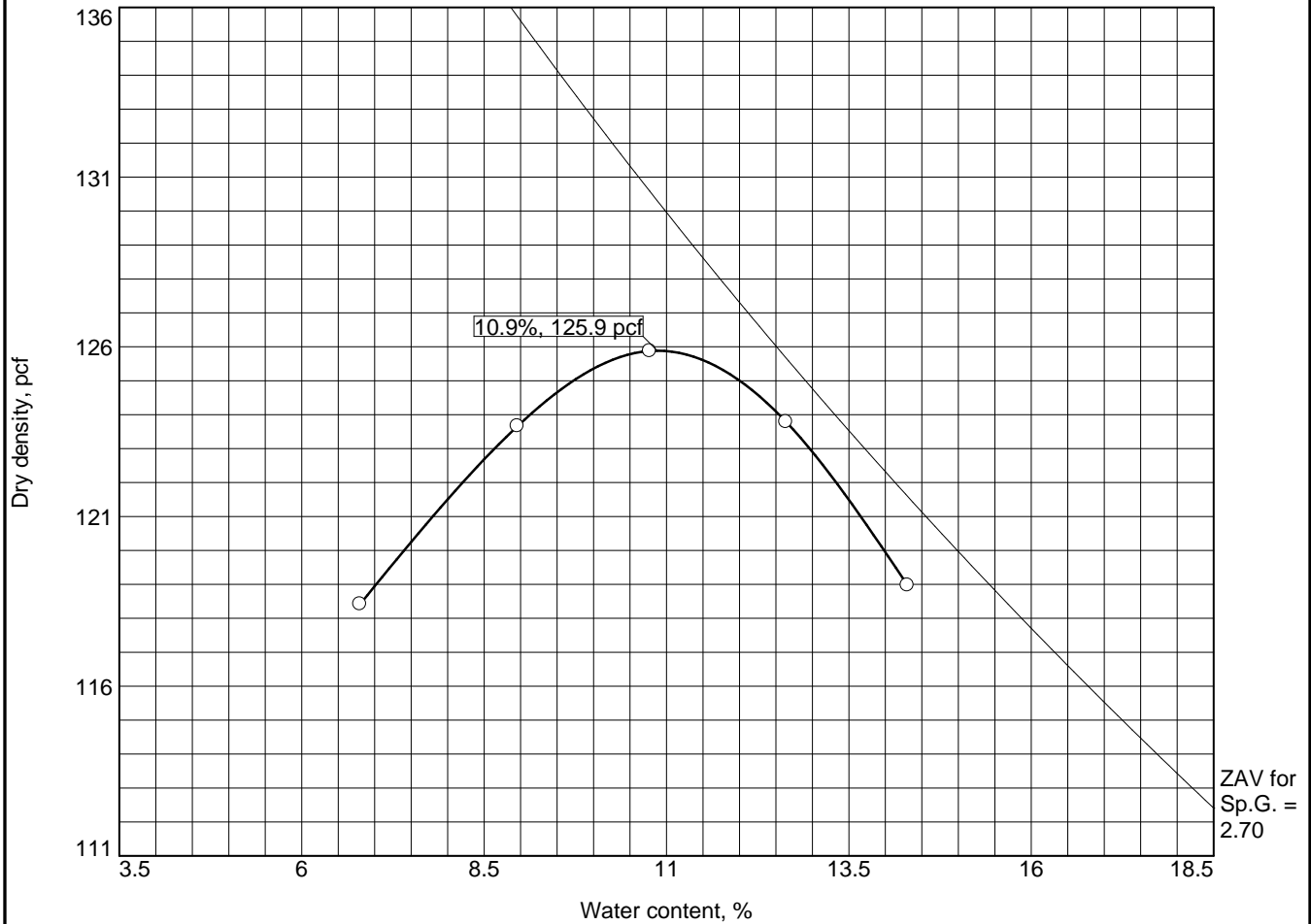
Elev/ Depth	Classification		Nat. Moist.	Sp.G.	LL	PI	% > #4	% < No.200
	USCS	AASHTO						
0.0 - 5.0'	SC	A-6(4)	18.2	2.65	34	15	11.2	48.4

ROCK CORRECTED TEST RESULTS		UNCORRECTED	MATERIAL DESCRIPTION
Maximum dry density = 128.4 pcf		124.9 pcf	Brown, Clayey sand
Optimum moisture = 10.7 %		11.8 %	
<div><div><div>Project No. JD175507</div><div>Client:</div></div><div><div>Project: JBA HCP &amp; EOD</div><div>Date: 02-07-19</div></div><div><div>Location: MSA-3</div><div>Sample Number: 1</div></div></div>			Remarks:
Terracon Consultants, Inc.			
Ashburn, Virginia			Figure

Figure

Checked By: *David A. Winters*

# COMPACTION TEST REPORT



Test specification: ASTM D 1557-12 Method A Modified

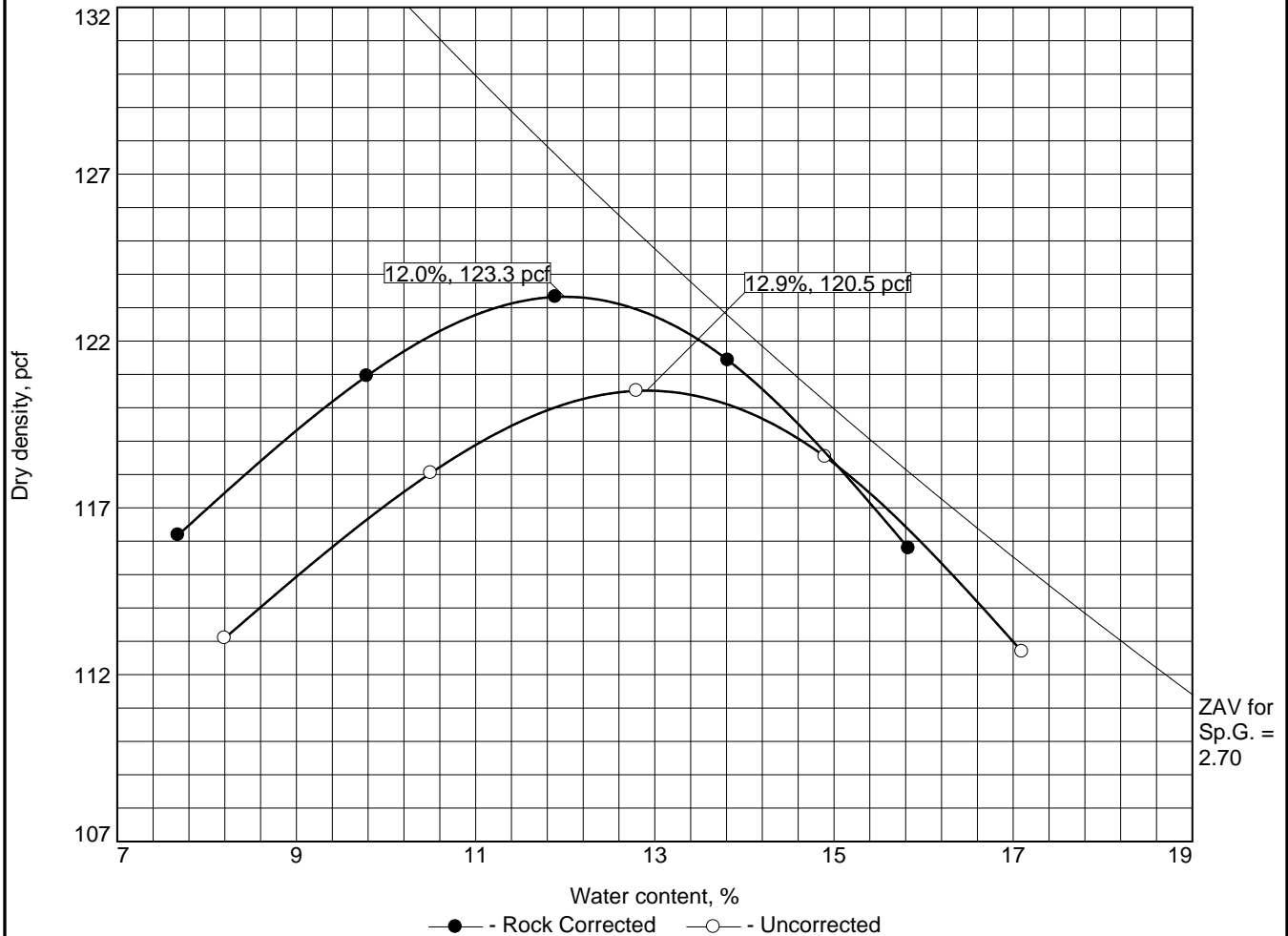
Elev/ Depth	Classification		Nat. Moist.	Sp.G.	LL	PI	% > #4	% < No.200
	USCS	AASHTO						
0.0 - 5.0'	CL	A-6(7)	18.7	2.65	31	13	2.0	69.3

TEST RESULTS		MATERIAL DESCRIPTION	
Maximum dry density = 125.9 pcf		Brown, Sandy lean clay	
Optimum moisture = 10.9 %			
Project No. JD175507      Client:		Remarks:	
Project: JBA HCP & EOD			
Date: 03-06-19			
Location: T-2      Sample Number: 1			
Terracon Consultants, Inc.			
Ashburn, Virginia		Figure	

Figure

Checked By: \_\_\_\_\_

# COMPACTION TEST REPORT



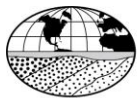
Test specification: ASTM D 1557-12 Method A Modified  
ASTM D4718-15 Oversize Corr. Applied to Each Test Point

Elev/ Depth	Classification		Nat. Moist.	Sp.G.	LL	PI	% > #4	% < No.200
	USCS	AASHTO						
0.0 - 5.0"	CL	A-6(9)	18.8	2.65	40	19	8.4	60.5

ROCK CORRECTED TEST RESULTS		UNCORRECTED	MATERIAL DESCRIPTION
Maximum dry density = 123.3 pcf		120.5 pcf	Brown, Sandy lean clay
Optimum moisture = 12.0 %		12.9 %	
<div>Project No. JD175507Client: JBA HCP &amp; EOD</div> <div>Date: 02-07-19</div> <div>Location: T11Sample Number: 1</div> <div>Terracon Consultants, Inc.</div> <div>Ashburn, Virginia</div>			Remarks:   <

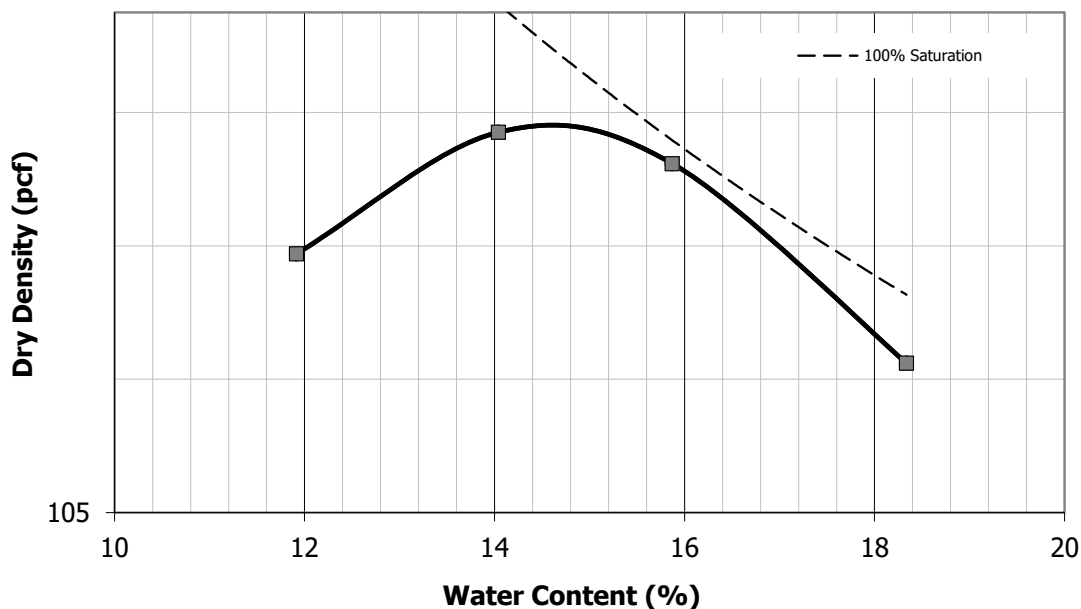
Figure

Checked By: *Daniel W. Jones*



## MOISTURE DENSITY RELATIONSHIP - ASTM D 1557

Project No.	JD175507	Project Name	JBA HCP & EOD
Sample ID	MCR-5	Depth (Feet)	0.0-5.0
Lab Order No.	5317	Date	6/22/2020



TEST RESULTS	Before Correc.		After Correc.					
Maximum Dry Density (pcf)	116.6		--		Color			
Optimum Moisture Content (%)	14.7		--		Yellow Brown			
Material	Classification		Nat. Moist. (%)	Sp. G. (Assumed)	LL	PI	% > # 4	% < #200
sandy Lean Clay	USCS	AASHTO	21.1	2.65	42	17	3.7	69.3
	CL	A-7-6						

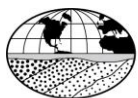
Preparation Method-Moist

Method-A

Manual Rammer

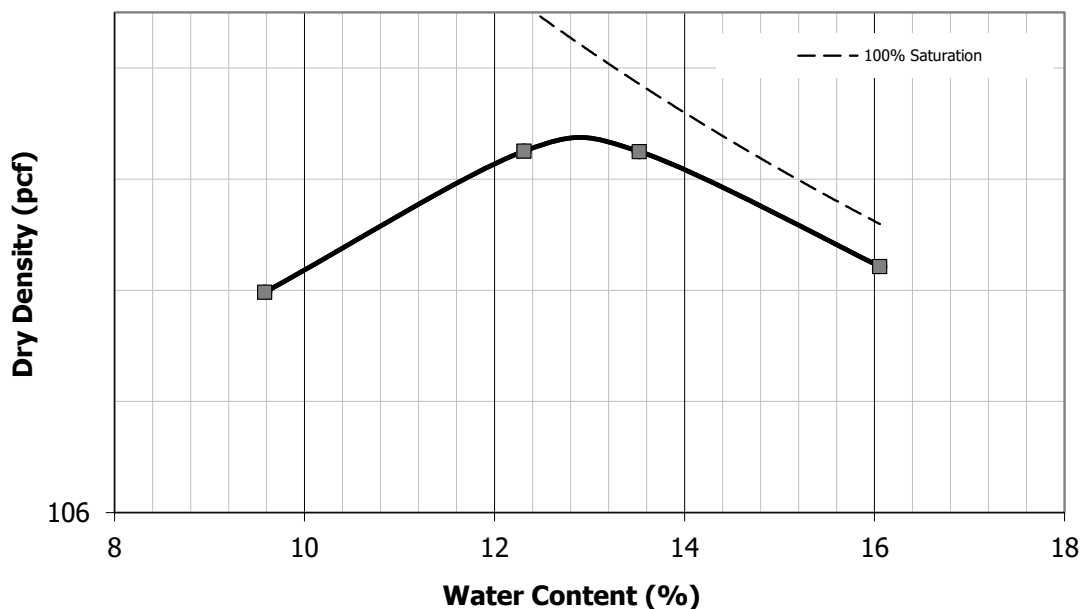
Reviewed by DW





## MOISTURE DENSITY RELATIONSHIP - ASTM D 1557

Project No.	JD175507	Project Name	JBA HCP & EOD
Sample ID	MCR-7	Depth (Feet)	0.0-5.0
Lab Order No.	5317	Date	6/22/2020



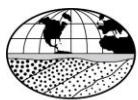
TEST RESULTS	Before Correc.		After Correc.					
Maximum Dry Density (pcf)	119.3		--		Color			
Optimum Moisture Content (%)	13.0		--		Light Brown			
Material	Classification		Nat. Moist. (%)	Sp. G. (Assumed)	LL	PI	% > # 4	% < #200
Lean Clay with sand	USCS	AASHTO	21.7	2.65	45	24	0.9	82.3
	CL	A-7-6						

Preparation Method-Moist

Method-A

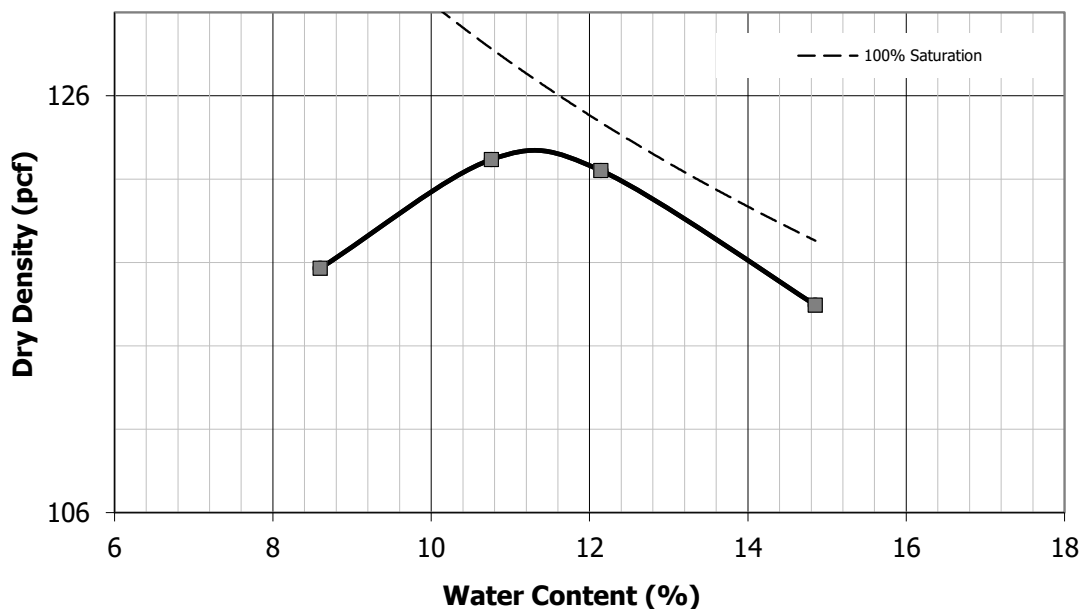
Manual Rammer

Reviewed by DW



## MOISTURE DENSITY RELATIONSHIP - ASTM D 1557

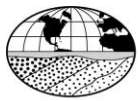
Project No.	JD175507	Project Name	JBA HCP & EOD
Sample ID	MCR-8	Depth (Feet)	0.0-5.0
Lab Order No.	5317	Date	6/22/2020



TEST RESULTS		Before Correc.		After Correc.					
Maximum Dry Density (pcf)		123.2		--		Color			
Optimum Moisture Content (%)		11.4		--		Yellow Brown			
Material	Classification	Nat. Moist. (%)	Sp. G. (Assumed)	LL	PI	% > # 4	% < #200		
sandy Lean Clay	USCS	20.9	2.65	33	16	4.4	66.2		
	CL	A-6							

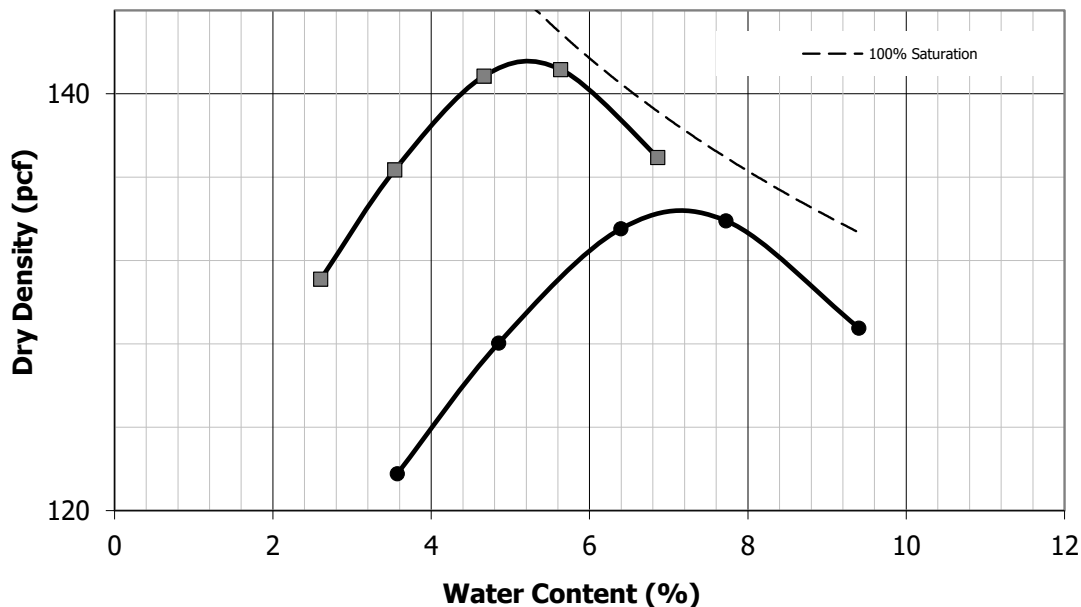
Method-A Preparation Method-Moist  
Manual Rammer

Reviewed by DW



## MOISTURE DENSITY RELATIONSHIP - ASTM D 1557

Project No.	JD175507	Project Name	JBA HCP & EOD
Sample ID	NT-1	Depth (Feet)	0.0-5.0
Lab Order No.	5317	Date	6/22/2020



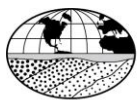
TEST RESULTS		Before Correc.		After Correc.					
Maximum Dry Density (pcf)		134.4		141.5		Color			
Optimum Moisture Content (%)		7.2		5.5		Light Brown			
Material	Classification	Nat. Moist. (%)		Sp. G. (Assumed)		LL	PI	% > # 4	% < #200
POORLY GRADED SAND with silt and gravel	USCS	10.6		2.65		17	1	27.0	11.5
	SP-SM								

Preparation Method-Moist

Method-B

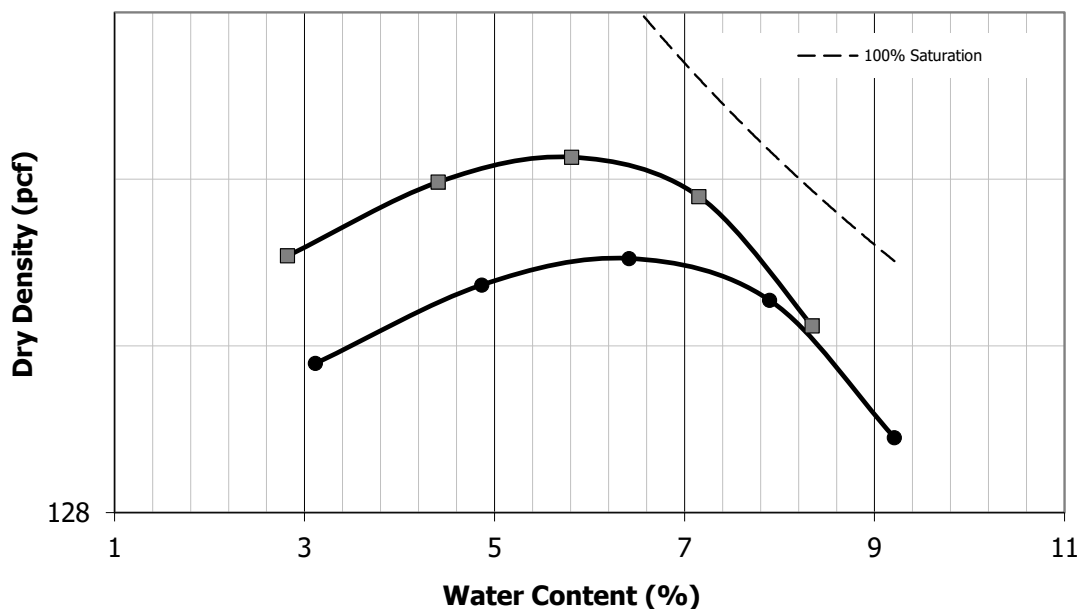
Manual Rammer

Reviewed by DW



## MOISTURE DENSITY RELATIONSHIP - ASTM D 1557

Project No.	JD175507	Project Name	JBA HCP & EOD
Sample ID	NT-3	Depth (Feet)	0.0-10.0
Lab Order No.	5317	Date	6/22/2020



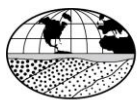
TEST RESULTS	Before Correc.		After Correc.					
Maximum Dry Density (pcf)	134.0		136.5		Color			
Optimum Moisture Content (%)	6.4		6.0		Yellow Brown			
Material	Classification		Nat. Moist. (%)	Sp. G. (Assumed)	LL	PI	% > # 4	% < #200
CLAYEY SAND	USCS	AASHTO	15.0	2.65	26	11	9.4	33.3
	SC	A-2-6						

Preparation Method-Moist

Method-B

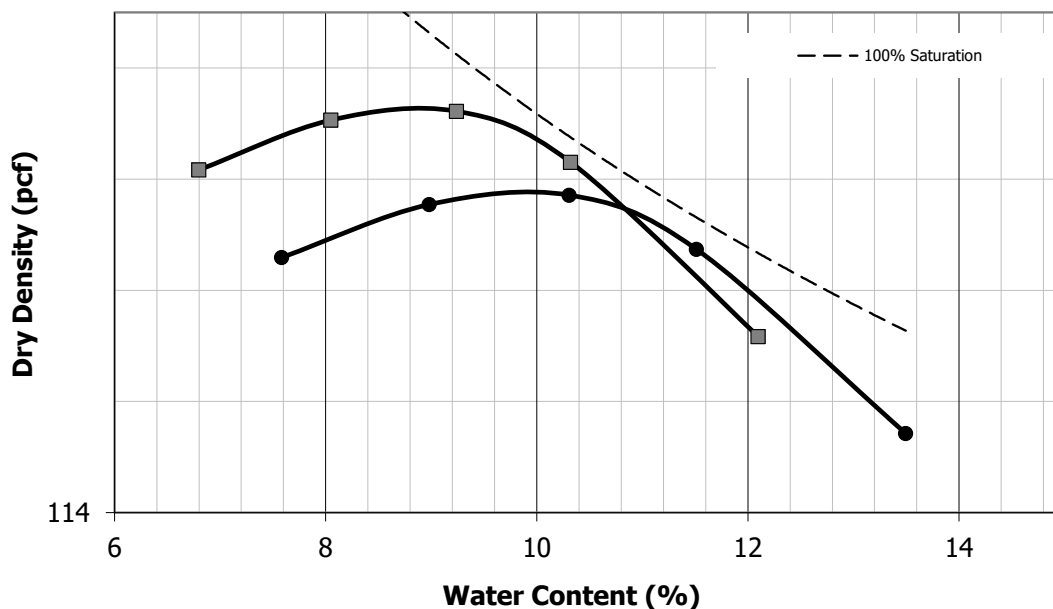
Manual Rammer

Reviewed by DW



## MOISTURE DENSITY RELATIONSHIP - ASTM D 1557

Project No.	JD175507	Project Name	JBA HCP & EOD
Sample ID	NT-6	Depth (Feet)	0.0-5.0
Lab Order No.	5317	Date	6/22/2020



TEST RESULTS		Before Correc.		After Correc.					
Maximum Dry Density (pcf)		125.5		128.5		Color			
Optimum Moisture Content (%)		10.5		9.5		Dark Gray			
Material	Classification	Nat. Moist. (%)		Sp. G. (Assumed)		LL	PI	% > # 4	% < #200
CLAYEY SAND	USCS	25.0		2.6		29	12	10.4	45.9
	SC								

Preparation Method-Moist

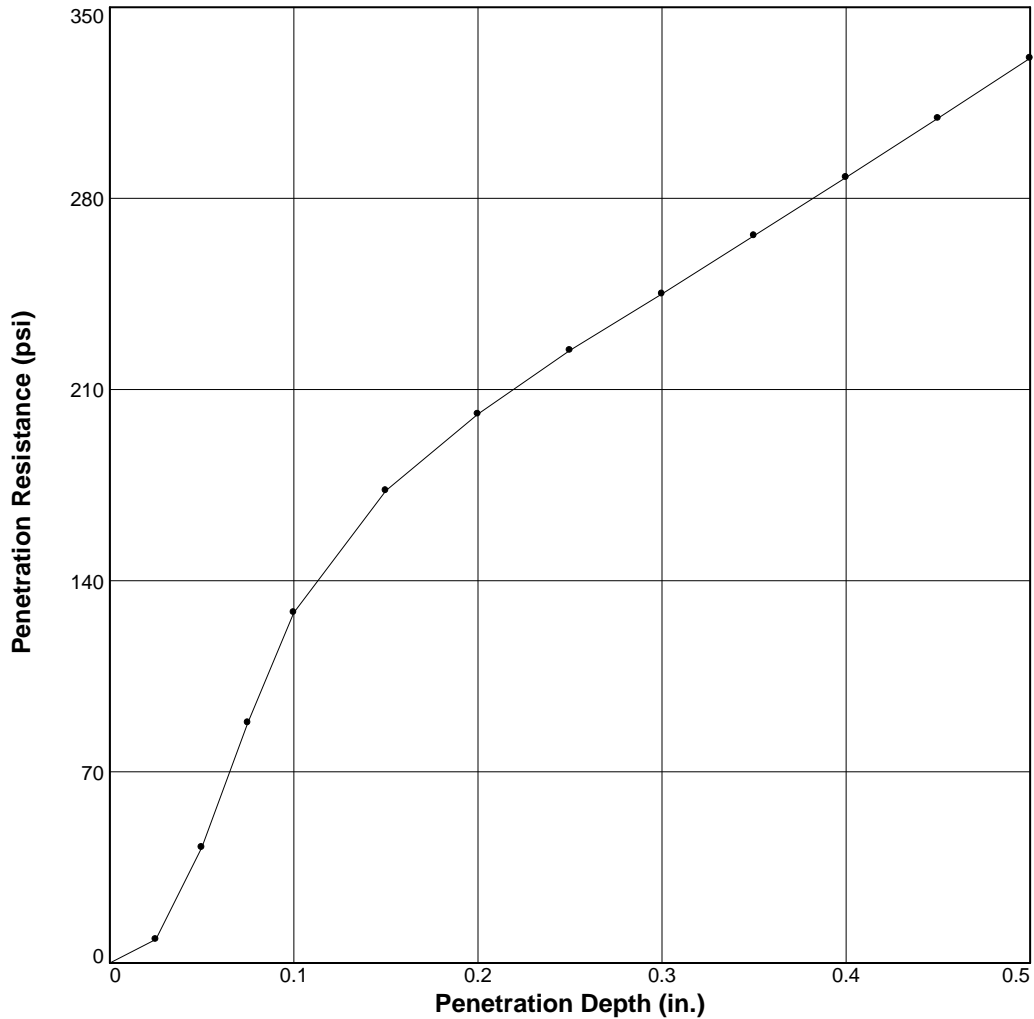
Method-A

Manual Rammer

Reviewed by DW

# BEARING RATIO TEST REPORT

## ASTM D1883-16



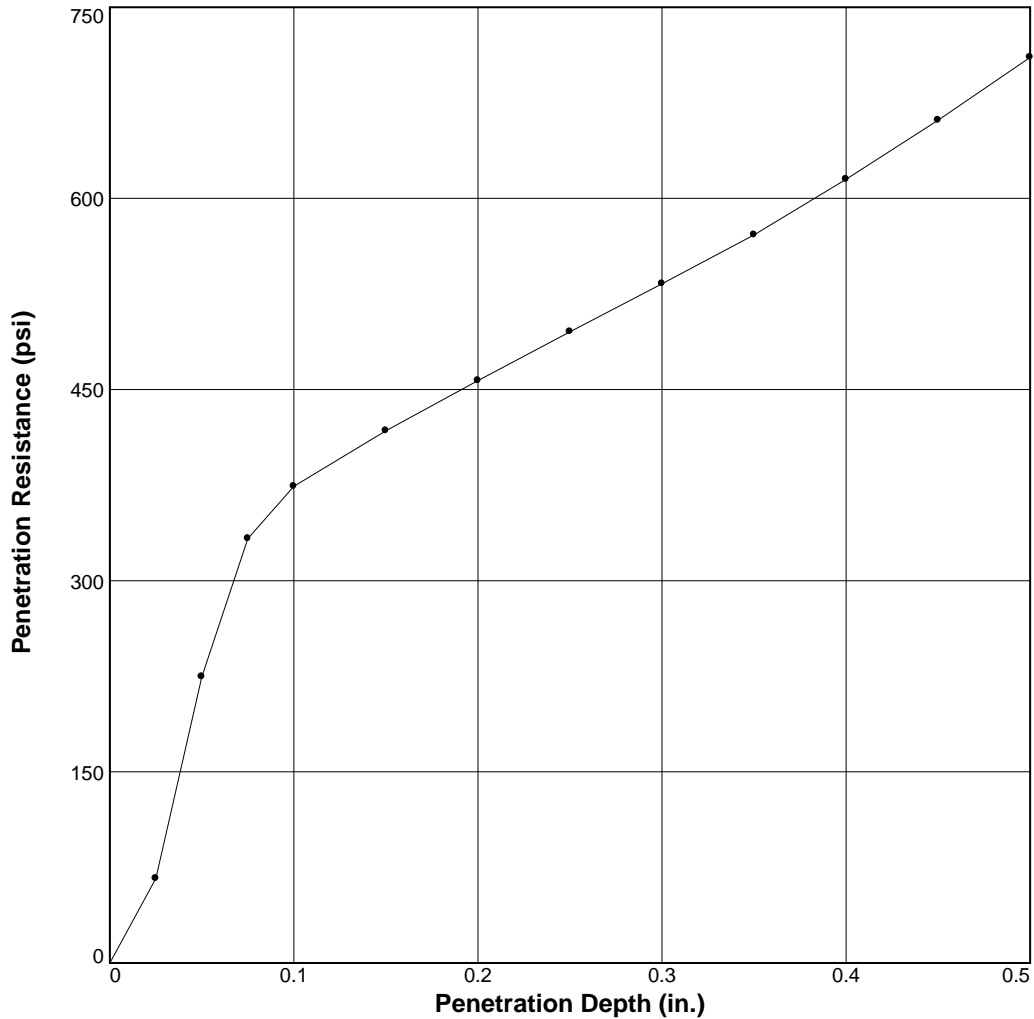
	Molded			Soaked			CBR (%)		Linearity Correction (in.)	Surcharge (lbs.)	Max. Swell (%)
	Density (pcf)	Percent of Max. Dens.	Moisture (%)	Density (pcf)	Percent of Max. Dens.	Moisture (%)	0.10 in.	0.20 in.			
1 ○	121.5	98.9	11.1	120.9	98.4	14.7	15.2	14.2	0.026	10	0.5
2 △											
3 □											

Material Description		USCS	Max. Dens. (pcf)	Optimum Moisture (%)	LL	PI
Brown, Lean clay with sand						
		CL	122.8	12.9	36	16

<b>Project No:</b> JD175507 <b>Project:</b> JBA HCP & EOD <b>Location:</b> BC-4 <b>Sample Number:</b> 1 <b>Depth:</b> 0.0 - 5.0' <b>Date:</b> 02-12-19	<b>Test Description/Remarks:</b>  <div style="text-align: center;">   <b>Figure</b> _____         </div>
BEARING RATIO TEST REPORT <b>Terracon Consultants, Inc.</b>	

# BEARING RATIO TEST REPORT

## ASTM D1883-16



	Molded			Soaked			CBR (%)		Linearity Correction (in.)	Surcharge (lbs.)	Max. Swell (%)
	Density (pcf)	Percent of Max. Dens.	Moisture (%)	Density (pcf)	Percent of Max. Dens.	Moisture (%)	0.10 in.	0.20 in.			
1 ○	127.6	99.4	9.5	127.1	99	12.5	38.6	31.2	0.014	10	0.4
2 △											
3 □											

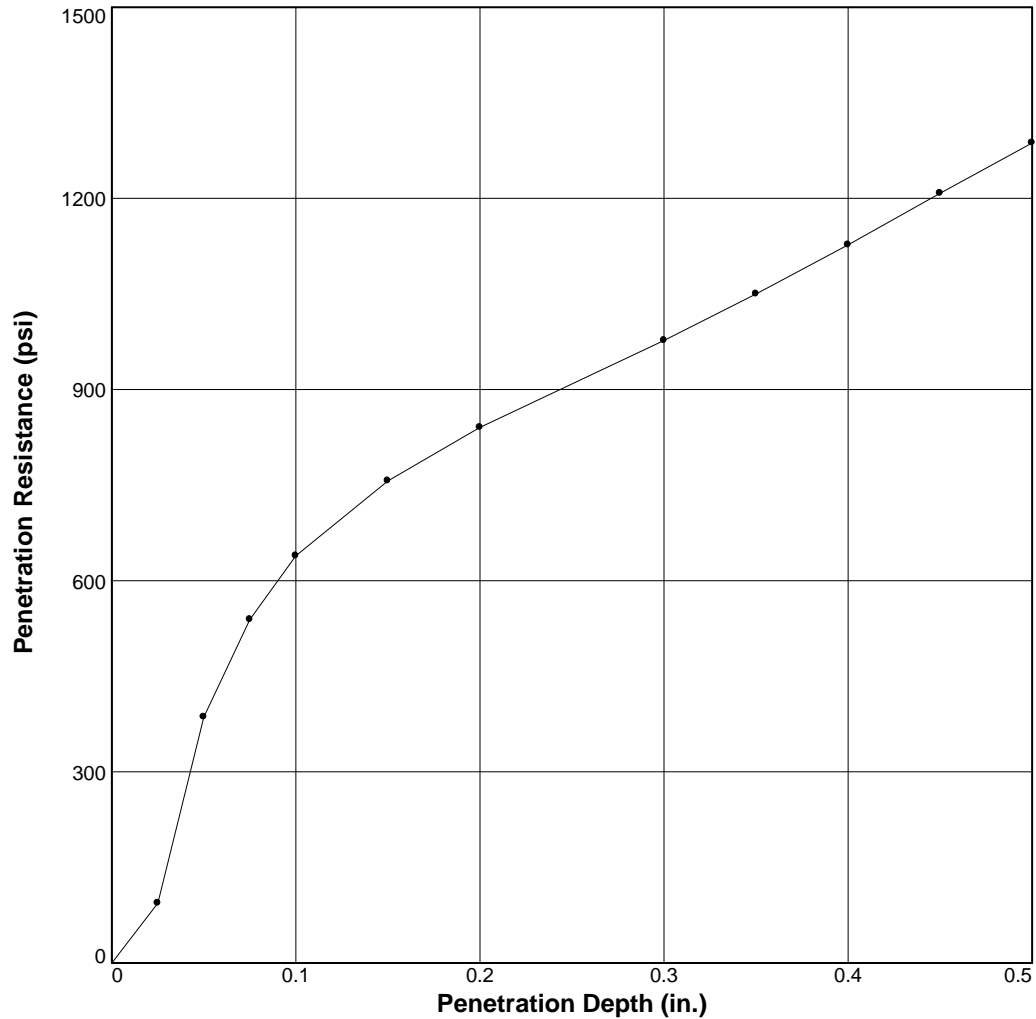
Material Description		USCS	Max. Dens. (pcf)	Optimum Moisture (%)	LL	PI
Brown, Clayey sand						
		SC	128.4	10.7	34	15

<b>Project No:</b> JD175507 <b>Project:</b> JBA HCP & EOD <b>Location:</b> MSA-3 <b>Sample Number:</b> 1 <b>Depth:</b> 0.0 - 5.0' <b>Date:</b> 02-12-19	<b>Test Description/Remarks:</b>  <div style="text-align: right; font-family: cursive;">  </div>
BEARING RATIO TEST REPORT <b>Terracon Consultants, Inc.</b>	

Figure \_\_\_\_\_

# BEARING RATIO TEST REPORT

## ASTM D1883-16



	Molded			Soaked			CBR (%)		Linearity Correction (in.)	Surcharge (lbs.)	Max. Swell (%)
	Density (pcf)	Percent of Max. Dens.	Moisture (%)	Density (pcf)	Percent of Max. Dens.	Moisture (%)	0.10 in.	0.20 in.			
1 ○	124.4	98.8	11.4	123.9	98.4	12.8	67.6	57.5	0.016	10	0.4
2 △											
3 □											
Material Description							USCS	Max. Dens. (pcf)	Optimum Moisture (%)	LL	PI
Brown, Sandy lean clay							CL	125.9	10.9	31	13

**Project No:** JD175507  
**Project:** JBA HCP & EOD  
**Location:** T-2  
**Sample Number:** 1      **Depth:** 0.0 - 5.0'  
**Date:** 03-11-19

**Test Description/Remarks:**

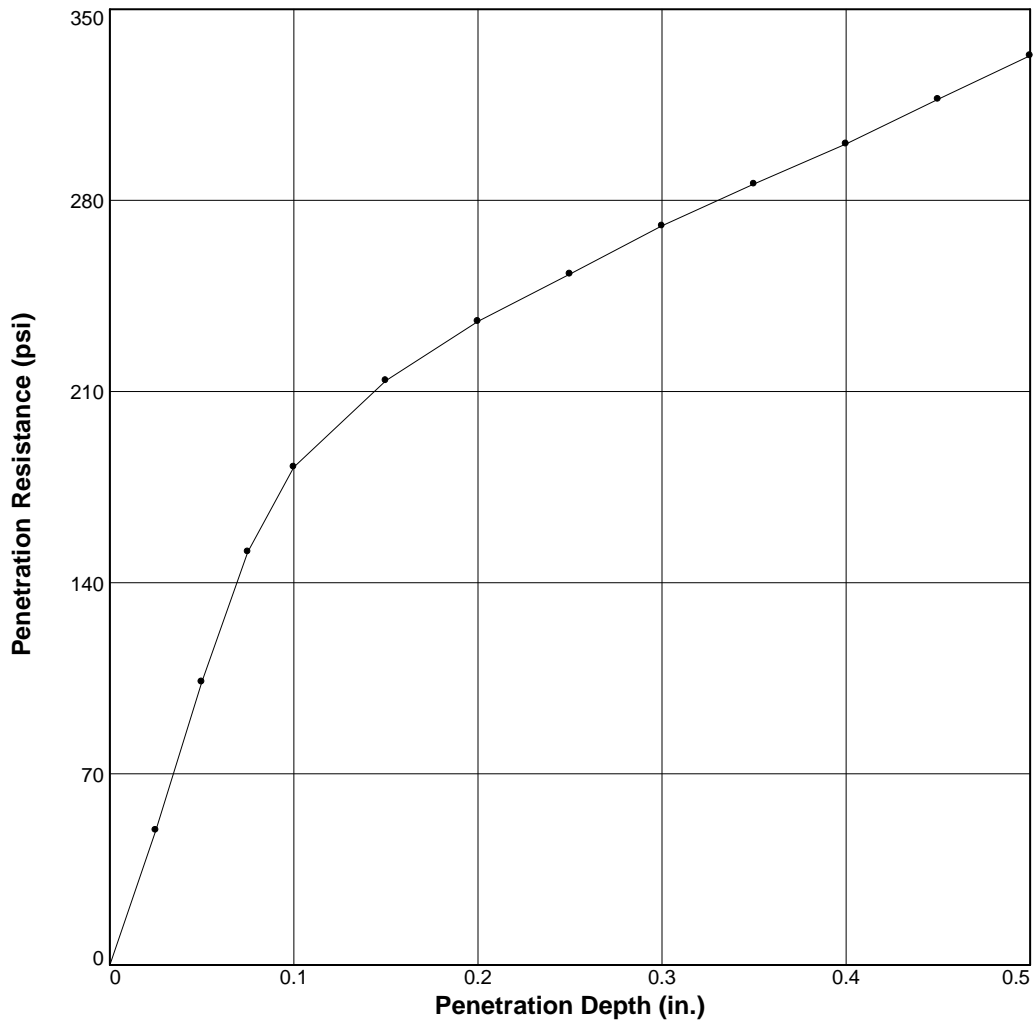
BEARING RATIO TEST REPORT  
**Terracon Consultants, Inc.**

Figure \_\_\_\_\_



# BEARING RATIO TEST REPORT

## ASTM D1883-16



	Molded			Soaked			CBR (%)		Linearity Correction (in.)	Surcharge (lbs.)	Max. Swell (%)
	Density (pcf)	Percent of Max. Dens.	Moisture (%)	Density (pcf)	Percent of Max. Dens.	Moisture (%)	0.10 in.	0.20 in.			
1 ○	121.9	98.9	11.9	121.0	98.2	15.2	18.2	15.7	0.000	10	0.7
2 △											
3 □											

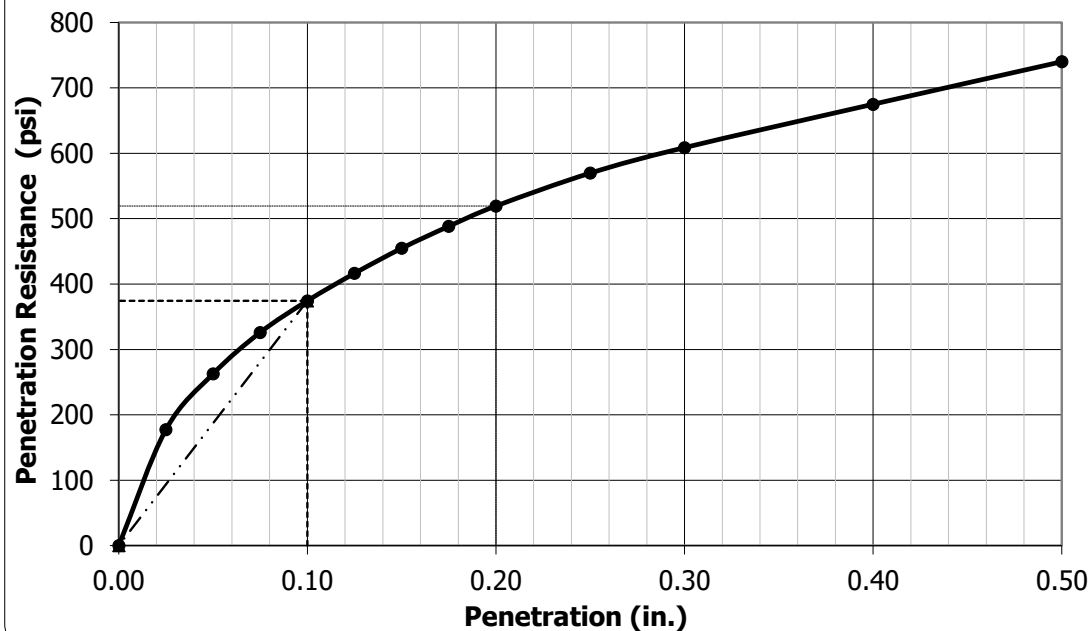
Material Description		USCS	Max. Dens. (pcf)	Optimum Moisture (%)	LL	PI
Brown, Sandy lean clay						
		CL	123.3	12.0	40	19

<b>Project No:</b> JD175507 <b>Project:</b> JBA HCP & EOD <b>Location:</b> T11 <b>Sample Number:</b> 1 <b>Depth:</b> 0.0 - 5.0" <b>Date:</b> 02-12-19	<b>Test Description/Remarks:</b>  <div style="text-align: center;">   <b>Figure</b> _____         </div>
BEARING RATIO TEST REPORT <b>Terracon Consultants, Inc.</b>	



## CALIFORNIA BEARING RATIO (CBR) TEST - ASTM D1883

Project No.	JD175507	Project Name	JBA HCP & EOD
Sample ID	MCR-5	Depth (Feet)	0.0-5.0
Lab Order No.	5317	Date	6/22/2020



### Molded

Dry Density (pcf)	116.4
Moisture (%)	15.2
Percent of Max. Density (%)	99.8

### Soaked

Dry Density (pcf)	116.3
Moisture (%)	16.6
Percentage of Max. Density (%)	99.7

### CBR (%)

0.1 in.	37.4
0.2 in.	34.6

Linearity Correction	0.000
Surcharge (lbs)	10
Max Swell (%)	0.1

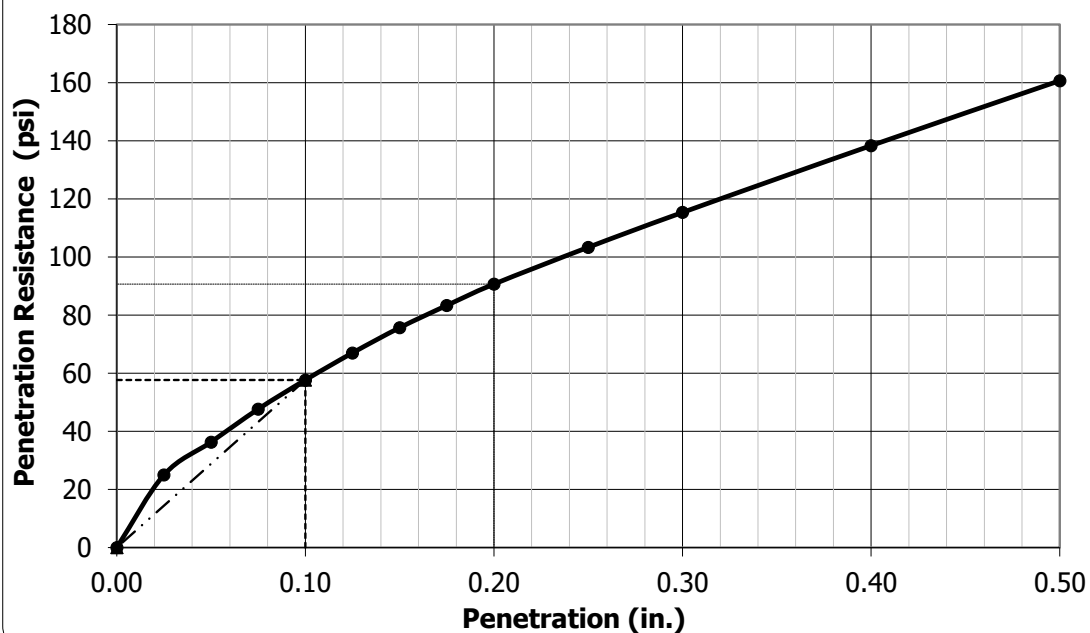
Material Description	sandy Lean Clay
USCS	CL
Max Density	116.6
Optimum Moisture (%)	14.7
LL	42
PI	17
Color	Yellow Brown

Reviewed by: \_\_\_\_\_ DW



## CALIFORNIA BEARING RATIO (CBR) TEST - ASTM D1883

Project No.	JD175507	Project Name	JBA HCP & EOD
Sample ID	MCR-7	Depth (Feet)	0.0-5.0
Lab Order No.	5317	Date	6/22/2020



### Molded

Dry Density (pcf)	118.1
Moisture (%)	13.2
Percent of Max. Density (%)	99.0

### Soaked

Dry Density (pcf)	113.4
Moisture (%)	18.1
Percentage of Max. Density (%)	95.1

### CBR (%)

0.1 in.	5.8
0.2 in.	6.0

Linearity Correction	0.000
Surcharge (lbs)	10
Max Swell (%)	4.1

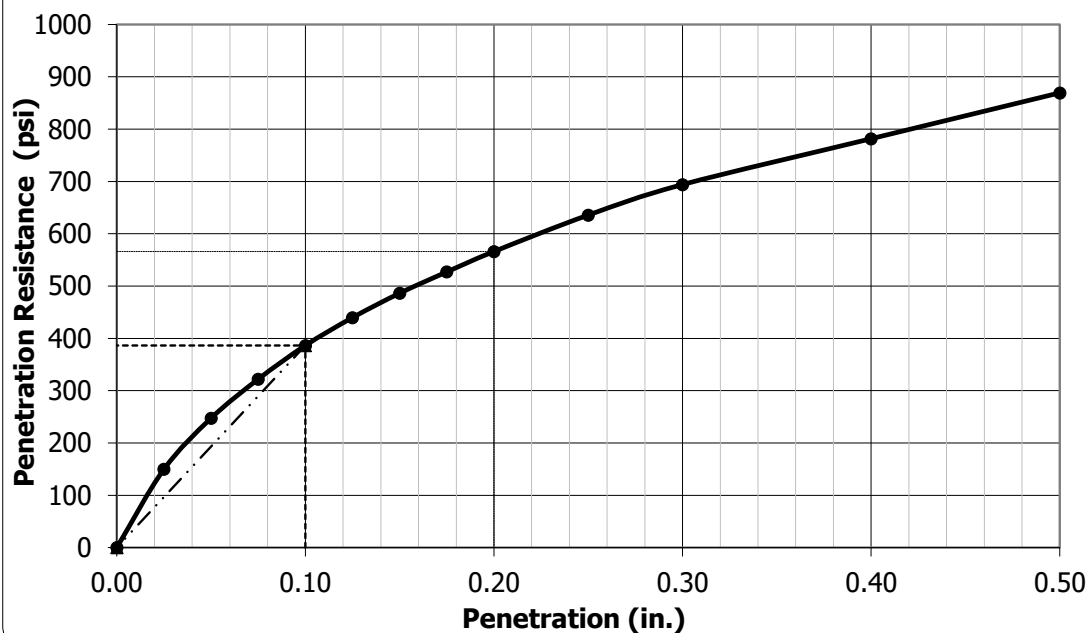
Material Description	Lean Clay with sand
USCS	CL
Max Density	119.3
Optimum Moisture (%)	13.0
LL	45
PI	24
Color	Light Brown

Reviewed by: \_\_\_\_\_ DW



## CALIFORNIA BEARING RATIO (CBR) TEST - ASTM D1883

Project No.	JD175507	Project Name	JBA HCP & EOD
Sample ID	MCR-8	Depth (Feet)	0.0-5.0
Lab Order No.	5317	Date	6/22/2020



### Molded

Dry Density (pcf)	122.7
Moisture (%)	12.1
Percent of Max. Density (%)	99.6

### Soaked

Dry Density (pcf)	121.9
Moisture (%)	13.8
Percentage of Max. Density (%)	98.9

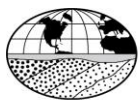
### CBR (%)

0.1 in.	38.6
0.2 in.	37.7

Linearity Correction	0.000
Surcharge (lbs)	10
Max Swell (%)	0.7

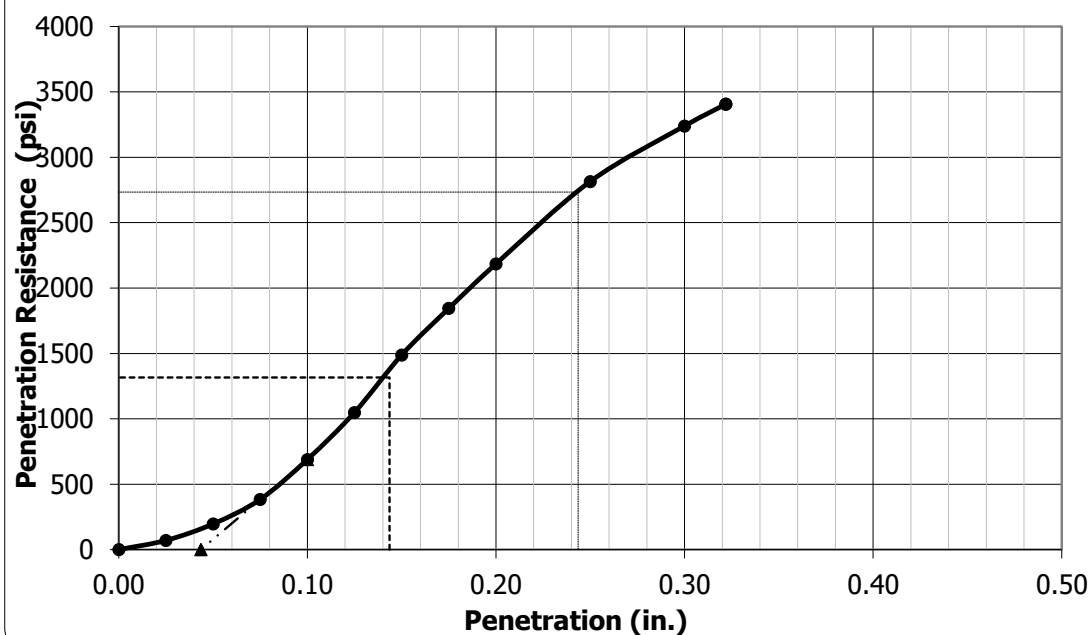
Material Description	sandy Lean Clay
USCS	CL
Max Density	123.2
Optimum Moisture (%)	11.4
LL	33
PI	16
Color	Yellow Brown

Reviewed by: \_\_\_\_\_ DW



## CALIFORNIA BEARING RATIO (CBR) TEST - ASTM D1883

Project No.	JD175507	Project Name	JBA HCP & EOD
Sample ID	NT-1	Depth (Feet)	0.0-5.0
Lab Order No.	5317	Date	6/22/2020



### Molded

Dry Density (pcf)	140.0
Moisture (%)	6.0
Percent of Max. Density (%)	98.9

Linearity Correction	0.044
Surcharge (lbs)	10
Max Swell (%)	0.1

### Soaked

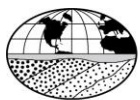
Dry Density (pcf)	139.8
Moisture (%)	6.5
Percentage of Max. Density (%)	98.8

Material Description	RLY GRADED SAND with silt and g
USCS	SP-SM
Max Density	141.5
Optimum Moisture (%)	5.5
LL	17
PI	1
Color	Light Brown

### CBR (%)

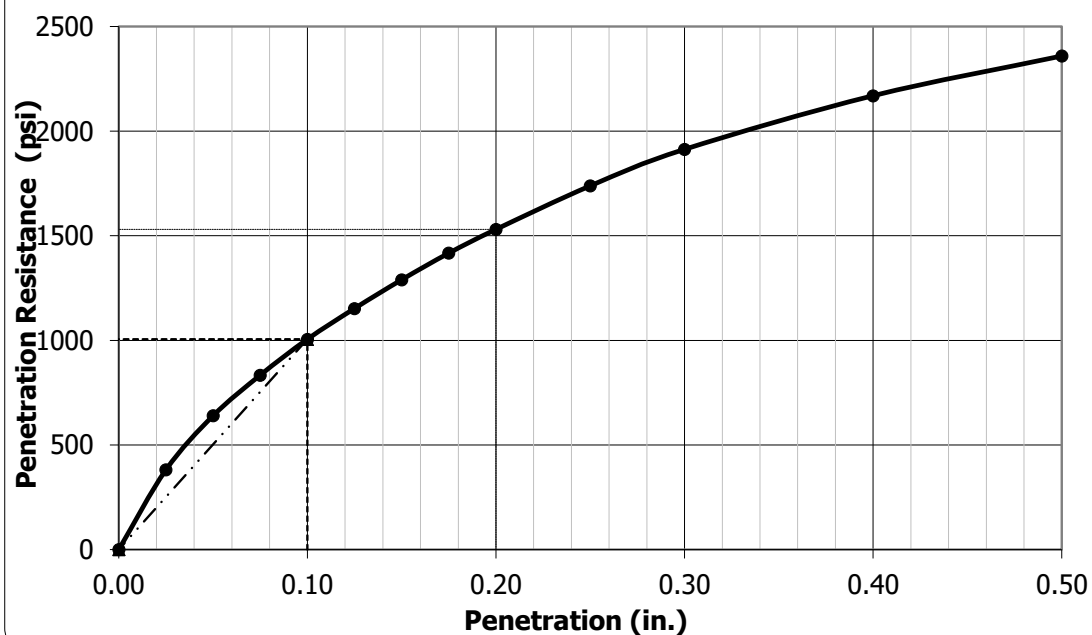
0.1 in.	131.6
0.2 in.	182.3

Reviewed by: \_\_\_\_\_ DW



## CALIFORNIA BEARING RATIO (CBR) TEST - ASTM D1883

Project No.	JD175507	Project Name	JBA HCP & EOD
Sample ID	NT-3	Depth (Feet)	0.0-10.0
Lab Order No.	5317	Date	6/22/2020



### Molded

Dry Density (pcf)	134.8
Moisture (%)	6.9
Percent of Max. Density (%)	98.8

### Soaked

Dry Density (pcf)	134.5
Moisture (%)	8.8
Percentage of Max. Density (%)	98.5

### CBR (%)

0.1 in.	100.5
0.2 in.	102.0

Linearity Correction	0.000
Surcharge (lbs)	10
Max Swell (%)	0.2

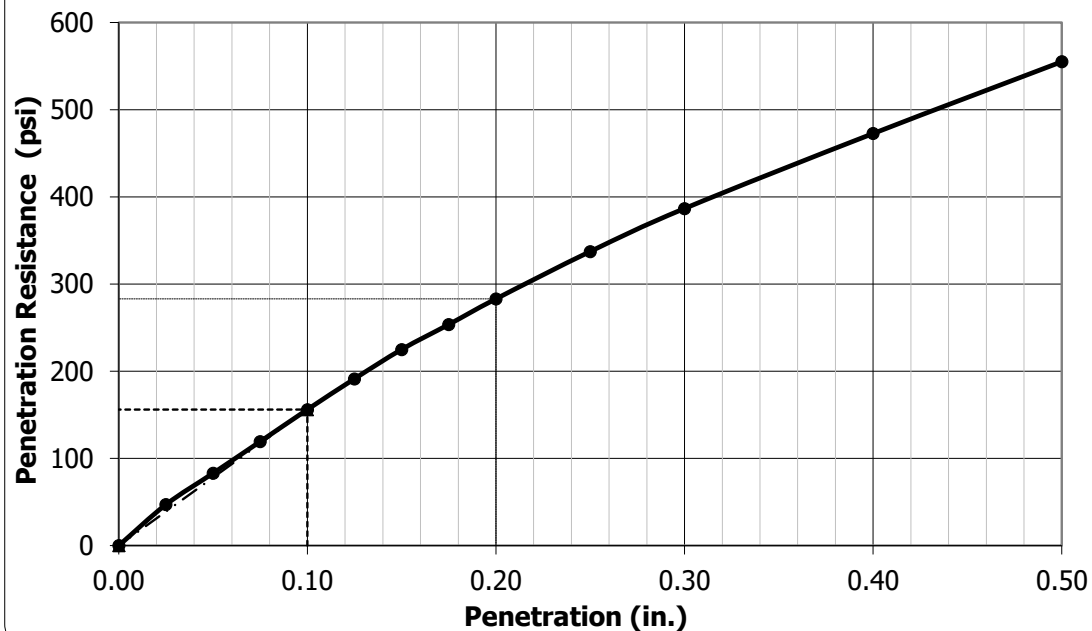
Material Description	CLAYEY SAND
USCS	SC
Max Density	136.5
Optimum Moisture (%)	6.0
LL	26
PI	11
Color	Yellow Brown

Reviewed by: \_\_\_\_\_ DW



## CALIFORNIA BEARING RATIO (CBR) TEST - ASTM D1883

Project No.	JD175507	Project Name	JBA HCP & EOD
Sample ID	NT-6	Depth (Feet)	0.0-5.0
Lab Order No.	5317	Date	6/22/2020



### Molded

Dry Density (pcf)	126.8
Moisture (%)	10.0
Percent of Max. Density (%)	98.7

### Soaked

Dry Density (pcf)	126.3
Moisture (%)	13.0
Percentage of Max. Density (%)	98.3

### CBR (%)

0.1 in.	15.6
0.2 in.	18.9

Linearity Correction	0.000
Surcharge (lbs)	10
Max Swell (%)	0.4

Material Description	CLAYEY SAND
USCS	SC
Max Density	128.5
Optimum Moisture (%)	9.5
LL	29
PI	12
Color	Dark Gray

Reviewed by: \_\_\_\_\_ DW