BORING LOG NO. 10-B4

CLIENT:	USACE, Galveston District Galveston, Texas	PROJECT:	Galveston Channel Deepening, TO-0010
BORING LOCATION:	N: 13687522.19 E: 3316669.77	SITE:	San Jacinto Placement Area Galveston, Texas

Approx. Surface Elevation: 17.4 feet

Elevation	Description	Depth, feet
15.4	**CLAYEY SAND** light brown, w/ roots, dry, compacted, very dense	2.0
10.4	**FAT CLAY w/ SAND** brown, gray, w/ sand pockets, seams and thin layers, moist, plastic, consistency decreasin with depth from medium stiff to very soft	7.0
7.4	**SANDY FAT CLAY** gray, brown, w/ sand pockets and vertical seams, w/ organic matter stains, moist, very soft to soft	10.0
-4.6	**FAT CLAY** greenish gray, bluish gray, with sand seams and pockets, w/ organic matter stains and undecomposed wood and roots, high plasticity, very soft	22.0
	POORLY GRADED SAND w/ SILT bluish gray, with finely broken shell, fine grain, some cohesion, non plastic, medium dense	

Depth, feet	USCS Symbol	Type	Recovery, IN	SPT, Blows/FT	Calibrated Hand Penetrom., TSF	Torvane, TSF	Moisture Content, %	Dry Density, PCF	Liquid Limit, %	Plastic Limit, %	Plasticity Index	Minus #200 Sieve, %	Compressive Strength, TSF	Failure Strain, %	Confining Pressure, PSI
1	SC	ST	11		4.5		14								
3	CH	ST	7		1.5		41								
5		BS	9		0.5		32								
7		ST	12		0.0	0.25	70		99	31	68	100			
8	CH	BS	12		0.0	0.35			76	24	52	63			
9		ST	9		0.0	0.25	55	66							
11	CH	ST	19		0.0	0.3			93	27	66	95			
13		ST	11		0.0	0.4	46								
15		ST	12		0.0	0.35			94	29	65	95			
17		ST	19		0.0	0.35	65								
19		ST	18		0.25	0.4	64								
21		ST	11		0.0	0.4			127	34	93	98			
23	SP-SM	SS	10	38			25								
25		SS	10	52			18					10			
27		SS	9	38			25								
29		SS	11	24			26								

Continued Next Page

STRATIFICATION LINES REPRESENT APPROXIMATE BOUNDARIES BETWEEN SOIL TYPES. IN SITU, THE TRANSITION BETWEEN STRATA MAY BE MORE GRADUAL.

REMARKS: **Dry auger to 22 feet; wet rotary thereafter.**

WATER LEVEL OBSERVATIONS			
▽ 22 ft	WS	▼ 16.5 ft	at 5 min
▼ 16 ft	at 10 min	▼ 16 ft	at 15 min

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DATE DRILLED	Page 1 of 3
5/11/2010	10-B4
PROJECT NUMBER 92105154	EXHIBIT A-4

BORING LOG NO. 10-B4

CLIENT:	USACE, Galveston District Galveston, Texas	PROJECT:	Galveston Channel Deepening, TO-0010
BORING LOCATION:	N: 13687522.19 E: 3316669.77	SITE:	San Jacinto Placement Area Galveston, Texas

Approx. Surface Elevation: 17.4 feet

Graphic Log	DESCRIPTION	Elevation	Depth, feet	USCS Symbol	Type	Recovery, in	SPT, Blows/ft	Calibrated Hand Penetrom., TSF	Torvane, TSF	Moisture Content, %	Dry Density, PCF	Liquid Limit, %	Plastic Limit, %	Plasticity Index	Minus #200 Sieve, %	Compressive Strength, TSF	Failure Strain, %	Confining Pressure, PSI
	POORLY GRADED SAND w/ SILT bluish gray, with finely broken shell, fine grain, some cohesion, non plastic, medium dense		31		SS	8	23			25								
			32															
			33		SS	9	24			26								
			34															
			35		SS	11	23			27								
			36															
			37		BS	18				30					12			
		-20.6	38.0															
	BROKEN SHELL w/ SILT w/ fine sand and clay pockets, loose		38	GP-GM														
			39		SS	8	10			23								
			40															
			41		SS	12	8			23								
		-24.6	42.0															
	POORLY GRADED SAND w/ SILT bluish gray, with finely broken shell, fine grain, some cohesion, non plastic, dense to very dense		42	SP-SM														
			43		SS	9	42			23								
			44															
			45		SS	9	55			24								
		-28.6	46.0															
	LEAN CLAY bluish gray, with interbedded thin sand layers, medium stiff		46	CL														
			47		SS	8	5			35								
		-30.6	48.0															
	POORLY GRADED SAND w/ SILT bluish gray, w/ broken shell, fine, some cohesion, non plastic, dense		48	SP-SM														
			49		SS	14	36			23								
		-32.6	50.0															
	SANDY LEAN CLAY bluish gray, w/ interbedded sand layers and shell, hard to soft		50	CL														
			51		SS	18	52			43								
			52															
			53		SS	16	2			40		35	16	19	60			
		-36.6	54.0															
	CLAYEY SAND bluish gray, with interbedded fat clay layers and shell, plastic, medium stiff		54	SC														
			55		SS	18	7			25								
			56															
			57		BS	18				30								
			58															
			59		BS	14				34								
		-42.6	60.0															

Continued Next Page

STRATIFICATION LINES REPRESENT APPROXIMATE BOUNDARIES BETWEEN SOIL TYPES. IN SITU, THE TRANSITION BETWEEN STRATA MAY BE MORE GRADUAL.

REMARKS: **Dry auger to 22 feet; wet rotary thereafter.**

WATER LEVEL OBSERVATIONS			
▽ 22 ft	WS	▼16.5 ft	at 5 min
▼ 16 ft	at 10 min	▼ 16 ft	at 15 min

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DATE DRILLED	Page 2 of 3
5/11/2010	10-B4
PROJECT NUMBER 92105154	EXHIBIT A-4

BORING LOG NO. 10-B4

CLIENT:	USACE, Galveston District Galveston, Texas	PROJECT:	Galveston Channel Deepening, TO-0010
BORING LOCATION:	N: 13687522.19 E: 3316669.77	SITE:	San Jacinto Placement Area Galveston, Texas

Approx. Surface Elevation: 17.4 feet

Graphic Log	DESCRIPTION	DEPTH, FEET	USCS SYMBOL	TYPE	RECOVERY, IN	SPT, BLOWS/FT	CALIBRATED HAND PENETROM., TSF	TORVANE, TSF	MOISTURE CONTENT, %	DRY DENSITY, PCF	LIQUID LIMIT, %	PLASTIC LIMIT, %	PLASTICITY INDEX	MINUS #200 SIEVE, %	COMPRESSIVE STRENGTH, TSF	FAILURE STRAIN, %	CONFINING PRESSURE, PSI
	FAT CLAY bluish gray, w/ shell, sand pockets and seams, very soft to soft	61	CH	ST	9		0.0	0.15	43								
		62															
		63		ST	15		0.25	0.25	43	75	64	22	42	89			
		64															
		65		ST	20		0.25	0.4	54								
		66															
		67		BS	14		0.25	0.35	49								
	-50.6 68.0	68															
	SANDY FAT CLAY bluish, greenish gray and reddish yellow, with sand and shell pockets, soft to very stiff at bottom 2 " thick layer of black organic clay	69	CH	ST	17		0.25		27								
		70															
		71		ST	12		2.5		30								
		72															
		73		ST	18		1.25		43								
		74															
	-58.1 75.5	75		ST	10		1.0		38					89			
	LEAN CLAY yellow and greenish yellow, medium stiff to stiff	76	CL														
		77		ST	11		0.75		25								
		78															
		79		SS	11	18			28					91			
	-62.6 80.0	80															
	Boring terminated at 80 feet.																

STRATIFICATION LINES REPRESENT APPROXIMATE BOUNDARIES BETWEEN SOIL TYPES. IN SITU, THE TRANSITION BETWEEN STRATA MAY BE MORE GRADUAL.

REMARKS: **Dry auger to 22 feet; wet rotary thereafter.**

WATER LEVEL OBSERVATIONS			
▽ 22 ft	WS	▼16.5 ft	at 5 min
▼ 16 ft	at 10 min	▼ 16 ft	at 15 min

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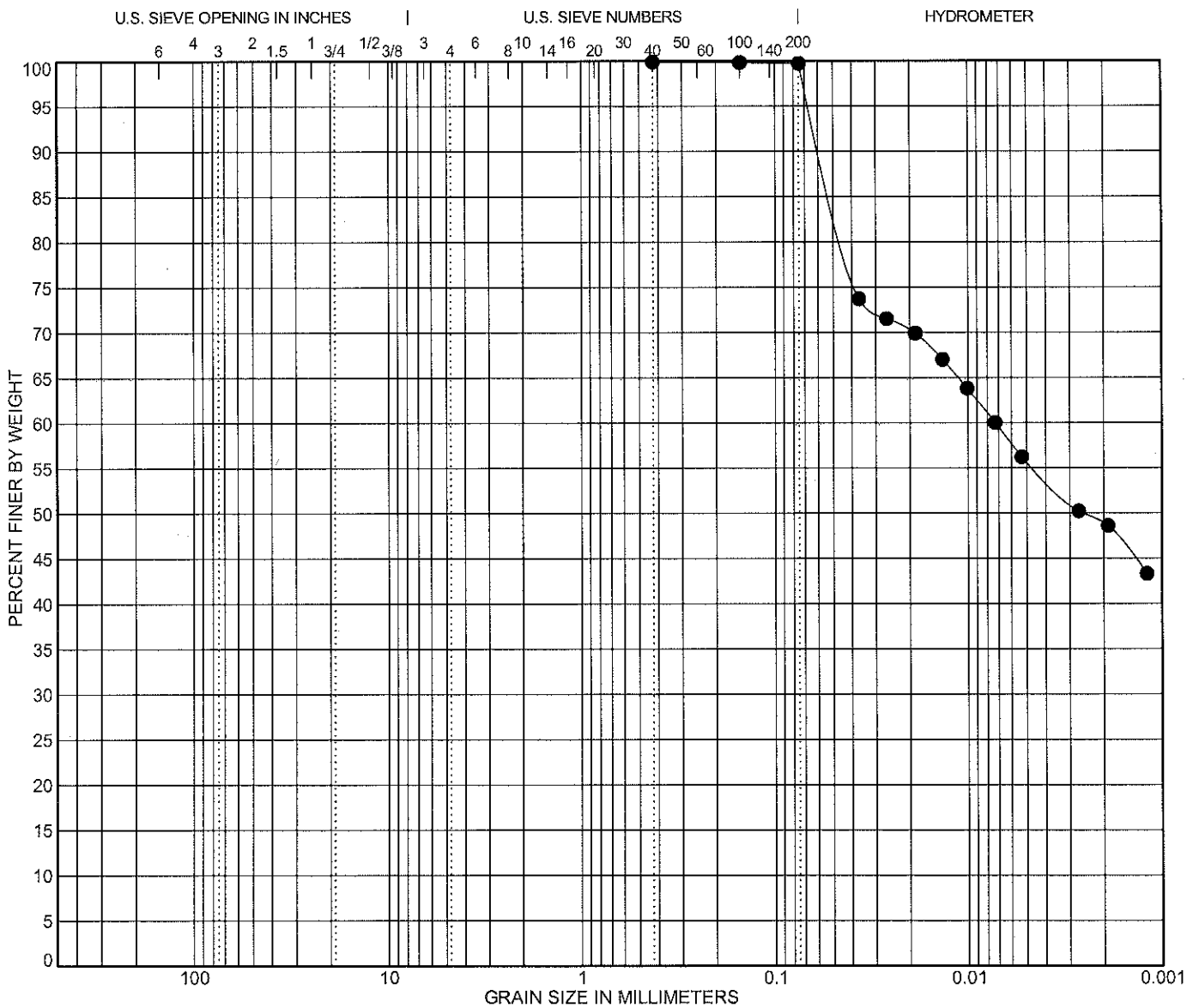
DATE DRILLED	Page 3 of 3
5/11/2010	10-B4
PROJECT NUMBER 92105154	EXHIBIT A-4



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

Specimen Identification		Classification	LL	PL	PI	Cc	Cu
● **10-B4**	**6.0**	**FAT CLAY(CH)**	**99**	**31**	**68**		

Percent Passing the Indicated Sieve

Specimen Identification		3/8"	#4	#10	#40	#100	#200
● **10-B4**	**6.0**				**99.9**	**99.8**	**99.7**

Specimen Identification		D100	D50	D30	D10	%Gravel	%Sand	%Silt	%Clay
● **10-B4**	**6.0**	**0.425**	**0.003**			**0.0**	**0.2**	**50.9**	**48.8**

GRAIN SIZE DISTRIBUTION

Galveston Channel Deepening,
TO-0010
Galveston, Texas
Project Number 92105154

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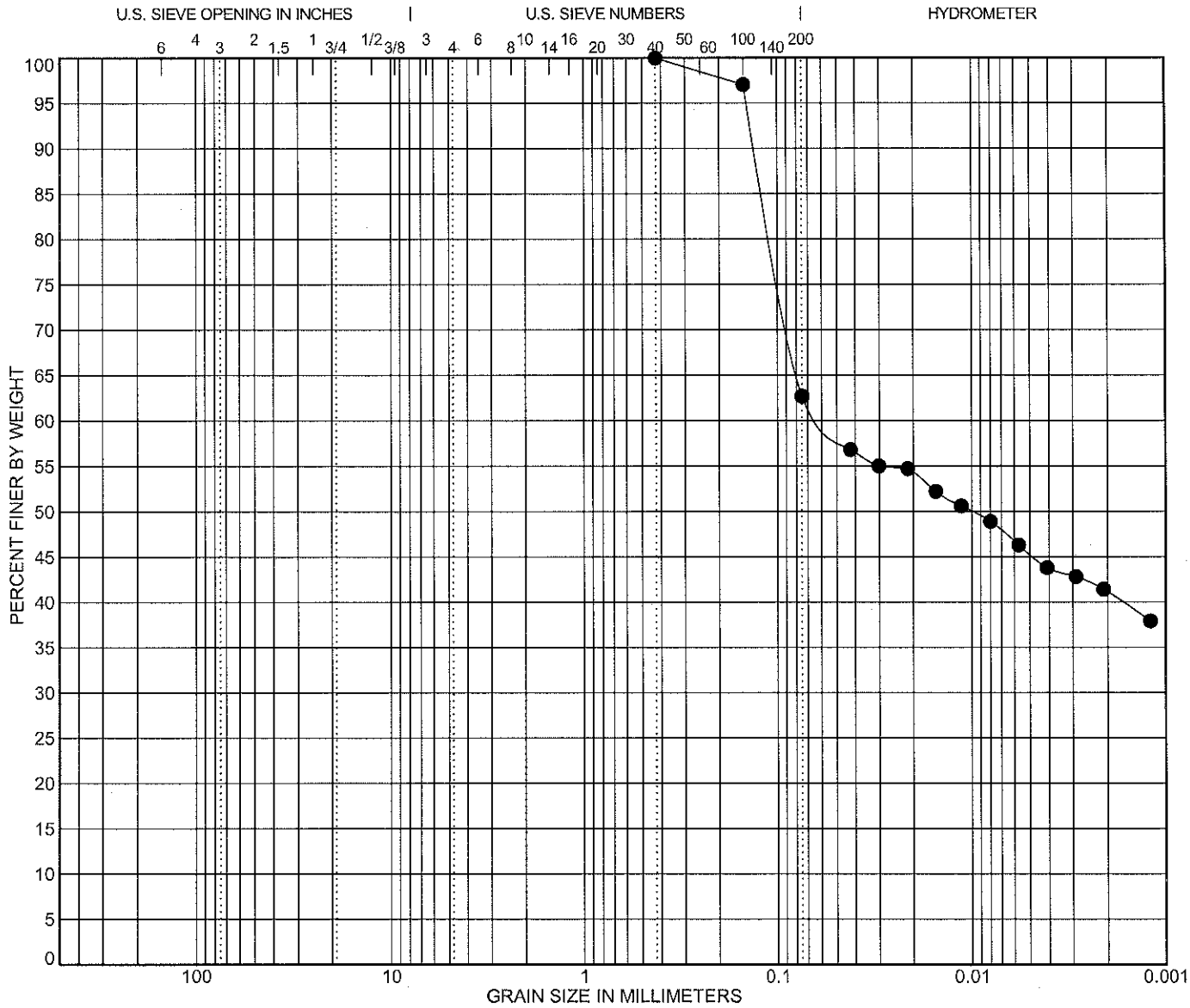
SPECIMEN ID
10-B4, 6.0



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	Specimen Identification		Classification	LL	PL	PI	Cc	Cu
●	**10-B4**	**7.0**	**SANDY FAT CLAY(CH)**	**76**	**24**	**52**		

Percent Passing the Indicated Sieve

	Specimen Identification		3/8"	#4	#10	#40	#100	#200
●	**10-B4**	**7.0**				**100**	**97**	**62.7**

	Specimen Identification		D100	D50	D30	D10	%Gravel	%Sand	%Silt	%Clay
●	**10-B4**	**7.0**	**0.425**	**0.01**			**0.0**	**37.3**	**21.6**	**41.1**

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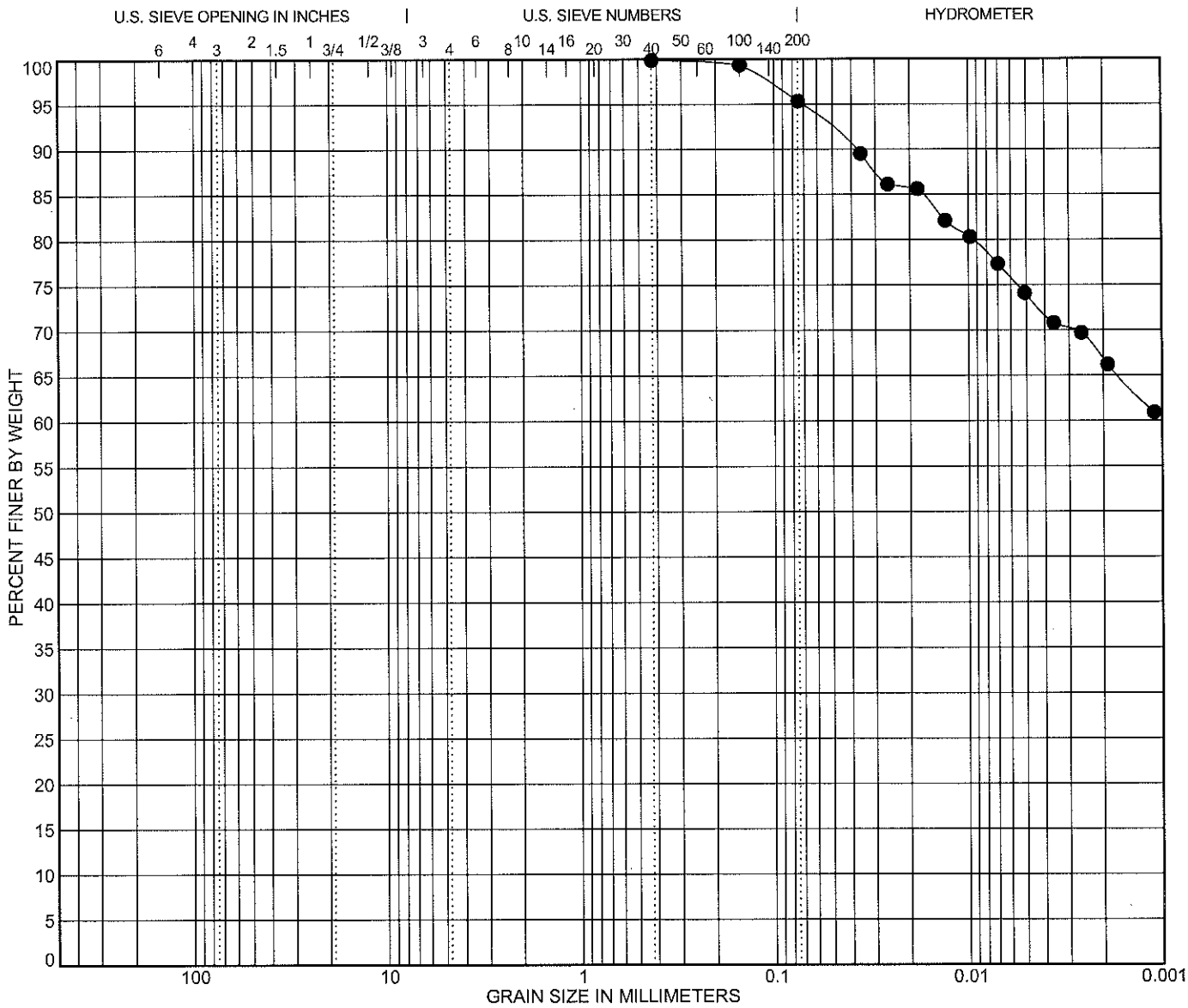
SPECIMEN ID
10-B4, 7.0



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	Specimen Identification		Classification	LL	PL	PI	Cc	Cu
●	**10-B4**	**10.0**	**FAT CLAY(CH)**	**93**	**27**	**66**		

Percent Passing the Indicated Sieve

	Specimen Identification		3/8"	#4	#10	#40	#100	#200
●	**10-B4**	**10.0**				**99.9**	**99.3**	**95.3**

	Specimen Identification		D100	D50	D30	D10	%Gravel	%Sand	%Silt	%Clay
●	**10-B4**	**10.0**	**0.425**				**0.0**	**4.5**	**28.6**	**66.8**

GRAIN SIZE DISTRIBUTION

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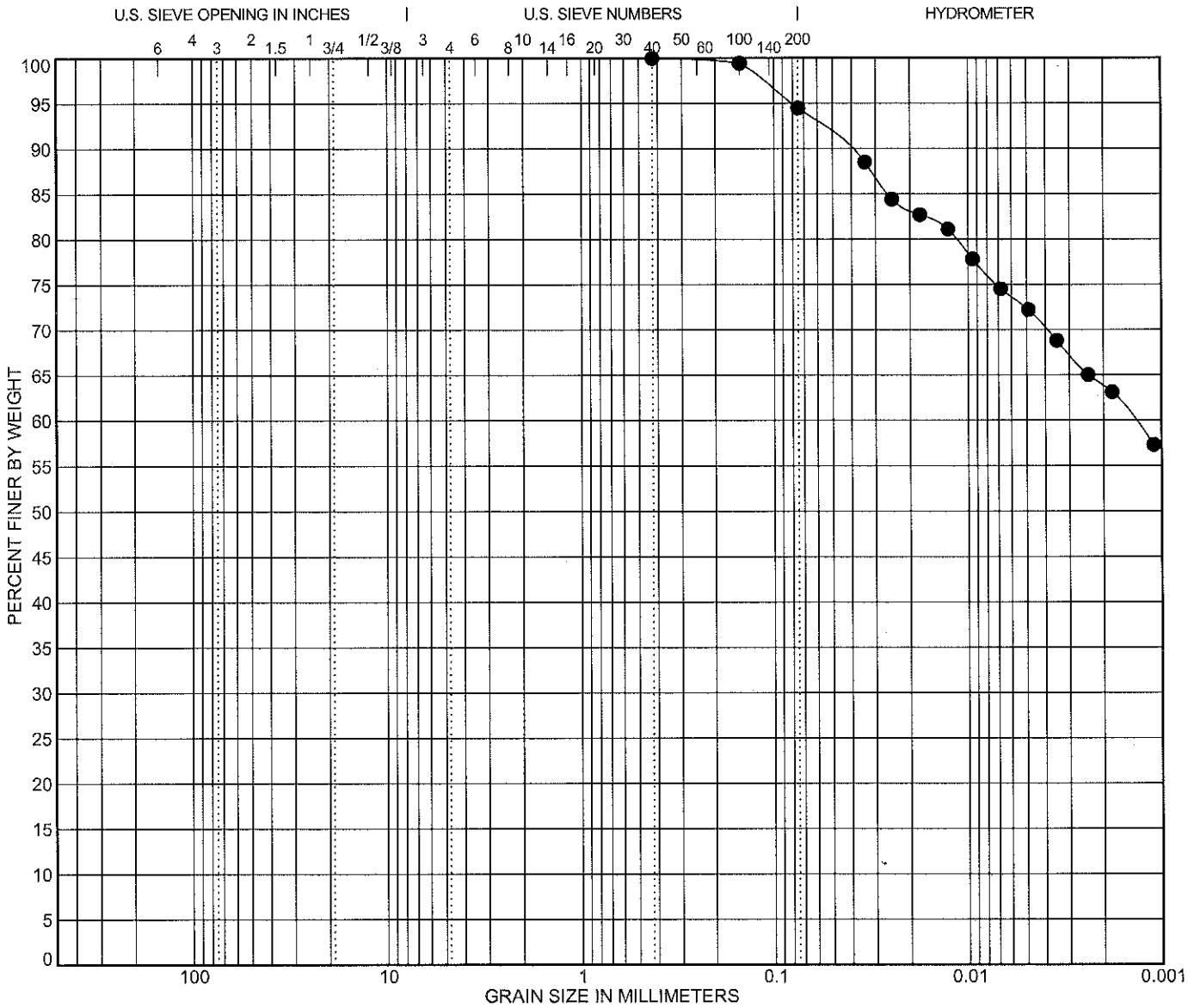
SPECIMEN ID
10-B4, 10.0



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	Specimen Identification		Classification	LL	PL	PI	Cc	Cu
●	**10-B4**	**14.0**	**FAT CLAY(CH)**	**94**	**29**	**65**		

Percent Passing the Indicated Sieve

	Specimen Identification		3/8"	#4	#10	#40	#100	#200
●	**10-B4**	**14.0**				**100**	**99.4**	**94.5**

	Specimen Identification		D100	D50	D30	D10	%Gravel	%Sand	%Silt	%Clay
●	**10-B4**	**14.0**	**0.425**				**0.0**	**5.5**	**30.7**	**63.8**

GRAIN SIZE DISTRIBUTION

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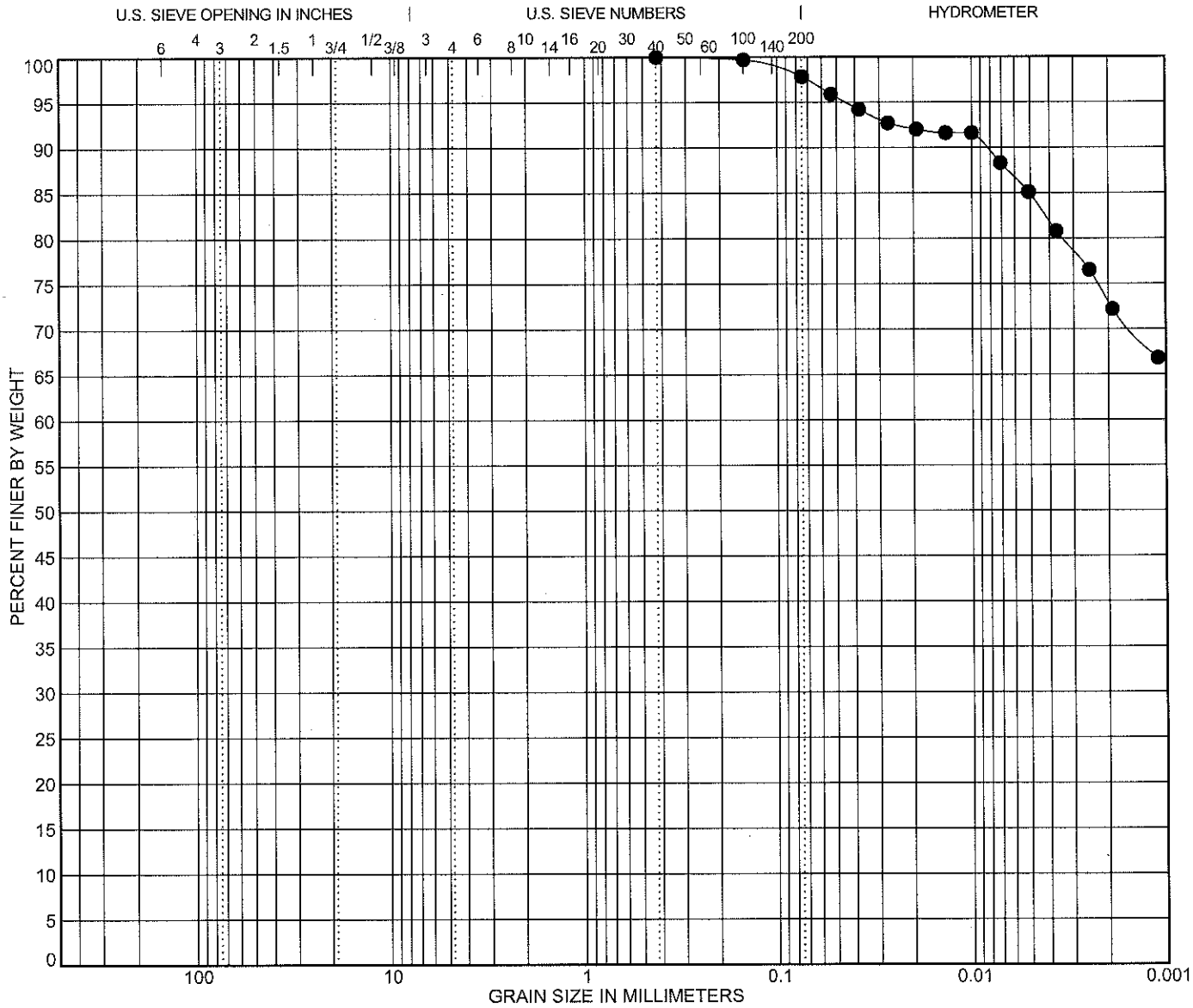
SPECIMEN ID
10-B4, 14.0



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

Specimen Identification		Classification	LL	PL	PI	Cc	Cu
● **10-B4**	**20.0**	**FAT CLAY(CH)**	**127**	**34**	**93**		

Percent Passing the Indicated Sieve

Specimen Identification		3/8"	#4	#10	#40	#100	#200
● **10-B4**	**20.0**				**100**	**99.7**	**97.8**

Specimen Identification		D100	D50	D30	D10	%Gravel	%Sand	%Silt	%Clay
● **10-B4**	**20.0**	**0.425**				**0.0**	**2.1**	**24.8**	**73.0**

GRAIN SIZE DISTRIBUTION

Galveston Channel Deepening,
TO-0010
Galveston, Texas
Project Number 92105154

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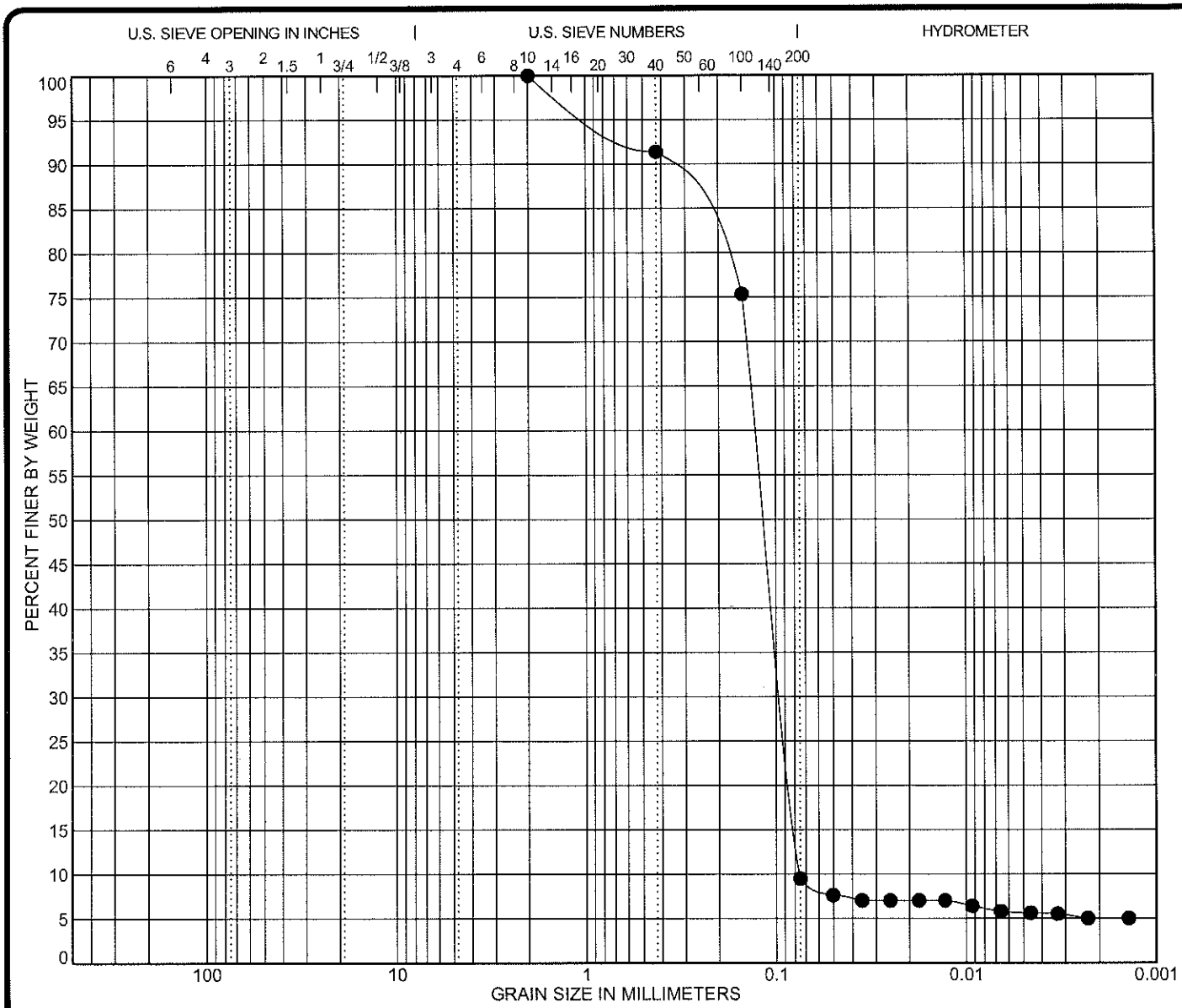
SPECIMEN ID
10-B4, 20.0



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

Specimen Identification		Classification	LL	PL	PI	Cc	Cu
● **10-B4**	**24.5**					**0.90**	**1.69**

Percent Passing the Indicated Sieve

Specimen Identification		3/8"	#4	#10	#40	#100	#200
● **10-B4**	**24.5**			**100**	**91.4**	**75.3**	**9.5**

Specimen Identification		D100	D50	D30	D10	%Gravel	%Sand	%Silt	%Clay
● **10-B4**	**24.5**	**2**	**0.115**	**0.093**	**0.075**	**0.0**	**90.5**	**4.5**	**5.0**

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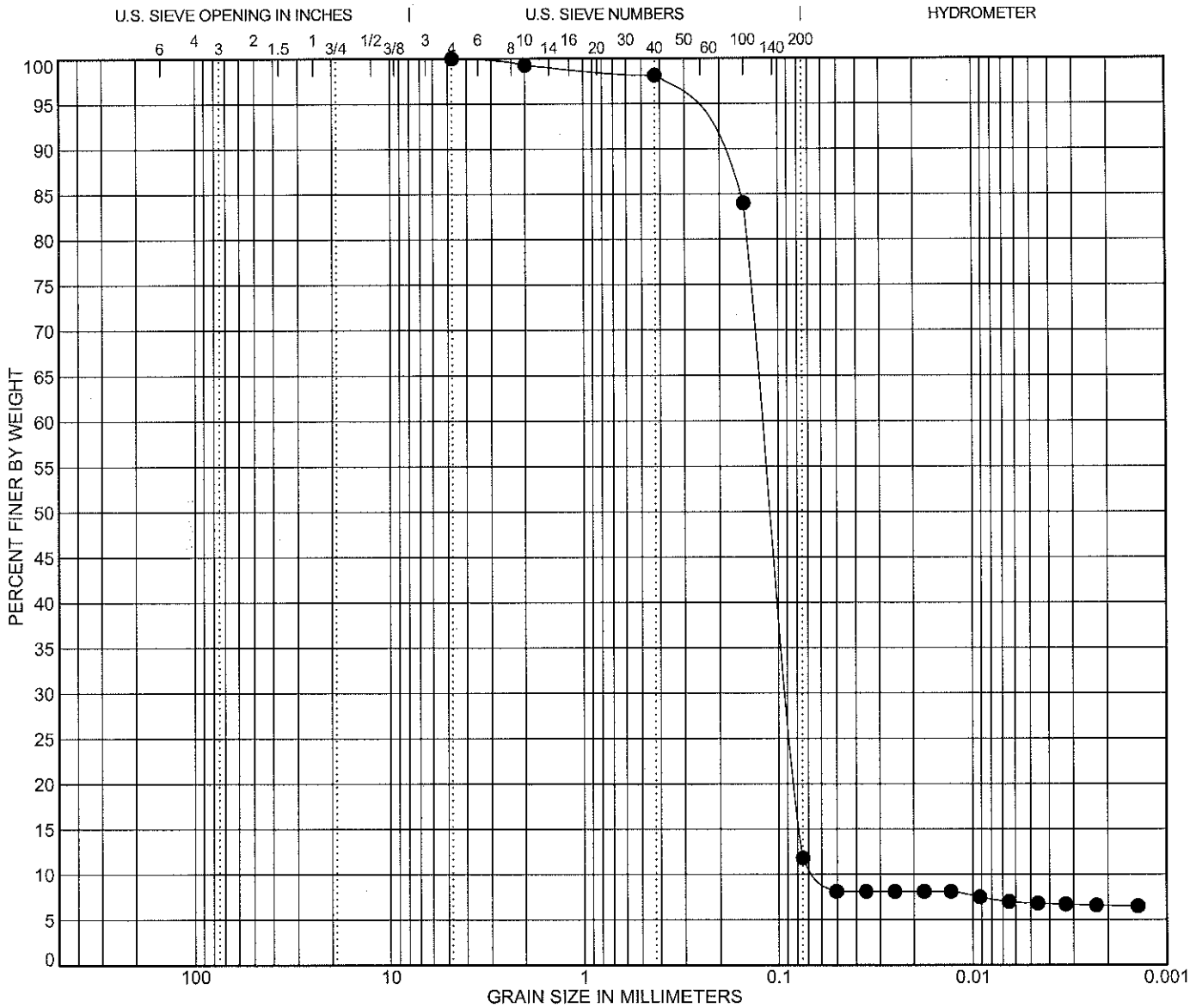
SPECIMEN ID
10-B4, 24.5



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

Specimen Identification		Classification	LL	PL	PI	Cc	Cu
● **10-B4**	**36.0**					**1.08**	**1.93**

Percent Passing the Indicated Sieve

Specimen Identification		3/8"	#4	#10	#40	#100	#200
● **10-B4**	**36.0**		**100**	**99.3**	**98.1**	**84**	**11.8**

Specimen Identification		D100	D50	D30	D10	%Gravel	%Sand	%Silt	%Clay
● **10-B4**	**36.0**	**4.75**	**0.108**	**0.089**	**0.062**	**0.0**	**88.2**	**5.2**	**6.6**

GRAIN SIZE DISTRIBUTION

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Project Number 92105154

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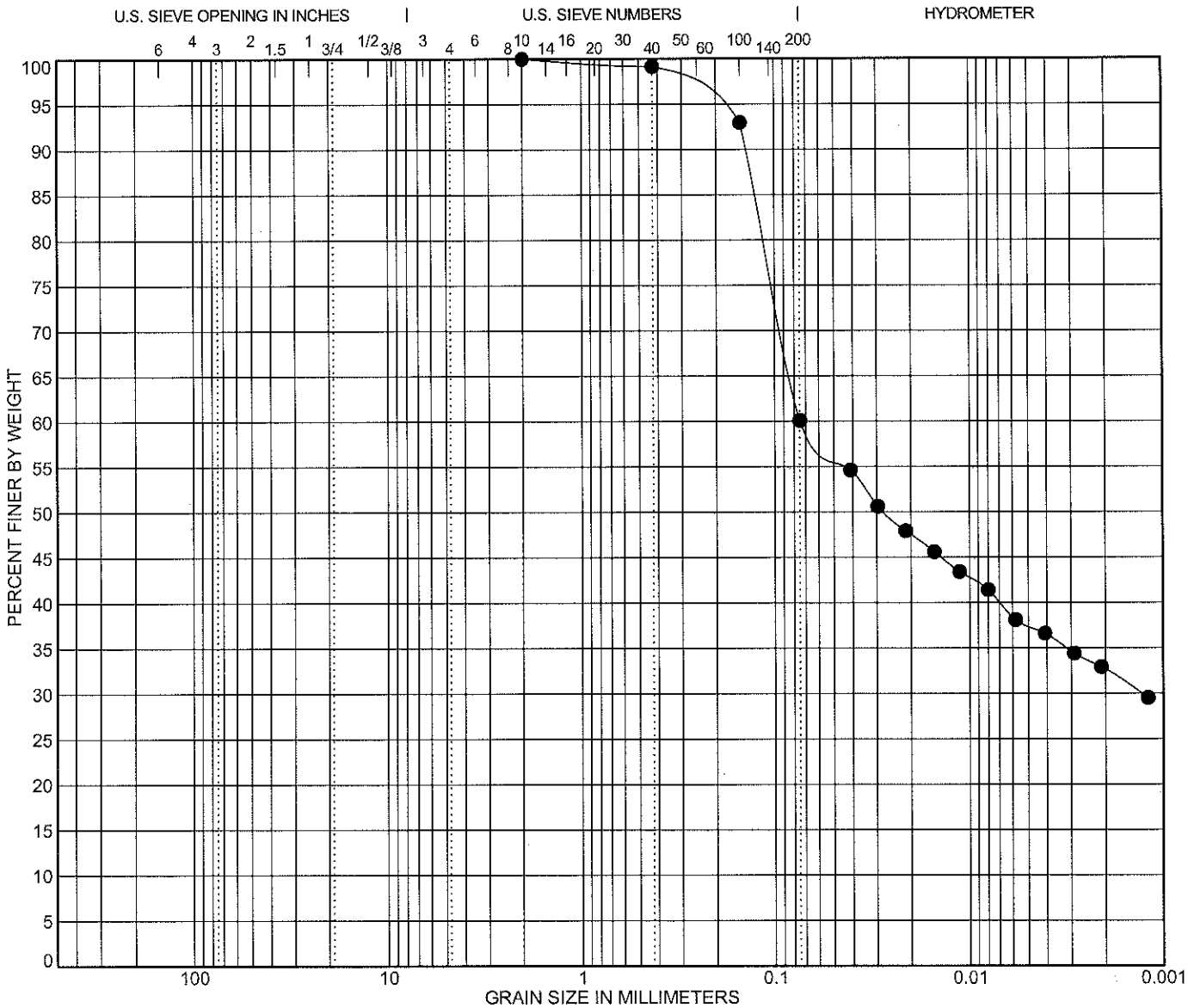
SPECIMEN ID
10-B4, 36.0



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	Specimen Identification		Classification	LL	PL	PI	Cc	Cu
●	**10-B4**	**52.5**	**SANDY LEAN CLAY(CL)**	**35**	**16**	**19**		

Percent Passing the Indicated Sieve

	Specimen Identification		3/8"	#4	#10	#40	#100	#200
●	**10-B4**	**52.5**			**100**	**99.1**	**92.9**	**60.1**

	Specimen Identification		D100	D50	D30	D10	%Gravel	%Sand	%Silt	%Clay
●	**10-B4**	**52.5**	**2**	**0.028**	**0.001**		**0.0**	**39.9**	**27.5**	**32.6**

GRAIN SIZE DISTRIBUTION

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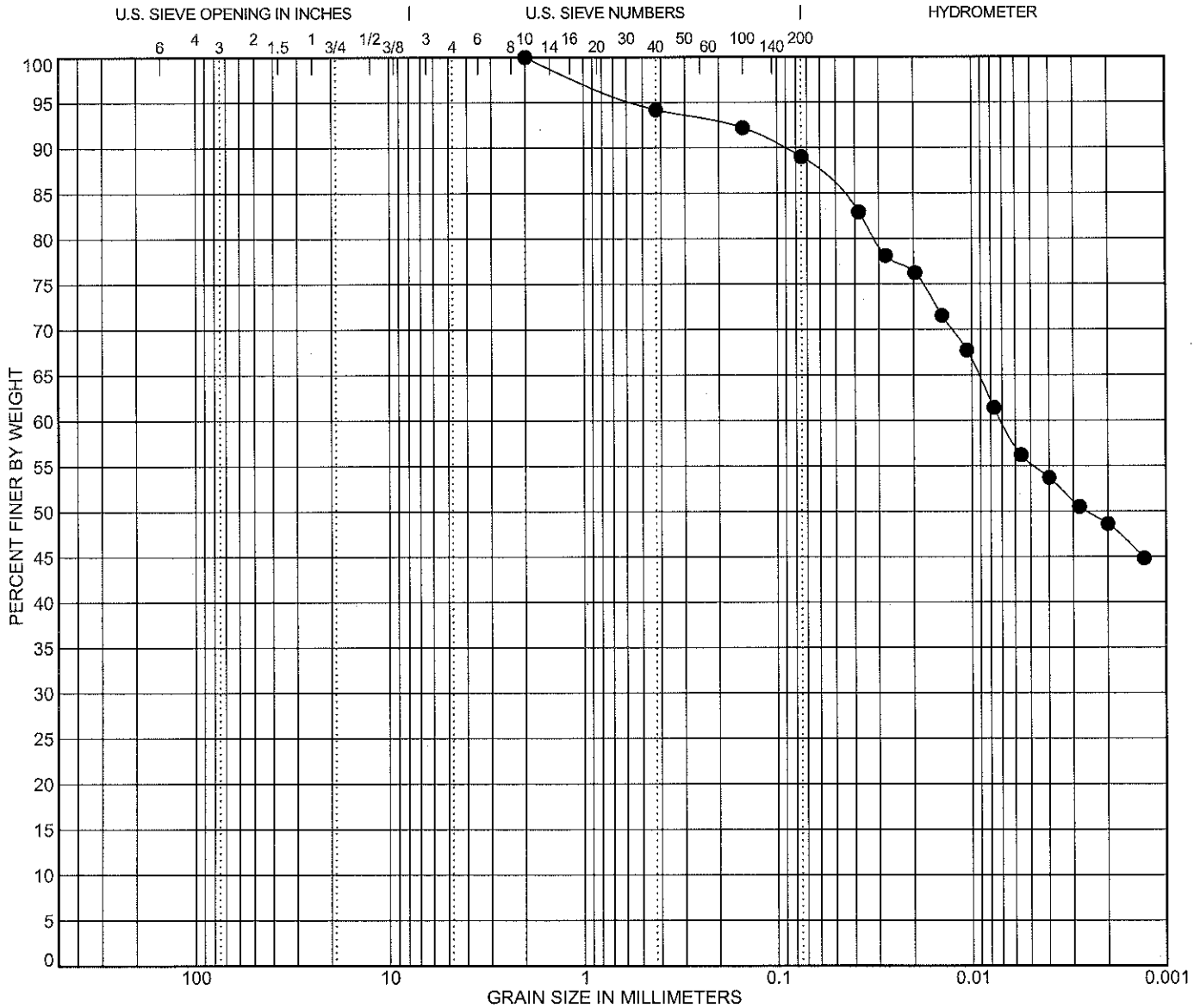
SPECIMEN ID
10-B4, 52.5



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	Specimen Identification		Classification	LL	PL	PI	Cc	Cu
●	**10-B4**	**62.0**	**FAT CLAY(CH)**	**64**	**22**	**42**		

Percent Passing the Indicated Sieve

	Specimen Identification		3/8"	#4	#10	#40	#100	#200
●	**10-B4**	**62.0**			**100**	**94.2**	**92.2**	**89**

	Specimen Identification		D100	D50	D30	D10	%Gravel	%Sand	%Silt	%Clay
●	**10-B4**	**62.0**	**2**	**0.003**			**0.0**	**11.0**	**40.4**	**48.6**

GRAIN SIZE DISTRIBUTION

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TO-0010
Galveston, Texas
Project Number 92105154

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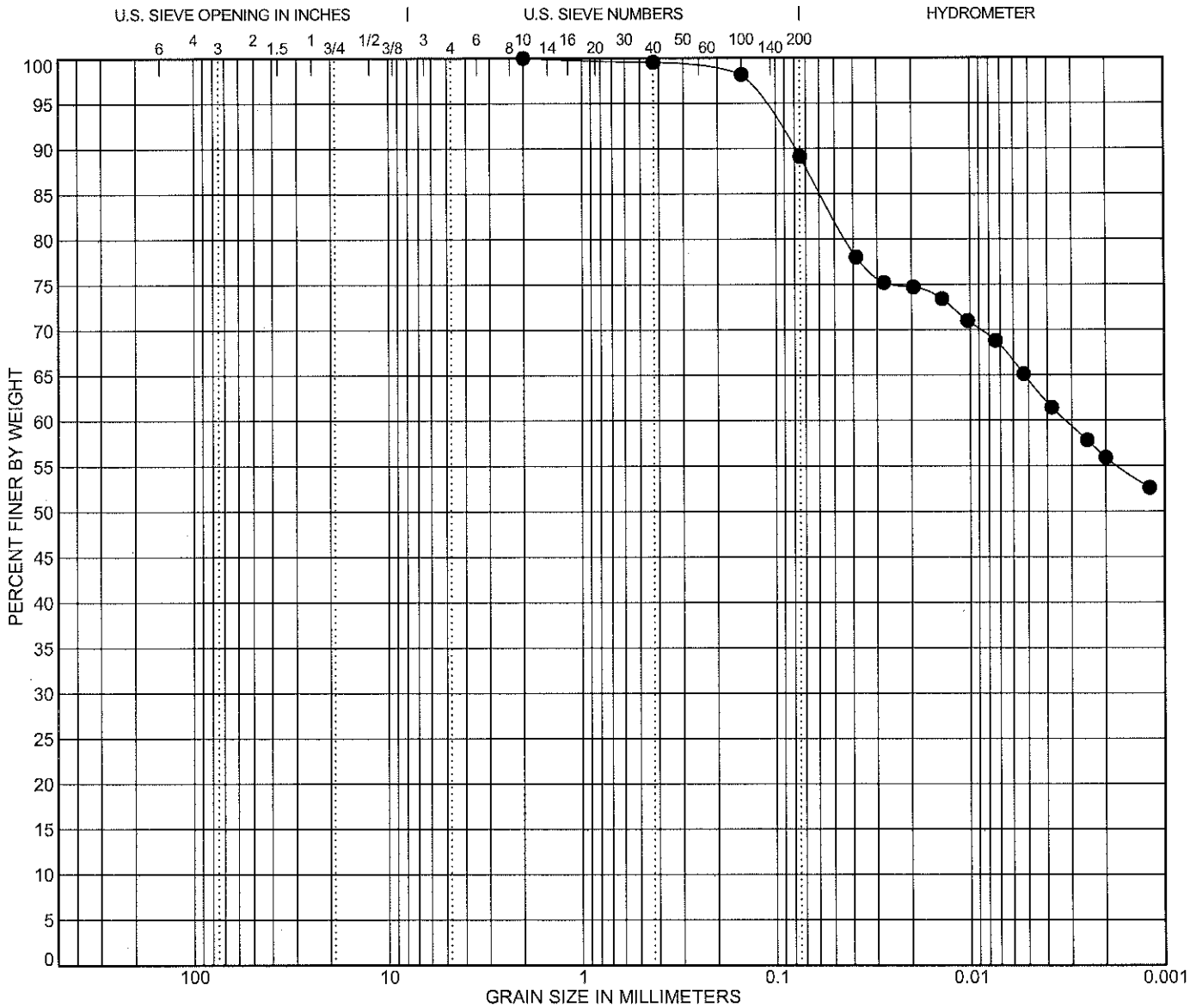
SPECIMEN ID
10-B4, 62.0



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

Specimen Identification		Classification	LL	PL	PI	Cc	Cu
● **10-B4**	**74.0**						

Percent Passing the Indicated Sieve

Specimen Identification		3/8"	#4	#10	#40	#100	#200
● **10-B4**	**74.0**			**100**	**99.5**	**98.2**	**89.1**

Specimen Identification		D100	D50	D30	D10	%Gravel	%Sand	%Silt	%Clay
● **10-B4**	**74.0**	**2**				**0.0**	**10.9**	**33.2**	**55.9**

GRAIN SIZE DISTRIBUTION

Galveston Channel Deepening,
TO-0010
Galveston, Texas
Project Number 92105154

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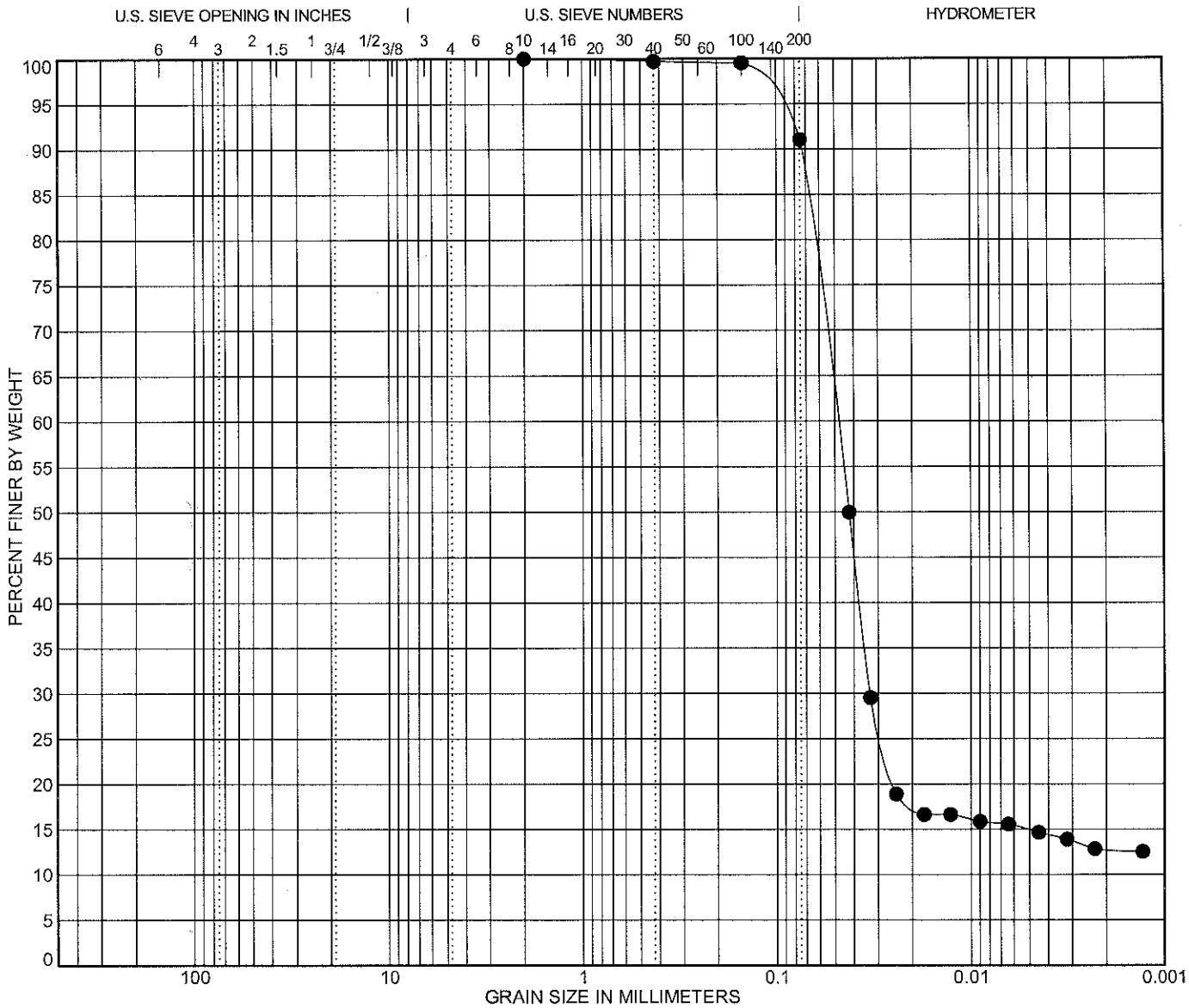
SPECIMEN ID
10-B4, 74.0



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

Specimen Identification		Classification	LL	PL	PI	Cc	Cu
● **10-B4**	**78.5**						

Percent Passing the Indicated Sieve

Specimen Identification		3/8"	#4	#10	#40	#100	#200
● **10-B4**	**78.5**			**100**	**99.7**	**99.5**	**91.1**

Specimen Identification		D100	D50	D30	D10	%Gravel	%Sand	%Silt	%Clay
● **10-B4**	**78.5**	**2**	**0.042**	**0.033**		**0.0**	**8.9**	**78.3**	**12.8**

GRAIN SIZE DISTRIBUTION

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Galveston, Texas
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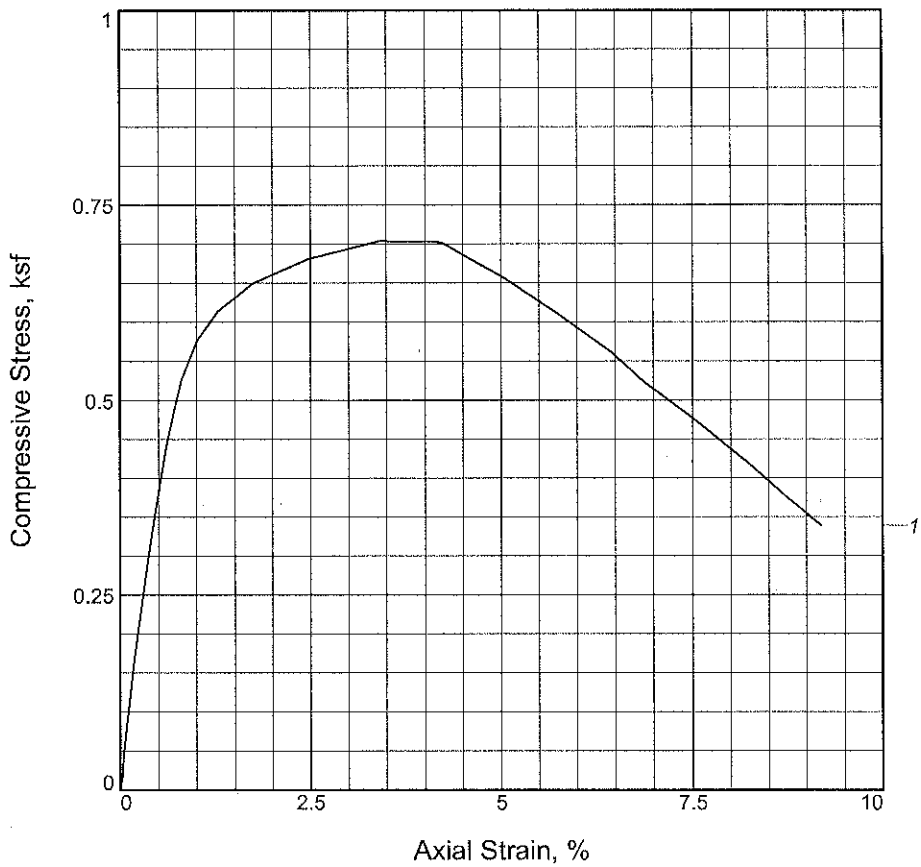
SPECIMEN ID
10-B4, 78.5

UNCONFINED COMPRESSION TEST



Sample No.	1			
Unconfined strength, ksf	0.704			
Undrained shear strength, ksf	0.352			
Failure strain, %	3.4			
Strain rate, in./min.	0.055			
Water content, %	55.3			
Wet density, pcf	103.9			
Dry density, pcf	66.9			
Saturation, %	97.1			
Void ratio	1.5662			
Specimen diameter, in.	2.843			
Specimen height, in.	5.983			
Height/diameter ratio	2.10			

Description: Gray Fat Clay w/calcareious nodules and sand pockets

LL =	**PL =**	**PI =**	**Assumed GS=** 2.75	**Type:** Undisturbed

Project No.: 92105154

Date Sampled:

Remarks:
ASTM D2166

Client: USACE

Project: Galveston Channel Deepening San Jacinto Placement Area
Contract #W912HY-09-D-0021, Task Order #0010

Location: 10-B4

Sample Number: 8 **Depth:** 14-16 ft.

UNCONFINED COMPRESSION TEST
Terracon, Inc.
Houston, TX

UNCONFINED COMPRESSION TEST

7/21/2010

Date:
Client: USACE
Project: Galveston Channel Deepening San Jacinto Placement Area
Contract #W912HY-09-D-0021, Task Order #0010
Project No.: 92105154
Location: 10-B4
Depth: 14-16 ft. **Sample Number:** 8
Description: Gray Fat Clay w/calcareious nodules and sand pockets
Remarks: ASTM D2166
Type of Sample: Undisturbed
Assumed Specific Gravity=2.75 **LL=** **PL=** **PI=**

Parameters for Specimen No. 1

Specimen Parameter	Initial
Moisture content: Moist soil+tare, gms.	162.920
Moisture content: Dry soil+tare, gms.	126.240
Moisture content: Tare, gms.	59.890
Moisture, %	55.3
Moist specimen weight, gms.	1035.70
Diameter, in.	2.843
Area, in.^{2}	6.348
Height, in.	5.983
Wet density, pcf	103.9
Dry density, pcf	66.9
Void ratio	1.5662
Saturation, %	97.1

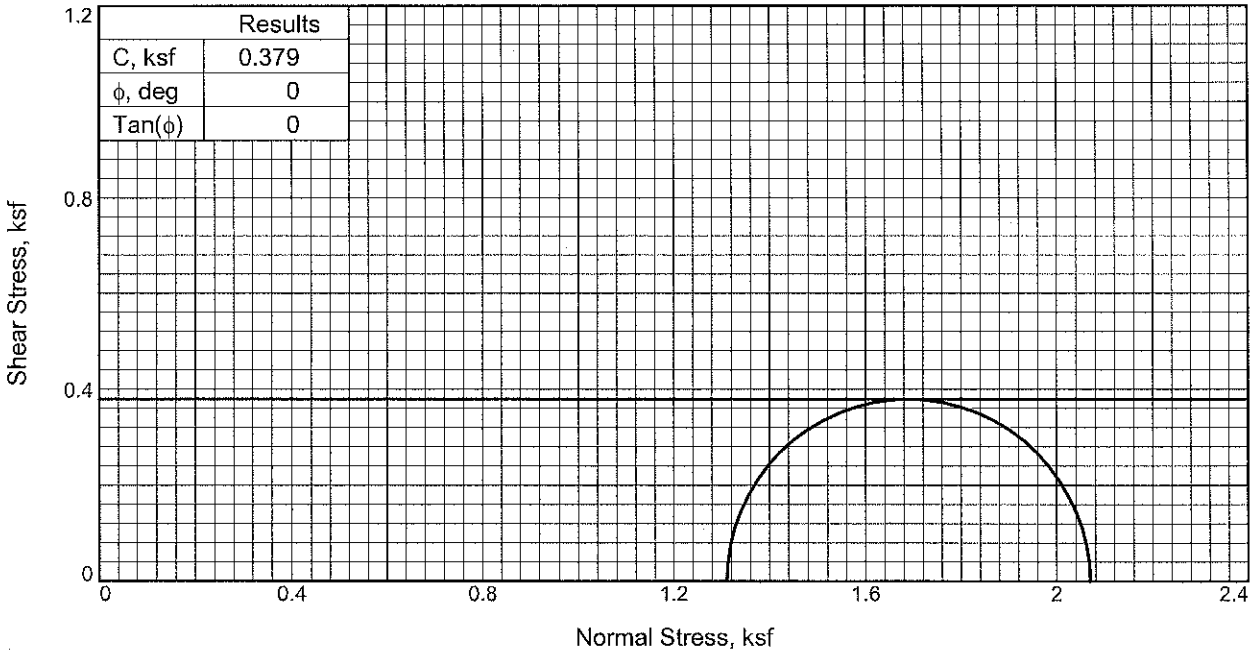
Test Readings for Specimen No. 1

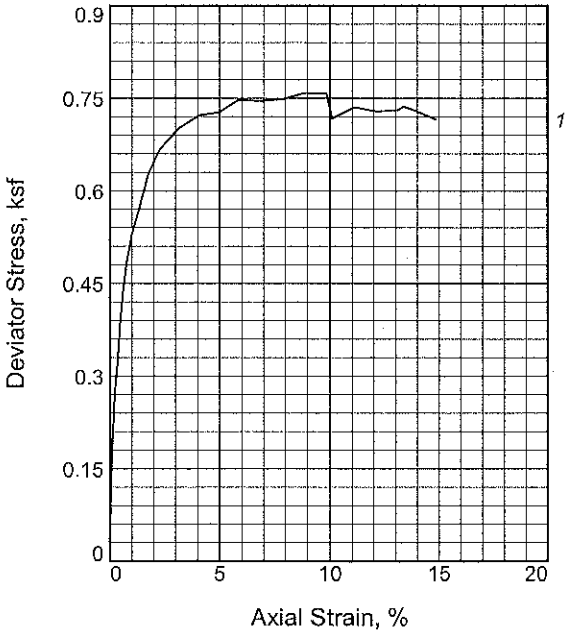
Strain rate, in./min. = 0.055
Unconfined compressive strength = 0.704 ksf **at reading no.** 18

No.	Def. Dial in.	Load Dial	Load lbs.	Strain %	Deviator Stress ksf
0	0.0000	0.000	0.0	0.0	0.000
1	0.0020	0.800	0.8	0.0	0.018
2	0.0026	1.742	1.7	0.0	0.039
3	0.0050	3.404	3.4	0.1	0.077
4	0.0078	5.129	5.1	0.1	0.116
5	0.0107	7.014	7.0	0.2	0.159
6	0.0149	9.312	9.3	0.2	0.211
7	0.0192	11.580	11.6	0.3	0.262
8	0.0230	13.585	13.6	0.4	0.307
9	0.0272	15.645	15.6	0.5	0.353
10	0.0315	17.576	17.6	0.5	0.397
11	0.0358	19.474	19.5	0.6	0.439
12	0.0414	21.430	21.4	0.7	0.483
13	0.0481	23.404	23.4	0.8	0.527
14	0.0603	25.661	25.7	1.0	0.576
15	0.0769	27.426	27.4	1.3	0.614

Test Readings for Specimen No. 1

No.	Def. Dial in.	Load Dial	Load lbs.	Strain %	Deviator Stress ksf
16	0.1043	29.149	29.1	1.7	0.650
17	0.1483	30.803	30.8	2.5	0.681
18	0.2036	32.118	32.1	3.4	0.704
19	0.2476	32.357	32.4	4.1	0.704
20	0.2533	32.279	32.3	4.2	0.701
21	0.3024	30.451	30.5	5.1	0.656
22	0.3440	28.569	28.6	5.7	0.611
23	0.3851	26.506	26.5	6.4	0.563
24	0.4126	24.739	24.7	6.9	0.522
25	0.4537	22.478	22.5	7.6	0.471
26	0.4953	19.943	19.9	8.3	0.415
27	0.5227	18.135	18.1	8.7	0.375
28	0.5501	16.449	16.4	9.2	0.339





Sample No.		1
Initial	Water Content, %	54.5
	Dry Density, pcf	69.2
	Saturation, %	100.1
	Void Ratio	1.5252
	Diameter, in.	2.835
	Height, in.	5.886
At Test	Water Content, %	54.5
	Dry Density, pcf	69.2
	Saturation, %	100.0
	Void Ratio	1.5252
	Diameter, in.	2.835
	Height, in.	5.886
Strain rate, in./min.		0.055
Back Pressure, psi		0.000
Cell Pressure, psi		9.100
Fail. Stress, ksf		0.758
Ult. Stress, ksf		
σ_1 Failure, ksf		2.069
σ_3 Failure, ksf		1.310

Type of Test:
Unconsolidated Undrained

Sample Type: Undisturbed

Description: Gray Fat Clay w/sand pockets

Assumed Specific Gravity= 2.80

Remarks: ASTM D2850

Client: USACE

Project: Galveston Channel Deepening San Jacinto Placement Area
Contract #W912HY-09-D-0021, Task Order #0010

Location: 10-B4

Sample Number: 6 **Depth:** 10-12 ft.

Proj. No.: 92105154 **Date Sampled:**

TRIAXIAL SHEAR TEST REPORT
Terracon, Inc.
Houston, TX

TRIAXIAL COMPRESSION TEST

Unconsolidated Undrained

7/20/2010
2:20 PM

Date:
Client: USACE
Project: Galveston Channel Deepening San Jacinto Placement Area
Contract #W912HY-09-D-0021, Task Order #0010
Project No.: 92105154
Location: 10-B4
Depth: 10-12 ft. **Sample Number:** 6
Description: Gray Fat Clay w/sand pockets
Remarks: ASTM D2850
Type of Sample: Undisturbed
Assumed Specific Gravity=2.80 **LL=** **PL=** **PI=**
Test Method: COE uniform strain

Parameters for Specimen No. 1

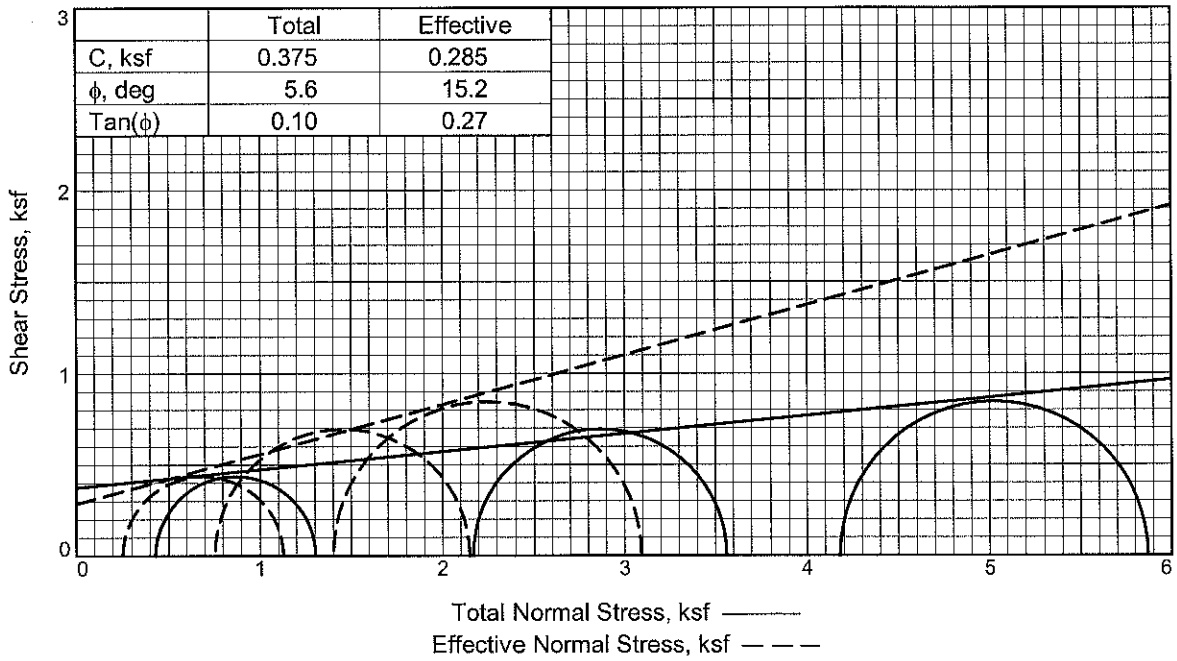
Specimen Parameter	Initial	Saturated	Final
Moisture content: Moist soil+tare, gms.	153.450		153.450
Moisture content: Dry soil+tare, gms.	119.610		119.610
Moisture content: Tare, gms.	57.530		57.530
Moisture, %	54.5	54.5	54.5
Moist specimen weight, gms.	1043.13		
Diameter, in.	2.835	2.835	
Area, in.^{2}	6.312	6.312	
Height, in.	5.886	5.886	
Net decrease in height, in.		0.000	
Wet density, pcf	107.0	106.9	
Dry density, pcf	69.2	69.2	
Void ratio	1.5252	1.5252	
Saturation, %	100.1	100.0	

Test Readings for Specimen No. 1

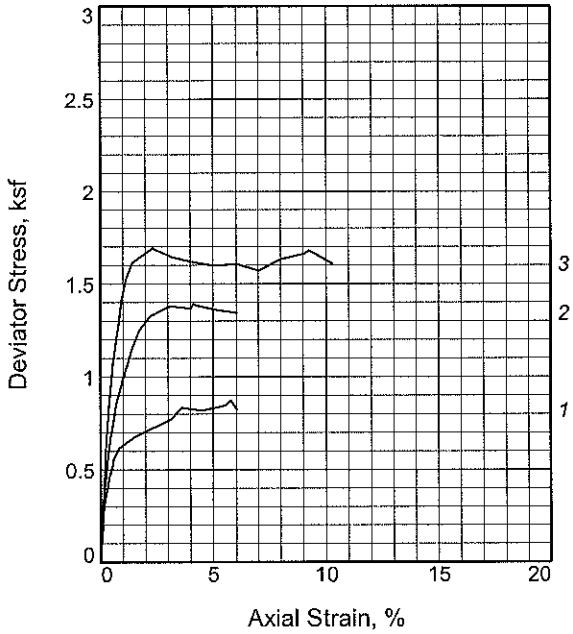
Cell pressure = 9.100 psi (1.310 ksf)
Back pressure = 0.000 psi (0.000 ksf)
Strain rate, in./min. = 0.055
Fail. Stress = 0.758 ksf **at reading no.** 21

Test Readings for Specimen No. 1

No.	Def. Dial in.	Load Dial	Load lbs.	Strain %	Deviator Stress ksf	Minor Princ. Stress ksf	Major Princ. Stress ksf	1:3 Ratio	P ksf	Q ksf
0	0.0000	0.000	0.0	0.0	0.000	1.310	1.310	1.00	1.310	0.000
1	0.0010	1.000	1.0	0.0	0.023	1.310	1.333	1.02	1.322	0.011
2	0.0016	2.693	2.7	0.0	0.061	1.310	1.372	1.05	1.341	0.031
3	0.0028	5.089	5.1	0.0	0.116	1.310	1.426	1.09	1.368	0.058
4	0.0060	7.542	7.5	0.1	0.172	1.310	1.482	1.13	1.396	0.086
5	0.0091	9.528	9.5	0.2	0.217	1.310	1.527	1.17	1.419	0.109
6	0.0135	12.027	12.0	0.2	0.274	1.310	1.584	1.21	1.447	0.137
7	0.0200	13.975	14.0	0.3	0.318	1.310	1.628	1.24	1.469	0.159
8	0.0275	17.143	17.1	0.5	0.389	1.310	1.700	1.30	1.505	0.195
9	0.0352	19.382	19.4	0.6	0.439	1.310	1.750	1.34	1.530	0.220
10	0.0440	21.294	21.3	0.7	0.482	1.310	1.793	1.37	1.551	0.241
11	0.0580	23.409	23.4	1.0	0.529	1.310	1.839	1.40	1.575	0.264
12	0.0787	25.437	25.4	1.3	0.573	1.310	1.883	1.44	1.597	0.286
13	0.1024	27.999	28.0	1.7	0.628	1.310	1.938	1.48	1.624	0.314
14	0.1325	29.871	29.9	2.3	0.666	1.310	1.976	1.51	1.643	0.333
15	0.1859	31.770	31.8	3.2	0.702	1.310	2.012	1.54	1.661	0.351
16	0.2398	33.010	33.0	4.1	0.722	1.310	2.033	1.55	1.672	0.361
17	0.2930	33.550	33.5	5.0	0.727	1.310	2.038	1.55	1.674	0.364
18	0.3431	34.799	34.8	5.8	0.748	1.310	2.058	1.57	1.684	0.374
19	0.4022	35.090	35.1	6.8	0.746	1.310	2.056	1.57	1.683	0.373
20	0.4612	35.586	35.6	7.8	0.748	1.310	2.059	1.57	1.684	0.374
21	0.5203	36.469	36.5	8.8	0.758	1.310	2.069	1.58	1.690	0.379
22	0.5791	36.842	36.8	9.8	0.758	1.310	2.068	1.58	1.689	0.379
23	0.5943	34.962	35.0	10.1	0.717	1.310	2.027	1.55	1.669	0.359
24	0.6533	36.251	36.3	11.1	0.735	1.310	2.046	1.56	1.678	0.368
25	0.7123	36.350	36.3	12.1	0.729	1.310	2.039	1.56	1.675	0.364
26	0.7712	36.876	36.9	13.1	0.731	1.310	2.041	1.56	1.676	0.366
27	0.7861	37.252	37.3	13.4	0.736	1.310	2.047	1.56	1.679	0.368
28	0.8157	37.157	37.2	13.9	0.730	1.310	2.041	1.56	1.675	0.365
29	0.8747	36.855	36.9	14.9	0.716	1.310	2.026	1.55	1.668	0.358



	Total	Effective
C, ksf	0.375	0.285
ϕ, deg	5.6	15.2
Tan(ϕ)	0.10	0.27



	Sample No.	1	2	3
Initial	Water Content, %	64.0	64.0	64.0
	Dry Density, pcf	64.0	63.8	63.8
	Saturation, %	104.6	104.1	104.1
	Void Ratio	1.6832	1.6911	1.6911
	Diameter, in.	2.795	2.795	2.795
	Height, in.	6.034	6.034	6.034
At Test	Water Content, %	64.6	64.5	64.5
	Dry Density, pcf	64.0	63.8	63.8
	Saturation, %	105.5	105.0	105.0
	Void Ratio	1.6832	1.6911	1.6911
	Diameter, in.	2.795	2.795	2.795
	Height, in.	6.034	6.034	6.034
	Strain rate, in./min.	0.001	0.001	0.001
	Back Pressure, psi	40.000	40.000	40.000
	Cell Pressure, psi	42.990	55.070	69.010
	Fail. Stress, ksf	0.873	1.392	1.692
	Excess Pore Pr., ksf	0.177	1.414	2.777
	Ult. Stress, ksf			
	Excess Pore Pr., ksf			
	$\bar{\sigma}_1$ Failure, ksf	1.127	2.148	3.093
	$\bar{\sigma}_3$ Failure, ksf	0.254	0.757	1.400

Type of Test:
CU with Pore Pressures
Sample Type: Undisturbed
Description: Gray Fat Clay

Assumed Specific Gravity= 2.75
Remarks: ASTM D4767

Client: USACE

Project: Galveston Channel Deepening San Jacinto Placement Area
Contract #W912HY-09-D-0021, Task Order #0010
Location: 10-B4
Sample Number: 11 **Depth:** 20-22 ft.
Proj. No.: 92105154 **Date Sampled:**

TRIAXIAL SHEAR TEST REPORT
Terracon, Inc.
Houston, TX

TRIAXIAL COMPRESSION TEST

CU with Pore Pressures

8/4/2010
1:10 PM

Date:
Client: USACE
Project: Galveston Channel Deepening San Jacinto Placement Area
Contract #W912HY-09-D-0021, Task Order #0010
Project No.: 92105154
Location: 10-B4
Depth: 20-22 ft. **Sample Number:** 11
Description: Gray Fat Clay
Remarks: ASTM D4767
Type of Sample: Undisturbed
Assumed Specific Gravity=2.75 **LL=** **PL=** **PI=**
Test Method: ASTM D 4767 Method A

Parameters for Specimen No. 1

Specimen Parameter	Initial	Saturated	Consolidated	Final
Moisture content: Moist soil+tare, gms.	171.510			122.980
Moisture content: Dry soil+tare, gms.	128.190			94.050
Moisture content: Tare, gms.	60.510			49.250
Moisture, %	64.0	64.6	64.6	64.6
Moist specimen weight, gms.	1019.76			
Diameter, in.	2.795	2.795	2.795	
Area, in.^{2}	6.136	6.136	6.136	
Height, in.	6.034	6.034	6.034	
Net decrease in height, in.		0.000	0.000	
Net decrease in water volume, cc.			0.000	
Wet density, pcf	104.9	105.3	105.3	
Dry density, pcf	64.0	64.0	64.0	
Void ratio	1.6832	1.6832	1.6832	
Saturation, %	104.6	105.5	105.5	

Test Readings for Specimen No. 1

Consolidation cell pressure = 42.990 psi (6.191 ksf)
Consolidation back pressure = 40.000 psi (5.760 ksf)
Consolidation effective confining stress = 0.431 ksf
Strain rate, in./min. = 0.001
Fail. Stress = 0.873 ksf **at reading no.** 18

Test Readings for Specimen No. 1

No.	Def. Dial in.	Load Dial	Load lbs.	Strain %	Deviator Stress ksf	Minor Eff. Stress ksf	Major Eff. Stress ksf	1:3 Ratio	Pore Press. psi	P ksf	Q ksf
0	0.0000	0.000	0.0	0.0	0.000	6.191	6.191	1.00	0.000	6.191	0.000
1	0.0009	2.443	2.4	0.0	0.057	0.421	0.479	1.14	40.065	0.450	0.029
2	0.0039	6.038	6.0	0.1	0.142	0.381	0.522	1.37	40.346	0.452	0.071
3	0.0054	8.182	8.2	0.1	0.192	0.353	0.545	1.54	40.539	0.449	0.096
4	0.0069	10.321	10.3	0.1	0.242	0.325	0.567	1.75	40.735	0.446	0.121
5	0.0099	12.745	12.7	0.2	0.299	0.288	0.586	2.04	40.991	0.437	0.149
6	0.0130	14.719	14.7	0.2	0.345	0.259	0.604	2.33	41.190	0.432	0.172
7	0.0190	17.000	17.0	0.3	0.398	0.215	0.613	2.85	41.495	0.414	0.199
8	0.0235	19.547	19.5	0.4	0.457	0.197	0.654	3.32	41.620	0.426	0.228
9	0.0311	21.762	21.8	0.5	0.508	0.171	0.679	3.97	41.801	0.425	0.254
10	0.0356	23.919	23.9	0.6	0.558	0.163	0.721	4.42	41.857	0.442	0.279
11	0.0492	26.412	26.4	0.8	0.615	0.150	0.765	5.10	41.949	0.457	0.307
12	0.0914	29.301	29.3	1.5	0.677	0.154	0.831	5.39	41.920	0.493	0.339
13	0.1336	31.289	31.3	2.2	0.718	0.171	0.889	5.20	41.802	0.530	0.359
14	0.1879	33.895	33.9	3.1	0.771	0.188	0.958	5.11	41.688	0.573	0.385
15	0.2180	36.850	36.9	3.6	0.834	0.197	1.031	5.23	41.621	0.614	0.417
16	0.2723	36.543	36.5	4.5	0.819	0.213	1.032	4.84	41.509	0.623	0.409
17	0.3326	38.105	38.1	5.5	0.845	0.246	1.091	4.43	41.280	0.669	0.423
18	0.3477	39.472	39.5	5.8	0.873	0.254	1.127	4.44	41.228	0.690	0.437
19	0.3628	37.312	37.3	6.0	0.823	0.264	1.087	4.11	41.154	0.676	0.412

Parameters for Specimen No. 2

Specimen Parameter	Initial	Saturated	Consolidated	Final
Moisture content: Moist soil+tare, gms.	171.510			122.980
Moisture content: Dry soil+tare, gms.	128.190			94.050
Moisture content: Tare, gms.	60.510			49.230
Moisture, %	64.0	64.5	64.5	64.5
Moist specimen weight, gms.	1016.76			
Diameter, in.	2.795	2.795	2.795	
Area, in.^{2}	6.136	6.136	6.136	
Height, in.	6.034	6.034	6.034	
Net decrease in height, in.		0.000	0.000	
Net decrease in water volume, cc.			0.000	
Wet density, pcf	104.6	105.0	105.0	
Dry density, pcf	63.8	63.8	63.8	
Void ratio	1.6911	1.6911	1.6911	
Saturation, %	104.1	105.0	105.0	

Test Readings for Specimen No. 2

Consolidation cell pressure = 55.070 psi (7.930 ksf)
Consolidation back pressure = 40.000 psi (5.760 ksf)
Consolidation effective confining stress = 2.170 ksf
Strain rate, in./min. = 0.001
Fail. Stress = 1.392 ksf **at reading no.** 19

No.	Def. Dial in.	Load Dial	Load lbs.	Strain %	Deviator Stress ksf	Minor Eff. Stress ksf	Major Eff. Stress ksf	1:3 Ratio	Pore Press. psi	P ksf	Q ksf
0	0.0000	0.000	0.0	0.0	0.000	7.930	7.930	1.00	0.000	7.930	0.000
1	0.0015	3.227	3.2	0.0	0.076	2.110	2.186	1.04	40.417	2.148	0.038
2	0.0030	7.611	7.6	0.0	0.179	1.960	2.138	1.09	41.461	2.049	0.089
3	0.0060	10.899	10.9	0.1	0.256	1.793	2.048	1.14	42.621	1.920	0.128
4	0.0090	14.252	14.3	0.1	0.334	1.689	2.023	1.20	43.340	1.856	0.167
5	0.0120	17.721	17.7	0.2	0.415	1.616	2.032	1.26	43.845	1.824	0.208
6	0.0165	21.136	21.1	0.3	0.495	1.517	2.012	1.33	44.533	1.765	0.247
7	0.0211	24.621	24.6	0.3	0.576	1.442	2.018	1.40	45.057	1.730	0.288
8	0.0271	28.675	28.7	0.4	0.670	1.355	2.025	1.49	45.659	1.690	0.335
9	0.0346	32.416	32.4	0.6	0.756	1.275	2.032	1.59	46.215	1.653	0.378
10	0.0422	36.772	36.8	0.7	0.857	1.201	2.058	1.71	46.727	1.630	0.429
11	0.0527	40.073	40.1	0.9	0.932	1.120	2.052	1.83	47.291	1.586	0.466
12	0.0618	43.194	43.2	1.0	1.003	1.061	2.065	1.95	47.699	1.563	0.502
13	0.0738	46.472	46.5	1.2	1.077	0.994	2.072	2.08	48.166	1.533	0.539
14	0.0859	50.148	50.1	1.4	1.160	0.936	2.096	2.24	48.569	1.516	0.580
15	0.1040	54.186	54.2	1.7	1.250	0.871	2.121	2.43	49.018	1.496	0.625
16	0.1342	57.885	57.9	2.2	1.328	0.801	2.130	2.66	49.506	1.465	0.664
17	0.1885	60.722	60.7	3.1	1.381	0.754	2.135	2.83	49.832	1.445	0.690
18	0.2427	60.744	60.7	4.0	1.368	0.754	2.122	2.82	49.836	1.438	0.684
19	0.2488	61.839	61.8	4.1	1.392	0.757	2.148	2.84	49.816	1.452	0.696
20	0.2548	61.578	61.6	4.2	1.384	0.758	2.143	2.83	49.804	1.450	0.692
21	0.3181	61.025	61.0	5.3	1.357	0.796	2.153	2.70	49.542	1.474	0.678
22	0.3634	61.002	61.0	6.0	1.345	0.822	2.167	2.64	49.365	1.494	0.673

Parameters for Specimen No. 3

Specimen Parameter	Initial	Saturated	Consolidated	Final
Moisture content: Moist soil+tare, gms.	171.510			122.980
Moisture content: Dry soil+tare, gms.	128.190			94.050
Moisture content: Tare, gms.	60.510			49.230
Moisture, %	64.0	64.5	64.5	64.5
Moist specimen weight, gms.	1016.76			
Diameter, in.	2.795	2.795	2.795	
Area, in.^{2}	6.136	6.136	6.136	
Height, in.	6.034	6.034	6.034	
Net decrease in height, in.		0.000	0.000	
Net decrease in water volume, cc.			0.000	
Wet density, pcf	104.6	105.0	105.0	
Dry density, pcf	63.8	63.8	63.8	
Void ratio	1.6911	1.6911	1.6911	
Saturation, %	104.1	105.0	105.0	

Test Readings for Specimen No. 3

Consolidation cell pressure = 69.010 psi (9.937 ksf)

Consolidation back pressure = 40.000 psi (5.760 ksf)

Consolidation effective confining stress = 4.177 ksf

Strain rate, in./min. = 0.001

Fail. Stress = 1.692 ksf **at reading no.** 16

No.	Def. Dial in.	Load Dial	Load lbs.	Strain %	Deviator Stress ksf	Minor Eff. Stress ksf	Major Eff. Stress ksf	1:3 Ratio	Pore Press. psi	P ksf	Q ksf
0	0.0000	0.000	0.0	0.0	0.000	9.937	9.937	1.00	0.000	9.937	0.000
1	0.0015	1.582	1.6	0.0	0.037	4.194	4.231	1.01	39.883	4.213	0.019
2	0.0060	7.591	7.6	0.1	0.178	3.440	3.618	1.05	45.118	3.529	0.089
3	0.0076	12.321	12.3	0.1	0.289	3.273	3.562	1.09	46.282	3.417	0.144
4	0.0106	18.299	18.3	0.2	0.429	3.023	3.451	1.14	48.019	3.237	0.214
5	0.0121	22.307	22.3	0.2	0.522	2.928	3.450	1.18	48.679	3.189	0.261
6	0.0151	27.142	27.1	0.3	0.635	2.768	3.403	1.23	49.791	3.085	0.318
7	0.0196	31.878	31.9	0.3	0.746	2.575	3.321	1.29	51.128	2.948	0.373
8	0.0226	35.942	35.9	0.4	0.840	2.474	3.315	1.34	51.828	2.894	0.420
9	0.0287	41.441	41.4	0.5	0.968	2.307	3.275	1.42	52.992	2.791	0.484
10	0.0332	45.597	45.6	0.6	1.064	2.199	3.263	1.48	53.742	2.731	0.532
11	0.0407	50.414	50.4	0.7	1.175	2.049	3.224	1.57	54.780	2.637	0.588
12	0.0483	54.986	55.0	0.8	1.280	1.927	3.208	1.66	55.625	2.568	0.640
13	0.0558	60.564	60.6	0.9	1.408	1.824	3.232	1.77	56.345	2.528	0.704
14	0.0679	65.588	65.6	1.1	1.522	1.694	3.216	1.90	57.249	2.455	0.761
15	0.0860	69.798	69.8	1.4	1.615	1.570	3.185	2.03	58.106	2.378	0.807
16	0.1403	73.818	73.8	2.3	1.692	1.400	3.093	2.21	59.284	2.247	0.846
17	0.1946	72.339	72.3	3.2	1.643	1.331	2.974	2.23	59.769	2.152	0.822
18	0.2488	71.877	71.9	4.1	1.617	1.276	2.893	2.27	60.151	2.084	0.809
19	0.3031	71.731	71.7	5.0	1.599	1.233	2.832	2.30	60.450	2.032	0.799
20	0.3634	72.885	72.9	6.0	1.608	1.186	2.793	2.36	60.775	1.990	0.804
21	0.4237	72.001	72.0	7.0	1.571	1.137	2.708	2.38	61.116	1.922	0.786
22	0.4840	75.660	75.7	8.0	1.633	1.116	2.749	2.46	61.262	1.932	0.817
23	0.5443	77.821	77.8	9.0	1.662	1.082	2.743	2.54	61.500	1.912	0.831
24	0.5594	78.857	78.9	9.3	1.679	1.073	2.752	2.57	61.560	1.912	0.840
25	0.6197	76.434	76.4	10.3	1.610	1.058	2.668	2.52	61.659	1.863	0.805

SUMMARY TABLE OF LABORATORY TEST DATA

Project name: TO-0010 Galveston Channel Deepening | Client: USACE, Galveston District | Terracon Project # : 92105154

Boring	Depth	Field tests			Atterberg Limits			Grain size Analysis										USCS Symbol	Wc	γd	Strenght tests																					
								% by weight passing sieve					Soil Particle Content								Direct Shear Test					Unconfined Compression				UU Triaxial Test				CU Triaxial Test							
		PP	TV	SPTn	LL	PL	PI	4	10	40	100	200	gravel	sand	silt	clay	sieve 200				C	φ	Wc	γd	Symbol	C	Wc	γd	Symbol	C	Wc	γd	Symbol	C	φ	c'	φ'	Wc	γd	Symbol
	ft	tsf	tsf	bl/ft	%	%	%	%	%	%	%	%	%	%	%	%	%		%	pcf	ksf	°	%	pcf		ksf	%	pcf		ksf	%	pcf		ksf	°	ksf	°	%	pcf	
	48.5-50			22				100	100	100	90	29	0	71	10	19		SC*	39																					
	50.5-52			9														SC**	45																					
	52.5-54			3														SC**	49																					
	54-56	0.00	0.15		50	18	32	100	100	100	96	49	0	51	16	33		SC	36																					
	56-58	0.50	0.20															SC**	54																					
	58-60	0.50	0.25		60	21	39	100	100	99	92	41	0	59	12	29		SC																0.25	12	0.25	26	45	76	SC**
	60-62	0.25	0.15															SC**	40																					
	62-64	0.00	0.10															SC**	26																					
	64-66	0.75			73	25	48	98	94	82	81	78	2	21	33	44		CH			0.85	16	49	70	CH**															
	66-68	0.00	0.30															CH**	47																					
	68-70	0.25	0.20															CH**	53	70																				
	70-72	0.00	0.25		44	26	18	100	100	100	93	74	0	26	44	30		CL	28																					
	72-74	2.00																CH**	30																					
	74-76	0.00	0.15		57	20	37	100	100	100	97	56	0	44	19	37		CH	48	73																				
	76-78	4.50																CL**	19																					
	78-80	2.00																CL**	22																					
10-B4	0-2	4.50																SC**	14																					
	2-4	1.50																CH**	41																					
	4-6	0.50																CH**	32																					
	6-7	0.00	0.25		99	31	68	100	100	100	100	100	0	0	51	49		CH	70																					
	7-8	0.00	0.35		76	24	52	100	100	100	97	63	0	37	22	41		CH																						
	8-10	0.00	0.25															CH**	55	66																				
	10-12	0.00	0.30		93	27	66	100	100	100	99	95	0	5	28	67		CH												0.38	55	69	CH**							
	12-14	0.00	0.40															CH**	46																					
	14-16	0.00	0.35		94	29	65	100	100	100	99	94	0	5	31	64		CH								0.35	55	67	CH**											
	16-18	0.00	0.35															CH**	65																					
	18-20	0.25	0.40															CH**	64																					
	20-22	0.00	0.40		127	34	93	100	100	100	100	98	0	2	25	73		CH																0.38	6	0.29	15	64	64	CH**
	22.5-24			38														SP-SM**	25																					
	24.5-26			52				100	100	91	75	10	0	90	5	5		SP-SM*	18																					
	26.5-28			38														SP-SM**	25																					
	28.5-30			24														SP-SM**	26																					
	30.5-32			23														SP-SM**	25																					
	32.5-34			24														SP-SM**	26																					
	34.5-36			23														SP-SM**	27																					
	36-38							100	99	98	84	12	0	88	5	7		SP-SM*	30																					
	38.5-40			10														GP-GM**	23																					
	40.5-42			8														GP-GM**	23																					
	42.5-44			42														SP-SM**	23																					
	44.5-46			55														SP-SM**	24																					
	46.5-48			5														CL**	35																					
	48.5-50			36														SP-SM**	23																					
	50.5-52			52														CL**	43																					
	52.5-54			2	35	16	19	100	100	99	93	60	0	40	27	33		CL	40																					
	54.5-56			7														SC**	25																					
	56-58																	SC**	30																					
	58-60																	SC**	34																					
	60-62	0.00	0.15															CH**	43																					
	62-64	0.25	0.25		64	22	42	100	100	94	92	89	0	11	40	49		CH	43	75																				
	64-66	0.25	0.40															CH**	54																					

SUMMARY TABLE OF LABORATORY TEST DATA

Project name: TO-0010 Galveston Channel Deepening | Client: USACE, Galveston District | Terracon Project # : 92105154

Boring	Depth	Field tests			Atterberg Limits			Grain size Analysis										USCS Symbol	Wc	γd	Strenght tests																					
								% by weight passing sieve					Soil Particle Content								Direct Shear Test					Unconfined Compression				UU Triaxial Test				CU Triaxial Test							
		PP	TV	SPTn	LL	PL	PI	4	10	40	100	200	gravel	sand	silt	clay	sieve 200				C	φ	Wc	γd	Symbol	C	Wc	γd	Symbol	C	Wc	γd	Symbol	C	φ	c'	φ'	Wc	γd	Symbol
	ft	tsf	tsf	bl/ft	%	%	%	%	%	%	%	%	%	%	%	%	%		%	pcf	ksf	°	%	pcf		ksf	%	pcf		ksf	%	pcf		ksf	°	ksf	°	%	pcf	
10-B5	66-68	0.25	0.35															CH**	49																						
	68-70	0.25																CH**	27																						
	70-72	2.50																CH**	30																						
	72-74	1.25																CH**	43																						
	74-76	1.00						100	100	100	98	89	0	11	33	56		CL*	38																						
	76-78	0.75																CL**	25																						
	78.5-80			18				100	100	100	100	91	0	9	78	13		CL*	28																						
	0-2	4.50			29	18	11	100	100	100	93	41	0	59	15	26		SC	10																						
	2-4	1.25																SC**	15																						
	4-6	1.00						100	100	100	93	84	0	16	46	38		CH*	41							0.60	41	77	CH**												
	6-8	0.00	0.10					100	100	100	96	23	0	77	8	15		SC*	22																						
	8.5-10			0				100	100	100	94	19	0	81	10	9		SC*	26																						
	10.5-12			2														CH**	50																						
	12.5-14			8														SC**	24																						
	14-16	0.50																CH**	55																						
	16.5-18			3														SC**	38																						
	18-20	1.00			99	32	67	100	100	100	100	100	0	0	20	80		CH			0.52	15	48	71	CH**															
	20-22																	SP-SM**	28																						
	22.5-24			49				100	100	99	83	6	0	94	2	4		SP-SM*	53																						
	24.5-26			40														SP-SM**	25																						
	26.5-28			27				99	98	94	74	5	1	94	1	4		SP-SM*	25																						
	28.5-30			35														SP-SM**	25																						
	30.5-32			52														SP-SM**	23																						
	32.5-34			26														SP-SM**	24																						
	34.5-36			24														SP-SM**	27																						
	36.5-38			23														SP-SM**	26																						
	38.5-40			27														SP-SM**	25																						
	40.5-42			29				100	100	98	79	7	0	93	3	4		SP-SM*	24																						
	42.5-44			25														SP-SM**	25																						
	44.5-46			17														SP-SM**	23																						
	46.5-48			8														SP-SM**	20																						
	48.5-50			16														SP-SM**	23																						
	50.5-52			21														SC**	50																						
	52.5-54			22														SC**	26																						
	54.5-56			12														SC**	25																						
	56.5-58			9														SC**	25																						
	58.5-60			1				100	100	96	87	42	0	58	24	18		SC*	37																						
	60-62	0.00	0.30		50	20	30	100	100	100	98	87	0	13	41	46		CH	38															0.36	12	0.30	25	41	83	CH**
	62-64	0.00	0.25															CH**																							
	64-66	0.50																CH**	60																						
	66-68	0.25	0.20		87	28	59	100	100	100	99	99	0	1	33	66		CH	53																						
	68-70	0.25	0.25															CH**	39	86																					
	70-72																	SC**	35																						
	72-74	1.25																CH**	19																						
	74-76	0.50			109	33	76	100	100	98	97	96	0	4	13	83		CH																						
	76-78	1.00																CL**	68																						
	78-80	1.00			32	23	9	100	100	100	100	97	0	3	78	19		CL	25																						
	0-2	4.50																SC**	7																						
	2.5-4																	SM**	5																						