BORING LOG NO. 10-B5

CLIENT:	USACE, Galveston District Galveston, Texas	PROJECT:	Galveston Channel Deepening, TO-0010
BORING LOCATION:	N: 13688005.79 E: 3316518.42	SITE:	San Jacinto Placement Area Galveston, Texas

Approx. Surface Elevation: 18.7 feet

Elev.	Description	Depth
	FILL: CLAYEY SAND brown, gray, w/ roots & sand layers, dry, very dense, low plasticity	
15.7		3.0
14.7	**FILL: SILTY SAND** light brown, fine, dry, dense	4.0
	FILL: FAT CLAY w/ SAND gray, w/ sand pockets, moist, stiff	
12.7		6.0
	FILL: CLAYEY SAND light gray, yellowish brown moist, very loose	
7.2		11.5
6.7	**FILL: FAT CLAY** gray, very soft	12.0
4.7	**FILL: CLAYEY SAND** gray, fine, cohesive, plastic, loose	14.0
2.7	**FILL: FAT CLAY** gray, w/ sand seams & pockets, soft	16.0
0.6	**FILL: CLAYEY SAND** gray, w/ interbedded thin clay layers, very loose	18.0
-1.4	**FILL: FAT CLAY** gray, medium stiff	20.0

Continued Next Page

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	10		4.5		10		29	18	11	41			
3		ST	9		1.25		15								
4	SM														
5	CH	ST	16		1.0		41					84			
7	SC	ST	16		0.0	0.1	22					23			
9		SS	12	0			26					19			
11		SS	12	2			50								
12	CH/SC														
13		SS	10	8			24								
15	CH	ST	16		0.5		55								
17	SC	SS	10	3			38								
19	CH	ST	16		1.0				99	32	67	100			
21	SP-SM	SS	6				28								
23		SS	15	49			53					6			
25		SS	4	40			25								
27		SS	11	27			25					5			
29		SS	8	35			25								

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

REMARKS: **Dry auger to 14 feet; wet rotary thereafter.**

WATER LEVEL OBSERVATIONS			
13 ft	WS	10.5 ft	DCI
10 ft	at 10 min	10 ft	at 15 min

Terracon

DATE DRILLED: 4/17/2010

PROJECT NUMBER: 92105154

10-B5

EXHIBIT A-5

BORING LOG NO. 10-B5

CLIENT:	USACE, Galveston District Galveston, Texas	PROJECT:	Galveston Channel Deepening, TO-0010
BORING LOCATION:	N: 13688005.79 E: 3316518.42	SITE:	San Jacinto Placement Area Galveston, Texas

Approx. Surface Elevation: 18.7 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
	POORLY GRADED SAND w/ SILT bluish gray, with finely broken shell, fine, slightly cohesive, medium to very dense	31		SS	13	52			23								
		32															
		33		SS	8	26			24								
		34															
		35		SS	11	24			27								
		36															
		37		SS	12	23			26								
		38															
		39		SS	13	27			25								
		40															
		41		SS	12	29			24					7			
		42															
		43		SS	11	25			25								
		44															
	below 44' density decreses to medium dense to loose	45		SS	7	17			23								
		46															
		47		SS	8	8			20								
		48															
		49		SS	7	16			23								
	-31.4 50.0	50															
	CLAYEY SAND bluish gray, with interbedded fat clay layers, fine grain, some cohesion to cohesive, with finely broken shell, plastic, density decreases with depth from medium dense to very loose	51	SC	SS	18	21			50								
		52															
		53		SS	5	22			26								
		54															
		55		SS	16	12			25								
		56															
		57		SS	10	9			25								
		58															
	-41.4 60.0	59		SS	18	1			37					42			
		60															

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 14 feet; wet rotary thereafter.**

WATER LEVEL OBSERVATIONS			
▽ 13 ft	WS	▼10.5 ft	DCI
▼ 10 ft	at 10 min	▼ 10 ft	at 15 min

Terracon

DATE DRILLED	Page 2 of 3
4/17/2010	10-B5
PROJECT NUMBER 92105154	EXHIBIT A-5

BORING LOG NO. 10-B5

CLIENT:	USACE, Galveston District Galveston, Texas	PROJECT:	Galveston Channel Deepening, TO-0010
BORING LOCATION:	N: 13688005.79 E: 3316518.42	SITE:	San Jacinto Placement Area Galveston, Texas

Approx. Surface Elevation: 18.7 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, with sand seams, thin layers and pockets, with finely broken shell, very soft to soft consistency	61	CH	ST	18		0.0	0.3	38		50	20	30	87			
		62															
		63		ST	11		0.0	0.25									
		64															
		65		ST	21		0.5		60								
		66															
		67		ST	13		0.25	0.2	53		87	28	59	99			
		68															
	-51.4 70.0	69		ST	20		0.25	0.25	39	86							
	CLAYEY SAND gray, w/ clay pockets, very loose -53.4 72.0	70	SC														
		71		ST	4				35								
	FAT CLAY reddish brown and greenish gray, w/ sand, silt pockets, $CaCO_3$ nods, medium stiff to stiff -58.4 77.0	72															
		73	CH	ST	14		1.25		19								
		74															
		75		ST	12		0.5				109	33	76	96			
		76															
	LEAN CLAY greenish gray, w/ sand pockets, medium stiff -61.4 80.0	77		ST	13		1.0		68								
		78	CL														
		79		ST	8		1.0		25		32	23	9	97			
	Boring terminated at 80 feet.	80															

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

REMARKS: **Dry auger to 14 feet; wet rotary thereafter.**

WATER LEVEL OBSERVATIONS			
▽ 13 ft	WS	▼10.5 ft	DCI
▼ 10 ft	at 10 min	▼ 10 ft	at 15 min

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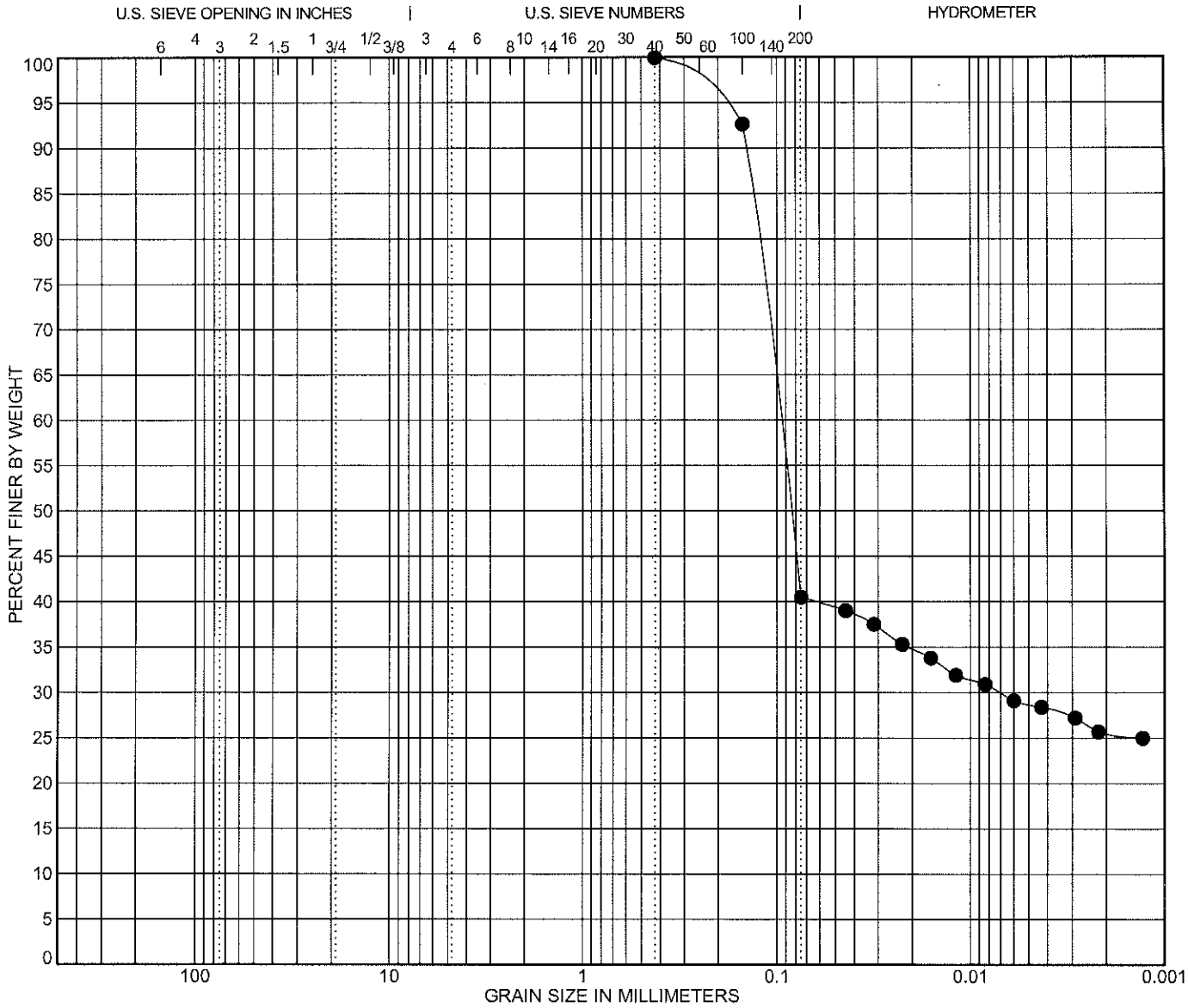
DATE DRILLED	Page 3 of 3
4/17/2010	10-B5
PROJECT NUMBER 92105154	EXHIBIT A-5



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	Specimen Identification		Classification	LL	PL	PI	Cc	Cu
●	**10-B5**	**0.0**	**CLAYEY SAND(SC)**	**29**	**18**	**11**		

Percent Passing the Indicated Sieve

	Specimen Identification		3/8"	#4	#10	#40	#100	#200
●	**10-B5**	**0.0**				**99.9**	**92.6**	**40.5**

	Specimen Identification		D100	D50	D30	D10	%Gravel	%Sand	%Silt	%Clay
●	**10-B5**	**0.0**	**0.425**	**0.085**	**0.007**		**0.0**	**59.5**	**14.9**	**25.6**

GRAIN SIZE DISTRIBUTION

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

Terracon

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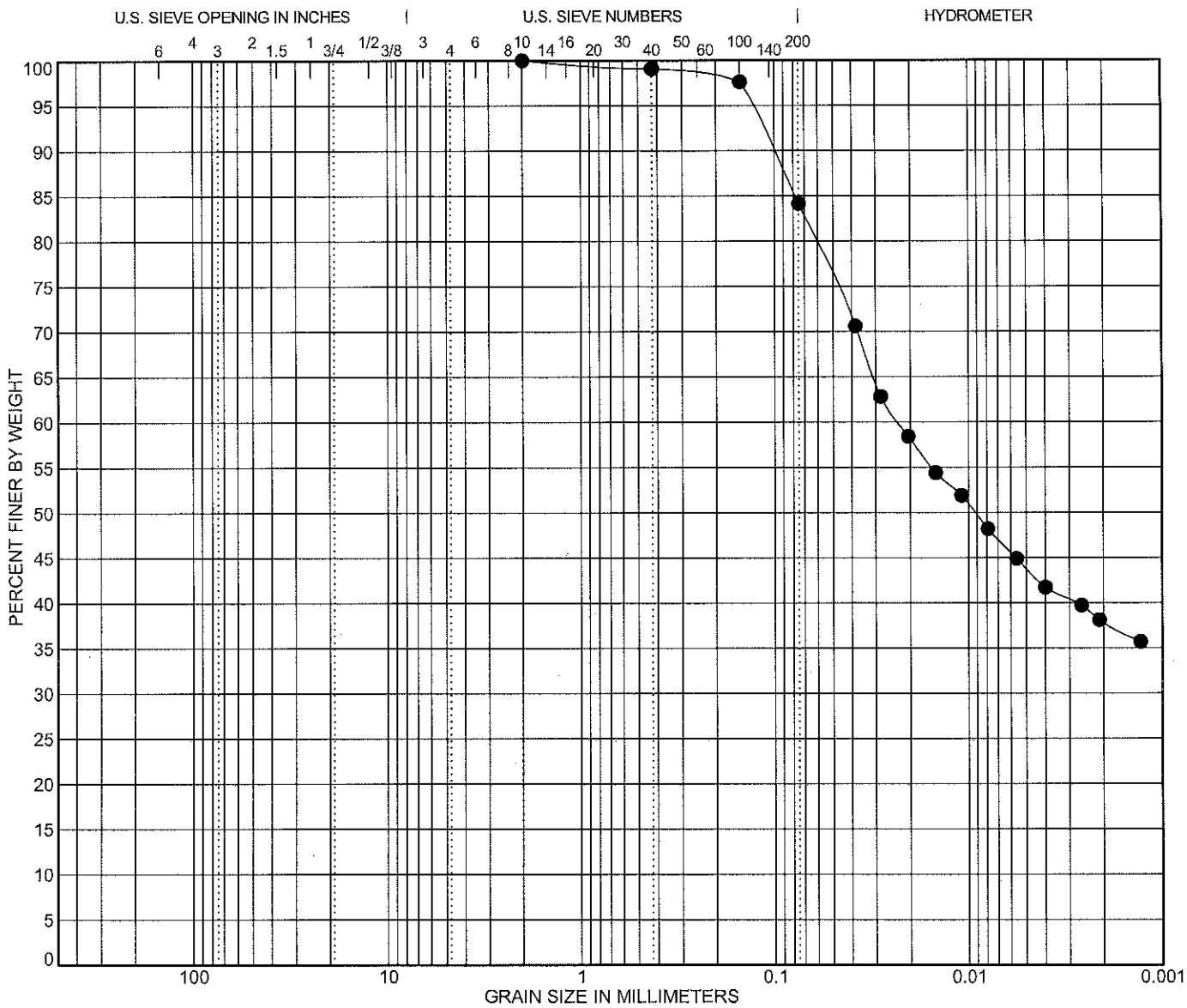
Fax: 713-690-8787

SPECIMEN ID
10-B5, 0.0



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

Specimen Identification		Classification	LL	PL	PI	Cc	Cu
● **10-B5**	**4.0**						

Percent Passing the Indicated Sieve

Specimen Identification		3/8"	#4	#10	#40	#100	#200
● **10-B5**	**4.0**			**100**	**99.1**	**97.6**	**84.1**

Specimen Identification		D100	D50	D30	D10	%Gravel	%Sand	%Silt	%Clay
● **10-B5**	**4.0**	**2**	**0.009**			**0.0**	**15.9**	**46.3**	**37.9**

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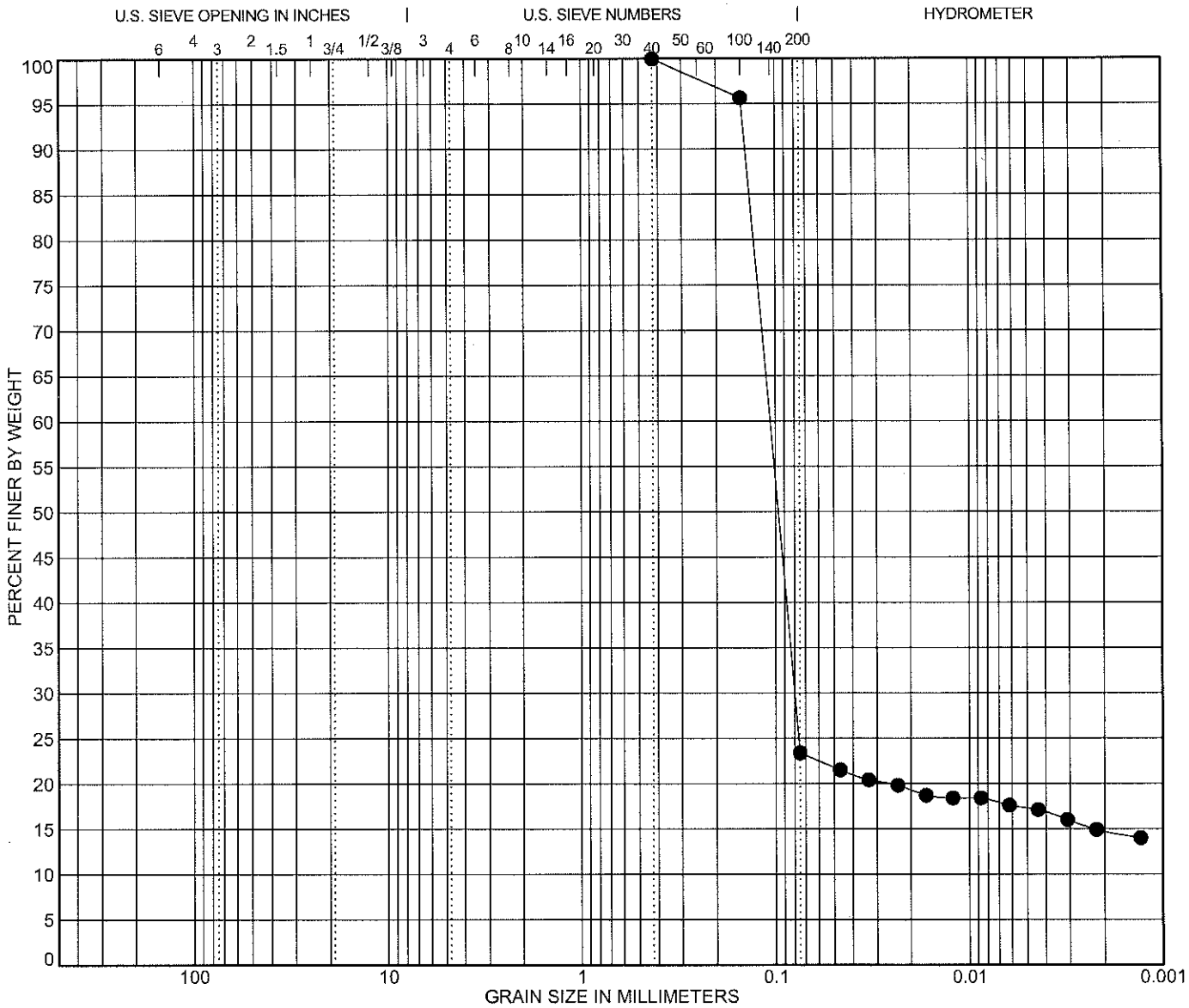
SPECIMEN ID
10-B5, 4.0



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

Specimen Identification		Classification	LL	PL	PI	Cc	Cu
● **10-B5**	**6.0**						

Percent Passing the Indicated Sieve

Specimen Identification		3/8"	#4	#10	#40	#100	#200
● **10-B5**	**6.0**				**100**	**95.6**	**23.4**

Specimen Identification		D100	D50	D30	D10	%Gravel	%Sand	%Silt	%Clay
● **10-B5**	**6.0**	**0.425**	**0.097**	**0.08**		**0.0**	**76.6**	**8.6**	**14.7**

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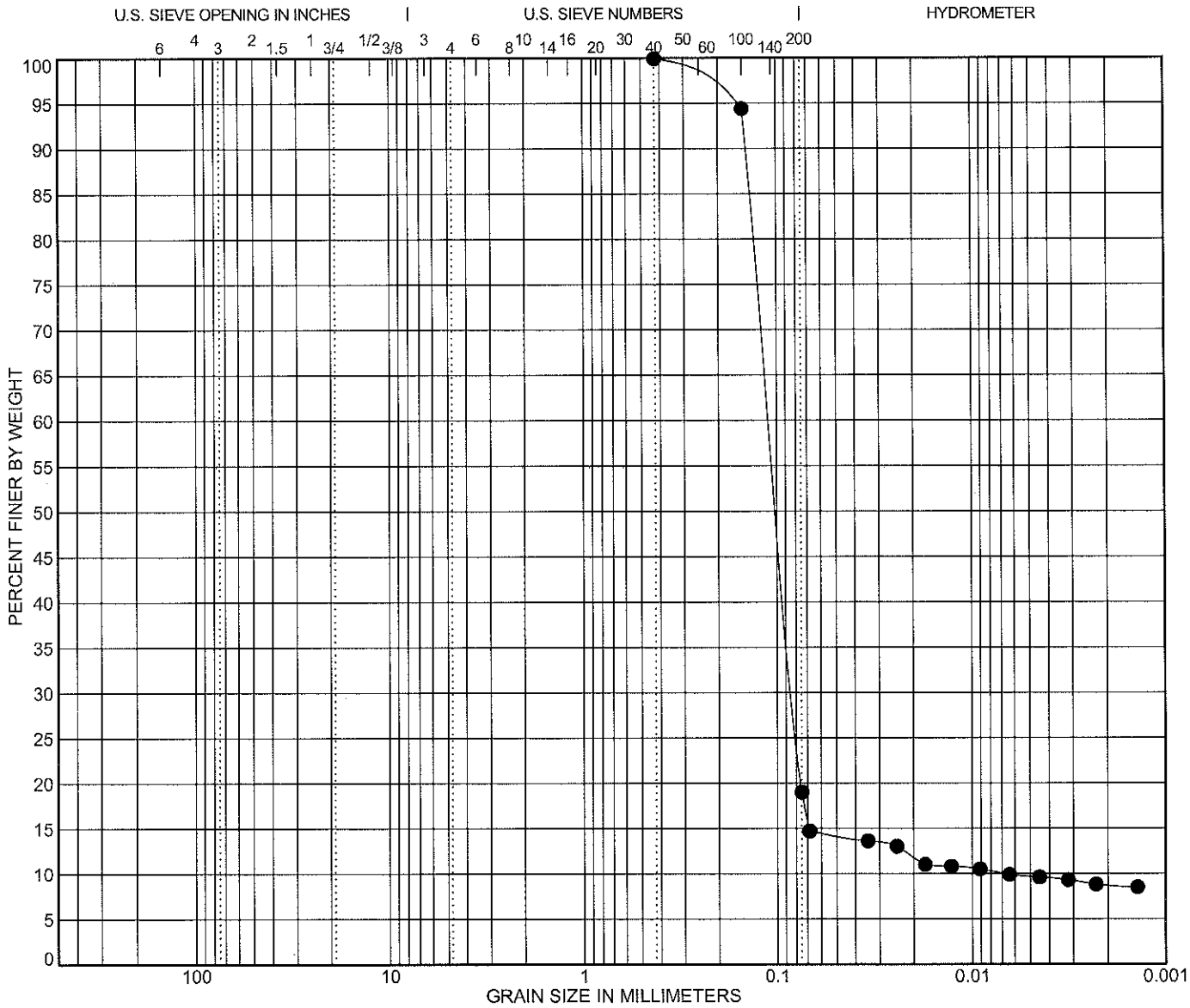
SPECIMEN ID
10-B5, 6.0



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	Specimen Identification		Classification	LL	PL	PI	Cc	Cu
●	**10-B5**	**8.5**					**9.28**	**16.11**

Percent Passing the Indicated Sieve

	Specimen Identification		3/8"	#4	#10	#40	#100	#200
●	**10-B5**	**8.5**				**99.9**	**94.4**	**19**

	Specimen Identification		D100	D50	D30	D10	%Gravel	%Sand	%Silt	%Clay
●	**10-B5**	**8.5**	**0.425**	**0.1**	**0.083**	**0.007**	**0.0**	**80.9**	**10.3**	**8.7**

GRAIN SIZE DISTRIBUTION

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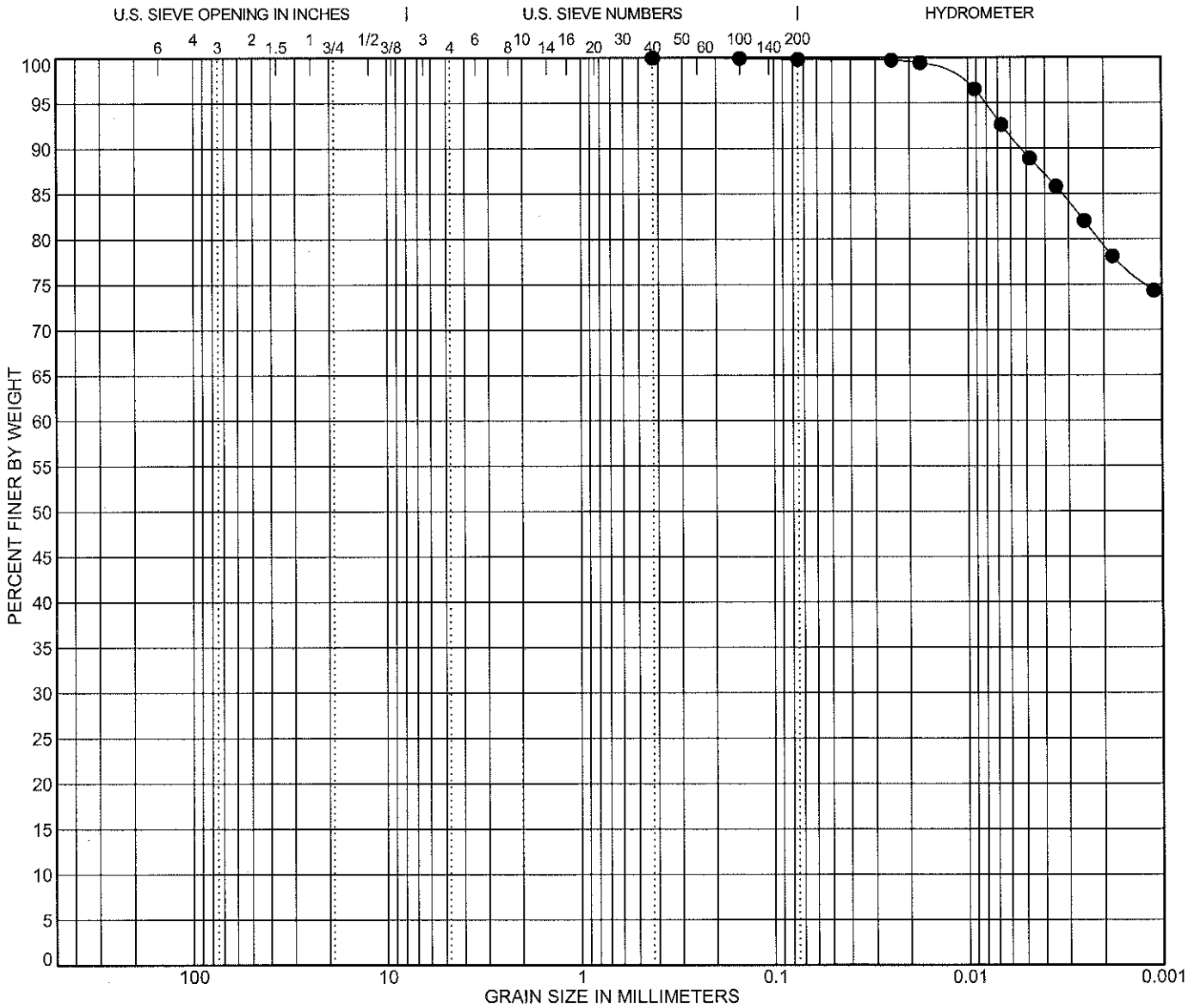
SPECIMEN ID
10-B5, 8.5



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	Specimen Identification		Classification	LL	PL	PI	Cc	Cu
●	**10-B5**	**18.0**	**FAT CLAY(CH)**	**99**	**32**	**67**		

Percent Passing the Indicated Sieve

	Specimen Identification		3/8"	#4	#10	#40	#100	#200
●	**10-B5**	**18.0**				**100**	**99.9**	**99.8**

	Specimen Identification		D100	D50	D30	D10	%Gravel	%Sand	%Silt	%Clay
●	**10-B5**	**18.0**	**0.425**				**0.0**	**0.2**	**20.4**	**79.4**

GRAIN SIZE DISTRIBUTION

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

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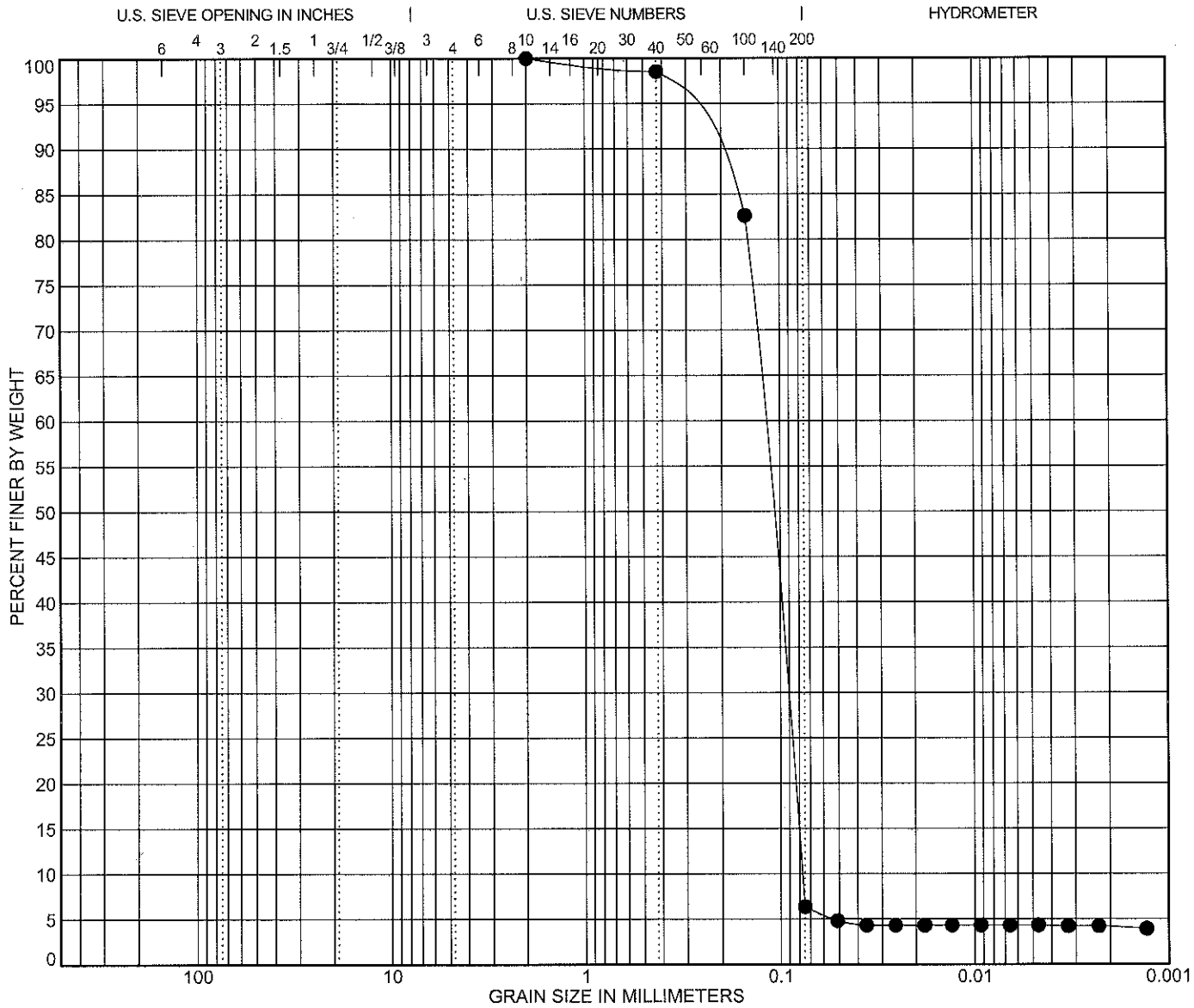
SPECIMEN ID
10-B5, 18.0



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

Specimen Identification		Classification	LL	PL	PI	Cc	Cu
● **10-B5**	**22.5**					**0.91**	**1.58**

Percent Passing the Indicated Sieve

Specimen Identification		3/8"	#4	#10	#40	#100	#200
● **10-B5**	**22.5**			**100**	**98.5**	**82.6**	**6.3**

Specimen Identification		D100	D50	D30	D10	%Gravel	%Sand	%Silt	%Clay
● **10-B5**	**22.5**	**2**	**0.112**	**0.093**	**0.078**	**0.0**	**93.7**	**2.2**	**4.1**

GRAIN SIZE DISTRIBUTION

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

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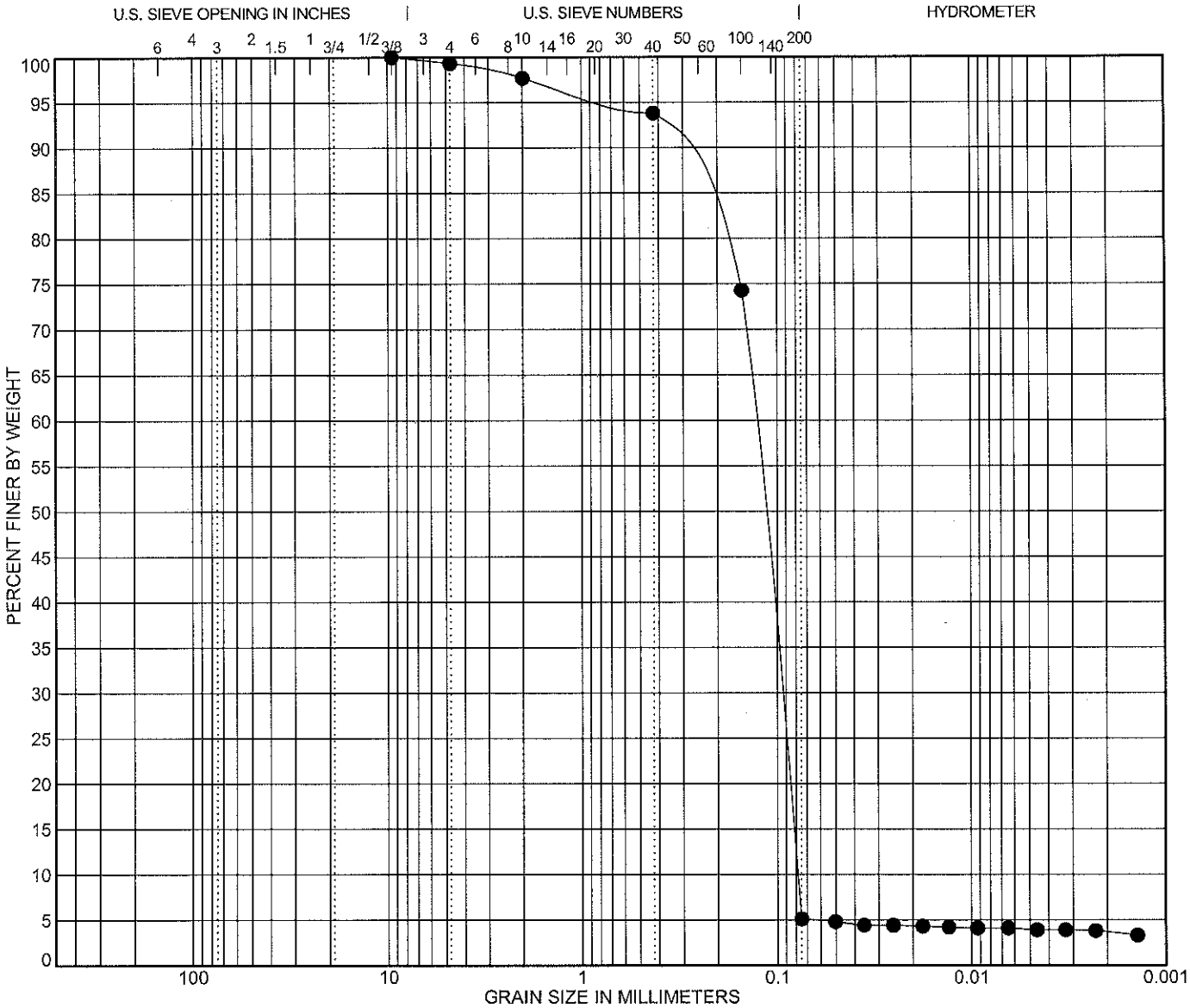
SPECIMEN ID
10-B5, 22.5



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

Specimen Identification		Classification	LL	PL	PI	Cc	Cu
● **10-B5**	**26.5**					**0.90**	**1.65**

Percent Passing the Indicated Sieve

Specimen Identification		3/8"	#4	#10	#40	#100	#200
● **10-B5**	**26.5**		**99.3**	**97.7**	**93.8**	**74.3**	**5.1**

Specimen Identification		D100	D50	D30	D10	%Gravel	%Sand	%Silt	%Clay
● **10-B5**	**26.5**	**9.52**	**0.118**	**0.096**	**0.079**	**0.7**	**94.2**	**1.4**	**3.7**

GRAIN SIZE DISTRIBUTION

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TO-0010
Galveston, Texas
Project Number 92105154

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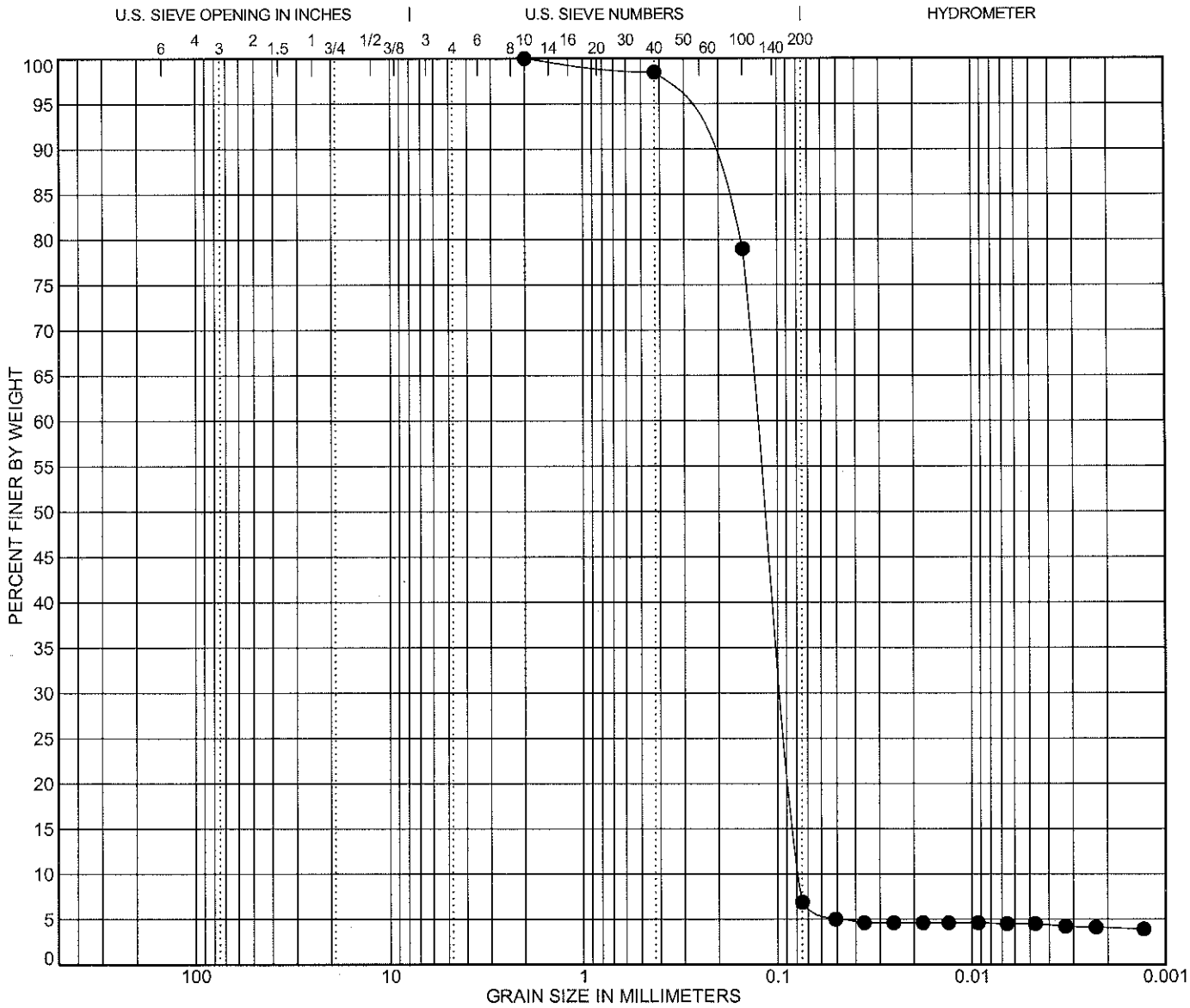
SPECIMEN ID
10-B5, 26.5



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

Specimen Identification		Classification	LL	PL	PI	Cc	Cu
● **10-B5**	**40.5**					**0.91**	**1.62**

Percent Passing the Indicated Sieve

Specimen Identification		3/8"	#4	#10	#40	#100	#200
● **10-B5**	**40.5**			**100**	**98.5**	**79**	**6.9**

Specimen Identification		D100	D50	D30	D10	%Gravel	%Sand	%Silt	%Clay
● **10-B5**	**40.5**	**2**	**0.114**	**0.094**	**0.077**	**0.0**	**93.1**	**2.8**	**4.1**

GRAIN SIZE DISTRIBUTION

Galveston Channel Deepening,
TO-0010
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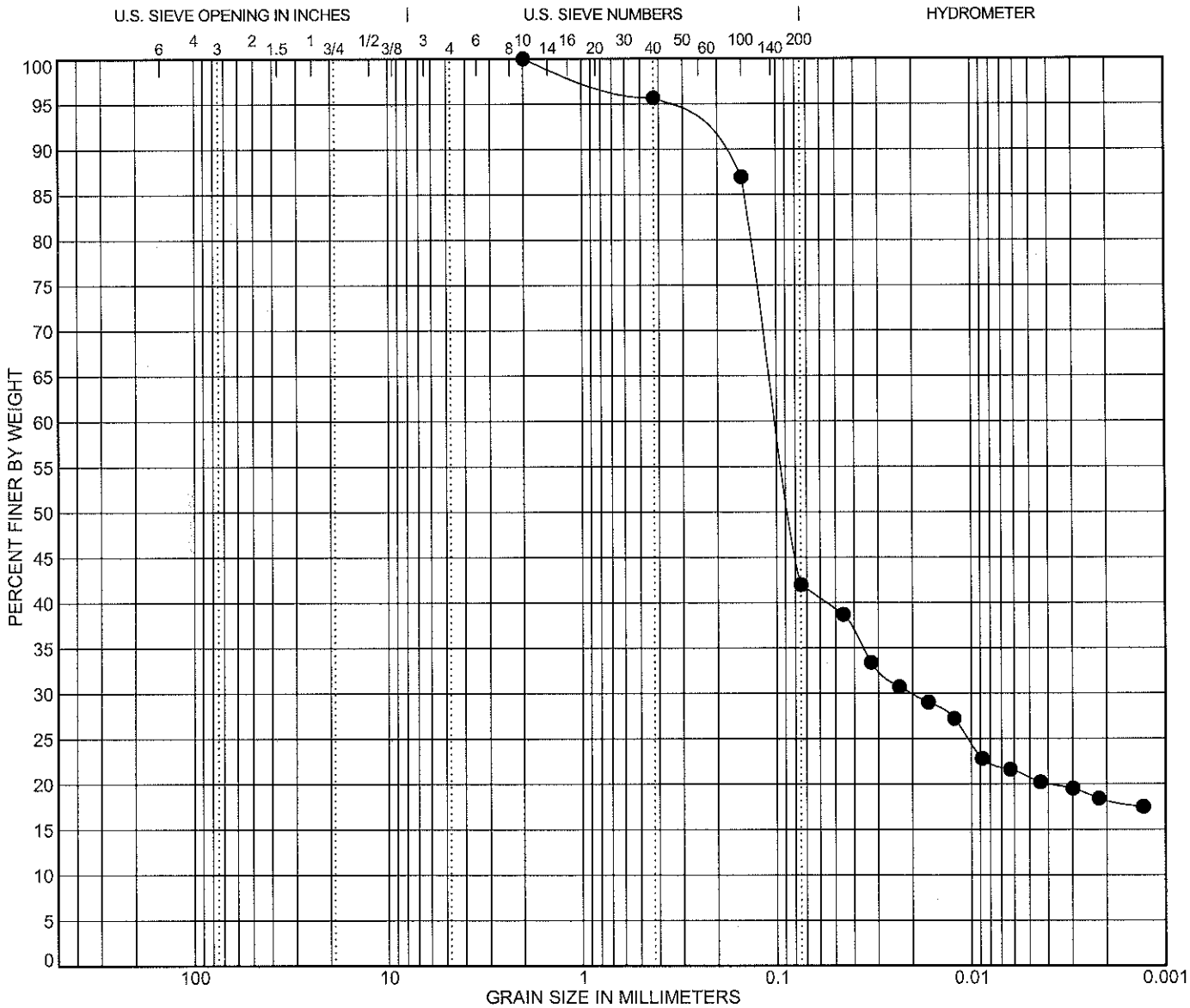
SPECIMEN ID
10-B5, 40.5



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

Specimen Identification		Classification	LL	PL	PI	Cc	Cu
● **10-B5**	**58.5**						

Percent Passing the Indicated Sieve

Specimen Identification		3/8"	#4	#10	#40	#100	#200
● **10-B5**	**58.5**			**100**	**95.7**	**86.9**	**42**

Specimen Identification		D100	D50	D30	D10	%Gravel	%Sand	%Silt	%Clay
● **10-B5**	**58.5**	**2**	**0.085**	**0.02**		**0.0**	**58.0**	**23.7**	**18.2**

GRAIN SIZE DISTRIBUTION

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

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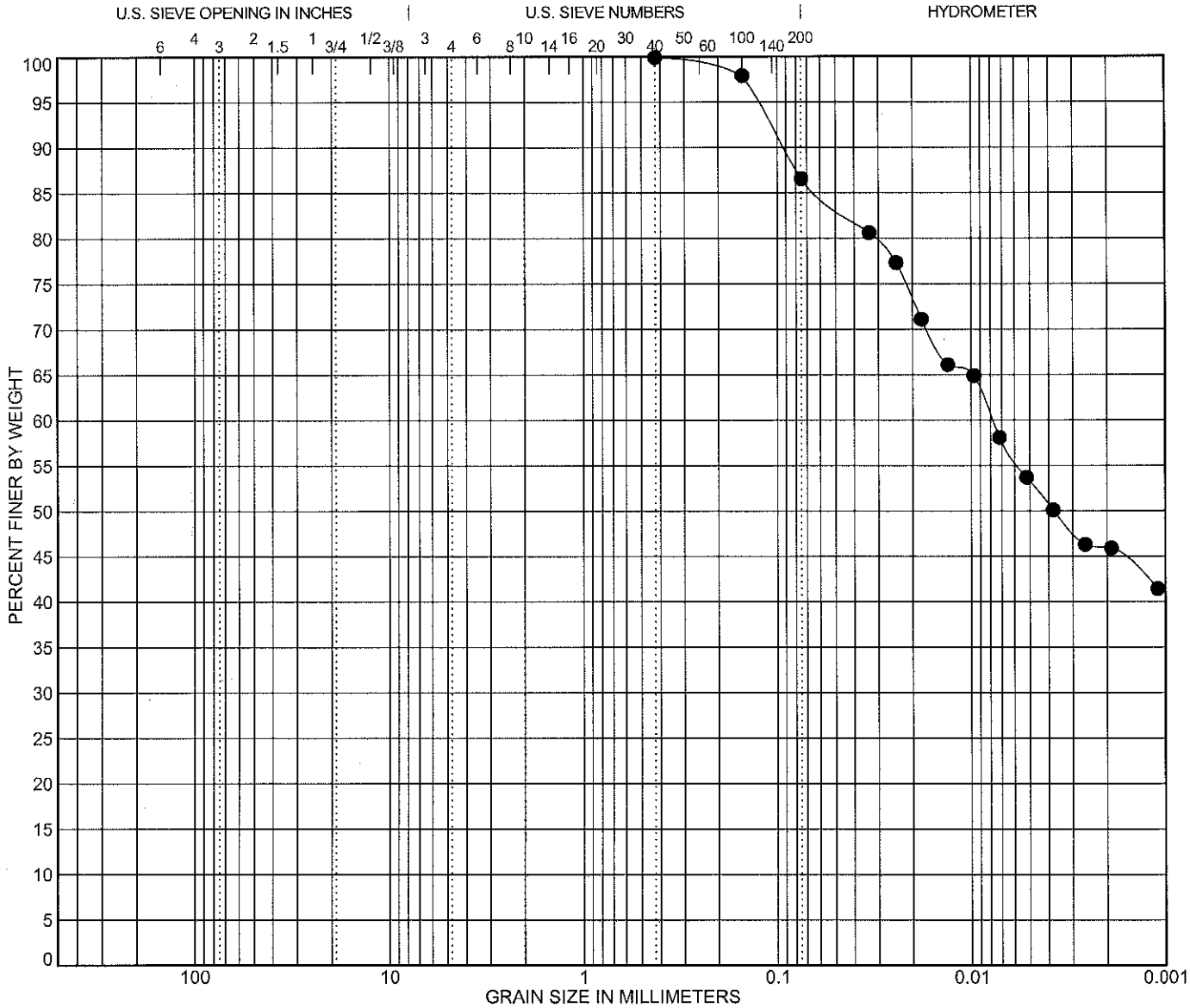
SPECIMEN ID
10-B5, 58.5



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	Specimen Identification		Classification	LL	PL	PI	Cc	Cu
●	**10-B5**	**60.0**	**FAT CLAY(CH)**	**50**	**20**	**30**		

Percent Passing the Indicated Sieve

	Specimen Identification		3/8"	#4	#10	#40	#100	#200
●	**10-B5**	**60.0**				**99.9**	**97.9**	**86.5**

	Specimen Identification		D100	D50	D30	D10	%Gravel	%Sand	%Silt	%Clay
●	**10-B5**	**60.0**	**0.425**	**0.004**			**0.0**	**13.4**	**40.6**	**46.0**

GRAIN SIZE DISTRIBUTION

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

Terracon

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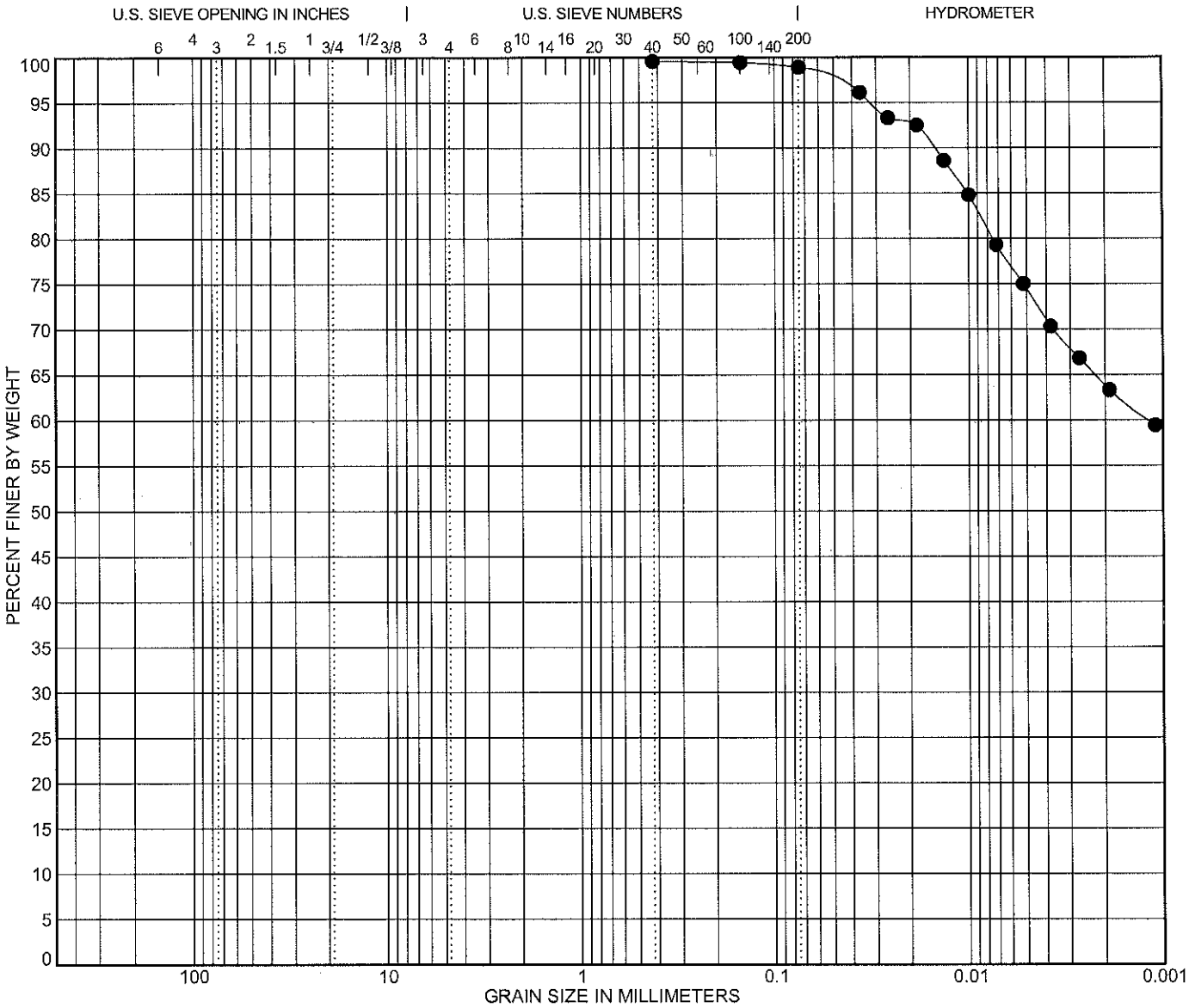
SPECIMEN ID
10-B5, 60.0



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	Specimen Identification		Classification	LL	PL	PI	Cc	Cu
●	**10-B5**	**66.0**	**FAT CLAY(CH)**	**87**	**28**	**59**		

Percent Passing the Indicated Sieve

	Specimen Identification		3/8"	#4	#10	#40	#100	#200
●	**10-B5**	**66.0**				**99.5**	**99.4**	**98.9**

	Specimen Identification		D100	D50	D30	D10	%Gravel	%Sand	%Silt	%Clay
●	**10-B5**	**66.0**	**0.425**				**0.0**	**0.7**	**35.1**	**63.8**

GRAIN SIZE DISTRIBUTION

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TO-0010
Galveston, Texas
Project Number 92105154

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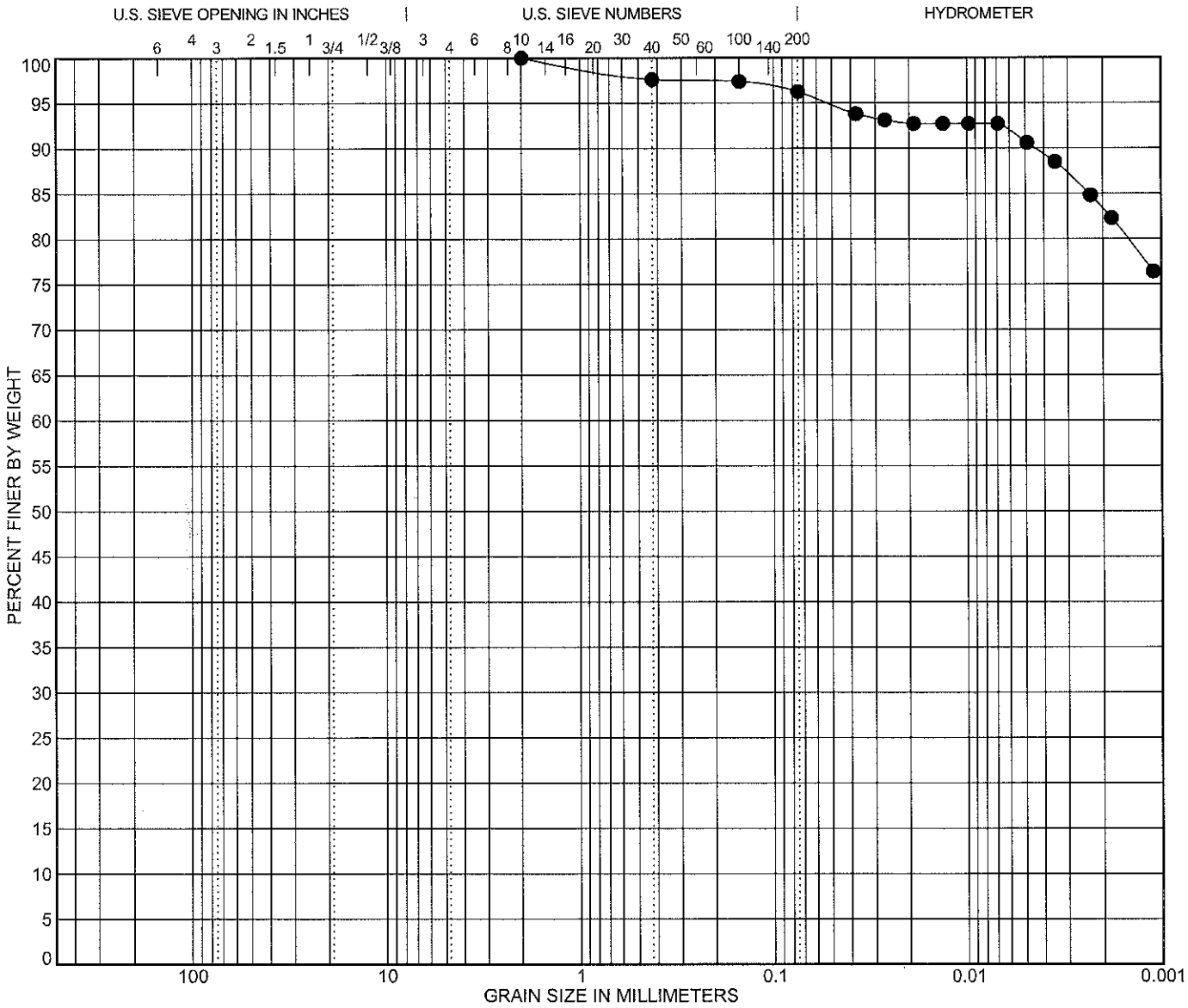
SPECIMEN ID
10-B5, 66.0



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

Specimen Identification		Classification	LL	PL	PI	Cc	Cu
● **10-B5**	**74.0**	**FAT CLAY(CH)**	**109**	**33**	**76**		

Percent Passing the Indicated Sieve

Specimen Identification		3/8"	#4	#10	#40	#100	#200
● **10-B5**	**74.0**			**100**	**97.6**	**97.4**	**96.2**

Specimen Identification		D100	D50	D30	D10	%Gravel	%Sand	%Silt	%Clay
● **10-B5**	**74.0**	**2**				**0.0**	**3.8**	**12.9**	**83.4**

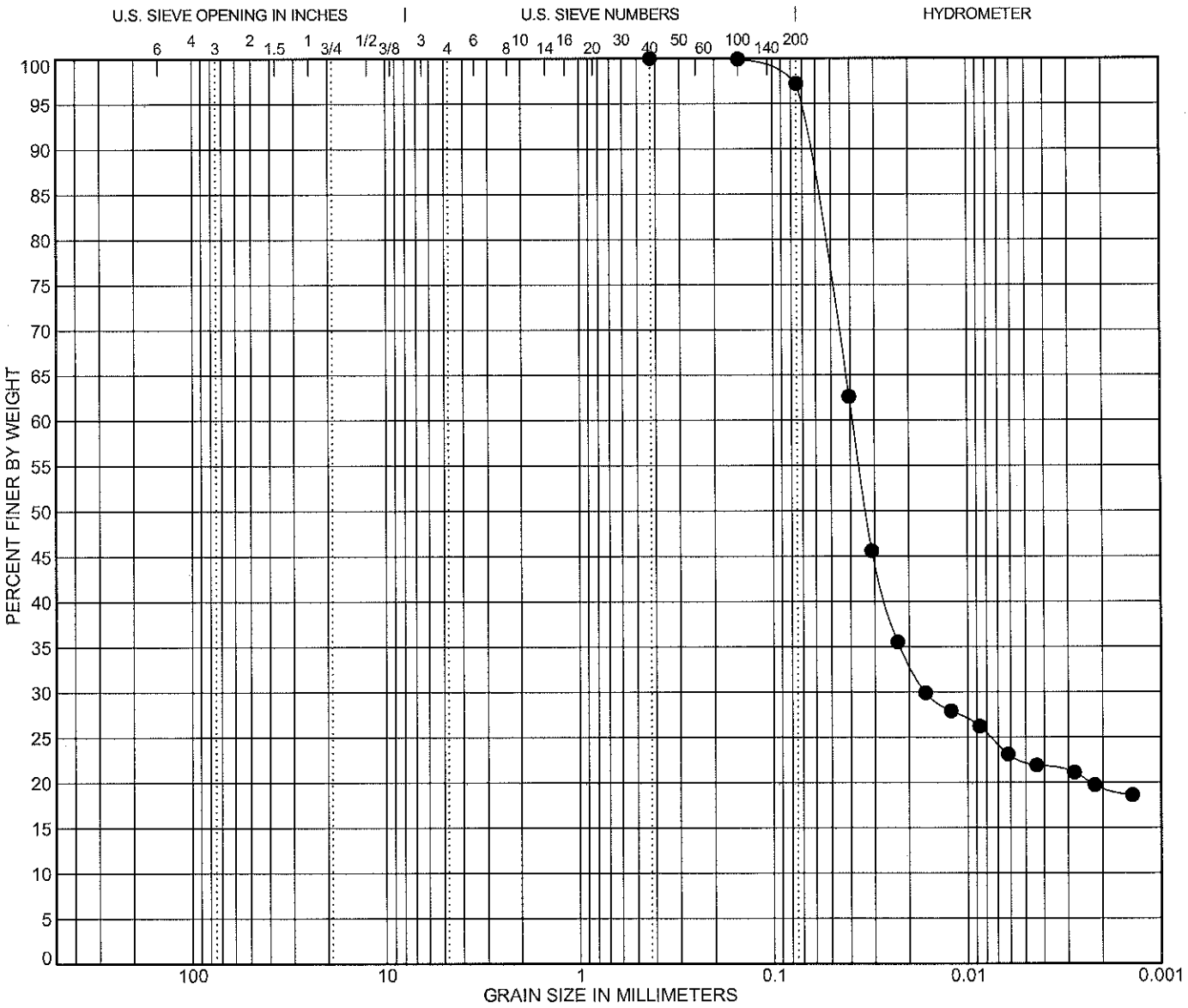
GRAIN SIZE DISTRIBUTION

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

Terracon

Terracon Consultants, Inc.
11555 Clay Road, Suite 100
Houston, Texas 77043
Telephone: 713-690-8989
Fax: 713-690-8787

SPECIMEN ID
10-B5, 74.0



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

Specimen Identification		Classification	LL	PL	PI	Cc	Cu
● **10-B5**	**78.0**	**LEAN CLAY(CL)**	**32**	**23**	**9**		

Percent Passing the Indicated Sieve

Specimen Identification		3/8"	#4	#10	#40	#100	#200
● **10-B5**	**78.0**				**100**	**99.9**	**97.2**

Specimen Identification		D100	D50	D30	D10	%Gravel	%Sand	%Silt	%Clay
● **10-B5**	**78.0**	**0.425**	**0.033**	**0.017**		**0.0**	**2.8**	**77.8**	**19.5**

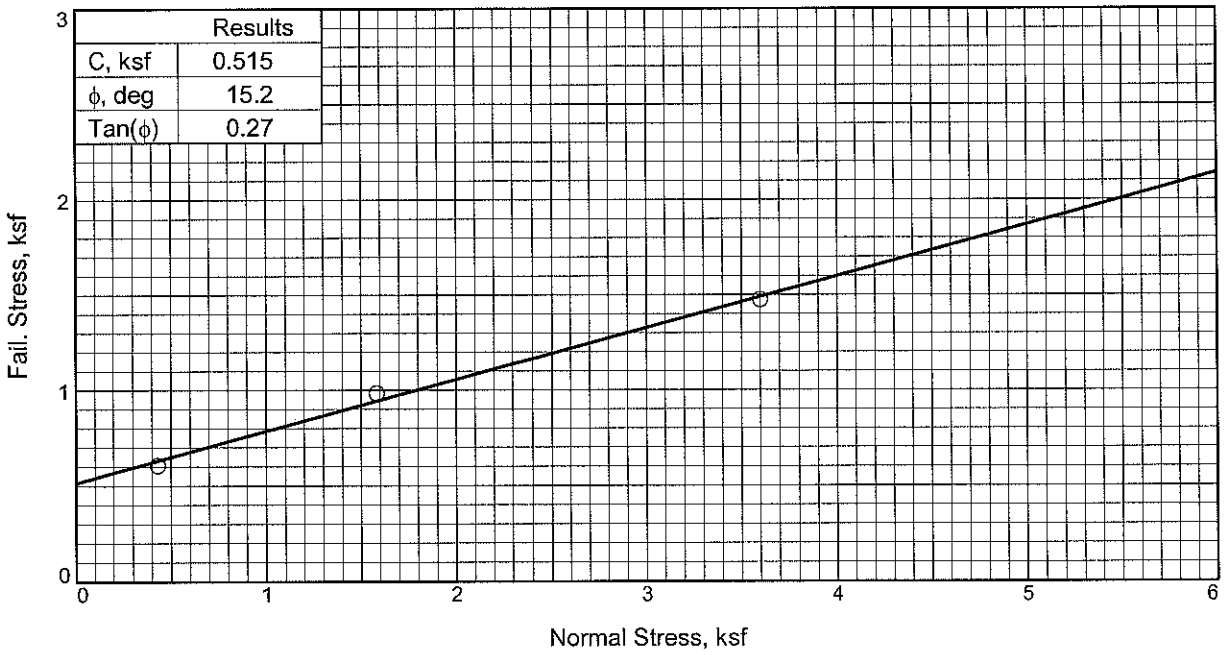
GRAIN SIZE DISTRIBUTION

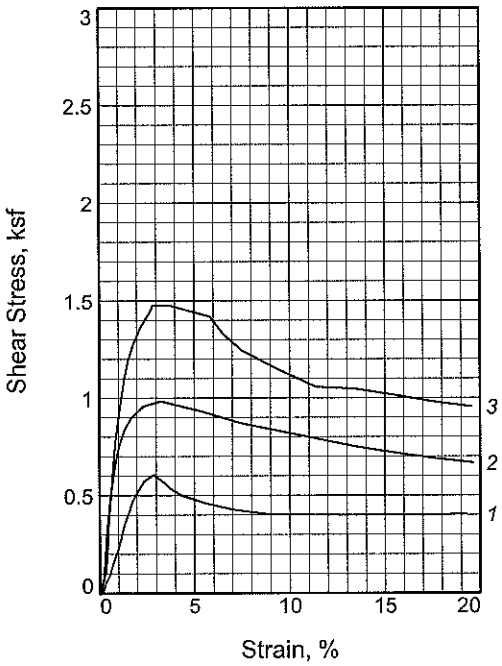
Galveston Channel Deepening,
TO-0010
Galveston, Texas
Project Number 92105154

Terracon

Terracon Consultants, Inc.
11555 Clay Road, Suite 100
Houston, Texas 77043
Telephone: 713-690-8989
Fax: 713-690-8787

SPECIMEN ID
10-B5, 78.0





Sample No.		1	2	3
Initial	Water Content, %	47.9	47.9	47.9
	Dry Density, pcf	70.3	72.4	71.0
	Saturation, %	91.5	96.2	93.1
	Void Ratio	1.4408	1.3708	1.4167
	Diameter, in.	2.500	2.500	2.500
	Height, in.	1.030	1.020	1.000
At Test	Water Content, %	49.8	46.5	46.8
	Dry Density, pcf	71.0	74.3	76.6
	Saturation, %	96.6	97.5	103.7
	Void Ratio	1.4188	1.3120	1.2412
	Diameter, in.	2.500	2.500	2.500
	Height, in.	1.021	0.995	0.927
Normal Stress, ksf		0.432	1.584	3.600
Fail. Stress, ksf		0.606	0.984	1.476
Strain, %		2.9	3.2	2.8
Ult. Stress, ksf				
Strain, %				
Strain rate, in./min.		0.001	0.001	0.001

Sample Type: Undisturbed
Description: Gray Fat Clay

Assumed Specific Gravity= 2.75
Remarks: ASTM D3080

Client: USACE

Project: Galveston Channel Deepening San Jacinto Placement Area
Contract #W912HY-09-D-0021, Task Order #0010
Location: 10-B5
Sample Number: 10 **Depth:** 18-20 ft.
Proj. No.: 92105154 **Date Sampled:**

DIRECT SHEAR TEST REPORT
Terracon, Inc.
Houston, TX

DIRECT SHEAR TEST

8/5/2010

Date:
Client: USACE
Project: Galveston Channel Deepening San Jacinto Placement Area
Contract #W912HY-09-D-0021, Task Order #0010
Project No.: 92105154
Location: 10-B5
Depth: 18-20 ft. **Sample Number:** 10
Description: Gray Fat Clay
Remarks: ASTM D3080
Type of Sample: Undisturbed
Assumed Specific Gravity=2.75 **LL=** **PL=** **PI=**

Parameters for Specimen No. 1

Specimen Parameter	Initial	Consolidated	Final
Moisture content: Moist soil+tare, gms.	100.170		196.200
Moisture content: Dry soil+tare, gms.	84.090		150.260
Moisture content: Tare, gms.	50.550		58.080
Moisture, %	47.9	49.8	49.8
Moist specimen weight, gms.	138.10		
Diameter, in.	2.500	2.500	
Area, in.^{2}	4.909	4.909	
Height, in.	1.030	1.021	
Net decrease in height, in.		0.009	
Wet density, pcf	104.1	106.3	
Dry density, pcf	70.3	71.0	
Void ratio	1.4408	1.4188	
Saturation, %	91.5	96.6	

Test Readings for Specimen No. 1

Normal stress = 0.432 ksf
Strain rate, in./min. = 0.001
Fail. Stress = 0.606 ksf **at reading no.** 18

No.	Horizontal Def. Dial in.	Load Dial	Load lbs.	Strain %	Shear Stress ksf
0	0.0000	0.000	0.0	0.0	0.000
1	0.0005	0.080	0.1	0.0	0.002
2	0.0050	0.427	0.4	0.2	0.013
3	0.0085	1.852	1.9	0.3	0.054
4	0.0135	3.147	3.1	0.5	0.092
5	0.0160	4.309	4.3	0.6	0.126
6	0.0185	5.357	5.4	0.7	0.157
7	0.0220	6.559	6.6	0.9	0.192
8	0.0251	7.805	7.8	1.0	0.229
9	0.0286	9.334	9.3	1.1	0.274
10	0.0316	10.956	11.0	1.3	0.321
11	0.0346	12.368	12.4	1.4	0.363
12	0.0376	13.435	13.4	1.5	0.394
13	0.0406	14.540	14.5	1.6	0.427

Test Readings for Specimen No. 1

No.	Horizontal Def. Dial in.	Load Dial	Load lbs.	Strain %	Shear Stress ksf
14	0.0436	15.843	15.8	1.7	0.465
15	0.0481	16.990	17.0	1.9	0.498
16	0.0541	18.365	18.4	2.2	0.539
17	0.0601	19.556	19.6	2.4	0.574
18	0.0721	20.668	20.7	2.9	0.606
19	0.0736	20.462	20.5	2.9	0.600
20	0.0856	19.319	19.3	3.4	0.567
21	0.0946	18.174	18.2	3.8	0.533
22	0.1096	16.994	17.0	4.4	0.499
23	0.1397	15.718	15.7	5.6	0.461
24	0.1757	14.618	14.6	7.0	0.429
25	0.2267	13.709	13.7	9.1	0.402
26	0.2777	13.804	13.8	11.1	0.405
27	0.3288	13.634	13.6	13.2	0.400
28	0.3798	13.705	13.7	15.2	0.402
29	0.4308	13.681	13.7	17.2	0.401
30	0.4819	13.828	13.8	19.3	0.406

Parameters for Specimen No. 2

Specimen Parameter	Initial	Consolidated	Final
Moisture content: Moist soil+tare, gms.	100.170		188.340
Moisture content: Dry soil+tare, gms.	84.090		144.160
Moisture content: Tare, gms.	50.550		49.230
Moisture, %	47.9	46.5	46.5
Moist specimen weight, gms.	140.80		
Diameter, in.	2.500	2.500	
Area, in.^{2}	4.909	4.909	
Height, in.	1.020	0.995	
Net decrease in height, in.		0.025	
Wet density, pcf	107.1	108.8	
Dry density, pcf	72.4	74.3	
Void ratio	1.3708	1.3120	
Saturation, %	96.2	97.5	

Test Readings for Specimen No. 2

Normal stress = 1.584 ksf

Strain rate, in./min. = 0.001

Fail. Stress = 0.984 ksf **at reading no.** 18

No.	Horizontal Def. Dial in.	Load Dial	Load lbs.	Strain %	Shear Stress ksf
0	0.0000	6.248	0.0	0.0	0.000
1	0.0005	6.258	0.0	0.0	0.000
2	0.0015	6.019	-0.2	0.1	-0.007
3	0.0055	8.482	2.2	0.2	0.066
4	0.0065	10.526	4.3	0.3	0.126
5	0.0075	12.982	6.7	0.3	0.198
6	0.0090	15.555	9.3	0.4	0.273
7	0.0105	18.052	11.8	0.4	0.346
8	0.0120	20.080	13.8	0.5	0.406
9	0.0140	22.450	16.2	0.6	0.475
10	0.0165	24.885	18.6	0.7	0.547
11	0.0195	27.292	21.0	0.8	0.617
12	0.0225	29.828	23.6	0.9	0.692
13	0.0271	32.121	25.9	1.1	0.759
14	0.0331	34.667	28.4	1.3	0.834
15	0.0421	36.719	30.5	1.7	0.894
16	0.0586	38.899	32.7	2.3	0.958
17	0.0796	39.710	33.5	3.2	0.982
18	0.0811	39.794	33.5	3.2	0.984
19	0.1336	38.086	31.8	5.3	0.934
20	0.1847	35.988	29.7	7.4	0.872
21	0.2357	34.604	28.4	9.4	0.832
22	0.2867	33.193	26.9	11.5	0.790
23	0.3378	31.805	25.6	13.5	0.750
24	0.3888	30.742	24.5	15.6	0.719
25	0.4398	29.805	23.6	17.6	0.691
26	0.4909	29.001	22.8	19.6	0.667

Parameters for Specimen No. 3

Specimen Parameter	Initial	Consolidated	Final
Moisture content: Moist soil+tare, gms.	100.170		132.570
Moisture content: Dry soil+tare, gms.	84.090		109.010
Moisture content: Tare, gms.	50.550		58.690
Moisture, %	47.9	46.8	46.8
Moist specimen weight, gms.	135.42		
Diameter, in.	2.500	2.500	
Area, in.^{2}	4.909	4.909	
Height, in.	1.000	0.927	
Net decrease in height, in.		0.073	
Wet density, pcf	105.1	112.5	
Dry density, pcf	71.0	76.6	
Void ratio	1.4167	1.2412	
Saturation, %	93.1	103.7	

Test Readings for Specimen No. 3

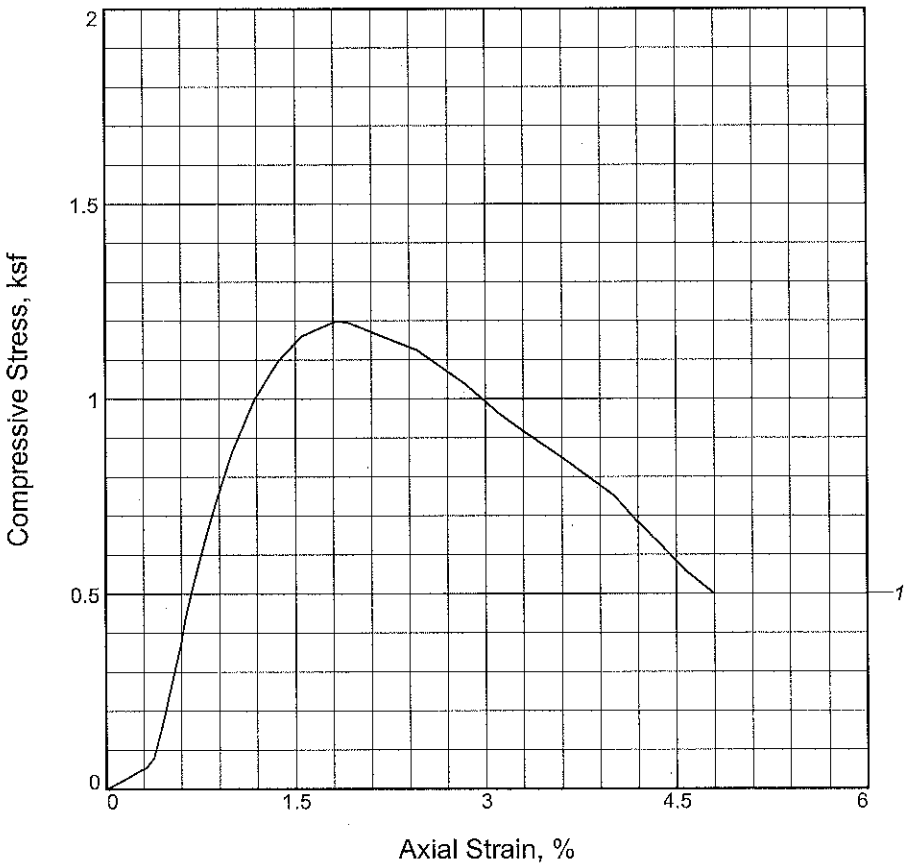
Normal stress = 3.600 ksf

Strain rate, in./min. = 0.001

Fail. Stress = 1.476 ksf **at reading no.** 17

No.	Horizontal Def. Dial in.	Load Dial	Load lbs.	Strain %	Shear Stress ksf
0	0.0000	6.325	0.0	0.0	0.000
1	0.0005	6.695	0.4	0.0	0.011
2	0.0085	10.166	3.8	0.3	0.113
3	0.0105	14.331	8.0	0.4	0.235
4	0.0115	17.164	10.8	0.5	0.318
5	0.0130	20.205	13.9	0.5	0.407
6	0.0150	23.388	17.1	0.6	0.501
7	0.0170	26.733	20.4	0.7	0.599
8	0.0190	29.677	23.4	0.8	0.685
9	0.0210	32.659	26.3	0.8	0.773
10	0.0241	35.634	29.3	1.0	0.860
11	0.0286	39.812	33.5	1.1	0.982
12	0.0331	43.569	37.2	1.3	1.093
13	0.0376	46.659	40.3	1.5	1.183
14	0.0451	49.625	43.3	1.8	1.270
15	0.0556	52.871	46.5	2.2	1.365
16	0.0691	55.947	49.6	2.8	1.456
17	0.0706	56.644	50.3	2.8	1.476
18	0.0931	56.626	50.3	3.7	1.476
19	0.1457	54.737	48.4	5.8	1.420
20	0.1637	51.594	45.3	6.5	1.328
21	0.1877	48.750	42.4	7.5	1.245
22	0.2387	45.234	38.9	9.5	1.141
23	0.2838	42.386	36.1	11.4	1.058
24	0.3348	42.043	35.7	13.4	1.048
25	0.3858	40.967	34.6	15.4	1.016
26	0.4368	39.822	33.5	17.5	0.983
27	0.4879	38.941	32.6	19.5	0.957

UNCONFINED COMPRESSION TEST



Sample No.	1			
Unconfined strength, ksf	1.199			
Undrained shear strength, ksf	0.600			
Failure strain, %	1.8			
Strain rate, in./min.	0.055			
Water content, %	41.2			
Wet density, pcf	108.3			
Dry density, pcf	76.7			
Saturation, %	91.5			
Void ratio	1.2396			
Specimen diameter, in.	2.839			
Specimen height, in.	6.023			
Height/diameter ratio	2.12			

Description: Gray Fat Clay w/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-B5

Sample Number: 3 **Depth:** 4-6 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-B5
Depth: 4-6 ft. **Sample Number:** 3
Description: Gray Fat Clay w/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.	160.550
Moisture content: Dry soil+tare, gms.	130.930
Moisture content: Tare, gms.	59.100
Moisture, %	41.2
Moist specimen weight, gms.	1083.52
Diameter, in.	2.839
Area, in.^{2}	6.330
Height, in.	6.023
Wet density, pcf	108.3
Dry density, pcf	76.7
Void ratio	1.2396
Saturation, %	91.5

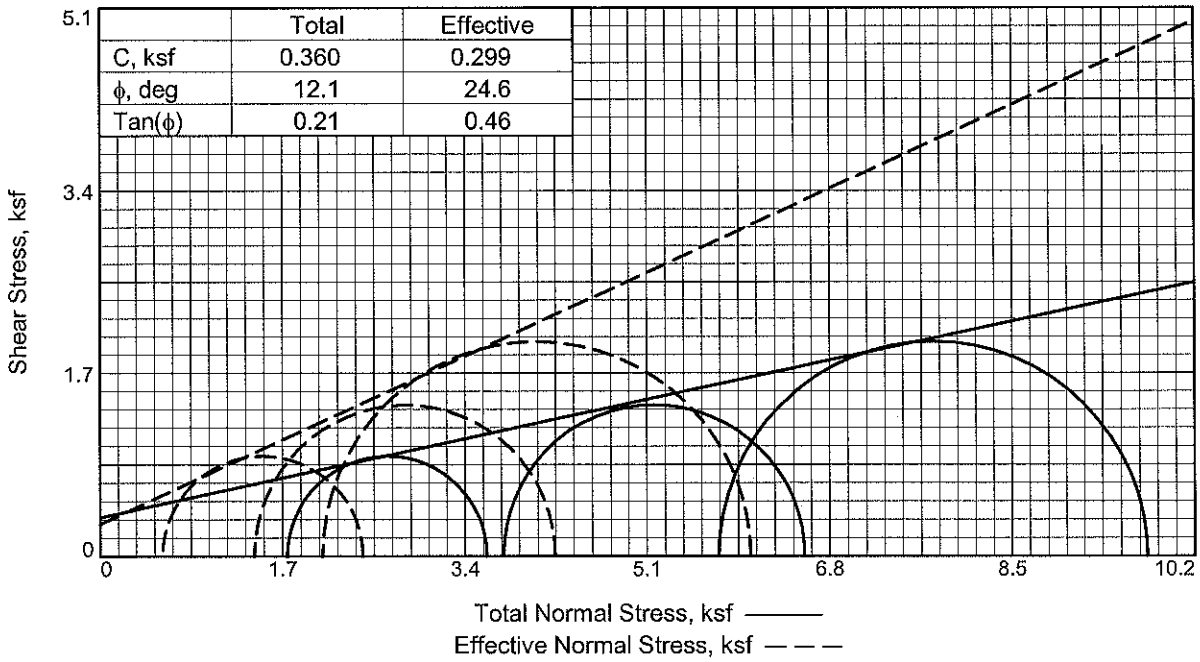
Test Readings for Specimen No. 1

Strain rate, in./min. = 0.055
Unconfined compressive strength = 1.199 ksf **at reading no.** 20

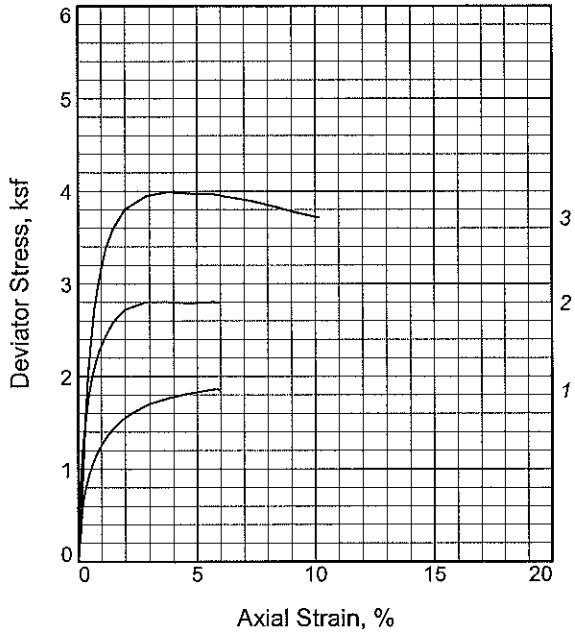
No.	Def. Dial in.	Load Dial	Load lbs.	Strain %	Deviator Stress ksf
0	0.0000	0.000	0.0	0.0	0.000
1	0.0005	0.000	0.0	0.0	0.000
2	0.0093	1.100	1.1	0.2	0.025
3	0.0150	1.900	1.9	0.2	0.043
4	0.0192	2.400	2.4	0.3	0.054
5	0.0230	3.547	3.5	0.4	0.080
6	0.0272	7.524	7.5	0.5	0.170
7	0.0301	10.375	10.4	0.5	0.235
8	0.0329	13.348	13.3	0.5	0.302
9	0.0358	16.254	16.3	0.6	0.368
10	0.0381	19.305	19.3	0.6	0.436
11	0.0410	22.216	22.2	0.7	0.502
12	0.0438	24.904	24.9	0.7	0.562
13	0.0480	28.753	28.8	0.8	0.649
14	0.0523	32.293	32.3	0.9	0.728
15	0.0603	38.261	38.3	1.0	0.862

Test Readings for Specimen No. 1

No.	Def. Dial in.	Load Dial	Load lbs.	Strain %	Deviator Stress ksf
16	0.0660	41.399	41.4	1.1	0.931
17	0.0712	44.348	44.3	1.2	0.997
18	0.0826	48.900	48.9	1.4	1.097
19	0.0934	51.833	51.8	1.6	1.161
20	0.1100	53.698	53.7	1.8	1.199
21	0.1152	53.609	53.6	1.9	1.196
22	0.1483	50.717	50.7	2.5	1.125
23	0.1705	47.043	47.0	2.8	1.040
24	0.1871	43.677	43.7	3.1	0.963
25	0.2036	40.901	40.9	3.4	0.899
26	0.2202	38.178	38.2	3.7	0.837
27	0.2419	34.341	34.3	4.0	0.750
28	0.2528	31.334	31.3	4.2	0.683
29	0.2641	28.636	28.6	4.4	0.623
30	0.2750	25.840	25.8	4.6	0.561
31	0.2887	23.144	23.1	4.8	0.501



	Total	Effective
C, ksf	0.360	0.299
ϕ, deg	12.1	24.6
Tan(ϕ)	0.21	0.46



Sample No.		1	2	3
Initial	Water Content, %	41.4	41.4	41.4
	Dry Density, pcf	83.4	83.4	83.4
	Saturation, %	107.6	107.6	107.6
	Void Ratio	1.0579	1.0579	1.0579
	Diameter, in.	2.787	2.787	2.787
	Height, in.	6.186	6.186	6.186
At Test	Water Content, %	39.7	39.7	39.7
	Dry Density, pcf	83.4	83.4	83.4
	Saturation, %	103.2	103.2	103.2
	Void Ratio	1.0579	1.0579	1.0579
	Diameter, in.	2.787	2.787	2.787
	Height, in.	6.186	6.186	6.186
Strain rate, in./min.		0.001	0.001	0.001
Back Pressure, psi		35.000	35.000	35.000
Cell Pressure, psi		47.120	61.110	75.060
Fail. Stress, ksf		1.858	2.805	3.991
Excess Pore Pr., ksf		1.160	2.320	3.698
Ult. Stress, ksf				
Excess Pore Pr., ksf				
$\bar{\sigma}_1$ Failure, ksf		2.443	4.244	6.062
$\bar{\sigma}_3$ Failure, ksf		0.585	1.440	2.071

Type of Test:
CU with Pore Pressures

Sample Type: Undisturbed

Description: Gray Clay w/shell

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-B5

Sample Number: 31 **Depth:** 60-62 ft.

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

TRIAXIAL SHEAR TEST REPORT
Terracon, Inc.
Houston, TX

TRIAXIAL COMPRESSION TEST

CU with Pore Pressures

8/4/2010
2:49 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-B5
Depth: 60-62 ft. **Sample Number:** 31
Description: Gray Clay w/shell
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.	155.350			149.860
Moisture content: Dry soil+tare, gms.	124.100			120.870
Moisture content: Tare, gms.	48.640			47.830
Moisture, %	41.4	39.7	39.7	39.7
Moist specimen weight, gms.	1168.60			
Diameter, in.	2.787	2.787	2.787	
Area, in.^{2}	6.100	6.100	6.100	
Height, in.	6.186	6.186	6.186	
Net decrease in height, in.		0.000	0.000	
Net decrease in water volume, cc.			0.000	
Wet density, pcf	118.0	116.5	116.5	
Dry density, pcf	83.4	83.4	83.4	
Void ratio	1.0579	1.0579	1.0579	
Saturation, %	107.6	103.2	103.2	

Test Readings for Specimen No. 1

Consolidation cell pressure = 47.120 psi (6.785 ksf)
Consolidation back pressure = 35.000 psi (5.040 ksf)
Consolidation effective confining stress = 1.745 ksf
Strain rate, in./min. = 0.001
Fail. Stress = 1.858 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	6.785	6.785	1.00	0.000	6.785	0.000
1	0.0021	2.777	2.8	0.0	0.066	1.732	1.797	1.04	35.093	1.765	0.033
2	0.0037	8.684	8.7	0.1	0.205	1.621	1.826	1.13	35.861	1.724	0.102
3	0.0052	13.391	13.4	0.1	0.316	1.549	1.865	1.20	36.364	1.707	0.158
4	0.0082	20.352	20.4	0.1	0.480	1.436	1.916	1.33	37.145	1.676	0.240
5	0.0113	24.566	24.6	0.2	0.579	1.350	1.929	1.43	37.747	1.639	0.289
6	0.0159	30.016	30.0	0.3	0.707	1.264	1.970	1.56	38.344	1.617	0.353
7	0.0220	34.815	34.8	0.4	0.819	1.168	1.987	1.70	39.005	1.578	0.409
8	0.0296	39.978	40.0	0.5	0.939	1.087	2.026	1.86	39.574	1.556	0.470
9	0.0388	44.678	44.7	0.6	1.048	1.009	2.057	2.04	40.115	1.533	0.524
10	0.0494	49.598	49.6	0.8	1.161	0.935	2.096	2.24	40.629	1.515	0.581
11	0.0693	55.846	55.8	1.1	1.303	0.841	2.144	2.55	41.282	1.492	0.652
12	0.0876	60.456	60.5	1.4	1.407	0.776	2.183	2.81	41.732	1.479	0.703
13	0.1120	65.430	65.4	1.8	1.516	0.726	2.243	3.09	42.076	1.485	0.758
14	0.1425	69.630	69.6	2.3	1.606	0.674	2.280	3.38	42.438	1.477	0.803
15	0.1852	74.320	74.3	3.0	1.702	0.625	2.327	3.72	42.781	1.476	0.851
16	0.2402	78.091	78.1	3.9	1.772	0.605	2.376	3.93	42.921	1.491	0.886
17	0.2951	80.926	80.9	4.8	1.819	0.589	2.408	4.09	43.031	1.498	0.910
18	0.3530	83.474	83.5	5.7	1.858	0.585	2.443	4.18	43.056	1.514	0.929
19	0.3683	83.647	83.6	6.0	1.857	0.574	2.431	4.24	43.135	1.502	0.928
20	0.3684	83.471	83.5	6.0	1.853	0.575	2.428	4.22	43.125	1.502	0.926

Parameters for Specimen No. 2

Specimen Parameter	Initial	Saturated	Consolidated	Final
Moisture content: Moist soil+tare, gms.	155.350			149.860
Moisture content: Dry soil+tare, gms.	124.100			120.870
Moisture content: Tare, gms.	48.640			47.830
Moisture, %	41.4	39.7	39.7	39.7
Moist specimen weight, gms.	1168.60			
Diameter, in.	2.787	2.787	2.787	
Area, in.^{2}	6.100	6.100	6.100	
Height, in.	6.186	6.186	6.186	
Net decrease in height, in.		0.000	0.000	
Net decrease in water volume, cc.			0.000	
Wet density, pcf	118.0	116.5	116.5	
Dry density, pcf	83.4	83.4	83.4	
Void ratio	1.0579	1.0579	1.0579	
Saturation, %	107.6	103.2	103.2	

Test Readings for Specimen No. 2

Consolidation cell pressure = 61.110 psi (8.800 ksf)
Consolidation back pressure = 35.000 psi (5.040 ksf)
Consolidation effective confining stress = 3.760 ksf
Strain rate, in./min. = 0.001
Fail. Stress = 2.805 ksf **at reading no.** 17

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	8.800	8.800	1.00	0.000	8.800	0.000
1	0.0009	5.313	5.3	0.0	0.125	3.685	3.810	1.03	35.520	3.748	0.063
2	0.0024	15.149	15.1	0.0	0.357	3.495	3.852	1.10	36.839	3.674	0.179
3	0.0039	23.344	23.3	0.1	0.551	3.371	3.922	1.16	37.699	3.647	0.275
4	0.0055	30.342	30.3	0.1	0.716	3.263	3.979	1.22	38.449	3.621	0.358
5	0.0085	41.047	41.0	0.1	0.968	3.088	4.055	1.31	39.668	3.571	0.484
6	0.0116	48.998	49.0	0.2	1.154	2.949	4.103	1.39	40.633	3.526	0.577
7	0.0146	55.675	55.7	0.2	1.311	2.830	4.141	1.46	41.457	3.486	0.656
8	0.0192	63.687	63.7	0.3	1.499	2.674	4.172	1.56	42.542	3.423	0.749
9	0.0238	70.081	70.1	0.4	1.648	2.552	4.200	1.65	43.389	3.376	0.824
10	0.0299	77.342	77.3	0.5	1.817	2.410	4.227	1.75	44.373	3.319	0.908
11	0.0375	84.358	84.4	0.6	1.979	2.272	4.251	1.87	45.332	3.262	0.990
12	0.0467	91.153	91.2	0.8	2.135	2.140	4.275	2.00	46.249	3.208	1.068
13	0.0574	97.604	97.6	0.9	2.283	2.016	4.299	2.13	47.110	3.157	1.141
14	0.0741	104.457	104.5	1.2	2.436	1.860	4.296	2.31	48.191	3.078	1.218
15	0.0925	110.982	111.0	1.5	2.581	1.738	4.319	2.48	49.038	3.029	1.290
16	0.1230	117.686	117.7	2.0	2.723	1.595	4.318	2.71	50.034	2.956	1.361
17	0.1779	122.339	122.3	2.9	2.805	1.440	4.244	2.95	51.112	2.842	1.402
18	0.2328	123.420	123.4	3.8	2.804	1.346	4.150	3.08	51.762	2.748	1.402
19	0.2877	123.961	124.0	4.7	2.790	1.277	4.067	3.19	52.244	2.672	1.395
20	0.3518	125.962	126.0	5.7	2.804	1.229	4.033	3.28	52.579	2.631	1.402
21	0.3671	125.867	125.9	5.9	2.795	1.227	4.021	3.28	52.592	2.624	1.397
22	0.3671	126.070	126.1	5.9	2.799	1.226	4.025	3.28	52.595	2.626	1.400

Parameters for Specimen No. 3

Specimen Parameter	Initial	Saturated	Consolidated	Final
Moisture content: Moist soil+tare, gms.	155.350			149.860
Moisture content: Dry soil+tare, gms.	124.100			120.870
Moisture content: Tare, gms.	48.640			47.830
Moisture, %	41.4	39.7	39.7	39.7
Moist specimen weight, gms.	1168.60			
Diameter, in.	2.787	2.787	2.787	
Area, in.^{2}	6.100	6.100	6.100	
Height, in.	6.186	6.186	6.186	
Net decrease in height, in.		0.000	0.000	
Net decrease in water volume, cc.			0.000	
Wet density, pcf	118.0	116.5	116.5	
Dry density, pcf	83.4	83.4	83.4	
Void ratio	1.0579	1.0579	1.0579	
Saturation, %	107.6	103.2	103.2	

Test Readings for Specimen No. 3

Consolidation cell pressure = 75.060 psi (10.809 ksf)

Consolidation back pressure = 35.000 psi (5.040 ksf)

Consolidation effective confining stress = 5.769 ksf

Strain rate, in./min. = 0.001

Fail. Stress = 3.991 ksf **at reading no.** 18

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	10.809	10.809	1.00	0.000	10.809	0.000
1	0.0014	2.770	2.8	0.0	0.065	5.736	5.801	1.01	35.229	5.768	0.033
2	0.0091	16.431	16.4	0.1	0.387	5.067	5.454	1.08	39.874	5.260	0.194
3	0.0106	26.802	26.8	0.2	0.632	4.927	5.558	1.13	40.846	5.243	0.316
4	0.0136	42.468	42.5	0.2	1.000	4.673	5.674	1.21	42.606	5.173	0.500
5	0.0167	55.214	55.2	0.3	1.300	4.453	5.752	1.29	44.139	5.103	0.650
6	0.0197	66.226	66.2	0.3	1.558	4.255	5.814	1.37	45.510	5.034	0.779
7	0.0228	75.502	75.5	0.4	1.776	4.087	5.863	1.43	46.679	4.975	0.888
8	0.0274	87.072	87.1	0.4	2.046	3.875	5.921	1.53	48.150	4.898	1.023
9	0.0320	96.426	96.4	0.5	2.264	3.686	5.950	1.61	49.463	4.818	1.132
10	0.0381	107.357	107.4	0.6	2.519	3.491	6.010	1.72	50.816	4.750	1.259
11	0.0442	116.859	116.9	0.7	2.739	3.312	6.051	1.83	52.060	4.681	1.369
12	0.0518	125.770	125.8	0.8	2.944	3.142	6.085	1.94	53.244	4.613	1.472
13	0.0609	134.745	134.7	1.0	3.149	2.978	6.127	2.06	54.381	4.552	1.575
14	0.0747	145.261	145.3	1.2	3.387	2.782	6.169	2.22	55.744	4.475	1.694
15	0.0930	154.408	154.4	1.5	3.590	2.595	6.185	2.38	57.040	4.390	1.795
16	0.1235	164.360	164.4	2.0	3.802	2.388	6.190	2.59	58.477	4.289	1.901
17	0.1784	172.321	172.3	2.9	3.950	2.185	6.136	2.81	59.884	4.160	1.975
18	0.2334	175.700	175.7	3.8	3.991	2.071	6.062	2.93	60.678	4.066	1.995
19	0.2883	176.620	176.6	4.7	3.975	1.997	5.972	2.99	61.191	3.985	1.987
20	0.3524	178.201	178.2	5.7	3.967	1.937	5.903	3.05	61.612	3.920	1.983
21	0.3829	178.106	178.1	6.2	3.944	1.920	5.864	3.05	61.730	3.892	1.972
22	0.4439	178.049	178.0	7.2	3.901	1.878	5.779	3.08	62.020	3.828	1.951
23	0.5049	177.309	177.3	8.2	3.844	1.861	5.705	3.07	62.135	3.783	1.922
24	0.5659	175.998	176.0	9.1	3.774	1.828	5.603	3.06	62.362	3.716	1.887
25	0.6269	175.143	175.1	10.1	3.715	1.815	5.531	3.05	62.453	3.673	1.858

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																						