Tolunay-Wong Engineers, Inc.

ASTM D 5084; Falling Head/Rising Tail Method
Constant Volume Apparatus

Project Number: 03-859-13
Project Name: Brownsville Resacas
Sample ID: 04-135 (0.0-1.4')
Description: (Remold) Gray SILTY SAND

Date: 7/20/04 CELL #11
Tech: RAL

Before Test

Specimin Data		
Length(in)	**1.48**	
Diameter(in)	**1.34**	
Length(cm)	**3.76**	
Diameter(cm)	**3.41**	
Specific Gravity	2.65	Assumed
Wet Weight(gm)	68.85	
Area(cm^2)	**9.16**	
Volume(cc)	**34.46**	
Moisture Data		
Wet Wt.+Tare(gm)	108.1	
Dry Wt.+Tare(gm)	94.58	
Tare Weight(gm)	30.65	
Moisture(%)	**21.15**	
Weight/Volume Data		
Wet Weight(pcf)	**124.7**	
Dry Weight(pcf)	**103.0**	
Vol.Voids(cc)	**13.0**	
Void Ratio	**0.603**	
Saturation(%)	**92.9**	
Cell(psi)	65	
Backpressure(psi)	60	

After Test

Specimin Data	
Length(in)	**1.48**
Diameter(in)	**1.35**
Length(cm)	**3.76**
Diameter(cm)	**3.42**
Wet Weight(gm)	68.67
Area(cm)	**9.17**
Volume(cc)	**34.50**
Moisture Data	
Wet Wt. + Tare	23.42
Dry Wt. + Tare	18.81
Tare Weight	0.4
Moisture(%)	**25.04**
Weight/Volume Data	
Wet Weight(pcf)	**124.3**
Dry Weight(pcf)	**99.4**
Vol.Voids(cc)	**13.8**
Void Ratio	**0.668**
Saturation(%)	**99.3**
a-in (cm^2)	**0.76712**
a-out (cm^2)	**0.03142**

BEFORE	
DIA	LENGTH
1.351	1.476
1.348	1.494
1.338	1.476
1.345	1.474
1.339	1.489
1.344	**1.482**
AFTER	
DIA	LENGTH
1.350	1.473
1.349	1.493
1.339	1.476
1.346	1.476
1.342	1.488
1.345	**1.481**

Test Constants	
M1=	**0.03018**
M2=	**1.040953**
S=	**0.410314**
G=	**12.542**
C=	**9.873E-04**

ASTM D 4767 B COEFF. 0.99

Actual Date (mm/dd/yy)	Actual Time (hh:mm:ss)	Elapsed Time (seconds)	Temperature (Fahren.)	Temperature (Cels)	a - in Outflow (mm)	a - out Inflow (mm)	Gradient	Trial Constant T	Hydraulic Conductivity (20C,cm/sec)
7/22/2004	**7:34:02 AM**	**0**	**78.8**	**26.0**	**93**	**13.89**	**28.5**		
	7:34:15 AM	**13**	**78.8**	**26.0**	**50**	**15.65**	**12.4**	**0.13158**	**5.4E-05**
	7:34:50 AM	**0**	**78.8**	**26.0**	**93**	**13.89**	**28.5**		
	7:35:02 AM	**12**	**78.8**	**26.0**	**50**	**15.65**	**12.4**	**0.13158**	**5.9E-05**
	7:35:40 AM	**0**	**78.8**	**26.0**	**93**	**13.89**	**28.5**		
	7:35:52 AM	**12**	**78.8**	**26.0**	**50**	**15.65**	**12.4**	**0.13158**	**5.9E-05**
	7:36:22 AM	**0**	**78.8**	**26.0**	**93**	**13.89**	**28.5**		
	7:36:35 AM	**13**	**78.8**	**26.0**	**50**	**15.65**	**12.4**	**0.13158**	**5.4E-05**

Coefficient of permeability, $k_{20°}$ (cm/sec) 5.7E-05

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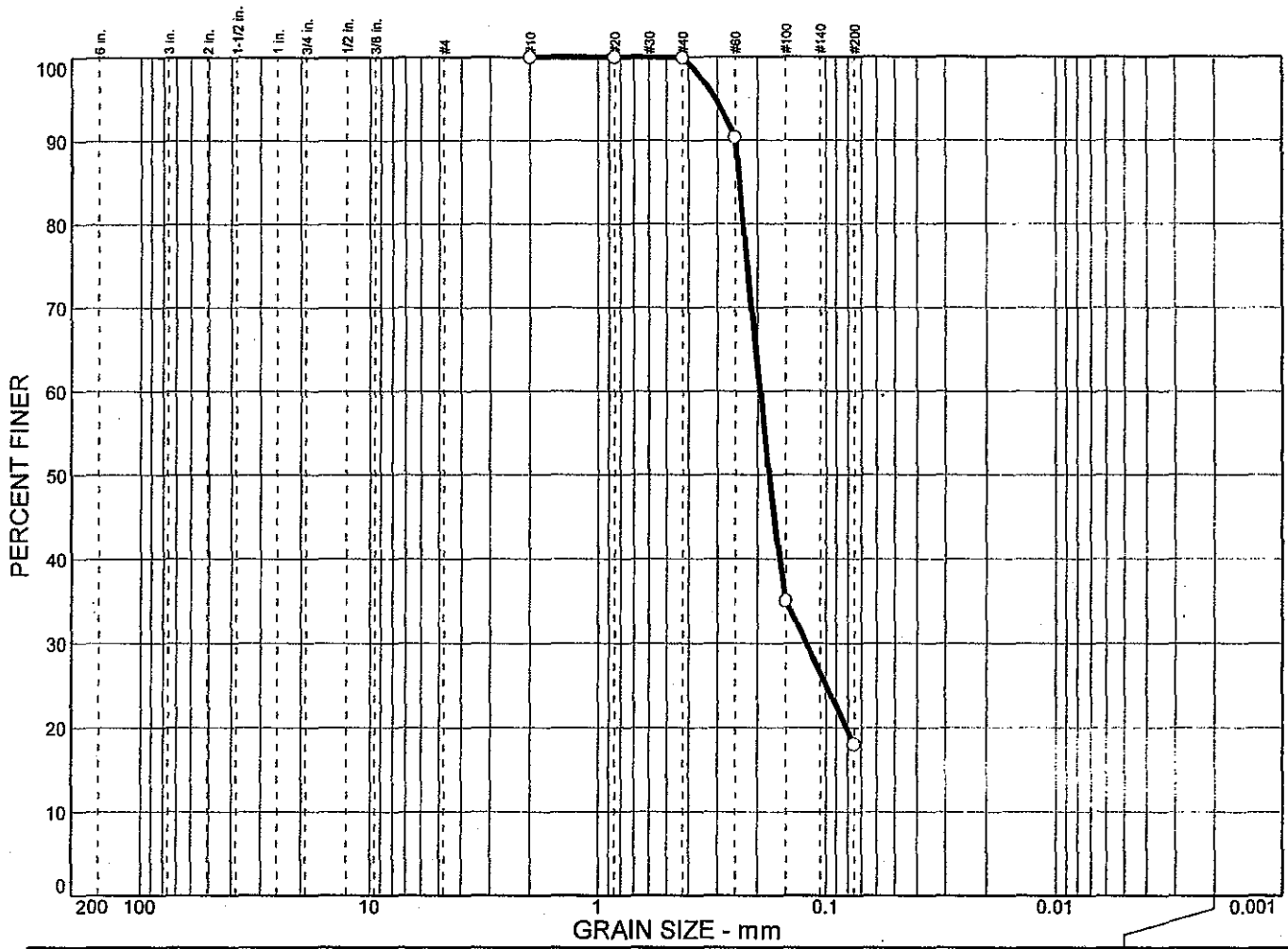
Particle Size Analysis (ASTM D 422)



	% + 3"	% GRAVEL	% SAND	% SILT	% CLAY
O	0.0	0.0	81.9	18.1	

SOIL DATA

SYMBOL	SOURCE	SAMPLE NO.	DEPTH (ft.)	DESCRIPTION	USCS
O	04-135		0-1.4	Gray and tan SILTY SAND	SM

Particle Size Analysis (ASTM D 422)

Tolunay-Wong Engineers, Inc.

Client: United States Army Corps of Engineers

Project: Brownsville Resacas
Contract: DACW64-03-D-0008: Delivery Order 0013

Project No.: 03-859-0013 **Figure**

Project No. 03-859-0013 Client: United States Army Corps of Engineers

Project: Brownsville Resacas; Contract: DACW64-03-D-0008: Delivery Order 0013

Boring No.	Depth (ft)	Soil Description	USCS	Water Content (%)	Dry Density (pcf)	Liquid Limit	Plastic Limit	Plast. Index	Finer than #200 Sieve (%)
04-127	0-1	Firm gray FAT CLAY	CH	36.7		79	29	50	98.7
04-128	0-2	Very soft gray FAT CLAY; lean clay seams	CH	76.3		90	33	57	99.1
04-129	0-1.1	Firm gray FAT CLAY with sand	CH	37.5		60	24	36	81.9
04-130	0-1.5	Firm gray FAT CLAY; traces of calcareous nodules	CH	40.6		81	30	51	99.3
04-131	0-1.5	Firm gray FAT CLAY	CH	38.3	81.3	59	30	29	99.5
04-132	0-2.2	Soft gray FAT CLAY	CH	61.6		87	33	54	99.0
04-133	0-1	Firm gray FAT CLAY	CH	36.8		67	28	39	97.8
04-134	0-1	Firm gray FAT CLAY	CH	38.9	83.5	73	28	45	98.5
04-135	0-1.4	Gray and tan SILTY SAND	SM	22.3					18.1
04-136	0.0-0.5	Soft gray LEAN CLAY	CL	78.7		45	24	21	89.7
	0.5-1.5	Tan and gray SILTY SAND	SM	26.4		NV	NP	NP	16.6
	2.5-3.5	Gray SANDY SILT	ML	24.4					67.5
04-137	0-1.1	Firm gray FAT CLAY	CH	44.3	78.6	68	26	42	99.1
04-138	0-1	Gray SILTY SAND	SM	27.1					42.4

Form: COESUM-5

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