

ATTERBERG LIMITS

ASTM D 4318-98 / AASHTO T89 (SOP - S4A)

Client	PAUL C. RIZZO	Boring No.	TS-SOIL-02
Client Reference	TAUM SAUK 06-3551	Depth (in)	7-12
Project No.	2006-060-01	Sample No.	S-2
Lab ID	2006-060-01-69	Soil Description	REDDISH BROWN FAT CLAY

Note: The USCS symbol used with this test refers only to the minus No. 40 sieve material. See the "Sieve and Hydrometer Analysis" graph page for the complete material description.

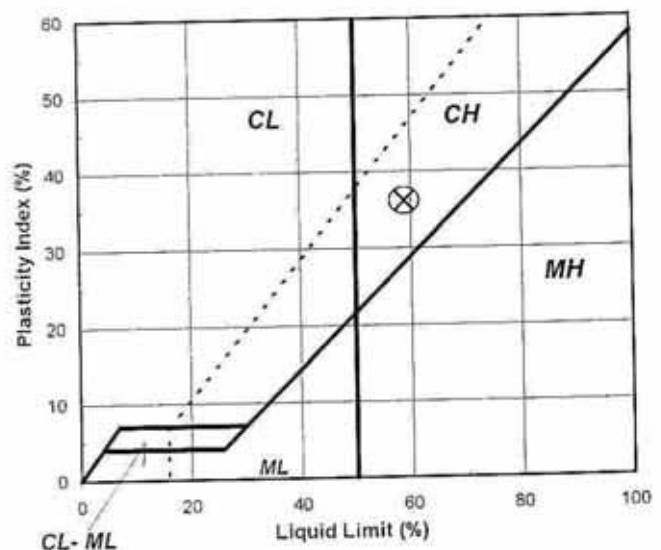
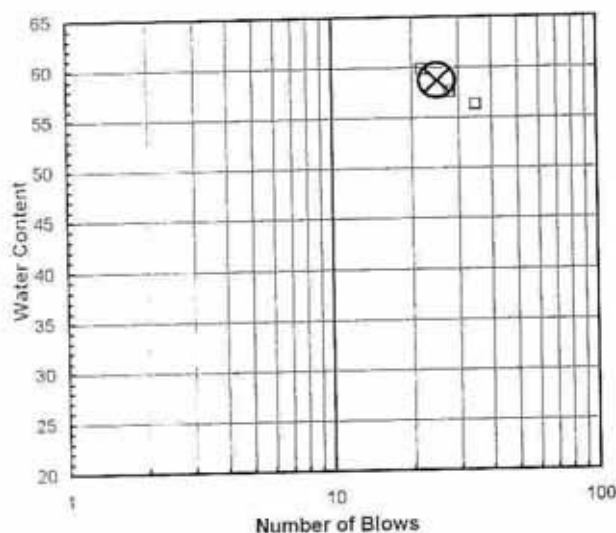
Liquid Limit Test	1	2	3	
Tare Number	16	26	27	MULTIPOINT
Wt. of Tare & WS (gm)	39.30	42.18	42.97	
Wt. of Tare & DS (gm)	32.01	33.31	34.55	
Wt. of Tare (gm)	19.06	17.90	20.48	
Wt. of Water (gm)	7.3	8.9	8.4	
Wt. of DS (gm)	13.0	15.4	14.1	
Moisture Content (%)	56.3	57.6	59.8	
Number of Blows	35	28	22	

Plastic Limit Test	1	2	Range	Test Results
Tare Number	48	53		Liquid Limit (%) 59
Wt. of Tare & WS (gm)	24.27	25.48		Plastic Limit (%) 23
Wt. of Tare & DS (gm)	23.11	24.21		Plasticity Index (%) 36
Wt. of Tare (gm)	18.15	18.82		USCS Symbol CH
Wt. of Water (gm)	1.2	1.3		
Wt. of DS (gm)	5.0	5.4		
Moisture Content (%)	23.4	23.6	-0.2	

Note: The acceptable range of the two Moisture contents is ± 2.6

Flow Curve

Plasticity Chart



Tested By	BS	Date	3/1/06	Checked By	KB	Date	3-2-06
DCN:	CT-S4B	DATE:	10/8/01	REVISION:	2		

DIRECT SHEAR

ASTM D 3080-04 (SOP-S21)

Client	PAUL C. RIZZO & ASSOC.	Boring No.	TS-SOIL-02
Client Reference	TAUM SAUK 06-3551	Depth (in)	7-12
Project No.	2006-060-01	Sample No.	S-2
Lab ID	2006-060-01-69	Visual Description	BROWN AND REDDISH GRAY MOTTLED CLAY

Sample Conditions: UNDISTURBED, INUNDATED AND DOUBLE DRAINED

Maximum Shear Stress (psi)		Normal Stress (psi)
15.37	(1)	20
25.87	(2)	40
30.97	(3)	60

Overall Regression Analysis

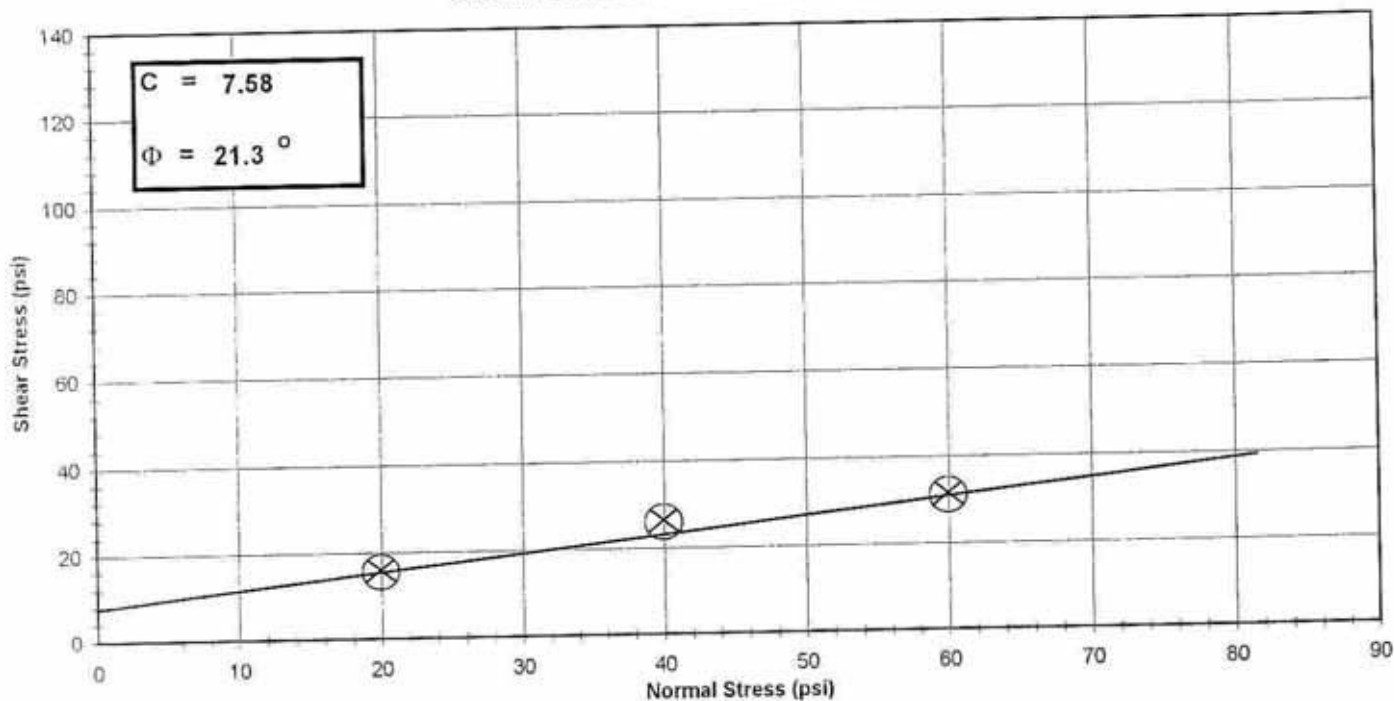
Slope = 0.39
 C = 8.48
 Φ = 21.3 degrees

Selected Points	Shear Stress (psi)	Normal Stress (psi)
1	15.37	20
3	30.97	60

Selected Points Regression

Slope = 0.39
 C = 7.58
 Φ = 21.3 degrees

SHEAR STRESS vs. NORMAL STRESS



Note: Graph not to scale

Tested By TM Date 2/28/06 Approved By DB Date 2/28/06

DIRECT SHEAR

ASTM D 3080-04 (SOP-S21)

Client	PAUL C. RIZZO & ASSOC.	Boring No.	TS-SOIL-02
Client Reference	TAUM SAUK 06-3551	Depth (in)	7-12
Project No.	2006-060-01	Sample No.	S-2
Lab ID	2006-060-01-69	Visual Description	BROWN AND REDDISH GRAY MOTTLED CLAY

Sample Conditions: UNDISTURBED, INUNDATED AND DOUBLE DRAINED

Maximum Shear Stress (psi)		Normal Stress (psi)
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15.37	(1)	20
25.87	(2)	40
30.97	(3)	60

Overall Regression Analysis

Slope = 0.39
C = 8.48
 Φ = 21.3 degrees

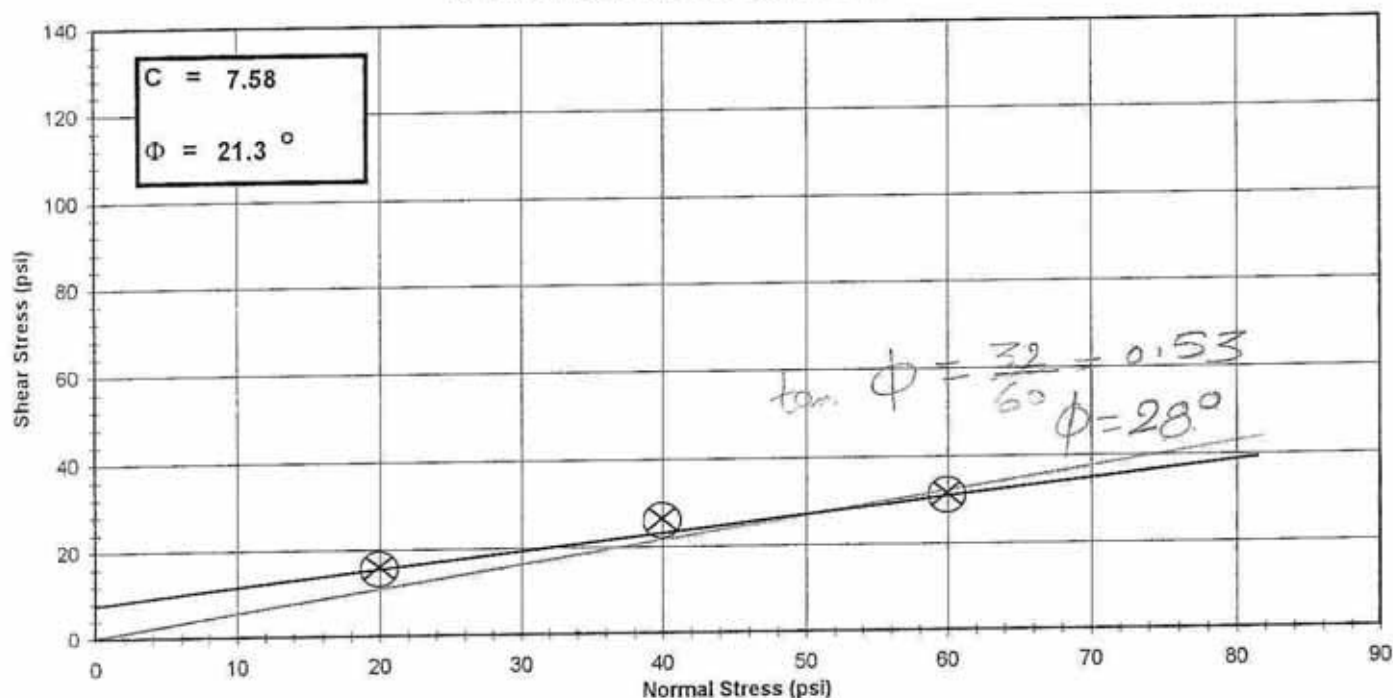
Selected Points	Shear Stress (psi)	Normal Stress (psi)
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1	15.37	20
3	30.97	60

Selected Points Regression

Slope = 0.39
C = 7.58
 Φ = 21.3 degrees

SHEAR STRESS vs. NORMAL STRESS



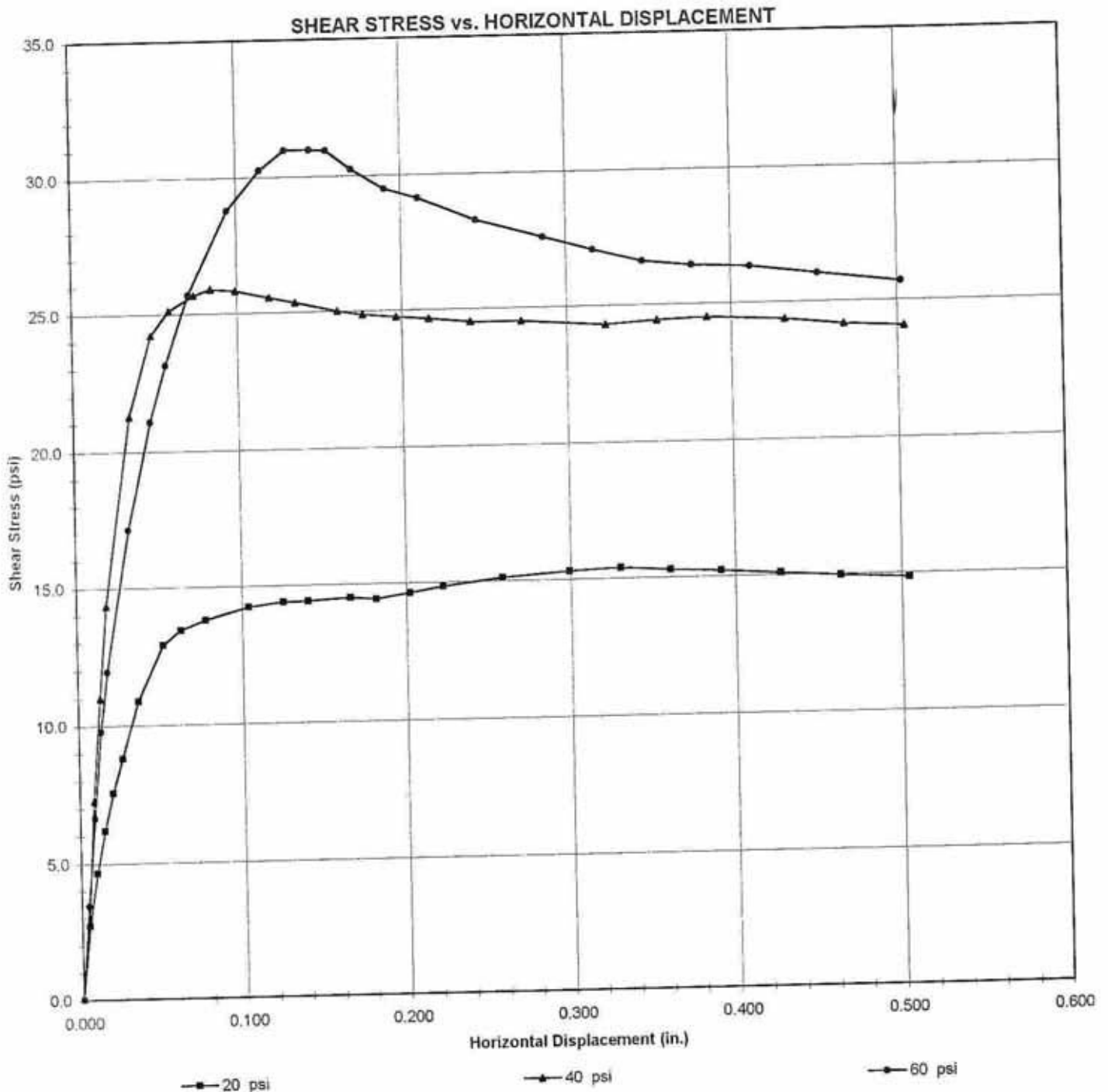
Note: Graph not to scale

Tested By TM Date 2/28/06 Approved By DB Date 2/28/06

DIRECT SHEAR
ASTM D 3080-04 (SOP-S21)

Client	PAUL C. RIZZO & ASSOC.	Boring No.	TS-SOIL-02
Client Reference	TAUM SAUK 06-3551	Depth (in)	7-12
Project No.	2006-060-01	Sample No.	S-2
Lab ID	2006-060-01-69	Visual Description	BROWN AND REDDISH GRAY MOTTLED CLAY

Sample Conditions: UNDISTURBED, INUNDATED AND DOUBLE DRAINED



Tested By TM Date 2/28/06 Approved By DS Date 2/28/06

DIRECT SHEAR
ASTM D 3080-04 (SOP-S21)

Client	PAUL C. RIZZO & ASSOC.	Boring No.	TS-SOIL-02
Client Reference	TAUM SAUK 06-3551	Depth (in)	7-12
Project No.	2006-060-01	Sample No.	S-2
Lab ID	2006-060-01-69	Visual Description	BROWN AND REDDISH GRAY MOTTLED CLAY

Sample Conditions: UNDISTURBED, INUNDATED AND DOUBLE DRAINED

Machine ID #	G 783	SHEAR BOX DATA	
Wt. of Wet Specimen & Ring (gm)	605.83	Specific Gravity (Assumed)	2.70
Weight of Ring (gm)	457.26	Volume of Solids (cc)	43.2
Weight of Wet Specimen (gm)	148.57	Initial Consolidation Dial Reading (in.)	0.0
Initial Specimen Height (in)	1	Final Consolidation Dial Reading (in.)	0.0266
Specimen Diameter (in)	2.5	Corrected Final Cons. Reading (in.)	0.0208
Wet Density (pcf)	115.3	Void Ratio Before Consolidation	0.86
Dry Density (pcf)	90.5	Void Ratio After Consolidation	0.82

<u>Moisture Content</u>	<u>Before Test</u>	<u>After Test</u>	<u>Testing Parameters</u>
Tare ID	1399	D-1	
Wt. Wet Soil & Tare (gm)	165.81	183.64	Normal Stress (psi) 20
Wt. Dry Soil & Tare (gm)	138.38	148.06	
Wt. Tare (gm)	38.19	34.68	Strain Rate (in/min) 0.00144
Wt. of Water (gm)	27.43	35.58	
Wt. of Dry Soil (gm)	100.19	113.38	Machine Deflection (in.) 0.0058
Moisture Content (%)	27.4	31.4	

Horizontal Displacement (in)	Shear Force (lbs)	Shear Stress (psi)	Vertical Dial Reading (in)	Vertical Displacement (+)incr, (-)decr (in)	Shear To Normal Ratio
0.000	0.0	0.00	0.0000	0.0000	0.00
0.005	13.3	2.72	-0.0002	0.0002	0.14
0.010	22.7	4.63	-0.0002	0.0002	0.23
0.015	30.3	6.18	0.0003	-0.0003	0.31
0.020	37.0	7.53	0.0005	-0.0005	0.38
0.026	43.2	8.80	0.0008	-0.0008	0.44
0.036	53.4	10.89	0.0012	-0.0012	0.54
0.052	63.3	12.89	0.0016	-0.0016	0.64
0.063	65.9	13.42	0.0019	-0.0019	0.67
0.078	67.6	13.78	0.0021	-0.0021	0.69
0.104	69.8	14.22	0.0023	-0.0023	0.71
0.125	70.7	14.40	0.0026	-0.0026	0.72
0.140	70.7	14.41	0.0031	-0.0031	0.72
0.166	71.1	14.49	0.0034	-0.0034	0.72
0.182	70.8	14.42	0.0034	-0.0034	0.72
0.202	71.8	14.62	0.0033	-0.0033	0.73
0.223	72.8	14.83	0.0034	-0.0034	0.74
0.259	74.2	15.12	0.0034	-0.0034	0.76
0.299	75.0	15.29	0.0034	-0.0034	0.76
0.331	75.5	15.37	0.0033	-0.0033	0.77
0.361	75.0	15.27	0.0035	-0.0035	0.76
0.391	74.6	15.20	0.0034	-0.0034	0.76
0.427	74.0	15.07	0.0033	-0.0033	0.75
0.463	73.4	14.95	0.0032	-0.0032	0.75
0.505	72.9	14.85	0.0031	-0.0031	0.74

Tested By TM Date 2/24/06 Input Checked By C-U Date 2-28-06

DIRECT SHEAR
ASTM D 3080-04 (SOP-S21)

Client	PAUL C. RIZZO & ASSOC.	Boring No.	TS-SOIL-02
Client Reference	TAUM SAUK 06-3551	Depth (in)	7-12
Project No.	2006-060-01	Sample No.	S-2
Lab ID	2006-060-01-69	Visual Description	BROWN AND REDDISH GRAY MOTTLED CLAY

Sample Conditions: UNDISTURBED, INUNDATED AND DOUBLE DRAINED

Machine ID #	G 783	SHEAR BOX DATA	
Wt. of Wet Specimen & Ring (gm)	348.4	Specific Gravity (Assumed)	2.70
Weight of Ring (gm)	203.55	Volume of Solids (cc)	42.0
Weight of Wet Specimen (gm)	144.85	Initial Consolidation Dial Reading (in.)	0.0
Initial Specimen Height (in)	1	Final Consolidation Dial Reading (in.)	0.0334
Specimen Diameter (in)	2.5	Corrected Final Cons. Reading (in.)	0.0260
Wet Density (pcf)	112.4	Void Ratio Before Consolidation	0.92
Dry Density (pcf)	87.9	Void Ratio After Consolidation	0.87

Moisture Content	Before Test	After Test	Testing Parameters	
Tare ID	D-3	T-16	Normal Stress (psi)	40
Wt. Wet Soil & Tare (gm)	215.14	236.48		
Wt. Dry Soil & Tare (gm)	176.12	201.92	Strain Rate (in/min)	0.00144
Wt. Tare (gm)	36.06	92.68		
Wt. of Water (gm)	39.02	34.56	Machine Deflection (in.)	0.0074
Wt. of Dry Soil (gm)	140.06	109.24		
Moisture Content (%)	27.9	31.6		

Horizontal Displacement (in)	Shear Force (lbs)	Shear Stress (psi)	Vertical Dial Reading (in)	Vertical Displacement (+)incr, (-)decr (in)	Shear To Normal Ratio
0.000	0.0	0.00	0.0000	0.0000	0.00
0.004	13.6	2.78	0.0003	-0.0003	0.07
0.008	35.7	7.27	0.0003	-0.0003	0.18
0.013	53.9	10.98	0.0001	-0.0001	0.27
0.018	70.4	14.33	0.0001	-0.0001	0.36
0.033	104.3	21.26	-0.0001	0.0001	0.53
0.048	119.0	24.23	0.0000	0.0000	0.61
0.059	123.3	25.11	-0.0002	0.0002	0.63
0.074	126.0	25.67	0.0007	-0.0007	0.64
0.084	127.0	25.87	0.0012	-0.0012	0.65
0.099	126.7	25.80	0.0018	-0.0018	0.65
0.119	125.3	25.53	0.0023	-0.0023	0.64
0.135	124.4	25.34	0.0026	-0.0026	0.63
0.161	122.7	25.00	0.0030	-0.0030	0.63
0.176	122.0	24.85	0.0032	-0.0032	0.62
0.197	121.5	24.75	0.0034	-0.0034	0.62
0.216	121.0	24.66	0.0038	-0.0038	0.62
0.242	120.3	24.52	0.0042	-0.0042	0.61
0.273	120.3	24.50	0.0042	-0.0042	0.61
0.324	119.3	24.30	0.0045	-0.0045	0.61
0.355	119.9	24.43	0.0046	-0.0046	0.61
0.386	120.2	24.49	0.0044	-0.0044	0.61
0.432	119.7	24.38	0.0059	-0.0059	0.61
0.468	118.6	24.16	0.0062	-0.0062	0.60
0.504	118.0	24.05	0.0062	-0.0062	0.60

Tested By TM Date 2/27/06 Input Checked By GU Date 2-28-06

DIRECT SHEAR
ASTM D 3080-04 (SOP-S21)

Client	PAUL C. RIZZO & ASSOC.	Boring No.	TS-SOIL-02
Client Reference	TAUM SAUK 06-3551	Depth (in)	7-12
Project No.	2006-060-01	Sample No.	S-2
Lab ID	2006-060-01-69	Visual Description	BROWN AND REDDISH GRAY MOTTLED CLAY

Sample Conditions: **UNDISTURBED, INUNDATED AND DOUBLE DRAINED**

Machine ID # **G 783** **SHEAR BOX DATA**

Wt. of Wet Specimen & Ring(gm)	601.13	Specific Gravity (Assumed)	2.70
Weight of Ring (gm)	457.26	Volume of Solids(cc)	41.6
Weight of Wet Specimen (gm)	143.87	Initial Consolidation Dial Reading (in.)	0.0
Initial Specimen Height (in)	1	Final Consolidation Dial Reading (in.)	0.0391
Specimen Diameter (in)	2.5	Corrected Final Cons. Reading (in.)	0.0303
Wet Density (pcf)	111.7	Void Ratio Before Consolidation	0.93
Dry Density (pcf)	87.1	Void Ratio After Consolidation	0.88

Moisture Content	Before Test	After Test	Testing Parameters
Tare ID	1399	D-7	Normal Stress(psi) 60
Wt. Wet Soil & Tare (gm)	140.74	185.75	
Wt. Dry Soil & Tare (gm)	118.20	152.19	Strain Rate(in/min) 0.00144
Wt. Tare (gm)	38.18	42.24	
Wt. of Water (gm)	22.54	33.56	Machine Deflection (in.) 0.0088
Wt. of Dry Soil (gm)	80.02	109.95	
Moisture Content (%)	28.2	30.5	

Horizontal Displacement (in)	Shear Force (lbs)	Shear Stress (psi)	Vertical Dial Reading (in)	Vertical Displacement (+)incr.(-)decr (in)	Shear To Normal Ratio
0.000	0.0	0.00	0.0000	0.0000	0.00
0.004	17.0	3.46	0.0001	-0.0001	0.06
0.009	32.6	6.63	0.0001	-0.0001	0.11
0.013	48.0	9.78	0.0001	-0.0001	0.16
0.018	58.7	11.95	0.0001	-0.0001	0.20
0.032	84.0	17.12	0.0030	-0.0030	0.29
0.046	103.4	21.06	0.0062	-0.0062	0.35
0.056	113.6	23.14	0.0081	-0.0081	0.39
0.070	126.1	25.69	0.0105	-0.0105	0.43
0.095	141.4	28.80	0.0149	-0.0149	0.48
0.115	148.5	30.25	0.0170	-0.0170	0.50
0.130	152.0	30.97	0.0184	-0.0184	0.52
0.145	152.0	30.97	0.0195	-0.0195	0.52
0.155	151.8	30.93	0.0199	-0.0199	0.52
0.170	148.4	30.23	0.0203	-0.0203	0.50
0.190	144.8	29.50	0.0208	-0.0208	0.49
0.211	143.0	29.13	0.0212	-0.0212	0.49
0.246	138.8	28.28	0.0217	-0.0217	0.47
0.286	135.4	27.58	0.0222	-0.0222	0.46
0.317	132.9	27.07	0.0223	-0.0223	0.45
0.347	130.6	26.60	0.0225	-0.0225	0.44
0.377	129.7	26.42	0.0226	-0.0226	0.44
0.412	129.3	26.33	0.0227	-0.0227	0.44
0.452	127.8	26.03	0.0228	-0.0228	0.43
0.503	126.1	25.69	0.0229	-0.0229	0.43

Tested By **TM** Date **2/23/06** Input Checked By **GU** Date **2-28-06**

PHOTOGRAPH

Client
Client Project
Project No.
Lab ID

PAUL C. RIZZO & ASSOCIATES, INC.
TAUM SAUK 06-3551
2006-060-01
2006-060-01-70

Boring No.. TS-SOIL-02
Depth (ft.) 12-19
Sample No. S-3

SAMPLE: AFTER CU



PHOTOGRAPH

Client
Client Project
Project No.
Lab ID

PAUL C. RIZZO & ASSOCIATES, INC.
TAUM SAUK 06-3551
2006-060-01
2006-060-01-70

Boring No.. TS-SOIL-02
Depth (ft.) 12-19
Sample No. S-3

SAMPLE: AFTER CU



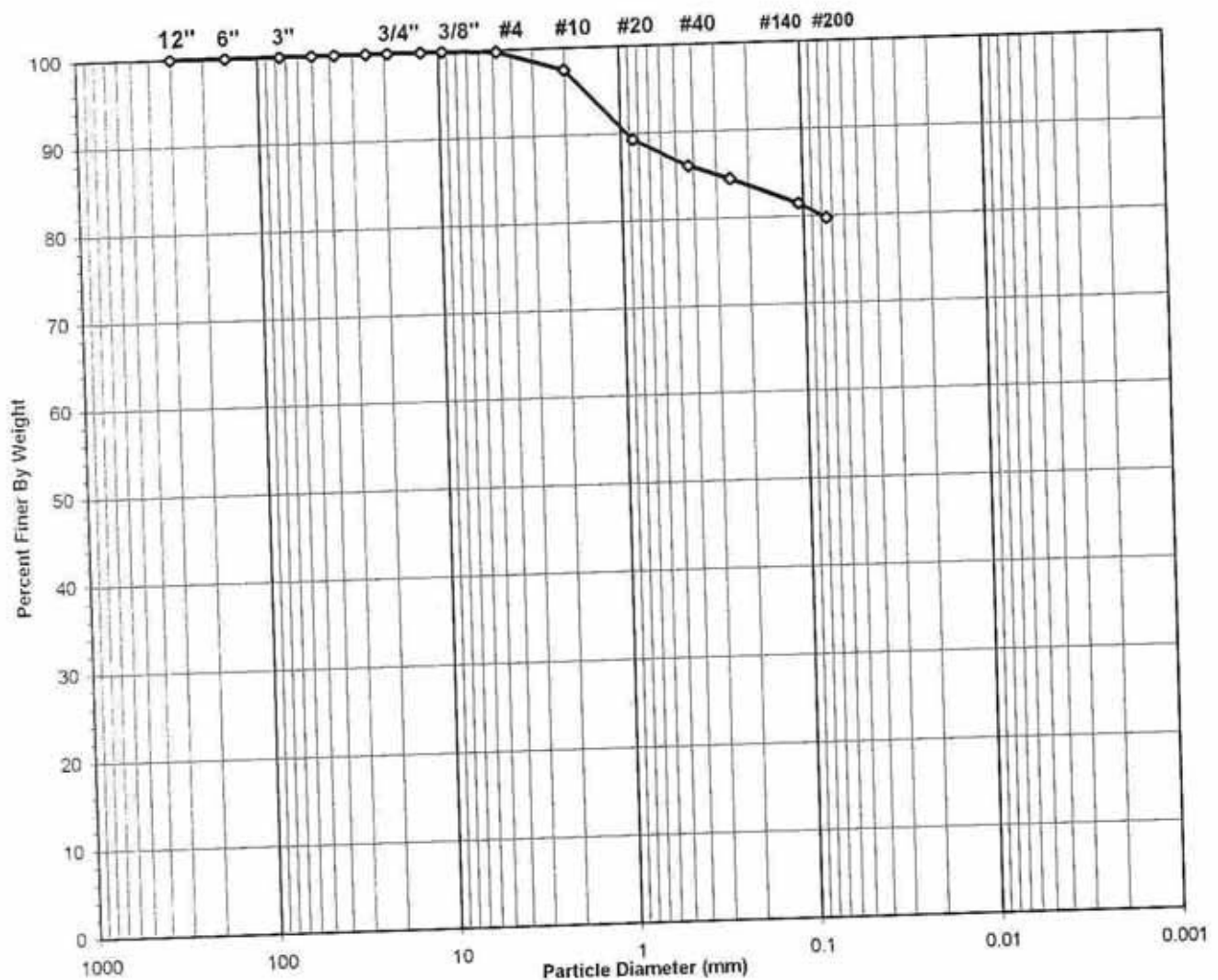
SIEVE ANALYSIS
ASTM D 422-63/AASHTO T88-00 (SOP-S3)

Client: PAUL C. RIZZO
Client Reference: TAUM SAUK 06-3551
Project No.: 2006-060-01
Lab ID: 2006-060-01-70

Boring No.:
Depth (in):
Sample No.:
Soil Color:

TS-SOIL-02
12-19
S-3
REDDISH BROWN

USCS	SIEVE ANALYSIS		HYDROMETER
	gravel	sand	silt and clay



USCS Symbol: CH, TESTED

USCS Classification: FAT CLAY WITH SAND

Tested By: JP

Date: 2/27/06

Checked By: *KB*

Date: 3-1-06

WASH SIEVE ANALYSIS

ASTM D 422-63/AASHTO T88-00 (SOP-S3)

Client **PAUL C. RIZZO**
Client Reference **TAUM SAUK 06-3551**
Project No. **2006-060-01**
Lab ID **2006-060-01-70**

Boring No. **TS-SOIL-02**
Depth (in) **12-19**
Sample No. **S-3**
Soil Color **REDDISH BROWN**

Moisture Content of Passing 3/4" Material		Water Content of Retained 3/4" Material	
Tare No.	685	Tare No.	NA
Wgt. Tare + Wet Specimen (gm)	790.40	Wgt. Tare + Wet Specimen (gm)	NA
Wgt. Tare + Dry Specimen (gm)	669.10	Wgt. Tare + Dry Specimen (gm)	NA
Weight of Tare (gm)	98.37	Weight of Tare (gm)	NA
Weight of Water (gm)	121.30	Weight of Water (gm)	NA
Weight of Dry Soil (gm)	570.73	Weight of Dry Soil (gm)	NA
Moisture Content (%)	21.3	Moisture Content (%)	NA

Wet Weight - 3/4" Sample (gm)	NA	Weight of the Dry Specimen (gm)	570.73
Dry Weight - 3/4" Sample (gm)	115.7	Weight of minus #200 material (gm)	454.99
Wet Weight + 3/4" Sample (gm)	NA	Weight of plus #200 material (gm)	115.74
Dry Weight + 3/4" Sample (gm)	0.00		
Total Dry Weight Sample (gm)	NA		

Sieve Size	Sieve Opening (mm)	Wgt. of Soil Retained (gm)	Percent Retained (%)	Accumulated Percent Retained (%)	Percent Finer (%)	Accumulated Percent Finer (%)
12"	300	0.00	0.00	0.00	100.00	100.00
6"	150	0.00	0.00	0.00	100.00	100.00
3"	75	0.00	0.00	0.00	100.00	100.00
2"	50	0.00	0.00	0.00	100.00	100.00
1 1/2"	37.5	0.00	0.00	0.00	100.00	100.00
1"	25.0	0.00	0.00	0.00	100.00	100.00
3/4"	19.0	0.00	0.00	0.00	100.00	100.00
1/2"	12.50	0.00	0.00	0.00	100.00	100.00
3/8"	9.50	0.00	0.00	0.00	100.00	100.00
#4	4.75	1.12	0.20	0.20	99.80	99.80
#10	2.00	13.41	2.35	2.55	97.45	97.45
#20	0.850	46.54	8.15	10.70	89.30	89.30
#40	0.425	18.27	3.20	13.90	86.10	86.10
#60	0.250	8.95	1.57	15.47	84.53	84.53
#140	0.106	17.54	3.07	18.54	81.46	81.46
#200	0.075	9.91	1.74	20.28	79.72	79.72
Pan	-	454.99	79.72	100.00	-	-

Tested By **JP**

Date **2/27/06**

Checked By **YKB**

Date **3-1-06**

ATTERBERG LIMITS

ASTM D 4318-98 / AASHTO T89 (SOP - S4A)

Client **PAUL C. RIZZO**
Client Reference **TAUM SAUK 06-3551**
Project No. **2006-060-01**
Lab ID **2006-060-01-70**

Boring No. **TS-SOIL-02**
Depth (in) **12-19**
Sample No. **S-3**
Soil Description **REDDISH BROWN FAT CLAY**
(Minus No. 40 sieve material, Airdried)

Note: The USCS symbol used with this test refers only to the minus No. 40 sieve material. See the "Sieve and Hydrometer Analysis" graph page for the complete material description.

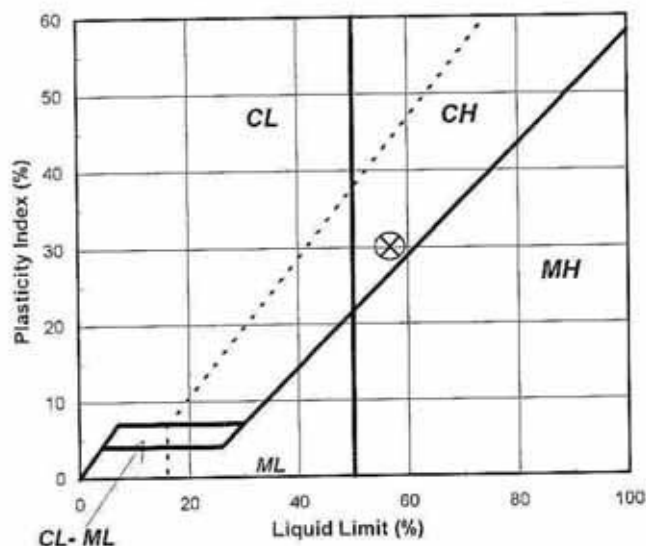
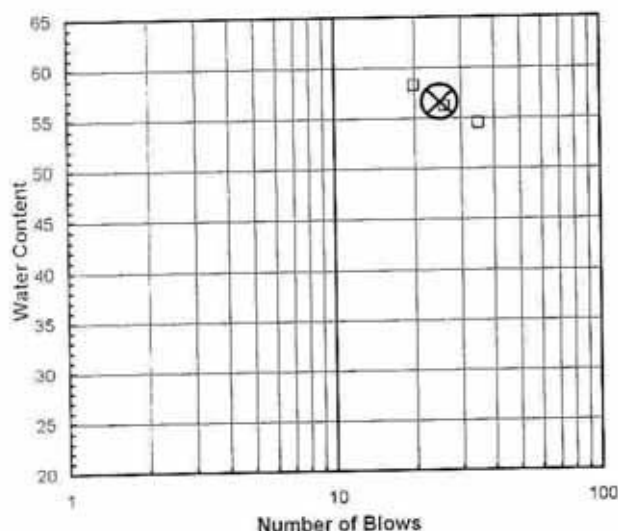
Liquid Limit Test	1	2	3	MULTIPOINT
Tare Number	19	21	22	
Wt. of Tare & WS (gm)	40.14	40.95	40.97	
Wt. of Tare & DS (gm)	32.86	32.41	32.31	
Wt. of Tare (gm)	19.50	17.21	17.44	
Wt. of Water (gm)	7.3	8.5	8.7	
Wt. of DS (gm)	13.4	15.2	14.9	
Moisture Content (%)	54.5	56.2	58.2	
Number of Blows	35	26	20	

Plastic Limit Test	1	2	Range	Test Results	
Tare Number	27	38		Liquid Limit (%)	57
Wt. of Tare & WS (gm)	26.55	24.38		Plastic Limit (%)	27
Wt. of Tare & DS (gm)	25.28	23.11		Plasticity Index (%)	30
Wt. of Tare (gm)	20.49	18.34		USCS Symbol	CH
Wt. of Water (gm)	1.3	1.3			
Wt. of DS (gm)	4.8	4.8			
Moisture Content (%)	26.5	26.6	-0.1		

Note: The acceptable range of the two Moisture contents is ± 2.6

Flow Curve

Plasticity Chart



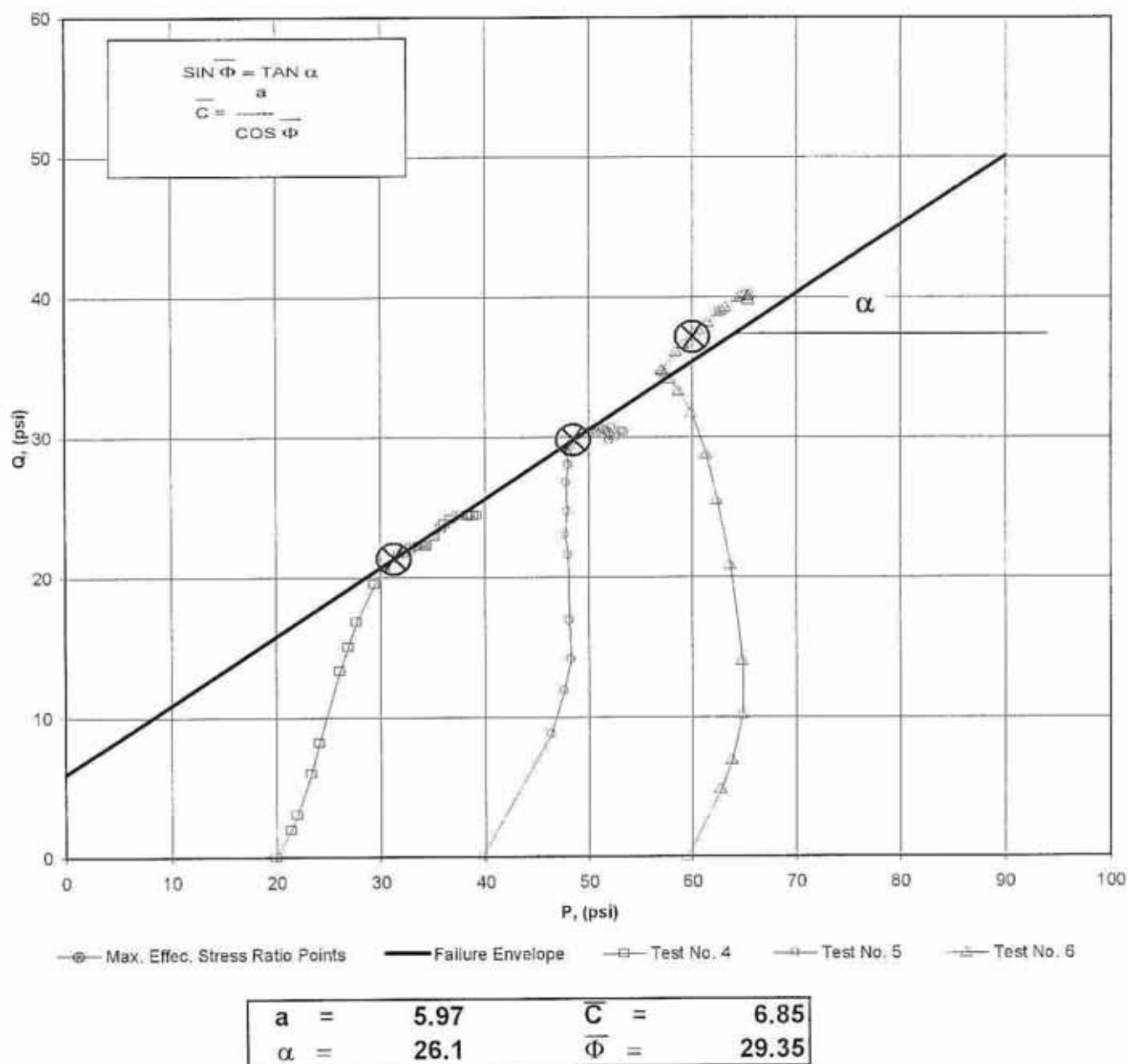
Tested By **BS** Date **2/28/06** Checked By **KPB** Date **3-1-06**
page 1 of 1 DCN: CT-S4B DATE: 10/8/01 REVISION: 2

C:\MSOFFICE\Excel\PrintQ\U399.xls\Sheet1

**CONSOLIDATED UNDRAINED TRIAXIAL TEST
WITH PORE PRESSURE READINGS
ASTM D4767-95 / AASHTO T297-94 (SOP-S28)**

Client	PAUL C. RIZZO	Boring No.	TS-SOIL-02
Client Reference	TAUM SAUK 06-3551	Depth(in.)	12-19
Project No.	2006-060-01	Sample No.	S-3
Lab ID	2006-060-01-70		

Consolidated Undrained Triaxial Test with Pore Pressure



Tested By JCM Date 02/23/06 Approved By DB Date 3/2/06

**CONSOLIDATED UNDRAINED TRIAXIAL TEST
WITH PORE PRESSURE READINGS
ASTM D4767-95 / AASHTO T297-94 (SOP-S28)**

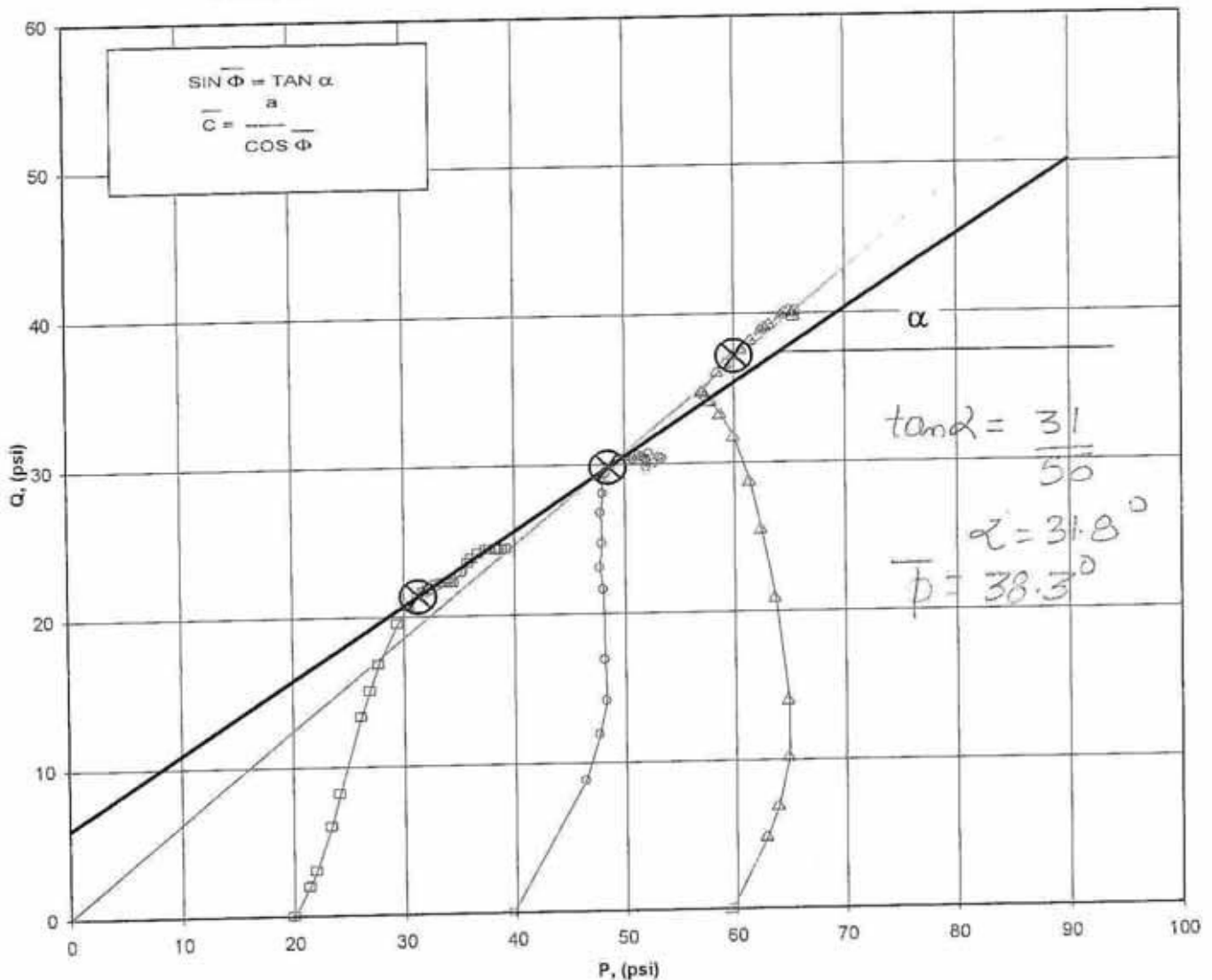
Client
Client Reference
Project No.
Lab ID

PAUL C. RIZZO
TAUM SAUK 06-3551
2006-060-01
2006-060-01-70

Boring No.
Depth(in.)
Sample No.

TS-SOIL-02
12-19
S-3

Consolidated Undrained Triaxial Test with Pore Pressure



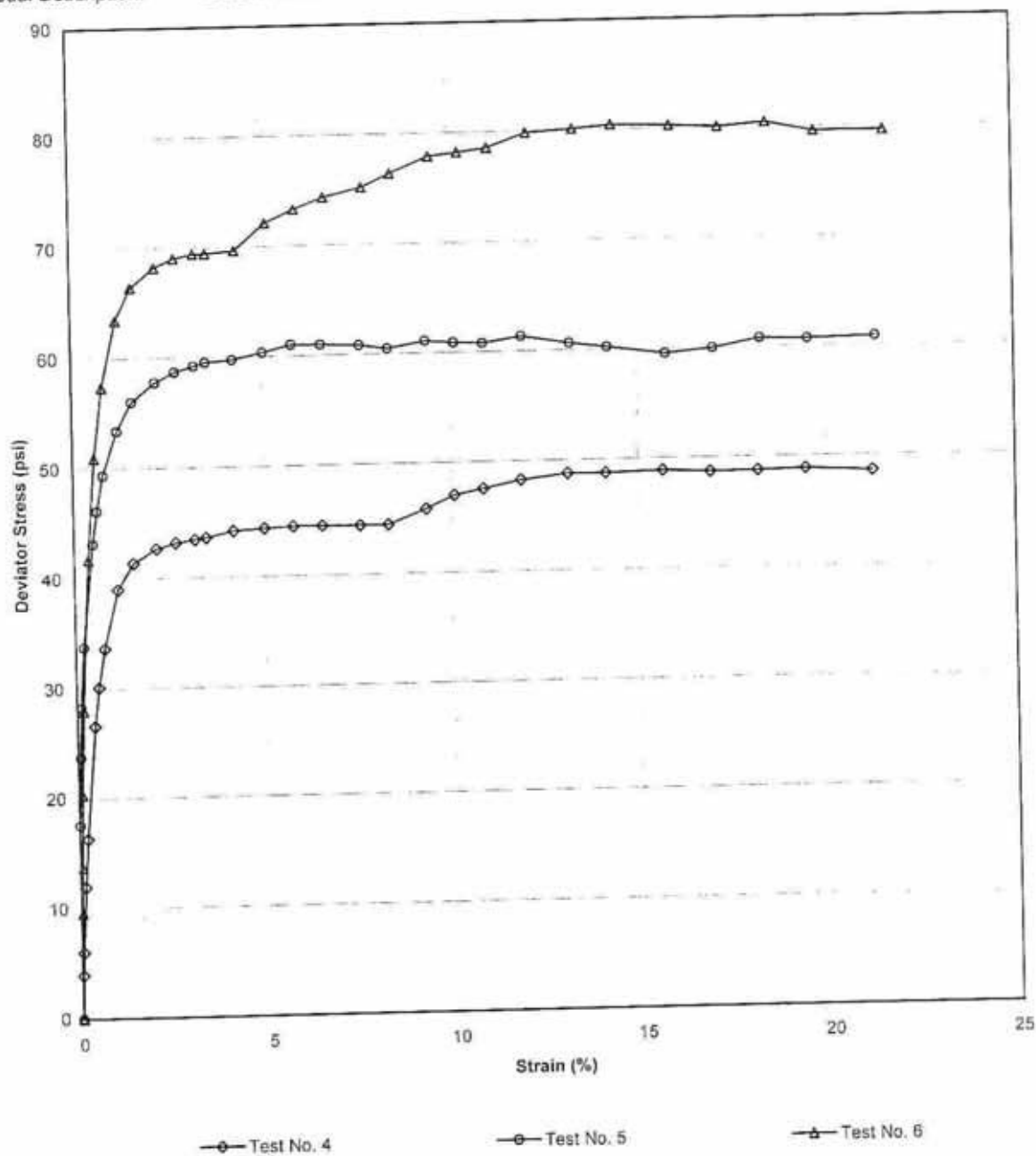
—●— Max. Effec. Stress Ratio Points — Failure Envelope —□— Test No. 4 —○— Test No. 5 —△— Test No. 6

a	$=$	5.97	$\bar{c}$	$=$	6.85
α	$=$	26.1	$\bar{\Phi}$	$=$	29.35

Tested By JCM Date 02/23/06 Approved By DB Date 3/2/06

**CONSOLIDATED UNDRAINED TRIAXIAL TEST
WITH PORE PRESSURE READINGS
ASTM D4767-95 / AASHTO T297-94 (SOP-S28)**

Client:	PAUL C. RIZZO	Boring No.	TS-SOIL-02
Client Reference	TAUM SAUK 06-3551	Depth(in.)	12-19
Project No.	2006-060-01	Sample No.	S-3
Lab ID	2006-060-01-70		
Visual Description:	BROWN & GRAY MOTTLED CLAY (UNDISTURBED)		



Tested By JCM Date 02/23/06 Approved By DB Date 3/2/06
page 2 of 8

**CONSOLIDATED UNDRAINED TRIAXIAL TEST
WITH PORE PRESSURE READINGS**
ASTM D4767-95 / AASHTO T297-94 (SOP-S28)



Client	PAUL C. RIZZO	Boring No.	TS-SOIL-02
Client Reference	TAUM SAUK 06-3551	Depth(in.)	12-19
Project No.	2006-060-01	Sample No.	S-3
Lab ID	2006-060-01-70		

Visual Description: BROWN & GRAY MOTTLED CLAY (UNDISTURBED)

Stage No.	1
Test No	4

INITIAL SAMPLE DIMENSIONS (in)

Length 1	2.988	Diameter 1	1.461
Length 2	2.991	Diameter 2	1.402
Length 3	2.966	Diameter 3	1.403
Avg Leng.=	2.982	Avg. Diam.=	1.422

PRESSURES (psi)

Cell Pressure(psi)	55.4
Back Pressure(psi)	35.4
Eff. Cons. Pressure(psi)	20.0
Pore Pressure	
Response (%)	99

VOLUME CHANGE

Initial Burette Reading (ml)	24.0
Final Burette Reading (ml)	22.4
Final Change (ml)	1.6

MAXIMUM OBLIQUITY POINTS

$\bar{P}$	=	31.35
Q	=	21.34

Initial Dial Reading (D.R.), mils	83
D.R. After Saturation, mils	94
D.R. After Consolidation, mils	108

LOAD (LBS)	DEFORMATION (INCHES)	PORE PRESSURE (PSI)
12.1	0.000	35.4
18.2	0.001	35.9
21.5	0.001	36.4
30.7	0.004	38.0
37.5	0.006	39.4
53.6	0.014	42.6
59.1	0.017	43.5
64.7	0.023	44.5
73.3	0.034	45.5
77.3	0.046	45.6
79.7	0.064	45.4
80.9	0.079	45.2
81.7	0.094	44.9
82.2	0.103	44.8
83.6	0.124	44.5
84.5	0.148	44.2
85.3	0.171	43.9
85.9	0.194	43.7
86.7	0.223	43.4
87.3	0.246	43.2
90.4	0.276	43.1
93.2	0.298	43.1
94.8	0.321	43.0
97.0	0.351	42.8
99.2	0.388	42.3
100.1	0.418	41.9
102.0	0.463	41.4
103.0	0.500	41.1
104.5	0.538	40.8
106.1	0.575	40.6
107.7	0.628	40.2

Tested By JCM Date 02/23/06 Input Checked By *YKB* Date *3-2-06*

**CONSOLIDATED UNDRAINED TRIAXIAL TEST
WITH PORE PRESSURE READINGS**
ASTM D4767-95 / AASHTO T297-94 (SOP-S28)



Client	PAUL C. RIZZO	Boring No.	TS-SOIL-02
Client Reference	TAUM SAUK 06-3551	Depth(in.)	12-19
Project No.	2006-060-01	Sample No.	S-3
Lab ID	2006-060-01-70		

Visual Description: BROWN & GRAY MOTTLED CLAY (UNDISTURBED)

Effective Confining Pressure (psi)	20.0	Stage No.	1
		Test No	4

INITIAL DIMENSIONS

Initial Sample Length (in.)	2.98
Initial Sample Diameter (in.)	1.42
Initial Sample Area (in ²)	1.59
Initial Sample Volume (in ³)	4.74

VOLUME CHANGE

Volume After Consolidation (in ³)	4.59
Length After Consolidation (in)	2.96
Area After Consolidation (in ²)	1.551

Strain (%)	Deviation Stress	ΔU	$\bar{\sigma}_1$	$\bar{\sigma}_3$	Effective Principle Stress Ratio	A	P	Q
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0.02	3.94	0.55	23.40	19.5	1.203	0.14	21.42	1.97
0.04	6.04	0.97	25.07	19.0	1.317	0.16	22.05	3.02
0.13	11.96	2.58	29.38	17.4	1.687	0.22	23.40	5.98
0.22	16.34	4.03	32.31	16.0	2.023	0.25	24.14	8.17
0.46	26.62	7.16	39.46	12.8	3.073	0.27	26.15	13.31
0.59	30.12	8.13	41.99	11.9	3.538	0.27	26.93	15.06
0.76	33.65	9.11	44.54	10.9	4.090	0.27	27.72	16.83
1.14	39.00	10.05	48.95	9.9	4.921	0.26	29.45	19.50
1.55	41.38	10.21	51.18	9.8	5.225	0.25	30.49	20.69
2.16	42.67	9.99	52.68	10.0	5.264	0.24	31.35	21.34
2.67	43.17	9.75	53.42	10.2	5.212	0.23	31.84	21.59
3.18	43.45	9.52	53.93	10.5	5.148	0.22	32.20	21.73
3.48	43.62	9.38	54.24	10.6	5.109	0.22	32.43	21.81
4.20	44.19	9.09	55.10	10.9	5.050	0.21	33.01	22.09
5.02	44.36	8.80	55.57	11.2	4.960	0.20	33.38	22.18
5.79	44.48	8.54	55.93	11.5	4.883	0.19	33.69	22.24
6.55	44.48	8.31	56.18	11.7	4.804	0.19	33.94	22.24
7.56	44.45	8.00	56.44	12.0	4.705	0.18	34.22	22.22
8.32	44.47	7.80	56.67	12.2	4.644	0.18	34.44	22.24
9.33	45.81	7.68	58.13	12.3	4.718	0.17	35.23	22.90
10.09	47.00	7.65	59.35	12.3	4.807	0.16	35.85	23.50
10.86	47.54	7.57	59.97	12.4	4.824	0.16	36.20	23.77
11.86	48.25	7.35	60.90	12.6	4.816	0.15	36.77	24.13
13.12	48.78	6.90	61.88	13.1	4.723	0.14	37.49	24.39
14.13	48.75	6.53	62.22	13.5	4.619	0.14	37.85	24.38
15.65	48.89	6.04	62.85	14.0	4.502	0.12	38.40	24.44
16.92	48.68	5.74	62.94	14.3	4.415	0.12	38.60	24.34
18.18	48.75	5.45	63.30	14.6	4.350	0.11	38.93	24.38
19.46	48.84	5.17	63.68	14.8	4.292	0.11	39.26	24.42
21.22	48.57	4.79	63.77	15.2	4.194	0.10	39.49	24.28

Tested By JCM Date 02/23/06 Input Checked By *YB* Date 3-2-06

**CONSOLIDATED UNDRAINED TRIAXIAL TEST
WITH PORE PRESSURE READINGS**
ASTM D4767-95 / AASHTO T297-94 (SOP-S28)



Client	PAUL C. RIZZO	Boring No.	TS-SOIL-02
Client Reference	TAUM SAUK 06-3551	Depth(in.)	12-19
Project No.	2006-060-01	Sample No.	S-3
Lab ID	2006-060-01-70		

Visual Description: BROWN & GRAY MOTTLED CLAY (UNDISTURBED)

Stage No.	1
Test No	5

INITIAL SAMPLE DIMENSIONS (in)

Length 1	3.048	Diameter 1	1.380
Length 2	3.052	Diameter 2	1.407
Length 3	3.057	Diameter 3	1.385
Avg Leng. =	3.052	Avg. Diam. =	1.391

PRESSURES (psi)

Cell Pressure(psi)	75.6
Back Pressure(psi)	35.9
Eff. Cons. Pressure(psi)	39.7
Pore Pressure Response (%)	100

VOLUME CHANGE

Initial Burette Reading (ml)	24.0
Final Burette Reading (ml)	21.0
Final Change (ml)	3.0

MAXIMUM OBLIQUITY POINTS

P	=	48.57
Q	=	29.78

Initial Dial Reading (D.R.), mils	54
D.R. After Saturation, mils	65
D.R. After Consolidation, mils	94

LOAD (LBS)	DEFORMATION (INCHES)	PORE PRESSURE (PSI)
13.8	0.000	35.9
39.5	0.001	38.0
48.5	0.002	39.8
55.2	0.003	41.5
63.3	0.006	44.3
77.2	0.015	49.1
81.7	0.019	50.9
86.6	0.024	52.3
92.8	0.035	54.4
97.0	0.048	55.6
100.2	0.066	56.5
102.0	0.082	56.6
103.3	0.097	56.8
104.0	0.106	56.8
105.0	0.128	56.6
106.7	0.152	56.1
108.5	0.175	55.8
109.2	0.198	55.5
110.0	0.229	55.2
110.3	0.252	54.9
112.3	0.282	54.7
112.8	0.305	54.5
113.5	0.328	54.2
115.6	0.359	54.0
115.9	0.398	53.9
116.4	0.428	53.5
117.1	0.475	53.3
119.4	0.513	52.8
122.5	0.551	52.8
124.0	0.589	52.5
126.8	0.643	52.0

Tested By JCM Date 02/23/06 Input Checked By *KPB* Date 3-2-06

**CONSOLIDATED UNDRAINED TRIAXIAL TEST
WITH PORE PRESSURE READINGS
ASTM D4767-95 / AASHTO T297-94 (SOP-S28)**



Client	PAUL C. RIZZO	Boring No.	TS-SOIL-02
Client Reference	TAUM SAUK 06-3551	Depth(in.)	12-19
Project No.	2006-060-01	Sample No.	S-3
Lab ID	2006-060-01-70		

Visual Description: BROWN & GRAY MOTTLED CLAY (UNDISTURBED)

Effective Confining Pressure (psi)	39.7	Stage No.	1
		Test No	5

INITIAL DIMENSIONS

Initial Sample Length (in.)	3.05
Initial Sample Diameter (in.)	1.39
Initial Sample Area (in ²)	1.52
Initial Sample Volume (in ³)	4.64

VOLUME CHANGE

Volume After Consolidation (in ³)	4.40
Length After Consolidation (in)	3.01
Area After Consolidation (in ²)	1.462

Strain (%)	Deviation Stress	ΔU	$\bar{\sigma}_1$	$\bar{\sigma}_3$	Effective Principle Stress Ratio	$\bar{A}$	$\bar{P}$	Q
0.02	17.57	2.12	55.15	37.6	1.468	0.12	46.36	8.79
0.07	23.76	3.93	59.53	35.8	1.664	0.17	47.65	11.88
0.11	28.29	5.57	62.43	34.1	1.829	0.20	48.28	14.15
0.21	33.79	8.44	65.05	31.3	2.081	0.25	48.15	16.89
0.49	43.16	13.25	69.62	26.5	2.632	0.31	48.03	21.58
0.62	46.15	15.01	70.85	24.7	2.869	0.33	47.77	23.08
0.79	49.38	16.42	72.66	23.3	3.122	0.33	47.97	24.69
1.17	53.42	18.54	74.59	21.2	3.524	0.35	47.88	26.71
1.58	56.05	19.68	76.07	20.0	3.800	0.35	48.04	28.03
2.19	57.81	20.59	76.92	19.1	4.025	0.36	48.02	28.90
2.71	58.72	20.69	77.73	19.0	4.089	0.35	48.37	29.36
3.22	59.25	20.88	78.07	18.8	4.147	0.35	48.45	29.62
3.52	59.56	20.91	78.35	18.8	4.170	0.35	48.57	29.78
4.23	59.75	20.68	78.76	19.0	4.141	0.35	48.89	29.87
5.04	60.35	20.25	79.81	19.5	4.102	0.34	49.63	30.18
5.81	61.02	19.88	80.84	19.8	4.079	0.33	50.33	30.51
6.58	60.95	19.58	81.08	20.1	4.029	0.32	50.60	30.48
7.60	60.82	19.31	81.21	20.4	3.983	0.32	50.80	30.41
8.36	60.48	19.05	81.14	20.7	3.928	0.31	50.89	30.24
9.37	61.09	18.82	81.98	20.9	3.926	0.31	51.43	30.55
10.13	60.88	18.57	82.01	21.1	3.881	0.31	51.57	30.44
10.89	60.78	18.31	82.17	21.4	3.842	0.30	51.78	30.39
11.92	61.35	18.11	82.94	21.6	3.841	0.30	52.27	30.67
13.21	60.61	18.02	82.29	21.7	3.796	0.30	51.99	30.31
14.22	60.22	17.64	82.28	22.1	3.730	0.29	52.17	30.11
15.76	59.53	17.41	81.82	22.3	3.670	0.29	52.06	29.77
17.02	59.93	16.94	82.69	22.8	3.633	0.28	52.73	29.97
18.28	60.76	16.88	83.59	22.8	3.662	0.28	53.21	30.38
19.54	60.65	16.57	83.78	23.1	3.622	0.27	53.46	30.32
21.33	60.80	16.09	84.42	23.6	3.575	0.26	54.02	30.40

Tested By JCM Date 02/23/06 Input Checked By *KJB* Date 3-2-06

**CONSOLIDATED UNDRAINED TRIAXIAL TEST
WITH PORE PRESSURE READINGS**
ASTM D4767-95 / AASHTO T297-94 (SOP-S28)

Client	PAUL C. RIZZO	Boring No.	TS-SOIL-02
Client Reference	TAUM SAUK 06-3551	Depth(in.)	12-19
Project No.	2006-060-01	Sample No.	S-3
Lab ID	2006-060-01-70		

Visual Description: BROWN & GRAY MOTTLED CLAY (UNDISTURBED)

Stage No.	1
Test No	6

INITIAL SAMPLE DIMENSIONS (in)

Length 1	3.088	Diameter 1	1.407
Length 2	3.078	Diameter 2	1.385
Length 3	3.075	Diameter 3	1.418
Avg Leng.=	3.080	Avg. Diam.=	1.403

PRESSURES (psi)

Cell Pressure(psi)	95.4
Back Pressure(psi)	35.8
Eff. Cons. Pressure(psi)	59.6
Pore Pressure	
Response (%)	100

VOLUME CHANGE

Initial Burette Reading (ml)	24.0
Final Burette Reading (ml)	20.3
Final Change (ml)	3.7

MAXIMUM OBLIQUITY POINTS

$\bar{P}$	=	60.01
Q	=	37.17

Initial Dial Reading (D.R.), mils	57
D.R. After Saturation, mils	70
D.R. After Consolidation, mils	112

LOAD (LBS)	DEFORMATION (INCHES)	PORE PRESSURE (PSI)
16.0	0.000	35.8
30.2	0.001	37.4
36.3	0.002	38.5
46.1	0.003	40.7
57.5	0.005	44.6
78.0	0.011	52.6
91.9	0.017	58.5
101.7	0.024	62.7
111.0	0.036	67.2
115.9	0.048	69.8
119.3	0.067	71.6
121.1	0.083	72.4
122.2	0.098	72.8
122.6	0.108	73.0
123.7	0.131	73.1
128.5	0.156	72.9
131.3	0.179	72.8
134.0	0.203	72.6
136.6	0.234	72.3
139.6	0.257	72.1
143.4	0.288	71.8
145.0	0.312	71.6
146.7	0.336	71.4
150.5	0.367	70.9
152.9	0.405	70.7
155.0	0.436	70.5
157.3	0.483	70.1
159.2	0.522	70.0
162.0	0.560	69.9
162.8	0.599	69.7
166.2	0.654	69.4

Tested By JCM Date 02/23/06 Input Checked By *KJB* Date 3-2-06

**CONSOLIDATED UNDRAINED TRIAXIAL TEST
WITH PORE PRESSURE READINGS
ASTM D4767-95 / AASHTO T297-94 (SOP-S28)**

Client	PAUL C. RIZZO	Boring No.	TS-SOIL-02
Client Reference	TAUM SAUK 06-3551	Depth(in.)	12-19
Project No.	2006-060-01	Sample No.	S-3
Lab ID	2006-060-01-70		

Visual Description: BROWN & GRAY MOTTLED CLAY (UNDISTURBED)

Effective Confining Pressure (psi)	59.6	Stage No.	1
		Test No	6

INITIAL DIMENSIONS

Initial Sample Length (in.)	3.08
Initial Sample Diameter (in.)	1.40
Initial Sample Area (in ²)	1.55
Initial Sample Volume (in ³)	4.76

VOLUME CHANGE

Volume After Consolidation (in ³)	4.48
Length After Consolidation (in)	3.03
Area After Consolidation (in ²)	1.480

Strain (%)	Deviation Stress	ΔU	$\bar{\sigma}_1$	$\bar{\sigma}_3$	Effective Principle Stress Ratio	$\bar{A}$	$\bar{P}$	Q
0.03	9.59	1.65	67.55	58.0	1.166	0.17	62.75	4.80
0.06	13.74	2.67	70.66	56.9	1.241	0.19	63.80	6.87
0.10	20.31	4.92	74.99	54.7	1.372	0.24	64.84	10.16
0.17	27.99	8.78	78.81	50.8	1.551	0.31	64.81	14.00
0.37	41.73	16.82	84.51	42.8	1.975	0.40	63.65	20.86
0.57	50.96	22.67	87.89	36.9	2.380	0.44	62.41	25.48
0.80	57.42	26.92	90.10	32.7	2.757	0.47	61.39	28.71
1.19	63.45	31.35	91.70	28.2	3.246	0.49	59.97	31.72
1.60	66.43	34.03	91.99	25.6	3.598	0.51	58.78	33.21
2.22	68.22	35.83	91.99	23.8	3.870	0.53	57.88	34.11
2.73	69.04	36.62	92.01	23.0	4.005	0.53	57.49	34.52
3.25	69.39	37.03	91.95	22.6	4.075	0.53	57.26	34.69
3.57	69.43	37.22	91.81	22.4	4.102	0.54	57.10	34.71
4.33	69.64	37.34	91.90	22.3	4.128	0.54	57.08	34.82
5.16	72.10	37.14	94.56	22.5	4.210	0.52	58.51	36.05
5.93	73.29	36.99	95.90	22.6	4.242	0.50	59.25	36.64
6.71	74.34	36.76	97.18	22.8	4.255	0.49	60.01	37.17
7.73	75.17	36.51	98.26	23.1	4.255	0.49	60.68	37.58
8.50	76.39	36.26	99.73	23.3	4.273	0.47	61.53	38.19
9.52	77.86	36.00	101.46	23.6	4.299	0.46	62.53	38.93
10.30	78.17	35.80	101.97	23.8	4.285	0.46	62.88	39.09
11.09	78.52	35.60	102.51	24.0	4.272	0.45	63.26	39.26
12.13	79.85	35.09	104.36	24.5	4.259	0.44	64.43	39.93
13.38	80.12	34.93	104.79	24.7	4.247	0.44	64.73	40.06
14.41	80.39	34.71	105.28	24.9	4.230	0.43	65.09	40.20
15.96	80.25	34.30	105.54	25.3	4.172	0.43	65.42	40.12
17.24	80.07	34.21	105.46	25.4	4.153	0.43	65.43	40.03
18.50	80.40	34.14	105.86	25.5	4.157	0.42	65.66	40.20
19.79	79.55	33.87	105.28	25.7	4.091	0.43	65.50	39.77
21.62	79.56	33.64	105.53	26.0	4.064	0.42	65.74	39.78

Tested By JCM Date 02/23/06 Input Checked By *YKB* Date 3-2-06

CONSOLIDATED UNDRAINED TRIAXIAL TEST WITH PORE PRESSURE READINGS

ASTM D4767-95 / AASHTO T297-94 (SOP-S28)

Client PAUL C. RIZZO
Client Reference TAUM SAUK 06-3551
Project No. 2006-060-01
Lab ID 2006-060-01-70 Specific Gravity (assumed) 2.7

Visual Description: BROWN AND GRAY MOTTLED CLAY (UNDISTURBED)

SAMPLE CONDITION SUMMARY

	TS-SOIL-02	TS-SOIL-02	TS-SOIL-02
Boring No.	12-19	12-19	12-19
Depth (in)	S-3	S-3	S-3
Sample No.			
Test No.	T4	T5	T6
Deformation Rate (in/min)	0.001	0.001	0.001
Back Pressure (psi)	35.4	35.9	35.8
Consolidation Time (days)	1	1	1
Initial State (w%)	30.2	30.2	30.2
Total Unit Weight (pcf)	115.7	113.4	111.8
Dry Unit Weight (pcf)	88.9	87.1	85.9
Final State (w%)	34.7	30.6	30.1
Initial State Void Ratio, e	0.897	0.934	0.963

Tested By JCM Date 02/23/06 Input Checked By KB Date 3-2-06
page 1 of 1 DCN: CT-S28 DATE 8-25-98 REVISION: 1 C:\MSOFFICE\Excel\Printq\0318.xls\Sheet1

SOIL SAMPLE TS-SOIL 03

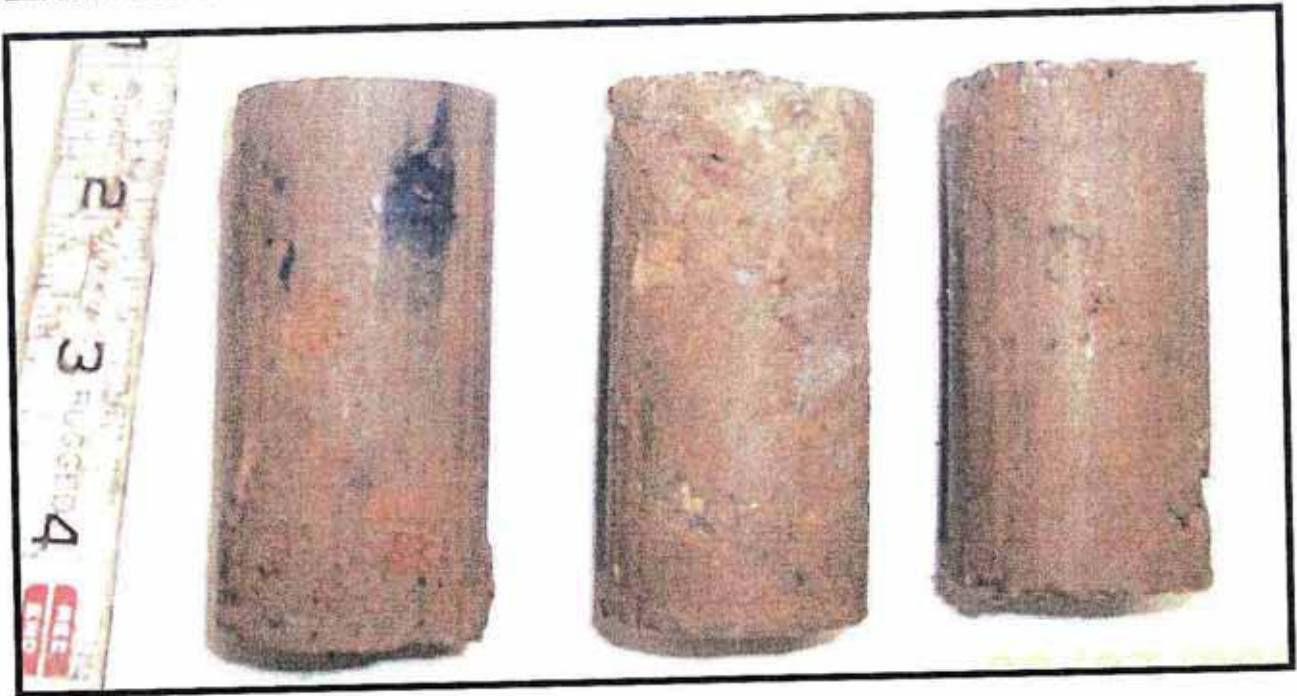
PHOTOGRAPH

Client
Client Project
Project No.
Lab ID

PAUL C. RIZZO & ASSOCIATES, INC.
TAUM SAUK 06-3551
2006-060-01
2006-060-01-72

Boring No.. TS-SOIL-03
Depth (in.) 7-15
Sample No. S-2

SAMPLE: BEFORE CU



PHOTOGRAPH

Client
Client Project
Project No.
Lab ID

PAUL C. RIZZO & ASSOCIATES, INC.
TAUM SAUK 06-3551
2006-060-01
2006-060-01-72

Boring No. TS-SOIL-03
Depth (in.) 7-15
Sample No. S-2

SAMPLE: AFTER CU TEST #7



PHOTOGRAPH

Client	PAUL C. RIZZO & ASSOCIATES, INC.	Boring No..	TS-SOIL-03
Client Project	TAUM SAUK 06-3551	Depth (in.)	7-15
Project No.	2006-060-01	Sample No.	S-2
Lab ID	2006-060-01-72		

SAMPLE: AFTER CU TEST #8



PHOTOGRAPH

Client
Client Project
Project No.
Lab ID

PAUL C. RIZZO & ASSOCIATES, INC.
TAUM SAUK 06-3551
2006-060-01
2006-060-01-72

Boring No.. TS-SOIL-03
Depth (in.) 7-15
Sample No. S-2

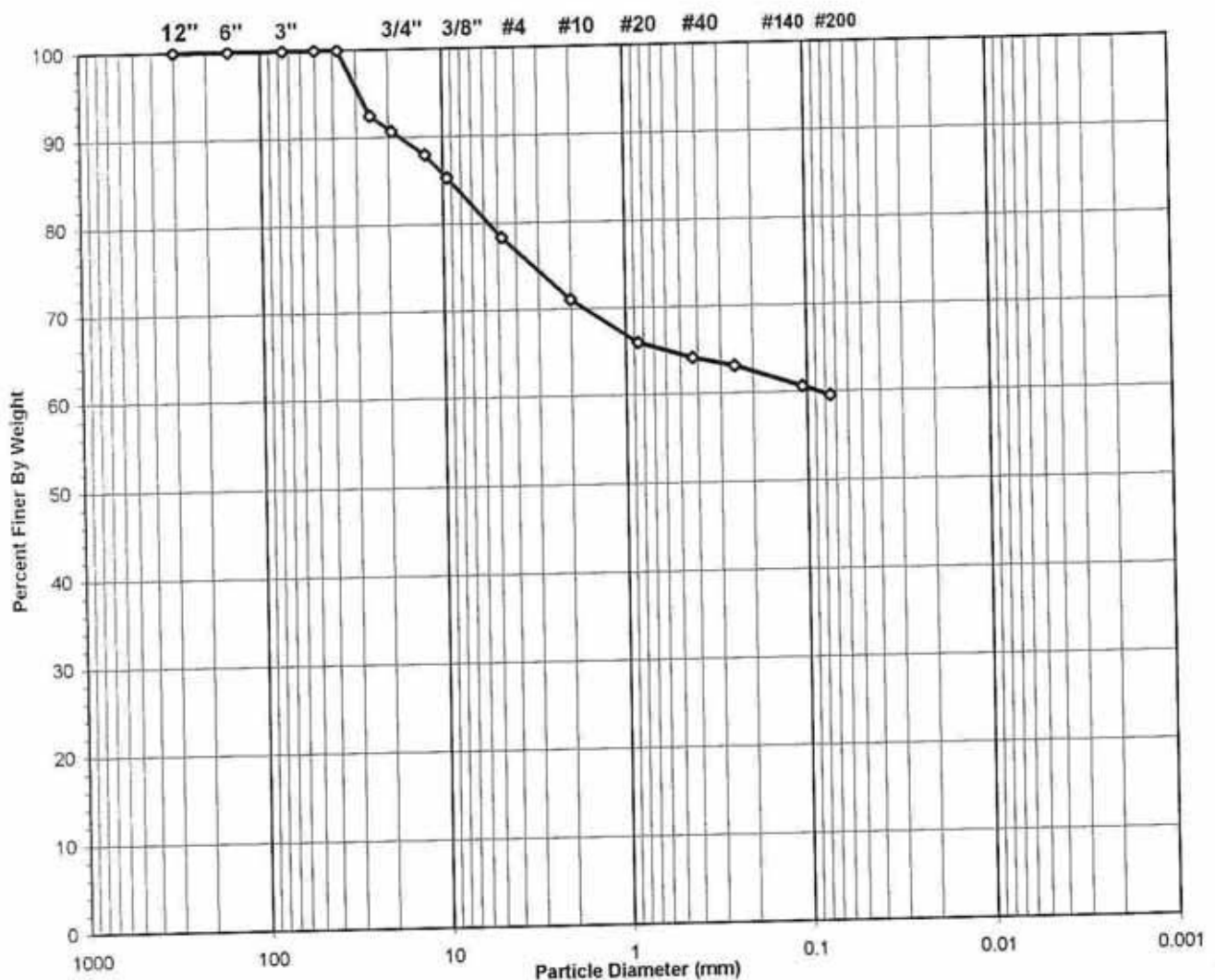
SAMPLE: AFTER CU TEST #9



SIEVE ANALYSIS
ASTM D 422-63/AASHTO T88-00 (SOP-S3)

Client	PAUL C. RIZZO	Boring No.	TS-SOIL-03
Client Reference	TAUM SAUK 06-3551	Depth (in)	7-15
Project No.	2006-060-01	Sample No.	S-2
Lab ID	2006-060-01-72	Soil Color	BROWN

USCS	SIEVE ANALYSIS		HYDROMETER
	gravel	sand	silt and clay



USCS Symbol **CL, TESTED**

USCS Classification **GRAVELLY LEAN CLAY WITH SAND**

Tested By	PC	Date	3/10/06	Checked By	<i>KYB</i>	Date	3-13-06
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page 1 of 2 DCN: CT-S3C DATE 8-25-98 REVISION: 2 C:\MSOFFICE\Excel\PrintQ\U700.xls]Sheet1

WASH SIEVE ANALYSIS

ASTM D 422-63/AASHTO T88-00 (SOP-S3)

Client **PAUL C. RIZZO**
Client Reference **TAUM SAUK 06-3551**
Project No. **2006-060-01**
Lab ID **2006-060-01-72**

Boring No. **TS-SOIL-03**
Depth (in) **7-15**
Sample No. **S-2**
Soil Color **BROWN**

Moisture Content of Passing 3/4" Material		Water Content of Retained 3/4" Material	
Tare No.	653	Tare No.	NA
Wgt. Tare + Wet Specimen (gm)	879.37	Wgt. Tare + Wet Specimen (gm)	NA
Wgt. Tare + Dry Specimen (gm)	763.40	Wgt. Tare + Dry Specimen (gm)	NA
Weight of Tare (gm)	96.56	Weight of Tare (gm)	NA
Weight of Water (gm)	115.97	Weight of Water (gm)	NA
Weight of Dry Soil (gm)	666.84	Weight of Dry Soil (gm)	NA
Moisture Content (%)	17.4	Moisture Content (%)	NA

Wet Weight - 3/4" Sample (gm)	NA	Weight of the Dry Specimen (gm)	666.84
Dry Weight - 3/4" Sample (gm)	207.6	Weight of minus #200 material (gm)	397.05
Wet Weight + 3/4" Sample (gm)	NA	Weight of plus #200 material (gm)	269.79
Dry Weight + 3/4" Sample (gm)	62.16		
Total Dry Weight Sample (gm)	NA		

Sieve Size	Sieve Opening (mm)	Wgt. of Soil Retained (gm)	Percent Retained (%)	Accumulated Percent Retained (%)	Percent Finer (%)	Accumulated Percent Finer (%)
12"	300	0.00	0.00	0.00	100.00	100.00
6"	150	0.00	0.00	0.00	100.00	100.00
3"	75	0.00	0.00	0.00	100.00	100.00
2"	50	0.00	0.00	0.00	100.00	100.00
1 1/2"	37.5	0.00	0.00	0.00	100.00	100.00
1"	25.0	49.97	7.49	7.49	92.51	92.51
3/4"	19.0	12.19	1.83	9.32	90.68	90.68
1/2"	12.50	18.29	2.74	12.06	87.94	87.94
3/8"	9.50	17.80	2.67	14.73	85.27	85.27
#4	4.75	46.54	6.98	21.71	78.29	78.29
#10	2.00	48.37	7.25	28.97	71.03	71.03
#20	0.850	33.92	5.09	34.05	65.95	65.95
#40	0.425	12.41	1.86	35.91	64.09	64.09
#60	0.250	6.94	1.04	36.95	63.05	63.05
#140	0.106	16.09	2.41	39.37	60.63	60.63
#200	0.075	7.27	1.09	40.46	59.54	59.54
Pan	-	397.05	59.54	100.00	-	-

Tested By **PC**

Date **3/10/06**

Checked By **YLB**

Date **3-13-06**

ATTERBERG LIMITS ASTM D 4318-98 / AASHTO T89 (SOP - S4A)

Client	PAUL C. RIZZO	Boring No.	TS-SOIL-03
Client Reference	TAUM SAUK 06-3551	Depth (in)	7-15
Project No.	2006-060-01	Sample No.	S-2
Lab ID	2006-060-01-72	Soil Description	BROWN LEAN CLAY (Minus No. 40 sieve material, Airdried)

Note: The USCS symbol used with this test refers only to the minus No. 40 sieve material. See the "Sieve and Hydrometer Analysis" graph page for the complete material description.

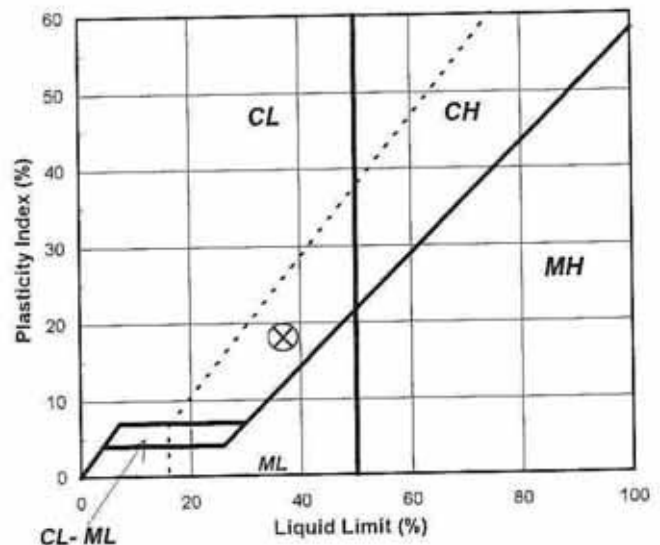
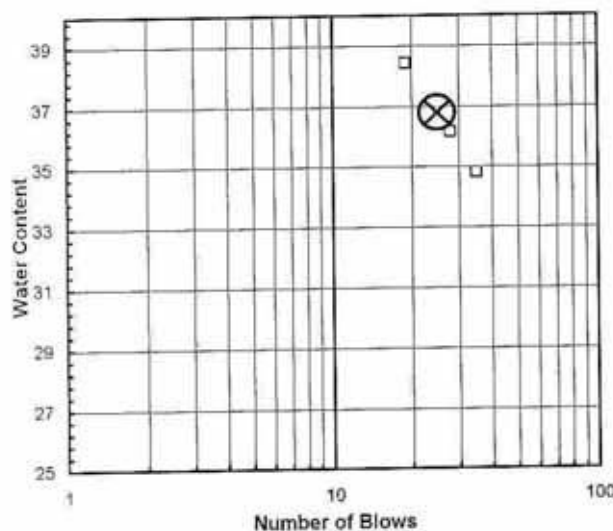
Liquid Limit Test	1	2	3	
Tare Number	3	5	8	MULTIPOINT
Wt. of Tare & WS (gm)	39.83	36.95	41.61	
Wt. of Tare & DS (gm)	33.68	30.85	34.22	
Wt. of Tare (gm)	16.01	13.98	15.00	
Wt. of Water (gm)	6.2	6.1	7.4	
Wt. of DS (gm)	17.7	16.9	19.2	
Moisture Content (%)	34.8	36.2	38.4	
Number of Blows	35	28	19	

Plastic Limit Test	1	2	Range	Test Results
Tare Number	9	40		Liquid Limit (%) 37
Wt. of Tare & WS (gm)	21.91	22.11		Plastic Limit (%) 19
Wt. of Tare & DS (gm)	20.93	21.04		Plasticity Index (%) 18
Wt. of Tare (gm)	15.78	15.54		USCS Symbol CL
Wt. of Water (gm)	1.0	1.1		
Wt. of DS (gm)	5.2	5.5		
Moisture Content (%)	19.0	19.5	-0.4	

Note: The acceptable range of the two Moisture contents is ± 2.6

Flow Curve

Plasticity Chart



Tested By	BS	Date	3/9/06	Checked By	KB	Date	3-13-06
page 1 of 1	DCN:	CT-S4B	DATE:	10/8/01	REVISION:	2	

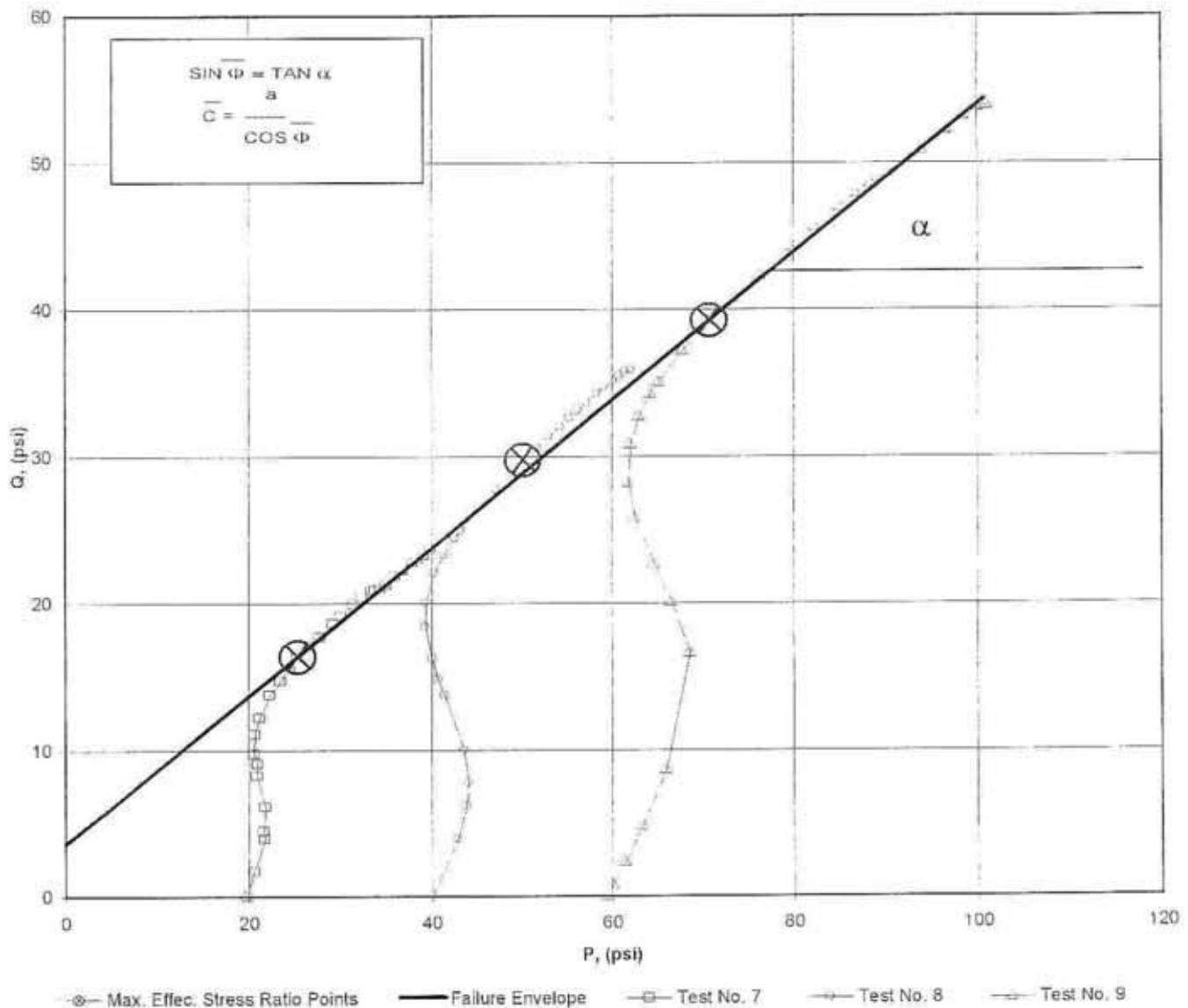
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**CONSOLIDATED UNDRAINED TRIAXIAL TEST
WITH PORE PRESSURE READINGS
ASTM D4767-95 / AASHTO T297-94 (SOP-S28)**

Client: PAUL C. RIZZO
Client Reference: TAUM SAUK 06-3551
Project No.: 2006-060-01
Lab ID: 2006-060-01-72

Boring No.: TS-SOIL-03
Depth(in.): 7-15
Sample No.: S-2

Consolidated Undrained Triaxial Test with Pore Pressure



a	$=$	3.63	C	$=$	4.20
α	$=$	26.7	ϕ	$=$	30.22

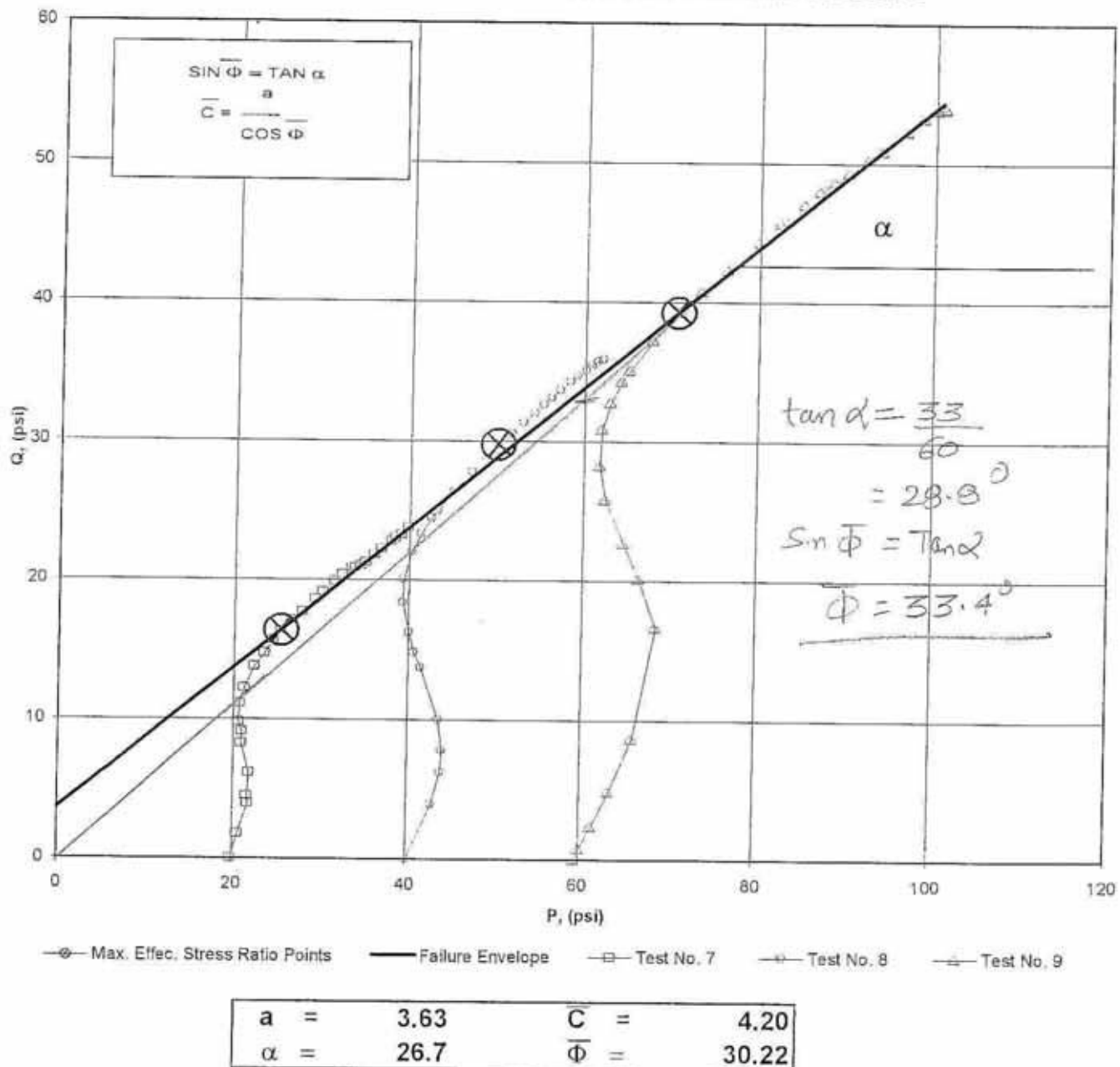
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**CONSOLIDATED UNDRAINED TRIAXIAL TEST
WITH PORE PRESSURE READINGS
ASTM D4767-95 / AASHTO T297-94 (SOP-S28)**

Client: PAUL C. RIZZO
Client Reference: TAUM SAUK 06-3551
Project No.: 2006-060-01
Lab ID: 2006-060-01-72

Boring No.: TS-SOIL-03
Depth (in.): 7-15
Sample No.: S-2

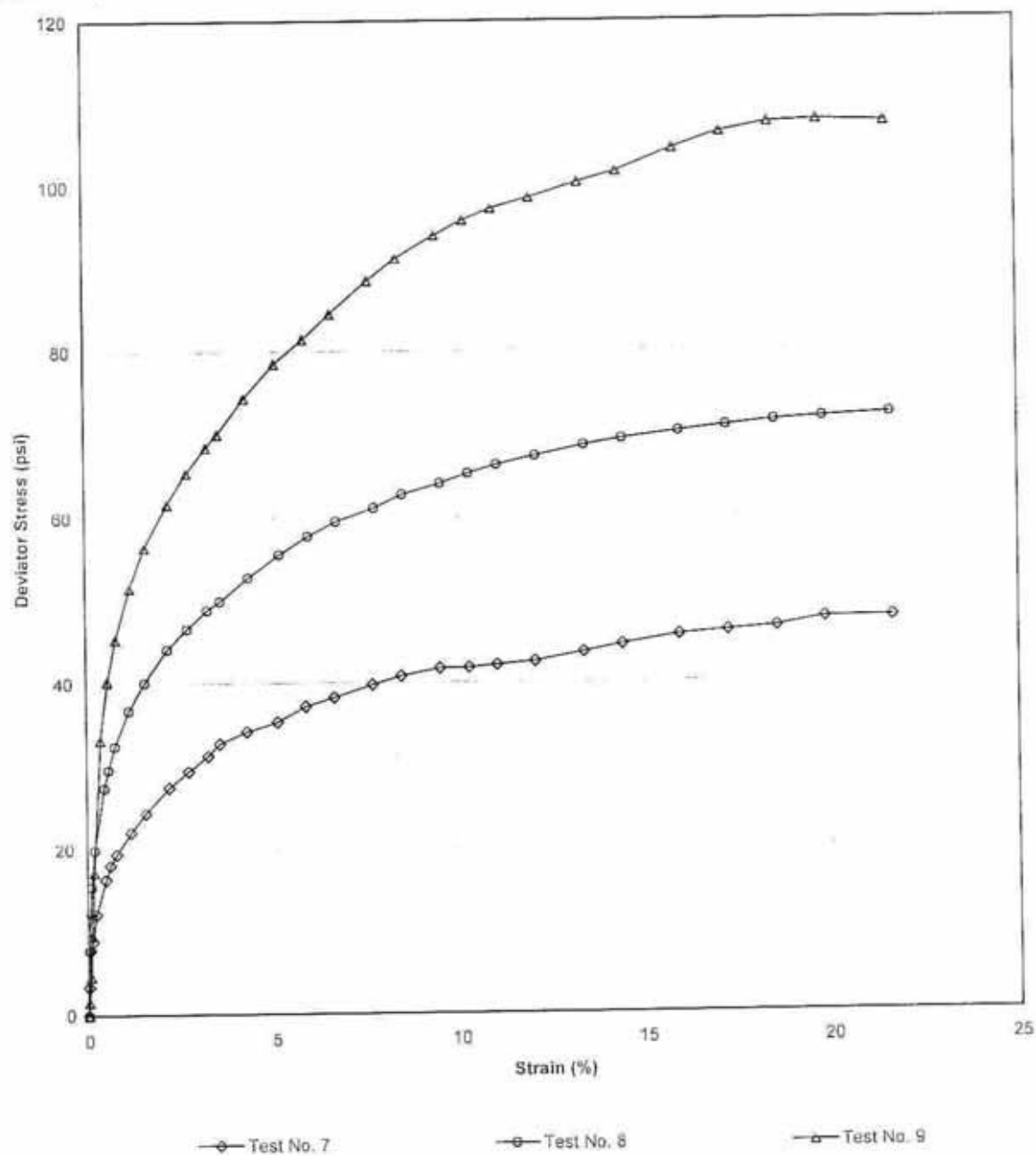
Consolidated Undrained Triaxial Test with Pore Pressure



Tested By: JCM Date: 03/07/06 Approved By: DB Date: 3/13/06

CONSOLIDATED UNDRAINED TRIAXIAL TEST
WITH PORE PRESSURE READINGS
ASTM D4767-95 / AASHTO T297-94 (SOP-S28)

Client	PAUL C. RIZZO	Boring No.	TS-SOIL-03
Client Reference	TAUM SAUK 06-3551	Depth(in.)	7-15
Project No.	2006-060-01	Sample No.	S-2
Lab ID	2006-060-01-72		
Visual Description:	BROWN SANDY CLAY, SOME ORGANIC MATERIAL (UNDISTURBED)		



Tested By JCM Date 03/07/06 Approved By DB Date 3/13/06

page 2 of 8

**CONSOLIDATED UNDRAINED TRIAXIAL TEST
WITH PORE PRESSURE READINGS**
ASTM D4767-95 / AASHTO T297-94 (SOP-S28)



Client PAUL C. RIZZO
Client Reference TAUM SAUK 06-3551
Project No. 2006-060-01
Lab ID 2006-060-01-72

Boring No. TS-SOIL-03
Depth(in.) 7-15
Sample No. S-2

Visual Description: BROWN SANDY CLAY, SOME ORGANIC MATERIAL (UNDISTURBED)

Stage No.	1
Test No	7

PRESSURES (psi)

Cell Pressure(psi) 60.1
Back Pressure(psi) 40.3
Eff. Cons. Pressure(psi) 19.8
Pore Pressure
Response (%) 97

MAXIMUM OBLIQUITY POINTS

P = 25.33
Q = 16.38

INITIAL SAMPLE DIMENSIONS (in)

Length 1	3.113	Diameter 1	1.421
Length 2	3.147	Diameter 2	1.423
Length 3	3.152	Diameter 3	1.420
Avg Leng.=	3.137	Avg. Diam.=	1.421

VOLUME CHANGE

Initial Burette Reading (ml)	24.0
Final Burette Reading (ml)	22.0
Final Change (ml)	2.0

Initial Dial Reading (D.R.), mils	50
D.R. After Saturation, mils	109
D.R. After Consolidation, mils	126

LOAD (LBS)	DEFORMATION (INCHES)	PORE PRESSURE (PSI)
12.4	0.000	40.3
17.6	0.001	41.2
24.2	0.002	42.3
25.8	0.004	43.0
30.7	0.007	44.4
37.1	0.015	47.4
39.7	0.019	48.2
41.8	0.024	49.3
45.9	0.036	50.5
49.5	0.048	51.1
54.4	0.067	51.5
57.6	0.083	51.4
60.7	0.099	51.3
63.1	0.108	51.2
65.8	0.131	50.7
68.1	0.156	50.0
71.4	0.179	49.4
73.6	0.203	49.1
76.7	0.234	48.5
78.9	0.259	48.1
81.3	0.291	47.6
82.0	0.315	47.1
83.1	0.339	46.7
84.6	0.370	46.3
87.6	0.410	45.9
90.1	0.441	45.6
93.5	0.488	45.0
95.6	0.528	44.7
97.8	0.568	44.3
101.1	0.608	43.9
103.2	0.663	43.6

Tested By JCM Date 03/07/06 Input Checked By *KYB* Date *3-13-06*

CONSOLIDATED UNDRAINED TRIAXIAL TEST
WITH PORE PRESSURE READINGS
ASTM D4767-95 / AASHTO T297-94 (SOP-S28)



Client	PAUL C. RIZZO	Boring No.	TS-SOIL-03
Client Reference	TAUM SAUK 06-3551	Depth(in.)	7-15
Project No.	2006-060-01	Sample No.	S-2
Lab ID	2006-060-01-72		

Visual Description: BROWN SANDY CLAY, SOME ORGANIC MATERIAL (UNDISTURBED)

Effective Confining Pressure (psi)	19.8	Stage No.	1
		Test No	7

INITIAL DIMENSIONS

Initial Sample Length (in.)	3.14
Initial Sample Diameter (in.)	1.42
Initial Sample Area (in ²)	1.59
Initial Sample Volume (in ³)	4.98

VOLUME CHANGE

Volume After Consolidation (in ³)	4.57
Length After Consolidation (in)	3.06
Area After Consolidation (in ²)	1.494

Strain (%)	Deviation Stress	Δ U	σ ₁	σ ₃	Effective Principle Stress Ratio	A	P	Q
0.02	3.47	0.94	22.33	18.9	1.184	0.28	20.60	1.74
0.06	7.90	1.97	25.72	17.8	1.443	0.26	21.78	3.95
0.13	8.94	2.65	26.09	17.1	1.521	0.31	21.62	4.47
0.23	12.23	4.10	27.93	15.7	1.779	0.35	21.82	6.12
0.49	16.46	7.10	29.16	12.7	2.296	0.44	20.93	8.23
0.61	18.17	7.89	30.08	11.9	2.525	0.45	21.00	9.08
0.79	19.50	8.95	30.35	10.8	2.798	0.47	20.60	9.75
1.17	22.13	10.18	31.76	9.6	3.300	0.47	20.69	11.07
1.57	24.42	10.80	33.42	9.0	3.713	0.46	21.21	12.21
2.19	27.51	11.23	36.08	8.6	4.211	0.42	22.33	13.76
2.71	29.45	11.06	38.19	8.7	4.371	0.39	23.46	14.73
3.23	31.30	10.99	40.11	8.8	4.555	0.36	24.46	15.65
3.54	32.76	10.85	41.70	8.9	4.661	0.34	25.33	16.38
4.27	34.20	10.37	43.64	9.4	4.626	0.31	26.53	17.10
5.10	35.35	9.70	45.45	10.1	4.500	0.28	27.78	17.68
5.86	37.18	9.14	47.84	10.7	4.486	0.25	29.25	18.59
6.63	38.24	8.84	49.20	11.0	4.491	0.24	30.08	19.12
7.66	39.75	8.18	51.37	11.6	4.420	0.21	31.50	19.87
8.45	40.76	7.79	52.77	12.0	4.395	0.20	32.39	20.38
9.50	41.71	7.27	54.24	12.5	4.329	0.18	33.38	20.85
10.29	41.78	6.83	54.75	13.0	4.221	0.17	33.86	20.89
11.06	42.06	6.42	55.44	13.4	4.143	0.16	34.41	21.03
12.08	42.48	6.00	56.27	13.8	4.079	0.15	35.04	21.24
13.38	43.60	5.60	57.79	14.2	4.071	0.13	35.99	21.80
14.41	44.50	5.26	59.04	14.5	4.060	0.12	36.79	22.25
15.94	45.60	4.67	60.73	15.1	4.014	0.11	37.93	22.80
17.25	46.07	4.40	61.47	15.4	3.991	0.10	38.44	23.03
18.57	46.52	3.97	62.35	15.8	3.939	0.09	39.09	23.26
19.86	47.55	3.65	63.70	16.2	3.944	0.08	39.92	23.77
21.66	47.60	3.27	64.13	16.5	3.880	0.07	40.33	23.80

Tested By JCM Date 03/07/06 Input Checked By *KB* Date 3-13-06

**CONSOLIDATED UNDRAINED TRIAXIAL TEST
WITH PORE PRESSURE READINGS**
ASTM D4767-95 / AASHTO T297-94 (SOP-S28)



Client	PAUL C. RIZZO	Boring No.	TS-SOIL-03
Client Reference	TAUM SAUK 06-3551	Depth(in.)	7-15
Project No.	2006-060-01	Sample No.	S-2
Lab ID	2006-060-01-72		

Visual Description: BROWN SANDY CLAY (UNDISTURBED)

Stage No.	1
Test No	8

INITIAL SAMPLE DIMENSIONS (in)

Length 1	3.033	Diameter 1	1.432
Length 2	3.026	Diameter 2	1.430
Length 3	3.023	Diameter 3	1.422
Avg Leng.=	3.027	Avg. Diam.=	1.428

PRESSURES (psi)

Cell Pressure(psi)	80.2
Back Pressure(psi)	40.1
Eff. Cons. Pressure(psi)	40.1
Pore Pressure Response (%)	100

VOLUME CHANGE

Initial Burette Reading (ml)	24.0
Final Burette Reading (ml)	20.6
Final Change (ml)	3.4

MAXIMUM OBLIQUITY POINTS

P	=	50.18
Q	=	29.75

Initial Dial Reading (D.R.), mils	57
D.R. After Saturation, mils	68
D.R. After Consolidation, mils	117

LOAD (LBS)	DEFORMATION (INCHES)	PORE PRESSURE (PSI)
17.6	0.000	40.1
29.8	0.001	41.2
36.7	0.002	42.5
41.7	0.003	43.9
48.6	0.006	46.6
60.3	0.014	52.4
63.7	0.017	54.3
68.2	0.022	56.4
75.1	0.034	59.2
80.6	0.046	60.8
87.3	0.064	61.9
91.6	0.080	62.1
95.7	0.096	62.1
97.6	0.106	61.9
102.9	0.129	61.5
108.2	0.153	60.9
112.5	0.176	60.3
116.2	0.199	59.8
120.0	0.229	59.0
123.5	0.252	58.6
127.0	0.283	57.9
130.0	0.305	57.5
132.7	0.328	57.1
136.0	0.359	56.6
140.0	0.398	56.2
142.9	0.428	55.8
146.7	0.473	55.2
149.9	0.511	54.8
153.1	0.550	54.4
156.0	0.588	54.0
160.0	0.642	53.5

Tested By JCM Date 03/07/06 Input Checked By *YKB* Date 3-13-06

**CONSOLIDATED UNDRAINED TRIAXIAL TEST
WITH PORE PRESSURE READINGS**
ASTM D4767-95 / AASHTO T297-94 (SOP-S28)



Client	PAUL C. RIZZO	Boring No.	TS-SOIL-03
Client Reference	TAUM SAUK 06-3551	Depth(in.)	7-15
Project No.	2006-060-01	Sample No.	S-2
Lab ID	2006-060-01-72		

Visual Description: BROWN SANDY CLAY (UNDISTURBED)

Effective Confining Pressure (psi)	40.1	Stage No.	1
		Test No.	8

INITIAL DIMENSIONS

Initial Sample Length (in.)	3.03
Initial Sample Diameter (in.)	1.43
Initial Sample Area (in ²)	1.60
Initial Sample Volume (in ³)	4.85

VOLUME CHANGE

Volume After Consolidation (in ³)	4.59
Length After Consolidation (in)	2.97
Area After Consolidation (in ²)	1.546

Strain (%)	Deviation Stress	ΔU	$\bar{\sigma}_1$	$\bar{\sigma}_3$	Effective Principle Stress Ratio	$\bar{A}$	$\bar{P}$	Q
0.02	7.87	1.08	46.89	39.0	1.202	0.14	42.96	3.93
0.06	12.37	2.40	50.07	37.7	1.328	0.19	43.89	6.18
0.10	15.57	3.81	51.86	36.3	1.429	0.24	44.08	7.79
0.20	19.98	6.52	53.56	33.6	1.595	0.33	43.57	9.99
0.46	27.48	12.35	55.23	27.8	1.990	0.45	41.49	13.74
0.58	29.64	14.21	55.54	25.9	2.145	0.48	40.71	14.82
0.75	32.50	16.29	56.30	23.8	2.365	0.50	40.06	16.25
1.14	36.78	19.11	57.77	21.0	2.753	0.52	39.38	18.39
1.55	40.08	20.74	59.44	19.4	3.071	0.52	39.40	20.04
2.17	44.12	21.82	62.40	18.3	3.414	0.49	40.34	22.06
2.69	46.57	22.03	64.64	18.1	3.578	0.47	41.35	23.29
3.23	48.85	21.96	66.99	18.1	3.693	0.45	42.57	24.43
3.57	49.89	21.82	68.18	18.3	3.729	0.44	43.23	24.95
4.34	52.78	21.38	71.50	18.7	3.819	0.41	45.11	26.39
5.17	55.55	20.76	74.89	19.3	3.872	0.37	47.12	27.77
5.94	57.75	20.22	77.63	19.9	3.905	0.35	48.75	28.88
6.70	59.50	19.67	79.93	20.4	3.913	0.33	50.18	29.75
7.73	61.08	18.95	82.24	21.2	3.888	0.31	51.69	30.54
8.49	62.70	18.45	84.34	21.6	3.897	0.29	52.99	31.35
9.52	63.99	17.85	86.25	22.3	3.876	0.28	54.25	32.00
10.29	65.19	17.42	87.86	22.7	3.874	0.27	55.27	32.59
11.07	66.22	17.01	89.31	23.1	3.868	0.26	56.20	33.11
12.10	67.28	16.55	90.84	23.6	3.857	0.25	57.20	33.64
13.40	68.53	16.05	92.58	24.0	3.850	0.23	58.31	34.27
14.43	69.33	15.66	93.77	24.4	3.837	0.23	59.10	34.66
15.96	70.19	15.07	95.22	25.0	3.804	0.21	60.12	35.10
17.23	70.84	14.67	96.27	25.4	3.786	0.21	60.85	35.42
18.52	71.42	14.29	97.22	25.8	3.768	0.20	61.51	35.71
19.82	71.77	13.88	98.00	26.2	3.737	0.19	62.11	35.89
21.62	72.19	13.40	98.89	26.7	3.704	0.19	62.79	36.09

Tested By JCM Date 03/07/06 Input Checked By *YAB* Date 3-13-06

**CONSOLIDATED UNDRAINED TRIAXIAL TEST
WITH PORE PRESSURE READINGS**
ASTM D4767-95 / AASHTO T297-94 (SOP-S28)

Client	PAUL C. RIZZO	Boring No.	TS-SOIL-03
Client Reference	TAUM SAUK 06-3551	Depth(in.)	7-15
Project No.	2006-060-01	Sample No.	S-2
Lab ID	2006-060-01-72		

Visual Description: BROWN SANDY CLAY (UNDISTURBED)

Stage No.	1
Test No	9

INITIAL SAMPLE DIMENSIONS (in)

Length 1	3.117	Diameter 1	1.442
Length 2	3.107	Diameter 2	1.437
Length 3	3.078	Diameter 3	1.441
Avg Leng.=	3.101	Avg. Diam.=	1.440

PRESSURES (psi)

Cell Pressure(psi)	100.4
Back Pressure(psi)	40.8
Eff. Cons. Pressure(psi)	59.6
Pore Pressure Response (%)	99

VOLUME CHANGE

Initial Burette Reading (ml)	24.0
Final Burette Reading (ml)	19.5
Final Change (ml)	4.5

MAXIMUM OBLIQUITY POINTS

P	=	70.77
Q	=	39.25

Initial Dial Reading (D.R.), mils	65
D.R. After Saturation, mils	75
D.R. After Consolidation, mils	127

LOAD (LBS)	DEFORMATION (INCHES)	PORE PRESSURE (PSI)
17.1	0.000	40.8
19.6	0.001	41.1
24.4	0.002	41.3
32.2	0.003	41.8
44.1	0.006	43.0
69.0	0.011	48.4
80.1	0.017	54.0
88.2	0.024	58.4
98.3	0.036	63.6
106.3	0.048	66.8
115.2	0.067	69.2
121.6	0.082	70.1
127.2	0.098	70.4
130.1	0.107	70.3
138.0	0.129	69.8
145.7	0.154	68.9
151.6	0.177	67.7
157.8	0.200	66.4
166.2	0.231	64.8
172.0	0.254	63.7
178.5	0.286	62.3
183.2	0.310	61.5
187.0	0.333	60.6
191.3	0.364	59.5
197.2	0.404	58.3
201.7	0.435	57.3
210.2	0.482	55.9
216.8	0.520	55.0
222.1	0.560	54.1
225.9	0.600	53.2
230.2	0.655	52.1

Tested By JCM Date 03/07/06 Input Checked By *YJB* Date 3-13-06

**CONSOLIDATED UNDRAINED TRIAXIAL TEST
WITH PORE PRESSURE READINGS
ASTM D4767-95 / AASHTO T297-94 (SOP-S28)**

Client	PAUL C. RIZZO	Boring No.	TS-SOIL-03
Client Reference	TAUM SAUK 06-3551	Depth(in.)	7-15
Project No.	2006-060-01	Sample No.	S-2
Lab ID	2006-060-01-72		

Visual Description: BROWN SANDY CLAY (UNDISTURBED)

Effective Confining Pressure (psi)	59.6	Stage No.	1
		Test No	9

INITIAL DIMENSIONS

Initial Sample Length (in.)	3.10
Initial Sample Diameter (in.)	1.44
Initial Sample Area (in ²)	1.63
Initial Sample Volume (in ³)	5.05

VOLUME CHANGE

Volume After Consolidation (in ³)	4.73
Length After Consolidation (in)	3.04
Area After Consolidation (in ²)	1.555

Strain (%)	Deviation Stress	ΔU	$\bar{\sigma}_1$	$\bar{\sigma}_3$	Effective Principle Stress Ratio	$\bar{A}$	$\bar{P}$	Q
0.02	1.59	0.31	60.88	59.3	1.027	0.20	60.08	0.79
0.06	4.67	0.47	63.80	59.1	1.079	0.10	61.46	2.34
0.11	9.68	1.00	68.27	58.6	1.165	0.10	63.44	4.84
0.18	17.30	2.23	74.67	57.4	1.302	0.13	66.02	8.65
0.37	33.28	7.60	85.28	52.0	1.640	0.23	68.64	16.64
0.57	40.26	13.16	86.70	46.4	1.867	0.33	66.57	20.13
0.79	45.37	17.58	87.40	42.0	2.080	0.39	64.71	22.69
1.18	51.57	22.78	88.39	36.8	2.401	0.45	62.60	25.79
1.58	56.47	25.99	90.07	33.6	2.680	0.46	61.84	28.23
2.20	61.69	28.36	92.93	31.2	2.975	0.46	62.08	30.85
2.70	65.40	29.27	95.73	30.3	3.156	0.45	63.03	32.70
3.22	68.48	29.58	98.50	30.0	3.281	0.44	64.26	34.24
3.54	70.10	29.48	100.22	30.1	3.327	0.42	65.17	35.05
4.25	74.40	28.96	105.03	30.6	3.428	0.39	67.83	37.20
5.07	78.50	28.08	110.02	31.5	3.491	0.36	70.77	39.25
5.83	81.44	26.86	114.17	32.7	3.488	0.33	73.45	40.72
6.58	84.52	25.55	118.57	34.0	3.482	0.31	76.31	42.26
7.59	88.56	23.99	124.17	35.6	3.487	0.27	79.89	44.28
8.36	91.26	22.91	127.95	36.7	3.487	0.25	82.32	45.63
9.42	94.02	21.54	132.08	38.1	3.470	0.23	85.07	47.01
10.20	95.88	20.74	134.74	38.9	3.467	0.22	86.80	47.94
10.97	97.27	19.78	137.10	39.8	3.443	0.21	88.46	48.64
11.99	98.57	18.69	139.48	40.9	3.410	0.19	90.19	49.28
13.29	100.40	17.47	142.52	42.1	3.383	0.18	92.33	50.20
14.32	101.68	16.49	144.80	43.1	3.358	0.16	93.96	50.84
15.85	104.47	15.12	148.94	44.5	3.349	0.15	96.71	52.23
17.13	106.41	14.24	151.77	45.4	3.346	0.14	98.56	53.21
18.43	107.51	13.26	153.85	46.3	3.320	0.12	100.10	53.76
19.74	107.76	12.38	154.98	47.2	3.282	0.12	101.10	53.88
21.54	107.47	11.26	155.81	48.3	3.223	0.11	102.07	53.74

Tested By JCM Date 03/07/06 Input Checked By *YLB* Date 3-13-06

**CONSOLIDATED UNDRAINED TRIAXIAL TEST
WITH PORE PRESSURE READINGS**
ASTM D4767-95 / AASHTO T297-94 (SOP-S28)

Client: PAUL C. RIZZO
 Client Reference: TAUM SAUK 06-3551
 Project No.: 2006-060-01
 Lab ID: 2006-060-01-72 Specific Gravity (assumed) 2.7

Visual Description: BROWN SANDY CLAY, SOME ORGANIC MATERIAL (UNDISTURBED)

SAMPLE CONDITION SUMMARY

	TS-SOIL-03	TS-SOIL-03	TS-SOIL-03
Boring No.	7-15	7-15	7-15
Depth (in)	S-2	S-2	S-2
Sample No.			
Test No.	T7	T8	T9
Deformation Rate (in/min)	0.001	0.001	0.001
Back Pressure (psi)	40.3	40.1	40.8
Consolidation Time (days)	1	1	1
Initial State (w%)	17.8	19.2	19.6
Total Unit Weight (pcf)	127.8	126.9	123.2
Dry Unit Weight (pcf)	108.5	106.5	103.0
Final State (w%)	21.1	18.9	17.2
Initial State Void Ratio, e	0.554	0.582	0.636

Tested By JCM Date 03/07/06 Input Checked By *KB* Date *3-13-06*
 page 1 of 1 DCN: CT-S28 DATE 8-25-99 REVISION: 1 C:\MSOFFICE\Excel\Printql\0338.xls]Sheet1

SOIL SAMPLE TS-SOIL 04

SIEVE SAMPLE

Client
Client Project
Project No.
Lab ID

PAUL C. RIZZO & ASSOCIATES, INC.
TAUM SAUK 06-3551
2006-060-01
2006-060-01-74

Boring No. TS-SOIL-04
Depth (in.) 5" - 11"
Sample No. S-2

SAMPLE AS RECEIVED:



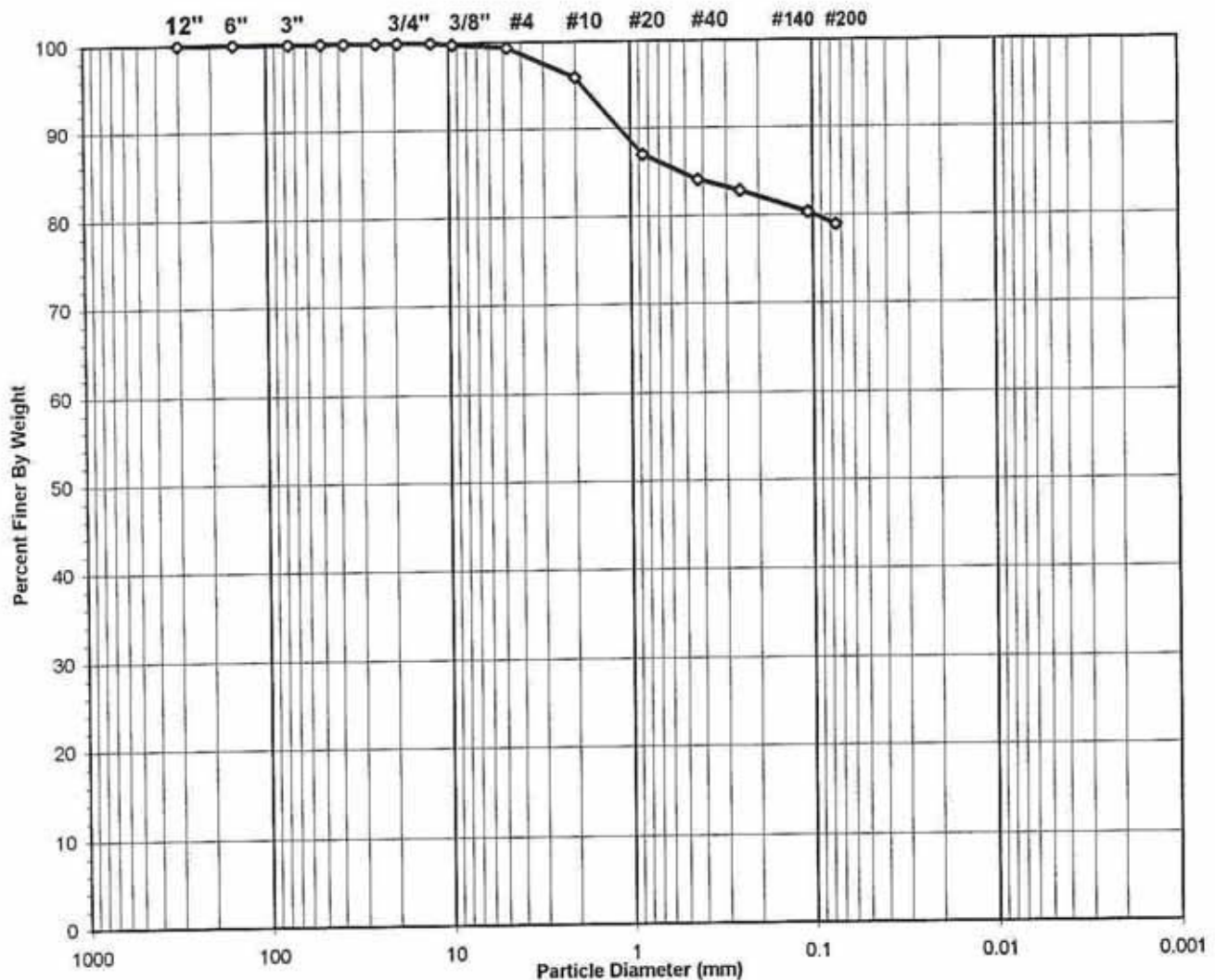
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SIEVE ANALYSIS
ASTM D 422-63/AASHTO T88-00 (SOP-S3)

Client PAUL C. RIZZO
Client Reference TAUM SAUK 06-3551
Project No. 2006-060-01
Lab ID 2006-060-01-74

Boring No. TS-SOIL-04
Depth (in) 5-11
Sample No. S-2
Soil Color REDDISH BROWN

USCS	SIEVE ANALYSIS		HYDROMETER
	gravel	sand	silt and clay



USCS Symbol **CH, TESTED**

USCS Classification **FAT CLAY WITH SAND**

Tested By JP Date 3/1/06 Checked By KYB Date 3-6-06

WASH SIEVE ANALYSIS

ASTM D 422-63/AASHTO T88-00 (SOP-S3)

Client PAUL C. RIZZO
Client Reference TAUM SAUK 06-3551
Project No. 2006-060-01
Lab ID 2006-060-01-74

Boring No. TS-SOIL-04
Depth (in) 5-11
Sample No. S-2
Soil Color REDDISH BROWN

Moisture Content of Passing 3/4" Material		Water Content of Retained 3/4" Material	
Tare No.	527	Tare No.	NA
Wgt. Tare + Wet Specimen (gm)	1195.60	Wgt. Tare + Wet Specimen (gm)	NA
Wgt. Tare + Dry Specimen (gm)	949.80	Wgt. Tare + Dry Specimen (gm)	NA
Weight of Tare (gm)	96.35	Weight of Tare (gm)	NA
Weight of Water (gm)	245.80	Weight of Water (gm)	NA
Weight of Dry Soil (gm)	853.45	Weight of Dry Soil (gm)	NA
Moisture Content (%)	28.8	Moisture Content (%)	NA

Wet Weight - 3/4" Sample (gm)	NA	Weight of the Dry Specimen (gm)	853.45
Dry Weight - 3/4" Sample (gm)	180.2	Weight of minus #200 material (gm)	673.26
Wet Weight + 3/4" Sample (gm)	NA	Weight of plus #200 material (gm)	180.19
Dry Weight + 3/4" Sample (gm)	0.00		
Total Dry Weight Sample (gm)	NA		

Sieve Size	Sieve Opening (mm)	Wgt. of Soil Retained (gm)	Percent Retained (%)	Accumulated Percent Retained (%)	Percent Finer (%)	Accumulated Percent Finer (%)
12"	300	0.00	0.00	0.00	100.00	100.00
6"	150	0.00	0.00	0.00	100.00	100.00
3"	75	0.00	0.00	0.00	100.00	100.00
2"	50	0.00	0.00	0.00	100.00	100.00
1 1/2"	37.5	0.00	0.00	0.00	100.00	100.00
1"	25.0	0.00	0.00	0.00	100.00	100.00
3/4"	19.0	0.00	0.00	0.00	100.00	100.00
1/2"	12.50	0.00	0.00	0.00	100.00	100.00
3/8"	9.50	1.96	0.23	0.23	99.77	99.77
#4	4.75	3.12	0.37	0.60	99.40	99.40
#10	2.00	29.38	3.44	4.04	95.96	95.96
#20	0.850	76.57	8.97	13.01	86.99	86.99
#40	0.425	25.06	2.94	15.95	84.05	84.05
#60	0.250	10.83	1.27	17.21	82.79	82.79
#140	0.106	21.29	2.49	19.71	80.29	80.29
#200	0.075	11.98	1.40	21.11	78.89	78.89
Pan	-	673.26	78.89	100.00	-	-

Tested By JP

Date 3/1/06

Checked By *YJB*

Date 3-16-06

ATTERBERG LIMITS ASTM D 4318-98 / AASHTO T89 (SOP - S4A)

Client	PAUL C. RIZZO	Boring No.	TS-SOIL-04
Client Reference	TAUM SAUK 06-3551	Depth (in)	5-11
Project No.	2006-060-01	Sample No.	S-2
Lab ID	2006-060-01-74	Soil Description	REDDISH BROWN FAT CLAY

Note: The USCS symbol used with this test refers only to the minus No. 40 sieve material. See the "Sieve and Hydrometer Analysis" graph page for the complete material description.

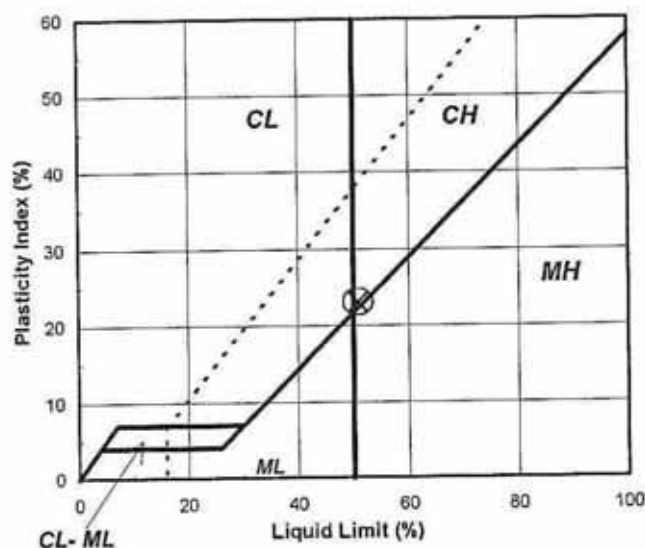
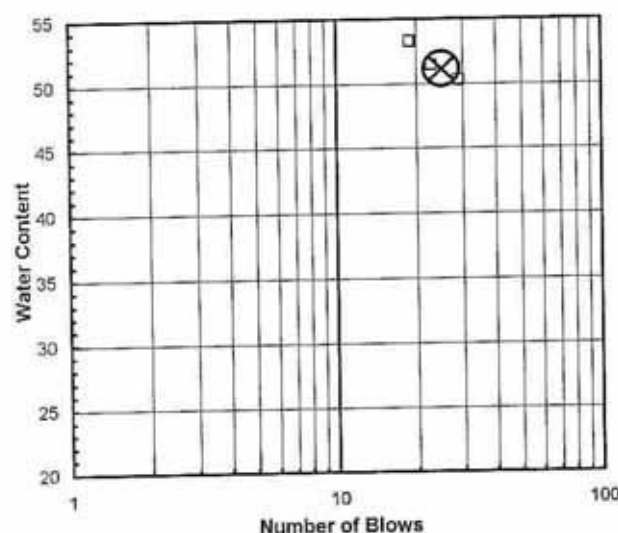
Liquid Limit Test	1	2	3	MULTIPOINT
Tare Number	1158	2184	189	
Wt. of Tare & WS (gm)	41.89	41.70	41.02	
Wt. of Tare & DS (gm)	34.34	34.40	33.60	
Wt. of Tare (gm)	19.32	20.21	19.67	
Wt. of Water (gm)	7.6	7.3	7.4	
Wt. of DS (gm)	15.0	14.2	13.9	
Moisture Content (%)	50.3	51.4	53.3	
Number of Blows	29	23	19	

Plastic Limit Test	1	2	Range	Test Results
Tare Number	31	3		Liquid Limit (%) 51
Wt. of Tare & WS (gm)	22.54	22.43		Plastic Limit (%) 28
Wt. of Tare & DS (gm)	21.12	21.05		Plasticity Index (%) 23
Wt. of Tare (gm)	16.00	16.00		USCS Symbol CH
Wt. of Water (gm)	1.4	1.4		
Wt. of DS (gm)	5.1	5.1		
Moisture Content (%)	27.7	27.3	0.4	

Note: The acceptable range of the two Moisture contents is ± 2.6

Flow Curve

Plasticity Chart



Tested By	TO	Date	3/5/06	Checked By	KRB	Date	3-6-06
page 1 of 1	DCN:	CT-S4B	DATE:	10/8/01	REVISION:	2	

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DIRECT SHEAR
ASTM D 3080-04 (SOP-S21)

Client	PAUL C. RIZZO & ASSOC.	Boring No.	TS-SOIL-04
Client Reference	TAUM SAUK 06-3551	Depth (in)	5-11
Project No.	2006-060-01	Sample No.	S-2
Lab ID	2006-060-01-74	Visual Description	BROWN, REDDISH BROWN AND GRAY MOTTLED CLAY

Sample Conditions: UNDISTURBED, INUNDATED AND DOUBLE DRAINED

Maximum Shear Stress (psi)		Normal Stress (psi)
15.84	(1)	20
26.74	(2)	40
42.24	(3)	60

Overall Regression Analysis

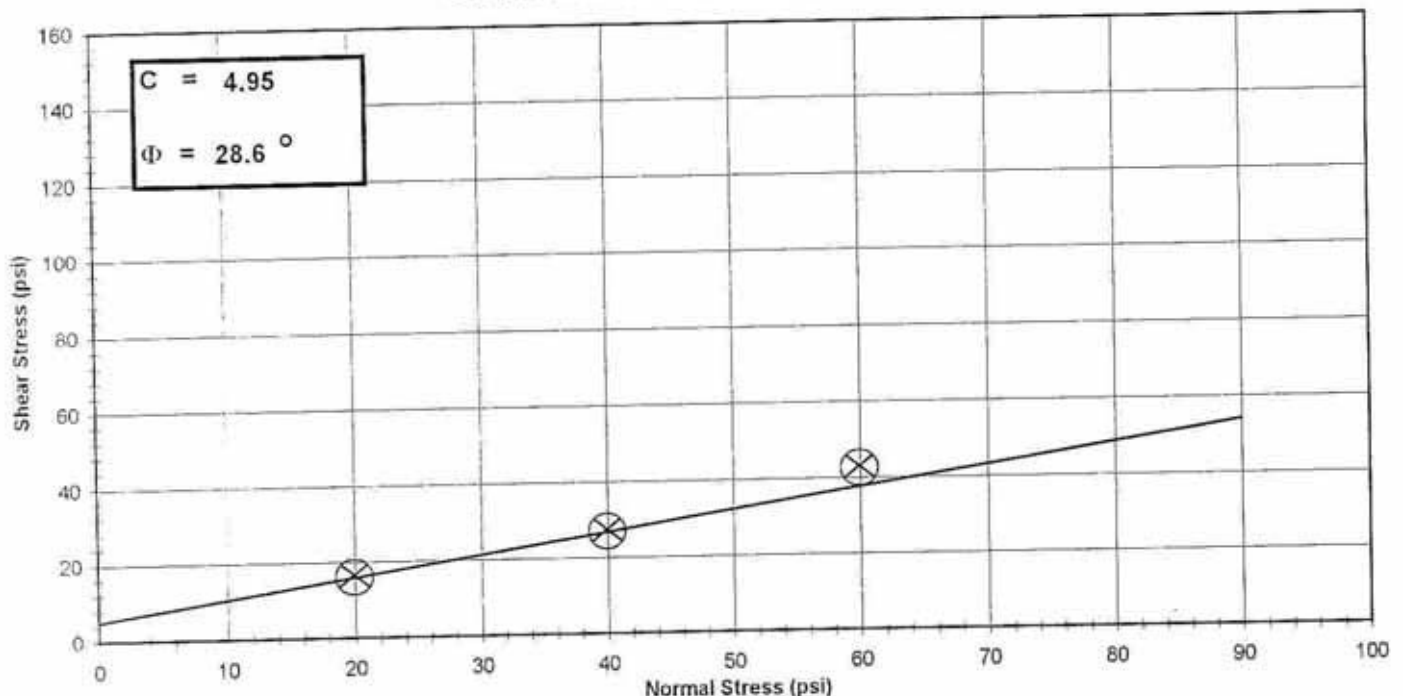
Slope =	0.66
C =	1.88
Φ =	33.4 degrees

Selected Points	Shear Stress (psi)	Normal Stress (psi)
1	15.84	20
2	26.74	40

Selected Points Regression

Slope =	0.54
C =	4.95
Φ =	28.6 degrees

SHEAR STRESS vs. NORMAL STRESS



Note: Graph not to scale

Tested By TM Date 3/3/06 Approved By DB Date 3/3/06

DIRECT SHEAR

ASTM D 3080-04 (SOP-S21)

Client	PAUL C. RIZZO & ASSOC.	Boring No.	TS-SOIL-04
Client Reference	TAUM SAUK 06-3551	Depth (in)	5-11
Project No.	2006-060-01	Sample No.	S-2
Lab ID	2006-060-01-74	Visual Description	BROWN, REDDISH BROWN AND GRAY MOTTLED CLAY

Sample Conditions: UNDISTURBED, INUNDATED AND DOUBLE DRAINED

Maximum Shear Stress (psi)		Normal Stress (psi)
15.84	(1)	20
26.74	(2)	40
42.24	(3)	60

Overall Regression Analysis

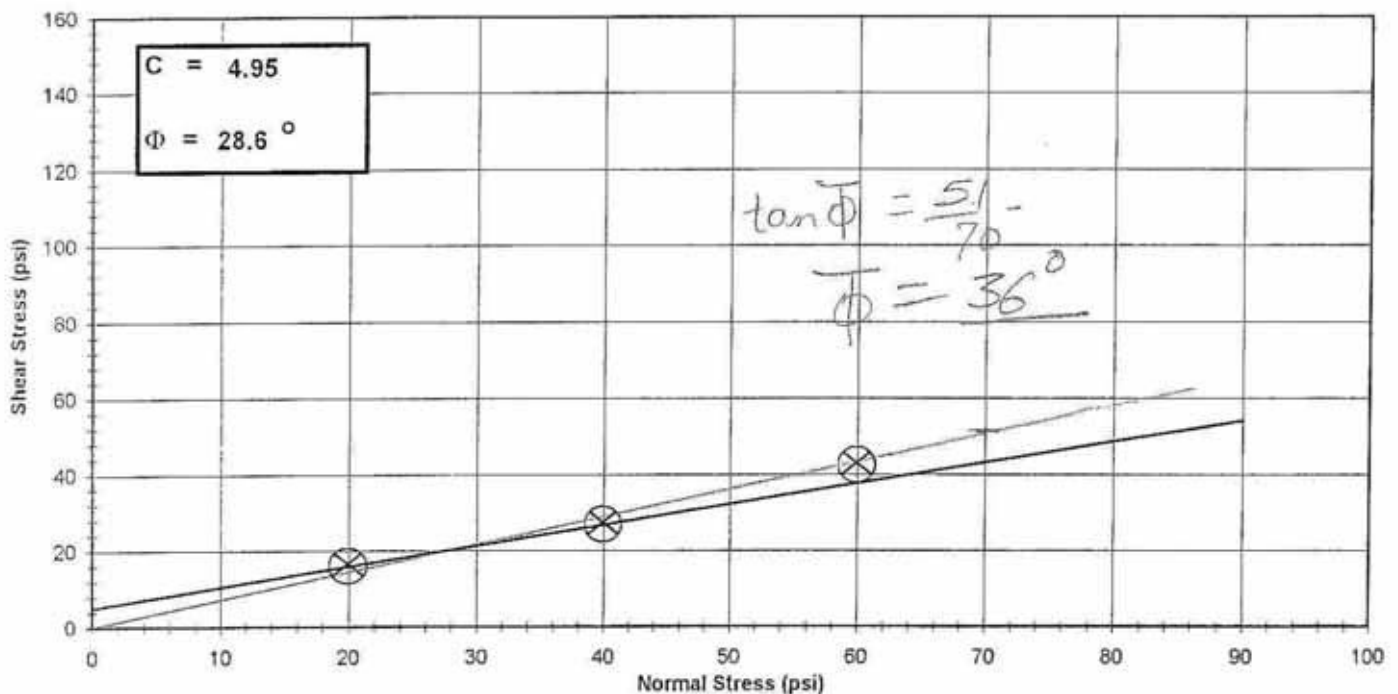
Slope = 0.66
C = 1.88
 Φ = 33.4 degrees

Selected Points	Shear Stress (psi)	Normal Stress (psi)
1	15.84	20
2	26.74	40

Selected Points Regression

Slope = 0.54
C = 4.95
 Φ = 28.6 degrees

SHEAR STRESS vs. NORMAL STRESS



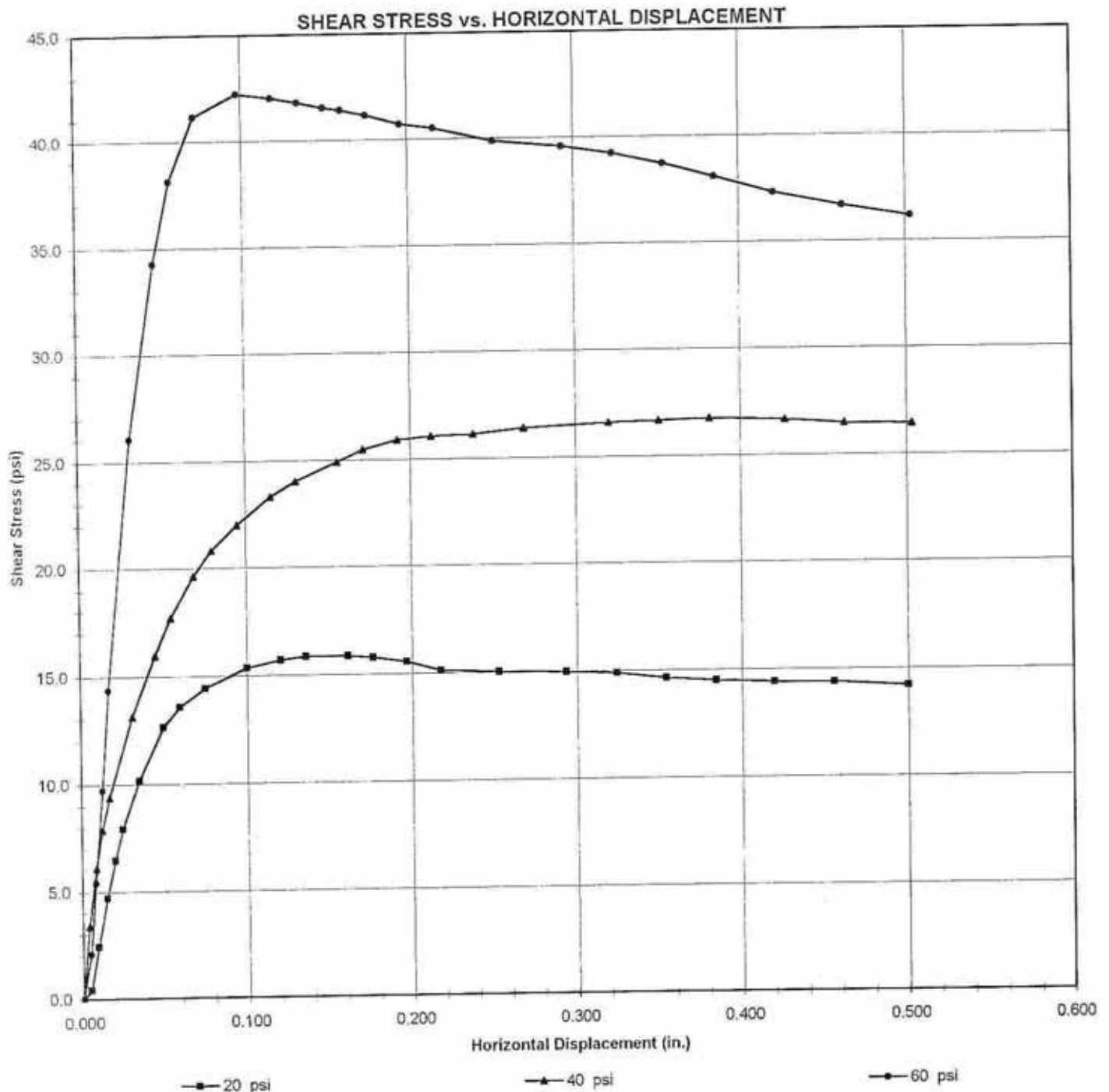
Note: Graph not to scale

Tested By TM Date 3/3/06 Approved By DB Date 3/3/06

DIRECT SHEAR
ASTM D 3080-04 (SOP-S21)

Client	PAUL C. RIZZO & ASSOC.	Boring No.	TS-SOIL-04
Client Reference	TAUM SAUK 06-3551	Depth (in)	5-11
Project No.	2006-060-01	Sample No.	S-2
Lab ID	2006-060-01-74	Visual Description	BROWN, REDDISH BROWN AND GRAY MOTTLED CLAY

Sample Conditions: UNDISTURBED, INUNDATED AND DOUBLE DRAINED



Tested By **TM** Date **3/3/06** Approved By **DB** Date **3/3/06**

DIRECT SHEAR ASTM D 3080-04 (SOP-S21)

Client	PAUL C. RIZZO & ASSOC.	Boring No.	TS-SOIL-04
Client Reference	TAUM SAUK 06-3551	Depth (in)	5-11
Project No.	2006-060-01	Sample No.	S-2
Lab ID	2006-060-01-74	Visual Description	BROWN, REDDISH BROWN AND GRAY MOTTLED CLAY

Sample Conditions: UNDISTURBED, INUNDATED AND DOUBLE DRAINED

Machine ID # **G 783** **SHEAR BOX DATA**

Wt. of Wet Specimen & Ring (gm)	609.02	Specific Gravity (Assumed)	2.70
Weight of Ring (gm)	457.26	Volume of Solids (cc)	44.5
Weight of Wet Specimen (gm)	151.76	Initial Consolidation Dial Reading (in.)	0.0
Initial Specimen Height (in)	1	Final Consolidation Dial Reading (in.)	0.0127
Specimen Diameter (in)	2.5	Corrected Final Cons. Reading (in.)	0.0069
Wet Density (pcf)	117.8	Void Ratio Before Consolidation	0.81
Dry Density (pcf)	93.3	Void Ratio After Consolidation	0.79

Moisture Content	Before Test	After Test	Testing Parameters
Tare ID	T-16	D-3	
Wt. Wet Soil & Tare (gm)	258.13	189.25	Normal Stress (psi) 20
Wt. Dry Soil & Tare (gm)	223.69	156.08	
Wt. Tare (gm)	92.70	36.04	Strain Rate (in/min) 0.00144
Wt. of Water (gm)	34.44	33.17	
Wt. of Dry Soil (gm)	130.99	120.04	Machine Deflection (in.) 0.0058
Moisture Content (%)	26.3	27.6	

Horizontal Displacement (in)	Shear Force (lbs)	Shear Stress (psi)	Vertical Dial Reading (in)	Vertical Displacement (+)incr, (-)decr (in)	Shear To Normal Ratio
0.000	0.0	0.00	0.0000	0.0000	0.00
0.005	2.0	0.41	-0.0008	0.0008	0.02
0.009	11.9	2.42	-0.0024	0.0024	0.12
0.015	23.1	4.71	-0.0029	0.0029	0.24
0.020	31.6	6.44	-0.0029	0.0029	0.32
0.025	38.9	7.92	-0.0029	0.0029	0.40
0.035	49.9	10.16	-0.0029	0.0029	0.51
0.050	62.1	12.64	-0.0028	0.0028	0.63
0.060	66.6	13.56	-0.0026	0.0026	0.68
0.075	70.8	14.42	-0.0023	0.0023	0.72
0.100	75.2	15.33	-0.0021	0.0021	0.77
0.121	77.0	15.69	-0.0021	0.0021	0.78
0.136	77.8	15.84	-0.0021	0.0021	0.79
0.161	77.7	15.84	-0.0021	0.0021	0.79
0.177	77.3	15.75	-0.0021	0.0021	0.79
0.197	76.3	15.54	-0.0021	0.0021	0.78
0.217	74.2	15.12	-0.0022	0.0022	0.76
0.253	73.7	15.01	-0.0025	0.0025	0.75
0.294	73.5	14.97	-0.0025	0.0025	0.75
0.324	73.0	14.88	-0.0027	0.0027	0.74
0.354	71.7	14.61	-0.0026	0.0026	0.73
0.384	71.1	14.49	-0.0026	0.0026	0.72
0.420	70.6	14.39	-0.0026	0.0026	0.72
0.455	70.5	14.36	-0.0029	0.0029	0.72
0.500	69.6	14.18	-0.0028	0.0028	0.71

Tested By **TM** Date **3/1/06** Input Checked By **GU** Date **3-3-06**

DIRECT SHEAR

ASTM D 3080-04 (SOP-S21)

Client	PAUL C. RIZZO & ASSOC.	Boring No.	TS-SOIL-04
Client Reference	TAUM SAUK 06-3551	Depth (in)	5-11
Project No.	2006-060-01	Sample No.	S-2
Lab ID	2006-060-01-74	Visual Description	BROWN, REDDISH BROWN AND GRAY MOTTLED CLAY

Sample Conditions: UNDISTURBED, INUNDATED AND DOUBLE DRAINED

Machine ID # **G 783** **SHEAR BOX DATA**

Wt. of Wet Specimen & Ring (gm)	349.48	Specific Gravity (Assumed)	2.70
Weight of Ring (gm)	203.58	Volume of Solids (cc)	42.0
Weight of Wet Specimen (gm)	145.9	Initial Consolidation Dial Reading (in.)	0.0
Initial Specimen Height (in)	1	Final Consolidation Dial Reading (in.)	0.0400
Specimen Diameter (in)	2.5	Corrected Final Cons. Reading (in.)	0.0326
Wet Density (pcf)	113.2	Void Ratio Before Consolidation	0.91
Dry Density (pcf)	88.1	Void Ratio After Consolidation	0.85

Moisture Content	Before Test	After Test	Testing Parameters
Tare ID	D-3	D-1	
Wt. Wet Soil & Tare (gm)	235.13	181.63	Normal Stress (psi) 40
Wt. Dry Soil & Tare (gm)	190.91	149.72	
Wt. Tare (gm)	36.05	34.68	Strain Rate (in/min) 0.00144
Wt. of Water (gm)	44.22	31.91	
Wt. of Dry Soil (gm)	154.86	115.04	Machine Deflection (in.) 0.0074
Moisture Content (%)	28.6	27.7	

Horizontal Displacement (in)	Shear Force (lbs)	Shear Stress (psi)	Vertical Dial Reading (in)	Vertical Displacement (+)incr, (-)decr (in)	Shear To Normal Ratio
0.000	0.0	0.00	0.0000	0.0000	0.00
0.004	16.6	3.38	0.0002	-0.0002	0.08
0.008	29.8	6.07	0.0002	-0.0002	0.15
0.012	38.5	7.84	0.0002	-0.0002	0.20
0.017	46.0	9.37	0.0002	-0.0002	0.23
0.031	64.4	13.12	0.0000	0.0000	0.33
0.045	78.2	15.94	0.0025	-0.0025	0.40
0.055	86.9	17.69	0.0042	-0.0042	0.44
0.069	96.3	19.61	0.0067	-0.0067	0.49
0.080	102.2	20.82	0.0082	-0.0082	0.52
0.095	108.1	22.02	0.0093	-0.0093	0.55
0.115	114.4	23.31	0.0108	-0.0108	0.58
0.131	118.0	24.03	0.0114	-0.0114	0.60
0.156	122.3	24.91	0.0124	-0.0124	0.62
0.172	124.9	25.45	0.0126	-0.0126	0.64
0.192	127.1	25.89	0.0127	-0.0127	0.65
0.213	127.9	26.06	0.0127	-0.0127	0.65
0.238	128.3	26.13	0.0127	-0.0127	0.65
0.269	129.5	26.39	0.0126	-0.0126	0.66
0.320	130.6	26.60	0.0127	-0.0127	0.66
0.351	130.8	26.65	0.0126	-0.0126	0.67
0.381	131.3	26.74	0.0127	-0.0127	0.67
0.427	130.8	26.65	0.0127	-0.0127	0.67
0.463	129.9	26.47	0.0127	-0.0127	0.66
0.503	129.7	26.43	0.0127	-0.0127	0.66

Tested By **TM** Date **3/2/06** Input Checked By **GU** Date **3-3-06**

DIRECT SHEAR
ASTM D 3080-04 (SOP-S21)

Client	PAUL C. RIZZO & ASSOC.	Boring No.	TS-SOIL-04
Client Reference	TAUM SAUK 06-3551	Depth (in)	5-11
Project No.	2006-060-01	Sample No.	S-2
Lab ID	2006-060-01-74	Visual Description	BROWN, REDDISH BROWN AND GRAY MOTTLED CLAY

Sample Conditions: UNDISTURBED, INUNDATED AND DOUBLE DRAINED

Machine ID # **G 783** **SHEAR BOX DATA**

Wt. of Wet Specimen & Ring(gm)	611.35	Specific Gravity (Assumed)	2.70
Weight of Ring (gm)	457.26	Volume of Solids(cc)	46.3
Weight of Wet Specimen (gm)	154.09	Initial Consolidation Dial Reading (in.)	0.0
Initial Specimen Height (in)	1	Final Consolidation Dial Reading (in.)	0.0516
Specimen Diameter (in)	2.5	Corrected Final Cons. Reading (in.)	0.0428
Wet Density (pcf)	119.6	Void Ratio Before Consolidation	0.74
Dry Density (pcf)	96.9	Void Ratio After Consolidation	0.66

Moisture Content	Before Test	After Test	Testing Parameters
Tare ID	01	1399	
Wt. Wet Soil & Tare (gm)	154.55	190.84	Normal Stress(psi) 60
Wt. Dry Soil & Tare (gm)	134.96	159.47	
Wt. Tare (gm)	51.22	38.16	Strain Rate(in/min) 0.00144
Wt. of Water (gm)	19.59	31.37	
Wt. of Dry Soil (gm)	83.74	121.31	Machine Deflection (in.) 0.0088
Moisture Content (%)	23.4	25.9	

Horizontal Displacement (in)	Shear Force (lbs)	Shear Stress (psi)	Vertical Dial Reading (in)	Vertical Displacement (+)Incr.(-)decr (in)	Shear To Normal Ratio
0.000	0.0	0.00	0.0000	0.0000	0.00
0.005	10.2	2.07	0.0000	0.0000	0.03
0.008	26.6	5.41	-0.0001	0.0001	0.09
0.013	47.8	9.73	0.0000	0.0000	0.16
0.017	70.4	14.35	-0.0001	0.0001	0.24
0.031	127.9	26.06	0.0000	0.0000	0.43
0.047	168.3	34.29	-0.0002	0.0002	0.57
0.057	187.1	38.12	-0.0002	0.0002	0.64
0.072	202.1	41.16	-0.0001	0.0001	0.69
0.098	207.3	42.24	-0.0001	0.0001	0.70
0.118	206.3	42.02	0.0002	-0.0002	0.70
0.134	205.2	41.80	0.0005	-0.0005	0.70
0.150	203.9	41.54	0.0011	-0.0011	0.69
0.160	203.3	41.41	0.0017	-0.0017	0.69
0.175	202.1	41.16	0.0023	-0.0023	0.69
0.196	200.0	40.74	0.0026	-0.0026	0.68
0.216	198.8	40.51	0.0034	-0.0034	0.68
0.252	195.8	39.88	0.0044	-0.0044	0.66
0.293	194.3	39.57	0.0055	-0.0055	0.66
0.324	192.4	39.20	0.0060	-0.0060	0.65
0.355	189.9	38.69	0.0063	-0.0063	0.64
0.385	186.7	38.04	0.0066	-0.0066	0.63
0.421	183.0	37.28	0.0072	-0.0072	0.62
0.462	180.0	36.67	0.0075	-0.0075	0.61
0.503	177.5	36.16	0.0081	-0.0081	0.60

Tested By **TM** Date **2/28/06** Input Checked By **GU** Date **3-3-06**

MOISTURE CONTENT

ASTM D 2216 (SOP-S1)

Client PAUL C. RIZZO
 Client Reference TAUM SAUK 06-3551
 Project No. 2006-060-01

Lab ID	067	069	070	072	074
Boring No.	TS-SOIL-01	TS-SOIL-02	TS-SOIL-02	TS-SOIL-03	TS-SOIL-04
Depth (in)	9-14	7-12	12-19	7-15	5-11
Sample No.	S-2	S-2	S-3	S-2	S-2
Tare Number	1126	D-3	884	614	497
Wt. of Tare & WS (gm)	417.6	163.32	352.07	149.02	217.03
Wt. of Tare & DS (gm)	375.09	136.51	295.88	138.68	166.58
Wt. of Tare (gm)	84.89	36.05	109.76	84.69	8.24
Wt. of Water (gm)	42.51	26.81	56.19	10.34	50.45
Wt. of DS (gm)	290.2	100.46	186.12	53.99	158.34
Water Content (%)	14.6	26.7	30.2	19.2	31.9

Notes: NA

Tested By TM Date 2/21/06 Checked By *KRB* Date 3-13-06
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