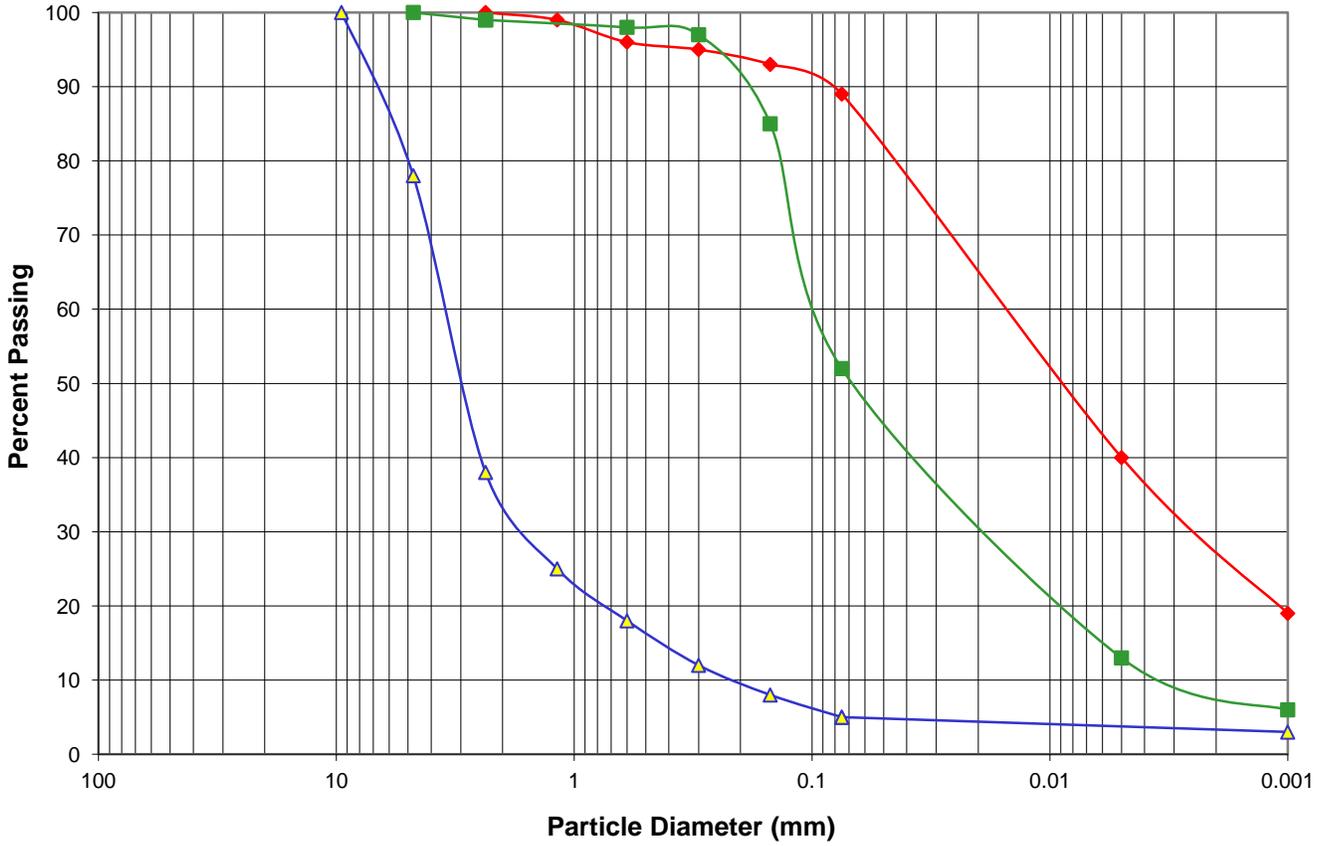


# Gradation Analysis Test Results

US Standard Sieve Openings (Inches)					US Standard Sieve Number						Hydrometer (Cal Test 203)		
4"	2"	1"	3/4"	1/2" 3/8"	#4	#8	#16	#30	#50	#100	#200	5 $\mu$ m	1 $\mu$ m



GRAVELS		SANDS			SILT	CLAY

**Sample ID:**      ◆ B1@3.05m      ■ B2@3.05m      ▲ B24@3.05m

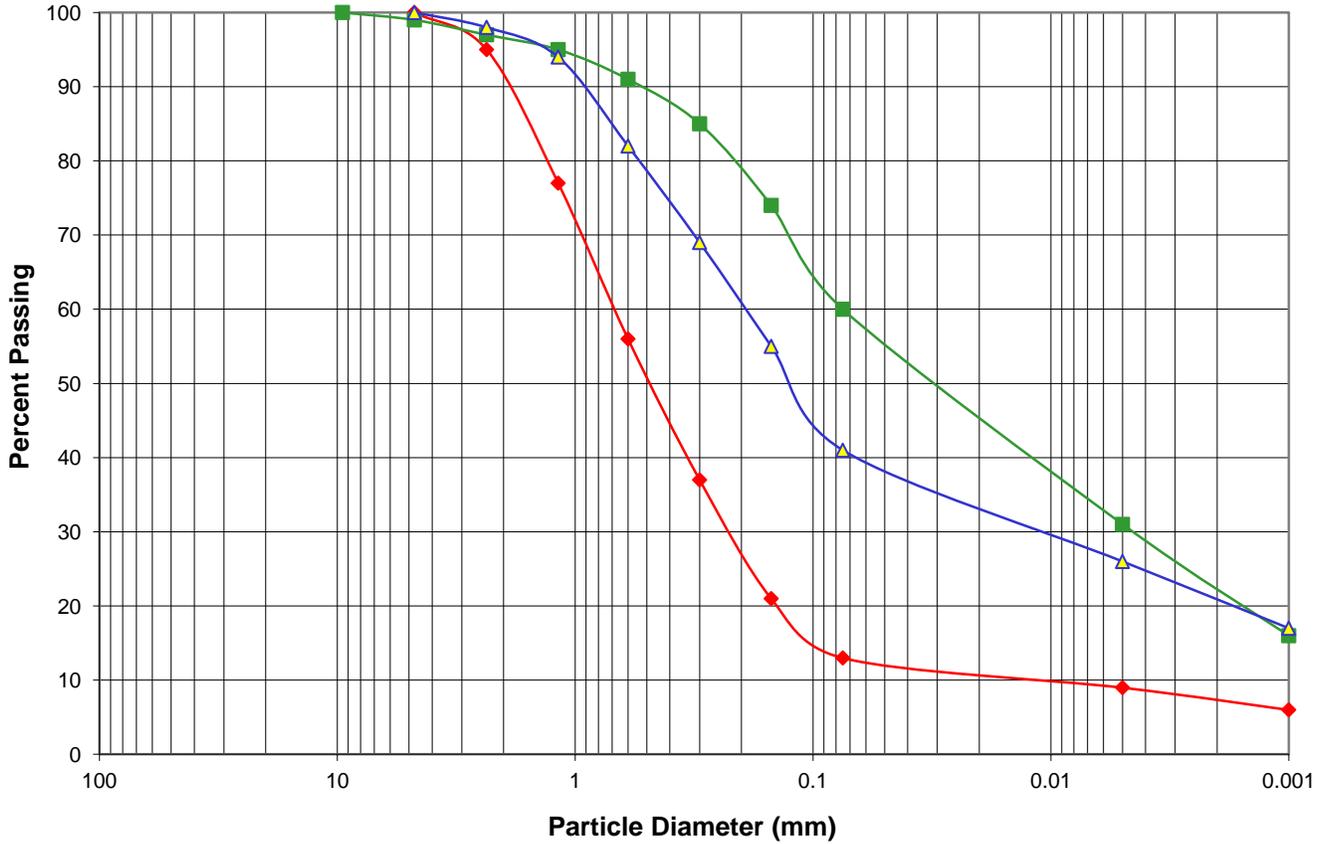


**CALTRANS**  
 Division of Engineering Services  
 Office of Geotechnical Design - South

<b>Project:</b>	CA58 Realignment @ Hinkley
<b>EA:</b>	08-043510
<b>D.-Co.-Rt.:</b>	08-SBd-58-KP35.1/50.0
<b>Test Date:</b>	Jun. 5, 2002

# Gradation Analysis Test Results

US Standard Sieve Openings (Inches)					US Standard Sieve Number							Hydrometer (Cal Test 203)	
4"	2"	1"	3/4"	1/2" 3/8"	#4	#8	#16	#30	#50	#100	#200	5 $\mu$ m	1 $\mu$ m



GRAVELS		SANDS			SILT	CLAY
		Coarse	Fine	Coarse		

**Sample ID:**      ◆ B35@3.05m      ■ B36@3.05m      ▲ B37@3.05m

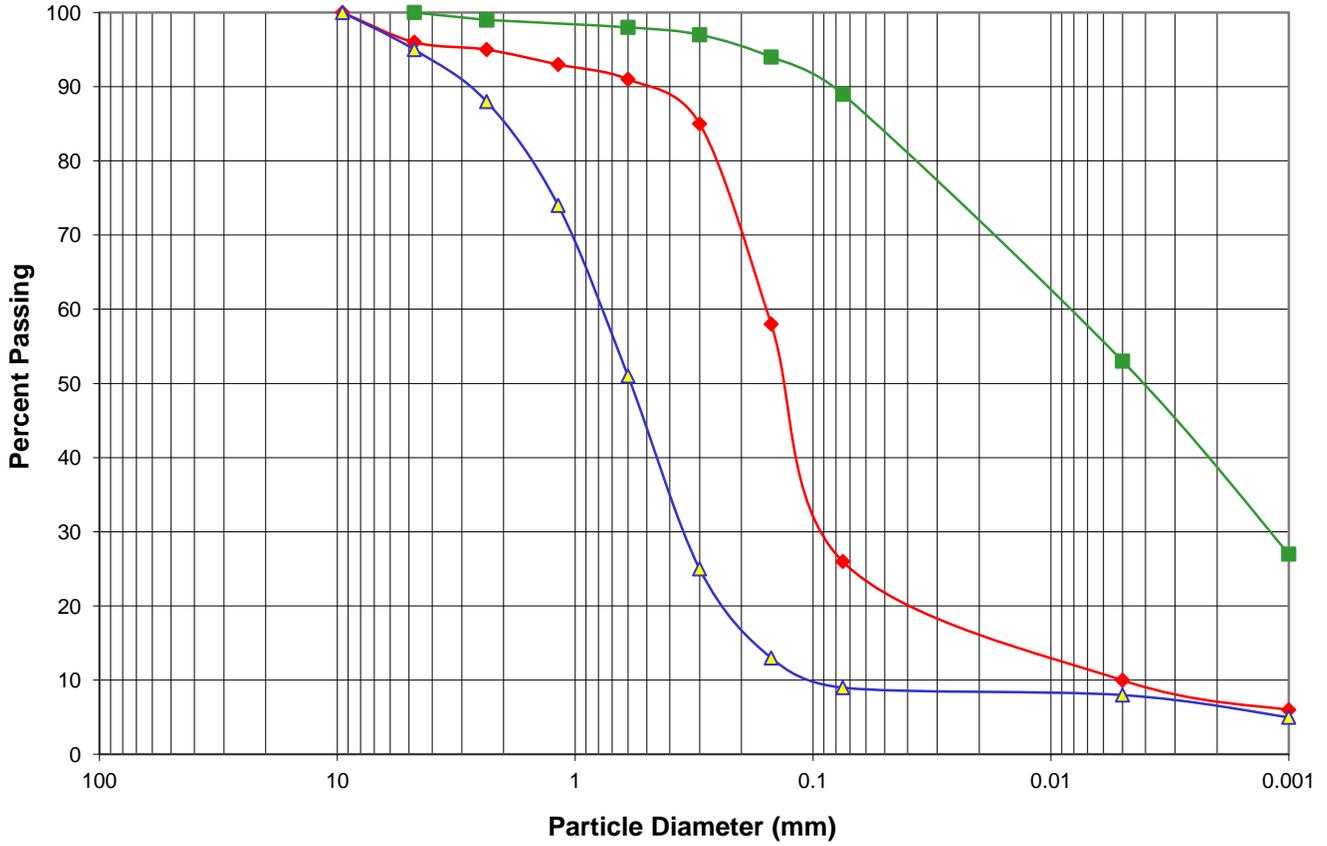


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<b>Project:</b>	CA58 Realignment @ Hinkley
<b>EA:</b>	08-043510
<b>D.-Co.-Rt.:</b>	08-SBd-58-KP35.1/50.0
<b>Test Date:</b>	Jun. 5, 2002

# Gradation Analysis Test Results

US Standard Sieve Openings (Inches)					US Standard Sieve Number							Hydrometer (Cal Test 203)	
4"	2"	1"	3/4"	1/2" 3/8"	#4	#8	#16	#30	#50	#100	#200	5 $\mu$ m	1 $\mu$ m



GRAVELS		SANDS			SILT	CLAY
		Coarse	Fine	Coarse		

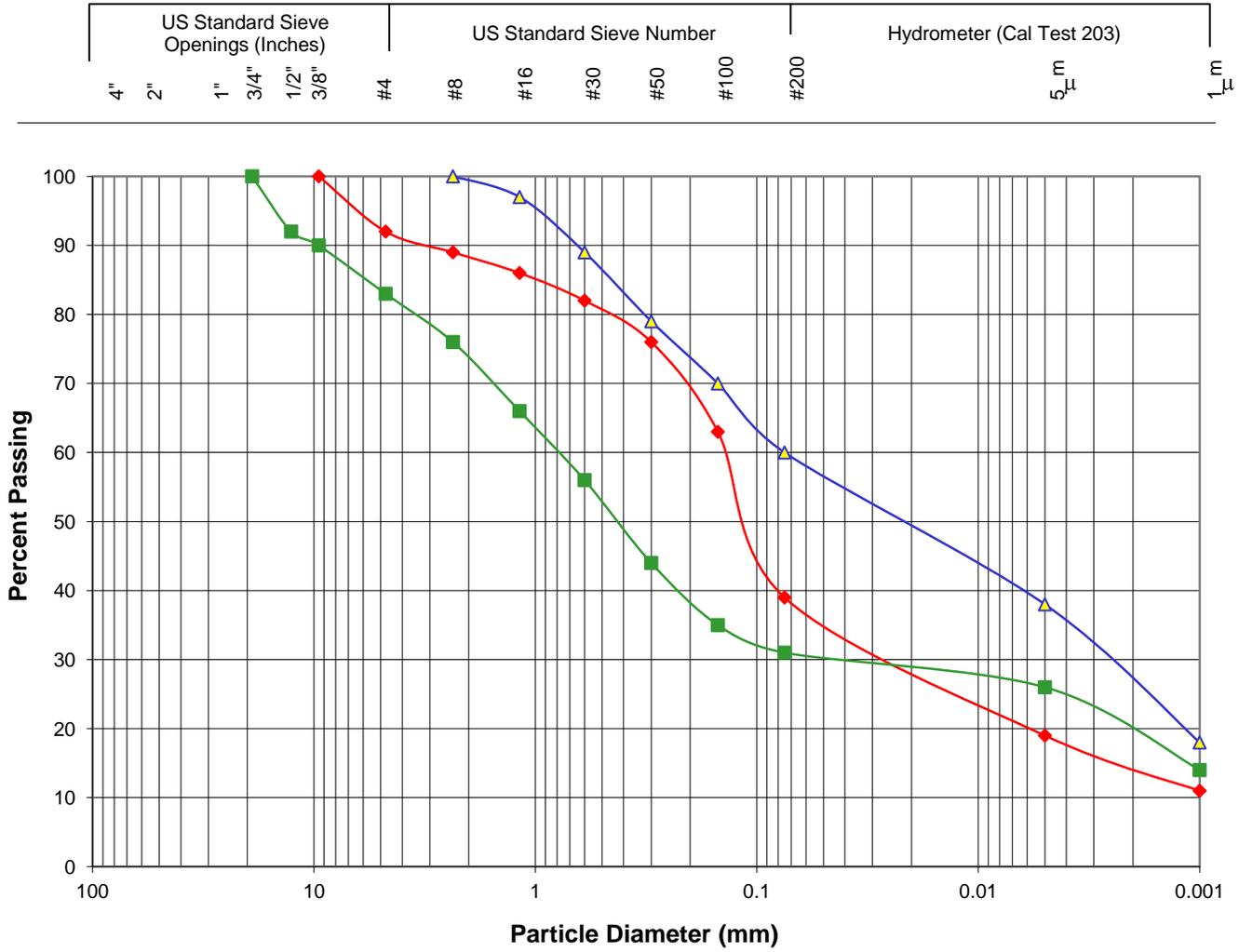
**Sample ID:**      ◆ B33@1.53m      ■ B33@4.58m      ▲ B34@6.1m



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<b>Project:</b>	CA58 Realignment @ Hinkley
<b>EA:</b>	08-043510
<b>D.-Co.-Rt.:</b>	08-SBd-58-KP35.1/50.0
<b>Test Date:</b>	Jun. 19, 2002

# Gradation Analysis Test Results



GRAVELS		SANDS			SILT	CLAY
Coarse	Fine	Coarse	Medium	Fine		

**Sample ID:**      ◆ B30@3.05m      ■ B30@6.1m      ▲ B32@3.05m

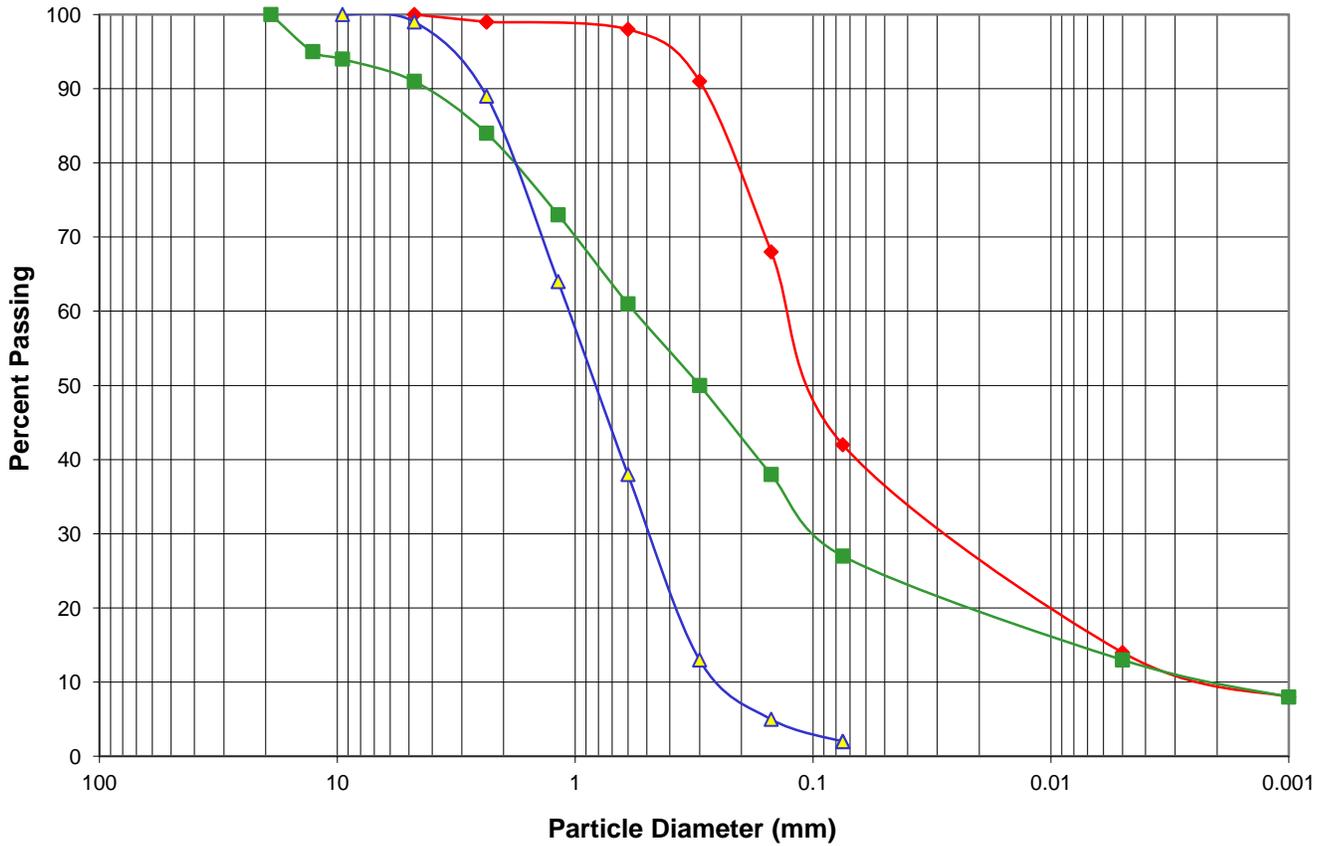


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<b>Project:</b>	CA58 Realignment @ Hinkley
<b>EA:</b>	08-043510
<b>D.-Co.-Rt.:</b>	08-SBd-58-KP35.1/50.0
<b>Test Date:</b>	Jun. 19, 2002

# Gradation Analysis Test Results

US Standard Sieve Openings (Inches)				US Standard Sieve Number						Hydrometer (Cal Test 203)				
4"	2"	1"	3/4"	1/2"	3/8"	#4	#8	#16	#30	#50	#100	#200	5 $\mu$ m	1 $\mu$ m



GRAVELS		SANDS			SILT	CLAY
		Coarse	Fine	Coarse		

**Sample ID:**      ◆ B29@3.05m      ■ B29@6.1m      ▲ B29@12.2m

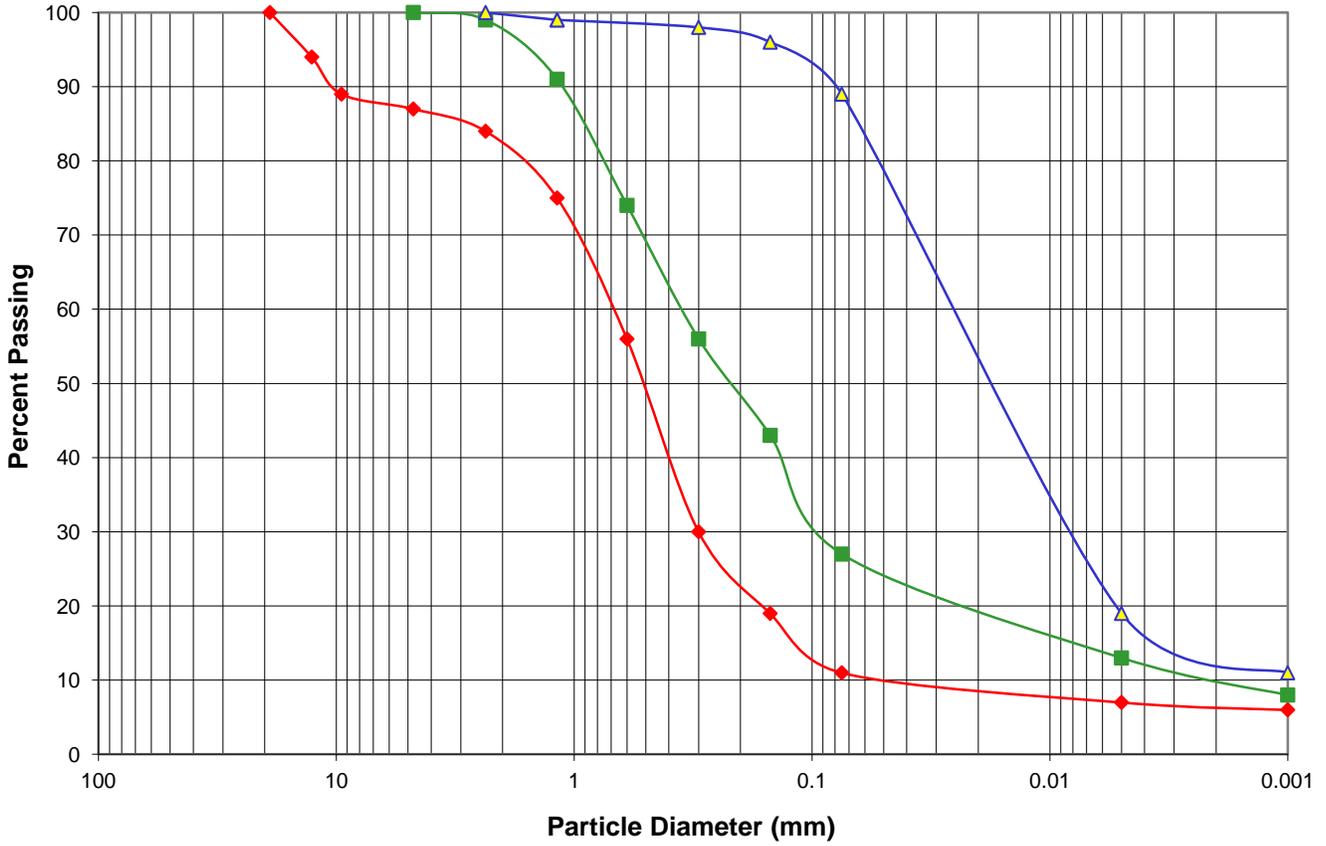


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<b>Project:</b>	CA58 Realignment @ Hinkley
<b>EA:</b>	08-043510
<b>D.-Co.-Rt.:</b>	08-SBd-58-KP35.1/50.0
<b>Test Date:</b>	Jun. 19, 2002

# Gradation Analysis Test Results

US Standard Sieve Openings (Inches)					US Standard Sieve Number							Hydrometer (Cal Test 203)		
4"	2"	1"	3/4"	1/2"	3/8"	#4	#8	#16	#30	#50	#100	#200	5 $\mu$ m	1 $\mu$ m



GRAVELS		SANDS			SILT	CLAY
Coarse	Fine	Coarse	Medium	Fine		

**Sample ID:**      ◆ B28@3.05m      ■ B28@12.2m      ▲ B28@15.253m

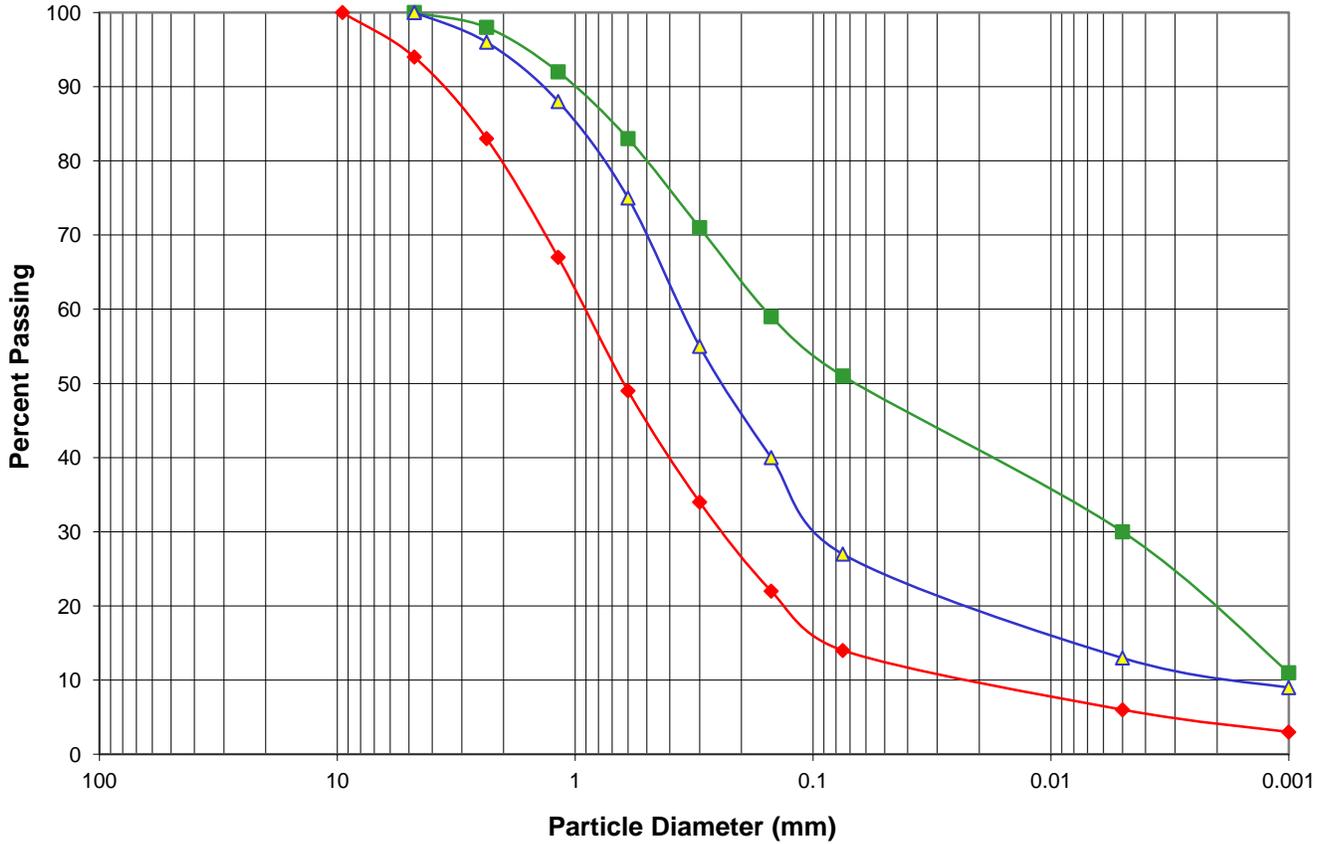


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<b>Project:</b>	CA58 Realignment @ Hinkley
<b>EA:</b>	08-043510
<b>D.-Co.-Rt.:</b>	08-SBd-58-KP35.1/50.0
<b>Test Date:</b>	Jun. 19, 2002

# Gradation Analysis Test Results

US Standard Sieve Openings (Inches)					US Standard Sieve Number							Hydrometer (Cal Test 203)	
4"	2"	1"	3/4"	1/2" 3/8"	#4	#8	#16	#30	#50	#100	#200	5 $\mu$ m	1 $\mu$ m



GRAVELS		SANDS			SILT	CLAY
		Coarse	Fine	Coarse		

**Sample ID:**      ◆ B25@3.05m      ■ B26@3.05m      ▲ B27@3.05m

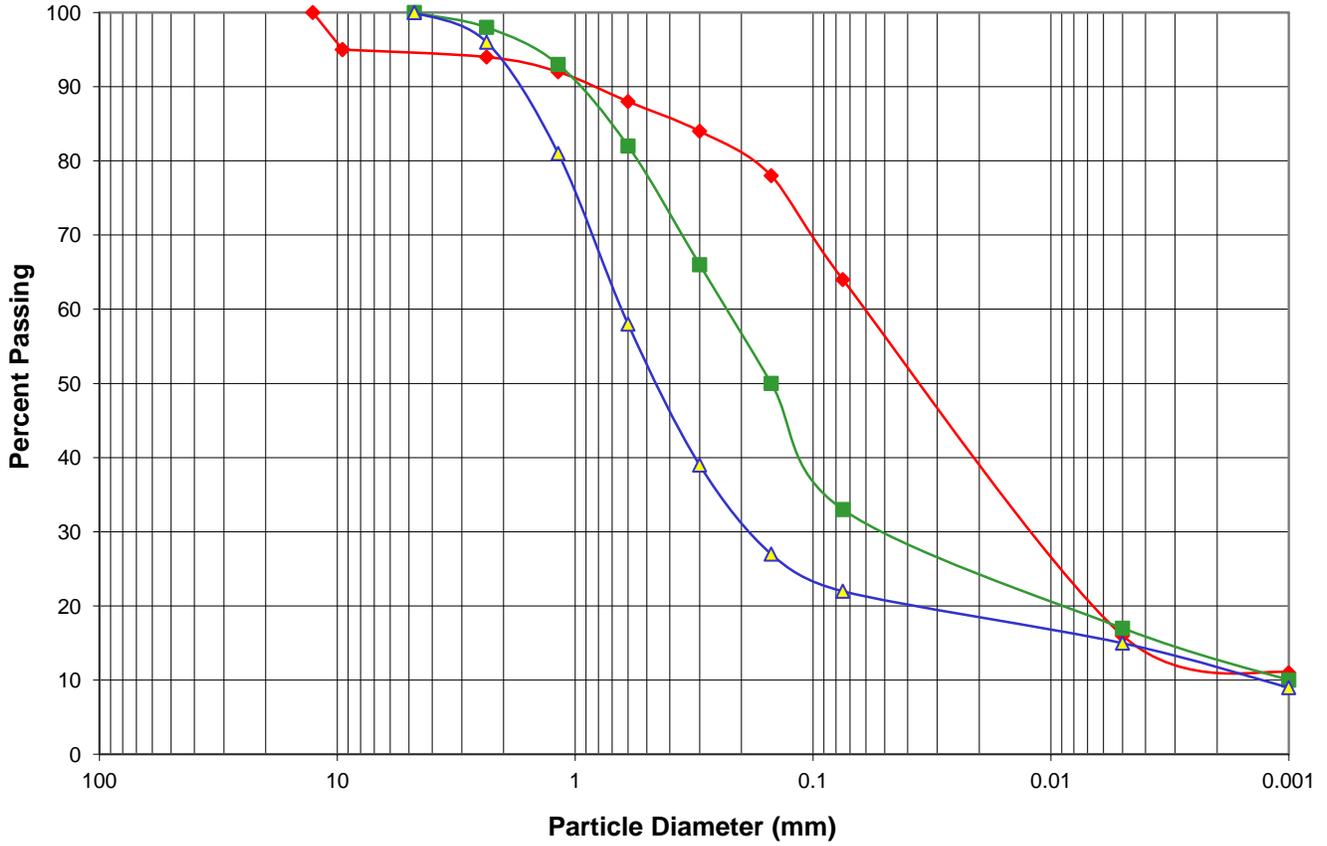


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<b>Project:</b>	CA58 Realignment @ Hinkley
<b>EA:</b>	08-043510
<b>D.-Co.-Rt.:</b>	08-SBd-58-KP35.1/50.0
<b>Test Date:</b>	Jun. 5, 2002

# Gradation Analysis Test Results

US Standard Sieve Openings (Inches)					US Standard Sieve Number							Hydrometer (Cal Test 203)	
4"	2"	1"	3/4"	1/2" 3/8"	#4	#8	#16	#30	#50	#100	#200	5 $\mu$ m	1 $\mu$ m



GRAVELS		SANDS			SILT	CLAY
		Coarse	Fine	Coarse		

<b>Sample ID:</b>	<span style="color: red;">◆</span> B23A@3.05m	<span style="color: green;">■</span> B23A@6.10m	<span style="color: blue;">▲</span> B23B@3.05m
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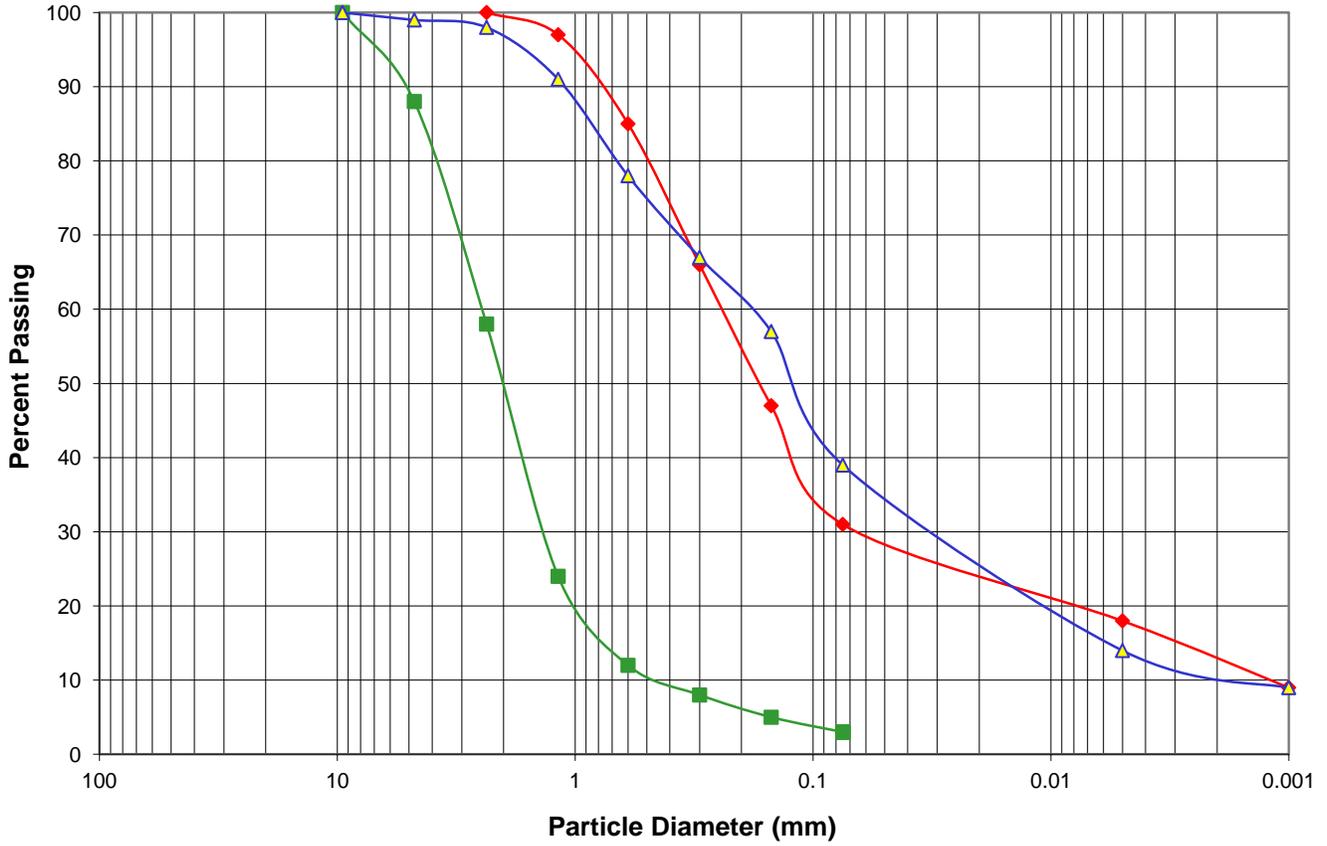


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<b>Project:</b>	CA58 Realignment @ Hinkley
<b>EA:</b>	08-043510
<b>D.-Co.-Rt.:</b>	08-SBd-58-KP35.1/50.0
<b>Test Date:</b>	Jun. 19, 2002

# Gradation Analysis Test Results

US Standard Sieve Openings (Inches)					US Standard Sieve Number							Hydrometer (Cal Test 203)	
4"	2"	1"	3/4"	1/2" 3/8"	#4	#8	#16	#30	#50	#100	#200	5 $\mu$ m	1 $\mu$ m



GRAVELS		SANDS			SILT	CLAY
		Coarse	Fine	Coarse		

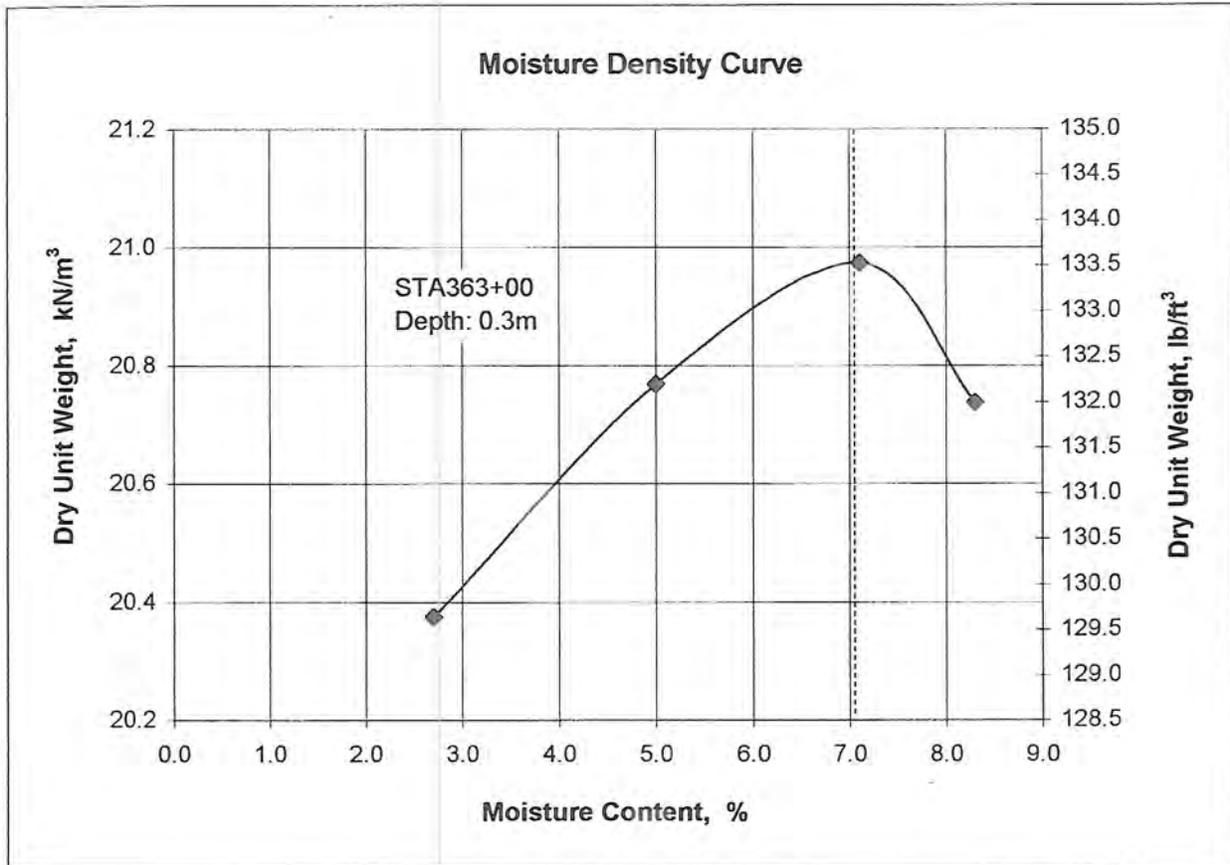
**Sample ID:**      ◆ B38@3.05m      ■ B39@3.05m      ▲ B40@3.05m



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<b>Project:</b>	CA58 Realignment @ Hinkley
<b>EA:</b>	08-043510
<b>D.-Co.-Rt.:</b>	08-SBd-58-KP35.1/50.0
<b>Test Date:</b>	Jun. 5, 2002

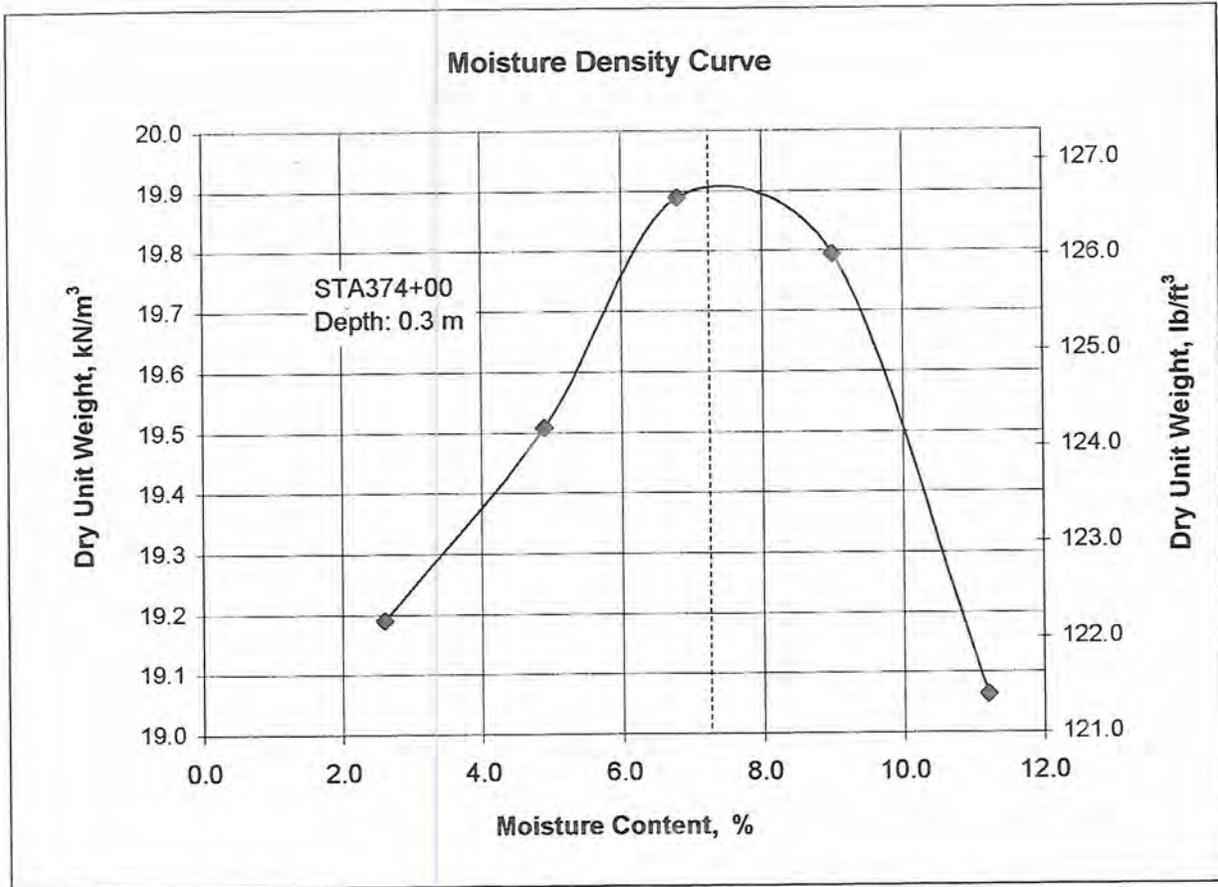
Moisture Content (%)		2.7	5.0	7.1	8.3
Dry Unit Weight (SI)	kN/m <sup>3</sup>	20.4	20.8	21.0	20.7
Dry Unit Weight (US)	lb/ft <sup>3</sup>	129.7	132.2	133.5	132.0
Max. Dry Density (SI)	kN/m <sup>3</sup>	21.0	Optimum Moisture		7.1%



Remark: Poorly Graded SAND with Silt (SP). Sand: Fine to Medium, Poorly Graded. Brown (10YR5/4).  
Dry

	CALTRANS Division of Engineering Services Office of Geotechnical Design - South	Project:	CA58 Realignment @ Hinkley
		EA:	08-043510
		D.-Co.-Rt.:	08-SBd-58-KP35.1/50.0
		Test Date:	June 3, 2002

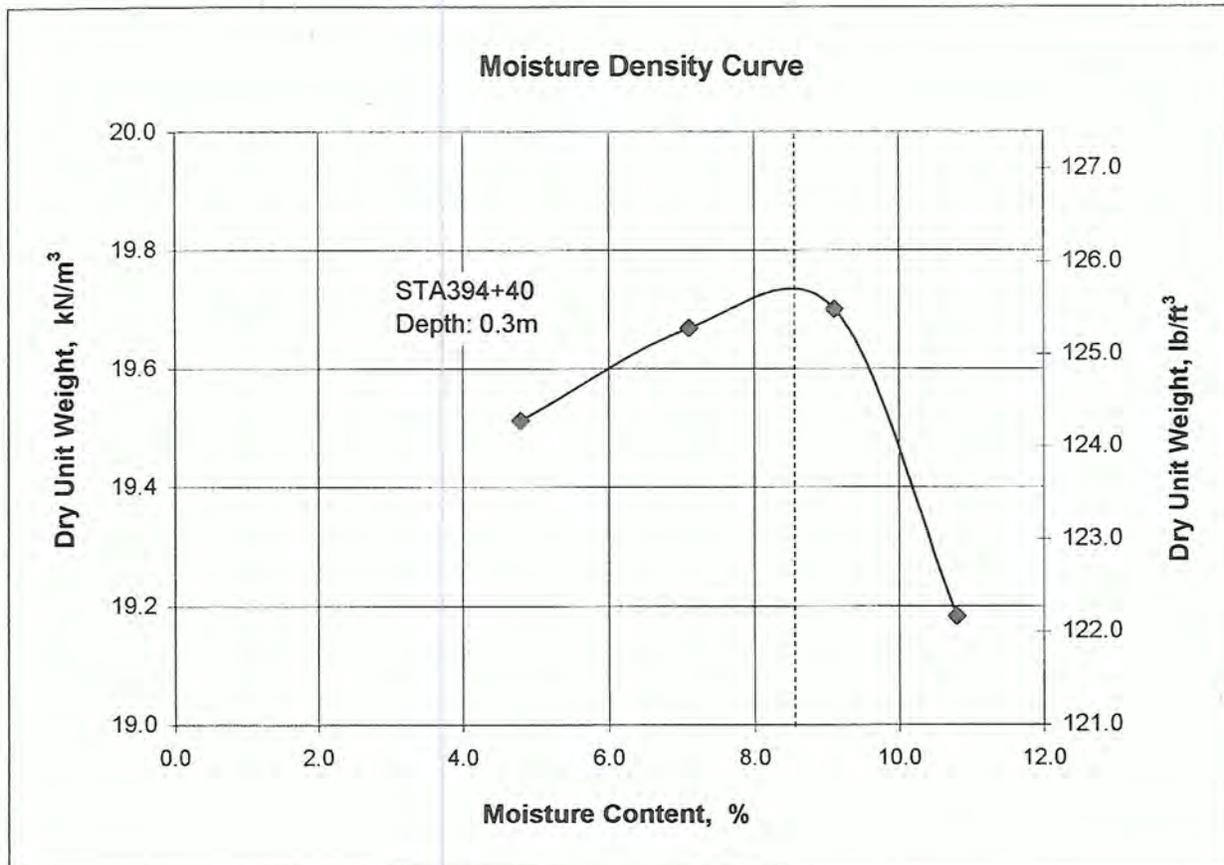
Moisture Content (%)		2.6	4.9	6.8	9.0	11.2
Dry Unit Weight (SI)	kN/m <sup>3</sup>	19.2	19.5	19.9	19.8	19.1
Dry Unit Weight (US)	lb/ft <sup>3</sup>	122.2	124.2	126.6	126.0	121.4
Max. Dry Density (SI)	kN/m <sup>3</sup>	19.9	Optimum Moisture		7.3%	



Remark: Poorly Graded SAND (SP). Sand: Fine to Coarse, Poorly Graded, Brown  
(10YR5/4). Dry

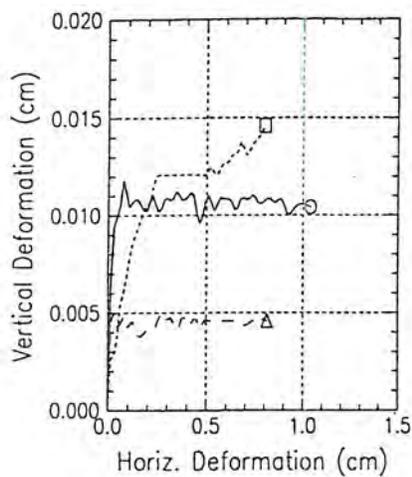
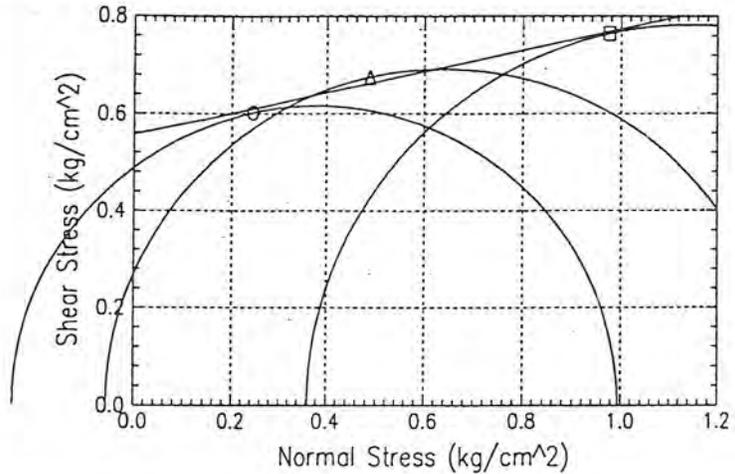
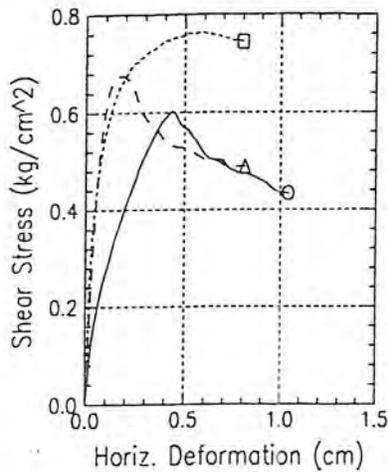
	CALTRANS Division of Engineering Services Office of Geotechnical Design - South	<b>Project:</b>	CA58 Realignment @ Hinkley
		<b>EA:</b>	08-043510
		<b>D.-Co.-Rt.:</b>	08-SBd-58-KP35.1/50.0
		<b>Test Date:</b>	June 5, 2002

Moisture Content (%)		4.8	7.1	9.1	10.8
Dry Unit Weight (SI)	kN/m <sup>3</sup>	19.5	19.7	19.7	19.2
Dry Unit Weight (US)	lb/ft <sup>3</sup>	124.2	125.2	125.4	122.1
Max. Dry Density (SI)	kN/m <sup>3</sup>	19.8	Optimum Moisture		8.7%



Remarks: Poorly Graded SAND with Silt (SP). Sand: Fine, Poorly Graded. Brown (10YR5/4).  
Dry

	CALTRANS Division of Engineering Services Office of Geotechnical Design - South	<b>Project:</b>	CA58 Realignment @ Hinkley
		<b>EA:</b>	08-043510
		<b>D.-Co.-Rt.:</b>	08-SBd-58-KP35.1/50.0
		<b>Test Date:</b>	June 11, 2002



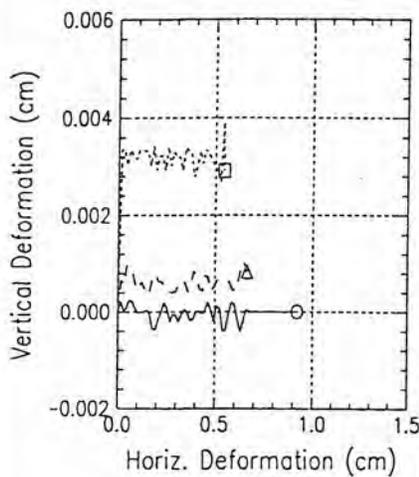
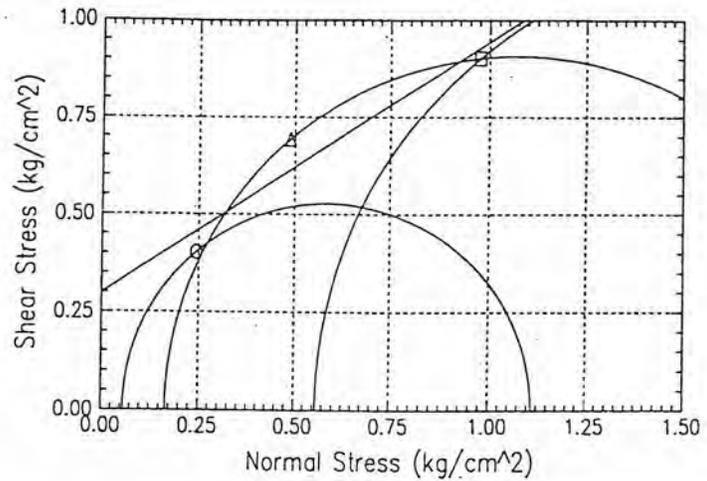
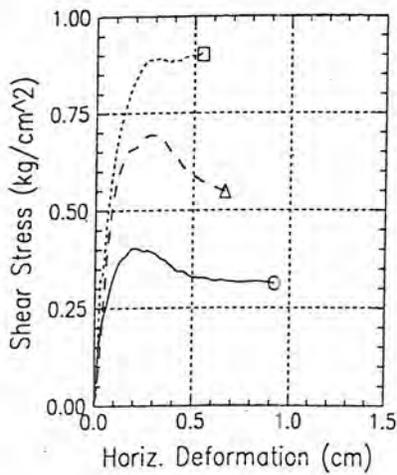
Strength Parameters

$$c = 0.571 \text{ kg/cm}^2 = 56 \text{ KPa}$$

$$\phi = 12.4$$

Graph Symbol		O	Δ	□
Test No.		DS02081A	DS02081B	DS02081C
Initial	Water content (%) $w_o$	8.37	12.99	11.24
	Void ratio $e_o$	0.00	0.00	0.00
	Saturation (%) $S_o$	12.75	22.41	17.68
	Dry density ( $\text{gm/cm}^3$ ) $\gamma_d$	1.52	1.72	1.57
Void ratio after consolidation $e_c$		0.00	0.00	0.00
Time for 50 percent consolidation $t_{50}$				
Final	Water content (%) $w_f$	26.32	24.20	26.27
	Void Ratio $e_f$	0.00	0.00	0.00
	Saturation (%) $S_f$	40.26	41.81	41.56
Normal stress ( $\text{kg/cm}^2$ ) $\sigma$		0.24	0.49	0.98
Maximum shear stress ( $\text{kg/cm}^2$ ) $\tau_{max}$		0.60	0.68	0.76
Actual time to failure (min) $t_f$		43	19	55
Rate of strain				
Ultimate shear stress ( $\text{kg/cm}^2$ ) $\tau_{ult}$		0.43	0.49	0.74

Type of Specimen	1.944						
Description	DRY BROWN SILT WITH SAND						
LL	0.0	PL	0.0	PI	0.0	$G_s$	0
Remarks	SHEAR RATE .004 IN/MIN			Project			RTE 58 REALIGNMENT
	Area		19.15 ( $\text{cm}^2$ )	Boring No.		B-23A	
	Depth		10 FT	Sample No.		B-23A-10'	
	Elevation		---	Date		06/04/02	
DIRECT SHEAR TEST REPORT							



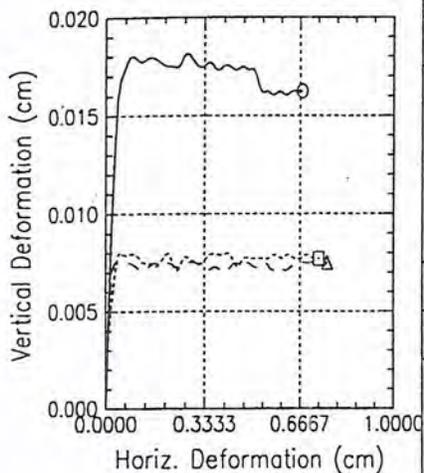
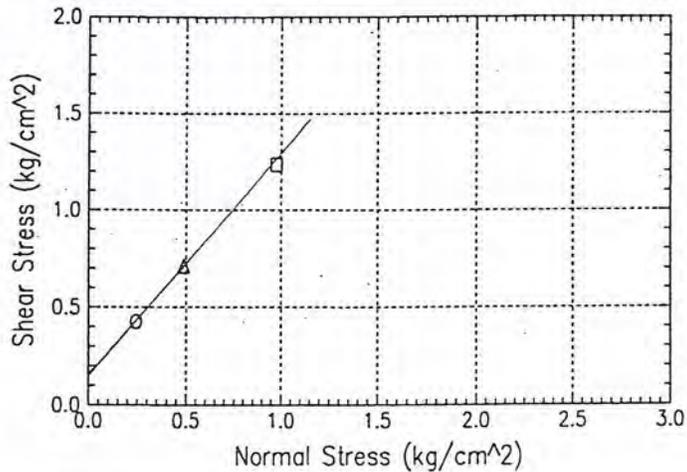
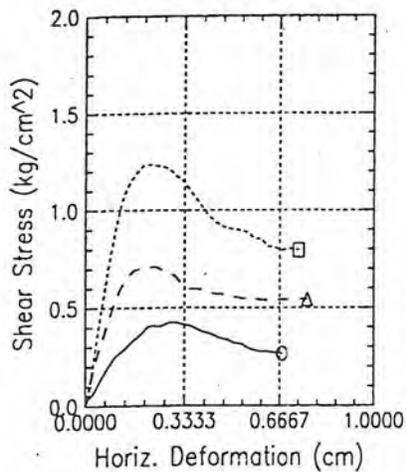
Strength Parameters

$$c = 0.39 \text{ kg/cm}^2 = 38.3 \text{ kPa}$$

$$\phi = 40.2$$

Graph Symbol		O	Δ	□
Test No.		DS02082A	DS02082B	DS02082C
Initial	Water content (%) $w_o$	7.78	10.16	9.26
	Void ratio $e_o$	0.00	0.00	0.00
	Saturation (%) $S_o$	13.77	18.50	16.24
	Dry density ( $\text{gm/cm}^3$ ) $\gamma_d$	1.77	1.82	1.75
Void ratio after consolidation $e_c$		0.00	0.00	0.00
Time for 50 percent consolidation $t_{50}$				
Final	Water content (%) $w_f$	22.18	21.11	20.63
	Void Ratio $e_f$	0.00	0.00	0.00
	Saturation (%) $S_f$	39.27	38.46	36.23
Normal stress ( $\text{kg/cm}^2$ ) $\sigma$		0.24	0.49	0.98
Maximum shear stress ( $\text{kg/cm}^2$ ) $\tau_{max}$		0.40	0.69	0.90
Actual time to failure (min) $t_f$		21	27	50
Rate of strain				
Ultimate shear stress ( $\text{kg/cm}^2$ ) $\tau_{ult}$		0.31	0.55	0.90

Type of Specimen		1.944					
Description		DRY BROWN SILT WITH SAND					
LL	0.0	PL	0.0	PI	0.0	$G_s$	0
Remarks		SHEAR RATE .004 IN/MIN		Project RTE 58 REALIGNMENT			
				Area	19.15 ( $\text{cm}^2$ )	Boring No.	B-23A
				Depth	20 FT	Sample No.	B-23A-20'1
				Elevation	---	Date	06/04/02
DIRECT SHEAR TEST REPORT							



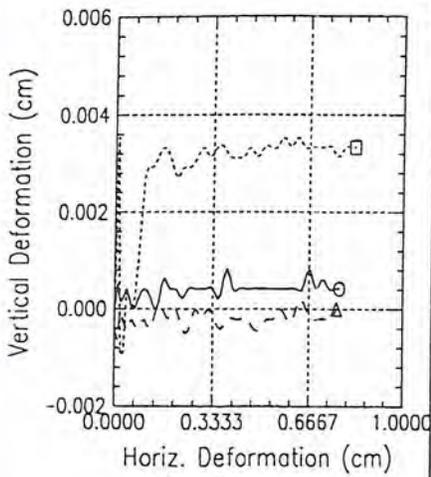
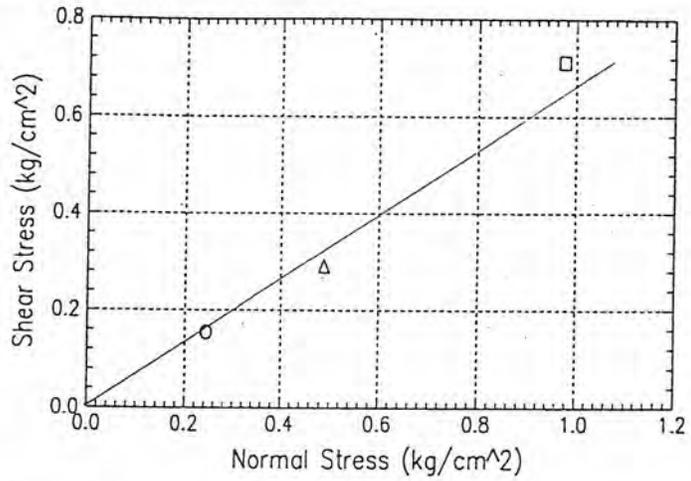
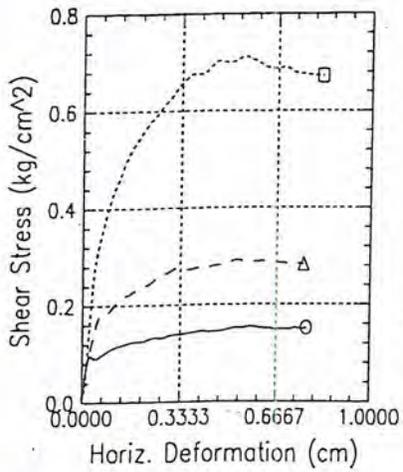
Graph Symbol		O	Δ	□
Test No.		DS02083A	DS02083B	DS02083C
Initial	Water content (%) $w_o$	12.41	12.86	12.20
	Void ratio $e_o$	0.00	0.00	0.00
	Saturation (%) $S_o$	22.00	23.03	22.00
	Dry density ( $gm/cm^3$ ) $\gamma_d$	1.77	1.79	1.80
Void ratio after consolidation $e_c$		0.00	0.00	0.00
Time for 50 percent consolidation $t_{50}$				
Final	Water content (%) $w_f$	21.35	21.93	22.69
	Void Ratio $e_f$	0.00	0.00	0.00
	Saturation (%) $S_f$	38.07	39.39	41.04
Normal stress ( $kg/cm^2$ ) $\sigma$		0.24	0.49	0.98
Maximum shear stress ( $kg/cm^2$ ) $\tau_{max}$		0.43	0.71	1.24
Actual time to failure (min) $t_f$		29	23	21
Rate of strain				
Ultimate shear stress ( $kg/cm^2$ ) $\tau_{ult}$		0.26	0.54	0.79

Strength Parameters

$$c = 0.15 \text{ kg/cm}^2 = 14.7 \text{ KPa}$$

$$\phi = 50^\circ$$

Type of Specimen		1.944			
Description MOIST BROWN MEDIUM SAND WITH SILT					
LL	0.0	PL	0.0	PI	0.0
				$G_s$	0
Remarks SHEAR RATE .004 IN/MIN			Project RTE 58 REALIGNMENT		
08-043510					
		Area	19.15 ( $cm^2$ )	Boring No.	B-23B
		Depth	10 FT	Sample No.	B-23B-10'1
		Elevation	---	Date	06/04/02
DIRECT SHEAR TEST REPORT <i>ip6/6</i>					



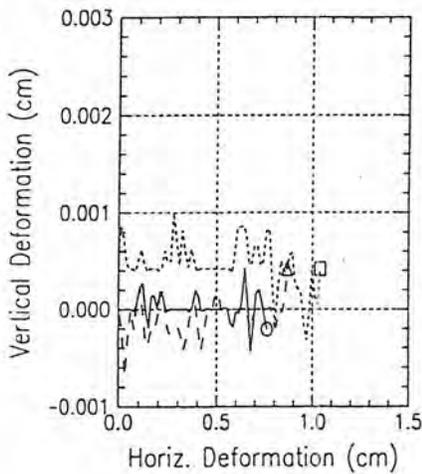
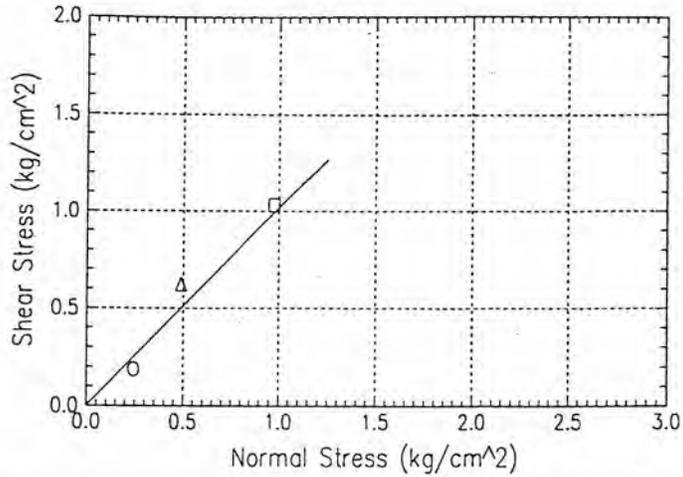
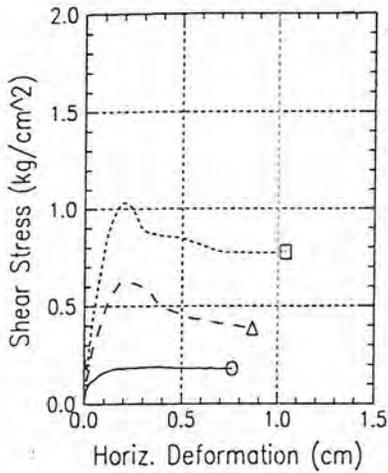
Graph Symbol		O	Δ	□
Test No.		DS02084A	DS02084B	DS02084C
Initial	Water content (%) $w_o$	3.54	2.28	2.15
	Void ratio $e_o$	0.00	0.00	0.00
	Saturation (%) $S_o$	5.76	3.70	3.50
	Dry density ( $gm/cm^3$ ) $\gamma_d$	1.62	1.62	1.63
Void ratio after consolidation $e_c$		0.00	0.00	0.00
Time for 50 percent consolidation $t_{50}$				
Final	Water content (%) $w_f$	20.51	20.81	22.76
	Void Ratio $e_f$	0.00	0.00	0.00
	Saturation (%) $S_f$	33.31	33.72	37.06
Normal stress ( $kg/cm^2$ ) $\sigma$		0.24	0.49	0.98
Maximum shear stress ( $kg/cm^2$ ) $\tau_{max}$		0.15	0.29	0.71
Actual time to failure ( $min$ ) $t_f$		55	49	51
Rate of strain				
Ultimate shear stress ( $kg/cm^2$ ) $\tau_{ult}$		0.15	0.28	0.67

Strength Parameters

$$\phi = 35^\circ$$

$$c = 0$$

Type of Specimen		1.944	
Description DRY BROWN MEDIUM SAND WITH SILT			
LL	0.0	PL	0.0
PI	0.0	$G_s$ 0	
Remarks SHEAR RATE .004 IN/MIN		Project RTE 58 REALIGNMENT	
08-043510			
Area		19.15 ( $cm^2$ )	Boring No. B-28
Depth		10 FT	Sample No. B-28-10'-1
Elevation		---	Date 06/04/02
DIRECT SHEAR TEST REPORT VP 6/6 <i>jj</i>			

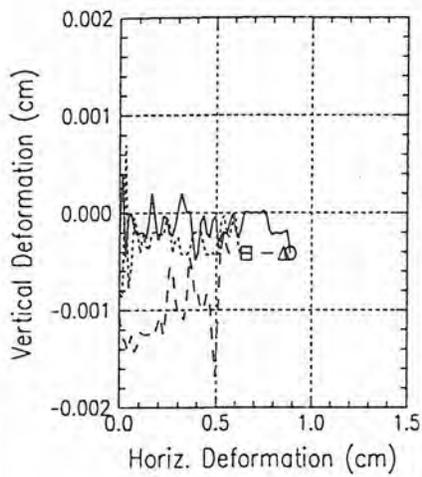
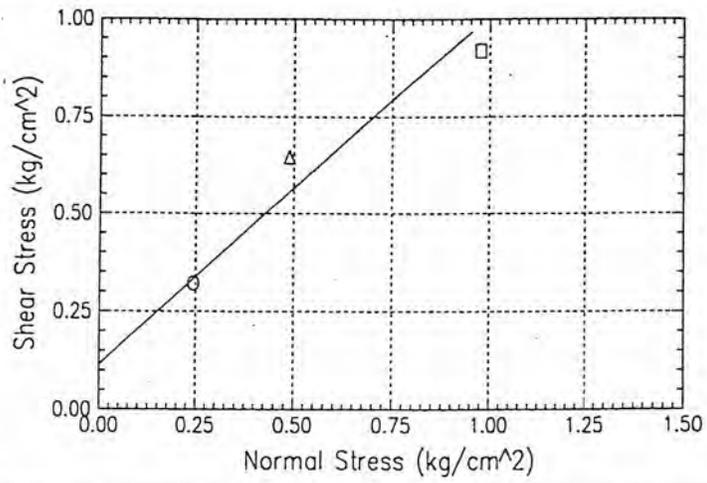
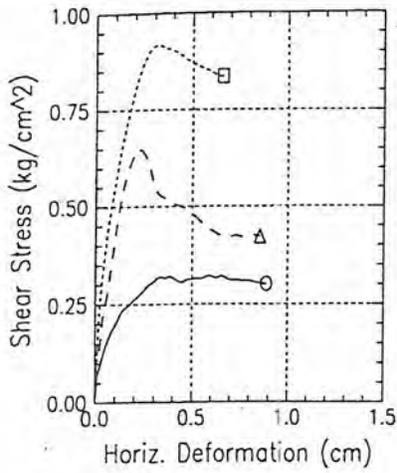


Graph Symbol		O	Δ	□
Test No.		DS02085A	DS02085B	DS02085C
Initial	Water content (%) $w_o$	13.57	15.39	17.31
	Void ratio $e_o$	0.00	0.00	0.00
	Saturation (%) $S_o$	21.18	24.88	28.37
	Dry density ( $gm/cm^3$ ) $\gamma_d$	1.56	1.62	1.64
Void ratio after consolidation $e_c$		0.00	0.00	0.00
Time for 50 percent consolidation $t_{50}$				
Final	Water content (%) $w_f$	25.16	25.45	24.09
	Void Ratio $e_f$	0.00	0.00	0.00
	Saturation (%) $S_f$	39.27	41.13	39.48
Normal stress ( $kg/cm^2$ ) $\sigma$		0.24	0.49	0.98
Maximum shear stress ( $kg/cm^2$ ) $\tau_{max}$		0.19	0.62	1.03
Actual time to failure (min) $t_f$		33	21	21
Rate of strain				
Ultimate shear stress ( $kg/cm^2$ ) $\tau_{ult}$		0.18	0.39	0.78

Strength Parameters

$\phi = 45^\circ$   
 $C = 0$

Type of Specimen	1.944						
Description	MOIST BROWN SAND WITH SILT						
LL	0.0	PL	0.0	PI	0.0	$G_s$	0
Remarks	SHEAR RATE .004 IN/MIN			Project RTE 58 REALIGNMENT			
	08-043510						
	Area	19.15 ( $cm^2$ )	Boring No.	B-29			
	Depth	10 FT	Sample No.	B-29-10'-1			
	Elevation	---	Date	06/11/02			
DIRECT SHEAR TEST REPORT <i>W 4/6</i>							

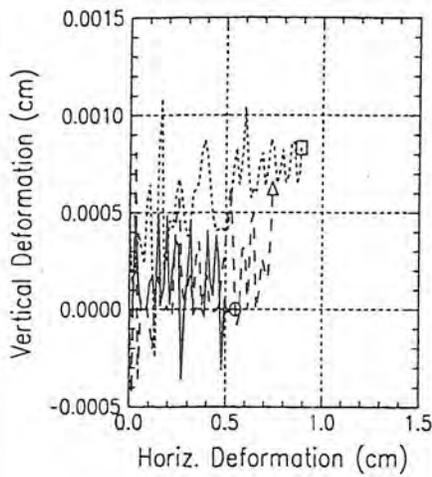
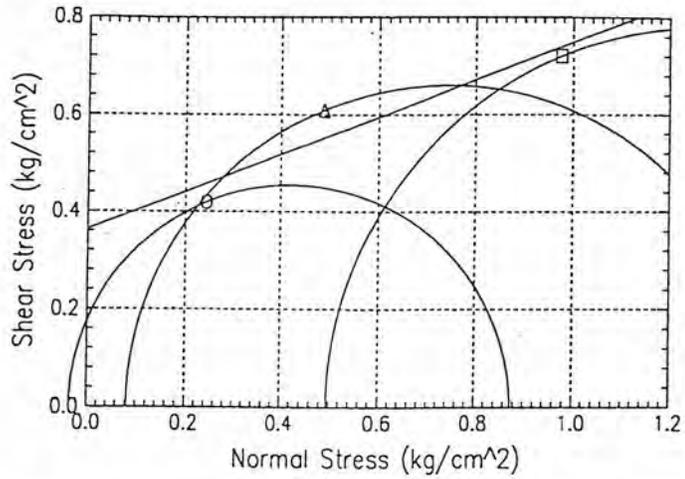
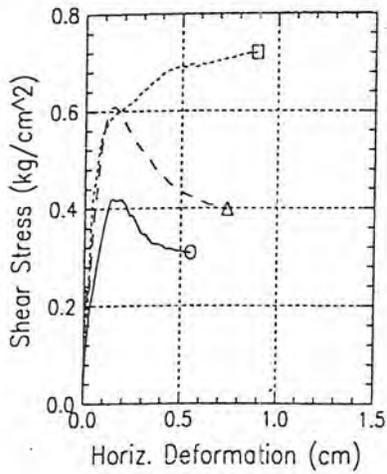


Graph Symbol		O	Δ	□
Test No.		DS02086A	DS02086B	DS02086C
Initial	Water content (%) $w_o$	20.53	19.95	18.13
	Void ratio $e_o$	0.00	0.00	0.00
	Saturation (%) $S_o$	31.66	33.72	30.22
	Dry density ( $gm/cm^3$ ) $\gamma_d$	1.54	1.69	1.67
Void ratio after consolidation $e_c$		0.00	0.00	0.00
Time for 50 percent consolidation $t_{50}$				
Final	Water content (%) $w_f$	26.27	25.55	22.93
	Void Ratio $e_f$	0.00	0.00	0.00
	Saturation (%) $S_f$	40.50	43.17	38.23
Normal stress ( $kg/cm^2$ ) $\sigma$		0.24	0.49	0.98
Maximum shear stress ( $kg/cm^2$ ) $\tau_{max}$		0.32	0.65	0.92
Actual time to failure (min) $t_f$		55	21	31
Rate of strain				
Ultimate shear stress ( $kg/cm^2$ ) $\tau_{ult}$		0.30	0.42	0.84

Strength Parameters

$c = 0.23 kg = 22.6 kPa$   
 $\phi = 46$

Type of Specimen	1.944						
Description	MOIST BROWN SILT WITH SAND						
LL	0.0	PL	0.0	PI	0.0	$G_s$	0
Remarks	SHEAR RATE .004 IN/MIN			Project RTE 58 REALIGNMENT			
<b>08-043516</b>							
		Area	19.15 (cm <sup>2</sup> )	Boring No.	B-30		
		Depth	10 FT	Sample No.	B-30-10'-1		
		Elevation	---	Date	06/04/02		
DIRECT SHEAR TEST REPORT <i>UP 6/6 g</i>							



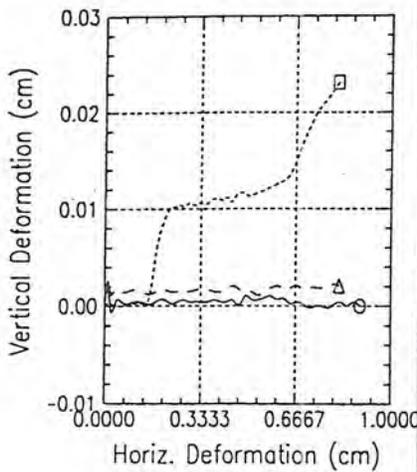
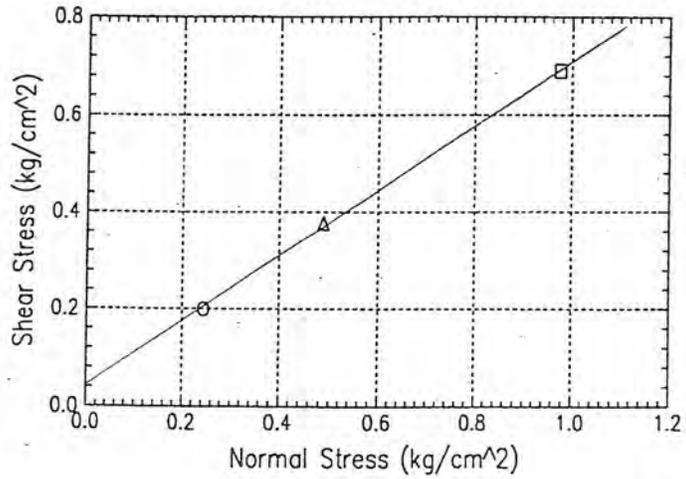
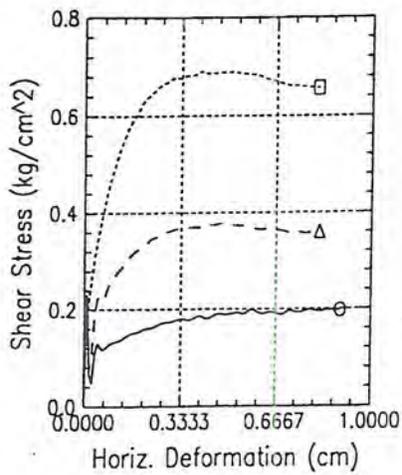
Strength Parameters

$$c = 0.394 \text{ kg} = 38.7 \text{ kPa}$$

$$\phi = 22.7$$

Graph Symbol		O	Δ	□
Test No.		DS02087A	DS02087B	DS02087C
Initial	Water content (%) $w_o$	13.22	21.05	14.76
	Void ratio $e_o$	0.00	0.00	0.00
	Saturation (%) $S_o$	23.03	32.28	24.88
	Dry density ( $\text{gm}/\text{cm}^3$ ) $\gamma_d$	1.74	1.53	1.69
Void ratio after consolidation $e_c$		0.00	0.00	0.00
Time for 50 percent consolidation $t_{50}$				
Final	Water content (%) $w_f$	20.19	30.83	24.15
	Void Ratio $e_f$	0.00	0.00	0.00
	Saturation (%) $S_f$	35.16	47.30	40.72
Normal stress ( $\text{kg}/\text{cm}^2$ ) $\sigma$		0.24	0.49	0.98
Maximum shear stress ( $\text{kg}/\text{cm}^2$ ) $\tau_{max}$		0.42	0.61	0.72
Actual time to failure (min) $t_f$		15	15	84
Rate of strain				
Ultimate shear stress ( $\text{kg}/\text{cm}^2$ ) $\tau_{ult}$		0.31	0.40	0.72

Type of Specimen		1.944			
Description MOIST BROWN SILTY CLAY WITH SAND					
LL	0.0	PL	0.0	PI	0.0
				$G_s$	0
Remarks SHEAR RATE .004 IN/MIN			Project RTE 58 REALIGNMENT		
		Area	19.15 ( $\text{cm}^2$ )	Boring No.	B-32
		Depth	10 FT	Sample No.	B-32-10'-1
		Elevation	---	Date	06/04/02
DIRECT SHEAR TEST REPORT					



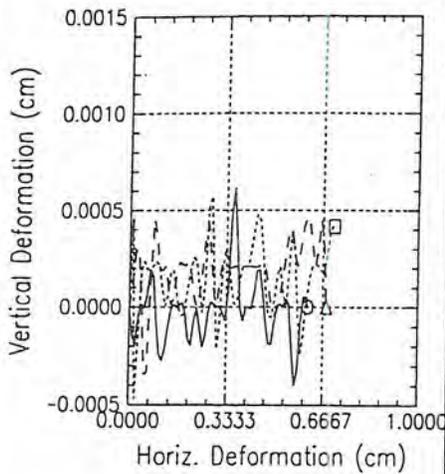
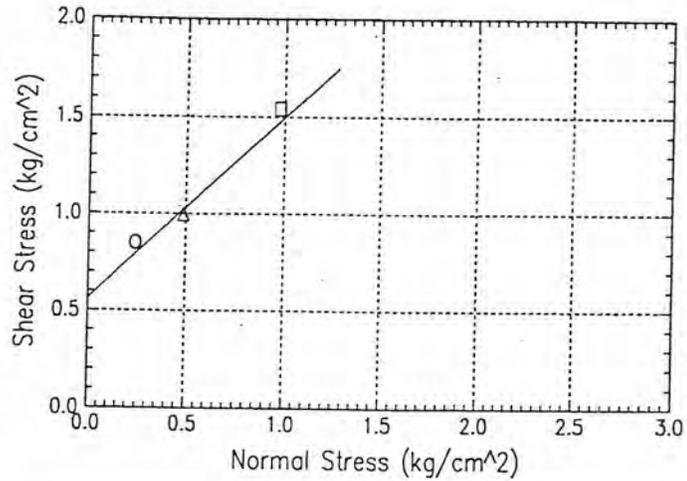
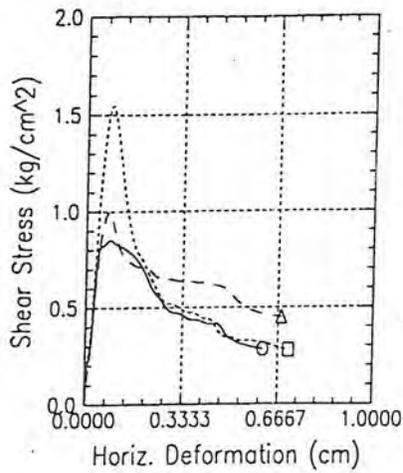
Strength Parameters

$$\phi = 37^\circ$$

$$c \approx 0$$

Graph Symbol		O	Δ	□
Test No.		DS02088A	DS02088B	DS02088C
Initial	Water content (%) $w_o$	2.93	2.71	1.78
	Void ratio $e_o$	0.00	0.00	0.00
	Saturation (%) $S_o$	3.70	3.91	2.47
	Dry density ( $gm/cm^3$ ) $\gamma_d$	1.26	1.44	1.39
Void ratio after consolidation $e_c$		0.00	0.00	0.00
Time for 50 percent consolidation $t_{50}$				
Final	Water content (%) $w_f$	34.80	33.33	34.62
	Void Ratio $e_f$	0.00	0.00	0.00
	Saturation (%) $S_f$	44.00	48.15	48.55
Normal stress ( $kg/cm^2$ ) $\sigma$	0.24	0.49	0.98	
Maximum shear stress ( $kg/cm^2$ ) $\tau_{max}$	0.20	0.38	0.69	
Actual time to failure (min) $t_f$	55	45	55	
Rate of strain				
Ultimate shear stress ( $kg/cm^2$ ) $\tau_{ult}$	0.20	0.36	0.66	

Type of Specimen	1.944						
Description	DRY BROWN SILT WITH SAND						
LL	0.0	PL	0.0	PI	0.0	$G_s$	0
Remarks	SHEAR RATE .004 IN/MIN			Project RTE 58 REALIGNMENT			
	08-043510						
	Area	19.15 ( $cm^2$ )	Boring No.	B-33			
	Depth	5 FT	Sample No.	T1-5'-1			
	Elevation	---	Date	06/04/02			
DIRECT SHEAR TEST REPORT <i>lp 6/6</i>							



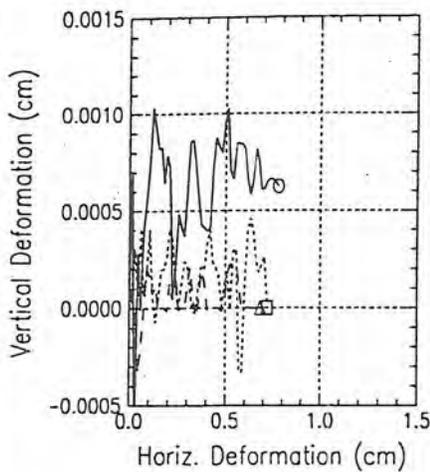
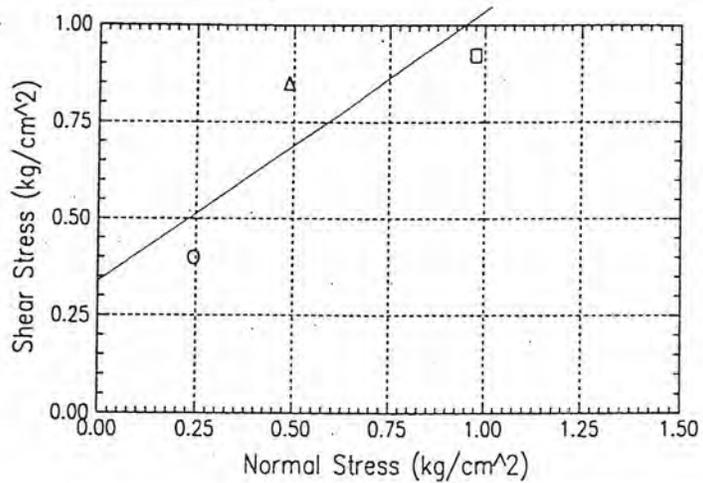
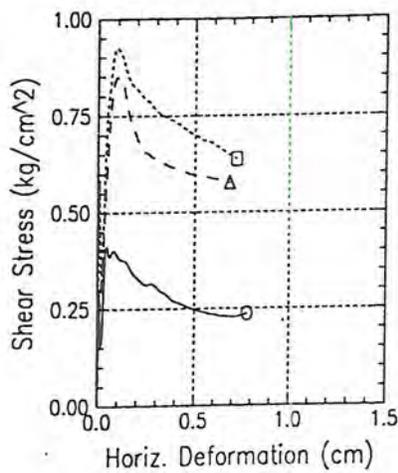
Graph Symbol		O	Δ	□
Test No.		DS02089A	DS02089B	DS02089C
Initial	Water content (%) $w_o$	19.51	18.60	18.75
	Void ratio $e_o$	0.00	0.00	0.00
	Saturation (%) $S_o$	32.90	28.37	30.22
	Dry density ( $gm/cm^3$ ) $\gamma_d$	1.69	1.53	1.61
Void ratio after consolidation $e_c$		0.00	0.00	0.00
Time for 50 percent consolidation $t_{50}$				
Final	Water content (%) $w_f$	30.85	34.10	33.42
	Void Ratio $e_f$	0.00	0.00	0.00
	Saturation (%) $S_f$	52.02	52.02	53.88
Normal stress ( $kg/cm^2$ ) $\sigma$		0.24	0.49	0.98
Maximum shear stress ( $kg/cm^2$ ) $\tau_{max}$		0.85	1.00	1.54
Actual time to failure (min) $t_f$		9	9	9
Rate of strain				
Ultimate shear stress ( $kg/cm^2$ ) $\tau_{ult}$		0.28	0.45	0.28

Strength Parameters

$$c = 0.57 \text{ kg/cm}^2 = 55.9 \text{ kPa}$$

$$\phi = 44$$

Type of Specimen	1.944				
Description	MOIST BROWN SILTY CLAY WITH SAND				
LL	0.0	PL	0.0	PI	0.0
				$G_s$	0
Remarks	SHEAR RATE .004 IN/MIN			Project RTE 58 REALIGNMENT	
	08-043510				
	Area	19.15 ( $cm^2$ )	Boring No.	B-33	
	Depth	15 FT	Sample No.	T1-15'-1	
	Elevation	---	Date	06/04/02	
DIRECT SHEAR TEST REPORT <i>ip6/b gy</i>					

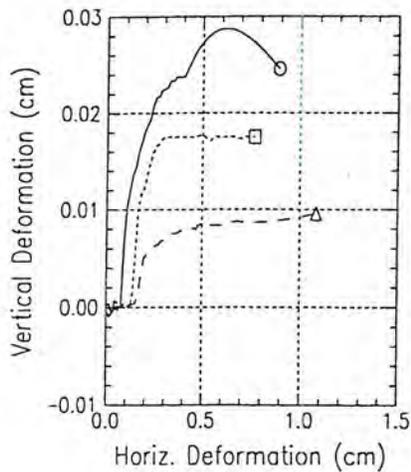
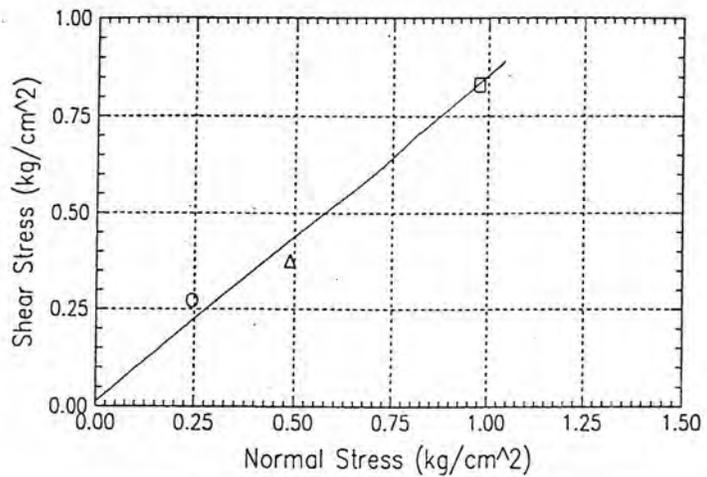
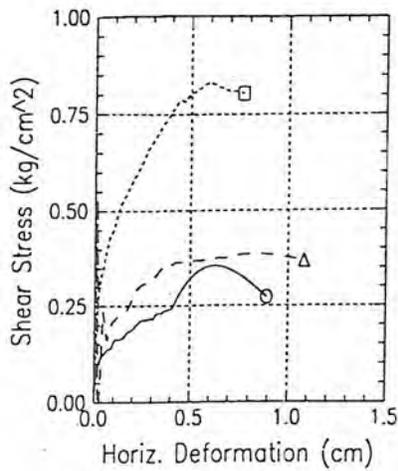


Graph Symbol		O	Δ	□
Test No.		DS02090A	DS02090B	DS02090C
Initial	Water content (%) $w_o$	8.04	9.93	9.02
	Void ratio $e_o$	0.00	0.00	0.00
	Saturation (%) $S_o$	13.57	17.89	16.04
	Dry density ( $gm/cm^3$ ) $\gamma_d$	1.69	1.80	1.78
Void ratio after consolidation $e_c$		0.00	0.00	0.00
Time for 50 percent consolidation $t_{50}$				
Final	Water content (%) $w_f$	26.19	25.11	25.43
	Void Ratio $e_f$	0.00	0.00	0.00
	Saturation (%) $S_f$	44.21	45.23	45.23
Normal stress ( $kg/cm^2$ ) $\sigma$		0.24	0.49	0.98
Maximum shear stress ( $kg/cm^2$ ) $\tau_{max}$		0.40	0.85	0.92
Actual time to failure (min) $t_f$		9	17	11
Rate of strain				
Ultimate shear stress ( $kg/cm^2$ ) $\tau_{ult}$		0.24	0.58	0.64

Strength Parameters

$c = 0.34 kg/cm^2 = 33.4 kPa$   
 $\phi = 35$

Type of Specimen	1.944						
Description	DRY BROWN SILT WITH SAND						
LL	0.0	PL	0.0	PI	0.0	$G_s$	0
Remarks	SHEAR RATE .004 IN/MIN			Project RTE 58 REALIGNMENT			
	08-043510						
	Area	19.15 ( $cm^2$ )	Boring No.	B-34			
	Depth	10 FT	Sample No.	T1-10'-1			
	Elevation	---	Date	06/06/02			
DIRECT SHEAR TEST REPORT Wp 6/6 gw							



Strength Parameters

$$\phi = 42^\circ$$

$$c = 0$$

Graph Symbol		O	Δ	□
Test No.		DS02091A	DS02091B	DS02091C
Initial	Water content (%) $w_o$	2.32	2.14	2.21
	Void ratio $e_o$	0.00	0.00	0.00
	Saturation (%) $S_o$	4.11	3.50	3.70
	Dry density ( $gm/cm^3$ ) $\gamma_d$	1.77	1.63	1.67
Void ratio after consolidation $e_c$		0.00	0.00	0.00
Time for 50 percent consolidation $t_{50}$				
Final	Water content (%) $w_f$	17.89	19.55	17.84
	Void Ratio $e_f$	0.00	0.00	0.00
	Saturation (%) $S_f$	31.97	31.99	30.02
Normal stress ( $kg/cm^2$ ) $\sigma$		0.24	0.49	0.98
Maximum shear stress ( $kg/cm^2$ ) $\tau_{max}$		0.27	0.38	0.83
Actual time to failure (min) $t_f$		80	65	57
Rate of strain				
Ultimate shear stress ( $kg/cm^2$ ) $\tau_{ult}$		0.27	0.37	0.80

Type of Specimen 1.944

Description DRY BROWN MEDIUM SAND WITH SILT AND GRAVEL

LL 0.0 PL 0.0 PI 0.0  $C_s$  0

Remarks SHEAR RATE .004 IN/MIN Project RTE 58 REALIGNMENT

08-043570

Area 19.15 ( $cm^2$ ) Boring No. B-34

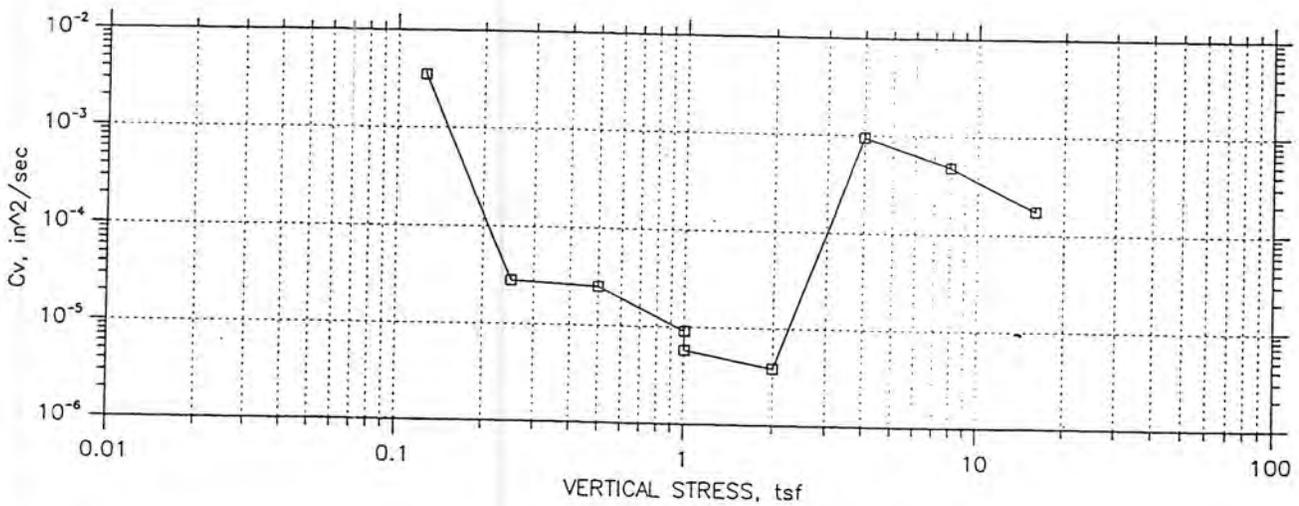
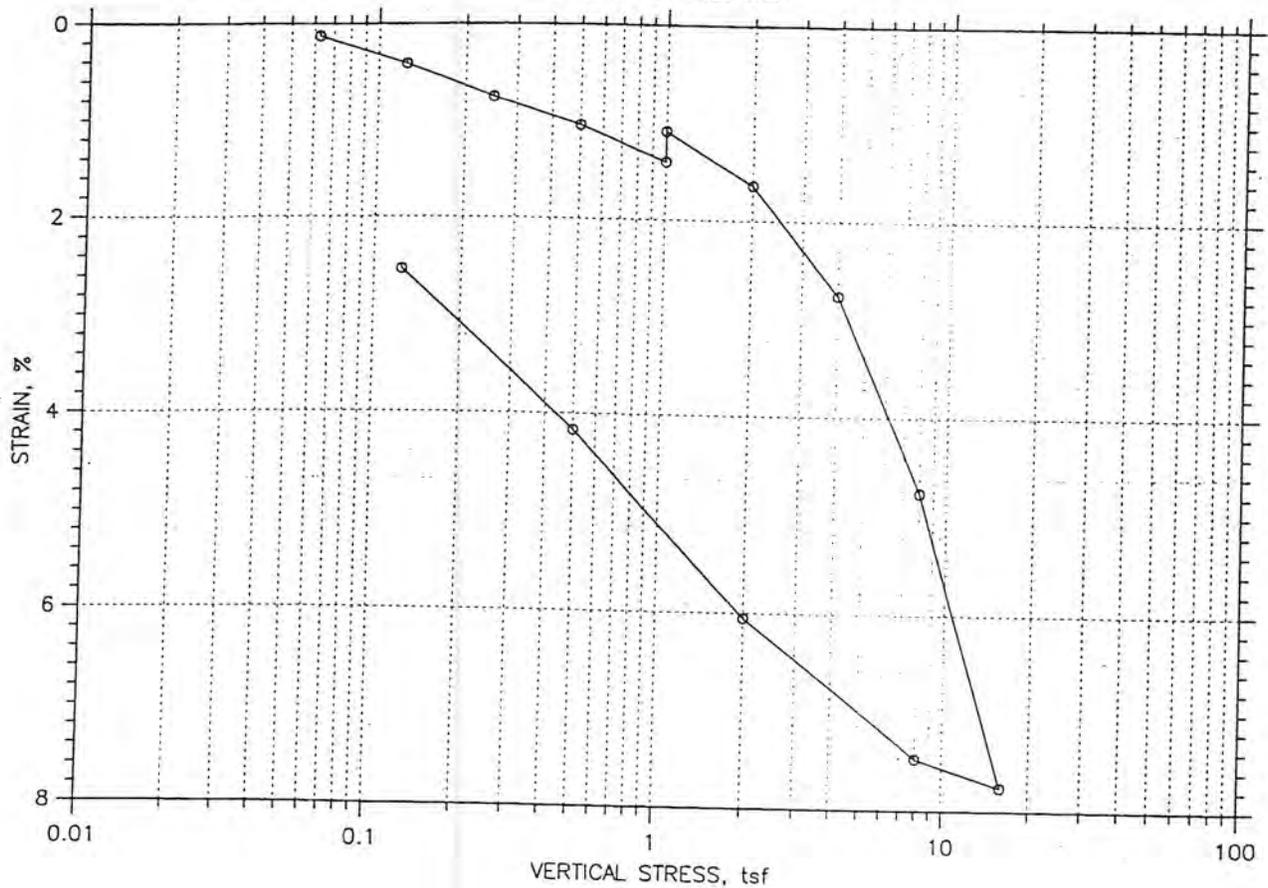
Depth 20 FT Sample No. T1-20'-1

Elevation --- Date 06/06/02.

DIRECT SHEAR TEST REPORT No 6/6

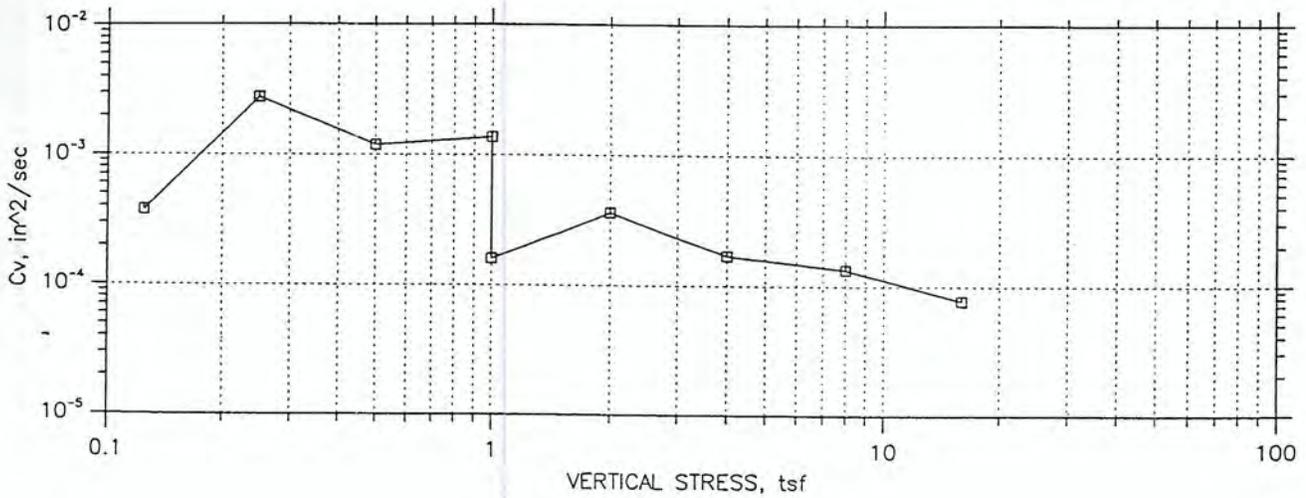
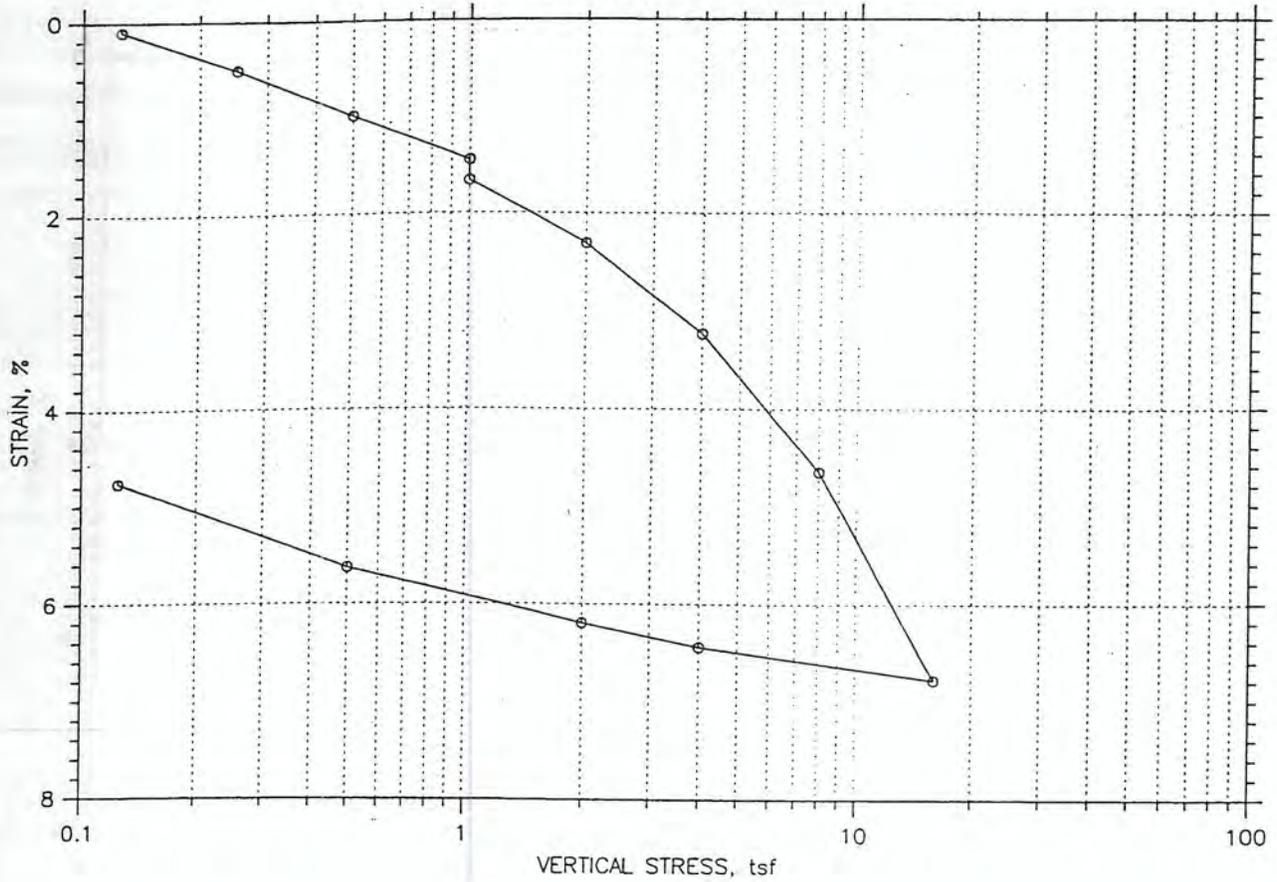
# CONSOLIDATION TEST DATA

## SUMMARY REPORT



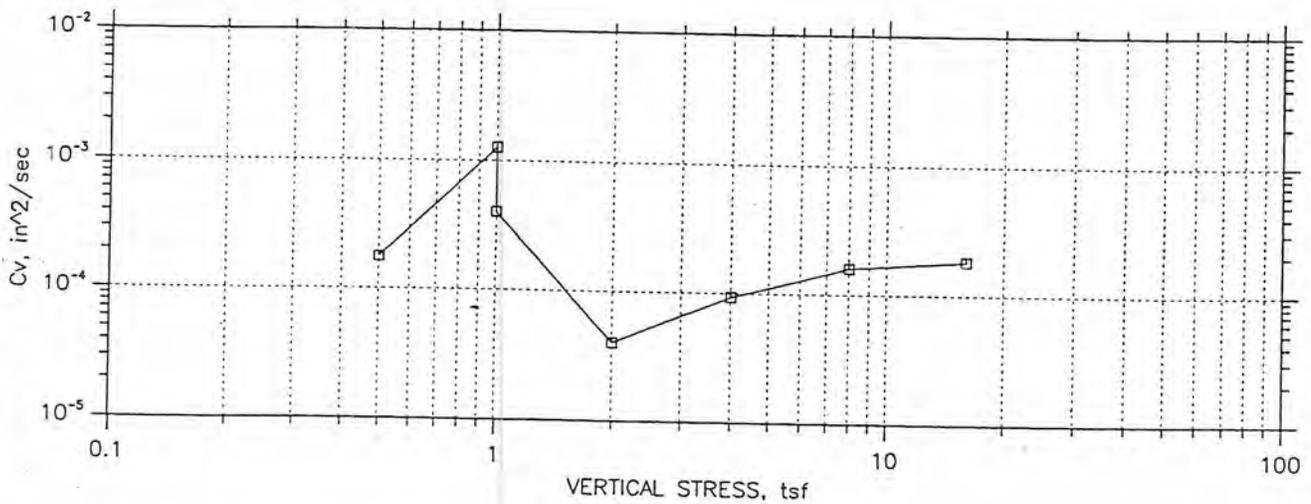
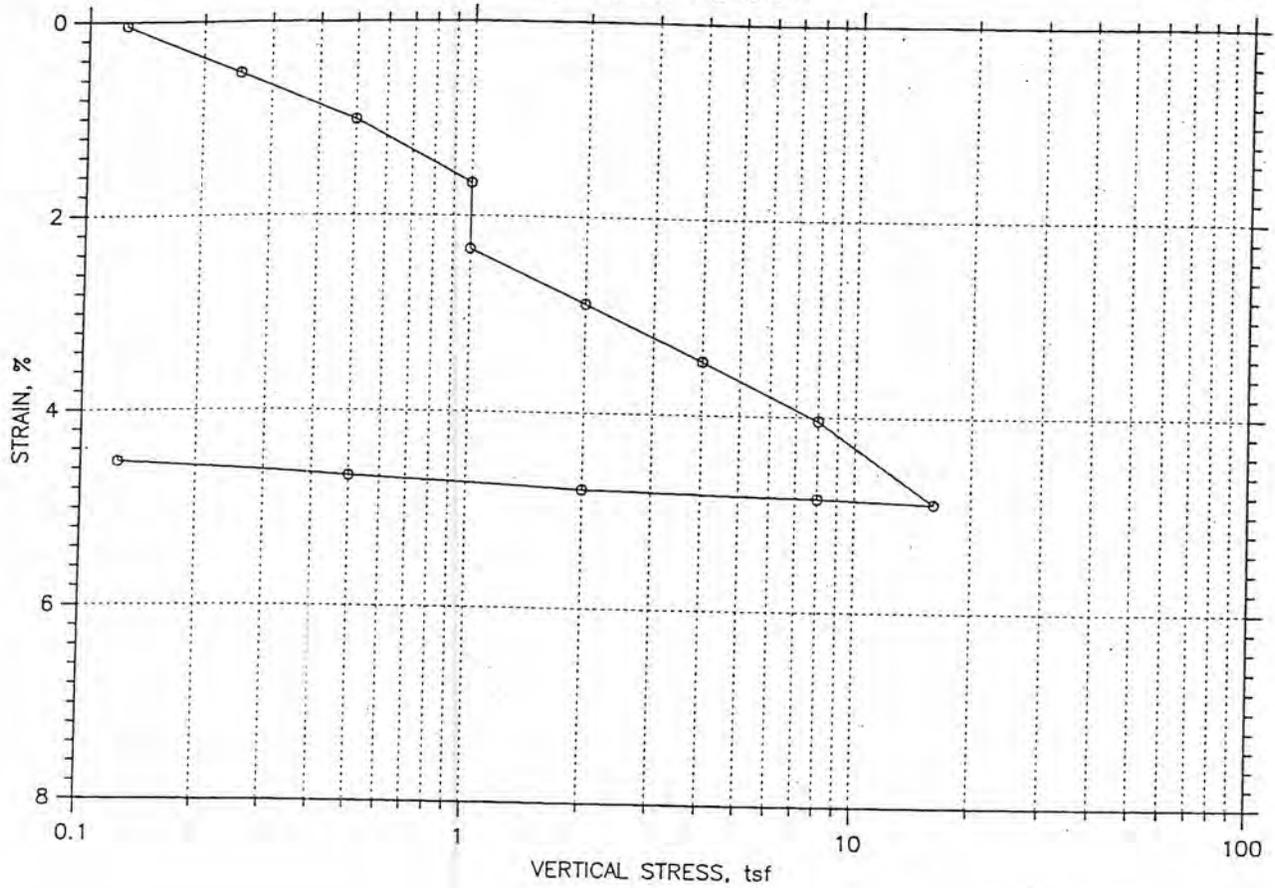
Project: RTE 58 REALIGNMENT	Location: 08-SBD-58; 35.1/50	Project No.: 08-043510
Boring No.: B-1	Tested By: KS	Checked By: <i>gy</i>
Sample No.: 10'-1	Test Date: 4/11/02	Depth: 10'
Test No.: 02074-G4	Sample Type: 1.944"	Elevation: ---
Description: VERY STIFF, LIGHT BROWN, MOIST, SILTY CLAY WITH SAND		
Remarks: COLLAPSE TEST. SAT @ 2000PSF. TEST SPECIMEN PATCHED.		

# CONSOLIDATION TEST DATA SUMMARY REPORT



Project: RTE 5 REALIGNMENT	Location: 8-SBD-58; 35.1/50	Project No.: 08-043510
Boring No.: B-2	Tested By: KS	Checked By: <i>aps</i>
Sample No.: 10'-1	Test Date: 4/11/02	Depth: 10'
Test No.: 02073-G3	Sample Type: 1.944"	Elevation: ---
Description: DENSE, LIGHT BROWN, MOIST, SILTY FINE SAND		
Remarks: COLLAPSE TEST. SAT @ 2000 PSF. TEST SPECIMEN PATCHED.		

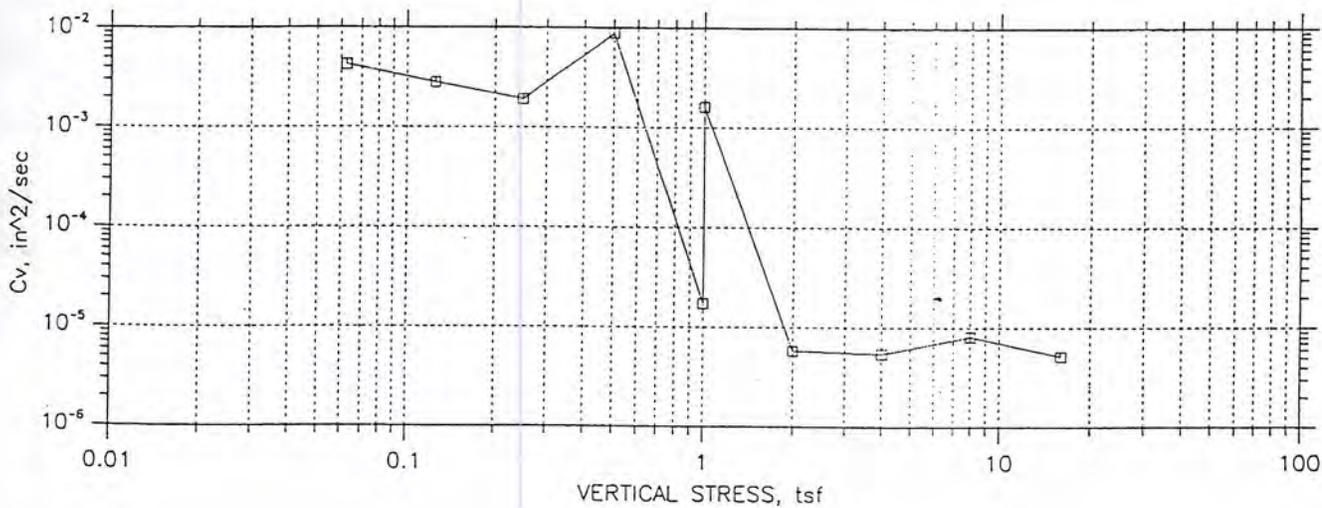
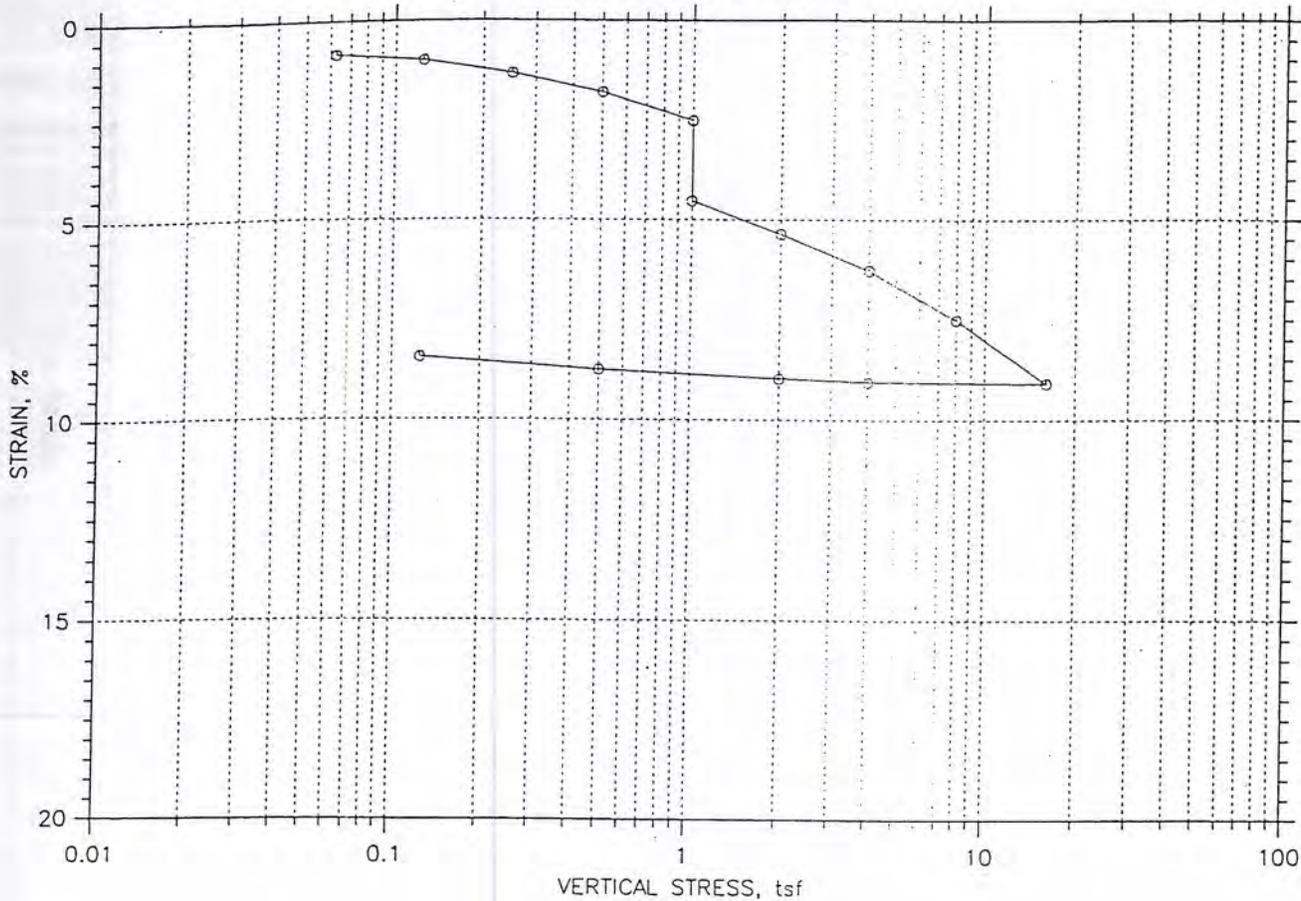
# CONSOLIDATION TEST DATA SUMMARY REPORT



Project: RTE 58 REALIGNMENT	Location: 04-SBD-58; 35.1/50	Project No.: 08-043510
Boring No.: B-25	Tested By: KS	Checked By: <i>[Signature]</i>
Sample No.: 10'-1	Test Date: 4/11/02	Depth: 10'
Test No.: 02075-G5	Sample Type: 1.944"	Elevation: ---
Description: DENSE, BEIGE, DRY, SAND WITH GRAVEL		
Remarks: COLLAPSE TEST. SATURATED AT 2000PSF		

# CONSOLIDATION TEST DATA

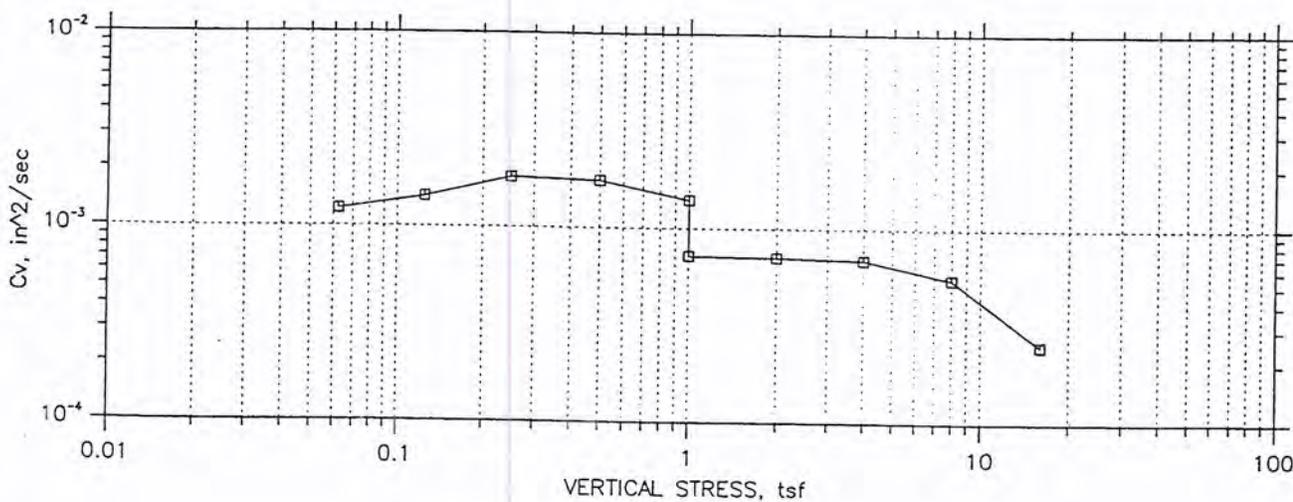
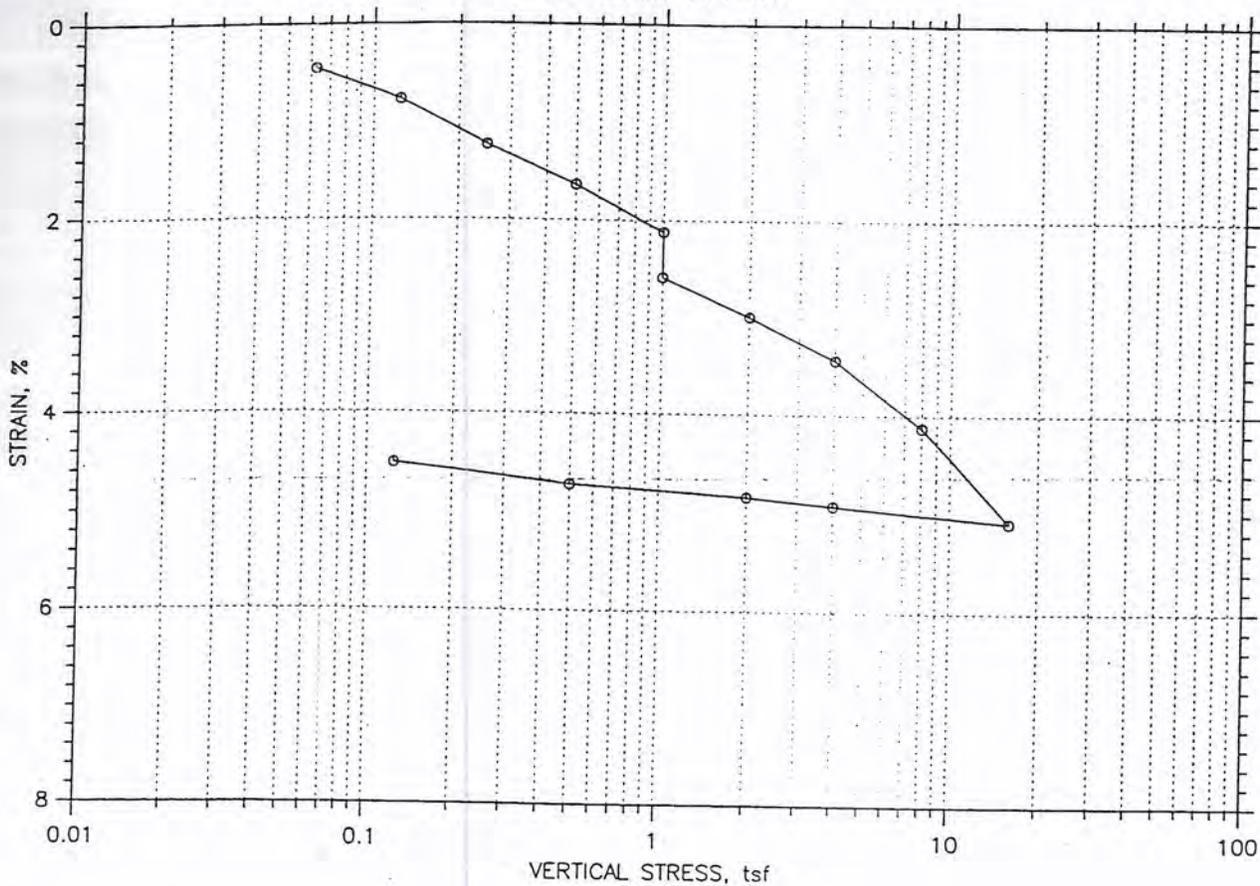
## SUMMARY REPORT



Project: RTE 58 RE-ALIGNMENT	Location: 08-SBD-58; 35.1/50	Project No.: 08-043510
Boring No.: B-35	Tested By: KS	Checked By: <i>ifj</i>
Sample No.: 10'-1	Test Date: 4/15/02	Depth: 10'
Test No.: 02076-G2	Sample Type: 1.944"	Elevation: ---
Description: MOIST,DENSE, LIGHT TAN, SILTY SAND		
Remarks: COLLAPSE TEST. SAT @ 2000 PSF.		

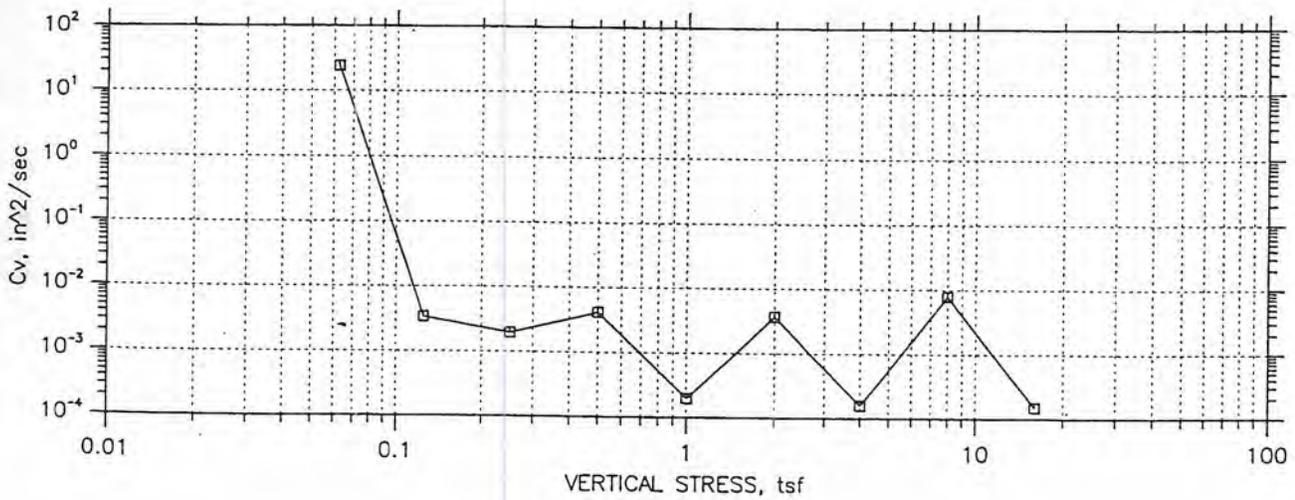
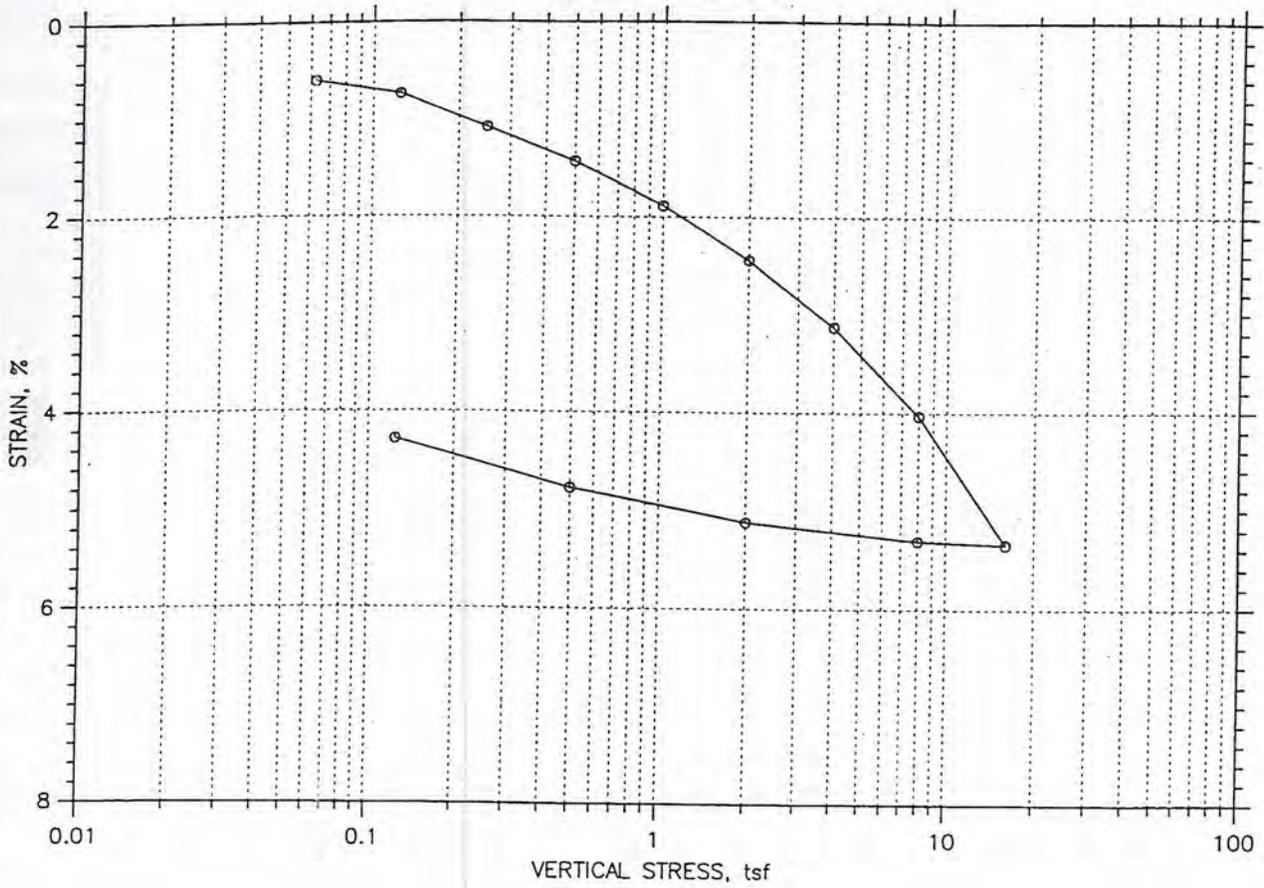
# CONSOLIDATION TEST DATA

## SUMMARY REPORT



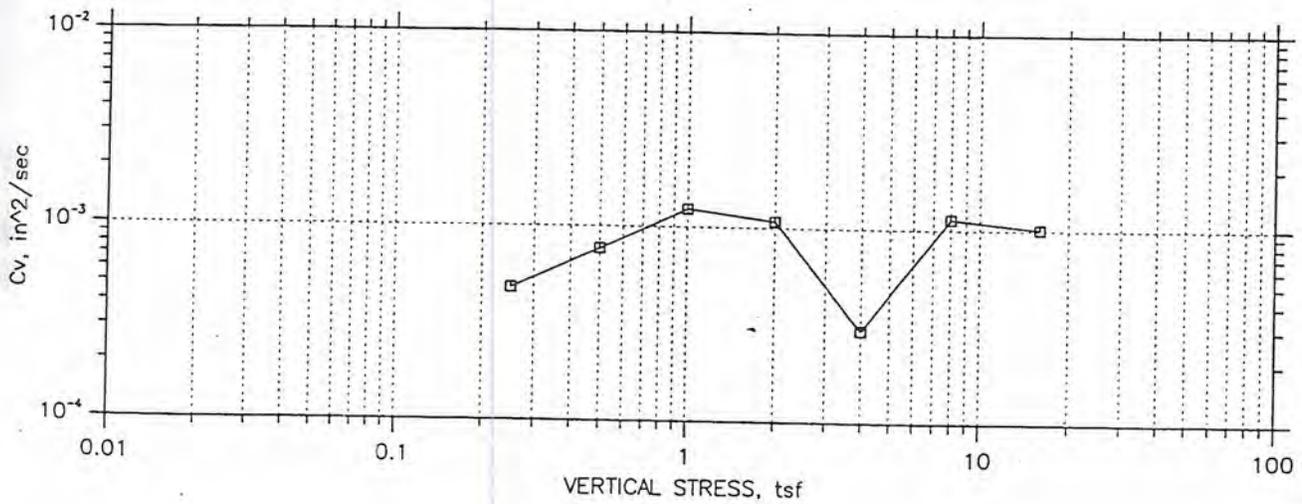
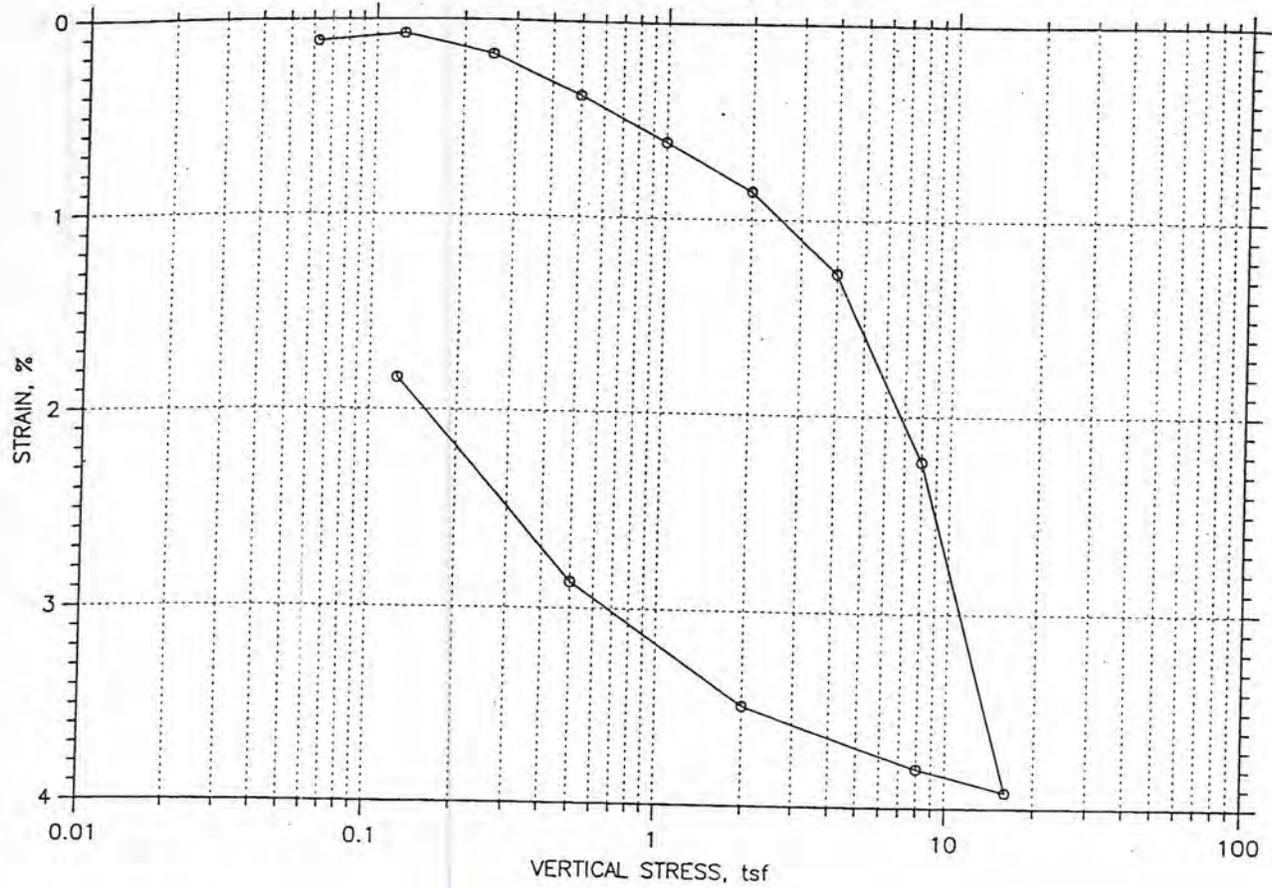
Project: RTE 58 RE-ALIGNMENT	Location: 08-SBD-58; 35.1/50	Project No.: 08-043510
Boring No.: B-28	Tested By: KS	Checked By: <i>[Signature]</i>
Sample No.: 10'-2	Test Date: 4/15/02	Depth: 10'
Test No.: 02077-G3	Sample Type: 1.944"	Elevation: ---
Description: MOIST, DENSE, LIGHT TAN, SILTY SAND		
Remarks: COLLAPSE TEST. SAT @ 2000 PSF. PATCHED.		

# CONSOLIDATION TEST DATA SUMMARY REPORT



Project: RTE 58 REALIGNMENT	Location: 08-SBD-58; 35.1/50	Project No.: 08-043510
Boring No.: B-28	Tested By: KS	Checked By: <i>[Signature]</i>
Sample No.: 40'-1	Test Date: 4/15/02	Depth: 40'
Test No.: 02078-G4	Sample Type: 1.944"	Elevation: ---
Description: MOIST,STIFF, BROWN, SANDY CLAY		
Remarks:		

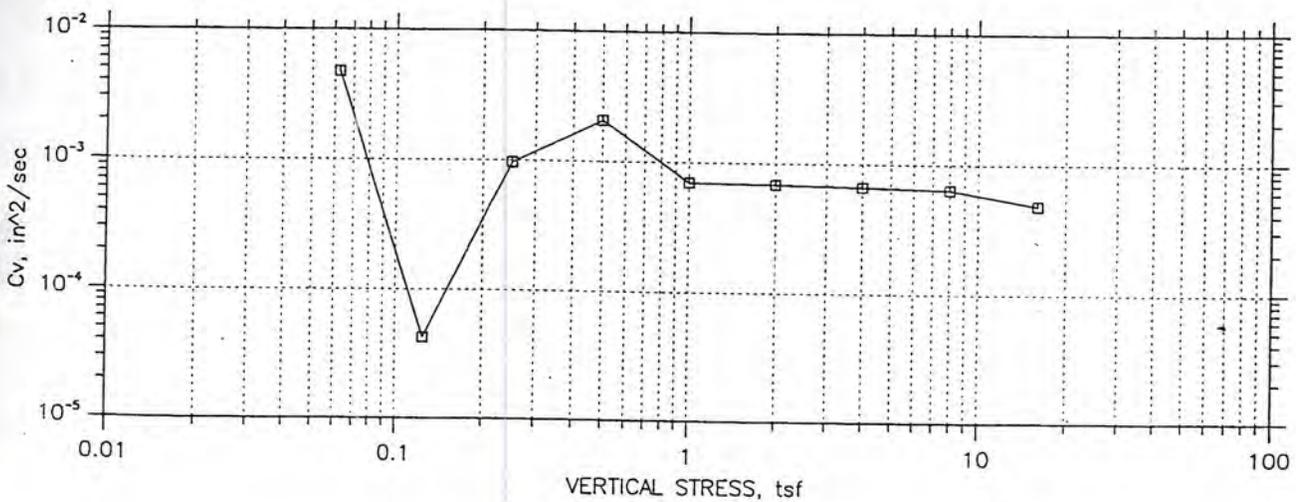
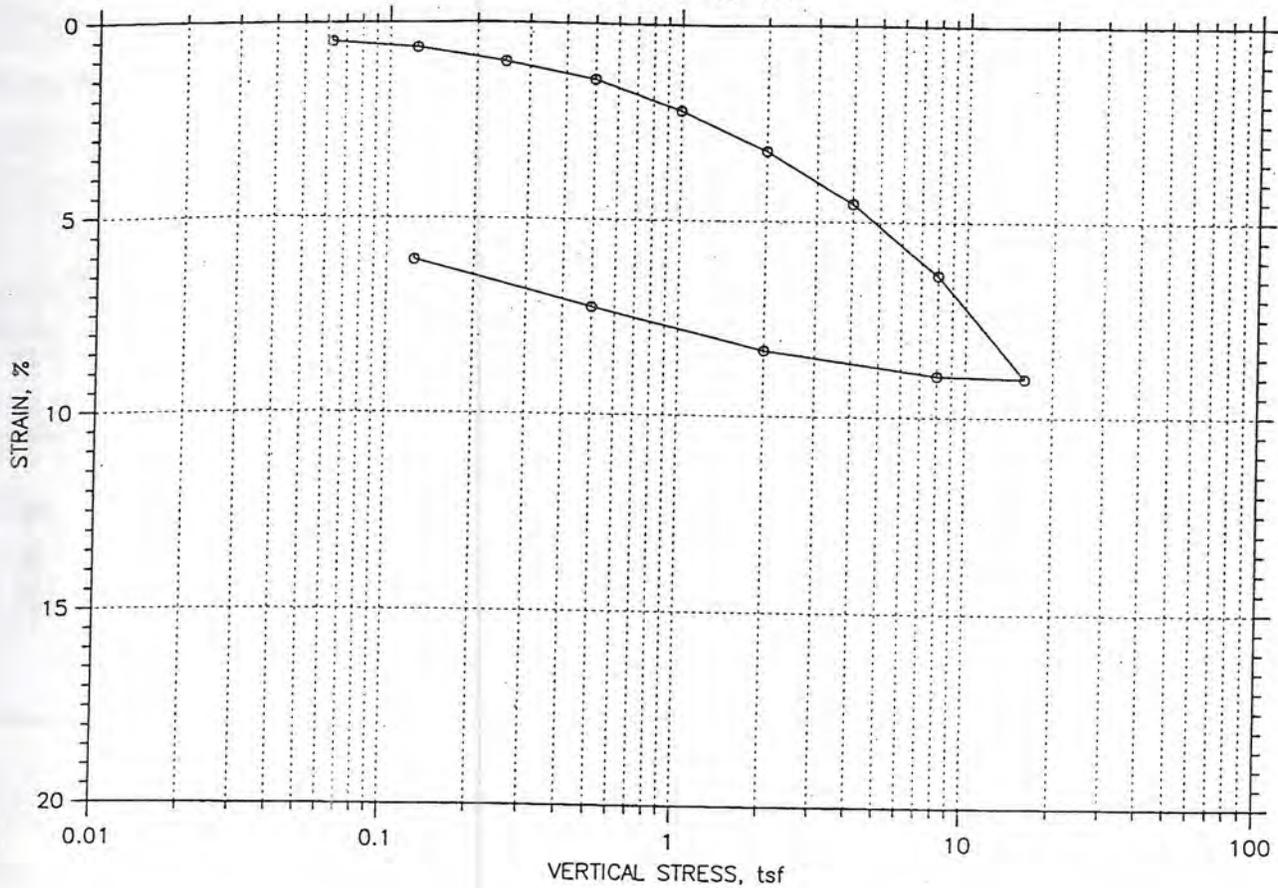
# CONSOLIDATION TEST DATA SUMMARY REPORT



Project: RTE 58 REALIGNMENT	Location: 08-SBD-58; 35.1/50	Project No.: 08-043510
Boring No.: B-28	Tested By: KS	Checked By: <i>CS</i>
Sample No.: 50'-1	Test Date: 4/15/02	Depth: 50'
Test No.: 02079-G5	Sample Type: 1.944"	Elevation: ---
Description: MOIST,STIFF, BROWN, SANDY SILT		
Remarks:		

# CONSOLIDATION TEST DATA

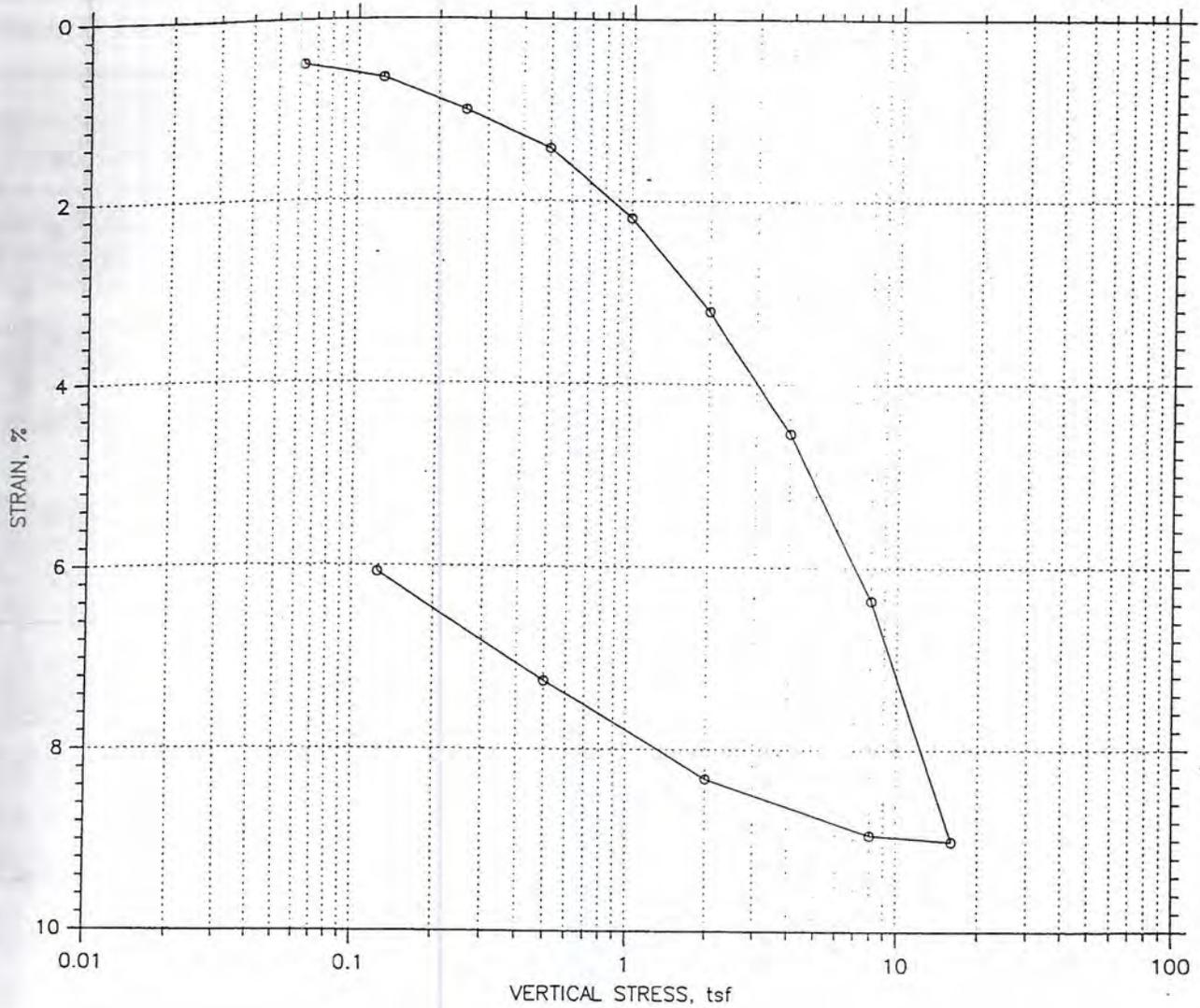
## SUMMARY REPORT



Project: RTE 58 REALIGNMENT	Location: 08-SBD-58; 35.1/50	Project No.: 08-043510
Boring No.: B-29	Tested By: KS	Checked By: <i>[Signature]</i>
Sample No.: 10'-2	Test Date: 4/16/02	Depth: 10'
Test No.: 02081-G4	Sample Type: 1.944"	Elevation: ---
Description: MOIST, STIFF, BROWN, SANDY LEAN CLAY		
Remarks:		

# CONSOLIDATION TEST DATA

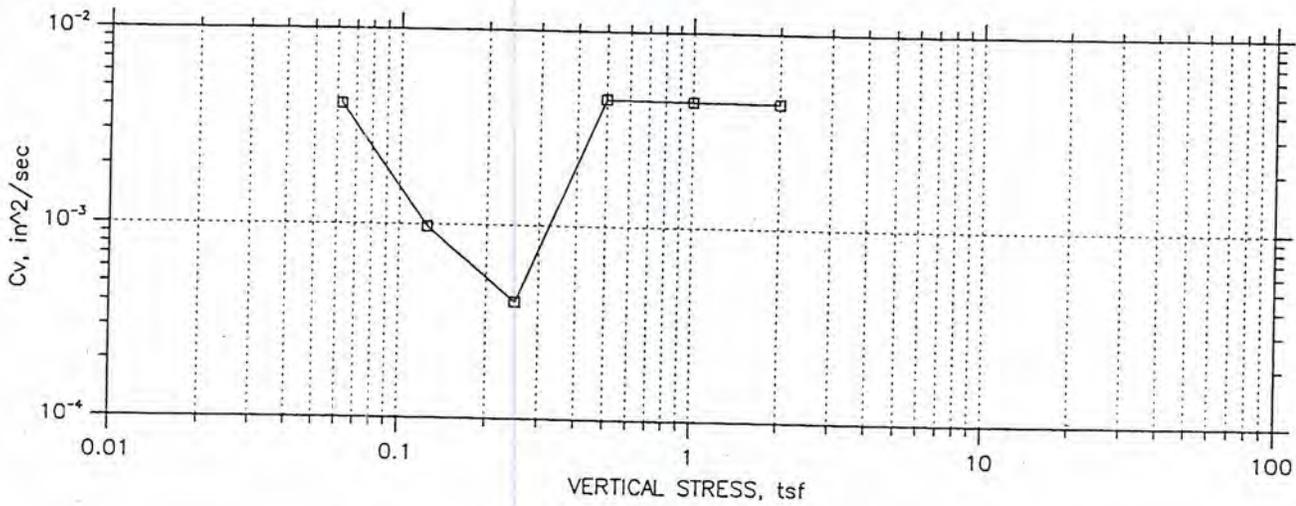
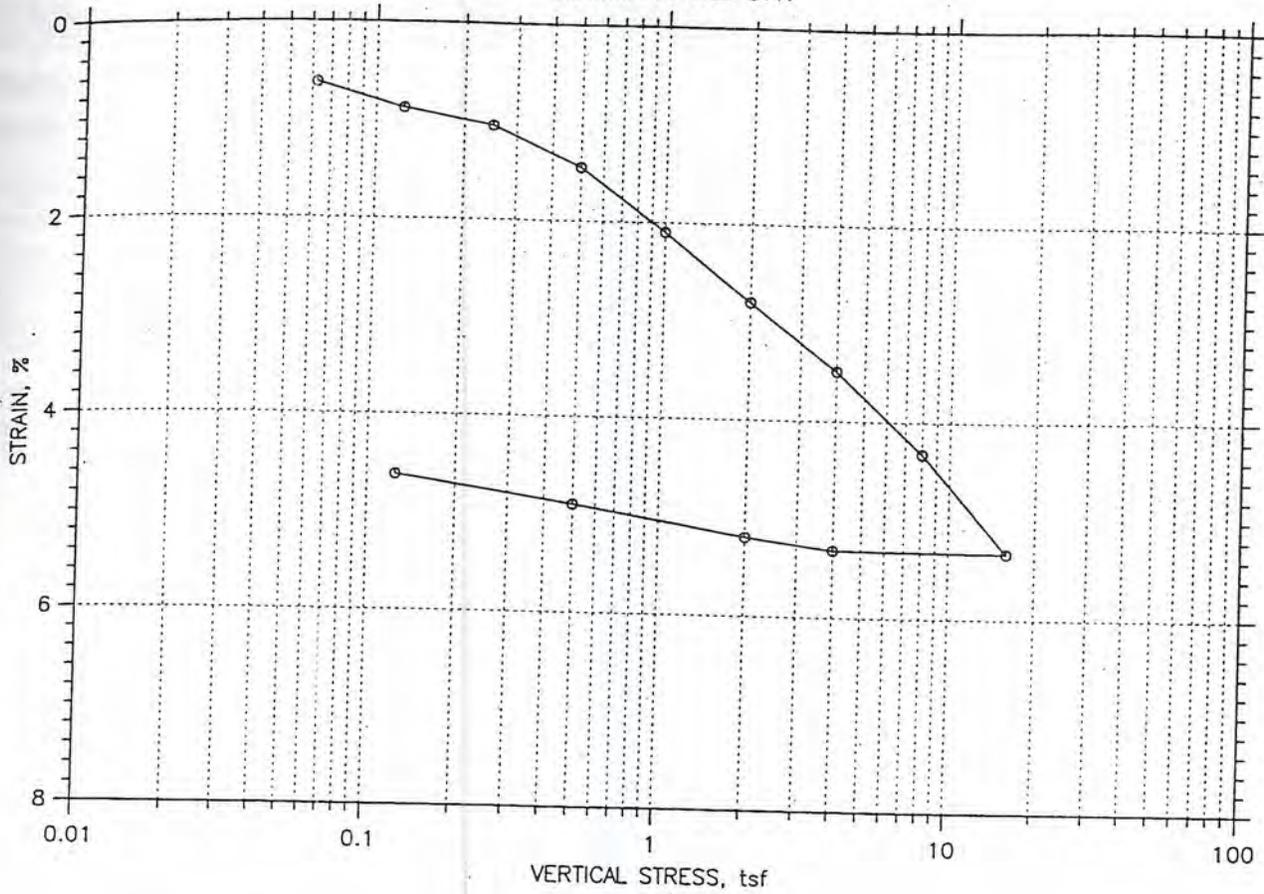
## SUMMARY REPORT



				Before Test	After Test
Overburden Pressure, tsf:		Water Content, %		20.22	18.96
Preconsolidation Pressure, tsf:		Dry Unit Weight, pcf		104.16	110.89
Compression Index:		Saturation, %		87.48	97.34
Diameter: 1.944 in	Height: 0.78 in	Void Ratio		0.63	0.53
LL: 0	PL: 0	PI: 0	GS: 2.72		

Project: RTE 58 REALIGNMENT	Location: 08-SBD-58; 35.1/50	Project No.: 08-043510
Boring No.: B-29	Tested By: KS	Checked By:
Sample No.: 10'-2	Test Date: 4/16/02	Depth: 10'
Test No.: 02081-G4	Sample Type: 1.944"	Elevation: ---
Description: MOIST,STIFF, BROWN, SANDY LEAN CLAY		
Remarks:		

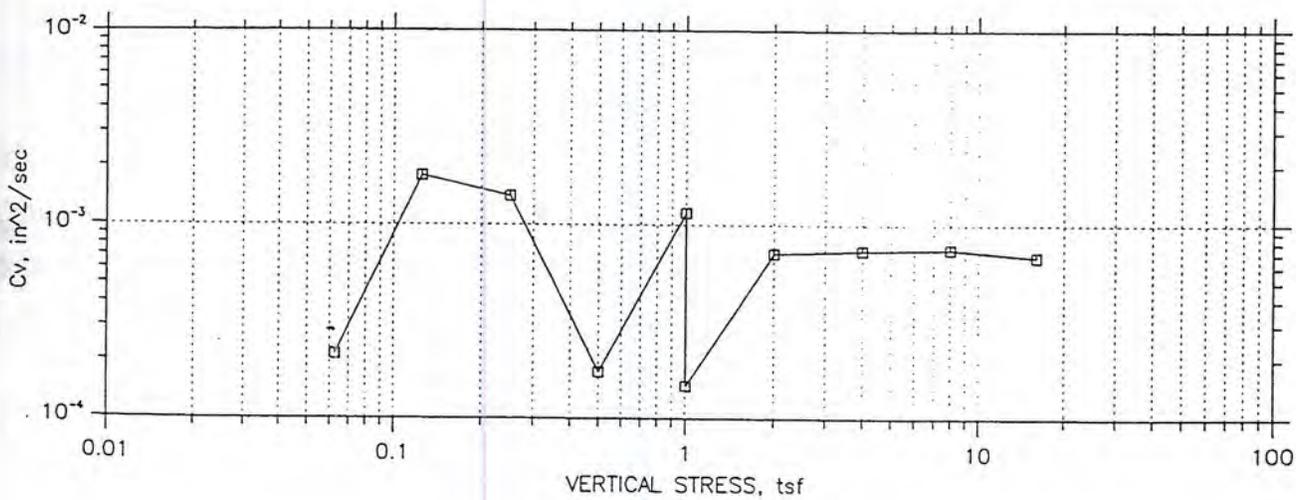
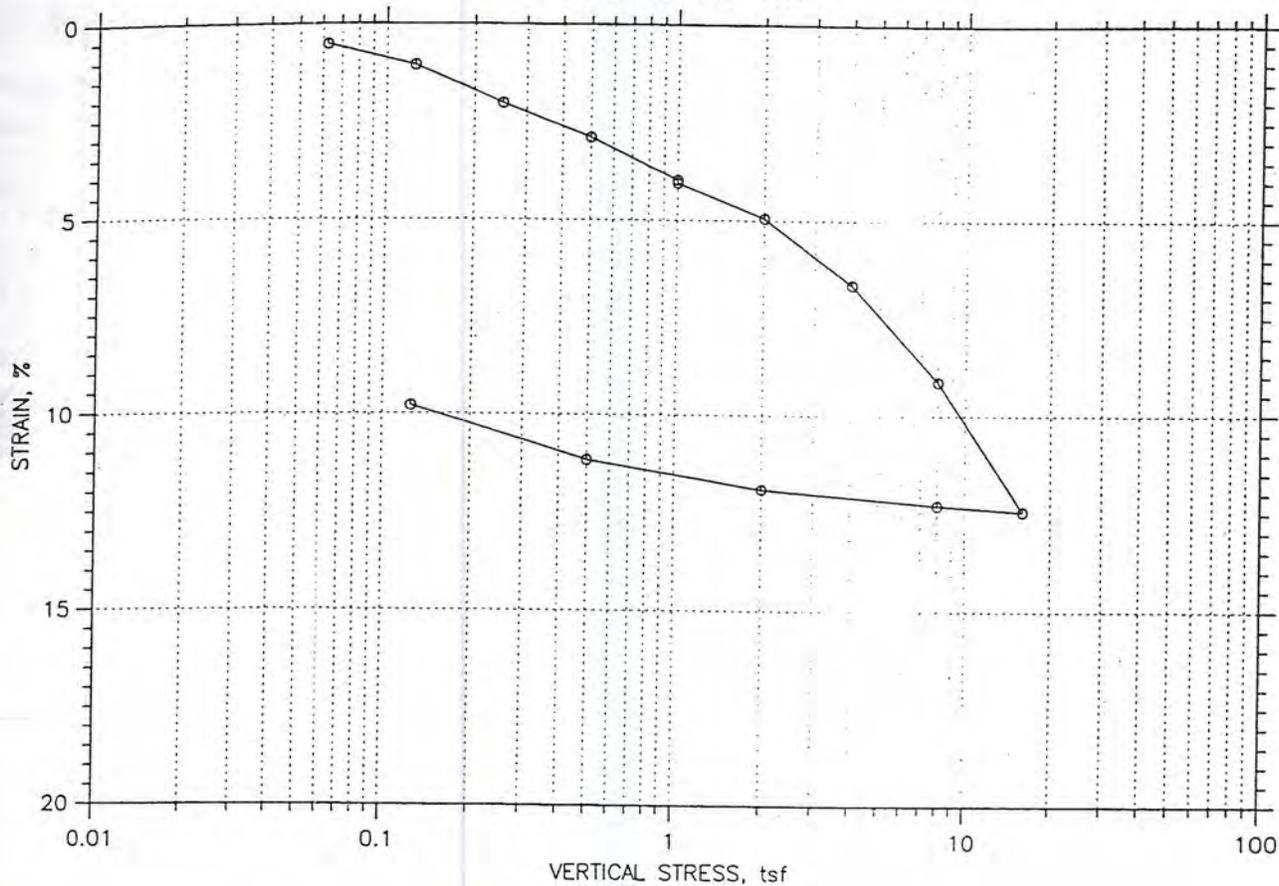
# CONSOLIDATION TEST DATA SUMMARY REPORT



Project: RTE 58 ALIGNMENT	Location: 08-SBD-58; 35.1/50	Project No.: 08-043510
Boring No.: B-29	Tested By: KS	Checked By: <i>[Signature]</i>
Sample No.: 30'-2	Test Date: 4/16/02	Depth: 30'
Test No.: 02082-G2	Sample Type: 1.944"	Elevation: ---
Description: MOIST,DENSE, LIGHT TAN, SILTY SAND		
Remarks: SLIGHTLY PATCHED		

# CONSOLIDATION TEST DATA

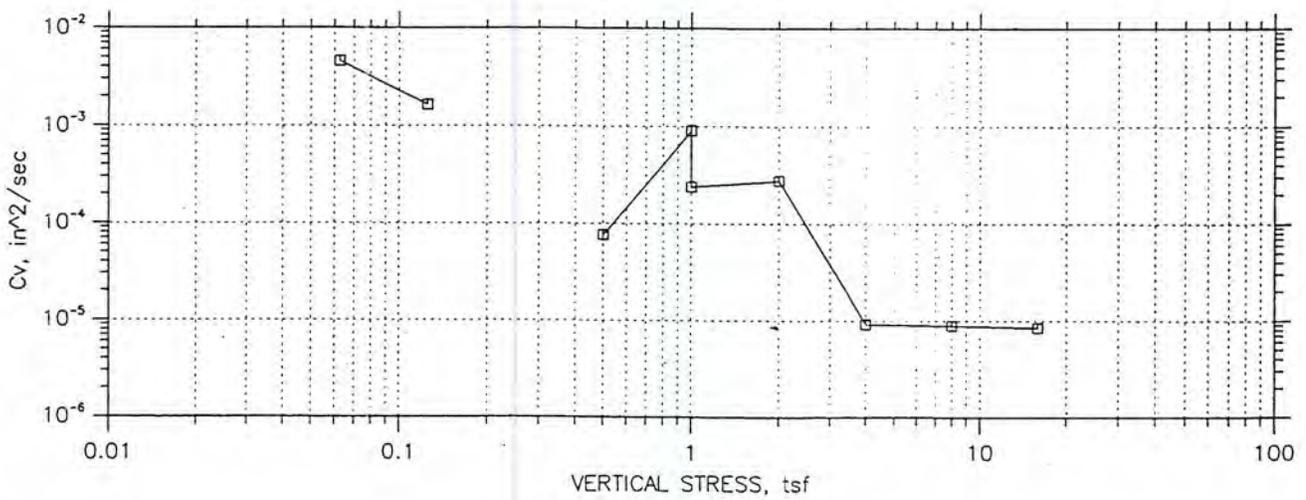
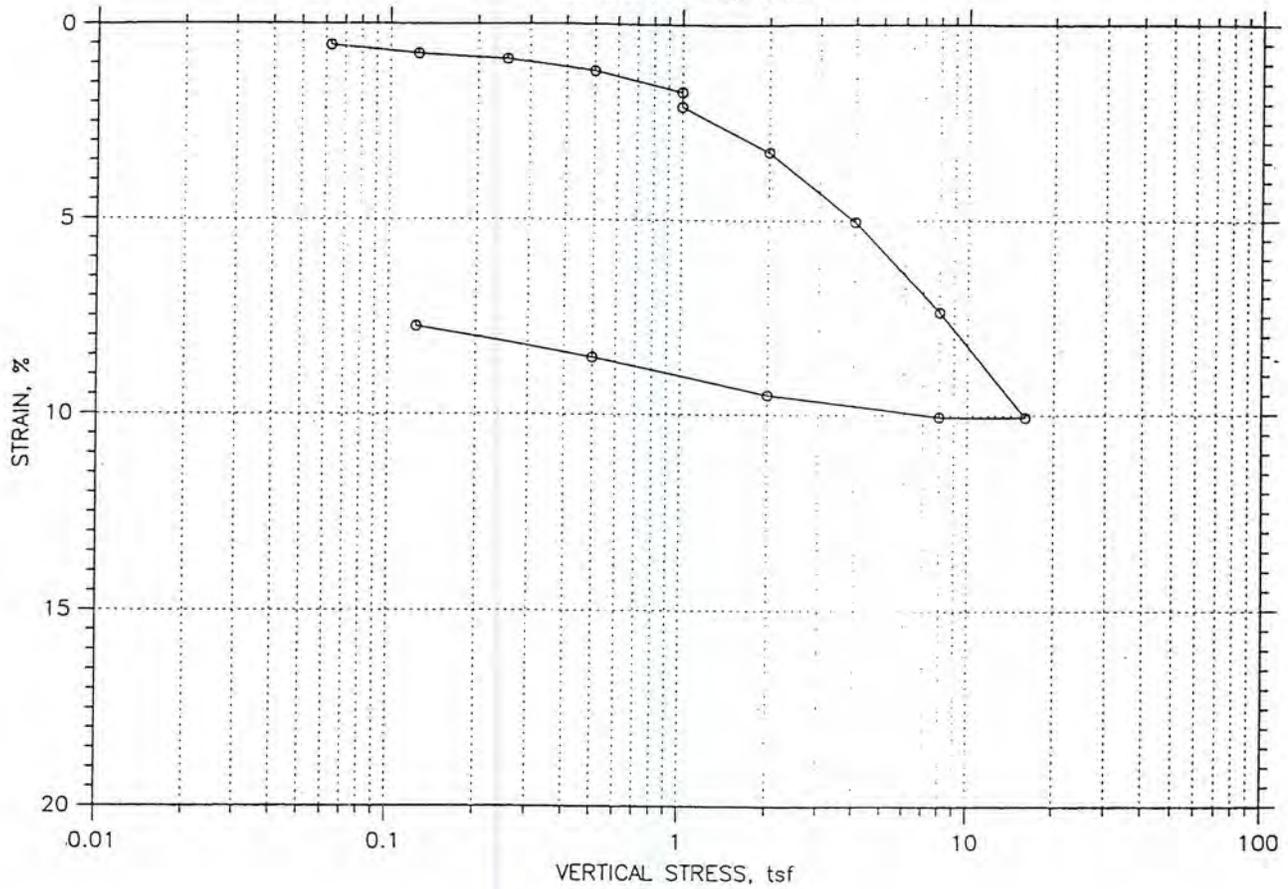
## SUMMARY REPORT



Project: RTE 58 REALIGNMENT	Location: 08-SBD-58; 35.1/50	Project No.: 08-043510
Boring No.: B-30	Tested By: KS	Checked By: <i>[Signature]</i>
Sample No.: 10'-2	Test Date: 4/16/02	Depth: 10'
Test No.: 02080-G5	Sample Type: 1.944"	Elevation: ---
Description: MOIST, MEDIUM DENSE, BROWN, SILTY SAND		
Remarks: COLLAPSE TEST. SATURATE @ 2000 PSF		

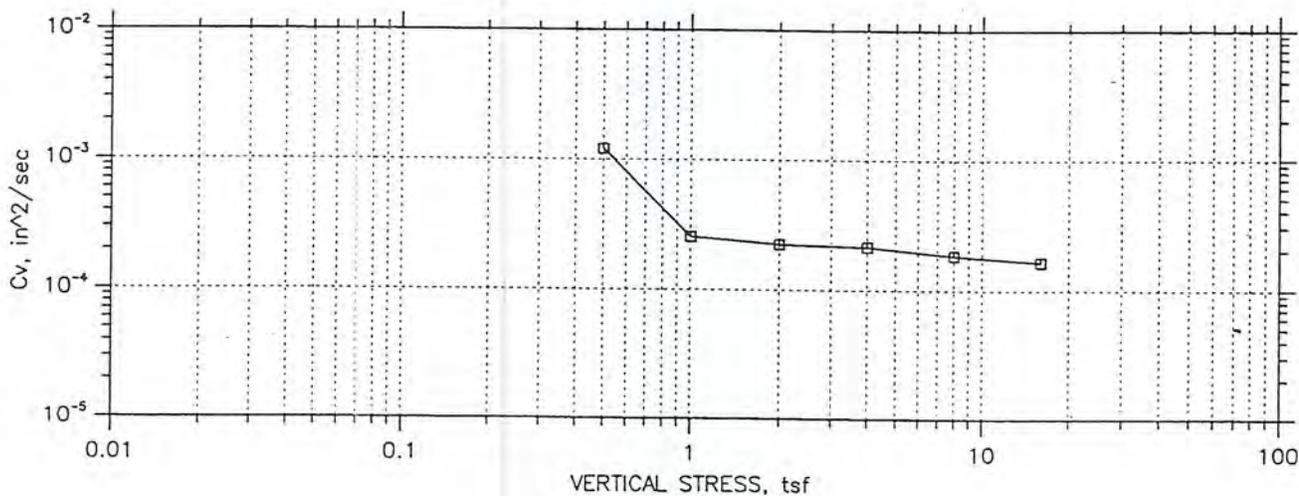
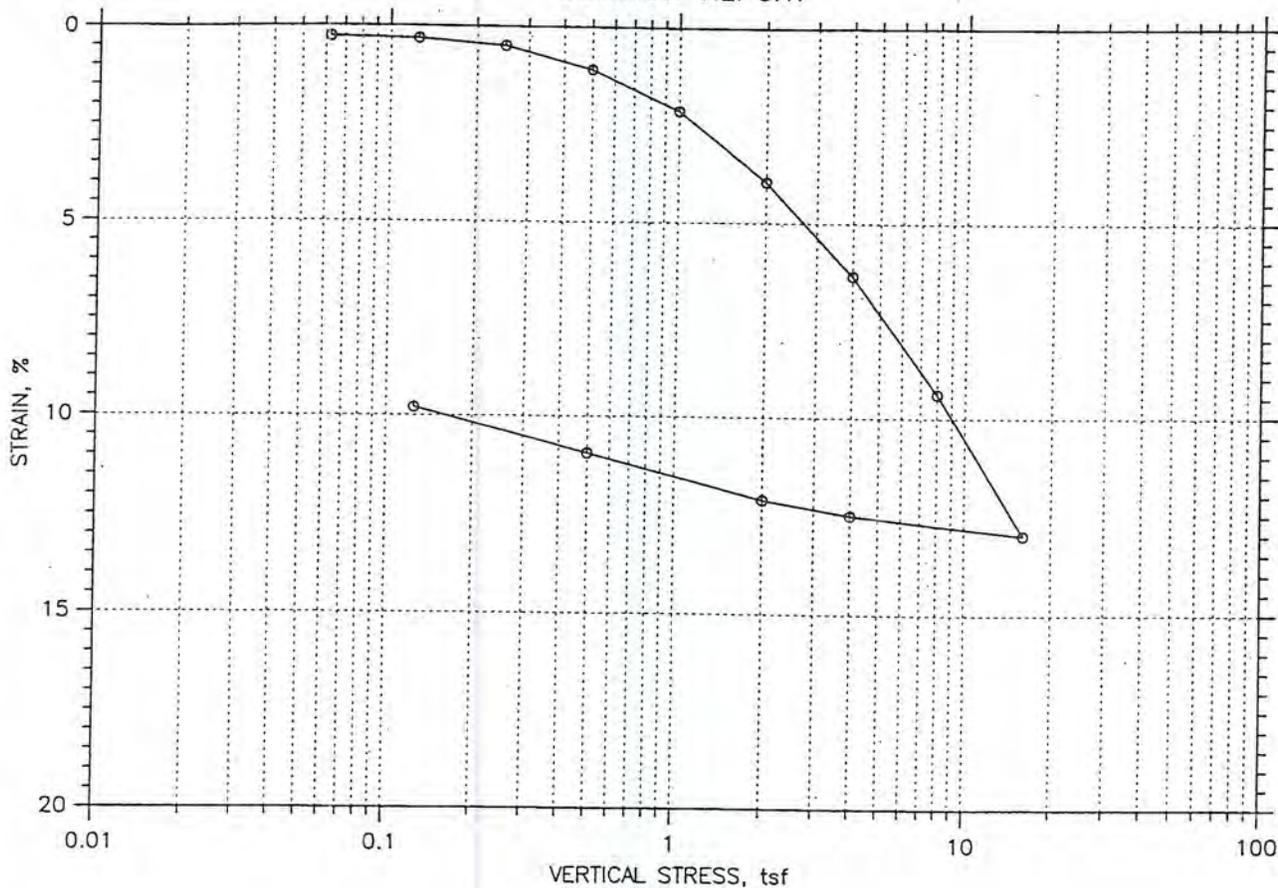
# CONSOLIDATION TEST DATA

## SUMMARY REPORT



Project: RTE 58 REALIGNMENT	Location: 08-SBD-58; 35.1/50	Project No.: 08-043510
Boring No.: B-32	Tested By: KS	Checked By:
Sample No.: 10'-2	Test Date: 4/17/02	Depth: 10'
Test No.: 02084-G4	Sample Type: 1.944"	Elevation: ---
Description: STIFF, LIGHT BROWN, MOIST, SILTY LEAN CLAY w SAND		
Remarks: COLLARSE TEST. SAT@ 2000PSF		

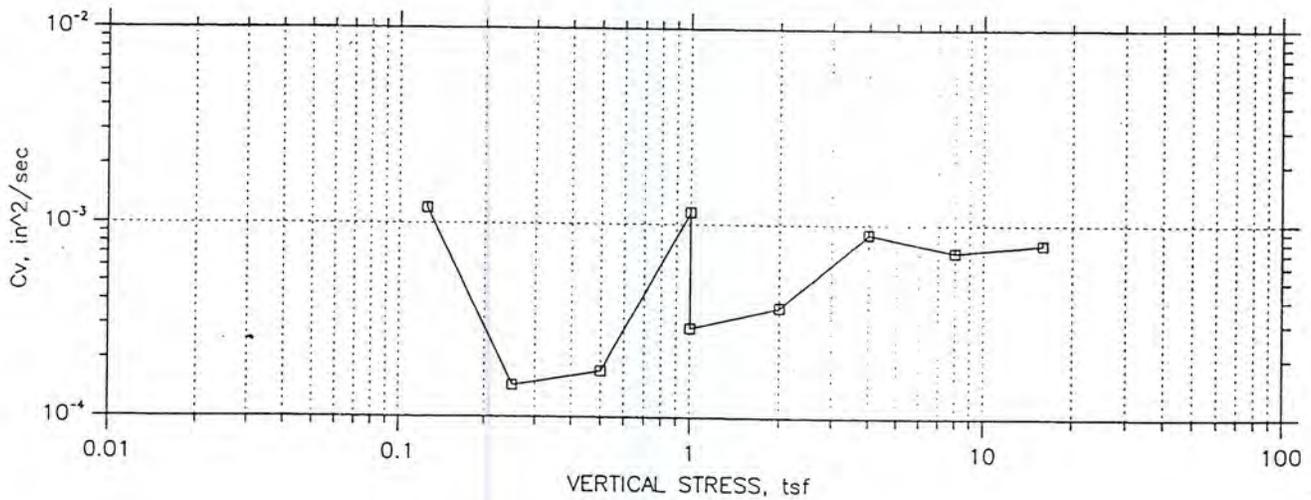
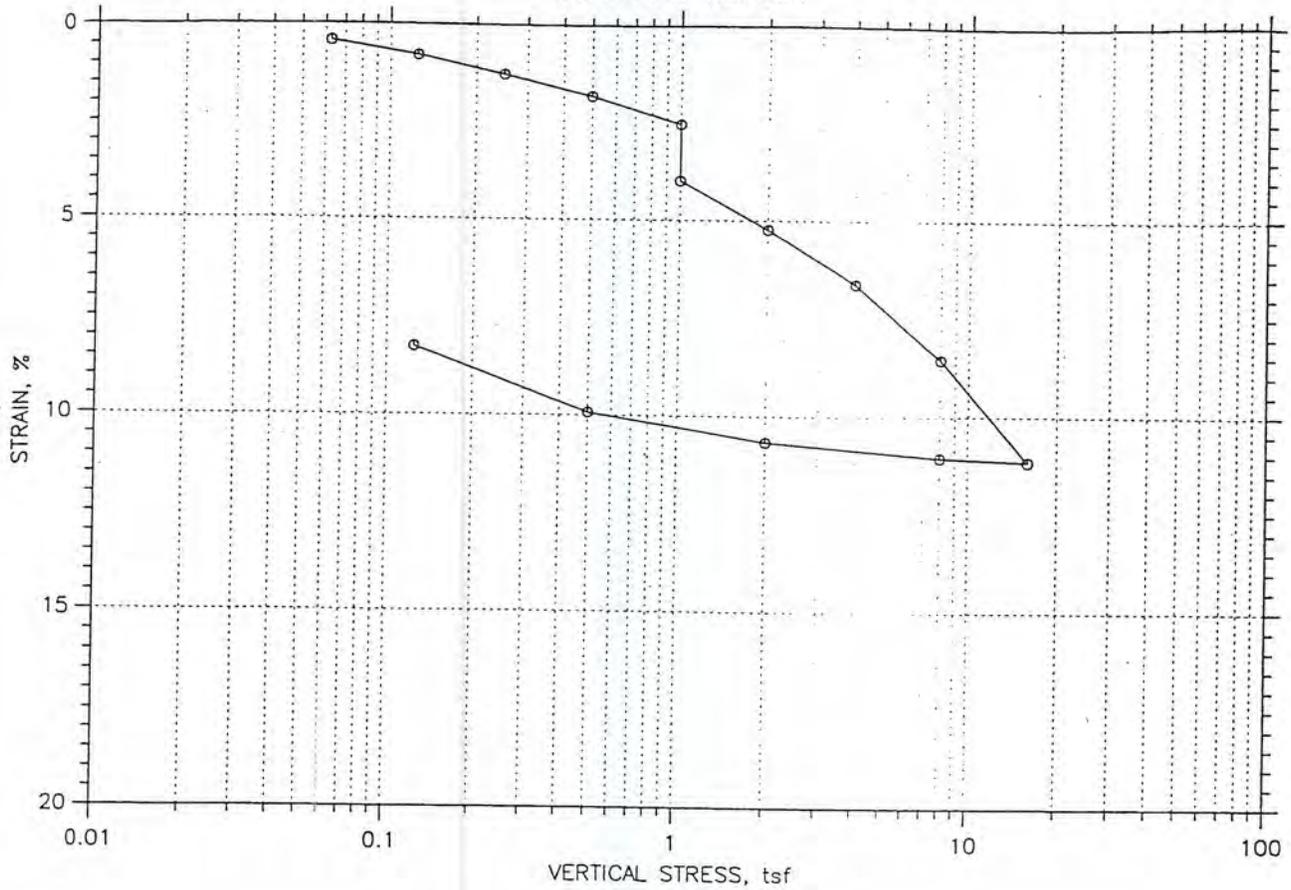
# CONSOLIDATION TEST DATA SUMMARY REPORT



Project: RTE 5 REALIGNMENT	Location: 8-SBD-58; 35.1/50	Project No.: 08-043510
Boring No.: B-33	Tested By: KS	Checked By: <i>CJS</i>
Sample No.: T2-15'-2	Test Date: 4/16/02	Depth: 15'
Test No.: 02083-G3	Sample Type: 1.944"	Elevation: ---
Description: MOIST, VERY STIFF, LIGHT TAN, SANDY LEAN CLAY		
Remarks: TEST SPECIMEN PATCHED.		

# CONSOLIDATION TEST DATA

## SUMMARY REPORT



Project: RTE 58 REALIGNMENT	Location: 08-SBD-58; 35.1/50	Project No.: 08-043510
Boring No.: B-34-T2	Tested By: KS	Checked By: <i>[Signature]</i>
Sample No.: 10'-2	Test Date: 4/17/02	Depth: 10'
Test No.: 02085-G5	Sample Type: 1.944"	Elevation: ---
Description: MOIST, STIFF, LIGHT TAN, SANDY SILT		
Remarks: COLLAPSE TEST. SATURATE @ 2000 PSF		

REPORT BY: Susan Hall, *SH*  
Corrosion Technology Branch

MATERIAL SOURCE: 8 - SBd - 58 - KP 35.1/50

SAMPLE OF: Soil

EA : 08-043510

SIC NUMBER	CORROSION NUMBER	SAMPLE FROM	LOCATION	DATE SAMPLED	SAMPLE DEPTH	pH	MINIMUM RESISTIVITY (ohm-cm) (PPM or mg/kg)	SULFATE CONTENT (PPM or mg/kg)	CHLORIDE CONTENT (PPM or mg/kg)	YEARS TO PERFORATION 18 ga. GALV. STEEL CULVERT
C541351	02-0250	Boring B-2 Bulk	369+00	1/29/2002	0.0'-1.0'	8.71	5600	N/A	N/A	51

Note: Caltrans currently defines a corrosive area as an area where the soil and/or water contains more than 500 ppm of chlorides, or more than 2000 ppm of sulfates, or has a minimum resistivity of less than 1000 ohm-centimeters, or has a pH of 5.5 or less.  
With the exception of MSE Walls, chloride and sulfate tests (CTM 422 and CTM 417) are not required (N/A) if the minimum resistivity is greater than 1,000 ohm-cm.

Results sent to: CHRIS HOADLEY

Division of Engineering Services  
Materials Engineering and Testing Services  
Corrosion and Structural Concrete Field Investigation Branch

Report Date: 2/13/2013  
Reported by Michael Mifkovic

## CORROSION TEST SUMMARY REPORT - SOIL

EA

EFIS: **0800000010**

Dist/Co/Rte/PM **08 / SBD /058/R / 30.5 PM**

CORROSION			DEPTH (FT)		MINIMUM RESISTIVITY <sup>1</sup>	CHLORIDE CONTENT <sup>2</sup>	SULFATE CONTENT <sup>3</sup>	IS SAMPLE CORROSIVE?	
LAB #	TL101 #	BORE #	START	END	(ohm-cm)	pH <sup>1</sup>	(ppm)	(ppm)	
SOIL SAMPLE FROM:									
CR20130047	C704805	A-13-001	3	5	1153	7.9			NO
CR20130048	C704806	A-13-002	5	10	752	7.69	480	264	NO
CR20130049	C704807	A-13-003	5	10	2441	8.1			NO

This site is not corrosive to foundation elements (see note below).

Note: For structural elements, the Department considers a site corrosive if one or more of the following conditions exist: pH is 5.5 or less, chloride concentration is 500 ppm or greater, sulfate concentration is 2000 ppm or greater. MSE backfill shall conform to the requirements of section 47-2.02C Structure Backfill in the 2010 Standard Specifications.

<sup>1</sup>CT 643, <sup>2</sup>CT 422, <sup>3</sup>CT 417

CR20130047 - CR20130049

2/13/2013

**CORROSION TEST SUMMARY REPORT**

Bridge  
 Name:  
 Bridge  
 Number:  
 EA No.: **08-043510**  
 Dist/Co/Rte/ **8 / SBd / 58**  
 PM or KP:

SIC Number	Sample Location/ Limit	Sample Type	Sample Depth	Minimum Resistivity <sup>1</sup> (ohm-cm)	pH <sup>2</sup>	Chloride Content <sup>3</sup> (ppm)	Sulfate Content <sup>4</sup> (ppm)
C639641	B20	Soil	8'-9'	1800	9.29		
C639644	B22	Soil	22'-33'	1500	9.5		
C639642	B20	Soil	29'-30'	950	9.33	210	230
C639643	B22	Soil	8'-9'	950	8.33	200	320

This site is not corrosive to foundation elements (see note below for MSE wall backfill)

This site is corrosive (if checked).

Note: For MSE wall structure backfill material, minimum resistivity must be 1500 ohm-cm or greater, pH must be between 5.5 and 10.0, chloride content must not be greater than 500 ppm, and sulfate content must not be greater than 2000 ppm.

1,2CTM 643, 3CTM 422, 4CTM 417