

TEST BORING LOG

TYPE		5" ROTARY WASH						ELEVATION +/-108.5 FEET		BORING R-2	
										... (25 to 28 feet - 1.5 feet recovery) Diatomaceous SILTSTONE, laminated, very pale brown, brownish yellow, light brownish gray, shears on bedding surfaces, close spaced fractures	
		46	94.2							... (28 to 30 feet) hard SILTSTONE/PORCELLENITE layer, slow drilling	
		44	101.8	30	2.4		30			... (30 feet) Diatomaceous SILTSTONE, laminated white 10YR 8/1, light yellowish brown 10YR 6/4 and light brownish gray 10Yr 6/2 interbedded with fine SILTY SANDSTONE, black 5Y 2.5/1 to olive gray 5Y 5/2, healed fractures, rollups, fish scales, oxidation staining on fractures and bedding surfaces, moist, soft to moderately, soft rock strength	
										MONTEREY FORMATION: Tm (35 to 38 feet - 2 inch recovery) drilled 1.5 feet back into hard rock, COBBLE jammed in tip	
		87	35.1	30	2.5		40			... (40 feet) bluish gray 5B 6/1, micaceous SANDY SILTSTONE interlaminated with olive black 5Y 2/1, CLAYSTONE partings, very close high-angle fractures, very soft, slightly to moderately weathered, moist sheared along CLAYSTONE laminations	
		64 79	54.6 34.4				45			... (45 feet) sampler advanced ~2 feet ... (45 to 50 feet) scattered chert fragments in cuttings SILTSTONE with CLAY, dark grayish brown, gypsiferous on parting surfaces, fissile, microfractures, abundant shears randomly oriented, moist, soft	
										Continued	
STRIKE DIP	RELATIVE COMPACTION	DRY DENSITY (lbs-cu. ft.)	MOISTURE (%)	BLOWS/FOOT ft-1bs.	SAMPLE SIZE (INCHES)	SAMPLE NO.	DEPTH IN FEET	MATERIAL SYMBOL	UNIFIED SOIL CLASS.	THIS BORING LOG SUMMARY APPLIES ONLY AT THE TIME AND LOCATION INDICATED. SUBSURFACE CONDITIONS MAY DIFFER AT OTHER LOCATIONS AND TIMES.	
										LOGGED BY DB/JG DATE 3-17-99	

TEST BORING LOG

5" ROTARY WASH							ELEVATION	+/-108.5 FEET		BORING	
TYPE									R-2		
	81	34.0		2.5	10					... (50 feet) high-angle laminations with thin chert interbeds, rock fabric sheared/rolled	
										... (52 feet) fragments of cemented oxidized shale in cuttings	
	76	46.6		FITCHER	11					... (55 feet) sampler advanced 15 feet, SILTSTONE, olive black 5Y 2/1, laminated, with laminations inclined up to 10 degrees, fissile, moderately cemented, moist to wet, soft	
	91	27.9	90	2.5	12					Dark greenish gray 5GY 3/1, CLAYEY SILTSTONE, soft, slightly weathered, slightly gypsum (?) cemented, scattered thin olive black 5Y 2/1, CLAYSTONE interbeds, bedding is low angle with close high-angle fractures	
										Olive black 5Y 2/1, CLAYEY SILTSTONE, slightly weathered, slightly gypsum-cemented, moderately-high plasticity, low-angle laminated to thin bedded, soft, moist	
										... (65 feet) CLAYEY SILTSTONE, olive black 5Y 2/1, unoxidized, laminated to thinly bedded, sheared, moist, soft	
	76	42.3									
	85	39.3									
	101	23.3									
										... (70 feet) SILTSTONE, olive black 6Y 2/1, laminated, fissile, moderately cemented, very light gray low angle SILTY partings, moist, soft	
	46	35.1									
										Continued	
STRIKE DIP	RELATIVE COMPACTION	DRY DENSITY (lbs-cu. ft.)	MOISTURE (%)	BLOWS/FOOT 1-1bs.	SAMPLE SIZE (INCHES)	SAMPLE NO.	DEPTH IN FEET	MATERIAL SYMBOL	UNIFIED SOIL CLASS.	THIS BORING LOG SUMMARY APPLIES ONLY AT THE TIME AND LOCATION INDICATED. SUBSURFACE CONDITIONS MAY DIFFER AT OTHER LOCATIONS AND TIMES.	
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TEST BORING LOG

TYPE		5" ROTARY WASH					ELEVATION +/-108.5 FEET		BORING R-2				
		78	38.8		2.5	15				... (75 feet) dark greenish gray 5G 4/1 to dark gray N3/4, CLAYEY SILTSTONE, thin bedded, low angle, soft, slightly weathered, moist			
										(79 to 81 feet) cemented shale (small bag of cuttings)			
					BAG	16	80			SILTSTONE with CLAY, olive black 5Y 2/1, laminated, with laminations inclined ~10 degrees, fine SANDY or micaceous partings, sheared, with shears inclined ~30 degrees, shear surfaces are paper thin with striations on surfaces, very closely to closely fractured, top of tube is less disturbed than bottom, moist, soft			
					FITCHER	17							
		83	34.9		FITCHER	18	85			... (85 feet) SILTSTONE with CLAY, micaceous or fine SAND on parting surfaces, closely fractured, abundant shears, striations on sheared surfaces, thinly bedded, moist, soft			
		79	36.6							... (88 feet) abundant microcrystalline pyrite - petrolific odor			
		87	28.9	75	2.5	19	90			... (90 feet) abundant randomly - oriented shear surfaces, waxy texture			
					FITCHER	20	95			... (95 to 98 feet - 3 feet recovery) SILTSTONE with CLAY, very dark brown 10YR 2/2, gypsiferous, tectonic shears, waxy appearance, relatively low angle, bedding inclined ~10 degrees, closely fractured, relatively high angle, pods of olive gray clayey SILTSTONE, moist, soft rock strength			
		80	37.3										
										Continued			
STRIKE DIP	RELATIVE COMPACTION	DRY DENSITY (lbs-cu. ft.)	MOISTURE (%)	BLOWS/FOOT 1/4" - 1/2"	SAMPLE SIZE (INCHES)	SAMPLE NO.	DEPTH IN FEET	MATERIAL SYMBOL	UNIFIED SOIL CLASS.	THIS BORING LOG SUMMARY APPLIES ONLY AT THE TIME AND LOCATION INDICATED. SUBSURFACE CONDITIONS MAY DIFFER AT OTHER LOCATIONS AND TIMES.			
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TEST BORING LOG

TYPE		5" ROTARY WASH					ELEVATION +/-108.5 FEET		BORING R-2	
					FITCHER	21				... (100 to 103 feet - 2 feet recovery) CLAYEY SILTSTONE/SILTY CLAYSTONE Very dark brown 10YR 2/2, thinly bedded to laminated, abundant low and high angle tectonic shears, inclined ~25 degrees, striations on sheared surfaces, moderate high plastic CLAY on sheared surfaces, waxy appearance, fine SAND on parting surfaces, fractured, moist, soft
		77	38.0							NOTES: 1) Total depth of boring 103 feet. 2) 2 inch well screen installed from 0 feet to 100 feet. 3) Backfilled with #30 SAND. 4) Drive weight 140 lbs. 5) Elevation from topo.
STRIKE DIP	RELATIVE COMPACTION	DRY DENSITY (lbs-cu. ft.)	MOISTURE (%)	BLOWS/FOOT ft-lbs.	SAMPLE SIZE (INCHES)	SAMPLE NO.	DEPTH IN FEET	MATERIAL SYMBOL	UNIFIED SOIL CLASS.	THIS BORING LOG SUMMARY APPLIES ONLY AT THE TIME AND LOCATION INDICATED. SUBSURFACE CONDITIONS MAY DIFFER AT OTHER LOCATIONS AND TIMES. LOGGED BY DB/JG DATE 3-17-99

TEST BORING LOG

TYPE		5" ROTARY WASH					ELEVATION +/-108 FEET		BORING R-3	
								ML	FILL (A): CLAYEY SILT with SAND, dark grayish brown, moist, soft	
		110	18.1	12	2.4	1	5	CL	... (5 feet) SILTY CLAY with SAND, mottled grayish brown 2.5Y 5/2, dark gray 10YR 4/1 and dark grayish brown 10YR 4/2, gypsiferous, scattered pockets of strong brown 7.5YR 5/8, oxidation staining, fragments of oxidized rock, moist, firm to stiff	
NSR				10	2.4	2	10		... (10 feet - no recovery) SILTY CLAY pulled out of sampler	
							15	ML	... (15 to 18 feet - 1.5 feet recovery) SILT with GRAVEL mottled white 10YR 8/1, light yellowish gray 10YR 6/2 and dark gray 10YR 4/1 and dark gray 10YR 4/1, fragments of oxidized SILTSTONE, moist, firm	
		88	41.6			FITCHER 3				
NSR						FITCHER 4	20	SW	(20 to 23 feet - no recovery)	
		94	27.7	7	2.4	5			... (24 feet) GRAVELLY SAND with CLAY, very dark grayish brown 10YR 3/2, angular, GRAVEL sized rock	
									Continued	
STRIKE DIP	RELATIVE COMPACTION	DRY DENSITY (lbs-cu. ft.)	MOISTURE (%)	BLOWS/FOOT ft-lbs.	SAMPLE SIZE (INCHES)	SAMPLE NO.	DEPTH IN FEET	MATERIAL SYMBOL	UNIFIED SOIL CLASS.	THIS BORING LOG SUMMARY APPLIES ONLY AT THE TIME AND LOCATION INDICATED. SUBSURFACE CONDITIONS MAY DIFFER AT OTHER LOCATIONS AND TIMES.
										LOGGED BY DB DATE 3-12-99 3-17-99

TEST BORING LOG

TYPE		5" ROTARY WASH					ELEVATION +/-108 FEET		BORING R-3	
									fragments, severely weathered/oxidized, wet, loose ... (25.5 feet) losing drilling fluid through GRAVELLY layer	
		13.0	38	2.4	6			SW	STREAM DEPOSITS (Qal): ... (28 feet) GRAVELLY SAND with CLAY, very dark grayish brown 10YR 3/2, GRAVEL composed of schist and various igneous rock, occasional COBBLE of schist, wet, medium dense	
		102.0	50/10"	2.4	7		30		MONTEREY FORMATION (Tm): ... (30 feet) no recovery, only in tip, COBBLE jammed in sampler ... (30 to 37 feet) COBBLY zone, COBBLES of various igneous rock interbedded with SILTY CLAYSTONE, gray 10YR 5/1, strong brown 7.5 YR 5/8, oxidation staining overlying laminated SILTSTONE, well cemented, severely weathered, dark brown 7.5 YR 3/4, rust staining, moist, soft rock strength	
							35		... (36 feet) COBBLE no sample taken	
					FITCHER	8	40		... (40 to 43 feet - 1 foot recovery) SILTSTONE black 7.5 YR 2.5/1, abundant shears along bedding planes, waxy-greasy appearance, moist, soft rock strength	
		108	36.8	100/9"	2.4	9	45		SILTSTONE, very dark grayish brown 10Yr 3/2, thinly bedded, interbedded with very thin beds of SANDSTONE and CLAYSTONE SILTSTONE oxidized, abundant packages of shears, moist to wet, soft to moderately soft rock strength	
									Continued	
STRIKE DIP	RELATIVE COMPACTION	DRY DENSITY (lbs-cu.ft.)	MOISTURE (%)	BLOWS/FOOT ††-lbs.	SAMPLE SIZE (INCHES)	SAMPLE NO.	DEPTH IN FEET	MATERIAL SYMBOL	UNITED SOIL CLASS.	THIS BORING LOG SUMMARY APPLIES ONLY AT THE TIME AND LOCATION INDICATED. SUBSURFACE CONDITIONS MAY DIFFER AT OTHER LOCATIONS AND TIMES.
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TEST BORING LOG

TYPE		5" ROTARY WASH					ELEVATION	+/-108 FEET	BORING	R-3
				FITCHER	10				<p>... (50 to 53 feet - 3 feet recovery)</p> <p>SILTSTONE, very dark grayish brown 10YR 3/2, thinly bedded to thickly laminated, abundant shears along bedding surfaces, waxy appearance, roll up shears, gypsiferous or fine SAND on parting surfaces, moist, soft to moderately soft rock strength</p>	
		74	45.8							
		77	41.2							
					25	2.4	55		<p>... (54 feet) lost drilling fluid leaking out 10 feet below top of hole</p> <p>... (55 feet) no recovery</p>	
		68	47.7	100/9"	2.4	11a			<p>... (56 feet)</p>	
				FITCHER	12				<p>... (60 feet) lost drilling fluid 10 feet below top of hole</p> <p>... (60 to 63 feet - 2 feet recovery)</p> <p>SILTSTONE mottled very dark grayish brown 10YR 3/2 and gray 10YR 5/1, laminated to thinly bedded, high angle fractures, abundant shears randomly oriented, waxy appearance, rolled shears, gypsiferous or fine SAND on parting surfaces, unoxidized, moist, soft rock strength</p>	
		83	40.2							
		80	38.7	40	2.4	13	65		<p>... (65 feet) SILTSTONE, dark grayish brown 10YR 3/2, oxidized, thinly bedded, abundant shears randomly oriented, moist, soft to moderately soft rock strength</p>	
									<p>... (69 feet) still losing drilling fluid</p>	
		83	39.7				70		<p>... (70 feet) SILTSTONE, dark grayish brown 10YR 3/2, oxidized, thinly bedded, abundant shears randomly oriented, waxy appearance, moist, soft rock strength</p>	
									Continued	
STRIKE DIP	RELATIVE COMPACTION	DRY DENSITY (lbs-cu. ft.)	MOISTURE (%)	BLOWS/FOOT ft-lbs.	SAMPLE SIZE (INCHES)	SAMPLE NO.	DEPTH IN FEET	MATERIAL SYMBOL	UNIFIED SOIL CLASS.	THIS BORING LOG SUMMARY APPLIES ONLY AT THE TIME AND LOCATION INDICATED. SUBSURFACE CONDITIONS MAY DIFFER AT OTHER LOCATIONS AND TIMES.
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TEST BORING LOG

5" ROTARY WASH							ELEVATION	+/-108 FEET	BORING	R-3
				FITCHER	15					... (75 to 78 feet - 1 foot recovery) SILTSTONE, dark grayish brown 10YR 3/2, thinly bedded, slightly gypsiferous, close spaced shears, moist moderately soft rock strength
			80	2.4	14					
	76	42.0	50	2.4	16	80				SILTSTONE to CLAYEY SILTSTONE, very dark grayish brown 10YR 3/2 to dark brown 10YR 3/3 to dark gray 2.5Y 4/1, thinly bedded, some staining along bedding planes, interbedded with fine SANDSTONE beds up to 1/4 inch thick, bluish gray 5PB 5/1 and micaceous beds, secondary mineralization along some bedding planes, moist, moderately soft rock strength, poor recovery 7 feet
						85				... (85 to 88 feet - 1.5 feet recovery) SILTSTONE, very dark brown 10YR 2/2 to very dark gray 5Y 3/1, thinly bedded, abundant shears, waxy appearance, CLAYEY on sheared surfaces, interbedded with very thin beds of SANDSTONE, some staining along bedding planes, gypsiferous, moist, soft rock strength
	76	40.4		FITCHER	17					
	77	38.9	55	2.4	18	90				... (90 feet) SILTSTONE, very dark brown 7.5YR 2.5/0, thinly bedded to beds up to 1/2 inch thick, interbedded with very thin to 1 inch thick CLAYSTONE beds, dark gray 5Y 4/1, CLAYSTONE has abundant shearing, randomly oriented, waxy appearance, SILTSTONE has minor staining along bedding planes, high angle joints/fractures, moist, soft to moderately soft rock strength
						95				... (95 to 98 feet - 2 feet recovery) drilled for 2.5 feet, rock became too hard SILTSTONE, dark brown 7.5 Yr 2.5/0, thinly bedded to thickly laminated, abundant, waxy shears, randomly oriented, deformation zones, shears abundant, gypsiferous, moist, soft rock strength
	75	36.6		FITCHER	19					
										Continued
										THIS BORING LOG SUMMARY APPLIES ONLY AT THE TIME AND LOCATION INDICATED. SUBSURFACE CONDITIONS MAY DIFFER AT OTHER LOCATIONS AND TIMES.
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TEST BORING LOG

TYPE		5" ROTARY WASH			ELEVATION +/-108 FEET		BORING R-3			
			100/6"	2.4	20			<p>... (100 feet) SILTSTONE, very dark grayish brown 10YR 3/2 to black 10YR 2/1, thinly bedded, shears on bedding planes, gypsiferous, moist, soft rock strength</p> <p>NOTES:</p> <ol style="list-style-type: none"> 1) Total depth of boring 100.5 feet 2) Groundwater encountered at 24 feet. 3) 2 inch diameter screen installed from 0 feet to 100 feet. 4) Backfilled with #30 SAND. 5) Drive weight 140 lbs. 6) Continuously lost drilling fluid through SANDY layer at elevation ~20 feet. 7) Elevation from topo. 		
STRIKE DIP	RELATIVE COMPACTION	DRY DENSITY (lbs-cu.ft.)	MOISTURE (%)	BLOWS/FOOT #ft-lbs.	SAMPLE SIZE (INCHES)	SAMPLE NO.	DEPTH IN FEET	MATERIAL SYMBOL	UNIFIED SOIL CLASS.	<p>THIS BORING LOG SUMMARY APPLIES ONLY AT THE TIME AND LOCATION INDICATED. SUBSURFACE CONDITIONS MAY DIFFER AT OTHER LOCATIONS AND TIMES.</p> <p>LOGGED BY DB DATE 3-12-99 3-17-99</p>

TEST BORING LOG

TYPE		5" ROTARY WASH					ELEVATION +/-107 FEET		BORING R-4	
		83	56.0	8	2.4	1	5	ML	FILL (A): CLAYEY SILT with SAND, grayish brown 2.5Y 5/2, inclusions GRAVEL to COBBLE size, rootlets, damp, soft	
		105	27.1	14	2.4	2	10	CL	... (5 feet) CLAYEY SILT with SAND, mottled yellow 2.5Y 7/6, olive gray 5Y 4/2 and black 5Y 2.5/1, inclusions GRAVEL to COBBLE size of schist and various igneous rock, slightly gypsiferous, rootlets, moist, soft	
		98	26.9	FITCHER		3	15	ML	... (10 feet) SILTY CLAY with SAND, mottled light olive brown 2.5Y 5/4, olive gray 5Y 4/2 and black 5Y 2.5/1, inclusions GRAVEL to COBBLE size of schist and various weathered igneous rock, moist, soft to firm, poor recovery 4 inch, sample disturbed	
		79	35.3	FITCHER		4	20	CL	... (15 to 18 feet - 2.75 feet recovery) CLAY, very dark olive gray 5Y 3/2 to olive gray 5Y 5/2, CLAYEY SILT in lighter material than fat CLAY in darker material (black 5Y 2.5/1), bedding is a couple of inches thick, apparent dip of ~ 30 - 35 degrees, scattered gravel, CLAY is plastic, argillaceous odor, very moist, soft	
									... (20.5 to 23.5 feet - 2.75 feet recovery) SILTY CLAY with medium to coarse SAND with scattered GRAVEL, olive brown 2.5Y 4/3, scattered roots, wet, soft	
STRIKE DIP	RELATIVE COMPACTION	DRY DENSITY (lbs-cu.ft.)	MOISTURE (%)	BLOWS/FOOT ft-lbs.	SAMPLE SIZE (INCHES)	SAMPLE NO.	DEPTH IN FEET	MATERIAL SYMBOL	UNIFIED SOIL CLASS.	
									Continued	
THIS BORING LOG SUMMARY APPLIES ONLY AT THE TIME AND LOCATION INDICATED. SUBSURFACE CONDITIONS MAY DIFFER AT OTHER LOCATIONS AND TIMES.										
LOGGED BY					DB		DATE		3-19-99 3-22-99	

TEST BORING LOG

TYPE		5" ROTARY WASH						ELEVATION +/-107 FEET		BORING R-4	
NSR		88	29.1	5	2.4	5				... (25 feet) SILTY CLAY mottled dark grayish brown 10YR 4/2 and black 10YR 2/1 with fragments of weathered SILTSTONE, moist to wet, soft	
										LANDSLIDE DEBRIS (Q _{ls}): ... (30 feet - no recovery) very soft	
		98	22.7	9	2.4	6				... (34 feet) SILTY CLAY with GRAVEL, mottled white 10YR 8/1, pale brown 10YR 6/3 and gray 10YR 6/1, GRAVEL angular SILTSTONE fragments, moist to wet, soft	
		105	22.0			7	FITCHER			... (35 to 38 feet - 2 feet recovery) SANDY SILTSTONE to SILTSTONE with SANDSTONE interbeds, white 10YR 8/1, pale brown 10YR 6/3 and gray 10YR 6/1, SILTSTONE layers predominately fine SAND, scattered coarse SAND, non-plastic, SILTY SANDSTONE, fine to medium grain, non-plastic, bedding ~40 degrees at 2", moist to wet, soft	
		52	74.5 75.1			8	FITCHER			... (38 feet) lost all drilling fluid ... (40 to 43 feet - 1.5 feet recovery) SILTY CLAYSTONE with SILTSTONE interbeds, very dark brown 10YR 2/2, CLAYSTONE moderate to high plasticity, SILTSTONE low to moderate plasticity, hackley fractured, very heavily weathered, abundant shears, waxy appearance, moist to wet, soft to very soft rock strength	
	98	22.9	80/6"	2.4	9					... (45 feet) hammer hanging up last 30 blows - 1 inch recovery SILTY CLAYSTONE, very dark brown 10YR 2/2, interbedded with thin SILTSTONE beds, secondary mineralization along some bedding planes, moist, soft rock strength	
										MONTEREY FORMATION (T _m):	
										Continued	
STRIKE DIP	RELATIVE COMPACTION	DRY DENSITY (lbs-cu.ft.)	MOISTURE (%)	BLOWS/FOOT ft-lbs.	SAMPLE SIZE (INCHES)	SAMPLE NO.	DEPTH IN FEET	MATERIAL SYMBOL	UNIFIED SOIL CLASS.	THIS BORING LOG SUMMARY APPLIES ONLY AT THE TIME AND LOCATION INDICATED. SUBSURFACE CONDITIONS MAY DIFFER AT OTHER LOCATIONS AND TIMES.	
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TEST BORING LOG

TYPE		5" ROTARY WASH					ELEVATION +/-107 FEET		BORING R-4	
					FITCHER	10				... (50 to 53 feet - 1 foot recovery) COBBLE jammed in tip, well cemented SILTSTONE. Second try only went a couple of inches - too hard
		79	44.3		FITCHER	11				(55 to 58 feet - 2 feet recovery) SILTSTONE to CLAYEY SILTSTONE very dark brown 10YR 2/2, gypsiferous, thinly bedded to laminated, laminations inclined ~5 degrees, moderately cemented (gypsum?), abundant bedding shears, waxy appearance, shears inclined ~30 degrees, roll ups, unoxidized, low plasticity, moist, soft rock strength losing drilling fluid
		71	47.3							
		81	40.3							
				89	28.2	100/7°	2.4	12	60	... (60 feet) CLAYEY SILTSTONE, very dark brown 10YR 2/2, abundant shears, interbedded with very thin beds of SANDSTONE, moist, moderately soft rock strength
		85	38.3						65	... (65 to 68 feet - 1 foot recovery) CLAYEY SILTSTONE, very dark brown 10YR 2/2, slightly gypsiferous, high angle, close spaced joint/fractures, highly sheared, randomly oriented waxy appearance, higher clay content than before, unoxidized, petrolific odor, COBBLE of very hard dolostone, moist to wet, moderately soft rock strength
		77	37.9		FITCHER	13				
										... (69 feet) caving/COBBLE blocking boring, redrilled part of boring
										... (70 to 73 feet - 2.5 feet recovery) SILTSTONE interbedded with CLAYEY SILTSTONE, very dark brown 10YR 2/2, CLAYEY SILTSTONE is moderately cemented, gypsiferous, high angle, close spaced joints/fractures, unoxidized, petrolific odor, moist to wet, moderately soft to moderate rock strength
		75	40.0		FITCHER	14				
										Continued
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TEST BORING LOG

TYPE		5" ROTARY WASH					ELEVATION +/-107 FEET		BORING R-4	
		93	19.7	100/10*	2.4	15				... (75 feet - 2 inch of recovery) SILTSTONE, very dark brown 10YR 2/2, laminated, well indurated, highly fractured, moderately weathered, moist to wet, moderate rock strength
		97	29.9		FITCHER	16				... (80 to 83 feet - 1.5 feet recovery) SILTSTONE, very dark brown 10YR 2/2, laminated, laminations/partings inclined ~30 degrees, moderately/gypsum cemented, highly sheared waxy appearance, randomly oriented highly fracture, moist to wet, moderately soft to moderate rock strength
								GW GM		SAN ONOFRE BRECCIA (T ₅₀): very tip of sampler SAN ONOFRE BRECCIA, matrix GRAVELLY CLAYSTONE, bluish gray 5PB 6/1
		80	39.5							... (85 to 88 feet - 2.75 feet recovery) BRECCIA, light bluish gray 5PB 7/1, GRAYWACKE matrix (CLAYEY SANDSTONE) gypsiferous, high plasticity, clasts GRAVEL to COBBLE sized of schist and various igneous hard rock, subrounded to subangular, clast severely weathered to weathered, matrix very severely to severely weathered, moist, soft rock strength
		125	12.8	85	2.4	18				... (90 feet) BRECCIA, light bluish gray 5PB 7/1, GRAYWACKE matrix (CLAYEY SANDSTONE) clast of fine GRAVEL to COBBLE size, moderately weathered schist, quartz and severely weathered various igneous hard rock, subrounded to subangular, matrix very severely to severely weathered, damp, moderately soft
										... (93 to 96 feet) lot of rig chatter
		105	18.5		FITCHER	19				... (95 to 98 feet - 1.75 feet recovery) COBBLE of schist jammed in tip BRECCIA, light bluish gray 5PB 7/1, GRAYWACKE matrix (CLAYEY to SILTY SANDSTONE) high plasticity, gypsiferous, clasts GRAVEL to COBBLE sized, schist and quartz, subrounded to subangular, moist, soft to moderate rock strength
										Continued
STRIKE DIP	RELATIVE COMPACTION	DRY DENSITY (lbs-cu. ft.)	MOISTURE (%)	BLOWS/FOOT ft-lbs.	SAMPLE SIZE (INCHES)	SAMPLE NO.	DEPTH IN FEET	MATERIAL SYMBOL	UNIFIED SOIL CLASS.	THIS BORING LOG SUMMARY APPLIES ONLY AT THE TIME AND LOCATION INDICATED. SUBSURFACE CONDITIONS MAY DIFFER AT OTHER LOCATIONS AND TIMES.
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TEST BORING LOG

TYPE		5" ROTARY WASH					ELEVATION +/-107 FEET		BORING R-4	
				HITCHER	20					... (100 to 103 feet - 2 inch recovery) drilled for 5 inches BRECCIA, light bluish gray SPB 7/1, GRAYWACKE matrix (CLAYEY to SANDY SILTSTONE), clast GRAVEL to COBBLE sized weathered schist, quartz and various igneous rock, matrix moderately soft to moderate rock strength
										NOTES: 1) Total depth of boring 100.5 feet. 2) 2 inch diameter well screen installed from 0 feet to 100 feet. 3) Backfilled with #30 SAND. 4) Drive weight 140 lbs. 5) Lost drilling fluid 38 feet and 55 feet. 6) Elevation from topo.
SRIKE DIP	RELATIVE COMPACTION	DRY DENSITY (lbs-cu. ft.)	MOISTURE (%)	BLOWS/FOOT ft-lbs.	SAMPLE SIZE (INCHES)	SAMPLE NO.	DEPTH IN FEET	MATERIAL SYMBOL	UNIFIED SOIL CLASS.	THIS BORING LOG SUMMARY APPLIES ONLY AT THE TIME AND LOCATION INDICATED. SUBSURFACE CONDITIONS MAY DIFFER AT OTHER LOCATIONS AND TIMES.
										LOGGED BY DB DATE 3-19-99 3-22-99

TEST BORING LOG

TYPE		5" ROTARY WASH					ELEVATION +/-112 FEET		BORING R-5	
NSR		110	17.9	10	2.4	1	5	ML	<p>FILL (Af): CLAYEY SILT with SAND, mottled brown 10YR 5/3 and very dark gray 10YR 3/1, inclusions GRAVEL to COBBLE sized, SILTSTONE fragments, quartz, schist and igneous rock, rootlets, damp, soft</p> <p>... (4 to 5 feet) COBBLE</p> <p>... (5.5 feet) CLAYEY SILT, mottled black 10YR 2/1 and dark grayish brown 10YR 4/2, slightly gypsiferous, scattered pockets of calcite material, oxidized rock fragments</p>	
		121	18.5	11	2.4	2	10	ML CL	<p>LANDSLIDE DEBRIS (Qls):</p> <p>... (10 feet) SILTY CLAY, yellowish brown 10YR 5/8 to yellow 10YR 8/8, oxidized, severely weathered fragments of schist and various igneous rock, rust and other oxidation staining present, moist, soft poor recovery 6 inches</p> <p>... (14 feet) drilled out boring - COBBLES falling in from side</p> <p>... (15 to 18 feet) no recovery, need new drill bit</p>	
		122	16.0			4	20	CL	<p>... (20 to 23 feet - 2 feet recovery) CLAYEY SILT/SILTY CLAY, mottled reddish brown 5YR 4//4 and bluish gray 10B 5/1, oxidized, severely weathered fragments of schist, quartz, and various igneous rock, rust staining, moist, soft</p>	
									CL	Continued
STRIKE DIP	RELATIVE COMPACTION	DRY DENSITY (lbs-cu. ft.)	MOISTURE (%)	BLOWS/FOOT ft-lbs.	SAMPLE SIZE (INCHES)	SAMPLE NO.	DEPTH IN FEET	MATERIAL SYMBOL	UNIFIED SOIL CLASS.	<p>THIS BORING LOG SUMMARY APPLIES ONLY AT THE TIME AND LOCATION INDICATED. SUBSURFACE CONDITIONS MAY DIFFER AT OTHER LOCATIONS AND TIMES.</p>
										<p>LOGGED BY DB DATE 3-20-99 3-24-99</p>

TEST BORING LOG

TYPE		5" ROTARY WASH					ELEVATION +/-112 FEET		BORING R-5	
				FITCHER	10					... (50 to 55 feet - 2.5 feet recovery) SILTSTONE, very dark gray 2.5Y 3/1, gypsiferous, moist, soft rock strength
		48	74.5							
		73	43.7	100	2.4	11	55			(55 feet) SILTSTONE with CLAY, very dark gray 2.5Y 3/1, gypsiferous, occasional secondary mineralization along bedding surface, bedding plane shears, rolled-shears, high angle joints/fractures, moist, soft to moderately soft rock strength
				FITCHER	12					... (60 to 63 feet - 2.75 feet recovery) very dark gray 2.5Y 3/1, thinly bedded, high and low angle shear surfaces ~30 degrees to 50 degrees along bedding surfaces, striations of shear surfaces, fine SAND or gypsiferous on parting surfaces, moist, soft rock strength
		82	38.5							
				FITCHER	13					... (65 to 68 feet - 3 feet recovery) SILTSTONE, very dark gray 5.5Y 3/1, SILTSTONE is well indurated slightly gypsiferous, highly sheared waxy appearance, pyrite, gypsiferous, or fine SAND on parting surfaces, moist, moderately soft rock strength
		80	38.5							
		83	27.9							
		81	38.8	70	2.4	14	70			... (70 feet) SILTSTONE, very dark gray 2.5Y 3/1 to dark bluish gray 5PB 4/1, abundant shears on bedding surfaces, waxy appearance, high angle joints/fractures, secondary mineralization along some bedding planes, staining on others, gypsiferous, moist, soft rock strength
										Continued
										THIS BORING LOG SUMMARY APPLIES ONLY AT THE TIME AND LOCATION INDICATED. SUBSURFACE CONDITIONS MAY DIFFER AT OTHER LOCATIONS AND TIMES.
										LOGGED BY DB DATE 3-20-99 3-24-99

TEST BORING LOG

TYPE		5" ROTARY WASH					ELEVATION +/-112 FEET		BORING R-5		
		89	26.4		FITCHER 15					... (75 to 78 feet - 1.5 feet recovery) SILTSTONE, very dark gray 2.5Y 3/1 to dark bluish gray 5PB 4/1, thinly bedded, abundant shears on bedding surfaces, waxy appearance, high angle joints/fractures, secondary mineralization along some bedding planes, staining on others, gypsiferous, moist, soft rock strength	
		102	34.7		FITCHER 16					... (80 to 82 feet - 2 feet recovery, drilled for 2 feet) SILTSTONE, very dark gray 2.5Y 3/1, thinly bedded, well indurated, high angle fractures/joints, highly sheared waxy appearance, moist, moderate rock strength	
		84	28.6	100/7"	2.4	17				... (85 feet - poor recovery 2 inches) SILTSTONE, very dark gray 2.5Y 3/1, well indurated, slightly gypsiferous, jointed/fractured interbedded with up to 1.5 inch thick beds of SILTY CLAYSTONE, moist, soft to moderately soft rock strength	
					FITCHER 18					... (90 to 93 feet - 2.75 feet recovery) SILTSTONE, very dark gray 2.5Y 3/1, well indurated, slightly gypsiferous, interbedded with SILTY CLAYSTONE, very dark gray 2.5Y 3/1, moist, soft to moderately soft rock strength	
					FITCHER 19					... (95 to 98 feet - 1 foot recovery)	
		140	10.3					GW GM		SAN ONOFRE BRECCIA (Tso): ... (97 feet) BRECCIA, GRAYWACKE matrix (CLAYEY SILTSTONE to SILTY SANDSTONE), light bluish gray 5PB 7/1, gypsiferous, moderately severe weathering, clast GRAVEL to COBBLE sized clasts of schist, quartz and various igneous rock, subrounded to subangular, matrix	
										Continued	
STRIKE DIP	RELATIVE COMPACTION	DRY DENSITY (lbs-cu. ft.)	MOISTURE (%)	BLOWS/FOOT ± lbs.	SAMPLE SIZE (INCHES)	SAMPLE NO.	DEPTH IN FEET	MATERIAL SYMBOL	UNIFIED SOIL CLASS.	THIS BORING LOG SUMMARY APPLIES ONLY AT THE TIME AND LOCATION INDICATED. SUBSURFACE CONDITIONS MAY DIFFER AT OTHER LOCATIONS AND TIMES.	
										LOGGED BY	DB
										DATE	3-20-99 3-24-99

TEST BORING LOG

TYPE		5" ROTARY WASH				ELEVATION +/-112 FEET		BORING R-5	
				100/10"	2.4	20			
								<p>severe to moderately severe weathering, moist, soft to moderate rock strength</p> <p>... (100 feet) BRECCIA, GREYWACKE matrix (CLAYEY SILTSTONE to SILTY SANDSTONE), light bluish gray 5PB 7/1, gypsiferous, clasts GRAVEL to COBBLE sized of schist and various igneous rock, subrounded to subangular, moderate weathering, strong brown 7.5YR 5/8 oxidation staining, matrix moderately severe weathering, moist, soft to moderate rock strength</p> <p>NOTES:</p> <ol style="list-style-type: none"> 1) Total depth of boring 101 feet. 2) 2 inch diameter well screen installed 0 feet to 100 feet. 3) Backfilled with #30 SAND. 4) Drive weight 140 lbs. 5) Elevation from topo. 	
STRIKE DIP	RELATIVE COMPACTION	DRY DENSITY (lbs-cu. ft.)	MOISTURE (%)	BLOWS/FOOT ft-lbs.	SAMPLE SIZE (INCHES)	SAMPLE NO.	DEPTH IN FEET	MATERIAL SYMBOL	UNIFIED SOIL CLASS.
THIS BORING LOG SUMMARY APPLIES ONLY AT THE TIME AND LOCATION INDICATED. SUBSURFACE CONDITIONS MAY DIFFER AT OTHER LOCATIONS AND TIMES.									
LOGGED BY DB							DATE		3-20-99 3-24-99

TEST BORING LOG

TYPE		24"		ELEVATION +/-207 FEET		BORING BB-104		
N04W/58NE			BULK	1			<p>COLLUVIUM (Q_{col}): Dark brown 7.5YR 4/4 SANDY CLAY with scattered GRAVEL and COBBLES, moist</p> <p>LANDSLIDE DEBRIS (Q_{ls}): BRECCIA, matrix is light olive brown 2.5Y 5/4 to 2.5Y 5/6 to grayish yellow green 5GY 6/2, soft, very severely weathered, moist, clasts are GRAVEL to COBBLE size, subangular, clasts composed of schist and some quartz, abundant manganese oxide staining on clast surfaces.</p> <p>... (2 feet) shear surface, approximately 1.0 inch wide, composed of plastic CLAY</p> <p>... (4 feet) attitudes on two intersecting shear surfaces - both approximately 0.2 inch wide and filled with plastic CLAY (sample). High angle shear merges with lower-bound, low-angle shear surface.</p> <p>... (5 feet) "rolled" zone approximately 1-foot wide, adjacent and parallel to above low-angle shear</p> <p>... (6.5 feet) shear surface ranges from paper-thin to 0.3 inch wide, composed of plastic CLAY (sample). This shear surface varies from 55 to 12 degrees in inclination and emplaces BRECCIA over an approximately 4.0 foot thick paleosol</p> <p>... (8 feet) high angle shear surface</p> <p>... (9 feet) low angle shear surface up to 0.5 inch wide (sample). Tabular schist fragments to COBBLE size are drawn out along shear surface</p> <p>... (12 feet) undulatory contact</p> <p>SAN ONOFRE BRECCIA (T_{so}): BRECCIA, GRAYWACKE matrix is light olive brown 2.5Y 5/6 fine to coarse SILTY SAND, moderately hard, severely weathered, clasts are GRAVEL to COBBLE size with scattered BOULDERS, subangular to subrounded, clasts composed of schist and some quartz</p> <p>... (13.5 feet) bedding attitude in preferred alignment of COBBLES</p> <p>... (18.5 to 21.5 feet) BOULDER</p>	
N15E/16SE, N50E/46SE		3	BAG	1A				
N55E/12SE			BAG	2A				
N80E/49SE N40E/23SE		4	BAG	2B				
N35E/41SE			BULK	4				
N42E/38SE		80		5				
							Continued	
STRIKE DIP JOINTING BEDDING	DRY DENSITY (LBS/CU.FT)	MOISTURE (%)	BLOWS/FOOT	SAMPLE SIZE (INCHES)	SAMPLE NO.	DEPTH IN FEET	MATERIAL SYMBOL UNIFIED SOIL CLASS.	THIS BORING LOG SUMMARY APPLIES ONLY AT THE TIME AND LOCATION INDICATED. SUBSURFACE CONDITIONS MAY DIFFER AT OTHER LOCATIONS AND TIMES.
								LOGGED BY JPG/LEF DATE 3-31-99

TEST BORING LOG

TYPE		24"				ELEVATION +/-207 FEET		BORING BB-104	
		100	1.4	6					... (26 feet) matrix becomes wet ... (27 feet) slight seepage, sloughing at sides of hole
		90	1.4	7	35				NOTES: 1) Total depth of boring 36.5 feet. 2) Seepage from 27 feet. 3) Minor sloughing below 27 feet. 4) Kelly weight 3,200 lbs. 5) Boring downhole logged by JPG to 27 feet. 6) Boring backfilled with cuttings and tamped on March 31, 1999.
STRIKE DIP	JOINTING BEDDING	MOISTURE (%)	BLOWS/FOOT	SAMPLE SIZE (INCHES)	SAMPLE NO.	DEPTH IN FEET	MATERIAL SYMBOL	UNIFIED SOIL CLASS.	THIS BORING LOG SUMMARY APPLIES ONLY AT THE TIME AND LOCATION INDICATED. SUBSURFACE CONDITIONS MAY DIFFER AT OTHER LOCATIONS AND TIMES.
									LOGGED BY JPG/LEF DATE 3-31-99

TEST BORING LOG

TYPE		24" DIA BUCKET AUGER					ELEVATION +/-227 FEET		BORING BB-106						
N70E/08SE (C)				BULK	1		CL	COLLUVIUM (Qool): Dark brown (7.5 YR 4/4) to (7.5 YR 3/4) SANDY CLAY with scattered roots to 0.25-inch, scattered GRAVEL and COBBLES, stiff, moist ... (3 feet) irregular contact							
					2			96	1.4	5	LANDSLIDE (Qls): GRAYWACKE matrix is olive (5Y 5/4) fine to coarse SILTY SANDSTONE, moderately hard, damp to moist, clasts are GRAVEL- to BOULDER-size, subangular to subrounded, clasts composed of schist and quartz, unit is severely to very severely weathered				
				BULK	3										
					4			100	1.4	10					
					5			90	1.4	15					
					6			73	1.4	20					
					7			119	12.4	6	2.5		... (22.5 feet) erosional contact within BRECCIA between overlying COBBLEY channel deposits and underlying BRECCIA with GRAYWACKE (SANDY SILTSTONE) matrix		
				BULK	8								... (24 feet) matrix is soft to moderately hard SANDY		
N02W/50NE (C?) DIST								Continued							
STRIKE DIP JOINTING BEDDING	DRY DENSITY (LBS/CU.FT)	MOISTURE (%)	BLOWS/FOOT	SAMPLE SIZE (INCHES)	SAMPLE NO.	DEPTH IN FEET	MATERIAL SYMBOL	UNIFIED SOIL CLASS.	THIS BORING LOG SUMMARY APPLIES ONLY AT THE TIME AND LOCATION INDICATED. SUBSURFACE CONDITIONS MAY DIFFER AT OTHER LOCATIONS AND TIMES.						
									LOGGED BY	JPG	DATE	3-29-99 3-30-99			

TEST BORING LOG

TYPE						24" DIA BUCKET AUGER				ELEVATION +/-227 FEET		BORING BB-106	
			200+	1.4	9						SILTSTONE		
N33E/21SE				BULK	9A						... (26 feet) shear plane up to 0.5-inch wide filled with olive-gray SILTY CLAY of moderate plasticity (Sample), root to 0.25 inch diameter in shear plane. A second shear extends upward into the hanging wall from the first to a maximum angle of 62 degrees.		
N11E/62SE				BULK	10						... (28.5 feet) shear surface to 0.5-inch with scattered reddish-orange streaks in low plasticity CLAYEY SILT		
N17W/14NE (S)			76	1.4	11			30			SAN ONOFRE BRECCIA (Tso):		
N75E/18SE (B?)											... (31 feet) strong brown oxidation-staining in GRAYWACKE SANDY SILTSTONE matrix ... (32 feet) top of nested COBBLES and BOULDERS		
N65W/25NE (B)	119	8.4	140	2.5	12			35			... (35 feet) gradational contact - change in GRAYWACKE matrix from SANDY SILTSTONE (above) to fine to coarse SILTY SANDSTONE (below)		
			120	1.4	13			40			... (41 feet) slight seepage, increases with depth ... (42 feet) abundant nested COBBLES and BOULDERS		
				BULK	14								
			141	1.4	15			45					
											Continued		
STRIKE DIP JOINTING BEDDING	DRY DENSITY (LBS/CU.FT)	MOISTURE (%)	BLOWS/FOOT	SAMPLE SIZE (INCHES)	SAMPLE NO.	DEPTH IN FEET	MATERIAL SYMBOL	UNIFIED SOIL CLASS.	THIS BORING LOG SUMMARY APPLIES ONLY AT THE TIME AND LOCATION INDICATED. SUBSURFACE CONDITIONS MAY DIFFER AT OTHER LOCATIONS AND TIMES.				
									LOGGED BY	JPG	DATE	3-29-99 3-30-99	

TEST BORING LOG

TYPE							24" DIA BUCKET AUGER		ELEVATION +/-227 FEET		BORING BB-106			
			134	1.4	16					SAN ONOFRE BRECCIA:				
									55	... (55 feet) nested COBBLES and BOULDERS				
			85	1.4	17					NOTES:				
										1) Total depth of boring 58 feet. 2) Seepage at 41 feet. 3) Groundwater surface measured at 46 feet on March 30, 1999. 4) Boring downhole logged on March 30, 1999 by JPG/LEF. 5) Boring backfilled with cuttings and tamped on March 30, 1999. 6) B = Bedding F = Fault Fr = Fracture J = Joint P = Plunge S = Shear				
										THIS BORING LOG SUMMARY APPLIES ONLY AT THE TIME AND LOCATION INDICATED. SUBSURFACE CONDITIONS MAY DIFFER AT OTHER LOCATIONS AND TIMES.				
STRIKE	DIP	JOINTING	DRY DENSITY (LBS/CU.FT)	MOISTURE (%)	BLOWS/FOOT	SAMPLE SIZE (INCHES)	SAMPLE NO.	DEPTH IN FEET	MATERIAL SYMBOL	UNIFIED SOIL CLASS.	LOGGED BY	JPG	DATE	3-29-99 3-30-99

TEST BORING LOG

TYPE		24" DIA BUCKET AUGER					ELEVATION +/- 110.5 FEET		BORING BB-108		
N75E/22SE (B) N20E/52SE (S) N05E/90 (J) N35E/43SE (Fr) N55W/64NE (Fr)					BULK	1			SAN ONOPRE BRECCIA (T ₈₀): GRAYWACKE matrix is light olive-brown (2.5 Y 5/4) fine to medium (SILTY SANDSTONE), damp to moist, hard, moderately severe weathering, clasts are GRAVEL to BOULDER-size, subangular to subrounded, clasts composed of schist and quartz, strong brown (7.5 YR 5/8) oxidation - staining ... (1 to 5 feet) abundant rootlets		
			67	1.4	BAG	2A	5		... (6.5 feet) olive-brown CLAYSTONE layer approximately 6 inches thick, low to moderate plasticity, scattered iron-stained streaks ... (6.5 feet) orientation on two shear zones in CLAYSTONE layer, shears are approximately 0.5-inch wide with thin/tight network of rootlets and exhibit normal offsets of approximately 1-inch. Shears extend downward into BRECCIA, no waxy zones		
			43	1.4		3	10		... (8 feet) irregular contact at top of a zone of nested COBBLES/BOULDERS that extends to 13 feet, GRAYWACKE matrix is very severely weathered (SILTY SANDSTONE), moist ... (13 feet) 3-foot diameter schist BOULDER		
			60	1.4		4	15		... (14 feet) orientation on two closed fractures, thin CLAYEY films on fracture surfaces, abundant nested COBBLES ... (19 to 20 feet) 2-foot diameter schist BOULDER		
			118	1.4		5	20		... (20 to 21 feet) discontinuous tectonic shear in BRECCIA, coincident with COBBLEY zone, shear surface is approximately 0.5-inch wide and lithified, local GRAYWACKE matrix is (CLAYEY SANDSTONE/SANDY CLAYSTONE) ... (21 to 24 feet) interval of nested COBBLES and BOULDERS, orientation on base on interval		
N50E/10SE (C) <i>Not comp.</i>									Continued		
STRIKE DIP JOINTING BEDDING	DRY DENSITY (LBS/CU.FT)	MOISTURE (%)	BLOWS/FOOT	SAMPLE SIZE (INCHES)	SAMPLE NO.	DEPTH IN FEET	MATERIAL SYMBOL	UNIFIED SOIL CLASS.	THIS BORING LOG SUMMARY APPLIES ONLY AT THE TIME AND LOCATION INDICATED. SUBSURFACE CONDITIONS MAY DIFFER AT OTHER LOCATIONS AND TIMES.		
								LOGGED BY	JPG	DATE	3-22-99 3-23-99

TEST BORING LOG

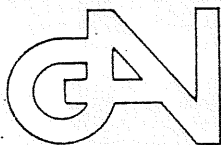
TYPE		24" DIA BUCKET AUGER					ELEVATION +/- 110.5 FEET		BORING BB-108	
N55W/20SW (C)		200+	1.4	6					... (26 feet) orientation on base of tabular schist BOULDER, matrix changes to olive-gray (2.5 Y 5/2) (SANDY SILTSTONE) GRAYWACKE with trace of CLAY and mottled strong brown (7.5 YR 5/8) oxidation staining, moderately weathered, moderately hard, moist	
		100	1.4	7	30					
				BULK	8				... (32 to 34 feet) interval of nested COBBLES	
N32W/47SW (S)		112	1.4	9	35					
				BAG	9A				... (38 feet) shear surface approximately 3 inches wide composed of grayish-brown to yellowish-brown moderate plasticity SILTY CLAY (sample), wet, some iron-staining on hanging wall	
		25	1.4	10	40					
N55W/35SW (C)		116	11.4	4	2.5	11			... (41 feet) slight seepage in hanging wall of above shear surface	
				BAG	11A					
		120	5.7	36	2.5	12			... (46 feet) irregular gradational contact seen as change in matrix to medium to coarse (SANDSTONE) GRAYWACKE, hard, slightly weathered	
Continued										
STRIKE DIP JOINTING BEDDING	DRY DENSITY (LBS/CU.FT)	MOISTURE (%)	BLOWS/FOOT	SAMPLE SIZE (INCHES)	SAMPLE NO.	DEPTH IN FEET	MATERIAL SYMBOL	UNIFIED SOIL CLASS.	THIS BORING LOG SUMMARY APPLIES ONLY AT THE TIME AND LOCATION INDICATED. SUBSURFACE CONDITIONS MAY DIFFER AT OTHER LOCATIONS AND TIMES.	
									LOGGED BY	JPG
									DATE	3-22-99 3-23-99

LOG OF BORING

Drill Rig: EZ Bore Bucket Auger	Boring Diameter: 24 inches	Boring Elevation:	Boring Number BA-1(X)
Date Drilled: June 2, 1993		This log is a representation of subsurface conditions at the time and place of drilling. With the passage of time or at any other location there may be consequential changes in conditions.	

SAMPLE		DRIVE ENERGY FT. KIPS/FT.	FIELD MOISTURE % DRY WEIGHT	DRY DENSITY LB./CU. FT.	SHEAR RESISTANCE KIPS/SQ. FT.	DEPTH, FEET	SOIL/ROCK SYMBOL	SOIL/ROCK TYPE	Description and Remarks
BULK	TUBE								
	>	13.3	116.9			5	SC	FILL	Clayey SAND: dark brown, very moist, dense @ 3 feet, becomes light orange-brown, medium dense 10-15% rock clasts present
	17	13.8	120.0			10	BR		Clayey SANDSTONE Conglomerate: fine- to medium-grained, light grey-green, poorly cemented, somewhat weathered, abundant quartz cobbles present, poorly bedded
	37	12.0	125.2			15			@ 9.5-10 feet, siliceous zone @ 9.8 feet, becomes well cemented @ 10.5 feet, increasing clasts up to 12 inches in diameter, slight caving @ 12 feet, caved zone 1' diameter northwest side of hole @ 13.5 feet, Bedding: N71E, 34SE @ 14.5 feet, rock fragments make up 50% of matrix
	37	6.0	-			20			@ 16 feet, increasingly weathered @ 16.4 feet, becomes fine-grained, yellow-brown, loose to medium dense, dry @ 17 feet, well cemented, very hard @ 18 feet, Fracture: N87W, 58NE, infilled with Clayey SAND soil, moist, loose.
	23	13.1	103.0			25			@ 22.5 feet, Matrix 90% Clayey SAND: fine-grained, light greenish-grey, poorly bedded, poorly cemented, moderately hard @ 23.5 feet, Bedding: N81E, 34SE
	>100	7.9	123.1			27			@ 27 feet, becomes very well cemented

(Continued on Figure B-2.2)



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EARTH SCIENCE CONSULTANTS
Tustin, California

South Shores Baptist Church
32712 Crown Valley Parkway
Dana Point, California

Project No.:
4800-04

Figure No.:
B-2.1

LOG OF BORING

Drill Rig: EZ Bore Bucket Auger	Boring Diameter: 24 inches	Boring Elevation:	Boring Number
Date Drilled: June 2, 1993 AK		This log is a representation of subsurface conditions at the time and place of drilling. With the passage of time or at any other location there may be consequential changes in conditions.	
			BA-1(X)

SAMPLE		DRIVE ENERGY FT. KIPS/FT.	FIELD MOISTURE % DRY WEIGHT	DRY DENSITY LB./CU. FT.	SHEAR RESISTANCE KIPS/SQ. FT.	DEPTH, FEET	SOIL/ROCK SYMBOL	SOIL/ROCK TYPE	Description and Remarks
BULK	TUBE								
		44	7.9	123.1			BR	@ 32 feet, siliceous zone to 35 feet	
		19	10.6	127.8		35		@ 35 feet, becomes orange-brown, less hard	
		>100	6.1	119.8		40		@ 40 feet, becomes very hard, well cemented, no visible bedding or fractures	
		-	NR	NR		45			
						50		very hard drilling conditions	
						55		Bottom of Boring at 52 feet. Notes: 1) Minor caving at 10.5 and 12 feet. 2) No ground water encountered. 3) Boring backfilled and tamped 20 blows every 5 feet.	
								NR - No Recovery	



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Tustin, California

South Shores Baptist Church
32712 Crown Valley Parkway
Dana Point, California

Project No.:
4800-04

Figure No.: B-2.2

LOG OF BORING

Drill Rig: EZ Bore Bucket Auger	Boring Diameter: 24 inches	Boring Elevation:	Boring Number BA-2(X)
Date Drilled: June 3, 1993 AK		This log is a representation of subsurface conditions at the time and place of drilling. With the passage of time or at any other location there may be consequential changes in conditions.	

SAMPLE		DRIVE ENERGY FT. KIPS/FT.	FIELD MOISTURE % DRY WEIGHT	DRY DENSITY LB./CU. FT.	SHEAR RESISTANCE KIPS/SQ. FT.	DEPTH, FEET	SOIL/ROCK SYMBOL	SOIL/ROCK TYPE	Description and Remarks
BULK	TUBE								
							SC	Clayey SAND: fine- to medium-grained, reddish-brown very moist, dense FILL	
	20	11.7	121.4				BR	Clayey SANDSTONE Conglomerate: fine- to medium-grained, orange-brown, moist, weathered, moderately hard, 5% rock fragments present @ 2 feet, rock fragments make up 20% of matrix, less weathered @ 4 feet, becomes light greenish-grey, well cemented poorly bedded @ 8.2-8.8 feet, weathered zone Clayey SAND: reddish-brown, very moist, medium dense, @ 10 feet, becomes well cemented, hard, some rock fragments show faint striations @ 14 feet, oxidation present, Bedding: N86E,24SE @ 16.5 feet, Bedding: N45E,19SE @ 17.5 feet, Fracture: N11E,70SE, open 1/2 inch wide infilled with Silty CLAY and angular rock fragments @ 19.7-21 feet, weathered zone, Clayey SAND: orange brown, moist, medium dense, less rock fragment in matrix @ 24.5-25 feet, Siliceous layer	
	27	6.9	138.4		5				
	-	21.3	99.7		10				
	-	12.2	124.9		15				
	27	23.3	99.1		25				
	-	NR	NR						

(Continued on Figure B-3.2)



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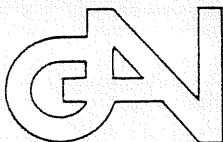
Project No.:
4800-04

Figure No.:
B-3.1

LOG OF BORING

Drill Rig: EZ Bore BUcket Auger	Boring Diameter: 24 inches	Boring Elevation:	Boring Number
Date Drilled: June 3, 1993 AK		This log is a representation of subsurface conditions at the time and place of drilling. With the passage of time or at any other location there may be consequential changes in conditions.	
			BA-2(X)

SAMPLE		DRIVE ENERGY FT. KIPS/FT.	FIELD MOISTURE % DRY WEIGHT	DRY DENSITY LB./CU. FT.	SHEAR RESISTANCE KIPS/SQ. FT.	DEPTH, FEET	SOIL/ROCK SYMBOL	SOIL/ROCK TYPE	Description and Remarks (Continued from Figure B-3.1)
BULK	TUBE								
		-	NR	NR		35			@ 29-32 feet, increasing rock fragments, making up to 50% of matrix, well cemented, very hard @ 30 feet, rock augered to 32 feet @ 32 feet, rock augered to 35 feet @ 35 feet, Refusal SAN ONOFRE BRECCIA
						40			Bottom of Boring at 35 feet. Notes: 1) No caving. 2) No ground water encountered. 3) Boring backfilled and tamped 20 blows every 5 feet NR - No Recovery
						45			
						50			
						55			



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 Tustin, California

South Shores Baptist Church
 32712 Crown Valley Parkway
 Laguna Niguel, California

Project No.:
 4800-04

Figure No.:
 B-3.2

GEOTECHNICAL BORING LOG

DATE 2/2/86 DRILL HOLE No. 8-7 **LB-7(B)** SHEET 1 OF 3
 PROJECT STEIN-BRIEF/AREA 16 PROJECT No. 1851354-01
 DRILLING Co. Shoring Engineers TYPE OF RIG LDH Spin Auger
 HOLE DIAMETER 24" DRIVE WEIGHT - DROP -
 ELEVATION TOP OF HOLE 266' REF. OR DATUM See Geotechnical Map

DEPTH FEET	GRAPHIC LOG	ATTITUDES	TUBE SAMPLE No.	BLOWS PER FOOT	DRY DENSITY PCF	MOISTURE CONTENT, %	SOIL CLASS. (U.S.C.S.)	GEOTECHNICAL DESCRIPTION
								LOGGED BY <u>RM/DT</u> SAMPLED BY <u>-</u>
0								<p><u>Fill:</u> Medium brown, moist to very moist, slightly to mod. dense, silty sand; fine to medium grained.</p> <p>@ 1.0' Medium gray, Tc fill, root hairs</p> <p>@ 2.8' Dark brown, silty clayey sand; fine to medium grained; occasional pebbles.</p> <p>@ 3' Brick.</p> <p>@ 4' Wood fragment.</p>
5								<p><u>Topsoil/Colluvium:</u> @ 4.4' Red brown, moist to very moist, sandy clay; pebbles and cobbles near contact, loose, soil mottling, loc. wet.</p>
10								<p><u>San Onofre Breccia:</u> @ 5.5' Red brown to yellow gray, clayey sand; fine to medium grnd; clasts are weathered; clast-supported; fine gravel and cobbles to 3-4" diam.</p> <p>@ 8.8' Orange brown, very moist to wet, sandy silt with fine gravel; dips to north, may be contact w/above.</p> <p>@ 9.8' Yellow-gray, dry to damp, silty sand; small pebbles.</p> <p>@ 12.3' 2-3" thk gray brn to mottled orange brn sand bed.</p> <p>@ 12.5-13' Gradational change from sandy silt to green gray - mottled yellow clayey sand to sandy clay with loc. gravel.</p> <p>@ 14.7' Gray to orange brn, dense, 2-3" thk sand bed; non-cemented; parallels beds above.</p> <p>@ 15' Grayer, more siliceous, clasts up to 6 diam., abundant gravel; sandy clay - clayey sand matrix.</p>
15								<p>@ 15' Fault zone, polished, sheared, numerous subparallel shears; gux. orange brn w gray brn. Zone is 1.5' thick with white clayey gouge 1" thick, subparallel to shear zone.</p> <p>Below Fault: Green gray, moist, dense, clayey sand to cobbles; general fabric parallels above zone.</p>
20								<p>@ 24' Quartz chunk.</p>
25								<p>@ 27' Fabric subparallels above fault zone - material drier below - gray brn clayey silt with sand, not as much gravel or cobbles, occ. boulders.</p> <p>@ 27' Very hard clast.</p>
30								

GEOTECHNICAL BORING LOG

DATE 2/24/86 DRILL HOLE No. B-7 LB-7(B) SHEET 2 OF 3
 PROJECT STEIN-BRIEF/AREA 16 PROJECT No. 1851354-01
 DRILLING Co. Shoring Engineers TYPE OF RIG LDH Spin Auger
 HOLE DIAMETER 24" DRIVE WEIGHT - DROP - IN.
 ELEVATION TOP OF HOLE 266' REF. OR DATUM See Geotechnical Map

DEPTH FEET	GRAPHIC LOG	ATTITUDES	TUBE SAMPLE No.	BLOWS PER FOOT	DRY DENSITY PCF	MOISTURE CONTENT, %	SOIL CLASS. (U.S.C.S.)	GEOTECHNICAL DESCRIPTION
30								LOGGED BY <u>RM/DT</u> SAMPLED BY <u>-</u>
31-31.5'								@ 31-31.5' Clast density increases; clayey sand matrix.
33'								@ 33' Bouldery bed, with silty to clayey sand; minor seepage on bed.
34'								@ 34' Gray, silty sand with pebbles, cobbles.
36'								@ 36' Gray brown, dry - damp, dense, clayey sand with pebbles to boulders; belted zone.
43'								@ 43' Gray brn sand bed, poorly defined, fewer clasts, irregular, discontinuous.
44.5'								@ 44.5' Clayey sand to sandy clay bed, 1/2' thick; few clasts; FeO stained, discontinuous bedding planes, wet & soft on one side, dry on other side.
45'								@ 45' Medium gray, massive, abct boulders.
51'								@ 51' Matrix gray brn, damp - moist, massive, very rocky, similar to above.
60								

TD=74'

PAGE 3 of 3

- NOT AVAILABLE -

GEOTECHNICAL BORING LOG

DATE 10-21-85 DRILL HOLE NO. B-1 SHEET 2 OF 3
 PROJECT REGIS / AREA 15 PROJECT NO. 185145C-61
 DRILLING CO. BO-JAC / SHORING ENGINEERING TYPE OF RIG BUCKET
 HOLE DIAMETER 24" DRIVE WEIGHT 2500 lb / 1500 lb, 225 / 750 lb, 645' DROP 12
 ELEVATION TOP OF HOLE 255' REF. OR DATUM SEE GEOTECHNICAL MAP

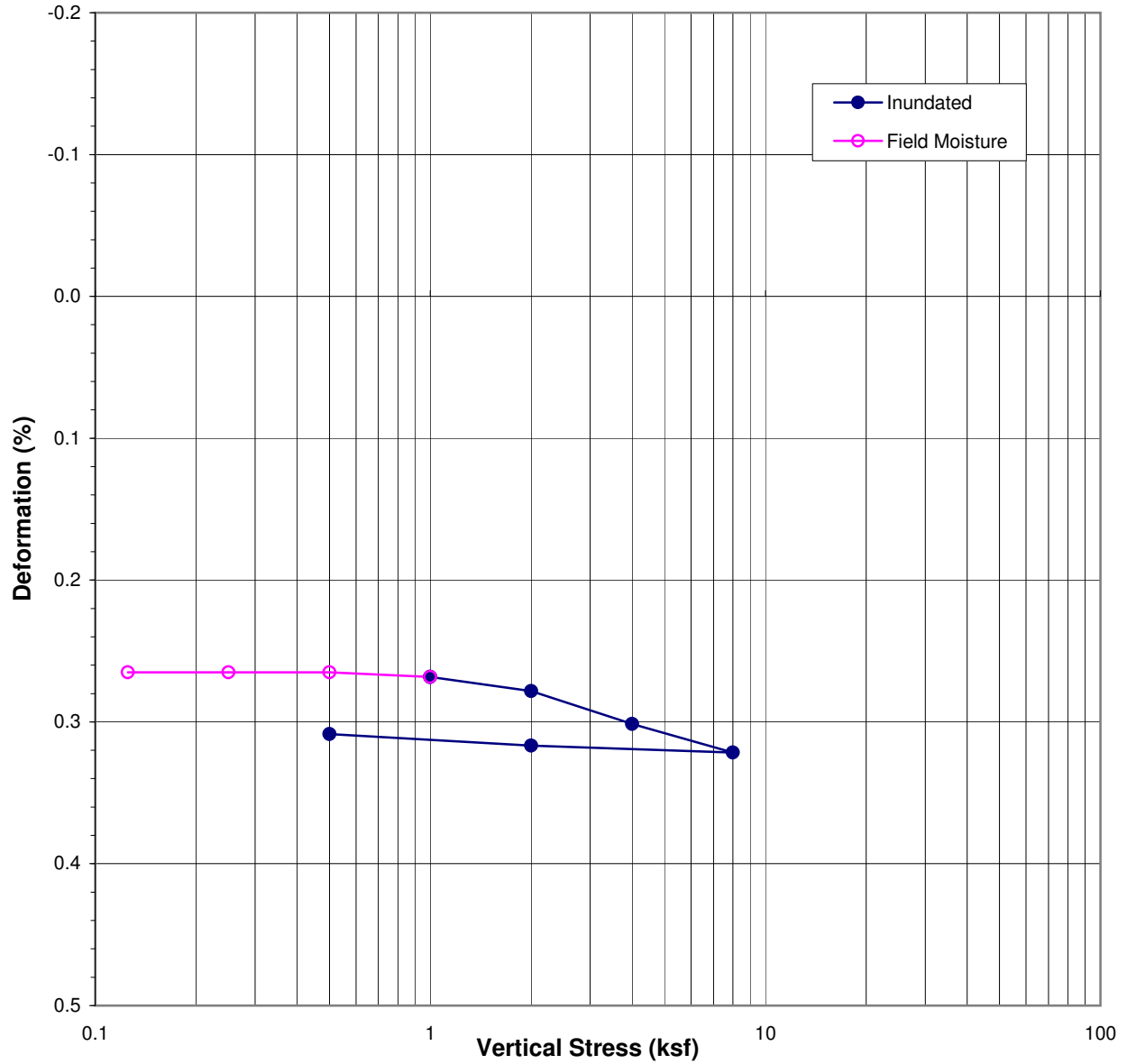
DEPTH FEET	GRAPHIC LOG	ATTITUDES	TUBE SAMPLE NO.	BLOWS PER FOOT	DRY DENSITY PCF	MOISTURE CONTENT %	SOIL CLASS. (U.S.C.S.)	GEO TECHNICAL DESCRIPTION	
								LOGGED BY <u>WG</u> SAMPLED BY <u>WG</u>	
30			2	16	110.7	12.7	CM/CC	@ 30' Color change from mottled grayish brn to orangeish brown. @ 33' Grayish brn, mottled w/ orange; on west wall large boulder to 35'. @ 35' NW wall - seepage below boulder @ 38-40' 2' sand & gravel bed below large cobbles & boulders; seepage confined to north & west walls. @ 40' Seepage from gravel bed. @ 43.5' Grayish brn, 2' sand bed; med grained, well-packed, grades below to a clayey sand. @ 44' Mottled gray brn to orange; pebbles, cobbles, small boulders. @ 48' Sand bed 1.5' thk. @ 57' Less clay, more sand in matrix; very abdt cobbles & small boulders. @ 60' Caving below.	
35									
40		(3)	3	16	123.5	9.5	CM/CC		
45									
50				4	22	117.8	9.0	CM/CC	
55									
60									

GEOTECHNICAL BORING LOG

DATE 10-21-85 DRILL HOLE No. B-1 SHEET 3 OF 3
 PROJECT REGIS/AREA 15 PROJECT No. 1851456-0
 DRILLING Co. BO-JAC/SHORINC ENGINEERING TYPE OF RIG BUCKET
 HOLE DIAMETER 24" DRIVE WEIGHT 2500 LB / 1500 LB @ 25' / 750 LB @ 45' DROP _____
 ELEVATION TOP OF HOLE 225' REF. OR DATUM SEE GEOTECHNICAL MAP

DEPTH, FEET	GRAPHIC LOG	ATTITUDES	TUBE SAMPLE NO.	BLOWS PER FOOT	DRY DENSITY PCF	MOISTURE CONTENT, %	SOIL CLASS. (U.S.C.S.)	GEOTECHNICAL DESCRIPTION
60 65 70 75		K						LOGGED BY <u>WG</u> SAMPLED BY <u>WG</u>
								<p>@ 75' Gray blue, damp, silty sandy breccia; fine-grained matrix; abdt subangular-subrounded clasts of blueschist & quartzite.</p> <p>TD 78.5' Downhole logged to 60' Light seepage at 35' & 40', heavy seepage below 60'. Caving below 60' After 1 hour, water level @ 70'</p>

Appendix C
Laboratory Data



Location:	Sample No.:	Depth (ft)	Dry Density (pcf)	Initial Moisture Content (%)	Final Moisture Content (%)
LGC-2	R-2	5	116.2	12.2	14.6

Sample Description: Clayey Sand

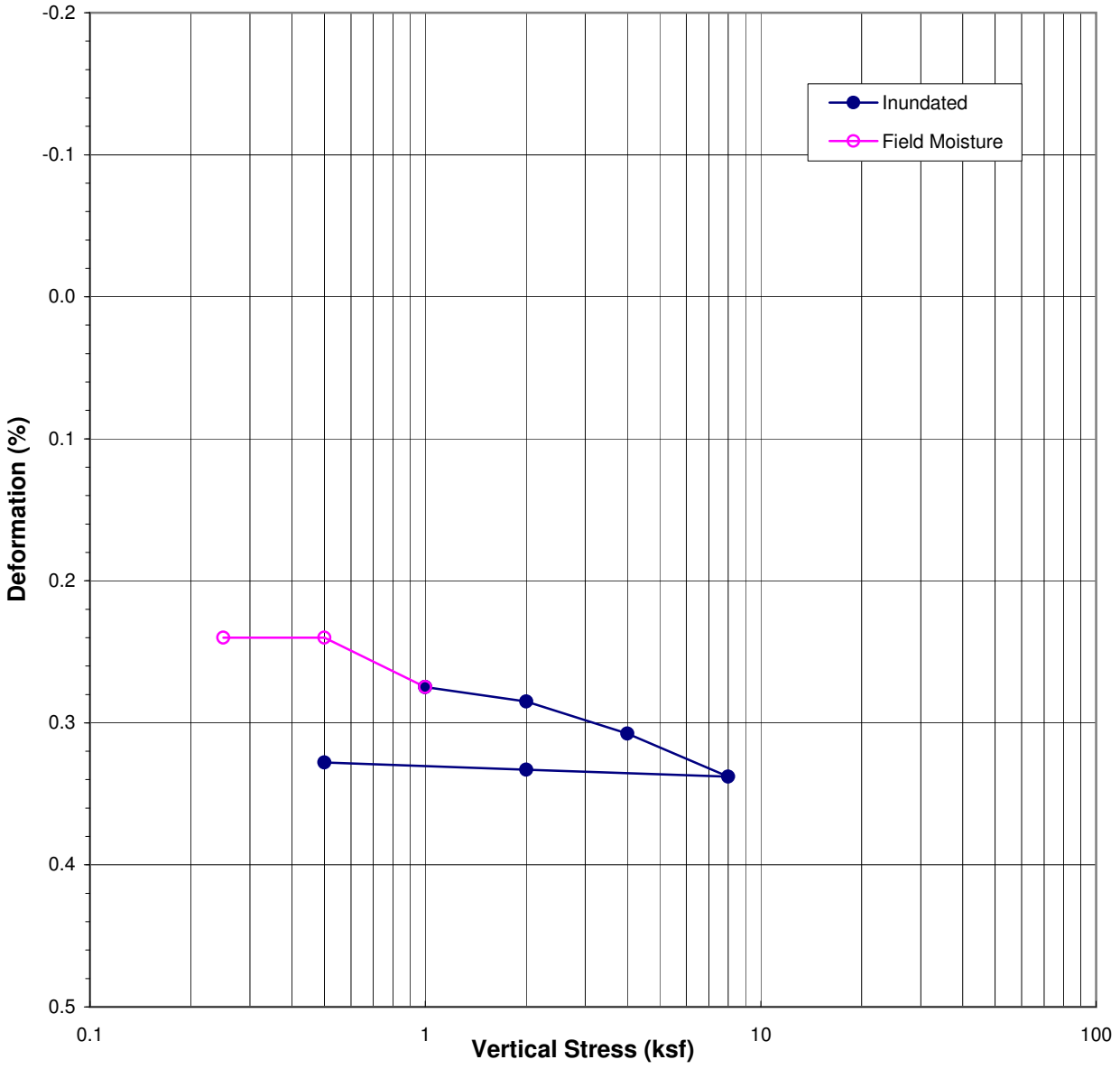


ONE-DIMENSIONAL CONSOLIDATION

Project Number: 10132-01

Date: May-12

South Shores Church



Location:	Sample No.:	Depth (ft)	Dry Density (pcf)	Initial Moisture Content (%)	Final Moisture Content (%)
LGC-2	R-4	10	110.5	13.8	12.8

Sample Description: Clayey Sand

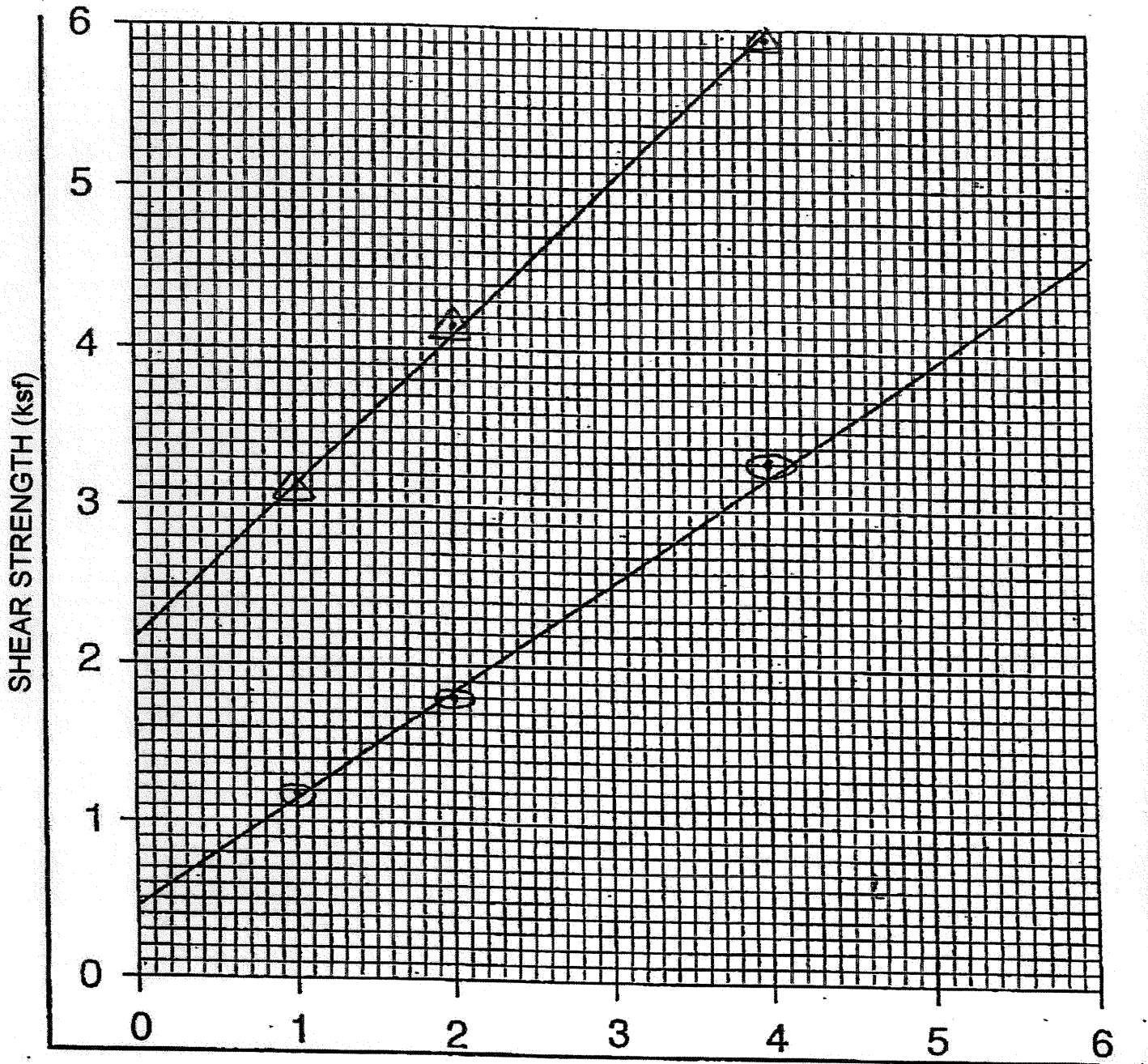


ONE-DIMENSIONAL CONSOLIDATION

Project Number: 10132-01
Date: May-12

South Shores Church

DIRECT SHEAR TEST DIAGRAM



Boring No. BN-3 Depth 20-21 feet NORMAL STRESS (ksf)

Soil Description Silty SAND w/tr. of clay + 5% cement by wt.

Undisturbed/Remolded Remolded to 90%

Moisture Content, % 15.9% after test

Dry Density, pcf 122.2% after test

Saturation, % 113.4% after test

Shearing Rate .023"/min.

Cohesion (ksf)

Friction Angle

Remarks:

▲ Peak	● Ultimate	■ Reshear
2190	480	
43	34	



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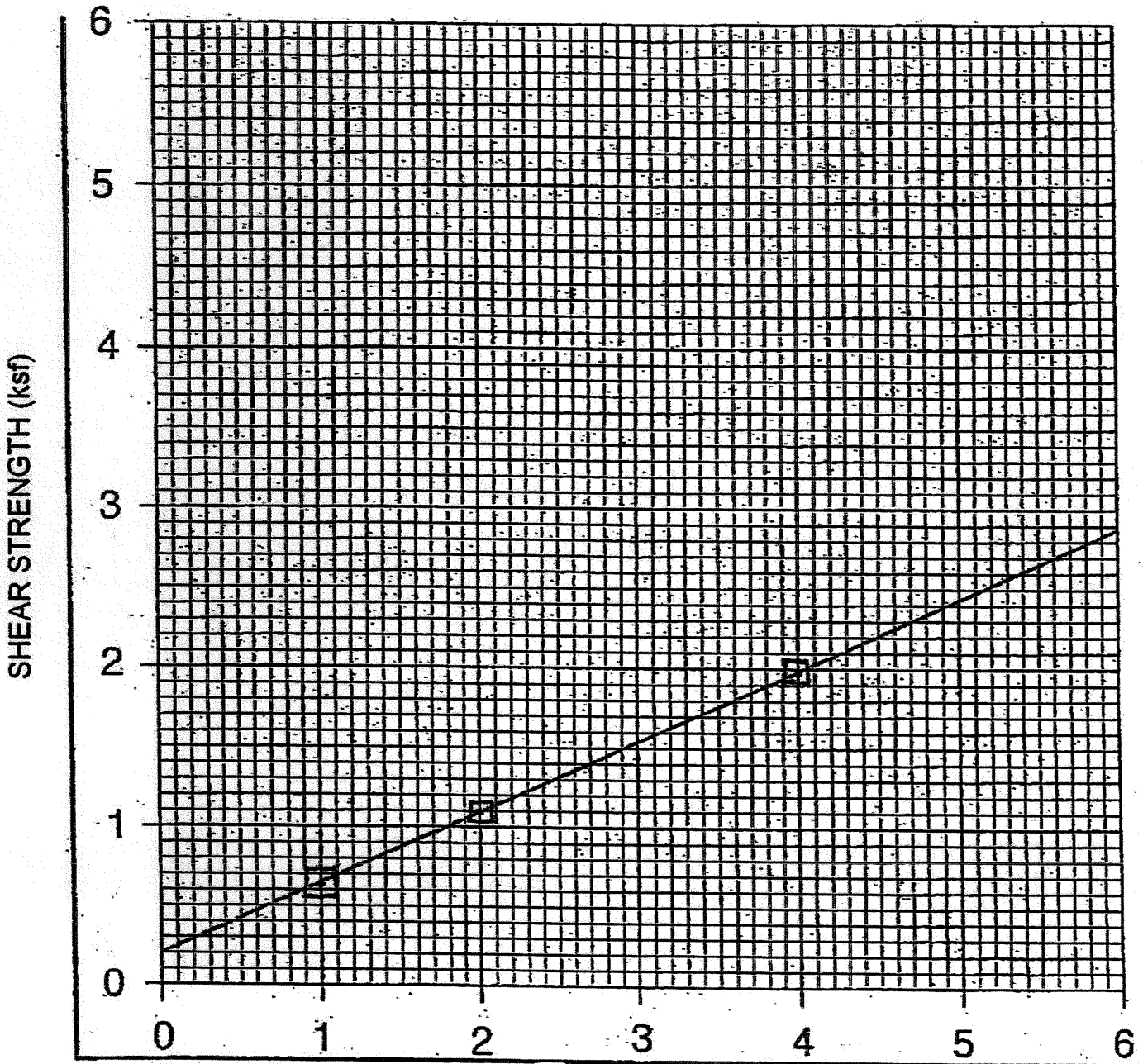
Project Name: **SOUTH SHORES CHURCH**

Date: **May 2007**

Project No: **6375-04.1**

Figure No: **C-1**

DIRECT SHEAR TEST DIAGRAM



Boring No. BA-4 Depth 32.5' NORMAL STRESS (ksf)
 Soil Description Sandy Silt with Clay
 Undisturbed/Remolded Remolded to 105.5 D.D.

Moisture Content, % _____
 Dry Density, pcf _____
 Saturation, % _____
 Shearing Rate _____

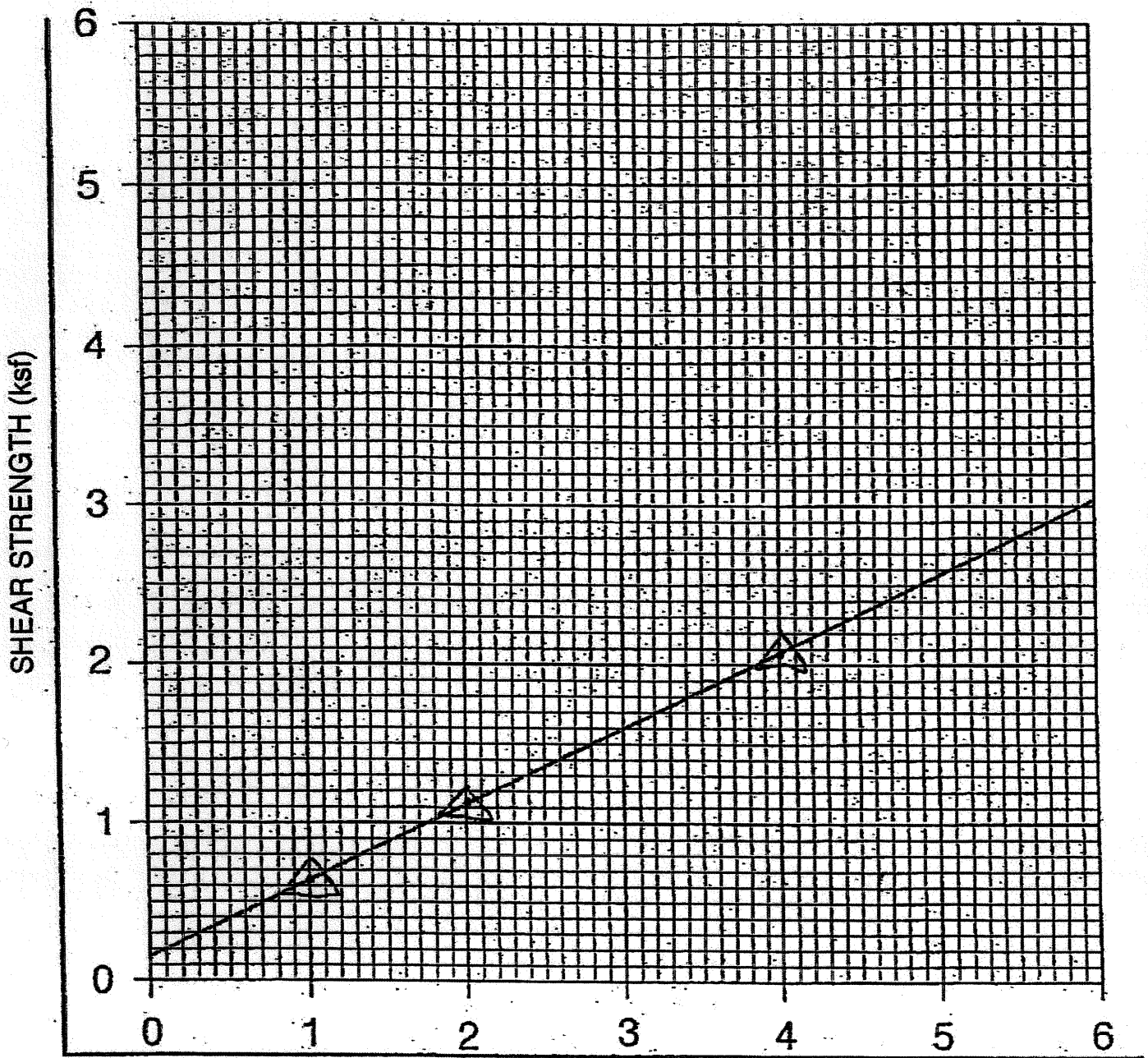
Peak
 Ultimate
 Reshear
 Cohesion (ksf) _____ 0.20
 Friction Angle _____ 24
 Remarks: _____



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Project Name: South Shores Church	
Date: June 2007	
Project No: 6375-04.1	Figure No: 1

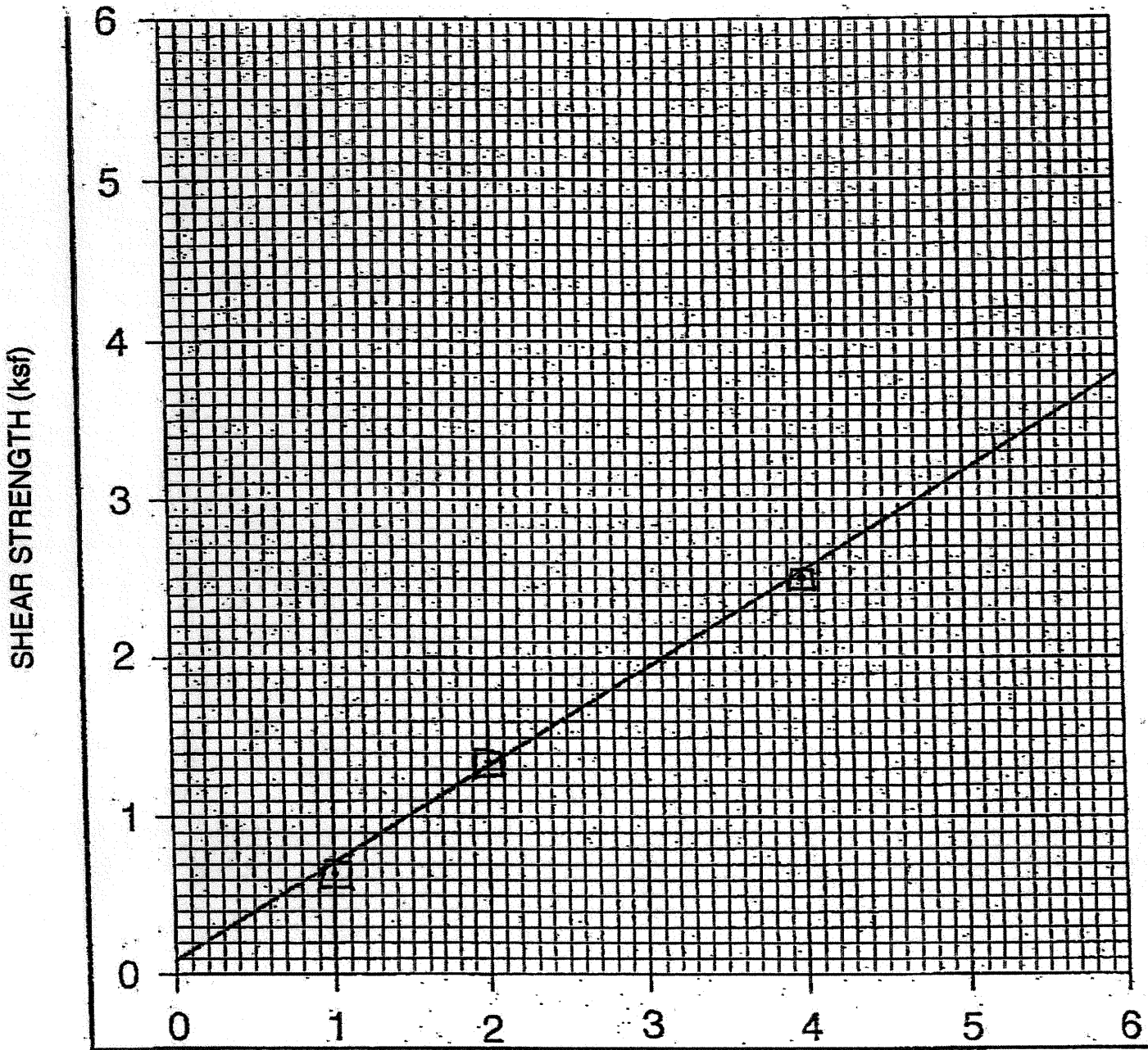
DIRECT SHEAR TEST DIAGRAM



Boring No. BA-4	Depth 32.5'	NORMAL STRESS (ksf)
Soil Description	Sandy Silt with Clay	
Undisturbed/Remolded	Remolded to 105.5 D.D.	
Moisture Content, %	19.9% after test	
Dry Density, pcf	105.7% after test	
Saturation, %	90.5% after test	
Shearing Rate	.028"/min.	

	Cohesion (ksf)	▲ Peak	● Ultimate	■ Reshear	
		0.15	0.15		
	Friction Angle	26	26		
	Remarks:	_____			

DIRECT SHEAR TEST DIAGRAM



Boring No. BA-4 Depth 72.5' - 73.5
 Soil Description Silty SAND
 Undisturbed/Remolded Remolded to 90% reshear

NORMAL STRESS (ksf)

Moisture Content, % _____
 Dry Density, pcf _____
 Saturation, % _____
 Shearing Rate _____

▲ Peak ● Ultimate ◼ Reshear

Cohesion (ksf) _____
 Friction Angle _____
 Remarks: _____

0.10

31



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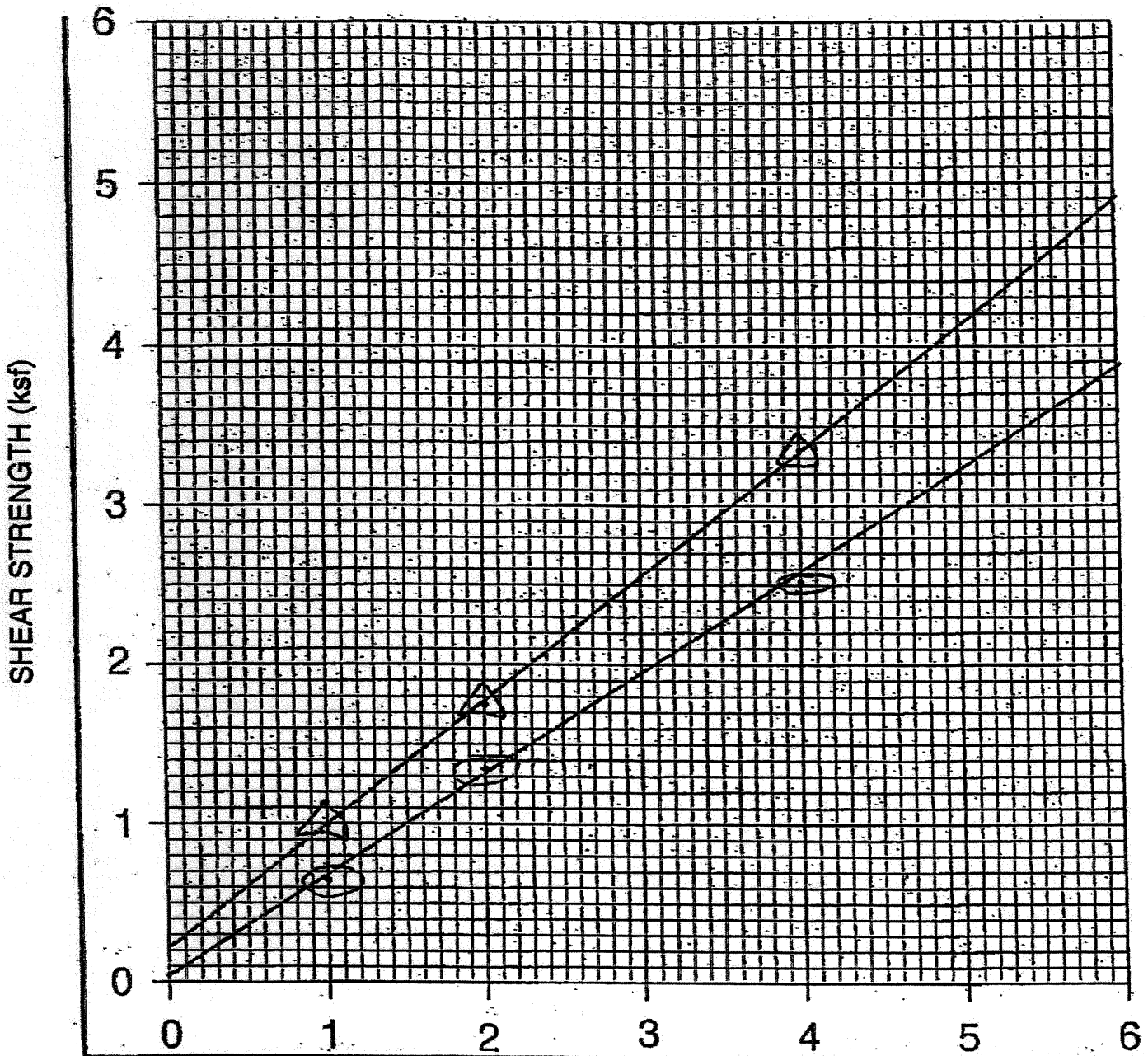
Project Name: **South Shores Church**

Date: **June 2007**

Project No: **6375-04.1**

Figure No: **3**

DIRECT SHEAR TEST DIAGRAM



Boring No. BA-4 Depth 72.5' - 73.5'
 Soil Description Silty SAND
 Undisturbed/Remolded Remolded to 90%
 Moisture Content, % 18.5% after test
 Dry Density, pcf 108.2% after test
 Saturation, % 89.7% after test
 Shearing Rate .028"/min.

NORMAL STRESS (ksf)

Cohesion (ksf) _____
 Friction Angle _____
 Remarks: _____

▲ Peak	● Ultimate	■ Reshear
<u>210</u>	<u>0.05</u>	_____
<u>38</u>	<u>32</u>	_____



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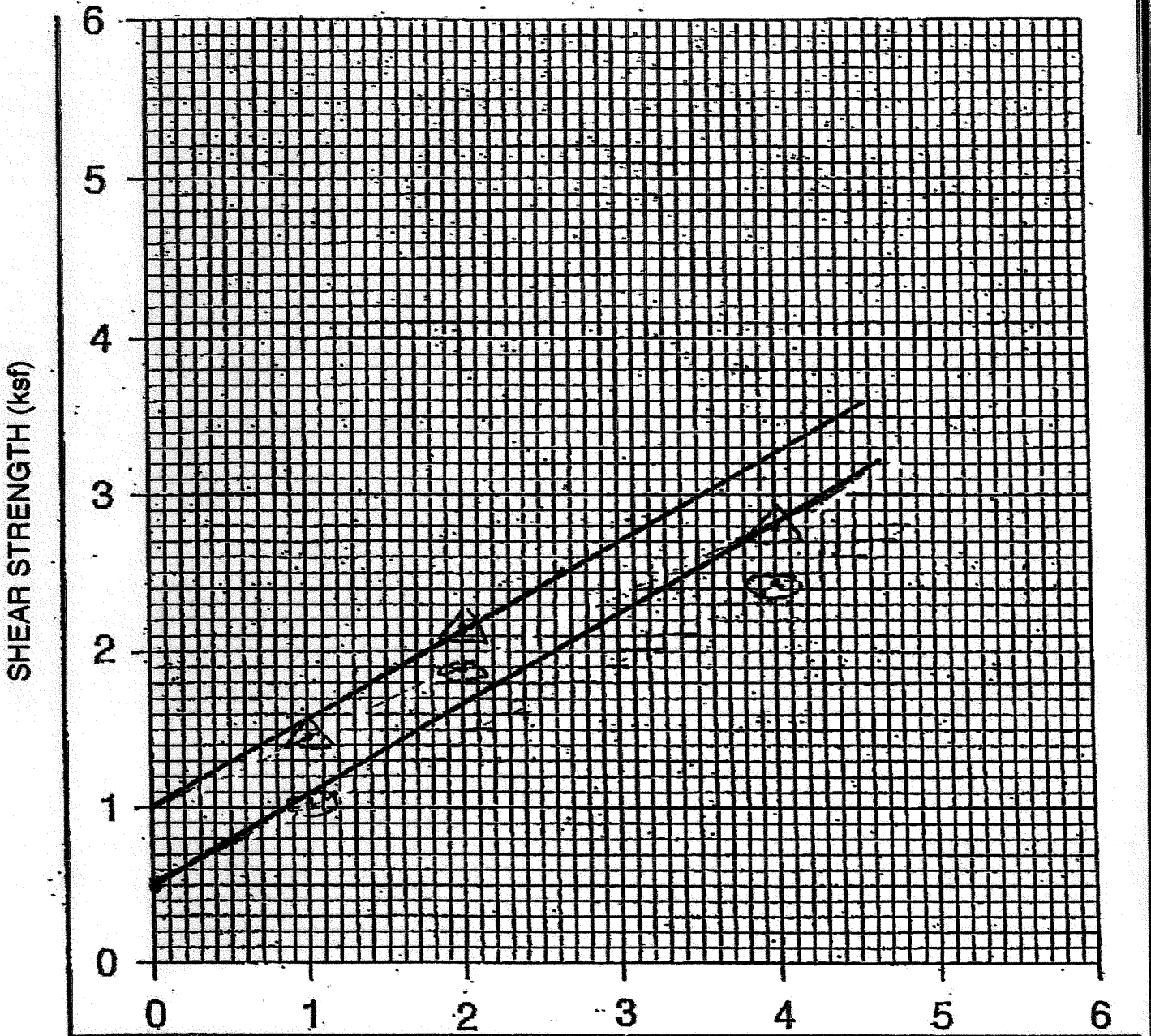
Project Name: **South Shores Church**

Date: **June 2007**

Project No: **6375-04.1**

Figure No: **4**

DIRECT SHEAR TEST DIAGRAM



Boring No. BN-1 Depth 30 feet
 Soil Description Breccia
 Undisturbed/Remolded Undisturbed
 Moisture Content, % 14.2% after test
 Dry Density, pcf 122.1% after test
 Saturation, % 100.9% after test
 Shearing Rate .022"/min.

NORMAL STRESS (ksf)

Cohesion (ksf) 1.0 0.5
 Friction Angle 30 30
 Remarks: _____

▲ Peak ● Ultimate ■ Reshear



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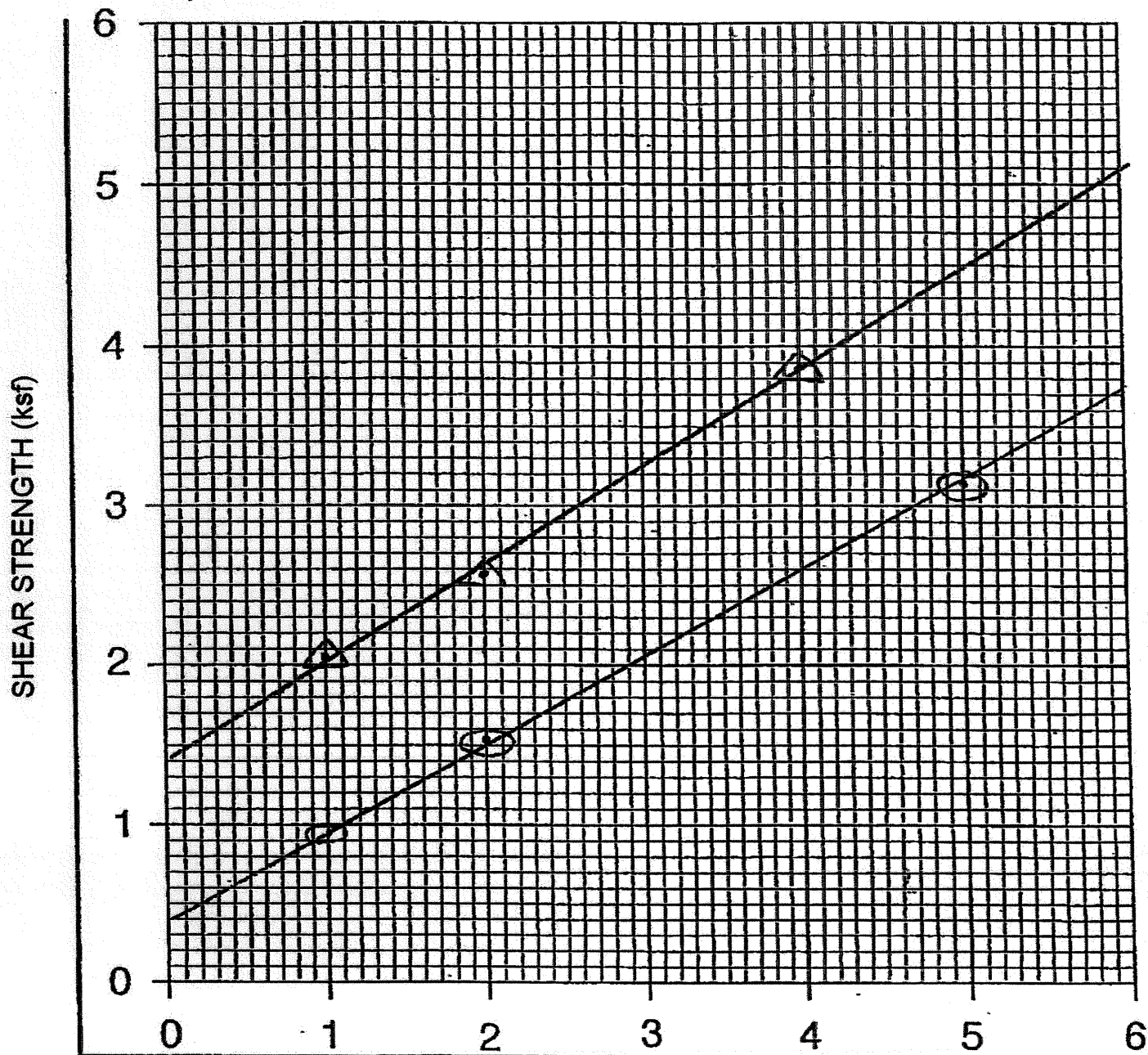
Project Name: South Shores Church

Date: February 2008

Project No: 6375-04.1

Figure No: A-1

DIRECT SHEAR TEST DIAGRAM



Boring No. BN-2 **Depth** 10 feet
Soil Description Breccia
Undisturbed/Remolded Undisturbed
Moisture Content, % 15.8% after test
Dry Density, pcf 126.9% after test
Saturation, % 130.2% after test
Shearing Rate .023"/min.

NORMAL STRESS (ksf)

Cohesion (ksf) _____
Friction Angle _____
Remarks: _____

▲ Peak ● Ultimate ■ Reshear
 _____ 0.40 _____
 _____ 29 _____



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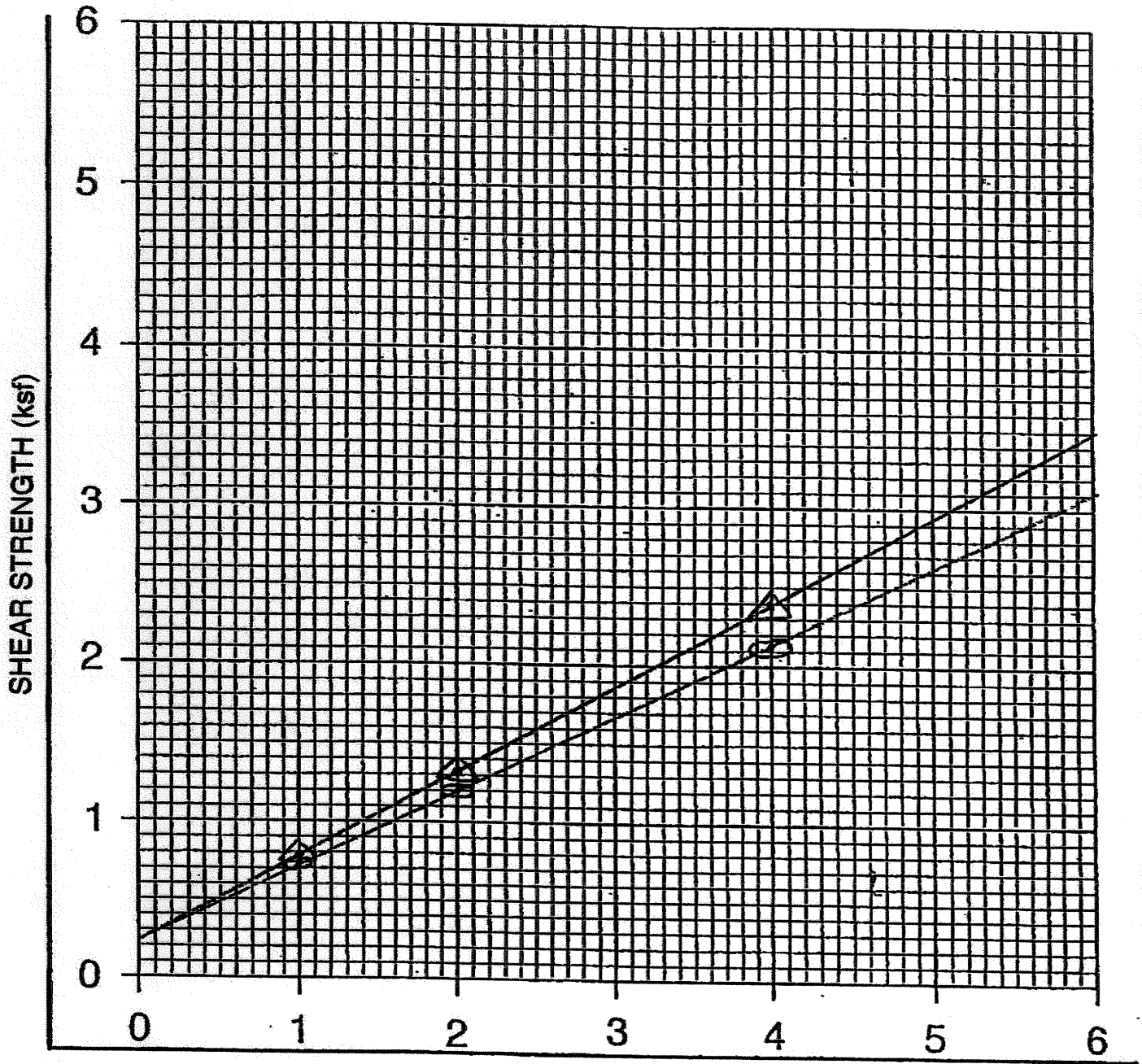
Project Name: South Shores Church

Date: February 2008

Project No: 6375-04.1

Figure No: A-2

DIRECT SHEAR TEST DIAGRAM



Boring No. BN-3 **Depth** 20 and 21 feet
Soil Description Silty Sand w/Gravel and tr. of Clay
Undisturbed/Remolded Remolded
Moisture Content, % 15.8% after test
Dry Density, pcf 122.2% after test
Saturation, % 112.6% after test
Shearing Rate .023"/min.

NORMAL STRESS (ksf)

Cohesion (ksf) 1.0
Friction Angle 30
Remarks: _____

▲ Peak ● Ultimate ■ Reshear
 _____ _____ _____
 _____ _____ _____



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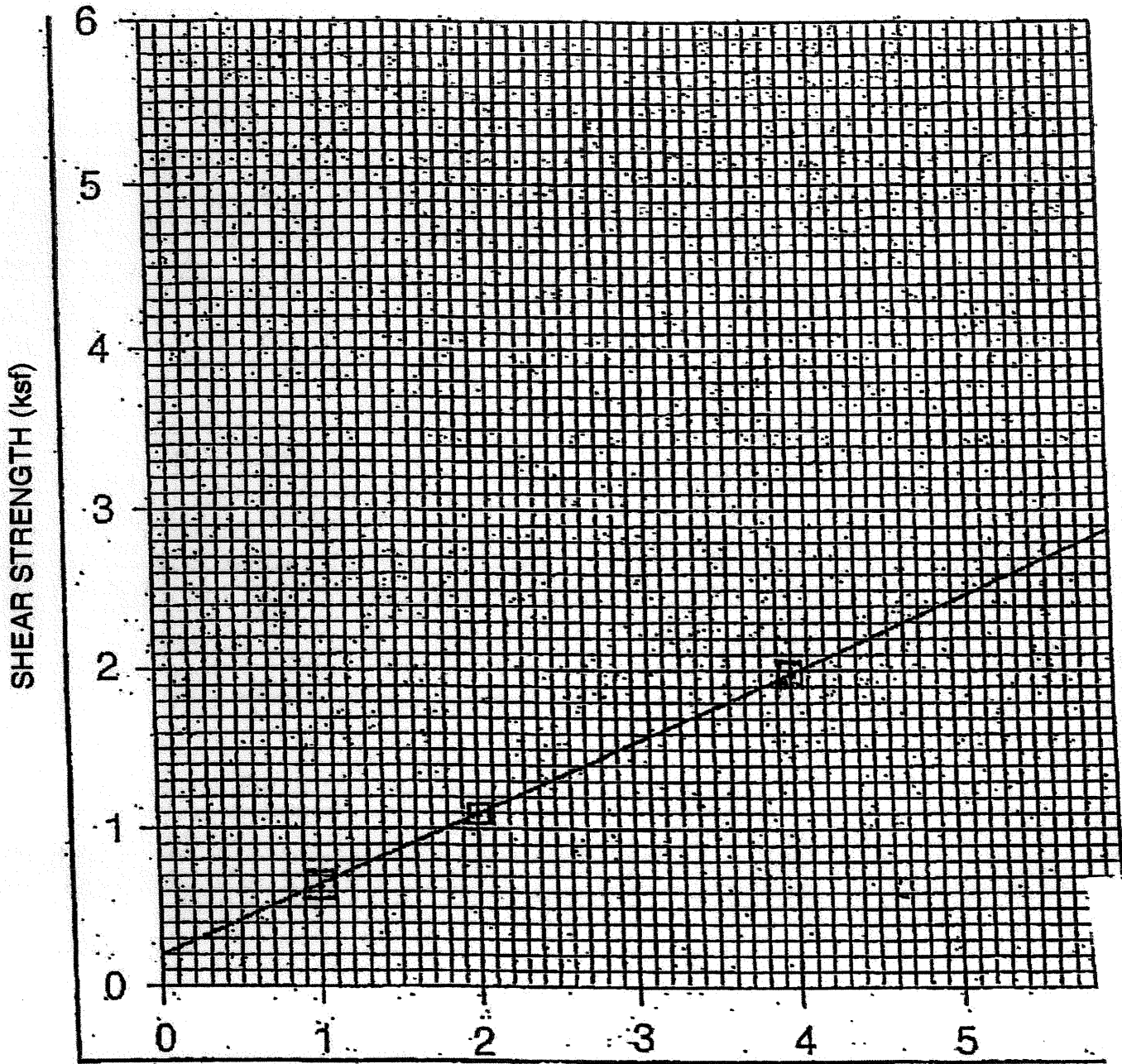
Project Name: South Shores Church

Date: February 2008

Project No: 6375-04.1

Figure No: A-3

DIRECT SHEAR TEST DIAGRAM



Boring No. BA-4 Depth 32.5 feet
 Soil Description Sandy Silt with Clay
 Undisturbed/Remolded Remolded to 105.5 D.D.
 Moisture Content, % 19.9% after test
 Dry Density, pcf 105.7% after test
 Saturation, % 99.5% after test
 Shearing Rate .022"/min.

NORMAL STRESS (ksf)

Cohesion (ksf) _____
 Friction Angle _____
 Remarks: _____

▲ Peak ● Ultimate ■ Reshear
 _____ _____ _____
 0.20
 24



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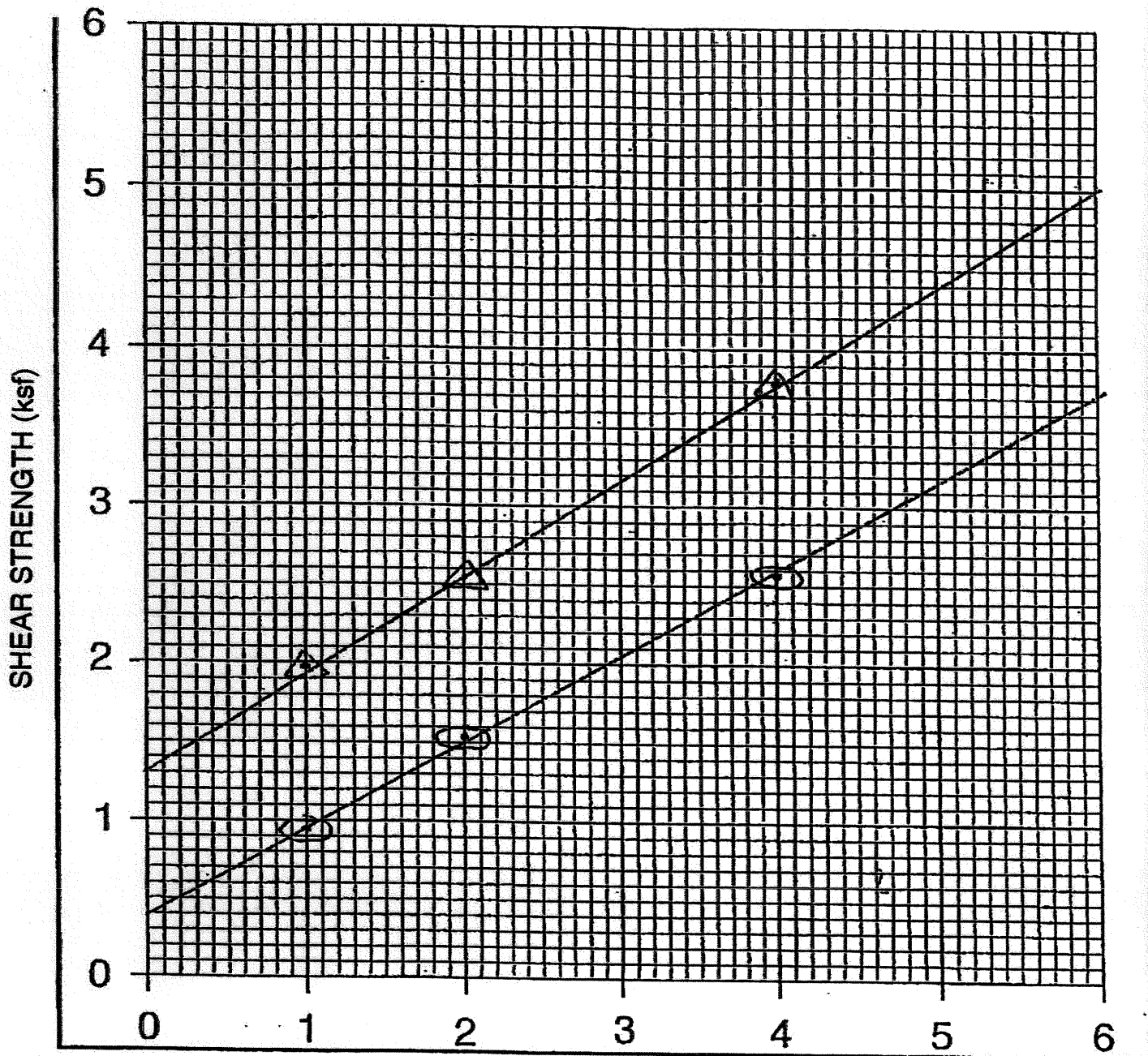
Project Name: South Shores Church

Date: February 2008

Project No: 6375-04.1

Figure No: A-5

DIRECT SHEAR TEST DIAGRAM



Boring No. BN-4 Depth 35 feet
 Soil Description Breccia
 Undisturbed/Remolded Undisturbed
 Moisture Content, % 14.1% after test
 Dry Density, pcf 125.2% after test
 Saturation, % 110.1% after test
 Shearing Rate .023"/min.

NORMAL STRESS (ksf)

Cohesion (ksf) 390
 Friction Angle 29
 Remarks: _____

▲ Peak ● Ultimate ■ Reshear



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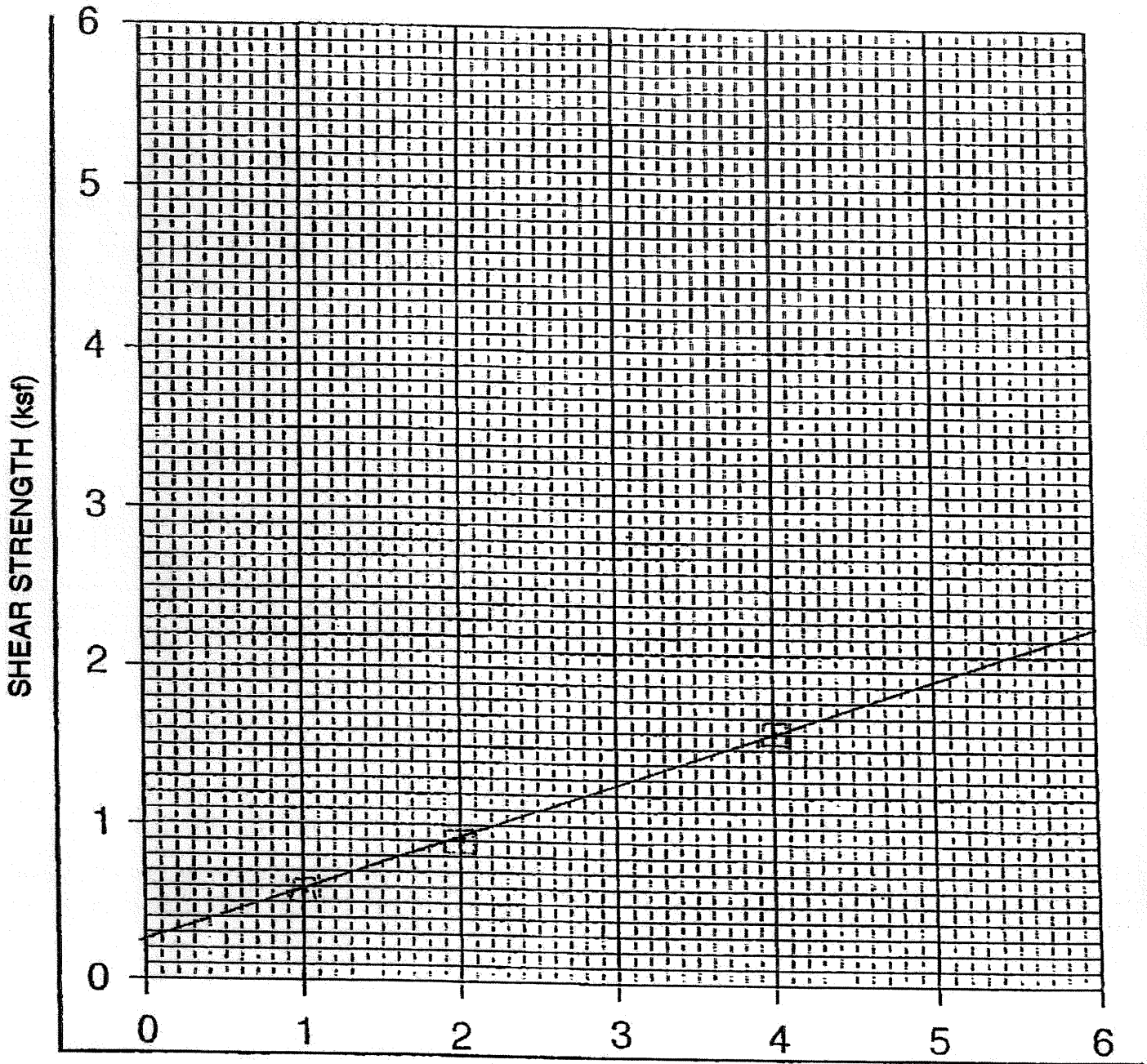
Project Name: South Shores Church

Date: February 2008

Project No: 6375-04.1

Figure No: A-6

DIRECT SHEAR TEST DIAGRAM



Boring No.	<u>BN-6</u>	Depth	<u>31 feet</u>
Soil Description	<u>Clayey Siltstone bed</u>		
Undisturbed/Remolded	<u>Undisturbed</u>		
Moisture Content, %	<u>16.9% after test</u>		
Dry Density, pcf	<u>115.4% after test</u>		
Saturation, %	<u>99.2 after test</u>		
Shearing Rate	<u>.022"/min.</u>		

NORMAL STRESS (ksf)

Cohesion (ksf)	_____	_____	_____
Friction Angle	_____	_____	<u>19</u>
Remarks:	_____		

▲ Peak ● Ultimate ■ Reshear



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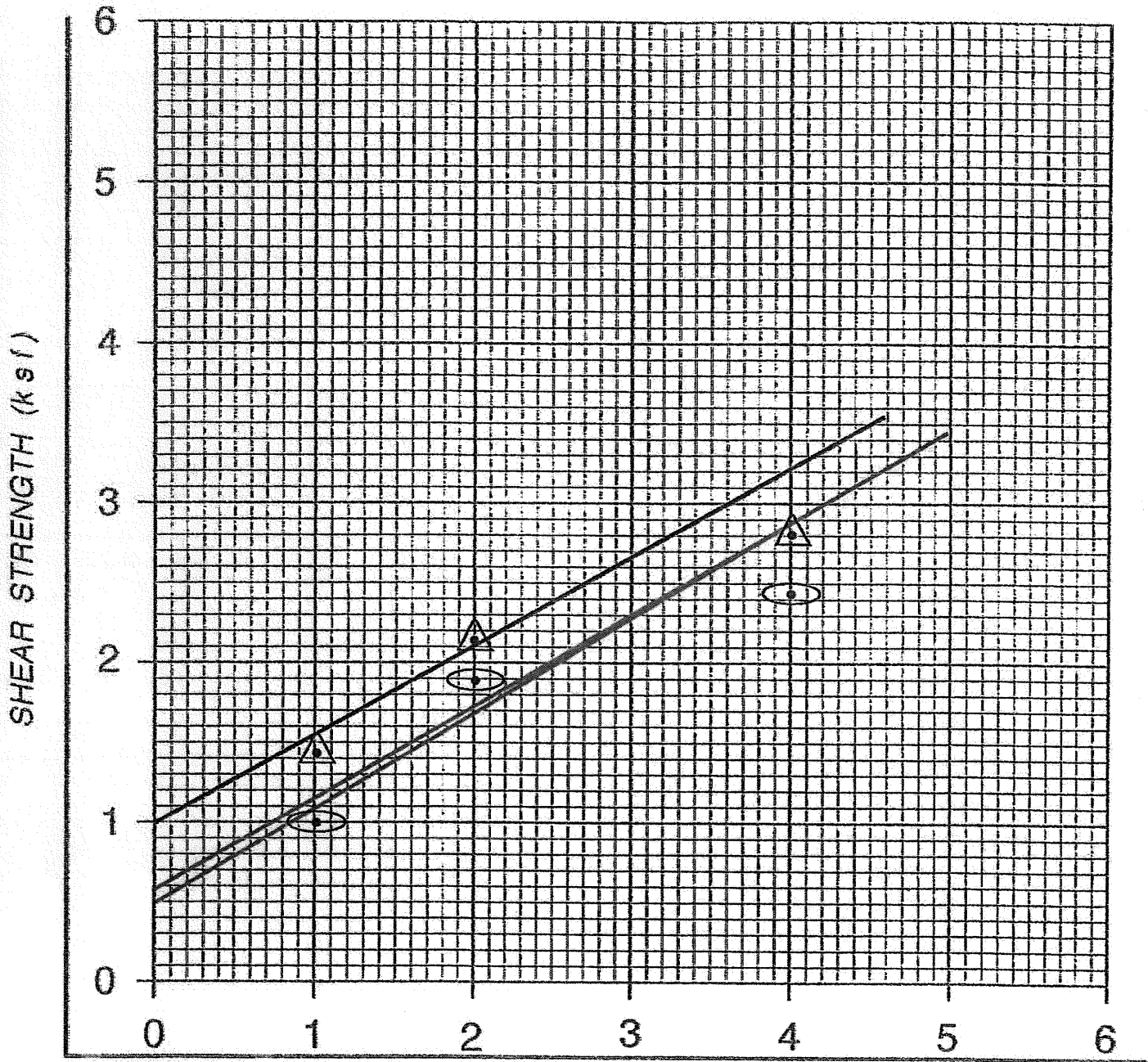
Project Name: South Shores Church

Date: February 2008

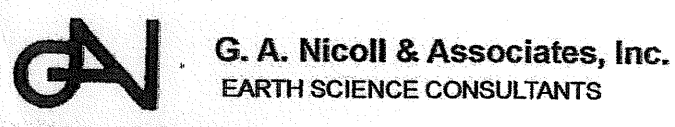
Project No: 6375-04.1

Figure No: A-7

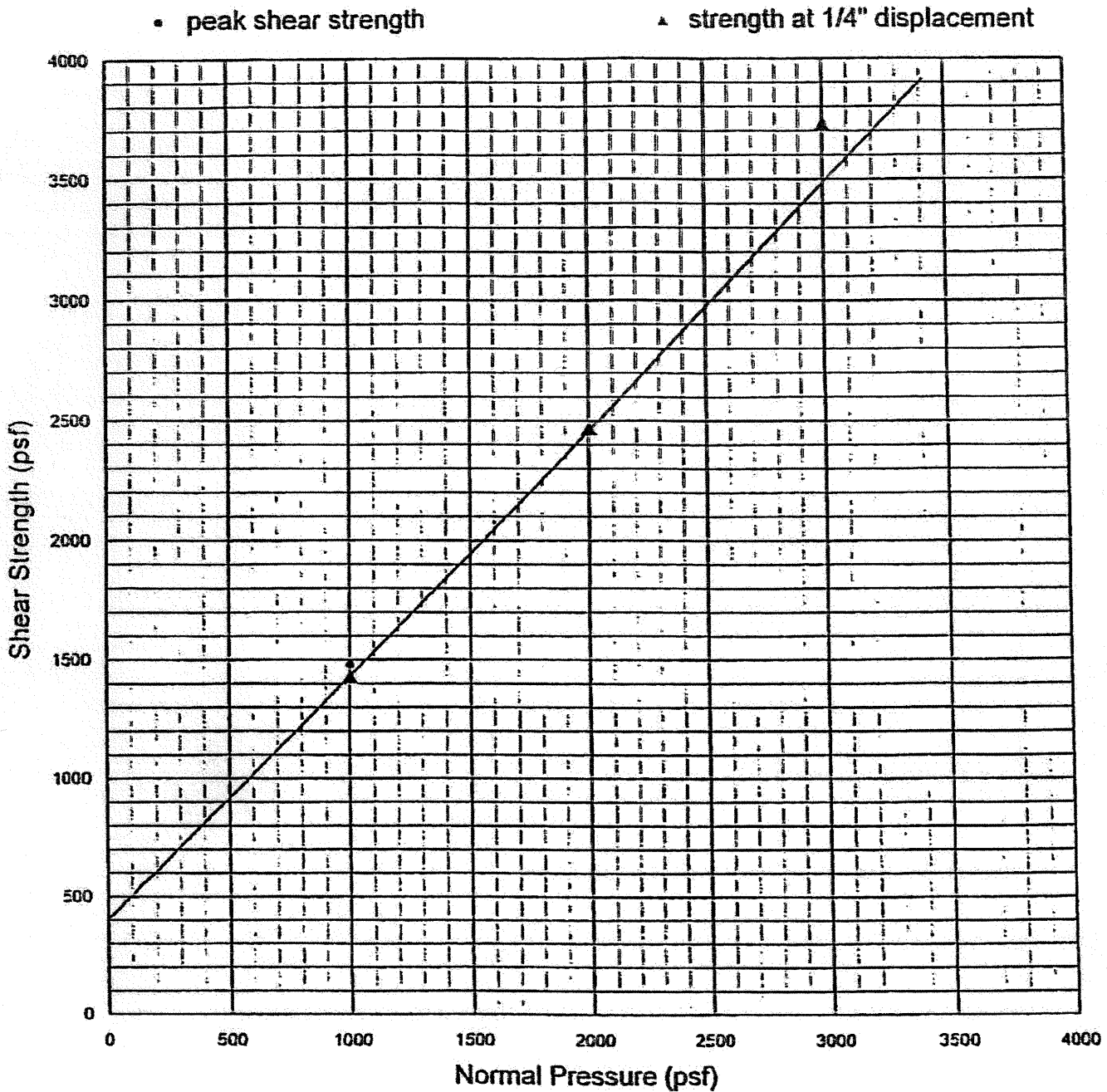
DIRECT SHEAR TEST DIAGRAM



Boring No.	BN-1	Depth	30 feet	<i>NORMAL STRESS (ksf)</i>
Soil Description	Breccia			
Undisturbed/Remolded	Undisturbed			
Moisture Content, %	14.2% after test			
Dry Density, pcf	122.1% after test			
Saturation, %	100.9% after test			
Shearing Rate	.022"/min.			
		Cohesion (ksf)	1.0	0.5 / 0.6
		Friction Angle	30	31 / 30
		Remarks:	_____	



Project Name:	South Shores Church	
Date:	April 2008	
Project No:	6375-04.1	Figure No: A-1

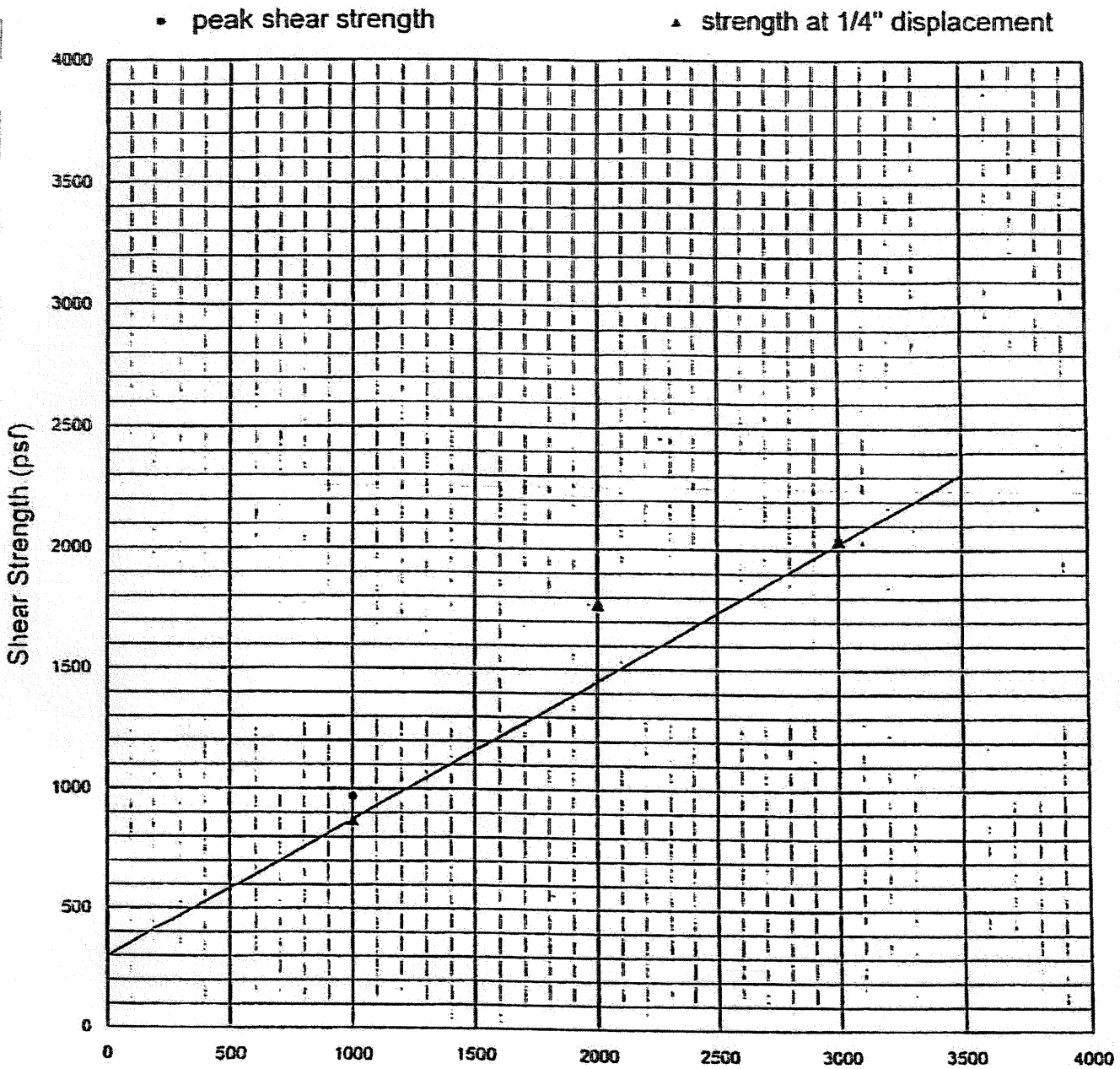


Strain Rate: 0.025 in. / min.

Sample	Type	Description	Dry Density (pcf)	Water Content (%)
BB-1/4	Undisturbed	San Onofre Formation: Sandy Siltstone w. Gravel	125.5	7.4

Normal Pressure (psf)	Peak Shear Strength (psf)	Ultimate Shear Strength (psf)
1000	1480	1430
2000	2470	2470
3000	3730	3730
	C = 400 psf	C = 400 psf
	φ = 46 deg.	φ = 46 deg.

AGRA

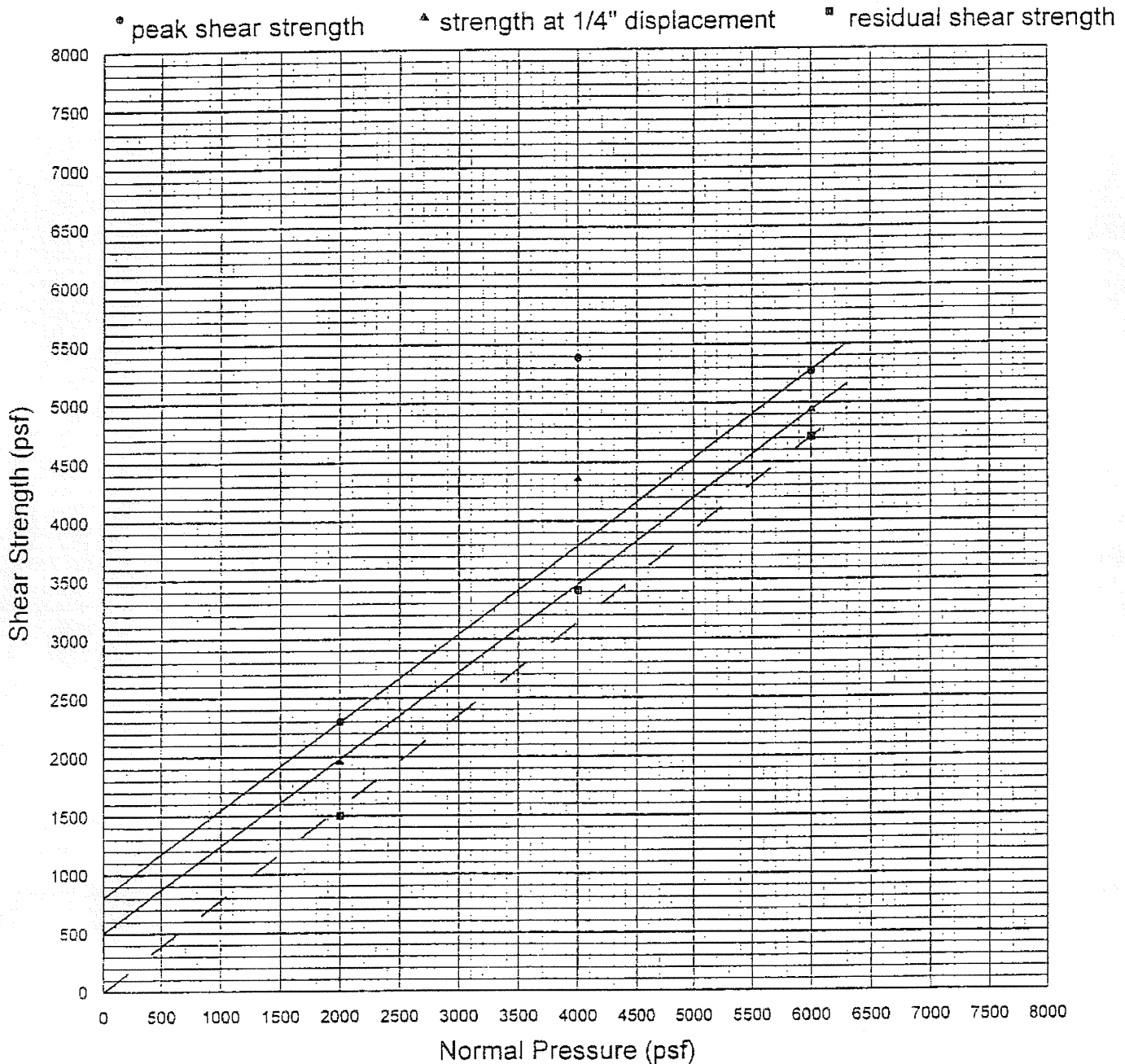


Normal Pressure (psf)
Strain Rate: 0.025 in. / min.

Sample	Type	Description	Dry Density (pcf)	Water Content (%)
S-1/3	Undisturbed	San Onofre Formation: Sandy Siltstone w. Gravel	126.7	14.5

Normal Pressure (psf)	Peak Shear Strength (psf)	Ultimate Shear Strength (psf)
1000	970	870
2000	1770	1770
3000	2040	2040
	C = 300 psf	C = 300 psf
	$\phi = 30$ deg.	$\phi = 30$ deg.

AGRA



Strain Rate: 0.0165 in. / min.

Sample	Type	Description	Dry Density (pcf)	Water Content (%)
R-2-3A	Undisturbed	Landslide Material: Diatomaceous Siltstone	40.7	113.7

Normal Pressure (psf)	Peak Shear Strength (psf)	Ultimate Shear Strength (psf)	Residual Shear Strength (psf)
2000	2300	1970	1500
4000	5390	4370	3410
6000	5270	4950	4710
	C = 800 psf $\phi = 36.5$ deg.	C = 500 psf $\phi = 36.5$ deg.	C = 0 psf $\phi = 38$ deg.