4. All foundations shall be reviewed by the project soils engineer.

5. All retaining wall backdrain systems and backfill shall be reviewed and tested by a representative of this office.

6. The pre-moistened soils shall be tested, and verified to be 120% of optimum moisture content, prior to the placement of the sub-grade.

Reviews will be required to verify all work. A review will be performed to determine if the intent of the report has been adequately carried forth. This office should be notified at least **two working days** in advance of any reviews of this nature so that staff personnel may be made available.

Construction Review

It is required that all foundation excavations, retaining wall backdrain systems, pre-moistened soils shall be tested, and grading be reviewed by this office. A review will be performed to determine if the intent of the report has been adequately carried forth. This office should be notified at least two working days in advance of any reviews of this nature so that staff personnel may be made available. The reviews will be billed at our current hourly rate.

LIMITATIONS

General

Subsurface conditions were determined on the basis of our field explorations and appear to be relatively uniform. Although, between exploratory excavations, subsurface earth materials may vary in type, strength, and many other properties. The recommendations presented herein are for soil conditions encountered in specific locations. Other soil conditions due to non-uniformity of the soil conditions or manmade alterations may be revealed during construction. At that time, further recommendations may be made if required.

Conclusions and recommendations presented herein are based on our experience and background. Therefore, the conclusions and recommendations are professional opinions and are not meant to indicate a control of nature. This report makes no other warranty, either expressed or implied, concerning the advice presented herein.

Conclusions on building site stability, settlement, slippage, and its affects on off-site property are based on our visual examination, the placement of explorations, laboratory testing of samples obtained during explorations, analysis of our data, and our experience. It is our opinion that our standard-of-care analysis provides an adequate assessment of the site conditions. Our examination does not, however, imply that the subject property is risk free.

This report may not be copied. If you wish additional copies, you may order them from this office. See your contract for charges.

Construction Notice

Construction can be difficult. Recommendations contained herein are based upon several windows (explorations) excavated at locations deemed suitable by your consultants. It is this corporation's aim to advise you through this report of the general site conditions, suitability for construction, and overall stability. It must be understood that the opinions are based upon testing, analysis, and interpretation thereof.

All properties are subject to risk, these risks can be mitigated but not be eliminated. Properties are subject to hazards including but not limited to, floods, mudslides, landslides, seepage, erosion, raveling of slopes, concentrated drainage, limited access, differential settlement, heaving and fire. The damage from these hazards may be reduced by the property owner by maintaining yards, slopes, walls, slough protection devices, drainage facilities, and by correcting any deficiencies found during occupancy of the property. It is not possible to eliminate all hazards.

Quantities for foundation concrete and steel may be estimated, based on the findings given in this report. However, you must be aware that depths and magnitudes will most likely vary between the excavated windows (explorations) given in the report.

If you have any questions concerning this report, please contact this office.

Respectfully submitted:
SUBSURFACE DESIGNS, INC.

Jon Mahn
Project Engineer
RCE 60293

REGISTERED PROFESSIONAL ENGINEER
JONATHAN EDWARD MAHN
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STATE OF CALIFORNIA

JEM/MJT/vr: 3614B.03S

dist: (1) Addressee
(1) Parallax Associates, Inc. (Attn: Mr. Joe Masotta)
(4) EPA Inc. (Attn: Mr. Jim Brock)
(1) file

APPENDIX I

SITE INFORMATION

Vicinity Map

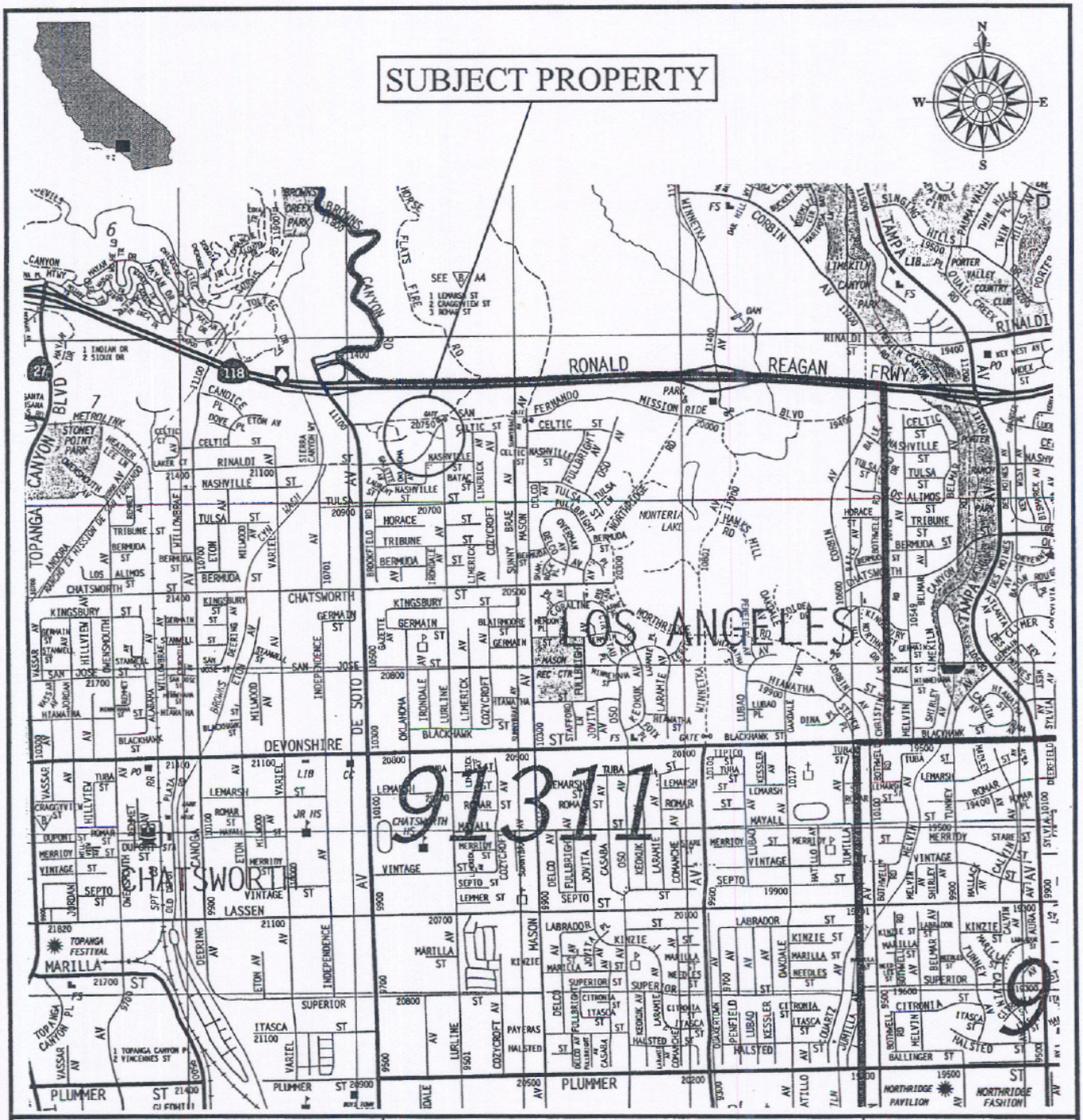
Geologic Map, Thomas W. Dibblee

Seismic Hazard Map

Exploration Logs, Figure E.1 through E.8

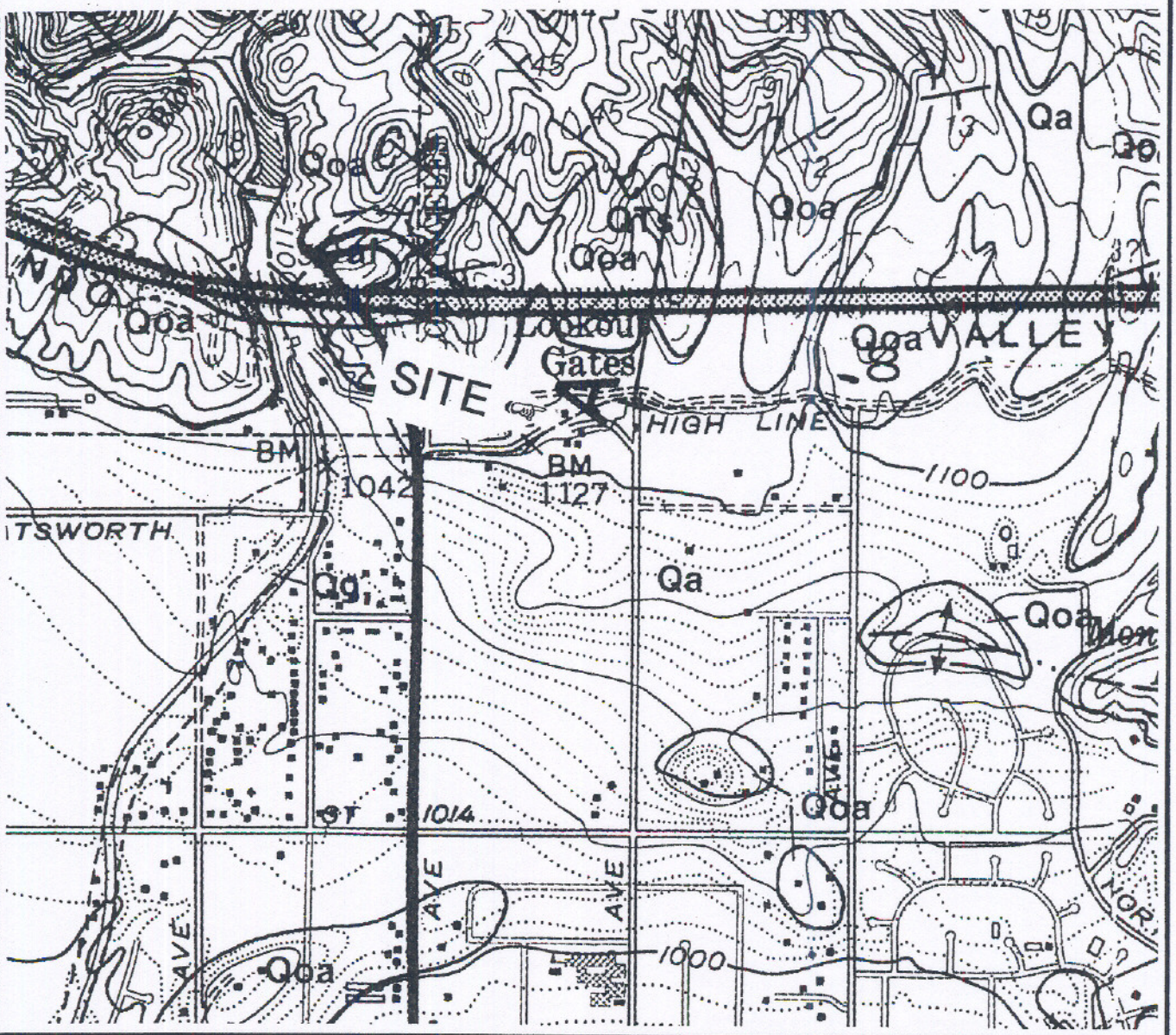
Geologic Map, Plate A (Pocket Attachment)

Geologic Cross Sections, Plate B (Pocket Attachment)



SubSurface Designs, Inc. Geotechnical Engineers Engineering Geologists	**Client**: Sierra Canyon School	**PIN#** 3614B
	Subject: Vicinity Map **Ref**: Thomas Bros. Maps L. A. County, Page 500 **Scale**: 1" = 2400'	

DIBBLEE GEOLOGIC MAP



SubSurface Designs, Inc. Geotechnical Engineers Engineering Geologists	**Client**: Sierra Canyon School	**PIN#** 3614B
	Ref: Modified from the Geologic Map of the Oat Mountain & Canoga Park (North ½) Quadrangles, prepared by Thomas W. Dibblee, 1992. **Scale:** 1" = 1000'	

SEISMIC HAZARD MAP

SubSurface Designs, Inc. Geotechnical Engineers Engineering Geologists	**Client:** Sierra Canyon School	**PIN#** 3614B
	Ref: Modified from the Seismic Hazard Zone Map of the Oat Mountain Quadrangle, prepared by the California Division of Mines and Geology, 1998. **Scale:** 1: = 1000'	

EXPLORATION LOG

PROJECT NAME: *Sierra Canyon School*	EXPLORATION NO: *AH 01*	PAGE *1* OF *1*
PROJECT NUMBER: *PIN 3614B*	EXPLORATION EQUIPMENT: *Hollow-Stem Auger*	

Comments: *See attached Site Plan for location.*

Logged By: *JEM*	Total Depth: *25.0'*
Date Started: *January 27, 2003*	Top Elevation (ft.):
Date Completed: *January 27, 2003*	Excavation Width: *8"*

Sample Graphics	Blow Count (Per Foot)	Moisture Content (%)	Unit Dry Wt. (pcf.)	Depth (ft.)	Lithologic Graphics	LITHOLOGIC DESCRIPTION
	33	10	121	2		**Older Alluvium (Qoa)** Silty Sand (SM), Pleistocene geologic age, Dibblee 1992, brown, moist.
	58	8	125	4		Silty Sand (SM), also contains gravels, shale fragments and clay binder, reddish brown, moist.
	44	12	110	6		
	26	12	102	8		
	69	11	110	10		Silty Sand (SM), also contains some gravels, yellowish brown, moist.
				12		
	65	11	99	14		Sand with little or no fines (SW), yellowish brown, moist, some caliche stringers below 19 feet.
				16		
				18		
	60	14	111	20		
				22		
	73	6	108	24		Gravelly Sand (SP), medium to coarse grained sands, light yellowish brown, moist.
				26		Notes: 1. End of boring at 25 feet. 2. No water encountered.
				28		

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Figure E.1

EXPLORATION LOG

PROJECT NAME: *Sierra Canyon School*	EXPLORATION NO: *AH 02*	PAGE *1* OF *1*
PROJECT NUMBER: *PIN 3614B*	EXPLORATION EQUIPMENT: *Hollow-Stem Auger*	
Comments: *See attached Site Plan for location.*		

Logged By: *JEM*	Total Depth: *26.0'*
Date Started: *January 27, 2003*	Top Elevation (ft.):
Date Completed: *January 27, 2003*	Excavation Width: *8"*

Sample Graphics	Blow Count (Per Foot)	Moisture Content (%)	Unit Dry Wt. (pcf.)	Depth (ft.)	Lithologic Graphics	LITHOLOGIC DESCRIPTION
	44	7	108	2		**Older Alluvium (Qoa)** Gravelly Sand with little or no fines (SP), Pleistocene geologic age, Dibblee 1992, contains some shale fragments, yellowish brown, moist.
	42	5	106	4		
	52	18	102	6		Sand with little or no fines (SW), yellowish brown, moist, some caliche stringers.
	66	14	106	8		
	76	8	108	10		Silty Sand (SM), also contains some gravels, yellowish brown, moist.
				12		
				14		
	74	9	117	16		Silty Sand (SM), also some shale fragments, yellowish brown, moist.
				18		
	81	15	112	20		Silty Sand (SM), also contains clay binder, reddish brown, moist.
				22		
				24		
	73	22	94	26		Notes: 1. End of boring at 26 feet. 2. No water encountered.
				28		

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Figure E.2

EXPLORATION LOG

PROJECT NAME: *Sierra Canyon School*	EXPLORATION NO: *AH 03*	PAGE *1* OF *1*
PROJECT NUMBER: *PIN 3614B*	EXPLORATION EQUIPMENT: *Hollow-Stem Auger*	

Comments: *See attached Site Plan for location.*

Logged By: *JEM*	Total Depth: *26.0'*
Date Started: *January 27, 2003*	Top Elevation (ft.):
Date Completed: *January 27, 2003*	Excavation Width: *8"*

Sample Graphics	Blow Count (Per Foot)	Moisture Content (%)	Unit Dry Wt. (pcf.)	Depth (ft.)	Lithologic Graphics	LITHOLOGIC DESCRIPTION
				2		**Older Alluvium (Qoa)** Silty Sand (SM), Pleistocene geologic age, Dibblee 1992, contains clay binder, reddish brown, moist.
	22	12	120	4		
	35	8	124	6		Silty Sand (SM), also contains clay binder and some shale fragments, reddish brown, moist.
	58	7	120	8		Silty Sand (SM), also contains clay binder, reddish brown, moist.
	73	9	124	10		
	71	15	117	12		
				14		
				16		
				18		
	54	14	114	20		Silty Sand (SM), also contains clay binder and some shale fragments, reddish brown, moist.
				22		
				24		
	77	14	105	26		Silty Sand (SM), also contains gravels, light brown, moist.
				28		Notes: 1. End of boring at 26 feet. 2. No water encountered.

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Figure E.3

EXPLORATION LOG

PROJECT NAME: *Sierra Canyon School*	EXPLORATION NO: *AH 04*	PAGE *1* OF *1*
PROJECT NUMBER: *PIN 3614B*	EXPLORATION EQUIPMENT: *Hollow-Stem Auger*	

Comments: *See attached Site Plan for location.*

Logged By: *JEM*	Total Depth: *21.0'*
Date Started: *January 27, 2003*	Top Elevation (ft.):
Date Completed: *January 27, 2003*	Excavation Width: *8"*

Sample Graphics	Blow Count (Per Foot)	Moisture Content (%)	Unit Dry Wt. (pcf.)	Depth (ft.)	Lithologic Graphics	LITHOLOGIC DESCRIPTION
	9	12	105	2		**Older Alluvium (Qoa)** Silty Sand (SM), Pleistocene geologic age, Dibblee 1992, contains clay binder, reddish brown, moist, porous with some roots.
	37	10	111	6		Silty Sand (SM), also contains clay binder and some shale fragments, light brown to brown, moist.
	42	10	120	10		
	100	10	101	12		
	73	8	108	16		
	68	16	110	20		Silty Sand (SM), yellowish brown, moist, some caliche stringers.
				22		Notes: 1. End of boring at 21 feet. 2. No water encountered.
				24		
				26		
				28		

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Figure E.4

EXPLORATION LOG

PROJECT NAME: *Sierra Canyon School*	EXPLORATION NO: *AH 05*	PAGE *1* OF *1*
PROJECT NUMBER: *PIN 3614B*	EXPLORATION EQUIPMENT: *Hollow-Stem Auger*	

Comments: *See attached Site Plan for location.*

Logged By: *JEM*	Total Depth: *41.0'*
Date Started: *January 27, 2003*	Top Elevation (ft.):
Date Completed: *January 27, 2003*	Excavation Width: *8"*

Sample Graphics	Blow Count (Per Foot)	Moisture Content (%)	Unit Dry Wt. (pcf.)	Depth (ft.)	Lithologic Graphics	LITHOLOGIC DESCRIPTION
	41	11	107	2–4		**Older Alluvium (Qoa)** Silty Sand (SM), Pleistocene geologic age, Dibblee 1992, contains clay binder, brown, moist.
	65	8	117	6		Silty Sand (SM), also contains clay binder, reddish brown, moist.
	36	8	112	8		
	67	10	107	10–12		Silty Sand (SM), also contains clay binder and some gravels and shale fragments, reddish brown, moist.
	41	6	107	14–16		
	57	9	106	18–20		
	68	8	118	22–30		
	67	8	106	32–40		
				42–48		Notes: 1. End of boring at 41 feet. 2. No water encountered.

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Figure E.5

EXPLORATION LOG

PROJECT NAME: *Sierra Canyon School*	EXPLORATION NO: *AH 06*	PAGE *1* OF *1*
PROJECT NUMBER: *PIN 3614B*	EXPLORATION EQUIPMENT: *Hollow-Stem Auger*	

Comments: *See attached Site Plan for location.*

Logged By: *JEM*	Total Depth: *16.0'*
Date Started: *January 27, 2003*	Top Elevation (ft.):
Date Completed: *January 27, 2003*	Excavation Width: *8"*

Sample Graphics	Blow Count (Per Foot)	Moisture Content (%)	Unit Dry Wt. (pcf.)	Depth (ft.)	Lithologic Graphics	LITHOLOGIC DESCRIPTION
				2		**Earth Fill** Silty Sand (SM), also contains some gravels, brown, moist, porous.
	23	10	114			
				4		**Older Alluvium (Qoa)** Silty Sand (SM), Pleistocene geologic age, Dibblee 1992, contains shale fragments, reddish brown, moist, porous.
	18	6	112	6		
	26	9	121	8		Silty Sand (SM), also contains clay binder and some gravels and shale fragments, reddish brown, moist.
	41	13	120	10		
				12		
				14		
	46	14	121	16		Notes: 1. End of boring at 16 feet. 2. No water encountered.
				18		

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Figure E.6

EXPLORATION LOG

PROJECT NAME: *Sierra Canyon School*	EXPLORATION NO: *AH 07*	PAGE *1* OF *1*
PROJECT NUMBER: *PIN 3614B*	EXPLORATION EQUIPMENT: *Hollow-Stem Auger*	

Comments: *See attached Site Plan for location.*

Logged By: *JEM*	Total Depth: *16.0'*
Date Started: *January 27, 2003*	Top Elevation (ft.):
Date Completed: *January 27, 2003*	Excavation Width: *8"*

Sample Graphics	Blow Count (Per Foot)	Moisture Content (%)	Unit Dry Wt. (pcf.)	Depth (ft.)	Lithologic Graphics	LITHOLOGIC DESCRIPTION
	19	5	108	2		**Earth Fill** Silty Sand (SM), also contains some gravels, brown, moist, porous.
	27	7	116	4		**Older Alluvium (Qoa)** Silty Sand (SM), Pleistocene geologic age, Dibblee 1992, contains clay binder and some gravel, reddish brown, moist.
	84	8	124	6		Silty Sand (SM), reddish brown, moist.
	48	12	124	8		Silty Sand (SM), also contains clay binder and some gravels, reddish brown, moist.
	34	9	124	10		
				12		
				14		
	37	18	90	16		Silty Sand (SM), also contains clay binder and some gravels, yellowish brown, moist.
				18		Notes: 1. End of boring at 16 feet. 2. No water encountered.

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Figure E.7

EXPLORATION LOG

PROJECT NAME: *Sierra Canyon School*	EXPLORATION NO: *AH 08*	PAGE *1* OF *1*
PROJECT NUMBER: *PIN 3614B*	EXPLORATION EQUIPMENT: *Hollow-Stem Auger*	
Comments: *See attached Site Plan for location.*		

Logged By: *JEM*	Total Depth: *16.0'*
Date Started: *January 27, 2003*	Top Elevation (ft.):
Date Completed: *January 27, 2003*	Excavation Width: *8"*

Sample Graphics	Blow Count (Per Foot)	Moisture Content (%)	Unit Dry Wt. (pcf.)	Depth (ft.)	Lithologic Graphics	LITHOLOGIC DESCRIPTION
	81	5	106	2		**Older Alluvium (Qoa)** Silty Sand (SM), Pleistocene geologic age, Dibblee 1992, contains clay binder and gravel, reddish brown, moist.
	68	8	109	4		
	23	7	109	6		Silty Sand (SM), also contains clay binder, gravels and shale fragments, reddish brown, moist.
	46	5	113	8		
	37	8	120	10		Silty Sand (SM), also contains clay binder, reddish brown, moist.
				12		
				14		
	32	5	112	16		Silty Sand (SM), also some shale fragments, reddish brown, moist.
				18		Notes: 1. End of boring at 16 feet. 2. No water encountered.

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Figure E.8

EXPLORATION LOG

PROJECT NAME: *Sierra Canyon School*	EXPLORATION NO: *TT 01*	PAGE *1* OF *1*
PROJECT NUMBER: *PIN 3614A*	EXPLORATION EQUIPMENT: *Backhoe*	
Comments: *See enclosed Plot Plan for location*		

Logged By: *JEM*	Total Depth: *7.5'*
Date Started: *October 25, 2000*	Top Elevation (ft.):
Date Completed: *October 25, 2000*	Excavation Width: *2'X16'*

Sample Graphics	Recovery (No. of Rings)	Moisture Content (%)	Unit Dry Wt. (pcf.)	Depth (ft.)	Lithologic Graphics	LITHOLOGIC DESCRIPTION
						Earth Fill (ef) Silty Sand (SM), brown, slightly moist, loosely compact, some construction material.
	6	8	111	2		**Older Alluvium (Qoa)** Clayey Sand (SC) and Gravels (GP), Pleistocene geologic age, Dibblee 1992, reddish brown, moist, dense, granitic and shale bedrock fragments to 3" in dimension (20% - 30%), scattered calcium carbonate nodules.
	6	6	113	4		
				6		
	6	5	111			
				8		**Notes:** 1. No caving encountered. 2. No groundwater encountered.
				10		
				12		
				14		
				16		
				18		

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Figure E.9

EXPLORATION LOG

PROJECT NAME: *Sierra Canyon School*	EXPLORATION NO: *TT 02*	PAGE *1* OF *1*
PROJECT NUMBER: *PIN 3614A*	EXPLORATION EQUIPMENT: *Backhoe*	
Comments: *See enclosed Plot Plan for location*		

Logged By: *JEM*	Total Depth: *8.5'*
Date Started: *October 25, 2000*	Top Elevation (ft.):
Date Completed: *October 25, 2000*	Excavation Width: *2'X16'*

Sample Graphics	Recovery (No. of Rings)	Moisture Content (%)	Unit Dry Wt. (pcf.)	Depth (ft.)	Lithologic Graphics	LITHOLOGIC DESCRIPTION
				0		**Earth Fill (ef)** Silty Sand (SM), brown, slightly moist, loosely compact, some construction material.
	6	6	115	2		**Natural Soil** Clayey Sand (SC), brown, moist, moderately dense, porous.
				4		**Older Alluvium (Qoa)** Clayey Sand (SC) to Slightly Silty Sand (SM) and Gravels (GP), Pleistocene geologic age, Dibblee 1992, reddish brown in upper portion - grades to a yellowish brown with depth, moist, dense, granitic and shale bedrock fragments to 4" in dimension (20% - 30%), scattered calcium carbonate nodules.
	6	8	94	6		
				8		**Notes:** 1. No caving encountered. 2. No groundwater encountered.
				10		
				12		
				14		
				16		
				18		

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Figure E.10

EXPLORATION LOG

PROJECT NAME: *Sierra Canyon School*	EXPLORATION NO: *TT 03*	PAGE *1* OF *1*
PROJECT NUMBER: *PIN 3614A*	EXPLORATION EQUIPMENT: *Backhoe*	
Comments: *See enclosed Plot Plan for location*		

Logged By: *JEM*	Total Depth: *8.0'*
Date Started: *October 25, 2000*	Top Elevation (ft.):
Date Completed: *October 25, 2000*	Excavation Width: *2'X16'*

Sample Graphics	Recovery (No. of Rings)	Moisture Content (%)	Unit Dry Wt. (pcf.)	Depth (ft.)	Lithologic Graphics	LITHOLOGIC DESCRIPTION
				2		**Earth Fill (ef)** Clayey Sand (SC), dark brown, slightly moist, moderately compact, numerous roots and rootlets to 5' deep.
				4		**Natural Soil** Sandy Clay (CL), dark brown, slightly moist, stiff, numerous roots and rootlets.
	6	6	96	6		**Older Alluvium (Qoa)** Slightly Silty Sand (SM) and Gravels (GP), Pleistocene geologic age, Dibblee 1992, yellowish brown, slightly moist to moist, dense, shale bedrock fragments to 6" in dimension (20% - 30%), abundant calcium carbonate stringers.
				8		**Notes:** 1. No caving encountered. 2. No groundwater encountered.
				10		
				12		
				14		
				16		
				18		

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Figure E.11

EXPLORATION LOG

PROJECT NAME: *Sierra Canyon School*	EXPLORATION NO: *TT 04*	PAGE *1* OF *1*
PROJECT NUMBER: *PIN 3614A*	EXPLORATION EQUIPMENT: *Backhoe*	
Comments: *See enclosed Plot Plan for location*		

Logged By: *JEM*	Total Depth: *5.0'*
Date Started: *October 25, 2000*	Top Elevation (ft.):
Date Completed: *October 25, 2000*	Excavation Width: *2'X16'*

Sample Graphics	Recovery (No. of Rings)	Moisture Content (%)	Unit Dry Wt. (pcf.)	Depth (ft.)	Lithologic Graphics	LITHOLOGIC DESCRIPTION
	6	7	102	2 4		**Earth Fill (ef)** Silty Sand (SM), brown, slightly moist, loosely compact, some construction material. **Older Alluvium (Qoa)** Slightly Silty Sand (SM) and Gravels (GP), Pleistocene geologic age, Dibblee 1992, yellowish brown, slightly moist to moist, dense, shale bedrock fragments to 6" in dimension (20% - 30%)
				6 8 10 12 14 16 18		**Notes:** 1. No caving encountered. 2. No groundwater encountered.

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Figure E.12

EXPLORATION LOG

PROJECT NAME: *Sierra Canyon School*	EXPLORATION NO: *TT 05*	PAGE *1* OF *1*
PROJECT NUMBER: *PIN 3614A*	EXPLORATION EQUIPMENT: *Backhoe*	
Comments: *See enclosed Plot Plan for location*		

Logged By: *JEM*	Total Depth: *10.5'*
Date Started: *November 7, 2000*	Top Elevation (ft.):
Date Completed: *November 7, 2000*	Excavation Width: *2'X16'*

Sample Graphics	*Recovery (No. of Rings)*	*Moisture Content (%)*	*Unit Dry Wt. (pcf.)*	*Depth (ft.)*	*Lithologic Graphics*	LITHOLOGIC DESCRIPTION
				2, 4, 6, 8		**Earth Fill (ef)** Clayey Sand (SC) to Sandy Clay (SC), dark brown, moist, moderately compact, mottled.
				10		**Older Alluvium (Qoa)** Slightly Silty Sand (SM) and Gravels (GP), Pleistocene geologic age, Dibblee 1992, yellowish brown, slightly moist to moist, dense, shale bedrock fragments to 1" in dimension (20% - 30%)
				12, 14, 16, 18		**Notes:** 1. No caving encountered. 2. No groundwater encountered.

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GEOTECHNICAL ENGINEERS & ENGINEERING GEOLOGISTS

Figure E.13

EXPLORATION LOG

PROJECT NAME: *Sierra Canyon School*	EXPLORATION NO: *TT 06*	PAGE *1* OF *1*
PROJECT NUMBER: *PIN 3614A*	EXPLORATION EQUIPMENT: *Backhoe*	
Comments: *See enclosed Plot Plan for location*		

Logged By: *JEM*	Total Depth: *10.0'*
Date Started: *November 7, 2000*	Top Elevation (ft.):
Date Completed: *November 7, 2000*	Excavation Width: *2'X16'*

Sample Graphics	Recovery (No. of Rings)	Moisture Content (%)	Unit Dry Wt. (pcf.)	Depth (ft.)	Lithologic Graphics	LITHOLOGIC DESCRIPTION
				2 4 6		**Earth Fill (ef)** Clayey Sand (SC), dark brown, slightly moist, loosely to moderately compact.
				8 10		**Older Alluvium (Qoa)** Clayey Sand (SC) and Gravels (GP), Pleistocene geologic age, Dibblee 1992, reddish brown, moist, dense, granitic and shale bedrock fragments to 2" in dimension (20% - 30%), scattered calcium carbonate nodules.
				12 14 16 18		**Notes:** 1. No caving encountered. 2. No groundwater encountered.

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Figure E.14

EXPLORATION LOG

PROJECT NAME: *Sierra Canyon School*	EXPLORATION NO: *TT 07*	PAGE *1* OF *1*
PROJECT NUMBER: *PIN 3614A*	EXPLORATION EQUIPMENT: *Backhoe*	
Comments: *See enclosed Plot Plan for location*		

Logged By: *JEM*	Total Depth: *5.0'*
Date Started: *November 7, 2000*	Top Elevation (ft.):
Date Completed: *November 7, 2000*	Excavation Width: *2'X16'*

Sample Graphics	Recovery (No. of Rings)	Moisture Content (%)	Unit Dry Wt. (pcf.)	Depth (ft.)	Lithologic Graphics	LITHOLOGIC DESCRIPTION
				2		**Natural Soil** Silty Sand (SM), brown, moist, moderately dense, numerous roots and rootlets, porous.
				4		**Older Alluvium (Qoa)** Slightly Silty Sand (SM), Pleistocene geologic age, Dibblee 1992, yellowish brown, slightly moist to moist, dense, numerous rounded rock fragments, shale and pebbles to 6" in dimension (30% - 40%), some horizontal layering of the pebble layers.
				6		**Notes:** 1. No caving encountered. 2. No groundwater encountered.
				8		
				10		
				12		
				14		
				16		
				18		

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Figure E.15

EXPLORATION LOG

PROJECT NAME: *Sierra Canyon School*	EXPLORATION NO: *TT 08*	PAGE *1* OF *1*
PROJECT NUMBER: *PIN 3614A*	EXPLORATION EQUIPMENT: *Backhoe*	
Comments: *See enclosed Plot Plan for location*		

Logged By: *JEM*	Total Depth: *12.0'*
Date Started: *November 7, 2000*	Top Elevation (ft.):
Date Completed: *November 7, 2000*	Excavation Width: *2'X16'*

Sample Graphics	*Recovery (No. of Rings)*	*Moisture Content (%)*	*Unit Dry Wt. (pcf.)*	*Depth (ft.)*	*Lithologic Graphics*	LITHOLOGIC DESCRIPTION
				0		**Earth Fill (ef)** Silty Sand (SM), brown, slightly moist, moderately compact, some roots and rootlets.
				2		**Natural Soil** Sandy Clay (CL) to Clayey Sand (SC), brown, moist, dense, some roots and rootlets.
				8		**Older Alluvium (Qoa)** Clayey Sand (SC) and Gravels (GP), Pleistocene geologic age, Dibblee 1992, reddish brown in upper portion - grades to a yellowish brown with depth, moist, dense, granitic and shale bedrock fragments to 4" in dimension (20% - 30%), scattered calcium carbonate nodules.
				12		**Notes:** 1. No caving encountered. 2. No groundwater encountered.
				14		
				16		
				18		

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Figure E.16

APPENDIX II

LABORATORY TEST RESULTS

Laboratory Testing

Laboratory Recapitulation - Table I-1

Shear Strength Diagram, Figure S.1 through S.4

Consolidation Diagram, Figure C.1 through C.15

LABORATORY TEST RESULTS

Moisture and Density Tests

The moisture content and in-place dry density of all undisturbed samples obtained were determined. The test results are presented in the Laboratory Recapitulation - Table I.

Shear Tests

Direct single-shear tests were performed on representative undisturbed samples to determine their strength characteristics. The desired normal load was applied to the specimen and allowed to come to equilibrium. The rate of deflection on the sample is approximately 0.01 inches per minute. Depending upon the sample location and future site condition, samples may be tested at field moisture. The results are plotted on the Shear Test Diagrams, Figures S.1 through S.4 and in the Laboratory Recapitulation - Table I.

Consolidation

Consolidation tests were performed on undisturbed samples to predict the soils behavior under a specific load. Loads are applied in increasing load increments and the results are recorded. The samples are usually inundated at a designated load to determine the effect of water contacting the bearing soil. The results are plotted on the "Consolidation Pressure Curve," Figures C.1 through C.15 and the load at which the water is added is noted on the drawing.

Expansion Tests

Expansion tests are performed on representative samples to determine the expansive potential of compacted soils when inundated with water. The test was performed in accordance with the latest version of ASTM D 4829. The classification of potentially expansive soil is based on the following table.

Expansion Index	Potential Expansion
0-20	Very Low
20-50	Low
50-90	Medium
90-130	High
Above 130	Very High

Sulfate Tests

Selected samples were tested for their sulfate contents. Samples were obtained from the subsurface soils that will be in contact with the foundation of the proposed structure. The results are shown in the Laboratory Recapitulation - Table I.

RECOMMENDATIONS FOR NORMAL WEIGHT CONCRETE SUBJECT TO SULFATE ATTACK

Exposure	Water Soluble Sulfate (SO_4) in soil (%)	Sulfate (SO_4) in water (ppm)	Cement	Water Cement Ratio Maximum*
Mild	0.00-0.10	0-150	--	0.50
Moderate**	0.10-0.2	150-1500	Type II	0.50
Severe	0.20-2.00	1500-10,000	Type V	0.45
Very Severe	Over 2.00	Over 10,000	Type V + Pozzolan***	0.45

* A lower water-cement ratio may be necessary to prevent corrosion of embedded items.

** Seawater also falls in this category.

*** Use a pozzolan which has been determined by tests to improve sulfate resistance when used in concrete containing Type V cement.

LABORATORY RECAPITULATION

Table I-1

Location	Depth (ft)	Material Type	In Situ Dry Density. (P.C.F.)	In Situ Water (%)	Expansion Index	Sulfate (ppm)	Cohesion	Friction Angle
AH 01	2.0	Qoa	121.4	10.2				
AH 01	4.0	Qoa	124.9	8.0				
AH 01	6.0	Qoa	110.4	11.6				
AH 01	8.0	Qoa	101.6	12.5				
AH 01	10.0	Qoa	109.5	10.6				
AH 01	14.0	Qoa	98.9	10.8				
AH 01	20.0	Qoa	110.7	13.5				
AH 01	24.0	Qoa	108.1	5.7				
AH 02	2.0	Qoa	107.5	7.2		ND		
AH 02	4.0	Qoa	105.7	4.9			0.339	28.6
AH 02	6.0	Qoa	101.9	17.6				
AH 02	8.0	Qoa	105.5	13.5				
AH 02	10.0	Qoa	108.3	7.6				
AH 02	15.0	Qoa	116.8	9.2				
AH 02	20.0	Qoa	111.6	14.8				
AH 02	25.0	Qoa	94.0	21.6				
AH 03	3.0	Qoa	119.9	12.0			0.253	32.0
AH 03	6.0	Qoa	124.5	8.2				
AH 03	9.0	Qoa	120.2	7.0				
AH 03	12.0	Qoa	124.3	9.0				

Table I-1								
Location	Depth (ft)	Material Type	In Situ Dry Density (P.C.F.)	In Situ Water (%)	Expansion Index	Sulfate (ppm)	Cohesion	Friction Angle
AH 03	15.0	Qoa	116.8	14.6				
AH 03	20.0	Qoa	113.5	13.7				
AH 03	25.0	Qoa	104.9	13.7				
AH 04	3.0	Qoa	105.2	11.6		ND	0.290	30.3
AH 04	6.0	Qoa	111.5	10.0				
AH 04	9.0	Qoa	119.7	10.0				
AH 04	12.0	Qoa	101.4	10.0				
AH 04	15.0	Qoa	107.7	7.8				
AH 04	20.0	Qoa	110.4	15.7				
AH 05	3.0	Qoa	107.2	11.2		ND	0.300	30.5
AH 05	5.0	Qoa	117.1	8.0				
AH 05	7.5	Qoa	112.4	8.0				
AH 05	10.0	Qoa	106.6	9.8				
AH 05	15.0	Qoa	106.7	6.4				
AH 05	20.0	Qoa	106.2	9.4				
AH 05	30.0	Qoa	118.2	8.0				
AH 05	40.0	Qoa	106.4	8.4				
AH 06	0 - 5	Qoa	bulk	-	21			
AH 06	2.5	Qoa	113.9	9.6		ND		
AH 06	5.0	Qoa	111.9	6.0				
AH 06	7.5	Qoa	121.0	9.0				

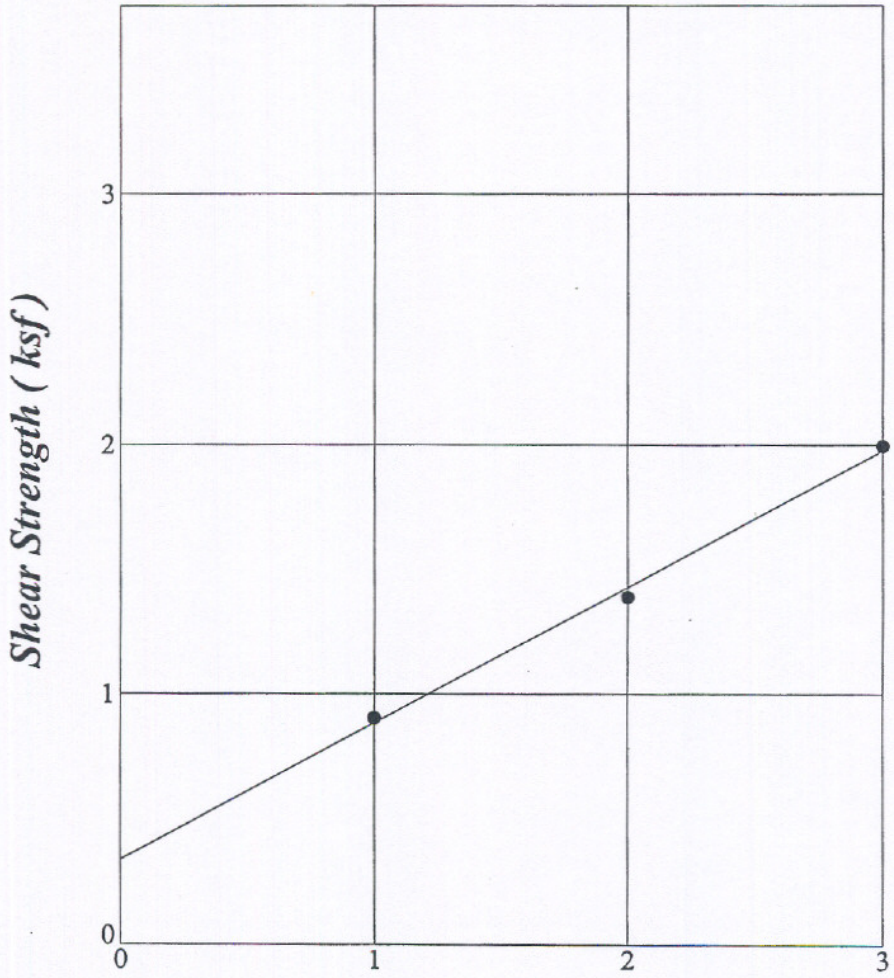
Table I-1

Location	Depth (ft)	Material Type	In Situ Dry Density. (P.C.F.)	In Situ Water (%)	Expansion Index	Sulfate (ppm)	Cohesion	Friction Angle
AH 06	10.0	Qoa	119.7	13.3				
AH 06	15.0	Qoa	120.6	13.7				
AH 07	0 - 7	Qoa	bulk	-	15			
AH 07	2.0	Qoa	108.1	4.6				
AH 07	4.0	Qoa	116.3	7.2				
AH 07	6.0	Qoa	124.1	7.8				
AH 07	8.0	Qoa	123.7	11.6				
AH 07	10.0	Qoa	123.9	8.8				
AH 07	15.0	Qoa	89.6	17.6				
AH 08	0 - 2.5	Qoa	bulk	-	3			
AH 08	2.0	Qoa	106.3	5.5				
AH 08	4.0	Qoa	108.6	7.8				
AH 08	6.0	Qoa	108.8	6.6				
AH 08	8.0	Qoa	113.2	4.9				
AH 08	10.0	Qoa	119.9	8.0				
AH 08	15.0	Qoa	111.6	4.9				

ND - Indicates levels not detectable.

SHEAR TEST DIAGRAM

PROJECT NAME: *Sierra Canyon School*	SAMPLE ID: *AH 02 @ 4.00*
PROJECT NUMBER: *PIN 3614B*	MATERIAL DESCRIPTION: *Older Alluvium (Qoa)*
TEST METHOD: *Ultimate Saturated Shear*	



MOISTURE CONTENT (%)		DENSITY (pcf)		RESULTS	
In Situ:	*4.9*			Phi (deg.):	*28.6*
Saturated:	*21.0*	Dry Density:	*105.7*	Cohesion (kips):	*0.339*

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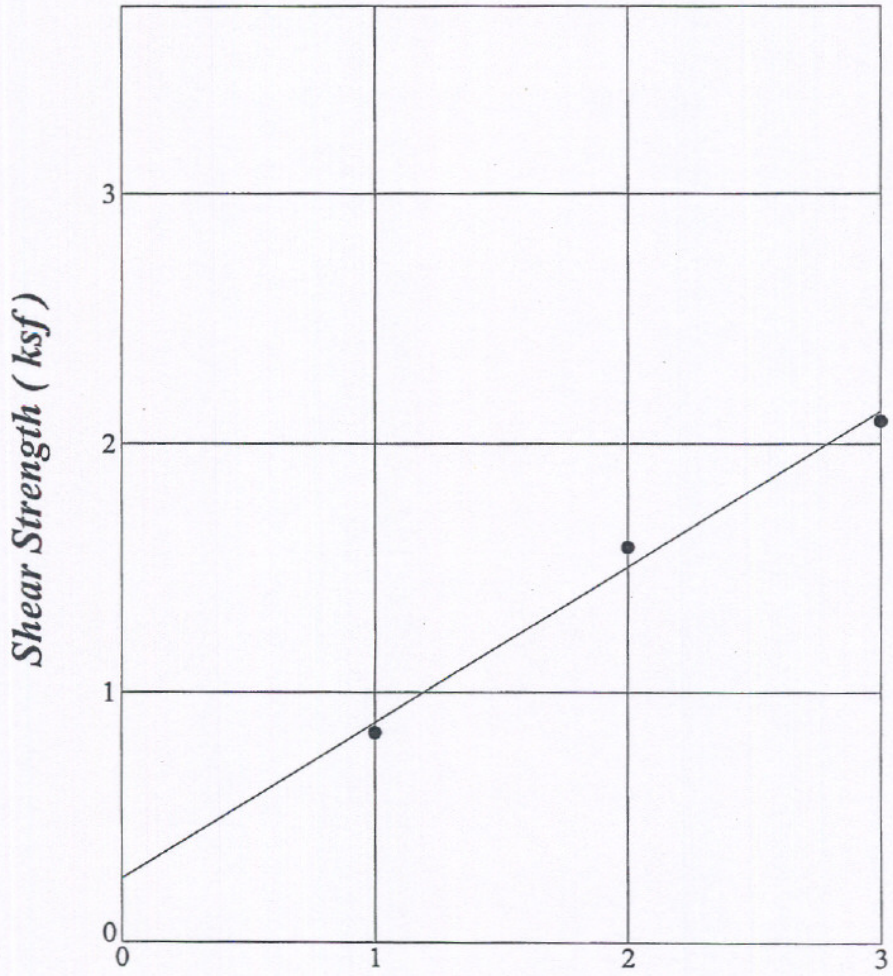
Figure S.1

SHEAR TEST DIAGRAM

PROJECT NAME: *Sierra Canyon School*	SAMPLE ID: *AH 03 @ 3.00*
PROJECT NUMBER: *PIN 3614B*	MATERIAL DESCRIPTION: *Older Alluvium (Qoa)*
TEST METHOD: *Ultimate Saturated Shear*	



MOISTURE CONTENT (%)		DENSITY (pcf)		RESULTS	
In Situ:	*12.0*			Phi (deg.):	*32.0*
Saturated:	*19.8*	Dry Density:	*119.9*	Cohesion (kips):	*0.253*

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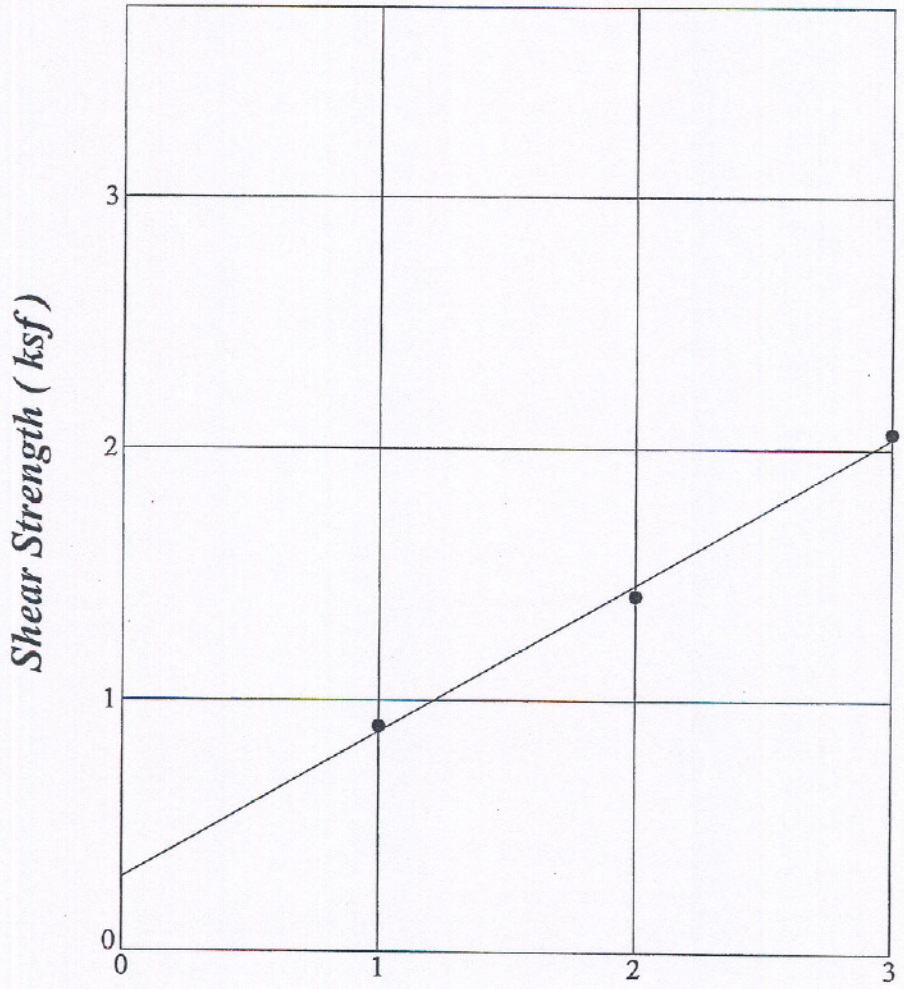
Figure S.2

SHEAR TEST DIAGRAM

PROJECT NAME: *Sierra Canyon School*	SAMPLE ID: *AH 04 @ 3.00*
PROJECT NUMBER: *PIN 3614B*	MATERIAL DESCRIPTION: *Older Alluvium (Qoa)*
TEST METHOD: *Ultimate Saturated Shear*	



MOISTURE CONTENT (%)		DENSITY (pcf)		RESULTS	
In Situ:	*11.6*			Phi (deg.):	*30.3*
Saturated:	*21.5*	Dry Density:	*105.2*	Cohesion (kips):	*0.290*

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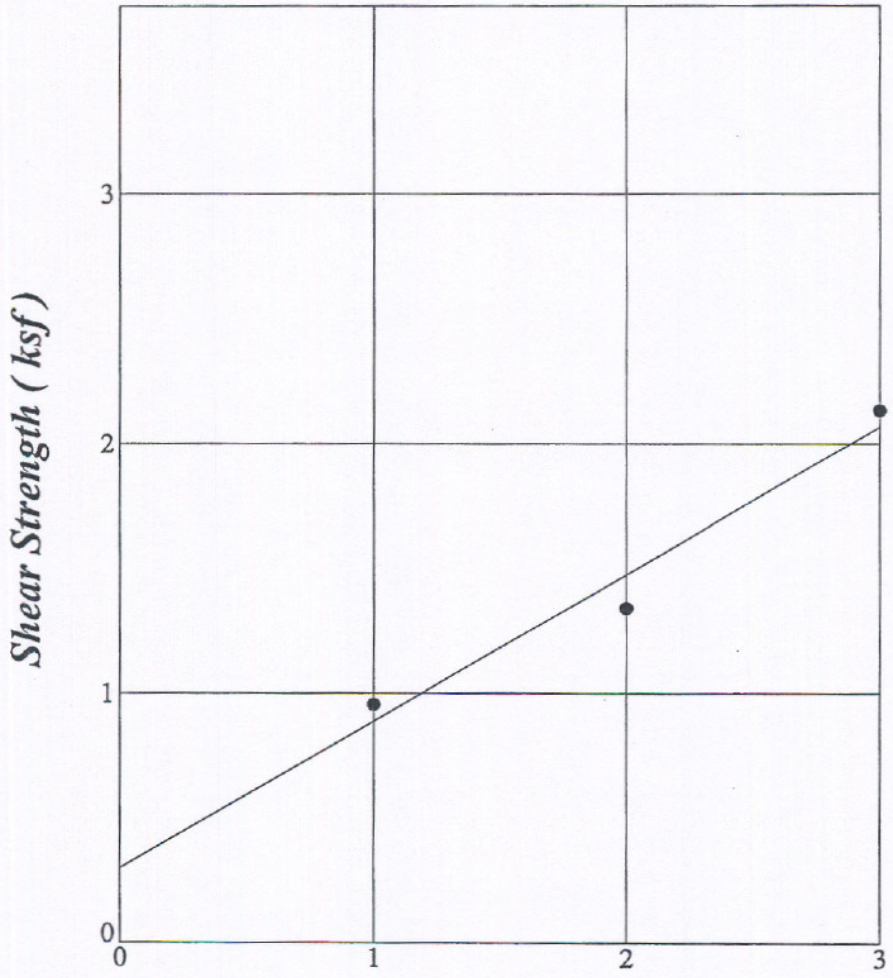
Figure S.3

SHEAR TEST DIAGRAM

PROJECT NAME: *Sierra Canyon School*	SAMPLE ID: *AH 05 @ 3.00*
PROJECT NUMBER: *PIN 3614B*	MATERIAL DESCRIPTION: *Older Alluvium (Qoa)*
TEST METHOD: *Ultimate Saturated Shear*	



MOISTURE CONTENT (%)		DENSITY (pcf)		RESULTS	
In Situ:	*11.2*			Phi (deg.):	*30.5*
Saturated:	*20.7*	Dry Density:	*107.2*	Cohesion (kips):	*0.300*

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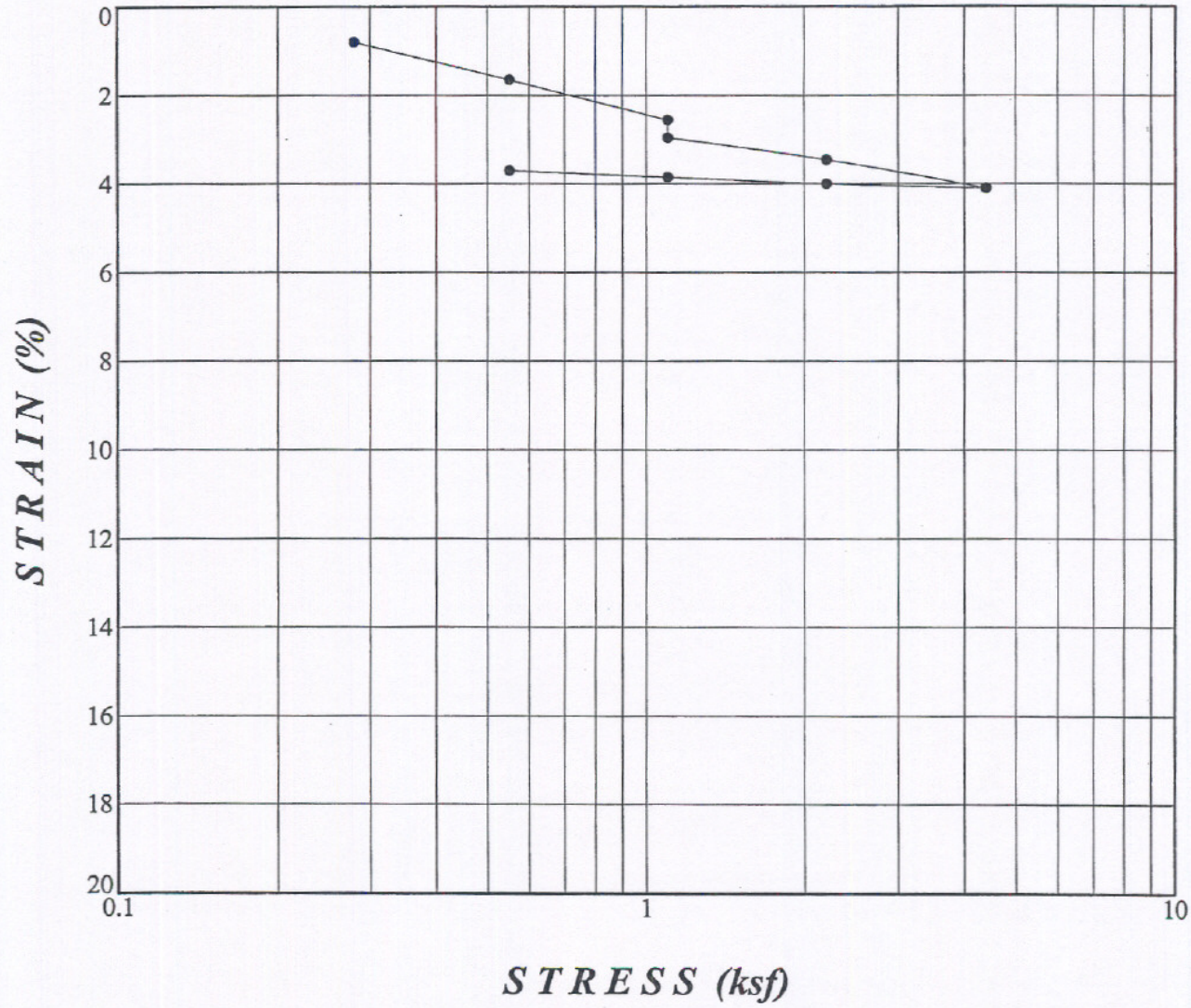
Figure S.4

CONSOLIDATION TEST

PROJECT NAME: *Sierra Canyon School*	SAMPLE ID: *AH 02 @ 2.00*
PROJECT NUMBER: *PIN 3614B*	MATERIAL DESCRIPTION: *Older Alluvium (Qoa)*

Load (psf) water added to test at: 1100



MOISTURE CONTENT (%)		DRY DENSITY (pcf)		RESULTS	
In Situ:	*7.2*	Before Test:	*107.5*	Initial Void Ratio:	*0.7516*

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Figure C.1