3.4 Building Construction - 2016

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	9.7000e-004	9.8800e-003	0.0128	2.0000e-005	6.8000e-004	1.5000e-004	8.1000e-004	1.9000e-004	1.4000e-004	3.3000e-004	0.0000	2.1501	2.1501	2.0000e-005	0.0000	2.1504
Worker	2.3600e-003	3.4500e-003	0.0359	8.0000e-005	5.9200e-003	6.0000e-005	5.9700e-003	1.5700e-003	5.0000e-005	1.6200e-003	0.0000	5.7741	5.7741	3.3000e-004	0.0000	5.7810
Total	3.3300e-003	0.0133	0.0488	1.0000e-004	6.5800e-003	2.1000e-004	6.7800e-003	1.7600e-003	1.9000e-004	1.9500e-003	0.0000	7.9242	7.9242	3.5000e-004	0.0000	7.9314

3.5 Paving - 2016

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	6.4400e-003	0.0660	0.0454	7.0000e-005		4.0400e-003	4.0400e-003		3.7200e-003	3.7200e-003	0.0000	6.2071	6.2071	1.8400e-003	0.0000	6.2457
Paving	8.3000e-004					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	7.2700e-003	0.0660	0.0454	7.0000e-005		4.0400e-003	4.0400e-003		3.7200e-003	3.7200e-003	0.0000	6.2071	6.2071	1.8400e-003	0.0000	6.2457

3.5 Paving - 2016

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	2.8000e-004	4.1000e-004	4.3200e-003	1.0000e-005	7.1000e-004	1.0000e-005	7.2000e-004	1.9000e-004	1.0000e-005	2.0000e-004	0.0000	0.6950	0.6950	4.0000e-005	0.0000	0.6959
Total	2.8000e-004	4.1000e-004	4.3200e-003	1.0000e-005	7.1000e-004	1.0000e-005	7.2000e-004	1.9000e-004	1.0000e-005	2.0000e-004	0.0000	0.6950	0.6950	4.0000e-005	0.0000	0.6959

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	6.4400e-003	0.0660	0.0454	7.0000e-005		4.0400e-003	4.0400e-003		3.7200e-003	3.7200e-003	0.0000	6.2071	6.2071	1.8400e-003	0.0000	6.2457
Paving	8.3000e-004					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	7.2700e-003	0.0660	0.0454	7.0000e-005		4.0400e-003	4.0400e-003		3.7200e-003	3.7200e-003	0.0000	6.2071	6.2071	1.8400e-003	0.0000	6.2457

3.5 Paving - 2016

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	2.8000e-004	4.1000e-004	4.3200e-003	1.0000e-005	7.1000e-004	1.0000e-005	7.2000e-004	1.9000e-004	1.0000e-005	2.0000e-004	0.0000	0.6950	0.6950	4.0000e-005	0.0000	0.6959
Total	2.8000e-004	4.1000e-004	4.3200e-003	1.0000e-005	7.1000e-004	1.0000e-005	7.2000e-004	1.9000e-004	1.0000e-005	2.0000e-004	0.0000	0.6950	0.6950	4.0000e-005	0.0000	0.6959

3.6 Architectural Coating - 2016

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	0.2880					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	1.8400e-003	0.0119	9.4200e-003	1.0000e-005		9.8000e-004	9.8000e-004		9.8000e-004	9.8000e-004	0.0000	1.2766	1.2766	1.5000e-004	0.0000	1.2798
Total	0.2899	0.0119	9.4200e-003	1.0000e-005		9.8000e-004	9.8000e-004		9.8000e-004	9.8000e-004	0.0000	1.2766	1.2766	1.5000e-004	0.0000	1.2798

3.6 Architectural Coating - 2016

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	2.0000e-004	2.9000e-004	2.9900e-003	1.0000e-005	4.9000e-004	0.0000	5.0000e-004	1.3000e-004	0.0000	1.4000e-004	0.0000	0.4812	0.4812	3.0000e-005	0.0000	0.4818
Total	2.0000e-004	2.9000e-004	2.9900e-003	1.0000e-005	4.9000e-004	0.0000	5.0000e-004	1.3000e-004	0.0000	1.4000e-004	0.0000	0.4812	0.4812	3.0000e-005	0.0000	0.4818

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	0.2880					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	1.8400e-003	0.0119	9.4200e-003	1.0000e-005		9.8000e-004	9.8000e-004		9.8000e-004	9.8000e-004	0.0000	1.2766	1.2766	1.5000e-004	0.0000	1.2798
Total	0.2899	0.0119	9.4200e-003	1.0000e-005		9.8000e-004	9.8000e-004		9.8000e-004	9.8000e-004	0.0000	1.2766	1.2766	1.5000e-004	0.0000	1.2798

3.6 Architectural Coating - 2016

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	2.0000e-004	2.9000e-004	2.8900e-003	1.0000e-005	4.9000e-004	0.0000	5.0000e-004	1.3000e-004	0.0000	1.4000e-004	0.0000	0.4812	0.4812	3.0000e-005	0.0000	0.4818
Total	2.0000e-004	2.9000e-004	2.8900e-003	1.0000e-005	4.9000e-004	0.0000	5.0000e-004	1.3000e-004	0.0000	1.4000e-004	0.0000	0.4812	0.4812	3.0000e-005	0.0000	0.4818

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	0.1908	0.5976	2.2895	5.1800e-003	0.3461	8.1900e-003	0.3542	0.0927	7.5300e-003	0.1002	0.0000	414.8209	414.8209	0.0177	0.0000	415.1932
Unmitigated	0.1908	0.5976	2.2895	5.1800e-003	0.3461	8.1900e-003	0.3542	0.0927	7.5300e-003	0.1002	0.0000	414.8209	414.8209	0.0177	0.0000	415.1932

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Apartments Low Rise	267.26	267.26	267.26	913,268	913,268
Parking Lot	0.00	0.00	0.00		
Total	267.26	267.26	267.26	913,268	913,268

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
Apartments Low Rise	14.70	5.90	8.70	40.20	19.20	40.60	86	11	3
Parking Lot	16.60	8.40	6.90	0.00	0.00	0.00	0	0	0

LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
0.533598	0.058434	0.178244	0.125508	0.038944	0.006283	0.016425	0.031066	0.002453	0.003157	0.003691	0.000543	0.001655

5.0 Energy Detail

5.2 Fleet Mix

Historical Energy Use: N

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Electricity Mitigated						0.0000	0.0000		0.0000	0.0000	0.0000	54.3121	54.3121	2.5000e-003	5.2000e-004	54.5246
Electricity Unmitigated						0.0000	0.0000		0.0000	0.0000	0.0000	54.3121	54.3121	2.5000e-003	5.2000e-004	54.5246
NaturalGas Mitigated	2.7300e-003	0.0234	9.9400e-003	1.5000e-004		1.8900e-003	1.8900e-003		1.8900e-003	1.8900e-003	0.0000	27.0423	27.0423	5.2000e-004	5.0000e-004	27.2068
NaturalGas Unmitigated	2.7300e-003	0.0234	9.9400e-003	1.5000e-004		1.8900e-003	1.8900e-003		1.8900e-003	1.8900e-003	0.0000	27.0423	27.0423	5.2000e-004	5.0000e-004	27.2068

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
Apartments Low Rise	506753	2.7300e-003	0.0234	9.9400e-003	1.5000e-004		1.8900e-003	1.8900e-003		1.8900e-003	1.8900e-003	0.0000	27.0423	27.0423	5.2000e-004	5.0000e-004	27.2068
Parking Lot	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total		2.7300e-003	0.0234	9.9400e-003	1.5000e-004		1.8900e-003	1.8900e-003		1.8900e-003	1.8900e-003	0.0000	27.0423	27.0423	5.2000e-004	5.0000e-004	27.2068

5.2 Energy by Land Use - NaturalGas

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
Apartments Low Rise	506753	2.7300e-003	0.0234	9.9400e-003	1.5000e-004		1.8900e-003	1.8900e-003		1.8900e-003	1.8900e-003	0.0000	27.0423	27.0423	5.2000e-004	5.0000e-004	27.2068
Parking Lot	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total		2.7300e-003	0.0234	9.9400e-003	1.5000e-004		1.8900e-003	1.8900e-003		1.8900e-003	1.8900e-003	0.0000	27.0423	27.0423	5.2000e-004	5.0000e-004	27.2068

5.3 Energy by Land Use - Electricity

Unmitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Apartments Low Rise	185642	47.4012	2.1800e-003	4.5000e-004	47.5867
Parking Lot	24149.7	6.9108	3.2000e-004	7.0000e-005	6.9379
Total		54.3121	2.5000e-003	5.2000e-004	54.5246

5.3 Energy by Land Use - Electricity

Mitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Apartments Low Rise	165642	47.4012	2.1800e-003	4.5000e-004	47.5867
Parking Lot	24149.7	6.9108	3.2000e-004	7.0000e-005	6.9379
Total		54.3121	2.5000e-003	5.2000e-004	54.5246

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	0.4004	5.6300e-003	0.4810	3.0000e-005		2.5900e-003	2.5900e-003		2.5900e-003	2.5900e-003	0.0000	0.7749	0.7749	7.9000e-004	0.0000	0.7915
Unmitigated	0.4004	5.6300e-003	0.4810	3.0000e-005		2.5900e-003	2.5900e-003		2.5900e-003	2.5900e-003	0.0000	0.7749	0.7749	7.9000e-004	0.0000	0.7915

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.0288					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.3565					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Hearth	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	0.0152	5.6300e-003	0.4810	3.0000e-005		2.5900e-003	2.5900e-003		2.5900e-003	2.5900e-003	0.0000	0.7749	0.7749	7.9000e-004	0.0000	0.7915
Total	0.4004	5.6300e-003	0.4810	3.0000e-005		2.5900e-003	2.5900e-003		2.5900e-003	2.5900e-003	0.0000	0.7749	0.7749	7.9000e-004	0.0000	0.7915

6.2 Area by SubCategory

Mitigated

SubCategory	tons/yr										MT/yr					
	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Architectural Coating	0.0288					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.3565					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Hearth	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	0.0152	5.6300e-003	0.4810	3.0000e-005		2.5900e-003	2.5900e-003		2.5900e-003	2.5900e-003	0.0000	0.7749	0.7749	7.9000e-004	0.0000	0.7915
Total	0.4004	5.6300e-003	0.4810	3.0000e-005		2.5900e-003	2.5900e-003		2.5900e-003	2.5900e-003	0.0000	0.7749	0.7749	7.9000e-004	0.0000	0.7915

7.0 Water Detail

7.1 Mitigation Measures Water

Category	Total CO2	CH4	N2O	CO2e
	MT/yr			
Mitigated	18.1257	0.0984	2.4700e-003	20.9571
Unmitigated	18.1257	0.0985	2.4700e-003	20.9587

7.2 Water by Land Use

Unmitigated

Land Use	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
	Mgal	MT/yr			
Apartments Low Rise	2.99709 / 1.88947	18.1257	0.0985	2.4700e-003	20.9587
Parking Lot	0 / 0	0.0000	0.0000	0.0000	0.0000
Total		18.1257	0.0985	2.4700e-003	20.9587

Mitigated

Land Use	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
	Mgal	MT/yr			
Apartments Low Rise	2.99709 / 1.88947	18.1257	0.0984	2.4700e-003	20.9571
Parking Lot	0 / 0	0.0000	0.0000	0.0000	0.0000
Total		18.1257	0.0984	2.4700e-003	20.9571

8.0 Waste Detail

8.1 Mitigation Measures Waste

Institute Recycling and Composting Services

Category/Year

	Total CO2	CH4	N2O	CO2e
	MT/yr			
Mitigated	1.8040	0.1066	0.0000	4.0429
Unmitigated	4.2953	0.2538	0.0000	9.6260

8.2 Waste by Land Use

Unmitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Apartments Low Rise	21.16	4.2953	0.2538	0.0000	9.6260
Parking Lot	0	0.0000	0.0000	0.0000	0.0000
Total		4.2953	0.2538	0.0000	9.6260

8.2 Waste by Land Use

Mitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Apartments Low Rise	8.8872	1.8040	0.1066	0.0000	4.0429
Parking Lot	0	0.0000	0.0000	0.0000	0.0000
Total		1.8040	0.1066	0.0000	4.0429

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type

10.0 Vegetation

Park at Ladyface Mountain

Los Angeles-South Coast County, Winter

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Parking Lot	0.63	Acre	0.63	27,442.80	0
Apartments Low Rise	46.00	Dwelling Unit	1.00	71,206.00	92

1.2 Other Project Characteristics

Urbanization	Urban	Wind Speed (m/s)	2.2	Precipitation Freq (Days)	33
Climate Zone	8			Operational Year	2016
Utility Company	Southern California Edison				
CO2 Intensity (lb/MWhr)	630.89	CH4 Intensity (lb/MWhr)	0.029	N2O Intensity (lb/MWhr)	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics -

Land Use - Total building footprint = 1 acre.
Building square footage = 71,206 square feet.
Acreage of paved surface (parking lot + driveways) assumed to be 0.63 acres.

Construction Phase - Overall construction schedule anticipated to be 14 months, including 2 months for grading.

Trips and VMT - Hauling length for grading = 6 miles to Calabasas Landfill

Grading - 1,910 cubic yards of materials to be exported from site during grading

Woodstoves - Assumed no wood stoves or fireplaces.

Waste Mitigation - Diversion rate of 58%.

Vehicle Trips - Trip rate: ITE Code 230 = 5.81 trips/day

Construction Off-road Equipment Mitigation -

Table Name	Column Name	Default Value	New Value
tblConstructionPhase	NumDays	200.00	220.00
tblConstructionPhase	NumDays	4.00	60.00
tblConstructionPhase	NumDays	2.00	5.00
tblFireplaces	NumberGas	39.10	0.00
tblFireplaces	NumberNoFireplace	4.60	0.00
tblFireplaces	NumberWood	2.30	0.00
tblGrading	AcresOfGrading	22.50	1.50
tblGrading	AcresOfGrading	2.50	1.00
tblGrading	MaterialExported	0.00	1,910.00
tblLandUse	LandUseSquareFeet	46,000.00	71,206.00
tblLandUse	LotAcreage	2.88	1.00
tblLandUse	Population	132.00	92.00
tblProjectCharacteristics	OperationalYear	2014	2016
tblTripsAndVMT	HaulingTripLength	20.00	6.00
tblVehicleTrips	ST_TR	7.16	5.81
tblVehicleTrips	SU_TR	6.07	5.81
tblVehicleTrips	WD_TR	6.59	5.81
tblWoodstoves	NumberCatalytic	2.30	0.00
tblWoodstoves	NumberNoncatalytic	2.30	0.00

2.0 Emissions Summary

2.1 Overall Construction (Maximum Daily Emission)

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2015	3.9267	26.9436	19.4468	0.0301	5.5709	1.5052	7.0388	2.9431	1.4529	4.2936	0.0000	2,794.3736	2,794.3736	0.5437	0.0000	2,805.7913
2016	58.0128	21.6329	18.7526	0.0301	0.5591	1.3828	1.9420	0.1494	1.3334	1.4827	0.0000	2,765.5101	2,765.5101	0.4815	0.0000	2,775.6219
Total	61.9395	48.5765	38.1994	0.0602	6.1300	2.8880	8.9807	3.0924	2.7862	5.7763	0.0000	5,559.8838	5,559.8838	1.0252	0.0000	5,581.4132

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2015	3.9267	26.9436	19.4468	0.0301	2.2272	1.5052	3.6951	1.1623	1.4529	2.5128	0.0000	2,794.3736	2,794.3736	0.5437	0.0000	2,805.7913
2016	58.0128	21.6329	18.7526	0.0301	0.5591	1.3828	1.9420	0.1494	1.3334	1.4827	0.0000	2,765.5101	2,765.5101	0.4815	0.0000	2,775.6219
Total	61.9395	48.5765	38.1994	0.0602	2.7863	2.8880	5.6371	1.3116	2.7862	3.9955	0.0000	5,559.8837	5,559.8837	1.0252	0.0000	5,581.4132

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	0.00	0.00	0.00	0.00	54.55	0.00	37.23	57.59	0.00	30.83	0.00	0.00	0.00	0.00	0.00	0.00

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	2.2323	0.0450	3.8480	2.0000e-004		0.0208	0.0208		0.0208	0.0208	0.0000	6.8335	6.8335	6.9600e-003	0.0000	6.9798
Energy	0.0150	0.1280	0.0545	8.2000e-004		0.0103	0.0103		0.0103	0.0103		163.3368	163.3368	3.1300e-003	2.9900e-003	164.3309
Mobile	1.1017	3.2213	12.5094	0.0282	1.9389	0.0452	1.9840	0.5184	0.0415	0.5599		2,483.822 2	2,483.822 2	0.1076		2,486.081 1
Total	3.3489	3.3942	16.4118	0.0292	1.9389	0.0763	2.0151	0.5184	0.0726	0.5910	0.0000	2,653.992 6	2,653.992 6	0.1177	2.9900e-003	2,657.391 8

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	2.2323	0.0450	3.8480	2.0000e-004		0.0208	0.0208		0.0208	0.0208	0.0000	6.8335	6.8335	6.9600e-003	0.0000	6.9798
Energy	0.0150	0.1280	0.0545	8.2000e-004		0.0103	0.0103		0.0103	0.0103		163.3368	163.3368	3.1300e-003	2.9900e-003	164.3309
Mobile	1.1017	3.2213	12.5094	0.0282	1.9389	0.0452	1.9840	0.5184	0.0415	0.5599		2,483.822 2	2,483.822 2	0.1076		2,486.081 1
Total	3.3489	3.3942	16.4118	0.0292	1.9389	0.0763	2.0151	0.5184	0.0726	0.5910	0.0000	2,653.992 6	2,653.992 6	0.1177	2.9900e-003	2,657.391 8

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Percent Reduction	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Site Preparation	Site Preparation	1/1/2015	1/7/2015	5	5	
2	Grading	Grading	1/8/2015	4/1/2015	5	60	
3	Building Construction	Building Construction	4/2/2015	2/3/2016	5	220	
4	Paving	Paving	2/4/2016	2/17/2016	5	10	
5	Architectural Coating	Architectural Coating	2/18/2016	3/2/2016	5	10	

Acres of Grading (Site Preparation Phase): 1

Acres of Grading (Grading Phase): 1.5

Acres of Paving: 0

Residential Indoor: 144,192; Residential Outdoor: 48,064; Non-Residential Indoor: 1,235; Non-Residential Outdoor: 412 (Architectural Coating – sqft)

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Site Preparation	Graders	1	8.00	174	0.41
Site Preparation	Rubber Tired Dozers	1	7.00	255	0.40
Site Preparation	Tractors/Loaders/Backhoes	1	8.00	97	0.37
Grading	Graders	1	6.00	174	0.41
Grading	Rubber Tired Dozers	1	6.00	255	0.40
Grading	Tractors/Loaders/Backhoes	1	7.00	97	0.37
Building Construction	Cranes	1	6.00	226	0.29
Building Construction	Forklifts	1	6.00	89	0.20
Building Construction	Generator Sets	1	8.00	84	0.74
Building Construction	Tractors/Loaders/Backhoes	1	6.00	97	0.37
Building Construction	Welders	3	8.00	46	0.45
Paving	Cement and Mortar Mixers	1	6.00	9	0.56
Paving	Pavers	1	6.00	125	0.42
Paving	Paving Equipment	1	8.00	130	0.36
Paving	Rollers	1	7.00	80	0.38
Paving	Tractors/Loaders/Backhoes	1	8.00	97	0.37
Architectural Coating	Air Compressors	1	6.00	78	0.48

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Site Preparation	3	8.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Grading	3	8.00	0.00	239.00	14.70	6.90	6.00	LD_Mix	HDT_Mix	HHDT
Building Construction	7	45.00	9.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Paving	5	13.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Architectural Coating	1	9.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Water Exposed Area

Clean Paved Roads

3.2 Site Preparation - 2015

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					5.4814	0.0000	5.4814	2.9194	0.0000	2.9194			0.0000			0.0000
Off-Road	2.5362	26.8886	17.0107	0.0171		1.4671	1.4671		1.3497	1.3497		1,801.7440	1,801.7440	0.5379		1,813.0398
Total	2.5362	26.8886	17.0107	0.0171	5.4814	1.4671	6.9485	2.9194	1.3497	4.2690		1,801.7440	1,801.7440	0.5379		1,813.0398

3.2 Site Preparation - 2015

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0411	0.0550	0.5764	1.1000e-003	0.0894	8.9000e-004	0.0903	0.0237	8.2000e-004	0.0245		96.0086	96.0086	5.8000e-003		96.1305
Total	0.0411	0.0550	0.5764	1.1000e-003	0.0894	8.9000e-004	0.0903	0.0237	8.2000e-004	0.0245		96.0086	96.0086	5.8000e-003		96.1305

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					2.1378	0.0000	2.1378	1.1386	0.0000	1.1386			0.0000			0.0000
Off-Road	2.5362	26.8886	17.0107	0.0171		1.4671	1.4671		1.3497	1.3497	0.0000	1,801.744 0	1,801.744 0	0.5379		1,813.039 8
Total	2.5362	26.8886	17.0107	0.0171	2.1378	1.4671	3.6048	1.1386	1.3497	2.4882	0.0000	1,801.744 0	1,801.744 0	0.5379		1,813.039 8

3.2 Site Preparation - 2015

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0411	0.0550	0.5764	1.1000e-003	0.0894	8.9000e-004	0.0903	0.0237	8.2000e-004	0.0245		96.0086	96.0086	5.8000e-003		96.1305
Total	0.0411	0.0550	0.5764	1.1000e-003	0.0894	8.9000e-004	0.0903	0.0237	8.2000e-004	0.0245		96.0086	96.0086	5.8000e-003		96.1305

3.3 Grading - 2015

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					4.5467	0.0000	4.5467	2.4861	0.0000	2.4861			0.0000			0.0000
Off-Road	2.0666	21.9443	14.0902	0.0141		1.1968	1.1968		1.1011	1.1011		1,479.800 0	1,479.800 0	0.4418		1,489.077 4
Total	2.0666	21.9443	14.0902	0.0141	4.5467	1.1968	5.7435	2.4861	1.1011	3.5871		1,479.800 0	1,479.800 0	0.4418		1,489.077 4

3.3 Grading - 2015

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0488	0.4522	0.7340	9.4000e-004	0.0209	6.5300e-003	0.0274	5.7200e-003	6.0100e-003	0.0117		95.3801	95.3801	9.2000e-004		95.3994
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0411	0.0550	0.5784	1.1000e-003	0.0894	8.9000e-004	0.0903	0.0237	8.2000e-004	0.0245		96.0086	96.0086	5.8000e-003		96.1305
Total	0.0899	0.5072	1.3104	2.0400e-003	0.1103	7.4200e-003	0.1177	0.0294	6.8300e-003	0.0363		191.3887	191.3887	6.7200e-003		191.5299

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					1.7732	0.0000	1.7732	0.9696	0.0000	0.9696			0.0000			0.0000
Off-Road	2.0868	21.9443	14.0902	0.0141		1.1968	1.1968		1.1011	1.1011	0.0000	1,479.800 0	1,479.800 0	0.4418		1,489.077 4
Total	2.0868	21.9443	14.0902	0.0141	1.7732	1.1968	2.9700	0.9696	1.1011	2.0708	0.0000	1,479.800 0	1,479.800 0	0.4418		1,489.077 4

3.3 Grading - 2015

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0488	0.4522	0.7340	9.4000e-004	0.0209	6.5300e-003	0.0274	5.7200e-003	6.0100e-003	0.0117		95.3801	95.3801	9.2000e-004		95.3994
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0411	0.0550	0.5784	1.1000e-003	0.0894	8.9000e-004	0.0903	0.0237	8.2000e-004	0.0245		96.0086	96.0086	5.8000e-003		96.1305
Total	0.0899	0.5072	1.3104	2.0400e-003	0.1103	7.4200e-003	0.1177	0.0294	6.8300e-003	0.0363		191.3887	191.3887	6.7200e-003		191.5299

3.4 Building Construction - 2015

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	3.6000	21.5642	15.0041	0.0220		1.4851	1.4851		1.4344	1.4344		2,055.624 7	2,055.624 7	0.4741		2,065.581 2
Total	3.6000	21.5642	15.0041	0.0220		1.4851	1.4851		1.4344	1.4344		2,055.624 7	2,055.624 7	0.4741		2,065.581 2

3.4 Building Construction - 2015

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0954	0.9129	1.2006	1.9700e-003	0.0561	0.0151	0.0712	0.0160	0.0139	0.0299		198.7006	198.7006	1.6500e-003		198.7353
Worker	0.2313	0.3094	3.2421	6.1800e-003	0.5030	5.0300e-003	0.5080	0.1334	4.6000e-003	0.1380		540.0484	540.0484	0.0327		540.7341
Total	0.3267	1.2222	4.4427	8.1500e-003	0.5591	0.0201	0.5792	0.1494	0.0185	0.1679		738.7490	738.7490	0.0343		739.4694

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	3.6000	21.5642	15.0041	0.0220		1.4851	1.4851		1.4344	1.4344	0.0000	2,055.6247	2,055.6247	0.4741		2,065.5812
Total	3.6000	21.5642	15.0041	0.0220		1.4851	1.4851		1.4344	1.4344	0.0000	2,055.6247	2,055.6247	0.4741		2,065.5812

3.4 Building Construction - 2015

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0954	0.9129	1.2006	1.9700e-003	0.0561	0.0151	0.0712	0.0160	0.0139	0.0299		198.7006	198.7006	1.6500e-003		198.7353
Worker	0.2313	0.3094	3.2421	6.1800e-003	0.5030	5.0300e-003	0.5080	0.1334	4.6000e-003	0.1380		540.0484	540.0484	0.0327		540.7341
Total	0.3267	1.2222	4.4427	8.1500e-003	0.5591	0.0201	0.5792	0.1494	0.0185	0.1679		738.7490	738.7490	0.0343		739.4694

3.4 Building Construction - 2016

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	3.2915	20.5459	14.7074	0.0220		1.3656	1.3656		1.3176	1.3176		2,046.9432	2,046.9432	0.4499		2,056.3913
Total	3.2915	20.5459	14.7074	0.0220		1.3656	1.3656		1.3176	1.3176		2,046.9432	2,046.9432	0.4499		2,056.3913

3.4 Building Construction - 2016

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0837	0.8074	1.1140	1.9600e-003	0.0561	0.0124	0.0686	0.0160	0.0114	0.0274		196.5529	196.5529	1.5000e-003		196.5843
Worker	0.2085	0.2797	2.9312	6.1700e-003	0.5030	4.7600e-003	0.5078	0.1334	4.3700e-003	0.1378		522.0140	522.0140	0.0301		522.6462
Total	0.2922	1.0871	4.0452	8.1300e-003	0.5591	0.0172	0.5763	0.1494	0.0158	0.1652		718.5669	718.5669	0.0316		719.2306

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	3.2915	20.5459	14.7074	0.0220		1.3656	1.3656		1.3176	1.3176	0.0000	2,046.9432	2,046.9432	0.4499		2,056.3913
Total	3.2915	20.5459	14.7074	0.0220		1.3656	1.3656		1.3176	1.3176	0.0000	2,046.9432	2,046.9432	0.4499		2,056.3913

3.4 Building Construction - 2016

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0837	0.8074	1.1140	1.9600e-003	0.0561	0.0124	0.0686	0.0160	0.0114	0.0274		196.5529	196.5529	1.5000e-003		196.5843
Worker	0.2085	0.2797	2.9312	6.1700e-003	0.5030	4.7600e-003	0.5078	0.1334	4.3700e-003	0.1378		522.0140	522.0140	0.0301		522.6462
Total	0.2922	1.0871	4.0452	8.1300e-003	0.5591	0.0172	0.5763	0.1494	0.0158	0.1652		718.5669	718.5669	0.0316		719.2306

3.5 Paving - 2016

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.2872	13.2076	9.0880	0.0133		0.8075	0.8075		0.7438	0.7438		1,368.4366	1,368.4366	0.4053		1,376.9473
Paving	0.1651					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	1.4523	13.2076	9.0880	0.0133		0.8075	0.8075		0.7438	0.7438		1,368.4366	1,368.4366	0.4053		1,376.9473

3.5 Paving - 2016

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0602	0.0808	0.8468	1.7800e-003	0.1453	1.3700e-003	0.1467	0.0385	1.2600e-003	0.0398		150.8040	150.8040	8.7000e-003		150.9857
Total	0.0602	0.0808	0.8468	1.7800e-003	0.1453	1.3700e-003	0.1467	0.0385	1.2600e-003	0.0398		150.8040	150.8040	8.7000e-003		150.9857

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.2872	13.2076	9.0880	0.0133		0.8075	0.8075		0.7438	0.7438	0.0000	1,368.436 6	1,368.436 6	0.4053		1,376.947 3
Paving	0.1651					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	1.4523	13.2076	9.0880	0.0133		0.8075	0.8075		0.7438	0.7438	0.0000	1,368.436 6	1,368.436 6	0.4053		1,376.947 3

3.5 Paving - 2016

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0602	0.0808	0.8468	1.7800e-003	0.1453	1.3700e-003	0.1467	0.0385	1.2600e-003	0.0398		150.8040	150.8040	8.7000e-003		150.9857
Total	0.0602	0.0808	0.8468	1.7800e-003	0.1453	1.3700e-003	0.1467	0.0385	1.2600e-003	0.0398		150.8040	150.8040	8.7000e-003		150.9857

3.6 Architectural Coating - 2016

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	57.6026					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.3685	2.3722	1.8839	2.9700e-003		0.1966	0.1966		0.1966	0.1966		281.4481	281.4481	0.0332		282.1449
Total	57.9711	2.3722	1.8839	2.9700e-003		0.1966	0.1966		0.1966	0.1966		281.4481	281.4481	0.0332		282.1449

3.6 Architectural Coating - 2016

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0417	0.0559	0.5862	1.2300e-003	0.1006	9.5000e-004	0.1016	0.0267	8.7000e-004	0.0276		104.4028	104.4028	6.0200e-003		104.5293
Total	0.0417	0.0559	0.5862	1.2300e-003	0.1006	9.5000e-004	0.1016	0.0267	8.7000e-004	0.0276		104.4028	104.4028	6.0200e-003		104.5293

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	57.8026					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.3685	2.3722	1.8839	2.9700e-003		0.1966	0.1966		0.1966	0.1966	0.0000	281.4481	281.4481	0.0332		282.1449
Total	57.9711	2.3722	1.8839	2.9700e-003		0.1966	0.1966		0.1966	0.1966	0.0000	281.4481	281.4481	0.0332		282.1449

3.6 Architectural Coating - 2016

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0417	0.0559	0.5862	1.2300e-003	0.1006	9.5000e-004	0.1016	0.0267	8.7000e-004	0.0276		104.4028	104.4028	6.0200e-003		104.5293
Total	0.0417	0.0559	0.5862	1.2300e-003	0.1006	9.5000e-004	0.1016	0.0267	8.7000e-004	0.0276		104.4028	104.4028	6.0200e-003		104.5293

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	1.1017	3.2213	12.5094	0.0282	1.9389	0.0452	1.9840	0.5184	0.0415	0.5599		2,483.8222	2,483.8222	0.1076		2,486.0611
Unmitigated	1.1017	3.2213	12.5094	0.0282	1.9389	0.0452	1.9840	0.5184	0.0415	0.5599		2,483.8222	2,483.8222	0.1076		2,486.0611

4.2 Trip Summary Information

Land Use	Average Daily Trip Rate			Unmitigated	Mitigated
	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Apartments Low Rise	267.26	267.26	267.26	913,268	913,268
Parking Lot	0.00	0.00	0.00		
Total	267.26	267.26	267.26	913,268	913,268

4.3 Trip Type Information

Land Use	Miles			Trip %			Trip Purpose %		
	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
Apartments Low Rise	14.70	5.90	5.70	40.20	19.20	40.60	86	11	3
Parking Lot	16.60	8.40	6.90	0.00	0.00	0.00	0	0	0

LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
0.533598	0.058434	0.178244	0.125508	0.038944	0.006283	0.016425	0.031066	0.002453	0.003157	0.003691	0.000543	0.001655

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
NaturalGas Mitigated	0.0150	0.1280	0.0545	8.2000e-004		0.0103	0.0103		0.0103	0.0103		163.3368	163.3368	3.1300e-003	2.9900e-003	164.3309
NaturalGas Unmitigated	0.0150	0.1280	0.0545	8.2000e-004		0.0103	0.0103		0.0103	0.0103		163.3368	163.3368	3.1300e-003	2.9900e-003	164.3309

5.2 Energy by Land Use - NaturalGas

Unmitigated

Land Use	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
	kBTU/yr	lb/day											lb/day				
Apartments Low Rise	1388.36	0.0150	0.1280	0.0545	8.2000e-004		0.0103	0.0103		0.0103	0.0103		163.3368	163.3368	3.1300e-003	2.9900e-003	164.3309
Parking Lot	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Total		0.0150	0.1280	0.0545	8.2000e-004		0.0103	0.0103		0.0103	0.0103		163.3368	163.3368	3.1300e-003	2.9900e-003	164.3309

5.2 Energy by Land Use - NaturalGas

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
Apartments Low Rise	1.38838	0.0150	0.1280	0.0545	8.2000e-004		0.0103	0.0103		0.0103	0.0103		163.3368	163.3368	3.1300e-003	2.9900e-003	164.3309
Parking Lot	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Total		0.0150	0.1280	0.0545	8.2000e-004		0.0103	0.0103		0.0103	0.0103		163.3368	163.3368	3.1300e-003	2.9900e-003	164.3309

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	2.2323	0.0450	3.8480	2.0000e-004		0.0208	0.0208		0.0208	0.0208	0.0000	6.8335	6.8335	6.9600e-003	0.0000	6.9798
Unmitigated	2.2323	0.0450	3.8480	2.0000e-004		0.0208	0.0208		0.0208	0.0208	0.0000	6.8335	6.8335	6.9600e-003	0.0000	6.9798

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.1578					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	1.9533					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Hearth	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	0.1212	0.0450	3.8480	2.0000e-004		0.0208	0.0208		0.0208	0.0208		6.8335	6.8335	6.9600e-003		6.9798
Total	2.2323	0.0450	3.8480	2.0000e-004		0.0208	0.0208		0.0208	0.0208	0.0000	6.8335	6.8335	6.9600e-003	0.0000	6.9798

6.2 Area by SubCategory

Mitigated

SubCategory	tons/yr															
	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Architectural Coating	0.1578					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	1.9533					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Hearth	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	0.1212	0.0450	3.8480	2.0000e-004		0.0208	0.0208		0.0208	0.0208		6.8335	6.8335	6.9600e-003		6.9798
Total	2.2323	0.0450	3.8480	2.0000e-004		0.0208	0.0208		0.0208	0.0208	0.0000	6.8335	6.8335	6.9600e-003	0.0000	6.9798

7.0 Water Detail

7.1 Mitigation Measures Water

8.0 Waste Detail

8.1 Mitigation Measures Waste

Institute Recycling and Composting Services

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type

10.0 Vegetation

The Oak Collaborative

P. O. Box 1752 Thousand Oaks, Ca. 91358 (805) 340-1260

OAK TREE REPORT

AGOURA HILLS SENIOR HOUSING

September 1, 2013

RCI Builders
2985 E. Hillcrest Drive, Suite 107
Thousand Oaks, California 91362

Attn.: Steve Rice

SUBJECT SITE

AGOURA HILLS SENIOR HOUSING
PARCEL 2 OF PARCEL MAP 15762 (TT 71742)
IN THE CITY OF AGOURA HILLS, CALIFORNIA

GENERAL STATEMENT

Between February 18, 2012 and March 24, 2012, a new Oak Tree "survey" was conducted at the Subject Site. A ground level field inventory and external details (caliper size, health and physical and aesthetic character) were recorded, based upon the existing site conditions. Originally, ninety-three (93) Oak Trees were "surveyed" in 2007 and evaluated for their present conditions based on "owner's" concern for the general health and potential impacts from proposed new site clearing, grading and building construction for a Senior Housing Project. The new "survey" now includes the condition and disposition of one hundred seventy-five (175) Oak Trees. Of the original ninety-three Oak Trees "surveyed", sixty-six were Quercus agrifolia (Coast Live Oak and twenty-seven were Quercus lobata (Valley Oak). Since the original "survey", an additional eighty-two (82) Oak Tree seedlings have grown-to-size (2" or greater trunk diameter) making the total of one hundred seventy-five (175) Oak Trees now "protected" by City Ordinance. Of the one hundred seventy-five (175) Oak Trees, seventy two (72) are Quercus agrifolia (Coast Live Oak) and one hundred three (103) are Quercus lobata (Valley Oak). Three of the Trees are Landmark Trees of "Heritage Oak Status", which are those with a forty-eight inch (48") or greater trunk diameter. The results of the "survey" are shown on the attached Tree Evaluation Forms, EXISTING TREE DRIPLINE EXHIBIT and/or as outlined herein.

The Oak Trees have been "tagged" with aluminum flags at 4'-6" above grade with their corresponding numbers on their northerly sides, for identification purposes. Diameter measurements were taken at 3'-6" (or 42") per City Ordinance. The conditions of the Trees are itemized herein, on the Tree Evaluation forms (DB), Photo Record and their Plan graphics represented on the EXISTING TREE DRIPLINE EXHIBIT.

PURPOSE AND SCOPE

The purpose and scope of this report, in accordance with the City of Agoura Hills Zoning Ordinance #9657 and #9657.5, Appendix A, **Oak Tree Preservation Guidelines**, is to identify native and "planted" Oak species and evaluate their present condition. A report on impacts, if known, and proposed mitigation measures is required, for submittal to the City for review by the Planning Department, if any work is planned to take place in or within the "PROTECTED ZONE" of any Quercus genus two (2") inches, and over, in diameter at 3'-6" above grade.

SITE CONDITIONS

The site topography is gently rolling to steeply sloping downward from southeast to northwest, toward a small southwest to northeast arroyo near the western boundary of the site. Another small southeast to northwest arroyo flows along the eastern boundary and previously constructed storm water retention area, at the northeast quarter of the site, was created during the installation of Agoura Road. The high point of the property is located at the southeast corner of the site, the low points where the two culverts allow runoff to pass under Agoura Road. The property is bordered by undeveloped land, generally, to the east and south, a mulit-family project to the west and Agoura Road to the north. Other common flora existing at the site and adjacent thereto, include Baccharis, Elymus, Eriogonum, Poison Oak, Rhamnus, Sambucus, Sumac, sage scrub, disturbed grassland and, of course, Mustard & Wild Oats. The Oak Trees recorded in this Report are located on the south side of Agoura Road, across from the Farmers Insurance facility in the "West Agoura Road Area" near the City of Agoura Hills western boundary. A few reported-on Oak Trees, just off-site within the 250' reporting distance, are perceived to be vulnerable to construction activities (unguarded) and are included in this Report. Additional Oak Trees are located off-site, within the 250' reporting distance, which are generally to the east and south, but those are "guarded" by the trees recorded as to remain in place in this Report. Therefore, those off-site Trees are not included in this Report. Each Tree included in this Report has been "tagged" with a numbered aluminum flag on its northerly side, at 4'-6" above grade, for identification purposes. No stands of Scrub Oak (Quercus berberidifolia) were observed within the property.

Tree KT-1 was at the northeast corner of the property and has been previously removed for construction of a storm water retention basin. Trees KT-2 thru KT-4, KT-6 thru KT-14 and KT-16 thru KT-16a are on the westerly side of the easterly storm water retention basin area. Tree KT-5 has died and remnants of dead tissue were observed. Tree KT-15 has been vandalized and is missing. Trees KT-17 thru KT-29a are located in the Southeast corner of the site. Trees KT-30 thru KT-38e are along the southerly boundary of the site. The number KT-38b was not used. Trees KT-39a thru KT-48b are in the southerly center of the site. Trees KT-49 thru KT-58a are located in the center of the site. Trees KT-59 thru KT-60c are in the west central area of the site. Trees KT-61 thru KT-68a are along the south side of Agoura Road. Trees KT-66 and KT-67 have been removed by unknown party, apparently for road repairs. Trees KT-69 thru KT-70a are adjacent to the multi-family project in the westerly quadrant of the site. Trees KT-71 thru KT-81 are along the westerly side of the westerly arroyo. Tree KT-82 is to the northwest of Tree KT-60. Trees KT-83 thru KT-95 are located along the central southwesterly boundary of the site. Trees KT-96 thru KT-103 are in the southerly portion of the west central area of the site. Oak Tree grove KT-104 is south of Tree KT-69, along the boundary with the multi-family housing project. Tree KT-105 is in the southerly portion of the east central area of the site.

Most of the Trees are on moderate to steeply sloping terrain, surrounded by disturbed (disc harrowed) grassland and sage scrub habitats. Trees KT-2, KT-17, KT-18, KT-21, KT-23, KT-25, KT-26, KT-28, KT-33, KT-34, KT-35, KT-36, KT-38, KT-39a, KT-49, KT-58, KT-59, KT-60, KT-65, KT-68, KT-69, KT-70, KT-102 and KT-103 are fully matured Oak Trees and exhibit the normal characteristics of those of a mature age, ie., fire damage, minor infestations of pit scale/twig girdler, exudation, exfoliation, broken branch scars, rot, etc. Trees KT-17, KT-23 and KT-26 are considered to be "Heritage Oak Status" or Landmark Trees, as their trunk diameters at 3'-6" are forty-eight inches (48") or greater. Trees KT-3 thru KT-16a, KT-17a thru KT-20, KT-21a thru KT-22, KT-24 thru KT-25a, KT-27 thru KT-27c, KT-29 thru KT-32c, KT-37a thru KT-37b, KT-38a thru KT-38e, KT-39a thru KT-48b, KT-49a thru KT-57a, KT-58a, KT-60a thru KT-64a, KT-65a thru KT-67, KT-70a thru KT-101 and the KT-104 grove thru KT-105 are young Oak Trees with minor maladies for their species.

Eight (8) Trees (KT-62 thru KT-68a) are located in the future Agoura Road street widening alignment, and are stated to be removed. Thirty-eight (38) Trees (KT-4, KT-6, KT-6a, KT-7, KT-8a, KT-8b, KT-8c, KT-8d, KT-27, KT-27a, KT-28, KT-29, KT-29a, KT-71, KT-72, KT-73, KT-73b, KT-73c, KT-74, KT-74a, KT-74b, KT-75, KT-75a, KT-75d, KT-75f, KT-78, KT-78a, KT-78b, KT-104, KT-105) are in areas proposed for site clearing, grading and/or construction activities and are proposed to be removed.

Healthy Trees six inches (6") and under in diameter are proposed to be transplanted on-site, as selected and shown per a to-be-approved Landscape Architectural Plan, by others.

Twenty-five (25) Trees (KT-9, KT-10, KT-11, KT-20, KT-27b, KT-27c, KT-28, KT-50, KT-58, KT-58a, KT-61, KT-69, KT-72a, KT-73a, KT-75b, KT-75c, KT-75e, KT-77a, KT-77c, KT-77d, KT-78c, KT-78d, KT-79, KT-80, KT-81) are proposed to be encroached upon. Along with the remaining Oak Trees not in "harms way", these Trees are proposed to be protected in place.

See EXISTING TREE DRIPLINE EXHIBIT, Oak Tree Evaluation Summary forms and herein for specific notes and comments.

WORK PROCEDURES (AS APPLICABLE)

All work, as applicable, (construction/maintenance activity) around existing Oak Trees is recommended to follow this work procedures program. This program has been developed to minimize the impacts to each Tree and protect them from unscheduled damage and unauthorized treatment.

1. **All work** within the Oak Tree aerial/root ("protected") zone shall be regularly observed by the Oak Tree Preservation Consultant.

2. The extent of all new construction work affecting Oak Trees shall be staked, where applicable, by field survey and reviewed with the Oak Tree Preservation Consultant.

3. Any approved pruning shall be done by a qualified Tree trimmer, and observed by the Oak Tree Preservation Consultant of record.

4. **Hand dig** vertical trench or fence post(s) at the final location to final grade and "bridge-over," move footing/post or cleanly cut and seal with Tree/root seal, as approved by the Oak Tree Preservation Consultant, any and all roots encountered. (This procedure shall protect the root system from unnecessary damage by excavation equipment).

5. All footings for wall construction (as applicable) shall be designed to pro ide minimal impact to the Tree and backfilled with topsoil. Where roots greater in diameter than one (1") inch are encountered, footings must "bridge" over the affected roots.

6. Unless waived, a minimum five (5') foot high temporary chain link fence shall be constructed at the limit of approved work, prior to the commencement of work, to protect the adjacent Trees from further unauthorized damage and remain in place until completion of construction. A Fencing Plan shall be submitted at the reconstruction meeting. The fence must have four (4) warning signs located equidistant from each other around each Tree or group of Trees. For groves of Oak Trees the signs must be no further than fifty (50') feet apart around the grove.

The signs must be two (2') feet square and contain the following language:

WARNING
THIS FENCE SHALL NOT BE REMOVED OR RELOCATED WITHOUT WRITTEN AUTHORIZATION FROM THE CITY OF AGOURA HILLS DEPARTMENT OF PLANNING AND COMMUNITY DEVELOPMENT

Should any work be required within the limit of work, and the temporary fence must be opened, the Oak Tree Preservation Consultant **must** direct **all work** at any time the fence is open.

7. No further work within the aerial/root ("protected") zone shall be done beyond that which was approved, without obtaining written approval prior to proceeding.

8. The area within the chain link fence shall not be used at any time for material or equipment storage or parking.

9. No chemicals or herbicides shall be applied to the soil surface within 100' of an Oak Tree's aerial/root ("protected") zone.

10. Copies of the following shall be maintained on the site during any work to or around the Oak Trees, as applicable:

OAK TREE REPORT
OAK TREE PERMIT
OAK TREE LOCATION MAP
ENGINEERING PLANS
INSPECTION TICKET
OAK TREE PRESERVATION AND GUIDELINES
OAK TREE ORDINANCE
APPROVED SITE PLAN
APPROVED PLANTING AND IRRIGATION PLAN

11. Oak Tree preservation devices, such as air ventilation systems, Tree wells, drains, special paving and branch cabling, if required, must be installed prior to completion of grading and prior to the construction phase.

12. A utilities trenching pathway plan must be submitted prior to completion of grading and prior to the construction phase in order to avoid unnecessary damage to the Tree root systems. The plan shall indicate the routing of all trenching, including, but not limited to storm drains, subdrains, sewers, easements, area drains, gas lines, electrical service, cable TV, water mains, irrigation main lines and any other underground installations.

13. In areas where Trees are in or adjacent to walkways or parking areas, pervious paving shall be employed to mitigate the effects of root air space reduction, as approved.

14. As a part of the required 4:1 mitigation, Oak Tree removals shall be replaced as follows:

Appendix E

Oak Tree Reports

Commercial properties — For dead or hazardous Trees, one (1) thirty-six inch box Oak Tree shall be planted on site for each unhealthy Oak Tree approved for removal. For healthy Trees, two (2) twenty-four inch box specimen Oak Trees and one (1) thirty-six inch box specimen Oak Tree shall be planted on site for each healthy Oak Tree approved for removal. For Landmark Trees (forty-eight inch diameter and larger), a nursery grown Oak Tree of equivalent diameter to the Tree removed or two (2) nursery container grown sixty inch box Oak Trees shall be planted on site for each healthy Oak Tree approved for removal.

Residential properties — For dead or hazardous Trees one (1) thirty-six inch box Oak Tree shall be planted on site for each Tree approved for removal. However, in cases where houses currently exist on the property, the requirement for replacement shall be one (1) fifteen gallon Oak Tree be planted on site for each unhealthy Tree approved for removal. For Landmark Trees (forty-eight inch diameter and larger), one (1) nursery container grown sixty inch box Oak Tree shall be planted on site for each healthy Oak Tree approved for removal.

Agoura Municipal Code 9657.5 C. (c) also states the following:

"In no case shall less than four (4) native oaks be provided for any oak tree removed or relocated."

The Agoura Hills OAK TREE PRESERVATION GUIDELINES, section 10.3 and 10.4 states the following:

"Replacement trees shall be planted in accordance with the procedures established in section V.5 of this resolution (appendix)."

"Unless waived by the department of planning and community development, a refundable security deposit in the amount equal to the cost of the replacement trees shall be deposited in trust with the City of Agoura Hills to guarantee the implementation of section 10.3. The deposit will be refunded upon satisfactory completion of these conditions."

In the case of Trees which are candidates for transplant, a refundable cash deposit in the amount equal to the cost of purchasing an equivalent nursery grown Oak Tree, shall be made with the City. The deposit will be refunded after twelve (12) months if, in the opinion of the City's Oak Tree Consultant, the transplanted Tree has survived and is considered to be in good health. Should the Tree be in marginal health or physical condition, the deposit will be retained for an additional twelve (12) months. At the end of the second twelve month period, should the Tree continue to be in a marginal or poor

health condition, then the Tree shall be removed and replaced with an equivalent nursery grown Oak Tree and the deposit will be retained for at least an additional twelve (12) months.

15. Whenever any construction work is being performed contrary to the provisions of the Oak Tree Permit/Ordinance, a City inspector may issue a written notice to the responsible party, to stop work on the project on which the violation occurred or upon which danger exists. The "Stop Work Order" will state the nature of the violation or danger and no work may proceed until the violation has been rectified and approved by the code enforcement officer or City's Oak Tree Consultant. During any construction and/or treatment, Tree work and impacts must be closely monitored to further mitigate shock symptoms, should they occur. If needed, water must be provided to irrigate the Tree(s) and also to wash the dust from foliage.

AGOURA HILLS MUNICIPAL CODE 9657.5 Oak Tree Permit pp C. 3. And D

"c...That the removal or relocation of the oak tree(s) proposed is necessary because the continued existence at present location(s) prevents the planned improvement or proposed use of the subject property to such an extent that alternative development plans cannot achieve the same permitted density or that the cost of such alternative would be prohibitive; or that the placement of such tree(s) precludes the reasonable and efficient use of such property for a use otherwise authorized; or that the oak tree(s) proposed for removal or relocation interferes with utility services or streets and highways, either within or outside of the subject property, and no reasonable alternative to such interference exists other than removal of the tree(s).

If the applicant has met the above...

PROTECTION

Per paragraph 6 above, to preserve Oak Trees in a construction area, a minimum 5' height chain link fence must be installed at the limit of work, prior to any clearing, grubbing, demolition, construction and/or treatment, in order to protect the sensitive "Z.O.N.E.," during <u>all</u> work operations. The Oak Tree Preservation Consultant of record must "function" as the fence for any work necessary within the Z.O.N.E. fenced area, while directing or observing work in and near any Oak Trees.

Z.O.N.E. = "Zone of Nutraire Endemic" (the area of natural or amended planting medium which may extend to or beyond the dripline of a native tree). An Oak Tree care and maintenance guideline, as provided by the City of Agoura Hills, should be followed, as well as regular monitoring throughout each Tree's life cycle, by a qualified Oak Tree Preservation Specialist/Consultant.

EVALUATION CRITERIA

In evaluating Oak Trees, as with any other Trees, the reporting format records the external observation of the Tree(s) at the time of the "survey," including approximate sizes of trunk, height and spread of the branching system to the outer dripline, surface observation of the Trees' condition and other pertinent information. The <u>Rating</u> designation assigns a health and aesthetic value for each Tree. Ratings range from "A" to "F," with "A" as the indicator of a Tree exhibiting the best condition for the species in the area, and the lower letters indicating lesser values. The "C" value represents an average condition for the species. An "F" rating is a candidate for removal for health or hazard reasons. Plus (+) and minus (-) sub-values are assigned where a clear letter designation is not appropriate. The letter "E" is not used in order to avoid confusion with the term "excellent."

CARE AND SAFETY

It must be noted that the Trees referred to in this report are living organisms, and therefore subject to change. And since internal, crown and subsurface systems could not be investigated, no warranties, neither expressed nor implied, are made that these Trees will be in any condition other than as observed and reported herein, beyond the date of the inventory walk-thru ("survey"). A copy of the OAK TREE CARE AND MAINTENANCE, for the care and maintenance of Oak Trees, is available from the City of Agoura Hills for use in providing guidelines for the "on-going" maintenance of Oak Trees. The preferred maintenance procedure used in caring for native Oak Trees is to promote and encourage proper vigor within the Tree systems. In this way, the natural defenses are better able to ward-off pests and diseases.

CONSTRUCTION AND MAINTENANCE PROCEDURES

According to the "City" Oak Tree Ordinance, all work, should it be necessary, within the "Protected Zone" (that area enclosed by a line five (5') feet beyond the natural "dripline" of the Oak Tree, but not less than fifteen (15') feet from the trunk), shall be done using hand tools under the observation of the Oak Tree Preservation Consultant. This also includes pruning/trimming for clearance. Pruning for aesthetics is not permitted in the Ordinance.

Current maintenance/impacts/treatment procedures for the Oak Trees at Agoura Senior Housing, Parcel Map 15762 (TT 71742), consist of the following (also see Oak Tree Evaluation Summary forms and EXISTING TREE DRIPLINE EXHIBIT):

GENERAL RECOMMENDATIONS:

It is our recommendation that the following treatment(s) to the appropriate Oak Trees be implemented:

Oak Tree Preservation Specialist is to monitor and direct all work near the Trees to remain protected in place.

Remove deadwood from appropriate specimens.

Clean-cut prior pruning/stub-cuts/broken branch scars, as directed.

Clean out trunk and branch cavities and "screen" openings.

Clean and "screen" water traps.

Clean excess fill from base of trunks (without damaging feeder roots), as directed.

Remove "waterspouts" and crossing branches, as directed.

Protect "Duff" areas to allow seedlings to establish.

The "Protected Zone" of all Trees need not be fenced to protect the canopies and root systems from site improvement activities.

The "Protected Zones" of some of the on-site Oak trees are in direct conflict with grading, building and site construction, and are proposed for removal and/or transplant – see IMPACT NOTES below and EXISTING TREE DRIPLINE EXHIBIT.

Final determination of the treatment(s), as outlined herein, will be as directed in the field by the Oak Tree Preservation Specialist.

IMPACT NOTES:

Direct impacts are proposed to the following Oak Trees - see IMPACT NOTES and EXISTING TREE DRIPLINE EXHIBIT.:

KT-4, KT-6, KT-6a, KT-7, KT-8a, KT-8b, KT-8c, KT-8d, KT-27, KT-27a, KT-28, KT-29, KT-29a, KT-62, KT-63, KT-64, KT-64a, KT-65, KT-65a, KT-68, KT-68a, KT-71, KT-72, KT-73, KT-73b, KT-73c, KT-74, KT-74a, KT-74b, KT-75, KT-75a, KT-75d, KT-75f, KT-78, KT-78a, KT-78b, KT-104, KT-105

Encroachments are proposed to the following Oak Trees - see IMPACT NOTES and EXISTING TREE DRIPLINE EXHIBIT.:

KT-9, KT-10, KT-11, KT-20, KT-27b, KT-27c, KT-28, KT-50, KT-58, KT-58a, KT-61, KT-69, KT-72a, KT-73a, KT-75b, KT-75c, KT-75e, KT-77a, KT-77c, KT-77d, KT-78c, KT-78d, KT-79, KT-80, KT-81.

The following Oak Trees are missing, have been removed by others.:

KT-1, KT-5, KT-15, KT-66, KT-67

OAK TREES PROPOSED FOR REMOVAL ARE AS FOLLOWS:

OAK TREE KT-4 (Quercus lobata)

Oak Tree KT-4 is located within the footprint of Building B and is proposed to be removed. Replacement of this Oak Tree shall be as required by the City of Agoura Hills Municipal Code 9657.5 Oak Tree Permit pp C. 3. and D.

OAK TREE KT-6

Oak Tree KT-6 is located within the graded slope adjacent to Building B and is proposed to be removed. Replacement of this Oak Tree shall be as required by the City of Agoura Hills Municipal Code 9657.5 Oak Tree Permit pp C. 3. and D.

OAK TREE KT-6a

Oak Tree KT-6a is located within the graded slope adjacent to Building B and is proposed to be removed. Replacement of this Oak Tree shall be as required by the City of Agoura Hills Municipal Code 9657.5 Oak Tree Permit pp C. 3. and D.

OAK TREE KT-7

Oak Tree KT-7 is located within the graded slope adjacent to Building B and is proposed to be removed. Replacement of this Oak Tree shall be as required by the City of Agoura Hills Municipal Code 9657.5 Oak Tree Permit pp C. 3. and D.

OAK TREE KT-8a

AGOURA SENIOR HOUSING

ADDENDUM REPORT

(06-30-15)

OAK TREE REPORT

THE OAK COLLABORATIVE

OAK AND LANDMARK TREE PRESERVATION SPECIALISTS

RICHARD W. CAMPBELL, ASLA, BSLA

P. O. Box 16192 Thousand Oaks, Ca. 91359 (805) 375-10101260

ADDENDUM OAK TREE REPORT

AGOURA HILLS SENIOR HOUSING

June 30, 2015

RCI Builders
2985 E. Hillcrest Drive, Suite 107
Thousand Oaks, California 91362

Attn.: Steve Rice

SUBJECT SITE

AGOURA HILLS SENIOR HOUSING
PARCEL 2 OF PARCEL MAP 15762 (TT 71742)
IN THE CITY OF AGOURA HILLS, CALIFORNIA

GENERAL STATEMENT

On June 20, 2015 an Oak Tree "survey" was conducted at the Subject Site on twelve (12) newly discovered Trees. A ground level field inventory and external details (caliper size, health and physical and aesthetic character) were recorded, based upon the existing site conditions. Originally, ninety-three (93) in 2007 and later in 2013 sixteen (16) additional Oak Trees were "surveyed" and evaluated for their present conditions based on "owner's" concern for the general health and potential impacts from proposed new site clearing, grading and building construction for a Senior Housing Project. This new "survey" now includes the condition and disposition of the newly discovered twelve (12) Oak Trees near the westerly boundary. Of these new Oak Trees "surveyed", eight (8) are Quercus agrifolia (Coast Live Oak and four (4) are Quercus lobata (Valley Oak). None of the twelve new Trees are Landmark Trees of "Heritage Oak Status", which are those with a forty-eight inch (48") or greater trunk diameter. The results of the "survey" are shown on the attached Tree Evaluation Form, EXISTING TREE DRIPLINE EXHIBIT and/or as outlined herein.

The Oak Trees have been "tagged" with aluminum flags at 3'-6" above grade with their corresponding numbers on their northerly sides, for identification purposes. Diameter measurements were taken at 3'-6" (or 42") per City Ordinance. The conditions of the Trees are itemized herein, on the Tree Evaluation form (DB), Photo Record and their Plan graphics represented on the EXISTING TREE DRIPLINE EXHIBIT.

PURPOSE AND SCOPE

The purpose and scope of this report, in accordance with the City of Agoura Hills Zoning Ordinance #9657 and #9657.5, Appendix A, **Oak Tree Preservation Guidelines**, is to identify native and "planted" Oak species and evaluate their present condition. A report on impacts, if known, and proposed mitigation measures is required, for submittal to the City for review by the Planning Department, if any work is planned to take place in or within the "PROTECTED ZONE" of any Quercus genus two (2") inches, and over, in diameter at 3'-6" above grade.

SITE CONDITIONS

Oak Trees KT-81a and KT-81b are along the westerly side of the westerly arroyo near the Agoura Road boundary and Tree KT-61. Oak Trees KT-106 and KT-107 are west of Tree grove KT-104, along the boundary with the adjacent multi-family housing project. Trees KT-108 thru KT-114 are along the westerly boundary. Tree KT-115 is directly adjacent to the Agoura Road widening "cut" slope, near he westerly boundary.

Ten of the twelve new Trees (KT-106 thru KT-115) in this Addendum Report are on relatively flat terrain, surrounded by disturbed (disc harrowed) grassland and adjacent multi-family housing project irrigated planting areas. The other two (KT-81a and KT-81b) are along the westerly side of the westerly drainage swale. Trees KT-81a, KT-81b and KT-106 thru KT-114 are young and maturing Oak Trees and exhibit the normal characteristics of those of a youthful age, ie. minor infestations of pit scale/twig girdler, broken branch scars, deadwood, etc. Tree KT-115 is a semi-mature Oak Tree with a few minor maladies and is in relatively good health Two (2) Trees (KT-81a thru KT-81b) are located in the proposed building access drive, and are proposed to be removed. The other ten Oak Trees (KT-106 thru KT-115) near the westerly boundary are proposed to be encroached upon for site clearing, grading and/or construction activities but will remain in place.

Healthy Trees six inches (6") and under in diameter are proposed to be transplanted on-site, as selected and shown per a to-be-approved Landscape Architectural Plans, by others.

See EXISTING TREE DRIPLINE EXHIBIT, Oak Tree Evaluation Summary forms and herein for specific notes and comments.

WORK PROCEDURES (AS APPLICABLE)

All work, as applicable, (construction/maintenance activity) around existing Oak Trees is recommended to follow this work procedures program. This program has been developed to minimize the impacts to each Tree and protect them from unscheduled damage and unauthorized treatment.

All work within the Oak Tree aerial/root ("protected") zone shall be regularly observed by the Oak Tree Preservation Consultant.

1. The extent of all new construction work affecting Oak Trees shall be staked, where applicable, by field survey and reviewed with the Oak Tree Preservation Consultant.

2. Any approved pruning shall be done by a qualified Tree trimmer, and observed by the Oak Tree Preservation Consultant of record.

3.

4. **Hand dig** vertical trench or fence post(s) at the final location to final grade and "bridge-over," move footing/post or cleanly cut and seal with Tree/root seal, as approved by the Oak Tree Preservation Consultant, any and all roots encountered. (This procedure shall protect the root system from unnecessary damage by excavation equipment).

5. All footings for wall construction (as applicable) shall be designed to provide minimal impact to the Tree and backfilled with topsoil. Where roots greater in diameter than one (1") inch are encountered, footings must "bridge" over the affected roots.

6. Unless waived, a minimum five (5') foot high temporary chain link fence shall be constructed at the limit of approved work, prior to the commencement of work, to protect the adjacent Trees from further unauthorized damage and remain in place until completion of construction. A Fencing Plan shall be submitted at the reconstruction meeting. The fence must have four (4) warning signs located equidistant from each other around each Tree or group of Trees. For groves of Oak Trees the signs must be no further than fifty (50') feet apart around the grove.

   The signs must be two (2') feet square and contain the following language:

   WARNING
   THIS FENCE SHALL NOT BE REMOVED OR RELOCATED WITHOUT WRITTEN AUTHORIZATION FROM THE CITY OF AGOURA HILLS DEPARTMENT OF PLANNING AND COMMUNITY DEVELOPMENT

   Should any work be required within the limit of work, and the temporary fence must be opened, the Oak Tree Preservation Consultant **must** direct **all work** at any time the fence is open. **The Oak Tree Preservation Specialist "becomes the fence".**

7. No further work within the aerial/root ("protected") zone shall be done beyond that which was approved, without obtaining written approval prior to proceeding.

8. The area within the chain link fence shall not be used at any time for material or equipment storage or parking.

9. No chemicals or herbicides shall be applied to the soil surface within 100' of an Oak Tree's aerial/root ("protected") zone.

10. Copies of the following shall be maintained on the site during any work to or around the Oak Trees, as applicable:

    OAK TREE REPORT
    OAK TREE PERMIT
    OAK TREE LOCATION MAP
    ENGINEERING PLANS
    INSPECTION TICKET
    OAK TREE PRESERVATION AND GUIDELINES
    OAK TREE ORDINANCE
    APPROVED SITE PLAN
    APPROVED PLANTING AND IRRIGATION PLAN

Oak Tree preservation devices, such as air ventilation systems, Tree wells, drains, special paving and branch cabling, if required, must be installed prior to completion of grading and prior to the construction phase.

11. A utilities trenching pathway plan must be submitted prior to completion of grading and prior to the construction phase in order to avoid unnecessary damage to the Tree root systems. The plan shall indicate the routing of all trenching, including, but not limited to storm drains, subdrains, sewers, easements, area drains, gas lines, electrical service, cable TV, water mains, irrigation main lines and any other underground installations.

12. In areas where Trees are in or adjacent to walkways or parking areas, pervious paving shall be employed to mitigate the effects of root air space reduction, as approved.

As a part of the required 4:1 mitigation, Oak Tree removals shall be replaced as follows:

Commercial properties — For dead or hazardous Trees, one (1) thirty-six inch box Oak Tree shall be planted on site for each unhealthy Oak Tree approved for removal. For healthy Trees, two (2) twenty-four inch box specimen Oak Trees and one (1) thirty-six inch box specimen Oak Tree shall be planted on site for each healthy Oak Tree approved for removal. For Landmark Trees (forty-eight inch diameter and larger), a nursery grown Oak Tree of equivalent diameter to the Tree removed or two (2) nursery container grown sixty inch box Oak Trees shall be planted on site for each healthy Oak Tree approved for removal.

Residential properties — For dead or hazardous Trees one (1) thirty-six inch box Oak Tree shall be planted on site for each Tree approved for removal. However, in cases where houses currently exist on the property, the requirement for replacement shall be one (1) fifteen gallon Oak Tree be planted on site for each unhealthy Tree approved for removal. For Landmark Trees (forty-eight inch diameter and larger), one (1) nursery container grown sixty inch box Oak Tree shall be planted on site for each healthy Oak Tree approved for removal.

Agoura Municipal Code 9657.5 C. (c) also states the following:

"In no case shall less than four (4) native oaks be provided for any oak tree removed or relocated.

The Agoura Hills OAK TREE PRESERVATION GUIDELINES, section 10.3 and 10.4 states the following:

"Replacement trees shall be planted in accordance with the procedures established in section V.5 of this resolution (appendix)."

"Unless waived by the department of planning and community development, a refundable security deposit in the amount equal to the cost of the replacement trees shall be deposited in trust with the City of Agoura Hills to guarantee the implementation of section 10.3. The deposit will be refunded upon satisfactory completion of these conditions."

In the case of Trees which are candidates for transplant, a refundable cash deposit in the amount equal to the cost of purchasing an equivalent nursery grown Oak Tree, shall be made with the City. The deposit will be refunded after twelve (12) months if, in the opinion of the City's Oak Tree Consultant, the transplanted Tree has survived and is considered to be in good health. Should the Tree be in marginal health or physical condition, the deposit will be retained for an additional twelve (12) months. At the end of the second twelve month period, should the Tree continue to be in a marginal or poor health condition, then the Tree shall be removed and replaced with an equivalent nursery grown Oak Tree and the deposit will be retained for at least an additional twelve (12) months.

13. Whenever any construction work is being performed contrary to the provisions of the Oak Tree Permit/Ordinance, a City inspector may issue a written notice to the responsible party, to stop work on the project on which the violation occurred or upon which danger exists. The "Stop Work Order" will state the nature of the violation or danger and no work may proceed until the violation has been rectified and approved by the code enforcement officer or City's Oak Tree Consultant. During any construction and/or treatment, Tree work and impacts must be closely monitored to further mitigate shock symptoms, should they occur. If needed, water must be provided to irrigate the Tree(s) and also to wash the dust from foliage.

AGOURA HILLS MUNICIPAL CODE 9657.5 Oak Tree Permit pp C. 3. And D

"c... That the removal or relocation of the oak tree(s) proposed is necessary because the continued existence at present location(s) prevents the planned improvement or proposed use of the subject property to such an extent that alternative development plans cannot achieve the same permitted density or that the cost of such alternative would be prohibitive; or that the placement of such tree(s) precludes the reasonable and efficient use of such property for a use otherwise authorized; or that the oak tree(s) proposed for removal or relocation interferes with utility services or streets and highways, either within or outside of the subject property, and no reasonable alternative to such interference exists other than removal of the tree(s).

PROTECTION

Per paragraph 6 above, to preserve Oak Trees in a construction area, a minimum 5' height chain link **fence** must be installed at the limit of work, prior to any clearing, grubbing, demolition, construction and/or treatment, in order to protect the sensitive "Z.O.N.E.," during <u>all</u> work operations. The Oak Tree Preservation Consultant of record must "function" as the **fence** for any work necessary within the Z.O.N.E. fenced area, while directing or observing work in and near any Oak Trees.

Z.O.N.E. = "Zone of Nutraire Endemic" (the area of natural or amended planting medium which may extend to or beyond the dripline of a native tree). An Oak Tree care and maintenance guideline, as provided by the City of Agoura Hills, should be followed, as well as regular monitoring throughout each Tree's life cycle, by a qualified Oak Tree Preservation Specialist/Consultant.

EVALUATION CRITERIA

In evaluating Oak Trees, as with any other Trees, the reporting format records the external observation of the Tree(s) at the time of the "survey," including approximate sizes of trunk, height and spread of the branching system to the outer dripline, surface observation of the Trees' condition and other pertinent information. The Rating designation assigns a health and aesthetic value for each Tree. Ratings range from "A" to "F," with "A" as the indicator of a Tree exhibiting the best condition for the species in the area, and the lower letters indicating lesser values. The "C" value represents an average condition for the species. An "F" rating is a candidate for removal for health or hazard reasons. Plus (+) and minus (-) sub-values are assigned where a clear letter designation is not appropriate. The letter "E" is not used in order to avoid confusion with the term "excellent."

CARE AND SAFETY

It must be noted that the Trees referred to in this report are living organisms, and therefore subject to change. And since internal, crown and subsurface systems could not be investigated, no warranties, neither expressed nor implied, are made that these Trees will be in any condition other than as observed and reported herein, beyond the date of the inventory walk-thru ("survey"). A copy of the OAK TREE CARE AND MAINTENANCE, for the care and maintenance of Oak Trees, is available from the City of Agoura Hills for use in providing guidelines for the "on-going" maintenance of Oak Trees. The preferred maintenance procedure used in caring for native Oak Trees is to promote and encourage proper vigor within the Tree systems. In this way, the natural defenses are better able to ward-off pests and diseases.

CONSTRUCTION AND MAINTENANCE PROCEDURES

According to the "City" Oak Tree Ordinance, all work, should it be necessary, within the "Protected Zone" (that area enclosed by a line five (5') feet beyond the natural "dripline" of the Oak Tree, but not less than fifteen (15') feet from the trunk), shall be done using hand tools under the observation of the Oak Tree Preservation Consultant. This also includes pruning/trimming for clearance. Pruning for aesthetics is not permitted in the Ordinance.

Current maintenance/impacts/treatment procedures for the Oak Trees at Agoura Senior Housing, Parcel Map 15762 (TT 71742), consist of the following (also see Oak Tree Evaluation Summary form and EXISTING TREE DRIPLINE EXHIBIT):

GENERAL RECOMMENDATIONS:

It is our recommendation that the following treatment(s) to the appropriate Oak Trees be implemented:

Oak Tree Preservation Specialist is to monitor and direct all work near the Trees to remain protected in place.

Remove deadwood from appropriate specimens.

Clean-cut prior pruning/stub-cuts/broken branch scars, as directed.

Clean out trunk and branch cavities and "screen" openings.

Clean and "screen" water traps.

Clean excess fill from base of trunks (without damaging feeder roots), as directed.

Remove "waterspouts" and crossing branches, as directed.

Protect "Duff" areas to allow seedlings to establish.

The "Protected Zone" of all Trees need not be fenced to protect the canopies and root systems from site improvement activities.

The "Protected Zones" of some of the on-site Oak trees are in direct conflict with grading, building and site construction, and are proposed for removal and/or transplant – see IMPACT NOTES below and EXISTING TREE DRIPLINE EXHIBIT.

Final determination of the treatment(s), as outlined herein, will be as directed in the field by the Oak Tree Preservation Specialist.

IMPACT NOTES:

Direct impacts are proposed to the following Oak Trees - see IMPACT NOTES and EXISTING TREE DRIPLINE EXHIBIT.:

KT-81a and KT-81b

Encroachments are proposed to the following Oak Trees - see IMPACT NOTES and EXISTING TREE DRIPLINE EXHIBIT.:

KT-106 thru KT-115

OAK TREES PROPOSED FOR REMOVAL ARE AS FOLLOWS:

OAK TREE KT-81a (Quercus agrifolia)

Oak Tree KT-81a is located within the footprint of Building A's easterly access drive and is proposed to be removed. Replacement of this Oak Tree shall be as required by the City of Agoura Hills Municipal Code 9657.5 Oak Tree Permit pp C. 3. and D.

OAK TREE KT-81b (Quercus agrifolia)

Oak Tree KT-81b is located within the footprint of Building A's easterly access drive and is proposed to be removed. Replacement of this Oak Tree shall be as required by the City of Agoura Hills Municipal Code 9657.5 Oak Tree Permit pp C. 3. and D.

OAK TREES PROPOSED TO BE ENCROACHED UPON, ARE AS FOLLOWS:

OAK TREES KT-106 and KT-107 (Quercus lobata)

Oak Tree KT-106 and KT-107 are located near a slope southwest of Building A and are proposed to be protected in place with the required Oak Tree protection fencing as required by the City of Agoura Hills Zoning Ordinance #9657 and #9657.5, Appendix A. Monitoring the protection of this Oak Tree whenever the Oak Tree Protection fencing is "open", is required. Richard W. Campbell will "act-as-the-fence" during all times when a fence is "open" or "down".

OAK TREES KT-108 thru KT-113 (Quercus agrifolia)

Oak Trees KT-108 thru KT-113 are located near a slope west of Building A and are proposed to be protected in place with the required Oak Tree protection fencing as required by the City of Agoura Hills Zoning Ordinance #9657 and #9657.5, Appendix A. Monitoring the protection of this Oak Tree whenever the Oak Tree protection fencing is "open" is required. Richard W. Campbell will "act-as-the-fence" during all times when a fence is "open" or "down".

OAK TREE KT-114 (Quercus lobata)

Oak Tree KT-114 is located near a slope west of Building A and are proposed to be protected in place with the required Oak Tree protection fencing as required by the City of Agoura Hills Zoning Ordinance #9657 and #9657.5, Appendix A. Monitoring the protection of this Oak Tree whenever the Oak Tree protection fencing is "open" is required. Richard W. Campbell will "act-as-the-fence" during all times when a fence is "open" or "down".

OAK TREE KT-115 (Quercus lobata)

Oak Tree KT-115 is located near a slope north of Building A and is proposed to be protected in place with the required Oak Tree protection fencing as required by the City of Agoura Hills Zoning Ordinance #9657 and #9657.5, Appendix A. Monitoring the protection of this Oak Tree whenever the Oak Tree protection fencing is "open" is required. Richard W. Campbell will "act-as-the-fence" during all times when the fence is "open" or "down".

GENERAL MAINTENANCE NOTES:

Remove deadwood from larger specimens, as directed.

Clean-cut prune broken branch scars and poor prior pruning cuts, as directed.

Removing fill and relieve of soil compaction with light manual scarifying (without damaging feeder roots) for air/water transference as directed, may also be appropriate.

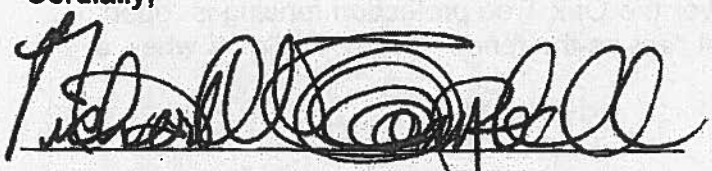
Note!

Periodic (at least quarterly) monitoring for declining branching systems is also recommended.

Please review this report and return your questions and/or comments to:

Richard W. Campbell, A.S.L.A., B.S.L.A.
P. O. BOX 6192
Thousand Oaks, California 91359
Phone (805) 375-1010

Cordially,



Richard W. Campbell, A.S.L.A., B.S.L.A.
Landscape Architect & Oak Tree Preservation Consultant
California License # 1099, Nevada License # 14
rwcampbellasla@verizon.net
www.richardwcampbellasla.com

OAK TREE EVALUATION SUMMARY

AGOURA HILLS SENIOR HOUSING
OAK TREE ADDENDUM EVALUATION SUMMARY (12 TREES)
6-20-15

Tree No.	Tree Name	Trunk Diam.	N	NE	E	SE	S	SW	W	NW	Ht ±	Hlth	Aest	Notes/Remarks
KT-81a	Quercus agrifolia	5'/0'	3'//0'	4'/0'	5'/1'	6'/1'	3'/0'	5'/0'	3'/2'	3'/2'	14'	A-	A-	BRANCHES ON GROUND, INTERTWINED IN KT-81b, LOW BRANCHING, SHORT SHOOT GROWTH
KT-81b	Quercus agrifolia	2 ¾" "	4'/1'	5'/0'	4'/0'	6'/1'	4'/0'	3'/1'	2'/0'	3'/3'	14'	C	C	BRANCHES ON GROUND, INTERTWINED IN KT-81a, LOW BRANCHING, SHORT SHOOT GROWTH
KT-106	Quercus lobata	2 ¼", ¾", 1/8"	5'/1'	6'/1'	4'/1'	3'/1'	2'/2'	2'/2'	3'/2'	5'/1'	14'	A-	A-	FILL ON TRUNK, GALLS, LEAF SCORCH, LEAF MINERS, LOW BRANCHING,
KT-107	Quercus lobata	3 ¾", 2"	10'/1'	10'/0'	9'/0'	4'/1'	4'/1'	4'/2'	4'/2'	5'/2'	20'	A-	A-	BRANCHES ON GOUND, LOW BRANCHING, OAK SEEDLINGS IN DUFF
KT-108	Quercus agrifolia	4 ¼"	6'/0'	9'/0'	7'/1'	7'/1'	7'/1/	6'/1/	6'/1'	7'/2'	18'	B+	B+	BRANCHES ON GOUND, CO-DOMINANT TRUNKS, SHORT SHOOT GROWTH, INCLUDED BARK, INTERTWINED IN KT-109, LOW BRANCHING, OAK SEEDLINGS IN DUFF, SQUIRREL HOLE AT BASE

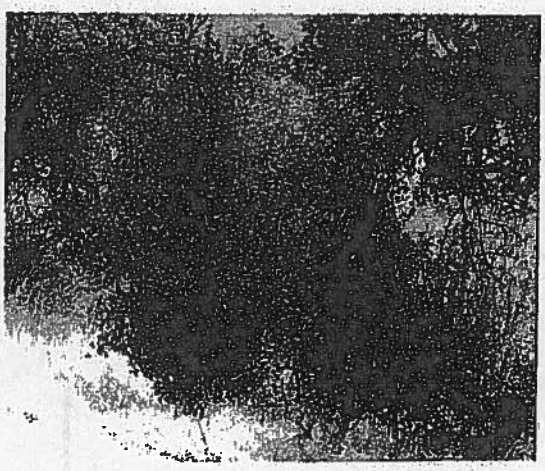
RICHARD W. CAMPBELL, ASLA, BSLA

Tree No.	Tree Name	Trunk Diam.	N	NE	E	SE	S	SW	W	NW	Ht ±	Hlth	Aest	Notes/Remarks
KT-109	Quercus agrifolia	2", (2) 1", ½"	2'/4'	5'/3'	4'/2'	6'/1'	4'/2'	4'/4'	2'/4'	2'/3'	13'	B-	B-	FILL ON TRUNK, SHSORT SHOOT GROWTH, INTERTWINED IN KT-108, LOPSIDED CANOPY, LOW BRANCHING, OAK SEEDLINGS IN DUFF
KT-110	Quercus agrifolia	2 ½"	3'/7'	3'/3'	5'/10'	4'/4'	7'/4'	0'/0'	0'/0'	0'/0'	14'	B-	B-	FILL ON TRUNK, SHORT SHOOT GROWTH, LOPSIDED CANOPY, LOW BRANCHING, OAK SEEDLINGS IN DUFF GROUND SQUIRREL HOLE AT BASE, PIT SCALE
KT-111	Quercus agrifolia	4"	5'/1'	6'/0'	6'/0'	7'/1'	7'/0'	4'/1'	2'/4'	4'/1'	13'	B-	B-	BRANCHES ON GROUND, CO-DOMINANT SCAFFOLDS, SHORT SHOOT GROWTH, INCLUDED BARK, LOPSIDED CANOPY, LOW BRANCHING, OAK SEEDLINGS IN DUFF, SQUIRREL HOLE AT BASE, TWIG GIRDLER
KT-112	Quercus agrifolia	4 ½"	0'/0'	0'/0'	0'/0'	18'/0'	18'/0'	0'/0'	0'/0'	0'/0'	16'	C+	C+	SHORT SHOOT GROWTH, INTERTWINED IN KT-113, LOPSIDED CANOPY, LEANS TO SOUTHEAST, LOW BRANCHING, OAK SEEDLINGS IN DUFF, TWIG GIRDLER

KT-113	Quercus agrifolia	9 ½", 2 ½"	10'/4'	12'/2'	12'/0'	15'/0'	18'/0'	6'/2'	7'/3'	9'/3'	30'	C-	C-	BRANCHES ON GROUND, BROKEN BRANCH SCARS (TOPPED), CO-DOMINANT TSCAFFOLDS, FILL ON TRUNK, INTERTWINED WITH TREE(S) KT-7, KT-8a AND KT-8c, PIT SCALE
KT-114	Quercus lobata	46"	5'/5'	7'/4'	10'/1'	8'/4'	6'/4'	0'/0'	0'/0'	0'/0'	36'	C+	C+	BRANCHES ON GROUND, BROKEN BRANCH SCARS (TOPPED)DEADWOOD, SHORT SHOOT GREWTH, INTERTWINED WITH TREES KT-112 & KT-114, LOW BRANCHING, NEST IN TREE, OAK SEEDLINGS IN DUFF, PIT SCALE, WEAK SCAFFOLD CONNECTION
KT-115	Quercus lobata	±11 ½"	16'/15'	18'/19'	23'/11'	24'/6'	22'/0'	25'/12'	12'/16'	18'/18'	40	C-	B-	BRANCHES ON GROUND, CO-DOMINANT SCAFFOLDS, DEADWOOD, SHORT SHOOT GROWTH, LOW BRANCHING, OAK SEEDLINGS IN DUFF, PIT SCALE, PRIOR PRUNING, STRESSED, WEAK SCAFFOLD CONNECTION

OAK TREE PHOTO LOG

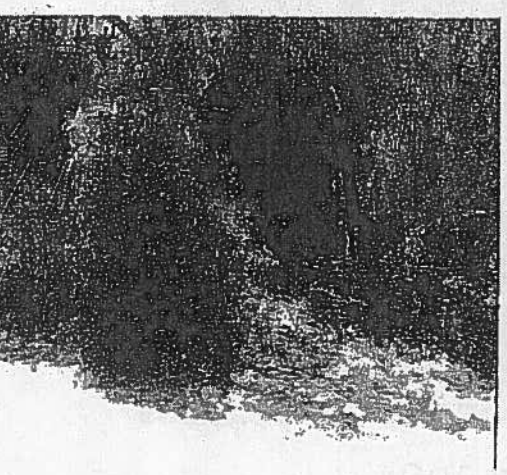
AGOURA SENIOR HOUSING
PARCEL 2 OF PARCEL MAP 16762 (TT 71742) (12 TREES)
ADDENDUM PHOTO LOG



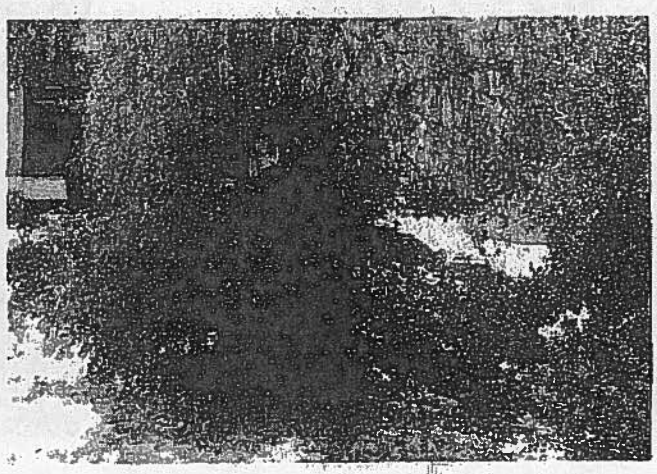
KT-81a

KT-81b

AGOURA SENIOR HOUSING
PARCEL 2 OF PARCEL MAP 16782 (TT 71742) (12 TREES)
ADDENDUM PHOTO LOG



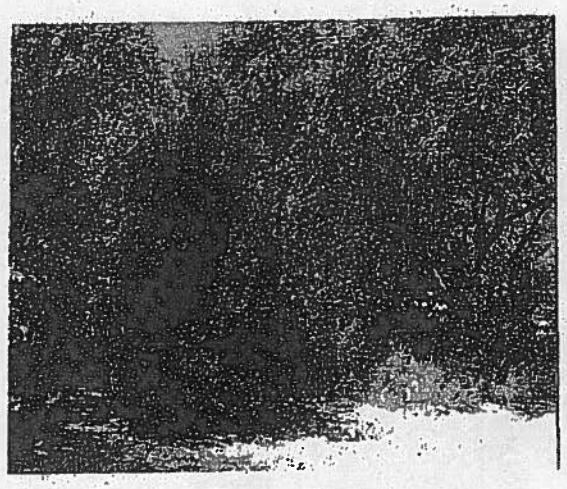
KT-106



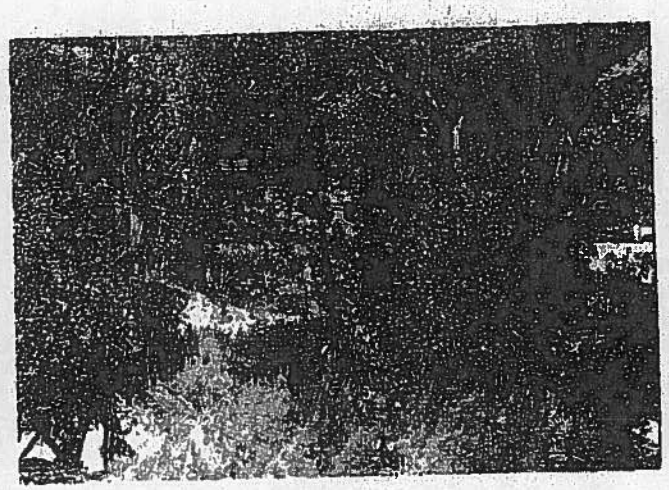
KT-107

THE OAK COLLABORATIVE
OAK TREE PRESERVATION SPECIALIST

AGOURA SENIOR HOUSING
PARCEL 2 OF PARCEL MAP 16762 (TT 71742) (12 TREES)
ADDENDUM PHOTO LOG

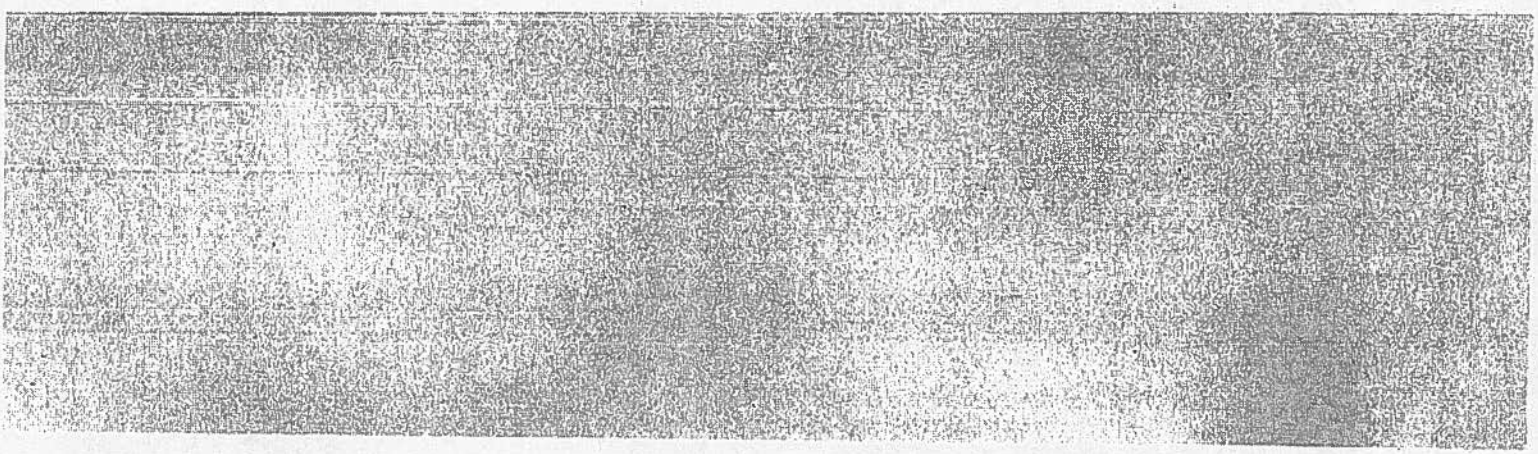


KT-108

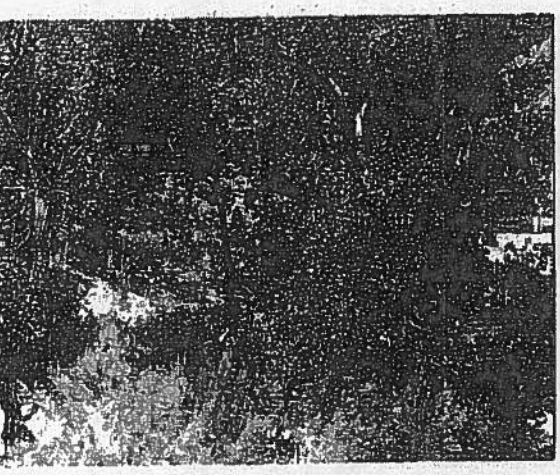


KT-109

THE OAK COLLABORATIVE
OAK TREE PRESERVATION SPECIALIST



AGOURA SENIOR HOUSING
PARCEL 2 OF PARCEL MAP 15762 (TT 71742) (12 TREES)
ADDENDUM PHOTO LOG



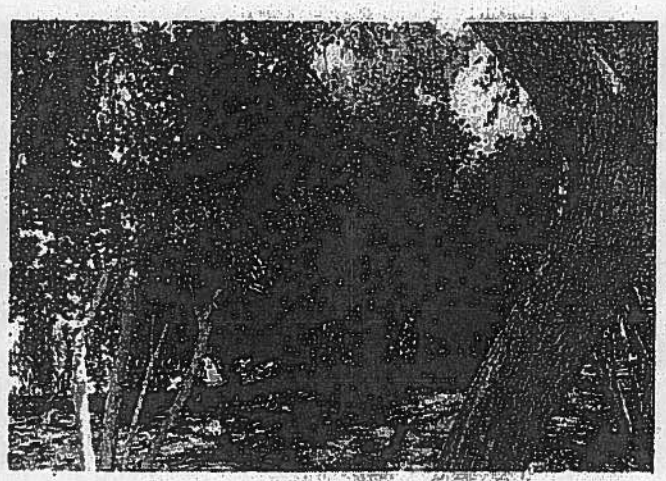
KT-110

KT-111

THE OAK COLLABORATIVE
OAK TREE PRESERVATION SPECIALIST

AGOURA SENIOR HOUSING
PARCEL 2 OF PARCEL MAP 15762 (TT 71742) (12 TREES)
ADDENDUM PHOTO LOG

KT-112



KT-113

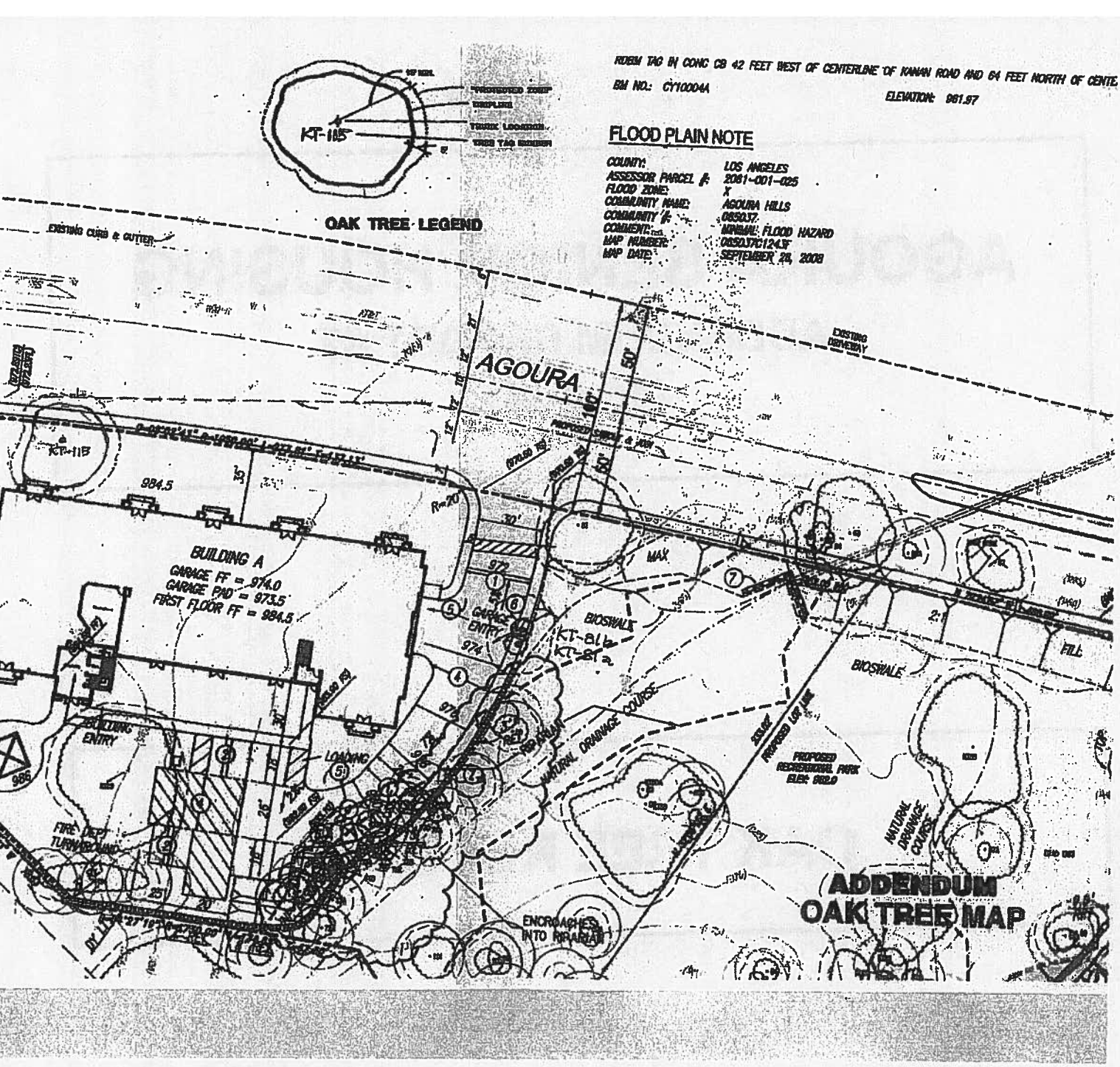
THE OAK COLLABORATIVE
OAK TREE PRESERVATION SPECIALIST

AGOURA SENIOR HOUSING
PARCEL 2 OF PARCEL MAP 15782 (TT 71742) (12 TREES)
ADDENDUM PHOTO LOG

KT-114

KT-115

OAK TREE MAP


KT-11B
OAK TREE LEGEND
REBAR TAG IN CONC CB 42 FEET WEST OF CENTERLINE OF KANAN ROAD AND 64 FEET NORTH OF CENTE
BM NO.: CY10004A
ELEVATION: 981.97
FLOOD PLAIN NOTE
COUNTY: LOS ANGELES
ASSESSOR PARCEL #: 2061-001-025
FLOOD ZONE: X
COMMUNITY NAME: AGOURA HILLS
COMMUNITY #: 060737
COMMENT: MINIMAL FLOOD HAZARD
MAP NUMBER: 06037C1214F
MAP DATE: SEPTEMBER 26, 2008
EXISTING CURB & GUTTER
AGOURA
EXISTING DRIVEWAY
BUILDING A
GARAGE FF = 974.0
GARAGE PAD = 973.5
FIRST FLOOR FF = 984.5
984.5
MAX
BIOSWALE
KT-8B
KT-8B
BUILDING ENTRY
LOADING
FIRE DEPT TURNAROUND
NATURAL DRAINAGE COURSE
PROPOSED LOS
PROPOSED RECREATIONAL PARK ELEV: 960.0
ENCROACHES INTO RIPARIAN
ADDENDUM
OAK TREE MAP

AGOURA SENIOR HOUSING

ADDENDUM REPORT #2

(10-6-15)

OAK TREE REPORT

RICHARD W. CAMPBELL, ASLA, BSLA
OAK TREE PRESERVATION SPECIALIST

Richard W. Campbell, ASLA, BSLA

P. O Box 6192 Thousand Oaks, California 91359

ADDENDUM OAK TREE REPORT #2

AGOURA SENIOR HOUSING

October 6, 2015

RCI Builders
2985 E. Hillcrest Drive, Suite 107
Thousand Oaks, California 91362

Attn.: Steve Rice

SUBJECT SITE

AGOURA SENIOR HOUSING
PARCEL 2 OF PARCEL MAP 15762 (TT 71742)
IN THE CITY OF AGOURA HILLS, CALIFORNIA

GENERAL STATEMENT

On September 18 , 2015 an Oak Tree "survey" was conducted at the Subject Site on one (1) grown-to-size Oak Tree, located adjacent to and intertwined in Oak Tree KT-80. A field level inventory and external details (caliper size, health and physical and aesthetic character) were recorded, based upon the existing site conditions. In the first Addendum Report, twelve additional oak Trees were discovered added from along the westerly boundary of the property. This new young Coast LiveOak Tree (Quercus agrifolia) was evaluated for its present condition based on the Owner's concern for the general health of the Tree and potential impacts from proposed site clearing, grading and building construction for a Senior Housing Project. The new "survey" now includes the condition and disposition of this newly grown-to-size Oak Tree near the previously reported Oak Tree KT-80. The results of the recent "Survey" are shown on the attached Tree Evaluation Form, the separate EXISTING TREE DRIPLINE EXHIBIT and/or as outlined herein.

The Oak Tree has been "taggef" with an aluminum flag at 3'-6" above grade with the "tag" number KT-80a on the northerly side of its trunk, for I, Photo Record and their Plan identification purposes. Diameter measurement was taken at 3'-6" (42") per City Ordinance. The condition of the tree is itemized herein, on the Tree Evaluation Form, Photo Record and the plan graphic as shown on the Engineer's EXISTING TREE DRIPLINE EXHIBIT.

PURPOSE AND SCOPE

The purpose and scope of this report, in accordinance with the city of Agoura hills Zoning Ordinance #9657 and #9657.5, Appendix A, **Oak Tree Preservation Guidelines**, is to identify native and "planted" Oak species and evaluate their present condition. A report on impacts, if known, and proposed mitigation measures is required, for submittal to the City for review by the Planning Department, if <u>any</u> work is planned to tale place in or within the "PROTECTED ZONE" of any Quercus genus two inches (2") and over, in diameter at 3'-6" above grade.

SITE CONDITIONS

Oak Tree KT-80a is located in the northwest quadrant of the property, adjacent to and just southerly and inside the canopy of Oak Tree KT-80. The trunk of Oak Tree KT-80a is on a minimal-moderately easterly descending grade to the Site's westerly drainage swale. The grove of Oak Trees KT-80, KT-81 and KT-80a are surrounded by disturbed (disc-harrowed) grassland and additional riparian vegetation. Oak Tree KT-80a is a young seedling which is intertwined in oak Tree KT-80 and is located outside any proposed construction activity.

WORK PROCEDURES (AS APPLICABLE)

All work, as applicable (construction/maintenance actlvity) around existing Oak Trees is recommended to follow this work procedures program. This program has been developed to minimize impacts to each Tree and protect them from unscheduled damage and unauthorized treatment.

<u>All work</u> within the Oak Tree aerial/root ("protected") zone, shall be regularly observed by the Oak Tree Preservation Consultant.

1. The extent of all new construction work affecting Oak Trees shall be staked, where applicable, by field survey and reviewed with the oak Tree preservation Consultant.

2. Any approved pruning shall be done by a qualified Tree Trimmer, and observed by the Oak Tree Preservation Consultant of Record.

3. <u>Hand dig</u> vrtical trench or ence post(s) at the final location to final grade and "bridge-over", move footing/post or cleanly cut and seal with Tree/root seal, as approved by the Oak Tree Preservation Consultant, any roots encountered. (This procedure shall protect the root system from unnecessary damage from excavation equipment.

4. All footings for wall construction (as applicable) shall be designed to provide minimal impact to the Tree and excavation hole shall be backfilled with topsoil.

5. Unless waived, a minimum five foot (5') high temporary chain link fence shall be constructed at the limit of the approved work, prior to the commencement of work, to protect the adjacent Trees from furher unauthorized damage and remain in place until completion of construction. A Fencing plan shall be submitted at the pre-construction meeting. The fence must have four (4) warning signs located equidistant fro each other around the Tree or group of Trees. For groves of Oak Trees, the signs must be no further than fifty feet (50') apart around the grove.

The signs must be two feet (2') square and contain the following language:

WARNING

THIS FENCE SHALL NOT BE REMOVED OR RELOCATED WITHOUT WRITTEN AUTHORIZATION FROM THE CITY OF AGOURA HILLS DEPARTMENT OF PLANNING AND COMMUNITY DEVELOPMENT

Should any work be required within the limit of work, and the temporary fence must be opened, the Oak Tree Preservation Consultant, with written approval from the City of Agoura Hills, **must** direct **all work** at the time the fence is open. In essence, the Oak Tree Preservation Consultant "becomes the fence".

6. No further work within the aerial/root ("protected") zone shall be done beyond that which was approved by the City of Agoura Hills, without obtaining additional written approval, prior to proceeding.

7. The area within the chain link fence shall not be used at any time for materials or equipment storage or parking.

8. No chemicals or herbicides shall be applied to the soil surface or aerial canopies within one hundred feet (100') of an Oak Tree's aerial/root ("protected") zone.

9. Copies of the following shall be maintained on the site during any work to or around the Oak Trees, as applicable:

OAK TREE REPORT
OAK TREE PERMIT
OAK TREE LOCATION MAP
ENGINEER'S CIVIL PLANS
INSPECTION TICKET
OAK TREE PRESERVATION AND GUIDELINES
OAK TREE ORDINANCE
APPROVED SITE PLAN
APPROVED PLANTING AND IRRIGATION PLAN

10. All utilities trenching pathway plan must be submitted prior to completion of grading and prior to the construction phase, in orde to avoid unnecessary damage to the Tree root system(s).

11. In all areas where Trees are in or adjacent to walkways or parking areas, pervious paving shall be employed to mitigate the effects or root air space reduction, as approved. Oak Tree preservation devices, such as air ventilation systems, tree wells, area drains, special paving, branch cabling, if required, must be installed prior to completion of grading and prior to the construction phase.

12. 4:1 mitigation requirement - not applicable for this Tree.

13. Whenever any construction work is being performed contrary to the provisions of the Oak Tree Permit/Ordinance, a City Inspector may issue a written notice to the responsible party, to stop work on the project on which a violation occurred or upon which danger exists. The "Stop Work Order" will state the nature of the violation or danger and no work may proceed until the violation has been rectified and approved by the code enforcement officer or City's Oak Tree Consultant. During any construction and/or treatment, Tree work and impacts must be closely monitored to further mitigate shock symptems, should they occur. If needed, water must be provided to irrigate the Tree(s) and also to wash the dust/debris from the foliar mass.

AGOURA HILLS MUNICIPAL CODE 9657.5 Oak Tree Permit pp C.3. and D

"c...That the removal or relocation of the oak tree(s) proposed is necessary because the continued existence at present locatio (s) prevents the planned improvement or proposed use of the subject property to sudch an extent that alternative development plans cannot achieve the same permitted density or that the cost of such alternative would be prohibitive; or that the placement of such Tree(s) pecludes the reasonable and efficient use of such property for a use otherwise authorized; or that the oak Tree(s) proposed or removal or relocation interferes with utility services or streets and highways, either within or outside of the subject property, and no reasonable alternative to such interference exsists other than removal or relocation of the Tree(s).

PROTECTION

Per paragraph 6 above, to preserve Oak Trees in a construction area, a minimum I've foot (5') height chain link fence must be installed at he limit of work, prior to any clearing, grubbing, demolition, grading, construction and/or treatment, in order to protect the sensitive "Z.O.N.E.", during <u>all</u> work operations. After writen approval from the City of Agoura Hills, the Oak Tree Preservation Consultant-of-record must function as the fence, whenever he fence is "open", to observe and direct work in and near tny Oak Tree(s).

Z.O.N.E. = "ZONE OF NUTRAIRE ENDEMIC" (the natural or amended planting meduim which may extend to or beyond the driplind or "Protected Zone" of a native Tree). An Oak Tree Care and Maintenance Guideline, as provided by the City of Agoura Hills should be followed, as well as regular monitoring throughout each Tree's yearly life cycle, by a qualified Oak Tree Preservation Consultant.

EVALUATION CRITERIA

In evaluating Oak Trees, as with any other Trees, the reporting format records the external observation of he Tree(s) at the time of the "survey", including approximate size of trunk(s), height and spread of the branching system to the outer dripline and top, surface observation of the Tree's condition and other pertinent information. A rating designation assigns a health and aesthetic letter

value for each Tree. Rating values range from "A" to "F", with "A" as the indicatio of a Tree exhibiting the best condition or the species in that local area and the lower letters indication lesser values. The "C" rating represents an average condition of the species in that local area. An "F" rating is a candidate for removal for health or hazard reasons. Plus (+) and minus (-) sub-ratings are assigned where a clear letter designation value is not appropriate. The letter "E" is avoided so as not to confuse it with the term "excellent".

CARE AND SAFETY

It must be noted that the Trees referred to in this Report are living organisims, and therefore, are subjedt to change. And since internal, crown and sub-surface aystems could not e investigated or observed, on warrantees, neither expressed or implied, are made that the Tree(s) reported on herein, are or will be in any condition other than as observed beyond the date of the "survey". A copy of the OAK TREE CARE AND MAINTENANCE, or the care and maintenance of Oak Trees is available from the City of Agoura Hills or use in providing guidelines for the on-going maintenance of Oak Trees The preferred maintenance procedure used in caring for native Oak Trees, is to promote and encourage proper vigor within the Tree systems, In this way, the Tree's natural defenses are better able to ward-off pests and diseases.

CONSTRUCTION AND MAINTENANCE PROCEDURES

According to the City Oak Tree Ordinance, all work, should it be necessary, within the Protected Zone (that area enclosed by a line five feet (5') beyond the Tree's natural dripline, but not less than fifteen feet (15') from the trunk), shall be done using hand tools, under the observation and direction of the Oak Tree preservation Consultant. This also includes pruning/trimming for clearance reasons. Pruning for aesthestic reasons is <u>not</u> permitted in the Ordinance.

GENERAL RECOMMENDATIONS

It is our recommendation that no treatment is required for this Oak Tree.

IMPACT NOTES

No impact is proposed which would affect Oak Tree KT-80a

Note! Periodic (at least quarterly) monitoring for declining branching systems, is also recommended.

The Oak Collaborative
c/o Richard W. Campbell, A.S.L.A., B.S.L.A.
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Thousand Oaks, California 91359
Phone (805) 375-1010
Email rwcampbellasla@verizon.net

Cordially,

Richard W. Campbell, A.S.L.A., B.S.L.A.
Landscape Architect and Oak Tree Preservation Consultant
California License # 1099, Nevada License # 14

OAK TREE EVALUATION SUMMARY

TREE EVALUATION

AGOURA SENIOR HOUSING

OAK TREE ADDENDUM EVALUATION SUMMARY (1 TREE)

10-6-15

Tree No.	Tree Name	Trunk Daim.	N	NE	E	SE	S	SW	W	NW	Ht	Hlth	Aesth	Notes/Remarks
KT-80a	Quercus agrifolia	3 ½"	8'/0'	8'/4'	8'/3'	8'/4'	6'/3'	0'/0'	6'/0'	6'/3'	10'	B-	B-	Fill on trunk, leans to north, lopsided canopy. No impacts or encroachments are proposed for this Oak Tree

OAK TREE PHOTO LOG

AGOURA SENIOR HOUSING

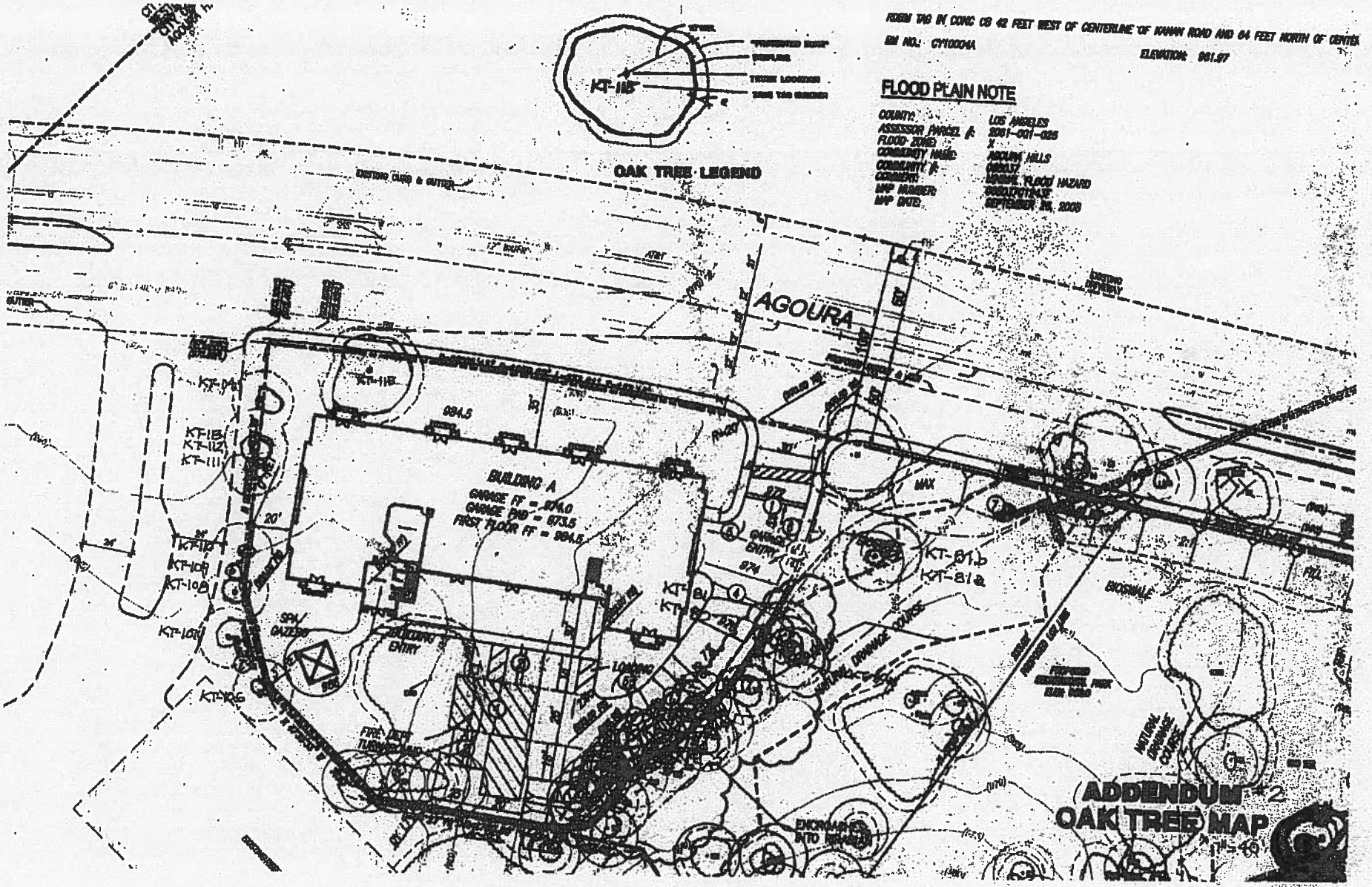
PARCEL 2 OF PARCEL MAP 15762 (TT 71742) ONE TREE

ADDENDUM #2 PHOTO LOG

RICHARD W. CAMPBELL, ASLA, BSLA
OAK TREE PRESERVATION SPECIALIST

OAK TREE MAP

AGOURA SENIOR HOUSING
ADDENDUM #2 (1 OAK TREE)


OAK TREE LEGEND
KT-11B
FLOOD PLAIN NOTE
COUNTY: LOS ANGELES
ASSESSOR PARCEL #: 2061-001-025
FLOOD ZONE: X
COMMUNITY NAME: AGOURA HILLS
COMMUNITY #:
COMMENTS: MINIMAL FLOOD HAZARD
MAP NUMBER: 06037C1114E
MAP DATE: SEPTEMBER 26, 2008
AGOURA
BUILDING A
GARAGE FF = 974.0
GARAGE TOP = 973.5
FIRST FLOOR FF = 984.5
KT-11B
KT-11C
KT-11D
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KT-10B
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(ADDENDUM #2)
OAK TREE MAP

Appendix F

Geotechnical Reports

RESULTS OF PRELIMINARY GEOTECHNICAL INVESTIGATION
AGOURA HILLS PROJECT
APN# 2061-001-025 & 30800 BLOCK OF AGOURA ROAD
AGOURA HILLS, CALIFORNIA

Prepared For

Mr. Carlos Khantzis
31280 Oak Crest Drive, #4
Westlake Village, CA 91361

October 12, 2000
Work Order: 2272-1-0-11
Log Number: 20524

GORIAN & ASSOCIATES, INC

Table of Contents

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Attachments: References
Figure 4: Typical Fill Over Natural Slope Detail
Figure 5: Typical Subdrain Detail
Geotechnical Map (Plate 1)
Geotechnical Cross Sections (Plate 2)
Logs of Subsurface Data (Appendix A)
Laboratory Test Results (Appendix B)
Results of Slope Stability Analyses (Appendix C)

GORIAN ASSOCIATES, INC.

Applied Earth Sciences
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FAX 805 373-6938

October 12, 2000

Mr. Carlos Khantzis
31280 Oak Crest Drive, #4
Westlake Village, CA 91361

Work Order: 2272-1-0-11
Log Number: 20524

Subject: **RESULTS OF PRELIMINARY GEOTECHNICAL INVESTIGATION, AGOURA HILLS PROJECT, APN# 2061-001-025 & 30800 BLOCK OF AGOURA ROAD, AGOURA HILLS, CALIFORNIA**

1 INTRODUCTION

Presented herein are the results of our geotechnical investigation of the site referred to as APN# 2061-001-025 in the 30800 block of Agoura Road in the city of Agoura Hills. The work addressed herein was performed per our proposal dated May 11, 2000. Construction of the office building addressed herein is considered feasible from a geotechnical standpoint. Our conclusions and geotechnical recommendations regarding design and construction of the proposed office building and associated infrastructure are contained in this report. This report also contains a compilation of the previous work and current investigation including field exploration, laboratory testing, and engineering analyses performed for the current investigation.

2 PROPOSED DEVELOPMENT

The site will be developed using cut and fill grading and retaining walls for a 28,000 square foot office building and parking areas. The building will be a two-story structure, stair stepped into the hillside. Access to the parking areas will be via a paved driveway off Agoura Road. Our present understanding of the proposed site development is based upon conversations with Mr. Carlos Khantzis and Mr. John Grounds, Project Architect with Ware & Malcomb Architects, Inc., and a preliminary site concept plan supplied by Mr. Grounds.

3 SCOPE OF SERVICES

The following scope of services was conducted by or under the direct supervision of a State registered geotechnical engineer and certified engineering geologist.

Archival Research - Regional geologic maps and the referenced geologic reports addressing the site and vicinity were reviewed and utilized in the analyses of the proposed project.

Geologic Mapping - Detailed geologic mapping of existing surficial exposures was performed to supplement the existing regional geologic maps. Geologic mapping was extended as needed off-site to the crest of the ridgeline for consideration of gross slope stability analyses.

Shallow Seismic Refraction Traverse Surveys – Three shallow seismic refraction traverse surveys were performed to evaluate rock hardness and rippability in areas of possible deep cuts.

Subsurface Exploration and Sampling - Six (6) borings were drilled to depths ranging from 46 feet (B-1) to 16 feet (B-5 and B-6) below the existing ground surface. The borings were excavated with a subcontractor supplied and operated bucket auger drill rig equipped with a 24-inch bucket. Geologists from this office logged the borings from the surface. Bulk and relatively undisturbed drive samples were obtained from each boring during the drilling operations for geotechnical laboratory testing. The geologists entered selected borings for detailed observation of encountered geologic structure and stratigraphy.

Each exploratory excavation was backfilled at the completion of the logging and sampling operations with spoils from the excavations. The backfill was tamped with the drill rig equipment to densify the soil during placement in the exploratory borings, however, the backfill material may settle. Therefore, the site owner or representative should periodically inspect the locations to determine if the backfill has settled and to fill any depressions.

Laboratory Testing - A program of laboratory testing was performed to evaluate the geotechnical properties of the samples obtained during the drilling operations. The laboratory testing program included evaluation of: in situ moisture and density, compaction characteristics (maximum density/optimum moisture), shear strength, expansion, and consolidation potential.

Geologic Analyses - The results of the archival research, geologic mapping, and subsurface exploration are presented on the attached geotechnical map (Plate 1) depicting the approximate distribution of earth units on the site and cross sections. Cross sections were constructed to illustrate geologic structure and relationships between geologic structure, geologic units, and anticipated proposed grades. Geotechnical input for design in accordance with the 1997 Uniform Building Code minimums are provided.

Geotechnical Analyses – The field and laboratory test results were used to evaluate removal depths, shrinkage and subsidence, and slope stability. Grading and geotechnical foundation design recommendations were formulated based on our evaluation. Preliminary recommendations for structural sections (pavement) were also developed.

Report – This report was prepared which summarizes our findings, conclusions, and recommendations based on the previous and recent site investigations. Discussions of the geologic setting, ground water conditions, faulting and seismicity, earth material properties evaluated from laboratory testing, and stability analyses are provided. The report is completed with presentation of a geotechnical map and geologic cross section as well as appendices containing logs of the subsurface exploration, laboratory test methods and results, stability analyses, and preliminary construction details.

4 SITE DESCRIPTION

The approximately 7.1 acre parcel (hereafter referred to as site) is south and adjacent to Agoura Road, south of the Ventura Freeway (U.S. 101), between the Lindero Canyon Road and Reyes Adobe Road exits (Figure 1). Situated in the western part of the city of Agoura Hills, the site is east of the Oak Ridge Apartments (located at 30856 Agoura Road) and across the street from the Teradyne campus (located at 30801 Agoura Road).

The hillside site is along the north base of Ladyface ridge, in the central Santa Monica Mountains, between an elevation of approximately 955 and 1030 feet above sea level. Low gradient areas characterize the northern part of the site with slopes less than 5:1 (horizontal to vertical). Slopes are steeper in the southern part of the property. Here slopes are typically 3:1 (horizontal to vertical) or less, but limited areas along the southern property line are as steep as 1½:1.

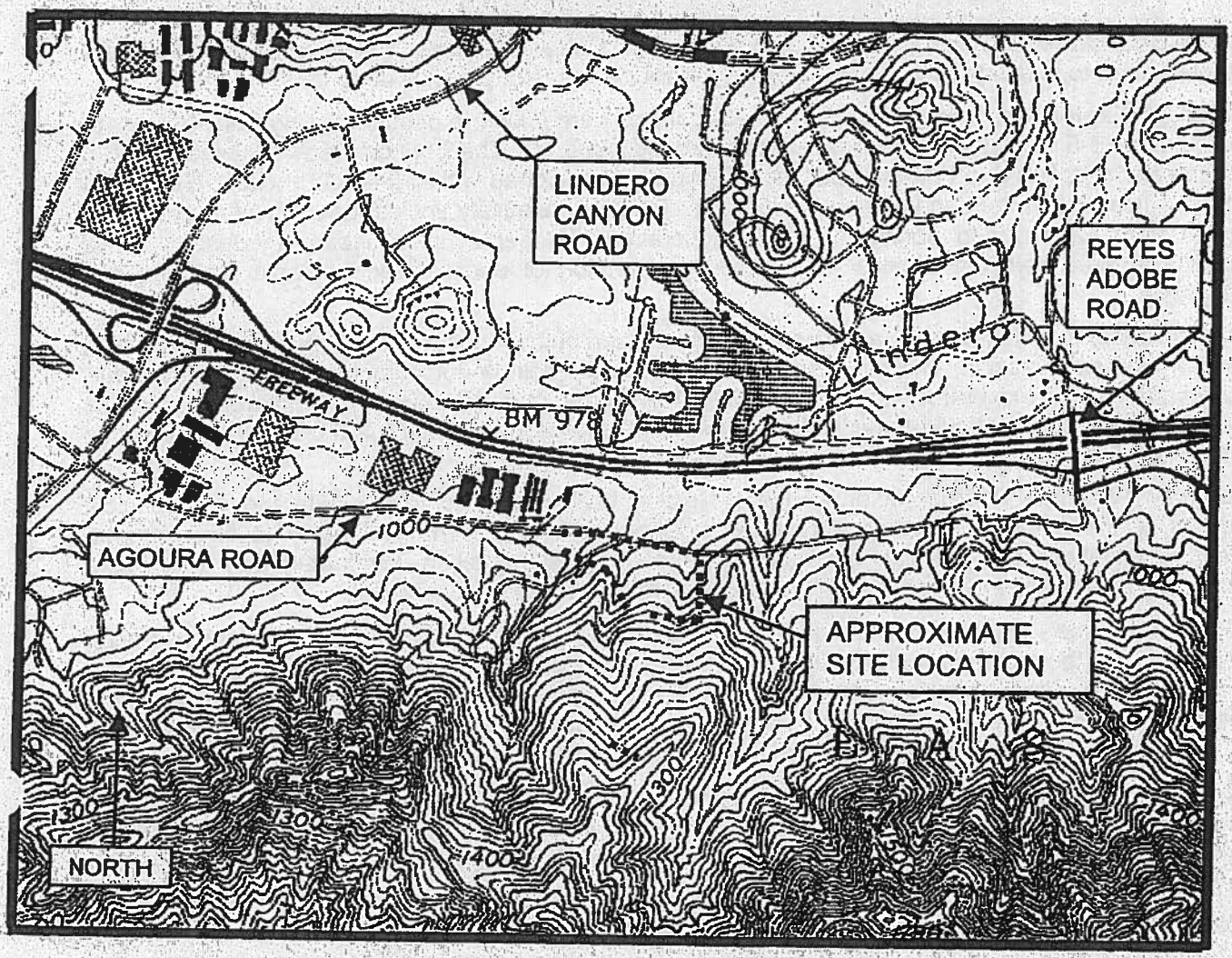


Figure 1. Portion of Thousand Oaks Quadrangle (7.5-minute series topographic) illustrating the approximate location of the site. Scale 1" ≈ 3,100 ft. (use quadrangle map for accurate scale).

Three drainage courses flow northerly across the site. The western drainage course is shown as a "blueline" stream on the U.S.G.S. quadrangle map (Figure 1). The stream courses drain to inlets along Agoura Road, which is on a fill berm along much of the site's northern property line. These drainages are tributary to Lindero Canyon creek.

Vegetation in the northern, lower gradient part of the site consists largely of annual grasses, herbaceous plants, and some scrub brush. Valley Oaks are relatively common in this area. In the canyons and steeper slopes of the southern part of the site, coastal live oaks, scrub brush, and chaparral plants are present. Willow and a cottonwood line the stream in the western part of the site.

Maps and aerial photographs in our files indicate that a residence was previously present in the western part of the site. In addition, two ancillary structures and graded roads were present. Debris is present in the western part of the site that appears to be the remnants of the previous structures.

5 REGIONAL GEOLOGIC SETTING

The site is in the Santa Monica Mountains that is an east-west trending mountain range along the southern edge of the Transverse Ranges geomorphic province. This geomorphic province is dominated by active compressional tectonics and is characterized by roughly east-west trending ranges and ridges with intervening canyons and valleys. The Santa Monica Mountains consist of a west plunging anticline (a convex upward-shaped fold) and the site is on the northern limb of this anticline along the northern base of Ladyface ridge. This anticline of the Santa Monica Mountains generally consists of Cretaceous and Tertiary rocks with a core of Jurassic metasediments and Cretaceous granitic rocks.

Ladyface ridge is a hogback composed of an interlayered sequence of volcanic and volcaniclastic rocks that are grouped in the Conejo Volcanics, which are of Miocene age. The layers of rock dip to the north at moderate angle (~40 to 60 degrees). North of Ladyface, is an area of low relief and rolling hills composed of marine sedimentary rocks and volcanic rocks. These rocks are complexly folded and faulted. Figure 2 is a portion of a portion of a geologic map by Weber (1984) that includes the area of the site.

6 SITE GEOLOGY

Based on our archival review, surficial mapping, and subsurface exploration programs, the area of the proposed development is mainly underlain by a relatively thick sequence of older alluvial soils. Marine sedimentary rocks assigned to the Calabasas formation underlie the Older Alluvium and in low gradient areas of the site residual soils and colluvial / younger alluvial soils mantle the Older Alluvium. Along the south easternmost site boundary and the steeper hillside to the south, hard volcanic bedrock of the Conejo Volcanics formation is exposed. General descriptions of these earth units are presented in the following sections. The areal distribution and spatial relationships of these earth units (except for topsoil / colluvium) are shown on the attached Geotechnical Map, Plate 1 and Cross Section, Plate 2.

.1 CONEJO VOLCANICS (Tcv)

Representing the oldest bedrock unit exposed on and adjacent the site, the Miocene–age Conejo Volcanics underlies the southernmost edge of the site and adjacent steeper hillside ascending Ladyface ridge. As observed in outcrop, the bedrock generally consists of andesitic agglomerate that dips at a moderate angle (27-55 degrees) to the north. Typically, this volcanic bedrock is indurated and considered stable.

6.2 CALABASAS FORMATION (Tc)

The Miocene-age Calabasas Formation underlies the major portion of the property. Although not exposed in outcrop, (being mantled by the surficial Older / Younger Alluvial deposits) this bedrock formation was encountered in all of our recent exploratory borings, except B-5, at depths ranging from 42.5 feet (B-1) to 10 feet (B-4) below the existing ground surface. As observed in our exploratory borings, the Calabasas Formation generally consist of pale olive to light olive gray to light olive brown silty claystone to claystone occasionally interbedded with very pale brown clayey siltstone and fine grained sandstone. Bedding within the Calabasas Formation bedrock is commonly massive to poorly defined and non-fissile. At depth, the Calabasas Formation becomes dark gray to black in color. The bedrock is typically tightly fractured with manganese and iron oxide staining yet is in a hard and moist condition.

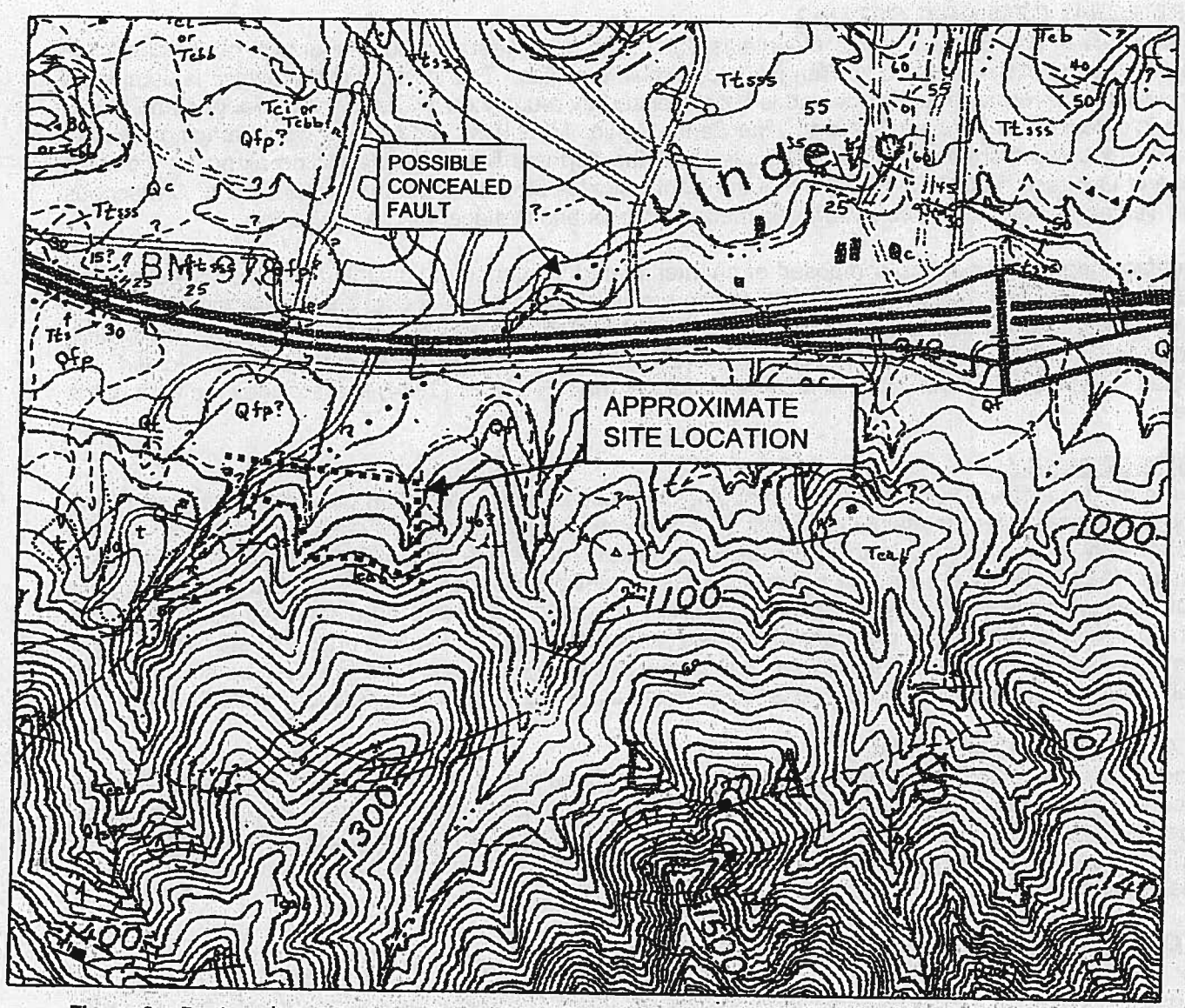


Figure 2. Portion of the geologic map of S½, Thousand Oaks Quadrangle, Ventura and Los Angeles counties, California by Weber and Blackerby (Weber, 1984). Symbols are as follows: Tcab, andesite to dacite flow breccia and agglomerate; Tcb, basalt; Tcbb, basaltic breccia; Tts, siltstone and shale; Ttsss, interlayered siltstone, sandstone, and shale; Qf, fanglomerate; Qfp, flood plain deposits; Qc, colluvium, Qs, bedrock slide.

Structurally, the Calabasas Formation in this area is plastically deformed with complexly folded, multi-directionally oriented bedding. Bedding orientations noted during downhole logging in boring B-2 were inclined to the northwest at low angles (10 to 12 degrees) and to the southeast at steep angles (37 degrees). Bedding observed in boring B-3 were inclined to the southwest at moderate to steep angles (24 to 88 degrees) before becoming vertical at 34.5 feet below the ground surface.

6.3 OLDER ALLUVIUM (Qoal)

As mentioned previously, Quaternary-age older alluvium mantles the underlying Calabasas Formation over most of the site, (refer to Plate 1). This relatively thick sequence of older alluvial soils forms the

ridge east of the site (being well exposed on the Agoura Road cut) and is expected to cap the spur (minor ridge) in the western part of the site.

As observed in our exploratory borings the thickness of the older alluvium varies from 35.5 feet (B-1) to 6 feet (B-6). The older alluvium generally consists of brownish yellow silty clay interbedded with silty fine to coarse sand and clayey fine sand grading downward to pale brown silty clay and clayey fine to coarse sand. This deposit is typically in a hard to dense and moist condition. The base of the older alluvium is generally denoted with fine to coarse sand and gravel with some cobbles of volcanic rock.

The contact with the underlying bedrock is abrupt with an irregular and undulatory to planar surface. In boring B-3, the contact with the underlying bedrock was inclined at 13 degrees to the northeast.

6.4 TOPSOIL / COLLUVIUM AND YOUNGER ALLUVIUM (Qal)

Low gradient areas of the northern part of the site are mantled by residual soils and colluvial soils while minor alluvial deposits are present were the canyon stream courses runout onto the low gradient areas of the northern part of the site. As encountered in the borings the topsoil / colluvium mantling the older alluvium varies in thickness from 7 feet (B-1) to 2.5 feet (B-3). The colluvium generally consists of very dark grayish brown to grayish brown sandy silty clay to silt with subangular to subrounded gravel to cobbles sized clasts of volcanic rock in a hard and damp to moist condition. Typically, the upper portion of these materials is porous with scattered roots. The Younger Alluvial deposits consist of unconsolidated sand, silts, and clays with scattered to locally abundant gravel to cobble size volcanic clasts.

6.5 ARTIFICIAL FILL

Mechanically placed fill is locally present that is associated with graded roads and with the previous building pads. A fill berm was constructed for Agoura Road along the northern edge of the property with the southern slope extending onto the site. Near surface soils are disturbed in the northern part of the site as a result of plowing for "weed abatement". Artificial fill, 1 foot in thickness, was encountered in boring B-5 mantling the colluvium. As encountered, the artificial fill generally consists of dark grayish brown very silty clay with roots and some rock. Additional areas of concealed deeper fill deposits may exist on the property and will need to be removed to underlying suitable materials within the limits of the proposed construction.

6.6 LANDSLIDES

No landslides were evident in our reconnaissance of the site nor are any shown to exist on-site in the regional geologic literature. However, we are aware that a landslide occurred along Agoura Road northeast of the site. A significant rotational failure occurred near the contact between clayey siltstone and the overlying saturated older alluvial deposits. A landslide has been "mapped" by Weber and Blackerby (Weber, 1984) southwest of the site in terrain underlain by volcanic bedrock (see Figure 2). Landslides are relatively uncommon in areas underlain by Conejo Volcanics and generally, irregular topographic expressions due to resistant rocks have been misinterpreted as landslides. Bedrock of the Conejo Volcanics is generally the most stable rock unit within the area.

6.7 GROUNDWATER

Groundwater was encountered in boring B-1 at 24 feet below the ground surface in a silty fine to coarse sand layer within the older alluvium and as seepage in boring B-3 from 15.3 feet to 16.9 feet below the ground surface. The seepage was observed just above the contact with the underlying bedrock.

7 FAULTING AND SEISMICITY

The site is within a seismically active region that will experience occasional damaging earthquakes. The destructive power of earthquakes can be grouped into fault-rupture, ground shaking (strong motion), and secondary effects of ground shaking (such as tsunami, liquefaction, settlement, landslides).

The hazard of fault-rupture is generally thought to be associated with a relatively narrow zone along well-defined pre-existing active or potentially active faults. No active faults are known to cross the site and the project site is not within an Alquist-Priolo Earthquake Fault Zone as defined by the State Geologist (Hart and Bryant, 1997). The Malibu Coast fault is the nearest active fault; it is located about 7 miles south of the site (Figure 3). As depicted on the geologic map, Figure 2, by Weber (1984), a northeast trending fault is interpreted to cross the western part of the site. This fault, if indeed present, is a minor local feature. Some geologists have suggested that the contact between the Conejo Volcanics and Calabasas Formation in this area may be a fault contact. While this may account for the complex folding (plastic deformation) observed in the Calabasas Formation on site, this relationship has not been demonstrated. It appears that the contact between theses two bedrock units is beyond the area of proposed construction; probably south of site, past borings B-2 and B-3.

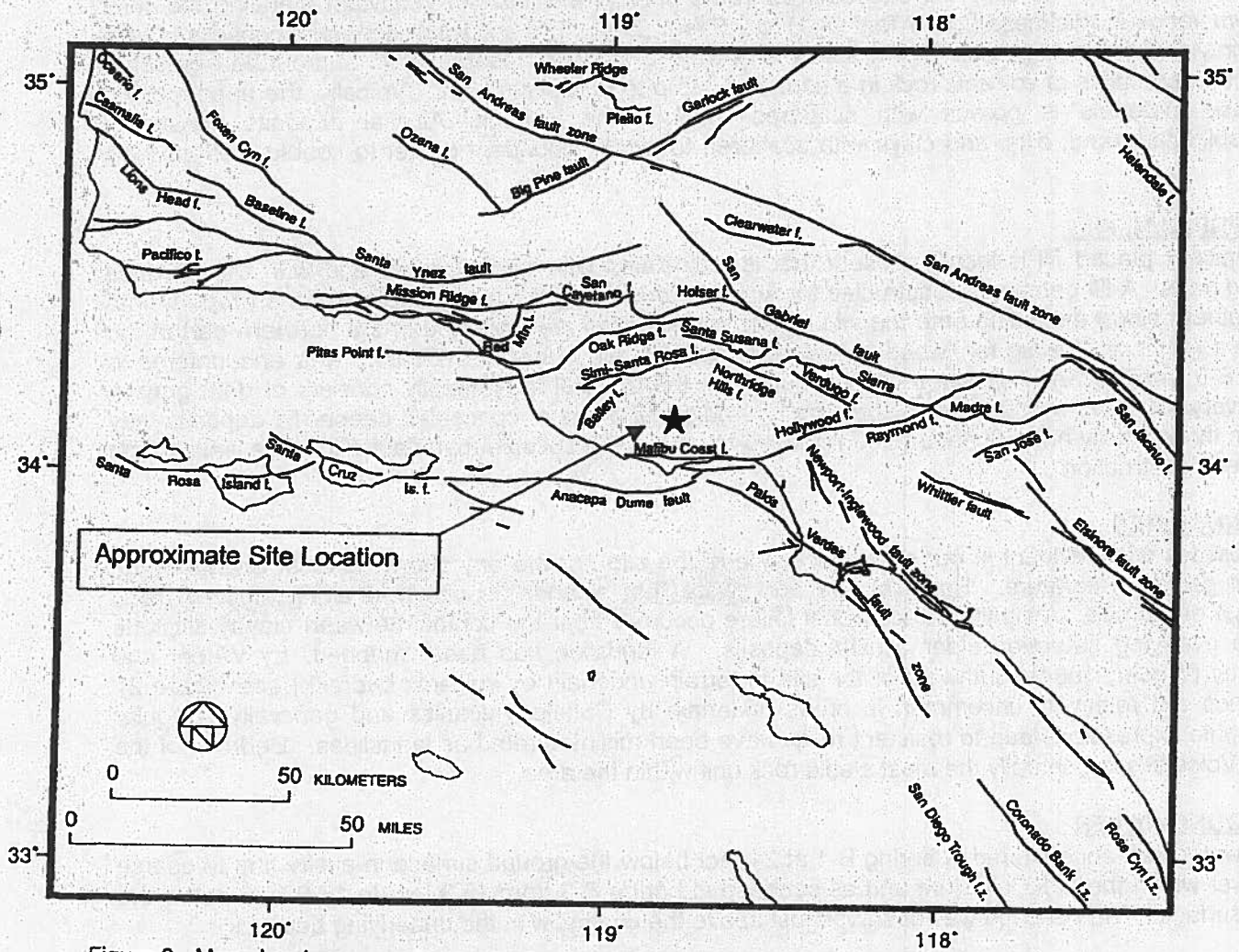


Figure 3. Map showing approximate site location in relationship to Holocene and late Quaternary faults of the Los Angeles region after Jennings (1992).

The site will be subjected to ground motion from occasional earthquakes in the region. Based on Petersen et al. (1996), the ground motion exceeded once, on the average, every 475 years (10% probability in 50 years) at the site is 40 to 50 percent gravity.

The secondary effects of strong ground motion include tsunami, seiche, liquefaction, settlement, landslides, etc. Tsunami (seismic sea wave) and seiche (standing wave) are not hazards inherent to the site. Generally, surficial soils in this area are clayey and dense and not susceptible to seismic settlement or liquefaction.

8 ROCK HARDNESS

Three shallow seismic refraction traverse surveys were preformed to provide data for the evaluation of rock hardness and rippability of the areas of the deepest proposed cuts. The locations of our traverses are shown on the attached Geotechnical Map, Plate 1.

The excavation characteristics of rock material are a function of lithology, seismic velocity, geologic structure, ripping equipment capacity, and operation. Shallow seismic refraction survey traverses can provide data to compute compressional wave velocities (p-wave) traveling through the underlying earth materials. These velocities can be roughly correlated with the rippability of these materials by conventional grading equipment. These correlations are not precise but rather, are intended to represent a generalized means of indicating relative excavation characteristics.

Based on our experience with full-scale rippability tests at other sites in the area, thick to massively bedded Conejo Volcanics Formation bedrock materials can be ripped to a maximum compression wave velocity of approximately 7500 to 9500 feet per second (ft/sec). The rippability tests were performed utilizing a D9R Caterpillar tractor or equivalent bulldozer in good condition with a single shank, variable pitch ripper. Although rippable, oversized rock (i.e., rock greater than 8" diameter) can be generated in materials above 5000 ft/sec. Other tests with a Caterpillar D-10N bulldozer equipped with a single shank variable pitch ripper indicated that the D-10N was able to rip bedrock at production rates to within the 8,500 to 10,500 ft/sec range. At higher velocities, however, very difficult ripping was encountered and considerable quantities of oversized rock was generated.

The average (and rounded) results of our (two direction) shallow seismic refraction survey traverse is presented in Table 1. Comments regarding rock rippability reflect usage of Caterpillar D9R bulldozer or equivalent, and are based on local experience and on rippability curves published by Caterpillar, Inc. (1995).

TABLE 1
SHALLOW SEISMIC REFRACTION TRAVERSE SURVEY RESULTS

Traverse Number	Layer	Depth (ft)	Average Velocity (ft/sec)	Comments
ST-1	1	surface to 5	1550	Easy ripping
	2	5 to at least 32	2150	Moderate ripping
	3	>32	7000*	Possible blasting
ST-2	1	surface to 6½	1310	Easy ripping
	2	6 ½ to at least 43	2690	Moderate ripping
	3	>43	7000*	Possible blasting
ST-3	1	surface to 5	1520	Easy ripping
	2	5 to at least 38	2520	Moderate ripping
	3	>38	7000*	Possible blasting

*Assumed velocity of layer 3 (used to calculate depth to layer 3)

The seismic traverse indicates that the surficial soil is easily rippable. At a depth of about 5 feet below ground surface (bgs) the earth material is moderately rippable to at least 32 feet. Consequently, the proposed design grades should be able to be obtained without blasting or difficult ripping. The results suggest that the material underlying the site in the area of the proposed cuts is not composed of hard rock and may not be underlain in the shallow subsurface by volcanic rock as depicted on regional geologic map.

As a matter of completeness, we quote from the *Caterpillar Performance Handbook*, edition 26, pg.1-73:

"*Use of Seismic Velocity Charts*

The charts of ripper performance estimated by seismic wave velocities have been developed from field tests conducted in a variety of materials. Considering the extreme variations among materials and even among rocks of a specific classification, the charts must be recognized as being at best only one indicator of rippability.

Accordingly, consider the following precautions when evaluating the feasibility of ripping a given formation:

- *Tooth penetration is often the key to ripping success, regardless of seismic velocity. This is particularly true in homogeneous materials such as mudstone and claystone and the fine-grained caliches. It is also true in tightly cemented formations such as conglomerate, some glacial tills and caliches containing rock fragments.*
- *Low seismic velocities of sedimentaries can indicate probable rippability. However, if the fractures and bedding joints do not allow tooth penetration, the material may not be ripped effectively.*
- *Pre-blasting or "popping" may induce sufficient fracturing to permit tooth entry, particularly in the caliches, conglomerates and some other rock; but the economics should be checked carefully when considering popping in the higher grades of sandstones, limestones and granites.*

Ripping is still more art than science, and much will depend on the skill and experience of the tractor operator. Ripping for scraper loading may call for different techniques than if the same material is to be dozed away. If cross-ripping is called for, it, too, requires a change in approach. The number of shanks used, length and depth of shank and tooth angle, direction, throttle position--all must be adjusted according to field conditions encountered. Ripping success may well depend on the operator finding the proper combination for those conditions."

9 SLOPE STABILITY

9.1 GENERAL

Manufactured slopes will be constructed at a maximum gradient of 2(h):1(v) or flatter within the proposed development area. Cross section A-A' has been drawn to depict the proposed stepped building design with the natural ascending slope above. Stability analyses were conducted using this cross section to evaluate the gross stability of the lower proposed development and the natural slope above. Surficial stability of the existing slope was also evaluated. Based on the geology observed, no continuous adversely oriented bedding planes or other structural elements are anticipated within the Conejo Volcanics or Calabasas Formation.

The computer program GSTABL7 that utilizes Bishop's simplified method of slices for rotational failures was used to evaluate gross slope stability of the proposed slopes discussed above. The results of the gross and surficial stability analyses are presented in Appendix D.

9.2 Shear Strength Parameters

The shear strength parameters used in the slope stability analyses were derived from a series of direct shear test results conducted on samples from the recent investigation. Shear strength parameters for Conejo Volcanics bedrock were derived from direct shear testing conducted on relatively undisturbed bedrock samples from a nearby site with bedrock of the same formation (Gorian, 1979). The resulting shear strength parameters are as follows:

SOIL TYPE	UNIT WEIGHT	COHESION	FRICTION ANGLE
Engineered Fill	125 pcf	400 psf	21.5°
Older Alluvium	125 pcf	200 psf	35°
Calabasas Formation	125 pcf	560 psf	27.5°
Conejo Volcanics	125 pcf	1000 psf	26°

9.3 Ground water

In the analyses, two types of water input were used to model the conditions at the site. In general, a piezometric ground water surface was input and applied to the Older Alluvium and Calabasas Formation. The surface was modeled at the contact between the Older Alluvium and artificial fill placed for Agoura Road near the base of the section transitioning to the contact between the Older Alluvium and Calabasas Formation beneath the proposed building. The transition was modeled to account for the drainage that will be installed at the toes of proposed retaining walls. In addition to the piezometric surface, a constant pore pressure of 312 psf was applied to the Conejo Volcanics to account for possible seeps that may occur within this formation. This value is equivalent to having a water level 5 feet above each failure plane evaluated within the Conejo Volcanics.

9.4 Global Analyses

Global static and pseudostatic stability analyses were conducted to evaluate the stability of both the entire slope and the lower portion that is being affected by the proposed development. Rotational failure paths were evaluated with varying toe and exit paths to find the critical failure surface. Pseudostatic analyses were conducted using a horizontal acceleration coefficient of 0.15g. The results of the

analyses indicate that the proposed development has satisfactory factors of safety against global rotational failures. The output and plot files from the stability analyses are contained in Appendix C, herein.

9.5 Surficial Stability

The proposed 2(h):1(v) cut and fill slopes have a minimum factor of safety of 1.5 as demonstrated by the surficial stability calculations presented in Appendix C.

10 CONCLUSIONS AND RECOMMENDATIONS

10.1 GENERAL

The site was found to be suitable for the proposed development from a geotechnical standpoint. Geotechnical recommendations for site development and foundation design are presented below. The conclusions and recommendations should be reviewed if development plans or site conditions change. All aspects of grading including site preparation, excavation and fill placement should be performed per the city of Agoura Hills grading ordinances.

10.2 SEISMIC DESIGN

The site may be designed per the minimum seismic design presented in 1997 Uniform Building Code (UBC), Chapter 16 with the understanding that the site acceleration could be higher than that addressed by code values. The purpose of the UBC earthquake provisions is primarily to safeguard against major structural failures and loss of life, not to limit damage or maintain function. Therefore, cracking of walls and possible structural damage should be anticipated in a significant seismic event.

UBC – CHAPTER 16 TABLE NO.	SEISMIC PARAMETER	VALUE PER1997 UNIFORM BUILDING CODE
16 - I	Seismic Zone Factor Z	0.40
16 - J	Soil Profile Type	S_D
16 – Q	Seismic Coefficient (C_a)	$0.44N_a$
16 – R	Seismic Coefficient (C_v)	$0.64N_v$
16 - S	Near-Source Acceleration Factor, N_a	1.0
16 – T	Near-Source Velocity Factor, N_v	1.06
16 - U	Seismic Source Type	B
Map L-32	closest distance to known seismic source (Malibu Coast Fault)	8.4 km

Secondary effects of strong ground motion include such phenomena as tsunami, seiche, liquefaction, seismic settlement, mass wasting, and flooding from dam failure. Tsunami, seiche, and seismically induced mass wasting are not hazards inherent to the site. The site is not considered susceptible to liquefaction and seismic settlement.

10.3 SITE PREPARATION AND GRADING

10.3.1 Site Cleanup

Deleterious surface materials, including trash, debris, vegetation, and organic materials present on-site at the time of grading should be removed.

10.3.2 Soil Removal

All non-engineered fill, recent alluvium and colluvium within the site should be removed from areas of construction and a minimum of five feet beyond. Additionally, older alluvial soil removals should extend to competent soil having a minimum relative compaction of 85% or bedrock, whichever is less. However, within the building area and five feet beyond, the soil removal should extend to in-place soils having a

minimum relative compaction of 90% or competent bedrock, whichever is the lesser removal. Alluvial removals should be on the order of 3 to 10 feet and 7 to 15 feet in parking areas and the building pad, respectively. The bottoms of removal areas should be observed by a representative of this office to evaluate if local areas exist where deeper removals are necessary.

10.3.3 Relative Compaction

Relative compaction is the ratio of the in-place dry density to the maximum dry density as determined in general conformance with ASTM test method D 1557.

10.3.4 Building Area Undercuts

In addition to the soil removals discussed in the *Soil Removal* section above, the cut portion of the building pad area should be undercut. The undercut should extend to a minimum depth of three feet below the bottom of the footings and five feet beyond the building's perimeter. The undercut should extend to five feet behind interior retaining wall footings. A construction level foundation plan will be necessary to provide the foundation depths and locations.

10.3.5 Over Excavation in Bedrock Areas Behind Retaining Walls

Although not anticipated, if retaining wall backcuts penetrate into the Calabasas Formation, an equipment width stabilization fill should be constructed to remediate possible localized adverse elements of the complexly folded bedding. The project geotechnical consultant should observe all retaining wall backcut excavations.

10.3.6 Preparation of Fill Areas

All areas to receive fill should be processed before placing fill. Processing should consist of surface scarification to a minimum depth of 8 inches, moisture conditioning to approximately 2% over the optimum moisture content, and recompaction to a minimum of 90% relative compaction.

10.3.7 Keying and Benching

All fills placed on slopes steeper than 5(h):1(v) should be keyed and benched (horizontal benches) into firm competent in-place soil or bedrock (after all required removals are made). All keyways should be a minimum of 15 feet wide measured from the design toe of slope and cut a minimum depth of 2 feet at the toe into firm competent in-place soil or bedrock. Keyways should be tilted into the slope and should be at least 3 feet deep at the heel (measured from below the slope toe elevation). A representative of this office should observe the keyways before placing any fill. Horizontal benches should be a minimum of 5 feet wide, i.e. a minimum 5 feet of competent material. A representative of this office should observe benching before placing any fill soils. A Typical Fill Over Natural Slope Detail is presented herein, Figure 4.

10.3.8 Fill Placement

Fill soils should be cleaned of deleterious materials including trash, debris, organic matter, and rocks larger than 12 inches. Fill soils should be placed in thin uniform lifts, brought to 3% over the optimum moisture content, and compacted to a minimum of 90% relative compaction.

Soils excavated on-site may be used as fill. However, clayey soils having expansion indices greater than 130 should not be placed within the building footprint and five feet beyond or within 10 feet of the slope faces. Very highly expansive clays were found to be located within the older alluvium units during the subsurface investigation. Therefore, selected grading will be necessary within the building and slope areas. The expansion potential of the very highly expansive on-site soils (EI > 130) could possibly be reduced by blending very highly expansive soils with the more granular soils. If the soils are blended, the soils should be disked to provide thorough mixing. Frequent expansion index tests should be performed during grading to determine if the resulting expansion indices are below 130 within the building and slope

areas. Additionally, select grading will be required within a 1(h):1(v) wedge, projected up from the toe, hind retaining walls and within 10 feet of any fill slopes.

The very highly expansive on-site soils (EI > 130) whenever possible should be placed at the base of the proposed fills in the parking and drive areas. Near the parking and drive finished grades, the expansive clayey soils may be used if lime treated. Parking and drive subgrade soils may be lime treated using 4% to 5% lime, measured by weight, to a minimum depth of 8 inches. Subgrade preparation, lime spreading, mixing, and compacting should be completed per the Greenbook 2000 specifications.

If import fill is required, the project geotechnical consultant should approve the sources of the fill. The shear strength parameters and the expansion indices of the fill soils should be determined by this office prior to importing to the site.

10.3.9 Subdrains

Subdrains should be placed in the two drainage swales crossed by the proposed access road as shown on the geotechnical map. The subdrains should be constructed as described below and shown on the attached Typical Subdrain Detail, Figure 5. The drain should be installed in a backhoe trench cut into competent native soils or bedrock. No portion of the drain should be constructed in engineered compacted fill.

The 3-foot wide by 3-foot deep subdrain should be encased in 9 cubic feet of drain material per lineal foot of pipe. The drain material should consist of 3/4 to 1-inch clean coarse aggregate or equivalent wrapped with filter fabric having an equivalent screen opening size of 70± to 100 (such as Supac 4NP, Mirafi 140S or equivalent). The pipe should be a minimum 6-inch diameter perforated PVC (Schedule 40) pipe or equivalent (such as ABS-SDR 35). Perforations should be no more than ½ inch diameter and placed down. The last 10 feet of drainpipe prior to the outlet should be non-perforated. A concrete cutoff wall should be constructed at the transition from perforated to non-perforated pipe.

The subdrain locations and installation should be observed by an engineering geologist from this office. The subdrain outlet should be located and maintained to allow unrestricted flow through the subdrain system. The end of the subdrain outlet pipe should be covered with a slotted cap. The locations of the subdrains should located by the project surveyor.

10.3.10 Temporary Excavations

Temporary slopes should conform to the requirements of CAL/OSHA. Surcharge loads should be setback a distance at least equal to the depth of the cut or trench from the tops of temporary excavations or 5 feet, whichever is more

10.3.11 Utility Trenches

Backfill of all utility trenches within building, parking, and drive areas should be compacted to a minimum of 90% relative compaction.

10.3.12 Shrinkage and Subsidence

Shrinkage or bulking is the volume loss or gain respectively of soils excavated and recompacted. Shrinkage of the recent alluvium and artificial fill is expected to range from 5 to 15 percent. Colluvium and older alluvial soils are expected to shrink on the order of 5 to 10 percent and shrinkage of bedrock that is removed and recompacted should range from 0 to 5 percent. For example, 1 cubic yard of cut in older alluvium will yield approximately 0.9 to 0.95 cubic yards of engineered compacted fill. In addition to the shrinkage/bulking values presented above, subsidence or a loss of 0.1 to 0.2 feet should be considered for stripping of vegetation and densification of the surface soils.

10.4 SLOPE CONSTRUCTION

10.4.1 General

Manufactured fill and cut slopes may be constructed at maximum gradients of 2(h):1(v). Select grading will be required when constructing fill slopes since highly expansive soils should not be placed within the slope faces.

10.4.2 Fill Slopes

The proposed fill slopes should be keyed and benched into competent native soil or bedrock materials, as previously recommended. Select grading will be required when placing fill materials within 10 feet of permanent slope faces as described above in the fill placement section. In addition, fill soils near slope faces should have at least 250 psf cohesive shear strength. Where possible, the outer slope faces should be overfilled and trimmed back to provide for firm, well-compacted surfaces. The slope faces should be compacted with a sheepsfoot and/or grid roller if the slopes are not trimmed back. The slope faces should be tested and reworked as necessary to achieve the required compaction.

Fill slopes over 10 feet high should be constructed with a backdrain constructed at the heel of the slope keyway. The drain should consist of a four inch diameter perforated PVC (Schedule 40) or equivalent (such as ABS-SDR 35) drainpipe. The pipe should be placed with perforations down approximately 1 to 2 inches from the bottom of the excavation and contained in a minimum 2 square feet of ¾ ± inch crushed rock. The rock within the drain should be wrapped in filter fabric having an equivalent screen opening size of 70± to 100 (such as Supac 4NP, Mirafi 140S or equivalent) with all joints overlapped a minimum of 12 inches. Outlet pipes should be installed at roughly 100-foot intervals with a minimum of two outlets per slope. A concrete cutoff wall should be installed at the transition from perforated to non-perforated pipe. The backdrain excavation should be observed by a representative of this office prior to backfilling.

10.4.3 Cut Slopes

Cut slopes may be made at gradients of 2(h):1(v) or less. Adverse geologic conditions are not anticipated in the cut slopes however; all slopes should be evaluated by this office during grading.

10.4.4 Berms

Compacted earthen berms should be constructed on pads adjacent descending slopes to direct water away from the slope and the pads should be graded to provide drainage away from the tops of slopes.

10.4.5 Slope Maintenance

All slopes constructed within the site will require maintenance or protection to reduce the risk of erosion and degradation with time due to natural or man-made conditions. The manufactured slopes should be appropriately planted with dense, deep rooting, drought resistant groundcover with shrubs and trees per the appropriate city of Agoura Hills guidelines. A reliable irrigation system should be installed, adjusted so that over watering does not occur, and periodically checked for leakage. The slopes should be irrigated in a prudent manner where only sufficient water is applied to the slopes to maintain the vegetation. In addition, prudent irrigation practices would not allow the slopes to dry out or become overly wet. The landscape architect should select the appropriate slope cover and determine the frequency of watering that will be dependent on plant type and seasonal variations. The slopes should not be over watered and should not be watered before forecasted rain. All drainage structures should be kept in good condition and clean. Burrowing animals (e.g., ground squirrels) can destroy slopes; therefore, where present, immediate measures should be taken to eliminate them.

10.5 SOIL EXPANSIVENESS

Expansion tests performed on representative samples of the upper soil profile and bedrock resulted in expansion indexes of 80 and 177, which are in the moderately and critically high range, respectively.

The recommended grading is intended to reduce the expansion potential within the building area to a soil expansion of less than 130. However, due to the proposed grading, additional expansion tests should be performed within the finished pads to determine the appropriate final expansion to be used for final foundation design. For planning purposes, foundation design recommendations for two expected expansion ranges are presented in the foundation section of this report.

Expansive soils contain clay minerals that change in volume (shrink or swell) due to variations in soil moisture content. The amount of volume change depends upon soil swell potential, availability of water, and soil restraining pressure. Geotechnical recommendations presented herein are generally consistent with the standard level of practice in this area. However, these recommendations are not intended to eliminate the effects of expansive soils. Additional recommendations can be provided to further reduce the potential for expansive soil action and inherent risk; these recommendations are generally beyond standard practice for the area and may be of substantial cost. In addition to the foundation recommendations presented in the following section, the following drainage and watering recommendations should be followed to help mitigate the effects of expansive soils.

a) Positive drainage should be continually provided and maintained away from structures and should not be changed creating an adverse drainage condition. Ponding or trapping of water adjacent foundations can cause differential moisture levels in subsurface soils. Plumbing leaks should be immediately repaired so the subgrade soils underlying the structure do not become saturated.

b) Initial landscaping should be undertaken in unpaved areas adjacent to structures. However, trees and shrubbery should not be planted where roots can grow under foundations and hardscape when they mature.

c) Landscape watering should be held to a minimum; however, landscaped areas should be maintained in a uniformly moist condition and not allowed to dry out.

10.6 FOUNDATION DESIGN

10.6.1 General

The foundations and slabs-on-grade should be designed by a structural engineer in accordance with the current applicable building code and following recommendations. A final expansion test(s) should be performed at the conclusion of the proposed rough grading to determine the expansions of the finished building pad. The following foundation recommendations are considered to be within the standard of practice within the area and comply with the city of Agoura Hills Building Code.

10.6.2 Conventional Footings

The proposed construction may be supported on continuous and spread footings embedded in properly compacted fill. Continuous and isolated footings, a minimum of 12 and 24 inches wide respectively, may be designed to impose an allowable net bearing pressure of 2000 pounds per square foot (psf). This value may be increased by 250 psf for each foot of increased footing width. The bearing value may also be increased by one third for temporary wind and seismic loading.

Embedment depth for expansive soils of EI 51-90 and EI 91-130 should be a minimum of 30 and 36 inches respectively. Soils with an EI of greater than 130 should not be placed within the building footprint or 5 feet beyond. The embedment for exterior perimeter footings should be measured from the lowest adjacent rough grade or permanent lowest grade, whichever is deeper. Interior footing embedment may be measured from the top of the interior slab-on-grade. The footing reinforcement should be per the structural engineer's design. However, continuous footings should be reinforced with a minimum of two #5 bars in the top and bottom (total of four bars).

10.6.3 Settlements

Maximum foundation settlement due to static loading should not exceed 1/2 inch based on anticipated wall loads of approximately 3 kips/linear foot and isolated footing loads of approximately 15 to 20 kips. Settlement is also based on the remedial grading as recommended herein. Differential settlement between similarly loaded footings is expected to be less than ¼ inch. Settlements are expected to occur rapidly as loads are applied. After construction is completed, no long-term settlements are anticipated. However, footing movement could occur due to expansive soil movement if extreme moisture changes are allowed to occur under the foundations.

10.6.4 Lateral Soil Resistance

Lateral forces on foundations may be resisted by lateral passive earth pressure and base friction. Passive earth pressure may be assumed equal to an equivalent fluid pressure of 300 pounds per cubic foot for level ground, however should not exceed 2,000 pounds per square foot. This allowable passive pressure may be used adjacent a descending slope provided the footing has a setback to slope face distance equal to that required by Figure 18-1-I of the Uniform Building Code. Footings adjacent to descending slopes and requiring passive pressure should be deepened to meet the setback requirements. A coefficient of friction of 0.30 may be assumed along the base of concrete elements cast directly against the subgrade. Passive earth pressure and friction may be combined with no reductions.

10.6.5 Conventional Slabs

Conventional concrete slabs-on-grade should be a minimum of 5 inches thick and reinforced at mid-height with #4 bars placed on 18 inch centers each way for soils with an EI of less than 130. The slab reinforcement should be extended into the footings to within 3 inches from the footing bottom. The slab subgrade soils should be recompacted before placing sand subbase, if soils were disturbed during footing construction or utility installation.

0.6.6 Moisture Penetration

Subgrade soils underlying footings and slabs-on-grade should be moistened to a minimum of 3% over the optimum moisture content to a minimum depth of 24 inches. Subgrade soil premoistening should be achieved and maintained at least two days before pouring concrete. Moisture penetration testing should be performed by this office before pouring concrete. Soils silted into footing or deepened edge excavations during the premoistening operations should be removed before pouring the concrete.

10.6.7 Moisture Barrier

Slabs-on-grade should be underlain by a minimum of 6-inch thick clean sand layer. A minimum 10-mil thick polyethylene membrane should be placed mid-height in the sand. The membrane should be sealed around plumbing pipes.

10.6.8 Concrete Placement

Concrete shrinks as it cures resulting in shrinkage tension within the concrete mass. The development of tension results in cracks within the concrete since concrete is weak in tension. Therefore, the concrete should be placed using procedures to minimize shrinkage and cracking within the slab. Shrinkage cracks can become excessive if water is added to the concrete above the allowable limit and proper finishing and curing practices are not followed. Concrete mixing, placement, finishing, and curing should be performed per the American Concrete Institute Guide for Concrete Floor and Slab Construction (ACI 302.1R-89). The concrete slump should be per the structural engineer's specifications for concrete slabs-on-grade. Where shrinkage cracks would be unsightly, concrete slabs on grade should be provided with tooled crack control joints at 10-15 foot centers or as specified by the structural engineer.

10.6.9 Floor Covering

Tile flooring can crack, reflecting cracks in the concrete slab below. Therefore, the slab designer should consider additional slab reinforcement where tile will be placed. The tile installer also should consider using approved materials and techniques recommended by the Tile Council of America/Ceramic Tile Institute. A vinyl crack isolation membrane placed between the tile and concrete slab-on-grade is one method to reduce possible cracking of tile. The concrete slab-on-grade should be tested for moisture where organic floor covering will be used such as wool carpet or wood flooring. Slab sealers should be used if necessary per the flooring manufacturer.

10.6.10 Footing and Beam Excavations

All footings should be cut square and level and cleaned of all loose slough and soils silted into the excavations during the premoistening operations. Soil excavated from the footing trenches should not be spread over any areas of construction unless properly compacted. The footing excavations should be observed by a representative of this office before placing reinforcing steel. The footings should be cast as soon as possible to avoid deep desiccation of the footing sub-soils.

10.6.11 Footings on or Near Adjacent Slopes

Footings located on or near the top or toe of slopes should be deepened or setback to provide footing support and to reduce the impact of changes that can occur on slope faces. The setbacks presented in Chapter 18 of the 1997 Uniform Building Code should be used as a minimum with the following revision. Because of the possible presence of critically high expansive soil, the minimum setback from a descending slope should be increased to 10 feet. Setbacks or footings deepened to meet the setbacks should be used for all buildings and accessory structures that are sensitive to differential movement adjacent to a descending slope.

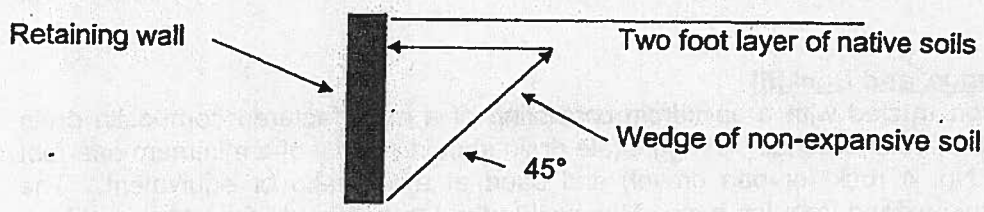
10.7 RETAINING WALL DESIGN

0.7.1 Foundations

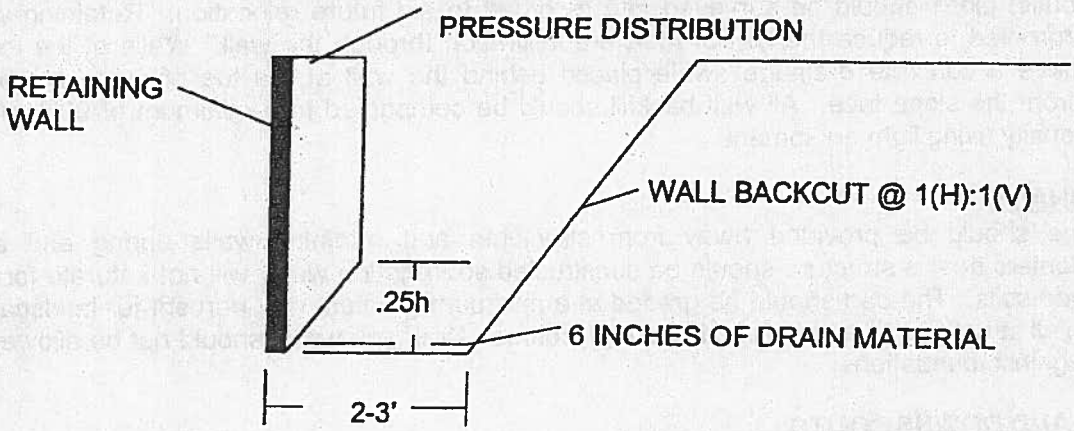
Continuous footings for exterior retaining walls founded below level ground may be designed to impose a uniform allowable soil bearing pressure of 2,000 psf. The bearing value may be increased by 250 psf for each one foot of increased footing width. However, the bearing value should reduced to 1500 psf where the footing is adjacent to a descending slope. The maximum pressure under the toe should not exceed the allowable bearing pressure. The resultant of the retaining wall footing pressure should pass within the middle third of the width of the footing. The footings (outside the proposed buildings) should be embedded a minimum of 30 inches into firm soils having an EI of less than 130 and have a minimum width of 24 inches. Footing reinforcement should be per the structural engineer's recommendations. Footings adjacent to descending slopes should be deepened as described above in *Footings on or Near Adjacent Slopes* section above.

10.7.2 Active Pressures

Retaining walls should be designed to resist an active pressure exerted by compacted backfill or retained soil/bedrock. Retaining walls that may yield at the top may be designed for an equivalent fluid pressure equal to 40 and 55 psf for a level or 2(h):1(v) sloped backfill, respectively. The backfill placed behind the walls should have an expansion of less than 20. The non-expansive backfill should (where feasible) extend up from the bottom of the wall at a minimum 45-degree angle from the back of the wall. The backfill should be benched in to any backcut. The upper two feet of the backfill should consist of soils similar to the adjacent grade or backcut.



Braced retaining walls should be designed for a pressure of 40H(psf) where H is the height of the retained soil. The pressure distribution should be over the area shown below. The backcut should be overcut at least 2-3 feet from the face of the wall and the cut should be sloped at a maximum 1(h):1(v) gradient. The above pressure may be reduced to 25H providing the backcut is filled using gravel or soil having an expansion index of less than 20. The backdrain should be designed as recommended herein or a filter cloth covered drainage board may be used directly along the back of the wall. The invert of the drainpipe should be a minimum of 6 inches below the surface of the interior slab. In addition a minimum 6 inches of drain material should be laid over the entire surface of the base of the overcut.



NOT TO SCALE

The footing embedment for retaining walls within the building may be measured from the top of the interior slab or from the exterior grade, whichever is deeper. An engineering geologist from this office should observe retaining wall backcuts in bedrock for adverse geologic conditions.

10.7.3 Seismic Pressures

Since the site is located in an active seismic area, retaining walls are expected to experience additional surcharge pressure due to backfill inertia during a seismic event. Walls greater than 10 feet in height should be designed for a seismic lateral pressure taken as in inverted triangular pressure of 20 pcf. The resultant of the seismic pressure should be considered to act at 0.67H from the base of the wall, where H is the height of the wall measured from the base of the footing to the top of the backfill.

10.7.4 Lateral Soil Resistance

Lateral forces on foundations may be resisted by lateral passive earth pressure and base friction. Passive earth pressure may be assumed equal to an equivalent fluid pressure of 300 pounds per cubic foot for level ground, however should not exceed 2,000 pounds per square foot. A coefficient of friction of 0.30 may be assumed along the base of concrete elements cast directly against the subgrade. Passive earth pressure and friction may be combined with no reductions. However, the passive pressure should reduced to 250 pcf where the retaining wall footing is adjacent to a descending slope. Footings

adjacent to descending slopes should be deepened as specified above in the *Footings on or Near Adjacent Slopes* section.

10.7.5 Retaining Wall Drainage and Backfill

Retaining walls should be constructed with a backdrain consisting of a manufactured composite drain board or a section of aggregate drain material. An aggregate drain should consist of a minimum one-foot wide continuous section of No. 4 rock (or pea gravel) and sand at a 1:1 ratio or equivalent. The aggregate drain material should extend from the base of the wall to the top of the wall for interior walls or to within 2 feet of the top of exterior walls. The upper 2 feet of exterior wall backfill should consist of compacted native soils. A layer of filter cloth should be placed between the drain material (including non-expansive backfill) and 2 foot soil cap to minimize the migration of fines into the drain material. The filter cloth should have an equivalent screen opening size of 70± to 100 (such as Supac 4NP, Mirafi 140S or equivalent). The composite drain board or aggregate section should be drained by a four inch diameter perforated Schedule 40 PVC or equivalent drainpipe (perforations ½± inch or smaller, perforations down) located in the lower portion of the drain. The invert of the drainpipe should be at least 6 inches below any adjacent slab-on-grade. The drainpipe may be laid flat along the top of the footing at the back of the wall. Drainpipes outside the retaining wall backdrain should be sloped at a minimum one percent gradient. The outlet pipes should be surveyed and recorded to aid future relocation. Retaining walls should be waterproofed to reduce the risk of moisture infiltration through the wall. Walls at the toe of slopes should have a concrete drainage swale placed behind the wall at the toe of slope to collect surface run off from the slope face. All wall backfill should be compacted to a minimum of 90% of the maximum soil density using light equipment.

10.8 SITE DRAINAGE

Positive drainage should be provided away from structures and retaining walls during and after construction. Planters near a structure should be constructed so irrigation water will not saturate footing nd slab subgrade soils. The pad should be graded at a minimum gradient of 2 percent for landscaped areas away from all structures to an approved drainage course. Drainage water should not be allowed to gather or pond against foundations.

10.9 GUTTERS AND DOWNSPOUTS

Gutters and downspouts should be installed to collect roof water that may otherwise infiltrate the soils adjacent the structures. The downspouts should be directly connected to solid PVC collector pipes (or other positive drainage) that will carry water away from buildings.

10.10 EXTERIOR SLABS AND WALKWAYS

All exterior concrete hardscape (slabs-on-grade) and walkways should be a minimum of 4 inches thick and underlain by a minimum of 6 inches of sand or sand-gravel base. Concrete slabs (excluding sidewalks) should be reinforced with a minimum #4 bars at a spacing of 24 or 18 inches or less in both directions, respectively for the 51-90 and 91-130 soil expansion ranges. In either case, reinforcement should be placed at mid-depth of the slab. The recommendations for slab design should be revised if the underlying soils have an EI of greater than 130. Reinforced (1- #4 bar top and bottom) deepened edges of 18 inches should be constructed on all exterior (non-auto traffic) slabs that are adjacent to landscape areas to prevent water from entering the sand base.

The slab and sidewalk subgrade soils should be premoistened to a minimum of 3% over the optimum moisture content to a depth of 18 inches. All planter areas should be constructed so excess water drains onto, rather than beneath, adjacent concrete hardscape.

Concrete slabs on grade should be provided with tooled crack control joints at 10-15 foot centers or as specified by the structural engineer. Sidewalks should be scored (tooled crack control joints) into square

panels (a 5-foot wide sidewalk should be scored every 5 feet). Concrete placement should be performed per the recommendations provided in the *Concrete Placement* section of this report.

10.11 PRELIMINARY PAVEMENT DESIGN

For preliminary planning, based on an estimated "R" Value of 5 and a Traffic Index of 5, assume 3 inches of A/C over 10 inches of aggregate base for drive areas and 3 inches of A/C over 7 inches of aggregate base for parking stalls. The structural sections should be confirmed after conclusion of grading. The upper 6 inches of subgrade, and the base material, should be compacted to at least 90 and 95% relative compaction, respectively, just prior to placing the asphalt.

Concrete pavement should be considered in driveways that will receive high abrasion loads, and in areas subject to repeated heavy truck loads, such as trash pickup areas. The concrete pavement in these areas should be a minimum 7-inch thick with No. 3 bars at 18 inches on center in both directions or per the structural engineer's design. The slab should be underlain by 4 inches of Class 2 aggregate base compacted to a minimum 95% relative compaction. Concrete should have a minimum 28-day compressive strength of 3500 psi. Concrete pavement subgrade soils should be premoistened to a minimum of 3% above the optimum moisture content for a minimum depth of 18 inches.

Planter areas should be graded and constructed so that excess water is either collected by an area drain system or is drained onto and not beneath the adjacent AC pavement. Consideration should be given to deepening the curbs adjacent to planters so that water is prevented from entering the pavement base and saturating the pavement subgrade. Concrete curbs near the top of descending slopes should be embedded so the bottom of the curb has a setback of at least 5 feet to the slope face.

10.12 PLAN REVIEW

As detailed grading plans, building location and foundation plans become available, this office should review them before completing the plans. The grading plan should be reviewed and signed by this office.

11 CLOSURE

This report was prepared under the direction of a registered geotechnical engineer and certified engineering geologist. No warranty, express or implied, is made as to conclusions and professional advice included in this report. Gorian and Associates, Inc., disclaims responsibility and liability for problems that may occur if recommendations presented herein are not followed.

This report was prepared for Mr. Carlos Khantzis and his design consultants solely for design and construction of the project described herein. It may not contain sufficient information for other uses or the purposes of other parties. These recommendations should not be extrapolated to other areas or used for other facilities without consulting Gorian and Associates, Inc.

Recommendations herein are based on interpretations of the subsurface conditions concluded from information gained from subsurface explorations and a surficial site reconnaissance. The interpretations may differ from actual subsurface conditions that can vary horizontally and vertically across the site. Therefore, persons using this report for bidding or construction purposes should perform such independent investigation(s), as they deem necessary.

Grading and foundation work at the site should be performed per the current City of Agoura Hills Building Code. Due to possible subsurface variations, the project geotechnical consultant should observe all aspects of field construction addressed in this report. Services of the geotechnical consultant should not be construed to relieve the owner of contractors of their responsibilities or liabilities.

oOo

We have prepared this geotechnical report based upon our understanding of your project and needs at this time. Please do not hesitate to call if you have any questions or comments regarding this report.

Respectfully submitted,

GORIAN AND ASSOCIATES, INC.

By: William F. Cavan Jr.
Principal Engineer Geologist
CEG 1161

REGISTERED GEOLOGIST
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By: Jerome J. Blunck
Principal Geotechnical Engineer
GE 151

PROFESSIONAL ENGINEER
JEROME JOHN BLUNCK
151
12-31-2000
STATE OF CALIFORNIA

Distribution: Addressee (3)
Ware & Malcomb Architects, Inc. (3)
Attention: John Grounds

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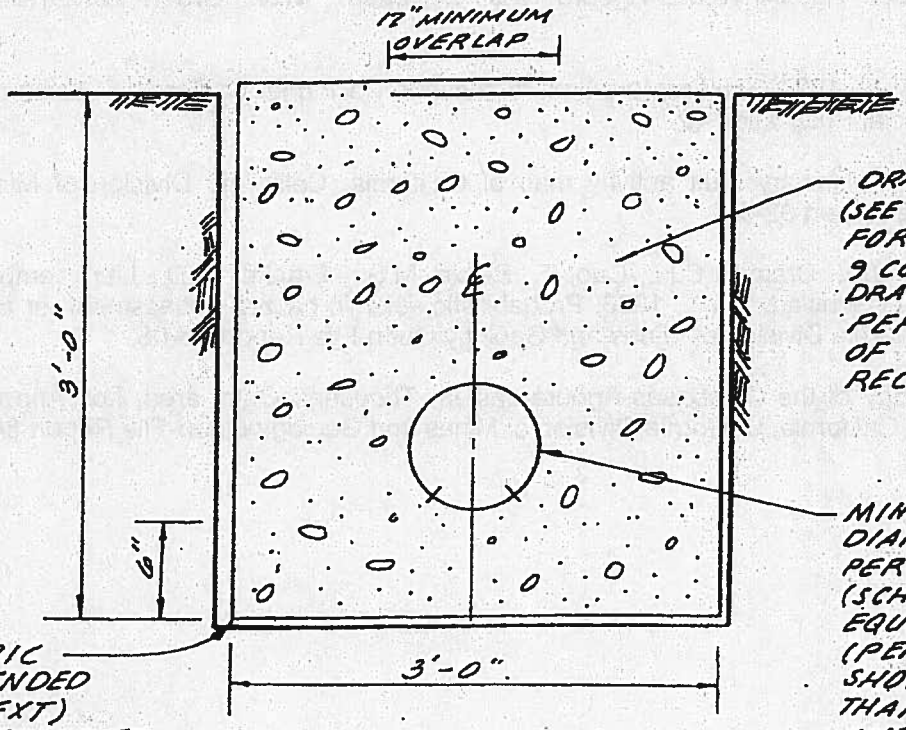
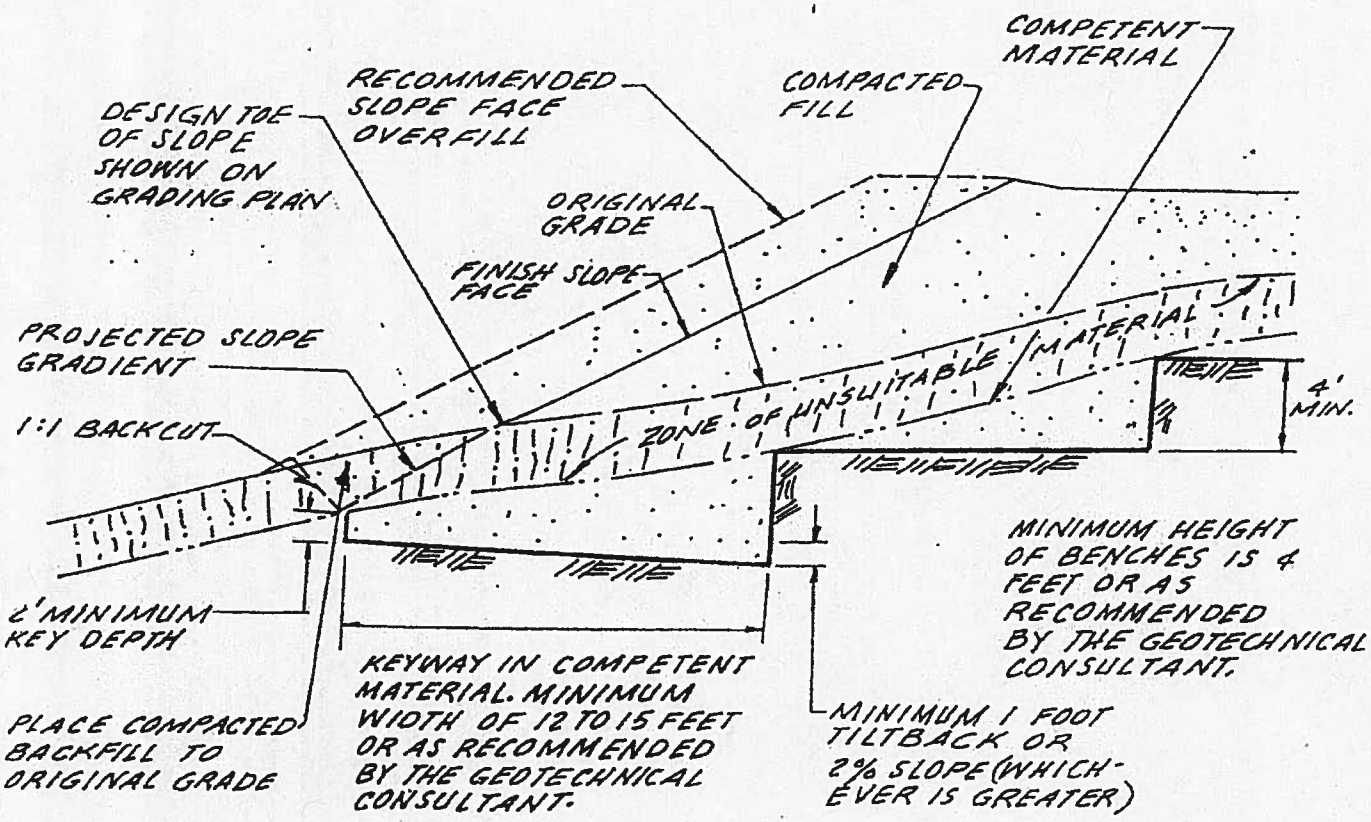
TYPICAL
SUBDRAIN DETAIL
(N.T.S.)



NOTE: ALTERNATE DESIGN SHOULD BE REVIEWED BY THE GEOTECHNICAL CONSULTANT PRIOR TO CONSTRUCTION.

TYPICAL FILL ABOVE NATURAL SLOPE DETAIL

N.T.S.



NOTE: BENCHING SHALL BE REQUIRED WHEN NATURAL SLOPES ARE EQUAL TO OR STEEPER THAN 5:1 OR WHEN RECOMMENDED BY THE GEOTECHNICAL CONSULTANT.

APPENDIX A

LOGS OF SUBSURFACE EXPLORATION

GORIAN & ASSOCIATES, INC.
Applied Earth Sciences

BORING: B-1
Page 1 of 2

Project: Khantzis, 30800 Block of Agoura Rd.
Drill Co. and Rig Type: TriValley, 24" Bucket Auger
Hammer: 3450# 0-27', 2050# 27-57'
Boring Diameter: 24" Surface Elevation: 964'± Logged by: CHD Date: 08/03/00

Work Order: 2272-1-0-11
Report Log No.: 20524

Depth (ft)	Undisturbed	Bulk	Blow Counts	Moisture Content (% dry weight)	Dry Density (pcf)	Penetrometer (tsf)	USCS	Soil/ Lithology	Description	Remarks
0			4/ 12"	14.7	104		CL		COLLUVIUM: AT 0'-1.5'; Very dark grayish brown (10YR 3/2) sandy clay, some cobbles and gravel (damp, hard). Basalt clasts common.	
			4/ 12"	18.8	105		CL		: AT 1.5'-4.5'; Dark grayish brown (10YR 4/2) to grayish brown (10YR 5/2) sandy silty clay (damp to moist, hard). Some gravel. Few cobbles. At 4'; becoming very moist to wet.	
5			6/ 12"	8.2	107		CL		: AT 4.5'-7'; Grayish brown (2.5Y 5/2) sandy clay with gravel (damp-moist, hard). Some cobbles. Below 5', hard drilling.	
							CL		OLDER ALLUVIUM: AT 7'-24'; Brownish yellow (10YR 6/6) silty clay mottled with light gray (5Y 7/2) (very moist, very stiff). Seepage at 7', Minor caving. At 15'; becoming stiff, very moist. At 23'; trace fine sand.	
10			2/ 12"	36.2	85					
15			1/ 12"	29.9	94					
20			1/ 12"	18.6	100					
25			1/ 12"	20.2	98		SM		: AT 24'-25'; Brownish yellow (10YR 6/6) silty fine to coarse sand, trace clay. Groundwater at 24'.	
							SC		: AT25'-27'; Brownish yellow (10YR 6/6) clayey fine sand (very moist, medium dense).	
							CL		: AT27'-27.5'; Brownish yellow (10YR 6/6) sandy clay (very moist, stiff).	
							CL		: AT 27.5'-31'; Yellowish brown (10YR 5/4) sandy clay (very moist, hard). Some gravel.	
30			11/ 12"	11.4	119					
							SC		: AT 31'-35'; Yellowish brown (10YR 5/4) clayey fine to coarse sand (saturated, dense). Common gravel, some cobbles.	

GORIAN & ASSOCIATES, INC.
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Logged by: CHD Date: 08/03/00

Depth (ft)	Undisturbed	Bulk	Blow Counts	Moisture Content (% dry weight)	Dry Density (pcf)	Penetrometer (tsf)	USCS	Soil/ Lithology	Description	Remarks
35			7/ 12"	17.6	109		CL		: AT 35'-36.5'; Pale brown (10YR 6/3) silty clay, some coarse sand (moist, hard).	
							GC/ SC		: AT 36.5'-40.5'; Pale brown (10YR 6/3) clayey fine to coarse sand, common gravel. Interbedded with sandy clay.	
40			7/ 12"	26.3	100		CL		RESIDUAL SOIL: AT 40.5'-42.5'; Grayish brown (10YR 5/2) clay. Some coarse grains of sand (moist, hard). At 41'; crowd used to "get a bite". Few gravel.	
									CALABASAS FORMATION: AT 42.5'-46'; Olive gray (5Y 5/2) claystone. Fractured with iron oxide staining. At 45'; becoming greenish gray (10Y 5/1).	
45			6/ 12"	32.8	88				Total depth 46': Groundwater at 24', Caving from 5'-7', No Downhole.	
50										

GORIAN & ASSOCIATES, INC.
Applied Earth Sciences

Project: Khantzis, 30800 Block of Agoura Rd.
Drill Co. and Rig Type: TriValley, 24" Bucket Auger
Hammer: 3450# 0-27', 2050# 27-57'
Boring Diameter: 24" Surface Elevation: 1018'± Logged by: CHD Date: 08/03/00 & 08/04/

BORING: B-2

Work Order: 2272-1-0-11
Report Log No.: 20524

Depth (ft)	Undisturbed	Bulk	Blow Counts	Moisture Content (% dry weight)	Dry Density (pcf)	Penetrometer (tsf)	USCS	Soil/ Lithology	Description	Remarks
0							GM/ ML		COLLUVIUM: AT 0'-1'; Very dark grayish brown (10YR 3/2) silt (damp, stiff). Porous. Common gravel and cobbles of basalt and dacite.	
							CL		: AT 1'-3'; Very dark grayish brown (10YR 3/2) sandy clay (damp, stiff). Common gravel and cobbles. Some boulders.	
							GC/ SC		OLDER ALLUVIUM: AT 3'-20'; Brown (10YR 5/3) clayey fine to coarse sand (damp, very dense). Common gravel. Some cobbles. At 4'; core barrel used on large cobbles. At 4'; becoming yellowish brown (10YR 5/4) (moist, very dense). Very difficult drilling. Alternate core barrel and bucket auger. Rare shale fragments. At 16½'; crowd used. At 19'; common cobbles. Contact at 20'; is highly irregular, undulatory yet generally horizontal.	
5			12/ 12"	9.4	106					
10			9/ 10"							
15			14/ 9"	13.0	112					

GORIAN & ASSOCIATES, INC.
Applied Earth Sciences

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Work Order: 2272-1-0-11
Report Log No.: 20524

Depth (ft)	Undisturbed	Bulk	Blow Counts	Moisture Content (% dry weight)	Dry Density (pcf)	Penetrometer (tsf)	USCS	Soil/ Lithology	Description	Remarks
20			6/ 12"	17.4	102				CALABASAS FORMATION: AT 20'-41'; Pale olive (5Y 6/3) claystone (moist, hard). Fractured with manganese and iron oxide staining. After sample at 20'; 24" bucket auger used. Generally massive. Plastic deformation. At 25'; becoming interbedded with light olive gray (5Y 6/2) occasionally interbedded with brownish yellow (10YR 6/8) claystone. At 29½'; 1/2" thick silty fine sand interbed. At 30'; becoming interbedded with brown (10YR 5/3) to gray (5Y 6/1) claystone. At 32'; becoming interbedded with light yellowish brown (2.5Y 6/4) claystone. At 35'; 1/4" thick silty fine sand interbed. At 36'; minor interbed of light yellowish brown (2.5Y 6/4) siltstone (indurated). Not continuous.	
25			4/ 12"	23.6	100					APPROXIMATE ATTITUDE ON BEDDING AT 28' N75°E/12°NW
30			7/ 12"	15.7	108					ATTITUDE ON BEDDING AT 29½' N30°E/10°NW
35			7/ 12"	23.5	101					APPROXIMATE ATTITUDE ON BEDDING AT 35' N80°E/37°SE

GORIAN & ASSOCIATES, INC.
Applied Earth Sciences

Project: Khantzis, 30800 Block of Agoura Rd.
Drill Co. and Rig Type: TriValley, 24" Bucket Auger
Hammer: 3450# 0-27', 2050# 27-57'
Boring Diameter: 24" Surface Elevation: 1018'± Logged by: CHD Date: 08/03/00 & 08/04/

Work Order: 2272-1-0-11
Report Log No.: 20524

Depth (ft)	Undisturbed	Bulk	Blow Counts	Moisture Content (% dry weight)	Dry Density (pcf)	Penetrometer (tsf)	USCS	Soil/ Lithology	Description	Remarks
40			7/ 12"	27.7	97					
									Total depth 41': No caving, No groundwater, Downhole logged to 36'	
45										
50										

GORIAN & ASSOCIATES, INC.
Applied Earth Sciences

Project: Khantzis, 30800 Block of Agoura Rd.
Drill Co. and Rig Type: TriValley, 24" Bucket Auger
Hammer: 3450# 0-30', 2050# 30-60'
Boring Diameter: 24" Surface Elevation: 998'± Logged by: JPQ Date: 08/08/2000

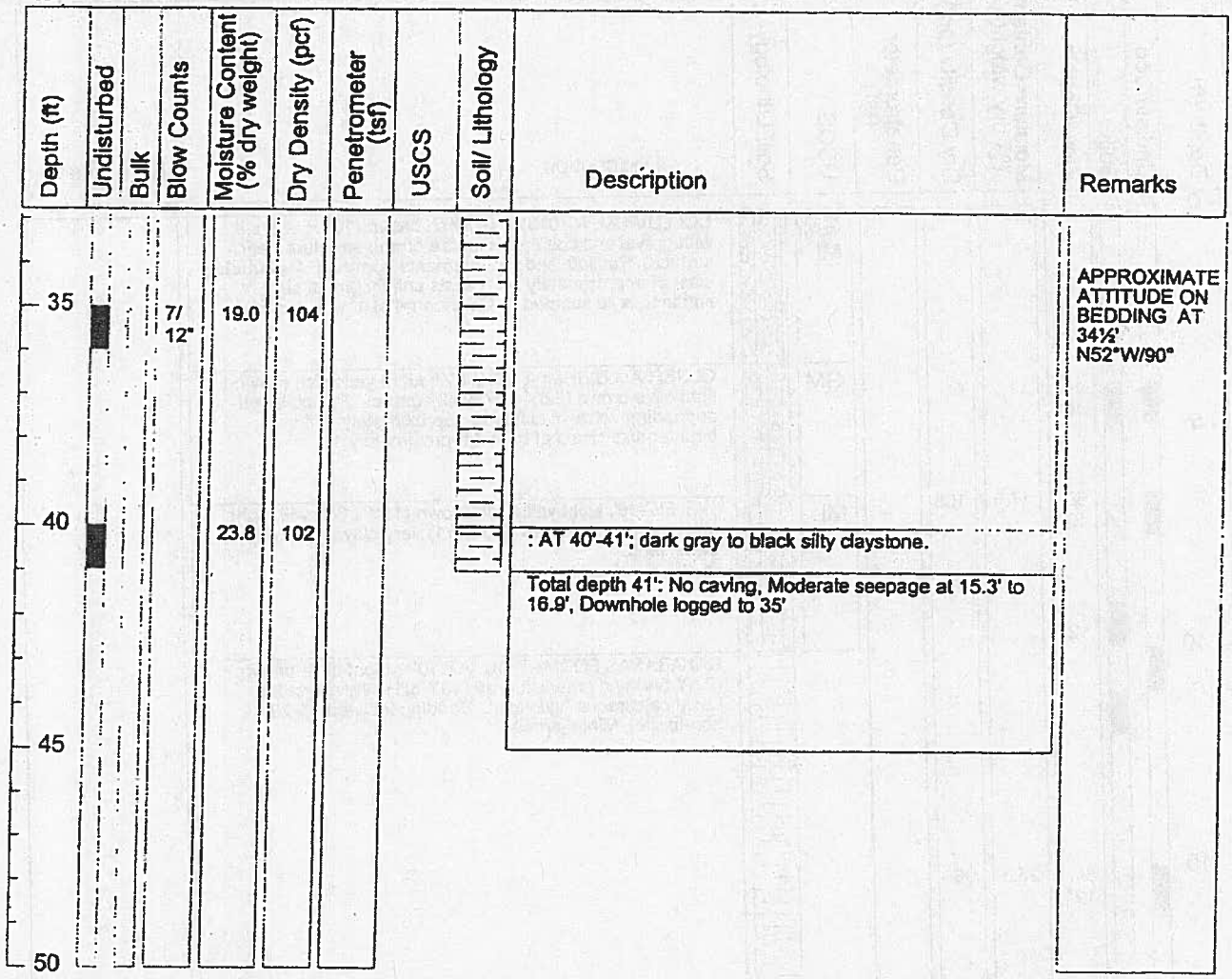
Work Order: 2272-1-0-11
Report Log No.: 20524

Depth (ft)	Undisturbed	Bulk	Blow Counts	Moisture Content (% dry weight)	Dry Density (pcf)	Penetrometer (tsf)	USCS	Soil/ Lithology	Description	Remarks
0							ML		COLLUVIUM: AT 0'-1.2'; grayish brown (10YR 5/2) clayey silt with gravel. Clasts to 1', subangular volcanics. (Hard).	
							CL		: AT 1.2'-2.5'; grayish brown (10YR 5/2) silty clay with gravel. Clasts to 1', subangular volcanics. (Hard). Basalt contact gradual.	
							GM/ ML		OLDER ALLUVIUM: AT 2.5'-15.3'; light olive brown (2.5Y 5/3) grading to light yellowish brown (10YR 6/4) clayey silt and gravel. Clasts subangular to subrounded, gravel and cobbles to 6" and chiefly composed of volcanics. Local areas with heavy limonitic staining. Minor manganese oxide. Few rootlets. Soil is hard to dense and breaks along polished fractures. Clear basal contact.	
5			8/ 12"	19.3	92					
10			15/ 10"	23.0	86					APPROXIMATE ATTITUDE ON POLISHED SURFACE AT 10.9' N73°W/52°NE
15			11/ 12"	14.4	85		SW		: AT 15.3'-16.9'; light yellowish brown (10YR 6/4) silty fine to coarse sand with gravel. Basal contact abrupt, planar. seepage.	
			2/ 12"	20.8	102				CALABASAS FORMATION: AT 16.9'+; olive gray (5Y 5/2) massive silty claystone. Very weathered and "sheared" to 17.3'; rootlets along plastic clay "seams" subparallel with upper contact. Below 17.3'; tightly fractured. Some fractures invaded by rootlets and calcium carbonate. Others stained by limonite. Thin plastic clay bed at 21', subparallel with limonite stained laminae of very fine-grained sandstone. Polished ? bedding surface at 29'. Bedding surface with subhorizontal striations, invaded by rootlets and calcium carbonate. Overall, bedding is poorly defined.	APPROXIMATE ATTITUDE ON CONTACT AT 16.9' N62°W/13°NE
20										APPROXIMATE ATTITUDE ON CLAYBED AT 21' N30°W/24°SW
25			2/ 12"	25.3	98					
30			7/ 12"	25.3	99					APPROXIMATE ATTITUDE ON BEDDING AT 29' N81°W/88°SW

GORIAN ASSOCIATES, INC.
Applied Earth Sciences

Project: Khantzis, 30800 Block of Agoura Rd.
Drill Co. and Rig Type: TriValley, 24" Bucket Auger
Hammer: 3450# 0-30', 2050# 30-60'
Boring Diameter: 24" Surface Elevation: 998'± Logged by: JPQ Date: 08/08/2000

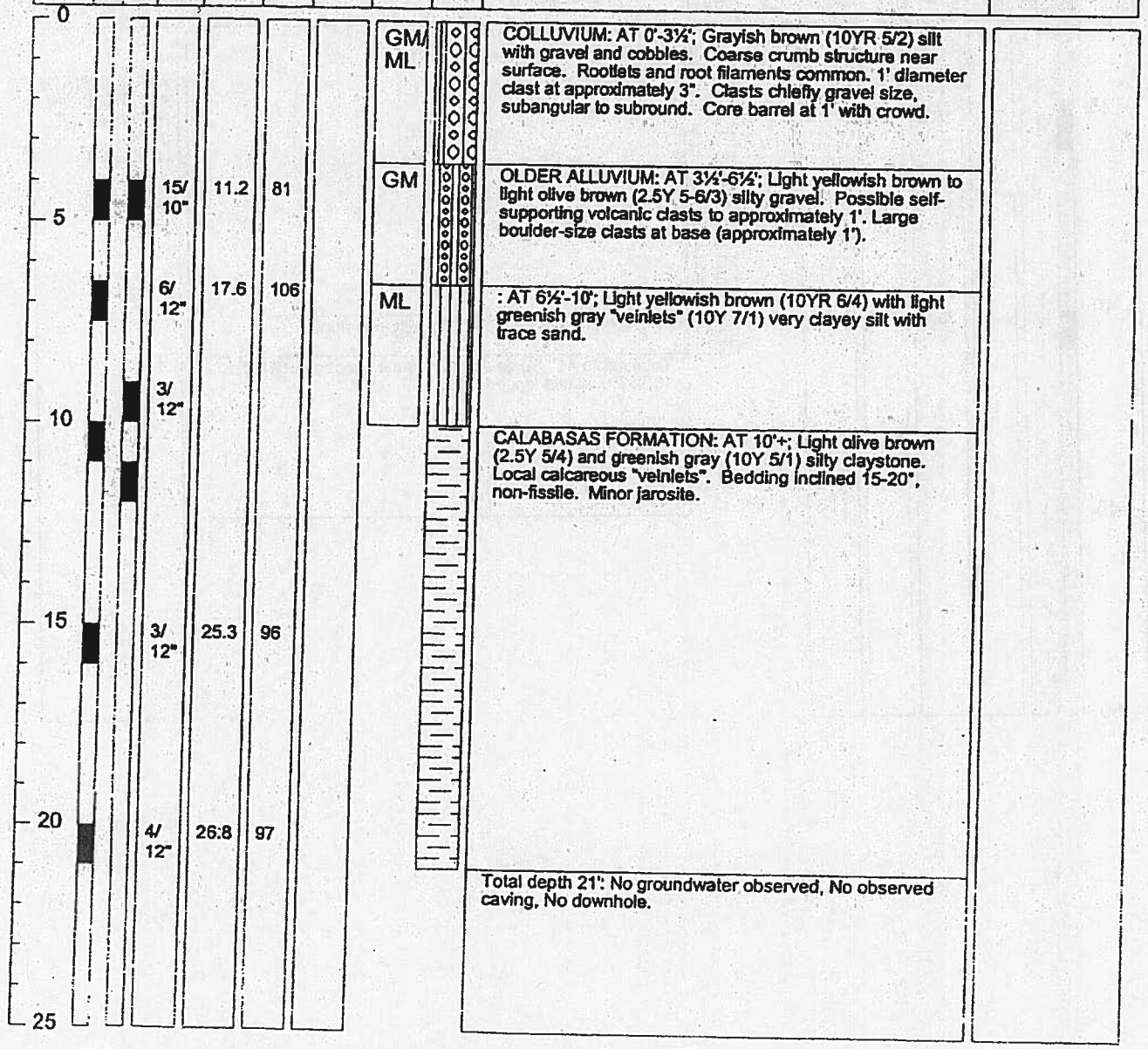
Work Order: 2272-1-0-11
Report Log No.: 20524



GORIAN & ASSOCIATES, INC.
Applied Earth Sciences

Project: Khantzis, 30800 Block of Agoura Rd.
Drill Co. and Rig Type: TriValley, 24" Bucket Auger
Hammer: 3450# 0-30', 2050# 30-60'
Boring Diameter: 24" Surface Elevation: 967'± Logged by: JPQ Date: 08/07/00

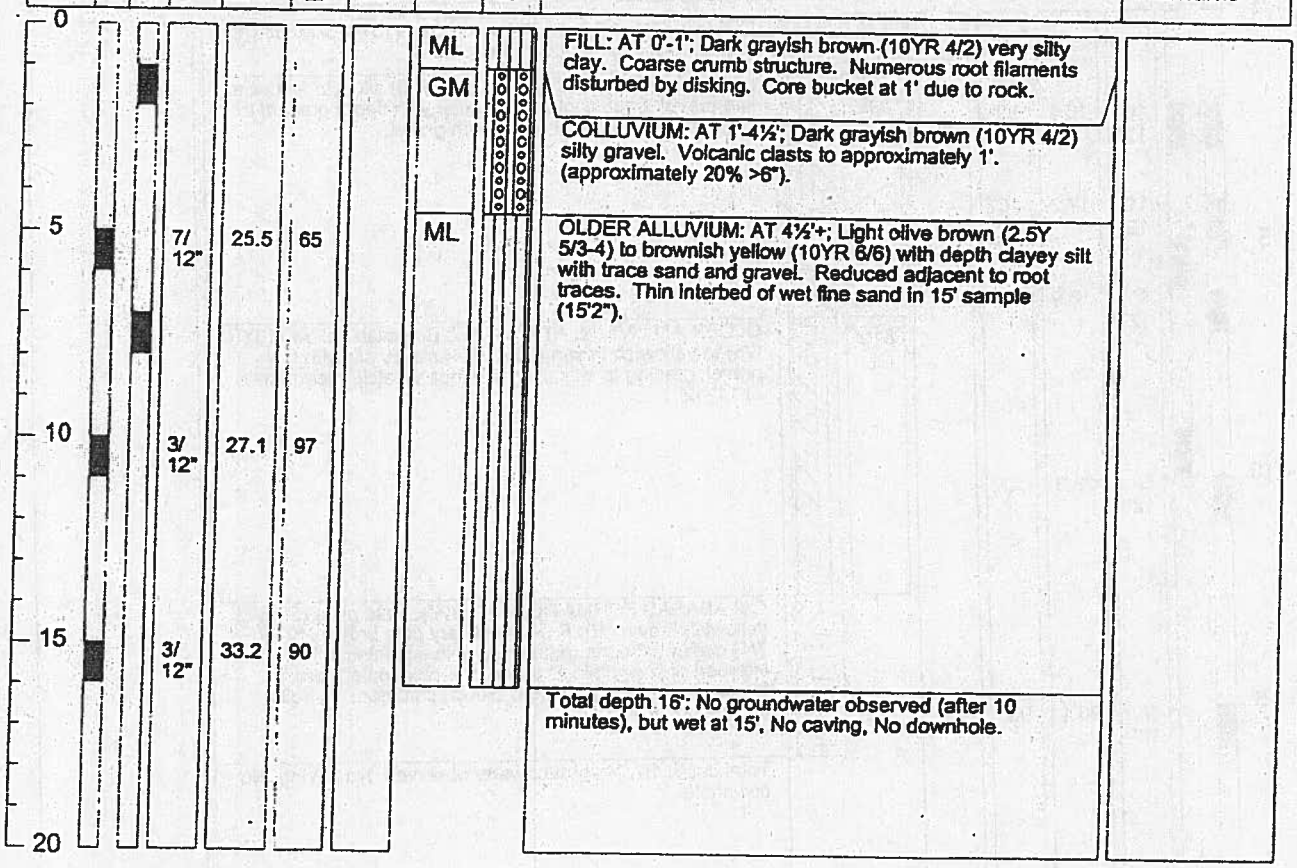
Work Order: 2272-1-0-11
Report Log No.: 20524



GORIAN & ASSOCIATES, INC.
Applied Earth Sciences

Project: Khantzis, 30800 Block of Agoura Rd.
Drill Co. and Rig Type: TriValley, 24" Bucket Auger
Hammer: 3450# 0-30', 2050# 30-60'
Boring Diameter: 24" Surface Elevation: 958'±

Work Order: 2272-1-0-11
Report Log No.: 20524
Logged by: JPQ Date: 08/08/00

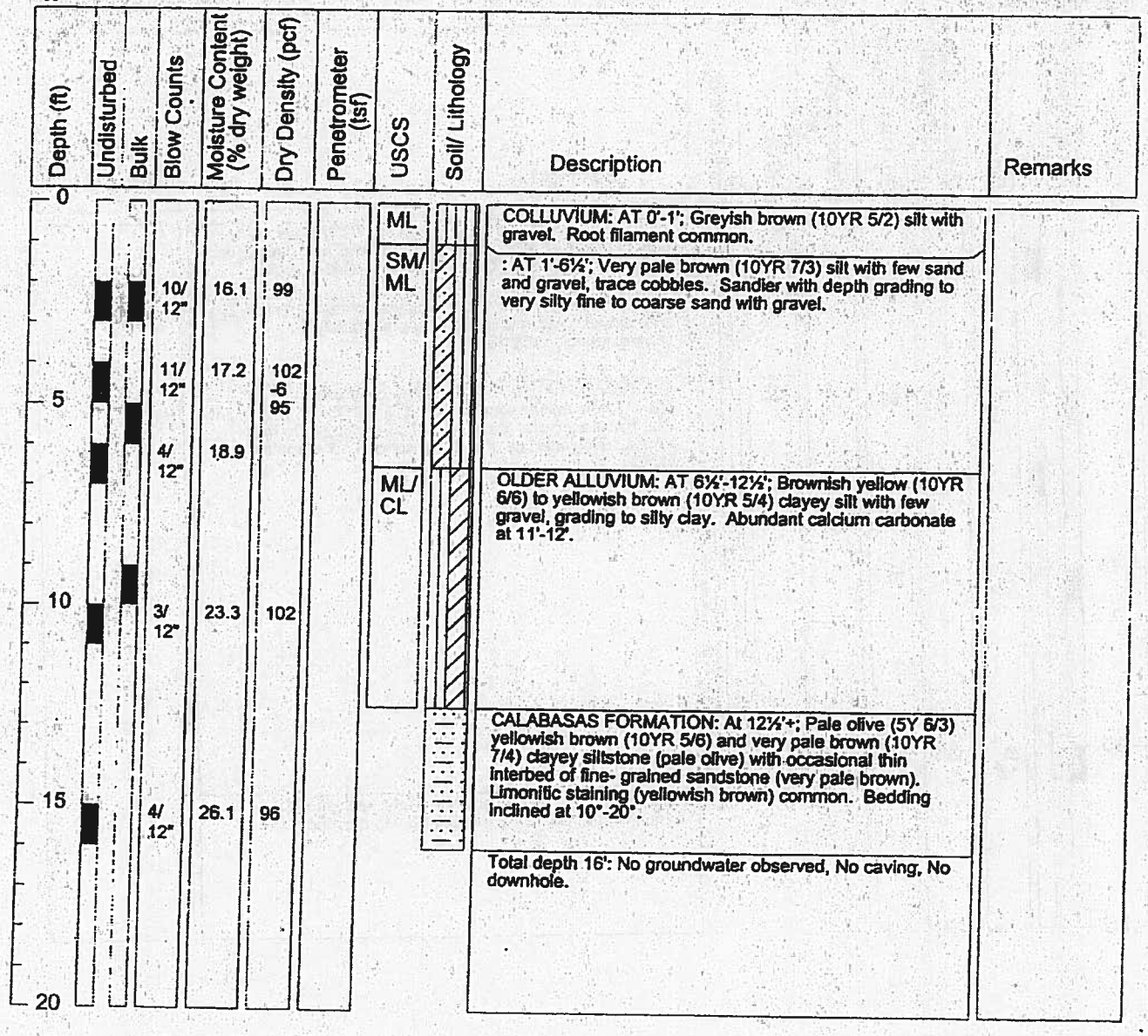


GORIAN & ASSOCIATES, INC
Applied Earth Sciences

Project: Khantzis, 30800 Block of Agoura Rd.
Drill Co. and Rig Type: TriValley, 24" Bucket Auger
Hammer: 3450# 0-30', 2050# 30-60'
Boring Diameter: 24" Surface Elevation: 977'±

BORING: B-6

Work Order: 2272-1-0-11
Report Log No.: 20524
Logged by: JPQ Date: 08/08/00



APPENDIX B

LABORATORY TEST RESULTS

General

Recent laboratory test results on selected relatively undisturbed and bulk samples are presented below. Tests were performed to evaluate the physical and engineering properties of the encountered earth materials, including field moisture and density, compaction characteristics, expansion/consolidation potential, and shear strength.

Field Density and Moisture Tests

In situ dry density and moisture content were evaluated for relatively undisturbed samples obtained from the exploratory excavations. The test results and a detailed description of the soils encountered are shown on the attached logs.

Optimum Moisture-Maximum Density Curve

Maximum density/optimum moisture tests (compaction characteristics) were performed on selected bulk samples of the encountered materials. The results are as follows:

Boring	Depth (feet)	Visual Soil Classification	Maximum Dry Density – pcf	Optimum Moisture Content - %
B-3	25	Olive gray silty clay	107	18
B-4	9	Light yellowish brown clayey silt and fine sand	116	14
B-5	1	Dark grayish brown silty gravel	116.5	12.5
B-6	9	Brownish yellow clayey silt	105	20

Expansion Test

Selected samples of the encountered soils were tested for expansiveness. The samples were passed through the #10 sieve, wet to approximately 80% of the optimum moisture content, and compacted in a one inch thick ring. An axial load of 144 psf was applied to the sample and water was added to saturate the sample. Twenty-four hours after adding water, the amount of expansion was evaluated in terms of the "expansion index". The results are as follows:

Boring	Depth (feet)	Visual Soil Classification	Expansion Index	Index Range
B-3	25	Olive gray silty clay	80	51-90
B-6	9	Brownish yellow clayey silt	177	130+

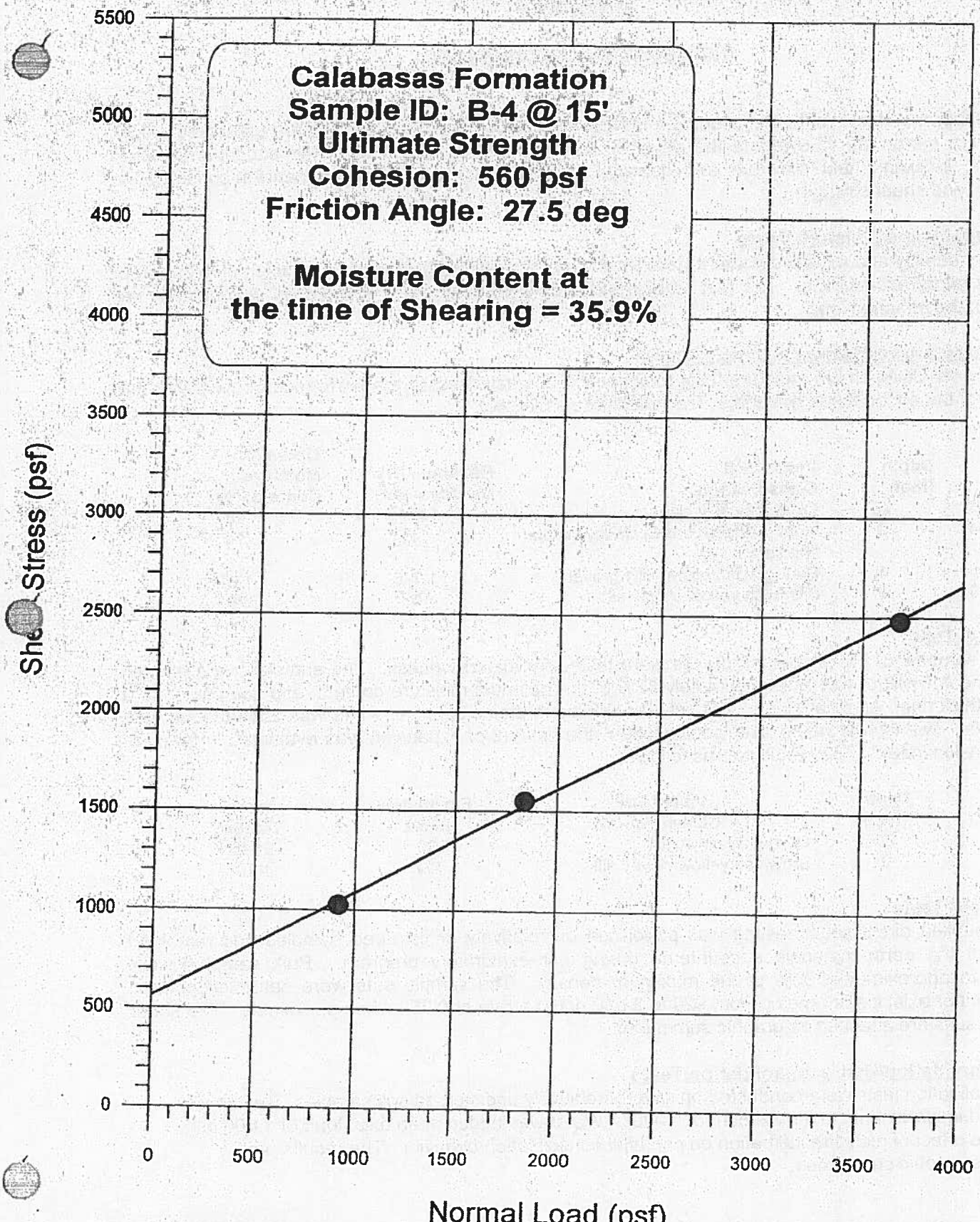
Direct Shear Tests

Strain controlled direct shear testing was performed on relatively undisturbed samples and remolded samples of the earth materials encountered during our exploratory program. Bulk samples were remolded to approximately 90% of the maximum density. The sample sets were saturated prior to shearing under axial loads ranging from 920 to 3,680 psf at a rate of 0.05 inches per minute. The shear strength results are attached as graphic summaries.

Load Consolidation/Hydroconsolidation Tests

Load consolidation tests were conducted on several relatively undisturbed soil samples. Test loads were added in increments to a maximum of 8,000 f. Water was added at an axial load of 1,000 psf to study the effect of moisture infiltration on potential consolidation behavior. The results are attached as graphic summaries.

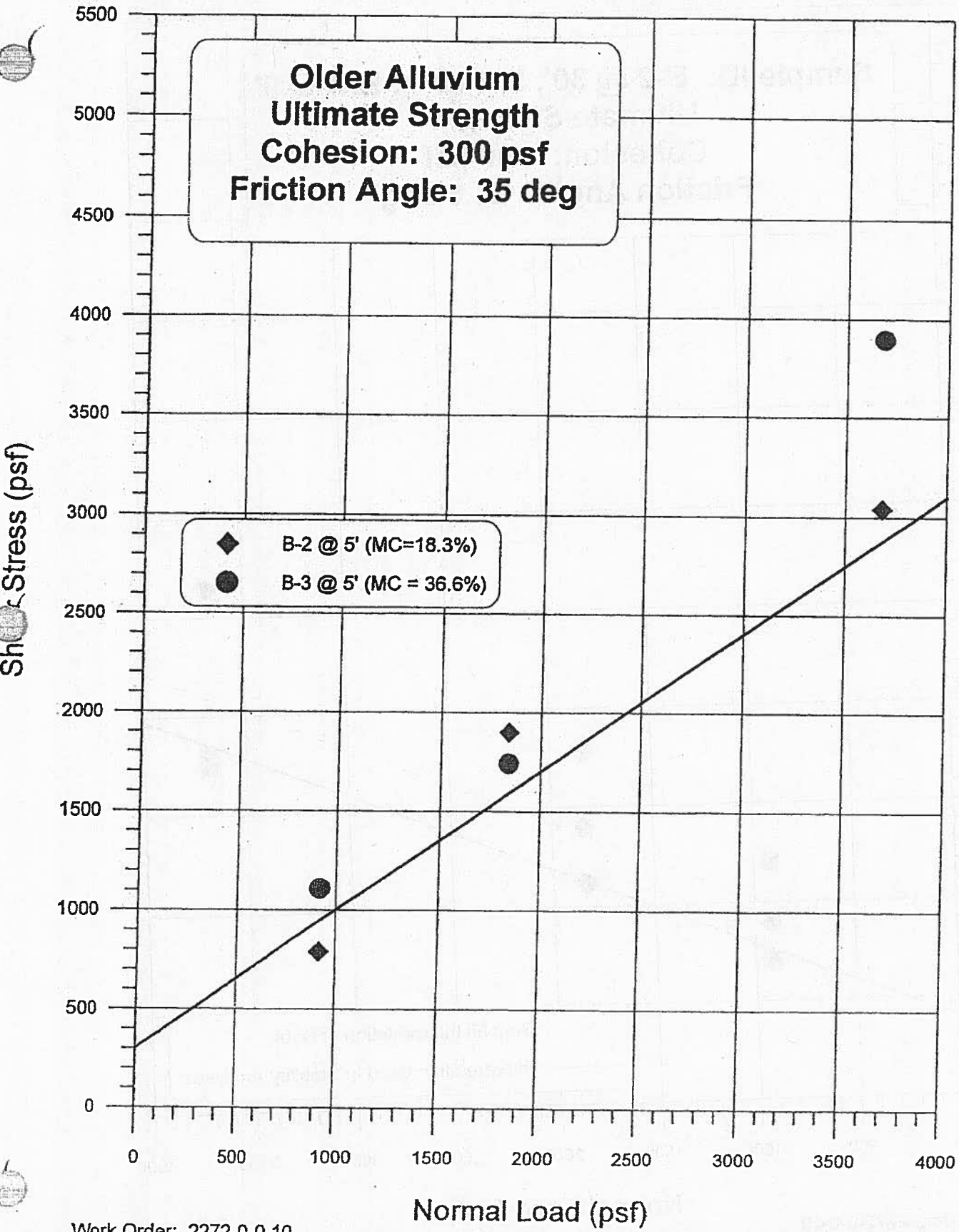
RESULTS OF SHEARING STRENGTH TESTS



Work Order: 2272-0-0-10
Log Number: 20524

GORIAN AND ASSOCIATES, INC.

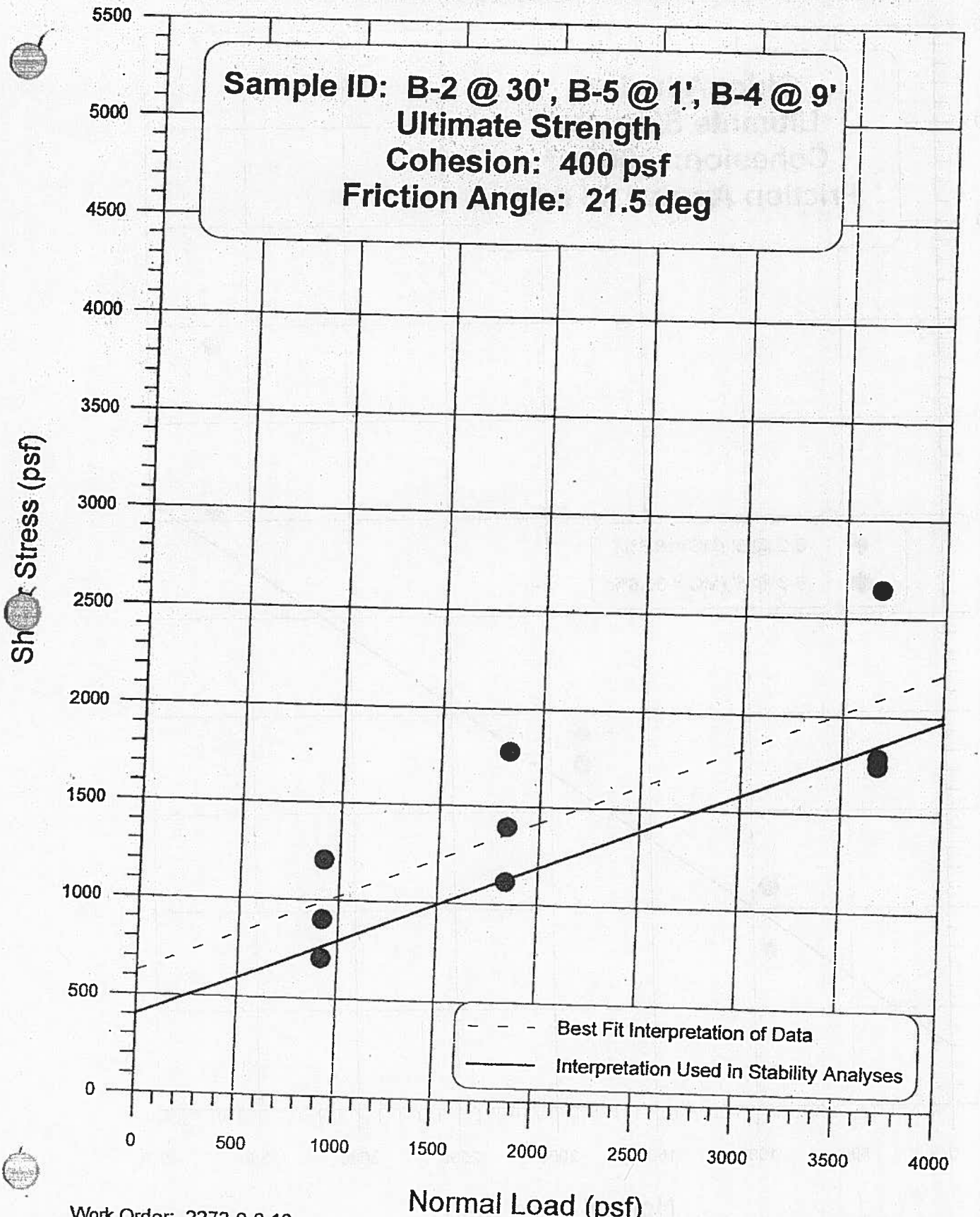
RESULTS OF SHEARING STRENGTH TESTS



Work Order: 2272-0-0-10
Log Number: 20524

GORIAN AND ASSOCIATES, INC.

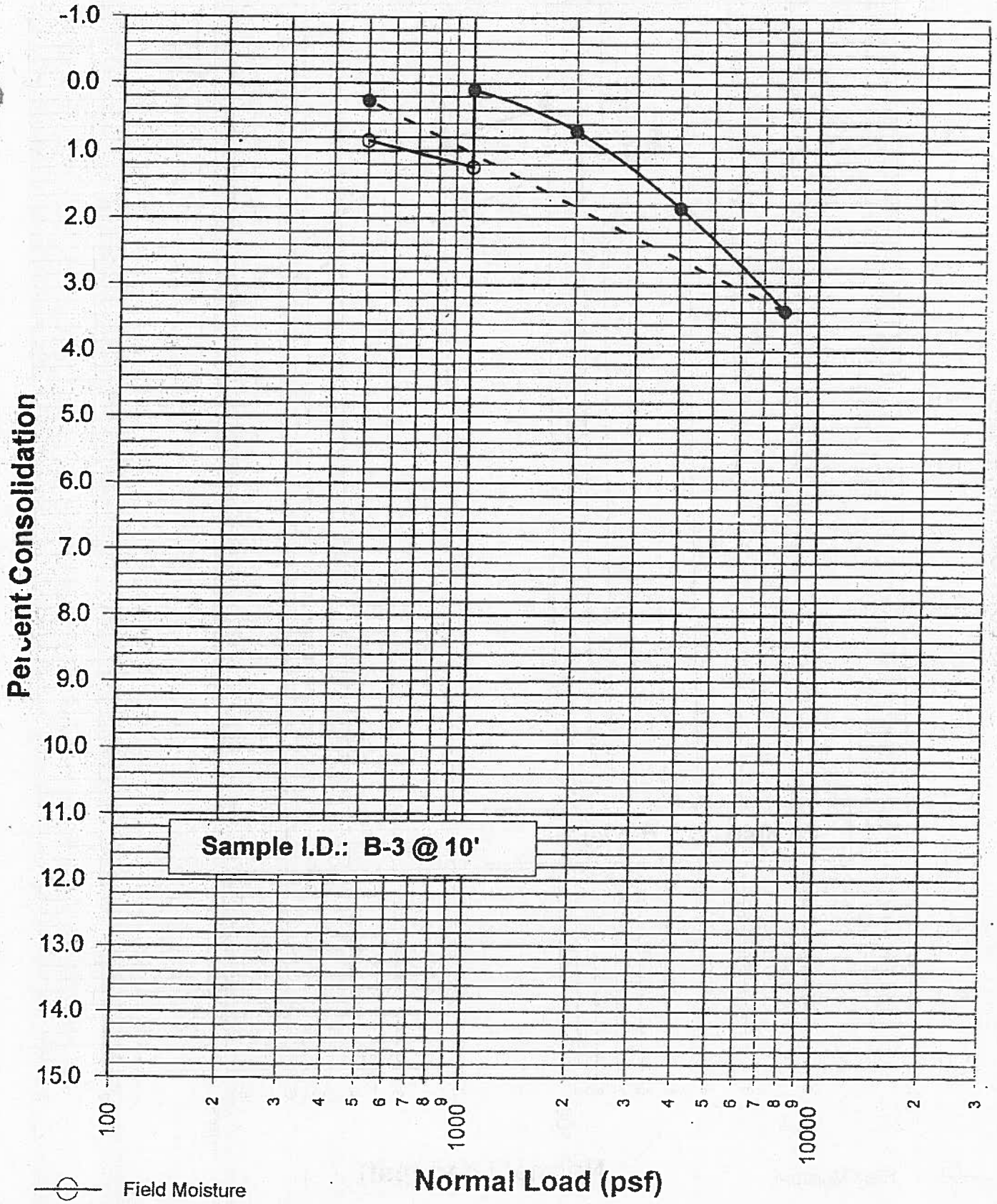
RESULTS OF SHEARING STRENGTH TESTS



Work Order: 2272-0-0-10
Log Number: 20524

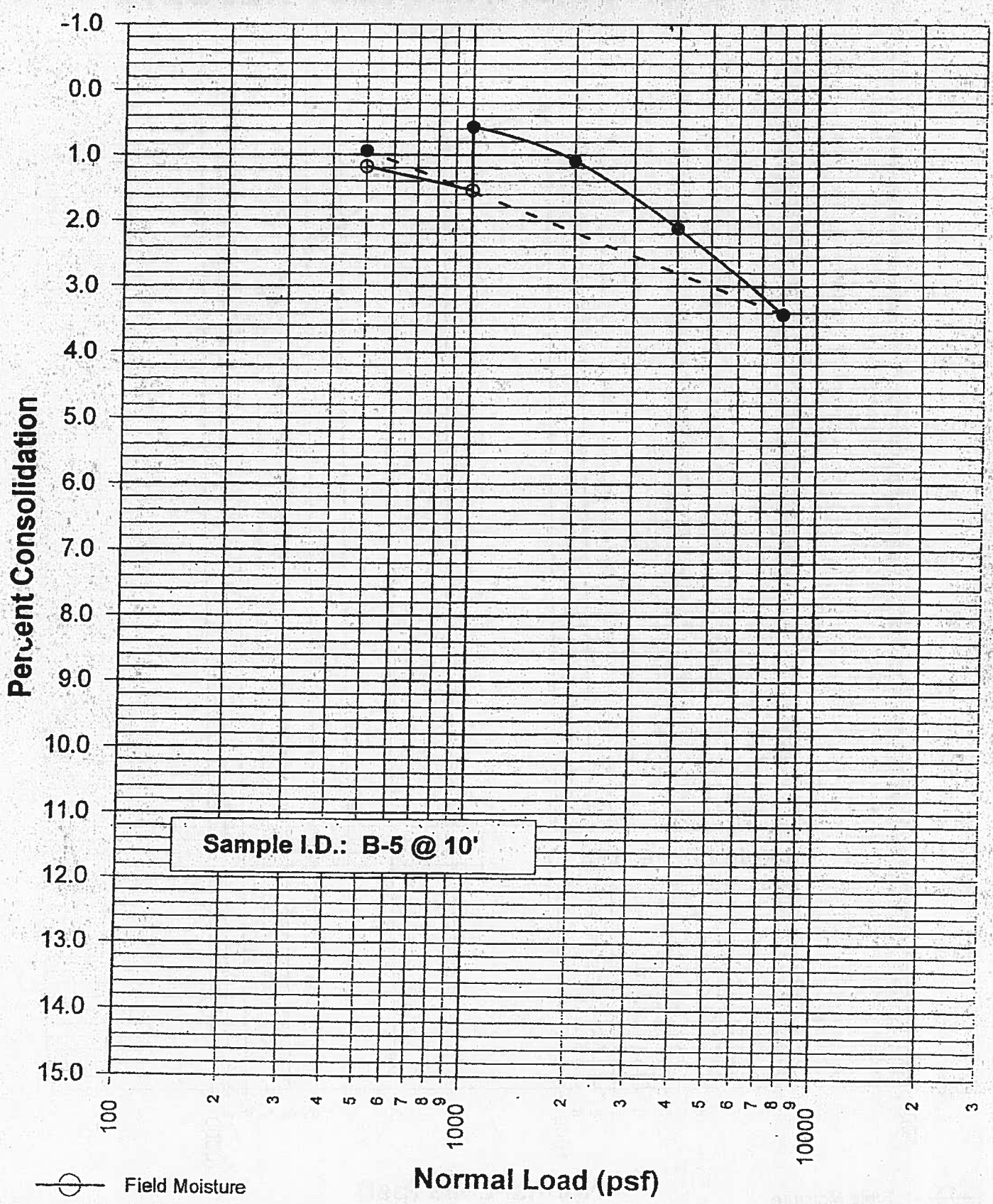
GORIAN AND ASSOCIATES, INC.

LOAD CONSOLIDATION TEST RESULTS



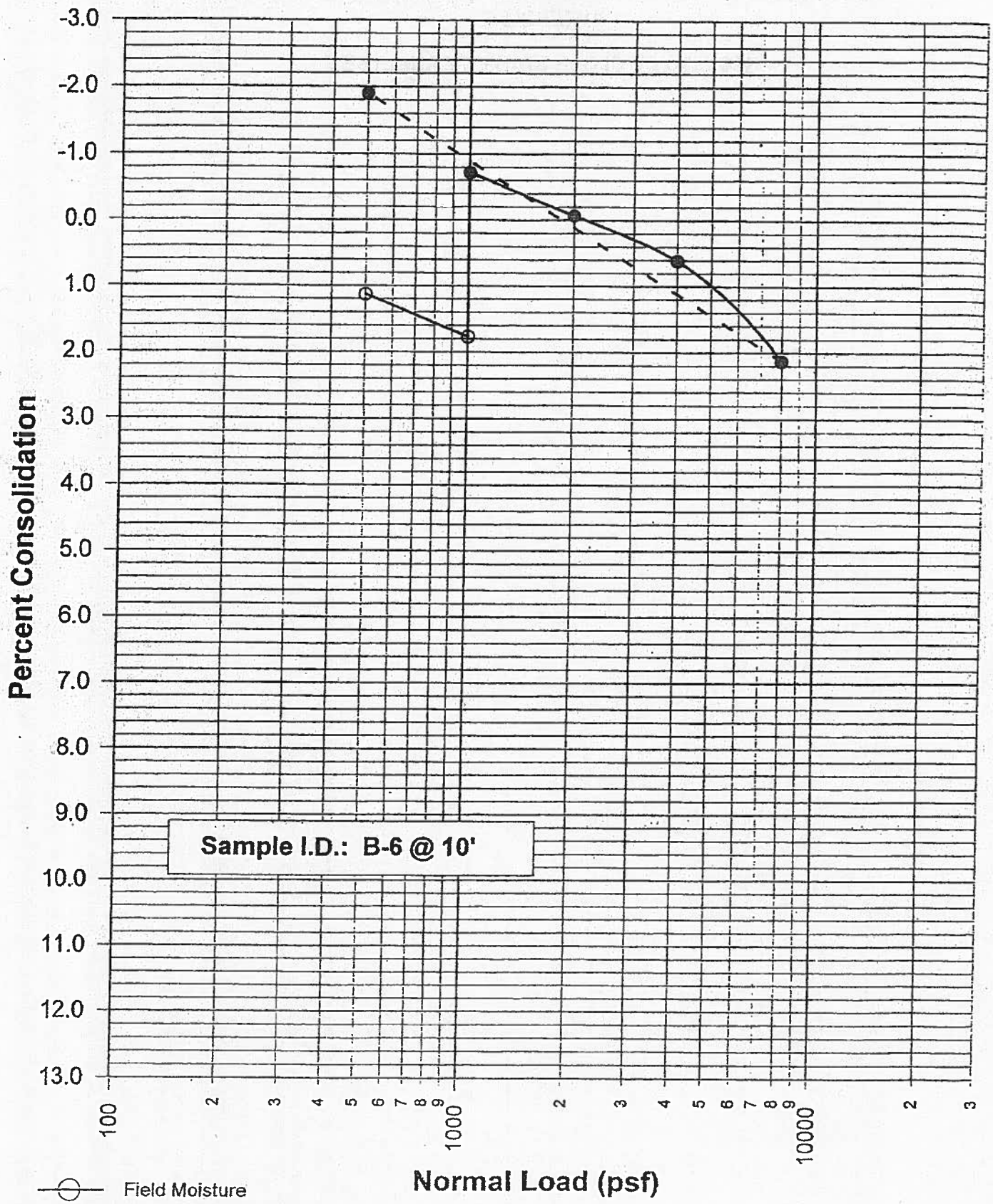
GORIAN AND ASSOCIATES, INC.
Work Order: 2272-1-0-11

LOAD CONSOLIDATION TEST RESULTS



GORIAN AND ASSOCIATES, INC.
Work Order: 2272-1-0-11

LOAD CONSOLIDATION TEST RESULTS



GORIAN AND ASSOCIATES, INC.
Work Order: 2272-1-0-11

APPENDIX C

RESULTS OF SLOPE STABILITY ANALYSES

*** GSTABL7 ***
** GSTABL7 by Garry H. Gregory, P.E. **
** Version 1.0, January 1996; Version 1.16, May 2000 **
--Slope Stability Analysis--
Simplified Janbu, Modified Bishop
or Spencer`s Method of Slices
(Based on STABL6-1986, by Purdue University)

Run Date: 10/11/00
Time of Run: 1:05PM
Run By: GORIAN AND ASSOCIATES, INC.
Input Data Filename: D:2272a1w4.in
Output Filename: D:2272a1w4.OUT
Unit System: English
Plotted Output Filename: D:2272a1w4.PLT
PROBLEM DESCRIPTION APN# 2061-001-025, 30800 Block Agoura Rd
Section A-A' Static Global Stability

BOUNDARY COORDINATES
Note: User origin value specified.
Add 0.00 to X-values and 800.00 to Y-values listed.

32 Top Boundaries
49 Total Boundaries

Boundary No.	X-Left (ft)	Y-Left (ft)	X-Right (ft)	Y-Right (ft)	Soil Type Below Bnd
1	0.00	169.00	31.00	169.00	1
2	31.00	169.00	36.00	170.00	1
3	36.00	170.00	72.00	158.00	1
4	72.00	158.00	113.00	165.00	2
5	113.00	165.00	114.00	175.00	1
6	114.00	175.00	197.00	175.00	1
7	197.00	175.00	231.00	175.00	2
8	231.00	175.00	231.50	182.00	2
9	231.50	182.00	232.00	190.00	1
10	232.00	190.00	260.00	190.00	1
11	260.00	190.00	286.00	190.00	2
12	286.00	190.00	286.50	195.00	2
13	286.50	195.00	287.00	200.00	1
14	287.00	200.00	312.00	202.00	1
15	312.00	202.00	345.00	205.00	2
16	345.00	205.00	345.50	210.00	2
17	345.50	210.00	346.00	215.00	1
18	346.00	215.00	464.00	231.00	1
19	464.00	231.00	538.00	265.00	4
20	538.00	265.00	792.00	323.00	4
21	792.00	323.00	891.00	346.00	4
22	891.00	346.00	960.00	384.00	4
23	960.00	384.00	1041.00	415.00	4
24	1041.00	415.00	1253.00	460.00	4
25	1253.00	460.00	1363.00	507.00	4
26	1363.00	507.00	1451.00	539.00	4
27	1451.00	539.00	1471.00	543.00	4
28	1471.00	543.00	1526.00	543.00	4
29	1526.00	543.00	1611.00	530.00	4
30	1611.00	530.00	1691.00	510.00	4
31	1691.00	510.00	1740.00	503.00	4
32	1740.00	503.00	1852.00	499.00	4
33	0.00	147.00	72.00	158.00	2
34	113.00	165.00	128.00	166.00	2
35	128.00	166.00	174.00	170.00	2
36	174.00	170.00	204.00	170.00	2
37	204.00	170.00	237.00	170.00	3
38	237.00	170.00	243.00	176.00	3
39	243.00	176.00	253.00	185.00	2
40	253.00	185.00	292.00	185.00	2
41	292.00	185.00	312.00	202.00	2
42	0.00	131.00	204.00	170.00	3
43	243.00	176.00	292.00	185.00	3
44	292.00	185.00	329.00	190.00	3
45	329.00	190.00	355.00	198.00	3
46	355.00	198.00	394.00	199.00	3
47	394.00	199.00	445.00	214.00	3

```
    48        445.00      214.00      464.00      231.00        4
    49        300.00      100.00      445.00      214.00        4
ISOTROPIC SOIL PARAMETERS
  4 Type(s) of Soil
  Soil  Total   Saturated  Cohesion Friction  Pore   Pressure  Piez.
  Type Unit Wt. Unit Wt.  Intercept  Angle  Pressure Constant Surface
   No.  (pcf)     (pcf)      (psf)    (deg)   Param    (psf)    No.
    1   125.0     125.0     400.0      21.5   0.00      0.0      0
    2   125.0     125.0     200.0      35.0   0.00      0.0      1
    3   125.0     125.0     560.0      27.5   0.00      0.0      1
    4   125.0     125.0    1000.0      26.0   0.00    312.0      0
  1 PIEZOMETRIC SURFACE(S) HAVE BEEN SPECIFIED
  Unit Weight of Water =  62.40
  Piezometric Surface No.  1 Specified by 14 Coordinate Points
    Point      X-Water     Y-Water
     No.         (ft)        (ft)
      1          0.00      147.00
      2         72.00      158.00
      3        113.00      165.00
      4        128.00      166.00
      5        174.00      170.00
      6        237.00      170.00
      7        253.00      185.00
      8        292.00      185.00
      9        329.00      190.00
     10        355.00      198.00
     11        394.00      199.00
     12        445.00      214.00
     13        464.00      231.00
     14       1852.00      231.00
  A Critical Failure Surface Searching Method, Using A Random
  Technique For Generating Circular Surfaces, Has Been Specified.
  3000 Trial Surfaces Have Been Generated.
  300 Surfaces Initiate From Each Of 10 Points Equally Spaced
  Along The Ground Surface Between X =  50.00(ft)
                               and X =  150.00(ft)
  Each Surface Terminates Between   X =  350.00(ft)
                                and X = 1535.00(ft)
  Unless Further Limitations Were Imposed, The Minimum Elevation
  At Which A Surface Extends Is  Y =  0.00(ft)
  25.00(ft) Line Segments Define Each Trial Failure Surface.
  Following Are Displayed The Ten Most Critical Of The Trial
       Failure Surfaces Examined.  They Are Ordered - Most Critical
       First.
       * * Safety Factors Are Calculated By The Modified Bishop Method * *
       Failure Surface Specified By 61 Coordinate Points
         Point     X-Surf      Y-Surf
          No.       (ft)        (ft)
           1       138.89      175.00
           2       163.63      171.43
           3       188.43      168.21
           4       213.26      165.33
           5       238.13      162.79
           6       263.03      160.59
           7       287.96      158.74
           8       312.92      157.22
           9       337.89      156.06
          10       362.88      155.24
          11       387.87      154.76
          12       412.87      154.62
          13       437.87      154.83
          14       462.86      155.39
          15       487.85      156.29
          16       512.82      157.53
          17       537.77      159.12
          18       562.69      161.05
          19       587.59      163.32
          20       612.45      165.94
          21       637.28      168.90
          22       662.06      172.20
          23       686.79      175.84
```