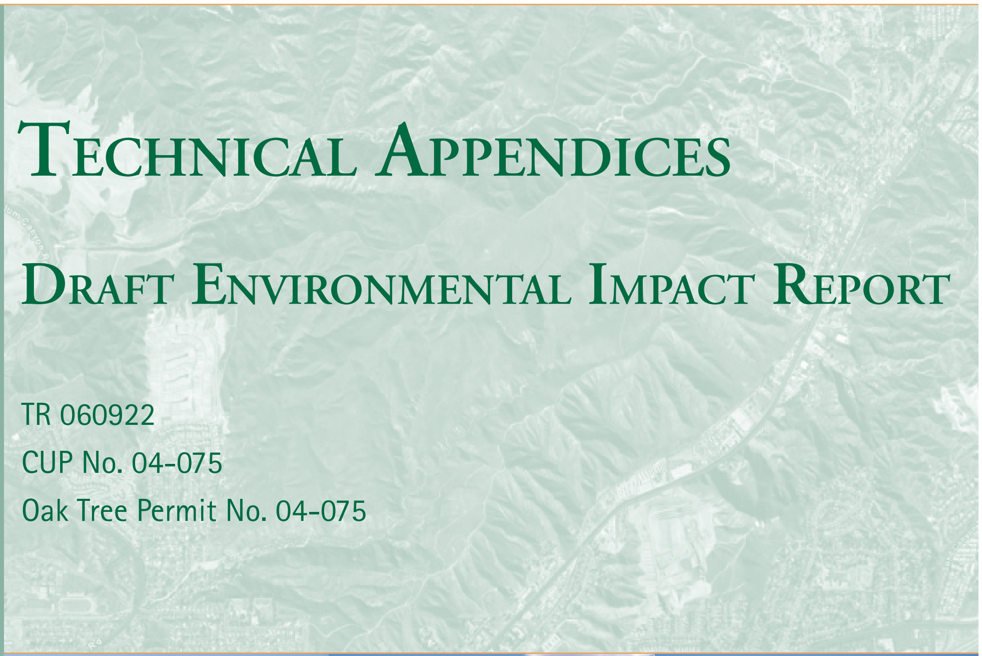
VOLUME II

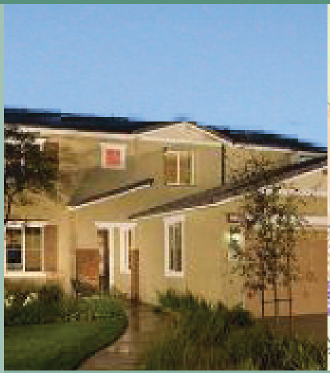


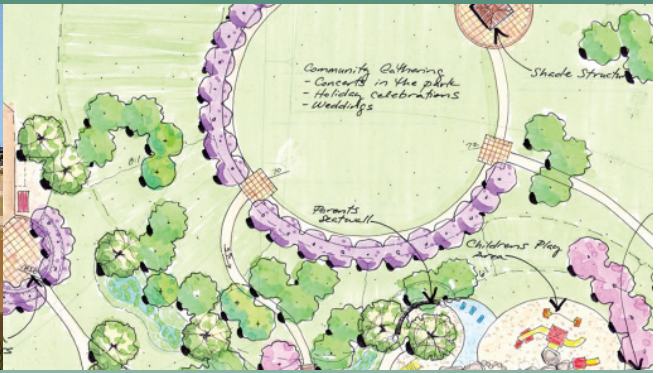
TECHNICAL APPENDICES

DRAFT ENVIRONMENTAL IMPACT REPORT

TR 060922
CUP No. 04-075
Oak Tree Permit No. 04-075

SKYLINE RANCH PROJECT





County Project No. 04-075
State Clearinghouse No. 2004101090

County of Los Angeles
Department of Regional Planning
Impact Analysis Section
320 West Temple Street
Los Angeles, California 90012-3225

JULY 2009

VOLUME
II

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JULY 2009

Prepared by:
PCR Services Corporation
233 Wilshire Boulevard
Santa Monica, California 90401
TEL 310.451.4488
FAX 310.451.5279

PCR

VOLUME
II

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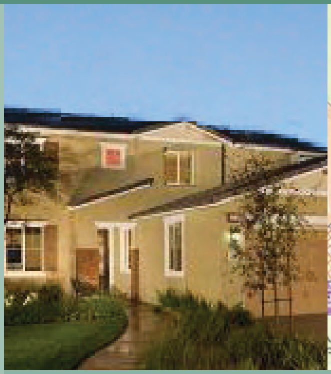

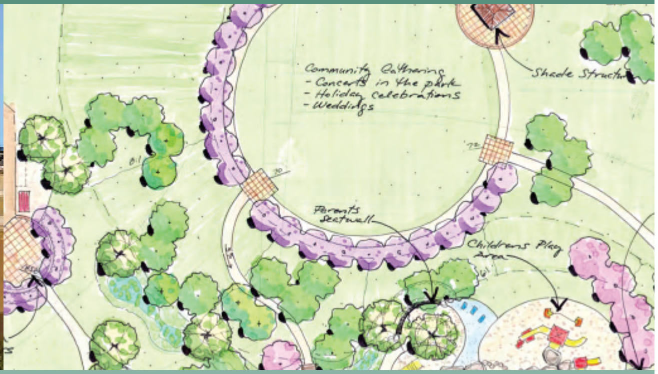

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VOLUME
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Technical Appendices
Draft Environmental Impact Report

TR 060922
CUP No. 04-075
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Skyline Ranch
Project

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July 2009

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233 Wilshire Boulevard
Santa Monica, California 90401
TEL 310.451.4488
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PCR

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Los Angeles County
Department of Regional Planning

Planning for the Challenges Ahead

James E. Hartl, AICP
Director of Planning

NOTICE OF PREPARATION AND SCOPING MEETING

"The Skyline Ranch Project"

County Project No. 04-075
Tentative Tract Map No. 060922
Oak Tree Permit, Conditional Use Permit, Development Agreement

The County of Los Angeles will be the lead agency and will prepare an Environmental Impact Report (EIR) for the project identified above. In compliance with Section 15082 of the CEQA *Guidelines*, the County of Los Angeles is sending this Notice of Preparation to responsible agencies, interested parties and federal agencies which may be involved in approving or permitting the project, and to trustee agencies responsible for natural resources affected by the project. Within 30 days after receiving the Notice of Preparation, each agency shall provide the County of Los Angeles with specific details about the scope and content of the environmental information to be contained in the EIR related to that agency's area of statutory responsibility. In addition to the project actions cited above, permission will be sought for offsite grading on federally owned land managed by the Bureau of Land Management (BLM). Should such offsite grading be determined to be a project subject to the National Environmental Policy Act (NEPA), clearance of that aspect of this project will probably be undertaken separately through an Environmental Assessment (EA) or a joint EIR/EA.

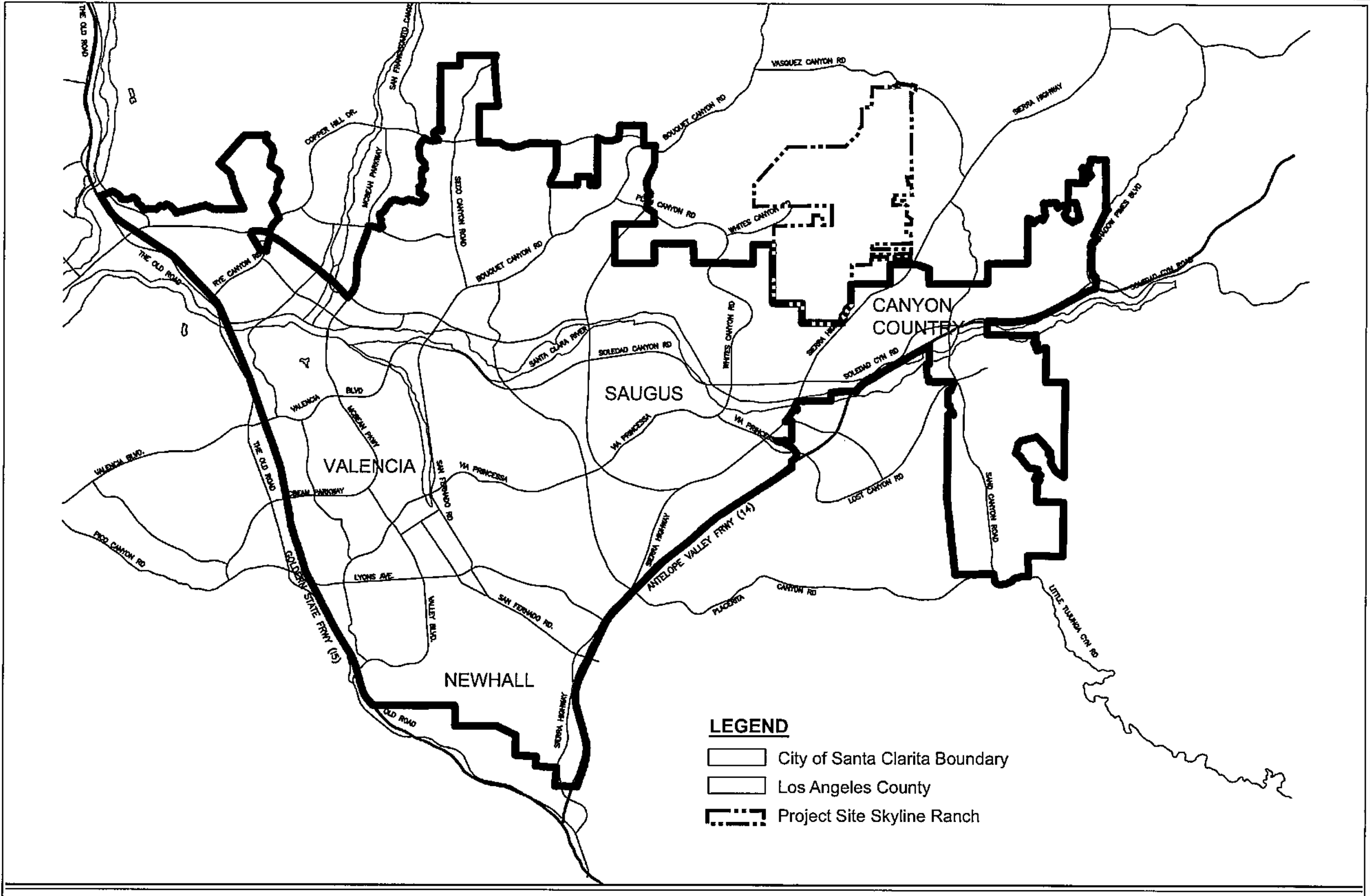
The purpose of this Notice of Preparation is to solicit the views of your agency as to the scope and content of the environmental information germane to your agency's statutory responsibilities in connection with the proposed project. Your agency may need to use the EIR prepared by our agency when considering your permit or other approval for the project.

PROJECT LOCATION

As shown in Figure 1, the 2,196-acre Skyline Ranch site is located in the Santa Clarita Valley west and north of Highway 14 (Antelope Valley Freeway) and north of the City of Santa Clarita in unincorporated Los Angeles County. The project site includes various parcels west of Mint Canyon between the Santa Clara River and Vasquez Canyon. As illustrated in Figure 2, the site is roughly defined by Sierra Highway (Mint Canyon) on the east and southeast, residential communities on the south and southwest, Plum Canyon Road on the west, Bouquet Canyon Road to the northwest, and Vasquez Canyon Road to the northeast.

ORIGINAL FILED
OCT 2 2 2004
LOS ANGELES, COUNTY CLERK

320 West Temple Street · Los Angeles, CA 90012 · 213-974-6411 · Fax: 213-626-0434 · TDD: 213-617-2292



LEGEND

▭ City of Santa Clarita Boundary

▭ Los Angeles County

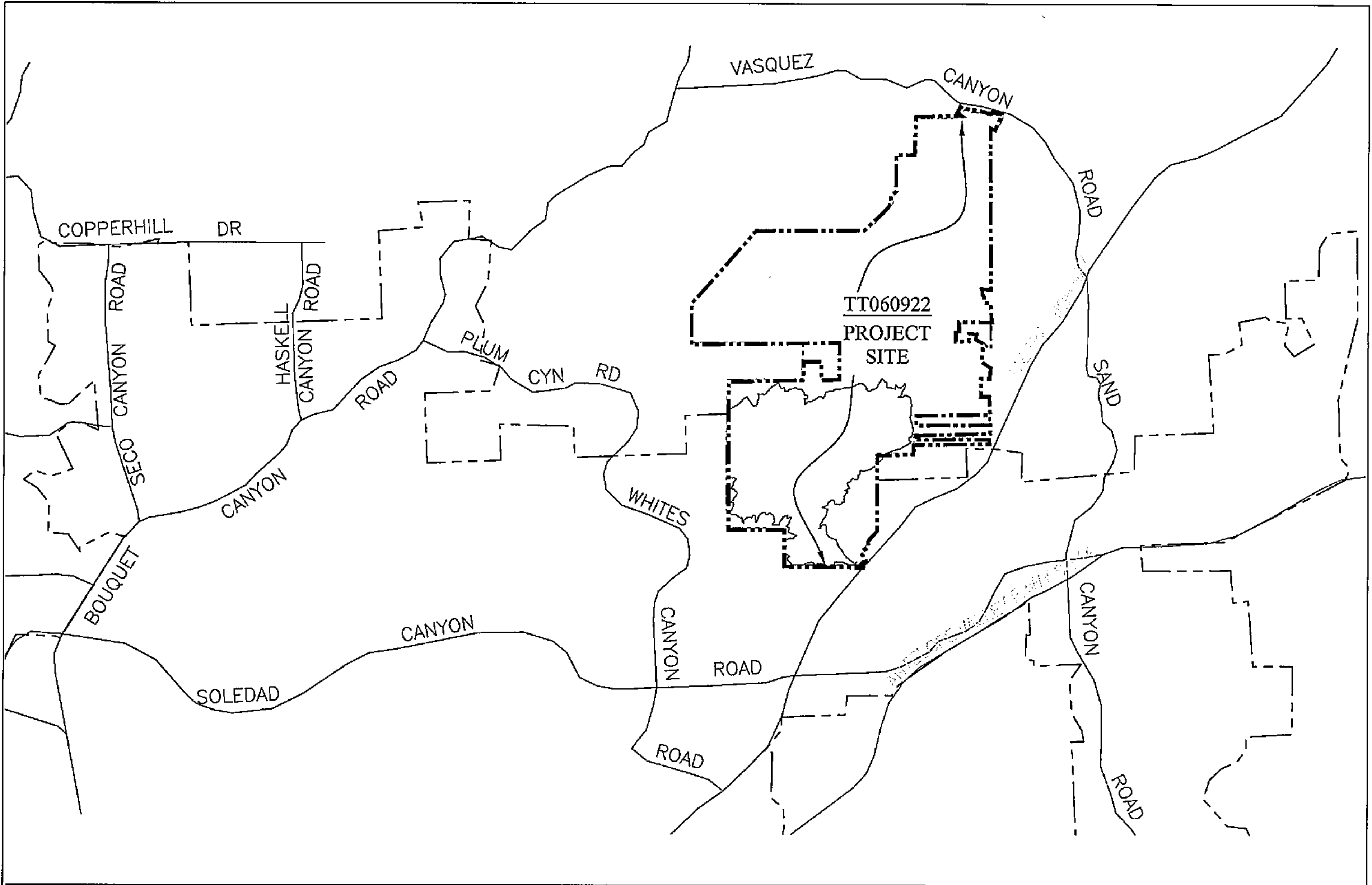
▭ Project Site Skyline Ranch

Not to Scale

Source: Sikand, 2004

PCR

Figure 1
Regional Location Map



PCR

Source: Sikand, 2004

Figure 2
Vicinity Map

EXISTING LAND USE AND ZONING DESIGNATIONS

As shown in Figure 3, the Santa Clarita Valley Area Plan Land Use Policy Map designates the project site as U1 (Urban 1.1 to 3.3 dwelling unit [du]/ acre), U2 (Urban 3.4 to 6.6 du/acre), U3 (Urban 6.7 to 15 du/acre), N (Non-Urban 0.5 to 1.0 du/acre), W (Floodplain), and HM (Hillside Management).

As shown in Figure 4, the County of Los Angeles Zoning Code designates the project site for agricultural uses, including A-2-1 (Heavy Agricultural), and A-1-1 and A-1-10,000 (Light Agricultural).

PROJECT DESCRIPTION

Land Use

The project applicant proposes to develop approximately 592 acres of the site with 1,325 single-family residential lots with pads ranging in size from 4,830 to 7,350 square feet along with a 10-acre school site and approximately 10 acres of public park land. Development is proposed for the southern portion of the property where slopes of 25 percent or less are located. The northern 1,604 acres of the site would remain preserved as open space and managed by an as yet to be determined entity. A copy of the map is included as Figure 5.

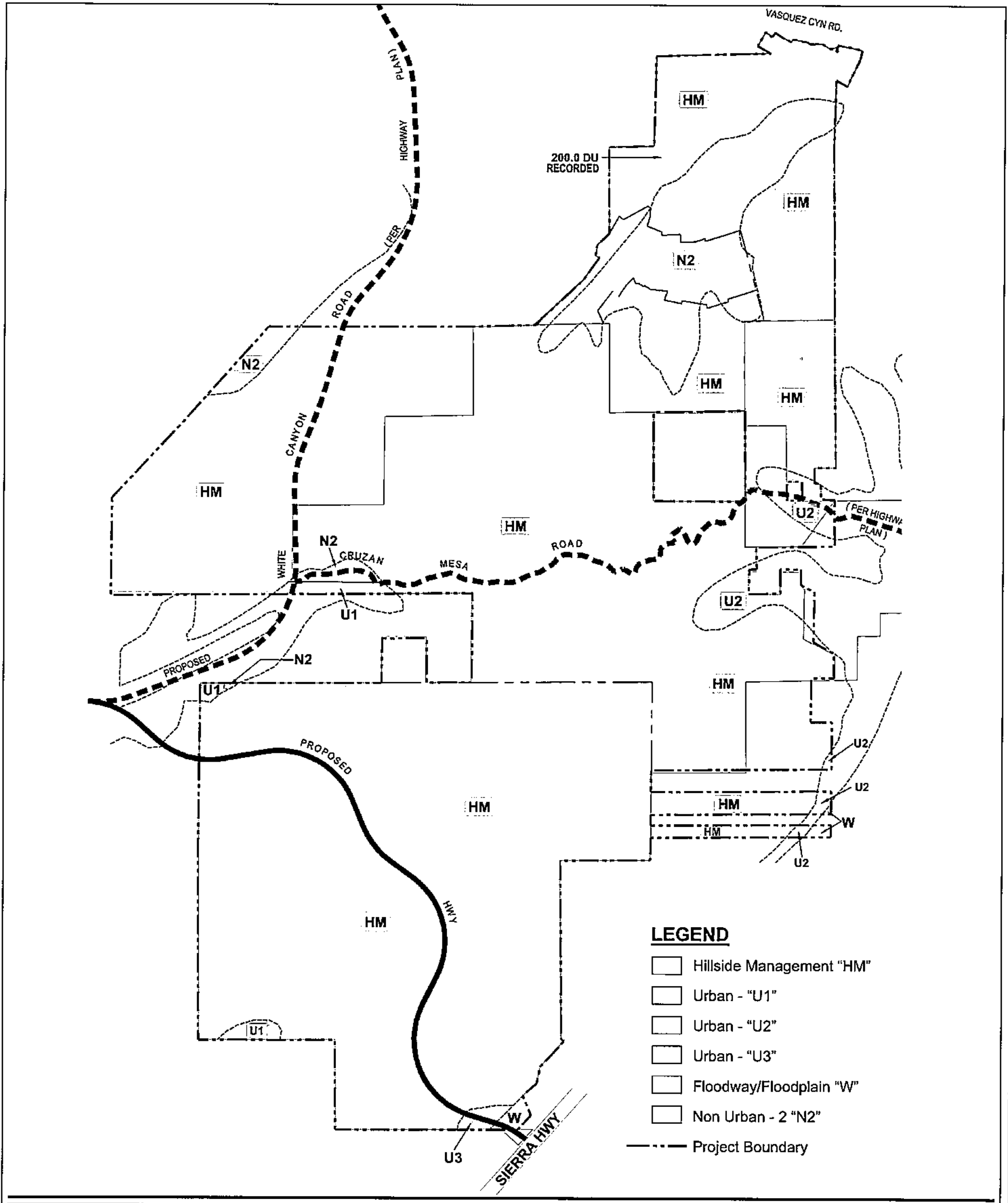
Grading

Grading and associated earthwork would require the movement of approximately 20 million cubic yards of earth (cut/fill) that would occur exclusively on the southern 592 acres of the 2,196-acre site and immediately adjacent properties to the southeast and west for project access. Approximately 32 percent of the grading would be associated with a proposed off- and on-site public street improvement to extend Whites Canyon Road to the project site. Within the 592 acre portion of the property, mass grading would take place to provide for major roads and infrastructure, establish drainage patterns and for creation of building pads for the various land uses within the project.

The overall grading and earthwork proposal includes approximately 10.54 acres off-site associated with the extension of Whites Canyon Road to Plum Canyon Road. For approximately 1.42 acres of this off-site area, permission will be sought to undertake grading on land owned by the Federal government. Approximately 65,000 cubic yards of fill would be placed on this property with a maximum fill depth of 100 feet.

Infrastructure

The project will construct a network of collector roads to provide local access to land uses associated with the proposed project. Primary access to the tract is provided by the off-site extension of Whites Canyon Road from Plum Canyon on the west (through Tract Map No. 46018), through the project site as Skyline Ranch Road, ultimately connecting to Sierra Highway in the southeast. This roadway is planned for two travel lanes in each direction separated by a center median and containing landscaped parkways of variable width within a 100-foot right-of-way. Local roadways would extend off Whites Canyon Road within a 50-foot right of way. All roadways within the project site will be constructed to urban standards as defined by the County of Los Angeles Department of Public Works.



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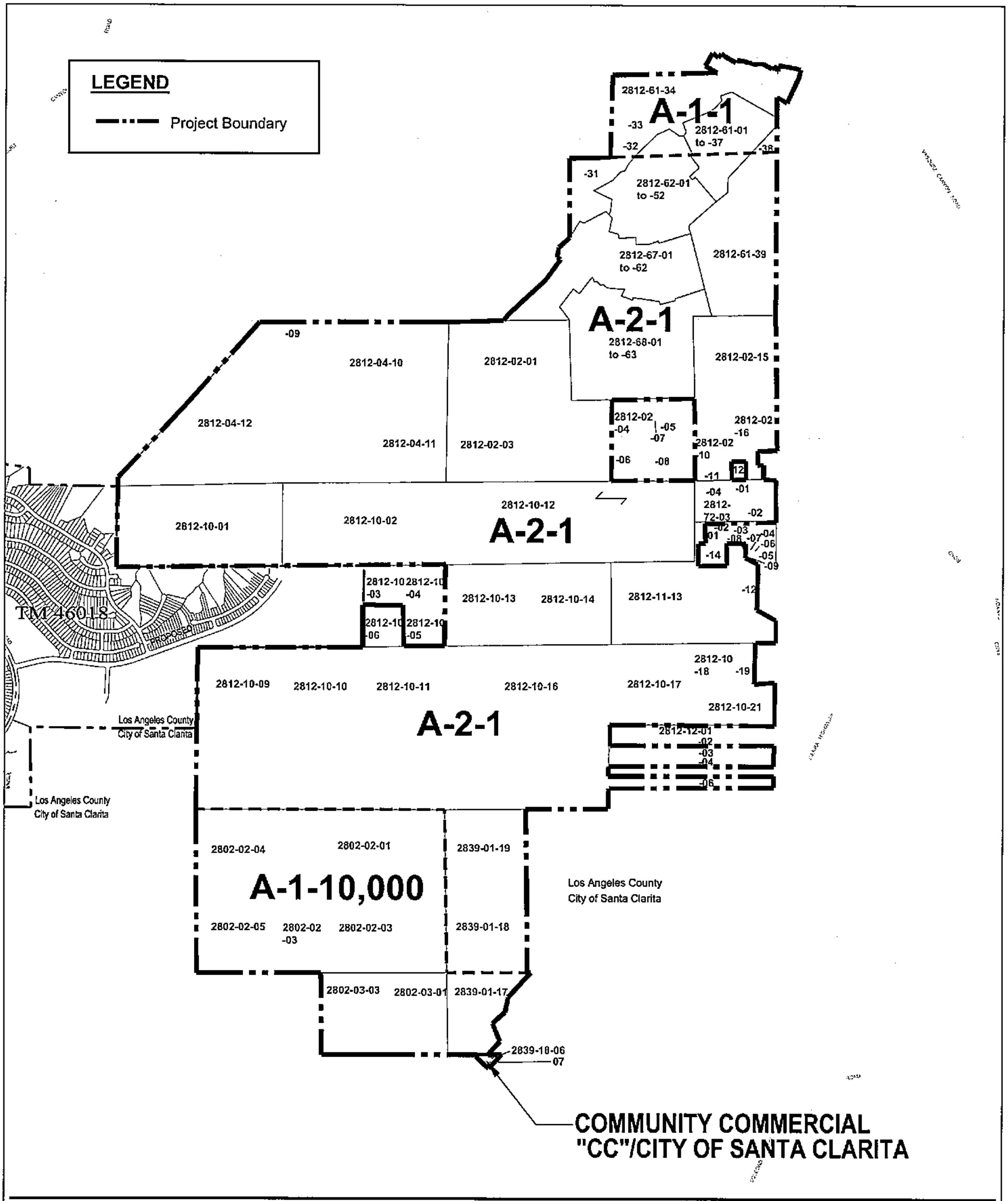
N

Not to scale

Figure 3
Existing General Plan Designation

Source: Sikand, 2004



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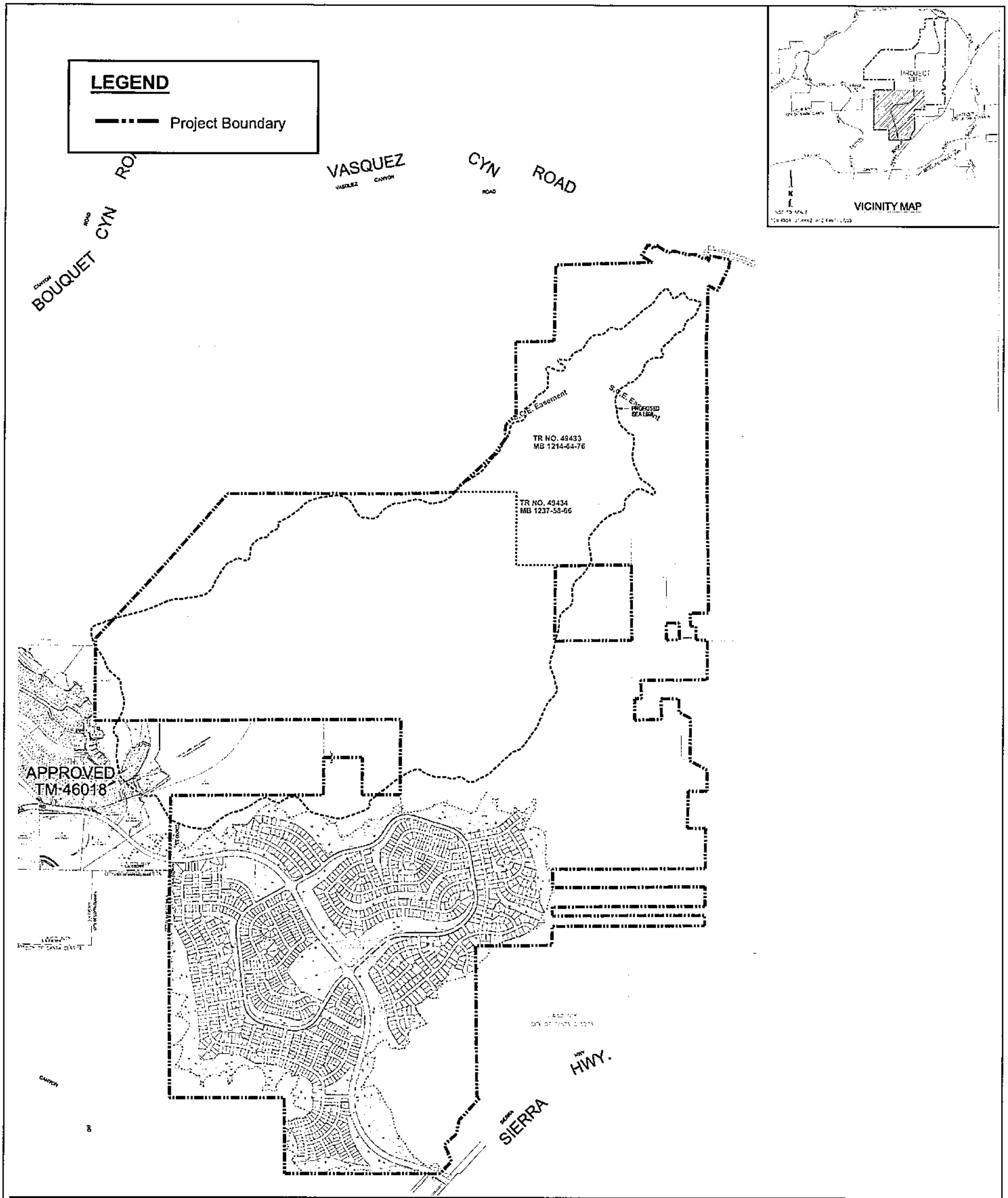
Not to scale

Source: Sikand, 2004

PCR

Figure 4
Zoning Map



Not to scale

Figure 5
Vesting Tentative Tract No. 060922

Source: Sikand, 2004

A system of landscaped trails and walkways, called paseos, is proposed to provide a safe and attractive means of pedestrian access from residential neighborhoods to the elementary school and park sites. The paseos would adjoin Skyline Ranch Road and certain residential collector streets, and would be separated from vehicular traffic.

On-site surface run-off would be intercepted by curb, debris, and/or desilting inlets and conveyed to a network of storm drains that lead to a series of treatment structures including water quality basins prior to discharge into the existing storm drain network serving nearby developed uses.

Wastewater would be collected and conveyed by a gravity flow network of pipes placed beneath on-site roadways. The sewer collector lines serving the site will connect to a sewer trunk main that extends along Sierra Highway.

The site is currently located in an area served by both the Santa Clarita Water Division (SCWD) and the Newhall County Water District. However, detachment from the Newhall County Water District is proposed as part of the project since the SCWD has existing distribution infrastructure in place that can more feasibly serve the project. In order to provide sufficient amounts of water and adequate water pressure to the project, a series of water storage reservoirs are proposed within two on-site water zones. Potable water would be conveyed to on-site uses via a network of 6" to 12" pipes that are located primarily beneath the planned roadway alignments.

DISCRETIONARY ACTIONS REQUESTED

Actions from the County of Los Angeles Department of Regional Planning needed to develop the property as proposed include: 1) Vesting Tentative Tract Map No. 060922; 2) Conditional Use Permit (04-075) for a Residential Planned Development, development in a Hillside Management Area, and for the movement of more than 100,000 cubic yards of earth; 3) Oak Tree Permit (04-075) for removal of one oak tree; and 4) a Development Agreement (04-075) with the County of Los Angeles. Among actions being sought from other agencies, detachment from the Newhall County Water District and annexation to the SCWD is proposed.

ENVIRONMENTAL SETTING/POTENTIAL ENVIRONMENTAL ISSUES

Topography consists of modest- to steep-sloped ridgelines and canyons. The site drains to the west and southwest into the Santa Clara River basin. The terrain is generally rugged, but has few exposed rock outcroppings. South of Plum Canyon, the terrain rises gently from southwest to northeast where it joins the pass at the headwaters of Plum Canyon. North of Plum Canyon is a series of side canyons and associated slopes and ridges. These ridges slope southwestward from Cruzan Mesa and northward into Vasquez and Bouquet Canyons farther to the north.

The site has no active land uses other than on Cruzan Mesa. The northern portion of Cruzan Mesa is currently being leased by SLS Film Works as an outdoor movie location. Portions of Cruzan Mesa have been used for cattle grazing and are the site of a sizable vernal pool. Land ownership of the entire Skyline Ranch site is in private holdings. Recorded Tract Map No. 44967 of 200 lots on 360 acres is included within the northern boundary of this project.

The Skyline Ranch site supports seven vegetation communities as classified by Holland (1986): non-native grassland, coastal sage scrub, chaparral, coastal sage–chaparral scrub, holly-leaved cherry scrub, vernal pool, sycamore riparian woodland, and highly disturbed areas, with minor elements of other plant communities present. The dominant communities on the site are coastal sage scrub and coastal sage–chaparral scrub, with the former best represented on south-facing slopes and ridgelines and the latter mostly on north-facing slopes. True chaparral with scrub oaks is restricted primarily to shaded north-facing slopes in the northern portion of the project site. Non-native grassland predominates on mesas, ridgelines, and gentler south-facing slopes, but as with chaparral, in many areas it is transitional with coastal sage scrub and clearly represents an early stage of sage scrub following past soil disturbance.

Wildlife diversity on the site is moderate, commensurate with the rather homogeneous nature of the sage scrub and grassland-covered slopes and ridges that comprise most of the site. The highest diversity occurs in Plum Canyon and an unnamed canyon to the southwest, which have the best developed plant community structure and greatest diversity of habitat types. Cruzan Mesa, the northern portion of the 1,604 acres of the project site proposed to remain preserved as open space, has seasonal pools and extensive grassland, offers additional habitat for a different array of species, and the long escarpment along the northern end of this area provides nesting habitat for several species of raptors. The pools also offer resting and foraging habitat for a number of migratory waterfowl and shorebirds in the spring and early summer. Biological survey data from 2002 and 2003 confirmed the presence of four plant species and twelve wildlife species that are recognized as regionally or locally "sensitive", but are not federally or State-listed.

The Los Angeles County Department of Regional Planning prepared an Initial Study for the Skyline Ranch project and determined that a project EIR is required. A copy of the Initial Study is included as an attachment to this NOP.

The attached Initial Study was prepared pursuant to CEQA Guidelines §15063 and provides a preliminary analysis of the potential environmental effects to be analyzed in the Project EIR. The Initial Study provides a description of the project, including the location; a description of the environmental setting; and an identification of the project's potential environmental effects relative to hazards (geotechnical, flood, fire and noise); resources (water quality, air quality, biota, cultural resources and visual resources/aesthetics), services (traffic/access, sewage disposal, education, fire/sheriff and utilities) and other potential impact categories (general, environmental safety/hazardous materials, land use, population/housing/employment and mandatory findings of significance).

Based on the preliminary analysis, the Initial Study determined that the project may have potentially significant effects relative to the various impact categories, including: hazards (geotechnical, flood, fire and noise), resources (water quality, air quality, biota, cultural resources, and visual resources/aesthetics), services (traffic/access, sewage disposal, education, fire/sheriff and utilities) and other (general, environmental safety/hazardous materials, land use and recreation).

SCOPING MEETING

To assist in local participation, a Scoping Meeting will be held to present the proposed project and to solicit suggestions from the public and responsible agencies on the content of the Draft EIR. This meeting will be held in the Canyon Country Joanne Darcy Library located at 18536 Soledad Canyon Road, Santa Clarita, CA 91351 on November 10th, 2004 from 6:00 p.m. to 8:00 p.m.

NOTICE OF PREPARATION REVIEW AND COMMENTS

The review period for the Notice of Preparation will be from October 25 to November 24, 2004. Copies of the NOP are available for review at Canyon Country Library located at 18536 Soledad Canyon Road, Santa Clarita, CA 91351; Valencia County Library at 23743 West Valencia Boulevard, Santa Clarita, CA 91355; Newhall County Library at 22704 West 9th Street, Santa Clarita, CA 91321; as well as at the Department of Regional Planning, at the address below, and its website http://planning.co.la.ca.us/drp_agnd.html Tentative Tract Map No. 060922. Due to the time limits mandated by State law, your response must be sent at the earliest possible date, but not later than November 30, 2004. Please direct all written comments to the following address. In your written response, please include the name of a contact person in your agency.

Dr. Hsiao-ching Chen, AICP
Los Angeles County Regional Planning Department
Impact Analysis Section
320 West Temple Street, Room 1348
Los Angeles, CA 90012
Tel (213) 974-6461
Fax (213) 626-0434

NOTICE OF CORRECTION

ADDITIONAL PROJECT INFORMATION TO BE INCLUDED IN THE NOTICE OF PREPARATION

The "Skyline Ranch" Project

County Project No. 04-075
Oak Tree Permit, Conditional Use Permit, Development Agreement
Tentative Tract Map No. 060922

The Notice of Preparation (NOP) distributed on October 25, 2004 regarding the above-referenced project failed to include a copy of the Initial Study prepared by the County of Los Angeles Department of Regional Planning. We apologize for this oversight. A copy of the Initial Study is attached for your review.

Please direct any questions concerning this matter or the project to:

Dr. Hsiao-ching Chen, AICP
Impact Analysis Section
Los Angeles County, Department of Regional Planning
320 W. Temple Street, Room 1348
Los Angeles, CA 90012
Telephone: (213) 974-6461
Fax: (213) 626-0434

STAFF USE ONLY

PROJECT NUMBER: 04-075

CASES: TR 060922

CP, ZC, PA

* * * * INITIAL STUDY * * * *

COUNTY OF LOS ANGELES
DEPARTMENT OF REGIONAL PLANNING

GENERAL INFORMATION

I.A. Map Date: March 8, 2004 Staff Member: Hsiao-ching Chen

Thomas Guide: 4551 H,J-1; 4461 H,J1-6; 4462 A 1-7, B1-6 USGS Quad: Mint Canyon

Location: West of Mint Canyon and Sierra Highway between the Santa Clara River and Vasquez Canyon Road, Canyon Country

Description of Project: This application is a request for a Tentative Tract Map and a Conditional Use Permit for hillside development to subdivide into 1,343 single-family lots, a 10-acre school site, 9 acres of park lands, and an open space area of 1,604 acres. Approximately 306 acres of the site contains previously approved and recorded tract maps (i.e., Tracts 49433, 49434, 44967). Requests for ZC, PA, and OTP are uncertain and to be determined by staff.

Gross Area: 2,196 acres

Environmental Setting: The project site is located in the upper Santa Clarita Valley north and west of Highway 14 and north of the City of Santa Clarita in the unincorporated Los Angeles County. Plum Canyon is the major drainage on-site and runs east-west, ultimately draining into Bouquet Canyon west of the site. Topography consists of modest to steep ridgelines and canyons covered with low scrub and grasslands with scattered trees and tall scrub in the larger canyons. Northern portion of the site is currently being leased as an outdoor movie set on the previously recorded tracts area and another portion site has been used for cattle grazing. Surrounding land uses include existing, approved, and proposed residential communities and vacant land.

Zoning: A-2-1, A-1-1, A-1- 10,000

General Plan: Non-urban

Community/Area Wide Plan: U1, U2, U3, N, W, HM (SCVAP)

Major projects in area:

Project Number	Description & Status
CP 03-074	*Condominium (12/2003 approved)*
85-628/TR46018	*(TN) 1309 lots on 603 AC (1/31/89 partially recorded)*
04-124/ TR060999	*45 SF and 1 Open Space (pending)*
04-102/ TR46018	*4 SF, 5MF, 1 Fire Station, 1 Park, 3 Open Space (Revised Map-pending)*
00-187/TR 52763	*11 SF and 1 Open Space (pending)*
86-441/ TR44967	*(TN) 202 SF, 4 OS, 2 PF LOTS ON 360 AC (recorded 5/12/99)*

NOTE: For EIRs, above projects are not sufficient for cumulative analysis.

REVIEWING AGENCIES

Responsible Agencies

☐ None

☒ Regional Water Quality Control Board

  ☒ Los Angeles Region

  ☐ Lahontan Region

☐ CA Dept of Health Services

☒ Army Corps of Engineers

☒ *CA Integ. Waste Mgt Board*

☒ *Caltrans*

Trustee Agencies

☐ None

☒ State Fish and Game

☒ State Parks

☒ *USFWS*

☐ ________________

Special Reviewing Agencies

☐ None

☒ Santa Monica Mountains Conservancy

☐ National Parks

☐ National Forest

☐ Edwards Air Force Base

☐ Resource Conservation District of the Santa Monica Mtns.

☒ *Air Resources Board*

☒ *AQMD, SCAG, DTSC*

☒ *City of Santa Clarita*

☒ *W S Hart USD, Saugus SD*

☒ *Sulphur Springs Union SD*

☒ *Newhall County Water Dist.*

☒ *CA WaterImpact Network*

☒ *SC Valley Historical Society*

Regional Significance

☐ None

☒ SCAG Criteria

☒ Air Quality

☒ Water Resources

County Reviewing Agencies

☒ Subdivision Committee

☒ DPW: *Traffic & Lighting; Env Programs; Land Dev, Geo & Materials, Waterworks, Watershed Mgt,*

☒ Health Services: *Env Protection, Solid Waste Mgt Programs*

☒ *Sanitation Districts*

☒ *Fire, Sheriff, Library*

☒ *Parks & Recreation*

☐ __________

IMPACT ANALYSIS MATRIX

			ANALYSIS SUMMARY (See individual pages for details)			
CATEGORY	FACTOR	Pg	No Additional Analysis	Addendum EIR/ND	Subsequent/Supplemental EIR	Potential Concern
HAZARDS	1. Geotechnical	5	☐	☐	☒	*Seismic hazard, landslide, substantial grading*
	2. Flood	6	☐	☐	☒	*Plum Canyon*
	3. Fire	7	☐	☐	☒	*Fire Zone 4, Water supply for fire fighting purposes*
	4. Noise	8	☐	☐	☒	*Construction noise on surrounding residential uses*
RESOURCES	1. Water Quality	9	☐	☐	☒	*NPDES compliance*
	2. Air Quality	10	☐	☐	☒	*Project exceeds regional threshold*
	3. Biota	11	☐	☐	☒	*vernal pools, coastal sage scrub, sycamore riparian habitat*
	4. Cultural Resources	12	☐	☐	☒	*Oak, drainage course, undisturbed land*
	5. Mineral Resources	13	☒	☐	☐	
	6. Agriculture Resources	14	☒	☐	☐	
	7. Visual Qualities	15	☐	☐	☒	*Landform alteration*
SERVICES	1. Traffic/Access	16	☐	☐	☒	*Project exceeds CMP thresholds*
	2. Sewage Disposal	17	☐	☐	☒	*No existing services available*
	3. Education	18	☐	☐	☒	*Existing district/school exceeds current capacity*
	4. Fire/Sheriff	19	☐	☐	☒	*Nearest fire/sheriff unable to respond in time*
	5. Utilities	20	☐	☐	☒	*All utility supplies including water*
OTHER	1. General	21	☐	☐	☒	*Water supply, solid waste facility near capacity*
	2. Environmental Safety	22	☐	☐	☒	*Phase I Env Assessment is required*
	3. Land Use	23	☐	☐	☒	*Plan Amendment, Zone Change, Hillside development*
	4. Pop./Hous./Emp./Rec.	24	☐	☐	☒	*Increased demand for recreational facility*
	Mandatory Findings	25	☐	☐	☒	*Biota, Traffic, Water Quality, Air Quality*

DEVELOPMENT MONITORING SYSTEM (DMS) *

As required by the Los Angeles County General Plan, DMS shall be employed in the Initial Study phase of the environmental review procedure as prescribed by state law.

1. Development Policy Map Designation: *Non-urban hillside, other non-urban and agricultral*

2. ☒ Yes ☐ No Is the project located in the Antelope Valley, East San Gabriel Valley, Malibu/Santa Monica Mountains or Santa Clarita Valley planning area?

3. ☒ Yes ☐ No Is the project at urban density and located within, or proposes a plan amendment to, an urban expansion designation?

If both of the above questions are answered "yes", the project is subject to a County DMS analysis.

☒ Check if DMS printout generated (attached) Date of printout: *4/28/04*

☐ Check if DMS overview worksheet completed (attached)

*EIRs and/or staff reports shall utilize the most current DMS information available.

Environmental Finding:

FINAL DETERMINATION: On the basis of this Initial Study, the Department of Regional Planning finds that this project qualifies for the following environmental document:

☐ NEGATIVE DECLARATION, inasmuch as the proposed project will not have a significant effect on the environment.

An Initial Study was prepared on this project in compliance with the State CEQA Guidelines and the environmental reporting procedures of the County of Los Angeles. It was determined that this project will not exceed the established threshold criteria for any environmental/service factor and, as a result, will not have a significant effect on the physical environment.

☐ MITIGATED NEGATIVE DECLARATION, inasmuch as the changes required for the project will reduce impacts to insignificant levels (see attached discussion and/or conditions).

An Initial Study was prepared on this project in compliance with the State CEQA Guidelines and the environmental reporting procedures of the County of Los Angeles. It was originally determined that the proposed project may exceed established threshold criteria. The applicant has agreed to modification of the project so that it can now be determined that the project will not have a significant effect on the physical environment. The modification to mitigate this impact(s) is identified on the Project Changes/Conditions Form included as part of this Initial Study.

☒ ENVIRONMENTAL IMPACT REPORT*, inasmuch as there is substantial evidence that the project may have a significant impact due to factors listed above as "significant."

☐ On the basis of substantial evidence in the light of the whole record, there are substantial changes in project as well as with respect to the circumstances under which the project is undertaken. A Subsequent EIR is to be prepared pursuant to CEQA Guidelines Section 15162.

Reviewed by: *Hsiao-ching Chen* Date: ____________

Approved by: *Daryl Koutnik* Daryl Koutnik Date: 5 MAY 2004

☐ This proposed project is exempt from Fish and Game CEQA filling fees. There is no substantial evidence that the proposed project will have potential for an adverse effect on wildlife or the habitat upon which the wildlife depends. (Fish & Game Code 753.5).

☐ Determination appealed--see attached sheet.

*NOTE: Findings for Environmental Impact Reports will be prepared as a separate document following the public hearing on the project.

HAZARDS - 1. Geotechnical

SETTING/IMPACTS

	Yes	No	Maybe	
a.	☒	☐	☐	Is the project site located in an active or potentially active fault zone, Seismic Hazards Zone, or Alquist-Priolo Earthquake Fault Zone? *Portion of the site is close to Mint Canyon Fault (LA Co Safety Element Plate 1); Earthquake-induced landslides and liquefaction areas (Seismic Hazard Zones Map Mint Canyon Quad.)*
b.	☒	☐	☐	Is the project site located in an area containing a major landslide(s)? *Earthquake-induced landslides (Seismic Hazard Zones Map Mint Canyon Quad.)*
c.	☒	☐	☐	Is the project site located in an area having high slope instability? *Grading and construction within hillside area.*
d.	☒	☐	☐	Is the project site subject to high subsidence, high groundwater level, liquefaction, or hydrocompaction? *Liquefaction areas (Seismic Hazard Zones Map Mint Canyon Quad.)*
e.	☒	☐	☐	Is the proposed project considered a sensitive use (school, hospital, public assembly site) located in close proximity to a significant geotechnical hazard? *Project contains a propsoed school site.*
f.	☒	☐	☐	Will the project entail substantial grading and/or alteration of topography including slopes of more than 25%? *Substantial grading in hillside area*
g.	☐	☒	☐	Would the project be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994), creating substantial risks to life or property?
h.	☐	☐	☐	Other factors?

STANDARD CODE REQUIREMENTS

☐ Building Ordinance No. 2225 C Sections 308B, 309, 310 and 311 and Chapters 29 and 70.

☒ **MITIGATION MEASURES** / ☐ **OTHER CONSIDERATIONS**

☐ Lot Size ☐ Project Design ☒ Approval of Geotechnical Report by DPW

CONCLUSION

Considering the above information, could the project have a significant impact (individually or cumulatively) on, or be impacted by, **geotechnical** factors?

☒ Potentially significant ☐ Less than significant with project mitigation ☐ Less than significant/No impact

HAZARDS - 2. Flood

SETTING/IMPACTS

Yes No Maybe

a. ☒ ☐ ☐ Is a major drainage course, as identified on USGS quad sheets by a dashed line, located on the project site?

Plum Canyon

b. ☒ ☐ ☐ Is the project site located within or does it contain a floodway, floodplain, or designated flood hazard zone?

Plum Canyon

c. ☐ ☐ ☒ Is the project site located in or subject to high mudflow conditions?

Construction on hillside area

d. ☐ ☐ ☒ Could the project contribute or be subject to high erosion and debris deposition from run off?

Construction on hillside area

e. ☒ ☐ ☐ Would the project substantially alter the existing drainage pattern of the site or area?

Topography to be significantly altered although not directly in main Plum Canyon

f. ☐ ☐ ☐ Other factors (e.g., dam failure)? ______

STANDARD CODE REQUIREMENTS

☐ Building Ordinance No. 2225 C Section 308A ☐ Ordinance No. 12,114 (Floodways)
☒ Approval of Drainage Concept by DPW

☒ MITIGATION MEASURES / ☐ OTHER CONSIDERATIONS

☐ Lot Size ☐ Project Design

CONCLUSION

Considering the above information, could the project have a significant impact (individually or cumulatively) on, or be impacted by **flood (hydrological)** factors?

☒ Potentially significant ☐ Less than significant with project mitigation ☐ Less than significant/No impact

HAZARDS - 3. Fire

SETTING/IMPACTS

	Yes	No	Maybe	
a.	☒	☐	☐	Is the project site located in a Very High Fire Hazard Severity Zone (Fire Zone 4)? *Fire Zone 4 (LA County Safety Element Plate 7)*
b.	☐	☒	☐	Is the project site in a high fire hazard area and served by inadequate access due to lengths, widths, surface materials, turnarounds or grade?
c.	☐	☒	☐	Does the project site have more than 75 dwelling units on a single access in a high fire hazard area?
d.	☐	☐	☒	Is the project site located in an area having inadequate water and pressure to meet fire flow standards? *No water currently available*
e.	☐	☒	☐	Is the project site located in close proximity to potential dangerous fire hazard conditions/uses (such as refineries, flammables, explosives manufacturing)?
f.	☐	☒	☐	Does the proposed use constitute a potentially dangerous fire hazard?
g.	☐	☐	☐	Other factors?

STANDARD CODE REQUIREMENTS

☒ Water Ordinance No. 7834 ☒ Fire Ordinance No. 2947 ☒ Fire Regulation No. 8

☒ Fuel Modification/Landscape Plan

☒ **MITIGATION MEASURES** / ☐ **OTHER CONSIDERATIONS**

☐ Project Design ☐ Compatible Use

CONCLUSION

Considering the above information, could the project have a significant impact (individually or cumulatively) on, or be impacted by **fire hazard** factors?

☒ Potentially significant ☐ Less than significant with project mitigation ☐ Less than significant/No impact

HAZARDS - 4. Noise

SETTING/IMPACTS

	Yes	No	Maybe	
a.	☐	☒	☐	Is the project site located near a high noise source (airports, railroads, freeways, industry)?
b.	☒	☐	☐	Is the proposed use considered sensitive (school, hospital, senior citizen facility) or are there other sensitive uses in close proximity? *Project contains a propsoed school site.*
c.	☒	☐	☐	Could the project substantially increase ambient noise levels including those associated with special equipment (such as amplified sound systems) or parking areas associated with the project? *Site is currently undeveloped*
d.	☒	☐	☐	Would the project result in a substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels without the project? *During project preparation and construction, truck trips may travel through existing residential communities or affect exisiting surrounding residential uses.*
e.	☐	☐	☐	Other factors?

STANDARD CODE REQUIREMENTS

☒ Noise Ordinance No. 11,778

☐ Building Ordinance No. 2225--Chapter 35

☒ MITIGATION MEASURES / ☐ OTHER CONSIDERATIONS

☐ Lot Size ☐ Project Design ☐ Compatible Use

CONCLUSION

Considering the above information, could the project have a significant impact (individually or cumulatively) on, or be adversely impacted by **noise**?

☒ Potentially significant ☐ Less than significant with project mitigation ☐ Less than significant/No impact

RESOURCES - 1. Water Quality

SETTING/IMPACTS

	Yes	No	Maybe	
a.	☐	☒	☐	Is the project site located in an area having known water quality problems and proposing the use of individual water wells?
b.	☐	☒	☐	Will the proposed project require the use of a private sewage disposal system?
	☐	☐	☐	If the answer is yes, is the project site located in an area having known septic tank limitations due to high groundwater or other geotechnical limitations *or* is the project proposing on-site systems located in close proximity to a drainage course?
c.	☒	☐	☐	Could the project's associated construction activities significantly impact the quality of groundwater and/or storm water runoff to the storm water conveyance system and/or receiving water bodies? *NPDES compliance required.*
d.	☒	☐	☐	Could the project's post-development activities potentially degrade the quality of storm water runoff and/or could post-development non-storm water discharges contribute potential pollutants to the storm water conveyance system and/or receiving bodies? *NPDES compliance required.*
e.	☐	☐	☐	Other factors?

STANDARD CODE REQUIREMENTS

☐ Industrial Waste Permit ☐ Health Code Ordinance No. 7583, Chapter 5

☐ Plumbing Code Ordinance No. 2269 ☒ NPDES Permit Compliance (DPW)

☒ **MITIGATION MEASURES** / ☐ **OTHER CONSIDERATIONS**

☐ Lot Size ☐ Project Design

CONCLUSION

Considering the above information, could the project have a significant impact (individually or cumulatively) on, or be impacted by, **water quality** problems?

☒ Potentially significant ☐ Less than significant with project mitigation ☐ Less than significant/No impact

RESOURCES - 2. Air Quality

SETTING/IMPACTS

	Yes	No	Maybe	
a.	☒	☐	☐	Will the proposed project exceed the State's criteria for regional significance (generally (a) 500 dwelling units for residential uses or (b) 40 gross acres, 650,000 square feet of floor area or 1,000 employees for nonresidential uses)? *Project contains 1,341 units of single family units and one school site.*
b.	☒	☐	☐	Is the proposal considered a sensitive use (schools, hospitals, parks) and located near a freeway or heavy industrial use? *Project contains a proposed school site.*
c.	☒	☐	☐	Will the project increase local emissions to a significant extent due to increased traffic congestion or use of a parking structure, or exceed AQMD thresholds of potential significance? *Project is likely to exceed AQMD thresholds of significance due to its large size.*
d.	☐	☒	☐	Will the project generate or is the site in close proximity to sources which create obnoxious odors, dust, and/or hazardous emissions?
e.	☐	☐	☒	Would the project conflict with or obstruct implementation of the applicable air quality plan? *Project is a non-attainment area.*
f.	☐	☐	☒	Would the project violate any air quality standard or contribute substantially to an existing or projected air quality violation? *Construction activities could exceed Nox threshold.*
g.	☒	☐	☐	Would the project result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard (including releasing emissions which exceed quantitative thresholds for ozone precursors)? *ROG, NOx, PM10*
h.	☒	☐	☐	Other factors: *Site is located within a non-attainment air quality district.*

STANDARD CODE REQUIREMENTS

☐ Health and Safety Code Section 40506

☒ **MITIGATION MEASURES** / ☐ **OTHER CONSIDERATIONS**

☐ Project Design ☒ Air Quality Report

CONCLUSION

Considering the above information, could the project have a significant impact (individually or cumulatively) on, or be impacted by, **air quality**?

☒ Potentially significant ☐ Less than significant with project mitigation ☐ Less than significant/No impact

RESOURCES - 3. Biota

SETTING/IMPACTS

	Yes	No	Maybe	
a.	☒	☐	☐	Is the project site located within a Significant Ecological Area (SEA), SEA Buffer, or coastal Sensitive Environmental Resource (ESHA, etc.), or is the site relatively undisturbed and natural? *Portion of the site is within the proposed Crezan Mesa SEA; Site is relatively undisturbed*
b.	☒	☐	☐	Will grading, fire clearance, or flood related improvements remove substantial natural habitat areas? *Site is relatively undisturbed*
c.	☒	☐	☐	Is a major drainage course, as identified on USGS quad sheets by a blue, dashed line, located on the project site? *Plum Canyon and its unnamed tributary drainage.*
d.	☒	☐	☐	Does the project site contain a major riparian or other sensitive habitat (e.g., coastal sage scrub, oak woodland, sycamore riparian woodland, wetland, etc.)? *Cruzan Mesa and Plum Canyon vernal pools, coastal sage scrub, holly-leaved cherry scrub, sycamore riparian woodland, chaparral*
e.	☒	☐	☐	Does the project site contain oak or other unique native trees (specify kinds of trees)? *Site contains one mature coast live oak (Quercus agrifolia) tree and Sycamore*
f.	☒	☐	☐	Is the project site habitat for any known sensitive species (federal or state listed endangered, etc.)? *California Orcutt, spreading navarretia, slender mariposa lily, Peirson's Morning-glory, Palmer's Grappling Hook, California gnatcatcher, white-tailed kite, nothern harrier, golden eagle, prairie falcon, ashy rufous-crowned sparrow, Bell's sage sparrow, widespread Pacific treefrog, western spadefoot, coast horned lizard, vernal pool fairy shrimp, coastal whiptail, and southern rattlesnake.*
g.	☐	☐	☐	Other factors (e.g., wildlife corridor, adjacent open space linkage)? ____________

☒ MITIGATION MEASURES / ☐ OTHER CONSIDERATIONS

☐ Lot Size ☒ Project Design ☒ Oak Tree Permit ☒ SEATAC Review

Biological Resources Constraints dated March 2004 by Natural Resource Consultant on file.

CONCLUSION

Considering the above information, could the project have a significant impact (individually or cumulatively) on **biotic resources**?

☒ Potentially significant ☐ Less than significant with project mitigation ☐ Less than significant/No impact

RESOURCES - 4. Archaeological / Historical / Paleontological

SETTING/IMPACTS

	Yes	No	Maybe	
a.	☒	☐	☐	Is the project site in or near an area containing known archaeological resources or containing features (drainage course, spring, knoll, rock outcroppings, or oak trees) which indicate potential archaeological sensitivity? *Plum Canyon, one oak tree*
b.	☐	☒	☐	Does the project site contain rock formations indicating potential paleontological resources?
c.	☐	☒	☐	Does the project site contain known historic structures or sites? *Site is currently vacant*
d.	☐	☒	☐	Would the project cause a substantial adverse change in the significance of a historical or archaeological resource as defined in 15064.5?
e.	☐	☒	☐	Would the project directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?
f.	☐	☐	☐	Other factors?

☒ MITIGATION MEASURES / ☐ OTHER CONSIDERATIONS

☐ Lot Size ☐ Project Design ☒ Phase I Archaeology Report

CONCLUSION

Considering the above information, could the project leave a significant impact (individually or cumulatively) on **archaeological, historical**, or **paleontological** resources?

☒ Potentially significant ☐ Less than significant with project mitigation ☐ Less than significant/No impact

RESOURCES - 5.Mineral Resources

SETTING/IMPACTS

	Yes	No	Maybe	
a.	☐	☒	☐	Would the project result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state?
b.	☐	☒	☐	Would the project result in the loss of availability of a locally important mineral resource discovery site delineated on a local general plan, specific plan or other land use plan?
c.	☐	☐	☐	Other factors? ______

☐ MITIGATION MEASURES / ☐ OTHER CONSIDERATIONS

☐ Lot Size ☐ Project Design

CONCLUSION

Considering the above information, could the project leave a significant impact (individually or cumulatively) on **mineral** resources?

☐ Potentially significant ☐ Less than significant with project mitigation ☒ Less than significant/No impact

RESOURCES - 6. Agriculture Resources

SETTING/IMPACTS

	Yes	No	Maybe	
a.	☐	☒	☐	Would the project convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to non-agricultural use? *Per Los Angeles County Important Farmland 2002 map*
b.	☐	☒	☐	Would the project conflict with existing zoning for agricultural use, or a Williamson Act contract?
c.	☐	☒	☐	Would the project involve other changes in the existing environment which, due to their location or nature, could result in conversion of Farmland, to non-agricultural use?
d.	☐	☐	☐	Other factors?

☐ **MITIGATION MEASURES** / ☐ **OTHER CONSIDERATIONS**

☐ Lot Size ☐ Project Design

CONCLUSION

Considering the above information, could the project leave a significant impact (individually or cumulatively) on **agriculture** resources?

☐ Potentially significant ☐ Less than significant with project mitigation ☒ Less than significant/No impact

RESOURCES - 7. Visual Qualities

SETTING/IMPACTS

Yes No Maybe

a. ☐ ☐ ☒ Is the project site substantially visible from or will it obstruct views along a scenic highway (as shown on the Scenic Highway Element), or is it located within a scenic corridor or will it otherwise impact the viewshed?

Soledad Canyon Road is Santa Clarita is a secondary scenic highway.

b. ☐ ☐ ☒ Is the project substantially visible from or will it obstruct views from a regional riding or hiking trail? *Mint Canyon and Bouquet Canyon Trails are in the close area (per LA County Trail System Map)*

c. ☐ ☒ ☐ Is the project site located in an undeveloped or undisturbed area, which contains unique aesthetic features?

d. ☐ ☒ ☐ Is the proposed use out-of-character in comparison to adjacent uses because of height, bulk, or other features?

e. ☐ ☒ ☐ Is the project likely to create substantial sun shadow, light or glare problems?

f. ☐ ☐ ☐ Other factors (e.g., grading or land form alteration):

☒ **MITIGATION MEASURES** / ☐ **OTHER CONSIDERATIONS**

☐ Lot Size ☐ Project Design ☒ Visual Report ☐ Compatible Use

CONCLUSION

Considering the above information, could the project have a significant impact (individually or cumulatively) on **scenic** qualities?

☒ Potentially significant ☐ Less than significant with project mitigation ☐ Less than significant/No impact

SERVICES - 1. Traffic/Access

SETTING/IMPACTS

	Yes	No	Maybe	
a.	☒	☐	☐	Does the project contain 25 dwelling units, or more and is it located in an area with known congestion problems (roadway or intersections)? *Project is proposing 1,341 SF units and 1 school site; many intersections in Santa Clarita near capacity.*
b.	☐	☒	☐	Will the project result in any hazardous traffic conditions?
c.	☐	☒	☐	Will the project result in parking problems with a subsequent impact on traffic conditions?
d.	☐	☒	☐	Will inadequate access during an emergency (other than fire hazards) result in problems for emergency vehicles or residents/employees in the area?
e.	☒	☐	☐	Will the congestion management program (CMP) Transportation Impact Analysis thresholds of 50 peak hour vehicles added by project traffic to a CMP highway system intersection or 150 peak hour trips added by project traffic to a mainline freeway link be exceeded? *Project exceeds CMP threshold for single family residential projects.*
f.	☐	☒	☐	Would the project conflict with adopted policies, plans, or programs supporting alternative transportation (e.g., bus turnouts, bicycle racks)?
g.	☐	☐	☐	Other factors?

☒ MITIGATION MEASURES / ☐ OTHER CONSIDERATIONS

☐ Project Design ☒ Traffic Report ☒ Consultation with Traffic & Lighting Division

CONCLUSION

Considering the above information, could the project have a significant impact (individually or cumulatively) on the physical environment due to **traffic/access** factors?

☒ Potentially significant ☐ Less than significant with project mitigation ☐ Less than significant/No impact

SERVICES - 2. Sewage Disposal

SETTING/IMPACTS

	Yes	No	Maybe	
a.	☒	☐	☐	If served by a community sewage system, could the project create capacity problems at the treatment plant? *Per application, the project will be annexed to the LA County Sanitation District No. 26, within which the current demand exceeds design capacity.*
b.	☒	☐	☐	Could the project create capacity problems in the sewer lines serving the project site? *Community sewage system for the site currently unavailable. Project will require existing sewer lines to be extended.*
c.	☐	☐	☐	Other factors?

STANDARD CODE REQUIREMENTS

☐ Sanitary Sewers and Industrial Waste Ordinance No. 6130

☐ Plumbing Code Ordinance No. 2269

☐ **MITIGATION MEASURES** / ☐ **OTHER CONSIDERATIONS**

CONCLUSION

Considering the above information, could the project have a significant impact (individually or cumulatively) on the physical environment due to **sewage disposal** facilities?

☒ Potentially significant ☐ Less than significant with project mitigation ☐ Less than significant/No impact

SERVICES - 3. Education

SETTING/IMPACTS

	Yes	No	Maybe	
a.	☒	☐	☐	Could the project create capacity problems at the district level? *Sulphur Springs, Saugus, and William S. Hart School Districts are currently over capacity.*
b.	☒	☐	☐	Could the project create capacity problems at individual schools which will serve the project site? *Individual schools within the above three school districts are currently operating over capacity.*
c.	☒	☐	☐	Could the project create student transportation problems? *Students may be transferred to other schools not in the immediate vicinity.*
d.	☒	☐	☐	Could the project create substantial library impacts due to increased population and demand? *Project will increase demand for library services by 8,287 volumes and 1,612 square feet to a total of 129,600 volumes and 25,207 square feet respectively, compared to current supply of 66,790 volumes and 5,050 square feet. Project will result in significant impacts on project level as well as on a cumulative basis.*
e.	☐	☐	☐	Other factors? ______

☒ **MITIGATION MEASURES** / ☐ **OTHER CONSIDERATIONS**

☐ Site Dedication ☒ Government Code Section 65995 ☒ Library Facilities Mitigation Fee

CONCLUSION

Considering the above information, could the project have a significant impact (individually or cumulatively) relative to **educational** facilities/services?

☒ Potentially significant ☐ Less than significant with project mitigation ☐ Less than significant/No impact

SERVICES - 4. Fire/Sheriff Services

SETTING/IMPACTS

	Yes	No	Maybe	
a.	☒	☐	☐	Could the project create staffing or response time problems at the fire station or sheriff's substation serving the project site? *The nearest fire station Fire Engine 107 is located at 18239 Soledad Canyon Road, Canyon County, which is approximately 4.5 miles from site; Project site is within the service area of the Santa Clarita Sheriff Station, which is located approxinmately 10.3 miles from the site at 23740 West Magic Mountain Parkway in Valencia.*
b.	☐	☒	☐	Are there any special fire or law enforcement problems associated with the project or the general area? *Site is currently undeveloped.*
c.	☐	☐	☐	Other factors?

☐ **MITIGATION MEASURES** / ☐ **OTHER CONSIDERATIONS**

☒ Fire Mitigation Fees

CONCLUSION

Considering the above information, could the project have a significant impact (individually or cumulatively) relative to **fire/sheriff** services?

☐ Potentially significant ☐ Less than significant with project mitigation ☐ Less than significant/No impact

SERVICES - 5. Utilities/Other Services

SETTING/IMPACTS

	Yes	No	Maybe	
a.	☐	☐	☒	Is the project site in an area known to have an inadequate public water supply to meet domestic needs or to have an inadequate ground water supply and proposes water wells? *Dispute in known available water supplies*
b.	☐	☒	☐	Is the project site in an area known to have an inadequate water supply and/or pressure to meet fire fighting needs?
c.	☐	☒	☐	Could the project create problems with providing utility services, such as electricity, gas, or propane?
d.	☒	☐	☐	Are there any other known service problem areas (e.g., solid waste)? *Countywide solid waste facilities are reaching capacity.*
e.	☐	☒	☐	Would the project result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times or other performance objectives for any of the public services or facilities (e.g., fire protection, police protection, schools, parks, roads)?
f.	☒	☐	☐	Other factors? *Project is required to perform a mandatory water assessment.*

STANDARD CODE REQUIREMENTS

☐ Plumbing Code Ordinance No. 2269 ☐ Water Code Ordinance No. 7834

☐ MITIGATION MEASURES / ☐ OTHER CONSIDERATIONS

☐ Lot Size ☐ Project Design

CONCLUSION

Considering the above information, could the project have a significant impact (individually or cumulatively) relative to **utilities/services**?

☒ Potentially significant ☐ Less than significant with project mitigation ☐ Less than significant/No impact

OTHER FACTORS - 1. General

SETTING/IMPACTS

	Yes	No	Maybe	
a.	☐	☒	☐	Will the project result in an inefficient use of energy resources?
b.	☐	☐	☒	Will the project result in a major change in the patterns, scale, or character of the general area or community? *Site is currently undeveloped.*
c.	☐	☒	☐	Will the project result in a significant reduction in the amount of agricultural land?
d.	☐	☐	☐	Other factors?

STANDARD CODE REQUIREMENTS

☐ State Administrative Code, Title 24, Part 5, T-20 (Energy Conservation)

☐ **MITIGATION MEASURES** / ☐ **OTHER CONSIDERATIONS**

☐ Lot size ☐ Project Design ☐ Compatible Use

To be discussed in conjunction with "Land Use," "Visual," and other factors.

CONCLUSION

Considering the above information, could the project have a significant impact (individually or cumulatively) on the physical environment due to any of the above factors?

☒ Potentially significant ☐ Less than significant with project mitigation ☐ Less than significant/No impact

OTHER FACTORS - 2. Environmental Safety

SETTING/IMPACTS

	Yes	No	Maybe	
a.	☐	☒	☐	Are any hazardous materials used, transported, produced, handled, or stored on-site?
b.	☐	☒	☐	Are any pressurized tanks to be used or any hazardous wastes stored on-site?
c.	☐	☐	☒	Are any residential units, schools, or hospitals located within 500 feet and potentially adversely affected? *Project is proposing a school on-site*
d.	☐	☐	☒	Have there been previous uses which indicate residual soil toxicity of the site?
e.	☐	☒	☐	Would the project create a significant hazard to the public or the environment involving the accidental release of hazardous materials into the environment?
f.	☐	☒	☐	Would the project emit hazardous emissions or handle hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?
g.	☐	☒	☐	Would the project be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, would create a significant hazard to the public or environment?
h.	☐	☒	☐	Would the project result in a safety hazard for people in a project area located within an airport land use plan, within two miles of a public or public use airport, or within the vicinity of a private airstrip?
I.	☐	☒	☐	Would the project impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?
j.	☐	☐	☐	Other factors?

☐ **MITIGATION MEASURES** / ☐ **OTHER CONSIDERATIONS**

☒ A Phase I Environmental Assessment to be performed to demonstrate no possible soil toxicity.

CONCLUSION

Considering the above information, could the project have a significant impact relative to **public safety**?

☒ Potentially significant ☐ Less than significant with project mitigation ☐ Less than significant/No impact

OTHER FACTORS - 3. Land Use

SETTING/IMPACTS

	Yes	No	Maybe	
a.	☒	☐	☐	Can the project be found to be inconsistent with the plan designation(s) of the subject property? *Project may require a Plan Amendment*
b.	☒	☐	☐	Can the project be found to be inconsistent with the zoning designation of the subject property? *Project may require a Zone Change.*
c.				Can the project be found to be inconsistent with the following applicable land use criteria:
	☒	☐	☐	Hillside Management Criteria?
	☐	☐	☒	SEA Conformance Criteria? *Site is within the proposed Cruzan Mesa SEA.*
	☐	☐	☐	Other?
d.	☐	☒	☐	Would the project physically divide an established community?
e.	☒	☐	☐	Other factors? *One of the two project main access connects to a road extending from west of a pending Tract Map (Project No. 04-102/TR 46018-Revsied) not yet approved and recorded. This uncertainity leads to possible design alteration until TR 46018 is approved and recorded.*

☒ **MITIGATION MEASURES** / ☐ **OTHER CONSIDERATIONS**

Land use consistency analysis.

CONCLUSION

Considering the above information, could the project have a significant impact (individually or cumulatively) on the physical environment due to **land use** factors?

☒ Potentially significant ☐ Less than significant with project mitigation ☐ Less than significant/No impact

OTHER FACTORS - 4. Population/Housing/Employment/Recreation

SETTING/IMPACTS

	Yes	No	Maybe	
a.	☐	☒	☐	Could the project cumulatively exceed official regional or local population projections?
b.	☐	☐	☒	Could the project induce substantial direct or indirect growth in an area (e.g., through projects in an undeveloped area or extension of major infrastructure)? *Site is currently undeveloped.*
c.	☐	☒	☐	Could the project displace existing housing, especially affordable housing?
d.	☐	☒	☐	Could the project result in a substantial job/housing imbalance or substantial increase in Vehicle Miles Traveled (VMT)?
e.	☒	☐	☐	Could the project require new or expanded recreational facilities for future residents? *Demand for recreation facilities from future residents*
f.	☐	☒	☐	Would the project displace substantial numbers of people, necessitating the construction of replacement housing elsewhere?
g.	☐	☐	☐	Other factors?

☐ **MITIGATION MEASURES** / ☐ **OTHER CONSIDERATIONS**

CONCLUSION

Considering the above information, could the project have a significant impact (individually or cumulatively) on the physical environment due to **population, housing, employment**, or **recreational** factors?

☒ Potentially significant ☐ Less than significant with project mitigation ☐ Less than significant/No impact

MANDATORY FINDINGS OF SIGNIFICANCE

Based on this Initial Study, the following findings are made:

	Yes	No	Maybe	
a.	☒	☐	☐	Does the project have the potential to substantially degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, reduce the number or restrict the range of a rare or endangered plant or animal, or eliminate important examples of the major periods of California history or prehistory? *Biota*
b.	☒	☐	☐	Does the project have possible environmental effects which are individually limited but cumulatively considerable? "Cumulatively considerable" means that the incremental effects of an individual project are considerable when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects. *Traffic, education, air quality, sewer treatment*
c.	☒	☐	☐	Will the environmental effects of the project cause substantial adverse effects on human beings, either directly or indirectly? *Air quality, water quality*

CONCLUSION

Considering the above information, could the project have a significant impact (individually or cumulatively) on the environment?

☒ Potentially significant ☐ Less than significant with project mitigation ☐ Less than significant/No impact

URBAN SERVICES ANALYSIS

PROJECT NO. 04-075
CASE NO: TR060922

SEWER TREATMENT CAPACITY ANALYSIS

(MILLION GALLONS PER DAY)
4/28/2004

SEWER AGENCY	EXISTING DEMAND	RECORDED	APPROVED	PENDING	PROJECT	TOTAL	SUPPLY	POTENTIAL SIGNIFICANT IMPACT
S.D. NO. 26 & 32	15.04	3.42	3.21	3.01	0.35	25.03	19.10	YES

PLANNED EXPANSION

SEWER AGENCY	TOTAL CAPACITY	COMPLETION EXPECTED	POTENTIAL SIGNIFICANT IMPACT
S.D. NO. 26 & 32			
FIRST STAGE	28.10	2002	NO
PRACTICAL SITE CAPACITY:	34.10	2010	NO

CRITERIA

DEMAND FACTORS (GAL/DAY):	SF	MF	MH	COMMERCIAL (PER ACRE)	INDUSTRIAL (PER ACRE)
S.D. NO. 26 & 32	260	195	156	1,440	2,009

URBAN SERVICES ANALYSIS

PROJECT NO 04-075
CASE NO. TR060922

LIBRARY CAPACITY ANALYSIS

4/28/2004

	DEMAND							
		POTENTIAL						
LIBRARY	EXISTING DEMAND	RECORDED	APPROVED	PENDING	PROJECT	TOTAL	SUPPLY	POTENITAL SIGNIFICANT IMPACT
CANYON COUNTRY								
VOLUMES	64,408	13,571	28,236	15,098	8,287	129,600	66,790	YES
SPACE (SQ FT)	12,527	2,640	5,492	2,937	1,612	25,207	5,050	YES
-AREA CLUSTER-*								
VOLUMES	320,598	82,886	76,886	62,659	8,287	551,316	348,467	YES
SPACE (SQ FT)	62,356	16,121	14,954	12,187	1,612	107,231	67,777	YES

* AREA CLUSTER IS THE GROUP OF LIBRARIES SERVING THE ENTIRE COMMUNITY.

	CRITERIA
VOLUMES PER CAPITA:	2
SQUARE FOOT PER CAPITA:	0.389

PROJECT NO. 04-075
CASE NO. TR060922

URBAN SERVICES ANALYSIS
SCHOOL CAPACITY ANALYSIS
4/28/2004

STUDENT EVALUATION

SCHOOL DISTRICT	ENROLLMENT	PENDING	APPROVED	RECORDED	PROJECT	TOTAL	CAPACITY	STUDENT OVERLOAD	POTENTIAL SIGNIFICANT IMPACT
SULPHUR SPRINGS	4,662	586	801	802	534	7,385	4,975	2,410	YES
WM.S. HART JR HI	5,217	541	852	793	134	7,537	5,174	2,363	YES
WM.S. HART SR HI	9,903	1,468	1,778	1,973	252	15,374	9,512	5,862	YES

PROJECT NO. 04-075
CASE NO. TR060922

URBAN SERVICES ANALYSIS
SCHOOL CAPACITY ANALYSIS
4/28/2004

STUDENT EVALUATION

SCHOOL DISTRICT	ENROLLMENT	PENDING	APPROVED	RECORDED	PROJECT	TOTAL	CAPACITY	STUDENT OVERLOAD	POTENTIAL SIGNIFICANT IMPACT
SAUGUS UNION	8,979	533	1,970	1,421	467	13,370	7,579	5,791	YES
WM.S. HART JR HI	5,217	541	852	793	134	7,537	5,174	2,363	YES
WM.S. HART SR HI	9,903	1,468	1,778	1,973	252	15,374	9,512	5,862	YES

PROJECT NO. 04-075

CASE NO. TR060922

URBAN SERVICES ANALYSIS
WATER CAPACITY ANALYSIS

4/28/2004

WATER AVAILABILITY EVALUATION

(ACRE-FEET/YEAR)

DEMAND

POTENTIAL

WATER COMPANY	EXISTING DEMAND	RECORDED	APPROVED	PENDING	PROJECT	TOTAL	DRY SUPPLY	NORMAL SUPPLY	OTENTIAL SIGNIFICANT IMPACT
NEWHALL WD	9,348	1,469.77	33.18	3,556.13	1,059.39	15,466.47			
SC VALLEY WIDE	64,350	6,862.85	5,521.85	6,585.35	1,059.39	84,379.44	90,600	96,000	NO

SANTA CLARITA VALLEY WIDE FUTURE SUPPLY

YEAR			
2005	90,600	96,000	NO
2006	90,600	96,000	NO
2007	90,600	96,000	NO
2008	90,600	96,000	NO

CRITERIA

DEMAND FACTORS (AF/YR):	SF	MF	MH	COMMERCIAL (PER ACRE)	INDUSTRIAL (PER ACRE)
NEWHALL WD	0.79	0.22	0.31	2.77	3.14

Note:

Dry Supply - Ranges from 90,600 to 147,500 acre-feet-per year.
Conjunctive-use and groundwater banking supplies are not included in table.

Normal Supply - Ranges from 96,000 to 151,900 acre-feet-per year.

URBAN SERVICES ANALYSIS

FIRE PROTECTION ANALYSIS

4/28/2004

PROJECT NO. 04-075
CASE NO. TR060922

RESPONSE DISTANCE EVALUATION (MILES)

	MAXIMUM DISTANCE CRITERIA			
Lot Type	Residential	Commercial Industrial	Approximate Distance	Potential Significant Impact
SINGLE FAMILY	6		4.4	No

THE SIGNAL NEWSPAPER
24000 Creekside Rd
Valencia CA 91355

Proof of Publication
(2015.5 C.C.P)

STATE OF CALIFORNIA,
COUNTY OF LOS ANGELES

I am a citizen of the United States, and a resident of the county aforesaid; I am over the age of eighteen years; and I am not a party to or interested in the notice published. I am the chief legal advertising clerk of the publisher of the

SIGNAL NEWSPAPER

a newspaper of general circulation, printed and published **Daily** in the City of **Santa Clarita** County of Los Angeles, and which newspaper has been adjudged a newspaper of general circulation by the Superior Court of the County of Los Angeles, State of California, under the date of **March 25, 1988** Case Number **NVC15880**, that the notice, of which the annexed is a printed copy, has been published in each regular and entire issue of said newspaper and not in any supplement thereof on the following dates, to-wit:

11/1 11/2 11/3

All in the year 20 04

I certify (or declare) under penalty of perjury that the foregoing is true and correct

Dated at **Valencia**, California, this

3 day of November 2004

L Estes
Signature

Paste Clipping

Los Angeles County Department of Regional Planning
Notice of Preparation and Scoping Meeting Notification

Date: October 22, 2004

Project: The "Skyline Ranch" Project, County Project No. 04-075, Tentative Tract Map No. 060922

Applicant: Pardee Homes

Notice is hereby given pursuant to California Public Resources Code Section 21083.9. The Los Angeles County Regional Planning Department has conducted an Initial Study for the subject project and has determined that a Environmental Impact Report (EIR) is necessary. Los Angeles County will be the Lead Agency for the project and will be responsible for the EIR preparation. In order for the concerns of responsible and trustee agencies, adjacent jurisdictions, other public agencies, groups and individuals to be incorporated into the Draft EIR, we need to know their views, concerns and recommendations regarding the scope and content of the environmental information relevant to the proposed project. Responsible and trustee agencies must consider the EIR prepared by Los Angeles County when considering a subsequent permit or approval for the project.

The 2,196-acre Skyline Ranch site is located in the Santa Clarita Valley west and north of Highway 14 (Antelope Valley Freeway) and north of the City of Santa Clarita in unincorporated Los Angeles County. The project site includes various parcels west of Mint Canyon between the Santa Clara River and Vasquez Canyon. The site is roughly defined by Sierra Highway (Mint Canyon) on the east and southeast, residential communities on the south and southwest, Plum Canyon Road on the west, Bouquet Canyon Road to the northwest, and Vasquez Canyon Road to the northeast.

The project applicant proposes to develop approximately 592 acres of the site with 1,325 single-family residential lots with pads ranging in size from 4,830 to 7,350 square feet along with a 10-acre school site and approximately 10 acres of public park land. Development is proposed for the southern portion of the property where slopes of 25 percent or less are located. The northern 1,604 acres of the site would remain preserved as open space and managed by an as yet to be determined entity.

A Notice of Preparation (NOP) for the EIR is being distributed. The review period for the NOP is from **October 25 to November 24, 2004**. Copies of the NOP are available for review at Canyon Country Library located at 18536 Soledad Canyon Road, Santa Clarita, CA 91351; Valencia County Library at 23743 West Valencia Boulevard, Santa Clarita, CA 91355; Newhall County Library at 22704 West 9th Street, Santa Clarita, CA 91321, as well as at the Department of Regional Planning at the address below, and its website http://planning.co.la.ca.us/drp_agnd.html Tentative Tract Map No. 060922. Due to the time limits mandated by State law, your response must be sent at the earliest possible date, but not later than **November 30, 2004 at 5:00 p.m.** Send written responses to: Dr. Hsiao-ching Chen, AICP, County of Los Angeles Department of Regional Planning, Impact Analysis Section, 320 West Temple Street, Los Angeles, CA 90012-3225; Telephone: (213) 974-6461; Fax (213) 626-0434.

To assist in local participation, a Scoping Meeting will be held to present the proposed project and to solicit suggestions from the public and responsible agencies on the content of the Draft EIR. This meeting will be held in the Canyon Country Joanne Darcy Library located at 18536 Soledad Canyon Road, Santa Clarita, CA 91351 on **November 10th, 2004 from 6:00 p.m. to 8:00 p.m.**

Published in the Signal 11/01, 11/02, 11/3, 2004

COUNTY OF LOS ANGELES
SKYLINE RANCH PROJECT DRAFT EIR
SCOPING MEETING SUMMARY

Date: November 10, 2004

Time: 6:00 P.M. – 8:00 P.M.

Place: Canyon Country Joanne Darcy Library, 18536 Soledad Canyon Road, Santa Clarita

Subject: Skyline Ranch Project Draft EIR

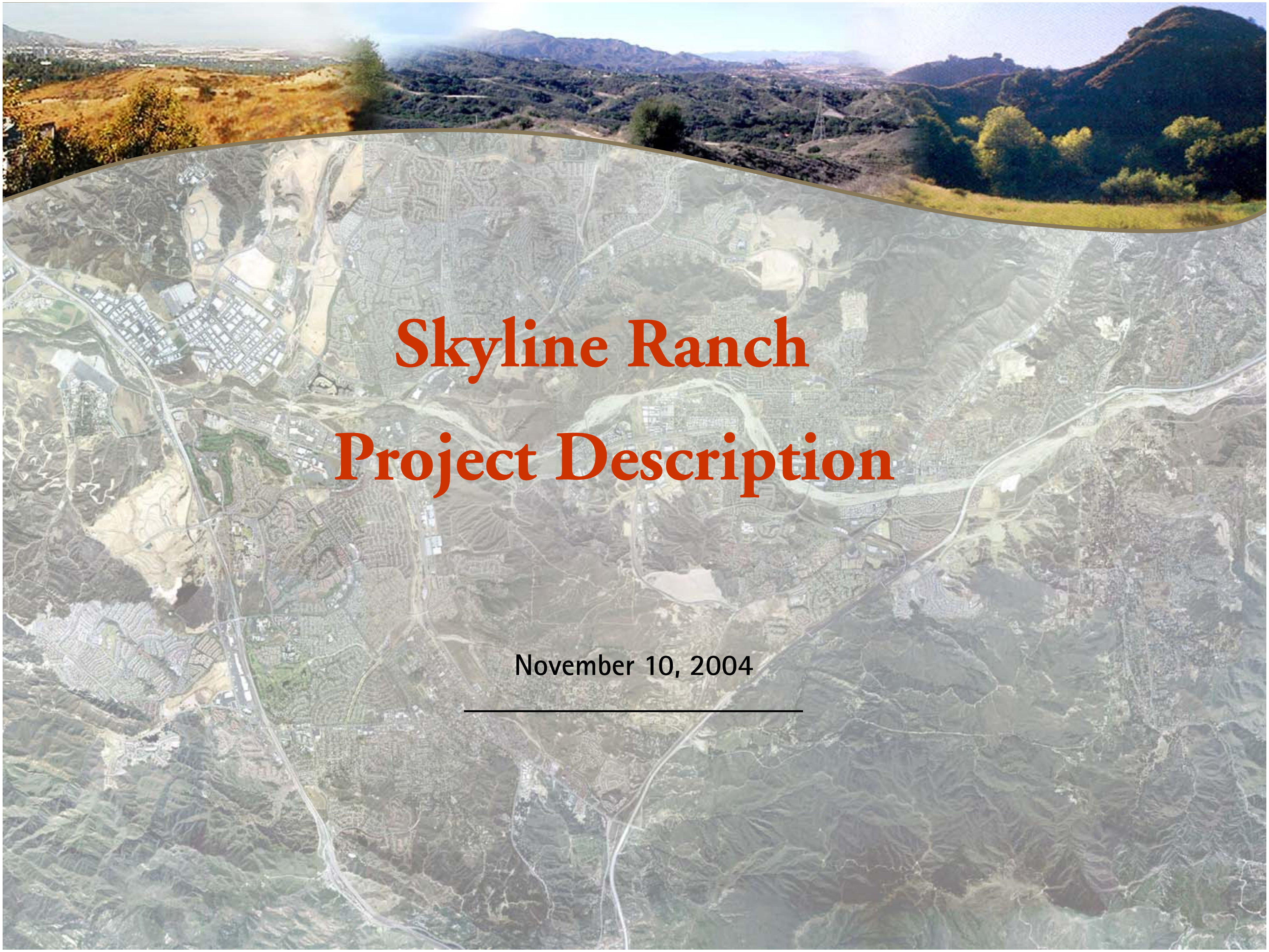
Participating Staff:	Hsiao-ching Chen	County of Los Angeles Regional Planning
	Daryl Koutnik	County of Los Angeles Regional Planning
	Joel Miller	Psomas (Facilitator)
CEQA Consultant:	Stephanie Eyestone-Jones	PCR Services Corporation (CEQA Consultant)
	Jay Ziff	PCR Services Corporation (CEQA Consultant)

Meeting Overview: The main purpose of the scoping meeting was to present an introduction to the Environmental Impact Report (EIR) process, establish base facts about the proposed project, and solicit input on the range of issues to be analyzed in the EIR. Attendees were greeted by County staff, signed-in, and were given informational materials including an agenda and a printout of the slide (Power Point) presentation to be discussed during the meeting. The presentation included an explanation of the meeting agenda and format, an overview of the CEQA process, a summary of the proposed project and its basic components, and a summary of the Initial Study. The presentation was followed by a facilitated public input session, where individuals had an opportunity to state their concerns or questions regarding the information contained in the Initial Study.

The following presents a general summary of meeting comments based on notes taken by the facilitator and the CEQA consultant.

COMMENTOR	SUMMARY OF COMMENTS
Kai Luoma, City of Santa Clarita	▪ Growth inducing impacts resulting from infrastructure extensions ▪ Project may need to be revised; it's dependent on the approval of another project. If that project is not approved, what is the impact on access?
Bill Wittenberg	▪ Skyline Ranch Road is a single means of access ▪ Fire and emergency access issue ▪ No site for a fire station; impacts on the Fire Department ▪ There is currently no water to the site ▪ Does the school district have funds to build the school that is necessary? Will it be operational before occupany? ▪ Use of Soledad Canyon Road
Sgt. Hernandez, CHP	▪ 15 percent increase in traffic collisions since 2001 ▪ No personnel increase in over 20 years; need more officers to patrol highways ▪ CHP has requested 20 new officers but there is no funding ▪ CHP wants to be involved in the school's design and proper access (ingress/egress) for the school

COMMENTOR	SUMMARY OF COMMENTS
Bill Wittenberg	▪ CHP responsibilities are increasing but staffing is not ▪ Staff are needed (Sheriff and CHP) for unincorporated areas ▪ Lack of service by Sheriff’s Department ▪ Project will add to existing burden on crime prevention and traffic and the safety of existing residents – biggest issue ▪ Traffic-related safety should be discussed
Roger Peterson	▪ Concerned about whether project will connect to Vasquez Canyon Road (Mystery Mesa) ▪ Will Pardee develop this area? If so, then too much traffic (and hazards) on Vasquez Canyon Road ▪ Traffic from the movie industry should be looked at
Nina Woodbury	▪ Impact on Vasquez Canyon Road ▪ Concern regarding filming traffic ▪ Concern regarding sewers and water ▪ Cross Valley Connector will only add to traffic congestion ▪ All housing tracts make traffic terrible
Bill Wittenberg	▪ What are the benefits of the project? ▪ Will the community park just be graded or will it be improved? What are the amenities? ▪ Will the traffic study go beyond the tract?

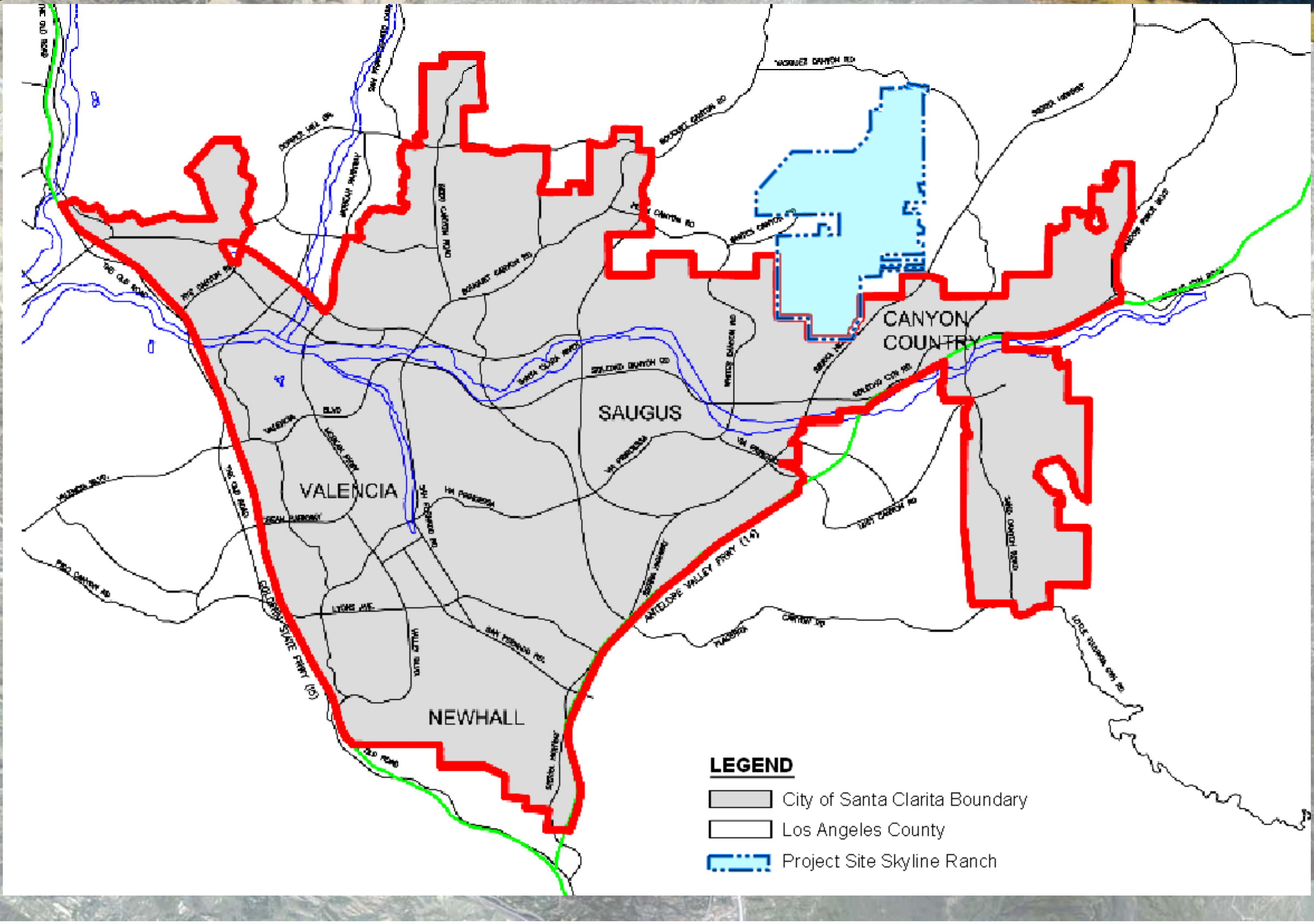


Skyline Ranch

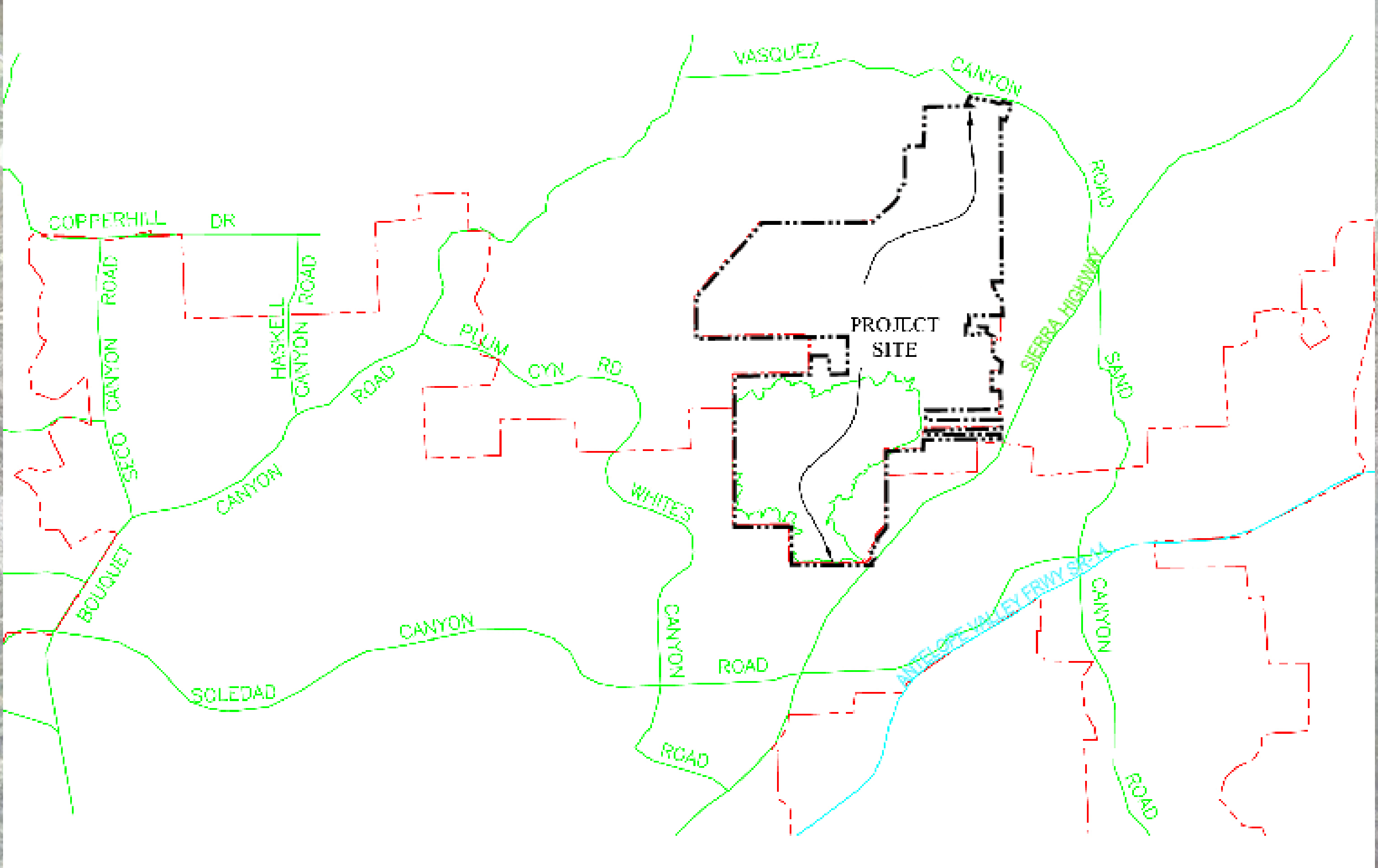
Project Description

November 10, 2004

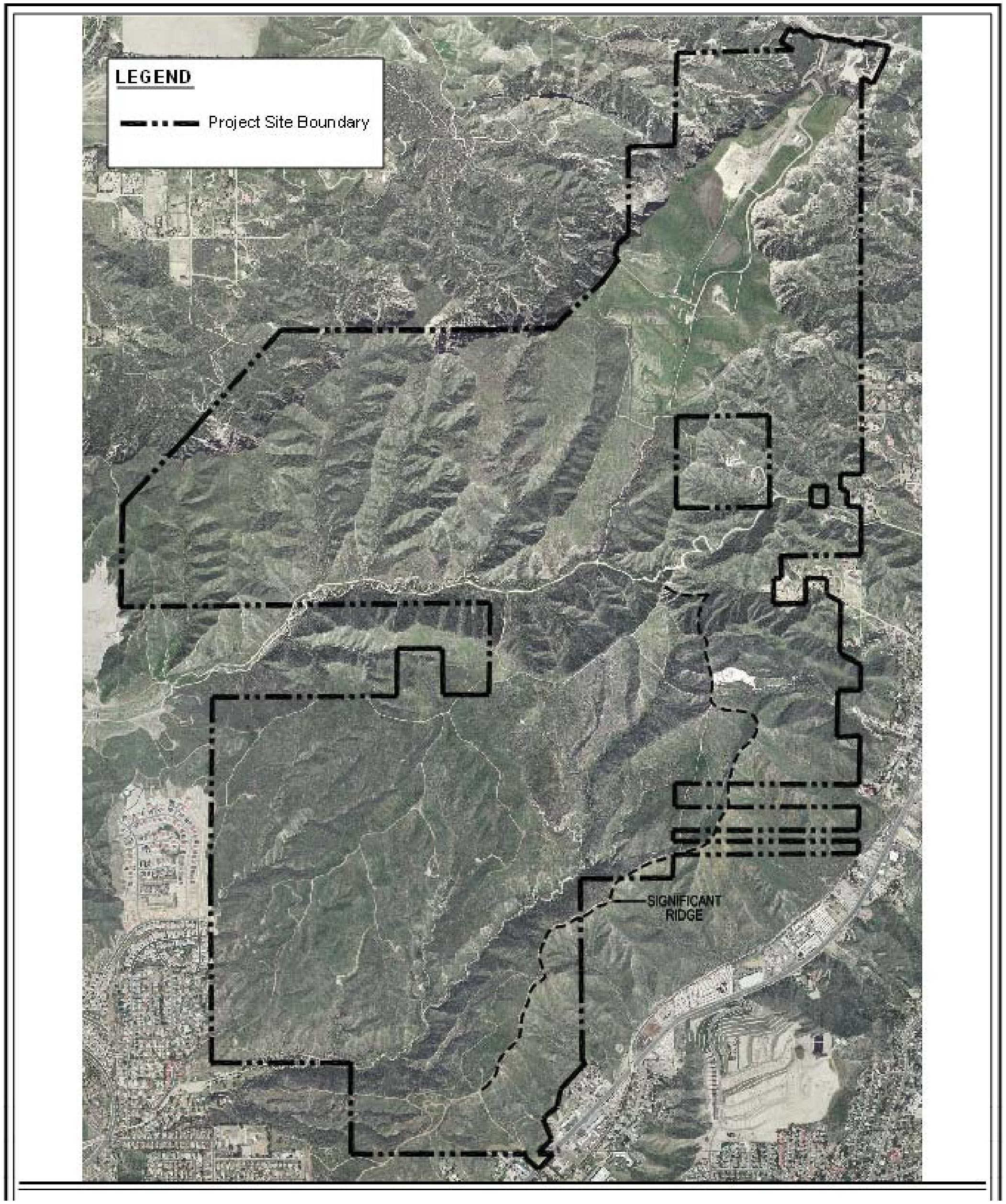
Regional Location



Project Vicinity



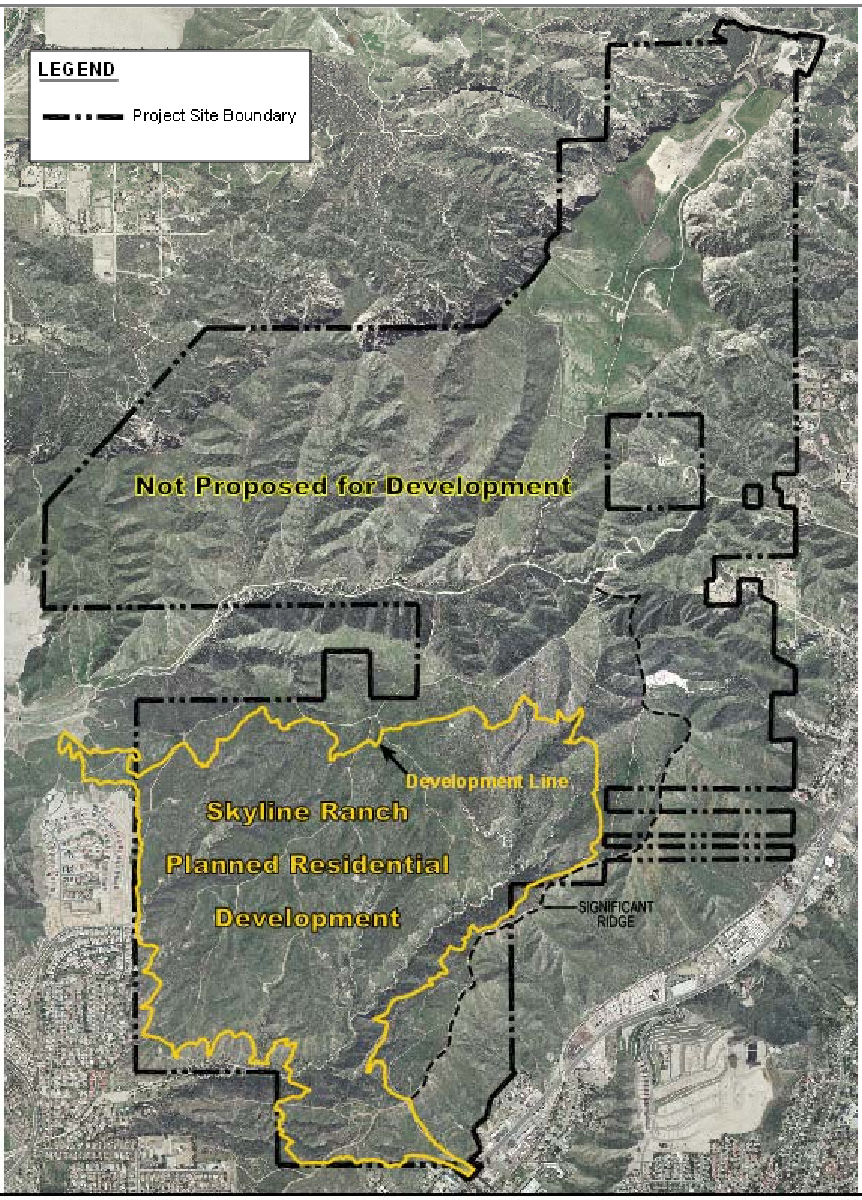
Aerial View of Project Site



Existing Site Characteristics

- Size: 2,196 acres
- Moderate to Steep Slopes, Ridges and Canyons
- Dominant Plant Communities
  Coastal Sage Scrub, Coastal Sage-Chaparral Scrub
- Proposed Cruzan Mesa Vernal Pools SEA
- Previous Uses: Grazing, Landing Strip
- Active Land Uses: Limited, with the exception of an Outdoor Movie Location
- Land Use Designations: U1 (Urban 1.1to 3.3 du/acre); U2 (Urban 3.4 to 6.6 du/acre); U3 (6.7 to 15 du/acre); N (Non Urban 0.5 to 1.0 du/acre); HM (Hillside Management), W (flood plain)
- Zoning Designations: A-2-1 (Heavy Agricultural) and A-1-1 and A-1-10,000 (Light Agricultural)

Aerial View with Development Area



- Northern Area:

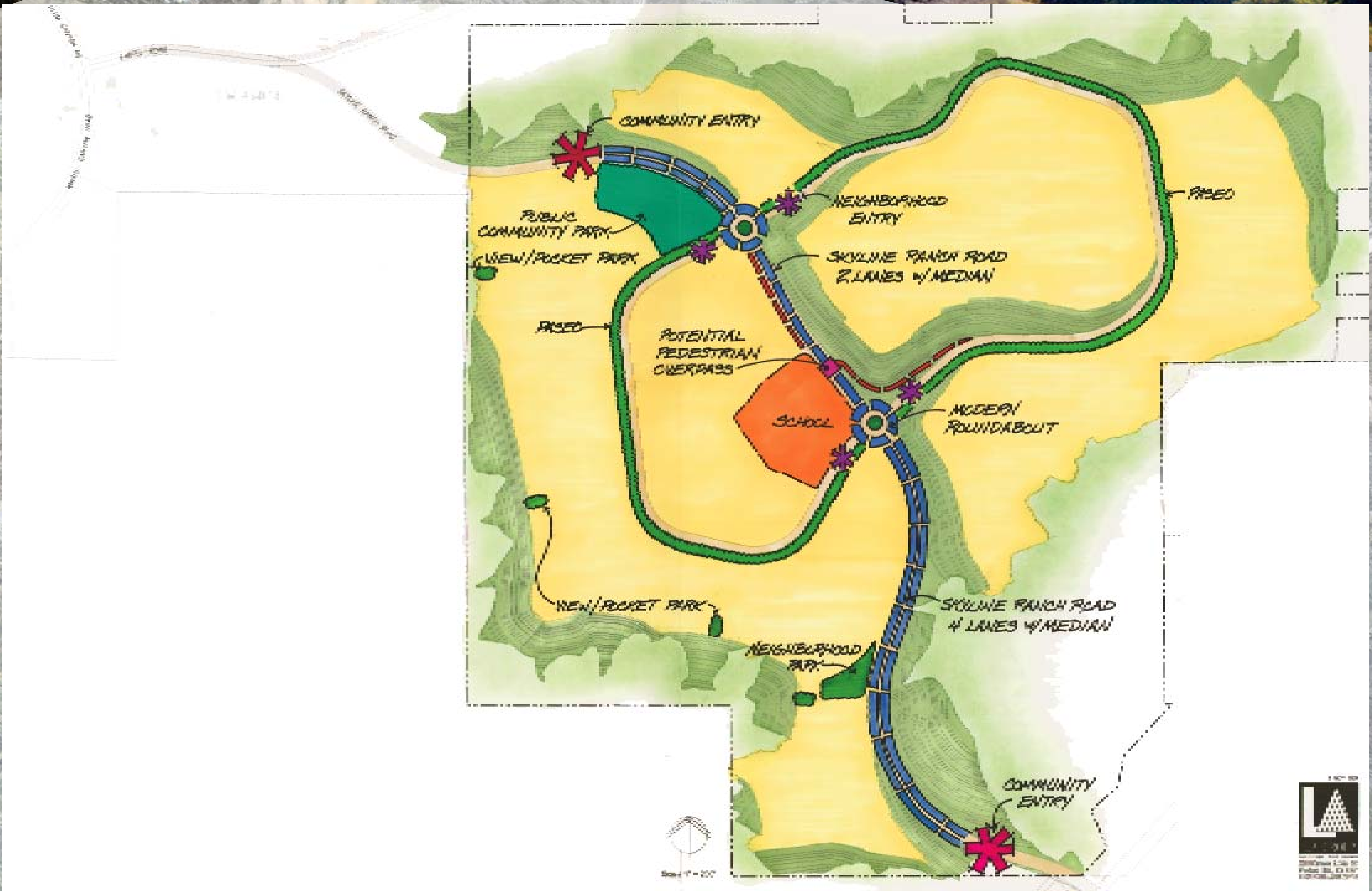
  No Development 1,604 acres (73% of site)

- Southern Area: Development of 592 acres (27% of site)

Proposed Project

- Approximately 1,246 single-family residential lots
- 10 acre public school site (K-6)
- 10 acre public community park, a private neighborhood park, and private pocket parks
- Whites Canyon Road Extension (Skyline Ranch Road)
- Grading: on 27 % of site, concentrated in areas of 25 % or less slopes, substantial cut and fill for infrastructure and development areas
- Landscape Design: transitional perimeter plantings with native and drought tolerant plants, enhanced pedestrian circulation, landscape theme for development area

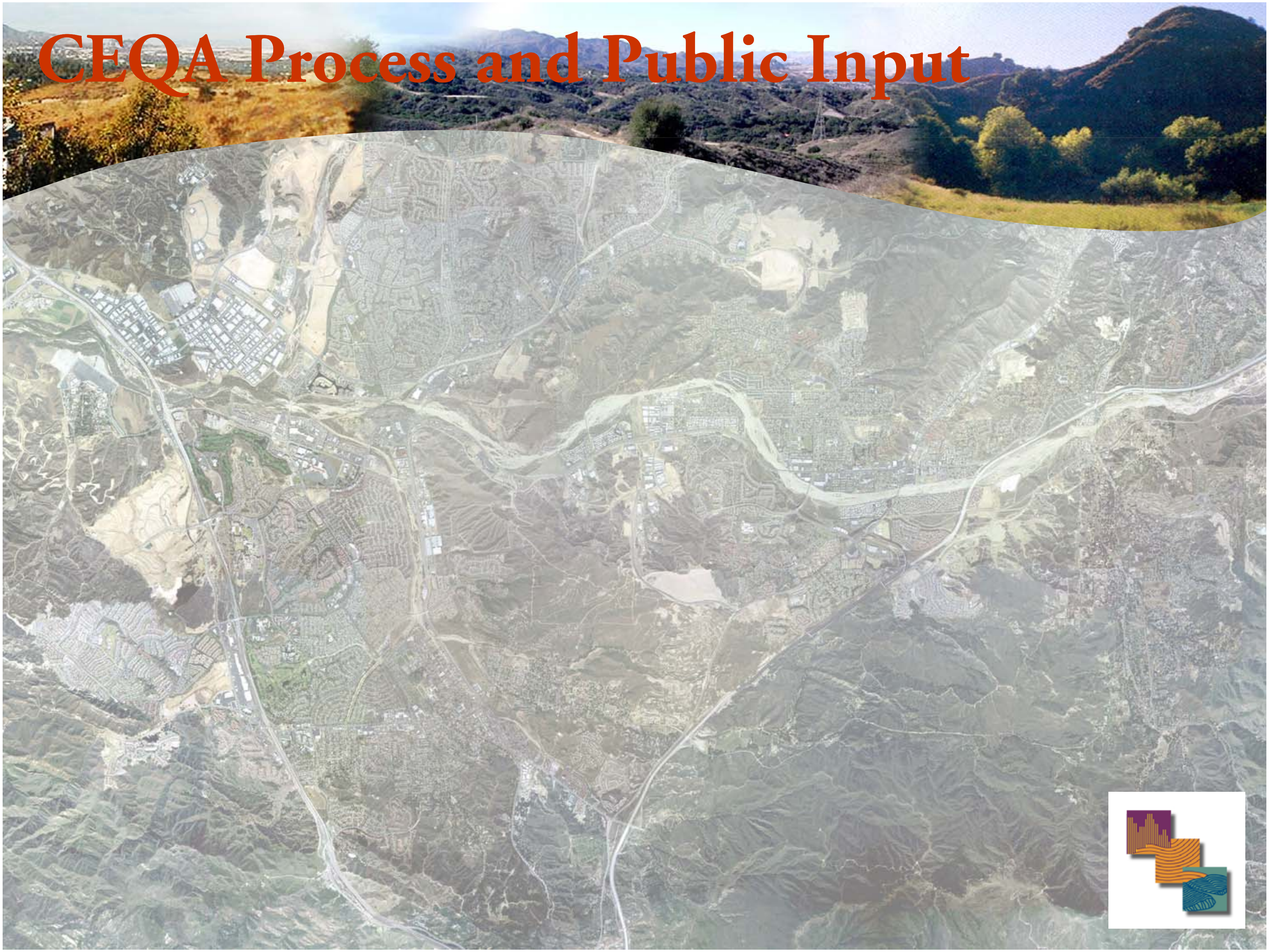
Skyline Ranch Community Design Concept



Discretionary Actions for LA County

- Vesting Tentative Tract Map No. 060922
- Conditional Use Permit for Residential Planned Development
- Oak Tree Permit (1 oak tree)
- Development Agreement
- Other Agency Actions

CEQA Process and Public Input



Sign-In Form
Public Scoping Meeting
The “Skyline Ranch” Project
County Project No. 04-075

November 10, 2004

Name Rick Winsman	Organization (if applicable) PLANNING COMMISSIONER CITY OF SANTA CLARITA	Street Address/City/State/ZIP	Phone Number	Check if wish to speak ☐
Name ROGER PETERSON	Organization (if applicable)	Street Address/City/State/ZIP 30815 SUNRISE HILLS RD	Phone Number 661 714-9022	Check if wish to speak ☒
Name ANDREW HERNANDEZ SERGEANT	Organization (if applicable) CALIFORNIA HIGHWAY PATROL	Street Address/City/State/ZIP 28648 THE OLD ROAD VALENCIA CA 91355	Phone Number (661) 294-5540	Check if wish to speak ☒
Name Adriana Hemans	Organization (if applicable) The Signal	Street Address/City/State/ZIP 24000 Creekside Rd.	Phone Number (661) 259-1234	Check if wish to speak ☐
Name	Organization (if applicable)	Street Address/City/State/ZIP	Phone Number	Check if wish to speak ☐
Name	Organization (if applicable)	Street Address/City/State/ZIP	Phone Number	Check if wish to speak ☐
Name	Organization (if applicable)	Street Address/City/State/ZIP	Phone Number	Check if wish to speak ☐
Name	Organization (if applicable)	Street Address/City/State/ZIP	Phone Number	Check if wish to speak ☐

Sign-In Form
Public Scoping Meeting
The "Skyline Ranch" Project
County Project No. 04-075

November 10, 2004

Name DENNIS ROLFE	Organization (if applicable) SANTA CLARITA WATER	Street Address/City/State/ZIP P.O. BOX 903 S.C. CA.	Phone Number 661 2592737	Check if wish to speak ☐
Name Bill WITTENberg	Organization (if applicable) NONE	Street Address/City/State/ZIP 28541 N. HASKELL CYN SAUGUS CA 91390	Phone Number 661 213-6891	Check if wish to speak ☒
Name Kai Luoma	Organization (if applicable) City of Santa Clarita	Street Address/City/State/ZIP	Phone Number 661 255-4350	Check if wish to speak ☒
Name	Organization (if applicable)	Street Address/City/State/ZIP	Phone Number	Check if wish to speak ☐
Name	Organization (if applicable)	Street Address/City/State/ZIP	Phone Number	Check if wish to speak ☐
Name	Organization (if applicable)	Street Address/City/State/ZIP	Phone Number	Check if wish to speak ☐
Name	Organization (if applicable)	Street Address/City/State/ZIP	Phone Number	Check if wish to speak ☐
Name	Organization (if applicable)	Street Address/City/State/ZIP	Phone Number	Check if wish to speak ☐

Sign-In Form
Public Scoping Meeting
The "Skyline Ranch" Project
County Project No. 04-075

November 10, 2004

Name NINA Woodbury	Organization (if applicable)	Street Address/City/State/ZIP 30815 Sunrise Hills Rd	Phone Number (661)296 6462	Check if wish to speak ☒
Name	Organization (if applicable)	Street Address/City/State/ZIP	Phone Number	Check if wish to speak ☐
Name	Organization (if applicable)	Street Address/City/State/ZIP	Phone Number	Check if wish to speak ☐
Name	Organization (if applicable)	Street Address/City/State/ZIP	Phone Number	Check if wish to speak ☐
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Name	Organization (if applicable)	Street Address/City/State/ZIP	Phone Number	Check if wish to speak ☐

STATE OF CALIFORNIA
Governor's Office of Planning and Research
State Clearinghouse and Planning Unit

Arnold
Schwarzenegger
Governor

Jan Boel
Acting Director

Notice of Preparation

RECEIVED
OCT 28 2004

October 22, 2004

To: Reviewing Agencies

Re: Skyline Ranch Project, Project No. 03-075, Tract Map No. 060922
SCH# 2004101090

Attached for your review and comment is the Notice of Preparation (NOP) for the Skyline Ranch Project, Project No. 03-075, Tract Map No. 060922 draft Environmental Impact Report (EIR).

Responsible agencies must transmit their comments on the scope and content of the NOP, focusing on specific information related to their own statutory responsibility, within 30 days of receipt of the NOP from the Lead Agency. This is a courtesy notice provided by the State Clearinghouse with a reminder for you to comment in a timely manner. We encourage other agencies to also respond to this notice and express their concerns early in the environmental review process.

Please direct your comments to:

Hsiao-ching Chen
Los Angeles County Department of Regional Planning
320 W. Temple Street
Los Angeles, CA 90012

with a copy to the State Clearinghouse in the Office of Planning and Research. Please refer to the SCH number noted above in all correspondence concerning this project.

If you have any questions about the environmental document review process, please call the State Clearinghouse at (916) 445-0613.

Sincerely,

Scott Morgan

Scott Morgan
Associate Planner, State Clearinghouse

Attachments
cc: Lead Agency

1400 TENTH STREET P.O. BOX 3044 SACRAMENTO, CALIFORNIA 95812-3044
TEL (916) 445-0613 FAX (916) 323-3018 www.opr.ca.gov

Document Details Report
State Clearinghouse Data Base

SCH# **2004101090**
Project Title Skyline Ranch Project, Project No. 03-075, Tract Map No. 060922
Lead Agency Los Angeles County Department of Regional Planning

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Type **NOP** Notice of Preparation

Description The project applicant proposes to develop approximately 592 acres of the site with 1,325 single-family residential lots ranging in size from 4,830 to 7,350 square feet along with a 10-acre school site and 10 acres of parks. Development is proposed for the southern portion of the property with slopes of 25 percent or less. The northern 1,604 acres of the site would remain preserved as open space and managed by an as yet to be determined entity.

Lead Agency Contact

Name Hsiao-ching Chen
Agency Los Angeles County Department of Regional Planning
Phone (213) 974-6461 **Fax**
email
Address 320 W. Temple Street
City Los Angeles **State** CA **Zip** 90012

Project Location

County Los Angeles
City Santa Clarita
Region
Cross Streets Sierra Highway, Plum Canyon Road
Parcel No. 2839-0-17 to 19, 2802-02-1, 3 to 8, 10 to 12, 15, 2812-3-45, 4, 27, 2, 2802-03-1, 5, 2812-4-11
Township 4N **Range** 15W **Section** 3,9,10 **Base** SBB&M

Proximity to:

Highways 14
Airports None
Railways Metrolink
Waterways Santa Clara River, Mint Canyon
Schools Canyon HS, Sierra Vista JH, L.H. Cox Elem.
Land Use Vacant (occasional filming use) / A-2-1, A-1-1, A-1-10,000 / Non-urban

Project Issues Aesthetic/Visual; Air Quality; Archaeologic-Historic; Drainage/Absorption; Flood Plain/Flooding; Forest Land/Fire Hazard; Geologic/Seismic; Noise; Population/Housing Balance; Public Services; Recreation/Parks; Schools/Universities; Sewer Capacity; Soil Erosion/Compaction/Grading; Solid Waste; Toxic/Hazardous; Traffic/Circulation; Vegetation; Water Quality; Water Supply; Wetland/Riparian; Wildlife; Growth Inducing; Landuse; Cumulative Effects; Other Issues

Reviewing Agencies Resources Agency; Department of Forestry and Fire Protection; Department of Parks and Recreation; Department of Water Resources; Native American Heritage Commission; Office of Emergency Services; Department of Health Services; Department of Fish and Game, Region 5; California Highway Patrol; Department of Housing and Community Development; Public Utilities Commission; Caltrans, District 7; Department of Toxic Substances Control; Regional Water Quality Control Board, Region 4

Date Received 10/22/2004 **Start of Review** 10/22/2004 **End of Review** 11/22/2004

Note: Blanks in data fields result from insufficient information provided by lead agency.

NOP Distribution List

County: Los Angeles

SCH# ____________

Resources Agency

☒ **Resources Agency**
Nadell Gayou

☐ **Dept. of Boating & Waterways**
Suzi Betzler

☐ **California Coastal Commission**
Elizabeth A. Fuchs

☐ **Colorado River Board**
Gerald R. Zimmerman

☐ **Dept. of Conservation**
Roseanne Taylor

☐ **California Energy Commission**
Environmental Office

☒ **Dept. of Forestry & Fire Protection**
Allen Robertson

☐ **Office of Historic Preservation**
Hans Kreutzberg

☒ **Dept of Parks & Recreation**
B. Noah Tilghman
Environmental Stewardship Section

☐ **Reclamation Board**
DeeDee Jones

☐ **Santa Monica Mountains Conservancy**
Paul Edelman

☐ **S.F. Bay Conservation & Dev't. Comm.**
Steve McAdam

☒ **Dept. of Water Resources**
Resources Agency
Nadell Gayou

Fish and Game

☐ **Dept. of Fish & Game**
Scott Flint
Environmental Services Division

☐ **Dept. of Fish & Game 1**
Donald Koch
Region 1

☐ **Dept. of Fish & Game 2**
Banky Curtis
Region 2

☐ **Dept. of Fish & Game 3**
Robert Floerke
Region 3

☐ **Dept. of Fish & Game 4**
William Laudermilk
Region 4

☒ **Dept. of Fish & Game 5**
Don Chadwick
Region 5, Habitat Conservation Program

☐ **Dept. of Fish & Game 6**
Gabrina Gatchel
Region 6, Habitat Conservation Program

☐ **Dept. of Fish & Game 6 I/M**
Tammy Allen
Region 6, Inyo/Mono, Habitat Conservation Program

☐ **Dept. of Fish & Game M**
George Isaac
Marine Region

Other Departments

☐ **Food & Agriculture**
Steve Shaffer
Dept. of Food and Agriculture

☐ **Dept. of General Services**
Robert Sleppy
Environmental Services Section

☒ **Dept. of Health Services**
Wayne Hubbard
Dept. of Health/Drinking Water

Independent Commissions,Boards

☐ **Delta Protection Commission**
Debby Eddy

☒ **Office of Emergency Services**
John Rowden, Manager

☐ **Governor's Office of Planning & Research**
State Clearinghouse

____

☒ **Native American Heritage Comm.**
Debbie Treadway

☒ **Public Utilities Commission**
Ken Lewis

☐ **State Lands Commission**
Jean Sarino

☐ **Tahoe Regional Planning Agency (TRPA)**
Cherry Jacques

Business, Trans & Housing

☐ **Caltrans - Division of Aeronautics**
Sandy Hesnard

☐ **Caltrans - Planning**
Terri Pencovic

☒ **California Highway Patrol**
John Olejnik
Office of Special Projects

☒ **Housing & Community Development**
Cathy Creswell
Housing Policy Division

Dept. of Transportation

☐ **Dept. of Transportation 1**
Mike Eagan
District 1

☐ **Dept. of Transportation 2**
Don Anderson
District 2

☐ **Dept. of Transportation 3**
Jeff Pulverman
District 3

☐ **Dept. of Transportation 4**
Tim Sable
District 4

☐ **Dept. of Transportation 5**
David Murray
District 5

☐ **Dept. of Transportation 6**
Marc Birnbaum
District 6

☒ **Dept. of Transportation 7**
Cheryl J. Powell
District 7

☐ **Dept. of Transportation 8**
John Pagano
District 8

☐ **Dept. of Transportation 9**
Gayle Rosander
District 9

☐ **Dept. of Transportation 10**
Tom Dumas
District 10

☐ **Dept. of Transportation 11**
Mario Orso
District 11

☐ **Dept. of Transportation 12**
Bob Joseph
District 12

Cal EPA

Air Resources Board

- ☐ Airport Projects
  Jim Lerner
- ☐ Transportation Projects
  Kurt Karperos
- ☐ Industrial Projects
  Mike Tollstrup

☐ **California Integrated Waste Management Board**
Sue O'Leary

☐ **State Water Resources Control Board**
Jim Hockenberry
Division of Financial Assistance

☐ **State Water Resources Control Board**
Student Intern, 401 Water Quality Certification Unit
Division of Water Quality

☐ **State Water Resouces Control Board**
Steven Herrera
Division of Water Rights

☒ **Dept. of Toxic Substances Control**
CEQA Tracking Center

Regional Water Quality Control Board (RWQCB)

☐ **RWQCB 1**
Cathleen Hudson
North Coast Region (1)

☐ **RWQCB 2**
Environmental Document Coordinator
San Francisco Bay Region (2)

☐ **RWQCB 3**
Central Coast Region (3)

☒ **RWQCB 4**
Jonathan Bishop
Los Angeles Region (4)

☐ **RWQCB 5S**
Central Valley Region (5)

- ☐ **RWQCB 5F**
  Central Valley Region (5)
  Fresno Branch Office
- ☐ **RWQCB 5R**
  Central Valley Region (5)
  Redding Branch Office

☐ **RWQCB 6**
Lahontan Region (6)

- ☐ **RWQCB 6V**
  Lahontan Region (6)
  Victorville Branch Office

☐ **RWQCB 7**
Colorado River Basin Region (7)

☐ **RWQCB 8**
Santa Ana Region (8)

☐ **RWQCB 9**
San Diego Region (9)

☐ **Other** ____________
____
____

Last Updated on 05/21/04

South Coast
Air Quality Management District
21865 Copley Drive, Diamond Bar, CA 91765-4178
(909) 396-2000 · www.aqmd.gov

October 28, 2004

RECEIVED
NOV 1 2004

Dr. Hsiao-ching Chen, AICP
Los Angeles County Regional Planning Dept.
Impact Analysis Section
320 West Temple Street, Room 1348
Los Angeles, CA 90012

Dear Dr. Chen:

Notice of Preparation of a Draft Environmental Impact Report for
The Skyline Ranch Project

The South Coast Air Quality Management District (SCAQMD) appreciates the opportunity to comment on the above-mentioned document. The SCAQMD's comments are recommendations regarding the analysis of potential air quality impacts from the proposed project that should be included in the Draft Environmental Impact Report (EIR). Please send the SCAQMD a copy of the Draft EIR upon its completion.

Air Quality Analysis

The SCAQMD adopted its California Environmental Quality Act (CEQA) Air Quality Handbook in 1993 to assist other public agencies with the preparation of air quality analyses. The SCAQMD recommends that the Lead Agency use this Handbook as guidance when preparing its air quality analysis. Copies of the Handbook are available from the SCAQMD's Subscription Services Department by calling (909) 396-3720. Alternatively, lead agency may wish to consider using the California Air Resources Board (CARB) approved URBEMIS 2002 Model. This model is available on the CARB Website at: www.arb.ca.gov.

The Lead Agency should identify any potential adverse air quality impacts that could occur from all phases of the project and all air pollutant sources related to the project. Air quality impacts from both construction and operations should be calculated. Construction-related air quality impacts typically include, but are not limited to, emissions from the use of heavy-duty equipment from grading, earth-loading/unloading, paving, architectural coatings, off-road mobile sources (e.g., heavy-duty construction equipment) and on-road mobile sources (e.g., construction worker vehicle trips, material transport trips). Operation-related air quality impacts may include, but are not limited to, emissions from stationary sources (e.g., boilers), area sources (e.g., solvents and coatings), and vehicular trips (e.g., on- and off-road tailpipe emissions and entrained dust). Air quality impacts from indirect sources, that is, sources that generate or attract vehicular trips should be included in the analysis. An analysis of all toxic air contaminant impacts due to the decommissioning or use of equipment potentially generating such air pollutants should also be included.

Mitigation Measures

In the event that the project generates significant adverse air quality impacts, CEQA requires that all feasible mitigation measures be utilized during project construction and operation to minimize or eliminate significant adverse air quality impacts. To assist the Lead Agency with identifying possible mitigation measures for the project, please refer to Chapter 11 of the SCAQMD CEQA Air Quality Handbook for sample air quality mitigation measures. Additionally, SCAQMD's Rule 403 – Fugitive Dust, and the Implementation Handbook contain numerous measures for controlling construction-related emissions that should be considered for use as CEQA mitigation if not otherwise required. Pursuant to state CEQA Guidelines §15126.4 (a)(1)(D), any impacts resulting from mitigation measures must also be discussed.

Data Sources

SCAQMD rules and relevant air quality reports and data are available by calling the SCAQMD's Public Information Center at (909) 396-2039. Much of the information available through the Public Information Center is also available via the SCAQMD's World Wide Web Homepage (http://www.aqmd.gov).

The SCAQMD is willing to work with the Lead Agency to ensure that project-related emissions are accurately identified, categorized, and evaluated. Please call Charles Blankson, Ph.D., Air Quality Specialist, CEQA Section, at (909) 396-3304 if you have any questions regarding this letter.

Sincerely,

Michael Krause

for Steve Smith, Ph.D.
Program Supervisor, CEQA Section
Planning, Rule Development and Area Sources

SS:CB:li

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Control Number

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NOV 9 2004

County of Los Angeles
Sheriff's Department Headquarters
4700 Ramona Boulevard
Monterey Park, California 91754-2169
(661) 255-1121

LEROY D. BACA, SHERIFF

November 3, 2004

Dr. Hsiao-ching Chen, AICP
Los Angeles County Regional Planning
320 W. Temple Street
Los Angeles, California 90012-3225

Dear Dr. Chen:

INITIAL STUDY
TRACT NO. 060922, PROJECT NO. 04-075
SKYLINE RANCH PROJECT

The proposed Project consisting of 1,343 single family residential units, west of Mint Canyon and Sierra Highway between the Santa Clara River and Vasquez Canyon, is within the jurisdiction of the Los Angeles County Sheriff's Department, Santa Clarita Valley Station, 23740 Magic Mountain Parkway, Valencia, California. The station is located approximately 9-10 miles from the project site.

It is anticipated that the non-emergent response time to a request for service would be approximately 25-35 minutes. The priority response time would be approximately 8-11 minutes and the response time under emergent circumstances would be approximately 5-8 minutes. All response times are approximations, only, and would be dependent on both the deployment of area radio cars and traffic conditions.

This station serves an area of 656 square miles, which is made up of the City of Santa Clarita and unincorporated County area between the Los Angeles City Limits to the South, the Kern County Line to the North and involving all area between the Ventura County Line to the West and the township of Aqua Dulce to the East. The population served by our station is approximately 200,000 residents.

Our ideal officer to population ratio is one deputy per 1,000 residents and with our current staffing of 161 sworn deputies currently assigned, our ratio is less than ideal at one deputy per every 1,243 residents. Assuming a residential density of 3.01 persons per dwelling unit, this proposed project will generate a population increase of 4,042. Based on the above, this project would require four additional deputies to the station complement.

Our primary concern is our ability to provide an adequate level of protection and service to all areas we police. Due to the rapidly expanding population of the Santa Clarita Valley and its record-setting home building, it is difficult to project the impact of this project on law enforcement.

Adding this project and other projects in progress, either proposed, approved or committed, it is certain they will all significantly strain our resources to the breaking point. Additionally, the increase in required field personnel will necessitate a concomitant increase in support resources such as detectives, complaint desk officers, vehicles and portable radios. While not directly a builder's matter, our ability to provide a sufficient level of law enforcement services must be considered when applications for new projects such as these are considered.

While we do not oppose this project, we are seriously concerned about our ability to adequately police this area. Without a commitment from the Board of Supervisors to provide sufficient funding, we may face a situation where we cannot provide timely emergency services.

It is suggested, for the security and safety of the residents, that the following crime prevention measures be implemented during site and building layout design:

- Provide lighting in open areas and parking lots;
- Ensure the visibility of doors and windows from the street and between buildings;
- Provide adequate parking spaces in the parking lots to accommodate shoppers, employees and residents;
- Ensure that the required building address numbers are lighted and readily apparent from the street for emergency response agencies.

Should you have further questions, please feel free to call me at (661) 255-1121 extension 5102, or Deputy Patrick Rissler at extension 5159.

Sincerely,

LEROY D. BACA, SHERIFF

Patti A. Minutello, Captain
Santa Clarita Valley Station

cc: Mr. Gary T.K. Tse, Director
Facilities Planning Bureau

PAM;par

COUNTY OF LOS ANGELES
DEPARTMENT OF HEALTH SERVICES
Public Health

THOMAS L. GARTHWAITE, M.D.
DIRECTOR and CHIEF MEDICAL OFFICER

FRED LEAF
CHIEF OPERATING OFFICER

JONATHAN E. FIELDING, M.D., M.P.H.
Director of Public Health and Health Officer

Environmental Health
ARTURO AGUIRRE, Director

Bureau of Environmental Protection
Mountain & Rural/Water, Sewage & Subdivision Program
5050 Commerce Drive, Baldwin Park, CA 91706-1423
TEL (626)430-5380 · FAX (626)813-3016
www.lapublichealth.org/eh/progs/envirp.htm

RECEIVED
NOV 15 2004

November 3, 2004

Hsiao-ching Chen,
Impact Analysis Section,
Department of Regional Planning
320 W. Temple St., Los Angeles, CA 90012

RE: Project No. 04-075/TR 060922; The Skyline Ranch Project, Canyon Country

This is in response to request for comments regarding Notice of Preparation of a Draft Environmental Impact Report for the above referenced development project that was forwarded to this Department.

Mountain & Rural/Water, Sewage & Subdivision program of Environmental Health has reviewed the information submitted and has no objection to the noted development with the understanding that adequate and sustainable potable water shall be supplied through an existing public water systems or an improvement district which will guarantee water connection and service to the entire project area. Furthermore waste water treatment for the entire project site shall be accommodated by public sewer and waste water treatment facilities of the Los Angeles County Sanitation District.
However, this preliminary review encompasses issues that pertain to this program; other potential environmental impacts associated with the development of this project should be addressed by their respective programs/units, e.g., acoustical impact review and analysis should be conducted by Environmental Hygiene Program of this Department.

We would like to receive and review future subsequent documents that will be prepared for this project.

If you have any questions or need additional information, please contact me at 626-430-5380.

Respectfully,

Patrick Nejadian, Program Director
Mountain & Rural/Water, Sewage & Subdivision Program

WATER RECLAMATION
SOLID WASTE MANAGEMENT

COUNTY SANITATION DISTRICTS
OF LOS ANGELES COUNTY

1955 Workman Mill Road, Whittier, CA 90601-1400
Mailing Address: P.O. Box 4998, Whittier, CA 90607-4998
Telephone: (562) 699-7411, FAX: (562) 699-5422
www.lacsd.org

JAMES F. STAHL
Chief Engineer and General Manager

November 9, 2004

File No: 26-00.04-00

RECEIVED
NOV 15 2004

Dr. Hsiao-ching Chen, AICP
Impact Analysis Section
Los Angeles County
Department of Regional Planning
320 West Temple Street, Room 1348
Los Angeles, CA 90012

Dear Dr. Chen:

Skyline Ranch Project, County Project No. 04-075, Tract Map No. 060922

The County Sanitation Districts of Los Angeles County (Districts) received a Notice of Preparation of a Draft Environmental Impact Report for the subject project on October 25, 2004. We offer the following comments regarding sewerage service:

1. Most of the project area is outside the jurisdictional boundaries of the Districts and will require annexation into District No. 26 before sewerage service can be provided to the proposed development. For specific information regarding the annexation procedure and fees, please contact Ms. Margarita Cabrera at extension 2708. Copies of the Districts' Annexation Information and Processing Fees sheets are enclosed for your convenience.

2. Because of the project's location, the flow originating from the proposed project would have to be transported to the Districts' trunk sewer by local sewer(s) that are not maintained by the Districts. If no local sewer lines currently exist, it is the responsibility of the developer to convey any wastewater generated by the project to the nearest local sewer and/or Districts' trunk sewer. The nearest Districts' trunk sewer is the Soledad Canyon Trunk Sewer, Section 5, located in Soledad Canyon Road at Sierra Highway. This 18-inch diameter trunk sewer has a design capacity of 6.4 million gallons per day (mgd) and conveyed a peak flow of 4.5 mgd when last measured in 2003.

3. Due to the large amount of wastewater the future development would generate, the proposed project may have significant impacts on the Districts' sewerage system. Although a relief sewer is not scheduled for construction at this time, if additional flows are generated and the Districts' trunk sewer nears capacity, construction of a relief sewer will be scheduled, depending on the availability of relief project funding.

4. The Districts operate two water reclamation plants (WRPs), the Saugus WRP and the Valencia WRP, which provide wastewater treatment in the Santa Clarita Valley. These facilities are interconnected to form a regional treatment system known as the Santa Clarita Valley Joint Sewerage System (SCVJSS) that currently has a permitted treatment capacity of 19.1 mgd. A

9 mgd expansion of the Valencia WRP will be completed in 2004 and is expected to meet the Regional Growth Management Plan forecasted demand through 2010. The SCVJSS currently processes an average flow of 18.4 mgd.

5. The expected average wastewater flow from the project site is 386,500 gallons per day. A copy of the Districts' average wastewater generation factors is enclosed for your information.

6. The Districts are empowered by the California Health and Safety Code to charge a fee for the privilege of connecting (directly or indirectly) to the Districts' Sewerage System or increasing the existing strength and/or quantity of wastewater attributable to a particular parcel or operation already connected. This connection fee is required to construct an incremental expansion of the Sewerage System to accommodate the proposed project, which will mitigate the impact of this project on the present Sewerage System. Payment of a connection fee will be required before a permit to connect to the sewer is issued. A copy of the Connection Fee Information Sheet is enclosed for your convenience. For more specific information regarding the connection fee application procedure and fees, please contact the Connection Fee Counter at extension 2727.

7. In order for the Districts to conform to the requirements of the Federal Clean Air Act (CAA), the design capacities of the Districts' wastewater treatment facilities are based on the regional growth forecast adopted by the Southern California Association of Governments (SCAG). Specific policies included in the development of the SCAG regional growth forecast are incorporated into the Air Quality Management Plan, which is prepared by the South Coast Air Quality Management District in order to improve air quality in the South Coast Air Basin as mandated by the CAA. All expansions of Districts' facilities must be sized and service phased in a manner that will be consistent with the SCAG regional growth forecast for the counties of Los Angeles, Orange, San Bernardino, Riverside, Ventura, and Imperial. The available capacity of the Districts' treatment facilities will, therefore, be limited to levels associated with the approved growth identified by SCAG. As such, this letter does not constitute a guarantee of wastewater service, but is to advise you that the Districts intend to provide this service up to the levels that are legally permitted and to inform you of the currently existing capacity and any proposed expansion of the Districts' facilities.

If you have any questions, please contact the undersigned at (562) 699-7411, extension 2717.

Very truly yours,

James F. Stahl

Ruth I. Frazen

Ruth I. Frazen
Engineering Technician
Planning & Property Management Section

RIF:rf
Enclosures
c: M. Cabrera
415374.1

INFORMATION SHEET FOR APPLICANTS REQUESTING ANNEXATION TO A COUNTY SANITATION DISTRICT OF LOS ANGELES COUNTY

A. ELIGIBILITY CRITERIA FOR ANNEXATION TO A COUNTY SANITATION DISTRICT OF LOS ANGELES COUNTY

1. The property is contiguous to said County Sanitation District or, if not contiguous, may be drained by gravity to a trunk sewer of that District,
2. The property is not included in whole or in part in any other agency providing services similar to those of the said County Sanitation District, and
3. The property is to be benefited by its inclusion in the said County Sanitation District.

B. HOW DO I INITIATE THE ANNEXATION APPLICATION PROCESS?

1. <u>WRITE TO:</u> County Sanitation Districts of Los Angeles County
P.O. Box 4998, Whittier, CA 90607
Attn: Annexation Fee Program

The letter should contain the following information and support documentation about the property involved:

a) Property location (street address, city, zip and Thomas Brothers map, page, grid)

b) In case of a recorded single lot, include the County Assessor's map book-page-parcel map with the parcel highlighted.

c) In case of a tract or parcel map, include a copy of the tentative or final map plus a closed-survey engineering traverse around the boundary to be annexed to the centerline of any public street.

<u>CALL:</u> County Sanitation Districts of Los Angeles County
(562) 699-7411, Extension 2708
7:00 a.m. through 4:30 p.m., Monday through Thursday
7:00 a.m. through 3:30 p.m., Fridays, except holidays

2. Districts' staff will calculate the acreage involved and will provide the applicant with a quote of annexation fees to be paid. At this time, the applicant will also be provided with a *"Request for Annexation"* form along with necessary instructions.

3. An annexation application file will be opened upon submittal by applicant of all the required documents (refer to Section C) along with a check for the annexation fee made payable to:

County Sanitation Districts of Los Angeles County

C. WHAT DOCUMENTS DO I NEED TO FILE?

1. **"Request for Annexation" Form (4 pages)**: All applicants must complete, in detail, and return the Request for Annexation form signed by the legal owner whose name appears on the current Los Angeles County assessment roll. See C5) for assistance in completing page 4 of this form.

2. **Los Angeles County Local Agency Formation Commission Party Disclosure Form:** All applicants must complete and return the Party Disclosure Form pursuant to the Local Agency Formation Commission Party Disclosure Form Information Sheet.

3. **Annexation Fee payment** as stated in the quotation letter. Cash will not be accepted.

4. **Copy of Grant Deed** (Applicants must submit a copy of the Grant Deed which includes the legal description. Disregard this request if the proposed project is a tract/parcel map.)

5. **California Environmental Quality Act (CEQA):** All applications are subject to CEQA. **If you are applying for a single-family home on septic tank, your project is exempt and the Notice of Exemption will be prepared by this office.** As required by LAFCO, all other applicants must provide twenty six (26) copies of the Initial Study, Final Negative Declaration, Final Mitigated Negative Declaration, Notice of Determination, and Mitigation Monitoring and Reporting Program approved by a city or County Regional Planning Commission, or five (5) copies each of the Final Environmental Impact Report (EIR) and the Notice of Determination approved by a city or County Regional Planning Commission, whichever is applicable

6. **Radius Map and Corresponding Mailing Labels for LAFCO:** All developers are required to submit a radius map within a 300-foot radius of the exterior boundaries of the project area and each parcel of land lying entirely or partially within a 300-foot radius. A set of mailing labels of those landowners that are within a 300-foot radius of the exterior boundaries of the subject area is also required. Provide a list of the Assessor's parcel number, name, and address of each landowner.

7. ***Please Note:*** The annexation fees and application will not be accepted until *all* of the required items have been submitted.

D. HOW MUCH DO I HAVE TO PAY?

The annexation fee consists of three processing fees. The **Annexation Processing Fees** table is attached. The Sanitation Districts, as the lead agency for the annexation, will collect the processing fees at time of annexation application. The three processing fees are for: 1) County Sanitation Districts of Los Angeles County (CSD), 2) Local Agency Formation Commission (LAFCO), and 3) State Board of Equalization (SBE). The LAFCO and SBE processing fees are subject to change without notice. If their fees increase before your application is processed by this office for submittal to these agencies, then you will be notified and the additional monies must be paid before the annexation procedure can be finalized.

E. HOW LONG DOES IT TAKE TO PROCESS MY ANNEXATION APPLICATION?

If the project is a recorded single family lot, Districts' staff will begin processing the annexation application as soon as the required forms are submitted and the annexation fees paid. Upon payment of the annexation fees, for all Sanitation Districts except 26 & 32, the applicant may pay the connection fees and proceed with the project.

If the project is a tract or parcel map, Districts' staff will begin processing the annexation application as soon as the required forms, annexation fees and a copy of the recorded tract/parcel map blueline are submitted. Upon payment of annexation fees, the applicant may have the original sewer map signed off. Also, for all Sanitation Districts except 26 & 32, the applicant may pay the connection fees. The annexation procedure cannot be completed until after receipt, in this office, of the recorded tract/parcel blueline map.

F. WHERE CAN I GET ADDITIONAL INFORMATION?

For additional information, please call:

County Sanitation Districts of Los Angeles County
(562) 699-7411, Extension 2708
7:00 a.m. through 4:30 p.m., Monday through Thursday
7:00 a.m. through 3:30 p.m., Fridays, except holidays

ANNEXATION PROCESSING FEES FOR THE COUNTY SANITATION DISTRICTS OF LOS ANGELES COUNTY

COUNTY SANITATION DISTRICTS' PROCESSING FEE	ACREAGE			FEE
	0.0	to	1.5	$800
	>1.5	to	5.0	$1,075
	>5.0	to	20.0	$215/Acre
	Over 20.0			$4,300 Plus $35/Additional Acre And Every Fraction Thereof

LOCAL AGENCY FORMATION COMMISSION FILING FEE[1]	ACREAGE			FEE
ANNEXATIONS AND DETACHMENTS	0.0	to	1.0	$2,500
	>1.0	to	5.0	$3,000
	>5.0	to	10.0	$3,500
	>10.0	to	25.0	$5,000
	>25.0	to	50.0	$6,000
	>50.0	to	160.0	$7,000
	160.0+ Acres			$8,000
OTHER PROPOSALS	Special Reorganization			$10,000
	Incorporation/Disincorporation/Consolidation			$7,500
	District Formation			$7,500
	District Dissolution/Consolidation/Merger			$5,000
	Establishment of Subsidiary District			$4,000
	Reorganizations			Basic Fee*+ 20%
	Amend Existing Sphere of Influence for an Annexation			$500
	Amend Existing Sphere of Influence for Action other than an Annexation			20% of Basic Fee
	Amend/Update Existing Sphere of Influence Without other Action			
	0.0	to	1.0	$2,500
	>1.0	to	5.0	$3,000
	>5.0	to	10.0	$3,500
	>10.0	to	25.0	$5,000
	>25.0	to	50.0	$6,000
	>50.0	to	160.0	$7,000
	160.0+ Acres			$7,000
	Reconsideration of LAFCO Determinations			50% of Basic Fee
*The "Basic Fee" is the filing fee charged for the underlying change of organization associated with the action indicated. If more than one change of organization is proposed, it is the higher fee.	Special District Study			Actual Cost
	Out-of-Agency Service Agreements			$2,000
	Petition Verification			Actual Cost
	Notice/Radius Map			Actual Cost
	State Controller Review			$2,000 + Actual Cost

STATE BOARD OF EQUALIZATION[2]	ACREAGE			FEE
SINGLE AREA TRANSACTIONS	0.0	to	1.0	$300
	1.0	to	5.0	$350
	6.0	to	10.0	$500
	11.0	to	20.0	$800
	21.0	to	50.0	$1,200
	51.0	to	100.0	$1,500
	101.0	to	500.0	$2,000
	501.0	to	1,000.0	$2,500
	1,001.0	to	2,000.0	$3,000
	2,001.0 and Above			$3,500
OTHER PROPOSALS	Deferral of Fees			$35
	Additional County per Transaction			$250
	Consolidation per District or Zone			$300
	Entire District Transaction			$300
	Coterminous Transaction			$300
	Dissolution or Name Change			$0

[1] Most recent LAFCO fee increase effective June 1, 2003.

[2] Most recent SBE fee increase effective December 2, 1998.

L:\annexfee\annexation\forms\annexfees.doc

Rev July 17, 2003

TABLE 1

LOADINGS FOR EACH CLASS OF LAND USE

DESCRIPTION	UNIT OF MEASURE	FLOW (Gallons Per Day)	COD (Pounds Per Day)	SUSPENDED SOLIDS (Pounds Per Day)
RESIDENTIAL				
Single Family Home	Parcel	260	1.22	0.59
Duplex	Parcel	312	1.46	0.70
Triplex	Parcel	468	2.19	1.05
Fourplex	Parcel	624	2.92	1.40
Condominiums	Parcel	195	0.92	0.44
Single Family Home (reduced rate)	Parcel	156	0.73	0.35
Five Units or More	No. of Dwlg. Units	156	0.73	0.35
Mobile Home Parks	No. of Spaces	156	0.73	0.35
COMMERCIAL				
Hotel/Motel/Rooming House	Room	125	0.54	0.28
Store	1000 ft^2	100	0.43	0.23
Supermarket	1000 ft^2	150	2.00	1.00
Shopping Center	1000 ft^2	325	3.00	1.17
Regional Mall	1000 ft^2	150	2.10	0.77
Office Building	1000 ft^2	200	0.86	0.45
Professional Building	1000 ft^2	300	1.29	0.68
Restaurant	1000 ft^2	1,000	16.68	5.00
Indoor Theatre	1000 ft^2	125	0.54	0.28
Car Wash				
Tunnel - No Recycling	1000 ft^2	3,700	15.86	8.33
Tunnel - Recycling	1000 ft^2	2,700	11.74	6.16
Wand	1000 ft^2	700	3.00	1.58
Financial Institution	1000 ft^2	100	0.43	0.23
Service Shop	1000 ft^2	100	0.43	0.23
Animal Kennels	1000 ft^2	100	0.43	0.23
Service Station	1000 ft^2	100	0.43	0.23
Auto Sales/Repair	1000 ft^2	100	0.43	0.23
Wholesale Outlet	1000 ft^2	100	0.43	0.23
Nursery/Greenhouse	1000 ft^2	25	0.11	0.06
Manufacturing	1000 ft^2	200	1.86	0.70
Dry Manufacturing	1000 ft^2	25	0.23	0.09
Lumber Yard	1000 ft^2	25	0.23	0.09
Warehousing	1000 ft^2	25	0.23	0.09
Open Storage	1000 ft^2	25	0.23	0.09
Drive-in Theatre	1000 ft^2	20	0.09	0.05

TABLE 1
(continued)
LOADINGS FOR EACH CLASS OF LAND USE

DESCRIPTION	UNIT OF MEASURE	FLOW (Gallons Per Day)	COD (Pounds Per Day)	SUSPENDED SOLIDS (Pounds Per Day)
COMMERCIAL				
Night Club	1000 ft^2	350	1.50	0.79
Bowling/Skating	1000 ft^2	150	1.76	0.55
Club	1000 ft^2	125	0.54	0.27
Auditorium, Amusement	1000 ft^2	350	1.50	0.79
Golf Course, Camp, and Park (Structures and Improvements	1000 ft^2	100	0.43	0.23
Recreational Vehicle Park	No. of Spaces	55	0.34	0.14
Convalescent Home	Bed	125	0.54	0.28
Laundry	1000 ft^2	3,825	16.40	8.61
Mortuary/Cemetery	1000 ft^2	100	1.33	0.67
Health Spa, Gymnasium				
With Showers	1000 ft^2	600	2.58	1.35
Without Showers	1000 ft^2	300	1.29	0.68
Convention Center, Fairground, Racetrack, Sports Stadium/Arena	Average Daily Attendance	10	0.04	0.02
INSTITUTIONAL				
College/University	Student	20	0.09	0.05
Private School	1000 ft^2	200	0.86	0.45
Church	1000 ft^2	50	0.21	0.11

INFORMATION SHEET FOR APPLICANTS
PROPOSING TO CONNECT OR INCREASE THEIR DISCHARGE TO
THE COUNTY SANITATION DISTRICTS OF LOS ANGELES COUNTY SEWERAGE SYSTEM

THE PROGRAM

The County Sanitation Districts of Los Angeles County are empowered by the California Health and Safety Code to charge a fee for the privilege of connecting to a Sanitation District's sewerage system. Your connection to a City or County sewer constitutes a connection to a Sanitation District's sewerage system as these sewers flow into a Sanitation District's system. The County Sanitation Districts of Los Angeles County provide for the conveyance, treatment, and disposal of your wastewater. **PAYMENT OF A <u>CONNECTION FEE</u> TO THE COUNTY SANITATION DISTRICTS OF LOS ANGELES COUNTY WILL BE REQUIRED BEFORE A CITY OR THE COUNTY WILL ISSUE YOU A PERMIT TO CONNECT TO THE SEWER.**

I. WHO IS REQUIRED TO PAY A CONNECTION FEE?

1. Anyone connecting to the sewerage system for the first time for any structure located on a parcel(s) of land within a County Sanitation District of Los Angeles County.
2. Anyone increasing the quantity of wastewater discharged due to the construction of additional dwelling units on or a change in land usage of a parcel already connected to the sewerage system.
3. Anyone increasing the improvement square footage of a commercial or institutional parcel by more than 25 percent.
4. Anyone increasing the quantity and/or strength of wastewater from an industrial parcel.
5. If you qualify for an Ad Valorem Tax or Demolition Credit, connection fee will be adjusted accordingly.

II. HOW ARE THE CONNECTION FEES USED?

The connection fees are used to provide additional conveyance, treatment, and disposal facilities (capital facilities) which are made necessary by new users connecting to a Sanitation District's sewerage system or by existing users who significantly increase the quantity or strength of their wastewater discharge. The Connection Fee Program insures that all users pay their fair share for any necessary expansion of the system.

III. HOW MUCH IS MY CONNECTION FEE?

Your connection fee can be determined from the Connection Fee Schedule specific to the Sanitation District in which your parcel(s) to be connected is located. A Sanitation District boundary map is attached to each corresponding Sanitation District Connection Fee Schedule. Your City or County sewer permitting office has copies of the Connection Fee Schedule(s) and Sanitation District boundary map(s) for your parcel(s). If you require verification of the Sanitation District in which your parcel is located, please call the Sanitation Districts' information number listed under Item IX below.

IV. WHAT FORMS ARE REQUIRED*?

The Connection Fee application package consists of the following:

1. Information Sheet for Applicants (this form)
2. Application for Sewer Connection

3. Connection Fee Schedule with Sanitation District Map (one schedule for each Sanitation District)

*Additional forms are required for Industrial Dischargers.

V. WHAT DO I NEED TO FILE?

1. Completed Application Form
2. A complete set of architectural blueprints (not required for connecting one single family home)
3. Fee Payment (checks payable to: County Sanitation Districts of Los Angeles County)
4. Industrial applicants must file additional forms and follow the procedures as outlined in the application instructions

VI. WHERE DO I SUBMIT THE FORMS?

Residential, Commercial, and Institutional applicants should submit the above listed materials either by mail or in person to:

County Sanitation Districts of Los Angeles County
Connection Fee Program, Room 130
1955 Workman Mill Road
Whittier, CA 90601

Industrial applicants should submit the appropriate materials directly to the City or County office which will issue the sewer connection permit.

VII. HOW LONG DOES IT TAKE TO PROCESS MY APPLICATION?

Applications submitted by mail are generally processed and mailed within three working days of receipt. Applications brought in person are processed on the same day provided the application, supporting materials, and fee is satisfactory. Processing of large and/or complex projects may take longer.

VIII. HOW DO I OBTAIN MY SEWER PERMIT TO CONNECT?

An approved Application for Sewer Connection will be returned to the applicant after all necessary documents for processing have been submitted. Present this approved-stamped copy to the City or County Office issuing sewer connection permits for your area at the time you apply for actual sewer hookup.

IX. HOW CAN I GET ADDITIONAL INFORMATION?

If you require assistance or need additional information, please call the County Sanitation Districts of Los Angeles County at (562) 699-7411, extension 2727.

X. WHAT ARE THE DISTRICTS' WORKING HOURS?

The Districts' offices are open between the hours of 7:00 a.m. and 4:00 p.m., Monday through Thursday, and between the hours of 7:00 a.m. and 3:00 p.m. on Friday, except holidays. When applying in person, applicants must be at the Connection Fee counter at least 30 minutes before closing time.

Department of Toxic Substances Control

Terry Tamminen
Agency Secretary
Cal/EPA

1011 North Grandview Avenue
Glendale, California 91201

Arnold Schwarzenegger
Governor

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NOV 18 2004

November 16, 2004

Dr. Hsiao-ching Chen, AICP
Los Angeles County Regional Planning Department
Impact Analysis Section
320 West Temple Street, Room 1348
Los Angeles, California 90012

NOTICE OF PREPARATION DRAFT ENVIRONMENTAL IMPACT REPORT FOR THE SKYLINE RANCH PROJECT, PROJECT NO. 03-075, TRACT NO. 060922, SCH NO. 2004101090

Dear Dr. Chen:

The Department of Toxic Substances Control (DTSC) has received your Notice of Preparation of a draft Environmental Impact Report (EIR) for the project mentioned above.

Based on the review of the document, DTSC comments are as follows:

1. The draft EIR needs to identify and determine whether current or historic uses at the Project site have resulted in any release of hazardous wastes/substances at the Project area.

2. The draft EIR needs to identify any known or potentially contaminated site within the Project area. For all identified sites, the draft EIR needs to evaluate whether conditions at the site pose a threat to human health or the environment.

3. The draft EIR should identify the mechanism to initiate any required investigation and/or remediation for any site that may require remediation, and which government agency will provide appropriate regulatory oversight.

4. If during construction of the project, soil contamination is suspected, construction in the area should stop, and appropriate health and safety procedures should be implemented. If it is determined that contaminated soils exists, the draft EIR should identify how any required investigation and/or remediation will be conducted, and which government agency will provide regulatory oversight.

DTSC provides guidance for Preliminary Endangerment Assessment preparation and cleanup oversight through the Voluntary Cleanup Program (VCP). For additional information on the VCP please visit DTSC's web site at www.dtsc.ca.gov. If you would like to meet and discuss this matter further, please contact Mr. Alberto Valmidiano, Project Manager, at (818) 551-2870 or me, at (818) 551-2857.

Sincerely,

Michel Iskarous
Acting Unit Chief
Southern California Cleanup Operations Branch – Glendale Office

cc: Governor's Office of Planning and Research
State Clearinghouse
P.O. Box 3044
Sacramento, California 95812-3044

Mr. Guenther W. Moskat, Chief
Planning and Environmental Analysis Section
CEQA Tracking Center
Department of Toxic Substances Control
P.O. Box 806
Sacramento, California 95812-0806

State of California - The Resources Agency
ARNOLD SCHWARZENEGGER, *Governor*

DEPARTMENT OF FISH AND GAME
http://www.dfg.ca.gov
4949 Viewridge Avenue
San Diego, CA 92123
(858) 467-4201

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NOV 17 2004

November 15, 2004

Ms. Hsiao-ching Chen
Los Angeles County Department of Regional Planning
320 W. Temple Street
Los Angeles, CA 90012

Notice of Preparation for an Environmental Impact Report for
Skyline Ranch Project, Project # 03-075
SCH# 2004101090, Los Angeles County

Dear Ms Chen:

The Department of Fish and Game (Department) appreciates this opportunity to comment on the above-referenced project, relative to impacts to biological resources. The proposed project involves the development of 592 acres of the site with 1,325 single-family residences and a ten acre school. Approximately 1,604 acres of the site is proposed for protected open space. The project site supports habitat for listed species, species of Special Concern, seven vegetative communities and a large vernal pool at Cruzan Mesa (located within a Los Angeles County proposed Significant Ecological Area). Plum Canyon drainage and its tributary are also identified within the subject project site. The majority of the site is undeveloped and is located near the intersection of Sierra Highway and Plum Canyon Road near the City of Santa Clarita, Los Angeles County.

To enable Department staff to adequately review and comment on the proposed project we recommend the following information, where applicable, be included in the Draft Environmental Impact Report:

1. A complete, recent assessment of flora and fauna within and adjacent to the project area, with particular emphasis upon identifying endangered, threatened, and locally unique species and sensitive habitats.

    a. A thorough recent assessment of rare plants and rare natural communities, following the Department's Guidelines for Assessing Impacts to Rare Plants and Rare Natural Communities (Attachment 1).

    b. A complete, recent assessment of sensitive fish, wildlife, reptile, and amphibian species. Seasonal variations in use of the project area should also be addressed. Recent, focused, species-specific surveys, conducted at the appropriate time of year and time of day when the sensitive species are active or otherwise identifiable, are required. Acceptable species-specific survey procedures should be developed in consultation with the Department and U.S. Fish and Wildlife Service.

c. Rare, threatened, and endangered species to be addressed should include all those which meet the California Environmental Quality Act (CEQA) definition (see CEQA Guidelines, Section 15380).

d. The Department's California Natural Diversity Data Base in Sacramento should be contacted at (916) 327-5960 to obtain current information on any previously reported sensitive species and habitats, including Significant Natural Areas identified under Chapter 12 of the Fish and Game Code. Also, any Significant Ecological Areas (SEAs) or Environmentally Sensitive Habitats (ESHs) or any areas that are considered sensitive by the local jurisdiction that are located in or adjacent to the project area must be addressed.

2. A thorough discussion of direct, indirect, and cumulative impacts expected to adversely affect biological resources, with specific measures to offset such impacts. This discussion should focus on maximizing avoidance, and minimizing impacts.

a. CEQA Guidelines, Section 15125(a), direct that knowledge of the regional setting is critical to an assessment of environmental impacts and that special emphasis should be placed on resources that are rare or unique to the region.

b. Project impacts should also be analyzed relative to their effects on off-site habitats and populations. Specifically, this should include nearby public lands, open space, adjacent natural habitats, and riparian ecosystems. Impacts to and maintenance of wildlife corridor/movement areas, including access to undisturbed habitat in adjacent areas, should be fully evaluated and provided. The analysis should also include a discussion of the potential for impacts resulting from such effects as increased vehicle traffic and outdoor artificial lighting.

c. A cumulative effects analysis should be developed as described under CEQA Guidelines, Section 15130. General and specific plans, as well as past, present, and anticipated future projects, should be analyzed relative to their impacts on similar plant communities and wildlife habitats.

d. Impacts to migratory wildlife affected by the project should be fully evaluated. This can include such elements as migratory butterfly roost sites and neo-tropical bird and waterfowl stop-over and staging sites. All migratory nongame native bird species are protected by international treaty under the Federal Migratory Bird Treaty Act (MBTA) of 1918 (50 C.F.R. Section 10.13). Sections 3503, 3503.5 and 3513 of the California Fish and Game Code prohibit take of birds and their active nests, including raptors and other migratory nongame birds as listed under the MBTA.

e. Impacts to all habitats from City or County required Fuel Modification Zones (FMZ). Areas slated as mitigation for loss of habitat shall not occur within the FMZ.

f. Proposed project activities (including disturbances to vegetation) should take place outside of the breeding bird season (February 1- September 15) to avoid take (including disturbances which would cause abandonment of active nests containing eggs and/or young). If project activities cannot avoid the breeding bird season, nest surveys should be conducted and active nests should be avoided and provided with a minimum buffer as determined by a biological monitor (the Department recommends a minimum 500-foot buffer for all active raptor nests).

g. Night lighting, and reflective surfaces pose a hazard to resident and migrant birds species. These impacts are often overlooked during project planning and design. The DEIR should discuss measures to avoid/minimize these additional project related threats to avian species.

3. A range of alternatives should be analyzed to ensure that alternatives to the proposed project are fully considered and evaluated. A range of alternatives which avoid or otherwise minimize impacts to sensitive biological resources including wetlands/riparian habitats, alluvial scrub, coastal sage scrub, native woodlands, etc. should be included. Specific alternative locations should also be evaluated in areas with lower resource sensitivity where appropriate.

   a. Mitigation measures for project impacts to sensitive plants, animals, and habitats should emphasize evaluation and selection of alternatives which avoid or otherwise minimize project impacts. Compensation for unavoidable impacts through acquisition and protection of high quality habitat elsewhere should be addressed.

   b. The Department considers Rare Natural Communities as threatened habitats having both regional and local significance. Thus, these communities should be fully avoided and otherwise protected from project-related impacts (Attachment 2).

   c. The Department generally does not support the use of relocation, salvage, and/or transplantation as mitigation for impacts to rare, threatened, or endangered species. Department studies have shown that these efforts are experimental in nature and largely unsuccessful.

4. A California Endangered Species Act (CESA) Permit must be obtained, if the project has the potential to result in "take" of species of plants or animals listed under CESA, either during construction or over the life of the project. CESA Permits are issued to conserve, protect, enhance, and restore State-listed threatened or endangered species and their habitats. Early consultation is encouraged, as significant modification to the proposed project and mitigation measures may be required in order to obtain a CESA Permit. Revisions to the Fish and Game Code, effective January 1998, require that the Department issue a separate CEQA document for the issuance of a CESA permit unless the project CEQA document addresses all project impacts to listed species and specifies a mitigation monitoring and reporting program that will meet the requirements of a CESA permit. For these reasons, the following information is requested:

   a. Biological mitigation monitoring and reporting proposals should be of sufficient detail and resolution to satisfy the requirements for a CESA Permit.

   b. A Department-approved Mitigation Agreement and Mitigation Plan are required for plants listed as rare under the Native Plant Protection Act.

5. The Department opposes the elimination of watercourses and/or their channelization or conversion to subsurface drains. All wetlands and watercourses, whether intermittent, ephemeral, or perennial, must be retained and provided with substantial setbacks which preserve the riparian and aquatic habitat values and maintain their value to on-site and off-site wildlife populations.

   a. The Department requires a Streambed Alteration Agreement (SAA), pursuant to Section 1600 et seq. of the Fish and Game Code, with the applicant prior to any direct or indirect impact to a lake or stream bed, bank or channel or associated riparian resources. The Department's issuance of a SAA may be a project that is subject to CEQA. To facilitate our issuance of the Agreement when CEQA applies, the

Department as a responsible agency under CEQA may consider the local jurisdiction's (lead agency) document for the project. To minimize additional requirements by the Department under CEQA the document should fully identify the potential impacts to the lake, stream or riparian resources and provide adequate avoidance, mitigation, monitoring and reporting commitments for issuance of the Agreement. Early consultation is recommended, since modification of the proposed project may be required to avoid or reduce impacts to fish and wildlife resources.

The Department suggests a pre-project or early consultation planning meeting for all projects. To make an appointment, please call Scott Harris, Wildlife Biologist, at (626) 797-3170. Thank you for this opportunity to provide comment.

Sincerely,

C F Raysbrook

C. F. Raysbrook
Regional Manager

Attachments

cc: Ms. Morgan Wehtje
Mr. Scott Harris
Ms. Betty Courtney
Department of Fish & Game
Mr. Scott Morgan
State Clearinghouse

HCP-Chron
Department of Fish and Game

SPH:sph

SOUTHERN CALIFORNIA
ASSOCIATION of GOVERNMENTS

Main Office
818 West Seventh Street
12th Floor
Los Angeles, California
90017-3435

t (213) 236-1800
f (213) 236-1825

www.scag.ca.gov

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NOV 24 2004

November 23, 2004

Dr. Hsiao-ching Chen, AICP
Impact Analysis Section
Los Angeles County
Department of Regional Planning
320 W. Temple Street, Room 1348
Los Angeles, CA 90012

RE: **Comments on the Notice of Preparation for a Draft Environmental Impact Report for the Skyline Ranch Project – SCAG No. I 20040723**

Dear Dr. Chen:

Thank you for submitting the **Notice of Preparation for a Draft Environmental Impact Report for the Skyline Ranch Project** to SCAG for review and comment. As areawide clearinghouse for regionally significant projects, SCAG reviews the consistency of local plans, projects, and programs with regional plans. This activity is based on SCAG's responsibilities as a regional planning organization pursuant to state and federal laws and regulations. Guidance provided by these reviews is intended to assist local agencies and project sponsors to take actions that contribute to the attainment of regional goals and policies.

We have reviewed the **Notice of Preparation**, and have determined that **the proposed Project is regionally significant per California Environmental Quality Act (CEQA) Guidelines (Section 15206).** The proposed Project considers the construction of more than 500 dwelling units. CEQA requires that EIRs discuss any inconsistencies between the proposed project and the applicable general plans and **regional plans (Section 15125 [d]).** If there are inconsistencies, an explanation and rationalization for such inconsistencies should be provided.

Policies of SCAG's Regional Comprehensive Plan and Guide and Regional Transportation Plan, which may be applicable to your project, are outlined in the attachment. **We expect the Draft EIR to specifically cite the appropriate SCAG policies and address the manner in which the Project is consistent with applicable core policies or supportive of applicable ancillary policies. Please use our policy numbers to refer to them in your Draft EIR. Also, we would encourage you to use a side-by-side comparison of SCAG policies with a discussion of the consistency or support of the policy with the Proposed Project.**

Please provide a minimum of 45 days for SCAG to review the Draft EIR when this document is available. If you have any questions regarding the attached comments, please contact me at (213) 236-1867. Thank you.

Sincerely,

Jeffrey M. Smith

JEFFREY M. SMITH, AICP
Senior Regional Planner
Intergovernmental Review

COMMENTS ON THE PROPOSAL TO DEVELOP A DRAFT SUPPLEMENTAL ENVIRONMENTAL IMPACT REPORT FOR THE SKYLINE RANCH PROJECT

SCAG NO. I 20040723

PROJECT DESCRIPTION

The proposed Project considers the development of 1,325 single-family residences on approximately 592 acres. The Project will also include a 10-acres school site and 10-acres for a public park. The proposed Project is part of a 2,196 acre project area that is located in the Santa Clarita Valley, west and north of Highway 14 (Antelope Valley Freeway) and north of the City of Santa Clarita in unincorporated Los Angeles County.

CONSISTENCY WITH REGIONAL COMPREHENSIVE PLAN AND GUIDE POLICIES

The **Growth Management Chapter (GMC)** of the Regional Comprehensive Plan and Guide (RCPG) contains the following policies that are particularly applicable and should be addressed in the Draft EIR for the Skyline Ranch Project.

3.01 *The population, housing, and jobs forecasts, which are adopted by SCAG's Regional Council and that reflect local plans and policies, shall be used by SCAG in all phases of implementation and review.*

Regional Growth Forecasts

The Draft EIR should reflect the most current SCAG forecasts which are the 2004 RTP (April 2004) Population, Household and Employment forecasts for the North Los Angeles County subregion and Unincorporated Los Angeles County. These forecasts are as follows:

NORTH LA SUBREGION	2000	2005	2010	2015	2020	2025
POPULATION	512,391	614,502	735,262	852,964	967,387	1,076,013
HOUSEHOLD	161,131	181,825	221,538	256,966	292,658	327,745
EMPLOYMENT	178,999	182,284	215,955	235,070	253,417	270,409

UNINCORP. LA CO.	2000	2005	2010	2015	2020	2025
POPULATION	1,007,701	1,118,360	1,231,730	1,332,100	1,429,615	1,520,279
HOUSEHOLD	2,81,124	301,345	337,539	371,349	405,520	439,160
EMPLOYMENT	256,474	260,627	303,110	314,852	326,028	336,182

3.03 *The timing, financing, and location of public facilities, utility systems, and transportation systems shall be used by SCAG to implement the region's growth policies.*

GMC POLICIES RELATED TO THE RCPG GOAL TO IMPROVE THE REGIONAL STANDARD OF LIVING

The Growth Management goals to develop urban forms that enable individuals to spend less income on housing cost, that minimize public and private development costs, and that enable firms to be more competitive, strengthen the regional strategic goal to stimulate the regional economy. The evaluation of the proposed project in relation to the following policies would be intended to guide efforts toward achievement of such goals and does not infer regional interference with local land use powers.

3.05 *Encourage patterns of urban development and land use, which reduce costs on infrastructure construction and make better use of existing facilities.*

3.09 *Support local jurisdictions' efforts to minimize the cost of infrastructure and public service delivery, and efforts to seek new sources of funding for development and the provision of services.*

3.10 *Support local jurisdictions' actions to minimize red tape and expedite the permitting process to maintain economic vitality and competitiveness.*

GMC POLICIES RELATED TO THE RCPG GOAL TO IMPROVE THE REGIONAL QUALITY OF LIFE

The Growth Management goals to attain mobility and clean air goals and to develop urban forms that enhance quality of life, that accommodate a diversity of life styles, that preserve open space and natural resources, and that are aesthetically pleasing and preserve the character of communities, enhance the regional strategic goal of maintaining the regional quality of life. The evaluation of the proposed project in relation to the following policies would be intended to provide direction for plan implementation, and does not allude to regional mandates.

3.12 *Encourage existing or proposed local jurisdictions' programs aimed at designing land uses which encourage the use of transit and thus reduce the need for roadway expansion, reduce the number of auto trips and vehicle miles traveled, and create opportunities for residents to walk and bike.*

3.14 *Support local plans to increase density of future development located at strategic* *points along the regional commuter rail, transit systems, and activity centers.*

3.17 *Support and encourage settlement patterns, which contain a range of urban densities*

3.18 *Encourage planned development in locations least likely to cause environmental impact.*

3.19 *SCAG shall support policies and actions that preserve open space areas identified in local, state and federal plans.*

3.20 *Support the protection of vital resources such as wetlands, groundwater recharge areas, woodlands, production lands, and land containing unique and endangered plants and animals.*

3.21 *Encourage the implementation of measures aimed at the preservation and protection of recorded and unrecorded cultural resources and archaeological sites.*

3.22 *Discourage development, or encourage the use of special design requirements, in areas with steep slopes, high fire, flood, and seismic hazards.*

3.23 *Encourage mitigation measures that reduce noise in certain locations, measures aimed at preservation of biological and ecological resources, measures that would reduce exposure to seismic hazards, minimize earthquake damage, and to develop emergency response and recovery plans.*

GMC POLICIES RELATED TO THE RCPG GOAL TO PROVIDE SOCIAL, POLITICAL, AND CULTURAL EQUITY

The Growth Management Goal to develop urban forms that avoid economic and social polarization promotes the regional strategic goal of minimizing social and geographic disparities and of reaching equity among all segments of society. The evaluation of the proposed project in relation to the policy stated below is intended guide direction for the accomplishment of this goal, and does not infer regional mandates and interference with local land use powers.

3.24 *Encourage efforts of local jurisdictions in the implementation of programs that increase the supply and quality of housing and provide affordable housing as evaluated in the Regional Housing Needs Assessment.*

3.27 *Support local jurisdictions and other service providers in their efforts to develop sustainable communities and provide, equally to all members of society, accessible and effective services such as: public education, housing, health care, social* *services, recreational facilities, law enforcement, and fire protection.*

REGIONAL TRANSPORTATION PLAN

The **2004 Regional Transportation Plan (RTP)** also has goals and policies that are pertinent to this proposed project. This RTP links the goal of sustaining mobility with the goals of fostering economic development, enhancing the environment, reducing energy consumption, promoting transportation-friendly development patterns, and encouraging fair and equitable access to residents affected by socio-economic, geographic and commercial limitations. The RTP continues to support all applicable federal and state laws in implementing the proposed project. Among the relevant goals and policies of the RTP are the following:

Regional Transportation Plan Goals

- Maximize mobility and accessibility for all people and goods in the region.
- Ensure travel safety and reliability for all people and goods in the region.
- Preserve and ensure a sustainable regional transportation system.
- Maximize the productivity of our transportation system.
- Protect the environment, improve air quality and promote energy efficiency.
- Encourage land use and growth patterns that complement our transportation investments.

Regional Transportation Plan Policies

- Transportation investments shall be based on SCAG's adopted Regional Performance Indicators.

Performance Indicator	**Performance Measures**	**Definition**	**Performance Outcome**
Mobility	• Average Daily Speed	Speed-experienced by travelers regardless of mode.	10% Improvement
	• Average Daily Delay	Delay-excess travel time resulting from the difference between a reference speed and actual speed. Total daily delay and daily delay per capita are indicators used.	40% Improvement
Accessibility	• Percent PM peak work trips within 45 minutes of home		Auto 90% Transit 37%
	• Distribution of work trip travel times		Auto 8% Improvement Transit 8% Improvement
Reliability	• Percent variation in travel time	Day-to-day change in travel times experienced by travelers. Variability results from accidents, weather, road closures, system problems and other non-recurrent conditions.	10% Improvement
Safety	• Accident Rates	Measured in accidents per million	0.3% Improvement

		vehicle miles by mode.	
Performance Indicator	**Performance Measures**	**Definition**	**Performance Outcome**
Cost Effectiveness	• Benefit-to-Cost (B/C) Ratio	Ratio of benefits of RTP investments to the associated investments costs.	$3.08
Productivity	• Percent capability utilized during peak conditions	Transportation infrastructure capacity and services provided. • Roadway Capacity - vehicles per hour per lane by type of facility. • Transit Capacity – seating capacity utilized by mode.	20% Improvement at known bottlenecks N/A
Sustainability	• Total cost per capita to sustain current system performance	Focus in on overall performance, including infrastructure condition Preservation measure is a sub-set of sustainability.	$20 per capita, primarily in preservation costs
Preservation	• Maintenance cost per capita to preserve system at base year conditions	Focus is on infrastructure condition. Sub-set of sustainability.	Maintain current conditions
Environmental	• Emissions generated by travel	Measured/forecast emissions include CO, NOX, PM10, SOX and VOC. CO2 as secondary measure to reflect greenhouse emissions.	Meets conformity requirements
Environmental Justice	• Expenditures by quintile and ethnicity • Benefit vs. burden by quintiles	Proportionate share of expenditures in the 2004 RTP by each quintile. Proportionate share of benefits to each quintile ethnicity. Proportionate share of additional airport noise by ethnic group.	No disproportionate impact to any group or quintile

- Ensuring safety, adequate maintenance, and efficiency of operations on the existing multi-modal transportation system will be RTP priorities and will be balanced against the need for system expansion investments.

- RTP land use and growth strategies that differ from currently expected trends will require a collaborative implementation program that identifies required actions and policies by all affected agencies and sub-regions.

- HOV gap closures that significantly increase transit and rideshare usage will be supported and encouraged, subject to Policy #1.

AIR QUALITY CHAPTER CORE ACTIONS

The **Air Quality Chapter** core actions related to the proposed project includes:

5.07 *Determine specific programs and associated actions needed (e.g., indirect source rules, enhanced use of telecommunications, provision of community based shuttle services, provision of demand management based programs, or vehicle-miles-traveled/emission fees) so that options to command and control regulations can be assessed.*

5.11 *Through the environmental document review process, ensure that plans at all levels of government (regional, air basin, county, subregional and local) consider air quality, land use, transportation and economic relationships to ensure consistency and minimize conflicts.*

OPEN SPACE CHAPTER ANCILLARY GOALS

Outdoor Recreation

9.01 *Provide adequate land resources to meet the outdoor recreation needs of the present and future residents in the region and to promote tourism in the region.*

9.02 *Increase the accessibility to open space lands for outdoor recreation.*

9.03 *Promote self-sustaining regional recreation resources and facilities.*

Public Health and Safety

9.04 *Maintain open space for adequate protection of lives and properties against natural and man-made hazards.*

9.05 *Minimize potentially hazardous developments in hillsides, canyons, areas susceptible to flooding, earthquakes, wildfire and other known hazards, and areas with limited access for emergency equipment.*

Resource Production

9.07 *Maintain adequate viable resource production land, particularly lands devoted to commercial agriculture and mining operations.*

Resource Protection

9.08 Develop well-managed viable ecosystems or known habitats of rare, threatened and endangered species, including wetlands.

WATER QUALITY CHAPTER RECOMMENDATIONS AND POLICY OPTIONS

The **Water Quality Chapter** core recommendations and policy options relate to the two water quality goals: to restore and maintain the chemical, physical and biological integrity of the nation's water; and, to achieve and maintain water quality objectives that are necessary to protect all beneficial uses of all waters.

11.07 Encourage water reclamation throughout the region where it is cost-effective, feasible, and appropriate to reduce reliance on imported water and wastewater discharges. Current administrative impediments to increased use of wastewater should be addressed.

GROWTH VISIONING

The fundamental goal of the Growth Visioning effort is to make the SCAG region a better place to live, work and play for all residents regardless of race, ethnicity or income class. Thus, decisions regarding growth, transportation, land use, and economic development should be made to promote and **sustain** for future generations the region's **mobility**, **livability** and **prosperity**. The following "Regional Growth Principles" are proposed to provide a framework for local and regional decision making that improves the quality of life for all SCAG residents. Each principle is followed by a specific set of strategies intended to achieve this goal.

Principle 1: Improve **mobility** for all residents

- Encourage transportation investments and land use decisions that are mutually supportive.
- Locate new housing near existing jobs and new jobs near existing housing.
- Encourage transit-oriented development.
- Promote a variety of travel choices

Principle 2: Foster **livability** in all communities

- Promote infill development and redevelopment to revitalize existing communities.
- Promote developments, which provide a mix of uses.
- Promote "people scaled," walkable communities.
- Support the preservation of stable, single-family neighborhoods.

Principle 3: Enable **prosperity** for all people

- Provide, in each community, a variety of housing types to meet the housing needs of all income levels.
- Support educational opportunities that promote balanced growth.
- Ensure environmental justice regardless of race, ethnicity or income class.
- Support local and state fiscal policies that encourage balanced growth
- Encourage civic engagement.

Principle 4: Promote **sustainability** for future generations

- Preserve rural, agricultural, recreational and environmentally sensitive areas.
- Focus development in urban centers and existing cities.
- Develop strategies to accommodate growth that uses resources efficiently, eliminate pollution and significantly reduce waste.
- Utilize "green" development techniques.

CONCLUSIONS

All feasible measures needed to mitigate any potentially negative regional impacts associated with the proposed project should be implemented and monitored, as required by CEQA.

SOUTHERN CALIFORNIA ASSOCIATION OF GOVERNMENTS

Roles and Authorities

THE SOUTHERN CALIFORNIA ASSOCIATION OF GOVERNMENTS (SCAG) is a ***Joint Powers Agency*** established under California Government Code Section 6502 et seq. Under federal and state law, SCAG is designated as a Council of Governments (COG), a Regional Transportation Planning Agency (RTPA), and a Metropolitan Planning Organization (MPO). SCAG's mandated roles and responsibilities include the following:

SCAG is designated by the federal government as the Region's ***Metropolitan Planning Organization*** and mandated to maintain a continuing, cooperative, and comprehensive transportation planning process resulting in a Regional Transportation Plan and a Regional Transportation Improvement Program pursuant to 23 U.S.C. '134, 49 U.S.C. '5301 et seq., 23 C.F.R. '450, and 49 C.F.R. '613. SCAG is also the designated ***Regional Transportation Planning Agency***, and as such is responsible for both preparation of the Regional Transportation Plan (RTP) and Regional Transportation Improvement Program (RTIP) under California Government Code Section 65080 and 65082 respectively.

SCAG is responsible for developing the demographic projections and the integrated land use, housing, employment, and transportation programs, measures, and strategies portions of the ***South Coast Air Quality Management Plan***, pursuant to California Health and Safety Code Section 40460(b)-(c). SCAG is also designated under 42 U.S.C. '7504(a) as a ***Co-Lead Agency*** for air quality planning for the Central Coast and Southeast Desert Air Basin District.

SCAG is responsible under the Federal Clean Air Act for determining ***Conformity*** of Projects, Plans and Programs to the State Implementation Plan, pursuant to 42 U.S.C. '7506.

Pursuant to California Government Code Section 65089.2, SCAG is responsible for ***reviewing all Congestion Management Plans (CMPs) for consistency with regional transportation plans*** required by Section 65080 of the Government Code. SCAG must also evaluate the consistency and compatibility of such programs within the region.

SCAG is the authorized regional agency for ***Inter-Governmental Review*** of Programs proposed for federal financial assistance and direct development activities, pursuant to Presidential Executive Order 12,372 (replacing A-95 Review).

SCAG reviews, pursuant to Public Resources Code Sections 21083 and 21087, Environmental Impacts Reports of projects of regional significance for consistency with regional plans [California Environmental Quality Act Guidelines Sections 15206 and 15125(b)].

Pursuant to 33 U.S.C. '1288(a)(2) (Section 208 of the Federal Water Pollution Control Act), SCAG is the authorized ***Areawide Waste Treatment Management Planning Agency***.

SCAG is responsible for preparation of the ***Regional Housing Needs Assessment***, pursuant to California Government Code Section 65584(a).

SCAG is responsible (with the Association of Bay Area Governments, the Sacramento Area Council of Governments, and the Association of Monterey Bay Area Governments) for preparing the ***Southern California Hazardous Waste Management Plan*** pursuant to California Health and Safety Code Section 25135.3.

Revised July 2001

COUNTY OF LOS ANGELES
DEPARTMENT OF PARKS AND RECREATION

November 30, 2004

TO: Ms. Hsiao-ching Chen
Department of Regional Planning
Impact Analysis Section

FROM: Larry Hensley
Planning Division Chief

SUBJECT: **NOTICE OF PREPARATION**
"Skyline Ranch" Project
County Project No. 04-075/Tract Map No. 060922

The Department of Parks and Recreation has reviewed the Notice of Preparation for the preparation of an Environmental Impact Report for the proposed Skyline Ranch project. We concur with the finding that the proposed project could require new or expanded recreational facilities for future residents. Some of our specific concerns are as follows:

- Provide local parks for the enjoyment and leisure of the proposed development by meeting the standard established in the County's General Plan of four (4) acres per thousand population*. The Department understands that local parkland has been designated for implementation in lots 1343 and 1344 per the March 9, 2004 map.

- Provide regional park facilities for the enjoyment of the residents in the larger Santa Clarita Valley area by meeting the standard of six (6) acres per thousand population* as established in the County's General Plan. This could take several forms including but not to limited trails, trail heads, and additional facilities for the William S. Hart Regional Park or Vasquez Rocks Natural Area Park.

- The Mint Canyon Trail appears to be within the project boundary, however, that is still subject to field verification.

---

* Population (approximately 4,250) based on the anticipated growth relating to the number of projected dwelling units within the development.

If you have any questions, please contact me at (213) 351-5098.

LH:bm(c:response-skylineranch)

c: Gil Lopez, Parks and Recreation
James Barber, Parks and Recreation
Joan Rupert, Parks and Recreation
Bryan Moscardini, Parks and Recreation

COUNTY OF LOS ANGELES

DEPARTMENT OF PUBLIC WORKS

"To Enrich Lives Through Effective and Caring Service"

900 SOUTH FREMONT AVENUE
ALHAMBRA, CALIFORNIA 91803-1331
Telephone: (626) 458-5100
www.ladpw.org

ADDRESS ALL CORRESPONDENCE TO:
P.O. BOX 1460
ALHAMBRA, CALIFORNIA 91802-1460

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DEC 14 2004

December 7, 2004

IN REPLY PLEASE
REFER TO FILE: LD-0

TO: Daryl Koutnik
Department of Regional Planning

Attention Hsiao-Ching Chen

FROM: Dennis Hunter DH
Land Development Division

RESPONSE TO A NOTICE OF PREPARATION
SKYLINE RANCH PROJECT
PROJECT NO. 04-075/TRACT NO. 060922

We have reviewed the Notice of Preparation for the Skyline Ranch Project and offer the following comments for your consideration in preparing the Draft Environmental Impact Report (DEIR).

Geotechnical

The geotechnical report should include a topographic map identifying grading activities, geotechnical hazards, and a detailed discussion of any mitigation measures. A liquefaction analysis and seismic slope analyses are not warranted at this time. However, detailed liquefaction and seismic slope stability analyses, conforming to the requirements of the State of California Division of Mines and Geology "Special Publication 117," must be conducted at the tentative map and/or grading/building plan stages.

Drainage/Water Quality

Our records indicate that a drainage concept was previously prepared for this project and we have since returned comments. Following submission, review, and approval of the revised drainage concept, the results of the final approved report should be included in the DEIR.

The DEIR should discuss the impacts of the encroachments on the floodplain/floodway near the Skyline Ranch Road and Sierra Highway intersection. Because this encroachment has the potential to raise the base flood elevations, the analysis needs to document the finished floor elevations of existing structures. The finished floor elevations of the existing structures must remain below the base flood elevations.

Also, the project includes the construction of debris basins. Periodic cleanouts of these facilities are necessary to maintain design capacity. Cleanout activities entail operation of equipment within the basin and truck traffic to haul the material away. The DEIR should discuss the periodic removal of vegetation as part of the sediment removal. If regulatory agencies determine these basins fall within their jurisdiction, maintenance plans and permits will be required prior to these facilities being accepted for public maintenance. The DEIR should also address the long-term sediment management impacts by determining the average annual sediment basin entrapment and where this material will be placed over the life of the project. This development may negatively impact the County's sediment management infrastructure.

Traffic/Access

The proposed project has the potential to significantly impact the County and County/City roadways and intersections in the area, as well as freeways under the jurisdiction of Caltrans. (Please see attached Caltran's letter dated July 20, 2004.) We would like the opportunity to review the related environmental document and traffic studies upon their completion. The County's methodology shall be used when evaluating the County and/or County/City roadways and intersections. The applicant must confer with Caltrans in order to select the methodology to use when determining the impact to the freeways. The traffic impact study shall also address the cumulative impacts generated by this and nearby developments by including the level of service analysis for the affected roadways and intersections. Upon identifying impact, the traffic study must identify feasible mitigation measures. A copy of the County's Traffic Impact Study Guidelines is attached. Please note that our guidelines reiterate the need of the developer to confer with Caltrans and/or affected cities during the preparation of the traffic study.

Sewage Disposal

A sewer area study shall be submitted to determine if the proposed and existing sewerage system servicing this project have adequate capacity to accept all tributary area sewer discharges. This tributary area shall include, but is not limited to, the proposed flows from the project site and tributary flows from adjacent areas and, if applicable, all other tributary areas beyond the project boundaries. The sewer area study shall be approved by Public Works and/or agencies having jurisdiction of the tributary area. If the system is found to have insufficient capacity, upgrade of the proposed and existing sewerage system is required to the satisfaction of all affected agencies. In addition, the sewer deficiencies shall be addressed in the DEIR.

Also, the Department's Consolidated Sewer Maintenance District maintains the local sanitary sewers within the unincorporated areas of the County. Therefore, the entire sewer system will be required to be annexed to the District. This will be in addition to the Las Virgenes Municipal Water District's requirements.

Solid Waste

The construction, demolition and/or predevelopment activities associated with the proposed project and the postdevelopment operation over the life of the proposed project will increase the generation of solid waste and may negatively impact the solid waste management infrastructure in the County. Therefore, the DEIR should identify what measures the project proponent plans to implement to mitigate the impact. Mitigation measures may include, but are not limited to, implementation of waste reduction and recycling programs to divert the solid waste, including construction and demolition waste and excavated material, from the landfills.

The DEIR should include/discuss standards to provide adequate recyclable storage areas for collection/storage of recyclable and green waste materials for this project's public facilities.

School districts are encouraged to take advantage of special County programs, available through Public Works, by calling (888) CLEAN LA or visiting www.888CleanLA.com.

The proposed project may generate hazardous waste and/or household hazardous waste, which could adversely impact existing hazardous waste management infrastructure. This issue should be addressed and mitigation measures provided. Mitigation measures may include, but are not limited to, providing new homeowners with educational materials on the proper management and disposal of household hazardous waste. The project proponent may contact Public Works for available educational materials by calling 1(888) CLEAN LA.

COMMENTS RELATED TO THE LAND USE PERMIT

The proposed realignment of Whites Canyon Road will require approval by the Board of Supervisors.

The Los Angeles County Building Code, Section 110.4 requires that buildings or structures adjacent to or within 200 feet (60.96 m) of active, abandoned or idle oil or gas well(s) be provided with methane gas protection systems. If the project site contains or lies within 200 feet of active, abandoned, or idle oil or gas wells, this issue should be addressed and mitigation measures provided, and our Environmental Programs Division must be contacted for issuance of necessary permits.

Should any operation within the subject project include the construction, installation, modification, or removal of underground storage tanks, industrial waste treatment or disposal facilities, and/or stormwater treatment facilities, Public Works must be contacted for required approvals and operating permits.

The food service facility at the school, may be required to provide a grease treatment device and will be subject to review and approval by Public Works.

If you have any questions or require additional information, please contact Clarice Nash at (626) 458-5910.

CN:ca:jmw
P:\CEQA\CLARIE\\skyline_ranch.doc

Attach.

STATE OF CALIFORNIA—BUSINESS, TRANSPORTATION AND HOUSING AGENCY ARNOLD SCHWARZENEGGER, Governor

DEPARTMENT OF TRANSPORTATION
DISTRICT 7, REGIONAL PLANNING
IGR/CEQA BRANCH
120 SO. SPRING ST.
LOS ANGELES, CA 90012
PHONE (213) 897-6536
FAX (213) 897-1337
E-Mail:NersesYerjanian@dot.ca.gov

RECEIVED
DEP[illegible]
20[illegible] [illegible] 22 [illegible] 5:03
900 S. [illegible] AVE.

Mr. James Chon
Department of Public Works
Los Angeles County
900 S. Fremont Ave.
P.O. Box 1460
Alhambra, CA. 91802-1460

IGR/CEQA# 040640NY
TIS/ Skyline Ranch/1,350 Single Family Homes
TT#060922
LA/14/35.71

July 20, 2004
Dear Mr. Chon:

Thank you for including the California Department of Transportation (Caltrans) in the environmental review process for the Skyline Ranch/1,350 Single Family Residential Project.

We have reviewed the project's traffic study that you provided. The Department as a responsible agency under CEQA has jurisdiction superceding that of MTA in identifying the freeway analysis needed for this project. Caltrans is responsible for obtaining measures that will off-set project vehicle trip generation that worsens Caltrans facilities and hence, it does not adhere to the CMP guide of 150 or more vehicle trips added before freeway analysis is needed. MTA's Congestion Management Program in acknowledging the Department's role, stipulates that Caltrans must be consulted to identify specific locations to be analyzed on the State Highway System.

Please reference the Department's **Traffic Impact Study Guideline** on the Internet at http://www.dot.ca.gov/hq/traffops/developserv/operationalsystems/reports/tisguide.pdf

We request that you apply the equitable share responsibility formula on page 2 of Appendix B **(Methodology for Calculating Equitable Mitigation Measures)** and set aside a portion of Transportation Impact Fees generated for the future State Highway 14 improvement projects. The County may need to recalculate or establish an additional fee for this purpose.
If you have any questions regarding this response, please call the Project Engineer/Coordinator Mr. Yerjanian at (213) 897-6536 and refer to IGR/CEQA # 040640NY.

Sincerely,
Cheryl J. Powell
Cheryl J. Powell
IGR/CEQA Branch Chief
Regional Transportation Planning

"Caltrans improves mobility across California"

STATE OF CALIFORNIA–THE RESOURCES AGENCY
ARNOLD SCHWARZENEGGER, *Governor*

SANTA MONICA MOUNTAINS CONSERVANCY
RAMIREZ CANYON PARK
5750 RAMIREZ CANYON ROAD
MALIBU, CALIFORNIA 90265
PHONE (310) 589-3200
FAX (310) 589-3207

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DEC 20 2004

December 6, 2004

Dr. Hsiao-ching Chen, AICP
Los Angeles County Regional Planning Department
Impact Analysis Section
320 West Temple Street, Room 1348
Los Angeles, California 90012

Notice of Preparation of a Draft Environmental Impact Report Comments
Skyline Ranch Project
Tentative Tract Map No. 060922

Dear Dr. Chen:

The proposed project is located in the upper Santa Clara River watershed, which contains regionally significant ecological, recreational and visual resources. The project site includes the biologically sensitive and significant Cruzan Mesa. Located on the mesa is a vernal pool complex that supports numerous endangered and sensitive species. The vernal pool system is a sensitive, regional resource that must be protected.

Community Facilities District

The land that is to become open space, as identified in the Notice of Preparation (NOP), is a regionally significant resource. Good stewardship must be provided for this open space. A resource management agency that can adequately protect the resources on the property is the only entity that the open space should be dedicated to. The Conservancy's joint powers entity, the Mountains Recreation and Conservation Authority (MRCA), is able to take title to the open space and manage it in a protective capacity.

In order to guarantee the safety of the public visiting the open space dedication and of the new adjoining homeowners, as well as the ecological integrity of the open space, another critical mitigation measure that must be included in the DEIR is a permanent funding mechanism to maintain the property. Dedication of land is only a complete mitigation measure if funding is provided. To our knowledge, a Community Facilities District (CFD) is the optimal method for such a funding source.

A minimum of $35,000 per year with an inflation adjuster must be provided for maintenance of the open space. The open space recipient, such as the MRCA, would be the beneficiary of the money generated by the CFD each year. The $35,000 would fund two half-day visits to the site per week throughout the year. The money would also fund the maintenance of signage, trails, fencing, protection of the vernal pools, the cleanup of trash, and provide for public safety. The first increment of the CFD must be provided simultaneously with the transfer of the open space. If the resource management agency were to provide brushing on the project site as well, then $40,000 per year must be provided by the CFD.

In addition to the money raised annually by the CFD, the resource management agency must be provided with a minimum of $20,000 for initial site improvements. This money for initial site improvements must be provided simultaneously with the transfer of the open space. The improvements to the site would include gates, fencing, and signage.

Mitigation Measures

The DEIR must include two mitigation measures. The project site and in particular Cruzan Mesa, where the vernal pools are located, has been significantly degraded. This degradation was caused by continual discing of the land surrounding each vernal pool, as well as the filming and grazing activities allowed on the mesa. To mitigate these impacts, the DEIR must include the following measure. All filming and grazing uses not recommended by Los Angeles County biologists be removed from the project site, no more than 60 days after project approval.

To help educate the public about the significant biological resources found on Cruzan Mesa, the DEIR must include the following mitigation measure. The project applicant will provide one-time funding totaling $25,000 to the open space recipient to prepare educational kiosks about the vernal pool ecosystem prior to map recordation or the issuance of grading permits.

Restoration of the Vernal Pool Complex

The biological integrity of the vernal pool ecosystem must be restored. As stated in the above section, the site has been significantly degraded by the uses in that area of the project site. To adequately restore the vernal pool system, a restoration plan must developed. This plan must be approved by Los Angeles County biologists prior to EIR certification. A minimum of $500,000 must be provided to the resource management agency to administer the plan and restore the vernal pools. The restoration fund must be in an escrow account 30 days prior to map recordation or the issuance of a grading permit.

Growth Inducing Impacts

Two inholdings are located in the eastern side of the project site. The DEIR must describe what type of access will be provided to these inholdings. All future environmental impacts must be described. One of the parcels is located within the Cruzan Mesa Significant Ecological Area. To remove any potential for growth inducing impacts, the applicant should buy out the inholdings and include them as part of the open space dedication.

Mint Canyon Creek

The Conservancy is pleased that the project footprint was completely moved off of the mesa. However, the majority of Mint Canyon Creek and its tributaries on the project site will be totally filled in. Mint Canyon Creek is a significant biological resource and must be protected. The footprint should be altered so that the creek is preserved.

The Conservancy appreciates the opportunity to comment. Please direct any questions or future documents to Paul Edelman of our staff at (310) 589-3200 ext. 128 and at the above Ramirez Canyon Park address.

Sincerely,

Jerome C. Daniel

JEROME C. DANIEL
Chairperson

COUNTY OF LOS ANGELES

FIRE DEPARTMENT

1320 NORTH EASTERN AVENUE
LOS ANGELES, CALIFORNIA 90063-3294

(323) 890-4330

P. MICHAEL FREEMAN
FIRE CHIEF
FORESTER & FIRE WARDEN

December 21, 2004

Mr. Daryl Koutnik
Impact Analysis Section
Department of Regional Planning
320 West Temple Street
Los Angeles, CA 90012

Dear Mr. Koutnik:

NOTICE OF PREPARATION/INITIAL STUDY OF A DRAFT ENVIRONMENTAL IMPACT REPORT FOR THE PROPOSED "SKYLINE RANCH" SUBDIVISION PROJECT, COUNTY PROJECT #04-075, TRACT MAP #060922, "SANTA CLARITA VALLEY" -- (EIR #2165/2004)

The Notice of Preparation/Initial Study of a Draft Environmental Impact Report (EIR) for the Skyline Ranch Project" has been reviewed by the Planning Division, Land Development Unit, and Forestry Division of the County of Los Angeles Fire Department. The following are their comments:

PLANNING DIVISION:

Enclosed please find our previous letter regarding this project. In addition to the two fire stations mentioned in that letter, a future station is planned in the vicinity of the intersection of Plum Canyon and Whites Canyon Roads. We reiterate that we would need a detailed, scaled map showing all existing and proposed roads in order to calculate response distances/times.

The DMS analysis concludes that the first-due response distance is adequate, based on the maximum distance criteria for rural density. Since the critical factor for fire containment is structure separation, the relevant density is the density within the developed area, after subtracting the open space. The actual density of this project is thus low-urban, approximately 2.25 dwelling units per acre of development.

The fire camps play a supportive role in wildland fire prevention and suppression. They are not staffed with firefighters and do not respond to incidents in developed areas. They should not be included in an EIR for a land development project.

There are no aid agreements with other fire protection agencies affecting this project.

The developer fee is due and payable at the time a building permit is issued. It is anticipated that the rate will be set at $0.3877 per square foot as of December 1st, 2004. This figure is subject to periodic adjustment.

SERVING THE UNINCORPORATED AREAS OF LOS ANGELES COUNTY AND THE CITIES OF:

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ARTESIA
AZUSA
BALDWIN PARK
BELL
BELLFLOWER
BELL GARDENS
BRADBURY
CALABASAS
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CERRITOS
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COVINA
CUDAHY
DIAMOND BAR
DUARTE
EL MONTE
GLENDORA
HAWAIIAN GARDENS
HAWTHORNE
HIDDEN HILLS
HUNTINGTON PARK
INDUSTRY
IRWINDALE
LA CANADA FLINTRIDGE
LAKEWOOD
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LANCASTER
LA PUENTE
LAWNDALE
LOMITA
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ROLLING HILLS
ROLLING HILLS ESTATES
ROSEMEAD
SAN DIMAS
SANTA CLARITA
SIGNAL HILL
SOUTH EL MONTE
SOUTH GATE
TEMPLE CITY
WALNUT
WEST HOLLYWOOD
WESTLAKE VILLAGE
WHITTIER

LAND DEVELOPMENT UNIT:

The Fire Prevention Division, Land Development Unit has no additional comments regarding this project. The conditions that were detailed in the letter dated October 8, 2004, EIR #2088/2004 have not been changed at this time (see enclosed copy of letter).

Should any questions arise regarding subdivision, water systems, or access please contact Inspector Marvin Dorsey at (323) 890-4243.

FORESTRY DIVISION – OTHER ENVIRONMENTAL CONCERNS:

The statutory responsibilities of the County of Los Angeles Fire Department, Forestry Division include erosion control, watershed management, rare and endangered species, vegetation, fuel modification for Very High Fire Hazard Severity Zones or Fire Zone 4, archeological and cultural resources and the County Oak Tree Ordinance. Potential impacts in these areas should be addressed in the Final Environmental Impact Report.

This project will require an EIR fee deposit of $1,000 payable to the Los Angeles County Fire Department at the time the DEIR is submitted for review (see enclosed).

If you have any additional questions, please contact this office at (323) 890-4330.

Very truly yours,

DAVID R. LEININGER, CHIEF, FORESTRY DIVISION
PREVENTION BUREAU

DRL:sc

Enclosures

c: Ms. Lisa Dittman -- Cox Castle Nicholson

bc: Yocum-E/R
Div. III
EIR #2165/Pac.
Land Development
Planning
#219
(EIR #2165.B74)

NOTE: Ms. Lisa Dittman
Cox Castle Nicholson
2049 Century Park East, 28th Floor
Los Angeles, CA 90067

(323) 890-4330

October 8, 2004

Mr. Ned Baldwin
Impact Sciences
30343 Canwood Street, Suite 210
Agoura Hills, CA 91301

Dear Mr. Baldwin:

NOTICE OF PREPARATION OF A DRAFT ENVIRONMENTAL IMPACT REPORT FOR THE "SYLINE RANCH (TENTATIVE TRACT #060922) PROJECT" – "SANTA CLARITA" (EIR #2088/2004)

The Notice of Preparation of an Environmental Impact Report for the aforementioned proposed project has been reviewed by the Planning Division, Land Development Unit, and Forestry Division of the County of Los Angeles Fire Department. The following are their comments:

PLANNING DIVISION:

The subject development will receive fire protection and paramedic service from the County of Los Angeles Fire Department. Fire Station 107, located at 18239 W. Soledad Canyon Road, is the jurisdictional station for this property. A 3-person engine company and a 2-person paramedic squad are assigned to this station.

The second closest station will be the new Fire Station 104, scheduled to open October 15, 2004. This fire station will be temporarily located at 26622 Golden Valley Road, Santa Clarita 91350. It will house a 4-person quint (a combination engine/ladder truck apparatus).

We would need a detailed map showing the location of proposed land uses as well as existing and proposed roads in order to calculate response distances/times from these and other fire stations in the area.

The County of Los Angeles Consolidated Fire Protection District, also known as the County Fire Department, is not divided into distinct service areas. The entire District is a seamless whole for the purposes of dispatching emergency response units. The closest available units are dispatched as needed to an incident anywhere within its territory.

Any new development will increase the service demand on existing resources. Although this development would be in proximity to an existing fire station, it would increase service demand on the fire protection resources in the general area. Additional manpower, equipment, and facilities are needed in the area now. Limited tax revenues have restricted the Fire Department's ability to meet new growth needs. While general plans have been developed or upgrading fire protection in this area, the Department will not be able to implement these plans without specific provisions for the necessary manpower, equipment and facilities. Mitigation of this problem should be required prior to granting approval of this development. The Fire Department will work with the developer to establish appropriate mitigation arrangements for the proposed project.

The applicant shall participate in an appropriate financing mechanism, such as a developer fee or an in-kind consideration in lieu of developer fees, to provide funds for fire protection facilities which are required by new commercial, industrial or residential development in an amount proportionate to the demand created by this project. Currently, the developer fee is a set amount per square foot of building space, adjusted annually, and is due and payable at the time a building permit is issued. In the event that the developer fee is no longer in effect at the time of building permit issuance, alternative mitigation measures shall be required.

The environmental document should provide a breakdown of dwelling units by density and type e.g., single-family detached vs. multi-family.

Due to the fact that the information available on this project is limited at the present time, we are not able to respond fully as to how this project will affect our Department. We would like to reserve the right to respond further at a future date when additional information and suitable maps are available.

__LAND DEVELOPMENT UNIT/GENERAL REQUIREMENTS:__
The proposed development may necessitate multiple ingress/egress access for the circulation of traffic, and emergency response issues. The Department may condition future development to provide additional means of access. The development of this project must comply with all applicable code and ordinance requirements for construction, access, water mains, fire flows and hydrants.

This property is located within the area described by the Forester and Fire Warden as a Fire Zone 4, Very High Fire Hazard Severity Zone (VHFHSZ). All applicable fire code and ordinance requirements for construction, access, water mains, fire hydrants, fire flows, brush clearance and fuel modification plans, must be met.

Specific fire and life safety requirements for the construction phase will be addressed at the building fire plan check. There may be additional fire and life safety requirements during this time. Every building constructed shall be accessible to Fire Department apparatus by way of access roadways, with an all-weather surface of not less than the prescribed width. The roadway shall be extended to within 150 feet of all portions of the exterior walls when measured by an unobstructed route around the exterior of the building.

Access roads shall be maintained with a minimum of ten (10) feet of brush clearance on each side. Fire access roads shall have an unobstructed vertical clearance clear-to-sky with the exception of protected tree species. Protected tree species overhanging fire access roads shall be maintained to provide a vertical clearance of 13 feet, 6 inches.

The maximum allowable grade shall not exceed 15% except where topography makes it impractical to keep within such grade; in such cases, an absolute maximum of 20% will be allowed for up to 150 feet in distance. The average maximum allowed grade including topographical difficulties shall be no more than 17%. Grade breaks shall not exceed 10% in ten (10) feet.

When involved with a subdivision in unincorporated areas within the County of Los Angeles Fire Department, requirements for access, fire flows and hydrants are addressed at the Los Angeles County Subdivision Committee meeting during the subdivision tentative map stage.

Fire sprinkler systems are required in some residential and most commercial occupancies. For those occupancies not requiring fire sprinkler systems, it is strongly suggested that fire sprinkler systems be installed. This will reduce potential fire and life losses. Systems are now technically and economically feasible for residential use.

INSTITUTIONAL:

The development may require fire flows up to 8,000 gallons per minute at 20 pounds per square inch residual pressure for up to a four-hour duration as outlined in the 2002 County of Los Angeles Fire Code Appendix III-AA. Final fire flows will be based on the size of buildings, their relationship to other structures, property lines, and types of construction used.

Fire hydrant spacing shall be based on fire flow requirements as outlined in the 2002 County of Los Angeles Fire Code Appendix III-BB. Additional hydrants will be required if hydrant spacing exceeds specified distances.

Turning radii shall not be less than 32 feet. This measurement shall be determined at the centerline of the road. A Fire Department approved turning area shall be provided for all driveways exceeding 150 feet in length and at the end of all cul-de-sacs.

All on-site driveways/roadways shall provide a minimum unobstructed width of 28 feet, clear-to-sky. The on-site driveway is to be within 150 feet of all portions of the exterior walls of the first story of any building. The centerline of the access driveway shall be located parallel to, and within 30 feet of an exterior wall on one side of the proposed structure. Driveway width for Institutional developments shall be increased when any of the following conditions will exist:

1. Provide 34 feet in width when parallel parking is allowed on one side of the access roadway/driveway. Preference is that such parking is not adjacent to the structure.
2. Provide 42 feet in width when parallel parking is allowed on each side of the access roadway/driveway.
3. Any access way less than 34 feet in width shall be labeled "Fire Lane" on the final recording map, and final building plans.
4. For streets or driveways with parking restrictions: The entrance to the street/driveway and intermittent spacing distances of 150 feet shall be posted with Fire Department approved signs stating "NO PARKING – FIRE LANE" in three-inch high letters. Driveway labeling is necessary to ensure access for Fire Department use.

HIGH-DENSITY RESIDENTIAL:

The development may require fire flows up to 5,000 gallons per minute at 20 pounds per square inch residual pressure for up to a five-hour duration. Final fire flows will be based on the size of the buildings, their relationship to other structures, property lines, and types of construction used. Fire hydrant spacing shall be 300 feet and shall meet the following requirements:

1. No portion of lot frontage shall be more than 200 feet via vehicular access from a public fire hydrant.

2. No portion of a building shall exceed 400 feet via vehicular access from a properly spaced fire hydrant.
3. When cul-de-sac depth exceeds 200 feet, hydrants will be required at the corner and mid-block.
4. Additional hydrants will be required if the hydrant spacing exceeds specified distances.

Turning radii shall not be less than 32 feet. This measurement shall be determined at the centerline of the road. A Fire Department approved turning area shall be provided for all driveways exceeding 150 feet in length and at the end of all cul-de-sacs. When serving land zoned for residential uses having a density of more than four (4) units per net acre:

1. A cul-de-sac shall be a minimum of 34 feet in width and shall not be more than 700 feet in length.
2. The length of the cul-de-sac may be increased to 1,000 feet if a minimum of 36 feet in width is provided.
3. A Fire Department approved turning area shall be provided at the end of a cul-de-sac.

All on-site driveways shall provide a minimum unobstructed width of 28 feet, clear-to-sky. The 28 feet width does not allow for parking, and shall be designated as a "Fire Lane," and have appropriate signage. The centerline of the on-site driveway shall be located parallel to and within 30 feet of an exterior wall on one side of the proposed structure. The on-site driveway is to be within 150 feet of all portions of the exterior walls of the first story of any building. The 28 feet in width shall be increased to:

1. Provide 34 feet in width when parallel parking is allowed on one side of the access way.
2. Provide 36 feet in width when parallel parking is allowed on both sides of the access way.
3. Any access way less than 34 feet in width shall be labeled "Fire Lane" on the final recording map, and final building plans.
4. For streets or driveways with parking restrictions: The entrance to the street/driveway and intermittent spacing distances of 150 feet shall be posted with Fire Department approved signs stating "NO PARKING – FIRE LANE" in three-inch high letters. Driveway labeling is necessary to ensure access for Fire Department use.

SINGLE-FAMILY/TWO-FAMILY DWELLING UNITS:

Single-family detached homes shall require a minimum fire flow of 1,250 gallons per minute at 20 pounds per square inch residual pressure for a two-hour duration. Two-family dwelling units (duplexes) shall require a fire flow of 1,500 gallons per minute at 20 pounds per square inch residual pressure for a two-hour duration. When there are five (5) or more units taking access on a single driveway, the minimum fire flow shall be increased to 1,500 gallons per minute at 20 pounds per square inch residual pressure for a two-hour duration. Fire hydrant spacing shall be 600 feet and shall meet the following requirements:

1. No portion of lot frontage shall be more than 450 feet via vehicular access from a public fire hydrant.
2. No portion of a structure should be placed on a lot where it exceeds 750 feet via vehicular access from a properly spaced public fire hydrant.
3. When cul-de-sac depth exceeds 450 feet on a residential street, hydrants shall be required at the corner and mid-block.
4. Additional hydrants will be required if hydrant spacing exceeds specified distances.

A Fire Department approved turning area shall be provided for all driveways exceeding 150 feet in length and at the end of all cul-de-sacs. Fire Department access shall provide a minimum unobstructed width of 28 feet, clear-to-sky and be within 150 feet of all portions of the exterior walls of the first story of any single unit. If exceeding 150 feet, provide 20 feet minimum paved width "Private Driveway/Fire Lane" clear-to-sky to within 150 feet of all portions of the exterior walls of the unit. Fire Lanes serving three (3) or more units shall be increased to 26 feet. Streets or driveways within the development shall be provided with the following:

1. Provide 36 feet in width on all streets where parking is allowed on both sides.
2. Provide 34 feet in width on cul-de-sacs up to 700 feet in length. This allows parking on both sides of the street.
3. Provide 36 feet in width on cul-de-sacs from 701 to 1,000 feet in length. This allows parking on both sides of the street.
4. For streets or driveways with parking restrictions: The entrance to the street/driveway and intermittent spacing distances of 150 feet shall be posted with Fire Department approved signs stating "NO PARKING – FIRE LANE" in three-inch high letters. Driveway labeling is necessary to ensure access for Fire Department use.
5. Turning radii shall not be less than 32 feet. This measurement shall be determined at the centerline of the road.

LIMITED ACCESS DEVICES (GATES, ETC.):

All access devices and gates for schools shall comply with California Code of Regulations, Title 19, Article 3.05 and Article 3.16. All access devices and gates for residential developments shall meet the following requirements:

1. Any single-gated opening used for ingress and egress shall be a minimum of 26 feet in width, clear-to-sky.
2. Any divided gate opening (when each gate is used for a single-direction of travel – i.e., ingress or egress) shall be a minimum width of 20 feet clear-to-sky.
3. Gates and/or control devices shall be positioned a minimum of 50 feet from a public right-of-way, and shall be provided with a turnaround having a minimum of 32 feet of turning radius. If an intercom system is used, the 50 feet shall be measured from the right-of-way to the intercom control device.
4. All limited access devices shall be of a type approved by the Fire Department.
5. Gate plans shall be submitted to the Fire Department prior to installation. These plans shall show all locations, widths and details of the proposed gates.

TRAFFIC CALMING MEASURES:

All proposals for traffic calming measures (speed humps/bumps/cushions, traffic circles, roundabouts, etc.) shall be submitted to the Fire Department for review prior to implementation. Should any questions arise regarding design and construction, and/or water and access, please contact Inspector Marvin Dorsey at (323) 890-4243.

FORESTRY DIVISION:

The statutory responsibilities of the County of Los Angeles Fire Department, Forestry Division include erosion control, watershed management, rare and endangered species, vegetation, fuel modification for Very High Fire Hazard Severity Zones or Fire Zone 4, archeological and cultural resources, and the County Oak Tree Ordinance.

Oak trees are known to exist in the proposed project area. Further field studies should be conducted to determine the presence of this species on the project site.

Under the Los Angeles County Oak Tree Ordinance, a permit is required to cut, destroy, remove, relocate, inflict damage or encroach into the protected zone of any tree of the Oak genus which is 25 inches or more in circumference (eight (8) inches in diameter), as measured 4 1/2 feet above mean natural grade. The applicant should incorporate innovative design to reduce or eliminate the impact to the Oak resources.

This property is located within the area described by the Forester and Fire Warden as a Very High Fire Hazard Severity Zone or Fire Zone 4. The development of this project must comply with all Very High Fire Hazard Severity Zone code and ordinance requirements for fuel modification.

As required by Section 1117.2.1 of the County of Los Angeles Fire Code, a fuel modification plan, a landscape plan, and an irrigation plan shall be submitted with any subdivision of land or prior to any new construction, remodeling, modification or reconstruction where such activities increase the square footage of the existing structure by at least 50% within a 12-month period and where said structure or subdivision is located within an area designated as a Very High Fire Hazard Severity Zone or within Fire Zone 4.

A fuel modification plan, a landscape plan, and an irrigation plan shall be developed and approved prior to construction. Said plans shall be reviewed and approved by the County of Los Angeles Fire Department, Forestry Division. Specific questions regarding fuel modification requirements should be directed to the Fuel Modification Office at (626) 969-5205.

This project will require an EIR fee deposit of $1,000 payable to the County of Los Angeles Fire Department at the time the DEIR is submitted for review. (See enclosed)

If you have any additional questions, please contact this office at (323) 890-4330.

Very truly yours,

David R. Leininger

DAVID R. LEININGER, CHIEF, FORESTRY DIVISION
PREVENTION BUREAU

DRL:sc

Enclosure

bc: Yocum/ERU, Division III, EIR #2088/Pac., Chalton/Saugus, Land Development, Planning, #219
(EIR #2088.b70)

LOS ANGELES COUNTY FIRE DEPARTMENT ENVIRONMENTAL REVIEW FEES & DEPOSITS

Effective September 11, 1991, whenever a review for impact on the fire prevention, natural resources, and/or fire resource allocation responsibilities of the Fire Department is required, as part of the environmental review process, the applicant shall pay a minimum deposit fee of $1,000 from which actual costs shall be billed and deducted. Additional deposits may have to be made if actual review costs exceed 80% of deposited funds. A larger deposit may be made for more complex projects to ensure prompt continuation of environmental review efforts. All unused funds shall be refunded to the applicant.

All Environmental Review Deposits should be made payable and sent to:

County of Los Angeles Fire Department
P.O. Box 910901
Commerce, CA 90091-0901
Attn: Financial Management Division

If you have any questions regarding the Environmental Review Fee or Deposit amount, please call the Forestry Division at (323) 890-4330.

If you have any questions regarding your Environmental Review Deposit status, please contact the Fiscal Services Division at (323) 838-2345.

California Regional Water Quality Control Board
Los Angeles Region
Over 51 Years Serving Coastal Los Angeles and Ventura Counties
Recipient of the 2001 *Environmental Leadership Award* from Keep California Beautiful

Terry Tamminen
Secretary for Environmental Protection

320 W. 4th Street, Suite 200, Los Angeles, California 90013
Phone (213) 576-6600 FAX (213) 576-6640 - Internet Address: http://www.swrcb.ca.gov/rwqcb4

Arnold Schwarzenegger
Governor

RECEIVED
JAN 3 2005

December 30, 2004

Hsiao-ching Chen
Los Angeles County Department of Regional Planning
320 W Temple St
Los Angeles, CA 90012

Dear Hsiao-ching Chen,

Re: CEQA Documentation for Project in the Santa Clara Watershed

Skyline Ranch Project, Project No. 03-075, Tract Map No. 060922
SCH #2004101090

We appreciate the opportunity to comment on the CEQA documentation for the above-mentioned project. For your information a list of permitting requirements and Regional Board Contacts is provided in Attachment A hereto.

The project site lies in the Santa Clara watershed that was listed as being impaired pursuant to Section 303 (d) of the Clean Water Act. Impairments listed in reaches downstream from the proposed project include nutrients and their effects, salts, coliform bacteria, and historic pesticides. The Los Angeles Regional Water Quality Control Board will be developing Total Maximum Daily Loads (TMDLs) for the watershed, but the proposed project is expected to proceed before applicable TMDLs are adopted. In the interim, the Regional Board must carefully evaluate the potential impacts of new projects that may discharge to impaired waterbodies.

Our review of your documentation shows that it does not include information on how this project will change the loading of these pollutants into the watershed. Please provide the following additional information for both the construction and operational phases of the project.

- For each constituent listed above, please provide an estimate of the concentration (ppb) and load (lbs/day) from non-point and point source discharges.

- Estimates of the amount of additional runoff generated by the project during wet and dry seasons.

- Estimate of the amount of increased or decreased percolation due to the project.

- Estimates of the net change in cubic feet per second of groundwater and surface water contributions under historic drought conditions (as compiled by local water purveyors, the Department of Water Resources, and others), and 10-year 50-year, and 100-year flood conditions.

The Upper Santa Clara River River has been subjected to significant urban development during the past 10 years. Unfortunately very little water quality data has been collected in this area, especially in comparison with data collected in the Lower Santa Clara River.

Additional water quality data are necessary to evaluate the cumulative impacts of past development and predict potential impacts of the subject project. Pollutants of concern include sediment, dissolved oxygen, pesticides, metals, and bioassessment.

If you have any questions please call me at (213) 576-6683.

Sincerely,

Elizabeth Erickson
Associate Geologist, TMDL Unit
Los Angeles Regional Water Quality Control Board

EE
Attachments (1)
cc:
State Clearinghouse
File

ATTACHMENT A

- ✓ If the proposed project will result in a **discharge of dredge or fill into a surface water** (including a dry streambed), and is subject to a **federal license or permit**, the project may require a *Section 401 Water Quality Certification*, or waiver of Waste Discharge Requirements. For further information, please contact:

  Valerie Carillo, Nonpoint Source Unit at (213) 576-6759.

- ✓ If the project involves **inland disposal of nonhazardous contaminated soils and materials**, the proposed project may be subject to *Waste Discharge Requirements*. For further information, please contact:

  Rodney Nelson, Landfills Unit, at (213) 620-6119

****

- ✓ If the overall project area is **larger than five acres**, the proposed project may be subject to the State *Board's General Construction Activity Storm Water Permit.* For further information, please contact:

  Tracy Woods, Statewide General Construction Activity Storm Water Permits at (213) 620-2095.

- ✓ If the project involves a facility that is proposing to discharge storm water associated with **industrial activity** (e.g., manufacturing, recycling and transportation facilities, etc.), the facility may be subject to the State Board's *General Industrial Activities Storm Water Permit.* For further information, please contact:

  Kristie Chung, Statewide General Industrial Storm Water Permits at (213) 620-2283.

- ✓ If the proposed project involves requirements for new development and construction pertaining to **municipal storm water programs**, please contact:

  Dan Radulescu, Municipal Storm Water Permits, Los Angeles County at (213) 620-2038;
  Jeff Mack, Municipal Storm Water Permits, Ventura County at (213) 620-2121.

- ✓ The proposed project also shall comply with the local regulations associated with the applicable **Regional Board stormwater permit**:

  Los Angeles County and Co-permittees:
  NPDES No. CAS614001
  Waste Discharge Requirements Order No. 96-054.

  Long Beach County and Co-permittees:
  NPDES CAS004003
  Waste Discharge Requirements Order No. 99-060.

  Ventura County and Co-permittees:
  NPDES No. CAS004002
  Waste Discharge Requirements Order No. 00-108.

****

- ✓ If the proposed project involves any construction and/or groundwater **dewatering to be discharged to surface waters**, the project may be subject to *NPDES/Waste Discharge Requirements*. For further information, please contact:

  Augustine Anijielo, General Permitting and Special Projects Unit at (213) 576-6657(All Region 4 Watersheds).

- ✓ If the proposed project involves any construction and/or groundwater **dewatering to be discharged to land or groundwater**, the project may be subject to *Waste Discharge Requirements*. For further information, please contact:

  Kwang-il Lee, Non-Chapter 15 Unit, at (213) 620-2269 (All Region 4 Watersheds).

Revised : March 11, 2004

County of Los Angeles Public Library
7400 East Imperial Hwy., P.O. Box 7011, Downey, CA 90241-7011
(562) 940-8461, TELEFAX (562) 803-3032

Library

MARGARET DONNELLAN TODD
COUNTY LIBRARIAN

February 25, 2005

RECEIVED
MAR 1 2005

TO: Hsiao-ching Chen
Los Angeles County Department of Regional Planning

FROM: Malou Rubio
Head, Staff Services

SUBJECT: **SKYLINE RANCH PROJECT**
PROJECT No. 04-075, TENTATIVE TRACT MAP No. 060922

This is in response to your request for information regarding the Draft Environmental Impact Report for the Skyline Ranch project. The Skyline Ranch project is located in the County Library's Developer Fee Planning Area 1 and is within the Canyon Country Jo Anne Darcy Library (Canyon Country Library) service area. The Canyon Country Library is located at 18601 Soledad Canyon Road. It is a 12,864 sq. ft. facility and has a current collection of 109,796 books and other materials.

Demand for library services is typically determined based on the size of the resident population. Increase in population results in a need for additional facility space and library items. The Library Capacity section of the Urban Services Analysis uses 2 volumes (items) per capita and 0.389 sq. ft. of facility space per capita. The current Public Library service level guidelines are 2.0 items per capita for new libraries (opening day collection), 2.75 items per capita for community libraries (built-out collection), and 0.5 sq. ft. of facility space per capita.

Using an average persons per household of 3.09, the proposed Skyline Ranch project would result in an estimated population increase of 4,150 (1,343 x 3.09). This projected population increase would generate a need for an additional 2,075 sq. ft. (4,150 x 0.5) of facility space and 11,413 books and other materials (4,150 x 2.75). Please revise the numbers in the EIR to reflect current service level guidelines.

The cumulative effect of new housing and infill development, such as the Skyline Ranch project, will have significant impact on the ability of the Canyon Country Library to serve existing and future population in the service area. This impact may be mitigated by payment of the County Library's developer fee. If the project is approved and built as described, it will result in a total of 1,343 dwelling units. The current County Library Developer Fee for Planning Area 1 is $677 per dwelling unit. This would result in a total fee obligation of $909,211 (1,343 x $677) at the current rate. The County Library Developer Fee is subject to an annual CPI adjustment, and the actual amount of the fee will be that in effect at the time the building permits for the project are issued. Therefore, the total fee obligation for this project may be higher.

If you have any questions or require additional information, please contact Malaisha Hughes at (562) 940-8455.

MR:MH:mh
U:\STAFFSERVICES\DEVELOPER FEE\EIR\Skyline Ranch-2.doc

c: David Flint, Assistant Director, Finance and Planning, Public Library

Serving the unincorporated areas of Los Angeles County and the cities of: Agoura Hills ▪ Artesia ▪ Avalon ▪ Baldwin Park ▪ Bell ▪ Bell Gardens ▪ Bellflower ▪ Bradbury ▪ Carson ▪ Claremont ▪ Compton ▪ Cudahy ▪ Culver City ▪ Diamond Bar ▪ Duarte ▪ El Monte ▪ Gardena ▪ Hawaiian Gardens ▪ Hawthorne ▪ Hermosa Beach ▪ Hidden Hills ▪ Huntington Park ▪ La Canada Flintridge ▪ La Habra Heights ▪ Lakewood ▪ La Mirada ▪ Lancaster ▪ La Puente ▪ La Verne ▪ Lawndale ▪ Lomita ▪ Lynwood ▪ Malibu ▪ Manhattan Beach ▪ Maywood ▪ Montebello ▪ Norwalk ▪ Paramount ▪ Pico Rivera ▪ Rosemead ▪ San Dimas ▪ San Fernando ▪ San Gabriel ▪ Santa Clarita ▪ South El Monte ▪ South Gate ▪ Temple City ▪ Walnut ▪ West Covina ▪ West Hollywood ▪ Westlake Village

Appendix B: Geotechnical Reports

Sheet 1 of 1

County of Los Angeles Department of Public Works
GEOTECHNICAL AND MATERIALS ENGINEERING DIVISION
GEOLOGIC REVIEW SHEET
900 So. Fremont Ave., Alhambra, CA 91803
TEL. (626) 458-4925

DISTRIBUTION
1 Geologist
_ Soils Engineer
1 GMED File
1 Subdivision

TENTATIVE TRACT MAP 60922
SUBDIVIDER Pardee Homes
ENGINEER Sikand
GEOLOGIST & SOILS ENGINEER Geolabs – Westlake Village

TENTATIVE MAP DATED 12/27/04 (Revised)
LOCATION Santa Clarita
REPORT DATE 1/3/05, 8/23/04, 3/6/04

[X] **TENTATIVE MAP FEASIBILITY IS RECOMMENDED FOR APPROVAL. PRIOR TO FILING THE FINAL LAND DIVISION MAP, THE FOLLOWING CONDITIONS MUST BE FULFILLED:**

[X] The final map must be approved by the Geology and Soils Sections to assure that all geotechnical (geology and soils) factors have been properly evaluated.

[X] A grading plan must be geotechnically approved by the Geology and Soils Sections. This grading plan must be based on a detailed engineering geology report and/or soils engineering report and show all recommendations submitted by them. It must also agree with the tentative map and conditions as approved by the Planning Commission. If the subdivision is to be recorded prior to the completion and acceptance of grading, corrective geologic bonds will be required.

[X] All geologic hazards associated with this proposed development must be eliminated,

or

delineate restricted use areas, approved by the consultant geologist and/or soils engineer, to the satisfaction of the Geology and Soils Sections, and dedicate to the County the right to prohibit the erection of buildings or other structures within the restricted use areas.

[ ] A statement entitled: "Geotechnical Note(s), Potential Building Site: For grading and corrective work requirements for access and building areas for Lot(s) No(s). __________ refer to the Soils Report(s) by __________ ,dated __________ ."

[X] The Soils Engineering review dated 2/22/05 is attached.

[X] **TENTATIVE MAP IS APPROVED FOR FEASIBILITY. THE FOLLOWING INFORMATION IS APPLICABLE TO THIS DIVISION OF LAND:**

[ ] This project may not qualify for a waiver of final map under section 21.48.140 of the Los Angeles County Title 21 Subdivision Code.

[ ] The subdivider is advised that approval of this division of land is contingent upon the installation and use of a sewer system.

[ ] A geology and/or soils engineering report may be required prior to approval of building or grading plans.

[X] Geotechnical Recordation Map verification deposit estimate 6 hours.

[ ] Groundwater is less than 10 feet from the ground surface on lots __________

Prepared by __________
Geir R. Mathisen

Reviewed by __________
Charles T. Nestle

Date 2/7/05

P:\Gmepub\Geology Review\Forms\Form02.doc
1/7/03

COUNTY OF LOS ANGELES
DEPARTMENT OF PUBLIC WORKS
GEOTECHNICAL AND MATERIALS ENGINEERING DIVISION

SOILS ENGINEERING REVIEW SHEET

Address: 900 S. Fremont Ave., Alhambra, CA 91803
Telephone: (626) 458-4925
Fax: (626) 458-4913

District Office 8.2
Job Number LX001129 & GMTR
Sheet 1 of 2

Review No. 2

Tentative Tract Map 60922
Location Santa Clarita
Developer/Owner Pardee Homes
Engineer/Architect Sikand
Soils Engineer Geolabs - Westlake Village
Geologist Same as above

DISTRIBUTION:
____ Drainage
____ Grading
____ Geo/Soils Central File
____ District Engineer
____ Geologist
____ Soils Engineer
____ Engineer/Architect

Review of:

Revised Tentative Tract Map Dated By Regional Planning 12/27/04
Soil Engineering and Geologic Report Dated 1/3/05, 8/23/04, 3/06/04

Previous review sheet dated 1/19/05

ACTION:

Tentative Map feasibility is recommended for approval.

REMARKS:

1. Provide a soils engineering report at the grading plan stage. The report must comply with the provisions of "**Manual for Preparation of Geotechnical Reports**" prepared by County of Los Angeles, Department of Public Works. The Manual is available on the Internet at the following address: ***http://ladpw.org/construction/manual.pdf***

2. Submit two sets of grading plans to the Soils Section for verification of compliance with County codes and policies.

NOTE(S) TO THE PLAN CHECKER/BUILDING AND SAFETY ENGINEER:

A. THE ON-SITE SOILS ARE SEVERELY CORROSIVE TO FERROUS METALS.
B. THE ON-SITE SOILS HAVE A MEDIUM EXPANSION POTENTIAL.
C. OFF-SITE GRADING IS RECOMMENED FOR THE REMOVAL AND RECOMPACTION OF LANDSLIDES QLS-9A, QLS-10, QLS-10A, L1, AND L17.

YOSHIYA MORISAKU
No. 67567
Exp. 6/30/05

Reviewed by Yoshiya Morisaku Date 2/23/05
Yoshiya Morisaku

NOTICE: **Public safety, relative to geotechnical subsurface exploration, shall be provided in accordance with current codes for excavations, inclusive of the Los Angeles County Code, Chapter 11.48, and the State of California, Title 8, Construction Safety Orders.**

P:\Yosh\60922TentTd

Geotechnical Investigation of Vesting Tentative Tract No. 060922, Skyline Ranch, Santa Clarita Area, County of Los Angeles, California

W.O. 8838

March 6, 2004

Geolabs-Westlake Village

GEOLABS-WESTLAKE VILLAGE
Foundation and Soils Engineering, Geology
31119 Via Colinas, Suite 502 • Westlake Village, CA 91362
Voice: (818) 889-2562 (805) 495-2197
Fax: (818) 889-2995 (805) 379-2603

a dba of
R & R Services
Corporation

March 6, 2004
W.O. 8838

Pardee Homes
1320 Flynn Road, Suite 100
Camarillo, California

Attention: Mr. Wade Lewis

SUBJECT: Geotechnical Investigation of Vesting Tentative Tract No. 060922, Skyline Ranch, Santa Clarita Area, County of Los Angeles, California

Gentlemen;

We present herein our findings from our geotechnical investigation of Vesting Tentative Tract No. 060922, Skyline Ranch in the Whites Canyon area of the Santa Clarita Valley. The purpose of our investigation was to identify the major geologic and geotechnical elements of the site which might impact the proposed development.

The scope of work included the following: review of aerial photographs and published geological maps covering the site, review of consultant's reports for adjacent properties which were readily available to our office, geologic mapping of the site, the recent drilling and sampling of twenty-two large-diameter bucket-auger borings, advancement of five continuously-cored borings within areas of deep cut and conglomerate-rich bedrock formations, excavation and logging of sixteen exploratory test pits, laboratory testing of selected samples, soils engineering analyses, and preparation of this report. In addition, subsurface data from our previous geotechnical investigations of the Monarch Hills property (Geolabs-Westlake Village, 1997) and our due diligence study of the Skyline Ranch property (GWV, 2002) are included herein.

SITE LOCATION

The subject property is located in northern Santa Clarita Valley, west of Sierra Highway and southeast of the Plum Canyon residential development. The site is best accessed from its westerly boundary, via basins at the terminus of Canyon Crest Drive or Falcon Crest Court within the Tr. 46626 (recently constructed by Richmond American Homes). Both points of entry provide access to a dirt access road which climbs a north-trending ridgeline. This access road eventually heads in a northeasterly direction and climbs along the east-west trending ridgeline which separates the Plum Canyon drainage to the north with that of Whites Canyon (and the proposed development footprint) to the south.

The current City of Santa Clarita boundary traverses the westerly and southerly boundary of the site. Tract No. 46626 (directly to the west) was recently developed by Richmond American Homes). The Plum Canyon Development of S&S Construction is located to the northwest.

Evidence of prior use of the site is minimal. Small residential structures were present in the southwest corner of the site (in the Sherburne parcel) but have since been demolished. We surmise that these structures were serviced by on-site sewage disposal systems comprised of either leach fields or seepage pits. No evidence of either feature was observed in our site visit to this locality. Review of the references available to our office do not indicate the presence of any oil wells on the site. However, two drilling pads were observed in the vicinity of Cross Section G-G'. We believe this to be the locations of either geotechnical, water, or oil well exploratory borings.

SITE TOPOGRAPHY

The enclosed Geologic Map was prepared at a scale of 1"=200' utilizing the Tentative Tract Map and topography prepared by Sikand Engineering (see Plate 1.2). A Geologic Map without the proposed development enclosed as Plate 1.4 for easier review of the topography, geologic conditions, and exploratory findings.

The subject property is dominated by a broad east-west trending ridge located between Plum Canyon to the north and Whites Canon to the south. The northerly tract line traverses the numerous rounded peaks and saddles of this ridgeline. The northerly flank of this ridge is moderately to steeply incised, with slopes averaging 250 feet in height from the ridgetop to Plum Canyon below.

The southerly flank of the ridge is notably more subdued, with numerous southerly to southwesterly draining canyons, typically paralleling the rounded ridgespurs. The higher portions of these ridgespurs which exhibit the subdued, rounded topographic expression appear to represent an older erosional surface. Examples of similar ancient land forms are have been noted in the immediate vicinity and include Mystery (Cruzan) Mesa to the northeast. These ancient land form surfaces may correlate to broad, elevated erosional surfaces along the west-side of Bouquet Canyon (located west of Mystery Mesa) and the subject property.

The lower portions of the site, such as the canyon bottoms along the Whites Canyon drainage exhibit steeper, more rugged terrain indicative of recent and active erosional processes (stream rejuvenation). Total relief from the major ridgeline to the lower reaches of Whites Canyon is on the order of 650 feet.

Geologic influences on topography are evident in some portions of the site in the form of strike ridges (ridgelines conforming to the strike of hard, resistant beds), topographic reversals associated with landsliding, and geologic contacts.

PROPOSED GRADING

The 1"=200' scale Tentative Tract Map prepared by Sikand Engineering proposed the development of the site for 1340± single family residences, associated streets, three park sites, and two water reservoir pads (at elevations 2,215 and 1,927 feet). The proposed Whites Canyon

Highway will provide access to the site, in addition to connecting Sierra Highway to Plum Canyon Road. Whites Canyon Highway will consist of four lanes with a center greenbelt/meridian, and enhanced intersections.

Fill slopes are proposed around the westerly and southerly portions of the site, while the major perimeter cut slopes would be constructed along the easterly and northerly ridgelines. The upper reaches of Whites Canyon shall be filled, enhancing the site stability.

Fill slopes are planned at gradients of 2:1 or flatter, to a maximum height of 200 feet (See Cross Section S-S'). The maximum depth of fill is anticipated to be on the order of 140 feet following alluvial removals within Whites Canyon.

Cut slopes are also planned at a gradient of 2:1 or flatter to maximum height of 210 feet (see Cross Section P-P'). The maximum depth of planned cut approaches 200 feet as illustrated in Cross Section P-P'.

PREVIOUS EXPLORATION AND STUDIES

Previous exploration was performed by our office in 1995 in the southeasterly portion of the site. A total of twelve bucket-auger borings (see Plates B1(1995) through B12(1995) were drilled, along with the excavation and logging of twenty-three test pits (see Plates T1-T23).

The adjacent Tr. 46626 was investigated by Pacific Soils Eng. and Geosoils. Pertinent data (boring B-115 and in-grading attitudes) from their reports are included on the Geologic Map. Data from the Plum Canyon development in the northwesterly portion of the site is somewhat sparse since that development is primarily north and west of Plum Canyon Road.

EARTH MATERIALS

Through the course of our investigation, the following earth materials have been mapped at the subject site:

Engineered Fill

Engineered fill placed for Tr. 46626 and under the observation of Geosoils, Inc. is located west of Skyline Ranch. Engineered fill placed for a buttress fill/landslide removal may extend on-site within northerly trending ridgeline which separates the Skyline Ranch from Tr. 46626.

Artificial Fill

Localized undocumented fills were observed in association with existing dozer roads, and abandoned house site in the southwest corner of the site. Field observations indicate that these soils are typically less than five feet in thickness. Similarly, minor dozer road fill and pads constructed by our office for this investigation are similarly thin. Such materials will require removal in conjunction with the grading of the site.

Alluvial Deposits

These soils have been mapped within the major of canyon bottoms which traverse the site. In general, these materials consist of interbedded sand, gravel, cobbles, and boulders with only sparse to minor silt and clay content. A notable concentration of oversize boulders were noted within the vast majority of canyons (ranging from 12" to 6 feet in diameter). These boulders are typically subangular to subrounded, crystalline, and very hard (granitic or gneissic composition).

Based on field observations and exploratory test pits, we anticipate these soils to be unconsolidated and thus require removal and recompaction within areas to receive engineered fill. We anticipate the oversize rock to create some difficult excavation conditions.

The depth of these materials within the smaller southerly-draining canyon was found to be relatively thin (less than 10 feet). Bedrock outcroppings were observed along many of the canyon bottoms. However, we anticipate canyon cleanouts to be relatively steep and narrow ("V-shaped") with buried canyon walls continuing at gradients similar to (2:1 to 1:1) the exposed canyon slopes.

Exploration within canyon bottoms was somewhat difficult in light of the abundance of large boulders.

Within Whites Canyon, the alluvial deposits are very coarse-grained, consisting of gravels, cobbles, and boulders within a poorly sorted sand matrix. Deposits may also be clast-supported (i.e. boulders and cobbles in contact with one another). Due to environmental concerns and difficult access conditions, exploration with Whites Canyon was not feasible at the time of our site investigation. Access to the canyon bottom would have required extensive dozer work which was determined inappropriate at this time by the project environmental consultant. The depth of these alluvial soils is anticipated approach or exceed 40 feet.

Colluvial/Slopewash Deposits

Colluvial and slopewash deposits have been observed within the smaller tributary canyons. Due to the localized nature of these materials, we have not mapped them at the scale of 1"=200'. These soils are generally located in the subdued topography and are generated from the weathering of the underlying formations as well as from down-slope creep processes. Findings from our exploratory test pits indicate that these materials are typically less than 5 feet in thickness and consist of gravelly to cobble-rich silty and clayey sands in a dry and slightly loose to slightly dense condition. These materials are not considered suitable to remain in areas to receive fills and are recommended for removal during the grading of the site.

Landslide Debris

Numerous landslides have been identified on the site on the basis of field observations, aerial photo review, and topographic expression. These materials will require complete removal due to their potential compressibility, hydroconsolidation, and/or to provide satisfactory slope stability conditions.

The largest landslides observed appear to have failed in the direction of the prevailing dip of the Saugus Formation. Such landslides were likely triggered by the undermining of westerly-facing natural slopes within canyons.

Additional discussion with respect to landsliding and slope stability is provided later in this report.

Terrace Deposits

Terrace deposits have been mapped adjacent to Whites Canyon, locally capping the relatively flatter portions of the higher terrain. Based on the test pits excavated on the Monarch Hills property, these remnant deposits generally consist of reddish brown clayey sand to silty sand with occasional lenses of gravels and cobbles. Their depths typically range from ten to fifteen feet. The vast majority of these materials shall be removed by the planned cut.

Saugus Formation

The majority of the site is underlain by the Quaternary-age Saugus Formation, which is comprised of poorly lithified, nonmarine sandstone and conglomerate. The lowermost 20 to 50 feet of this formation typically consists of a massively-bedded cobble to boulder conglomerate which is exposed along White Canyon and in its tributary canyons. Some regional geologic maps have differentiated this lithologic section from the overlying section which contains less conglomerate.

Lesser sandy siltstone and red sandy claystone (possibly paleosols) have been observed in outcrop and borings in the westerly portion of the site which corresponds to the upper (younger) portion of the formation. These units appear poorly to massively bedded and in a dense condition. The red clayey beds encountered in this formation typically require removal and recompaction where exposed at grade due to their expansion potential. These beds also strongly influence the site stability on account of their lower shear strength.

Mint Canyon Formation

The Miocene-age Mint Canyon Formation exposed on the project site is primarily comprised of nonmarine sandstone and conglomerate with poor to moderate cementation. The conglomerate units are typically massively bedded but occasionally well-defined bedding can be observed within the finer-grained sandstone sections.

The upper portion of this formation consists of a white, light grey, or greenish grey conglomerate which is commonly discernible from the overlying light orangish brown to tan Saugus Formation basal conglomerate. In addition, the conglomerates and sandstones of the Mint Canyon Formation typically exhibit better sorting and less silt and clay content that those of the Saugus Formation. Fine grained siltstone and claystone within the Mint Canyon Formation are relatively rare on the subject tract. Unoxidized materials were not encountered in our deep borings.

GEOLOGIC STRUCTURE

Regional geologic maps of the Mint Canyon Quadrangle (Dibblee, 1996 and Yerkes, 1996) indicate that bedding of both the Saugus and Mint Canyon formations dip gently to the west and southwest. Data obtained during the course of our investigation agree with this generalization of the geologic structure.

The Saugus Fm.-Mint Canyon Fm. contact observed within numerous canyon bottoms and sides indicates an overall shallow westerly to southwesterly dip for the formational contact. Internal bedding of the Saugus Formation yields dip directions ranging from due south to due west, with dip angles typically between 0 (horizontal bedding) to 10 degrees. Variations in dip direction and inclination are attributed to localized structural variations, cross-bedding, and channelization within the formation. The basal portion of the Saugus Formation is typically comprised of a massively-bedded cobble to boulder conglomerate, particularly in the easterly portion of the site. Overall, the

Saugus Formation exhibits a slight fining of lithologies moving east to west across the site, which corresponds with increasing exposure of higher stratigraphic horizons of the formation.

The Mint Canyon Formation, in general, yields slightly steeper dips on average (typically between 10 and 25 degrees), with prevailing westerly dip directions.

A broad westerly-plunging syncline has been mapped across the site by Dibblee (1996). Data obtained by our investigation confirms the westerly-dipping structure but does not conform well to this feature interpreted by Dibblee (1996).

LANDSLIDING AND SLOPE STABILITY

As part of our investigation, numerous regional maps were reviewed for the determination of previously mapped landslides. One of these maps, presented in the Seismic Evaluation Report of the Mint Canyon 7.5-Minute Quadrangle (CDMG, 1998) indicated the presence of large-scale landsliding within the westerly half of the subject property. This map is reproduced herein as Plate 1.4. Such large-scale landsliding has been documented in the immediate vicinity of Santa Clarita (Plum Canyon and Shangri-La landslide complexes). Review of 1 inch = 2000 feet scale topographic maps and aerial photographs render some topographic expressions and geomorphic features suggestive of such a large-scale landslide(s). In addition, the direction of landsliding (to southwest) conforms with much of the prevailing dip direction of the Saugus Formation. A primary objective of our drilling B1 through B8 in 2002 was to determine the presence or absence of such large-scale landslides which might complicate the development of the site.

Aerial Photo Review

Aerial photographs were obtained and reviewed in order to discern the extent of landsliding on the site. Numerous small to moderate size landslides were identified on the aerial photographs and similarly supported by field observations and their geomorphic expression in the 1"=200' scale topographic map. The majority of these landslides appear to have failed in the direction of the prevailing dip of the Saugus Formation. Such landslides were likely triggered by the undermining of westerly-facing natural slopes within canyons which led to daylighted bedding conditions. Due to the generally shallow dips, some of the landslides may have failed in a rotational fashion, as large-scale slumps. The scarps of the larger landslides are commonly healed and appear to have been infilled with slopewash, but topographic breaks or benches at the heads of the landslides remain discernible.

The 1"=2000' scale topography of the westerly and southwesterly portion of the site displays numerous saddles, locally irregular drainages alignments, and large-scale hummocky-like topography. Explanation of such features are commonly attributed to large-scale landsliding or alternatively, a combination of small-scale landslides and geomorphic expression of the underlying geologic structure.

Review of Regional Maps and Geologic Mapping

Regional Geologic Maps with coverage of the site were reviewed as part of our landslide investigation. Only the Seismic Evaluation Report of the Mint Canyon 7.5-Minute Quadrangle (CDMG, 1998) contains the postulated large-scale landslide. Maps prepared by Dibblee (1996), and Yerkes (1996), and Larson (1990) do not display such large-scale landsliding. Rather, they indicate smaller landslides.

These later three referenced geologic maps present the geologic contact between the Saugus Formation and underlying Mint Canyon Formation along numerous canyon walls of the site. This contact was similarly observed and mapped by our office during the course of our fieldwork. No indication of displacement by a large-scale landslide (of the contact or internally bedding of each formation) was observed.

Subsurface Borings

Six large diameter bucket-auger borings were drilled in 2002 in order to further our understanding of the site conditions. Minor dozer work was performed to improve existing dirt roads and to create level drilling pads. Borings were located within areas of suspicious topography in relation to the early hypothesis of large-scale landsliding. In addition, care was exercised to locate borings along canyon sides or bottoms to minimize the depth of drilling to penetrate any deep-seated slideplane. These borings were downhole-logged by our geologist (or by BIPS camera logging) for observation of the stratigraphy and geologic structure.

As described in the attached boring logs, drilling conditions were very difficult on account of the abundance of conglomerate beds requiring coring. In particular, conglomerate beds of the Mint Canyon Formation were difficult to penetrate on account of the large crystalline boulders and cobbles, and the localized cementation of the matrix in the conglomerates. Refusal was encountered in all of the bucket-auger borings prior to the intended depth of exploration. In the case of Boring 3, over 30 hours of coring was performed to advance the hole from 40 to 70 feet in depth.

Boring data from Borings 2 and 3 provided additional control on the Saugus-Mint Canyon Fm. contact, supporting the southwesterly dip indicated from field mapping and regional geologic maps. Furthermore, these borings were located in an area of suspected large-scale landsliding. No evidence of landsliding was observed in the borings; bedrock units were observed to be notably hard, very dense, and undisturbed. No fine-grained lithologies (siltstone or claystone) were observed.

Evidence of landsliding such as disaggregated bedrock, extensive weathering or fracturing, or slideplanes, were not observed within any of these bucket-auger borings.

Continuous-Core Borings and BIPS Logging

Due to the difficulty encountered in the advancement of the bucket-auger borings and the limited depth capability of the downhole-logging, a second episode of exploration was performed in 2002 with a Boyles-37 four-wheel drive HQ-HX coring rig. Upon completion of these borings (Borings 7 and 8), the BIPS system (Borehole Image Processing System) was utilized to log the interior of the boring for the recordation of geologic data such as strike and dip of bedding, joints, and shears, and lithology. This data complements the rock cores recovered, and provides a means of structural data acquisition as well as documenting zones where core recovery is poor.

Raw data in the form of a VHS format videotape of the boring was processed by Layne-Christiensen Drilling Company for determination of the structural data. As indicated in the enclosed boring logs and JPG files for B7 and B8 (See CD1), the materials encountered were entirely coarse-grained (sandstone and conglomerate). Structural data interpreted by Layne Christiansen is provided after each boring log. Strike orientation was corrected by our office from magnetic north to true north (14 degree declination correction). The features from which these attitudes were obtained were then reviewed to determine if they consisted of bedding planes, fractures, shears, or faults. Numerous attitudes were based on the tops or bottoms of cobbles or boulders and thus not considered representative of bedding. Ultimately, the data plotted and added to the boring logs (Plates B7 & B8) include that structural data which was considered most representative of bedding and fracture planes observed in the log images. This process was also performed for the more recently drilled B17, B18, and B20 which were logged by a downhole camera.

These deep borings provided the following critical pieces of data: (1) the lack of deep-seated landsliding via direct observation of the lack of landslide planes, (2) the lack of any landslide-related disturbance such as open fractures or disaggregated bedrock, and (3) confirmation of the lack of fine-grained beds within the southerly portion of the site which might impact the stability of the site with respect to the Whites Canyon drainage, and (4) additional control on the Saugus Fm./Mint Canyon Fm. geologic contact.

Mitigation of Small and Moderate-Level Landslides

A total of 25 landslides have been identified within VITM 060922 and four additional landslides have been mapped by Leighton (1999) in the vicinity of Whites Canyon Highway connection to Plum Canyon (Leighton Qls-9, Qls-9a, Qls-10, and Qls-10a). A brief description and discussion for these features are provided herein, along with their proposed mitigation measures (as warranted).

Landslide L1

Landslide L1 consists of a rotational failure within the Saugus Formation. A basin was constructed down-canyon as part of its mitigation with respect to Tr. 46626. Since the proposed Whites Canyon Hwy. alignment traverses this feature, it will require removal and recompaction in its entirety. The sloping portion above Whites Canyon Hwy (and outside of the planned graded slope) should be rebuilt at 2:1 or flatter.

Landslide L2

This landslide has a relatively well defined headscarp and bench at its head, while its lower surface has experienced variable incision. Boring 26 encountered a reddish brown clay at 31 feet in depth which has been interpreted as the basal landslide plane. This landslide failed in a southeasterly direction, opposite to the direction of the prevailing structure. However, southeasterly dips were recorded at depth within B26, indicating that the mode of failure was translational. Most of this landslide shall be removed by the planned cut. Remaining portions should be removed to competent bedrock.

Landslides L3, L4, L5, L6

These small landslides exhibit numerous features suggestive of recent failure such as tension cracks, poorly vegetated scarps, and obstructed drainages along their toes. These landslides should be removed and recompacted in their entirety during the grading of the site.

Landslides L7 and L8

These landslides failed in a northwesterly-direction into a steeply-incised canyon. Boring 27 encountered a landslide plane at 21.5 feet, with a southwesterly dip, indicating that their failure was in part translational. The majority of these landslides are to be removed by the planned cut; remaining portions should be removed and recompacted to competent bedrock.

Landslide L9

This landslide is located at the far northerly portion of the site (outside of the development footprint) and fails to the northwest across the tract boundary. Review of aerial photographs and the topography exhibit a broad, flat head area and steeply-incised canyon along its toe. The portion of L9 within the subject tract shall require placement in a Restricted Use Area.

Landslide L10, L11, L12, L13, and L14

These landslides have been mapped on the basis of mild topographic and field expression, and our review of available aerial photography. The prevailing westerly dip of the Saugus Formation further supports their presence. The planned grading calls for the vast majority of these features to be removed by the planned cut. Remaining portions should be removed to competent bedrock and replaced with engineered fill. Further exploration at the 1"=40' scale grading plan stage of these features is warranted to conclusively determine their presence.

Landslides L15, L16, and L20

These small landslides fail into canyons along their toes. They should be removed and recompacted to competent bedrock during the grading of the site.

Landslides L17 and L23

These features consist of relatively thin failures within the southeasterly canyon wall of Whites Canyon. They should be removed and recompacted to competent bedrock during the grading of the site. The planned development calls for deep engineered fill at their locations.

Landslides L18 and L19

Landslides L18 and L19 consist of thin deposits of slopewash which have accumulated on the flank of the steep westerly canyon wall of Whites Canyon. They have been mapped as landslides on account of their current surficial instability. These features shall be mitigated through removal and recompaction to competent bedrock.

Landslides L21 and L22

These two queried landslides are located outside of the limits of proposed development. Field observations of the morphology of this north-facing slope is obscured by dense vegetation. However, aerial photographs and the topography is suggestive of thin slumping, likely within the outer slopewash and weathered bedrock materials within the oversteepened natural slope. Slope stability analyses along R-R' assume the absence (i.e. failure) of L22 to establish a preliminary slope setback of 50 feet. Landslides L22 and the portion of L21 within the tract boundary should be placed in Restricted Use Areas.

Landslide L24 and L25

Portions of these small landslides that are not removed by the planned cut should be removed and recompacted to bedrock.

Offsite Landslides at Whites Canyon Highway and Plum Canyon Road

Four landslides have been identified by Leighton (1999) near the proposed connection of Whites Canyon Highway to Plum Canyon Road. Of these four, we anticipate Qls-10a to require complete removal and recompaction. Landslide Qls-10 will likely require partial removal and recompaction. Landslides Qls-9 and Qls-9a do not impact the road alignment on account of their distant location.

GROUNDWATER

Groundwater seepage within the hillside terrain was notably absent within the numerous bucket-auger borings. One exception was Boring 4, located within a small canyon tributary in the southerly portion of the site. This groundwater occurrence consisted of slow but steady seepage from sandstone and conglomeratic bedrock, at elevation 1655' (below the elevation of the canyon axis).

Within the deeper cored borings, groundwater was artificially elevated at the conclusion of drilling on account of the use of drilling mud. Hence, determination of the naturally occurring groundwater required selected borings to remain open until static groundwater conditions were established.

Groundwater was recorded at a depth of 169.5 feet in Boring 7 (approx. elev. 1790'), roughly 10.5 feet above the boring bottom.

Within Boring 8, groundwater remained at a depth of 120 feet (approx. elev.1434') roughly 3 weeks after its drilling. This elevation corresponds to the elevation of Whites Canyon stream bed to the south.

Within B17 and B18, the water levels dropped to the bottom of the cored boring within the weeks following their drilling. B22 experienced a similar rapid drop following after its completion. Hence, we do not consider groundwater present to the depths of exploration at those locations.

In summary, groundwater within the hillside terrain is at such depth that it is not anticipated to impact the proposed development.

Canyon Areas

Exploration within the floor of Whites Canyon and other major canyons on the site was impeded by environmental and property line constraints. We anticipate groundwater to be present in an unconfined condition within the deeper alluvial deposits of Whites Canyon. Further explanation in these areas is warranted at the 1"=40' scale grading plan stage or as soon as environmental issues allow the necessary dozer work in these areas.

LIQUEFACTION AND RELATED SEISMIC HAZARDS

Portions of Whites Canyon and a tributary canyon which extends on-site have been delineated as Seismic Hazard Zones where liquefaction hazards may exist according to the Official Map of Seismic Hazards for the Mint Canyon Quadrangle. These canyons contain very coarse-grained alluvial deposits in a generally matrix-supported condition. We anticipate groundwater to be present at depth, near the alluvial-bedrock contact. Mitigation of the liquefaction hazards for such materials is most commonly addressed by the removal and recompaction of the alluvial materials. We anticipate this to be necessary where the proposed development traverses these canyons. Consideration of the removal and recompaction of these deposits, and the notable depth of planned fill (over 50 feet in most cases), renders the potential for liquefaction to occur at the site as very low and not a constraint to the development.

Exploration with Whites Canyon should be performed to determine depths of removal upon notice from the project environmental consultant that necessary dozer work (to obtain access from hillside terrain) is permissible.

Dry Seismic Settlement

During seismic groundshaking, seismically induced settlement can occur. The estimation of the potential seismic settlement is divided into two separate causative mechanisms. The settlement of coarse grained soils above the groundwater table is assumed to be related primarily to groundshaking adjusting the coarse grained soils into a tighter packing configuration. The seismic settlement below the groundwater is assumed to be related to pore pressure changes during liquefaction. Since surficial materials of low relative density (such as alluvial, colluvial, landslide debris, and terrace deposits) are anticipated to be removed during the grading of the site, the potential for dry seismic settlement to impact the site is considered very low.

Tsunamis and Seiches

Review of the site's location in elevated terrain, the potential for tsunamis and seiches to impact the site is considered negligible.

HYDROCONSOLIDATION POTENTIAL

Hydroconsolidation is a condition where dry or moist soils undergo settlement upon being wetted. In many cases no additional surcharge load is necessary to trigger the hydroconsolidation.

The potential for hydroconsolidation has been evaluated based upon the results of consolidation tests performed on samples taken from the excavated borings, and from our observations of the density of the materials encountered. Consolidation testing performed on bedrock formations indicate that they are not susceptible to hydroconsolidation on account of their high density and lithified state. The very minor collapse (typically <0.5%) observed in such tests is attributed to sampling and handling disturbance.

Consolidation testing from samples of alluvium on the Sierra Highway portion of the site indicate that alluvial soils are susceptible to hydroconsolidation and should be removed in areas of proposed improvements. Sampling of the alluvial deposits in the remaining portions of the site was impeded by: (1) the notable coarseness of the deposits (cobble and boulder-rich) and (2) impeded access for exploratory excavation due to environmental concerns. Based on our experience, we anticipate alluvial deposits in the tributary drainages to be relatively thin and requiring removal and recompaction. Within Whites Canyon, alluvial deposits are notably coarse, consisting essentially of lag deposits of cobbles and boulders with a poorly-sorted sand matrix. Due to the notable depth of planned fill, these materials should be removed and replaced within engineered fill, thus mitigating their potential for hydroconsolidation.

Consolidation testing and subsurface observations of terrace deposits, colluvium, and slopewash on the site indicate that these materials have a potential for hydroconsolidation. These materials should be removed and recompacted to bedrock within areas of planned development. Much of these materials will be removed by the planned cuts.

FAULTING AND SEISMICITY

The subject site contains no known active or potentially active faults, nor is it within an Alquist-Priolo Fault Rupture Hazard Zone. Therefore, the potential for ground rupture is considered to be very low. However, the property is situated within the seismically active Southern California region and ground shaking is likely to occur due to earthquakes caused by movement along nearby faults.

One method of seismic design is to utilize the Static Force procedure (structures less than five stories) presented in the Uniform Building Code (UBC), which can be used to estimate base shear/on-site acceleration based upon site location, occupancy classifications, and the planned structural system. The program UBCSEIS (Blake) was utilized to determine appropriate design parameters (See Appendix A).

For the 1997 UBC this site has a Seismic Zone Factor, Z of 0.4 (Tbl 16-I), the Soil Profile Type is considered S_D (Tbl 16-J) on account of the numerous deep fills anticipated. The Seismic Source Type is considered B (Tbl 16-U), and the Near Source Factors are estimated as N_a of 1.0 and N_v of 1.2 (Tbl 16-S & 16-T). The nearest Type B fault is the Sierra Madre (San Fernando) fault, located approximately 6.2 kilometers to the south. The San Gabriel fault, another Type B fault, is located approximately 6.8 kilometers from the site. The nearest Type A fault is the San Andreas fault, located roughly 23 kilometers away.

Another method of seismic design is to assess the potential on-site ground acceleration based upon a site's proximity to specific, known faults. This relies upon prediction of a maximum earthquake for each fault considered, relationships which characterize the diminution of ground response with distance from the causative event, and relationships which assess impact of site-characteristics upon ground response. One commonly used method of estimating possible on-site accelerations is the probabilistic seismic hazard analysis.

Probabilistic Analysis - Simplified Prescribed Parameter Value

We have employed the Simplified Prescribed Parameter Value Method for the estimation of peak ground acceleration during a design level seismic event (10% probability of occurrence in 50 years, per 1997 UBC). Figures presented in the Seismic Hazard Evaluation Report of the Mint Canyon 7.5' Quadrangle were reviewed for the selection of peak ground acceleration and magnitude. Based on the referenced document, a peak ground acceleration of 0.58g is anticipated the subject property (for a soft rock condition), with a predominant earthquake magnitude of M=6.6, for a design level event. Copies of Figures 1.2 and 1.3 from the Seismic Hazard Evaluation Report are provided in Appendix A.

Seismic Discussion

The methodology in the Uniform Building Code intends to protect and preserve life and limb. It has, apparently, been successful in that regard. On that basis, we recommend minimum structural design be in compliance with the seismic design provisions of the UBC. Design per the UBC (and hence adoption of the philosophy that life and limb need be protected) is commensurate with the local building ordinance. Being that higher standards of design (i.e. that intend to minimize property damage in the case of a much less likely event) have not been adopted by the governing agency (which is responsible for setting such standards), use of a higher acceleration (than provided by the UBC) is discretionary.

LABORATORY TESTING

Undisturbed and bulk samples of soil and rock materials encountered at the site were collected during the course of our field work. Selected laboratory tests completed on the retrieved samples are described below:

Moisture-Density

The field moisture content and dry unit weight were determined for each undisturbed sample. Dry unit weight is expressed in pounds per cubic foot and the moisture content represents a percentage of the dry unit weight. This test data is presented on the boring logs.

Shear Test

Shear tests were performed in a Direct Shear Machine of the strain control type. The rate of deformation is approximately 0.01 inches per minute. Selected samples, as noted in the shear test diagram, were sheared at reduced rates of deformation. Shearing occurred under a variety of confining loads in order to determine the Coulomb shear strength parameters. The test was performed on undisturbed and remolded (@ 90% relative compaction) samples in an artificially saturated condition. The test results are presented in Appendix B.

Consolidation Test

Settlement predictions of the soil's behavior under load are made on the basis of consolidation tests. A one inch high sample is loaded in a geometric progression and the resulting deformation is recorded at selected time intervals. Porous stones are placed in contact with the sample (top and bottom) to permit addition and release of pore fluid. The sample is inundated at a selected load (typically near overburden pressure) during the progression. Results are plotted on the enclosed Consolidation-Pressure Curves included in Appendix C.

Compaction and Expansion Tests

To determine the compaction characteristics of the onsite materials, compaction tests are performed in accordance with ASTM D 1557-00. The maximum dry density is reported in pounds per cubic foot and the optimum moisture content as a percentage of the maximum dry density. Expansion index tests were performed in accordance with the criteria in U.B.C. 18-2. The results of these tests are included in Table I.

Table I - Laboratory Test Data

Sample	Description	Maximum Dry Density PCF	Optimum Moisture Content %	Expansion Index
B2@11-15'	Tan silty SAND (Saugus Fm.)	134	8	6
B3@5'	Tan clayey silty SAND (Saugus Fm.)	127	9	0
B3@38'	Lt. gray silty SAND w/ grave. (Mint Cyn.Fm.)	132	10	0
B9@15'	Lt. brown sandy SILT	124	11	19
B10@20'	Tan clayey med-cs SAND w/ gravel	137	7	4
B16@60'	Dark red sandy CLAY (TQs)			56
B19@15'	Tan silty f-cs SAND w/ gravel	128	10	10
B1(1995)@15'	Gray silty SAND w/ gravel	133	7	
B1(1995)@35'	Lt gray silty med-cs SAND	131	9	
B1(1995)@72'	Lt. gray clayey silty SAND	125	10	
B11(1995)@40'	Lt. gray clayey SAND	130	10	
T3@1.5'	Brown clayey silty f-med. SAND	126	9.5	

Atterburg Limits and Sieve Analyses

Selected fine-grained samples were subject to particle-size analyses, hydrometer analyses, and Atterburg Limit testing. The results of this testing is presented in the following table.

Sample	Liquid Limit	Plastic Limit	Plasticity Index	% Clay (passing 0.005 mm sieve)
B5@12' (TQs)	36.9%	18.9%	18	19%
B5@72' (Tmc)	40%	20.7%	20	9%
B13@27' (Tmc)	38.4%	17.4%	21	25%
B16@60' (TQs)	42.7%	15.9%	27	---
B16@63' (TQs)	57.5%	18.2%	40	---
B16@80' (TQs)	91.9%	32.2%	60	90%
B21@49' (TQs)	57.9%	18.2%	40	50%
B23@70' (TQs)	84.3%	27.3%	57	86%
B25@53' (TQs)	46.7%	19.2%	28	12%

CHEMICAL TESTING

Selected samples were submitted to M.J. Schiff and Associates for chemical testing to evaluate their corrosion potential. Results presented in Appendix E are summarized herein.

Sulfates

Preliminary testing of samples obtained from our borings indicate the on-site soils have low levels (< 150 ppm) of sulfates which indicates a low corrosion potential for concrete. Near the completion of grading additional testing should be performed to verify the corrosion potential of the soils.

TABLE 19-A-4 REQUIREMENTS FOR CONCRETE EXPOSED TO SULFATE-CONTAINING SOLUTIONS

SULFATE EXPOSURE	WATER-SOLUBLE SULFATE (SO_4) IN SOIL, % by weight	SULFATE (SO_4) IN WATER, ppm	CEMENT TYPE	Maximum Water-Cementitious Materials Ratio, by Weight, Normal-Weight Aggregate Concrete[1]	Minimum f'$_c$ Normal Weight and Lightweight Aggregate Concrete, psi[1]
					x 0.00689 for MPa
Negligible	0.00 - 0.10	0 - 150	--	--	--
Moderate[2]	0.10 - 0.20	150 - 1,500	II, IP(MS), IS(MS)	0.50	4,000
Severe	0.20 - 2.00	1,500 - 10,000	V	0.45	4,500
Very severe	Over 2.00	Over 10,000	V plus pozzolan[3]	0.45	4,500

[1] A lower water-cementitious materials ratio or higher strength may be required for low permeability or for protection against corrosion of embedded items or freezing and thawing (Table 19-A-2).

[2] Seawater

[3] Pozzolan that has been determined by test or service record to improve sulfate resistance when used in concrete containing Type V cement.

Chlorides

Test results indicate that chloride levels (40 to 210 ppm) are below levels of concern with respect to corrosion.

pH levels

Test results presented in Appendix E indicate the on-site soils are typically neutral to slightly basic (pH 7-8).

Soil Resistivity

Representative samples of the earth materials encountered at the site was tested for resistivity. Resistivity of soils is inversely proportional to corrosiveness. Thus, the analysis helps in determining whether the soils may have a deleterious affect on underground metallic structures. A generally accepted correlation between resistivity and soil corrosiveness toward metals is provided below:

Resistivity (Ohm-Centimeter)	Corrosiveness
< 1,000	Severely Corrosive
1,000 - 2,000	Corrosive
2,000 - 10,000	Increasingly Moderate
> 10,000	Increasingly Mild

Laboratory Test Results

Sample	As-Received Resistivity ohm-cm	Saturated Resistivity ohm-cm
B2@10-15'	930,000	1,700
B9@15'	7,400	690

Based on these test results, the on-site soils are considered corrosive to severely corrosive to ferrous metals when saturated. Appropriate mitigation measures should be obtained from an experienced corrosion engineer.

SLOPE STABILITY

Much of the sloping terrain on the site has been delineated within Seismic Hazard Zones with the potential for earthquake-induced landsliding. These zones typically include areas where landslides or adverse bedding conditions are readily evident.

Stability analyses of the planned and natural slopes were performed using the computer software entitled XSTABL which is based on the program PCSTABL5 developed at Purdue University. Program output includes a description of the problem, including soil boundaries, soil properties, earthquake loading, searching criteria, and the method of safety factor calculation. Information regarding the ten trial surfaces with the lowest computed factors of safety is also provided. Graphical depictions of the ten most critical failure surfaces and all failure surfaces considered are presented on the final two sheets of each analysis. Pseudostatic analyses (when bedding dips exceed 12°) utilize a pseudostatic coefficient of 0.15 in accordance with LACDPW requirements.

Across-Bedding Shear Strengths

Direct shear testing of undisturbed samples of the materials encountered at the site were performed in order to develop representative "across-bedding" strengths. Composite plots of the shear strength tests data are presented on Plates STQs (Saugus Fm.), STmc (Mint Canyon Fm.), and Saf (eng. fill) of Appendix B.

Along-Bedding Strengths

In order to determine along-bedding strengths for the Saugus and Mint Canyon Formations, multi-cycle residual shear tests and correlations (per SCEC, 2002 and Stark and McCone, 2001) were performed on selected fine-grained samples. As noted in the boring logs, fine-grained lithologies are relatively infrequent in the Saugus Formation, and somewhat rare in the Mint Canyon Formation within the subject property. Graphs associated with the Stark and McCone (2001) correlations are presented on Plate SC1 of Appendix B. Liquid limit and % clay results were utilized to generate "ball-milled" liquid limits and "ball milled" clay fractions from which residual friction angles were estimated. Nonlinear shear strength envelopes were generated (see Plate SC2) and friction angles corresponding from the 3 to 10 kip normal pressure range (corresponding to typical slope geometries considered herein) are presented in the following table.

Sample	"Ball-Milled" Liquid Limit	"Ball-Milled" Clay Fraction	Angle of Internal Friction per Stark & McCone (2001) Correlation
B5@12' (TQs)	47%	25%	20 deg.
B5@72' (Tmc)	51%	<15%	24 deg.
B13@27' (Tmc)	49%	37%	19 deg.
B16@80' (TQs)	138%	99%	7 deg.
B21@49' (TQs)	79%	58%	10 deg.
B23@70' (TQs)	125%	95%	7 deg.
B25@53' (TQs)	61%	25%	17 deg.

Along-Bedding Bedding Strength for Sheared TQs Clays

Review of the descriptions for the Saugus Formation clay samples indicate they all have reddish brown to dark red coloration, but vary in their residual strengths. Hence, sheared claystone beds of the Saugus Fm. can be grouped into two strength categories: (1) claystones (such as B5@12' and B25@53') with friction angles between 17 and 20 deg., and (2) weak claystones with notably low friction (phi = 7 deg.). We have utilized the lower strength for specific cases where such low friction angle sheared clays are documented.

Along Bedding Strength for Unsheared TQs Clays

Numerous claystones encountered in the Saugus Formation did not exhibit shearing and thus do not warrant use of the lowest residual friction angle. A shear strength of phi=17°, c=150 psf has been utilized to model such unsheared beds, and corresponds to the correlations obtained for the B5@12' and B25@53' samples.

Along Bedding Strength for Coarse-Grained Lithologies (Tmc and TQs)

The along bedding shear strength of phi=25°, c=100 psf was utilized to model slopes with daylighted bedding conditions that have boring data confirming the lack of fine-grained beds. This strength is considered representative of a through-going poorly cemented sandstone.

Along Bedding Strength for Tmc Sheared Clays

Correlations performed for Mint Canyon Formation claystones indicate that they have relatively high (19° to 24°) friction angles. Based on our experience with claystones of this formation from nearby sites, we have used a conservatively lower shear strength of phi=12°, c=150psf for sheared clays of the Mint Canyon Formation.

The following shear strengths were utilized in our analyses (unless specified otherwise in the following paragraphs):

Material Type	Cohesion (psf)	Angle of Internal Friction (degrees)
Engineered Fill	200	34
Alluvium	0	30
Landslide Debris	200	30
Saugus Formation Across-Bedding Strength	225	40
Mint Canyon and Saugus Fm- Along Bedding Strength, Coarse-grained Lithologies	100	25
Saugus Formation Along Bedding, Fine-grained Lithologies, Unsheared	150	17
Saugus Formation Along Bedding, Fine-grained Sheared Lithologies	150	7
Mint Canyon Formation Across-Bedding Strength.	200	40
Mint Canyon Formation Along Bedding, Fine-grained Sheared Lithologies	150	12

Cross Section B-B'

The 150 feet high, 2:1 cut slope illustrated in Cross Section B-B' is anticipated to encounter laterally-supported Saugus Fm. within its upper reaches, and potentially daylighted bedding near its toe (based on B25 and B26). An anisotropic strength range (17 to 22 degrees) was applied to the Saugus Formation from x=0' to x=560' to model this adverse bedding condition. An along-bedding strength of phi=5°, c=750 psf was used based on Plate S26.53m. A buttress key width of 210 feet, and depth of 5 feet, along with a 2:1 backcut were required to achieve satisfactory factors of safety with Spencer's Method.

Cross Section C-C'

This 130 feet high, 2:1 cut slope is anticipated to expose daylight bedding of the Saugus Formation. Data from B16 indicates that the majority of the Saugus Fm. consists of interbedded sandstone and conglomerate, with relatively shallow dips. However, a series of relatively thin red sheared clay beds were encountered. In particular, the clay at 80 feet was considered the most critical, on account of its location, dip inclination, and low friction angle correlation. Analyses for a buttress design targeted this bed (for which a 21° dip was recorded) in order to demonstrate the feasibility of buttressing this slope, assuming this weak bed is continuous. This resulted in a key width of 150 feet and depth of five feet, along with a 2.75:1 backcut. Satisfactory factors of safety of 1.5 (static) and 1.12 (pseudostatic) were obtained with Spencer's Method.

A higher friction angle (10 deg.) was utilized in our backcut analyses for C-C'. A 2.75:1 backcut provides for a temporary factor of safety of 1.3.

We anticipate that additional exploration in this area will demonstrate a lack of continuity of these clay beds. In addition, multi-cycle residual shear strength testing on these materials may warrant an increase in along-bedding strength, and thus help reduce key width dimensions and steepen backcut angles.

Cross Section D-D'

Data from B17 indicates that coarse-grained lithologies are present to a depth of 95 feet within the Saugus Formation. Between 95 feet and 132 feet, isolated red claystone (some with sheared textures) were encountered. Dip inclination and directions were highly variable on account of the abundance of conglomerates.

The slope was modeled with two soil types for the Saugus Formation corresponding to the coarse-grained strata (0 to 95 feet) and the strata containing the clays (below 95 feet to 132 feet). Below 132 feet, entirely coarse-grained lithologies of the Mint Canyon Formation were encountered. The Saugus Formation was modeled with bedding inclinations of 4 to 8 degrees on the basis of the formation's regional dip and the more consistent bedding dips of B16 and B23 (to west and east). The Mint Canyon Formation was modeled with a dip of 15 to 20 degrees but does not contribute to critical geometries since its entirely coarse-grained strata is documented by B17.

A 180 feet wide, 5 feet deep key provides for a factor of safety of 1.6 for the most critical geometries which pass through the clay-bearing strata of the Saugus Formation. For the backcut analysis, the along bedding friction angle was modestly increased to 10° in light of the temporary condition. A temporary factor of safety of 1.26 was obtained for a 2.75:1 backcut.

Cross Section E-E'

Attitudes obtained from B23 indicate that bedding of the Saugus Formation is laterally supported with respect to the perimeter cut slope illustrated in Cross Section E-E'. This slope was analyzed with circular failures surfaces; static and pseudostatic factors of safety of 2.33 and 1.62 were obtained respectively.

Cross Sections G-G' and I-I'

Boring 18 was advanced 200 feet to determine the structure and stratigraphy underlying this 2:1 cut slope. The upper 119 feet consist of massively bedded conglomerate and sandstone. At a depth of 119.5 feet, a sheared mudstone was encountered. Attitudes below this depth rendered southerly dips, typically between 25 and 30 degrees. Sections G and I were evaluated considering the phi=12°, c=150 psf along-bedding strength below the 119.5 foot depth. A buttress key width of 80 feet and depth of 5 feet was found to provide adequate factors of safety for both sections (see Plates G and I of Appendix D).

Cross Section H-H'

Boring 22 indicates that this proposed cut slope is underlain by massively bedded sandstone and conglomerate. Attitudes obtained by the downhole camera reader generally flat apparent dips relative to the section. Since the prevailing structure of the Mint Canyon is known to dip to the west, we considered it prudent to model the slope with a dip of 5-12° and the coarse-grained along bedding strength. An 80 foot wide by 5 foot deep buttress provides a static factor of safety of 1.76. A 2:1

backcut yields a temporary factor of safety of 1.57.

Cross Section K-K'

In light of the forgoing discussion and analyses for Section H-H', the portion of slope illustrated in Section K-K' has been provided a W=60 feet, D=5 feet keyway.

Cross Section L-L'

The projection of Boring 24 indicates that this natural and planned cut slope is underlain by sandstone and conglomerate (devoid of fine-grained beds) of the Saugus and Mint Canyon Formations, with shallow westerly dips (based on dip inclinations from core samples, assuming adverse dip direction). A buttress fill width of 70 feet and depth of 5 feet provide for adequate factors of safety (see Plates L.1-L.5, Lp.1-Lp.5, and Lb.1-Lb.5) and also provides for re-facing of the slope to mitigate surficial issues with uncemented zones and cobbles. A 2.5:1 backcut provides a temporary factor of safety of 1.62.

Cross Section M-M'

Boring 10 and the project of Boring 24 indicate that the westerly facing cut and natural slope is underlain by coarse-grained lithologies of the Saugus and Mint Canyon Formations. These units dip shallowly to the west and have been modeled as 5 to 10 degrees for the Saugus Fm. and 10 to 15 degrees for the Mint Canyon Formation. Along-bedding values of phi = 25 deg. and C=100 psf were utilized on account of the lack of fine-grained lithologies in both formations.

A buttress key width of 60 feet and depth of 5 feet provide for factors of safety of 1.87 (static) and 1.25 (pseudostatic). A 1.9:1 backcut yields a temporary factor of safety of 1.45 .

Cross Section N-N'

Data from B9 indicates that the Mint Canyon Formation dips very shallowly to the northwest, rendering very shallow to neutral apparent dips relative to the section. The Saugus Formation has shallow westerly dips but lacks fine-grained beds and thus translational analyses are not warranted.

Cross Section O-O'

The proposed 2:1 cut slope at the southerly end of Section O-O' is anticipated to expose northwesterly-dipping Saugus Formation based on B10. Data from B10 and the numerous borings which penetrated the Saugus-Mint Canyon Formation contact have indicated a lack of sheared clays within the Saugus Formation in this portion of the site. Hence, the unsheared claystone strength of phi=17°, c=150 psf was utilized. An out-of-slope dip range of 5 to 9 degrees was considered and a buttress key width of 70 feet, and depth of 5 feet was required to demonstrate an adequate factor of safety for the static condition (see Plates O.1-O.5). The 1.5:1 backcut has a temporary factor of safety of 1.29.

Cross Section R-R' - Southerly Buttress

Similar conditions were modeled for this southerly Section of R-R' as for Section O-O'. A key width of 60 feet and depth of 5 feet provided for a static factor of safety of 1.87. The 1.75:1 backcut provides a temporary factor of safety of 1.42.

Cross Section P-P' - Stability Fills

Data from B6(1995) and B11(1995) indicate that the Saugus and Mint Canyon Formations to be exposed in the tall cuts associated with this section of Whites Canyon Hwy. contain friable, uncemented zones (prone to caving in borings) and large cobbles and boulders. While predominantly massively-bedded, both formations dip shallowly to the west and are thus laterally-supported with respect to this section. Due to the potential for poor surficial performance (erosion and rockfall), we recommend the stabilization of these tall cut slopes as illustrated in the section (upper and lower keyways, separated by a 20 foot wide bench).

Due to the height of the slope, rotational analyses were performed for the southwesterly-facing slope. Factors of safety of 2.3 (static) and 1.56 (pseudostatic) were obtained.

Cross Section R-R' - Descending Natural Slope Setback

The westerly end of Cross Section R-R' illustrates a steep, descending natural slope condition. Bedding of both the Saugus and Mint Canyon Formations is anticipated to be laterally-supported based on the available subsurface data. A shallow landslide has been mapped within the lower portion of the slope and has been assumed absent in our rotational mode of failure slope stability evaluation.

Substandard factors of safety were obtained within the outer 50 feet of the proposed daylight cut lot illustrated in Cross Section R-R'. Accordingly, a preliminary slope setback line (50 feet from the top of slope) has been incorporated on the Remedial Grading Map (Plate 1.3). Further evaluation of the adjacent daylight cut lots should be performed at the grading plan stage to provide design-level slope setbacks.

Cross Section S-S'

This 2:1 fill slope was evaluated with rotational failures on account of its tall height. Factors of safety of 1.87 (static) and 1.29 (pseudostatic) were obtained.

Cross Section T-T'

This fill slope was also evaluated with rotational failure surfaces. Factors of safety of 1.9 (static) and 1.3 (pseudostatic) were obtained.

Cross Section V-V'

Attitudes obtained from B21 indicate that the southwesterly-facing portion of this cut slope shall expose daylighted bedding with dips of 7 to 12 degrees. The majority of the Saugus Formation encountered consisted of sandstone and conglomerate with isolated claystones which did not exhibit shearing. Boring 1 (nearby) encountered entirely coarse-grained materials and met with refusal. A buttress key width of 130 feet and depth of 5 feet provide for a static factor of safety of 1.78. The 2.4:1 backcut provides a temporary factor of safety of 1.37.

Cross Section Y-Y'

These cut slopes shall be subject to a daylighted bedding condition based on B5 and surrounding attitudes. No shearing was noted in fine-grained materials within B5 which projects into the section. A key width of 40 feet and depth of 5 feet, along with a 30' by 5' key for the ascending slope above "Main Street South" provide adequate factors of safety. A 2.6:1 backcut provides a temporary factor of safety of 1.75.

Surficial Stability Analyses of 2:1 Cut and Fill Slopes

Surficial stability analyses have been performed for the Saugus Fm., Mint Canyon Fm., and engineered fill, assuming a 2:1 gradient and saturated thickness of 4 feet. The results of these analyses are presented on Plates A.1, A.2, and A.3 of Appendix D. Factors of safety in excess of 1.5 were obtained.

Surficial Stability of Natural Slopes

Geologic mapping of the site indicates that surficial instability of the natural slopes commonly occurs at gradients of 1.25:1 or steeper within thin, sandy surficials soil in the form of shallow isolated soil slips. The most common occurrences of such features are along the sides of steeply incised canyons such as Whites Canyon. These features will be removed by the proposed grading and removals.

Review of the Tentative Tract Map indicates that a few lots are exposed to ascending natural slope conditions. These areas are discussed in the following sections.

Easterly Daylight Fill of Whites Canyon

Several lots, a water tank site, and park site are located at the toe of a natural slope ranging in height from 25 to 100 feet. Slope gradients of this slope are typically 2:1 or flatter. In order to protect these improvements from potential surficial instability, we recommend the incorporation of a 2:1 slope from the edge of these pads down to the daylight. This slope should be between 4 feet in height for the smaller sections of natural slope, and up to 7 feet in height for the taller sections. A paved swale should be provided along the toe/daylight to convey water and eroded materials to an appropriate inlets or small basins.

Lots West of Section C-C'

Three lots appear to be exposed to a tall ascending natural slope. As discussed above, a false slope should be provided along the edge of these pads down to the daylight in order to protect the lots from potential surficial instability. A paved swale should be provided to convey water and eroded material to an appropriate inlet or basin.

FINDINGS AND RECOMMENDATIONS

Based on our exploratory finding, analyses, we consider the proposed development of the Tentative Tract No. 060922 to be feasible with respect to geotechnical considerations. The following recommendations are presented for your consideration in the grading and development of the site.

Removals

The following materials are considered unsuitable for support of the proposed grading and building construction: existing fill soils, colluvial deposits and slopewash, alluvial deposits, landslide debris, and terrace deposits. These materials should be removed and recompacted in the grading of the site. The approximate limits and depths of removals are illustrated on the enclosed Plate 1.3.

Groundwater may be encountered during alluvial removals in the lower reaches of Whites Canyon within the southerly portion of the site. However, the notable amount of cobbles and boulders in these deposits should support grading equipment even when saturated. Dewatering may be considered to facilitate removals in some cases.

Subdrains

Following canyon removals, subdrains should be installed in order to provide subsurface drainage along the fill-bedrock contact. Details regarding typical canyon bottom subdrain construction is illustrated in Plate GS1 of Appendix F. In the case of the Whites Canyon drainage and other subdrain runs exceeding 2000 feet, the double 8" pipe configuration of Plate GS1B should be utilized. Where removals extend below depths of viable outletting at the toe of a slope, a canyon-side subdrain should be installed in accordance with Plate GS1A. A cut-off wall should be installed (in accordance with Plate GS2) at least 20 feet before each outlet location, with solid pipe utilized between the wall and the outlet.

The approximate locations of proposed subdrains are provided on Plate 1.3. These locations should be revisited at the 40-scale grading plan stage. All subdrains and backdrains should be surveyed by the project civil engineering during the grading of the site and presented on an as-built map.

Oversize Materials and Rock Disposal

Exploratory logs and geologic mapping of the site indicate that a significant amount of oversize rock in the form of crystalline igneous and metamorphic cobbles and boulders are present on the site. These materials will be encountered in colluvial soils, alluvial soils, and conglomerate beds of both formations. We do not anticipate such rocks to break down under normal grading equipment or operations.

Such materials will create difficult excavation conditions both in canyon removals and in planned cuts. We anticipate much of these materials to require placement in canyons as windrows in accordance with traditional rock disposal methods and in accordance with Plate RD of Appendix

F. Additional handling should be anticipated as finish grade is approached to remove oversize rock from the engineered fill.

In addition to such rock disposal measures, we anticipate a significant amount of oversize rock to remain towards the later part of grading as material is generated from the conglomerate beds of the bedrock formations. The disposal of this material towards the later part of grading should be considered. Possible solutions include: crushing for use as base, exportation, use on site as rip-rap, or leaving a designated rock disposal canyon low towards the later portion of grading.

Rippability

Based on our recovery and Rock Quality Designations from the cored borings, deep cuts within the Saugus and Mint Canyon Formations are not anticipated to require blasting. Several bucket-auger borings met refusal prior to their planned depth on account of hard, crystalline cobbles and boulders within the conglomerate beds. Such beds may be problematic but excavatable. Cementation within both bedrock formations was found to be poor to moderate, and not at levels anticipated to require blasting.

Street or Lot Overexcavation for Trenching Considerations

Where encountered, conglomerate beds may create problematic trenching conditions for foundations, storm drains, and utilities. We suggest consideration of the overexcavation of such beds (where encountered during grading) to provide for more uniform and easier trenching conditions. Oversize rock from the excavated material would require separation prior to its reuse as engineered fill within the upper 10 feet of fill. The delineation of such areas would be best determined in-grading.

Buttresses and Stability Fills

Based on the data available to date, westerly-facing and some southwesterly-facing slopes are scheduled for buttress or stability fills. Perimeter slopes were evaluated to demonstrate the feasibility of buttressing. Slopes within the interior of the site are obviously feasible to buttress since property lines do not constrain any backcuts. At the 1"=40' scale grading plan stage, interior slopes with daylighted bedding conditions should be analyzed for appropriate buttress design. At this time, we have assigned stability fill key dimensions for planning purposes.

Tall cut slopes in the southerly portion of the site are anticipated to expose friable, uncemented bedrock zones and large cobbles and boulders. We anticipate several of these slopes to require stabilization in order to mitigate the potential for raveling and dislocation of cobbles and boulders. Typical stability and buttress fill construction are provided in Plates GS4 and GS5 of Appendix F. All stability fills and buttresses should be provided with backdrains in accordance with Plate GS6.

Generalized stability fill key dimensions for the "re-facing" of planned cuts slopes for the reasons discussed above are provided in the following table.

Slope Height	Key Width (feet)	Key Depth (feet)
< 30'	20	5
< 45'	25	5
< 60'	30	5
< 75'	40	5
< 90'	50	5
< 105	60	5
< 130	70	5

Expansive Soils and Expansive Bedrock

The vast majority of soils encountered are anticipated to be within the very low (0-20) and low (21-50) expansion index ranges. Either conventional or post-tension foundations may be utilized.

Expansive lithologies were encountered within the westerly portion of the site within the Saugus Formation. These expansive beds typically consist of reddish brown sandy clay (paleosol). Such beds will require overexcavation where encountered within lots and streets in order to mitigate the potential for differential expansion. The depth of such overexcavation typically ranges between 7 and 10 feet.

Sulfates and Corrosivity

Based on our laboratory testing and that performed on similar soils from the adjacent developments, we anticipate sulfate contents to be relatively low (< 150 ppm). Special concrete design is not anticipated.

As with the majority of soils in the Santa Clarita Valley, chemical testing has shown them to be corrosive to ferrous metals. Appropriate mitigation measures should be incorporated in the project design.

Transition Lots and Fill Caps

To provide uniform foundational support for future structures, we recommend the creation of fill caps for cut/fill lots. Shallow cut lots and cut/fill lots should be provided with a minimum five feet cap of compacted fill. Cut/fill lots underlain by 10 feet or less of compacted fill on the fill portion of the lot should have the cut portion overexcavated a minimum of 5 feet below finish grade and replaced with compacted fill, thus providing a fill cap with a minimum 5 feet fill thickness. For those transition lots with 10 to 20 feet of fill on the fill side, the cut side should be provided with a minimum 7 feet thick fill cap. For those transition lots with in excess of 20 feet of fill on the fill side, the cut side should be provided with a minimum 10 feet thick fill cap. Fill caps should extend a minimum of 5 feet beyond the perimeter footings.

Where the backslope is 3:1 or steeper, the last bench prior to reaching the undercut should be at least 15 feet in width in accordance with Plate GS7. The 15 feet wide bench is intended to reduce the steep dip of the fill-bedrock contact commonly created during undercutting. Plate GS7 provides a graphical representation of the fill cap construction. Preliminary fill cap depths for transition lots are presented on the enclosed Removal Map (Plate 1.3).

Grading - Engineered Fills

The following recommendations pertain to the placement of, and preparation for, engineered fills;

1. The on-site soils are suitable for use as structural fill. Any import materials that are to be used as structural fill should be approved by this office prior to placement.

2. Shrinkage refers to the lesser volume of fill that results from a given volume of excavation. Conversely, bulking refers to the increase in volume upon excavation of dense material (i.e. bedrock formations) and ensuing placement as engineered fill. The following shrinkage and bulking estimates are provided for your consideration in the earth balance of the site

Earth Material	Estimated Shrinkage	Estimated Bulking
Alluvium (Qal)	10-15%	
Colluvium/Slopewash (Qc)	10-15%	
Landslide Debris	0-5%	
Terrace Deposits	5-10%	
Saugus Formation		4 - 8%
Mint Canyon Formation		5 - 10%

3. Subsidence includes the general lowering of the ground due to in-place compaction by construction equipment. Subsidence is anticipated to range from 1.0 to 1.5 tenths of a foot.

4. All vegetation, trash debris or other deleterious material should be stripped from the area to

be graded. Soils bearing sparse grasses may be thoroughly mixed with at least ten parts clean soil and incorporated into the engineered fill. Other materials should be wasted from the site.

5. Compressible soils that lie within the area to be filled should be removed to relatively incompressible material and replaced as properly compacted fill. Portions of the compressible materials that are sufficiently thin may be scarified, watered or air dried to approximately the material's optimum moisture content, and compacted in-place. The anticipated removal depths are illustrated on Plate 1.3.

6. Fill slopes which toe onto sloping ground should be founded in bedrock, below the compressible surface soils. The key should be at least 20 feet wide and 3 feet deep (measured on the downslope side). The bottom of the key should be graded so that there is at least one foot of fall across its width (toward the upslope side). The key should be located in front of the toe of slope (as shown on the plan) so that the outside limit of the key lies at or beyond a 1:1 projection from the planned toe of the slope. Typical fill key construction is illustrated on Plate GS3.

7. Fill-over-cut slopes should have the fill founded on a 20 foot wide bench cut into the bedrock or, where bedrock is not present in the cut portion of the slope, on a key cut below the toe of the slope. The 20 foot bench should be graded to provide at least 1 foot of fall toward its upslope side. If keyed below the toe of slope, then the key should be at least 20 feet wide, 3 feet deep (below the toe), and tilted (at least 1 foot) into the slope. The cut portion of the slope should be exposed (and observed by a representative of this firm) prior to constructing the fill portion of the slope. Typical fill-over-cut slope construction is illustrated on Plate GS8.

8. Exposed surfaces should be scarified, moistened or air dried as appropriate, and compacted to 90% of the material's maximum dry density prior to placement of fill.

9. Where the ground slopes steeper than 5:1 (H:V), the fill should be properly benched into bedrock. Typical benching is illustrated in Plate GS3.

10. Fill slopes constructed of clean sand are commonly subject to excessive erosion or shallow slope failures. Similarly, fill slopes constructed with clayey soils may be subject to desiccation, cracking, creep or other surficial deterioration. Utilizing mixed soils (sand with some proportion of fines, i.e. clayey sand) in the outer 20 feet of the fill slope may serve to minimize the potential for surficial slope deterioration.

11. Fill materials should be placed in thin lifts, watered to near the material's optimum moisture content (or to near 2% over optimum moisture content, and compacted to the applicable level of relative compaction prior to placing the next lift). Compaction criteria varies depending on the depth of fill as outlined in the following table.

Depth of Fill	Moisture Level	Minimum Relative Compaction
< 20 feet	near optimum	90%
20 to 50 feet	near 2% over optimum	92%
> 50	near 2% over optimum	95%

On account of the primarily sandy nature of the on-site soils, compaction with the high moisture content is not anticipated to be difficult. The intent of this compaction criteria is to reduce the amount and duration of settlement.

12. The 90% relative compaction standard applies to the face of fill slopes. This may be achieved by overfilling the constructed slope and trimming to a compacted finished surface, rolling the slope face with a sheepsfoot, or any method that achieves the desired product.

13. All grading should comply with the grading specifications and requirements of the local governing agency.

SETTLEMENT MONITORING

Several areas of deep engineered fill are planned and approach maximum depths of 140 feet after anticipated removals. While the vast majority of earth materials are coarse-grained and anticipated to consolidate rapidly, settlement monitoring remains a prudent measure. Fills in excess of 50 feet in depth within residential areas be should be monitored to evaluate the rate and amount of settlement.

Surface settlement monuments should consist of 1-inch diameter metal pipe cast, surrounded by a 4 inch diameter solid pvc casing (See Plate SM). Both the pipe and casing should be cast in a concrete pad, founded at least five feet below pad grade. The concrete pad should be at least 2 feet by 2 feet and a minimum of 6 inches in thickness. The pad and a portion of the casing should be backfilled with nonexpansive sand or gravel. Typical settlement monument construction is illustrated on Plate SM. Settlement surveys should be performed at the following intervals:

1) At the completion of settlement monitor construction

2) One week after installation

3) Every two weeks for a period of 2 months following installation.

4) Monthly thereafter as necessary.

The monitors should be surveyed with sufficient precision to allow detection of movements that are on the order of 0.005 feet. The monitoring surveys should be performed in a closed loop, with the originating benchmark in a static location. Monitoring should be continued until plotted survey data indicate that the estimated rate of settlement and estimated remaining settlement is no longer significant.

A total of 60 preliminary settlement monument locations (SM1-SM60) have been illustrated on the enclosed Plate 1.3 in areas of deep engineered fill. The number and location of settlement monuments should be revisited at the 40-scale grading plan stage. Based on our experience from other sites with similar soils, settlement monitoring for moderate depth fills (50 to 75 feet deep) is anticipated to continue for 9 to 12 months following the conclusion of grading. Monitoring of deep fills (75 to 140 feet deep) is anticipated to continue for 18 to 24 months following the conclusion of grading. We recommend that models and early phases of construction be situated in areas of planned cut. Periodic settlement monitoring reports should be prepared to indicate the status of the monitoring process.

POST-TENSION FOUNDATIONS

Different methods are used to account for the potential effects of expansive soils. One method of mitigation, the California Slab Method (Spanability Method) utilizes deepened footings and pre-swelling of foundation soils. UBC Standard 18-III, 1997, outlines another method, the Post-Tensioned Institute (PTI) Method, which relies upon increased stiffening of post-tension slabs to resist significant soil stresses due to variations caused by climatic conditions. The former attempts to retard soil movement; the latter attempts to minimize slab deflection in the face of soil movement. Recommendations for both post-tension design methods are provided herein.

California Slab (Spanability) Method

This method reduces the potential for the soil to exert expansion-induced stresses by impeding the lateral migration of near-surface moisture. This method has proven successful. When utilizing deepened footings and pre-saturation techniques, the structural design need not employ the methodology from UBC Standard 18-III.

Geotechnical based input parameters for design of this foundation system are based, in part, upon the expansive properties of the soils near pad grade. Samples judged representative of these soils were determined to have an expansion index in the range of 0-20, 21-50, and 51-90. "K" values, span criteria, recommended minimum perimeter footing embedment and pre-saturation guidelines that are commensurate with each range of soil expansiveness are provided in the accompanying table.

Expansion Index	Typical "K" Values	Span Criteria	Exterior Footing Depth	Pre-saturation Depth
0 - 20	900 - 200	4' - 6'	12"	12"
21 - 50	200 - 100	6' - 7'	15"	21"
51 - 90	100 - 40	7' - 9'	21"	27"

Post-Tensioning Institute Method

The potential for differential uplift in this method can be evaluated using the Uniform Building Code (UBC) Section 1816, based on the design specifications of the Post-Tension Institute. The following table presents suggested minimum coefficients to be used.

Suggested Coefficients

Thornthwaite Moisture Index	-20 in/yr
Depth to Constant Soil Suction	5 feet
Constant Soil Suction	3.25 to 3.67 pf

Based on the above parameters, the following values were obtained from figures or tables in the UBC Section 1816. The values may not be appropriate to account for possible differential settlement of slabs due to other factors. If a stiffer slab is desired, higher values of Y_m and E_m can be considered.

Parameter	EI 0 to 50	EI 51 to 90
E_m Center Moisture Variation Distance	5.5 feet	5.5 feet
E_m Edge Moisture Variation Distance	2.5 feet	2.7 feet
Y_m Center Lift	1.5 in.	2.5 in.
Y_m Edge Lift	0.25 in.	0.5 in.

These edge lift values are based on the effects of climatic variations only, as specified in the UBC. In an attempt to account for the potential effects of irrigation, we recommend that horizontal moisture barriers in the form of deepened perimeter beams be used to retard non-uniform surface moisture migration beneath the slab. The bottom of the deepened perimeter beams should be designed to resist tension, using cable or reinforcement per the Structural Engineer. Pre-swelling of the soils must also be used to minimize uplift after construction. For perimeter beam depths and pre-saturation criteria see the previous table in the California (Spanability) Method Section of this report.

The design criteria are considered minimums and may not be adequate to represent worst-case conditions such as adverse drainage and/or improper landscaping and maintenance. Additional protection may be provided by adjusting the edge lift parameters for a greater Thornthwaite Moisture Index value (to simulate irrigation or wetter conditions than the presumptive climatic conditions). This is discretionary. Additional parameters for this modification can be provided upon request.

General Post-Tension Discussion

The allowable bearing capacity may be taken as 1000 PSF at pad grade and 1500 PSF at twelve inches embedment and with a minimum width of twelve inches. This may be increased by one-third for short duration loading, such as by wind or seismic forces. Care should be exercised to see that all spoils from the slab subgrade are removed or property compacted.

Pre-saturation of the foundation soils should be initiated well before concrete is scheduled to be placed. Care should be taken to see that the water has properly penetrated the soil. Last minute flooding is not a good practice. Excess water remaining in the target pre-saturation zone at the time of concrete placement will penetrate further into the soil, possibly causing additional expansion and uplift of the curing concrete.

A minimum of one inch of sand should be placed beneath the slab. A vapor barrier (i.e., ten mil visqueen) should be installed where moisture penetration of the slab is undesirable.

Other aspects of the design, including but not limited to minimum reinforcement, footing embedment and the need for interior footings, are to be determined by the project structural engineer. However, cold joints (in deepened footings and/or sunken rooms) should not be allowed.

CONVENTIONAL FOUNDATION SYSTEMS

Continuous or pad footings may be used to support the proposed residential and/or accessory structures. In order to achieve the capacities specified below, they should be founded a minimum of 12 inches into bedrock or engineered fill (not partially into each), with the concrete placed against in-place, undisturbed material. Foundation design criteria are based, in part, upon the expansive properties of the materials present near the finished pad grade. Laboratory testing to verify the expansive properties of the near-pad-grade materials should be performed at the completion of rough grading.

Pre-saturation guidelines are presented in the following table. Pre-saturation of the foundation soils should be initiated well before concrete is scheduled to be placed. Care should be taken to see that the water has properly penetrated the soil. Last minute flooding is not a good practice. Excess water remaining in the target pre-saturation zone at the time of concrete placement will penetrate further into the soil, possibly causing additional expansion and uplift of the curing concrete.

Expansion Index Range	0 - 20
Pre-saturation	12"
Footings(1)	
Allowable Bearing Capacity	1500 PSF(2)
Lateral Resistance	325 PSF/Ft(2) (3)
Maximum Lateral Resistance	2000 PSF (2) (3)
Coefficient of Friction	0.3
Minimum Embedment Into Foundation Material	12 inches
Minimum Embedment Below Adjacent Grade(4)	12 inches
Minimum Reinforcement	2 #4 bars, 1 near top, 1 near bottom
Slabs-On-Grade	
Bedding	2" of clean sand(5)
Thickness	Nominal 4"
Minimum Reinforcement	#4 bars @ 48" o.c.e.w., or #3 bars @ 36" o.c.e.w.

(1) Bearing portions of all footings should be at least five feet (measured horizontally) from the face of adjacent, descending slopes. All footings should bear at least three feet below an imaginary plane projected upward at 1.5:1 from the toe of locally over-steepened slopes. Pad footings should be at least 24 inches square.

(2) May be increased by 1/3 for short duration loading such as by wind or seismic forces.

(3) Decrease by 1/3 when combined with friction.

(4) Applies to exterior footings.

(5) Place vapor barrier (6 mil. visqueen) one inch below top of sand layer beneath all areas where moisture penetration of the slab is undesirable.

Expansion Index Range	21 - 50
Pre-Saturation Depth	21"
Footings(1)	
Allowable Bearing Capacity	1500 PSF(2)
Lateral Resistance	325 PSF/Ft(2) (3)
Maximum Lateral Resistance	2000 PSF(2) (3)
Coefficient of Friction	0.3
Minimum Embedment Into Foundation Material	12 inches
Minimum Embedment Below Adjacent Grade(4)	15 inches
Minimum Reinforcement	2 #4 bars, 1 near top, 1 near bottom
Slabs-On-Grade	
Bedding	4" of clean sand(5)
Thickness	Nominal 4"
Minimum Reinforcement	#4 bars @ 48" o.c.e.w., or #3 bars @ 36" o.c.e.w.

(1) Bearing portions of all footings should be at least five feet (measured horizontally) from the face of adjacent, descending slopes. All footings should bear at least three feet below an imaginary plane projected upward at 1.5:1 from the toe of locally over-steepened slopes. Pad footings should be at least 24 inches square.

(2) May be increased by 1/3 for short duration loading such as by wind or seismic forces.

(3) Decrease by 1/3 when combined with friction.

(4) Applies to exterior footings.

(5) Place vapor barrier (6 mil. visqueen) one inch below top of sand layer beneath all areas where moisture penetration of the slab is undesirable.

Expansion Index Range	51 - 90
Pre-saturation	27"
Footings(1)	
Allowable Bearing Capacity	1500 PSF(2)
Lateral Resistance	325 PSF/Ft(2) (3)
Maximum Lateral Resistance	2000 PSF(2) (3)
Coefficient of Friction	0.3
Minimum Embedment Into Foundation Material	12 inches
Minimum Embedment Below Adjacent Grade(4)	27 inches
Minimum Reinforcement	2 #4 bars, 1 near top,1 near bottom, #3 bars @24" in ext. footing, bend 3' into slab
Slabs-On-Grade	
Bedding	4" of clean sand(5)
Thickness	Nominal 4"
Minimum Reinforcement(6)	#3 bars @ 24" o.c., e.w.

(1) Bearing portions of all footings should be at least five feet (measured horizontally) from the face of adjacent, descending slopes. All footings should bear at least three feet below an imaginary plane projected upward at 1.5:1 from the toe of locally over-steepened slopes. Pad footings should be at least 24 inches square.

(2) May be increased by 1/3 for short duration loading such as by wind or seismic forces.

(3) Decrease by 1/3 when combined with friction.

(4) Applies to exterior footings.

(5) Place vapor barrier (6 mil. visqueen) one inch below top of sand layer beneath all areas where moisture penetration of the slab is undesirable.

(6) Dowel slab to exterior footing using #3 bars @ 24" on center, bent 3' into slab.

Settlement

We anticipate total settlement due to foundational loads to be on the order of 1 inch or less while differential settlement is anticipated to be on the order of 1/4 to ½ inch across a distance of 30 feet.

Settlement associated with consolidation of the deep engineered fills under their own weight is anticipated to be on the order of 2 to 3 inches. Settlement monitoring (as discussed above) is recommended such that this settlement may be recorded and monitored for consideration of the release of monitored lots.

RETAINING WALL RECOMMENDATIONS

Retaining walls are anticipated in the development plans. Foundation design criteria are provided in the preceding section. Lateral loading criteria for cantilevered wall designs are presented in the table below. Lateral loading criteria for unyielding (basement, braced etc.) walls and walls constructed prior to placement of the fill that the wall is to support may be provided if such are to be utilized in the project.

Lateral Design(1)

Slope of Backfill	Equivalent Fluid Density (PCF)
Level	30
2:1	43

(1) Special design required for wall height in excess of fifteen feet.

All retaining walls should be provided with adequate backdrainage systems. Perforated pipe backdrains should be installed in accordance with Plate RW1. Free draining material should be used around pipe drains and care should be exercised to see that backdrain outlets are installed and maintained above the finish grade adjacent to the face of the wall. Backdrains should outlet to a nonerosive device or surface.

Backfill for retaining walls should be properly compacted. An impervious cap should be provided at the top of the backfill to retard infiltration of water.

Additional surcharge, such as that due to proposed structures, traffic, or other loading, should be included in the wall design. Use of expansive soil as backfill for retaining walls will result in a surcharge to the wall, the magnitude of which is dependent upon the expansion index of the backfill. This may be avoided by using sand or gravel as backfill adjacent to the wall. Details regarding this type of construction may be provided upon request.

SLOPE SETBACKS

Slope setbacks (H/3, max. 40 feet) set forth in the Los Angeles County Building Code should be applied to residences and appertunent structures. The setback should be taken as H/3 where H is the height of the descending slope, with a typical maximum of 40 feet for graded slopes. Structures situated within the setback area will require special foundation design, which might include deepening footings, pile/caisson construction, and/or consideration of creep loads. Recommendations should be developed on a case by case basis.

Daylight cut lots in the vicinity of Cross Section R-R' will be subject to greater setbacks on account of the descending natural slope. At this time, a preliminary 50 foot setback from the top of slope has been demonstrated to provide a factor of safety of 1.5. At the grading plan stage, additional cross sections and analyses should be performed.

RESTRICTED USE AREAS

Landslides (or portions thereof) that remain in-place following the grading of the subject tract will require placement within Restricted Use Areas in accordance with LACDPW requirements. Restricted Use Areas have been illustrated on the enclosed Removal Map (Plate 1.3) for Landslides L9, L21, and L22.

IRRIGATION PRACTICES

The surficial stability of graded slopes is diminished by changes in their moisture content. Permanent changes induced by the drying influence of the sun and the wetting influence of rainfall prior to establishment of plant cover may bear upon long term slope performance.. Maintenance of constant moisture content prior to planting may necessitate covering the slope with plastic sheeting or a polymer spray, regular application of water (during hot weather), or other procedures. Slopes that are not planted directly upon the completion of grading should be evaluated by a representative of this firm after each drying or wetting season.

Control of irrigation and precipitated water will serve to retard the occurrence of seeps. Obviously, minimizing the excess water that infiltrates into the ground will minimize the amount of water that finds its way back to the surface. Considering the above, it should be obvious that all irrigation systems should be adjusted to provide the minimum water needed to sustain landscaping. As general rules, (1) if runoff increases notably during irrigation, then the duration of irrigation should be reduced, (2) if notable run off occurs at the onset of irrigation, then the rate of water application should be reduced, and (3) if wet soils persist below the root zones, then the amount of irrigation should be reduced. Adjustments should be made for changes in the climate. Irrigation should stop when sufficient water is provided by precipitation. Broken, leaking, or plugged sprinklers or irrigation lines should be repaired immediately. Frequent inspections of the irrigation systems should be performed.

DRAINAGE

Positive drainage should be established to carry pad waters away from structures and foundations, and to prevent uncontrolled or sheet flow over manufactured slopes. We recommend as steep a gradient as possible be established around the residence, to the street or other non-erosive drainage devices. Fine-grade fills placed to create pad drainage should be compacted in order to retard infiltration of surface water.

Preserving proper surface drainage is also important. Planters, decorative walls, plants, trees or accumulations of organic matter should not be allowed to retard surface drainage. Area drains and roof gutters (if present) should be kept free of obstruction. Roof gutters (if present) and condensation lines from air conditioners should outlet to area drains or paved areas which conduct the water to the street. Positive drainage along the backs of retaining walls should be maintained. Any other measures that will facilitate positive surface drainage should be employed.

Utility Trench Backfill

Backfill for utility trench excavations should be compacted to at least 90% relative compaction. Where installed in sloping areas, the backfill should be properly keyed and benched.

CONSTRUCTION MONITORING

Finalized grading plans and foundation plans should be submitted to this office. Additional recommendations may be provided at that time, if such are considered warranted.

Placement of all fill and backfill should be monitored by representatives of this office. This includes our observation of prepared bottoms prior to filling. All excavated slopes, both temporary and permanent, should be observed by a representative of this office. Supplemental recommendations may prove warranted based upon the materials exposed in the actual excavations.

Foundation excavations should be observed by representatives of this office to see if the recommended penetration of proper supporting strata has been achieved. Such observations should be made prior to placing concrete, steel or forms. This office should be notified at least 24 hours prior to placing concrete.

111 STATEMENT

Based upon tests conducted as outlined in this and applicable referenced reports, and if constructed in accordance with our recommendations and properly maintained, it is the opinion of the undersigned, a duly registered professional engineer and engineering geologist, that (1) the proposed structure(s) will be safe against hazard from landslide, settlement or slippage, and that (2) the proposed building or grading construction will have no adverse effect on the geologic stability of property outside the building site. The nature and extent of tests conducted for purposes of this declaration are, in the opinion of the undersigned, in conformance with generally accepted practices in this area. Test findings and statements of professional opinion do not constitute a guarantee or warranty, express or implied.

CLOSURE

This geotechnical report has been prepared in accordance with generally accepted engineering practices at this time and location. No other warranties, either express or implied, are made as to the professional advice provided under the terms of our agreement and included in this report.

Thank you for this opportunity to be of service. Please do not hesitate to call if you have any questions regarding this report.

Respectfully submitted,
GEOLABS-WESTLAKE VILLAGE

David Sarkisian
C.E.G. 2183

DAVID H. SARKISIAN
No. 2183
Exp. 3/31/06

Ronald Z. Shmerling
C.E.G. 1047
R.C.E. 35444

RONALD Z. SHMERLING
No. 35444
Exp. 09/30/05

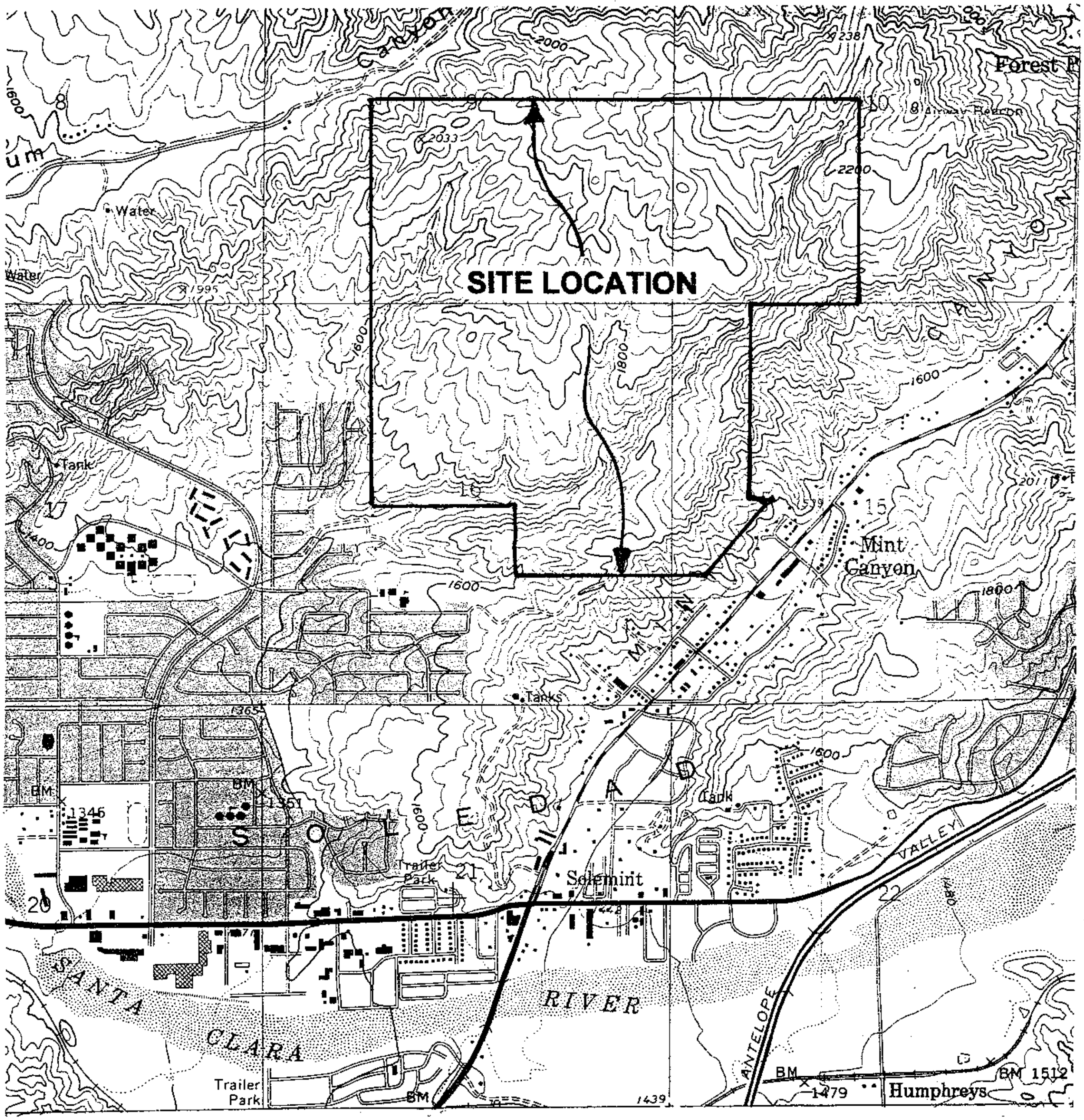
RONALD Z. SHMERLING
NO. 1047

Enclosures:

Location Map	Plate 1.1
Geologic Map	Plate 1.2
Remedial Grading Map	Plate 1.3
Geologic Map (without TTM)	Plate 1.4
Landslide Inventory Map from CDMG OFR98-09	Plate 1.5
Seismic Hazard Zone Map	Plate 1.6
Historical High Groundwater Map	Plate 1.7
Cross Sections	Plates 2.1- 2.11
Boring Logs	Plates B1-B27, B1(1995)-B12(1995), B115 (by PSE)
Test Pit Logs	Plates TP1-TP16, T1-T23
Seismicity Analyses	Appendix A
Shear Test Diagrams	Appendix B
Consolidation Test Results	Appendix C
Slope Stability Analyses	Appendix D
Chemical Test Results	Appendix E
Grading Details	Appendix F
B7-B8 JPG files on Direct CD Rom	CD1
References	Plates R.1 and R.2

XC:
(6) Addressee
(3) Sikand Engineering
(2) County of Los Angeles, Land Development

SITE LOCATION MAP
VESTING TENTATIVE TRACT MAP NO. 060922 SKYLINE RANCH, SANTA CLARITA AREA, COUNTY OF LOS ANGELES, CALIFORNIA



Geolabs - Westlake Village
GEOLOGY AND SOIL ENGINEERING

DATE 3/6/04 BY DS
SCALE 1"=2000' W.O. 8838

PLATE 1.1

RESPONSE TO LACDPW REVIEW SHEETS DATED MAY 25 AND JUNE 15, 2004 FOR TENTATIVE TRACT 60922, SKYLINE RANCH, SANTA CLARITA AREA, COUNTY OF LOS ANGELES, CA

August 23, 2004
W.O. 8838

GEOLABS-WESTLAKE VILLAGE
Foundation and Soils Engineering, Geology
31119 Via Colinas, Suite 502 • Westlake Village, CA 91362
Voice: (818) 889-2562 (805) 495-2197
Fax: (818) 889-2995 (805) 379-2603

a dba of
R & R Services
Corporation

August 23, 2004
W.O. 8838

Pardee Homes
26650 The Old Road, Suite 110
Valencia, California 91381

Attention: Mr. Wade Lewis

SUBJECT: Response to LACDPW Review Sheets dated May 25 and June 15, 2004 for Tentative Tract No. 60922, Skyline Ranch, Santa Clarita Area, County of Los Angeles, California

Mr. Lewis:

In accordance with your request, we present herein our responses to the issues raised by the LACDPW Materials Engineering Division in their review of our Tentative Tract Report dated March 6, 2004. Copies of the review sheets are provided in Appendix A for your reference.

The tasks performed for the response included the drilling and sampling of an additional two large-diameter bucket-auger borings, dozer work to provide further access within the site, excavation and logging of an additional seven test pits (TP17-TP23), laboratory testing of selected samples, the revision of the Geologic Map and applicable cross sections, review of pertinent references, additional soils engineering analyses, and preparation of this report. Specific responses to the issues raised by LACDPW are provided later in this report, following brief discussions of the revisions to the Tentative Tract Map design and supplemental data obtained since our March 6, 2004 report.

REVISIONS TO TENTATIVE TRACT MAP

Minor revisions have been made to the Tentative Tract Map by Sikand Engineering and include: changes to interior street layouts and circulation, changes to lot layouts, the incorporation of eleven basins around the site perimeter, and engineered slopes covering L1. A booster station pad is also proposed adjacent to Lot 766. A total of 1341 residential lots are currently proposed.

SUPPLEMENTAL EXPLORATION AND LABORATORY TESTING

Borings B28 and B29 were advanced in the southerly portion of the site to further define the stratigraphy and geologic structure of the site. Logs are enclosed as Plates B28.1, B28.2, B29.1, B29.2, and B29.3. In addition, seven exploratory test pits were advanced in the main canyon to determine the depth of alluvial deposits. These deposits were found to be notably coarse-grained and contain abundant oversized boulders, commonly in a clast-supported condition (see Plates TP17-TP23).

Samples from borings B28 and B29 were submitted to our laboratory for selected testing. Moisture-dry density test results are presented on the enclosed boring logs (Plates B28 & B29). The results of direct shear tests are provided in Appendix D. Maximum dry density test results are provided in the following table.

Laboratory Test Data

Sample	Description	Optimum Dry Density PCF	Moisture Content %
B29@63'	Saugus Fm. – Tan silty med-cs. SAND	130	9

RECENT LEIGHTON & ASSOCIATES STUDY

A Leighton & Associates report dated April 19, 2004 for Tr. 46018-10 & -11 was reviewed by our office since it included exploration of Qls-9A, and Qls-10 near the northwesterly portion of the subject property. Borings BCW-4 and BCW-5 and trench T-22 did not show evidence of the existence of Landslide Qls-9. We have removed it from our Geologic Map, as did Leighton & Associates in the referenced report. Copies of Leighton's logs for their borings and test pits are provided in Appendix C.

RAPID DRAWDOWN ANALYSES FOR BASINS

Due to the incorporation of basins around the site, additional cross sections (B1 through B7) were prepared and evaluated for rapid drawdown conditions. Analyses are specifically discussed under Soils Eng. Item #1.

RESPONSES TO GEOLOGIC REVIEW COMMENTS

Item #1 - Landslide L23

Landslide L23 is scheduled for complete removal and recompaction. The Tentative Tract Map has been modified to include a graded slope across the anticipated limits of this removal (See Plate 1.2).

Item #2 - Landslides L1 and L17

Landslides L1 and L17 are scheduled to be completely removed and recompacted to bedrock. The Tentative Tract Map has been modified to include a graded slope over L1 for its reconstruction. In the case of L17, it is located within an area of planned fill, with a daylight fill extending above its head to the easterly ridgeline. The creation of this daylight fill and the mitigation of L17 will require off-site grading.

Item #3 - Buttress Keyway per Section C-C'

The slope illustrated by Cross Section C-C' will require buttressing. Revised slope stability analyses were performed (see Soils Eng. Item #1) and led to a key width of 130 feet and depth of five feet. This keyway has been added to the Geologic Map and Removal Map.

Item #4 - Cross Section O-O'

Cross Section O-O' has been revised to include the recommended stability fill at its northerly end (W=25', D=5'): (see Plate 2.7).

Item #5 - Depiction of L10 on Cross Sections

Cross Sections U-U' and Y-Y' have been revised to depict Landslide L10 (not L11, see Plates 2.10 & 2.11) at the easterly ends of these sections. This landslide should be removed and recompacted in its entirety during the grading of the site.

Item #6 - Down Dip Cross Sections through Entire Site

Per the request of the Geologic Reviewer, we have prepared Cross Sections AA-AA', BB-BB', and CC-CC' through the entire site in the down-dip direction (see Plate 2.12). These cross sections were drawn with a southwesterly orientation on account of this prevailing orientation of the Saugus Formation and its basal contact across the site. This orientation also captures much of the vertical relief across the site (in comparison to a due-west orientation). Additional discussion with respect to the geologic conditions modeled in our analyses for these sections is provided under Soils Engineering Item #4.

RESPONSES TO SOILS ENGINEERING REVIEW COMMENTS

Soils Eng. Item #1 - Direct Shear Strength Testing

In our March 6, 2004 report, shear strengths for along-bedding bedrock materials were developed through a combination of correlations (Stark & McCone, 2001) and direct shear strength testing. We understand that County policy has yet to accept the Stark & McCone correlations for use in shear strength estimation and slope stability analyses. Accordingly we present herein discussion of the direct shear test results and determination of the shear strengths utilized in this report.

Saugus Formation

A composite plot of multi-cycle shear tests performed on fine-grained Saugus Formation lithologies is presented on Plate STQsm. As seen, a lower-bound shear strength of phi = 11 deg., C=150 psf is appropriate for use in modeling *fine-grained, sheared* beds of the Saugus Formation. (A shear strength of phi = 12 deg., C=200 psf was utilized by Pacific Soils Eng. and GeoSoils for the adjacent Tr. 46626, while a shear strength of phi = 13.8 deg., C=200 psf was utilized by Leighton & Associates (2004)). This revised shear strength is utilized for Cross Sections B-B', C-C', D-D', AA-AA', and BB-BB' presented herein.

The along-bedding shear strength of phi = 17 deg., C=150 psf passes through the lowermost third of this data and is considered appropriate for *fine-grained, **unsheared*** Saugus Fm. beds. This shear strength was previously utilized for Cross Sections O-O', V-V', Y-Y and remains applicable to those sections. Hence, revised slope stability for those sections are not presented. This shear strength has also been utilized for Cross Section CC-CC', where boring data indicates a lack of fine-grained, sheared lithologies.

The along-bedding shear strength of phi = 25 deg., C=100 psf is applicable to coarse-grained lithologies of the Saugus Formation (and Mint Canyon Formation).

Mint Canyon Formation

Fine-grained beds within the Mint Canyon Formation at the site are generally lacking, as similarly noted in Tr. 46018-10 and -11 of Plum Canyon. In our March 6, 2004 report, a shear strength of phi = 12 deg., C=150 psf was utilized to model the along-bedding strength for fine-grained sheared lithologies of the Mint Canyon Formation. This shear strength is significantly weaker than that used by Leighton & Associates (for the adjacent Plum Canyon project), which was based on the lower mean/median shear strength parameters for along-bedding of the Mint Canyon Formation (phi = 23 deg., C=250 psf) presented in CDMG, 1998. It is also slightly less than the along-bedding shear strength utilized by GeoSoils (1998) for the Mint Canyon

Formation (phi = 12 deg. C=200 psf) for the adjacent (westerly) Tr. 46626. Accordingly, revision of this strength and applicable slope stability analyses from our March 6, 2004 report is not warranted.

For coarse-grained lithologies of the Mint Canyon Formation, an along-bedding strength of phi = 25 deg., C=100 psf was utilized in our March 6, 2004 report. This strength is relatively similar to the along-bedding of the Mint Canyon Formation (phi = 23 deg., C=250 psf) presented in CDMG (1998).

Cross sections which were analyzed for gross stability and required the use of revised along-bedding strengths are discussed herein. The results of the revised analyses are presented in Appendix B.

Cross Section B-B'

The analyses for Cross Section B-B' were revised for the phi = 11 deg., C=150 psf shear strength. Bedding condition described in our March 6, 2004 report remain applicable. A key width of 180 feet, and depth of 5 feet, along with a backcut of 2.2:1 provide for adequate factors of safety with Spencer's Method. The 2.2:1 backcut yields a temporary factor of safety of 1.27 with Spencer's Method.

Cross Section C-C'

This cross section was also reevaluated with the phi=11 deg., C=150 psf along-bedding TQs shear strength. A key width of 130 feet, depth of 5 feet provide for factors of safety of 1.69 (static) and 1.24 (pseudostatic) with Spencer's Method. A 3:1 backcut provides for a temporary factor of safety of 1.26.

Cross Section D-D'

Analyses were revised for the phi=11 deg. C=150 psf along-bedding TQs shear strength.

A factor of safety of 1.62 was obtained for the static condition and a key width of 140 feet and depth of 5 feet. A 2.75:1 backcut yields a temporary factor of safety of 1.25.

Cross Section O-O'

Boring 28 was advanced in the southerly portion of the site to further define the geologic structure and stratigraphy for the north-facing cut slope. Poorly-bedded sandstone and conglomerate was encountered throughout the depth explored, with refusal occurring at 59 feet. Bedding attitudes recorded render an overall shallow westerly dip, resulting in a laterally-supported bedding condition relative to the proposed cut slope. Hence, slope stability analyses are not warranted. However, the stabilization of the slope remains appropriate in light of the friable nature of the sandstones encountered. The W=70', D=5' keyway and 1.5:1 backcut remain applicable.

Cross Section R-R'

As with Section O-O', Boring 28 indicates that the bedding of the Saugus Formation is laterally supported relative to this cut slope, and lithologies are predominantly coarse-grained. Stabilization of the slope remains appropriate, with a key width of 60 feet, depth of 5 feet, and 1.75:1 backcut at the location of R-R'.

Cross Section V-V'

The along-bedding TQs shear strength of phi = 17 degrees, C=150 psf remains applicable to this cross section. Hence, revision of the analyses is not warranted, and the W=130' D=5' keyway remains applicable.

Cross Section Y-Y'

The along-bedding TQs shear strength of phi = 17 degrees, C=150 psf remains applicable to this cross section. Hence, revision of the analyses is not warranted, and the keyway (W=40'

D=5') remains applicable.

Cross Section B1-B1' Rapid Drawdown

Based on the data from surrounding borings, the Saugus Formation dips shallowly to the west rendering a laterally supported bedding condition for this south-facing slope. Due to its height and basin, this section was evaluated for the rapid drawdown condition with circular failure surfaces. Factors of safety of 2.3 (static) and 1.59 (pseudostatic) were obtained (See Plates B1.1-B1.4 and B1p.1-B1p.4).

Cross Section B2-B2' Rapid Drawdown

A stability fill (W=80', D=5') is recommended for this cut slope in order to remove the southerly-dipping bedrock indicated by Boring 26. Boring 25 and surrounding data indicate that the Saugus Formation within the backcut and ascending natural slope is westerly-dipping. Factors of safety of 1.89 (static) and 1.32 (pseudostatic) were obtained for this profile and the rapid drawdown condition (See Plates B2.1-B2.4, B2p.1-B2p.4 of Appendix B).

Cross Section B3-B3' Rapid Drawdown

Since the bedding of the Saugus Formation dips shallowly into this section (based on B23), this slope was evaluated with rotational failure surfaces. A stability fill key width of 100 feet and depth of 5 feet is recommended (as an intermediate key width between Section D-D' and the portion of slope further east to remain as cut. A rapid drawdown condition was considered and factors of safety of 1.94 (static) and 1.34 (pseudostatic) were obtained (see Plates B3.1-B3.4, B3p.1-B3p.4).

Cross Section B4-B4' Rapid Drawdown

Boring 15 indicates that the Mint Canyon Formation dips shallowly to the west in the vicinity of Cross Section B4-B4'. This boring encountered an entirely coarse-grained stratigraphy (as did other borings in the Mint Canyon Fm. on this ridge). Thus, the along-bedding shear strength of phi = 25 deg., C=100 psf was applied to a dip range of 4 to 8 degrees. A static factor of safety of 1.6 was obtained for this natural slope.

Cross Section B5-B5' Rapid Drawdown

This cut slope is anticipated to encounter daylighted bedding of both the Saugus and Mint Canyon formations. Coarse-grained lithologies are anticipated based on the findings from B11, B15, and B20. Critical geometries were found to pass primarily through the Mint Canyon Formation and through the heel of the keyway. A 40 feet wide, 5 feet deep keyway provides for a static factor of safety of 2.0. The 2:1 backcut yields a temporary factor of safety of 1.61.

Cross Section B6-B6' Rapid Drawdown

This section was evaluated in consideration of the daylighted bedding condition of both the Saugus and Mint Canyon Formations and their coarse-grained stratigraphy. Failure geometries through the Mint Canyon were found to be the most critical. A dip range of 5 to 10 degrees was utilized for the Saugus Formation, while the steeper dip range of 10 to 15 degrees was utilized for the Mint Canyon Formation. The lower key width of 50 feet and upper key width of 40 feet (and depths of 5 feet) were found to yield satisfactory factors of safety for static (factor of safety = 1.59) and pseudostatic (factor of safety = 1.11 with Spencer's Method) conditions.

The composite backcut yields a temporary factor of safety of 1.43 (see Plates B6b.1-B6b.3)

Cross Section B7-B7' Rapid Drawdown

This section was evaluated with the same 5 to 12 degrees daylighted bedding condition as H-H', and the coarse-grained along-bedding strength based on B13 and B22. A 60 feet wide, 5 feet deep keyway and 2:1 backcut provide for a static factor of 1.67 (see Plate B7.1-B7.3). The 2:1 backcut yields a temporary factor of safety of 1.55 (See Plates B7b.1-B7b.3).

Soils Engineering Item #2

The landslide denoted as Qls-10 was explored by Leighton & Associates with Boring BCW-3 which encountered landslide debris to a depth of 25 feet. We recommend the removal and recompaction of this landslide in its entirety in order to mitigate its influence on the proposed Whites Canyon Road. As noted by Leighton & Associates on p. 13 of their April 19, 2004 report, Qls-10 should be mitigated by removal of landslide debris and constructing of buttress fills when plans for future development south of the proposed Farrell Road are developed. Hence, this work may be implemented by Shapell-Monteverde prior to the grading of T.T.M. 060922.

Soils Engineering Item #3

The grading required for the removal and recompaction of Landslide L1 has been added to the Tentative Tract Map.

In the case of L17, it is located within an area of planned fill, with a daylight fill extending above its head to the easterly ridgeline. The creation of this daylight fill and the mitigation of L17 will require off-site grading.

Landslide L23 is scheduled for complete removal and recompaction. The Tentative Tract Map should be modified to include a graded slope across the anticipated limits of this removal.

Landslide Qls-10a was explored by boring BCW-2 which encountered landslide debris to a depth of 35 feet. This landslide should be removed and recompacted in its entirety, with any affected portions of the planned cut slope provided with a stability fill keyway (Min. W=20', D=3'). Backdrains and/or subdrains should be installed in the removal. As in the cases of Qls-

9a and Qls-10, landslide Qls-10a may be removed under future Shapell-Monteverde plans as discussed by Leighton & Associates (2004).

Soils Engineering Item #4

Cross Sections AA-AA', BB-BB', and CC-CC' were prepared in the down-dip direction (south-westerly) through the entirety of the site to address this comment. Analyses were performed first with Janbu's Method, followed by Spencer's Method for a more rigorous treatment of inter-slice forces. The Spencer's Method output also lists the shear strengths utilized along segments, thus allowing review of which material strength/type was encountered along the segments of the most critical geometry.

Cross Section AA-AA'

Data along the profile of AA-AA' indicates that the Saugus Formation has dips generally ranging from 5 to 10 degrees, while the Mint Canyon dips at steeper inclinations, in the range of 20 to 30 degrees. Review of the profile relative to these dips indicates that the only the Saugus Formation (and its basal contact) might yield daylighted bedding conditions. Search blocks were defined to evaluate such conditions.

The weak parallel to bedding shear strengths were applied to the Saugus and Mint Canyon Formations since boring data along the section is lacking to dispel the presence of such weak beds. The most critical failure geometries were found to nearly parallel the TQs/Tmc contact, and pass through planned fills (were encountered). A Spencer's factor of safety of 3.99 was obtained (See Plates AAs.1-AAs.6). Pseudostatic analyses were not performed since the Saugus Formation dips at inclinations of less than 12 degrees.

Cross Section BB-BB'

Based on the available data, the Saugus Formation generally dips between 4 to 9 degrees along this section, with the exception of the western-most portion of the section, where attitudes from outcrop indicate a northwesterly dip. This yields a very flat to neutral apparent dip relative to the cross section. This portion of the Saugus Formation was modeled as isotropic (between x=0 and x=1730', soil unit type #5). Critical failure surfaces were generally found to toe-out near this zone, yielding a minimum Spencer's factor of safety of 2.86 (see Plates BBs.1-BBs.5).

Circular failure surfaces were also evaluated since the westerly end of the section presents a relatively tall fill slope above a descending natural slope. Factors of safety of 2.6 (static) and 1.75 (pseudostatic) were obtained (see Plates BBc.1-BBc.6, BBcp.1-BBcp.6).

Cross Section CC-CC'

This cross section passes through several of the deep borings performed at the site which document the lack of continuity of fine-grained beds within the Saugus and Mint Canyon Formations. Specifically, borings B2, B3, B4, B7, and B8 penetrated the formational contact, and document a lack of fine-grained beds. In fact, the base of the Saugus Formation is clearly conglomeratic as documented in these borings.

Due to this documented stratigraphy, the higher parallel to bedding strengths were utilized for the Saugus (phi = 17 deg., C=150 psf) and Mint Canyon Formations (phi = 25 deg., C=100 psf) for this section. The most critical failure surfaces were found to occur in the westerly portion of the section, and yielded a minimum Spencer's factor of safety of 2.12 (see Plates CCs.1-CCs.6).

Soils Engineering Item #5

Our recommendation for the incorporation of a small, descending 2:1 fill slope for daylight fill lots is one means of protecting lots from potential surficial instability of ascending natural slopes. Alternatives such as impact walls may also achieve adequate levels of protection.

The depiction of a five feet high fill slope is barely visible at the Tentative Tract Map scale of 1"=200'. In light of this, we consider the depiction of this element on the Tentative Tract Map itself as unnecessary. However, this recommendation is clearly shown on our enclosed Removal Map (Plate 1.3) and shall be implemented at the grading plan stage (i.e. 1"=40' scale), where fill slopes or impact walls can be more readily designed and depicted.

Soils Engineering Item #6

The following items are presented on the Removal Map, Plate 1.3:

- Approximate limits and depths of removal for landslides, alluvium, and other unsuitable soils,
- Buttress and stability fill keyways (including for C-C' and O-O'),
- Restricted Use Areas for landslides or portions thereof (including L9, L21 and L22),
- All other recommended mitigation measures such as subdrains and fill caps.

CLOSURE

Based upon tests conducted as outlined in this and applicable referenced reports, and if constructed in accordance with our recommendations and properly maintained, it is the opinion of the undersigned, a duly registered professional engineer and engineering geologist, that (1) the proposed structure(s) will be safe against hazard from landslide, settlement or slippage, and that (2) the proposed building or grading construction will have no adverse effect on the geologic stability of property outside the building site. The nature and extent of tests conducted for purposes of this declaration are, in the opinion of the undersigned, in conformance with generally accepted practices in this area. Test findings and statements of professional opinion do not constitute a guarantee or warranty, express or implied.

This geotechnical report has been prepared in accordance with generally accepted engineering practices at this time and location. No other warranties, either express or implied, are made as to the professional advice provided under the terms of our agreement and included in this report.

Thank you for this opportunity to be of service. Please do not hesitate to call if you have any questions regarding this report.

Respectfully submitted,
GEOLABS-WESTLAKE VILLAGE

David Sarkisian
C.E.G. 2183

REGISTERED GEOLOGIST
DAVID H. SARKISIAN
No. 2183
CERTIFIED ENGINEERING GEOLOGIST
Exp 3/31/06
STATE OF CALIFORNIA

Ronald Z. Shmerling
C.E.G. 1047
R.C.E. 35444

REGISTERED PROFESSIONAL ENGINEER
RONALD Z. SHMERLING
No. 35444
Exp. 09/30/05
CIVIL
STATE OF CALIFORNIA

REGISTERED GEOLOGIST
RONALD Z. SHMERLING
NO. 1047
CERTIFIED ENGINEERING GEOLOGIST
STATE OF CALIFORNIA

Enclosures:	Geologic Map	Plate 1.2 (in pocket)
	Removal Map	Plate 1.3 (in pocket)
	Cross Sections	Plate 2.1- 2.15
	Boring Logs by GWV	Plates B28.1, B28.2, B29.1, B29.2, B29.3
	Test Pit Logs	Plates TP17-TP23
	Review Sheet	Appendix A
	Slope Stability Analyses	Appendix B
	Exploratory Logs by Leighton & Assoc.	Appendix C
	Shear Test Diagrams	Appendix D
	References	Plate R.1-R.2

XC: (4) Addressee
(1) Addressee, Attention Mr. Jim Bizzelle
(2) Sikand Engineers, Attention Mark Sikand
(2) LA County, Land Development
(1) Impact Science, Attention Ken Koch

GEOLABS-WESTLAKE VILLAGE
Foundation and Soils Engineering, Geology
a dba of
R & R Services
Corporation
31119 Via Colinas, Suite 502 • Westlake Village, CA 91362
Voice: (818) 889-2562 (805) 495-2197
Fax: (818) 889-2995 (805) 379-2603

January 3, 2005
W.O. 8838

Pardee Homes
26650 The Old Road, Suite 110
Valencia, California 91381

Attention: Mr. Wade Lewis

SUBJECT: Response to LACDPW Review Sheets dated October 12 and 15, 2004
Tentative Tract No. 060922, Skyline Ranch, Santa Clarita Area,
County of Los Angeles, California

Mr. Lewis:

We present herein our response to comments raised in the LACDPW Geologic and Soils Engineering Review Sheets dated October 12 and 15, 2004 for the subject property. Copies of these review sheets are provided in Appendix A for your reference.

Geologic Item #1 – Use of Latest Tentative Tract Map

The latest Tentative Tract Map layout has been obtained from Sikand Engineering and is utilized as the base for our enclosed Geologic Map (see Plate 1.2) and Removal Map (see Plate 1.3). Changes to the Tentative Tract Map include: minor revision to lot lines, a reduction of residential lot count from 1341 to 1251, and increase in minimum lot size from 4,830 sqft. to 5,775 sqft. The reduction in residential lot count also resulted in the creation of small lot-sized parks (Lots 1255 to 1259) and the increase in size of the Lot 1253 park site. Minor modifications to the street layouts/circulation were also made in the area of the Lot 1253 park site.

No major slope or grading revisions were made to warrant revising cross sections, or slope stability analyses.

Soils Engineering Item #1 – Use of Latest Tentative Tract Map

As noted above, the enclosed maps utilize the latest Tentative Tract Map (scale 1"=200') prepared by Sikand Engineering. In order to conform as closely as possible with the Tentative Tract Map submittal, we have "unfrozen" the 5 foot contours on the attached maps. These contours were previously left off of our maps such that the geologic and geotechnical information could be readily visible.

Soils Engineering Item #2

a) Illustration of Restricted Use Areas

Restricted Use Areas have been illustrated for Landslides L9, L21, and L22 (or portions thereof within tract boundary) on the enclosed Geologic and Removal Maps. It should be noted that the limits of Tentative Tract Map No. 060922 extend to the north, well beyond the limits of proposed development. In keeping with the LACDPW requirements, we have mapped known landslides in that portion of the site and placed them in Restricted Use Areas. That northern area and those landslides and corresponding Restricted Use Areas are presented on Plate 1.4 at a scale of 1"=600'.

b) Depiction of Recommended Mitigation Measures

Mitigation measures such as limits of removal, depths of removal, keyways, backcut gradients, fill caps, and proposed subdrains are illustrated on the Removal Map, Plate 1.3.

111 STATEMENT

Based upon tests conducted as outlined in this and applicable referenced reports, and if constructed in accordance with our recommendations and properly maintained, it is the opinion of the undersigned, a duly registered professional engineer and engineering geologist, that (1) the proposed structure(s) will be safe against hazard from landslide, settlement or slippage, and that (2) the proposed building or grading construction will have no adverse effect on the geologic stability of property outside the building site. The nature and extent of tests conducted for purposes of this declaration are, in the opinion of the undersigned, in conformance with generally accepted practices in this area. Test findings and statements of professional opinion do not constitute a guarantee or warranty, express or implied.

CLOSURE

This geotechnical report has been prepared in accordance with generally accepted engineering practices at this time and location. No other warranties, either express or implied, are made as to the professional advice provided under the terms of our agreement and included in this report.

Thank you for this opportunity to be of service. Please do not hesitate to call if you have any questions regarding this report.

Respectfully submitted,
GEOLABS-WESTLAKE VILLAGE

David Sarkisian
C.E.G. 2183

DAVID H. SARKISIAN
No. 2183
CERTIFIED ENGINEERING GEOLOGIST
Exp 3/31/06

Ronald Z. Shmerling
C.E.G. 1047
R.C.E. 35444

RONALD Z. SHMERLING
No. 35444
Exp. 09/30/05
CIVIL

RONALD Z. SHMERLING
NO. 1047
CERTIFIED ENGINEERING GEOLOGIST

Enclosures:	Geologic Map	Plate 1.2 (in pocket)
	Removal Map	Plate 1.3 (in pocket)
	Restricted Use Area Map for TTM 060922	Plates 1.4 (in pocket)
	Review Sheets	Appendix A
	References	Plate R.1 & R.2

XC: (3) Addressee
(1) Pardee-Valencia, Attention Jim Bizzelle
(2) Sikand Engineers, Attention Mark Sikand
(2) County of Los Angeles, Land Development
(1) PCR Services, Attention Stephanie Eyestone-Jones
233 Wilshire Blvd., Suite 130
Santa Monica, CA 90401

Copies of Maps on file with the County of Los Angeles, Department of Public Works, Land Development

Strike and Dip:

Bedding

Joint or fracture

Shear or fault

Geologic Contact (dashed where approx., dotted where covered)

Fault (dashed where approx., dotted where covered)

Line of Cross Section

▨ Buttress or Stability Fill Keyway with dimensions

MAJOR LAND DIVISION

ENTATIVE TRACT NO. 060922

THE UNINCORPORATED TERRITORY OF
OF LOS ANGELES, STATE OF CALIFORNIA

Geolabs – Westlake Village
GEOLOGY AND SOIL ENGINEERING

DATE	1/3/05	BY	DS
SCALE	1"=200'	W.O.	8838

PLATE 1.2

X:\silkand\5097-019\13\Planning\Tentative Map\Dwg\TM 060922-55.dwg TM SHT 2 12/22/04 15:2

with dimensions

Proposed subdrain and cut-off w

Proposed swale/fill slope at
daylight of fill lots

Restricted Use Area

MAJOR LAND DIVISION

NG TENTATIVE TRACT NO. 060922

ED IN THE UNINCORPORATED TERRITORY OF
UNTY OF LOS ANGELES, STATE OF CALIFORN

Y:

SikandL

Geolabs - Westlake Vil
GEOLOGY AND SOIL ENGINEER

DATE	1/3/05	BY	DS
SCALE	1"=200'	W.O.	8838

PLATE 1.3

ILSHIRE BLVD., SUITE 130
A MONICA, CA 90401
451-4488

ENGINEER:

N FOUST ASSOCIATES
NORTH TUSTIN AVENUE
A ANA, CA 92705
667-0496

D PERMITTING

N LUKOS ASSOCIATES
RCHARD
FOREST, CA 92630-8300
837-0404

Geolabs - Westlake Village
GEOLOGY AND SOIL ENGINEERING

DATE 1/3/05	BY DS
SCALE 1"=600'	W.O. 8838

PLATE 1.4

MAJOR LAND DIVISION

G TENTATIVE TRACT NO. 060922

IN THE UNINCORPORATED TERRITORY OF
TY OF LOS ANGELES, STATE OF CALIFORNIA

kandLogo.jpg

APPENDIX A

LACDPW REVIEW SHEETS DATED OCTOBER 12 & 15, 2004 FOR TENTATIVE TRACT NO. 060922, SKYLINE RANCH

Sheet 1 of 1

County of Los Angeles Department of Public Works
GEOTECHNICAL AND MATERIALS ENGINEERING DIVISION
GEOLOGIC REVIEW SHEET
900 So. Fremont Ave., Alhambra, CA 91803
TEL. (626) 458-4925

DISTRIBUTION
1 Geologist
__ Soils Engineer
1 GMED File
1 Subdivision

TENTATIVE TRACT 60922
SUBDIVIDER Pardee Homes
ENGINEER Sikand
GEOLOGIST & SOILS ENGINEER Geolabs – Westlake Village

TENTATIVE MAP DATED 3/9/04 (Tentative)
LOCATION Santa Clarita
REPORT DATE 8/23/04, 3/6/04

The Regional Planning Commission, developer, and engineer are advised that:

PRIOR TO RECOMMENDING APPROVAL OF THE TENTATIVE TRACT OR PARCEL MAP:

1. Provide a geotechnical map that uses the latest version of the tentative map as a base.
2. The Soils Engineering review dated 10/15/04 is attached.

RECEIVED OCT 2 2 2004

NOTE: Provide a copy of this review sheet with your resubmittal.

NOTE Provide a copy of this review with your resubmittal

Prepared by Geir R. Mathisen

Reviewed by Charles T. Nestle

Date 10/12/04

P:\Gmepub\Geology Review\Forms\Form01.doc
1/7/03

COUNTY OF LOS ANGELES
DEPARTMENT OF PUBLIC WORKS
GEOTECHNICAL AND MATERIALS ENGINEERING DIVISION

SOILS ENGINEERING REVIEW SHEET

Address: 900 S. Fremont Ave., Alhambra, CA 91803
Telephone: (626) 458-4925
Fax: (626) 458-4913

District Office 8.2
Job Number GMTR
Sheet 1 of 2

Review No. 2

Tentative Map (Tract) 60922
Location Santa Clarita
Developer/Owner Pardee Homes
Engineer/Architect Sikand
Soils Engineer Geolabs - Westlake Village
Geologist Same as above

DISTRIBUTION:
1 Drainage
1 Grading
1 Geo/Soils Central File
__ District Engineer
1 Geologist
1 Soils Engineer
1 Engineer/Architect

Review of:

Tentative Map (Tract) Dated By Regional Planning 3/09/04
Soil Engineering and Geologic Report Dated **8/23/04**, 3/06/04

Previous review sheet dated 6/15/04

ACTION:

Tentative Map feasibility is not recommended for approval.

REMARKS:

1. Requirements of the Geology Section are attached. The topography and/or grading shown on the geotechnical map and the latest tentative map must conform.
2. Show the following on the geotechnical map:
   a. Location of "Restricted Use Area(s)". Per the soils engineer, portions of landslides L9, L21, and L22 shall be placed in "Restricted Use Area(s)".
   b. All recommended mitigation measures.
3. Include a copy of this review sheet with your response.

NOTE(S) TO THE PLAN CHECKER/BUILDING AND SAFETY ENGINEER:

A. THE ON-SITE SOILS ARE SEVERELY CORROSIVE TO FERROUS METALS.
B. THE ON-SITE SOILS HAVE A MEDIUM EXPANSION POTENTIAL.
C. OFF-SITE GRADING IS RECOMMENED FOR THE REMOVAL AND RECOMPACTION OF LANDSLIDES QLS-9A, QLS-10, QLS-10A, L1, AND L17.

GAN N. LEM
NO. 2328
EXP. 6/30/07

Prepared by Yoshiya Morisaku
Yoshiya Morisaku
Reviewed by
Gan Lem
Date 10/15/04

NOTICE: Public safety, relative to geotechnical subsurface exploration, shall be provided in accordance with current codes for excavations, inclusive of the Los Angeles County Code, Chapter 11.48, and the State of California, Title 8, Construction Safety Orders.

P:\Yosh\60922TentTa

REFERENCES

CDMG, 1998; Seismic Hazard Evaluation Report of the Mint Canyon 7.5-Minute Quadrangle, Los Angeles County, California, OFR-98-09

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..., April 17, 2002; Offsite Grading, North Rear of Lot 28, Tract 46626, Canyon Country, City of Santa Clarita, California

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..., March 18, 1997; Summary of Removals and Buttress Sizing, 138 Lot Portion of Vesting Tentative Tract 46626, Canyon Country, City of Santa Clarita, California

Geotechnical Associates, February 4, 1997; Final Rough Grading Compaction Test Report, Plum Canyon/Whites Canyon Road Alignment, 7.5.464., Tentative Tract No. 46018, Saugus Area of Los Angeles County, CA

LACDPW, May 5 and June 15, 2004; Geologic and Soils Engineering Review Sheets for Tent. Tr. Map 060922, Santa Clarita Area, County of Los Angeles, California

Plate R.1

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…, April 19, 2004; Geotechnical Review of the 40-Scale Rough Grading Plan, Tracts 46018-10 and 46018-11, and Associated Fill Disposal Site, Plum Canyon Area, Saugus, County of Los Angeles, California

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Yerkes, R.F.(compiler), 1996; Preliminary Geologic Map of the Mint Canyon 7.5 Minute Quadrangle, Southern California, U.S. Geological Survey Open File Report 96-89, Scale 1:24,000

AERIAL PHOTOGRAPHS

Flight C-300, 1928, Frames F9, F10, F11, E243, E244, E245, Scale 1:18,000

Flight C-17727, 1952, Frames 4-72, 4-73, 4-74, Scale 1:14,400

Flight TG-7600, 1976, Frames 21-3, 21-4, 21-5, Scale 1:24,000

Flight 94-028, acc. 04684, 1994, Frames 106, 107, 108, 1:32,500

Horizon Surveys, performed for Sikand Engineering, Tr. 50846, Monarch Hills project, dated January 29, 1994, Frames 1-5, Scale 1:4800 +/-

Plate R.2

ADDENDUM GEOTECHNICAL REPORT, TENTATIVE TRACT MAP NO. 060922, SKYLINE RANCH, SANTA CLARITA AREA, COUNTY OF LOS ANGELES, CALIFORNIA

November 16, 2006
W.O. 8838

GEOLABS-WESTLAKE VILLAGE

a dba of
R & R Services
Corporation

GEOLABS-WESTLAKE VILLAGE
Foundation and Soils Engineering, Geology
31119 Via Colinas, Suite 502 • Westlake Village, CA 91362
Voice: (818) 889-2562 (805) 495-2197
Fax: (818) 889-2995 (805) 379-2603

November 16, 2006
W.O. 8838

Pardee Homes
26650 The Old Road, Suite 110
Valencia, California 91381

Attention: Mr. Tom Mitchell

SUBJECT: Addendum Geotechnical Report,
Tentative Tract Map No. 060922, Skyline Ranch,
Santa Clarita Area, County of Los Angeles, California

Mr. Mitchell:

We present herein an addendum geotechnical report for Tentative Tract Map No. 060922 to address the changes made to the Tentative Tract Map design since the issuance of our last geotechnical report dated January 3, 2005. That report was approved in the LACDPW Geologic and Soils Engineering Review Sheets dated February 7 and 22, 2005.

Since the issuance of our January 3, 2005 report, additional field exploration and laboratory testing has been performed for the purpose of evaluating the future 40-scale grading plans. An additional forty-seven borings (B30 through B76) have been performed, the logs of which are provided in Appendix A. In addition, an additional 185 test pits (TP24-TP208) have been performed throughout the site (See Appendix B).

Based on our review of the available data and the revised Tentative Tract Map design prepared by Sikand Engineers, the development of Tentative Tract Map No. 60922 is considered feasible from a geotechnical engineering and engineering geologic perspective. Recommendations presented in our previous reports remain applicable, unless superseded herein.

MODIFICATIONS TO THE TENTATIVE TRACT MAP

Pertinent modifications to the Tentative Tract Map (since our January 3, 2005 report) consist of the following elements:

* Incorporation of new topographic base map, which is incorporated in our enclosed maps with 5-foot contour intervals;

* The water tank site formerly located in the easterly portion of the site has been moved to the northwesterly portion of the site (Lot 1321) at elevation 1962'. The former water tank site has been redesigned for residential lots.

* Cut slopes in the northwesterly corner of the site have been modified to accommodate basins and the new water tank site (See Cross Sections B, B1, B2, and C).

* Grades in the southeasterly portion of the site (vicinity of Lots 1-80) have been lowered five to ten feet for earthwork balance purposes. Minor grade changes and lot line adjustments have been made throughout the rest of the tract.

* The vertical and horizontal alignment of Skyline Ranch Road has been modified slightly in the southeasterly portion of the site, warranting revisions to Cross Sections L-L', M-M', N-N', P-P', and B6-B6'.

* A total of 1270 residential lots are proposed (Lots 1-1270). Lot 1271 is designated as a school site, Lots 1272-1278 are dedicated as parks, and Lots 1279-1306 are Open Space Lots. Debris basins are planned as Lots 1307-1320 and the Water Tank sites and Water Pump/Booster Stations are denoted as Lots 1321-1324.

* Improvements (sidewalks, medians, parkways) along Skyline Ranch Drive have been modified/enhanced.

GEOLOGIC FINDINGS

The additional exploration performed at the site and new topography has allowed for the refinement of numerous geologic contacts, in particular that of the alluvium within the canyon bottoms. In particular, test pits within the main canyon (Whites Canyon) have verified the relatively shallow (5 to 15 feet on average) of the alluvial deposits, as well as their notably coarse-grained nature. The distribution of terrace deposits has also been reduced on the basis of test pit findings. The distribution and geologic structure of the Saugus Formation and underlying Mint Canyon Formation generally remains as previously defined in our referenced reports, albeit contacts have been updated in light of the new topography and additional geologic mapping.

Numerous borings were advanced within mapped landslides for the purpose of defining their depth of failure. A possible landslide was encountered by Boring B69 in the north-central portion of the site. The majority of this queried landslide is within an area of deep planned cut.

PROPOSED WATER TANK SITE

A new water tank site for two tanks is proposed at elevation 1962' in the northwesterly portion of the site. The westerly tank footprint will be comprised entirely of bedrock cut, however the easterly tank is underlain by a cut-fill transition. Hence the easterly tank should be anticipated to be undercut (5 to 10 feet) so that a relatively uniform depth of engineered fill is provided beneath the tank. The southerly-facing cut slope associated with this site is anticipated to be buttressed, as discussed in the slope stability section.

REVISED CROSS SECTIONS AND SLOPE STABILITY ANALYSES

Based on our review of the additional geologic data and revised Tentative Tract Map, the following cross sections warranted revision and slope stability analyses: B1-B1', B2-B2', B3-B3', B6-B6', C-C', D-D', L-L', M-M', N-N', P-P', and R-R'.

Shear strengths previously utilized in our referenced reports were assigned to the various material types. These are summarized in the following table:

Material	Cohesion (psf)	Angle of Internal Friction
Engineered Fill	200	34
Saugus Formation Across-Bedding	225	40
Saugus Formation Along-Bedding for Coarse-grained Lithologies	100	25
Saugus Formation Along-Bedding for Fine-grained Unsheared Lithologies	150	17
Saugus Formation Along Bedding for Fine-Grained Sheared Lithologies	150	11
Mint Canyon Formation Across-Bedding	200	40
Mint Canyon Formation Along-Bedding for Coarse-grained Lithologies	100	25
Mint Canyon Fm. Along-Bedding for Sheared Fine-grained Lithologies	150	12

Cross Section A-A'

Cross Section A-A' has been updated to illustrate the off-site grading and the proposed stability fills recommended by Geosoils, Inc. in their report dated June 5, 2006.

Cross Section B-B'

Borings B25 and B46 were advanced in the vicinity of this south-facing perimeter cut slope to define the geologic structure and stratigraphy to be exposed. The structural data from B25 and B46 indicate that the Saugus Formation is predominantly dipping to the southwest, with local southerly and westerly dips associated with scoured, irregular lithologic contacts. An apparent dip of 10 to 14 degrees was considered appropriate for consideration of translational failure surfaces. Review of the stratigraphy from B25, B46, and the projection of nearby B48 indicates that the coarse-grained along bedding strength (phi = 25 deg., C=100 psf) is applicable to the stratigraphy encountered in B25 and B46. Data from B48 indicates that the unsheared fine-grained along-bedding strength (phi=17 deg., C=150 psf) is applicable to its stratigraphic section to the depth of 125 feet. Stratigraphy below 125 feet in B48 was assigned the sheared fine-grained along bedding strength (phi = 11 deg., C=150 psf) on account of the sheared claystones encountered at and below this depth.

Analyses indicated that the most critical trial failure surfaces occur within the unsheared fine-grained stratigraphy zone, below the buttress key. Failure surfaces in the sheared, fine-grained along bedding strength zone were sufficiently deep to provide factors of safety well above the required minimums. A buttress key width of 100 feet and depth of 5 feet, along with a 1.94:1 backcut were incorporated in the analyses. Factors of safety of 1.71 (static) and 1.32 (pseudostatic, Spencer's) were obtained. The 1.94:1 backcut provides for a temporary factor of safety of 1.33.

Cross Section B1-B1'

This cross section has been revised to evaluate the minor northward shift of the slope and the additional data obtained from B66. This boring encountered southwesterly-dipping Saugus Formation, which was modeled with an apparent dip range of 13 to 16 degrees. The rapid drawdown condition was also incorporated in these analyses on account of the basin. Based on the stratigraphy of B66, the sheared fine-grained along-bedding strength of the Saugus Formation was assigned to materials below 125 feet in B66. This boundary is illustrated on the cross section. The most critical failure surfaces were found to pass through this zone. A buttress key width of 100 feet and depth of 5 feet, along with a 1.9:1 backcut yielded factors of safety of 1.58 and 1.17 for static and pseudostatic conditions respectively. The 1.9:1 backcut yields a temporary factor of safety of 1.32.

Cross Section B2-B2'

Due to the southwesterly-dipping bedding identified by B48, a southeasterly cut slope was recommended by our office so as to reduce the loading relative to the south-facing slope associated with the proposed basin. In addition, the southeasterly-facing cut slope eliminates the exposure of Lots 1248 and 1249 to potential surficial instability within a tall natural slope. Cross Section B2-B2' was drawn to capture the south-facing slope associated with the basin and an apparent dip condition relative to this slope. Review of B48 indicates that the majority of bedding attitudes yield flat apparent dips (typically 6 to 12 degrees) or are supported relative to the line of section. However, a sheared clay with a true-dip roughly parallel the line of section was observed at a depth of 125 feet. The Saugus Formation above this depth was assigned the fine-grained along bedding strength to a dip range of 6 to 12 degrees. The Saugus Formation below the top of this critical bed was assigned the sheared fine-grained along bedding strength. A buttress key width of 60 feet and depth of 5 feet was incorporated in the analysis as well as the rapid drawdown condition due to the basin. The critical failure surface was found to occur in the deeper zone and exit beyond the toe of slope. A factor of safety of 1.52 was obtained. A factor of safety of 1.48 was obtained for the backcut.

Cross Section C-C'

This cross section illustrates the new water tank site and the south-facing slopes associated with the water tank site. As discussed in our previous reports, a daylighted bedding condition exists for this southwesterly-facing cut slope based on the B16 data. The slope was reevaluated in light of the lesser total slope height. A five feet thick fill cap for the water tanks and the stabilization of the southwesterly-facing descending slope was also incorporated in the slope stability analyses. A bedding dip range of 21 to 24 degrees was assigned the sheared fine-grained along bedding shear strength (phi = 11 deg., C=150 psf) of the Saugus Fm. A buttress key width of 110 feet and depth of 5 feet, along with a 2.3:1 backcut provide for adequate factors of safety for static (F.O.S. = 1.60) and pseudostatic (F.O.S. = 1.12) conditions. The 2.3:1 backcut yields a factor of safety of 1.4 with Spencer's Method.

Cross Section C3-C3'

Boring B70 was advanced in the locality of an interior southwesterly-facing cut slope with a daylighted bedding condition. A dip range of 12 to 16 degrees was considered, along with the sheared fine-grained along bedding strength. A W=90' D=5' keyway, along with a 3:1 backcut was necessary to demonstrate adequate factors of safety (static F.O.S. = 1.7, pseudostatic F.O.S. = 1.25 with Spencer's Method). The 3:1 backcut yields a temporary factor of safety of 1.27.

Cross Section D-D'

The terraced pads illustrated in this cross section have been modified in elevation and result in a lesser slope height for the 2:1 perimeter slope. In addition, the data from B49 indicates that the Saugus Formation is generally coarse-grained and yields highly variable bedding attitudes on account of channels and cross-bedding. In general, the downhole data from B49 yields westerly to northwesterly data. Cross-cutting, and generally discontinuous clay shears with variable orientations were also recorded. Bedding data from B17 was generated from the downhole BIPS camera and yielded similarly highly variable dip directions. Consideration of an adverse dip range of 6 to 11 degrees relative to the section is a grossly conservative manner of modeling this slope. The Saugus Formation was assigned the fine-grained along-bedding strength (phi =17 deg., C=150 psf) for this dip range. A phreatic surface was also incorporated into the analysis based on the groundwater depth of 125 feet recorded in B49.

A buttress key width of 100 feet, and depth of 5 feet, along with a 2:1 backcut provides for a factor of safety of 1.56. The backcut yields a temporary factor of safety of 1.27.

Cross Sections L-L', M-M', N-N', B6-B6' and P-P'

These cross sections depict the proposed grading of Skyline Ranch Road and the large west to southwesterly-facing cut slope along its easterly side. Numerous borings have been advanced within this slope to define the structure and stratigraphy of the Saugus and underlying Mint Canyon Formations. Both of these formations are notable coarse-grained with lithologies being dominated by conglomerates, conglomeratic sandstone, and sandstone. The Saugus Formation is interpreted to dip very shallowly to the west and southwest. The Mint Canyon Formation in this locality generally dips to the west and northwest at angles between 10 and 17 degrees. Bedding attitudes recorded from the various borings yield notable variations on account of the irregular and channelized nature of the deposits.

The vast majority of this west to southwesterly-facing slope is recommended for buttressing on account of the anticipated daylighted bedding condition. The coarse-grained along-bedding strengths for the formations were utilized in these analyses based on the boring data. Minor modifications to the buttress dimensions and backcut gradients have been made in our review of the modified grading design. The following table summarizes the factors of safety and buttress dimensions for these four cross sections.

Cross Section	Buttress Keyway Dimensions	Static F.O.S.	Pseudostatic F.O.S.
L-L'	W=70', D=5'	1.86	1.31
M-M'	W=60', D=5'	1.86	1.21
N-N'	W=80', D=5' Lower Key W=50', D=5' Upper Key	2.26	1.54
B6-B6'	W=70' D=5' Lower Key W=50', D=5' Upper Key	1.60	1.2
P-P'	W=80', D=5' Lower Key W=50', D=5' Upper Key	2.1	1.49

Cross Section R-R'

The proposed 2:1 cut slope at the south end of Cross Section R-R' was revisited due to the increase in its slope height. Factors of safety of 2.49 (static) and 1.74 (pseudostatic) were obtained in consideration of a W=40', D=5' keyway. The 1.85:1 backcut yields a factor of safety of 1.9.

At the north end of R-R', the lowering of the proposed grade results in a lesser total slope height of the descending natural slope. As with our previous analyses, this slope was analyzed assuming that the slide debris and proposed fill at the toe are absent (this creating a taller and steeper natural slope condition). Circular trial failure searches were performed to identify the distance into the pad at which adequate factors of safety are present. This distance was found to be 40 feet at the location of R-R', which represents the worst-case condition for this natural slope. This slope setback of 40 feet is presented for Lots 80 through 86 as a preliminary slope setback.

SUMMARY

Based on our review of the available data and Tentative Tract Map design prepared by Sikand Engineers, Tentative Tract Map No. 60922 is considered feasible from a geotechnical engineering and engineering geologic perspective. Remedial grading recommendations such as keyways, alluvial and landslide removals, subdrains, and settlement monuments are illustrated on the enclosed Removal Map (Plate 1.3). Grading plans should be provided to our office for our review and comment. Design-level geotechnical recommendations shall be provided at that time.

111 STATEMENT

Based upon tests conducted as outlined in this and applicable referenced reports, and if constructed in accordance with our recommendations and properly maintained, it is the opinion of the undersigned, a duly registered professional engineer and engineering geologist, that (1) the proposed structure(s) will be safe against hazard from landslide, settlement or slippage, and that (2) the proposed building or grading construction will have no adverse effect on the geologic stability of property outside the building site. The nature and extent of tests conducted for purposes of this declaration are, in the opinion of the undersigned, in conformance with generally accepted practices in this area. Test findings and statements of professional opinion do not constitute a guarantee or warranty, express or implied.

CLOSURE

This geotechnical report has been prepared in accordance with generally accepted engineering practices at this time and location. No other warranties, either express or implied, are made as to the professional advice provided under the terms of our agreement and included in this report.

Thank you for this opportunity to be of service. Please do not hesitate to call if you have any questions regarding this report.

Respectfully submitted,
GEOLABS-WESTLAKE VILLAGE

David Sarkisian
C.E.G. 2183

Registered Geologist
David H. Sarkisian
No. 2183
Certified Engineering Geologist
Exp 3/31/08
State of California

Ronald Z. Shmerling
C.E.G. 1047
R.C.E. 35444

Registered Geologist
Ronald Z. Shmerling
No. 1047
Certified Engineering Geologist
State of California

Registered Professional Engineer
Ronald Z. Shmerling
No. 35444
Exp. 09/30/07
Civil
State of California

Enclosures:

Geologic Map	....	Plate 1.2 (in pocket)
Removal Map	....	Plate 1.3 (in pocket)
Cross Sections	....	Plates 2.1-2.7
Boring Logs	....	Appendix A
Test Pit Logs	....	Appendix B
Slope Stability Analyses	....	Appendix C
References	....	Plate R.1-R.3

XC: (1) Addressee (and 1 PDF on CD)
(1) Pardee-Valencia, Attention Jim Bizzelle
(2) Sikand Engineers, Attention Craig Young
(2) County of Los Angeles, Land Development (and 1 PDF on CD)
(2) PCR Services, Attention Jay Ziff (and 1 PDF on CD)
233 Wilshire Blvd., Suite 130
Santa Monica, CA 90401

(1) File

GEOLOGIC MAP OF VTTM O60922, SKYLINE RANCH, COUNTY OF LOSANGELES, CALIFORNIA

11/16/06

PLATE 1.2

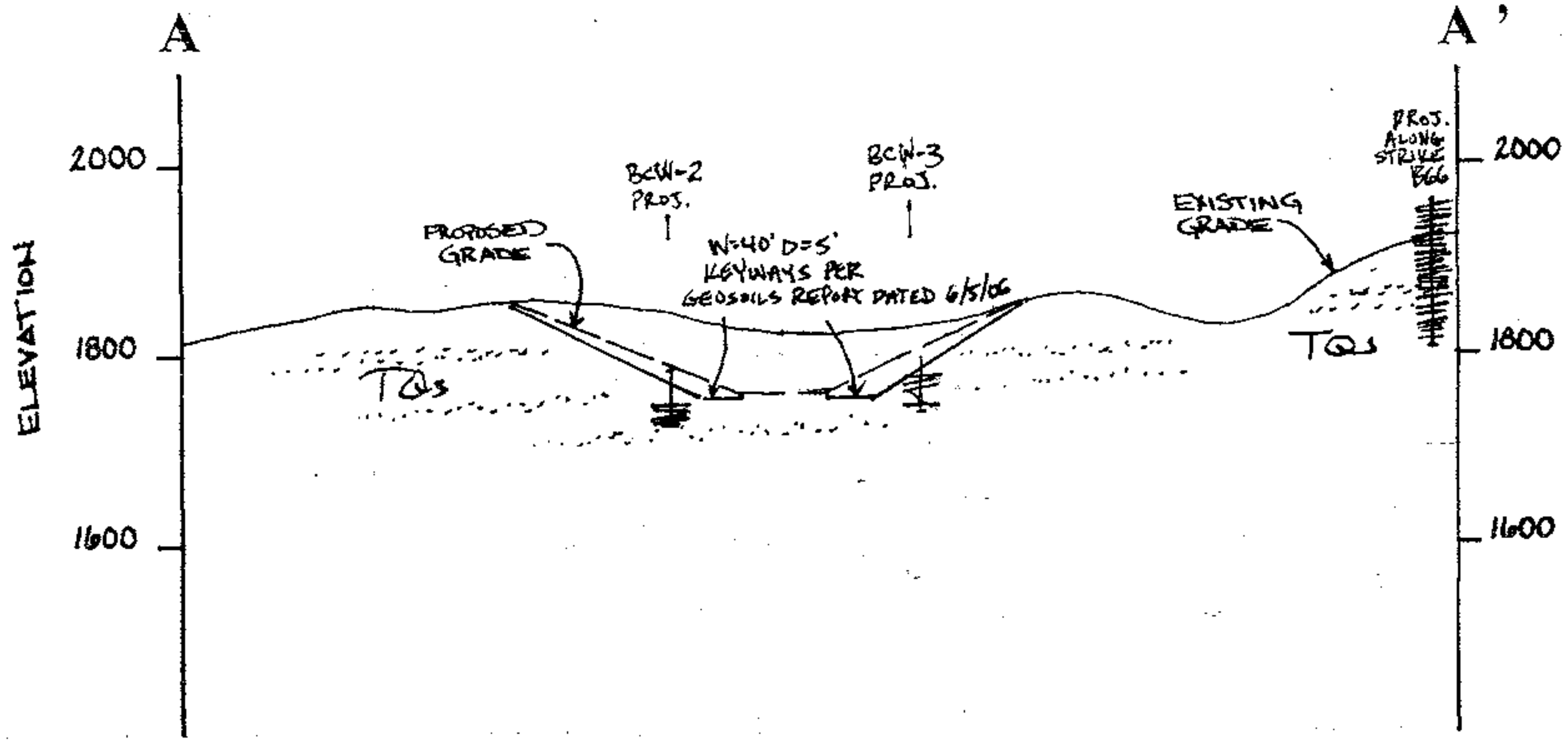
MAP ON FILE WITH THE LOS ANGELES COUNTY
DEPARTMENT OF REGIONAL PLANNING

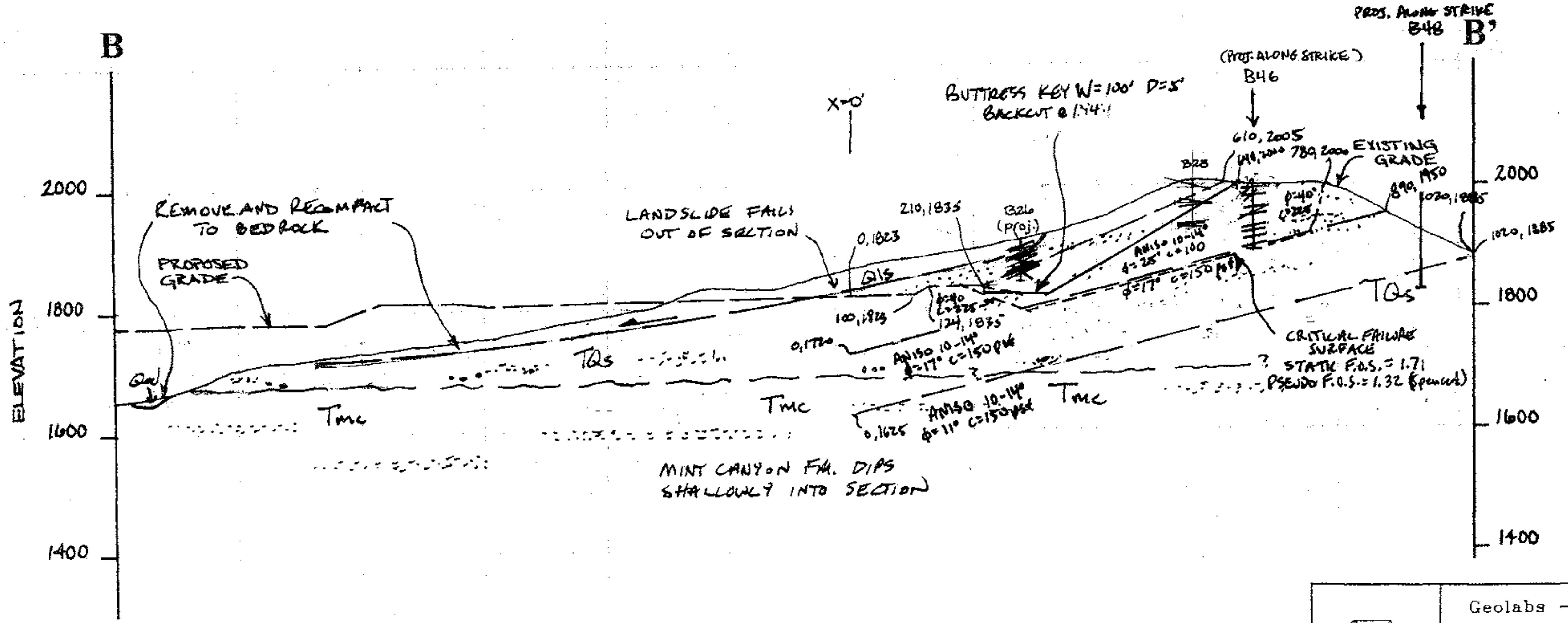
REMOVAL MAP OF VTTM O60922, SKYLINE RANCH, COUNTY OF LOSANGELES, CALIFORNIA

11/16/06

PLATE 1.3

MAP ON FILE WITH THE LOS ANGELES COUNTY
DEPARTMENT OF REGIONAL PLANNING

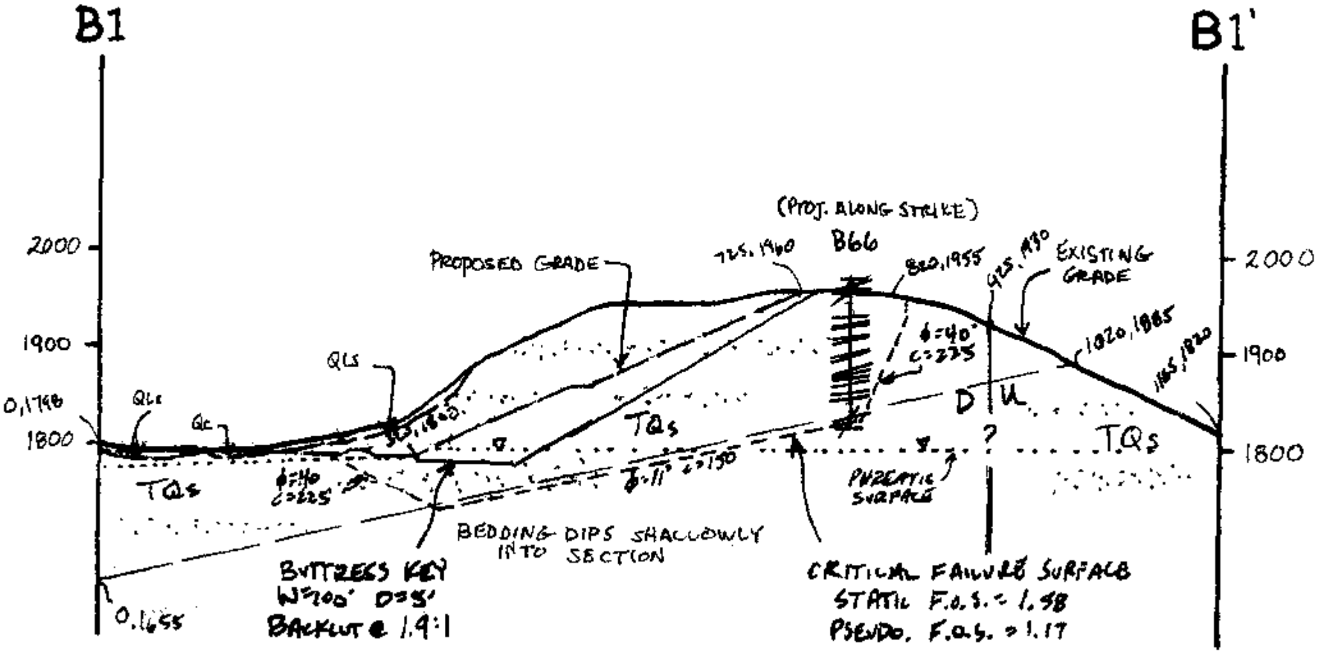


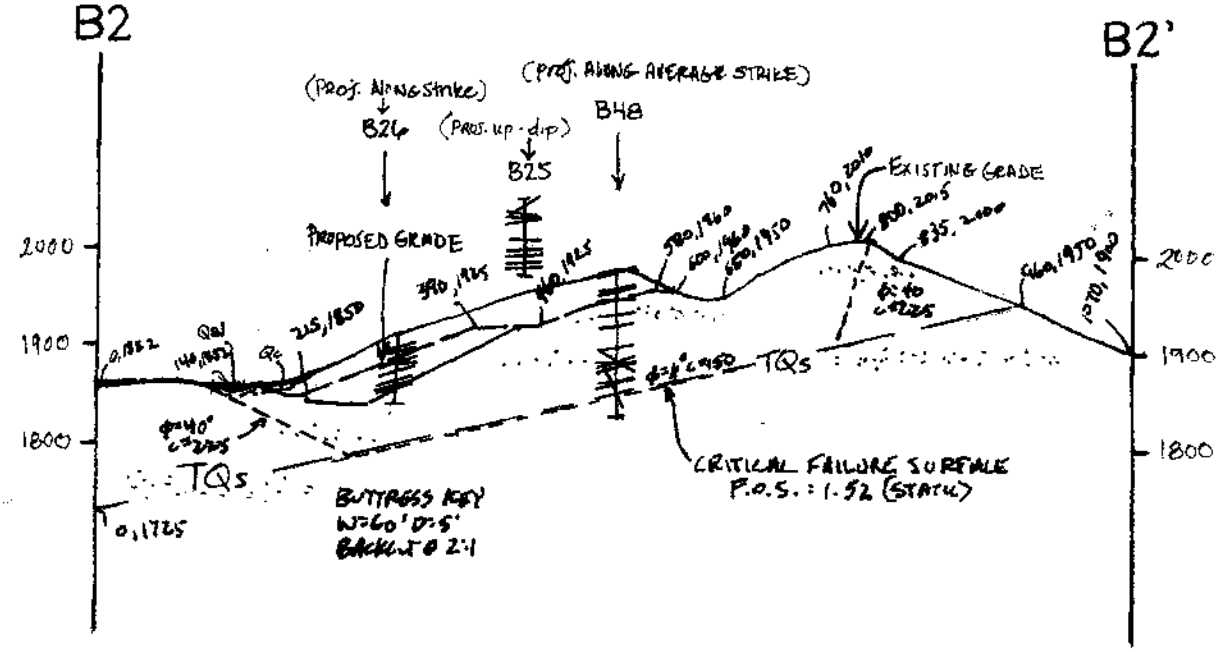


Geolabs – Westlake Village
GEOLOGY AND SOIL ENGINEERING

DATE 11/16/06 BY DS
SCALE 1"=200' W.O. 2839

PLATE 2.1





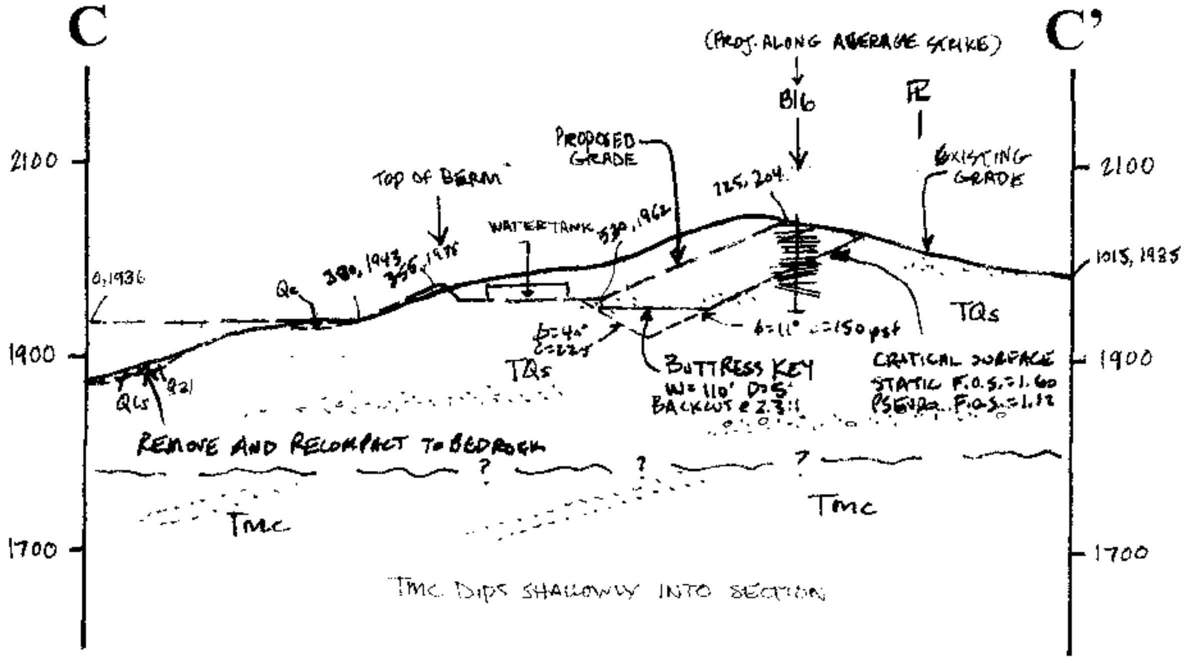
Geolabs - Westlake Village

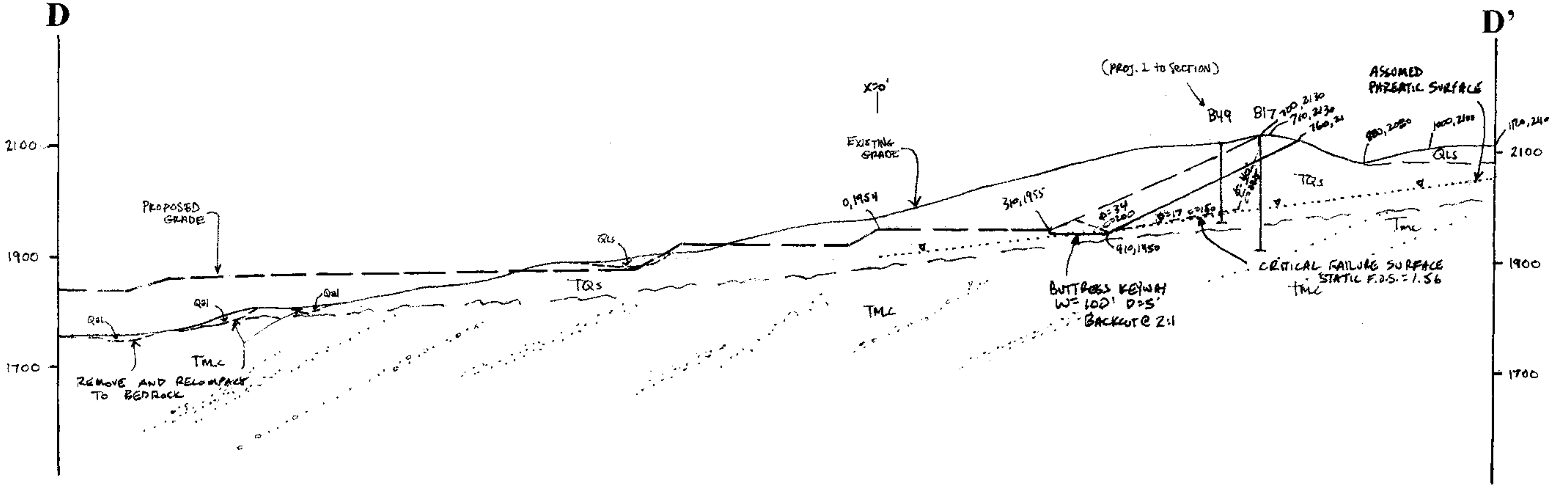
GEOLOGY AND SOIL ENGINEERING

DATE 11/16/06 BY DS

SCALE 1" = 200' W.O. 8838

PLATE 2.2

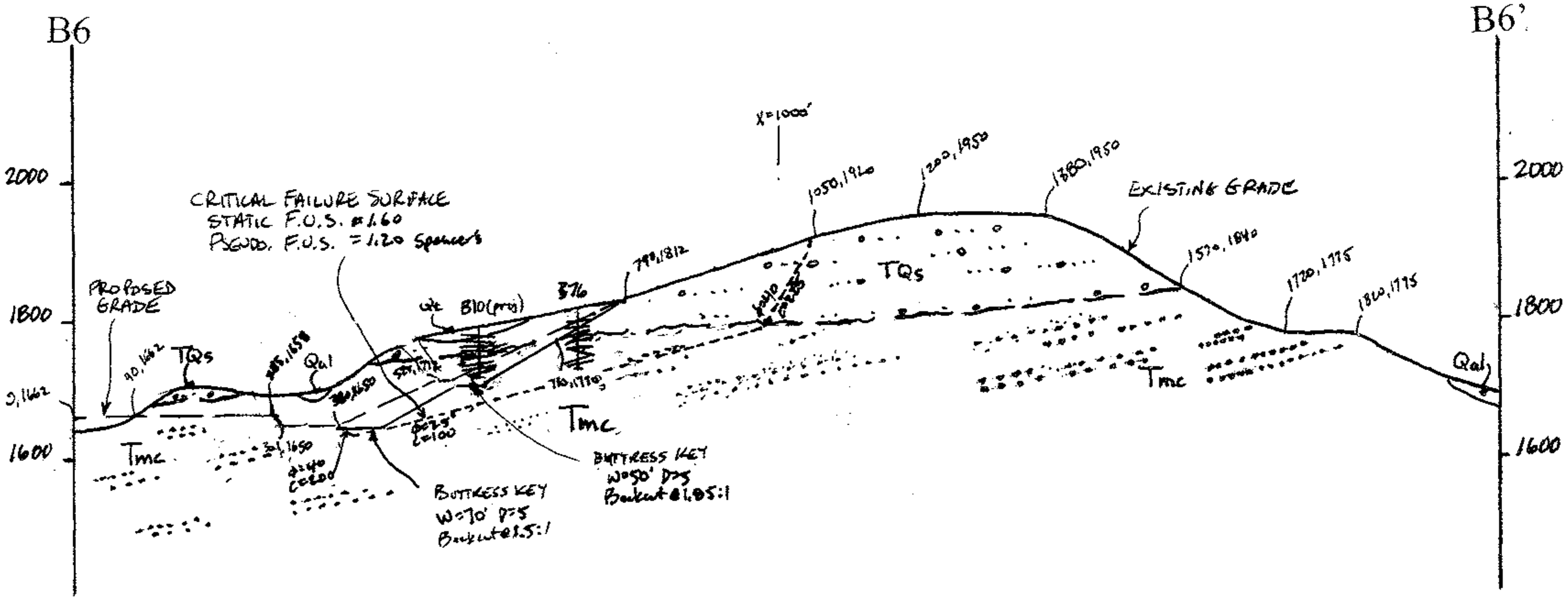


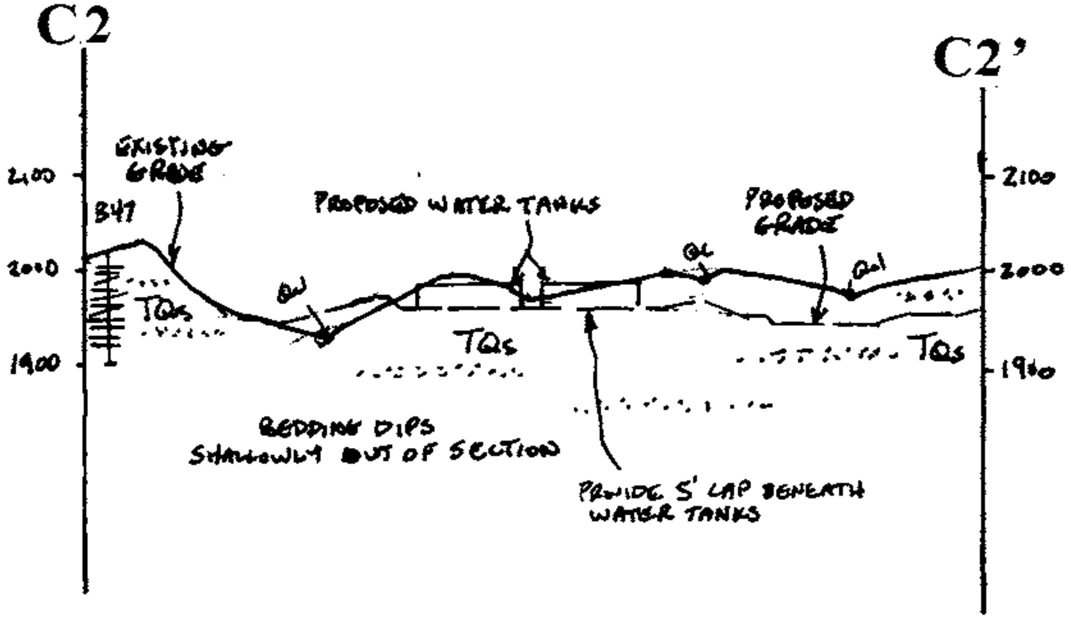


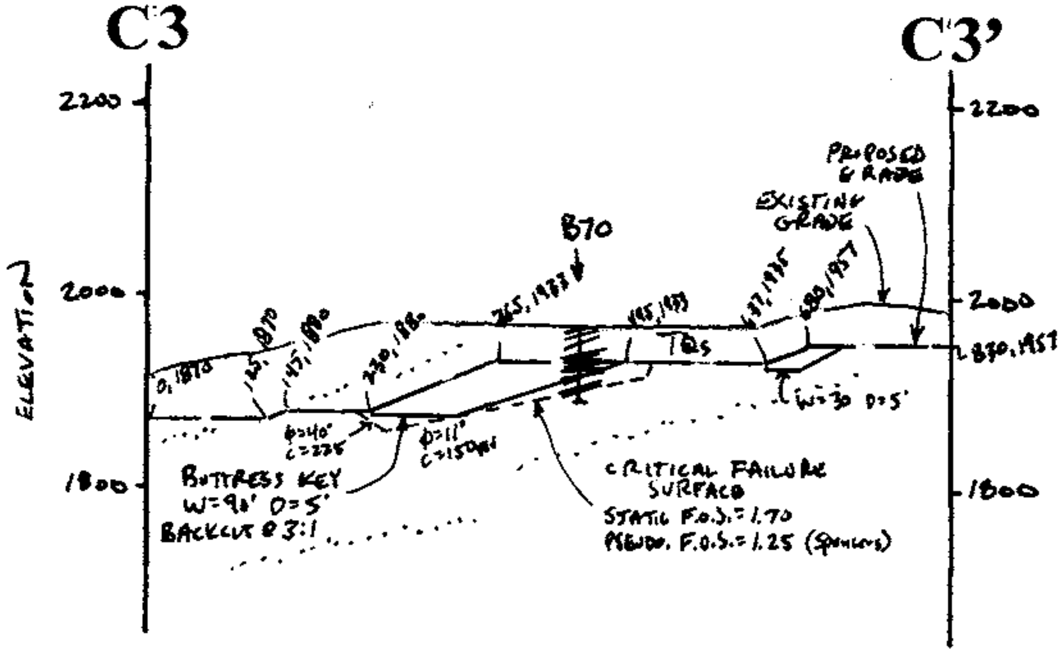
Geolabs - Westlake Village
GEOLOGY AND SOIL ENGINEERING

DATE 11/16/06 BY DS
SCALE 1"=200' W.O. 8838

PLATE 2.3







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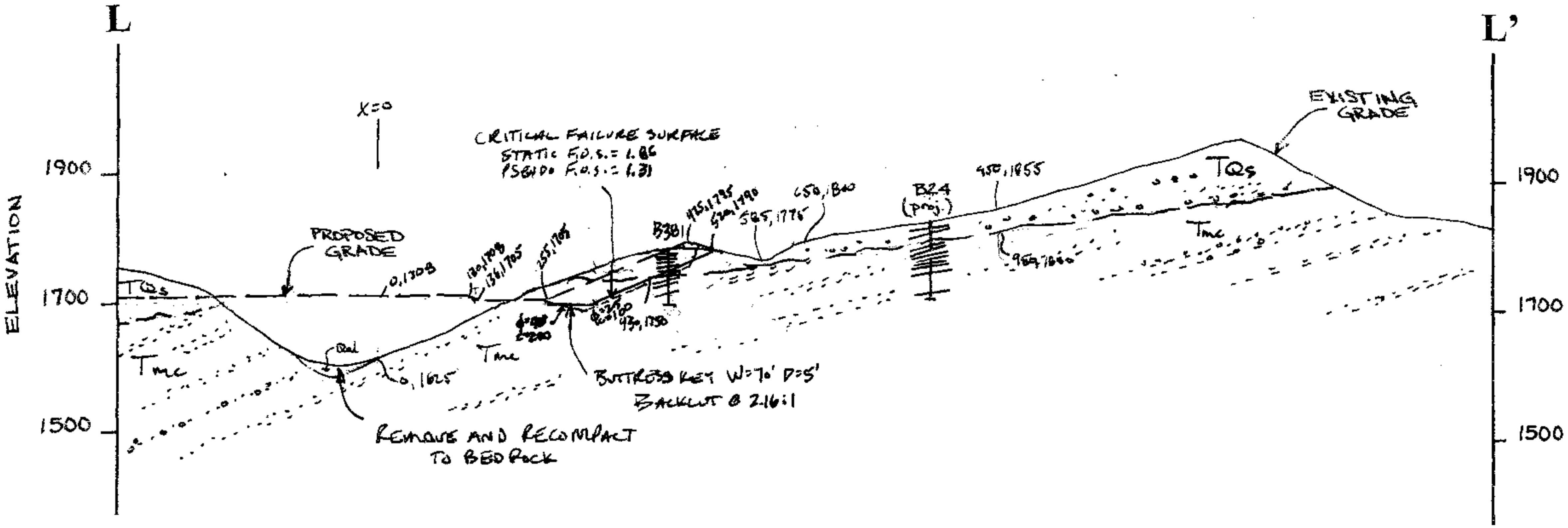
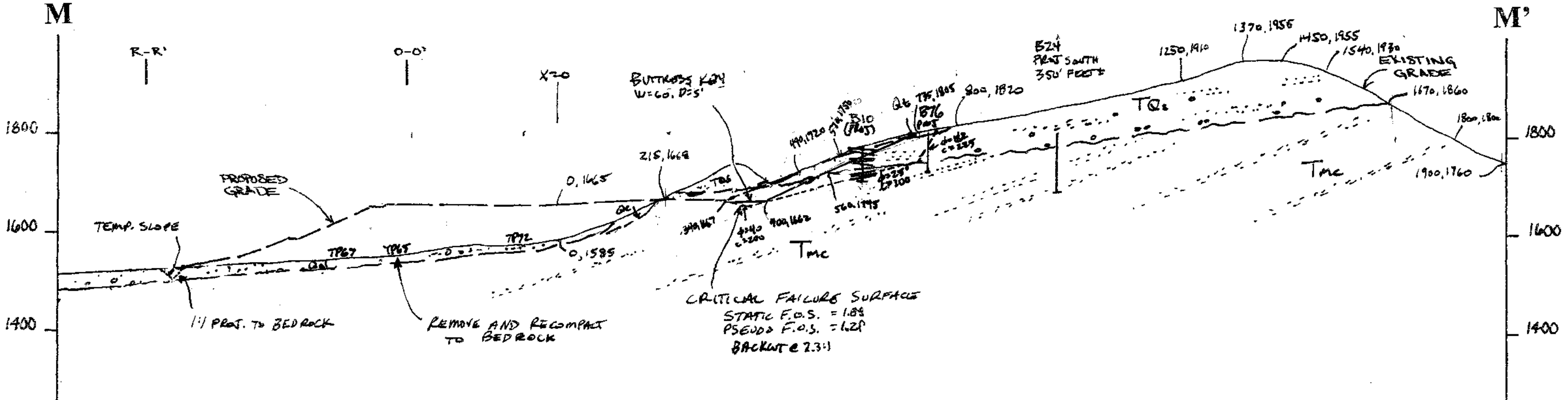
GEOLOGY AND SOIL ENGINEERING

DATE 11/16/06 BY DS
SCALE 1"=20' W.O. 8838

PLATE 2.4

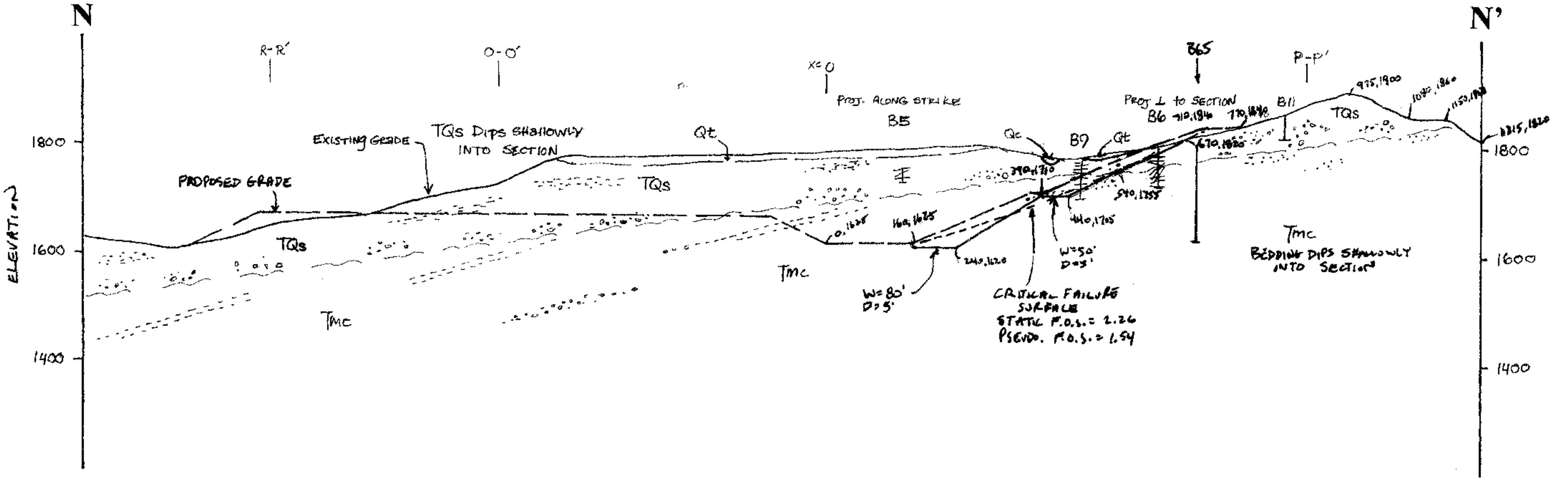


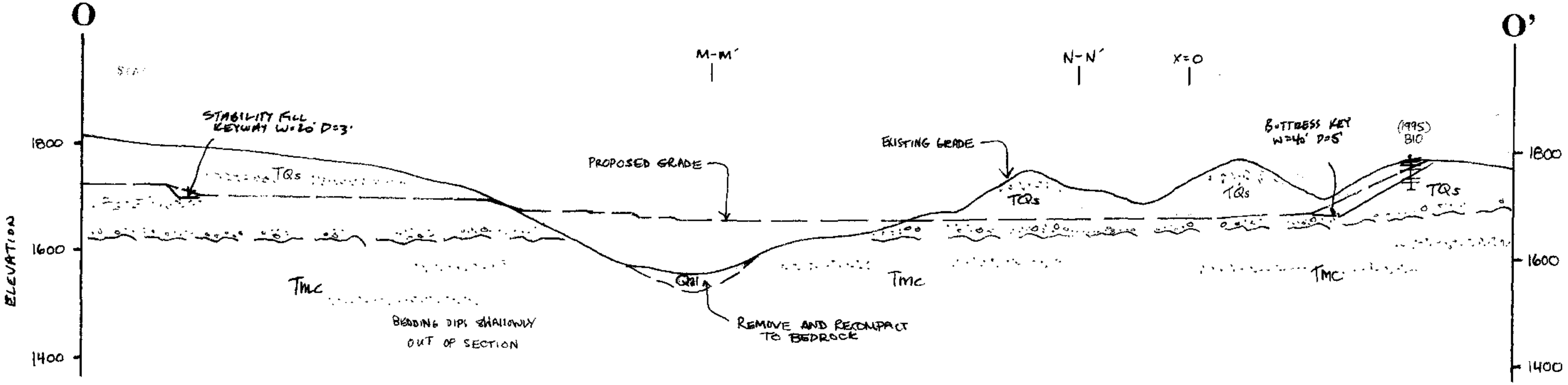


Geolabs – Westlake Village
GEOLOGY AND SOIL ENGINEERING

DATE 11/16/06 BY DS
SCALE 1" = 200' W.O. 8838

PLATE 2.5





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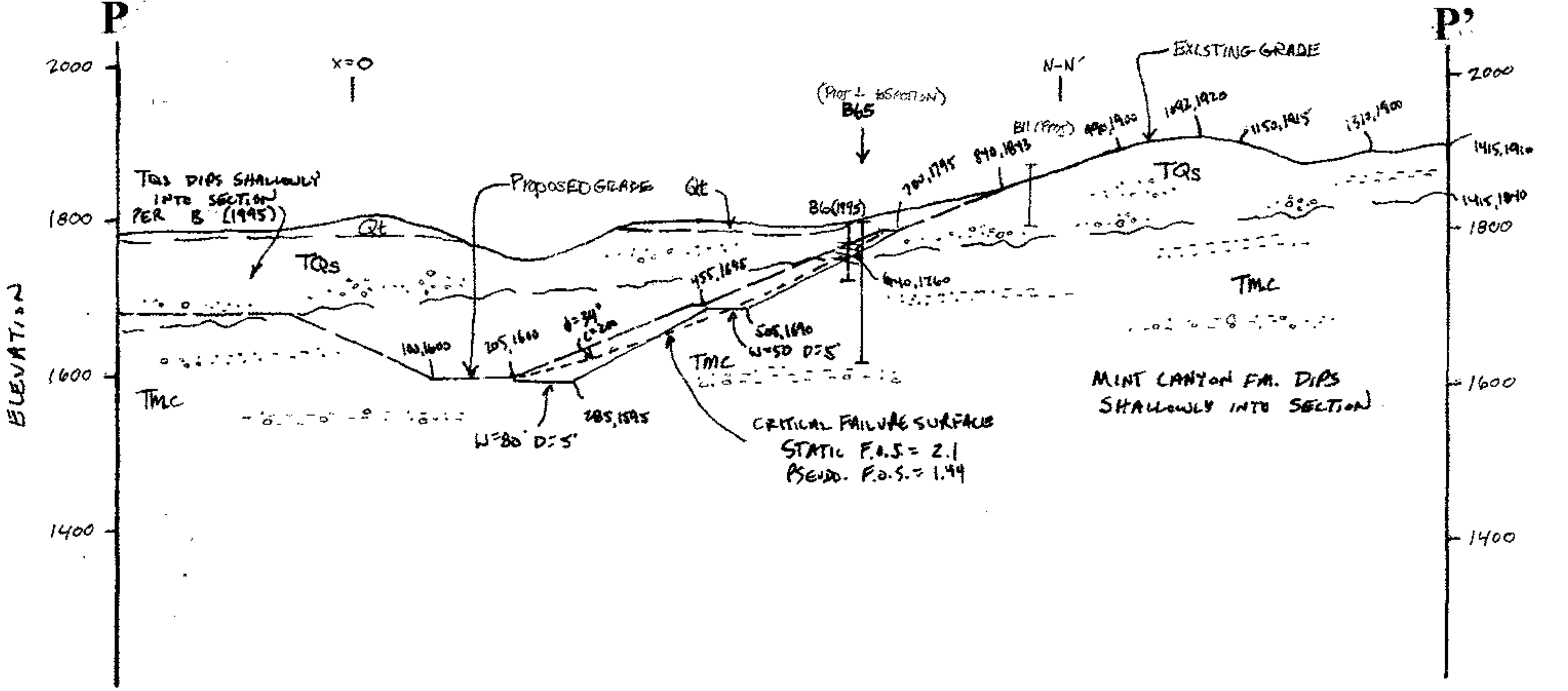
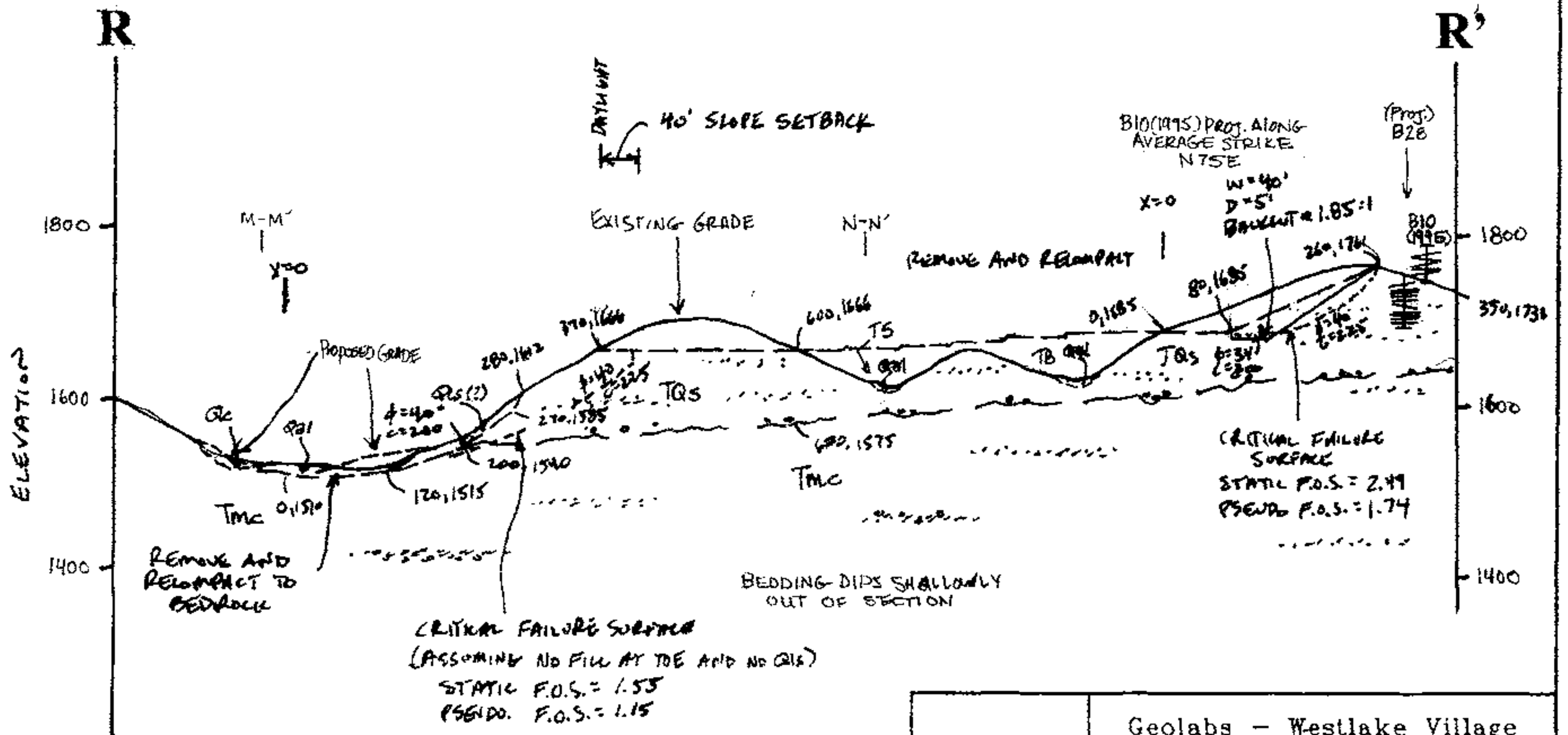
DATE 11/16/06 BY JN
SCALE 1" = 200' W.O. 8838

PLATE 2.6





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DATE 11/16/06 BY JN
SCALE 1"=200' W.O. 8938

PLATE 2.7

APPENDIX A

BORING LOGS
B30 THROUGH B76

TTM 060922, SKYLINE RANCH
COUNTY OF LOS ANGELES, CALIFORNIA

SUBSURFACE DATA

LOG OF BORING B30

CLIENT: Pardee Homes	PROJECT: Skyline Ranch	W.O.: 8838
LOCATION: Santa Clarita	ELEVATION: 1518'	DATE: 3/24/06
RIG TYPE: 6" HSA	HAMMER WEIGHTS: 140 lbs.	DROP: 30"

	N	U	B	M	DD	DESCRIPTION	ATTITUDES
0			X			Alluvium: Brown silty fine to coarse grained SAND with gravel and cobbles, abundant roothairs, loose, moist.	
			X				
			X				
			X				
5	17/22/19	C		2.2	125.0	Light gray gravelly SAND, medium dense, dry.	
10	15/50-6"	C				Tan to light gray sandy GRAVEL, friable, dry (no sample recovered).	
15	50-3"	C				Tan to light gray sandy GRAVEL, friable, dry (no sample recovered).	
20	50-5"	C				Tan to light gray sandy GRAVEL, friable, dry (no sample recovered).	
25	8/13/26	C		5.6	121.9	Olive to tan gravelly fine to coarse grained SAND, friable, medium dense, moist.	
30						Refusal on boulder Total Depth - 30' No groundwater No caving	
35							
40							
45							

ADDITIONAL COMMENTS: Blows per 6" unless otherwise noted

C = California Sampler

Logged by: AH

Geolabs-Westlake Village

PLATE B30

SUBSURFACE DATA

LOG OF BORING B31

CLIENT: Pardee Homes	PROJECT: Skyline Ranch	W.O.: 8838
LOCATION: Santa Clarita	ELEVATION: 1518'	DATE: 3/24/06
RIG TYPE: 6" HSA	HAMMER WEIGHTS: 140 lbs.	DROP: 30"

	N	U	B	M	DD	DESCRIPTION	ATTITUDES
0						Alluvium: Brown silty fine to coarse grained SAND with gravel and cobbles, very dense at surface, but loose at 6" below surface, moist.	
5	12/21/32	C		3.2	116.7	Tan silty gravelly fine to coarse grained SAND, friable, loose, moist. @7' - Drilling through cobbles.	
10	50-5"	C		--	--	Tan gravelly fine to coarse grained SAND, friable, dry (no sample recovered).	
15	21/35/33	C		3.0	132.8	Tan gravelly fine to coarse grained SAND with cobbles, friable, dense, dry to moist.	
20	50-4"	C				Tan gravelly fine to coarse grained SAND with small cobbles, friable, dry (no sample recovered).	
25	50-0"		S			Refusal on cobble/boulder. Total Depth - 25' No groundwater No caving	
30							
35							
40							
45							

ADDITIONAL COMMENTS:

Blows per 6" unless otherwise noted
C = California Sampler
S = Standard Penetration Test

Logged by: AH

Geolabs-Westlake Village

PLATE B31

SUBSURFACE DATA

LOG OF BORING B32

CLIENT: Pardee Homes	PROJECT: Skyline Ranch	W.O.: 8838
LOCATION: Santa Clarita	ELEVATION: 1518'	DATE: 3/24/06
RIG TYPE: 6" HSA	HAMMER WEIGHTS: 140 lbs.	DROP: 30"

	N	U	B	M	DD	DESCRIPTION	ATTITUDES
0						Alluvium: Brownish tan gravelly SAND with cobbles, loose, dry.	
						Refusal on boulder/cobble	
						Total Depth - 3'	
5						No groundwater	
						No caving	
10							
15							
20							
25							
30							
35							
40							
45							

ADDITIONAL COMMENTS:

Logged by: AH

Geolabs-Westlake Village

SUBSURFACE DATA

LOG OF BORING B33

CLIENT: Pardee Homes	PROJECT: Skyline Ranch	W.O.: 8838
LOCATION: Santa Clarita	ELEVATION: 1518'	DATE: 3/24/06
RIG TYPE: 6" HSA	HAMMER WEIGHTS: 140 lbs.	DROP: 30"

	N	U	B	M	DD	DESCRIPTION	ATTITUDES
0						Alluvium: Brownish tan gravelly SAND with cobbles, loose, dry.	
						Refusal on boulder/cobble	
						Total Depth - 3'	
5						No groundwater	
						No caving	
10							
15							
20							
25							
30							
35							
40							
45							

ADDITIONAL COMMENTS:

Logged by: AH

SUBSURFACE DATA

LOG OF BORING B34

CLIENT: Pardee Homes
PROJECT: Skyline Ranch
W.O.: 8838
LOCATION: Santa Clarita
ELEVATION: 1518'
DATE: 3/24/06
RIG TYPE: 6" HSA
HAMMER WEIGHTS: 140 lbs.
DROP: 30"

	N	U	B	M	DD	DESCRIPTION	ATTITUDES
0						Alluvium: Grayish tan fine to coarse grained SAND with gravel, loose, friable, dry.	
5							
10							
15						Increasing cobbles and gravels with depth, difficult drilling.	
20						@20' - Drill teeth broke on cobbles. Refusal. Total Depth - 20' No groundwater No caving	
25							
30							
35							
40							
45							

ADDITIONAL COMMENTS:

Logged by: AH

Geolabs-Westlake Village

PLATE B34

SUBSURFACE DATA

LOG OF BORING B35

CLIENT: Pardee Homes	PROJECT: Skyline Ranch	W.O.: 8838
LOCATION: Santa Clarita	ELEVATION: 1518'	DATE: 3/24/06
RIG TYPE: 6" HSA	HAMMER WEIGHTS: 140 lbs.	DROP: 30"

	N	U	B	M	DD	DESCRIPTION	ATTITUDES
0			X			Alluvium: Brownish tan fine to coarse grained SAND with gravel and cobbles, roothairs, loose, moist.	
			X				
			X				
			X				
			X				
5						Drilling on cobble/boulder, no sample taken.	
	38/50-3"	C		6.2	119.5	Brownish tan silty fine to coarse grained SAND with gravel, medium dense, moist.	
10	38/50-4"	C		9.8	111.2	Mint Canyon Formation: Gray gravelly fine to coarse grained SANDSTONE, friable, dense, moist.	
15	50-3"	S				Gray gravelly fine to coarse grained SANDSTONE, friable, moist (no sample recovered).	
20	50-6"	S				Gray fine to medium grained SANDSTONE with gravel, friable, very hard, moist.	
25	50-6"	S				Gray fine to medium grained SANDSTONE with gravel, hard, moist.	
30						Total Depth - 25' No groundwater No caving	
35							
40							
45							

ADDITIONAL COMMENTS:

Blows per 6"

C = California Sampler

S = Standard Penetration Test

Logged by: AH

Geolabs-Westlake Village

PLATE B35

SUBSURFACE DATA LOG OF BORING B36

CLIENT: Pardee Homes	PROJECT: Skyline Ranch	W.O.: 8838
LOCATION: Santa Clarita	ELEVATION: 1518'	DATE: 3/24/06
RIG TYPE: 6" HSA	HAMMER WEIGHTS: 140 lbs.	DROP: 30"

	N	U	B	M	DD	DESCRIPTION	ATTITUDES
0			X			<u>Alluvium</u>: Brown silty fine to coarse grained SAND with gravel and cobbles, roothairs, loose, moist.	
			X				
			X				
			X				
5	8/21/26	C		--	--	Tan gravelly fine to coarse grained SAND, loose, dry.	
						Refusal on cobble/boulder.	
						Total Depth - 8'	
10						No groundwater	
						No caving	
15							
20							
25							
30							
35							
40							
45							

ADDITIONAL COMMENTS:

Blows per 6"
C = California Sampler

Logged by: AH Geolabs-Westlake Village PLATE B36

SUBSURFACE DATA

LOG OF BORING B37

CLIENT: Pardee Homes
PROJECT: Skyline Ranch
W.O.: 8838
LOCATION: Santa Clarita
ELEVATION: 1518'
DATE: 3/24/06
RIG TYPE: 6" HSA
HAMMER WEIGHTS: 140 lbs.
DROP: 30"

	N	U	B	M	DD	DESCRIPTION	ATTITUDES
0						Alluvium: Brown/tan silty fine to coarse grained SAND with gravel	
						and cobbles, roothairs, loose, moist.	
5							
						@8' Cobble zone.	
10						Refusal on cobble/boulder.	
						Total Depth - 8'	
						No groundwater	
						No caving	
15							
20							
25							
30							
35							
40							
45							

ADDITIONAL COMMENTS:

Logged by: AH

Geolabs-Westlake Village

PLATE B37

SUBSURFACE DATA

LOG OF BORING B38

CLIENT: Pardee Homes	PROJECT: Skyline Ranch	W.O.: 8838.002
LOCATION: Santa Clarita	ELEVATION: 1787'±	DATE: 4/21/06
RIG TYPE: 24" Bucket	HAMMER WEIGHTS: Kelly Bar Weights	DROP: 12"

	N	U	B	M	DD	DESCRIPTION	ATTITUDES
0			X			Colluvium: Medium brown silty SAND and abundant scattered gravel and cobbles, subrounded, occasional rootlets, damp, medium dense.	
			X				
			X				
			X				
			X			Weathered Saugus Formation: Tan to light brown silty SANDSTONE with abundant gravel and cobbles, well graded, friable, weathered, damp, dense.	
5							
							@7' Approx. BN90/17W
10	5-12"	C		9.5	115.0	Highly channelized friable SANDSTONE with gravel to weakly cemented sandy CONGLOMERATE, well graded, very dense, moist.	@10' Approx. Horizontal bedding
						Saugus Formation: Undulatory, scoured contact with cobble to boulder CONGLOMERATE with occasional zones of gravelly SANDSTONE, interbedded.	@13' Approx. Horizontal bedding
15							
						Gravel CONGLOMERATE.	@17' Approx. BN25W/5SW
						Tan medium to coarse grained SANDSTONE, slightly friable to friable, dense, moist.	
20	5-12"	C		10.4	115.9	@20' - Cobble CONGLOMERATE. @22' - Medium to coarse grained SANDSTONE with abundant gravel, friable, well graded.	@20' Approx. BN23W/8SW
							@23' Approx. Horizontal bedding
25						@25.5' - Gravelly SANDSTONE with occasional subrounded cobbles, well graded.	
							@27' Approx. Channel N68E/6NW
30	14-12"	C	X	4.3	111.5	Tan coarse grained SANDSTONE with scattered gravels, moist, friable. @31.5' - Fine to coarse gravel CONGLOMERATE, matrix supported, slightly friable to friable, matrix is well graded silty SAND.	
			X				
			X				
			X				
			X				
35						Tan coarse gravel CONGLOMERATE, matrix supported, slightly friable to friable with occasional interbeds of well graded SANDSTONE, massive, very dense, moist.	
						Discontinuous sand lens.	@39' Approx. BN3E/55SE
40	12-12"	C		10.3	104.5	Silty very fine to medium grained SANDSTONE, friable. Slightly undulatory contact. Light brown silty very well graded SANDSTONE with scattered fine to coarse gravel.	@42' Approx. Horizontal bedding
45							

ADDITIONAL COMMENTS:

Blows per 6"

C = Modified California Sampler

Kelly Bar Weights: 0 - 30', 5,619 lbs.
31 - 60', 3,745 lbs.
61 - 90', 2,280 lbs.

Logged by: AH/DS

Geolabs-Westlake Village

CLIENT: Pardee Homes	PROJECT: Skyline Ranch	W.O.: 8838.002
LOCATION: Santa Clarita	ELEVATION: 1787'±	DATE: 4/21/06
RIG TYPE: 24" Bucket	HAMMER WEIGHTS: Kelly Bar Weights	DROP: 12"

	N	U	B	M	DD	DESCRIPTION	ATTITUDES
40							
45							
						@47.5' - Tan fine to coarse grained SANDSTONE with scattered gravel, friable, very dense.	@48' Approx. BN26E/4NW
50	15-12"	C		2.9	122.3		
						Buff fine to very coarse grained SANDSTONE with scattered gravel, well graded.	@52' Approx. BN26E/5NW
55						Cobble to boulder CONGLOMERATE, matrix supported, well graded, sand and gravel matrix.	
						@56.5' - Medium to coarse grained SANDSTONE with gravel interbeds.	@57' B N26E/8NW
60						Tan to light brown to orangish brown sandy CONGLOMERATE with gravel to cobble clasts, matrix supported, friable, moist, very dense.	
	20-10"	C	X	5.7	122.2		
65						Mint Canyon Formation: Highly scoured undulatory contact, light gray gravel CONGLOMERATE, moderately cemented, hard, moist.	@64' Approx. Contact Horizonta
						@66.5' - Base of CONGLOMERATE, cemented zone (approx. 6" thick) with scattered cobbles.	@66.5' Approx. Contact N20E/24NW
						@67' - Light gray fine to medium grained SANDSTONE, poorly graded, moderately cemented, hard, moist.	
70	11-5"	C		6.2	115.3	Light gray gravelly SANDSTONE with occasional brown siltstone ripup clasts (clasts up to 12" diameter), friable, moist, very dense.	
	18-8"	C					
75						@74.5' - Massively bedded light gray fine to medium grained SANDSTONE, poorly graded, moderately cemented, hard, moist.	@74.5' Approx. BN14W/18SW
						Well graded fine to coarse gravel CONGLOMERATE.	
80	15-12"	C	X	15.5	116.8	Black silty very fine grained SANDSTONE (3-4" thick), continuous around boring.	@80' B N28W/17SW
						@80.5' - Light gray silty very fine to fine grained SANDSTONE, moist, very dense.	
						@83' - Light gray gravelly CONGLOMERATE.	
85							

ADDITIONAL COMMENTS:

Total Depth - 90'
No groundwater
Minor caving at 7'
Backfilled

C = Modified California Sampler
Kelly Bar Weight) - 30', 5,619 lbs.
31 - 60', 3,745 lbs.
61 - 90', 2,280 lbs.

Logged by: AH/DS

SUBSURFACE DATA

LOG OF BORING B39

CLIENT: Pardee Homes	PROJECT: Skyline Ranch	W.O.: 8838.002
LOCATION: Santa Clarita	ELEVATION: 1780'±	DATE: 4/25/06
RIG TYPE: 24" Bucket	HAMMER WEIGHTS: Kelly Bar Weights	DROP: 12"

	N	U	B	M	DD	DESCRIPTION	ATTITUDES
0			X X X			Artificial Fill: Reddish brown clayey silty fine to coarse grained SAND with gravel, moist, medium dense, trash. @1' - Terrace Deposit: Orangish brown fine to coarse grained SAND with gravel and cobbles, dry to slightly damp.	
5						Saugus Formation: Undulatory contact to brown silty medium to coarse grained SANDSTONE with gravel, very dense, moist. @7' - Brown fine grained SANDSTONE with occasional gravel, massive, very dense, moist.	@6' Approx. Horizontal bedding
10						@9' - Brown fine to coarse grained SANDSTONE with occasional	
	5-12"	C		12.1	112.0	cobbles, friable, very dense, fining upwards, moist. Brown fine to medium grained SANDSTONE with occasional gravel, thickly bedded, moist, weakly cemented, very dense, moist.	@12' Approx. BN37E/23SE
15						Brown medium to coarse grained SANDSTONE with fine gravel and occasional cobbles, subrounded, highly channelized, friable, very dense, moist.	@17' Approx. BN45W/9NE @19.5' Approx. BN14W/6SW
20	8-11"	C		1.3	121.6	@19.5' - Coarse sand stringer (approx. 4" thick). Brown fine to coarse grained sandy gravel and cobble CONGLOMERATE, friable, very dense, moist.	
25						3" thick fine to medium grained SANDSTONE lens with subangular fine gravel.	@28' Approx. Horizontal bedding
30	11-10"	C	X	1.5	117.7	@29' - Brown fine to medium grained SANDSTONE, friable, well graded, very dense, moist. @30.5' - Channelized interbedded medium to coarse grained SANDSTONE with fine gravel to occasional cobbles, interbeds 2-4" zones of fine to medium grained SANDSTONE.	@33.5' Approx. BN51E/19NW
35						@33.5' - Undulatory channelized contact between medium to coarse grained gravelly SANDSTONE and fine to medium grained SANDSTONE, contact is discontinuous around boring.	
40	19-12"	C		4.1	116.8	Undulatory contact with brown fine grained SANDSTONE, friable, very dense with occasional cobbles and occasional zones of discontinuous silty fine grained SANDSTONE, fining upwards, moist.	@40' Approx. Horizontal contact
45							

ADDITIONAL COMMENTS:

C = Modified California Sampler

Kelly Bar Weights: 0 - 30', 5,619 lbs.
31 - 60', 3,745 lbs.
61 - 90', 2,280 lbs.
91 - 120', 1,223 lbs.

Logged by: AH/SBS

Geolabs-Westlake Village

PLATE B39.1

SUBSURFACE DATA

LOG OF BORING B39

CLIENT: Pardee Homes	PROJECT: Skyline Ranch	W.O.: 8838.002
LOCATION: Santa Clarita	ELEVATION: 1780'±	DATE: 4/25/06
RIG TYPE: 24" Bucket	HAMMER WEIGHTS: Kelly Bar Weights	DROP: 12"

	N	U	B	M	DD	DESCRIPTION	ATTITUDES
40							
45						Brown cobble CONGLOMERATE with silty sand matrix, matrix supported. @44.5' - Brown medium to coarse grained SANDSTONE and CONGLOMERATE, interbedded, undulatory, pinched contact. Massively bedded fine to medium grained SANDSTONE, poorly graded, friable.	
50	15-10"	C	X	9.1	109.7	Undulatory contact to brown cobble CONGLOMERATE, fine to medium sand matrix with occasional discontinuous pockets of clayey SANDSTONE, highly channelized, friable. @51' - 3" thick clayey discontinuous SANDSTONE, grading into fine to medium grained SANDSTONE with occasional cobble and boulder CONGLOMERATE.	@50' Approx. Contact N88E/14SE @51' B N50W/21SW
55							
60						@58.5' - Slightly irregular contact to brown fine grained SANDSTONE, friable. @60.5' - Channeled fine grained gravel to cobble CONGLOMERATE, subrounded to subangular (fine clasts are more angular) friable fine to coarse sand matrix, beds are 2-4" thick.	@58.5' Approx. BN24W/17SW @62' Approx. Channel contact N34W/20-33SW
65	20-9"	C	X X X	8.0	111.7	@64.5' - Cobble CONGLOMERATE, well graded, matrix supported to fine gravel to cobble CONGLOMERATE, occasional thick clast supported beds, well graded, friable channels dipping to NW and NE.	@64.5' B N60E/17NW
70	21-6"	C		1.9	113.8	@71' Thin bedded fine gravel CONGLOMERATE, friable, sand matrix and thinly bedded fine gravel to cobble CONGLOMERATE, well graded, friable, sand matrix.	@71' B N30E/11NW
75						@73' - Occasional cobble to boulder CONGLOMERATE. @74' - Fine grained gravel to cobble CONGLOMERATE with occasional subrounded boulders.	@75' B N80E/19NW
80	20-5"	C		2.4	113.2	@78' Fine gravel CONGLOMERATE to fine grained gravelly coarse grained SANDSTONE, friable. Channelized interbedded medium to coarse grained SANDSTONE, friable, damp. Occasional boulders, boring is tighter below, fine grained to cobble CONGLOMERATE, 2-4" thick, fine gravelly medium to coarse grained SANDSTONE.	@80' Approx. Channel N40E/6NW
85							

ADDITIONAL COMMENTS:

C = Modified California Sampler

Kelly Bar Weights:) - 30', 5,619 lbs.
31 - 60', 3,745 lbs.
61 - 90', 2,280 lbs.
91 - 120', 1,223 lbs.

Logged by: AH/SBS

Geolabs-Westlake Village

SUBSURFACE DATA

LOG OF BORING B39

CLIENT: Pardee Homes	PROJECT: Skyline Ranch	W.O.: 8838.002
LOCATION: Santa Clarita	ELEVATION: 1780'±	DATE: 4/25/06
RIG TYPE: 24" Bucket	HAMMER WEIGHTS: Kelly Bar Weights	DROP: 12"

	N	U	B	M	DD	DESCRIPTION	ATTITUDES
80							
85						Clayey fine grained SANDSTONE, 2" thick scoured into CONGLOMERATE above, non-plastic. @87' - Thin fine gravel to cobble CONGLOMERATE.	@86' B N40E/6NW
	14-12"	C	X	27.7	95.2	1/4" thick clayey SILTSTONE.	@89' B N48W/11NE
90			X			@89.5' - 1/4" thick clayey SILTSTONE. @90' - Friable coarse grained SANDSTONE, moist. @91' - Fine gravel to cobble to boulder CONGLOMERATE, well graded, coarse sand matrix supported. @92' - Fine gravel to cobble CONGLOMERATE, well graded, coarse sand matrix supported.	
95						@95' - Occasional boulder.	@95' Approx. Horizontal bedding
100	20-6"	C		2.6	111.4	Brown gravelly fine to coarse grained SANDSTONE, slightly damp, friable.	@102' Approx. Horizontal bedding
105						Brown gravel and cobble CONGLOMERATE, fine to coarse grained sandy matrix, damp, friable, well graded.	
110						Total Depth - 108' No groundwater No caving Backfilled	
115							
120							
125							

ADDITIONAL COMMENTS:

C = Modified California Sampler

Kelly Bar Weights:) - 30', 5,619 lbs.
31 - 60', 3,745 lbs.
61 - 90', 2,280 lbs.
91 - 120', 1,223 lbs.

Logged by: AH/SBS

SUBSURFACE DATA

LOG OF BORING B40

CLIENT: Pardee Homes	PROJECT: Skyline Ranch	W.O.: 8838.001
LOCATION: Santa Clarita	ELEVATION: 1651'±	DATE: 5-8-06
RIG TYPE: 24" Bucket	HAMMER WEIGHTS: Kelly Bar Weights	DROP: 12"

	N	U	B	M	DD	DESCRIPTION	ATTITUDES
0						Alluvium: Dark grayish brown fine to medium grained SAND with 40% subangular fine to coarse gravel clasts and 5-10% subrounded cobble to boulder clasts, medium dense, moist, roots (1/4" diameter) to brown fine to medium grained SAND, medium dense, moist.	
			X				
5						Brown fine to coarse grained SAND with 40% subangular fine to coarse gravel clasts and 5-10% subrounded cobble to boulder clasts, medium dense, moist, roots (1/4" diameter).	
10	18/ Refusal	C		10.9	117.8	Mint Canyon Formation: Scoured contact to subrounded coarse gravel CONGLOMERATE, clasts commonly fine to coarse gravel (granitic), moderately cemented, greenish gray silty fine to medium sandstone matrix, channeled, hard, moist. @12' - Sharp contact to greenish gray silty fine to coarse grained SANDSTONE (12" thick), grading to coarse grained SANDSTONE, occasionally subrounded fine to coarse gravel, fining upward, hard, moist, moderately indurated. @17' - Grading to subrounded coarse gravel to cobble (granitics) CONGLOMERATE, moderately cemented greenish gray silty fine to coarse grained sandstone matrix, massive, channeled, hard, moist.	@10' Contact N49W/13NE to 34NE @12' Contact N74E/36NW
15							
20	13/25	C		9.5	126.1	Subrounded coarse gravel to cobble CONGLOMERATE, moderately cemented greenish gray silty fine to coarse sandstone matrix, channeled, massive, hard, moist.	@20' Channel N21E/40-60NW
25							
30	15/30	C		5.0	112.8	Bedded coarse gravel to cobble CONGLOMERATE to fine grained SANDSTONE to channeled, scoured fine gravel to cobble CONGLOMERATE. Increase in subrounded coarse cobble clasts, massive.	@28' B N33E/21NW
35						Subrounded gravel to cobble CONGLOMERATE, moderately cemented greenish gray fine to coarse sandstone matrix, massive, hard, moist.	
			X				
40	30/30	C		11.5	127.3	4-8" diameter greenish gray SILTSTONE ripup clasts in gravel to cobble CONGLOMERATE. Grades to greenish gray silty clayey fine grained SANDSTONE with undulatory near vertical, striated shears, hard, moist, to fine grained gravel to cobble CONGLOMERATE with siltstone ripup clasts in moderately cemented greenish gray fine to coarse sandstone matrix, hard, moist.	@39.5' Contact N84E/24NW @41' Shear N20E/Vertical @41.5' B N18E/27NW
45							

ADDITIONAL COMMENTS:

Blows per 6"

C = Modified California Sampler

Kelly Bar Weights: 0 - 50', 2,280 lbs.
50 - 75', 1,220 lbs.

Logged by: SBS

Geolabs-Westlake Village

SUBSURFACE DATA

LOG OF BORING B40

CLIENT: Pardee Homes	PROJECT: Skyline Ranch	W.O.: 8838.001
LOCATION: Santa Clarita	ELEVATION: 1651'±	DATE: 5-8-06
RIG TYPE: 24" Bucket	HAMMER WEIGHTS: Kelly Bar Weights	DROP: 12"

	N	U	B	M	DD	DESCRIPTION	ATTITUDES
40							
						Grading to fining upward sequences of greenish gray clayey fine grained SANDSTONE to fine grained SANDSTONE (with depth), hard, moist.	@42.5' Contact N64E/13NW @44.5' Contact N24W/26NE
45						@44.5' - Light seep in west wall above greenish gray clayey fine grained SANDSTONE (1mm thick brown clayey fine grained SANDSTONE at contact, hard, moist, massive, grading to fine grained SANDSTONE, abundant white calcium carbonate nodules 4-8" diameter), hard, moist, massive.	
50	15/30	C		11.0	121.7	Grades to greenish gray CLAYSTONE, hard, moist, massive, steeply dipping shears.	
						Grades to clayey silty fine grained SANDSTONE, hard, moist, massive.	@52' Shear N10E/70-85NW
55			X				
60	50-6"	C		12.0	112.9	Continued fining upward sequences of greenish gray fine grained SANDSTONE to clayey fine grained SANDSTONE (typically 2 feet thick), hard, moist, massive.	
65						Grades to fine to coarse grained SANDSTONE, occasional subrounded boulder, hard, moist, massive, to fine to coarse grained gravel CONGLOMERATE, moderately cemented greenish gray fine to coarse sandstone matrix, hard, moist.	
70						Total Depth - 70' Light seep in W wall at 44.5' and seep below 70' No caving Backfilled	
75							
80							
85							

ADDITIONAL COMMENTS:

Blows per 6"
C = Modified California Sampler
Kelly Bar Weights:) - 50', 2,280 lbs.
50 - 75', 1,220 lbs.

Logged by: SBS

Geolabs-Westlake Village

SUBSURFACE DATA

LOG OF BORING B41

CLIENT: Pardee Homes	PROJECT: Skyline Ranch	W.O.: 8838
LOCATION: Santa Clarita	ELEVATION: 1754'±	DATE: 5/10/06
RIG TYPE: 24" Bucket	HAMMER WEIGHTS: Kelly Bar Weights	DROP: 12"

	N	U	B	M	DD	DESCRIPTION	ATTITUDES
0						Colluvium: Light brown fine to coarse grained SAND with gravel and cobbles, subrounded clasts, friable, loose, dry.	
						Saugus Formation: Light brown fine to coarse grained SANDSTONE with gravel, interbedded with gravel stringers, beds approximately 1/4" to 1/2" thick, friable, cross-bedded, highly channelized.	
5							
						@7.5' - Medium to coarse grained SANDSTONE with gravel, dense, moist.	
10	15/16			2.1	126.0	Fine sand lens approximately 2" thick. @11' - Light brown fine to coarse grained SANDSTONE with gravel, interbedded gravel stringers, highly channelized, friable, moist, very dense.	@11' Channel BN49W/9NE
15							
						Light brown cobble and boulder CONGLOMERATE, matrix supported, sand matrix.	
20						Light brown interbedded fine to coarse grained SANDSTONE and gravel CONGLOMERATE, 1" and 12" thick beds, highly channelized, slightly friable to weakly cemented, moist, hard.	@21' Channel BN39E/9SE
25							@27' Channel BN38W/25NE
30							
						Light brown boulder and cobble CONGLOMERATE, matrix supported, boring belled to approximately 5' diameter, corkscrewing down.	
35							
40							
						No downlogging below 43' because boring is excessively wide and unsafe to log.	
45							

ADDITIONAL COMMENTS:

Blows per 6"

C = Modified California Sampler

Kelly Bar Weights: 0 - 50', 2,280 lbs.
50 - 75', 1,200 lbs.

Logged by: AH

Geolabs-Westlake Village

PLATE B41.1

SUBSURFACE DATA LOG OF BORING B41

CLIENT: Pardee Homes	PROJECT: Skyline Ranch	W.O.: 8838
LOCATION: Santa Clarita	ELEVATION: 1754'±	DATE: 5/10/06
RIG TYPE: 24" Bucket	HAMMER WEIGHTS: Kelly Bar Weights	DROP: 12"

	N	U	B	M	DD	DESCRIPTION	ATTITUDES
40							
45						Light brown fine to coarse grained SANDSTONE with subangular gravel and subrounded cobbles, friable, moist, hard.	
50							
55						Light brown fine to coarse grained SANDSTONE with subangular gravel subrounded cobbles, friable, moist, hard.	
60							
						Refusal on boulder.	
65							
70						Total Depth - 63' No groundwater No caving Backfilled	
75							
80							
85							

ADDITIONAL COMMENTS:

Logged by: AH Geolabs-Westlake Village

SUBSURFACE DATA

LOG OF BORING B42

CLIENT: Pardee Homes	PROJECT: Skyline Ranch	W.O.: 8838
LOCATION: Santa Clarita	ELEVATION: 2160'±	DATE: 5/15/06
RIG TYPE: 24" Bucket	HAMMER WEIGHTS: Kelly Bar Weights	DROP: 12"

	N	U	B	M	DD	DESCRIPTION	ATTITUDES
0						<u>Colluvium</u>: Brown clayey silty SAND with gravel, cobbles, and boulders, medium dense, moist.	
						<u>Mint Canyon Formation</u>: Tan SANDSTONE with gravel, cobbles, and boulders, moist.	
5							
10	15-6"	C		3.2	132.8	Tan fine to medium grained SANDSTONE with fine to coarse gravel, friable, dry (30-40% coarse gravel).	
15							
						Refusal on boulder at 17'	
20							
25							
30							
35							
40							
45							

ADDITIONAL COMMENTS:

Blows per 6"
C = Modified California Sampler
Kelly Bar Weights: 0 - 50', 2,280 lbs.
50 - 75', 1,200 lbs.

Logged by: AH

PLATE B42

SUBSURFACE DATA

LOG OF BORING B42a

CLIENT: Pardee Homes	PROJECT: Skyline Ranch	W.O.: 8838
LOCATION: Santa Clarita	ELEVATION: 2160'±	DATE: 5/15/06
RIG TYPE: 24" Bucket	HAMMER WEIGHTS: Kelly Bar Weights	DROP: 12"

	N	U	B	M	DD	DESCRIPTION	ATTITUDES
0						Colluvium: Brown clayey silty SAND with gravel, cobbles, and boulders, medium dense, moist. Mint Canyon Formation: Tan CONGLOMERATE, friable sandstone matrix, dry.	
5						Subrounded to subangular coarse gravel to boulder CONGLOMERATE well graded, weakly cemented fine to coarse grained SANDSTONE matrix, bedded, hard, moist, clasts are granitic, quarzitic, volcanic (5-10% boulder size).	@7' B N55W/22NE
10						@10' - Slightly friable matrix. Occasional 2-12" thick subangular fine to coarse grained gravel CONGLOMERATE in fine to coarse grained sandstone matrix, slightly friable, hard, moist.	@11' B N20W/20NE
15						@24' - 18-30" boulder in hard, moist, slightly friable fine to coarse grained SANDSTONE, belling to 3' diameter, SW-SE dipping channels (20-30°), unsafe to downhole below 25'.	@15' B N85E/18SE
20	4/10	C		4.9	110.4		@19' Channel BN-S/26SE to N30W/25SW @21' B N30W/19NE
25							
30	6/13	C		6.3	116.0	Tan SANDSTONE with fine cobbles and angular gravel (approximately 60% coarse clasts), cobbles are subangular, finer clasts are more angular, well graded, friable, moist.	
35							
40	6/15	C				Cobble in shoe, no sample recovered, tan SANDSTONE with gravel to cobble clasts, clasts are subrounded, smaller clasts are subangular, moist, friable.	
45							

ADDITIONAL COMMENTS:

Blows per 6"

C = Modified California Sampler

Kelly Bar Weights: 0 - 50', 2,280 lbs.
50 - 75', 1,200 lbs.

Logged by: AH/SBS

SUBSURFACE DATA LOG OF BORING B42a

CLIENT: Pardee Homes	PROJECT: Skyline Ranch	W.O.: 8838
LOCATION: Santa Clarita	ELEVATION: 2160'±	DATE: 5/15/06
RIG TYPE: 24" Bucket	HAMMER WEIGHTS: Kelly Bar Weights	DROP: 12"

	N	U	B	M	DD	DESCRIPTION	ATTITUDES
40							
45							
50	6/17	C		5.9	126.5	Tan gravelly fine to coarse grained SANDSTONE, gravel is subrounded (approximately 25% gravel), moist, friable.	
55							
60	18/26	C		6.6	110.8	Tan gravelly fine to coarse grained SANDSTONE, subangular clasts (approximately 20% gravel), moist, friable. Frequent boulders.	
65							
						Refusal on boulders.	
70							
75						Total Depth - 68' No groundwater No caving Backfilled	
80							
85							

ADDITIONAL COMMENTS:

Blows per 6"

C = Modified California Sampler

Kelly Bar Weights:) - 50', 2,280 lbs.
50 - 75', 1,200 lbs.

SUBSURFACE DATA

LOG OF BORING B43

CLIENT: Pardee Homes	PROJECT: Skyline Ranch	W.O.: 8838
LOCATION: Santa Clarita	ELEVATION: 2115'±	DATE: 5/18/06
RIG TYPE: 24" Bucket	HAMMER WEIGHTS: Kelly Bar Weights	DROP: 12"

	N	U	B	M	DD	DESCRIPTION	ATTITUDES
0						Colluvium: Brown silty clayey gravelly SAND with cobbles, moist, medium dense. @1' - Mint Canyon Formation: Tan cobble CONGLOMERATE, gravel and sand matrix, matrix supported, friable, moist (approximately 15% cobbles, 45% sand, 40% gravel), cobbles are subrounded, coarse sands and gravel are subangular	
5							
						Drilling on cobbles and boulders, drilling is very difficult. @8' - Boulder to cobble CONGLOMERATE, clasts mostly grano-diorite,	@8' Approx. BN17E/15NW
10	3/5	C		8.0	105.0	approximately 10% boulders, clast supported.	
						Subangular boulder CONGLOMERATE, boulders up to 2' diameter, clast supported, approximately 60% boulders, gravel and fine to medium sand matrix.	
15			X				
						Boulder to cobble CONGLOMERATE (10% boulders, 40% cobbles, 25% sand, 25% gravel), subangular to subrounded clasts, fine to medium sand and gravel matrix.	
20							
	23-10"	C		11.6	--	@22.5' - Moderately cemented fine to medium grained SANDSTONE, discontinuous around hole, hard, dry. @23' - Cobble CONGLOMERATE with occasional boulder (less than 5%), subrounded to subangular cobbles, clast supported.	@23' Approx. BN36W/11SW
25							
30	6/10	C		7.3	93.9	Boulder and cobble CONGLOMERATE, boulders up to 2' diameter, clast supported (40% boulders, 20% cobbles).	
35						Refusal at 34' on boulders No groundwater No caving Backfilled	
40							
45							

ADDITIONAL COMMENTS:

Blows per 6"

C = Modified California Sampler

Kelly Bar Weights: 0 - 50', 2,280 lbs.
50 - 75', 1,200 lbs.

Logged by: AH

SUBSURFACE DATA

LOG OF BORING B44

CLIENT: Pardee Homes	PROJECT: Skyline Ranch	W.O.: 8838
LOCATION: Santa Clarita	ELEVATION: 2060'±	DATE: 5/26/06
RIG TYPE: 24" Bucket	HAMMER WEIGHTS: Kelly Bar Weights	DROP:

	N	U	B	M	DD	DESCRIPTION	ATTITUDES
0						Mint Canyon Formation: Dark brown clayey fine grained SAND with subrounded coarse gravel to cobble, very stiff, moist, to well graded subrounded coarse gravel to boulder CONGLOMERATE with weakly cemented greenish gray fine to medium grained sandstone matrix, hard, moist.	
5							
10		C		7.0	126.4	@10' - Well graded subrounded coarse gravel to cobble CONGLOMERATE with weakly cemented greenish gray fine to medium sandstone matrix, hard, moist, to conglomeratic fine to coarse grained SANDSTONE with subrounded fine gravel to cobble, weakly cemented to slightly friable, hard, moist.	@11' B N38W/29SW
						@13' - Crudely bedded fine gravel to subrounded cobble to boulder CONGLOMERATE, well graded, weakly cemented to slightly friable, to greenish gray fine to medium grained SANDSTONE, well graded, hard, moist (20-30% gravel/cobble, 5% boulder).	
15							@17' B N34W/25SW
20	8/10	C		12.4	119.1	@20.5' - Scoured contact with green gray fine grained SANDSTONE, massive, moderately indurated, very hard, moist.	@20' J N76W/38SW
						@22.5' - Contact to coarse gravel to cobble CONGLOMERATE (subrounded), in weakly cemented green gray fine to medium grained sandstone matrix, well graded, hard, moist, crudely bedded.	@22.5' Contact N39W/19SW
25							
						@28' - Occasional subrounded boulders (5-10%).	@27' B N47W/20SW
	14/25	C		9.2	107.4		
30							
						@32' - Subrounded coarse gravel to cobble CONGLOMERATE with occasional boulder in weakly cemented green gray fine to medium grained sandstone matrix, well graded, hard, moist.	
35						Green gray fine to coarse grained SANDSTONE (12" thick) with occasional subangular fine gravel, weakly indurated, hard, moist.	@35' Contact N40W/18SW
						@36' - Subrounded coarse gravel to cobble CONGLOMERATE, weakly cemented, green gray fine to medium grained sandstone matrix, very hard, moist, crudely bedded, occasional boulder (≤5%).	@38.5' B N47W/23SW
40	10/20	C		10.7	107.6	@40' - Subrounded coarse gravel to cobble CONGLOMERATE, weakly cemented, green gray fine to medium grained sandstone matrix, very hard, moist, crudely bedded, occasional boulder (≤5%).	
45							

ADDITIONAL COMMENTS:

Blows per 6"

C = Modified California Sampler

Kelly Bar Weights: 0 - 50', 2,280 lbs.
50 - 75', 1,200 lbs.

Logged by: SBS

Geolabs-Westlake Village

PLATE B44.1

SUBSURFACE DATA

LOG OF BORING B44

CLIENT: Pardee Homes	PROJECT: Skyline Ranch	W.O.: 8838
LOCATION: Santa Clarita	ELEVATION: 2060'±	DATE: 5/26/06
RIG TYPE: 24" Bucket	HAMMER WEIGHTS: Kelly Bar Weights	DROP:

	N	U	B	M	DD	DESCRIPTION	ATTITUDES
40							
45							
50	15/20	C		9.2	115.4	@50' - Interbedded fine grained SANDSTONE, laminated to thinly bedded, and gravel to cobble CONGLOMERATE in weakly to moderately cemented green gray fine to medium grained sandstone matrix, hard, moist.	
55							
60	25/45	C		8.0	109.4	@60' - Fine gravel to cobble CONGLOMERATE, slightly friable to weakly cemented, greenish gray fine to medium grained sandstone matrix, hard, moist.	
65						Total Depth - 60' No groundwater No caving Backfilled	
70							
75							
80							
85							

ADDITIONAL COMMENTS:

Blows per 6"

C = Modified California Sampler

Kelly Bar Weights:) - 50', 2,280 lbs.
50 - 75', 1,200 lbs.

Logged by: SBS

SUBSURFACE DATA

LOG OF BORING B45

CLIENT: Pardee Homes	PROJECT: Skyline Ranch	W.O.: 8838
LOCATION: Santa Clarita	ELEVATION: 2105'±	DATE: 5/30/06
RIG TYPE: 24" Bucket	HAMMER WEIGHTS: Kelly Bar Weights	DROP: 12"

	N	U	B	M	DD	DESCRIPTION	ATTITUDES
0						Colluvium: Brown cobbly and gravelly SAND, cobbles are subrounded, occasional boulders, roots, dry.	
5						@4' - Mint Canyon Formation: Tan cobble to boulder CONGLOMERATE, sand and gravel matrix, matrix supported, boulders up to 2' diameter (approximately 35% boulders), well graded, dry, very dense.	
10	12/18	C		13.1	116.4	@11' - Tan cobble to boulder CONGLOMERATE, friable sand and gravel matrix, clast supported, massive, moist, very dense.	
15						@14' - Fine to medium grained SANDSTONE, friable, moist. @15' - Tan cobble to gravel CONGLOMERATE, fine to medium sand matrix, matrix supported, massive.	@14' B N39W/21SW @15' B N42W/22SW
20	8/12	C		11.5	105.3	@19' - Channelized tan fine to medium grained SANDSTONE with occasional coarse cobbles, well graded, moist, friable.	@19' B N15W/22SW
25						@23' - Boulder to cobble CONGLOMERATE, approximately 2' diameter boulder, clast supported, massive. @24' - Tan subangular gravel and cobble CONGLOMERATE with friable fine to medium sand matrix, matrix supported, well graded, massive, hard, moist.	
30	15/20	C		6.7	127.6	@30' - Tan subangular gravel and cobble CONGLOMERATE with friable fine to medium sand matrix, matrix supported, well graded, massive, hard, moist.	
35							
40	15/25	C		5.9	124.5	@39' - 2' diameter boulder, horizontally elongated. @39.5' - Gravel and cobble CONGLOMERATE with friable fine to medium sand matrix, matrix supported, well graded, hard, moist.	
45							

ADDITIONAL COMMENTS:

Blows per 6"

C = Modified California Sampler

Kelly Bar Weights: 0 - 50', 2,280 lbs.

50 - 75', 1,200 lbs.

Logged by: AH

Geolabs-Westlake Village

SUBSURFACE DATA

LOG OF BORING B45

CLIENT: Pardee Homes	PROJECT: Skyline Ranch	W.O.: 8838
LOCATION: Santa Clarita	ELEVATION: 2105'±	DATE: 5/30/06
RIG TYPE: 24" Bucket	HAMMER WEIGHTS: Kelly Bar Weights	DROP: 12"

	N	U	B	M	DD	DESCRIPTION	ATTITUDES
40							
						@43' - Switch to 18" diameter digging bucket (from 24" diameter), unable to downhole log below 43', subrounded gravel to cobble CONGLOMERATE, well graded, friable sandstone matrix.	
45							
50	140-6"	C		10.7	110.0	@50' - Subrounded gravel to cobble CONGLOMERATE, friable sandstone matrix.	
55						@55' - Boulders up to 1.5' diameter in gravel to cobble CONGLOMERATE, friable sandstone matrix.	
60	50-5"	C				@60' - No sample recovered, too rocky. @61' - 1.5' diameter boulder.	
65						Total Depth - 63' refusal on boulder No groundwater No caving Backfilled	
70							
75							
80							
85							

ADDITIONAL COMMENTS:

Blows per 6"

C = Modified California Sampler

Kelly Bar Weights:) - 50', 2,280 lbs.
50 - 75', 1,200 lbs.

Logged by: AH

Geolabs-Westlake Village

SUBSURFACE DATA

LOG OF BORING B46

CLIENT: Pardee Homes	PROJECT: Skyline Ranch	W.O.: 8838.002
LOCATION: Santa Clarita	ELEVATION: 2005'±	DATE: 6/1/06
RIG TYPE: 24" Bucket	HAMMER WEIGHTS: Kelly Bar Weights	DROP: 12"

	N	U	B	M	DD	DESCRIPTION	ATTITUDES
0						<u>Saugus Formation</u>: Silty fine grained SANDSTONE with clay and subrounded to subangular cobbles, roothairs to 3'.	
5						@5' - Massive silty fine grained SANDSTONE, weakly indurated, hard, moist. @6' - White calcite precipitate along joint. @8' - Brown silty fine grained SANDSTONE with sparse fine gravel, discontinuous carbonate veins, massive, weakly indurated, hard, moist.	@6' Joint N18E/74SE
10	7-12"	C		12.1	112.6	@10' - Brown to light brown silty fine to medium grained SANDSTONE with abundant coarse sand to fine gravel, weakly indurated, massive, hard, moist.	
15						@16.5' - Contact with light brown fine grained SANDSTONE and subrounded to subangular gravel CONGLOMERATE, well graded, weakly cemented, hard, moist. @18' - Thinly bedded to channelized, channels dip to west approximately 20°.	@16.5' Contact N20W/11SW @18' B N14W/19SW
20	7-12"	C	X	16.3	111.1	@21' - Sharp contact to light brown fine grained sandy SILTSTONE with trace clay, massive, hard, multidirectional shears.	@21' Contact N39W/17SW @21.5' Shear N85E/40SE @22' Shears N56W/38SW N33W/29SW Slicks: S40W
25						@25' - Gradational contact to tan medium to coarse grained SANDSTONE with gravel and occasional cobbles. @27' - Approximately 6" thick light brown medium to coarse grained SAND, slightly friable, interbedded with gravel to cobble CONGLOMERATE, hard, moist.	
30	15-13"	C		2.9	118.6	@30' - Light brown fine to coarse grained SANDSTONE with occasional gravel, friable, hard, moist. @31' - Channelized conglomerate. @33' - Contact to tan fine to coarse grained SANDSTONE, massive, hard, moist.	@31' Channel N40W/16SW @33' Contact N45W/14SW
35						@34.5' - Gradational contact to gravel CONGLOMERATE with sand matrix, angular to subrounded clasts, undulating channels dipping approximately 17-24 SW to SE. @37' - Appearance of fine cobbles.	@38' B N75E/20SE
40	18-12"	C		7.0	117.3	@40' - Gradational contact to fine to coarse grained SANDSTONE with occasional gravel, friable, hard, moist.	
45							

ADDITIONAL COMMENTS:

C = Modified California Sampler

Kelly Bar Weights:	0 - 30', 5,619 lbs.
	31 - 60', 3,745 lbs.
	61 - 90', 2,280 lbs.
	91 - 120', 1,223 lbs.

Logged by: AH/SS

Geolabs-Westlake Village

SUBSURFACE DATA LOG OF BORING B46

CLIENT: Pardee Homes	PROJECT: Skyline Ranch	W.O.: 8838.002
LOCATION: Santa Clarita	ELEVATION: 2005'±	DATE: 6/1/06
RIG TYPE: 24" Bucket	HAMMER WEIGHTS: Kelly Bar Weights	DROP: 12"

	N	U	B	M	DD	DESCRIPTION	ATTITUDES
40							
45						@44' - Sharp, slightly scoured contact with yellow brown fine grained SANDSTONE, massive, slightly friable, hard, moist.	@44' B N27E/22SE
						@45' - Fine grained SANDSTONE with gravel, grading to gravel CONGLOMERATE with slightly friable medium to coarse sand matrix, moist.	
						@49' - Thinly bedded CONGLOMERATE.	
50	18-12"	C		5.6	125.3	@50' - Channel, scoured into yellow brown medium to coarse grained SANDSTONE with gravel and small cobbles, slightly friable, hard, moist.	@50' Channel N35E/24SE
55							
			X				
						@57' - Scoured contact with clayey fine grained SANDSTONE, hard, massive. Near vertical, pervasive shears.	@57' Channel N68E/6SE
						@59.5' - Brown fine to coarse grained SANDSTONE with gravel.	@59.5' Approx.
60	15-12"	C		15.6	119.6	@60.5' - Contact with brown fine grained sandy SILTSTONE with approximately 1/4" diameter concretions, cemented, hard, moist, discontinuous, undulatory, shallow, west dipping clay-lined shears.	BN52W/11SW
			X				
							@63' Shear N45W/26SW
65							
						@67' - Gravel cobble CONGLOMERATE with slightly friable fine to medium grained sandstone matrix.	
70	14-12"	C		7.2	118.4	@70' - Light brown gravelly SANDSTONE with occasional fine cobbles, friable, hard, moist.	@70' B N30W/12SW
							@74' B N46W/13SW
75						@75' - Grading to fine gravel CONGLOMERATE, slightly friable, hard, moist.	
						@78' - Contact to sandy SILTSTONE with occasional gravels, hard, moist.	@78' Contact N66W/11SW
80	15-12"	C		7.3	115.4		
						@81' - Scoured contact to well graded subrounded gravel to cobble CONGLOMERATE, friable yellow fine to coarse sandstone matrix, very dense, moist.	@81' Contact N80E/37SE
85							

ADDITIONAL COMMENTS:

C = Modified California Sampler
Kelly Bar Weights:) - 30', 5,619 lbs.
31 - 60', 3,745 lbs.
61 - 90', 2,280 lbs.
91 - 120', 1,223 lbs.

Logged by: AH/SS Geolabs-Westlake Village

SUBSURFACE DATA

LOG OF BORING B46

CLIENT: Pardee Homes	PROJECT: Skyline Ranch	W.O.: 8838.002
LOCATION: Santa Clarita	ELEVATION: 2005'±	DATE: 6/1/06
RIG TYPE: 24" Bucket	HAMMER WEIGHTS: Kelly Bar Weights	DROP: 12"

	N	U	B	M	DD	DESCRIPTION	ATTITUDES
80							
85						@84' - Grading to gravel CONGLOMERATE with friable yellow brown fine to coarse sandstone matrix, highly channelized beds.	@84' B N25W/17SW
90	30-10"	C		5.0	108.3	@90' - Boulder approximately 1' diameter, elongated horizontally in well graded, gravel to cobble CONGLOMERATE with slightly friable yellow brown sandstone matrix, massive, hard, moist.	@90' Channel N90E/14S
95						@94' - Contact with friable light brown fine grained SANDSTONE, moist, hard. @95.5' - Gradational contact to subrounded gravel to cobble CONGLOMERATE, slightly friable light brown fine to coarse sandstone matrix, highly channelized.	@94' Channel N4W/16SW @95' B N36W/18SW
100	20-12"	C		7.2	116.1	@100' - Light brown fine to coarse grained SANDSTONE with gravel, hard, moist, friable. @101' - Subrounded gravel to cobble CONGLOMERATE, slightly friable, fine to coarse sandstone matrix.	@101' B N32W/19SW
105							
110	8-12"	C		8.5	99.9	@109' - Abundant gravel to cobble quartz clasts, granitic clasts and schist, channelized. @110' - Light brown fine to coarse grained SANDSTONE with gravel, friable, hard, moist. @111' - Channelized bedding.	@111' B N75E/15SE
115						@115' - Light brown fine to coarse grained SANDSTONE with gravel, friable, hard, moist.	
120						Total Depth - 115' No groundwater No caving Backfilled	
125							

ADDITIONAL COMMENTS:

C = Modified California Sampler

Kelly Bar Weights:) - 30', 5,619 lbs.
31 - 60', 3,745 lbs.
61 - 90', 2,280 lbs.
91 - 120', 1,223 lbs.

Logged by: AH/SS

Geolabs-Westlake Village

SUBSURFACE DATA

LOG OF BORING B47

CLIENT: Pardee Homes	PROJECT: Skyline Ranch	W.O.: 8838
LOCATION: Santa Clarita	ELEVATION: 2021'	DATE: 6/5/06
RIG TYPE: 24" Bucket	HAMMER WEIGHTS: Kelly Bar Weights	DROP: 12"

	N	U	B	M	DD	DESCRIPTION	ATTITUDES
0						Colluvium: Brown silty SAND, dry, medium dense, rootlets.	
						@3' - Saugus Formation: Light brown gravelly fine to coarse grained SANDSTONE, subangular gravel, slightly friable, rootlets to 5' depth, moist, hard.	
5							
						@6' - Scoured contact to light brown fine grained SANDSTONE with subangular gravel, friable, moist, hard.	
10	4-12"	C		8.2	115.4	@8' - Discontinuous light brown SILTSTONE bed, moist, hard, within light brown fine grained SANDSTONE with subangular gravel, friable, hard, moist.	
15							
						@18.5' - Slightly scoured contact with light brown silty fine grained SANDSTONE with occasional subangular gravel, moist, hard.	
20	9-12"	C	X	17.5	113.9	@20' - 12" thick sheared brown CLAYSTONE, waxy surface on shears, multidirectional shears, carbonate veins, moist, hard.	
						@21' - Light brown fine grained sandy SILTSTONE, moist, hard.	
25						@25' - Light brown fine grained sandy SILTSTONE with carbonate nodules, moderately cemented, carbonate nodules are 2" maximum diameter, moist, hard.	
						@26.5' - Brown CLAYSTONE, discontinuous, multidirectional shears, moist, hard.	
30	11-12"	C		19.0	111.9	@27' - Light brown fine grained sandy SILTSTONE to silty fine grained SANDSTONE, massive, moist, hard.	
						@30' - Grading into light brown fine grained SANDSTONE, massive, moist, hard.	
						@34.5' - Grading into brown CLAYSTONE, massive, moist, hard.	
35							
40	12-12"	C		16.0	113.5	@40' - Grading into light brown silty fine to medium grained SANDSTONE with subangular gravel, massive, moist, hard.	
45							

ADDITIONAL COMMENTS:

C = Modified California Sampler

Kelly Bar Weights: 0 - 30', 5,619 lbs.
31 - 60', 3,745 lbs.
61 - 90', 2,280 lbs.
91 - 120', 1,200 lbs.

Logged by: AH/SS

Geolabs-Westlake Village

SUBSURFACE DATA

LOG OF BORING B47

CLIENT: Pardee Homes	PROJECT: Skyline Ranch	W.O.: 8838
LOCATION: Santa Clarita	ELEVATION: 2021'	DATE: 6/5/06
RIG TYPE: 24" Bucket	HAMMER WEIGHTS: Kelly Bar Weights	DROP: 12"

	N	U	B	M	DD	DESCRIPTION	ATTITUDES
40							
45						@44' - Grading into subangular gravel CONGLOMERATE with friable, light brown coarse sand matrix, matrix supported, channelized, moist, hard.	
50	15-12"	C		14.5	118.5		
						@51' - Scoured contact with light brown clayey fine grained SANDSTONE, massive, with occasional gradational stringers of siltstone.	@51' Scoured Contact N46W/18NE
55						@56' - Grading into light brown fine to coarse grained SANDSTONE with sparse subangular gravel, friable, moist. @57' - Grading into light brown gravel CONGLOMERATE with occasional cobbles, subangular gravel and cobbles, sand matrix, matrix supported, moist, hard, channelized.	
60	14-12"	C		6.5	113.7	@59' - Sharp contact with light brown silty fine grained SANDSTONE, scoured, massive, moist, hard. @61.5' - Grading into light brown gravel and cobble CONGLOMERATE, subangular clasts are weathered and fractured, sand matrix, matrix supported, well graded, moist, hard.	@59' Approx. Contact N5E/4NW @62.5' B N25W/17SW
65							@68' B N60W/14SW
70	20-12"	C		10.7	116.5	@71' - Scoured contact into light brown fine to coarse grained SANDSTONE, friable, moist, hard. @72' - Light brown gravelly fine to coarse grained SANDSTONE, subangular gravel, moist, hard.	@71' Scoured Contact N15E/19NW
75						@74' - Light brown cobble and gravel CONGLOMERATE, slightly friable, fine to coarse sand matrix, matrix supported, well graded, moist, hard. @76.5' - Scoured contact with brown CLAYSTONE, pervasively sheared, claystone shears have waxy surfaces, conglomerate above scoured down to 79' on NW wall.	
80	17-12"	C		13.5	118.7	@78' - Grading into light brown silty fine grained SANDSTONE with sparse gravel, massive, moist, hard.	
85							

ADDITIONAL COMMENTS:

C = Modified California Sampler

Kelly Bar Weights:) - 30', 5,619 lbs.
31 - 60', 3,745 lbs.
61 - 90', 2,280 lbs.
91 - 120', 1,200 lbs.

Logged by: AH/SS

Geolabs-Westlake Village

SUBSURFACE DATA

LOG OF BORING B47

CLIENT: Pardee Homes	PROJECT: Skyline Ranch	W.O.: 8838
LOCATION: Santa Clarita	ELEVATION: 2021'	DATE: 6/5/06
RIG TYPE: 24" Bucket	HAMMER WEIGHTS: Kelly Bar Weights	DROP: 12"

	N	U	B	M	DD	DESCRIPTION	ATTITUDES
80							
85							
			X			@87' - Highly plastic brown CLAY seam, no noticable shears (approximately 2" thick).	@87' Contact N58W/7SW
90	22-10"	C		11.7	122.6	@88' - Light brown clayey fine grained SANDSTONE with subangular gravel, massive, hard, moist, with 1-2" thick brown clay seams at 88.5' and 90', clay seams are very stiff, moist, no shear surfaces. surfaces.	@88.5' clay seam N55W/10SW @90' clay seam N60W/20SW
95							
100	25-10"	C		11.6	121.3	@99' - Brown discontinuous clay seam. @100' - Brown clay seam. @100.5' - Grading into light brown silty fine to medium grained SANDSTONE, hard, moist. @103' - Grading into light brown fine to medium grained SANDSTONE, moist, hard.	@100' Clay seam N27W/12SW
105						@104' - Grading into light brown gravel CONGLOMERATE with fine to coarse sand matrix, matrix supported, subangular gravel, massive, hard, moist to very moist.	@106' Approx. BN85E/15SE
110	25-8"	C		6.4	116.1	@110' - Brown gravelly fine to coarse grained SANDSTONE, subangular gravel, friable, moist, hard. @113' - Fine grained gravel CONGLOMERATE with sheared olive clay (not observed downhole), only in surface cuttings.	
115							
120						Total Depth - 115' No groundwater No caving Backfilled	
125							

ADDITIONAL COMMENTS:

C = Modified California Sampler

Kelly Bar Weights:) - 30', 5,619 lbs.
31 - 60', 3,745 lbs.
61 - 90', 2,280 lbs.
91 - 120', 1,200 lbs.

Logged by: AH/SS

Geolabs-Westlake Village

SUBSURFACE DATA

LOG OF BORING B48

CLIENT: Pardee Homes	PROJECT: Skyline Ranch	W.O.: 8838.002
LOCATION: Santa Clarita	ELEVATION: 1987'±	DATE: 6/7/06
RIG TYPE: 24" Bucket	HAMMER WEIGHTS: Kelly Bar Weights	DROP: 12"

	N	U	B	M	DD	DESCRIPTION	ATTITUDES
0						Colluvium: Brown clayey fine grained SAND, moist.	
						@1' - Saugus Formation: Light brown fine to coarse grained SANDSTONE, with subangular cobble and gravel, moist.	
						@3' - Light brown silty fine to medium grained SANDSTONE, hard, moist, rootlets.	@4' Contact E-W/7S
5						@4' - Gravel to cobble CONGLOMERATE with light brown fine to coarse sandstone matrix, matrix supported, subangular clasts.	
						@5' - Gravel to boulder CONGLOMERATE with light brown fine to coarse sandstone matrix, matrix supported.	@7' B N72W/19SW
10	9-12"	C		3.7	124.8	@6' - Gravel to cobble CONGLOMERATE with light brown fine to medium sand matrix, matrix supported, clasts are fractured and subangular.	@8.5' Approx. scoured contact N30W/28SW
						@8.5' - Scoured irregular contact with CLAYSTONE.	@12.5' B N48W/29SW
						@10' - Subangular gravel to cobble CONGLOMERATE, slightly friable light brown medium to coarse sandstone matrix, hard, moist.	
15							
						@16' - Scoured contact with light brown silty fine grained SANDSTONE with occasional medium to coarse sand, hard, massive.	@16' Contact N2W/8NE
20	6-12"	C				@20' - Undulatory contact with subangular gravel CONGLOMERATE, occasional cobble, slightly friable light brown fine to coarse sandstone matrix, well graded, occasional silt, channelized, moist, hard.	@20' B N32W/16SW
							@23' Channel N70E/9SE
25						@25.5' - Scoured contact to fine to coarse grained SANDSTONE with gravel, moist.	@25.5' B N37W/19SW
						@27' - Grading to subangular gravel CONGLOMERATE with slightly friable light brown fine to coarse sandstone matrix, occasional cobbles, hard, moist.	@28.5' Contact N48E/8SE
30	20-12"	C		5.8	127.6	@28.5' - Scoured contact with silty fine to medium grained SANDSTONE with occasional subangular gravel, hard, moist.	
						@31' - Grading to subangular gravel to cobble CONGLOMERATE with light brown fine to coarse sandstone matrix, hard, moist.	
35							@34.5' B N26E/22SE
						@36' - Irregular, scoured contact to brown clayey fine grained SANDSTONE, moist, hard, massive.	@36' Contact N47E/8SE
						@37.5' - Grading to light brown fine grained SANDSTONE, slightly friable, hard, moist, massive.	
40	23-12"	C		6.7	122.1	@40' - Grading to gravel to cobble CONGLOMERATE, light brown fine to coarse sandstone matrix, hard, moist.	
45							

ADDITIONAL COMMENTS:

C = Modified California Sampler

Kelly Bar Weights:
0 - 30', 5619 lbs.
31 - 60', 3745 lbs.
61 - 90', 2280 lbs.
91 - 120', 1223 lbs.
121 - 135', 1723 lbs.
136 - 155', 2223 lbs.

Logged by: AH/SS

Geolabs-Westlake Village

CLIENT: Pardee Homes	PROJECT: Skyline Ranch	W.O.: 8838.002
LOCATION: Santa Clarita	ELEVATION: 1987'±	DATE: 6/7/06
RIG TYPE: 24" Bucket	HAMMER WEIGHTS: Kelly Bar Weights	DROP: 12"

	N	U	B	M	DD	DESCRIPTION	ATTITUDES
40							
45						@45' - Gravel to cobble CONGLOMERATE, channels dipping SE and NE. @46.5' - Irregular, scoured contact to brown clayey fine to medium grained SANDSTONE with slightly friable fine to coarse gravel, hard, moist.	
50				6.3	120.5	@47' - Grading to light brown gravelly SANDSTONE to gravel CONGLOMERATE, light brown fine to coarse sandstone matrix. @51' - Grading to gravel to cobble CONGLOMERATE with fine to coarse sand matrix supported, highly channelized.	@52' Channel N22W/14SW
55						@54.5' - Grading to light brown fine to coarse grained SANDSTONE with gravel, friable, hard, moist. @56' - Grading to subangular gravel to cobble CONGLOMERATE with light brown fine to coarse sandstone matrix. @57' - Clast supported, highly channelized, gravel to cobble CONGLOMERATE.	
60	15-12"	C		10.7	121.9	@60.5' - Sharp scoured contact with brown sandy CLAYSTONE, slightly undulatory, paper thin shear at contact. @61' - Grading to gravelly SANDSTONE to subangular gravel CONGLOMERATE with slightly friable light brown fine to coarse sandstone matrix, channelized, well graded.	@60.5' Shear N46W/10SW @60.5' Contact N84W/13SW
65						@67' - Interbedded brown fine grained SANDSTONE and gravel CONGLOMERATE, slightly friable.	
70	26-12"	C		7.1	123.4	@69' - Subangular gravel to cobble CONGLOMERATE, friable brown fine to coarse sandstone matrix, hard, very moist, well graded, crudely bedded with occasional 2"-6" thick fine to medium sandstone beds.	
75						@75' - Subangular gravel to cobble CONGLOMERATE, friable brown fine to coarse sandstone matrix, hard, very moist, well graded, crudely bedded.	
80	2-12"	C				@80' - Subangular gravel to cobble CONGLOMERATE, friable brown fine to coarse sandstone matrix, hard, very moist, well graded, crudely bedded.	
85							

ADDITIONAL COMMENTS:

C = Modified California Sampler

Kelly Bar Weights:
0 - 30', 5619 lbs.
31 - 60', 3745 lbs.
61 - 90', 2280 lbs.
91 - 120', 1223 lbs.
121 - 135', 1723 lbs.
136 - 155', 2223 lbs.

Logged by: AH/SS

SUBSURFACE DATA

LOG OF BORING B48

CLIENT: Pardee Homes	PROJECT: Skyline Ranch	W.O.: 8838.002
LOCATION: Santa Clarita	ELEVATION: 1987'±	DATE: 6/7/06
RIG TYPE: 24" Bucket	HAMMER WEIGHTS: Kelly Bar Weights	DROP: 12"

	N	U	B	M	DD	DESCRIPTION	ATTITUDES
80							
85						@85' - Moisture increasing in gravel CONGLOMERATE with slightly	
						friable brown fine to coarse sandstone matrix, hard, moist.	
						@87' - Wet.	
						@88' - Gravel CONGLOMERATE with friable brown fine to coarse sand	
						matrix, hard, wet.	
90	29-12"	C				@90' - Slow seepage in brown fine to coarse grained SANDSTONE to	
						gravel CONGLOMERATE, sand matrix supported.	
						@91' - Grades to fine grained sandy SILTSTONE with occasional	
						coarse gravel clasts.	
95							
	24-12"	C	X				
						@97' - Pervasively sheared CLAYSTONE, waxy surface, nearly horizontal,	@97' Shear
						undulatory upper contact, shears cutting through silty fine grained	N43E/23SE
						SANDSTONE.	@97.5' Shear
100						@98' - 4" thick undulatory shear.	N72W/31NE
						@98'3" - Contact with silty fine grained SANDSTONE, hard, moist, massive.	@98' Approx.
						@100' - 4" CONGLOMERATE bed with subangular gravel and cobbles,	shear
						fine to coarse sand matrix supported, wet.	N5E/5SE
						@100.5' - Silty very fine grained SANDSTONE, massive.	@103.5'
105						@103' - 12" thick subrounded gravel CONGLOMERATE, slightly friable,	Approx. B
						fine to medium sand matrix, hard, wet.	N50W/18SW
						@104' - Sharp, scoured contact with brown clayey fine grained	
	30-10"	C				SANDSTONE, hard, moist, massive.	
						@107' - Conglomeratic fine to medium grained SANDSTONE, poorly	
110						bedded.	
						@108' - Brown silty fine grained SANDSTONE, hard, moist.	
						@109' - 4" thick conglomeratic fine to medium grained *SANDSTONE*	
						interbed.	
						@110' - 6"thick conglomeratic fine to medium grained SANDSTONE to	
115						clayey fine grained SANDSTONE, poorly defined bedding.	@115.5'
						@110.5' - Brown clayey fine grained SANDSTONE with occasional	Approx. B
						subangular fine gravels, very dense, moist.	N75E/9SE
						@115' - 6" thick conglomeratic fine to medium grained SANDSTONE.	@117' Approx.
						@116.5' - 6" thick CONGLOMERATE.	contact
120			X			@117' - Sharp contact with CLAYSTONE, hard.	N65W/6SW
						@118.5' - 1' thick CONGLOMERATE.	@119' B
						@119' - Sharp contact with sheared clayey SANDSTONE, 6" thick,	N50W/50NE
						undulatory imbricated shears.	@120' Approx.
						@120' - Strong brown CLAYSTONE, stiff, highly plastic, undulatory upper	contact
125						contact, sheared and waxy surface, pervasively sheared throughout.	N45W/16SW

ADDITIONAL COMMENTS:

C = Modified California Sampler

Kelly Bar Weights:
0 - 30', 5619 lbs.
31 - 60', 3745 lbs.
61 - 90', 2280 lbs.
91 - 120', 1223 lbs.
121 - 135', 1723 lbs.
136 - 155', 2223 lbs.

Logged by: AH/SS

SUBSURFACE DATA

LOG OF BORING B48

CLIENT: Pardee Homes	PROJECT: Skyline Ranch	W.O.: 8838.002
LOCATION: Santa Clarita	ELEVATION: 1987'±	DATE: 6/7/06
RIG TYPE: 24" Bucket	HAMMER WEIGHTS: Kelly Bar Weights	DROP: 12"

	N	U	B	M	DD	DESCRIPTION	ATTITUDES
120							
						@122.2' - Sharp contact with silty fine grained SANDSTONE, hard, moist, contact is not sheared.	@123' Contact N57W/32SW
125						@125' - 1-2" thick clay seam truncates higher angle shear.	@125' Clay seam N65W/13SW
						@125' - 4" CONGLOMERATE just above clay seam.	
						@125' - High angle clay shear through CONGLOMERATE, slickensides indicate horizontal motion along strike.	@125' Shear N86E/66NW
						@125.5' - Brown silty fine to medium grained SANDSTONE, hard, moist.	
130							
						@131' - Subangular fine to coarse grained gravel CONGLOMERATE, slightly friable, brown medium to coarse sand matrix, moderately graded, hard, moist, crudely bedded.	
						@132' - Gravel CONGLOMERATE.	
135						@134' - Thinly bedded.	@134' B N66W/9SW
						@137' - Contact with approximately 6" thick brown fine grained sandy SILTSTONE, hard, wet.	
						@138' - Discontinuous seepage.	
140						@138.5' - Brown silty fine grained SANDSTONE, wet, hard, massive.	
						@141' - Approximately 6" thick discontinuous SILTSTONE.	
145	25-12"	C				@145' - Brown silty fine grained SANDSTONE, hard, wet, massive.	
						@147' - Lower limit of zone of seepage.	
						@148' - Brown silty fine grained SANDSTONE with some clay, massive.	
150							
						@153' - Seepage from NE quadrant of boring in 12" thick gravel CONGLOMERATE.	
155	36-10"	C					
160						Total Depth - 155' Seepage at 90', 138-147', and 153' No caving Backfilled	
165							

ADDITIONAL COMMENTS:

C = Modified California Sampler

Kelly Bar Weights:
0 - 30', 5619 lbs.
31 - 60', 3745 lbs.
61 - 90', 2280 lbs.
91 - 120', 1223 lbs.
121 - 135', 1723 lbs.
136 - 155', 2223 lbs.

SUBSURFACE DATA

LOG OF BORING B49

CLIENT: Pardee Homes	PROJECT: Skyline Ranch	W.O.: 8838.002
LOCATION: Santa Clarita	ELEVATION: 2091'	DATE: 6/12/06
RIG TYPE: 24" Bucket	HAMMER WEIGHTS: Kelly Bar Weights	DROP: 12"

	N	U	B	M	DD	DESCRIPTION	ATTITUDES
0						Saugus Formation : Dark brown clayey fine to coarse grained SAND with subangular gravel, moist, very dense, weathered.	
5						@4' - Gradational contact with yellowish brown silty fine to coarse grained SANDSTONE with occasional gravel, hard, moist.	
						@6' - Yellowish brown fine to coarse grained SANDSTONE with occasional subangular gravel, clasts include quartz, shist, and granitics, friable, moist, hard.	@6' Approx. contact N10E/8NW
10	4-12"	C		5.4	115.1	@8' - Discontinuous SILTSTONE (approx. 6" thick) on eastern quadrant of boring, massive, moist, hard.	
						@9' - Highly channelized fine to medium grained SANDSTONE to subangular gravel CONGLOMERATE, matrix supported, friable, hard, moist.	
15						@11' - Brown subangular gravel to cobble CONGLOMERATE, matrix supported, highly channelized, friable, hard, moist.	@13' Approx. BN16W/19SW
						@13' - Conglomeratic fine to coarse grained SANDSTONE, subangular to subrounded fine gravel to cobble clasts, moist, hard.	@16' Approx. BN70E/24NW
20	5-12"	C		5.7	120.2	@16 - Gravel to occasional boulder (<5%) CONGLOMERATE, channeled, crudely bedded, slightly friable, brown fine to coarse sand matrix, moist, hard.	
						@20' - Channeled CONGLOMERATE.	@20' Scoured channels dipping N & S
						@23' - Channelized contact with fine to medium grained SANDSTONE with coarse sand, friable.	@23' Contact N15E/21NW
25						@24' - Grading to subangular gravel CONGLOMERATE, sand matrix, matrix supported.	@25' Approx. BN45W/21NE
						@26' - Sharp, scoured contact with silty fine grained SANDSTONE with clay, massive.	@26' Contact N31W/25NE
						@27.5' - Irregular, discontinuous paper thin shear, waxy, clay lined.	
30	18-12"	C		13.4	119.9		
						@31' - Brown silty very fine grained SANDSTONE with very sparse coarse sand and fine gravel, moist, hard.	
						@32' - Grades to brown fine grained SANDSTONE with very sparse coarse sand and fine gravel, massive, moist, hard.	
35							
						@36.5' - Brown angular fine gravel CONGLOMERATE with clayey sand matrix, gradational upper contact (approximately 4" thick bed), moist, hard.	@37' Approx. contact N55E/25SE
						@37' - Brown fine grained sandy SILTSTONE, moist, hard.	
40	11-12"	C		17.4	111.4	@40' - Slightly waxy clayey SANDSTONE with carbonate nodules, poorly defined shears.	@40' Approx. attitude of carb. nodules N5E/25SE
45							

ADDITIONAL COMMENTS:

C = Modified California Sampler

Kelly Bar Weights: 0 - 30', 5619 lbs.
31 - 60', 3745 lbs.
61 - 90', 2280 lbs.
91 - 120', 1223 lbs.
121 - 135', 1723 lbs.
136 - 155', 2223 lbs.

Logged by: AH/SS

Geolabs-Westlake Village

CLIENT: Pardee Homes	PROJECT: Skyline Ranch	W.O.: 8838.002
LOCATION: Santa Clarita	ELEVATION: 2091'	DATE: 6/12/06
RIG TYPE: 24" Bucket	HAMMER WEIGHTS: Kelly Bar Weights	DROP: 12"

	N	U	B	M	DD	DESCRIPTION	ATTITUDES
40							
						@43' - Grades to brown clayey fine grained SANDSTONE with occasional coarse sands and fine gravel, thickly bedded, hard, moist.	
45							
						@46.5' - Sandy CLAYSTONE (approx. 6" thick).	@46' Approx. contact E-W/12N
						@47.5' - Subrounded fine gravel CONGLOMERATE (approx. 6" thick).	
						@48' - Brown clayey fine grained SANDSTONE with occasional coarse sands and fine gravel, massive, hard, moist.	@47.5' Approx. BN75W/17NE
50	17-12"	C		10.6	104.4		
						@52' - Grades to conglomeratic fine to medium grained SANDSTONE, subangular fine to coarse gravel clasts, moist, hard (approx. 3" thick), lower contact is highly scoured and irregular.	
55						@55' - Sheared contact to brown fine grained sandy CLAYSTONE with poorly defined shears.	@55' Sheared contact N12W/60SW
						@56' - Grades to brown silty fine grained SANDSTONE with occasional subangular fine gravel, moist, hard.	
						@59' - Grades to brown medium to coarse grained SANDSTONE, moist, hard.	
60	13-12"	C		14.9	117.9	@60' - Contact with gravel and cobble CONGLOMERATE, brown silty fine to coarse sand matrix, matrix supported, increase in moisture to very moist.	@60' Contact N36W/16SW
65						@65' - Grading to gravel and cobble CONGLOMERATE with brown fine to coarse sand matrix, higher % of gravel and cobble clasts.	
						@67' - Interbedded gravel CONGLOMERATE with fine to coarse sand matrix and fine gravelly medium to coarse sandstone interbeds between 2" and 8" thick, sand is friable, both beds exhibit occasional coarse gravel.	@67' B N52W/34NE N75W/22NE N35W/31NE
70	20-12"	C		9.9	118.6	@69'8" - Sharp contact with 1" thick clayey fine grained SANDSTONE, grading to fine to coarse grained SANDSTONE.	@67.5' B N49W/39NE
						@70' - Brown fine to coarse grained SANDSTONE with occasional cobbles.	@69.5' Contact N30W/57NE
75						@70.5' - Silty fine grained SANDSTONE, wet, hard.	@69'8" Contact N44W/21NE
						@71' - Silty gravelly fine grained SANDSTONE.	@70.5' Contact N59W/15NE
						@71.5' - Brown CLAYSTONE, pervasively sheared, very stiff, waxy.	@72' Shear N42E/20NE
			X			@72' - Very slow seepage in NW quadrant above 4" thick sheared claystone, grading to clayey fine grained SANDSTONE, waxy shear surfaces in claystone.	
80	30-12"	C	X	13.4	122.1	@72.5' - Massive brown silty very fine grained SANDSTONE to very fine grained sandy SILTSTONE, occasional seepage.	@75.5' Contact N30E/13NW
						@75.5' - Gravel CONGLOMERATE with fine to coarse sand matrix, wet.	@79.5' Shear N10W/35SW
						@79.5' - Sheared CLAYSTONE, seepage around entire hole.	slicks bear
85						@80' - 4" thick clay shear (across bedding).	S85W

ADDITIONAL COMMENTS:

C = Modified California Sampler

Kelly Bar Weights:
0 - 30', 5619 lbs.
31 - 60', 3745 lbs.
61 - 90', 2280 lbs.
91 - 120', 1223 lbs.
121 - 135', 1723 lbs.
136 - 155', 2223 lbs.

SUBSURFACE DATA

LOG OF BORING B49

CLIENT: Pardee Homes	PROJECT: Skyline Ranch	W.O.: 8838.002
LOCATION: Santa Clarita	ELEVATION: 2091'	DATE: 6/12/06
RIG TYPE: 24" Bucket	HAMMER WEIGHTS: Kelly Bar Weights	DROP: 12"

	N	U	B	M	DD	DESCRIPTION	ATTITUDES
80						@80.5' - Brown fine grained SANDSTONE, hard, wet. @82' - Grading to fine to coarse grained SANDSTONE, hard, wet. @84' - Grading to gravelly fine to coarse grained SANDSTONE, hard, wet.	@79.5' Shear N14E/56SE slicks bear N84E @80' Shear N5E/14NW
85						@85' - Grading to gravel cobble CONGLOMERATE with weakly cemented to slightly friable brown fine to coarse sandstone matrix. @87' - Grades to brown clayey fine grained SANDSTONE, hard, wet.	@86' Approx. BN45E/18NW
90	26-8"	C				@90' - No sample recovered. @91' - Grades to fine gravel CONGLOMERATE (approx. 12" thick) interbed. @92' - Grades to brown clayey fine grained SANDSTONE. @93.5' - Fine to coarse grained SANDSTONE with occasional subround fine gravel.	
95						@95' - Sharp contact to 1" thick CLAYSTONE, pervasive shears throughout fine to coarse grained SANDSTONE with occasional subrounded fine gravel to coarse sand. @95.5' - Parallel shears (across bedding).	@95' Shear N61W/7SW @95.5' Shear N31W/32NE
100	24-9"	C		5.7	112.8	@98' - Grades to subrounded to subangular fine to coarse grained gravel CONGLOMERATE, weakly cemented to slightly friable, brown fine to coarse sand matrix, hard, wet. @102' - Heavy seepage. @103' - Grades to fine to coarse grained SANDSTONE.	@100' B N34W/20SW @102' B N77W/20NE
105						@104.5' - Sharp contact to clayey fine grained SANDSTONE. @106' - Grading to sandy CLAYSTONE, pervasive shearing, very stiff, wet. @106-108.5' - Brecciated sandy CLAYSTONE. @108.5' - Clayey fine grained SANDSTONE, hard, wet.	@104.5' Approx. contact N35W/11SW
110	30-8"	C		15.3	110.7	@113' - Sharp contact to fine gravel CONGLOMERATE, weakly cemented brown fine to coarse sandstone matrix, hard, wet.	@113' Approx. contact N50W/27SW
115						@115' - Fine gravel CONGLOMERATE, crudely bedded, weakly cemented brown fine to coarse sandstone matrix, hard, wet.	@118' Approx. BN35E/25NW
120	28-10"	C		14.9	113.1	@122' - Contact to brown fine grained SANDSTONE.	
125							

ADDITIONAL COMMENTS:

C = Modified California Sampler

Kelly Bar Weights:
0 - 30', 5619 lbs.
31 - 60', 3745 lbs.
61 - 90', 2280 lbs.
91 - 120', 1223 lbs.
121 - 135', 1723 lbs.
136 - 155', 2223 lbs.

SUBSURFACE DATA

LOG OF BORING B49

CLIENT: Pardee Homes	PROJECT: Skyline Ranch	W.O.: 8838.002
LOCATION: Santa Clarita	ELEVATION: 2091'	DATE: 6/12/06
RIG TYPE: 24" Bucket	HAMMER WEIGHTS: Kelly Bar Weights	DROP: 12"

	N	U	B	M	DD	DESCRIPTION	ATTITUDES
120							
						@123' - Standing water in boring (after 24 hours), unable to downhole log below.	
125							
130	30-10"	C		12.1	123.1	@130' - Brown fine to coarse grained SANDSTONE, friable, wet, free water in sampler, hard.	
135							
						@137' - Brown pervasively sheared CLAYSTONE, highly plastic, wet.	
140	15-12"	C		16.7	108.0	@140' - Brown pervasively sheared CLAYSTONE, grading to brown fine grained SANDSTONE, wet, hard.	
145							
150							
155						Total Depth - 140' No caving Seepage below 70', standing water at 123' (24 hours after drilling completed) Backfilled	
160							
165							

ADDITIONAL COMMENTS:

C = Modified California Sampler

Kelly Bar Weights:
0 - 30', 5619 lbs.
31 - 60', 3745 lbs.
61 - 90', 2280 lbs.
91 - 120', 1223 lbs.
121 - 135', 1723 lbs.
136 - 155', 2223 lbs.

Logged by: AH/SS

Geolabs-Westlake Village

SUBSURFACE DATA

LOG OF BORING B50

CLIENT: Pardee Homes	PROJECT: Skyline Ranch	W.O.: 8838.002
LOCATION: Santa Clarita	ELEVATION: 2245'±	DATE: 6/13/06
RIG TYPE: 24" Bucket	HAMMER WEIGHTS: Kelly Bar Weights	DROP: 12"

	N	U	B	M	DD	DESCRIPTION	ATTITUDES
0						Topsoil: Dark gray brown clayey fine to coarse grained SAND with subangular to subrounded gravel to boulder clasts, weathered,dense, moist.	
						@2.5' - Mint Canyon Formation: Subangular to subrounded gravel to boulder CONGLOMERATE, weakly cemented olive brown fine to coarse sandstone matrix, well graded, moist, hard.	
5						@6' - Subangular to subrounded gravel to boulder CONGLOMERATE, weakly cemented olive gray fine to coarse sandstone matrix, moist, massive, hard,well graded clasts predominantly granitic with some meta volcanics, channelized, crudely bedded (less than 5% 12" diameter boulders).	
10	15/20	C		3.2	--	@10' - Subangular to subrounded gravel, cobble, boulder CONGLOMERATE, weakly cemented olive gray fine to coarse sandstone matrix, hard, moist.	@10' B N56W/13SW
						@13' - Bedded zone of boulders.	
15						@15' - Subangular to subrounded gravel to boulder CONGLOMERATE, weakly cemented olive brown fine to coarse sandstone matrix, well graded, hard, moist, increase in boulders to 5-10%.	@15' Approx. BN60W/35SW
							@19' B N54W/23SW
20	19/21	C	X	--	--	@20' - Subangular to subrounded gravel to boulder CONGLOMERATE, weakly cemented olive brown fine to coarse sandstone matrix, well graded, hard, moist.	
						@21' - Percentage of boulders less than 5%.	
25							
						@27' - Subangular to subrounded gravel to boulder CONGLOMERATE, weakly cemented olive brown fine to coarse sandstone matrix, well graded, hard, moist, occasional poorly graded fine coarse grained gravel approximately 12" thick.	@27' B N34E/17SE
30			X	--		@30' - Subangular to subrounded gravel to cobble (occasional boulder) CONGLOMERATE, weakly cemented olive brown fine to coarse sandstone matrix, hard, moist.	@33' B N61E/21SE
35							@35' B N77W/23SW
						@36' - Sharp contact to olive gray fine grained SANDSTONE, moderately indurated, very hard, moist, massive.	@36' Contact N62W/22SW
			X			@38' - Occasional thin beds of weakly cemented fine to medium grained SANDSTONE and thin beds of slightly friable conglomeratic medium to coarse grained SANDSTONE, clasts are subangular, fine to coarse gravel (up to 4" diameter), moist, very hard.	@38' B N36W/18SW
40	11/23	C		8.2	120.1	@39.5' - Sharp sheared contact to clayey fine grained SANDSTONE (approx. 1" thick), moist, very hard, grading to weakly indurated medium to coarse grained SANDSTONE, very hard.	@39.5' Sheared contact N43W/26SW
45							

ADDITIONAL COMMENTS:

Blows per 6"

C = Modified California Sampler

Kelly Bar Weights: 0 - 50', 2280 lbs.
50- 75', 1200 lbs.

Logged by: SS/JN

SUBSURFACE DATA

LOG OF BORING B50

CLIENT: Pardee Homes	PROJECT: Skyline Ranch	W.O.: 8838.002
LOCATION: Santa Clarita	ELEVATION: 2245'±	DATE: 6/13/06
RIG TYPE: 24" Bucket	HAMMER WEIGHTS: Kelly Bar Weights	DROP: 12"

	N	U	B	M	DD	DESCRIPTION	ATTITUDES
40						@40' - Light gray brown fine to coarse grained SANDSTONE with subangular to subrounded fine gravel, slightly friable, hard, moist.	
						@41' - Occasional thin beds of fine grained GRAVEL.	@42.5' B N34W/16SW
45						@43' - Subangular gravel cobble CONGLOMERATE, occasional boulders, well graded, slightly friable, olive gray fine to coarse sandstone matrix,hard, moist.	
						@47' - Sharp contact to fine to medium grained SANDSTONE, weakly indurated, very hard, moist.	@47' Contact N34W/17SW
50	10/15	C		17.8	110.3	@48' - Grades to subangular to subrounded fine gravel to cobble CONGLOMERATE, weakly cemented, olive gray fine to coarse sandstone matrix, hard, moist.	
						@50' - *Light gray brown* fine to coarse grained SANDSTONE with subangular to subrounded gravels, occasional cobbles, moist, hard.	@51' B N16W/26SW
55			X			@52.5' - Sharp contact to light olive gray fine to medium grained SANDSTONE, weakly indurated, moist, hard.	@54.75' Shear N17W/16SW
						@54' - Grades to subangular to subrounded fine gravel to cobble CONGLOMERATE, weakly cemented.	
60	20/30	C		3.5	13.6	@54.5' - Approximately 12" thick clayey fine grained SANDSTONE, pervasively sheared, slightly plastic, stiff, moist, grading to subangular to subrounded fine grained gravel to cobble CONGLOMERATE, massive, hard, moist.	
						@60' - Light gray brown fine to coarse grained SANDSTONE with subangular to subrounded coarse gravel to cobble clasts, hard, moist, friable, massive.	
65							
			X			@67' - Olive brown fine to coarse grained SANDSTONE with subangular to subrounded gravel, moderately indurated, moist, hard, occasional cobbles.	
70							
75						Total Depth - 67' No groundwater No caving Backfilled	
80							
85							

ADDITIONAL COMMENTS:

Blows per 6"

C = Modified California Sampler

Kelly Bar Weights: 0 - 50', 2280 lbs.

50- 75', 1200 lbs.

Logged by: SS/JN

SUBSURFACE DATA

LOG OF BORING B51

CLIENT: Pardee Homes	PROJECT: Skyline Ranch	W.O.: 8838.002
LOCATION: Santa Clarita	ELEVATION: 1765'±	DATE: 6/15/06
RIG TYPE: 24" Bucket	HAMMER WEIGHTS: Kelly Bar Weights	DROP: 12"

	N	U	B	M	DD	DESCRIPTION	ATTITUDES
0						Topsoil: Medium brown fine grained SAND with fine gravel, moist.	
						@3' - Landslide Deposit: Near vertical carbonate veinlets/nodules approximately 8" diameter.	
5						@4.5' - Medium to coarse grained SANDSTONE with subangular to subrounded fine to coarse gravel, friable, rootlets, very dense, moist. @7' - Grades to fine grained SANDSTONE, sparse fine gravel, slightly friable, very dense, moist, occasional rootlets, massive.	
10	6/10	C		12.2	113.4	@10' - Light orange to grayish brown silty fine to coarse grained SANDSTONE with fine to coarse gravels, occasional boulders (less than 5%), very dense, moist.	
							@13' Contact N15W/46SW
15							@17.5' B N87E/27SE
20	7/15	C		15.1	116.0	@20' - Light orange brown fine to coarse grained SANDSTONE with clay, subangular to subrounded gravel, layers of highly plastic clay, moist, very dense, moderately to well graded.	
			X			@21' - Clay shear (1-2" thick), waxy, internally sheared, plastic, no distinct slicks.	@21' Shear N52W/9SW
25							@25' Shear N78W/21SW @26' Shear N79E/29NW
			X			@28' - Grades to olive fine to medium grained SANDSTONE with fine gravel.	@28.5' Approx. Shear N20E/15NW
30	6/18	C		10.0	121.5	@28.5' - Contact with shear, updip side of undulatory upper contact with multiple shears, to 12" thick zone of shearing in clayey fine grained sand. @29.4' - Basal shear surface (undulatory). @30' - Saugus Formation: Olive silty fine grained SANDSTONE with clay, oxidized, grading to greenish gray fine grained sandy SILTSTONE, hard, moist, massive.	@29.4' Basal Shear N22W/6SW N53W/6SW
35						@32.5' - Contact to olive silty fine to medium grained SANDSTONE with occasional fine gravel, hard, moist, slightly friable, massive. @34' - Contact to 4" thick SILTSTONE, grades to olive fine to medium grained SANDSTONE, slightly friable, moist, hard.	@34' Approx. BN5W/7SW @36.5' B N34W/8SW
40	15/30	C		5.4	108.7	@40' - Light to medium yellow brown medium to coarse grained SANDSTONE, subangular to subrounded fine gravels, occasional cobbles, very dense, moist, moderately graded.	
45							

ADDITIONAL COMMENTS:

Blows per 6"

C = Modified California Sampler

Kelly Bar Weights: 0 - 50', 2280 lbs.
50- 75', 1200 lbs.

Logged by: SS/JN

Geolabs-Westlake Village

SUBSURFACE DATA LOG OF BORING B51

CLIENT: Pardee Homes	PROJECT: Skyline Ranch	W.O.: 8838.002
LOCATION: Santa Clarita	ELEVATION: 1765'±	DATE: 6/15/06
RIG TYPE: 24" Bucket	HAMMER WEIGHTS: Kelly Bar Weights	DROP: 12"

	N	U	B	M	DD	DESCRIPTION	ATTITUDES
40							
						@41' - Fine to coarse grained gravel CONGLOMERATE with cobbles, well graded, channels dip north and south, slightly friable olive coarse grained sandstone matrix.	
						@44' - Medium to coarse grained SANDSTONE with occasional fine gravel and cobble CONGLOMERATE.	
45							
						@46' - Siltstone ripup clasts.	@46' B N30E/11NW
50	10/30	C		6.2	126.0	@50' - Light yellow brown medium to coarse grained SANDSTONE with well graded fine gravel to boulder (10% boulder clasts) CONGLOMERATE, moist, very weathered clasts.	@50' Approx. BN20W/21SW
						@58' - Fine gravel to cobble CONGLOMERATE with occasional boulder clasts, well graded, crudely bedded, slightly friable, yellow brown fine to coarse grained sandstone matrix, hard, moist, crudely bedded.	
55			X				
							@57' Approx. BN10W/29SW
60	20/30	C		8.5	117.6		
65							
70						@70' - Subangular to subrounded fine to coarse gravel and occasional cobble CONGLOMERATE with yellow brown medium to coarse grained sandstone matrix, well graded, hard, moist.	
	20/25	C		9.6	111.7		
75						Total Depth - 72' No groundwater No caving Backfilled	
80							
85							

ADDITIONAL COMMENTS:

Blows per 6"

C = Modified California Sampler

Kelly Bar Weights: 0 - 50', 2280 lbs.
50- 75', 1200 lbs.

Logged by: SS/JN Geolabs-Westlake Village PLATE B51.2

SUBSURFACE DATA

LOG OF BORING B52

CLIENT: Pardee Homes	PROJECT: Skyline Ranch	W.O.: 8838.002
LOCATION: Santa Clarita	ELEVATION: 2245'±	DATE: 6/19/06
RIG TYPE: 24" Bucket	HAMMER WEIGHTS: Kelly Bar Weights	DROP: 12"

	N	U	B	M	DD	DESCRIPTION	ATTITUDES
0						Mint Canyon Formation: Tan subrounded gravel to cobble CONGLOMERATE with fine to medium sand matrix, clasts are fractured in upper 1', moist. @2.5' - Subrounded to rounded cobble to boulder CONGLOMERATE with fine to medium sand matrix, hard, rootlets, matrix supported, channelized.	
5						@7' - Scoured contact with yellowish brown fine to medium grained SANDSTONE, hard, channelized, moist.	@7' Channel N66W/24SW
10	10-8"	C		1.8	133.7	@8' - Undulatory contact with yellowish brown cobble to gravel CONGLOMERATE, coarse sand matrix, matrix supported, moist, hard. @9.5' - Yellowish brown gravel-cobble-boulder CONGLOMERATE, fine to coarse sand matrix, matrix supported, channelized, approximately 15% boulders, moist. @11' - Boulder approx. 2' diameter.	@8' Contact N60W/28SW
15						@12' - Tan to gray cobble to boulder CONGLOMERATE, fine to coarse sand matrix, matrix supported, channelized. @17' - Tan to gray cobble to boulder CONGLOMERATE, fine to coarse sand matrix, matrix supported, channelized.	
20	9-12"	C		10.7	122.0		
25						@23' - Light olive brown gravel-cobble-boulder CONGLOMERATE, fine to coarse sand matrix, matrix supported, channelized, decrease in % boulders, cobbles and gravel, moist, hard. @25' - Light olive brown gravel-cobble-boulder CONGLOMERATE, fine to coarse grained sand matrix, matrix supported, channelized, increase in frequency of coarse clasts, moist.	
30	26-12"	C		7.6	124.3	@30' - Light olive brown gravel to cobble CONGLOMERATE, friable fine to coarse sand matrix, matrix supported, hard, moist.	
35						@36.5' - Channelized, scoured contact to light olive brown fine grained gravelly fine to coarse grained SANDSTONE, hard, moist. @38' - Contact to light yellow brown subangular to subrounded gravel to cobble CONGLOMERATE, hard, moist.	@36.5' Channel N34W/17SW @38' Contact N50W/24SW
40							
45							

ADDITIONAL COMMENTS:

C = Modified California Sampler

Kelly Bar Weights: 0 - 30', 5619 lbs.
31 - 60', 3745 lbs.
61 - 90', 2280 lbs.
91 - 120', 1223 lbs.

Logged by: AH

Geolabs-Westlake Village

SUBSURFACE DATA

LOG OF BORING B52

CLIENT: Pardee Homes	PROJECT: Skyline Ranch	W.O.: 8838.002
LOCATION: Santa Clarita	ELEVATION: 2245'±	DATE: 6/19/06
RIG TYPE: 24" Bucket	HAMMER WEIGHTS: Kelly Bar Weights	DROP: 12"

	N	U	B	M	DD	DESCRIPTION	ATTITUDES
40						@41' - Light yellow brown subangular to subrounded gravel to cobble CONGLOMERATE, moist.	
	20-12"	C		4.8	128.3		
45						@45.5' - Scoured, channelized contact to light olive brown fine to coarse grained SANDSTONE, occasional gravel, moist.	@45.5' Scoured contact N69W/19SW
						@46' - Contact to fine to medium grained SANDSTONE with occasional coarse sand, moist.	@46' B N50W/19SW
50	15-10"	C		6.3	114.0	@47' - Irregular contact to light olive brown gravel to cobble CONGLOMERATE with occasional boulders (approximately 5%), weakly cemented olive gray fine to coarse sand matrix, matrix supported, moist, hard.	@47' Contact N36W/20SW
						@49.5' - Contact to light olive brown fine to coarse grained SANDSTONE with fine gravel, friable, moist.	@49.5' Contact N45W/21SW
55						@50.5' - Contact to light olive brown gravel to cobble with occasional boulder CONGLOMERATE, fine to medium sand matrix, matrix supported, moist.	@50.5' Contact N57W/16SW
						@51' - Approximately 18" diameter boulders.	
60	17-12"	C		5.5	122.8	@57' - Light olive brown gravel to cobble with occasional boulder CONGLOMERATE, fine to medium sand matrix, matrix supported, moist, hard.	
							@64' B N20E/26NW
65						@65' - Cobble to boulder CONGLOMERATE, clast supported to matrix supported, weakly cemented olive gray fine to medium sand matrix with occasional gravel, moist, hard.	
70	25-12"	C		4.2	142.0	@70' - Cobble to boulder CONGLOMERATE, clast supported to matrix supported, weakly cemented olive gray fine to medium sand matrix with occasional gravel, moist, hard.	
75							
						@77.5' - Scoured contact to light olive brown fine to coarse grained SANDSTONE with fine gravel, moist, hard.	@77.5' Contact N44W/29SW
80						@78.5' - Contact to light olive brown gravel to cobble CONGLOMERATE, weakly cemented olive gray fine to coarse sand matrix, matrix supported, moist, hard.	@78.5' B N28W/22SW
85							

ADDITIONAL COMMENTS:

C = Modified California Sampler

Kelly Bar Weights: 0 - 30', 5619 lbs.
31 - 60', 3745 lbs.
61 - 90', 2280 lbs.
91 - 120', 1223 lbs.

Logged by: AH

Geolabs-Westlake Village

SUBSURFACE DATA LOG OF BORING B52

CLIENT: Pardee Homes	PROJECT: Skyline Ranch	W.O.: 8838.002
LOCATION: Santa Clarita	ELEVATION: 2245'±	DATE: 6/19/06
RIG TYPE: 24" Bucket	HAMMER WEIGHTS: Kelly Bar Weights	DROP: 12"

	N	U	B	M	DD	DESCRIPTION	ATTITUDES
80							
						@81' - Grading to light olive brown cobble to boulder CONGLOMERATE, weakly cemented olive gray fine to coarse sandstone matrix.	
85						@85.5' - Grading to light olive brown fine to coarse grained SANDSTONE.	
						@86.5' - Subrounded gravel to boulder CONGLOMERATE, well graded, crudely bedded, weakly cemented olive gray fine to coarse sand matrix, hard, moist.	@86' B N34W/22SW
	24-12"	C		5.9	107.9		@89'± B N10E/23NW
90						@90' - Subrounded fine gravel to cobble CONGLOMERATE, well graded, crudely bedded, weakly cemented olive gray fine to coarse sandstone matrix, hard, moist.	@92' B N10W/19SW
95						@95' - Subrounded fine gravel to cobble CONGLOMERATE, well graded, crudely bedded, weakly cemented olive gray fine to coarse sandstone matrix, hard, moist.	
							@98'± B N40W/20SW
100						@100' - Subrounded fine gravel to cobble CONGLOMERATE, well graded, crudely bedded, weakly cemented olive gray fine to coarse sandstone matrix, hard, moist.	
105						@105' - Subrounded fine gravel to cobble CONGLOMERATE, well graded, crudely bedded, weakly cemented olive gray fine to coarse sandstone matrix, hard, channeled, moist.	@106' B N47W/19SW
110						@109' - Subrounded fine gravel to cobble CONGLOMERATE, well graded, crudely bedded, weakly cemented olive gray fine to coarse sandstone matrix, hard, channeled, moist.	
115						@113' - Subrounded fine gravel to cobble CONGLOMERATE, well graded, crudely bedded, weakly cemented olive gray fine to coarse sandstone matrix, hard, channeled, moist.	@113'± B N30W/24SW
120						@118' - Subrounded fine gravel to cobble CONGLOMERATE, well graded, crudely bedded, weakly cemented olive gray fine to coarse sandstone matrix, hard, channeled, moist.	
125						@122' - 12" thick olive gray fine to medium grained SANDSTONE to subrounded gravel to boulder CONGLOMERATE, well graded, weakly cemented olive gray fine to coarse sandstone matrix, moist. Total Depth - 123', No groundwater, No caving, Backfilled	

ADDITIONAL COMMENTS:

C = Modified California Sampler

Kelly Bar Weights:
0 - 30', 5619 lbs.
31 - 60', 3745 lbs.
61 - 90', 2280 lbs.
91 - 120', 1223 lbs.

SUBSURFACE DATA

LOG OF BORING B53

CLIENT: Pardee Homes	PROJECT: Skyline Ranch	W.O.: 8838.002
LOCATION: Santa Clarita	ELEVATION: 1770'±	DATE: 6/16/06
RIG TYPE: 24" Bucket	HAMMER WEIGHTS: Kelly Bar Weights	DROP: 12"

	N	U	B	M	DD	DESCRIPTION	ATTITUDES
0						Saugus Formation: Dark grayish brown clayey fine grained SANDSTONE with abundant subangular fine gravel, very dense, moist.	
						@4' - Grades to dark yellowish brown fine grained SANDSTONE with subangular fine gravel, very dense, moist, crudely bedded.	
5							
10	6/12	C		11.2	122.5		@10.5' Shear N44W/17SW
			X			@10.5' - Sheared clay at contact to strong brown silty fine grained SANDSTONE, very dense, moist. @12' - 2"-6" thick sheared clay, stiff, highly plastic, to dark yellow brown fine to medium grained SANDSTONE with fine gravel and clay, very dense, moist, massive.	@12' Approx. shear N12W/8SW
15			X				@14' B N25W/25SW
						@17' - Brown SILTSTONE, very stiff, moist, to clayey fine grained SANDSTONE, hard, moist, massive. @19' - Grades to slightly friable medium to coarse grained SANDSTONE with fine gravel, hard, moist, crudely bedded.	
20	10/15	C		12.0	124.6	@20' - Scoured contact to fine grained SANDSTONE, hard, moist. @22' - 12" thick gravel CONGLOMERATE channel, to slightly friable yellow brown fine to medium grained SANDSTONE, massive, hard, moist, grading to channelized medium to coarse grained SANDSTONE and gravel CONGLOMERATE.	@20' Contact N65W/16NE @22' Channel N34E/17NW @23' Contact N28W/13SW
25							@26' Channel N-S/13E
						@27' - Scoured contact (E dipping) to dark yellow brown fine grained SANDSTONE, massive, hard, moist.	
30	12/28	C		16.0	114.5		
			X			@32' - 1"-3" thick strong brown CLAY shear, highly plastic, to 12" CLAYSTONE, grading to yellow brown fine grained SANDSTONE, massive, hard, moist.	@32' Shear N6E/7NW
35							
						@36' - Pinhole seep on NW wall. @37' - Nearly horizontal, undulatory 1" thick CLAY seam, highly plastic, sheared.	@37' Shear Horizontal
40	12/22	C		10.1	127.9	@40' - Undulatory, nearly horizontal, highly plastic 1" thick CLAY shear, to yellow brown fine grained SANDSTONE with subangular gravel, massive.	@40' Shear Horizontal
45							

ADDITIONAL COMMENTS:

Blows per 6"

C = Modified California Sampler

Kelly Bar Weights: 0 - 50', 2280 lbs.
50- 75', 1200 lbs.

Logged by: SS

Geolabs-Westlake Village

SUBSURFACE DATA

LOG OF BORING B53

CLIENT: Pardee Homes	PROJECT: Skyline Ranch	W.O.: 8838.002
LOCATION: Santa Clarita	ELEVATION: 1770'±	DATE: 6/16/06
RIG TYPE: 24" Bucket	HAMMER WEIGHTS: Kelly Bar Weights	DROP: 12"

	N	U	B	M	DD	DESCRIPTION	ATTITUDES
40							
						@42' - Grading to subangular fine to coarse grained gravel CONGLOMERATE, well graded, crudely bedded, slightly friable yellow brown fine to coarse grained sandstone matrix, hard, moist.	
45						@44' - Sharp, slightly scoured contact to yellow brown clayey fine grained SANDSTONE, massive, hard, moist.	@44' Approx. contact N40E/44NW
						@47' - Grading to slightly friable medium to coarse grained SANDSTONE with abundant subangular fine gravel, hard, moist.	
50	10/20	C		13.8	122.7	@49' - Sharp, slightly scoured contact to clayey fine grained SANDSTONE, hard, moist, massive, with occasional subangular fine gravel.	@49' Approx. contact N-S/5W
						@52' - Grading to slightly friable subangular fine gravel CONGLOMERATE.	
						@53' - Irregular sharp contact to clayey fine grained SANDSTONE with occasional carbonate nodules and fine gravel, massive, hard, moist.	
55							
60	15/20	C		12.4	119.2	@60' - Brown clayey SILTSTONE, massive, hard, moist.	
						@63' - Grades to massive dark yellow brown fine grained SANDSTONE with subangular fine gravel, hard, moist.	
65							
						@68' - Grades to massive dark yellow brown fine grained SANDSTONE with subangular fine gravel, hard, moist.	@68' Approx. BN70W/14NE
70	15/25	C		10.6	120.9		
75						Total Depth - 75' Light seepage at 36' No caving Backfilled	
80							
85							

ADDITIONAL COMMENTS:

Blows per 6"
C = Modified California Sampler
Kelly Bar Weights: 0 - 50', 2280 lbs.
50- 75', 1200 lbs.

SUBSURFACE DATA

LOG OF BORING B54

CLIENT: Pardee Homes	PROJECT: Skyline Ranch	W.O.: 8838
LOCATION: Santa Clarita	ELEVATION: 1845'±	DATE: 6/19/06
RIG TYPE: 24" Bucket	HAMMER WEIGHTS: Kelly Bar Weights	DROP: 12"

	N	U	B	M	DD	DESCRIPTION	ATTITUDES
0						Landslide Deposit: Dark grayish brown medium to coarse grained SAND with gravels, subangular to subrounded, clayey, moist, very dense, occasional rootlets.	
5							
						@7.5' - Grades to light orange brown medium to coarse grained SANDSTONE, increasing coarse gravels with depth, moist, dense, occasional rootlets.	
10	6/10	C		12.2	113.5	@10' - Light orange brown fine to coarse grained SANDSTONE with traces of sandy clay, subangular to subrounded fine to coarse gravels, occasional small cobbles, well graded, moist, very dense.	@10.8' Contact N32E/32NW
						@10.8' - Medium brown CLAY, stiff, occasional rootlets, downdip side approx. 1/4" to 1/2" thick, updip side approx. 12" thick.	@12' Approx. BN30E/29NW
15						@11' - Grades to slightly friable medium to coarse grained SANDSTONE with coarse gravels, moist, dense.	
						@13' - Severely weathered granite boulder in gravel cobble CONGLOMERATE with slightly friable light orange brown medium to coarse grained sandstone matrix, moist, dense, gravels and cobbles increase with depth.	@18' Contact N46E/16NW
20	6/12	C		5.9	119.7	@18' - Scoured contact to orange brown clayey SILTSTONE with gravels, grading to SILTSTONE with sand.	
						@22' - Interbeds of gravel to cobble CONGLOMERATE with medium to coarse grained sandstone matrix and SILTSTONE, moist, dense.	
25							
						@26.3' - Highly scoured contact to fine to coarse grained silty SANDSTONE, occasional gravels, moist, slightly friable, massive.	@26.3' Contact N50E/50SE
30	8/12	C		8.9	122.3	@30' - Yellowish orange brown fine to medium grained SANDSTONE with subrounded to subangular fine to coarse gravel channels, moist, dense, moderately graded.	
35						@34' - Subangular to subrounded gravel cobble CONGLOMERATE, slightly friable fine to coarse grained sand matrix, very dense, moist.	@34' Approx. BN50W/29SW
						@38' - Interbeds of gravel cobble CONGLOMERATE with medium to coarse grained sandstone matrix and fine grained silty sandstone (2 6" thick interbeds).	@39' Approx. BN66W/19SW
40	10/13	C		11.4	120.9	@40' - Yellowish brown medium to coarse grained SANDSTONE with subangular to subrounded fine to coarse gravels, occasional cobbles, well graded, moist, dense.	
45							

ADDITIONAL COMMENTS:

Blows per 6"

C = Modified California Sampler

Kelly Bar Weights: 0 - 50', 2280 lbs.
50- 75', 1200 lbs.

Logged by: SS/JN

Geolabs-Westlake Village

SUBSURFACE DATA

LOG OF BORING B54

CLIENT: Pardee Homes	PROJECT: Skyline Ranch	W.O.: 8838
LOCATION: Santa Clarita	ELEVATION: 1845'±	DATE: 6/19/06
RIG TYPE: 24" Bucket	HAMMER WEIGHTS: Kelly Bar Weights	DROP: 12"

	N	U	B	M	DD	DESCRIPTION	ATTITUDES
40						@42' - Scoured, irregular contact to fine grained sandy SILTSTONE, hard, moist. @43' - Grades to fine to medium grained SANDSTONE with occasional gravels.	
45						@45' - Grades to fine grained SANDSTONE with occasional clay.	
50	10/18	C		7.0	124.2	@49' - Interbedded fine grained sandy SILTSTONE and gravel cobble CONGLOMERATE, friable, moist. @50' - Yellowish orange brown medium to coarse grained SANDSTONE with fine to coarse gravels, subangular to subrounded, well graded, dense, moist. @52' - Interbedded gravel cobble CONGLOMERATE and medium to coarse grained SANDSTONE. Conglomerate is wet.	@50' Approx. BN80E/12SE @53' B N87E/14SE
55			X			@56' - Sharp contact to CLAY, water seepage stops at top of contact, imbricated, sheared (not sheared at contact), low plasticity. @56.5' - Upper shear, highly plastic, mullion surface, very stiff, 1-2" thick.	@56' Contact N84E/21SE @56.5' Shear N80E/6SE
60	10/20	C		10.9	103.3	@56.9' - Lower shear, no slicks, mullioned surface just below shear. @57' - <u>Saugus Formation</u>: Yellowish red brown silty fine grained SANDSTONE with occasional subangular to subrounded gravels, moist, dense. @60.5' - Contact to approx. 3" thick SILTSTONE, scoured and irregular interbeds.	@56.9' Shear N69W/4SW @62' Approx. contact N70W/6SW
65						@62.3' - Discontinuous gravel bed. @63' - Grades to gravel cobble CONGLOMERATE with medium to coarse grained sand matrix, hard, moist, channelized.	@64' Channel N40E/23SE
70	13/20	C		9.6	114.9	Total Depth - 70' Seepage from 55-56' No caving Backfilled	
75							
80							
85							

ADDITIONAL COMMENTS:

Blows per 6"
C = Modified California Sampler
Kelly Bar Weights: 0 - 50', 2280 lbs.
50- 75', 1200 lbs.

Logged by: SS/JN

Geolabs-Westlake Village

SUBSURFACE DATA

LOG OF BORING B55

CLIENT: Pardee Homes	PROJECT: Skyline Ranch	W.O.: 8838.002
LOCATION: Santa Clarita	ELEVATION: 2145'±	DATE: 6/20/06
RIG TYPE: 24" Bucket	HAMMER WEIGHTS: Kelly Bar Weights	DROP: 12"

	N	U	B	M	DD	DESCRIPTION	ATTITUDES
0						Colluvium: Brown clayey gravelly SAND, dry, hard.	
						@1' - Mint Canyon Formation: Gravel cobble CONGLOMERATE with occasional boulders, fine to medium grained sandstone matrix, subangular to subrounded, moist, dense.	
5							
							@7' Approx. BN65W/21SW @7.5' Approx. Channel N65E/21SE
10						@10' - Light olive brown gravel cobble CONGLOMERATE with occasional boulders, fine to medium grained sand matrix, moist, very dense.	@10' Approx. BN15W/22SW
						@13' - Boulder (approximately 24" diameter) metavolcanic, granitic, schist, occasional volcanic clasts.	@13' Approx. BN45W/21SW
15						@15' - Light olive brown gravel cobble CONGLOMERATE with occasional boulders, fine to medium sand grained sand matrix, moist, hard.	
							@17' Approx. BN45W/21SW
20	10/15	C		9.5	106.7		
						@21' - Subangular to subrounded fine gravel cobble CONGLOMERATE, well graded, weakly cemented, olive gray fine to coarse grained sandstone matrix, hard, moist, crudely bedded.	
						@23' - Scoured contact to light olive brown fine to coarse grained SANDSTONE, weakly indurated, moist, massive.	
25							
							@26.5' B N38W/22SW
						@27' - Thin (1-2' thick) SILTSTONE interbedded (3" apart) with subangular to subrounded fine gravel cobble CONGLOMERATE, olive gray fine to coarse grained sandstone matrix.	@29' B N8W/22SW
30	10/20	C		4.7	---	@29' - Seepage in NW quadrant, then wet all around with depth.	
						@30' - Fine gravel cobble CONGLOMERATE with light olive brown fine to coarse grained sandstone matrix, weakly to moderately cemented, well graded, hard, moist, crudely bedded, occasional boulders.	
35						@35' - Subangular to subrounded coarse gravel cobble CONGLOMERATE with medium to coarse grained sandy clay matrix, wet, hard.	@36' Channel N80E/25NW
40	10/25	C		4.9	127.4	@38' - Fine gravel cobble CONGLOMERATE with light olive brown fine to coarse grained sandstone matrix, weakly to moderately cemented, well graded, hard, moist, crudely bedded.	
						@40' - Approximately 12" thick conglomeratic fine to medium grained SANDSTONE, scoured contact.	
45							

ADDITIONAL COMMENTS:

Blows per 6"

C = Modified California Sampler

Kelly Bar Weights: 0 - 50', 2280 lbs.
50- 75', 1200 lbs.

Logged by: SS/JN

Geolabs-Westlake Village

PLATE B55.1

SUBSURFACE DATA

LOG OF BORING B55

CLIENT: Pardee Homes	PROJECT: Skyline Ranch	W.O.: 8838.002
LOCATION: Santa Clarita	ELEVATION: 2145'±	DATE: 6/20/06
RIG TYPE: 24" Bucket	HAMMER WEIGHTS: Kelly Bar Weights	DROP: 12"

	N	U	B	M	DD	DESCRIPTION	ATTITUDES
40							
						@41' - Boulder clasts, moderately cemented.	
45							@45' Approx. BN5W/23SW
						@46' - Fine to medium grained SANDSTONE bed, scoured contact (approximately 6" thick), very hard, moist, massive.	
							@47' B N29W/24SW
			X				@49' Approx. BN34W/28SW
50						@50' - Gravel cobble CONGLOMERATE with occasional boulders with olive brown fine to coarse grained sandy clay matrix, moist, hard.	
							@51' Approx. BN34W/28SW
55							
60	30/B	C		13.8	116.2	@60' - Subangular to subrounded gravel cobble CONGLOMERATE, weakly cemented olive brown sandy clay matrix, hard, moist.	
			X				
						@64' - Subangular to subrounded gravel cobble CONGLOMERATE with moderately cemented olive gray fine to medium grained sandstone matrix, well graded, very hard, moist.	
65							
70						Refusal at 65' Seepage at 29-30' No caving Backfilled	
75							
80							
85							

ADDITIONAL COMMENTS:

Blows per 6"

C = Modified California Sampler

Kelly Bar Weights: 0 - 50', 2280 lbs.
50- 75', 1200 lbs.

Logged by: SS/JN

Geolabs-Westlake Village

CLIENT: Pardee Homes
PROJECT: Skyline Ranch
W.O.: 8838.002
LOCATION: Santa Clarita
ELEVATION: 2066'±
DATE: 6/26/06
RIG TYPE: 24" Bucket
HAMMER WEIGHTS: Kelly Bar Weights
DROP: 12"

	N	U	B	M	DD	DESCRIPTION	ATTITUDES
0			X			Colluvium: Brown fine to coarse grained SAND with clay and subangular	
						to subrounded fine gravel, moist, hard, rootlets.	
5						Saugus Formation: Yellowish brown conglomeratic medium to coarse	
						grained SANDSTONE with fine to coarse gravel, occasional fine boulder,	
						well graded, moist, very dense, crudely bedded.	
							@8' Approx.
							BN30W/20SW
10	8/12	C		3.6	122.7	@10' - Yellowish brown conglomeratic medium to coarse grained	@10' Approx.
						SANDSTONE with fine to coarse gravel, occasional fine boulder, well	BN85W/22SW
						graded, moist, very dense, crudely bedded.	
15						@15' - (6-12" thick) SILTSTONE interbed, irregular, scoured by	@15' Approx.
						conglomeratic SANDSTONE, irregular lower contact.	contact
							N10W/45-60SW
						@18' - Fine gravel CONGLOMERATE, coarsening upwards.	@17' Approx.
							BN15W/26SW
20	10/14	C		8.0	126.0	@20' - Yellowish brown medium to coarse grained SANDSTONE with	@20.5' Approx.
						silt, fine to coarse gravel, occasional cobble, subangular to subrounded	BN8E/28NW
			X			granitic clasts, moist, hard.	@22.5' Approx.
						@21' - Discontinuous medium brown CLAY, pervasively sheared.	shear
						@22.5' - Highly irregular contact to CLAY, grades to sandy CLAY,	N20E/23NW
25						pervasively sheared (approximately 1" thick).	@24.5' Approx.
						@23.5' - Downdip side of contact, pervasively sheared CLAY, grades to	shear
						sandy CLAY, moist, hard, massive.	N60W/5SW
						@24.5' - Approximately 1/8" thick CLAY shear (no slicks), plastic, stiff,	
						grades to blocky clayey SILTSTONE to clayey fine grained SANDSTONE,	
30	5/8	C				hard, moist.	
						@26.5' - Interbeds of highly scoured coarse grained SANDSTONE with	
						gravel, clayey fine grained SANDSTONE with occasional gravels, fine	
						and coarsening sequences.	
						@29' - Yellow brown fine to coarse grained SANDSTONE with gravel,	
35						grades to clayey fine to coarse grained SANDSTONE.	
						@33' - Silty fine grained SANDSTONE, grading to yellow brown silty fine	@36' Approx.
						to medium grained SANDSTONE, moist, hard.	contact
						@36' - Sharp contact to brown medium to coarse grained SANDSTONE	N60E/35SE
						with some gravels at contact, moist, hard.	@37' Approx.
40	10/13	C		9.9	125.4	@37' - Gravel channels in medium to coarse grained SANDSTONE,	channel
						slightly friable, moist, hard.	N55E/58SE
						@37.5' - Sharp contact to clayey SILTSTONE to scoured, irregular, roughl	@37.5' B
						horizontal contact with 1" thick CLAYSTONE within irregular gravel lens,	N7W/14NE
						discontinuous.	
45			X				

ADDITIONAL COMMENTS:

Blows per 6"
C = Modified California Sampler
Kelly Bar Weights: 0 - 50', 2280 lbs.
50- 75', 1200 lbs.

SUBSURFACE DATA

LOG OF BORING B56

CLIENT: Pardee Homes	PROJECT: Skyline Ranch	W.O.: 8838.002
LOCATION: Santa Clarita	ELEVATION: 2066'±	DATE: 6/26/06
RIG TYPE: 24" Bucket	HAMMER WEIGHTS: Kelly Bar Weights	DROP: 12"

	N	U	B	M	DD	DESCRIPTION	ATTITUDES
40							
						@42' - Dark yellow brown clayey fine grained SANDSTONE, occasional fine gravel, moist, hard.	
						@43.5' - Sharp contact to brown clayey fine grained SANDSTONE, moist, hard.	@43.5' Approx. contact N45W/12SW
45						@45' - Pervasively sheared CLAYSTONE, sheared zone (approximately 12" thick) grades to clayey fine grained SANDSTONE with pervasive shearing.	
						@48' - Fine to medium grained SANDSTONE with fine gravels, moist, massive.	
50	12/18	C		10.0	126.0	@50' - Medium brown fine to coarse grained clayey SANDSTONE with occasional fine gravels, moist, hard.	
						@53' - Increase in subangular coarse gravel clasts in medium brown medium to coarse grained SANDSTONE, moist, subangular clasts.	
55							
						@56' - Sharp contact, brown clayey fine grained SANDSTONE, moist.	@56' Approx. BN55W/10SW @56.5' Approx. contact N20W/10SW
60	15/20	C		12.1	119.6	@60' - Medium brown clayey fine to coarse grained SANDSTONE with subangular fine gravel, moist, hard.	
65							
						@67' - Strong brown medium to coarse grained clayey SANDSTONE, fine gravels, moist, hard.	
70	15/15	C		10.6	120.0	@70' - Gray light brown fine to coarse grained silty SANDSTONE with clay, fine gravels, subangular clasts, well graded, moist, hard.	
						@72' - Coarse cobble and gravel clasts in medium to coarse grained SANDSTONE, moist, hard, well graded.	
75						Total Depth - 72' No groundwater No caving Backfilled	
80							
85							

ADDITIONAL COMMENTS:

Blows per 6"
C = Modified California Sampler
Kelly Bar Weights: 0 - 50', 2280 lbs.
50- 75', 1200 lbs.

SUBSURFACE DATA

LOG OF BORING B57

CLIENT: Pardee Homes	PROJECT: Skyline Ranch	W.O.: 8838.002
LOCATION: Santa Clarita	ELEVATION: 2105'	DATE: 6/27/06
RIG TYPE: 24" Bucket	HAMMER WEIGHTS: Kelly Bar Weights	DROP: 12"

	N	U	B	M	DD
0					
5					
10	6/12	C		8.2	124.9
15					
20	7/10	C		9.2	111.6
25					
30	10/12	C		5.3	124.7
35					
40	9/11	C		17.0	110.7
45					

DESCRIPTION

Saugus Formation: Fine to coarse grained SANDSTONE with silt and fine gravel, graded, very dense, brown, moist, weakly indurated, rootlets, veins of light yellowish brown fine gravelly silty fine grained SAND, dry, and patches of very dark brown clayey SANDSTONE to CLAYSTONE.

@6'7" - Grades to 1'7" thick coarse grained gravel CONGLOMERATE with fine to coarse grained sandy matrix, slightly friable to friable with depth, reddish brown, roots, metamorphic (schist and gneiss) clasts.

@8'2" - Sharp, irregular contact with fine grained SANDSTONE with fine gravel, clay, and silt, poorly graded, dense, brown to light brown, moist, rootlets.

@8'7" - Grades to fine to medium grained SANDSTONE with clay, silt, and fine gravel, graded to well graded.

@9'9" - Fine grained sandy silty CLAYSTONE, non-plastic, grades to fine grained gravelly silty clayey fine grained SANDSTONE, poorly graded to graded, dense, dark brown, moist, rootlets.

@11.5' - Sharp contact with 6" thick coarse grained gravel CONGLOMERATE with silty fine to coarse grained sand matrix, well graded, dense, brown, moist, friable, no continuous thickness around hole, channeled.

@12' - Sharp contact with fine grained sandy silty CLAYSTONE, graded, very stiff, dark brown, moist, plastic, grades to fine grained SANDSTONE at 14' and coarse grained gravel CONGLOMERATE at 15', slightly friable to friable.

@15.5' - Clayey silty fine grained SANDSTONE, very dense, brown, grades to 2" thick coarse grained gravel CONGLOMERATE.

@16.5' - Silty fine to coarse grained sand matrix, graded, slightly friable, lesser gravel than material above.

@16'8" - Sharp contact with CLAYSTONE with sand and silt, poorly graded, very stiff, brown, moist, grades to silty fine to medium grained SANDSTONE.

@17'7" - Grades to coarse grained gravel CONGLOMERATE.

@19'3" - Slightly friable, small percentage of gravel.

@20' - Sharp contact with CLAYSTONE.

@22'5" - Sheared CLAYSTONE with upper and lower bounding shears, no slickensides, grades to coarse grained gravel CONGLOMERATE, slightly friable to friable.

@24'9" - Sharp, irregular, contact with CLAYSTONE, grading to fine grained SANDSTONE.

@25'10" - CLAYSTONE, sharp contact with 12" thick coarse grained gravel CONGLOMERATE with friable fine to coarse sand matrix.

@26.5' - 1mm thick sheared CLAY with well defined shear, no slickensides, highly plastic, moist.

@28' - Contact between CONGLOMERATE above and CLAYSTONE, brown, grading to 2" thick coarse grained gravel CONGLOMERATE at 30'8", yellowish brown.

@30'10" - Fine grained gravelly silty fine grained SANDSTONE, graded, light brown, moist, slightly friable.

ATTITUDES

@8'2" C
N61E/42NW

@11.5' C
N61E/35NW

@12' C
N55E/34NW

@22'5" Shear
N46E/21NW

@26.5' Shear
N64E/13NW

@27' C
N70E/36NW

@30'8" C
N73E/16NW

ADDITIONAL COMMENTS:

Blows per 6"
C = Modified California Sampler
Kelly Bar Weights: 0 - 50', 2280 lbs.
50- 75', 1200 lbs.

Logged by: RMP

SUBSURFACE DATA

LOG OF BORING B57

CLIENT: Pardee Homes	PROJECT: Skyline Ranch	W.O.: 8838.002
LOCATION: Santa Clarita	ELEVATION: 2105'	DATE: 6/27/06
RIG TYPE: 24" Bucket	HAMMER WEIGHTS: Kelly Bar Weights	DROP: 12"

	N	U	B	M	DD
40					
45					
50	10/14	C		20.8	106.5
55					
60	15/20	C		16.8	113.7
65					
70					
75					
80					
85					

DESCRIPTION

@34' - Coarse grained gravel CONGLOMERATE with fine to coarse sand matrix.

@34'5" - Fine grained sandy SILTSTONE, yellowish brown, grading to fine grained sandy clayey SILTSTONE with trace gravel, brown.

@37'2" - Silty CLAYSTONE streaks white, dry.

@38'10" - SILTSTONE, grades to silty fine grained SANDSTONE, then to coarse grained gravel CONGLOMERATE beds, approximately 6" thick, with light brown silty fine grained SANDSTONE between 39' and 40'4".

@40'9" - Sharp contact with CLAYSTONE, poorly graded, very stiff, brown, moist, waxy (suggesting shear), but no shear plane visible.

@42' - Grades to silty fine to medium grained SANDSTONE with trace fine gravel, graded, hard, light brown, moist, friable to slightly friable.

@44'3" - Grades to clayey fine grained sandy SILTSTONE, poorly graded, very stiff to hard, moist, brown.

@46'9" - Grades to coarse grained gravel CONGLOMERATE, moist, friable, irregular contact with claystone below, contact dips roughly NNE.

@48'3" - Silty CLAYSTONE, poorly graded, very stiff, dark brown, moist, highly plastic, roughly horizontal.

@48'8" - Clayey SILTSTONE with fine sand, poorly graded, hard, light brown, moist.

@53'4" - Grades to clayey silty fine grained SANDSTONE with trace gravel, graded, hard, dark brown, moist.

@60' - Grades to fine grained gravel CONGLOMERATE with clayey fine to coarse grained sand matrix, well graded, hard, dark brown, moist.

Total Depth - 60'
No groundwater
No caving
Backfilled

ATTITUDES

ADDITIONAL COMMENTS:

Blows per 6"
C = Modified California Sampler
Kelly Bar Weights: 0 - 50', 2280 lbs.
50- 75', 1200 lbs.

Logged by: RMP

SUBSURFACE DATA

LOG OF BORING B58

CLIENT: Pardee Homes	PROJECT: Skyline Ranch	W.O.: 8838.002
LOCATION: Santa Clarita	ELEVATION: 1696'	DATE: 6/27/06
RIG TYPE: 24" Bucket	HAMMER WEIGHTS: Kelly Bar Weights	DROP: 12"

	N	U	B	M	DD	DESCRIPTION	ATTITUDES
0						<u>Colluvium</u>: Tan fine to coarse grained SAND with subangular cobbles and gravel, dry.	
5						@3' - <u>Saugus Formation</u>: Light brown silty fine to medium grained SANDSTONE with gravel, moist, dense, poorly graded, rootlets, occasional streaks of white fine grained dry material oriented subvertical and subhorizontal.	@3'3" B N17W/11SW
10						@8' - Yellow fine grained SANDSTONE, 1" thick gray green fine subrounded gravel CONGLOMERATE with fine to medium grained sand matrix, weakly cemented, well graded, dense, moist.	@7' C N54W/7SW @10'2" C N67W/12SW
						@10' - No sample recovered.	
15	6-10"	C		11.7	116.0	@10'2" - Abrupt, irregular contact with gravel cobble CONGLOMERATE with slightly friable to friable fine to coarse grained sand matrix, well graded, dense to very dense, pale brown, moist to wet, subangular to subrounded metamorphic clasts.	@14'1" Approx. CN56E/15SE
						@12' - Yellowish brown friable fine to coarse grained SANDSTONE with gravel to occasional cobbles, moist.	
						@14'1" - Sharp irregular scoured contact with yellowish brown silty fine grained SANDSTONE, poorly graded to graded, very dense, moist.	
20						@15' - Olive fine grained SANDSTONE with silt, moist, hard.	
						@16'7" - 4" thick fine to coarse grained subangular gravel CONGLOMERATE with pale brown slightly friable to friable fine to coarse grained sand matrix, well graded, hard, very moist.	
25	10-10"	C		6.0	117.5	@20'11" - Silty fine grained SANDSTONE, poorly graded, hard, interbedded light brown, orange brown, and gray brown, moist, shallow, subhorizontal bedding, cross bedding, only exposed in SE wall, channel shaped.	
						@21' -Tan fine to coarse grained SANDSTONE with subangular gravel to cobble clasts, moist.	
30						@24'5" - CONGLOMERATE, extremely friable.	
						@27' - Pale olive friable medium grained SAND with occasional coarse gravel, moist, hard,	
35						@33' - Light brown subangular to subrounded gravel to cobble CONGLOMERATE, friable, fine to coarse grained sand matrix, moist.	
						@36' - Brown SANDSTONE with subrounded to subangular gravel and cobbles, friable, moist.	
						@37'4" - Matrix fining to clayey, fine to medium grained SANDSTONE, wet.	
40	21-10"	C		11.9	99.3	@37'10" - Matrix resumes coarseness.	
						@39'8" - Transition to fine gravelly fine to coarse grained SANDSTONE with occasional subrounded cobbles, graded, very dense, light brown, moist.	
45						@40' - Light yellowish brown fine to coarse grained SANDSTONE with occasional gravel.	

ADDITIONAL COMMENTS:

Blows per 12"

C = Modified California Sampler

Kelly Bar Weights: 0 - 30', 5619 lbs.
31 - 60', 3745 lbs.
61 - 90', 2280 lbs.
91 - 120', 1223 lbs.

Logged by: AH/RMP

Geolabs-Westlake Village

SUBSURFACE DATA

LOG OF BORING B58

CLIENT: Pardee Homes	PROJECT: Skyline Ranch	W.O.: 8838.002
LOCATION: Santa Clarita	ELEVATION: 1696'	DATE: 6/27/06
RIG TYPE: 24" Bucket	HAMMER WEIGHTS: Kelly Bar Weights	DROP: 12"

	N	U	B	M	DD	DESCRIPTION	ATTITUDES
40						@41'5" - Grades subrounded to subangular to fine gravel CONGLOMERATE to coarse gravel CONGLOMERATE with light brown fine to coarse grained sand matrix, well graded, hard, moist.	
45							
50	7-5"	C				@50' - No sample recovered, subangular gravel to cobble CONGLOMERATE, fine to coarse grained sand matrix, moist, possible minor seep at 50-52', coarsens to boulder CONGLOMERATE, matrix is wet, possibly from seep above.	
55							
60	15-5"	C		5.4	100.5	@59'3" - Clast decreasing in coarseness to cobbles (up to 6"), iron staining in matrix and clasts. @60' - Light brown subangular gravel CONGLOMERATE with friable fine to coarse grained sand matrix, moist.	
65							
70	22-12"	C		8.5	109.9	@70' - Dark yellowish brown subangular fine gravel CONGLOMERATE with fine to coarse grained sand matrix, moist, friable, poorly graded, hard. @71' - Light brownish gray subrounded coarse gravel CONGLOMERATE with fine to coarse grained sand matrix, well graded, hard, moist, metamorphic clasts. @72' - Seeping.	
75	16-5"	C				@74' - Greenish gray fine to medium grained SANDSTONE with trace fine gravel, graded, hard, moist. @74'11" - Mint Canyon Formation: Sharp, scoured, irregular contact with subrounded cobble CONGLOMERATE, gray brown fine to coarse grained sand matrix, weakly to moderately cemented, very moist, hard, well graded. @75' - Greenish gray silty fine grained SANDSTONE, poorly graded, hard, moist. @76'8" - Abrupt transition to subrounded cobble CONGLOMERATE with greenish gray fine to coarse sand matrix, very dense, moist, well graded.	@76'8" Approx. contact N35E/8SE
80							
85							

ADDITIONAL COMMENTS:

Blows per 12"

C = Modified California Sampler

Kelly Bar Weights: 0 - 30', 5619 lbs.
31 - 60', 3745 lbs.
61 - 90', 2280 lbs.
91 - 120', 1223 lbs.

Logged by: AH/RMP

Geolabs-Westlake Village

SUBSURFACE DATA

LOG OF BORING B58

CLIENT: Pardee Homes	PROJECT: Skyline Ranch	W.O.: 8838.002
LOCATION: Santa Clarita	ELEVATION: 1696'	DATE: 6/27/06
RIG TYPE: 24" Bucket	HAMMER WEIGHTS: Kelly Bar Weights	DROP: 12"

	N	U	B	M	DD	DESCRIPTION	ATTITUDES
80						@80' - Greenish gray subrounded cobble CONGLOMERATE with silty fine to coarse grained sand matrix, well graded, hard, moist, metamorphic clasts. @83' - Greenish brown subrounded cobble CONGLOMERATE with silty fine to coarse grained sand matrix, well graded, hard, moist, metamorphic clasts.	
85							
						@87'4" - Fine grained gravelly fine to coarse grained SANDSTONE, graded, hard, gray, moist to very moist.	@87'4" B N23W/8SW
	30-10"	C		14.0	104.3	@88' - Light brownish gray silty fine to medium grained SAND with trace subangular fine gravel, graded to well graded, hard, dense, moist, metamorphic clasts.	
90						@88'4" - Scoured contact between subrounded coarse gravel CONGLOMERATE, slightly friable, and silty fine grained SANDSTONE below, poorly graded to graded, hard, gray, moist.	
95						@89' - Gray very silty fine to medium grained SANDSTONE, poorly graded to graded, hard, moist. @92' - Grades to silty fine to coarse grained SAND over fine gravel CONGLOMERATE, over cobble CONGLOMERATE, friable, gray fine to coarse grained sand matrix, hard, wet.	
100							
						@103' - Brown to dark brown cobble CONGLOMERATE with subrounded gravelly fine to coarse grained sand matrix, well graded, hard, moist, metamorphic clasts.	
105	30-5"	C		5.3	87.1	@105' - Gray subrounded to subangular coarse gravel to cobble CONGLOMERATE with friable fine to to coarse grained sand matrix, well graded, hard, moist, metamorphic clasts, in SE wall weakly cemented fine to coarse grained SANDSTONE, graded, hard, gray, moist, truncated by CONGLOMERATE.	
110							
115						@115' - Cobbles coarsening to boulder size.	
120						Total Depth - 116' Minor seep at 50' Seep causing sand to run at 72' Backfilled	
125							

ADDITIONAL COMMENTS:

Blows per 12"

C = Modified California Sampler

Kelly Bar Weights: 0 - 30', 5619 lbs.
31 - 60', 3745 lbs.
61 - 90', 2280 lbs.
91 - 120', 1223 lbs.

Logged by: AH/RMP

SUBSURFACE DATA LOG OF BORING B59

CLIENT: Pardee Homes	PROJECT: Skyline Ranch	W.O.: 8838.002
LOCATION: Santa Clarita	ELEVATION: 1678'±	DATE: 6/30/06
RIG TYPE: 24" Bucket	HAMMER WEIGHTS: Kelly Bar Weights	DROP: 12"

	N	U	B	M	DD
0					
5					
10	8	C		12.1	118.0
15					
20	10-8"	C		4.0	117.6
25					
30	15-10"	C		4.6	116.6
35					
40	14-6"	C		6.3	103.0
45					

DESCRIPTION

<u>Saugus Formation</u>: Brown coarse grained gravel to cobble CONGLOMERATE with fine to coarse grained sand matrix, well graded, dense, moist, clasts metamorphic and subrounded to subangular, metamorphic clasts, slightly friable, rootlets.

@2' - Pale brown coarse grained gravel CONGLOMERATE with fine to coarse grained sand matrix, well graded, dense, moist, subrounded metamorphic clasts.

@5' - Mottled light yellowish brown, pale brown, and gray green silty fine grained SAND, poorly graded, medium dense, moist, with trace iron staining, to fine grained gravelly silty fine to medium grained SAND, poorly graded, dense, moist.

@7'4" - Grades to very silty fine grained SANDSTONE, poorly graded, very dense, brown, moist.

@9' - Dark brown fine to coarse grained sandy clayey SILT, poorly graded, very stiff, moist, bedded with gray green beds from above.

@10' - Light yellow brown fine grained gravel CONGLOMERATE with fine to medium grained sand matrix, graded to well graded, dense, moist, subrounded, over interbedded gray green silty fine to coarse grained SAND, graded, dense, moist, and dark brown silty fine to coarse grained SAND, graded, dense, moist.

@17' - Gray green interbeds, color change to olive and very moist.

@18'10" - Subrounded to subangular cobble CONGLOMERATE, well graded, slightly friable, olive silty fine to coarse grained sand matrix, very dense, moist.

@20' - Yellowish brown fine grained gravel CONGLOMERATE with fine to coarse grained sand matrix, well graded, hard, moist, subrounded metamorphic clasts.

@21' - Coarsens to cobble CONGLOMERATE.

@21.5' - Yellow brown fine to coarse grained SANDSTONE, graded, hard, friable, irregular thickness.

@22.5' - Subangular coarse grained gravel CONGLOMERATE, friable.

@23' - Yellow brown fine to coarse grained SANDSTONE, graded, hard, moist, friable, irregular thickness.

@23.5' - Yellow brown fine to coarse grained gravel CONGLOMERATE with friable fine to coarse grained sand matrix, well graded, hard, moist, subangular metamorphic clasts, occasional cobbles.

@29'4" - Yellow brown fine to coarse grained SANDSTONE, graded, hard, moist, friable, contact with above is irregular and scoured.

@32' - Yellowish brown fine grained gravel CONGLOMERATE with fine to coarse grained sand matrix, well graded, hard, moist, subangular metamorphic clasts.

@33' - Dark yellowish brown coarse grained gravel CONGLOMERATE with fine to coarse grained sand matrix, well graded, very dense, moist, subrounded metamorphic clasts, also boulder sized pocket of silty fine grained SANDSTONE, poorly graded, dense, brown to yellowish brown, moist, weakly indurated, only in N wall (ripup clast?).

ATTITUDES

@3.5' C
N80W/9NE

@10'3" B
N64W/8SW

@14.6" B
N41W/12SW

@18'10" B
N86W/11SW

@29'4" C
N51E/12SE

ADDITIONAL COMMENTS:

Blows per 12"
C = Modified California Sampler
Kelly Bar Weights: 0 - 30', 5619 lbs.
31 - 60', 3745 lbs.
61 - 90', 2280 lbs.
91 - 120', 1223 lbs.

Logged by: RMP

SUBSURFACE DATA LOG OF BORING B59

CLIENT: Pardee Homes	PROJECT: Skyline Ranch	W.O.: 8838.002
LOCATION: Santa Clarita	ELEVATION: 1678'±	DATE: 6/30/06
RIG TYPE: 24" Bucket	HAMMER WEIGHTS: Kelly Bar Weights	DROP: 12"

	N	U	B	M	DD	DESCRIPTION	ATTITUDES
40						@34'5" - Grades to fine grained gravelly fine to coarse grained SANDSTONE, graded, slightly friable. @35'2" - Dark yellowish brown fine to coarse grained gravel CONGLOMERATE with fine to coarse grained sand matrix and occasional cobbles, subrounded metamorphic clasts.	
45						@40' - Yellowish brown to dark yellowish brown coarse grained gravel CONGLOMERATE with fine to coarse sand matrix, well graded, very dense, moist, subrounded metamorphic clasts, also discontinuous lens of brown CLAYSTONE, very stiff, wet, waxy, non-slightly plastic, boulder sized and only in SW wall.	
50						@44' - Several cobbles approach boulder size. @46' - Grades to pale brown fine to coarse grained SANDSTONE with coarse gravel, graded, hard, moist, slightly friable, subangular metamorphic clasts. @47'3" - Pale brown fine to coarse grained gravel to cobble CONGLOMERATE, well graded, hard, moist, subangular metamorphic clasts.	
55	20-6"	C		8.2	113.5	@49' - Yellowish brown to dark yellowish brown cobble CONGLOMERATE with fine to coarse sand matrix, well graded,very dense, moist, subangular to subrounded metamorphic clasts, also boulder sized ripup clast of clayey SILTSTONE in SE wall, poorly graded, very stiff, dark brown, moist, slightly plastic.	@56'4" C N89W/15NE @57'5" B N20E/16NW
60						@55' - Occasional boulder sized clasts in CONGLOMERATE. @56'4" - Sharp, erosional contact with pale brown fine to coarse grained SANDSTONE, poorly graded to graded, hard, moist, thinly bedded.	
65						@57'8" - Sharp, irregular, erosional contact with coarse grained gravel to cobble CONGLOMERATE, well graded, pale brown, weakly cemented to cemented fine to coarse grained sand matrix, hard, moist, subangular metamorphic clasts.	
70						@61'7" - Pocket of gravelly fine to coarse grained SANDSTONE, graded, hard, moist, pale brown, slightly friable, only in E wall. @70' - Boulder sized clast. @71'5" - Orange CLAY rind around clasts, soft, moist to wet, highly plastic, approximately 1/2mm thick but same matrix from 57'8" exists, mostly clast supported, very little matrix.	
75							
80							
85							

ADDITIONAL COMMENTS:

Blows per 12"
C = Modified California Sampler
Kelly Bar Weights: 0 - 30', 5619 lbs.
31 - 60', 3745 lbs.
61 - 90', 2280 lbs.
91 - 120', 1223 lbs.

Logged by: RMP Geolabs-Westlake Village

SUBSURFACE DATA

LOG OF BORING B59

CLIENT: Pardee Homes	PROJECT: Skyline Ranch	W.O.: 8838.002
LOCATION: Santa Clarita	ELEVATION: 1678'±	DATE: 6/30/06
RIG TYPE: 24" Bucket	HAMMER WEIGHTS: Kelly Bar Weights	DROP: 12"

	N	U	B	M	DD	DESCRIPTION	ATTITUDES
80	21-8"	C		7.4	---	Light yellowish brown coarse grained gravel CONGLOMERATE with silty fine to coarse grained sand matrix, well graded, very dense, moist, subrounded metamorphic clasts.	
85							
90							
						Total Depth - 92' No groundwater No caving	
95						Backfilled	
100							
105							
110							
115							
120							
125							

ADDITIONAL COMMENTS:

Blows per 12"

C = Modified California Sampler

Kelly Bar Weights:
0 - 30', 5619 lbs.
31 - 60', 3745 lbs.
61 - 90', 2280 lbs.
91 - 120', 1223 lbs.

Logged by: RMP

Geolabs-Westlake Village

SUBSURFACE DATA

LOG OF BORING B60

CLIENT: Pardee Homes	PROJECT: Skyline Ranch	W.O.: 8838.002
LOCATION: Santa Clarita	ELEVATION: 1664'	DATE: 7/7/06
RIG TYPE: 24" Bucket	HAMMER WEIGHTS: Kelly Bar Weights	DROP: 12"

	N	U	B	M	DD	DESCRIPTION	ATTITUDES
0						Saugus Formation:	
5						@3' - Mottled gray green, rusty orange, brown fine to coarse grained gravelly fine to coarse grained SANDSTONE, graded, weakly indurated, very dense, moist, massive, subangular metamorphic clasts, rootlets to 5'.	
						@5'4" - Grades to fine grained gravel CONGLOMERATE with weakly cemented to slightly friable fine to coarse sand matrix, graded to well graded, very dense, moist.	@6'11" B N48W/85SW
						@5.5' - Dark brown CLAYSTONE, highly plastic, moist.	
10	10	C		14.0	115.2	@6'7" - Grades to fine grained gravel CONGLOMERATE with weakly cemented fine to coarse grained sand matrix, graded to well graded, very dense, moist.	@9'4" B N7W/7SW
						@9'4" - Grades to yellow brown fine to coarse grained gravel CONGLOMERATE, subangular metamorphic clasts, friable in west wall.	
						@10' - Brown silty fine to medium grained SANDSTONE, poorly graded, weakly indurated, very dense, moist, subangular metamorphic fine gravels.	@12' B N32W/8SW
15						@12' - Grades to light yellowish brown fine grained gravel CONGLOMERATE with friable fine to coarse sand matrix, well graded, hard, moist, subangular metamorphic clasts.	@16' B N22W/7SW
						@12'5" - Grades to yellowish brown silty fine grained SANDSTONE, poorly graded graded, weakly indurated, hard, moist, massive.	
20						@13'8" - Grades to pale brown fine to coarse grained SANDSTONE, slightly friable, massive.	@20'3" B N66W/8SW
						@15' - Grades to pale brown fine grained gravel CONGLOMERATE, well graded, friable, hard, moist, subangular metamorphic clasts.	
25						@15.5' - Grades to yellowish brown silty fine grained SANDSTONE, poorly graded to graded, weakly indurated, hard, moist.	
						@16' - Grades to cobble CONGLOMERATE with friable light yellowish brown fine to coarse sand matrix, well graded, hard, moist, subrounded metamorphic clasts.	@26'8" B N9W/8SW
						@18'4" - Grades to yellowish brown silty fine grained SANDSTONE, poorly graded to graded, weakly indurated, hard, moist.	
30						@20'3" - Grades to coarse grained gravel CONGLOMERATE with friable yellow brown fine to coarse sand matrix, well graded, hard, moist, subrounded metamorphic clasts.	
						@22'4" - Grades to yellowish brown silty fine to coarse grained SANDSTONE, graded, weakly indurated to slightly friable, hard, moist.	
35						@23'4" - Grades to yellowish brown fine grained gravel CONGLOMERATE with friable fine to coarse sand matrix, well graded, hard, moist, subrounded metamorphic clasts.	
						@26'8" - Coarsens to coarse grained gravel CONGLOMERATE.	@38'9" B N17W/20SW
40						@26'10" - Grades to yellowish brown fine to coarse grained SANDSTONE, graded, friable, hard, moist.	
						@28'2" - Grades to subrounded fine to coarse grained gravel to cobble CONGLOMERATE, friable.	
						@30' - Yellow brown coarse grained gravel to cobble CONGLOMERATE with fine to coarse sand matrix, well graded, hard, moist, subrounded metamorphic clasts.	
45							

ADDITIONAL COMMENTS:

Blows per 12"

C = Modified California Sampler

Kelly Bar Weights: 0 - 50', 2280 lbs.

50- 75', 1200 lbs.

SUBSURFACE DATA LOG OF BORING B60

CLIENT: Pardee Homes	PROJECT: Skyline Ranch	W.O.: 8838.002
LOCATION: Santa Clarita	ELEVATION: 1664'	DATE: 7/7/06
RIG TYPE: 24" Bucket	HAMMER WEIGHTS: Kelly Bar Weights	DROP: 12"

	N	U	B	M	DD	DESCRIPTION	ATTITUDES
40						@35' - Brown coarse grained gravel to cobble CONGLOMERATE with fine to coarse sand matrix, well graded, hard, moist, subangular metamorphic clasts.	
						@37'9" - Sharp, irregular, scoured contact with yellowish brown fine to coarse grained SANDSTONE, graded, friable, hard, moist.	
						@38'9" - Grades to coarse grained subangular gravel CONGLOMERATE, friable.	
45						@38'11 - Sharp, irregular, scoured contact with yellowish brown fine to coarse grained SANDSTONE, graded, hard, moist, friable.	
						@40' - Grades to cobble CONGLOMERATE with friable yellowish brown fine to coarse sand matrix, graded, hard, moist, subangular metamorphic clasts.	
50						@41' - Pale yellowish brown fine grained subangular gravelly fine to coarse grained SANDSTONE, graded, hard, moist.	
						@42' - Fines to fine to coarse grained gravel CONGLOMERATE.	
						@45' - Yellow brown coarse grained gravel to cobble CONGLOMERATE with fine to coarse sand matrix, well graded, hard, moist, clasts subangular to subrounded metamorphics.	@52' B N63W/12SW
55						@45.5' - Matrix color grades to very pale brown, approx. 50% of conglomerate is matrix material, most clasts subangular fine gravel, occasional cobbles, hard, moist, friable to slightly friable.	
						@47' - Moisture increases to very moist, subangular cobble clasts.	
60	22-10"	C		16.1	113.2	@53' - Grades to brown coarse grained gravel to cobble CONGLOMERATE with fine to coarse sand matrix, well graded, hard, very moist, clasts subangular to subrounded metamorphics.	
						@55'2" - Matrix color grades to very pale brown, approx. 50% of conglomerate is matrix material, most clasts subangular fine gravel size, occasional cobbles, hard, moist, friable to slightly friable, massive.	@62'1" C N2E/11NW @64'11" C
65						@59' - Orange highly plastic CLAYSTONE, appears in matrix surrounding clasts.	N2E/14NW
						@61' - Brownish yellow fine grained gravelly slightly plastic clayey fine to medium grained SANDSTONE, poorly graded, very dense, moist, gravels subrounded to subangular metamorphics, overlying mottled brownish yellow and gray silty fine grained SANDSTONE, poorly graded to graded, dense, moist.	@65'8" B N11W/16SW
70						@62'1" - Sharp, irregular contact along a 1mm thick highly plastic CLAYSTONE bed, soft, moist, light brown to brown, overlying dark yellowish brown silty fine grained SANDSTONE, poorly graded, weakly indurated, hard, moist, thinly bedded.	@71' B N34W/4SW
						@63' - Light gray silty fine grained SANDSTONE, poorly graded, weakly to moderately indurated, hard, moist.	
75						@64'11" - Contact between dark yellowish brown and gray silty fine grained SANDSTONE.	
						@65'3" - Grades back to dark yellowish brown.	
						@67.5' - Contact with gray silty fine grained SANDSTONE.	
						@68' - Color change to mottled gray and dark yellowish brown.	
80						@69' - Mottled gray and yellowish brown to dark yellowish brown silty fine grained SANDSTONE, poorly graded, hard, moist.	
						Total Depth - 76', Seep from 56-58', No caving, Backfilled	
85							

ADDITIONAL COMMENTS: Blows per 12"

C = Modified California Sampler

Kelly Bar Weights: 0 - 50', 2280 lbs.
50- 75', 1200 lbs.

Logged by: RMP Geolabs-Westlake Village PLATE B60.2

SUBSURFACE DATA LOG OF BORING B61

CLIENT: Pardee Homes	PROJECT: Skyline Ranch	W.O.: 8838.002
LOCATION: Santa Clarita	ELEVATION: 1684'	DATE: 7/11/06
RIG TYPE: 24" Bucket	HAMMER WEIGHTS: Kelly Bar Weights	DROP: 12"

	N	U	B	M	DD	DESCRIPTION	ATTITUDES
0						Saugus Formation: Very pale brown silty fine to coarse grained gravelly fine to	
						coarse grained SANDSTONE, graded, hard, dry, gravel clasts are subangular.	
						@2' - 4" thick fine grained gravel CONGLOMERATE with slightly friable silty fine to	@2' B
						coarse sand matrix, well graded, hard, moist, rootlets, clasts are subangular and	N52W/14SW
						metamorphic.	
5						@2'4" - Mottled yellowish brown and gray green fine grained gravelly silty fine to	
						coarse grained SANDSTONE, graded, hard, moist, gravels are subangular, end of	@6' B
						rootlets, massive.	N48W/6SW
						@3'3" - Absence of gray green color.	
						@5' - Dark yellowish brown and mottled olive gray clayey silty fine to medium	
10	7	C		12.7	121.7	grained SANDSTONE, graded, hard, moist.	
						@6' - Grades to yellowish brown fine to coarse grained gravel CONGLOMERATE	@11'10" B
						with friable fine to coarse sand matrix, well graded, hard, moist, clasts are subrounded	N25W/5NW
						and metamorphic.	
						@9' - Sharp, scoured contact with 12" thick section of interbedded yellowish brown	
15						and gray green fine grained sandy SILTSTONE, poorly graded, hard, moist, interbeds	
						approximately 1.5" thick.	
						@10' - Yellowish brown thinly bedded SILTSTONE.	
						@11'10" - Grades to reddish brown clayey silty fine to coarse grained SANDSTONE	
						with fine gravel, graded, hard, moist.	
20	11-10"	C		8.6	115.2	@12'5" - Grades to coarse grained gravel to cobble CONGLOMERATE with friable	@20' B
						yellow brown fine to coarse sand matrix, well graded, hard, moist, clasts are	N37W/6SW
						subrounded and metamorphic.	
						@13'5" - Matrix color changes to pale brown.	
						@14.5' - Matrix occasionally turns reddish brown for 2", then back to pale brown.	
25						@17'10" - Sharp, irregular scoured contact with dark yellowish brown fine grained	
						gravelly silty fine to medium grained SANDSTONE, graded, weakly indurated, hard,	
						moist, massive.	
						@20' - Grades to yellowish brown coarse grained gravel to cobble CONGLOMERATE	
						with slightly friable fine to coarse sand matrix, well graded, hard, moist, occasional	
30	19-8"	C		8.7	120.9	cobbles, clasts are subrounded and metamorphic.	
						@22' - Scoured contact with dark yellowish brown silty fine to coarse grained	
						SANDSTONE, graded, hard, moist, thickly bedded.	
						@23'7" - Grades to yellowish brown fine to coarse grained gravel CONGLOMERATE.	
						@23'11" - Yellow brown silty fine grained gravelly fine to coarse grained	
35						SANDSTONE, slightly friable, graded, hard, moist, massive.	@35' B
						@25'1" - Grades to yellow brown coarse grained gravel to cobble CONGLOMERATE,	N52W/7SW
						friable to slightly friable, well graded,hard, moist, clasts are subrounded and	
						metamorphic.	
						@30' - Grades to yellowish brown coarse grained gravel to cobble	
40						CONGLOMERATE with fine to coarse sand matrix, well graded, slightly friable to	
						friable, hard, moist, occasional cobbles, clasts are subrounded and metamorphic.	
						@31' - 1" thick discontinuous brown clayey silty SAND, poorly graded, stiff, moist,	
						90° around hole in SE quadrant.	
						@31'5" - Occasional boulders begin appearing in conglomerate for remainder of boring.	
45						@35' - Matrix coarsens and becomes friable.	

ADDITIONAL COMMENTS:

Blows per 12"

C = Modified California Sampler

Kelly Bar Weights: 0 - 30', 5619 lbs.
31 - 60', 3745 lbs.
61 - 90', 2280 lbs.

SUBSURFACE DATA LOG OF BORING B61

CLIENT: Pardee Homes	PROJECT: Skyline Ranch	W.O.: 8838.002
LOCATION: Santa Clarita	ELEVATION: 1684'	DATE: 7/11/06
RIG TYPE: 24" Bucket	HAMMER WEIGHTS: Kelly Bar Weights	DROP: 12"

	N	U	B	M	DD	DESCRIPTION	ATTITUDES
40							
						@42' - Grades to fine grained gravel CONGLOMERATE.	
						@44' - Grades to coarse grained gravel to cobble CONGLOMERATE.	
45						@44'5" - Boulder sized pocket of brown silty fine grained SANDSTONE, poorly graded, dense, moist, thinly bedded, occurs in south wall.	
						@47' - Yellowish brown fine grained gravelly fine to coarse grained SANDSTONE, graded, slightly friable, hard, moist, massive.	
50						@49' - Very pale brown fine grained gravelly fine to coarse grained SANDSTONE, friable, graded, hard, very moist.	
						@51' - Grades to yellowish brown fine grained gravel CONGLOMERATE with slightly friable fine to coarse sand matrix, well graded, hard, moist, subangular metamorphic clasts.	
55						@55' - Grades to cobble CONGLOMERATE.	
						@56'5" - Grades to subrounded fine grained gravel CONGLOMERATE.	
60	22-10"	C		8.5	99.3	@60' - Yellowish brown fine to coarse grained gravel CONGLOMERATE with fine to coarse sand matrix, well graded, hard, moist, subangular metamoprhic clasts, orange highly plastic clay in matrix around clasts.	
						@60.5' - Matrix color changes to very dark brownish black.	
						@64' - Matrix color changes back to pale yellowish brown.	
65							
70						@70' - Yellow brown subangular fine to coarse grained gravel CONGLOMERATE with fine to coarse sand matrix, well graded, hard, moist.	
75						@75' - Yellow brown subangular fine to coarse grained gravel CONGLOMERATE with fine to coarse sand matrix, well graded, hard, moist.	
							@77' B N20W/12NW
80						@80' - Yellow brown subangular fine to coarse grained gravel CONGLOMERATE with fine to coarse sand matrix, well graded, hard, moist.	
						Total Depth - 80' No groundwater, No caving	
85						Backfilled	

ADDITIONAL COMMENTS:

Blows per 12"

C = Modified California Sampler

Kelly Bar Weights: 0 - 30', 5619 lbs.
31 - 60', 3745 lbs.
61 - 90', 2280 lbs.

SUBSURFACE DATA LOG OF BORING B62

CLIENT: Pardee Homes	PROJECT: Skyline Ranch	W.O.: 8838.002
LOCATION: Santa Clarita	ELEVATION: 1998'	DATE: 7/12/06
RIG TYPE: 24" Bucket	HAMMER WEIGHTS: Kelly Bar Weights	DROP: 12"

	N	U	B	M	DD	DESCRIPTION	ATTITUDES
0						Saugus Formation: Brown fine grained gravelly fine to coarse grained SANDSTONE, graded, slightly friable, dense, moist.	
						@3' - Color change to yellow brown fine to coarse grained gravel to cobble CONGLOMERATE with fine to coarse sand matrix, well graded, hard, moist, clasts are subrounded and metamorphic.	@3' B N58E/24NW
5						@5' - Reddish yellow silty fine to medium grained sandy SILTSTONE, weakly indurated, poorly graded, very stiff, moist.	
						@9'9" - Grades to channelled gravels, 2" thick, rootlets.	@9'9" B N69E/14NW
10	7	C		12.6	118.3	@10' - Dark yellowish brown clayey silty fine to medium grained SANDSTONE, weakly indurated, hard, moist, occasional white streaks.	
						@11.5' - Grades to fine to coarse grained gravel CONGLOMERATE with slightly friable coarse sand matrix, well graded, hard, moist, clasts are subrounded and metamorphic.	@11.5' B N79E/26NW
15						@13' - Yellowish brown fine grained gravelly fine to coarse grained SANDSTONE with occasional coarse gravel, graded, slightly friable, hard, moist, massive, occasional gravel beds.	
						@16' - Coarse gravel bed.	@16' B N49E/23NW
20	4	C		10.4	116.7	@20' - Grades to fine grained gravel CONGLOMERATE with pale brown fine to coarse sand matrix, well graded, hard, moist.	
						@21'3" - Sharp, scoured contact along bedding, yellow brown clayey silty fine grained SANDSTONE, poorly graded, hard, moist, slightly plastic.	@21'3" C N31E/27NW
						@21'9" - 1/4" thick clay bed.	@21'9" B N38E/22NW
25						@23' - Yellowish brown clayey fine to coarse grained SANDSTONE, occasional coarse gravel, graded, hard, moist.	
						@24'4" - 6" thick discontinuous yellow brown clayey silty fine grained SANDSTONE, poorly graded, slightly plastic, hard, moist.	
30	9	C		12.2	114.9	@25' - Grades to coarse grained gravel to cobble CONGLOMERATE, slightly friable.	
						@30' - Light yellowish brown coarse grained gravel to cobble CONGLOMERATE with fine to coarse sand matrix, well graded, hard, moist.	@31'7" B N65E/31NW
						@31'7" - Yellowish brown fine to coarse grained SANDSTONE, graded, slightly friable, hard, moist, poorly bedded.	
35						@34'4" - Grades to subrounded fine grained gravel to cobble CONGLOMERATE, slightly friable.	
40	15	C		13.9	119.9	@39' - Yellowish brown coarse grained gravel to cobble CONGLOMERATE with fine to coarse sand matrix, well graded, hard, very moist, clasts are subrounded and metamporhic.	
						@40' - Matrix becomes slightly plastic clayey fine grained SAND.	@41'10" B N29E/24NW
45							

ADDITIONAL COMMENTS:

Blows per 12"

C = Modified California Sampler

Kelly Bar Weights: 0 - 30', 5619 lbs.
31 - 60', 3745 lbs.
61 - 90', 2280 lbs.

Logged by: RMP

SUBSURFACE DATA LOG OF BORING B62

CLIENT: Pardee Homes	PROJECT: Skyline Ranch	W.O.: 8838.002
LOCATION: Santa Clarita	ELEVATION: 1998'	DATE: 7/12/06
RIG TYPE: 24" Bucket	HAMMER WEIGHTS: Kelly Bar Weights	DROP: 12"

	N	U	B	M	DD	DESCRIPTION	ATTITUDES
40							
						@43' - Moisture increases to wet.	
						@44' - Seep within cobble CONGLOMERATE.	
45							
						@47' Sharp, irregular, nonsheared contact with brown CLAYSTONE, very stiff, wet, pervasively sheared, corn flaky texture.	@47' C N49E/26NW
	13		C	12.1	119.8	@47.5' - 6" thick conglomeratic SANDSTONE interbed truncated by shear below.	@47'3" S
50						@48' - Brown CLAYSTONE, very stiff, wet, pervasively sheared, corn flaky texture, medium plastic.	N49E/29NW @48' S
						@49' - Brown fine grained sandy clayey SILTSTONE, poorly graded, stiff, moist, with sheared, waxy slickensided clay bed, overlying yellow brown subangular fine grained gravel CONGLOMERATE with clayey fine to coarse grained sand matrix, well graded, hard, very moist to wet.	N50W/43SW @51' S N43E/37NW
55						@50' - Brown to dark brown fine to medium grained sandy silty CLAYSTONE, poorly graded, hard, moist.	
						@51' - Shear in claystone with slickensides (34°, N54W), NW dipping shears are dominant as they truncate SW dipping shear at 48'.	
60	14		C	10.4	119.1	@54' - Highly plastic CLAYSTONE, brown to dark brown, moist, very stiff.	
						@57' - Brown to dark brown very clayey fine to medium grained SANDSTONE, graded, hard, moist, slightly to medium plastic.	
						@59' - Dark yellowish brown clayey silty fine to medium grained SANDSTONE, graded, hard, moist.	
65						@60' - Yellowish brown fine grained gravel CONGLOMERATE with fine to coarse sand matrix, well graded, hard, wet, clasts are subrounded and metamorphic.	
						@63' - Dark yellowish brown clayey fine to medium grained SANDSTONE, graded, hard, moist, slightly plastic.	
70	21		C	12.1	125.0	@70' - Brown silty fine to medium grained SANDSTONE, graded, hard, moist.	
75						@75' - Yellowish brown fine grained gravelly fine to coarse grained SANDSTONE, graded, hard, moist.	
80	22-10"		C	14.5	117.7	@80' - Grades to yellowish brown subrounded to rounded fine grained gravel CONGLOMERATE with clayey fine to coarse grained sand matrix, well graded, hard, to contact with brown clayey silty fine to medium grained SANDSTONE, graded, hard, moist.	
85							

ADDITIONAL COMMENTS:

Blows per 12"

C = Modified California Sampler

Kelly Bar Weights: 0 - 30', 5619 lbs.
31 - 60', 3745 lbs.
61 - 90', 2280 lbs.

SUBSURFACE DATA

LOG OF BORING B62

CLIENT: Pardee Homes	PROJECT: Skyline Ranch	W.O.: 8838.002
LOCATION: Santa Clarita	ELEVATION: 1998'	DATE: 7/12/06
RIG TYPE: 24" Bucket	HAMMER WEIGHTS: Kelly Bar Weights	DROP: 12"

	N	U	B	M	DD	DESCRIPTION	ATTITUDES
80							
						@82' Brown clayey fine to medium grained SANDSTONE, graded, hard, wet, medium to highly plastic.	
85							
						@87' - Brown to yellowish brown fine to coarse grained gravel CONGLOMERATE with fine to coarse sand matrix, well graded, hard, moist, subrounded metamorphic clasts.	
90	26-10"	C		16.7	106.7	@90' - Dark yellow brown fine grained sandy clayey SILTSTONE, poorly graded, hard, moist. @92' - Dark yellowish brown clayey silty fine to medium grained SANDSTONE, graded, hard, moist.	
95							
						@98' - Dark yellowish brown clayey silty fine grained subrounded to subangular gravelly fine to coarse grained SANDSTONE, well graded, hard, moist, clasts are subrounded and metamorphic.	
100	30-10"	C		4.9	106.9	@100' - Light yellowish brown fine to coarse grained gravel CONGLOMERATE with friable fine to coarse sand matrix, well graded, hard, moist, clasts are subrounded and metamorphic. @101' - Color change to dark yellowish brown.	
105						@104' - Abundant cobbles. @105' - Moisture increase to very moist, matrix coarsens to fine to coarse grained sandy fine grained gravel. @106' - Seep. @109' - Yellowish red subrounded cobble CONGLOMERATE with weakly cemented clayey fine to coarse sand matrix, well graded, hard, moist, clasts are subrounded.	
110						@110' - Yellowish brown fine grained gravel CONGLOMERATE with weakly cemented clayey fine to coarse sand matrix, well graded, hard, moist, low to medium plastic matrix, clasts are subrounded and metamorphic.	
115							
120						Total Depth - 115' Seeps at 44'-54' and 106' Caving at 51'-53' Backfilled	
125							

ADDITIONAL COMMENTS:

Blows per 12"

C = Modified California Sampler

Kelly Bar Weights:
0 - 30', 5619 lbs.
31 - 60', 3745 lbs.
61 - 90', 2280 lbs.

SUBSURFACE DATA LOG OF BORING B63

CLIENT: Pardee Homes	PROJECT: Skyline Ranch	W.O.: 8838.002
LOCATION: Santa Clarita	ELEVATION: 2165'	DATE: 7/14/06
RIG TYPE: 24" Bucket	HAMMER WEIGHTS: Kelly Bar Weights	DROP: 12"

	N	U	B	M	DD	DESCRIPTION	ATTITUDES
0						Saugus Formation: Dark brown clayey silty fine to coarse grained SANDSTONE, graded, dense, moist, rootlets.	
						@2' - Light yellowish brown fine to coarse grained gravelly silty fine grained SANDSTONE, poorly graded, dense, moist, weakly cemented, clasts are subangular.	
5						@5'5" - Grades to fine to coarse grained gravel CONGLOMERATE with friable fine to coarse sand matrix, well graded, dense, moist, abundant rootlets.	@5'5" Approx. BN79E/10NW
						@7.5' - Irregular, scoured contact with brown clayey silty fine to medium grained SANDSTONE, graded, dense, moist, weakly indurated.	
						@8' - Color change to yellowish brown.	
10	4	C		13.0	110.8		
						@11' - Grades to yellowish brown fine grained gravel CONGLOMERATE with slightly friable clayey silty fine to coarse sand matrix, well graded, hard, moist.	@12'2" Approx. BN58E/11NW
						@11.5' - Irregular, scoured contact with brown clayey silty fine to medium grained SANDSTONE, graded, dense, moist, weakly indurated.	
15						@12'2" - Grades to yellowish brown fine to coarse grained gravel CONGLOMERATE with slightly friable clayey silty fine to coarse sand matrix, well graded, hard, moist.	@15'11" B + S Horizontal
						@15'11" - 2" thick brown claystone bed, stiff, moist, medium to highly plastic, waxy, corn flaky texture, internally sheared.	
						@19' - Very pale brown fine grained gravelly fine to coarse grained SANDSTONE,	@19' Approx.
20	4	C		9.8	117.2	poorly graded to graded, hard, moist, friable.	BN55E/14NW
						@20'7" - Dark yellowish brown fine grained gravelly clayey silty fine grained SANDSTONE, graded, hard, moist, subrounded gravels, massive, weakly indurated, occasional discontinuous fine to coarse sandstone channels.	@20'7" C N84E/13SE
25							
						@29' - Yellowish brown fine grained gravelly fine to coarse grained SANDSTONE,	@29'8" Approx.
30	13	C		4.4	110.8	graded, hard, moist, gravels are subangular.	BN69W/12SW
						@29'8" - Grades to yellowish brown subrounded fine to coarse grained gravel CONGLOMERATE with with slightly friable fine to coarse sand matrix, well graded, moist.	@30'10" B N56W/5SW
						@30'10" - Material becomes thinly bedded with cross bedding.	
35						@31'7" - Matrix becomes clayey.	@35'2" Approx.
						@33'4" - Clayey silty fine grained SANDSTONE, poorly graded.	CN37W/2SW
						@34'3" - Grades to fine grained gravel CONGLOMERATE.	@35'3" S
						@35'2" - Sharp, scoured contact with 8" thick brown CLAYSTONE, stiff, moist, highly plastic, internally sheared, corn flaky texture, waxy.	N37W/2SW
40	20	C		9.1	120.4	@35'10" - Clayey silty fine to medium grained SANDSTONE, massive, weakly indurated, slightly plastic, occasional subangular fine gravel.	
						@38' - Loose clay in matrix.	
						@40' - Dark yellowish brown fine grained gravelly clayey silty fine to coarse grained SANDSTONE, graded, hard, moist.	
45							

ADDITIONAL COMMENTS:

Blows per 12"

C = Modified California Sampler

Kelly Bar Weights: 0 - 30', 5619 lbs.
31 - 60', 3745 lbs.
61 - 90', 2280 lbs.

Logged by: RMP

SUBSURFACE DATA

LOG OF BORING B63

CLIENT: Pardee Homes	PROJECT: Skyline Ranch	W.O.: 8838.002
LOCATION: Santa Clarita	ELEVATION: 2165'	DATE: 7/14/06
RIG TYPE: 24" Bucket	HAMMER WEIGHTS: Kelly Bar Weights	DROP: 12"

	N	U	B	M	DD	DESCRIPTION	ATTITUDES
40							
						@43' - Discontinuous fine grained gravel channel deposit.	
45							
						@46' - Grades to subrounded coarse grained gravel to cobble CONGLOMERATE, weakly cemented, hard, moist.	@46' Approx. BN9W/8SW
50	20	C		2.7	118.6	@48.5' - Pale yellowish brown subrounded fine to coarse grained gravel CONGLOMERATE with weakly cemented fine to coarse sand matrix, well graded, hard, moist.	@48.5' Approx. BN2W/7SW
						@50' - Light gray subangular fine to coarse grained gravel CONGLOMERATE with fine to coarse sand matrix, well graded, hard, moist, thinly bedded with cross bedding.	@50'4" B N56W/10SW
						@51' - 1' thick dark grayish brown to grayish brown subangular fine to coarse grained gravelly fine to coarse grained SANDSTONE, graded, hard, moist.	@52' B N56W/9SW
55						@54' - Yellowish brown fine grained subangular to angular gravelly fine to coarse grained SANDSTONE, graded, hard, moist.	
						@55.5' - Grades to coarse grained gravel CONGLOMERATE.	
						@56'1" - Reddish brown to yellowish red fine grained gravelly clayey fine to coarse grained SANDSTONE, well graded, hard, moist, slightly plastic, clasts are subrounded.	@59' Approx.
60						@59' - Sharp, irregular scoured contact with fine to coarse grained sandy CLAYSTONE, graded, very stiff, moist, slightly plastic.	C Horizontal
	19	C		9.2	121.7	@60'4" - Grades to yellowish brown subrounded fine grained gravel to cobble CONGLOMERATE with fine to coarse sand matrix, graded, hard, moist.	
65						@63'9" - Brownish yellow clayey fine to coarse grained SANDSTONE, graded, hard, very moist, slightly plastic, weakly indurated.	
						@65.5' - Grades to light brownish gray subrounded to subangular coarse grained gravel to cobble CONGLOMERATE with weakly cemented fine to coarse sand matrix, graded, hard, moist.	
						@66'7" - Matrix color changes to pale brown.	
70	25-10"	C		8.3	105.6	@68' - Yellowish brown subrounded to subangular coarse grained gravel to cobble CONGLOMERATE with fine to coarse sand matrix, well graded, hard, moist, slightly plastic.	
75						@69' - Grades to light brownish subrounded to subangular gray coarse grained gravel to cobble CONGLOMERATE with weakly cemented fine to coarse silty sand matrix, graded, hard, moist.	
						@70' - Pale brown subrounded fine grained gravel to cobble CONGLOMERATE with fine to coarse sand matrix, graded, hard, moist.	
						@72' - Color change to pale yellow.	
80						Total Depth - 72' No groundwater No caving Backfilled	
85							

ADDITIONAL COMMENTS:

Blows per 12"

C = Modified California Sampler

Kelly Bar Weights: 0 - 30', 5619 lbs.
31 - 60', 3745 lbs.
61 - 90', 2280 lbs.

Logged by: RMP

Geolabs-Westlake Village

SUBSURFACE DATA

LOG OF BORING B64

CLIENT: Pardee Homes	PROJECT: Skyline Ranch	W.O.: 8838.002
LOCATION: Santa Clarita	ELEVATION: 1978'	DATE: 7/17/06
RIG TYPE: 24" Bucket	HAMMER WEIGHTS: Kelly Bar Weights	DROP: 12"

	N	U	B	M	DD	DESCRIPTION	ATTITUDES
0						Artificial Fill: Brown silty fine to medium grained SAND, poorly graded, medium dense, dry, pieces of grass.	
						@1' - Saugus Formation: Brown fine grained gravelly clayey silty fine to coarse grained SANDSTONE, well graded, very dense, moist, subangular gravels, weakly cemented, rootlets.	
5						@3.5' - Yellowish brown fine grained gravelly clayey silty fine to medium grained SANDSTONE, graded, dense, moist, slightly friable, rootlets.	
						@3'10" - 6" thick blue gray cementation, pervasive white carbonate veins.	
						@6' - Some coarse gravels.	
10	5	C	X	16.7	111.7	@8' - 1-6" thick dark yellowish brown channel deposit: fine to coarse grained gravel CONGLOMERATE with slightly friable fine to coarse grained sandstone matrix, well graded, dense, moist, subrounded to subangular clasts.	@8' Approx. B N4E/17NW @10'7" B N24E/15NW
						@8'1" - Brown fine grained gravelly silty fine grained SANDSTONE to fine grained sandy SILTSTONE, poorly graded, hard, moist.	
15						@10' - Grades to subrounded fine grained gravel CONGLOMERATE with weakly cemented sand matrix, well graded, hard, moist.	
						@10'7" - abrupt, irregular contact to 3" thick brown silty CLAYSTONE, very stiff, moist, corn flaky texture, waxy, grades to fine grained sandy clayey SILTSTONE.	
20	9-9"	C		7.8	115.3	@12'7" - Yelowish brown fine to medium grained sandy silty CLAYSTONE, poorly graded, slightly to medium plastic, moist, very stiff, white carbonate cemented veins at random orientations.	@19' Approx. BN4W/11SW
						@13'4" - Grades to brown silty SANDSTONE to sandy SILTSTONE.	
25						@14'7" - Grades to yellowish brown subrounded cobble CONGLOMERATE with clayey silty fine to coarse sand matrix, well graded, moist, slightly friable to weakly cemented.	
						@19' - Fine grained gravel CONGLOMERATE bed with slightly friable to friable fine to coarse sand matrix, graded, hard, scoured.	
						@20' - Clasts coarsen to coarse grained gravel.	
						@25' - Grades to cobble CONGLOMERATE.	
30						@29' - Grades to cobble to boulder CONGLOMERATE.	
						@30' - Color change to dark yellowish brown.	
						@31' - Yellowish brown cobble to boulder CONGLOMERATE, slightly friable fine to coarse sand matrix, graded, hard, moist.	
35						@35' - Fine grained gravel interbed.	@35' Approx. BN12E/13NW
40	9-6"	C		7.1	89.1	@40' - Yellowish brown subrounded cobble CONGLOMERATE with fine to coarse sand matrix, well graded, hard, moist, black carbonate cemented gravels.	@40' Approx. BN38E/2NW
45							

ADDITIONAL COMMENTS:

Blows per 12"

C = Modified California Sampler

Kelly Bar Weights: 0 - 30', 5619 lbs.
31 - 60', 3745 lbs.
61 - 90', 2280 lbs.

Logged by: RMP

SUBSURFACE DATA

LOG OF BORING B64

CLIENT: Pardee Homes	PROJECT: Skyline Ranch	W.O.: 8838.002
LOCATION: Santa Clarita	ELEVATION: 1978'	DATE: 7/17/06
RIG TYPE: 24" Bucket	HAMMER WEIGHTS: Kelly Bar Weights	DROP: 12"

	N	U	B	M	DD	DESCRIPTION	ATTITUDES
40							
45						@45' - Yellowish brown fine grained gravelly silty fine to coarse grained SANDSTONE, graded to well graded, hard, moist, slightly friable, clasts are subangular.	@45' Approx. BN50E/9NW
50	21-10"	C		8.3	119.1	@48'8" - Abrupt contact with very pale brown silty fine to coarse grained SANDSTONE with clay and subangular to subrounded fine gravel clasts, well graded, weakly indurated, hard, moist. @49' - Very pale brown fine grained gravelly fine to coarse grained SANDSTONE, graded, hard, moist, clasts are subrounded. @50' - Very pale brown subangular fine grained gravel CONGLOMERATE with clayey silty fine to coarse sandstone matrix, well graded, hard, moist.	@48'8" C N9E/27NW
55						@51' - Grades to very pale brown subangular to subrounded coarse grained gravel to cobble CONGLOMERATE, well graded, hard, moist, weakly cemented. @54' - Color change to dark yellowish brown, moisture to very moist. @56' - Color change to light yellowish brown, moist.	
60	17-9"	C				@61' - Color change to light olive brown.	
65						@65' - <u>Mint Canyon Formation</u>: Sharp, irregular, scoured contact with gray silty fine grained SANDSTONE, poorly graded, hard, moist, moderately indurated. @67'10" - Irregular contact with subangular to subrounded coarse grained gravel to cobble CONGLOMERATE with slightly friable to weakly cemented clayey silty fine to coarse sand matrix, well graded, hard, moist.	@65' Approx. CN24W/6SW @67'4" B N2W/14SW @67'10" C N60W/15NE
70							
75						Total Depth - 72' No groundwater No caving Backfilled	
80							
85							

ADDITIONAL COMMENTS:

Blows per 12"

C = Modified California Sampler

Kelly Bar Weights: 0 - 30', 5619 lbs.
31 - 60', 3745 lbs.
61 - 90', 2280 lbs.

SUBSURFACE DATA LOG OF BORING B65

CLIENT: Pardee	PROJECT: Skyline Ranch	W.O.: 8838
LOCATION: Santa Clarita	ELEVATION: 1806'	DATE: 7/18/06
RIG TYPE: HQ Core	HAMMER WEIGHTS: N/A	DROP: N/A

	Depth (for Recovery/RQD)	Recovery/Core Barrel (inches)	% Recovery	Length Rx > 4" (inches)	RQD % Total 4"/Core	DESCRIPTION	ATTITUDES
0						Saugus Formation; 0 - 30 feet, advanced with Tricone-bit. See log of Boring B6 (1995) for lithology from 0-30 feet.	
5							
10							
15							
20							
						@22' - Brown silty fine to medium grained SANDSTONE, well graded.	
25							
						@27' - Brown clayey fine to coarse grained SANDSTONE, with subangular to subrounded quartz and granitic fine gravels, well graded.	
						@29' - Brown silty fine to coarse grained SANDSTONE, well graded.	
30	@30'	12/30	40	0/30	0	@30' - Began coring.	
						@30' - Gravel CONGLOMERATE, friable brown clayey sand matrix,	
	@32.5'	9/30	30	0/30	0	low plasticity, moist.	
						@30.5' - Brown sandy CLAYSTONE, medium plastic, overlying brown	
						friable fine grained SANDSTONE with subangular to subrounded fine	
35	@35'	12/30	40	4/30	13	gravel, well graded, moist.	
						@32.5' - Subangular to subrounded cobble CONGLOMERATE, clasts	
	@37.5'	8/30	26	7/30	23	commonly granite, quartzite, and andesite. Matrix is friable tan	
						coarse grained sand.	
40	@40'	24/30	80	0/30	0	@40' - Subangular to subrounded gravel CONGLOMERATE, clasts	
						commonly granite and quartzite. Matrix is friable fine to coarse grained sand.	
45							

ADDITIONAL COMMENTS: True dip inclinations determined by core measurement with protractor

Logged by: JK Geolabs-Westlake Village

SUBSURFACE DATA

LOG OF BORING B65

CLIENT: Pardee
PROJECT: Skyline Ranch
W.O.: 8838
LOCATION: Santa Clarita
ELEVATION: 1806'
DATE: 7/18/06
RIG TYPE: HQ Core
HAMMER WEIGHTS: N/A
DROP: N/A

Depth (for Recovery/RQD)	Recovery/Core Barrel (inches)	% Recovery	Length Rx > 4" (inches)	RQD % Total 4"/Core
@42.5'	20/30	67	4/30	13
@45'	28/30	93	0/30	0
@47.5'	27/30	90	4/30	30
@50'	28/30	93	6/30	20
@53'	6/24	25	0/24	0
@55'	17/24	71	0/24	0
@57'	31/36	86	6/36	17
@60'	57/60	95	38/60	63
@65	58/60	97	30/60	50
@70'	57/60	8	45/60	75
@75'	50/54	93	29/54	54

DESCRIPTION

@42.5' - Subangular to subrounded fine gravel to cobble CONGLOMERATE, with light brown medium to coarse grained sand matrix.

@45' - Mint Canyon Formation: Subrounded gravel to cobble CONGLOMERATE clasts commonly andesite and granodiorite. Matrix is friable light greenish gray medium to coarse grained sand, moist.

@47.5' - Light brown silty SANDSTONE, poorly graded, hard, moist grading to fine to coarse gravel to cobble CONGLOMERATE, hard, moist

@50' - Fine to coarse gravel CONGLOMERATE approx. 3" thick, light gray.

@53.5' - Sharp contact to cobble CONGLOMERATE
@54' - Sharp contact to friable medium grained SANDSTONE with fine to coarse gravel (clasts commonly andesite and diorite), hard, moist.
@55' - Occasional cobble clast. Sharp contact to CONGLOMERATE below.
@55.5' - Fine to coarse gravel CONGLOMERATE, well graded, friable greenish gray medium to coarse grained sand matrix, hard, moist.
@57' - Dark reddish brown silty CLAYSTONE, medium plastic, in tip of core barrel (less than 1/4" thick).
@57'4" - Tan medium to coarse grained SANDSTONE, well graded, hard, moist hard, moist.
@57'8" - Gabbro cobble, dark gray to black, sharp basal contact.
@59'4" - Subangular to subrounded gravel CONGLOMERATE (approximately 30% gravel clasts). Matrix is fine to coarse sand.

@60' - Medium grained SANDSTONE with approximately 15% subangular to subrounded fine gravel clasts, hard, moist.
@62' - Grades to fine grained SANDSTONE, hard, moist.
@62'2" - Greenish gray silty CLAYSTONE, medium plastic, stiff, moist. Slickensides.
@62'10" - Fine grained SANDSTONE with occassional subrounded gravel, friable, hard, moist.

@65' - Fine to coarse grained gravel CONGLOMERATE, weakly cemented olive brown medium to coarse grained sand matrix, hard, moist.

@70' - Fine grained gravel to cobble CONGLOMERATE with friable olive brown fine to coarse grained sand matrix, hard, moist.

@75' - Subangular to subrounded fine to coarse gravel CONGLOMERATE, slightly friable dark brown (mottled tan) medium grained sand matrix, hard, moist. Overlying coarse grained SANDSTONE.

ATTITUDES

@49.5'
True dip =45°

@67.5'
True Dip = 10°

ADDITIONAL COMMENTS:

Logged by: JK

Geolabs-Westlake Village

SUBSURFACE DATA

LOG OF BORING B65

CLIENT: Pardee

PROJECT: Skyline Ranch

W.O.: 8838

LOCATION: Santa Clarita

ELEVATION: 1806'

DATE: 7/19/06

RIG TYPE:

HAMMER WEIGHTS: N/A

DROP: N/A

Depth (for Recovery/RQD)	Recovery/Core Barrel (inches)	% Recovery	Length Rx > 4" (inches)	RQD % Total 4"/Core
@79.5'	30/30	100	15/30	50
@82'	29/36	81	10/30	33
@85'	28/30	93	15/30	50
@87.5'	26/30	87	6/30	20
@90'	50/60	83	25/60	42
@95'	24/24	100	12/24	50
@97'	27/36	75	24/36	67
@100'	19/24	58	8/24	33
@102'	36/36	100	29/36	81
@105'	46/54	85	14/54	26
@109.5	26/36	72	11/36	31
@112.5	14/30	46	0/30	0
@115'	24/30	80	0/30	0

DESCRIPTION

@79.5' - Light olive gray fine grained SANDSTONE with fine gravel, hard, moist.

@82' - Granodiorite cobble, porphyritic.

@82'8" - Light gray medium to coarse grained SANDSTONE, with occasional fine to coarse gravel clasts of gabbro and diorite, slightly friable, hard, moist.

@85' - Light gray fine to coarse grained SANDSTONE with fine gravel, poorly graded, slightly friable, hard, moist. Occasional granodiorite cobble clast.

@87.5' - Sharp contact with fine to coarse grained SANDSTONE with fine gravel clasts of rhyolite and diorite, poorly graded, slightly friable, hard, moist.

@89.5' - Granodiorite cobble, porphyritic, light gray, 4" diameter.

@90' - Brown medium to coarse grained SANDSTONE with subrounded coarse gravel, poorly graded, slightly friable, hard, moist.

@92' - Light gray medium to coarse grained SANDSTONE with subangular to subrounded fine to coarse gravel, well graded, slightly friable, hard, moist.

@95' - Fine gravel to cobble CONGLOMERATE, weakly cemented light greenish gray fine to coarse sand matrix, well graded, hard, moist.

@97' - Light gray fine to coarse grained SANDSTONE with fine gravel to cobble clasts, well graded, slightly friable, hard, moist.

@100' - Granodiorite gravel (2.5" diameter), gravel clasts are subangular.

@103' - Medium to coarse grained SANDSTONE with subangular fine gravel clasts, well graded, friable, hard, moist.

@105' - Light gray fine to medium grained SANDSTONE, well graded, weakly indurated, hard, moist.

@105'4" - Light gray fine to coarse gravel CONGLOMERATE, slightly friable light gray fine to coarse sand matrix, well graded, hard, moist. To fining upward sequences of gravel CG to coarse SS.

@107' - 1/8" diameter clay ripup clasts, slightly plastic, medium stiff,

@109.5' - Occasional granitic cobble clast within fine to coarse SANDSTONE to gravel CONGLOMERATE.

@111' - Fine gravel CONGLOMERATE, grading downward to fine to coarse grained SANDSTONE with fine gravel clasts, well graded, friable, hard, moist.

@112.5' - Fine to coarse grained SANDSTONE, poorly graded, slightly friable, hard, moist.

@115' - Fine gravel to cobble CONGLOMERATE, well graded, hard, moist.

ATTITUDES

@90.5'
True dip = 15°
@91'
True dip = 10°

@103'
True dip = 20°
@104'
True dip = 14°
@105'
True dip = 15°

@119.4'
True dip = 11°
@121'
True dip = 15°
@123'
True dip = 18°

ADDITIONAL COMMENTS:

Logged by: JK

Geolabs-Westlake Village

SUBSURFACE DATA

LOG OF BORING B65

CLIENT: Pardee	PROJECT: Skyline Ranch	W.O.: 8838
LOCATION: Santa Clarita	ELEVATION: 1806'	DATE: 7/19/06
RIG TYPE: HQ Core	HAMMER WEIGHTS: N/A	DROP: N/A

120 125 130 135 140 145 150 155 160 165

N Depth (for Recovery/RQD)	U Recovery/Core Barrel (inches)	B % Recovery	M Length Rx > 4" (inches)	DD RQD % Total 4"/Core
@117.5'	29/30	97	4/30	13
@120'	52/60	87	39/60	65
@125'	24/24	100	17/24	71
@127'	24/36	67	13/36	36
@130'	18/44	41	19/44	42
@133.5'	14/18	78	0/18	0
@135'	39/42	93	22/42	52
@138.5'	14/18	78	0/18	0
@140'	58/60	97	40/60	67
@145'	53/60	88	38/60	63
@150'	58/60	97	36/60	60
@155'	31/36	86	12/36	33
@158'	22/24	92	22/24	92

DESCRIPTION

@117.5' - Cobble CONGLOMERATE, weakly indurated greenish gray fine to coarse grained sand matrix, well graded, hard, moist. Grades to medium to coarse grained SANDSTONE with fine gravel, poorly graded, hard, moist.

@120' - Light gray fine to coarse grained SANDSTONE with fine gravel, poorly graded, mod indurated, hard, moist. To light olive brown fine to coarse grained SANDSTONE with subrounded fine gravel, poorly graded, weakly indurated, hard, moist. 1/8 inch thick CLAY, slightly plastic, stiff, moist.

@125' - Fine to coarse gravel CONGLOMERATE, weakly cemented light gray fine to coarse sand matrix, well graded, hard, moist.

@127' - Light gray fine to coarse grained SANDSTONE, well graded, weakly indurated, hard, moist.

@135' - Fine gravel to cobble CONGLOMERATE, poorly graded, weakly cemented light gray fine to coarse sand matrix, hard, moist.

@140' - Fine to coarse gravel CONGLOMERATE, weakly cemented light gray fine to coarse sand matrix, poorly graded, hard, moist. Sharp contact with light gray fine to coarse grained SANDSTONE with gravel, poorly graded, moderately indurated, hard moist.

@145' - Light gray medium to coarse grained SANDSTONE, hard, moist. 12 inch thick interbed of weakly cemented gravel to cobble CONGLOMERATE. To olive gray medium to coarse grained SANDSTONE, hard, moist.

@148' - Fine to coarse gravel CONGLOMERATE, weakly cemented light greenish gray sand matrix, hard, moist.

@150' - Light greenish gray medium grained SANDSTONE, poorly graded, hard, moist. 12 inch thick fine to coarse gravel CONGLOMERATE, moderately cemented medium grained sand matrix.

@152' - Sharp contact with light gray fine to medium grained SANDSTONE, poorly graded, hard, moist, massive.

@155' - Light gray medium to coarse grained SANDSTONE to coarse gravel CONGLOMERATE, weakly cemented sand matrix, hard, moist.

@158' - Fine to coarse grained gravel CONGLOMERATE with moderately cemented light greenish gray sand matrix, well graded, hard, moist.

ATTITUDES

@128.5'
True dip = 18°

@139'
True dip = 16°

@150.5'
True dip = 9°

@153'
True dip = 13°

ADDITIONAL COMMENTS:

Logged by: JK

Geolabs-Westlake Village

SUBSURFACE DATA

LOG OF BORING B65

CLIENT: Pardee	PROJECT: Skyline Ranch	W.O.: 8838
LOCATION: Santa Clarita	ELEVATION: 1806'	DATE: 7/19/06
RIG TYPE: HQ Core	HAMMER WEIGHTS: N/A	DROP: N/A

N	U	B	M	DD
Depth (for Recovery/RQD)	Recovery/Core Barrel (inches)	% Recovery	Length Rx > 4" (inches)	RQD % Total 4"/Core
@160'	18/24	75	10/24	41
@162'	29/36	81	20/36	55
@165'	47/60	78	29/60	48
@170	9/12	75	0/12	0
@173.	18/18	100	18/18	100
@175'	60/60	100	46/60	76
@180'				

DESCRIPTION

@160' - Fine gravel to cobble CONGLOMERATE, moderately cemented light greenish gray fine to coarse sand matrix, well graded, hard, moist.

@165' - Fine gravel to cobble CONGLOMERATE, weakly cemented light greenish gray fine to coarse sand matrix, well graded, hard, moist.

@170' - Olive gray fine to coarse grained SANDSTONE with gravel, well graded, hard, moist. To olive brown CLAY with silt and fine gravel, slightly plastic, very stiff, moist.

@173.5' - Olive brown clayey SILTSTONE, medium plastic, very stiff, moist.
@175' - Olive brown silty CLAYSTONE, medium plastic, very stiff, moist.

@179' - Gray medium to coarse grained Sandstone with fine gravel, moderately indurated, hard, moist.

Total Depth - 180'

ATTITUDES

@170.8'
Horizontal
bedding

160
165
170
175
180
185
190
195
200
205

ADDITIONAL COMMENTS:

SUBSURFACE DATA

LOG OF BORING B66

CLIENT: Pardee Homes

PROJECT: Skyline Ranch

W.O.: 8838.002

LOCATION: Santa Clarita

ELEVATION: 1964'±

DATE: 7/19/06

RIG TYPE: 24" Bucket

HAMMER WEIGHTS: Kelly Bar Weights

DROP: 12"

	N	U	B	M	DD	DESCRIPTION	ATTITUDES
0						Saugus Formation: Yellowish brown coarse grained gravel to cobble CONGLOMERATE with clayey silty fine to coarse sandstone matrix, well graded, dense, moist, rootlets, clasts consist of subangular to subrounded schist, granodiorite and quartzite. @2.5' - Pale brown subrounded fine to coarse grained gravel CONGLOMERATE with weakly cemented fine to coarse sand matrix, well graded, hard, moist, rootlets.	
5						@6' - Highly scoured contact with dark yellowish brown silty fine grained SANDSTONE, poorly graded, hard, moist, weakly indurated, material blocky and fractured in sets every few inches, grades downward to fine grained SANDSTONE with gravel.	@6' B N68W/15SW @6-7.5' fracture set N82E/40SE
10	5	C		11.2	109.4	@10' - Grades to pale brown fine grained SANDSTONE with fine gravel, silt, and clay, well graded, dense, moist, slightly friable, pervasive subvertical dry white carbonate veins, grading to fine to medium grained sandy clayey SILTSTONE, dark yellowish brown, weakly indurated.	@14'8" Approx. BN24W/18SW
15						@15'5" - Contact to pale brown fine to medium grained SANDSTONE, graded, hard, moist. @16' - Discontinuous one foot thick zone on SW wall, pervasive subvertical carbonate fractures.	@15'5" Fault N76E/70SE
20	7	C		10.7	116.3	@19' - Grades to yellowish brown fine grained gravel to cobble CONGLOMERATE with slightly friable fine to coarse sandstone matrix, well graded, hard, moist. @21' - Channeled. @22'5" - Fine grained gravel CONGLOMERATE with fine to coarse sand matrix, well graded, hard, moist.	@19' Approx. BN4W/11SW
25						@24' - Pocket of fine grained sandy clayey SILTSTONE in south wall. @24'8" - Reddish brown fine to medium grained sandy clayey SILTSTONE with occasional fine gravel, poorly graded, hard, moist, weakly indurated, confined to NNE portion of boring with steep, sharp contact with sandstone from 22'5".	@28' Fault N75E/80NW
30	12	C		7.1	125.4	@30' - Grades to yellowish brown fine grained gravel to cobble CONGLOMERATE with slightly friable silty fine to coarse sand matrix, well graded, hard, moist, subangular to subrounded. @33'8" - Reddish brown clayey SILTSTONE exits boring.	@33'8" C N84W/65NW @33'9" Approx. BN57W/14SW
35			X				
40	20-10"	C		8.9	121.4	@40' - Three 1/4" thick bedding parallel orange weathering surfaces. @43' - Yellowish brown clayey silty fine grained gravelly SANDSTONE, graded, hard, moist.	@40' B N30W/7SW
45							

ADDITIONAL COMMENTS:

Blows per 12"

C = Modified California Sampler

Kelly Bar Weights:
0 - 30', 5619 lbs.
31 - 60', 3745 lbs.
61 - 90', 2280 lbs.
91 - 120', 1223 lbs.
121 - 140', 1620 lbs.
161 - 160', 2020 lbs.

Logged by: RMP

Geolabs-Westlake Village

PLATE B66.1

SUBSURFACE DATA

LOG OF BORING B66

CLIENT: Pardee Homes
PROJECT: Skyline Ranch
W.O.: 8838.002
LOCATION: Santa Clarita
ELEVATION: 1964'±
DATE: 7/19/06
RIG TYPE: 24" Bucket
HAMMER WEIGHTS: Kelly Bar Weights
DROP: 12"

	N	U	B	M	DD
40					
45					
			X		
50	24	C		7.6	121.8
55					
60	21	C		6.3	122.3
65					
70	24	C		4.5	126.9
75					
80	25	C		12.9	120.6
85					

DESCRIPTION

@44'7" - Grades to coarse grained gravel to cobble CONGLOMERATE with fine to coarse sand matrix.
@46'3" - Slightly irregular and scoured contact to dark yellowish brown clayey SILTSTONE with fine to medium sand, poorly graded, hard, moist, weakly indurated.
@46'10" - Grades to fine to medium grained SANDSTONE.
@47'8" - Grades to fine to coarse grained gravel CONGLOMERATE.
@48.5' - Contact with dark yellow brown clayey SILTSTONE.
@49.5' - Grades to yellowish brown fine grained gravel CONGLOMERATE with silty fine to coarse sand matrix, well graded, hard, moist, subangular, slightly friable.
@53' - Slightly irregular, scoured contact to dark yellow brown clayey SILTSTONE, hard, moist.
@54' - Grades to fine to medium grained SANDSTONE.
@55' - Grades to grayish brown clayey silty fine to coarse grained gravelly SANDSTONE, well graded, slightly friable, hard, moist, clasts are subrounded.
@56' - Grades to fine to coarse grained gravel CONGLOMERATE.
@57' - Slightly irregular to scoured contact with dark yellow brown clayey SILTSTONE.
@59' - Grades to grayish brown to dark yellowish brown subrounded fine grained gravel CONGLOMERATE with slightly friable fine to coarse sand matrix, well graded, hard, moist.
@62' - 6" thick fine grained SANDSTONE bed, discontinuous.
@67' - 6" thick dark yellow brown SILTSTONE.
@69'5" - Grades to dark yellowish brown subangular to subrounded fine to coarse grained gravel CONGLOMERATE with slightly friable fine to coarse sand matrix, well graded, hard, moist, occasional cobbles.

@74' - Discontinuous 3" thick clayey SANDSTONE, matrix grades to weakly cemented.

@77' - Matrix grades to brown clayey fine to coarse grained SANDSTONE; channel deposit.

@81.5' - Discontinuous claystone, 8" diameter pocket on west side of boring, within dark yellow brown fine to coarse grained gravel CONGLOMERATE, slightly friable fine to coarse sand matrix, well graded, hard, moist.

ATTITUDES

@44' Approx.
BN55W/17SW
@46'3" C
N65W/10SW
@48' B
N43W/11SW
@53' C
N60E/10SE
@57' Approx.
CN20W/8SW
@64' B
N32W/16SW
@66.5' B
N47W/15SW
@67' C
N47W/15SW
@69.5' B
N42W/16SW
@77' Approx.
Channel
N30E/25SE
@80' B
N40W/16SW

ADDITIONAL COMMENTS:

Blows per 12"
C = Modified California Sampler

Kelly Bar Weights:
0 - 30', 5619 lbs.
31 - 60', 3745 lbs.
61 - 90', 2280 lbs.
91 - 120', 1223 lbs.
121 - 140', 1620 lbs.
161 - 160', 2020 lbs.

Logged by: RMP

SUBSURFACE DATA

LOG OF BORING B66

CLIENT: Pardee Homes
PROJECT: Skyline Ranch
W.O.: 8838.002
LOCATION: Santa Clarita
ELEVATION: 1964'±
DATE: 7/19/06
RIG TYPE: 24" Bucket
HAMMER WEIGHTS: Kelly Bar Weights
DROP: 12"

	N	U	B	M	DD	DESCRIPTION	ATTITUDES
80							
85							
						@86' - Dark yellow brown clayey fine to medium grained sandy SILTSTONE, discontinuous, poorly graded, hard, moist, weakly indurated. @88.5' - Sharp, slightly scoured contact with medium grained SANDSTONE.	@87' B N56W/17SW
90	30-7"	C		13.1	110.5	@90.5' - Grades to dark yellowish brown angular to subrounded coarse grained gravel to cobble CONGLOMERATE with slightly friable silty fine to coarse sand matrix, well graded, hard, moist. @92.5' - Slightly scoured contact with 1' thick SILTSTONE. @93.5' - Grades to dark yellowish brown subangular to subrounded gravel to cobble CONGLOMERATE with weakly cemented fine to coarse sand matrix, well graded, hard, moist.	@92.5' C N85E/14SE
95						@95' - Color change to yellowish brown. @96' - Bedding becoming slightly crude.	@96' B N80W/18SW
100	30-10"	C		6.8	114.5	@103' - Color change to dark yellowish brown and clayey matrix.	@101' B N65E/14SE
105						@107' - 2" thick bed of dark yellow brown clayey SILTSTONE with fine to medium sand, hard, moist.	@106' Approx. BN50E/10SE @108' C N73W/16SW
110	30-10"	C		5.3	112.0	@110' - Grades to dark yellowish brown subangular to subrounded fine grained gravel to cobble CONGLOMERATE with slightly friable fine to coarse sand matrix, well graded, hard, moist. @114'7" - Dark yellowish brown fine to coarse grained SANDSTONE, graded, hard, moist, slightly friable, thinly bedded.	@111' Approx. BN79E/9SE @114'7" B N48W/6SW
115						@115' - Grades to fine grained gravel to cobble CONGLOMERATE with fine to coarse sand matrix, subangular to subrounded clasts. @118' - Moisture change to wet. @119'4" - Minor seep along contact with dark yellowish brown fine grained sandy SILTSTONE, poorly graded, hard, moderately indurated, moist.	@119'4" C N22W/10SW
120						@121' - 12" thick clayey SILTSTONE.	
			X				
			X			@124.5' - 1/2" thick dark yellowish brown CLAYSTONE, poorly graded, very stiff, moist, highly plastic, corn flaky texture.	@124.5' S N35W/12SW
125							

ADDITIONAL COMMENTS:

Blows per 12"
C = Modified California Sampler

Kelly Bar Weights: 0 - 30', 5619 lbs.
31 - 60', 3745 lbs.
61 - 90', 2280 lbs.
91 - 120', 1223 lbs.
121 - 140', 1620 lbs.
161 - 160', 2020 lbs.

Logged by: RMP

Geolabs-Westlake Village

SUBSURFACE DATA

LOG OF BORING B66

CLIENT: Pardee Homes	PROJECT: Skyline Ranch	W.O.: 8838.002
LOCATION: Santa Clarita	ELEVATION: 1964'±	DATE: 7/19/06
RIG TYPE: 24" Bucket	HAMMER WEIGHTS: Kelly Bar Weights	DROP: 12"

	N	U	B	M	DD
	22	C		11.0	122.8
	24	C		12.6	117.0

DESCRIPTION

@125.5' - Grades to dark yellowish brown silty fine to coarse grained SANDSTONE with subangular to subrounded fine to coarse gravel, graded, hard, moist.
@127' - 4" thick fine to coarse grained gravel bed.
@128' - Sharp, slightly irregular, scoured contact with dark yellowish brown fine to medium grained sandy clayey SILTSTONE, weakly indurated, sheared.
@128.5' - Grades to fine to medium sandy SILTSTONE, not sheared.
@129' - Dark yellowish brown silty fine grained SANDSTONE to fine grained sandy SILTSTONE with occasional subangular fine gravel, poorly graded, hard, moist.
@131' - Grades to dark yellowish brown fine grained gravelly silty fine to medium grained SANDSTONE, graded, hard, moist, subangular clasts.
@132' - Yellowish brown silty fine to medium grained SANDSTONE to fine to medium grained sandy SILTSTONE.
@133.5' - 6" thick clayey SANDSTONE.
@135.5' - 12" thick dark yellowish brown fine grained gravelly clayey fine to coarse grained SANDSTONE, graded, hard, very moist, slightly to medium plastic, subangular clasts.
@138' - Dark yellowish brown fine grained gravelly silty fine to coarse grained SANDSTONE, well graded, hard, moist, 1/2mm thick discontinuous clay bed.
@141.5' - Shear zone, dark yellowish brown CLAYSTONE, highly plastic where sheared, very stiff, poorly graded, moist. Shear at 141.5' truncates others and is dominant.
@142.5' - Dark yellowish brown to yellowish brown subangular to subrounded fine grained gravel CONGLOMERATE with slightly friable fine to coarse sand matrix, well graded, hard, moist, occasional rounded cobbles.
@143' - Color change to yellowish brown.
@144' - Dark yellowish brown fine gravel CONGLOMERATE, weakly cemented.
@145' - Matrix becomes clayey for 3".
@146' - Dark yellowish brown clayey SILTSTONE to silty CLAYSTONE, poorly graded, stiff, moist.
@147.5' - Clayey SILTSTONE, pervasively sheared, shear at 148' is dominant.
@148.5' - Grades to clayey silty fine to coarse grained SANDSTONE with slightly friable channel deposit in E wall of fine grained gravel to cobble CONGLOMERATE, fine to coarse sand matrix.
@150' - Dark yellowish brown fine grained sandy clayey SILTSTONE, poorly graded to graded, hard, moist.
@151' - Shear, truncated above by shear at 148'.
@154' - Dark yellowish brown silty fine to coarse grained SANDSTONE, graded, hard, moist.

ATTITUDES

@127' Approx.
BN74W/8SW
@128'
SN70W/78NE
Slicks Plunge
11°, S82E

@141.5' S
N20W/16SW
@142.5' S
N82E/27SE
@143.5' B
N49W/22SW
@146' C
N56W/16SW
@148' S
N78E/14SE
@151' S
N81W/56SW

120
125
130
135
140
145
150
155
160
165

ADDITIONAL COMMENTS:

Blows per 12"
C = Modified California Sampler

Kelly Bar Weights:	
0 - 30'	5619 lbs.
31 - 60'	3745 lbs.
61 - 90'	2280 lbs.
91 - 120'	1223 lbs.
121 - 140'	1620 lbs.
161 - 160'	2020 lbs.

Logged by: RMP

Geolabs-Westlake Village

SUBSURFACE DATA

LOG OF BORING B67

CLIENT: Pardee Homes	PROJECT: Skyline Ranch	W.O.: 8838.002
LOCATION: Santa Clarita	ELEVATION: 2325'	DATE: 8/28/06
RIG TYPE: 24" Bucket	HAMMER WEIGHTS: Kelly Bar Weights	DROP: 12"

	N	U	B	M	DD	DESCRIPTION	ATTITUDES
0						Mint Canyon Formation: Brown to dark grayish brown cobble	
						CONGLOMERATE with slightly friable silty fine to medium sand matrix, well	
						graded, hard, moist, clasts are subangular to subrounded.	
5							@5' Approx.
						@6.5' - 5%-10% boulders.	BN45E/9SE
						@7.5' - Discontinuous pale brown fine to coarse grained SANDSTONE with	
						subangular fine gravel, moderately graded, hard, moist, cross bedded,	
						slightly friable.	
10						@10' - End roots.	
						@12' - Light yellowish brown subangular to subrounded cobble	@12' Approx.
						CONGLOMERATE with slightly friable silty fine to coarse sand matrix, well	BN5W/20SW
						graded, hard, moist, 20% boulders, increasing with depth, occasional	
15						subangular to subrounded gravel CONGLOMERATE interbeds.	
						@17' - Sharp scoured contact to discontinuous pale brown to light gray	@17' C
						silty fine to medium grained SANDSTONE, poorly graded, hard, moist,	N25W/23SW
						weakly indurated.	@19' B
20						@19' - Abruptly grades to pale brown to light gray subangular to	N75W/15SW
						subrounded cobble CONGLOMERATE with slightly friable silty fine to coarse	@20' C
						sand matrix, well graded, hard, moist.	N12W/22SW
						@20' - Sharp scoured contact to discontinuous pale brown to light gray	
						silty fine to medium grained SANDSTONE, poorly graded, hard, moist,	@24' B
25						weakly indurated.	N25W/19SW
						@23' - Abruptly grades to pale brown to light gray subangular to	
						subrounded fine grained gravel CONGLOMERATE with slightly friable silty	
						fine to coarse sand matrix, well graded, hard, moist.	
						@24' - Grades to pale brown to light gray subangular to subrounded cobble	
30						CONGLOMERATE with slightly friable clayey silty fine to coarse sand matrix,	
						well graded, hard, moist.	@31' B
						@26.5' - Light gray to pale brown scoured-out discontinuous pocket of	N42W/16SW
						fine to coarse grained SANDSTONE with subangular fine gravel, poorly	@32.5' B
						graded, very dense, moist, slightly friable to weakly cemented.	N41W/19SW
35						@27' - Olive brown subangular to subrounded fine cobble CONGLOMERATE	
						with slightly friable clayey fine to medium sand matrix, well graded, hard,	
						moist, with occasional fine gravel CONGLOMERATE interbeds.	
						@28' - Occasional boulders (10%) to 30' depth.	@38' Approx.
						@32.5' - 3" thick discontinuous light gray silty fine to medium grained	BN43W/20SW
40						SANDSTONE.	
						@36' - Olive brown to light gray subangular to subrounded cobble	
						CONGLOMERATE with slightly friable silty fine to coarse sand matrix with	
						lean clay, well graded, hard, moist, with occasional fine gravel	
						CONGLOMERATE interbeds.	
45						@38' - Matrix grades to slightly plastic and clayey.	

ADDITIONAL COMMENTS:

Logged by: RMP

SUBSURFACE DATA

LOG OF BORING B67

CLIENT: Pardee Homes	PROJECT: Skyline Ranch	W.O.: 8838.002
LOCATION: Santa Clarita	ELEVATION: 2325'	DATE: 8/28/06
RIG TYPE: 24" Bucket	HAMMER WEIGHTS: Kelly Bar Weights	DROP: 12"

	N	U	B	M	DD	DESCRIPTION	ATTITUDES
40						@41' - Occasional boulders (10%) in olive brown to light gray subangular to subrounded cobble CONGLOMERATE with slightly friable, slightly plastic silty fine to coarse sand matrix with CLAY, well graded, hard, moist.	
45						@49' - Lean clay in matrix, non-plastic.	@45' B N40W/12SW
50						@52' - End boulders to light gray subangular to subrounded cobble CONGLOMERATE with slightly friable silty fine to coarse sand matrix, well graded, hard, moist, with occasional poorly graded conglomerate.	
55							@55.5' Appox. BN28W/20SW @57.5' B N38W/19SW
60						@62.5' - Light gray cobble boulder CONGLOMERATE,.	
65						@66' - Refusal on boulder.	
70						Total Depth - 66' No groundwater No caving Backfilled	
75							
80							
85							

ADDITIONAL COMMENTS:

SUBSURFACE DATA LOG OF BORING B68

CLIENT: Pardee Homes	PROJECT: Skyline Ranch	W.O.: 8838.002
LOCATION: Santa Clarita	ELEVATION: 2014'	DATE: 9/1/06
RIG TYPE: 24" Bucket	HAMMER WEIGHTS: Kelly Bar Weights	DROP: 12"

	N	U	B	M	DD	DESCRIPTION	ATTITUDES
0						Saugus Formation: Dark brown to grayish brown silty fine to medium grained SANDSTONE with trace angular to subangular fine gravel, poorly graded, dense, dry, rootlets.	
2.5						@2' - Pale brown silty fine to medium grained SANDSTONE with subangular to subrounded fine gravel, poorly graded, dense, dry, subhorizontal calcium carbonate veins spaced 3-4" apart.	
						@4' - Moist.	
5							
						@6' - Yellowish brown silty fine to medium grained SANDSTONE, poorly graded, dense, moist.	
7.5			X			@7' - Grades to yellowish brown clayey SILTSTONE, poorly graded, dense, moist, slightly friable, subhorizontal calcium carbonate veins.	
						@8' - Grades to silty fine grained SANDSTONE to fine grained sandy SILTSTONE.	
10							@10.5' carbonate vein N35E/21NW
						@11' - 2' thick discontinuous channel deposit in S quadrant, fine to coarse gravel CONGLOMERATE with slightly friable clayey fine to coarse sand matrix, well graded, dense, moist.	
12.5						@11.5' - Silty fine grained SANDSTONE to fine grained sandy SILTSTONE, coarsens to yellowish brown subangular fine gravel CONGLOMERATE with slightly friable fine to coarse sand matrix, well graded, hard, moist.	@12' Approx. contact N86W/18SW
15	4/10-5"	C		8.9	122.0	@12' - Sharp, slightly scoured contact with discontinuous silty fine grained SANDSTONE to fine grained sandy SILTSTONE, poorly graded, hard, moist, slightly friable, scoured out by gravels from 11'.	
			X			@13' - Slightly irregular contact to yellowish brown clayey SILTSTONE, poorly graded, hard, moist, slightly friable with mottled 1/2" claystone veins.	
						@14' - Reddish brown clayey SILTSTONE with olive green streaks, poorly graded, dense, moist.	@17' Approx. contact horizontal
17.5			X			@15' - Grades to dark yellowish brown subangular fine gravel CONGLOMERATE with fine to medium sandy silty clay matrix, well graded, very dense, moist, slightly friable, matrix is slightly plastic.	
						@15.5' - Grades to silty clayey SANDSTONE to clayey SILTSTONE with coarse sand and fine gravel, poorly graded, dense, moist, slightly friable, wavy.	
20						@17' - Grades to yellowish brown gravel to cobble CONGLOMERATE with friable to slightly friable fine to coarse sand matrix with trace silt, well graded, hard, moist.	
						@18' - Matrix changes to reddish brown, clayey silty fine to coarse sand.	
						@20' - Trace clay in matrix, coarse gravel CONGLOMERATE.	
						@22' - Boulders.	
22.5							

ADDITIONAL COMMENTS:

Blows per 6"

C = Modified California Sampler

Kelly Bar Weights: 0 - 24', 2854 lbs.
25 - 47', 1802 lbs.
48 - 70', 1091 lbs.

Logged by: RMP

SUBSURFACE DATA LOG OF BORING B68

CLIENT: Pardee Homes	PROJECT: Skyline Ranch	W.O.: 8838.002
LOCATION: Santa Clarita	ELEVATION: 2014'	DATE: 9/1/06
RIG TYPE: 24" Bucket	HAMMER WEIGHTS: Kelly Bar Weights	DROP: 12"

	N	U	B	M	DD	DESCRIPTION	ATTITUDES
20							
22.5							
						@23' - Matrix changes to yellowish brown fine to coarse sand.	
						@24' - Boulder.	
25						@25' - Dark grayish brown subangular to subrounded coarse gravel CONGLOMERATE with very clayey fine to coarse sand matrix, well graded, hard, moist.	
			X				
						@26' - Yellowish brown trace silty fine to coarse sand matrix.	
						@26.5' - Yellowish brown interbedded clayey silty fine grained SANDSTONE to fine grained sandy clayey SILTSTONE, poorly graded, hard, moist, slightly friable.	
27.5							
			X				
30	5/10-5"	C		14.5	109.3	@30' - Grades to light yellowish brown clayey silty fine to coarse grained SANDSTONE with trace subangular to subrounded fine to coarse gravel and trace fine gravel sized pockets of dark yellowish brown clayey SILT to silty CLAY, moderately graded, hard, moist, slightly friable.	@30' Approx. contact @30.5' Approx. BE-W/14S
						@31' - Grades to subangular to subrounded gravel CONGLOMERATE with slightly friable clyey silty fine to coarse sand matrix, well graded, hard, moist.	
32.5							
						@33.5' - Grades to grayish brown subangular to subrounded gravel to cobble CONGLOMERATE with fine to coarse sand matrix with trace silt, moderately graded, hard, moist.	
35						@35' - Boulder.	
						@36' - 1.5' diameter boulder.	
37.5							
							@39' B N42E/7SE
40						@40' - Yellowish brown subangular to subrounded fine grained gravel CONGLOMERATE with trace silty fine to coarse sand matrix, moderately graded, hard, moist.	
42.5							

ADDITIONAL COMMENTS:

Blows per 6"

C = Modified California Sampler

Kelly Bar Weights: 0 - 24', 2854 lbs.
25 - 47', 1802 lbs.
48 - 70', 1091 lbs.

SUBSURFACE DATA

LOG OF BORING B68

CLIENT: Pardee Homes	PROJECT: Skyline Ranch	W.O.: 8838.002
LOCATION: Santa Clarita	ELEVATION: 2014'	DATE: 9/1/06
RIG TYPE: 24" Bucket	HAMMER WEIGHTS: Kelly Bar Weights	DROP: 12"

	N	U	B	M	DD	DESCRIPTION	ATTITUDES
40							
						@41' - Yellowish brown fine to coarse grained SANDSTONE, poorly graded, hard, moist.	
42.5							
						@44' - Yellowish brown clayey fine to coarse grained SANDSTONE with subrounded fine gravel, moderately graded, hard, moist.	
45	12-6"	C		10.9	98.6	@45' - Grades to yellowish brown subangular to subrounded fine to coarse grained gravel CONGLOMERATE with trace clayey fine to coarse sand matrix, well graded, hard, moist.	
47.5						Total Depth - 45' No groundwater No caving Backfilled	
50							
52.5							
55							
57.5							
60							
62.5							

ADDITIONAL COMMENTS:

Blows per 6"

C = Modified California Sampler

Kelly Bar Weights:
0 - 24', 2854 lbs.
25 - 47', 1802 lbs.
48 - 70', 1091 lbs.

Logged by: RMP

Geolabs-Westlake Village

SUBSURFACE DATA

LOG OF BORING B69

CLIENT: Pardee Homes	PROJECT: Skyline Ranch	W.O.: 8838.002
LOCATION: Santa Clarita	ELEVATION: 2080'	DATE: 9/5/06
RIG TYPE: 24" Bucket	HAMMER WEIGHTS: Kelly Bar Weights	DROP: 12"

	N	U	B	M	DD	DESCRIPTION	ATTITUDES
0						<u>Landslide Debris?</u>: Yellowish brown gravel to cobble CONGLOMERATE with silty fine to medium sand matrix, well graded, medium dense, dry, rootlets, blocky and fractured in upper 8", slightly friable.	
						@2' - Moist.	@2' B N78E/24NW
2.5							
						@3' - Sharp, scoured contact with dark yellowish brown CLAYSTONE, stiff, moist, massive.	@3' C N86E/19NW
			X				
5							
						@6' - End roots.	
7.5						@7.5' - 3" of medium plasticity within claystone.	
			X				
						@9' - Grades to dark yellowish brown fine to coarse grained sandy clayey SILTSTONE with trace subangular fine gravel, poorly graded, stiff, moist.	
10							
						@11' - Grades to dark yellowish brown clayey silty fine to medium grained SANDSTONE with 15% subangular fine gravel, moderately graded, medium dense, moist, slightly friable.	
12.5			X			@12.5' - Slightly scoured contact to dark yellowish brown clayey fine grained sandy SILTSTONE, poorly graded, stiff, moist, slightly plastic, slightly friable.	@12.5' C N24E/16NW
						@13.5' - 1-3" thick CLAYSTONE, stiff, moist, highly plastic, corn flaky texture, internall sheared, bounded below by clayey silty fine grained SANDSTONE, poorly graded, medium dense, moist, slightly plastic.	@13.5' S N8E/19NW
15	2/2	C		15.5	---	@15' - Dark yellowish brown silty fine to coarse grained sandy CLAYSTONE, stiff, moist, medium plastic.	
						@15.5' - Scoured contact to fine grained sandy SILTSTONE, poorly graded, stiff, moist, slightly plastic, slightly friable.	@15.5' Approx. CN72W/4NE
						@16' - Discontinuous 1" thick CLAYSTONE, sheared, highly plastic.	
17.5							
						@18' - Grades to fine gravel fine to coarse grained sandy SILTSTONE.	
						@19.5' - Grades to yellowish brown subangular fine grained gravel CONGLOMERATE, well graded, medium dense, moist, slightly friable.	
20			X			@20' - Grades to dark yellowish brown clayey silty fine to coarse grained SANDSTONE with subangular fine gravel, poorly graded, medium dense, moist.	
						@21' - Sharp contact to 2" thick dark yellowish brown silty CLAYSTONE, poorly graded, stiff, moist, internally sheared, shear cuts bedding in sands above.	@21' Approx. BN19W/10NE
22.5							

ADDITIONAL COMMENTS:

Blows per 6"

C = Modified California Sampler

Kelly Bar Weights: 0 - 24', 2854 lbs.
25 - 47', 1802 lbs.
48 - 70', 1091 lbs.

Logged by: RMP

Geolabs-Westlake Village

SUBSURFACE DATA

LOG OF BORING B69

CLIENT: Pardee Homes	PROJECT: Skyline Ranch	W.O.: 8838.002
LOCATION: Santa Clarita	ELEVATION: 2080'	DATE: 9/5/06
RIG TYPE: 24" Bucket	HAMMER WEIGHTS: Kelly Bar Weights	DROP: 12"

	N	U	B	M	DD	DESCRIPTION	ATTITUDES
20							
						@21.5' - Grades to clayey fine grained sandy SILTSTONE with trace subangular fine gravel, poorly graded, stiff, moist, slightly friable.	@21'1" S N60E/45SE
22.5							
						@24' - Increase in clay, material becomes slightly plastic.	
25							
			C			@26.5' - Abruptly grades to yellowish brown subangular to subrounded fine grained gravel CONGLOMERATE with slightly friable clayey silty fine to coarse sand matrix, moderately graded, medium dense, moist, 3-12" thick.	@27' Approx. CN6W/27NE
27.5						@27' - Sharp, irregular contact to 3" thick dark yellowish brown CLAYSTONE, stiff, moist, highly plastic, grades to clayey fine grained sandy SILTSTONE, poorly graded, stiff, moist, slightly friable.	
30	2/4	C	X	20.2	105.2	@29' - Grades to yellowish brown silty fine grained SANDSTONE, poorly graded, medium dense, moist, slightly friable.	@30' S N63W/8SW
						@29.5' - Sharp contact with discontinuous fine to coarse grianed SANDSTONE with fine gravel.	
						@30' - Contact with 1-10" thick dark yellowish brown silty CLAYSTONE, poorly graded, stiff, moist, highly plastic, pervasively sheared, sheared lower contact.	
32.5						@31' - <u>Saugus Formation</u>: Dark yellowish brown SILTSTONE, weakly indurated, very stiff, moist.	
						@32.5' - Grades to dark yellowish brown silty fine to medium grained SANDSTONE with trace subangular to subrounded fine gravel, poorly graded, dense, moist, massive, slightly friable.	
35							
						@36.5' - 4" thick subangular fine grained gravel CONGLOMERATE with slightly friable fine to coarse sand matrix, moderately graded, dense, moist.	
37.5						@37' - 3" thick subangular fine grained gravel CONGLOMERATE.	@37' B N35E/11SE
						@38' - Grades to yellowish brown fine to coarse grained SANDSTONE with trace subangular to subrounded fine gravel, poorly graded, dense, moist, slightly friable.	
						@38.5' - Sharp contact to dark yellowish brown clayey SILTSTONE, poorly graded, very stiff, moist, slightly friable.	@38.5' C N57E/8SE
40						@40' - Dark yellowish brown fine to medium grained sandy clayey SILTSTONE, poorly graded, very stiff, moist, slightly plastic, slightly friable.	
42.5							

ADDITIONAL COMMENTS:

Blows per 6"
C = Modified California Sampler
Kelly Bar Weights: 0 - 24', 2854 lbs.
25 - 47', 1802 lbs.
48 - 70', 1091 lbs.

Logged by: RMP

Geolabs-Westlake Village

SUBSURFACE DATA

LOG OF BORING B69

CLIENT: Pardee Homes	PROJECT: Skyline Ranch	W.O.: 8838.002
LOCATION: Santa Clarita	ELEVATION: 2080'	DATE: 9/5/06
RIG TYPE: 24" Bucket	HAMMER WEIGHTS: Kelly Bar Weights	DROP: 12"

	N	U	B	M	DD	DESCRIPTION	ATTITUDES
40							
						@42' - Grades to fine grained sandy clayey SILTSTONE, medium plastic.	
42.5							
						@43' - Grades to dark yellowish brown clayey silty fine to medium grained SANDSTONE, poorly graded, dense, moist, slightly plastic, slightly friable.	
45	3/7	C		19.9	107.7	@45' - Dark yellowish brown fine to medium grained sandy clayey SILTSTONE, poorly graded, very stiff, moist, medium plastic, slightly friable.	
47.5							
						@49' - Grades to dark yellowish brown very clayey silty fine grained SANDSTONE, poorly graded, dense, moist, slightly plastic, slightly friable.	
50							
52.5							
55							
						@55.5' - 5" thick dark yellowish brown fine grained gravel CONGLOMERATE with slightly friable clayey silty fine to coarse sand matrix, well graded, dense, very moist.	@55.5' B N74E/9SE
						@56' - Dark yellowish brown clayey silty fine to coarse grained SANDSTONE, poorly graded, dense, moist, slightly friable.	
57.5							
60	15-8"	C		13.3	---	@60' - Yellowish brown silty fine grained SANDSTONE with mottled iron staining and olive green veins, poorly graded, dense, moist, slightly plastic, slightly friable.	
62.5							

ADDITIONAL COMMENTS:

Blows per 6"
C = Modified California Sampler
Kelly Bar Weights: 0 - 24', 2854 lbs.
25 - 47', 1802 lbs.
48 - 70', 1091 lbs.

Logged by: RMP

Geolabs-Westlake Village

SUBSURFACE DATA LOG OF BORING B69

CLIENT: Pardee Homes	PROJECT: Skyline Ranch	W.O.: 8838.002
LOCATION: Santa Clarita	ELEVATION: 2080'	DATE: 9/5/06
RIG TYPE: 24" Bucket	HAMMER WEIGHTS: Kelly Bar Weights	DROP: 12"

	N	U	B	M	DD	DESCRIPTION	ATTITUDES
60							
62.5							
						@64' - Yellowish brown clayey fine grained sandy SILTSTONE to clayey silty fine grained SANDSTONE, poorly graded, dense, moist, slightly friable.	
65							
67.5						@67' - Grades to yellowish brown clayey silty fine grained SANDSTONE, poorly graded, dense, moist, slightly plastic, slightly friable. @68' - Abruptly grades to yellowish brown gravel to cobble CONGLOMERATE with slightly friable clayey silty fine to medium sand matrix, well graded, dense, moist.	
70						Total Depth - 70' No groundwater No caving Backfilled	
72.5							
75							
77.5							
80							
82.5							

ADDITIONAL COMMENTS: Blows per 6"

C = Modified California Sampler

Kelly Bar Weights: 0 - 24', 2854 lbs.
25 - 47', 1802 lbs.
48 - 70', 1091 lbs.

Logged by: RMP Geolabs-Westlake Village

SUBSURFACE DATA

LOG OF BORING B70

CLIENT: Pardee Homes	PROJECT: Skyline Ranch	W.O.: 8838.002
LOCATION: Santa Clarita	ELEVATION: 1966'	DATE: 9/7/06
RIG TYPE: 24" Bucket	HAMMER WEIGHTS: Kelly Bar Weights	DROP: 12"

	N	U	B	M	DD	DESCRIPTION	ATTITUDES
0						Saugus Formation: Yellowish brown silty fine grained SANDSTONE with subangular to subrounded fine to coarse gravel, poorly graded, medium dense, moist, blocky and fractured in upper 6", rootlets to 3'.	
2.5						@2.5' - Dark yellowish brown clayey fine to medium grained sandy SILTSTONE with trace subangular fine gravel, poorly graded, stiff, moist, slightly friable.	
						@3.5' - Grades to yellowish brown silty fine to medium grained SANDSTONE, poorly graded, medium dense, moist, slightly friable.	
5			X X			@4.5' - Grades to yellowish brown subangular fine grained gravel CONGLOMERATE with slightly friable fine to medium sand matrix, moderately graded, medium dense, moist.	@5' C N29W/12SW
						@5' - Sharp contact with yellowish brown clayey fine to medium grained sandy SILTSTONE, poorly graded, stiff, moist, slightly friable.	@6.5' B
7.5						@5.5' - Grades to yellowish brown subangular fine grained gravel CONGLOMERATE with slightly friable fine to medium sand matrix, moderately graded, medium dense, moist.	N29W/16SW
						@5'9" - Sharp contact with yellowish brown clayey fine to medium grained sandy SILTSTONE, poorly graded, stiff, moist, slightly friable.	@8' C N56W/22SW
10						@6.2' - Grades to yellowish brown subangular fine grained gravel CONGLOMERATE with slighlty friable fine to medium sand matrix, moderately graded, medium dense, moist.	
						@8' - Slightly scoured contact with dark yellowish brown clayey very silty fine to medium grained SANDSTONE with trace subangular fine gravel, poorly graded, medium dense, moist, slightly plastic, massive.	
12.5							
15	2/4	C		5.4	119.5	@14.5' - Grades to clayey silty fine to medium grained SANDSTONE with 15% subangular to subrounded fine gravel, moderately graded, medium dense, moist, slightly friable.	
						@15' - Grades to yellowish brown subangular to subrounded gravel CONGLOMERAT with slightly friable fine to coarse sand (trace silt) matrix, well graded, medium dense, moist.	@16' B N6W/16SW
17.5							
20						@18.5' - Sharp highly scoured (2.5' in SE quadrant) contact with dark yellowish brown fine to medium grained sandy very clayey SILTSTONE, poorly graded, stiff, moist, waxy, corn flaky texture, medium plastic.	@18.5' Approx. CN47E/47SE @19.5' Approx. BN65E/10SE
22.5							

ADDITIONAL COMMENTS:

Blows per 6"

C = Modified California Sampler

Kelly Bar Weights: 0 - 24', 2854 lbs.
25 - 47', 1802 lbs.
48 - 70', 1091 lbs.

Logged by: RMP

Geolabs-Westlake Village

SUBSURFACE DATA

LOG OF BORING B70

CLIENT: Pardee Homes	PROJECT: Skyline Ranch	W.O.: 8838.002
LOCATION: Santa Clarita	ELEVATION: 1966'	DATE: 9/7/06
RIG TYPE: 24" Bucket	HAMMER WEIGHTS: Kelly Bar Weights	DROP: 12"

	N	U	B	M	DD	DESCRIPTION	ATTITUDES
20							
22.5							
						@23' - Grades to dark yellowish brown very clayey fine to medium grained sandy SILTSTONE, poorly graded, stiff, moist, slightly plastic.	
25							
27.5						@27' - Grades to dark yellowish brown very fine grained very silty SANDSTONE, poorly graded, stiff, moist, slightly plastic.	
30	3/8	C		10.3	123.9	@30' - Grades to dark yellowish brown silty fine grained SANDSTONE with trace subrounded fine gravel, poorly graded, dense, moist.	
						@30.5' - Contact with dark yellowish brown 1" thick CLAYSTONE, stiff, moist, highly plastic, internal discontinous shear, truncated by sandstone above.	@30.5' Approx. SN84W/13SW
						@32' - 2-8" thick subangular fine grained gravel CONGLOMERATE, slightly friable.	@32' Approx. BN2W/12SW
32.5						@32.5' - Dark yellowish brown silty fine grained SANDSTONE, poorly graded, dense, moist, slightly friable.	
			X			@34' - 6" dark yellowish brown CLAYSTONE, highly plastic, stiff, moist, internally sheared, waxy, corn flaky, slightly friable.	@34.5' S N10W/9SW
35						@35' - Grades to brown silty fine to coarse grained SANDSTONE with subangular fine gravel, moderately graded, dense, moist.	
						@36.5' - Sheared contact to 3" thick dark yellowish brown CLAYSTONE, highly plastic.	@36.5' Sheared contact N39W/12SW
37.5						@36.8' - Grades to clayey silty fine grained SANDSTONE, poorly graded, dense, moist, slightly plastic, slightly friable.	
						@38' - Dark yellowish brown fine grained sandy silty CLAYSTONE with trace subangular fine gravel, poorly graded, very stiff, moist, medium plastic.	
40						@40' - Dark yellowish brown silty very clayey fine to coarse grained SANDSTONE with 10% subangular fine gravel, moderately graded, dense, moist, medium plastic.	
42.5							

ADDITIONAL COMMENTS: Blows per 6"

C = Modified California Sampler

Kelly Bar Weights: 0 - 24', 2854 lbs.
25 - 47', 1802 lbs.
48 - 70', 1091 lbs.

SUBSURFACE DATA

LOG OF BORING B70

CLIENT: Pardee Homes	PROJECT: Skyline Ranch	W.O.: 8838.002
LOCATION: Santa Clarita	ELEVATION: 1966'	DATE: 9/7/06
RIG TYPE: 24" Bucket	HAMMER WEIGHTS: Kelly Bar Weights	DROP: 12"

	N	U	B	M	DD	DESCRIPTION	ATTITUDES
40							
			X			@42' - 4" thick dark yellowish brown highly plastic CLAYSTONE, stiff, moist, sheared 1/4" below contact, parallel to contact, waxy, corn flaky texture.	@42' Sheared contact N53W/12SW
42.5						@42.3' - Dark yellowish brown clayey SILTSTONE, poorly graded, hard, moist, slightly plastic.	
45	4/10	C		12.9	123.5	@45' - Grades to dark yellowish brown clayey silty fine to medium grained SANDSTONE, poorly graded, very dense, moist.	
						@47' - Dark yellowish brown silty fine to medium grained SANDSTONE with sparse coarse sand and subangular fine gravel, poorly graded, very dense, moist, discontinuous subangular fine gravel CONGLOMERATE with silty fine to coarse sand matrix.	@47' B N66W/24SW
47.5							
50							
						@51.5' - 4" thick dark yellowish brown CLAYSTONE, highly plastic, discontinuous shear.	@51.5' Approx. SN18E/8NW
52.5							
						@53' - 1-2" thick dark yellowish brown CLAYSTONE, stiff, moist, waxy, corn flaky texture, highly plastic where sheared, medium plastic otherwise.	@53' Shear N30W/10SW
55							
						@55.5' - Discontinuous one foot thick fine gravel CONGLOMERATE.	@55.5' B N55W/16SW
						@56.5' - Dark yellowish brown fine grained sandy SILTSTONE, poorly graded, hard, moist, slightly friable.	
57.5							
						@58' - Grades to dark yellowish brown clayey silty fine to medium grained SANDSTONE, poorly graded, dense, moist, slightly friable.	
60	16-6"	C		10.4	108.3	@60' - Yellowish brown fine to medium grained sandy SILTSTONE, poorly graded, very stiff, moist, with dark yellowish brown trace fine to coarse grained sandy CLAYSTONE, highly plastic.	
62.5							

ADDITIONAL COMMENTS:

Blows per 6"
C = Modified California Sampler
Kelly Bar Weights: 0 - 24', 2854 lbs.
25 - 47', 1802 lbs.
48 - 70', 1091 lbs.

Logged by: RMP

Geolabs-Westlake Village

SUBSURFACE DATA

LOG OF BORING B70

CLIENT: Pardee Homes	PROJECT: Skyline Ranch	W.O.: 8838.002
LOCATION: Santa Clarita	ELEVATION: 1966'	DATE: 9/7/06
RIG TYPE: 24" Bucket	HAMMER WEIGHTS: Kelly Bar Weights	DROP: 12"

	N	U	B	M	DD	DESCRIPTION	ATTITUDES
60							
						@61.5' - Brown subangular cobble CONGLOMERATE with slightly friable silty fine to coarse sand matrix, well graded, dense, moist, thickly bedded.	
62.5							
65						@65' - Brown subangular cobble CONGLOMERATE with slightly friable silty fine to coarse sand matrix, well graded, dense, moist, thickly bedded.	@65' Approx. BN71W/18SW
67.5							
70						@70' - Brown subangular cobble CONGLOMERATE with slightly friable silty fine to coarse sand matrix, well graded, dense, moist, thickly bedded.	
72.5							
						Total Depth - 74' No groundwater No caving Backfilled	
75							
77.5							
80							
82.5							

ADDITIONAL COMMENTS:

Blows per 6"
C = Modified California Sampler
Kelly Bar Weights: 0 - 24', 2854 lbs.
25 - 47', 1802 lbs.
48 - 70', 1091 lbs.

Logged by: RMP

Geolabs-Westlake Village

SUBSURFACE DATA

LOG OF BORING B71

CLIENT: Pardee Homes	PROJECT: Skyline Ranch	W.O.: 8838.002
LOCATION: Santa Clarita	ELEVATION: 1815'	DATE: 9/11/06
RIG TYPE: 24" Bucket	HAMMER WEIGHTS: Kelly Bar Weights	DROP: 12"

	N	U	B	M	DD	DESCRIPTION	ATTITUDES
0						Landslide Debris: Dark grayish brown to dark yellowish brown fine to coarse grained SAND with 10% subangular to subrounded fine to coarse gravel, graded, medium dense, dry.	
						@1' - Grades to dark yellowish brown fine to coarse grained SAND with 20% subangular to subrounded fine to coarse gravel, well graded, dense, moist.	
5						@4' - Color change to yellowish brown and fine gravel to cobble sized clasts.	@4' Approx. BN65E/16SE
			X			@6' - Absence of clasts, yellowish brown clayey fine to medium grained SAND, poorly graded, dense, moist, subvertical 1/4" thick carbonate stringers.	
						@8' - Dark yellowish brown fine to coarse grained SAND with 20% subangular to subrounded fine to coarse gravel, well graded, dense, moist.	
10							
						@12' - Clay lens.	@11' Approx. BE-W/17S
15	1/1	C		19.3	108.9	@15' - Yellowish brown fine to coarse grained SAND with angular to subangular fine gravel, moderately graded, dense, moist, contact with strong brown clayey fine grained SANDSTONE in tip, poorly graded, dense, moist, medium plastic.	
			X			@17' - Grades to yellowish brown fine to coarse grained SAND with angular to subangular fine gravel and clayey fine sand interbeds.	
20						@20' - Sharp contact with 6" thick strong brown clayey fine grained SAND, very moist to wet.	@20' Approx. CN55E/15SE
						@20.5' - Contact with yellowish brown 6" thick fine to coarse grained SAND with gravel.	@22.5' S
						@22.5' - 1/8" thick strong brown CLAY, exits boring, medium plastic, sheared.	N26E/17SE
						@23' - Less than 1/8" thick lower bound shear (continuous) within discontinuous 1-6" thick CLAY to clayey fine grained SAND, slickensides bear N71W.	@23' S N74E/4NW
25						Saugus Formation: Dark yellowish brown to olive brown fine to coarse grained SANDSTONE grading to boulder CONGLOMERATE with weakly cemented fine to coarse sand matrix, well graded, hard, moist.	@25' Approx. CN55E/17SE
			X			@25' - Mint Canyon Formation: Slightly irregular, undulatory, scoured contact with gray fine to coarse grained SANDSTONE, poorly graded, very dense, moist, weakly indurated.	
30						@26' - Grades to gray subangular to subrounded fine gravel to cobble CONGLOMERATE with moderately cemented fine to coarse sand matrix, well graded, hard, moist.	@31' B N18W/22SW @32' B N50W/16SW
35						@30' - Grades to coarse gravel CONGLOMERATE, poorly graded, hard, moist.	
						@31' - Crude bedding.	@33' C N55E/29NW
						@33' - Scoured contact to light gray fine to coarse grained SANDSTONE, weakly indurated.	@35' Approx. BN5E/18NW
						@35' - Thin coarse gravel to boulder CONGLOMERATE within sandstone.	
40						@36' - Grades to conglomeratic fine to coarse grained SANDSTONE with fine gravel clasts and occasional boulders, very dense, moist, weakly cemented.	
						@39' - Grades to boulder CONGLOMERATE.	
45							

ADDITIONAL COMMENTS:

Total Depth 42'
No groundwater, No caving, backfilled.
Blows per 6"
C = Modified California Sampler
Kelly Bar Weights: 0 - 25', 2854 lbs.
25 - 49', 1802 lbs.

Logged by: RMP/SBS

Geolabs-Westlake Village

SUBSURFACE DATA

LOG OF BORING B72

CLIENT: Pardee Homes	PROJECT: Skyline Ranch	W.O.: 8838.002
LOCATION: Santa Clarita	ELEVATION: 1846'	DATE: 9/13/06
RIG TYPE: 24" Bucket	HAMMER WEIGHTS: Kelly Bar Weights	DROP: 12"

	N	U	B	M	DD	DESCRIPTION	ATTITUDES
0						Saugus Formation: Yellowish brown subangular fine grained gravel CONGLOMERATE with slightly friable silty fine to coarse sand matrix, well graded, dry in upper 6", moist below, blocky and fractured in upper 8", roots to 3'.	@1' B N58W/17NE
						@2' - Discontinuous dark brown CLAY pocket in N wall.	
			X			@2'3" - Slightly scoured contact with silty fine grained SANDSTONE, poorly graded, hard, moist.	
5						@2.5' - Grades to dark brown very clayey fine to medium grained SANDSTONE with coarse sand sized dry white carbonate nodules, hard, moist.	
						@4.5' - Grades to yellowish brown subangular to subrounded fine gravel to cobble CONGLOMERATE with silty fine to medium sand matrix, well graded, hard, moist.	@8' Approx. BN30W/16SW
10						@9.5' - Absence of clasts in yellowish brown fine to coarse grained SANDSTONE.	
						@11' - Grades to subangular to subrounded fine grained gravel CONGLOMERATE with fine to coarse sand matrix, well graded, hard, moist, slightly friable.	@11' B N52W/13SE
						@11.5' - Sharp scoured contact to strong brown very silty fine grained SANDSTONE.	@11.5' Approx. CN57E/11NW
15	2/4	C		14.4	120.6	@12' - 6" thick fine to coarse grained SANDSTONE with subangular to subrounded fine gravel.	@14.5' Approx. SN22W/1SW
						@14.5' - Undulatory sharp upper contact with strong brown CLAYSTONE, sheared, highly plastic, waxy, corn flaky texture, moist.	
						@15' - Brown clayey silty fine to coarse grained SANDSTONE with subangular fine gravel, poorly graded, hard, moist.	@19' B N50W/12SW
20						@19' - Abruptly grades to yellowish brown subangular to subrounded gravel CONGLOMERATE with fine to coarse sand matrix, well graded, hard, moist.	
						@19.5' - Slightly scoured contact to dark yellowish brown 4" thick very silty fine grained SANDSTONE, overlying strong brown clayey SILTSTONE.	
						@21.3' - Becomes waxy for 3".	
25						@23' - Grades to dark yellowish brown clayey silty fine grained SANDSTONE with sparse medium to coarse sand, poorly graded, hard, moist.	
						@27.5' - 3" thick section of subrounded fine gravel in silty fine to medium grained SANDSTONE.	
30	4/8	C		14.8	118.7	@30' - Brown to dark yellowish brown silty fine to medium grained SANDSTONE, poorly graded, hard, moist.	
						@33.5' - 1' thick section of subrounded fine gravel within silty fine to medium grained SANDSTONE.	
35						@35.5' - Abruptly grades to subangular to subrounded gravel CONGLOMERATE with slightly friable fine to coarse sand matrix, well graded, hard, moist.	@36' B N46W/15SW
						@38' - Slightly scoured sharp contact to strong brown clayey fine grained sandy SILTSTONE, poorly graded, hard, moist.	@38' C N21W/22NE
40						@39.5' - Two 6" thick channel deposits, yellowish brown subangular to subrounded fine grained gravel CONGLOMERATE with fine to coarse sand matrix, well graded, very dense, moist, exits in N and W walls.	
45							

ADDITIONAL COMMENTS:

Blows per 6"

C = Modified California Sampler

Kelly Bar Weights: 0 - 25', 2854 lbs.
25 - 48', 1802 lbs.
48 - 70', 1019 lbs.

Logged by: RMP

Geolabs-Westlake Village

SUBSURFACE DATA LOG OF BORING B72

CLIENT: Pardee Homes	PROJECT: Skyline Ranch	W.O.: 8838.002
LOCATION: Santa Clarita	ELEVATION: 1846'	DATE: 9/13/06
RIG TYPE: 24" Bucket	HAMMER WEIGHTS: Kelly Bar Weights	DROP: 12"

	N	U	B	M	DD	DESCRIPTION	ATTITUDES
40							
						@43' - Grades to dark yellowish brown silty fine grained SANDSTONE, poorly graded, hard, moist.	
45	5/12	C		12.4	121.8	@44' - 2" thick zone of fine gravel sized dry white carbonate nodules.	
						@45' - Yellowish brown silty fine grained SANDSTONE, poorly graded, hard, moist.	
						@47' - Grades to yellowish brown fine to coarse grained SANDSTONE which grades to 2" thick subangular to subrounded fine grained gravel CONGLOMERATE at base.	@47' B N26W/11SW
50						@48' - Sharp, slightly scoured contact with dark yellowish brown silty fine grained SANDSTONE, poorly graded, hard, moist.	@48' C N31W/10SW
						@50.5' - Grades to yellowish brown fine to coarse grained SANDSTONE, poorly graded, hard, moist, slightly friable.	@52.5' B
55						@51.5' - Grades to yellowish brown subangular to subrounded gravel CONGLOMERATE with slightly friable fine to coarse sand matrix, well graded, hard, moist.	N49E/10SE @54' B N22E/14NW
						@52.5' - Crudely bedded.	@55' C
						@55' - Sharp, scoured contact to yellowish brown silty fine grained SANDSTONE, poorly graded, hard, moist.	N60W/17SW
60	7/16-2"	C		16.7	110.5	@60' - Brown to yellowish brown silty fine grained SANDSTONE with sparse medium sand and trace subrounded fine gravel, poorly graded, hard, moist.	
						@60.5' - 6" thick section of subangular to subrounded gravel clasts in clayey silty fine grained SANDSTONE.	
65						@62' - Strong brown trace fine to medium grained sandy SILTSTONE, weakly indurated, poorly graded, hard.	
						@63' - Grades to yellowish brown fine grained gravel CONGLOMERATE with clayey fine to coarse sand matrix and trace subrounded cobbles, well graded, hard, moist.	
						@68' - Yellowish brown silty fine to coarse grained SANDSTONE with subangular fine gravel, moderately graded, hard, moist.	
70							
75						Total Depth - 72' No groundwater No caving Backfilled	
80							
85							

ADDITIONAL COMMENTS: Blows per 6"

C = Modified California Sampler

Kelly Bar Weights: 0 - 25', 2854 lbs.
25 - 48', 1802 lbs.
48 - 70', 1019 lbs.

SUBSURFACE DATA LOG OF BORING B73

CLIENT: Pardee Homes	PROJECT: Skyline Ranch	W.O.: 8838.002
LOCATION: Santa Clarita	ELEVATION: 1836'	DATE: 9/14/06
RIG TYPE: 24" Bucket	HAMMER WEIGHTS: Kelly Bar Weights	DROP: 12"

	N	U	B	M	DD	DESCRIPTION	ATTITUDES
0						Landslide Debris: Brown to dark brown fine grained sandy silty CLAY, poorly graded, hard, moist, slightly plastic, upper 1' is dry.	
5			X			@3' - Yellowish brown subangular to subrounded coarse grained gravel CONGLOMERATE with slightly friable silty fine to coarse sand matrix, well graded, dense, dry.	@3' Approx. BN54E/20SE
10						@7.5' - Sharp, irregular, scoured contact with yellowish brown silty fine grained SAND with angular to subangular fine gravel and sparse medium to coarse sand, poorly graded, very dense, moist, occasional dry white carbonate stringers, subvertical to subhorizontal.	@7.5' Approx. CN87W/12SW
						@11' - 3" thick light yellowish brown silty fine to medium grained SAND layer.	
						@11.5' - Discontinuous 3" thick clayey SILT to silty CLAY, irregular upper and lower contacts, medium plastic.	
15						@13.5' - Abruptly grades to cobble to boulder CONGLOMERATE with fine to coarse sand matrix, well graded, very dense, moist, predominantly massive.	@13.5' Approx. BN65E/17NW
20							
	2/5	C	X X	14.4	118.4	@22' - Sheared contact to 1/2" to 1" thick dark yellowish brown CLAY, highly plastic, waxy, corn flaky texture, grades to dark yellowish brown clayey SILT, poorly graded, hard, moist.	@22' Sheared contact N63W/11SW
25						@24' - Dark yellowish brown clayey SILT, poorly graded, hard, moist.	
						@27' - Grades to clayey silty fine to coarse grained SAND with subrounded fine gravel.	
			X			@28' - Irregular, slightly scoured contact to fine to coarse grianed sandy clayey SILT, poorly graded, hard, moist.	@28' C N52W/20SW
30	3/11	C		16.3	114.4	@29' - Sheared upper contact to strong brown 1/4" to 1" thick CLAYSTONE, highly plastic, waxy, corn flaky texture.	@29' S N39W/8SW
						@30' - Yellowish brown silty fine to medium grained SANDSTONE, poorly graded, very dense, moist.	
35						@30.5' - Grades to clayey silty fine to medium grained SAND, poorly graded, very dense, moist, slightly plastic.	@35.5' C N42W/13SW
						@34' - Grades to yellowish brown subrounded fine grained gravel CONGLOMERATE with clayey silty fine to coarse sand matrix, well graded, very dense, moist to very moist, highly channelized.	
40						@35.5' - Sharp, irregular slightly scoured contact to dark yellowish brown clayey silty fine grained SAND, poorly graded, very dense, moist, slightly plastic.	@39.8' B N41W/13SW
						@39.8' - 2-5" thick olive brown fine to coarse grained SAND with subrounded fine gravel in clayey silty fine grained SAND from 35.5'.	
45							

ADDITIONAL COMMENTS:

Blows per 6"

C = Modified California Sampler

Kelly Bar Weights: 0 - 25', 2854 lbs.
25 - 48', 1802 lbs.
48 - 70', 1019 lbs.

Logged by: RMP Geolabs-Westlake Village PLATE B73.1

SUBSURFACE DATA

LOG OF BORING B73

CLIENT: Pardee Homes	PROJECT: Skyline Ranch	W.O.: 8838.002
LOCATION: Santa Clarita	ELEVATION: 1836'	DATE: 9/14/06
RIG TYPE: 24" Bucket	HAMMER WEIGHTS: Kelly Bar Weights	DROP: 12"

	N	U	B	M	DD	DESCRIPTION	ATTITUDES
40						@41.5' - Abruptly grades to olive brown subangular to subrounded gravel CONGLOMERATE with slightly friable clayey silty fine to coarse sand matrix, well graded, very dense, moist. @43' - Slightly scoured, sharp contact to dark yellowish brown fine grained sandy clayey SILT, poorly graded, hard, moist, slightly plastic. @44' - 1/4" thick strong brown CLAY, highly plastic, sheared on upper contact, waxy, corn flaky, bedding below this point is well defined. @44.5' - <u>Saugus Formation</u>: Olive brown silty fine grained SANDSTONE, poorly graded, very dense, moist, weakly cemented between many discontinuous lenses of this material and dark yellowish brown fine grained sandy clayey SILTSTONE. @45' - Olive brown clayey fine grained sandy SILTSTONE to silty fine grained SANDSTONE, poorly graded, very dense, moist, grades to subangular to subrounded gravel CONGLOMERATE with olive silty fine sand matrix. @45.8' - Grades to olive brown gravel to cobble CONGLOMERATE with silty fine to coarse sand matrix, well graded, hard. @46.8' - Slightly scoured contact to olive fine to coarse grained SANDSTONE, hard, moist, slightly friable to friable. @48.5' - Grades to olive fine to coarse grained SANDSTONE with 20% subrounded fine gravel. @53.5' - Grades to olive fine grained gravel CONGLOMERATE with fine to coarse sand matrix, well graded, hard, moist. @55' - Olive cobble CONGLOMERATE with fine to coarse sand matrix, well graded, hard, moist. @56' - Olive brown gravel to cobble CONGLOMERATE with fine to coarse sand matrix, well graded, hard, moist.	@42' B N34W/15SW @43' C N33W/12SW @46' B N41W/15SW @49.5' B N14W/8SW @53' B N55W/18SW
			X				
45	12-6"	C	X	10.9	116.0		
50							
55							
60							
65							
70						Total Depth - 60' No groundwater No caving Backfilled	
75							
80							
85							

ADDITIONAL COMMENTS:

Blows per 6"

C = Modified California Sampler

Kelly Bar Weights: 0 - 25', 2854 lbs.

25 - 48', 1802 lbs.

48 - 70', 1019 lbs.

Logged by: RMP

Geolabs-Westlake Village

SUBSURFACE DATA

LOG OF BORING B74

CLIENT: Pardee Homes	PROJECT: Skyline Ranch	W.O.: 8838.002
LOCATION: Santa Clarita	ELEVATION: 1713'	DATE: 9/20/06
RIG TYPE: 24" Bucket	HAMMER WEIGHTS: Kelly Bar Weights	DROP: 12"

	N	U	B	M	DD	DESCRIPTION	ATTITUDES
0						Landslide Debris?: Soil formation, dark brown, blocky and fractured, dry, roots to 3'.	@1.5' B
						@1' - Olive green silty fine grained SAND with 2" thick gravel CONGLOMERATE layer at base, poorly graded, very dense, moist.	N31W/9SW @3.5' B
5						@1.5' - Yellowish brown silty fine grained SAND with pervasive carbonate stringers, poorly graded, moist, pervasively fractured.	N40W/10SW
						@3.5' - Yellowish brown silty fine grained SAND mottled with material from 1'.	
			X			@5' - Yellowish brown fine grained sandy SILT with sparse medium to coarse sand, poorly graded, very dense, moist, slightly friable, slightly plastic.	
10						@8' - Grades to olive yellow silty fine grained SAND, poorly graded, very dense, moist.	
						@9.5' - 10% subangular fine to coarse grained GRAVEL with trace subangular small cobbles.	@11' B N13W/12SW
						@11' - Grades to olive yellow gravel to cobble CONGLOMERATE with fine to coarse sand matrix, well graded, very dense, moist, slightly friable.	@13.5' B N70E/16NW
15	8-6"			5.0	115.8	@12' - Pale yellow silty fine to medium grained SAND, poorly graded, very dense, moist, slightly friable.	@16' B
						@13' - Grades to fine to coarse grained SAND.	N22E/9NW
						@14' - Grades to fine to coarse grained SAND with abundant fine to coarse gravel.	
20						@14.5' - 3-4" thick gravel CONGLOMERATE interbed.	
						@15' - Light yellowish brown fine to coarse grained SAND with 30% angular to subangular fine gravel and trace subagular cobbles,very dense, moist.	@22.5' B N36W/8SW
25						@18.5' - Grades to yellowish brown subangular to subrounded gravel to cobble CONGLOMERATE with fine to coarse sand matrix, well graded, very dense, moist, slightly friable.	
						@20-22' - Boulders.	
						Refusal on boulder.	
30						Total Depth - 27.5'	
						No groundwater	
						No caving	
						Backfilled	
35							
40							
45							

ADDITIONAL COMMENTS: Blows per 6"

C = Modified California Sampler

Kelly Bar Weights: 0 - 25', 2854 lbs.
25 - 48', 1802 lbs.

Logged by: RMP

Geolabs-Westlake Village

PLATE B74

SUBSURFACE DATA

LOG OF BORING B75

CLIENT: Pardee Homes	PROJECT: Skyline Ranch	W.O.: 8838.002
LOCATION: Santa Clarita	ELEVATION: 1752'	DATE: 9/19/06
RIG TYPE: 24" Bucket	HAMMER WEIGHTS: Kelly Bar Weights	DROP: 12"

	N	U	B	M	DD	DESCRIPTION	ATTITUDES
0						Landslide Debris?: Strong brown silty fine to medium grained SAND, poorly graded,	
						loose, moist, dry in upper 6", roots to 4', slightly friable.	
						@2' - Grades to irregular contact with yellowish brown angular to subrounded fine	
						gravel CONGLOMERATE with slightly friable fine to coarse sand matrix, well graded,	@3' C
						loose, moist, thickness irregular and bedding interrupted by jumbled pockets of silty	N8W/26SW
5						sandy material from above and below.	@3.5' Approx.
						@3' - Slightly scoured contact to strong brown silty fine to medium grained SAND,	BN10W/25SW
						poorly graded, loose, moist, slightly friable.	@7' B
						@3.5' - 3" thick dark brown silty CLAY, poorly graded, very stiff, moist, grades to strong	N2E/19SW
						brown silty fine to medium grained SAND with subangular fine gravel and sparse	@9' C
10			X			sand, poorly graded, dense, moist, slightly friable.	N19W/12SW
						@6.5' - Grades to strong brown subangular to subrounded gravel CONGLOMERATE	@10' S
						with clayey sand matrix.	N32W/17SW
						@7' - Pale brown loose clay in matrix.	
						@9' - Slightly scoured contact with brown fine grained sandy clayey SILTSTONE, poorly	
15						graded, stiff, moist.	
						@10' - Dark yellowish brown CLAY, poorly graded, very moist, highly plastic, upper inch	
						is sheared, corn flaky texture, waxy, laminated.	@17' B
	2/7-5"	C		16.7	114.3	@10.5' - Grades to dark grayish brown fine to coarse grained sandy CLAY with trace	N17W/6SW
						subangular to subrounded fine gravel, poorly graded, stiff, moist.	@17.5' C
20						@12' - Yellowish brown very clayey fine to coarse grained SAND with 20% to 30%	N35W/10SW
						subangular gravel, moderately graded, medium dense to dense, moist.	@19' C
						@14' - Gravel to cobble (angular to subangular) in clay, disturbed (mottled appearance).	N35W/12SW
						@15' - Pale brown clayey silty fine to coarse grained SAND with angular to subangular	@21' C
						fine gravel, moderately graded, moist, dense to very dense, slightly friable.	N44W/10SW
25						@16.5' - Olive green silty fine to medium grained SAND, poorly graded, very dense,	@23' C/B
						moist, slightly friable.	N48W/9SW
						@17' - Grades to subrounded fine gravel CONGLOMERATE with fine to coarse sand	@24' C
						matrix, well graded, very dense, moist, slightly friable.	N84W/8SW
						@17.5' - Slightly scoured contact with strong brown fine grained sandy clayey	
30						SILTSTONE, poorly graded, hard, moist, weakly indurated.	
						@18.5' - Mottled strong brown and pale brown fine grained sandy SILTSTONE, poorly	
						graded, moist, overlying olive green clayey silty fine to coarse grained SAND with	
						channeled pockets of subangular to subrounded fine gravel CONGLOMERATE.	
						@21' - Strong brown clayey silty fine grained SAND, poorly graded, very dense, moist.	
35						@23' - Olive green clayey silty fine to coarse grained SAND.	
						@24' - Strong brown clayey silty fine grained SAND, poorly graded, very dense, moist.	
						@26' - Olive green very silty fine grained SAND, poorly graded, very dense, moist.	
						@27' - Grades to olive green silty fine to medium grained SAND with subangular	
						fine gravel and sparse coarse sand;.	
40						@27.5' - Cobbles.	
						Total Depth - 28', refusal on boulder	
						No groundwater, No caving	
45						Backfilled	

ADDITIONAL COMMENTS:

Blows per 6"
C = Modified California Sampler
Kelly Bar Weights: 0 - 25', 2854 lbs.
25 - 48', 1802 lbs.

Logged by: RMP

Geolabs-Westlake Village

SUBSURFACE DATA

LOG OF BORING B76

CLIENT: Pardee Homes	PROJECT: Skyline Ranch	W.O.: 8838.002
LOCATION: Santa Clarita	ELEVATION: 1804'	DATE: 9/20/06
RIG TYPE: 24" Bucket	HAMMER WEIGHTS: Kelly Bar Weights	DROP: 12"

	N	U	B	M	DD	DESCRIPTION	ATTITUDES
0						Saugus Formation: Dark brown soil formation, moist. @1.5' - Yellowish brown subangular to subrounded cobble CONGLOMERATE with slightly friable silty fine sand matrix with sparse coarse sand, well graded, moist, medium dense, roots to 4'.	
5							
			X				@7' B N19E/7NW
10							
						@11' - Grayish brown subangular to subrounded cobble CONGLOMERATE with slightly friable clayey silty fine to coarse sand matrix, well graded, very dense, moist.	
15	4/8	C		7.8	123.7	@15' - Yellowish brown subangular to subrounded gravel CONGLOMERATE with slightly friable silty fine to coarse sand matrix, well graded, hard, moist.	
							@17.5' Approx. BN75W/15SW
20						@20' - Yellowish brown subangular to subrounded gravel CONGLOMERATE with slightly friable silty fine to coarse sand matrix, well graded, hard, moist.	
25							
						@28' - Grayish brown subangular to subrounded cobble CONGLOMERATE with slightly friable clayey silty fine to coarse sand matrix, well graded, hard, moist.	
30							
	4/18	C		6.7	117.2	@31' - Pale brown to yellowish brown subangular to subrounded cobble CONGLOMERATE with slightly friable clayey silty fine to coarse sand matrix, well graded, hard, moist.	
35						@35' - Mint Canyon Formation: Sharp scoured contact with yellowish brown fine grained sandy SILTSTONE, poorly graded, hard, moist, weakly indurated, sheared upper contact and shear in upper inch making material soft and slightly friable.	@35' CN6E/17NW SN22E/32NW
						@37' - Grades to olive brown subangular to subrounded cobble CONGLOMERATE, slightly friable clayey silty fine to coarse sand matrix, hard, moist, well graded.	@39' Approx. BN2W/11W
40							
45							

ADDITIONAL COMMENTS:

Blows per 6"

C = Modified California Sampler

Kelly Bar Weights:	0 - 25', 2854 lbs.
	25 - 48', 1802 lbs.
	48 - 70', 1019 lbs.
	70 - 95', 1491 lbs.

Logged by: RMP

Geolabs-Westlake Village

SUBSURFACE DATA LOG OF BORING B76

CLIENT: Pardee Homes	PROJECT: Skyline Ranch	W.O.: 8838.002
LOCATION: Santa Clarita	ELEVATION: 1804'	DATE: 9/20/06
RIG TYPE: 24" Bucket	HAMMER WEIGHTS: Kelly Bar Weights	DROP: 12"

	N	U	B	M	DD	DESCRIPTION	ATTITUDES
40							
45	5/15	C		7.3	119.9	@45' - Olive brown subangular to subrounded cobble CONGLOMERATE with slightly friable clayey silty fine to coarse sand matrix, hard, moist, well graded, overlying light gray fine grained sandy SILTSTONE, poorly graded, weakly indurated, hard, moist.	
50						@50' - Sharp scoured contact with gray very silty fine grained SANDSTONE, poorly graded, very dense, moist, weakly indurated. @50.5' - Clay healed fracture, 1/2mm thick, highly plastic, moist. @52' - Grades to CONGLOMERATE. @54' - 8-10" thick interbed of silty fine to medium grained SANDSTONE, poorly graded, weakly indurated, cross-bedded, roughly horizontal, very dense, moist, to olive brown subangular to subrounded cobble CONGLOMERATE with slightly friable clayey silty fine to coarse sand matrix, well graded, hard, moist.	@50' C N80W/15SW @50.5' FR N31E/14SE
55							
60							
						@63' - Olive brown subangular to subrounded cobble CONGLOMERATE with slightly friable clayey silty fine to coarse sand matrix, well graded, hard, moist.	
65							
							@68' B N10E/17NW
70	15-6"	C		11.6	105.1	@70' - Brown clayey SILTSTONE, poorly graded, hard, moist, weakly indurated.	@70.5' C N2E/12NW
						@73' - Olive brown subangular to subrounded cobble CONGLOMERATE with slightly friable silty fine to coarse sand matrix, well graded, hard, moist.	
75							
						@77' - Matrix grades to clayey silty fine to medium sand with sparse coarse sand.	
80						Total Depth - 78' No groundwater Minor caving from 17-22' Backfilled	
85							

ADDITIONAL COMMENTS:

Blows per 6"
C = Modified California Sampler
Kelly Bar Weights: 0 - 25', 2854 lbs.
25 - 48', 1802 lbs.
48 - 70', 1019 lbs.
70 - 95', 1491 lbs.

Logged by: RMP

Geolabs-Westlake Village

APPENDIX B

TEST PIT LOGS
TP24 THROUGH TP208

TTM 060922, SKYLINE RANCH
COUNTY OF LOS ANGELES, CALIFORNIA

LOG OF EXCAVATION
Trench No. TP24

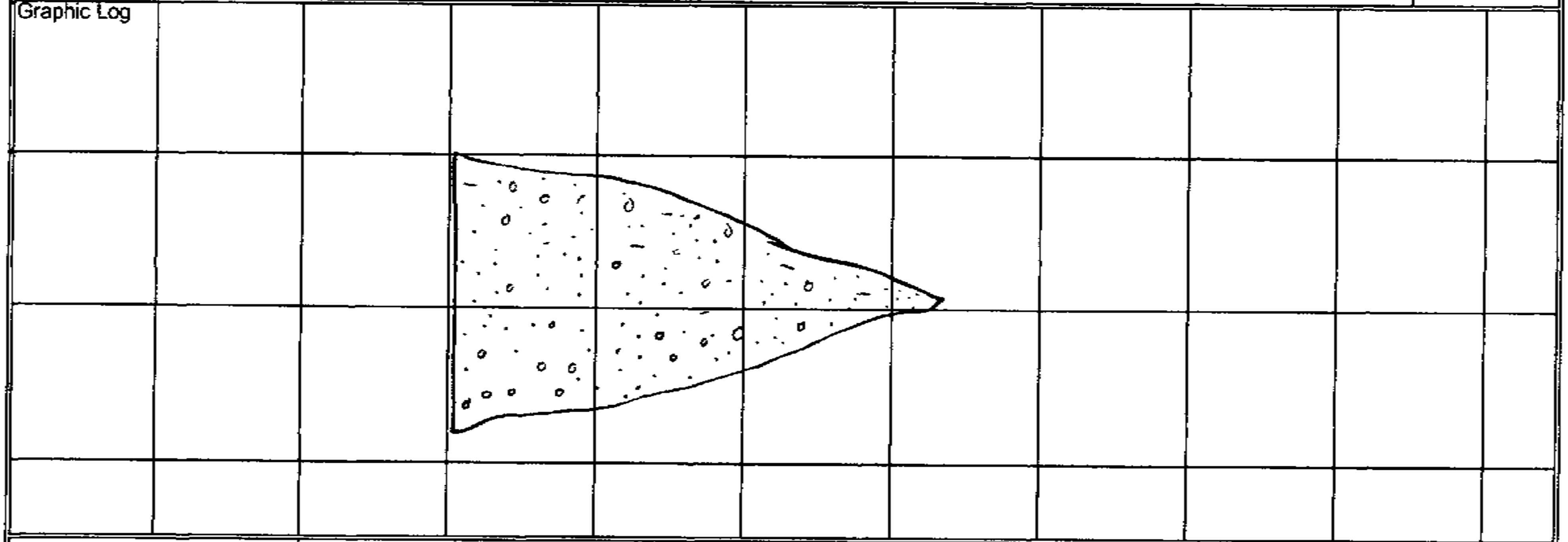
Logged By: AH

Date Excavated: 3/27/06

Client: Pardee Homes

Depth (ft)	Description	Comments
0 - 2	Colluvium: Brown silty SAND with gravel and cobbles, abundant roots, loose, moist.	
2 - 7.5	Saugus Formation: Brown gravelly cobbly SANDSTONE, cobbles are rounded, gravels are subrounded, weakly cemented, moist, very dense, abundant rootlets, massive.	
	Total Depth - 7.5' No groundwater No caving Backfilled	

Graphic Log



scale 1" = 5'

GEOLABS-WESTLAKE VILLAGE

W.O. 8838.002

PLATE TP24

LOG OF EXCAVATION
Trench No. TP25

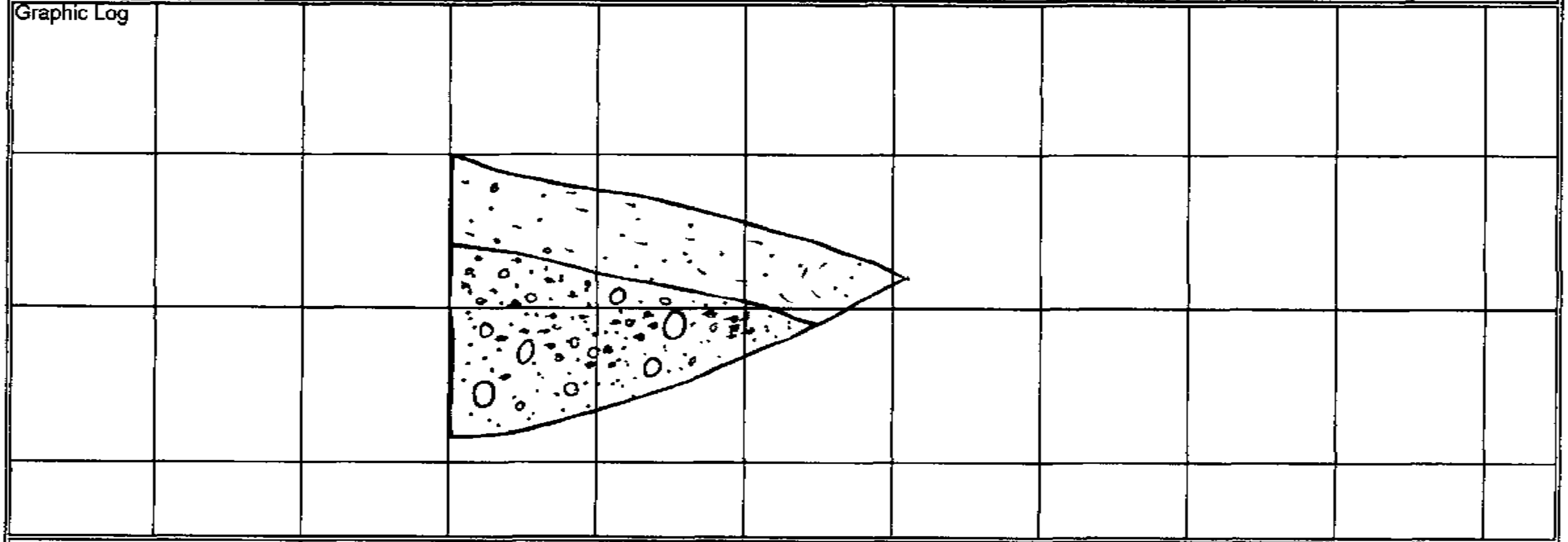
Logged By: AH

Date Excavated: 3/27/06

Client: Pardee Homes

Depth (ft)	Description	Comments
0 - 3	<u>Colluvium</u>: Brown silty SAND with gravel, roots, very moist.	
3 - 8.5	<u>Saugus Formation</u>: Orangish brown SANDSTONE with subrounded gravel and cobbles, moist, very dense, massive.	
	Total Depth - 8.5' No groundwater No caving Backfilled	

Graphic Log



scale 1" = 5'

GEOLABS-WESTLAKE VILLAGE

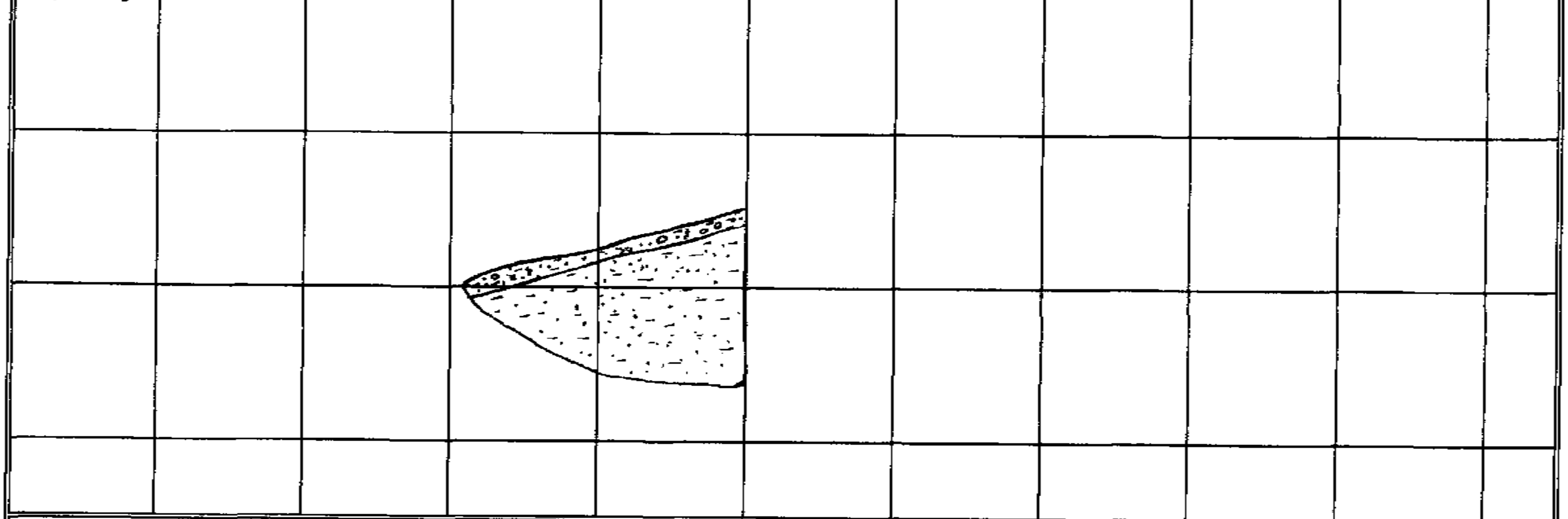
W.O. 8838.002

PLATE TP25

LOG OF EXCAVATION Trench No. TP26	Logged By: AH	Date Excavated: 3/27/06	Client: Pardee Homes

Depth (ft)	Description	Comments
0 - 1	<u>Colluvium</u>: Dark brown silty SAND with gravel and organics, roots, very moist.	
1 - 8	<u>Saugus Formation</u>: Orangish brown silty fine to medium grained SANDSTONE, moist, very dense, massive.	
	Total Depth - 8' No groundwater No caving Backfilled	

Graphic Log



scale 1" = 5'	GEOLABS-WESTLAKE VILLAGE	W.O. 8838.002	PLATE TP26

LOG OF EXCAVATION
Trench No. TP27

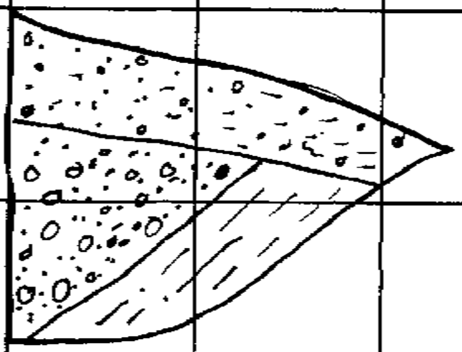
Logged By: AH

Date Excavated: 3/27/06

Client: Pardee Homes

Depth (ft)	Description	Comments
0 - 2	<u>Alluvium</u>: Brown silty SAND with gravel and cobbles, abundant roots and roothairs, loose.	
2 - 3	Cobbles, gravel and sand, wet, loose.	
3 - 8	<u>Saugus Formation</u>: Orange, white, and tan CONGLOMERATE with contact to brown clayey SILTSTONE, moist, very stiff, massive.	@5' Contact N88W/5SW
	Total Depth - 8' Wet from 2-3' No caving Backfilled	

Graphic Log



scale 1" = 5'

GEOLABS-WESTLAKE VILLAGE

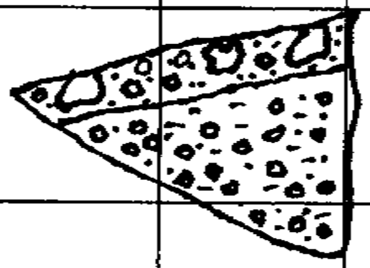
W.O. 8838.002

PLATE TP27

LOG OF EXCAVATION Trench No. TP28	Logged By: AH	Date Excavated: 3/27/06	Client: Pardee Homes

Depth (ft)	Description	Comments
0 - 2	Alluvium: Brown clayey fine to coarse grained SAND with gravel and (5-10%) boulders, pockets of friable medium to coarse SAND with gravel and boulders, wet, medium dense, roots.	
2 - 6	Saugus Formation: Gravel CONGLOMERATE with orangish tan medium to coarse sand matrix, very moist, very dense, massive.	
	Total Depth - 6' Wet to 2' No caving Backfilled	

Graphic Log



scale 1" = 5'	GEOLABS-WESTLAKE VILLAGE	W.O. 8838.002	PLATE TP28

LOG OF EXCAVATION
Trench No. TP29

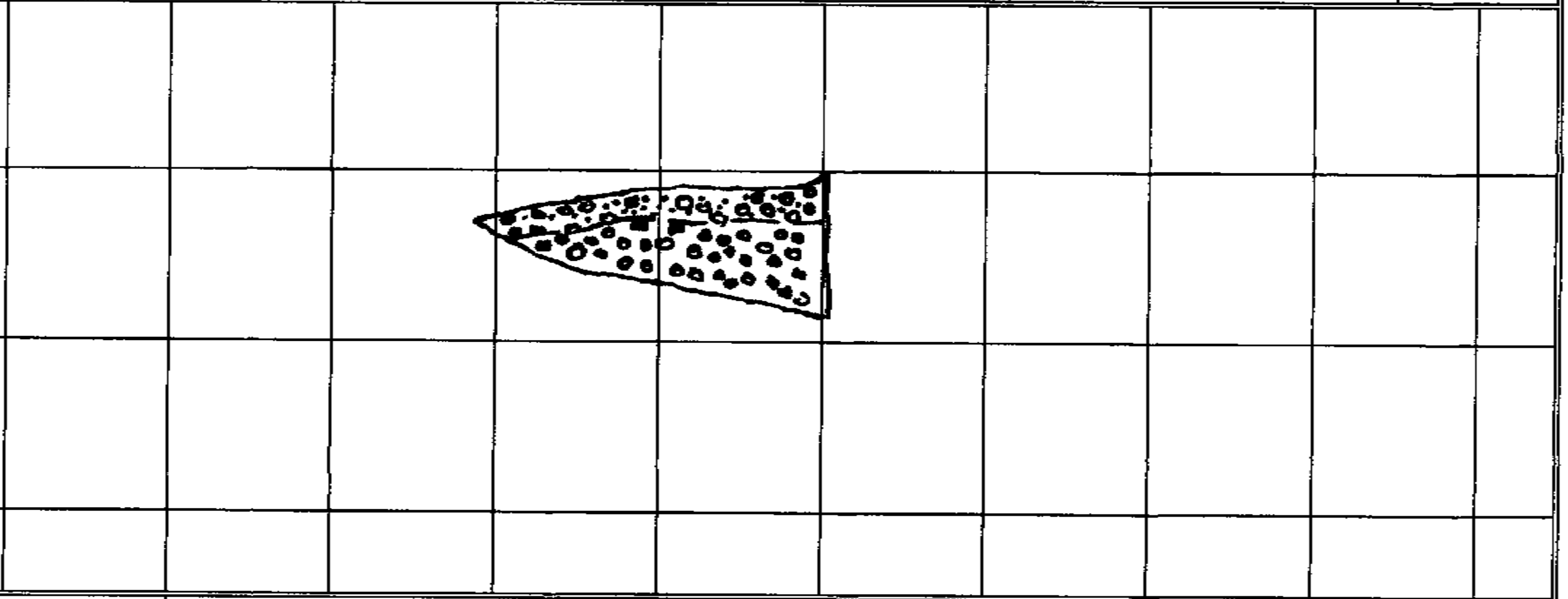
Logged By: AH

Date Excavated: 3/27/06

Client: Pardee Homes

Depth (ft)	Description	Comments
0 - 1	<u>Alluvium</u>: Brown silty SAND with gravel and cobbles, moist, loose, roots and roothairs.	
1 - 4.5	<u>Saugus Formation</u>: Orangish brown CONGLOMERATE, moist, dense, weathered, roothairs.	
	Total Depth - 4.5' No groundwater No caving Backfilled	

Graphic Log



scale 1" = 5'

GEOLABS-WESTLAKE VILLAGE

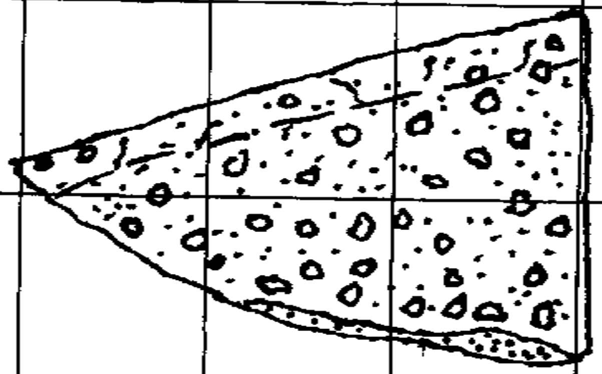
W.O. 8838.002

PLATE TP29

LOG OF EXCAVATION
Trench No. TP30
Logged By: AH
Date Excavated: 3/27/06
Client: Pardee Homes

Depth (ft)	Description	Comments
0 - 1	<u>Colluvium</u>: Brown silty SAND with gravel, roots, very moist.	
1 - 8.5	<u>Saugus Formation</u>: Orangish brown medium to coarse grained SANDSTONE with gravel and cobbles, friable, moist, dense, massive.	
	Total Depth - 8.5' No groundwater No caving Backfilled	

Graphic Log

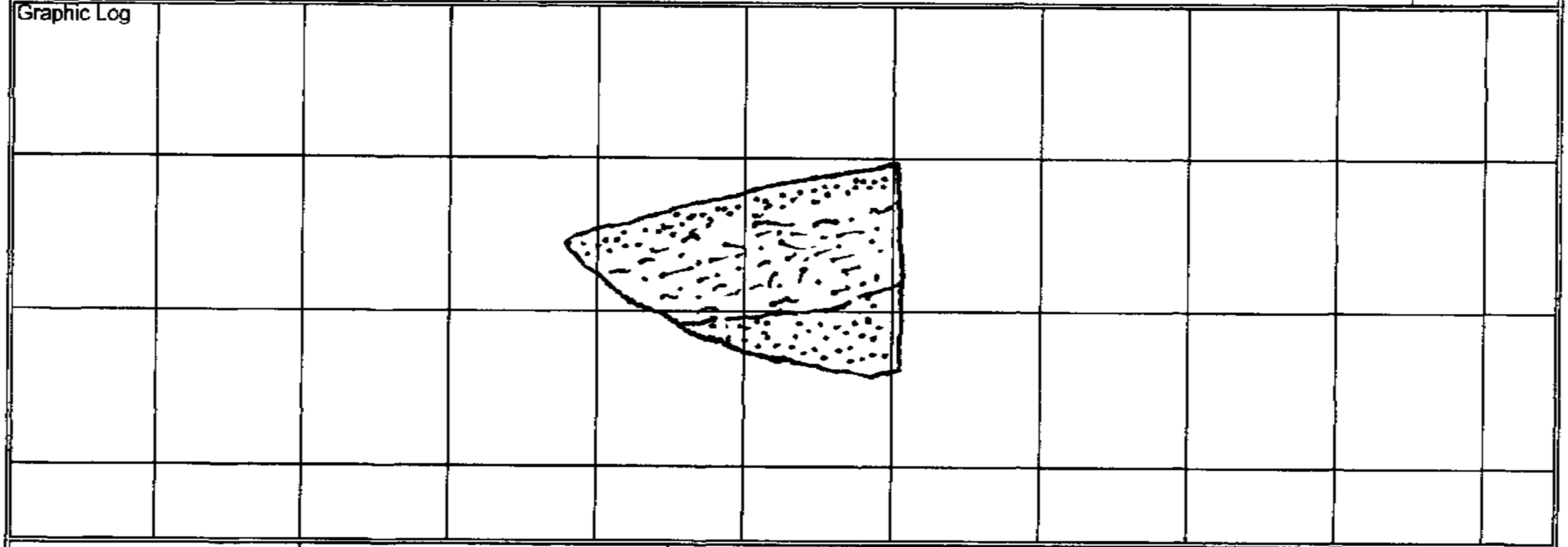


scale 1" = 5'
GEOLABS-WESTLAKE VILLAGE
W.O. 8838.002
PLATE TP30

LOG OF EXCAVATION
Trench No. TP31
Logged By: AH
Date Excavated: 3/27/06
Client: Pardee Homes

Depth (ft)	Description	Comments
0 - 1	<u>Colluvium</u>: Dark brown silty SAND with gravel, moist, loose, roots.	
1 - 2	Light brown sandy SILT, wet, roots and roothairs.	
2 - 4	<u>Saugus Formation</u>: Light brown sandy SILTSTONE, hard, weathered, moist to very moist, very stiff, massive.	
4 - 6.5	Brown fine to coarse grained SANDSTONE with gravel and cobbles, moist, dense, friable, massive.	
	Total Depth - 6.5' Wet from 1-2' No caving Backfilled	

Graphic Log



scale 1" = 5'
GEOLABS-WESTLAKE VILLAGE
W.O. 8838.002
PLATE TP31

LOG OF EXCAVATION
Trench No. TP32

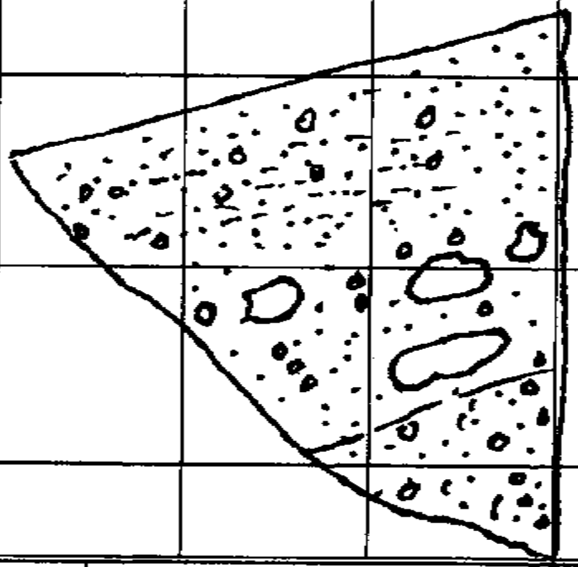
Logged By: AH

Date Excavated: 3/27/06

Client: Pardee Homes

Depth (ft)	Description	Comments
0 - 4	<u>Colluvium</u>: Brown silty SAND with gravel and cobbles, loose, very moist.	
4 - 8	Brown silty SAND with gravel, cobbles, and boulders, boulders (approximately 20% up to 3' diameter), very moist, loose.	
8 - 11	<u>Mint Canyon Formation</u>: Tan gravelly SANDSTONE with cobbles, massive, weathered, friable, moist, dense.	
11 - 13	Tan gravelly SANDSTONE with cobbles, massive, friable, moist, dense.	
	Total Depth - 13' No groundwater No caving Backfilled	

Graphic Log



scale 1" = 5'

GEOLABS-WESTLAKE VILLAGE

W.O. 8838.002

PLATE TP32

LOG OF EXCAVATION
Trench No. TP33

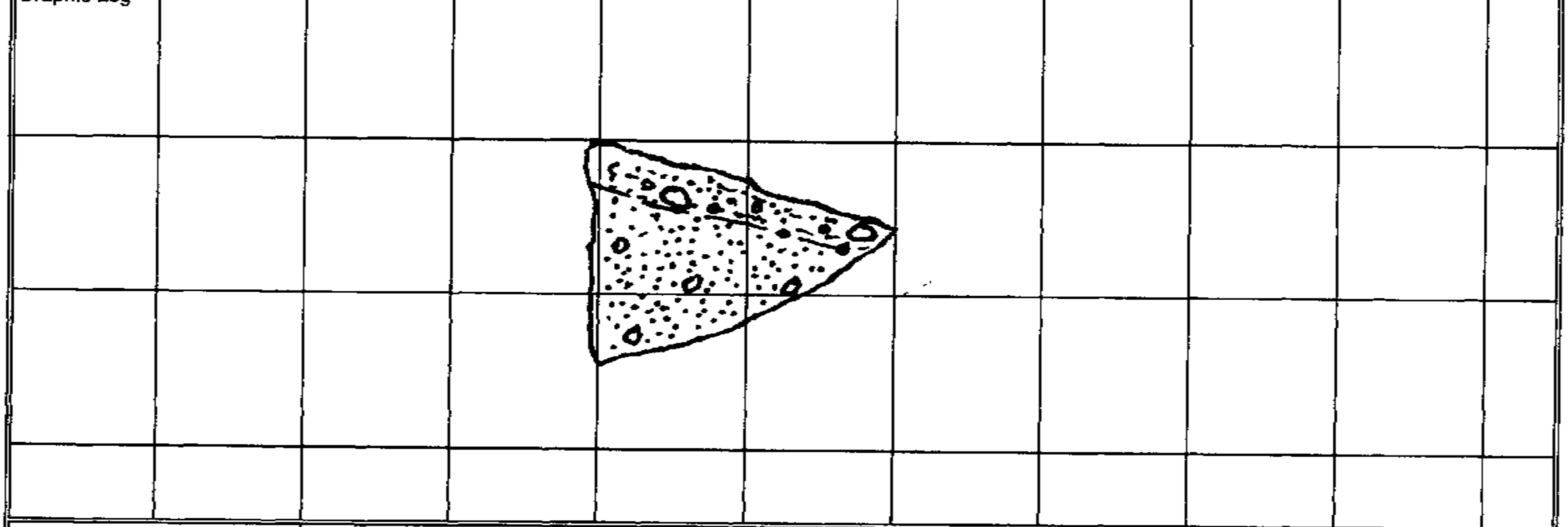
Logged By: AH

Date Excavated: 3/27/06

Client: Pardee Homes

Depth (ft)	Description	Comments
0 - 2	Colluvium: Brown sandy SILT with gravel and cobbles (less than 5% boulders), very moist, stiff.	
2 - 7	Mint Canyon Formation: Gray fine grained SANDSTONE, moist, very dense, weakly cemented, massive, occasional subrounded cobbles.	
	Total Depth - 7' No groundwater No caving Backfilled	

Graphic Log



scale 1" = 5'

GEOLABS-WESTLAKE VILLAGE

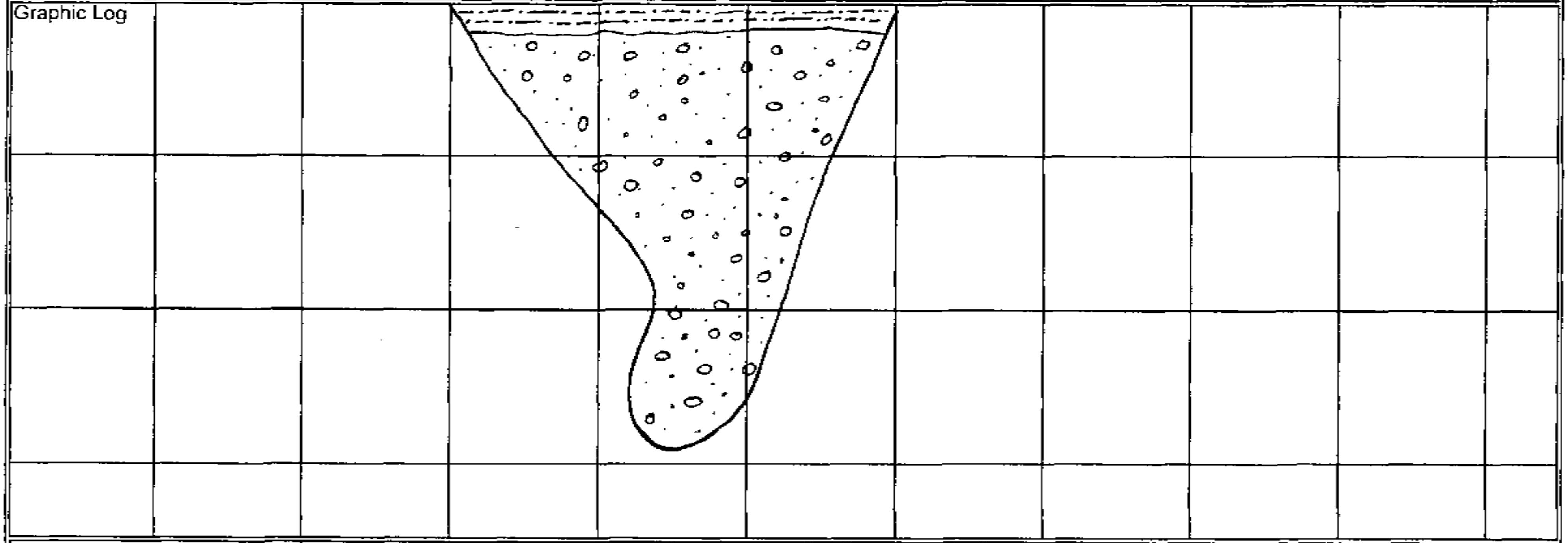
W.O. 8838.002

PLATE TP33

LOG OF EXCAVATION
Trench No. TP34
Logged By: RMP
Date Excavated: 4/19/06
Client: Pardee Homes

Depth (ft)	Description	Comments
0 - 1	Topsoil: Very dark brown fine to medium grained sandy clayey SILT, graded, soft, very moist, roots.	
1 - 14.5	Saugus Formation: Tan cobble CONGLOMERATE, rounded to subrounded clasts commonly granitoid, gneiss, and quartzite, well graded, massive, slightly friable, very dense, moist.	
	Total Depth - 14.5' No groundwater No caving Backfilled	

Graphic Log



scale 1" = 5'
GEOLABS-WESTLAKE VILLAGE
W.O. 8838.002
PLATE TP34

LOG OF EXCAVATION
Trench No. TP35

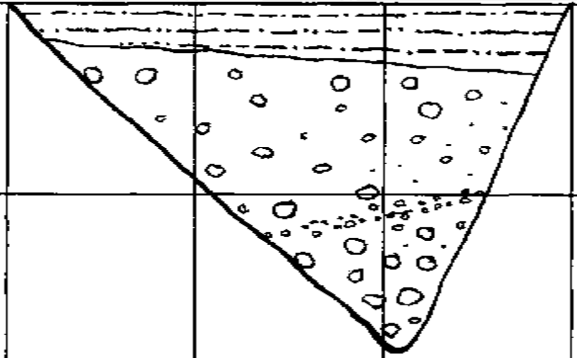
Logged By: RMP

Date Excavated: 4/19/06

Client: Pardee Homes

Depth (ft)	Description	Comments
0 - 2	Topsoil: Very dark brown fine to medium grained sandy clayey SILT, moderately graded, soft, very moist, roots.	
2 - 9	Saugus Formation: Tan cobble CONGLOMERATE, rounded to subrounded clasts commonly granitoid and quartzite, well graded, poorly bedded, slightly friable, dense, moist, roots to 6', gravel lens at 6', largest cobble is 10" in diameter.	@6' BN45E/19NW
	Total Depth - 9' No groundwater No caving Backfilled	

Graphic Log



scale 1" = 5'

GEOLABS-WESTLAKE VILLAGE

W.O. 8838

PLATE TP35

LOG OF EXCAVATION
Trench No. TP36

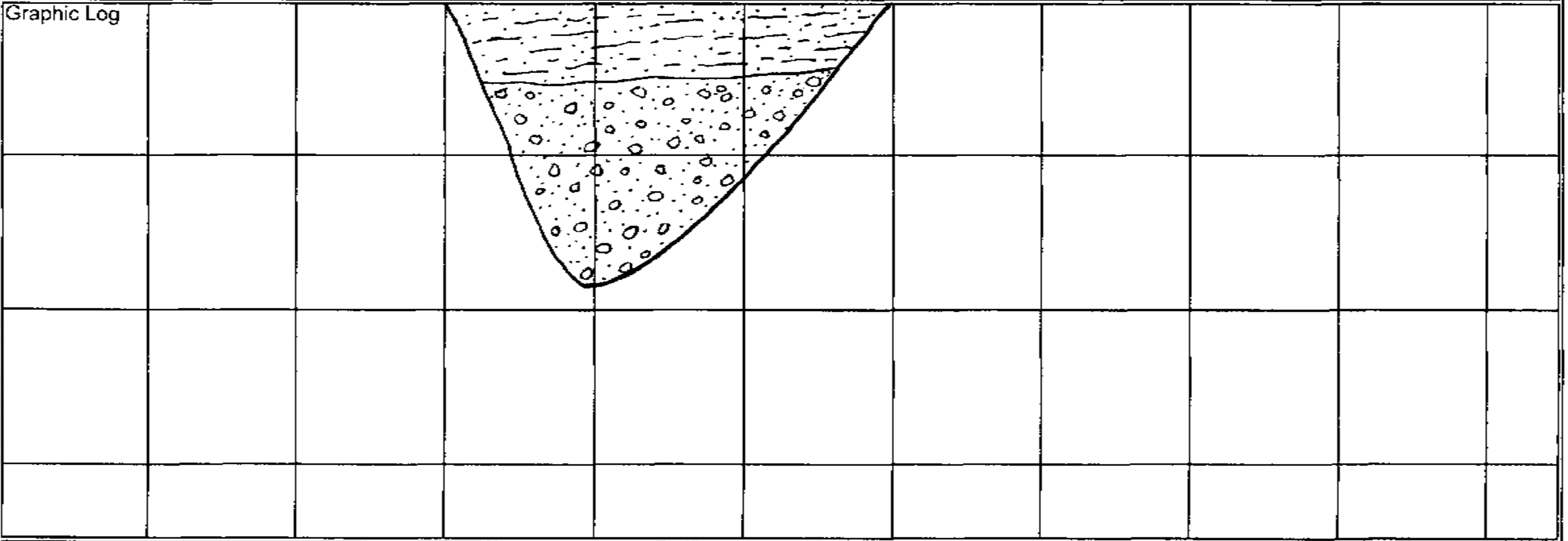
Logged By: RMP

Date Excavated: 4/19/06

Client: Pardee Homes

Depth (ft)	Description	Comments
0 - 2.5	<u>Topsoil</u>: Very dark brown sandy, silty CLAY, with subrounded fine to coarse grained gravel, well graded, soft, moist, roots.	
2.5 - 9	<u>Terrace Deposit</u>: Orange to tan cobble GRAVEL with sand, subrounded to rounded clasts commonly gneiss, volcanic and granitoid, well graded, massive, slightly friable, dense, dry to very moist (inconsistent moisture).	
	Total Depth - 9' No groundwater No caving Backfilled	

Graphic Log



scale 1" = 5'

GEOLABS-WESTLAKE VILLAGE

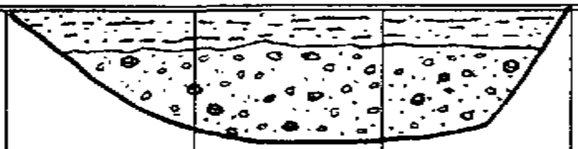
W.O. 8838.002

PLATE TP36

LOG OF EXCAVATION
Trench No. TP37
Logged By: RMP
Date Excavated: 4/19/06
Client: Pardee Homes

Depth (ft)	Description	Comments
0 - 1	Topsoil: Very dark brown fine to medium grained sandy clayey SILT, graded, soft, moist, roots.	
1 - 3	Saugus Formation: Orange to tan gravel CONGLOMERATE, subrounded clasts, well graded, massive, weakly cemented, very dense, moist, roots throughout.	
	Total Depth - 3' No groundwater No caving Refusal at 3' Backfilled	

Graphic Log

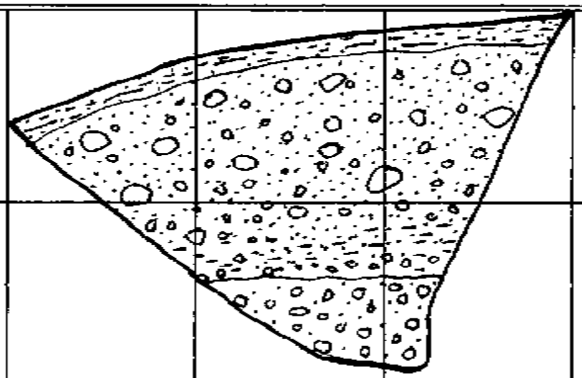


scale 1" = 5'
GEOLABS-WESTLAKE VILLAGE
W.O. 8838.002
PLATE TP37

LOG OF EXCAVATION
Trench No. TP38
Logged By: RMP
Date Excavated: 4/19/06
Client: Pardee Homes

Depth (ft)	Description	Comments
0 - 1	Topsoil: Very dark brown to black fine to coarse grained sandy clayey SILT, graded, soft, moist, abundant roots.	
1 - 7	Saugus Formation: Orange to tan fine to coarse grained sandy cobble GRAVEL, subrounded clasts, well graded, massive, friable, highly weathered, very moist, disturbed by roots.	
7 - 7.5	Interbed of brown fine grained sandy SILTSTONE, moderately graded, stiff, moist, discontinuous.	
7.5 - 9	Orange to tan gravel cobble CONGLOMERATE, subrounded clasts commonly granitoid and quartzite, moderately graded, massive, slightly friable, dense, moist.	
	Total Depth - 9' No groundwater No caving Backfilled	

Graphic Log

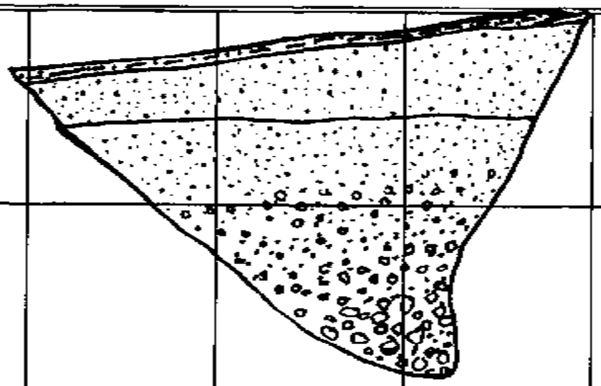


scale 1" = 5'
GEOLABS-WESTLAKE VILLAGE
W.O. 8838.002
PLATE TP38

LOG OF EXCAVATION
Trench No. TP39
Logged By: RMP
Date Excavated: 4/19/06
Client: Pardee Homes

Depth (ft)	Description	Comments
0 - 0.5	Topsoil: Very dark brown to black fine to medium grained sandy clayey SILT, moderately graded, soft, moist, abundant roots.	
0.5 - 3	Terrace Deposit: Tan fine to coarse grained SAND, moderately graded, massive, slightly friable, loose, moist, subrounded clasts commonly quartzite, metaigneous, granitoid, well graded, poorly bedded, friable.	
3 - 9.5	Saugus Formation: Orange to tan interbedded fine to coarse grained SANDSTONE and gravel to cobble CONGLOMERATE, subrounded clasts commonly quartzite, metaigneous, granitoid, well graded, bedded, slightly friable, dense, moist, interbeds occur in fining upwards sequences.	@7.5' N62E/19NW
	Total Depth - 9.5' No groundwater No caving Backfilled	

Graphic Log

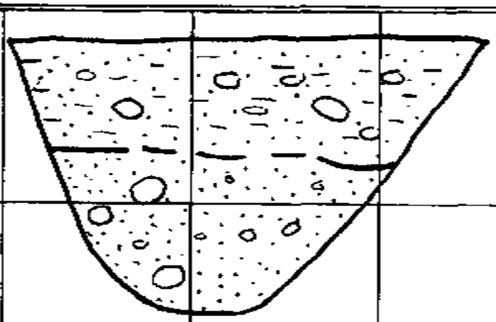


scale 1" = 5'
GEOLABS-WESTLAKE VILLAGE
W.O. 8838.002
PLATE TP39

LOG OF EXCAVATION
Trench No. TP40
Logged By: NM
Date Excavated: 5/23/06
Client: Pardee Homes

Depth (ft)	Description	Comments
0 - 3	Alluvium: Dark brown clayey silty SAND with scattered gravels and cobbles, abundant roots, moist, medium dense.	
3 - 7	Mint Canyon Formation: Light brown to grayish brown CONGLOMERATE with medium grained sand matrix, clasts are typically rounded to subrounded gravels and cobbles (approximately 10-15% greater than 12" diameter), some clasts are weathered and gracture with a hammer strike, well graded, moist, very dense.	
	Total Depth - 7' No groundwater No caving Backfilled	

Graphic Log

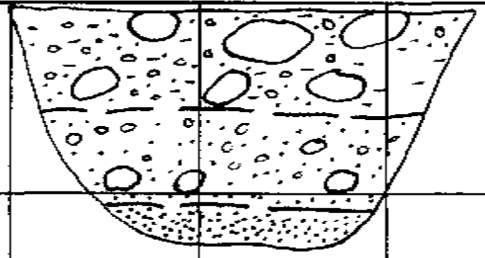


scale 1" = 5'
GEOLABS-WESTLAKE VILLAGE
W.O. 8838
PLATE TP40

LOG OF EXCAVATION
Trench No. TP41
Logged By: NM
Date Excavated: 5/23/06
Client: Pardee Homes

Depth (ft)	Description	Comments
0 - 2.5	Alluvium: Dark brown silty sandy CLAY with abundant rounded to subrounded granitic boulders (mostly on surface and upper 2') up to 3' diameter, approximately 25% are boulders, moist, medium stiff, abundant roots, porous.	
3 - 5	Mint Canyon Formation: Light grayish brown CONGLOMERATE with abundant fractured granitic clasts (mostly less than 1' diameter), well graded, moist, very dense.	
5 - 6	Gradational contact with light brown fine to medium grained SANDSTONE with disseminated organic stains, massive, poorly graded, moist, very dense.	
	Total Depth - 6' No groundwater No caving Backfilled	

Graphic Log

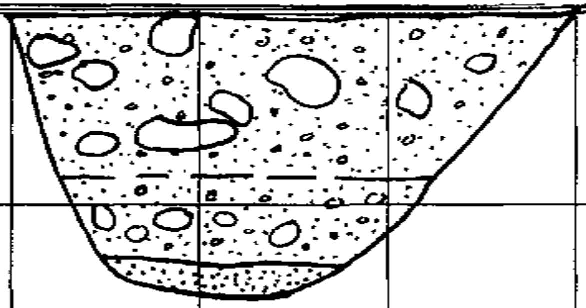


scale 1" = 5'
GEOLABS-WESTLAKE VILLAGE
W.O. 8838
PLATE TP41

LOG OF EXCAVATION Trench No. TP42	Logged By: NM	Date Excavated: 5/23/06	Client: Pardee Homes

Depth (ft)	Description	Comments
0 - 4	Alluvium: Dark brown sandy silty CLAY with dispersed rounded and subrounded granitic boulders up to 3' diameter (approximately 25% are greater than 12" diameter), very moist, medium stiff, rootlets.	
4 - 6	Dark brown clayey fine to coarse grained SAND with gravels, cobbles, and lesser boulders (less than 10%), well graded, moist, dense.	
6 - 7	Mint Canyon Formation: Sharp undulating contact with light grayish to yelllowish brown medium grained SANDSTONE with occasional coarse sand lenses, moderately graded, moist, very dense.	
	Total Depth - 7' No groundwater No caving Backfilled	

Graphic Log

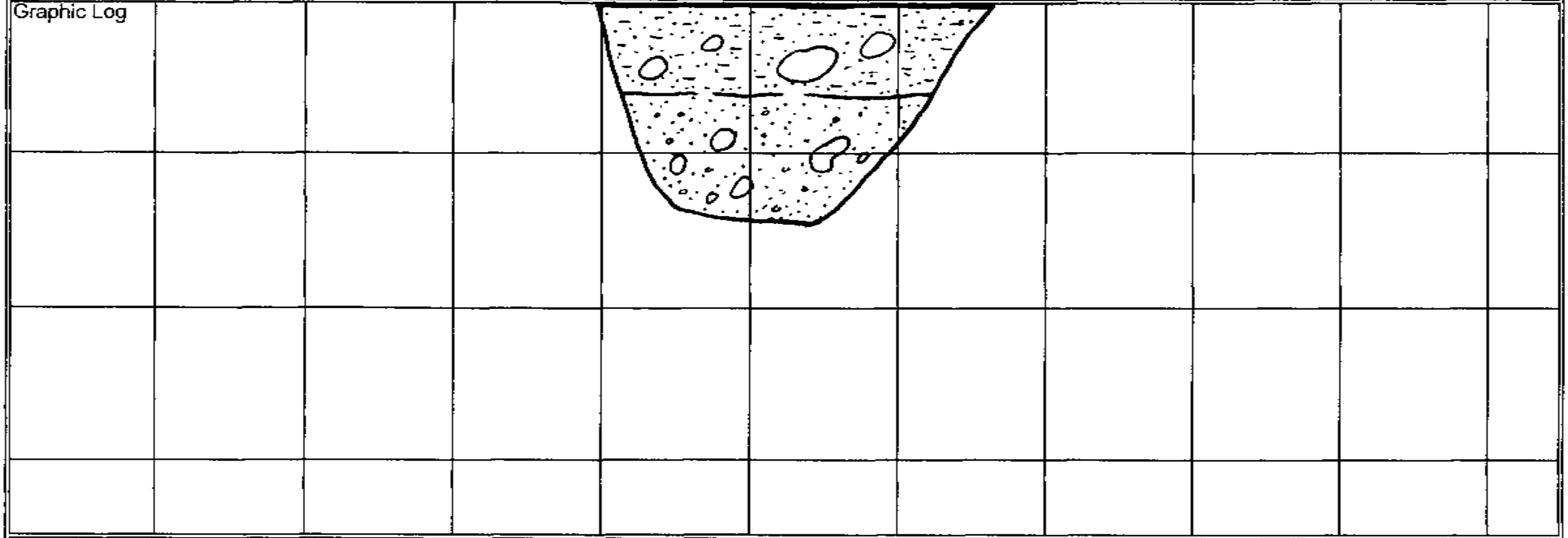


scale 1" = 5'	GEOLABS-WESTLAKE VILLAGE	W.O. 8838	PLATE TP42

LOG OF EXCAVATION
Trench No. TP43
Logged By: NM
Date Excavated: 5/23/06
Client: Pardee Homes

Depth (ft)	Description	Comments
0 - 3	<u>Colluvium</u>: Dark brown sandy silty CLAY with occasional boulders up to 18" diameter (approximately 10% boulders), rootlets, moist, medium stiff, pinhole porosity.	
3 - 7	<u>Mint Canyon Formation</u>: Light brown to yellowish brown sandy gravel cobble CONGLOMERATE with sparse boulders up to 13" diameter, well graded, subrounded to rounded clasts (mostly granitic with abundant fractures in clasts, moist, very dense.	
	Total Depth - 7' No groundwater No caving Backfilled	

Graphic Log



scale 1" = 5'
GEOLABS-WESTLAKE VILLAGE
W.O. 8838
PLATE TP43

LOG OF EXCAVATION
Trench No. TP44

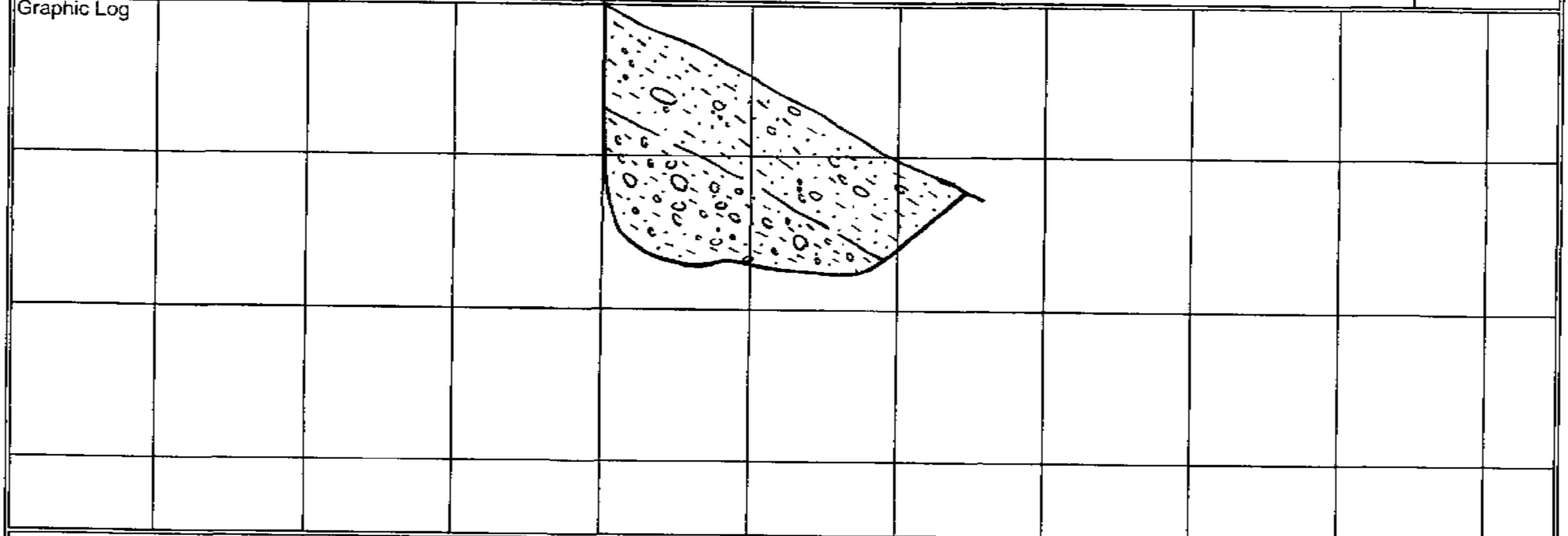
Logged By: NM

Date Excavated: 5/23/06

Client: Pardee Homes

Depth (ft)	Description	Comments
0 - 3.5	Topsoil: Dark brown silty sandy CLAY with occasional cobbles, roots/rootlets, pinhole porosity, moist, medium stiff.	
3.5 - 7	Mint Canyon Formation: Light orangish brown sandy gravel cobble CONGLOMERATE, subangular to rounded clasts, massive, well graded,moist, very dense.	
	Total Depth - 7' No groundwater No caving Backfilled	

Graphic Log



scale 1" = 5'

GEOLABS-WESTLAKE VILLAGE

W.O. 8838

PLATE TP44

LOG OF EXCAVATION
Trench No. TP45

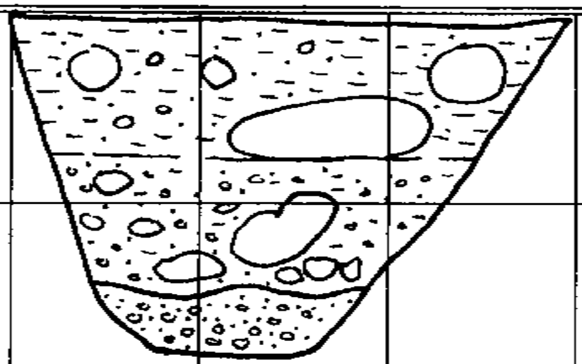
Logged By: NM

Date Excavated: 5/23/06

Client: Pardee Homes

Depth (ft)	Description	Comments
0 - 3.5	<u>Topsoil/Alluvium</u>: Dark brown sandy silty CLAY with sparse boulders and cobbles, typically 1-2' diameter, one 4' diameter boulder at 3-4' depth, moist, medium stiff.	
3.5 - 7	<u>Alluvium</u>: Medium to dark brown silty clayey SAND with dispersed cobbles and boulders (approximately 25-30%), granitic clasts typically 8" to 18" in diameter up to 2', poorly graded at base (higher concentration of boulders).	
7 - 8.5	<u>Mint Canyon Formation</u>: Irregular contact (undulating amplitude approximately 8") with light brown sandy CONGLOMERATE with boulders up to 12" diameter, well graded, moist, very dense.	
	Total Depth - 8.5' No groundwater No caving Backfilled	

Graphic Log



scale 1" = 5'

GEOLABS-WESTLAKE VILLAGE

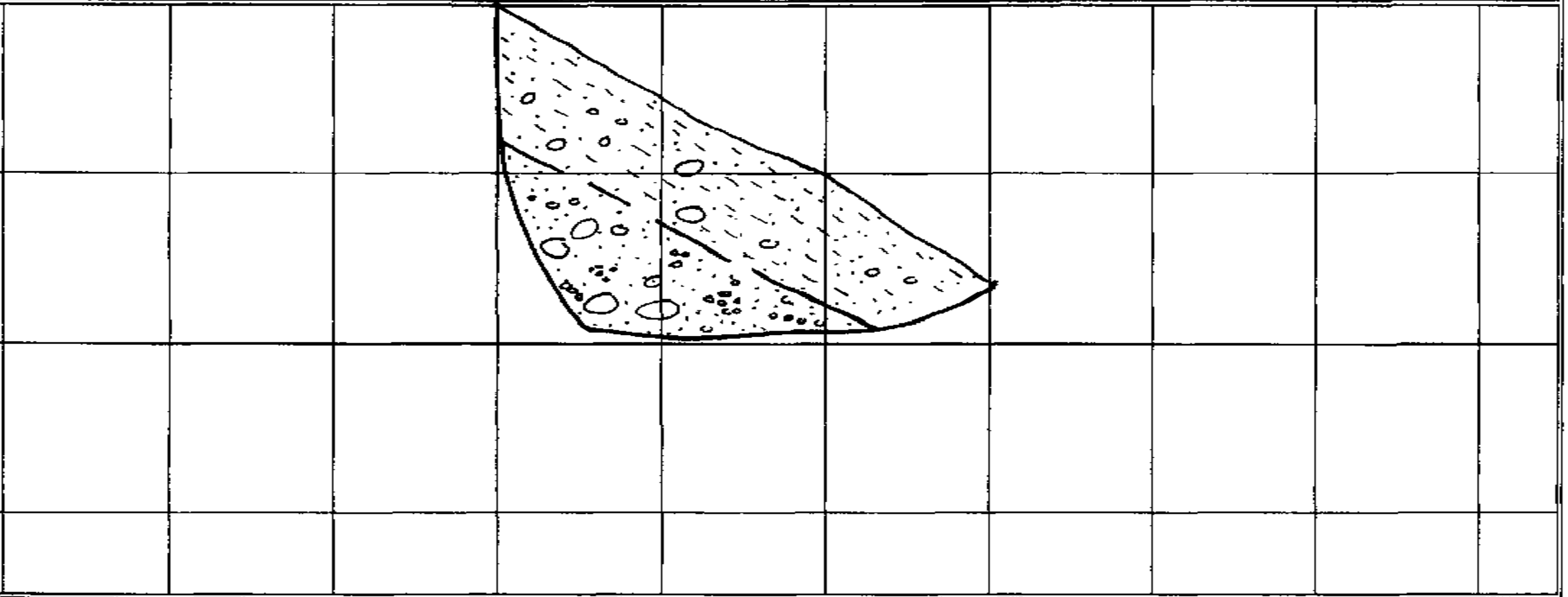
W.O. 8838

PLATE TP45

LOG OF EXCAVATION
Trench No. TP46
Logged By: NM
Date Excavated: 5/23/06
Client: Pardee Homes

Depth (ft)	Description	Comments
0 - 3.5	<u>Topsoil</u>: Medium to dark brown silty clayey SAND with gravels and lesser cobbles.	
3.5 - 8	<u>Landslide Deposit</u>: Light brown to yellowish brown sandy gravel cobble CONGLOMERATE, approximately 30% sandstone matrix, well graded, massive, moist, very dense, no clasts greater than 12" observed.	
	Total Depth - 8' No groundwater No caving Backfilled	

Graphic Log

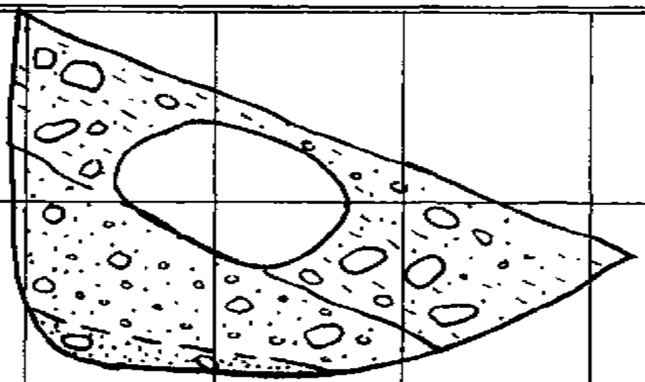


scale 1" = 5'
GEOLABS-WESTLAKE VILLAGE
W.O. 8838
PLATE TP46

LOG OF EXCAVATION
Trench No. TP47
Logged By: NM
Date Excavated: 5/23/06
Client: Pardee Homes

Depth (ft)	Description	Comments
0 - 4	<u>Alluvium</u>: Dark brown silty sandy CLAY with dispersed angular to rounded gravels, cobbles and lesser boulders, typically up to 16" diameter (approximately 10% greater than 12" diameter clasts), single approximately 5' by 3' rounded granitic boulder at surface down to approximately 3.5', moist, medium stiff.	
4 - 7	<u>Landslide Deposit</u>: Light brown to grayish brown sandy gravel cobble CONGLOMERATE with sparse boulders up to 16" diameter (approximately 2-4' apart), well graded, moist, very dense.	
7 - 8	Gradational contact with light brown to light grayish brown fine to medium grained SANDSTONE with gravels and lesser cobbles, moderately graded, massive, moist, very dense.	
	Total Depth - 8' No groundwater No caving Backfilled	

Graphic Log



scale 1" = 5'
GEOLABS-WESTLAKE VILLAGE
W.O. 8838
PLATE TP47

LOG OF EXCAVATION
Trench No. TP48

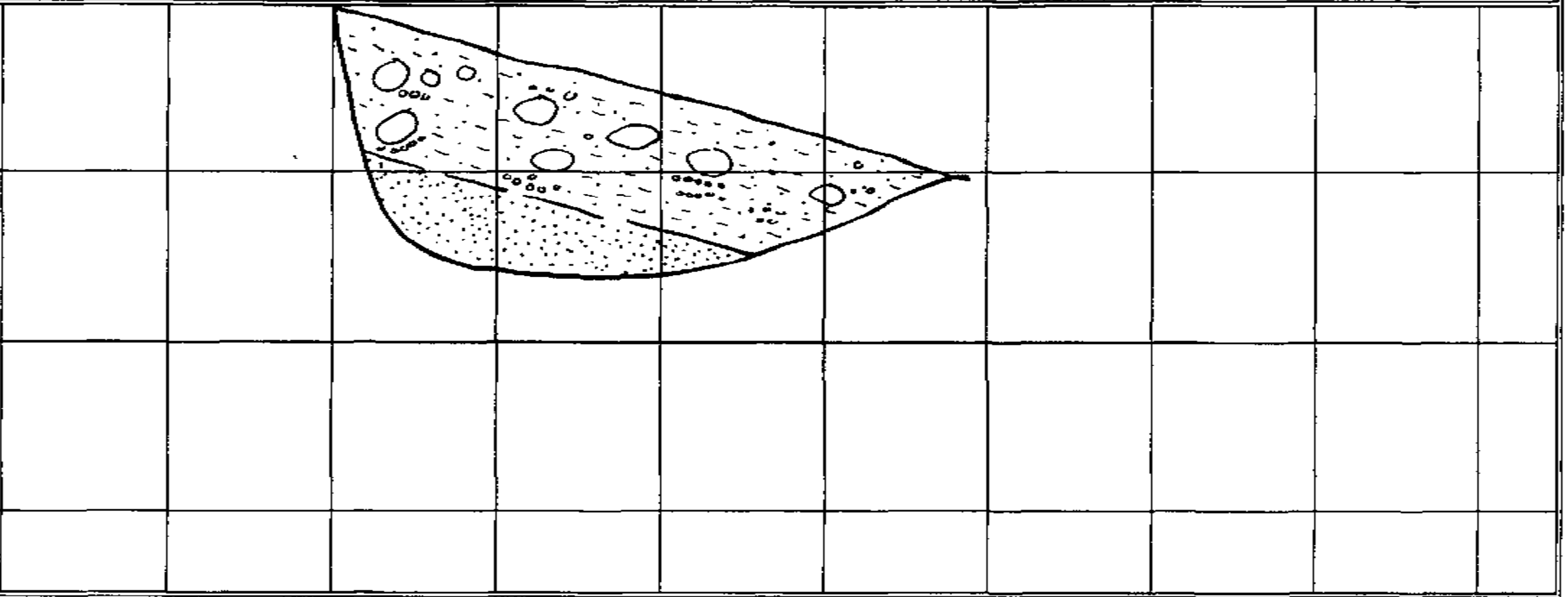
Logged By: NM

Date Excavated: 5/23/06

Client: Pardee Homes

Depth (ft)	Description	Comments
0 - 4	Alluvium: Dark brown clayey fine to coarse grained SAND and gravelly SAND with abundant cobbles and boulders up to 3' diameter, clasts are mostly granitic and subrounded, approximately 50% greater than 12", moist, medium stiff.	
4 - 6.5	Mint Canyon Formation: Light gray fine grained SANDSTONE, poorly graded, massive, discontinuous disseminated organic stringers 1-2cm thick, slightly moist, very dense.	
	Total Depth - 6.5' No groundwater No caving Backfilled	

Graphic Log



scale 1" = 5'

GEOLABS-WESTLAKE VILLAGE

W.O. 8838

PLATE TP48

LOG OF EXCAVATION
Trench No. TP49

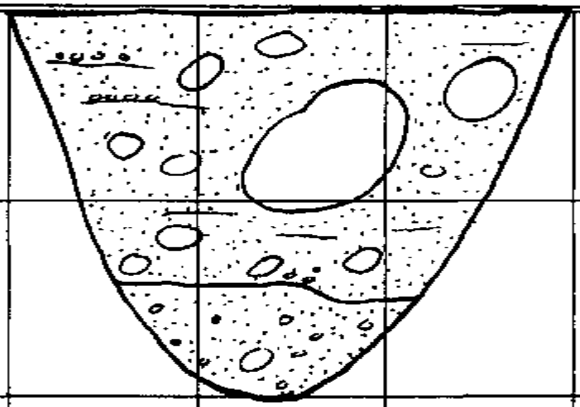
Logged By: NM

Date Excavated: 5/24/06

Client: Pardee Homes

Depth (ft)	Description	Comments
0 - 7	Alluvium: Medium and light brown clayey silty fine to coarse grained SAND with cobbles and boulders (one up to 4' diameter), crudely bedded, slightly friable at base, moist, medium dense, approximately 35-40% is greater than 12" diameter, typically 12-24".	
7 - 10	Mint Canyon Formation: Light brown sandy CONGLOMERATE with occasional boulders up to approximately 12" diameter, well graded, moist, very dense.	
	Total Depth - 10' No groundwater No caving Backfilled	

Graphic Log



scale 1" = 5'

GEOLABS-WESTLAKE VILLAGE

W.O. 8838

PLATE TP49

LOG OF EXCAVATION
Trench No. TP50

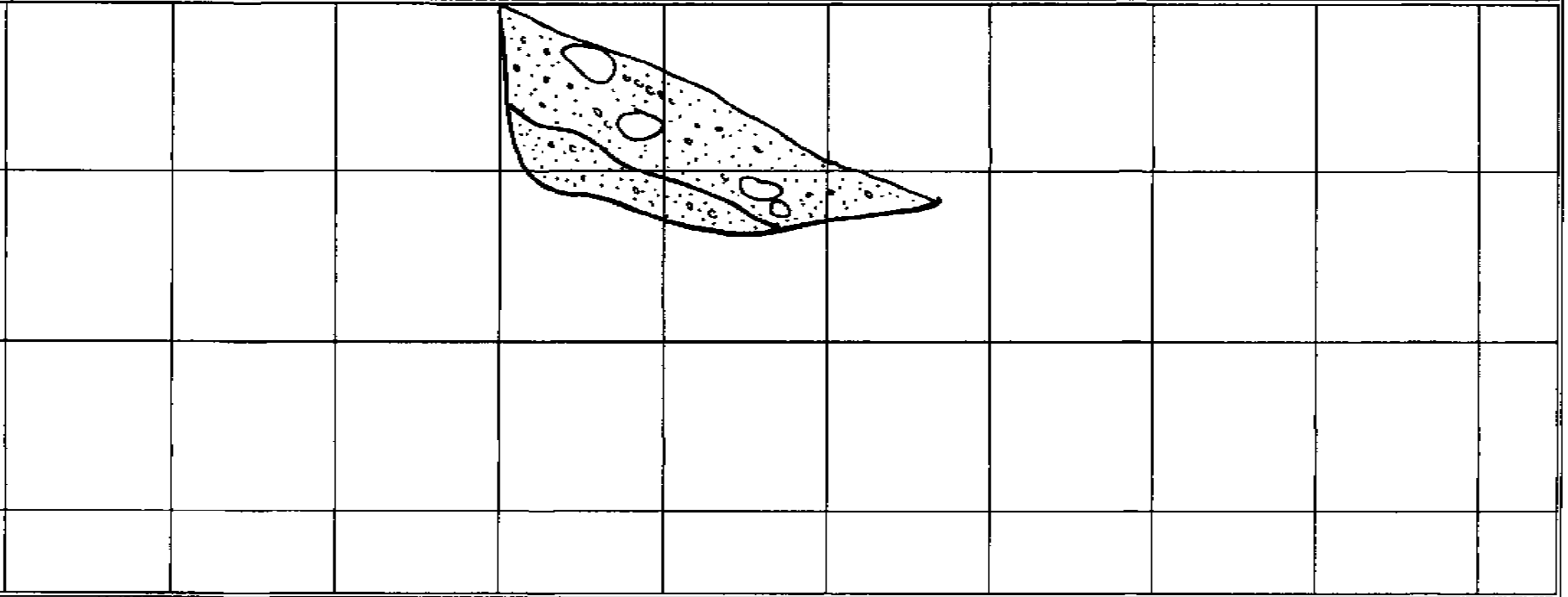
Logged By: NM

Date Excavated: 5/24/06

Client: Pardee Homes

Depth (ft)	Description	Comments
0 - 3	Alluvium: Dark brown clayey silty fine to coarse grained gravelly SAND with cobbles and boulders up to 2' diameter, approximately 25% greater than 12" diameter, well graded, slightly moist, *slightly friable*, dense.	
3 - 4.5	Mint Canyon Formation: Light gray fine to coarse grained gravelly SANDSTONE to sandy gravel CONGLOMERATE with cobbles up to 10" diameter, massive, slightly moist, very dense.	
	Total Depth - 4.5' No groundwater No caving Backfilled	

Graphic Log



scale 1" = 5'

GEOLABS-WESTLAKE VILLAGE

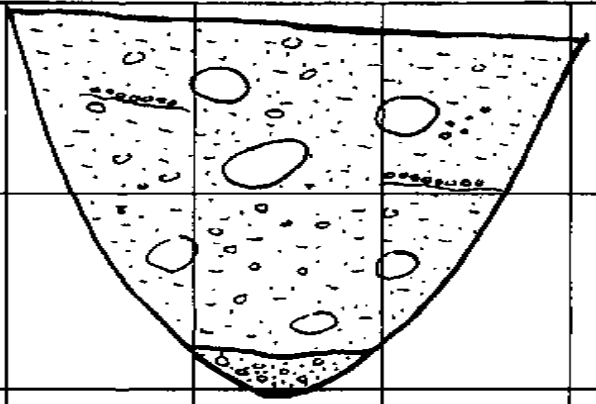
W.O. 8838

PLATE TP50

LOG OF EXCAVATION
Trench No. TP51
Logged By: NM
Date Excavated: 5/24/06
Client: Pardee Homes

Depth (ft)	Description	Comments
0 - 8.5	Alluvium: Dark brown fine to coarse grained sandy CLAY and clayey SAND with gravels, cobbles, and lesser boulders (approximately 25% greater than 12" diameter), well graded, moist, medium stiff/medium dense to dense with depth.	
8.5 - 9.5	Mint Canyon Formation: Light gray fine to coarse grained gravel cobble CONGLOMERATE with occasional boulders up to 16" diameter, approximately 5% greater than 12" diameter, moist, very dense.	
	Total Depth - 9.5' No groundwater No caving Backfilled	

Graphic Log



scale 1" = 5'
GEOLABS-WESTLAKE VILLAGE
W.O. 8838
PLATE TP51

LOG OF EXCAVATION
Trench No. TP52

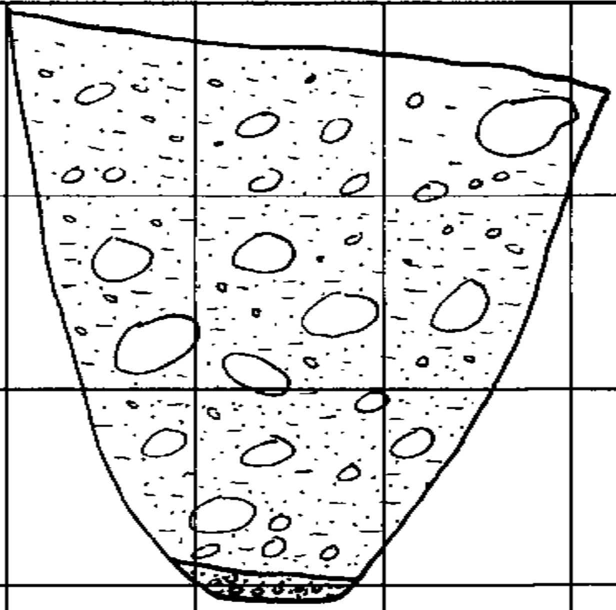
Logged By: NM

Date Excavated: 5/24/06

Client: Pardee Homes

Depth (ft)	Description	Comments
0 - 13.5	Colluvium: Medium brown clayey silty fine to coarse grained SAND with abundant subangular to rounded gravels, cobbles, and lesser boulders up to 3' diameter (approximately 10-15% greater than 12" diameter), well graded, coarsening with depth, moist, medium dense to dense with depth.	
13.5 - 14	Mint Canyon Formation: Light gray sandy CONGLOMERATE, well graded, moist, very dense.	
	Total Depth - 14' No groundwater No caving Backfilled	

Graphic Log



scale 1" = 5'

GEOLABS-WESTLAKE VILLAGE

W.O. 8838

PLATE TP52

LOG OF EXCAVATION
Trench No. TP53

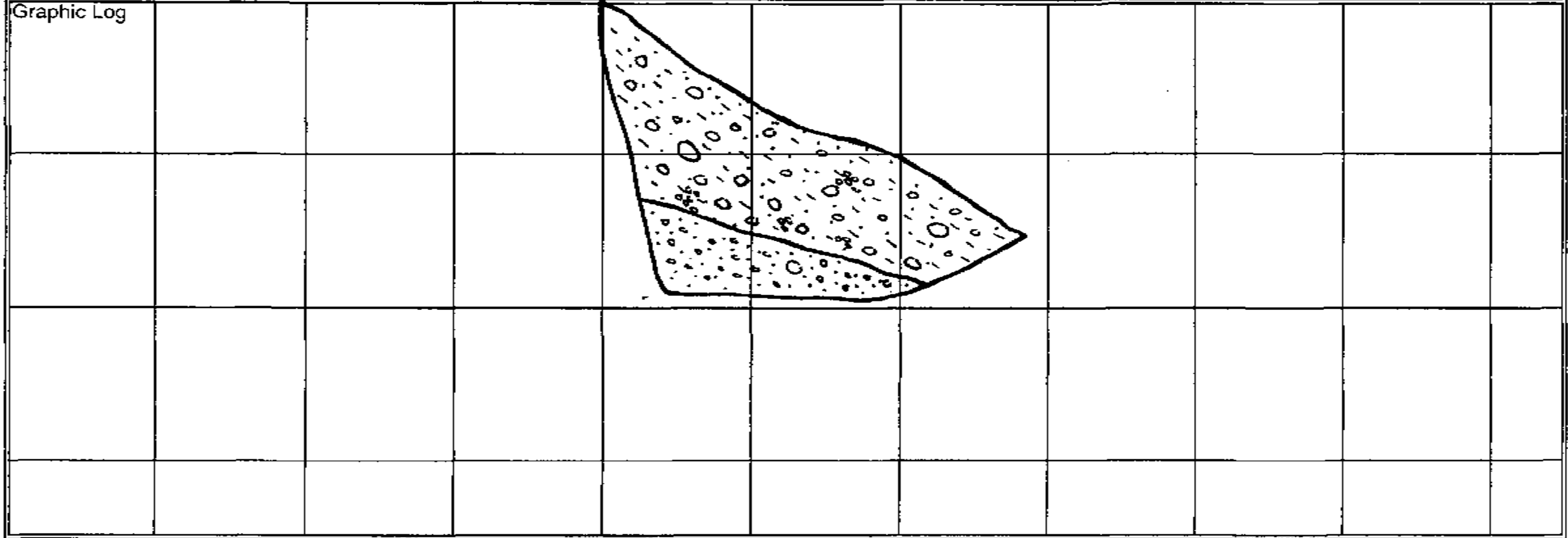
Logged By: NM

Date Excavated: 5/24/06

Client: Pardee Homes

Depth (ft)	Description	Comments
0 - 7.5	Colluvium: Medium brown silty sandy CLAY and clayey SAND with abundant subangular to rounded gravels and cobbles (no boulders observed), well graded, massive, moist, very stiff.	
7.5 - 9	Mint Canyon Formation: Light gray sandy gravel CONGLOMERATE, slightly moist, very dense.	
	Total Depth - 9' No groundwater No caving Backfilled	

Graphic Log



scale 1" = 5'

GEOLABS-WESTLAKE VILLAGE

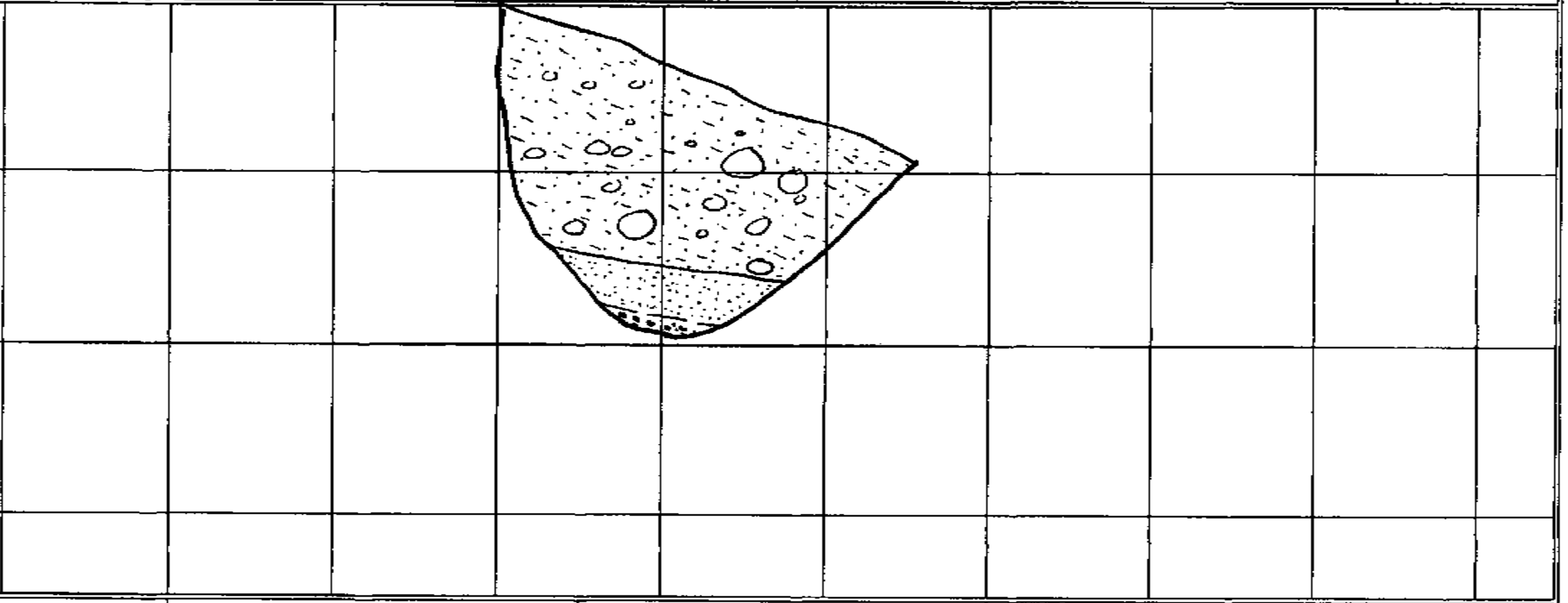
W.O. 8838

PLATE TP53

LOG OF EXCAVATION Trench No. TP54	Logged By: NM	Date Excavated: 5/24/06	Client: Pardee Homes

Depth (ft)	Description	Comments
0 - 6.5	Colluvium: Medium brown silty clayey SAND with gravels and scattered cobbles and boulders up to 14" diameter (approximately 5% greater than 12"), well graded, massive, occasional pinhole porosity, moist, medium dense.	
6.5 - 8.5	Mint Canyon Formation: Light gray fine to medium grained SANDSTONE, poorly graded, massive, moist, very dense.	
@8'	Approximate horizontal contact with gravel CONGLOMERATE.	
	Total Depth - 8.5' No groundwater No caving Backfilled	

Graphic Log



scale 1" = 5'	GEOLABS-WESTLAKE VILLAGE	W.O. 8838	PLATE TP54

LOG OF EXCAVATION
Trench No. TP55

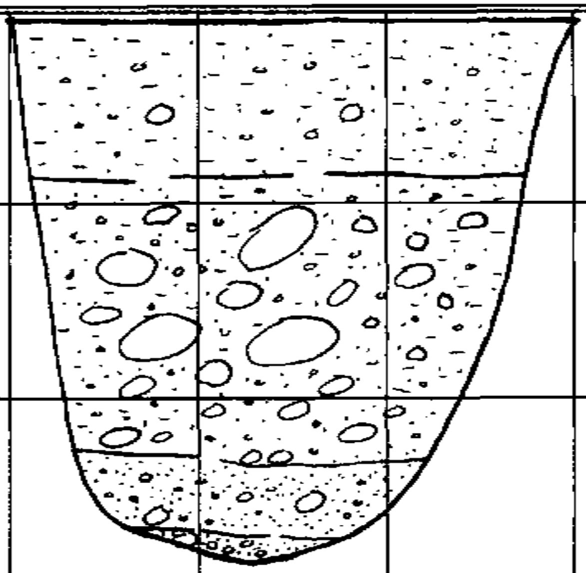
Logged By: NM

Date Excavated: 5/24/06

Client: Pardee Homes

Depth (ft)	Description	Comments
0 - 4	Topsoil: Dark brown sandy CLAY to clayey SAND with gravels and lesser cobbles, massive, pinhole porosity, moist, medium stiff to medium dense.	
4 - 11.5	Alluvium: Medium brown silty clayey gravelly SAND with abundant cobbles and boulders, typically 1-2' diameter up to 3', subangular to rounded clasts, well graded, approximately 35% greater than 12" diameter.	
11.5 - 13.5	Light brown medium to coarse grained SAND with gravels, cobbles, and lesser boulders (approximately 10% up to 1' diameter, low amount of fines, slightly friable, moist, dense to very dense.	
13.5 - 14	Mint Canyon Formation: Light gray sandy CONGLOMERATE, massive, moist, very dense.	
	Total Depth - 14' No groundwater No caving Backfilled	

Graphic Log



scale 1" = 5'

GEOLABS-WESTLAKE VILLAGE

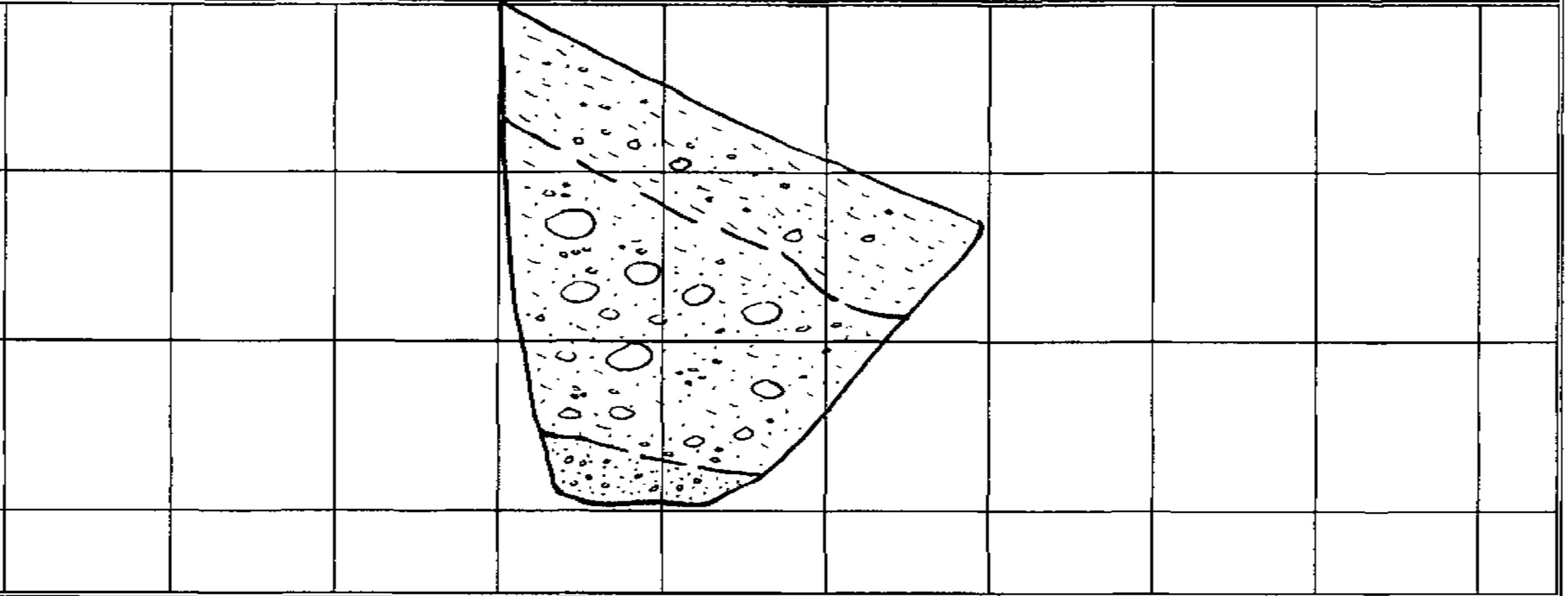
W.O. 8838

PLATE TP55

LOG OF EXCAVATION
Trench No. TP56
Logged By: NM
Date Excavated: 5/24/06
Client: Pardee Homes

Depth (ft)	Description	Comments
0 - 3	<u>Topsoil</u>: Dark brown silty clayey SAND with gravels and occasional cobbles, porous, rootlets, moist, medium dense.	
3 - 12	<u>Alluvium</u>: Light brown clayey silty SAND with subrounded to rounded gravels, cobbles, and lesser boulders up to 2' diameter (approximately 20% greater than 12" diameter), well graded, moist, dense.	
12 - 13.5	<u>Mint Canyon Formation</u>: Light gray brown sandy gravel cobble CONGLOMERATE, moist, very dense, occasional oxidation stains.	
	Total Depth - 13.5' No groundwater No caving Backfilled	

Graphic Log



scale 1" = 5'
GEOLABS-WESTLAKE VILLAGE
W.O. 8838
PLATE TP56

LOG OF EXCAVATION
Trench No. TP57

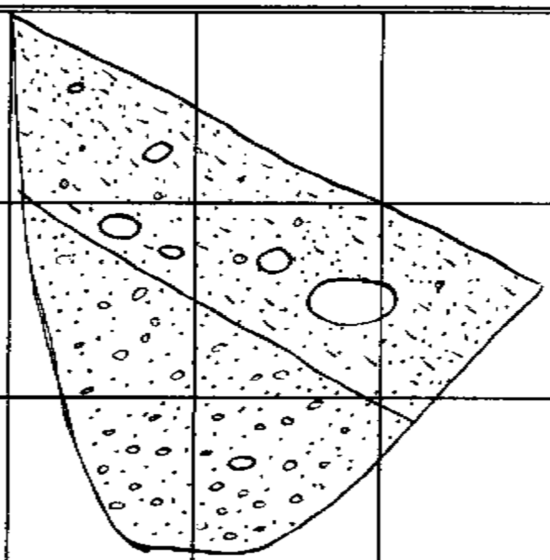
Logged By: NM

Date Excavated: 5/25/06

Client: Pardee Homes

Depth (ft)	Description	Comments
0 - 5	Colluvium: Dark brown silty clayey SAND with gravels and occasional cobbles and boulders (approximately 5% greater than 12" diameter and one clast up to 2' diameter), moist, medium dense.	
5 - 12.5	Mint Canyon Formation: Light gray fine to medium grained gravelly SANDSTONE with dispersed cobbles, well graded, massive, moist to very moist, very dense.	
	Total Depth - 12.5' No groundwater No caving Backfilled	

Graphic Log



scale 1" = 5'

GEOLABS-WESTLAKE VILLAGE

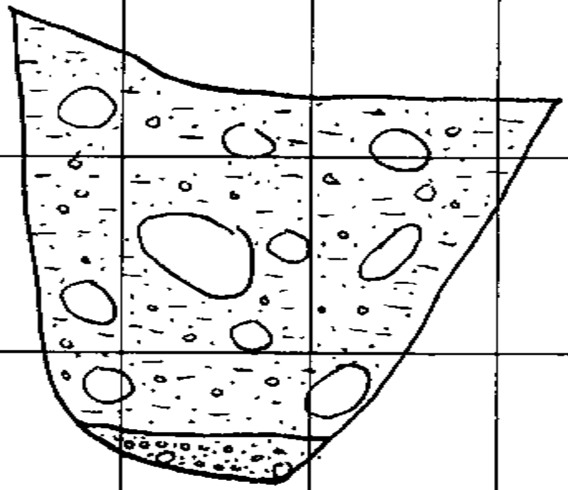
W.O. 8838

PLATE TP57

LOG OF EXCAVATION
Trench No. TP58
Logged By: NM
Date Excavated: 5/25/06
Client: Pardee Homes

Depth (ft)	Description	Comments
0 - 8	Alluvium: Dark brown fine to coarse grained sandy CLAY with abundant gravels, cobbles and lesser boulders (approximately 30% greater than 12" diameter), well graded, moist to very moist, medium stiff.	
8 - 10	Mint Canyon Formation: Light gray fine to coarse grained gravel cobble CONGLOMERATE with occasional boulders approximately 12" diameter, well graded, moist, very dense.	
	Total Depth - 10' No groundwater No caving Backfilled	

Graphic Log

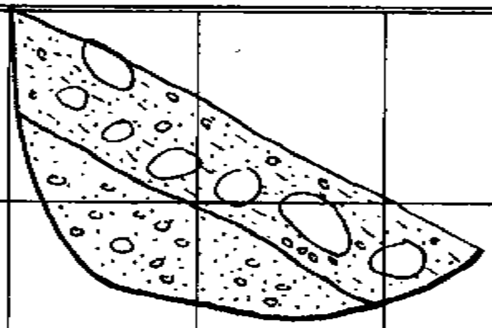


scale 1" = 5'
GEOLABS-WESTLAKE VILLAGE
W.O. 8838
PLATE TP58

LOG OF EXCAVATION Trench No. TP59	Logged By: NM	Date Excavated: 5/25/06	Client: Pardee Homes

Depth (ft)	Description	Comments
0 - 3	Colluvium: Medium brown silty SAND with gravels and abundant cobbles and boulders (approximately 35% greater than 12" diameter), clasts are subangular to rounded, typically 12"-18" diameter up to 2', well graded, moist, medium dense.	
3 - 6	Mint Canyon Formation; Light gray sandy gravel cobble CONGLOMERATE, well graded, massive, slightly moist, very dense.	
	Total Depth - 6' No groundwater No caving Backfilled	

Graphic Log



scale 1" = 5'

GEOLABS-WESTLAKE VILLAGE

W.O. 8838

PLATE TP59

LOG OF EXCAVATION
Trench No. TP60

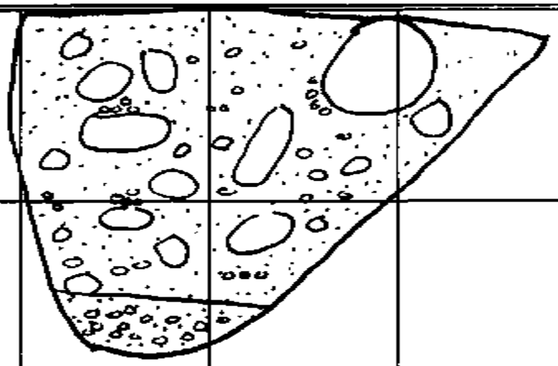
Logged By: NM

Date Excavated: 5/25/06

Client: Pardee Homes

Depth (ft)	Description	Comments
0 - 7.5	Alluvium: Medium brown silty SAND with abundant gravels, cobbles, and boulders (30% greater than 12" diameter), well graded, slightly moist, medium dense, several clasts up to 3' diameter.	
7.5 - 9	Mint Canyon Formation: Light gray gravel cobble CONGLOMERATE, well graded, slightly moist, very dense.	
	Total Depth - 9' No groundwater No caving Backfilled	

Graphic Log



scale 1" = 5'

GEOLABS-WESTLAKE VILLAGE

W.O. 8838

PLATE TP60

LOG OF EXCAVATION
Trench No. TP61

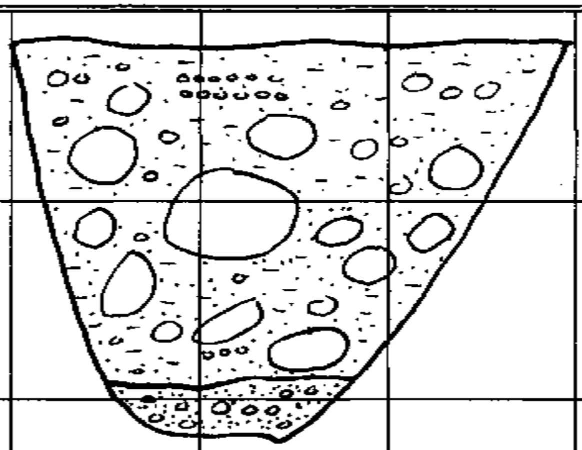
Logged By: NM

Date Excavated: 5/25/06

Client: Pardee Homes

Depth (ft)	Description	Comments
0 - 8.5	Alluvium: Medium brown silty SAND and fine to coarse grained SAND with abundant gravels, cobbles, and lesser boulders (approximately 35% greater than 12" diameter), subangular to rounded clasts typically 18" to 24" diameter, well graded, moist to very moist at depth, slightly friable, medium dense.	
8.5 - 10	Mint Canyon Formation: Light gray sandy gravel cobble CONGLOMERATE with occasional boulders (typically 12" to 16" diameter), well graded, moist to very moist, very dense.	
	Total Depth - 10' No groundwater No caving Backfilled	

Graphic Log



scale 1" = 5'

GEOLABS-WESTLAKE VILLAGE

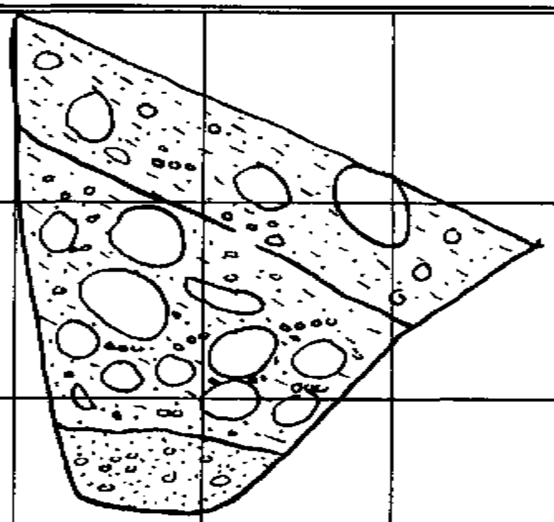
W.O. 8838

PLATE TP61

LOG OF EXCAVATION
Trench No. TP62
Logged By: NM
Date Excavated: 5/25/06
Client: Pardee Homes

Depth (ft)	Description	Comments
0 - 3	<u>Topsoil</u>: Dark brown silty clayey SAND with gravels and occasional boulders up to 2' diameter (approximately 10% greater than 12" diameter), porous, abundant roots, slightly moist, medium dense.	
3 - 9	<u>Colluvium</u>: Medium brown clayey SAND with abundant gravels, cobbles, and boulders (approximately 35% greater than 12" diameter, up to 3' diameter), subrounded to rounded clasts typically 12" to 18" diameter, well graded, moist, medium dense.	
9 - 11.5	<u>Mint Canyon Formation</u>: Light gray brown sandy gravel cobble CONGLOMERATE, moist, very dense.	
	Total Depth - 11.5' No groundwater No caving Backfilled	

Graphic Log

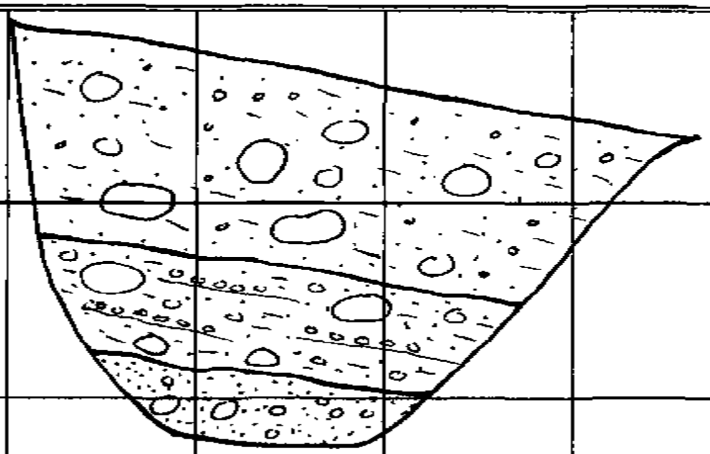


scale 1" = 5'
GEOLABS-WESTLAKE VILLAGE
W.O. 8838
PLATE TP62

LOG OF EXCAVATION Trench No. TP63	Logged By: NM	Date Excavated: 5/25/06	Client: Pardee Homes

Depth (ft)	Description	Comments
0 - 5	<u>Colluvium</u>: Medium brown clayey SAND with gravels and lesser cobbles and boulders (approximately 15% greater than 12" diameter), angular to rounded clasts typically 6" to 12" diameter, poorly sorted, moist, medium dense.	
5 - 8	Light gray brown fine to coarse grained SAND with coarse gravel, occasional boulders up to 18" diameter (approximately 20% greater than 12" diameter), occasional crude laminations, well graded, very moist, seepage at base of unit.	
8 - 10	<u>Mint Canyon Formation</u>: Light gray brown sandy cobble CONGLOMERATE (sandstone matrix supported), massive, very moist, very dense.	
	Total Depth - 10' Seep at 8' (bottom of colluvium) No caving Backfilled	

Graphic Log



scale 1" = 5'	GEOLABS-WESTLAKE VILLAGE	W.O. 8838	PLATE TP63

LOG OF EXCAVATION
Trench No. TP64

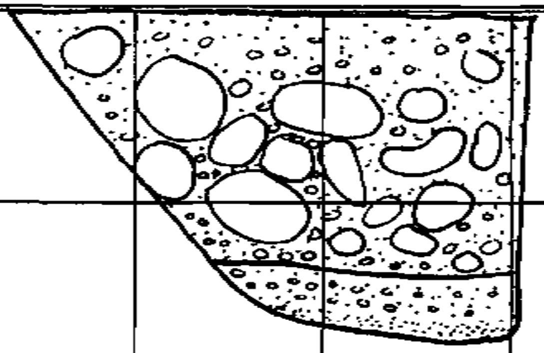
Logged By: NM

Date Excavated: 5/25/06

Client: Pardee Homes

Depth (ft)	Description	Comments
0 - 6.5	Alluvium: Medium brown silty clayey SAND with abundant gravels, cobbles, and boulders (approximately 50% greater than 12" diameter), boulders are typically 2' to 2.5' diameter (closely spaced), well graded, very moist to wet at base (seepage in bottom ±6" to 12"), loose to medium dense, bottom 2' is coarse grained.	
6.5 - 8	Mint Canyon Formation: Light gray brown fine to coarse grained sandy gravel CONGLOMERATE to fine grained SANDSTONE, very moist, very dense.	
	Total Depth - 8' Seep at 6.5' (bottom of alluvium) No caving Backfilled	

Graphic Log



scale 1" = 5'

GEOLABS-WESTLAKE VILLAGE

W.O. 8838

PLATE TP64

LOG OF EXCAVATION
Trench No. TP65

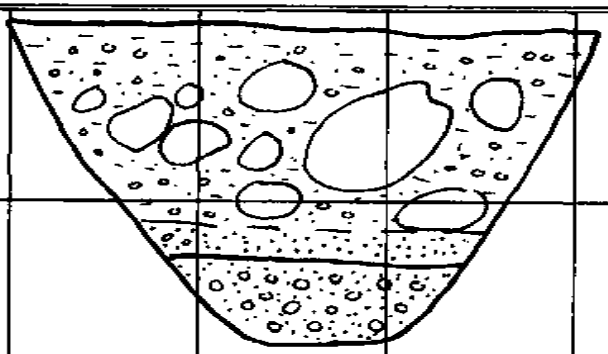
Logged By: NM

Date Excavated: 5/25/06

Client: Pardee Homes

Depth (ft)	Description	Comments
0 - 6	Alluvium: Medium brown silty clayey SAND with abundant gravels, cobbles, and boulders (occasionally up to 3.5' diameter, approximately 55% greater than 12" diameter), bottom 12" is coarse grained SAND with seepage at base.	
6 - 8	Mint Canyon Formation: Light gray brown sandy gravel cobble CONGLOMERATE, very moist, very dense.	
	Total Depth - 8' Seep at 6' (bottom of alluvium) No caving Backfilled	

Graphic Log



scale 1" = 5'

GEOLABS-WESTLAKE VILLAGE

W.O. 8838

PLATE TP65

LOG OF EXCAVATION
Trench No. TP66

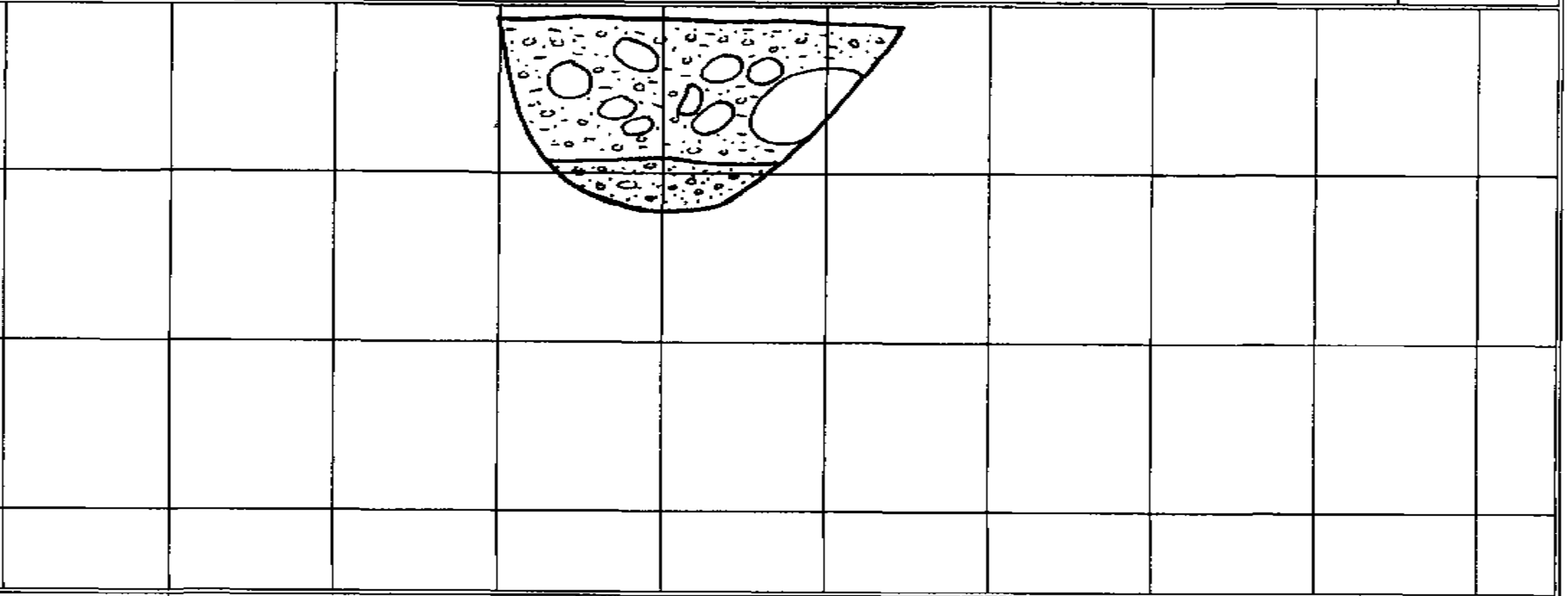
Logged By: NM

Date Excavated: 5/25/06

Client: Pardee Homes

Depth (ft)	Description	Comments
0 - 4	<u>Alluvium</u>: Medium brown silty SAND with abundant gravels, cobbles, and boulders (approximately 20% greater than 12" diameter), occasional clasts up to 3' diameter, well graded, loose to medium dense, wet in bottom 12", continuous slow seepage at base (bottom 12" is coarse grained).	
4 - 5.5	<u>Mint Canyon Formation</u>: Light gray brown sandy gravel cobble CONGLOMERATE, very moist, very dense.	
	Total Depth - 5.5' Seep at 4' (bottom of alluvium) No caving Backfilled	

Graphic Log



scale 1" = 5'

GEOLABS-WESTLAKE VILLAGE

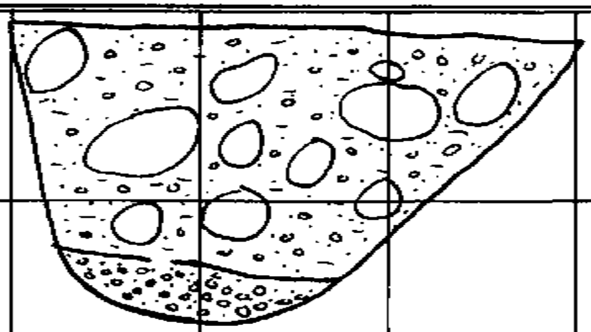
W.O. 8838

PLATE TP66

LOG OF EXCAVATION
Trench No. TP67
Logged By: NM
Date Excavated: 5/26/06
Client: Pardee Homes

Depth (ft)	Description	Comments
0 - 6	<u>Alluvium</u>: Medium brown silty SAND with abundant gravels, cobbles, and boulders (approximately 35% greater than 12" diameter), subrounded to rounded clasts up to 3' diameter, well graded, moist to very moist at base, medium dense, minor seepage at base (bedrock contact).	
6 - 7.5	<u>Mint Canyon Formation</u>: Light gray coarse grained gravel CONGLOMERATE, very moist, very dense.	
	Total Depth - 7.5' Seep at 6' (bottom of alluvium) No caving Backfilled	

Graphic Log



scale 1" = 5'
GEOLABS-WESTLAKE VILLAGE
W.O. 8838
PLATE TP67

LOG OF EXCAVATION
Trench No. TP68

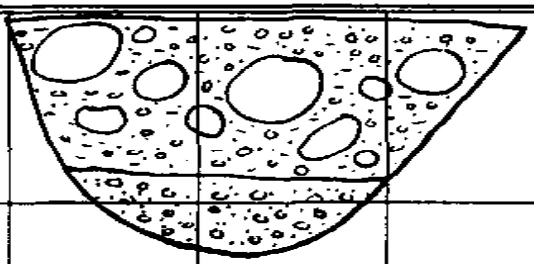
Logged By: NM

Date Excavated: 5/26/06

Client: Pardee Homes

Depth (ft)	Description	Comments
0 - 4	Alluvium: Medium brown silty SAND with abundant gravels, cobbles, and boulders (approximately 35% greater than 12" diameter), subangular to rounded clasts typically 1-2" diameter up to 3', well graded, moist, medium dense.	
4 - 6	Mint Canyon Formation: Light gray sandy gravel cobble CONGLOMERATE (sandstone matrix supported), moist, very dense.	
	Total Depth - 6' No groundwater No caving Backfilled	

Graphic Log



scale 1" = 5'

GEOLABS-WESTLAKE VILLAGE

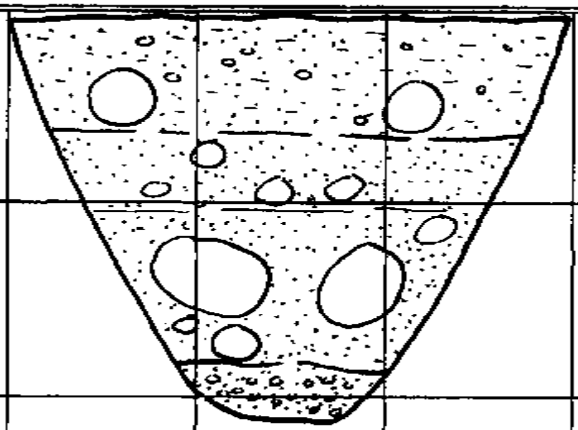
W.O. 8838

PLATE TP68

LOG OF EXCAVATION Trench No. TP69	Logged By: NM	Date Excavated: 5/26/06	Client: Pardee Homes

Depth (ft)	Description	Comments
0 - 3	Topsoil: Medium brown silty SAND with gravels and occasional cobbles and boulders (approximately 15% greater than 12" diameter), slightly moist, medium dense.	
3 - 9	Alluvium: Medium brown coarse grained gravelly SAND with abundant cobbles and boulders (approximately 25% greater than 12" diameter), well graded, subangular to rounded clasts typically 6" to 18" diameter (up to 3'), moist to wet at 8', medium dense.	
9 - 10.5	Mint Canyon Formation: Light gray gravel cobble CONGLOMERATE with sandstone supported matrix, very moist, very dense.	
	Total Depth - 10.5' Seep at 9' (bottom of alluvium) No caving Backfilled	

Graphic Log



scale 1" = 5'	GEOLABS-WESTLAKE VILLAGE	W.O. 8838	PLATE TP69

LOG OF EXCAVATION
Trench No. TP70

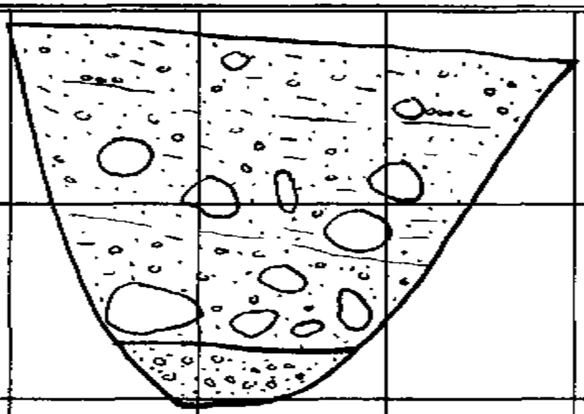
Logged By: NM

Date Excavated: 5/26/06

Client: Pardee Homes

Depth (ft)	Description	Comments
0 - 8	Alluvium: Medium brown silty clayey fine to coarse grained gravelly SAND with cobbles and lesser boulders (approximately 15% greater than 12" diameter), well graded, at 6' becoming very moist to wet, medium dense.	
8 - 9.5	Mint Canyon Formation: Light gray gravel cobble CONGLOMERATE with occasional boulders (approximately 12" diameter), moist, very dense.	
	Total Depth - 9.5' Wet from 6'-8' No caving Backfilled	

Graphic Log



scale 1" = 5'

GEOLABS-WESTLAKE VILLAGE

W.O. 8838

PLATE TP70

LOG OF EXCAVATION
Trench No. TP71

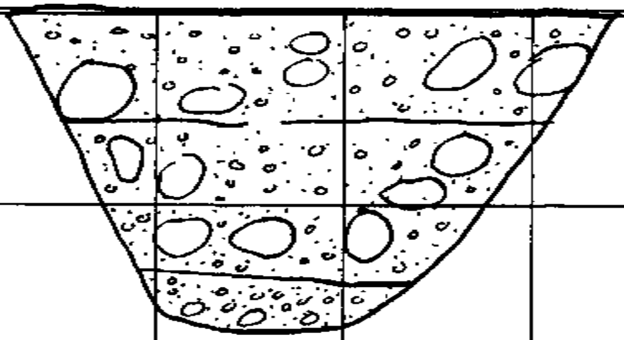
Logged By: NM

Date Excavated: 5/26/06

Client: Pardee Homes

Depth (ft)	Description	Comments
0 - 3	Alluvium: Light grayish brown sandy GRAVEL with abundant cobbles and boulders up to 3' diameter, typically 6" to 18" (approximately 25% greater than 12" diameter), medium dense to loose, slightly moist.	
3- 6.5	Medium brown clayey coarse grained gravelly SAND with abundant cobbles and boulders (approximately 35% greater than 12" diameter), clasts typically 8" to 18" diameter up to 3' (observed 5 at this size), well graded, very moist to wet at base (slow seepage at base).	
6.5 - 8	Mint Canyon Formation: Light gray sandy gravel cobble CONGLOMERATE, fine to medium sandstone matrix, very moist, very dense.	
	Total Depth - 8' Seep at 6.5' (bottom of alluvium) No caving Backfilled	

Graphic Log



scale 1" = 5'

GEOLABS-WESTLAKE VILLAGE

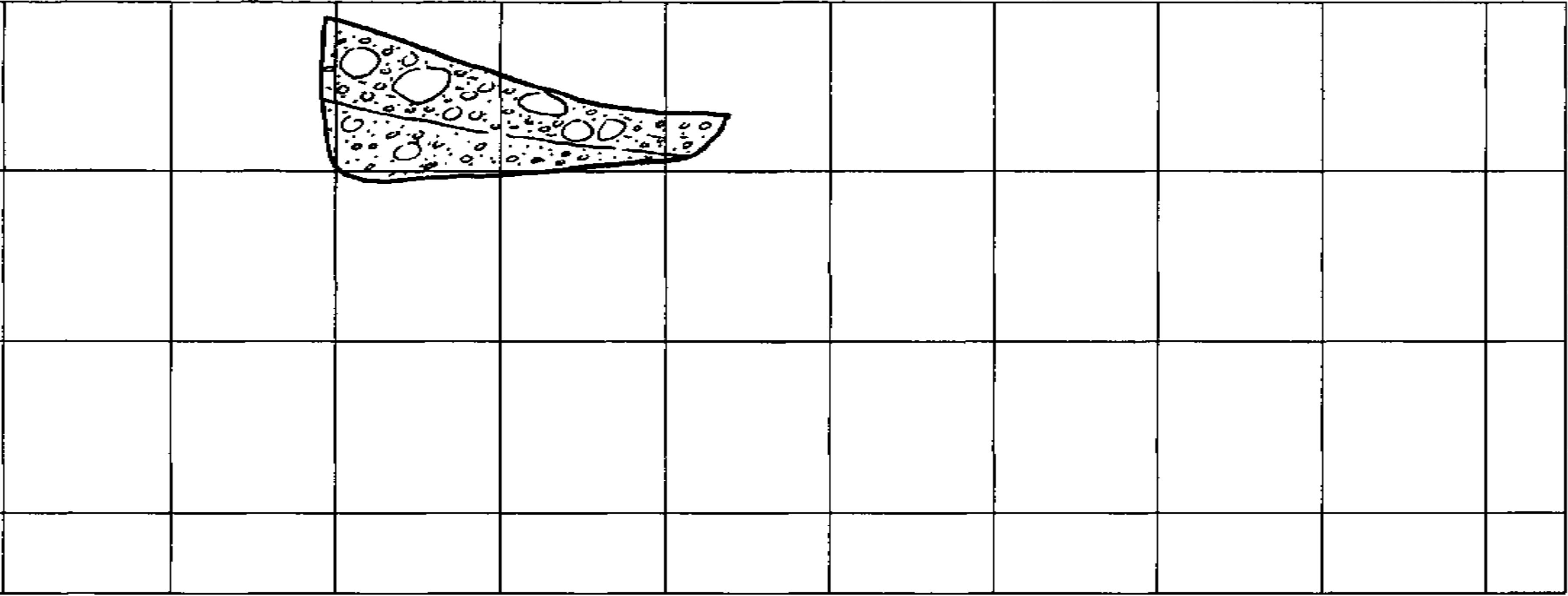
W.O. 8838

PLATE TP71

LOG OF EXCAVATION
Trench No. TP72
Logged By: NM
Date Excavated: 5/26/06
Client: Pardee Homes

Depth (ft)	Description	Comments
0 - 3	Alluvium: Medium brown silty fine grained SAND with abundant gravels, cobbles and lesser boulders (approximately 10% greater than 12" diameter) up to 24", matrix supported, well graded, wet, medium dense, continuous seepage at base.	
3 - 4	Mint Canyon Formation: Light gray to greenish gray sandy gravel cobble CONGLOMERATE, very moist, very dense.	
	Total Depth - 4' Seep at 3' (bottom of alluvium) No caving Backfilled	

Graphic Log



scale 1" = 5'
GEOLABS-WESTLAKE VILLAGE
W.O. 8838
PLATE TP72

LOG OF EXCAVATION
Trench No. TP73

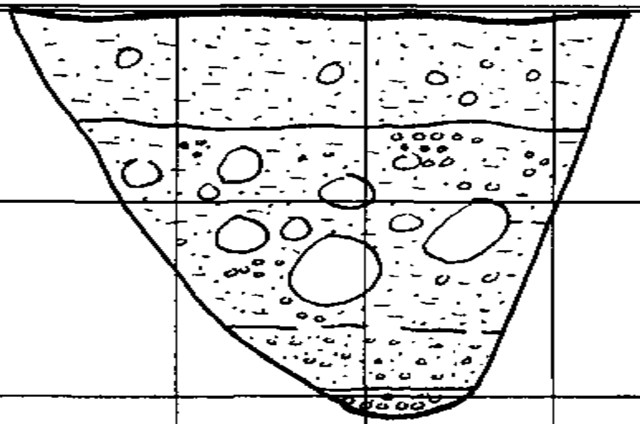
Logged By: NM

Date Excavated: 5/26/06

Client: Pardee Homes

Depth (ft)	Description	Comments
0 - 3	Topsoil: Dark brown silty fine grained SAND with occasional gravels and cobbles, porous, abundant roots, moist, medium dense.	
3 - 8	Alluvium: Medium brown silty fine to coarse grained SAND with abundant gravels, cobbles, and boulders (approximately 35% greater than 12" diameter), subangular to rounded clasts up to 3' diameter, poorly sorted, slightly friable, moist, medium dense.	
8 - 10	Medium brown coarse grained SAND with gravels and cobbles (low amount of fines), well graded, friable, wet, dense, minor seepage at base.	
10 - 11	Mint Canyon Formation: Light greenish gray to light gray sandy gravel CONGLOMERATE, very moist, very dense.	
	Total Depth - 11' Seep at 10' (bottom of alluvium) No caving Backfilled	

Graphic Log



scale 1" = 5'

GEOLABS-WESTLAKE VILLAGE

W.O. 8838

PLATE TP73

LOG OF EXCAVATION
Trench No. TP74

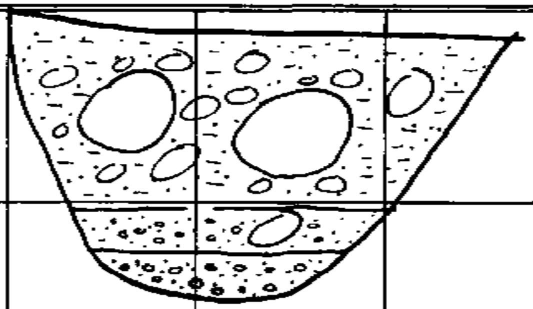
Logged By: NM

Date Excavated: 5/26/06

Client: Pardee Homes

Depth (ft)	Description	Comments
0 - 4.5	<u>Alluvium</u>: Medium brown silty fine to coarse grained SAND with abundant gravels, cobbles, and boulders approximately 40% greater 12" diameter), several large rounded boulders up to 3.5' diameter, well graded, moist, medium dense to dense.	
4.5 - 5.5	Medium brown coarse grained gravelly SAND with occasional cobbles and boulders approximately 12" diameter, friable, water seeping at base, wet, dense.	
5.5 - 6.5	<u>Mint Canyon Formation</u>: Light greenish gray sandy gravel cobble CONGLOMERATE, very moist to wet, very dense, orange oxidation stains.	
	Total Depth - 6.5' Seep at 5.5' (bottom of alluvium) No caving Backfilled	

Graphic Log



scale 1" = 5'

GEOLABS-WESTLAKE VILLAGE

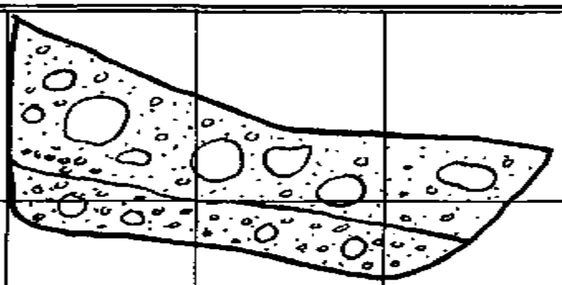
W.O. 8838

PLATE TP74

LOG OF EXCAVATION
Trench No. TP75
Logged By: NM
Date Excavated: 5/26/06
Client: Pardee Homes

Depth (ft)	Description	Comments
0 - 3.5	Alluvium: Medium brown silty fine to coarse grained SAND with abundant gravels, cobbles, and lesser boulders (approximately 20% greater than 12" diameter), well graded, very moist to wet at base, bottom 12" is silty coarse grained gravelly SAND, seepage at base, clasts typically 1' diameter and as coarse as 2' diameter.	
3.5 - 5	Mint Canyon Formation: Light gray sandy gravel cobble CONGLOMERATE, very moist to wet, very dense.	
	Total Depth - 5' Seep at 3.5' (bottom of alluvium) No caving Backfilled	

Graphic Log



scale 1" = 5'
GEOLABS-WESTLAKE VILLAGE
W.O. 8838
PLATE TP75

LOG OF EXCAVATION
Trench No. TP76

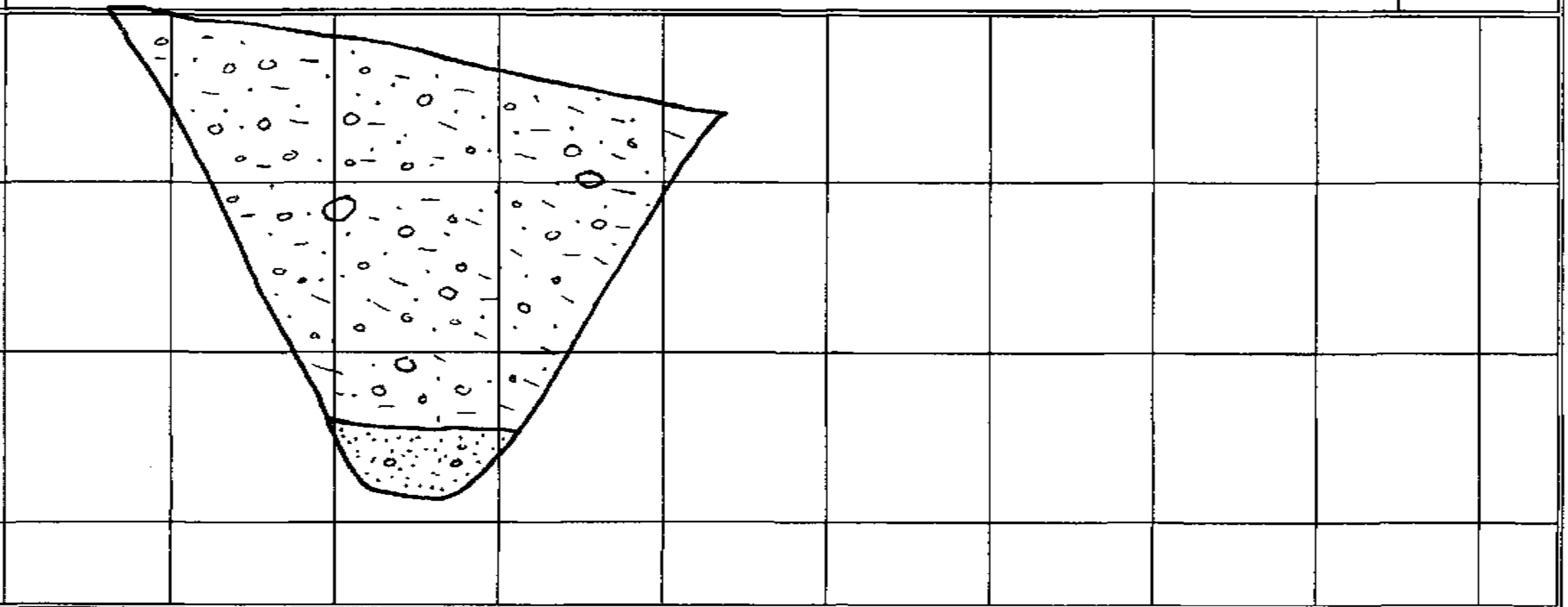
Logged By: NM

Date Excavated: 5/26/06

Client: Pardee Homes

Depth (ft)	Description	Comments
0 - 11	Colluvium: Light medium brown fine to medium grained silty SAND with gravels and cobbles (approximately 20%), moderately graded, massive, rootlets down to 8', moist, medium dense (no boulders observed).	
11 - 13	Mint Canyon Formation: Light greenish gray fine grained SANDSTONE with occasional cobbles and gravels, poorly graded, moist, very dense.	
	Total Depth - 13' No groundwater No caving Backfilled	

Graphic Log



scale 1" = 5'

GEOLABS-WESTLAKE VILLAGE

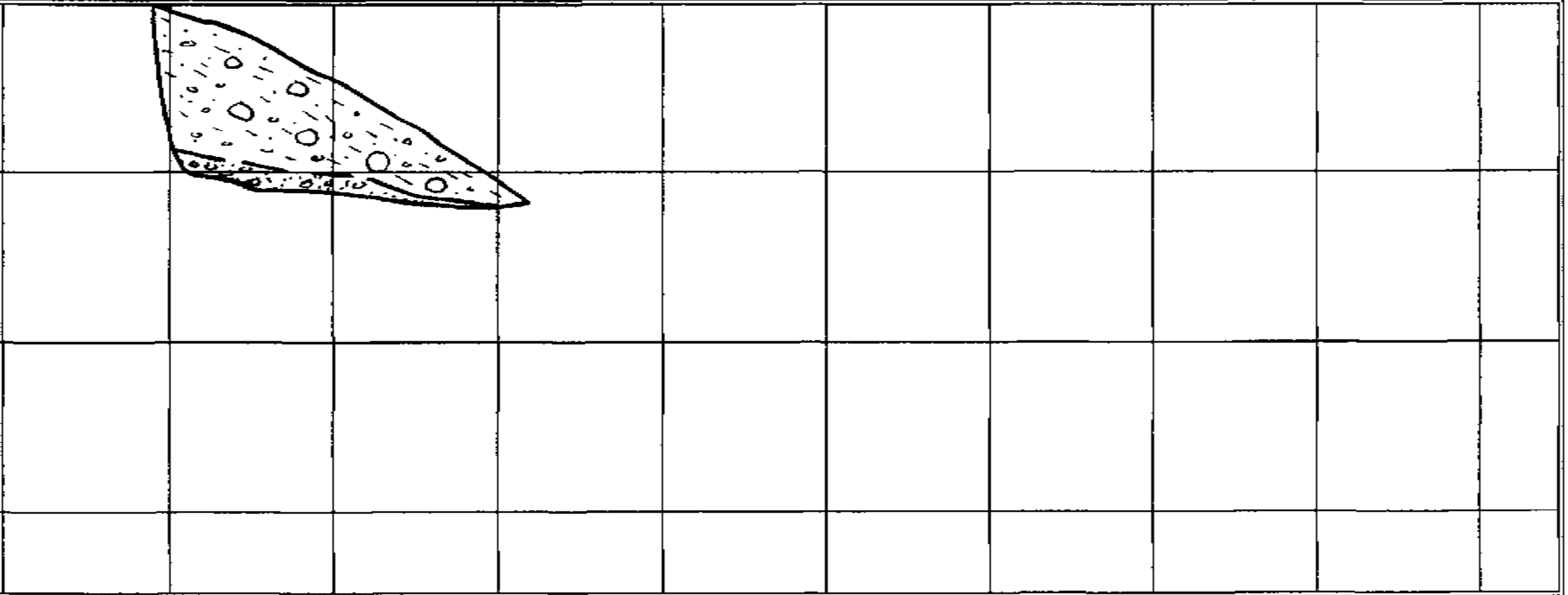
W.O. 8838

PLATE TP76

LOG OF EXCAVATION
Trench No. TP77
Logged By: NM
Date Excavated: 5/26/06
Client: Pardee Homes

Depth (ft)	Description	Comments
0 - 1	Topsoil: Dark brown sandy CLAY, rootlets, occasional gravels, porous, slightly moist, medium stiff.	
1 - 4	Colluvium: Medium brown silty fine to medium grained SAND with gravels and cobbles up to 12" diameter (approximately 25% is coarse grained cobble), massive, slightly moist, medium dense.	
4 - 5.5	Mint Canyon Formation: Light greenish gray fine to medium grained SANDSTONE with occasional gravels, cobbles, moderately graded, moist, very dense.	
	Total Depth - 5.5' No groundwater No caving Backfilled	

Graphic Log



scale 1" = 5'
GEOLABS-WESTLAKE VILLAGE
W.O. 8838
PLATE TP77

LOG OF EXCAVATION
Trench No. TP78

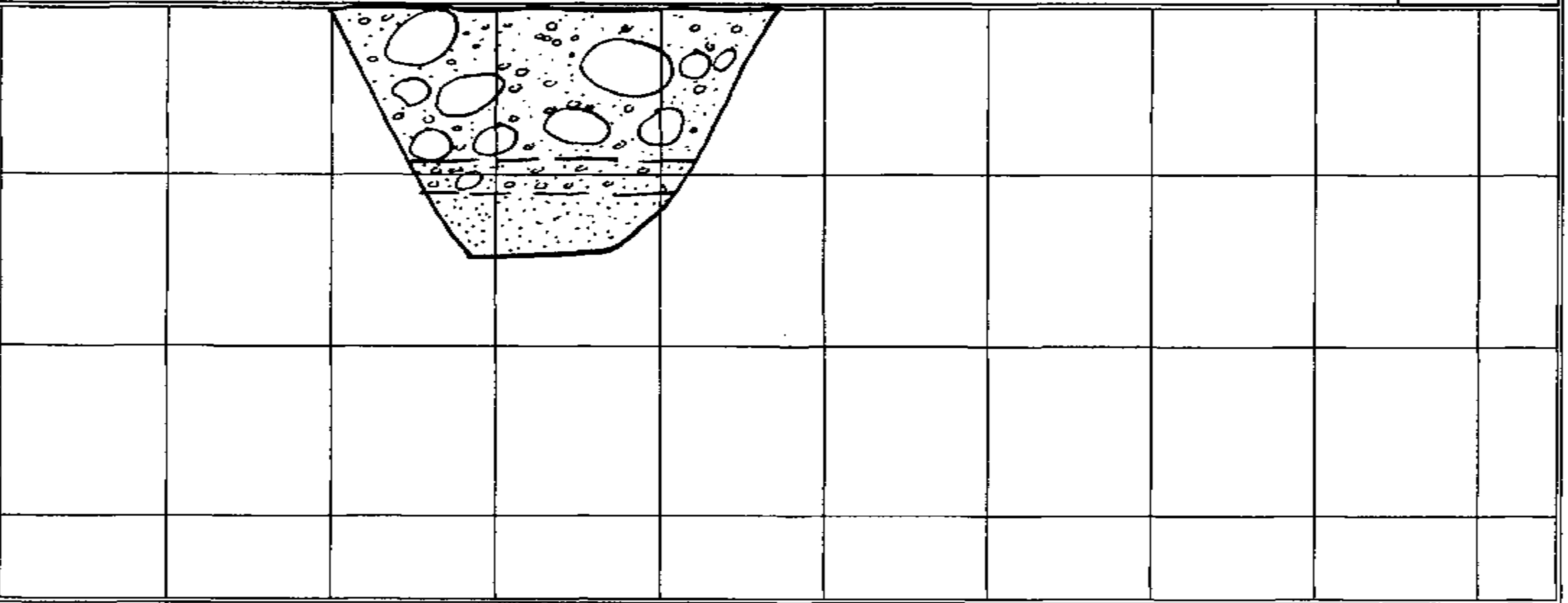
Logged By: NM

Date Excavated: 5/26/06

Client: Pardee Homes

Depth (ft)	Description	Comments
0 - 4.5	Alluvium: Medium brown silty SAND with abundant subangular to rounded gravels, cobbles and boulders (approximately 50% greater than 12" diameter), up to 3' diameter, boulders typically 1-2' diameter, well graded, moist, medium dense.	
4.5 - 5.5	Medium brown clayey coarse grained gravelly SAND with cobbles and lesser boulders up to 1' diameter, clasts are angular to rounded, low % of fines, well graded, very moist, dense.	
5.5 - 7	Mint Canyon Formation: Light greenish gray fine to very fine grained SANDSTONE, poorly graded, massive, moist, very dense.	
	Total Depth - 7' No groundwater No caving Backfilled	

Graphic Log



scale 1" = 5'

GEOLABS-WESTLAKE VILLAGE

W.O. 8838

PLATE TP78

LOG OF EXCAVATION
Trench No. TP79

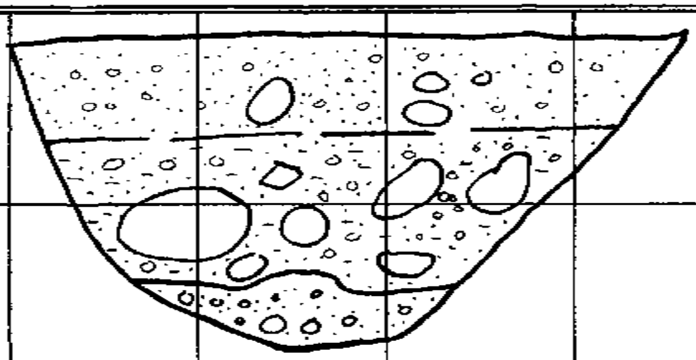
Logged By: NM

Date Excavated: 6/1/06

Client: Pardee Homes

Depth (ft)	Description	Comments
0 - 2.5	<u>Alluvium</u>: Light brown fine to coarse grained gravelly SAND with abundant cobbles and boulders (approximately 5% greater than 1' diameter), well graded, clasts are typically 3" to 1' diameter, friable, moist, medium dense.	
2.5 - 6	Medium brown silty fine to medium grained gravelly SAND with abundant cobbles and boulders (approx. 15% greater than 1' diameter) up to approximately 3' diameter, clasts are typically 6" to 1' diameter and are subrounded to rounded (mostly granitic), well graded, moist, medium dense.	
6 - 8	<u>Mint Canyon Formation</u>: Light greenish gray conglomeratic SANDSTONE with occasional cobbles, well graded, massive, moist, very dense.	
	Total Depth - 8' No groundwater No caving Backfilled	

Graphic Log



scale 1" = 5'

GEOLABS-WESTLAKE VILLAGE

W.O. 8838

PLATE TP79

LOG OF EXCAVATION
Trench No. TP80

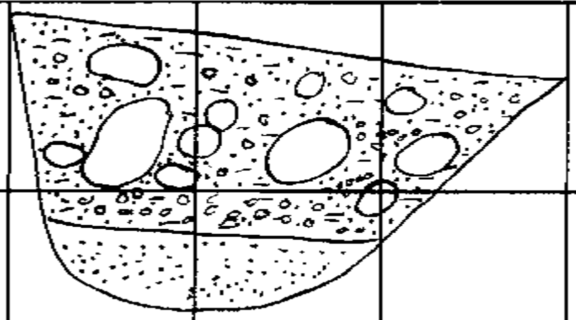
Logged By: NM

Date Excavated: 6/1/06

Client: Pardee Homes

Depth (ft)	Description	Comments
0 - 5	<u>Alluvium</u>: Medium brown silty fine to coarse grained gravelly SAND with abundant subangular to rounded cobbles and boulders (approximately 15% greater than 1' diameter), occasional pockets of clean gravelly SAND, well graded, clasts typically a few inches to 1' diameter and up to 2.5' diameter, friable, moist, medium dense.	
5 - 7	<u>Mint Canyon Formation</u>: Grayish green to greenish gray fine to medium grained SANDSTONE with occasional white calcium carbonate stringers, poorly graded, occasional blocky planar randomly oriented fractures, moist to very moist, very dense.	
	Total Depth - 7' No groundwater No caving Backfilled	

Graphic Log



scale 1" = 5'

GEOLABS-WESTLAKE VILLAGE

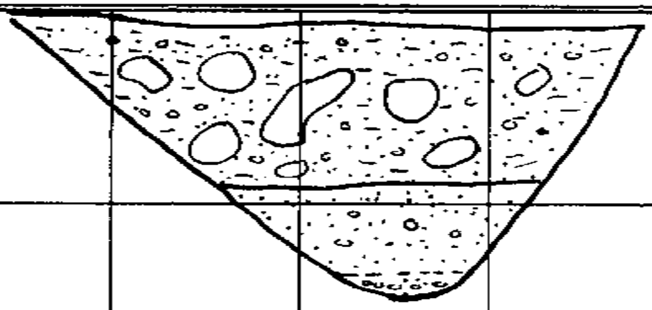
W.O. 8838

PLATE TP80

LOG OF EXCAVATION
Trench No. TP81
Logged By: NM
Date Excavated: 6/1/06
Client: Pardee Homes

Depth (ft)	Description	Comments
0 - 4	Colluvium: Medium brown silty fine grained SAND with subangular to rounded gravels, cobbles and boulders (approximately 10% greater than 1' diameter), clasts typically 1-2' diameter, well graded, moist, medium dense.	
4 - 7.5	Mint Canyon Formation: Light greenish gray fine to medium grained SANDSTONE with dispersed gravels and cobbles, moderately graded, faint gradational contact at 7' to sandy CONGLOMERATE, calcium carbonate stringers, moist, very dense.	
	Total Depth - 7.5' No groundwater No caving Backfilled	

Graphic Log



scale 1" = 5'
GEOLABS-WESTLAKE VILLAGE
W.O. 8838
PLATE TP81

LOG OF EXCAVATION
Trench No. TP82

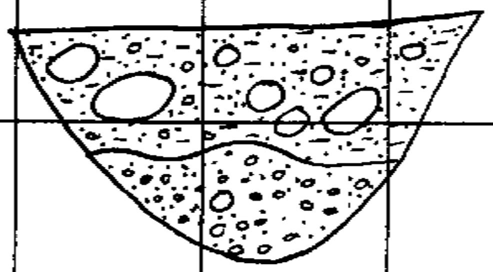
Logged By: NM

Date Excavated: 6/1/06

Client: Pardee Homes

Depth (ft)	Description	Comments
0 - 3	<u>Alluvium</u>: Medium brown silty fine to coarse grained SAND with gravels, cobbles, and boulders (approximately 10% greater than 1' diameter), clasts up to 2' diameter, well graded, very moist to wet with depth, continuous seepage at base, medium dense.	
3 - 6	<u>Mint Canyon Formation</u>: Light gray sandy gravel CONGLOMERATE with lesser cobbles and boulders (one or two up to approximately 14" diameter), very moist to wet, very dense.	
	Total Depth - 6' Seep at 3' (bottom of alluvium) No caving Backfilled	

Graphic Log



scale 1" = 5'

GEOLABS-WESTLAKE VILLAGE

W.O. 8838

PLATE TP82

LOG OF EXCAVATION
Trench No. TP83

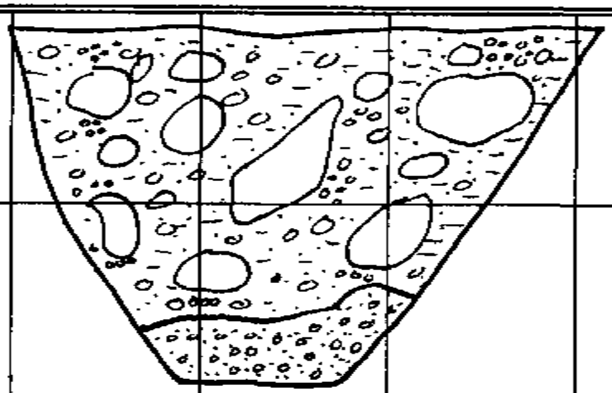
Logged By: NM

Date Excavated: 6/1/06

Client: Pardee Homes

Depth (ft)	Description	Comments
0 - 7	Alluvium: Medium to light brown silty fine to coarse grained gravelly SAND with abundant subangular to rounded cobbles and boulders (20% greater than 1' diameter), well graded, slightly friable, moist to very moist with depth, medium dense.	
7 - 9	Mint Canyon Formation: Light green gray sandy gravel CONGLOMERATE, very moist, very dense, sandstone matrix supported.	
	Total Depth - 9' No groundwater No caving Backfilled	

Graphic Log



scale 1" = 5'

GEOLABS-WESTLAKE VILLAGE

W.O. 8838

PLATE TP83

LOG OF EXCAVATION
Trench No. TP84

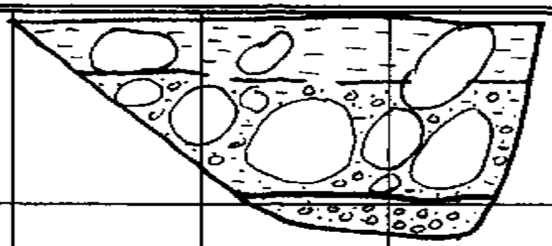
Logged By: NM

Date Excavated: 6/1/06

Client: Pardee Homes

Depth (ft)	Description	Comments
0 - 1.5	Topsoil: Dark brown clayey sandy SILT with dispersed gravels, cobbles and boulders (2 clasts up to 2' diameter), abundant rootlets, porous, slightly moist, medium stiff (approx. 35% greater than 1' diameter).	
1.5 - 4	Alluvium: Medium brown silty fine to medium grained SAND and gravelly SAND with abundant cobbles and boulders (approximately 35% greater than 1' diameter, 3 boulders as coarse as approximately 3' diameter), well graded, slightly friable, moist, medium dense.	
4 - 5.5	Mint Canyon Formation: Light greenish gray gravel cobble CONGLOMERATE with fine to medium grained sandstone matrix, well graded, slightly moist, very dense.	
	Total Depth - 5.5' No groundwater No caving Backfilled	

Graphic Log



scale 1" = 5'

GEOLABS-WESTLAKE VILLAGE

W.O. 8838

PLATE TP84

LOG OF EXCAVATION
Trench No. TP85

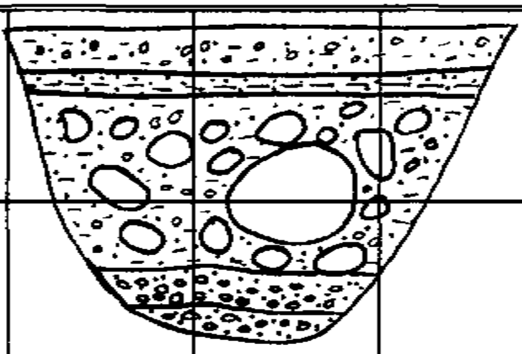
Logged By: NM

Date Excavated: 6/1/06

Client: Pardee Homes

Depth (ft)	Description	Comments
0 - 1	<u>Topsoil</u>: Medium brown silty fine to medium grained SAND with gravels and cobbles, well graded, rootlets, dry, medium dense.	
1 - 1.5	<u>Burn Horizon?</u>: Black silty fine grained SAND to sandy SILT with coarse sand and gravels, organic rich, abundant rootlets, porous, dry, medium dense to medium stiff.	
1.5 - 6	<u>Alluvium</u>: Medium brown silty fine to coarse grained gravelly SAND to sandy GRAVEL with abundant cobbles and boulders (approximately 20% greater than 1' diameter), well graded, angular to rounded clasts typically a few inches to approximately 1' diameter, slightly friable, slightly moist, medium dense.	
6 - 7	Light brown coarse grained sandy GRAVEL, well graded, friable, slightly moist, dense.	
7 - 8	<u>Mint Canyon Formation</u>: Light greenish gray sandy CONGLOMERATE, sandstone matrix supported, slightly moist, very dense.	
	Total Depth - 8' No groundwater No caving Backfilled	

Graphic Log



scale 1" = 5'

GEOLABS-WESTLAKE VILLAGE

W.O. 8838

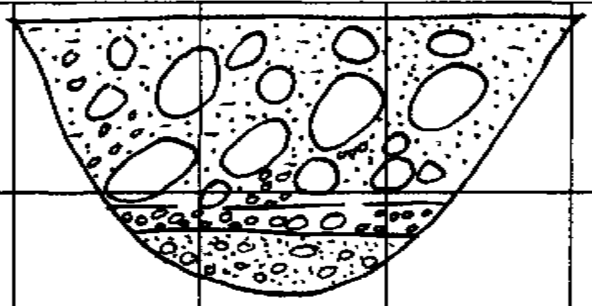
PLATE TP85

LOG OF EXCAVATION
Trench No. TP86
Logged By: NM
Date Excavated: 6/2/06
Client: Pardee Homes

Depth (ft)	Description	Comments
0 - 5	Alluvium: Medium brown silty sandy GRAVEL with abundant cobbles and boulders (approximately 30% greater than 1' diameter), subangular to rounded granitic clasts typically a few inches to approx. 1' diameter up to approx. 2' diameter, predominantly cobbles and boulders (clast supported), well graded, moist to very moist with depth, medium dense.	
5 - 5.5	Medium brown coarse grained sandy GRAVEL with occasional cobbles, well graded, low % of fines, wet, continuous seepage at base.	
5.5 - 7	Mint Canyon Formation: Light greenish gray coarse grained sandy gravel CONGLOMERATE, very moist to wet, very dense, difficult to excavate.	

Total Depth - 7'
Seep at 5.5' (bottom of alluvium)
No caving
Backfilled

Graphic Log

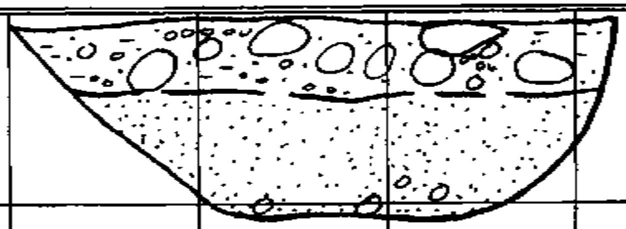


scale 1" = 5'
GEOLABS-WESTLAKE VILLAGE
W.O. 8838
PLATE TP86

LOG OF EXCAVATION
Trench No. TP87
Logged By: NM
Date Excavated: 6/2/06
Client: Pardee Homes

Depth (ft)	Description	Comments
0 - 2	Alluvium: Medium brown silty fine to coarse grained SAND with gravels, cobbles, and boulders (approx. 15% greater than 1' diameter), subangular to rounded clasts typically a few inches to 1' diameter up to approx. 1.5' diameter, well graded, slightly moist to very moist at base, medium dense.	
2 - 5	Mint Canyon Formation: Light grayish green fine to medium grained SANDSTONE, poorly graded, massive, very moist, very dense, sparse cobbles in bottom 6".	
	Total Depth - 5' No groundwater No caving Backfilled	

Graphic Log

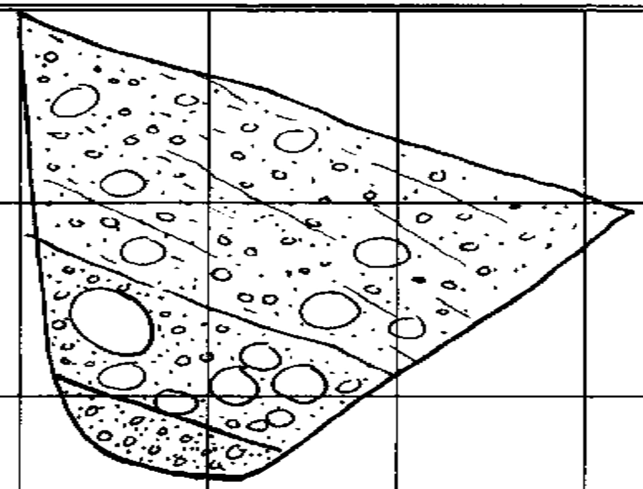


scale 1" = 5'
GEOLABS-WESTLAKE VILLAGE
W.O. 8838
PLATE TP87

LOG OF EXCAVATION
Trench No. TP88
Logged By: NM
Date Excavated: 6/2/06
Client: Pardee Homes

Depth (ft)	Description	Comments
0 - 6	Colluvium: Medium brown silty fine to medium grained SAND with scattered coarse sand, gravels, and lesser cobbles, matrix supported, crudely bedded, dipping gently toward canyon, moist, medium dense, porous, abundant rootlets.	
6 - 9	Alluvium: Medium brown silty fine to coarse grained gravelly SAND with abundant cobbles and boulders (approx. 10% greater than 1' diameter), subangular to rounded clasts typically a few inches to 1' diameter up to approx. 1.5' diameter, occasional pockets of friable medium to coarse sand, well graded, moist, medium dense.	
9 - 10.5	Mint Canyon Formation: Light greenish gray gravel to cobble CONGLOMERATE, massive, moist, very dense.	
	Total Depth - 10.5' No groundwater No caving Backfilled	

Graphic Log



scale 1" = 5'
GEOLABS-WESTLAKE VILLAGE
W.O. 8838
PLATE TP88

LOG OF EXCAVATION
Trench No. TP89

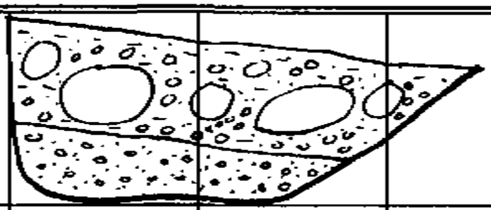
Logged By: NM

Date Excavated: 6/2/06

Client: Pardee Homes

Depth (ft)	Description	Comments
0 - 2.5	Alluvium: Medium brown silty fine to coarse grained SAND with subangular to rounded gravels, cobbles and boulders (approx. 30% greater than 1' diameter), clasts up to 2' diameter, typically a few inches to 1' diameter, well graded, moist, medium dense.	
2.5 - 4	Mint Canyon Formation: Light greenish gray conglomeratic SANDSTONE, clasts predominantly gravel to cobble size, moist, dense.	
	Total Depth - 4' No groundwater No caving Backfilled	

Graphic Log



scale 1" = 5'

GEOLABS-WESTLAKE VILLAGE

W.O. 8838

PLATE TP89

LOG OF EXCAVATION
Trench No. TP90

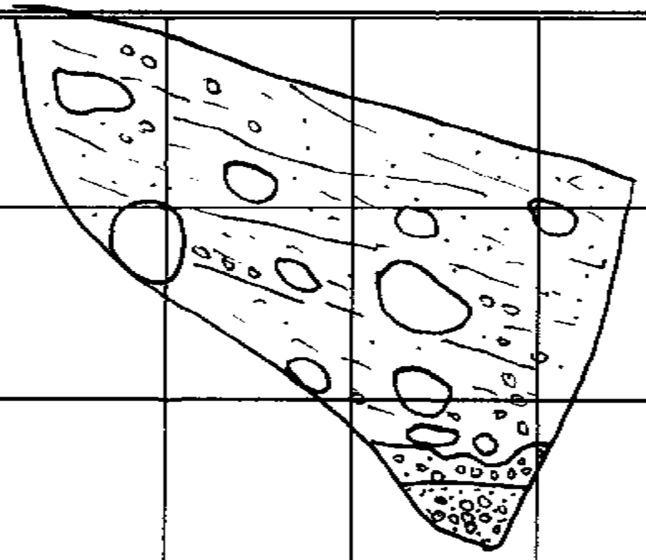
Logged By: NM

Date Excavated: 6/2/06

Client: Pardee Homes

Depth (ft)	Description	Comments
0 - 8	<u>Alluvium</u>: Medium brown clayey silty fine to coarse grained gravelly SAND with dispersed cobbles and boulders (approx. 10% greater than 1' diameter), clasts up to 2' diameter but typically a few inches to 12" diameter, occasional crude bedding, increasing moisture with depth, medium dense.	
8 - 9	Gradational irregular contact to medium brown gravelly SAND, well graded with occasional cobbles to boulders up to 14" diameter (approximately 5% greater than 1' diameter), very moist, dense.	
9 - 10.5	<u>Mint Canyon Formation</u>: Light green gray sandy CONGLOMERATE, moist, very dense.	
	Total Depth - 10.5' No groundwater No caving Backfilled	

Graphic Log



scale 1" = 5'

GEOLABS-WESTLAKE VILLAGE

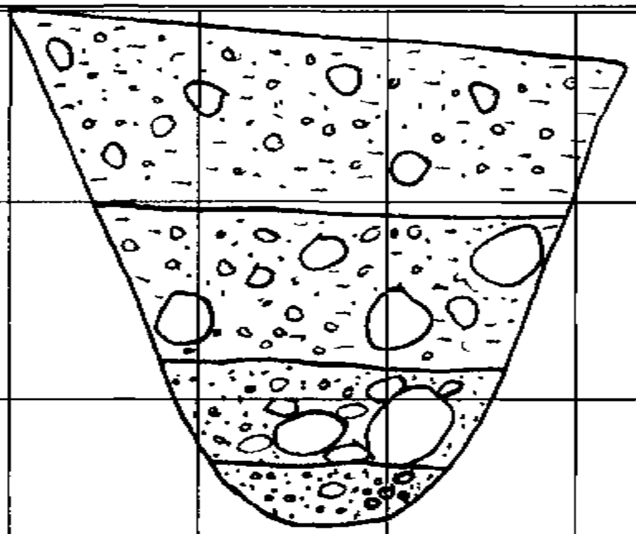
W.O. 8838

PLATE TP90

LOG OF EXCAVATION
Trench No. TP92
Logged By: NM
Date Excavated: 6/2/06
Client: Pardee Homes

Depth (ft)	Description	Comments
0 - 4.5	Colluvium: Medium brown silty sandy CLAY to clayey SAND with gravels and lesser cobbles, porous, abundant rootlets, moist, medium dense.	
4.5 - 8.5	Alluvium: Medium brown silty fine to coarse grained gravelly SAND to sandy GRAVEL with abundant gravels and cobbles and lesser boulders (approximately 10% greater than 1'), boulders as coarse as approximately 2' diameter, well graded, moist, medium dense.	
8.5 - 11	Medium to light brown fine to coarse grained gravelly SAND with cobbles and boulders (approximately 15% greater than 1' diameter), well graded, low % of fines, moist to very moist, dense, boulders up to 2.5' diameter.	
11 - 12.5	Mint Canyon Formation: Light greenish gray sandy gravel CONGLOMERATE, moist, very dense.	
	Total Depth - 12.5' No groundwater No caving Backfilled	

Graphic Log

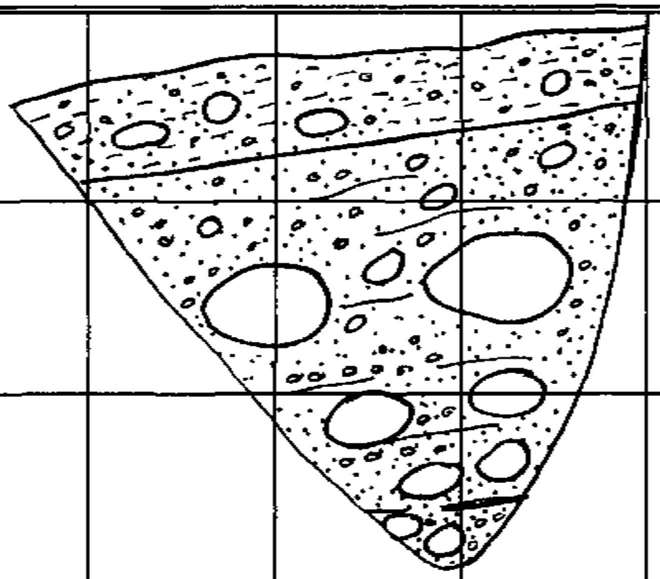


scale 1" = 5'
GEOLABS-WESTLAKE VILLAGE
W.O. 8838
PLATE TP92

LOG OF EXCAVATION
Trench No. TP93
Logged By: NM
Date Excavated: 6/2/06
Client: Pardee Homes

Depth (ft)	Description	Comments
0 - 2.5	Colluvium: Medium brown clayey silty SAND with gravels and lesser cobbles and boulders (less than 15% is boulders), pinhole porosity, medium dense, moist.	
2.5 - 12	Alluvium: Light grayish brown fine to coarse grained gravelly SAND with abundant cobbles and occasional boulders (approx. 5% greater than 1' diameter), angular to rounded clasts (mostly subrounded), with very faint imbrication dipping gently (1°-3°) downslope, massive, slightly friable, rootlets, moist, medium dense to dense with depth.	
12 - 13.5	Faint contact to light brown fine to coarse grained gravelly SAND with cobbles and boulders (30% greater than 1' diameter), subangular to rounded clasts typically 6" to 14" up to 2.5' diameter, some boulders supported by fine to medium sand matrix, friable, slight caving, moist, dense, 14' maximum depth for backhoe, boulder on bottom won't break free enough to reach 13.5'	
	Total Depth - 13.5' No groundwater No caving Backfilled	

Graphic Log

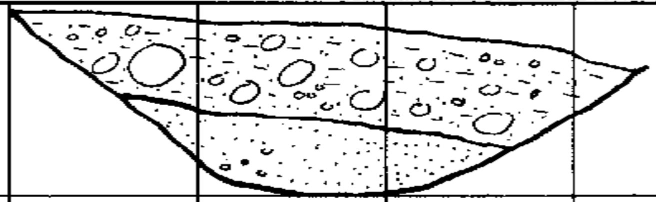


scale 1" = 5'
GEOLABS-WESTLAKE VILLAGE
W.O. 8838
PLATE TP93

LOG OF EXCAVATION
Trench No. TP94
Logged By: NM
Date Excavated: 6/5/06
Client: Pardee Homes

Depth (ft)	Description	Comments
0 - 2.5	Alluvium: Medium brown clayey silty SAND with dispersed gravels and cobbles, occasional boulders up to approx. 1.5' diameter (approx. 35% greater than 1' diameter), well graded, porous, rootlets, moist, medium dense.	
2.5 - 4	Mint Canyon Formation?: Light brown fine to medium grained SANDSTONE with occasional gravels and cobbles, moderately graded, moist, very dense,oxidation stains.	
	Total Depth - 4' No groundwater No caving Backfilled	

Graphic Log

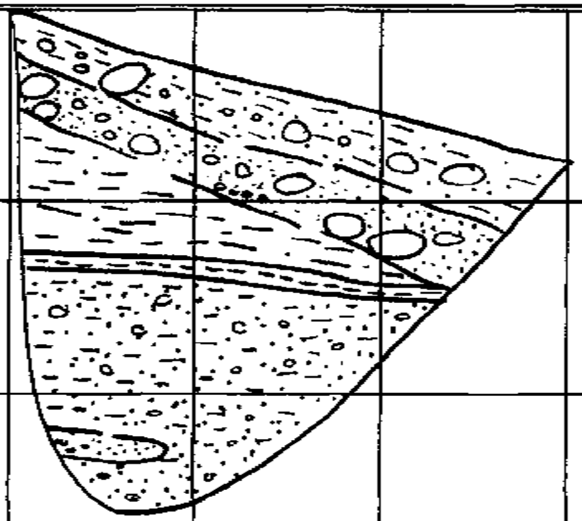


scale 1" = 5'
GEOLABS-WESTLAKE VILLAGE
W.O. 8838
PLATE TP94

LOG OF EXCAVATION
Trench No. TP95
Logged By: NM
Date Excavated: 6/5/06
Client: Pardee Homes

Depth (ft)	Description	Comments
0 - 1.5	Alluvium: Medium brown silty SAND with gravels and cobbles, less than 25% is coarse grained, rootlets, moist, medium dense.	
1.5 - 3	Light grayish brown sandy GRAVEL to gravelly SAND with cobbles and lesser boulders (approximately 15% greater than 1' diameter) well graded, subrounded to rounded clasts typically a few inches to 10" diameter, moist, medium dense.	
3 - 5'3"	Landslide Debris: Red brown silty CLAY to CLAY with occasional coarse sand grains, very moist, medium stiff.	
5'3" - 5.5'	Slide Plane?: Medium brown CLAY (high plasticity), abundant randomly oriented, polished shear surfaces, very moist, medium stiff	
5.5 - 12	Mint Canyon Formation?: Mottled gray brown, orange brown and brown sandy CLAYSTONE to clayey SANDSTONE with abundant coarse sand grains and lesser gravels and cobbles, well graded, massive, very moist, very dense, occasional discontinuous pockets of orange brown fine to coarse grained SAND with occasional gravels and cobbles.	
	Total Depth - 12' No groundwater No caving Backfilled	

Graphic Log

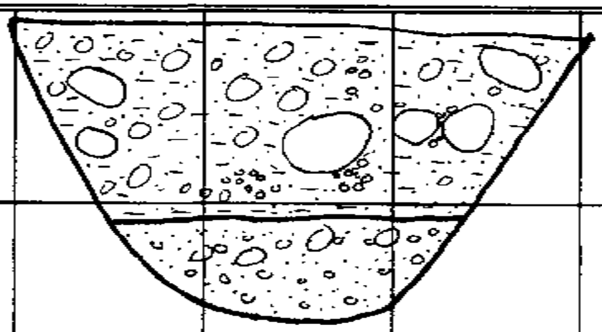


scale 1" = 5'
GEOLABS-WESTLAKE VILLAGE
W.O. 8838
PLATE TP95

LOG OF EXCAVATION Trench No. TP96	Logged By: NM	Date Excavated: 6/5/06	Client: Pardee Homes

Depth (ft)	Description	Comments
0 - 5	<u>Alluvium</u>: Medium brown silty fine to coarse grained SAND with gravels, cobbles and boulders (approx. 10% greater than 1' diameter), subangular to rounded clasts typically a few inches to 1' diameter (predominantly cobbles and gravels), well graded, moist, medium dense.	
5 - 7.5	<u>Mint Canyon Formation?</u>: Light greenish gray gravel cobble CONGLOMERATE, moist, very dense, sandstone matrix supported.	
	Total Depth - 7.5' No groundwater No caving Backfilled	

Graphic Log



scale 1" = 5'	GEOLABS-WESTLAKE VILLAGE	W.O. 8838	PLATE TP96

LOG OF EXCAVATION
Trench No. TP97

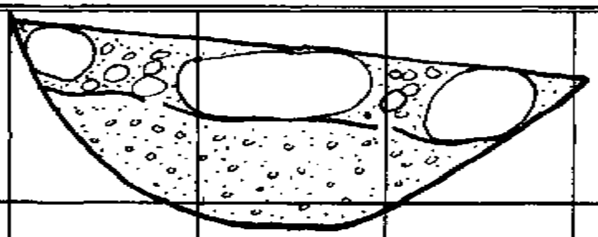
Logged By: NM

Date Excavated: 6/5/06

Client: Pardee Homes

Depth (ft)	Description	Comments
0 - 2	Alluvium; Medium brown silty fine to coarse grained gravelly SAND with abundant cobbles and boulders (approx. 70% greater than 1' diameter), clasts are subangular to rounded and typically 6" to 2.5' diameter with a few boulders up to 3 or 4' diameter (one clast 4' by 2.5'), well graded, moist, medium dense.	
2 - 4.5	Mint Canyon Formation?: Light greenish gray medium to coarse grained gravel CONGLOMERATE (sandstone matrix supported), moist, very dense, massive.	
	Total Depth - 4.5' No groundwater No caving Backfilled	

Graphic Log



scale 1" = 5'

GEOLABS-WESTLAKE VILLAGE

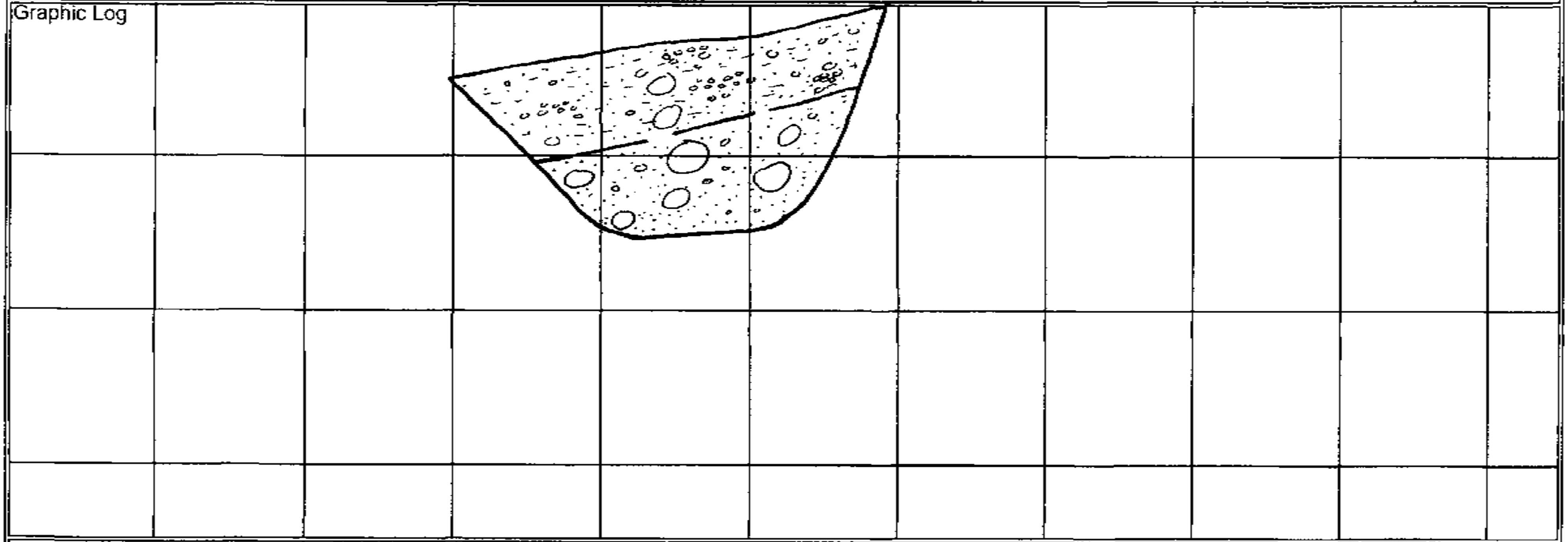
W.O. 8838

PLATE TP97

LOG OF EXCAVATION Trench No. TP98	Logged By: NM	Date Excavated: 6/5/06	Client: Pardee Homes

Depth (ft)	Description	Comments
0 - 3	Alluvium: Medium brown clayey silty fine to coarse grained SAND with dispersed gravels and lesser cobbles (approx. 15%), well graded, moist, medium dense.	
3 - 6	Saugus Formation?: Light brown to tan fine to coarse grained SANDSTONE with gravels and lesser cobbles (occasional severely weathered granitic clast approx. 1' diameter), moderately graded, moist, very dense.	
	Total Depth - 6' No groundwater No caving Backfilled	

Graphic Log



scale 1" = 5'	GEOLABS-WESTLAKE VILLAGE	W.O. 8838	PLATE TP98

LOG OF EXCAVATION
Trench No. TP99

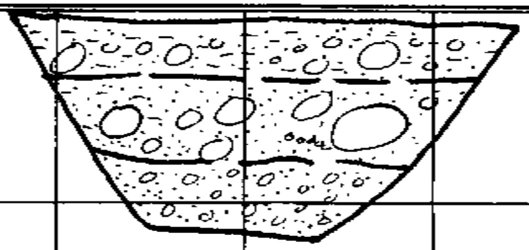
Logged By: NM

Date Excavated: 6/5/06

Client: Pardee Homes

Depth (ft)	Description	Comments
0 -1.5	<u>Alluvium</u>: Medium brown silty SAND to sandy SILT with gravels, cobbles and sparse boulders (approx. 5% greater than 1' diameter) up to 1.5' diameter, moist, medium dense to medium stiff.	
1.5 - 3.5	Medium brown medium to coarse grained gravelly SAND with cobbles and occasional boulders (approx. 5% greater than 1' diameter), slightly friable, well graded, medium dense.	
3.5 - 5.5	<u>Mint Canyon Formation?</u>: Light greenish gray gravel cobble CONGLOMERATE, moist, very dense.	
	Total Depth - 5.5' No groundwater No caving Backfilled	

Graphic Log



scale 1" = 5'

GEOLABS-WESTLAKE VILLAGE

W.O. 8838

PLATE TP99

LOG OF EXCAVATION
Trench No. TP100

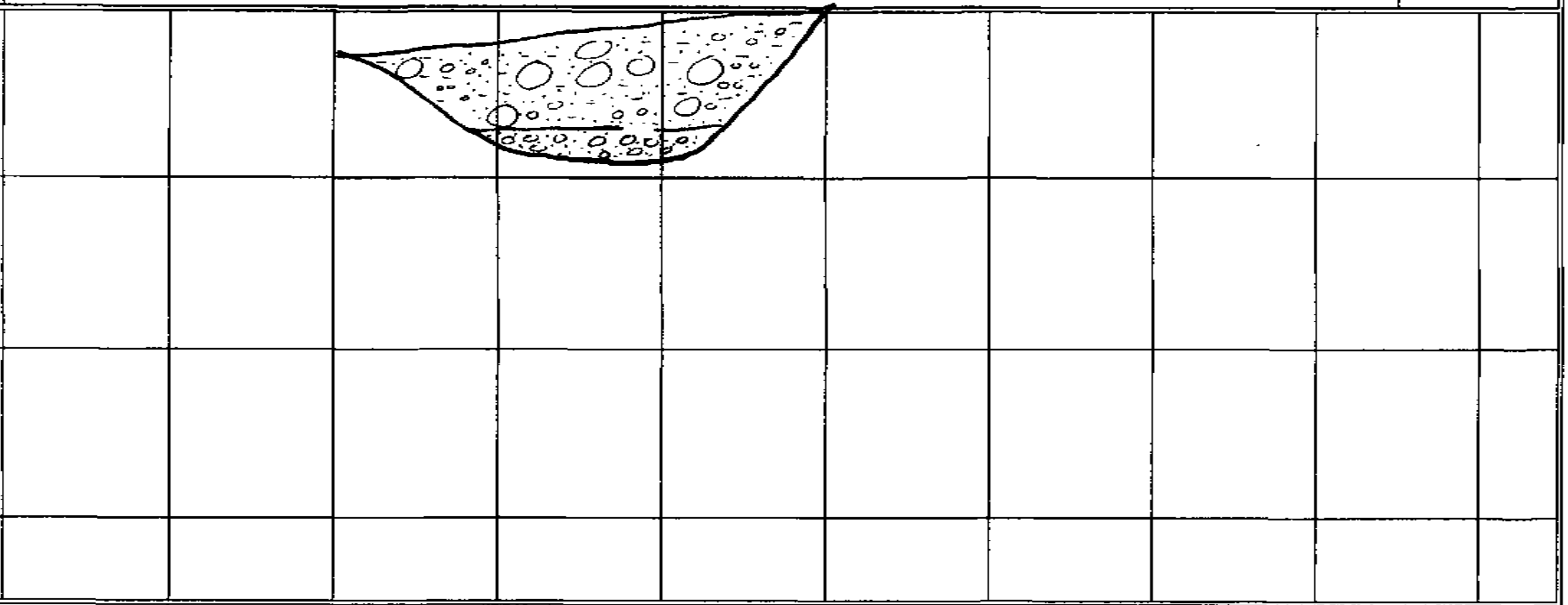
Logged By: NM

Date Excavated: 6/6/06

Client: Pardee Homes

Depth (ft)	Description	Comments
0 - 3	Alluvium: Medium brown silty SAND to sandy SILT with gravels, cobble, and lesser boulders (approx. 10% is boulder and 5% is greater than 1' diameter), clasts are subangular to rounded and typically a few inches to 1' diameter, well graded, moist, medium dense to medium stiff.	
3 - 4	Saugus Formation: Light orangish brown medium to coarse grained sandy CONGLOMERATE, slightly moist, very dense, difficult to excavate.	
	Total Depth - 4' No groundwater No caving Backfilled	

Graphic Log



scale 1" = 5'

GEOLABS-WESTLAKE VILLAGE

W.O. 8838

PLATE TP100

LOG OF EXCAVATION
Trench No. TP101

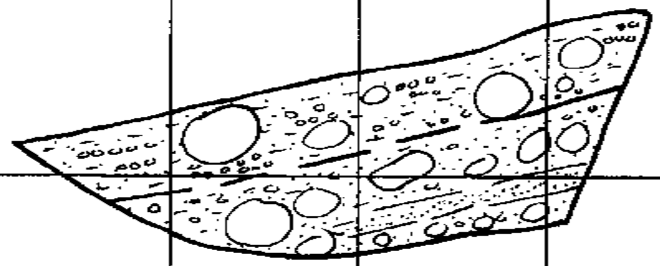
Logged By: NM

Date Excavated: 6/6/06

Client: Pardee Homes

Depth (ft)	Description	Comments
0 - 2	Alluvium: Medium brown silty clayey medium to coarse grained SAND with gravels, cobbles and lesser boulders (approx. 5% greater than 1' diameter), clasts are typically a few inches to 10" diameter up to 1.5', moist, medium dense, porous.	
2 - 5	Saugus Formation: Light brown sandy CONGLOMERATE with 1' thick poorly graded discontinuous fine grained SANDSTONE interbed. Conglomerate is fine to medium grained sandstone matrix supported, moist, very dense, clasts are granitic and sedimentary (sandy claystone ripups or highly weathered volcanics).	
	Total Depth - 5' No groundwater No caving Backfilled	

Graphic Log



scale 1" = 5'

GEOLABS-WESTLAKE VILLAGE

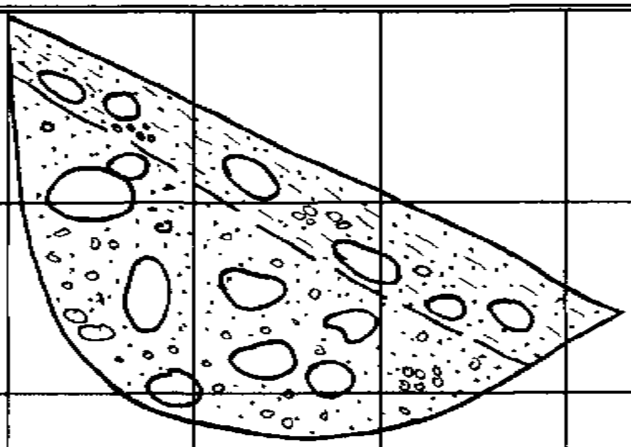
W.O. 8838

PLATE TP101

LOG OF EXCAVATION Trench No. TP102	Logged By: NM	Date Excavated: 6/6/06	Client: Pardee Homes

Depth (ft)	Description	Comments
0 - 2	Landslide Deposit: Medium brown sandy CLAY with gravels, cobbles and occasional boulders up to 14" diameter, well graded, moist, medium stiff.	
2 - 8.5	Saugus Formation?: Light brown to light grayish brown gravel cobble CONGLOMERATE (medium grained sandstone matrix approximately 15% to 20%), granitic and lesser sedimentary clasts (bluish gray coarse grained sandy claystone), slightly moist, very dense, upper 1' is weathered/oxidized, approximately 5% are boulders up to 16" diameter.	
	Total Depth - 8.5' No groundwater No caving Backfilled	

Graphic Log



scale 1" = 5'	GEOLABS-WESTLAKE VILLAGE	W.O. 8838	PLATE TP102

LOG OF EXCAVATION
Trench No. TP103

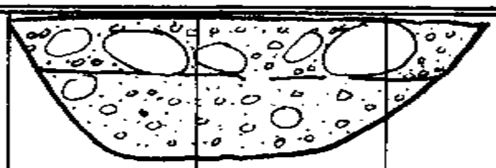
Logged By: NM

Date Excavated: 6/6/06

Client: Pardee Homes

Depth (ft)	Description	Comments
0 - 1.5	Alluvium: Light to medium brown fine to coarse grained SAND with gravels, cobbles and boulders (approximately 20% greater than 1' diameter up to 2'), approximately 30% is fine grained, loose, dry.	
1.5 - 3	Saugus Formation?: Light brown gravel cobble CONGLOMERATE, moist, very dense, difficult to excavate at 3'.	
	Total Depth - 3' No groundwater No caving Backfilled	

Graphic Log



scale 1" = 5'

GEOLABS-WESTLAKE VILLAGE

W.O. 8838

PLATE TP103

LOG OF EXCAVATION
Trench No. TP104

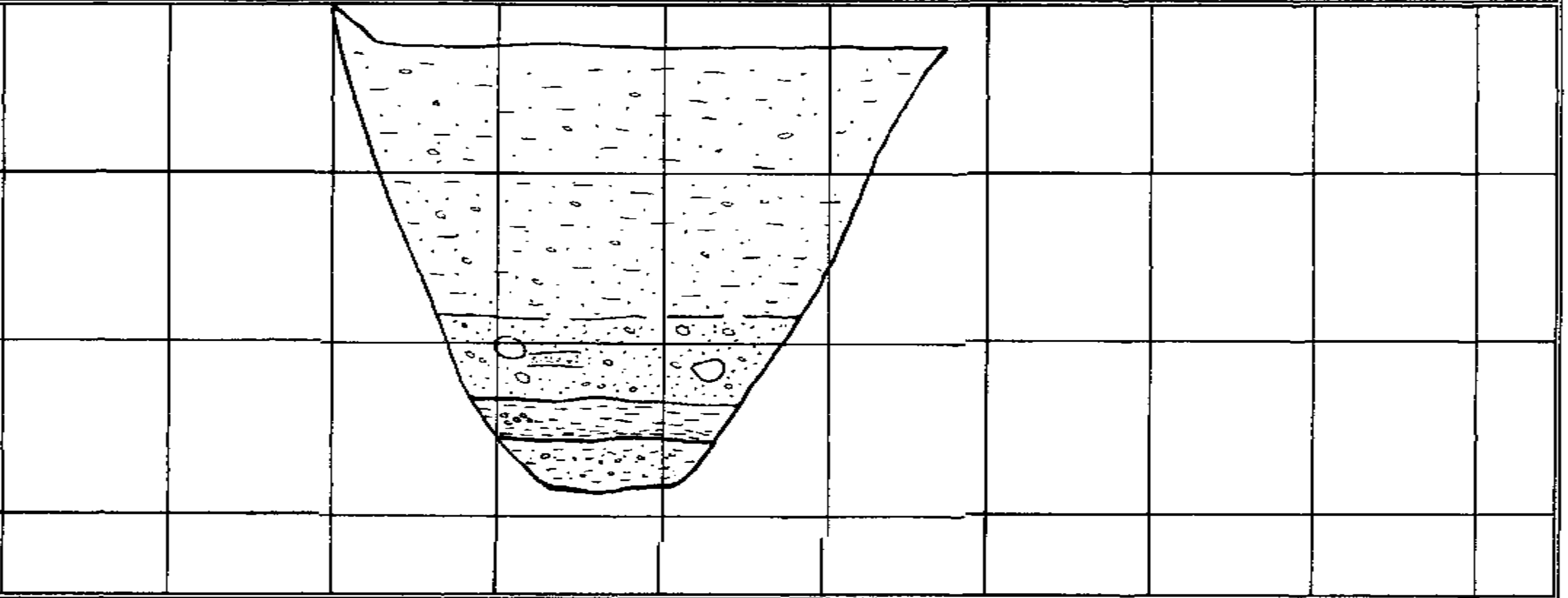
Logged By: NM

Date Excavated: 6/6/06

Client: Pardee Homes

Depth (ft)	Description	Comments
0 - 8	Landslide Debris: Medium brown sandy CLAY to clayey SAND with scattered coarse sand and gravels, moist to very moist at 8', massive, medium dense to medium stiff.	
8 - 10.5	Irregular contact to light yellow brown fine to coarse grained SANDSTONE with gravels and cobbles, well graded, very moist to wet at base, 1' thick discontinuous orange brown interbed of silty SAND at 9-10', medium dense.	
10.5 - 11'8"	Slide Plane?: Medium brown CLAYSTONE (high plasticity) with abundant polished shears and mullion surfaces (discontinuous 6" thick interbed of fine grained silty sandstone at 11'), several gravels in claystone at base.	
11'8" - 13	Saugus Formation?: Medium brown sandy CLAYSTONE with coarse sand grains and lesser small gravels, massive, no shearing, increasingly more coarse sand with depth, moist very stiff to hard, small seepage in back corner of pit.	
	Total Depth - 13' Seep at 13' No caving Backfilled	

Graphic Log



scale 1" = 5'

GEOLABS-WESTLAKE VILLAGE

W.O. 8838

PLATE TP104

LOG OF EXCAVATION
Trench No. TP105

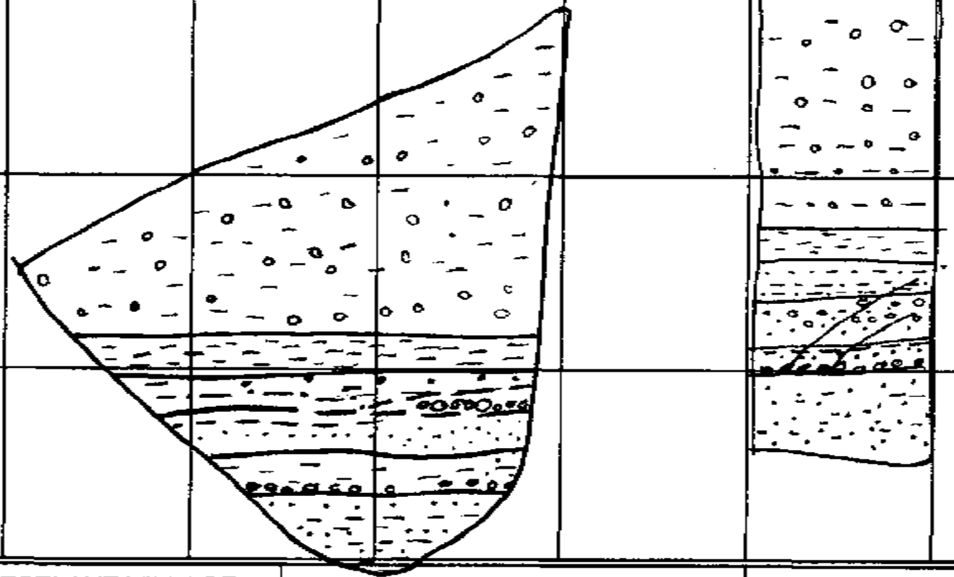
Logged By: NM

Date Excavated: 6/6/06

Client: Pardee Homes

Depth (ft)	Description	Comments
0 - 6	<u>Landslide Debris</u>: Medium orangish brown silty clayey fine to medium grained SAND with coarse sand and small gravels, occasional cobbles, well graded, massive, pinhole porosity, rootlets, slightly moist, medium dense.	
6 - 7	Irregular contact to medium brown CLAYSTONE with abundant polished shears/calcium carbonate specks, manganese stains, occasional small gravels and coarse sand grains, moist, medium stiff to stiff.	
7 - 7.5	Light brown clayey SILTSTONE to SILTSTONE, massive, moist, very stiff.	
7.5 - 8	Discontinuous light grayish brown fine to coarse SANDSTONE with gravels, moderately to well graded, slightly moist, very dense.	
8 - 8'3"	Light brown SILTSTONE, massive, moist, very stiff.	
@8'3"	2-3 mm thick claystone shear, over light brown silty very fine SANDSTONE, poorly graded, moist, massive, very dense.	
@8'9"	1/4" thick CLAYSTONE shear, irregular sharp contact.	
8'9.25" - 10	Medium brown sandy CLAYSTONE with dispersed coarse sand grains and very sparse small gravels, massive, moist, very stiff.	
10 - 12	Grades to light medium brown silty very fine grained SANDSTONE, massive, moist, very dense. Total Depth - 12', No groundwater, No caving, Backfilled	

Graphic Log



scale 1" = 5'

GEOLABS-WESTLAKE VILLAGE

W.O. 8838

PLATE TP105

LOG OF EXCAVATION
Trench No. TP106

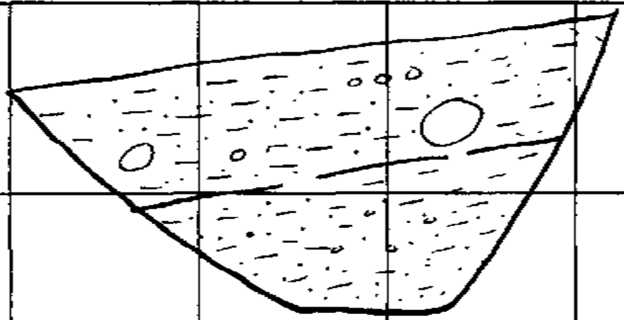
Logged By: NM

Date Excavated: 6/7/06

Client: Pardee Homes

Depth (ft)	Description	Comments
0 - 3	Alluvium: Medium brown silty clayey fine to coarse grained SAND to sandy CLAY with occasional gravels and very sparse cobbles and boulders up to 1' diameter, porous, rootlets, moist, medium stiff.	
3 - 7	Saugus Formation?: Reddish brown sandy MUDSTONE with coarse sand grains, moderately graded, massive, moist, seepage observed in small tight fractures at approximately 6'.	
	Total Depth - 7' Seep at 6' No caving Backfilled	

Graphic Log



scale 1" = 5'

GEOLABS-WESTLAKE VILLAGE

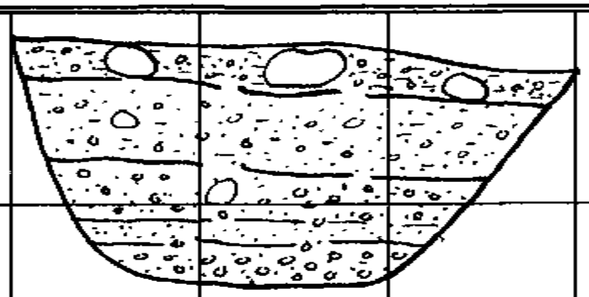
W.O. 8838

PLATE TP106

LOG OF EXCAVATION
Trench No. TP107
Logged By: NM
Date Excavated: 6/7/06
Client: Pardee Homes

Depth (ft)	Description	Comments
0 - 1	Alluvium: Dark brown sandy silty CLAY with occasional gravels and boulders (2-3 approx. 1' diameter), porous, moist, medium stiff.	
1 - 3	Severely Weathered Saugus Formation: Medium brown gravel cobble CONGLOMERATE, clayey sand matrix supported, moist, medium dense to dense.	
3 - 6	Saugus Formation: Light brown gravel cobble CONGLOMERATE with a 1' thick interbed of fine grained SANDSTONE from 4-5'. Contacts are gradational, moist, very dense.	
	Total Depth - 6' No groundwater No caving Backfilled	

Graphic Log



scale 1" = 5'
GEOLABS-WESTLAKE VILLAGE
W.O. 8838
PLATE TP107

LOG OF EXCAVATION
Trench No. TP108

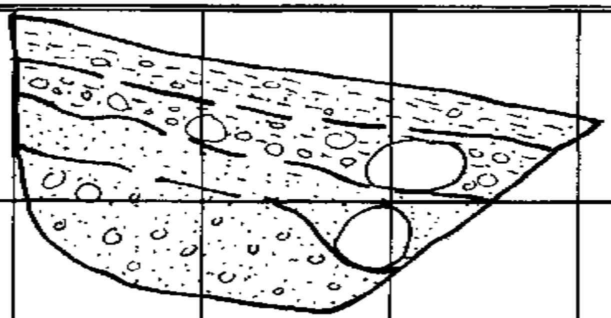
Logged By: NM

Date Excavated: 6/7/06

Client: Pardee Homes

Depth (ft)	Description	Comments
0 - 1	Topsoil: Dark brown sandy CLAY with dispersed gravels, cobbles, and occasional boulders, porous, slightly moist, medium stiff.	
1 - 2	Alluvium: Medium brown sandy CLAY with gravels, cobbles and occasional boulders (1 clast near surface is approx. 2' maximum diameter), typically 1-1.5' diameter, well graded, moist, rootlets, medium dense (approximately 3% greater than 1' diameter).	
2 - 3	Saugus Formation?: Light brown to light reddish brown very fine to silty very fine grained SANDSTONE, wavy irregular contact above and below, upper few inches is weathered, poorly graded, moist, very dense.	
3 - 6	Light yellowish brown sandy CONGLOMERATE with several clasts up to approx. 1' diameter, fine to medium grained sandstone supported matrix, moist.	
	Total Depth - 6' No groundwater No caving Backfilled	

Graphic Log



scale 1" = 5'

GEOLABS-WESTLAKE VILLAGE

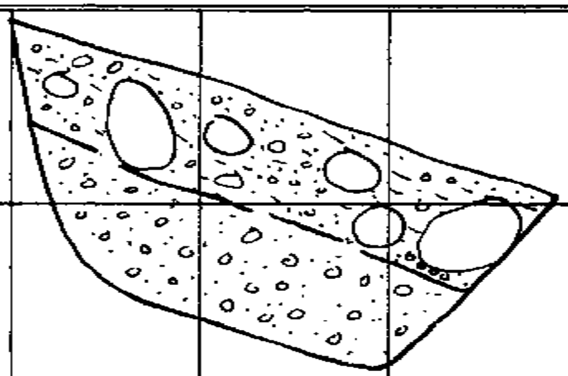
W.O. 8838

PLATE TP108

LOG OF EXCAVATION
Trench No. TP109
Logged By: NM
Date Excavated: 6/7/06
Client: Pardee Homes

Depth (ft)	Description	Comments
0 - 3	<u>Alluvium</u>: Medium brown sandy CLAY to clayey SAND with abundant gravels, cobbles and boulders (approximately 20% greater than 1' diameter), several boulders up to approx. 2' diameter, slightly moist, medium dense.	
3 - 6	<u>Saugus Formation?</u>: Light brown sandy gravel cobble CONGLOMERATE, sandstone matrix supported, slightly moist, very dense.	
	Total Depth - 6' No groundwater No caving Backfilled	

Graphic Log



scale 1" = 5'
GEOLABS-WESTLAKE VILLAGE
W.O. 8838
PLATE TP109

LOG OF EXCAVATION
Trench No. TP110

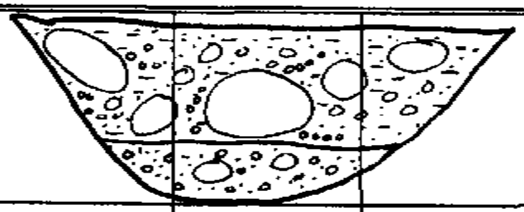
Logged By: NM

Date Excavated: 6/7/06

Client: Pardee Homes

Depth (ft)	Description	Comments
0 - 3	<u>Alluvium</u>: Medium brown silty fine to coarse grained gravelly SAND with abundant cobbles and boulders (approximately 25% greater than 1' diameter), well graded, subangular to subrounded clasts typically 4-6" to approximately 1.5', moist, medium dense.	
3 - 4.5	<u>Saugus Formation?</u>: Light brown sandy gravel cobble CONGLOMERATE, fine to medium grained sandstone matrix supported, moist, very dense.	
	Total Depth - 4.5' No groundwater No caving Backfilled	

Graphic Log



scale 1" = 5'

GEOLABS-WESTLAKE VILLAGE

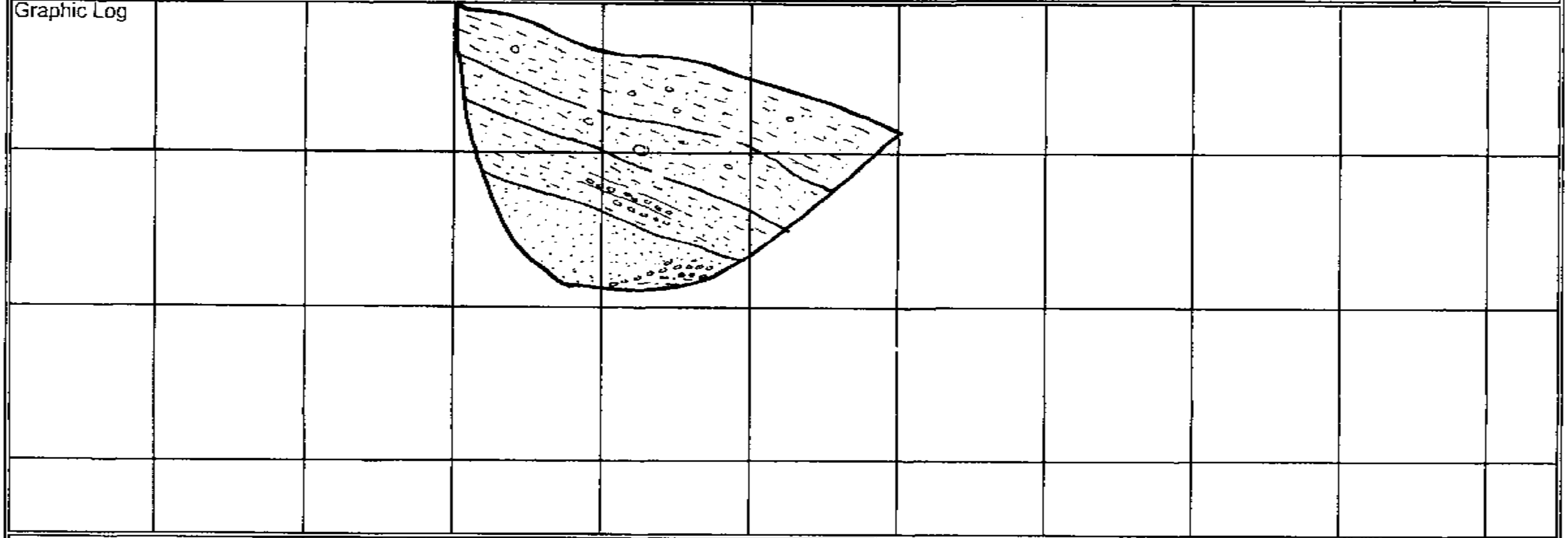
W.O. 8838

PLATE TP110

LOG OF EXCAVATION
Trench No. TP111
Logged By: NM
Date Excavated: 6/7/06
Client: Pardee Homes

Depth (ft)	Description	Comments
0 - 2	Colluvium: Dark brown sandy CLAY with occasional gravels, rootlets, porous, slightly moist, medium stiff.	
2 - 3	Gradational contact to reddish brown clayey SAND with occasional gravels and cobbles, massive, pinhole porosity, slightly moist, medium dense.	
3 - 5	Saugus Formation: Light reddish brown very fine grained silty SANDSTONE with occasional discontinuous coarse grained interbeds approximately 6" thick, poorly graded, moist, very dense.	
5 - 7.5	Gradational contact with light reddish brown fine grained SANDSTONE, poorly graded, massive, moist, very dense, scoured contact with discontinuous siltstone.	
	Total Depth - 7.5' No groundwater No caving Backfilled	

Graphic Log



scale 1" = 5'
GEOLABS-WESTLAKE VILLAGE
W.O. 8838
PLATE TP111

LOG OF EXCAVATION
Trench No. TP112

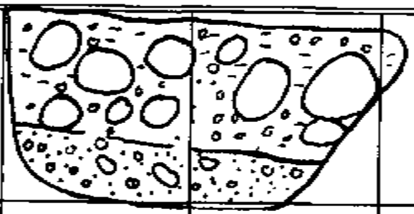
Logged By: NM

Date Excavated: 6/7/06

Client: Pardee Homes

Depth (ft)	Description	Comments
0 - 3	<u>Alluvium</u>: Medium brown clayey fine to coarse grained gravelly SAND with abundant cobbles and boulders (approximately 35% greater than 1' diameter), clasts typically 6" to 18" diameter (as coarse as 2.5" diameter), well graded, moist, medium dense.	
3 - 5	<u>Saugus Formation?</u>: Light brown gravel cobble CONGLOMERATE with medium grained sandstone supported matrix, moist, very dense.	
	Total Depth - 5' No groundwater No caving Backfilled	

Graphic Log



scale 1" = 5'

GEOLABS-WESTLAKE VILLAGE

W.O. 8838

PLATE TP112

LOG OF EXCAVATION
Trench No. TP113

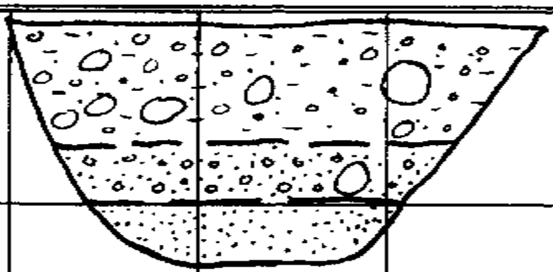
Logged By: NM

Date Excavated: 6/7/06

Client: Pardee Homes

Depth (ft)	Description	Comments
0 - 3	Alluvium: Medium brown sandy CLAY to clayey SAND with abundant gravels, cobbles and lesser boulders (approx. 10%) up to 1' diameter, well graded, rootlets, moist, medium dense.	
3 - 4.5	Saugus Formation: Light brown sandy CONGLOMERATE (matrix supported), occasional boulders approximately 1' diameter, moist, very dense.	
4.5 - 6	Irregular contact to light brown fine to very fine grained SANDSTONE, poorly graded, moist, very dense.	
	Total Depth - 6' No groundwater No caving Backfilled	

Graphic Log



scale 1" = 5'

GEOLABS-WESTLAKE VILLAGE

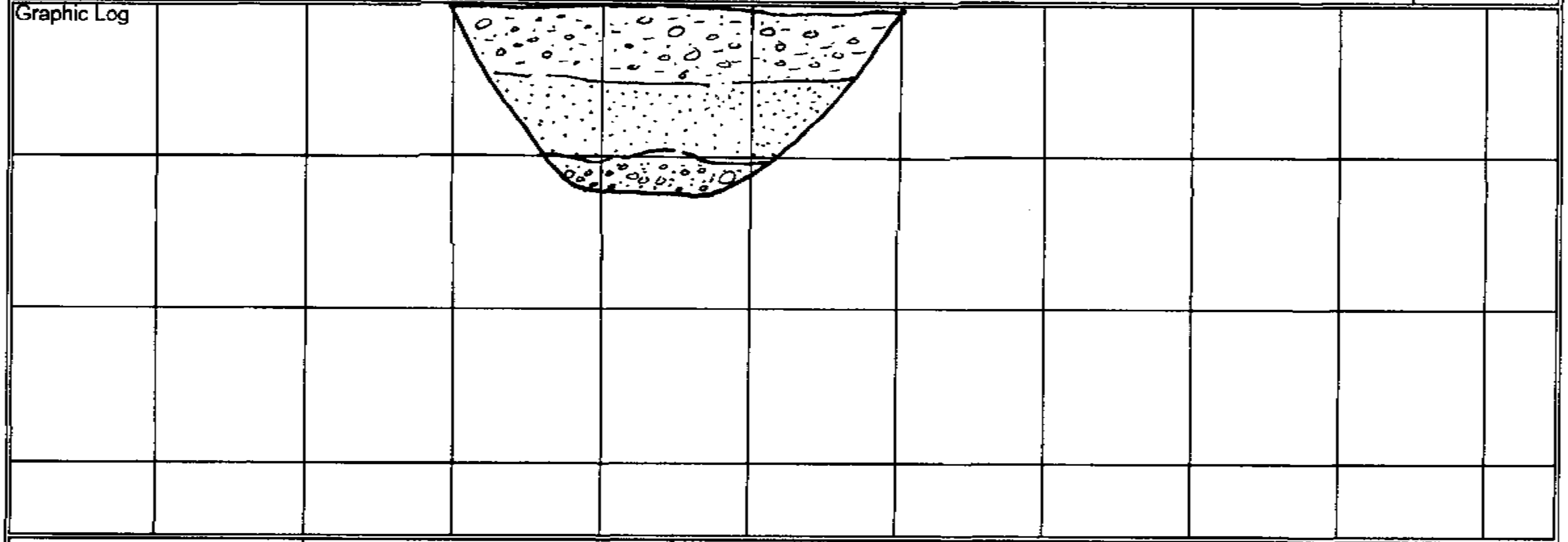
W.O. 8838

PLATE TP113

LOG OF EXCAVATION Trench No. TP114	Logged By: NM	Date Excavated: 6/8/06	Client: Pardee Homes

Depth (ft)	Description	Comments
0 - 2.5	Alluvium: Medium brown silty fine to coarse grained SAND with gravels and cobbles, slightly friable, rootlets, well graded, slightly moist, very dense.	
2.5 - 5	Mint Canyon Formation?: Mottled light greenish gray and reddish brown fine grained SANDSTONE with occasional coarse sand grains, poorly graded, massive, moist, very dense.	
5 - 6	Light greenish gray sandy CONGLOMERATE, irregular undulating contact, sandstone matrix supported, massive, moist, very dense.	
	Total Depth - 6' No groundwater No caving Backfilled	

Graphic Log



scale 1" = 5'	GEOLABS-WESTLAKE VILLAGE	W.O. 8838	PLATE TP114

LOG OF EXCAVATION
Trench No. TP115

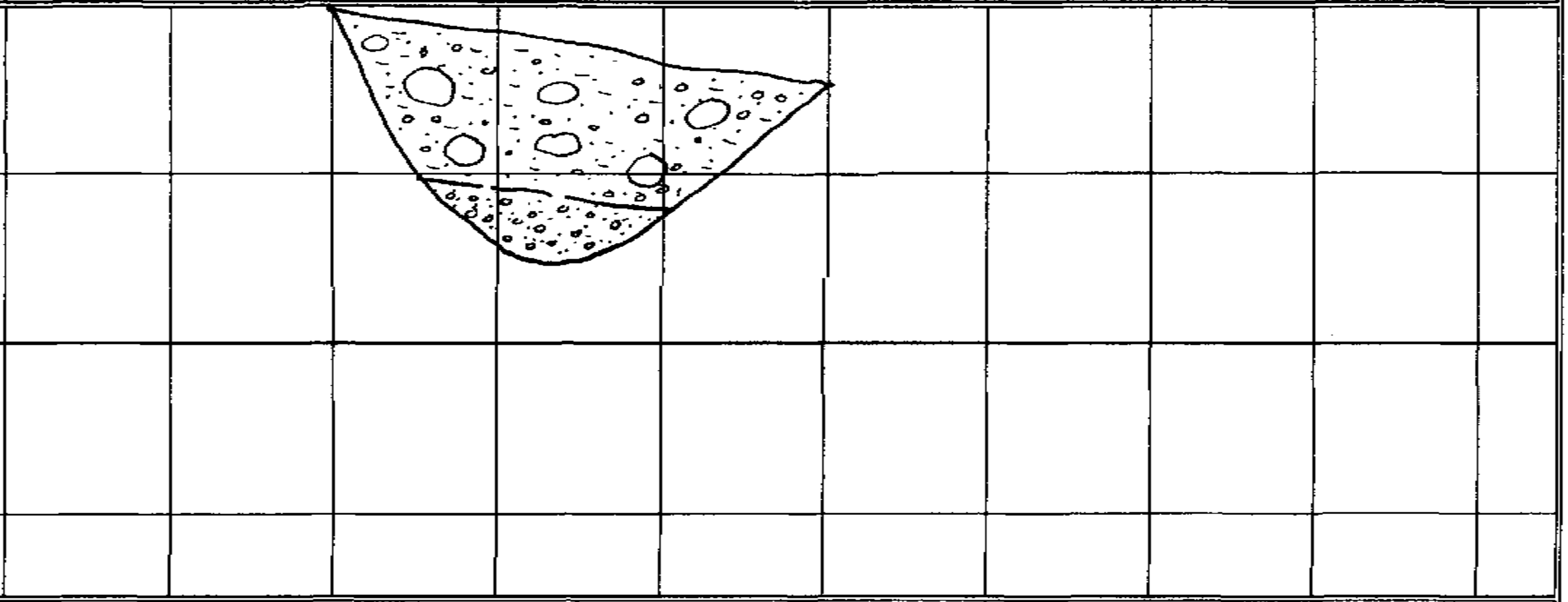
Logged By: NM

Date Excavated: 6/8/06

Client: Pardee Homes

Depth (ft)	Description	Comments
0 - 4.5	Alluvium: Medium brown clayey silty SAND with gravel, cobbles and boulders (approximately 10% greater than 1' diameter), subrounded clasts typically a few inches to approximately 1' diameter, moist, medium dense.	
4.5 - 6.5	Mint Canyon Formation?: Light greenish gray sandy gravel cobble CONGLOMERATE, moist, very dense (sandstone matrix supported).	
	Total Depth - 6.5' No groundwater No caving Backfilled	

Graphic Log



scale 1" = 5'

GEOLABS-WESTLAKE VILLAGE

W.O. 8838

PLATE TP115

LOG OF EXCAVATION
Trench No. TP116

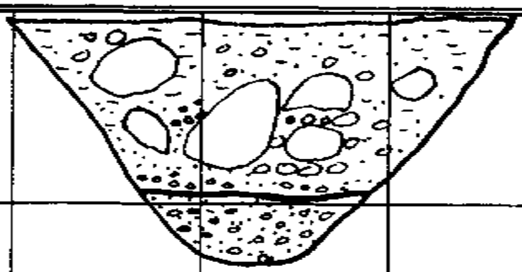
Logged By: NM

Date Excavated: 6/8/06

Client: Pardee Homes

Depth (ft)	Description	Comments
0 - 4.5	<u>Alluvium</u>: Medium brown silty fine to coarse grained gravelly SAND with cobbles and lesser boulders (approximately 15%), several clasts up to approximately 2' diameter (fractures when hit with bucket) but typically 1-3" diameter, well graded, slightly friable in bottom 1' (less fines), moist, medium dense.	
4.5 - 6	<u>Mint Canyon Formation?</u>: Light gray gravel cobble CONGLOMERATE, moist, very dense, massive.	
	Total Depth - 6' No groundwater No caving Backfilled	

Graphic Log



scale 1" = 5'

GEOLABS-WESTLAKE VILLAGE

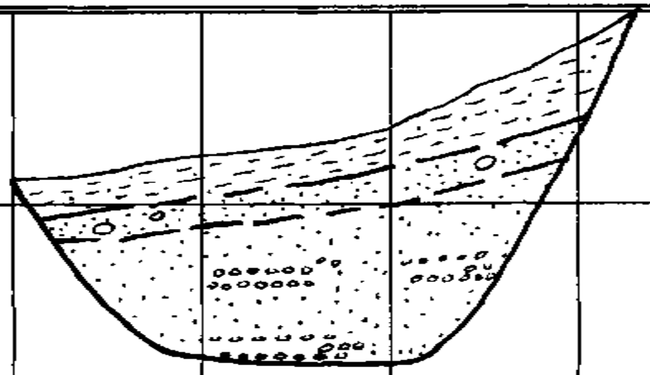
W.O. 8838

PLATE TP116

LOG OF EXCAVATION
Trench No. TP117
Logged By: NM
Date Excavated: 6/8/06
Client: Pardee Homes

Depth (ft)	Description	Comments
0 - 1	Alluvium: Dark brown sandy CLAY, porous, rootlets, moist.	
1 - 2	Severely Weathered Saugus Formation: Gradational contact to medium brown and reddish brown clayey SANDSTONE with occasional cobbles, porous, moist, medium dense.	
2 - 6	Saugus Formation: Mottled reddish brown and light gray fine grained SANDSTONE with crude discontinuous conglomeratic sandstone interbeds approx. 1' thick, moist to very moist at depth, very dense.	
	Total Depth - 6' No groundwater No caving Backfilled	

Graphic Log

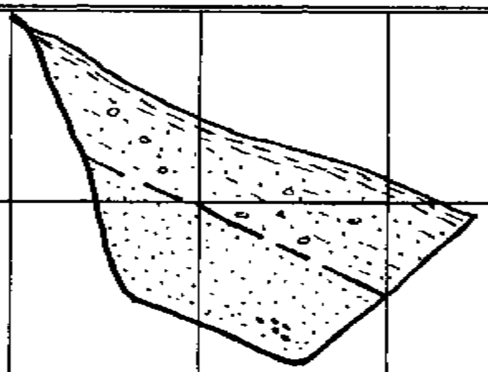


scale 1" = 5'
GEOLABS-WESTLAKE VILLAGE
W.O. 8838
PLATE TP117

LOG OF EXCAVATION
Trench No. TP118
Logged By: NM
Date Excavated: 6/8/06
Client: Pardee Homes

Depth (ft)	Description	Comments
0 - 1	Topsoil: Dark brown sandy CLAY with occasional gravels, porous, moist, rootlets, medium stiff.	
1 - 2.5	Colluvium: Medium brown clayey SAND with occasional gravels and cobbles, porous, moist, medium dense.	
2.5 - 5.5	Saugus Formation: Light reddish brown fine grained SANDSTONE with occasional scattered gravels and cobbles, poorly graded, massive, moist, very dense.	
	Total Depth - 5.5' No groundwater No caving Backfilled	

Graphic Log

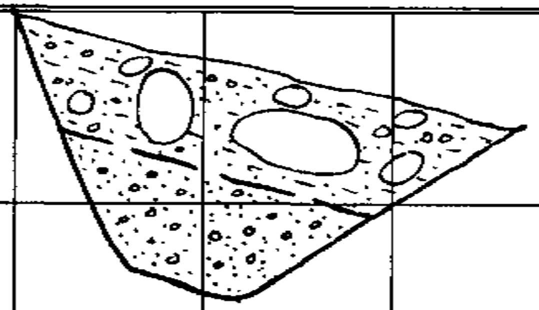


scale 1" = 5'
GEOLABS-WESTLAKE VILLAGE
W.O. 8838
PLATE TP118

LOG OF EXCAVATION
Trench No. TP119
Logged By: NM
Date Excavated: 6/8/06
Client: Pardee Homes

Depth (ft)	Description	Comments
0 - 3	Alluvium: Medium brown clayey silty fine to coarse grained SAND with gravels, cobbles and boulders (approximately 15% greater than 1' diameter), angular to rounded clasts typically a few inches to 8" diameter with 4 or 5 clasts up to approximately 1.5-2' diameter, moist, medium dense.	
3 - 6	Saugus Formation: Light brown and light greenish gray sandy CONGLOMERATE (1-2 clasts are approximately 1' diameter and highly fractured), moist, very dense.	
	Total Depth - 6' No groundwater No caving Backfilled	

Graphic Log

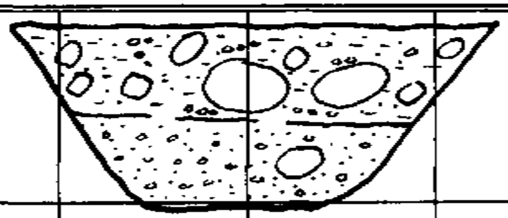


scale 1" = 5'
GEOLABS-WESTLAKE VILLAGE
W.O. 8838
PLATE TP119

LOG OF EXCAVATION Trench No. TP120	Logged By: NM	Date Excavated: 6/8/06	Client: Pardee Homes

Depth (ft)	Description	Comments
0 - 2.5	Alluvium: Medium brown clayey silty SAND with abundant gravels, cobbles and lesser boulders (approx. 10-15% greater than 1' diameter) up to 2' diameter, well graded, moist, medium dense.	
2.5 - 4.5	Saugus Formation: Light brown sandy CONGLOMERATE with occasional boulders approximately 1' diameter, moist, very dense.	
	Total Depth - 4.5' No groundwater No caving Backfilled	

Graphic Log



scale 1" = 5'	GEOLABS-WESTLAKE VILLAGE	W.O. 8838	PLATE	TP120

LOG OF EXCAVATION
Trench No. TP121

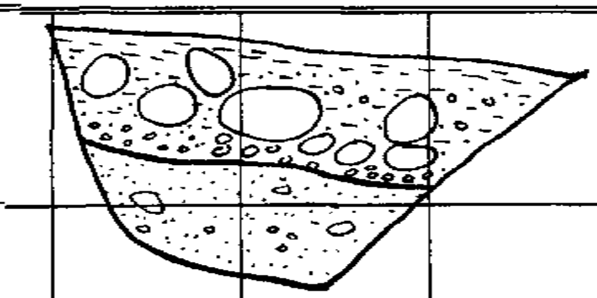
Logged By: NM

Date Excavated: 6/8/06

Client: Pardee Homes

Depth (ft)	Description	Comments
0 - 3	<u>Alluvium</u>: Medium brown silty clayey SAND with abundant gravels, cobbles and boulders (approximately 25% greater than 1' diameter), well graded, moist, medium dense, coarse sand at approximately 2-3'.	
3 - 6	<u>Saugus Formation</u>: Light yellow brown medium to coarse grained SANDSTONE with scattered gravels and lesser cobbles, moderately graded, very moist, very dense.	
	Total Depth - 6' No groundwater No caving Backfilled	

Graphic Log



scale 1" = 5'

GEOLABS-WESTLAKE VILLAGE

W.O. 8838

PLATE TP121

LOG OF EXCAVATION
Trench No. TP122

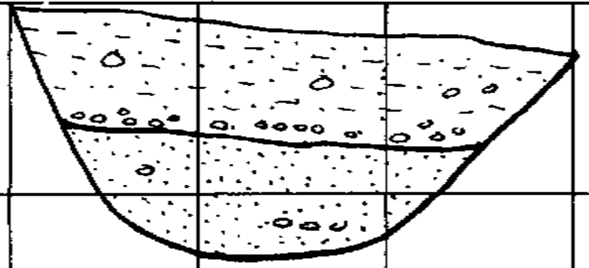
Logged By: NM

Date Excavated: 6/8/06

Client: Pardee Homes

Depth (ft)	Description	Comments
0 - 3	Colluvium: Dark brown sandy CLAY with scattered gravels and cobbles (approximately 5% are gravel to cobble clasts), rootlets, porous, moist, medium stiff.	
3 - 6	Saugus Formation: Sharp contact with light brown fine grained SANDSTONE with occasional scattered gravels and lesser cobbles, massive, poorly graded, moist, very dense, color change to light reddish brown at 5.5'.	
	Total Depth - 6' No groundwater No caving Backfilled	

Graphic Log



scale 1" = 5'

GEOLABS-WESTLAKE VILLAGE

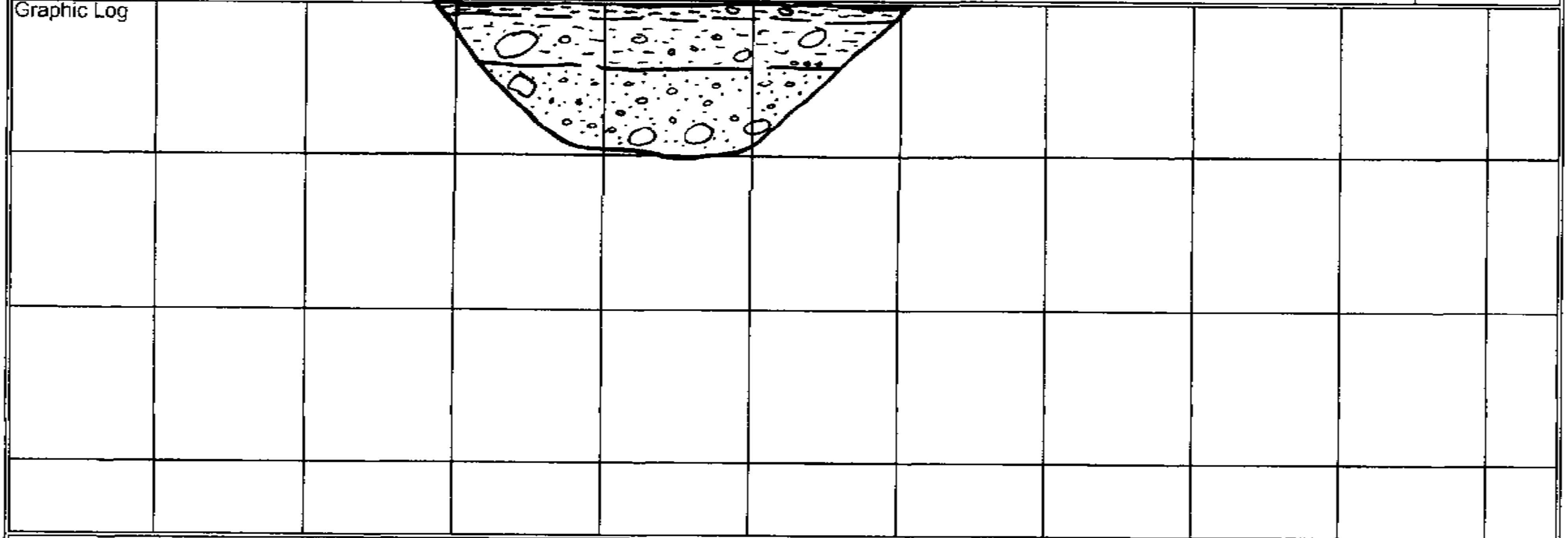
W.O. 8838

PLATE TP122

LOG OF EXCAVATION
Trench No. TP123
Logged By: NM
Date Excavated: 6/8/06
Client: Pardee Homes

Depth (ft)	Description	Comments
0 - 1	Topsoil; Dark brown sandy CLAY with scattered gravels, moist, rootlets, medium stiff.	
1 - 2.5	Colluvium: Medium brown sandy CLAY to clayey SAND with gravels and occasional cobbles to boulders up to approximately 14" diameter, moist, medium stiff to medium dense.	
2.5 - 5	Saugus Formation: Light brown and light reddish brown sandy CONGLOMERATE, fine to coarse grained sandstone supported matrix, moist, very dense.	
	Total Depth - 5' No groundwater No caving Backfilled	

Graphic Log

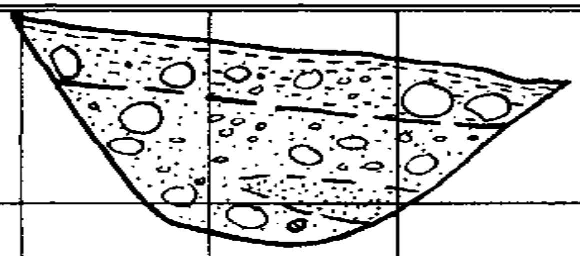


scale 1" = 5'
GEOLABS-WESTLAKE VILLAGE
W.O. 8838
PLATE TP123

LOG OF EXCAVATION
Trench No. TP124
Logged By: NM
Date Excavated: 6/9/06
Client: Pardee Homes

Depth (ft)	Description	Comments
0 - 0.5	Topsoil: Dark brown sandy CLAY with gravels and cobbles, rootlets, porous, moist, medium stiff.	
0.5 - 1.5	Alluvium: Medium brown sandy CLAY with abundant gravels, cobbles and lesser boulders (approximately 5%), angular to rounded granitic clasts up to approx. 1' diameter, well graded, moist, medium dense.	
1.5 - 5	Saugus Formation: Gradational contact to mottled light reddish brown and light greenish gray gravel cobble CONGLOMERATE with a discontinuous 1' thick interbed of light gray silty fine grained SANDSTONE at 3-4', moist, very dense.	
	Total Depth - 5' No groundwater No caving Backfilled	

Graphic Log

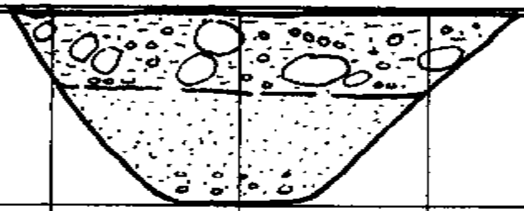


scale 1" = 5'
GEOLABS-WESTLAKE VILLAGE
W.O. 8838
PLATE TP124

LOG OF EXCAVATION Trench No. TP125	Logged By: NM	Date Excavated: 6/9/06	Client: Pardee Homes

Depth (ft)	Description	Comments
0 - 2	<u>Alluvium</u>: Medium brown to medium orangish brown clayey SAND with abundant gravels, cobbles and lesser boulders (approximately 10%), angular to subrounded clasts up to 18" diameter (approximately 10% greater than 12" diameter), abundant rootlets, moist, medium dense, clear contact with unit below.	
2 - 4	<u>Saugus Formation</u>: Yellow brown fine grained SANDSTONE, poorly graded, moist, massive, very dense.	
4 - 5	Grading to fine grained SANDSTONE with gravels (approximately 35%), moist, very dense.	
	Total Depth - 5' No groundwater No caving Backfilled	

Graphic Log

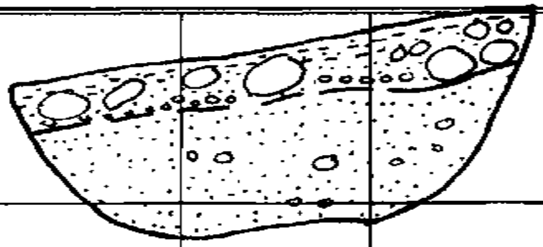


scale 1" = 5'	GEOLABS-WESTLAKE VILLAGE	W.O. 8838	PLATE TP125

LOG OF EXCAVATION
Trench No. TP126
Logged By: NM
Date Excavated: 6/9/06
Client: Pardee Homes

Depth (ft)	Description	Comments
0 - 2	<u>Alluvium</u>: Medium brown to reddish brown(with depth)sandy CLAY to clayey SAND with abundant gravels, cobbles, and lesser boulders (approximately 15% greater than 1' diameter), 1 or 2 boulders up to 1.5' diameter, porous, moist, medium dense.	
2 - 5	<u>Saugus Formation</u>; Yellow brown fine and fine to coarse grained SANDSTONE with scattered gravels and cobbles, massive, moist, very dense.	
	Total Depth - 5' No groundwater No caving Backfilled	

Graphic Log



scale 1" = 5'
GEOLABS-WESTLAKE VILLAGE
W.O. 8838
PLATE TP126

LOG OF EXCAVATION
Trench No. TP127

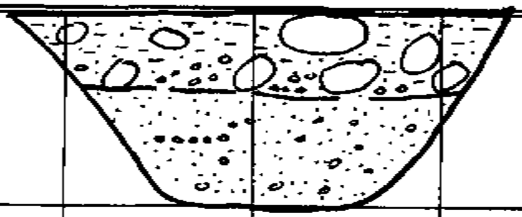
Logged By: NM

Date Excavated: 6/9/06

Client: Pardee Homes

Depth (ft)	Description	Comments
0 - 2	Alluvium: Medium brown silty clayey SAND with abundant gravels, cobbles, and lesser boulders up to approximately 1' diameter, well graded, moist, medium dense.	
2 - 5	Saugus Formation: Sharp contact to yellowish brown fine to coarse grained conglomeratic SANDSTONE (approximately 50% is sandstone), moist, very dense, massive.	
	Total Depth - 5' No groundwater No caving Backfilled	

Graphic Log



scale 1" = 5'

GEOLABS-WESTLAKE VILLAGE

W.O. 8838

PLATE TP127

LOG OF EXCAVATION
Trench No. TP128

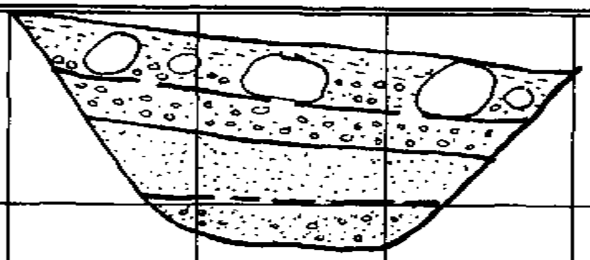
Logged By: NM

Date Excavated: 6/9/06

Client: Pardee Homes

Depth (ft)	Description	Comments
0 - 1.5	Alluvium: Medium brown clayey SAND with abundant gravels, cobbles and boulders (2-3 boulders up to 2' diameter), becoming more sandy with depth, well graded, moist, medium dense.	
1.5 - 2.5	Saugus Formation: Orangish brown coarse grained CONGLOMERATE, moist, very dense, clasts commonly gravel and cobble, slightly undulating crude contact with unit below.	
2.5 - 4	Light yellow brown fine grained SANDSTONE, poorly graded, moist, massive, very dense, faint crude contact with unit below.	
4 - 5	Light yellow brown conglomeratic SANDSTONE (approximately 50% fines), moderately graded, moist, very dense.	
	Total Depth - 5' No groundwater No caving Backfilled	

Graphic Log



scale 1" = 5'

GEOLABS-WESTLAKE VILLAGE

W.O. 8838

PLATE TP128

LOG OF EXCAVATION
Trench No. TP129

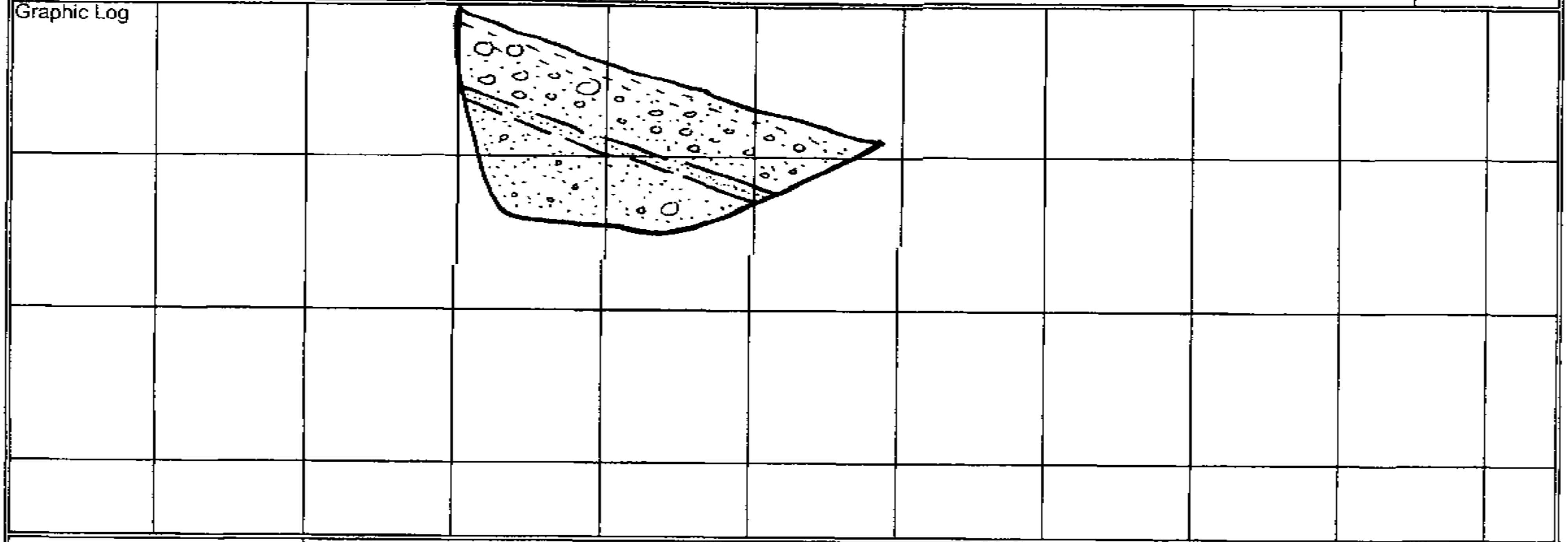
Logged By: NM

Date Excavated: 6/9/06

Client: Pardee Homes

Depth (ft)	Description	Comments
0 - 2.5	Colluvium: Medium brown sandy CLAY with abundant subrounded to rounded gravels and cobbles, slightly moist, rootlets, medium dense.	
2.5 - 3	Weathered Saugus Formation: Gradational contact to orangish brown medium to coarse grained SANDSTONE, moderately graded, slightly moist, dense.	
3 - 6	Saugus Formation: Light yellow brown medium to coarse grained SANDSTONE with scattered gravels (approximately 15%), moderately graded, massive, moist, very dense.	
	Total Depth - 6' No groundwater No caving Backfilled	

Graphic Log



scale 1" = 5'

GEOLABS-WESTLAKE VILLAGE

W.O. 8838

PLATE TP129

LOG OF EXCAVATION
Trench No. TP130

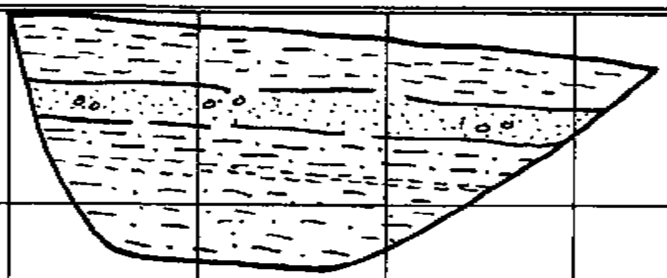
Logged By: NM

Date Excavated: 6/9/06

Client: Pardee Homes

Depth (ft)	Description	Comments
0 - 1.5	Topsoil/Dump Fill: Dark brown sandy clayey SILT with abundant pieces of small trash (bottles, tin, plastic), dry, loose.	
1.5 - 2.5	Weathered Saugus Formation: Light brown silty fine to coarse grained SANDSTONE with gravels, moderately graded, slightly friable, moist, medium dense.	
2.5 - 3'4"	Saugus Formation; Medium brown SILTSTONE to clayey SILTSTONE, massive, moist, hard.	
3'4" - 3'5"	Medium brown CLAYSTONE with pervasive internal shears, not highly polished, moist, very stiff.	
3'5" - 6	Light medium brown MUDSTONE with abundant white round specs (1-2mm), massive, moist, hard.	
	Total Depth - 6' No groundwater No caving Backfilled	

Graphic Log



scale 1" = 5'

GEOLABS-WESTLAKE VILLAGE

W.O. 8838

PLATE TP130

LOG OF EXCAVATION
Trench No. TP131

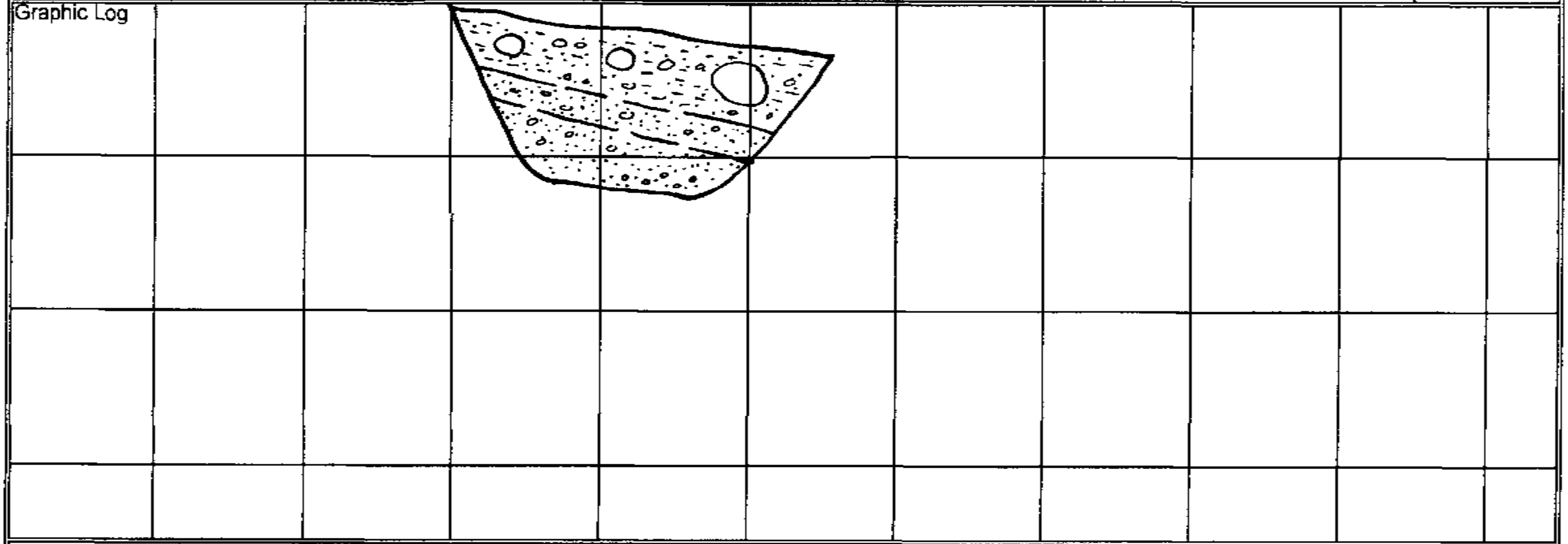
Logged By: NM

Date Excavated: 6/9/06

Client: Pardee Homes

Depth (ft)	Description	Comments
0 - 2	<u>Dump Fill/Colluvium</u>: Medium brown clayey silty SAND with gravels, cobbles, and occasional boulders up to approximately 1' diameter, abundant trash (glass, tin, metal pipe), porous, moist, medium dense.	
2 - 3	<u>Severely Weathered Saugus Formation</u>: Orange brown medium to coarse grained SANDSTONE with gravels and cobbles, moderately graded, slightly moist, dense.	
3 - 5	<u>Saugus Formation</u>: Light brown fine to coarse grained SANDSTONE with scattered gravels (approximately 25%), massive, moderately graded, moist, very dense.	
	Total Depth - 5' No groundwater No caving Backfilled	

Graphic Log



scale 1" = 5'

GEOLABS-WESTLAKE VILLAGE

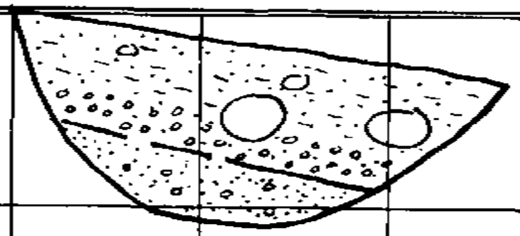
W.O. 8838

PLATE TP131

LOG OF EXCAVATION
Trench No. TP132
Logged By: NM
Date Excavated: 6/9/06
Client: Pardee Homes

Depth (ft)	Description	Comments
0 - 3	Dump Fil/Colluvium: Medium brown clayey silty SAND with gravels, cobbles and boulders (approximately 10%), with 2-3 clasts up to approximately 1.5' diameter, abundant transh (mostly metal cans/boxes) in upper 2.5', dry, loose.	
3 - 4.5	Saugus Formation: Light yellow brown medium to coarse grained SANDSTONE with scattered gravels (approximately 30%), moderately graded, massive, moist, very dense.	
	Total Depth - 4.5' No groundwater No caving Backfilled	

Graphic Log



scale 1" = 5'
GEOLABS-WESTLAKE VILLAGE
W.O. 8838
PLATE TP132

LOG OF EXCAVATION
Trench No. TP133

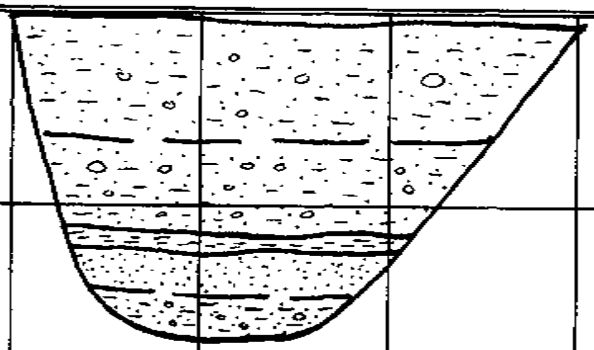
Logged By: NM

Date Excavated: 6/9/06

Client: Pardee Homes

Depth (ft)	Description	Comments
0 - 3	<u>Topsoil</u>: Medium brown clayey silty SAND with occasional gravels, slightly moist, porous, medium dense, occasional old metal pipe.	
3 - 5.5	<u>Colluvium</u>: Light medium brown silty fine to medium grained SAND and clayey SAND with occasional gravels, slightly moist, medium dense.	
5.5 - 6'3"	<u>Saugus Formation</u>: Medium brown clayey SILTSTONE to silty CLAYSTONE with occasional claystone fragments, massive, moist, very stiff.	
6'3" - 7'3"	Light grayish brown fine to medium grained SANDSTONE, moderately graded, slightly moist, very dense.	
7'3" - 8	Medium brown clayey fine grained SANDSTONE with coarse sand grains, slightly moist, very dense.	
	Total Depth - 8' No groundwater No caving Backfilled	

Graphic Log



scale 1" = 5'

GEOLABS-WESTLAKE VILLAGE

W.O. 8838

PLATE TP133

LOG OF EXCAVATION
Trench No. TP134

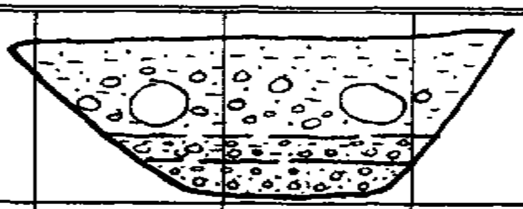
Logged By: NM

Date Excavated: 6/12/06

Client: Pardee Homes

Depth (ft)	Description	Comments
0 - 2.5	Alluvium: Medium brown sandy CLAY with gravels, cobbles and occasional boulders (approximately 2-3% greater than 1' diameter), subangular to rounded clasts typically a few inches to 8" diameter, well graded, dry to slightly moist with depth, medium dense, rootlets coarser grained with depth.	
2.5 - 3	Severely Weathered Saugus Formation: Gradational contact to orange brown CONGLOMERATE with sandy clay matrix, occasional rootlets, moist, dense.	
3 - 4	Saugus Formation: Mottled light reddish brown and light greenish gray CONGLOMERATE with fine to medium grained sandstone matrix (approximately 15%), moist, very dense.	
	Total Depth - 4' No groundwater No caving Backfilled	

Graphic Log



scale 1" = 5'

GEOLABS-WESTLAKE VILLAGE

W.O. 8838

PLATE TP134

LOG OF EXCAVATION
Trench No. TP135

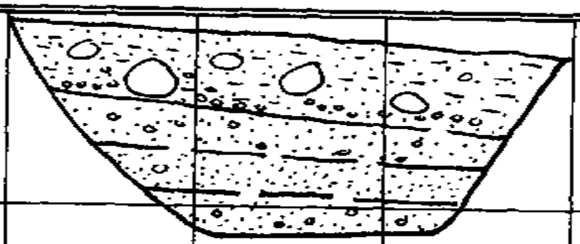
Logged By: NM

Date Excavated: 6/12/06

Client: Pardee Homes

Depth (ft)	Description	Comments
0 - 2	Alluvium: Medium brown sandy CLAY with subangular to subrounded gravels, cobbles, and occasional boulders up to approximately 1' diameter, clasts typically 3" diameter, well graded, dry to moist with depth, medium dense, rootlets, porous.	
2 - 3	Saugus Formation: Light orangish brown medium to coarse grained SANDSTONE with gravels (10-15%), moderately graded with crude faint flat lying contacts, moist, very dense.	
3 - 4	Light yellow brown medium to coarse grained SANDSTONE with very sparse gravels (less than 10%), moderately graded, moist, very dense.	
4 - 5	Crude faint contact to light yellow brown medium to coarse grained gravelly SANDSTONE, moderately graded, moist, very dense.	
	Total Depth - 5' No groundwater No caving Backfilled	

Graphic Log



scale 1" = 5'

GEOLABS-WESTLAKE VILLAGE

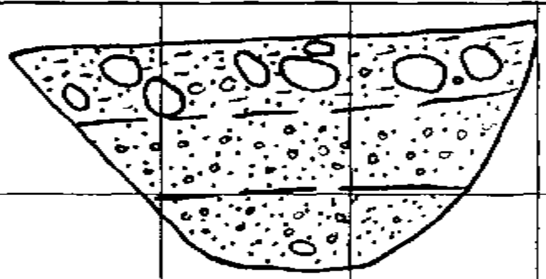
W.O. 8838

PLATE TP135

LOG OF EXCAVATION
Trench No. TP136
Logged By: NM
Date Excavated: 6/12/06
Client: Pardee Homes

Depth (ft)	Description	Comments
0 - 2	Alluvium: Medium brown sandy CLAY with gravels, cobbles, and boulders (approximately 15% greater than 1' diameter), subangular to subrounded clasts up to 2' diameter, rootlets, well graded, slightly moist, medium dense.	
2 - 4	Saugus Formation: Light yellow brown gravelly SANDSTONE with occasional oxidation stains, moderately graded, moist, very dense.	
4 - 6	Light yellow brown medium to coarse grained SANDSTONE with sparse gravels and cobbles, moderately graded, massive, moist, very dense.	
	Total Depth - 6' No groundwater No caving Backfilled	

Graphic Log



scale 1" = 5'
GEOLABS-WESTLAKE VILLAGE
W.O. 8838
PLATE TP136

LOG OF EXCAVATION
Trench No. TP137

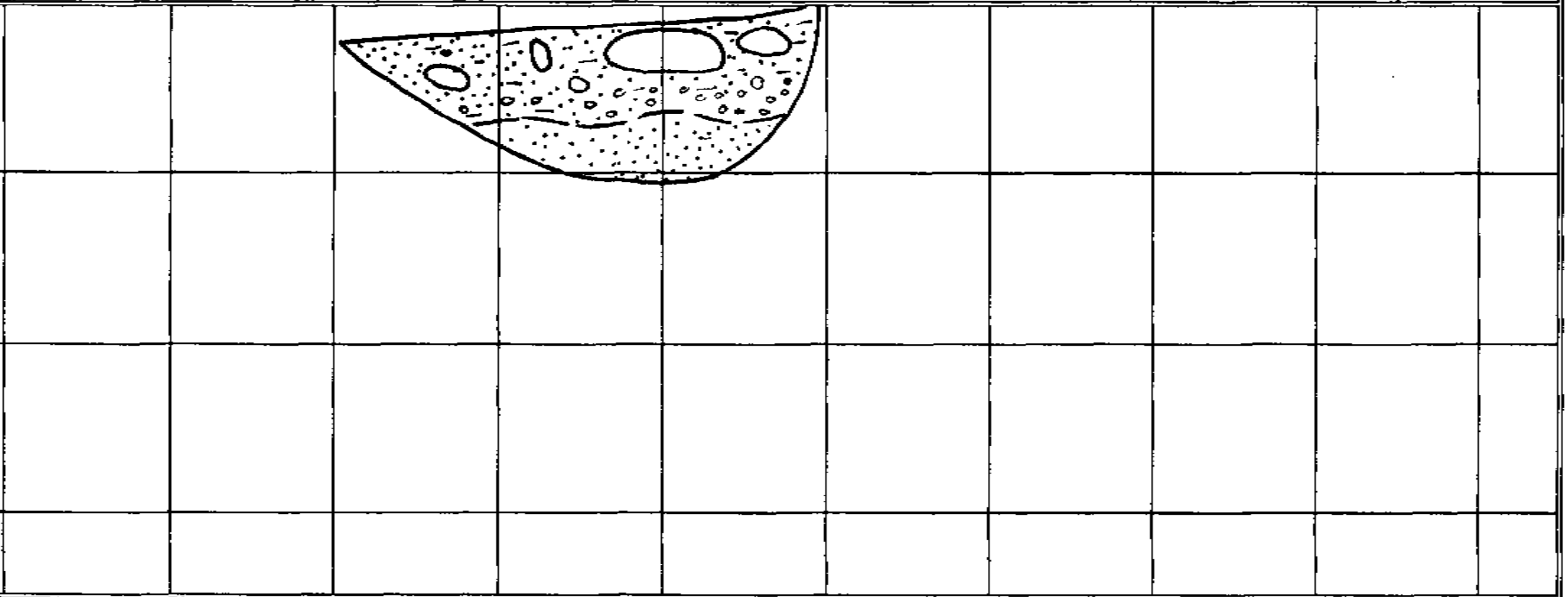
Logged By: JN

Date Excavated: 6/12/06

Client: Pardee Homes

Depth (ft)	Description	Comments
0 - 2.5	<u>Alluvium</u>: Medium brown sandy CLAY with subangular to subrounded gravels, cobbles and boulders, rootlets, well graded, slightly moist, medium dense (several large boulders approximately 3' diameter), gradational undulatory contact.	
2.5 - 4.5	<u>Mint Canyon Formation</u>: Light greenish gray fine grained SANDSTONE, slight orange brown oxidation, poorly graded, massive, very dense, moist.	
	Total Depth - 4.5' No groundwater No caving Backfilled	

Graphic Log



scale 1" = 5'

GEOLABS-WESTLAKE VILLAGE

W.O. 8838

PLATE TP137

LOG OF EXCAVATION
Trench No. TP138

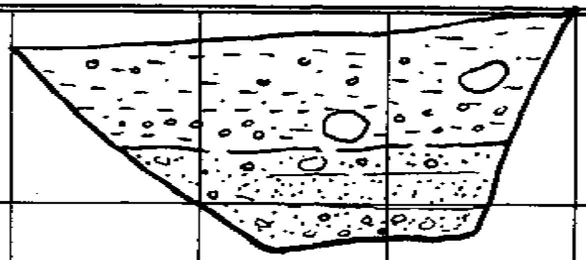
Logged By: NM

Date Excavated: 6/12/06

Client: Pardee Homes

Depth (ft)	Description	Comments
0 - 3	<u>Colluvium</u>: Dark brown sandy silty CLAY with scattered gravels and cobbles (occasional boulders up to approximately 1' diameter), well graded, porous, rootlets, dry to moist at depth, medium dense, trash in upper 1' (metal scraps).	
3 - 5.5	<u>Saugus Formation</u>: Mottled light greenish gray and light reddish brown gravel cobble CONGLOMERATE with a discontinuous 1' thick interbed of light reddish brown fine grained SANDSTONE (from 3.5-4.5'), moist, very dense.	
	Total Depth - 5.5' No groundwater No caving Backfilled	

Graphic Log



scale 1" = 5'

GEOLABS-WESTLAKE VILLAGE

W.O. 8838

PLATE TP138

LOG OF EXCAVATION
Trench No. TP139

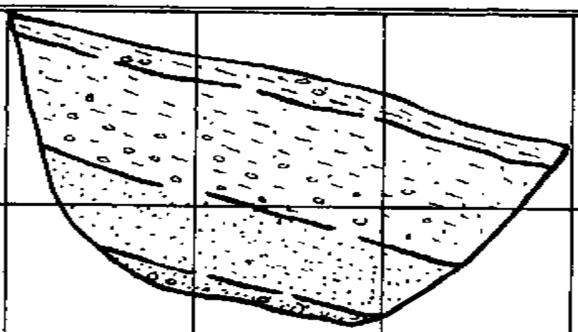
Logged By: NM

Date Excavated: 6/12/06

Client: Pardee Homes

Depth (ft)	Description	Comments
0 - 1	Topsoil: Dark brown clayey SILT with occasional gravels and cobbles, porous, rootlets, medium dense.	
1 - 4	Alluvium: Medium brown sandy CLAY with abundant fine gravels and lesser coarse gravels and cobbles, well graded, massive, moist, medium stiff.	
4 - 5.5	Saugus Formation: Medium orange brown to light reddish brown fine to medium grained SANDSTONE, moderately graded, massive, moist, very dense, small calcium carbonate specs.	
5.5 - 6	Gradational contact to light greenish gray fine grained SANDSTONE with angular to subrounded gravel and cobbles at 5.5', poorly to moderately graded, moist, very dense.	
	Total Depth - 6' No groundwater No caving Backfilled	

Graphic Log



scale 1" = 5'

GEOLABS-WESTLAKE VILLAGE

W.O. 8838

PLATE TP139

LOG OF EXCAVATION
Trench No. TP140

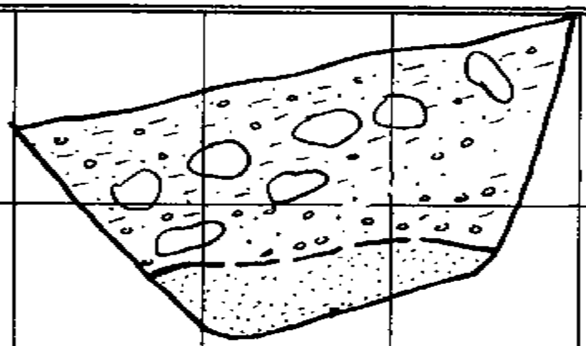
Logged By: NM

Date Excavated: 6/12/06

Client: Pardee Homes

Depth (ft)	Description	Comments
0 - 3.5	<u>Alluvium</u>: Medium brown sandy CLAY to clayey SAND with abundant subangular to rounded gravel, cobble, and boulders (approximately 25% greater than 1' diameter), abundant rootlets, pinhole porosity, grading to coarse grained SAND at 2.5', well graded.	
3.5 - 6	<u>Saugus Formation</u>: Tan to light brown fine to medium grained SANDSTONE, massive, moist, very dense, occasional gravels.	
	Total Depth - 6' No groundwater No caving Backfilled	

Graphic Log



scale 1" = 5'

GEOLABS-WESTLAKE VILLAGE

W.O. 8838

PLATE TP140

LOG OF EXCAVATION
Trench No. TP141

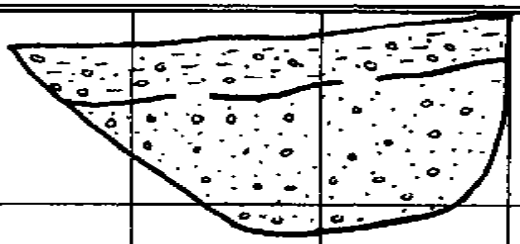
Logged By: NM

Date Excavated: 6/13/06

Client: Pardee Homes

Depth (ft)	Description	Comments
0 - 1.5	<u>Colluvium</u>: Medium brown silty SAND with gravels, porous, well graded, roots, medium dense.	
1.5 - 5	<u>Saugus Formation</u>: Light orangish brown fine to coarse grained SANDSTONE with abundant gravels and cobbles, clasts are typically 3" to 10" diameter, massive, moist, very dense.	
	Total Depth - 5' No groundwater No caving Backfilled	

Graphic Log



scale 1" = 5'

GEOLABS-WESTLAKE VILLAGE

W.O. 8838

PLATE TP141

LOG OF EXCAVATION
Trench No. TP142

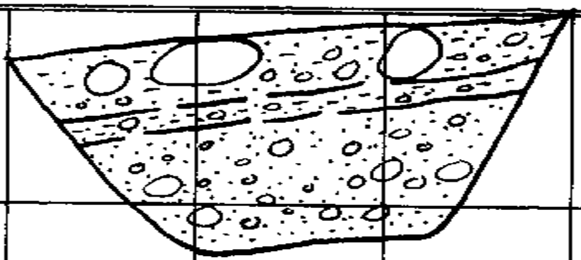
Logged By: NM

Date Excavated: 6/13/06

Client: Pardee Homes

Depth (ft)	Description	Comments
0 - 1.5	Colluvium: Medium brown clayey fine to coarse grained SAND with abundant gravels and cobbles (several boulders up to approximately 1-2' diameter at surface), well graded, medium dense, dry.	
1.5 - 2	Severely Weathered Saugus Formation: Orange brown coarse grained sandy gravel cobble CONGLOMERATE with clay in matrix, moist, dense.	
2 - 5.5	Saugus Formation: Light brown to light orange brown sandy gravel cobble CONGLOMERATE (sandstone matrix supported), massive, moist, very dense.	
	Total Depth - 5.5' No groundwater No caving Backfilled	

Graphic Log



scale 1" = 5'

GEOLABS-WESTLAKE VILLAGE

W.O. 8838

PLATE TP142

LOG OF EXCAVATION
Trench No. TP143

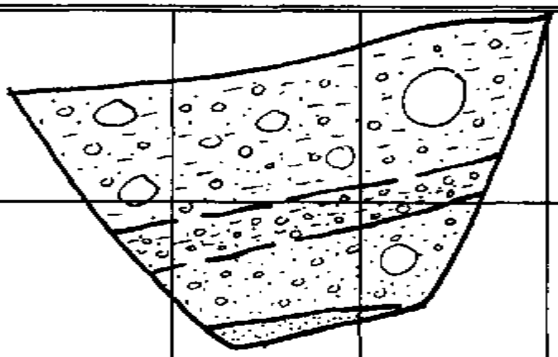
Logged By: NM

Date Excavated: 6/13/06

Client: Pardee Homes

Depth (ft)	Description	Comments
0 - 3.5	Colluvium: Medium brown sandy CLAY with scattered gravels and cobbles, occasional boulders up to 1' diameter, porous, moist, roots, medium stiff.	
3.5 - 4.5	Weathered Saugus Formation: Gradational contact to medium brown sandy gravel cobble CONGLOMERATE with sandy clay matrix, rootlets, slightly moist, medium dense.	
4.5 - 6.5	Saugus Formation; Light brown sandy gravel cobble CONGLOMERATE, massive, moist, very dense.	
6.5 - 7	Irregular scoured contact to light brown very fine grained SANDSTONE, poorly graded, moist, massive, very dense.	
	Total Depth - 7' No groundwater No caving Backfilled	

Graphic Log



scale 1" = 5'

GEOLABS-WESTLAKE VILLAGE

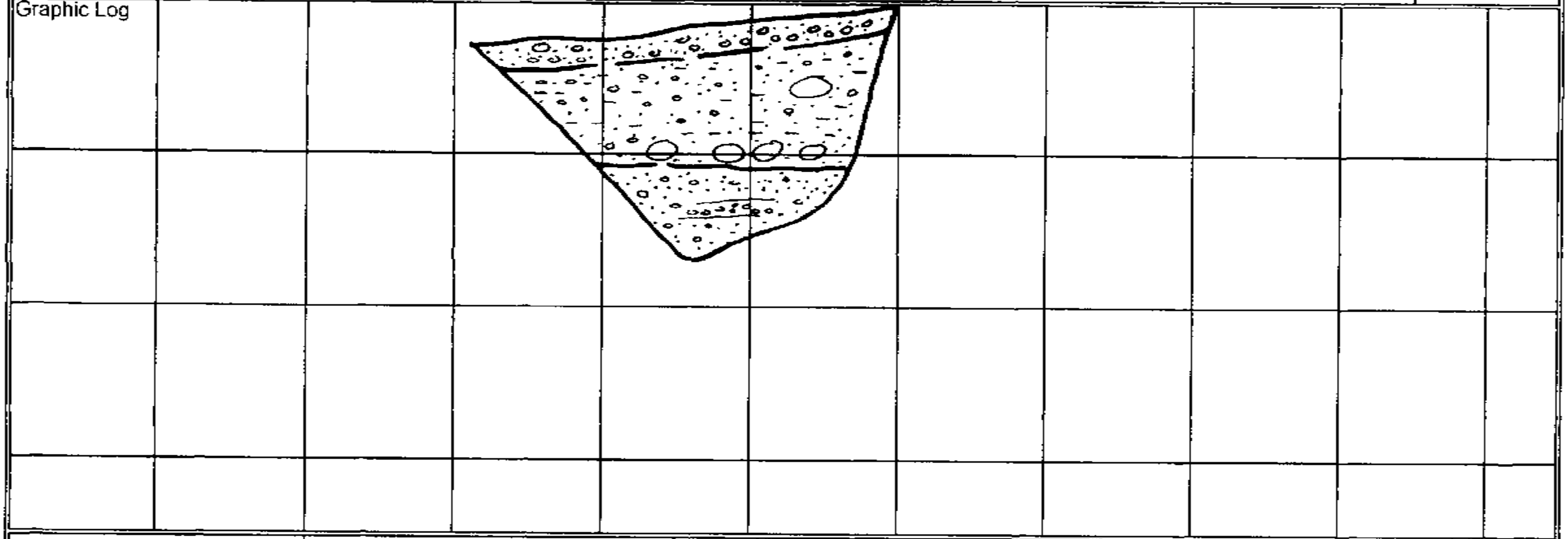
W.O. 8838

PLATE TP143

LOG OF EXCAVATION
Trench No. TP144
Logged By: NM
Date Excavated: 6/13/06
Client: Pardee Homes

Depth (ft)	Description	Comments
0 - 1	Topsoil: Medium brown clayey SAND to sandy CLAY with abundant gravels and cobbles, well graded, roots, slightly moist, medium dense to medium stiff.	
1 - 4.5	Colluvium: Medium brown sandy CLAY with scattered gravels and cobbles (higher % of clasts from 3.5-4.5' depth), occasional rootlets, moist, stiff.	
4.5 - 7	Saugus Formation: Light brown medium to coarse grained gravelly SANDSTONE with a 1' thick discontinuous interbed of gravel CONGLOMERATE from 5-6', moist, very dense.	
	Total Depth - 7' No groundwater No caving Backfilled	

Graphic Log

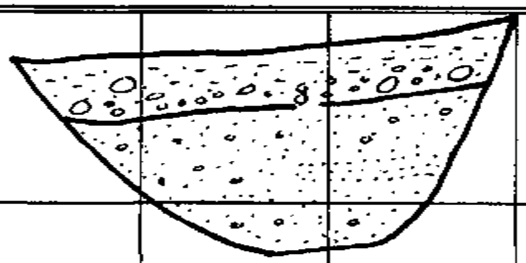


scale 1" = 5'
GEOLABS-WESTLAKE VILLAGE
W.O. 8838
PLATE TP144

LOG OF EXCAVATION
Trench No. TP145
Logged By: NM
Date Excavated: 6/13/06
Client: Pardee Homes

Depth (ft)	Description	Comments
0 - 1.5	Colluvium: Medium brown silty clayey SAND with gravels and cobbles (mostly in bottom 6"), well graded, porous, rootlets, slightly moist to moist with depth, medium dense.	
1.5 - 5	Saugus Formation: Light yellow brown sandy gravel CONGLOMERATE to conglomeratic fine to medium grained SANDSTONE, moderately to well graded, moist, very dense.	
	Total Depth - 5' No groundwater No caving Backfilled	

Graphic Log

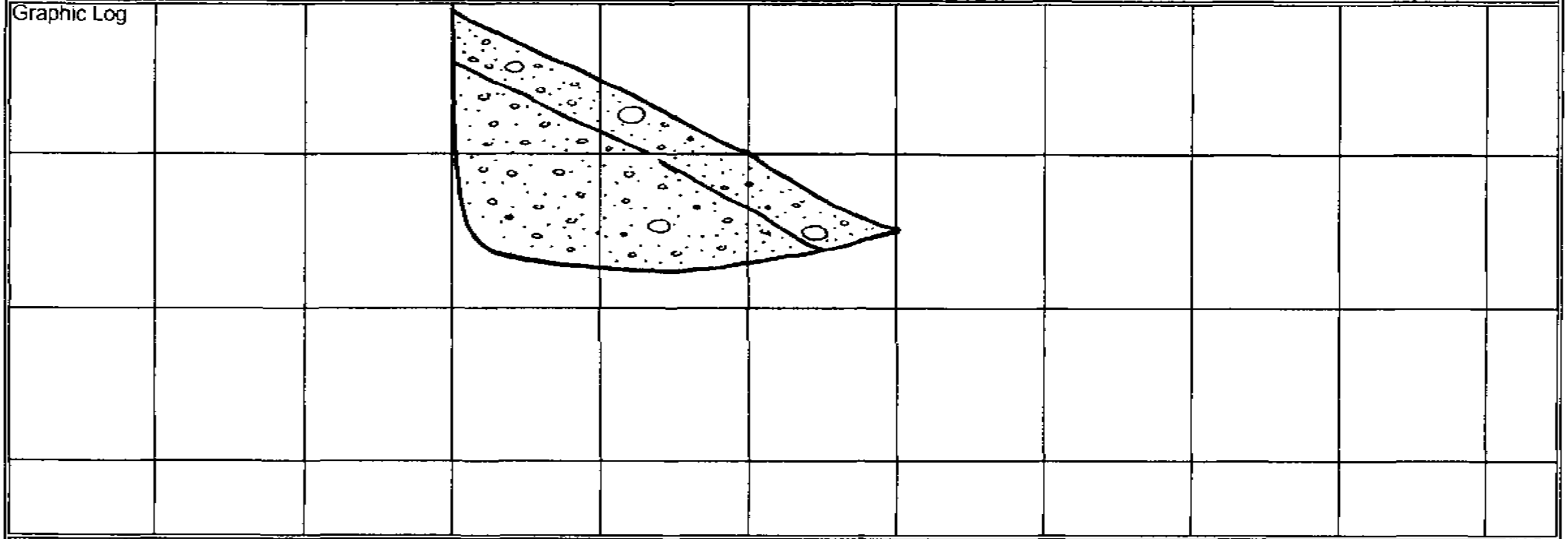


scale 1" = 5'
GEOLABS-WESTLAKE VILLAGE
W.O. 8838
PLATE TP145

LOG OF EXCAVATION Trench No. TP146	Logged By: NM	Date Excavated: 6/13/06	Client: Pardee Homes

Depth (ft)	Description	Comments
0 - 1.5	Colluvium: Medium brown fine to coarse grained SAND with gravel to sandy GRAVEL (mostly fine gravels), rootlets, slightly moist, medium dense.	
1.5 - 7	Landslide Deposit (remnant Saugus Formation): Light yellow brown coarse grained fine gravel CONGLOMERATE, massive, moist, very dense.	
	Total Depth - 7' No groundwater No caving Backfilled	

Graphic Log

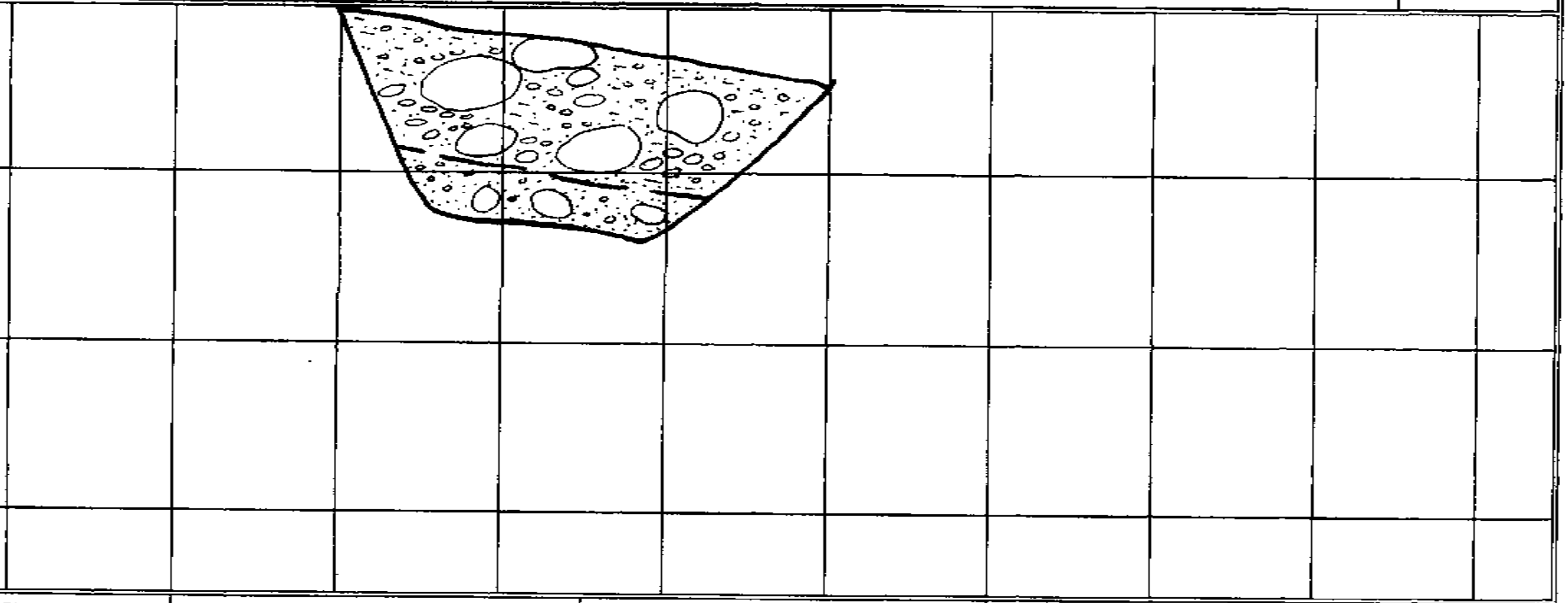


scale 1" = 5'	GEOLABS-WESTLAKE VILLAGE	W.O. 8838	PLATE TP146

LOG OF EXCAVATION
Trench No. TP147
Logged By: NM
Date Excavated: 6/13/06
Client: Pardee Homes

Depth (ft)	Description	Comments
0 - 4	<u>Alluvium</u>: Medium brown silty clayey fine to coarse grained SAND with abundant gravels, cobbles, and boulders (a few 3-4' subrounded boulders at surface), approximately 15% greater than 1' diameter, well graded, less fine content with depth, dry to moist at 3.5', medium dense.	
4 - 5.5	<u>Saugus Formation?</u>: Light greenish gray and light brown CONGLOMERATE with fine to coarse grained sandstone supported matrix, moist, very dense, one 1.5' diameter clast.	
	Total Depth - 5.5' No groundwater No caving Backfilled	

Graphic Log



scale 1" = 5'
GEOLABS-WESTLAKE VILLAGE
W.O. 8838
PLATE TP147

LOG OF EXCAVATION
Trench No. TP148

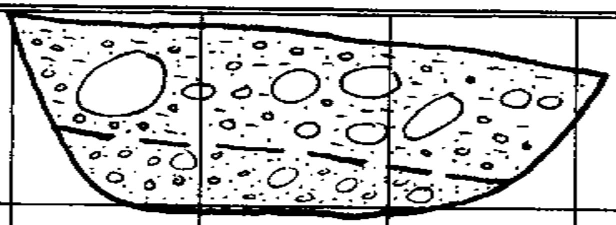
Logged By: NM

Date Excavated: 6/13/06

Client: Pardee Homes

Depth (ft)	Description	Comments
0 - 3	<u>Alluvium</u>: Medium brown silty fine to coarse grained SAND with abundant gravels, cobbles and lesser boulders (approximately 10%) approximately 15% of boulders are between 1' to 2' diameter, moist, medium dense.	
3 - 4.5	<u>Saugus Formation?</u>: Light orangish brown sandy gravel cobble CONGLOMERATE, moist, very dense.	
	Total Depth - 4.5' No groundwater No caving Backfilled	

Graphic Log



scale 1" = 5'

GEOLABS-WESTLAKE VILLAGE

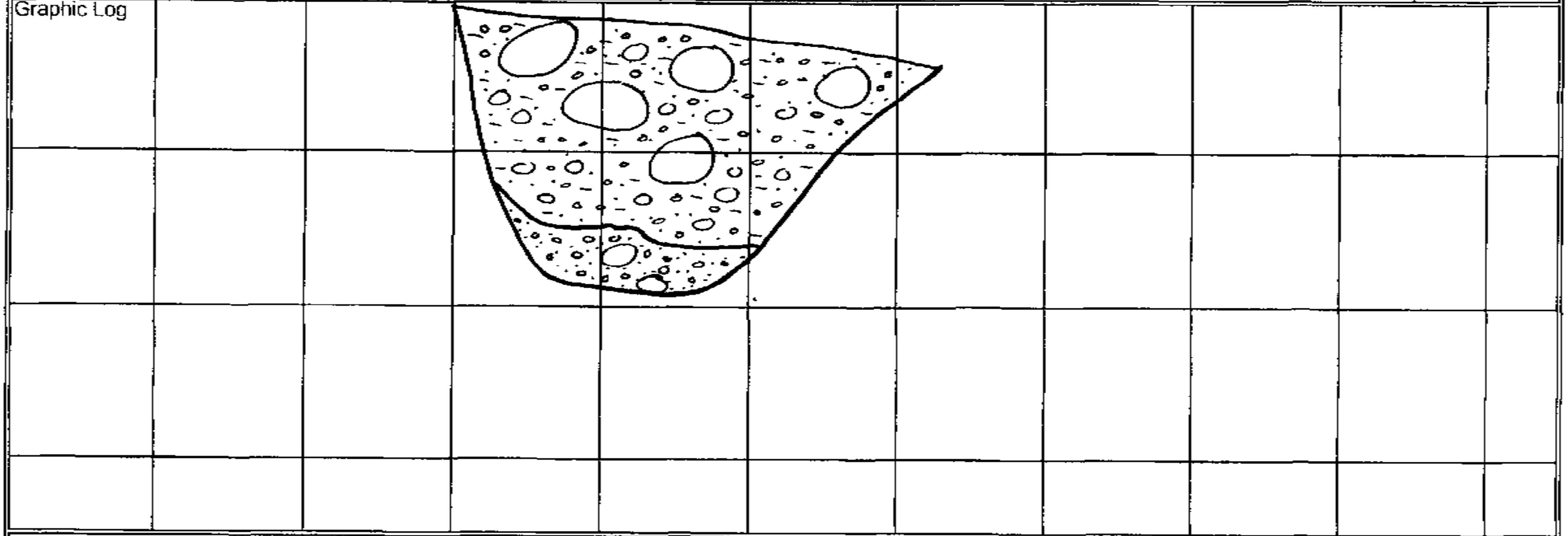
W.O. 8838

PLATE TP148

LOG OF EXCAVATION
Trench No. TP149
Logged By: NM
Date Excavated: 6/13/06
Client: Pardee Homes

Depth (ft)	Description	Comments
0 - 7	Colluvium: Medium brown silty fine to medium grained SAND with gravels and cobbles, moist to wet with seepage at approximately 7', abundant boulders on surface up to approx. 2' diameter, medium dense, steeply incised at contact.	
7 - 8.5	Saugus Formation?: Light yellow brown sandy CONGLOMERATE with occasional boulders (one clast in bottom of trench approximately 2' diameter), very moist, very dense.	
	Total Depth - 8.5' Seep at 7' No caving Backfilled	

Graphic Log



scale 1" = 5'
GEOLABS-WESTLAKE VILLAGE
W.O. 8838
PLATE TP149

LOG OF EXCAVATION
Trench No. TP150

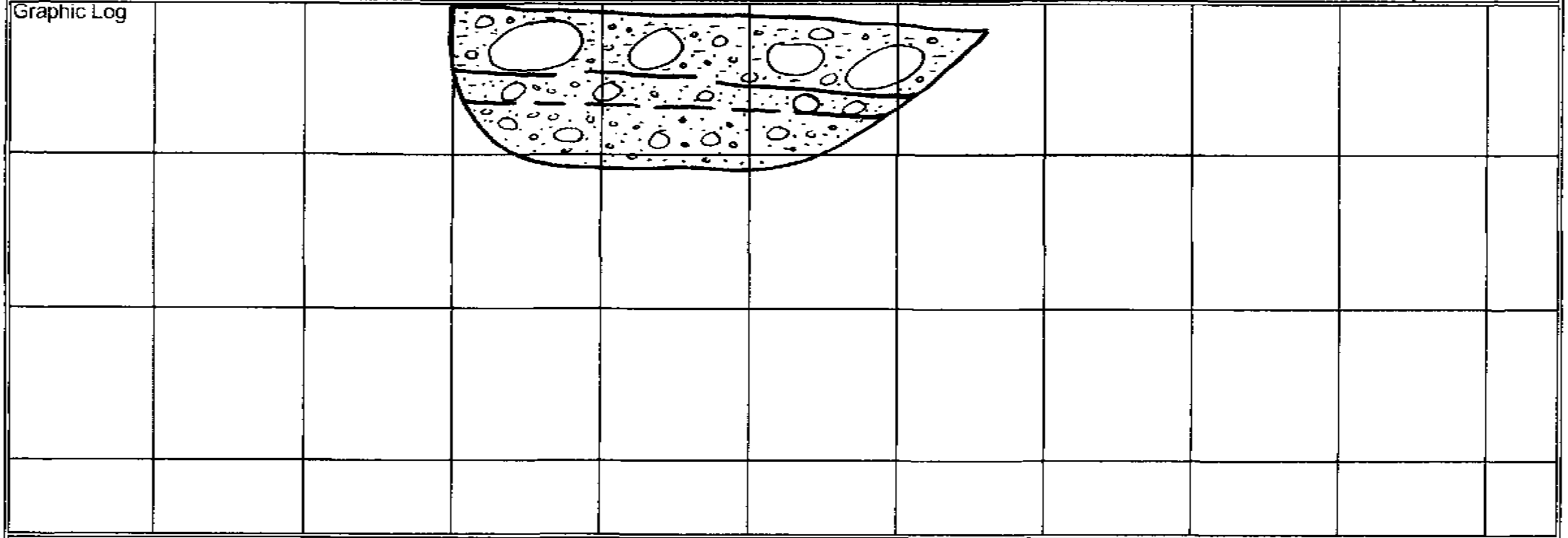
Logged By: NM

Date Excavated: 6/13/06

Client: Pardee Homes

Depth (ft)	Description	Comments
0 - 2	Alluvium: Medium to dark brown silty clayey SAND with abundant gravels and cobbles with lesser boulders (approx. 15%), subangular to rounded clasts typically a few inches diameter with 3 or 4 clasts up to 2' diameter, roots, porous, slightly moist, medium dense.	
2 - 3	Saugus Formation?: Orange brown fine to medium grained sandy gravel CONGLOMERATE, massive, slightly moist, roots, dense, highly weathered.	
3 - 5	Light yellow brown fine to medium grained sandy gravel CONGLOMERATE, massive, moist, very dense.	
	Total Depth - 5' No groundwater No caving Backfilled	

Graphic Log



scale 1" = 5'

GEOLABS-WESTLAKE VILLAGE

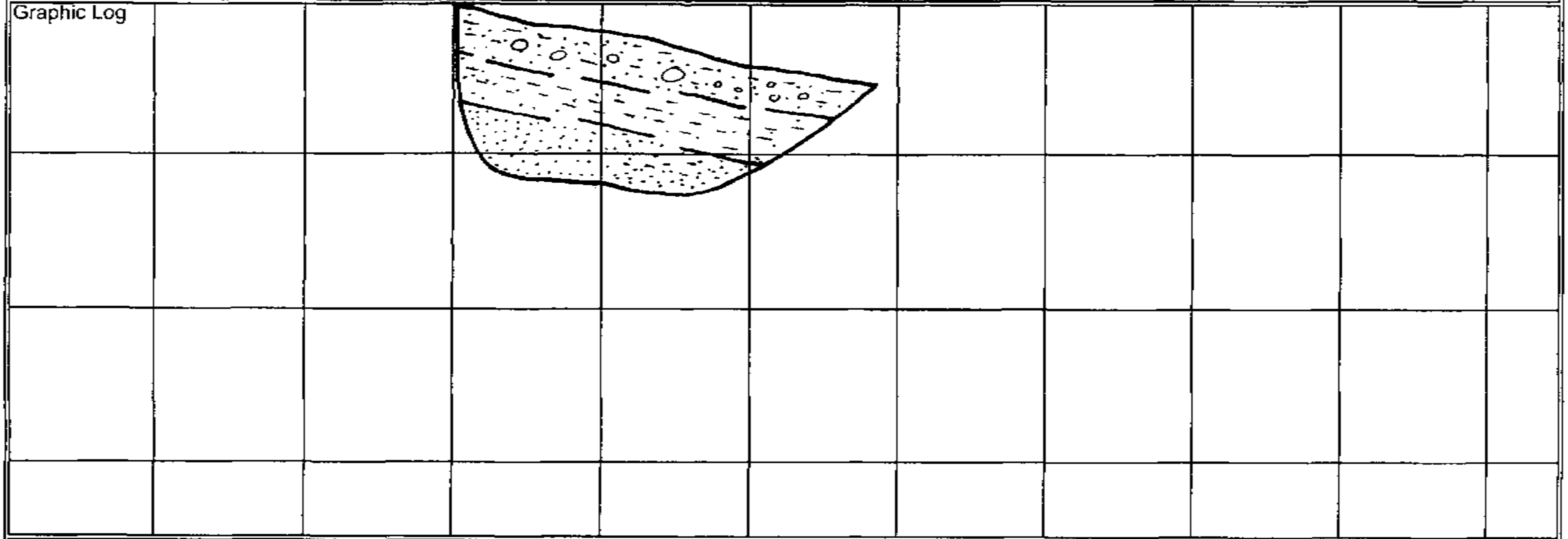
W.O. 8838

PLATE TP150

LOG OF EXCAVATION
Trench No. TP151
Logged By: NM
Date Excavated: 6/14/06
Client: Pardee Homes

Depth (ft)	Description	Comments
0 - 1.5	<u>Alluvium</u>: Medium to dark brown sandy CLAY with scattered gravels and cobbles (approximately 15%), rootlets, moist, porous, medium stiff.	
1.5 - 3	<u>Saugus Formation</u>: Light grayish brown sandy silty CLAY, moist, massive, medium stiff, occasional rootlets, highly weathered to 3'.	
3 - 5	Light brown and light reddish brown fine grained and silty fine grained SANDSTONE, poorly graded, massive, moist, very dense.	
	Total Depth - 5' No groundwate No caving Backfilled	

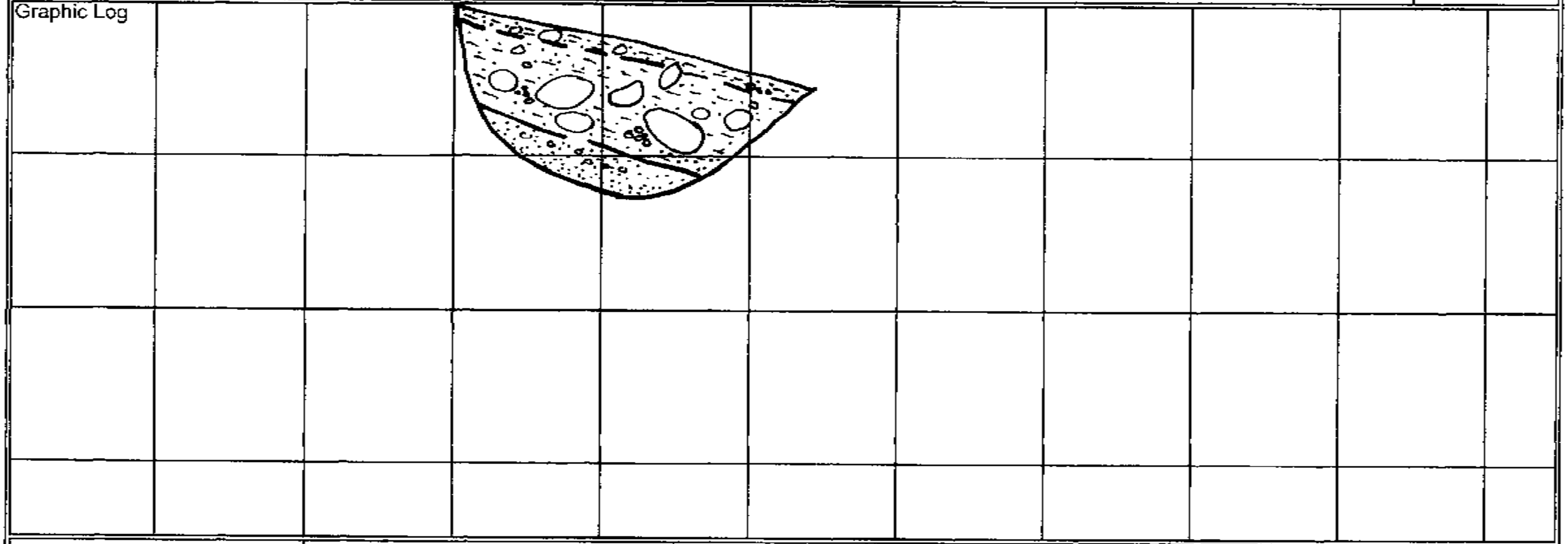
Graphic Log



scale 1" = 5'
GEOLABS-WESTLAKE VILLAGE
W.O. 8838
PLATE TP151

LOG OF EXCAVATION Trench No. TP152	Logged By: NM	Date Excavated: 6/14/06	Client: Pardee Homes

Depth (ft)	Description	Comments
0 - 1	Topsoil: Dark brown clayey SAND with gravels, cobbles, and lesser boulders (approximately 15% greater than 1' diameter), typically 1-1.5' diameter, rootlets, porous, slightly moist, medium dense.	
1 - 3	Alluvium: Medium brown sandy CLAY with gravels, cobbles and lesser boulders (approximately 15% greater than 1' diameter, typically 1-1.5' diameter), sandy CLAY at 2', massive moist, medium stiff to stiff.	
3 - 5	Saugus Formation: Light brown fine to coarse grained SANDSTONE with scattered small gravels, moderately graded, massive. Gradational contact with medium to coarse grained SANDSTONE at 4', moist, very dense, calcium carbonate stains.	
	Total Depth - 5' No groundwater No caving Backfilled	



scale 1" = 5'	GEOLABS-WESTLAKE VILLAGE	W.O. 8838	PLATE TP152

LOG OF EXCAVATION
Trench No. TP153

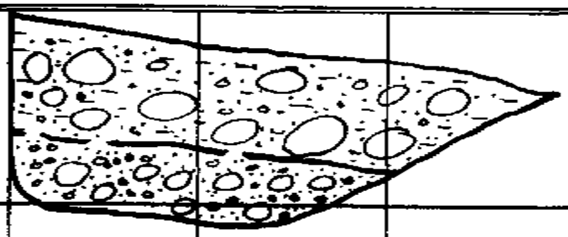
Logged By: NM

Date Excavated: 6/14/06

Client: Pardee Homes

Depth (ft)	Description	Comments
0 - 3	Alluvium: Medium brown fine to coarse grained clayey SAND with abundant angular to subrounded gravels, cobbles and lesser boulders (approximately 15%) up to 1.5' diameter, well graded, porous, rootlets, moist, medium dense.	
3 - 5	Saugus Formation: Light brown and light orangish brown sandy CONGLOMERATE, abundant cobbles, massive, moist, very dense, sandstone supported matrix.	
	Total Depth - 5' No groundwater No caving Backfilled	

Graphic Log



scale 1" = 5'

GEOLABS-WESTLAKE VILLAGE

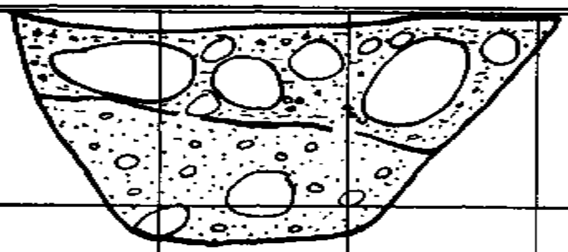
W.O. 8838

PLATE TP153

LOG OF EXCAVATION
Trench No. TP154
Logged By: NM
Date Excavated: 6/14/06
Client: Pardee Homes

Depth (ft)	Description	Comments
0 - 2.5	Alluvium: Medium brown clayey fine to coarse grained SAND with abundant gravels, cobbles and boulders (approximately 25% greater than 1' diameter), several boulders up to 3' diameter, coarsening with depth, well graded, slightly moist, medium dense.	
2.5 - 5	Saugus Formation: Light brown sandy CONGLOMERATE fine to coarse grained sandstone supported matrix, occasional boulders up to 1.5' diameter, moist, very dense.	
	Total Depth - 5' No groundwater No caving Backfilled	

Graphic Log

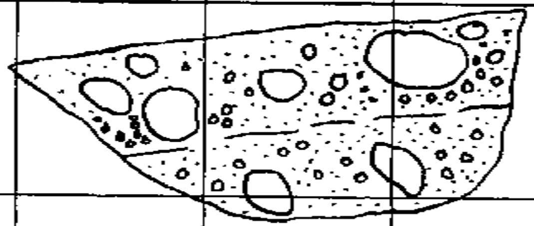


scale 1" = 5'
GEOLABS-WESTLAKE VILLAGE
W.O. 8838
PLATE TP154

LOG OF EXCAVATION
Trench No. TP155
Logged By: NM
Date Excavated: 6/14/06
Client: Pardee Homes

Depth (ft)	Description	Comments
0 - 2.5	Alluvium: Medium brown silty fine to coarse grained SAND with abundant gravels, cobbles and boulders (approximately 25% greater than 1' diameter up to approximately 2.5' diameter), moist, medium dense, rootlets.	
2.5 - 5	Saugus Formation: Light orangish to light brown fine to coarse grained sandy CONGLOMERATE with several 1.5' diameter clasts of granite/tonalite, moist to very moist with depth, very dense.	
	Total Depth - 5' No groundwater No caving Backfilled	

Graphic Log

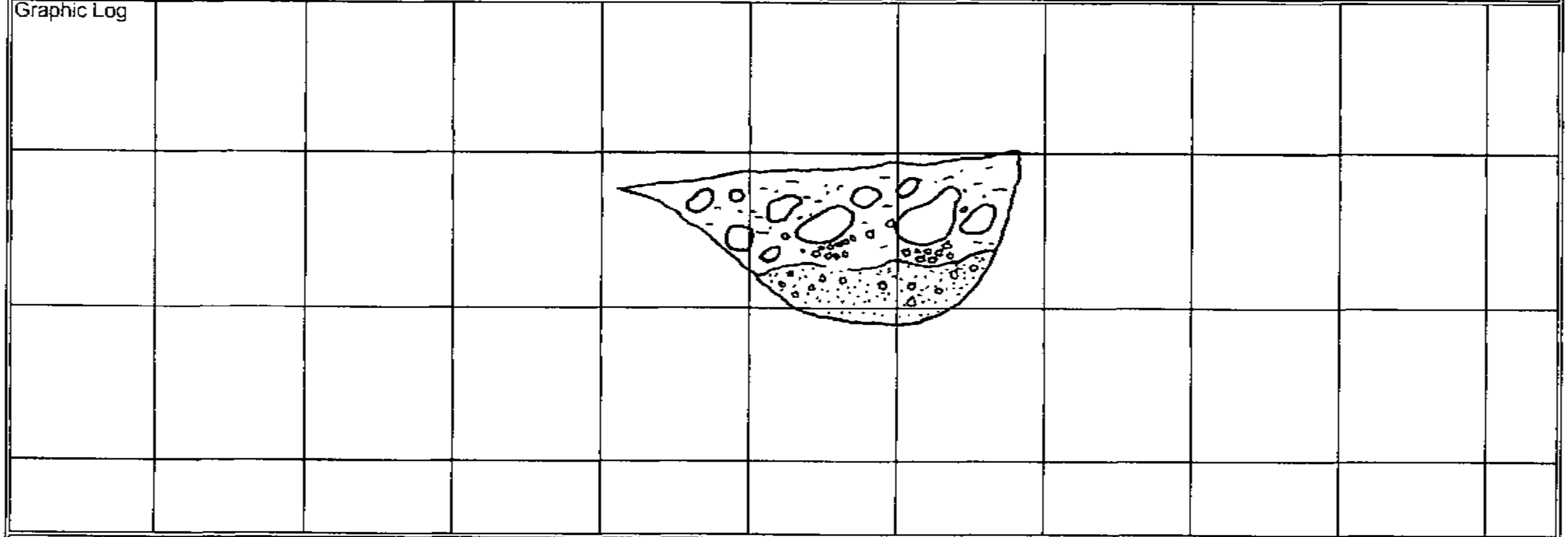


scale 1" = 5'
GEOLABS-WESTLAKE VILLAGE
W.O. 8838
PLATE TP155

LOG OF EXCAVATION Trench No. TP156	Logged By: NM	Date Excavated: 6/14/06	Client: Pardee Homes

Depth (ft)	Description	Comments
0 - 3	Alluvium: Medium brown clayey silty fine to coarse grained SAND with abundant angular to subrounded gravels, cobbles and lesser boulders (approximately 10% greater than 1' diameter up to 2' diameter), pockets of medium to coarse grained SAND at 2', well graded, rootlets, moist, medium dense.	
3 - 5	Saugus Formation: Irregular undulating contact to light brown gravel cobble CONGLOMERATE (approximately 40% fine to coarse grained sandstone supported matrix), massive, moist to very moist, very dense.	
	Total Depth - 5' No groundwater No caving Backfilled	

Graphic Log



scale 1" = 5'	GEOLABS-WESTLAKE VILLAGE	W.O. 8838	PLATE TP156

LOG OF EXCAVATION
Trench No. TP157

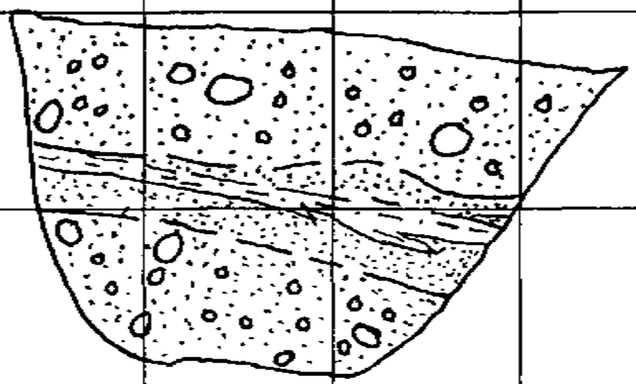
Logged By: NM

Date Excavated: 6/14/06

Client: Pardee Homes

Depth (ft)	Description	Comments
0 - 3.5	<u>Colluvium</u>: Medium brown sandy CLAY with gravels and cobbles, occasional boulders approximately 1' diameter, moist, stiff, rootlets.	
3.5 - 4'2"	<u>Saugus Formation</u>: Gradational contact with light brown silty very fine grained SANDSTONE, moderately graded, massive, slightly moist, very dense.	
4'2" - 4'10"	Light medium brown SILTSTONE ranging from 3" to 8" thick, base is interfingered with sandstone below, semi planar contacts with a discontinuous paper thin silty claystone bed at base, moist, very stiff.	
4'10" - 5'4"	Light reddish brown silty fine to medium grained SANDSTONE, moderately graded, massive with semi planar contact at base.	
5'4" - 8.5	Light brown to light greenish brown fine to coarse grained SANDSTONE with gravels and cobbles (conglomeratic sandstone).	
	Total Depth - 8.5' No groundwater No caving Backfilled	

Graphic Log



scale 1" = 5'

GEOLABS-WESTLAKE VILLAGE

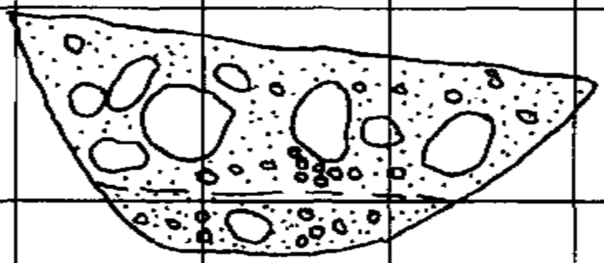
W.O. 8838

PLATE TP157

LOG OF EXCAVATION Trench No. TP158	Logged By: NM	Date Excavated: 6/14/06	Client: Pardee Homes

Depth (ft)	Description	Comments
0 - 4	Alluvium: Medium brown clayey fine to coarse grained SAND with abundant gravels, cobbles and boulders (approximately 35% greater than 1' diameter), boulder clasts typically 1-2' diameter, well graded with discontinuous pockets up to 1' thick of coarse sand, moist to very moist at base, medium dense.	
4 - 6	Saugus Formation: Light brown sandy CONGLOMERATE, very moist, very dense.	
	Total Depth - 6' No groundwater No caving Backfilled	

Graphic Log



scale 1" = 5'	GEOLABS-WESTLAKE VILLAGE	W.O. 8838	PLATE TP158

LOG OF EXCAVATION
Trench No. TP159

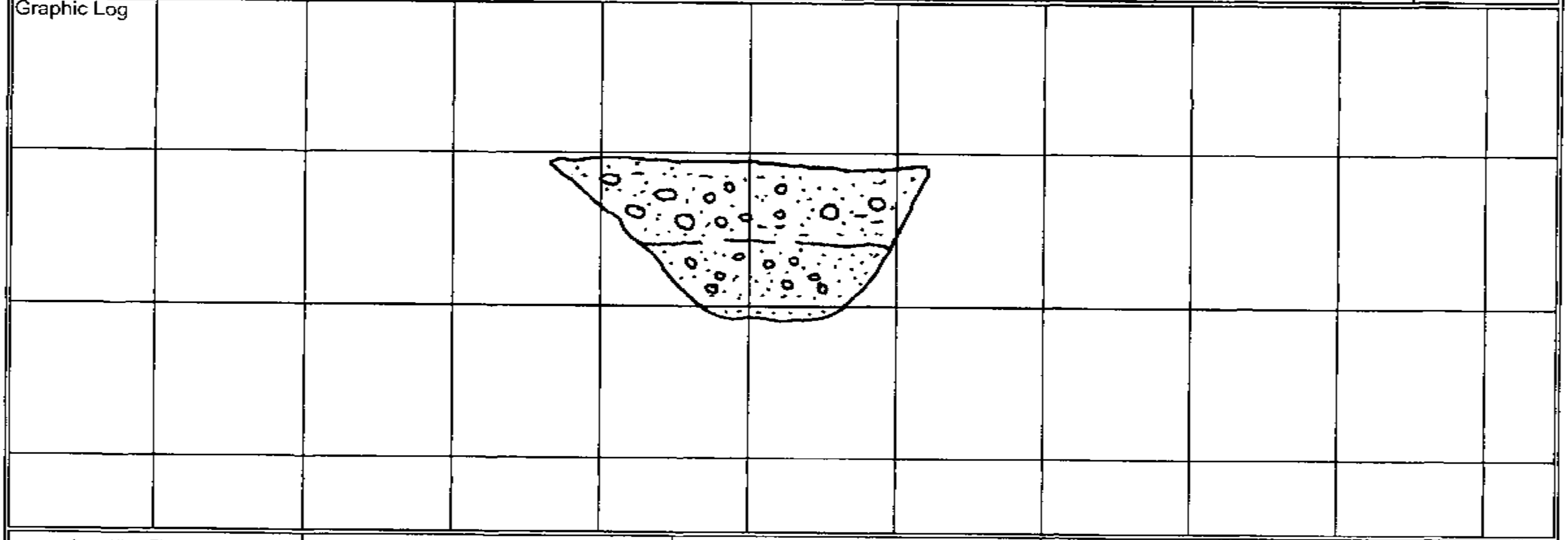
Logged By: NM

Date Excavated: 6/14/06

Client: Pardee Homes

Depth (ft)	Description	Comments
0 - 2.5	Alluvium: Medium brown silty SAND with gravels and cobbles up to 1' diameter, porous, well graded, rootlets, moist, medium dense.	
2.5 - 5	Saugus Formation: Light brown fine to coarse grained SANDSTONE with gravels (conglomeratic sandstone), moderately to well graded, massive, moist, very dense.	
	Total Depth - 5' No groundwater No caving Backfilled	

Graphic Log



scale 1" = 5'

GEOLABS-WESTLAKE VILLAGE

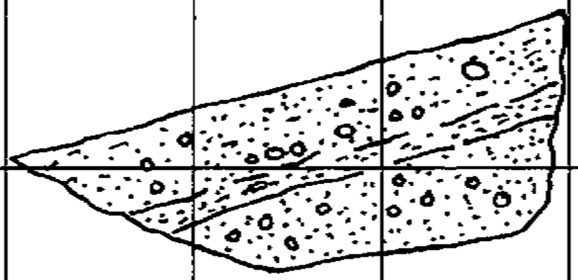
W.O. 8838

PLATE TP159

LOG OF EXCAVATION
Trench No. TP160
Logged By: NM
Date Excavated: 6/14/06
Client: Pardee Homes

Depth (ft)	Description	Comments
0 - 2	Colluvium: Medium to dark brown fine to coarse grained sandy CLAY to clayey SAND with gravels and occasional cobbles, porous, rootlets, slightly moist, medium stiff.	
2 - 2.5	Weathered Saugus Formation: Red brown fine to coarse grained sandy CLAY, moist, stiff.	
2.5 - 5	Saugus Formation: Light yellowish brown fine to coarse grained SANDSTONE with scattered gravels (approximately 10%), moderately graded, massive, moist, very dense	
	Total Depth - 5' No groundwater No caving Backfilled	

Graphic Log



scale 1" = 5'
GEOLABS-WESTLAKE VILLAGE
W.O. 8838
PLATE TP160

LOG OF EXCAVATION
Trench No. TP161

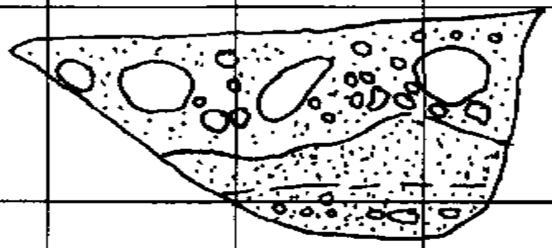
Logged By: NM

Date Excavated: 6/15/06

Client: Pardee Homes

Depth (ft)	Description	Comments
0 - 3	<u>Alluvium</u>: Medium brown clayey fine to coarse grained SAND with gravels, cobbles and boulders (approximately 25% greater than 1' diameter), boulders typically 1.5-2' diameter, mostly granitic, well graded, rootlets, moist, medium dense.	
3 - 5.5	<u>Saugus Formation</u>: Irregular undulating contact with light brown fine grained SANDSTONE, poorly graded with a gradational flat lying contact at approximately 4', with light yellowish brown fine to coarse grained SANDSTONE with gravels and cobbles (approximately 20%), moderately graded, moist, very dense.	
	Total Depth - 5.5' No groundwater No caving Backfilled	

Graphic Log



scale 1" = 5'

GEOLABS-WESTLAKE VILLAGE

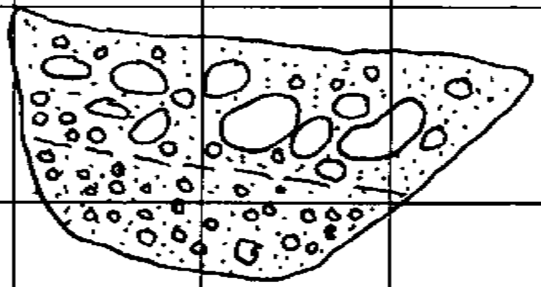
W.O. 8838

PLATE TP161

LOG OF EXCAVATION
Trench No. TP162
Logged By: NM
Date Excavated: 6/15/06
Client: Pardee Homes

Depth (ft)	Description	Comments
0 - 3	Alluvium: Medium brown clayey silty SAND with gravels, cobbles and boulders (approximately 25% greater than 1' diameter), boulders typically 1-2' diameter, well graded, rootlets, dry at surface to moist with depth, medium dense.	
3 - 6	Saugus Formation: Gradational contact witho orangish brown and light reddish brown fine to coarse grained sandy CONGLOMERATE (abundant gravels and cobbles), massive, moist, very dense.	
	Total Depth - 6' No groundwater No caving Backfilled	

Graphic Log

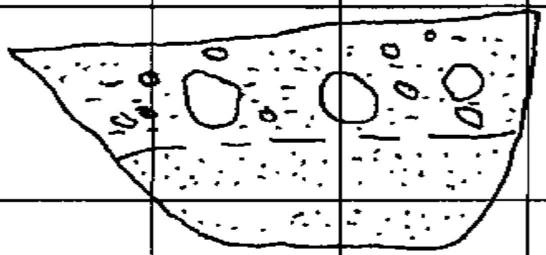


scale 1" = 5'
GEOLABS-WESTLAKE VILLAGE
W.O. 8838
PLATE TP162

LOG OF EXCAVATION Trench No. TP163	Logged By: NM	Date Excavated: 6/15/06	Client: Pardee Homes

Depth (ft)	Description	Comments
0 - 3	Alluvium: Medium brown clayey silty SAND with gravels, cobbles and lesser boulders (approximately 5%) up to 1.5' diameter, well graded, rootlets, slightly moist, medium dense.	
3 - 6	Saugus Formation: Gradational contact with light reddish brown silty fine grained SANDSTONE with coarse sand grains, moderately graded, massive, moist, very dense, calcium carbonate stains in upper 2'.	
	Total Depth - 6' No groundwater No caving Backfilled	

Graphic Log

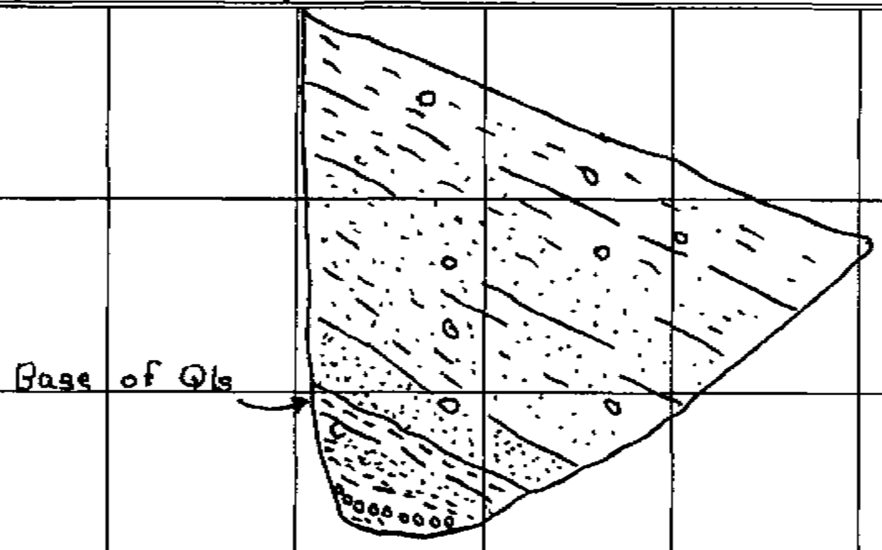


scale 1" = 5'	GEOLABS-WESTLAKE VILLAGE	W.O. 8838	PLATE TP163

LOG OF EXCAVATION
Trench No. TP164
Logged By: NM
Date Excavated: 6/15/06
Client: Pardee Homes

Depth (ft)	Description	Comments
0 - 2'	<u>Topsoil</u>: Medium brown sandy CLAY with occasional gravels, porous, rootlets.	
2 - 9	<u>Landslide Debris</u>: Crudely interbedded light medium brown silty fine to coarse grained SAND and medium brown sandy CLAY, occasional graevls, discontinuous wavy contact, abundant rootlets, pinhole porosity.	
9 - 9'8"	Medium brown sandy CLAYSTONE, grading to silty CLAYSTONE in bottom 2-3 inches (possible base of slide but with no clearly defined bounding surface), slightly polished when picked fresh, moist, massive, stiff.	
9'8" - 10'4"	<u>Saugus Formation?</u>: Contact not planar but clear to light brown silty fine grained SANDSTONE, massive, moist, very dense.	
10'4" - 10'7"	Grading to medium brown silty CLAY, massive, moist, very stiff.	
10'7" - 11'7"	Grading to light brown sandy SILTSTONE, massive, moist, very stiff.	
11'7" - 12.5	Light grayish brown fine to coarse grained SANDSTONE with abundant fine gravels, well graded, massive, calcium carbonate stains, moist, very dense to hard. Total Depth - 12.5', No groundwater, No caving, Backfilled	

Graphic Log



scale 1" = 5'
GEOLABS-WESTLAKE VILLAGE
W.O. 8838
PLATE TP164

LOG OF EXCAVATION
Trench No. TP165

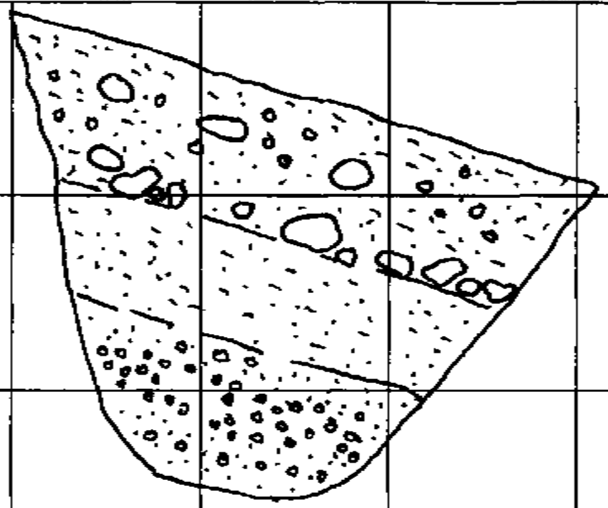
Logged By: NM

Date Excavated: 6/16/06

Client: Pardee Homes

Depth (ft)	Description	Comments
0 - 4.5	Landslide Debris?: Medium brown silty sandy CLAY with scattered gravels and cobbles, several boulders at base up to 14" diameter, well graded, moist, medium stiff.	
4.5 - 7	Gradational contact with medium brown silty very fine grained SANDSTONE, massive, moist, very dense.	
7 - 13	Saugus Formation?: Gradational contact to medium brown to light reddish brown silty fine grained SANDSTONE with coarse sand and fine gravel, 8-10' has higher concentration of small gravels (approximately 40%), massive with occasional vague flat lying gradational contacts, moist, very dense.	
	Total Depth - 13' No groundwater No caving Backfilled	

Graphic Log



scale 1" = 5'

GEOLABS-WESTLAKE VILLAGE

W.O. 8838

PLATE TP165

LOG OF EXCAVATION
Trench No. TP166

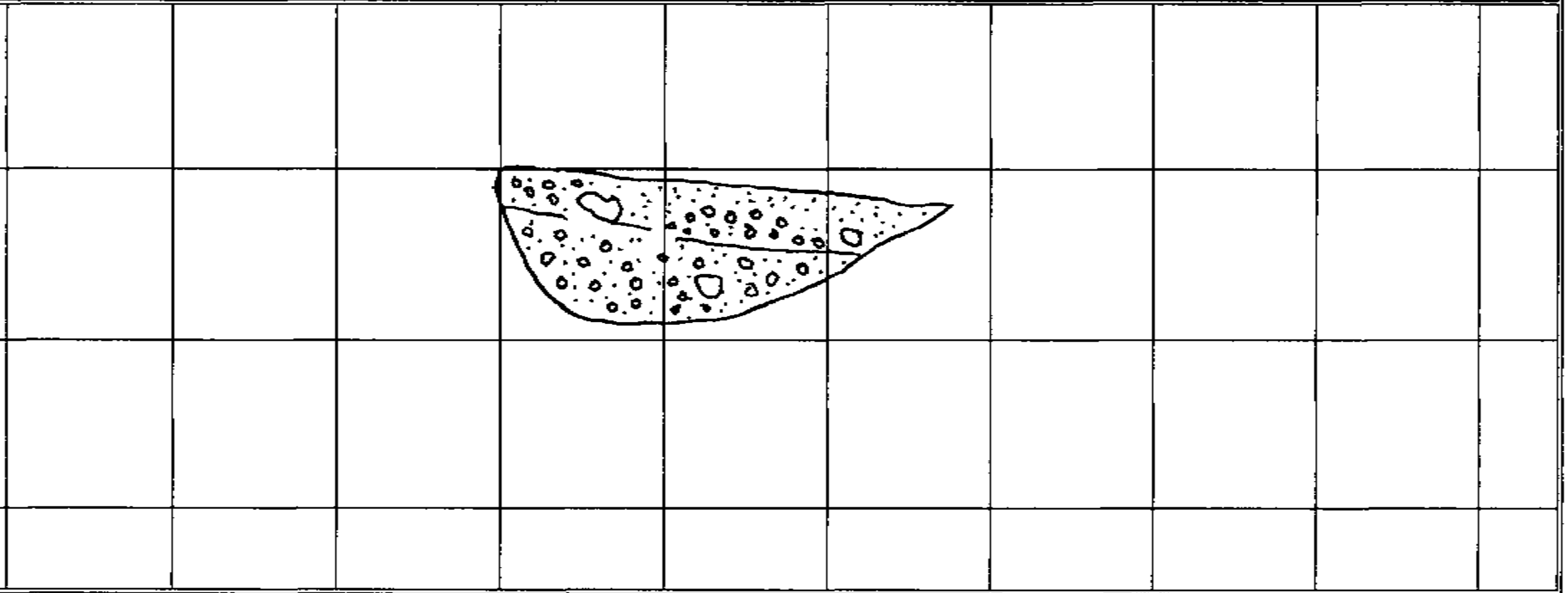
Logged By: NM

Date Excavated: 6/16/06

Client: Pardee Homes

Depth (ft)	Description	Comments
0 - 1.5	Alluvium: Medium brown fine to coarse grained gravelly SAND with scattered cobbles and very sparse boulders up to 1.5' diameter (one at surface approximately 2' diameter), well graded, loose to medium dense, dry, rootlets.	
1.5 - 4	Saugus Formation: Light brown sandy CONGLOMERATE with fine to coarse grained sandstone supported matrix, massive, moist, very dense.	
	Total Depth - 4' No groundwater No caving Backfilled	

Graphic Log



scale 1" = 5'

GEOLABS-WESTLAKE VILLAGE

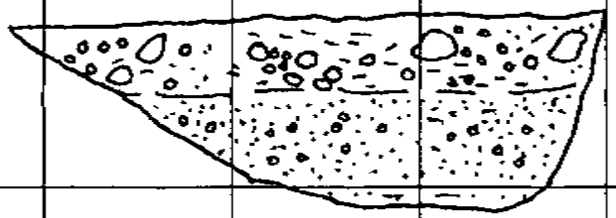
W.O. 8838

PLATE TP166

LOG OF EXCAVATION
Trench No. TP167
Logged By: NM
Date Excavated: 6/16/06
Client: Pardee Homes

Depth (ft)	Description	Comments
0 - 2	<u>Alluvium</u>: Medium brown silty fine to coarse grained SAND with gravels, cobbles, and sparse boulders (approximately 1' diameter), well graded, porous, rootlets, dry to moist with depth, medium dense.	
2 - 5	<u>Saugus Formation</u>: Gradational contact with medium brown silty fine grained SANDSTONE with coarse sand and fine gravel massive, moist, very dense.	
	Total Depth - 5' No groundwater No caving Backfilled	

Graphic Log

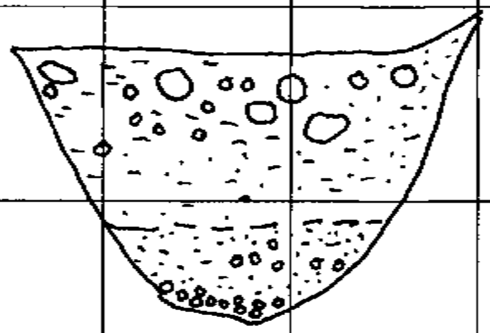


scale 1" = 5'
GEOLABS-WESTLAKE VILLAGE
W.O. 8838
PLATE TP167

LOG OF EXCAVATION Trench No. TP168	Logged By: NM	Date Excavated: 6/16/06	Client: Pardee Homes

Depth (ft)	Description	Comments
0 - 4.5	Alluvium: Medium brown sandy CLAY with scattered angular to subrounded gravels, cobbles and lesser boulders (in upper 18") up to 1.5' diameter, rootlets, moist, medium stiff to stiff with deph.	
4.5 - 7	Saugus Formation: Light medium brown silty fie to medium grained SANDSTONE with occasional coarse sand and fine gravel at 6', grades to silty fine to medium grained SANDSTONE with abundant coarse sand and small gravels, massive, moist, very dense.	
	Total Depth - 7' No groundwater No caving Backfilled	

Graphic Log



scale 1" = 5'	GEOLABS-WESTLAKE VILLAGE	W.O. 8838	PLATE TP168

LOG OF EXCAVATION
Trench No. TP169

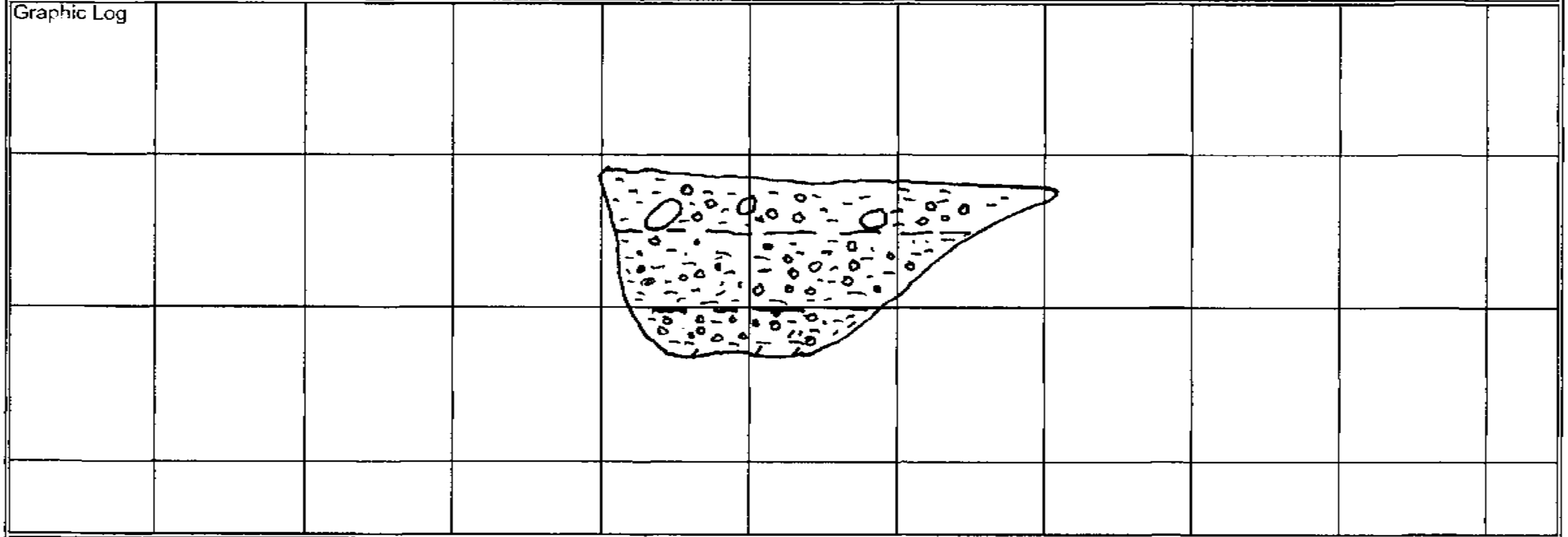
Logged By: NM

Date Excavated: 6/16/06

Client: Pardee Homes

Depth (ft)	Description	Comments
0 - 2	Alluvium: Medium brown silty clayey SAND with gravels, cobbles and occasional boulders, approximately 1' diameter, well graded, slightly moist, medium dense, rootlets.	
2 - 4.5	Saugus Formation: Gradational contact with light reddish brown silty fine to medium grained SANDSTONE with scattered coarse sand and sparse fine gravels, calcium carbonate stains, rootlets, massive, moist, dense, highly weathered to 4.5'.	
4.5 - 6	Grading to light reddish brown to medium brown fine to medium grained SANDSTONE with scattered coarse sand and fine subangular to rounded fine gravels, massive, moist, very dense.	
	Total Depth - 6' No groundwater No caving Backfilled	

Graphic Log



scale 1" = 5'

GEOLABS-WESTLAKE VILLAGE

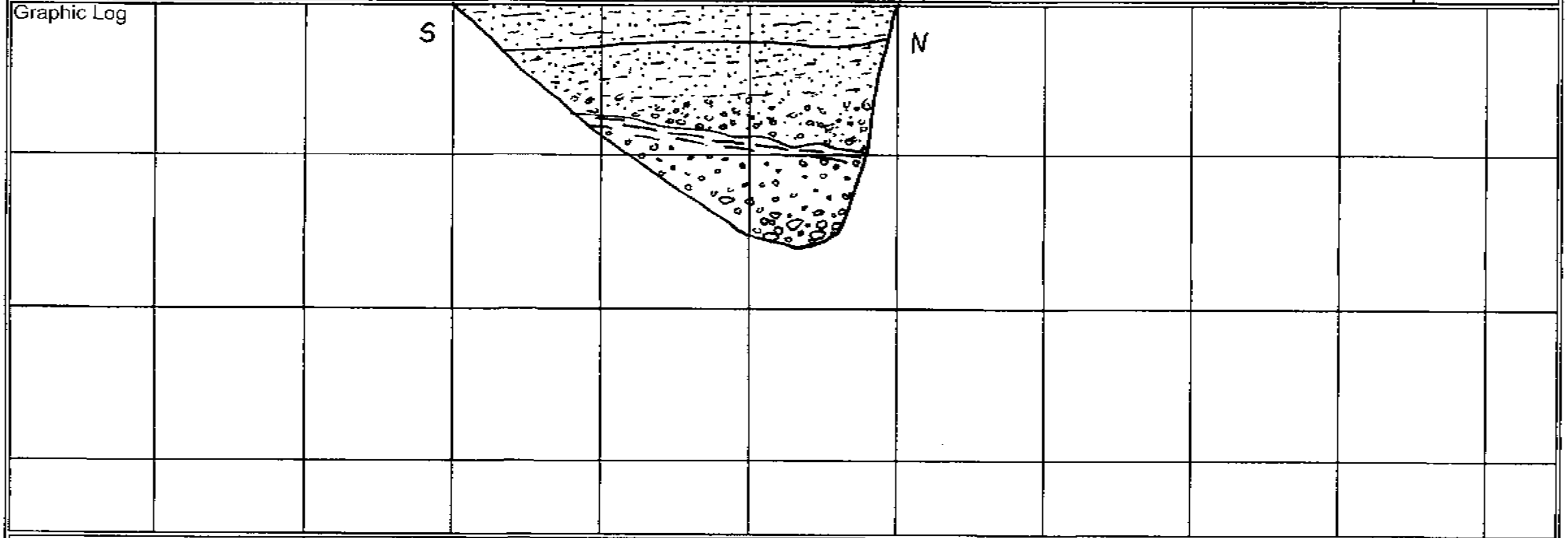
W.O. 8838

PLATE TP169

LOG OF EXCAVATION
Trench No. TP170
Logged By: RMP
Date Excavated: 8/2/06
Client: Pardee Homes

Depth (ft)	Description	Comments
0 - 1.5	Topsoil: Dark brown fine to medium grained sandy clayey SILT, graded, stiff, moist, rootlets.	
1.5 - 3	Saugus Formation: Yellowish brown sandy SILTSTONE, poorly graded, very stiff, moist, weakly indurated.	
3 - 5	Grades to subangular to subrounded fine grained gravel CONGLOMERATE with weakly cemented silty fine to coarse sand matrix, well graded, dense, moist.	@5' B N86W/28NE
5 - 5.5	Dark brown CLAYSTONE, poorly graded, very stiff, moist, sheared, variable thickness (1-6" thick) but continuous, wavy upper contact.	
5.5 - 8	Grades to subangular to subrounded yellow brown fine grained gravel CONGLOMERATE, well graded, dense, moist, trace cobbles.	
	Total Depth - 8' No groundwater No caving Backfilled	

Graphic Log



scale 1" = 5'
GEOLABS-WESTLAKE VILLAGE
W.O. 8838
PLATE TP170

LOG OF EXCAVATION
Trench No. TP171

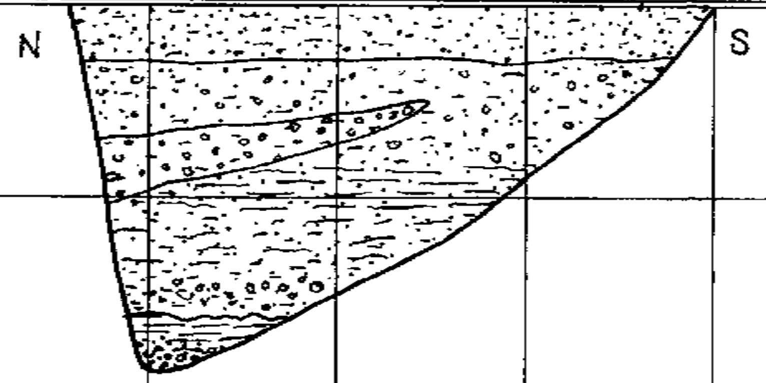
Logged By: RMP

Date Excavated: 8/2/06

Client: Pardee Homes

Depth (ft)	Description	Comments
0 - 1.5	Topsoil: Brown silty fine to coarse grained SAND, graded, dense, dry to moist, with depth, rootlets.	
1.5 - 3.5	Saugus Formation: Yellowish brown fine grained gravelly silty fine to coarse grained SANDSTONE, graded, dense, moist, weakly cemented.	
3.5 - 4.5	1' thick channeled sand in east wall, yellowish brown subangular to subrounded fine grained gravel CONGLOMERATE with slightly friable silty fine to coarse sand matrix, well graded, dense, moist.	
4.5 - 5.5	Brown silty CLAYSTONE with fine to coarse sand, graded, hard, moist.	
5.5 - 5.7	Grades to yellowish brown subangular to subrounded fine to coarse grained gravel CONGLOMERATE with weakly cemented silty fine to coarse sand matrix, well graded.	
5.7 - 7	Brown fine to coarse grained sandy silty CLAYSTONE, graded, hard, moist.	
7 - 8	Grades to yellowish brown subangular to subrounded fine to coarse grained gravel CONGLOMERATE with weakly cemented silty fine to coarse sand matrix, well graded.	
8 - 9.5	1.5' thick dark yellowish brown CLAYSTONE, hard, moist, sheared, waxy.	Total Depth - 9.5' No groundwater No caving Backfilled
@9.5'	Grades to fine grained gravelly fine to coarse grained sandy CLAYSTONE, graded, hard, moist, weakly indurated.	

Graphic Log



scale 1" = 5'

GEOLABS-WESTLAKE VILLAGE

W.O. 8838

PLATE TP171

LOG OF EXCAVATION
Trench No. TP172

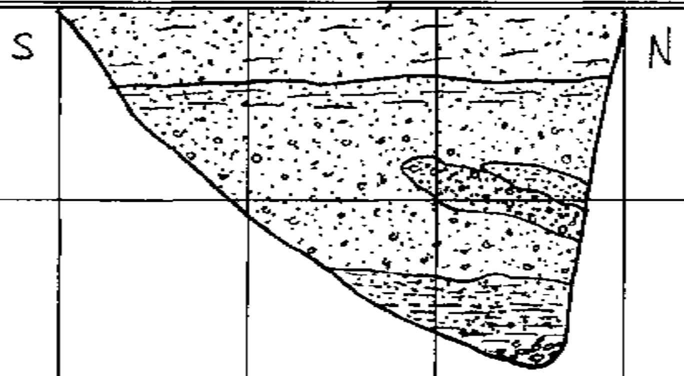
Logged By: RMP

Date Excavated: 8/2/06

Client: Pardee Homes

Depth (ft)	Description	Comments
0 - 2	Topsoil: Dark brown clayey fine to coarse grained SANDSTONE, graded, dense, moist, rootlets, pervasive white carbonate veinlets in lower 6".	
2 - 3.5	Saugus Formation: 4" thick dark yellowish brown fine to medium grained sandy CLAYSTONE, very stiff, moist.	
3.5 - 5.5	Grades to yellowish brown subangular to subrounded fine grained gravel CONGLOMERATE with weakly cemented to slightly friable clayey fine to coarse sand matrix, well graded, dense, moist.	
5.5 - 6.5	Reddish brown fine grained gravelly clayey fine to medium grained SANDSTONE, graded, dense, moist, weakly indurated, discontinuous.	
6.5 - 7.5	Discontinuous channeled sand in head wall and part of west wall, yellowish brown subangular to subrounded fine grained gravel CONGLOMERATE with slightly friable fine to coarse sand matrix, well graded, dense.	
7.5 - 8	6" thick yellowish brown fine to medium grained sandy SILTSTONE, poorly graded, very stiff, moist.	
8 - 8'8"	2" thick dark yellowish brown silty CLAYSTONE, grades to 6" thick silty fine grained SANDSTONE interbed.	
8'8" - 9.5	CLAYSTONE grades to fine grained gravel CONGLOMERATE at 9'.	
	Total Depth - 9.5', No groundwater, No caving, Backfilled	

Graphic Log



scale 1" = 5'

GEOLABS-WESTLAKE VILLAGE

W.O. 8838

PLATE TP172

LOG OF EXCAVATION
Trench No. TP173

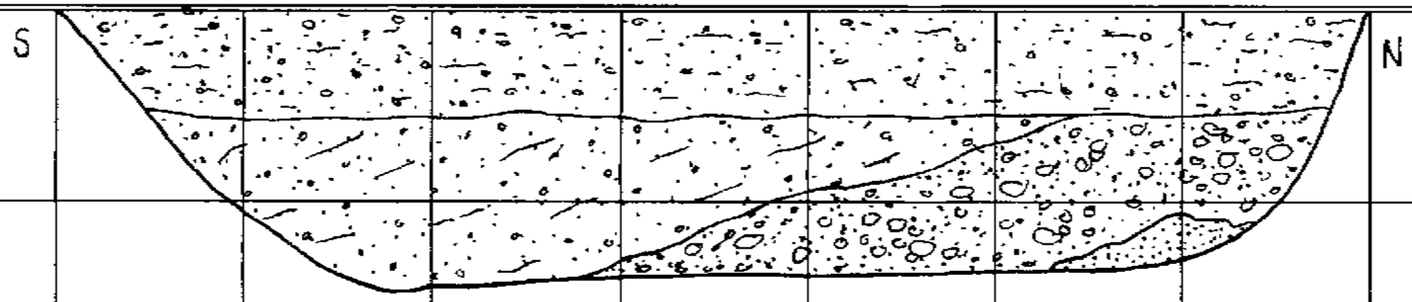
Logged By: RMP

Date Excavated: 8/2/06

Client: Pardee Homes

Depth (ft)	Description	Comments
0 - 3	Topsoil: Dark brown fine to coarse grained SAND with clay, silt, and gravel, well graded, dense, dry to moist with depth, subangular to subrounded clasts, rootlets.	
3 - 4	Saugus Formation: Yellowish brown clayey fine to coarse grained SAND with fine gravel, graded, very dense, moist, weakly indurated, clasts are subangular to subrounded.	
4 - 5.5	Grades to yellowish brown subangular to subrounded fine grained gravel-cobble CONGLOMERATE with slightly friable to weakly cemented silty fine to coarse sand matrix, well graded, very dense, moist.	
5.5 - 7	Sharp scoured contact with yellowish brown silty fine to medium grained SANDSTONE, poorly graded, very dense, moist, weakly to moderately indurated, grades to coarse sand at 6', mottled appearance.	BN26W/27SW
	Total Depth - 7' No groundwater No caving Backfilled	

Graphic Log



scale 1" = 5'

GEOLABS-WESTLAKE VILLAGE

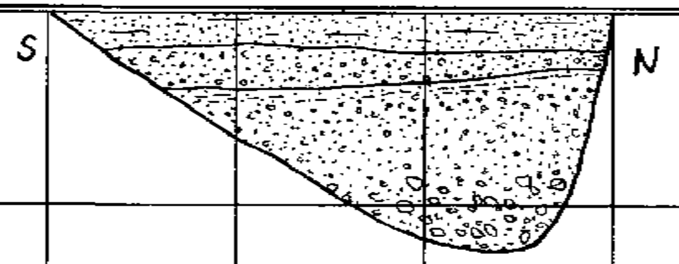
W.O. 8838

PLATE TP173

LOG OF EXCAVATION Trench No. TP174	Logged By: RMP	Date Excavated: 8/2/06	Client: Pardee Homes

Depth (ft)	Description	Comments
0 - 1	<u>Topsoil</u>: Dark brown clayey silty fine to coarse grained SAND, graded, dense, dry to moist with depth, rootlets.	
1 - 1.5	<u>Saugus Formation</u>: Yellowish brown subangular to subrounded fine grained gravel CONGLOMERATE with fine to coarse sand matrix, matrix, well graded, dense, moist, pervasive fractures, rootlets	
1.5 - 2	Yellowish brown fine grained sandy SILTSTONE, poorly graded, very stiff, moist, rootlets, pervasive fractures.	
2 - 2.5	1" thick fine grained gravel layer.	BN46W/10SW
2.5 - 4.5	Grades to yellowish brown subangular fine grained gravelly fine to coarse grained SANDSTONE with silt, graded, very dense, moist, weakly indurated, upper 6" pervasively fractured.	
4.5 - 6	Grades to yellowish brown subangular to subrounded gravel to cobble CONGLOMERATE with fine to coarse sand matrix, well graded, very dense, moist.	
	Total Depth - 6' (refusal on cobble) No groundwater No caving Backfilled	

Graphic Log



scale 1" = 5'	GEOLABS-WESTLAKE VILLAGE	W.O. 8838	PLATE TP174

LOG OF EXCAVATION
Trench No. TP175

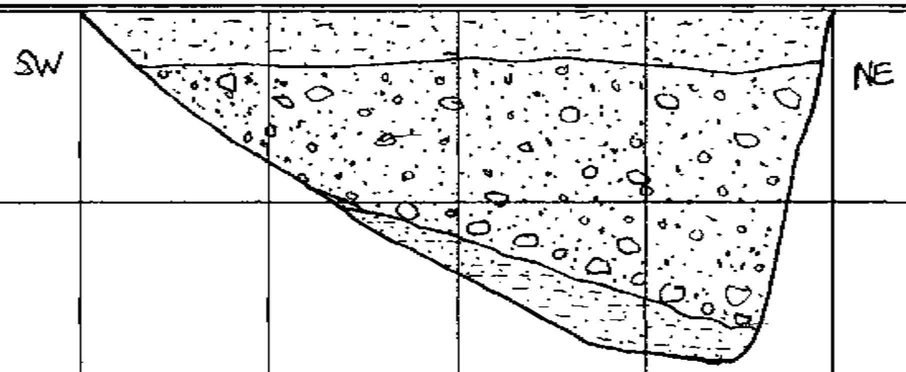
Logged By: RMP

Date Excavated: 8/2/06

Client: Pardee Homes

Depth (ft)	Description	Comments
0 - 1.5	Topsoil: Dark brown to yellowish brown fine grained gravelly silty fine to coarse grained SAND, graded, medium dense, moist.	.
1.5 - 8	Terrace Deposits: Pale yellowish brown subangular to subrounded cobble GRAVEL with slightly friable fine to coarse sand matrix, well graded, very dense, moist, weathered to 8.5', rootlets to 7'.	
8 - 9	Saugus Formation: Sharp, wavy, and slightly scoured contact with yellowish brown fine grained sandy SILTSTONE, poorly graded, very dense, moist.	@8.5' Approx. CN2E/36SE
	Total Depth - 9' No groundwater No caving Backfilled	

Graphic Log



scale 1" = 5'

GEOLABS-WESTLAKE VILLAGE

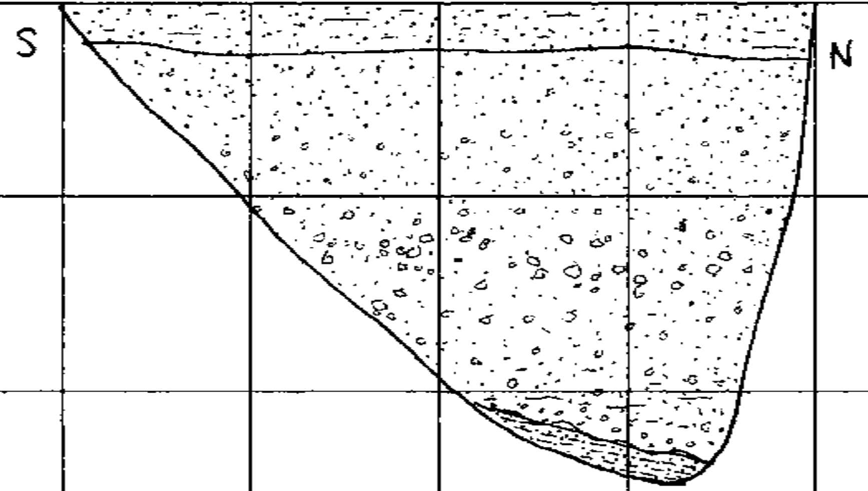
W.O. 8838

PLATE TP175

LOG OF EXCAVATION Trench No. TP176	Logged By: RMP	Date Excavated: 8/2/06	Client: Pardee Homes

Depth (ft)	Description	Comments
0 - 1	Topsoil: Dark brown clayey silty fine to coarse grained SAND, graded, dense, dry to moist with depth, rootlets.	
1 - 2	Saugus Formation: Dark brown clayey silty fine to coarse grained SANDSTONE, graded, very dense, moist.	
2 - 3	Yellowish brown silty fine to medium grained SANDSTONE, poorly graded, very dense, moist.	
3 - 4.5	Pale brown fine grained gravelly silty fine to medium grained SANDSTONE, graded, dense, moist, pervasively fractured, pervasive white carbonate veins, rootlets.	
4.5 - 6	Grades to pale brown silty fine to coarse grained SANDSTONE, poorly graded to graded, very dense, moist, carbonate veins, no fractures.	
6 - 9	Grades to yellowish brown subangular to subrounded fine to coarse grained gravel CONGLOMERATE with silty fine to coarse sand matrix, well graded, very dense, moist.	
9 - 10.5	Yellowish brown fine grained gravelly fine to coarse grained SANDSTONE with silt and clay, graded, very dense, very moist.	
10.5 - 11	Grades to fine grained gravel CONGLOMERATE.	Total Depth - 12' No groundwater
11 - 12	Sharp, wavy, slightly scoured contact with dark yellowish brown fine to coarse grained sandy SILTSTONE, poorly graded, hard, moist.	No caving Backfilled

Graphic Log

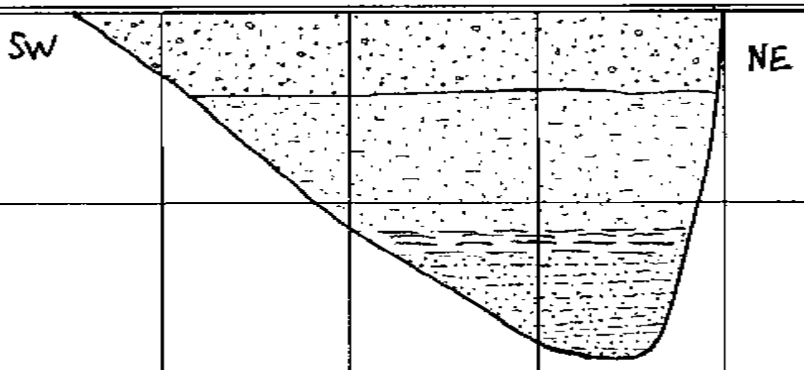


scale 1" = 5'	GEOLABS-WESTLAKE VILLAGE	W.O. 8838	PLATE TP176

LOG OF EXCAVATION
Trench No. TP177
Logged By: RMP
Date Excavated: 8/2/06
Client: Pardee Homes

Depth (ft)	Description	Comments
0 - 2	Topsoil: Brown silty fine to medium grained SAND with gravel, poorly graded, medium dense, moist.	
2 - 3.5	Saugus Formation: Dark yellowish brown silty fine to coarse grained SANDSTONE with gravel, graded, dense, moist, weakly indurated, blocky appearance, pervasive fracturing.	
3.5 - 6.5	Pervasive, dry, white carbonate veins for 1.5'	
6.5 - 6'10"	4" thick dark yellowish brown CLAYSTONE, pervasively sheared, waxy, highly plastic, no dominant shear plane, although shears are roughly parallel to bedding.	BN15E/9NW
6'10" - 9	Dark yellowish brown fine to medium grained sandy SILTSTONE, poorly graded, hard, moist.	
	Total Depth - 9' No groundwater No caving Backfilled	

Graphic Log



scale 1" = 5'
GEOLABS-WESTLAKE VILLAGE
W.O. 8838
PLATE TP177

LOG OF EXCAVATION
Trench No. TP178

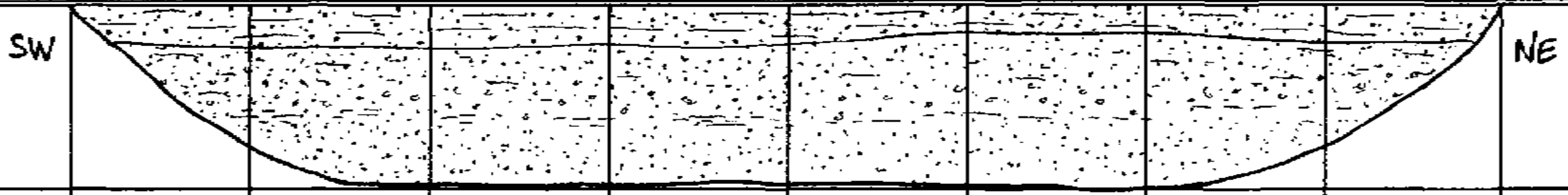
Logged By: RMP

Date Excavated: 8/2/06

Client: Pardee Homes

Depth (ft)	Description	Comments
0 - 1	Topsoil: Brown very clayey fine to coarse grained SAND, graded, dense, moist.	
1 - 2	Saugus Formation: Yellowish brown clayey silty fine to coarse grained SANDSTONE, graded, dense to very dense, moist, weakly indurated, dry, white carbonate veins throughout, rootlets.	
2 - 2.5	Fine grained gravels in SANDSTONE.	
2.5 - 3	Mottled appearance (brown, olive green, yellowish brown) in SANDSTONE, olive green colored material is finer grained (fine to medium grained sandy clayey SILTSTONE).	
3 - 5	Grades to yellow brown fine to medium grained SANDSTONE, hard, moist.	
	Total Depth - 5' No groundwater No caving Backfilled	

Graphic Log



scale 1" = 5'

GEOLABS-WESTLAKE VILLAGE

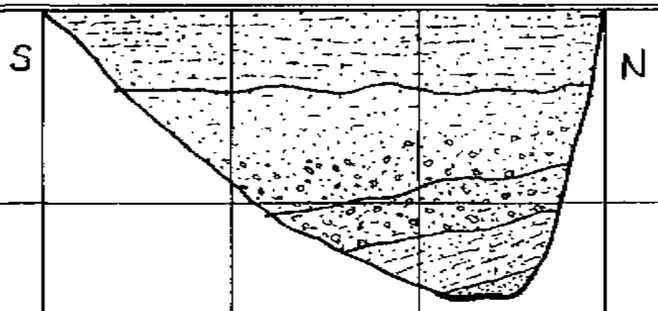
W.O. 8838

PLATE TP178

LOG OF EXCAVATION
Trench No. TP179
Logged By: RMP
Date Excavated: 8/2/06
Client: Pardee Homes

Depth (ft)	Description	Comments
0 - 2	Topsoil: Brown to yellowish brown silty fine to medium grained SAND to fine to medium grained sandy SILT, poorly graded, medium dense to stiff, dry.	
2 - 2.5	Saugus Formation: Yellowish brown silty fine to coarse grained SANDSTONE, graded, dense, dry, rootlets, weakly indurated.	
2.5 - 4	Grades to subangular to subrounded fine grained gravel CONGLOMERATE with slightly friable silty fine to coarse sand matrix, well graded, dense, dry, rootlets, pervasively fractures.	
4 - 5.5	Olive green subangular to subrounded fine to coarse grained gravel CONGLOMERATE with weakly cemented silty fine to coarse sand matrix, well graded, very dense, moist.	BN69W/8SW
5.5 - 6	Yellowish brown silty fine grained SANDSTONE to fine grained sandy SILTSTONE, poorly graded, hard, moist, weakly indurated.	
6 - 7	Olive green silty fine to coarse grained SANDSTONE, hard, moist, weakly indurated.	
	Total Depth - 7' No groundwater No caving Backfilled	

Graphic Log



scale 1" = 5'
GEOLABS-WESTLAKE VILLAGE
W.O. 8838
PLATE TP179

LOG OF EXCAVATION
Trench No. TP180

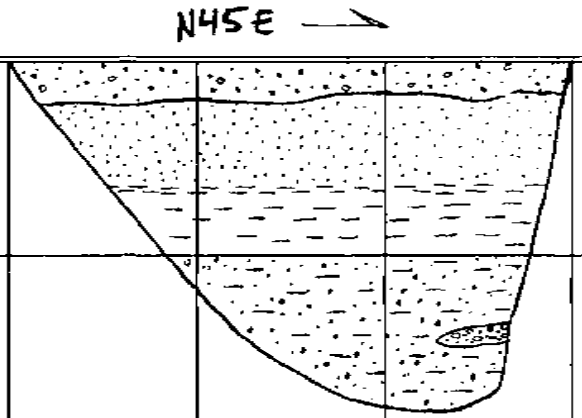
Logged By: RMP

Date Excavated: 8/4/06

Client: Pardee Homes

Depth (ft)	Description	Comments
0 - 1.5	<u>Topsoil</u>: Dark brown silty fine to coarse grained SAND with subangular fine gravel, graded, medium dense, moist, weakly cemented, rootlets.	
1.5 - 3.5	<u>Colluvium</u>: Yellowish brown very silty fine grained SAND, poorly graded, medium dense, moist, weakly cemented, pervasive fracturing filled with white carbonate veins, rootlets.	
3.5 - 4	6" thick dark yellowish brown fine to medium grained sandy silty CLAY, poorly graded, very stiff, moist, non-plastic, weakly cemented.	
4 - 7	<u>Saugus Formation</u>; Mottled dark yellowish brown silty fine grained SANDSTONE to fine grained sandy SILTSTONE, poorly graded, very dense to hard, moist, weakly cemented, and olive green clayey silty fine to coarse grained SANDSTONE, graded, very dense, moist, weakly cemented.	@7' CH N45W/14SW
7 - 9	3-4" thick discontinuous channel deposit, olive green fine gravel CONGLOMERATE with silty fine to coarse sand matrix, graded, weakly cemented, subangular to subrounded.	
	Total Depth - 9' No groundwater No caving Backfilled	

Graphic Log



scale 1" = 5'

GEOLABS-WESTLAKE VILLAGE

W.O. 8838

PLATE TP180

LOG OF EXCAVATION
Trench No. TP181

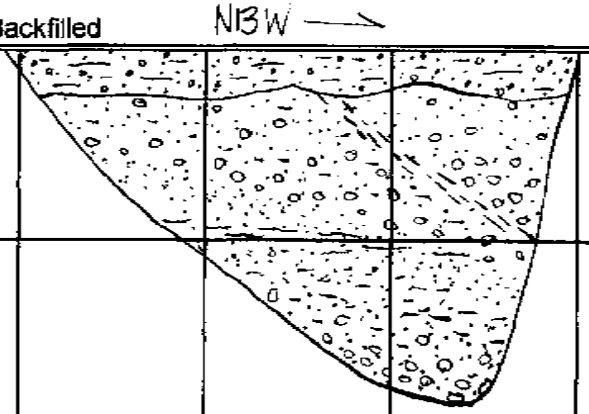
Logged By: RMP

Date Excavated: 8/4/06

Client: Pardee Homes

Depth (ft)	Description	Comments
0 - 1.5	<u>Topsoil</u>: Dark brown clayey silty fine to coarse grained SAND with fine gravel, graded, medium dense, moist, weakly cemented, rootlets.	
1.5 - 9	<u>Saugus Formation</u>: Weathered to 4' (rootlets).	
2.5 - 3	Grades to dark yellowish brown coarse gravel CONGLOMERATE with silty fine to medium sand matrix, well graded, dense, moist, subounded to rounded, weakly cemented, pervasive carbonate veinlets.	
3 - 4	Yellowish brown silty fine to coarse grained SANDSTONE with fine gravel, graded, dense, moist, weakly cemented.	
4 - 5	Color change to pale brown, lose silt, gravels coarsen to cobbles.	
5 - 5'3"	Wavy slightly scoured contact with 3" thick dark yellowish brown CLAYSTONE, poorly graded, very stiff, moist, slightly plastic.	@5' B N75E/37NW
5'3" - 8	Grades to yellowish brown clayey silty fine to coarse grained SANDSTONE, graded, moist, weakly cemented.	
8 - 9	Grades to pale brown cobble CONGLOMERATE with silty fine to coarse sand matrix, well graded, dense, moist, slightly friable, subrounded.	@8.5' B N61E/25NW
	Total Depth - 9' No groundwater, No caving, Backfilled	

Graphic Log



scale 1" = 5'

GEOLABS-WESTLAKE VILLAGE

W.O. 8838

PLATE TP181

LOG OF EXCAVATION
Trench No. TP182

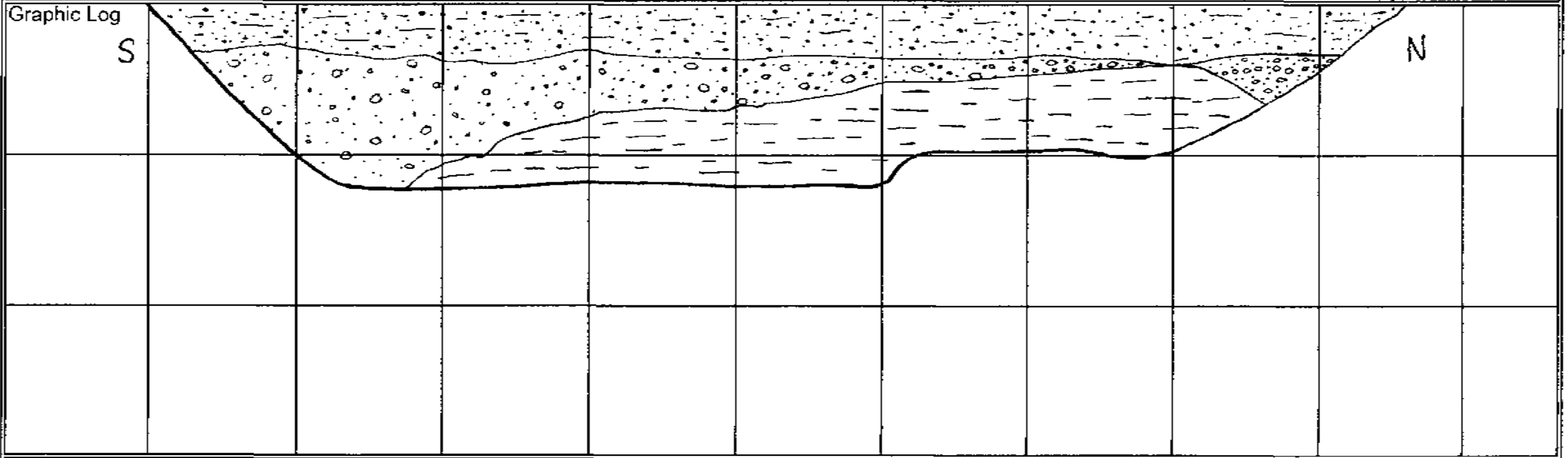
Logged By: RMP

Date Excavated: 8/4/06

Client: Pardee Homes

Depth (ft)	Description	Comments
0 - 2	<u>Topsoil</u>: Dark brown clayey silty fine to coarse grained SAND with fine gravel, graded, medium dense, moist, weakly cemented, rootlets.	
2 - 6	<u>Saugus Formation</u>: Weathered to 6' (rootlets, carbonate veins), pale brown gravel to cobble CONGLOMERATE with silty fine to coarse sand matrix, well graded, moist, slightly friable, subrounded, overlying highly scoured contact with dark yellowish brown silty CLAYSTONE, poorly graded, very stiff, moist, non-plastic, weakly cemented, pervasive carbonate veins, contact is sharp in northern portion of trench on west wall only, other walls have scoured contact.	@2' C N88W/49NE @2.5' B Approximate N79E/19SE
	Total Depth - 6' No groundwater No caving Backfilled	

Graphic Log



scale 1" = 5'

GEOLABS-WESTLAKE VILLAGE

W.O. 8838

PLATE TP182

LOG OF EXCAVATION
Trench No. TP183

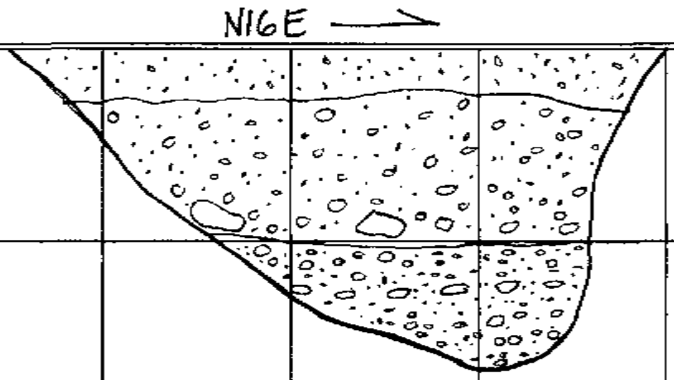
Logged By: RMP

Date Excavated: 8/4/06

Client: Pardee Homes

Depth (ft)	Description	Comments
0 - 1.5	Topsoil: Dark brown silty fine to coarse grained SAND with fine gravel, graded, loose, dry, slightly friable, rootlets.	
1.5 - 5	Terrace Deposits: Reddish brown fine to coarse grained gravel CONGLOMERATE with fine to coarse sand matrix, well graded, dense, moist, subangular to subrounded, weakly cemented, grades to cobble CONGLOMERATE at base with trace boulders.	
5 - 7	Saugus Formation: Weathered to 7' (rootlets), yellowish brown cobble CONGLOMERATE with fine to coarse sand matrix, well graded, dense, moist, slightly friable, subrounded to rounded.	@6' B N7W/16SW
	Total Depth - 7' No groundwater No caving Backfilled	

Graphic Log



scale 1" = 5'

GEOLABS-WESTLAKE VILLAGE

W.O. 8838

PLATE TP183

LOG OF EXCAVATION
Trench No. TP184

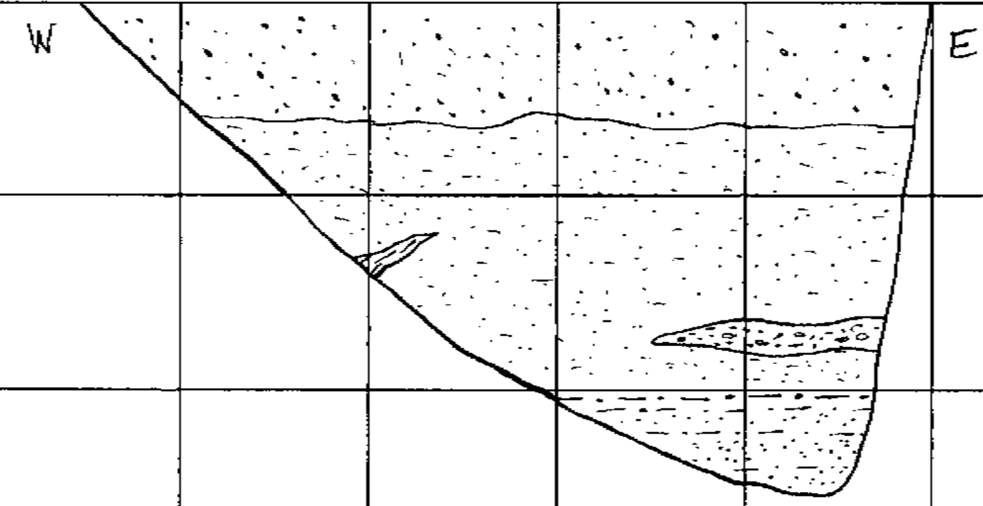
Logged By: RMP

Date Excavated: 8/4/06

Client: Pardee Homes

Depth (ft)	Description	Comments
0 - 3	Topsoil: Brown silty fine to coarse grained SAND with fine gravel, graded, loose, dry, slightly friable, rootlets.	
3 - 12.5	Weathered Saugus Formation: Yellowish brown clayey silty fine to coarse grained SANDSTONE, graded, medium dense, moist, slightly friable, occasional subangular to subrounded gravels and cobbles, rootlets to 8'.	
7 - 7'3"	1-3" thick discontinuous red clayey SILTSTONE to silty CLAYSTONE, poorly graded, stiff, moist, slightly plastic.	
8 - 8.5	6" thick discontinuous pale brown silty fine to coarse grained SANDSTONE with fine gravel.	
8.5 - 12.5	Silty fine grained SANDSTONE to fine grained sandy SILTSTONE, poorly graded, dense, moist, grades down to yellowish brown clayey silty fine to coarse grained SANDSTONE, graded, medium dense, moist, slightly friable.	
	Total Depth - 12.5' No groundwater No caving Backfilled	

Graphic Log



scale 1" = 5'

GEOLABS-WESTLAKE VILLAGE

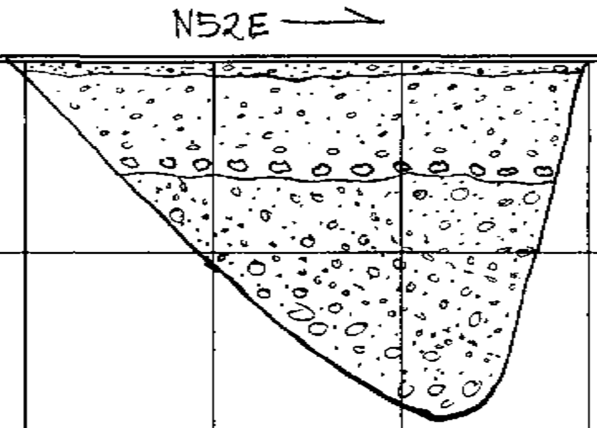
W.O. 8838

PLATE TP184

LOG OF EXCAVATION
Trench No. TP185
Logged By: RMP
Date Excavated: 8/4/06
Client: Pardee Homes

Depth (ft)	Description	Comments
0 - 0.5	Topsoil: Dark brown silty fine to coarse grained SAND with fine gravel, graded, loose, dry, slightly friable, rootlets.	
0.5 - 3	Terrace Deposits: Reddish brown fine grained GRAVEL with fine to coarse sand matrix, well graded, dense, moist, weakly cemented, subangular to subrounded, upper foot fractured and blocky, rootlets, grades to cobble GRAVEL at base.	
3 - 9	Saugus Formation: Yellowish brown gravel to cobble CONGLOMERATE with fine to coarse sand matrix, well graded, dense, moist, slightly friable, subangular to subrounded.	@5' B N80W/37NE
	Total Depth - 9' No groundwater No caving Backfilled	

Graphic Log

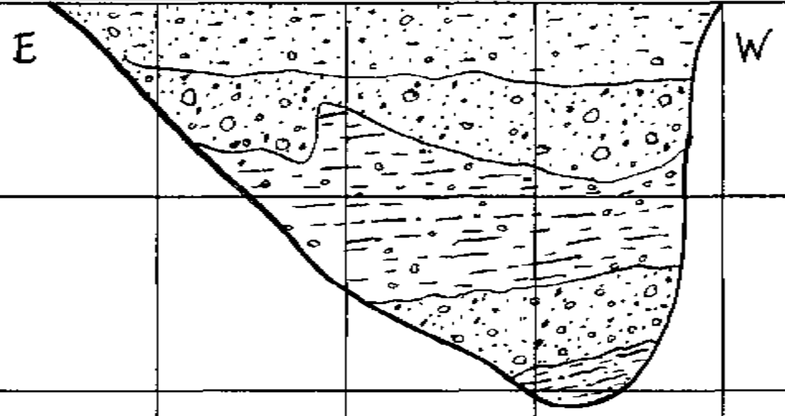


scale 1" = 5'
GEOLABS-WESTLAKE VILLAGE
W.O. 8838
PLATE TP185

LOG OF EXCAVATION
Trench No. TP186
Logged By: RMP
Date Excavated: 8/4/06
Client: Pardee Homes

Depth (ft)	Description	Comments
0 - 2	Topsoil: Dark brown silty fine to coarse grained SAND with fine gravel, graded, medium dense, dry, rootlets, weakly cemented.	
2 - 4	Colluvium: Yellowish brown fine to coarse grained GRAVEL with fine to coarse sand matrix, well graded, medium dense, moist, slightly friable.	
4 - 7	Highly irregular contact with mottled yellowish brown clayey SILT and dark yellowish brown silty CLAY, poorly graded, stiff, moist, non-plastic, weakly cemented.	
7 - 9	Saugus Formation: Weathered to 9', rootlets to 8', pale brown gravel to cobble CONGLOMERATE with silty fine to coarse sand matrix, well graded, dense, moist, slightly friable, occasional rootlets in upper foot.	@8' B N76W/24NE
9 - 10	Yellowish brown clayey SILTSTONE, poorly graded, very stiff, moist, weakly cemented, massive.	
	Total Depth - 10' No groundwater No caving Backfilled	

Graphic Log



scale 1" = 5'
GEOLABS-WESTLAKE VILLAGE
W.O. 8838
PLATE TP186

LOG OF EXCAVATION
Trench No. TP187

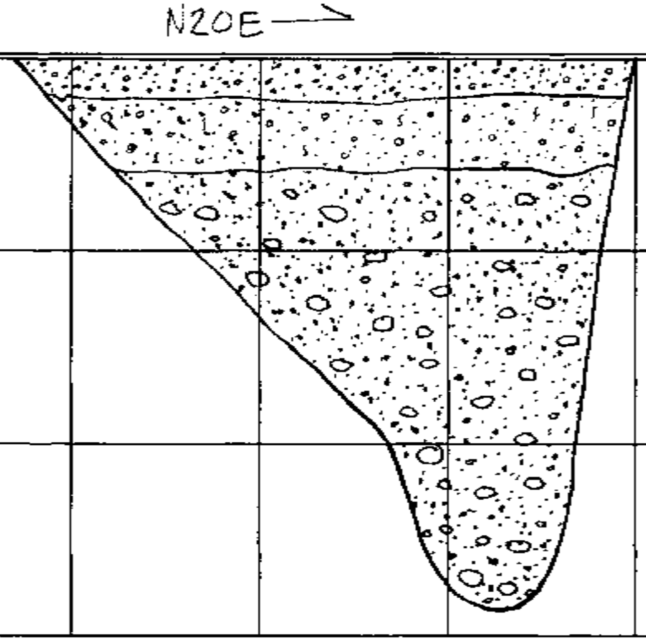
Logged By: RMP

Date Excavated: 8/4/06

Client: Pardee Homes

Depth (ft)	Description	Comments
0 - 1	Topsoil: Dark brown silty fine to coarse grained SAND with fine gravel, graded, loose, dry, slightly friable, rootlets.	
1 - 2.5	Saugus Formation: Weathered to 14', rootlets, reddish brown fine grained gravel CONGLOMERATE with silty fine to coarse sand matrix, graded, dense, moist, weakly cemented, clasts are subangular to subrounded.	
2.5 - 14	Yellowish brown subrounded cobble CONGLOMERATE with friable fine to coarse sand matrix, well graded, dense, moist.	@4' Approx. BN79E/14NW
	Total Depth - 14' No groundwater No caving Backfilled	

Graphic Log



scale 1" = 5'

GEOLABS-WESTLAKE VILLAGE

W.O. 8838

PLATE TP187

LOG OF EXCAVATION
Trench No. TP188

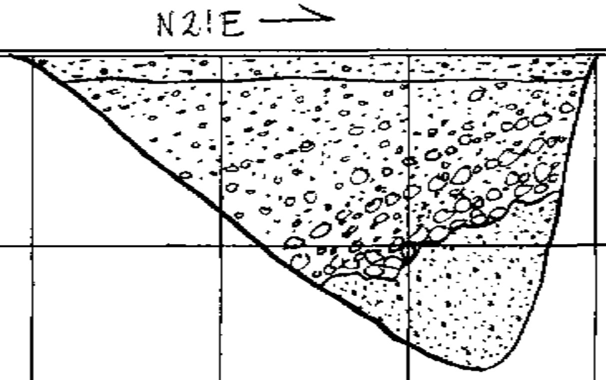
Logged By: RMP

Date Excavated: 8/4/06

Client: Pardee Homes

Depth (ft)	Description	Comments
0 - 1	Topsoil: Dark brown silty fine to coarse grained SAND with fine gravel, graded, loose, dry, friable, rootlets.	
1 - 6	Saugus Formation: Weathered to 6.5' (rootlets), yellowish brown subangular to subrounded fine grained gravel CONGLOMERATE with slightly friable to weakly cemented clayey silty fine to coarse sand matrix, well graded, very dense, moist, rootlets, clasts coarsen to cobbles with depth.	@3.5' B N11W/6SW
6 - 8	Wavy, scoured contact with yellowish brown fine to coarse grained SANDSTONE, poorly graded, very dense, moist, weakly cemented.	
	Total Depth - 8' No groundwater No caving Backfilled	

Graphic Log



scale 1" = 5'

GEOLABS-WESTLAKE VILLAGE

W.O. 8838

PLATE TP188

LOG OF EXCAVATION
Trench No. TP189

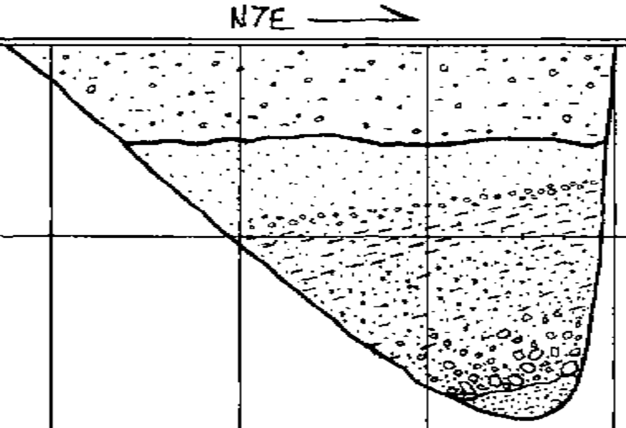
Logged By: RMP

Date Excavated: 8/4/06

Client: Pardee Homes

Depth (ft)	Description	Comments
0 - 2.5	Topsoil: Dark brown silty fine to coarse grained SAND with fine gravel, graded, loose, dry, friable, rootlets.	
2.5 - 3.5	Saugus Formation: Weathered to 9' (rootlets to 7.5'), yellowish brown silty fine grained SANDSTONE, poorly graded, dense, moist, weakly indurated, massive.	
3.5 - 4	6" thick subangular to subrounded fine grained gravel CONGLOMERATE with slightly friable to weakly cemented silty fine to coarse sand matrix, well graded, very dense, moist.	
4 - 5.5	Yellowish brown fine grained sandy SILTSTONE, poorly graded, very stiff, moist, weakly indurated, massive.	
5.5 - 8.5	Grades to pale brown silty fine to medium grained SANDSTONE.	@8' B N34W/13SW
8.5 - 9	Grades to subangular to subrounded gravel to cobble CONGLOMERATE with weakly cemented silty fine to coarse sand matrix, well graded, very dense, moist.	
9 - 9.5	Yellowish brown silty fine grained SANDSTONE, poorly graded, very dense, moist, weakly indurated, massive.	
	Total Depth - 9.5' No groundwater No caving Backfilled	

Graphic Log



scale 1" = 5'

GEOLABS-WESTLAKE VILLAGE

W.O. 8838

PLATE TP189

LOG OF EXCAVATION
Trench No. TP190

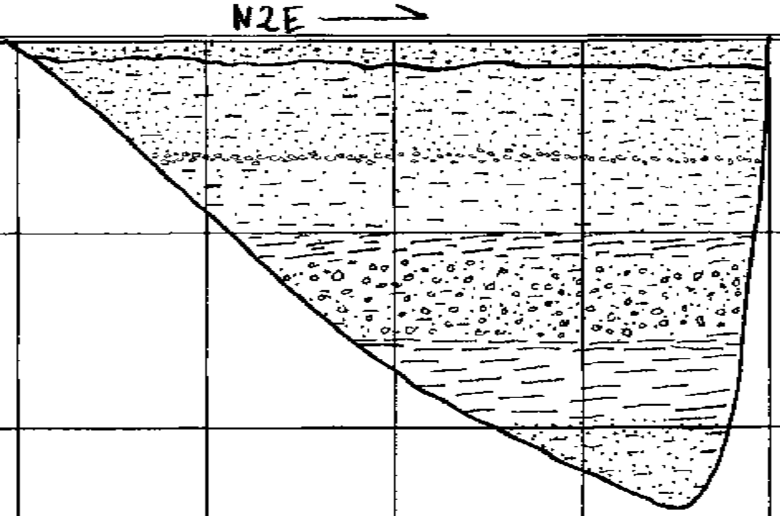
Logged By: RMP

Date Excavated: 8/4/06

Client: Pardee Homes

Depth (ft)	Description	Comments
0 - 1	Topsoil: Dark brown silty fine to coarse grained SAND with sparse fine gravel, graded, loose, dry, friable, rootlets.	
1 - 6	Saugus Formation: Weathered to 10' (rootlets to 8.5'), yellowish brown fine grained sandy SILTSTONE, poorly graded, stiff, dry, pervasively fractured and blocky, pervasive carbonate veins.	
3 - 3'3"	Grades to 3" thick subrounded fine grained gravel CONGLOMERATE with friable fine to coarse sand matrix, graded, medium dense, dry.	
6 - 6'3"	3" thick dark yellowish brown silty CLAYSTONE, poorly graded, very stiff, moist, carbonate veinlets, non-plastic, weakly indurated.	
6'3" - 8	Grades to yellowish brown subangular to subrounded fine to coarse grained gravel CONGLOMERATE with weakly cemented silty fine to coarse sand matrix, well graded, dense, moist.	@7' Approx. BN2E/4SE
8 - 10	2' thick dark yellowish brown CLAYSTONE, hard, moist, non-plastic.	
10 - 12	Grades to silty fine grained SANDSTONE with sparse fine gravel, graded, very dense, moist, weakly indurated.	
	Total Depth - 12' No groundwater No caving Backfilled	

Graphic Log



scale 1" = 5'

GEOLABS-WESTLAKE VILLAGE

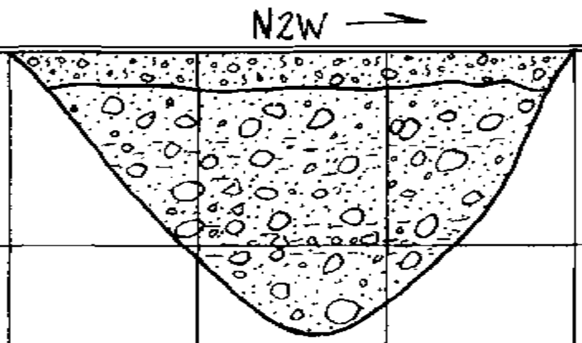
W.O. 8838

PLATE TP190

LOG OF EXCAVATION
Trench No. TP191
Logged By: RMP
Date Excavated: 8/7/06
Client: Pardee Homes

Depth (ft)	Description	Comments
0 - 1	<u>Topsoil</u>: Dark brown silty fine to coarse grained sandy fine GRAVEL with cobbles, well graded, loose, moist, rootlets.	
1 - 7.5	<u>Mint Canyon Formation</u>: Weathered to 5', rootlets to 2.5', scoured interbeds of reddish brown and olive green subangular to subrounded cobble CONGLOMERATE with trace boulders and weakly cemented silty fine to coarse sand matrix, well graded, hard, moist.	@5' B N28W/21SW
	Total Depth - 7.5' No groundwater No caving Backfilled	

Graphic Log



scale 1" = 5'
GEOLABS-WESTLAKE VILLAGE
W.O. 8838
PLATE TP191

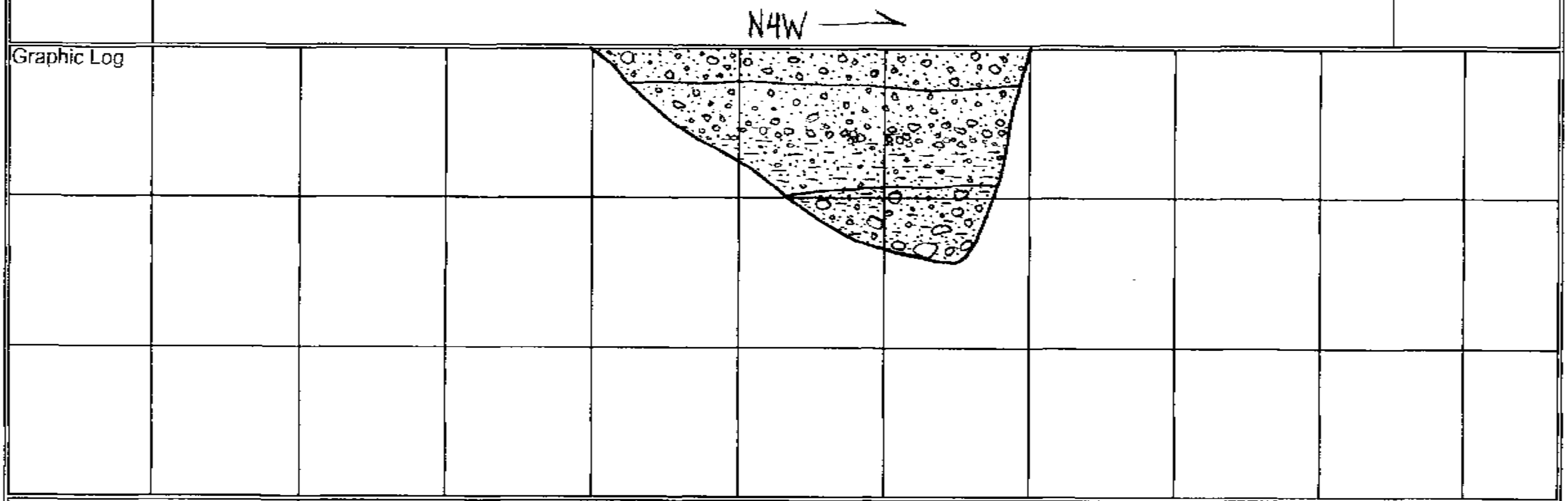
LOG OF EXCAVATION
Trench No. TP192

Logged By: RMP

Date Excavated: 8/7/06

Client: Pardee Homes

Depth (ft)	Description	Comments
0 - 1.5	Topsoil: Dark brown silty fine to coarse grained sandy GRAVEL with cobbles, well graded, loose, moist.	
1.5 - 2	Saugus Formation: Weathered to 4' (roots to 3'), reddish brown subangular to subrounded fine grained gravel CONGLOMERATE with slightly friable fine to coarse sand matrix, well graded, very dense, moist.	
2 - 3	Grades to gravel to cobble CONGLOMERATE.	
3 - 4.5	Scoured contact to dark brown fine to coarse grained sandy SILTSTONE with trace fine gravel, poorly graded, hard, moist, weakly indurated, massive, blocky.	
4.5 - 7	Dark yellowish brown subangular to subrounded gravel to cobble CONGLOMERATE with weakly cemented fine to coarse sandy silt matrix, well graded, hard, matrix coarsens with depth and becomes slightly friable.	@6' B N40W/8SW
	Total Depth - 7' No groundwater No caving Backfilled	



scale 1" = 5'

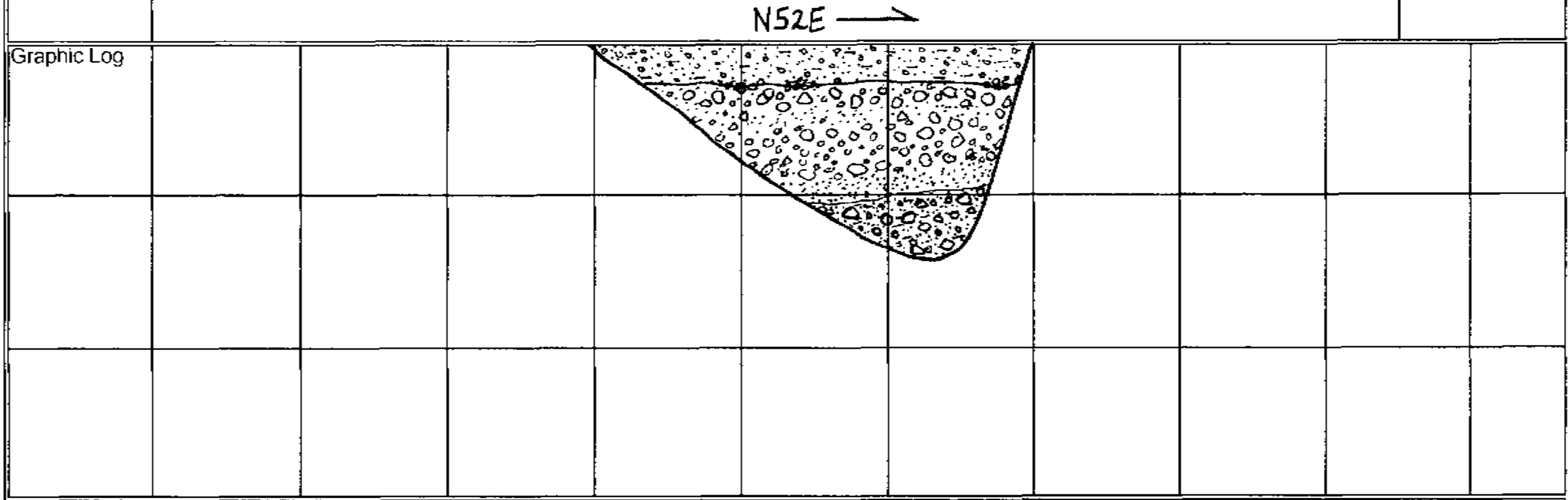
GEOLABS-WESTLAKE VILLAGE

W.O. 8838

PLATE TP192

LOG OF EXCAVATION Trench No. TP193	Logged By: RMP	Date Excavated: 8/7/06	Client: Pardee Homes

Depth (ft)	Description	Comments
0 - 1.5	Topsoil: Dark brown fine to coarse grained sandy silty GRAVEL, well graded, loose, dry, weakly cemented, fractured and blocky.	
1.5 - 4.5	Saugus Formation: Weathered to 5' (roots to 4'), yellowish brown subangular to subrounded gravel to cobble CONGLOMERATE with slightly friable fine to coarse sand matrix (trace silt), well graded, very dense, dry.	@4' B N24W/16SW
4.5 - 5.5	Wavy, sharp, slightly scoured contact to mottled brown and olive green trace gravelly silty fine to coarse grained SANDSTONE, poorly graded, very dense, moist, weakly cemented, massive.	
5.5 - 7	Yellow brown subangular to subrounded gravel to cobble CONGLOMERATE with slightly firable fine to coarse sand matrix (trace silt), well graded, hard, moist.	
	Total Depth - 7' No groundwater No caving Backfilled	

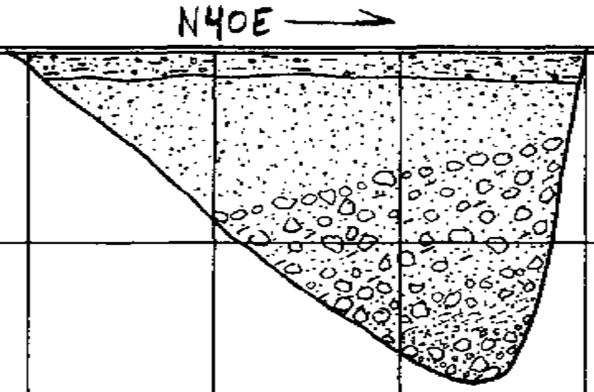


scale 1" = 5'	GEOLABS-WESTLAKE VILLAGE	W.O. 8838	PLATE TP193

LOG OF EXCAVATION Trench No. TP194	Logged By: RMP	Date Excavated: 8/7/06	Client: Pardee Homes

Depth (ft)	Description	Comments
0 - 1	Topsoil: Dark brown fine to coarse grained sandy SILT with fine gravel, graded, soft, dry, slightly friable.	
1 - 2.5	Saugus Formation: Weathered to 5' (roots to 3'), yellowish brown fine to coarse grained SANDSTONE, poorly graded, very dense, moist, slightly friable.	
2.5 - 7	Grades to yellowish brown subangular to subrounded cobble CONGLOMERATE with slightly friable silty fine to coarse sand matrix, well graded, very dense, moist.	@6' B N44W/20SW
7 - 7.5	Wavy, sharp, scoured contact with 6" thick mottled dark brown and olive green silty fine to medium grained SANDSTONE, poorly graded, hard, moist, weakly indurated.	
7.5 - 8	Grades to yellowish brown subangular to subrounded cobble CONGLOMERATE with slightly friable silty fine to coarse sand matrix, well graded, hard, moist.	
	Total Depth - 8' No groundwater No caving Backfilled	

Graphic Log

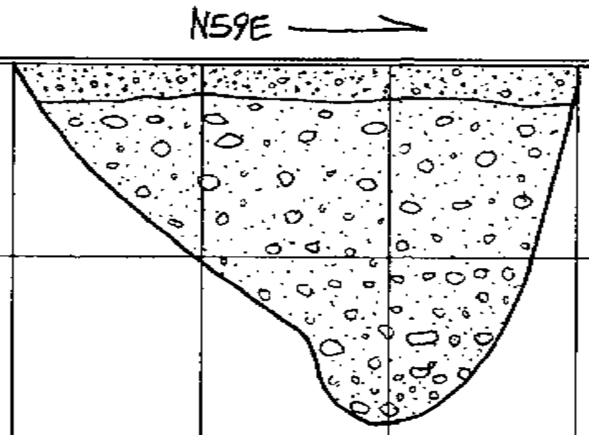


scale 1" = 5'	GEOLABS-WESTLAKE VILLAGE	W.O. 8838	PLATE TP194

LOG OF EXCAVATION Trench No. TP195	Logged By: RMP	Date Excavated: 8/7/06	Client: Pardee Homes

Depth (ft)	Description	Comments
0 - 1	Topsoil: Dark gray brown silty fine to coarse grained SAND with fine gravel, graded, loose, dry, weakly cemented, rootlets.	
1 - 9	Mint Canyon Formation: Weathered to 8', rootlets to 5', light yellowish brown subangular to subrounded cobble CONGLOMERATE with slightly friable matrix, well graded, very dense, moist.	@5' B N35E/18NW
	Total Depth - 9' No groundwater No caving Backfilled	

Graphic Log



scale 1" = 5'	GEOLABS-WESTLAKE VILLAGE	W.O. 8838	PLATE TP195

LOG OF EXCAVATION
Trench No. TP196

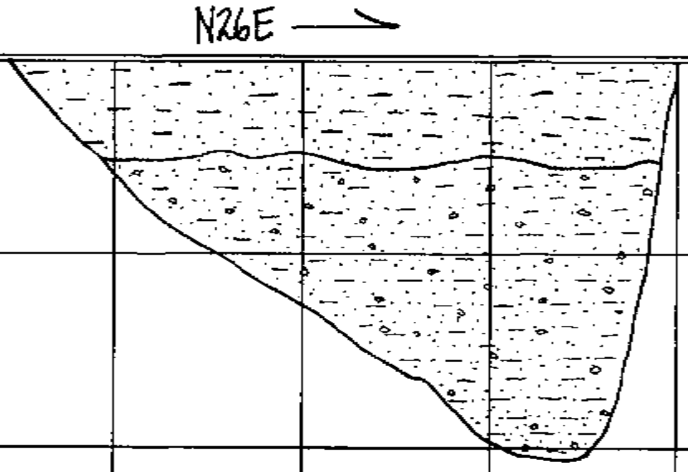
Logged By: RMP

Date Excavated: 8/7/06

Client: Pardee Homes

Depth (ft)	Description	Comments
0 - 2.5	<u>Topsoil</u>: Dark brown fine to coarse grained sandy SILT, graded, loose to medium dense, moist, slightly friable.	
2.5 - 9	<u>Mint Canyon Formation</u>: Weathered to 9' (roots to 8'), yellowish brown fine grained sandy SILTSTONE, poorly graded, very stiff, moist, weakly indurated, white carbonate veinlets, occasional subangular fine gravel, massive.	
9 - 10	Hard.	
	Total Depth - 10' No groundwater No caving Backfilled	

Graphic Log



scale 1" = 5'

GEOLABS-WESTLAKE VILLAGE

W.O. 8838

PLATE TP196

LOG OF EXCAVATION
Trench No. TP197

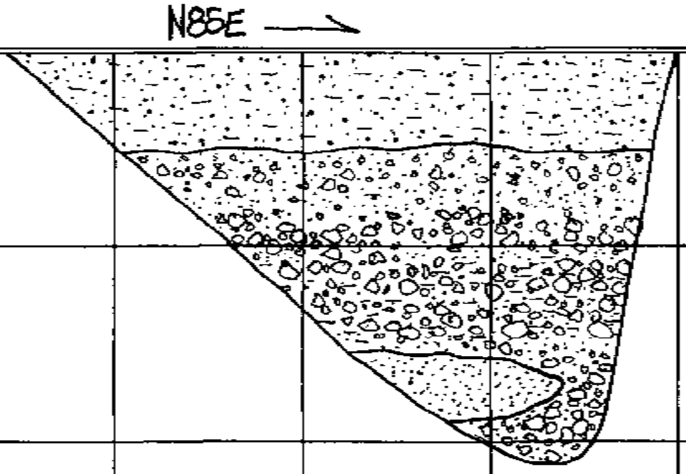
Logged By: RMP

Date Excavated: 8/7/06

Client: Pardee Homes

Depth (ft)	Description	Comments
0 - 2.5	Topsoil: Dark brown fine to coarse grained sandy SILT with fine gravel, graded, stiff, moist, weakly cemented.	
2.5 - 5.5	Mint Canyon Formation: Weathered to 8.5' (roots to 5', carbonate veins), pale yellowish brown subangular to subrounded fine grained gravel CONGLOMERATE with slightly friable with silty fine to coarse sand matrix, well graded, medium dense, moist.	
5.5 - 7.5	Grades to subangular to subrounded gravel to cobble CONGLOMERATE with slightly friable silty fine to coarse sand matrix, well graded, dense, moist.	
7.5 - 9.5	Scoured, irregular contact with discontinuous pale brown silty fine to coarse grained SANDSTONE, poorly graded, hard, moist, slightly friable, massive, white carbonate veins.	@8' Approx. BN57W/19SW
9.5 - 10.5	Grades to subangular to subrounded cobble CONGLOMERATE with slightly friable silty fine to coarse sand matrix, well graded, hard, moist.	
	Total Depth - 10.5' No groundwater No caving Backfilled	

Graphic Log



scale 1" = 5'

GEOLABS-WESTLAKE VILLAGE

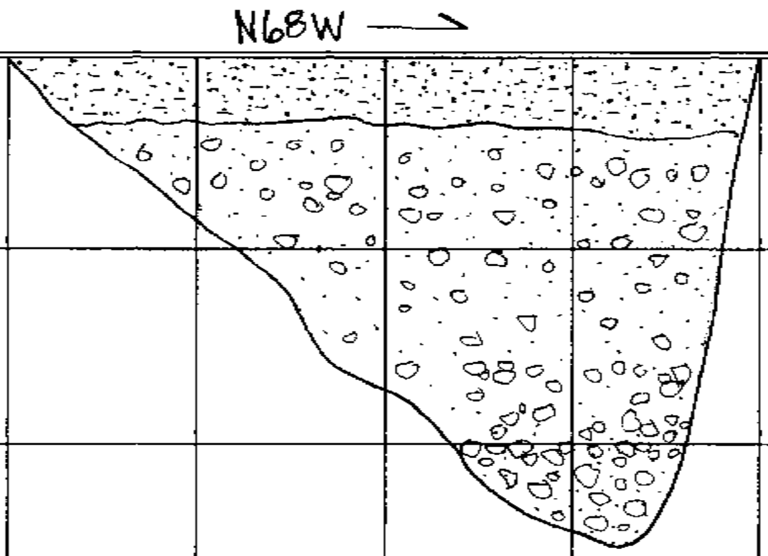
W.O. 8838

PLATE TP197

LOG OF EXCAVATION Trench No. TP198	Logged By: RMP	Date Excavated: 8/7/06	Client: Pardee Homes

Depth (ft)	Description	Comments
0 - 2	Topsoil: Dark brown fine to coarse grained sandy SILT with fine gravel, graded, soft, moist, rootlets.	
2 - 12	Mint Canyon Formation: Weathered to 8', roots to 4', light yellowish brown subangular to subrounded cobble CONGLOMERATE with slightly friable matrix, well graded, dense, moist, trace boulders.	@7' Approx. BN5W/15SW
@8'	Grades to very dense.	
	Total Depth - 12' No groundwater No caving Backfilled	

Graphic Log

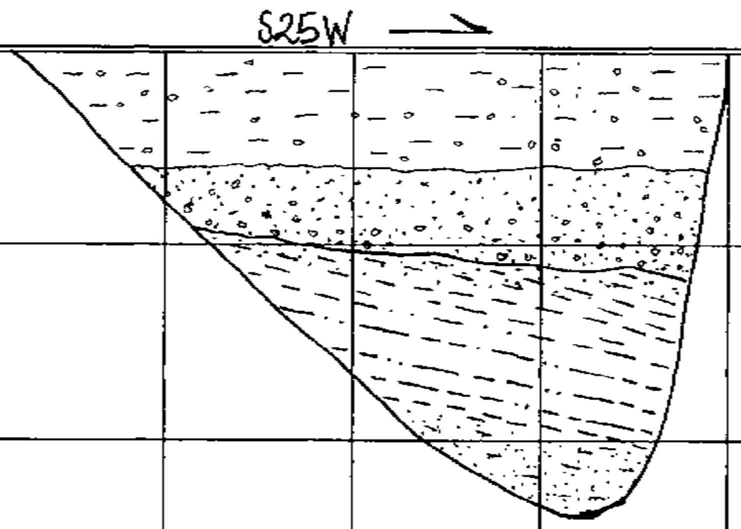


scale 1" = 5'	GEOLABS-WESTLAKE VILLAGE	W.O. 8838	PLATE TP198

LOG OF EXCAVATION
Trench No. TP199
Logged By: RMP
Date Excavated: 8/7/06
Client: Pardee Homes

Depth (ft)	Description	Comments
0 - 3	Topsoil: Dark brown fine to coarse grained sandy SILT with fine gravel, graded, very stiff, moist, rootlets.	
3 - 5.5	Saugus Formation: Weathered to 9' (roots to 5'), yellowish brown silty fine grained SANDSTONE, poorly graded, dense, moist, weakly indurated, massive.	
5.5 - 6	Grades to yellowish brown fine to coarse grained SANDSTONE with fine gravel, graded, dense, moist, slightly friable.	@5.5' B N81E/13SE
6 - 8	Wavy, scoured contact with yellowish brown fine grained sandy SILTSTONE, poorly graded, very stiff, moist, slightly friable, massive, white carbonate veins.	
8 - 8.5	6" thick dark yellowish brown clayey SILTSTONE, poorly graded, hard, moist, weakly indurated, massive.	
8.5 - 11	Grades to yellowish brown SILTSTONE.	
11 - 11.5	Grades to yellowish brown silty fine grained SANDSTONE, poorly graded, hard, moist, weakly indurated.	
	Total Depth - 11.5' No groundwater No caving Backfilled	

Graphic Log

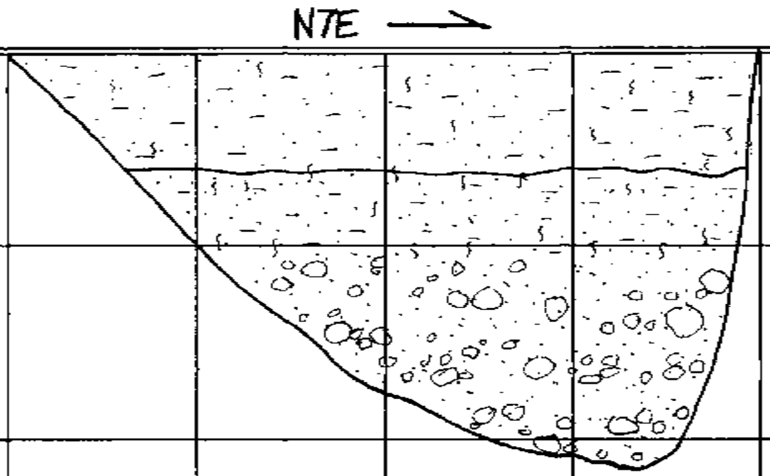


scale 1" = 5'
GEOLABS-WESTLAKE VILLAGE
W.O. 8838
PLATE TP199

LOG OF EXCAVATION
Trench No. TP200
Logged By: RMP
Date Excavated: 8/8/06
Client: Pardee Homes

Depth (ft)	Description	Comments
0 - 3	<u>Topsoil</u>: Dark brown clayey fine to coarse grained sandy SILT, graded, very stiff, moist, blocky and pervasively fractured, rootlets.	
3 - 6	<u>Terrace Deposits</u>: Weathered to 6' (rootlets), yellow brown silty fine grained SAND, poorly graded, dense, moist, consolidated, pervasive carbonate veins.	
6 - 11	Grades to yellow brown cobble to boulder GRAVEL with slightly friable fine to coarse sand matrix, well graded, very dense, moist, subrounded to rounded, 10% boulders.	@7' Approx. BN43E/10SE
	Total Depth - 11' No groundwater No caving Backfilled	

Graphic Log



scale 1" = 5'
GEOLABS-WESTLAKE VILLAGE
W.O. 8838
PLATE TP200

LOG OF EXCAVATION
Trench No. TP201

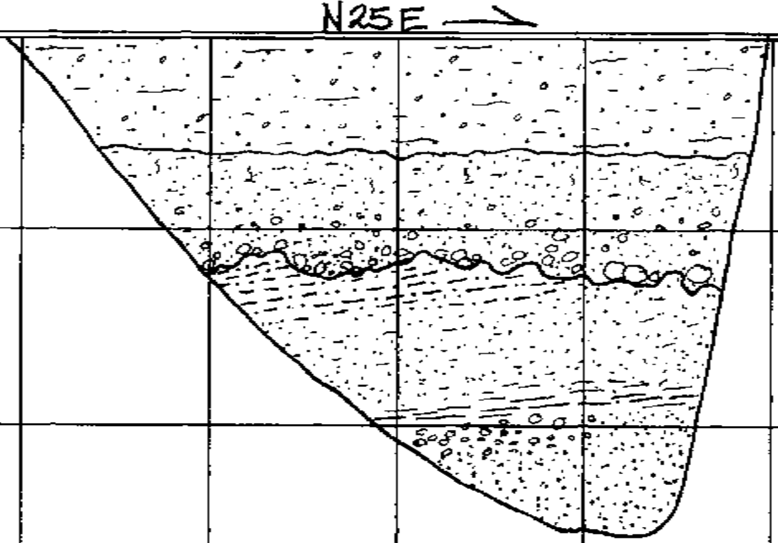
Logged By: RMP

Date Excavated: 8/8/06

Client: Pardee Homes

Depth (ft)	Description	Comments
0 - 3	Topsoil: Dark brown clayey silty fine to coarse grained SAND with fine gravel, graded, dense, moist, rootlets.	
3 - 4	Terrace Deposits: Yellowish brown silty fine to coarse grained SAND, poorly graded, very dense, moist, consolidated, roots.	
4 - 6	Grades to yellowish brown subangular to subrounded fine to coarse grained gravel CONGLOMERATE with slightly friable silty fine to coarse sand matrix, well graded, very dense, moist.	
6 - 6.5	Saugus Formation: Weathered to 9.5', irregular scoured contact with yellowish brown fine grained sandy SILTSTONE, poorly graded, very dense, moist, slightly friable.	
6.5 - 9	Grades to silty fine to medium grained SANDSTONE.	
9 - 9.5	Gradational contact with 6" thick dark yellowish brown CLAYSTONE, very stiff, moist, weakly indurated, medium plastic, pervasive internal shearing truncated above and below by sandstone beds, discontinuous (scoured out by conglomerate on east wall), sharp, irregular, sheared contact with material below.	@10' B N6E/19NW
9.5 - 10.5	Channel Deposit: Yellow brown subangular to subrounded gravel CONGLOMERATE with slightly friable silty fine to coarse sand matrix, well graded, very dense, moist.	
10.5 - 12.5	Yellowish brown fine to coarse grained SANDSTONE, poorly graded, very dense, moist, slightly friable, massive.	Total Depth - 12.5' No groundwater No caving Backfilled

Graphic Log



scale 1" = 5'

GEOLABS-WESTLAKE VILLAGE

W.O. 8838

PLATE TP201

LOG OF EXCAVATION
Trench No. TP202

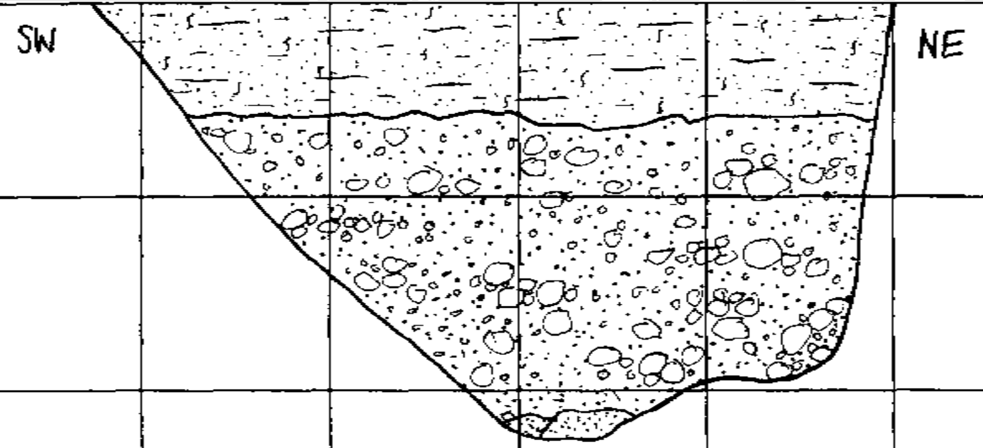
Logged By: RMP

Date Excavated: 8/8/06

Client: Pardee Homes

Depth (ft)	Description	Comments
0 - 3	Topsoil: Dark brown fine to coarse grained sandy silty CLAY with fine gravel, graded, very dense, moist, rootlets.	
3 - 11	Terrace Deposits: Pale brown cobble to boulder GRAVEL with slightly friable fine to coarse sand matrix, well graded, very dense, moist.	
11 - 11.5	Saugus Formation: Weathered to 11.5', yellowish brown fine to coarse grained SANDSTONE, poorly graded, very dense, moist, slightly friable.	
	Total Depth - 11.5' No groundwater No caving Backfilled	

Graphic Log



scale 1" = 5'

GEOLABS-WESTLAKE VILLAGE

W.O. 8838

PLATE TP202

LOG OF EXCAVATION
Trench No. TP203

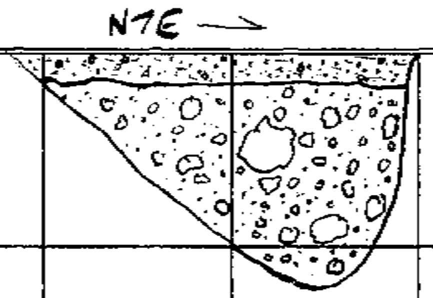
Logged By: RMP

Date Excavated: 8/8/06

Client: Pardee Homes

Depth (ft)	Description	Comments
0 - 1	<u>Topsoil</u>: Dark brown clayey silty fine to coarse grained SAND with fine gravel, graded, very dense, moist.	
1 - 6	<u>Saugus Formation</u>: Weathered to 4.5' (roots to 4'), yellow brown subangular to subrounded gravel to cobble CONGLOMERATE with *slightly friable* matrix, well *graded, very* dense, *moist, trace boulders* (2' diameter in east wall).	@3' Approx. BN85W/14SW
	Total Depth - 6' No groundwater No caving Backfilled	

Graphic Log



scale 1" = 5'

GEOLABS-WESTLAKE VILLAGE

W.O. 8838

PLATE TP203

LOG OF EXCAVATION
Trench No. TP204

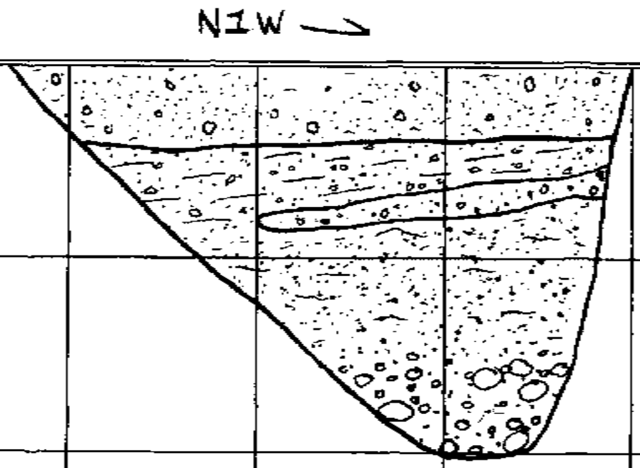
Logged By: RMP

Date Excavated: 8/8/06

Client: Pardee Homes

Depth (ft)	Description	Comments
0 - 2	Topsoil: Dark grayish brown silty fine to coarse grained SAND with fine to coarse gravel, graded, dense, dry, slightly friable, rootlets.	
2 - 3	Saugus Formation: Weathered to 8' (roots to 5'), brown fine grained sandy CLAYSTONE with subangular fine gravel, graded, very stiff, moist, weakly indurated.	
3 - 4	1' thick discontinuous channeled sand, yellowish brown silty fine to coarse grained SANDSTONE with subangular fine gravel, graded, very dense, moist, massive, slightly friable.	@3' CH N39E/25SE
4 - 4.5	Dark yellowish brown clayey silty fine to coarse grained SANDSTONE, graded, very dense, moist, weakly indurated.	
4.5 - 7	Yellowish brown silty fine to coarse grained SANDSTONE, poorly graded, very dense, moist, weakly indurated, massive, pervasive subhorizontal carbonate veins.	
7 - 10	Yellowish brown subangular to subrounded gravel to cobble CONGLOMERATE with slightly friable silty fine to coarse sand matrix, well graded, hard, moist.	
	Total Depth - 10' No groundwater No caving Backfilled	

Graphic Log



scale 1" = 5'

GEOLABS-WESTLAKE VILLAGE

W.O. 8838

PLATE TP204

LOG OF EXCAVATION
Trench No. TP205

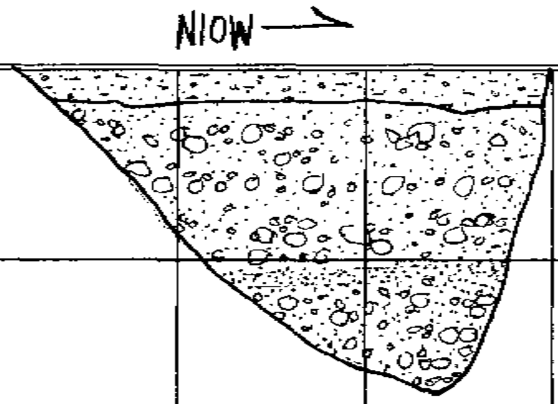
Logged By: RMP

Date Excavated: 8/8/06

Client: Pardee Homes

Depth (ft)	Description	Comments
0 - 1	Topsoil: Dark grayish brown silty fine to coarse grained SAND with fine gravel, graded, dense, dry, rootlets, slightly friable.	
1 - 8	Saugus Formation: Weathered to 6' (rootlets to 3'), yellowish brown subangular to subrounded gravel to cobble CONGLOMERATE with slightly friable fine to coarse sand matrix, well graded, very dense, moist.	@6' B N64W/17SW
@6'	1' thick fine to coarse grained SANDSTONE layer.	
	Total Depth - 8' No groundwater No caving Backfilled	

Graphic Log



scale 1" = 5'

GEOLABS-WESTLAKE VILLAGE

W.O. 8838

PLATE TP205

LOG OF EXCAVATION
Trench No. TP206

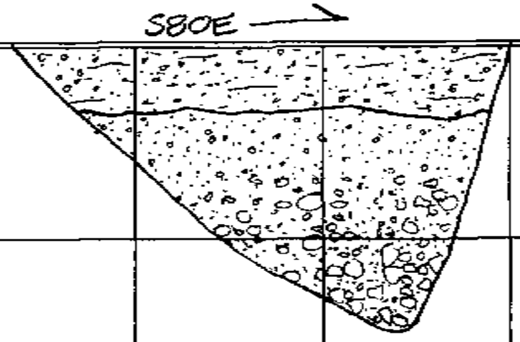
Logged By: RMP

Date Excavated: 8/8/06

Client: Pardee Homes

Depth (ft)	Description	Comments
0 - 2	Topsoil: Yellow brown clayey silty fine to coarse grained sandy fine GRAVEL, well graded, very dense, moist, rootlets.	
2 - 7	Saugus Formation: Weathered to 6' (roots to 3'). Yellow brown gravelly SANDSTONE, grading to gravel to cobble CONGLOMERATE with slightly friable fine to coarse sand matrix, well graded, very dense, moist.	@5' Approx. BN13W/17SW
	Total Depth - 7' No groundwater No caving Backfilled	

Graphic Log



scale 1" = 5'

GEOLABS-WESTLAKE VILLAGE

W.O. 8838

PLATE TP206

LOG OF EXCAVATION
Trench No. TP207

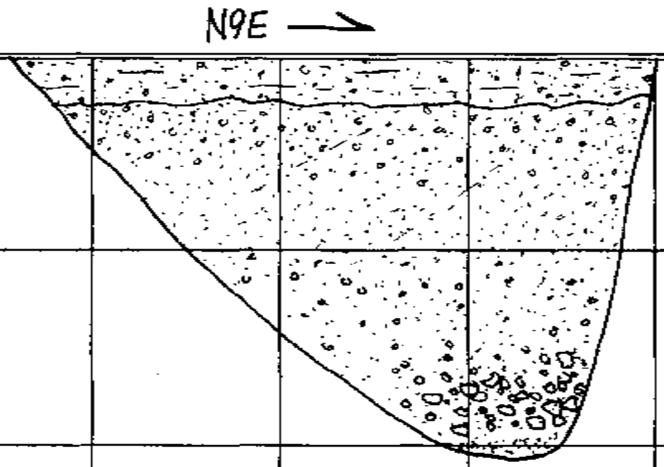
Logged By: RMP

Date Excavated: 8/8/06

Client: Pardee Homes

Depth (ft)	Description	Comments
0 - 1.5	Topsoil: Brown clayey silty fine to coarse grained SAND with fine gravel, graded, very dense, moist.	
1.5 - 3.5	Saugus Formation: Weathered to 8' (roots to 4', matrix tighter at 8' with more fines), yellowish brown subangular to subrounded fine to coarse grained gravel CONGLOMERATE with slightly friable fine to coarse sand matrix, well graded, very dense, moist.	
3.5 - 6	Bedding subparallel carbonate veins.	
5.5 - 8.5	Yellowish brown fine to coarse grained SANDSTONE with fine gravel, graded, very dense, moist, slightly friable, massive.	
8.5 - 9.5	Grades to subangular to subrounded gravel to cobble CONGLOMERATE with slightly friable fine to coarse sand matrix, well graded, hard, moist.	@9' B N35W/8SW
9.5 - 10	Yellowish brown fine to coarse grained SANDSTONE with fine gravel, graded, hard, moist, slightly friable, massive.	
	Total Depth - 10' No groundwater No caving Backfilled	

Graphic Log



scale 1" = 5'

GEOLABS-WESTLAKE VILLAGE

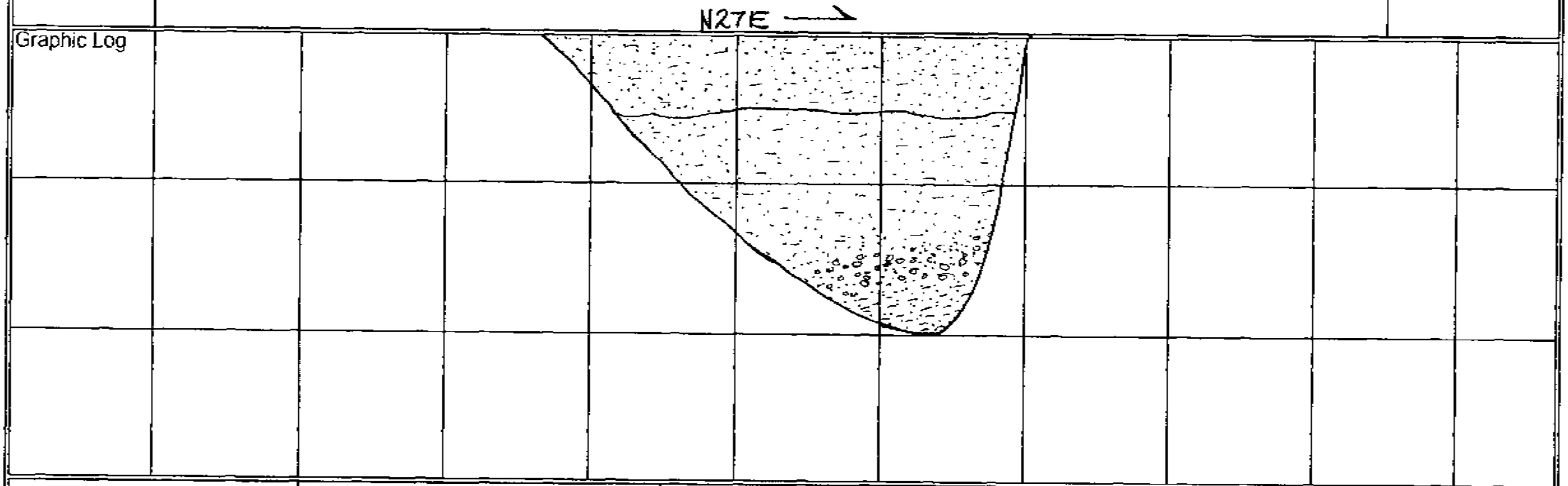
W.O. 8838

PLATE TP207

LOG OF EXCAVATION
Trench No. TP208
Logged By: RMP
Date Excavated: 8/8/06
Client: Pardee Homes

Depth (ft)	Description	Comments
0 - 2.5	Topsoil: Brown silty fine to coarse grained SAND, poorly graded, very dense, moist, rootlets.	
2.5 - 5	Saugus Formation: Weathered to 9.5' (roots to 8'), yellowish brown silty fine grained SANDSTONE, poorly graded, very dense, moist, moderately indurated, pervasively fractured and blocky with white carbonate staining in fractures.	
5 - 7.5	Yellowish brown silty fine grained SANDSTONE with sparse fine gravel, poorly graded, very dense, moist, weakly indurated, massive.	
7.5 - 8.5	Grades to yellowish brown subangular to subrounded fine to coarse grained gravel CONGLOMERATE with slightly friable silty fine sand matrix, graded, very dense, moist.	@8' B N52W/14SW
8.5 - 10	Dark yellowish brown fine to medium grained sandy SILTSTONE, poorly graded, very dense, moist, weakly indurated, massive.	
	Total Depth - 10' No groundwater No caving Backfilled	

Graphic Log



scale 1" = 5'
GEOLABS-WESTLAKE VILLAGE
W.O. 8838
PLATE TP208

APPENDIX C

SLOPE STABILITY ANALYSES

TTM 060922, SKYLINE RANCH
COUNTY OF LOS ANGELES, CALIFORNIA

W.O. 8838

Sec. B-B' W=100' D=5'

```
XSTABL File: 8838B     11-20-**   10:15

          ******************************************
          *              X S T A B L               *
          *                                        *
          *        Slope Stability Analysis        *
          *              using the                 *
          *           Method of Slices             *
          *                                        *
          *        Copyright (C) 1992 À 96         *
          *   Interactive Software Designs, Inc.   *
          *       Moscow, ID 83843, U.S.A.         *
          *                                        *
          *          All Rights Reserved           *
          *                                        *
          * Ver. 5.201                  96 À 1545  *
          ******************************************

Problem Description : Sec. B-B' W=100'D=5'


-----------------------------
SEGMENT BOUNDARY COORDINATES
-----------------------------

   9 SURFACE boundary segments

Segment   x-left    y-left    x-right   y-right     Soil Unit
  No.      (ft)      (ft)      (ft)      (ft)     Below Segment

  1          .0     1823.0     124.0    1835.0          1
  2       124.0     1835.0     210.0    1835.0          1
  3       210.0     1835.0     610.0    2005.0          2
  4       610.0     2005.0     640.0    2000.0          2
  5       640.0     2000.0     780.0    2000.0          1
  6       780.0     2000.0     890.0    1550.0          3
  7       890.0     1950.0    1020.0    1885.0          3
  8      1020.0     1885.0    1120.0    1860.0          4
  9      1120.0     1860.0    1200.0    1840.0          4

   5 SUBSURFACE boundary segments

Segment   x-left    y-left    x-right   y-right     Soil Unit
  No.      (ft)      (ft)      (ft)      (ft)     Below Segment

  1       210.0     1835.0     210.1    1830.0          1
  2       210.1     1830.0     310.0    1830.0          1
  3       310.0     1830.0     640.0    2000.0          1
  4          .0     1720.0     890.0    1950.0          3
  5          .0     1625.0    1020.0    1885.0          4


-----------------------------------
 A CRACKED ZONE HAS BEEN SPECIFIED
-----------------------------------

    Depth of crack below ground surface =  8.00   (feet)
    Maximum depth of water in crack     =   .00   (feet)
    Unit weight of water in crack       = 62.40   (pcf)

Failure surfaces will have a vertical side equal to the
specified depth of crack and be affected by a hydrostatic
force according to the specified depth of water in the crack
```

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--------------------------
ISOTROPIC Soil Parameters
--------------------------

 4 Soil unit(s) specified

Soil    Unit Weight   Cohesion  Friction    Pore Pressure        Water
Unit  Moist    Sat.  Intercept   Angle   Parameter  Constant  Surface
 No.  (pcf)   (pcf)    (psf)     (deg)      Ru        (psf)      No.

  1   130.0   140.0    225.0     40.00      .000          .0       0
  2   125.0   135.0    200.0     34.00      .000          .0       0
  3   130.0   140.0    225.0     40.00      .000          .0       0
  4   130.0   140.0    225.0     40.00      .000          .0       0


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ANISOTROPIC STRENGTH PARAMETERS
specified for  3 Soil Unit(s)
--------------------------------


Soil Unit  1 is ANISOTROPIC

Number of direction ranges specified =  3

Direction     Counterclockwise         c-value     i-value
Range No.   Direction Limit (deg)       (psf)     (degrees)

    1              10.00                225.0       40.00
    2              14.00                100.0       25.00
    3              90.00                225.0       40.00

Soil Unit  3 is ANISOTROPIC

Number of direction ranges specified =  3

Direction     Counterclockwise         c-value     i-value
Range No.   Direction Limit (deg)       (psf)     (degrees)

    1              10.00                225.0       40.00
    2              14.00                150.0       17.00
    3              90.00                225.0       40.00

Soil Unit  4 is ANISOTROPIC

Number of direction ranges specified =  3

Direction     Counterclockwise         c-value     i-value
Range No.   Direction Limit (deg)       (psf)     (degrees)

    1              10.00                225.0       40.00
    2              14.00                150.0       11.00
    3              90.00                225.0       40.00


A critical failure surface searching method, using a random
technique for generating sliding BLOCK surfaces, has been
specified.


The active and passive portions of the sliding surfaces
```

```
are generated according to the Rankine theory.


 5000 trial surfaces will be generated and analyzed.


  2 boxes specified for generation of central block base


Length of line segments for active and passive portions of
sliding block is    100.0 ft


Box        x-left     y-left    x-right    y-right      Width
no.         (ft)       (ft)       (ft)       (ft)        (ft)

 1          210.0     1790.0      500.0     1860.0       70.0
 2          540.0     1870.0      810.0     1940.0       70.0



Factors of safety have been calculated by the :

* * * * *   SIMPLIFIED JANBU METHOD   * * * * *



The 10 most critical of all the failure surfaces examined
are displayed below - the most critical first

Failure surface No. 1 specified by  9 coordinate points

       Point      x-surf      y-surf
        No.        (ft)        (ft)

        1         137.25     1835.00
        2         156.36     1826.09
        3         246.99     1783.83
        4         247.49     1783.59
        5         603.82     1868.12
        6         608.02     1877.13
        7         650.29     1967.76
        8         661.59     1992.00
        9         661.59     2000.00

 **  Corrected JANBU FOS =    1.713   **     (Fo factor = 1.071)


Failure surface No. 2 specified by  8 coordinate points

       Point      x-surf      y-surf
        No.        (ft)        (ft)

        1         163.00     1835.00
        2         172.93     1830.37
        3         263.56     1788.11
        4         264.99     1787.44
        5         749.62     1908.01
        6         752.65     1914.50
        7         787.25     1988.71
        8         787.25     1996.71

 **  Corrected JANBU FOS =    1.727   **     (Fo factor = 1.049)


Failure surface No. 3 specified by  9 coordinate points

       Point      x-surf      y-surf
        No.        (ft)        (ft)

        1         166.74     1835.00
        2         175.35     1830.99
        3         265.97     1788.73
        4         272.91     1785.50
        5         607.49     1867.43
        6         612.56     1878.30
        7         654.82     1968.93
        8         665.58     1992.00
        9         665.58     2000.00

 **  Corrected JANBU FOS =    1.731   **     (Fo factor = 1.073)


Failure surface No. 4 specified by  9 coordinate points

       Point      x-surf      y-surf
        No.        (ft)        (ft)

        1         142.41     1835.00
        2         159.68     1826.95
        3         250.31     1784.69
        4         252.48     1783.67
        5         590.47     1858.87
        6         597.75     1874.47
        7         640.01     1965.11
        8         652.55     1992.00
        9         652.55     2000.00

 **  Corrected JANBU FOS =    1.742   **     (Fo factor = 1.075)


Failure surface No. 5 specified by 10 coordinate points

       Point      x-surf      y-surf
        No.        (ft)        (ft)

        1         173.94     1835.00
        2         179.97     1832.19
        3         270.60     1789.93
        4         273.23     1788.70
        5         556.29     1851.71
        6         562.68     1865.41
        7         604.95     1956.04
        8         620.84     1990.13
        9         623.31     1994.78
       10         623.31     2002.78

 **  Corrected JANBU FOS =    1.748   **     (Fo factor = 1.081)


Failure surface No. 6 specified by  9 coordinate points

       Point      x-surf      y-surf
        No.        (ft)        (ft)

        1         150.53     1835.00
        2         164.90     1828.30
        3         255.53     1786.04
        4         255.65     1785.98
        5         689.42     1887.62
        6         695.01     1899.61
        7         737.28     1990.24
        8         738.10     1992.00
        9         738.10     2000.00

 **  Corrected JANBU FOS =    1.752   **     (Fo factor = 1.061)


Failure surface No. 7 specified by  9 coordinate points
```

W.O. 8838
Sec. B-B' W=100' D=5'

```
         Point      x-surf      y-surf
          No.        (ft)        (ft)

           1        188.44     1835.00
           2        189.29     1834.60
           3        279.93     1792.34
           4        288.82     1788.19
           5        568.81     1857.94
           6        573.61     1868.24
           7        615.87     1958.87
           8        631.95     1993.34
           9        631.95     2001.34

  **  Corrected JANBU FOS =   1.754  **     (Fo factor = 1.079)

Failure surface No. 8 specified by  9 coordinate points

         Point      x-surf      y-surf
          No.        (ft)        (ft)

           1        157.41     1835.00
           2        169.33     1829.44
           3        259.96     1787.18
           4        262.31     1786.08
           5        581.62     1851.95
           6        591.36     1872.82
           7        633.62     1963.45
           8        646.93     1992.00
           9        646.93     2000.00

  **  Corrected JANBU FOS =   1.764  **     (Fo factor = 1.078)

Failure surface No. 9 specified by  9 coordinate points

         Point      x-surf      y-surf
          No.        (ft)        (ft)

           1        162.69     1835.00
           2        172.72     1830.32
           3        263.35     1788.06
           4        271.32     1784.34
           5        693.02     1888.06
           6        698.87     1900.61
           7        741.13     1991.24
           8        741.49     1992.00
           9        741.49     2000.00

  **  Corrected JANBU FOS =   1.770  **     (Fo factor = 1.061)

Failure surface No.10 specified by  9 coordinate points

         Point      x-surf      y-surf
          No.        (ft)        (ft)

           1        160.05     1835.00
           2        171.03     1829.88
           3        261.66     1787.62
           4        266.82     1785.21
           5        637.32     1870.00
           6        645.11     1886.71
           7        687.38     1977.35
           8        694.21     1992.00
           9        694.21     2000.00

  **  Corrected JANBU FOS =   1.775  **     (Fo factor = 1.070)
```

```
The following is a summary of the TEN most critical surfaces

Problem Description : Sec. B-B' W=100'D=5'

       Modified      Correction     Initial      Terminal     Available
       JANBU FOS       Factor       x-coord      x-coord       Strength
                                     (ft)          (ft)          (lb)

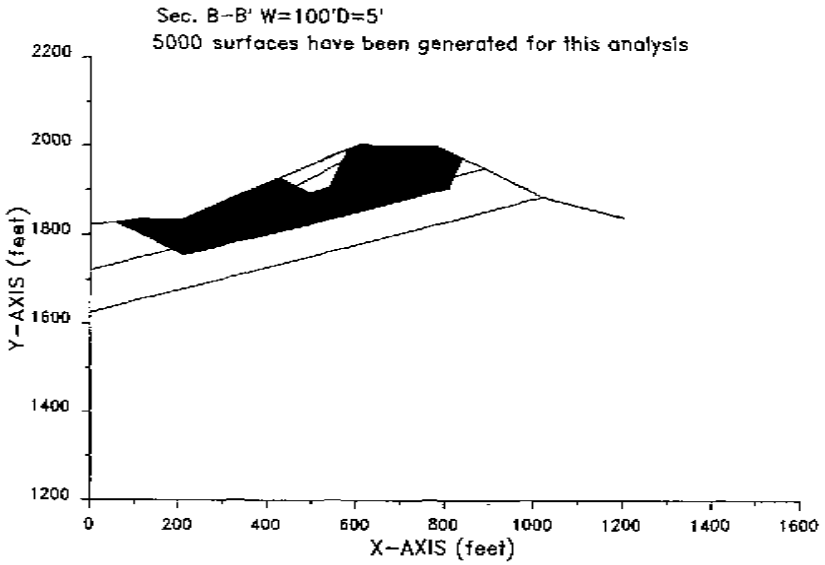
  1.     1.713         1.071        137.25        661.59      2.485E+06
  2.     1.727         1.049        163.00        787.25      2.782E+06
  3.     1.731         1.073        166.74        665.58      2.524E+06
  4.     1.742         1.075        142.41        652.55      2.532E+06
  5.     1.749         1.081        173.94        623.31      2.277E+06
  6.     1.752         1.061        150.53        738.10      2.724E+06
  7.     1.754         1.079        188.44        631.95      2.355E+06
  8.     1.764         1.078        157.41        646.93      2.525E+06
  9.     1.770         1.061        162.69        741.49      2.824E+06
 10.     1.775         1.070        160.05        694.21      2.682E+06

                 *    * *  END OF FILE  * * *
```

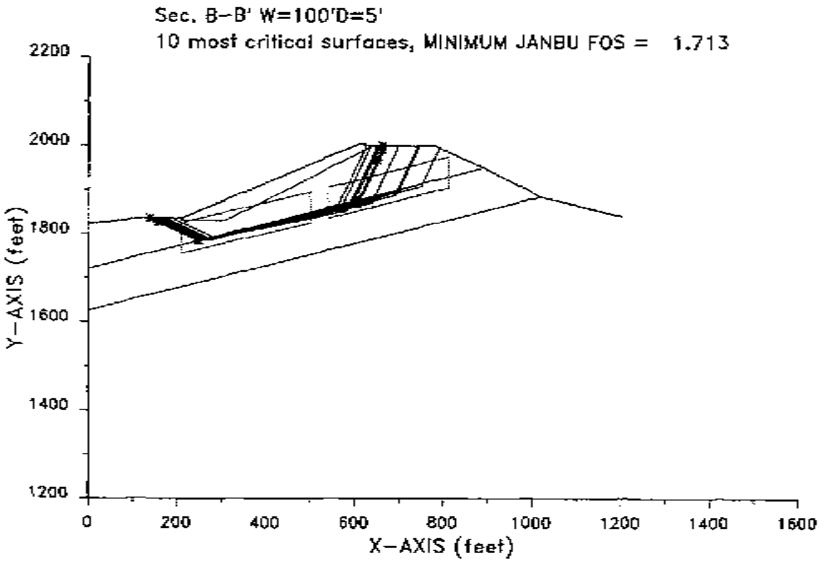
W.O. 8838

Sec. B-B' W=100' D=5'

8838B 11-20-** 10:15



8838B 11-20-** 10:15



GEOLABS-WESTLAKE VILLAGE

Plate B.4

W.O. 8838
Sec. B-B' Pseudo

```
XSTABL File: 8838BP    11-20-**   10:15

          ******************************************
          *              X S T A B L               *
          *                                        *
          *        Slope Stability Analysis        *
          *               using the                *
          *            Method of Slices            *
          *                                        *
          *         Copyright (C) 1992 À 96        *
          *    Interactive Software Designs, Inc.  *
          *       Moscow, ID 83843, U.S.A.         *
          *                                        *
          *          All Rights Reserved           *
          *                                        *
          * Ver. 5.201                  96 À 1545  *
          ******************************************

    Problem Description : Sec. B-B' W=100'D=5' Pseudo


    -----------------------------
    SEGMENT BOUNDARY COORDINATES
    -----------------------------

       9 SURFACE boundary segments

    Segment    x-left     y-left     x-right    y-right      Soil Unit
      No.       (ft)       (ft)       (ft)       (ft)      Below Segment

       1          .0      1823.0      124.0     1835.0           1
       2       124.0      1835.0      210.0     1835.0           1
       3       210.0      1835.0      610.0     2005.0           2
       4       610.0      2005.0      640.0     2000.0           2
       5       640.0      2000.0      780.0     2000.0           1
       6       780.0      2000.0      890.0     1950.0           3
       7       890.0      1950.0     1020.0     1885.0           3
       8      1020.0      1885.0     1120.0     1860.0           4
       9      1120.0      1860.0     1200.0     1840.0           4

       5 SUBSURFACE boundary segments

    Segment    x-left     y-left     x-right    y-right      Soil Unit
      No.       (ft)       (ft)       (ft)       (ft)      Below Segment

       1       210.0      1835.0      210.1     1830.0           1
       2       210.1      1830.0      310.0     1830.0           1
       3       310.0      1830.0      640.0     2000.0           1
       4          .0      1720.0      890.0     1950.0           3
       5          .0      1625.0     1020.0     1885.0           4

    -----------------------------------
     A CRACKED ZONE HAS BEEN SPECIFIED
    -----------------------------------

        Depth of crack below ground surface =  8.00   (feet)
        Maximum depth of water in crack     =   .00   (feet)
        Unit weight of water in crack       = 62.40   (pcf)

    Failure surfaces will have a vertical side equal to the
    specified depth of crack and be affected by a hydrostatic
    force according to the specified depth of water in the crack
```

```
    --------------------------
    ISOTROPIC Soil Parameters
    --------------------------

     4 Soil unit(s) specified

    Soil   Unit Weight    Cohesion  Friction     Pore Pressure       Water
    Unit  Moist    Sat.   Intercept  Angle   Parameter  Constant   Surface
    No.   (pcf)   (pcf)     (psf)    (deg)      Ru        (psf)      No.

     1    130.0   140.0     225.0    40.00      .000         .0        0
     2    125.0   135.0     200.0    34.00      .000         .0        0
     3    130.0   140.0     225.0    40.00      .000         .0        0
     4    130.0   140.0     225.0    40.00      .000         .0        0


    --------------------------------
    ANISOTROPIC STRENGTH PARAMETERS
    specified for  3 Soil Unit(s)
    --------------------------------


    Soil Unit  1 is ANISOTROPIC

    Number of direction ranges specified =  3

    Direction      Counterclockwise          c-value      i-value
    Range No.   Direction Limit (deg)         (psf)      (degrees)

        1              10.00                  225.0        40.00
        2              14.00                  100.0        25.00
        3              90.00                  225.0        40.00

    Soil Unit  3 is ANISOTROPIC

    Number of direction ranges specified =  3

    Direction      Counterclockwise          c-value      i-value
    Range No.   Direction Limit (deg)         (psf)      (degrees)

        1              10.00                  225.0        40.00
        2              14.00                  150.0        17.00
        3              90.00                  225.0        40.00

    Soil Unit  4 is ANISOTROPIC

    Number of direction ranges specified =  3

    Direction      Counterclockwise          c-value      i-value
    Range No.   Direction Limit (deg)         (psf)      (degrees)

        1              10.00                  225.0        40.00
        2              14.00                  150.0        11.00
        3              90.00                  225.0        40.00


    A horizontal earthquake loading coefficient
    of   .150 has been assigned

    A vertical earthquake loading coefficient
    of   .000 has been assigned
```

W.O. 8838
Sec. B-B' Pseudo

```
A critical failure surface searching method, using a random
technique for generating sliding BLOCK surfaces, has been
specified.


The active and passive portions of the sliding surfaces
are generated according to the Rankine theory.


 5000 trial surfaces will be generated and analyzed.


  2 boxes specified for generation of central block base


Length of line segments for active and passive portions of
sliding block is    100.0 ft


Box        x-left      y-left     x-right     y-right      Width
no.         (ft)        (ft)        (ft)        (ft)        (ft)

 1          210.0      1790.0      500.0      1860.0        70.0
 2          540.0      1870.0      810.0      1940.0        70.0


Factors of safety have been calculated by the :

* * * * *    SIMPLIFIED JANBU METHOD    * * * * *


The 10 most critical of all the failure surfaces examined
are displayed below - the most critical first

Failure surface No. 1 specified by  8 coordinate points

       Point      x-surf      y-surf
        No.        (ft)        (ft)

         1        163.00     1835.00
         2        172.93     1830.37
         3        263.56     1788.11
         4        264.99     1787.44
         5        749.62     1908.01
         6        752.65     1914.50
         7        787.25     1988.71
         8        787.25     1996.71

 **  Corrected JANBU FOS =    1.097  **     (Fo factor = 1.049)

Failure surface No. 2 specified by  7 coordinate points

       Point      x-surf      y-surf
        No.        (ft)        (ft)

         1        156.30     1835.00
         2        168.27     1829.42
         3        258.90     1787.16
         4        779.45     1910.58
         5        785.20     1922.92
         6        810.87     1977.97
         7        810.87     1985.97

 **  Corrected JANBU FOS =    1.108  **     (Fo factor = 1.044)
```

```
Failure surface No. 3 specified by  8 coordinate points

       Point      x-surf      y-surf
        No.        (ft)        (ft)

         1        161.47     1835.00
         2        171.94     1830.12
         3        262.57     1787.85
         4        263.89     1787.24
         5        766.10     1901.32
         6        774.93     1920.26
         7        803.42     1981.36
         8        803.42     1989.36

 **  Corrected JANBU FOS =    1.122  **     (Fo factor = 1.049)

Failure surface No. 4 specified by  9 coordinate points

       Point      x-surf      y-surf
        No.        (ft)        (ft)

         1        206.79     1835.00
         2        210.03     1833.28
         3        216.20     1830.00
         4        290.89     1795.17
         5        293.98     1793.73
         6        792.12     1914.55
         7        797.50     1926.09
         8        819.79     1973.91
         9        819.79     1981.91

 **  Corrected JANBU FOS =    1.126  **     (Fo factor = 1.042)

Failure surface No. 5 specified by  9 coordinate points

       Point      x-surf      y-surf
        No.        (ft)        (ft)

         1        150.53     1835.00
         2        164.90     1828.30
         3        255.53     1786.04
         4        255.65     1785.98
         5        689.42     1887.62
         6        695.01     1899.61
         7        737.28     1990.24
         8        738.10     1992.00
         9        738.10     2000.00

 **  Corrected JANBU FOS =    1.127  **     (Fo factor = 1.061)

Failure surface No. 6 specified by  6 coordinate points

       Point      x-surf      y-surf
        No.        (ft)        (ft)

         1        190.18     1835.00
         2        279.57     1793.32
         3        754.19     1909.21
         4        757.21     1915.68
         5        790.56     1987.20
         6        790.56     1995.20

 **  Corrected JANBU FOS =    1.132  **     (Fo factor = 1.049)

Failure surface No. 7 specified by  8 coordinate points
```

W.O. 8838
Sec. B-B' Pseudo

```
       Point       x-surf       y-surf
        No.         (ft)         (ft)

         1         120.10      1834.62
         2         144.80      1823.10
         3         235.43      1780.84
         4         239.48      1778.95
         5         770.37      1907.04
         6         776.76      1920.74
         7         804.75      1980.75
         8         804.75      1988.75

 **  Corrected JANBU FOS =    1.135  **     (Fo factor = 1.048)


Failure surface No. 8 specified by  7 coordinate points

       Point       x-surf       y-surf
        No.         (ft)         (ft)

         1         157.11      1835.00
         2         167.09      1830.34
         3         257.72      1788.08
         4         804.85      1909.69
         5         814.56      1930.50
         6         832.18      1968.28
         7         832.18      1976.28

 **  Corrected JANBU FOS =    1.139  **     (Fo factor = 1.042)


Failure surface No. 9 specified by  8 coordinate points

       Point       x-surf       y-surf
        No.         (ft)         (ft)

         1         176.46      1835.00
         2         181.59      1832.61
         3         272.22      1790.35
         4         273.72      1789.65
         5         757.25      1894.40
         6         768.54      1918.61
         7         798.78      1983.46
         8         798.78      1991.46

 **  Corrected JANBU FOS =    1.141  **     (Fo factor = 1.053)


Failure surface No.10 specified by  8 coordinate points

       Point       x-surf       y-surf
        No.         (ft)         (ft)

         1         217.85      1838.34
         2         233.54      1830.00
         3         302.04      1798.06
         4         303.73      1797.27
         5         792.19      1913.43
         6         798.18      1926.27
         7         820.29      1973.69
         8         820.29      1981.69

 **  Corrected JANBU FOS =    1.142  **     (Fo factor = 1.042)



The following is a summary of the TEN most critical surfaces
```

```
Problem Description : Sec. B-B' W=100'D=5' Pseudo

        Modified      Correction    Initial     Terminal     Available
        JANBU FOS       Factor      x-coord     x-coord      Strength
                                     (ft)        (ft)          (lb)

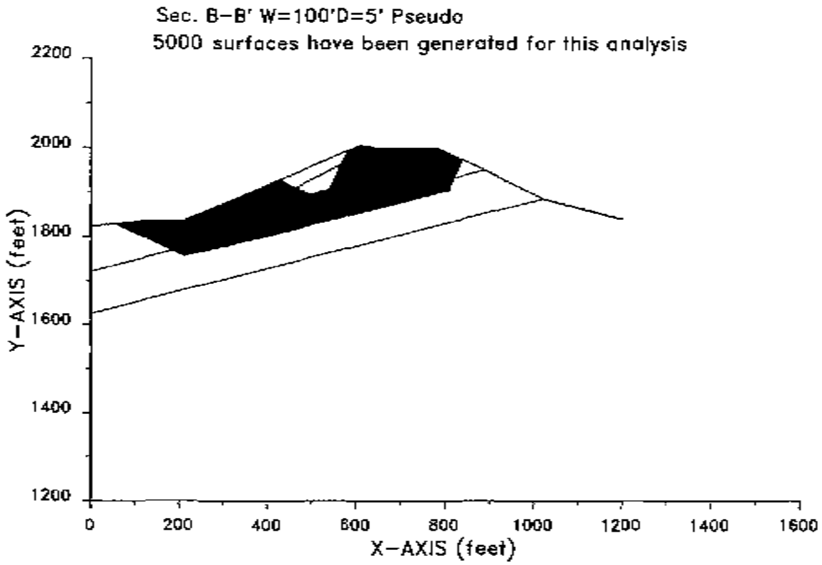
  1.     1.097          1.049       163.00      787.25      2.797E+06
  2.     1.108          1.044       136.30      810.87      2.900E+06
  3.     1.122          1.049       161.47      803.42      2.963E+06
  4.     1.126          1.042       206.79      819.79      2.855E+06
  5.     1.127          1.061       150.53      738.10      2.704E+06
  6.     1.132          1.049       190.18      790.56      2.789E+06
  7.     1.135          1.048       120.10      804.75      3.099E+05
  8.     1.139          1.042       157.11      832.18      3.023E+05
  9.     1.141          1.053       176.46      798.78      2.980E+05
 10.     1.142          1.042       217.85      820.29      2.828E+06

              *     * *  END OF FILE  * * *
```

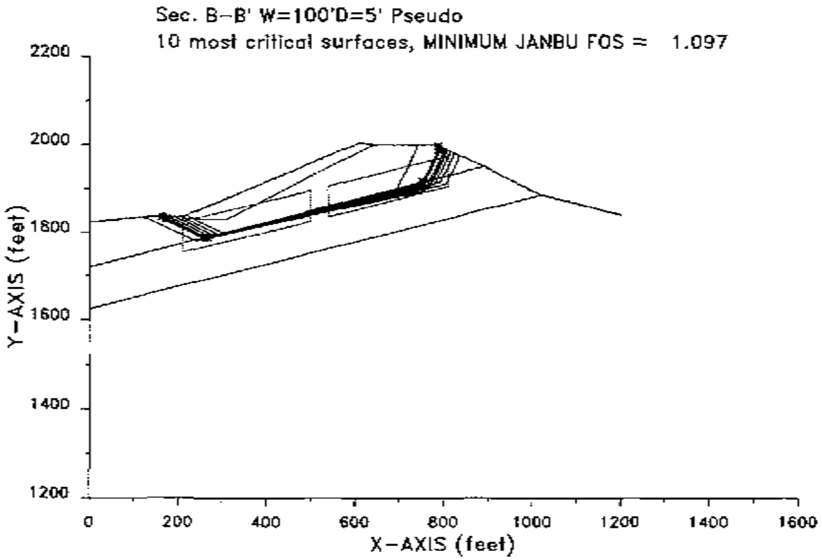
GEOLABS-WESTLAKE VILLAGE

W.O. 8838
Sec. B-B' Pseudo

883BBP 11-20-** 10:15



883BBP 11-20-** 10:15



GEOLABS-WESTLAKE VILLAGE

W.O. 8838

Sec. B-B' Pseudo., Spencer's

```
XSTABL File: 8838BPS   11-20-**   10:16

          ******************************************
          *               X S T A B L              *
          *                                        *
          *       Slope Stability Analysis         *
          *              using the                 *
          *           Method of Slices             *
          *                                        *
          *         Copyright (C) 1992 À 96        *
          *   Interactive Software Designs, Inc.   *
          *        Moscow, ID 83843, U.S.A.        *
          *                                        *
          *          All Rights Reserved           *
          *                                        *
          *  Ver. 5.201                96 À 1545   *
          ******************************************

Problem Description : Sec. B-B' W=100'D=5' Pseudo Spencer



-----------------------------
SEGMENT BOUNDARY COORDINATES
-----------------------------

   9 SURFACE boundary segments

Segment   x-left    y-left    x-right   y-right    Soil Unit
  No.      (ft)      (ft)      (ft)      (ft)    Below Segment

   1          .0    1823.0     124.0    1935.0         1
   2       124.0    1835.0     210.0    1835.0         1
   3       210.0    1835.0     610.0    2005.0         2
   4       610.0    2005.0     640.0    2000.0         2
   5       640.0    2000.0     780.0    2000.0         1
   6       780.0    2000.0     890.0    1950.0         3
   7       890.0    1950.0    1020.0    1885.0         3
   8      1020.0    1885.0    1120.0    1860.0         4
   9      1120.0    1860.0    1200.0    1840.0         4

   5 SUBSURFACE boundary segments

Segment   x-left    y-left    x-right   y-right    Soil Unit
  No.      (ft)      (ft)      (ft)      (ft)    Below Segment

   1       210.0    1835.0     210.1    1830.0         1
   2       210.1    1830.0     310.0    1830.0         1
   3       310.0    1830.0     640.0    2000.0         1
   4          .0    1720.0     890.0    1950.0         3
   5          .0    1625.0    1020.0    1885.0         4


-------------------------------------
 A CRACKED ZONE HAS BEEN SPECIFIED
-------------------------------------

    Depth of crack below ground surface =  8.00   (feet)
    Maximum depth of water in crack     =   .00   (feet)
    Unit weight of water in crack       = 62.40   (pcf)

Failure surfaces will have a vertical side equal to the
specified depth of crack and be affected by a hydrostatic
force according to the specified depth of water in the crack
```

```
--------------------------
ISOTROPIC Soil Parameters
--------------------------

 4 Soil unit(s) specified

Soil   Unit Weight   Cohesion  Friction    Pore Pressure      Water
Unit  Moist    Sat.  Intercept   Angle  Parameter  Constant  Surface
 No.  (pcf)   (pcf)    (psf)     (deg)     Ru       (psf)      No.

  1   130.0   140.0    225.0     40.00     .000         .0       0
  2   125.0   135.0    200.0     34.00     .000         .0       0
  3   130.0   140.0    225.0     40.00     .000         .0       0
  4   130.0   140.0    225.0     40.00     .000         .0       0


--------------------------------
ANISOTROPIC STRENGTH PARAMETERS
specified for  3 Soil Unit(s)
--------------------------------


Soil Unit  1 is ANISOTROPIC

Number of direction ranges specified =  3

Direction     Counterclockwise          c-value      i-value
Range No.   Direction Limit (deg)        (psf)      (degrees)

    1              10.00                 225.0        40.00
    2              14.00                 100.0        25.00
    3              90.00                 225.0        40.00


Soil Unit  3 is ANISOTROPIC

Number of direction ranges specified =  3

Direction     Counterclockwise          c-value      i-value
Range No.   Direction Limit (deg)        (psf)      (degrees)

    1              10.00                 225.0        40.00
    2              14.00                 150.0        17.00
    3              90.00                 225.0        40.00


Soil Unit  4 is ANISOTROPIC

Number of direction ranges specified =  3

Direction     Counterclockwise          c-value      i-value
Range No.   Direction Limit (deg)        (psf)      (degrees)

    1              10.00                 225.0        40.00
    2              14.00                 150.0        11.00
    3              90.00                 225.0        40.00


A horizontal earthquake loading coefficient
of   .150 has been assigned

A vertical earthquake loading coefficient
of   .000 has been assigned
```

W.O. 8838

Sec. B-B' Pseudo., Spencer's

```
-----------------------------------------------------------
A SINGLE FAILURE SURFACE HAS BEEN SPECIFIED FOR ANALYSIS
-----------------------------------------------------------

Trial failure surface specified by
the following  8 coordinate points :

        Point       x-surf       y-surf
         No.         (ft)         (ft)

          1         163.00      1835.00
          2         172.93      1830.37
          3         263.56      1788.11
          4         264.99      1787.44
          5         749.62      1908.01
          6         752.65      1914.50
          7         787.25      1988.71
          8         787.25      1996.71


****************************************************
SELECTED METHOD OF ANALYSIS:  Spencer (1973)
****************************************************



****************************************
SUMMARY OF INDIVIDUAL SLICE INFORMATION
****************************************

Slice  x-base     y-base  height    width   alpha     beta     weight
        (ft)       (ft)    (ft)     (ft)                       (lb)

  1    167.96    1832.69    2.31     9.93  -25.00      .00      2988.
  2    191.46    1821.73   13.27    37.07  -25.00      .00     63963.
  3    210.05    1813.06   21.96      .10  -25.00    23.03       284.
  4    236.83    1800.57   45.83    53.46  -25.00    23.03    314116.
  5    264.27    1787.77   70.29     1.43  -25.11    23.03     12867.
  6    287.49    1793.04   74.90    45.01   13.97    23.03    429705.
  7    460.00    1835.96  105.29   300.00   13.97    23.03   4055498.
  8    625.00    1877.01  125.49    30.00   13.97    -9.46    487892.
  9    694.81    1894.37  105.63   109.62   13.97      .00   1505235.
 10    751.14    1911.26   88.74     3.03   64.97      .00     34987.
 11    766.33    1943.83   56.17    27.35   65.00      .00    199692.
 12    783.62    1980.93   17.42     7.25   65.00   -24.44     16414.

--------------------------------
ITERATIONS FOR SPENCER'S METHOD
--------------------------------

     Iter #        Theta          FOS_force       FOS_moment
        2         18.5368          1.3433          1.2528
        3         17.6622          ------          1.3433
        3         18.0995          1.3325          ------
        4         17.7540          1.3241          1.3325
        5         17.8272          ------          1.3241
        5         17.7906          1.3251          ------
        6         17.8193          1.3257          1.3251

SLICE INFORMATION ... continued :

Slice   Sigma    c-value   phi     U-base     U-top     P-top    Delta
        (psf)     (psf)             (lb)       (lb)      (lb)

  1    1194.9    225.0    40.00      0.         0.        0.      .00
  2    5051.6    225.0    40.00      0.         0.        0.      .00
  3    8075.0    225.0    40.00      0.         0.        0.      .00
  4   16287.8    225.0    40.00      0.         0.        0.      .00
  5   24894.5    225.0    40.00      0.         0.        0.      .00
  6    8554.1    150.0    17.00      0.         0.        0.      .00
  7   12109.3    150.0    17.00      0.         0.        0.      .00
  8   14566.4    150.0    17.00      0.         0.        0.      .00
  9   12300.0    150.0    17.00      0.         0.        0.      .00
 10    3756.6    225.0    40.00      0.         0.        0.      .00
 11    2335.3    225.0    40.00      0.         0.        0.      .00
 12     653.1    225.0    40.00      0.         0.        0.      .00


------------------------------------------------------------
SPENCER'S (1973)  - TOTAL Stresses at center of slice base
------------------------------------------------------------

Slice     Base        Normal     Vertical    Pore Water      Shear
  #      x-coord      Stress      Stress      Pressure       Stress
          (ft)        (psf)       (psf)        (psf)         (psf)

   1     167.96      1194.9       300.9          .0          925.0
   2     191.46      5051.6      1725.5          .0         3367.1
   3     210.05      8075.0      2842.2          .0         5280.7
   4     236.83     16287.8      5875.7          .0        10478.8
   5     264.27     24894.5      8997.6          .0        15926.3
   6     287.49      8554.1      9546.9          .0         2085.8
   7     460.00     12109.3     13518.3          .0         2905.7
   8     625.00     14566.4     16263.1          .0         3472.3
   9     694.81     12300.0     13731.4          .0         2949.7
  10     751.14      3756.6     11536.5          .0         2547.4
  11     766.33      2335.3      7301.7          .0         1647.8
  12     783.62       653.1      2264.6          .0          583.1


-----------------------------------------------------------------
SPENCER'S (1973)  - Magnitude & Location of Interslice Forces
-----------------------------------------------------------------

Slice     Right      Force     Interslice    Force    Boundary   Height
  #      x-coord     Angle       Force       Height    Height    Ratio
          (ft)     (degrees)     (lb)         (ft)      (ft)

   1     172.93      17.82       14999.       3.87      4.63      .837
   2     210.00      17.82      227747.      15.52     21.92      .708
   3     210.10      17.82      228653.      15.54     22.00      .706
   4     263.56      17.82     1194063.      27.12     69.65      .389
   5     254.99      17.82     1233479.      27.31     70.93      .385
   6     310.00      17.82     1163775.      30.15     78.86      .382
   7     610.00      17.82      492102.      40.19    131.73      .305
   8     640.00      17.82      409453.      38.85    119.26      .326
   9     749.62      17.82      159580.      35.32     91.99      .384
  10     752.65      17.82      136550.      33.50     85.49      .392
  11     780.00      17.82        8547.       8.90     26.84      .332
  12     787.25        .00        -252.       -.07      8.00     -.008


------------------------------------------------------------
  AVERAGE VALUES ALONG FAILURE SURFACE
------------------------------------------------------------

        Total Normal Stress =   10542.42   (psf)
        Pore Water Pressure =        .00   (psf)
        Shear Stress        =    3369.86   (psf)

        Total Length of failure surface =  700.97 feet

------------------------------------------------------------


       For the single specified surface and the assumed angle
```

W.O. 8838
Sec. B-B' Pseudo., Spencer's

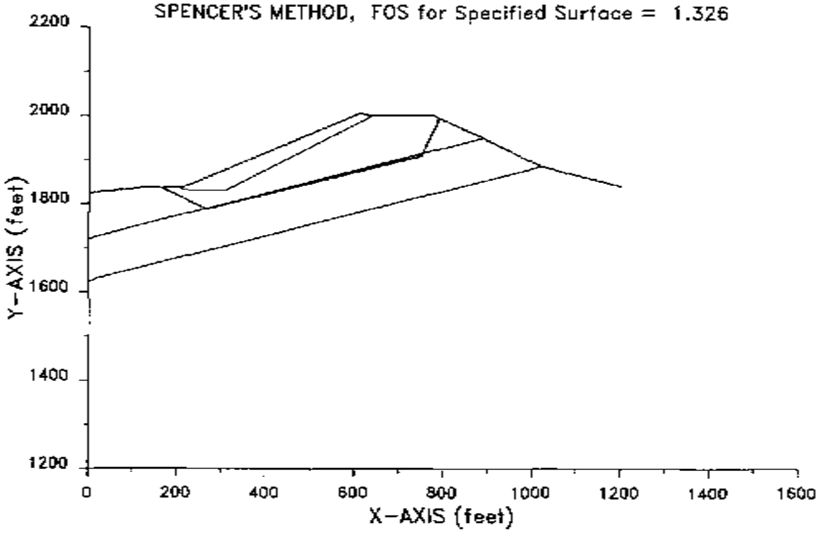
```
of the interslice forces, the SPENCER'S (1973)
procedure gives a

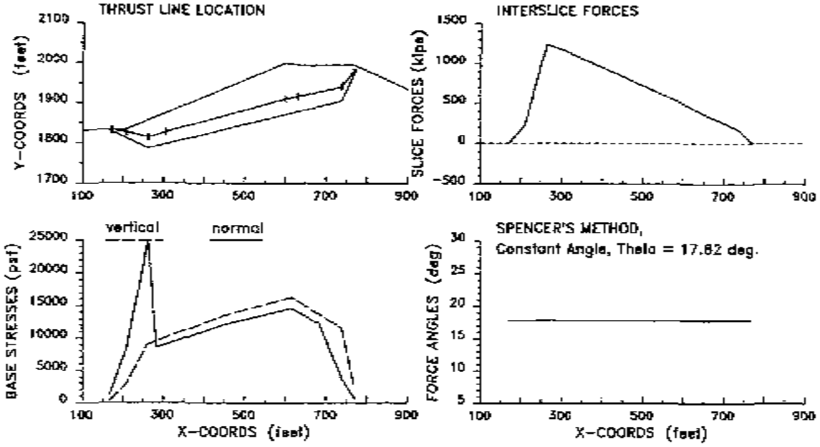
          FACTOR OF SAFETY =   1.326

Total shear strength available
along specified failure surface =  313.16E+04    lb
```

8838BPS 11-20-** 10:16

Sec. B-B' W=100'D=5' Pseudo Spencer
SPENCER'S METHOD, FOS for Specified Surface = 1.326





Sec. B-B' W=100'D=5' Pseudo Spencer
SPENCER'S METHOD, FOS for Specified Surface = 1.326

GEOLABS-WESTLAKE VILLAGE

W.O. 8838

Sec. B-B' Backcut

```
XSTABL File: 8838BB    11-20-**    10:08

          ******************************************
          *              X S T A B L               *
          *                                        *
          *        Slope Stability Analysis        *
          *               using the                *
          *            Method of Slices            *
          *                                        *
          *         Copyright (C) 1992 À 96        *
          *    Interactive Software Designs, Inc.  *
          *       Moscow, ID 83843, U.S.A.         *
          *                                        *
          *          All Rights Reserved           *
          *                                        *
          *  Ver. 5.201                96 À 1545   *
          ******************************************

Problem Description : Sec. B-B' Backcut



-----------------------------
SEGMENT BOUNDARY COORDINATES
-----------------------------

   10 SURFACE boundary segments

Segment    x-left    y-left    x-right   y-right     Soil Unit
  No.       (ft)      (ft)      (ft)      (ft)     Below Segment

   1          .0     1823.0     124.0    1835.0          1
   2       124.0     1835.0     210.0    1835.0          1
   3       210.0     1835.0     210.1    1830.0          1
   4       210.1     1830.0     310.0    1830.0          1
   5       310.0     1830.0     640.0    2000.0          1
   6       640.0     2000.0     780.0    2000.0          1
   7       780.0     2000.0     890.0    1950.0          1
   8       890.0     1950.0    1020.0    1885.0          3
   9      1020.0     1885.0    1120.0    1860.0          4
  10      1120.0     1860.0    1200.0    1840.0          4


    2 SUBSURFACE boundary segments

Segment    x-left    y-left    x-right   y-right     Soil Unit
  No.       (ft)      (ft)      (ft)      (ft)     Below Segment

   1          .0     1720.0     890.0    1950.0          3
   2          .0     1625.0    1020.0    1885.0          4


-----------------------------------
 A CRACKED ZONE HAS BEEN SPECIFIED
-----------------------------------

     Depth of crack below ground surface =  8.00   (feet)
     Maximum depth of water in crack     =   .00   (feet)
     Unit weight of water in crack       = 62.40   (pcf)

Failure surfaces will have a vertical side equal to the
specified depth of crack and be affected by a hydrostatic
force according to the specified depth of water in the crack



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```

```
ISOTROPIC Soil Parameters
--------------------------

 4 Soil unit(s) specified

Soil   Unit Weight    Cohesion  Friction     Pore Pressure       Water
Unit  Moist    Sat.   Intercept   Angle   Parameter  Constant  Surface
 No.  (pcf)   (pcf)     (psf)     (deg)      Ru        (psf)      No.

  1   130.0   140.0     225.0     40.00     .000         .0        0
  2   125.0   135.0     200.0     34.00     .000         .0        0
  3   130.0   140.0     225.0     40.00     .000         .0        0
  4   130.0   140.0     225.0     40.00     .000         .0        0


--------------------------------
ANISOTROPIC STRENGTH PARAMETERS
specified for  3 Soil Unit(s)
--------------------------------


Soil Unit  1 is ANISOTROPIC

Number of direction ranges specified =  3


Direction     Counterclockwise         c-value       i-value
Range No.   Direction Limit (deg)       (psf)       (degrees)

    1              10.00               225.0         40.00
    2              14.00               100.0         25.00
    3              90.00               225.0         40.00


Soil Unit  3 is ANISOTROPIC

Number of direction ranges specified =  3


Direction     Counterclockwise         c-value       i-value
Range No.   Direction Limit (deg)       (psf)       (degrees)

    1              10.00               225.0         40.00
    2              14.00               150.0         17.00
    3              90.00               225.0         40.00


Soil Unit  4 is ANISOTROPIC

Number of direction ranges specified =  3


Direction     Counterclockwise         c-value       i-value
Range No.   Direction Limit (deg)       (psf)       (degrees)

    1              10.00               225.0         40.00
    2              14.00               150.0         11.00
    3              90.00               225.0         40.00



A critical failure surface searching method, using a random
technique for generating sliding BLOCK surfaces, has been
specified.


The active and passive portions of the sliding surfaces
are generated according to the Rankine theory.
```

```
 5000 trial surfaces will be generated and analyzed.


  2 boxes specified for generation of central block base


Length of line segments for active and passive portions of
sliding block is    100.0 ft


Box        x-left     y-left    x-right    y-right       Width
no.         (ft)       (ft)       (ft)       (ft)         (ft)

 1          310.0     1790.0     400.0     1830.0         70.0
 2          500.0     1865.0     800.0     1940.0         80.0



Factors of safety have been calculated by the :

* * * * *   SIMPLIFIED JANBU METHOD   * * * * *



The 10 most critical of all the failure surfaces examined
are displayed below - the most critical first

Failure surface No. 1 specified by  8 coordinate points

       Point       x-surf      y-surf
        No.         (ft)        (ft)

         1         273.59     1830.00
         2         327.81     1804.71
         3         330.01     1803.69
         4         583.27     1865.98
         5         585.79     1871.38
         6         628.05     1962.01
         7         642.03     1992.00
         8         642.03     2000.00

 **  Corrected JANBU FOS =   1.336  **    (Fo factor = 1.080)


Failure surface No. 2 specified by  7 coordinate points

       Point       x-surf      y-surf
        No.         (ft)        (ft)

         1         313.05     1831.57
         2         354.81     1812.10
         3         611.50     1873.31
         4         614.00     1878.67
         5         655.26     1969.31
         6         665.85     1992.00
         7         666.85     2000.00

 **  Corrected JANBU FOS =   1.351  **    (Fo factor = 1.078)


Failure surface No. 3 specified by  8 coordinate points

       Point       x-surf      y-surf
        No.         (ft)        (ft)

         1         272.44     1830.00
         2         327.07     1804.52
         3         328.12     1804.04
         4         616.41     1868.37
         5         622.21     1880.80
         6         664.47     1971.43
         7         674.06     1992.00
         8         674.06     2000.00

 **  Corrected JANBU FOS =   1.351  **    (Fo factor = 1.077)


Failure surface No. 4 specified by  8 coordinate points

       Point       x-surf      y-surf
        No.         (ft)        (ft)

         1         296.82     1830.00
         2         342.76     1808.58
         3         343.94     1808.02
         4         587.51     1862.54
         5         592.43     1873.10
         6         634.69     1963.73
         7         647.87     1992.00
         8         647.87     2000.00

 **  Corrected JANBU FOS =   1.354  **    (Fo factor = 1.081)


Failure surface No. 5 specified by  8 coordinate points

       Point       x-surf      y-surf
        No.         (ft)        (ft)

         1         276.61     1830.00
         2         329.75     1805.22
         3         331.53     1804.39
         4         578.35     1862.11
         5         582.25     1870.47
         6         624.51     1961.10
         7         638.58     1991.27
         8         538.58     1999.27

 **  Corrected JANBU FOS =   1.354  **    (Fo factor = 1.081)


Failure surface No. 6 specified by  8 coordinate points

       Point       x-surf      y-surf
        No.         (ft)        (ft)

         1         275.46     1830.00
         2         329.02     1805.03
         3         329.64     1804.73
         4         611.49     1864.49
         5         618.67     1879.88
         6         660.93     1970.51
         7         670.95     1992.00
         8         670.95     2000.00

 **  Corrected JANBU FOS =   1.364  **    (Fo factor = 1.079)


Failure surface No. 7 specified by  8 coordinate points

       Point       x-surf      y-surf
        No.         (ft)        (ft)

         1         282.93     1830.00
         2         333.82     1806.27
         3         339.42     1803.66
         4         582.42     1861.25
         5         587.34     1871.78
         6         629.60     1962.41
```

```
       7          643.39     1992.00
       8          643.39     2000.00

 **  Corrected JANBU FOS =   1.368  **     (Fo factor = 1.081)


Failure surface No. 8 specified by  7 coordinate points

      Point       x-surf      y-surf
       No.         (ft)        (ft)

       1          266.11     1830.00
       2          320.23     1804.77
       3          612.34     1869.22
       4          617.12     1879.48
       5          559.38     1970.11
       6          669.59     1992.00
       7          669.59     2000.00

 **  Corrected JANBU FOS =   1.374  **     (Fo factor = 1.077)


Failure surface No. 9 specified by  7 coordinate points

      Point       x-surf      y-surf
       No.         (ft)        (ft)

       1          305.27     1830.00
       2          346.97     1810.55
       3          587.59     1861.25
       4          593.21     1873.30
       5          635.47     1963.93
       6          648.56     1992.00
       7          648.56     2000.00

 **  Corrected JANBU FOS =   1.379  **     (Fo factor = 1.082)


Failure surface No.10 specified by  8 coordinate points

      Point       x-surf      y-surf
       No.         (ft)        (ft)

       1          295.67     1830.00
       2          342.02     1808.39
       3          342.05     1808.37
       4          620.55     1864.93
       5          628.85     1882.51
       6          671.11     1973.14
       7          679.91     1992.00
       8          679.91     2000.00

 **  Corrected JANBU FOS =   1.381  **     (Fo factor = 1.079)



The following is a summary of the TEN most critical surfaces

Problem Description : Sec. B-B' Backcut

       Modified      Correction   Initial     Terminal    Available
       JANBU FOS       Factor     x-coord     x-coord      Strength
                                    (ft)        (ft)         (lb)

  1.     1.336         1.080      273.59      642.03     1.261E+06
  2.     1.351         1.078      313.05      656.85     1.361E+06
  3.     1.351         1.077      272.44      674.06     1.489E+06
  4.     1.354         1.081      296.82      647.87     1.303E+06
  5.     1.354         1.081      276.61      638.58     1.258E+06
  6.     1.364         1.079      275.46      670.95     1.493E+06
  7.     1.368         1.081      282.93      643.39     1.330E+06
  8.     1.374         1.077      266.11      669.59     1.468E+06
  9.     1.379         1.082      305.27      648.56     1.311E+06
 10.     1.381         1.079      295.67      679.91     1.527E+06

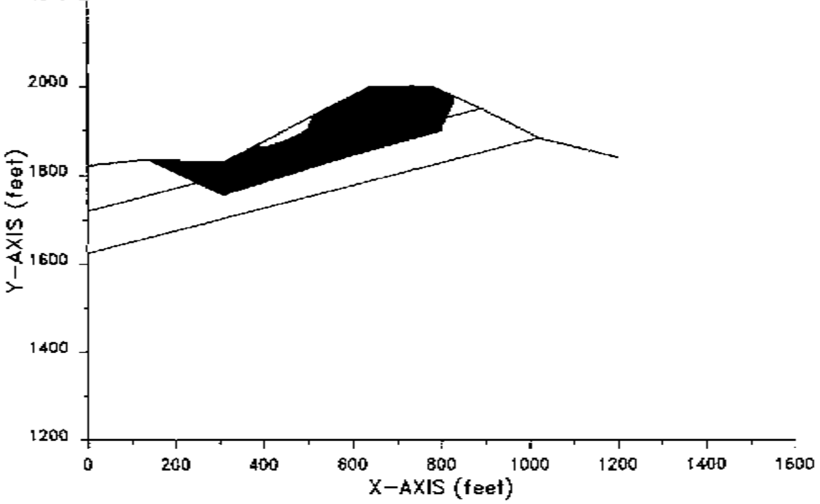
                  *     * *  END OF FILE  * * *
```

W.O. 8838

Sec. B-B' Backcut

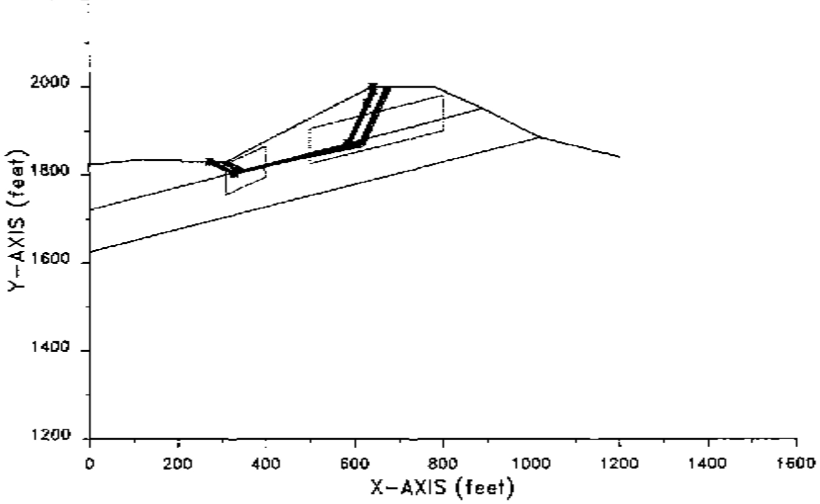
883888 11-20-** 10:08

Sec. B-B' Backcut
5000 surfaces have been generated for this analysis



883888 11-20-** 10:08

Sec. B-B' Backcut
10 most critical surfaces, MINIMUM JANBU FOS = 1.336



GEOLABS-WESTLAKE VILLAGE

Plate Bb.4

W.O. 8838

Sec. B1-B1’ W=100’ D=5’

```
XSTABL File: 8838B1    11-13-**   16:38

          *******************************************
          *              X S T A B L                *
          *                                         *
          *        Slope Stability Analysis         *
          *               using the                 *
          *           Method of Slices              *
          *                                         *
          *        Copyright (C) 1992 À 96          *
          *   Interactive Software Designs, Inc.    *
          *        Moscow, ID 83843, U.S.A.         *
          *                                         *
          *          All Rights Reserved            *
          *                                         *
          * Ver. 5.201                  96 À 1545   *
          *******************************************

 Problem Description : Sec. B1-B1' W=100' D=5'



 -----------------------------
 SEGMENT BOUNDARY COORDINATES
 -----------------------------

    12 SURFACE boundary segments

 Segment    x-left    y-left    x-right    y-right     Soil Unit
   No.       (ft)      (ft)      (ft)       (ft)     Below Segment

   1          .0      1798.0     250.0     1799.0          1
   2        250.0     1799.0     260.0     1804.0          1
   3        260.0     1804.0     265.0     1804.0          1
   4        265.0     1804.0     275.0     1800.0          1
   5        275.0     1800.0     320.0     1800.0          1
   6        320.0     1800.0     328.0     1804.0          2
   7        328.0     1804.0     725.0     1960.0          2
   8        725.0     1960.0     740.0     1960.0          2
   9        740.0     1960.0     820.0     1955.0          1
  10        820.0     1955.0     925.0     1930.0          1
  11        925.0     1930.0    1020.0     1885.0          1
  12       1020.0     1885.0    1165.0     1820.0          3

     4 SUBSURFACE boundary segments

 Segment    x-left    y-left    x-right    y-right     Soil Unit
   No.       (ft)      (ft)      (ft)       (ft)     Below Segment

   1        320.0     1800.0     320.1     1795.0          1
   2        320.1     1795.0     420.0     1795.0          1
   3        420.0     1795.0     740.0     1960.0          1
   4           .0     1655.0    1020.0     1885.0          3

 -------------------------------------
  A CRACKED ZONE HAS BEEN SPECIFIED
 -------------------------------------

      Depth of crack below ground surface =  8.00    (feet)
      Maximum depth of water in crack     =   .00    (feet)
      Unit weight of water in crack       = 62.40    (pcf)

 Failure surfaces will have a vertical side equal to the
 specified depth of crack and be affected by a hydrostatic
 force according to the specified depth of water in the crack
```

```
 --------------------------
 ISOTROPIC Soil Parameters
 --------------------------

  3 Soil unit(s) specified

 Soil   Unit Weight    Cohesion  Friction     Pore Pressure      Water
 Unit  Moist    Sat.  Intercept   Angle   Parameter Constant   Surface
  No.  (pcf)   (pcf)    (psf)     (deg)      Ru       (psf)       No.

   1   130.0   140.0    225.0     40.00     .000         .0        1
   2   125.0   135.0    200.0     34.00     .000         .0        1
   3   130.0   140.0    225.0     40.00     .000         .0        1

 --------------------------------
 ANISOTROPIC STRENGTH PARAMETERS
 specified for  2 Soil Unit(s)
 --------------------------------


 Soil Unit  2 is ANISOTROPIC

 Number of direction ranges specified =  3

 Direction      Counterclockwise        c-value      i-value
 Range No.   Direction Limit (deg)       (psf)      (degrees)

     1              13.00                225.0        40.00
     2              16.00                150.0        17.00
     3              90.00                225.0        40.00

 Soil Unit  3 is ANISOTROPIC

 Number of direction ranges specified =  3

 Direction      Counterclockwise        c-value      i-value
 Range No.   Direction Limit (deg)       (psf)      (degrees)

     1              13.00                225.0        40.00
     2              16.00                150.0        11.00
     3              90.00                225.0        40.00


  1 Water surface(s) have been specified

 Unit weight of water =    62.40  (pcf)

 Water Surface No.  1 specified by  5 coordinate points

 *********************************
         PHREATIC SURFACE,
 *********************************

   Point       x-water       y-water
    No.         (ft)          (ft)

     1            .00        1780.00
     2         300.00        1800.00
     3         320.00        1800.00
     4         328.00        1804.00
```

GEOLABS-WESTLAKE VILLAGE

Plate B1.1

W.O. 8838
Sec. B1-B1' W=100' D=5'

```
    5        1000.00      1804.00


        A critical failure surface searching method, using a random
        technique for generating sliding BLOCK surfaces, has been
        specified.


        The active and passive portions of the sliding surfaces
        are generated according to the Rankine theory.


         2500 trial surfaces will be generated and analyzed.


          2 boxes specified for generation of central block base


        Length of line segments for active and passive portions of
        sliding block is    100.0 ft


        Box         x-left     y-left     x-right    y-right      Width
        no.          (ft)       (ft)       (ft)       (ft)         (ft)

         1          300.0      1730.0      600.0     1800.0       100.0
         2          650.0      1810.0      920.0     1870.0       100.0


        Factors of safety have been calculated by the :

        * * * * *    SIMPLIFIED JANBU METHOD    * * * * *



        The 10 most critical of all the failure surfaces examined
        are displayed below - the most critical first

        Failure surface No. 1 specified by  9 coordinate points

               Point       x-surf       y-surf
                No.         (ft)         (ft)

                 1         208.52      1798.83
                 2         257.84      1775.84
                 3         348.47      1733.58
                 4         363.44      1726.60
                 5         787.52      1826.07
                 6         790.91      1833.34
                 7         833.17      1923.97
                 8         841.52      1941.88
                 9         841.52      1949.88

         **  Corrected JANBU FOS =   1.448  **    (Fo factor = 1.064)


        Failure surface No. 2 specified by  9 coordinate points

               Point       x-surf       y-surf
                No.         (ft)         (ft)

                 1         229.53      1798.92
                 2         272.12      1779.06
                 3         362.75      1736.80
                 4         379.91      1728.80
                 5         748.84      1818.25
                 6         751.76      1824.52
                 7         794.03      1915.15
                 8         809.19      1947.68
                 9         809.19      1955.68

         **  Corrected JANBU FOS =   1.450  **    (Fo factor = 1.071)


        Failure surface No. 3 specified by  9 coordinate points

               Point       x-surf       y-surf
                No.         (ft)         (ft)

                 1         238.14      1798.95
                 2         277.97      1780.38
                 3         368.60      1738.12
                 4         389.65      1728.30
                 5         800.11      1831.50
                 6         802.15      1835.89
                 7         844.42      1926.51
                 8         850.58      1939.72
                 9         850.58      1947.72

         **  Corrected JANBU FOS =   1.453  **    (Fo factor = 1.064)


        Failure surface No. 4 specified by  9 coordinate points

               Point       x-surf       y-surf
                No.         (ft)         (ft)

                 1         189.92      1798.76
                 2         245.19      1772.99
                 3         335.82      1730.72
                 4         355.36      1722.55
                 5         787.44      1827.70
                 6         789.98      1833.13
                 7         832.24      1923.76
                 8         840.77      1942.05
                 9         840.77      1950.05

         **  Corrected JANBU FOS =   1.455  **    (Fo factor = 1.064)


        Failure surface No. 5 specified by  9 coordinate points

               Point       x-surf       y-surf
                No.         (ft)         (ft)

                 1         229.57      1798.92
                 2         272.14      1779.06
                 3         362.77      1736.80
                 4         391.04      1723.62
                 5         756.86      1822.63
                 6         758.44      1826.02
                 7         800.70      1916.65
                 8         815.00      1947.31
                 9         815.00      1955.31

         **  Corrected JANBU FOS =   1.464  **    (Fo factor = 1.069)


        Failure surface No. 6 specified by  8 coordinate points

               Point       x-surf       y-surf
                No.         (ft)         (ft)

                 1         236.72      1798.95
                 2         277.01      1780.16
                 3         367.64      1737.90
                 4         387.93      1728.44
                 5         894.56      1855.25
                 6         895.33      1856.89
```

```
         7          925.56      1921.73
         8          925.56      1929.73

  **  Corrected JANBU FOS =    1.468   **      (Fo factor = 1.056)


 Failure surface No. 7 specified by  9 coordinate points

       Point        x-surf       y-surf
        No.          (ft)         (ft)

         1          287.69      1800.00
         2          313.02      1788.28
         3          403.65      1746.02
         4          414.74      1740.85
         5          813.69      1837.88
         6          814.00      1838.55
         7          856.26      1929.18
         8          860.12      1937.45
         9          860.12      1945.45

  **  Corrected JANBU FOS =    1.470   **      (Fo factor = 1.061)


 Failure surface No. 8 specified by  9 coordinate points

       Point        x-surf       y-surf
        No.          (ft)         (ft)

         1          258.64      1803.32
         2          298.11      1784.92
         3          388.74      1742.66
         4          415.87      1730.01
         5          812.70      1836.92
         6          813.40      1838.41
         7          855.66      1929.04
         8          859.63      1937.56
         9          859.63      1945.56

  **  Corrected JANBU FOS =    1.493   **      (Fo factor = 1.066)


 Failure surface No. 9 specified by  9 coordinate points

       Point        x-surf       y-surf
        No.          (ft)         (ft)

         I          215.19      1798.86
         2          262.37      1776.86
         3          353.00      1734.60
         4          374.99      1724.34
         5          735.42      1808.62
         6          741.78      1822.25
         7          784.04      1912.89
         8          800.51      1948.22
         9          800.51      1956.22

  **  Corrected JANBU FOS =    1.493   **      (Fo factor = 1.074)


 Failure surface No.10 specified by  9 coordinate points

       Point        x-surf       y-surf
        No.          (ft)         (ft)

         1          168.91      1798.68
         2          230.91      1769.77
         3          321.54      1727.50
         4          336.89      1720.35
         5          826.12      1835.52
```

```
         6          829.12      1841.96
         7          871.39      1932.59
         8          872.30      1934.55
         9          872.30      1942.55

  **  Corrected JANBU FOS =    1.495   **      (Fo factor = 1.060)


 The following is a summary of the TEN most critical surfaces

 Problem Description : Sec. B1-B1' W=100' D=5'

        Modified      Correction    Initial     Terminal    Available
       JANBU FOS        Factor      x-coord     x-coord     Strength
                                     (ft)        (ft)         (lb)

  1.      1.448          1.064       208.52      841.52     2.387E+06
  2.      1.450          1.071       229.53      809.19     2.311E+06
  3.      1.453          1.064       238.14      850.58     2.401E+06
  4.      1.455          1.064       189.92      840.77     2.443E+06
  5.      1.464          1.069       229.57      815.00     2.434E+06
  6.      1.468          1.055       236.72      925.56     2.424E+06
  7.      1.470          1.061       287.89      860.12     2.232E+06
  8.      1.493          1.066       258.64      859.63     2.451E+06
  9.      1.493          1.074       215.19      800.51     2.436E+06
 10.      1.495          1.060       168.91      872.30     2.523E+06

                 *     * *  END OF FILE  * * *
```

W.O. 8838
Sec. B1-B1' W=100' D=5'

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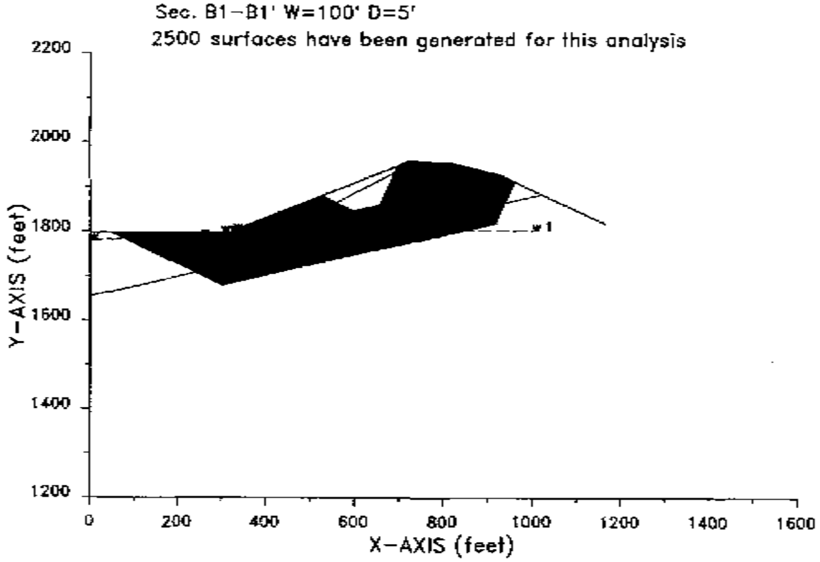
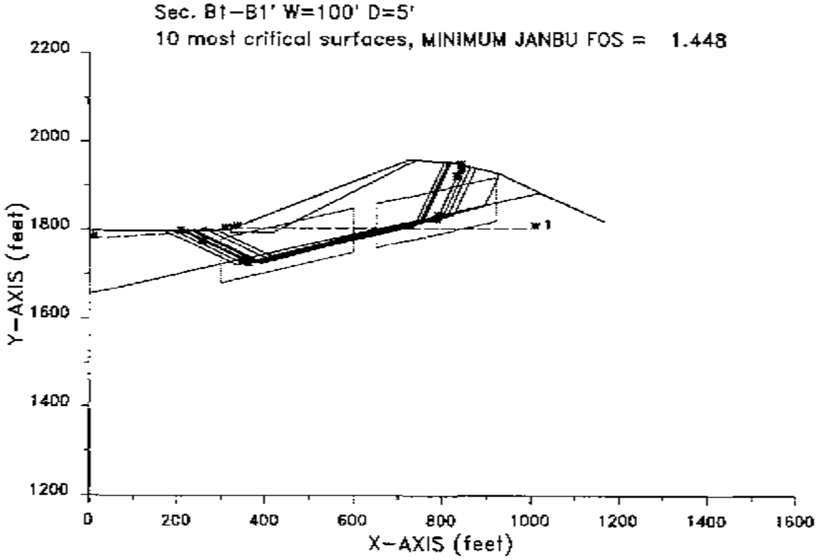

Sec. B1–B1' W=100' D=5'
2500 surfaces have been generated for this analysis

883881 11-13-** 16:38


Sec. B1–B1' W=100' D=5'
10 most critical surfaces, MINIMUM JANBU FOS = 1.448

GEOLABS-WESTLAKE VILLAGE

W.O. 8838

Sec. B1-B1' Spencer's

```
XSTABL File: 8838B1S   11-13-**   16:38

          *******************************************
          *                X S T A B L              *
          *                                         *
          *         Slope Stability Analysis        *
          *                using the                *
          *             Method of Slices            *
          *                                         *
          *          Copyright (C) 1992 Ã 96        *
          *   Interactive Software Designs, Inc.    *
          *        Moscow, ID 83843, U.S.A.         *
          *                                         *
          *           All Rights Reserved           *
          *                                         *
          * Ver. 5.201                   96 Ã 1545  *
          *******************************************

Problem Description : Sec. B1-B1' W=100' D=5' Spencer



-----------------------------
SEGMENT BOUNDARY COORDINATES
-----------------------------

   12 SURFACE boundary segments

Segment   x-left    y-left    x-right   y-right    Soil Unit
  No.      (ft)      (ft)      (ft)      (ft)    Below Segment

   1          .0    1798.0     250.0    1799.0         1
   2       250.0    1799.0     260.0    1804.0         1
   3       260.0    1804.0     265.0    1804.0         1
   4       265.0    1804.0     275.0    1800.0         1
   5       275.0    1800.0     320.0    1800.0         1
   6       320.0    1800.0     328.0    1804.0         2
   7       328.0    1804.0     725.0    1960.0         2
   8       725.0    1960.0     740.0    1960.0         2
   9       740.0    1960.0     820.0    1955.0         1
  10       820.0    1955.0     925.0    1930.0         1
  11       925.0    1930.0    1020.0    1885.0         1
  12      1020.0    1885.0    1165.0    1820.0         3

    4 SUBSURFACE boundary segments

Segment   x-left    y-left    x-right   y-right    Soil Unit
  No.      (ft)      (ft)      (ft)      (ft)    Below Segment

   1       320.0    1800.0     320.1    1795.0         1
   2       320.1    1795.0     420.0    1795.0         1
   3       420.0    1795.0     740.0    1960.0         1
   4          .0    1655.0    1020.0    1885.0         3

-----------------------------------
 A CRACKED ZONE HAS BEEN SPECIFIED
-----------------------------------

    Depth of crack below ground surface =  8.00   (feet)
    Maximum depth of water in crack     =   .00   (feet)
    Unit weight of water in crack       = 62.40   (pcf)

Failure surfaces will have a vertical side equal to the
specified depth of crack and be affected by a hydrostatic
force according to the specified depth of water in the crack
```

```
--------------------------
ISOTROPIC Soil Parameters
--------------------------

 3 Soil unit(s) specified

Soil   Unit Weight   Cohesion  Friction    Pore Pressure      Water
Unit  Moist    Sat.  Intercept  Angle   Parameter  Constant  Surface
 No.  (pcf)   (pcf)    (psf)    (deg)      Ru       (psf)      No.

  1   130.0   140.0    225.0    40.00     .000         .0       1
  2   125.0   135.0    200.0    34.00     .000         .0       1
  3   130.0   140.0    225.0    40.00     .000         .0       1

--------------------------------
ANISOTROPIC STRENGTH PARAMETERS
specified for  2 Soil Unit(s)
--------------------------------


Soil Unit  2 is ANISOTROPIC

Number of direction ranges specified =  3

Direction     Counterclockwise        c-value      i-value
Range No.   Direction Limit (deg)      (psf)      (degrees)

    1              13.00               225.0        40.00
    2              16.00               150.0        17.00
    3              90.00               225.0        40.00

Soil Unit  3 is ANISOTROPIC

Number of direction ranges specified =  3

Direction     Counterclockwise        c-value      i-value
Range No.   Direction Limit (deg)      (psf)      (degrees)

    1              13.00               225.0        40.00
    2              16.00               150.0        11.00
    3              90.00               225.0        40.00


 1 Water surface(s) have been specified

Unit weight of water =    62.40  (pcf)

Water Surface No.  1 specified by  5 coordinate points

**********************************
      PHREATIC SURFACE,
**********************************

  Point     x-water     y-water
   No.        (ft)        (ft)

    1           .00     1780.00
    2        300.00     1800.00
    3        320.00     1800.00
    4        328.00     1804.00
```

W.O. 8838

Sec. B1-B1' Spencer's

```
     5        1000.00      1804.00


  ---------------------------------------------------------
  A SINGLE FAILURE SURFACE HAS BEEN SPECIFIED FOR ANALYSIS
  ---------------------------------------------------------

  Trial failure surface specified by
  the following  9 coordinate points :

         Point        x-surf        y-surf
          No.          (ft)          (ft)

           1          208.52       1798.83
           2          257.84       1775.84
           3          348.47       1733.58
           4          363.44       1726.60
           5          787.52       1826.07
           6          790.91       1833.34
           7          833.17       1923.97
           8          841.52       1941.68
           9          841.52       1949.88


  ****************************************************
  SELECTED METHOD OF ANALYSIS:  Spencer (1973)
  ****************************************************



  ****************************************
  SUMMARY OF INDIVIDUAL SLICE INFORMATION
  ****************************************

  Slice  x-base    y-base  height    width   alpha     beta     weight
          (ft)      (ft)    (ft)      (ft)                       (lb)

    1    213.15   1796.68    2.18     9.26  -25.00      .23      2619.
    2    233.89   1787.01   11.93    32.22  -25.00      .23     52736.
    3    253.92   1777.67   23.29     7.84  -25.00    26.57     25250.
    4    258.92   1775.34   28.12     2.16  -25.00    26.57      8371.
    5    262.50   1773.67   30.33     5.00  -25.00      .00     20908.
    6    270.00   1770.17   31.83    10.00  -25.00   -21.80     44162.
    7    287.50   1762.01   37.99    25.00  -25.00      .00    132757.
    8    310.00   1751.52   48.48    20.00  -25.00      .00    135749.
    9    320.05   1746.83   53.19      .10  -25.00    25.57       743.
   10    324.05   1744.97   57.06     7.90  -25.00    25.57     62829.
   11    338.24   1738.35   69.67    20.47  -25.00    21.45    197555.
   12    355.96   1730.09   84.90    14.97  -25.00    21.45    174730.
   13    391.72   1733.23   95.81    56.56   13.20    21.45    734838.
   14    556.71   1771.93  121.94   273.43   13.20    21.45   4383269.
   15    709.21   1807.70  146.09    31.57   13.20    21.45    598113.
   16    732.50   1813.16  146.84    15.00   13.20      .00    286039.
   17    763.76   1820.50  138.02    47.52   13.20    -3.58    852621.
   18    789.22   1829.71  127.22     3.39   65.00    -3.58     56085.
   19    805.46   1864.53   91.37    29.09   65.00    -3.58    345537.
   20    826.58   1909.85   43.58    13.17   65.00   -13.39     74620.
   21    837.34   1932.92   17.95     8.35   65.00   -13.39     19478.

  ---------------------------------
  ITERATIONS FOR SPENCER'S METHOD
  ---------------------------------

     Iter #         Theta          FOS_force        FOS_moment
        2          8.8926           1.5784           1.7254
        3          8.9706           ------           1.5784
        3          8.9316           1.5796           ------
        4          8.9699           1.5807           1.5796
```

```
          5          8.9696          1.5807         1.5807


  SLICE INFORMATION ... continued :

  Slice     Sigma   c-value    phi     U-base      U-top     P-top     Delta
            (psf)    (psf)              (lb)       (lb)      (lb)

    1       624.6    225.0    40.00        0.         0.        0.       .00
    2      2068.9    225.0    40.00    18963.         0.        0.       .00
    3      3598.3    225.0    40.00    10350.         0.        0.       .00
    4      4541.1    225.0    40.00     3246.         0.        0.       .00
    5      4871.3    225.0    40.00     8168.         0.        0.       .00
    6      4879.0    225.0    40.00    19076.         0.        0.       .00
    7      5479.4    225.0    40.00    63674.         0.        0.       .00
    8      6845.6    225.0    40.00    66760.         0.        0.       .00
    9      8508.6    225.0    40.00      293.         0.        0.       .00
   10      9079.7    225.0    40.00    24828.         0.        0.       .00
   11      9986.0    225.0    40.00    92545.         0.        0.       .00
   12     12589.4    225.0    40.00    76154.         0.        0.       .00
   13      8032.4    150.0    11.00   256539.         0.        0.       .00
   14     13329.3    150.0    11.00   561967.         0.        0.       .00
   15     18095.9    150.0    11.00        0.         0.        0.       .00
   16     18215.7    150.0    11.00        0.         0.        0.       .00
   17     17138.9    150.0    11.00        0.         0.        0.       .00
   18      6792.5    225.0    40.00        0.         0.        0.       .00
   19      4845.5    225.0    40.00        0.         0.        0.       .00
   20      2249.4    225.0    40.00        0.         0.        0.       .00
   21       856.7    225.0    40.00        0.         0.        0.       .00


  ------------------------------------------------------------
  SPENCER'S (1973)  - TOTAL Stresses at center of slice base
  ------------------------------------------------------------

  Slice      Base        Normal     Vertical    Pore Water      Shear
    #       x-coord      Stress      Stress      Pressure       Stress
             (ft)        (psf)       (psf)        (psf)         (psf)

    1       213.15       624.6       282.9           .0         473.9
    2       233.89      2602.3      1635.6        533.4        1240.6
    3       253.92      4894.8      3220.6       1196.5        2105.6
    4       258.92      5903.2      3875.3       1362.1        2553.0
    5       262.50      6351.9      4181.6       1480.6        2728.3
    6       270.00      6607.9      4416.2       1728.9        2732.3
    7       287.50      7787.7      5310.3       2308.3        3051.1
    8       310.00      9870.8      6787.5       3025.3        3776.3
    9       320.05     11164.0      7434.4       2655.4        4659.1
   10       324.05     11928.0      7953.0       2848.3        4962.2
   11       338.24     14082.5      9648.7       4096.5        5443.4
   12       355.96     17201.5     11675.8       4612.1        6825.4
   13       391.72     12448.3     12992.2       4415.9        1082.7
   14       556.71     15330.3     16030.9       2001.0        1734.0
   15       709.21     18095.9     18943.9           .0        2320.2
   16       732.50     18215.7     19069.2           .0        2334.9
   17       763.76     17138.9     17942.3           .0        2202.5
   18       789.22      6792.5     16538.3           .0        3748.1
   19       805.46      4845.5     11878.7           .0        2714.5
   20       826.58      2249.4      5665.9           .0        1336.4
   21       837.34       856.7      2333.1           .0         597.1


  ------------------------------------------------------------------
  SPENCER'S (1973)  - Magnitude & Location of Interslice Forces
  ------------------------------------------------------------------

  Slice     Right      Force     Interslice    Force    Boundary   Height
    #      x-coord     Angle       Force      Height     Height     Ratio
             (ft)    (degrees)     (lb)        (ft)       (ft)
```

W.O. 8838

Sec. B1-B1' Spencer's

```
  1     217.78      8.97       7170.     2.89      4.35     .664
  2     250.00      8.97      87222.    11.12     19.50     .570
  3     257.84      8.97     122047.    12.14     27.08     .448
  4     260.00      8.97     133649.    12.38     29.17     .424
  5     265.00      8.97     162452.    13.03     31.50     .414
  6     275.00      8.97     221307.    14.97     32.16     .466
  7     300.00      8.97     390436.    20.71     43.82     .473
  8     320.00      8.97     560090.    25.03     53.14     .471
  9     320.10      8.97     561088.    25.05     53.24     .470
 10     328.00      8.97     645259.    26.39     60.88     .433
 11     348.47      8.97     894205.    30.04     78.47     .383
 12     363.44      8.97    1119126.    32.41     91.33     .355
 13     420.00      8.97    1013930.    31.20    100.28     .311
 14     693.43      8.97     498573.    31.64    143.59     .220
 15     725.00      8.97     437065.    33.50    148.59     .225
 16     740.00      8.97     407640.    34.72    145.08     .239
 17     787.52      8.97     320203.    40.06    130.96     .306
 18     790.91      8.97     283059.    38.14    123.49     .309
 19     820.00      8.97      56982.    17.02     59.27     .287
 20     833.17      8.97      10482.     8.29     27.89     .297
 21     841.52       .00         -1.     3.61      8.00     .451

-------------------------------------------------------------
  AVERAGE VALUES ALONG FAILURE SURFACE
-------------------------------------------------------------

        Total Normal Stress =  13364.58  (psf)
        Pore Water Pressure =   1637.70  (psf)
        Shear Stress        =   2599.61  (psf)

        Total Length of failure surface =  734.30 feet

-------------------------------------------------------------


     For the single specified surface and the assumed angle
     of the interslice forces, the SPENCER'S (1973)
     procedure gives a

                FACTOR OF SAFETY =   1.581

     Total shear strength available
     along specified failure surface =  253.60E+04   lb
```

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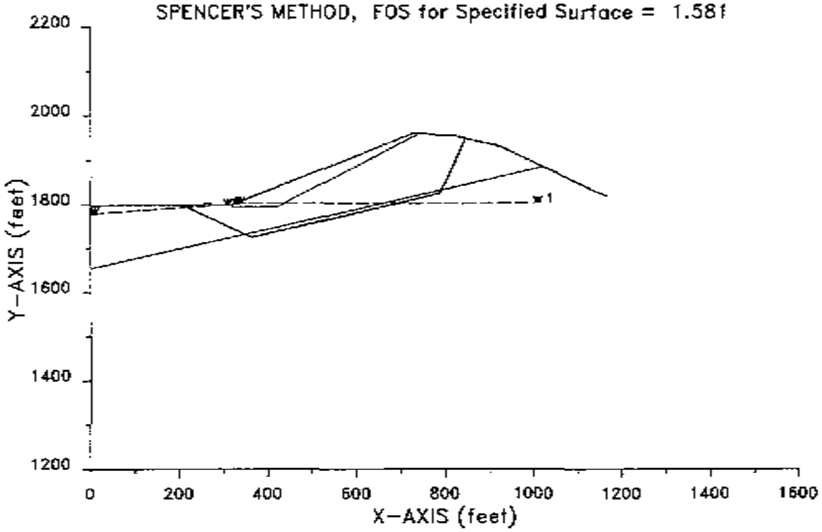
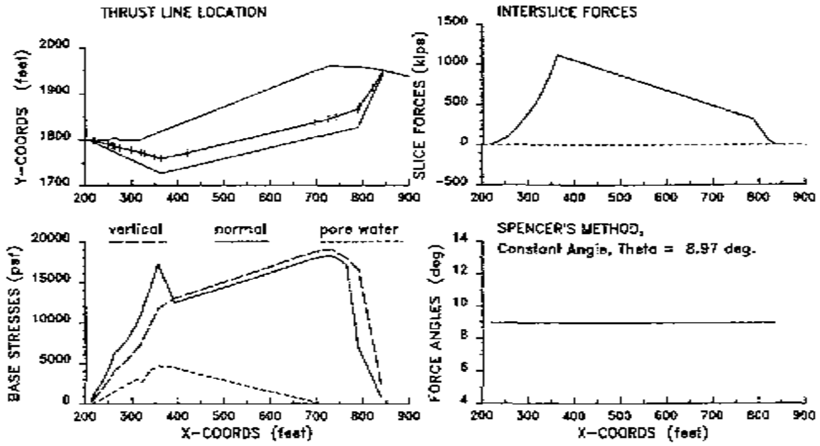
Sec. B1-B1' W=100' D=5' Spencer
SPENCER'S METHOD, FOS for Specified Surface = 1.581





Sec. B1-B1' W=100' D=5' Spencer
SPENCER'S METHOD, FOS for Specified Surface = 1.581

GEOLABS-WESTLAKE VILLAGE

Plate B1s.3

W.O. 8838

Sec. B1-B1' Pseudo

```
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          ******************************************
          *               X S T A B L              *
          *                                        *
          *        Slope Stability Analysis        *
          *              using the                 *
          *           Method of Slices             *
          *                                        *
          *        Copyright (C) 1992 Ä 96         *
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          *       Moscow, ID 83843, U.S.A.         *
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          *          All Rights Reserved           *
          *                                        *
          *  Ver. 5.201                 96 Ä 1545  *
          ******************************************


Problem Description : Sec. B1-B1' W=100' D=5' Pseudo



----------------------------
SEGMENT BOUNDARY COORDINATES
----------------------------

   12 SURFACE boundary segments

Segment    x-left     y-left    x-right    y-right     Soil Unit
  No.       (ft)       (ft)       (ft)       (ft)     Below Segment

   1          .0      1798.0      250.0     1799.0          1
   2       250.0      1799.0      260.0     1804.0          1
   3       260.0      1804.0      265.0     1804.0          1
   4       265.0      1804.0      275.0     1800.0          1
   5       275.0      1800.0      320.0     1800.0          1
   6       320.0      1800.0      328.0     1804.0          2
   7       328.0      1804.0      725.0     1960.0          2
   8       725.0      1960.0      740.0     1960.0          2
   9       740.0      1960.0      820.0     1955.0          1
  10       820.0      1955.0      925.0     1930.0          1
  11       925.0      1930.0     1020.0     1885.0          1
  12      1020.0      1885.0     1165.0     1820.0          3


    4 SUBSURFACE boundary segments

Segment    x-left     y-left    x-right    y-right     Soil Unit
  No.       (ft)       (ft)       (ft)       (ft)     Below Segment

   1       320.0      1800.0      320.1     1795.0          1
   2       320.1      1795.0      420.0     1795.0          1
   3       420.0      1795.0      740.0     1950.0          1
   4          .0      1655.0     1020.0     1885.0          3


 ------------------------------------
  A CRACKED ZONE HAS BEEN SPECIFIED
 ------------------------------------

     Depth of crack below ground surface =  5.00   (feet)
     Maximum depth of water in crack     =   .00   (feet)
     Unit weight of water in crack       = 62.40   (pcf)

Failure surfaces will have a vertical side equal to the
specified depth of crack and be affected by a hydrostatic
force according to the specified depth of water in the crack
```

```
--------------------------
ISOTROPIC Soil Parameters
--------------------------

 3 Soil unit(s) specified

Soil   Unit Weight   Cohesion  Friction    Pore Pressure      Water
Unit  Moist    Sat.  Intercept   Angle  Parameter  Constant  Surface
 No.  (pcf)   (pcf)    (psf)     (deg)      Ru       (psf)     No.

  1   130.0   140.0    225.0     40.00     .000        .0       1
  2   125.0   135.0    200.0     34.00     .000        .0       1
  3   130.0   140.0    225.0     40.00     .000        .0       1


---------------------------------
ANISOTROPIC STRENGTH PARAMETERS
specified for  2 Soil Unit(s)
---------------------------------


Soil Unit  2 is ANISOTROPIC

Number of direction ranges specified =  3

Direction      Counterclockwise        c-value      i-value
Range No.   Direction Limit (deg)       (psf)      (degrees)

    1               13.00               225.0        40.00
    2               16.00               150.0        17.00
    3               90.00               225.0        40.00

Soil Unit  3 is ANISOTROPIC

Number of direction ranges specified =  3

Direction      Counterclockwise        c-value      i-value
Range No.   Direction Limit (deg)       (psf)      (degrees)

    1               13.00               225.0        40.00
    2               16.00               150.0        17.00
    3               90.00               225.0        40.00


 1 Water surface(s) have been specified

Unit weight of water =    62.40  (pcf)

Water Surface No.  1 specified by  5 coordinate points

**********************************
        PHREATIC SURFACE,
**********************************

  Point       x-water      y-water
   No.         (ft)         (ft)

    1           .00       1780.00
    2        300.00       1800.00
    3        320.00       1800.00
    4        328.00       1804.00
```

```
     5        1000.00     1804.00


   A horizontal earthquake loading coefficient
   of   .150 has been assigned

   A vertical earthquake loading coefficient
   of   .000 has been assigned


   A critical failure surface searching method, using a random
   technique for generating sliding BLOCK surfaces, has been
   specified.


   The active and passive portions of the sliding surfaces
   are generated according to the Rankine theory.


    2500 trial surfaces will be generated and analyzed.


     2 boxes specified for generation of central block base


   Length of line segments for active and passive portions of
   sliding block is    100.0 ft


   Box       x-left     y-left     x-right    y-right     Width
   no.        (ft)       (ft)       (ft)       (ft)        (ft)

    1         300.0     1730.0      600.0     1800.0      100.0
    2         650.0     1810.0      920.0     1870.0      100.0


   Factors of safety have been calculated by the :

   * * * * *   SIMPLIFIED JANBU METHOD   * * * * *


   The 10 most critical of all the failure surfaces examined
   are displayed below - the most critical first

   Failure surface No. 1 specified by  8 coordinate points

         Point       x-surf       y-surf
          No.         (ft)         (ft)

           1         236.72      1798.95
           2         277.01      1780.16
           3         367.64      1737.90
           4         387.93      1728.44
           5         894.56      1855.25
           6         895.33      1856.89
           7         925.56      1921.73
           8         925.56      1929.73

    **  Corrected JANBU FOS =    .911  **    (Fo factor = 1.056)

   Failure surface No. 2 specified by  9 coordinate points

         Point       x-surf       y-surf
          No.         (ft)         (ft)
```

```
           1         208.52      1798.83
           2         257.84      1775.84
           3         348.47      1733.58
           4         363.44      1726.60
           5         787.52      1826.07
           6         790.91      1833.34
           7         833.17      1923.97
           8         841.52      1941.88
           9         841.52      1949.88

    **  Corrected JANBU FOS =    .926  **    (Fo factor = 1.064)

   Failure surface No. 3 specified by  9 coordinate points

         Point       x-surf       y-surf
          No.         (ft)         (ft)

           1         168.91      1798.68
           2         230.91      1769.77
           3         321.54      1727.50
           4         336.89      1720.35
           5         826.12      1835.52
           6         829.12      1841.96
           7         871.39      1932.59
           8         872.30      1934.55
           9         872.30      1942.55

    **  Corrected JANBU FOS =    .931  **    (Fo factor = 1.060)

   Failure surface No. 4 specified by  9 coordinate points

         Point       x-surf       y-surf
          No.         (ft)         (ft)

           1         189.92      1798.76
           2         245.19      1772.99
           3         335.82      1730.72
           4         353.36      1722.55
           5         787.44      1827.70
           6         789.98      1833.13
           7         832.24      1923.76
           8         840.77      1942.05
           9         840.77      1950.05

    **  Corrected JANBU FOS =    .933  **    (Fo factor = 1.064)

   Failure surface No. 5 specified by  9 coordinate points

         Point       x-surf       y-surf
          No.         (ft)         (ft)

           1         238.14      1798.95
           2         277.97      1780.38
           3         368.60      1738.12
           4         389.65      1728.30
           5         800.11      1831.50
           6         802.15      1835.88
           7         844.42      1926.51
           8         850.58      1939.72
           9         850.58      1947.72

    **  Corrected JANBU FOS =    .939  **    (Fo factor = 1.064)

   Failure surface No. 6 specified by  9 coordinate points

         Point       x-surf       y-surf
```

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Sec. B1-B1' Pseudo

```
      No.        (ft)        (ft)

       1        287.89     1800.00
       2        313.02     1788.28
       3        403.65     1746.02
       4        414.74     1740.85
       5        813.69     1837.88
       6        814.00     1838.55
       7        856.26     1929.18
       8        860.12     1937.45
       9        860.12     1945.45

 **  Corrected JANBU FOS =     .942  **     (Fo factor = 1.061)


Failure surface No. 7 specified by  8 coordinate points

      Point      x-surf      y-surf
       No.        (ft)        (ft)

       1        176.04     1798.70
       2        235.76     1770.86
       3        326.39     1728.60
       4        356.63     1714.50
       5        901.89     1941.16
       6        910.86     1860.39
       7        936.95     1916.34
       8        936.95     1924.34

 **  Corrected JANBU FOS =     .947  **     (Fo factor = 1.058)


Failure surface No. 8 specified by  9 coordinate points

      Point      x-surf      y-surf
       No.        (ft)        (ft)

       1        229.53     1798.92
       2        272.12     1779.06
       3        362.75     1736.80
       4        379.91     1728.80
       5        748.84     1818.25
       6        751.76     1824.52
       7        794.03     1915.15
       8        809.19     1947.68
       9        809.19     1955.68

 **  Corrected JANBU FOS =     .952  **     (Fo factor = 1.071)


Failure surface No. 9 specified by  8 coordinate points

      Point      x-surf      y-surf
       No.        (ft)        (ft)

       1        263.44     1804.00
       2        302.32     1785.87
       3        392.95     1743.61
       4        419.23     1731.36
       5        902.73     1856.38
       6        903.86     1858.81
       7        931.82     1918.77
       8        931.82     1926.77

 **  Corrected JANBU FOS =     .953  **     (Fo factor = 1.058)


Failure surface No.10 specified by  8 coordinate points

      Point      x-surf      y-surf
```

```
      No.        (ft)        (ft)

       1        185.20     1798.74
       2        241.99     1772.26
       3        332.62     1730.00
       4        373.98     1710.71
       5        889.00     1853.25
       6        890.16     1855.72
       7        921.46     1922.84
       8        921.46     1930.84

 **  Corrected JANBU FOS =     .953  **     (Fo factor = 1.062)



The following is a summary of the TEN most critical surfaces

Problem Description : Sec. B1-B1' W=100' D=5' Pseudo

      Modified      Correction   Initial     Terminal    Available
      JANBU FOS       Factor     x-coord     x-coord     Strength
                                  (ft)        (ft)         (lb)

 1.      .911         1.056      236.72      925.56     2.591E+06
 2.      .926         1.064      208.52      841.52     2.470E+06
 3.      .931         1.060      168.91      872.30     2.647E+06
 4.      .933         1.064      189.92      840.77     2.539E+06
 5.      .939         1.064      236.14      850.58     2.503E+06
 6.      .942         1.061      287.89      860.12     2.324E+06
 7.      .947         1.058      176.04      936.95     2.995E+06
 8.      .952         1.071      229.53      809.19     2.371E+06
 9.      .953         1.058      263.44      931.82     2.668E+06
10.      .953         1.062      185.20      921.46     3.009E+06

                 *     * *  END OF FILE  * * *
```

GEOLABS-WESTLAKE VILLAGE

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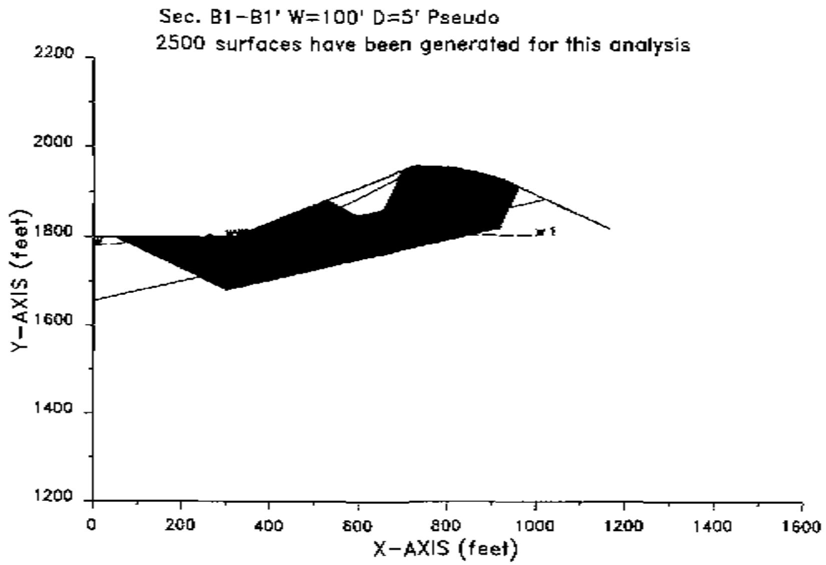
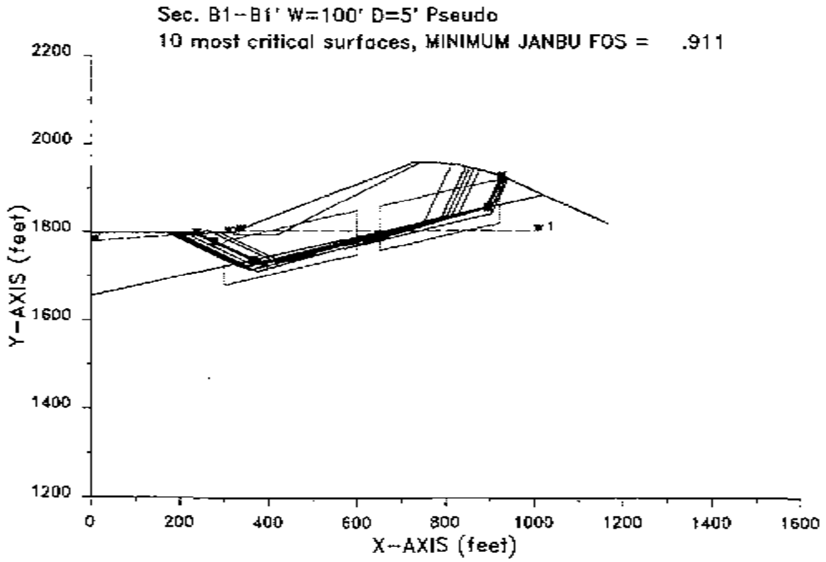
Sec. B1-B1' Pseudo

8838B1P 11-13-** 16:39


Sec. B1-B1' W=100' D=5' Pseudo
2500 surfaces have been generated for this analysis

8838B1P 11-13-** 16:39


Sec. B1-B1' W=100' D=5' Pseudo
10 most critical surfaces, MINIMUM JANBU FOS = .911

GEOLABS-WESTLAKE VILLAGE

W.O. 8838

Sec. B1-B1' Pseudo., Spencer's

```
XSTABL File: 8838B1PS  11-13-**   16:39

          ******************************************
          *             X S T A B L                *
          *                                        *
          *       Slope Stability Analysis         *
          *            using the                   *
          *         Method of Slices               *
          *                                        *
          *       Copyright (C) 1992 À 96          *
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          *       Moscow, ID 83843, U.S.A.         *
          *                                        *
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          *                                        *
          *  Ver. 5.201                96 À 1545   *
          ******************************************

Problem Description : Sec. B1-B1' W=100' D=5' Pseudo Spenc



-----------------------------
SEGMENT BOUNDARY COORDINATES
-----------------------------

   12 SURFACE boundary segments

Segment   x-left    y-left    x-right   y-right     Soil Unit
  No.      (ft)      (ft)      (ft)       (ft)    Below Segment

   1          .0    1798.0     250.0    1799.0          1
   2       250.0    1799.0     260.0    1804.0          1
   3       260.0    1804.0     265.0    1804.0          1
   4       265.0    1804.0     275.0    1800.0          1
   5       275.0    1800.0     320.0    1800.0          1
   6       320.0    1800.0     328.0    1804.0          2
   7       328.0    1804.0     725.0    1960.0          2
   8       725.0    1960.0     740.0    1960.0          2
   9       740.0    1960.0     820.0    1955.0          1
  10       820.0    1955.0     925.0    1930.0          1
  11       925.0    1930.0    1020.0    1885.0          1
  12      1020.0    1885.0    1165.0    1820.0          3

    4 SUBSURFACE boundary segments

Segment   x-left    y-left    x-right   y-right     Soil Unit
  No.      (ft)      (ft)      (ft)       (ft)    Below Segment

   1       320.0    1800.0     320.1    1795.0          1
   2       320.1    1795.0     420.0    1795.0          1
   3       420.0    1795.0     740.0    1960.0          1
   4          .0    1655.0    1020.0    1885.0          3

 -----------------------------------
 A CRACKED ZONE HAS BEEN SPECIFIED
 -----------------------------------

     Depth of crack below ground surface =  8.00   (feet)
     Maximum depth of water in crack     =   .00   (feet)
     Unit weight of water in crack       = 62.40   (pcf)

Failure surfaces will have a vertical side equal to the
specified depth of crack and be affected by a hydrostatic
force according to the specified depth of water in the crack
```

```
--------------------------
ISOTROPIC Soil Parameters
--------------------------

 3 Soil unit(s) specified

Soil   Unit Weight    Cohesion  Friction    Pore Pressure      Water
Unit  Moist    Sat.   Intercept   Angle  Parameter Constant  Surface
 No.  (pcf)   (pcf)     (psf)     (deg)      Ru      (psf)      No.

  1   130.0   140.0     225.0     40.00     .000        .0       1
  2   125.0   135.0     200.0     34.00     .000        .0       1
  3   130.0   140.0     225.0     40.00     .000        .0       1


--------------------------------
ANISOTROPIC STRENGTH PARAMETERS
specified for  2 Soil Unit(s)
--------------------------------


Soil Unit  2 is ANISOTROPIC

Number of direction ranges specified =  3

Direction     Counterclockwise        c-value      i-value
Range No.   Direction Limit (deg)      (psf)      (degrees)

   1              13.00               225.0        40.00
   2              16.00               150.0        17.00
   3              90.00               225.0        40.00


Soil Unit  3 is ANISOTROPIC

Number of direction ranges specified =  3

Direction     Counterclockwise        c-value      i-value
Range No.   Direction Limit (deg)      (psf)      (degrees)

   1              13.00               225.0        40.00
   2              16.00               150.0        11.00
   3              90.00               225.0        40.00


 1 Water surface(s) have been specified

Unit weight of water =     62.40  (pcf)


Water Surface No.  1 specified by  5 coordinate points

*********************************
      PHREATIC SURFACE,
*********************************

  Point      x-water     y-water
   No.        (ft)        (ft)

   1           .00      1780.00
   2        300.00      1800.00
   3        320.00      1800.00
   4        328.00      1804.00
```

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Sec. B1-B1' Pseudo., Spencer's

```
     5        1000.00      1804.00


A horizontal earthquake loading coefficient
of    .150 has been assigned

A vertical earthquake loading coefficient
of    .000 has been assigned

----------------------------------------------------------
A SINGLE FAILURE SURFACE HAS BEEN SPECIFIED FOR ANALYSIS
----------------------------------------------------------

Trial failure surface specified by
the following  9 coordinate points :

       Point       x-surf       y-surf
        No.         (ft)         (ft)

         1         236.72      1798.95
         2         277.01      1780.16
         3         367.64      1737.90
         4         387.93      1728.44
         5         894.56      1855.25
         6         895.33      1856.89
         7         925.56      1921.73
         8         925.56      1921.73
         9         925.56      1929.73


****************************************************
SELECTED METHOD OF ANALYSIS:  Spencer (1973)
****************************************************



****************************************
SUMMARY OF INDIVIDUAL SLICE INFORMATION
****************************************

Slice  x-base     y-base   height    width   alpha      beta      weight
        (ft)       (ft)     (ft)      (ft)                         (lb)

  1    239.69    1797.56    1.40      5.94  -25.00       .23       1078.
  2    246.33    1794.47    4.52      7.34  -25.00       .23       4456.
  3    255.00    1790.42   11.08     10.00  -25.00     26.57      15058.
  4    262.50    1786.93   17.07      5.00  -25.00       .00      11627.
  5    270.00    1783.43   18.57     10.00  -25.00    -21.80      25600.
  6    276.01    1780.63   19.37      2.01  -25.00       .00       5419.
  7    288.51    1774.80   25.20     22.99  -25.00       .00      80932.
  8    310.00    1764.78   35.22     20.00  -25.00       .00      98624.
  9    320.05    1760.09   39.93       .10  -25.00     26.57        558.
 10    324.05    1758.23   43.60      7.90  -25.00     26.57      48165.
 11    347.82    1747.14   64.65     39.64  -25.00     21.45     352360.
 12    377.79    1733.17   90.39     20.29  -25.00     21.45     249890.
 13    403.96    1732.45  101.40     32.07   14.05     21.45     439449.
 14    554.90    1770.23  122.93    269.81   14.05     21.45    4364185.
 15    707.40    1808.40  144.68     35.19   14.05     21.45     660195.
 16    732.50    1814.69  145.31     15.00   14.05       .00     283072.
 17    780.00    1826.58  130.92     80.00   14.05     -3.58    1361614.
 18    857.28    1845.92  100.20     74.56   14.05    -13.39     971267.
 19    894.95    1856.07   81.09       .77   64.85    -13.39       8117.
 20    910.17    1888.71   44.82     29.67   65.00    -13.39     172885.
 21    925.28    1921.13    8.74       .56   65.00    -25.35        636.

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```
ITERATIONS FOR SPENCER'S METHOD
--------------------------------

   Iter #         Theta         FOS_force      FOS_moment
     2          15.5312          1.1924          1.0680
     3          14.9060          -----           1.1924
     3          15.2186          1.1835          -----
     4          14.9445          1.1758          1.1835
     5          14.9785          -----           1.1758
     5          14.9615          1.1763          -----
     6          14.9757          1.1767          1.1763


SLICE INFORMATION ... continued :

Slice     Sigma    c-value   phi      U-base      U-top     P-top     Delta
          (psf)     (psf)              (lb)        (lb)      (lb)

  1       893.7    225.0   40.00        0.          0.        0.        .00
  2      1751.9    225.0   40.00      984.          0.        0.        .00
  3      3488.7    225.0   40.00     4508.          0.        0.        .00
  4      5106.2    225.0   40.00     3624.          0.        0.        .00
  5      5128.5    225.0   40.00     9988.          0.        0.        .00
  6      5005.0    225.0   40.00     2449.          0.        0.        .00
  7      6223.8    225.0   40.00    38504.          0.        0.        .00
  8      8380.3    225.0   40.00    48502.          0.        0.        .00
  9     10652.9    225.0   40.00      220.          0.        0.        .00
 10     11587.1    225.0   40.00    19059.          0.        0.        .00
 11     15815.0    225.0   40.00   155184.          0.        0.        .00
 12     22991.4    225.0   40.00    98941.          0.        0.        .00
 13      7886.1    150.0   11.00   147594.          0.        0.        .00
 14     12480.2    150.0   11.00   586028.          0.        0.        .00
 15     16923.5    150.0   11.00        0.          0.        0.        .00
 16     17024.9    150.0   11.00        0.          0.        0.        .00
 17     15355.0    150.0   11.00        0.          0.        0.        .00
 18     11752.6    150.0   11.00        0.          0.        0.        .00
 19      3368.8    225.0   40.00        0.          0.        0.        .00
 20      1797.1    225.0   40.00        0.          0.        0.        .00
 21       296.5    225.0   40.00        0.          0.        0.        .00


------------------------------------------------------------------
SPENCER'S (1973)  - TOTAL Stresses at center of slice base
------------------------------------------------------------------

Slice     Base        Normal     Vertical    Pore Water      Shear
  #      x-coord      Stress      Stress      Pressure       Stress
          (ft)        (psf)       (psf)        (psf)         (psf)

  1      239.69        893.7       181.6          .0          828.5
  2      246.33       1873.4       607.1       121.5         1440.5
  3      255.00       3897.3      1505.8       408.6         2679.0
  4      262.50       5763.1      2325.4       656.9         3832.5
  5      270.00       6033.7      2560.0       905.2         3848.4
  6      276.01       6109.0      2696.0      1104.0         3760.3
  7      288.51       7741.7      3520.3      1517.9         4629.4
  8      310.00      10578.2      4931.2      2197.9         6167.2
  9      320.05      12646.4      5578.2      1993.5         7787.8
 10      324.05      13773.6      6096.8      2186.5         8454.0
 11      347.82      19363.0      8888.7      3548.0        11469.0
 12      377.79      27411.2     12316.6      4419.8        16586.5
 13      403.96      12350.6     13702.8      4464.5         1430.2
 14      554.90      14587.2     16175.2      2107.0         2189.1
 15      707.40      16923.5     18759.1          .0         2923.1
 16      732.50      17024.9     18871.5          .0         2939.9
 17      780.00      15355.0     17020.2          .0         2664.0
 18      857.28      11752.6     13026.6          .0         2068.9
 19      894.95       3368.8     10541.2          .0         2593.6
 20      910.17       1797.1      5826.9          .0         1472.7
 21      925.28        296.5      1135.9          .0          402.6
```

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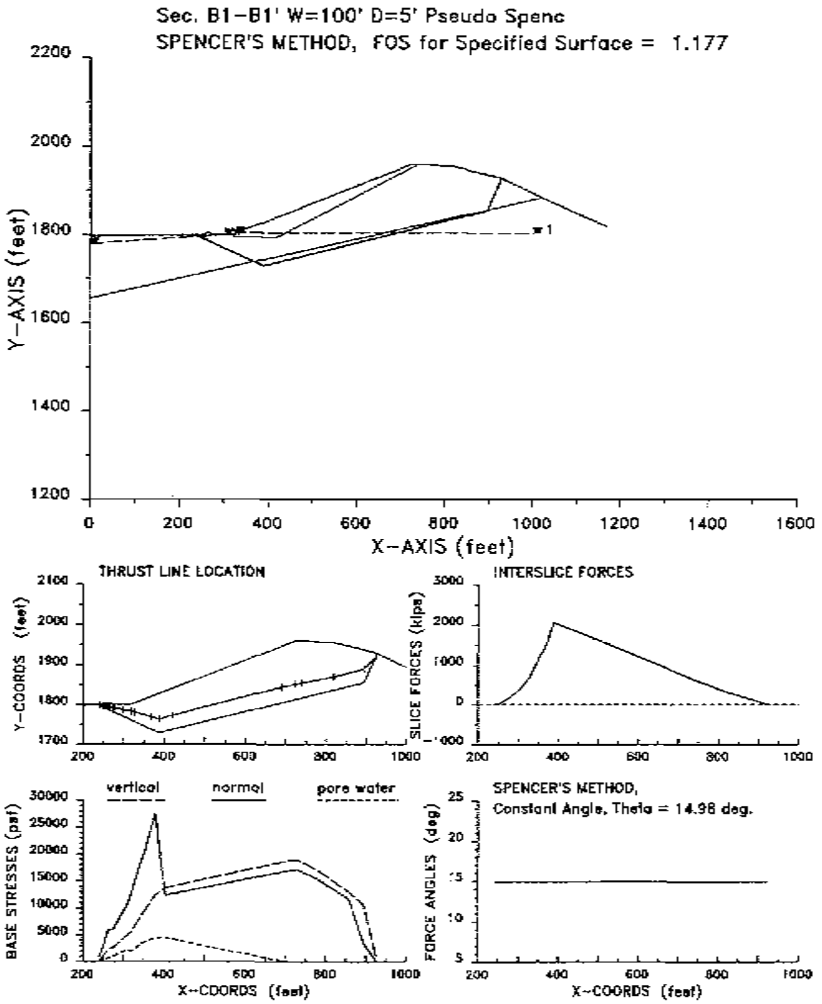
Sec. B1-B1' Pseudo., Spencer's

```
-----------------------------------------------------------------
SPENCER'S (1973)  - Magnitude & Location of Interslice Forces
-----------------------------------------------------------------

Slice    Right      Force    Interslice    Force   Boundary  Height
  #     x-coord     Angle       Force      Height    Height   Ratio
         (ft)     (degrees)     (lb)        (ft)      (ft)

   1    242.66     14.98        7489.       2.16      2.79    .775
   2    250.00     14.98       24380.       4.12      6.25    .660
   3    260.00     14.98       68586.       6.25     15.91    .393
   4    265.00     14.98      100525.       7.20     18.24    .395
   5    275.00     14.98      165511.      10.05     18.90    .531
   6    277.01     14.98      178420.      10.69     19.84    .539
   7    300.00     14.98      361936.      17.43     30.56    .570
   8    320.00     14.98      576422.      22.42     39.89    .562
   9    320.10     14.98      577752.      22.44     39.98    .561
  10    328.00     14.98      691929.      23.82     47.62    .500
  11    367.64     14.98     1478342.      31.32     81.68    .383
  12    387.93     14.98     2056306.      34.47     99.11    .348
  13    420.00     14.98     1932925.      35.49    103.68    .342
  14    689.91     14.98      846934.      40.15    142.17    .282
  15    725.00     14.98      696595.      38.86    147.19    .264
  16    740.00     14.98      632122.      38.05    143.44    .265
  17    820.00     14.98      323033.      33.63    118.41    .284
  18    894.56     14.98      104859.      34.13     82.00    .416
  19    895.33     14.98       99947.      33.83     80.17    .422
  20    925.00     14.98         -52.       -.63      9.47   -.066
  21    925.56       .00        -277.       -.05      8.00   -.008


-----------------------------------------------------------
  AVERAGE VALUES ALONG FAILURE SURFACE
-----------------------------------------------------------

      Total Normal Stress =  14359.30  (psf)
      Pore Water Pressure =   1463.15  (psf)
      Shear Stress        =   3945.41  (psf)

      Total Length of failure surface =  762.45 feet

-----------------------------------------------------------


     For the single specified surface and the assumed angle
     of the interslice forces, the SPENCER'S (1973)
     procedure gives a

              FACTOR OF SAFETY =   1.177

     Total shear strength available
     along specified failure surface =  307.66E+04   lb
```

8838B1PS 11-13-** 16:39



Sec. B1-B1' W=100' D=5' Pseudo Spenc
SPENCER'S METHOD, FOS for Specified Surface = 1.177

GEOLABS-WESTLAKE VILLAGE

W.O. 8838

Sec. B1-B1' Backcut

```
XSTABL File: 8838B1B   11-13-**   16:41

         ******************************************
         *              X S T A B L               *
         *                                        *
         *        Slope Stability Analysis        *
         *               using the                *
         *            Method of Slices            *
         *                                        *
         *        Copyright (C) 1992 À 96         *
         *   Interactive Software Designs, Inc.   *
         *        Moscow, ID 83843, U.S.A.        *
         *                                        *
         *          All Rights Reserved           *
         *                                        *
         * Ver. 5.201                  96 À 1545  *
         ******************************************

Problem Description : Sec. B1-B1' Backcut



----------------------------
SEGMENT BOUNDARY COORDINATES
----------------------------

   12 SURFACE boundary segments

Segment    x-left    y-left    x-right   y-right     Soil Unit
  No.       (ft)      (ft)      (ft)      (ft)     Below Segment

   1          .0     1798.0     250.0    1799.0          1
   2        250.0    1799.0     260.0    1804.0          1
   3        260.0    1804.0     265.0    1804.0          1
   4        265.0    1804.0     275.0    1800.0          1
   5        275.0    1800.0     320.0    1800.0          1
   6        320.0    1800.0     320.1    1795.0          1
   7        320.1    1795.0     420.0    1795.0          1
   8        420.0    1795.0     740.0    1960.0          1
   9        740.0    1960.0     820.0    1955.0          1
  10        820.0    1955.0     925.0    1930.0          1
  11        925.0    1930.0    1020.0    1885.0          1
  12       1020.0    1885.0    1165.0    1820.0          3

    1 SUBSURFACE boundary segments

Segment    x-left    y-left    x-right   y-right     Soil Unit
  No.       (ft)      (ft)      (ft)      (ft)     Below Segment

   1          .0     1655.0    1020.0    1885.0          3

 --------------------------------
 A CRACKED ZONE HAS BEEN SPECIFIED
 --------------------------------

     Depth of crack below ground surface =  8.00   (feet)
     Maximum depth of water in crack     =   .00   (feet)
     Unit weight of water in crack       = 62.40   (pcf)

Failure surfaces will have a vertical side equal to the
specified depth of crack and be affected by a hydrostatic
force according to the specified depth of water in the crack
```

```
-------------------------
ISOTROPIC Soil Parameters
-------------------------

 3 Soil unit(s) specified

Soil   Unit Weight   Cohesion  Friction    Pore Pressure      Water
Unit  Moist   Sat.  Intercept   Angle   Parameter Constant  Surface
 No.  (pcf)  (pcf)    (psf)     (deg)       Ru      (psf)      No.

  1   130.0  140.0    225.0     40.00      .000        .0        0
  2   125.0  135.0    200.0     34.00      .000        .0        0
  3   130.0  140.0    225.0     40.00      .000        .0        0


-------------------------------
ANISOTROPIC STRENGTH PARAMETERS
specified for  2 Soil Unit(s)
-------------------------------


Soil Unit  2 is ANISOTROPIC

Number of direction ranges specified =  3

Direction    Counterclockwise        c-value     i-value
Range No.  Direction Limit (deg)      (psf)     (degrees)

   1              13.00              225.0       40.00
   2              16.00              150.0       17.00
   3              90.00              225.0       40.00


Soil Unit  3 is ANISOTROPIC

Number of direction ranges specified =  3

Direction    Counterclockwise        c-value     i-value
Range No.  Direction Limit (deg)      (psf)     (degrees)

   1              13.00              225.0       40.00
   2              16.00              150.0       11.00
   3              90.00              225.0       40.00


A critical failure surface searching method, using a random
technique for generating sliding BLOCK surfaces, has been
specified.


The active and passive portions of the sliding surfaces
are generated according to the Rankine theory.


 2500 trial surfaces will be generated and analyzed.


  2 boxes specified for generation of central block base


Length of line segments for active and passive portions of
sliding block is    100.0 ft


Box        x-left    y-left    x-right   y-right     Width
no.         (ft)      (ft)      (ft)      (ft)       (ft)
```

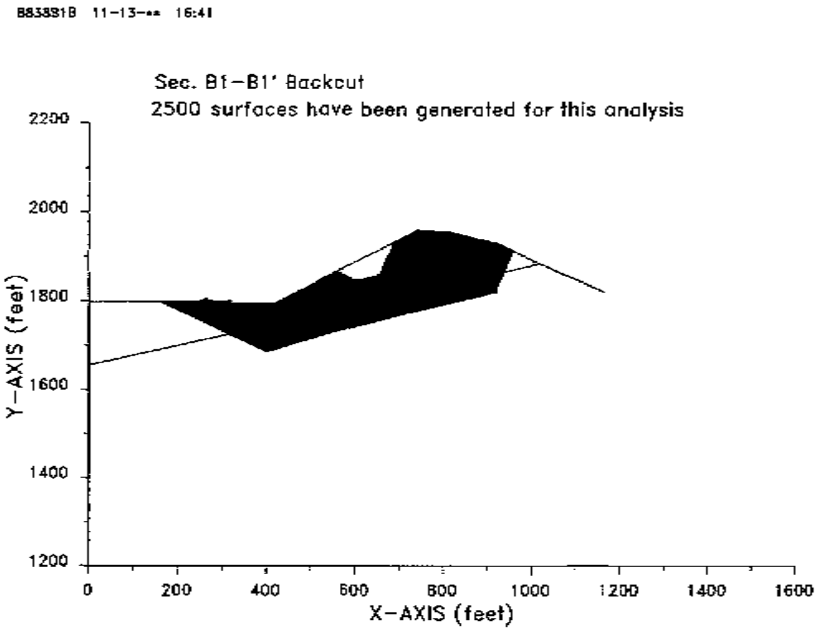
W.O. 8838
Sec. B1-B1' Backcut

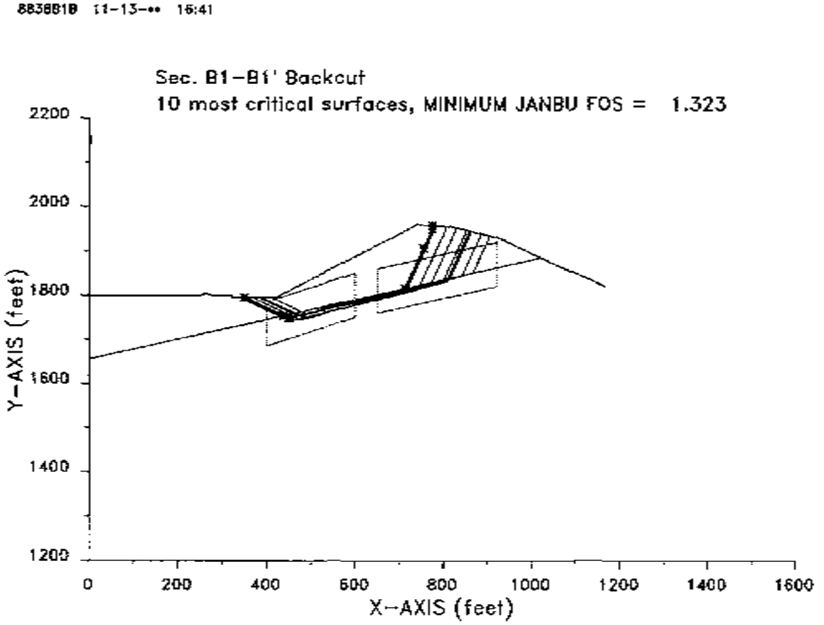
```
  1        400.0     1735.0     600.0     1800.0      100.0
  2        650.0     1810.0     920.0     1870.0      100.0



Factors of safety have been calculated by the :

* * * * *   SIMPLIFIED JANBU METHOD   * * * * *



The 10 most critical of all the failure surfaces examined
are displayed below - the most critical first

Failure surface No. 1 specified by  7 coordinate points

       Point      x-surf      y-surf
        No.        (ft)        (ft)

         1        349.27     1795.00
         2        437.80     1753.72
         3        449.30     1748.36
         4        711.98     1815.57
         5        754.24     1906.20
         6        774.59     1949.84
         7        774.59     1957.84

 **  Corrected JANBU FOS =   1.323  **    (Fo factor = 1.080)


Failure surface No. 2 specified by  8 coordinate points

       Point      x-surf      y-surf
        No.        (ft)        (ft)

         1        339.17     1795.00
         2        340.36     1794.45
         3        430.99     1752.18
         4        440.56     1747.72
         5        840.68     1842.86
         6        841.57     1844.77
         7        882.33     1932.16
         8        882.33     1940.16

 **  Corrected CANBU FOS =   1.333  **    (Fo factor = 1.059)


Failure surface No. 3 specified by  8 coordinate points

       Point      x-surf      y-surf
        No.        (ft)        (ft)

         1        381.09     1795.00
         2        459.24     1758.56
         3        473.55     1751.88
         4        715.72     1812.41
         5        717.79     1816.85
         6        760.05     1907.49
         7        779.65     1949.52
         8        779.65     1957.52

 **  Corrected JANBU FOS =   1.351  **    (Fo factor = 1.082)


Failure surface No. 4 specified by  8 coordinate points

       Point      x-surf      y-surf
        No.        (ft)        (ft)
```

```
         1        386.10     1795.00
         2        462.62     1759.32
         3        475.79     1753.18
         4        805.74     1831.87
         5        808.25     1837.25
         6        850.52     1927.88
         7        855.49     1938.55
         8        855.49     1946.55

 **  Corrected JANBU FOS =   1.352  **    (Fo factor = 1.070)


Failure surface No. 5 specified by  8 coordinate points

       Point      x-surf      y-surf
        No.        (ft)        (ft)

         1        366.98     1795.00
         2        449.74     1756.41
         3        476.49     1743.94
         4        813.69     1837.88
         5        814.00     1838.55
         6        856.26     1929.18
         7        860.12     1937.45
         8        860.12     1945.45

 **  Corrected JANBU FOS =   1.365  **    (Fo factor = 1.066)


Failure surface No. 6 specified by  8 coordinate points

       Point      x-surf      y-surf
        No.        (ft)        (ft)

         1        352.60     1795.00
         2        440.04     1754.22
         3        462.41     1743.80
         4        796.57     1828.16
         5        800.05     1835.40
         6        842.31     1926.03
         7        848.88     1940.12
         8        848.88     1948.12

 **  Corrected JANBU FOS =   1.378  **    (Fo factor = 1.070)


Failure surface No. 7 specified by  8 coordinate points

       Point      x-surf      y-surf
        No.        (ft)        (ft)

         1        387.84     1795.00
         2        463.79     1759.58
         3        486.60     1748.94
         4        809.34     1831.97
         5        812.22     1838.15
         6        854.48     1928.78
         7        858.68     1937.79
         8        858.68     1945.79

 **  Corrected JANBU FOS =   1.401  **    (Fo factor = 1.059)


Failure surface No. 8 specified by  8 coordinate points

       Point      x-surf      y-surf
        No.        (ft)        (ft)

         1        387.91     1795.00
```

W.O. 8838
Sec. B1-B1' Backcut

```
          2        463.84      1759.59
          3        490.86      1746.99
          4        770.58      1825.76
          5        772.15      1829.11
          6        814.41      1919.74
          7        826.41      1945.47
          8        826.41      1953.47

 **  Corrected JANBU FOS =    1.404  **     (Fo factor = 1.076)

Failure surface No. 9 specified by  9 coordinate points

      Point      x-surf      y-surf
       No.        (ft)        (ft)

        1        338.28      1795.00
        2        339.76      1794.31
        3        430.39      1752.05
        4        452.57      1741.70
        5        740.90      1812.24
        6        746.02      1823.22
        7        788.28      1913.85
        8        804.20      1947.99
        9        804.20      1955.99

 **  Corrected JANBU FOS =    1.404  **     (Fo factor = 1.079)

Failure surface No.10 specified by  6 coordinate points

      Point      x-surf      y-surf
       No.        (ft)        (ft)

        1        409.65      1795.00
        2        478.49      1762.90
        3        488.96      1758.02
        4        866.02      1850.46
        5        901.94      1927.49
        6        901.94      1935.49

 **  Corrected JANBU FOS =    1.408  **     (Fo factor = 1.056)


The following is a summary of the TEN most critical surfaces

Problem Description : Sec. B1-B1' Backcut

       Modified       Correction   Initial     Terminal    Available
       JANBU FOS        Factor     x-coord     x-coord     Strength
                                    (ft)        (ft)         (lb)

 1.     1.323           1.080      349.27      774.59     1.660E+06
 2.     1.333           1.059      339.17      882.33     1.861E+06
 3.     1.351           1.082      381.09      779.65     1.700E+06
 4.     1.352           1.070      386.10      855.49     1.844E+06
 5.     1.365           1.066      366.98      860.12     2.022E+06
 6.     1.378           1.070      352.60      848.88     2.015E+06
 7.     1.401           1.069      387.84      858.68     1.993E+06
 8.     1.404           1.076      387.91      826.41     1.986E+06
 9.     1.404           1.079      338.28      804.20     1.993E+06
10.     1.408           1.056      409.65      901.94     1.866E+06

                    *    * *  END OF FILE  * * *
```





GEOLABS-WESTLAKE VILLAGE

W.O. 8838

Sec.B2-B2' W=60' D=5'

```
XSTABL File: 8838B2    11-14-**    14:56

          ******************************************
          *                X S T A B L             *
          *                                        *
          *         Slope Stability Analysis       *
          *               using the                *
          *            Method of Slices            *
          *                                        *
          *         Copyright (C) 1992 À 96        *
          *   Interactive Software Designs, Inc.   *
          *        Moscow, ID 83843, U.S.A.        *
          *                                        *
          *           All Rights Reserved          *
          *                                        *
          * Ver. 5.201                   96 À 1545 *
          ******************************************

   Problem Description : Sec. B2-B2' W=60' D=5'



   -----------------------------
   SEGMENT BOUNDARY COORDINATES
   -----------------------------

      16 SURFACE boundary segments

   Segment    x-left    y-left    x-right   y-right    Soil Unit
     No.       (ft)      (ft)      (ft)      (ft)    Below Segment

      1          .0     1852.0     140.0    1852.0        1
      2       140.0     1852.0     148.0    1856.0        1
      3       148.0     1856.0     153.0    1856.0        1
      4       153.0     1856.0     165.0    1850.0        1
      5       165.0     1850.0     215.0    1850.0        1
      6       215.0     1850.0     395.0    1925.0        2
      7       395.0     1925.0     440.0    1925.0        2
      8       440.0     1925.0     460.0    1925.0        1
      9       460.0     1925.0     580.0    1960.0        1
     10       580.0     1960.0     600.0    1960.0        1
     11       600.0     1960.0     650.0    1950.0        1
     12       650.0     1950.0     760.0    2010.0        1
     13       760.0     2010.0     800.0    2015.0        1
     14       800.0     2015.0     835.0    2000.0        1
     15       835.0     2000.0     960.0    1950.0        1
     16       960.0     1950.0    1070.0    1900.0        2

       4 SUBSURFACE boundary segments

   Segment    x-left    y-left    x-right   y-right    Soil Unit
     No.       (ft)      (ft)      (ft)      (ft)    Below Segment

      1       215.0     1850.0     215.1    1845.0        1
      2       215.1     1845.0     275.0    1845.0        1
      3       275.0     1845.0     440.0    1925.0        1
      4          .0     1725.0     960.0    1950.0        3


   -----------------------------------
    A CRACKED ZONE HAS BEEN SPECIFIED
   -----------------------------------

        Depth of crack below ground surface =  8.00   (feet)
        Maximum depth of water in crack     =   .00   (feet)
        Unit weight of water in crack       = 62.40   (pcf)
```

```
   Failure surfaces will have a vertical side equal to the
   specified depth of crack and be affected by a hydrostatic
   force according to the specified depth of water in the crack



   --------------------------
   ISOTROPIC Soil Parameters
   --------------------------

    3 Soil unit(s) specified

   Soil   Unit Weight   Cohesion  Friction    Pore Pressure      Water
   Unit  Moist   Sat.  Intercept   Angle   Parameter  Constant  Surface
   No.   (pcf)   (pcf)   (psf)     (deg)      Ru        (psf)     No.

    1    130.0   140.0   225.0     40.00     .000        .0        1
    2    125.0   135.0   200.0     34.00     .000        .0        1
    3    130.0   140.0   225.0     40.00     .000        .0        1


   --------------------------------
   ANISOTROPIC STRENGTH PARAMETERS
   specified for  2 Soil Unit(s)
   --------------------------------


   Soil Unit  1 is ANISOTROPIC

   Number of direction ranges specified =  3


   Direction     Counterclockwise        c-value     i-value
   Range No.   Direction Limit (deg)      (psf)     (degrees)

       1              6.00                225.0       40.00
       2             12.00                150.0       17.00
       3             90.00                225.0       40.00


   Soil Unit  3 is ANISOTROPIC

   Number of direction ranges specified =  3


   Direction     Counterclockwise        c-value     i-value
   Range No.   Direction Limit (deg)      (psf)     (degrees)

       1              6.00                225.0       40.00
       2             12.00                150.0       11.00
       3             90.00                225.0       40.00



    1 Water surface(s) have been specified

   Unit weight of water =     62.40   (pcf)


   Water Surface No.  1 specified by  4 coordinate points

   **********************************
            PHREATIC SURFACE,
   **********************************

     Point       x-water      y-water
      No.          (ft)         (ft)
```

```
        1           .00       1850.00
        2        215.00       1850.00
        3        227.00       1856.00
        4       1000.00       1856.00


 A critical failure surface searching method, using a random
 technique for generating sliding BLOCK surfaces, has been
 specified.


 The active and passive portions of the sliding surfaces
 are generated according to the Rankine theory.


  2500 trial surfaces will be generated and analyzed.


   2 boxes specified for generation of central block base


 Length of line segments for active and passive portions of
 sliding block is    100.0 ft

 Box        x-left     y-left     x-right    y-right      Width
 no.         (ft)       (ft)       (ft)       (ft)        (ft)

  1          220.0     1800.0      360.0     1835.0       100.0
  2          380.0     1840.0      880.0     1930.0       100.0


 Factors of safety have been calculated by the :

 * * * * *    SIMPLIFIED JANBU METHOD    * * * * *


 The 10 most critical of all the failure surfaces examined
 are displayed below - the most critical first

 Failure surface No. 1 specified by  9 coordinate points

       Point       x-surf      y-surf
        No.         (ft)        (ft)

        1          79.04      1852.00
        2         143.22      1822.07
        3         233.85      1779.81
        4         237.14      1778.28
        5         767.91      1889.76
        6         775.87      1906.85
        7         818.13      1997.48
        8         818.82      1998.94
        9         818.82      2006.94

  **  Corrected JANBU FOS =    1.521   **     (Fo factor = 1.056)

 Failure surface No. 2 specified by  8 coordinate points

       Point       x-surf      y-surf
        No.         (ft)        (ft)

        1         124.66      1852.00
        2         173.59      1829.19
        3         264.22      1786.93
        4         265.86      1786.16
        5         783.45      1886.96
        6         794.78      1911.26
        7         832.85      1992.92
        8         832.85      2000.92

  **  Corrected JANBU FOS =    1.522   **     (Fo factor = 1.056)


 Failure surface No. 3 specified by  5 coordinate points

       Point       x-surf      y-surf
        No.         (ft)        (ft)

        1         181.10      1850.00
        2         223.70      1830.14
        3         756.95      1939.30
        4         787.81      2005.48
        5         787.81      2013.48

  **  Corrected JANBU FOS =    1.567   **     (Fo factor = 1.043)


 Failure surface No. 4 specified by  5 coordinate points

       Point       x-surf      y-surf
        No.         (ft)        (ft)

        1         198.87      1850.00
        2         228.32      1836.27
        3         790.14      1953.58
        4         812.55      2001.62
        5         812.55      2009.62

  **  Corrected JANBU FOS =    1.574   **     (Fo factor = 1.034)


 Failure surface No. 5 specified by  9 coordinate points

       Point       x-surf      y-surf
        No.         (ft)        (ft)

        1          85.17      1852.00
        2         147.30      1823.03
        3         237.93      1780.77
        4         251.82      1774.29
        5         749.97      1875.91
        6         762.99      1903.83
        7         805.25      1994.46
        8         809.25      2003.03
        9         809.25      2011.03

  **  Corrected JANBU FOS =    1.575   **     (Fo factor = 1.062)


 Failure surface No. 6 specified by  8 coordinate points

       Point       x-surf      y-surf
        No.         (ft)        (ft)

        1          98.21      1852.00
        2         155.98      1825.06
        3         246.61      1782.80
        4         266.42      1773.56
        5         765.10      1877.96
        6         778.90      1907.55
        7         821.06      1997.97
        8         821.06      2005.97

  **  Corrected JANBU FOS =    1.580   **     (Fo factor = 1.060)
```

W.O. 8838
Sec.B2-B2' W=60' D=5'

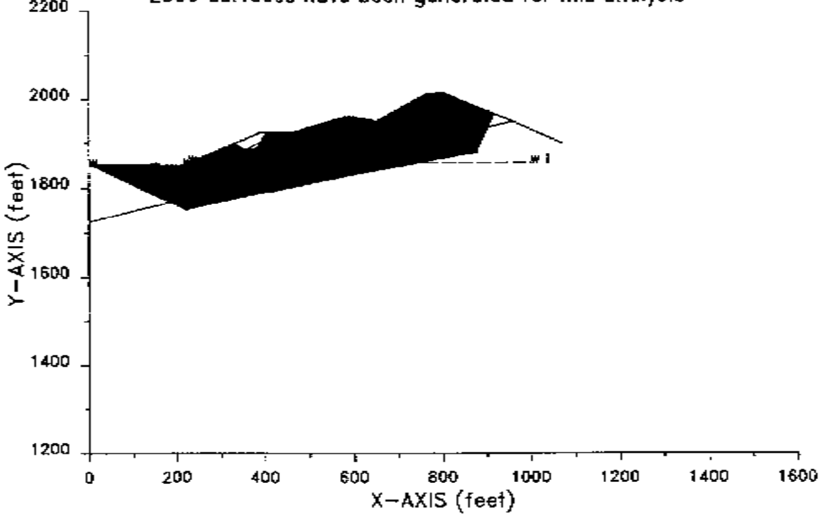
```
Failure surface No. 7 specified by  8 coordinate points

       Point      x-surf      y-surf
        No.        (ft)        (ft)

         1         62.55     1852.00
         2        131.94     1819.64
         3        222.57     1777.38
         4        736.26     1879.77
         5        745.57     1899.74
         6        787.83     1990.37
         7        795.31     2006.41
         8        795.31     2014.41

 **  Corrected JANBU FOS =   1.581  **    (Fo factor = 1.062)

Failure surface No. 8 specified by  7 coordinate points

       Point      x-surf      y-surf
        No.        (ft)        (ft)

         1        206.32     1850.00
         2        215.09     1845.33
         3        215.72     1845.00
         4        243.01     1832.29
         5        772.21     1939.73
         6        802.98     2005.72
         7        802.98     2013.72

 **  Corrected JANBU FOS =   1.586  **    (Fo factor = 1.044)

Failure surface No. 9 specified by 10 coordinate points

       Point      x-surf      y-surf
        No.        (ft)        (ft)

         1        207.58     1850.00
         2        215.08     1846.01
         3        216.99     1845.00
         4        225.04     1841.25
         5        315.67     1798.98
         6        316.75     1798.48
         7        792.07     1897.92
         8        798.72     1912.20
         9        835.79     1991.69
        10        835.79     1999.69

 **  Corrected JANBU FOS =   1.595  **    (Fo factor = 1.056)

Failure surface No.10 specified by  8 coordinate points

       Point      x-surf      y-surf
        No.        (ft)        (ft)

         1        165.64     1850.00
         2        198.00     1834.91
         3        288.63     1752.65
         4        297.36     1788.58
         5        838.56     1902.16
         6        848.70     1923.91
         7        873.30     1976.68
         8        873.30     1984.68

 **  Corrected JANBU FOS =   1.597  **    (Fo factor = 1.049)
```

```
The following is a summary of the TEN most critical surfaces

Problem Description : Sec. B2-B2' W=60' D=5'

        Modified      Correction    Initial     Terminal    Available
        JANBU FOS       Factor      x-coord     x-coord      Strength
                                     (ft)        (ft)         (lb)

  1.      1.521         1.056        79.04      818.82     2.353E+06
  2.      1.522         1.056       124.66      832.85     2.302E+06
  3.      1.567         1.043       181.10      787.81     1.246E+06
  4.      1.574         1.034       198.87      812.55     1.143E+06
  5.      1.575         1.062        85.17      809.25     2.533E+06
  6.      1.580         1.060        98.21      821.06     2.606E+06
  7.      1.581         1.062        62.55      795.31     2.344E+06
  8.      1.586         1.044       206.32      802.98     1.329E+06
  9.      1.595         1.056       207.58      835.79     2.157E+06
 10.      1.597         1.049       165.64      873.30     2.282E+06

                  *    * *  END OF FILE  * * *
```

W.O. 8838
Sec.B2-B2' W=60' D=5'

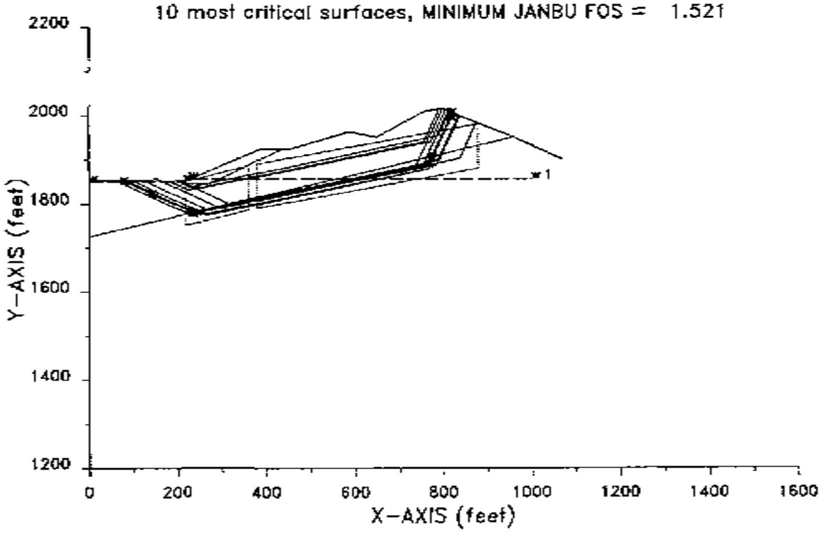
883882 11-14-** 14:56

Sec. B2-B2' W=60' D=5'
2500 surfaces have been generated for this analysis



883892 11-14-** 14:56

Sec. B2-B2' W=60' D=5'
10 most critical surfaces, MINIMUM JANBU FOS = 1.521



GEOLABS-WESTLAKE VILLAGE

Plate B2.4

W.O. 8838
Sec. B2-B2' Backcut

```
XSTABL File: 8838B2B  11-14-**  14:59

          ******************************************
          *              X S T A B L               *
          *                                        *
          *        Slope Stability Analysis        *
          *              using the                 *
          *           Method of Slices             *
          *                                        *
          *         Copyright (C) 1992 À 96        *
          *    Interactive Software Designs, Inc.  *
          *        Moscow, ID 83843, U.S.A.        *
          *                                        *
          *          All Rights Reserved           *
          *                                        *
          * Ver. 5.201                  96 À 1545  *
          ******************************************

   Problem Description : Sec. B2-B2' Backcut



   -----------------------------
   SEGMENT BOUNDARY COORDINATES
   -----------------------------

      17 SURFACE boundary segments

   Segment   x-left    y-left    x-right   y-right     Soil Unit
     No.      (ft)      (ft)      (ft)      (ft)     Below Segment

     1          .0     1852.0     140.0    1852.0          1
     2       140.0     1852.0     148.0    1856.0          1
     3       148.0     1856.0     153.0    1856.0          1
     4       153.0     1856.0     165.0    1850.0          1
     5       165.0     1850.0     215.0    1850.0          1
     6       215.0     1850.0     215.1    1845.0          1
     7       215.1     1845.0     275.0    1845.0          1
     8       275.0     1845.0     440.0    1925.0          1
     9       440.0     1925.0     460.0    1925.0          1
    10       460.0     1925.0     580.0    1960.0          1
    11       580.0     1960.0     600.0    1960.0          1
    12       600.0     1960.0     650.0    1950.0          1
    13       650.0     1950.0     760.0    2010.0          1
    14       760.0     2010.0     800.0    2015.0          1
    15       800.0     2015.0     835.0    2000.0          1
    16       835.0     2000.0     960.0    1950.0          1
    17       960.0     1950.0    1070.0    1900.0          2

      1 SUBSURFACE boundary segments

   Segment   x-left    y-left    x-right   y-right     Soil Unit
     No.      (ft)      (ft)      (ft)      (ft)     Below Segment

     1          .0     1725.0     960.0    1950.0          3


   ------------------------------------
    A CRACKED ZONE HAS BEEN SPECIFIED
   ------------------------------------

      Depth of crack below ground surface =  8.00    (feet)
      Maximum depth of water in crack     =   .00    (feet)
      Unit weight of water in crack       = 62.40    (pcf)

   Failure surfaces will have a vertical side equal to the
   specified depth of crack and be affected by a hydrostatic
```

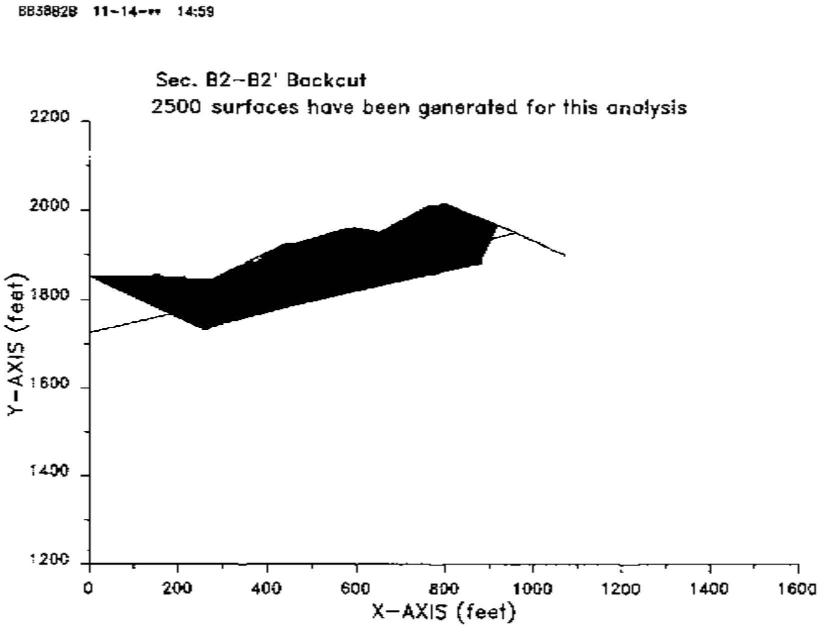
```
   force according to the specified depth of water in the crack



   --------------------------
   ISOTROPIC Soil Parameters
   --------------------------

    3 Soil unit(s) specified

   Soil    Unit Weight    Cohesion  Friction     Pore Pressure       Water
   Unit  Moist    Sat.   Intercept   Angle   Parameter  Constant   Surface
    No.  (pcf)   (pcf)     (psf)     (deg)      Ru        (psf)       No.

     1   130.0   140.0     225.0     40.00      .000         .0        0
     2   125.0   135.0     200.0     34.00      .000         .0        0
     3   130.0   140.0     225.0     40.00      .000         .0        0


   -------------------------------
   ANISOTROPIC STRENGTH PARAMETERS
   specified for  2 Soil Unit(s)
   -------------------------------


   Soil Unit  1 is ANISOTROPIC

   Number of direction ranges specified =  3


   Direction     Counterclockwise          c-value      i-value
   Range No.   Direction Limit (deg)        (psf)      (degrees)

       1               6.00                225.0        40.00
       2              12.00                150.0        17.00
       3              90.00                225.0        40.00


   Soil Unit  3 is ANISOTROPIC

   Number of direction ranges specified =  3


   Direction     Counterclockwise          c-value      i-value
   Range No.   Direction Limit (deg)        (psf)      (degrees)

       1               6.00                225.0        40.00
       2              12.00                150.0        11.00
       3              90.00                225.0        40.00



   A critical failure surface searching method, using a random
   technique for generating sliding BLOCK surfaces, has been
   specified.


   The active and passive portions of the sliding surfaces
   are generated according to the Rankine theory.


    2500 trial surfaces will be generated and analyzed.


     2 boxes specified for generation of central block base


   Length of line segments for active and passive portions of
```

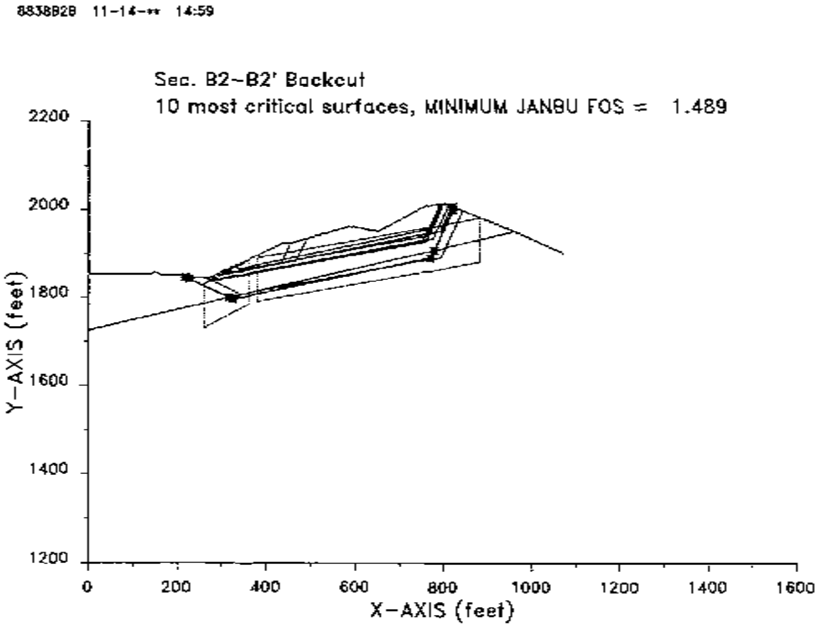
```
sliding block is    100.0 ft

Box       x-left     y-left     x-right    y-right     Width
no.        (ft)       (ft)       (ft)       (ft)        (ft)

 1        260.0     1780.0      360.0     1835.0      100.0
 2        380.0     1840.0      880.0     1930.0      100.0


Factors of safety have been calculated by the :

* * * * *    SIMPLIFIED JANBU METHOD    * * * * *


The 10 most critical of all the failure surfaces examined
are displayed below - the most critical first

Failure surface No. 1 specified by  9 coordinate points

      Point      x-surf      y-surf
       No.        (ft)        (ft)

        1        217.47     1845.00
        2        225.36     1841.32
        3        315.99     1799.06
        4        323.73     1795.45
        5        768.89     1889.49
        6        777.12     1907.14
        7        819.38     1997.77
        8        819.74     1998.54
        9        819.74     2006.54

 **  Corrected JANBU FOS =   1.489  **     (Fo factor = 1.062)

Failure surface No. 2 specified by  5 coordinate points

      Point      x-surf      y-surf
       No.        (ft)        (ft)

        1        289.91     1852.23
        2        295.62     1849.56
        3        466.30     1883.30
        4        485.48     1924.43
        5        485.48     1932.43

 **  Corrected JANBU FOS =   1.492  **     (Fo factor = 1.067)

Failure surface No. 3 specified by  5 coordinate points

      Point      x-surf      y-surf
       No.        (ft)        (ft)

        1        259.59     1845.00
        2        277.40     1836.69
        3        751.13     1929.13
        4        786.67     2005.33
        5        786.67     2013.33

 **  Corrected JANBU FOS =   1.500  **     (Fo factor = 1.052)

Failure surface No. 4 specified by  5 coordinate points

      Point      x-surf      y-surf
       No.        (ft)        (ft)
```

```
        1        328.16     1870.78
        2        340.03     1865.24
        3        767.95     1955.89
        4        791.28     2005.91
        5        791.28     2013.91

 **  Corrected JANBU FOS =   1.513  **     (Fo factor = 1.043)

Failure surface No. 5 specified by  5 coordinate points

      Point      x-surf      y-surf
       No.        (ft)        (ft)

        1        277.52     1846.22
        2        289.50     1840.63
        3        774.59     1934.34
        4        807.06     2003.97
        5        807.06     2011.97

 **  Corrected JANBU FOS =   1.523  **     (Fo factor = 1.049)

Failure surface No. 6 specified by  5 coordinate points

      Point      x-surf      y-surf
       No.        (ft)        (ft)

        1        310.66     1862.29
        2        323.64     1856.24
        3        433.25     1878.43
        4        451.24     1917.00
        5        451.24     1925.00

 **  Corrected JANBU FOS =   1.524  **     (Fo factor = 1.078)

Failure surface No. 7 specified by  5 coordinate points

      Point      x-surf      y-surf
       No.        (ft)        (ft)

        1        275.82     1845.40
        2        289.53     1839.01
        3        758.06     1926.39
        4        795.38     2006.42
        5        795.38     2014.42

 **  Corrected JANBU FOS =   1.533  **     (Fo factor = 1.054)

Failure surface No. 8 specified by  5 coordinate points

      Point      x-surf      y-surf
       No.        (ft)        (ft)

        1        308.72     1861.35
        2        320.80     1855.72
        3        791.26     1951.69
        4        814.21     2000.91
        5        814.21     2008.91

 **  Corrected JANBU FOS =   1.541  **     (Fo factor = 1.040)

Failure surface No. 9 specified by  5 coordinate points

      Point      x-surf      y-surf
       No.        (ft)        (ft)
```

W.O. 8838
Sec. B2-B2' Backcut

```
          1          305.86      1859.96
          2          313.76      1856.28
          3          759.75      1940.09
          4          790.39      2005.80
          5          790.39      2013.80

 **   Corrected JANBU FOS =    1.546   **     (Fo factor = 1.050)

Failure surface No.10 specified by  6 coordinate points

       Point         x-surf        y-surf
        No.           (ft)          (ft)

          1          259.93      1845.00
          2          342.55      1806.47
          3          792.62      1891.47
          4          802.73      1913.14
          5          838.79      1990.48
          6          838.79      1998.48

 **   Corrected JANBU FOS =    1.550   **     (Fo factor = 1.060)



The following is a summary of the TEN most critical surfaces

Problem Description : Sec. B2-B2' Backcut

       Modified      Correction    Initial     Terminal    Available
      JANBU FOS       Factor       x-coord     x-coord      Strength
                                    (ft)        (ft)          (lb)

  1.     1.489         1.062       217.47      819.74     2.161E+06
  2.     1.492         1.067       289.91      485.48     2.820E+05
  3.     1.500         1.052       259.59      786.67     1.172E+06
  4.     1.513         1.043       328.16      791.28     7.431E+05
  5.     1.523         1.049       277.52      807.06     1.206E+06
  6.     1.524         1.078       310.65      451.24     2.111E+05
  7.     1.533         1.054       275.82      795.38     1.247E+06
  8.     1.541         1.040       308.72      814.21     9.525E+05
  9.     1.546         1.050       305.86      790.39     9.361E+05
 10.     1.550         1.060       259.93      838.79     2.066E+06

                 *     * *  END OF FILE  * * *
```





W.O. 8838
Sec. B6-B6'

```
XSTABL File: 8838B6    11-22-**     9:24

          ******************************************
          *               X S T A B L              *
          *                                        *
          *        Slope Stability Analysis        *
          *              using the                 *
          *           Method of Slices             *
          *                                        *
          *         Copyright (C) 1992 À 96        *
          *    Interactive Software Designs, Inc.  *
          *        Moscow, ID 83843, U.S.A.        *
          *                                        *
          *          All Rights Reserved           *
          *                                        *
          * Ver. 5.201                  96 À 1545  *
          ******************************************

Problem Description : Sec. B6-B6' W=70'D=5/W=50'D=5'


-----------------------------
SEGMENT BOUNDARY COORDINATES
-----------------------------

   12 SURFACE boundary segments

Segment    x-left    y-left    x-right    y-right     Soil Unit
  No.       (ft)      (ft)      (ft)       (ft)     Below Segment

   1          .0     1662.0       90.0    1662.0          1
   2        90.0     1662.0      285.0    1658.0          2
   3       285.0     1658.0      301.0    1650.0          2
   4       301.0     1650.0      380.0    1650.0          2
   5       380.0     1650.0      525.0    1712.0          1
   6       525.0     1712.0      545.0    1712.0          1
   7       545.0     1712.0      790.0    1812.0          1
   8       790.0     1812.0     1050.0    1920.0          3
   9      1050.0     1920.0     1200.0    1950.0          3
  10      1200.0     1950.0     1380.0    1950.0          3
  11      1380.0     1950.0     1570.0    1840.0          3
  12      1570.0     1840.0     1720.0    1775.0          2

    8 SUBSURFACE boundary segments

Segment    x-left    y-left    x-right    y-right     Soil Unit
  No.       (ft)      (ft)      (ft)       (ft)     Below Segment

   1          .0     1640.0       90.0    1662.0          2
   2       380.0     1650.0      380.1    1645.0          2
   3       380.1     1645.0      450.0    1645.0          2
   4       450.0     1645.0      545.0    1707.0          2
   5       545.0     1707.0      595.0    1707.0          2
   6       595.0     1707.0      710.0    1770.0          2
   7       710.0     1770.0      790.0    1812.0          3
   8       710.0     1770.0     1570.0    1840.0          2


-----------------------------------
 A CRACKED ZONE HAS BEEN SPECIFIED
-----------------------------------

     Depth of crack below ground surface =  8.00   (feet)
     Maximum depth of water in crack     =   .00   (feet)
     Unit weight of water in crack       = 62.40   (pcf)
```

```
Failure surfaces will have a vertical side equal to the
specified depth of crack and be affected by a hydrostatic
force according to the specified depth of water in the crack


-------------------------
ISOTROPIC Soil Parameters
-------------------------

 3 Soil unit(s) specified

Soil   Unit Weight   Cohesion  Friction    Pore Pressure       Water
Unit  Moist    Sat.  Intercept   Angle   Parameter  Constant  Surface
 No.  (pcf)   (pcf)    (psf)     (deg)      Ru        (psf)     No.

  1   125.0   135.0    200.0     34.00     .000          .0       1
  2   130.0   140.0    200.0     40.00     .000          .0       1
  3   130.0   140.0    225.0     40.00     .000          .0       1

-----------------------------
ANISOTROPIC STRENGTH PARAMETERS
specified for  2 Soil Unit(s)
-----------------------------


Soil Unit  2 is ANISOTROPIC

Number of direction ranges specified =  3


Direction     Counterclockwise         c-value      i-value
Range No.   Direction Limit (deg)       (psf)      (degrees)

    1              10.00                225.0        40.00
    2              15.00                100.0        25.00
    3              90.00                225.0        40.00

Soil Unit  3 is ANISOTROPIC

Number of direction ranges specified =  3


Direction     Counterclockwise         c-value      i-value
Range No.   Direction Limit (deg)       (psf)      (degrees)

    1               5.00                225.0        40.00
    2              10.00                100.0        25.00
    3              90.00                225.0        40.00


 1 Water surface(s) have been specified

Unit weight of water =    62.40  (pcf)


Water Surface No.  1 specified by  6 coordinate points

**********************************
        PHREATIC SURFACE,
**********************************

 Point      x-water     y-water
  No.        (ft)        (ft)
```

GEOLABS-WESTLAKE VILLAGE

Plate B6.1

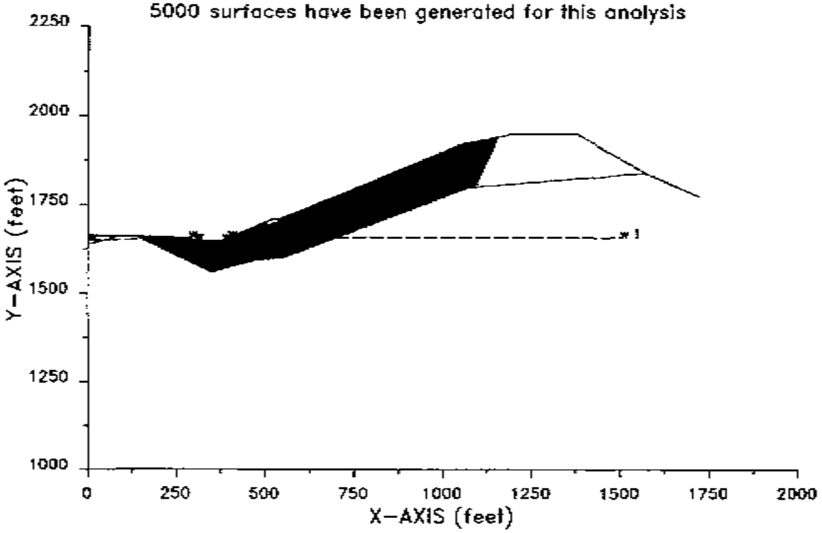
```
      1          .00      1650.00
      2       285.00      1658.00
      3       301.00      1650.00
      4       380.00      1650.00
      5       396.00      1658.00
      6      1500.00      1658.00


A critical failure surface searching method, using a random
technique for generating sliding BLOCK surfaces, has been
specified.


The active and passive portions of the sliding surfaces
are generated according to the Rankine theory.


 5000 trial surfaces will be generated and analyzed.


  2 boxes specified for generation of central block base


Length of line segments for active and passive portions of
sliding block is    100.0 ft


Box        x-left     y-left    x-right    y-right      Width
no.         (ft)       (ft)      (ft)       (ft)         (ft)

 1         350.0     1600.0     525.0     1650.0        80.0
 2         550.0     1650.0    1100.0     1860.0       100.0



Factors of safety have been calculated by the :

* * * * *   SIMPLIFIED JANBU METHOD    * * * * *



The 10 most critical of all the failure surfaces examined
are displayed below - the most critical first

Failure surface No. 1 specified by  7 coordinate points

       Point      x-surf      y-surf
        No.        (ft)        (ft)

         1        365.86     1650.00
         2        407.70     1630.49
         3        974.61     1781.13
         4        979.66     1791.95
         5       1021.92     1882.58
         6       1032.19     1904.50
         7       1032.19     1912.60

 **  Corrected JANBU FOS =   1.601  **     (Fo factor = 1.057)

Failure surface No. 2 specified by  7 coordinate points

       Point      x-surf      y-surf
        No.        (ft)        (ft)

         1        339.11     1650.00
         2        386.48     1627.91
         3        966.99     1782.20
         4        971.21     1791.26
         5       1013.47     1881.89
         6       1022.11     1900.42
         7       1022.11     1908.42

 **  Corrected JANBU FOS =   1.604  **     (Fo factor = 1.055)

Failure surface No. 3 specified by  9 coordinate points

       Point      x-surf      y-surf
        No.        (ft)        (ft)

         1        379.57     1650.00
         2        380.00     1649.77
         3        388.98     1645.00
         4        413.58     1633.53
         5        974.76     1779.55
         6        980.58     1792.02
         7       1022.84     1882.65
         8       1033.29     1905.06
         9       1033.29     1913.06

 **  Corrected JANBU FOS =   1.613  **     (Fo factor = 1.058)

Failure surface No. 4 specified by  7 coordinate points

       Point      x-surf      y-surf
        No.        (ft)        (ft)

         1        342.12     1650.00
         2        404.73     1620.80
         3       1015.19     1783.54
         4       1020.67     1795.29
         5       1062.93     1885.92
         6       1077.67     1917.53
         7       1077.67     1925.53

 **  Corrected JANBU FOS =   1.615  **     (Fo factor = 1.057)

Failure surface No. 5 specified by  7 coordinate points

       Point      x-surf      y-surf
        No.        (ft)        (ft)

         1        327.76     1650.00
         2        389.39     1621.26
         3       1007.72     1783.03
         4       1013.15     1794.67
         5       1055.41     1885.31
         6       1069.70     1915.94
         7       1069.70     1923.94

 **  Corrected JANBU FOS =   1.623  **     (Fo factor = 1.056)

Failure surface No. 6 specified by  7 coordinate points

       Point      x-surf      y-surf
        No.        (ft)        (ft)

         1        360.87     1550.00
         2        394.57     1534.29
         3       1028.06     1794.86
         4       1028.55     1795.93
         5       1070.81     1886.56
         6       1086.04     1919.21
         7       1086.04     1927.21
```

```
 **  Corrected JANBU FOS =   1.626  **     (Fo factor = 1.054)


Failure surface No. 7 specified by  7 coordinate points

       Point       x-surf       y-surf
        No.         (ft)         (ft)

         1         333.36      1650.00
         2         382.85      1626.92
         3        1009.57      1786.11
         4        1013.58      1794.71
         5        1055.84      1885.34
         6        1070.15      1916.03
         7        1070.15      1924.03

 **  Corrected JANBU FOS =   1.627  **     (Fo factor = 1.056)


Failure surface No. 8 specified by  7 coordinate points

       Point       x-surf       y-surf
        No.         (ft)         (ft)

         1         344.70      1650.00
         2         379.94      1633.57
         3         968.84      1785.28
         4         971.64      1791.30
         5        1013.90      1881.93
         6        1022.62      1900.63
         7        1022.62      1908.63

 **  Corrected JANBU FOS =   1.630  **     (Fo factor = 1.054)


Failure surface No. 9 specified by  7 coordinate points

       Point       x-surf       y-surf
        No.         (ft)         (ft)

         1         361.31      1650.00
         2         423.04      1621.22
         3        1013.64      1777.30
         4        1022.09      1795.40
         5        1064.35      1886.03
         6        1079.18      1917.84
         7        1079.18      1925.84

 **  Corrected JANBU FOS =   1.633  **     (Fo factor = 1.059)


Failure surface No.10 specified by  9 coordinate points

       Point       x-surf       y-surf
        No.         (ft)         (ft)

         1         373.82      1650.00
         2         380.07      1646.68
         3         383.22      1645.00
         4         409.95      1632.54
         5        1017.35      1783.46
         6        1022.95      1795.47
         7        1065.21      1886.10
         8        1080.09      1918.02
         9        1080.09      1526.02

 **  Corrected JANBU FOS =   1.637  **     (Fo factor = 1.058)
```

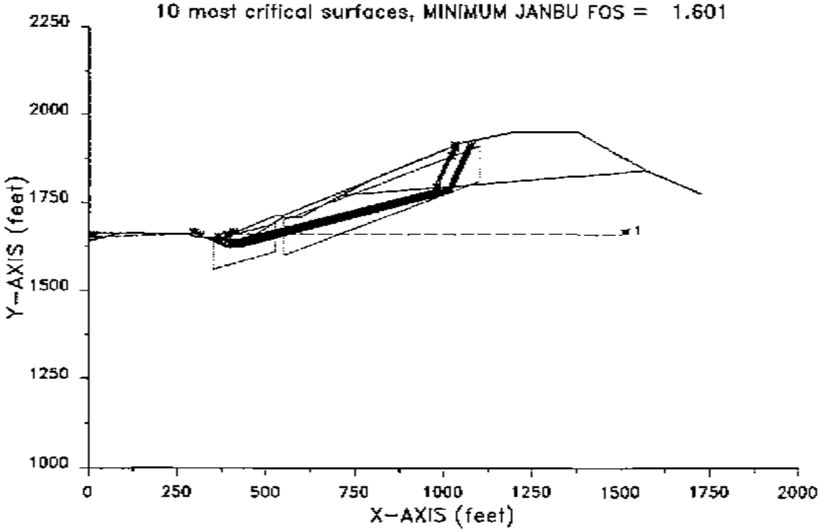
```
The following is a summary of the TEN most critical surfaces

Problem Description : Sec. B6-B6' W=70'D=5/W=50'D=5'

       Modified      Correction    Initial     Terminal    Available
       JANBU FOS       Factor      x-coord     x-coord      Strength
                                    (ft)        (ft)          (lb)

  1.     1.601         1.057       355.86      1032.19     2.709E+06
  2.     1.604         1.055       339.11      1022.11     2.559E+06
  3.     1.613         1.058       379.57      1033.29     2.715E+06
  4.     1.615         1.057       342.12      1077.67     3.416E+06
  5.     1.623         1.056       327.76      1069.70     3.264E+06
  6.     1.626         1.054       360.87      1086.04     3.004E+06
  7.     1.627         1.056       333.36      1070.15     3.070E+06
  8.     1.630         1.054       344.70      1022.62     2.410E+06
  9.     1.633         1.059       361.31      1079.18     3.615E+06
 10.     1.637         1.058       373.82      1080.09     3.229E+06

                  *     * *  END OF FILE  * * *
```

W.O. 8838
Sec. B6-B6'

883686 11-22-** 9:24


Sec. B6-B6' W=70'D=5/W=50'D=5'
5000 surfaces have been generated for this analysis

883686 11-22-** 9:24


Sec. B6-B6' W=70'D=5/W=50'D=5'
10 most critical surfaces, MINIMUM JANBU FOS = 1.601

GEOLABS-WESTLAKE VILLAGE

Plate B6.4

W.O. 8838

Sec. B6-B6' Pseudostatic

```
XSTABL File: 8838B6P   11-22-**    9:26

              ******************************************
              *              X S T A B L               *
              *                                        *
              *        Slope Stability Analysis        *
              *               using the                *
              *            Method of Slices            *
              *                                        *
              *         Copyright (C) 1992 A 96        *
              *    Interactive Software Designs, Inc.  *
              *        Moscow, ID 83843, U.S.A.        *
              *                                        *
              *          All Rights Reserved           *
              *                                        *
              * Ver. 5.201                  96 Ã 1545  *
              ******************************************

Problem Description : Sec. B6-B6' W=70'D=5/W=50'D=5' Pseud


-----------------------------
SEGMENT BOUNDARY COORDINATES
-----------------------------

  12 SURFACE boundary segments

Segment   x-left    y-left    x-right   y-right    Soil Unit
  No.      (ft)      (ft)      (ft)      (ft)    Below Segment

   1         .0     1662.0      90.0    1662.0        1
   2       90.0     1662.0     285.0    1658.0        2
   3      285.0     1658.0     301.0    1650.0        2
   4      301.0     1650.0     380.0    1650.0        2
   5      380.0     1650.0     525.0    1712.0        1
   6      525.0     1712.0     545.0    1712.0        1
   7      545.0     1712.0     790.0    1812.0        1
   8      790.0     1812.0    1050.0    1920.0        3
   9     1050.0     1920.0    1200.0    1950.0        3
  10     1200.0     1950.0    1380.0    1950.0        3
  11     1380.0     1950.0    1570.0    1840.0        3
  12     1570.0     1840.0    1720.0    1775.0        2


   8 SUBSURFACE boundary segments

Segment   x-left    y-left    x-right   y-right    Soil Unit
  No.      (ft)      (ft)      (ft)      (ft)    Below Segment

   1         .0     1640.0      90.0    1662.0        2
   2      380.0     1650.0     380.1    1645.0        2
   3      380.1     1645.0     450.0    1645.0        2
   4      450.0     1645.0     545.0    1707.0        2
   5      545.0     1707.0     595.0    1707.0        2
   6      595.0     1707.0     710.0    1770.0        2
   7      710.0     1770.0     790.0    1812.0        3
   8      710.0     1770.0    1570.0    1840.0        2


-----------------------------------
A CRACKED ZONE HAS BEEN SPECIFIED
-----------------------------------

     Depth of crack below ground surface =  8.00   (feet)
     Maximum depth of water in crack     =   .00   (feet)
     Unit weight of water in crack       = 62.40   (pcf)
```

```
Failure surfaces will have a vertical side equal to the
specified depth of crack and be affected by a hydrostatic
force according to the specified depth of water in the crack


-------------------------
ISOTROPIC Soil Parameters
-------------------------

 3 Soil unit(s) specified

Soil    Unit Weight    Cohesion  Friction     Pore Pressure      Water
Unit  Moist     Sat.   Intercept   Angle   Parameter  Constant  Surface
No.   (pcf)    (pcf)     (psf)     (deg)      Ru        (psf)     No.

  1   125.0    135.0     200.0     34.00     .000          .0       1
  2   130.0    140.0     200.0     40.00     .000          .0       1
  3   130.0    140.0     225.0     40.00     .000          .0       1


-------------------------------
ANISOTROPIC STRENGTH PARAMETERS
specified for  2 Soil Unit(s)
-------------------------------


Soil Unit  2 is ANISOTROPIC

Number of direction ranges specified =  3


Direction     Counterclockwise       c-value     i-value
Range No.   Direction Limit (deg)     (psf)     (degrees)

   1              10.00               225.0       40.00
   2              15.00               100.0       25.00
   3              90.00               225.0       40.00


Soil Unit  3 is ANISOTROPIC

Number of direction ranges specified =  3


Direction     Counterclockwise       c-value     i-value
Range No.   Direction Limit (deg)     (psf)     (degrees)

   1               5.00               225.0       40.00
   2              10.00               100.0       25.00
   3              90.00               225.0       40.00


 1 Water surface(s) have been specified

Unit weight of water =    62.40  (pcf)


Water Surface No.  1 specified by  6 coordinate points

**********************************
       PHREATIC SURFACE,
**********************************

  Point      x-water     y-water
   No.         (ft)        (ft)
```

```
          1          .00      1650.00
          2       285.00      1658.00
          3       301.00      1650.00
          4       380.00      1650.00
          5       396.00      1658.00
          6      1500.00      1658.00


A horizontal earthquake loading coefficient
of   .150 has been assigned

A vertical earthquake loading coefficient
of   .000 has been assigned


A critical failure surface searching method, using a random
technique for generating sliding BLOCK surfaces, has been
specified.


The active and passive portions of the sliding surfaces
are generated according to the Rankine theory.


 5000 trial surfaces will be generated and analyzed.


  2 boxes specified for generation of central block base


Length of line segments for active and passive portions of
sliding block is    100.0 ft


Box        x-left      y-left     x-right     y-right       Width
no.         (ft)        (ft)        (ft)        (ft)         (ft)

 1         350.0      1600.0       525.0      1650.0         80.0
 2         550.0      1650.0      1100.0      1860.0        100.0


Factors of safety have been calculated by the :

* * * * *   SIMPLIFIED JANBU METHOD   * * * * *


The 10 most critical of all the failure surfaces examined
are displayed below - the most critical first

Failure surface No. 1 specified by  7 coordinate points

      Point       x-surf      y-surf
       No.         (ft)        (ft)

        1         365.86     1650.00
        2         407.70     1630.49
        3         974.61     1781.13
        4         979.66     1791.95
        5        1021.92     1882.58
        6        1032.19     1904.60
        7        1032.19     1912.60

 **  Corrected JANBU FOS =    1.073  **     (Fo factor = 1.057)

Failure surface No. 2 specified by  7 coordinate points
```

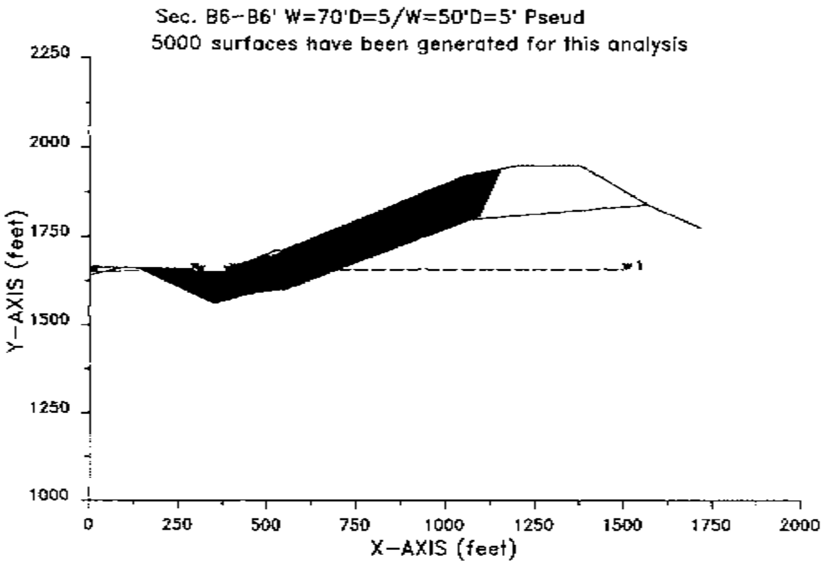
```
      Point       x-surf      y-surf
       No.         (ft)        (ft)

        1         339.11     1650.00
        2         386.48     1627.91
        3         966.99     1782.20
        4         971.21     1791.26
        5        1013.47     1881.89
        6        1022.11     1900.42
        7        1022.11     1908.42

 **  Corrected JANBU FOS =    1.074  **     (Fo factor = 1.055)

Failure surface No. 3 specified by  9 coordinate points

      Point       x-surf      y-surf
       No.         (ft)        (ft)

        1         379.57     1650.00
        2         380.00     1649.77
        3         388.98     1645.00
        4         413.58     1633.53
        5         974.76     1779.55
        6         980.58     1792.02
        7        1022.84     1882.65
        8        1033.29     1905.06
        9        1033.29     1913.06

 **  Corrected JANBU FOS =    1.080  **     (Fo factor = 1.058)

Failure surface No. 4 specified by  7 coordinate points

      Point       x-surf      y-surf
       No.         (ft)        (ft)

        1         342.12     1650.00
        2         404.73     1620.80
        3        1015.19     1783.54
        4        1020.67     1795.29
        5        1062.93     1885.92
        6        1077.67     1917.53
        7        1077.67     1925.53

 **  Corrected JANBU FOS =    1.082  **     (Fo factor = 1.057)

Failure surface No. 5 specified by  7 coordinate points

      Point       x-surf      y-surf
       No.         (ft)        (ft)

        1         360.87     1650.00
        2         394.57     1634.29
        3        1028.06     1794.86
        4        1028.55     1795.93
        5        1070.81     1886.56
        6        1086.04     1919.21
        7        1086.04     1927.21

 **  Corrected JANBU FOS =    1.083  **     (Fo factor = 1.054)

Failure surface No. 6 specified by  7 coordinate points

      Point       x-surf      y-surf
       No.         (ft)        (ft)
```

```
          1         327.76      1650.00
          2         389.39      1621.26
          3        1007.72      1783.03
          4        1013.15      1794.67
          5        1055.41      1885.31
          6        1069.70      1915.94
          7        1069.70      1923.94

 **   Corrected JANBU FOS =    1.085   **      (Fo factor = 1.056)


Failure surface No. 7 specified by   7 coordinate points

        Point       x-surf       y-surf
         No.         (ft)         (ft)

          1         333.36      1650.00
          2         382.85      1626.92
          3        1009.57      1786.11
          4        1013.58      1794.71
          5        1055.84      1885.34
          6        1070.15      1916.03
          7        1070.15      1924.03

 **   Corrected JANBU FOS =    1.085   **      (Fo factor = 1.056)


Failure surface No. 8 specified by   7 coordinate points

        Point       x-surf       y-surf
         No.         (ft)         (ft)

          1         344.70      1650.00
          2         379.94      1633.57
          3         968.84      1785.28
          4         971.64      1791.30
          5        1013.90      1881.93
          6        1022.62      1900.63
          7        1022.62      1908.63

 **   Corrected JANBU FOS =    1.089   **      (Fo factor = 1.054)


Failure surface No. 9 specified by   9 coordinate points

        Point       x-surf       y-surf
         No.         (ft)         (ft)

          1         373.82      1650.00
          2         380.07      1646.68
          3         383.22      1645.00
          4         409.95      1632.54
          5        1017.35      1783.46
          6        1022.95      1795.47
          7        1065.21      1886.10
          8        1080.09      1918.02
          9        1080.09      1926.02

 **   Corrected JANBU FOS =    1.091   **      (Fo factor = 1.058)


Failure surface No.10 specified by   9 coordinate points

        Point       x-surf       y-surf
         No.         (ft)         (ft)

          1         377.60      1650.00
          2         380.03      1648.71
          3         387.01      1645.00
          4         404.12      1637.02
          5         967.45      1777.46
          6         973.99      1791.49
          7        1016.25      1882.12
          8        1025.42      1901.79
          9        1025.42      1909.79

 **   Corrected JANBU FOS =    1.093   **      (Fo factor = 1.058)



The following is a summary of the TEN most critical surfaces

Problem Description : Sec. B6-B6' W=70'D=5/W=50'D=5' Pseud

       Modified       Correction    Initial     Terminal    Available
       JANBU FOS        Factor      x-coord     x-coord      Strength
                                     (ft)        (ft)         (lb)

  1.     1.073          1.057        365.86      1032.19     2.559E+06
  2.     1.074          1.055        339.11      1022.11     2.418E+06
  3.     1.080          1.058        379.57      1033.29     2.561E+06
  4.     1.082          1.057        342.12      1077.67     3.236E+06
  5.     1.083          1.054        360.87      1086.04     2.830E+06
  6.     1.085          1.056        327.76      1069.70     3.089E+06
  7.     1.085          1.056        333.36      1070.15     2.897E+06
  8.     1.089          1.054        344.70      1022.62     2.271E+06
  9.     1.091          1.058        373.82      1080.09     3.043E+06
 10.     1.093          1.058        377.60      1025.42     2.434E+06

                   *     * *  END OF FILE  * * *
```

W.O. 8838

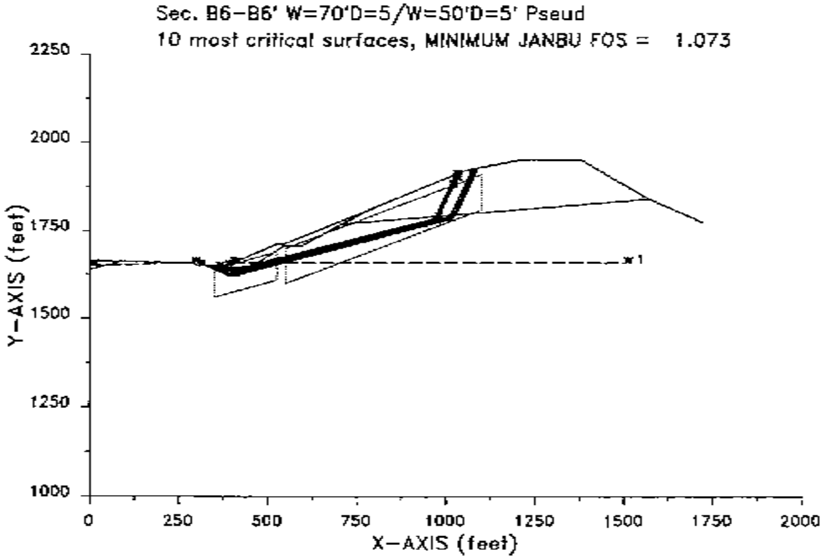
Sec. B6-B6' Pseudostatic

8838B6P 11-22-** 9:26



Sec. B6-B6' W=70'D=5/W=50'D=5' Pseud
5000 surfaces have been generated for this analysis

8838B6P 11-22-** 9:26



Sec. B6-B6' W=70'D=5/W=50'D=5' Pseud
10 most critical surfaces, MINIMUM JANBU FOS = 1.073

GEOLABS-WESTLAKE VILLAGE

Plate B6p.4

W.O. 8838

Sec. B6-B6' Pseudo. Spencer's

```
XSTABL File: 883836PS  11-22-**    9:26

          ******************************************
          *              X S T A B L               *
          *                                        *
          *        Slope Stability Analysis        *
          *              using the                 *
          *           Method of Slices             *
          *                                        *
          *        Copyright (C) 1992 À 96         *
          *   Interactive Software Designs, Inc.   *
          *       Moscow, ID 83843, U.S.A.         *
          *                                        *
          *          All Rights Reserved           *
          *                                        *
          * Ver. 5.201                  96 À 1545  *
          ******************************************

Problem Description : Sec. B6-B6' W=70'D=5/W=50'D=5' PsSpe



-----------------------------
SEGMENT BOUNDARY COORDINATES
-----------------------------

   12 SURFACE boundary segments

Segment   x-left    y-left    x-right   y-right    Soil Unit
  No.      (ft)      (ft)      (ft)      (ft)    Below Segment

   1         .0     1662.0      90.0    1662.0         1
   2       90.0     1662.0     285.0    1658.0         2
   3      285.0     1658.0     301.0    1650.0         2
   4      301.0     1650.0     380.0    1650.0         2
   5      380.0     1650.0     525.0    1712.0         1
   6      525.0     1712.0     545.0    1712.0         1
   7      545.0     1712.0     790.0    1812.0         1
   8      790.0     1812.0    1050.0    1920.0         3
   9     1050.0     1920.0    1200.0    1950.0         3
  10     1200.0     1950.0    1380.0    1950.0         3
  11     1380.0     1950.0    1570.0    1840.0         3
  12     1570.0     1840.0    1720.0    1775.0         2

    8 SUBSURFACE boundary segments

Segment   x-left    y-left    x-right   y-right    Soil Unit
  No.      (ft)      (ft)      (ft)      (ft)    Below Segment

   1         .0     1640.0      90.0    1662.0         2
   2      380.0     1650.0     380.1    1645.0         2
   3      380.1     1645.0     450.0    1645.0         2
   4      450.0     1645.0     545.0    1707.0         2
   5      545.0     1707.0     595.0    1707.0         2
   6      595.0     1707.0     710.0    1770.0         2
   7      710.0     1770.0     790.0    1812.0         3
   8      710.0     1770.0    1570.0    1840.0         2

-----------------------------------
 A CRACKED ZONE HAS BEEN SPECIFIED
-----------------------------------

      Depth of crack below ground surface =  8.00   (feet)
      Maximum depth of water in crack     =   .00   (feet)
      Unit weight of water in crack       = 62.40   (pcf)
```

```
Failure surfaces will have a vertical side equal to the
specified depth of crack and be affected by a hydrostatic
force according to the specified depth of water in the crack


--------------------------
ISOTROPIC Soil Parameters
--------------------------

 3 Soil unit(s) specified

Soil   Unit Weight   Cohesion  Friction    Pore Pressure      Water
Unit  Moist   Sat.   Intercept   Angle   Parameter Constant  Surface
 No.  (pcf)  (pcf)     (psf)     (deg)      Ru       (psf)     No.

  1   125.0  135.0     200.0     34.00     .000        .0       1
  2   130.0  140.0     200.0     40.00     .000        .0       1
  3   130.0  140.0     225.0     40.00     .000        .0       1

--------------------------------
ANISOTROPIC STRENGTH PARAMETERS
specified for  2 Soil Unit(s)
--------------------------------


Soil Unit  2 is ANISOTROPIC

Number of direction ranges specified =  3


Direction     Counterclockwise        c-value      i-value
Range No.   Direction Limit (deg)      (psf)      (degrees)

    1              10.00               225.0        40.00
    2              15.00               100.0        25.00
    3              90.00               225.0        40.00


Soil Unit  3 is ANISOTROPIC

Number of direction ranges specified =  3


Direction     Counterclockwise        c-value      i-value
Range No.   Direction Limit (deg)      (psf)      (degrees)

    1               5.00               225.0        40.00
    2              10.00               100.0        25.00
    3              90.00               225.0        40.00


 1 Water surface(s) have been specified

Unit weight of water =    62.40  (pcf)


Water Surface No.  1 specified by  6 coordinate points

**********************************
        PHREATIC SURFACE,
**********************************

  Point      x-water     y-water
   No.        (ft)        (ft)
```

W.O. 8838
Sec. B6-B6' Pseudo. Spencer's

```
         1            .00        1650.00
         2         285.00        1658.00
         3         301.00        1650.00
         4         380.00        1650.00
         5         396.00        1658.00
         6        1500.00        1658.00


 A horizontal earthquake loading coefficient
 of   .150 has been assigned

 A vertical earthquake loading coefficient
 of   .000 has been assigned

 ---------------------------------------------------------
 A SINGLE FAILURE SURFACE HAS BEEN SPECIFIED FOR ANALYSIS
 ---------------------------------------------------------

 Trial failure surface specified by
 the following  8 coordinate points :

        Point       x-surf       y-surf
         No.         (ft)         (ft)

          1         365.86      1650.00
          2         407.70      1630.49
          3         974.61      1781.13
          4         979.66      1791.95
          5        1021.92      1882.58
          6        1032.19      1904.60
          7        1032.19      1904.60
          8        1032.19      1912.60


 ****************************************************
 SELECTED METHOD OF ANALYSIS:  Spencer (1973)
 ****************************************************



 ****************************************
 SUMMARY OF INDIVIDUAL SLICE INFORMATION
 ****************************************

 Slice  x-base    y-base  height   width   alpha     beta     weight
         (ft)      (ft)    (ft)    (ft)                        (lb)

    1   372.93   1646.70    3.30   14.14  -25.00       .00      6526.
    2   380.05   1643.38    6.64     .10  -25.00     23.15        92.
    3   388.05   1639.65   13.79   15.90  -25.00     23.15     30024.
    4   401.85   1633.22   26.12   11.70  -25.00     23.15     41796.
    5   428.85   1636.11   34.78   42.30   14.88     23.15    195026.
    6   480.61   1649.86   43.16   61.23   14.88     23.15    339916.
    7   518.11   1659.83   49.23   13.77   14.88     23.15     86773.
    8   535.00   1664.32   47.68   20.00   14.88       .00    122825.
    9   570.00   1673.62   48.59   50.00   14.88     22.20    312018.
   10   652.50   1695.54   60.34  115.00   14.88     22.20    892076.
   11   750.00   1721.45   74.23   80.00   14.88     22.20    770092.
   12   882.30   1756.60   93.74  184.61   14.88     22.56   2249679.
   13   977.14   1786.54  103.19    5.05   64.98     22.56     67746.
   14  1000.79   1837.26   62.29   42.26   65.00     22.56    342231.
   15  1027.05   1893.59   16.89   10.27   65.00     22.56     22535.

 --------------------------------
 ITERATIONS FOR SPENCER'S METHOD
 --------------------------------
```

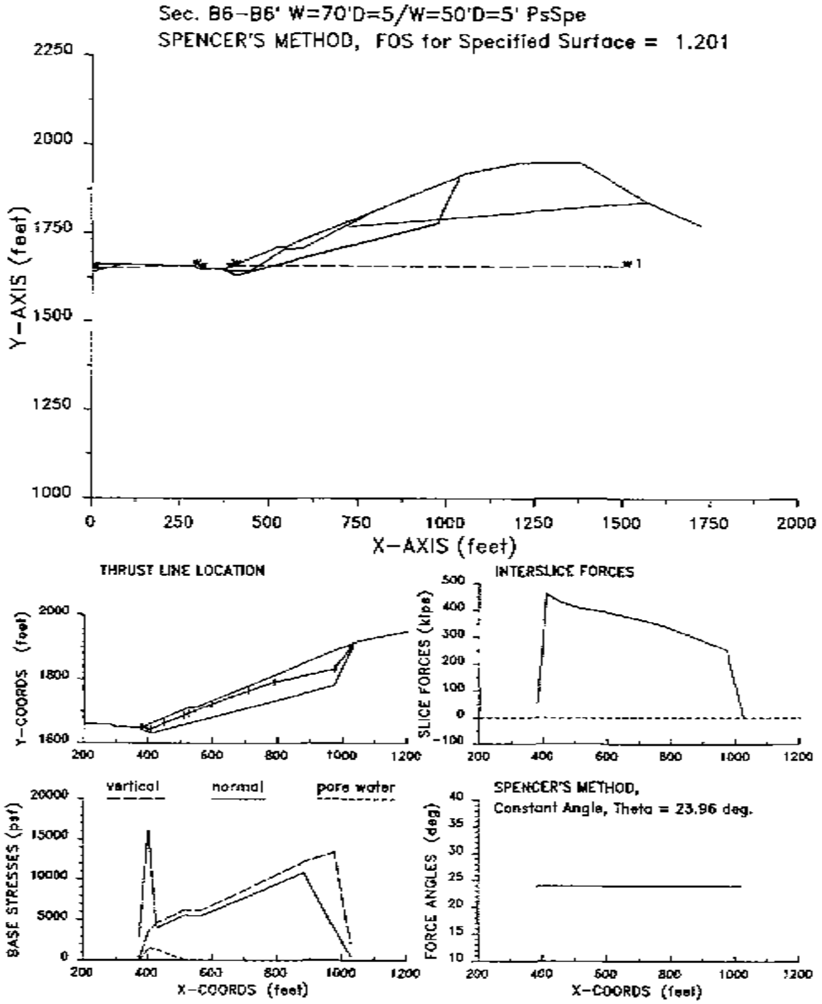
```
      Iter #        Theta        FOS_force       FOS_moment
         2         25.6036         1.2386          1.1571
         3         22.9147         -----           1.2386
         3         24.2591         1.2077          -----
         4         23.7545         1.1972          1.2077
         5         24.0828         -----           1.1972
         5         23.9186         1.2006          -----
         6         23.9753         1.2017          1.2006
         7         23.9569         1.2014          1.2017


 SLICE INFORMATION ... continued :

 Slice    Sigma    c-value   phi     U-base      U-top      P-top     Delta
          (psf)     (psf)             (lb)        (lb)       (lb)

    1    2794.4    225.0    40.00     3210.         0.         0.       .00
    2    4869.1    225.0    40.00       37.         0.         0.       .00
    3    8974.7    225.0    40.00    12587.       629.         0.       .00
    4   14530.9    225.0    40.00    19963.         0.         0.       .00
    5    2661.2    100.0    25.00    59784.         0.         0.       .00
    6    4413.6    100.0    25.00    32160.         0.         0.       .00
    7    5622.2    100.0    25.00        0.         0.         0.       .00
    8    5479.7    100.0    25.00        0.         0.         0.       .00
    9    5567.9    100.0    25.00        0.         0.         0.       .00
   10    6917.8    100.0    25.00        0.         0.         0.       .00
   11    8581.1    100.0    25.00        0.         0.         0.       .00
   12   10859.4    100.0    25.00        0.         0.         0.       .00
   13    3888.7    225.0    40.00        0.         0.         0.       .00
   14    2305.5    225.0    40.00        0.         0.         0.       .00
   15     557.2    225.0    40.00        0.         0.         0.       .00


 -------------------------------------------------------------
 SPENCER'S (1973)  - TOTAL Stresses at center of slice base
 -------------------------------------------------------------

 Slice    Base       Normal    Vertical   Pore Water     Shear
   #     x-coord     Stress     Stress     Pressure      Stress
          (ft)       (psf)      (psf)       (psf)        (psf)

    1    372.93     3000.1      461.5       205.7       2138.9
    2    380.05     5200.7      917.0       331.6       3587.9
    3    388.05     9692.2     1924.7       717.5       6455.3
    4    401.85    16077.3     3572.3      1546.4      10335.8
    5    428.85     4027.1     4610.5      1365.9       1116.1
    6    480.61     4921.3     5551.5       507.6       1796.3
    7    518.11     5622.2     6301.4          .0       2265.3
    8    535.00     5479.7     6141.3          .0       2210.0
    9    570.00     5567.9     6240.4          .0       2244.3
   10    652.50     6917.8     7757.2          .0       2768.2
   11    750.00     8581.1     9626.1          .0       3413.8
   12    882.30    10859.4    12186.1          .0       4298.0
   13    977.14     3888.7    13415.1          .0       2903.2
   14   1000.79     2305.5     8098.2          .0       1797.4
   15   1027.05      557.2     2194.3          .0        576.4


 ----------------------------------------------------------------
 SPENCER'S (1973)  - Magnitude & Location of Interslice Forces
 ----------------------------------------------------------------

 Slice   Right     Force     Interslice    Force   Boundary  Height
   #    x-coord    Angle       Force      Height    Height    Ratio
          (ft)   (degrees)     (lb)        (ft)      (ft)

    1    380.00    23.96      53670.       6.40      6.59     .971
    2    380.10    23.96      54313.       6.42      6.68     .960
    3    396.00    23.96     240604.      10.19     20.90     .488
```

W.O. 8838

Sec. B6-B6' Pseudo. Spencer's

```
     4     407.70      23.96      462054.     13.21      31.35      .421
     5     450.00      23.96      432172.     20.66      38.20      .541
     6     511.23      23.96      409114.     30.15      48.11      .627
     7     525.00      23.96      406494.     31.96      50.34      .635
     8     545.00      23.96      402834.     34.65      45.03      .770
     9     595.00      23.96      393461.     41.37      52.15      .793
    10     710.00      23.96      364064.     54.02      58.53      .788
    11     790.00      23.96      336895.     59.35      79.92      .743
    12     974.61      23.96      252960.     49.13     107.55      .457
    13     979.66      23.96      211842.     46.54      98.83      .471
    14    1021.92      23.96       10145.     11.69      25.76      .454
    15    1032.19        .00        -460.       .15       8.00      .018


-------------------------------------------------------------------
  AVERAGE VALUES ALONG FAILURE SURFACE
-------------------------------------------------------------------

        Total Normal Stress =    7049.07  (psf)
        Pore Water Pressure =     166.12  (psf)
        Shear Stress        =    3068.03  (psf)

        Total Length of failure surface =  768.98 feet

-------------------------------------------------------------------


      For the single specified surface and the assumed angle
      of the interslice forces, the SPENCER'S (1973)
      procedure gives a

                 FACTOR OF SAFETY =    1.201

      Total shear strength available
      along specified failure surface =  276.16E+04    lb
```

B83886PS 11-22-** 9:26



Sec. B6-B6' W=70'D=5/W=50'D=5' PsSpe
SPENCER'S METHOD, FOS for Specified Surface = 1.201

W.O. 8838

Sec. B6-B6' Backcut

```
XSTABL File: 8838B6B   11-22-**    9:32

          ******************************************
          *              X S T A B L               *
          *                                        *
          *        Slope Stability Analysis        *
          *              using the                 *
          *           Method of Slices             *
          *                                        *
          *        Copyright (C) 1992 À 96         *
          *    Interactive Software Designs, Inc.  *
          *       Moscow, ID 83843, U.S.A.         *
          *                                        *
          *          All Rights Reserved           *
          *                                        *
          *  Ver. 5.201                96 À 1545   *
          ******************************************

    Problem Description : Sec. B6-B6' Backcut


    ----------------------------
    SEGMENT BOUNDARY COORDINATES
    ----------------------------

       15 SURFACE boundary segments

    Segment    x-left    y-left    x-right   y-right     Soil Unit
      No.       (ft)      (ft)      (ft)      (ft)     Below Segment

       1          .0     1662.0      90.0    1662.0          1
       2        90.0     1662.0     285.0    1658.0          2
       3       285.0     1658.0     301.0    1650.0          2
       4       301.0     1650.0     380.0    1650.0          2
       5       380.0     1650.0     380.1    1645.0          2
       6       380.1     1645.0     450.0    1645.0          2
       7       450.0     1645.0     545.0    1707.0          2
       8       545.0     1707.0     595.0    1707.0          2
       9       595.0     1707.0     710.0    1770.0          2
      10       710.0     1770.0     790.0    1812.0          3
      11       790.0     1812.0    1050.0    1920.0          3
      12      1050.0     1920.0    1200.0    1950.0          3
      13      1200.0     1950.0    1380.0    1950.0          3
      14      1380.0     1950.0    1570.0    1840.0          3
      15      1570.0     1840.0    1720.0    1775.0          2

        2 SUBSURFACE boundary segments

    Segment    x-left    y-left    x-right   y-right     Soil Unit
      No.       (ft)      (ft)      (ft)      (ft)     Below Segment

       1          .0     1640.0      90.0    1662.0          2
       2       710.0     1770.0    1570.0    1840.0          2

    ----------------------------------
     A CRACKED ZONE HAS BEEN SPECIFIED
    ----------------------------------

       Depth of crack below ground surface =  8.00   [feet]
       Maximum depth of water in crack     =   .00   [feet]
       Unit weight of water in crack       = 62.40   [pcf]

    Failure surfaces will have a vertical side equal to the
    specified depth of crack and be affected by a hydrostatic
    force according to the specified depth of water in the crack
```

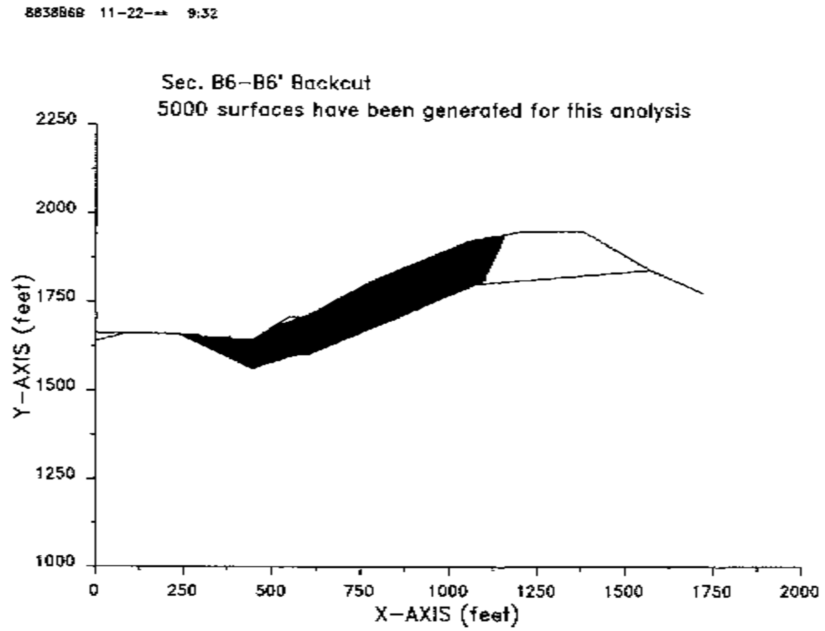
```
    -------------------------
    ISOTROPIC Soil Parameters
    -------------------------

     3 Soil unit(s) specified

    Soil   Unit Weight   Cohesion  Friction    Pore Pressure      Water
    Unit  Moist    Sat.  Intercept   Angle  Parameter Constant  Surface
     No.  (pcf)   (pcf)    (psf)     (deg)      Ru      (psf)      No.

      1   125.0   135.0    200.0     34.00     .000        .0       0
      2   130.0   140.0    200.0     40.00     .000        .0       0
      3   130.0   140.0    225.0     40.00     .000        .0       0


    -------------------------------
    ANISOTROPIC STRENGTH PARAMETERS
    specified for  2 Soil Unit(s)
    -------------------------------


    Soil Unit  2 is ANISOTROPIC

    Number of direction ranges specified =  3

    Direction     Counterclockwise        c-value      i-value
    Range No.   Direction Limit (deg)      (psf)      (degrees)

        1               10.00              225.0        40.00
        2               15.00              100.0        25.00
        3               90.00              225.0        40.00


    Soil Unit  3 is ANISOTROPIC

    Number of direction ranges specified =  3

    Direction     Counterclockwise        c-value      i-value
    Range No.   Direction Limit (deg)      (psf)      (degrees)

        1                5.00              225.0        40.00
        2               10.00              100.0        25.00
        3               90.00              225.0        40.00


    A critical failure surface searching method, using a random
    technique for generating sliding BLOCK surfaces, has been
    specified.


    The active and passive portions of the sliding surfaces
    are generated according to the Rankine theory.


     5000 trial surfaces will be generated and analyzed.


      2 boxes specified for generation of central block base


    Length of line segments for active and passive portions of
    sliding block is    100.0 ft
```

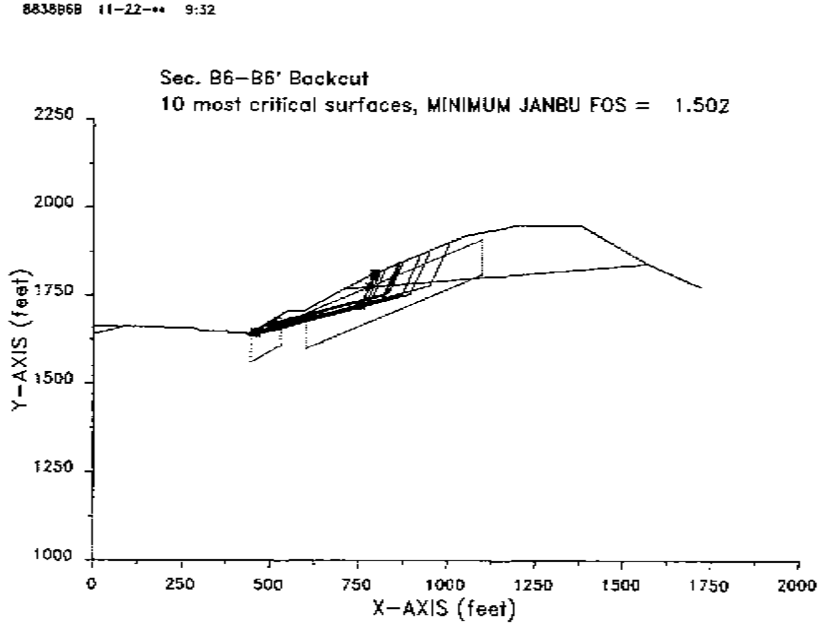
W.O. 8838
Sec. B6-B6' Backcut

```
 Box       x-left      y-left     x-right     y-right      Width
 no.        (ft)        (ft)        (ft)        (ft)        (ft)

  1        445.0      1600.0       530.0      1650.0       80.0
  2        600.0      1650.0      1100.0      1860.0      100.0



Factors of safety have been calculated by the :

* * * * *   SIMPLIFIED JANBU METHOD   * * * * *


The 10 most critical of all the failure surfaces examined
are displayed below - the most critical first

Failure surface No. 1 specified by  6 coordinate points

      Point      x-surf      y-surf
       No.        (ft)        (ft)

        1        454.49     1647.93
        2        461.77     1644.53
        3        754.97     1721.41
        4        780.30     1775.72
        5        794.33     1805.80
        6        794.33     1813.80

 **  Corrected JANBU FOS =    1.502  **    (Fo factor = 1.066)

Failure surface No. 2 specified by  6 coordinate points

      Point      x-surf      y-surf
       No.        (ft)        (ft)

        1        456.24     1649.07
        2        465.65     1644.69
        3        872.24     1753.56
        4        886.61     1784.38
        5        921.17     1858.49
        6        921.17     1866.49

 **  Corrected JANBU FOS =    1.502  **    (Fo factor = 1.062)

Failure surface No. 3 specified by  6 coordinate points

      Point      x-surf      y-surf
       No.        (ft)        (ft)

        1        463.44     1653.77
        2        467.46     1651.90
        3        771.78     1730.16
        4        793.53     1776.80
        5        810.11     1812.35
        6        810.11     1820.35

 **  Corrected JANBU FOS =    1.505  **    (Fo factor = 1.064)

Failure surface No. 4 specified by  6 coordinate points

      Point      x-surf      y-surf
       No.        (ft)        (ft)

        1        482.85     1666.44
        2        490.88     1662.69
        3        818.83     1750.26
        4        832.70     1779.99
        5        856.84     1831.76
        6        856.84     1839.76

 **  Corrected JANBU FOS =    1.512  **    (Fo factor = 1.062)

Failure surface No. 5 specified by  6 coordinate points

      Point      x-surf      y-surf
       No.        (ft)        (ft)

        1        429.82     1645.00
        2        449.31     1635.92
        3        895.55     1754.95
        4        910.17     1786.29
        5        949.28     1870.16
        6        949.28     1878.16

 **  Corrected JANBU FOS =    1.513  **    (Fo factor = 1.062)

Failure surface No. 6 specified by  7 coordinate points

      Point      x-surf      y-surf
       No.        (ft)        (ft)

        1        467.43     1656.37
        2        477.00     1651.91
        3        951.08     1778.64
        4        956.40     1790.06
        5        998.66     1880.69
        6       1004.44     1893.08
        7       1004.44     1901.08

 **  Corrected JANBU FOS =    1.513  **    (Fo factor = 1.060)

Failure surface No. 7 specified by  6 coordinate points

      Point      x-surf      y-surf
       No.        (ft)        (ft)

        1        456.41     1649.19
        2        471.68     1642.07
        3        870.70     1748.90
        4        887.27     1784.43
        5        921.95     1858.81
        6        921.95     1866.81

 **  Corrected JANBU FOS =    1.516  **    (Fo factor = 1.064)

Failure surface No. 8 specified by  6 coordinate points

      Point      x-surf      y-surf
       No.        (ft)        (ft)

        1        425.61     1645.00
        2        445.43     1635.76
        3        778.29     1722.80
        4        803.86     1777.64
        5        822.43     1817.47
        6        822.43     1825.47

 **  Corrected JANBU FOS =    1.519  **    (Fo factor = 1.065)
```

W.O. 8838
Sec. B6-B6' Backcut

```
Failure surface No. 9 specified by  6 coordinate points

       Point       x-surf       y-surf
        No.         (ft)         (ft)

         1         456.88      1649.49
         2         473.47      1641.76
         3         815.46      1733.07
         4         837.52      1780.38
         5         862.60      1834.16
         6         862.60      1842.16

 **  Corrected JANBU FOS =   1.521  **     (Fo factor = 1.066)

Failure surface No.10 specified by  6 coordinate points

       Point       x-surf       y-surf
        No.         (ft)         (ft)

         1         491.81      1572.28
         2         496.57      1670.06
         3         835.64      1759.01
         4         845.92      1781.06
         5         872.62      1838.32
         6         872.62      1846.32

 **  Corrected JANBU FOS =   1.522  **     (Fo factor = 1.060)




The following is a summary of the TEN most critical surfaces

Problem Description : Sec. B6-B6' Backcut

       Modified      Correction    Initial     Terminal    Available
       JANBU FOS       Factor      x-coord     x-coord     Strength
                                    (ft)        (ft)         (lb)

 1.      1.502         1.066       454.49      794.33     9.033E+05
 2.      1.502         1.062       456.24      921.17     1.583E+06
 3.      1.505         1.064       463.44      810.11     8.765E+05
 4.      1.512         1.062       482.85      856.84     9.622E+05
 5.      1.513         1.062       429.82      949.28     1.905E+06
 6.      1.513         1.060       467.43     1004.44     1.970E+06
 7.      1.516         1.054       456.41      921.95     1.711E+06
 8.      1.519         1.065       425.61      822.43     1.170E+06
 9.      1.521         1.066       456.88      862.60     1.386E+06
10.      1.522         1.060       491.81      872.62     9.214E+05

                  *    * *  END OF FILE  * * *
```





GEOLABS-WESTLAKE VILLAGE

W.O. 8838
Sec. C-C' W=110' D=5'

```
XSTABL File: 8838C     11-13-**   12:22

          ******************************************
          *              X S T A B L               *
          *                                        *
          *        Slope Stability Analysis        *
          *               using the                *
          *            Method of Slices            *
          *                                        *
          *         Copyright (C) 1992 Ã 96        *
          *   Interactive Software Designs, Inc.   *
          *        Moscow, ID 83843, U.S.A.        *
          *                                        *
          *           All Rights Reserved          *
          *                                        *
          * Ver. 5.201                  96 Ã 1545  *
          ******************************************


 Problem Description : Sec. C-C' W=110' D=5'



 ----------------------------
 SEGMENT BOUNDARY COORDINATES
 ----------------------------

    9 SURFACE boundary segments

 Segment    x-left    y-left    x-right   y-right     Soil Unit
   No.       (ft)      (ft)       (ft)      (ft)     Below Segment

    1          .0     1936.0     280.0    1943.0          1
    2        280.0    1943.0     355.0    1975.0          1
    3        355.0    1975.0     365.0    1975.0          1
    4        365.0    1975.0     381.0    1962.0          1
    5        381.0    1962.0     510.0    1962.0          1
    6        510.0    1962.0     530.0    1962.0          2
    7        530.0    1962.0     725.0    2040.0          1
    8        725.0    2040.0     800.0    2025.0          1
    9        800.0    2025.0    1015.0    1985.0          2

    8 SUBSURFACE boundary segments

 Segment    x-left    y-left    x-right   y-right     Soil Unit
   No.       (ft)      (ft)       (ft)      (ft)     Below Segment

    1          .0     1875.0     280.0    1938.0          2
    2        280.0    1938.0     310.0    1938.0          2
    3        310.0    1938.0     381.0    1957.0          2
    4        381.0    1957.0     509.0    1957.0          2
    5        509.0    1957.0     510.0    1962.0          2
    6        530.0    1962.0     530.1    1957.0          2
    7        530.1    1957.0     640.0    1957.0          2
    8        640.0    1957.0     800.0    2025.0          2


 ----------------------------------
  A CRACKED ZONE HAS BEEN SPECIFIED
 ----------------------------------

     Depth of crack below ground surface =  8.00   (feet)
     Maximum depth of water in crack      =   .00   (feet)
     Unit weight of water in crack        = 62.40   (pcf)

 Failure surfaces will have a vertical side equal to the
 specified depth of crack and be affected by a hydrostatic
 force according to the specified depth of water in the crack
```

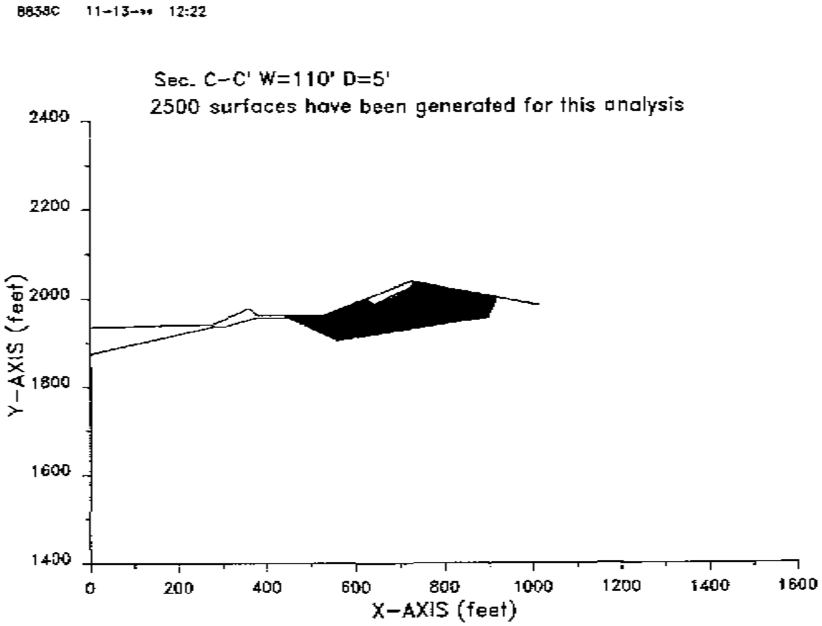
```
 --------------------------
 ISOTROPIC Soil Parameters
 --------------------------

  2 Soil unit(s) specified

 Soil    Unit Weight    Cohesion  Friction    Pore Pressure       Water
 Unit  Moist    Sat.   Intercept   Angle   Parameter  Constant   Surface
  No.  (pcf)   (pcf)     (psf)     (deg)      Ru        (psf)      No.

   1   125.0   130.0     200.0     34.00     .000         .0        0
   2   130.0   140.0     225.0     40.00     .000         .0        0


 -------------------------------
 ANISOTROPIC STRENGTH PARAMETERS
 specified for  1 Soil Unit(s)
 -------------------------------


 Soil Unit  2 is ANISOTROPIC

 Number of direction ranges specified =  3

 Direction      Counterclockwise        c-value      i-value
 Range No.   Direction Limit (deg)       (psf)     (degrees)

     1              21.00                225.0       40.00
     2              24.00                150.0       11.00
     3              90.00                225.0       40.00


 A critical failure surface searching method, using a random
 technique for generating sliding BLOCK surfaces, has been
 specified.


 The active and passive portions of the sliding surfaces
 are generated according to the Rankine theory.


  2500 trial surfaces will be generated and analyzed.


   2 boxes specified for generation of central block base


 Length of line segments for active and passive portions of
 sliding block is     100.0 ft


 Box        x-left     y-left     x-right    y-right      Width
 no.         (ft)       (ft)       (ft)       (ft)         (ft)

  1         560.0     1930.0      670.0     1950.0        50.0
  2         730.0     2010.0      900.0     1980.0        50.0


 Factors of safety have been calculated by the :

 * * * * *   SIMPLIFIED JANBU METHOD    * * * * *
```

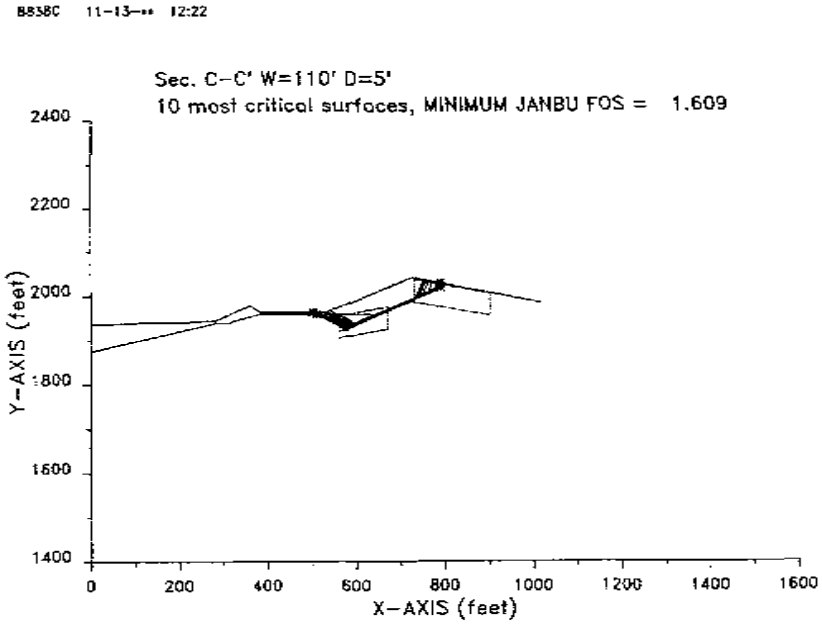
W.O. 8838
Sec. C-C' W=110' D=5'

```
The 10 most critical of all the failure surfaces examined
are displayed below - the most critical first

Failure surface No. 1 specified by  5 coordinate points

      Point      x-surf      y-surf
       No.        (ft)        (ft)

        1        500.72     1962.00
        2        509.11     1957.54
        3        572.94     1927.77
        4        789.74     2019.05
        5        789.74     2027.05

 **  Corrected JANBU FOS =   1.609  **    (Fo factor = 1.064)

Failure surface No. 2 specified by  6 coordinate points

      Point      x-surf      y-surf
       No.        (ft)        (ft)

        1        524.35     1962.00
        2        530.06     1958.96
        3        533.75     1957.00
        4        585.90     1932.68
        5        793.80     2018.24
        6        793.80     2026.24

 **  Corrected JANBU FOS =   1.610  **    (Fo factor = 1.061)

Failure surface No. 3 specified by  5 coordinate points

      Point      x-surf      y-surf
       No.        (ft)        (ft)

        1        532.70     1963.08
        2        544.14     1957.00
        3        589.53     1935.83
        4        797.61     2017.48
        5        797.61     2025.48

 **  Corrected JANBU FOS =   1.611  **    (Fo factor = 1.058)

Failure surface No. 4 specified by  7 coordinate points

      Point      x-surf      y-surf
       No.        (ft)        (ft)

        1        497.22     1962.00
        2        506.62     1957.00
        3        568.34     1928.22
        4        746.93     1997.43
        5        749.84     2003.68
        6        761.07     2024.79
        7        761.07     2032.79

 **  Corrected JANBU FOS =   1.631  **    (Fo factor = 1.069)

Failure surface No. 5 specified by  6 coordinate points

      Point      x-surf      y-surf
       No.        (ft)        (ft)

        1        510.93     1962.00
        2        582.29     1928.72
        3        777.63     2014.88
        4        777.98     2015.64
        5        780.75     2020.85
        6        780.75     2028.85

 **  Corrected JANBU FOS =   1.643  **    (Fo factor = 1.067)

Failure surface No. 6 specified by  7 coordinate points

      Point      x-surf      y-surf
       No.        (ft)        (ft)

        1        498.12     1962.00
        2        507.53     1957.00
        3        570.23     1927.76
        4        738.52     1994.77
        5        740.91     1999.89
        6        754.81     2026.04
        7        754.81     2034.04

 **  Corrected JANBU FOS =   1.649  **    (Fo factor = 1.071)

Failure surface No. 7 specified by  7 coordinate points

      Point      x-surf      y-surf
       No.        (ft)        (ft)

        1        539.28     1965.71
        2        555.66     1957.00
        3        596.76     1937.84
        4        761.58     2007.35
        5        762.34     2009.00
        6        769.81     2023.04
        7        769.81     2031.04

 **  Corrected JANBU FOS =   1.655  **    (Fo factor = 1.067)

Failure surface No. 8 specified by  7 coordinate points

      Point      x-surf      y-surf
       No.        (ft)        (ft)

        1        502.94     1962.00
        2        509.32     1958.61
        3        573.96     1928.47
        4        732.95     1992.45
        5        735.31     1997.51
        6        750.89     2026.82
        7        750.89     2034.82

 **  Corrected JANBU FOS =   1.659  **    (Fo factor = 1.072)

Failure surface No. 9 specified by  6 coordinate points

      Point      x-surf      y-surf
       No.        (ft)        (ft)

        1        511.62     1962.00
        2        579.52     1930.34
        3        730.21     1990.46
        4        733.05     1996.55
        5        749.31     2027.14
        6        749.31     2035.14

 **  Corrected JANBU FOS =   1.667  **    (Fo factor = 1.072)
```

W.O. 8838
Sec. C-C' W=110' D=5'

```
Failure surface No.10 specified by  5 coordinate points

       Point      x-surf      y-surf
        No.        (ft)        (ft)

         1        500.68      1962.00
         2        509.10      1957.52
         3        578.89      1924.98
         4        792.66      2018.47
         5        792.66      2026.47

 **  Corrected JANBU FOS =    1.686  **     (Fo factor = 1.067)



The following is a summary of the TEN most critical surfaces

Problem Description : Sec. C-C' W=110' D=5'

      Modified       Correction    Initial     Terminal     Available
      JANBU FOS        Factor      x-coord     x-coord      Strength
                                    (ft)        (ft)          (lb)

 1.      1.609          1.064      500.72      789.74      5.525E+05
 2.      1.610          1.061      524.35      793.80      5.245E+05
 3.      1.611          1.058      532.70      797.61      4.999E+05
 4.      1.631          1.069      497.22      761.07      5.490E+05
 5.      1.643          1.067      510.93      780.75      5.600E+05
 6.      1.649          1.071      498.12      754.81      5.569E+05
 7.      1.655          1.067      539.28      769.81      4.811E+05
 8.      1.659          1.072      502.94      750.89      5.558E+05
 9.      1.667          1.072      511.62      749.31      5.469E+05
10.      1.686          1.067      500.68      792.66      6.148E+05

               *     * *  END OF FILE  * * *
```





GEOLABS-WESTLAKE VILLAGE

Plate C.3

W.O. 8838

Sec. C-C' Pseudo

```
XSTABL File: 8838CP    11-13-**   12:23

          ******************************************
          *              X S T A B L               *
          *                                        *
          *        Slope Stability Analysis        *
          *               using the                *
          *            Method of Slices            *
          *                                        *
          *        Copyright (C) 1992 Ã 96         *
          *   Interactive Software Designs, Inc.   *
          *        Moscow, ID 83843, U.S.A.        *
          *                                        *
          *          All Rights Reserved           *
          *                                        *
          * Ver. 5.201                  96 Ã 1545  *
          ******************************************


Problem Description : Sec. C-C' W=110' D=5' Pseudo



----------------------------
SEGMENT BOUNDARY COORDINATES
----------------------------

   9 SURFACE boundary segments

Segment    x-left    y-left    x-right   y-right    Soil Unit
  No.       (ft)      (ft)      (ft)      (ft)    Below Segment

  1           .0    1936.0     280.0    1943.0          1
  2        280.0    1943.0     355.0    1975.0          1
  3        355.0    1975.0     365.0    1975.0          1
  4        365.0    1975.0     381.0    1962.0          1
  5        381.0    1962.0     510.0    1962.0          1
  6        510.0    1962.0     530.0    1962.0          2
  7        530.0    1962.0     725.0    2040.0          1
  8        725.0    2040.0     800.0    2025.0          1
  9        800.0    2025.0    1015.0    1985.0          2


   8 SUBSURFACE boundary segments

Segment    x-left    y-left    x-right   y-right    Soil Unit
  No.       (ft)      (ft)      (ft)      (ft)    Below Segment

  1           .0    1875.0     280.0    1938.0          2
  2        280.0    1938.0     310.0    1938.0          2
  3        310.0    1938.0     381.0    1957.0          2
  4        381.0    1957.0     509.0    1957.0          2
  5        509.0    1957.0     510.0    1962.0          2
  6        530.0    1962.0     530.1    1957.0          2
  7        530.1    1957.0     640.0    1957.0          2
  8        640.0    1957.0     800.0    2025.0          2


 -----------------------------------
 A CRACKED ZONE HAS BEEN SPECIFIED
 -----------------------------------

    Depth of crack below ground surface =  8.00   (feet)
    Maximum depth of water in crack     =   .00   (feet)
    Unit weight of water in crack       = 62.40   (pcf)

Failure surfaces will have a vertical side equal to the
specified depth of crack and be affected by a hydrostatic
force according to the specified depth of water in the crack
```

```
--------------------------
ISOTROPIC Soil Parameters
--------------------------

 2 Soil unit(s) specified

Soil   Unit Weight   Cohesion  Friction     Pore Pressure      Water
Unit  Moist    Sat.  Intercept   Angle   Parameter Constant  Surface
 No.  (pcf)   (pcf)    (psf)     (deg)       Ru      (psf)      No.

  1   125.0   130.0    200.0     34.00     .000        .0       0
  2   130.0   140.0    225.0     40.00     .000        .0       0


--------------------------------
ANISOTROPIC STRENGTH PARAMETERS
specified for  1 Soil Unit(s)
--------------------------------


Soil Unit  2 is ANISOTROPIC

Number of direction ranges specified =  3

Direction     Counterclockwise        c-value      i-value
Range No.   Direction Limit (deg)      (psf)      (degrees)

    1              21.00               225.0        40.00
    2              24.00               150.0        11.00
    3              90.00               225.0        40.00


A horizontal earthquake loading coefficient
of   .150 has been assigned

A vertical earthquake loading coefficient
of   .000 has been assigned


A critical failure surface searching method, using a random
technique for generating sliding BLOCK surfaces, has been
specified.


The active and passive portions of the sliding surfaces
are generated according to the Rankine theory.


 2500 trial surfaces will be generated and analyzed.


  2 boxes specified for generation of central block base


Length of line segments for active and passive portions of
sliding block is    100.0 ft


Box         x-left     y-left     x-right    y-right      Width
no.          (ft)       (ft)       (ft)       (ft)        (ft)

 1          560.0     1930.0      670.0     1950.0        50.0
```

W.O. 8838
Sec. C-C' Pseudo

```
  2          730.0     2010.0      900.0      1980.0       50.0


Factors of safety have been calculated by the :

* * * * *   SIMPLIFIED JANBU METHOD   * * * * *


The 10 most critical of all the failure surfaces examined
are displayed below - the most critical first

Failure surface No. 1 specified by  5 coordinate points

      Point        x-surf       y-surf
       No.          (ft)         (ft)

        1          532.70       1963.08
        2          544.14       1957.00
        3          589.53       1935.83
        4          797.61       2017.48
        5          797.61       2025.48

 **  Corrected JANBU FOS =    1.120  **     (Fo factor = 1.058)


Failure surface No. 2 specified by  6 coordinate points

      Point        x-surf       y-surf
       No.          (ft)         (ft)

        1          524.35       1962.00
        2          530.06       1958.96
        3          533.75       1957.00
        4          585.90       1932.68
        5          793.80       2018.24
        6          793.80       2026.24

 **  Corrected JANBU FOS =    1.133  **     (Fo factor = 1.061)


Failure surface No. 3 specified by  5 coordinate points

      Point        x-surf       y-surf
       No.          (ft)         (ft)

        1          500.72       1962.00
        2          509.11       1957.54
        3          572.94       1927.77
        4          789.74       2019.05
        5          789.74       2027.05

 **  Corrected JANBU FOS =    1.139  **     (Fo factor = 1.064)


Failure surface No. 4 specified by  7 coordinate points

      Point        x-surf       y-surf
       No.          (ft)         (ft)

        1          497.22       1962.00
        2          506.62       1957.00
        3          568.34       1928.22
        4          746.93       1997.43
        5          749.84       2003.68
        6          761.07       2024.79
        7          761.07       2032.79

 **  Corrected JANBU FOS =    1.152  **     (Fo factor = 1.069)
```

```
Failure surface No. 5 specified by  7 coordinate points

      Point        x-surf       y-surf
       No.          (ft)         (ft)

        1          539.28       1965.71
        2          555.66       1957.00
        3          596.76       1937.84
        4          761.58       2007.35
        5          762.34       2009.00
        6          769.81       2023.04
        7          769.81       2031.04

 **  Corrected JANBU FOS =    1.171  **     (Fo factor = 1.067)


Failure surface No. 6 specified by  6 coordinate points

      Point        x-surf       y-surf
       No.          (ft)         (ft)

        1          510.93       1962.00
        2          582.29       1928.72
        3          777.63       2014.88
        4          777.98       2015.64
        5          780.75       2020.85
        6          780.75       2028.85

 **  Corrected JANBU FOS =    1.172  **     (Fo factor = 1.067)


Failure surface No. 7 specified by  7 coordinate points

      Point        x-surf       y-surf
       No.          (ft)         (ft)

        1          498.12       1962.00
        2          507.53       1957.00
        3          570.23       1927.76
        4          738.52       1994.77
        5          740.91       1999.89
        6          754.81       2026.04
        7          754.81       2034.04

 **  Corrected JANBU FOS =    1.175  **     (Fo factor = 1.071)


Failure surface No. 8 specified by  6 coordinate points

      Point        x-surf       y-surf
       No.          (ft)         (ft)

        1          526.02       1962.00
        2          530.04       1959.86
        3          535.42       1957.00
        4          591.81       1930.71
        5          797.96       2017.41
        6          797.96       2025.41

 **  Corrected JANBU FOS =    1.182  **     (Fo factor = 1.063)


Failure surface No. 9 specified by  7 coordinate points

      Point        x-surf       y-surf
       No.          (ft)         (ft)

        1          496.27       1962.00
```

W.O. 8838
Sec. C-C' Pseudo

```
         2         505.67     1957.00
         3         572.39     1925.89
         4         757.60     1999.33
         5         762.04     2008.87
         6         769.60     2023.08
         7         769.60     2031.08

  **  Corrected JANBU FOS =   1.185  **    (Fo factor = 1.070)


Failure surface No.10 specified by  7 coordinate points

       Point       x-surf      y-surf
        No.         (ft)        (ft)

         1         502.94     1962.00
         2         509.32     1958.61
         3         573.96     1928.47
         4         732.95     1992.45
         5         735.31     1997.51
         6         750.89     2026.82
         7         750.89     2034.82

  **  Corrected JANBU FOS =   1.189  **    (Fo factor = 1.072)



The following is a summary of the TEN most critical surfaces

Problem Description : Sec. C-C' W=110' D=5' Pseudo

       Modified      Correction    Initial     Terminal    Available
      JANBU FOS        Factor      x-coord     x-coord      Strength
                                    (ft)        (ft)          (lb)

  1.      1.120         1.058      532.70      797.61     5.380E+05
  2.      1.133         1.061      524.35      793.80     5.646E+05
  3.      1.139         1.064      500.72      789.74     5.944E+05
  4.      1.152         1.069      497.22      761.07     5.822E+05
  5.      1.171         1.067      539.28      769.81     5.136E+05
  6.      1.172         1.067      510.93      780.75     6.014E+05
  7.      1.175         1.071      498.12      754.81     5.887E+05
  8.      1.182         1.063      526.02      797.96     6.196E+05
  9.      1.185         1.070      496.27      769.60     6.382E+05
 10.      1.189         1.072      502.94      750.89     5.858E+05

               *     * *  END OF FILE  * * *
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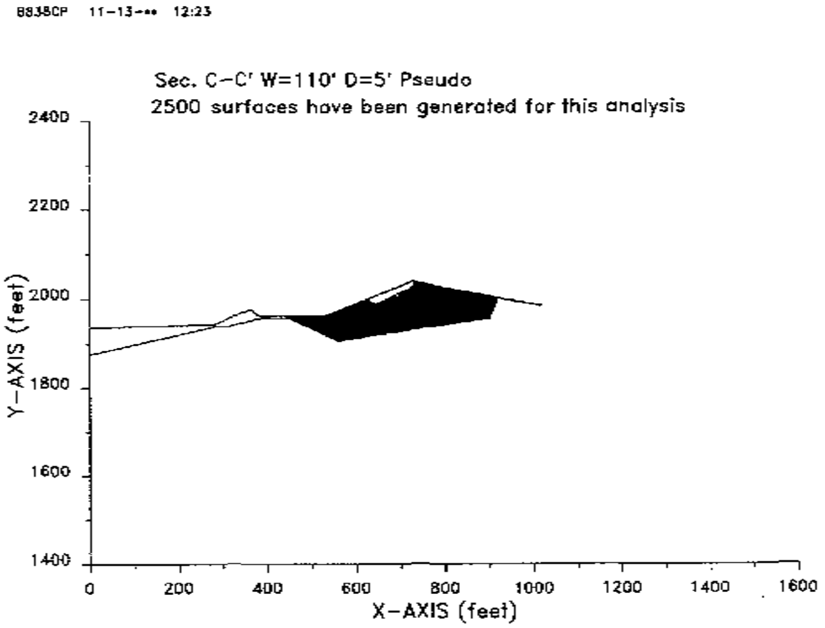
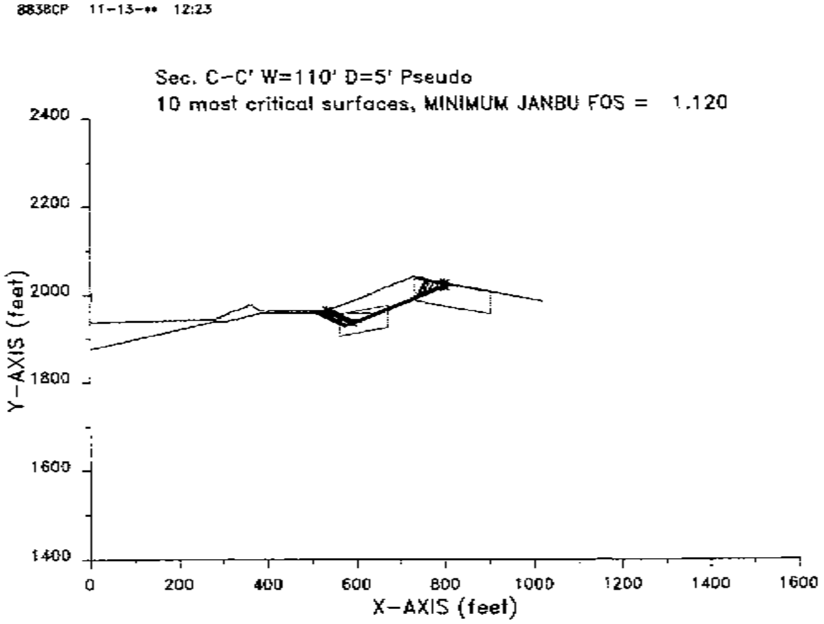




GEOLABS-WESTLAKE VILLAGE

Plate Cp.3

W.O. 8838

Sec. C-C' Backcut

```
XSTABL File: 8838CB    11-13-**   12:21

          ******************************************
          *             X S T A B L                *
          *                                        *
          *        Slope Stability Analysis        *
          *              using the                 *
          *           Method of Slices             *
          *                                        *
          *        Copyright (C) 1992 À 96         *
          *   Interactive Software Designs, Inc.   *
          *        Moscow, ID 83843, U.S.A.        *
          *                                        *
          *          All Rights Reserved           *
          *                                        *
          * Ver. 5.201                  96 À 1545  *
          ******************************************

Problem Description : Sec. C-C' Backcut



----------------------------
SEGMENT BOUNDARY COORDINATES
----------------------------

  10 SURFACE boundary segments

Segment   x-left    y-left   x-right   y-right    Soil Unit
  No.      (ft)      (ft)      (ft)      (ft)    Below Segment

   1          .0    1936.0    280.0    1943.0         1
   2       280.0    1943.0    355.0    1975.0         1
   3       355.0    1975.0    365.0    1975.0         1
   4       365.0    1975.0    381.0    1962.0         1
   5       381.0    1962.0    510.0    1962.0         1
   6       510.0    1962.0    530.0    1962.0         2
   7       530.0    1962.0    530.1    1957.0         2
   8       530.1    1957.0    640.0    1957.0         2
   9       640.0    1957.0    800.0    2025.0         2
  10       800.0    2025.0   1015.0    1985.0         2

   5 SUBSURFACE boundary segments

Segment   x-left    y-left   x-right   y-right    Soil Unit
  No.      (ft)      (ft)      (ft)      (ft)    Below Segment

   1          .0    1875.0    280.0    1938.0         2
   2       280.0    1938.0    310.0    1938.0         2
   3       310.0    1938.0    381.0    1958.0         2
   4       381.0    1958.0    509.0    1958.0         2
   5       509.0    1958.0    510.0    1962.0         2

-----------------------------------
 A CRACKED ZONE HAS BEEN SPECIFIED
-----------------------------------

     Depth of crack below ground surface =  8.00   (feet)
     Maximum depth of water in crack     =   .00   (feet)
     Unit weight of water in crack       = 62.40   (pcf)

Failure surfaces will have a vertical side equal to the
specified depth of crack and be affected by a hydrostatic
force according to the specified depth of water in the crack
```

```
--------------------------
ISOTROPIC Soil Parameters
--------------------------

 2 Soil unit(s) specified

Soil   Unit Weight   Cohesion  Friction    Pore Pressure      Water
Unit  Moist    Sat.  Intercept   Angle  Parameter  Constant  Surface
 No.  (pcf)   (pcf)    (psf)     (deg)      Ru       (psf)      No.

  1   125.0   130.0    200.0     34.00     .000         .0       0
  2   130.0   140.0    225.0     40.00     .000         .0       0


-------------------------------
ANISOTROPIC STRENGTH PARAMETERS
specified for  1 Soil Unit(s)
-------------------------------



Soil Unit  2 is ANISOTROPIC

Number of direction ranges specified =  3

Direction      Counterclockwise        c-value      i-value
Range No.   Direction Limit (deg)       (psf)      (degrees)

    1              21.00                225.0        40.00
    2              24.00                150.0        11.00
    3              90.00                225.0        40.00


A critical failure surface searching method, using a random
technique for generating sliding BLOCK surfaces, has been
specified.


The active and passive portions of the sliding surfaces
are generated according to the Rankine theory.


 2500 trial surfaces will be generated and analyzed.


  2 boxes specified for generation of central block base


Length of line segments for active and passive portions of
sliding block is    100.0 ft


Box        x-left     y-left    x-right    y-right      Width
no.         (ft)       (ft)       (ft)       (ft)        (ft)

 1          640.0     1930.0     710.0     1960.0        50.0
 2          795.0     1995.0     940.0     1970.0        50.0


Factors of safety have been calculated by the :

* * * * *   SIMPLIFIED JANBU METHOD   * * * * *
```

W.O. 8838
Sec. C-C' Backcut

```
The 10 most critical of all the failure surfaces examined
are displayed below - the most critical first

Failure surface No. 1 specified by  5 coordinate points

      Point       x-surf      y-surf
       No.         (ft)        (ft)

        1         653.83     1962.88
        2         671.86     1954.47
        3         812.09     2011.86
        4         813.33     2014.52
        5         813.33     2022.52

 **  Corrected JANBU FOS =    1.113  **     (Fo factor = 1.037)


Failure surface No. 2 specified by  5 coordinate points

      Point       x-surf      y-surf
       No.         (ft)        (ft)

        1         654.14     1963.01
        2         673.07     1954.18
        3         804.92     2008.95
        4         807.98     2015.52
        5         807.98     2023.52

 **  Corrected JANBU FOS =    1.135  **     (Fo factor = 1.040)


Failure surface No. 3 specified by  4 coordinate points

      Point       x-surf      y-surf
       No.         (ft)        (ft)

        1         676.03     1972.31
        2         687.41     1967.01
        3         804.63     2016.14
        4         804.63     2024.14

 **  Corrected JANBU FOS =    1.139  **     (Fo factor = 1.030)


Failure surface No. 4 specified by  5 coordinate points

      Point       x-surf      y-surf
       No.         (ft)        (ft)

        1         656.55     1964.03
        2         675.44     1955.22
        3         800.17     2006.47
        4         804.67     2016.13
        5         804.67     2024.13

 **  Corrected JANBU FOS =    1.149  **     (Fo factor = 1.041)


Failure surface No. 5 specified by  4 coordinate points

      Point       x-surf      y-surf
       No.         (ft)        (ft)

        1         640.66     1957.28
        2         646.15     1954.72
        3         789.17     2012.40
        4         789.17     2020.40

 **  Corrected JANBU FOS =    1.154  **     (Fo factor = 1.021)
```

```
Failure surface No. 6 specified by  5 coordinate points

      Point       x-surf      y-surf
       No.         (ft)        (ft)

        1         661.07     1965.95
        2         678.98     1957.60
        3         797.83     2004.40
        4         803.41     2016.37
        5         803.41     2024.37

 **  Corrected JANBU FOS =    1.159  **     (Fo factor = 1.045)


Failure surface No. 7 specified by  5 coordinate points

      Point       x-surf      y-surf
       No.         (ft)        (ft)

        1         658.70     1964.95
        2         679.17     1955.41
        3         816.48     2010.76
        4         817.84     2013.69
        5         817.84     2021.69

 **  Corrected JANBU FOS =    1.161  **     (Fo factor = 1.041)


Failure surface No. 8 specified by  5 coordinate points

      Point       x-surf      y-surf
       No.         (ft)        (ft)

        1         634.45     1957.00
        2         662.39     1943.97
        3         834.63     2010.51
        4         834.65     2010.55
        5         834.65     2018.55

 **  Corrected JANBU FOS =    1.164  **     (Fo factor = 1.043)


Failure surface No. 9 specified by  4 coordinate points

      Point       x-surf      y-surf
       No.         (ft)        (ft)

        1         647.56     1960.21
        2         670.92     1949.32
        3         817.19     2013.80
        4         817.19     2021.80

 **  Corrected JANBU FOS =    1.166  **     (Fo factor = 1.043)


Failure surface No.10 specified by  4 coordinate points

      Point       x-surf      y-surf
       No.         (ft)        (ft)

        1         651.23     1961.77
        2         677.04     1949.73
        3         821.68     2012.97
        4         821.68     2020.97

 **  Corrected JANBU FOS =    1.210  **     (Fo factor = 1.047)
```

W.O. 8838
Sec. C-C' Backcut

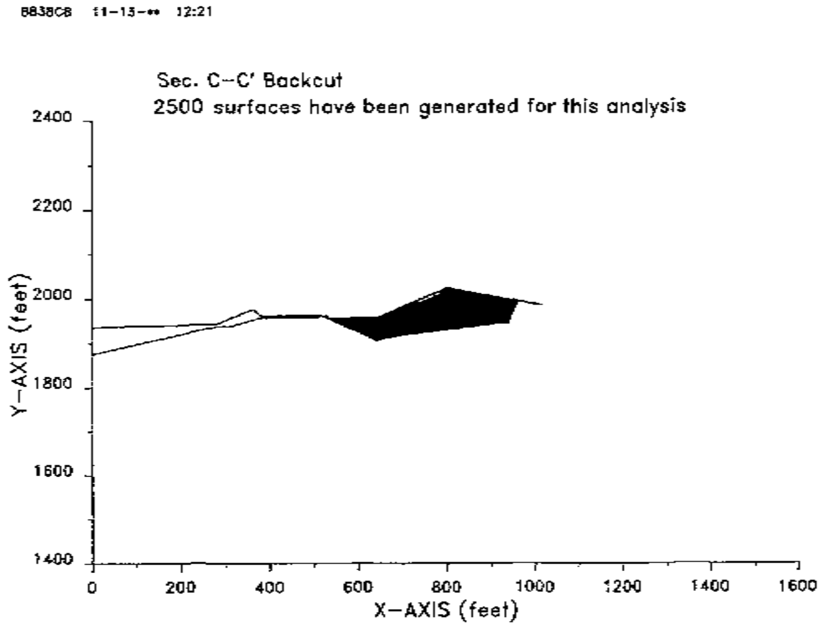
```
The following is a summary of the TEN most critical surfaces

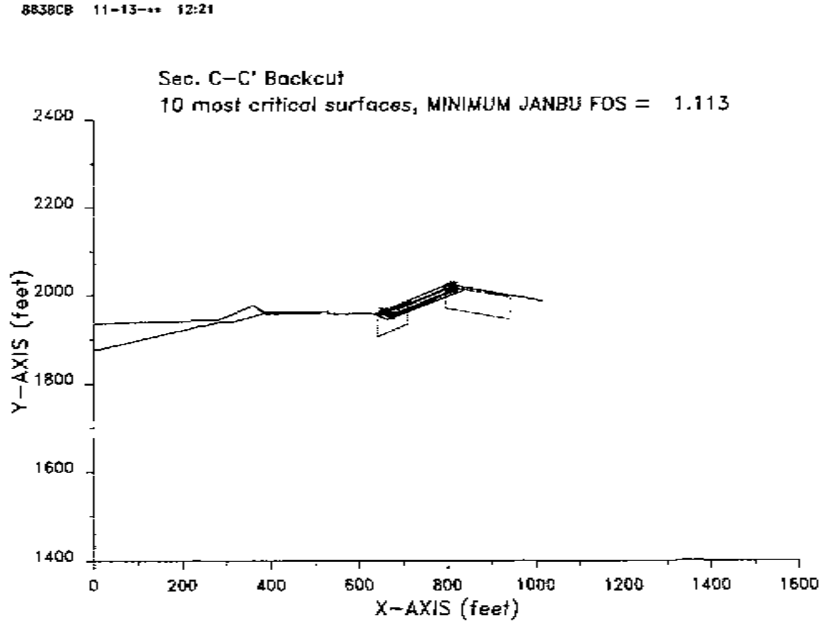
Problem Description : Sec. C-C' Backcut

       Modified       Correction    Initial     Terminal    Available
       JANBU FOS        Factor      x-coord      x-coord     Strength
                                     (ft)         (ft)        (lb)

 1.      1.113          1.037       653.83       813.33     1.171E+05
 2.      1.135          1.040       654.14       807.98     1.199E+05
 3.      1.139          1.030       676.03       804.63     6.408E+04
 4.      1.149          1.041       656.55       804.67     1.189E+05
 5.      1.154          1.021       640.66       789.17     4.970E+04
 6.      1.159          1.045       661.07       803.41     1.141E+05
 7.      1.161          1.041       658.70       817.84     1.316E+05
 8.      1.164          1.043       634.45       834.65     1.939E+05
 9.      1.166          1.043       647.56       817.19     1.477E+05
10.      1.210          1.047       651.23       821.68     1.643E+05

                •    * *  END OF FILE  * * *
```





W.O. 8838

Sec. C-C' Backcut, Spencers

```
XSTABL File: 8838CBS   11-13-**   12:21

         ******************************************
         *              X S T A B L               *
         *                                        *
         *        Slope Stability Analysis        *
         *               using the                *
         *            Method of Slices            *
         *                                        *
         *        Copyright (C) 1992 A 96         *
         *  Interactive Software Designs, Inc.    *
         *       Moscow, ID 83843, U.S.A.         *
         *                                        *
         *          All Rights Reserved           *
         *                                        *
         * Ver. 5.201                 96 A 1545   *
         ******************************************

Problem Description : Sec. C-C' Backcut Spencer



-----------------------------
SEGMENT BOUNDARY COORDINATES
-----------------------------

   10 SURFACE boundary segments

Segment   x-left    y-left    x-right   y-right    Soil Unit
  No.      (ft)      (ft)      (ft)      (ft)    Below Segment

   1         .0     1936.0     280.0    1943.0         1
   2      280.0     1943.0     355.0    1975.0         1
   3      355.0     1975.0     365.0    1975.0         1
   4      365.0     1975.0     381.0    1962.0         1
   5      381.0     1962.0     510.0    1962.0         1
   6      510.0     1962.0     530.0    1962.0         2
   7      530.0     1962.0     530.1    1957.0         2
   8      530.1     1957.0     640.0    1957.0         2
   9      640.0     1957.0     800.0    2025.0         2
  10      800.0     2025.0    1015.0    1985.0         2

    5 SUBSURFACE boundary segments

Segment   x-left    y-left    x-right   y-right    Soil Unit
  No.      (ft)      (ft)      (ft)      (ft)    Below Segment

   1         .0     1875.0     280.0    1938.0         2
   2      280.0     1938.0     310.0    1938.0         2
   3      310.0     1938.0     381.0    1958.0         2
   4      381.0     1958.0     509.0    1958.0         2
   5      509.0     1958.0     510.0    1962.0         2

-----------------------------------
 A CRACKED ZONE HAS BEEN SPECIFIED
-----------------------------------

     Depth of crack below ground surface =  8.00   (feet)
     Maximum depth of water in crack     =   .00   (feet)
     Unit weight of water in crack       = 62.40   (pcf)

Failure surfaces will have a vertical side equal to the
specified depth of crack and be affected by a hydrostatic
force according to the specified depth of water in the crack
```

```
--------------------------
ISOTROPIC Soil Parameters
--------------------------

 2 Soil unit(s) specified

Soil   Unit Weight   Cohesion  Friction     Pore Pressure      Water
Unit  Moist    Sat.  Intercept   Angle   Parameter  Constant  Surface
 No.  (pcf)   (pcf)    (psf)     (deg)      Ru        (psf)     No.

  1   125.0   130.0    200.0     34.00     .000         .0       0
  2   130.0   140.0    225.0     40.00     .000         .0       0


--------------------------------
ANISOTROPIC STRENGTH PARAMETERS
specified for  1 Soil Unit(s)
--------------------------------


Soil Unit  2 is ANISOTROPIC

Number of direction ranges specified =  3

Direction      Counterclockwise        c-value      i-value
Range No.    Direction Limit (deg)      (psf)      (degrees)

    1              21.00                225.0       40.00
    2              24.00                150.0       11.00
    3              90.00                225.0       40.00


------------------------------------------------------------
A SINGLE FAILURE SURFACE HAS BEEN SPECIFIED FOR ANALYSIS
------------------------------------------------------------

Trial failure surface specified by
the following  6 coordinate points :

       Point       x-surf      y-surf
        No.         (ft)        (ft)

         1         653.83     1962.88
         2         671.86     1954.47
         3         812.09     2011.86
         4         813.33     2014.52
         5         813.33     2014.52
         6         813.33     2022.52


*****************************************************
SELECTED METHOD OF ANALYSIS:  Spencer (1973)
*****************************************************



*****************************************
SUMMARY OF INDIVIDUAL SLICE INFORMATION
*****************************************

Slice  x-base    y-base  height    width   alpha    beta     weight
        (ft)      (ft)    (ft)     (ft)                       (lb)

  1    662.84   1958.67    8.04    18.03  -25.00   23.03    18834.
```

W.O. 8838
Sec. C-C' Backcut, Spencers

```
  2    735.93   1980.69   17.08  128.14    22.26    23.03   284509.
  3    806.05   2009.39   14.49   12.09    22.26   -10.54    22773.
  4    812.71   2013.19    9.45    1.24    65.01   -10.54     1523.

 ---------------------------------
 ITERATIONS FOR SPENCER'S METHOD
 ---------------------------------

     Iter #        Theta          FOS_force       FOS_moment
       2          17.1736          1.4212          1.5270
       3          17.1708          1.4210          1.4212

 SLICE INFORMATION ... continued :

 Slice     Sigma    c-value   phi     U-base      U-top     P-top    Delta
           (psf)    (psf)              (lb)        (lb)      (lb)

   1      2932.4    225.0   40.00       0.          0.        0.      .00
   2      1938.1    150.0   11.00       0.          0.        0.      .00
   3      1542.8    150.0   11.00       0.          0.        0.      .00
   4       341.4    225.0   40.00       0.          0.        0.      .00


 ---------------------------------------------------------------
 SPENCER'S (1973)  - TOTAL Stresses at center of slice base
 ---------------------------------------------------------------

 Slice     Base        Normal     Vertical   Pore Water     Shear
   #      x-coord      Stress      Stress     Pressure      Stress
           (ft)         (psf)       (psf)       (psf)        (psf)

   1      662.84       2932.4      1044.6         .0        1890.0
   2      735.93       1938.1      2220.3         .0         370.7
   3      806.05       1642.8      1883.6         .0         330.3
   4      812.71        341.4      1227.9         .0         360.0


 ------------------------------------------------------------------
 SPENCER'S (1973)  - Magnitude & Location of Interslice Forces
 ------------------------------------------------------------------

 Slice    Right      Force     Interslice    Force    Boundary   Height
   #     x-coord     Angle       Force      Height     Height     Ratio
          (ft)     (degrees)     (lb)        (ft)       (ft)

   1     671.86      17.17       51471.      6.99      16.07      .435
   2     800.00      17.17        4808.       .77      18.09      .043
   3     812.09      17.17         480.      1.09      10.89      .100
   4     813.33        .00          -3.       .00       8.00      .000


 ----------------------------------------------------------
   AVERAGE VALUES ALONG FAILURE SURFACE
 ----------------------------------------------------------

      Total Normal Stress =   2002.52  (psf)
      Pore Water Pressure =       .00  (psf)
      Shear Stress        =    540.82  (psf)

      Total Length of failure surface =  174.35 feet

 ----------------------------------------------------------

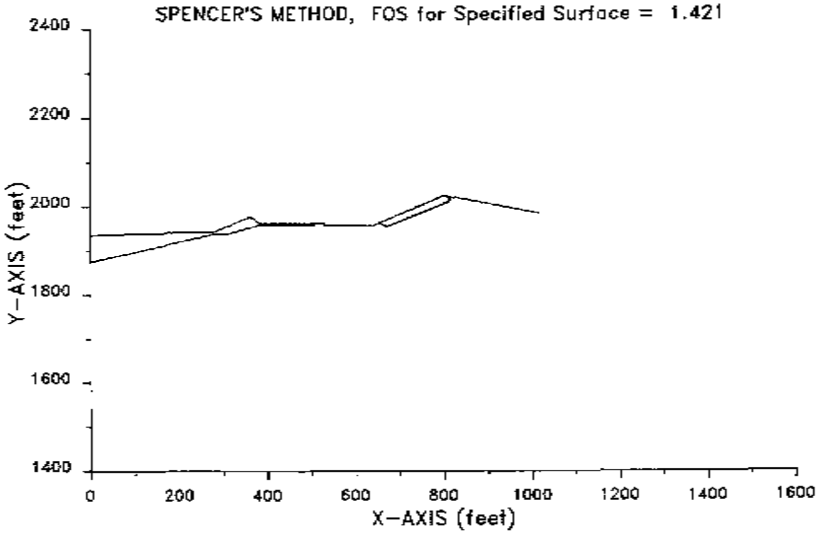
     For the single specified surface and the assumed angle
     of the interslice forces, the SPENCER'S (1973)
     procedure gives a

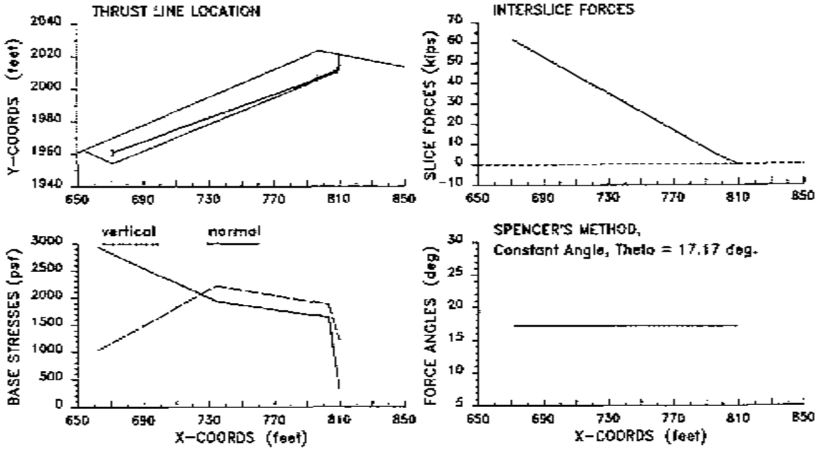
               FACTOR OF SAFETY =    1.421
```

```
Total shear strength available
along specified failure surface =  133.99E+03   lb

8838CBS  11-13-**  12:21
```

Sec. C-C' Backcut Spencer
SPENCER'S METHOD, FOS for Specified Surface = 1.421





Sec. C-C' Backcut Spencer
SPENCER'S METHOD, FOS for Specified Surface = 1.421

GEOLABS-WESTLAKE VILLAGE

W.O. 8838

Sec. C3-C3' W=90' D=5'

```
XSTABL File: 8838C3    11-20-**    12:18

          ******************************************
          *              X S T A B L               *
          *                                        *
          *        Slope Stability Analysis        *
          *               using the                *
          *            Method of Slices            *
          *                                        *
          *         Copyright (C) 1992 Ã 96        *
          *   Interactive Software Designs, Inc.   *
          *        Moscow, ID 83843, U.S.A.        *
          *                                        *
          *          All Rights Reserved           *
          *                                        *
          * Ver. 5.201                   96 Ã 1545 *
          ******************************************

 Problem Description : Sec. C3-C3' W=90' D=5'


 -----------------------------
 SEGMENT BOUNDARY COORDINATES
 -----------------------------

    9 SURFACE boundary segments

 Segment    x-left    y-left    x-right   y-right     Soil Unit
   No.       (ft)      (ft)       (ft)      (ft)    Below Segment

    1          .0     1870.0     125.0    1870.0          1
    2       125.0     1870.0     145.0    1880.0          1
    3       145.0     1880.0     230.0    1880.0          1
    4       230.0     1880.0     365.0    1933.0          2
    5       365.0     1933.0     495.0    1933.0          2
    6       495.0     1933.0     637.0    1935.0          1
    7       637.0     1935.0     680.0    1957.0          2
    8       680.0     1957.0     720.0    1957.0          2
    9       720.0     1957.0     830.0    1957.0          1

    6 SUBSURFACE boundary segments

 Segment    x-left    y-left    x-right   y-right     Soil Unit
   No.       (ft)      (ft)       (ft)      (ft)    Below Segment

    1       230.0     1880.0     230.1    1875.0          1
    2       230.1     1875.0     320.0    1875.0          1
    3       320.0     1875.0     495.0    1933.0          1
    4       637.0     1935.0     637.1    1930.0          1
    5       637.1     1930.0     667.0    1930.0          1
    6       667.0     1930.0     720.0    1957.0          1

 ----------------------------------
  A CRACKED ZONE HAS BEEN SPECIFIED
 ----------------------------------

     Depth of crack below ground surface =  8.00   (feet)
     Maximum depth of water in crack     =   .00   (feet)
     Unit weight of water in crack       = 62.40   (pcf)

 Failure surfaces will have a vertical side equal to the
 specified depth of crack and be affected by a hydrostatic
 force according to the specified depth of water in the crack
```

```
 --------------------------
 ISOTROPIC Soil Parameters
 --------------------------

  2 Soil unit(s) specified

 Soil   Unit Weight   Cohesion  Friction    Pore Pressure      Water
 Unit  Moist    Sat.  Intercept   Angle  Parameter  Constant  Surface
  No.  (pcf)   (pcf)    (psf)     (deg)     Ru       (psf)      No.

   1   130.0   140.0    225.0    40.00     .000         .0       0
   2   125.0   135.0    200.0    34.00     .000         .0       0


 ------------------------------
 ANISOTROPIC STRENGTH PARAMETERS
 specified for  1 Soil Unit(s)
 ------------------------------


 Soil Unit  1 is ANISOTROPIC

 Number of direction ranges specified =  3


 Direction     Counterclockwise         c-value      i-value
 Range No.   Direction Limit (deg)       (psf)      (degrees)

     1              12.00                225.0        40.00
     2              16.00                150.0        11.00
     3              90.00                225.0        40.00


 A critical failure surface searching method, using a random
 technique for generating sliding BLOCK surfaces, has been
 specified.


 The active and passive portions of the sliding surfaces
 are generated according to the Rankine theory.


  5000 trial surfaces will be generated and analyzed.


   2 boxes specified for generation of central block base


 Length of line segments for active and passive portions of
 sliding block is    100.0 ft


 Box          x-left     y-left    x-right    y-right      Width
 no.           (ft)       (ft)       (ft)       (ft)        (ft)

  1           230.0     1850.0      360.0     1870.0        50.0
  2           400.0     1900.0      620.0     1900.0        50.0


 Factors of safety have been calculated by the :

 * * * * *    SIMPLIFIED JANBU METHOD    * * * * *
```

W.O. 8838

Sec. C3-C3' W=90' D=5'

```
The 10 most critical of all the failure surfaces examined
are displayed below - the most critical first

Failure surface No. 1 specified by  5 coordinate points

      Point      x-surf      y-surf
       No.        (ft)        (ft)

        1        211.57     1880.00
        2        260.15     1857.35
        3        477.04     1917.81
        4        480.39     1925.00
        5        480.39     1933.00

 **  Corrected JANBU FOS =   1.706  **    (Fo factor = 1.048)

Failure surface No. 2 specified by  8 coordinate points

      Point      x-surf      y-surf
       No.        (ft)        (ft)

        1        227.90     1880.00
        2        230.02     1878.87
        3        237.30     1875.00
        4        266.38     1861.44
        5        445.21     1905.76
        6        451.13     1918.46
        7        454.61     1925.00
        8        454.61     1933.00

 **  Corrected JANBU FOS =   1.752  **    (Fo factor = 1.048)

Failure surface No. 3 specified by  6 coordinate points

      Point      x-surf      y-surf
       No.        (ft)        (ft)

        1        208.15     1880.00
        2        260.23     1855.72
        3        462.50     1912.84
        4        467.67     1923.94
        5        468.24     1925.00
        6        468.24     1933.00

 **  Corrected JANBU FOS =   1.756  **    (Fo factor = 1.053)

Failure surface No. 4 specified by  5 coordinate points

      Point      x-surf      y-surf
       No.        (ft)        (ft)

        1        216.14     1880.00
        2        259.55     1859.75
        3        512.28     1917.44
        4        515.95     1925.30
        5        515.95     1933.30

 **  Corrected JANBU FOS =   1.759  **    (Fo factor = 1.039)

Failure surface No. 5 specified by  6 coordinate points

      Point      x-surf      y-surf
       No.        (ft)        (ft)

        1        194.36     1880.00
        2        248.94     1854.55
        3        437.69     1906.55
        4        441.80     1915.37
        5        446.92     1925.00
        6        446.92     1933.00

 **  Corrected JANBU FOS =   1.768  **    (Fo factor = 1.056)

Failure surface No. 6 specified by  6 coordinate points

      Point      x-surf      y-surf
       No.        (ft)        (ft)

        1        188.44     1880.00
        2        244.53     1853.84
        3        444.90     1909.86
        4        448.51     1917.59
        5        452.45     1925.00
        6        452.45     1933.00

 **  Corrected JANBU FOS =   1.770  **    (Fo factor = 1.035)

Failure surface No. 7 specified by  5 coordinate points

      Point      x-surf      y-surf
       No.        (ft)        (ft)

        1        210.01     1880.00
        2        259.93     1856.72
        3        533.30     1924.53
        4        533.77     1925.55
        5        533.77     1933.55

 **  Corrected JANBU FOS =   1.774  **    (Fo factor = 1.041)

Failure surface No. 8 specified by  5 coordinate points

      Point      x-surf      y-surf
       No.        (ft)        (ft)

        1        190.29     1880.00
        2        244.24     1854.84
        3        515.71     1921.55
        4        517.46     1925.32
        5        517.46     1933.32

 **  Corrected JANBU FOS =   1.775  **    (Fo factor = 1.043)

Failure surface No. 9 specified by  6 coordinate points

      Point      x-surf      y-surf
       No.        (ft)        (ft)

        1        232.60     1881.02
        2        243.93     1875.00
        3        271.02     1862.37
        4        488.10     1919.49
        5        490.67     1925.00
        6        490.67     1933.00

 **  Corrected JANBU FOS =   1.778  **    (Fo factor = 1.042)

Failure surface No.10 specified by  6 coordinate points

      Point      x-surf      y-surf
       No.        (ft)        (ft)
```

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Sec. C3-C3' W=90' D=5'

```
              1         194.11      1880.00
              2         246.43      1855.60
              3         405.74      1896.14
              4         409.75      1904.75
              5         420.52      1925.00
              6         420.52      1933.00

 **  Corrected JANBU FOS =   1.794  **    (Fo factor = 1.060)



The following is a summary of the TEN most critical surfaces

Problem Description : Sec. C3-C3' W=90' D=5'

      Modified       Correction   Initial     Terminal    Available
     JANBU FOS         Factor     x-coord      x-coord     Strength
                                    (ft)         (ft)        (lb)

 1.     1.706          1.048      211.57       480.39    3.567E+05
 2.     1.752          1.048      227.90       454.61    3.248E+05
 3.     1.756          1.053      208.15       468.24    3.738E+05
 4.     1.759          1.039      216.14       515.95    3.742E+05
 5.     1.768          1.056      194.36       446.92    3.636E+05
 6.     1.770          1.055      188.44       452.45    3.664E+05
 7.     1.774          1.041      210.01       533.77    4.066E+05
 8.     1.775          1.043      190.29       517.46    4.015E+05
 9.     1.778          1.042      232.60       490.67    3.391E+05
10.     1.794          1.060      194.11       420.52    3.433E+05

                  * * *  END OF FILE  * * *
```

W.O. 8838

Sec. C3-C3' Pseudo

```
XSTABL File: 8838C3P   11-20-**   12:18

          ******************************************
          *              X S T A B L               *
          *                                        *
          *       Slope Stability Analysis         *
          *              using the                 *
          *           Method of Slices             *
          *                                        *
          *        Copyright (C) 1992 À 96         *
          *  Interactive Software Designs, Inc.    *
          *       Moscow, ID 83843, U.S.A.         *
          *                                        *
          *         All Rights Reserved            *
          *                                        *
          *  Ver. 5.201                96 À 1545   *
          ******************************************

Problem Description : Sec. C3-C3' W=90' D=5' Pseudo



-----------------------------
SEGMENT BOUNDARY COORDINATES
-----------------------------

   9 SURFACE boundary segments

Segment   x-left    y-left    x-right   y-right    Soil Unit
  No.      (ft)      (ft)      (ft)      (ft)    Below Segment

   1          .0    1870.0     125.0    1870.0         1
   2       125.0    1870.0     145.0    1880.0         1
   3       145.0    1880.0     230.0    1880.0         1
   4       230.0    1880.0     365.0    1933.0         2
   5       365.0    1933.0     495.0    1933.0         2
   6       495.0    1933.0     637.0    1935.0         1
   7       637.0    1935.0     680.0    1957.0         2
   8       680.0    1957.0     720.0    1957.0         2
   9       720.0    1957.0     830.0    1957.0         1


   6 SUBSURFACE boundary segments

Segment   x-left    y-left    x-right   y-right    Soil Unit
  No.      (ft)      (ft)      (ft)      (ft)    Below Segment

   1       230.0    1880.0     230.1    1875.0         1
   2       230.1    1875.0     320.0    1875.0         1
   3       320.0    1875.0     495.0    1933.0         1
   4       637.0    1935.0     637.1    1930.0         1
   5       637.1    1930.0     667.0    1930.0         1
   6       667.0    1930.0     720.0    1957.0         1


-----------------------------------
 A CRACKED ZONE HAS BEEN SPECIFIED
-----------------------------------

     Depth of crack below ground surface =  8.00   (feet)
     Maximum depth of water in crack     =   .00   (feet)
     Unit weight of water in crack       = 62.40   (pcf)

Failure surfaces will have a vertical side equal to the
specified depth of crack and be affected by a hydrostatic
force according to the specified depth of water in the crack
```

```
--------------------------
ISOTROPIC Soil Parameters
--------------------------

 2 Soil unit(s) specified

Soil   Unit Weight   Cohesion  Friction    Pore Pressure      Water
Unit  Moist   Sat.  Intercept   Angle   Parameter  Constant  Surface
 No.  (pcf)  (pcf)    (psf)     (deg)      Ru       (psf)      No.

  1   130.0  140.0    225.0     40.00     .000        .0        0
  2   125.0  135.0    200.0     34.00     .000        .0        0


--------------------------------
ANISOTROPIC STRENGTH PARAMETERS
specified for  1 Soil Unit(s)
--------------------------------


Soil Unit  1 is ANISOTROPIC

Number of direction ranges specified =  3

Direction     Counterclockwise        c-value     i-value
Range No.   Direction Limit (deg)      (psf)     (degrees)

    1              12.00               225.0       40.00
    2              16.00               150.0       11.00
    3              90.00               225.0       40.00


A horizontal earthquake loading coefficient
of   .150 has been assigned

A vertical earthquake loading coefficient
of   .000 has been assigned


A critical failure surface searching method, using a random
technique for generating sliding BLOCK surfaces, has been
specified.


The active and passive portions of the sliding surfaces
are generated according to the Rankine theory.


 5000 trial surfaces will be generated and analyzed.


  2 boxes specified for generation of central block base


Length of line segments for active and passive portions of
sliding block is    100.0 ft

Box         x-left    y-left    x-right    y-right      Width
no.          (ft)      (ft)      (ft)       (ft)        (ft)

 1          230.0    1850.0     360.0     1870.0        50.0
 2          400.0    1900.0     620.0     1900.0        50.0
```

W.O. 8838
Sec. C3-C3' Pseudo

```
Factors of safety have been calculated by the :

* * * * *   SIMPLIFIED JANBU METHOD   * * * * *


The 10 most critical of all the failure surfaces examined
are displayed below - the most critical first

Failure surface No. 1 specified by  5 coordinate points

       Point      x-surf      y-surf
        No.        (ft)        (ft)

         1        216.14     1880.00
         2        259.55     1859.75
         3        512.28     1917.44
         4        515.95     1925.30
         5        515.95     1933.30

 **  Corrected JANBU FOS =   1.045  **    (Fo factor = 1.039)

Failure surface No. 2 specified by  7 coordinate points

       Point      x-surf      y-surf
        No.        (ft)        (ft)

         1        228.50     1880.00
         2        230.02     1879.20
         3        237.91     1875.00
         4        263.85     1862.90
         5        526.89     1921.59
         6        528.70     1925.47
         7        528.70     1933.47

 **  Corrected JANBU FOS =   1.046  **    (Fo factor = 1.034)

Failure surface No. 3 specified by  5 coordinate points

       Point      x-surf      y-surf
        No.        (ft)        (ft)

         1        208.72     1880.00
         2        250.40     1860.57
         3        499.42     1914.47
         4        503.38     1925.12
         5        503.38     1933.12

 **  Corrected JANBU FOS =   1.057  **    (Fo factor = 1.039)

Failure surface No. 4 specified by  5 coordinate points

       Point      x-surf      y-surf
        No.        (ft)        (ft)

         1        203.53     1880.00
         2        255.04     1855.98
         3        553.94     1920.01
         4        556.67     1925.87
         5        556.67     1933.87

 **  Corrected JANBU FOS =   1.071  **    (Fo factor = 1.039)

Failure surface No. 5 specified by  5 coordinate points

       Point      x-surf      y-surf
        No.        (ft)        (ft)

         1        210.01     1880.00
         2        259.93     1856.72
         3        533.30     1924.53
         4        533.77     1925.55
         5        533.77     1933.55

 **  Corrected JANBU FOS =   1.073  **    (Fo factor = 1.041)

Failure surface No. 6 specified by  7 coordinate points

       Point      x-surf      y-surf
        No.        (ft)        (ft)

         1        226.58     1880.00
         2        230.04     1878.16
         3        235.99     1875.00
         4        268.67     1859.76
         5        533.42     1922.89
         6        534.67     1925.56
         7        534.67     1933.56

 **  Corrected JANBU FOS =   1.074  **    (Fo factor = 1.038)

Failure surface No. 7 specified by  5 coordinate points

       Point      x-surf      y-surf
        No.        (ft)        (ft)

         1        190.29     1880.00
         2        244.24     1854.84
         3        515.71     1921.55
         4        517.46     1925.32
         5        517.46     1933.32

 **  Corrected JANBU FOS =   1.074  **    (Fo factor = 1.043)

Failure surface No. 8 specified by  5 coordinate points

       Point      x-surf      y-surf
        No.        (ft)        (ft)

         1        211.57     1880.00
         2        260.15     1857.35
         3        477.04     1917.81
         4        480.39     1925.00
         5        480.39     1933.00

 **  Corrected JANBU FOS =   1.084  **    (Fo factor = 1.048)

Failure surface No. 9 specified by  6 coordinate points

       Point      x-surf      y-surf
        No.        (ft)        (ft)

         1        235.11     1882.01
         2        248.28     1875.00
         3        275.21     1862.44
         4        537.15     1922.91
         5        538.41     1925.61
         6        538.41     1933.61

 **  Corrected JANBU FOS =   1.089  **    (Fo factor = 1.037)
```

W.O. 8838
Sec. C3-C3' Pseudo

```
Failure surface No.10 specified by  8 coordinate points

       Point       x-surf      y-surf
        No.         (ft)        (ft)

         1         227.90     1880.00
         2         230.02     1878.87
         3         237.30     1875.00
         4         266.38     1861.44
         5         445.21     1905.76
         6         451.13     1918.46
         7         454.61     1925.00
         8         454.61     1933.00

 **  Corrected JANBU FOS =   1.091  **     (Fo factor = 1.048)



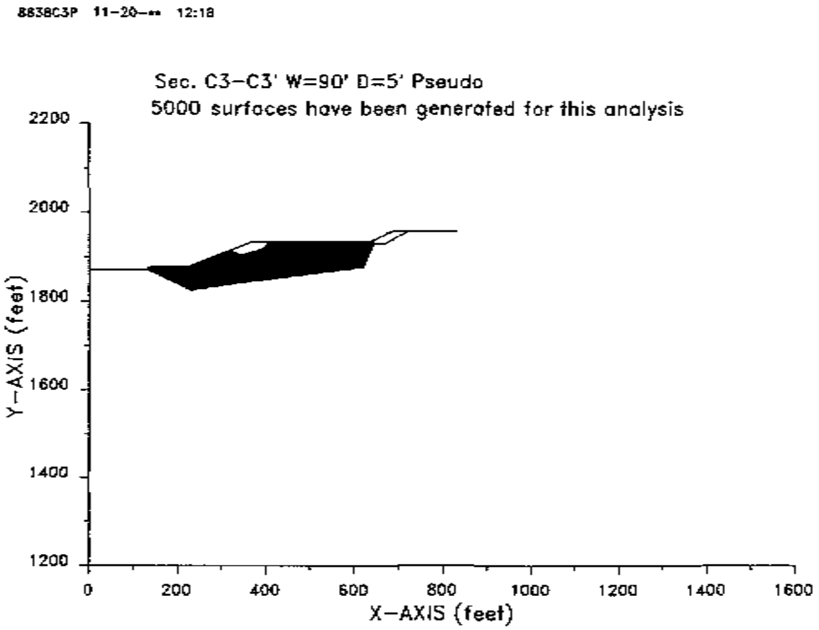
The following is a summary of the TEN most critical surfaces

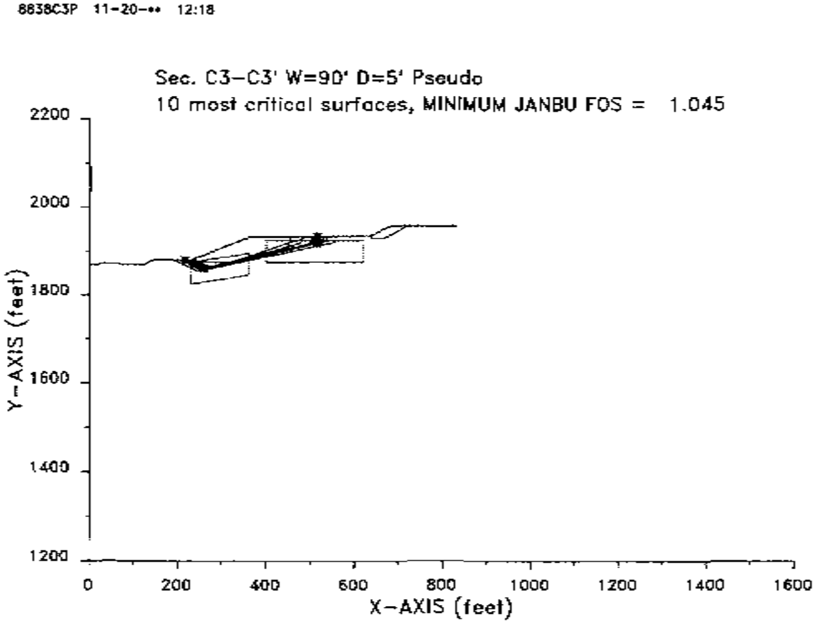
Problem Description : Sec. C3-C3' W=90' D=5' Pseudo

      Modified      Correction    Initial     Terminal    Available
      JANBU FOS       Factor      x-coord      x-coord     Strength
                                   (ft)         (ft)        (lb)

 1.     1.045         1.039       216.14       515.95    3.959E+05
 2.     1.046         1.034       228.50       528.70    3.782E+05
 3.     1.057         1.039       208.72       503.38    3.634E+05
 4.     1.071         1.039       203.53       556.67    4.796E+05
 5.     1.073         1.041       210.01       533.77    4.336E+05
 6.     1.074         1.038       226.58       534.67    4.171E+05
 7.     1.074         1.043       190.29       517.46    4.273E+05
 8.     1.084         1.048       211.57       480.39    3.801E+05
 9.     1.089         1.037       235.11       538.41    4.038E+05
10.     1.091         1.048       227.90       454.61    3.409E+05

                *     * *  END OF FILE  * * *
```





W.O. 8838

Sec. C3-C3' Pseudo., Spencer's

```
XSTABL File: 8838C3PS  11-20-**   12:19

          ******************************************
          *              X S T A B L               *
          *                                        *
          *        Slope Stability Analysis        *
          *              using the                 *
          *           Method of Slices             *
          *                                        *
          *        Copyright (C) 1992 À 96         *
          *   Interactive Software Designs, Inc.   *
          *      Moscow, ID 83843, U.S.A.          *
          *                                        *
          *          All Rights Reserved           *
          *                                        *
          *  Ver. 5.201                 96 À 1545  *
          ******************************************

Problem Description : Sec. C3-C3' W=90' D=5' Pseudo Spenc


-----------------------------
SEGMENT BOUNDARY COORDINATES
-----------------------------

    9 SURFACE boundary segments

Segment   x-left    y-left    x-right   y-right     Soil Unit
  No.      (ft)      (ft)      (ft)      (ft)     Below Segment

   1          .0    1870.0     125.0    1870.0          1
   2       125.0    1870.0     145.0    1880.0          1
   3       145.0    1880.0     230.0    1880.0          1
   4       230.0    1880.0     365.0    1933.0          2
   5       365.0    1933.0     495.0    1933.0          2
   6       495.0    1933.0     637.0    1935.0          1
   7       637.0    1935.0     680.0    1957.0          2
   8       680.0    1957.0     720.0    1957.0          2
   9       720.0    1957.0     830.0    1957.0          1

    6 SUBSURFACE boundary segments

Segment   x-left    y-left    x-right   y-right     Soil Unit
  No.      (ft)      (ft)      (ft)      (ft)     Below Segment

   1       230.0    1880.0     230.1    1875.0          1
   2       230.1    1875.0     320.0    1875.0          1
   3       320.0    1875.0     495.0    1933.0          1
   4       637.0    1935.0     637.1    1930.0          1
   5       637.1    1930.0     667.0    1930.0          1
   6       667.0    1930.0     720.0    1957.0          1

-------------------------------------
 A CRACKED ZONE HAS BEEN SPECIFIED
-------------------------------------

     Depth of crack below ground surface =   8.00   (feet)
     Maximum depth of water in crack     =    .00   (feet)
     Unit weight of water in crack       = 62.40    (pcf)

Failure surfaces will have a vertical side equal to the
specified depth of crack and be affected by a hydrostatic
force according to the specified depth of water in the crack
```

```
--------------------------
ISOTROPIC Soil Parameters
--------------------------

 2 Soil unit(s) specified

Soil   Unit Weight   Cohesion  Friction    Pore Pressure     Water
Unit  Moist    Sat.  Intercept   Angle  Parameter  Constant  Surface
 No.  (pcf)   (pcf)    (psf)     (deg)      Ru       (psf)     No.

  1   130.0   140.0    225.0     40.00     .000         .0      0
  2   125.0   135.0    200.0     34.00     .000         .0      0

---------------------------------
ANISOTROPIC STRENGTH PARAMETERS
specified for  1 Soil Unit(s)
---------------------------------


Soil Unit  1 is ANISOTROPIC

Number of direction ranges specified =  3

Direction      Counterclockwise        c-value      i-value
Range No.    Direction Limit (deg)      (psf)      (degrees)

    1              12.00               225.0        40.00
    2              16.00               150.0        11.00
    3              90.00               225.0        40.00


A horizontal earthquake loading coefficient
of   .150 has been assigned

A vertical earthquake loading coefficient
of   .000 has been assigned

--------------------------------------------------------
A SINGLE FAILURE SURFACE HAS BEEN SPECIFIED FOR ANALYSIS
--------------------------------------------------------

Trial failure surface specified by
the following  5 coordinate points :

       Point       x-surf       y-surf
        No.         (ft)         (ft)

         1         216.14      1880.00
         2         259.55      1859.75
         3         512.28      1917.44
         4         515.95      1925.30
         5         515.95      1933.30


****************************************************
SELECTED METHOD OF ANALYSIS:  Spencer (1973)
****************************************************



****************************************
```

GEOLABS-WESTLAKE VILLAGE

W.O. 8838

Sec. C3-C3' Pseudo., Spencer's

```
SUMMARY OF INDIVIDUAL SLICE INFORMATION
***************************************

Slice  x-base   y-base  height   width   alpha     beta     weight
        (ft)     (ft)    (ft)     (ft)                       (lb)

  1    223.07  1876.77    3.23   13.86  -25.01      .00      5825.
  2    230.05  1873.51    6.51     .10  -25.01    21.43        83.
  3    244.82  1866.62   19.20   29.45  -25.01    21.43     71919.
  4    289.77  1866.65   36.82   60.45   12.86    21.43    280728.
  5    342.50  1878.68   45.48   45.00   12.86    21.43    256684.
  6    430.00  1898.66   34.34  130.00   12.86      .00    566376.
  7    503.64  1915.47   17.65   17.28   12.86      .81     39658.
  8    514.11  1921.37   11.90    3.67   64.97      .81      5675.

-------------------------------
ITERATIONS FOR SPENCER'S METHOD
-------------------------------

    Iter #       Theta       FOS_force      FOS_moment
       2        14.5280       1.2704         1.1711
       3        13.9876       -----          1.2704
       3        14.2578       1.2637         -----
       4        14.0187       1.2579         1.2637
       5        14.0327       1.2583         1.2579


SLICE INFORMATION ... continued :

Slice    Sigma   c-value   phi    U-base     U-top     P-top   Delta
         (psf)    (psf)           (lb)       (lb)      (lb)

  1     1312.9    225.0   40.00      0.        0.        0.     .00
  2     2293.4    225.0   40.00      0.        0.        0.     .00
  3     6110.0    225.0   40.00      0.        0.        0.     .00
  4     4244.5    150.0   11.00      0.        0.        0.     .00
  5     5212.9    150.0   11.00      0.        0.        0.     .00
  6     3982.1    150.0   11.00      0.        0.        0.     .00
  7     2098.9    150.0   11.00      0.        0.        0.     .00
  8      412.1    225.0   40.00      0.        0.        0.     .00


----------------------------------------------------------
SPENCER'S (1973)  - TOTAL Stresses at center of slice base
----------------------------------------------------------

Slice     Base       Normal     Vertical   Pore Water     Shear
  #      x-coord     Stress      Stress     Pressure      Stress
          (ft)       (psf)       (psf)       (psf)        (psf)

  1      223.07      1312.9      420.3          .0        1054.4
  2      230.05      2293.4      833.5          .0        1708.2
  3      244.82      6110.0     2442.1          .0        4253.3
  4      289.77      4244.5     4644.0          .0         774.9
  5      342.50      5212.9     5704.1          .0         924.5
  6      430.00      3982.1     4356.7          .0         734.4
  7      503.64      2098.9     2295.0          .0         443.4
  8      514.11       412.1     1547.2          .0         453.6


-------------------------------------------------------------
SPENCER'S (1973)  - Magnitude & Location of Interslice Forces
-------------------------------------------------------------

Slice    Right      Force     Interslice    Force   Boundary  Height
  #     x-coord     Angle       Force      Height    Height    Ratio
         (ft)     (degrees)     (lb)        (ft)      (ft)

  1     230.00      14.03      22912.       4.90      6.47     .758
  2     230.10      14.03      23186.       4.91      6.55     .750
  3     259.55      14.03     227700.      11.66     31.85     .366
  4     320.00      14.03     172208.      12.35     41.78     .296
  5     365.00      14.03     120209.      11.41     49.18     .232
  6     495.00      14.03       9240.       7.10     19.50     .364
  7     512.28      14.03       2473.       5.56     15.80     .352
  8     515.95        .00        -25.        .42      8.00     .052


------------------------------------------------------
 AVERAGE VALUES ALONG FAILURE SURFACE
------------------------------------------------------

      Total Normal Stress =   4098.94  (psf)
      Pore Water Pressure =       .00  (psf)
      Shear Stress        =   1124.02  (psf)

      Total Length of failure surface =  315.80 feet

------------------------------------------------------

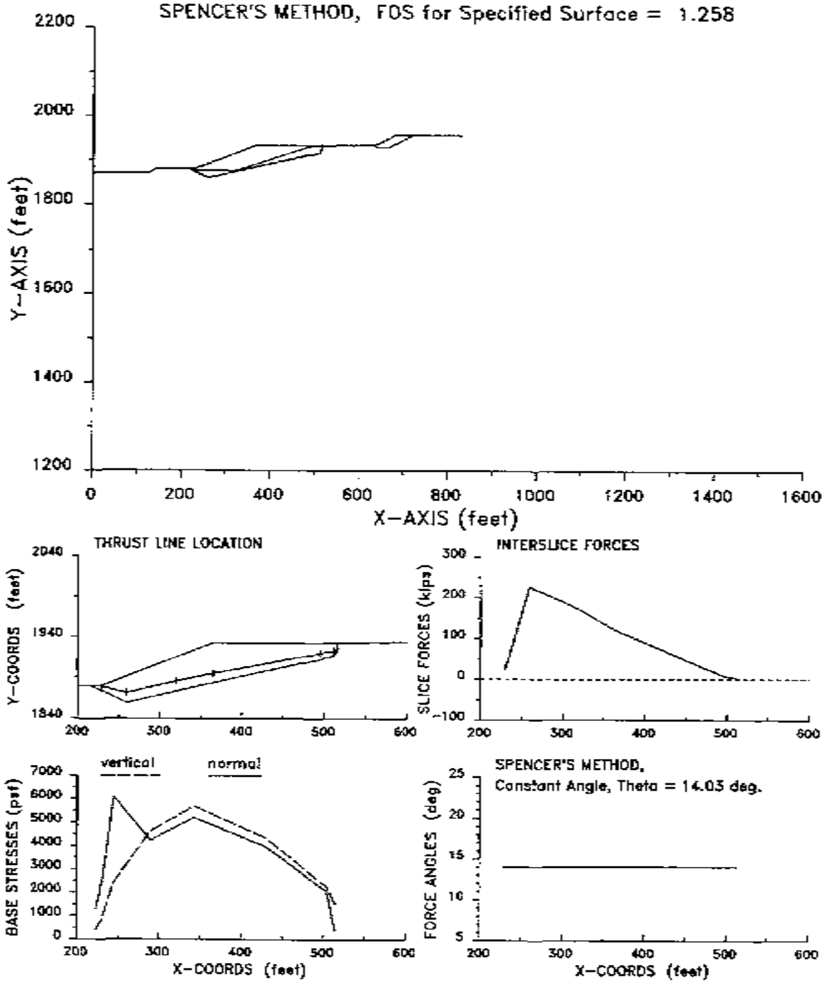

    For the single specified surface and the assumed angle
    of the interslice forces, the SPENCER'S (1973)
    procedure gives a

              FACTOR OF SAFETY =   1.258

    Total shear strength available
    along specified failure surface =  446.65E+03   lb
```

W.O. 8838
Sec. C3-C3' Pseudo., Spencer's
8838C3PS 11-20-** 12:19

Sec. C3–C3' W=90' D=5' Pseudo Spenc
SPENCER'S METHOD, FOS for Specified Surface = 1.258



Sec. C3–C3' W=90' D=5' Pseudo Spenc
SPENCER'S METHOD, FOS for Specified Surface = 1.258

GEOLABS-WESTLAKE VILLAGE

Plate C3ps.3

W.O. 8838

Sec. C3-C3' Backcut

```
XSTABL File: 8838C3B   11-20-**   12:13

         ******************************************
         *            X S T A B L                 *
         *                                        *
         *       Slope Stability Analysis         *
         *           using the                    *
         *        Method of Slices                *
         *                                        *
         *       Copyright (C) 1992 À 96          *
         *  Interactive Software Designs, Inc.    *
         *       Moscow, ID 83843, U.S.A.         *
         *                                        *
         *          All Rights Reserved           *
         *                                        *
         * Ver. 5.201                 96 À 1545   *
         ******************************************


  Problem Description : Sec. C3-C3' Backcut



  ----------------------------
  SEGMENT BOUNDARY COORDINATES
  ----------------------------

     10 SURFACE boundary segments

  Segment   x-left   y-left   x-right  y-right    Soil Unit
    No.      (ft)     (ft)     (ft)     (ft)    Below Segment

    1          .0    1870.0    125.0   1870.0        1
    2       125.0    1870.0    145.0   1880.0        1
    3       145.0    1880.0    230.0   1880.0        1
    4       230.0    1880.0    230.1   1875.0        1
    5       230.1    1875.0    320.0   1875.0        1
    6       320.0    1875.0    495.0   1933.0        1
    7       495.0    1933.0    637.0   1935.0        1
    8       637.0    1935.0    680.0   1957.0        2
    9       680.0    1957.0    720.0   1957.0        2
   10       720.0    1957.0    830.0   1957.0        1

     3 SUBSURFACE boundary segments

  Segment   x-left   y-left   x-right  y-right    Soil Unit
    No.      (ft)     (ft)     (ft)     (ft)    Below Segment

    1       637.0    1935.0    637.1   1930.0        1
    2       637.1    1930.0    667.0   1930.0        1
    3       667.0    1930.0    720.0   1957.0        1


  ----------------------------------
   A CRACKED ZONE HAS BEEN SPECIFIED
  ----------------------------------

      Depth of crack below ground surface =   8.00   (feet)
      Maximum depth of water in crack     =    .00   (feet)
      Unit weight of water in crack       =  62.40   (pcf)

  Failure surfaces will have a vertical side equal to the
  specified depth of crack and be affected by a hydrostatic
  force according to the specified depth of water in the crack
```

```
  -------------------------
  ISOTROPIC Soil Parameters
  -------------------------

   2 Soil unit(s) specified

  Soil   Unit Weight   Cohesion  Friction    Pore Pressure      Water
  Unit  Moist   Sat.  Intercept   Angle   Parameter Constant  Surface
  No.   (pcf)  (pcf)    (psf)     (deg)      Ru      (psf)      No.

   1    130.0  140.0    225.0     40.00     .000        .0        0
   2    125.0  135.0    200.0     34.00     .000        .0        0


  --------------------------------
  ANISOTROPIC STRENGTH PARAMETERS
  specified for  1 Soil Unit(s)
  --------------------------------


  Soil Unit  1 is ANISOTROPIC

  Number of direction ranges specified =  3


  Direction     Counterclockwise        c-value      i-value
  Range No.   Direction Limit (deg)      (psf)      (degrees)

     1               12.00               225.0        40.00
     2               16.00               150.0        11.00
     3               90.00               225.0        40.00


  A critical failure surface searching method, using a random
  technique for generating sliding BLOCK surfaces, has been
  specified.


  The active and passive portions of the sliding surfaces
  are generated according to the Rankine theory.


   5000 trial surfaces will be generated and analyzed.


    2 boxes specified for generation of central block base


  Length of line segments for active and passive portions of
  sliding block is    100.0 ft


  Box        x-left     y-left     x-right    y-right       Width
  no.         (ft)       (ft)       (ft)       (ft)          (ft)

  1          320.0     1850.0      400.0     1870.0         50.0
  2          495.0     1905.0      700.0     1910.0         50.0


  Factors of safety have been calculated by the :

  * * * * *    SIMPLIFIED JANBU METHOD    * * * * *


  The 10 most critical of all the failure surfaces examined
  are displayed below - the most critical first
```

W.O. 8838
Sec. C3-C3' Backcut

```
Failure surface No. 1 specified by  5 coordinate points

      Point      x-surf      y-surf
       No.        (ft)        (ft)

        1        325.98     1876.98
        2        338.02     1871.37
        3        536.19     1925.28
        4        536.32     1925.58
        5        536.32     1933.58

 **  Corrected JANBU FOS =   1.274  **    (Fo factor = 1.019)

Failure surface No. 2 specified by  5 coordinate points

      Point      x-surf      y-surf
       No.        (ft)        (ft)

        1        310.61     1875.00
        2        325.68     1867.97
        3        519.74     1922.72
        4        520.97     1925.37
        5        520.97     1933.37

 **  Corrected JANBU FOS =   1.288  **    (Fo factor = 1.023)

Failure surface No. 3 specified by  5 coordinate points

      Point      x-surf      y-surf
       No.        (ft)        (ft)

        1        331.70     1878.88
        2        342.04     1874.06
        3        539.66     1925.38
        4        539.77     1925.63
        5        539.77     1933.63

 **  Corrected JANBU FOS =   1.292  **    (Fo factor = 1.018)

Failure surface No. 4 specified by  5 coordinate points

      Point      x-surf      y-surf
       No.        (ft)        (ft)

        1        313.05     1875.00
        2        324.11     1869.84
        3        496.74     1914.24
        4        501.80     1925.10
        5        501.80     1933.10

 **  Corrected JANBU FOS =   1.295  **    (Fo factor = 1.037)

Failure surface No. 5 specified by  5 coordinate points

      Point      x-surf      y-surf
       No.        (ft)        (ft)

        1        328.42     1877.79
        2        336.43     1874.05
        3        519.96     1919.45
        4        522.73     1925.39
        5        522.73     1933.39

 **  Corrected JANBU FOS =   1.297  **    (Fo factor = 1.029)
```

```
Failure surface No. 6 specified by  5 coordinate points

      Point      x-surf      y-surf
       No.        (ft)        (ft)

        1        312.66     1875.00
        2        322.73     1870.30
        3        506.87     1918.62
        4        509.94     1925.21
        5        509.94     1933.21

 **  Corrected JANBU FOS =   1.298  **    (Fo factor = 1.029)

Failure surface No. 7 specified by  4 coordinate points

      Point      x-surf      y-surf
       No.        (ft)        (ft)

        1        313.35     1875.00
        2        328.25     1868.05
        3        560.08     1925.92
        4        560.08     1933.92

 **  Corrected JANBU FOS =   1.299  **    (Fo factor = 1.019)

Failure surface No. 8 specified by  5 coordinate points

      Point      x-surf      y-surf
       No.        (ft)        (ft)

        1        308.89     1875.00
        2        325.70     1867.16
        3        512.96     1920.07
        4        515.39     1925.29
        5        515.39     1933.29

 **  Corrected JANBU FOS =   1.300  **    (Fo factor = 1.026)

Failure surface No. 9 specified by  5 coordinate points

      Point      x-surf      y-surf
       No.        (ft)        (ft)

        1        316.11     1875.00
        2        322.69     1871.93
        3        520.42     1923.93
        4        521.10     1925.37
        5        521.10     1933.37

 **  Corrected JANBU FOS =   1.305  **    (Fo factor = 1.020)

Failure surface No.10 specified by  4 coordinate points

      Point      x-surf      y-surf
       No.        (ft)        (ft)

        1        329.49     1878.15
        2        345.01     1870.91
        3        541.53     1925.66
        4        541.53     1933.66

 **  Corrected JANBU FOS =   1.305  **    (Fo factor = 1.023)
```

W.O. 8838
Sec. C3-C3' Backcut

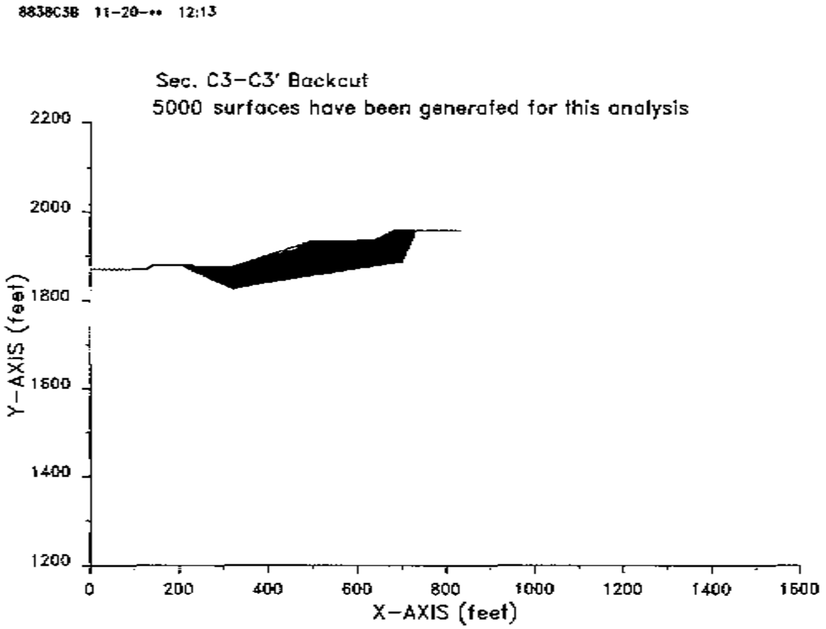
```
The following is a summary of the TEN most critical surfaces

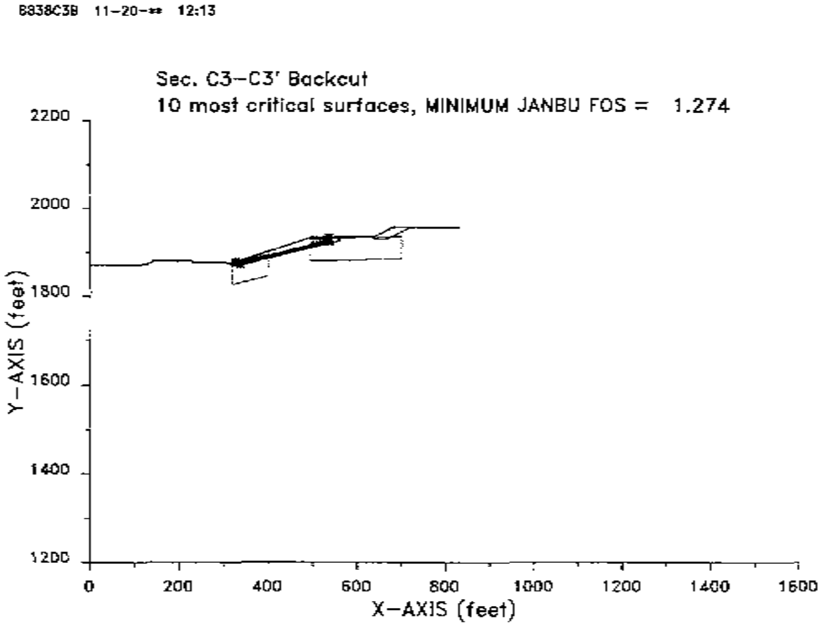
Problem Description : Sec. C3-C3' Backcut

       Modified      Correction   Initial    Terminal   Available
      JANBU FOS        Factor     x-coord    x-coord     Strength
                                   (ft)       (ft)        (lb)

 1.      1.274         1.019      325.98     536.32    1.145E+05
 2.      1.288         1.023      310.61     520.97    1.105E+05
 3.      1.292         1.018      331.70     539.77    1.089E+05
 4.      1.295         1.037      313.05     501.80    9.945E+04
 5.      1.297         1.029      328.42     522.73    1.010E+05
 6.      1.298         1.029      312.66     509.94    9.449E+04
 7.      1.299         1.019      313.35     560.08    1.454E+05
 8.      1.300         1.026      308.89     515.39    1.158E+05
 9.      1.305         1.020      316.11     521.10    8.531E+04
10.      1.305         1.023      329.49     541.53    1.298E+05

            •     * *  END OF FILE  * * *
```





GEOLABS-WESTLAKE VILLAGE

W.O. 8838

Sec. D-D' W=100' D=5'

```
XSTABL File: 8838D     11-13-**   15:12

          ******************************************
          *               X S T A B L              *
          *                                        *
          *        Slope Stability Analysis        *
          *               using the                *
          *            Method of Slices            *
          *                                        *
          *        Copyright (C) 1992 À 96         *
          *    Interactive Software Designs, Inc.  *
          *        Moscow, ID 83843, U.S.A.        *
          *                                        *
          *          All Rights Reserved           *
          *                                        *
          * Ver. 5.201                 96 À 1545   *
          ******************************************

Problem Description : Sec. D-D' W=100' D=5'


------------------------------
SEGMENT BOUNDARY COORDINATES
------------------------------

   7 SURFACE boundary segments

Segment    x-left    y-left    x-right    y-right     Soil Unit
  No.       (ft)      (ft)      (ft)       (ft)     Below Segment

  1            .0    1954.0     310.0     1955.0          1
  2         310.0    1955.0     700.0     2130.0          2
  3         700.0    2130.0     710.0     2130.0          2
  4         710.0    2130.0     760.0     2120.0          2
  5         760.0    2120.0     880.0     2080.0          1
  6         880.0    2080.0    1000.0     2100.0          3
  7        1000.0    2100.0    1120.0     2110.0          3

   5 SUBSURFACE boundary segments

Segment    x-left    y-left    x-right    y-right     Soil Unit
  No.       (ft)      (ft)      (ft)       (ft)     Below Segment

  1         310.0    1955.0     310.1     1950.0          1
  2         310.1    1950.0     410.0     1950.0          1
  3         410.0    1950.0     760.0     2120.0          1
  4         880.0    2080.0    1120.0     2080.0          1
  5            .0    1880.0    1120.0     2020.0          4

-------------------------------------
 A CRACKED ZONE HAS BEEN SPECIFIED
-------------------------------------

    Depth of crack below ground surface =  8.00   (feet)
    Maximum depth of water in crack     =   .00   (feet)
    Unit weight of water in crack       = 62.40   (pcf)

Failure surfaces will have a vertical side equal to the
specified depth of crack and be affected by a hydrostatic
force according to the specified depth of water in the crack

-------------------------
```

```
ISOTROPIC Soil Parameters
-------------------------

 4 Soil unit(s) specified

Soil   Unit Weight   Cohesion  Friction    Pore Pressure       Water
Unit  Moist   Sat.  Intercept   Angle   Parameter Constant  Surface
 No.  (pcf)  (pcf)    (psf)     (deg)       Ru      (psf)      No.

  1   130.0  140.0    225.0     40.00      .000        .0       1
  2   125.0  135.0    200.0     34.00      .000        .0       1
  3   125.0  135.0    200.0     30.00      .000        .0       1
  4   130.0  140.0    200.0     40.00      .000        .0       1


--------------------------------
ANISOTROPIC STRENGTH PARAMETERS
specified for  1 Soil Unit(s)
--------------------------------


Soil Unit  1 is ANISOTROPIC

Number of direction ranges specified =  3

Direction      Counterclockwise         c-value     i-value
Range No.   Direction Limit (deg)        (psf)     (degrees)

    1              6.00                  225.0       40.00
    2             11.00                  150.0       17.00
    3             90.00                  225.0       40.00


 1 Water surface(s) have been specified

Unit weight of water =    62.40  (pcf)

Water Surface No.  1 specified by  3 coordinate points

**********************************
      PHREATIC SURFACE,
**********************************

  Point     x-water    y-water
   No.       (ft)       (ft)

   1           .00     1905.00
   2        410.00     1950.00
   3       1120.00     2050.00


A critical failure surface searching method, using a random
technique for generating sliding BLOCK surfaces, has been
specified.


The active and passive portions of the sliding surfaces
are generated according to the Rankine theory.


 2500 trial surfaces will be generated and analyzed.


  2 boxes specified for generation of central block base
```

W.O. 8838
Sec. D-D' W=100' D=5'

```
Length of line segments for active and passive portions of
sliding block is    100.0 ft


Box          x-left       y-left      x-right      y-right       Width
no.           (ft)         (ft)        (ft)         (ft)          (ft)

 1           380.0        1940.0       600.0       2007.0         80.0
 2           620.0        2020.0       980.0       2040.0         80.0



Factors of safety have been calculated by the :

* * * * *    SIMPLIFIED JANBU METHOD    * * * * *



The 10 most critical of all the failure surfaces examined
are displayed below - the most critical first

Failure surface No. 1 specified by  6 coordinate points

       Point        x-surf        y-surf
        No.          (ft)          (ft)

         1          368.44       1981.22
         2          414.36       1956.81
         3          651.46       2001.74
         4          690.97       2086.47
         5          709.86       2122.00
         6          709.86       2130.00

 **  Corrected JANBU FOS =    1.562  **     (Fo factor = 1.082)


Failure surface No. 2 specified by  8 coordinate points

       Point        x-surf        y-surf
        No.          (ft)          (ft)

         1          337.91       1967.52
         2          370.87       1950.00
         3          395.90       1938.33
         4          665.92       1990.72
         5          708.18       2081.35
         6          716.31       2098.78
         7          726.86       2118.63
         8          726.86       2126.63

 **  Corrected JANBU FOS =    1.575  **     (Fo factor = 1.080)


Failure surface No. 3 specified by  6 coordinate points

       Point        x-surf        y-surf
        No.          (ft)          (ft)

         1          355.65       1975.48
         2          395.14       1954.48
         3          634.67       1998.70
         4          671.10       2076.82
         5          693.59       2119.12
         6          693.59       2127.12

 **  Corrected JANBU FOS =    1.578  **     (Fo factor = 1.081)


Failure surface No. 4 specified by  6 coordinate points

       Point        x-surf        y-surf
        No.          (ft)          (ft)

         1          353.11       1974.34
         2          383.19       1958.35
         3          641.78       2003.64
         4          677.31       2079.84
         5          699.65       2121.84
         6          699.65       2129.84

 **  Corrected JANBU FOS =    1.584  **     (Fo factor = 1.080)


Failure surface No. 5 specified by  8 coordinate points

       Point        x-surf        y-surf
        No.          (ft)          (ft)

         1          350.44       1973.15
         2          393.98       1950.00
         3          394.95       1949.54
         4          691.03       2000.65
         5          733.29       2091.29
         6          742.78       2111.64
         7          744.61       2115.08
         8          744.61       2123.08

 **  Corrected JANBU FOS =    1.611  **     (Fo factor = 1.077)


Failure surface No. 6 specified by  6 coordinate points

       Point        x-surf        y-surf
        No.          (ft)          (ft)

         1          403.08       1996.77
         2          436.43       1979.03
         3          654.90       2019.06
         4          684.97       2083.56
         5          705.41       2122.00
         6          705.41       2130.00

 **  Corrected JANBU FOS =    1.627  **     (Fo factor = 1.081)


Failure surface No. 7 specified by  6 coordinate points

       Point        x-surf        y-surf
        No.          (ft)          (ft)

         1          383.82       1988.13
         2          429.15       1964.02
         3          651.66       1999.13
         4          692.81       2087.36
         5          711.10       2121.78
         6          711.10       2129.78

 **  Corrected JANBU FOS =    1.641  **     (Fo factor = 1.084)


Failure surface No. 8 specified by  6 coordinate points

       Point        x-surf        y-surf
        No.          (ft)          (ft)

         1          385.76       1989.00
         2          425.18       1968.04
         3          705.16       2020.65
         4          747.42       2111.28
```

W.O. 8838
Sec. D-D' W=100' D=5'

```
         5          748.80      2114.24
         6          748.80      2122.24

  **  Corrected JANBU FOS =     1.653   **     (Fo factor = 1.074)


 Failure surface No. 9 specified by  6 coordinate points

        Point       x-surf      y-surf
         No.         (ft)        (ft)

         1          369.81      1981.84
         2          385.84      1973.31
         3          684.79      2019.88
         4          723.13      2102.09
         5          731.43      2117.71
         6          731.43      2125.71

  **  Corrected JANBU FOS =     1.659   **     (Fo factor = 1.074)


 Failure surface No.10 specified by  5 coordinate points

        Point       x-surf      y-surf
         No.         (ft)        (ft)

         1          368.51      1981.25
         2          390.22      1969.71
         3          713.28      2030.17
         4          752.17      2113.57
         5          752.17      2121.57

  **  Corrected JANBU FOS =     1.671   **     (Fo factor = 1.067)



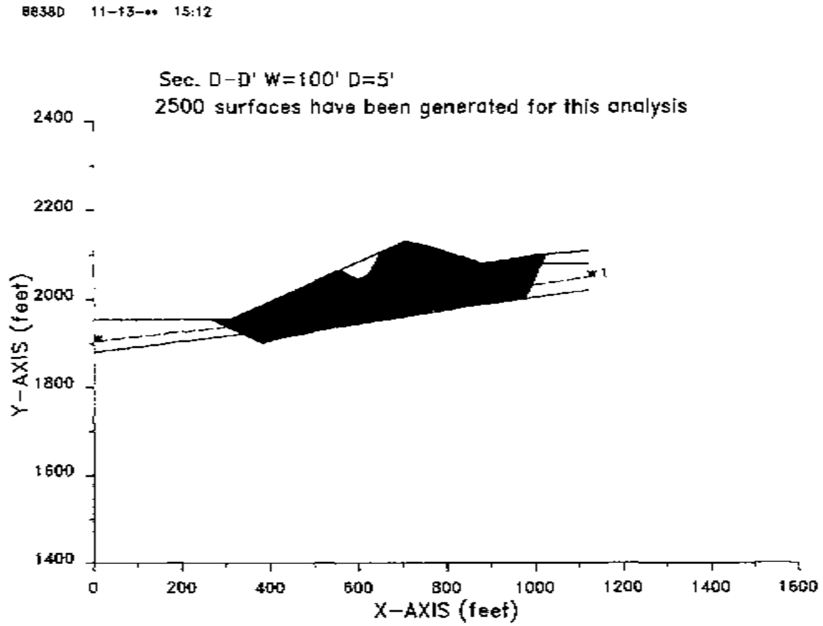
 The following is a summary of the TEN most critical surfaces

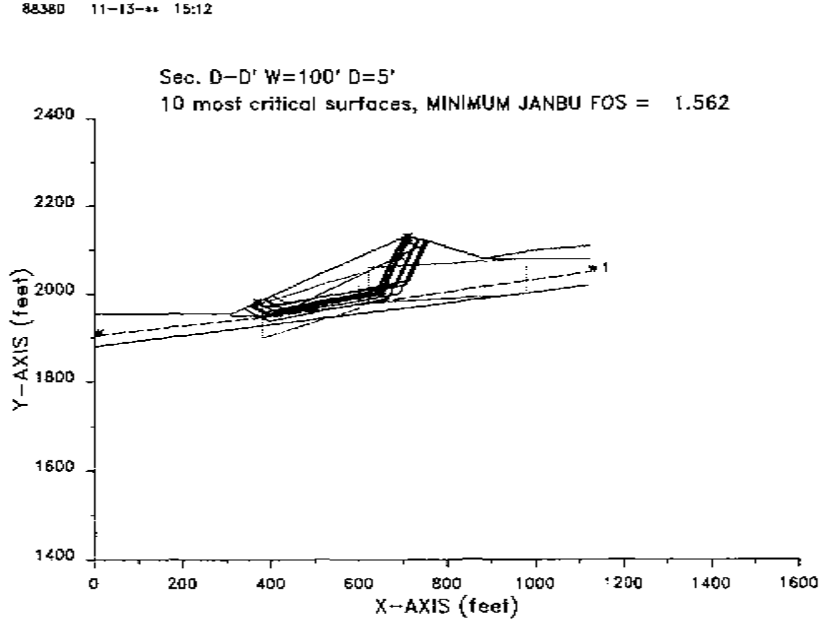
 Problem Description : Sec. D-D' W=100' D=5'

        Modified      Correction    Initial     Terminal    Available
        JANBU FOS       Factor      x-coord     x-coord     Strength
                                     (ft)        (ft)         (lb)

  1.      1.562         1.082       368.44      709.86     1.277E+06
  2.      1.575         1.080       337.91      726.86     1.694E+06
  3.      1.578         1.081       355.65      693.59     1.215E+06
  4.      1.584         1.090       353.11      699.65     1.202E+06
  5.      1.611         1.077       350.44      744.61     1.614E+06
  6.      1.627         1.081       403.08      705.41     9.991E+05
  7.      1.641         1.084       383.82      711.10     1.264E+06
  8.      1.653         1.074       385.76      748.80     1.329E+06
  9.      1.659         1.074       369.81      731.43     1.212E+06
 10.      1.671         1.067       368.51      752.17     1.263E+06


                 *    * *  END OF FILE  * * *
```





W.O. 8838
Sec. D-D' Backcut

```
XSTABL File: 8838DB    11-13-**    15:11

          ******************************************
          *                X S T A B L             *
          *                                        *
          *        Slope Stability Analysis        *
          *              using the                 *
          *           Method of Slices             *
          *                                        *
          *         Copyright (C) 1992 À 96        *
          *    Interactive Software Designs, Inc.  *
          *       Moscow, ID 83843, U.S.A.         *
          *                                        *
          *          All Rights Reserved           *
          *                                        *
          *  Ver. 5.201                96 À 1545   *
          ******************************************


   Problem Description : Sec. D-D' Backcut



   -----------------------------
   SEGMENT BOUNDARY COORDINATES
   -----------------------------

       7 SURFACE boundary segments

   Segment    x-left    y-left    x-right   y-right     Soil Unit
     No.       (ft)      (ft)      (ft)      (ft)    Below Segment

      1          .0     1954.0     310.0    1955.0         1
      2       310.0     1955.0     310.1    1950.0         1
      3       310.1     1950.0     410.0    1950.0         1
      4       410.0     1950.0     760.0    2120.0         1
      5       760.0     2120.0     880.0    2080.0         1
      6       880.0     2080.0    1000.0    2100.0         3
      7      1000.0     2100.0    1120.0    2110.0         3


       2 SUBSURFACE boundary segments

   Segment    x-left    y-left    x-right   y-right     Soil Unit
     No.       (ft)      (ft)      (ft)      (ft)    Below Segment

      1       880.0     2080.0    1120.0    2080.0         1
      2          .0     1880.0    1120.0    2020.0         4


   -----------------------------------
    A CRACKED ZONE HAS BEEN SPECIFIED
   -----------------------------------

        Depth of crack below ground surface =  8.00   (feet)
        Maximum depth of water in crack     =   .00   (feet)
        Unit weight of water in crack       = 62.40   (pcf)

   Failure surfaces will have a vertical side equal to the
   specified depth of crack and be affected by a hydrostatic
   force according to the specified depth of water in the crack



   --------------------------
   ISOTROPIC Soil Parameters
   --------------------------
```

```
 4 Soil unit(s) specified

Soil  Unit Weight   Cohesion  Friction    Pore Pressure      Water
Unit  Moist   Sat.  Intercept   Angle   Parameter  Constant  Surface
 No.  (pcf)  (pcf)    (psf)     (deg)      Ru       (psf)      No.

  1   130.0  140.0    225.0     40.00     .000         .0       1
  2   125.0  135.0    200.0     34.00     .000         .0       1
  3   125.0  135.0    200.0     30.00     .000         .0       1
  4   130.0  140.0    200.0     40.00     .000         .0       1


--------------------------------
ANISOTROPIC STRENGTH PARAMETERS
specified for  1 Soil Unit(s)
--------------------------------


Soil Unit  1 is ANISOTROPIC

Number of direction ranges specified =  3

Direction     Counterclockwise         c-value     i-value
Range No.   Direction Limit (deg)       (psf)     (degrees)

    1               6.00                225.0      40.00
    2              11.00                150.0      17.00
    3              90.00                225.0      40.00


 1 Water surface(s) have been specified

Unit weight of water =     62.40  (pcf)


Water Surface No.  1 specified by  3 coordinate points

**********************************
       PHREATIC SURFACE,
**********************************

  Point     x-water     y-water
   No.        (ft)        (ft)

    1           .00     1905.00
    2        410.00     1950.00
    3       1120.00     2050.00


A critical failure surface searching method, using a random
technique for generating sliding BLOCK surfaces, has been
specified.


The active and passive portions of the sliding surfaces
are generated according to the Rankine theory.


 2500 trial surfaces will be generated and analyzed.


  2 boxes specified for generation of central block base


Length of line segments for active and passive portions of
sliding block is    100.0 ft
```

W.O. 8838
Sec. D-D' Backcut

```
Box       x-left    y-left    x-right   y-right     Width
no.        (ft)      (ft)      (ft)      (ft)        (ft)

 1        410.0     1915.0     600.0    2007.0       60.0
 2        620.0     2010.0     980.0    2040.0       80.0



Factors of safety have been calculated by the :

* * * * *   SIMPLIFIED JANBU METHOD   * * * * *


The 10 most critical of all the failure surfaces examined
are displayed below - the most critical first

Failure surface No. 1 specified by  6 coordinate points

       Point      x-surf      y-surf
        No.        (ft)        (ft)

         1        397.18     1950.00
         2        417.65     1940.45
         3        677.07     1987.92
         4        719.33     2078.55
         5        727.58     2096.26
         6        727.58     2104.26

 **  Corrected JANBU FOS =   1.279  **     (Fo factor = 1.078)


Failure surface No. 2 specified by  6 coordinate points

       Point      x-surf      y-surf
        No.        (ft)        (ft)

         1        371.80     1950.00
         2        411.16     1931.65
         3        721.43     1987.77
         4        763.69     2078.40
         5        776.75     2106.42
         6        776.75     2114.42

 **  Corrected JANBU FOS =   1.286  **     (Fo factor = 1.076)


Failure surface No. 3 specified by  6 coordinate points

       Point      x-surf      y-surf
        No.        (ft)        (ft)

         1        387.00     1950.00
         2        417.55     1935.76
         3        721.53     1986.46
         4        763.79     2077.09
         5        777.37     2106.21
         6        777.37     2114.21

 **  Corrected JANBU FOS =   1.295  **     (Fo factor = 1.077)


Failure surface No. 4 specified by  6 coordinate points

       Point      x-surf      y-surf
        No.        (ft)        (ft)

         1        380.63     1950.00
         2        410.55     1936.05
         3        698.94     1978.53
         4        741.20     2069.16
         5        761.02     2111.66
         6        761.02     2119.66

 **  Corrected JANBU FOS =   1.317  **     (Fo factor = 1.081)


Failure surface No. 5 specified by  6 coordinate points

       Point      x-surf      y-surf
        No.        (ft)        (ft)

         1        425.03     1957.30
         2        451.57     1944.92
         3        709.33     1994.22
         4        751.59     2084.85
         5        763.68     2110.77
         6        763.68     2118.77

 **  Corrected JANBU FOS =   1.318  **     (Fo factor = 1.079)


Failure surface No. 6 specified by  7 coordinate points

       Point      x-surf      y-surf
        No.        (ft)        (ft)

         1        393.74     1950.00
         2        428.88     1933.61
         3        431.70     1932.30
         4        731.00     1987.43
         5        773.27     2078.07
         6        785.18     2103.61
         7        785.18     2111.61

 **  Corrected JANBU FOS =   1.335  **     (Fo factor = 1.077)


Failure surface No. 7 specified by  5 coordinate points

       Point      x-surf      y-surf
        No.        (ft)        (ft)

         1        477.13     1982.60
         2        483.46     1979.55
         3        680.41     2015.46
         4        715.31     2090.29
         5        715.31     2098.29

 **  Corrected JANBU FOS =   1.339  **     (Fo factor = 1.077)


Failure surface No. 8 specified by  5 coordinate points

       Point      x-surf      y-surf
        No.        (ft)        (ft)

         1        496.11     1991.83
         2        503.17     1988.54
         3        715.10     2025.76
         4        753.94     2109.06
         5        753.94     2117.06

 **  Corrected JANBU FOS =   1.340  **     (Fo factor = 1.077)


Failure surface No. 9 specified by  6 coordinate points
```

W.O. 8838

Sec. D-D' Backcut

```
      Point       x-surf       y-surf
       No.         (ft)         (ft)

        1         408.57      1950.00
        2         430.93      1939.57
        3         744.22      1993.10
        4         786.48      2083.73
        5         794.32      2100.56
        6         794.32      2108.56

 **  Corrected JANBU FOS =    1.342   **     (Fo factor = 1.074)

Failure surface No.10 specified by  6 coordinate points

      Point       x-surf       y-surf
       No.         (ft)         (ft)

        1         465.85      1977.13
        2         484.06      1968.64
        3         723.56      2013.31
        4         765.82      2103.94
        5         768.29      2109.24
        6         768.29      2117.24

 **  Corrected JANBU FOS =    1.344   **     (Fo factor = 1.077)



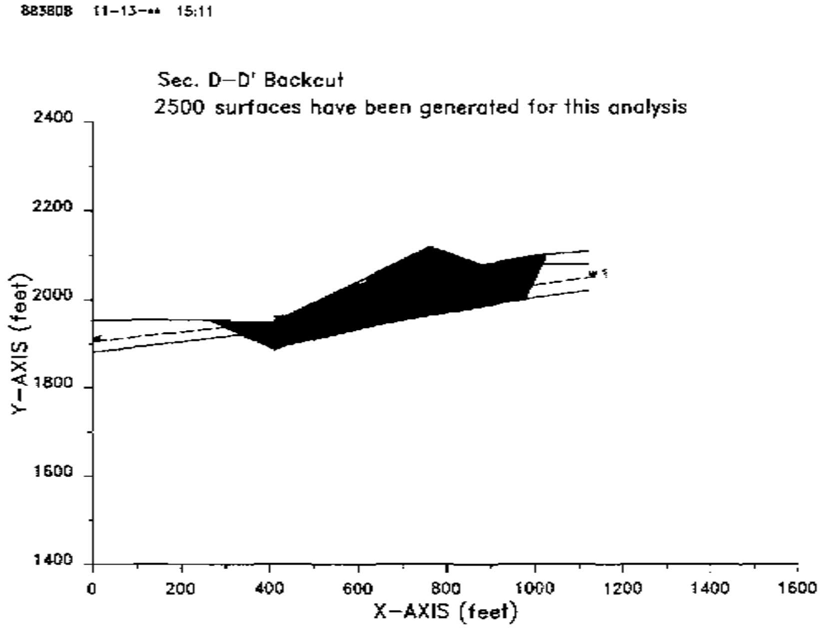
The following is a summary of the TEN most critical surfaces

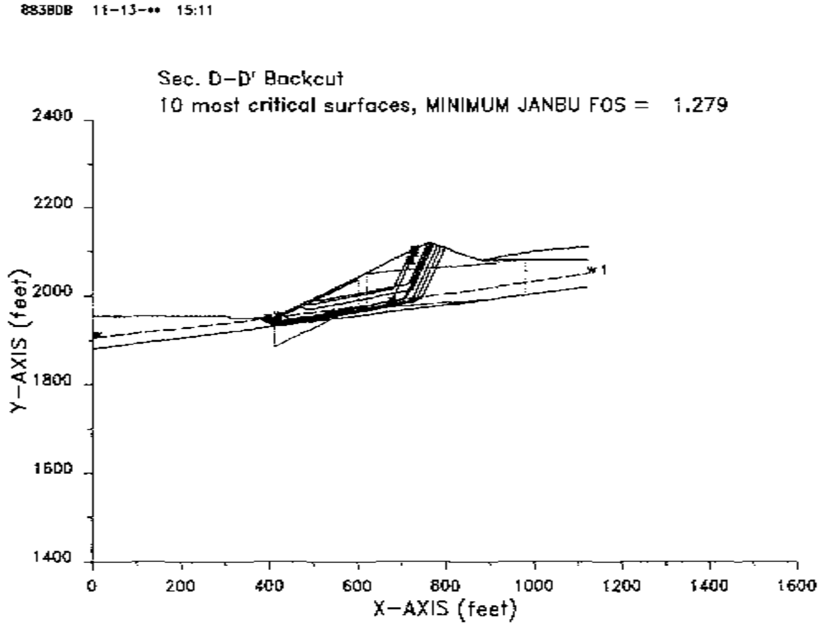
Problem Description : Sec. D-D' Backcut

        Modified      Correction    Initial     Terminal     Available
       JANBU FOS        Factor      x-coord      x-coord      Strength
                                     (ft)         (ft)          (lb)

  1.      1.279          1.078      397.18       727.58      8.334E+05
  2.      1.288          1.076      371.80       776.75      1.224E+06
  3.      1.296          1.077      387.00       777.37      1.205E+06
  4.      1.317          1.081      380.63       761.02      1.127E+06
  5.      1.318          1.079      425.03       763.68      1.040E+06
  6.      1.335          1.077      393.74       785.18      1.341E+06
  7.      1.339          1.077      477.13       715.31      4.518E+05
  8.      1.340          1.077      495.11       753.94      5.354E-05
  9.      1.342          1.074      408.57       794.32      1.261E-06
 10.      1.344          1.077      465.85       768.29      8.136E-05

                *    * *  END OF FILE  * * *
```





GEOLABS-WESTLAKE VILLAGE

Plate Db.3

W.O. 8838

Sec. L-L' W=70' D=5'

```
XSTABL File: 8838L     11-21-**   11:31

          ******************************************
          *               X S T A B L              *
          *                                        *
          *         Slope Stability Analysis       *
          *              using the                 *
          *           Method of Slices             *
          *                                        *
          *        Copyright (C) 1992 À 96         *
          *   Interactive Software Designs, Inc.   *
          *       Moscow, ID 83843, U.S.A.         *
          *                                        *
          *          All Rights Reserved           *
          *                                        *
          * Ver. 5.201                  96 À 1545  *
          ******************************************

   Problem Description : Sec. L-L' W=70' D=5'



   -----------------------------
   SEGMENT BOUNDARY COORDINATES
   -----------------------------

      9 SURFACE boundary segments

   Segment   x-left    y-left    x-right   y-right     Soil Unit
     No.      (ft)      (ft)      (ft)      (ft)     Below Segment

      1          .0    1708.0     130.0    1708.0          1
      2       130.0    1708.0     136.0    1705.0          1
      3       136.0    1705.0     200.0    1705.0          2
      4       200.0    1705.0     255.0    1705.0          2
      5       255.0    1705.0     475.0    1795.0          1
      6       475.0    1795.0     520.0    1790.0          1
      7       520.0    1790.0     585.0    1775.0          3
      8       585.0    1775.0     650.0    1800.0          3
      9       650.0    1800.0     950.0    1855.0          3

      6 SUBSURFACE boundary segments

   Segment   x-left    y-left    x-right   y-right     Soil Unit
     No.      (ft)      (ft)      (ft)      (ft)     Below Segment

      1          .0    1625.0     200.0    1705.0          2
      2       255.0    1705.0     255.1    1700.0          2
      3       255.1    1700.0     325.0    1700.0          2
      4       325.0    1700.0     430.0    1750.0          2
      5       430.0    1750.0     520.0    1790.0          3
      6       430.0    1750.0     950.0    1800.0          2

   -----------------------------------
    A CRACKED ZONE HAS BEEN SPECIFIED
   -----------------------------------

        Depth of crack below ground surface =  8.00   (feet)
        Maximum depth of water in crack     =   .00   (feet)
        Unit weight of water in crack       = 62.40   (pcf)

   Failure surfaces will have a vertical side equal to the
   specified depth of crack and be affected by a hydrostatic
   force according to the specified depth of water in the crack
```

```
--------------------------
ISOTROPIC Soil Parameters
--------------------------

 3 Soil unit(s) specified

Soil   Unit Weight   Cohesion  Friction    Pore Pressure     Water
Unit  Moist    Sat.  Intercept   Angle  Parameter  Constant  Surface
 No.  (pcf)   (pcf)    (psf)     (deg)     Ru       (psf)      No.

  1   125.0   135.0    200.0     34.00     .000        .0        0
  2   130.0   140.0    200.0     40.00     .000        .0        0
  3   130.0   140.0    225.0     40.00     .000        .0        0


--------------------------------
ANISOTROPIC STRENGTH PARAMETERS
specified for  1 Soil Unit(s)
--------------------------------


Soil Unit  2 is ANISOTROPIC

Number of direction ranges specified =  3


Direction     Counterclockwise         c-value      i-value
Range No.   Direction Limit (deg)       (psf)      (degrees)

    1              17.00               200.0        40.00
    2              24.00               100.0        25.00
    3              90.00               200.0        40.00


A critical failure surface searching method, using a random
technique for generating sliding BLOCK surfaces, has been
specified.


The active and passive portions of the sliding surfaces
are generated according to the Rankine theory.


 5000 trial surfaces will be generated and analyzed.


  2 boxes specified for generation of central block base


Length of line segments for active and passive portions of
sliding block is    100.0 ft


Box        x-left     y-left    x-right    y-right      Width
no.         (ft)       (ft)       (ft)       (ft)        (ft)

 1         255.0     1670.0     350.0     1690.0        60.0
 2         380.0     1710.0     570.0     1740.0        70.0


Factors of safety have been calculated by the :

* * * * *    SIMPLIFIED JANBU METHOD    * * * * *
```

W.O. 8838

Sec. L-L' W=70' D=5'

```
The 10 most critical of all the failure surfaces examined
are displayed below - the most critical first

Failure surface No. 1 specified by  7 coordinate points

       Point      x-surf      y-surf
        No.        (ft)        (ft)

         1        239.04     1705.00
         2        284.98     1683.58
         3        456.09     1749.30
         4        457.65     1752.66
         5        463.32     1764.81
         6        475.11     1786.99
         7        475.11     1794.99

 **  Corrected JANBU FOS =   1.861  **    (Fo factor = 1.057)

Failure surface No. 2 specified by  9 coordinate points

       Point      x-surf      y-surf
        No.        (ft)        (ft)

         1        249.54     1705.00
         2        255.06     1702.07
         3        258.95     1700.00
         4        289.78     1685.62
         5        453.03     1745.35
         6        456.38     1752.54
         7        461.78     1764.12
         8        473.65     1786.45
         9        473.65     1794.45

 **  Corrected JANBU FOS =   1.872  **    (Fo factor = 1.061)

Failure surface No. 3 specified by  6 coordinate points

       Point      x-surf      y-surf
        No.        (ft)        (ft)

         1        234.29     1705.00
         2        281.76     1682.87
         3        462.32     1754.91
         4        467.88     1766.83
         5        478.40     1786.62
         6        478.40     1794.62

 **  Corrected JANBU FOS =   1.883  **    (Fo factor = 1.057)

Failure surface No. 4 specified by  8 coordinate points

       Point      x-surf      y-surf
        No.        (ft)        (ft)

         1        289.07     1718.94
         2        324.69     1700.00
         3        325.57     1699.59
         4        453.88     1750.28
         5        454.97     1752.39
         6        459.96     1763.32
         7        471.87     1785.72
         8        471.87     1793.72

 **  Corrected JANBU FOS =   1.890  **    (Fo factor = 1.065)

Failure surface No. 5 specified by  7 coordinate points

       Point      x-surf      y-surf
        No.        (ft)        (ft)

         1        275.01     1713.18
         2        299.80     1700.00
         3        314.41     1693.19
         4        450.55     1752.03
         5        454.74     1760.99
         6        466.77     1783.64
         7        466.77     1791.64

 **  Corrected JANBU FOS =   1.903  **    (Fo factor = 1.062)

Failure surface No. 6 specified by  8 coordinate points

       Point      x-surf      y-surf
        No.        (ft)        (ft)

         1        268.32     1710.45
         2        287.97     1700.00
         3        300.89     1693.98
         4        468.91     1752.55
         5        469.49     1753.80
         6        477.59     1771.15
         7        485.40     1785.84
         8        485.40     1793.84

 **  Corrected JANBU FOS =   1.909  **    (Fo factor = 1.056)

Failure surface No. 7 specified by  8 coordinate points

       Point      x-surf      y-surf
        No.        (ft)        (ft)

         1        259.37     1706.79
         2        272.13     1700.00
         3        301.27     1686.41
         4        461.94     1747.45
         5        454.68     1753.33
         6        471.79     1768.57
         7        481.22     1786.31
         8        481.22     1794.31

 **  Corrected JANBU FOS =   1.910  **    (Fo factor = 1.060)

Failure surface No. 8 specified by  8 coordinate points

       Point      x-surf      y-surf
        No.        (ft)        (ft)

         1        255.85     1705.35
         2        265.90     1700.00
         3        286.23     1690.52
         4        453.67     1747.12
         5        456.18     1752.52
         6        461.55     1764.02
         7        473.42     1786.35
         8        473.42     1794.35

 **  Corrected JANBU FOS =   1.916  **    (Fo factor = 1.060)

Failure surface No. 9 specified by  7 coordinate points

       Point      x-surf      y-surf
        No.        (ft)        (ft)
```

W.O. 8838
Sec. L-L’ W=70’ D=5’

```
             1          239.48      1705.00
             2          279.87      1686.16
             3          447.28      1744.92
             4          450.57      1751.98
             5          454.78      1761.01
             6          466.82      1783.65
             7          466.82      1791.65

   **  Corrected JANBU FOS =   1.919  **     (Fo factor = 1.060)

 Failure surface No.10 specified by  7 coordinate points

          Point       x-surf       y-surf
           No.         (ft)         (ft)

             1          241.55      1705.00
             2          279.84      1687.14
             3          453.56      1749.39
             4          454.96      1752.40
             5          460.08      1763.37
             6          471.99      1785.77
             7          471.99      1793.77

   **  Corrected JANBU FOS =   1.919  **     (Fo factor = 1.057)

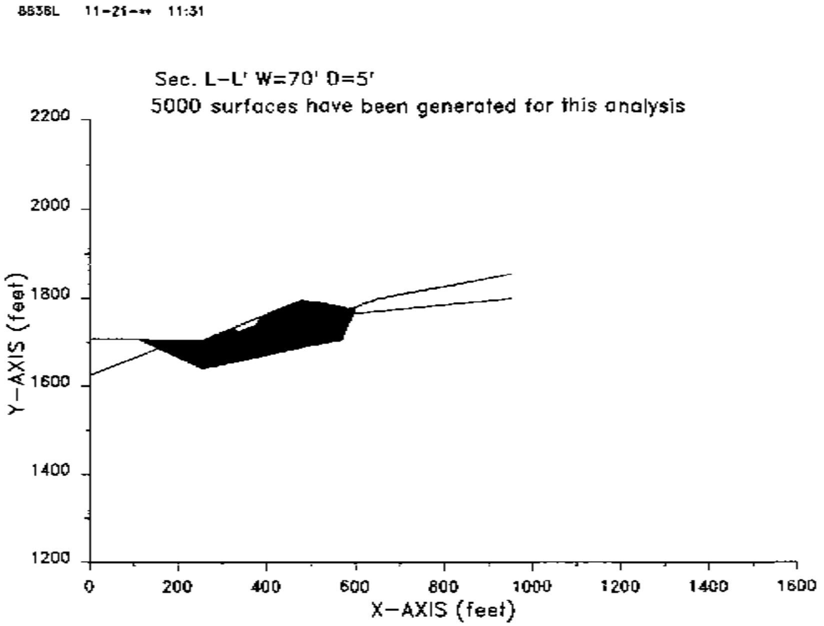

 The following is a summary of the TEN most critical surfaces

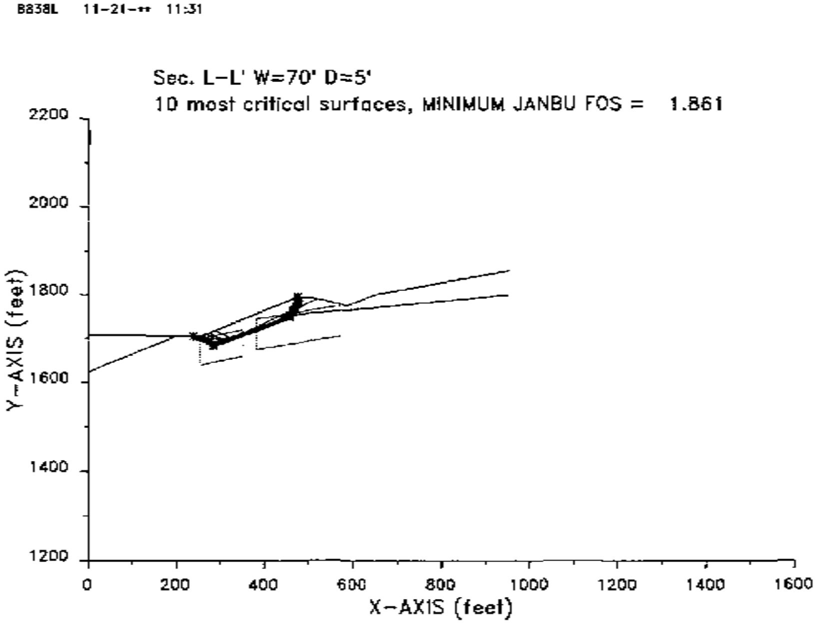
 Problem Description : Sec. L-L' W=70' D=5'

         Modified      Correction    Initial     Terminal     Available
        JANBU FOS        Factor      x-coord     x-coord      Strength
                                      (ft)        (ft)          (lb)

  1.       1.861         1.057       239.04      475.11      5.363E+05
  2.       1.872         1.061       249.54      473.65      5.324E+05
  3.       1.883         1.057       234.29      478.40      5.382E+05
  4.       1.890         1.065       289.07      471.87      4.054E+05
  5.       1.903         1.062       275.01      466.77      4.344E+05
  6.       1.909         1.056       268.32      485.40      5.004E+05
  7.       1.910         1.060       259.37      481.22      5.754E+05
  8.       1.916         1.060       255.65      473.42      4.893E+05
  9.       1.919         1.060       239.48      466.82      5.016E+05
 10.       1.919         1.057       241.55      471.99      4.998E+05

                   *    * *  END OF FILE  * * *
```





GEOLABS-WESTLAKE VILLAGE

Plate L.3

W.O. 8838

Sec. L-L' W=70' D=5' Pseudo

```
XSTABL File: 8838LP    11-21-**   11:31

          ******************************************
          *              X S T A B L               *
          *                                        *
          *        Slope Stability Analysis        *
          *               using the                *
          *            Method of Slices            *
          *                                        *
          *        Copyright (C) 1992 À 96         *
          *   Interactive Software Designs, Inc.   *
          *        Moscow, ID 83843, U.S.A.        *
          *                                        *
          *          All Rights Reserved           *
          *                                        *
          * Ver. 5.201                  96 À 1545  *
          ******************************************

 Problem Description : Sec. L-L' W=70' D=5' Pseudo


 -----------------------------
 SEGMENT BOUNDARY COORDINATES
 -----------------------------

    9 SURFACE boundary segments

 Segment    x-left    y-left    x-right   y-right     Soil Unit
   No.       (ft)      (ft)      (ft)      (ft)     Below Segment

    1          .0     1708.0     130.0    1708.0          1
    2       130.0     1708.0     136.0    1705.0          1
    3       136.0     1705.0     200.0    1705.0          2
    4       200.0     1705.0     255.0    1705.0          2
    5       255.0     1705.0     475.0    1795.0          1
    6       475.0     1795.0     520.0    1790.0          1
    7       520.0     1790.0     585.0    1775.0          3
    8       585.0     1775.0     650.0    1800.0          3
    9       650.0     1800.0     950.0    1855.0          3

    6 SUBSURFACE boundary segments

 Segment    x-left    y-left    x-right   y-right     Soil Unit
   No.       (ft)      (ft)      (ft)      (ft)     Below Segment

    1          .0     1625.0     200.0    1705.0          2
    2       255.0     1705.0     255.1    1700.0          2
    3       255.1     1700.0     325.0    1700.0          2
    4       325.0     1700.0     430.0    1750.0          2
    5       430.0     1750.0     520.0    1790.0          3
    6       430.0     1750.0     950.0    1800.0          2

  -----------------------------------
  A CRACKED ZONE HAS BEEN SPECIFIED
  -----------------------------------

      Depth of crack below ground surface =  8.00   (feet)
      Maximum depth of water in crack     =   .00   (feet)
      Unit weight of water in crack       = 62.40   (pcf)

 Failure surfaces will have a vertical side equal to the
 specified depth of crack and be affected by a hydrostatic
 force according to the specified depth of water in the crack
```

```
 --------------------------
 ISOTROPIC Soil Parameters
 --------------------------

  3 Soil unit(s) specified

 Soil   Unit Weight   Cohesion  Friction    Pore Pressure      Water
 Unit  Moist    Sat.  Intercept   Angle   Parameter Constant  Surface
  No.  (pcf)   (pcf)    (psf)     (deg)      Ru      (psf)      No.

   1   125.0   135.0    200.0     34.00     .000        .0        0
   2   130.0   140.0    200.0     40.00     .000        .0        0
   3   130.0   140.0    225.0     40.00     .000        .0        0


 --------------------------------
 ANISOTROPIC STRENGTH PARAMETERS
 specified for  1 Soil Unit(s)
 --------------------------------


 Soil Unit  2 is ANISOTROPIC

 Number of direction ranges specified =  3


 Direction     Counterclockwise       c-value     1-value
 Range No.   Direction Limit (deg)     (psf)     (degrees)

     1              17.00              200.0       40.00
     2              24.00              100.0       25.00
     3              90.00              200.0       40.00


 A horizontal earthquake loading coefficient
 of   .150 has been assigned

 A vertical earthquake loading coefficient
 of   .000 has been assigned


 A critical failure surface searching method, using a random
 technique for generating sliding BLOCK surfaces, has been
 specified.


 The active and passive portions of the sliding surfaces
 are generated according to the Rankine theory.


  5000 trial surfaces will be generated and analyzed.


   2 boxes specified for generation of central block base


 Length of line segments for active and passive portions of
 sliding block is    100.0 ft


 Box         x-left     y-left    x-right    y-right      Width
 no.          (ft)       (ft)       (ft)       (ft)        (ft)

  1          255.0     1670.0      350.0     1690.0        60.0
  2          380.0     1710.0      570.0     1740.0        70.0
```

W.O. 8838
Sec. L-L' W=70' D=5' Pseudo

```
Factors of safety have been calculated by the :

* * * * *   SIMPLIFIED JANBU METHOD   * * * * *


The 10 most critical of all the failure surfaces examined
are displayed below - the most critical first

Failure surface No. 1 specified by  9 coordinate points

      Point      x-surf      y-surf
       No.        (ft)        (ft)

        1        250.90     1705.00
        2        255.04     1702.80
        3        260.30     1700.00
        4        287.76     1687.20
        5        480.30     1747.98
        6        483.65     1755.16
        7        494.64     1778.73
        8        497.70     1784.48
        9        497.70     1792.48

 **  Corrected JANBU FOS =   1.311  **    (Fo factor = 1.056)

Failure surface No. 2 specified by  7 coordinate points

      Point      x-surf      y-surf
       No.        (ft)        (ft)

        1        239.04     1705.00
        2        284.98     1683.58
        3        456.09     1749.30
        4        457.65     1752.66
        5        463.32     1764.81
        6        475.11     1786.99
        7        475.11     1794.99

 **  Corrected JANBU FOS =   1.318  **    (Fo factor = 1.057)

Failure surface No. 3 specified by  9 coordinate points

      Point      x-surf      y-surf
       No.        (ft)        (ft)

        1        249.54     1705.00
        2        255.06     1702.07
        3        258.95     1700.00
        4        289.78     1685.62
        5        453.03     1745.35
        6        456.38     1752.54
        7        461.78     1764.12
        8        473.65     1786.45
        9        473.65     1794.45

 **  Corrected JANBU FOS =   1.321  **    (Fo factor = 1.061)

Failure surface No. 4 specified by  8 coordinate points

      Point      x-surf      y-surf
       No.        (ft)        (ft)

        1        268.32     1710.45
        2        287.97     1700.00
        3        300.89     1693.98
        4        468.91     1752.55
        5        469.49     1753.80
        6        477.59     1771.15
        7        485.40     1785.84
        8        485.40     1793.84

 **  Corrected JANBU FOS =   1.323  **    (Fo factor = 1.056)

Failure surface No. 5 specified by  7 coordinate points

      Point      x-surf      y-surf
       No.        (ft)        (ft)

        1        282.14     1716.10
        2        312.42     1700.00
        3        317.16     1697.79
        4        481.05     1755.18
        5        491.35     1777.26
        6        495.32     1784.74
        7        495.32     1792.74

 **  Corrected JANBU FOS =   1.324  **    (Fo factor = 1.055)

Failure surface No. 6 specified by  6 coordinate points

      Point      x-surf      y-surf
       No.        (ft)        (ft)

        1        235.65     1705.00
        2        279.74     1684.44
        3        489.59     1757.53
        4        500.73     1781.44
        5        502.09     1783.99
        6        502.09     1791.99

 **  Corrected JANBU FOS =   1.324  **    (Fo factor = 1.049)

Failure surface No. 7 specified by  8 coordinate points

      Point      x-surf      y-surf
       No.        (ft)        (ft)

        1        289.07     1718.94
        2        324.69     1700.00
        3        325.57     1699.59
        4        453.88     1750.28
        5        454.87     1752.39
        6        459.96     1763.32
        7        471.87     1785.72
        8        471.87     1793.72

 **  Corrected JANBU FOS =   1.330  **    (Fo factor = 1.065)

Failure surface No. 8 specified by  8 coordinate points

      Point      x-surf      y-surf
       No.        (ft)        (ft)

        1        271.00     1711.55
        2        292.72     1700.00
        3        304.11     1694.69
        4        462.68     1746.94
        5        465.71     1753.43
```

W.O. 8838
Sec. L-L' W=70' D=5' Pseudo

```
             6         473.03      1769.12
             7         482.11      1786.21
             8         482.11      1794.21

  **  Corrected JANBU FOS =    1.330  **     (Fo factor = 1.063)

Failure surface No. 9 specified by  6 coordinate points

         Point        x-surf       y-surf
          No.          (ft)         (ft)

             1         234.29      1705.00
             2         281.76      1682.87
             3         462.32      1754.91
             4         467.88      1766.83
             5         478.40      1786.62
             6         478.40      1794.62

  **  Corrected JANBU FOS =    1.332  **     (Fo factor = 1.057)

Failure surface No.10 specified by  8 coordinate points

         Point        x-surf       y-surf
          No.          (ft)         (ft)

             1         255.85      1705.35
             2         265.90      1700.00
             3         286.23      1690.52
             4         453.67      1747.12
             5         456.18      1752.52
             6         461.55      1764.02
             7         473.42      1786.35
             8         473.42      1794.35

  **  Corrected JANBU FOS =    1.336  **     (Fo factor = 1.060)



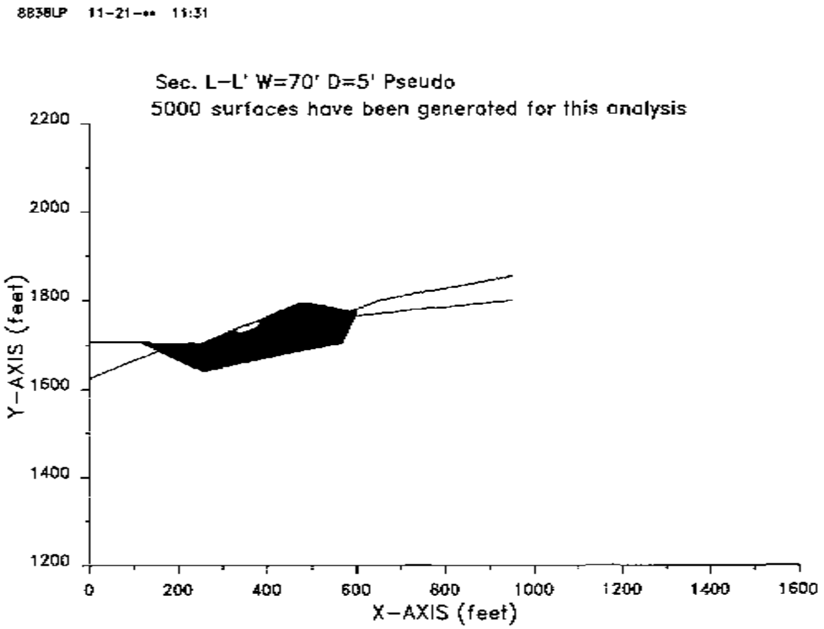
The following is a summary of the TEN most critical surfaces

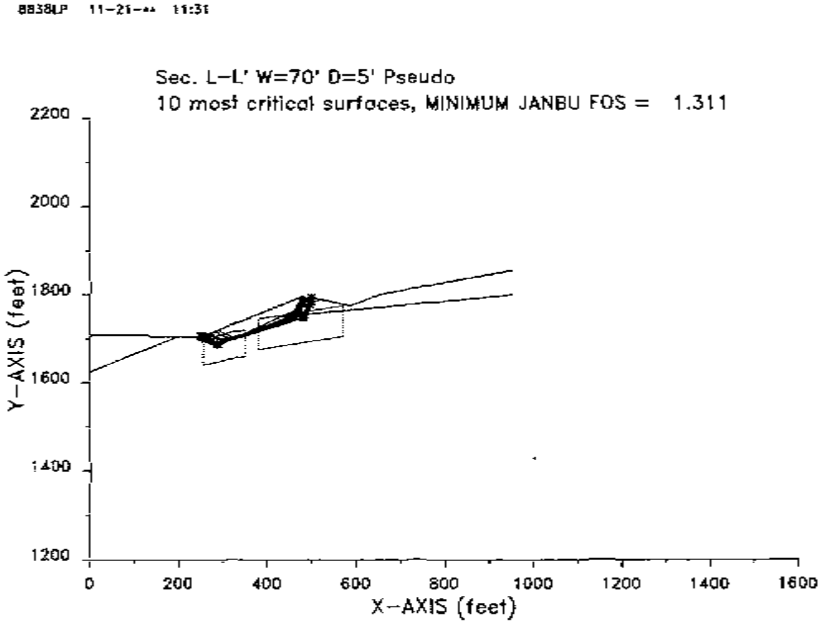
Problem Description : Sec. L-L' W=70' D=5' Pseudo

         Modified       Correction    Initial      Terminal     Available
        JANBU FOS         Factor      x-coord      x-coord       Strength
                                       (ft)         (ft)           (lb)

  1.       1.311           1.056      250.90       497.70      6.034E+05
  2.       1.318           1.057      239.04       475.11      5.296E+05
  3.       1.321           1.061      249.54       473.65      5.241E+05
  4.       1.323           1.056      268.32       485.40      4.976E+05
  5.       1.324           1.055      282.14       495.32      4.894E+05
  6.       1.324           1.049      235.65       502.09      6.026E+05
  7.       1.330           1.065      289.07       471.87      3.976E+05
  8.       1.330           1.063      271.00       482.11      4.907E+05
  9.       1.332           1.057      234.29       478.40      5.316E+05
 10.       1.336           1.060      255.85       473.42      4.757E+05

            *       * *  END OF FILE  * * *
```





W.O. 8838

Sec. L-L' Backcut

```
XSTABL File: 8838LB    11-21-**    12:34

          ******************************************
          *              X S T A B L               *
          *                                        *
          *        Slope Stability Analysis        *
          *               using the                *
          *            Method of Slices            *
          *                                        *
          *       Copyright (C) 1992 À 96          *
          *   Interactive Software Designs, Inc.   *
          *      Moscow, ID 83843, U.S.A.          *
          *                                        *
          *          All Rights Reserved           *
          *                                        *
          * Ver. 5.201                  96 À 1545  *
          ******************************************

Problem Description : Sec. L-L' Backcut



-----------------------------
SEGMENT BOUNDARY COORDINATES
-----------------------------

  11 SURFACE boundary segments

Segment   x-left    y-left    x-right   y-right     Soil Unit
  No.      (ft)      (ft)      (ft)      (ft)     Below Segment

   1         .0     1708.0     130.0    1708.0          1
   2      130.0     1708.0     136.0    1705.0          1
   3      136.0     1705.0     200.0    1705.0          2
   4      200.0     1705.0     255.0    1705.0          2
   5      255.0     1705.0     255.1    1700.0          2
   6      255.1     1700.0     325.0    1700.0          2
   7      325.0     1700.0     430.0    1750.0          2
   8      430.0     1750.0     520.0    1790.0          3
   9      520.0     1790.0     585.0    1775.0          3
  10      585.0     1775.0     650.0    1800.0          3
  11      650.0     1800.0     950.0    1855.0          3

   2 SUBSURFACE boundary segments

Segment   x-left    y-left    x-right   y-right     Soil Unit
  No.      (ft)      (ft)      (ft)      (ft)     Below Segment

   1         .0     1625.0     200.0    1705.0          2
   2      430.0     1750.0     950.0    1800.0          2


 ----------------------------------
 A CRACKED ZONE HAS BEEN SPECIFIED
 ----------------------------------

     Depth of crack below ground surface =  8.00   (feet)
     Maximum depth of water in crack     =   .00   (feet)
     Unit weight of water in crack       = 62.40   (pcf)

Failure surfaces will have a vertical side equal to the
specified depth of crack and be affected by a hydrostatic
force according to the specified depth of water in the crack
```

```
--------------------------
ISOTROPIC Soil Parameters
--------------------------

 3 Soil unit(s) specified

Soil   Unit Weight   Cohesion  Friction    Pore Pressure      Water
Unit  Moist    Sat.  Intercept  Angle   Parameter Constant  Surface
 No.  (pcf)   (pcf)    (psf)    (deg)      Ru      (psf)      No.

  1   125.0   135.0    200.0    34.00     .000        .0        0
  2   130.0   140.0    200.0    40.00     .000        .0        0
  3   130.0   140.0    225.0    40.00     .000        .0        0


--------------------------------
ANISOTROPIC STRENGTH PARAMETERS
specified for  1 Soil Unit(s)
--------------------------------


Soil Unit  2 is ANISOTROPIC

Number of direction ranges specified =  3

Direction     Counterclockwise        c-value     i-value
Range No.   Direction Limit (deg)      (psf)     (degrees)

    1              17.00              200.0       40.00
    2              24.00              100.0       25.00
    3              90.00              200.0       40.00


A critical failure surface searching method, using a random
technique for generating sliding BLOCK surfaces, has been
specified.


The active and passive portions of the sliding surfaces
are generated according to the Rankine theory.


 5000 trial surfaces will be generated and analyzed.


  2 boxes specified for generation of central block base


Length of line segments for active and passive portions of
sliding block is    100.0 ft


Box         x-left     y-left    x-right    y-right      Width
no.          (ft)       (ft)      (ft)       (ft)        (ft)

 1          325.0     1665.0     390.0     1695.0        60.0
 2          400.0     1700.0     530.0     1750.0        70.0



Factors of safety have been calculated by the :

* * * * *   SIMPLIFIED JANBU METHOD   * * * * *
```

```
The 10 most critical of all the failure surfaces examined
are displayed below - the most critical first

Failure surface No. 1 specified by  5 coordinate points

      Point      x-surf      y-surf
       No.        (ft)        (ft)

        1        331.66     1703.17
        2        340.13     1699.22
        3        469.94     1754.02
        4        473.31     1761.25
        5        473.31     1769.25

 **  Corrected JANBU FOS =   1.479  **     (Fo factor = 1.035)

Failure surface No. 2 specified by  6 coordinate points

      Point      x-surf      y-surf
       No.        (ft)        (ft)

        1        332.76     1703.69
        2        341.23     1699.74
        3        467.81     1750.89
        4        469.15     1753.76
        5        472.46     1760.87
        6        472.46     1768.87

 **  Corrected JANBU FOS =   1.491  **     (Fo factor = 1.040)

Failure surface No. 3 specified by  6 coordinate points

      Point      x-surf      y-surf
       No.        (ft)        (ft)

        1        323.79     1700.00
        2        331.66     1696.33
        3        512.95     1757.37
        4        513.25     1758.00
        5        524.01     1781.08
        6        524.01     1789.08

 **  Corrected JANBU FOS =   1.496  **     (Fo factor = 1.047)

Failure surface No. 4 specified by  6 coordinate points

      Point      x-surf      y-surf
       No.        (ft)        (ft)

        1        338.51     1706.43
        2        347.73     1702.13
        3        488.27     1754.29
        4        488.91     1755.66
        5        496.27     1771.45
        6        496.27     1779.45

 **  Corrected JANBU FOS =   1.506  **     (Fo factor = 1.047)

Failure surface No. 5 specified by  6 coordinate points

      Point      x-surf      y-surf
       No.        (ft)        (ft)

        1        335.01     1704.77
        2        344.18     1700.49
        3        502.59     1755.78
        4        503.18     1757.04
        5        513.47     1779.10
        6        513.47     1787.10

 **  Corrected JANBU FOS =   1.507  **     (Fo factor = 1.050)

Failure surface No. 6 specified by  6 coordinate points

      Point      x-surf      y-surf
       No.        (ft)        (ft)

        1        331.02     1702.87
        2        343.37     1697.11
        3        483.90     1751.42
        4        485.73     1755.36
        5        492.45     1769.75
        6        492.45     1777.75

 **  Corrected JANBU FOS =   1.507  **     (Fo factor = 1.048)

Failure surface No. 7 specified by  6 coordinate points

      Point      x-surf      y-surf
       No.        (ft)        (ft)

        1        329.00     1701.90
        2        336.31     1698.49
        3        496.49     1752.74
        4        498.28     1756.57
        5        507.56     1776.47
        6        507.56     1784.47

 **  Corrected JANBU FOS =   1.509  **     (Fo factor = 1.051)

Failure surface No. 8 specified by  5 coordinate points

      Point      x-surf      y-surf
       No.        (ft)        (ft)

        1        328.82     1701.82
        2        341.17     1696.06
        3        488.16     1757.69
        4        494.14     1770.51
        5        494.14     1778.51

 **  Corrected JANBU FOS =   1.510  **     (Fo factor = 1.039)

Failure surface No. 9 specified by  5 coordinate points

      Point      x-surf      y-surf
       No.        (ft)        (ft)

        1        314.04     1700.00
        2        331.12     1692.03
        3        482.02     1755.78
        4        487.52     1767.56
        5        487.52     1775.56

 **  Corrected JANBU FOS =   1.512  **     (Fo factor = 1.037)

Failure surface No.10 specified by  6 coordinate points

      Point      x-surf      y-surf
       No.        (ft)        (ft)
```

W.O. 8838
Sec. L-L' Backcut

```
              1        317.70      1700.00
              2        330.09      1694.22
              3        459.50      1746.99
              4        462.36      1753.11
              5        464.29      1757.24
              6        464.29      1765.24

  **  Corrected JANBU FOS =    1.513  **     (Fo factor = 1.040)

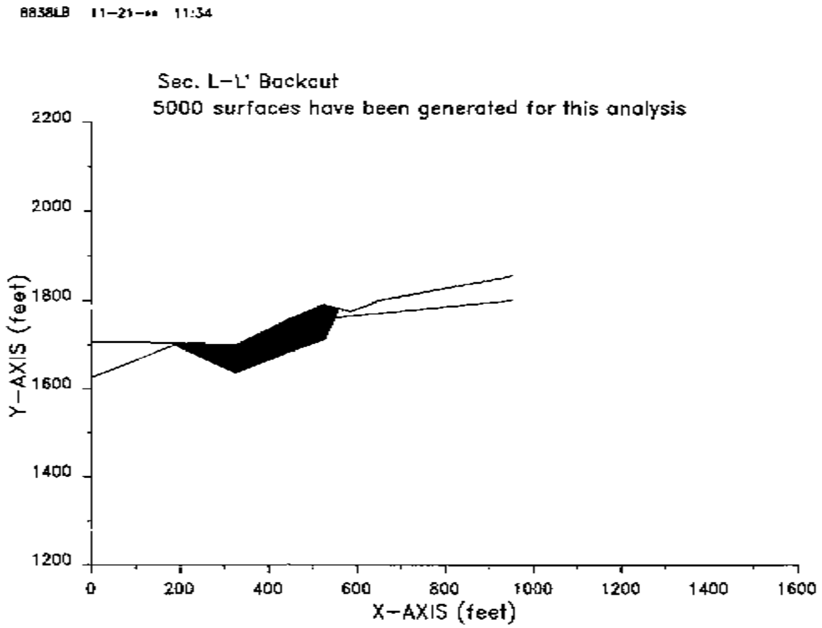

The following is a summary of the TEN most critical surfaces

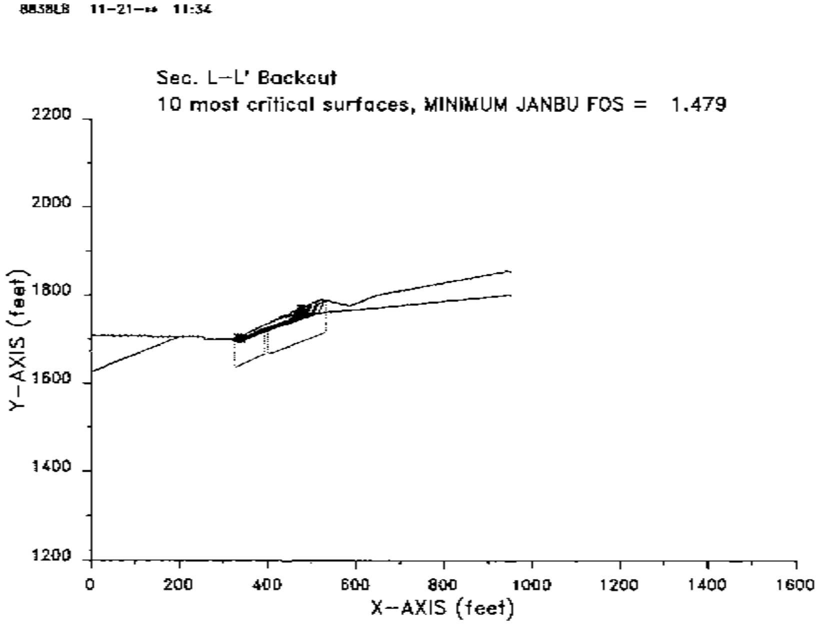
Problem Description : Sec. L-L' Backcut

        Modified       Correction    Initial      Terminal     Available
        JANBU FOS       Factor       x-coord      x-coord      Strength
                                      (ft)         (ft)          (lb)

  1.      1.479          1.035        331.66       473.31      1.107E+05
  2.      1.491          1.040        332.76       472.46      1.181E+05
  3.      1.496          1.047        323.79       524.01      2.484E+05
  4.      1.506          1.047        338.51       496.27      1.656E+05
  5.      1.507          1.050        335.01       513.47      2.145E+05
  6.      1.507          1.048        331.02       492.45      1.889E+05
  7.      1.509          1.051        329.00       507.56      2.076E+05
  8.      1.510          1.039        328.82       494.14      1.768E+05
  9.      1.512          1.037        314.04       487.52      1.716E+05
 10.      1.513          1.040        317.70       464.29      1.246E+05

                    *    * *  END OF FILE  * * *
```





GEOLABS-WESTLAKE VILLAGE

Plate Lb.3

W.O. 8838

Sec. M-M' W=60'D=5'

```
XSTABL File: 8838M    11-22-**   12:03

          ******************************************
          *                X S T A B L             *
          *                                        *
          *        Slope Stability Analysis        *
          *                using the               *
          *             Method of Slices           *
          *                                        *
          *         Copyright (C) 1992 Ã 96        *
          *    Interactive Software Designs, Inc.  *
          *        Moscow, ID 83843, U.S.A.        *
          *                                        *
          *           All Rights Reserved          *
          *                                        *
          *  Ver. 5.201                 96 Ã 1545  *
          ******************************************

Problem Description : Sec. M-M' W=60' D=5'


-----------------------------
SEGMENT BOUNDARY COORDINATES
-----------------------------

  11 SURFACE boundary segments

Segment    x-left    y-left    x-right   y-right     Soil Unit
  No.       (ft)      (ft)      (ft)      (ft)     Below Segment

   1          .0     1665.0     215.0    1667.0          1
   2       215.0     1667.0     340.0    1667.0          2
   3       340.0     1667.0     490.0    1720.0          1
   4       490.0     1720.0     570.0    1750.0          1
   5       570.0     1750.0     735.0    1805.0          1
   6       735.0     1805.0     800.0    1820.0          3
   7       800.0     1820.0    1250.0    1910.0          3
   8      1250.0     1910.0    1370.0    1955.0          3
   9      1370.0     1955.0    1450.0    1955.0          3
  10      1450.0     1955.0    1540.0    1930.0          3
  11      1540.0     1930.0    1670.0    1860.0          3

   6 SUBSURFACE boundary segments

Segment    x-left    y-left    x-right   y-right     Soil Unit
  No.       (ft)      (ft)      (ft)      (ft)     Below Segment

   1          .0     1585.0     215.0    1667.0          2
   2       340.0     1667.0     340.1    1662.0          2
   3       340.1     1662.0     400.0    1662.0          2
   4       400.0     1662.0     560.0    1745.0          2
   5       560.0     1745.0     735.0    1805.0          3
   6       560.0     1745.0    1670.0    1860.0          2

-----------------------------------
 A CRACKED ZONE HAS BEEN SPECIFIED
-----------------------------------

     Depth of crack below ground surface =  8.00   (feet)
     Maximum depth of water in crack     =   .00   (feet)
     Unit weight of water in crack       = 62.40   (pcf)

Failure surfaces will have a vertical side equal to the
specified depth of crack and be affected by a hydrostatic
force according to the specified depth of water in the crack

--------------------------
ISOTROPIC Soil Parameters
--------------------------

 3 Soil unit(s) specified

Soil   Unit Weight   Cohesion  Friction    Pore Pressure      Water
Unit  Moist   Sat.  Intercept   Angle   Parameter Constant  Surface
No.   (pcf)  (pcf)    (psf)     (deg)      Ru      (psf)      No.

  1   125.0  135.0    200.0     34.00     .000        .0       0
  2   130.0  140.0    200.0     40.00     .000        .0       0
  3   130.0  140.0    225.0     40.00     .000        .0       0


--------------------------------
ANISOTROPIC STRENGTH PARAMETERS
specified for  2 Soil Unit(s)
--------------------------------


Soil Unit  2 is ANISOTROPIC

Number of direction ranges specified =  3

Direction     Counterclockwise        c-value      i-value
Range No.   Direction Limit (deg)      (psf)      (degrees)

    1              10.00               200.0        40.00
    2              15.00               100.0        25.00
    3              90.00               200.0        40.00


Soil Unit  3 is ANISOTROPIC

Number of direction ranges specified =  3

Direction     Counterclockwise        c-value      i-value
Range No.   Direction Limit (deg)      (psf)      (degrees)

    1               5.00               225.0        40.00
    2              10.00               100.0        25.00
    3              90.00               225.0        40.00


A critical failure surface searching method, using a random
technique for generating sliding BLOCK surfaces, has been
specified.


The active and passive portions of the sliding surfaces
are generated according to the Rankine theory.


 5000 trial surfaces will be generated and analyzed.


  2 boxes specified for generation of central block base


Length of line segments for active and passive portions of
sliding block is    100.0 ft
```

W.O. 8838
Sec. M-M' W=60'D=5'

```
Box       x-left     y-left     x-right    y-right      Width
no.        (ft)       (ft)       (ft)       (ft)         (ft)

 1         340.0     1620.0      480.0     1670.0        70.0
 2         500.0     1675.0      850.0     1760.0        90.0


Factors of safety have been calculated by the :

* * * * *   SIMPLIFIED JANBU METHOD   * * * * *


The 10 most critical of all the failure surfaces examined
are displayed below - the most critical first

Failure surface No. 1 specified by  7 coordinate points

      Point      x-surf      y-surf
       No.        (ft)        (ft)

        1        357.74     1673.27
        2        378.93     1662.00
        3        379.58     1661.70
        4        725.88     1754.48
        5        729.65     1762.58
        6        747.00     1799.77
        7        747.00     1807.77

 **  Corrected JANBU FOS =    1.867  **     (Fo factor = 1.045)


Failure surface No. 2 specified by  7 coordinate points

      Point      x-surf      y-surf
       No.        (ft)        (ft)

        1        359.89     1674.03
        2        382.51     1662.00
        3        389.55     1658.71
        4        713.23     1743.32
        5        721.83     1761.77
        6        738.65     1797.84
        7        738.65     1805.84

 **  Corrected JANBU FOS =    1.884  **     (Fo factor = 1.052)


Failure surface No. 3 specified by  6 coordinate points

      Point      x-surf      y-surf
       No.        (ft)        (ft)

        1        362.57     1674.97
        2        386.50     1662.25
        3        786.60     1767.92
        4        786.87     1768.51
        5        807.89     1813.58
        6        807.89     1821.58

 **  Corrected JANBU FOS =    1.886  **     (Fo factor = 1.041)


Failure surface No. 4 specified by  6 coordinate points

      Point      x-surf      y-surf
       No.        (ft)        (ft)

        1        371.18     1678.02
        2        388.95     1668.57
        3        737.64     1758.86
        4        739.87     1763.64
        5        757.89     1802.28
        6        757.89     1810.28

 **  Corrected JANBU FOS =    1.891  **     (Fo factor = 1.044)


Failure surface No. 5 specified by  6 coordinate points

      Point      x-surf      y-surf
       No.        (ft)        (ft)

        1        315.88     1667.00
        2        353.30     1649.55
        3        686.13     1737.94
        4        695.99     1759.09
        5        709.74     1788.58
        6        709.74     1796.58

 **  Corrected JANBU FOS =    1.896  **     (Fo factor = 1.049)


Failure surface No. 6 specified by  6 coordinate points

      Point      x-surf      y-surf
       No.        (ft)        (ft)

        1        381.26     1681.58
        2        398.97     1672.16
        3        693.34     1750.29
        4        697.51     1759.25
        5        711.46     1789.15
        6        711.46     1797.15

 **  Corrected JANBU FOS =    1.897  **     (Fo factor = 1.046)


Failure surface No. 7 specified by  7 coordinate points

      Point      x-surf      y-surf
       No.        (ft)        (ft)

        1        358.23     1673.44
        2        379.76     1662.00
        3        391.77     1656.40
        4        773.86     1758.22
        5        778.24     1767.61
        6        798.81     1811.72
        7        798.81     1819.72

 **  Corrected JANBU FOS =    1.898  **     (Fo factor = 1.046)


Failure surface No. 8 specified by  7 coordinate points

      Point      x-surf      y-surf
       No.        (ft)        (ft)

        1        368.73     1677.15
        2        397.23     1662.00
        3        398.81     1661.27
        4        779.79     1759.68
        5        783.75     1768.18
        6        804.61     1812.92
        7        804.61     1820.92
```

W.O. 8838

Sec. M-M' W=60'D=5'

```
  **  Corrected JANBU FOS =   1.904  **     (Fo factor = 1.046)


 Failure surface No. 9 specified by  6 coordinate points

         Point       x-surf      y-surf
          No.         (ft)        (ft)

          1          320.11     1667.00
          2          355.68     1650.42
          3          680.39     1733.57
          4          692.10     1758.69
          5          705.36     1787.12
          6          705.36     1795.12

  **  Corrected JANBU FOS =   1.912  **     (Fo factor = 1.051)


 Failure surface No.10 specified by  7 coordinate points

         Point       x-surf      y-surf
          No.         (ft)        (ft)

          1          346.91     1669.44
          2          360.90     1662.00
          3          374.99     1655.43
          4          691.07     1734.08
          5          703.08     1759.82
          6          717.73     1791.24
          7          717.73     1799.24

  **  Corrected JANBU FOS =   1.914  **     (Fo factor = 1.054)



 The following is a summary of the TEN most critical surfaces

 Problem Description : Sec. M-M' W=60' D=5'

        Modified      Correction    Initial     Terminal     Available
        JANBU FOS       Factor      x-coord     x-coord      Strength
                                     (ft)        (ft)          (lb)

  1.      1.867          1.045       357.74      747.00      8.616E+05
  2.      1.884          1.052       359.89      738.65      9.731E+05
  3.      1.886          1.041       362.57      807.89      1.079E+06
  4.      1.891          1.044       371.18      757.89      8.147E+05
  5.      1.896          1.049       315.88      709.74      9.120E+05
  6.      1.897          1.046       381.26      711.46      6.304E+05
  7.      1.898          1.046       358.23      798.81      1.234E+06
  8.      1.904          1.046       368.73      804.61      1.190E+06
  9.      1.912          1.051       320.11      705.36      9.222E+05
 10.      1.914          1.054       346.91      717.73      9.568E+05


                 *     * *  END OF FILE  * * *
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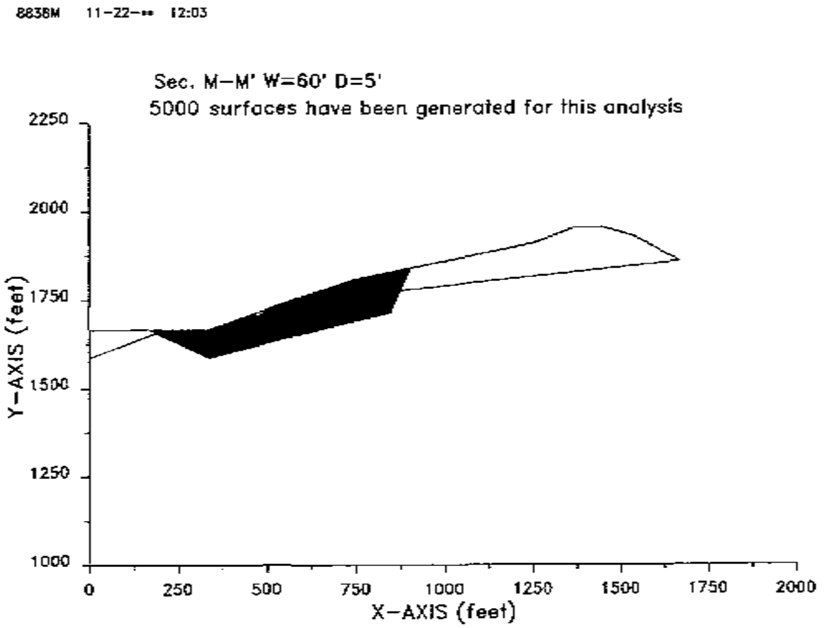
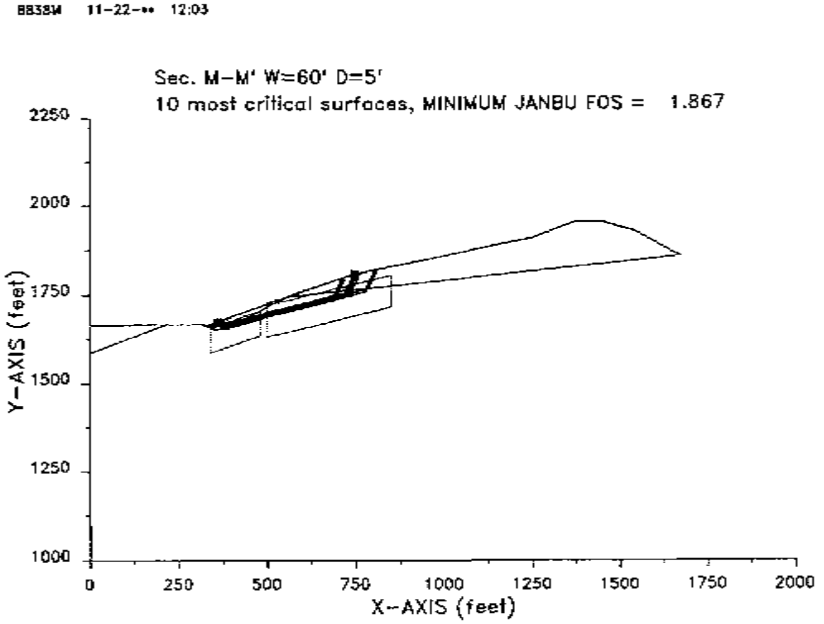




GEOLABS-WESTLAKE VILLAGE

Plate M.3

W.O. 8838

Sec. M-M' Pseudostatic

```
XSTABL File: 8838MP    11-22-**    12:03

          *****************************************
          *              X S T A B L              *
          *                                       *
          *        Slope Stability Analysis       *
          *              using the                *
          *           Method of Slices            *
          *                                       *
          *        Copyright (C) 1992 À 96        *
          *   Interactive Software Designs, Inc.  *
          *      Moscow, ID 83843, U.S.A.         *
          *                                       *
          *          All Rights Reserved          *
          *                                       *
          * Ver. 5.201                  96 À 1545 *
          *****************************************

Problem Description : Sec. M-M' W=60' D=5' Pseudo


----------------------------
SEGMENT BOUNDARY COORDINATES
----------------------------

   11 SURFACE boundary segments

Segment   x-left    y-left    x-right   y-right    Soil Unit
  No.      (ft)      (ft)      (ft)      (ft)    Below Segment

   1         .0     1665.0     215.0    1667.0         1
   2      215.0     1667.0     340.0    1667.0         2
   3      340.0     1667.0     490.0    1720.0         1
   4      490.0     1720.0     570.0    1750.0         1
   5      570.0     1750.0     735.0    1805.0         1
   6      735.0     1805.0     800.0    1820.0         3
   7      800.0     1820.0    1250.0    1910.0         3
   8     1250.0     1910.0    1370.0    1955.0         3
   9     1370.0     1955.0    1450.0    1955.0         3
  10     1450.0     1955.0    1540.0    1930.0         3
  11     1540.0     1930.0    1670.0    1860.0         3


    6 SUBSURFACE boundary segments

Segment   x-left    y-left    x-right   y-right    Soil Unit
  No.      (ft)      (ft)      (ft)      (ft)    Below Segment

   1         .0     1585.0     215.0    1667.0         2
   2      340.0     1667.0     340.1    1662.0         2
   3      340.1     1662.0     400.0    1662.0         2
   4      400.0     1662.0     560.0    1745.0         2
   5      560.0     1745.0     735.0    1805.0         3
   6      560.0     1745.0    1670.0    1860.0         2


 ----------------------------------
 A CRACKED ZONE HAS BEEN SPECIFIED
 ----------------------------------

     Depth of crack below ground surface =  8.00   (feet)
     Maximum depth of water in crack     =   .00   (feet)
     Unit weight of water in crack       = 62.40   (pcf)

Failure surfaces will have a vertical side equal to the
specified depth of crack and be affected by a hydrostatic
force according to the specified depth of water in the crack
```

```
-------------------------
ISOTROPIC Soil Parameters
-------------------------

 3 Soil unit(s) specified

Soil   Unit Weight   Cohesion  Friction    Pore Pressure      Water
Unit  Moist    Sat.  Intercept  Angle   Parameter  Constant  Surface
 No.  (pcf)   (pcf)    (psf)    (deg)      Ru        (psf)     No.

  1   125.0   135.0    200.0    34.00     .000         .0       0
  2   130.0   140.0    200.0    40.00     .000         .0       0
  3   130.0   140.0    225.0    40.00     .000         .0       0


--------------------------------
ANISOTROPIC STRENGTH PARAMETERS
specified for  2 Soil Unit(s)
--------------------------------


Soil Unit  2 is ANISOTROPIC

Number of direction ranges specified =  3


Direction     Counterclockwise         c-value      i-value
Range No.   Direction Limit (deg)       (psf)      (degrees)

    1               10.00               200.0        40.00
    2               15.00               100.0        25.00
    3               90.00               200.0        40.00


Soil Unit  3 is ANISOTROPIC

Number of direction ranges specified =  3


Direction     Counterclockwise         c-value      i-value
Range No.   Direction Limit (deg)       (psf)      (degrees)

    1                5.00               225.0        40.00
    2               10.00               100.0        25.00
    3               90.00               225.0        40.00


A horizontal earthquake loading coefficient
of   .150 has been assigned

A vertical earthquake loading coefficient
of   .000 has been assigned


A critical failure surface searching method, using a random
technique for generating sliding BLOCK surfaces, has been
specified.


The active and passive portions of the sliding surfaces
are generated according to the Rankine theory.
```

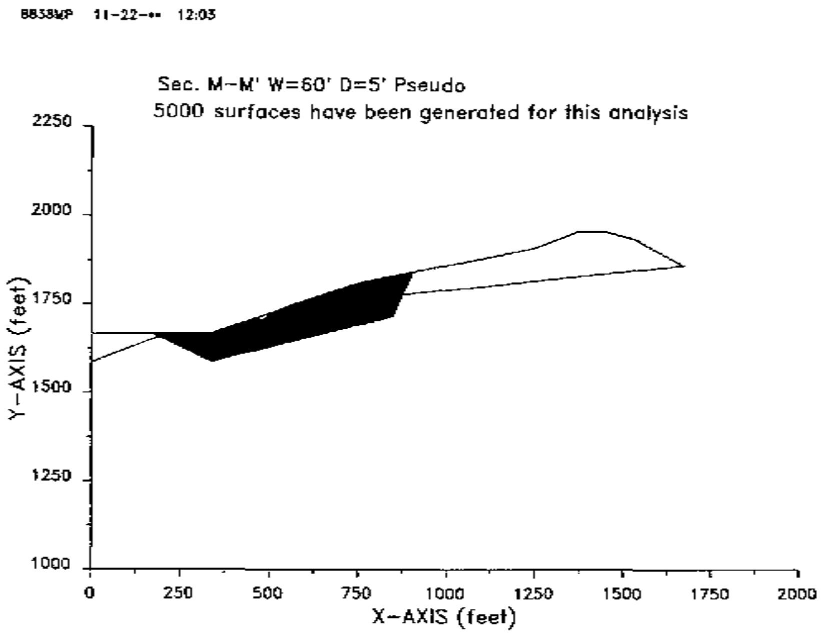
W.O. 8838
Sec. M-M' Pseudostatic

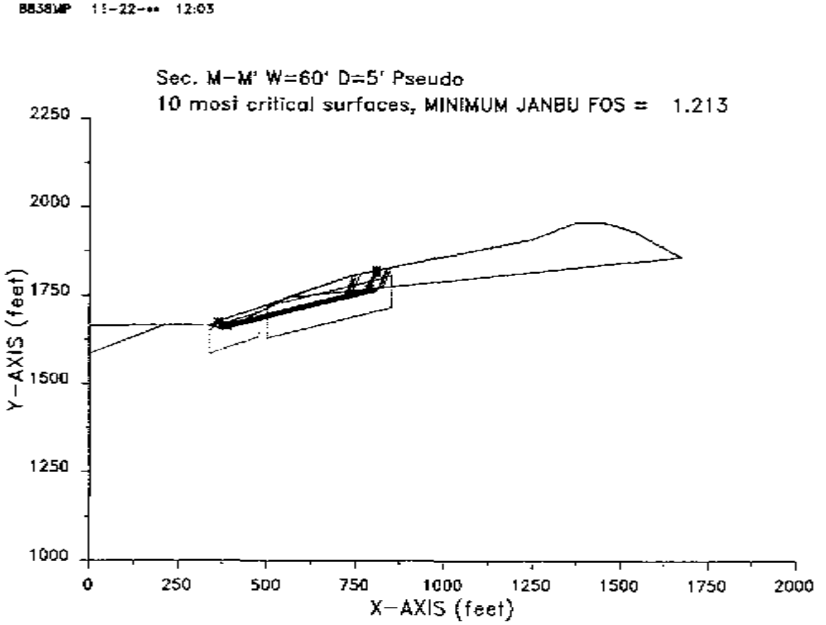
```
 5000 trial surfaces will be generated and analyzed.

  2 boxes specified for generation of central block base

Length of line segments for active and passive portions of
sliding block is    100.0 ft

Box         x-left      y-left     x-right     y-right      Width
no.          (ft)        (ft)        (ft)        (ft)        (ft)

 1          340.0      1620.0       480.0      1670.0       70.0
 2          500.0      1675.0       850.0      1760.0       90.0


Factors of safety have been calculated by the :

* * * * *   SIMPLIFIED JANBU METHOD   * * * * *


The 10 most critical of all the failure surfaces examined
are displayed below - the most critical first

Failure surface No. 1 specified by  6 coordinate points

      Point      x-surf      y-surf
       No.        (ft)        (ft)

        1        362.57     1674.97
        2        386.50     1662.25
        3        786.60     1767.92
        4        786.87     1768.51
        5        807.89     1813.58
        6        807.89     1821.58

 **  Corrected JANBU FOS =    1.213  **    (Fo factor = 1.041)

Failure surface No. 2 specified by  7 coordinate points

      Point      x-surf      y-surf
       No.        (ft)        (ft)

        1        357.74     1673.27
        2        378.93     1662.00
        3        379.58     1661.70
        4        725.88     1754.48
        5        729.65     1762.58
        6        747.00     1799.77
        7        747.00     1807.77

 **  Corrected JANBU FOS =    1.219  **    (Fo factor = 1.045)

Failure surface No. 3 specified by  6 coordinate points

      Point      x-surf      y-surf
       No.        (ft)        (ft)

        1        371.18     1678.02
        2        388.95     1668.57
        3        737.64     1758.86
        4        739.87     1763.64
        5        757.89     1802.28
        6        757.89     1810.28
```

```
 **  Corrected JANBU FOS =    1.226  **    (Fo factor = 1.044)

Failure surface No. 4 specified by  7 coordinate points

      Point      x-surf      y-surf
       No.        (ft)        (ft)

        1        368.73     1677.15
        2        397.23     1662.00
        3        398.61     1661.27
        4        779.79     1759.68
        5        783.75     1768.18
        6        804.61     1812.92
        7        804.61     1820.92

 **  Corrected JANBU FOS =    1.226  **    (Fo factor = 1.046)

Failure surface No. 5 specified by  6 coordinate points

      Point      x-surf      y-surf
       No.        (ft)        (ft)

        1        361.09     1674.45
        2        378.93     1664.97
        3        781.95     1767.43
        4        782.23     1768.02
        5        803.01     1812.60
        6        803.01     1820.60

 **  Corrected JANBU FOS =    1.226  **    (Fo factor = 1.041)

Failure surface No. 6 specified by  7 coordinate points

      Point      x-surf      y-surf
       No.        (ft)        (ft)

        1        342.95     1668.04
        2        354.32     1662.00
        3        364.25     1657.37
        4        814.59     1770.17
        5        815.18     1771.44
        6        837.50     1819.52
        7        837.50     1827.52

 **  Corrected JANBU FOS =    1.227  **    (Fo factor = 1.040)

Failure surface No. 7 specified by  7 coordinate points

      Point      x-surf      y-surf
       No.        (ft)        (ft)

        1        342.56     1667.90
        2        353.67     1662.00
        3        371.85     1653.52
        4        807.67     1763.38
        5        811.24     1771.03
        6        833.47     1818.69
        7        833.47     1826.69

 **  Corrected JANBU FOS =    1.229  **    (Fo factor = 1.043)

Failure surface No. 8 specified by  7 coordinate points

      Point      x-surf      y-surf
       No.        (ft)        (ft)
```

W.O. 8838
Sec. M-M' Pseudostatic

```
          1        358.23      1673.44
          2        379.76      1662.00
          3        391.77      1656.40
          4        773.86      1758.22
          5        778.24      1767.61
          6        798.81      1811.72
          7        798.81      1819.72

 **  Corrected JANBU FOS =   1.232  **    (Fo factor = 1.046)

Failure surface No. 9 specified by  7 coordinate points

       Point      x-surf      y-surf
        No.        (ft)        (ft)

          1        359.89      1674.03
          2        382.51      1662.00
          3        389.55      1658.71
          4        713.23      1743.32
          5        721.83      1761.77
          6        738.55      1797.84
          7        738.65      1805.84

 **  Corrected JANBU FOS =   1.235  **    (Fo factor = 1.052)

Failure surface No.10 specified by  6 coordinate points

       Point      x-surf      y-surf
        No.        (ft)        (ft)

          1        341.46      1667.51
          2        351.83      1662.00
          3        369.44      1653.79
          4        824.98      1775.03
          5        846.56      1821.31
          6        846.56      1829.31

 **  Corrected JANBU FOS =   1.235  **    (Fo factor = 1.037)


The following is a summary of the TEN most critical surfaces

Problem Description : Sec. M-M' W=60' D=5' Pseudo

       Modified        Correction    Initial     Terminal    Available
       JANBU FOS         Factor      x-coord      x-coord     Strength
                                      (ft)         (ft)        (lb)

 1.      1.213           1.041       362.57      807.89     1.033E+06
 2.      1.219           1.045       357.74      747.00     8.232E+05
 3.      1.226           1.044       371.18      757.89     7.772E+05
 4.      1.226           1.046       368.73      804.61     1.141E+06
 5.      1.226           1.041       361.09      803.01     9.596E+05
 6.      1.227           1.040       342.95      837.60     1.204E+06
 7.      1.229           1.043       342.56      833.47     1.338E+06
 8.      1.232           1.046       358.23      798.81     1.188E+06
 9.      1.235           1.052       359.89      738.65     9.338E+05
10.      1.235           1.037       341.46      846.56     1.296E+06

                *     * *  END OF FILE  * * *
```





GEOLABS-WESTLAKE VILLAGE

Plate Mp.3

W.O. 8838

Sec. M-M' Backcut

```
XSTABL File: 8838MB    11-22-**    12:04

          ******************************************
          *              X S T A B L               *
          *                                        *
          *        Slope Stability Analysis        *
          *               using the                *
          *            Method of Slices            *
          *                                        *
          *         Copyright (C) 1992 À 96        *
          *   Interactive Software Designs, Inc.   *
          *       Moscow, ID 83843, U.S.A.         *
          *                                        *
          *          All Rights Reserved           *
          *                                        *
          * Ver. 5.201                  96 À 1545  *
          ******************************************

   Problem Description : Sec. M-M' Backcut



   ----------------------------
   SEGMENT BOUNDARY COORDINATES
   ----------------------------

      12 SURFACE boundary segments

   Segment    x-left    y-left    x-right   y-right     Soil Unit
     No.       (ft)      (ft)      (ft)      (ft)     Below Segment

     1           .0     1665.0     215.0    1667.0          1
     2        215.0     1667.0     340.0    1667.0          2
     3        340.0     1667.0     340.1    1662.0          2
     4        340.1     1662.0     400.0    1662.0          2
     5        400.0     1662.0     560.0    1745.0          2
     6        560.0     1745.0     735.0    1805.0          3
     7        735.0     1805.0     800.0    1820.0          3
     8        800.0     1820.0    1250.0    1910.0          3
     9       1250.0     1910.0    1370.0    1955.0          3
    10       1370.0     1955.0    1450.0    1955.0          3
    11       1450.0     1955.0    1540.0    1930.0          3
    12       1540.0     1930.0    1670.0    1860.0          3

       2 SUBSURFACE boundary segments

   Segment    x-left    y-left    x-right   y-right     Soil Unit
     No.       (ft)      (ft)      (ft)      (ft)     Below Segment

     1           .0     1585.0     215.0    1667.0          2
     2        560.0     1745.0    1670.0    1860.0          2

   ----------------------------------
    A CRACKED ZONE HAS BEEN SPECIFIED
   ----------------------------------

       Depth of crack below ground surface =  8.00   (feet)
       Maximum depth of water in crack     =   .00   (feet)
       Unit weight of water in crack       = 62.40   (pcf)

   Failure surfaces will have a vertical side equal to the
   specified depth of crack and be affected by a hydrostatic
   force according to the specified depth of water in the crack
```

```
   --------------------------
   ISOTROPIC Soil Parameters
   --------------------------

    3 Soil unit(s) specified

   Soil   Unit Weight   Cohesion  Friction    Pore Pressure      Water
   Unit  Moist   Sat.  Intercept   Angle   Parameter  Constant  Surface
   No.   (pcf)  (pcf)    (psf)     (deg)      Ru        (psf)      No.

    1    125.0  135.0    200.0     34.00     .000          .0       0
    2    130.0  140.0    200.0     40.00     .000          .0       0
    3    130.0  140.0    225.0     40.00     .000          .0       0

   --------------------------------
   ANISOTROPIC STRENGTH PARAMETERS
   specified for  2 Soil Unit(s)
   --------------------------------


   Soil Unit  2 is ANISOTROPIC

   Number of direction ranges specified =  3

   Direction     Counterclockwise          c-value      i-value
   Range No.   Direction Limit (deg)        (psf)      (degrees)

      1              10.00                  200.0        40.00
      2              15.00                  100.0        25.00
      3              90.00                  200.0        40.00

   Soil Unit  3 is ANISOTROPIC

   Number of direction ranges specified =  3

   Direction     Counterclockwise          c-value      i-value
   Range No.   Direction Limit (deg)        (psf)      (degrees)

      1               5.00                  225.0        40.00
      2              10.00                  100.0        25.00
      3              90.00                  225.0        40.00


   A critical failure surface searching method, using a random
   technique for generating sliding BLOCK surfaces, has been
   specified.


   The active and passive portions of the sliding surfaces
   are generated according to the Rankine theory.


    5000 trial surfaces will be generated and analyzed.


     2 boxes specified for generation of central block base


   Length of line segments for active and passive portions of
   sliding block is    100.0 ft


   Box        x-left     y-left    x-right    y-right      Width
```

W.O. 8838
Sec. M-M' Backcut

```
no.        (ft)       (ft)       (ft)       (ft)        (ft)

 1         400.0      1620.0     480.0      1655.0      70.0
 2         500.0      1670.0     850.0      1760.0      70.0


Factors of safety have been calculated by the :

* * * * *   SIMPLIFIED JANBU METHOD    * * * * *


The 10 most critical of all the failure surfaces examined
are displayed below - the most critical first

Failure surface No. 1 specified by  6 coordinate points

      Point     x-surf     y-surf
       No.       (ft)       (ft)

        1       415.01     1669.79
        2       424.13     1665.54
        3       598.98     1710.87
        4       617.63     1750.98
        5       620.90     1757.88
        6       620.90     1765.88

 **  Corrected JANBU FOS =   1.630  **     (Fo factor = 1.067)


Failure surface No. 2 specified by  6 coordinate points

      Point     x-surf     y-surf
       No.       (ft)       (ft)

        1       395.72     1662.00
        2       406.06     1657.18
        3       615.20     1710.31
        4       635.00     1752.77
        5       640.52     1764.51
        6       640.52     1772.51

 **  Corrected JANBU FOS =   1.631  **     (Fo factor = 1.065)


Failure surface No. 3 specified by  6 coordinate points

      Point     x-surf     y-surf
       No.       (ft)       (ft)

        1       400.11     1662.06
        2       413.07     1656.01
        3       619.95     1709.89
        4       640.20     1753.31
        5       646.41     1766.63
        6       646.41     1774.63

 **  Corrected JANBU FOS =   1.639  **     (Fo factor = 1.067)


Failure surface No. 4 specified by  6 coordinate points

      Point     x-surf     y-surf
       No.       (ft)       (ft)

        1       421.96     1673.39
        2       433.81     1667.87
        3       615.40     1715.79
        4       632.53     1752.51
        5       637.72     1763.65
        6       637.72     1771.65

 **  Corrected JANBU FOS =   1.654  **     (Fo factor = 1.066)


Failure surface No. 5 specified by  6 coordinate points

      Point     x-surf     y-surf
       No.       (ft)       (ft)

        1       411.88     1668.16
        2       425.42     1661.85
        3       648.04     1720.14
        4       664.69     1755.85
        5       674.15     1776.14
        6       674.15     1784.14

 **  Corrected JANBU FOS =   1.662  **     (Fo factor = 1.064)


Failure surface No. 6 specified by  6 coordinate points

      Point     x-surf     y-surf
       No.       (ft)       (ft)

        1       404.20     1664.18
        2       418.36     1657.57
        3       686.51     1727.16
        4       701.68     1759.68
        5       716.05     1790.50
        6       716.05     1798.50

 **  Corrected JANBU FOS =   1.668  **     (Fo factor = 1.062)


Failure surface No. 7 specified by  6 coordinate points

      Point     x-surf     y-surf
       No.       (ft)       (ft)

        1       406.33     1665.29
        2       425.37     1656.41
        3       691.27     1726.74
        4       706.88     1760.22
        5       721.94     1792.52
        6       721.94     1800.52

 **  Corrected JANBU FOS =   1.582  **     (Fo factor = 1.063)


Failure surface No. 8 specified by  5 coordinate points

      Point     x-surf     y-surf
       No.       (ft)       (ft)

        1       403.97     1664.06
        2       424.50     1654.48
        3       563.00     1690.66
        4       589.29     1747.04
        5       589.29     1755.04

 **  Corrected JANBU FOS =   1.686  **     (Fo factor = 1.077)


Failure surface No. 9 specified by  6 coordinate points

      Point     x-surf     y-surf
       No.       (ft)       (ft)

        1       403.33     1663.73
```

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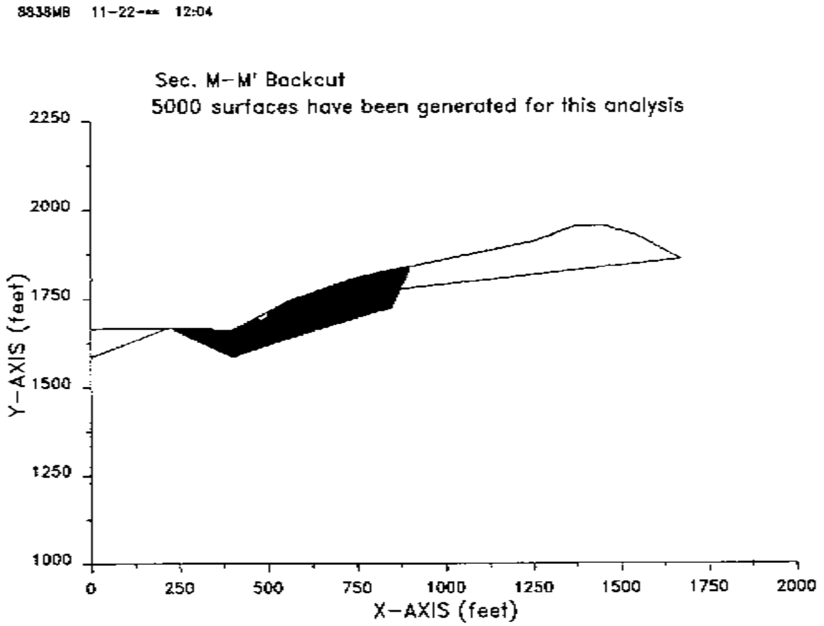
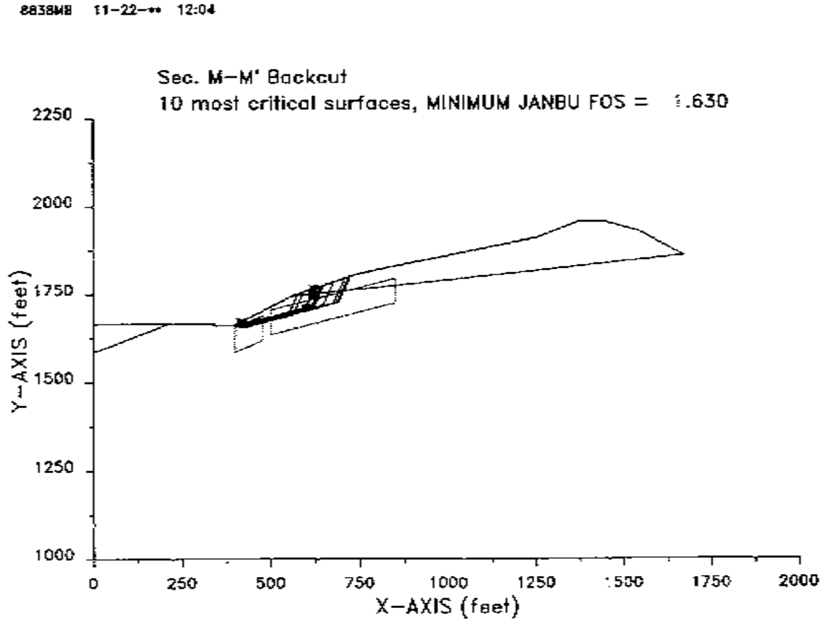
Sec. M-M' Backcut

```
           2         412.70      1659.35
           3         676.02      1723.80
           4         692.30      1758.71
           5         705.43      1786.86
           6         705.43      1794.86

  **  Corrected JANBU FOS =   1.687  **     (Fo factor = 1.063)


 Failure surface No.10 specified by  5 coordinate points

        Point        x-surf       y-surf
         No.          (ft)         (ft)

           1         404.63      1664.40
           2         414.52      1659.79
           3         547.85      1686.59
           4         573.52      1741.64
           5         573.52      1749.64

  **  Corrected JANBU FOS =   1.688  **     (Fo factor = 1.079)



 The following is a summary of the TEN most critical surfaces

 Problem Description : Sec. M-M' Backcut

       Modified       Correction    Initial     Terminal     Available
      JANBU FOS        Factor       x-coord      x-coord      Strength
                                     (ft)         (ft)          (lb)

  1.     1.630          1.067       415.01       620.90      4.166E+05
  2.     1.631          1.065       395.72       640.52      5.440E+05
  3.     1.639          1.067       400.11       646.41      5.989E+05
  4.     1.654          1.066       421.96       637.72      4.635E+05
  5.     1.662          1.064       411.88       674.15      6.475E+05
  6.     1.668          1.062       404.20       716.05      8.532E+05
  7.     1.682          1.063       406.33       721.94      9.235E+05
  8.     1.686          1.077       403.97       589.29      4.648E+05
  9.     1.687          1.063       403.33       705.43      7.904E+05
 10.     1.688          1.079       404.63       573.52      3.640E+05


                 *    * *  END OF FILE  * * *
```





GEOLABS-WESTLAKE VILLAGE

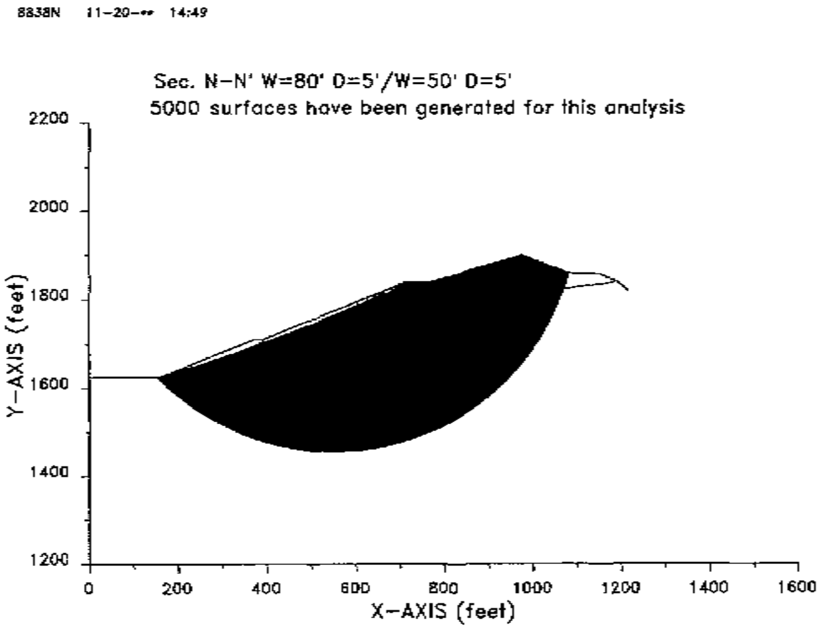
W.O. 8838
Sec. N-N'

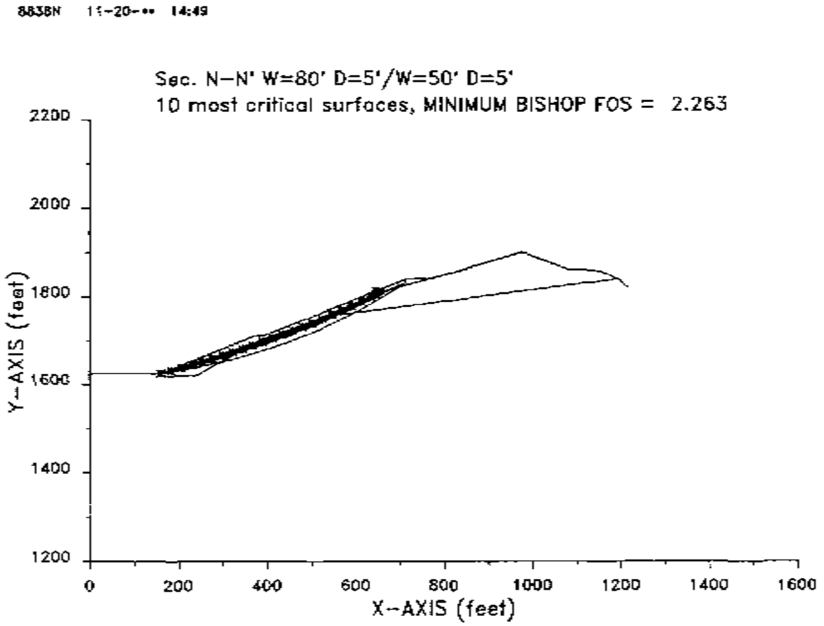
```
XSTABL File: 8838N     11-20-**   14:49

          ******************************************
          *               X S T A B L              *
          *                                        *
          *        Slope Stability Analysis        *
          *              using the                 *
          *           Method of Slices             *
          *                                        *
          *        Copyright (C) 1992 Ä 96         *
          *   Interactive Software Designs, Inc.   *
          *       Moscow, ID 83843, U.S.A.         *
          *                                        *
          *         All Rights Reserved            *
          *                                        *
          * Ver. 5.201                 96 Ä 1545   *
          ******************************************

Problem Description : Sec. N-N' W=80' D=5'/W=50' D=5'



 ----------------------------
 SEGMENT BOUNDARY COORDINATES
 ----------------------------

   11 SURFACE boundary segments

Segment   x-left    y-left    x-right   y-right     Soil Unit
  No.      (ft)      (ft)      (ft)      (ft)     Below Segment

   1          .0    1625.0     160.0    1625.0          1
   2       160.0    1625.0     370.0    1710.0          2
   3       370.0    1710.0     390.0    1710.0          2
   4       390.0    1710.0     710.0    1838.0          2
   5       710.0    1838.0     770.0    1840.0          2
   6       770.0    1840.0     975.0    1900.0          1
   7       975.0    1900.0    1080.0    1860.0          1
   8      1080.0    1860.0    1150.0    1858.0          1
   9      1150.0    1858.0    1170.0    1850.0          1
  10      1170.0    1850.0    1190.0    1840.0          1
  11      1190.0    1840.0    1215.0    1820.0          3

    8 SUBSURFACE boundary segments

Segment   x-left    y-left    x-right   y-right     Soil Unit
  No.      (ft)      (ft)      (ft)      (ft)     Below Segment

   1       160.0    1625.0     160.1    1620.0          1
   2       160.1    1620.0     240.0    1620.0          3
   3       240.0    1620.0     390.0    1705.0          3
   4       390.0    1705.0     440.0    1705.0          3
   5       440.0    1705.0     540.0    1755.0          3
   6       540.0    1755.0     670.0    1815.0          1
   7       670.0    1815.0     770.0    1840.0          1
   8       540.0    1755.0    1190.0    1840.0          3

 ----------------------------------
  A CRACKED ZONE HAS BEEN SPECIFIED
 ----------------------------------

      Depth of crack below ground surface =   8.00    (feet)
      Maximum depth of water in crack     =    .00    (feet)
      Unit weight of water in crack       =  62.40    (pcf)

Failure surfaces will have a vertical side equal to the
```

```
specified depth of crack and be affected by a hydrostatic
force according to the specified depth of water in the crack



--------------------------
ISOTROPIC Soil Parameters
--------------------------

 3 Soil unit(s) specified

Soil   Unit Weight    Cohesion  Friction     Pore Pressure       Water
Unit  Moist    Sat.  Intercept   Angle   Parameter  Constant   Surface
No.   (pcf)   (pcf)    (psf)     (deg)      Ru        (psf)      No.

  1   130.0   140.0    225.0     40.00      .000         .0        0
  2   125.0   135.0    200.0     34.00      .000         .0        0
  3   130.0   140.0    200.0     40.00      .000         .0        0


A critical failure surface searching method, using a random
technique for generating CIRCULAR surfaces has been specified.

 5000 trial surfaces will be generated and analyzed.

 500 Surfaces initiate from each of  10 points equally spaced
along the ground surface between   x =    155.0 ft
                              and  x =    165.0 ft

Each surface terminates between    x =    700.0 ft
                             and   x =   1080.0 ft

Unless further limitations were imposed, the minimum elevation
at which a surface extends is  y =       .0 ft

* * * * *  DEFAULT SEGMENT LENGTH SELECTED BY XSTABL  * * * * *

   24.0 ft line segments define each trial failure surface.


---------------------
ANGULAR RESTRICTIONS
---------------------

  The first segment of each failure surface will be inclined
  within the angular range defined by :

          Lower angular limit :=   -45.0 degrees
          Upper angular limit :=  (slope angle - 5.0) degrees



Factors of safety have been calculated by the :

* * * * *   SIMPLIFIED BISHOP METHOD   * * * * *


  The most critical circular failure surface
```

W.O. 8838
Sec. N-N'

```
is specified by 24 coordinate points

      Point      x-surf      y-surf
       No.        (ft)        (ft)

        1        160.56     1625.22
        2        183.75     1631.40
        3        206.88     1637.79
        4        229.96     1644.38
        5        252.97     1651.19
        6        275.92     1658.20
        7        298.81     1665.43
        8        321.63     1672.86
        9        344.39     1680.49
       10        367.07     1688.33
       11        389.68     1696.38
       12        412.22     1704.63
       13        434.68     1713.09
       14        457.06     1721.75
       15        479.36     1730.61
       16        501.59     1739.68
       17        523.73     1748.94
       18        545.78     1758.41
       19        567.75     1768.07
       20        589.63     1777.94
       21        611.42     1788.00
       22        633.11     1798.26
       23        644.82     1803.93
       24        644.82     1811.93

****  Simplified BISHOP FOS =    2.263   ****


The following is a summary of the TEN most critical surfaces

Problem Description : Sec. N-N' W=80' D=5'/W=50' D=5'

       FOS        Circle Center      Radius   Initial  Terminal   Resisting
     (BISHOP)   x-coord  y-coord              x-coord  x-coord     Moment
                 (ft)     (ft)        (ft)     (ft)     (ft)       (ft-lb)

 1.    2.263    -508.49  4183.95   2644.75   160.56    644.82   1.634E+09
 2.    2.299    -588.84  4389.77   2863.88   163.89    626.93   1.538E+09
 3.    2.331    -876.05  5200.47   3722.24   162.78    660.82   1.991E+09
 4.    2.338   -1050.82  5659.96   4212.66   150.56    652.38   2.047E+09
 5.    2.353   -1018.43  5569.72   4116.59   163.89    640.33   1.909E+09
 6.    2.361    -444.99  4085.17   2532.87   163.89    701.18   2.146E+09
 7.    2.363    -304.50  3649.48   2076.80   161.67    657.96   1.694E+09
 8.    2.367    -272.55  3565.27   1987.02   165.00    654.76   1.621E+09
 9.    2.379    -280.74  3632.79   2055.10   162.78    693.97   2.018E+09
10.    2.381      -3.91  2913.85   1298.17   163.89    710.53   2.043E+09

                   *     * *  END OF FILE  * * *
```





GEOLABS-WESTLAKE VILLAGE

Plate N.2

W.O. 8838

Sec. N-N' Pseudo.

```
XSTABL File: 8838NP    11-20-**   14:50

          ******************************************
          *                X S T A B L             *
          *                                        *
          *         Slope Stability Analysis       *
          *                using the               *
          *             Method of Slices           *
          *                                        *
          *         Copyright (C) 1992 À 96        *
          *    Interactive Software Designs, Inc.  *
          *         Moscow, ID 83843, U.S.A.       *
          *                                        *
          *            All Rights Reserved         *
          *                                        *
          *  Ver. 5.201                 96 À 1545  *
          ******************************************


Problem Description : Sec. N-N' W=80' D=5'/W=50' D=5' Pse



-----------------------------
SEGMENT BOUNDARY COORDINATES
-----------------------------

   11 SURFACE boundary segments

Segment    x-left    y-left    x-right   y-right     Soil Unit
  No.       (ft)      (ft)      (ft)      (ft)     Below Segment

   1          .0     1625.0     160.0    1625.0          1
   2       160.0     1625.0     370.0    1710.0          2
   3       370.0     1710.0     390.0    1710.0          2
   4       390.0     1710.0     710.0    1838.0          2
   5       710.0     1838.0     770.0    1840.0          2
   6       770.0     1840.0     975.0    1900.0          1
   7       975.0     1900.0    1080.0    1860.0          1
   8      1080.0     1860.0    1150.0    1858.0          1
   9      1150.0     1858.0    1170.0    1850.0          1
  10      1170.0     1850.0    1190.0    1840.0          1
  11      1190.0     1840.0    1215.0    1820.0          3


    8 SUBSURFACE boundary segments

Segment    x-left    y-left    x-right   y-right     Soil Unit
  No.       (ft)      (ft)      (ft)      (ft)     Below Segment

   1       160.0     1625.0     160.1    1620.0          1
   2       160.1     1620.0     240.0    1620.0          3
   3       240.0     1620.0     390.0    1705.0          3
   4       390.0     1705.0     440.0    1705.0          3
   5       440.0     1705.0     540.0    1755.0          3
   6       540.0     1755.0     670.0    1815.0          1
   7       670.0     1815.0     770.0    1840.0          1
   8       540.0     1755.0    1190.0    1840.0          3


------------------------------------
 A CRACKED ZONE HAS BEEN SPECIFIED
------------------------------------

    Depth of crack below ground surface =  8.00   (feet)
    Maximum depth of water in crack     =   .00   (feet)
    Unit weight of water in crack       = 62.40   (pcf)

Failure surfaces will have a vertical side equal to the
```

```
specified depth of crack and be affected by a hydrostatic
force according to the specified depth of water in the crack



--------------------------
ISOTROPIC Soil Parameters
--------------------------

 3 Soil unit(s) specified

Soil   Unit Weight    Cohesion  Friction     Pore Pressure      Water
Unit  Moist    Sat.   Intercept   Angle   Parameter  Constant  Surface
No.   (pcf)   (pcf)     (psf)     (deg)       Ru       (psf)     No.

  1   130.0   140.0     225.0     40.00      .000        .0        0
  2   125.0   135.0     200.0     34.00      .000        .0        0
  3   130.0   140.0     200.0     40.00      .000        .0        0


A horizontal earthquake loading coefficient
of   .150 has been assigned

A vertical earthquake loading coefficient
of   .000 has been assigned


A critical failure surface searching method, using a random
technique for generating CIRCULAR surfaces has been specified.

 5000 trial surfaces will be generated and analyzed.


 500 Surfaces initiate from each of  10 points equally spaced
along the ground surface between  x =    155.0 ft
                              and  x =    165.0 ft


Each surface terminates between   x =    700.0 ft
                            and   x =   1080.0 ft


Unless further limitations were imposed, the minimum elevation
at which a surface extends is  y =       .0 ft


* * * * *  DEFAULT SEGMENT LENGTH SELECTED BY XSTABL  * * * * *

   24.0 ft line segments define each trial failure surface.


---------------------
ANGULAR RESTRICTIONS
---------------------

  The first segment of each failure surface will be inclined
  within the angular range defined by :

        Lower angular limit :=   -45.0 degrees
        Upper angular limit :=  (slope angle - 5.0) degrees
```

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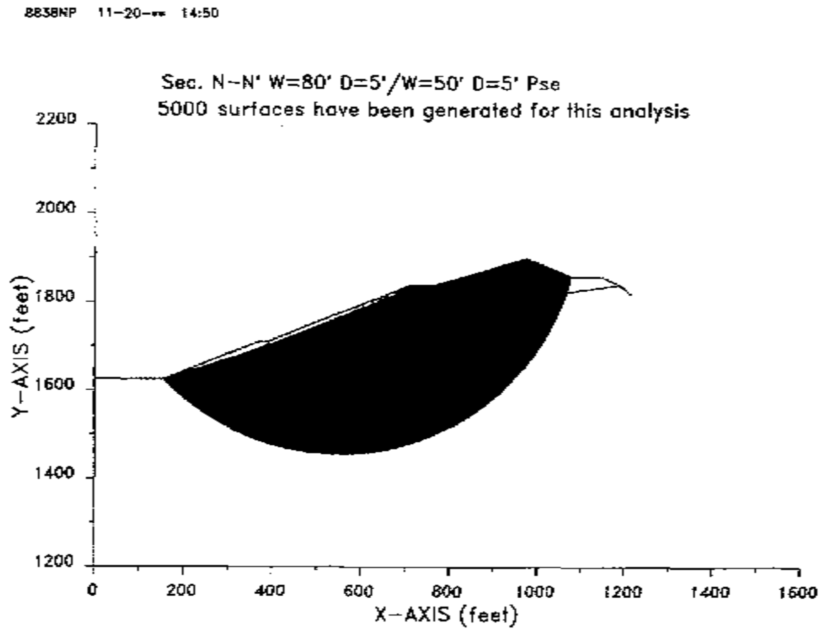
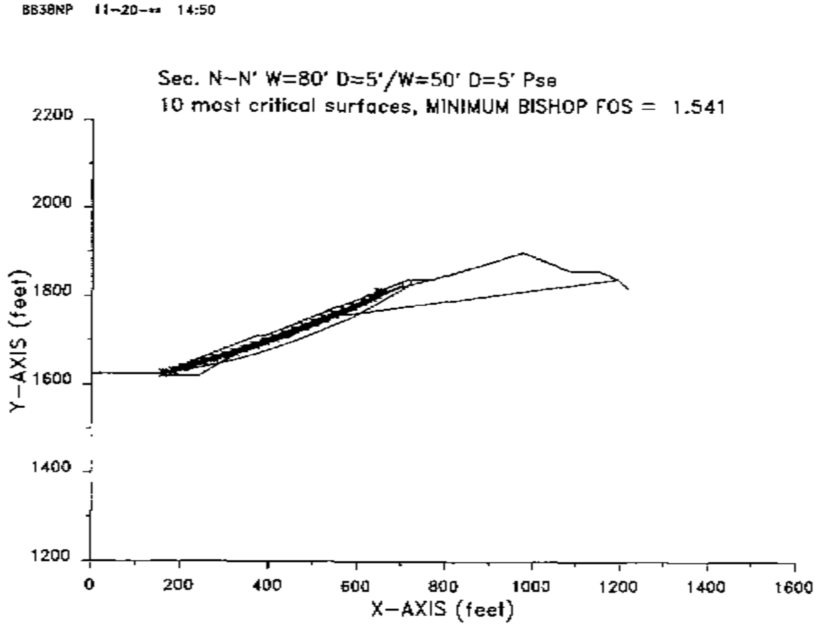
Sec. N-N' Pseudo.

```
Factors of safety have been calculated by the :

* * * * *   SIMPLIFIED BISHOP METHOD   * * * * *


 The most critical circular failure surface
 is specified by 24 coordinate points

      Point       x-surf      y-surf
       No.         (ft)        (ft)

        1         160.56     1625.22
        2         183.75     1631.40
        3         206.88     1637.79
        4         229.96     1644.38
        5         252.97     1651.19
        6         275.92     1658.20
        7         298.81     1665.43
        8         321.63     1672.86
        9         344.39     1680.49
       10         367.07     1688.33
       11         389.68     1696.38
       12         412.22     1704.63
       13         434.68     1713.09
       14         457.06     1721.75
       15         479.36     1730.61
       16         501.59     1739.68
       17         523.73     1748.94
       18         545.78     1758.41
       19         567.75     1768.07
       20         589.63     1777.94
       21         611.42     1788.00
       22         633.11     1798.26
       23         644.82     1803.93
       24         644.82     1811.93

****  Simplified BISHOP FOS =   1.541  ****



The following is a summary of the TEN most critical surfaces

Problem Description : Sec. N-N' W=80' D=5'/W=50' D=5' Pse

       FOS      Circle Center    Radius   Initial  Terminal  Resisting
     (BISHOP)  x-coord  y-coord           x-coord  x-coord    Moment
                 (ft)     (ft)     (ft)     (ft)     (ft)     (ft-lb)

 1.    1.541   -508.49  4183.95  2644.75   160.56   644.82  1.556E+09
 2.    1.565   -588.84  4389.77  2863.88   163.89   626.93  1.468E+09
 3.    1.590   -876.05  5200.47  3722.24   162.78   660.82  1.902E+09
 4.    1.596  -1050.82  5659.96  4212.66   160.56   652.38  1.957E+09
 5.    1.606  -1018.43  5569.72  4116.59   163.89   640.33  1.826E+09
 6.    1.606   -304.50  3649.48  2076.80   161.67   657.96  1.611E+09
 7.    1.607   -444.99  4085.17  2532.87   163.89   701.18  2.040E+09
 8.    1.608   -272.55  3565.27  1987.02   165.00   654.76  1.541E+09
 9.    1.618   -280.74  3632.79  2055.10   162.78   693.97  1.916E+09
10.    1.619     -9.79  2958.00  1343.62   160.56   720.79  2.204E+09

               *    * *  END OF FILE  * * *
```



Sec. N-N' W=80' D=5'/W=50' D=5' Pse
5000 surfaces have been generated for this analysis



Sec. N-N' W=80' D=5'/W=50' D=5' Pse
10 most critical surfaces, MINIMUM BISHOP FOS = 1.541

GEOLABS-WESTLAKE VILLAGE

Plate Np.2

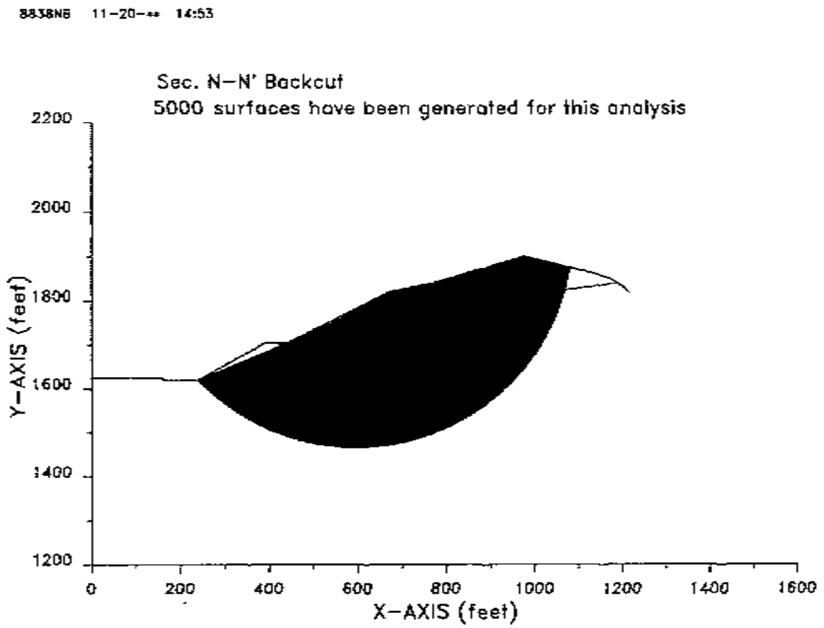
W.O. 8838
Sec. N-N' Backcut

```
XSTABL File: 8838NB    11-20-**   14:53

          ******************************************
          *              X S T A B L               *
          *                                        *
          *        Slope Stability Analysis        *
          *              using the                 *
          *           Method of Slices             *
          *                                        *
          *         Copyright (C) 1992 Â 96        *
          *   Interactive Software Designs, Inc.   *
          *        Moscow, ID 83843, U.S.A.        *
          *                                        *
          *          All Rights Reserved           *
          *                                        *
          *  Ver. 5.201                 96 Â 1545  *
          ******************************************


     Problem Description : Sec. N-N' Backcut



     -----------------------------
     SEGMENT BOUNDARY COORDINATES
     -----------------------------

        13 SURFACE boundary segments

     Segment    x-left    y-left    x-right   y-right     Soil Unit
       No.       (ft)      (ft)      (ft)      (ft)     Below Segment

        1           .0    1625.0     160.0    1625.0         1
        2        160.0    1625.0     160.1    1620.0         1
        3        160.1    1620.0     240.0    1620.0         1
        4        240.0    1620.0     390.0    1705.0         1
        5        390.0    1705.0     440.0    1705.0         1
        6        440.0    1705.0     540.0    1755.0         1
        7        540.0    1755.0     670.0    1820.0         1
        8        670.0    1820.0     770.0    1840.0         1
        9        770.0    1840.0     975.0    1900.0         1
       10        975.0    1900.0    1150.0    1858.0         1
       11       1150.0    1858.0    1170.0    1850.0         1
       12       1170.0    1850.0    1190.0    1840.0         1
       13       1190.0    1840.0    1215.0    1820.0         3


         1 SUBSURFACE boundary segments

     Segment    x-left    y-left    x-right   y-right     Soil Unit
       No.       (ft)      (ft)      (ft)      (ft)     Below Segment

        1        540.0    1755.0    1190.0    1840.0         3


     ----------------------------------
      A CRACKED ZONE HAS BEEN SPECIFIED
     ----------------------------------

         Depth of crack below ground surface =  8.00   (feet)
         Maximum depth of water in crack     =   .00   (feet)
         Unit weight of water in crack       = 62.40   (pcf)

     Failure surfaces will have a vertical side equal to the
     specified depth of crack and be affected by a hydrostatic
     force according to the specified depth of water in the crack
```

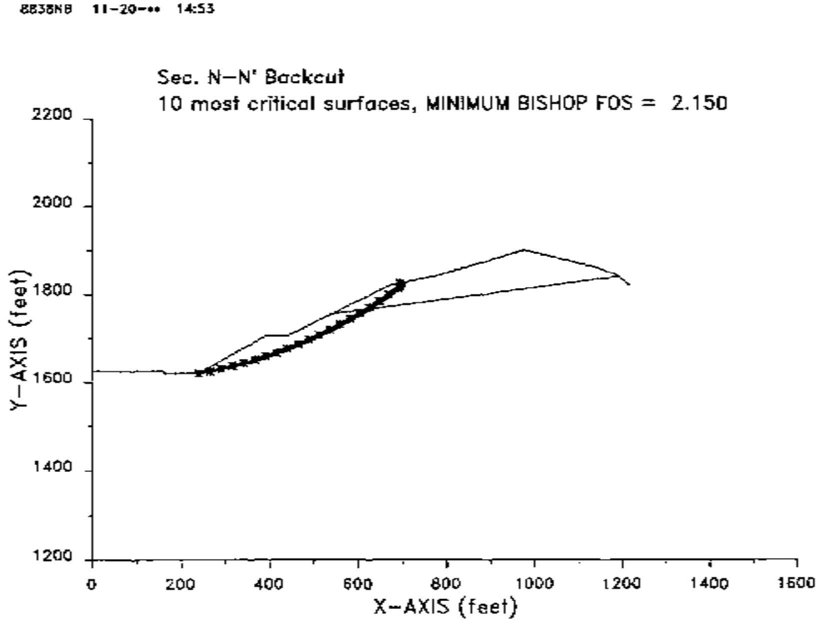
```
     --------------------------
     ISOTROPIC Soil Parameters
     --------------------------

      3 Soil unit(s) specified

     Soil   Unit Weight   Cohesion  Friction    Pore Pressure      Water
     Unit  Moist   Sat.  Intercept   Angle   Parameter Constant  Surface
     No.   (pcf)  (pcf)    (psf)     (deg)      Ru       (psf)     No.

       1   130.0  140.0    225.0     40.00     .000         .0       0
       2   125.0  135.0    200.0     34.00     .000         .0       0
       3   130.0  140.0    200.0     40.00     .000         .0       0


     A critical failure surface searching method, using a random
     technique for generating CIRCULAR surfaces has been specified.


      5000 trial surfaces will be generated and analyzed.


      500 Surfaces initiate from each of  10 points equally spaced
     along the ground surface between  x =    240.0 ft
                                 and  x =    240.0 ft


     Each surface terminates between   x =    600.0 ft
                                and   x =   1080.0 ft


     Unless further limitations were imposed, the minimum elevation
     at which a surface extends is  y =       .0 ft


     * * * * *  DEFAULT SEGMENT LENGTH SELECTED BY XSTABL  * * * * *

        26.0 ft line segments define each trial failure surface.


     ---------------------
     ANGULAR RESTRICTIONS
     ---------------------

       The first segment of each failure surface will be inclined
       within the angular range defined by :

               Lower angular limit :=   -45.0 degrees
               Upper angular limit :=  (slope angle - 5.0) degrees



     Factors of safety have been calculated by the :

     * * * * *   SIMPLIFIED BISHOP METHOD   * * * * *


       The most critical circular failure surface
       is specified by 22 coordinate points

            Point      x-surf      y-surf
             No.        (ft)        (ft)
```

W.O. 8838
Sec. N-N' Backcut

```
          1            240.00       1620.00
          2            265.52       1624.97
          3            290.92       1630.55
          4            316.17       1636.73
          5            341.27       1643.50
          6            356.20       1650.87
          7            390.96       1658.84
          8            415.51       1667.38
          9            439.86       1676.51
         10            463.98       1686.22
         11            487.86       1696.49
         12            511.49       1707.33
         13            534.86       1718.73
         14            557.95       1730.68
         15            580.75       1743.18
         16            603.25       1756.21
         17            625.43       1769.78
         18            647.28       1783.87
         19            668.79       1798.47
         20            689.95       1813.58
         21            694.33       1816.87
         22            694.33       1824.87


****   Simplified BISHOP FOS =    2.150   ****



The following is a summary of the TEN most critical surfaces

Problem Description : Sec. N-N' Backcut

       FOS        Circle Center      Radius   Initial  Terminal   Resisting
     (BISHOP)   x-coord  y-coord              x-coord  x-coord     Moment
                 (ft)     (ft)        (ft)     (ft)     (ft)       (ft-lb)

 1.    2.150     43.56  2696.38  1094.16   240.00    694.33   1.557E+09
 2.    2.151     42.87  2694.71  1092.64   240.00    693.04   1.539E+09
 3.    2.151     25.69  2738.91  1139.25   240.00    694.88   1.584E+09
 4.    2.151     42.03  2718.46  1116.15   240.00    701.96   1.672E+09
 5.    2.151     41.32  2692.18  1090.43   240.00    690.52   1.504E+09
 6.    2.151     20.36  2747.47  1148.67   240.00    693.41   1.567E+09
 7.    2.153     70.66  2613.11  1007.44   240.00    685.52   1.408E+09
 8.    2.153    107.61  2553.06   942.41   240.00    696.36   1.522E+09
 9.    2.153     70.59  2610.33  1004.72   240.00    684.22   1.391E+09
10.    2.153     86.23  2623.69  1015.40   240.00    705.56   1.673E+09

                 *      * *  END OF FILE  * * *
```


8838NB 11-20-** 14:53

Sec. N-N' Backcut
5000 surfaces have been generated for this analysis


8838NB 11-20-** 14:53

Sec. N-N' Backcut
10 most critical surfaces, MINIMUM BISHOP FOS = 2.150

GEOLABS-WESTLAKE VILLAGE

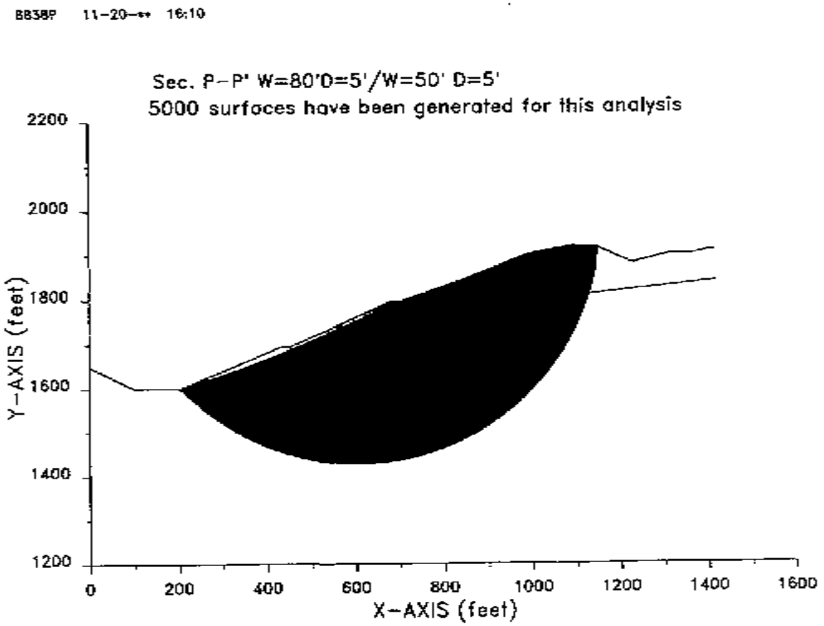
Plate Nb.2

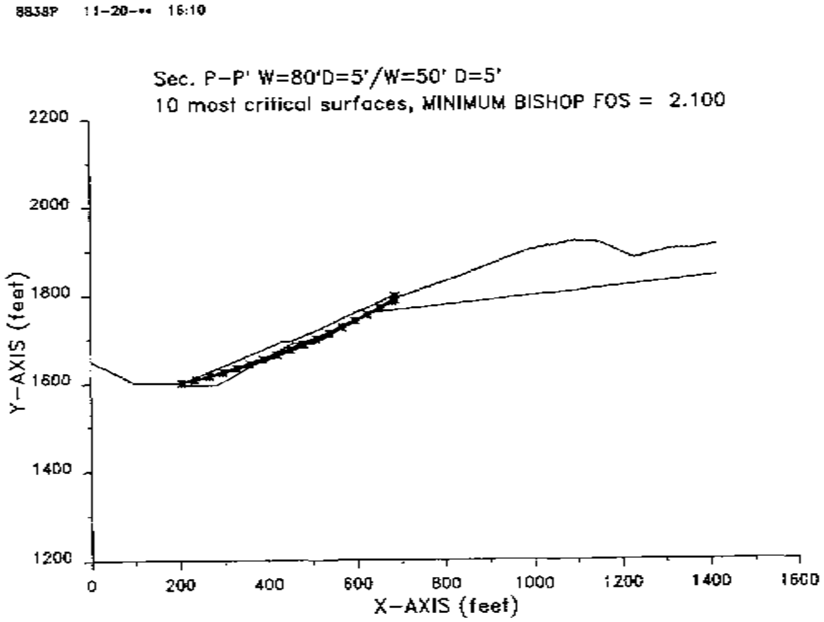
```
XSTABL File: 8838P     11-20-**   16:10

          ******************************************
          *              X S T A B L               *
          *                                        *
          *        Slope Stability Analysis        *
          *              using the                 *
          *           Method of Slices             *
          *                                        *
          *        Copyright (C) 1992 À 96         *
          *   Interactive Software Designs, Inc.   *
          *       Moscow, ID 83843, U.S.A.         *
          *                                        *
          *          All Rights Reserved           *
          *                                        *
          * Ver. 5.201                  96 À 1545  *
          ******************************************

 Problem Description : Sec. P-P' H=80'D=5'/H=50' D=5'



 ----------------------------
 SEGMENT BOUNDARY COORDINATES
 ----------------------------

   14 SURFACE boundary segments

 Segment    x-left     y-left     x-right    y-right     Soil Unit
   No.       (ft)       (ft)       (ft)       (ft)     Below Segment

    1           .0     1650.0      100.0     1600.0         1
    2        100.0     1600.0      205.0     1600.0         1
    3        205.0     1600.0      435.0     1695.0         2
    4        435.0     1695.0      455.0     1695.0         2
    5        455.0     1695.0      680.0     1795.0         2
    6        680.0     1795.0      700.0     1795.0         2
    7        700.0     1795.0      840.0     1843.0         3
    8        840.0     1843.0      990.0     1900.0         3
    9        990.0     1900.0     1092.0     1920.0         3
   10       1092.0     1920.0     1150.0     1915.0         3
   11       1150.0     1915.0     1228.0     1880.0         3
   12       1228.0     1880.0     1310.0     1900.0         3
   13       1310.0     1900.0     1358.0     1900.0         3
   14       1358.0     1900.0     1415.0     1910.0         3


    7 SUBSURFACE boundary segments

 Segment    x-left     y-left     x-right    y-right     Soil Unit
   No.       (ft)       (ft)       (ft)       (ft)     Below Segment

    1        205.0     1600.0      205.1     1595.0         1
    2        205.1     1595.0      285.0     1595.0         1
    3        285.0     1595.0      455.0     1690.0         1
    4        455.0     1690.0      505.0     1690.0         1
    5        505.0     1690.0      640.0     1760.0         1
    6        640.0     1760.0      700.0     1795.0         3
    7        640.0     1760.0     1415.0     1840.0         1


 -----------------------------------
  A CRACKED ZONE HAS BEEN SPECIFIED
 -----------------------------------

     Depth of crack below ground surface =  8.00   (feet)
     Maximum depth of water in crack     =   .00   (feet)
     Unit weight of water in crack       = 62.40   (pcf)
```

```
 Failure surfaces will have a vertical side equal to the
 specified depth of crack and be affected by a hydrostatic
 force according to the specified depth of water in the crack



 -------------------------
 ISOTROPIC Soil Parameters
 -------------------------

  3 Soil unit(s) specified

 Soil   Unit Weight   Cohesion  Friction    Pore Pressure      Water
 Unit  Moist    Sat.  Intercept  Angle   Parameter Constant  Surface
  No.  (pcf)   (pcf)    (psf)    (deg)      Ru       (psf)      No.

   1   130.0   140.0    200.0    40.00     .000         .0       0
   2   125.0   135.0    200.0    34.00     .000         .0       0
   3   130.0   140.0    225.0    40.00     .000         .0       0


 A critical failure surface searching method, using a random
 technique for generating CIRCULAR surfaces has been specified.

  5000 trial surfaces will be generated and analyzed.

  500 Surfaces initiate from each of  10 points equally spaced
 along the ground surface between  x =    205.0 ft
                              and  x =    205.0 ft

 Each surface terminates between   x =    680.0 ft
                             and   x =   1150.0 ft

 Unless further limitations were imposed, the minimum elevation
 at which a surface extends is  y =       .0 ft

 * * * * *  DEFAULT SEGMENT LENGTH SELECTED BY XSTABL  * * * * *

    32.0 ft line segments define each trial failure surface.


 --------------------
 ANGULAR RESTRICTIONS
 --------------------

   The first segment of each failure surface will be inclined
   within the angular range defined by :

          Lower angular limit :=   -45.0 degrees
          Upper angular limit :=  (slope angle - 5.0) degrees



 Factors of safety have been calculated by the :

 * * * * *   SIMPLIFIED BISHOP METHOD   * * * * *
```

W.O. 8838
Sec. P-P'

```
The most critical circular failure surface
is specified by 19 coordinate points

      Point        x-surf       y-surf
       No.          (ft)         (ft)

        1          205.00      1600.00
        2          236.12      1607.44
        3          267.11      1615.44
        4          297.94      1623.99
        5          328.62      1633.09
        6          359.13      1642.74
        7          389.46      1652.94
        8          419.61      1663.67
        9          449.56      1674.95
       10          479.30      1686.76
       11          508.82      1699.10
       12          538.12      1711.97
       13          567.19      1725.36
       14          596.01      1739.27
       15          624.57      1753.69
       16          652.87      1768.62
       17          680.90      1784.06
       18          686.03      1787.00
       19          686.03      1795.00

****  Simplified BISHOP FOS =   2.100  ****



The following is a summary of the TEN most critical surfaces

Problem Description : Sec. P-P' W=80'D=5'/W=50' D=5'

        FOS       Circle Center       Radius   Initial  Terminal  Resisting
      (BISHOP)  x-coord   y-coord              x-coord   x-coord    Moment
                  (ft)      (ft)        (ft)     (ft)      (ft)     (ft-lb)

 1.    2.100    -194.83   3341.14    1786.45   205.00    686.03  1.401E+09
 2.    2.100    -164.18   3258.13    1698.73   205.00    685.11  1.367E+09
 3.    2.101     -91.66   3056.30    1496.01   205.00    683.80  1.312E+09
 4.    2.105     -71.22   3006.52    1433.39   205.00    681.96  1.269E+09
 5.    2.106    -238.41   3443.73    1896.30   205.00    684.14  1.375E+09
 6.    2.108    -219.48   3385.83    1835.58   205.00    682.21  1.323E+09
 7.    2.111     -68.46   2989.16    1415.82   205.00    677.96  1.217E+09
 8.    2.113    -326.59   3671.02    2138.15   205.00    684.37  1.420E+09
 9.    2.115    -201.34   3366.08    1812.22   205.00    687.72  1.455E+09
10.    2.116    -358.70   3755.87    2228.35   205.00    684.83  1.447E+09

                   *    * *  END OF FILE  * * *
```





GEOLABS-WESTLAKE VILLAGE

Plate P.2

W.O. 8838
Sec. P-P' Pseudostatic

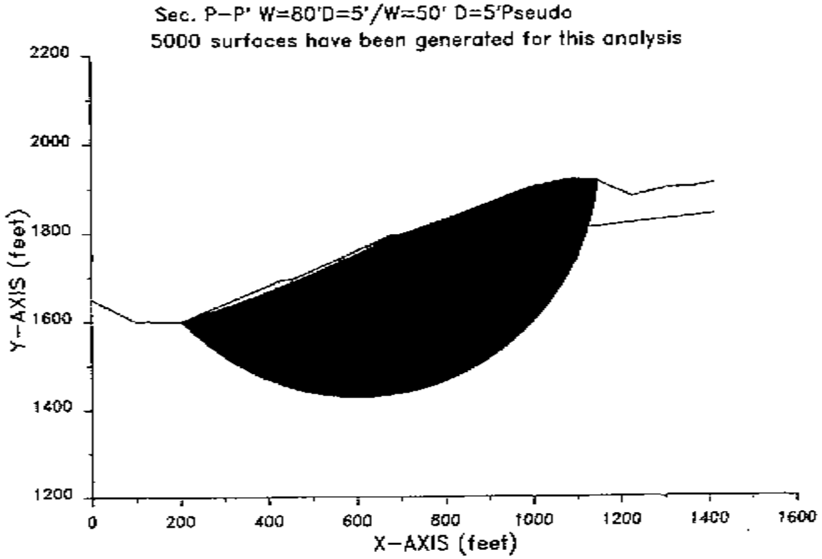
```
XSTABL File: 8838PP    11-20-**    16:11

          ******************************************
          *              X S T A B L               *
          *                                        *
          *        Slope Stability Analysis        *
          *              using the                 *
          *           Method of Slices             *
          *                                        *
          *        Copyright (C) 1992 À 96         *
          *   Interactive Software Designs, Inc.   *
          *        Moscow, ID 83843, U.S.A.        *
          *                                        *
          *          All Rights Reserved           *
          *                                        *
          * Ver. 5.201                  96 À 1545  *
          ******************************************

Problem Description : Sec. P-P' W=80'D=5'/W=50' D=5'Pseudo


-----------------------------
SEGMENT BOUNDARY COORDINATES
-----------------------------

  14 SURFACE boundary segments

Segment   x-left   y-left   x-right   y-right     Soil Unit
  No.      (ft)     (ft)      (ft)      (ft)    Below Segment

   1         .0    1650.0     100.0    1600.0          1
   2      100.0    1600.0     205.0    1600.0          1
   3      205.0    1600.0     435.0    1695.0          2
   4      435.0    1695.0     455.0    1695.0          2
   5      455.0    1695.0     680.0    1795.0          2
   6      680.0    1795.0     700.0    1795.0          2
   7      700.0    1795.0     840.0    1843.0          3
   8      840.0    1843.0     990.0    1900.0          3
   9      990.0    1900.0    1092.0    1920.0          3
  10     1092.0    1920.0    1150.0    1915.0          3
  11     1150.0    1915.0    1228.0    1880.0          3
  12     1228.0    1880.0    1310.0    1900.0          3
  13     1310.0    1900.0    1358.0    1900.0          3
  14     1358.0    1900.0    1415.0    1910.0          3


   7 SUBSURFACE boundary segments

Segment   x-left   y-left   x-right   y-right     Soil Unit
  No.      (ft)     (ft)      (ft)      (ft)    Below Segment

   1      205.0    1600.0     205.1    1595.0          1
   2      205.1    1595.0     285.0    1595.0          1
   3      285.0    1595.0     455.0    1690.0          1
   4      455.0    1690.0     505.0    1690.0          1
   5      505.0    1690.0     640.0    1760.0          1
   6      640.0    1760.0     700.0    1795.0          3
   7      640.0    1760.0    1415.0    1840.0          1


------------------------------------
 A CRACKED ZONE HAS BEEN SPECIFIED
------------------------------------

    Depth of crack below ground surface =  8.00   (feet)
    Maximum depth of water in crack     =   .00   (feet)
    Unit weight of water in crack       = 62.40   (pcf)
```

```
Failure surfaces will have a vertical side equal to the
specified depth of crack and be affected by a hydrostatic
force according to the specified depth of water in the crack



--------------------------
ISOTROPIC Soil Parameters
--------------------------

 3 Soil unit(s) specified

Soil   Unit Weight   Cohesion  Friction    Pore Pressure      Water
Unit  Moist    Sat.  Intercept   Angle  Parameter Constant  Surface
 No.  (pcf)   (pcf)    (psf)     (deg)      Ru      (psf)     No.

  1   130.0   140.0    200.0     40.00     .000        .0       0
  2   125.0   135.0    200.0     34.00     .000        .0       0
  3   130.0   140.0    225.0     40.00     .000        .0       0


A horizontal earthquake loading coefficient
of   .150 has been assigned

A vertical earthquake loading coefficient
of   .000 has been assigned


A critical failure surface searching method, using a random
technique for generating CIRCULAR surfaces has been specified.


 5000 trial surfaces will be generated and analyzed.


 500 Surfaces initiate from each of  10 points equally spaced
along the ground surface between  x =    205.0 ft
                             and  x =    205.0 ft


Each surface terminates between   x =    680.0 ft
                            and   x =   1150.0 ft


Unless further limitations were imposed, the minimum elevation
at which a surface extends is  y =       .0 ft


* * * * *  DEFAULT SEGMENT LENGTH SELECTED BY XSTABL  * * * * *

   32.0 ft line segments define each trial failure surface.


---------------------
ANGULAR RESTRICTIONS
---------------------

  The first segment of each failure surface will be inclined
  within the angular range defined by :

          Lower angular limit :=   -45.0 degrees
          Upper angular limit :=  (slope angle - 5.0) degrees
```

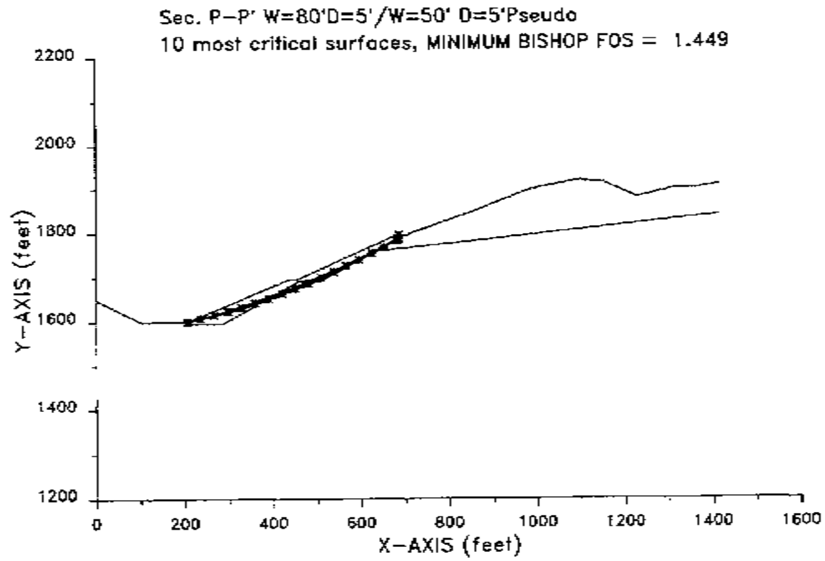
W.O. 8838
Sec. P-P' Pseudostatic

```
Factors of safety have been calculated by the :

* * * * *   SIMPLIFIED BISHOP METHOD   * * * * *


  The most critical circular failure surface
  is specified by 19 coordinate points

        Point       x-surf      y-surf
         No.         (ft)        (ft)

          1         205.00      1600.00
          2         236.12      1607.44
          3         267.11      1615.44
          4         297.94      1623.99
          5         328.62      1633.09
          6         359.13      1642.74
          7         389.46      1652.94
          8         419.61      1663.67
          9         449.56      1674.95
         10         479.30      1686.76
         11         508.82      1699.10
         12         538.12      1711.97
         13         567.19      1725.36
         14         596.01      1739.27
         15         624.57      1753.69
         16         652.87      1768.62
         17         680.90      1784.06
         18         686.03      1787.00
         19         686.03      1795.00

****  Simplified BISHOP FOS =   1.449   ****



The following is a summary of the TEN most critical surfaces

Problem Description : Sec. P-P' W=80'D=5'/W=50' D=5'Pseudo

         FOS       Circle Center     Radius   Initial  Terminal  Resisting
       (BISHOP)  x-coord  y-coord            x-coord   x-coord    Moment
                  (ft)     (ft)       (ft)     (ft)      (ft)     (ft-lb)

  1.    1.449   -194.83  3341.14   1786.45   205.00    686.03   1.329E+09
  2.    1.449   -164.18  3258.13   1698.73   205.00    685.11   1.297E+09
  3.    1.450    -91.66  3066.30   1496.01   205.00    683.80   1.244E+09
  4.    1.452    -71.22  3006.52   1433.39   205.00    681.96   1.203E+09
  5.    1.453   -238.41  3443.73   1896.30   205.00    684.14   1.306E+09
  6.    1.456   -219.48  3385.83   1835.58   205.00    682.21   1.256E+09
  7.    1.456    -68.46  2989.16   1415.82   205.00    677.96   1.155E+09
  8.    1.458   -201.34  3366.08   1812.22   205.00    687.72   1.380E+09
  9.    1.460   -326.59  3671.02   2138.15   205.00    684.37   1.349E+09
 10.    1.462   -358.70  3755.87   2228.35   205.00    684.83   1.375E+09

            *     * *  END OF FILE  * * *
```

8838PP 11-20-** 16:11



8838PP 11-20-** 16:11



GEOLABS-WESTLAKE VILLAGE

Plate Pp.2

W.O. 8838

Sec. P-P' Backcut

```
XSTABL File: 8838PB    11-20-**   16:09

          ******************************************
          *              X S T A B L               *
          *                                        *
          *        Slope Stability Analysis        *
          *               using the                *
          *            Method of Slices            *
          *                   .                    *
          *        Copyright (C) 1992 Ã 96         *
          *  Interactive Software Designs, Inc.    *
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          *                                        *
          * Ver. 5.201                  96 Ã 1545  *
          ******************************************


    Problem Description : Sec. P-P' Backcut



    -----------------------------
    SEGMENT BOUNDARY COORDINATES
    -----------------------------

       16 SURFACE boundary segments

    Segment   x-left    y-left    x-right   y-right    Soil Unit
      No.      (ft)      (ft)      (ft)      (ft)    Below Segment

      1          .0     1650.0     100.0    1600.0         1
      2       100.0     1600.0     205.0    1600.0         1
      3       205.0     1600.0     205.1    1595.0         1
      4       205.1     1595.0     285.0    1595.0         1
      5       285.0     1595.0     455.0    1690.0         1
      6       455.0     1690.0     505.0    1690.0         1
      7       505.0     1690.0     640.0    1760.0         3
      8       640.0     1760.0     700.0    1795.0         3
      9       700.0     1795.0     840.0    1843.0         3
     10       840.0     1843.0     990.0    1900.0         3
     11       990.0     1900.0    1092.0    1920.0         3
     12      1092.0     1920.0    1150.0    1915.0         3
     13      1150.0     1915.0    1228.0    1880.0         3
     14      1228.0     1880.0    1310.0    1900.0         3
     15      1310.0     1900.0    1358.0    1900.0         3
     16      1358.0     1900.0    1415.0    1910.0         3


        1 SUBSURFACE boundary segments

    Segment   x-left    y-left    x-right   y-right    Soil Unit
      No.      (ft)      (ft)      (ft)      (ft)    Below Segment

      1       640.0     1760.0    1415.0    1840.0         1


    -----------------------------------
     A CRACKED ZONE HAS BEEN SPECIFIED
    -----------------------------------

        Depth of crack below ground surface =  8.00   (feet)
        Maximum depth of water in crack     =   .00   (feet)
        Unit weight of water in crack       = 62.40   (pcf)

    Failure surfaces will have a vertical side equal to the
    specified depth of crack and be affected by a hydrostatic
    force according to the specified depth of water in the crack
```
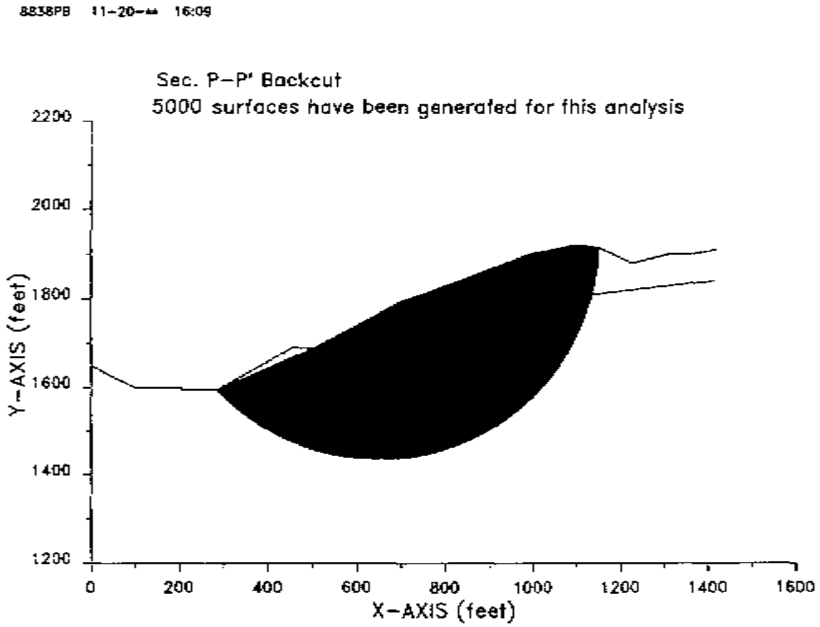
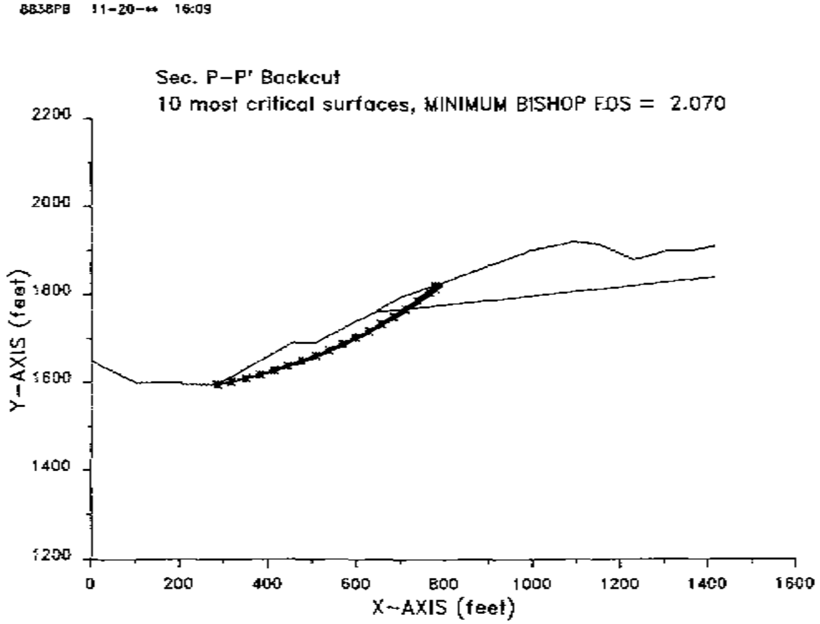

```
-------------------------
ISOTROPIC Soil Parameters
-------------------------

 3 Soil unit(s) specified

Soil   Unit Weight   Cohesion  Friction     Pore Pressure      Water
Unit  Moist    Sat.  Intercept   Angle   Parameter  Constant  Surface
 No.  (pcf)   (pcf)    (psf)     (deg)      Ru       (psf)      No.

  1   130.0   140.0    200.0     40.00     .000        .0        0
  2   125.0   135.0    200.0     34.00     .000        .0        0
  3   130.0   140.0    225.0     40.00     .000        .0        0


A critical failure surface searching method, using a random
technique for generating CIRCULAR surfaces has been specified.


 5000 trial surfaces will be generated and analyzed.


 500 Surfaces initiate from each of  10 points equally spaced
along the ground surface between  x =    285.0 ft
                             and  x =    285.0 ft


Each surface terminates between   x =    680.0 ft
                            and   x =   1150.0 ft


Unless further limitations were imposed, the minimum elevation
at which a surface extends is  y =       .0 ft


* * * * *  DEFAULT SEGMENT LENGTH SELECTED BY XSTABL  * * * * *

   33.0 ft line segments define each trial failure surface.


---------------------
ANGULAR RESTRICTIONS
---------------------

  The first segment of each failure surface will be inclined
  within the angular range defined by :

        Lower angular limit :=   -45.0 degrees
        Upper angular limit :=  (slope angle - 5.0) degrees



Factors of safety have been calculated by the :

* * * * *   SIMPLIFIED BISHOP METHOD   * * * * *


  The most critical circular failure surface
  is specified by 19 coordinate points
```

W.O. 8838
Sec. P-P' Backcut

```
Point      x-surf      y-surf
 No.        (ft)        (ft)

  1        285.00     1595.00
  2        317.31     1601.70
  3        349.43     1609.28
  4        381.32     1617.75
  5        412.97     1627.10
  6        444.35     1637.31
  7        475.44     1648.39
  8        506.21     1660.32
  9        536.63     1673.10
 10        566.69     1686.71
 11        596.37     1701.14
 12        625.64     1716.39
 13        654.47     1732.44
 14        682.85     1749.28
 15        710.76     1766.89
 16        738.17     1785.27
 17        765.06     1804.40
 18        777.00     1813.40
 19        777.00     1821.40

****  Simplified BISHOP FOS =   2.070   ****




The following is a summary of the TEN most critical surfaces

Problem Description : Sec. P-P' Backcut

      FOS     Circle Center     Radius  Initial Terminal  Resisting
   (BISHOP)  x-coord  y-coord           x-coord  x-coord   Moment
              (ft)     (ft)      (ft)     (ft)     (ft)    (ft-lb)

 1.   2.070    58.49  2769.24  1195.89   285.00   777.00  1.947E+09
 2.   2.071    62.32  2772.47  1198.34   285.00   783.68  2.030E+09
 3.   2.072    52.50  2813.83  1240.81   285.00   794.63  2.187E+09
 4.   2.072    28.18  2868.45  1299.09   285.00   794.35  2.213E+09
 5.   2.072    10.32  2900.67  1334.25   285.00   789.64  2.171E+09
 6.   2.072   104.53  2648.11  1068.46   285.00   767.15  1.774E+09
 7.   2.072   103.73  2647.11  1067.61   285.00   765.61  1.755E+09
 8.   2.072   103.44  2683.00  1103.04   285.00   785.69  2.010E+09
 9.   2.073    89.21  2666.86  1089.60   285.00   758.33  1.681E+09
10.   2.073   117.45  2619.58  1038.19   285.00   767.42  1.765E+09

           *    * *  END OF FILE  * * *
```





GEOLABS-WESTLAKE VILLAGE

W.O. 8838

Sec. R-R' W=40' D=5'

```
XSTABL File: 8838R     11-20-**   16:45

          ******************************************
          *              X S T A B L               *
          *                                        *
          *        Slope Stability Analysis        *
          *                using the               *
          *            Method of Slices            *
          *                                        *
          *        Copyright (C) 1992 Ã 96         *
          *    Interactive Software Designs, Inc.  *
          *         Moscow, ID 83843, U.S.A.       *
          *                                        *
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          *                                        *
          * Ver. 5.201                  96 Ã 1545  *
          ******************************************


  Problem Description : Sec. R-R' W=40' D=5'



  -----------------------------
  SEGMENT BOUNDARY COORDINATES
  -----------------------------

     3 SURFACE boundary segments

  Segment   x-left    y-left    x-right   y-right     Soil Unit
    No.      (ft)      (ft)      (ft)      (ft)     Below Segment

    1          .0     1685.0      80.0    1685.0          1
    2        80.0     1685.0     260.0    1761.0          1
    3       260.0     1761.0     350.0    1738.0          2


     4 SUBSURFACE boundary segments

  Segment   x-left    y-left    x-right   y-right     Soil Unit
    No.      (ft)      (ft)      (ft)      (ft)     Below Segment

    1        80.0     1685.0      80.1    1680.0          1
    2        80.1     1680.0     120.0    1680.0          1
    3       120.0     1680.0     259.9    1756.0          1
    4       259.9     1756.0     260.0    1761.0          1


  -----------------------------------
   A CRACKED ZONE HAS BEEN SPECIFIED
  -----------------------------------

       Depth of crack below ground surface =  8.00   (feet)
       Maximum depth of water in crack     =   .00   (feet)
       Unit weight of water in crack       = 62.40   (pcf)

  Failure surfaces will have a vertical side equal to the
  specified depth of crack and be affected by a hydrostatic
  force according to the specified depth of water in the crack



  --------------------------
  ISOTROPIC Soil Parameters
  --------------------------

   2 Soil unit(s) specified
```
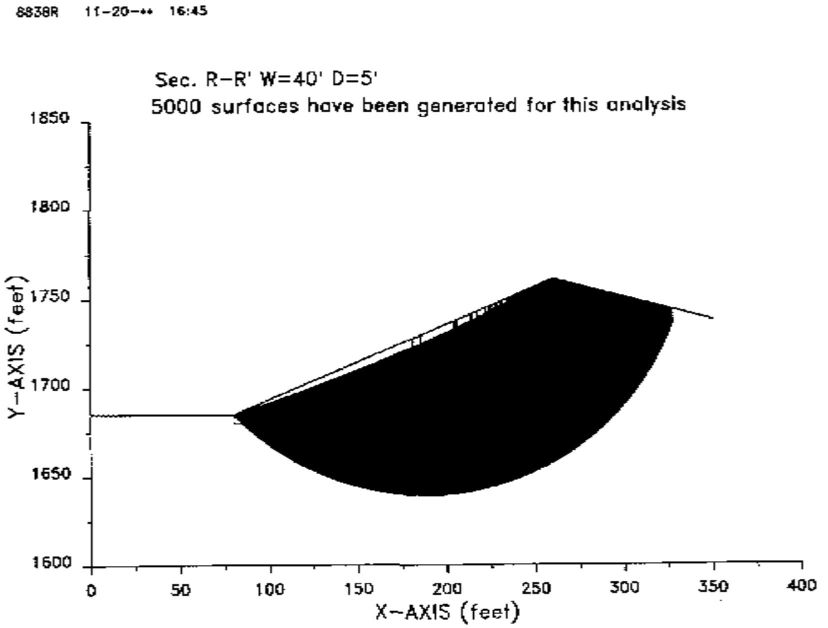
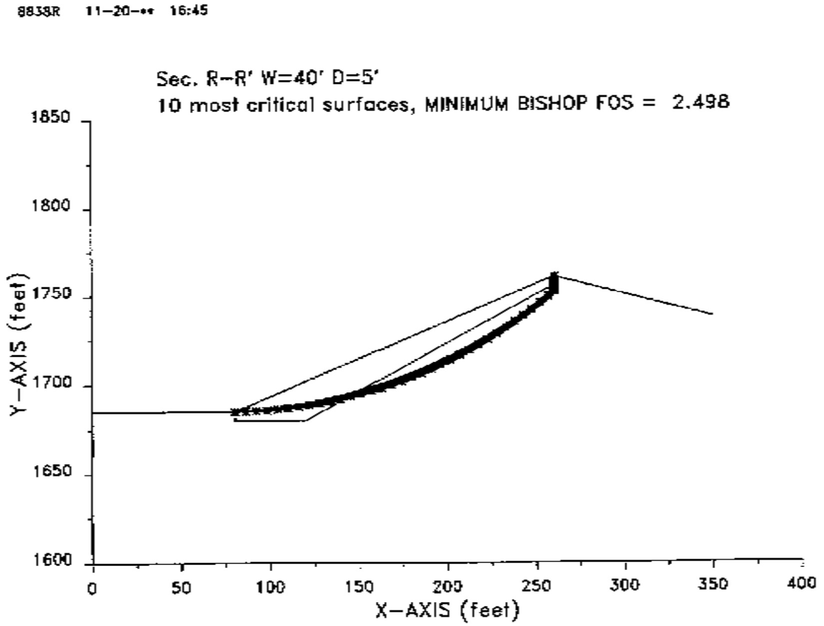

```
Soil   Unit Weight   Cohesion  Friction     Pore Pressure       Water
Unit  Moist    Sat.  Intercept   Angle   Parameter  Constant   Surface
No.   (pcf)   (pcf)    (psf)     (deg)       Ru       (psf)      No.

 1    130.0   140.0    225.0     40.00      .000        .0        0
 2    125.0   135.0    200.0     34.00      .000        .0        0


A critical failure surface searching method, using a random
technique for generating CIRCULAR surfaces has been specified.


 5000 trial surfaces will be generated and analyzed.


 100 Surfaces initiate from each of  50 points equally spaced
along the ground surface between  x =     80.0 ft
                             and  x =     80.0 ft


Each surface terminates between    x =    250.0 ft
                            and    x =    330.0 ft


Unless further limitations were imposed, the minimum elevation
at which a surface extends is  y =       .0 ft


* * * * *  DEFAULT SEGMENT LENGTH SELECTED BY XSTABL  * * * * *

    6.0 ft line segments define each trial failure surface.


---------------------
ANGULAR RESTRICTIONS
---------------------

  The first segment of each failure surface will be inclined
  within the angular range defined by :

         Lower angular limit :=   -45.0 degrees
         Upper angular limit :=  (slope angle - 5.0) degrees




Factors of safety have been calculated by the :

* * * * *   SIMPLIFIED BISHOP METHOD   * * * * *



  The most critical circular failure surface
  is specified by 35 coordinate points

      Point      x-surf      y-surf
       No.        (ft)        (ft)

        1        80.00     1685.00
        2        86.00     1685.12
        3        91.99     1685.36
        4        97.98     1685.74
        5       103.96     1686.24
        6       109.93     1686.87
        7       115.88     1687.63
        8       121.81     1688.52
```

```
          9          127.73       1689.53
         10          133.62       1690.67
         11          139.48       1691.93
         12          145.32       1693.32
         13          151.13       1694.84
         14          156.90       1696.48
         15          162.63       1698.24
         16          168.33       1700.12
         17          173.98       1702.13
         18          179.60       1704.26
         19          185.16       1706.50
         20          190.67       1708.87
         21          196.14       1711.35
         22          201.54       1713.95
         23          206.89       1716.66
         24          212.19       1719.49
         25          217.42       1722.43
         26          222.58       1725.48
         27          227.68       1728.64
         28          232.71       1731.91
         29          237.67       1735.29
         30          242.56       1738.77
         31          247.37       1742.36
         32          252.10       1746.05
         33          256.75       1749.84
         34          260.36       1752.91
         35          260.36       1760.91

****  Simplified BISHOP FOS =   2.498  ****



The following is a summary of the TEN most critical surfaces

Problem Description : Sec. R-R' W=40' D=5'

        FOS      Circle Center     Radius  Initial  Terminal  Resisting
     (BISHOP)  x-coord  y-coord            x-coord  x-coord    Moment
                (ft)     (ft)       (ft)     (ft)     (ft)     (ft-lb)

 1.   2.498    77.49  1965.19    280.20    80.00    260.36  9.786E+07
 2.   2.500    75.49  1968.06    283.10    80.00    259.05  9.590E+07
 3.   2.501    80.39  1961.34    276.34    80.00    261.47  1.006E+08
 4.   2.501    71.57  1977.97    293.09    80.00    258.68  9.632E+07
 5.   2.502    82.85  1954.05    269.06    80.00    261.23  9.932E+07
 6.   2.502    64.88  2000.02    315.38    80.00    260.71  1.022E+08
 7.   2.503    62.41  2003.85    319.33    80.00    259.96  1.004E+08
 8.   2.503    75.06  1967.23    282.27    80.00    257.62  9.399E+07
 9.   2.504    79.22  1968.21    283.22    80.00    262.62  1.045E+08
10.   2.504    81.77  1960.84    275.84    80.00    262.39  1.032E+08

              .     * *  END OF FILE  * * *
```





W.O. 8838

Sec. R-R' Pseudostatic

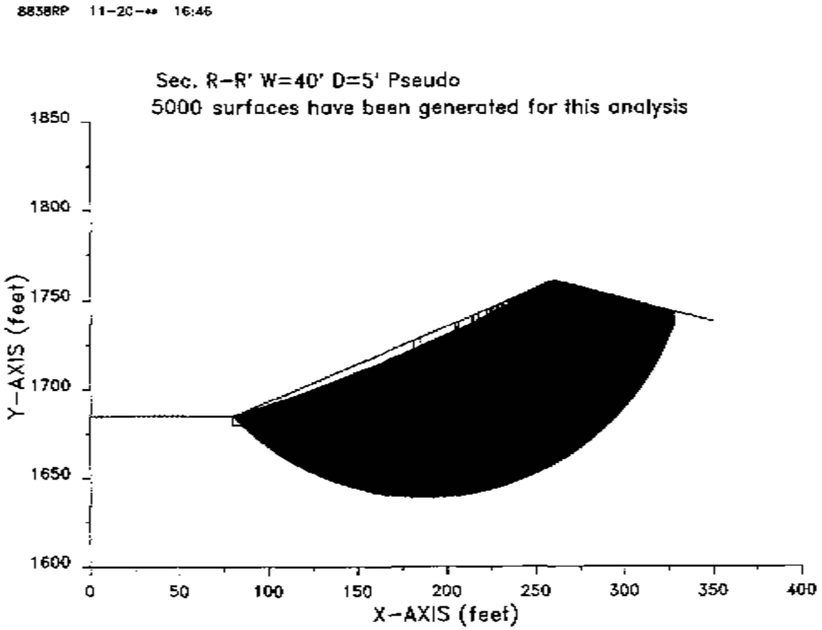
```
XSTABL File: 8838RP    11-20-**    16:46

          ******************************************
          *              X S T A B L               *
          *                                        *
          *       Slope Stability Analysis         *
          *              using the                 *
          *           Method of Slices             *
          *                                        *
          *       Copyright (C) 1992 À 96          *
          *   Interactive Software Designs, Inc.   *
          *       Moscow, ID 83843, U.S.A.         *
          *                                        *
          *          All Rights Reserved           *
          *                                        *
          * Ver. 5.201                  96 À 1545  *
          ******************************************

 Problem Description : Sec. R-R' W=40' D=5' Pseudo


 -----------------------------
 SEGMENT BOUNDARY COORDINATES
 -----------------------------

    3 SURFACE boundary segments

 Segment    x-left    y-left    x-right   y-right     Soil Unit
   No.       (ft)      (ft)      (ft)      (ft)     Below Segment

   1           .0     1685.0      80.0    1685.0          1
   2         80.0     1685.0     260.0    1761.0          1
   3        260.0     1761.0     350.0    1738.0          2


    4 SUBSURFACE boundary segments

 Segment    x-left    y-left    x-right   y-right     Soil Unit
   No.       (ft)      (ft)      (ft)      (ft)     Below Segment

   1         80.0     1685.0      80.1    1680.0          1
   2         80.1     1680.0     120.0    1680.0          1
   3        120.0     1680.0     259.9    1756.0          1
   4        259.9     1756.0     260.0    1761.0          1


 ------------------------------------
  A CRACKED ZONE HAS BEEN SPECIFIED
 ------------------------------------

     Depth of crack below ground surface =  8.00    (feet)
     Maximum depth of water in crack     =   .00    (feet)
     Unit weight of water in crack       = 62.40    (pcf)

 Failure surfaces will have a vertical side equal to the
 specified depth of crack and be affected by a hydrostatic
 force according to the specified depth of water in the crack



 --------------------------
 ISOTROPIC Soil Parameters
 --------------------------

  2 Soil unit(s) specified
```

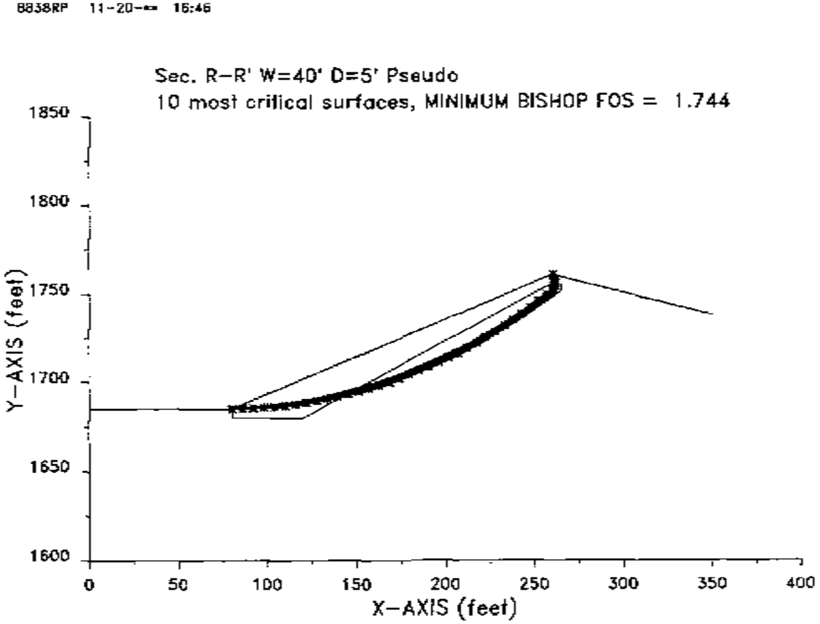
```
 Soil   Unit Weight   Cohesion  Friction     Pore Pressure       Water
 Unit  Moist   Sat.   Intercept   Angle  Parameter  Constant   Surface
  No.  (pcf)  (pcf)     (psf)     (deg)     Ru        (psf)       No.

   1   130.0  140.0     225.0     40.00    .000          .0         0
   2   125.0  135.0     200.0     34.00    .000          .0         0


 A horizontal earthquake loading coefficient
 of   .150 has been assigned

 A vertical earthquake loading coefficient
 of   .000 has been assigned


 A critical failure surface searching method, using a random
 technique for generating CIRCULAR surfaces has been specified.

  5000 trial surfaces will be generated and analyzed.

  100 Surfaces initiate from each of  50 points equally spaced
 along the ground surface between  x =     80.0 ft
                               and  x =     80.0 ft

 Each surface terminates between   x =    250.0 ft
                               and  x =    330.0 ft

 Unless further limitations were imposed, the minimum elevation
 at which a surface extends is  y =       .0 ft


 * * * * *  DEFAULT SEGMENT LENGTH SELECTED BY XSTABL  * * * * *

    6.0 ft line segments define each trial failure surface.


 ---------------------
 ANGULAR RESTRICTIONS
 ---------------------

   The first segment of each failure surface will be inclined
   within the angular range defined by :

          Lower angular limit :=   -45.0 degrees
          Upper angular limit :=  (slope angle - 5.0) degrees



 Factors of safety have been calculated by the :

 * * * * *   SIMPLIFIED BISHOP METHOD   * * * * *


   The most critical circular failure surface
   is specified by 35 coordinate points

       Point       x-surf       y-surf
        No.         (ft)         (ft)
```

W.O. 8838

Sec. R-R' Pseudostatic

```
                  1        80.00     1685.00
                  2        86.00     1685.12
                  3        91.99     1685.36
                  4        97.98     1685.74
                  5       103.96     1686.24
                  6       109.93     1686.87
                  7       115.88     1687.63
                  8       121.61     1688.52
                  9       127.73     1689.53
                 10       133.62     1690.67
                 11       139.48     1691.93
                 12       145.32     1693.32
                 13       151.13     1694.84
                 14       156.90     1696.48
                 15       162.63     1698.24
                 16       168.33     1700.12
                 17       173.98     1702.13
                 18       179.60     1704.26
                 19       185.16     1706.50
                 20       190.67     1708.87
                 21       196.14     1711.35
                 22       201.54     1713.95
                 23       206.89     1716.66
                 24       212.19     1719.49
                 25       217.42     1722.43
                 26       222.58     1725.48
                 27       227.68     1728.64
                 28       232.71     1731.91
                 29       237.67     1735.29
                 30       242.56     1738.77
                 31       247.37     1742.36
                 32       252.10     1746.05
                 33       256.75     1749.84
                 34       260.36     1752.91
                 35       260.36     1760.91

 ****  Simplified BISHOP FOS =   1.744  ****



 The following is a summary of the TEN most critical surfaces

 Problem Description : Sec. R-R' W=40' D=5' Pseudo

        FOS       Circle Center     Radius   Initial  Terminal  Resisting
      (BISHOP)  x-coord  y-coord             x-coord  x-coord    Moment
                  (ft)     (ft)      (ft)      (ft)     (ft)     (ft-lb)

  1.   1.744     77.49  1965.19    280.20     80.00    260.36  9.317E+07
  2.   1.744     54.88  2000.02    315.38     80.00    260.71  9.730E+07
  3.   1.745     80.39  1961.34    276.34     80.00    261.47  9.581E+07
  4.   1.745     79.22  1968.21    283.22     80.00    262.62  9.950E+07
  5.   1.745     75.49  1968.06    283.10     80.00    259.05  9.130E+07
  6.   1.746     71.57  1977.97    293.09     80.00    258.68  9.170E+07
  7.   1.746     62.41  2003.85    319.33     80.00    259.96  9.558E+07
  8.   1.746     80.19  1967.15    282.15     80.00    262.99  1.005E+08
  9.   1.746     70.76  1998.90    314.03     80.00    264.60  1.085E+08
 10.   1.746     81.77  1960.84    275.84     80.00    262.39  9.827E+07

                 *     * *  END OF FILE  * * *
```





W.O. 8838

Sec. R-R' Backcut

```
XSTABL File: 8838RB    11-20-**   16:49

          ******************************************
          *              X S T A B L               *
          *                                        *
          *        Slope Stability Analysis        *
          *              using the                 *
          *           Method of Slices             *
          *                                        *
          *         Copyright (C) 1992 À 96        *
          *   Interactive Software Designs, Inc.   *
          *        Moscow, ID 83843, U.S.A.        *
          *                                        *
          *          All Rights Reserved           *
          *                                        *
          * Ver. 5.201                  96 À 1545  *
          ******************************************

     Problem Description : Sec. R-R' Backcut



     ----------------------------
     SEGMENT BOUNDARY COORDINATES
     ----------------------------

        6 SURFACE boundary segments

     Segment   x-left    y-left    x-right   y-right     Soil Unit
       No.      (ft)      (ft)      (ft)      (ft)     Below Segment

       1          .0     1685.0      80.0    1685.0          1
       2        80.0     1685.0      80.1    1680.0          1
       3        80.1     1680.0     120.0    1680.0          1
       4       120.0     1680.0     259.9    1756.0          1
       5       259.9     1756.0     260.0    1761.0          1
       6       260.0     1761.0     350.0    1738.0          1


     ------------------------------------
      A CRACKED ZONE HAS BEEN SPECIFIED
     ------------------------------------

          Depth of crack below ground surface =  8.00    (feet)
          Maximum depth of water in crack     =   .00    (feet)
          Unit weight of water in crack       = 62.40    (pcf)

     Failure surfaces will have a vertical side equal to the
     specified depth of crack and be affected by a hydrostatic
     force according to the specified depth of water in the crack



     --------------------------
     ISOTROPIC Soil Parameters
     --------------------------

      1 Soil unit(s) specified

     Soil    Unit Weight   Cohesion  Friction    Pore Pressure      Water
     Unit   Moist   Sat.  Intercept   Angle   Parameter Constant   Surface
      No.   (pcf)  (pcf)    (psf)     (deg)      Ru       (psf)      No.

       1   130.0  140.0     225.0     40.00     .000         .0        0
```

```
A critical failure surface searching method, using a random
technique for generating CIRCULAR surfaces has been specified.


 5000 trial surfaces will be generated and analyzed.


 100 Surfaces initiate from each of  50 points equally spaced
along the ground surface between  x =    120.0 ft
                             and  x =    120.0 ft


Each surface terminates between   x =    230.0 ft
                            and   x =    330.0 ft


Unless further limitations were imposed, the minimum elevation
at which a surface extends is  y =        .0 ft


* * * * *  DEFAULT SEGMENT LENGTH SELECTED BY XSTABL  * * * * *

    7.0 ft line segments define each trial failure surface.



---------------------
ANGULAR RESTRICTIONS
---------------------

  The first segment of each failure surface will be inclined
  within the angular range defined by :

        Lower angular limit :=   -45.0 degrees
        Upper angular limit :=  (slope angle - 5.0) degrees




Factors of safety have been calculated by the :

* * * * *   SIMPLIFIED BISHOP METHOD   * * * * *



  The most critical circular failure surface
  is specified by 26 coordinate points

       Point        x-surf      y-surf
        No.          (ft)        (ft)

         1          120.00     1680.00
         2          126.95     1680.83
         3          133.87     1681.86
         4          140.76     1683.10
         5          147.61     1684.54
         6          154.42     1686.19
         7          161.17     1688.04
         8          167.86     1690.09
         9          174.49     1692.35
        10          181.05     1694.79
        11          187.53     1697.44
        12          193.93     1700.27
        13          200.24     1703.30
        14          206.46     1706.51
        15          212.58     1709.91
        16          218.59     1713.49
        17          224.50     1717.25
```

```
        18         230.29      1721.18
        19         235.96      1725.28
        20         241.51      1729.55
        21         246.92      1733.99
        22         252.20      1738.58
        23         257.35      1743.33
        24         262.34      1748.24
        25         265.55      1751.58
        26         265.55      1759.58

****  Simplified BISHOP FOS =   1.993  ****



The following is a summary of the TEN most critical surfaces

Problem Description : Sec. R-R' Backcut

       FOS       Circle Center     Radius   Initial  Terminal  Resisting
     (BISHOP)  x-coord  y-coord             x-coord  x-coord    Moment
                (ft)     (ft)       (ft)     (ft)     (ft)     (ft-lb)

  1.    1.993     95.86  1912.93    234.17   120.00   265.55  5.842E+07
  2.    1.994     93.48  1914.32    235.81   120.00   264.36  5.604E+07
  3.    1.995     95.52  1918.91    240.17   120.00   267.32  6.263E+07
  4.    1.995     86.15  1931.54    253.81   120.00   265.20  5.902E+07
  5.    1.996    103.44  1899.27    219.89   120.00   266.20  5.877E+07
  6.    1.996     88.30  1924.66    246.71   120.00   264.39  5.675E+07
  7.    1.996     87.47  1926.82    248.95   120.00   264.52  5.721E+07
  8.    1.996     90.52  1919.11    240.92   120.00   263.99  5.555E+07
  9.    1.997     84.85  1939.31    251.68   120.00   266.79  6.320E+07
 10.    1.997     97.21  1903.24    224.40   120.00   263.14  5.284E+07

              •     * *  END OF FILE  * * *
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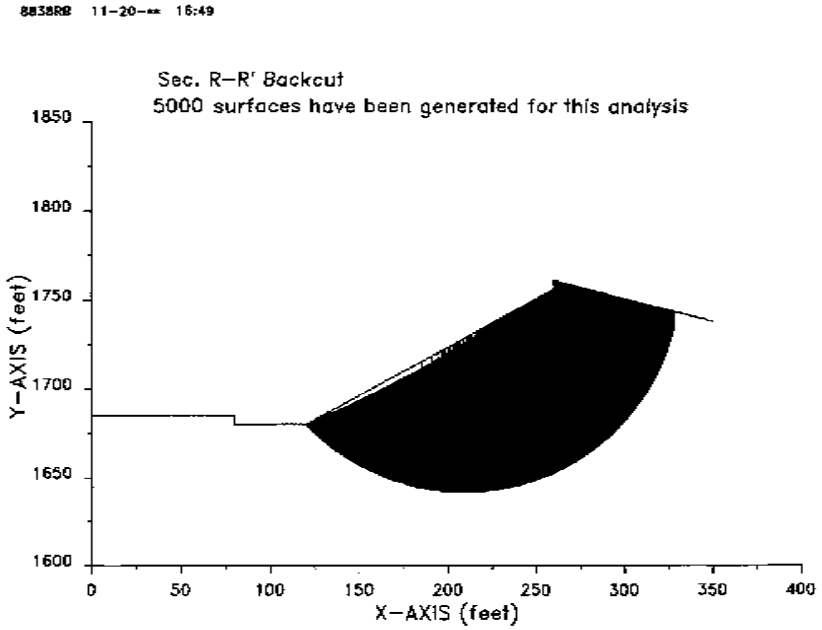
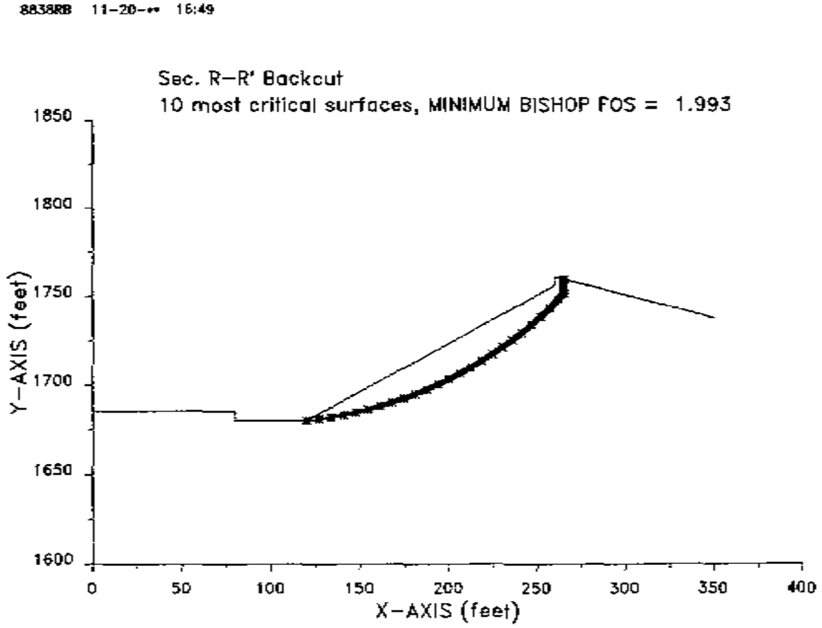




W.O. 8838

Sec. R-R' Natural slope 40' setback

```
XSTABL File: 8838RN    11-21-**    10:10

          ******************************************
          *               X S T A B L              *
          *                                        *
          *        Slope Stability Analysis        *
          *              using the                 *
          *           Method of Slices             *
          *                                        *
          *         Copyright (C) 1992 À 96        *
          *   Interactive Software Designs, Inc.   *
          *        Moscow, ID 83843, U.S.A.        *
          *                                        *
          *          All Rights Reserved           *
          *                                        *
          * Ver. 5.201                  96 À 1545  *
          ******************************************

 Problem Description : Sec. R-R' Natural slope 40' Setback



 ----------------------------
 SEGMENT BOUNDARY COORDINATES
 ----------------------------

    6 SURFACE boundary segments

 Segment    x-left     y-left     x-right    y-right     Soil Unit
   No.       (ft)       (ft)       (ft)       (ft)     Below Segment

    1          .0      1510.0      120.0     1515.0          1
    2       120.0      1515.0      200.0     1540.0          1
    3       200.0      1540.0      270.0     1585.0          2
    4       270.0      1585.0      280.0     1612.0          2
    5       280.0      1612.0      370.0     1666.0          2
    6       370.0      1666.0      600.0     1666.0          2

    1 SUBSURFACE boundary segments

 Segment    x-left     y-left     x-right    y-right     Soil Unit
   No.       (ft)       (ft)       (ft)       (ft)     Below Segment

    1       200.0      1540.0      600.0     1575.0          1


 -----------------------------------
  A CRACKED ZONE HAS BEEN SPECIFIED
 -----------------------------------

      Depth of crack below ground surface =  8.00    (feet)
      Maximum depth of water in crack      =   .00    (feet)
      Unit weight of water in crack        = 62.40    (pcf)

 Failure surfaces will have a vertical side equal to the
 specified depth of crack and be affected by a hydrostatic
 force according to the specified depth of water in the crack



 --------------------------
 ISOTROPIC Soil Parameters
 --------------------------

  2 Soil unit(s) specified
```

```
 Soil   Unit Weight   Cohesion  Friction    Pore Pressure       Water
 Unit  Moist    Sat.  Intercept   Angle   Parameter  Constant  Surface
  No.  (pcf)   (pcf)    (psf)     (deg)       Ru       (psf)      No.

   1   130.0   140.0    200.0     40.00      .000         .0       0
   2   125.0   135.0    225.0     40.00      .000         .0       0


 A critical failure surface searching method, using a random
 technique for generating CIRCULAR surfaces has been specified.


  5000 trial surfaces will be generated and analyzed.


  500 Surfaces initiate from each of  10 points equally spaced
 along the ground surface between  x =    120.0 ft
                              and  x =    270.0 ft


 Each surface terminates between   x =    410.0 ft
                             and   x =    520.0 ft


 Unless further limitations were imposed, the minimum elevation
 at which a surface extends is  y =       .0 ft


 * * * * *  DEFAULT SEGMENT LENGTH SELECTED BY XSTABL  * * * * *

    16.0 ft line segments define each trial failure surface.


 ---------------------
 ANGULAR RESTRICTIONS
 ---------------------

   The first segment of each failure surface will be inclined
   within the angular range defined by :

           Lower angular limit :=   -45.0 degrees
           Upper angular limit :=  (slope angle - 5.0) degrees



 Factors of safety have been calculated by the :

 * * * * *   SIMPLIFIED BISHOP METHOD   * * * * *


   The most critical circular failure surface
   is specified by 19 coordinate points

        Point        x-surf        y-surf
         No.          (ft)          (ft)

          1          186.67       1535.83
          2          202.32       1539.15
          3          217.83       1543.08
          4          233.17       1547.63
          5          248.32       1552.77
          6          263.25       1558.51
          7          277.95       1564.84
          8          292.38       1571.74
```

W.O. 8838

Sec. R-R' Natural slope 40' setback

```
      9          306.53       1579.21
     10          320.38       1587.23
     11          333.89       1595.79
     12          347.06       1604.88
     13          359.86       1614.49
     14          372.27       1624.59
     15          384.27       1635.17
     16          395.84       1646.22
     17          406.96       1657.72
     18          407.21       1658.00
     19          407.21       1666.00

 ****  Simplified BISHOP FOS =   1.551  ****



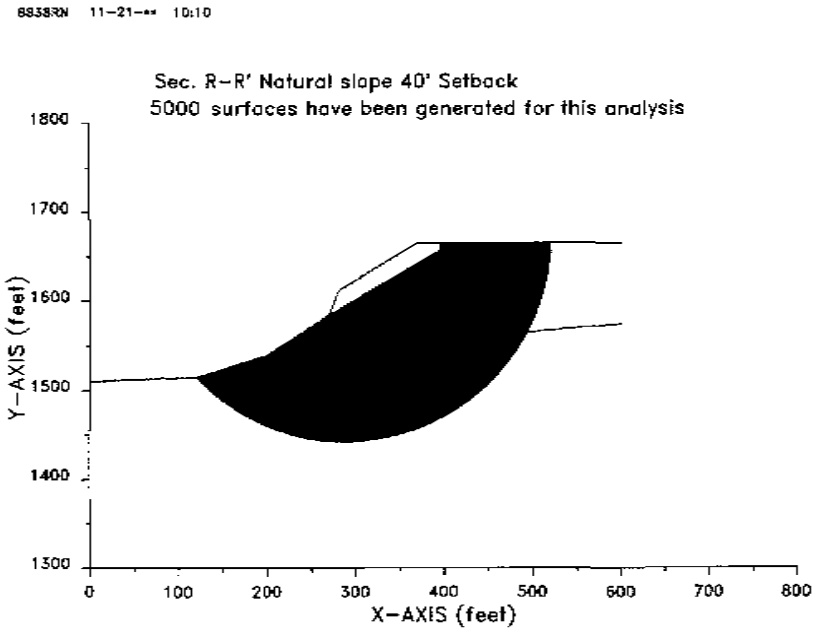
 The following is a summary of the TEN most critical surfaces

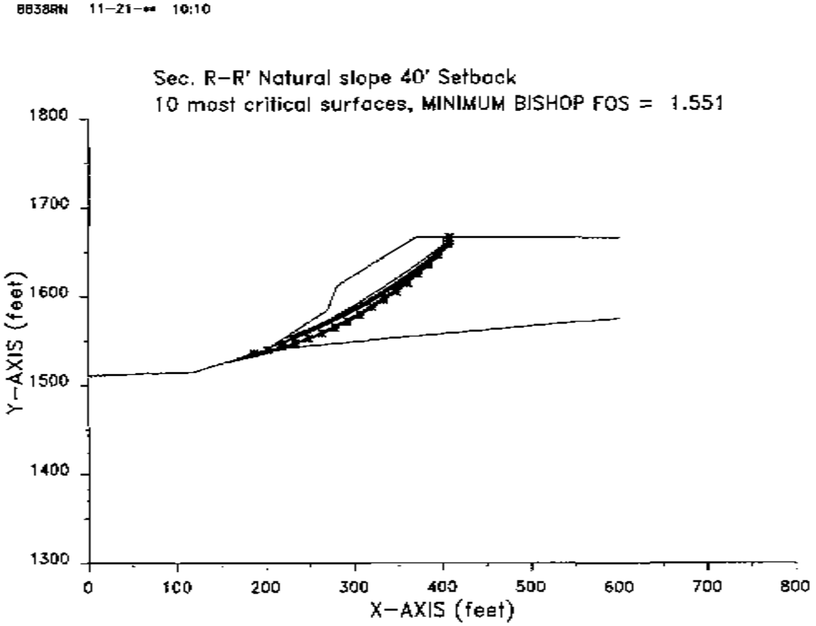
 Problem Description : Sec. R-R' Natural slope 40' Setback

        FOS     Circle Center     Radius   Initial  Terminal  Resisting
      (BISHOP)  x-coord  y-coord           x-coord  x-coord    Moment
                  (ft)     (ft)     (ft)     (ft)     (ft)     (ft-lb)

  1.    1.551    110.60  1933.33   404.71   186.67   407.21  2.655E+08
  2.    1.553   -136.47  2349.15   875.63   203.33   401.10  3.793E+08
  3.    1.556     14.27  2109.07   597.62   203.33   406.23  3.147E+08
  4.    1.556      -.34  2133.35   625.31   203.33   405.87  3.226E+08
  5.    1.558    106.14  1944.30   416.33   186.67   408.36  2.741E+08
  6.    1.561     63.30  2004.59   487.56   153.33   406.16  3.100E+08
  7.    1.564     80.87  1973.20   453.61   153.33   407.00  3.070E+08
  8.    1.571    -63.03  2245.14   751.77   203.33   406.40  3.710E+08
  9.    1.571     39.51  2081.66   558.75   220.00   403.75  2.594E+08
 10.    1.576    107.08  1967.98   430.21   220.00   405.29  2.234E+08

                 *    * *  END OF FILE  * * *
```





GEOLABS-WESTLAKE VILLAGE

Plate Rn.2

W.O. 8838

Sec. R-R', Nat. Slope, 40' Setback, Pseudo

```
XSTABL File: 8838RNP   11-21-**   10:10

          ******************************************
          *              X S T A B L               *
          *                                        *
          *        Slope Stability Analysis        *
          *              using the                 *
          *           Method of Slices             *
          *                                        *
          *         Copyright (C) 1992 À 96        *
          *    Interactive Software Designs, Inc.  *
          *       Moscow, ID 83843, U.S.A.         *
          *                                        *
          *          All Rights Reserved           *
          *                                        *
          * Ver. 5.201                  96 À 1545  *
          ******************************************

Problem Description : Sec. R-R' Natural slp 40' Setbk, pse


-----------------------------
SEGMENT BOUNDARY COORDINATES
-----------------------------

    6 SURFACE boundary segments

Segment   x-left    y-left    x-right   y-right     Soil Unit
  No.      (ft)      (ft)      (ft)      (ft)     Below Segment

   1          .0    1510.0     120.0    1515.0          1
   2       120.0    1515.0     200.0    1540.0          1
   3       200.0    1540.0     270.0    1585.0          2
   4       270.0    1585.0     280.0    1612.0          2
   5       280.0    1612.0     370.0    1666.0          2
   6       370.0    1666.0     600.0    1666.0          2

    1 SUBSURFACE boundary segments

Segment   x-left    y-left    x-right   y-right     Soil Unit
  No.      (ft)      (ft)      (ft)      (ft)     Below Segment

   1       200.0    1540.0     600.0    1575.0          1

----------------------------------
 A CRACKED ZONE HAS BEEN SPECIFIED
----------------------------------

     Depth of crack below ground surface =  8.00   (feet)
     Maximum depth of water in crack     =   .00   (feet)
     Unit weight of water in crack       = 62.40   (pcf)

Failure surfaces will have a vertical side equal to the
specified depth of crack and be affected by a hydrostatic
force according to the specified depth of water in the crack



--------------------------
ISOTROPIC Soil Parameters
--------------------------

 2 Soil unit(s) specified
```

```
Soil   Unit Weight   Cohesion  Friction    Pore Pressure       Water
Unit  Moist   Sat.   Intercept   Angle  Parameter  Constant  Surface
 No.  (pcf)  (pcf)     (psf)     (deg)      Ru       (psf)      No.

  1   130.0  140.0     200.0     40.00     .000         .0       0
  2   125.0  135.0     225.0     40.00     .000         .0       0


A horizontal earthquake loading coefficient
of   .150 has been assigned

A vertical earthquake loading coefficient
of   .000 has been assigned


A critical failure surface searching method, using a random
technique for generating CIRCULAR surfaces has been specified.


 5000 trial surfaces will be generated and analyzed.


 500 Surfaces initiate from each of  10 points equally spaced
along the ground surface between  x =    120.0 ft
                              and  x =    270.0 ft


Each surface terminates between    x =    410.0 ft
                            and    x =    520.0 ft


Unless further limitations were imposed, the minimum elevation
at which a surface extends is  y =        .0 ft


* * * * *  DEFAULT SEGMENT LENGTH SELECTED BY XSTABL  * * * * *

   16.0 ft line segments define each trial failure surface.


---------------------
ANGULAR RESTRICTIONS
---------------------

  The first segment of each failure surface will be inclined
  within the angular range defined by :

          Lower angular limit :=   -45.0 degrees
          Upper angular limit :=  (slope angle - 5.0) degrees



Factors of safety have been calculated by the :

* * * * *   SIMPLIFIED BISHOP METHOD   * * * * *


  The most critical circular failure surface
  is specified by 17 coordinate points

       Point       x-surf       y-surf
        No.         (ft)         (ft)
```

W.O. 8838

Sec. R-R', Nat. Slope, 40' Setback, Pseudo

```
        1          203.33      1542.14
        2          218.02      1548.49
        3          232.59      1555.10
        4          247.04      1561.97
        5          261.36      1569.11
        6          275.55      1576.51
        7          289.59      1584.17
        8          303.50      1592.08
        9          317.26      1600.25
       10          330.87      1608.66
       11          344.32      1617.32
       12          357.61      1626.23
       13          370.74      1635.38
       14          383.70      1644.76
       15          396.48      1654.39
       16          401.10      1658.00
       17          401.10      1666.00


****  Simplified BISHOP FOS =   1.155  ****



The following is a summary of the TEN most critical surfaces

Problem Description : Sec. R-R' Natural slp 40' Setbk, pse

       FOS      Circle Canter    Radius   Initial  Terminal  Resisting
     (BISHOP)  x-coord  y-coord            x-coord  x-coord    Moment
                 (ft)     (ft)     (ft)     (ft)     (ft)     (ft-lb)

 1.    1.155   -136.47  2349.15   875.63   203.33   401.10  3.493E+08
 2.    1.158     -.34   2133.35   625.31   203.33   405.87  2.975E+08
 3.    1.158    14.27   2109.07   597.62   203.33   406.23  2.902E+08
 4.    1.164   110.60   1933.33   404.71   186.67   407.21  2.454E+08
 5.    1.166   -63.03   2245.14   751.77   203.33   406.40  3.422E+08
 6.    1.167   106.14   1944.30   416.33   186.67   408.36  2.535E+08
 7.    1.169    63.30   2004.59   487.56   153.33   406.16  2.865E+08
 8.    1.169    39.51   2081.66   558.75   220.00   403.75  2.394E+08
 9.    1.172    80.87   1973.20   453.61   153.33   407.00  2.839E+08
10.    1.176   107.08   1967.98   430.21   220.00   405.29  2.065E+08

                 *     * *  END OF FILE  * * *
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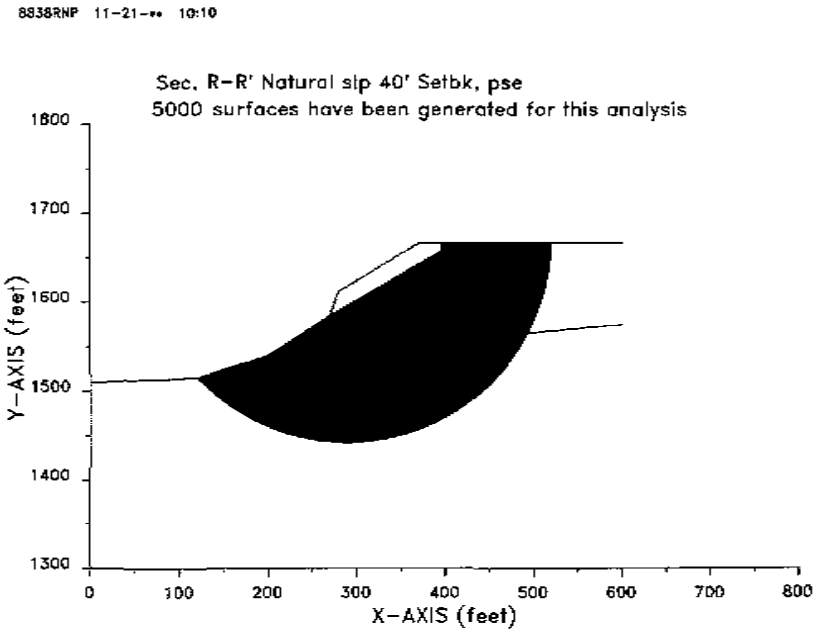

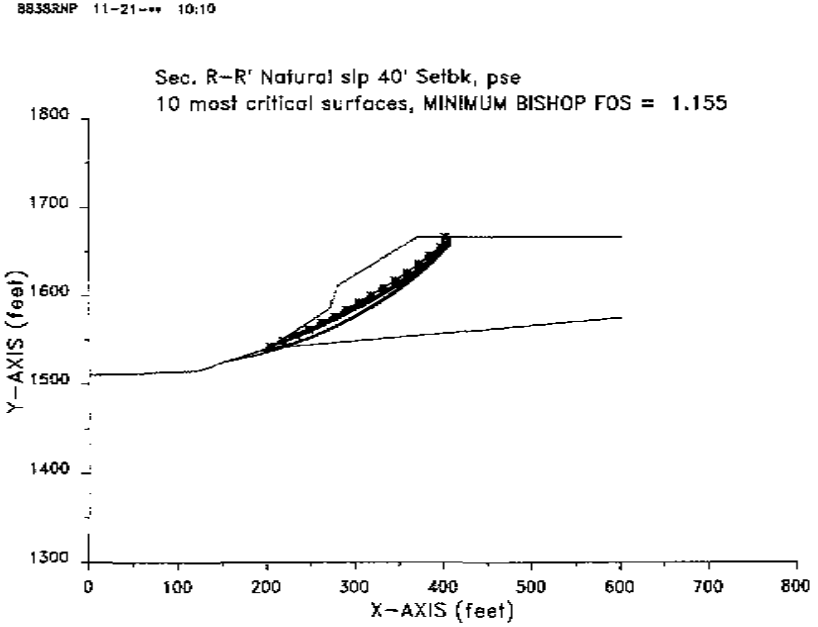

GEOLABS-WESTLAKE VILLAGE

Plate Rnp.2

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Plate R.1

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GEOLABS-WESTLAKE VILLAGE
Foundation and Soils Engineering, Geology
31119 Via Colinas, Suite 502 • Westlake Village, CA 91362
Voice: (818) 889-2562 (805) 495-2197
Fax: (818) 889-2995 (805) 379-2603

a dba of
R & R Services
Corporation

April 13, 2007
W.O. 8838

Pardee Homes
26650 The Old Road, Suite 110
Valencia, California 91381

Attention: Mr. Tom Mitchell

SUBJECT: Response to Soils Engineering Review Sheet dated February 8, 2007,
Tentative Tract Map No. 060922, Skyline Ranch,
Santa Clarita Area, County of Los Angeles, California

Mr. Mitchell:

We present herein our responses to the issued raised by the Los Angeles County Department of Public Works Soils Engineering Review Sheet dated February 8, 2007. A copy of the letter, along with the Geologic Review Sheet which did not contain any comments, is provided in Appendix A.

Item #1 – Slope Stability Analyses for Cross Sections B6-B6' and N-N'

The Geologic Map presented in our November 16, 2006 report utilized the 1"=200' scale Tentative Tract Map provided to our office by Sikand Engineers. This map is attached as Plate 1.2. At the 1"=200' scale, the eight feet wide terrace benches in the cross section (and map) are difficult to distinguish, let alone to illustrate. Cross Section B6-B6 and N-N' depict one of the largest slopes proposed, that contains up to six 8-foot benches, and two 20-foot wide benches. Our previously submitted analyses and cross sections included one 20-foot wide bench, and "smoothed" the terrain between the 20-foot bench and the top and toe of slope. This smoothing of the terrain (elimination of the smaller benches) allowed for a cleaner depiction of the slope, and yielded the 2.5:1 overall slope gradient as noted by the reviewer. In our experience of evaluating slopes of such height (particularly for feasibility purposes), there is typically little change in the factor of safety by the "smoothing" of such slopes, since the overall gradient of the slope (from top to toe of slope) remains nearly the same.

Cross Sections B6-B6' and N-N' have been revised to reflect all of the benches and re-analyzed to verify the consistency in the factor of safety (versus the smoothing). It should be noted that the overall slope gradient of these slopes remains about 2.5:1 due to the numerous benches and intervening 2:1 slope gradient.

The revised analyses for Cross Sections B6-B6' and N-N' are presented in Appendix B. Shear strengths and the method of analysis remain as outlined in our referenced reports for Tentative Tract Map No. 060922. We have also revisited the other cross sections exhibiting tall graded slopes which were simplified and drawn with overall gradients slightly flatter than 2:1. Those slopes with factors of safety near the required minimum of 1.5 were reanalyzed. The output for such analyses is also provided in Appendix B. The following table summarizes the factors of safety for these analyses, and those previously presented in our November 16, 2006 report for comparison purposes.

Analysis	F.O.S. Revised Analyses with all 8' benches depicted	F.O.S. from November 16, 2006 Report
B6-B6' static	1.66	1.60
B6-B6' pseudostatic	1.20	1.20
N-N' static	2.15	2.26
N-N' pseudostatic	1.47	1.54
C3-C3' static	1.70	1.70
C3-C3' pseudostatic	1.24	1.25
B2-B2' static	1.50	1.52
C-C' static	1.59	1.60
C-C' pseudostatic	1.11	1.12
D-D' static	1.58	1.56

As indicated, the slopes have factors of safety above the required minimums. Refinement of the proposed grading led to very minor differences in the factors of safety. Slope stability analyses for these areas shall be revisited at the 1"=40' scale grading plan stage for design and verification purposes.

Item #2 – Tentative Tract Map Modifications

The reviewer noted that the Tentative Tract Map configuration presented in our previous report does not conform with the map on file with Regional Planning (dated December 27, 2004). As the processing of TTM 060922 continues, we anticipate that Regional Planning will ultimately have the map/layout presented in this report and our November 16, 2006 report. Should further changes be made to the Tentative Tract Map, supplemental geotechnical report(s) shall be submitted by our office to address such changes.

SUMMARY

Based on our review of the available data and Tentative Tract Map design prepared by Sikand Engineers, Tentative Tract Map No. 60922 is considered feasible from a geotechnical engineering and engineering geologic perspective.

111 STATEMENT

Based upon tests conducted as outlined in this and applicable referenced reports, and if constructed in accordance with our recommendations and properly maintained, it is the opinion of the undersigned, a duly registered professional engineer and engineering geologist, that (1) the proposed grading and proposed structure(s) will be safe against hazard from landslide, settlement or slippage, and that (2) the proposed building or grading construction will have no adverse effect on the geologic stability of property outside the building site. The nature and extent of tests conducted for purposes of this declaration are, in the opinion of the undersigned, in conformance with generally accepted practices in this area. Test findings and statements of professional opinion do not constitute a guarantee or warranty, express or implied.

CLOSURE

This geotechnical report has been prepared in accordance with generally accepted engineering practices at this time and location. No other warranties, either express or implied, are made as to the professional advice provided under the terms of our agreement and included in this report.

Thank you for this opportunity to be of service. Please do not hesitate to call if you have any questions regarding this report.

Respectfully submitted,
GEOLABS-WESTLAKE VILLAGE

David Sarkisian
C.E.G. 2183

DAVID H. SARKISIAN
No. 2183
CERTIFIED ENGINEERING GEOLOGIST
Exp 7/31/08

Ronald Z. Shmerling
C.E.G. 1047
R.C.E. 35444

RONALD Z. SHMERLING
NO. 1047
CERTIFIED ENGINEERING GEOLOGIST

RONALD Z. SHMERLING
No. 35444
Exp. 09/30/07
CIVIL

Enclosures:

Enclosures:	Geologic Map	Plate 1.2 (in pocket)
	Cross Sections	Plate 2.1-2.4
	LACDPW Review Sheets	Appendix A
	Slope Stability Analyses	Appendix B
	References	Plates R.1-R.3

XC:
- (1) Addressee
- (1) Pardee-Valencia, Attention Jim Bizzelle
- (2) Sikand Engineers, Attention Craig Young
- (2) County of Los Angeles, Land Development (and 1 PDF on CD)
- (2) PCR Services, Attention Jay Ziff (and 1 PDF on CD)
  233 Wilshire Blvd., Suite 130
  Santa Monica, CA 90401
- (1) File

Copies of Maps on file with the
County of Los Angeles,
Department of Public Works,
Land Development

Proposed lot cap

Geologic Contact (dashed where approx., dotted where covered)

Fault (dashed where approx., dotted where covered)

Estimated removal depth

Line of Cross Section

▨ Buttress keyway

P:\8838 Pardee-Skyline Ranch\8838geo200scale.dwg (Layout: GE

LE 1"=200'

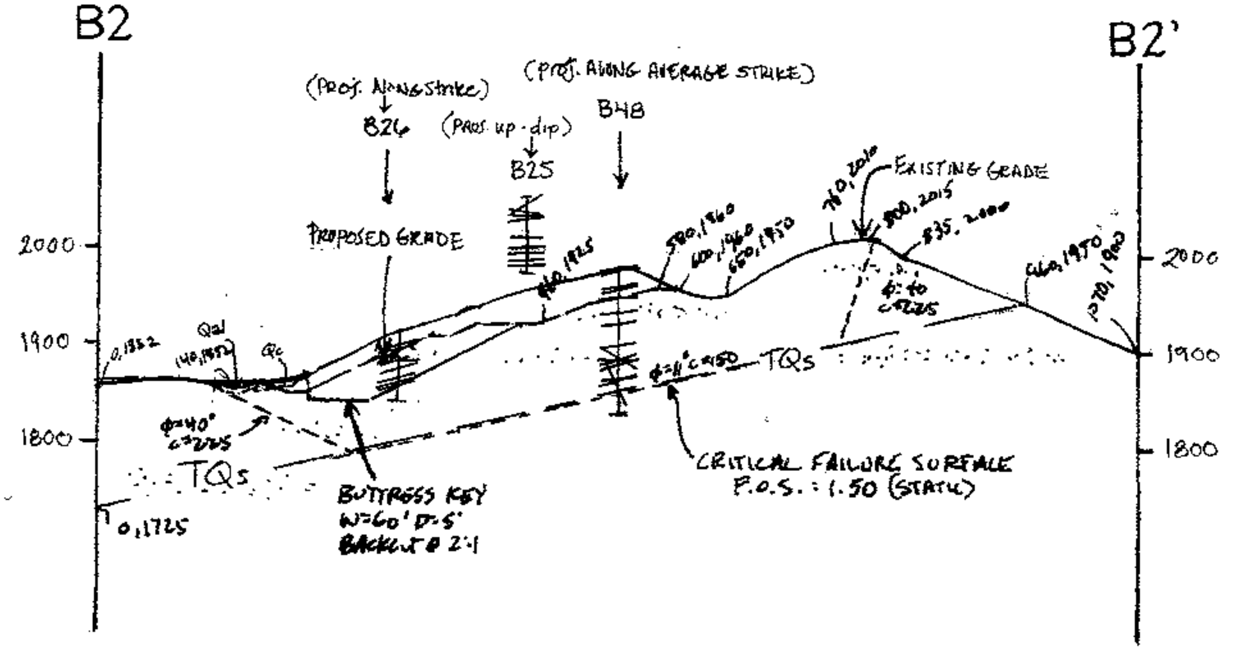
400 800
FEET

REISSUED 4/13/07

Geolabs - Westlake Village
GEOLOGY AND SOIL ENGINEERING

DATE 11/16/06 BY KMM/TC
SCALE 1"=200' W.O. 8838

PLATE 1.2

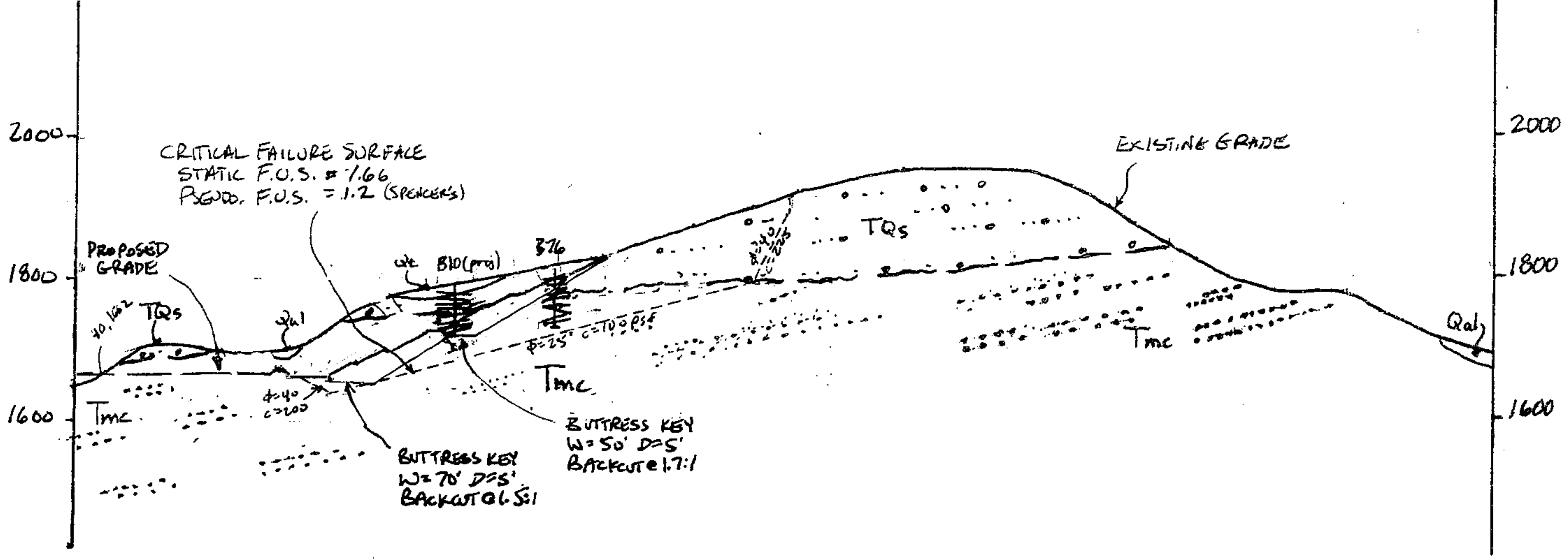


Geolabs – Westlake Village
GEOLOGY AND SOIL ENGINEERING

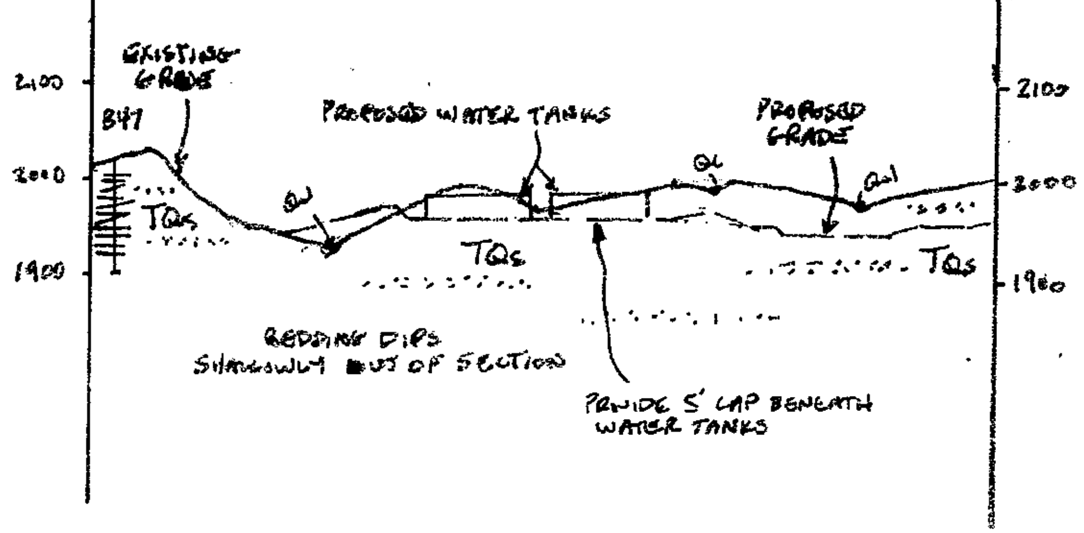
DATE 4/13/07 BY
SCALE 1"=200' W.O. 8838

PLATE 2.1

B6 B6'



C2 C2'



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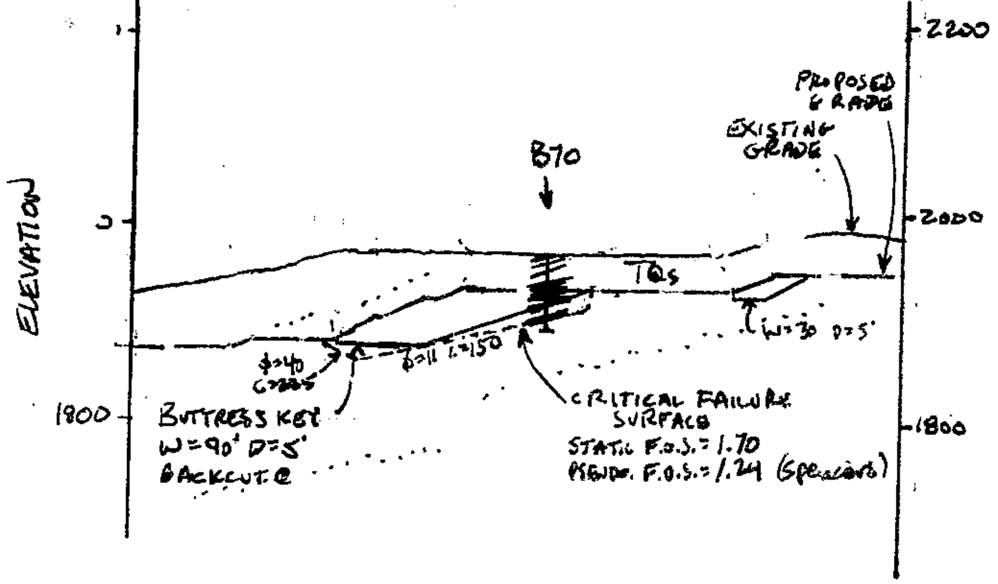
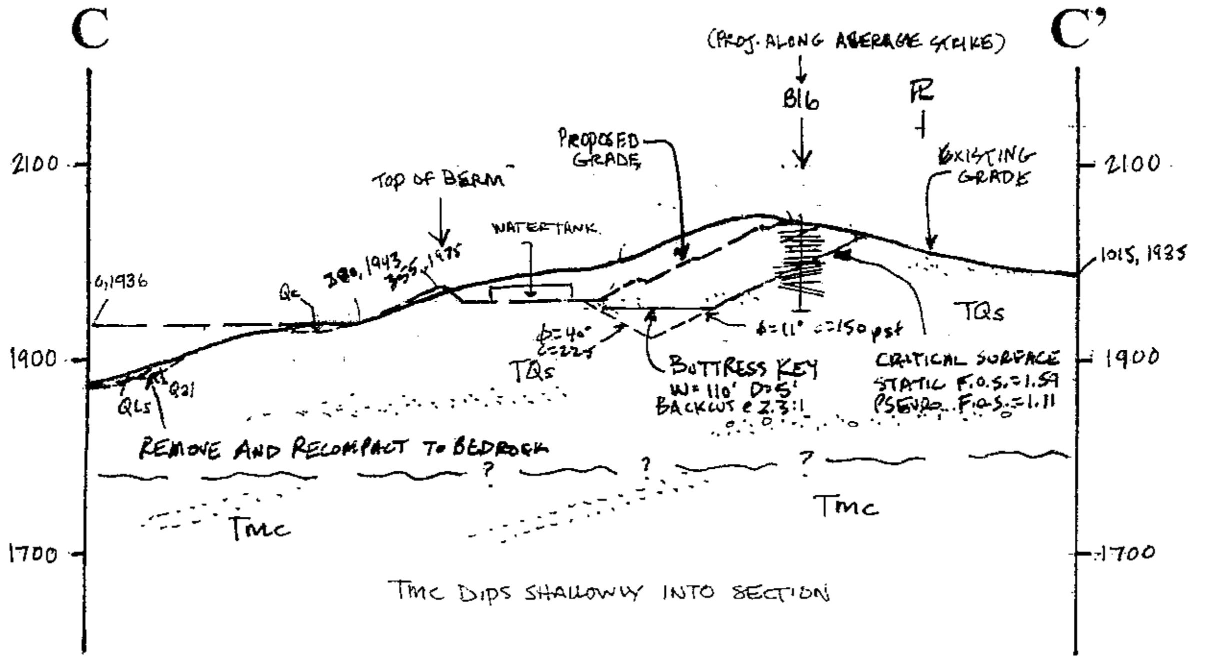


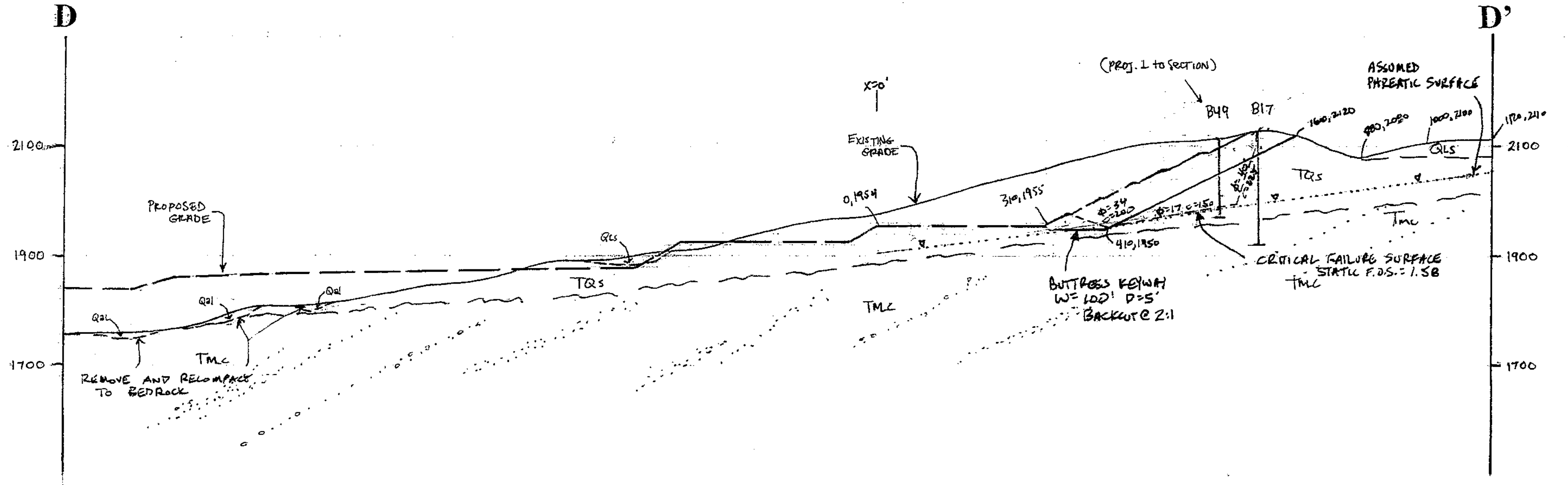
REVISED 4/13/07

Geolabs – Westlake Village
GEOLOGY AND SOIL ENGINEERING

DATE 11/16/06 BY DS
SCALE 1"=200' W.O. 8838

PLATE 2.2





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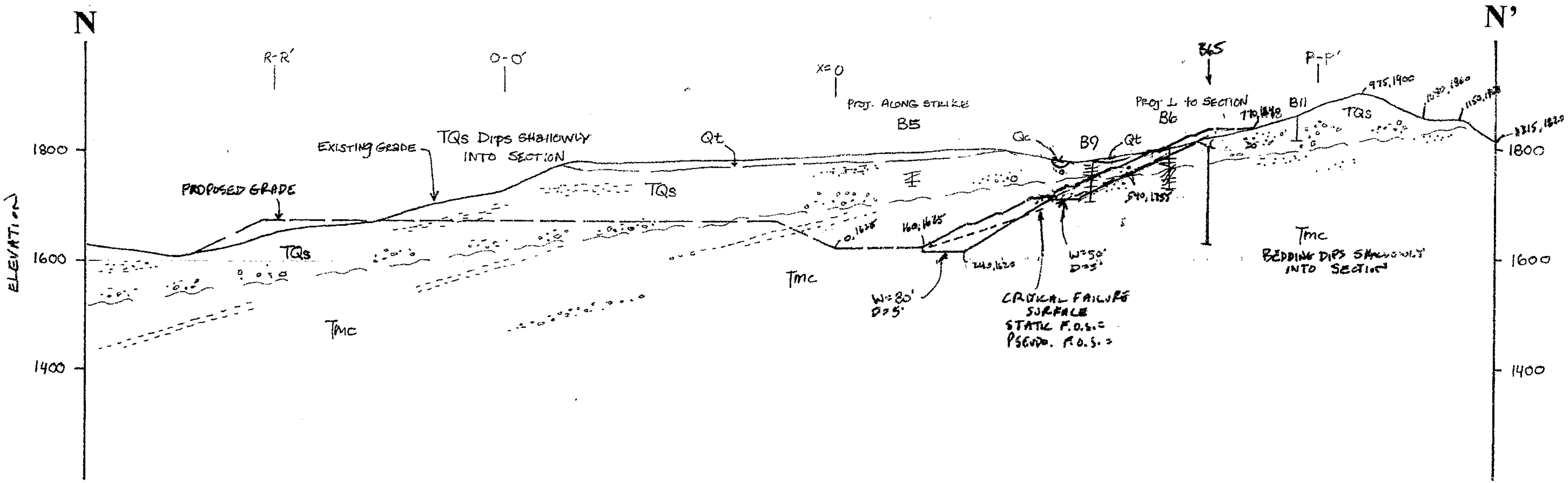
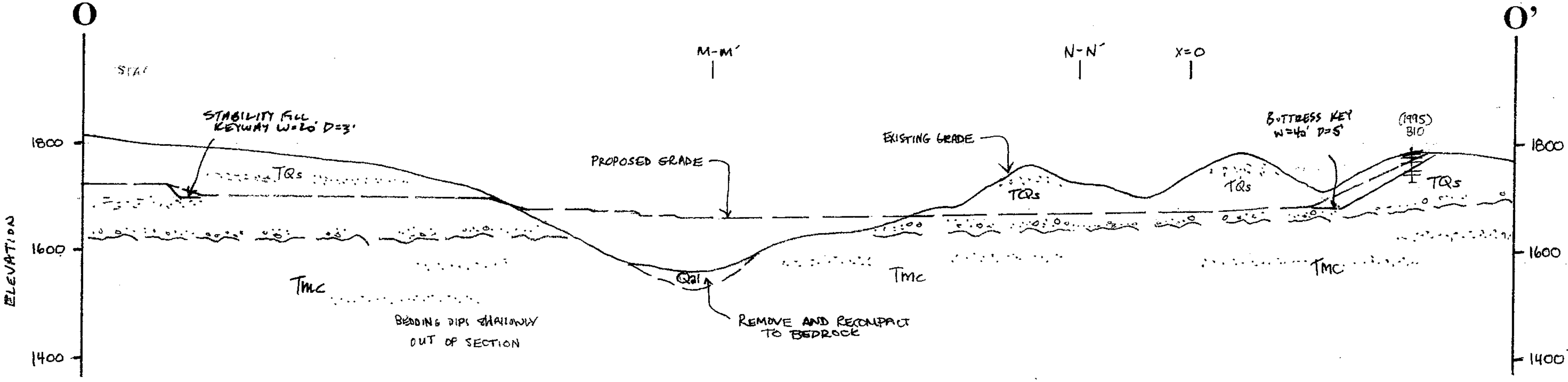
Geologabs - Westlake Village
GEOLOGY AND SOIL ENGINEERING

DATE 11/16/06 BY PS
SCALE 1"= 200' W.O. 8838

PLATE 2.3





REV. 4/13/07

Geolabs - Westlake Village
GEOLOGY AND SOIL ENGINEERING

DATE 11/16/06 BY JN
SCALE 1" = 200' W.O. 8838

APPENDIX A

LACDPW REVIEW SHEETS FOR TTM 060922, SKYLINE RANCH, COUNTY OF LOS ANGELES, CALIFORNIA

• Sheet 1 of 1

County of Los Angeles Department of Public Works
GEOTECHNICAL AND MATERIALS ENGINEERING DIVISION
GEOLOGIC REVIEW SHEET
900 So. Fremont Ave., Alhambra, CA 91803
TEL. (626) 458-4925

RECEIVED FEB 14 2007

DISTRIBUTION
1 Geologist
_ Soils Engineer
1 GMED File
1 Subdivision

TENTATIVE TRACT MAP 60922
SUBDIVIDER Pardee Homes
ENGINEER Sikand
GEOLOGIST & SOILS ENGINEER Geolabs – Westlake Village

TENTATIVE MAP DATED 12/18/06 (Revised)
LOCATION Santa Clarita
REPORT DATE 11/16/06 (CD), 1/3/05, 8/23/04, 3/6/04

The Regional Planning Commission, developer, and engineer are advised that:

PRIOR TO RECOMMENDING APPROVAL OF THE TENTATIVE TRACT OR PARCEL MAP:

1. The Soils Engineering review dated 2/8/07 is attached.

NOTE Provide a copy of this review with your resubmittal

Prepared by ________ Reviewed by ________ Date 2/6/07
Geir R. Mathisen

P:\gmepub\Geology_Review\Geir\Review Sheets\District 8.2 (Santa Clarita)\Tracts\60922, TM7 NA.doc

COUNTY OF LOS ANGELES
DEPARTMENT OF PUBLIC WORKS
GEOTECHNICAL AND MATERIALS ENGINEERING DIVISION

SOILS ENGINEERING REVIEW SHEET

Address: 900 S. Fremont Ave., Alhambra, CA 91803
Telephone: (626) 458-4925
Fax: (626) 458-4913

District Office 8.2
Job Number LX001129
Sheet 1 of 2

DISTRIBUTION:
____ Drainage
____ Grading
____ Geo/Soils Central File
____ District Engineer
____ Geologist
____ Soils Engineer
____ Engineer/Architect

Tentative Tract Map 60922
Location Santa Clarita
Developer/Owner Pardee Homes
Engineer/Architect Sikand
Soils Engineer Geolabs - Westlake Village
Geologist Same as above

Review of:

Revised Tentative Tract Map Dated By Regional Planning 12/18/06
Soil Engineering and Geologic Report Dated 11/16/06, 1/3/05, 8/23/04, 3/06/04
Previous review sheet dated 1/10/07

ACTION:

Tentative Map feasibility is not recommended for approval.

REMARKS:

As Previously Requested:

1. In the slope stability analyses within the submitted report, the profile of the proposed slopes in the analyses for Cross Sections B6-B6' and Cross Section N-N' is at 2.5:1 gradient. However on the submitted geotechnical maps and on the tentative map the slopes are proposed to be at 2:1 gradient. Verify the gradient of the proposed slopes for all slope stability analyses and provide revised slope stability analyses as necessary. Recommend mitigation if factors of safety are below County minimum standards.

2. The geotechnical maps within the submitted report do not conform to the latest tentative map dated by Regional Planning 12/27/04. Provide geotechnical maps and tentative maps that conform, as requested by the Geology Section.

3. Include a copy of this review sheet with your response.

<u>NOTE(S) TO THE PLAN CHECKER/BUILDING AND SAFETY ENGINEER:</u>

A. THE ON-SITE SOILS ARE SEVERELY CORROSIVE TO FERROUS METALS.
B. THE ON-SITE SOILS HAVE A MEDIUM EXPANSION POTENTIAL.
C. OFF-SITE GRADING IS RECOMMENED FOR THE REMOVAL AND RECOMPACTION OF LANDSLIDES QLS-9A, QLS-10, QLS-10A, L1, AND L17.

REGISTERED PROFESSIONAL ENGINEER
YOSHIYA MORISAKU
No. 67587
Exp. 6/30/07
STATE OF CALIFORNIA

Reviewed by Yoshiya Morisaku
Yoshiya Morisaku

Date 2/8/07

NOTICE: **Public safety, relative to geotechnical subsurface exploration, shall be provided in accordance with current codes for excavations, inclusive of the Los Angeles County Code, Chapter 11.48, and the State of California, Title 8, Construction Safety Orders.**

P:\Yosh\60922TentTe

APPENDIX B

SLOPE STABILITY ANALYSES
TTM 060922, SKYLINE RANCH,
COUNTY OF LOS ANGELES, CALIFORNIA

8838

Sec. B2-B2' W=60' D=5'

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         ******************************************
         *              X S T A B L               *
         *                                        *
         *        Slope Stability Analysis        *
         *               using the                *
         *            Method of Slices            *
         *                                        *
         *        Copyright (C) 1992 À 96         *
         *   Interactive Software Designs, Inc.   *
         *        Moscow, ID 83843, U.S.A.        *
         *                                        *
         *          All Rights Reserved           *
         *                                        *
         * Ver. 5.201                  96 À 1545  *
         ******************************************


Problem Description : Sec. B2-B2' W=60' D=5'


-----------------------------
SEGMENT BOUNDARY COORDINATES
-----------------------------

   20 SURFACE boundary segments

Segment    x-left    y-left    x-right   y-right     Soil Unit
  No.       (ft)      (ft)      (ft)      (ft)     Below Segment

   1          .0     1852.0     140.0    1852.0          1
   2       140.0     1852.0     148.0    1856.0          1
   3       148.0     1856.0     153.0    1856.0          1
   4       153.0     1856.0     165.0    1850.0          1
   5       165.0     1850.0     230.0    1850.0          1
   6       230.0     1850.0     286.0    1875.0          2
   7       286.0     2875.0     294.0    1875.0          2
   8       294.0     1875.0     342.0    1900.0          2
   9       342.0     1900.0     350.0    1900.0          2
  10       350.0     1900.0     396.0    1925.0          2
  11       396.0     1925.0     440.0    1925.0          2
  12       440.0     1925.0     460.0    1925.0          1
  13       460.0     1925.0     580.0    1960.0          1
  14       580.0     1960.0     600.0    1960.0          1
  15       600.0     1960.0     650.0    1950.0          1
  16       650.0     1950.0     760.0    2010.0          1
  17       760.0     2010.0     800.0    2015.0          1
  18       800.0     2015.0     835.0    2000.0          1
  19       835.0     2000.0     960.0    1950.0          1
  20       960.0     1950.0    1070.0    1900.0          2

    4 SUBSURFACE boundary segments

Segment    x-left    y-left    x-right   y-right     Soil Unit
  No.       (ft)      (ft)      (ft)      (ft)     Below Segment

   1       230.0     1850.0     230.1    1845.0          1
   2       230.1     1845.0     290.0    1845.0          1
   3       290.0     1845.0     440.0    1925.0          1
   4          .0     1725.0     960.0    1950.0          3


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 A CRACKED ZONE HAS BEEN SPECIFIED
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    Depth of crack below ground surface =  8.00   (feet)
    Maximum depth of water in crack     =   .00   (feet)
    Unit weight of water in crack       = 62.40   (pcf)

Failure surfaces will have a vertical side equal to the
specified depth of crack and be affected by a hydrostatic
force according to the specified depth of water in the crack



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ISOTROPIC Soil Parameters
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 3 Soil unit(s) specified

Soil   Unit Weight   Cohesion  Friction    Pore Pressure      Water
Unit  Moist    Sat.  Intercept   Angle  Parameter  Constant  Surface
 No.  (pcf)   (pcf)    (psf)     (deg)     Ru        (psf)     No.

  1   130.0   140.0    225.0     40.00    .000         .0       1
  2   125.0   135.0    200.0     34.00    .000         .0       1
  3   130.0   140.0    225.0     40.00    .000         .0       1


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ANISOTROPIC STRENGTH PARAMETERS
specified for  2 Soil Unit(s)
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Soil Unit  1 is ANISOTROPIC

Number of direction ranges specified =  3


Direction     Counterclockwise          c-value      i-value
Range No.   Direction Limit (deg)        (psf)      (degrees)

    1              6.00                 225.0        40.00
    2             12.00                 150.0        17.00
    3             90.00                 225.0        40.00


Soil Unit  3 is ANISOTROPIC

Number of direction ranges specified =  3


Direction     Counterclockwise          c-value      i-value
Range No.   Direction Limit (deg)        (psf)      (degrees)

    1              6.00                 225.0        40.00
    2             12.00                 150.0        11.00
    3             90.00                 225.0        40.00


 1 Water surface(s) have been specified

Unit weight of water =     62.40  (pcf)


Water Surface No.  1 specified by  4 coordinate points

**********************************
       PHREATIC SURFACE,
**********************************
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8838
Sec. B2-B2' W=60' D=5'

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     Point       x-water      y-water
      No.         (ft)         (ft)

       1            .00       1850.00
       2         230.00       1850.00
       3         242.00       1856.00
       4        1000.00       1856.00


A critical failure surface searching method, using a random
technique for generating sliding BLOCK surfaces, has been
specified.


The active and passive portions of the sliding surfaces
are generated according to the Rankine theory.


 2500 trial surfaces will be generated and analyzed.


  2 boxes specified for generation of central block base


Length of line segments for active and passive portions of
sliding block is    100.0 ft


Box        x-left     y-left    x-right    y-right      Width
no.         (ft)       (ft)       (ft)       (ft)        (ft)

 1          215.0     1795.0      360.0     1835.0      100.0
 2          380.0     1840.0      880.0     1930.0      100.0


Factors of safety have been calculated by the :

* * * * *   SIMPLIFIED JANBU METHOD   * * * * *


The 10 most critical of all the failure surfaces examined
are displayed below - the most critical first

Failure surface No. 1 specified by  8 coordinate points

       Point      x-surf      y-surf
        No.        (ft)        (ft)

         1        114.09     1852.00
         2        166.55     1827.54
         3        257.18     1785.28
         4        262.49     1782.80
         5        783.45     1886.96
         6        794.78     1911.28
         7        832.85     1992.92
         8        832.85     2000.92

 **  Corrected JANBU FOS =    1.503  **    (Fo factor = 1.056)

Failure surface No. 2 specified by  8 coordinate points

       Point      x-surf      y-surf
        No.        (ft)        (ft)

         1        201.41     1850.00
         2        221.80     1840.49
         3        312.43     1799.23
         4        315.21     1796.93
         5        792.07     1897.92
         6        798.72     1912.20
         7        835.79     1991.69
         8        835.79     1999.69

 **  Corrected JANBU FOS =    1.503  **    (Fo factor = 1.055)

Failure surface No. 3 specified by  8 coordinate points

       Point      x-surf      y-surf
        No.        (ft)        (ft)

         1        197.96     1850.00
         2        219.51     1839.95
         3        310.14     1797.69
         4        315.25     1795.31
         5        775.54     1889.98
         6        784.33     1908.83
         7        825.09     1996.25
         8        825.09     2004.25

 **  Corrected JANBU FOS =    1.520  **    (Fo factor = 1.060)

Failure surface No. 4 specified by  7 coordinate points

       Point      x-surf      y-surf
        No.        (ft)        (ft)

         1        194.15     1850.00
         2        211.87     1841.74
         3        302.50     1799.48
         4        785.28     1899.05
         5        790.51     1910.28
         6        829.68     1994.28
         7        829.68     2002.28

 **  Corrected JANBU FOS =    1.534  **    (Fo factor = 1.056)

Failure surface No. 5 specified by  9 coordinate points

       Point      x-surf      y-surf
        No.        (ft)        (ft)

         1        187.09     1850.00
         2        212.27     1838.26
         3        302.90     1795.99
         4        312.87     1791.35
         5        750.68     1879.86
         6        762.23     1903.65
         7        804.50     1994.28
         8        808.69     2003.28
         9        808.69     2011.28

 **  Corrected JANBU FOS =    1.547  **    (Fo factor = 1.067)

Failure surface No. 6 specified by  8 coordinate points

       Point      x-surf      y-surf
        No.        (ft)        (ft)

         1        202.09     1850.00
         2        216.78     1843.15
         3        307.41     1800.89
```

```
          4         768.89     1889.49
          5         777.12     1907.14
          6         819.38     1997.77
          7         819.74     1998.54
          8         819.74     2006.54

  **  Corrected JANBU FOS =   1.549  **     (Fo factor = 1.062)


 Failure surface No. 7 specified by  5 coordinate points

        Point       x-surf      y-surf
         No.         (ft)        (ft)

          1         191.86     1850.00
          2         238.83     1828.10
          3         772.21     1939.73
          4         802.98     2005.72
          5         802.98     2013.72

  **  Corrected JANBU FOS =   1.551  **     (Fo factor = 1.043)


 Failure surface No. 8 specified by  7 coordinate points

        Point       x-surf      y-surf
         No.         (ft)        (ft)

          1         167.39     1850.00
          2         191.32     1838.84
          3         281.95     1796.58
          4         800.53     1888.46
          5         813.18     1915.59
          6         846.64     1987.34
          7         846.64     1995.34

  **  Corrected JANBU FOS =   1.558  **     (Fo factor = 1.055)


 Failure surface No. 9 specified by  8 coordinate points

        Point       x-surf      y-surf
         No.         (ft)        (ft)

          1         103.55     1852.00
          2         148.90     1830.85
          3         239.53     1788.59
          4         761.57     1884.43
          5         771.66     1905.86
          6         813.93     1996.49
          7         815.59     2000.28
          8         815.59     2008.28

  **  Corrected JANBU FOS =   1.565  **     (Fo factor = 1.039)


 Failure surface No.10 specified by  8 coordinate points

        Point       x-surf      y-surf
         No.         (ft)        (ft)

          1         133.26     1852.00
          2         179.30     1830.53
          3         269.94     1788.27
          4         282.58     1782.37
          5         765.65     1871.50
          6         782.90     1906.49
          7         824.04     1996.70
          8         824.04     2004.70
```

```
  **  Corrected JANBU FOS =   1.565  **     (Fo factor = 1.064)



 The following is a summary of the TEN most critical surfaces

 Problem Description : Sec. B2-B2' W=60' D=5'

        Modified       Correction    Initial     Terminal     Available
        JANBU FOS        Factor      x-coord     x-coord       Strength
                                      (ft)        (ft)          (lb)

  1.      1.503          1.056       114.09      832.85      2.317E+06
  2.      1.503          1.055       201.41      835.79      2.087E+06
  3.      1.520          1.060       197.96      825.09      2.153E+06
  4.      1.534          1.056       194.15      829.68      2.102E+06
  5.      1.547          1.067       187.09      808.69      2.239E+06
  6.      1.549          1.062       202.09      819.74      2.111E+06
  7.      1.551          1.043       191.86      802.98      1.337E+06
  8.      1.558          1.055       167.39      846.64      2.193E+06
  9.      1.565          1.059       103.55      815.69      2.282E+06
 10.      1.565          1.064       133.26      824.04      2.475E+06

                   *     * *  END OF FILE  * * *
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Sec. B2-B2' W=60' D=5'

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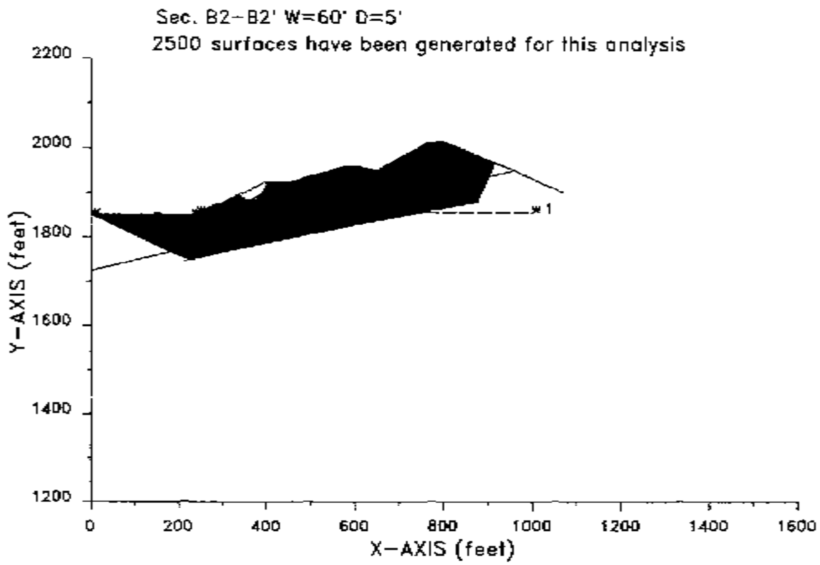
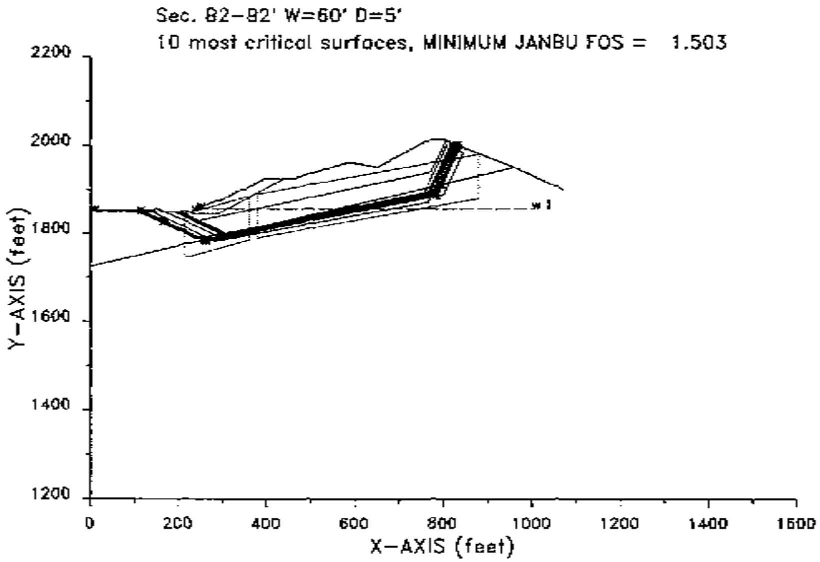


883882 4-13-** 13:40



GEOLABS-WESTLAKE VILLAGE

Plate B2.4

W.O. 8838

Sec. B2-B2' Backcut

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XSTABL File: 8838B2B    4-13-**   13:44

          ******************************************
          *                X S T A B L             *
          *                                        *
          *        Slope Stability Analysis        *
          *               using the                *
          *            Method of Slices            *
          *                                        *
          *        Copyright (C) 1992 À 96         *
          *    Interactive Software Designs, Inc.  *
          *       Moscow, ID 83843, U.S.A.         *
          *                                        *
          *          All Rights Reserved           *
          *                                        *
          * Ver. 5.201                  96 À 1545  *
          ******************************************

Problem Description : Sec. B2-B2' Backcut


----------------------------
SEGMENT BOUNDARY COORDINATES
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  17 SURFACE boundary segments

Segment   x-left    y-left    x-right    y-right     Soil Unit
  No.      (ft)      (ft)      (ft)       (ft)     Below Segment

   1          .0    1852.0     140.0     1852.0          1
   2       140.0    1852.0     148.0     1856.0          1
   3       148.0    1856.0     153.0     1856.0          1
   4       153.0    1856.0     165.0     1850.0          1
   5       165.0    1850.0     230.0     1850.0          1
   6       230.0    1850.0     230.1     1845.0          1
   7       230.1    1845.0     290.0     1845.0          1
   8       290.0    1845.0     440.0     1925.0          1
   9       440.0    1925.0     460.0     1925.0          1
  10       460.0    1925.0     580.0     1960.0          1
  11       580.0    1960.0     600.0     1960.0          1
  12       600.0    1960.0     650.0     1950.0          1
  13       650.0    1950.0     760.0     2010.0          1
  14       760.0    2010.0     800.0     2015.0          1
  15       800.0    2015.0     835.0     2000.0          1
  16       835.0    2000.0     960.0     1950.0          1
  17       960.0    1950.0    1070.0     1900.0          2

   1 SUBSURFACE boundary segments

Segment   x-left    y-left    x-right    y-right     Soil Unit
  No.      (ft)      (ft)      (ft)       (ft)     Below Segment

   1          .0    1725.0     960.0     1950.0          3


---------------------------------
 A CRACKED ZONE HAS BEEN SPECIFIED
---------------------------------

     Depth of crack below ground surface =  8.00    (feet)
     Maximum depth of water in crack     =   .00    (feet)
     Unit weight of water in crack       = 62.40    (pcf)

Failure surfaces will have a vertical side equal to the
specified depth of crack and be affected by a hydrostatic
```

```
force according to the specified depth of water in the crack


--------------------------
ISOTROPIC Soil Parameters
--------------------------

 3 Soil unit(s) specified

Soil    Unit Weight    Cohesion  Friction    Fore Pressure      Water
Unit   Moist    Sat.   Intercept   Angle   Parameter Constant  Surface
 No.   (pcf)   (pcf)     (psf)     (deg)      Ru       (psf)     No.

  1    130.0   140.0     225.0     40.00     .000        .0        0
  2    125.0   135.0     200.0     34.00     .000        .0        0
  3    130.0   140.0     225.0     40.00     .000        .0        0


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ANISOTROPIC STRENGTH PARAMETERS
specified for  2 Soil Unit(s)
--------------------------------


Soil Unit  1 is ANISOTROPIC

Number of direction ranges specified =  3

Direction     Counterclockwise         c-value      i-value
Range No.   Direction Limit (deg)       (psf)      (degrees)

    1              6.00                 225.0       40.00
    2             12.00                 150.0       17.00
    3             90.00                 225.0       40.00


Soil Unit  3 is ANISOTROPIC

Number of direction ranges specified =  3

Direction     Counterclockwise         c-value      i-value
Range No.   Direction Limit (deg)       (psf)      (degrees)

    1              6.00                 225.0       40.00
    2             12.00                 150.0       11.00
    3             90.00                 225.0       40.00


A critical failure surface searching method, using a random
technique for generating sliding BLOCK surfaces, has been
specified.


The active and passive portions of the sliding surfaces
are generated according to the Rankine theory.


 2500 trial surfaces will be generated and analyzed.


  2 boxes specified for generation of central block base


Length of line segments for active and passive portions of
```

```
sliding block is    100.0 ft

Box         x-left     y-left    x-right     y-right      Width
nc.          (ft)       (ft)       (ft)        (ft)        (ft)

 1          265.0     1780.0      365.0      1835.0       100.0
 2          380.0     1840.0      880.0      1930.0       100.0


Factors of safety have been calculated by the :

* * * * *   SIMPLIFIED JANBU METHOD   * * * * *


The 10 most critical of all the failure surfaces examined
are displayed below - the most critical first

Failure surface No. 1 specified by  5 coordinate points

       Point      x-surf      y-surf
        No.        (ft)        (ft)

         1        319.27      1860.61
         2        328.64      1856.24
         3        433.25      1878.43
         4        451.24      1917.00
         5        451.24      1925.00

 **  Corrected JANBU FOS =   1.401  **     (Fo factor = 1.079)

Failure surface No. 2 specified by  5 coordinate points

       Point      x-surf      y-surf
        No.        (ft)        (ft)

         1        299.52      1850.08
         2        300.62      1849.56
         3        466.30      1883.30
         4        485.48      1924.43
         5        485.48      1932.43

 **  Corrected JANBU FOS =   1.422  **     (Fo factor = 1.068)

Failure surface No. 3 specified by  5 coordinate points

       Point      x-surf      y-surf
        No.        (ft)        (ft)

         1        295.80      1848.09
         2        307.78      1842.50
         3        431.70      1863.12
         4        456.83      1917.00
         5        456.83      1925.00

 **  Corrected JANBU FOS =   1.465  **     (Fo factor = 1.082)

Failure surface No. 4 specified by  6 coordinate points

       Point      x-surf      y-surf
        No.        (ft)        (ft)

         1        264.93      1845.00
         2        347.55      1806.47
         3        792.62      1891.47
         4        802.73      1913.14
         5        838.79      1990.48
         6        838.79      1998.48

 **  Corrected JANBU FOS =   1.482  **     (Fo factor = 1.060)

Failure surface No. 5 specified by  5 coordinate points

       Point      x-surf      y-surf
        No.        (ft)        (ft)

         1        324.38      1853.33
         2        332.00      1859.78
         3        433.39      1876.81
         4        452.13      1917.00
         5        452.13      1925.00

 **  Corrected JANBU FOS =   1.484  **     (Fo factor = 1.081)

Failure surface No. 6 specified by  5 coordinate points

       Point      x-surf      y-surf
        No.        (ft)        (ft)

         1        264.59      1845.00
         2        282.40      1836.69
         3        751.13      1929.13
         4        786.67      2005.33
         5        786.67      2013.33

 **  Corrected JANBU FOS =   1.486  **     (Fo factor = 1.052)

Failure surface No. 7 specified by  5 coordinate points

       Point      x-surf      y-surf
        No.        (ft)        (ft)

         1        285.14      1845.00
         2        294.50      1840.63
         3        774.59      1934.34
         4        807.06      2003.97
         5        807.06      2011.97

 **  Corrected JANBU FOS =   1.494  **     (Fo factor = 1.049)

Failure surface No. 8 specified by  8 coordinate points

       Point      x-surf      y-surf
        No.        (ft)        (ft)

         1        262.42      1845.00
         2        345.90      1806.07
         3        349.68      1804.31
         4        720.85      1880.96
         5        727.66      1895.54
         6        769.92      1986.18
         7        778.37      2004.30
         8        778.37      2012.30

 **  Corrected JANBU FOS =   1.499  **     (Fo factor = 1.071)

Failure surface No. 9 specified by  5 coordinate points

       Point      x-surf      y-surf
        No.        (ft)        (ft)
```

W.O. 8838
Sec. B2-B2' Backcut

```
          1        281.68      1845.00
          2        294.53      1839.01
          3        758.06      1926.39
          4        795.38      2006.42
          5        795.38      2014.42

 **  Corrected JANBU FOS =   1.504  **     (Fo factor = 1.054)

Failure surface No.10 specified by  5 coordinate points

       Point       x-surf      y-surf
        No.         (ft)        (ft)

          1        317.42      1859.63
          2        325.80      1855.72
          3        791.26      1951.69
          4        814.21      2000.91
          5        814.21      2008.91

 **  Corrected JANBU FOS =   1.510  **     (Fo factor = 1.040)



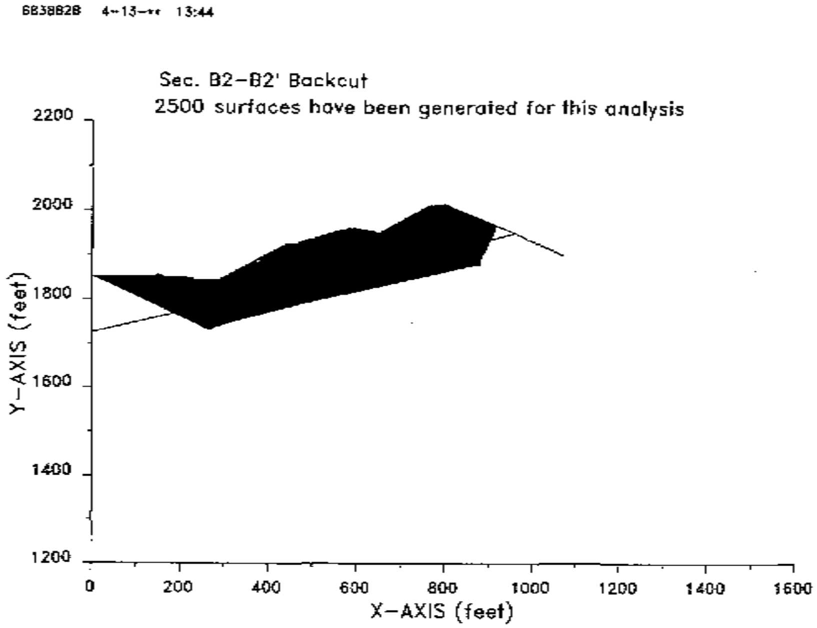
The following is a summary of the TEN most critical surfaces

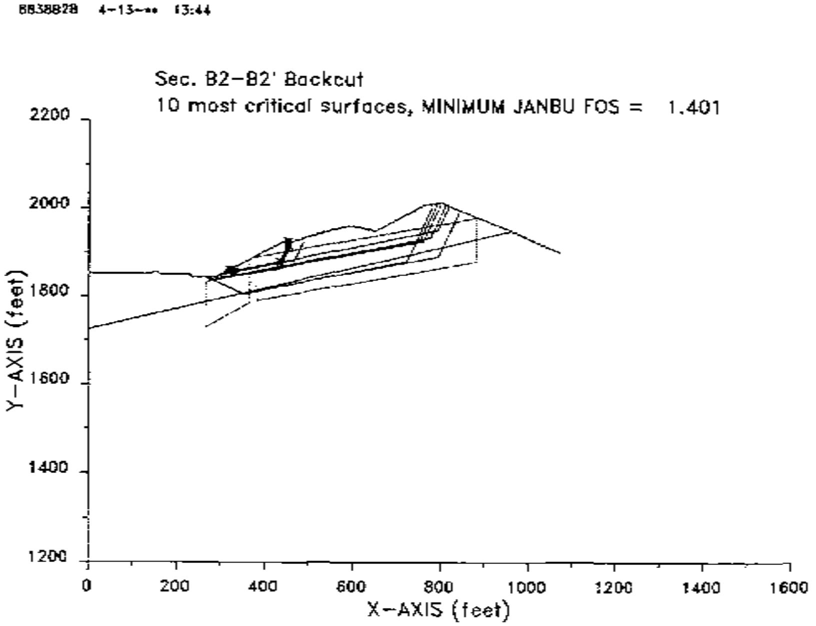
Problem Description : Sec. B2-B2' Backcut

      Modified     Correction    Initial     Terminal    Available
     JANBU FOS       Factor      x-coord     x-coord     Strength
                                  (ft)        (ft)        (lb)

 1.     1.401        1.078      319.27      451.24     1.880E+05
 2.     1.422        1.068      299.52      485.48     2.588E+05
 3.     1.465        1.082      295.80      456.83     3.026E+05
 4.     1.482        1.060      264.93      838.79     1.990E+06
 5.     1.484        1.081      324.38      452.13     1.872E+05
 6.     1.486        1.052      264.59      786.67     1.154E+06
 7.     1.494        1.049      285.14      807.06     1.181E+06
 8.     1.499        1.071      262.42      778.37     1.846E+06
 9.     1.504        1.054      281.68      795.38     1.222E+06
10.     1.510        1.040      317.42      814.21     9.377E+05

                 *    * *  END OF FILE  * * *
```





GEOLABS-WESTLAKE VILLAGE

```
XSTABL File: 8838B6     4-12-**   15:28

          ******************************************
          *                X S T A B L             *
          *                                        *
          *       Slope Stability Analysis         *
          *             using the                  *
          *          Method of Slices              *
          *                                        *
          *       Copyright (C) 1992 Ã 96          *
          *  Interactive Software Designs, Inc.    *
          *       Moscow, ID 83843, U.S.A.         *
          *                                        *
          *         All Rights Reserved            *
          *                                        *
          * Ver. 5.201                  96 Ã 1545  *
          ******************************************


   Problem Description : Sec. B6-B6' W=70'D=5/W=50'D=5'


   ----------------------------
   SEGMENT BOUNDARY COORDINATES
   ----------------------------

     24 SURFACE boundary segments

   Segment    x-left    y-left    x-right   y-right     Soil Unit
     No.       (ft)      (ft)      (ft)      (ft)    Below Segment

      1          .0    1662.0      90.0    1662.0          1
      2        90.0    1662.0     285.0    1658.0          2
      3       285.0    1658.0     301.0    1650.0          2
      4       301.0    1650.0     338.0    1650.0          2
      5       338.0    1650.0     362.0    1663.0          1
      6       362.0    1663.0     370.0    1663.0          1
      7       370.0    1663.0     421.0    1688.0          1
      8       421.0    1688.0     429.0    1688.0          1
      9       429.0    1688.0     481.0    1712.0          1
     10       481.0    1712.0     501.0    1712.0          1
     11       501.0    1712.0     553.0    1739.0          1
     12       553.0    1739.0     561.0    1739.0          1
     13       561.0    1739.0     612.0    1763.0          1
     14       612.0    1763.0     620.0    1763.0          1
     15       620.0    1763.0     670.0    1789.0          1
     16       670.0    1789.0     678.0    1789.0          1
     17       678.0    1789.0     738.0    1817.0          1
     18       738.0    1817.0     790.0    1830.0          3
     19       790.0    1830.0    1050.0    1920.0          3
     20      1050.0    1920.0    1200.0    1950.0          3
     21      1200.0    1950.0    1380.0    1950.0          3
     22      1380.0    1950.0    1570.0    1840.0          3
     23      1570.0    1840.0    1720.0    1775.0          2
     24      1720.0    1775.0    1820.0    1775.0          2


      8 SUBSURFACE boundary segments

   Segment    x-left    y-left    x-right   y-right     Soil Unit
     No.       (ft)      (ft)      (ft)      (ft)    Below Segment

      1          .0    1640.0      90.0    1662.0          2
      2       338.0    1650.0     338.1    1645.0          2
      3       338.1    1645.0     408.0    1645.0          2
      4       408.0    1645.0     501.0    1707.0          2
      5       501.0    1707.0     551.0    1707.0          2
      6       551.0    1707.0     675.0    1775.0          2
```

```
      7       675.0    1775.0     738.0    1817.0          3
      8       675.0    1775.0    1570.0    1840.0          2


  ----------------------------------
  A CRACKED ZONE HAS BEEN SPECIFIED
  ----------------------------------

      Depth of crack below ground surface =  8.00   (feet)
      Maximum depth of water in crack     =   .00   (feet)
      Unit weight of water in crack       = 62.40   (pcf)

  Failure surfaces will have a vertical side equal to the
  specified depth of crack and be affected by a hydrostatic
  force according to the specified depth of water in the crack



  --------------------------
  ISOTROPIC Soil Parameters
  --------------------------

   3 Soil unit(s) specified

  Soil   Unit Weight    Cohesion  Friction    Pore Pressure        Water
  Unit  Moist    Sat.   Intercept   Angle   Parameter  Constant  Surface
  No.   (pcf)   (pcf)     (psf)     (deg)      Ru       (psf)      No.

    1   125.0   135.0     200.0     34.00     .000        .0        1
    2   130.0   140.0     200.0     40.00     .000        .0        1
    3   130.0   140.0     225.0     40.00     .000        .0        1


  --------------------------------
  ANISOTROPIC STRENGTH PARAMETERS
  specified for  2 Soil Unit(s)
  --------------------------------



  Soil Unit  2 is ANISOTROPIC

  Number of direction ranges specified =  3


  Direction      Counterclockwise          c-value       i-value
  Range No.    Direction Limit (deg)        (psf)       (degrees)

      1               10.00                 200.0         40.00
      2               15.00                 100.0         25.00
      3               90.00                 200.0         40.00


  Soil Unit  3 is ANISOTROPIC

  Number of direction ranges specified =  3


  Direction      Counterclockwise          c-value       i-value
  Range No.    Direction Limit (deg)        (psf)       (degrees)

      1                5.00                 225.0         40.00
      2               10.00                 100.0         25.00
      3               90.00                 225.0         40.00



   1 Water surface(s) have been specified
```

```
Unit weight of water =    62.40  (pcf)

Water Surface No.  1 specified by  5 coordinate points

**********************************
        PHREATIC SURFACE,
**********************************

  Point      x-water      y-water
   No.        (ft)         (ft)

    1           .00      1650.00
    2        285.00      1658.00
    3        338.00      1650.00
    4        356.00      1658.00
    5       1500.00      1658.00


A critical failure surface searching method, using a random
technique for generating sliding BLOCK surfaces, has been
specified.


The active and passive portions of the sliding surfaces
are generated according to the Rankine theory.


 5000 trial surfaces will be generated and analyzed.


  2 boxes specified for generation of central block base


Length of line segments for active and passive portions of
sliding block is    100.0 ft


Box        x-left     y-left    x-right    y-right       Width
no.         (ft)       (ft)       (ft)       (ft)         (ft)

 1         320.0     1600.0      525.0     1670.0        60.0
 2         550.0     1670.0     1100.0     1860.0       100.0


Factors of safety have been calculated by the :

* * * * *   SIMPLIFIED JANBU METHOD   * * * * *


The 10 most critical of all the failure surfaces examined
are displayed below - the most critical first

Failure surface No. 1 specified by  7 coordinate points

       Point      x-surf      y-surf
        No.        (ft)        (ft)

         1        318.24     1650.00
         2        359.26     1630.87
         3        976.00     1793.46
         4        977.64     1796.98
         5       1019.91     1887.61
         6       1027.67     1904.27
         7       1027.67     1912.27

 **  Corrected JANBU FOS =    1.660  **    (Fo factor = 1.051)
```

```
Failure surface No. 2 specified by  8 coordinate points

       Point      x-surf      y-surf
        No.        (ft)        (ft)

         1        330.17     1650.00
         2        338.08     1645.79
         3        339.57     1645.00
         4        367.04     1632.19
         5        906.22     1773.43
         6        915.09     1792.44
         7        955.61     1879.33
         8        955.61     1887.33

 **  Corrected JANBU FOS =    1.670  **    (Fo factor = 1.054)

Failure surface No. 3 specified by  6 coordinate points

       Point      x-surf      y-surf
        No.        (ft)        (ft)

         1        342.01     1652.17
         2        353.49     1646.06
         3        738.50     1748.05
         4        753.74     1780.72
         5        770.74     1817.19
         6        770.74     1825.19

 **  Corrected JANBU FOS =    1.673  **    (Fo factor = 1.053)

Failure surface No. 4 specified by  6 coordinate points

       Point      x-surf      y-surf
        No.        (ft)        (ft)

         1        302.51     1650.00
         2        343.18     1631.04
         3        760.75     1739.31
         4        780.98     1782.70
         5        801.10     1825.84
         6        801.10     1833.84

 **  Corrected JANBU FOS =    1.678  **    (Fo factor = 1.056)

Failure surface No. 5 specified by  7 coordinate points

       Point      x-surf      y-surf
        No.        (ft)        (ft)

         1        324.30     1650.00
         2        362.73     1632.08
         3        966.99     1767.04
         4        971.41     1796.53
         5       1013.67     1887.16
         6       1020.50     1901.79
         7       1020.50     1909.79

 **  Corrected JANBU FOS =    1.680  **    (Fo factor = 1.053)

Failure surface No. 6 specified by  8 coordinate points

       Point      x-surf      y-surf
        No.        (ft)        (ft)
```

```
            1         337.59      1650.00
            2         338.00      1649.78
            3         346.99      1645.00
            4         353.68      1637.22
            5         847.31      1762.83
            6         859.23      1788.38
            7         891.25      1857.05
            8         891.25      1865.05

  **  Corrected JANBU FOS =   1.681  **     (Fo factor = 1.054)


 Failure surface No. 7 specified by  7 coordinate points

         Point       x-surf       y-surf
          No.         (ft)         (ft)

            1        280.12      1658.10
            2        341.29      1629.57
            3        968.53      1793.22
            4        970.03      1796.43
            5       1012.29      1887.06
            6       1018.90      1901.23
            7       1018.90      1909.23

  **  Corrected JANBU FOS =   1.682  **     (Fo factor = 1.050)


 Failure surface No. 8 specified by  6 coordinate points

         Point       x-surf       y-surf
          No.         (ft)         (ft)

            1        307.06      1650.00
            2        361.09      1624.81
            3        817.96      1745.31
            4        837.30      1796.79
            5        865.99      1848.30
            6        865.99      1856.30

  **  Corrected JANBU FOS =   1.683  **     (Fo factor = 1.058)


 Failure surface No. 9 specified by  7 coordinate points

         Point       x-surf       y-surf
          No.         (ft)         (ft)

            1        339.38      1650.75
            2        350.19      1645.00
            3        374.82      1633.51
            4        836.45      1753.39
            5        852.53      1787.89
            6        883.54      1854.38
            7        883.54      1862.38

  **  Corrected JANBU FOS =   1.686  **     (Fo factor = 1.058)


 Failure surface No.10 specified by  6 coordinate points

         Point       x-surf       y-surf
          No.         (ft)         (ft)

            1        324.30      1650.00
            2        335.52      1644.76
            3        731.03      1747.81
            4        746.12      1780.17
            5        762.41      1815.10
            6        762.41      1823.10
```

```
  **  Corrected JANBU FOS =   1.686  **     (Fo factor = 1.051)



 The following is a summary of the TEN most critical surfaces

 Problem Description : Sec. B6-B6' W=70'D=5/H=50'D=5'

       Modified      Correction   Initial    Terminal   Available
       JANBU FOS       Factor     x-coord    x-coord     Strength
                                   (ft)       (ft)        (lb)

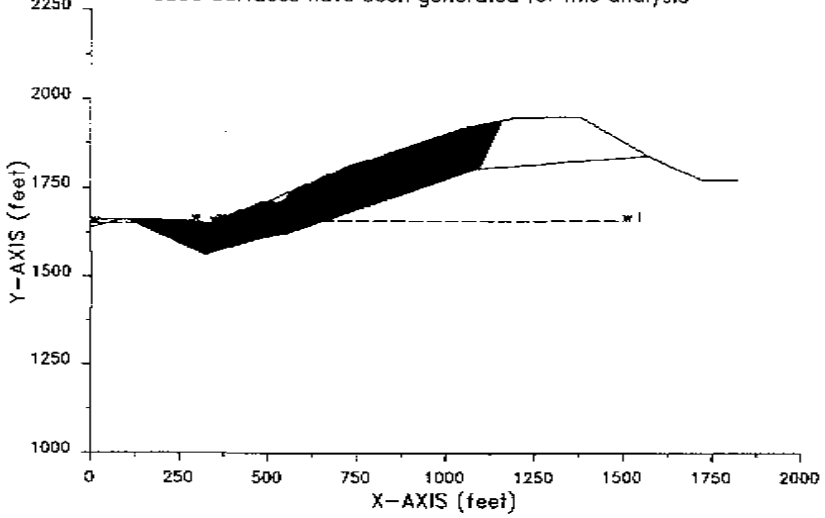
  1.     1.660         1.051      318.24     1027.67   2.930E+06
  2.     1.670         1.054      330.17      955.61   2.527E+06
  3.     1.673         1.053      342.01      770.74   1.095E+06
  4.     1.678         1.056      302.51      801.10   1.577E+06
  5.     1.680         1.053      324.30     1020.50   2.964E+06
  6.     1.681         1.054      337.59      891.25   1.995E+06
  7.     1.682         1.050      280.12     1018.90   2.820E+06
  8.     1.683         1.058      307.06      865.99   2.193E+06
  9.     1.686         1.058      339.38      883.54   2.140E+06
 10.     1.686         1.051      324.30      762.41   1.011E+06

                    *    * *  END OF FILE  * * *
```

W.O. 8838
Sec. B6-B6'

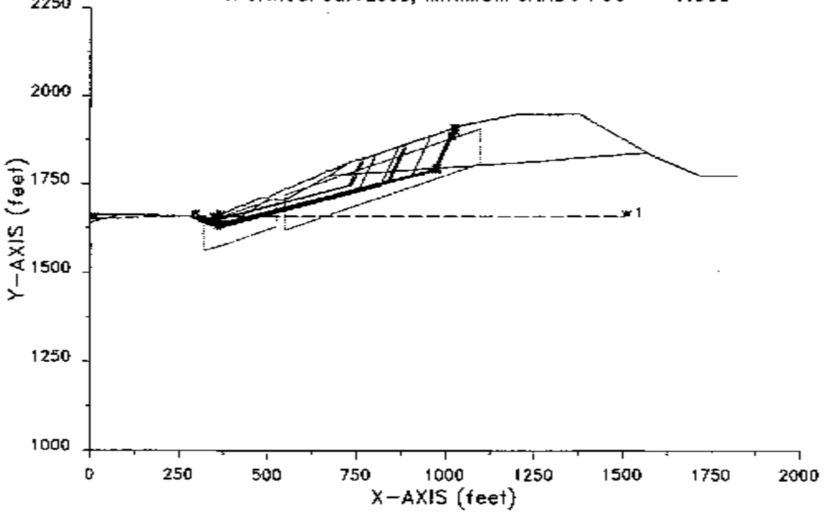
883886 4-12-** 15:28

Sec. B6–B6' W=70'D=5/W=50'D=5'
5000 surfaces have been generated for this analysis



883886 4-12-** 15:28

Sec. B6–B6' W=70'D=5/W=50'D=5'
10 most critical surfaces, MINIMUM JANBU FOS = 1.660



GEOLABS-WESTLAKE VILLAGE

Plate B6.4

W.O. 8838

Sec. B6-B6' Pseudostatic

```
XSTABL File: 8838B6P    4-12-**   15:28

          ******************************************
          *              X S T A B L               *
          *                                        *
          *        Slope Stability Analysis        *
          *              using the                 *
          *           Method of Slices             *
          *                                        *
          *        Copyright (C) 1992 À 96         *
          *     Interactive Software Designs, Inc. *
          *       Moscow, ID 83843, U.S.A.         *
          *                                        *
          *          All Rights Reserved           *
          *                                        *
          * Ver. 5.201                  96 À 1545  *
          ******************************************


Problem Description : Sec. B6-B6' W=70'D=5/W=50'D=5'Pseudo


----------------------------
SEGMENT BOUNDARY COORDINATES
----------------------------

   24 SURFACE boundary segments

Segment   x-left    y-left    x-right   y-right    Soil Unit
  No.      (ft)      (ft)      (ft)      (ft)    Below Segment

   1          .0    1662.0      90.0    1662.0        1
   2        90.0    1662.0     285.0    1658.0        2
   3       285.0    1658.0     301.0    1650.0        2
   4       301.0    1650.0     338.0    1650.0        2
   5       338.0    1650.0     362.0    1663.0        1
   6       362.0    1663.0     370.0    1663.0        1
   7       370.0    1663.0     421.0    1688.0        1
   8       421.0    1688.0     429.0    1688.0        1
   9       429.0    1688.0     481.0    1712.0        1
  10       481.0    1712.0     501.0    1712.0        1
  11       501.0    1712.0     553.0    1739.0        1
  12       553.0    1739.0     561.0    1739.0        1
  13       561.0    1739.0     612.0    1763.0        1
  14       612.0    1763.0     620.0    1763.0        1
  15       620.0    1763.0     670.0    1789.0        1
  16       670.0    1789.0     678.0    1789.0        1
  17       678.0    1789.0     738.0    1817.0        1
  18       738.0    1817.0     790.0    1830.0        3
  19       790.0    1830.0    1050.0    1920.0        3
  20      1050.0    1920.0    1200.0    1950.0        3
  21      1200.0    1950.0    1380.0    1950.0        3
  22      1380.0    1950.0    1570.0    1840.0        3
  23      1570.0    1840.0    1720.0    1775.0        2
  24      1720.0    1775.0    1820.0    1775.0        2


    8 SUBSURFACE boundary segments

Segment   x-left    y-left    x-right   y-right    Soil Unit
  No.      (ft)      (ft)      (ft)      (ft)    Below Segment

   1          .0    1640.0      90.0    1662.0        2
   2       338.0    1650.0     338.1    1645.0        2
   3       338.1    1645.0     408.0    1645.0        2
   4       408.0    1645.0     501.0    1707.0        2
   5       501.0    1707.0     551.0    1707.0        2
   6       551.0    1707.0     675.0    1775.0        2
   7       675.0    1775.0     738.0    1817.0        3
   8       675.0    1775.0    1570.0    1840.0        2


----------------------------------
A CRACKED ZONE HAS BEEN SPECIFIED
----------------------------------

     Depth of crack below ground surface =  8.00   (feet)
     Maximum depth of water in crack     =   .00   (feet)
     Unit weight of water in crack       = 62.40   (pcf)

Failure surfaces will have a vertical side equal to the
specified depth of crack and be affected by a hydrostatic
force according to the specified depth of water in the crack



-------------------------
ISOTROPIC Soil Parameters
-------------------------

 3 Soil unit(s) specified

Soil   Unit Weight    Cohesion  Friction    Pore Pressure     Water
Unit  Moist   Sat.   Intercept   Angle   Parameter Constant  Surface
No.   (pcf)  (pcf)     (psf)     (deg)      Ru      (psf)      No.

 1    125.0  135.0     200.0     34.00     .000        .0       1
 2    130.0  140.0     200.0     40.00     .000        .0       1
 3    130.0  140.0     225.0     40.00     .000        .0       1


--------------------------------
ANISOTROPIC STRENGTH PARAMETERS
specified for  2 Soil Unit(s)
--------------------------------



Soil Unit  2 is ANISOTROPIC

Number of direction ranges specified =  3

Direction     Counterclockwise          c-value     i-value
Range No.   Direction Limit (deg)        (psf)     (degrees)

   1              10.00                 200.0       40.00
   2              15.00                 100.0       25.00
   3              90.00                 200.0       40.00


Soil Unit  3 is ANISOTROPIC

Number of direction ranges specified =  3

Direction     Counterclockwise          c-value     i-value
Range No.   Direction Limit (deg)        (psf)     (degrees)

   1               5.00                 225.0       40.00
   2              10.00                 100.0       25.00
   3              90.00                 225.0       40.00


 1 Water surface(s) have been specified
```

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Sec. B6-B6' Pseudostatic

```
Unit weight of water =    62.40  (pcf)


Water Surface No.  1 specified by  5 coordinate points

**********************************
       PHREATIC SURFACE,
**********************************

  Point       x-water      y-water
   No.          (ft)         (ft)

   1             .00       1650.00
   2          285.00       1658.00
   3          338.00       1650.00
   4          356.00       1658.00
   5         1500.00       1658.00



A horizontal earthquake loading coefficient
of   .150 has been assigned

A vertical earthquake loading coefficient
of   .000 has been assigned



A critical failure surface searching method, using a random
technique for generating sliding BLOCK surfaces, has been
specified.


The active and passive portions of the sliding surfaces
are generated according to the Rankine theory.


 5000 trial surfaces will be generated and analyzed.


  2 boxes specified for generation of central block base


Length of line segments for active and passive portions of
sliding block is    100.0 ft


Box        x-left      y-left     x-right     y-right      Width
no.         (ft)        (ft)       (ft)        (ft)        (ft)

 1         320.0      1600.0      525.0      1670.0        80.0
 2         550.0      1670.0     1100.0      1860.0       100.0



Factors of safety have been calculated by the :

* * * * *    SIMPLIFIED JANBU METHOD    * * * * *



The 10 most critical of all the failure surfaces examined
are displayed below - the most critical first

Failure surface No. 1 specified by  7 coordinate points

         Point       x-surf      y-surf
          No.         (ft)        (ft)

          1          318.24     1650.00
          2          359.26     1630.87
          3          976.00     1793.46
          4          977.54     1796.98
          5         1019.91     1887.61
          6         1027.67     1904.27
          7         1027.67     1912.27

  **  Corrected JANBU FOS =    1.093  **     (Fo factor = 1.051)


Failure surface No. 2 specified by  8 coordinate points

         Point       x-surf      y-surf
          No.         (ft)        (ft)

          1          330.17     1650.00
          2          338.08     1645.79
          3          339.57     1645.00
          4          367.04     1632.19
          5          906.22     1773.43
          6          915.09     1792.44
          7          955.61     1879.33
          8          955.61     1887.33

  **  Corrected JANBU FOS =    1.103  **     (Fo factor = 1.054)


Failure surface No. 3 specified by  7 coordinate points

         Point       x-surf      y-surf
          No.         (ft)        (ft)

          1          324.30     1650.00
          2          362.73     1632.08
          3          966.99     1787.04
          4          971.41     1796.53
          5         1013.67     1887.16
          6         1020.50     1901.79
          7         1020.50     1909.79

  **  Corrected JANBU FOS =    1.105  **     (Fo factor = 1.053)


Failure surface No. 4 specified by  7 coordinate points

         Point       x-surf      y-surf
          No.         (ft)        (ft)

          1          280.12     1658.10
          2          341.29     1629.57
          3          968.53     1793.22
          4          970.03     1796.43
          5         1012.29     1887.06
          6         1018.90     1901.23
          7         1018.90     1909.23

  **  Corrected JANBU FOS =    1.106  **     (Fo factor = 1.050)


Failure surface No. 5 specified by  8 coordinate points

         Point       x-surf      y-surf
          No.         (ft)        (ft)

          1          337.59     1650.00
          2          338.00     1649.78
          3          346.99     1645.00
          4          363.68     1637.22
          5          847.31     1762.83
          6          859.23     1788.38
```

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Sec. B6-B6' Pseudostatic

```
          7        891.25      1857.05
          8        891.25      1865.05

  **  Corrected JANBU FOS =    1.112  **     (Fo factor = 1.054)


Failure surface No. 6 specified by  6 coordinate points

        Point       x-surf       y-surf
         No.         (ft)         (ft)

          1        282.04      1658.06
          2        345.65      1628.40
          3        889.59      1768.36
          4        900.32      1791.36
          5        938.59      1873.43
          6        938.59      1881.43

  **  Corrected JANBU FOS =    1.113  **     (Fo factor = 1.054)


Failure surface No. 7 specified by  9 coordinate points

        Point       x-surf       y-surf
         No.         (ft)         (ft)

          1        337.59      1650.00
          2        338.00      1649.78
          3        346.99      1645.00
          4        377.28      1630.88
          5        965.29      1782.44
          6        971.87      1796.56
          7       1014.14      1887.19
          8       1021.03      1901.97
          9       1021.03      1909.97

  **  Corrected JANBU FOS =    1.114  **     (Fo factor = 1.055)


Failure surface No. 8 specified by  7 coordinate points

        Point       x-surf       y-surf
         No.         (ft)         (ft)

          1        303.87      1650.00
          2        363.56      1622.17
          3        946.80      1774.36
          4        956.64      1795.45
          5        998.90      1886.09
          6       1003.48      1895.90
          7       1003.48      1903.90

  **  Corrected JANBU FOS =    1.114  **     (Fo factor = 1.056)


Failure surface No. 9 specified by  6 coordinate points

        Point       x-surf       y-surf
         No.         (ft)         (ft)

          1        324.30      1650.00
          2        349.13      1638.42
          3        849.01      1767.43
          4        858.76      1788.35
          5        890.71      1856.86
          6        890.71      1864.86

  **  Corrected JANBU FOS =    1.115  **     (Fo factor = 1.052)
```

```
Failure surface No.10 specified by  6 coordinate points

        Point       x-surf       y-surf
         No.         (ft)         (ft)

          1        302.51      1650.00
          2        343.18      1631.04
          3        760.75      1739.31
          4        780.98      1782.70
          5        801.10      1825.84
          6        801.10      1833.84

  **  Corrected JANBU FOS =    1.116  **     (Fo factor = 1.056)


The following is a summary of the TEN most critical surfaces

Problem Description : Sec. B6-B6' W=70'D=5/W=50'D=5'Pseudo

       Modified      Correction     Initial     Terminal     Available
       JANBU FOS       Factor       x-coord     x-coord       Strength
                                     (ft)        (ft)          (lb)

  1.     1.093          1.051       318.24      1027.67      2.776E+06
  2.     1.103          1.054       330.17       955.61      2.396E+06
  3.     1.105          1.053       324.30      1020.50      2.807E+06
  4.     1.106          1.050       280.12      1018.90      2.673E+06
  5.     1.112          1.054       337.59       891.25      1.868E+06
  6.     1.113          1.054       282.04       938.59      2.322E+06
  7.     1.114          1.055       337.59      1021.03      2.974E+06
  8.     1.114          1.056       303.87      1003.48      3.050E+06
  9.     1.115          1.052       324.30       890.71      1.770E+06
 10.     1.116          1.056       302.51       801.10      1.493E+06


                   *     * *  END OF FILE  * * *
```

W.O. 8838
Sec. B6-B6' Pseudostatic

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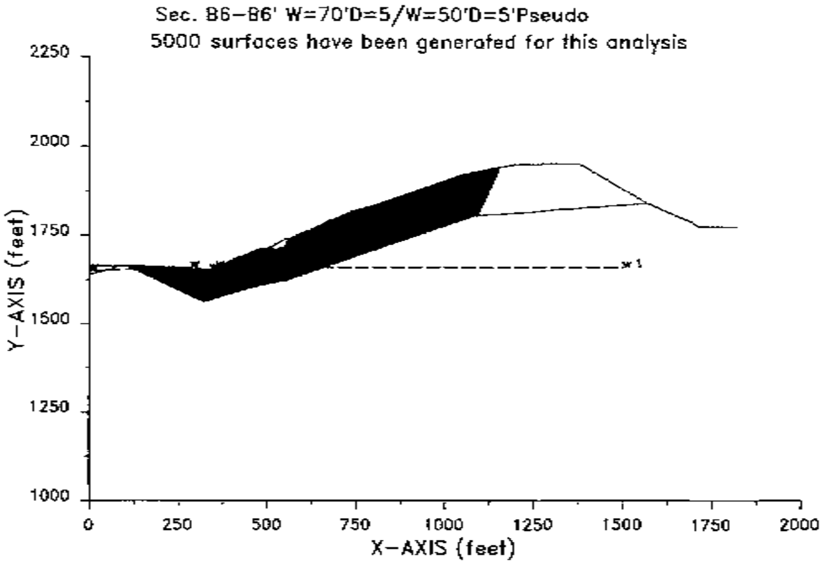

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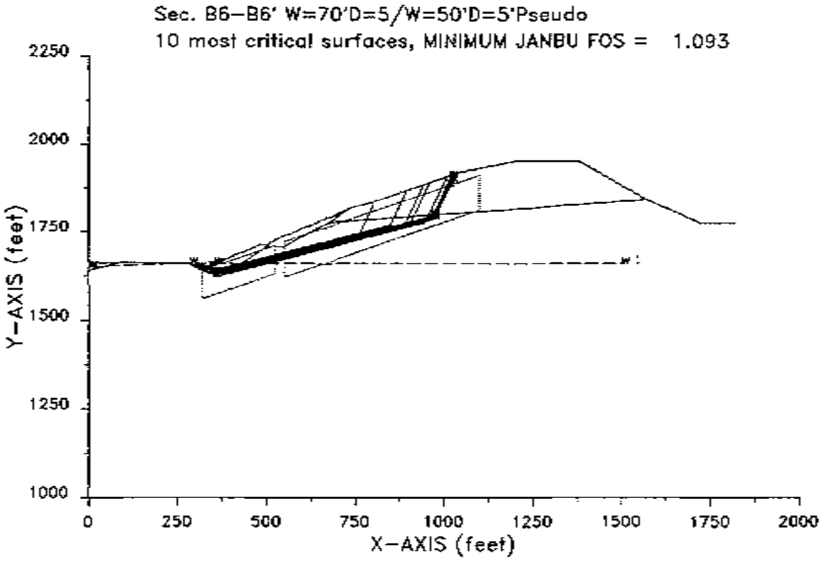


GEOLABS-WESTLAKE VILLAGE

Plate B6p.4

W.O. 8838

Sec. B6-B6' Pseudo. Spencer's

```
XSTABL File: 8838B6PS   4-12-**   15:29

          ******************************************
          *               X S T A B L              *
          *                                        *
          *        Slope Stability Analysis        *
          *              using the                 *
          *           Method of Slices             *
          *                                        *
          *        Copyright (C) 1992 - 96         *
          *  Interactive Software Designs, Inc.    *
          *       Moscow, ID 83843, U.S.A.         *
          *                                        *
          *          All Rights Reserved           *
          *                                        *
          * Ver. 5.201                  96 - 1545  *
          ******************************************

Problem Description : Sec. B6-B6' W=70'D=5/W=50'D=5'Ps Spe


----------------------------
SEGMENT BOUNDARY COORDINATES
----------------------------

  24 SURFACE boundary segments

Segment    x-left    y-left    x-right   y-right     Soil Unit
  No.       (ft)      (ft)      (ft)      (ft)     Below Segment

   1          .0     1662.0      90.0    1662.0          1
   2        90.0     1662.0     285.0    1658.0          2
   3       285.0     1658.0     301.0    1650.0          2
   4       301.0     1650.0     338.0    1650.0          2
   5       338.0     1650.0     362.0    1663.0          1
   6       362.0     1663.0     370.0    1663.0          1
   7       370.0     1663.0     421.0    1688.0          1
   8       421.0     1688.0     429.0    1688.0          1
   9       429.0     1688.0     481.0    1712.0          1
  10       481.0     1712.0     501.0    1712.0          1
  11       501.0     1712.0     553.0    1739.0          1
  12       553.0     1739.0     561.0    1739.0          1
  13       561.0     1739.0     612.0    1763.0          1
  14       612.0     1763.0     620.0    1763.0          1
  15       620.0     1763.0     670.0    1789.0          1
  16       670.0     1789.0     678.0    1789.0          1
  17       678.0     1789.0     738.0    1817.0          1
  18       738.0     1817.0     790.0    1830.0          3
  19       790.0     1830.0    1050.0    1920.0          3
  20      1050.0     1920.0    1200.0    1950.0          3
  21      1200.0     1950.0    1380.0    1950.0          3
  22      1380.0     1950.0    1570.0    1840.0          3
  23      1570.0     1840.0    1720.0    1775.0          2
  24      1720.0     1775.0    1820.0    1775.0          2

   8 SUBSURFACE boundary segments

Segment    x-left    y-left    x-right   y-right     Soil Unit
  No.       (ft)      (ft)      (ft)      (ft)     Below Segment

   1          .0     1640.0      90.0    1662.0          2
   2       338.0     1650.0     338.1    1645.0          2
   3       338.1     1645.0     408.0    1645.0          2
   4       408.0     1645.0     501.0    1707.0          2
   5       501.0     1707.0     551.0    1707.0          2
   6       551.0     1707.0     675.0    1775.0          2
   7       675.0     1775.0     738.0    1817.0          3
   8       675.0     1775.0    1570.0    1840.0          2


------------------------------------
A CRACKED ZONE HAS BEEN SPECIFIED
------------------------------------

     Depth of crack below ground surface =  8.00   (feet)
     Maximum depth of water in crack     =   .00   (feet)
     Unit weight of water in crack       = 62.40   (pcf)

Failure surfaces will have a vertical side equal to the
specified depth of crack and be affected by a hydrostatic
force according to the specified depth of water in the crack


--------------------------
ISOTROPIC Soil Parameters
--------------------------

 3 Soil unit(s) specified

Soil   Unit Weight    Cohesion  Friction    Pore Pressure      Water
Unit  Moist    Sat.   Intercept   Angle   Parameter  Constant  Surface
 No.  (pcf)   (pcf)     (psf)     (deg)      Ru       (psf)      No.

  1   125.0   135.0     200.0     34.00     .000        .0        1
  2   130.0   140.0     200.0     40.00     .000        .0        1
  3   130.0   140.0     225.0     40.00     .000        .0        1


---------------------------------
ANISOTROPIC STRENGTH PARAMETERS
specified for  2 Soil Unit(s)
---------------------------------


Soil Unit  2 is ANISOTROPIC

Number of direction ranges specified =  3

Direction      Counterclockwise        c-value     φ-value
Range No.   Direction Limit (deg)       (psf)     (degrees)

   1               10.00                200.0       40.00
   2               15.00                100.0       25.00
   3               90.00                200.0       40.00


Soil Unit  3 is ANISOTROPIC

Number of direction ranges specified =  3

Direction      Counterclockwise        c-value     φ-value
Range No.   Direction Limit (deg)       (psf)     (degrees)

   1                5.00                225.0       40.00
   2               10.00                100.0       25.00
   3               90.00                225.0       40.00


 1 Water surface(s) have been specified
```

GEOLABS-WESTLAKE VILLAGE

W.O. 8838

Sec. B6-B6' Pseudo. Spencer's

```
Unit weight of water =    62.40  (pcf)


Water Surface No.  1 specified by  5 coordinate points

**********************************
        PHREATIC SURFACE,
**********************************

  Point       x-water       y-water
   No.         (ft)          (ft)

    1            .00        1650.00
    2         285.00        1658.00
    3         338.00        1650.00
    4         356.00        1658.00
    5        1500.00        1658.00


A horizontal earthquake loading coefficient
of   .150 has been assigned

A vertical earthquake loading coefficient
of   .000 has been assigned

-------------------------------------------------------
A SINGLE FAILURE SURFACE HAS BEEN SPECIFIED FOR ANALYSIS
-------------------------------------------------------

Trial failure surface specified by
the following  8 coordinate points :

       Point       x-surf       y-surf
        No.         (ft)         (ft)

         1         318.24      1650.00
         2         359.26      1630.87
         3         976.00      1793.46
         4         977.64      1796.98
         5        1019.91      1887.61
         6        1027.67      1904.27
         7        1027.67      1904.27
         8        1027.67      1912.27


****************************************************
SELECTED METHOD OF ANALYSIS:  Spencer (1973)
****************************************************



****************************************
SUMMARY OF INDIVIDUAL SLICE INFORMATION
****************************************

Slice  x-base     y-base  height   width   alpha     beta    weight
        (ft)       (ft)    (ft)     (ft)                       (lb)

  1    328.12    1645.39    4.61   19.76  -25.00      .00    12747.
  2    338.05    1640.76    9.27     .10  -25.00    28.44      128.
  3    347.05    1636.56   18.34   17.90  -25.00    28.44    44911.
  4    357.63    1631.63   29.00    3.26  -25.00    28.44    12896.
  5    360.63    1631.23   31.03    2.74   14.77    28.44    11549.
  6    366.00    1632.65   30.35    8.00   14.77      .00    32976.
  7    389.00    1638.71   33.60   38.00   14.77    26.11   168141.
  8    414.50    1645.43   39.38   13.00   14.77    26.11    65881.
```

```
  9     425.00    1648.20   39.80     8.00   14.77      .00     40908.
 10     445.59    1653.63   42.03    33.17   14.77    24.78    178430.
 11     471.59    1660.48   47.17    18.83   14.77    24.78    113565.
 12     491.00    1665.60   46.40    20.00   14.77      .00    119472.
 13     526.00    1674.83   50.15    50.00   14.77    27.44    321501.
 14     552.00    1681.68   56.80     2.00   14.77    27.44     14458.
 15     557.00    1683.00   56.00     8.00   14.77      .00     57092.
 16     586.50    1690.78   60.22    51.00   14.77    25.20    393024.
 17     615.00    1698.55   64.45     8.00   14.77      .00     56210.
 18     645.00    1706.20   69.80    50.00   14.77    27.47    449343.
 19     672.50    1713.45   75.55     5.00   14.77      .00     48724.
 20     676.50    1714.50   74.50     3.00   14.77      .00     28859.
 21     708.00    1722.81   80.19    60.00   14.77    25.02    623701.
 22     764.00    1737.57   85.93    52.00   14.77    14.04    580881.
 23     883.00    1768.94   93.25   186.00   14.77    19.09   2254779.
 24     976.82    1795.22   99.45     1.64   65.02    19.09     21203.
 25     998.78    1842.30   59.97    42.27   65.00    19.09    329559.
 26    1023.79    1895.94   14.99     7.75   65.02    19.09     15119.

--------------------------------
ITERATIONS FOR SPENCER'S METHOD
--------------------------------

   Iter #        Theta         FOS_force      FOS_moment
     2          27.6732         1.2877         1.1442
     3          21.9821         -----          1.2877
     3          24.8276         1.2171         -----
     4          23.9776         1.2001         1.2171
     5          24.6366         -----          1.2001
     5          24.3071         1.2065         -----
     6          24.3784         1.2079         1.2065
     7          24.3507         1.2075         1.2079


SLICE INFORMATION ... continued :

Slice    Sigma    c-value   phi     U-base     U-top    P-top   Delta
         (psf)     (psf)             (lb)       (lb)     (lb)

   1     3677.6    200.0   40.00     8113.     1839.      0.      .00
   2     6443.0    200.0   40.00       53.        0.      0.      .00
   3    11792.5    200.0   40.00    17967.        0.      0.      .00
   4    16901.3    200.0   40.00     5919.        0.      0.      .00
   5     1982.8    100.0   25.00     4733.        0.      0.      .00
   6     1983.4    100.0   25.00    13089.        0.      0.      .00
   7     2669.0    100.0   25.00    47302.        0.      0.      .00
   8     3690.6    100.0   25.00    10543.        0.      0.      .00
   9     3916.1    100.0   25.00     5059.        0.      0.      .00
  10     4515.1    100.0   25.00     9359.        0.      0.      .00
  11     5387.6    100.0   25.00        0.        0.      0.      .00
  12     5336.4    100.0   25.00        0.        0.      0.      .00
  13     5743.0    100.0   25.00        0.        0.      0.      .00
  14     6454.9    100.0   25.00        0.        0.      0.      .00
  15     6372.3    100.0   25.00        0.        0.      0.      .00
  16     6860.0    100.0   25.00        0.        0.      0.      .00
  17     7387.6    100.0   25.00        0.        0.      0.      .00
  18     8020.7    100.0   25.00        0.        0.      0.      .00
  19     8695.9    100.0   25.00        0.        0.      0.      .00
  20     8584.3    100.0   25.00        0.        0.      0.      .00
  21     9275.1    100.0   25.00        0.        0.      0.      .00
  22     9956.2    100.0   25.00        0.        0.      0.      .00
  23    10814.0    100.0   25.00        0.        0.      0.      .00
  24     3738.5    200.0   40.00        0.        0.      0.      .00
  25     2210.0    225.0   40.00        0.        0.      0.      .00
  26      489.4    225.0   40.00        0.        0.      0.      .00


-----------------------------------------------------------
SPENCER'S (1973)  - TOTAL Stresses at center of slice base
-----------------------------------------------------------
```

W.O. 8838

Sec. B6-B6' Pseudo. Spencer's

```
 Slice      Base       Normal    Vertical   Pore Water     Shear
   #       x-coord     Stress     Stress     Pressure      Stress
            (ft)       (psf)      (psf)       (psf)        (psf)

   1      328.12      4049.7      738.1       372.1       2721.2
   2      338.05      6925.5     1284.5       482.6       4642.8
   3      347.05     12702.2     2509.0       909.7       8360.2
   4      357.63     18546.8     3955.9      1645.5      11910.3
   5      360.63      3653.2     4214.9      1670.4        848.5
   6      366.00      3565.4     4109.4      1582.0        848.7
   7      389.00      3872.7     4424.8      1203.7       1113.5
   8      414.50      4474.8     5067.8       784.2       1508.0
   9      425.00      4527.6     5113.5       611.5       1595.1
  10      445.59      4787.9     5379.2       272.8       1826.4
  11      471.59      5387.6     6031.1          .0       2163.4
  12      491.00      5336.4     5973.6          .0       2143.6
  13      526.00      5743.0     6430.0          .0       2300.6
  14      552.00      6454.9     7229.2          .0       2575.5
  15      557.00      6372.3     7136.5          .0       2543.6
  16      586.50      6880.0     7706.3          .0       2739.7
  17      616.00      7387.6     8276.2          .0       2935.7
  18      645.00      8020.7     8986.9          .0       3180.2
  19      672.50      8695.9     9744.8          .0       3440.9
  20      676.50      8584.3     9619.6          .0       3397.8
  21      708.00      9275.1    10395.0          .0       3664.6
  22      754.00      9966.2    11170.8          .0       3931.5
  23      883.00     10814.0    12122.5          .0       4258.9
  24      976.82      3738.5    12928.3          .0       2763.5
  25      998.78      2210.0     7796.5          .0       1722.0
  26     1023.79       489.4     1948.3          .0        526.4


-------------------------------------------------------------------
SPENCER'S (1973)  - Magnitude & Location of Interslice Forces
-------------------------------------------------------------------

Slice     Right      Force     Interslice    Force    Boundary   Height
  #      x-coord     Angle       Force       Height    Height     Ratio
          (ft)     (degrees)     (lb)        (ft)      (ft)

   1     338.00      24.35       97885.       9.02       9.22      .979
   2     338.10      24.35       98728.       9.04       9.32      .970
   3     356.00      24.35      371984.      12.62      27.36      .461
   4     359.26      24.35      443431.      13.27      30.65      .433
   5     362.00      24.35      441185.      13.79      31.41      .439
   6     370.00      24.35      434971.      15.32      29.30      .523
   7     408.00      24.35      411148.      22.45      37.91      .592
   8     421.00      24.35      404986.      24.74      40.85      .606
   9     429.00      24.35      401777.      26.13      38.74      .674
  10     462.17      24.35      392940.      31.49      45.31      .695
  11     481.00      24.35      389599.      34.20      49.04      .698
  12     501.00      24.35      386102.      37.13      43.76      .848
  13     551.00      24.35      376337.      44.15      56.54      .781
  14     553.00      24.35      375875.      44.41      57.05      .778
  15     561.00      24.35      374059.      45.44      54.95      .827
  16     612.00      24.35      361181.      51.51      65.50      .786
  17     620.00      24.35      358957.      52.38      63.39      .826
  18     670.00      24.35      343462.      56.94      76.21      .747
  19     675.00      24.35      341743.      57.29      74.89      .765
  20     678.00      24.35      340728.      57.51      74.10      .776
  21     738.00      24.35      318347.      60.40      86.28      .700
  22     790.00      24.35      297141.      61.08      85.57      .714
  23     976.00      24.35      213358.      46.13     100.92      .457
  24     977.64      24.35      200397.      45.38      97.97      .463
  25    1019.91      24.35        6188.       9.32      21.97      .424
  26    1027.67        .00        -699.       -.29       8.00     -.037


------------------------------------------------------------
```

```
AVERAGE VALUES ALONG FAILURE SURFACE
------------------------------------------------------------

     Total Normal Stress =    7335.36   (psf)
     Pore Water Pressure =     151.66   (psf)
     Shear Stress        =    3126.85   (psf)

     Total Length of failure surface =  805.34 feet

------------------------------------------------------------


    For the single specified surface and the assumed angle
    of the interslice forces, the SPENCER'S (1973)
    procedure gives a

             FACTOR OF SAFETY =   1.208

    Total shear strength available
    along specified failure surface =  297.18E+04   lb
```

GEOLABS-WESTLAKE VILLAGE

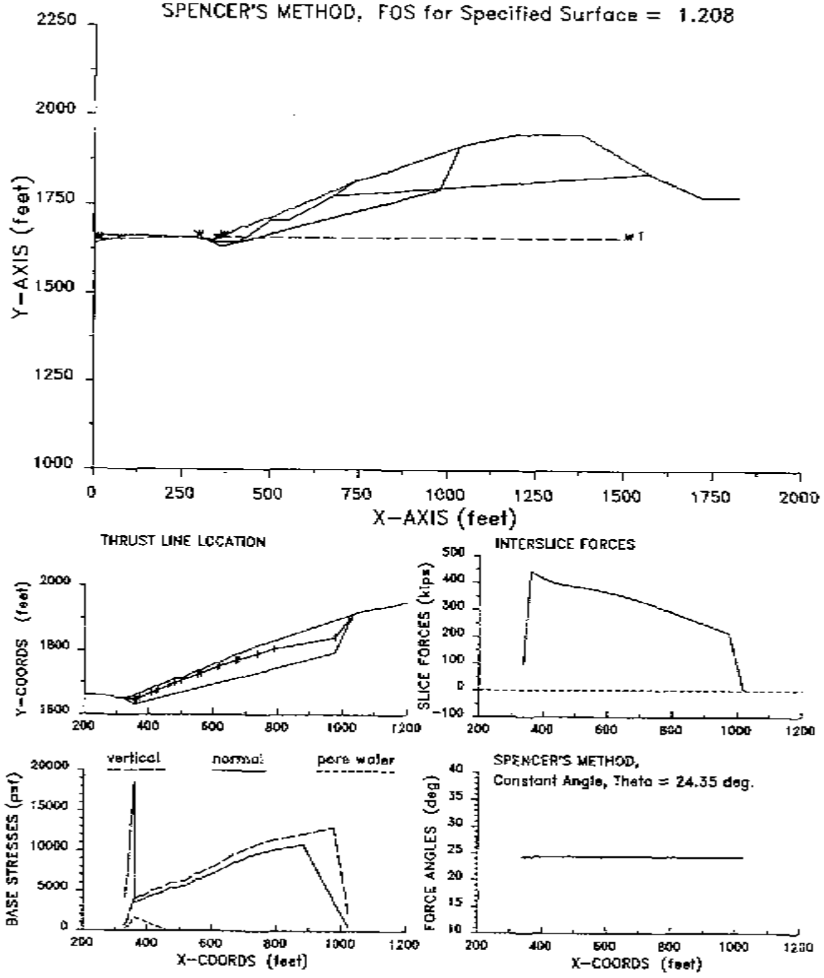
Plate B6ps.3

W.O. 8838

Sec. B6-B6' Pseudo. Spencer's

8838B6PS 4-12-** 15:29

Sec. B6-B6' W=70'D=5/W=50'D=5'Ps Spe
SPENCER'S METHOD, FOS for Specified Surface = 1.208



Sec. B6-B6' W=70'D=5/W=50'D=5'Ps Spe
SPENCER'S METHOD, FOS for Specified Surface = 1.208

GEOLABS-WESTLAKE VILLAGE

Plate B6ps.4

W.O. 8838

Sec. B6-B6' Backcut

```
XSTABL File: 883836B    4-12-**    16:16

         ******************************************
         *              X S T A B L               *
         *                                        *
         *        Slope Stability Analysis        *
         *               using the                *
         *           Method of Slices             *
         *                                        *
         *        Copyright (C) 1992 A 96         *
         *    Interactive Software Designs, Inc.  *
         *       Moscow, ID 83843, U.S.A.         *
         *                                        *
         *          All Rights Reserved           *
         *                                        *
         *  Ver. 5.201                 96 Ã 1545  *
         ******************************************

Problem Description : Sec. B6-B6' Backcut


 -----------------------------
 SEGMENT BOUNDARY COORDINATES
 -----------------------------

   16 SURFACE boundary segments

 Segment   x-left    y-left    x-right   y-right      Soil Unit
   No.      (ft)      (ft)      (ft)      (ft)      Below Segment

    1         .0     1662.0      90.0    1662.0           1
    2       90.0     1662.0     285.0    1658.0           2
    3      285.0     1658.0     301.0    1650.0           2
    4      301.0     1650.0     338.0    1650.0           2
    5      338.0     1650.0     338.1    1645.0           2
    6      338.1     1645.0     408.0    1645.0           2
    7      408.0     1645.0     501.0    1707.0           2
    8      501.0     1707.0     551.0    1707.0           2
    9      551.0     1707.0     675.0    1775.0           2
   10      675.0     1775.0     738.0    1817.0           3
   11      738.0     1817.0    1050.0    1920.0           3
   12     1050.0     1920.0    1200.0    1950.0           3
   13     1200.0     1950.0    1380.0    1950.0           3
   14     1380.0     1950.0    1570.0    1840.0           3
   15     1570.0     1840.0    1720.0    1775.0           2
   16     1720.0     1775.0    1820.0    1775.0           2

    2 SUBSURFACE boundary segments

 Segment   x-left    y-left    x-right   y-right      Soil Unit
   No.      (ft)      (ft)      (ft)      (ft)      Below Segment

    1         .0     1640.0      90.0    1662.0           2
    2      675.0     1775.0    1570.0    1840.0           2


 -----------------------------------
  A CRACKED ZONE HAS BEEN SPECIFIED
 -----------------------------------

     Depth of crack below ground surface =  8.00   (feet)
     Maximum depth of water in crack     =   .00   (feet)
     Unit weight of water in crack       = 62.40   (pcf)

 Failure surfaces will have a vertical side equal to the
 specified depth of crack and be affected by a hydrostatic
```

```
force according to the specified depth of water in the crack


--------------------------
ISOTROPIC Soil Parameters
--------------------------

 3 Soil unit(s) specified

Soil   Unit Weight   Cohesion  Friction    Pore Pressure      Water
Unit  Moist   Sat.   Intercept  Angle   Parameter Constant  Surface
No.   (pcf)   (pcf)    (psf)    (deg)      Ru       (psf)      No.

  1   125.0   135.0    200.0    34.00     .000        .0        1
  2   130.0   140.0    200.0    40.00     .000        .0        1
  3   130.0   140.0    225.0    40.00     .000        .0        1


-------------------------------
ANISOTROPIC STRENGTH PARAMETERS
specified for  2 Soil Unit(s)
-------------------------------


Soil Unit  2 is ANISOTROPIC

Number of direction ranges specified =  3


Direction     Counterclockwise        c-value      i-value
Range No.   Direction Limit (deg)      (psf)      (degrees)

    1              10.00               200.0        40.00
    2              15.00               100.0        25.00
    3              90.00               200.0        40.00


Soil Unit  3 is ANISOTROPIC

Number of direction ranges specified =  3


Direction     Counterclockwise        c-value      i-value
Range No.   Direction Limit (deg)      (psf)      (degrees)

    1               5.00               225.0        40.00
    2              10.00               100.0        25.00
    3              90.00               225.0        40.00


A critical failure surface searching method, using a random
technique for generating sliding BLOCK surfaces, has been
specified.


The active and passive portions of the sliding surfaces
are generated according to the Rankine theory.


 5000 trial surfaces will be generated and analyzed.


  2 boxes specified for generation of central block base


Length of line segments for active and passive portions of
```

W.O. 8838

Sec. B6-B6' Backcut

```
sliding block is    100.0 ft

Box        x-left      y-left     x-right     y-right       Width
no.         (ft)        (ft)       (ft)        (ft)          (ft)

 1          410.0      1600.0      520.0      1650.0         80.0
 2          600.0      1660.0     1100.0      1860.0        100.0

Factors of safety have been calculated by the :

* * * * *   SIMPLIFIED JANBU METHOD   * * * * *


The 10 most critical of all the failure surfaces examined
are displayed below - the most critical first

Failure surface No. 1 specified by  6 coordinate points

       Point      x-surf      y-surf
        No.        (ft)        (ft)

        1         407.00     1645.00
        2         418.84     1639.48
        3         684.47     1709.80
        4         716.27     1778.00
        5         727.45     1801.97
        6         727.45     1809.97

 **  Corrected JANBU FOS =   1.480  **     (Fo factor = 1.070)

Failure surface No. 2 specified by  6 coordinate points

       Point      x-surf      y-surf
        No.        (ft)        (ft)

        1         417.34     1651.23
        2         431.70     1644.53
        3         754.97     1728.31
        4         780.32     1782.65
        5         802.54     1830.31
        6         802.54     1838.31

 **  Corrected JANBU FOS =   1.497  **     (Fo factor = 1.068)

Failure surface No. 3 specified by  6 coordinate points

       Point      x-surf      y-surf
        No.        (ft)        (ft)

        1         426.88     1657.58
        2         439.06     1651.90
        3         771.78     1736.72
        4         793.65     1783.62
        5         817.76     1835.33
        6         817.76     1843.33

 **  Corrected JANBU FOS =   1.518  **     (Fo factor = 1.067)

Failure surface No. 4 specified by  6 coordinate points

       Point      x-surf      y-surf
        No.        (ft)        (ft)

        1         390.73     1645.00
```

```
        2         410.55     1635.76
        3         778.29     1729.24
        4         803.99     1784.37
        5         829.58     1839.23
        6         829.58     1847.23

 **  Corrected JANBU FOS =   1.519  **     (Fo factor = 1.067)

Failure surface No. 5 specified by  6 coordinate points

       Point      x-surf      y-surf
        No.        (ft)        (ft)

        1         423.57     1655.38
        2         443.18     1646.24
        3         770.10     1733.68
        4         793.36     1783.60
        5         817.45     1835.23
        6         817.45     1843.23

 **  Corrected JANBU FOS =   1.519  **     (Fo factor = 1.067)

Failure surface No. 6 specified by  6 coordinate points

       Point      x-surf      y-surf
        No.        (ft)        (ft)

        1         392.92     1645.00
        2         418.36     1633.14
        3         776.74     1724.61
        4         804.63     1784.41
        5         830.30     1839.47
        6         830.30     1847.47

 **  Corrected JANBU FOS =   1.530  **     (Fo factor = 1.068)

Failure surface No. 7 specified by  6 coordinate points

       Point      x-surf      y-surf
        No.        (ft)        (ft)

        1         435.32     1663.22
        2         454.71     1654.17
        3         723.47     1720.79
        4         751.33     1780.54
        5         769.44     1819.38
        6         769.44     1827.38

 **  Corrected JANBU FOS =   1.531  **     (Fo factor = 1.073)

Failure surface No. 8 specified by  6 coordinate points

       Point      x-surf      y-surf
        No.        (ft)        (ft)

        1         405.41     1645.00
        2         438.12     1629.75
        3         726.75     1705.63
        4         752.05     1781.32
        5         781.68     1823.42
        6         731.68     1831.42

 **  Corrected JANBU FOS =   1.550  **     (Fo factor = 1.074)

Failure surface No. 9 specified by  6 coordinate points
```

W.O. 8838

Sec. B6-B6' Backcut

```
        Point         x-surf         y-surf
         No.           (ft)           (ft)

          1           396.65        1645.00
          2           420.22        1634.01
          3           768.55        1718.02
          4           799.33        1784.03
          5           824.25        1837.47
          6           824.25        1845.47

   **  Corrected JANBU FOS =    1.552   **      (Fo factor = 1.071)

Failure surface No.10 specified by  6 coordinate points

        Point         x-surf         y-surf
         No.           (ft)           (ft)

          1           409.30        1645.86
          2           417.94        1641.83
          3           778.56        1726.07
          4           805.81        1784.50
          5           831.65        1839.92
          6           831.55        1847.92

   **  Corrected JANBU FOS =    1.552   **      (Fo factor = 1.069)



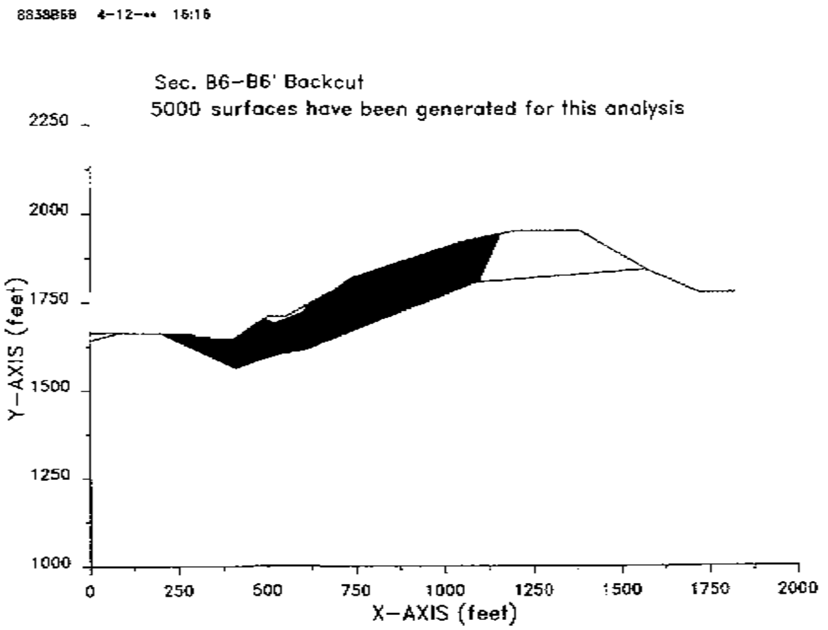

The following is a summary of the TEN most critical surfaces

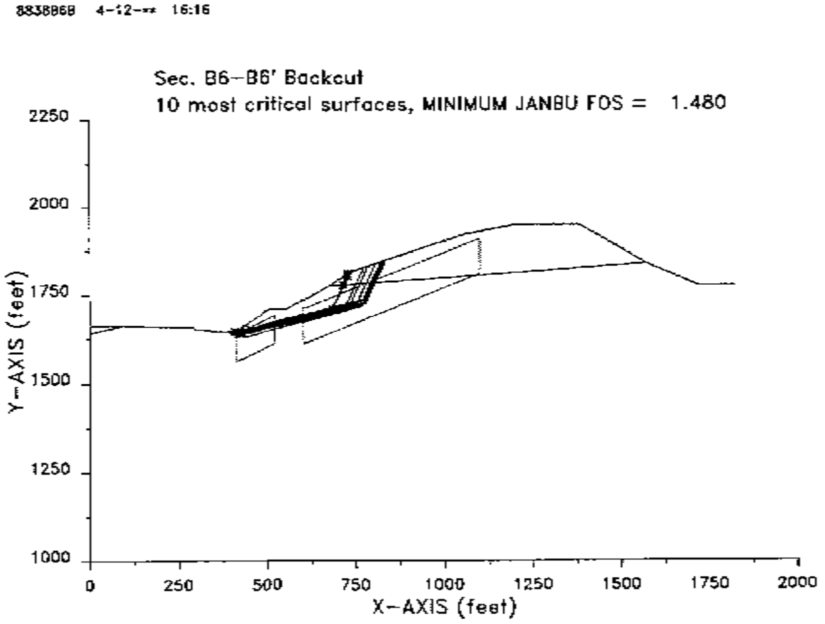
Problem Description : Sec. B6-B6' Backcut

       Modified      Correction     Initial      Terminal     Available
      JANBU FOS        Factor       x-coord      x-coord      Strength
                                     (ft)         (ft)          (lb)

  1.     1.480          1.070       407.00       727.45      8.886E+05
  2.     1.497          1.068       417.34       802.54      1.308E+06
  3.     1.518          1.067       426.88       817.76      1.283E+06
  4.     1.519          1.067       390.73       829.58      1.588E+06
  5.     1.519          1.067       423.57       817.45      1.396E+06
  6.     1.530          1.068       392.92       830.30      1.710E+06
  7.     1.531          1.073       435.32       769.44      1.075E+06
  8.     1.550          1.074       405.41       781.69      1.581E+06
  9.     1.552          1.071       396.65       824.25      1.728E+06
 10.     1.552          1.069       409.30       831.65      1.591E+06


                 *     * *  END OF FILE  * * *
```





GEOLABS-WESTLAKE VILLAGE

Plate B6b.3

W.O. 8838

Sec. C-C' W=110' D=5'

```
XSTABL File: 8838C     4-13-**   14:11

          ******************************************
          *                X S T A B L             *
          *                                        *
          *        Slope Stability Analysis        *
          *               using the                *
          *            Method of Slices            *
          *                                        *
          *        Copyright (C) 1992 À 96         *
          *  Interactive Software Designs, Inc.    *
          *      Moscow, ID 83843, U.S.A.          *
          *                                        *
          *          All Rights Reserved           *
          *                                        *
          * Ver. 5.201                 96 À 1545   *
          ******************************************

  Problem Description : Sec. C-C' W=110' D=5'



  ----------------------------
  SEGMENT BOUNDARY COORDINATES
  ----------------------------

     15 SURFACE boundary segments

  Segment    x-left    y-left    x-right   y-right     Soil Unit
    No.       (ft)      (ft)       (ft)      (ft)     Below Segment

     1          .0     1936.0     280.0    1943.0          1
     2       280.0     1943.0     355.0    1975.0          1
     3       355.0     1975.0     365.0    1975.0          1
     4       365.0     1975.0     381.0    1962.0          1
     5       381.0     1962.0     510.0    1962.0          1
     6       510.0     1962.0     530.0    1962.0          2
     7       530.0     1962.0     576.0    1984.0          1
     8       576.0     1984.0     584.0    1984.0          1
     9       584.0     1984.0     635.0    2010.0          1
    10       635.0     2010.0     643.0    2010.0          1
    11       643.0     2010.0     693.0    2032.0          1
    12       693.0     2032.0     701.0    2032.0          1
    13       701.0     2032.0     725.0    2040.0          1
    14       725.0     2040.0     800.0    2025.0          1
    15       800.0     2025.0    1015.0    1985.0          2

      8 SUBSURFACE boundary segments

  Segment    x-left    y-left    x-right   y-right     Soil Unit
    No.       (ft)      (ft)       (ft)      (ft)     Below Segment

     1          .0     1875.0     280.0    1938.0          2
     2       280.0     1938.0     310.0    1938.0          2
     3       310.0     1938.0     381.0    1957.0          2
     4       381.0     1957.0     509.0    1957.0          2
     5       509.0     1957.0     510.0    1962.0          2
     6       530.0     1962.0     530.1    1957.0          2
     7       530.1     1957.0     640.0    1957.0          2
     8       640.0     1957.0     800.0    2025.0          2


  ----------------------------------
   A CRACKED ZONE HAS BEEN SPECIFIED
  ----------------------------------

      Depth of crack below ground surface =  8.00   (feet)
```

```
      Maximum depth of water in crack     =   .00   (feet)
      Unit weight of water in crack       = 62.40   (pcf)

  Failure surfaces will have a vertical side equal to the
  specified depth of crack and be affected by a hydrostatic
  force according to the specified depth of water in the crack



  -------------------------
  ISOTROPIC Soil Parameters
  -------------------------

   2 Soil unit(s) specified

  Soil   Unit Weight   Cohesion  Friction    Pore Pressure      Water
  Unit  Moist    Sat.  Intercept   Angle  Parameter  Constant  Surface
   No.  (pcf)   (pcf)    (psf)     (deg)      Ru       (psf)      No.

    1   125.0   130.0    200.0     34.00     .000         .0       0
    2   130.0   140.0    225.0     40.00     .000         .0       0


  --------------------------------
  ANISOTROPIC STRENGTH PARAMETERS
  specified for  1 Soil Unit(s)
  --------------------------------



  Soil Unit  2 is ANISOTROPIC

  Number of direction ranges specified =  3


  Direction    Counterclockwise        c-value     i-value
  Range No.   Direction Limit (deg)     (psf)     (degrees)

      1              21.00              225.0      40.00
      2              24.00              150.0      11.00
      3              90.00              225.0      40.00


  A critical failure surface searching method, using a random
  technique for generating sliding BLOCK surfaces, has been
  specified.


  The active and passive portions of the sliding surfaces
  are generated according to the Rankine theory.


   2500 trial surfaces will be generated and analyzed.


    2 boxes specified for generation of central block base


  Length of line segments for active and passive portions of
  sliding block is    100.0 ft


  Box          x-left     y-left     x-right    y-right      Width
  no.           (ft)       (ft)        (ft)       (ft)        (ft)

   1           540.0     1930.0      670.0     1950.0       50.0
   2           730.0     2010.0      900.0     1980.0       50.0
```

W.O. 8838
Sec. C-C' W=110' D=5'

```
Factors of safety have been calculated by the :

* * * * *   SIMPLIFIED JANBU METHOD   * * * * *


The 10 most critical of all the failure surfaces examined
are displayed below - the most critical first

Failure surface No. 1 specified by  8 coordinate points

      Point      x-surf      y-surf
       No.        (ft)        (ft)

        1        526.81     1962.00
        2        530.03     1960.29
        3        536.21     1957.00
        4        583.82     1934.80
        5        777.81     2011.57
        6        780.14     2016.56
        7        782.26     2020.55
        8        782.26     2028.55

 **  Corrected JANBU FOS =   1.598  **    (Fo factor = 1.060)


Failure surface No. 2 specified by  4 coordinate points

      Point      x-surf      y-surf
       No.        (ft)        (ft)

        1        510.49     1962.00
        2        577.60     1930.71
        3        797.76     2017.45
        4        797.76     2025.45

 **  Corrected JANBU FOS =   1.602  **    (Fo factor = 1.060)


Failure surface No. 3 specified by  5 coordinate points

      Point      x-surf      y-surf
       No.        (ft)        (ft)

        1        484.25     1962.00
        2        493.66     1957.00
        3        562.32     1924.98
        4        792.32     2018.54
        5        792.32     2026.54

 **  Corrected JANBU FOS =   1.610  **    (Fo factor = 1.064)


Failure surface No. 4 specified by  7 coordinate points

      Point      x-surf      y-surf
       No.        (ft)        (ft)

        1        486.94     1962.00
        2        496.34     1957.00
        3        563.52     1925.67
        4        735.21     1991.70
        5        738.57     1998.89
        6        753.17     2026.37
        7        753.17     2034.37

 **  Corrected JANBU FOS =   1.657  **    (Fo factor = 1.072)
```

```
Failure surface No. 5 specified by  7 coordinate points

      Point      x-surf      y-surf
       No.        (ft)        (ft)

        1        533.65     1963.75
        2        546.34     1957.00
        3        592.67     1935.40
        4        761.05     2005.43
        5        762.80     2009.19
        6        770.13     2022.97
        7        770.13     2030.97

 **  Corrected JANBU FOS =   1.666  **    (Fo factor = 1.066)


Failure surface No. 6 specified by  7 coordinate points

      Point      x-surf      y-surf
       No.        (ft)        (ft)

        1        535.21     1964.49
        2        549.30     1957.00
        3        594.87     1935.75
        4        758.26     2004.27
        5        760.00     2008.00
        6        768.17     2023.37
        7        768.17     2031.37

 **  Corrected JANBU FOS =   1.687  **    (Fo factor = 1.068)


Failure surface No. 7 specified by  7 coordinate points

      Point      x-surf      y-surf
       No.        (ft)        (ft)

        1        541.55     1967.53
        2        561.35     1957.00
        3        598.90     1939.49
        4        736.45     1997.73
        5        736.61     1998.05
        6        751.80     2026.64
        7        751.80     2034.64

 **  Corrected JANBU FOS =   1.692  **    (Fo factor = 1.072)


Failure surface No. 8 specified by  5 coordinate points

      Point      x-surf      y-surf
       No.        (ft)        (ft)

        1        491.21     1962.00
        2        500.61     1957.00
        3        573.75     1922.90
        4        795.20     2017.96
        5        795.20     2025.96

 **  Corrected JANBU FOS =   1.693  **    (Fo factor = 1.067)


Failure surface No. 9 specified by  6 coordinate points

      Point      x-surf      y-surf
       No.        (ft)        (ft)

        1        522.18     1962.00
        2        530.08     1957.80
        3        531.59     1957.00
```

W.O. 8838
Sec. C-C' W=110' D=5'

```
          4         588.96      1930.25
          5         803.33      2016.38
          6         803.33      2024.38

   **  Corrected JANBU FOS =    1.697  **     (Fo factor = 1.061)

 Failure surface No.10 specified by  7 coordinate points

        Point       x-surf       y-surf
         No.         (ft)         (ft)

          1         541.93      1967.70
          2         562.06      1957.00
          3         599.13      1939.71
          4         775.17      2007.93
          5         778.96      2016.06
          6         781.44      2020.71
          7         781.44      2028.71

   **  Corrected JANBU FOS =    1.703  **     (Fo factor = 1.054)



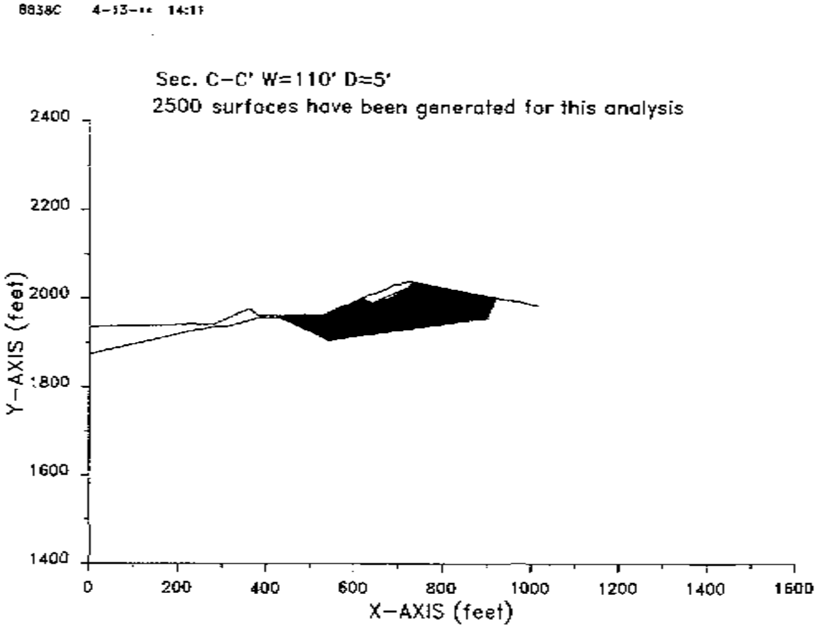
 The following is a summary of the TEN most critical surfaces

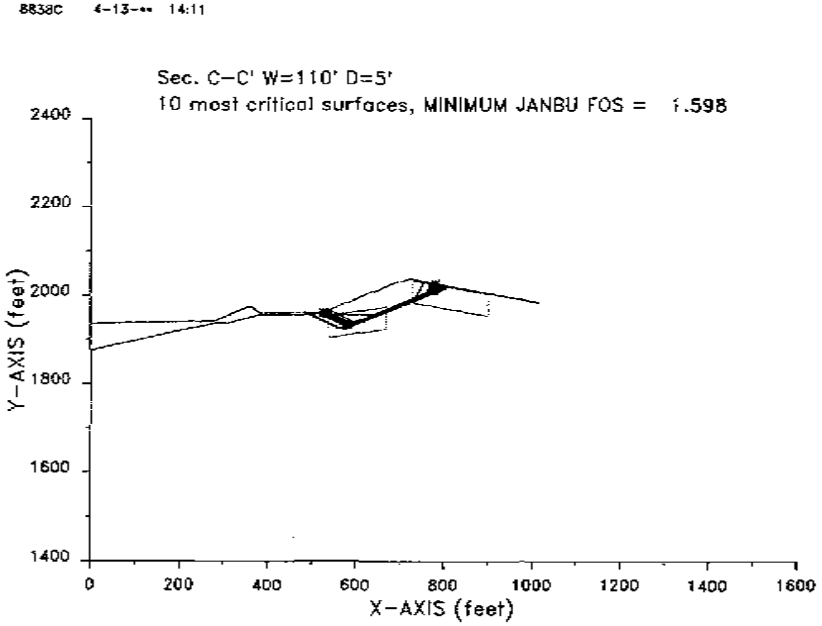
 Problem Description : Sec. C-C' W=110' D=5'

        Modified      Correction     Initial     Terminal     Available
       JANBU FOS        factor       x-coord      x-coord      Strength
                                       (ft)         (ft)         (lb)

  1.      1.598          1.060       526.81       782.26      5.189E+05
  2.      1.602          1.060       510.49       797.76      5.620E+05
  3.      1.610          1.064       484.25       792.32      5.976E+05
  4.      1.657          1.072       486.94       753.17      6.029E+05
  5.      1.666          1.066       533.65       770.13      5.315E+05
  6.      1.687          1.068       535.21       768.17      5.335E+05
  7.      1.692          1.072       541.55       751.80      4.907E+05
  8.      1.693          1.067       491.21       795.20      6.637E+05
  9.      1.697          1.061       522.18       803.33      6.093E+05
 10.      1.703          1.064       541.93       781.44      5.046E+05

                  .     * *  END OF FILE  * * *
```





W.O. 8838

Sec. C-C' Pseudostatic

```
XSTABL File: 8838CP     4-13-**   14:11

          ******************************************
          *              X S T A B L               *
          *                                        *
          *        Slope Stability Analysis        *
          *              using the                 *
          *           Method of Slices             *
          *                                        *
          *         Copyright (C) 1992 A 96        *
          *    Interactive Software Designs, Inc.  *
          *       Moscow, ID 83843, U.S.A.         *
          *                                        *
          *          All Rights Reserved           *
          *                                        *
          * Ver. 5.201                  96 A 1565  *
          ******************************************

   Problem Description : Sec. C-C' W=110' D=5' Pseudo


   -----------------------------
   SEGMENT BOUNDARY COORDINATES
   -----------------------------

      15 SURFACE boundary segments

   Segment    x-left    y-left    x-right   y-right     Soil Unit
     No.       (ft)      (ft)      (ft)      (ft)     Below Segment

      1          .0     1936.0     280.0    1943.0          1
      2       280.0     1943.0     355.0    1975.0          1
      3       355.0     1975.0     365.0    1975.0          1
      4       365.0     1975.0     381.0    1962.0          1
      5       381.0     1962.0     510.0    1962.0          1
      6       510.0     1962.0     530.0    1962.0          2
      7       530.0     1962.0     576.0    1984.0          1
      8       576.0     1984.0     584.0    1984.0          1
      9       584.0     1984.0     635.0    2010.0          1
     10       635.0     2010.0     643.0    2010.0          1
     11       643.0     2010.0     693.0    2032.0          1
     12       693.0     2032.0     701.0    2032.0          1
     13       701.0     2032.0     725.0    2040.0          1
     14       725.0     2040.0     800.0    2025.0          1
     15       800.0     2025.0    1015.0    1985.0          2


       8 SUBSURFACE boundary segments

   Segment    x-left    y-left    x-right   y-right     Soil Unit
     No.       (ft)      (ft)      (ft)      (ft)     Below Segment

      1          .0     1875.0     280.0    1938.0          2
      2       280.0     1938.0     310.0    1938.0          2
      3       310.0     1938.0     381.0    1957.0          2
      4       381.0     1957.0     509.0    1957.0          2
      5       509.0     1957.0     510.0    1962.0          2
      6       530.0     1962.0     530.1    1957.0          2
      7       530.1     1957.0     640.0    1957.0          2
      8       640.0     1957.0     900.0    2025.0          2


   ----------------------------------
    A CRACKED ZONE HAS BEEN SPECIFIED
   ----------------------------------

      Depth of crack below ground surface =   8.00    (feet)
```

```
      Maximum depth of water in crack      =   .00    (feet)
      Unit weight of water in crack        = 62.40    (pcf)

 Failure surfaces will have a vertical side equal to the
 specified depth of crack and be affected by a hydrostatic
 force according to the specified depth of water in the crack



 --------------------------
 ISOTROPIC Soil Parameters
 --------------------------

  2 Soil unit(s) specified

 Soil   Unit Weight   Cohesion  Friction    Pore Pressure       Water
 Unit  Moist    Sat.  Intercept   Angle   Parameter  Constant  Surface
  No.  (pcf)   (pcf)    (psf)     (deg)       Ru       (psf)      No.

   1   125.0   130.0    200.0     34.00      .000         .0       0
   2   130.0   140.0    225.0     40.00      .000         .0       0


 --------------------------------
 ANISOTROPIC STRENGTH PARAMETERS
 specified for  1 Soil Unit(s)
 --------------------------------


 Soil Unit  2 is ANISOTROPIC

 Number of direction ranges specified =  3


 Direction     Counterclockwise        c-value     i-value
 Range No.   Direction Limit (deg)      (psf)     (degrees)

     1              21.00              225.0        40.00
     2              24.00              150.0        11.00
     3              90.00              225.0        40.00


 A horizontal earthquake loading coefficient
 of   .150 has been assigned

 A vertical earthquake loading coefficient
 of   .000 has been assigned


 A critical failure surface searching method, using a random
 technique for generating sliding BLOCK surfaces, has been
 specified.


 The active and passive portions of the sliding surfaces
 are generated according to the Rankine theory.


  2500 trial surfaces will be generated and analyzed.


   2 boxes specified for generation of central block base


 Length of line segments for active and passive portions of
 sliding block is    100.0 ft
```

GEOLABS-WESTLAKE VILLAGE

Plate Cp.1

```
Box        x-left     y-left     x-right    y-right     Width
no.         (ft)       (ft)       (ft)       (ft)        (ft)

 1          540.0     1930.0      670.0     1950.0       50.0
 2          730.0     2010.0      900.0     1980.0       50.0


Factors of safety have been calculated by the :

* * * * *   SIMPLIFIED JANBU METHOD   * * * * *


The 10 most critical of all the failure surfaces examined
are displayed below - the most critical first

Failure surface No. 1 specified by  4 coordinate points

      Point      x-surf      y-surf
       No.        (ft)        (ft)

        1        510.49     1962.00
        2        577.60     1930.71
        3        797.76     2017.45
        4        797.76     2025.45

 **  Corrected JANBU FOS =   1.118  **     (Fo factor = 1.060)

Failure surface No. 2 specified by  8 coordinate points

      Point      x-surf      y-surf
       No.        (ft)        (ft)

        1        526.81     1962.00
        2        530.03     1960.29
        3        535.21     1957.00
        4        583.82     1934.80
        5        777.81     2011.57
        6        780.14     2016.56
        7        782.26     2020.55
        8        782.26     2028.55

 **  Corrected JANBU FOS =   1.119  **     (Fo factor = 1.060)

Failure surface No. 3 specified by  5 coordinate points

      Point      x-surf      y-surf
       No.        (ft)        (ft)

        1        484.25     1962.00
        2        493.65     1957.00
        3        562.32     1924.98
        4        792.32     2018.54
        5        792.32     2026.54

 **  Corrected JANBU FOS =   1.131  **     (Fo factor = 1.064)

Failure surface No. 4 specified by  7 coordinate points

      Point      x-surf      y-surf
       No.        (ft)        (ft)

        1        541.93     1967.70
        2        562.06     1957.00
        3        599.13     1939.71
        4        775.17     2007.93
        5        778.96     2016.06
        6        781.44     2020.71
        7        781.44     2028.71

 **  Corrected JANBU FOS =   1.171  **     (Fo factor = 1.064)

Failure surface No. 5 specified by  6 coordinate points

      Point      x-surf      y-surf
       No.        (ft)        (ft)

        1        522.18     1962.00
        2        530.08     1957.80
        3        531.59     1957.00
        4        588.96     1930.25
        5        803.33     2016.38
        6        803.33     2024.38

 **  Corrected JANBU FOS =   1.174  **     (Fo factor = 1.061)

Failure surface No. 6 specified by  7 coordinate points

      Point      x-surf      y-surf
       No.        (ft)        (ft)

        1        486.94     1962.00
        2        496.34     1957.00
        3        563.52     1925.67
        4        735.21     1991.70
        5        738.57     1998.89
        6        753.17     2026.37
        7        753.17     2034.37

 **  Corrected JANBU FOS =   1.174  **     (Fo factor = 1.072)

Failure surface No. 7 specified by  7 coordinate points

      Point      x-surf      y-surf
       No.        (ft)        (ft)

        1        533.65     1963.75
        2        546.34     1957.00
        3        592.67     1935.40
        4        761.05     2005.43
        5        762.80     2009.19
        6        770.13     2022.97
        7        770.13     2030.97

 **  Corrected JANBU FOS =   1.175  **     (Fo factor = 1.066)

Failure surface No. 8 specified by  6 coordinate points

      Point      x-surf      y-surf
       No.        (ft)        (ft)

        1        536.24     1964.99
        2        551.26     1957.00
        3        597.35     1935.51
        4        788.58     2011.82
        5        791.76     2018.65
        6        791.76     2026.65

 **  Corrected JANBU FOS =   1.187  **     (Fo factor = 1.063)
```

W.O. 8838

Sec. C-C' Pseudostatic

```
Failure surface No. 9 specified by  6 coordinate points

        Point      x-surf      y-surf
         No.        (ft)        (ft)

          1        528.10     1962.00
          2        530.02     1960.98
          3        537.50     1957.00
          4        593.36     1930.95
          5        803.48     2015.35
          6        803.48     2024.35

 **  Corrected JANBU FOS =    1.190  **     (Fo factor = 1.062)

Failure surface No.10 specified by  5 coordinate points

        Point      x-surf      y-surf
         No.        (ft)        (ft)

          1        491.21     1962.00
          2        500.61     1957.00
          3        573.75     1922.90
          4        795.20     2017.96
          5        795.20     2025.96

 **  Corrected JANBU FOS =    1.190  **     (Fo factor = 1.067)



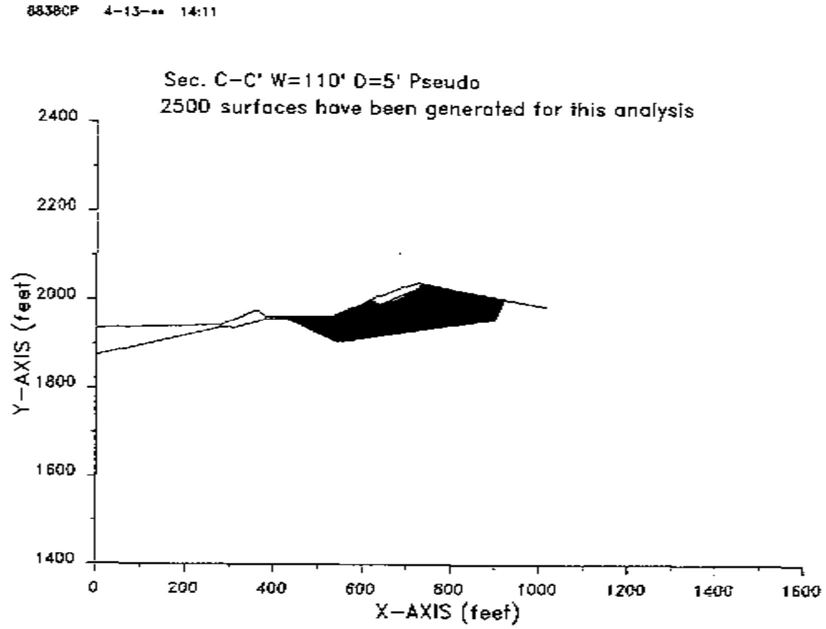
The following is a summary of the TEN most critical surfaces

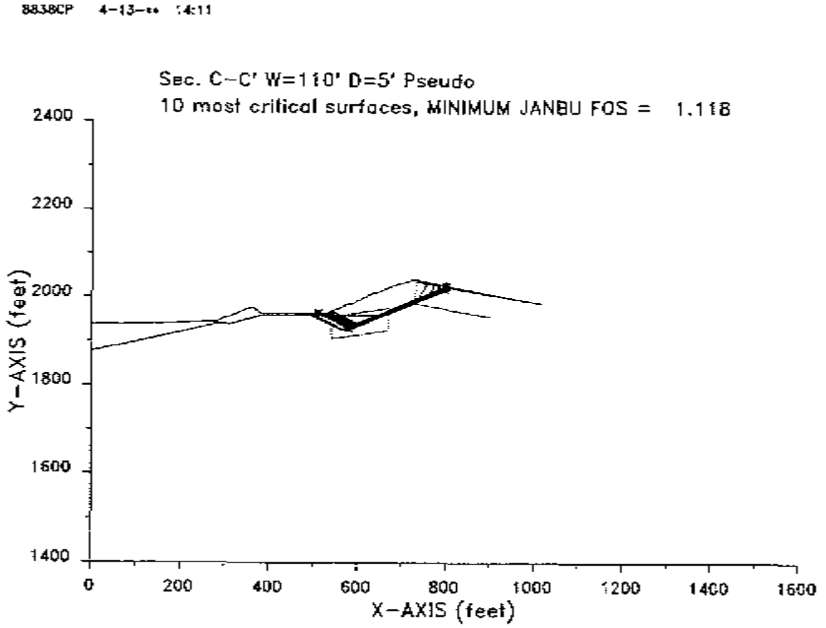
Problem Description : Sec. C-C' W=110' D=5' Pseudo

        Modified       Correction    Initial     Terminal    Available
        JANBU FOS        Factor      x-coord     x-coord     Strength
                                       (ft)        (ft)        (lb)

 1.       1.118          1.060      510.49      797.76     6.053E+05
 2.       1.119          1.060      526.81      782.26     5.564E+05
 3.       1.131          1.064      484.25      792.32     6.433E+05
 4.       1.171          1.064      541.93      781.44     5.398E+05
 5.       1.174          1.061      522.18      803.33     6.565E+05
 6.       1.174          1.072      486.94      753.17     6.364E+05
 7.       1.175          1.066      533.65      770.13     5.676E+05
 8.       1.187          1.063      536.24      791.76     5.997E+05
 9.       1.190          1.062      528.10      803.48     6.594E+05
10.       1.190          1.067      491.21      795.20     7.145E+05


              *   * *  END OF FILE  * * *
```





GEOLABS-WESTLAKE VILLAGE

W.O. 8838

Sec. C3-C3' W=90' D=5'

```
XSTABL File: 8838C3     4-13-**     9:22

          ******************************************
          *               X S T A B L              *
          *                                        *
          *        Slope Stability Analysis        *
          *               using the                *
          *            Method of Slices            *
          *                                        *
          *         Copyright (C) 1992 A 96        *
          *   Interactive Software Designs, Inc.   *
          *        Moscow, ID 83843, U.S.A.        *
          *                                        *
          *          All Rights Reserved           *
          *                                        *
          * Ver. 5.201                    96 A 1545 *
          ******************************************

Problem Description : Sec. C3-C3' W=90' D=5'


-----------------------------
SEGMENT BOUNDARY COORDINATES
-----------------------------

   12 SURFACE boundary segments

Segment    x-left    y-left    x-right   y-right    Soil Unit
  No.       (ft)      (ft)      (ft)      (ft)    Below Segment

   1          .0    1870.0     100.0    1870.0          1
   2       100.0    1870.0     120.0    1880.0          1
   3       120.0    1880.0     205.0    1880.0          1
   4       205.0    1880.0     238.0    1895.0          2
   5       238.0    1895.0     246.0    1895.0          2
   6       246.0    1895.0     296.0    1919.0          2
   7       296.0    1919.0     304.0    1919.0          2
   8       304.0    1919.0     336.0    1935.0          2
   9       336.0    1935.0     475.0    1935.0          2
  10       475.0    1935.0     624.0    1935.0          1
  11       624.0    1935.0     665.0    1957.0          1
  12       665.0    1957.0     695.0    1957.0          2

    6 SUBSURFACE boundary segments

Segment    x-left    y-left    x-right   y-right    Soil Unit
  No.       (ft)      (ft)      (ft)      (ft)    Below Segment

   1       205.0    1880.0     205.1    1875.0          1
   2       205.1    1875.0     295.0    1875.0          1
   3       295.0    1875.0     475.0    1935.0          1
   4       624.0    1935.0     624.1    1930.0          1
   5       624.1    1930.0     654.0    1930.0          1
   6       654.0    1930.0     695.0    1957.0          1

 ----------------------------------
  A CRACKED ZONE HAS BEEN SPECIFIED
 ----------------------------------

     Depth of crack below ground surface =  8.00   (feet)
     Maximum depth of water in crack     =   .00   (feet)
     Unit weight of water in crack       = 62.40   (pcf)

Failure surfaces will have a vertical side equal to the
specified depth of crack and be affected by a hydrostatic
```

```
force according to the specified depth of water in the crack



--------------------------
ISOTROPIC Soil Parameters
--------------------------

 2 Soil unit(s) specified

Soil   Unit Weight   Cohesion  Friction    Pore Pressure      Water
Unit  Moist   Sat.  Intercept   Angle   Parameter Constant  Surface
 No.  (pcf)   (pcf)    (psf)     (deg)      Ru       (psf)      No.

  1   130.0   140.0    225.0    40.00     .000          .0        0
  2   125.0   135.0    200.0    34.00     .000          .0        0


--------------------------------
ANISOTROPIC STRENGTH PARAMETERS
specified for  1 Soil Unit(s)
--------------------------------


Soil Unit  1 is ANISOTROPIC

Number of direction ranges specified =  3


Direction     Counterclockwise          c-value     i-value
Range No.   Direction Limit (deg)        (psf)     (degrees)

   1              12.00                 225.0       40.00
   2              16.00                 150.0       11.00
   3              90.00                 225.0       40.00


A critical failure surface searching method, using a random
technique for generating sliding BLOCK surfaces, has been
specified.


The active and passive portions of the sliding surfaces
are generated according to the Rankine theory.


 5000 trial surfaces will be generated and analyzed.


  2 boxes specified for generation of central block base


Length of line segments for active and passive portions of
sliding block is     100.0 ft


Box        x-left    y-left    x-right   y-right      Width
no.         (ft)      (ft)      (ft)      (ft)         (ft)

 1         210.0    1850.0     350.0    1875.0        50.0
 2         380.0    1902.0     600.0    1902.0        50.0


Factors of safety have been calculated by the :

* * * * *   SIMPLIFIED JANBU METHOD    * * * * *
```

W.O. 8838
Sec. C3-C3' W=90' D=5'

```
The 10 most critical of all the failure surfaces examined
are displayed below - the most critical first

Failure surface No. 1 specified by  7 coordinate points

       Point      x-surf      y-surf
        No.        (ft)        (ft)

         1        197.70     1880.00
         2        205.08     1876.08
         3        207.10     1875.00
         4        242.47     1858.51
         5        457.04     1919.81
         6        460.39     1927.00
         7        460.39     1935.00

 **  Corrected JANBU FOS =    1.708  **     (Fo factor = 1.047)

Failure surface No. 2 specified by  5 coordinate points

       Point      x-surf      y-surf
        No.        (ft)        (ft)

         1        172.56     1880.00
         2        225.34     1855.39
         3        495.71     1923.55
         4        497.31     1927.00
         5        497.31     1935.00

 **  Corrected JANBU FOS =    1.714  **     (Fo factor = 1.043)

Failure surface No. 3 specified by  6 coordinate points

       Point      x-surf      y-surf
        No.        (ft)        (ft)

         1        177.38     1880.00
         2        230.40     1855.28
         3        417.69     1908.55
         4        421.75     1917.25
         5        426.93     1927.00
         6        426.93     1935.00

 **  Corrected JANBU FOS =    1.714  **     (Fo factor = 1.056)

Failure surface No. 4 specified by  6 coordinate points

       Point      x-surf      y-surf
        No.        (ft)        (ft)

         1        183.44     1880.00
         2        229.99     1858.30
         3        396.68     1901.46
         4        400.78     1910.26
         5        409.68     1927.00
         6        409.68     1935.00

 **  Corrected JANBU FOS =    1.715  **     (Fo factor = 1.056)

Failure surface No. 5 specified by  6 coordinate points

       Point      x-surf      y-surf
        No.        (ft)        (ft)

         1        176.73     1880.00
         2        227.69     1856.24
         3        385.74     1898.14
         4        389.66     1906.55
         5        400.53     1927.00
         6        400.53     1935.00

 **  Corrected JANBU FOS =    1.733  **     (Fo factor = 1.060)

Failure surface No. 6 specified by  5 coordinate points

       Point      x-surf      y-surf
        No.        (ft)        (ft)

         1        166.35     1880.00
         2        215.14     1857.25
         3        446.28     1908.52
         4        454.90     1927.00
         5        454.90     1935.00

 **  Corrected JANBU FOS =    1.739  **     (Fo factor = 1.046)

Failure surface No. 7 specified by  7 coordinate points

       Point      x-surf      y-surf
        No.        (ft)        (ft)

         1        199.91     1880.00
         2        205.05     1877.26
         3        209.31     1875.00
         4        236.71     1862.22
         5        471.21     1913.17
         6        477.66     1927.00
         7        477.66     1935.00

 **  Corrected JANBU FOS =    1.742  **     (Fo factor = 1.038)

Failure surface No. 8 specified by  5 coordinate points

       Point      x-surf      y-surf
        No.        (ft)        (ft)

         1        192.97     1880.00
         2        231.97     1861.35
         3        478.42     1916.47
         4        483.33     1927.00
         5        483.33     1935.00

 **  Corrected JANBU FOS =    1.755  **     (Fo factor = 1.038)

Failure surface No. 9 specified by  7 coordinate points

       Point      x-surf      y-surf
        No.        (ft)        (ft)

         1        202.17     1880.00
         2        205.03     1878.48
         3        211.57     1875.00
         4        241.83     1860.89
         5        492.26     1919.44
         6        495.81     1927.00
         7        495.81     1935.00

 **  Corrected JANBU FOS =    1.769  **     (Fo factor = 1.038)
```

W.O. 8838

Sec. C3-C3' W=90' D=5'

```
Failure surface No.10 specified by  6 coordinate points

        Point       x-surf       y-surf
         No.         (ft)         (ft)

          1         213.66      1833.94
          2         230.47      1875.00
          3         254.18      1853.94
          4         468.10      1921.49
          5         470.67      1927.00
          6         470.67      1935.00

 **  Corrected JANBU FOS =    1.769   **     (Fo factor = 1.045)



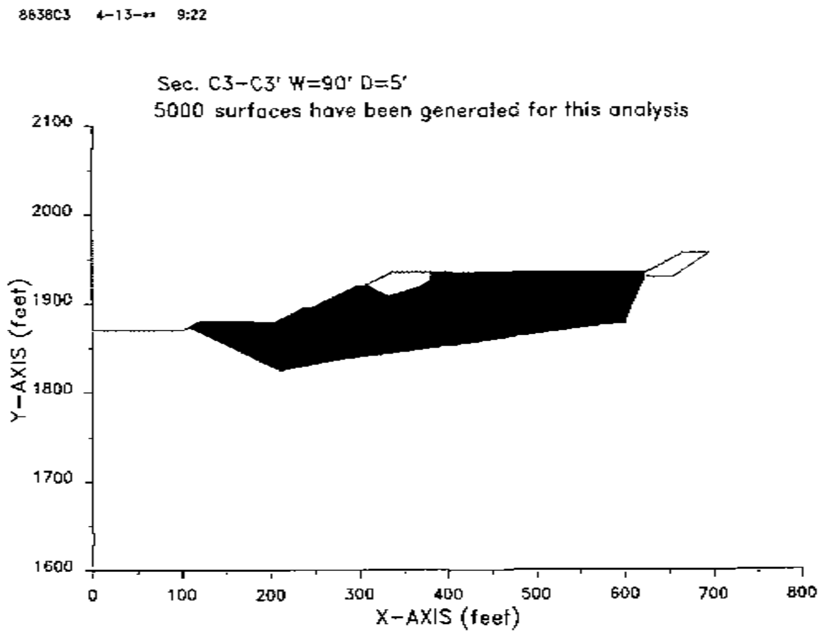
The following is a summary of the TEN most critical surfaces

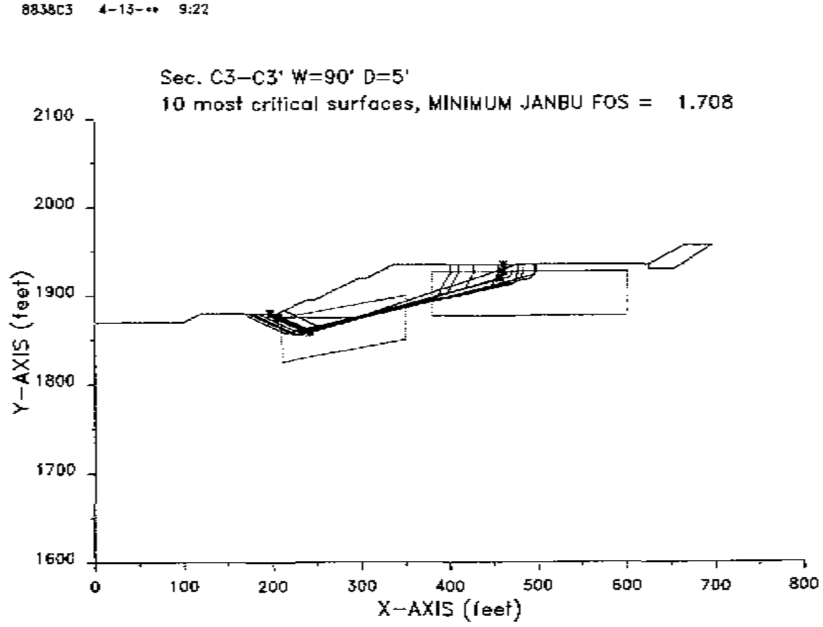
Problem Description : Sec. C3-C3' W=90' D=5'

        Modified       Correction    Initial      Terminal     Available
       JANBU FOS         Factor      x-coord       x-coord      Strength
                                      (ft)          (ft)          (lb)

 1.      1.708           1.047       197.70        460.39      3.718E+05
 2.      1.714           1.043       172.56        497.31      4.142E+05
 3.      1.714           1.056       177.38        426.93      3.756E+05
 4.      1.715           1.056       183.44        409.68      3.439E+05
 5.      1.733           1.060       176.73        400.53      3.539E+05
 6.      1.739           1.046       166.35        454.90      3.794E+05
 7.      1.742           1.038       199.91        477.66      3.652E+05
 8.      1.755           1.038       191.97        483.33      3.771E+05
 9.      1.769           1.038       202.17        495.81      3.889E+05
10.      1.769           1.045       213.66        470.67      3.441E+05

                 *     * *  END OF FILE  * * *
```





GEOLABS-WESTLAKE VILLAGE

Plate C3.3

W.O. 8838

Sec. C3-C3' Pseudo.

```
XSTABL File: 8838C3P    4-13-**     9:22

          ******************************************
          *                X S T A B L             *
          *                                        *
          *        Slope Stability Analysis        *
          *               using the                *
          *            Method of Slices            *
          *                                        *
          *        Copyright (C) 1992 À 96         *
          *    Interactive Software Designs, Inc.  *
          *        Moscow, ID 83843, U.S.A.        *
          *                                        *
          *           All Rights Reserved          *
          *                                        *
          *  Ver. 5.201                96 À 1545   *
          ******************************************


Problem Description : Sec. C3-C3' W=90' D=5' Pseudo



-----------------------------
SEGMENT BOUNDARY COORDINATES
-----------------------------

   12 SURFACE boundary segments

Segment   x-left    y-left    x-right   y-right    Soil Unit
  No.      (ft)      (ft)      (ft)      (ft)    Below Segment

  1          .0     1870.0     100.0    1870.0        1
  2       100.0     1870.0     120.0    1880.0        1
  3       120.0     1880.0     205.0    1880.0        1
  4       205.0     1880.0     238.0    1895.0        2
  5       238.0     1895.0     246.0    1895.0        2
  6       246.0     1895.0     296.0    1919.0        2
  7       296.0     1919.0     304.0    1919.0        2
  8       304.0     1919.0     336.0    1935.0        2
  9       336.0     1935.0     475.0    1935.0        2
 10       475.0     1935.0     624.0    1935.0        1
 11       624.0     1935.0     665.0    1957.0        1
 12       665.0     1957.0     695.0    1957.0        2


    6 SUBSURFACE boundary segments

Segment   x-left    y-left    x-right   y-right    Soil Unit
  No.      (ft)      (ft)      (ft)      (ft)    Below Segment

  1       205.0     1880.0     205.1    1875.0        1
  2       205.1     1875.0     295.0    1875.0        1
  3       295.0     1875.0     475.0    1935.0        1
  4       624.0     1935.0     624.1    1930.0        1
  5       624.1     1930.0     654.0    1930.0        1
  6       654.0     1930.0     695.0    1957.0        1


----------------------------------
 A CRACKED ZONE HAS BEEN SPECIFIED
----------------------------------

     Depth of crack below ground surface =   8.00   (feet)
     Maximum depth of water in crack     =    .00   (feet)
     Unit weight of water in crack       =  62.40   (pcf)

Failure surfaces will have a vertical side equal to the
specified depth of crack and be affected by a hydrostatic
```

```
force according to the specified depth of water in the crack



--------------------------
ISOTROPIC Soil Parameters
--------------------------

 2 Soil unit(s) specified

Soil   Unit Weight   Cohesion  Friction    Pore Pressure     Water
Unit  Moist    Sat.  Intercept  Angle   Parameter Constant  Surface
No.   (pcf)   (pcf)    (psf)    (deg)      Ru      (psf)      No.

  1   130.0   140.0    225.0    40.00     .000       .0        0
  2   125.0   135.0    200.0    34.00     .000       .0        0


--------------------------------
ANISOTROPIC STRENGTH PARAMETERS
specified for  1 Soil Unit(s)
--------------------------------



Soil Unit  1 is ANISOTROPIC

Number of direction ranges specified =  3


Direction      Counterclockwise          c-value      i-value
Range No.    Direction Limit (deg)        (psf)      (degrees)

    1              12.00                  225.0        40.00
    2              16.00                  150.0        11.00
    3              90.00                  225.0        40.00


A horizontal earthquake loading coefficient
of    .150 has been assigned

A vertical earthquake loading coefficient
of    .000 has been assigned


A critical failure surface searching method, using a random
technique for generating sliding BLOCK surfaces, has been
specified.


The active and passive portions of the sliding surfaces
are generated according to the Rankine theory.


 5000 trial surfaces will be generated and analyzed.


  2 boxes specified for generation of central block base


Length of line segments for active and passive portions of
sliding block is     100.0 ft


Box        x-left     y-left     x-right    y-right      Width
no.         (ft)       (ft)       (ft)       (ft)         (ft)
```

```
  1          210.0     1850.0     350.0     1875.0      50.0
  2          380.0     1902.0     600.0     1902.0      50.0


      Factors of safety have been calculated by the :

      * * * * *   SIMPLIFIED JANBU METHOD   * * * * *


      The 10 most critical of all the failure surfaces examined
      are displayed below - the most critical first

      Failure surface No. 1 specified by  7 coordinate points

             Point      x-surf      y-surf
              No.        (ft)        (ft)

               1        199.91     1880.00
               2        205.05     1877.26
               3        209.31     1875.00
               4        236.71     1862.22
               5        471.21     1913.17
               6        477.66     1927.00
               7        477.66     1935.00

       **  Corrected JANBU FOS =   1.028  **    (Fo factor = 1.038)


      Failure surface No. 2 specified by  5 coordinate points

             Point      x-surf      y-surf
              No.        (ft)        (ft)

               1        175.33     1880.00
               2        224.73     1856.96
               3        523.68     1920.69
               4        526.62     1927.00
               5        526.62     1935.00

       **  Corrected JANBU FOS =   1.033  **    (Fo factor = 1.038)


      Failure surface No. 3 specified by  5 coordinate points

             Point      x-surf      y-surf
              No.        (ft)        (ft)

               1        191.97     1880.00
               2        231.97     1861.35
               3        478.42     1916.47
               4        483.33     1927.00
               5        483.33     1935.00

       **  Corrected JANBU FOS =   1.039  **    (Fo factor = 1.038)


      Failure surface No. 4 specified by  5 coordinate points

             Point      x-surf      y-surf
              No.        (ft)        (ft)

               1        167.01     1880.00
               2        220.03     1855.28
               3        523.62     1921.51
               4        526.18     1927.00
               5        526.18     1935.00

       **  Corrected JANBU FOS =   1.046  **    (Fo factor = 1.039)
```

```
      Failure surface No. 5 specified by  5 coordinate points

             Point      x-surf      y-surf
              No.        (ft)        (ft)

               1        166.35     1880.00
               2        215.14     1857.25
               3        446.28     1908.52
               4        454.90     1927.00
               5        454.90     1935.00

       **  Corrected JANBU FOS =   1.046  **    (Fo factor = 1.046)


      Failure surface No. 6 specified by  5 coordinate points

             Point      x-surf      y-surf
              No.        (ft)        (ft)

               1        172.56     1880.00
               2        225.34     1855.39
               3        495.71     1923.55
               4        497.31     1927.00
               5        497.31     1935.00

       **  Corrected JANBU FOS =   1.052  **    (Fo factor = 1.043)


      Failure surface No. 7 specified by  7 coordinate points

             Point      x-surf      y-surf
              No.        (ft)        (ft)

               1        202.17     1880.00
               2        205.03     1878.48
               3        211.57     1875.00
               4        241.83     1860.89
               5        492.28     1919.44
               6        495.81     1927.00
               7        495.81     1935.00

       **  Corrected JANBU FOS =   1.054  **    (Fo factor = 1.038)


      Failure surface No. 8 specified by  6 coordinate points

             Point      x-surf      y-surf
              No.        (ft)        (ft)

               1        209.80     1882.18
               2        223.30     1875.00
               3        246.45     1864.20
               4        506.89     1923.59
               5        508.48     1927.00
               6        508.48     1935.00

       **  Corrected JANBU FOS =   1.063  **    (Fo factor = 1.035)


      Failure surface No. 9 specified by  5 coordinate points

             Point      x-surf      y-surf
              No.        (ft)        (ft)

               1        163.04     1880.00
               2        212.77     1856.81
               3        449.89     1910.17
               4        457.73     1927.00
```

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Sec. C3-C3' Pseudo.

```
          5          457.73      1935.00

  **  Corrected JANBU FOS =    1.069  **     (Fo factor = 1.045)


Failure surface No.10 specified by  5 coordinate points

         Point        x-surf       y-surf
          No.          (ft)         (ft)

           1          187.52      1880.00
           2          236.96      1856.94
           3          533.94      1922.01
           4          536.27      1927.00
           5          536.27      1935.00

  **  Corrected JANBU FOS =    1.071  **     (Fo factor = 1.038)



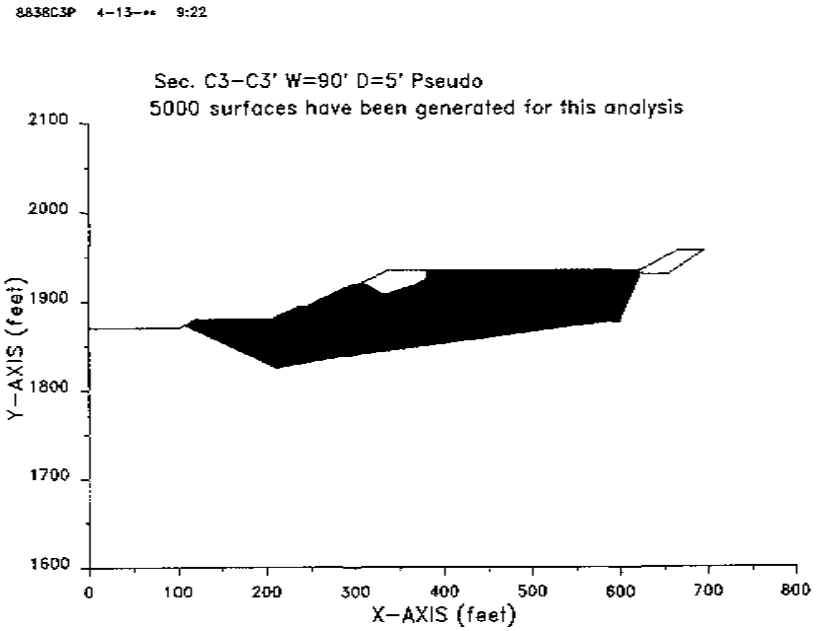
The following is a summary of the TEN most critical surfaces

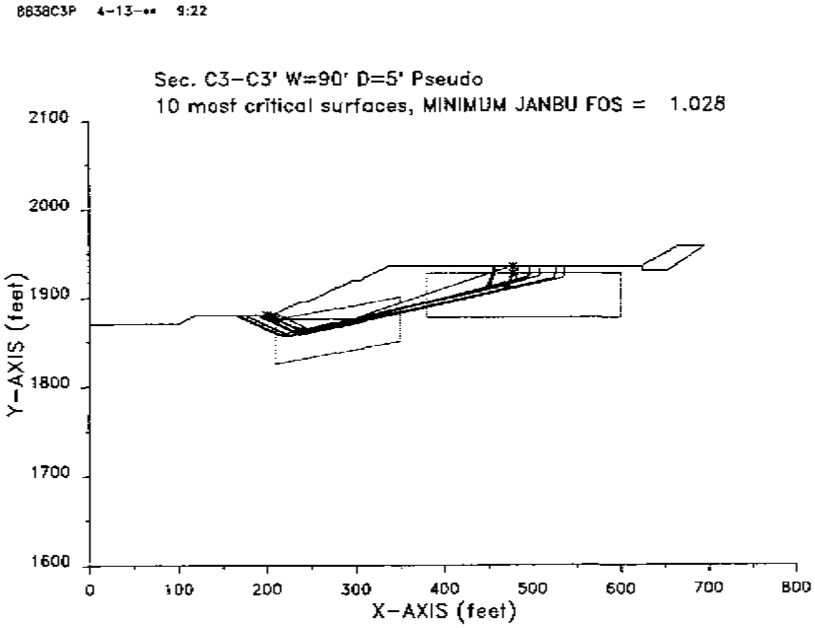
Problem Description : Sec. C3-C3' W=90' D=5' Pseudo

       Modified       Correction    Initial     Terminal    Available
       JANBU FOS        Factor      x-coord     x-coord      Strength
                                     (ft)        (ft)         (lb)

  1.     1.028          1.038       199.91      477.66     3.835E+05
  2.     1.033          1.038       175.33      526.62     4.662E+05
  3.     1.039          1.038       191.97      483.33     3.942E+05
  4.     1.046          1.039       167.01      526.18     4.801E+05
  5.     1.046          1.046       166.35      454.90     3.973E+05
  6.     1.052          1.043       172.56      497.31     4.413E+05
  7.     1.054          1.038       202.17      495.81     4.124E+05
  8.     1.063          1.035       209.80      508.48     3.934E+05
  9.     1.069          1.045       163.04      457.73     4.085E+05
 10.     1.071          1.038       187.52      536.27     4.951E+05

                    *     * *  END OF FILE  * * *
```





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Sec. C3-C3' Pseudo. Spencer's

```
XSTABL File: 8838C3PS   4-13-**    9:23

          ******************************************
          *                X S T A B L             *
          *                                        *
          *        Slope Stability Analysis        *
          *               using the                *
          *            Method of Slices            *
          *                                        *
          *         Copyright (C) 1992 À 96        *
          *    Interactive Software Designs, Inc.  *
          *        Moscow, ID 83843, U.S.A.        *
          *                                        *
          *          All Rights Reserved           *
          *                                        *
          *  Ver. 5.201                 96 À 1545  *
          ******************************************

Problem Description : Sec. C3-C3' W=90' D=5' Pseudo Spenc


 ----------------------------
 SEGMENT BOUNDARY COORDINATES
 ----------------------------

   12 SURFACE boundary segments

 Segment    x-left    y-left    x-right   y-right     Soil Unit
   No.       (ft)      (ft)      (ft)      (ft)     Below Segment

    1          .0     1870.0     100.0    1870.0          1
    2       100.0     1870.0     120.0    1880.0          1
    3       120.0     1880.0     205.0    1880.0          1
    4       205.0     1880.0     238.0    1895.0          2
    5       238.0     1895.0     246.0    1895.0          2
    6       246.0     1895.0     296.0    1919.0          2
    7       296.0     1919.0     304.0    1919.0          2
    8       304.0     1919.0     336.0    1935.0          2
    9       336.0     1935.0     475.0    1935.0          2
   10       475.0     1935.0     624.0    1935.0          1
   11       624.0     1935.0     665.0    1957.0          1
   12       665.0     1957.0     695.0    1957.0          2


    6 SUBSURFACE boundary segments

 Segment    x-left    y-left    x-right   y-right     Soil Unit
   No.       (ft)      (ft)      (ft)      (ft)     Below Segment

    1       205.0     1880.0     205.1    1875.0          1
    2       205.1     1875.0     295.0    1875.0          1
    3       295.0     1875.0     475.0    1935.0          1
    4       624.0     1935.0     624.1    1930.0          1
    5       624.1     1930.0     654.0    1930.0          1
    6       654.0     1930.0     695.0    1957.0          1


 -----------------------------------
  A CRACKED ZONE HAS BEEN SPECIFIED
 -----------------------------------

     Depth of crack below ground surface =  8.00   (feet)
     Maximum depth of water in crack     =   .00   (feet)
     Unit weight of water in crack       = 62.40   (pcf)

 Failure surfaces will have a vertical side equal to the
 specified depth of crack and be affected by a hydrostatic
```

```
force according to the specified depth of water in the crack


--------------------------
ISOTROPIC Soil Parameters
--------------------------

 2 Soil unit(s) specified

Soil   Unit Weight   Cohesion  Friction     Pore Pressure      Water
Unit  Moist   Sat.  Intercept   Angle   Parameter  Constant  Surface
 No.  (pcf)  (pcf)    (psf)     (deg)      Ru       (psf)      No.

  1   130.0  140.0     225.0    40.00     .000         .0        0
  2   125.0  135.0     200.0    34.00     .000         .0        0


--------------------------------
ANISOTROPIC STRENGTH PARAMETERS
specified for  1 Soil Unit(s)
--------------------------------


Soil Unit  1 is ANISOTROPIC

Number of direction ranges specified =  3


Direction      Counterclockwise          c-value      i-value
Range No.   Direction Limit (deg)         (psf)      (degrees)

    1              12.00                  225.0        40.00
    2              16.00                  150.0        11.00
    3              90.00                  225.0        40.00


A horizontal earthquake loading coefficient
of   .150 has been assigned

A vertical earthquake loading coefficient
of   .000 has been assigned


-------------------------------------------------------
A SINGLE FAILURE SURFACE HAS BEEN SPECIFIED FOR ANALYSIS
-------------------------------------------------------

Trial failure surface specified by
the following  8 coordinate points :

       Point      x-surf      y-surf
        No.        (ft)        (ft)

         1        199.91     1880.00
         2        205.05     1877.26
         3        209.31     1875.00
         4        236.71     1862.22
         5        471.21     1913.17
         6        477.66     1927.00
         7        477.66     1927.00
         8        477.66     1935.00


*****************************************************
SELECTED METHOD OF ANALYSIS:  Spencer (1973)
```

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Sec. C3-C3' Pseudo. Spencer's

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*****************************************************




****************************************
SUMMARY OF INDIVIDUAL SLICE INFORMATION
****************************************

Slice  x-base    y-base  height   width   alpha    beta    weight
        (ft)      (ft)    (ft)     (ft)                     (lb)

  1    202.46   1878.64    1.36    5.09  -28.06     .00     898.
  2    205.03   1877.27    2.74     .05  -28.06   24.44      19.
  3    207.18   1876.13    4.86    4.26  -27.95   24.44    2587.
  4    223.01   1868.61   19.58   27.40  -25.01   24.44   67925.
  5    237.36   1862.36   32.35    1.29   12.26   24.44    5297.
  6    242.00   1863.37   31.63    8.00   12.26     .00   32096.
  7    270.50   1869.56   37.20   49.00   12.26   25.64  229173.
  8    295.50   1874.99   43.77    1.00   12.26   25.64    5472.
  9    300.00   1875.97   43.03    8.00   12.26     .00   43057.
 10    320.00   1880.32   46.68   32.00   12.26   26.57  187217.
 11    403.60   1898.48   36.52  135.21   12.26     .00  625809.
 12    473.10   1917.23   17.77    3.79   65.00     .00    8742.
 13    476.33   1924.15   10.85    2.66   65.00     .00    3753.

--------------------------------
ITERATIONS FOR SPENCER'S METHOD
--------------------------------

    Iter #       Theta        FOS_force      FOS_moment
      2         15.0947        1.2600         1.1724
      3         14.5403        -----          1.2600
      3         14.8175        1.2532         -----
      4         14.5784        1.2475         1.2532
      5         14.5949        1.2479         1.2475


SLICE INFORMATION ... continued :

Slice    Sigma   c-value   phi    U-base    U-top    P-top   Delta
         (psf)    (psf)            (lb)      (lb)     (lb)

  1      953.8    225.0   40.00     0.        0.       0.     .00
  2     1461.1    225.0   40.00     0.        0.       0.     .00
  3     1636.7    200.0   34.00     0.        0.       0.     .00
  4     6446.8    225.0   40.00     0.        0.       0.     .00
  5     3763.7    150.0   11.00     0.        0.       0.     .00
  6     3677.1    150.0   11.00     0.        0.       0.     .00
  7     4285.8    150.0   11.00     0.        0.       0.     .00
  8     5013.2    150.0   11.00     0.        0.       0.     .00
  9     4931.2    150.0   11.00     0.        0.       0.     .00
 10     5360.0    150.0   11.00     0.        0.       0.     .00
 11     4241.4    150.0   11.00     0.        0.       0.     .00
 12      664.4    225.0   40.00     0.        0.       0.     .00
 13      360.7    225.0   40.00     0.        0.       0.     .00


---------------------------------------------------------------
SPENCER'S (1973)  - TOTAL Stresses at center of slice base
---------------------------------------------------------------

Slice    Base       Normal    Vertical   Pore Water    Shear
  #     x-coord     Stress     Stress     Pressure     Stress
         (ft)       (psf)      (psf)       (psf)       (psf)

  1     202.46      953.8      176.4         .0        821.7
  2     205.03     1461.1      349.3         .0       1162.7
  3     207.18     1635.7      607.9         .0       1044.9
  4     223.01     6445.8     2479.0         .0       4515.2
  5     237.36     3763.7     4106.5         .0        706.4
  6     242.00     3677.1     4012.0         .0        693.0
  7     270.50     4285.8     4677.0         .0        787.8
  8     295.50     5013.2     5471.7         .0        901.1
  9     300.00     4931.2     5382.1         .0        888.3
 10     320.00     5350.0     5850.5         .0        955.1
 11     403.60     4241.4     4628.4         .0        780.9
 12     473.10      654.4     2306.5         .0        627.0
 13     476.33      360.7     1410.7         .0        422.8


---------------------------------------------------------------
SPENCER'S (1973)  - Magnitude & Location of Interslice Forces
---------------------------------------------------------------

Slice   Right     Force    Interslice   Force   Boundary  Height
  #    x-coord    Angle      Force      Height   Height   Ratio
        (ft)    (degrees)     (lb)       (ft)     (ft)

  1    205.00    14.59        6857.      2.01     2.71    .739
  2    205.05    14.59        6964.      2.02     2.77    .729
  3    209.31    14.59       14976.      3.34     6.96    .480
  4    236.71    14.59      217426.     10.41    32.19    .323
  5    238.00    14.59      216457.     10.45    32.50    .322
  6    246.00    14.59      210606.     10.72    30.76    .349
  7    295.00    14.59      167823.     11.94    43.64    .274
  8    296.00    14.59      166780.     11.94    43.90    .272
  9    304.00    14.59      158593.     12.01    42.16    .285
 10    336.00    14.59      122647.     11.61    51.21    .227
 11    471.21    14.59        5992.      7.65    21.83    .350
 12    475.00    14.59        1514.      4.56    13.70    .333
 13    477.66      .00         -31.       .23     8.00    .028


-------------------------------------------------------
  AVERAGE VALUES ALONG FAILURE SURFACE
-------------------------------------------------------

      Total Normal Stress =   4304.00  (psf)
      Pore Water Pressure =       .00  (psf)
      Shear Stress        =   1176.11  (psf)

      Total Length of failure surface =  296.11 feet

-------------------------------------------------------


    For the single specified surface and the assumed angle
    of the interslice forces, the SPENCER'S (1973)
    procedure gives a

              FACTOR OF SAFETY =   1.248

    Total shear strength available
    along specified failure surface =  434.60E+03   lb
```

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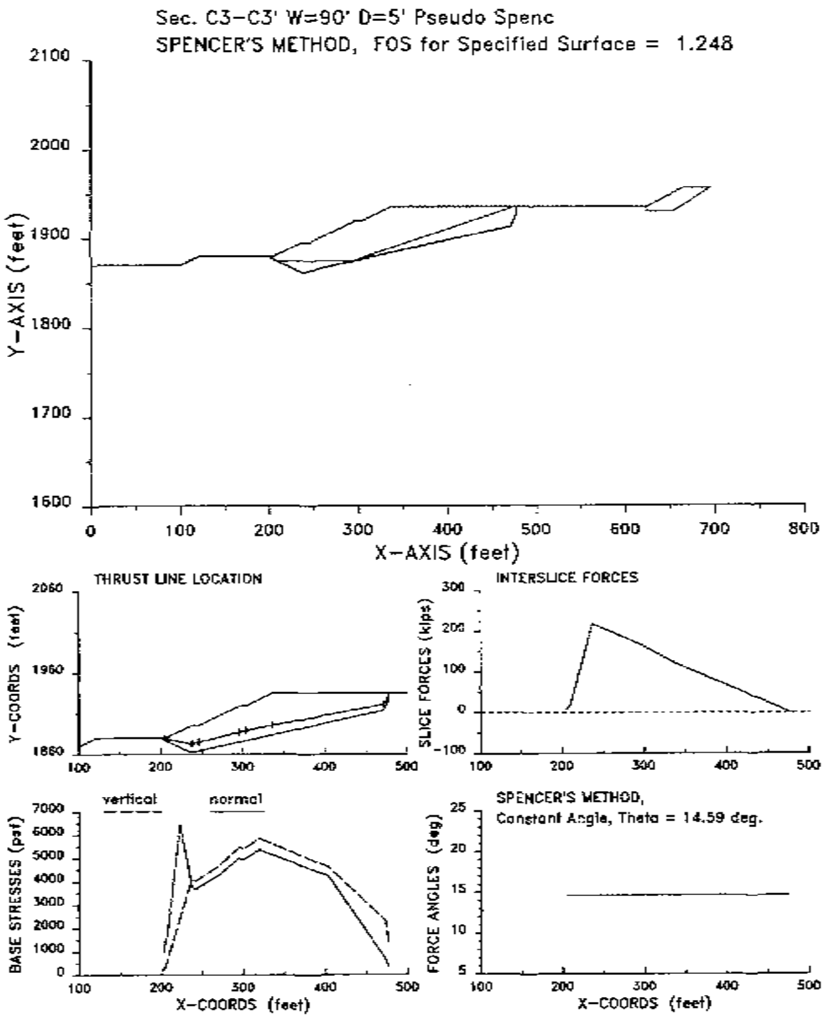
Sec. C3-C3' Pseudo. Spencer's

8838C3PS 4-13-** 9:23



Sec. C3-C3' W=90' D=5' Pseudo Spenc

SPENCER'S METHOD, FOS for Specified Surface = 1.248

Sec. C3-C3' W=90' D=5' Pseudo Spenc

SPENCER'S METHOD, FOS for Specified Surface = 1.248

GEOLABS-WESTLAKE VILLAGE

Plate C3ps.3

W.O. 8838

Sec. D-D' W=100' D=5'

```
XSTABL File: 8838D      4-13-**    14:56

         *******************************************
         *              X S T A B L                *
         *                                         *
         *        Slope Stability Analysis         *
         *              using the                  *
         *           Method of Slices              *
         *                                         *
         *         Copyright (C) 1992 À 96         *
         *    Interactive Software Designs, Inc.   *
         *       Moscow, ID 83843, U.S.A.          *
         *                                         *
         *          All Rights Reserved            *
         *                                         *
         *  Ver. 5.201                 96 À 1545   *
         *******************************************

Problem Description : Sec. D-D' W=100' D=5'



-----------------------------
SEGMENT BOUNDARY COORDINATES
-----------------------------

   18 SURFACE boundary segments

Segment    x-left     y-left     x-right    y-right     Soil Unit
  No.       (ft)       (ft)       (ft)       (ft)     Below Segment

    1          .0     1954.0      310.0     1955.0          1
    2       310.0     1955.0      347.0     1974.0          2
    3       347.0     1974.0      355.0     1974.0          2
    4       355.0     1974.0      406.0     2000.0          2
    5       406.0     2000.0      414.0     2000.0          2
    6       414.0     2000.0      465.0     2024.0          2
    7       465.0     2024.0      473.0     2024.0          2
    8       473.0     2024.0      525.0     2050.0          2
    9       525.0     2050.0      545.0     2050.0          2
   10       545.0     2050.0      596.0     2075.0          2
   11       596.0     2075.0      604.0     2075.0          2
   12       604.0     2075.0      655.0     2100.0          2
   13       655.0     2100.0      663.0     2100.0          2
   14       663.0     2100.0      715.0     2125.0          2
   15       715.0     2125.0      760.0     2120.0          2
   16       760.0     2120.0      880.0     2080.0          1
   17       880.0     2080.0     1000.0     2100.0          3
   18      1000.0     2100.0     1120.0     2110.0          3


    5 SUBSURFACE boundary segments

Segment    x-left     y-left     x-right    y-right     Soil Unit
  No.       (ft)       (ft)       (ft)       (ft)     Below Segment

    1       310.0     1955.0      310.1     1950.0          1
    2       310.1     1950.0      410.0     1950.0          1
    3       410.0     1950.0      760.0     2120.0          1
    4       880.0     2080.0     1120.0     2080.0          1
    5          .0     1880.0     1120.0     2020.0          4


-----------------------------------
 A CRACKED ZONE HAS BEEN SPECIFIED
-----------------------------------

     Depth of crack below ground surface =   8.00   (feet)
```

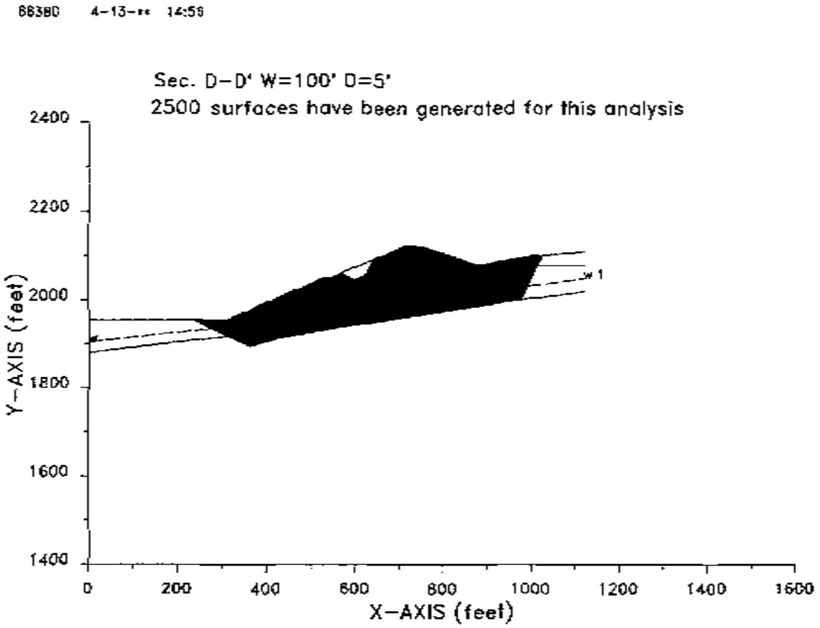
```
      Maximum depth of water in crack      =    .00   (feet)
      Unit weight of water in crack        = 62.40    (pcf)

Failure surfaces will have a vertical side equal to the
specified depth of crack and be affected by a hydrostatic
force according to the specified depth of water in the crack




--------------------------
ISOTROPIC Soil Parameters
--------------------------

 4 Soil unit(s) specified

Soil   Unit Weight   Cohesion  Friction    Pore Pressure      Water
Unit  Moist    Sat.  Intercept   Angle  Parameter  Constant  Surface
 No.  (pcf)   (pcf)    (psf)     (deg)     Ru       (psf)      No.

  1   130.0   140.0     225.0    40.00     .000         .0       1
  2   125.0   135.0     200.0    34.00     .000         .0       1
  3   125.0   135.0     200.0    30.00     .000         .0       1
  4   130.0   140.0     200.0    40.00     .000         .0       1


--------------------------------
ANISOTROPIC STRENGTH PARAMETERS
specified for  1 Soil Unit(s)
--------------------------------



Soil Unit  1 is ANISOTROPIC

Number of direction ranges specified =  3


Direction     Counterclockwise         c-value      i-value
Range No.   Direction Limit (deg)       (psf)      (degrees)

    1              6.00                 225.0        40.00
    2             11.00                 150.0        17.00
    3             90.00                 225.0        40.00



 1 Water surface(s) have been specified

Unit weight of water =     62.40  (pcf)


Water Surface No.  1 specified by  3 coordinate points

**********************************
        PHREATIC SURFACE,
**********************************

  Point      x-water     y-water
   No.        (ft)        (ft)

    1           .00     1905.00
    2        410.00     1950.00
    3       1120.00     2050.00


A critical failure surface searching method, using a random
technique for generating sliding BLOCK surfaces, has been
specified.
```

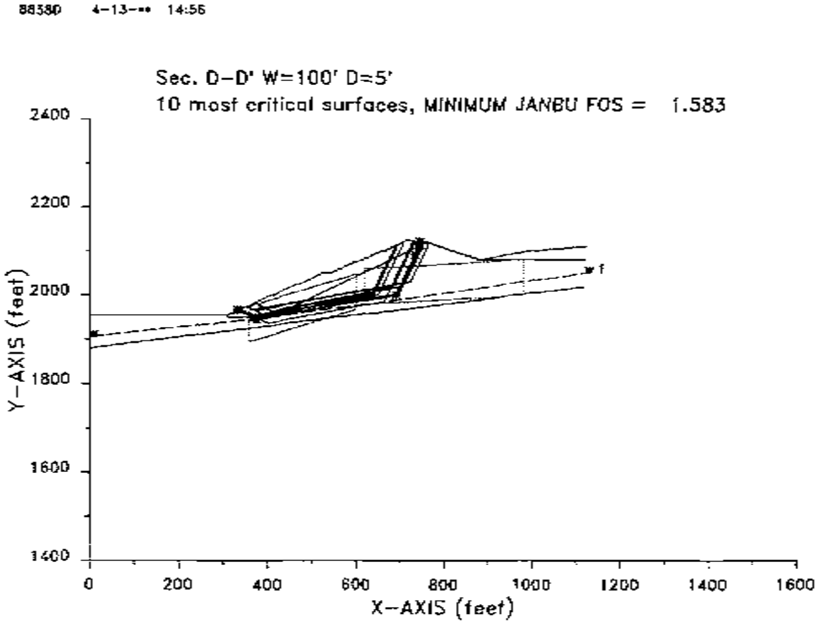
GEOLABS-WESTLAKE VILLAGE

```
The active and passive portions of the sliding surfaces
are generated according to the Rankine theory.

 2500 trial surfaces will be generated and analyzed.

  2 boxes specified for generation of central block base

Length of line segments for active and passive portions of
sliding block is    100.0 ft

Box         x-left      y-left      x-right     y-right       Width
no.          (ft)        (ft)        (ft)         (ft)         (ft)

 1          360.0       1935.0      600.0       2007.0        80.0
 2          620.0       2020.0      980.0       2040.0        80.0

Factors of safety have been calculated by the :

* * * * *    SIMPLIFIED JANBU METHOD    * * * * *


The 10 most critical of all the failure surfaces examined
are displayed below - the most critical first

Failure surface No. 1 specified by  8 coordinate points

       Point      x-surf      y-surf
        No.        (ft)        (ft)

         1        333.37     1967.00
         2        365.34     1950.00
         3        376.31     1944.88
         4        691.03     2000.65
         5        733.29     2091.29
         6        742.78     2111.54
         7        743.93     2113.79
         8        743.93     2121.79

 **  Corrected JANBU FOS =    1.583  **     (Fo factor = 1.075)

Failure surface No. 2 specified by  6 coordinate points

       Point      x-surf      y-surf
        No.        (ft)        (ft)

         1        356.13     1974.58
         2        397.49     1952.59
         3        651.46     2001.74
         4        690.97     2086.47
         5        704.53     2111.97
         6        704.53     2119.97

 **  Corrected JANBU FOS =    1.648  **     (Fo factor = 1.079)

Failure surface No. 3 specified by  5 coordinate points

       Point      x-surf      y-surf
        No.        (ft)        (ft)

         1        354.12     1974.00
         2        371.15     1964.95
         3        713.28     2030.17
         4        751.86     2112.90
         5        751.86     2120.90

 **  Corrected JANBU FOS =    1.654  **     (Fo factor = 1.065)

Failure surface No. 4 specified by  6 coordinate points

       Point      x-surf      y-surf
        No.        (ft)        (ft)

         1        373.17     1983.27
         2        409.29     1964.06
         3        705.16     2020.65
         4        747.42     2111.28
         5        748.36     2113.29
         6        748.36     2121.29

 **  Corrected JANBU FOS =    1.659  **     (Fo factor = 1.072)

Failure surface No. 5 specified by  7 coordinate points

       Point      x-surf      y-surf
        No.        (ft)        (ft)

         1        338.87     1969.82
         2        376.15     1950.00
         3        376.52     1949.83
         4        634.67     1998.70
         5        671.10     2076.82
         6        684.72     2102.44
         7        684.72     2110.44

 **  Corrected JANBU FOS =    1.671  **     (Fo factor = 1.077)

Failure surface No. 6 specified by  6 coordinate points

       Point      x-surf      y-surf
        No.        (ft)        (ft)

         1        338.58     1969.68
         2        371.34     1952.26
         3        698.24     2004.29
         4        740.50     2094.92
         5        749.04     2113.22
         6        749.04     2121.22

 **  Corrected JANBU FOS =    1.676  **     (Fo factor = 1.074)

Failure surface No. 7 specified by  6 coordinate points

       Point      x-surf      y-surf
        No.        (ft)        (ft)

         1        355.47     1974.24
         2        366.38     1968.44
         3        684.79     2019.88
         4        723.13     2102.09
         5        730.16     2115.32
         6        730.16     2123.32

 **  Corrected JANBU FOS =    1.683  **     (Fo factor = 1.071)

Failure surface No. 8 specified by  6 coordinate points
```

W.O. 8838
Sec. D-D' W=100' D=5'

```
        Point      x-surf      y-surf
         No.        (ft)        (ft)

          1        335.70      1968.20
          2        363.48      1953.42
          3        641.78      2003.64
          4        677.31      2079.84
          5        690.92      2105.42
          6        690.92      2113.42

  **  Corrected JANBU FOS =    1.684  **     (Fo factor = 1.075)

Failure surface No. 9 specified by  8 coordinate points

        Point      x-surf      y-surf
         No.        (ft)        (ft)

          1        337.41      1969.08
          2        373.29      1950.00
          3        402.45      1936.40
          4        664.91      1986.14
          5        707.17      2076.77
          6        717.76      2099.49
          7        726.40      2115.73
          8        726.40      2123.73

  **  Corrected JANBU FOS =    1.699  **     (Fo factor = 1.081)

Failure surface No.10 specified by  5 coordinate points

        Point      x-surf      y-surf
         No.        (ft)        (ft)

          1        371.18      1982.25
          2        396.18      1968.95
          3        724.17      2030.23
          4        761.99      2111.34
          5        761.99      2119.34

  **  Corrected JANBU FOS =    1.710  **     (Fo factor = 1.065)


The following is a summary of the TEN most critical surfaces

Problem Description : Sec. D-D' W=100' D=5'

      Modified       Correction    Initial     Terminal     Available
     JANBU FOS         Factor      x-coord     x-coord      Strength
                                    (ft)        (ft)          (lb)

 1.     1.583          1.075       333.37      743.93      1.517E+06
 2.     1.648          1.079       356.13      704.53      1.196E+06
 3.     1.654          1.065       354.12      751.86      1.194E+06
 4.     1.659          1.072       373.17      748.36      1.271E+06
 5.     1.671          1.077       338.87      684.72      1.143E+06
 6.     1.676          1.074       338.58      749.04      1.518E+06
 7.     1.683          1.071       355.47      730.16      1.126E+06
 8.     1.684          1.075       335.70      690.92      1.125E+06
 9.     1.699          1.081       337.41      726.40      1.672E+06
10.     1.710          1.065       371.18      761.99      1.227E+06

                *     * *  END OF FILE  * * *
```





GEOLABS-WESTLAKE VILLAGE

Plate D.3

```
XSTABL file: 8838K      4-12-**    11:28

          ******************************************
          *             X S T A B L                *
          *                                        *
          *       Slope Stability Analysis         *
          *             using the                  *
          *          Method of Slices              *
          *                                        *
          *        Copyright (C) 1992 À 96         *
          *   Interactive Software Designs, Inc.   *
          *      Moscow, ID 83843, U.S.A.          *
          *                                        *
          *          All Rights Reserved           *
          *                                        *
          * Ver. 5.201                  96 À 1545  *
          ******************************************

Problem Description : Sec. N-N' W=80' D=5'/W=50' D=5'


----------------------------
SEGMENT BOUNDARY COORDINATES
----------------------------

  27 SURFACE boundary segments

Segment    x-left     y-left    x-right    y-right      Soil Unit
  No.       (ft)       (ft)       (ft)       (ft)     Below Segment

   1          .0     1625.0      160.0     1625.0          1
   2       160.0     1625.0      194.0     1638.0          2
   3       194.0     1638.0      202.0     1638.0          2
   4       202.0     1638.0      251.0     1663.0          2
   5       251.0     1663.0      259.0     1663.0          2
   6       259.0     1663.0      310.0     1688.0          2
   7       310.0     1688.0      318.0     1688.0          2
   8       318.0     1688.0      367.0     1711.0          2
   9       367.0     1711.0      387.0     1711.0          2
  10       387.0     1711.0      435.0     1734.0          2
  11       435.0     1734.0      443.0     1734.0          2
  12       443.0     1734.0      493.0     1760.0          2
  13       493.0     1760.0      501.0     1760.0          2
  14       501.0     1760.0      549.0     1783.0          2
  15       549.0     1783.0      557.0     1783.0          2
  16       557.0     1783.0      603.0     1804.0          2
  17       603.0     1804.0      623.0     1804.0          2
  18       623.0     1804.0      669.0     1823.0          2
  19       669.0     1823.0      677.0     1823.0          2
  20       677.0     1823.0      710.0     1839.0          2
  21       710.0     1839.0      770.0     1840.0          2
  22       770.0     1840.0      975.0     1900.0          1
  23       975.0     1900.0     1080.0     1860.0          1
  24      1080.0     1860.0     1150.0     1858.0          1
  25      1150.0     1858.0     1170.0     1850.0          1
  26      1170.0     1850.0     1190.0     1840.0          1
  27      1190.0     1840.0     1215.0     1820.0          3

   8 SUBSURFACE boundary segments

Segment    x-left     y-left    x-right    y-right      Soil Unit
  No.       (ft)       (ft)       (ft)       (ft)     Below Segment

   1       160.0     1525.0      160.1     1620.0          1
   2       160.1     1620.0      240.0     1620.0          3
   3       240.0     1620.0      387.0     1706.0          3
   4       387.0     1706.0      437.0     1706.0          3
   5       437.0     1706.0      540.0     1755.0          3
   6       540.0     1755.0      670.0     1815.0          1
   7       670.0     1815.0      770.0     1840.0          1
   8       540.0     1755.0     1190.0     1840.0          3


------------------------------------
 A CRACKED ZONE HAS BEEN SPECIFIED
------------------------------------

     Depth of crack below ground surface =  8.00   (feet)
     Maximum depth of water in crack     =   .00   (feet)
     Unit weight of water in crack       = 62.40   (pcf)

Failure surfaces will have a vertical side equal to the
specified depth of crack and be affected by a hydrostatic
force according to the specified depth of water in the crack



--------------------------
ISOTROPIC Soil Parameters
--------------------------

 3 Soil unit(s) specified

Soil   Unit Weight   Cohesion  Friction     Pore Pressure      Water
Unit  Moist   Sat.   Intercept   Angle  Parameter  Constant  Surface
 No.  (pcf)   (pcf)    (psf)     (deg)      Ru       (psf)      No.

  1   130.0   140.0    225.0    40.00      .000         .0       0
  2   125.0   135.0    200.0    34.00      .000         .0       0
  3   130.0   140.0    200.0    40.00      .000         .0       0


A critical failure surface searching method, using a random
technique for generating CIRCULAR surfaces has been specified.


 5000 trial surfaces will be generated and analyzed.


 500 Surfaces initiate from each of  10 points equally spaced
along the ground surface between  x =    155.0 ft
                              and  x =    165.0 ft


Each surface terminates between   x =    700.0 ft
                             and   x =   1080.0 ft


Unless further limitations were imposed, the minimum elevation
at which a surface extends is  y =       .0 ft


* * * * *  DEFAULT SEGMENT LENGTH SELECTED BY XSTABL  * * * * *

   24.0 ft line segments define each trial failure surface.


--------------------
ANGULAR RESTRICTIONS
--------------------

  The first segment of each failure surface will be inclined
```

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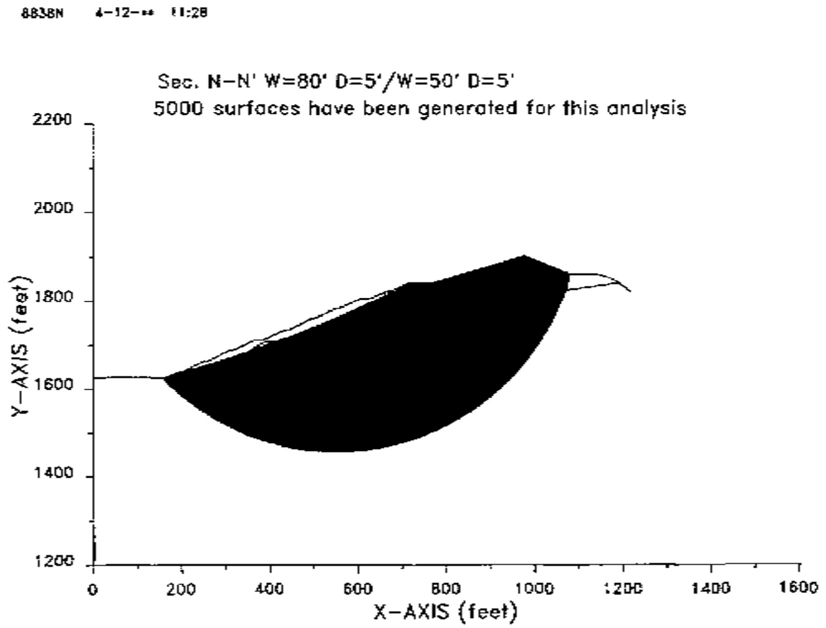
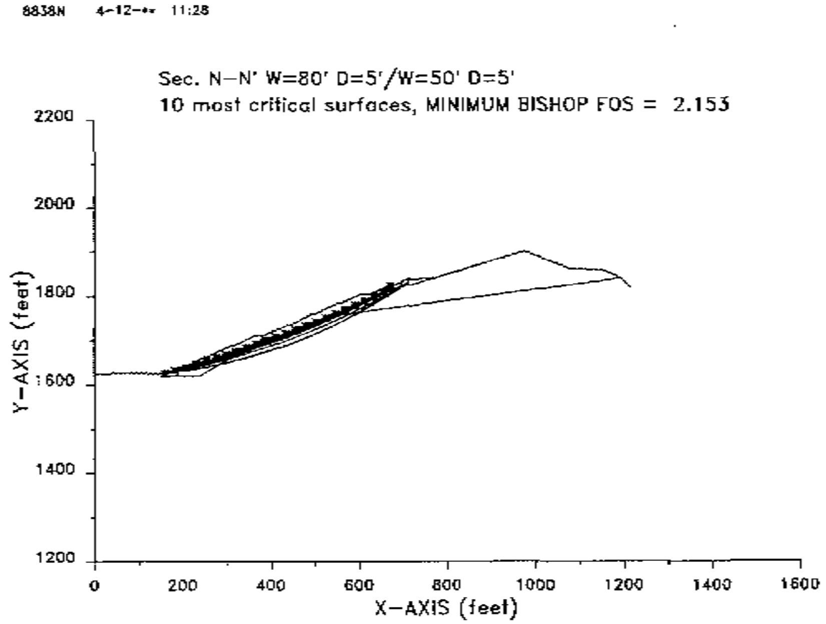
Sec. N-N'

```
within the angular range defined by :

        Lower angular limit :=   -45.0 degrees
        Upper angular limit :=  (slope angle - 5.0) degrees


Factors of safety have been calculated by the :

* * * * *    SIMPLIFIED BISHOP METHOD    * * * * *

 The most critical circular failure surface
 is specified by 25 coordinate points

      Point        x-surf       y-surf
       No.          (ft)         (ft)

        1          160.56       1625.21
        2          183.65       1631.75
        3          206.69       1638.47
        4          229.68       1645.36
        5          252.62       1652.41
        6          275.50       1659.65
        7          298.33       1667.05
        8          321.11       1674.62
        9          343.82       1682.36
       10          366.48       1690.27
       11          389.08       1698.36
       12          411.62       1706.61
       13          434.09       1715.03
       14          456.50       1723.61
       15          478.85       1732.37
       16          501.13       1741.29
       17          523.34       1750.38
       18          545.49       1759.63
       19          567.56       1769.05
       20          589.56       1778.64
       21          611.49       1788.39
       22          633.35       1798.30
       23          655.13       1808.38
       24          669.17       1815.00
       25          669.17       1823.00

****  Simplified BISHOP FOS =   2.153  ****


The following is a summary of the TEN most critical surfaces

Problem Description : Sec. N-N' W=80' D=5'/W=50' D=5'

      FOS     Circle Center    Radius   Initial Terminal  Resisting
   (BISHOP)  x-coord  y-coord           x-coord  x-coord    Moment
              (ft)     (ft)      (ft)     (ft)     (ft)     (ft-lb)

 1.   2.153   -701.50  4712.09  3204.99   160.56   669.17  2.227E+09
 2.   2.226   -421.40  3955.16  2401.10   163.89   658.92  1.960E+09
 3.   2.249   -713.64  4782.35  3275.59   163.89   673.53  2.485E+09
 4.   2.264   -740.27  4860.00  3357.88   160.56   675.10  2.622E+09
 5.   2.279   -623.90  4549.10  3027.05   162.78   675.18  2.504E+09
 6.   2.281   -368.82  3824.14  2261.75   160.56   669.79  2.098E+09
 7.   2.332   -127.56  3235.26  1635.63   160.56   711.00  2.352E+09
 8.   2.333     28.36  2827.50  1208.63   163.89   712.27  2.211E+09
 9.   2.334   -214.82  3415.02  1826.56   161.67   670.28  2.018E+09
10.   2.335     50.98  2742.39  1121.91   162.78   694.81  2.036E-09

                 *     * *  END OF FILE  * * *
```





W.O. 8838

Sec. N-N' Pseudostatic

```
XSTABL File: 8838NP     4-12-**   11:29

         ******************************************
         *               X S T A B L              *
         *                                        *
         *        Slope Stability Analysis        *
         *               using the                *
         *            Method of Slices            *
         *                                        *
         *        Copyright (C) 1992 A 96         *
         *   Interactive Software Designs, Inc.   *
         *       Moscow, ID 83843, U.S.A.         *
         *                                        *
         *          All Rights Reserved           *
         *                                        *
         *  Ver. 5.201                 96 A 1543  *
         ******************************************

Problem Description : Sec. N-N' W=80' D=5'/W=50' D=5' Pse


-----------------------------
SEGMENT BOUNDARY COORDINATES
-----------------------------

   27 SURFACE boundary segments

Segment    x-left     y-left     x-right    y-right     Soil Unit
  No.       (ft)       (ft)       (ft)       (ft)     Below Segment

   1          .0     1625.0      160.0     1625.0          1
   2       160.0     1625.0      194.0     1638.0          2
   3       194.0     1638.0      202.0     1638.0          2
   4       202.0     1638.0      251.0     1663.0          2
   5       251.0     1663.0      259.0     1663.0          2
   6       259.0     1663.0      310.0     1688.0          2
   7       310.0     1688.0      318.0     1688.0          2
   8       318.0     1688.0      367.0     1711.0          2
   9       367.0     1711.0      387.0     1711.0          2
  10       387.0     1711.0      435.0     1734.0          2
  11       435.0     1734.0      443.0     1734.0          2
  12       443.0     1734.0      493.0     1760.0          2
  13       493.0     1760.0      501.0     1760.0          2
  14       501.0     1760.0      549.0     1783.0          2
  15       549.0     1783.0      557.0     1783.0          2
  16       557.0     1783.0      603.0     1804.0          2
  17       603.0     1804.0      623.0     1804.0          2
  18       623.0     1804.0      669.0     1823.0          2
  19       669.0     1823.0      677.0     1823.0          2
  20       677.0     1823.0      710.0     1839.0          2
  21       710.0     1839.0      770.0     1840.0          2
  22       770.0     1840.0      975.0     1900.0          1
  23       975.0     1900.0     1080.0     1860.0          1
  24      1080.0     1860.0     1150.0     1858.0          1
  25      1150.0     1858.0     1170.0     1850.0          1
  26      1170.0     1850.0     1190.0     1840.0          1
  27      1190.0     1840.0     1215.0     1820.0          3


    8 SUBSURFACE boundary segments

Segment    x-left     y-left     x-right    y-right     Soil Unit
  No.       (ft)       (ft)       (ft)       (ft)     Below Segment

   1       160.0     1625.0      160.1     1620.0          1
   2       160.1     1620.0      240.0     1620.0          3
   3       240.0     1620.0      387.0     1706.0          3
   4       387.0     1706.0      437.0     1706.0          3
   5       437.0     1706.0      540.0     1755.0          3
   6       540.0     1755.0      670.0     1815.0          1
   7       670.0     1815.0      770.0     1840.0          1
   8       540.0     1755.0     1190.0     1840.0          3


---------------------------------
A CRACKED ZONE HAS BEEN SPECIFIED
---------------------------------

    Depth of crack below ground surface =  8.00   (feet)
    Maximum depth of water in crack     =   .00   (feet)
    Unit weight of water in crack       = 62.40   (pcf)

Failure surfaces will have a vertical side equal to the
specified depth of crack and be affected by a hydrostatic
force according to the specified depth of water in the crack



------------------------
ISOTROPIC Soil Parameters
------------------------

 3 Soil unit(s) specified

Soil   Unit Weight   Cohesion  Friction    Pore Pressure       Water
Unit  Moist   Sat.   Intercept   Angle   Parameter  Constant  Surface
 No.  (pcf)  (pcf)     (psf)     (deg)      Ru        (psf)     No.

  1   130.0  140.0     225.0     40.00     .000         .0        0
  2   125.0  135.0     200.0     34.00     .000         .0        0
  3   130.0  140.0     200.0     40.00     .000         .0        0


A horizontal earthquake loading coefficient
of   .150 has been assigned

A vertical earthquake loading coefficient
of   .000 has been assigned



A critical failure surface searching method, using a random
technique for generating CIRCULAR surfaces has been specified.


 5000 trial surfaces will be generated and analyzed.


 500 Surfaces initiate from each of  10 points equally spaced
along the ground surface between  x =    155.0 ft
                              and  x =    165.0 ft


Each surface terminates between   x =    700.0 ft
                           and    x =   1080.0 ft


Unless further limitations were imposed, the minimum elevation
at which a surface extends is  y =       .0 ft


* * * * *  DEFAULT SEGMENT LENGTH SELECTED BY XSTABL  * * * * *

   24.0 ft line segments define each trial failure surface.
```

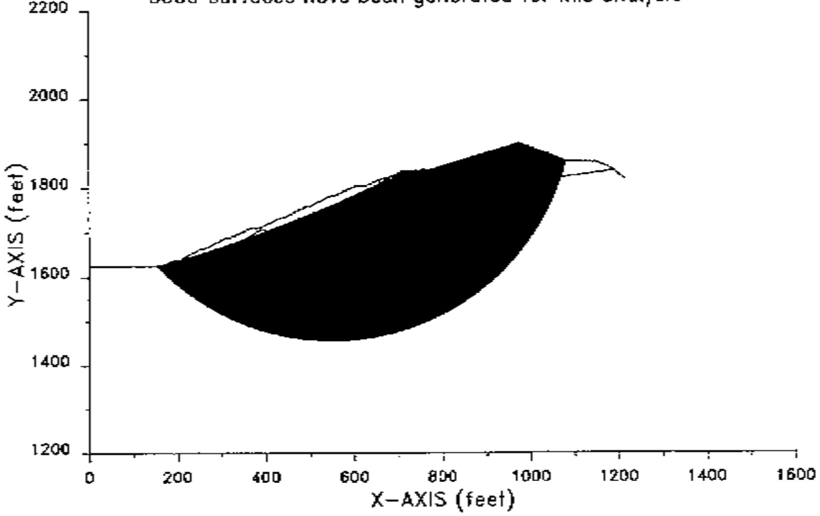
W.O. 8838
Sec. N-N' Pseudostatic

```
--------------------
ANGULAR RESTRICTIONS
--------------------

 The first segment of each failure surface will be inclined
 within the angular range defined by :

        Lower angular limit :=   -45.0 degrees
        Upper angular limit :=  (slope angle - 5.0) degrees



Factors of safety have been calculated by the :

* * * * *   SIMPLIFIED BISHOP METHOD   * * * * *


 The most critical circular failure surface
 is specified by 25 coordinate points

     Point      x-surf      y-surf
      No.        (ft)        (ft)

       1        160.56     1625.21
       2        183.65     1631.75
       3        206.69     1638.47
       4        229.68     1645.36
       5        252.62     1652.41
       6        275.50     1659.65
       7        298.33     1667.05
       8        321.11     1674.62
       9        343.82     1682.36
      10        366.48     1690.27
      11        389.08     1698.36
      12        411.62     1706.61
      13        434.09     1715.03
      14        456.50     1723.61
      15        478.85     1732.37
      16        501.13     1741.29
      17        523.34     1750.38
      18        545.49     1759.63
      19        567.56     1769.05
      20        589.56     1778.64
      21        611.49     1788.39
      22        633.35     1798.30
      23        655.13     1808.38
      24        669.17     1815.00
      25        669.17     1823.00

****  Simplified BISHOP FOS =    1.475   ****



The following is a summary of the TEN most critical surfaces

Problem Description : Sec. N-N' W=80' D=5'/W=50' D=5' Pse

      FOS      Circle Center     Radius   Initial  Terminal  Resisting
   (BISHOP)  x-coord  y-coord             x-coord  x-coord    Moment
              (ft)     (ft)       (ft)     (ft)     (ft)     (ft-lb)

  1.    1.475   -701.50  4712.09  3204.99   160.56    669.17  2.120E+09
  2.    1.524   -421.40  3955.16  2401.10   163.89    658.92  1.861E+09
  3.    1.537   -713.64  4782.35  3275.59   163.89    673.53  2.363E+09
  4.    1.546   -740.27  4860.00  3357.88   160.56    675.10  2.493E+09
  5.    1.556   -623.90  4549.10  3027.05   162.78    675.18  2.379E+09
  6.    1.560   -368.82  3824.14  2261.75   160.56    669.79  1.990E+09
  7.    1.593   -695.90  4844.16  3330.44   155.00    723.26  3.206E+09
  8.    1.593   -127.56  3235.26  1635.63   160.56    711.00  2.228E+09
  9.    1.594    -78.98  3126.02  1519.30   162.78    715.61  2.282E+09
 10.    1.594     28.36  2827.50  1208.63   163.89    712.27  2.095E+09

          *     * *  END OF FILE  * * *
```

W.O. 8838
Sec. N-N' Pseudostatic

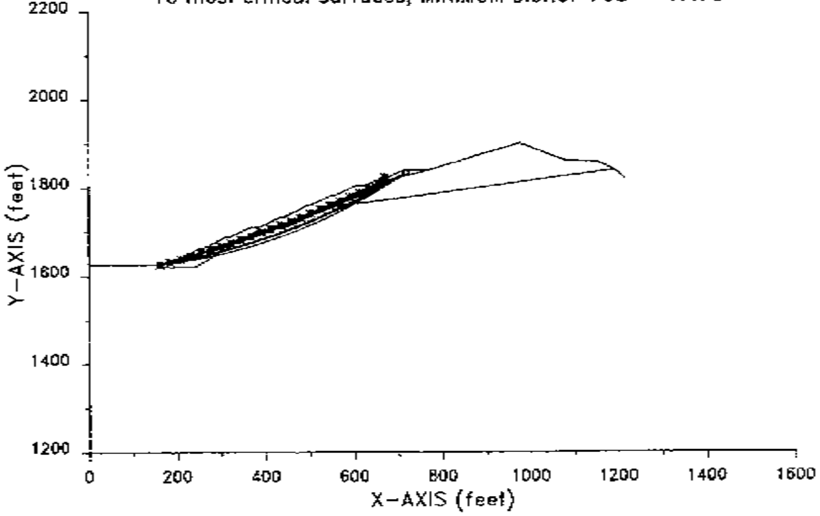
8838NP 4-12-** 11:29

Sec. N-N' W=80' D=5'/W=50' D=5' Pse
5000 surfaces have been generated for this analysis



8838NP 4-12-** 11:29

Sec. N-N' W=80' D=5'/W=50' D=5' Pse
10 most critical surfaces, MINIMUM BISHOP FOS = 1.475



GEOLABS-WESTLAKE VILLAGE

Plate Np.3

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Plate R.1

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Sheet 1 of 1

County of Los Angeles Department of Public Works
GEOTECHNICAL AND MATERIALS ENGINEERING DIVISION
GEOLOGIC REVIEW SHEET
900 So. Fremont Ave., Alhambra, CA 91803
TEL. (626) 458-4925

DISTRIBUTION
1 Geologist
_ Soils Engineer
1 GMED File
1 Subdivision

TENTATIVE TRACT MAP 60922
SUBDIVIDER Pardee Homes
ENGINEER Sikand
GEOLOGIST & SOILS ENGINEER Geolabs – Westlake Village

TENTATIVE MAP DATED 8/27/08 (Revised)
LOCATION Santa Clarita
GRADING BY SUBDIVIDER [Y] (Y or N)
REPORT DATE 8/28/08, 4/13/07, 11/16/06, 1/3/05, 8/23/04, 3/6/04

TENTATIVE MAP FEASIBILITY IS RECOMMENDED FOR APPROVAL FROM A GEOLOGIC STANDPOINT

THE FOLLOWING CONDITIONS MUST BE FULFILLED:

1. The final map must be approved by the Geotechnical and Materials Engineering Division (GMED) to assure that all geotechnical requirements have been properly depicted. For Final Map clearance guidelines refer to GS051.0 in the Manual for Preparation of Geotechnical Reports (http://www.dpw.lacounty.gov/gmed/manual.pdf).

2. A grading plan must be geotechnically approved by the GMED prior to Final Map approval. The grading depicted on the plan must agree with the grading depicted on the tentative tract or parcel map and the conditions approved by the Planning Commission. If the subdivision is to be recorded prior to the completion and acceptance of grading, corrective geologic bonds may be required.

3. Prior to grading plan approval a detailed engineering geology and soils engineering report must be submitted that addresses the proposed grading. All recommendations of the geotechnical consultants must be incorporated into the plan (Refer to the Manual for Preparation of Geotechnical Reports at http://www.dpw.lacounty.gov/gmed/manual.pdf).

4. All geologic hazards associated with this proposed development must be eliminated. Alternatively, the geologic hazards may be designated as restricted use areas (RUA), and their boundaries delineated on the Final Map. These RUAs must be approved by the GMED, and the subdivider must dedicate to the County the right to prohibit the erection of buildings or other structures within the restricted use areas (refer to GS063.0 in the manual for preparation of Geotechnical Reports).

5. The Soils Engineering review dated 9/30/08 is attached.

Prepared by __________ Reviewed by __________ ~~Date~~ 9/24/08
Geir Mathisen

Please complete a Customer Service Survey at http://dpw.lacounty.gov/go/gmedsurvey

P:\gmepub\Geology_Review\Geir\Review Sheets\District 8.2 (Santa Clarita)\Tracts\60922, TM9 APP.doc

COUNTY OF LOS ANGELES
DEPARTMENT OF PUBLIC WORKS
GEOTECHNICAL AND MATERIALS ENGINEERING DIVISION

SOILS ENGINEERING REVIEW SHEET

Address: 900 S. Fremont Ave., Alhambra, CA 91803
Telephone: (626) 458-4925
Fax: (626) 458-4913

District Office 8.2
Job Number LX001129
Sheet 1 of 1

DISTRIBUTION:
____ Drainage
____ Grading
____ Geo/Soils Central File
____ District Engineer
____ Geologist
____ Soils Engineer
____ Engineer/Architect

Tentative Tract Map 60922
Location Santa Clarita
Developer/Owner Pardee Homes
Engineer/Architect Sikand
Soils Engineer Geolabs - Westlake Village
Geologist Same as above

Review of:

Revised Tentative Parcel Map Dated by Regional Planning **8/27/08**
Soils Engineering Report and Addenda Dated 4/13/07, 11/16/06, 1/3/05, 8/23/04, 3/6/04
Previous Review Sheet Dated 6/25/07

ACTION:

Tentative Map feasibility is recommended for approval, subject to conditions below:

REMARKS:

1. At the grading plan stage, submit two sets of grading plans to the Soils Section for verification of compliance with County codes and policies.

2. At the grading plan stage, provide geotechnical maps and tentative maps that conform. The geotechnical maps within the submitted report do not conform to the latest tentative map dated 8/27/08 by Regional Planning.

NOTE(S) TO THE PLAN CHECKER/BUILDING AND SAFETY ENGINEER:
A. ONSITE SOILS HAVE A MEDIUM EXPANSION POTENTIAL AND ARE CORROSIVE TO METALS.
B. OFF-SITE GRADING IS RECOMMENED FOR THE REMOVAL AND RECOMPACTION OF LANDSLIDES QLS-9A, QLS-10, QLS-10A, L1, AND L17.

YOSHIYA MORISAKU
No. 67587
Exp. 6/30/09

Reviewed by Yoshiya Morisaku
Yoshiya Morisaku
Date 9/30/08

NOTICE: Public safety, relative to geotechnical subsurface exploration, shall be provided in accordance with current codes for excavations, inclusive of the Los Angeles County Code, Chapter 11.48, and the State of California, Title 8, Construction Safety Orders.
P:\Yosh\60922TentTg

GEOLABS-WESTLAKE VILLAGE
Foundation and Soils Engineering, Geology
31119 Via Colinas, Suite 502 • Westlake Village, CA 91362
Voice: (818) 889-2562 (805) 495-2197
Fax: (818) 889-2995 (805) 379-2603
a dba of
R & R Services
Corporation

August 28, 2008
W.O. 8838

Pardee Homes
26650 The Old Road, Suite 110
Valencia, California 91381

Attention: Mr. Tom Mitchell

SUBJECT: Addendum Geotechnical Report,
Tentative Tract No. 060922, Skyline Ranch,
Santa Clarita Area, County of Los Angeles, California

Mr. Mitchell:

We present herein an addendum geotechnical report for Tentative Tract Map No. 060922 to address the changes made to the Tentative Tract Map design since the issuance of our last geotechnical report dated April 13, 2007. Discussion, analyses, and recommendations provided in previous reports remain applicable unless superseded herein.

MODIFICATION TO TENTATIVE TRACT MAP

The Tentative Tract Map (TTM) used as a base for the geologic map in the April 13, 2007 report did not match the TTM submitted to planning. That is because updates included in our base map were ahead of the planning submittal.

There have been some minor modifications to the TTM since the April 13, 2007 report. We have compared the current TTM to the April 13, 2007 report map. Overall they maintain the same design. Differences between the two include:

- Proposed grades for the park site on Lot 1272 have been lowered approximately 8 to 11 feet. These modified grades result in a reduction of the perimeter slope heights along the southern and western sides while increasing the slope heights along the northern boarder. In addition, the previously proposed 2:1 (horizontal: vertical) slope that divided the park site into the upper eastern portion and lower western portion has been removed. An 8:1 slope is now proposed in the north central portion of the park site.

- Proposed grades for the park site on Lot 1273 have been modified by approximately four feet or less. The northern portion has been raised approximately four feet while the southern portion was lowered approximately two feet. The modified proposed grades results in minor adjustment of the adjacent proposed pad grades and slope heights.
- Proposed grades for the school site on Lot 1271 have been raised approximately four feet. The raised proposed grades results in minor adjustment of the adjacent proposed pad grades and slope heights.
- Two small basins previously proposed along the northeastern and southwestern sides of Skyline Ranch Road, immediately northwest of Sierra Highway, have been removed.
- The proposed booster station on Lot 1324 has been shifted toward the north and the proposed grades modified slightly.
- Proposed pad grades have been raised or lowered about 2 ½ feet or less in some areas throughout the site (i.e. Lots 1208-1270).
- Proposed lot lines have been shifted slightly in a few locations throughout the site (i.e. between Lots 653-659).

- The top or toe of proposed slopes about the perimeter of the proposed development have been modified slightly (i.e. northern boundary).
- An approximately 10 foot tall 2:1 slope has been eliminated from the area immediately south of Lot 80.

These differences are inconsequential to the geological and soils engineering analyses and recommendations provided in the reviewed report. Additional investigation, analyses, or recommendations are not warranted at this time.

111 STATEMENT

Based upon tests conducted as outlined in this and applicable referenced reports, and if constructed in accordance with our recommendations and properly maintained, it is the opinion of the undersigned, a duly registered professional engineer and engineering geologist, that (1) the proposed grading and proposed structure(s) will be safe against hazard from landslide, settlement or slippage, and that (2) the proposed building or grading construction will have no adverse effect on the geologic stability of property outside the building site. The nature and extent of tests conducted for purposes of this declaration are, in the opinion of the undersigned, in conformance with generally accepted practices in this area. Test findings and statements of professional opinion do not constitute a guarantee or warranty, express or implied.

CLOSURE

This geotechnical report has been prepared in accordance with generally accepted engineering practices at this time and location. No other warranties, either express or implied, are made as to the professional advice provided under the terms of our agreement and included in this report.

Thank you for this opportunity to be of service to you. Please do not hesitate to call if you have any questions regarding this report.

Respectfully submitted;
GEOLABS-WESTLAKE VILLAGE

Steve Diem

Steve Diem
C.E.G. 2246
R.C.E. 73086

Professional Geologist
Stephen D. Diem
No. 2246
Certified Engineering Geologist
Exp. 07/31/10
State of California

Registered Professional Engineer
Stephen D Diem
No 73086
Exp 12-31-08
Civil
State of California

Ronald Z. Shmerling
C.E.G. 1047
R.C.E. 35444

Registered Geologist
Ronald Z. Shmerling
No. 1047
Certified Engineering Geologist
State of California

Registered Professional Engineer
Ronald Z. Shmerling
No. 35444
Exp. 09/30/09
Civil
State of California

Enclosures: References

XC: (1) Addressee
(1) Pardee-Valencia, Attention Jim Bizzelle
(2) Sikand Engineers, Attention Craig Young
(2) County of Los Angeles, Land Development (and 1 PDF on CD)
(2) PCR Services, Attention Jay Ziff (and 1 PDF on CD)
233 Wilshire Blvd., Suite 130
Santa Monica, CA 90401

References

Geolabs-Westlake Village, April 13, 2007; Response to Soils Engineering Review Sheet dated February 8, 2007, Tentative Tract Map No. 060922, Skyline Ranch, Santa Clarita Area, County of Los Angeles, California

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…, August 23, 2004; Response to LACDPW Review Sheets dated May 25 and June 15, 2004 for Tentative Tract No. 60922, Skyline Ranch, Santa Clarita Area, County of Los Angeles, California

…, March 6, 2004; Geotechnical Investigation of Vesting Tentative Tract No. 060922, Skyline Ranch, Santa Clarita Area, County of Los Angeles, California

Copies of Plate 1.2 on file with the
County of Los Angeles,
Department of Public Works,
Land Development

Strike and Dip:

8	Bedding
78	Joint or fracture
79	Shear or fault
SM45	Proposed settlement monument
10	Proposed lot cap
— —	Geologic Contact (dashed where approx., dotted where covered)
━━	Fault (dashed where approx., dotted where covered)
10'	Estimated removal depth
C3'	Line of Cross Section
▨	Buttress keyway

SCALE 1"=200'

Geolabs – Westlake Village

GEOLOGY AND SOIL ENGINEERING

DATE 8/28/2008 BY TC

SCALE 1"=200' W.O. 8838

PLATE 1.2

P:\8838 Pardee-Skyline Ranch\2008.08.28 with Addendum Report\8838_8-28-08 with Addendum

PCR SANTA MONICA

233 Wilshire Boulevard
Suite 130
Santa Monica, CA 90401
TEL 310.451.4488
FAX 310.451.5279
EMAIL info@pcrnet.com

PCR IRVINE

One Venture
Suite 150
Irvine, CA 92618
TEL 949.753.7001
FAX 949.753.7002
EMAIL info@pcrnet.com

PCR PASADENA

55 South Lake Avenue
Suite 215
Pasadena, CA 91101
TEL 626.204.6170
FAX 626.204.6171
EMAIL info@pcrnet.com

PCR SANTA MONICA

233 Wilshire Boulevard
Suite 130
Santa Monica, CA 90401
TEL 310.451.4488
FAX 310.451.5279
EMAIL info@pcrnet.com

PCR IRVINE

One Venture
Suite 150
Irvine, CA 92618
TEL 949.753.7001
FAX 949.753.7002
EMAIL info@pcrnet.com

PCR PASADENA

55 South Lake Avenue
Suite 215
Pasadena, CA 91101
TEL 626.204.6170
FAX 626.204.6171
EMAIL info@pcrnet.com