Appendix I-1

Geologic and Geotechnical Hazards Investigation

CORNERSTONE
EARTH GROUP

Type of Services	**Geologic and Geotechnical Hazards Investigation**
Project Name	**Communications Hill – Phase 2**
Location	**Communications Hill Boulevard** **San Jose, California**
Client	**David J. Powers & Associates, Inc.**
Client Address	**1871 The Alameda, Suite 200** **San Jose, CA 95126**
Project Number	**118-38-1**
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CORNERSTONE EARTH GROUP

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SECTION 1: INTRODUCTION

This geologic and geotechnical hazards investigation report was prepared for the sole use of David J. Powers & Associates, Inc. for the Communications Hill – Phase 2 project located in San Jose, California. For our use, we were provided with the following documents:

- A plan presenting the existing site topography and proposed grading, electronic file titled, "Conceptual Rough Grading Plan", prepared by HMH Engineers, dated March 18, 2014.
- A plan presenting the existing site topography and proposed grading, electronic file titled, "Cut and Fill Exhibit", prepared by HMH Engineers, dated April 15, 2014.
- A set of plans titled, "Topographic Mine Survey Exhibit, Communications Hill", Exhibits 1 and 2, prepared by HMH Engineers, dated April 15, 2014.
- A set of plans depicting various off-site improvements prepared by HMH Engineers, dated October 15, 2013.
- A report titled, "Preliminary Subsidence Analysis for the Communications Hill Project", prepared by Vector Engineering, Inc., dated June 5, 2009.
- A report titled "Geophysical Investigation, Hillsdale Mercury Mine" prepared by NORCAL Geophysical Consultants, Inc., dated August 16, 2007.

- A report titled, "Preliminary Geologic and Geotechnical Evaluation, Communications Hill Specific Plan Area, San Jose, California, Project 4844", prepared by Terratech, Inc., dated May 30, 1991.
- Sheet 140 of 140 of a set of plans titled, "Record Drawing, Caltrain Track Improvement Project, Tamien to Lick, Tieback Anchor Wall, Log of Test Borings, Sheet 1 of 1," by Parikh Consultants, Inc., dated April 21, 2004.
- Sheet 128 of 140 of a set of plans titled, "Record Drawing, Caltrain Track Improvement Project, Tamien to Lick, American Dairy Overhead Bridge, Log of Test Borings," prepared by Parikh Consultants, dated April 20, 2004.
- A report titled "Geotechnical and Geologic Investigation, Communications Hill Development, San Jose, California," prepared by Lowney Associates dated December 21, 2000.
- A report titled, "Geotechnical and Geologic Feasibility Study, Communications Hill School Site, San Jose, California" prepared by TRC Lowney dated March 17, 2006.
- A draft set of boring logs dated May 10, 2007 by Strategic Engineering and Science, Inc.
- A letter titled, "Additional Mine Tunnel Evaluations" prepared by McCloskey Consultants dated April 18, 2014.
- A report titled "Mine Backfill Work Plan, Communications Hill, San Jose, California" prepared by SRK Consulting dated April 21, 2014.

1.1 PROJECT LOCATION AND DESCRIPTION

PROJECT LOCATION

The entire Communications Hill Specific Plan area comprises approximately 900 acres of hilly land located approximately four miles south of downtown San José. The Plan Area is bounded by Curtner Avenue to the north, Monterey Road to the east, Capitol Expressway, Snell Avenue, and Hillsdale Avenue to the south, and Guadalupe Freeway (SR 87) to the west. The Oak Hill Cemetery is located adjacent to the northeastern boundary of the Plan area.

The proposed project site is within the Specific Plan Area near the top of the hill adjacent to the existing KB Home Tuscany Hills development. The site is generally bounded by the Caltrain/Union Pacific railroad tracks on the north, Old Hillsdale Avenue to the east, the Tuscany Hills development to the south, and the Millpond and Dairy Hill neighborhoods to the west. The gross acreage of the project site is approximately 312 acres, with a net acreage of approximately 250 acres (not including public parks dedication and public right-of-way). The site is vacant and comprised primarily of grassland. The residential/commercial portion of the site is approximately 79 gross acres, while the industrial property is approximately 55 gross acres. The location of the project site is shown on the Vicinity Map, Figure 1.

DESCRIPTION OF THE PROJECT

The proposed project is the build-out of the remaining approximately 2,200 residential units allowed within the Specific Plan Area, which is anticipated to occur over a 12-15 year timeframe. It also includes construction of up to 67,500 square feet of commercial/retail uses, parks, open space, trails, streets, storm water facilities, and other associated supporting infrastructure. The subsequent Environmental Impact Report will also provide program-level environmental review for the development of an elementary school, centrally located on approximately 4.2 acres.

The proposed project also includes the future development of approximately 55 acres of industrial park uses in the eastern portion of the site near the base of Communications Hill adjacent to Old Hillsdale Avenue (refer to Figure 2). Details for this development have not yet been determined, although it is anticipated that it would have a Floor Area Ratio (FAR) of approximately 0.6. This would allow approximately 1.44 million square feet of industrial park development, consistent with the Specific Plan and the City's Zoning Ordinance. Proposed land uses are shown in Table 1, below.

Table 1: Proposed Land Uses

Land Use	Area in Acres
Residential (as shown in Table 2)	79.1
Mixed Use Commercial/Village Center*	3.1
Public Right-of-Way Dedication	43
Public Park	16
School	4.2

Table 1: Proposed Land Uses continued

Land Use	Area in Acres
Future Industrial Park	55
Public/Private Open Space/Water Quality Facilities	111.5
Existing Right-of-Way	3.3
Total	312.1
*The 3.1 acres in the Village Center are included in the 79.1 acres of residential lands.	

The project proposes the development of up to 2,200 residential units consisting of townhomes/flats, detached alley townhomes, detached row townhomes, podium condominiums, and apartments in the Village Center. Four podium condominium buildings are proposed as part of the project. An approximate breakdown of residential units to be developed is shown in Table 2, below.

Table 2: Residential Unit Mix and Densities

Unit Type	Number	Acreage	Approx. Average Density in du/ac
Attached Townhomes/Flats	900	39	23
Detached Alley Townhomes	375	15	25
Detached Row Townhomes	300	16	19
Podium Condominiums	460	6	77
Apartments in Village Center*	165	3	55
Total	**2,200**	**79.1**	**27.8**

*These structures also include commercial/retail uses.

Uses within the commercial/retail area would include restaurants, shops, entertainment, and small office consistent with the Specific Plan. Approximately 16 acres of parks and 112 acres of open space will be constructed as part of the proposed project.

There is an existing abandoned mercury mine and a former rock quarry within the boundary of the proposed project site. The project proposes to close these existing uses according to all local, state, and federal laws. An aggregate recycling center is currently using the quarry property which has been identified for future industrial park uses. It is anticipated that the recycling center will continue to operate until its Use Permit expires in approximately 10 years. Infrastructure constructed as part of previous development on Communications Hill (primarily the Tuscany Hills project) was sized to accommodate the proposed project, although the facilities would need to be extended onto the site. This infrastructure includes streets, water and sewer lines, and utilities (gas, electricity, cable, and telephone). An existing PG&E distribution/transmission line runs east/west through the Specific Plan Area. Major infrastructure elements are described below:

1. The Specific Plan includes the extension of Pullman Way from Communications Hill Boulevard to Monterey Road. The extension of Pullman Way was realigned as part of the Specific Plan amendments approved in 2002. The environmental analysis will include scenarios that analyze the conditions with and without the Pullman Way extension and possible alignments/designs for this roadway.
2. A vehicle bridge over the Caltrain/UPRR tracks will be constructed as part of Communications Hill Boulevard, as shown on Figure 2, consistent with the Specific Plan.
3. The proposed project will require storm water filtration/detention basins to be located on the site. One basin will be located in the northern portion, while the other would be constructed in the southwestern portion of the site near the existing basin, as shown on Figure 2. The existing basin may require modifications/expansion to accommodate run-off from the site. These basins would provide water quality benefits as well as detain water on-site during rain events prior to outfall to the City's storm water system, consistent with the Specific Plan.
4. The site will be re-graded to repair the grading alterations that were done as part of the former quarry operations. The grading will be designed to more closely follow the previous pre-quarry and natural topography. This will generally result in streets and blocks with slopes similar to development on the south/southwestern facing slopes of the hill.
5. The off-site improvements may include:

   A. Curtner Avenue Corridor Improvements:
      - Widen Curtner Avenue to five lanes between Communications Hill Boulevard and the Almaden Expressway southbound off-ramp
      - Improvements at the intersection of CHB and Curtner Avenue to include new right and left turn lanes, removal of pork chop islands, and signal modification

- Traffic signal modifications at intersection of Route 87 northbound off-ramp and Curtner Avenue
- Additional lanes and bicycle and pedestrian improvements to the Route 87 northbound on-ramp at Curtner Avenue

B. Capitol Expressway/Narvaez Avenue/Route 87 on and off-ramps Improvements:
- Widen Narvaez Avenue from Capitol Expressway to the Route 87 ramps
- Reconfigure the intersection of Narvaez Avenue and the Route 87 northbound on-ramp
- Traffic signal modifications at intersection of Narvaez and Capitol
- Pedestrian and bicycle improvements

C. Multi-modal Improvements:
- Class I bike facility from trail terminus at Unified Way, continuing along Route 87 to Millpond/Masonic Drive and then to Carol Drive
- Class II bike lanes beginning at Millpond to Canoas Garden under Route 87 to existing trail at Carol Drive
- Class II bike lane and sidewalk connecting Carol Drive to Sands Drive
- Class II bike lane on Narvaez Avenue from existing trail terminus at Azores Street to Capitol Expressway
- Construct a pedestrian/bicycle overcrossing of the Caltrain tracks to Monterey Road where the platform is located. Three connection alternatives have been identified for the location of the overcrossing and the trail/pathway to the overcrossing.

Grading for the site will involve excavation and compaction of several million cubic yards of soil and bedrock material. The grading for this project is fairly complex and will involve maximum cuts on the order of 105 to 110 feet and maximum fills up to about 80 feet thick. Based on the current grading plans, all graded slopes are planned at 2:1 (horizontal to vertical) for maximum cut and fill slope heights ranging up to 200 feet. Several slopes will transition from cut to fill within the slopes. Numerous natural drainage swales, which may have springs and other perched water conditions, are proposed to be backfilled at the site.

1.2 SCOPE OF SERVICES

Our scope of services was presented in our proposal dated June 10, 2011and consisted of field and laboratory programs to evaluate physical and engineering properties of the subsurface soils and bedrock, engineering geologic and geotechnical engineering analysis to characterize the site geologic and geotechnical conditions and to evaluate certain geologic hazards that may impact the project. If a geologic hazard was found to be a significant impact on the project, recommendations to mitigate the impact of the geologic hazards are included in this report. Brief descriptions of our methods of investigation are presented below.

SECTION 2: METHODS OF INVESTIGATION

2.1 LITERATURE REVIEW

Published and unpublished geologic, geotechnical, and EIR reports were researched and reviewed for this investigation and are listed in the references section at the end of this report (Section 9). In addition to regional geologic investigations performed by state and federal agencies, there have been numerous geologic and geotechnical investigations performed at Communications Hill and in the near vicinity. We reviewed unpublished consultants work reports at the offices of the City of San José Public Works Department (see references) but some previous consultants' work covering the area of the subject site were not available as they were no longer in the City's files.

2.2 SITE RECONNAISSANCE

Our geologist conducted a series of site reconnaissances on various occasions between the dates of December 21, 2008, and January 13, 2009, and April 1 and 2, 2014, to map the extent of surficial deposits such as alluvium, colluviums, fill and bedrock and collect structural data such as orientations of joints, bedding and foliations. Additionally, our geotechnical engineer visited to location of the bridge site on May 23, 2013, to review the surface conditions in the bridge area. Our engineering geologist visited the site on June 3, 2013, and December 11, 2013, to review surface conditions. No substantial changes were noted during these visits. Some new stockpiles of quarry spoils were noted within the quarry but these were of limited extent. No evidence of slope movements or severe erosion was noted. In 2009, we observed evidence of a recent grass fire in an area located just west of the existing pond.

2.3 EXPLORATION PROGRAM

The subsurface exploration program included exploratory borings and test pits. Eleven (11) exploratory borings were drilled at the site to depths ranging from 20 to 41½ feet [EB-1 through EB- 4 on December 23, 2008; EB-5 through EB-9 on January 21, 2009; EB-10 on January 22, 2009 and EB-11 on February 11, 2009] using at various times truck-mounted (Mobile B-60 and Mobile B-40) and track-mounted (CME 55), hollow-stem auger drill rigs. Seventeen (17) test pits were excavated [TP-1 through TP-5 on December 11, 2008; TP-8 through TP-17 on January 13, 2009] using four-wheel drive, rubber-tired backhoe equipment. On April 2, and 3, 2014 an additional 10 test pits (TP-1A through TP-10A) were excavated using a track mounted excavator. The borings were backfilled with cement grout in accordance with local requirements; the pits were loosely backfilled and the loose fills will need to be re-worked during site grading unless the pits are outside the limits of sensitive improvements or the grading removes them by deep cuts.

We also reviewed twelve (12) draft exploratory boring logs performed by Strategic Engineering & Science ("SES") concurrent with our investigation. We reviewed the graphic logs of five exploratory borings conducted at the north property line of the site in 2002 by Parikh Consultants Inc. We reviewed the twelve (12) test pits and twelve (12) exploratory borings logs prepared by TRC Lowney in 2000 as part of their investigation of the residential tract adjoining the south property line. We reviewed the logs of 8 test pits performed by TRC Lowney in 2000 as part of their investigation of the Tuscany Hills tract to the south. We reviewed the descriptions of test pits performed by TRC Lowney in 2006 as part of a feasibility study for the school site. No logs were available; therefore, we have not plotted the test pits on Figure 2.

The approximate locations of our borings and test pits, as well as the explorations by others, are shown on the Site Geologic Map, Figure 2. Logs of our borings and test pits and details regarding our field investigation are included in Appendix A; the results of our laboratory tests are discussed in Appendix B. The logs of previous investigators are included in Appendix D.

2.4 LABORATORY TESTING PROGRAM

In addition to visual classification of samples, the laboratory program focused on obtaining data for slope stability and seismic ground deformation estimates. Testing included moisture contents (ASTM D2216), dry densities (ASTM D2937), Plasticity Index (ASTM D4318), laboratory compaction (ASTM D1557), and triaxial compression tests (ASTM D4767). Details regarding our laboratory program are included in Appendix B.

We also reviewed laboratory test results from explorations listed above. Pertinent test results are included in Appendix D.

2.5 ENVIRONMENTAL AND MINE EVALUATION SERVICES

We understand that environmental services for the project are being provided by McClosky Consultants (MC) of Danville, California. MC should review our geologic hazard evaluation and recommendations for compatibility with any environmental concerns.

Naturally occurring asbestos was encountered at the adjacent Tuscany Hills and Dairy Hill sites and will be evaluated by the environmental consultant, as will mercury from the previous quicksilver mining operations. Additionally, Vector Engineering previously performed a preliminary mine collapse analyses and SRK Consultants has prepared recommendations to fill the mine area. As part of this work, MC has performed a additional mine tunnel evaluations for the project. These services are excluded from our scope of work.

SECTION 3: REGIONAL SETTING

3.1 REGIONAL GEOLOGICAL SETTING

Communications Hill is a bedrock ridge that rises above the relatively flat alluvial plain of the Santa Clara Valley, a northwest-southeast trending valley within the Coast Range Geomorphic Province. The Santa Clara Valley is within the San Francisco Bay Block, which is bounded on to the east by the Hayward and Calaveras faults and to the west by the San Andreas fault. According to McLaughlin et al. (1999), a Neogene age range-front thrust system, which includes the Shannon, Sargent, Hooker Gulch, Berrocal, and Monte Vista faults, lies in the foothills of the Santa Cruz Mountains along the western boundary of the valley. More locally, the Almaden Block represents a further subdivision of the San Francisco Bay block (Wentworth et al., 1999).

The New Almaden structural block forms the northeastern flank of the southern Santa Cruz Mountains between the Sierra Azul block and the southern Santa Clara Valley, with its northeastern boundary concealed beneath the valley and probably close to its northeastern margin. It abuts the San Andreas fault northwest of the Sierra Azul block. The block consists largely of masses of Franciscan greenstone and graywacke of the Permanente and Marin Headlands terranes that are immersed in abundant melange, all belonging to the Franciscan Central belt. These rocks, together with long seams and patches of serpentinite are considered part of the Coast Range ophiolite, and have been tectonically imbricated and interleaved. Subsequently, within the last 3 to 5 million years, these rocks and the unconformably overlying marine Miocene and nonmarine Plioene to middle-Pleistocene Santa Clara Formation were folded into a series of open to tightly-compressed folds and repeated across northeast-vergent reverse faults of the Sargent, Berrocal, and Shannon fault zones. The eastern edge of the valley is bounded by active and potentially active faults, such as the Calaveras fault.

Jurassic- to Cretaceous-aged Franciscan Complex rocks underlie Communications Hill (Bailey and Everhart, 1964; Dibblee, 1972; Rogers and Williams, 1974; and the Dibblee Foundation, 2005). The Franciscan Complex generally consists of various rock types that were tectonically mixed together adjacent to a subduction zone during the Jurassic and Cretaceous periods. The Franciscan complex in the vicinity of Communications Hill can be divided into two main subunits: a serpentinite subunit, and a sandstone/shale subunit. Whereas previously published regional scale maps identify the bedrock as subunit sandstone and shale (KJfs), Dibblee (2005) has classified the sedimentary rocks subunit as Franciscan Melange (fm). The distribution of the geologic units as revealed in our site-specific investigation results in a somewhat different interpretation than the earlier published maps (see the "Site Conditions" section below).

At the subject site the bedrock is overlain by colluvium, locally landslide debris, locally residual soil and artificial fill. The broad alluvial plain of the Santa Clara Valley surrounding the hill consists of Holocene and Pleistocene alluvial deposits (Helley and Wesling, 1990) that consist of a deep section of unconsolidated and semi-consolidated stream and basin deposits that were deposited largely by ancestral Coyote Creek and Guadalupe River on top of the Franciscan Complex rocks that form the bottom of the basin.

The tectonic regime in the San Francisco Bay region is primarily translational, expressed by mostly right-lateral strike-slip movement along the faults of the San Andreas fault system, including the nearby Calaveras and Hayward faults. A small component of compression is active in the region, resulting in continued folding and faulting of the geologic units. Compressional reverse or thrust faulting has occurred along the Monte Vista-Shannon fault to the southwest of the site, but its present activity at this location is poorly understood. Similar evidence of compression is evident along the Silver Creek fault in the hills bordering the northeast side of Santa Clara Valley.

3.2 REGIONAL SEISMICITY

The project site is located within the seismically active San Francisco Bay region that has been subjected to recurring large earthquakes. In 2008, the Working Group on California Earthquake Probabilities released a new earthquake forecast for the State of California called the Uniform

California Earthquake Rupture Forecast (UCERF). The UCERF has determined the overall probability of a magnitude 6.7 or greater earthquake in the Greater Bay Area from 2007 to 2036 is 63%. The earthquake probability is highest for the Hayward-Rodgers Creek Fault system at 31%, while the probability of a large earthquake occurring on the San Andreas Fault in the next 30 years is about 21%. The probability of the Calaveras Fault and San Gregorio Fault producing a magnitude 6.7 or greater earthquake in the next 30 years is 7% and 6%, respectively. In the East Bay, near the Central Valley, the Greenville Fault, the Mt. Diablo Thrust, and the Concord-Green Valley Fault were assigned probabilities of 3% or less of producing a magnitude 6.7 or greater earthquake in the next 30 years.

The UCERF study concludes that there is a probability of more than 99% that in the next 30 years. During such an earthquake the danger of fault ground rupture is limited to sites immediately adjacent to these fault zones (the project site is not located next to these fault zones), but strong ground shaking would occur city-wide, in San José, California.

The major active faults that could impact the project area include the San Andreas fault located approximately 10½ miles to the southwest, the Hayward fault located approximately 6 miles northeast, the Monte Vista-Shannon fault located approximately 4½ miles southwest, and the Calaveras fault located approximately 9 miles to the northeast. The San Andreas fault produced the 7.1 magnitude 1989 Loma Prieta earthquake, and the Calaveras fault produced the 1984 magnitude 6.2 Morgan Hill earthquake. It can be expected that earthquakes could produce strong ground shaking at the Project site during the lifetime of the structures built there.

The faults considered capable of generating significant earthquakes are generally associated with the well-defined areas of crustal movement, which trend northwesterly. Table 1 presents the State-considered active faults within 25 kilometers of the site (CDMG, 1998). The distances to the faults are determined from a central location on the site, in the vicinity of the mine. Other local seismologic features are discussed further in Section 4 of this report.

Table 3: Approximate Fault Distances

Fault Name	Distance	
	(miles)	(kilometers)
Monte Vista-Shannon	4.8	7.7
Hayward (southeast)	6.1	9.7
Calaveras (south extension)	9.0	14.5
San Andreas	10.8	17.3
Sargent- Berrocal	10.9	17.6
Hayward (total length)	11.3	18.2
Calaveras (north)	11.3	18.2
Zayante-Vergeles	10.9	17.6

A regional fault map is presented as Figure 3, illustrating the relative distances of the site to significant fault zones.

SECTION 4: SITE CONDITIONS

4.1 GEOMORPHOLOGY AND RECENT HISTORY

The site encompasses a northwest trending ridge and is characterized with rolling hill and is surrounded by flat-lying areas to the north, east and west. Portions of the site have been an active quarry for many years but a substantial amount of quarrying and off hauling began in the early 1970's. By 1981 the quarry was extensively developed which included a significant amount of cutting in the higher elevation portions of the property. The Hillsdale Mercury Mine (now abandoned), an underground mine, is located beneath a topographic knoll in the central portion of the subject site (see Figure 2). The mine was established in 1847 and actively mined until 1874, then again from 1892 to 1907, 1915, and during WWII (Crittenden, 1951). Aerial photographs covering the area of the mine (taken in 1948, 1963, 1965, 1974, and 1981) suggest the mining activity probably ceased in the late 1940's or early 1950's. At the invitation of personnel from SES, our Engineering Geologist entered the former mine on December 18, 2008 and observed pervasively sheared, closely fractured serpentinite, basalt, silica carbonate interspersed throughout the mine tunnels. The highly sheared contact between serpentinite and a black claystone ("KJfs(c)") was encountered at the southern termination of two mine tunnels at the southern, deepest portion of the mine. The claystone at the roof of each tunnel had collapsed at both locations. Crittenden (1951) indicated the silica carbonate ("sc") which acts as a host rock for the mercury at the site and is in fault contact with Franciscan sandstone ("KJfs") and shale to the north, although this fault contact is not exposed at the ground surface. Crittenden gave a fault altitude of N50°W, 45-60° SW and gave a maximum width of the silica carbonate band as 50 feet.

4.2 SURFACE DESCRIPTION AND TOPOGRAPHY

The approximately 300-acre site ranges from approximately 150 feet above mean sea level in the north and east portions and up to approximately 430 feet above mean sea level in the south central portion, as shown on Figure 2. Slope inclinations vary considerably across the site from level to as steep as vertical where cuts have been made. The site is bordered by Hillsdale Avenue (and a cattle pasture) on the east, UPRR railroad tracks on the north, existing residential subdivisions on the west and the south, and the Santa Clara County Communications Center to the southwest. A former communications tower (microwave tower) is present at the highest point along the south central ridge area. A pedestrian bridge and retaining walls are present along the railroad right-of-way. Some of the site is used for cattle grazing.

The Raisch (Azevedo) quarry covers a large portion of the northern half of the site. The quarry is characterized by highly modified, continually changing topography, dominated by steep cut slopes, graded access roads and stockpiles of quarried and imported material locally. Fills have been spread over the alluvial plain in the northern portion of the site sometime early in the site history in order to provide a flat working surface for quarry traffic and to create a runoff retention basin in the northern portion of the site.

For the area of the proposed Pedestrian/Bike trail along Highway 87, in 1987 Woodward Clyde Consultants ("hereinafter referred to as "WCC") conducted a geologic investigation of the site area for the proposed construction of the "Guadalupe Parkway" or "Route 87" which subsequently was excavated for the construction of the thoroughfare. Their investigation was conducted prior to the grading for the parkway and included five deep cored borings (ranging from 37 feet to 65 feet deep) and two test pits in the immediate area of the pedestrian trail. They encountered a number of geologic units of Jurassic and Cretaceous age at the site including; serpentinite and associated ultramafic rocks, sandstone and shale, greenstone and associated diabase, and silica carbonate. These rock units were highly variable in terms of structure and rock strength. These units were generally moderately to severely weathered and locally sheared and highly fractured. In terms of rock strength they varied from weak to very strong (cemented). The portion of the trail pathway near and north of Carol Drive runs along the base of a large cutslope for the 87 corridor. The cut is overgrown with ground cover weeds and shrubs but the float consists primarily of serpentinite. Isolated blocky outcrops of hard, foliated serpentinite is outcropping on the natural slope above Carol Drive.

The portion of the proposed trail to be located south of Millpond Drive is an area underlain by silica carbonate and serpentinite (mapping unit sp+/-sc). Our observations of scattered outcrops and our previous investigation of the adjoining Communications Hill Phase 2 site revealed these rock types can vary considerably in terms of competency and structure. They can be weak and massive, or hard and foliated.

Cuts made for the pedestrian trail retaining wall can be expected to expose bedrock along that portion of the slope located in the Guadalupe Corridor cut. Other areas located on natural slopes can be expected to encounter relatively thin surficial soils which are underlain by bedrock. As already mentioned conditions within the bedrock can vary considerably over short distances. We observed no evidence of slope instability on the natural or cutslopes for the proposed trail.

The key surface features are shown on Figure 4, "Aerial View of Site."

4.3 SITE GEOLOGY AND SUBSURFACE CONDITIONS

As shown on the Site Geologic Map, Figure 2, bedrock of the Franciscan Complex underlies thin soils and thicker colluvium on the topographically elevated portions of the site. Geologic cross sections 1-1' through 7-7', 10-10' are presented on Figure 5. Geologic Cross Section 8-8', 9-9', and 11-11' are presented on Figures 8, 10 and 9, respectively. Serpentinite ("sp") is the prevailing lithology present at the site and as already noted has been quarried at the site and exported as a construction fill material for many years. Terratech (1991) indicated in their previous study of the site that both the serpentinite and the sedimentary rocks (sandstone and shale, "KJs") can contain small irregular-shaped bodies of serpentinite, schist, silica carbonate, chert and quartzite. For the purpose of ease in mapping, however, we have defined lithologic mapping units based on the prevailing rock type (serpentinite vs. sedimentary rocks), as well as a few distinct bedrock units that are laterally extensive enough to justify their mapping. These units include a silica carbonate ("sc") and a black sandy claystone, designated on our map as ("KJfs(c)").

The "KJfs" subunit is present in the topographically lower portions of the site and in the western portion of the site. A band of sandy claystone ("KJfs(c)") runs parallel with and in contact with a northeast trending band of silica carbonate in the central portion of the site. The outcrop pattern of contacts between Franciscan subunits suggests the contacts dip steeply (toward the north-northeast) between most units although some exceptions do exist such as some of the contacts near the proposed railroad bridge crossing where shallow dips were inferred from field relations. This pattern is generally consistent with the findings of Woodward-Clyde (1988) during their investigation of a large excavation for Highway 87 on the southwest side of Communications Hill, approximately 1,800 feet southwest of the site. Additionally, Woodward Clyde noted that the internal structure (bedding, shears, and foliations) within the various subunits could vary considerably in orientation over relatively short distances. Interestingly, Lowney (2000) during their study of the adjacent parcel on the south depicts contacts between Franciscan subunits with shallow to moderate dips to the north. However, our investigation suggests that the contacts between Franciscan subunits are dipping steeply to the north.

Contacts between Franciscan rock types are not exposed at the ground surface but are generally irregular as is typical of the assemblage. These sheared contacts represent previous tectonic activity during the Cretaceous period and are presumed to be old inactive faults. Outcrops patterns onsite suggest a steep dip to the north between most subunits. One outcrop near the existing railroad crossing/footbridge suggests a very shallow to nearly horizontal contact between the sandstone and underlying serpentinite. Due to the nature of its formation and tectonic evolution, the contacts between individual lithologies of the Franciscan Complex are faults that last moved in the Cretaceous period.

Holocene and Pleistocene alluvium ("Qal") are present in the flat-lying areas at the base of the hills. This alluvium consists typically of unconsolidated silty and sandy clay with varying proportions of gravel. Accumulations of colluvium are present within swales and at the base of the hills. Additionally soil creep is apparent within thicker sections of colluvium. We also observed several areas of active landsliding in the north-central portion of the site (Site Plan and Geologic Map, Figure 2). More detailed descriptions of these surficial materials are included below.

4.3.1 Franciscan Complex ("KJfs," "KJfs(c)," "sp," and "sp/sc")

KJfs: The sandstone is light olive brown, medium grained, is extensively fractured, varies from low to hard in terms of rock hardness, and contains some silt and clay. It is well indurated locally and contains interbedded claystone and minor siltstone. The interbeds of siltstone are moderately hard and the claystone is generally weak. The sandstone is moderately weathered to fresh. The sandstone is of blocky fracture structure with closely spaced fracturing between 1 and 4 inches and also contained various semi-continuous joint sets with moderate spacing of between 3 and 6 inches.

KJfs(c): The claystone is laterally extensive enough to break out as a mapping unit and has a distinctive black to very dark gray color, is highly sheared and weak to moderately hard in terms of rock hardness. It occurs as a distinct body in fault contact with serpentinite on both the north and south side of the outcrop but may have originally been part of the sandstone subunit (KJfs). The sedimentary units of the Franciscan rocks [(KJfs) and "KJfs(c)"] on site were generally found at the lower elevations and in the western and central portions of the site.

sp and sp/sc: The serpentinite locally contains irregular or elongate bodies of ultramafic rocks and sandstone and shale and locally contains silica carbonate. This unit varies considerably in terms of structure and characteristics as it has a chaotic (block in matrix) structure in many exposures and locally contains foliations with foliation plane trends varying from highly random to trending generally east-west locally and dipping gently to steeply to the north and northeast. This rock also was moderately fractured, normally breaking into subangular fragments up to 2 feet in size. The serpentinite was generally hard at the site, with some zones that were completely weathered, soft and friable. Other portions of the site mapped as serpentinite include units of interlayered hard, strong, silica-carbonate and slightly weathered basalt locally. Harder serpentinite bedrock is generally located along the southern boundary of the site (on the ridge area) and in the eastern site area. Terratech (1991) reports at having found Chrysotile asbestos (Naturally Occurring Asbestos, NOA) veins at the site in 1991 and serpentinite collected for the construction of the adjacent State Route 87 transit corridor was found to contain 1.2% chrysotile (reported in Terratech, 1991).

The silica carbonate (mapped as sp/sc) is light gray to light orange, siliceous and well indurated (hard), commonly brecciated with irregular blocks varying in size from 4 inches to 14 inches. The rock in some areas has a prominent northwesterly trending pattern of relict foliations. The presence of relict serpentinite structure in outcrops of silica-carbonate at the site indicates, in our opinion, that the silica-carbonate rock is derived from pre-existing sheared serpentinite. This rock is commonly streaked with limonite, quartz, chalcedony, and carbonate veins. It is an important host rock for mercury mineralization.

4.3.2 Alluvium ("Qal")

The low-lying areas in the northern and eastern sides of the site within the Raisch Quarry area are underlain by Holocene and Pleistocene alluvium (see Site Geologic Map, Figure 2). The material can be characterized generally as stiff to very stiff, silty to sandy clay with some interbedded layers of clayey sand. Borings EB-5, EB-6, EB-7 and EB-9 encountered varying thicknesses of alluvium ranging from 10 feet to 37 or more feet. The alluvium is underlain by

Franciscan Complex bedrock and it is locally overlain by colluvium near the base of slopes and/or artificial fill in the nearly level portions of the site.

4.3.3 Colluvium (“Col”)

Colluvium is present on slopes, in the swales, and at the base of slopes, as shown on Site Plan and Geologic Map, (Figure 2). The colluvium showed evidence of active soil creep on the steeper slopes. The colluvium varies in thickness; on moderate to steep slopes (i.e. 3:1 to 2:1 horizontal to vertical) it is generally less than 3 feet thick but where slopes become more gentle (especially near the base of slopes) the colluvium thickness is generally between 6½ and 12 feet thick. The colluvium encountered in our borings and test pits consisted of soft to very stiff, silty clay with minor amounts of sand and gravel and cobbles derived from the surrounding hillsides. Deep erosion rills exist locally on moderate to steep slopes where colluvium mantels the bedrock.

4.3.4 Landslide Deposits

Several landslide deposits have been mapped at the site and are shown on Figure 2, Site Geologic Map. These landslides appear to consist of shallow slope and soil flows restricted to thick accumulations of colluvium within swales or flow failure of local soils underlain by Franciscan bedrock.

4.3.5 Artificial Fill (“Af,” “Af/Qal,” and “Af/KJfs”)

During our reconnaissance, we noted many areas where undocumented fills associated with the quarry operations were present. Some of the larger areal accumulations are shown on Figure 2. The fills are primarily due to previous quarrying activity (borrowing and redistributing, some importing) within the Raisch Quarry but some fills on the higher elevations of the site are partly from mass grading operations conducted on the existing residential development located at and beyond the south property line. The majority of the fills mapped contain varying proportions of bedrock material and surficial deposits but vary considerably in terms of composition. All the fills at the site likely vary in composition and thickness and have unknown densities. Relatively small pockets of fill can be expected to be present anywhere within the site designated on Figure 2 as “approximate limits of ground disturbance due to mining, borrowing, and grading activities.”

4.3.6 The Hillsdale Mercury Mine

A geophysical investigation of Hillsdale Mercury Mine were performed by NORCAL Geophysical, Inc. (“NORCAL”) in 2007 and a more recent mine subsidence analysis by Vector Engineering was conducted in 2009 and SRK in 2014. These evaluations were performed at the request of Strategic Engineering and Science, Inc. (SESI). NORCAL indicated the tunnels that comprise the mine occur in two different levels and three of the tunnels daylight on the slope in the northern portion of the mine area. Based on electrical resistivity profiling (ERP), multi-channel analysis of surface waves (MASW), and ground penetrating radar (GPR), NORCAL provided support in mapping the extent of tunnels associated with the mine. NORCAL’s data is presented in Appendix D. The subsidence analysis by Vector Engineering consisted of observations of the mine tunnels, subsurface profiling, stability analysis based on estimated material properties and boundary conditions for the mine site. Vector concluded “the conditions of the currently accessible drifts [sloping tunnels] appear to be in good to excellent condition, especially considering that some have been open for 70 to 150 years.” They indicated “there are collapsed drifts underground” which occur “either in the footwall serpentinite or the hanging wall mélange”. The rock in these collapsed areas was characterized as “different in character, (e.g., more fractured, weathered and sheared) and visibly lower in strength than the drifts in the silica-carbonate rock.” Terratech (1991) and others indicate that a “sink hole” was observed downhill of the complex of mine tunnels as shown on Figure 2. Based on mine mapping by McNeil performed in 1943 the sink hole appears to coincide with the shallow portion of the main tunnel. Vector also indicated that no ventilation rises could not be identified and postulated that two collapsed drifts within the claystone may have originally led to ventilation rises. No ventilation rises could be verified in the field but they may have been infilled on purpose or naturally. More recently, McCloskey Consultants has evaluated the presence of mine tunnel portals that are located south of the area of concentrated mining mapped by others and presented the results on a letter titled “Additional Mine Tunnel Analysis, April 18, 2014”.

4.3.7 Plasticity/Expansion Potential

We performed seven Plasticity Index (PI) tests on representative samples of surficial soil and shallow bedrock. Test results were used to evaluate expansion potential of surficial soils. The results of the PI tests indicated PIs ranging from 19 to 49, indicating moderate to very high expansion potential to wetting and drying cycles. Additionally, Lowney (2000) performed PI testing for the Tuscany Hills Development, which indicated PIs ranging from non-expansive (7) to very highly expansive (47).

4.3.8 In-Situ Moisture Contents

Laboratory testing indicated that the in-situ moisture contents range from 2 to 30 percent over the estimated laboratory optimum moisture.

4.4 GROUND WATER

Ground water was encountered in one of our explorations (Boring EB-5, performed in the northern, flat-lying area) at a depth of 23 feet below the current grade. All measurements were taken at the time of drilling and may not represent the stabilized levels that can be higher than the initial levels encountered. Based on review of the CGS maps illustrating depth to historical high ground water, we anticipate that ground water levels in the alluvium will be on the order of 30 to 50 feet below current site grades.

No significant water courses are known to exist at the site but perched water and localized seasonal springs occur on the moderately inclined slopes at various places on the subject property (see Figure 2). Some of the mapped springs were compiled from a field map by John W. Leonard, published in 2006. Spring flow measurements taken at surface springs located near the mine area in April of 2013, indicate flow rates at approximately 1 gal/min to 3 gal/min

(McCloskey Consultants, 2013). During our reconnaissance of the HMH mine we noted a pond with standing water that located at the lowest, southern end of the HMH mine. The main mine shaft (now collapsed) at the northern end of the mine seeps water as well. In addition, we understand that during mass grading for the adjacent Tuscany Hills site that ground water seepage was encountered at the colluvium/bedrock contact in the swale where our Cross Section 6-6' is located. A subdrain was installed to intercept water above the existing road, extending down into the fill below the road.

During our site reconnaissance we observed areas of localized ground water seepage. One area (a spring) exists on a north facing hillside near the location of Test Pit 17. The other occurrence of seepage was located just south of the railroad corridor at a lithologic contact between sandstone and underlying serpentinite (see Figure 2). Terratech (1991) reported seepage at two locations within the same broad swale that Test Pit TP-17 and borings EB-3 and EB-4 are located. Ground water was also encountered during grading of the first phase of Communications Hill in the swale that TP-16 and EB-11 are located. A subdrain was installed in this swale to mitigate the ground water.

Fluctuations in ground water levels occur due to many factors including seasonal fluctuation, underground drainage patterns, regional fluctuations, and other factors. We anticipate that perched water and water seepage would be encountered in swale areas at the site during mass grading, primarily at the bedrock/colluvium contacts but also possibly at contacts between different bedrock types.

SECTION 5: GEOLOGIC HAZARDS

5.1 FAULT RUPTURE

A regional fault map illustrating known active faults relative to the site is presented in Figure 3. No active or potentially active faults pass through the project site. The site is not located within a currently designated Alquist-Priolo Earthquake Fault Zone (known formerly as a Special Studies Zone) (CDMG, 1982) or a City of San Jose Fault Hazard Zone (Terratech, 1974; City of San Jose, 1983). Several small subparallel faults mapped in the general vicinity are discussed in the sections below.

As previously mentioned, contacts between lithologic subunits of the Franciscan Complex and continuous shears within subunits are tectonic in nature and therefore considered faults. These faults are not considered active and we uncovered no geomorphic or aerial photographic evidence in our study of the site to suggest that they are active. This interpretation is consistent with the findings of previous consultant's evaluations of the site (Terratech, 1991; Lowney Associates, 2000; Cleary 2008). These tectonic contacts and shears within the Franciscan Complex are millions of years old and not considered to be active.

One such fault reported by Terratech (1991) is interesting in that it is associated with the mercury mineralization at the site. The fault was apparently originally documented in a subsurface investigation of the Hillsdale Mercury mine conducted by Robert Thom in 1943. The report by Thom, referenced in the Terratech report, is unpublished; we could not obtain a copy during our investigation to review further. The fault in question was documented at the north edge of the Hillsdale Mine area and juxtaposed serpentinite (on the southwest) against Franciscan sandstone (on the northeast) with an attitude of N50°W/45-60°SW. Apparently the band of silica-carbonate that is associated with the mercury mineralization is concentrated along this fault contact. Thom (1943) apparently documented a few sheared contacts within the mine, which are shown on Terratech's site geologic map, but there is no evidence that these shears are continuous over a substantial distance or that they should be considered anything other than confined to the Franciscan complex units.

Terratech (1991) observed a lineament during their reconnaissance of the site, which they described as; "trending northwest-southeast about 700 feet southwest of the railroad cut." This lineament appears to coincide with a swale. Based on this geomorphic feature and a contact between serpentinite and sandstone that they show as coinciding with this feature, they established on their map a sympathetic-rupture hazard zone, roughly 200 feet wide plotted parallel to both the northeast and southwest sides of this mapped feature. Terratech's proposed "Fault Rupture Hazard Zone" is shown on Figure 4. As they had already concluded that no strain was currently building on these Franciscan faults and the potential of fault surface rupture along these dormant faults was low, it is perplexing as to why they created this hazard zone along this feature. Our interpretation of the geologic contacts in this particular area differs somewhat from Terratech's. We noted in our review of historical aerial photos no geomorphic or tonal evidence suggesting lineaments extending into the alluvial plain areas to the west and the east of the subject property. Such evidence would suggest a possibility that the mapped feature had disrupted Quaternary age deposits and therefore were an active or potentially active fault. While we concur that the potential for surface rupture on these Franciscan faults is low, we do not concur that there is justification for placing a surface hazard zone along the above described feature. It is our conclusion that there is a low potential for the occurrence of fault surface rupture (primary or coseismic) to occur at the subject site.

5.1.1 Eastern Santa Clara Valley Faults

Several subparallel faults are present within the hills along the eastern margin of the Santa Clara Valley, including the Silver Creek fault located approximately 3 miles northeast of the site near the valley margin. Although there is some geomorphic expression of the fault, the activity of this fault is poorly understood at this time. The fault is not considered active by the CDMG (1982) because there is no conclusive evidence that surface rupture has occurred along it during the last 11,000 years (Hart 1981). The City of San Jose has zoned the Silver Creek fault as potentially hazardous and prohibits construction across the surface trace. The City of San Jose Fault Hazard Map (1983) shows a northwesterly trending projection (queried) of the active Piercy fault crossing the Oak Hill Cemetery property, approximately 2,000 feet northeast of the site. The basis for the mapped projections for either of these faults is not stated in the cited published maps. Furthermore, as reported by Terratech (1991), the Department of Water Resources has plotted an extension of the potentially active Edenvale fault projected with a north-south trend through the Capitol Drive-in Theatre property located approximately 0.5 miles east of the site. Neither the Piercy nor the Edenvale faults potentially intersect the site. The active Calaveras fault (southern extension) passes approximately 8½ miles northeast of the site. The seismic hazard posed by this fault is discussed in Section 5.1.

5.1.2 Western Santa Clara Valley Faults

The southern trace of the Monte Vista-Shannon fault is mapped about 5 miles southwest of the site. The Monte Vista-Shannon fault is part of a complex system of thrust faults along the eastern front of the Santa Cruz Mountains on the west side of the Santa Clara Valley. However, it is unclear whether this is currently an active fault capable of generating earthquakes (seismogenic) or if motion along the fault trace is due to coseismic deformation during large earthquakes on active faults.

The Loma Prieta Earthquake of 1989 on the San Andreas fault produced coseismic ground deformation on the lower eastern flank of the Santa Cruz Mountains from the region of Los Gatos and Saratoga to Los Altos Hills (Haugerud and Ellen 1990) in the vicinity of the mapped trace of the Monte Vista-Shannon fault. Studies conducted after the 1989 earthquake have also identified topographic lineaments along the northeastern foothill terrain of the Santa Cruz Mountains that may represent other past occurrences of thrust fault related ground deformation (Hitchcock et al. 1994). The State of California has not zoned the Shannon fault as an active fault, but the City of San Jose zoned the fault to protect structures against potential surface rupture. The 1997 Uniform Building Code has also assigned near-source factors to mitigate potential seismic shaking should an earthquake occur along this fault.

5.2 ESTIMATED GROUND SHAKING

Moderate to severe (design-level) earthquakes can cause strong ground shaking, which is the case for most sites within the Bay Area. The magnitude-weighted pseudo-peak acceleration for the site for firm rock conditions is approximately 0.49g and 0.57g for alluvium conditions with a 10 percent chance of exceedance in 50 years (CGS, San Jose East Quadrangle, 2000). Pseudo-peak ground accelerations have been normalized to a 7.5Mw seismic event, including weighting to account for regional seismic activity and fault distances. A peak ground acceleration (PGA) was estimated for analysis using a value equal to $PGA_M = F_{PGA} * PGA_G$ (Equation 11.8-1) as allowed in the 2013 California Building Code. For our analysis we used a PGA of 0.50g.

5.3 LIQUEFACTION POTENTIAL

Soil liquefaction results from loss of strength during cyclic loading, such as imposed by earthquakes. Soils most susceptible to liquefaction are clean, loose, saturated, uniformly graded, and fine-grained sands. The nearly flat northern and eastern portions of the site are located within an area designated as having a moderately high potential for liquefaction by Cooper, Clark & Associates (1974 and Rogers and Williams (1974), but are designated by Geomatrix (1992) as having a low potential for liquefaction. More recent evaluations for the San Jose East Quadrangle (CGS, 2000) does not show the site in an area of liquefaction hazard (see Figure 6), nor is it located in a Santa Clara County Liquefaction Hazard Zone (Santa Clara County, 2002). In addition, the site is within a zone mapped as having a very low to low liquefaction potential by the Association of Bay Area Governments (ABAG, 2007). These published interpretive maps are based on regional evaluations.

Some of the exploratory borings performed at the site for this investigation were located on the alluvial plain in the northern portion of the site (Borings EB-5, EB-6, and EB-7) and Boring EB-9 in the eastern portion of the site. Ground water encountered at a depth of about 23 feet in Boring EB-5 within the bedrock. We did not encounter ground water in our other borings that extended to a maximum depth of about 41½ feet, nor was ground water encountered at the borings performed at the site recently by SESI. CGS has mapped the historically high depth to ground water on the order of 40 feet within the alluvial areas along the northern side of the site; historic high ground water is mapped as on the order of 50 feet along the east side of the site. Depth to ground water is shallower on the west side of the site; however, the alluvium exists outside the project boundaries in this area. Because the alluvium we encountered consisted of either stiff clays or very dense clayey sands overlying bedrock and the historically high water table is 40 feet or deeper, in our opinion, there is a low potential for liquefaction. Based on the above, our screening of the site for liquefaction indicates a low potential for liquefaction, and is in general agreement with local interpretive evaluations covering the area of the site by CGS, Santa Clara County, and ABAG.

5.4 LATERAL SPREADING

Lateral spreading typically occurs as horizontal displacement of relatively flat-lying alluvial material toward an open or "free" face such as an open body of water, channel, or excavation. Generally in soils, this movement is due to failure along a weak plane and is associated with earthquake-induced liquefaction. A significant factor for lateral spreading to occur is the presence of loose, shallow, saturated sands. The nearly flat northern portion of the site is located within an area designated as having a moderately high potential for liquefaction (Cooper, Clark & Associates, 1974) but is also designated by Geomatrix (1992) as having a low potential for liquefaction. CGS (2000) indicates these published interpretive maps are based on regional scale studies. Our exploratory borings located within the alluvium indicate that these materials are not potentially liquefiable. Whereas local "free" faces associated with the detention basins are present, the subsurface conditions indicate sufficiently stiff soil conditions that would tend to resist lateral spreading. Additionally, new detention pond excavations will either be constructed of compacted engineered fill or excavated into bedrock. Therefore, we consider the potential for lateral spreading to be low.

5.5 SEISMIC SETTLEMENT/UNSATURATED SAND SHAKING

Strong earthquake shaking can cause non-uniform compaction of soil strata, resulting in settlement of near-surface soils. Factors that affect this hazard include soil composition and consistency, the magnitude of loading on native soils, such as from fills and structures, and any other changes in thickness or consistency abruptly over short distances. In our opinion, because the site is underlain by shallow bedrock, stiff clays, or very dense sand and all proposed fills will be compacted to standard of practice compaction requirements, we judge the probability of differential seismic compaction at the site to be low.

5.6 LANDSLIDING

Based on our surface reconnaissance, research of published and unpublished geologic maps and reports, and our aerials photograph review, no significant landslides are present on Communications Hill that could impact the project area. We did identify one moderate sized landslide on a north facing slope about 600 feet northwest of the former Hillsdale Mine (see Figures 2. We also identified a very small landslide behind the retaining walls for the VTA Caltrain Track Widening Project. We compiled onto our base map (Figure 2) several small slumps which were mapped on sloping portions of the site by John W. Leonard (1977 through 2006) and also by Michael Cleary (2007) as part of their periodic reconnaissance mapping for the mine reclamation plan. These slumps are subtle, and, based on geomorphologic considerations, probably less than 3 feet thick and several are presently obscured by very thick tall ground cover vegetation. All landslides mapped by ourselves and those by previous consultants have been compiled onto Figure 2, as well as the 100-scale geologic map sheets. Nilsen (1972), Cooper, Clark & Associates (1974) Terratech (1991), Bechtel (1993 and CGS (2000) have mapped several smaller landslides within the project boundary; these are summarized on Figure 2. Cooper-Clark and Associates (1974) shows three relatively small landslides located on northeast facing slopes located approximately 1,000 and 1,800 feet east of the former Hillsdale Mine. A published photo-interpretation map by Nilsen (1972) shows the same three landslides. These mapped landslides are located in areas that subsequently received substantial grading after 1976 as part of the quarrying operations, such that the original landslide deposits have been removed. This is confirmed by our review of aerial photos covering the vicinity. Furthermore, these mapped landslides were not depicted on site-specific geologic maps by Terratech (1991), John W. Leonard (2006), Michael Cleary (2007) or by Lowney Associates (2000) investigation of the adjacent residential development of the south.

The Seismic Hazard Zone Report for the San Jose East Quadrangle (CDMG, 2000; their plate 2.1, reproduced as Figure 6), shows two mapped landslides occurring on a slope located in the vicinity of Communications Boulevard (southeast portion of the project site) where the roadway ascends the hillside. These features were noted by Terratech (1991), but the landslides were apparently removed as a result of mass grading for the Tuscany Hills site.

The Map of Seismic Hazard Zones for the San Jose East Quadrangle (CDMG, 2000) shows that portions of the steepest slopes at the site are zoned as having a potential for earthquake-induced landslides. Cooper-Clark and Associates (1974) and Rogers and Williams (1974) both designated the sloping areas of Communications Hill as having a low to moderate susceptibility for landsliding. Both the Cooper-Clark and Associates (1974) and the CDMG (2000) maps are interpretive maps for planning purposes and do not include site-specific data.

The current development plans require construction of numerous cut and fill slopes. As part of this investigation, we performed computer-assisted geotechnical static and seismic stability analyses of proposed cut and fill slopes. Our analyses are based on removal of existing colluvium and landslides prior to placement of engineered fill. The results of our analyses, including a discussion of the potential for earthquake induced landslides at the project site, are discussed in Section 6 of this report. Provided the recommendations contained in the report are incorporated into the project plans, the potential for landsliding at the subject site is therefore considered to be low.

5.7 HAZARDS ASSOCIATED WITH THE HILLSDALE MERCURY MINE

Terratech offered a discussion on the subject of Mining Collapse for the Hillsdale Mercury Mine in their 1991 report. Based apparently on aerial photo evidence they observed features suggesting the possible existence of "sink holes" above the mine. However, these features also may have been areas of exploration or perhaps ventilation vents. Terratech apparently did not inspect the mine and collected no site specific data for the mine beyond reviewing aerial photos and a surface reconnaissance. They concluded that the potential for subsidence due to cavity collapse is high above the shallower caverns and the potential is low for the deeper tunnels.

As already noted, in 2009 Vector Engineering, Inc. conducted a preliminary subsidence analysis for the Hillsdale Mine. It should be noted that there were no plans at that time for building homes or other structures directly adjacent to or over the mine area, therefore disturbance or and removal of overburden due to grading or construction were not considered in their evaluation. Presently significant cutting is being considered in the area of the mine but no residential lots will be located adjacent to mine tunnels. Some of their conclusions:

1) Most drifts are still accessible and are in stable condition. Some drifts in claystone mélange (i.e., "KJfs(c)") and serpentinite have evidence of being collapsed, but when the collapse occurred is unknown. No evidence of collapse drifts in the silica carbonate ore body was observed and it is unlikely that drifts in the silica carbonate body will collapse any time soon. The broadest drifts occur in the silica carbonate and therefore have a low potential for collapse.

   Although no quantitative statistical analysis was performed, the probability of the site actually experiencing the maximum subsidence due the drift collapse is thought to be extremely low.

2) If drifts collapse, there is a small probability that significant subsidence will be expressed at the ground surface.

3) It is unlikely for a collapse to propagate to the ground surface because the massive blocks of the ore body would fill the opening void and arrest progressive collapse.

4) It is unlikely that sinkholes subsidence is occurring at the ground surface.

The extensive roof collapse we observed within the sheared claystone was not directly associated with the silica carbonate therefore it is unlikely that further collapse of the claystone hanging wall would be filled and/or arrested by a block of the ore body filling the resulting void. Additionally, Terratech and MC report that a portion of the lower tunnel has collaspsed that is located in weaker serpenite unit in an area of the tunnel that had shallow cover (see Figure 2 for location). SRK Consultants has reviewed the Vector report and has recommended backfilling of the mine workings not removed by grading (See Figure 8 and 9). SRK has prepared a report detailing the recommendations for backfilling of the mine workings not removed by grading.

5.7 COMPRESSIBLE SOILS

Near surface, compressible, saturated clays are present in some areas of the site, mainly in the colluvium-filled ravines and swales and are of concern in the design of fill slopes. To mitigate this condition, we recommend that the colluvium be removed and replaced as engineered fill during earthwork. The alluvium in the lower part of the site is stiff to very stiff and is considered to have low compressibility characteristics under the anticipated loads.

5.8 EXPANSIVE SOILS AND SOIL CREEP

We identified expansive soil and bedrock on the site. Expansive soils can undergo significant volume change with changes in moisture content. In general, expansive soils shrink and harden when dried and swell and soften when wetted. Such changes can cause distress to building foundations and structures, slabs on grade, pavements, and other surface improvements. Expansive soils are also generally a major contributing factor to soil creep on slopes. To reduce the potential for damage to improvements, recommendations regarding the use of non-expansive fill, foundation types, drainage, landscaping considerations are discussed in the "Conclusions" section of this report.

Swales with accumulated colluvial soils are common on the flanks of Communications Hill. Some colluvium-filled swales, as identified on Figure 2, show signs of creep. Such movement is generally slow and gradual and is generally the result of seasonal expansion and contraction of the upper few feet of soil under the influence of gravity. Though not a substantial geologic hazard, this condition could be a nuisance to proposed development where slow displacement of surficial soil could impact site development located on or at the base of slopes. Based on the site development plans, the areas where creep is evident are to be graded. To mitigate the soil creep, we recommend that all areas of the site where thick colluvium is present and grading is proposed, the colluvium should be removed in its entirety prior to placing fills. In addition, re-use of the highly plastic claystone and colluvium (i.e. PIs greater than 25) should be limited to deeper fill areas and not at the outer edges of the new engineered fill slopes.

5.9 FLOODING

As shown on the August 2, 1982 Federal Emergency Management Agency (FEMA) "Flood Insurance Rate Map" (FIRM), the flatlands of the site area are within Zone D, described as "Areas of undetermined, but possible flood hazards." Flooding from Canoas Creek is possible in the flatlands immediately adjacent to the creek, but since the site grading will result in the building areas to be constructed well above the elevation of the flatland, flooding is unlikely. The March 1982 Santa Clara County General Plan identified 12 dams in Santa Clara County that could inundate downstream areas should dam failure occur. None of these dams would be expected to inundate the site if a failure occurred. The site is several miles inland from the San Francisco Bay shoreline and well beyond the projected run-up by seismically generated tsunamis impacting the bay (Ritter and Dupre 1972). Hence, the potential for inundation due to tsunami and/or seiche is considered remote.

SECTION 6: SLOPE STABILITY

6.1 PRELIMINARY SLOPE STABILITY

The planned grading for this project is fairly complex and will involve several areas of cut and fill slopes. Maximum cuts on the order of 105 to 110 feet and maximum fills up to about 80 feet thick are planned. Based on the current grading plans, most graded slopes are planned at 2:1 (horizontal to vertical) for maximum cut and fill slope heights ranging to 160 to 200 feet. Several slopes will transition from cut to fill. The previously discussed mapped landslides (see Figure 2) within the project boundaries occur within an area of planned fills up to about 80 feet thick. Eleven geologic cross sections (Sections 1-1' through Section 7-7', 10-10', Figure 5; Section 8-8', Figure 8; Section 11-11', Figure 8; and Section 9-9', Figure 10) were prepared illustrating the existing topography and geology, the proposed final grading, and the locations of the proposed roads and residential lots.

Where existing colluvium, undocumented fills, and the active landslides were encountered beneath planned fills, the geometry was modified such that the bottom of the planned fills extended just below each of these materials, assuming that these materials would be removed and replaced as engineered fill, as is customary on hillside grading projects. At the toe of fill slopes, we assumed that keyways would be constructed, and modeled them as approximately 5 feet deep and 25 to 50 feet wide, or larger.

Our slope stability analyses included both static and seismic (pseudo-static) limit equilibrium analyses and seismic deformation analyses. Our analyses were performed in accordance with the guidelines set forth by CGS in special publications 117A (2008), including acceptable factors of safety and seismic deformations. The following sections present the soil and bedrock properties used in our analyses and detailed discussions of our evaluation are presented.

The analyses presented in this report should be considered preliminary because the project grading plans are conceptual at this stage. The purpose of the analysis is to demonstrate that the overall grading concept is feasible. In some cases, our preliminary analysis indicates that mitigation of the slopes with buttress fills, geogrid, keyways, or other methods will need to be incorporated into the final grading plans. General mitigation alternatives are presented in this report. The project civil engineer should incorporate these recommendations into the grading plans as the final grading concept is developed. Additional slope stability analyses should be performed as part of the design-level geologic and geotechnical investigation for the project. Detailed Grading Mitigation Plans, which include keyways, subdrains, keying/benching, cut/fill transitions, and geogrid details for the project should be prepared by the geotechnical consultant during the design-level geologic and geotechnical investigation.

6.1.2 Selection of Soil and Bedrock Properties

Engineered Fill: The proposed engineered fill slopes are assumed to comprise mixtures of existing undocumented fills, colluvium, and bedrock material generated from cut slopes. As shown in the geologic cross sections, the majority of the planned cut areas occur within serpentinite bedrock areas. We assumed that the fills and colluvium would be mixed with the serpentinite, retaining the characteristics of remolded serpentinite. To model the engineered fill, we performed two sets of shear strength tests, consisting of consolidated undrained (CU) triaxial testing with pore pressure measurements, on bulk samples of serpentinite and sandy claystone collected from Test Pits TP-6 and TP-8, as summarized in Appendix B. In addition, we reviewed two sets of shear strength tests consisting of consolidated undrained (CU) triaxial tests with pore pressure measurements on bulk samples collected on “strong” serpentinite bedrock from the Dairy Hill development. The bulk samples were remolded to 90 to 95 percent relative compaction at a moisture content of 2 percent above laboratory optimum, based on results of a compaction curve also performed on the bulk sample following ASTM D1557 procedures.

Alluvium: We performed shear strength testing, consisting of consolidated undrained (CU) triaxial testing with pore pressure measurements, on drive samples of alluvium collected from Boring EB-5, as summarized in Appendix B.

Serpentinite and Sandy Claystone: We utilized the two sets of CU shear strength tests on the bulk samples of serpentinite collected from Test Pits TP-6 and TP-8. In addition, we reviewed previous shear strength testing performed samples of serpentinite collected on adjacent sites. Based on the review of the available data, there appears to be areas of relatively stronger and weaker serpentinite. The southeastern portion of the site along the ridge area, represented in Sections 1-1’, 2-2’, and 6-6’ were classified as the stronger serpentinite. Lower slope areas were considered as weaker serpentinite. The contribution of the relatively harder seams and blocks of silica carbonate encountered in the vicinity of the mine were considered in our Sections 5-5’, 8-8’, and 11-11’.

Highly Plastic Claystone: The highly plastic claystone (KJfs(c)) encountered in the region around the existing landslide (Section 3-3’) was modeled using estimates of phi values based on Plasticity Index testing (Lambe & Whitman, 1969) and the summary of shear strength data presented in Table 2.1 of the CGS Seismic Hazard report for the San Jose East Quad for the Franciscan Complex materials.

Franciscan Sandstone: The Franciscan Sandstone was modeled based on similar strength properties as the stronger serpentinite.

A summary of the soil and bedrock parameters used in our analyses are presented in the table below.

Table 4: Summary of Soil and Bedrock Strength Properties

			Drained, Static Conditions		Seismic Conditions	
Material Description	**Total Unit Weight (pcf)**	**Saturated Unit Weight (pcf)**	**Cohesion (psf)**	**Friction Angle (degrees)**	**Cohesion (psf)**	**Friction Angle (degrees)**
Engineered Fill	120	130	100	30	100	30
Alluvium (Qal)	110	125	100	28	1,500	0

Serpentinite (sp) – stronger	120	130	100	35	100	35
Serpentinite (sp) – weaker	120	130	100	30	200	20
Franciscan Sandstone (KJfs)	120	135	100	35	100	35
Sandy Claystone (KJfs-c)	120	130	100	30	1,500	0
High PI Claystone (KJfs(c))	110	125	50	22	200	16
Silica Carbonate (sp/sc)	120	130	100	35	100	35

6.1.3 Selection of Ground Water Depth for Stability Analysis

Ground water was encountered in only Boring EB-5 (Cornerstone, 2009) at 23 feet at the project site performed in the flat lying alluvial area northwest of the former mine workings (See Figure 2). In addition, water seeps were noted at the two swale locations at the project site. Our experience during grading of phase one of Communications Hill was that ground water will be encountered at the bedrock/colluvium contacts in the swale areas, but is limited to local fractures and does not form a continuous water table in the bedrock. To model the ground water depth in the cross sections, we assumed the water will be located 30 feet below the ground surface (existing) in the cut areas or located at the fill/bedrock interface in the fill areas (i.e. subdrains will be installed at the back of keyways and benches to intercept ground water) and 20 feet below the existing ground surface in the alluvium areas. Irrigation of the slopes will be restricted to applying 6 inches or less of water in the dry season to irrigate vineyard areas. Excess irrigation water will be collected in subdrains and discharged to a storm drain system. Accordingly, no increase in the depth to ground water level in the slopes due to irrigation was modeled in our slope stability analysis.

6.1.4 Surficial Loads

We modeled anticipated surficial loading from two sources: 1) new residential/school structures as areal loads of 200 psf over the width of the lots; and 2) new streets and park areas as areal loads of 100 psf over the width of the roads or parks.

6.1.5 Limit Equilibrium Analysis

The stability of a slope is influenced by many factors including but not limited to the geologic structure and composition, inclination, and height of a slope, ground water, climatic factors such as rainfall, and irrigation. In geotechnical engineering, “stability” is expressed as a ratio of resisting moments and forces divided by driving moments and forces termed the factor of safety (FS). Factors of safety can be calculated for static and seismic conditions. Rock slope analysis using stereonet methods is presented in Section 6.1.6 of this report. Seismic deformation analysis is presented in 6.1.7 of this report.

Due to the highly variable structure and texture of the serpentinite and associated ultramafic and hydrothermally altered rocks, these materials were treated as stiff soils during the analyses. Based on the above, we have judged that using the slope stability analysis method appropriate based on the site conditions encountered in our explorations.

The stability of the geologic cross sections were evaluated using the limit-equilibrium computer program GSTABL7, and circular and specified modes of failure. Input parameters for the analyses include slope geometry, soil/bedrock layers or zones, total and saturated unit weights and strength parameters, ground water conditions, and assumed areal surface loading within road and residential lot areas.

Static factors of safety for each section are presented in Table 5, below. CGS (2008) recommend minimum static factors of safety of 1.5. Where our analysis indicates marginal stability remedial, grading is recommended. As indicated, remedial grading increased static factors of safety to an acceptable level; see Sections 1-1', 2-2', 3-3', 5-5', 8-8', 9-9', 11-11'.

In evaluating the stability of slopes under seismic conditions, GSTABL7 uses a "pseudo-static" method of analysis. The pseudo-static method models the effects of transient or pulsating earthquake loading on a potential slide mass by using an "equivalent" static horizontal acceleration acting on the mass of the potential landslide in a limit-equilibrium analysis.

The ground motion parameter used in a pseudo-static analysis is referred to as the seismic coefficient "k". CGS (2008) has published recommendations for the selection of the "k" value in a publication titled, "Guidelines for Evaluation and Mitigation of Seismic Hazards in California, SP 117A."

We evaluated the "k" value using both the Stewart, et al (2001) and the Bray and Travasarou (2008) procedures. Both procedures take into account the anticipated seismic loading (earthquake magnitude, distance, and spectral acceleration), the seismic response characteristics of the slopes, as well as, an allowable seismic displacement. The site is located near the active San Andreas, Hayward, and Shannon Faults and high ground shaking can be expected during a seismic event near the site.

Using these two procedures, the "k" values generally ranged from 0.15 to 0.23, with higher values representing the slopes with greater thicknesses of potential slide mass. For our analyses, we used a "k" values of 0.23 for all slopes.

As discussed above, the selection of "k" value and acceptable factor of safety are dependent on the allowable displacement. For our analysis, we selected an allowable seismic displacement of 15 cm (approximately 6 inches), which is consistent with State guidelines and recommendations (CGS, 2008, and City of San Jose design guidelines).

Both the Stewart, et al, and Bray and Travasarou procedures recommend a minimum allowable factor of safety of 1.0, when using the calculated "k" value. A pseudo-static factor of safety of 1 typically implies "movement" of the slope mass and does not necessarily result in complete slope failure. In both procedures, a factor of safety of 1.0 would imply displacements close to the allowable displacement. For our analysis, we assumed a screening displacement of 6 inches (15 cm). As discussed further in Section 6.1.7, it should be noted that the Newmark displacement parameter is merely an index of slope performance. The 15 cm value likely distinguishes conditions in which small to moderate displacements are likely from conditions where large displacements are likely (Stewart, et al, 2003).

In our opinion, acceptable factors of safety for static and seismic (pseudo-static) conditions may be considered to be 1.5 and 1.0, respectively. These factors of safety are consistent with the guidelines set forth in SP 117A and has been accepted by the California Geological Survey during review of School projects that our firm has recently completed. To confirm that that displacement will be within the allowable range of 6 inches, we performed slope deformation analysis as presented in Section 6.1.7.

Our limit equilibrium analyses for the cross sections indicate that factors of safety with respect to slope movement under static loading conditions result are above 1.5; however, under seismic loading conditions the factor of safety was estimated to range from 0.8 to 0.9, which is below the minimum acceptable value of 1.0 and implies movement of the slide mass. Copies of the stability output for each section analyzed, also illustrating the soil parameters and surface load values and modeled locations, are attached in Appendix C.

Table 5: Results of Slope Stability Analyses

Cross Section	Design Condition	Factor of Safety[1]	
		Static[2]	Seismic[3]
1-1'	160' Fill Slope	1.52	***0.90***
	with geogrid reinforcement[4]	1.68	1.02
2-2'	150' Cut/Fill slope	***1.48***	***0.91***
	with geogrid reinforcement	1.71	1.07
3-3'	200' Cut/Fill Slope	***1.48***	***0.95***
	with geogrid reinforcement	1.63	1.01
4-4'	120' Cut/Fill Slope	1.98	1.03
5-5' Lower Slope	100' Cut Slope[5]	2.04	1.20
5-5' Upper Slope	60' Fill Slope	2.18	1.20
6-6'	75' Fill Slope	1.73	1.03
7-7'	50' Cut Slope	1.79	121
8-8'	100' Cut/Fill Slope with Buttress	2.09	1.14
9-9'	60' Abutment	***1.36***	***0.93***
	with geogrid reinforcement	1.54	1.03
9-9'	70' Fill Slope	***1.27***	***0.85***
	with geogrid reinforcement	1.64	1.03
10-10'	70' Cut slope	1.97	1.19
11-11' Lower Slope	30' Fill slope	***1.49***	1.00

	with geogrid reinforcement	1.73	1.15
11-11' Upper Slope	45' Fill slope	1.65	***0.98***
	with geogrid reinforcement	1.70	1.02

Notes 1 ***Bold and italicized*** where mitigation required
2 Minimum required factor of safety 1.5 for static condition.
3 Minimum required factor of safety 1.0 for seismic condition
4 See Section 7 for description of geogrid remediation
5 See Section 8-8' and 11-11' for description of mine influence; Figures 8 and 9.

6.1.6 Stereonet Analysis for Rock Cutslopes

For areas where bedrock will be exposed in the proposed graded slopes (i.e cut slopes 3-3', 7-7', and 10-10'), we performed kinematic rock stability analysis (i.e. stereonet analysis) according to the methods outlined in Markland (1972). A series of ten test pits were excavated and logged and additional observations were made at natural and manmade exposures to determine bedrock type, conditions and the presence and orientations of discontinuities. The actual conditions exposed in grading will likely be more complex and varied that is apparent in our somewhat limited sampling and characterization, and therefore should be periodically examined by our field representatives for general conformance with our assumptions. For this analysis we used; the orientation of proposed cut slopes, the anticipated bedrock type to be exposed in those cuts, field measured discontinuities collected in test pit excavations and exposures in these areas where the cuts will occur, as well as orientations of surfaces where rock failures have occurred on site. A more detailed discussion of the methodology employed in our analysis is presented in Appendix C. While spalling of rock off cutslopes can be anticipated at the site, our analysis indicates that the majority of cuts are unlikely to result in moderate or large scale failures of graded bedrock slopes. The rock spalling will be mitigated by capping the cutslopes. Once the slopes are cut, our Certified Engineering Geologist will be on-site during construction to observe the bedding and jointing. If adverse bedding conditions are encountered during construction, remediation may be required, such as localized over-excavation or catchment fences.

6.1.7 Deformation Analysis

As requested by the City, we also performed deformation analyses to estimate the potential magnitude of slope movement under seismic load conditions. We estimated the deformation based on four "simplified" Newmark Displacement procedures: CDMG (2000), Bray and Travasarou (2007), Jibson (2007), and Saygili & Rathje (2008). These procedures involve calculating the yield acceleration, defined as the inertial force necessary to cause the static factor of safety to reach 1.0, from the traditional limit-equilibrium slope stability analysis, for a single critical failure surface. This analysis, in combination with the results of the pseudo-static analysis, is typically used to evaluate the final design-level slope to determine if the estimated movement is acceptable or if mitigation is required. Newmark displacements of 0 to 15 centimeters (0 to 6 inches) are unlikely to correspond to serious landslide movement (CGS, 2008). Results are shown in Table 6. The four methods are in agreement that the potential magnitude of slope displacement is expected to be less than approximately 6 inches.

Table 6: Results of Slope Stability Analyses

Cross Section	Pseudo-Static FS	Yield Acceleration (g)	Newmark Displacement (in) CDMG (2000)	Bray and Travasarou (2007)	Jibson (2007)	Saygili & Rathje (2008)
1-1’	1.02	0.25	1.6	4.8	0.7	1.2
2-2’	1.07	0.29	0.8	4.3	0.3	0.6
3-3’	1.01	0.24	1.6	5.9	0.7	1.2
4-4’	1.03	0.26	1.6	4.3	0.5	0.9
5-5’	1.20	0.42	0.4	1.3	0.0	0.0
5-5’	1.20	0.42	0.4	1.9	0.0	0.0
6-6’	1.03	0.26	1.6	5.0	0.5	0.9
7-7’	1.21	0.43	0.4	1.5	0.0	0.0
8-8’	1.14	0.37	0.6	2.6	0.0	0.1
9-9’ (Abutment)	1.03	0.26	1.6	4.9	0.5	0.9
9-9’ (Slope)	1.03	0.26	1.6	5.2	0.5	0.9
10-10’	1.19	0.4	0.4	5.1	1.0	1.7
11-11’ (Lower Slope)	1.15	0.32	1.4	2.8	0.0	0.3

11-11' (Upper Slope)	1.02	0.24	1.6	4.3	0.3	1.2

6.1.8 Summary

The purpose of our preliminary slope stability analysis was to confirm that the proposed grading and slope configurations are feasible. A number of the slope configurations currently proposed for this project did not meet the acceptable safety factor criteria established in the CGS Guidelines. In these cases, we analyzed the effect of installing geogrid to improve the stability of the slope. In all cases, we were able to demonstrate that implementation of the mitigation alternative will yield slope configurations with acceptable factors of safety. Our review of the grading plan indicates that there are several locations where combination "fill over cut" slopes are planned. This type of slope configuration may have lower than acceptable factors of safety and is not permitted by the City's Grading Code, Sections 17.04.390C and 17.04.400B. We have analyzed a few of these configurations and a discussion regarding this issue if presented in Section 7. A discussion of the mitigation alternatives to increase the factor of safety where needed is also presented in Section 7.

SECTION 7: CONCLUSIONS

From a geologic and geotechnical viewpoint, the project is feasible provided the concerns listed below are addressed in the project design. Descriptions of each concern with brief outlines of our recommendations follow the listed concerns.

- Stability of slopes
- "Fill over Cut" slopes
- Bedrock/soil compression
- Removal of artificial fill
- Excavation of hard bedrock areas
- Shallow ground water
- Presence of expansive soils and bedrock
- Erosion
- Naturally occurring asbestos
- Former mercury mine mitigation
- Communication Hill Boulevard Overhead
- Cut/Fill Transitions

7.1 DISCUSSION OF PRELIMINARY SLOPE STABILITY ANALYSIS

As presented in Section 6, our stability analyses indicated that the proposed slope configurations are anticipated to have factors of safety that will range from slightly less than 1 to 2.0. Several slopes (see Cross Sections 1-1', 2-2', 4-4', 5-5', 6-6', 7-7', 8-8' and 11-11') will require mitigation to improve the factors of safety to achieve the minimum factor of safety criteria. Once the mitigation alternatives described below are incorporated into the project plans, it is our opinion that the slopes will perform satisfactory under static and seismic conditions.

The slope stability analysis presented is preliminary and should be updated as the project grading plans are finalized by the project civil engineer during the design level geotechnical investigation. Prior to performing additional slope stability analysis, the project civil engineer should consider the following criteria when developing the final project grading plans:

1. The maximum inclination of cut and fill slopes should be 2:1 (horizontal to vertical) unless retained by a retaining wall.

2. In general, for cut slopes in weak serpentinite or claystone, slopes higher than about 40 feet inclined at 2:1 (H:V) will require mitigation. Based on our preliminary stability analyses, significant hillside removal and replacement with geogrid-reinforced fills would be required to maintain the 2:1 inclination. Flattening the slopes will likely be the preferred option.

3. In general, for cut slopes in stronger serpentinite, slopes higher than about 50 feet inclined at 2:1 (H:V) will require mitigation as discussed above.

4. In general, fill slopes greater than about 40 feet in height will require mitigation including either flattening the slope to 2.5:1 (H:V) or reinforcing the fill with geogrid.

5. The cut slope above the park area in Section 7-7' should be flattened to 2.5: 1 (H:V), which may result in a smaller park area as currently configured.

6. Mitigation of the other slopes of concern could be achieved by using geo-grid or flattening the slopes. We have assumed that geogrid will be used.

7. Benches should be shown on the grading plans. These should be at least 6 feet wide and spaced at a maximum of 30 feet in vertical height.

8. Every effort should be made to reduce cut/fill transitions occurring in the slopes. These areas will require remedial grading.

9. "V" ditches or "J" ditches should be placed along the benches and the tops of the slopes to intercept surface water.

10. Irrigation of the slope areas should be kept to a minimum. If vineyards are planned, we should review the planting plans. Subdrains may be necessary to remove excess surface and subsurface water.

11. Grading plans should show locations of keyways, subdrains, and colluvium and fill removals. Grading plan details should include geogrid type, strength, vertical spacing, and length, subdrain details, and keying and benching details. These should be developed in a joint effort with the project civil engineer.

7.2 "FILL OVER CUT" SLOPES

Our review of the grading plan indicates that there are several locations where combination "fill over cut" slopes are planned. This type of slope configuration may have lower than acceptable factors of safety and is not permitted by the City's Grading Code, Sections 17.04.390C and 17.04.400B. We have analyzed a few of these configurations (See Section 2-2', 5-5', 8-8' and 11-11') and found that depending on the bedrock strength in the area of the cut portion of the slopes, mitigation may or may not been needed to increase the factor of safety. Where mitigation is needed (i.e. Section 2-2' and 11-11'), we would recommend rebuilding the slope with geogrid. Once the final grading plan has been developed, we should review each fill over ut slope configuration and make recommendations of mitigation, if needed.

7.3 BEDROCK/SOIL COMPRESSION

Subsurface materials at the site are expected to have widely varying compressibility. Bedrock materials generally have low compressibility. Colluvium generally possesses low to moderate compressibility. A map of Cooper-Clark and Associates (1974) indicates there is a low to moderate potential for encountering compressible soil within alluvium surrounding Communications Hill. Structural fill can have variable compressibility depending on its thickness and how the fill is constructed. Quarry materials will have a quite variable, and possibly very high, compressibility. Mitigation recommendations will likely include the following:

- Excavating and recompacting quarry stockpiles and soils disturbed or loosened by quarry operations.
- Controlling fill compaction and constructing properly designed foundations compatible with ground conditions and specific structural requirements. We do not anticipate that unusual foundations will be required for the majority of the structures.
- Removing colluvium down to bedrock during mass grading.

7.4 ARTIFICIAL FILL REMOVAL

As discussed above, numerous areas contain artificial fill that has been placed with various degrees of compactive effort. Since the compaction of these fills is unknown, they should be removed and replaced as engineered fill.

7.5 EXCAVATION OF HARD BEDROCK AREAS

The project will involve deep cuts into relatively hard rock. Based on work performed by others at the nearby Tuscany Hills and Dairy Hill sites and for the hard bedrock in the main mine tunnel complex area, seismic shear wave velocities in the order of 4,000 to 7,000 feet per second were encountered on the site in the hard Silica Carbonate bedrock in the upper 100 feet of the bedrock. Based on published correlations and our experience with the adjacent Tuscany Hills project, a majority of the bedrock should be rippable with D9 or larger late-model, Caterpillar-type tractors or equivalent. However, some controlled basting might be needed to excavate some of the harder areas of bedrock at the site particularly areas underlain by Silica Carbonate bedrock. Additional seismic refraction surveys should be performed during the design-level geotechnical investigation to evaluate further evaluate the rippability of the bedrock.

7.6 SHALLOW GROUND WATER

Shallow ground water was observed seeping from surface springs at the site. Additionally, previous workers have documented similar springing areas in the northern portion of the site. The potential impacts of ground water will typically consist of potentially wet and unstable subgrade, difficulty achieving compaction and adverse impacts on slope stability. Our experience with the adjacent Tuscany Hill was that shallow ground water will be encountered during mass grading within the swale areas and possibly within areas of deep bedrock cut. These concerns can be mitigated with routine earthwork procedures such as chemical treatment, drying/mixing soil before compaction, and installation of subdrains.

7.7 EXPANSIVE SOILS AND BEDROCK

As discussed, highly expansive soils and bedrock were encountered. Expansive materials can undergo significant volume change with changes in moisture content. They shrink and harden when dried and expand and soften when wetted. Expansive soils are also generally a major contributing factor to soil creep on slopes.

If structures are underlain by expansive soils it is important that foundation systems be capable of tolerating or resisting any potentially damaging soil movements. In addition, it is important to limit moisture changes in the surficial soils by using positive drainage away from buildings as well as limiting landscaping watering. On a preliminary basis, structures located on relatively flat building pads should be founded on post-tensioned mat foundations. Structures located on slopes should be designed on pier and grade beam foundation systems.

To mitigate the potential for soil creep, we recommend that all areas of the site where thick colluvium is present and grading is proposed, the colluvium should be removed in its entirety prior to placing fills. In addition, re-use of the highly plastic claystone and colluvium (i.e. PIs greater than 25) should be limited to deeper fill areas and not at the outer edges of the new engineered fill slopes.

7.8 EROSION

No evidence of unusual erosion was encountered at the site. No significant unprotected watercourses are present in the undeveloped part of the site. Cooper-Clark & Associates (1974) classified the potential for erosion on Communications Hill as generally high, although materials underlying the hillsides have various erosion potentials. Serpentinite and silica-carbonate rock have low erosion potential, the sandstone and shale unit has moderate erosion potential, and colluvium, alluvium, and artificial fill have high erosion potential. Grading, alteration of runoff, and the increase of impervious surface area will increase the potential for erosion locally. Mitigating this hazard on the site will probably consist of routine measures for hillside grading and control of surface drainage. Recommendations for erosion control and subsurface drainage should be provided in the design-level geotechnical investigation. These should be incorporated into the final grading plans.

7.9 NATURALLY OCCURRING ASBESTOS (NOA)

NOA was encountered on other portions of Communications Hill. We understand that MC is evaluating the potential for NOA across the site and will present mitigation alternatives to the project team. We should review the geotechnical aspects of these alternatives for compatibility with recommendations contained in this report and future reports.

7.10 FORMER MERCURY MINE TUNNELS

The evaluation and mitigation of the potential impacts of the former mine are outside our work scope. Vector Engineering, Inc. has provided remedial recommendations to address the hazard of mine collapse based on the "regions" presented in their Figure 31 which we have included in the appendix of this report. Based on review of the current grading plan, it appears that a majority of the mine workings will be removed during grading, and those that are to be mitigated in place with acceptation of the southern tunnel will not be overlain by structures. It is noted, that for geotechnical slope stabilization, over-excavation will be performed which will remove additional portions of the mine tunnels. Our Mine Mitigation Summary, Figure 8 and 9, which includes the mitigation recommendations of the Vector report, indicates workings to be removed, and those to be mitigated in place. Where mine workings are encountered during grading which are to be left in place SRK has developed backfill recommendations.

7.11 COMMUNICATION HILL BOULEVARD OVERHEAD

The current project scope includes an overhead crossing above the existing Caltrain and Union Pacific railroad (UPRR) tracks, connecting the new Communications Hill Boulevard and the existing road. The alignment of the existing UPRR tracks and the proposed overhead crossing location is shown on Figure 10. The evaluation of the Communication Hill Boulevard overhead crossing is outside our current scope of work, however Cornerstone Earth Group has recently performed a feasibility review of the proposed grading for the overhead crossing.

The Communications Hill Boulevard Overhead Preliminary Study, prepared by Biggs Cardosa Associates, Inc., dated March 4, 2013, identified three potential alignments for the overhead crossing, along with mechanically stabilized earth (MSE) walls and slab bridges options for two of the alignments. A third option utilized a bridge with very limited grading to cross the UPRR right of way. The current grading plan indicates an alignment requiring the MSE walls and slab bridge option, which is shown in the Conceptual Mitigation Cross-Section 9-9' of Figure 10 of this report. Per the findings of the Cornerstone Earth Group feasibility review, the crossing is feasible. Specific geotechnical recommendations for slopes and foundations should be developed in a design-level foundation investigation for the bridge improvements.

7.12 STORMWATER BASIN SYSTEM

The current project scope includes a stormwater detention system consisting of three basins within one area to manage storm water. The water quality detention basin is 3 ft maximum storage depth and collects first flush C3 water. It discharges to the biotreatment basin which has a subdrain discharge to the storm drain system. The biotreatment basin has a 1 foot storage depth. These basins are not intended to be an infiltration BMP's. Both of these basins will drain within 48 hours after a storm. Based on the proposed grading, the water levels in these basins would be in the range of 151 to 154 ft. The existing grade there is about 150 ft. The third basin is the HMP basin which takes the overflow from the water quality basin. It has an invert near elevation 142 feet and a max water level near 151 feet in the 100-year storm. The HMP basin would drain in 48 to 72 hours after the 100-year storm. The third basin is not intended as an infiltration basin. It only collects direct rainfall until the C3 storage volume for the site is exceeded, then it would be wet for a few days. This may occur 5 or more times in an average year.

From a geotechnical viewpoint due to the basins shallow depth and short duration of water retention, no impact on the existing groundwater levels is anticipated. Based on the results of our borings EB-5 and EB-6 (Cornerstone, 2009), liquefaction potential is low and a rise in the ground water table is not anticipated due to the basin, therefore, the liquefaction potential in this area due to the basin remains unchanged. There is no risk of lateral spreading in this situation. On a preliminary basis, since the basin will only have very short duration and shallow water depths, 2:1 side slopes are recommended. We have analyzed that slope stability of nearby cross sections (see section 11-11') and have demonstrated that the slope can be built with an acceptable FS in this area with appropriate mitigation. In summary, it is our opinion that construction of the stormwater basin system is geotechnically feasible. Detailed geotechnical recommendations for the stormwater basins should be presented in the design-level geotechnical report.

7.13 OFF-SITE IMPROVEMENTS

Based on our discussions with the project civil engineer, we understand that various off-site improvements are being considered as discussed in this report. However, none of the proposed improvements have been finalized. Our review of the proposed improvements indicates that they are mostly street or underground improvements that are geotechnically feasible. One proposed improvement involves constructing a pedestrian/bike trail along the toe of a cut slope for Highway 87 (see Figure 4); this trail should be constructed using appropriately designed retaining walls. Specific geotechnical recommendations for slopes, retaining walls, foundations, and underground utilities should be developed in a design-level foundation investigation for the off-site improvements.

7.14 CUT/FILL TRANSITIONS

The site grading plan indicates that fills up to 50-feet thick are proposed across the site. Foundations constructed over deep fills will be subject to long-term settlement. Even well-compacted fills may experience minor long-term settlements due to secondary strains or hydrocompression. Provided that the fills are placed and compacted in accordance with our recommendations; on a preliminary basis, we estimate that total long-term post-construction fill settlement would be less than approximately ½ percent of the total fill thickness.

In addition, shallow foundations, such as reinforced concrete or post-tensioned mats, constructed over cut/fill transitions may experience differential movements under static and seismic loading conditions. The current grading plan indicates that some lots will span both cut and fill. Therefore, to reduce the potential for differential movement beneath structures on these lots, we recommend that building pads on cut/fill transitions lots be over-excavated to provide a resulting differential fill thickness no greater than 10 feet and not exceeding a slope of 15 percent. Recommendations addressing this concern will be presented in the Design-Level Geotechnical Investigation Report.

7.15 DESIGN-LEVEL GEOTECHNICAL INVESTIGATION

The preliminary recommendations contained in this geologic and geotechnical hazards investigation were based on limited site development information and limited exploration. We recommend that we be retained to 1) perform a design-level geotechnical investigation, once detailed site development plans are available; 2) to review the geologic and geotechnical aspects of the proposed mine closure, NOA mitigation measures, and the project structural, civil, and landscape plans and specifications, allowing sufficient time to provide the design team with any comments prior to issuing the plans for construction; and 3) be present to provide geotechnical observation and testing during earthwork and foundation construction.

SECTION 8: LIMITATIONS

This report, an instrument of professional service, has been prepared for the sole use of David J. Powers & Associates, Inc. specifically to support the design of the Communications Hill – Phase II project in San Jose, California. The opinions, conclusions, and preliminary recommendations presented in this report have been formulated in accordance with accepted geotechnical engineering and engineering geologic practices that exist in Northern California at the time this report was prepared. No warranty, expressed or implied, is made or should be inferred.

Preliminary recommendations in this report are based upon the soil, bedrock, and ground water conditions encountered during our subsurface exploration. If variations or unsuitable conditions are encountered during the design-level geotechnical investigation or during construction, Cornerstone must be contacted to provide supplemental recommendations, as needed.

David J. Powers & Associates, Inc. may have provided Cornerstone with plans, reports and other documents prepared by others. David J. Powers & Associates, Inc. understands that Cornerstone reviewed and relied on the information presented in these documents and cannot be responsible for their accuracy.

Cornerstone prepared this report with the understanding that it is the responsibility of the owner or his representatives to see that the recommendations contained in this report are presented to other members of the design team and incorporated into the project plans and specifications, and that appropriate actions are taken to implement the geotechnical recommendations during construction.

Conclusions and preliminary recommendations presented in this report are valid as of the present time for the development as currently planned. Changes in the condition of the property or adjacent properties may occur with the passage of time, whether by natural processes or the acts of other persons. In addition, changes in applicable or appropriate standards may occur through legislation or the broadening of knowledge. Therefore, the conclusions and recommendations presented in this report may be invalidated, wholly or in part, by changes beyond Cornerstone's control. This report should be reviewed by Cornerstone after a period of three (3) years has elapsed from the date of this report. In addition, if the current project design is changed, then Cornerstone must review the proposed changes and provide supplemental recommendations, as needed.

An electronic transmission of this report may also have been issued. While Cornerstone has taken precautions to produce a complete and secure electronic transmission, please check the electronic transmission against the hard copy version for conformity.

Recommendations provided in this report are based on the assumption that Cornerstone will be retained to provide a design-level geotechnical investigation, plan review, and observation and testing services during construction to confirm that conditions are similar to that assumed for preliminary design, and to form an opinion as to whether the work has been performed in accordance with the project plans and specifications. If we are not retained for these services, Cornerstone cannot assume any responsibility for any potential claims that may arise during or after construction as a result of misuse or misinterpretation of Cornerstone's report by others. Furthermore, Cornerstone will cease to be the Geotechnical-Engineer-of-Record if we are not retained for these services.

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Aerial Photographs:

U. S. Geological Survey:

Date	Flight	Frames	Scale	Type
September 26, 1948	GS-HR	1-187, 188, 189	1:23,600	black & white
February 25, 1954	AV-11	20, 21	1:12,000	black & white
March 7, 1958	"SF Area"	3-155, 156	1:24,000	black & white
September 28, 1963	CIV-6DD	63, 64, 65	1:20,000	black & white
May 17, 1965	SCL	12-19 thru 21	1:12,000	black & white
July 15, 1968	AV-857-04	08, 09	1:24,000	black & white
October 12, 1971	AV-1006-15	19, 20	1:12,000	black & white
July 12, 1974	12-	169	1:20,000	natural color
October 13, 1976	AV-1277-15	24, 25	1:12,000	natural color

Date	Flight	Frames	Scale	Type
July 23,1980	AV-1905-15	24, 25	1:12,000	natural color
February 22, 1981	GS-VEZR	3-38	1:24,000	black & white
July 1, 1984	AV-2485-15	23, 24	1:12,000	black & white
June 28, 1988	AV-3324-15	28, 29	1:12,000	black & white
July 20, 1992	AV-4230-0129	79, 80	1:12,000	black & white
August 9, 1996	AV-5200-229	31, 32	1:12,000	black & white
June 29, 1999	AV-6100-129	79, 80	1:12,000	black & white

Photos from Aero-Geodetic Corp.:

Date	Flight	Frames	Scale	Type
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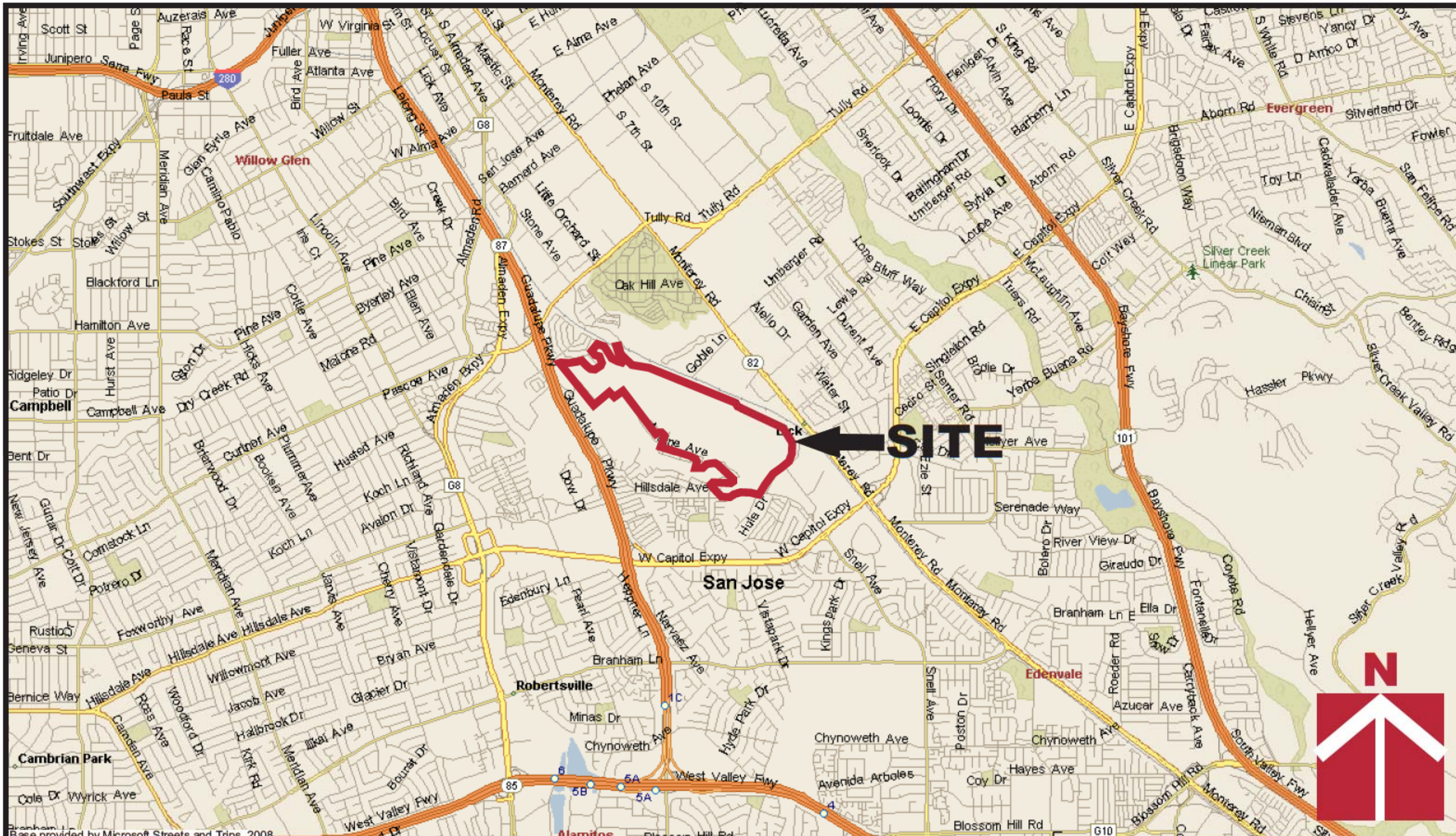
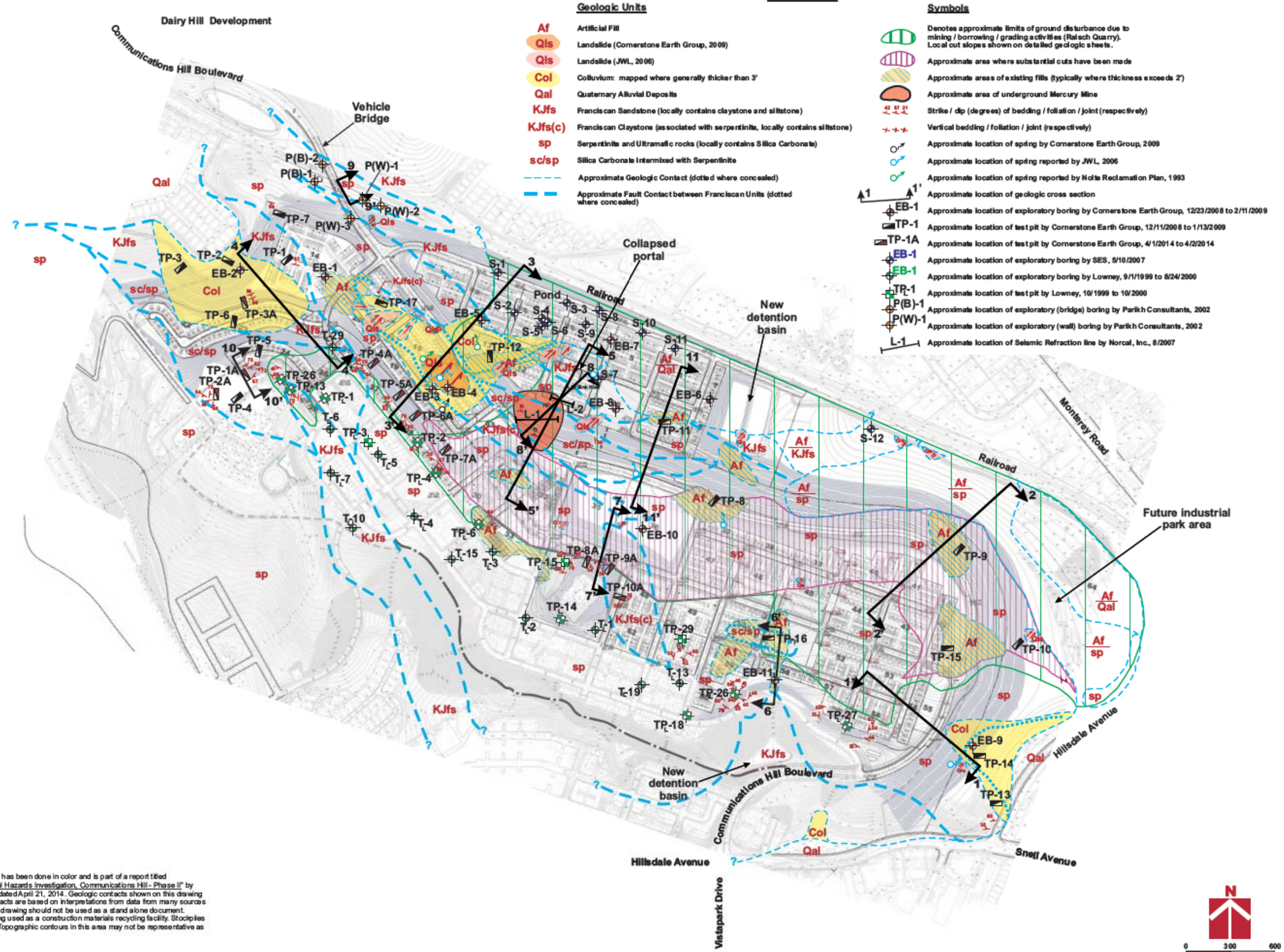


CORNERSTONE EARTH GROUP

Vicinity Map

Communications Hill - Phase 2
San Jose, CA

Project Number	118-38-1
Figure Number	Figure 1
Date	April 2014
Drawn By	RRN



Explanation

Geologic Units

- **Af** Artificial Fill
- **Qls** Landslide (Cornerstone Earth Group, 2009)
- **Qls** Landslide (JWL, 2006)
- **Col** Colluvium: mapped where generally thicker than 3'
- **Qal** Quaternary Alluvial Deposits
- **KJfs** Franciscan Sandstone (locally contains claystone and siltstone)
- **KJfs(c)** Franciscan Claystone (associated with serpentinite, locally contains siltstone)
- **sp** Serpentinite and Ultramafic rocks (locally contains Silica Carbonate)
- **sc/sp** Silica Carbonate intermixed with Serpentinite
- Approximate Geologic Contact (dotted where concealed)
- Approximate Fault Contact between Franciscan Units (dotted where concealed)

Symbols

- Denotes approximate limits of ground disturbance due to mining / borrowing / grading activities (Ralsch Quarry). Local cut slopes shown on detailed geologic sheets.
- Approximate area where substantial cuts have been made
- Approximate areas of existing fills (typically where thickness exceeds 2')
- Approximate area of underground Mercury Mine
- Strike / dip (degrees) of bedding / foliation / joint (respectively)
- Vertical bedding / foliation / joint (respectively)
- Approximate location of spring by Cornerstone Earth Group, 2009
- Approximate location of spring reported by JWL, 2006
- Approximate location of spring reported by Nolte Reclamation Plan, 1993
- 1 – 1' Approximate location of geologic cross section
- EB-1 Approximate location of exploratory boring by Cornerstone Earth Group, 12/23/2008 to 2/11/2009
- TP-1 Approximate location of test pit by Cornerstone Earth Group, 12/11/2008 to 1/13/2009
- TP-1A Approximate location of test pit by Cornerstone Earth Group, 4/1/2014 to 4/2/2014
- EB-1 Approximate location of exploratory boring by SES, 5/10/2007
- EB-1 Approximate location of exploratory boring by Lowney, 9/1/1999 to 8/24/2000
- TP_L-1 Approximate location of test pit by Lowney, 10/1999 to 10/2000
- P(B)-1 Approximate location of exploratory (bridge) boring by Parikh Consultants, 2002
- P(W)-1 Approximate location of exploratory (wall) boring by Parikh Consultants, 2002
- L-1 Approximate location of Seismic Refraction line by Norcal, Inc., 8/2007

Notes:
1) The original of this drawing has been done in color and is part of a report titled "Geologic and Geotechnical Hazards Investigation, Communications Hill - Phase II" by Cornerstone Earth Group dated April 21, 2014. Geologic contacts shown on this drawing are approximate. The contacts are based on interpretations from data from many sources and may vary in field. This drawing should not be used as a stand alone document.
2) Portions of the site are being used as a construction materials recycling facility. Stockpiles are created and removed. Topographic contours in this area may not be representative as shown on this plan.

Source:
Base map provided by HMH Engineers titled "Conceptual Rough Grading Plan", dated 3/18/2014.

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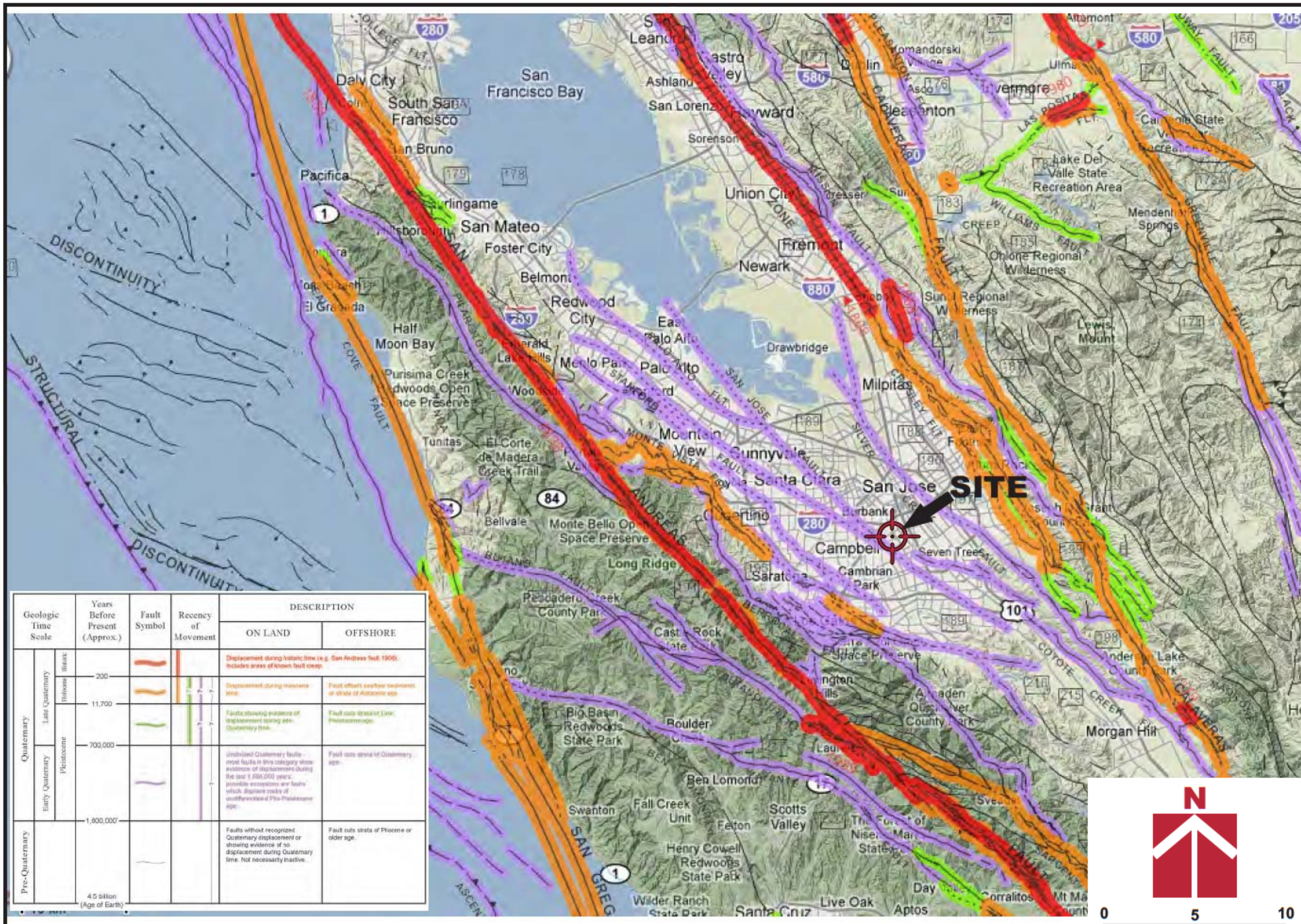
Site Geologic Map

Communications Hill - Phase 2
San Jose, CA

Project Number: 118-38-1
Figure Number: Figure 2
Date: April 2014
Drawn By: FLL, RRN



Geologic Time Scale			Years Before Present (Approx.)	Fault Symbol	Recency of Movement	DESCRIPTION: ON LAND	DESCRIPTION: OFFSHORE
Quaternary	Late Quaternary	Historic	200			Displacement during historic time (e.g. San Andreas fault 1906). Includes areas of known fault creep.	
		Holocene	11,700			Displacement during Holocene time.	Fault offsets seafloor sediments or strata of Holocene age.
		Pleistocene	700,000			Faults showing evidence of displacement during late Quaternary time.	Fault cuts strata of Late Pleistocene age.
	Early Quaternary		1,600,000			Undivided Quaternary faults - most faults in this category show evidence of displacement during the last 1,600,000 years; possible exceptions are faults which displace rocks of undifferentiated Plio-Pleistocene age.	Fault cuts strata of Quaternary age.
Pre-Quaternary			4.5 billion (Age of Earth)			Faults without recognized Quaternary displacement or showing evidence of no displacement during Quaternary time. Not necessarily inactive.	Fault cuts strata of Pliocene or older age.

Base by California Geological Survey - 2010 Fault Activity Map of California (Jennings and Bryant, 2010)

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Regional Fault Map

Communications Hill - Phase 2
San Jose, CA

Project Number	Figure Number	Date	Drawn By
118-38-1	Figure 3	April 2014	RRN

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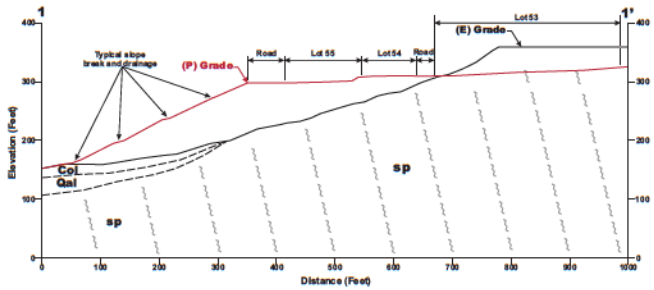
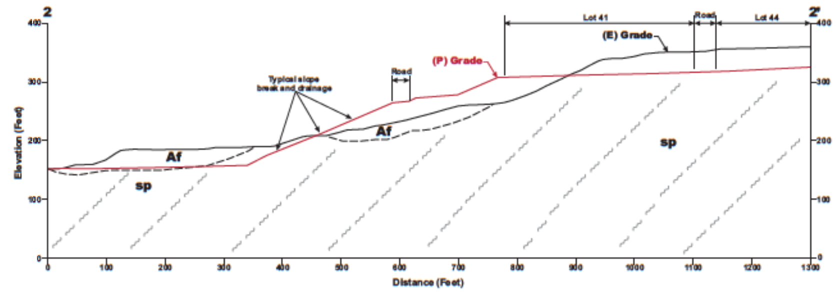
Aerial View of Site

Communications Hill - Phase 2
San Jose, CA

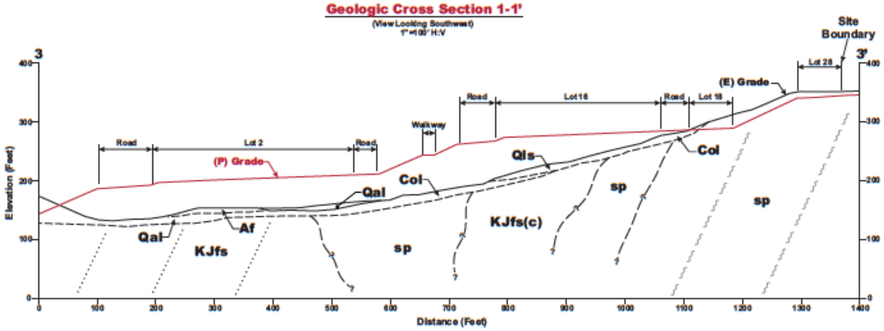
Project Number	Figure Number	Date	Drawn By
118-38-1	Figure 4	April 2014	RRN



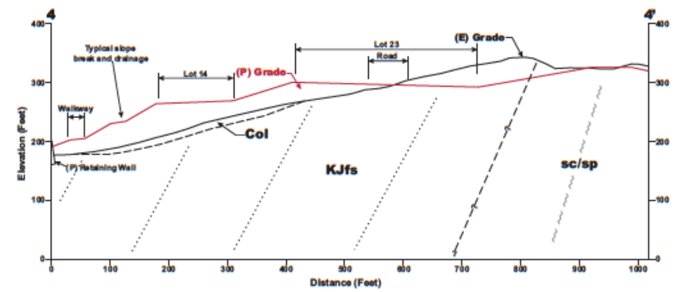
Geologic Cross Section 1-1'
(View Looking Southeast)
1"=100' H:V



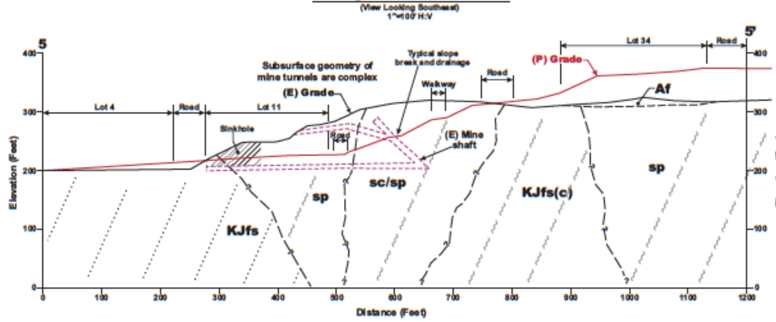
Geologic Cross Section 2-2'
(View Looking Southeast)
1"=100' H:V



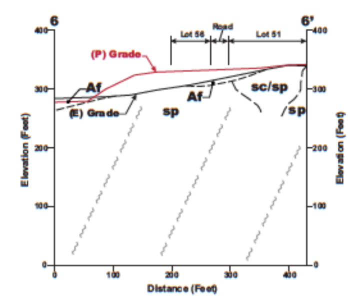
Geologic Cross Section 3-3'
(View Looking Southeast)
1"=100' H:V



Geologic Cross Section 4-4'
(View Looking Northeast)
1"=100' H:V

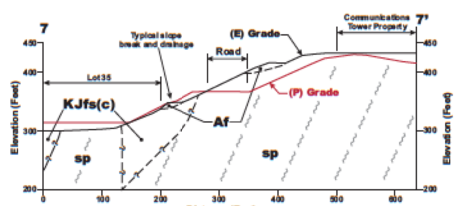


Geologic Cross Section 5-5'
(View Looking East)
1"=100' H:V

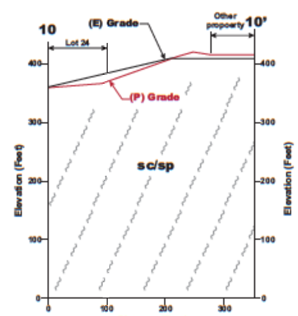


(P) Lot 35

Geologic Cross Section 6-6'
(View Looking West)
1"=100' H:V



Geologic Cross Section 7-7'
(View Looking East)
1"=100' H:V



Geologic Cross Section 10-10'
(View Looking Northeast)
1"=100' H:V

Explanation

Af	Artificial Fill
Col	Colluvium: Mapped where generally thicker than 3'
Qal	Quaternary Alluvial Deposits
KJfs	Franciscan Sandstone (locally contains claystone and siltstone)
KJfs(c)	Franciscan Claystone (associated with serpentinite, locally contains siltstone)
sp	Serpentinite and Ultramafic rocks locally contains Silica Carbonate
sc/sp	Silica Carbonate Intermixed with Serpentinite
———	Existing Grade (E)
——— (red)	Proposed Grade (P)
— — —	Approximate Geologic Contact
— — —	Approximate fault contact between Franciscan units
~~	Foliation
....	Bedding

Notes:
1) The subsurface profile is conceptual and is based on limited subsurface data obtained from widely spaced borings and test pits. Actual subsurface conditions may vary significantly between borings and test pits.
2) See Figure 2 for location of cross-section.

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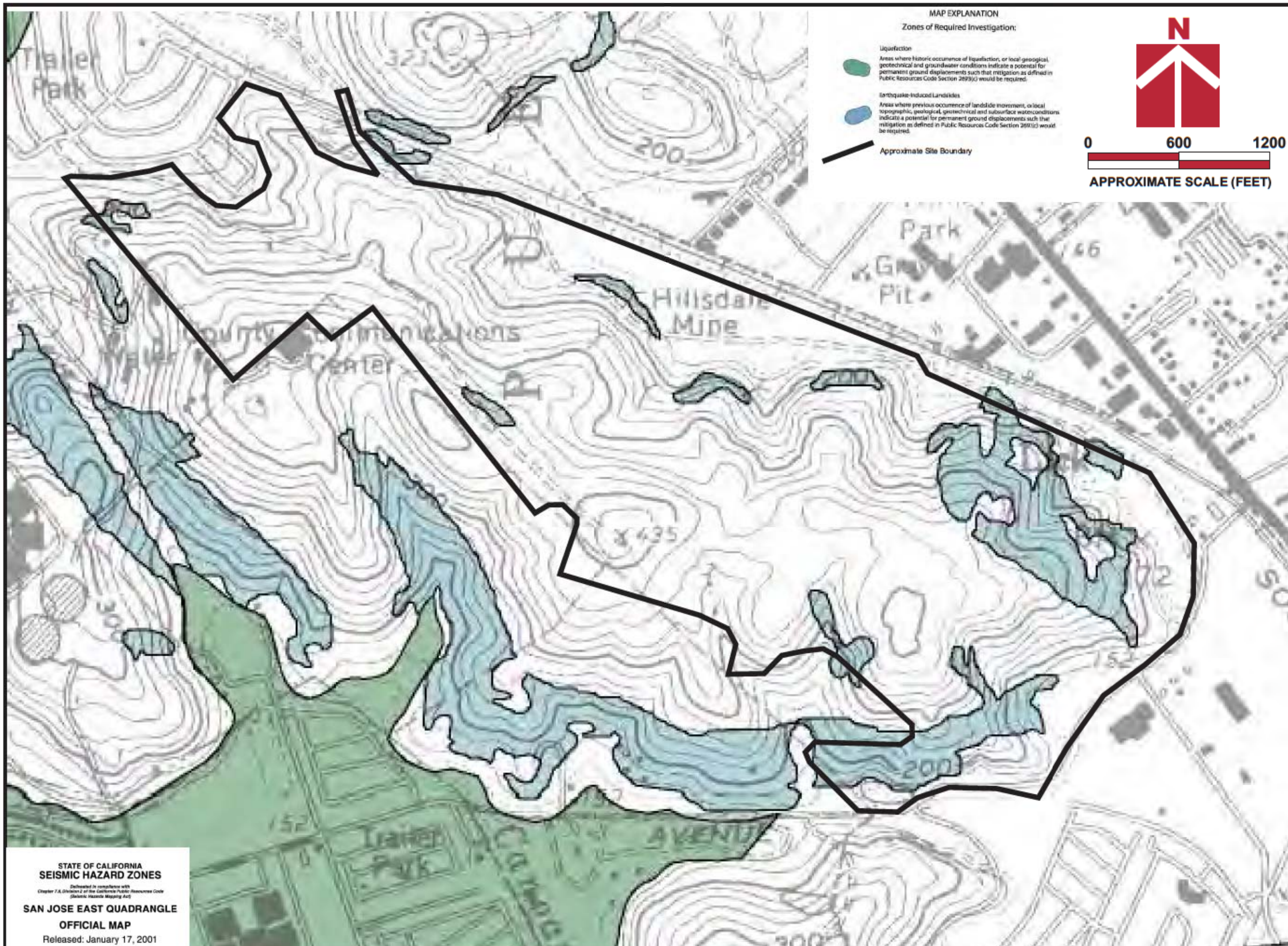
Geologic Cross Sections 1-1' to 7-7' and 10-10'

Communications Hill - Phase 2
San Jose, CA

Project Number	118-38-1
Figure Number	Figure 5
Date	April 2014
Drawn By	RRN



CGS Seismic Hazard Map

Communications Hill - Phase 2
San Jose, CA

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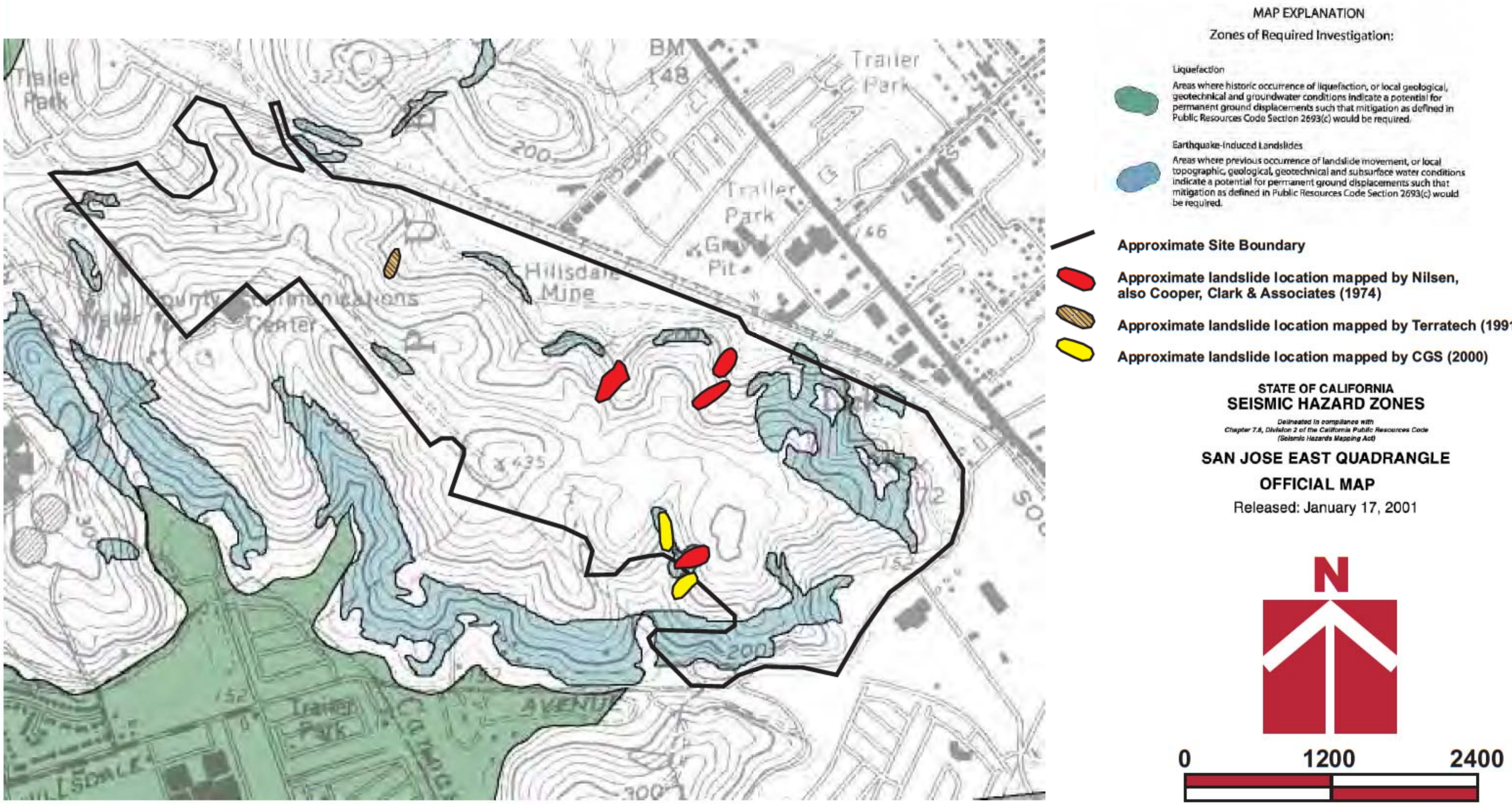
Project Number	Figure Number	Date	Drawn By
118-38-1	Figure 6	April 2014	RRN

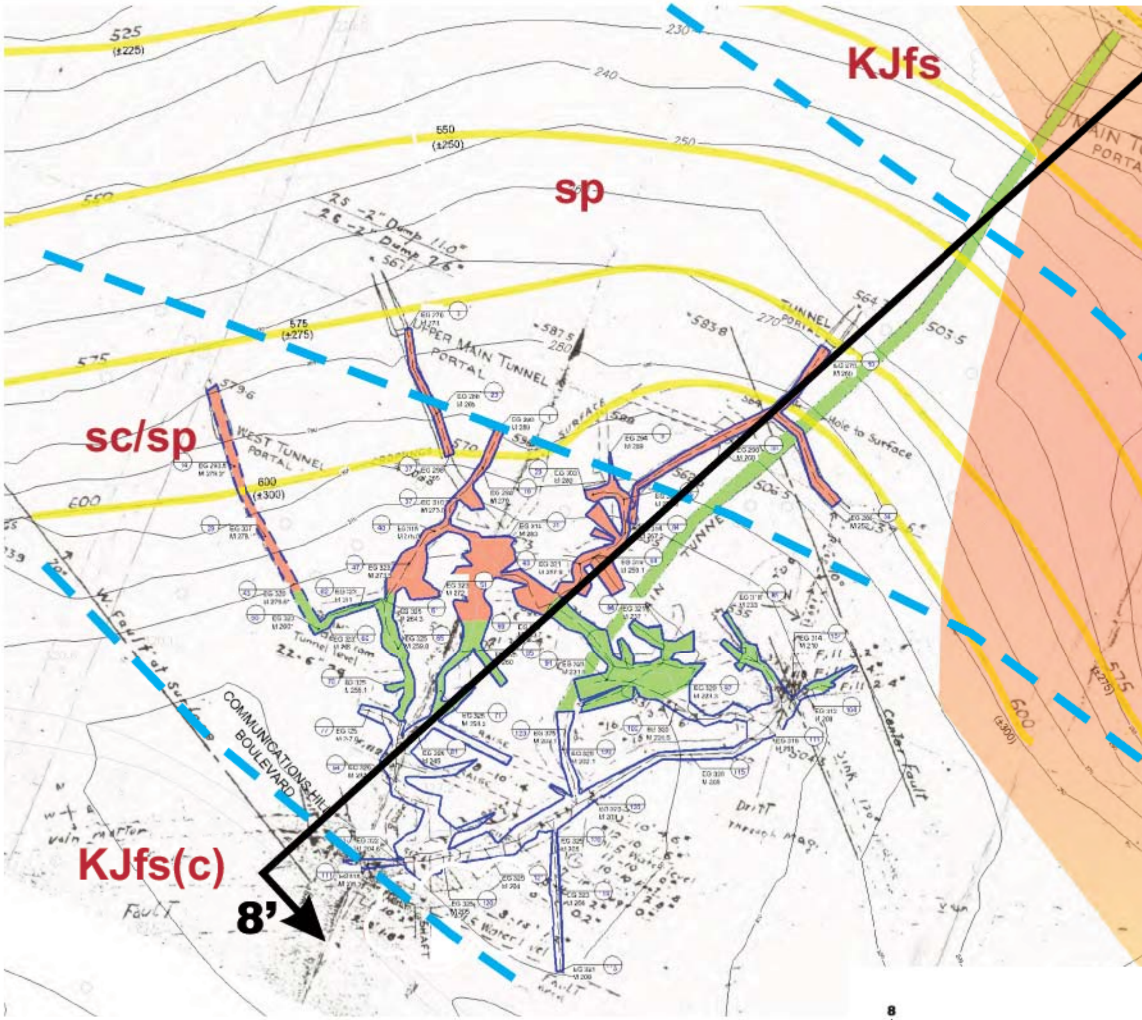


CORNERSTONE EARTH GROUP

Historically Mapped Landslides

Communications Hill - Phase 2
San Jose, CA

Project Number	118-38-1
Figure Number	Figure 7
Date	April 2014
Drawn By	RRN



Explanation

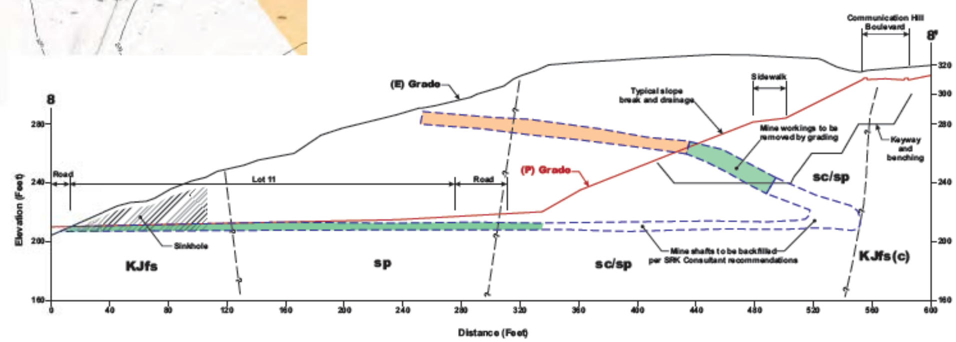
Symbols

- Mine shaft wall
- Mine shaft floor
- Mine shaft ceiling
- Mine shaft removed by grading
- Mine shaft removed by geotechnical over-excavation
- Mine shaft to remain, but backfilled
- Cut (From 2008 EG to 1943 EG)
- 8 – 8' Approximate location of geologic cross section

Geologic Units

- **KJfs** Franciscan Sandstone (locally contains claystone and siltstone)
- **KJfs(c)** Franciscan Claystone (associated with serpentinite, locally contains siltstone)
- **sp** Serpentinite and Ultramafic rocks (locally contains Silica Carbonate)
- **sc/sp** Silica Carbonate intermixed with Serpentinite
- Approximate Fault Contact between Franciscan Units (dotted where concealed)

Note: See recommendations by SRK addressing backfilling of all mine tunnels prior to performing grading activities including but not limited to cutting, filling, excavating, over-excavating, etc. in the area of the mine tunnels.



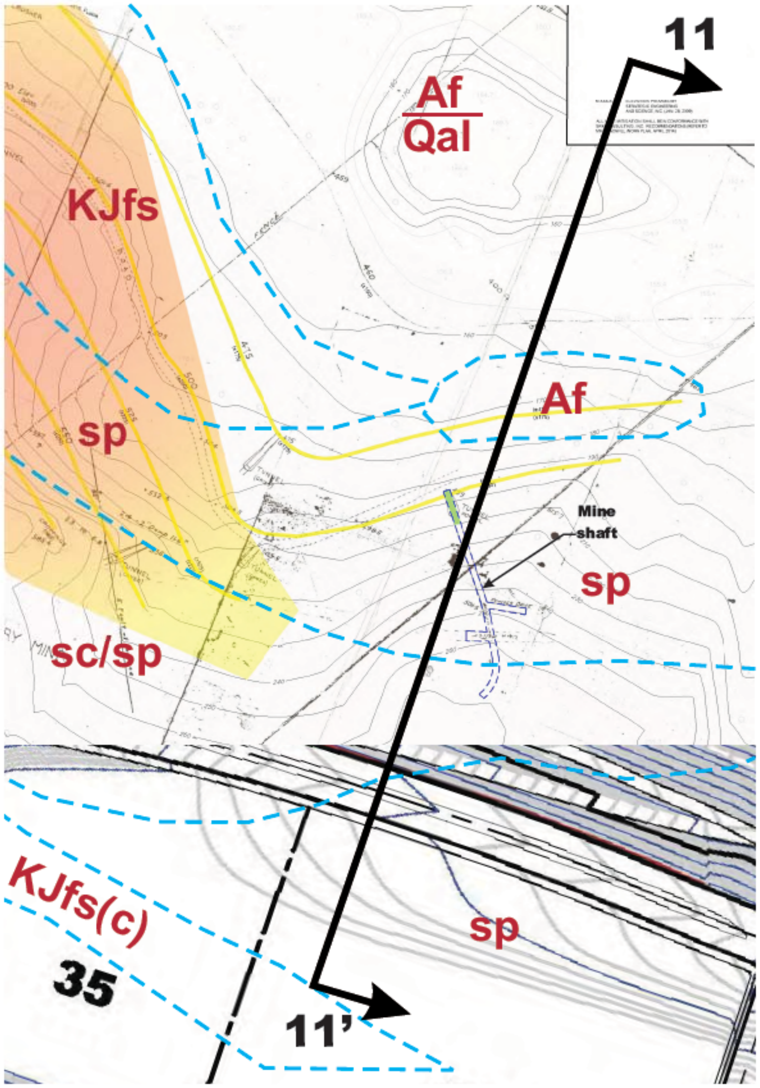
Conceptual Mitigation Section 8-8'
(View Looking Southeast)
1"=40' H:V

Notes:
1) The original of this drawing has been done in color and is part of a report titled "Geologic and Geotechnical Hazards Investigation, Communications Hill - Phase II" by Cornerstone Earth Group dated April 21, 2014. Geologic contacts shown on this drawing are approximate. The contacts are based on interpretations from data from many sources and may vary in field. This drawing should not be used as a stand alone document.
2) Portions of the site are being used as a construction materials recycling facility. Stockpiles are created and removed. Topographic contours in this area may not be representative as shown on this plan.

Source:
Base map provided by KB Home, "Topographic Mine - Sh. 2 of 5," dated 4/15/2014

CORNERSTONE EARTH GROUP

Mine Mitigation Summary	Project Number: 118-38-1
Communications Hill - Phase 2, San Jose, CA	Figure Number: Figure 8
	Date: April 2014 / Drawn By: FLL, RRN



N
APPROXIMATE SCALE (FEET)
0 60 120

Explanation

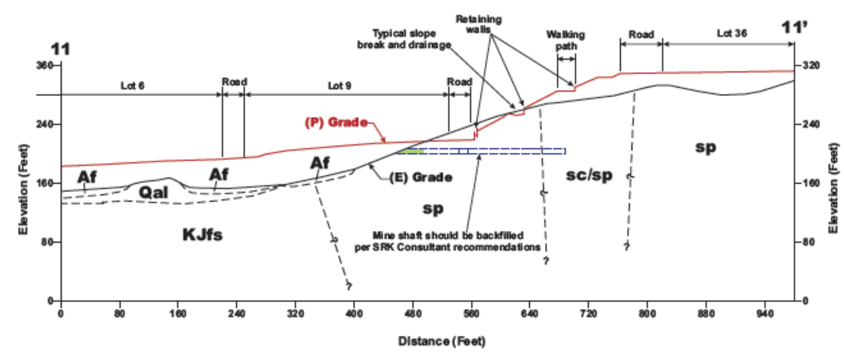
Symbols

- Mine shaft wall
- Mine shaft floor
- Mine shaft ceiling
- Mine shaft removed by grading
- Mine shaft removed by geotechnical over-excavation
- Mine shaft to remain, but backfilled
- Cut (From 2008 EG to 1943 EG)
- 11 11' Approximate location of geologic cross section

Geologic Units

- **Af** Artificial Fill
- **Qal** Quaternary Alluvial Deposits
- **KJfs** Franciscan Sandstone (locally contains claystone and siltstone)
- **KJfs(c)** Franciscan Claystone (associated with serpentinite, locally contains siltstone)
- **sp** Serpentinite and Ultramafic rocks (locally contains Silica Carbonate)
- **sc/sp** Silica Carbonate intermixed with Serpentinite
- Approximate Fault Contact between Franciscan Units (dotted where concealed)

Note: See recommendations by SRK addressing backfilling of all mine tunnels prior to performing grading activities including but not limited to cutting, filling, excavating, over-excavating, etc. in the area of the mine tunnels.



Conceptual Mitigation Section 11-11'
(View Looking East)
1"=40' H:V

Notes:
1) The original of this drawing has been done in color and is part of a report titled "Geologic and Geotechnical Hazards Investigation, Communications Hill - Phase II" by Cornerstone Earth Group dated April 21, 2014. Geologic contacts shown on this drawing are approximate. The contacts are based on interpretations from data from many sources and may vary in field. This drawing should not be used as a stand alone document.
2) Portions of the site are being used as a construction materials recycling facility. Stockpiles are created and removed. Topographic contours in this area may not be representative as shown on this plan.

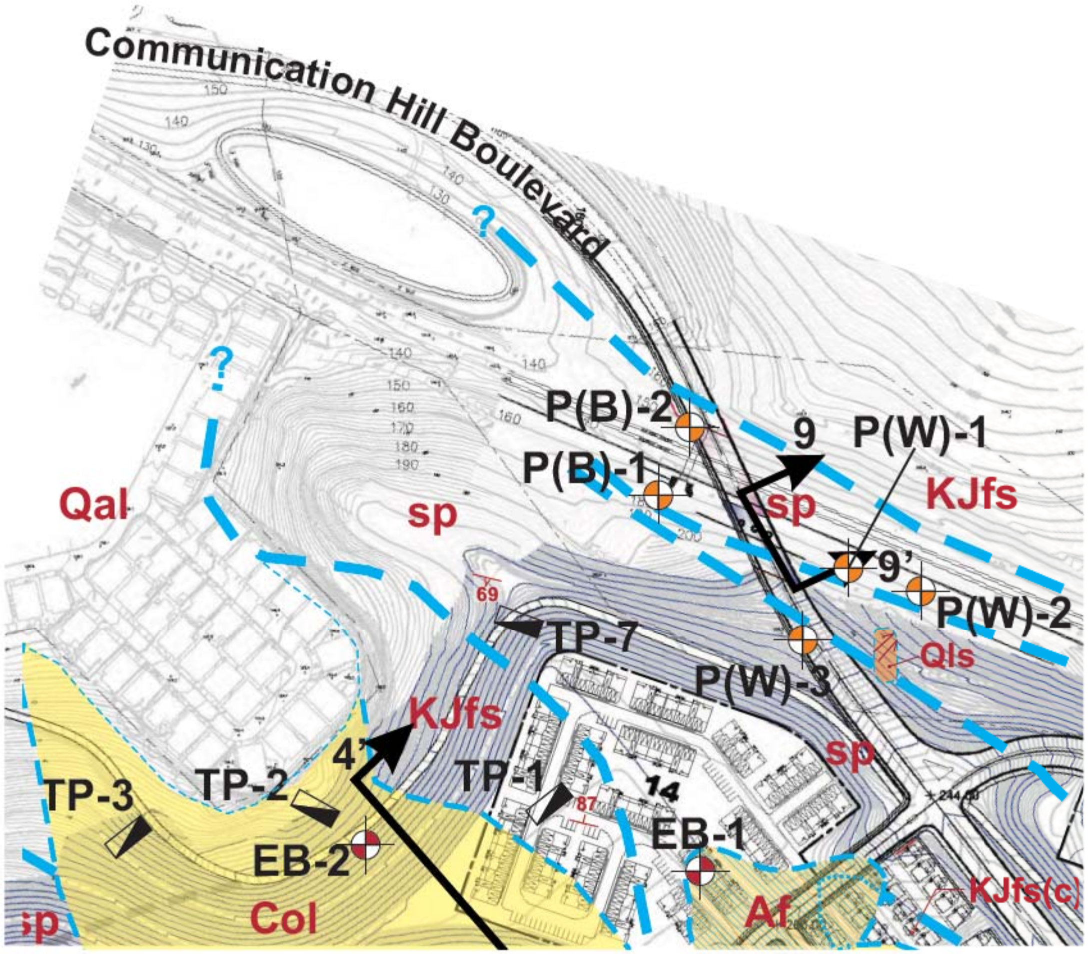
Source:
Base map provided by HMH Engineers, "Topographic Mine - Sh. 4 of 5," dated 4/15/2014 and HMH Engineers titled "Conceptual Rough Grading Plan", dated 3/18/2014

CORNERSTONE EARTH GROUP

Mine Mitigation Summary

Communications Hill - Phase 2
San Jose, CA

Project Number	118-38-1
Figure Number	Figure 9
Date	April 2014
Drawn By	RRN



Notes:
1) The original of this drawing has been done in color and is part of a report titled "Geologic and Geotechnical Hazards Investigation, Communications Hill - Phase II" by Cornerstone Earth Group dated April 21, 2014. Geologic contacts shown on this drawing are approximate. The contacts are based on interpretations from data from many sources and may vary in field. This drawing should not be used as a stand alone document.
2) Portions of the site are being used as a construction materials recycling facility. Stockpiles are created and removed. Topographic contours in this area may not be representative as shown on this plan.

Source:
Base map provided by HMH Engineers titled "Conceptual Rough Grading Plan", dated 3/18/2014.

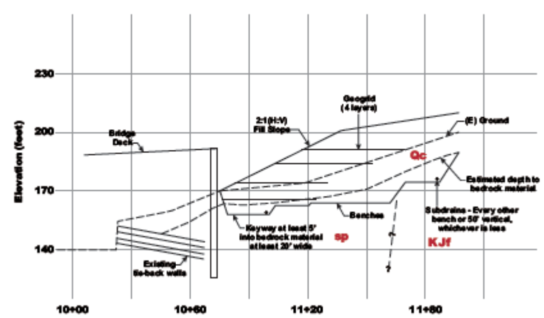
Explanation

Symbols

- Denotes approximate limits of ground disturbance due to mining / borrowing / grading activities (Raisch Quarry). Local cut slopes shown on detailed geologic sheets.
- Approximate area where substantial cuts have been made
- Approximate areas of existing fills (typically where thickness exceeds 2')
- Approximate area of underground Mercury Mine
- Strike / dip (degrees) of bedding / foliation / joint (respectively)
- Vertical bedding / foliation / joint (respectively)
- Approximate location of spring by Cornerstone Earth Group, 2009
- Approximate location of spring reported by JWL, 2006
- Approximate location of spring reported by Nolte Reclamation Plan, 1993
- 9 — 9' Approximate location of geologic cross section
- EB-1 Approximate location of exploratory boring by Cornerstone Earth Group, 12/23/2008 to 2/11/2009
- TP-1 Approximate location of test pit by Cornerstone Earth Group, 12/11/2008 to 1/13/2009
- TP-1A Approximate location of test pit by Cornerstone Earth Group, 4/1/2014 to 4/2/2014
- EB-1 Approximate location of exploratory boring by SES, 5/10/2007
- EB-1 Approximate location of exploratory boring by Lowney, 9/1/1999 to 8/24/2000
- TP-1 Approximate location of test pit by Lowney, 10/1999 to 10/2000
- P(B)-1 Approximate location of exploratory (bridge) boring by Parikh Consultants, 2002
- P(W)-1 Approximate location of exploratory (wall) boring by Parikh Consultants, 2002
- L-1 Approximate location of Seismic Refraction line by Norcal, Inc., 8/2007

Geologic Units

- Af — Artificial Fill
- Qls — Landslide (Cornerstone Earth Group, 2009)
- Qls — Landslide (JWL, 2006)
- Col — Colluvium: mapped where generally thicker than 3'
- Qal — Quaternary Alluvial Deposits
- Qc — Quaternary colluvium
- KJfs — Franciscan Sandstone (locally contains claystone and siltstone)
- KJfs(c) — Franciscan Claystone (associated with serpentinite, locally contains siltstone)
- sp — Serpentinite and Ultramafic rocks (locally contains Silica Carbonate)
- sc/sp — Silica Carbonate intermixed with Serpentinite
- Approximate Geologic Contact (dotted where concealed)
- Approximate Fault Contact between Franciscan Units (dotted where concealed)



Conceptual Mitigation Section 9-9'
(View Looking East)
1"=60' H:V

Notes:
1) MSE and engineered filled keyed in into bedrock material.
2) Geogrid reinforcement - MiraGrid 10XT at four layers at 8 foot spacing. Average length of 50 feet from face of slope.

CORNERSTONE EARTH GROUP

Communication Hill Boulevard Overhead Summary

Communications Hill - Phase 2
San Jose, CA

Project Number	Figure Number	Date	Drawn By
118-38-1	Figure 10	April 2014	FLL, RRN

APPENDIX A: FIELD INVESTIGATION

The field investigation consisted of a surface reconnaissance and a subsurface exploration program using truck-mounted, hollow-stem auger drilling equipment, rubber-tire backhoe, and track mounted excavator equipment. Eleven (11) 8-inch-diameter exploratory borings were drilled between December 23, 2008 and February 11, 2009 to depths of 20 to 41½ feet. Seventeen (17) test pits were excavated between December 11, 2008 and January 13, 2009 to depths ranging up to 11 feet deep. An additional ten test pits were excavated and logged on April 1, and 2, 2014. The approximate locations of exploratory borings and test pits are shown on the Site Plan and Geologic Map, Figure 2. The soils encountered were continuously logged in the field by our representative and described in accordance with the Unified Soil Classification System (ASTM D2488). Boring and test pit logs, as well as a key to the classification of the soil and bedrock, are included as part of this appendix.

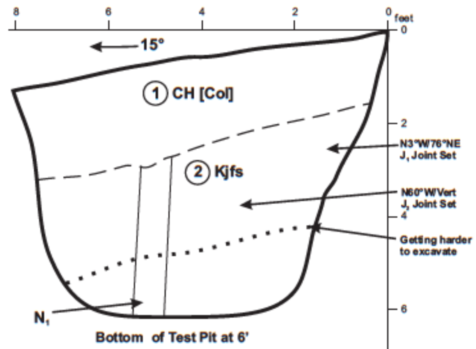
Boring and test pit locations were approximated using existing site boundaries and other site features as references. Boring and test pit elevations were based on interpolation of plan contours. The locations and elevations of the borings and test pits should be considered accurate only to the degree implied by the method used.

Representative soil samples (drive samples and bulk) were obtained from the borings and test pits at selected depths. All samples were returned to our laboratory for evaluation and appropriate testing. The standard penetration resistance blow counts from our borings were obtained by dropping a 140-pound hammer through a 30-inch free fall. The 2-inch O.D. split-spoon sampler was driven 18 inches and the number of blows was recorded for each 6 inches of penetration (ASTM D1586). 2.5-inch I.D. samples were obtained using a Modified California Sampler driven into the soil with the 140-pound hammer previously described. Unless otherwise indicated, the blows per foot recorded on the boring log represent the accumulated number of blows required to drive the last 12 inches. The various samplers are denoted at the appropriate depth on the boring logs. Additionally bedrock discontinuities were measured with a geologic compass in the test pits.

Field tests included an evaluation of the unconfined compressive strength of the soil samples using a pocket penetrometer device. The results of these tests are presented on the individual boring logs at the appropriate sample depths.

Attached boring and test pit logs and related information depict subsurface conditions at the locations indicated and on the date designated on the logs. Subsurface conditions at other locations may differ from conditions occurring at these boring and test pit locations. The passage of time may result in altered subsurface conditions due to environmental changes. In addition, any stratification lines on the logs represent the approximate boundary between soil types and the transition may be gradual.

TP-1



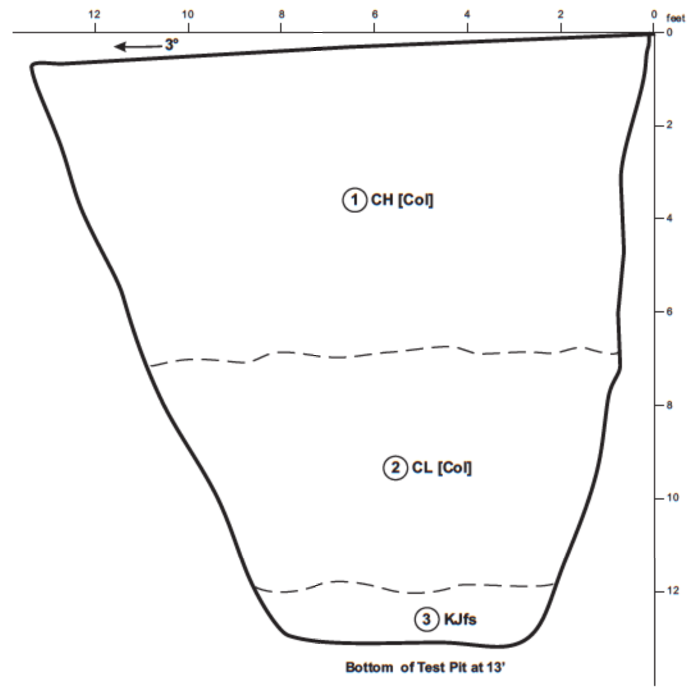
1. **Fat Clay (CH) [Colluvium]**
   moist, dark grayish brown; some gravel, blocky structure, expansion cracks to 1"wide, high plasticity

2. **Franciscan Sandstone [KJfs]**
   hard, moderately strong, moist, light olive brown to gray, moderate weathering, closely fractured; massive, contains interbedded shale
   The N60°W joint set is very prominent.

Notes:
J_2 is semicontinous.
J_1 is discontinous beyond 3 feet.

N_1 is a thin, siltstone bed with thin bedding (N76°W / 87°NE)

TP-2

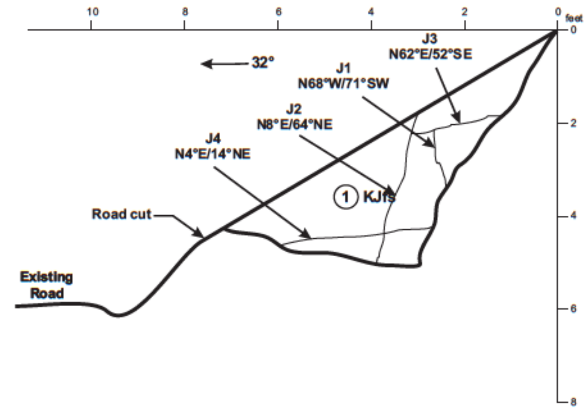


1. **Fat Clay (CH) [Colluvium]**
   moist, very dark gray-brown, some fine sand, trace fine subrounded gravel, moderate plasticity

2. **Lean Clay with Sand (CL) [Colluvium]**
   moist, brown, fine sand, some fine to coarse gravel, some cobbles below 10', moderate plasticity

3. **Franciscan Sandstone [KJfs]**
   moderately hard to hard (below 12'), weak to moderately strong, moist, olive, moderate weathering, moderate fracturing

TP-3



1. **Franciscan Sandstone [KJfs]**
   hard, moderately strong, moist, olive brown, moderate weathering, massive

Notes:
J1 = very prominent, continous joint, rough surface
J2 = semicontinous joint
J3 = semicontinous joint
J4 = semicontinous joint

Notes: Test Pit was performed in existing road cut area.

Test Pit Logs: TP-1, TP-2, TP-3

Communications Hill - Phase 2
San Jose, CA

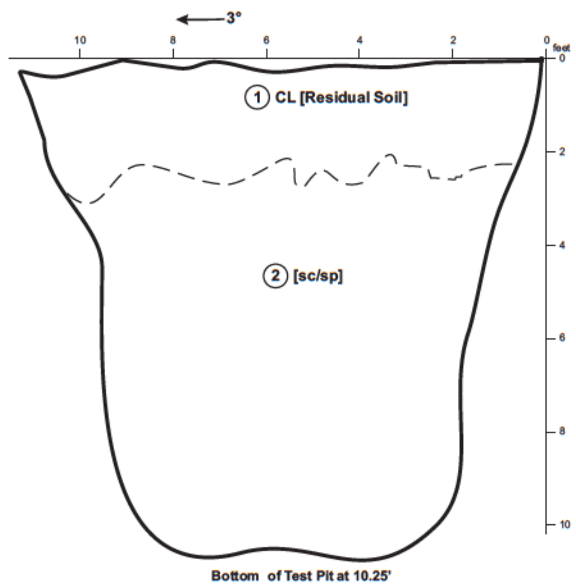
CORNERSTONE EARTH GROUP

Figure Number: Figure A-1

Project Number: 118-38-1

June 2013

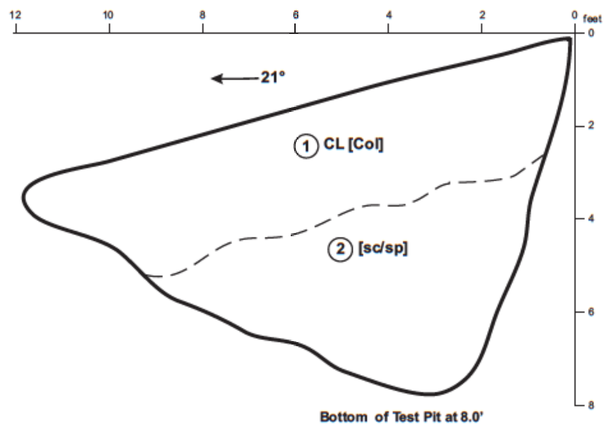
TP-4



① **Lean Clay with Sand (CL) [Residual Soil]**
moist, medium brown, fine sand, some fine to coarse gravel, moderate plasticity

② **Silica Carbonate intermixed with Serpeninite [sc/sp]**
low to moderately hard, weak to moderately strong, moist, light gray to light orange to yellow brown with white veins, moderate weathering, intensely fractured

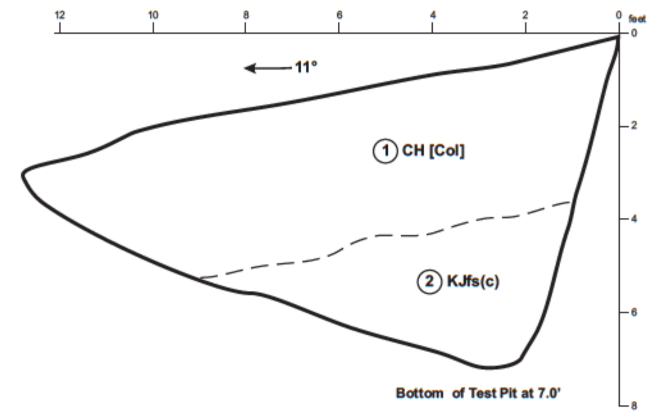
TP-5



① **Lean Clay (CL) [Colluvium]**
moist, very dark gray-brown, some fine gravel, low to moderate plasticity

② **Silica Carbonate intermixed with Serpentinite [sc/sp]**
low hardness to moderate hardness below 5', weak, moist, light orange to light gray, moderate weathering, closely fractured, massive structure

TP-6



① **Fat Clay (CH) [Colluvium]**
moist, very dark gray-brown, trace sand, high plasticity

② **Franciscan Claystone [KJfs(c)]**
soft, plastic, moist, olive brown, moderate weathering, non fractured, sheared
Plasticity Index = 19, Liquid Limit = 40

Test Pit Logs: TP-4, TP-5, TP-6

Communications Hill - Phase 2
San Jose, CA

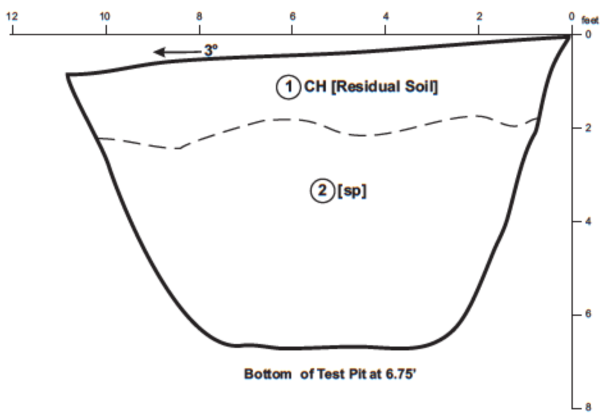
CORNERSTONE EARTH GROUP

Figure Number
Figure A-2

Project Number
118-38-1

June 2013

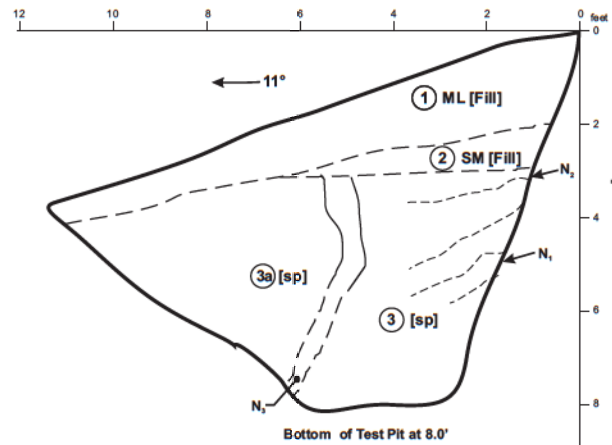
TP-7



1. Fat Clay (CH) [Residual Soil]
   moist, very dark gray-brown, trace sand, trace gravel, high plasticity
2. Serpentinite [sp]
   low hardness to moderate hardness below 4.5', weak, moist, grayish brown with white veins, moderate weathering, moderately fractured

Notes:
N67°W/69°SW foliation at nearby outcrop.

TP-8

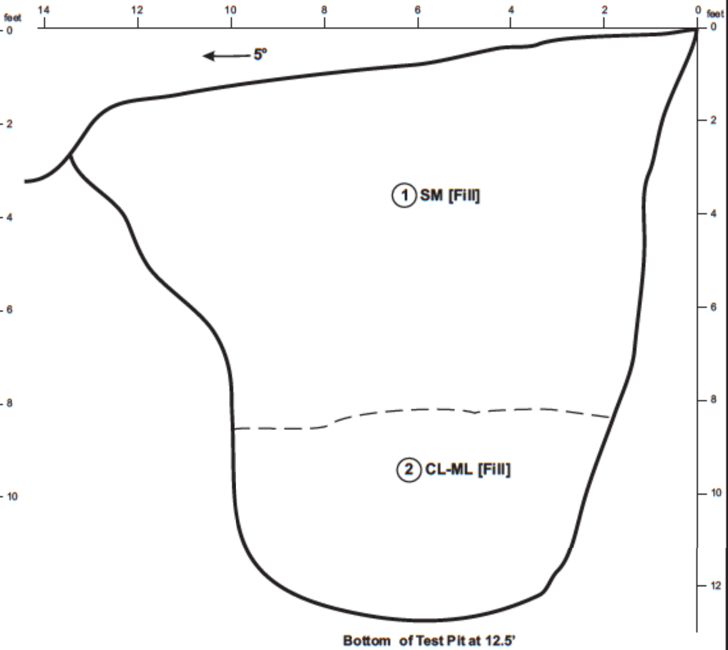


1. Sandy Silt with Gravel (ML) [Fill]
   moist, very dark brown, fine to coarse gravel, low to moderate plasticity
2. Silty Sand with Gravel (SM) [Fill]
   moist, blue gray, fine to coarse gravel
3. Serpentinite [sp]
   moderately hard, moderately strong, moist, very dark grey-brown, moderate weathering, closely fractured, some intermixed Diabase

3a. Serpentnite [sp]
   low hardness, weak to moderately strong, moist, greenish grey, moderate to deep weathering
   Plasticity Index = 28, Liquid Limit = 51

Notes:
N_1 = semicontinuous joint set dipping 47°NE
N_2 = discontinous joint set dipping 12°SW
N_3 = semicontinous shear (sandy silt, stiff)68°NE

TP-9



1. Silty Sand with Gravel (SM) [Fill]
   moist, reddish brown, fine to coarse subrounded and rounded to subangular gravel, getting harder to excavate at 5'
2. Silty Clay (CL-ML) [Fill]
   very dark gray-brown, some sand, some fine to coarse subangular gravel, low plasticity

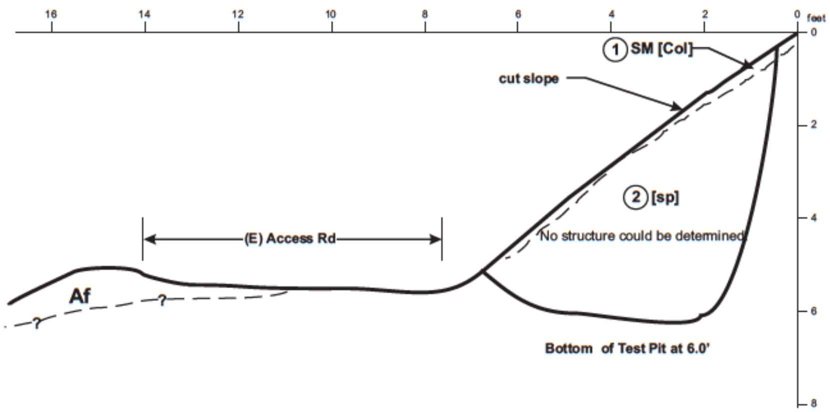
Test Pit Logs: TP-7, TP-8, TP-9

Communications Hill - Phase 2
San Jose, CA

CORNERSTONE EARTH GROUP

Figure Number: Figure A-3
Project Number: 118-38-1
June 2013

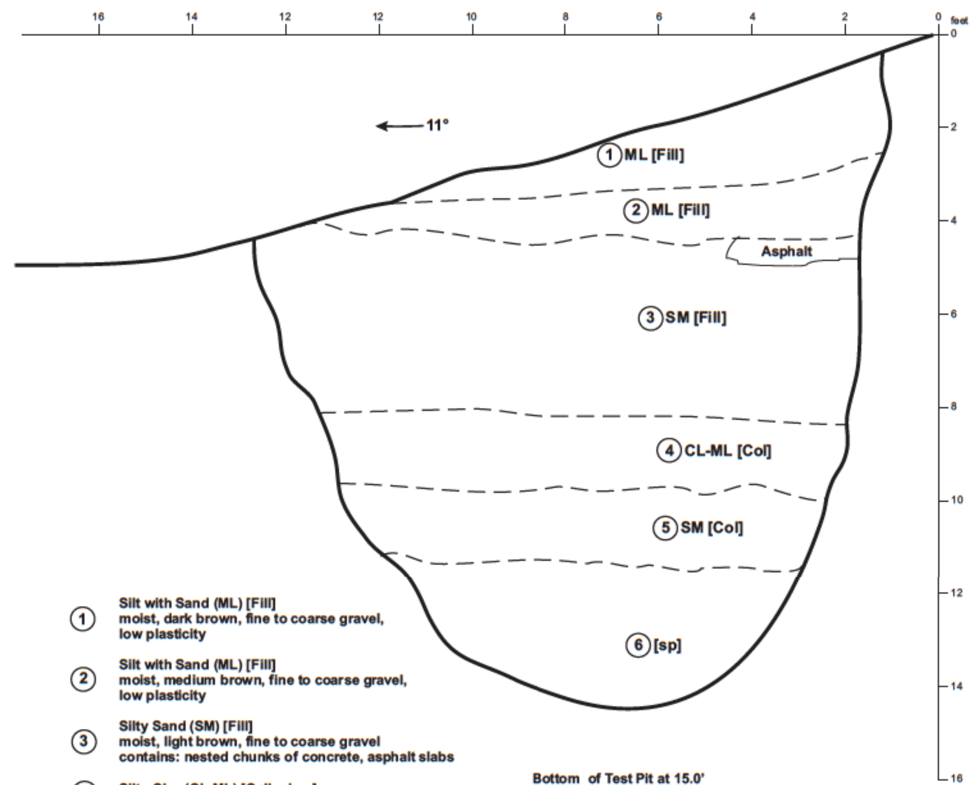
TP-10



1. **Silty Sand (SM) [Colluvium]**
   moist, dark brown
2. **Serpentinite [sp]**
   moderately hard, moderately strong, moist, greenish gray, moderate weathering, variable subhorizontal foliation

Notes: Af is not laterally extensive.

TP-11



1. **Silt with Sand (ML) [Fill]**
   moist, dark brown, fine to coarse gravel, low plasticity
2. **Silt with Sand (ML) [Fill]**
   moist, medium brown, fine to coarse gravel, low plasticity
3. **Silty Sand (SM) [Fill]**
   moist, light brown, fine to coarse gravel
   contains: nested chunks of concrete, asphalt slabs
4. **Silty Clay (CL-ML) [Colluvium]**
   moist, dark brown, low plasticity
5. **Silty Sand (SM) [Colluvium]**
   moist, light yellow brown, some fine gravel
6. **Serpentinite [sp]**
   moderately hard, weak, moist, light gray and yellow brown, deeply weathered, closely fractured and sheared, intermixed with Diabase

Test Pit Logs: TP-10, TP-11

Communications Hill - Phase 2
San Jose, CA

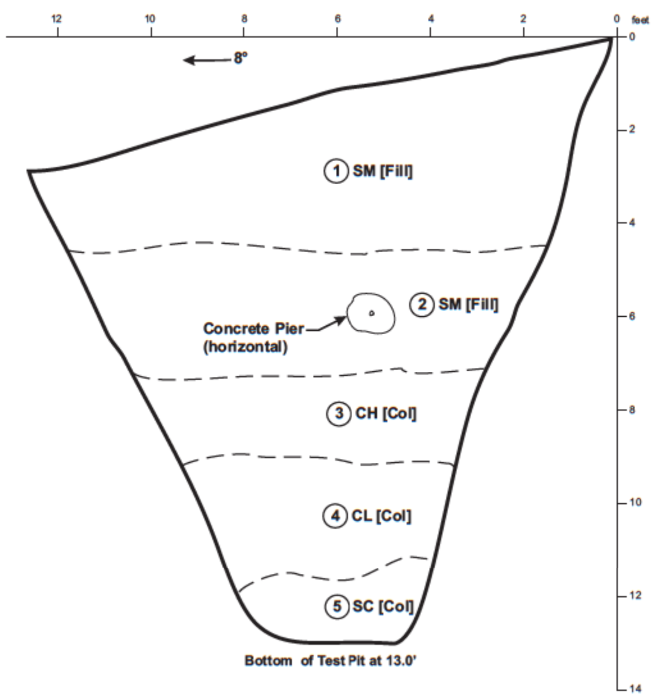
CORNERSTONE EARTH GROUP

Figure Number: Figure A-4

Project Number: 118-38-1

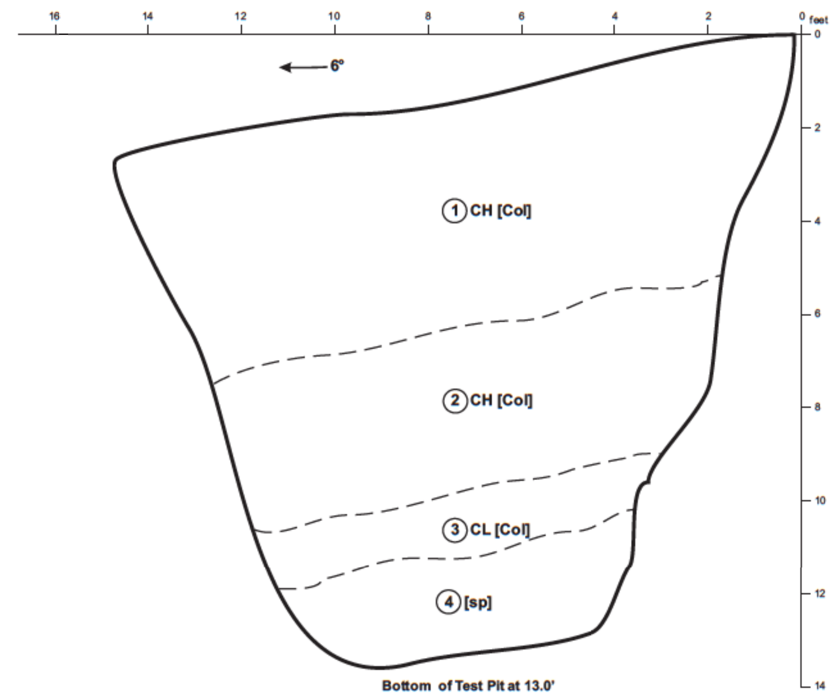
June 2013

TP-12



1. Silty Sand with Gravel (SM) [Fill]
   moist, dark brown, fine subangular to subrounded and rounded gravel, contains man-made debris (plastic pipe, asphalt chunks)
2. Silty Sand with Gravel (SM) [Fill]
   moist, dark brown, fine to coarse gravel, contains man-made debris (concrete pier)
3. Fat Clay (CH) [Colluvium]
   moist, very dark grayish brown to black, high plasticity
4. Lean Clay (CL) [Colluvium]
   moist, dark gray and light gray mottled, moderate plasticity
5. Clayey Sand with Gravel (SC) [Colluvium]
   moist to wet, dark gray, fine to coarse angular gravel

TP-13



1. Fat Clay (CH) [Colluvium]
   moist, very dark grayish brown, some fine to coarse subangular gravel, high plasticity, expansion cracks to 2.5'deep
2. Fat Clay (CH) [Colluvium]
   moist, dark brown, some fine to coarse subangular gravel, high plasticity
3. Lean Clay with Sand (CL) [Colluvium]
   moist, reddish brown, trace fine gravel, moderate plasticity
4. Serpentinite [sp]
   low hardness, friable to moderately strong below 12', moist, olive to light brown, moderately weathered, closely fractured and sheared

Test Pit Logs: TP-12, TP-13

Communications Hill - Phase 2
San Jose, CA

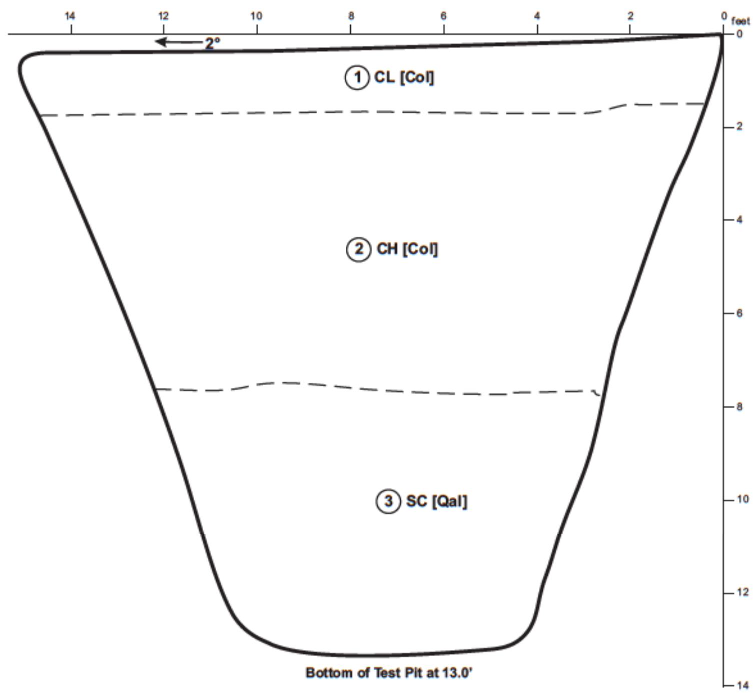
CORNERSTONE EARTH GROUP

Figure Number: Figure A-5

Project Number: 118-38-1

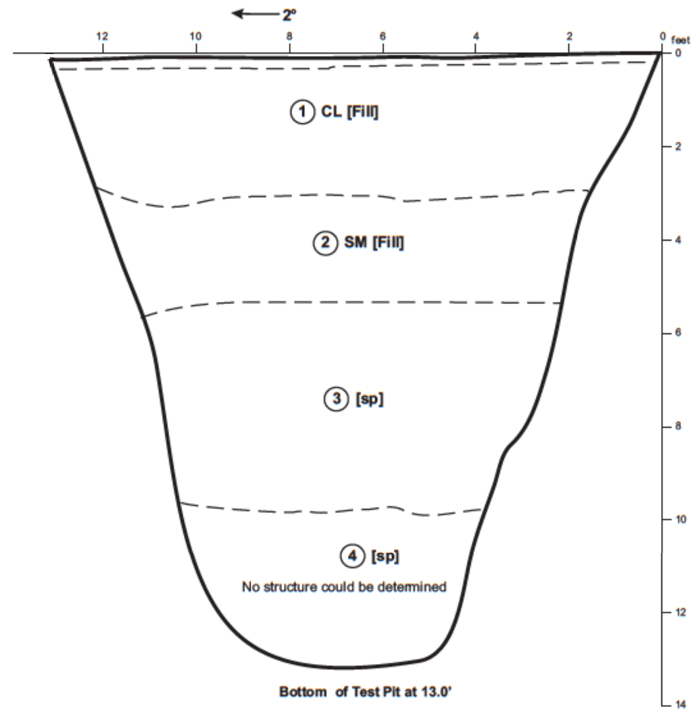
June 2013

TP-14



1. Sandy Lean Clay (CL) [Colluvium]
   moist, very dark gray brown, some fine to coarse gravel, moderate plasticity
2. Fat Clay (CH) [Colluvium]
   moist, dark brown, fine to coarse gravel, some fine sand, some gravel, high plasticity
3. Clayey Sand with Gravel (SC) [Alluvium]
   moist, medium brown, fine sand, fine subangular to subrounded gravel

TP-15



1. Sandy Lean Clay with Gravel (CL) [Fill]
   moist, light yellowish brown and grayish brown
2. Silty Sand with Gravel (SM) [Fill]
   moist, light yellow brown, fine to coarse angular gravel (serpentinite)
3. Serpentinite (sp)
   moderately hard, moderately strong, moist, light yellow brown, moderate weathering, closely fractured
4. Serpentinite (sp)
   hard, moderately strong, moist, olive to blue gray, moderate weathering, closely fractured

Test Pit Logs: TP-14, TP-15

Communications Hill - Phase 2
San Jose, CA

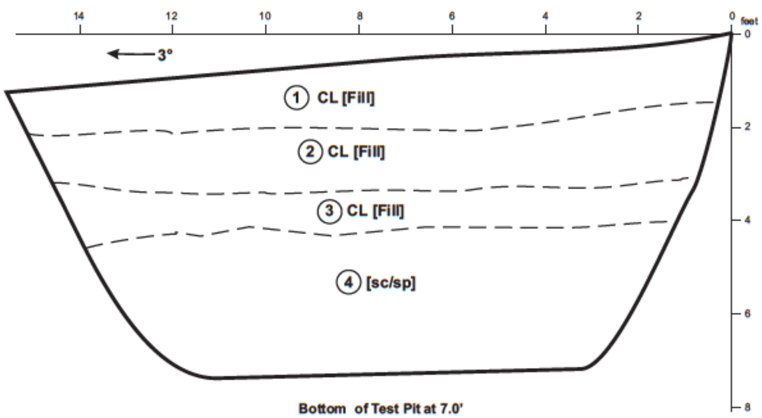
CORNERSTONE EARTH GROUP

Figure Number: Figure A-6

Project Number: 118-38-1

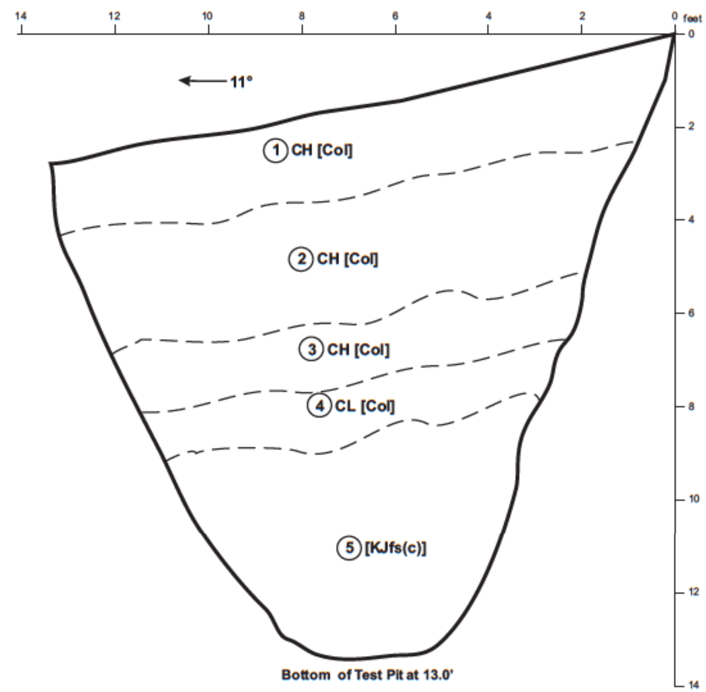
June 2013

TP-16



1. Sandy Lean Clay (CL) [Fill]
   moist, medium brown, trace gravel, moderate plasticity
2. Sandy Lean Clay with Gravel (CL) [Fill]
   moist, light olive brown, coarse gravel, moderate plasticity
3. Sandy Lean Clay with Gravel (CL) [Fill]
   moist, dark brown, , moderate plasticity, contains man-made materials
4. Silica Carbonate intermixed with Serpeninite [sc/sp]
   moderately hard to hard below 6', moderately strong, moist, orange brown, deeply weathered

TP-17



1. Fat Clay (CH) [Colluvium]
   moist, black, trace sand, trace gravel, high plasticity
2. Fat Clay (CH) [Colluvium]
   moist, very dark greyish brown, trace sand, high plasticity
3. Sandy Fat Clay with Gravel (CH) [Colluvium]
   moist, very dark grey, fine to coarse gravel and cobbles of silica carbonate and serpentinite, high plasticity
4. Lean Clay with Sand (CL) [Colluvium]
   moist, medium gray to olive with white mottles, some gravel, moderate plasticity
5. Franciscan Claystone [KJfs(c)]
   low hardness, weak, moist, olive gray with white mottles, moderate weathering, closely fractured and sheared, massive

Test Pit Logs: TP-16, TP-17

Communications Hill - Phase 2
San Jose, CA

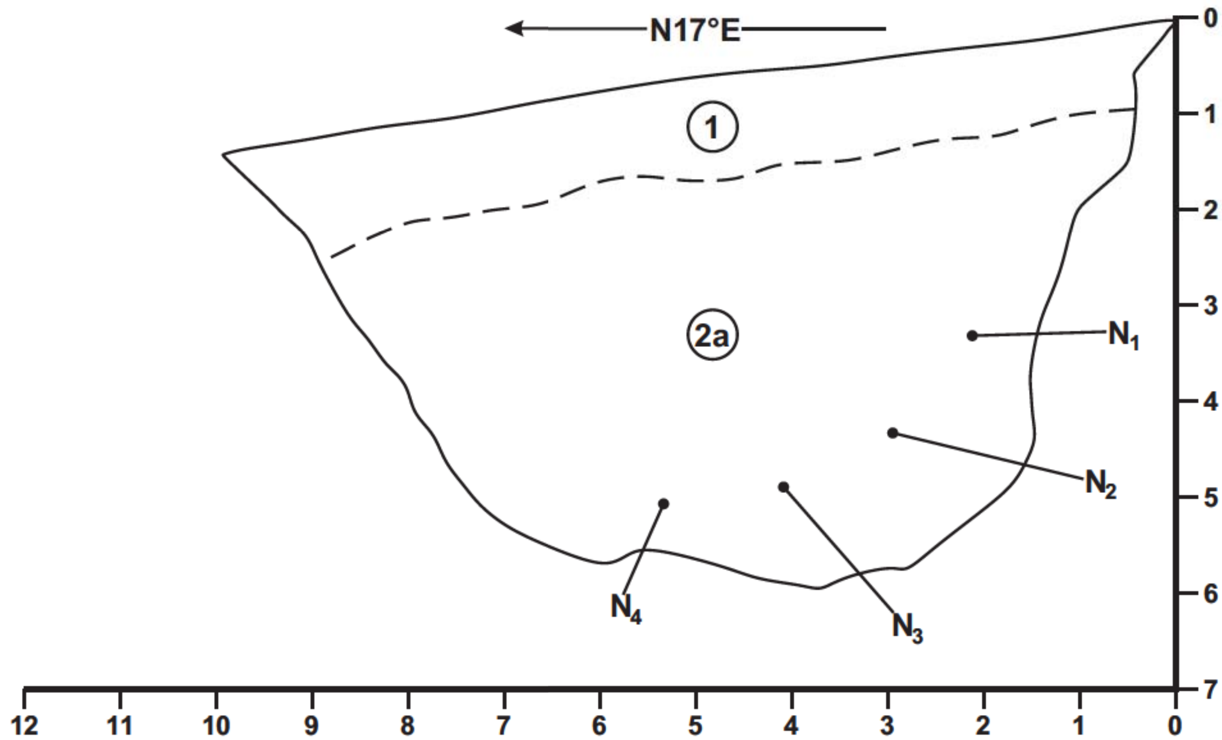
CORNERSTONE EARTH GROUP

Figure Number
Figure A-7

Project Number
118-38-1

June 2013

TP-1A



Unit Descriptions

(1) Sandy silt: Very dark gray-brown, damp, firm, some clay [residual soil]

(2a) Silica carbonate: Light yellow, brown and orange, hard, fractured, severely weathered, rough surfaces, viened with SiO_2

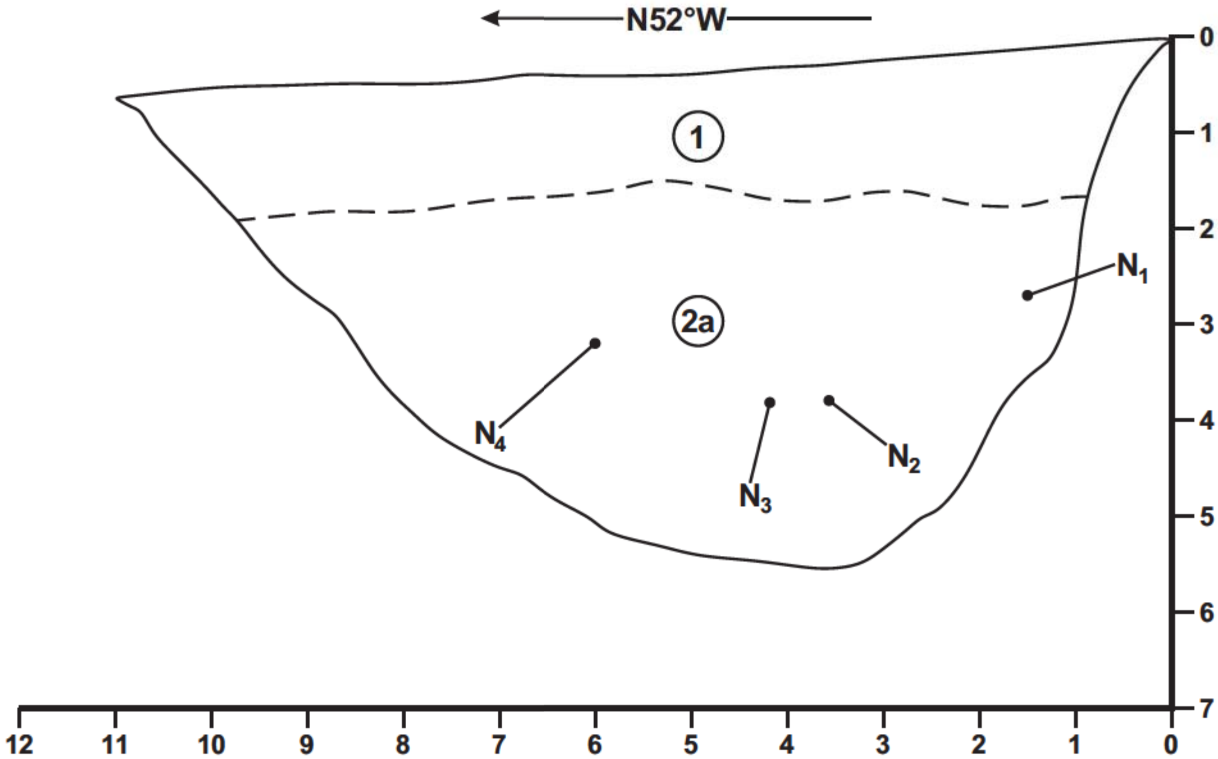
Notes

N_1 = Prominent fracture = N80°E/87°SE
N_2 = Joint = N47°W/73°SW
N_3 = Shears = N82°W/62°SW
N_4 = Shears = N75°W/75°SW

Scale: 1" = 2'

CORNERSTONE EARTH GROUP	Test Pit 1A	Project Number: 118-38-1
	Communication Hill - Phase 2 San Jose, CA	Figure Number: TP-1A
		Date: April 2014 · Drawn By: RRN

TP-2A



Unit Descriptions

(1) **Sandy silt: Gray-brown, damp, firm, [residual soil]**

(2a) **Silica carbonate: Orange and light yellow-brown, damp, hard, severely weathered, jointed and fractured, cemented locally**

Notes

N_1 = Shear = N5°E/75°SE
N_2 = Joint = 0°N/60°E - Failed
N_3 = Joint = N62°E/88°SE
N_4 = Joint = N58°W/54°SW

Scale: 1" = 2'

CORNERSTONE EARTH GROUP	Test Pit 2A	Project Number 118-38-1
	Communication Hill - Phase 2 San Jose, CA	Figure Number TP-2A
		Date April 2014 / Drawn By RRN

Unit Descriptions

(1a) Sandy silt with clay: Very dark gray-brown, damp, firm [Colluvium]

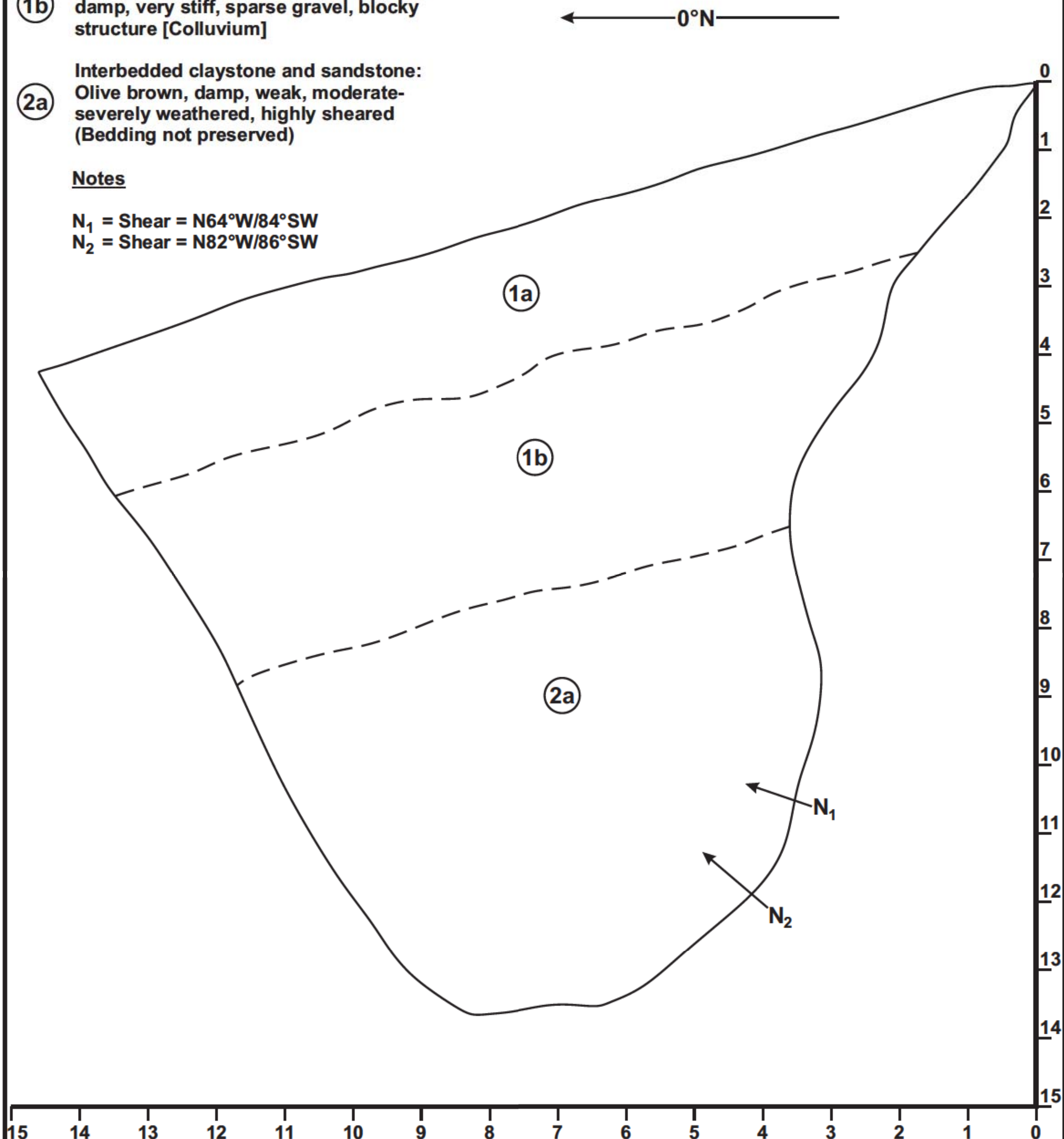
(1b) Sandy clay with silt: Dark gray-brown, damp, very stiff, sparse gravel, blocky structure [Colluvium]

(2a) Interbedded claystone and sandstone: Olive brown, damp, weak, moderate-severely weathered, highly sheared (Bedding not preserved)

Notes

N_1 = Shear = N64°W/84°SW
N_2 = Shear = N82°W/86°SW

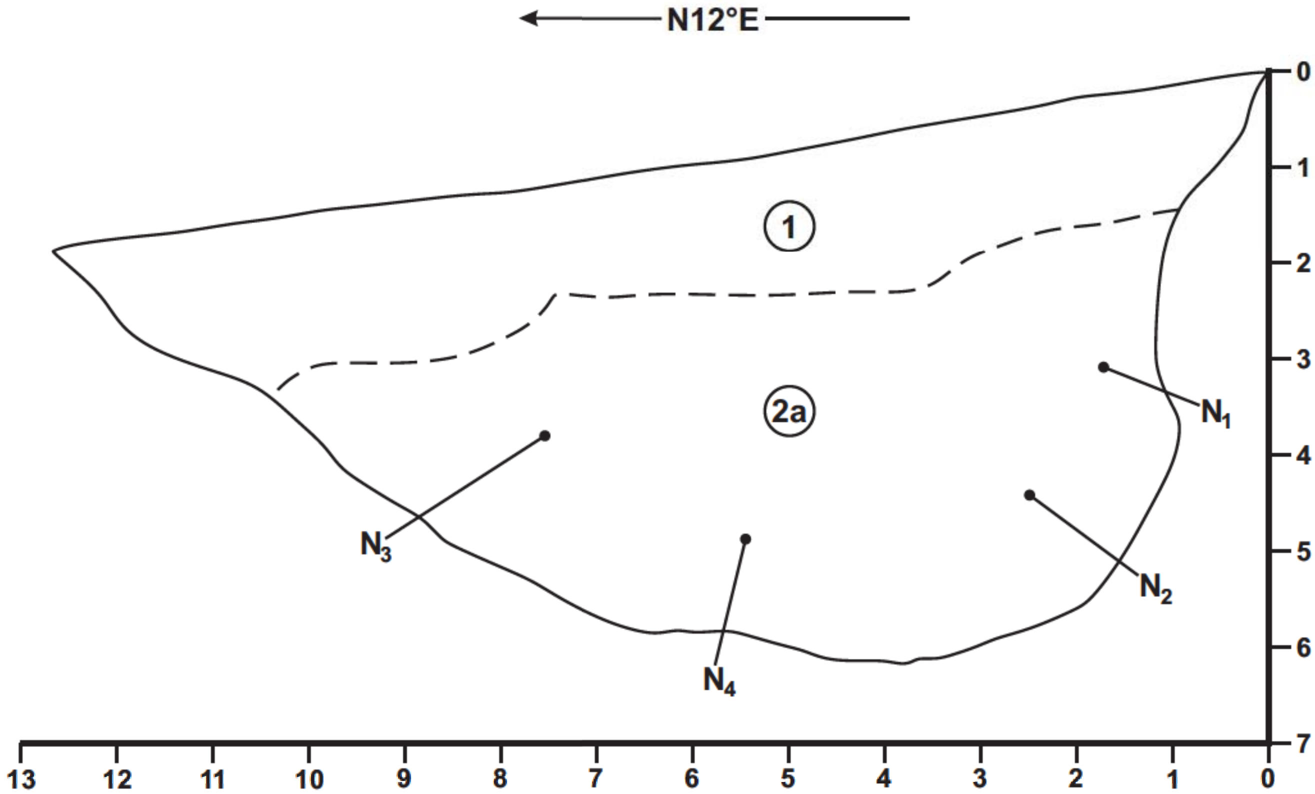
TP-3A



Scale: 1" = 2'

CORNERSTONE EARTH GROUP	Test Pit 3A	Project Number	118-38-1
	Communication Hill - Phase 2 San Jose, CA	Figure Number	TP-3A
		Date: April 2014	Drawn By: RRN

TP-4A



Unit Descriptions

① **Silty sand with gravel: Dark brown, damp, loose [residual soil]**

②a **Silica carbonate: Orange and light yellow-brown, damp, weak to moderately strong, severely to very severely weathered, jointed and sheared**

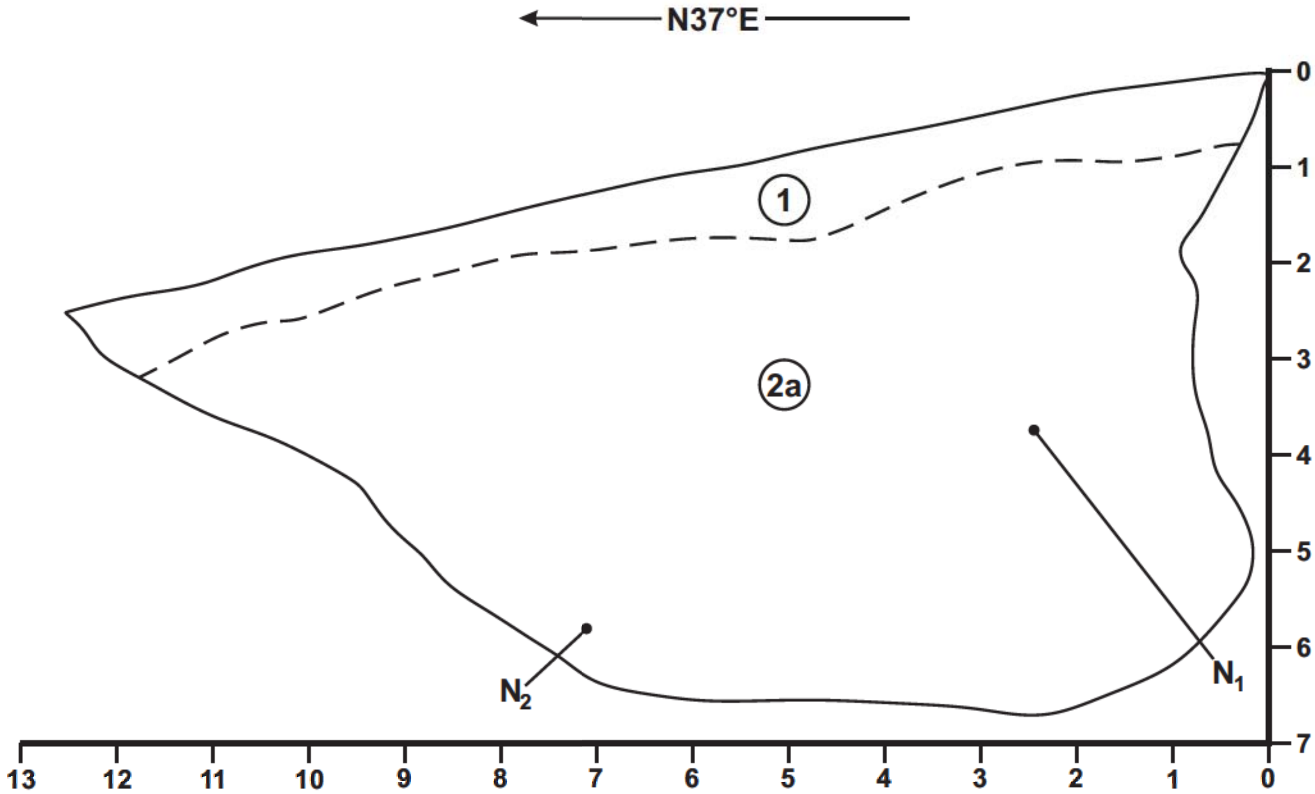
Notes

N_1 = Joint set = N30°W/81°NE
N_2 = Shear = N69°W/48°SW
N_3 = Foliation = N85°W/50°NE
N_4 = Fractures = N21°W/70°NE

Scale: 1" = 2'

CORNERSTONE EARTH GROUP	Test Pit 4A	Project Number 118-38-1
	Communication Hill - Phase 2 San Jose, CA	Figure Number TP-4A
		Date April 2014 / Drawn By RRN

TP-5A



Unit Descriptions

(1) **Silty sand with gravel: Dark brown, damp, loose [residual soil]**

(2a) **Intermixed ultramafic rocks and serpentinite: Dark green and black, discontinuous fractures thoughout, severely weathered, moderately strong**

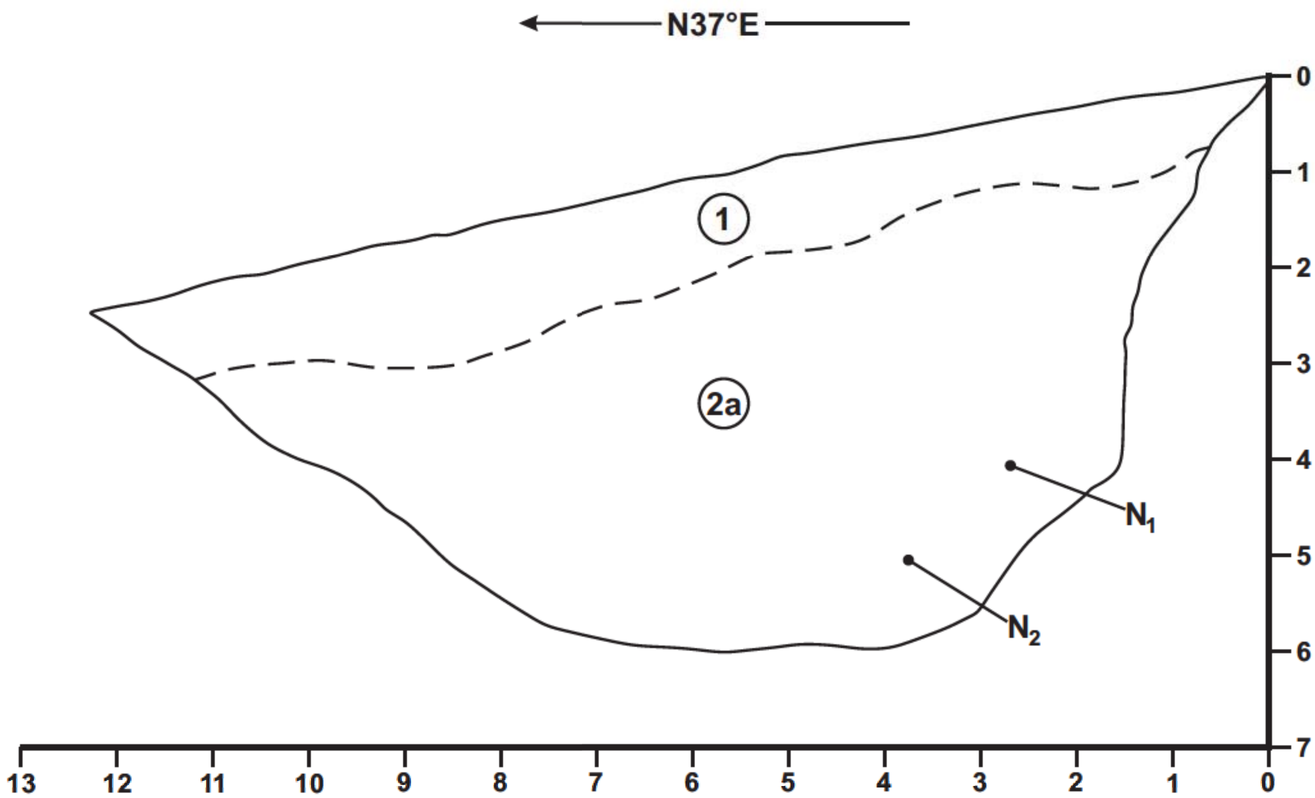
Notes

N_1 = Shear = N88°E/80°SE
N_2 = N85°W/52°NE

Scale: 1" = 2'

CORNERSTONE EARTH GROUP	Test Pit 5A	Project Number 118-38-1
	Communication Hill - Phase 2 San Jose, CA	Figure Number TP-5A
		Date April 2014 / Drawn By RRN

TP-6A



Unit Descriptions

(1) **Silty sand with gravel: Dark brown, damp, loose [residual soil]**

(2a) **Ultramafic rocks: Black and dark greenish gray, damp, moderately hard to very hard, severely weathered, sheared and jointed**

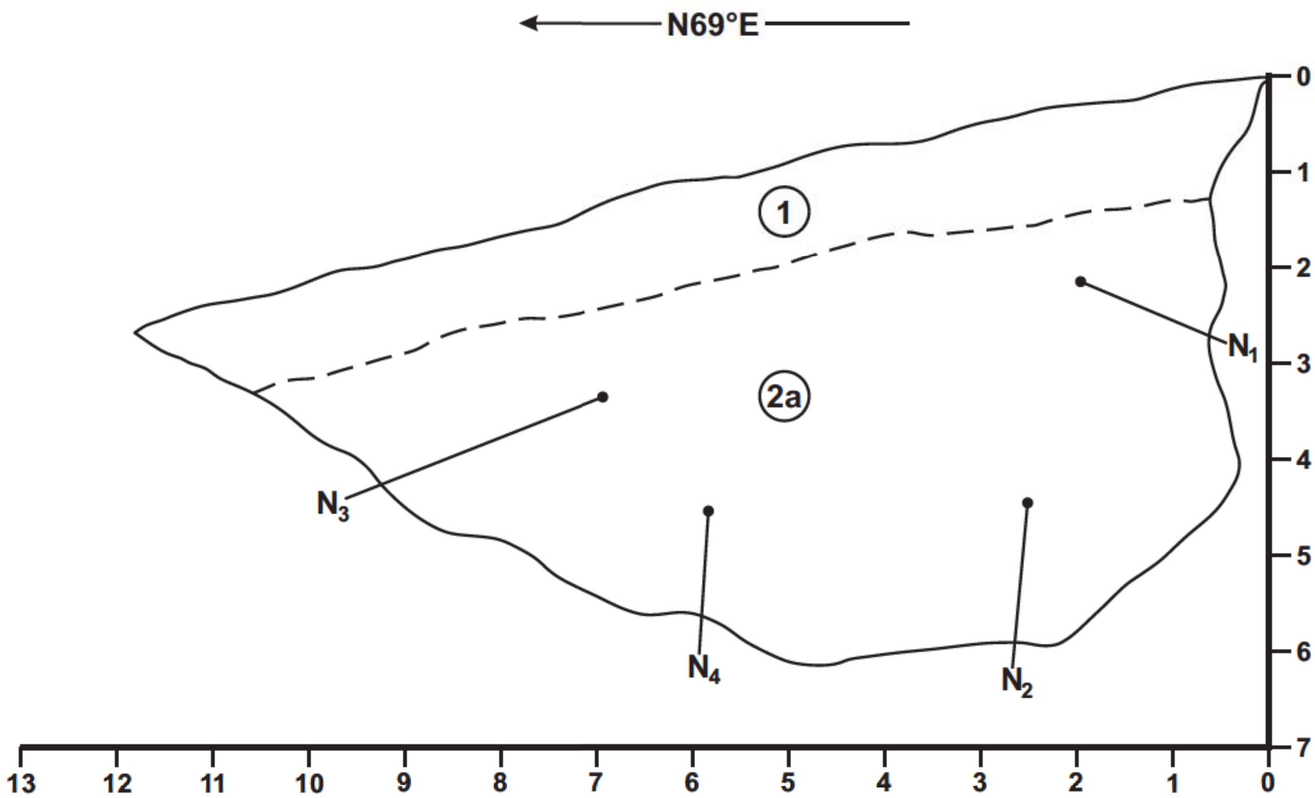
Notes

N_1 = Shear = N31°E/70°NW
N_2 = Joint set = N10°E/65°SE

Scale: 1" = 2'

CORNERSTONE EARTH GROUP	Test Pit 6A	Project Number 118-38-1
	Communication Hill - Phase 2 San Jose, CA	Figure Number TP-6A
		Date April 2014 / Drawn By RRN

TP-7A



Unit Descriptions

(1) Silty sand with gravel: Very dark grey-brown, damp, firm [residual soil]

(2a) Ultramafic rocks and serpentinite: Black and dark greenish-gray, damp, variable hard to locally soft, severely weathered, sheared

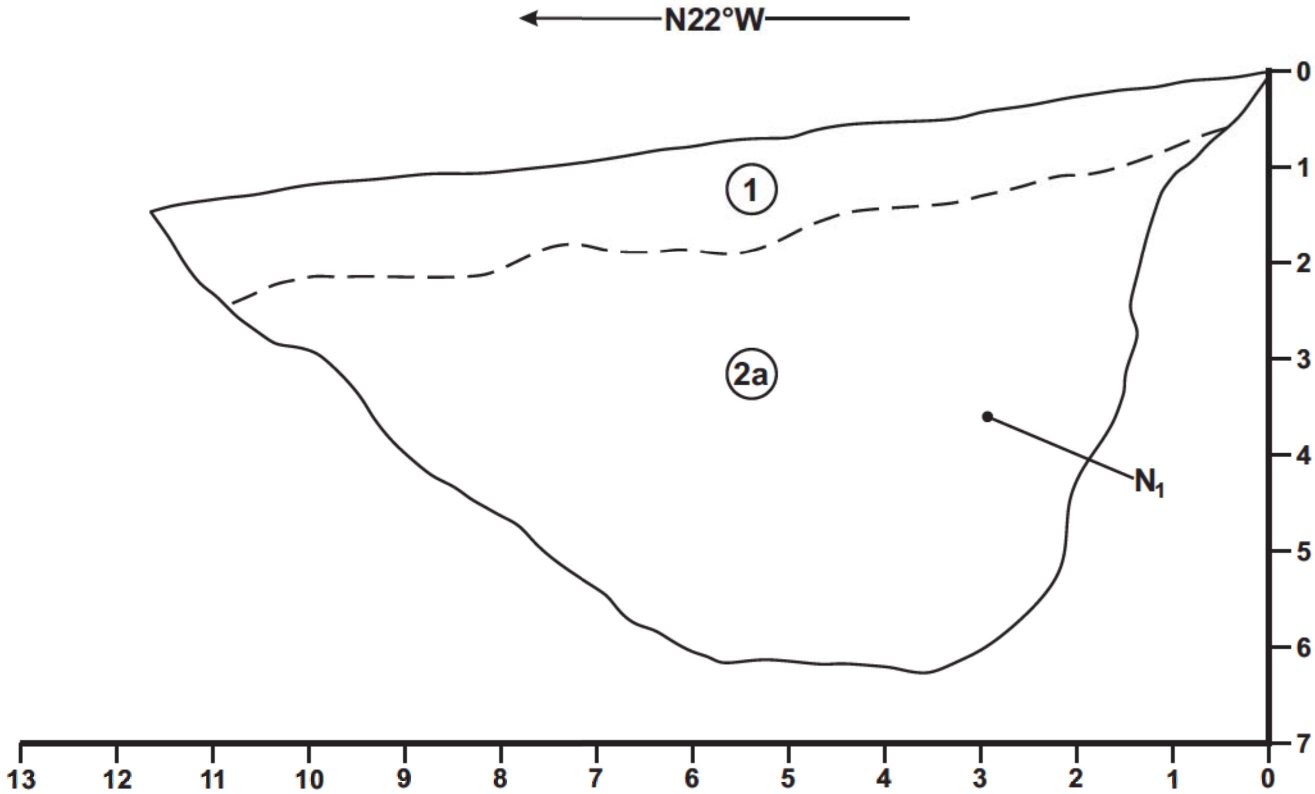
Notes

N_1 = Foliation = N56°W/23°SW
N_2 = Shear = N35°W/47°SW
N_3 = Shear = 0°N/34°E
N_4 = Shear = N32°W/90°

Scale: 1" = 2'

CORNERSTONE EARTH GROUP	Test Pit 7A	Project Number: 118-38-1
	Communication Hill - Phase 2 San Jose, CA	Figure Number: TP-7A
		Date: April 2014 / Drawn By: RRN

TP-8A



Unit Descriptions

(1) Sandy silt with gravel: Dark gray -brown, damp, loose [residual soil]

(2a) Ultramafic rocks and serpentinite: Black and dark greenish-gray, damp, variable weak to strong, severely weathered, sheared

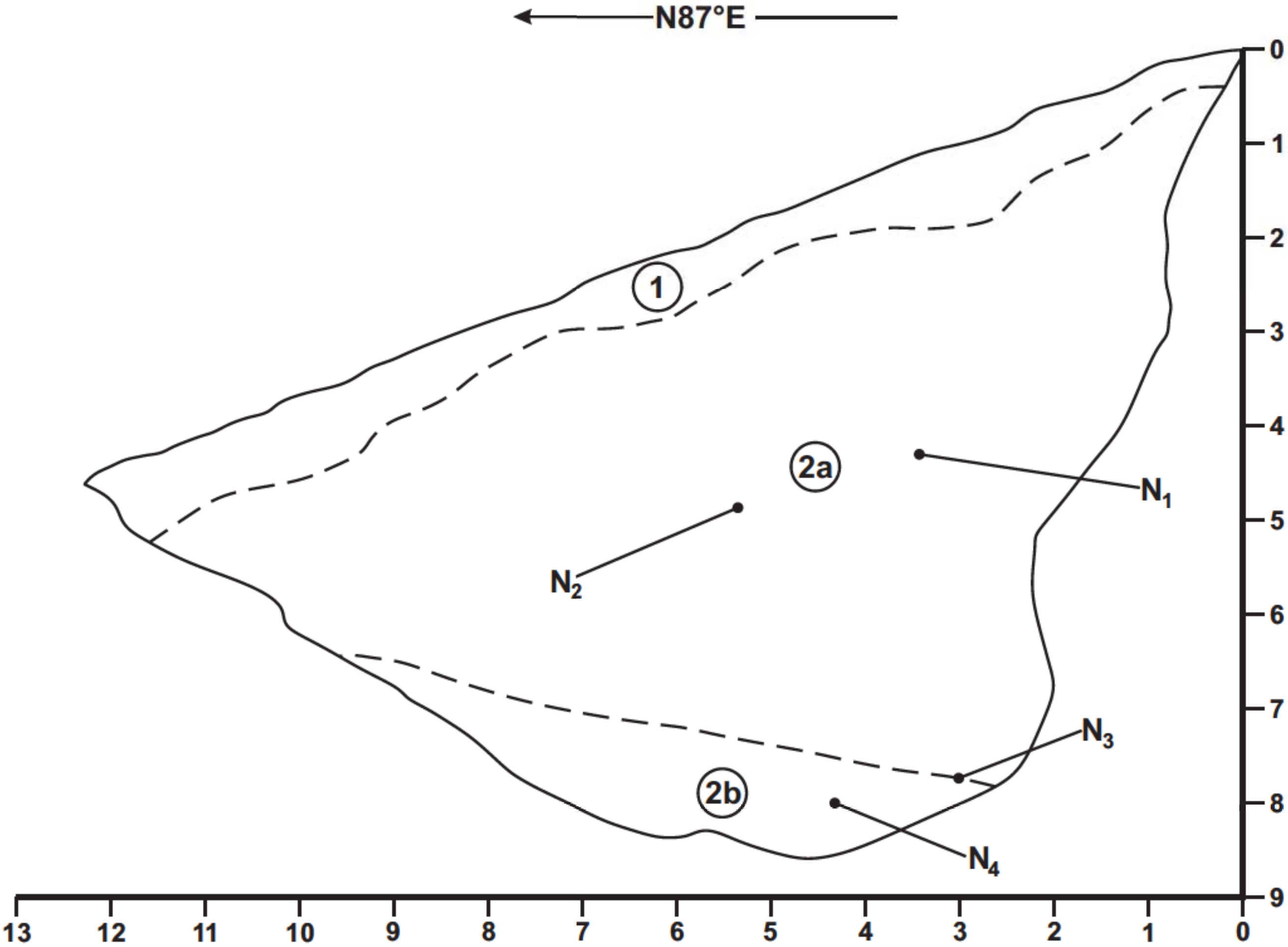
Notes

N_1 = Shear Zone = N44°W/34°SW

Scale: 1" = 2'

CORNERSTONE EARTH GROUP	Test Pit 8A	Project Number: 118-38-1
	Communication Hill - Phase 2 San Jose, CA	Figure Number: TP-8A
		Date: April 2014 / Drawn By: RRN

TP-9A



Unit Descriptions

(1) Sandy silt with gravel: Very dark gray -brown, damp, firm [residual soil]

(2a) Sandy shale: Very dark gray-brown, damp, weak, moderately-severely weathered, thin bedded, fissile, pervesively fractured, jointed

(2b) Sandstone: Medium gray-brown, damp, moderately hard, slightly cemented, moderately-severely weathered

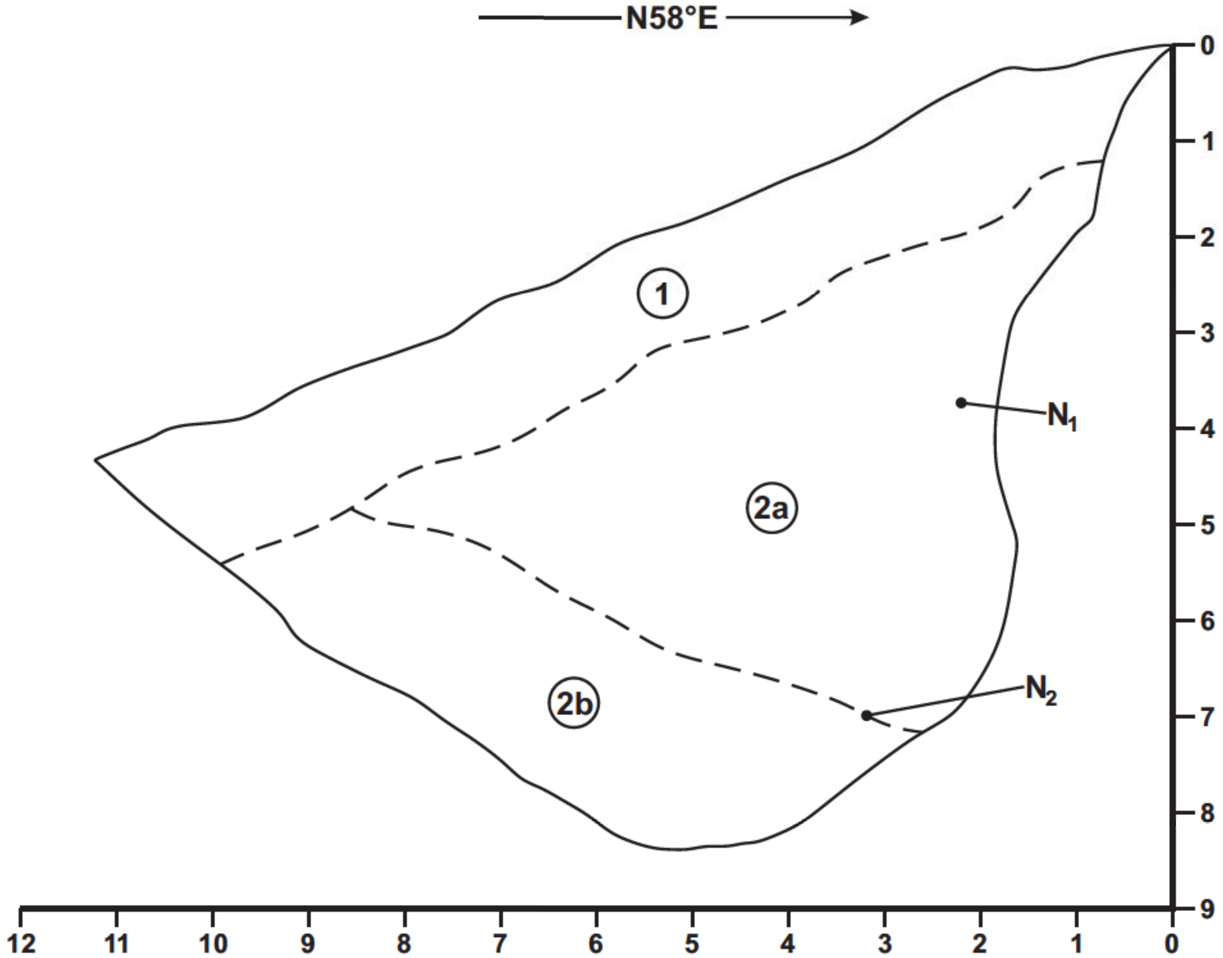
Notes

N_1 = Joint Set = N81°W/31°NE
N_2 = Spalling on bedding plane
N_3 = Contact = N30°E/41°NW
N_4 = Bedding = N30°W/36°SW

Scale: 1" = 2'

CORNERSTONE EARTH GROUP	Test Pit 9A	Project Number 118-38-1
	Communication Hill - Phase 2 San Jose, CA	Figure Number TP-9A
		Date April 2014 / Drawn By RRN

TP-10A



Unit Descriptions

(1) **Sandy silt with gravel: Very dark gray -brown, damp, firm [residual soil]**

(2a) **Sandy shale: Very dark gray-brown, damp, moderately hard, thin bedded, fissile, sheared and fractured**

(2b) **Sandy claystone: Olive brown and light yellow-brown, damp, weak, laminated and thin bedded, sheared and fractured, contains thin interbeds of fine sandstone**

Notes

N_1 = Bedding = N45°E/35°NW
N_2 = 2a/2b contact = N35°E/35°NW

Scale: 1" = 2'

CORNERSTONE EARTH GROUP	Test Pit 10A	Project Number 118-38-1
	Communication Hill - Phase 2 San Jose, CA	Figure Number TP-10A
		Date April 2014 / Drawn By RRN

BORING NUMBER EB-1

CORNERSTONE EARTH GROUP

PROJECT NAME Communication Hill - Phase 2
PROJECT NUMBER 118-38-1
PROJECT LOCATION San Jose, CA
DATE STARTED 12/23/08 **DATE COMPLETED** 12/23/08
GROUND ELEVATION 290 FT +/- **BORING DEPTH** 29.5 ft.
DRILLING CONTRACTOR Exploration Geoservices, Inc.
LATITUDE 37.291221 **LONGITUDE** -121.863388
DRILLING METHOD 8 inch Hollow Stem Auger
GROUND WATER LEVELS:
LOGGED BY CSH
▽ **AT TIME OF DRILLING** Not Encountered
NOTES
▼ **AT END OF DRILLING** Not Encountered

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UNDRAINED SHEAR STRENGTH, ksf: ○ HAND PENETROMETER; △ TORVANE; ● UNCONFINED COMPRESSION; ▲ UNCONSOLIDATED-UNDRAINED TRIAXIAL (scale 1.0, 2.0, 3.0, 4.0)

DESCRIPTION

- Elevation 290.0, Depth 0: **Lean Clay with Sand (CL) [Fill, Af]** hard, moist, dark grayish brown, fine to medium sand, moderate plasticity
- Elevation 288.5 / 287.8: **Sandy Fat Clay (CH) [Residual Soil]** hard, moist, dark grayish brown, fine to medium sand, some fine subangular gravel, high plasticity
- **Serpentinite [sp]** low hardness, friable, deep weathering, moist, olive and greenish gray with white veins, moderate to intensely sheared, subvertical shears
- (about 21 ft) black and green mottles
- (about 25 ft) becomes moderately hard
- Elevation 260.5, Depth 29.5: Bottom of Boring at 29.5 feet.

N-Value (uncorrected) blows per foot	Samples Type and Number	Dry Unit Weight PCF	Natural Moisture Content, %	Plasticity Index, %	Percent Passing No. 200 Sieve	Undrained Shear Strength, ksf
20	MC-2	106	13			○ >4.5
28	MC-4	112	13			○ 4.0
34	MC-6	87	36			○ 4.0
23	SPT-7		19			
25	SPT-8		15			
27	SPT-9		27			
28	SPT-10		12			
54	SPT-11		9			
50 3"	SPT					

BORING NUMBER EB-2

CORNERSTONE EARTH GROUP

PROJECT NAME Communication Hill - Phase 2
PROJECT NUMBER 118-38-1
PROJECT LOCATION San Jose, CA

DATE STARTED 12/23/08 **DATE COMPLETED** 12/23/08
GROUND ELEVATION 186 FT +/- **BORING DEPTH** 23 ft.
DRILLING CONTRACTOR Exploration Geoservices, Inc.
LATITUDE 37.291250 **LONGITUDE** -121.865329
DRILLING METHOD 8 inch Hollow Stem Auger
GROUND WATER LEVELS:
LOGGED BY CSH
▽ **AT TIME OF DRILLING** Not Encountered
NOTES
▼ **AT END OF DRILLING** Not Encountered

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UNDRAINED SHEAR STRENGTH, ksf: ○ HAND PENETROMETER; △ TORVANE; ● UNCONFINED COMPRESSION; ▲ UNCONSOLIDATED-UNDRAINED TRIAXIAL (scale 1.0, 2.0, 3.0, 4.0)

ELEVATION (ft)	DEPTH (ft)	DESCRIPTION	N-Value (uncorrected) blows per foot	SAMPLES TYPE AND NUMBER	DRY UNIT WEIGHT PCF	NATURAL MOISTURE CONTENT, %	PLASTICITY INDEX, %	PERCENT PASSING No. 200 SIEVE	UNDRAINED SHEAR STRENGTH, ksf
186.0	0	**Fat Clay (CH) [Colluvium]** very stiff, moist, dark grayish brown, some fine sand, high plasticity; Liquid Limit = 54, Plastic Limit = 18	18	MC-2	92	18	36		○
			22	MC-4	101	20			○
	5		18	MC-6	105	20			○
179.5		**Lean Clay with Sand (CL) [Colluvium]** hard, moist, brown, fine sand, some fine subangular gravel, moderate plasticity	28	MC-7	119	14			>4.5 ○
	10		31	MC-8	120	14			>4.5 ○
175.0		**Franciscan Sandstone [KJfs]** moderately hard, weak, moist, brown with white veins, moderate to deep weathering, some interbedded claystone	28	MC-9	114	15			
			34	SPT-10		11			
	15	drilling stiffened @16'							
		some interbedded siltstone	50 3"	SPT-11					
	20								
163.0		Bottom of Boring at 23.0 feet.	50 1"	SPT-12		3			
	25								
	30								
	35								

CORNERSTONE EARTH GROUP

BORING NUMBER EB-3

PROJECT NAME Communication Hill - Phase 2
PROJECT NUMBER 118-38-1
PROJECT LOCATION San Jose, CA

DATE STARTED 12/23/08 **DATE COMPLETED** 12/23/08
GROUND ELEVATION 266 FT +/- **BORING DEPTH** 41.5 ft.
DRILLING CONTRACTOR Exploration Geoservices, Inc.
LATITUDE 37.289082 **LONGITUDE** -121.861158
DRILLING METHOD 8 inch Hollow Stem Auger
GROUND WATER LEVELS:
LOGGED BY CSH
▽ **AT TIME OF DRILLING** Not Encountered
NOTES
▼ **AT END OF DRILLING** Not Encountered

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UNDRAINED SHEAR STRENGTH, ksf: ○ HAND PENETROMETER; △ TORVANE; ● UNCONFINED COMPRESSION; ▲ UNCONSOLIDATED-UNDRAINED TRIAXIAL (scale 1.0, 2.0, 3.0, 4.0)

ELEVATION (ft)	DEPTH (ft)	DESCRIPTION	N-Value (uncorrected) blows per foot	SAMPLES TYPE AND NUMBER	DRY UNIT WEIGHT PCF	NATURAL MOISTURE CONTENT, %	PLASTICITY INDEX, %	PERCENT PASSING No. 200 SIEVE	UNDRAINED SHEAR STRENGTH, ksf
266.0	0	**Fat Clay (CH) [Colluvium]** very stiff, moist, dark grayish brown, high plasticity. Liquid Limit = 76, Plastic Limit = 28	19	MC-1	67	40	48		○
263.0		**Sandy Fat Clay (CH) [Colluvium]** hard, moist, dark brown to brown, fine to medium sand, trace fine subangular gravel, high plasticity. Liquid Limit = 77, Plastic Limit = 28	29	MC-2	79	25	49		○
	5		23	MC-3	83	24			
			4	MC-4		25			
257.5		**Franciscan Claystone [KJfs(c)]** moderately hard, weak, moist, brown with white veins, moderate to deep weathering	19	SPT-5		28			
	10		46	MC-6	82	29			
253.0		**Serpentinite [sp]** low hardness, friable, deep weathering, moist, olive and greenish gray, moderate to intensely sheared							
	15		49	SPT-7		20			
	20		29	SPT-8		23			
	25		21	SPT-9		20			
	30	some white veins, subvertical shears	26	SPT-10		21			
231.0	35								

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CORNERSTONE EARTH GROUP

BORING NUMBER EB-3

PROJECT NAME Communication Hill - Phase 2

PROJECT NUMBER 118-38-1

PROJECT LOCATION San Jose, CA

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UNDRAINED SHEAR STRENGTH, ksf: ○ HAND PENETROMETER; △ TORVANE; ● UNCONFINED COMPRESSION; ▲ UNCONSOLIDATED-UNDRAINED TRIAXIAL (scale 1.0, 2.0, 3.0, 4.0)

ELEVATION (ft)	DEPTH (ft)	SYMBOL	DESCRIPTION	N-Value (uncorrected) blows per foot	SAMPLES TYPE AND NUMBER	DRY UNIT WEIGHT PCF	NATURAL MOISTURE CONTENT, %	PLASTICITY INDEX, %	PERCENT PASSING No. 200 SIEVE	UNDRAINED SHEAR STRENGTH, ksf
231.0	35		**Serpentinite [sp]** low hardness, friable, deep weathering, moist, olive and greenish gray, moderate to intensely sheared	36	SPT-11		13			
	40			32	SPT-12		17			
224.5	41.5		Bottom of Boring at 41.5 feet.							
	45									
	50									
	55									
	60									
	65									
	70									
	75									

BORING NUMBER EB-4

CORNERSTONE EARTH GROUP

PROJECT NAME Communication Hill - Phase 2
PROJECT NUMBER 118-38-1
PROJECT LOCATION San Jose, CA

DATE STARTED 12/23/08 DATE COMPLETED 12/23/08
GROUND ELEVATION 250 FT +/- BORING DEPTH 20 ft.
DRILLING CONTRACTOR Exploration Geoservices, Inc.
LATITUDE 37.289269 LONGITUDE -121.860652
DRILLING METHOD 8 inch Hollow Stem Auger
GROUND WATER LEVELS:
LOGGED BY CSH
AT TIME OF DRILLING Not Encountered
NOTES
AT END OF DRILLING Not Encountered

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UNDRAINED SHEAR STRENGTH, ksf: ○ HAND PENETROMETER; △ TORVANE; ● UNCONFINED COMPRESSION; ▲ UNCONSOLIDATED-UNDRAINED TRIAXIAL (scale 1.0, 2.0, 3.0, 4.0)

ELEVATION (ft)	DEPTH (ft)	DESCRIPTION	N-Value (uncorrected) blows per foot	SAMPLES TYPE AND NUMBER	DRY UNIT WEIGHT PCF	NATURAL MOISTURE CONTENT, %	PLASTICITY INDEX, %	PERCENT PASSING No. 200 SIEVE	UNDRAINED SHEAR STRENGTH, ksf
250.0	0	**Sandy Lean Clay (CL) [Landslide Debris, Qls]** soft, moist, dark grayish brown, fine to medium sand, moderate plasticity							
244.3		**Sandy Fat Clay (CH) [Landslide debris, Qls]** very stiff, moist, olive brown, fine to medium sand, fine to coarse subangular gravel, claystone fragments throughout sample, high plasticity	24	MC-2	86	28			
			16	MC-4	73	41			
			15	MC-5	80	34			
240.5	10	**Fat Clay (CH) [Landslide Debris]** stiff, moist, olive brown, fine to coarse sand, some fine subangular gravel, high plasticity Slide Plane	16	MC-7	74	48			○
			16	MC-9	76	45			○
237.5		**Sandy Elastic Silt (MH) [Colluvium]** stiff, wet, olive gray, fine sand, some fine gravel, high plasticity Liquid Limit = 79, Plastic Limit = 40	9	SPT-10		37	39		
	15		10	SPT-11		35			
234.0		**Franciscan Claystone [KJfs(c)]** low hardness, friable, deep weathering, moist, olive and greenish gray with white veins, moderate to intensely sheared some interlensed claystone	22	MC-13	91	29			○
			20	SPT-14		20			
			29	SPT-15		20			
230.0	20	Bottom of Boring at 20.0 feet.							

BORING NUMBER EB-5

CORNERSTONE EARTH GROUP

PROJECT NAME Communication Hill - Phase 2
PROJECT NUMBER 118-38-1
PROJECT LOCATION San Jose, CA

DATE STARTED 1/21/09 **DATE COMPLETED** 1/21/09
GROUND ELEVATION 158 FT +/- **BORING DEPTH** 40 ft.
DRILLING CONTRACTOR Exploration Geoservices, Inc.
LATITUDE 37.291173 **LONGITUDE** -121.860545
DRILLING METHOD Mobile B-61, 8 inch Hollow-Stem Auger
GROUND WATER LEVELS:
LOGGED BY CSH
∇ **AT TIME OF DRILLING** 23 ft.
NOTES
▼ **AT END OF DRILLING** 23 ft.

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UNDRAINED SHEAR STRENGTH, ksf: ○ HAND PENETROMETER; △ TORVANE; ● UNCONFINED COMPRESSION; ▲ UNCONSOLIDATED-UNDRAINED TRIAXIAL (scale 1.0, 2.0, 3.0, 4.0)

ELEVATION (ft)	DEPTH (ft)	DESCRIPTION	N-Value (uncorrected) blows per foot	SAMPLES TYPE AND NUMBER	DRY UNIT WEIGHT PCF	NATURAL MOISTURE CONTENT, %	PLASTICITY INDEX, %	PERCENT PASSING No. 200 SIEVE
158.0	0	**Silty Sand with Gravel (SM) [Fill, Af]** medium dense, moist, gray brown, fine to coarse gravel						
156.5		**Sandy Lean Clay with Gravel (CL) [Fill, Af]** hard, moist, gray brown, fine to medium sand, fine to coarse subangular to subrounded gravel, moderate plasticity	36	MC-2	102	15		
			49	MC-5	98	16		
	5		38	MC-8	112	12		
150.5		**Lean Clay (CL) [Alluvium]** stiff, moist, dark gray, trace fine subangular to subrounded gravel, moderate plasticity	22	MC-10	102	24		
	10							
	15	Liquid Limit = 46, Plastic Limit = 14	33	MC-13	103	23	32	
140.0		**Serpentinite [sp]** low hardness, deep weathering, moist, olive with white veins, friable, moderately to intensely sheared	46	MC-15	123	13		
	20	very moist						
		▼	54	MC-17	124	14		
	25		59	SPT-18		13		
	30		50/6"	SPT-19		12		
123.0	35							

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CORNERSTONE EARTH GROUP

PROJECT NAME Communication Hill - Phase 2

PROJECT NUMBER 118-38-1

PROJECT LOCATION San Jose, CA

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ELEVATION (ft)	DEPTH (ft)	SYMBOL	DESCRIPTION	N-Value (uncorrected) blows per foot	SAMPLES TYPE AND NUMBER	DRY UNIT WEIGHT PCF	NATURAL MOISTURE CONTENT, %	PLASTICITY INDEX, %	PERCENT PASSING No. 200 SIEVE	UNDRAINED SHEAR STRENGTH, ksf
123.0	35		**Serpentinite [sp]** low hardness, deep weathering, moist, olive with white veins, friable, moderately to intensely sheared							
			seam of claystone @39' moderately hard, deep weathering, moist, very dark gray to black, intensely sheared, friable	60	SPT-20		8			
118.0	40		Bottom of Boring at 40.0 feet.							
	45									
	50									
	55									
	60									
	65									
	70									
	75									

Undrained shear strength legend: ○ HAND PENETROMETER; △ TORVANE; ● UNCONFINED COMPRESSION; ▲ UNCONSOLIDATED-UNDRAINED TRIAXIAL. Scale: 1.0, 2.0, 3.0, 4.0

CORNERSTONE EARTH GROUP2 - CORNERSTONE 0812.GDT - 6/19/13 08:33 - P:\DRAFTING\GINT FILES\118-38-1 COMM HILL II.GPJ

BORING NUMBER EB-6

CORNERSTONE EARTH GROUP

PROJECT NAME Communication Hill - Phase 2
PROJECT NUMBER 118-38-1
PROJECT LOCATION San Jose, CA

DATE STARTED 1/21/09 **DATE COMPLETED** 1/21/09
GROUND ELEVATION 153 FT +/- **BORING DEPTH** 40 ft.
DRILLING CONTRACTOR Exploration Geoservices, Inc.
LATITUDE 37.288859 **LONGITUDE** -121.854426
DRILLING METHOD Mobile B-61, 8 inch Hollow-Stem Auger
GROUND WATER LEVELS:
LOGGED BY CSH
AT TIME OF DRILLING Not Encountered
NOTES
AT END OF DRILLING Not Encountered

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UNDRAINED SHEAR STRENGTH, ksf: ○ HAND PENETROMETER; △ TORVANE; ● UNCONFINED COMPRESSION; ▲ UNCONSOLIDATED-UNDRAINED TRIAXIAL (scale 1.0, 2.0, 3.0, 4.0)

ELEVATION (ft)	DEPTH (ft)	DESCRIPTION	N-Value (uncorrected) blows per foot	SAMPLES TYPE AND NUMBER	DRY UNIT WEIGHT PCF	NATURAL MOISTURE CONTENT, %	PLASTICITY INDEX, %	PERCENT PASSING No. 200 SIEVE	UNDRAINED SHEAR STRENGTH, ksf
153.0	0	**Clayey Sand with Gravel (SC) [Fill, Af]** dense, moist, light yellowish brown to dark grayish brown, some concrete rubble near surface	58	MC-2	112	9			
149.5		**Sandy Lean Clay with Gravel (CL) [Fill, Af]** hard, moist, dark gray brown, fine to medium sand, fine to coarse subangular to subrounded gravel, moderate plasticity	28	MC-4	109	14			>4.5
	5		21	MC-6	94	28			
147.0		**Fat Clay (CH) [Alluvium]** stiff, moist, dark gray, some fine subangular to subrounded gravel, high plasticity							
144.5		**Lean Clay (CL) [Alluvium]** hard to very stiff, moist, dark gray brown to gray brown, some fine sand, moderate plasticity	36	MC-8	105	20			>4.5
	10								
	15	brown with reddish brown mottling, trace roots	22	MC-10	96	24			
	20		19	MC-12	96	24			
	25		21	MC-14	104	20			
126.0		**Lean Clay (CL) [Alluvium]** medium stiff, moist, olive with gray mottles, moderate plasticity	10	MC-16	87	31			
	30								
120.0									

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BORING NUMBER EB-6

CORNERSTONE EARTH GROUP

PROJECT NAME Communication Hill - Phase 2

PROJECT NUMBER 118-38-1

PROJECT LOCATION San Jose, CA

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UNDRAINED SHEAR STRENGTH, ksf: ○ HAND PENETROMETER; △ TORVANE; ● UNCONFINED COMPRESSION; ▲ UNCONSOLIDATED-UNDRAINED TRIAXIAL (scale 1.0, 2.0, 3.0, 4.0)

ELEVATION (ft)	DEPTH (ft)	SYMBOL	DESCRIPTION	N-Value (uncorrected) blows per foot	SAMPLES TYPE AND NUMBER	DRY UNIT WEIGHT PCF	NATURAL MOISTURE CONTENT, %	PLASTICITY INDEX, %	PERCENT PASSING No. 200 SIEVE	UNDRAINED SHEAR STRENGTH, ksf
120.0			**Lean Clay (CL) [Alluvium]** stiff, moist, olive with gray mottles, moderate plasticity	18	MC-18	98	25			○
	35									
116.0			**Silty Clay (CL-ML) [Alluvium]** hard, moist, olive with gray mottles, some fine sand, low plasticity	17	MC-20	102	23			○ >4.5
113.0	40		Bottom of Boring at 40.0 feet.							
	45									
	50									
	55									
	60									
	65									
	70									

BORING NUMBER EB-7

CORNERSTONE EARTH GROUP

PROJECT NAME: Communication Hill - Phase 2
PROJECT NUMBER: 118-38-1
PROJECT LOCATION: San Jose, CA

DATE STARTED: 1/21/09 DATE COMPLETED: 1/21/09
GROUND ELEVATION: 152 FT +/- BORING DEPTH: 39 ft.
DRILLING CONTRACTOR: Exploration Geoservices, Inc.
LATITUDE: 37.289797 LONGITUDE: -121.856885
DRILLING METHOD: Mobile B-61, 8 inch Hollow-Stem Auger
GROUND WATER LEVELS:
LOGGED BY: CSH
AT TIME OF DRILLING: Not Encountered
NOTES:
AT END OF DRILLING: Not Encountered

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UNDRAINED SHEAR STRENGTH, ksf: ○ HAND PENETROMETER; △ TORVANE; ● UNCONFINED COMPRESSION; ▲ UNCONSOLIDATED-UNDRAINED TRIAXIAL (scale 1.0, 2.0, 3.0, 4.0)

ELEVATION (ft)	DEPTH (ft)	DESCRIPTION	N-Value (uncorrected) blows per foot	SAMPLES TYPE AND NUMBER	DRY UNIT WEIGHT PCF	NATURAL MOISTURE CONTENT, %	PLASTICITY INDEX, %	PERCENT PASSING No. 200 SIEVE	UNDRAINED SHEAR STRENGTH, ksf
152.0	0	**Sandy Clay with Gravel (CL) [Fill, Af]** hard, moist, dark gray brown, fine to medium sand, some fine to coarse subangular to subrounded gravel, moderate plasticity							
			36	MC-1	94	12			>4.5 ○
			17	MC-2	105	17			>4.5 ○
146.8	5	**Lean Clay (CL) [Fill, Af]** very stiff, moist, dark grayish brown and olive brown mottled, some fine sand, moderate plasticity	13	MC-3	97	24			○
			11	MC-4	99	25			○
	10								
140.5		**Lean Clay (CL) [Alluvium]** very stiff, moist, dark grayish brown, some fine sand, moderate plasticity							
			28	MC-5	84	29			○
	15								
		olive brown	29	MC-6	95	29			○
	20								
			40	MC-7	97	27			○
	25								
		hard	35	MC-8	102	23			○
	30								
119.0									

Continued Next Page

BORING NUMBER EB-7

CORNERSTONE EARTH GROUP

PROJECT NAME Communication Hill - Phase 2

PROJECT NUMBER 118-38-1

PROJECT LOCATION San Jose, CA

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UNDRAINED SHEAR STRENGTH, ksf: ○ HAND PENETROMETER; △ TORVANE; ● UNCONFINED COMPRESSION; ▲ UNCONSOLIDATED-UNDRAINED TRIAXIAL (scale 1.0, 2.0, 3.0, 4.0)

ELEVATION (ft)	DEPTH (ft)	DESCRIPTION	N-Value (uncorrected) blows per foot	SAMPLES TYPE AND NUMBER	DRY UNIT WEIGHT PCF	NATURAL MOISTURE CONTENT, %	PLASTICITY INDEX, %	PERCENT PASSING No. 200 SIEVE	UNDRAINED SHEAR STRENGTH, ksf
119.0	35	**Lean Clay (CL) [Alluvium]** very stiff, moist, dark grayish brown, some fine sand, moderate plasticity	30	MC-9	103	23			○
115.0		**Francsiscan Claystone [KJfs(c)]** low hardness, friable to weak, moist, olive brown, deep weathering, some fine sand	50/4"	MC-10	122	13			>4.5 ○
113.0		Bottom of Boring at 39.0 feet.							
	40								
	45								
	50								
	55								
	60								
	65								
	70								

BORING NUMBER EB-8

CORNERSTONE EARTH GROUP

PROJECT NAME Communication Hill - Phase 2
PROJECT NUMBER 118-38-1
PROJECT LOCATION San Jose, CA

DATE STARTED 1/21/09 **DATE COMPLETED** 1/21/09
GROUND ELEVATION 175 FT +/- **BORING DEPTH** 30 ft.
DRILLING CONTRACTOR Exploration Geoservices, Inc.
LATITUDE 37.288431 **LONGITUDE** -121.857009
DRILLING METHOD Mobile B-61, 8 inch Hollow-Stem Auger
GROUND WATER LEVELS:
LOGGED BY CSH
AT TIME OF DRILLING Not Encountered
NOTES
AT END OF DRILLING Not Encountered

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UNDRAINED SHEAR STRENGTH, ksf: ○ HAND PENETROMETER; △ TORVANE; ● UNCONFINED COMPRESSION; ▲ UNCONSOLIDATED-UNDRAINED TRIAXIAL; scale 1.0, 2.0, 3.0, 4.0

ELEVATION (ft)	DEPTH (ft)	DESCRIPTION	N-Value (uncorrected) blows per foot	SAMPLES TYPE AND NUMBER	DRY UNIT WEIGHT PCF	NATURAL MOISTURE CONTENT, %	PLASTICITY INDEX, %	PERCENT PASSING No. 200 SIEVE	UNDRAINED SHEAR STRENGTH, ksf
175.0	0	**Franciscan Sandstone [KJfs]** moderately hard, weak to moderately strong, moist, yellowish brown to dark olive, moderate to deep weathering							
			50/6"	MC-1	120	4			
			50/3"	MC-2	108	5			
	5		50/4"	SPT-3		8			
			50/4"	SPT-4		5			
	10								
			50/3"	SPT-5		6			
	15								
		olive gray, some subvertical shears	59	SPT-6		8			
	20								
		bluish gray, weakly cemented	50/5"	SPT-7		5			
	25								
			50/5"	SPT-8		8			
145.0	30	Bottom of Boring at 30.0 feet.							
	35								

BORING NUMBER EB-9

CORNERSTONE EARTH GROUP

PROJECT NAME Communication Hill - Phase 2
PROJECT NUMBER 118-38-1
PROJECT LOCATION San Jose, CA

DATE STARTED 1/21/09 DATE COMPLETED 1/21/09
GROUND ELEVATION 168 FT +/- BORING DEPTH 29 ft.
DRILLING CONTRACTOR Exploration Geoservices, Inc.
LATITUDE 37.282306 LONGITUDE -121.848524
DRILLING METHOD Mobile B-61, 8 inch Hollow-Stem Auger
GROUND WATER LEVELS:
LOGGED BY CSH
AT TIME OF DRILLING Not Encountered
NOTES
AT END OF DRILLING Not Encountered

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UNDRAINED SHEAR STRENGTH, ksf: ○ HAND PENETROMETER; △ TORVANE; ● UNCONFINED COMPRESSION; ▲ UNCONSOLIDATED-UNDRAINED TRIAXIAL (scale 1.0, 2.0, 3.0, 4.0)

ELEVATION (ft)	DEPTH (ft)	DESCRIPTION	N-Value (uncorrected) blows per foot	SAMPLES TYPE AND NUMBER	DRY UNIT WEIGHT PCF	NATURAL MOISTURE CONTENT, %	PLASTICITY INDEX, %	PERCENT PASSING No. 200 SIEVE	UNDRAINED SHEAR STRENGTH, ksf
168.0	0	**Sandy Lean Clay with Gravel (CL) [Colluvium]** stiff, moist, dark grayish brown, fine sand, fine to coarse gravel, moderate plasticity	11	MC-1		23			
165.0		**Fat Clay (CH) [Colluviuml]** hard, moist, grayish brown to olive brown, some fine sand, trace fine subangular gravel, high plasticity	16	MC-2	72	23			
	5		21	MC-4	87	28			>4.5 ○
	10		60	MC-5	86	32			>4.5 ○
156.0		**Clayey Sand with Gravel (SC) [Alluvium, Qal]** very dense, moist, yellowish brown, fine sand, fine angular gravel	50/6"	MC-6	82	25			>4.5 ○
	15								
	20		50/4"	MC-7		25			
146.0		**Serpentinite [sp]** low hardness, friable, deep weathering, moist, greenish gray with white veins, moderate to intensely sheared	38	SPT-8		24			
	25								
139.0		moderately hard, moderate weathering	50/6"	SPT-10		5			
		Bottom of Boring at 29.0 feet.							
	30								
	35								

BORING NUMBER EB-10

CORNERSTONE EARTH GROUP

PROJECT NAME Communication Hill - Phase 2
PROJECT NUMBER 118-38-1
PROJECT LOCATION San Jose, CA

DATE STARTED 1/22/09 **DATE COMPLETED** 1/22/09
GROUND ELEVATION 302 FT +/- **BORING DEPTH** 25.5 ft.
DRILLING CONTRACTOR Exploration Geoservices, Inc.
LATITUDE 37.286432 **LONGITUDE** -121.856231
DRILLING METHOD Mobile B-40, 8 inch Hollow-Stem Auger
GROUND WATER LEVELS:
LOGGED BY CSH
∇ **AT TIME OF DRILLING** Not Encountered
NOTES
▼ **AT END OF DRILLING** Not Encountered

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Undrained shear strength, ksf: ○ Hand Penetrometer; △ Torvane; ● Unconfined Compression; ▲ Unconsolidated-Undrained Triaxial (scale 1.0, 2.0, 3.0, 4.0)

ELEVATION (ft)	DEPTH (ft)	DESCRIPTION	N-Value (uncorrected) blows per foot	SAMPLES TYPE AND NUMBER	DRY UNIT WEIGHT PCF	NATURAL MOISTURE CONTENT, %	PLASTICITY INDEX, %	PERCENT PASSING No. 200 SIEVE	UNDRAINED SHEAR STRENGTH, ksf
302.0	0	**Serpentinite [sp]** moderately hard, friable to weak, deep weathering, moist, greenish gray to dark gray with white veins, moderate to intensely sheared	50/5"	MC-1	95	13			
			50/5"	MC-2	97	6			
	5		50/4"	SPT-3		9			
			50/6"	SPT-4		7			
	10								
			50	SPT-5		10			
	15								
			50/3"	SPT-6		16			
	20	olive green with light gray mottling							
		bluish gray mottling	50/5"	SPT-7					
278.0									
	25	Bottom of Boring at 25.5 feet.							
	30								
	35								

BORING NUMBER EB-11

CORNERSTONE EARTH GROUP

PROJECT NAME Communication Hill - Phase 2
PROJECT NUMBER 118-38-1
PROJECT LOCATION San Jose, CA

DATE STARTED 2/11/09 **DATE COMPLETED** 2/11/09
GROUND ELEVATION 292 FT +/- **BORING DEPTH** 25.5 ft.
DRILLING CONTRACTOR Britton Exploration, Services Inc.
LATITUDE 37.283592 **LONGITUDE** -121.853151
DRILLING METHOD CME 45 Track Rig, 8 inch Hollow-Stem Auger
GROUND WATER LEVELS:
LOGGED BY CSH
▽ **AT TIME OF DRILLING** Not Encountered
NOTES
▼ **AT END OF DRILLING** Not Encountered

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Undrained shear strength, ksf legend: ○ HAND PENETROMETER; △ TORVANE; ● UNCONFINED COMPRESSION; ▲ UNCONSOLIDATED-UNDRAINED TRIAXIAL (scale 1.0, 2.0, 3.0, 4.0)

ELEVATION (ft)	DEPTH (ft)	DESCRIPTION	N-Value (uncorrected) blows per foot	SAMPLES TYPE AND NUMBER	DRY UNIT WEIGHT PCF	NATURAL MOISTURE CONTENT, %	PLASTICITY INDEX, %	PERCENT PASSING No. 200 SIEVE	UNDRAINED SHEAR STRENGTH, ksf
292.0	0	**Sandy Lean Clay (CL) [Fill, Af]** very stiff, moist, dark grayish brown, fine to medium sand, some fine subangular gravel, moderate plasticity	10	MC-1	83	30			○ (~2.5)
288.5		**Sandy Lean Clay with Gravel (CL) [Fill, Af]** hard, moist, dark grayish brown, fine to medium sand, fine subangular gravel, moderate plasticity	33	MC-3	102	15			○ >4.5
	5		25	MC-5	92	20			○ >4.5
284.5		**Serpentenite [sp]** moderately hard, moderately strong, moist, dark greenish gray, moderate weathering, moderately fractured							
	10		42	SPT-9		19			
	15		34	SPT-7		17			
	20		47	SPT-8		18			
266.5	25	Bottom of Boring at 25.5 feet.	50 5"	SPT-9		10			
	30								
	35								

APPENDIX B: LABORATORY TEST PROGRAM

The laboratory testing program was performed to evaluate the physical and mechanical properties of the soils retrieved from the site to aid in verifying soil classification.

Moisture Content
The natural water content was determined (ASTM D2216) on 9 samples of the materials recovered from the borings. These water contents are recorded on the boring logs at the appropriate sample depths.

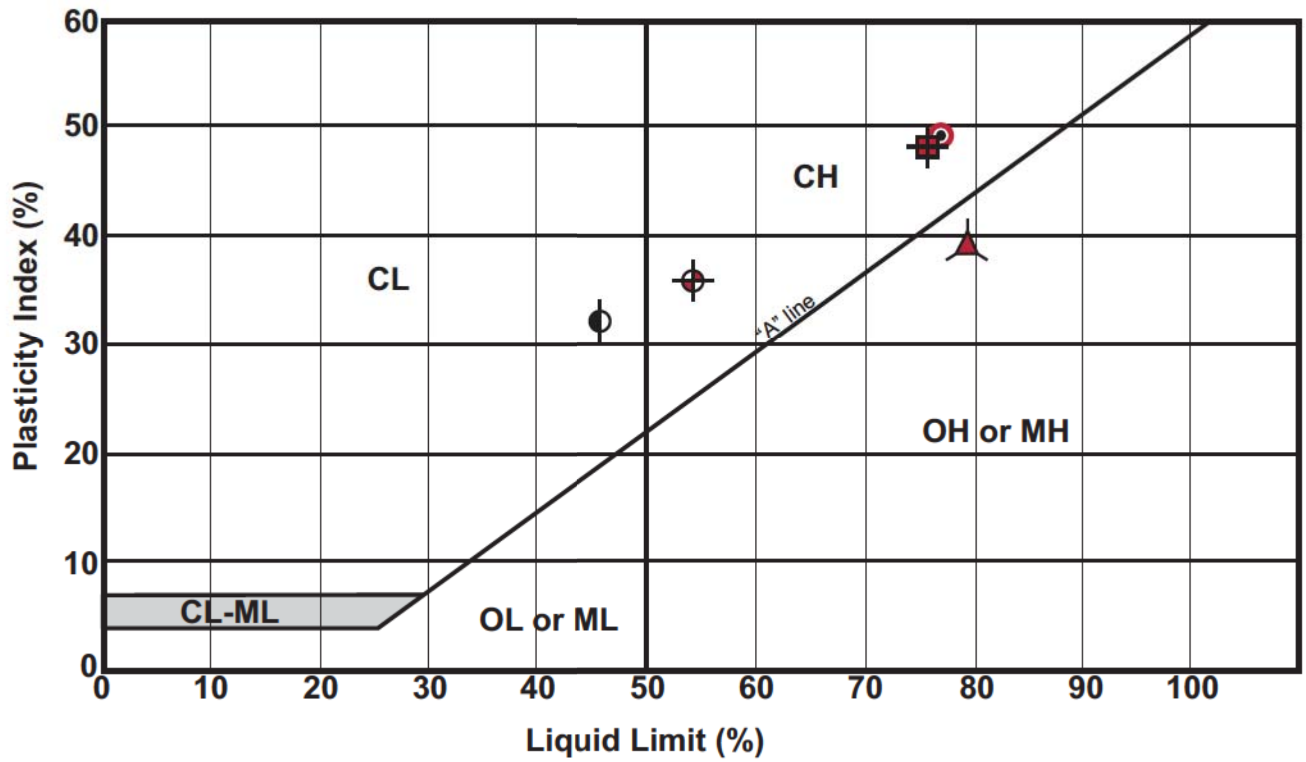
Dry Densities
In place dry density determinations (ASTM D2937) were performed on 57 samples to measure the unit weight of the subsurface soils. Results of these tests are shown on the boring logs at the appropriate sample depths.

Plasticity Index: Seven Plasticity Index determinations (ASTM D4318) were performed on samples of the subsurface soils to measure the range of water contents over which this material exhibits plasticity. The Plasticity Index was used to classify the soil in accordance with the Unified Soil Classification System and to evaluate the soil expansion potential. Results of these tests are shown on the boring logs at the appropriate sample depths.

Consolidated-Undrained Triaxial Compression with Pore Pressure Measurements: The undrained shear strength was determined on 9 remolded/relatively undisturbed sample of soil/bedrock material by consolidated undrained triaxial shear strength testing with pore pressure measurements (ASTM D4767). The results of this test are included as part of this appendix.

Maximum Density: Two (2) maximum density tests (ASTM D1557) were performed on samples of the subsurface soils to measure the relative maximum density and optimum moisture content.

Plasticity Index (ASTM D4318) Testing Summary



Symbol	Boring No.	Depth (ft)	Natural Water Content (%)	Liquid Limit (%)	Plastic Limit (%)	Plasticity Index	Passing No. 200 (%)	Group Name (USCS - ASTM D2487)
	EB-2	1.5	18	54	18	36	—	Fat Clay (CH) [Colluvium]
	EB-3	1.5	40	76	28	48	—	Fat Clay (CH) [Colluvium]
	EB-3	3.5	25	77	28	49	—	Sandy Fat Clay (CH) [Colluvium]
	EB-4	12.5	37	79	40	39	—	Sandy Elastic Silt (MH) [Colluvium]
	EB-5	14.0	23	46	14	32	—	Lean Clay (CL) [Alluvium]

CORNERSTONE EARTH GROUP

Plasticity Index Testing Summary

Communications Hill - Phase 2
San Jose, CA

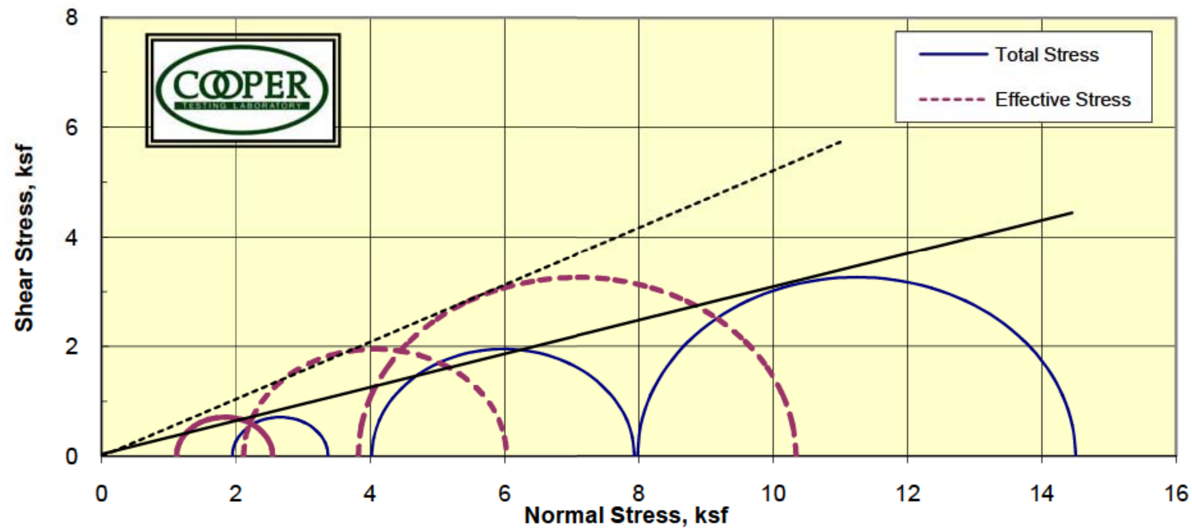
Project Number 118-38-1

Figure Number Figure B1

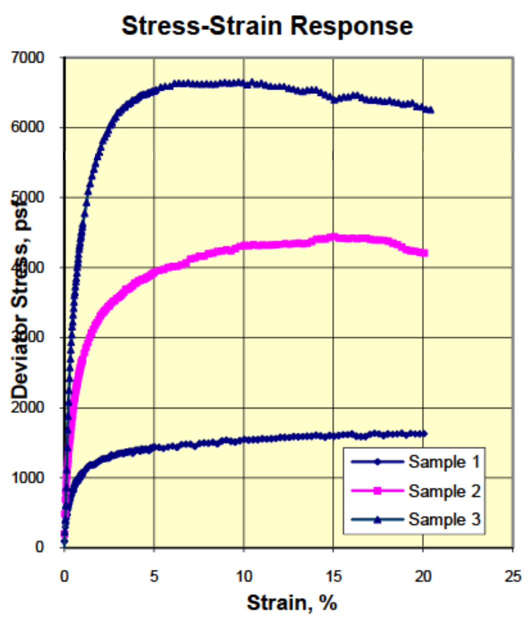
Date June 2013

Drawn By FLL

Triaxial Consolidated Undrained with Pore Pressure
ASTM D4767



Total : 17Phi, (deg.) 0C,(ksf) **Effective:** 27.6Phi, (deg.) 0C,(ksf)



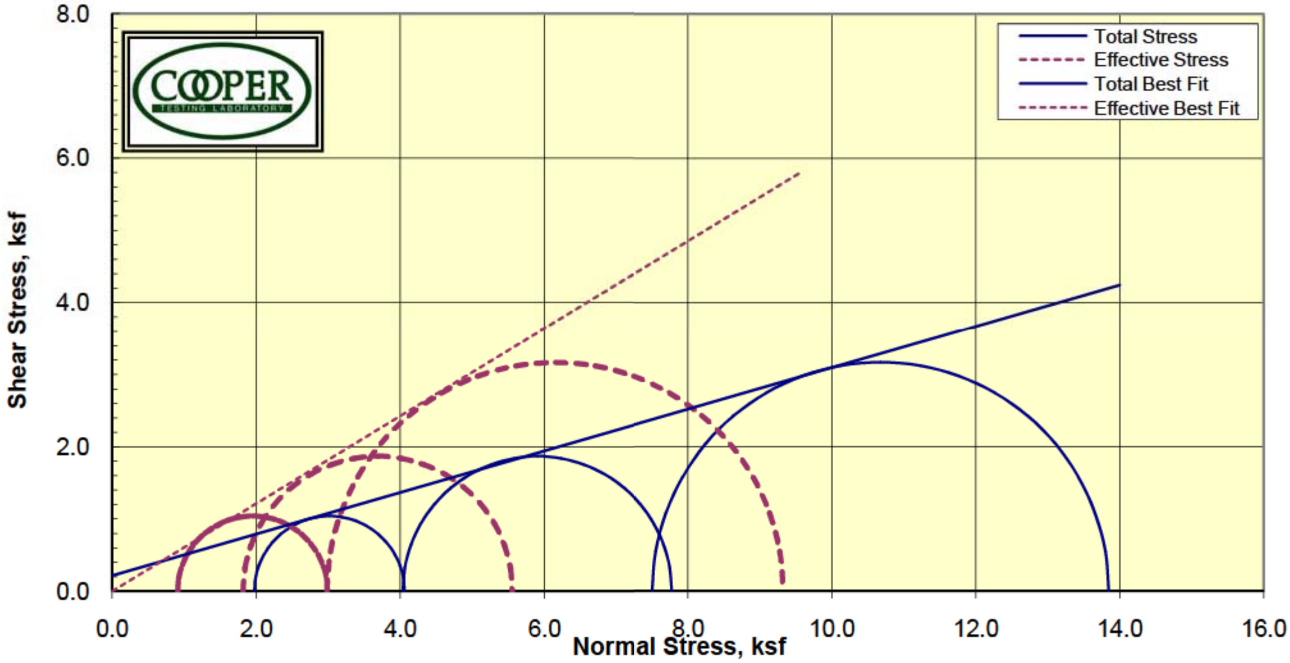
Sample:	1	2	3	4
MC, %	23.6	23.4	24.2	
DD, pcf	101.7	103.2	100.6	
Sat. %	96.9	99.8	96.8	
Void Ratio	0.656	0.632	0.675	
Diameter in	2.40	2.40	2.42	
Height, in	4.99	5.02	5.02	
	Final			
MC, %	26.2	25.1	24.3	
DD, pcf	98.7	100.4	101.7	
Sat. %	100.0	100.0	100.0	
Void Ratio	0.707	0.678	0.656	
Diameter, in	2.44	2.44	2.43	
Height, in	4.98	4.99	4.92	
Cell, psi	62.4	76.3	104.1	
BP, psi	48.9	48.4	48.7	
	Effective Stresses At:			
Strain, %	5.0	5.0	5.0	
Deviator ksf	1.428	3.915	6.525	
Excess PP	0.826	1.909	4.163	
Sigma 1	2.542	6.023	10.340	
Sigma 3	1.114	2.108	3.815	
P, ksf	1.828	4.066	7.077	
Q, ksf	0.714	1.958	3.262	
Stress Ratio	2.281	2.857	2.710	
Rate in/min	0.001	0.001	0.001	

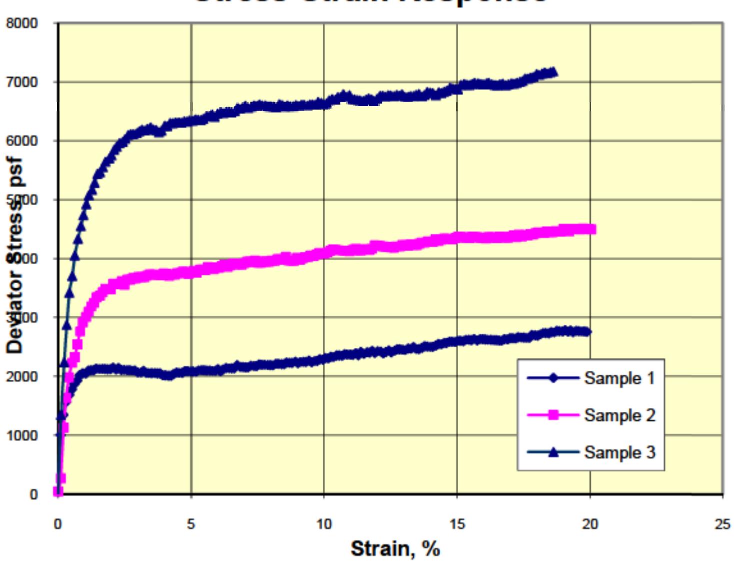
Job No.: 640-132 **Date:** 2/20/2009
Client: Cornerstone Earth Group BY:DC
Project: Comm Hill II - P955

Sample 1)	EB-5;10 @ 9.5'	Dark Gray CLAY
Sample 2)	EB-5;12 @ 14.0'	Grayish Brown CLAY w/ Sand
Sample 3)	EB-5;13 @ 14.5'	Grayish Brown CLAY

Triaxial Consolidated Undrained

(ASTM D4767)





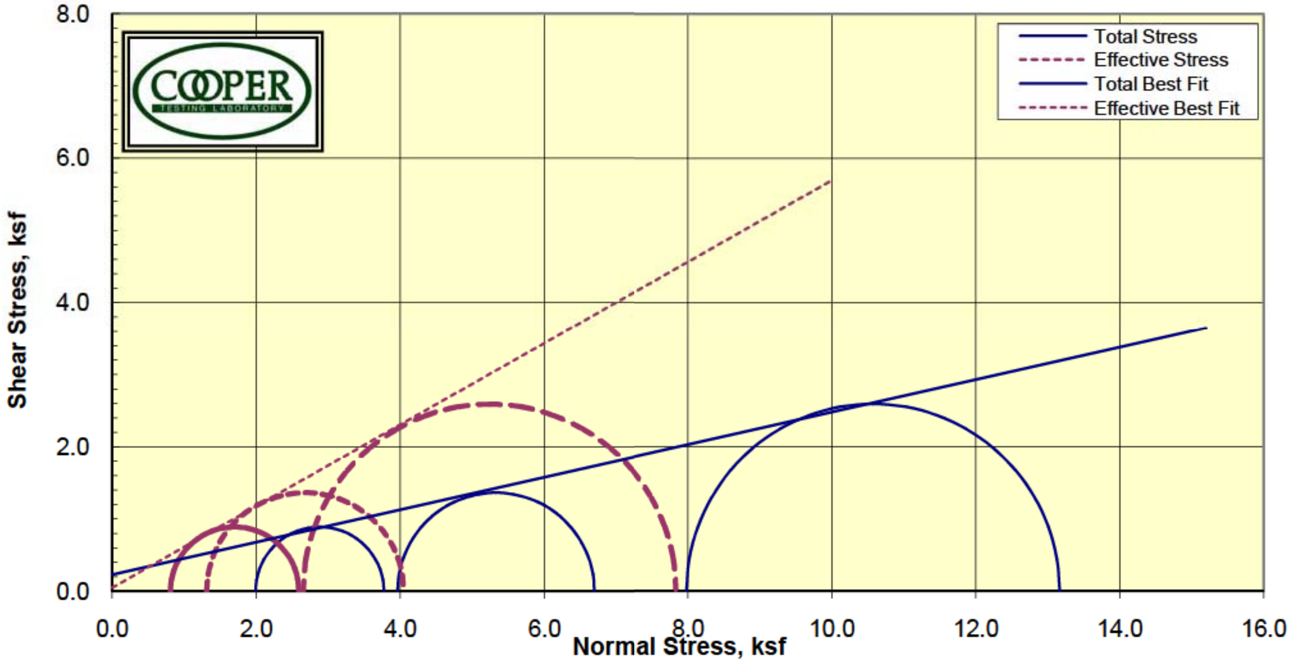
Sample:	1	2	3	4
MC, %	16.1	15.9	15.5	
Dry Dens, pcf	104.7	104.9	105.2	
Sat. %	71.4	71.1	69.5	
Void Ratio	0.609	0.606	0.601	
Diameter in	2.38	2.38	2.38	
Height, in	5.00	5.00	5.00	
	Final			
MC, %	25.2	23.4	22.3	
Dry Dens, pcf	100.2	103.2	105.2	
Sat. %	100.0	100.0	100.0	
Void Ratio	0.681	0.632	0.602	
Diameter, in	2.42	2.40	2.39	
Height, in	5.02	4.98	4.94	
Cell, psi	61.9	75.8	100.0	
BP, psi	48.2	47.8	47.9	
	Effective Stresses At:			
Strain, %	5.0	5.0	5.0	
Deviator ksf	2.083	3.741	6.342	
Excess PP	1.066	2.218	4.522	
Sigma 1	2.991	5.555	9.323	
Sigma 3	0.907	1.814	2.981	
P, ksf	1.949	3.685	6.152	
Q, ksf	1.042	1.870	3.171	
Stress Ratio	3.296	3.062	3.128	
Rate in/min	0.001	0.001	0.001	
Total C	0.2	ksf		
Total Phi	16.1	Degrees		
Eff. C	0.0	ksf		
Eff. Phi	31.3	Degrees		

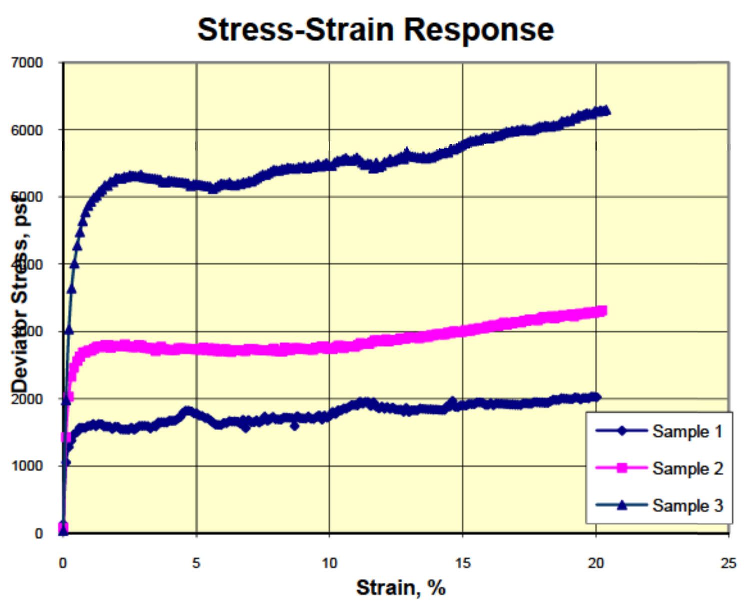
Job No.:	640-123	**Date:**	2/10/2009
Client:	Cornertone Earth Group		BY:MD/DC
Project:	Comm Hill II - P955		
Sample 1)	TP-6; Bulk	Brown Sandy CLAY near Clayey SAND	
Sample 2)	TP-6; Bulk	Brown Sandy CLAY near Clayey SAND	
Sample 3)	TP-6; Bulk	Brown Sandy CLAY near Clayey SAND	
Sample 4)			

REMARKS: Strengths picked at 5% strain. Remolded to 90-92% of 115.1 pcf @ 16.4 (OPT+2).

Triaxial Consolidated Undrained

(ASTM D4767)



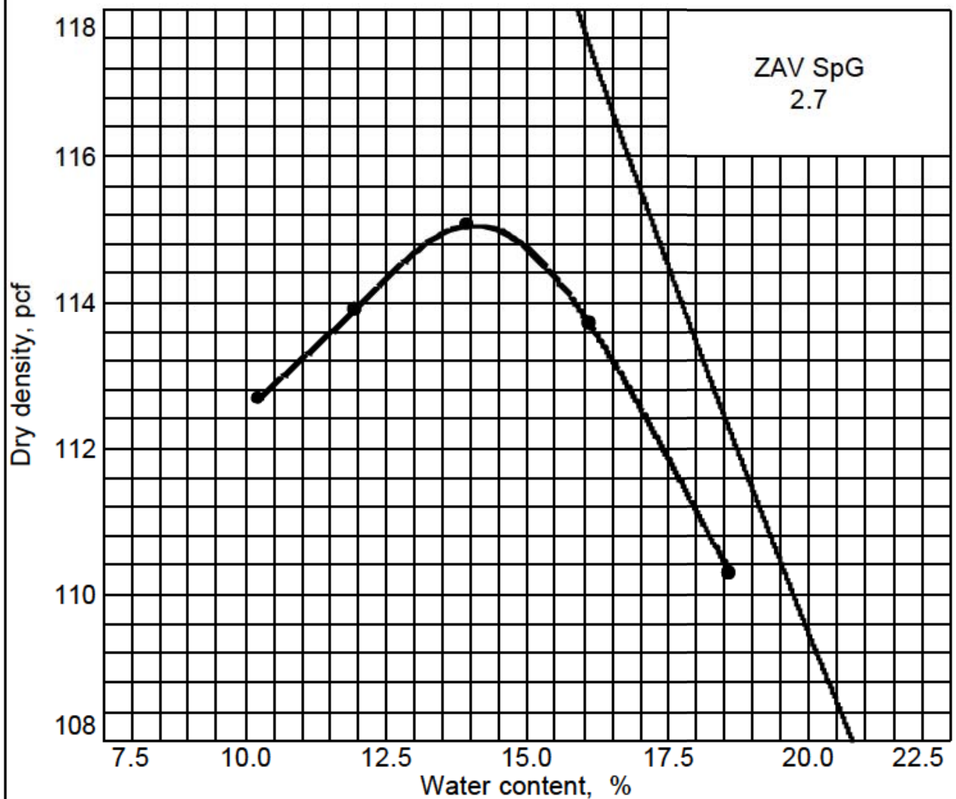


Sample:	1	2	3	4
MC, %	18.4	18.4	18.3	
Dry Dens, pcf	99.9	99.9	99.9	
Sat. %	72.2	72.2	72.2	
Void Ratio	0.687	0.687	0.686	
Diameter in	2.38	2.38	2.38	
Height, in	5.00	5.00	5.00	
	Final			
MC, %	24.3	22.4	21.0	
Dry Dens, pcf	101.7	105.0	107.5	
Sat. %	100.0	100.0	100.0	
Void Ratio	0.656	0.605	0.567	
Diameter, in	2.36	2.33	2.32	
Height, in	4.96	4.93	4.88	
Cell, psi	52.4	66.3	94.1	
BP, psi	38.6	38.8	38.7	
	Effective Stresses At:			
Strain, %	5.0	5.0	5.0	
Deviator ksf	1.785	2.733	5.184	
Excess PP	1.181	2.650	5.328	
Sigma 1	2.591	4.043	7.834	
Sigma 3	0.806	1.310	2.650	
P, ksf	1.699	2.677	5.242	
Q, ksf	0.892	1.367	2.592	
Stress Ratio	3.213	3.086	2.957	
Rate in/min	0.001	0.001	0.001	
Total C	0.2	ksf		
Total Phi	12.7	Degrees		
Eff. C	0.1	ksf		
Eff. Phi	29.5	Degrees		

Job No.:	640-124	**Date:**	2/10/2009
Client:	Cornerstone Earth Group		BY:MD/DC
Project:	Comm Hill II - P955		
Sample 1)	TP-8; Bulk	Grn Gry CLAY w/ Sand & Grvl (Weathered Serpentine)	
Sample 2)	TP-8; Bulk	Grn Gry CLAY w/ Sand & Grvl (Weathered Serpentine)	
Sample 3)	TP-8; Bulk	Grn Gry CLAY w/ Sand & Grvl (Weathered Serpentine)	
Sample 4)			

REMARKS: Strengths picked at 5% strain. Remolded to 90-92% of 109.9 @ 18.5 (OPT+2).

COMPACTION TEST REPORT



Curve No.

Test Specification:
ASTM D 1557-00 Method B Modified

Hammer Wt.: 10 lb.
Hammer Drop: 18 in.
Number of Layers: five
Blows per Layer: 25
Mold Size: .03333 cu.ft.
Test Performed on Material Passing 3/8 in. **Sieve**

Soil Data

NM ______ **Sp.G.** 2.7
LL ______ **PI** ______
%>3/8 in. ______ **%<#200** ______
USCS ______ **AASHTO** ______

TESTING DATA

	1	2	3	4	5	6
WM + WS	8.79	8.82	8.67	8.78	8.56	
WM	4.42	4.42	4.42	4.42	4.42	
WW + T #1	632.40	589.20	669.10	613.40	657.30	
WD + T #1	579.30	535.50	619.10	548.70	615.30	
TARE #1	198.50	201.90	200.60	200.80	204.70	
WW + T #2						
WD + T #2						
TARE #2						
MOISTURE	13.9	16.1	11.9	18.6	10.2	
DRY DENSITY	115.1	113.7	113.9	110.3	112.7	

TEST RESULTS

Maximum dry density = 115.1 pcf

Optimum moisture = 14.0 %

Material Description

Brown Sandy CLAY near Clayey SAND

Project No. 640-123 **Client:** Cornerstone Earth Group
Project: Comm Hill II - P955

● **Source:** TP-6

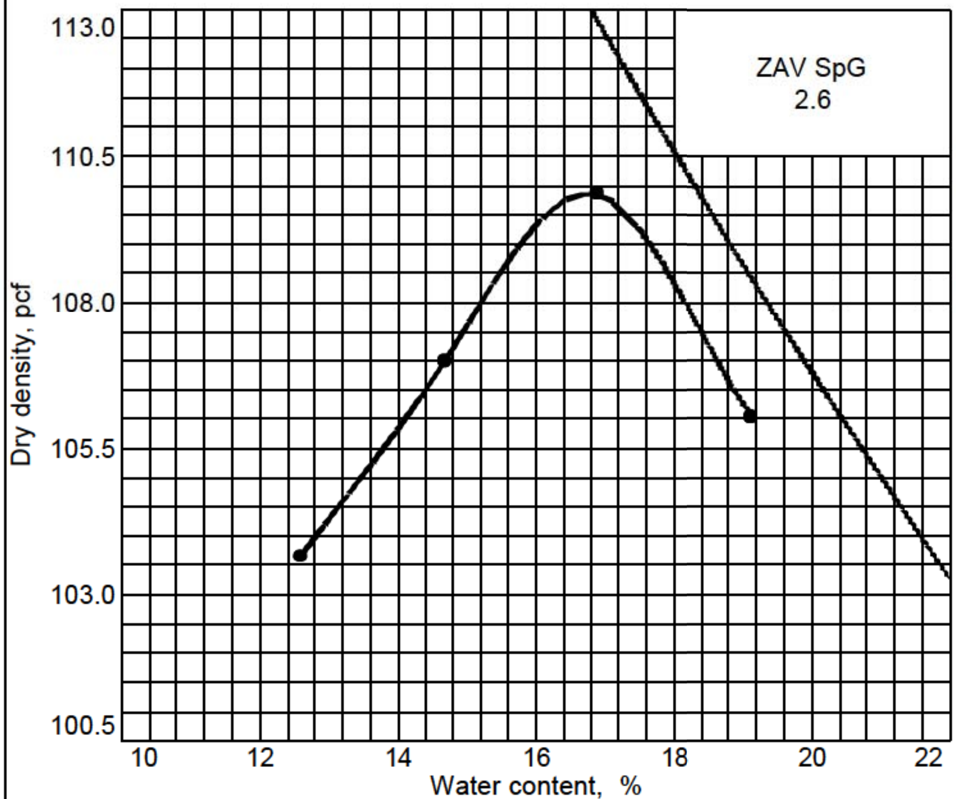
Remarks:

COMPACTION TEST REPORT

COOPER TESTING LABORATORY

Figure

COMPACTION TEST REPORT



Curve No.

Test Specification:
ASTM D 1557-00 Method A Modified

Hammer Wt.: 10 lb.
Hammer Drop: 18 in.
Number of Layers: five
Blows per Layer: 25
Mold Size: .03333 cu.ft.
Test Performed on Material Passing No.4 **Sieve**

Soil Data

NM		**Sp.G.**	2.7
LL		**PI**	
%>No.4		**%<#200**	
USCS		**AASHTO**	

TESTING DATA

	1	2	3	4	5	6
WM + WS	8.51	8.70	8.63	8.31		
WM	4.42	4.42	4.42	4.42		
WW + T #1	947.30	660.80	922.00	731.00		
WD + T #1	863.80	608.20	821.50	671.60		
TARE #1	295.20	296.80	296.10	200.00		
WW + T #2						
WD + T #2						
TARE #2						
MOISTURE	14.7	16.9	19.1	12.6		
DRY DENSITY	107.0	109.9	106.0	103.7		

TEST RESULTS

Maximum dry density = 109.9 pcf

Optimum moisture = 16.7 %

Material Description

Greenish Gray CLAY w/ Sand & Gravel (Weathered Serpentine)

Project No. 640-124 **Client:** Cornerstone Earth Group
Project: Comm Hill II - P955

● **Source:** TP-8 **Sample No.:** Bulk

Remarks:

COMPACTION TEST REPORT

COOPER TESTING LABORATORY

Figure

APPENDIX C: STABILITY ANALYSIS OUTPUT AND STEREONET ANALYSIS

Stereonet Analysis Methodology

The frequency and orientation of joints, bedding planes and other discontinuities as well as their properties affects the quality or strength of the rock mass and therefore the stability of the rock mass in the proposed graded slopes at the site. To assess the relative stability and potential for rock slope instability along the proposed graded slopes, we used kinematic rock stability analysis according to the methods outlined or described in Markland (1972). A graphical stereonet analysis allows the orientations of joints, bedding planes, and fractures to be analyzed at numerous sites to discriminate which discontinuities are likely to provide failure surfaces for a given graded slope orientation and bedrock type and conditions. This method compares the orientation of the proposed graded slope with orientations of rock discontinuities and the internal angle of friction (frictional component of shear strength) of the rock to see which discontinuities render the rock mass theoretically unstable. The "critical zone" indicated on the Markland Test Plots represents that condition where the proposed graded slope configuration falls within the circle that represents the internal angle of friction of the bedrock. Stated another way, assuming there is no cohesion along the bedrock discontinuities, whenever the dip value of the discontinuity is greater than the friction angle and simultaneously is also less than the proposed slope angle, then sliding along the discontinuity is possible. In the case of wedge failures, the intersection of two great circles represents the intersection of two discontinuities creating a wedge. Whenever the intersection of two discontinuities falls within the critical zone, then a wedge failure is unlikely.

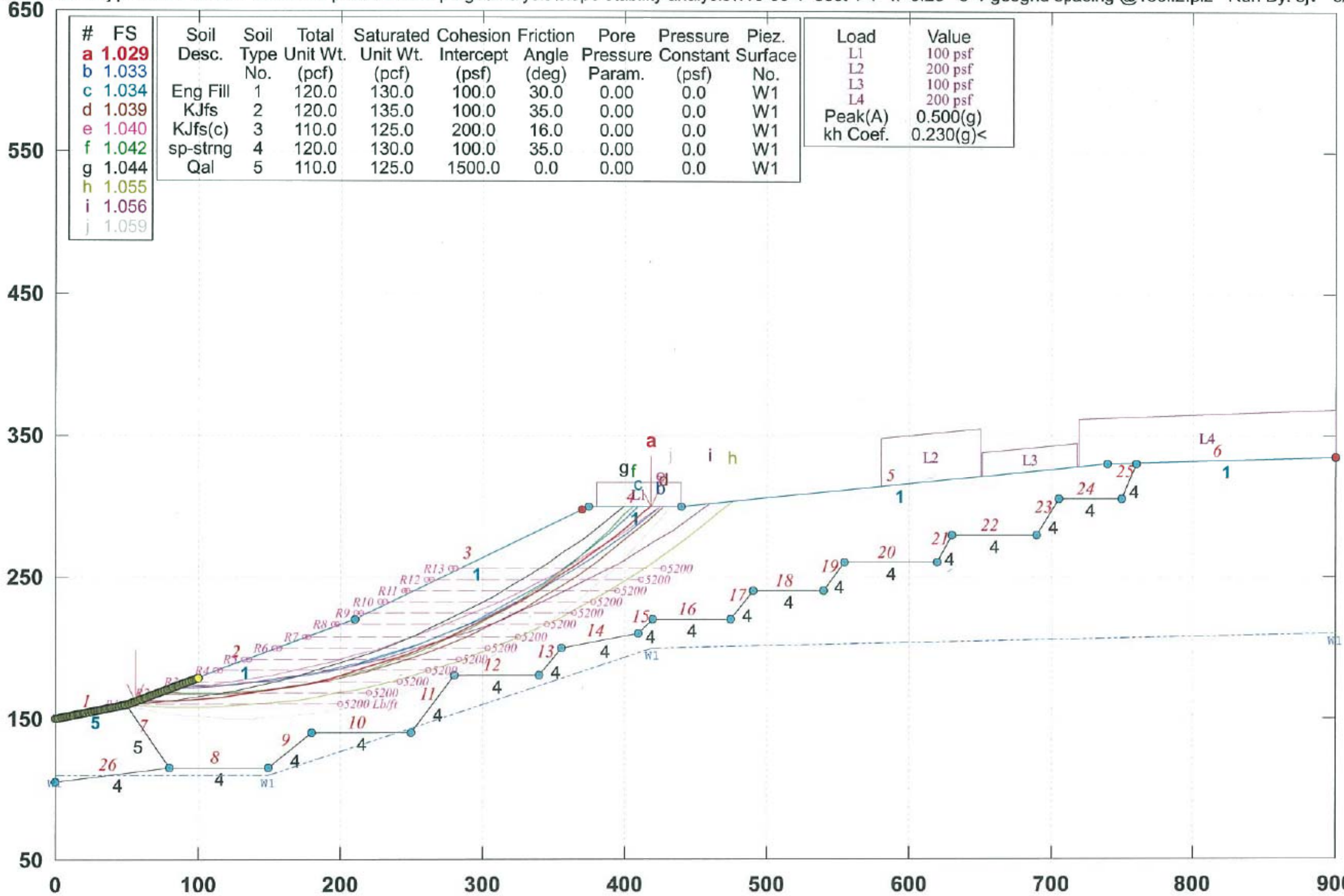
For the proposed graded slopes in the area of TP-1A, TP-2A and TP-4A, we anticipate that Silica Carbonate rock is the primary rock to be exposed in this area on the proposed cut slopes. The finished slope orientations differ slightly for these areas (orientation = N76W/26°NNE for TP-1A, N36°W/26°NE for TP-2A). In this area we observed localized bedrock failures within natural outcrops of the Silica Carbonate bedrock noting planar failures on a discontinuities that dipped roughly 35 degrees (internal angle of friction, Ø = 35°) and measured prominent shears, joints and fractures within test pits (TP-1A, and 2A). At TP-1A we measured two shears (1S1 and 1S2), one joint set (1S3) and one fracture (1S4). For TP-2A we determined one shear (2S1), and three joint sets (2S1, 2S2 and 2S3). The proposed cut slope in the area of TP-4A will be oriented N38°W/26°NE. For TP-4A we measured one joint set (4S1), a shear (4S2), a foliation (4S3) and a fracture (4S4). The resulting Markland Test plots for areas underlain by Silica Carbonate (TP-1A, TP-2A and TP-4A) indicated that the plot for great circles (planar failures) and the intersection of discontinuities (wedge failures) fall well outside the critical zone for failures. For the area of TP3A we encountered interbedded claystone and sandstone in an area that will have a finished slope orientation of N66°W/26°NE. At TP-3A we measured two shears (3S1 and 3S2). We determined a probable failure surface at a manmade exposure of the claystone in the southeastern portion of the site that dipped 30 degrees (internal angle of friction, Ø = 30°). The resulting Markland test plots for areas underlain by the interbedded claystone and sandstone indicated that the plot for great circles (planar failures) and the intersection of discontinuities (wedge failures) falls well outside the critical zone for failures.

For the area of TP-5A, TP-6A, TP-7A and TP-8 we noted that intermixed ultramafic and serpentinite occurs in this area. Contacts between the two lithologies tend to follow the prominent shears in this unit. The proposed cut slope in this areas will be oriented N38°W/26°NE. At these locations we measured seven shears (5S1, 5S2, 6S1, 7S2 through 7S4, and 8S1), one joint set (6S2) and a foliation (7S1). For the intermixed serpentinite and ultramafic rocks we observed failures at a nearby man-made cut which suggested an internal angle of friction equal to 35 degrees (internal angle of friction, Ø = 35°). The resulting Markland test plots for areas underlain by the intermixed serpentinite and associated ultramafic rocks indicated that the plot of great circles (planar failures) and intersection of great circles (wedge failures) fall well outside the critical zone for failures.

At TP-9A and TP10A, we encountered an interbedded shale and claystone with minor interbedded sandstone. Within the test pits we observed localized failure of bedrock along a surface with a 30° dip (internal angle of friction, Ø = 30°). At TP-9A a joint set (9S1), and three bedding orientations (9S2, 9S3 and 9S4), and within TP-10A we observed bedding (10S1, and 10S2). With the proposed cut slope oriented N36°W/26°NE (for TP-9A) and N24°E/26NE (for TP-10A), the resulting Markland test plots for areas underlain by the interbedded shale and claystone with minor sandstone indicated that great circles for planar failures and the intersection of great circles (wedges) falls well outside the critical zone for failures.

118-38-1 Comm Hill II- Section 1-1' seismic (8' geogrid spacing @ 150'L)

p:\projects\100\118 david j powers\118-38-1 comm hill phase 2\data-purge\analysis\slope stability analysis\118-38-1 sect 1-1' k=0.23 8' v geogrid spacing @150l.2.pl2 Run By: sjv 6/6/2013 12:19P

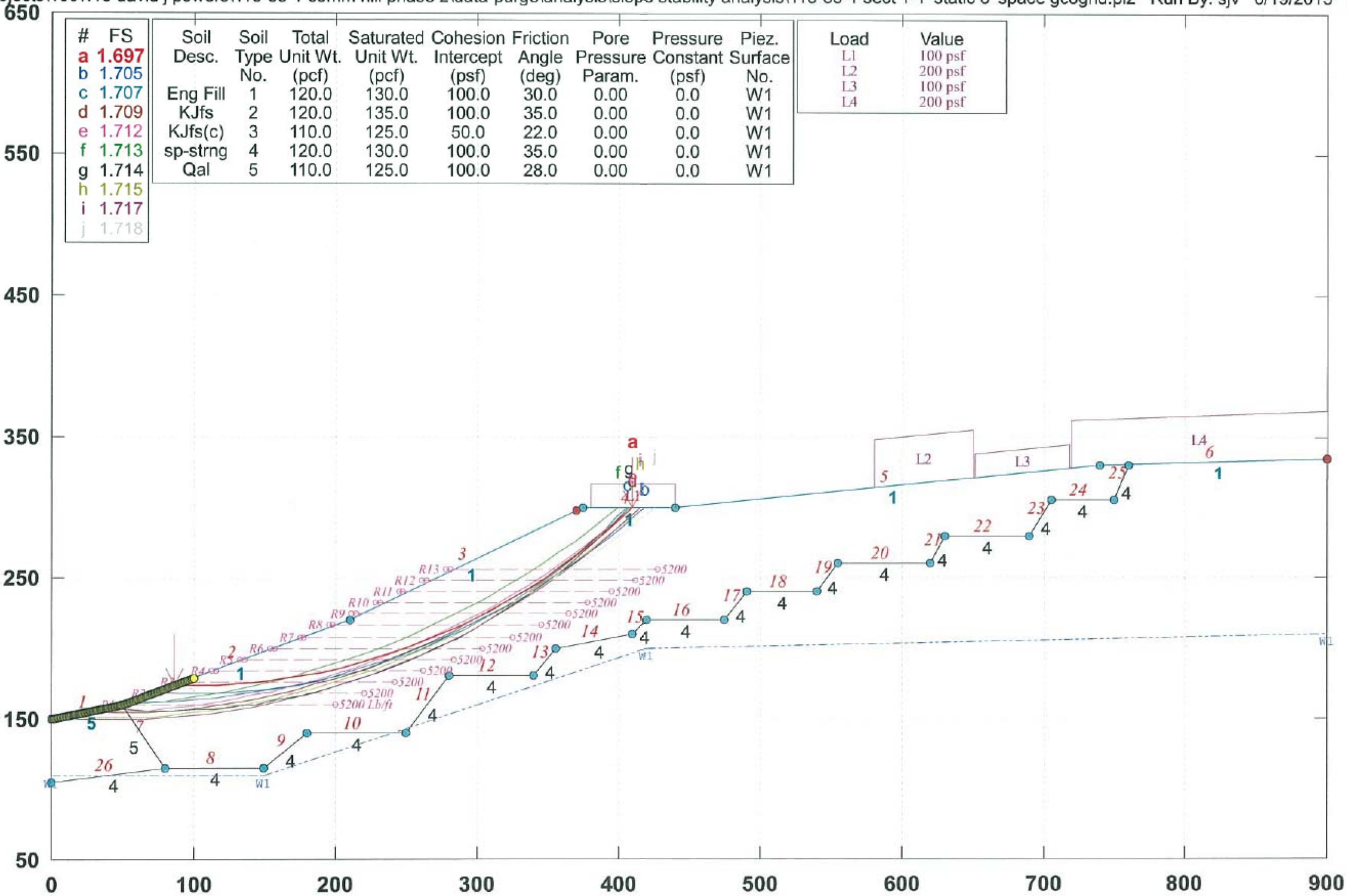


GSTABL7 v.2 FSmin=1.029

Safety Factors Are Calculated By The Modified Bishop Method

118-38-1 Comm Hill II- Section 1-1' static (8' geogrid spacing @ 150'L)

p:\projects\100\118 david j powers\118-38-1 comm hill phase 2\data-purge\analysis\slope stability analysis\118-38-1 sect 1-1' static 8' space geogrid.pl2 Run By: sjv 6/19/2013 08:18AM



#	FS
a	1.697
b	1.705
c	1.707
d	1.709
e	1.712
f	1.713
g	1.714
h	1.715
i	1.717
j	1.718

Soil Desc.	Soil Type No.	Total Unit Wt. (pcf)	Saturated Unit Wt. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Pore Pressure Param.	Pressure Constant (psf)	Piez. Surface No.
Eng Fill	1	120.0	130.0	100.0	30.0	0.00	0.0	W1
KJfs	2	120.0	135.0	100.0	35.0	0.00	0.0	W1
KJfs(c)	3	110.0	125.0	50.0	22.0	0.00	0.0	W1
sp-strng	4	120.0	130.0	100.0	35.0	0.00	0.0	W1
Qal	5	110.0	125.0	100.0	28.0	0.00	0.0	W1

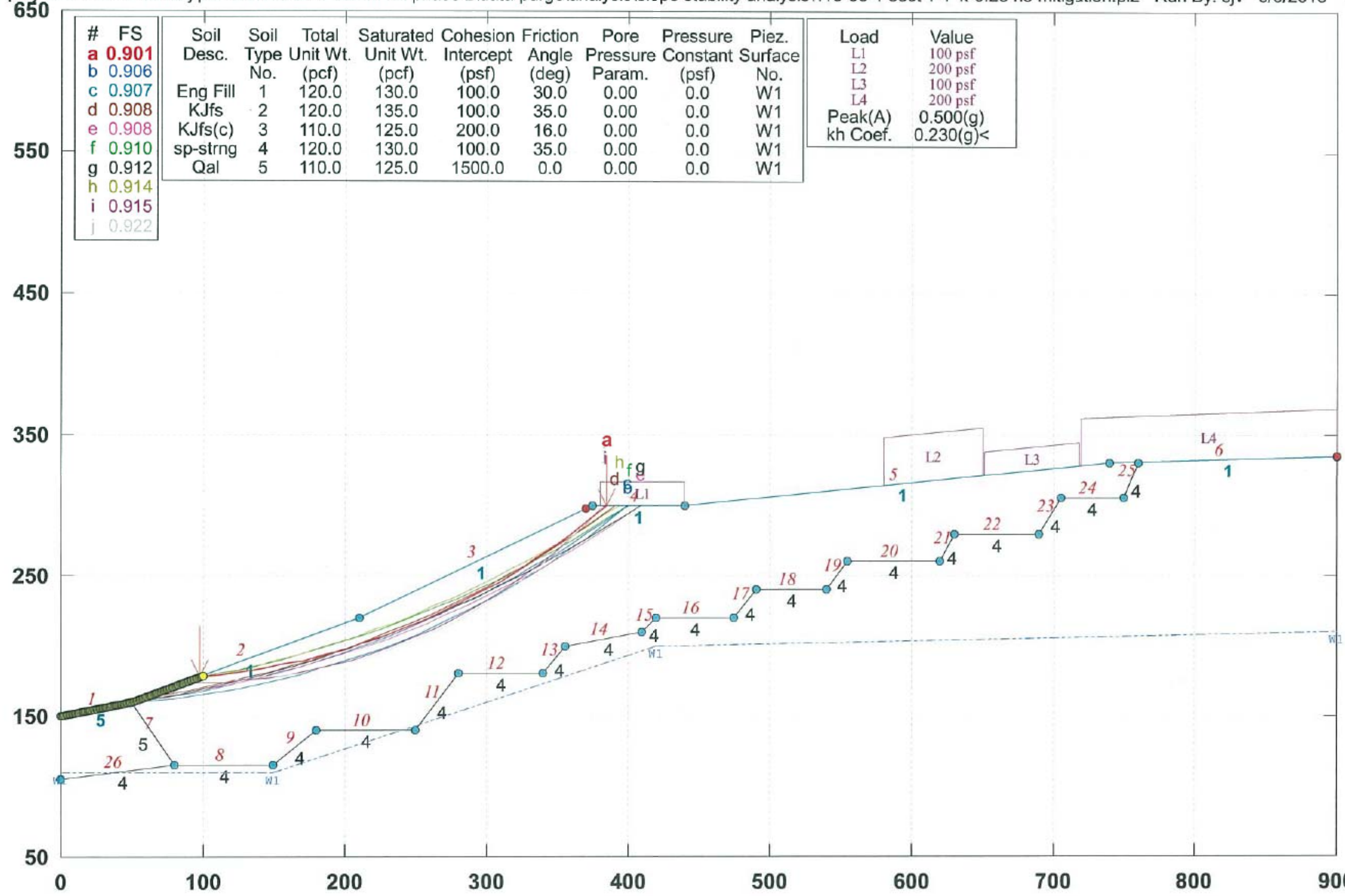
Load	Value
L1	100 psf
L2	200 psf
L3	100 psf
L4	200 psf

GSTABL7 v.2 FSmin=1.697

Safety Factors Are Calculated By The Modified Bishop Method

118-38-1 Comm Hill II- Section 1-1' seismic no mitigation

p:\projects\100\118 david j powers\118-38-1 comm hill phase 2\data-purge\analysis\slope stability analysis\118-38-1 sect 1-1' k-0.23 no mitigation.pl2 Run By: sjv 6/6/2013 12:18PM



GSTABL7 v.2 FSmin=0.901

Safety Factors Are Calculated By The Modified Bishop Method

118-38-1 Comm Hill II- Section 1-1' static no mitigation

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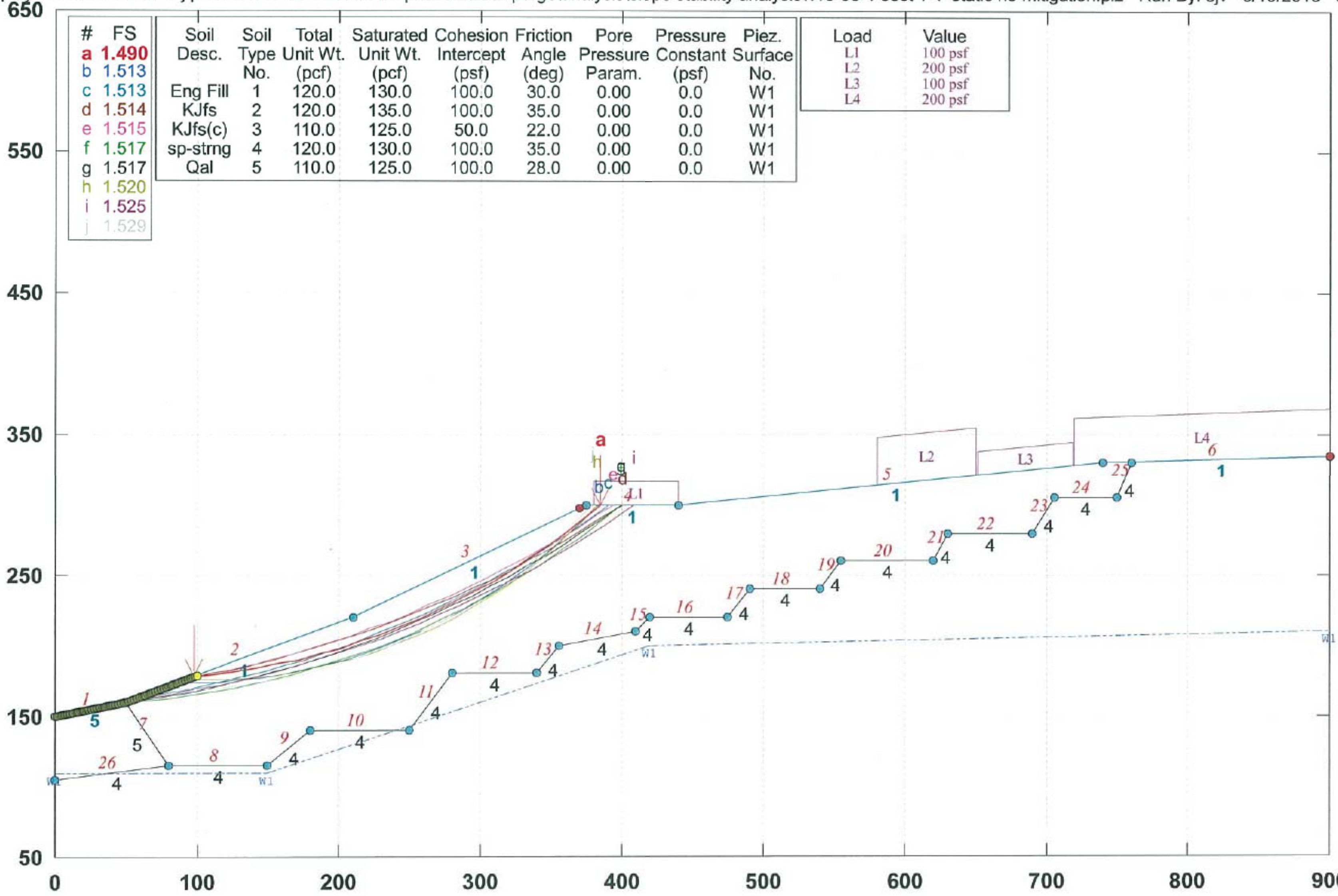


GSTABL7 v.2 FSmin=1.490

Safety Factors Are Calculated By The Modified Bishop Method

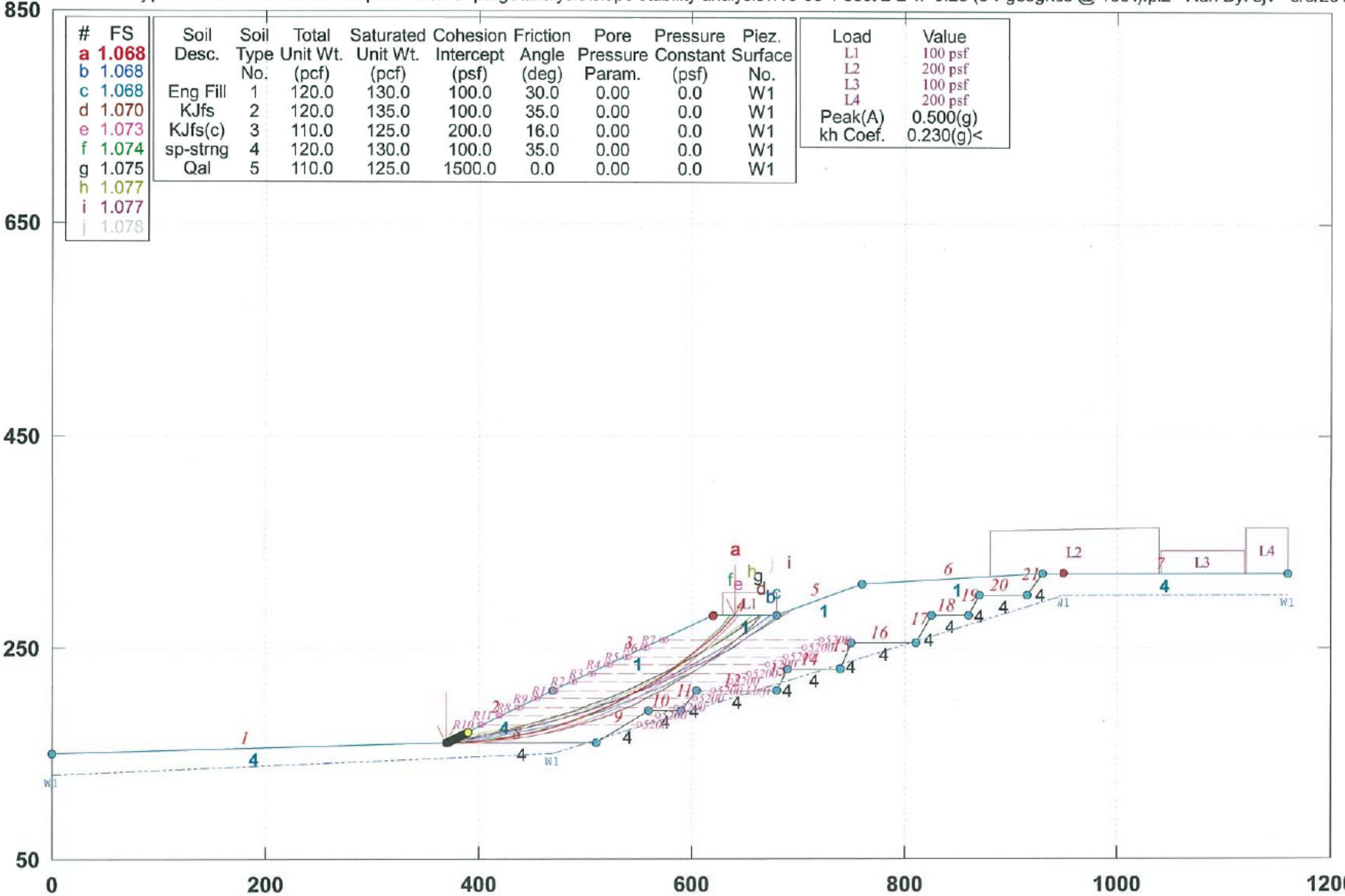
118-38-1 Comm Hill II- Section 2-2' seismic (8' grid spacing @ 150'L)

p:\projects\100\118 david j powers\118-38-1 comm hill phase 2\data-purge\analysis\slope stability analysis\118-38-1 sect 2-2' k=0.23 (8'v geogrids @ 150'l).pl2 Run By: sjv 6/6/2013 12:27PM

#	FS
a	1.068
b	1.068
c	1.068
d	1.070
e	1.073
f	1.074
g	1.075
h	1.077
i	1.077
j	1.078

Soil Desc.	Soil Type No.	Total Unit Wt. (pcf)	Saturated Unit Wt. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Pore Pressure Param.	Pressure Constant (psf)	Piez. Surface No.
Eng Fill	1	120.0	130.0	100.0	30.0	0.00	0.0	W1
KJfs	2	120.0	135.0	100.0	35.0	0.00	0.0	W1
KJfs(c)	3	110.0	125.0	200.0	16.0	0.00	0.0	W1
sp-strng	4	120.0	130.0	100.0	35.0	0.00	0.0	W1
Qal	5	110.0	125.0	1500.0	0.0	0.00	0.0	W1

Load	Value
L1	100 psf
L2	200 psf
L3	100 psf
L4	200 psf
Peak(A)	0.500(g)
kh Coef.	0.230(g)<

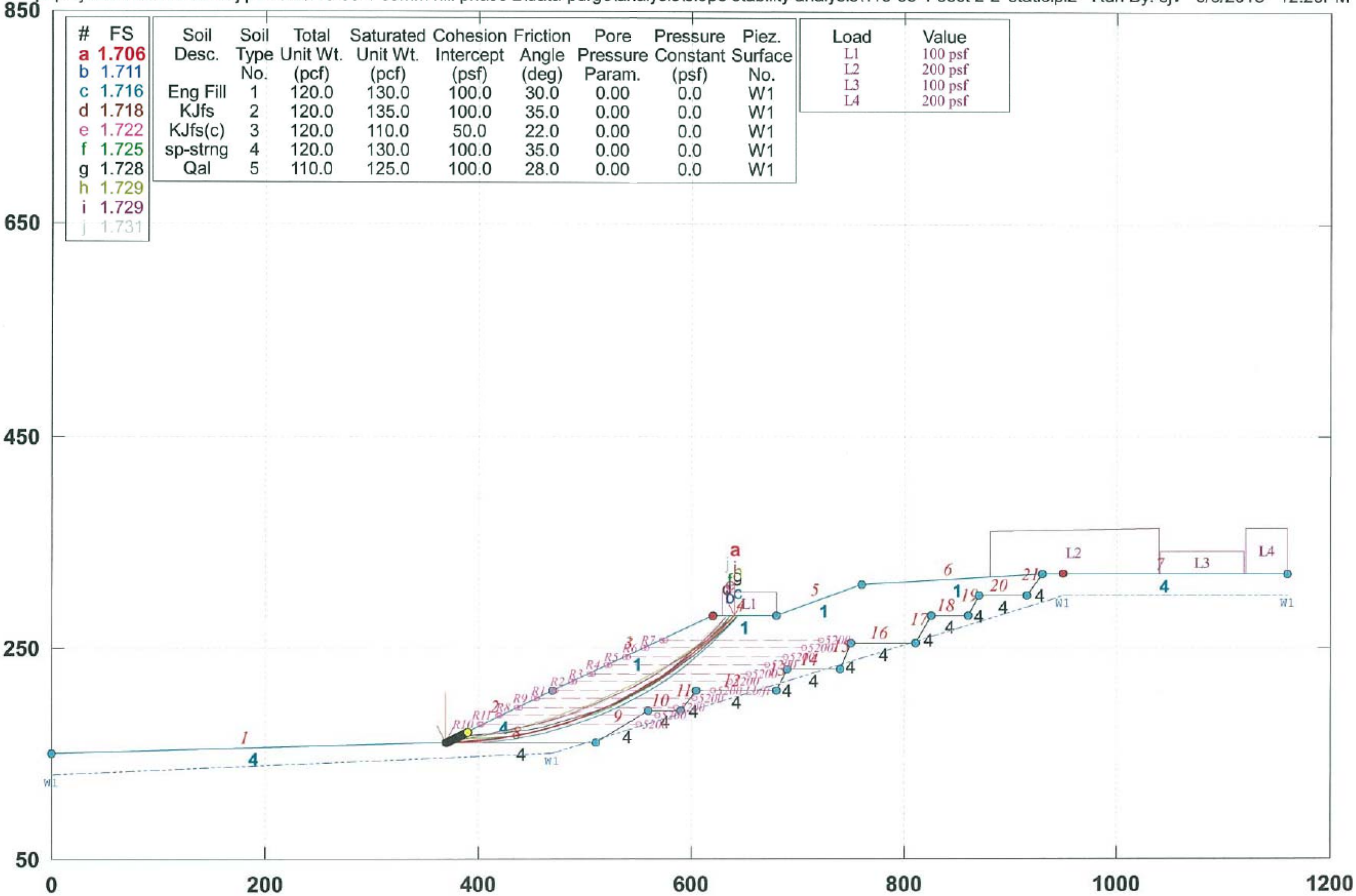


GSTABL7 v.2 FSmin=1.068

Safety Factors Are Calculated By The Modified Bishop Method

118-38-1 Comm Hill II- Section 2-2' static (8' grid spacing @ 150'L)

p:\projects\100\118 david j powers\118-38-1 comm hill phase 2\data-purge\analysis\slope stability analysis\118-38-1 sect 2-2' static.pl2 Run By: sjv 6/6/2013 12:26PM



#	FS
a	1.706
b	1.711
c	1.716
d	1.718
e	1.722
f	1.725
g	1.728
h	1.729
i	1.729
j	1.731

Soil Desc.	Soil Type No.	Total Unit Wt. (pcf)	Saturated Unit Wt. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Pore Pressure Param.	Pressure Constant (psf)	Piez. Surface No.
Eng Fill	1	120.0	130.0	100.0	30.0	0.00	0.0	W1
KJfs	2	120.0	135.0	100.0	35.0	0.00	0.0	W1
KJfs(c)	3	120.0	110.0	50.0	22.0	0.00	0.0	W1
sp-strng	4	120.0	130.0	100.0	35.0	0.00	0.0	W1
Qal	5	110.0	125.0	100.0	28.0	0.00	0.0	W1

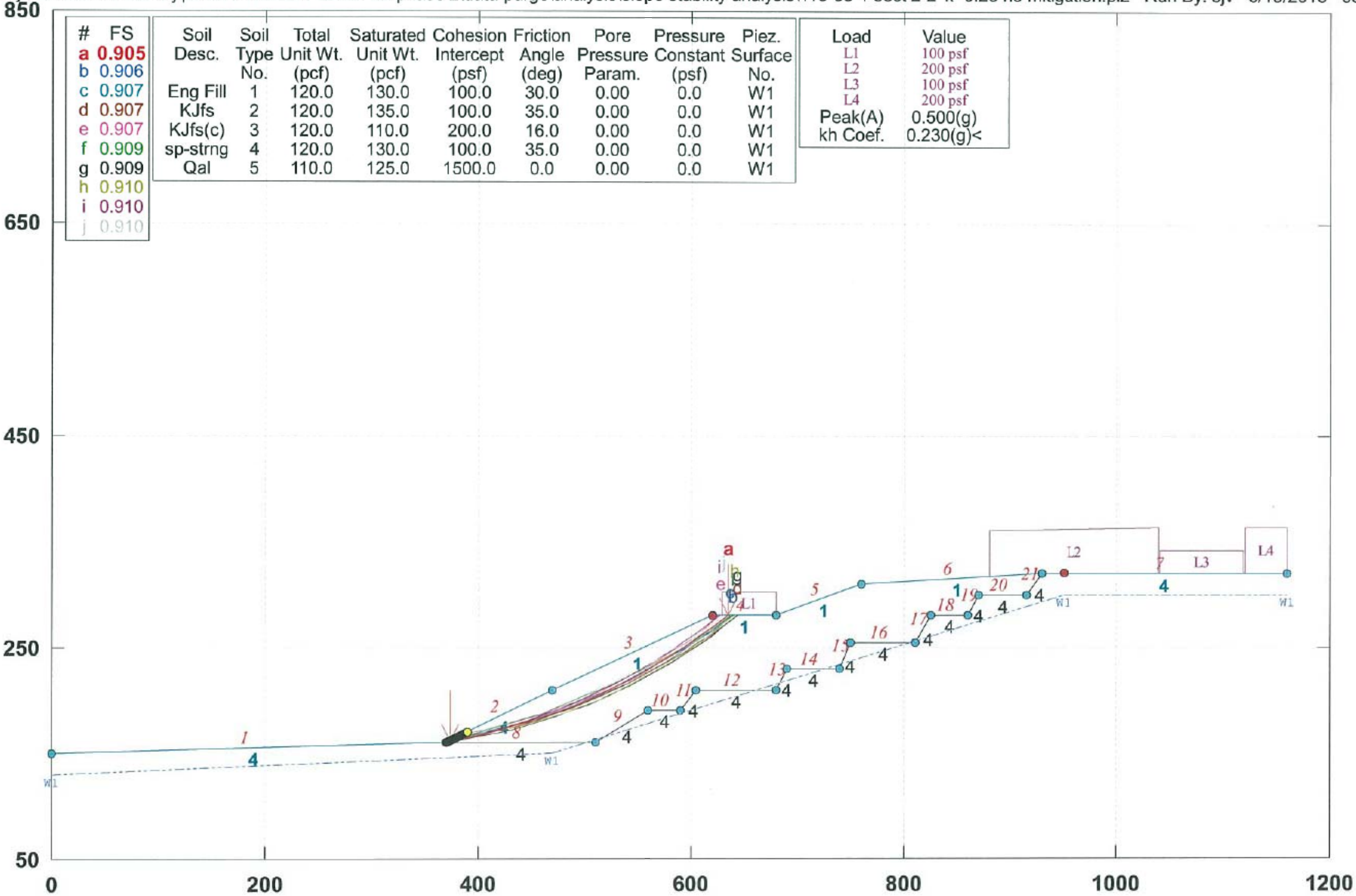
Load	Value
L1	100 psf
L2	200 psf
L3	100 psf
L4	200 psf

GSTABL7 v.2 FSmin=1.706

Safety Factors Are Calculated By The Modified Bishop Method

118-38-1 Comm Hill II- Section 2-2' seismic no mitigation

p:\projects\100\118 david j powers\118-38-1 comm hill phase 2\data-purge\analysis\slope stability analysis\118-38-1 sect 2-2' k=0.23 no mitigation.pl2 Run By: sjv 6/19/2013 08:22AM



#	FS
a	0.905
b	0.906
c	0.907
d	0.907
e	0.907
f	0.909
g	0.909
h	0.910
i	0.910
j	0.910

Soil Desc.	Soil Type No.	Total Unit Wt. (pcf)	Saturated Unit Wt. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Pore Pressure Param.	Pressure Constant (psf)	Piez. Surface No.
Eng Fill	1	120.0	130.0	100.0	30.0	0.00	0.0	W1
KJfs	2	120.0	135.0	100.0	35.0	0.00	0.0	W1
KJfs(c)	3	120.0	110.0	200.0	16.0	0.00	0.0	W1
sp-strng	4	120.0	130.0	100.0	35.0	0.00	0.0	W1
Qal	5	110.0	125.0	1500.0	0.0	0.00	0.0	W1

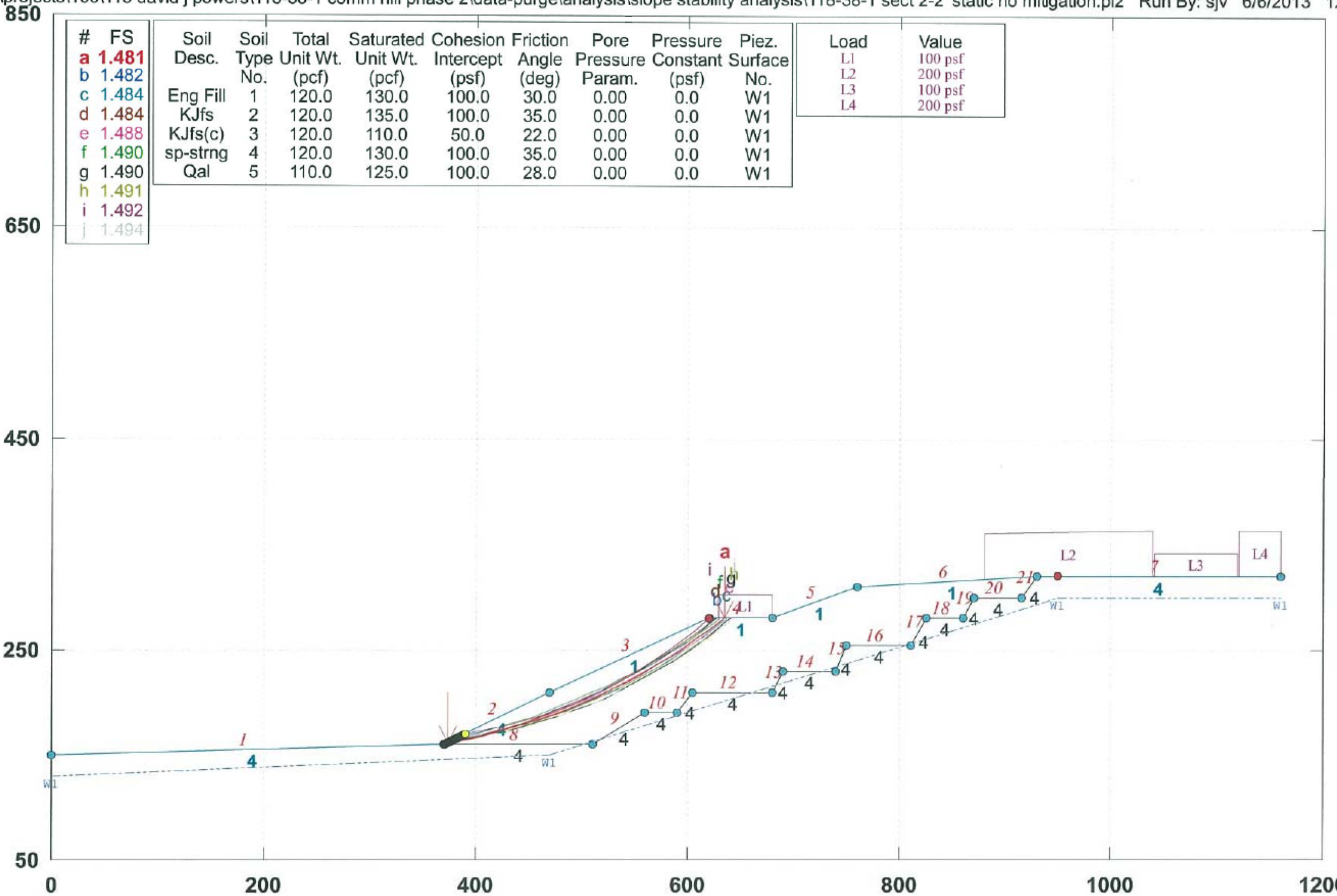
Load	Value
L1	100 psf
L2	200 psf
L3	100 psf
L4	200 psf
Peak(A)	0.500(g)
kh Coef.	0.230(g)<

GSTABL7 v.2 FSmin=0.905

Safety Factors Are Calculated By The Modified Bishop Method

118-38-1 Comm Hill II- Section 2-2' static no mitigation

p:\projects\100\118 david j powers\118-38-1 comm hill phase 2\data-purge\analysis\slope stability analysis\118-38-1 sect 2-2' static no mitigation.pl2 Run By: sjv 6/6/2013 12:25PM



#	FS
a	1.481
b	1.482
c	1.484
d	1.484
e	1.488
f	1.490
g	1.490
h	1.491
i	1.492
j	1.494

Soil Desc.	Soil Type No.	Total Unit Wt. (pcf)	Saturated Unit Wt. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Pore Pressure Param.	Pressure Constant (psf)	Piez. Surface No.
Eng Fill	1	120.0	130.0	100.0	30.0	0.00	0.0	W1
KJfs	2	120.0	135.0	100.0	35.0	0.00	0.0	W1
KJfs(c)	3	120.0	110.0	50.0	22.0	0.00	0.0	W1
sp-strng	4	120.0	130.0	100.0	35.0	0.00	0.0	W1
Qal	5	110.0	125.0	100.0	28.0	0.00	0.0	W1

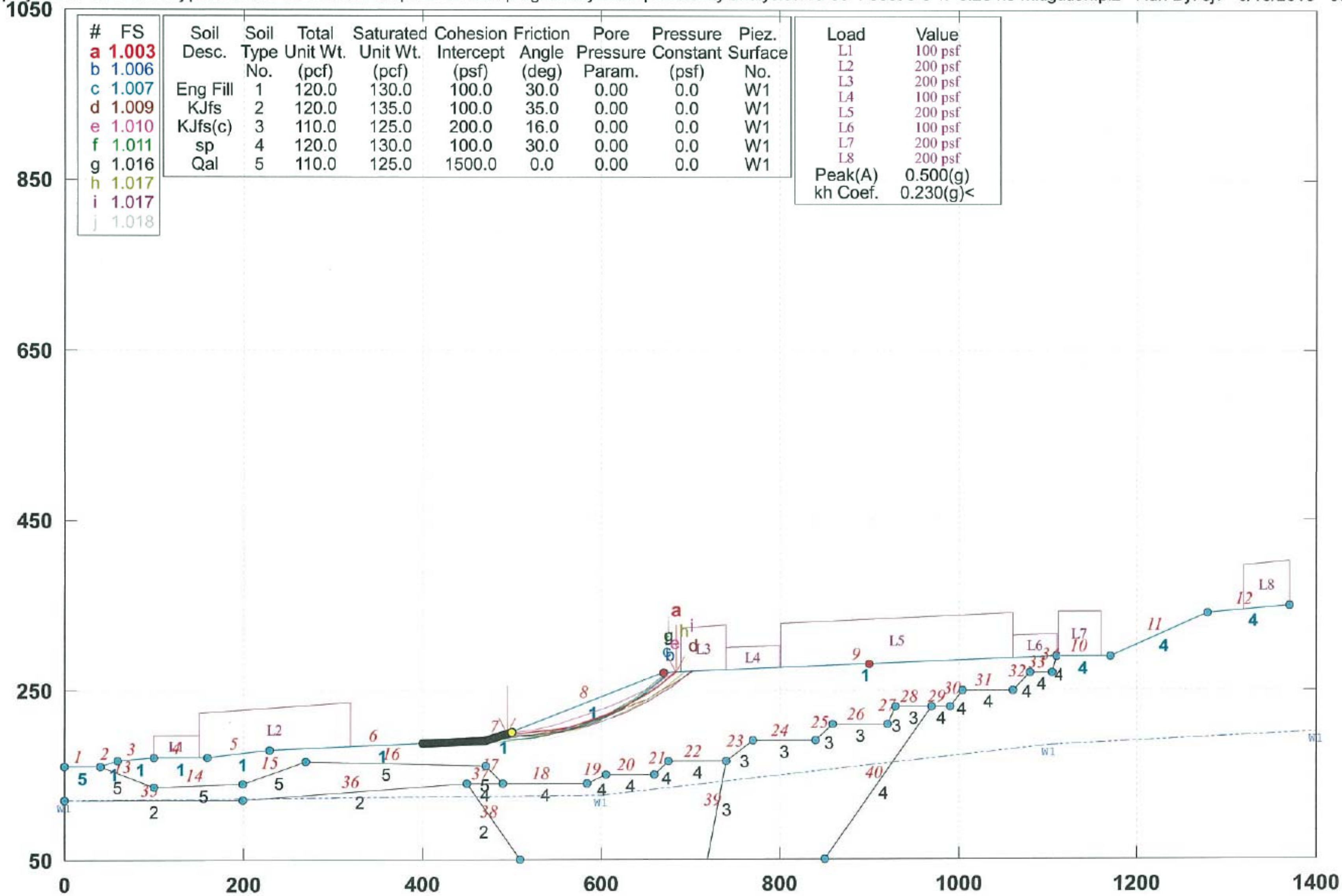
Load	Value
L1	100 psf
L2	200 psf
L3	100 psf
L4	200 psf

GSTABL7 v.2 FSmin=1.481

Safety Factors Are Calculated By The Modified Bishop Method

118-38-1 Comm Hill II- Section 3-3' seismic no mitigation

p:\projects\100\118 david j powers\118-38-1 comm hill phase 2\data-purge\analysis\slope stability analysis\118-38-1 sect 3-3' k=0.23 no mitigation.pl2 Run By: sjv 6/19/2013 08:23AM



#	FS
a	1.003
b	1.006
c	1.007
d	1.009
e	1.010
f	1.011
g	1.016
h	1.017
i	1.017
j	1.018

Soil Desc.	Soil Type No.	Total Unit Wt. (pcf)	Saturated Unit Wt. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Pore Pressure Param.	Pressure Constant (psf)	Piez. Surface No.
Eng Fill	1	120.0	130.0	100.0	30.0	0.00	0.0	W1
KJfs	2	120.0	135.0	100.0	35.0	0.00	0.0	W1
KJfs(c)	3	110.0	125.0	200.0	16.0	0.00	0.0	W1
sp	4	120.0	130.0	100.0	30.0	0.00	0.0	W1
Qal	5	110.0	125.0	1500.0	0.0	0.00	0.0	W1

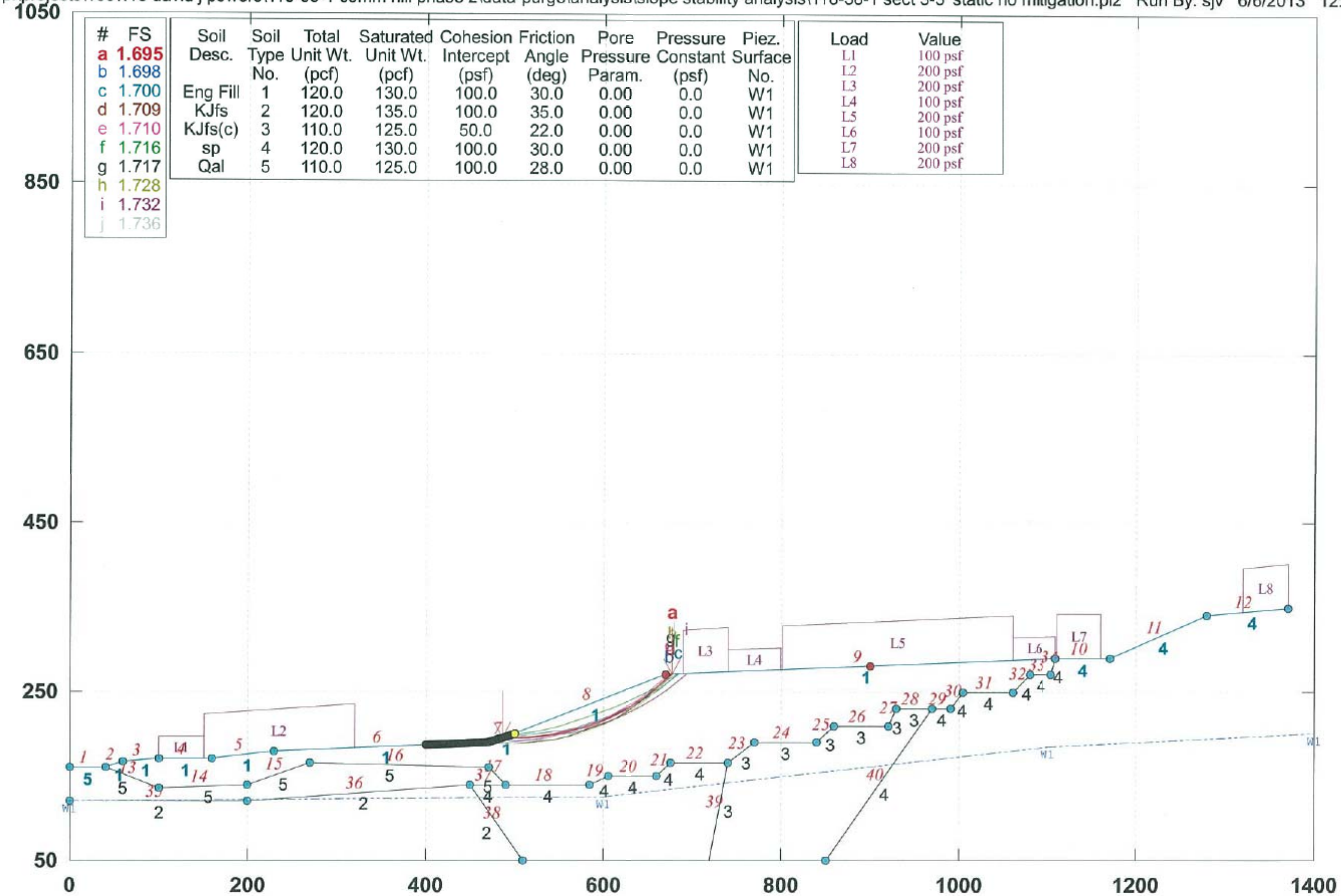
Load	Value
L1	100 psf
L2	200 psf
L3	200 psf
L4	100 psf
L5	200 psf
L6	100 psf
L7	200 psf
L8	200 psf
Peak(A)	0.500(g)
kh Coef.	0.230(g)<

GSTABL7 v.2 FSmin=1.003

Safety Factors Are Calculated By The Modified Bishop Method

118-38-1 Comm Hill II- Section 3-3' static no mitigation

p:\projects\100\118 david j powers\118-38-1 comm hill phase 2\data-purge\analysis\slope stability analysis\118-38-1 sect 3-3' static no mitigation.pl2 Run By: sjv 6/6/2013 12:34PM



#	FS
a	1.695
b	1.698
c	1.700
d	1.709
e	1.710
f	1.716
g	1.717
h	1.728
i	1.732
j	1.736

Soil Desc.	Soil Type No.	Total Unit Wt. (pcf)	Saturated Unit Wt. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Pore Pressure Param.	Pressure Constant (psf)	Piez. Surface No.
Eng Fill	1	120.0	130.0	100.0	30.0	0.00	0.0	W1
KJfs	2	120.0	135.0	100.0	35.0	0.00	0.0	W1
KJfs(c)	3	110.0	125.0	50.0	22.0	0.00	0.0	W1
sp	4	120.0	130.0	100.0	30.0	0.00	0.0	W1
Qal	5	110.0	125.0	100.0	28.0	0.00	0.0	W1

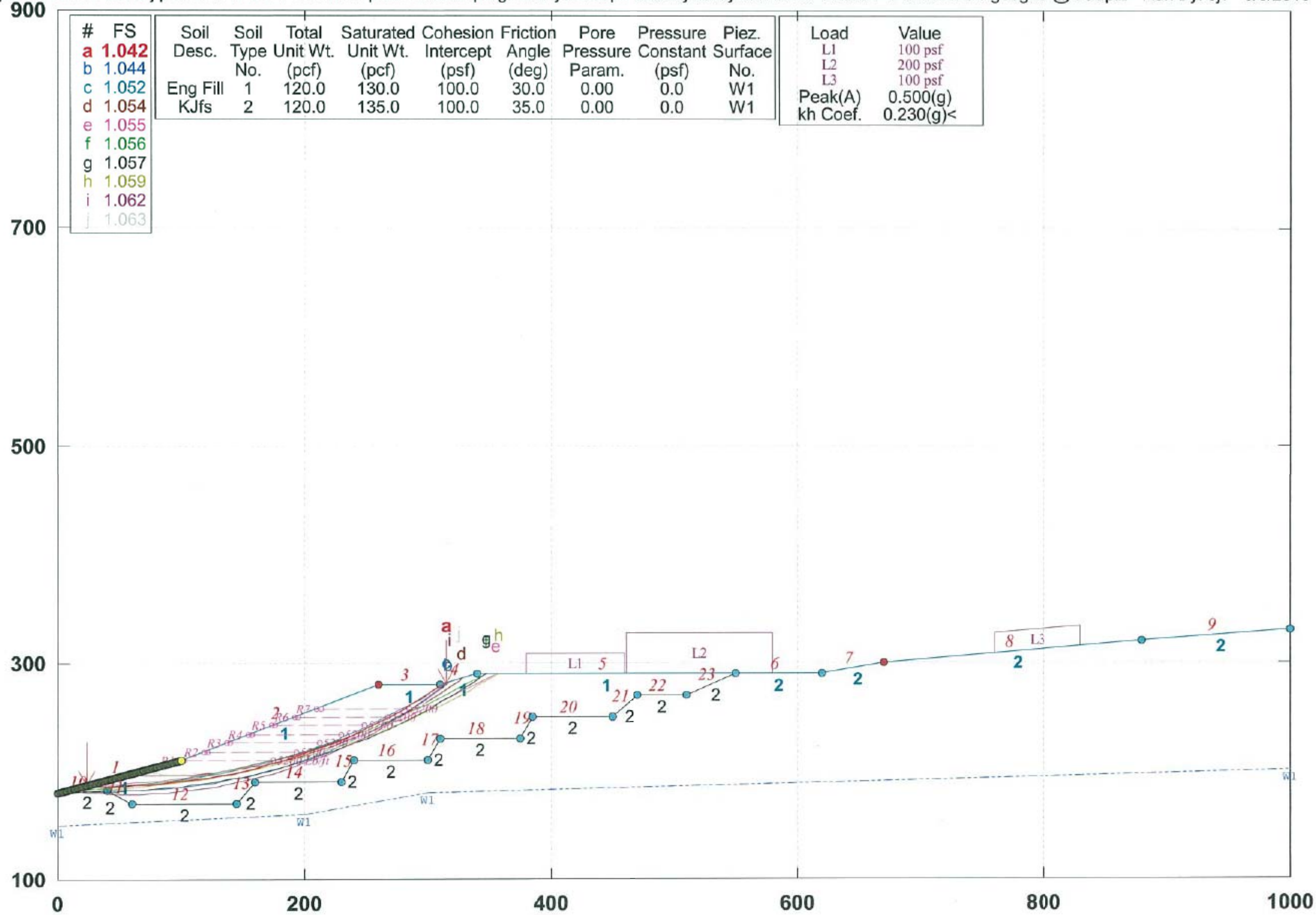
Load	Value
L1	100 psf
L2	200 psf
L3	200 psf
L4	100 psf
L5	200 psf
L6	100 psf
L7	200 psf
L8	200 psf

GSTABL7 v.2 FSmin=1.695

Safety Factors Are Calculated By The Modified Bishop Method

118-38-1 Comm Hill II- Section 4-4' seismic (8' grid spacing @ 75'L)

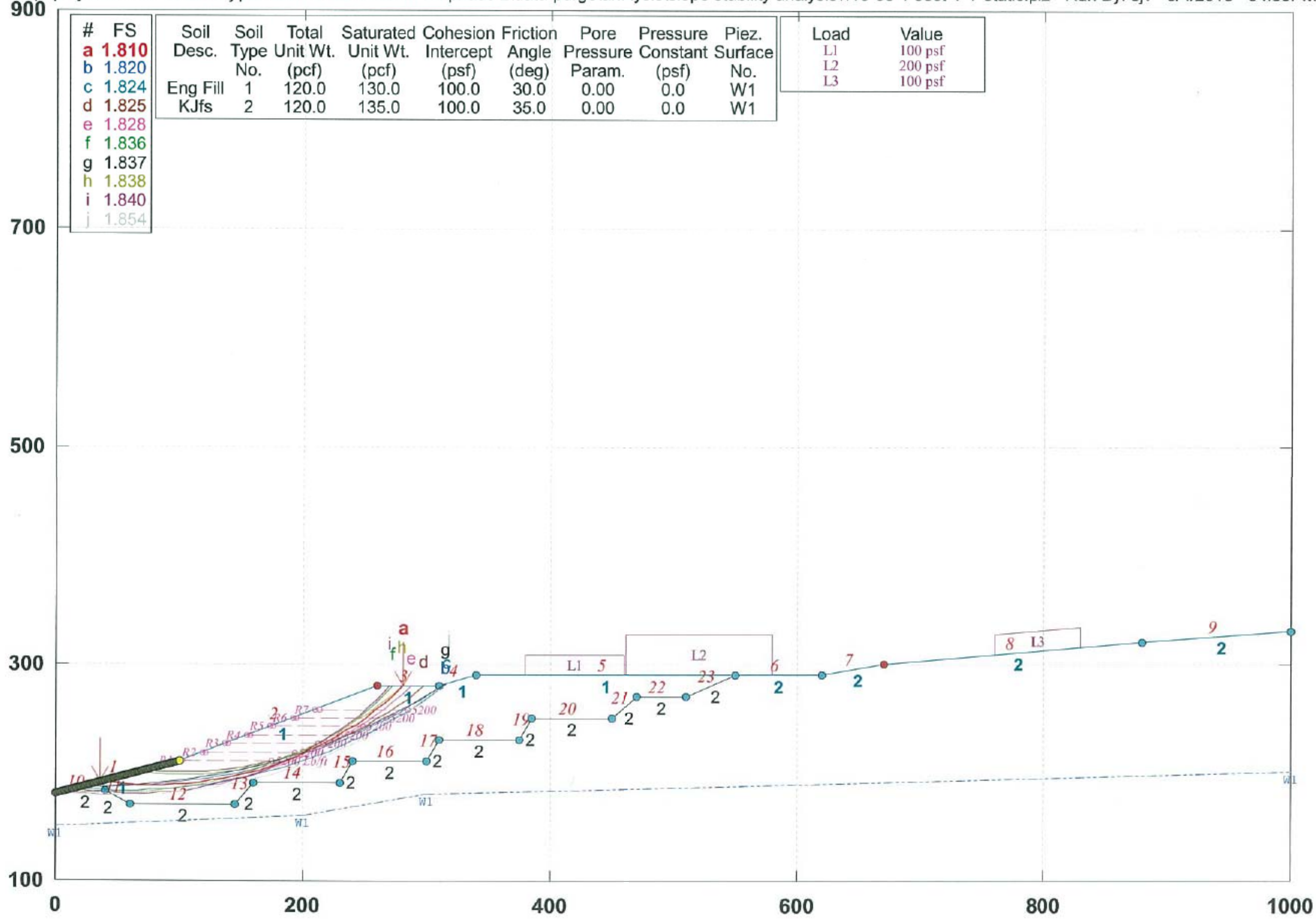
p:\projects\100\118 david j powers\118-38-1 comm hill phase 2\data-purge\analysis\slope stability analysis\118-38-1 sect 4-4' k=0.23 8'v geogrid @ 75'l.pl2 Run By: sjv 6/6/2013 12:40PM



GSTABL7 v.2 FSmin=1.042
Safety Factors Are Calculated By The Modified Bishop Method

118-38-1 Comm Hill II- Section 4-4' static (8' grid spacing @ 75'L)

p:\projects\100\118 david j powers\118-38-1 comm hill phase 2\data-purge\analysis\slope stability analysis\118-38-1 sect 4-4' static.pl2 Run By: sjv 6/4/2013 04:59PM

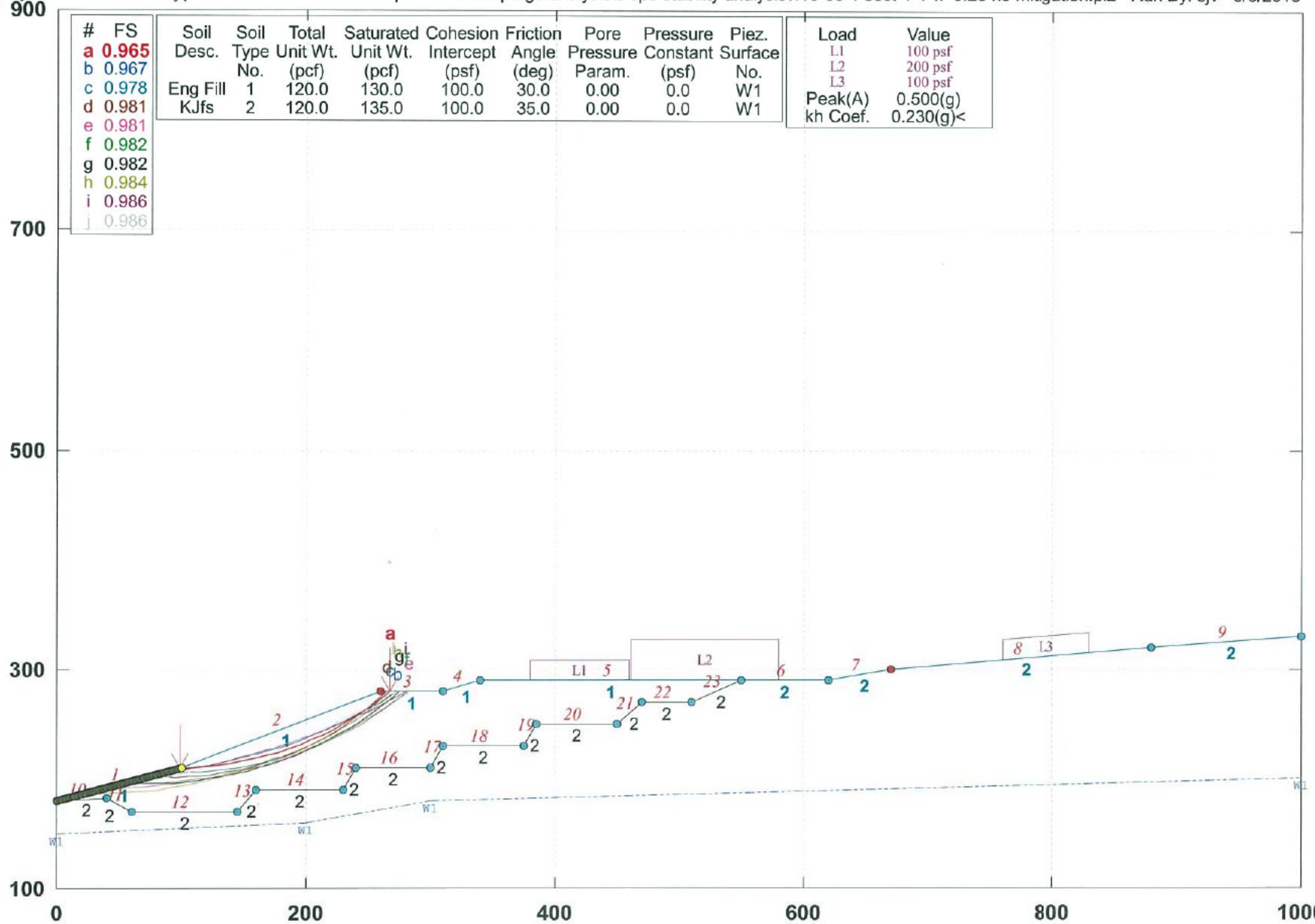


GSTABL7 v.2 FSmin=1.810

Safety Factors Are Calculated By The Modified Bishop Method

118-38-1 Comm Hill II- Section 4-4' seismic no mitigation

p:\projects\100\118 david j powers\118-38-1 comm hill phase 2\data-purge\analysis\slope stability analysis\118-38-1 sect 4-4' k=0.23 no mitigation.pl2 Run By: sjv 6/6/2013 12:39PM

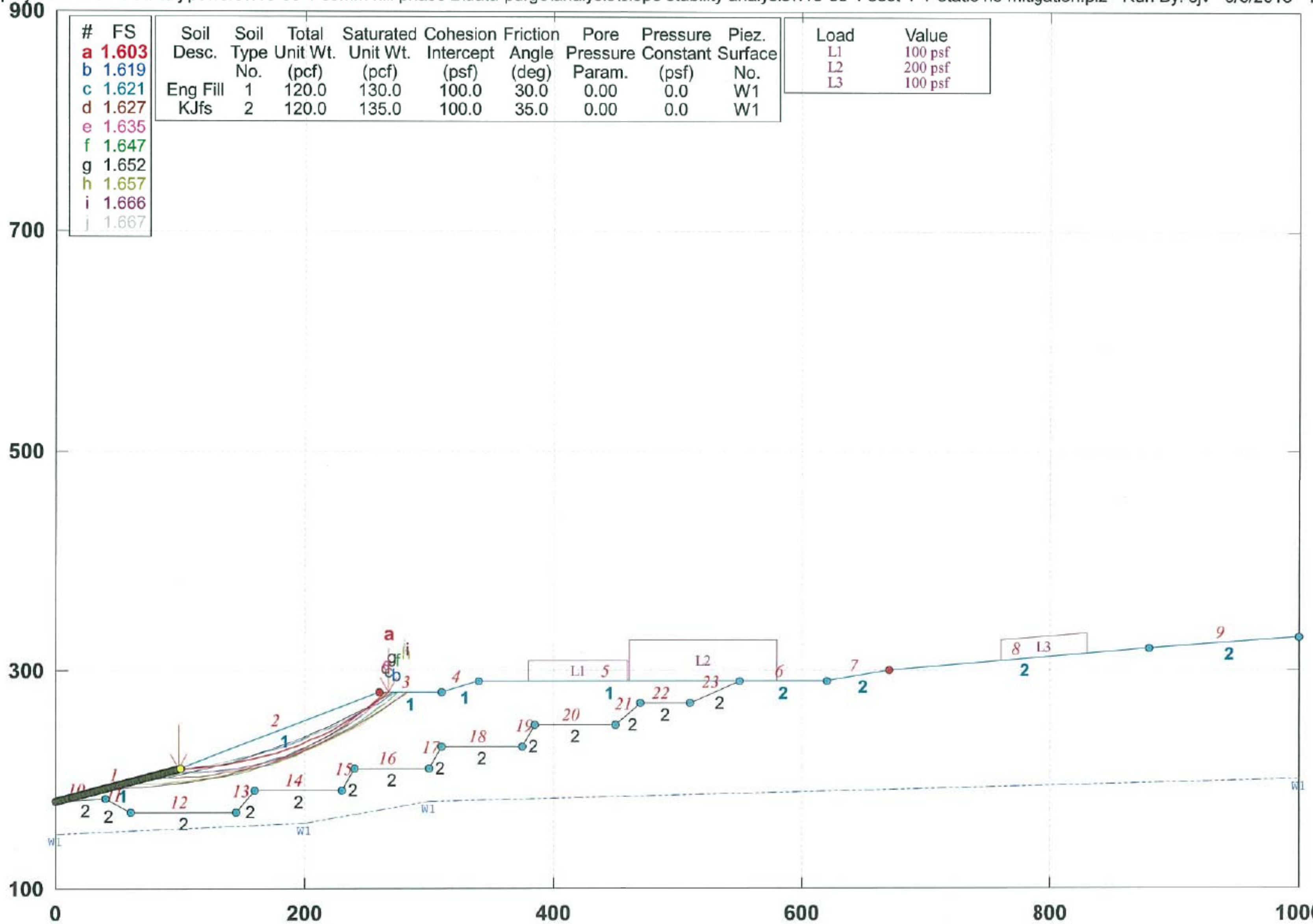


GSTABL7 v.2 FSmin=0.965

Safety Factors Are Calculated By The Modified Bishop Method

118-38-1 Comm Hill II- Section 4-4' static no mitigation

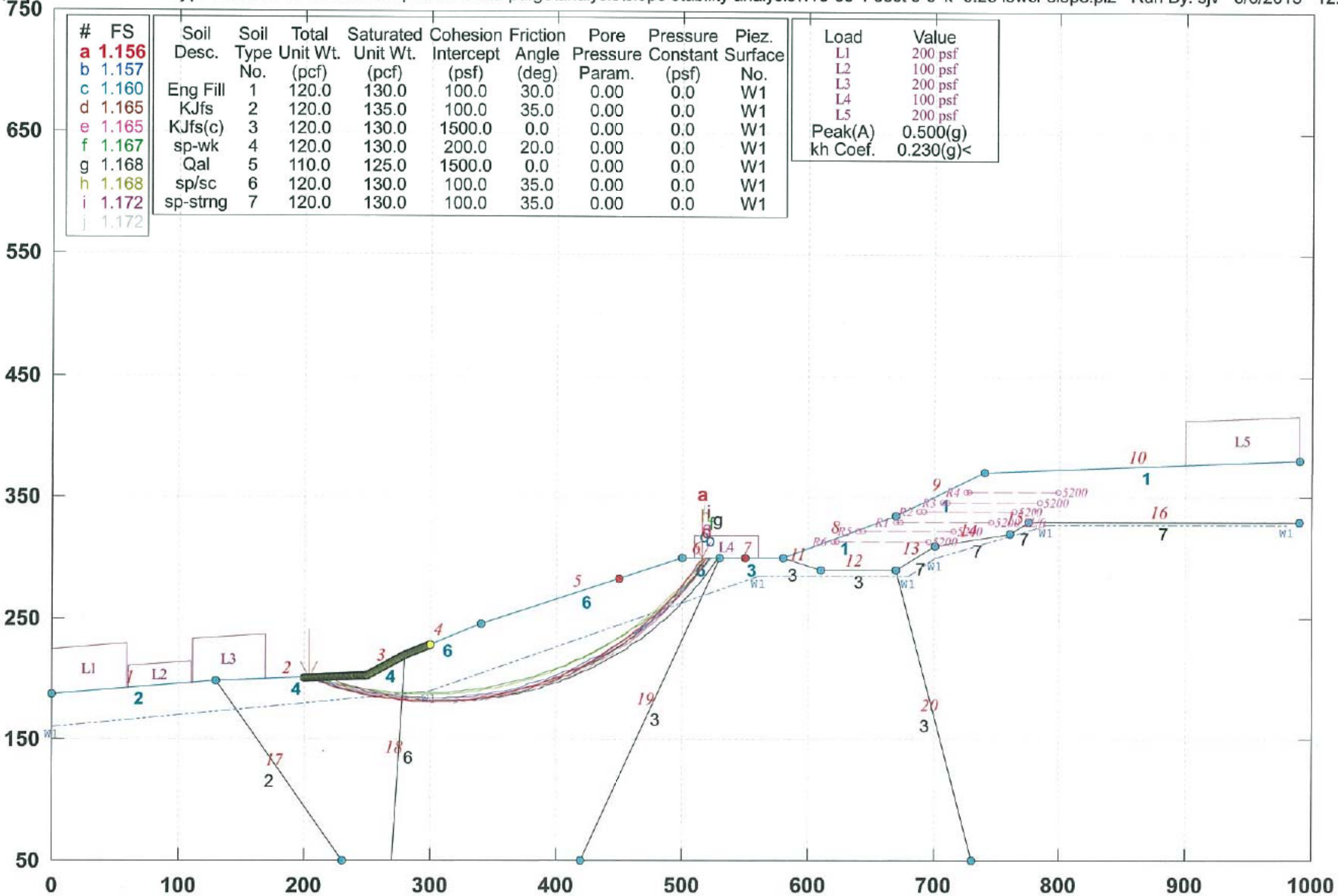
p:\projects\100\118 david j powers\118-38-1 comm hill phase 2\data-purge\analysis\slope stability analysis\118-38-1 sect 4-4' static no mitigation.pl2 Run By: sjv 6/6/2013 10:44AM



GSTABL7 v.2 FSmin=1.603
Safety Factors Are Calculated By The Modified Bishop Method

118-38-1 Comm Hill II- Section 5-5' seismic lower slope

p:\projects\100\118 david j powers\118-38-1 comm hill phase 2\data-purge\analysis\slope stability analysis\118-38-1 sect 5-5' k=0.23 lower slope.pl2 Run By: sjv 6/6/2013 12:42PM



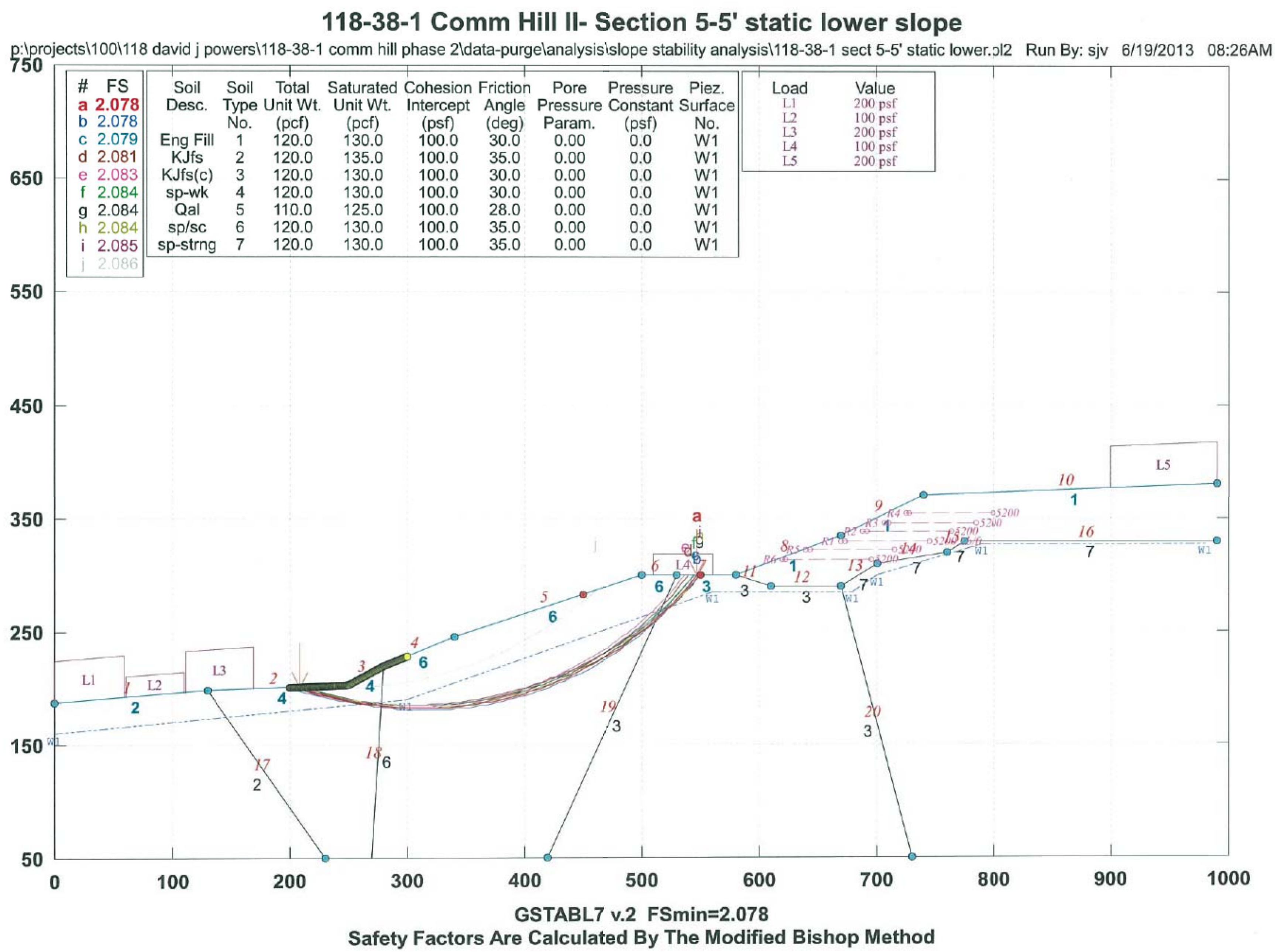
#	FS
a	1.156
b	1.157
c	1.160
d	1.165
e	1.165
f	1.167
g	1.168
h	1.168
i	1.172
j	1.172

Soil Desc.	Soil Type No.	Total Unit Wt. (pcf)	Saturated Unit Wt. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Pore Pressure Param.	Pressure Constant (psf)	Piez. Surface No.
Eng Fill	1	120.0	130.0	100.0	30.0	0.00	0.0	W1
KJfs	2	120.0	135.0	100.0	35.0	0.00	0.0	W1
KJfs(c)	3	120.0	130.0	1500.0	0.0	0.00	0.0	W1
sp-wk	4	120.0	130.0	200.0	20.0	0.00	0.0	W1
Qal	5	110.0	125.0	1500.0	0.0	0.00	0.0	W1
sp/sc	6	120.0	130.0	100.0	35.0	0.00	0.0	W1
sp-strng	7	120.0	130.0	100.0	35.0	0.00	0.0	W1

Load	Value
L1	200 psf
L2	100 psf
L3	200 psf
L4	100 psf
L5	200 psf
Peak(A)	0.500(g)
kh Coef.	0.230(g)<

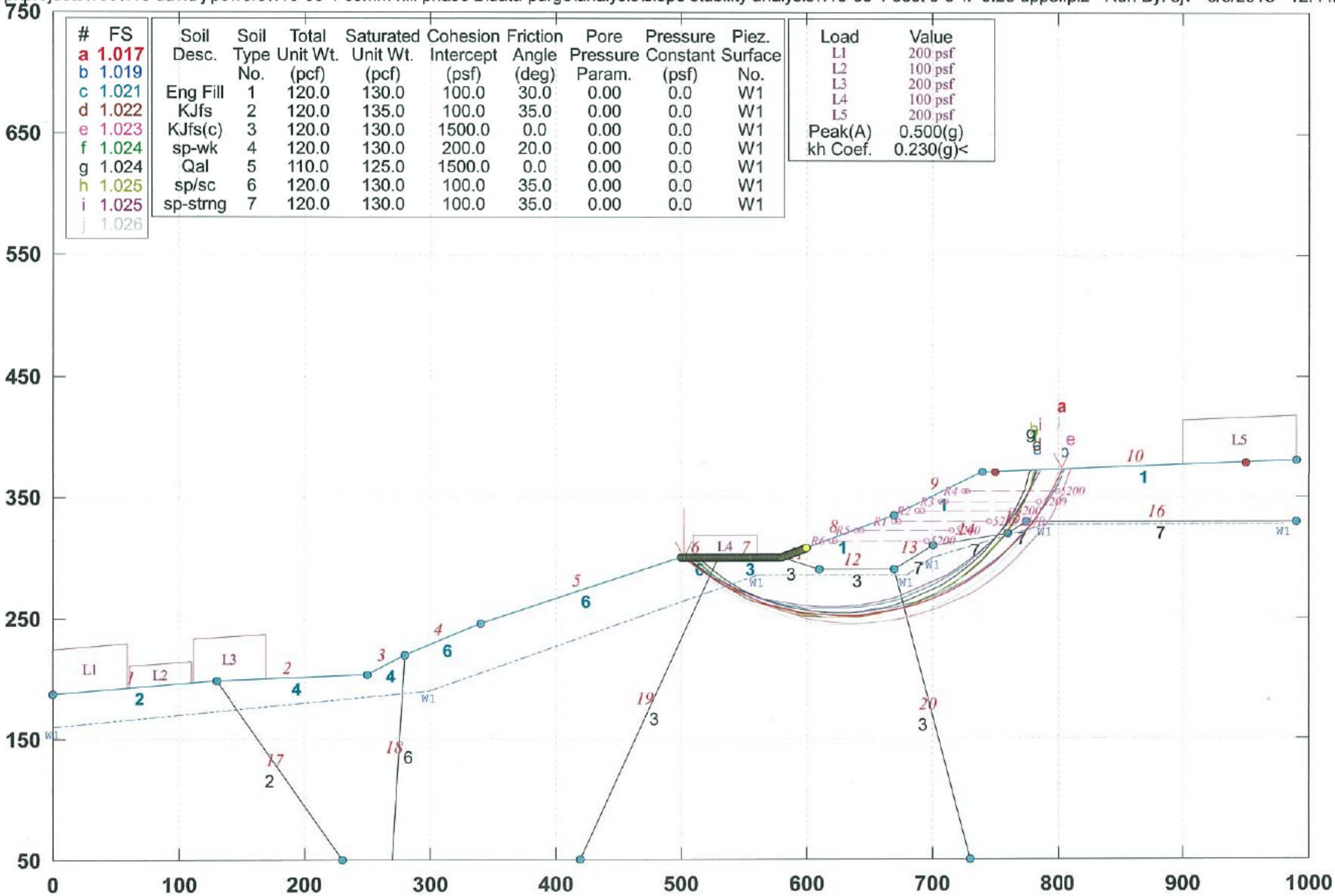
GSTABL7 v.2 FSmin=1.156

Safety Factors Are Calculated By The Modified Bishop Method


118-38-1 Comm Hill II- Section 5-5' static lower slope
p:\projects\100\118 david j powers\118-38-1 comm hill phase 2\data-purge\analysis\slope stability analysis\118-38-1 sect 5-5' static lower.pl2 Run By: sjv 6/19/2013 08:26AM
FS
a 2.078
b 2.078
c 2.079
d 2.081
e 2.083
f 2.084
g 2.084
h 2.084
i 2.085
j 2.086
Soil Desc. | Soil Type No. | Total Unit Wt. (pcf) | Saturated Unit Wt. (pcf) | Cohesion Intercept (psf) | Friction Angle (deg) | Pore Pressure Param. | Pressure Constant (psf) | Piez. Surface No.
Eng Fill 1 120.0 130.0 100.0 30.0 0.00 0.0 W1
KJfs 2 120.0 135.0 100.0 35.0 0.00 0.0 W1
KJfs(c) 3 120.0 130.0 100.0 30.0 0.00 0.0 W1
sp-wk 4 120.0 130.0 100.0 30.0 0.00 0.0 W1
Qal 5 110.0 125.0 100.0 28.0 0.00 0.0 W1
sp/sc 6 120.0 130.0 100.0 35.0 0.00 0.0 W1
sp-strng 7 120.0 130.0 100.0 35.0 0.00 0.0 W1
Load Value
L1 200 psf
L2 100 psf
L3 200 psf
L4 100 psf
L5 200 psf
750
650
550
450
350
250
150
50
0
100
200
300
400
500
600
700
800
900
1000
GSTABL7 v.2 FSmin=2.078
Safety Factors Are Calculated By The Modified Bishop Method

118-38-1 Comm Hill II- Section 5-5' seismic upper slope

p:\projects\100\118 david j powers\118-38-1 comm hill phase 2\data-purge\analysis\slope stability analysis\118-38-1 sect 5-5' k=0.23 upper.pl2 Run By: sjv 6/6/2013 12:44PM



#	FS
a	1.017
b	1.019
c	1.021
d	1.022
e	1.023
f	1.024
g	1.024
h	1.025
i	1.025
j	1.026

Soil Desc.	Soil Type No.	Total Unit Wt. (pcf)	Saturated Unit Wt. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Pore Pressure Param.	Pressure Constant (psf)	Piez. Surface No.
Eng Fill	1	120.0	130.0	100.0	30.0	0.00	0.0	W1
KJfs	2	120.0	135.0	100.0	35.0	0.00	0.0	W1
KJfs(c)	3	120.0	130.0	1500.0	0.0	0.00	0.0	W1
sp-wk	4	120.0	130.0	200.0	20.0	0.00	0.0	W1
Qal	5	110.0	125.0	1500.0	0.0	0.00	0.0	W1
sp/sc	6	120.0	130.0	100.0	35.0	0.00	0.0	W1
sp-strng	7	120.0	130.0	100.0	35.0	0.00	0.0	W1

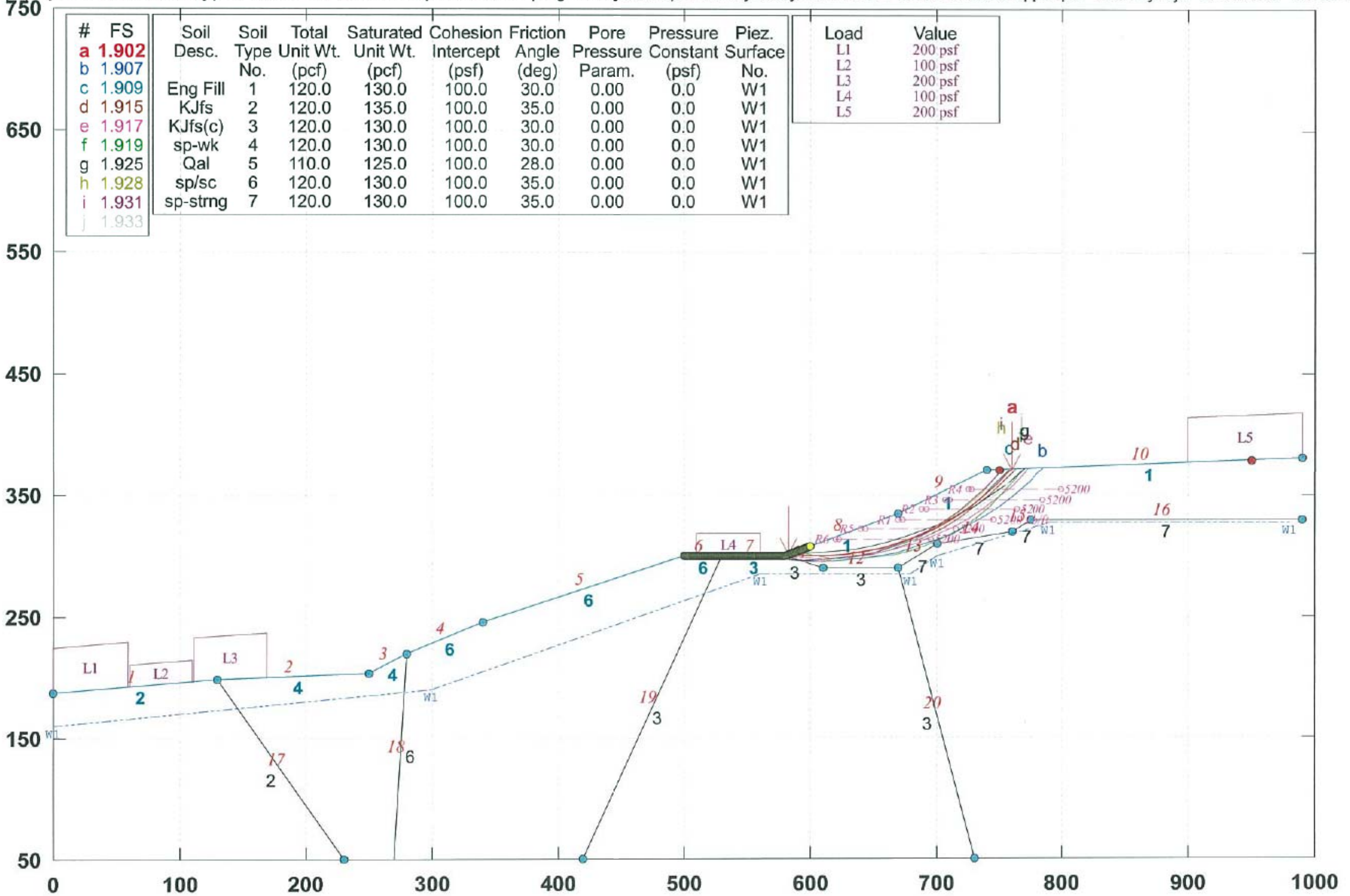
Load	Value
L1	200 psf
L2	100 psf
L3	200 psf
L4	100 psf
L5	200 psf
Peak(A)	0.500(g)
kh Coef.	0.230(g)<

GSTABL7 v.2 FSmin=1.017

Safety Factors Are Calculated By The Modified Bishop Method

118-38-1 Comm Hill II- Section 5-5' static upper slope

p:\projects\100\118 david j powers\118-38-1 comm hill phase 2\data-purge\analysis\slope stability analysis\118-38-1 sect 5-5' static upper.pl2 Run By: sjv 6/19/2013 08:29AM



#	FS
a	1.902
b	1.907
c	1.909
d	1.915
e	1.917
f	1.919
g	1.925
h	1.928
i	1.931
j	1.933

Soil Desc.	Soil Type No.	Total Unit Wt. (pcf)	Saturated Unit Wt. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Pore Pressure Param.	Pressure Constant (psf)	Piez. Surface No.
Eng Fill	1	120.0	130.0	100.0	30.0	0.00	0.0	W1
KJfs	2	120.0	135.0	100.0	35.0	0.00	0.0	W1
KJfs(c)	3	120.0	130.0	100.0	30.0	0.00	0.0	W1
sp-wk	4	120.0	130.0	100.0	30.0	0.00	0.0	W1
Qal	5	110.0	125.0	100.0	28.0	0.00	0.0	W1
sp/sc	6	120.0	130.0	100.0	35.0	0.00	0.0	W1
sp-strng	7	120.0	130.0	100.0	35.0	0.00	0.0	W1

Load	Value
L1	200 psf
L2	100 psf
L3	200 psf
L4	100 psf
L5	200 psf

GSTABL7 v.2 FSmin=1.902

Safety Factors Are Calculated By The Modified Bishop Method

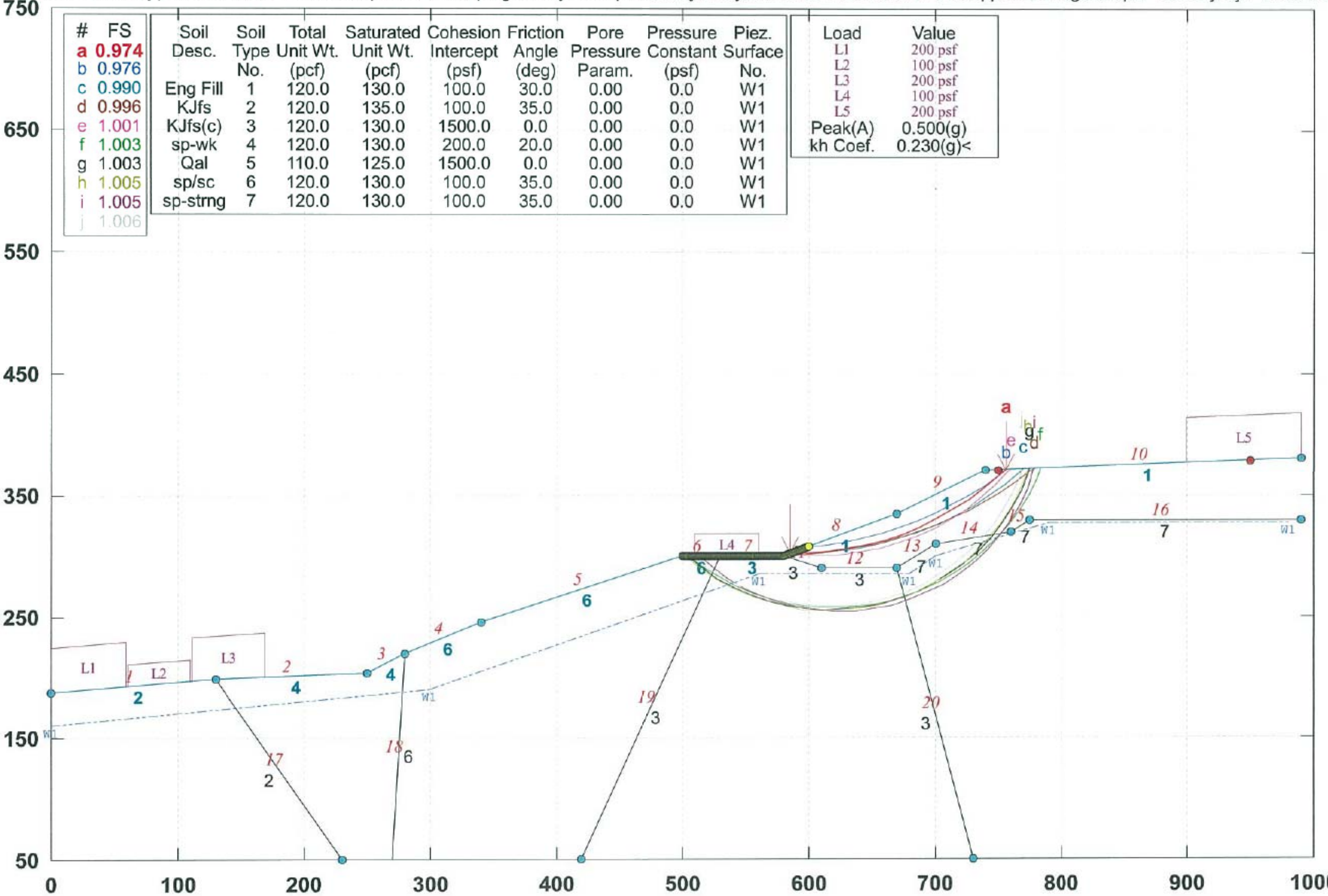
118-38-1 Comm Hill II- Section 5-5' seismic upper slope no mitigation

p:\projects\100\118 david j powers\118-38-1 comm hill phase 2\data-purge\analysis\slope stability analysis\118-38-1 sect 5-5' k=0.23 upper no mitigation.pl2 Run By: sjv 6/6/2013 12:43PM

#	FS
a	0.974
b	0.976
c	0.990
d	0.996
e	1.001
f	1.003
g	1.003
h	1.005
i	1.005
j	1.006

Soil Desc.	Soil Type No.	Total Unit Wt. (pcf)	Saturated Unit Wt. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Pore Pressure Param.	Pressure Constant (psf)	Piez. Surface No.
Eng Fill	1	120.0	130.0	100.0	30.0	0.00	0.0	W1
KJfs	2	120.0	135.0	100.0	35.0	0.00	0.0	W1
KJfs(c)	3	120.0	130.0	1500.0	0.0	0.00	0.0	W1
sp-wk	4	120.0	130.0	200.0	20.0	0.00	0.0	W1
Qal	5	110.0	125.0	1500.0	0.0	0.00	0.0	W1
sp/sc	6	120.0	130.0	100.0	35.0	0.00	0.0	W1
sp-strng	7	120.0	130.0	100.0	35.0	0.00	0.0	W1

Load	Value
L1	200 psf
L2	100 psf
L3	200 psf
L4	100 psf
L5	200 psf
Peak(A)	0.500(g)
kh Coef.	0.230(g)<

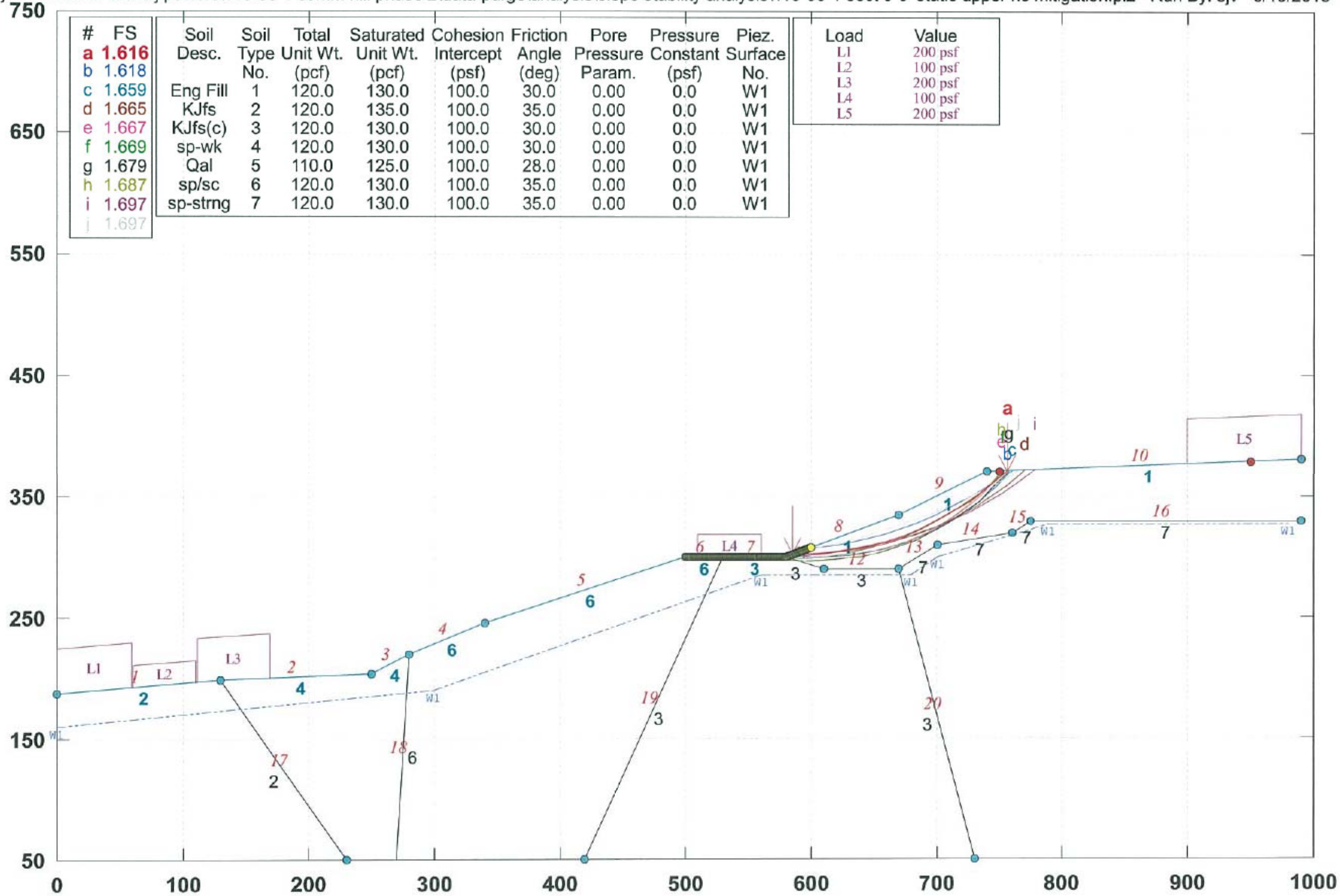


GSTABL7 v.2 FSmin=0.974

Safety Factors Are Calculated By The Modified Bishop Method

118-38-1 Comm Hill II- Section 5-5' static upper slope no mitigation

p:\projects\100\118 david j powers\118-38-1 comm hill phase 2\data-purge\analysis\slope stability analysis\118-38-1 sect 5-5' static upper no mitigation.pl2 Run By: sjv 6/19/2013 08:33AM



#	FS
a	1.616
b	1.618
c	1.659
d	1.665
e	1.667
f	1.669
g	1.679
h	1.687
i	1.697
j	1.697

Soil Desc.	Soil Type No.	Total Unit Wt. (pcf)	Saturated Unit Wt. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Pore Pressure Param.	Pressure Constant (psf)	Piez. Surface No.
Eng Fill	1	120.0	130.0	100.0	30.0	0.00	0.0	W1
KJfs	2	120.0	135.0	100.0	35.0	0.00	0.0	W1
KJfs(c)	3	120.0	130.0	100.0	30.0	0.00	0.0	W1
sp-wk	4	120.0	130.0	100.0	30.0	0.00	0.0	W1
Qal	5	110.0	125.0	100.0	28.0	0.00	0.0	W1
sp/sc	6	120.0	130.0	100.0	35.0	0.00	0.0	W1
sp-strng	7	120.0	130.0	100.0	35.0	0.00	0.0	W1

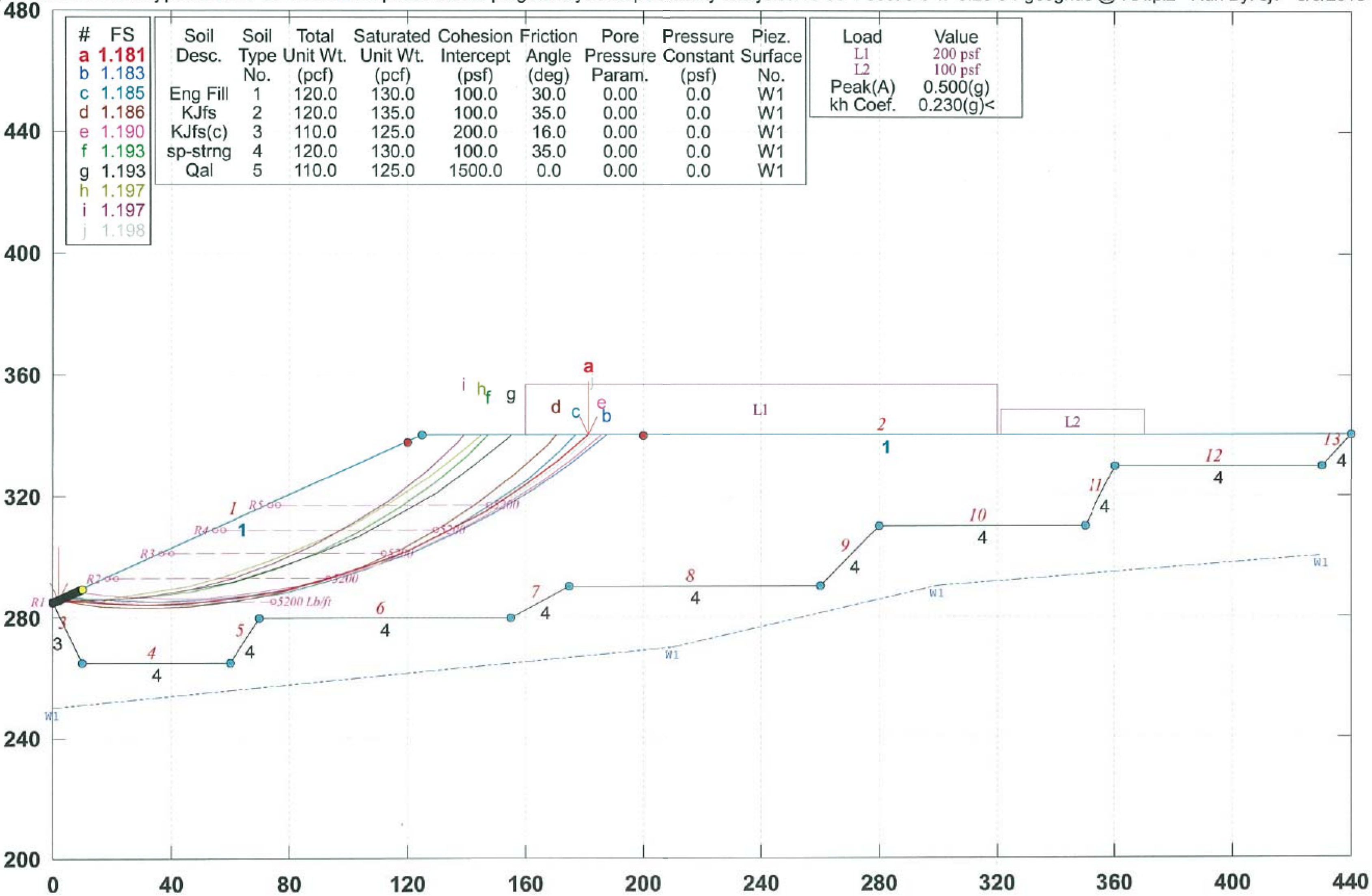
Load	Value
L1	200 psf
L2	100 psf
L3	200 psf
L4	100 psf
L5	200 psf

GSTABL7 v.2 FSmin=1.616

Safety Factors Are Calculated By The Modified Bishop Method

118-38-1 Comm Hill II- Section 6-6' seismic (8' geogrid spacing @ 75'L)

p:\projects\100\118 david j powers\118-38-1 comm hill phase 2\data-purge\analysis\slope stability analysis\118-38-1 sect 6-6' k=0.23 8'v geogrids @ 75'l.pl2 Run By: sjv 6/6/2013 12:12PM



#	FS
a	1.181
b	1.183
c	1.185
d	1.186
e	1.190
f	1.193
g	1.193
h	1.197
i	1.197
j	1.198

Soil Desc.	Soil Type No.	Total Unit Wt. (pcf)	Saturated Unit Wt. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Pore Pressure Param.	Pressure Constant (psf)	Piez. Surface No.
Eng Fill	1	120.0	130.0	100.0	30.0	0.00	0.0	W1
KJfs	2	120.0	135.0	100.0	35.0	0.00	0.0	W1
KJfs(c)	3	110.0	125.0	200.0	16.0	0.00	0.0	W1
sp-strng	4	120.0	130.0	100.0	35.0	0.00	0.0	W1
Qal	5	110.0	125.0	1500.0	0.0	0.00	0.0	W1

Load	Value
L1	200 psf
L2	100 psf
Peak(A)	0.500(g)
kh Coef.	0.230(g)<

GSTABL7 v.2 FSmin=1.181

Safety Factors Are Calculated By The Modified Bishop Method

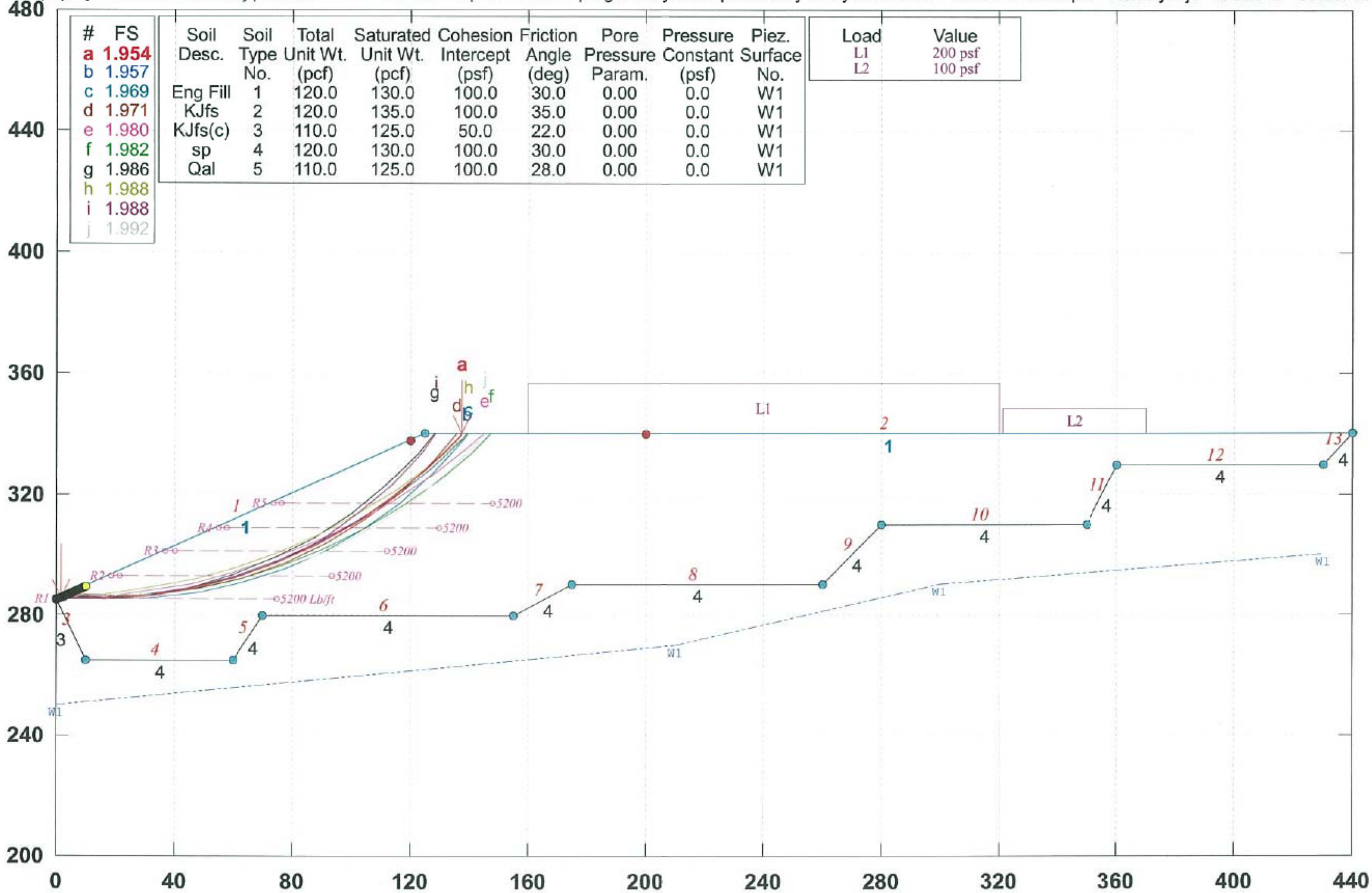
118-38-1 Comm Hill II- Section 6-6' static

p:\projects\100\118 david j powers\118-38-1 comm hill phase 2\data-purge\analysis\slope stability analysis\118-38-1 sect 6-6' static.pl2 Run By: sjv 6/4/2013 05:03PM

#	FS
a	1.954
b	1.957
c	1.969
d	1.971
e	1.980
f	1.982
g	1.986
h	1.988
i	1.988
j	1.992

Soil Desc.	Soil Type No.	Total Unit Wt. (pcf)	Saturated Unit Wt. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Pore Pressure Param.	Pressure Constant (psf)	Piez. Surface No.
Eng Fill	1	120.0	130.0	100.0	30.0	0.00	0.0	W1
KJfs	2	120.0	135.0	100.0	35.0	0.00	0.0	W1
KJfs(c)	3	110.0	125.0	50.0	22.0	0.00	0.0	W1
sp	4	120.0	130.0	100.0	30.0	0.00	0.0	W1
Qal	5	110.0	125.0	100.0	28.0	0.00	0.0	W1

Load	Value
L1	200 psf
L2	100 psf



GSTABL7 v.2 FSmin=1.954

Safety Factors Are Calculated By The Modified Bishop Method

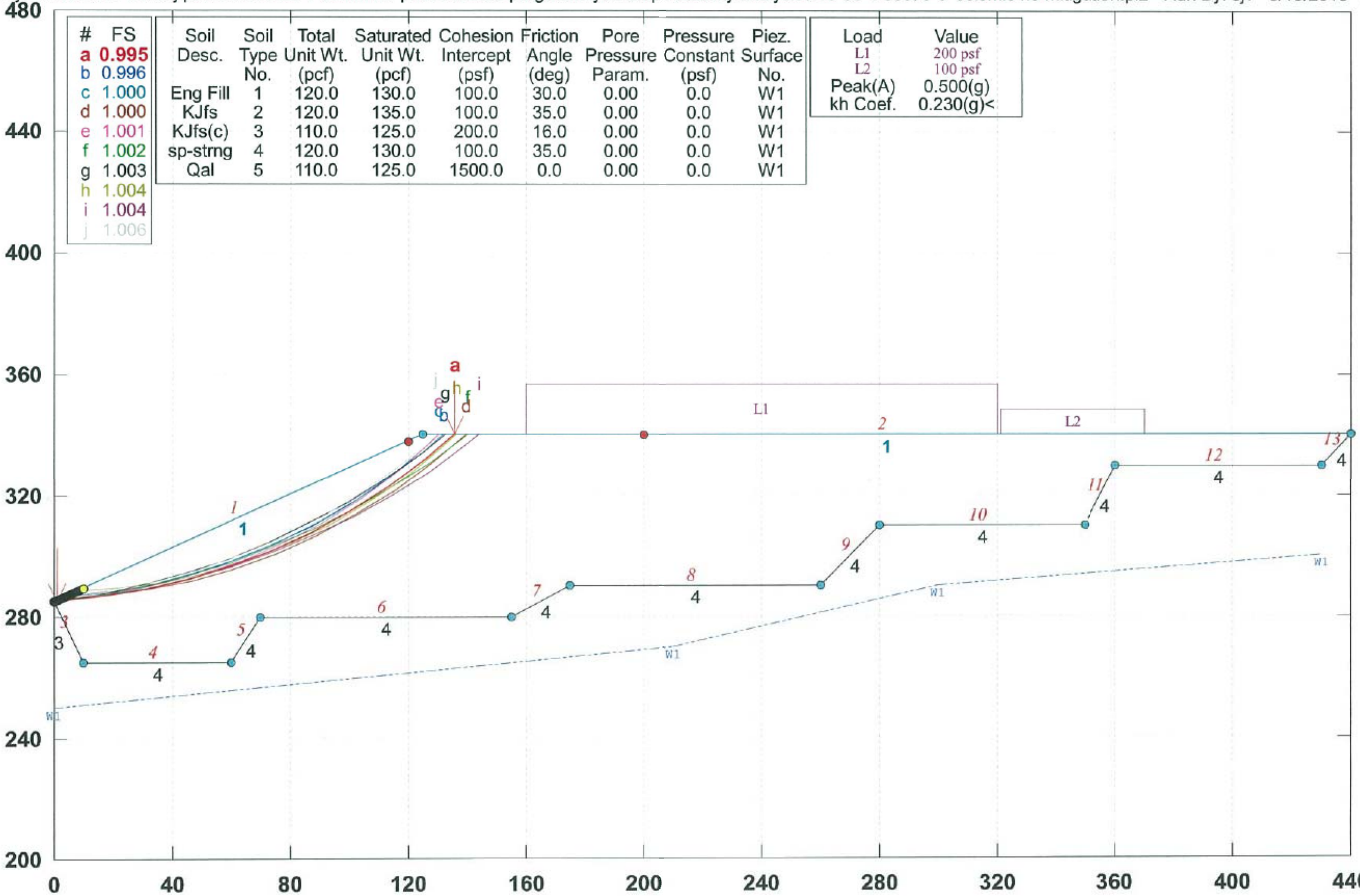
118-38-1 Comm Hill II- Section 6-6' seismic no mitigation

p:\projects\100\118 david j powers\118-38-1 comm hill phase 2\data-purge\analysis\slope stability analysis\118-38-1 sect 6-6' seismic no mitigation.pl2 Run By: sjv 6/19/2013 08:35AM

#	FS
a	0.995
b	0.996
c	1.000
d	1.000
e	1.001
f	1.002
g	1.003
h	1.004
i	1.004
j	1.006

Soil Desc.	Soil Type No.	Total Unit Wt. (pcf)	Saturated Unit Wt. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Pore Pressure Param.	Pressure Constant (psf)	Piez. Surface No.
Eng Fill	1	120.0	130.0	100.0	30.0	0.00	0.0	W1
KJfs	2	120.0	135.0	100.0	35.0	0.00	0.0	W1
KJfs(c)	3	110.0	125.0	200.0	16.0	0.00	0.0	W1
sp-strng	4	120.0	130.0	100.0	35.0	0.00	0.0	W1
Qal	5	110.0	125.0	1500.0	0.0	0.00	0.0	W1

Load	Value
L1	200 psf
L2	100 psf
Peak(A)	0.500(g)
kh Coef.	0.230(g)<

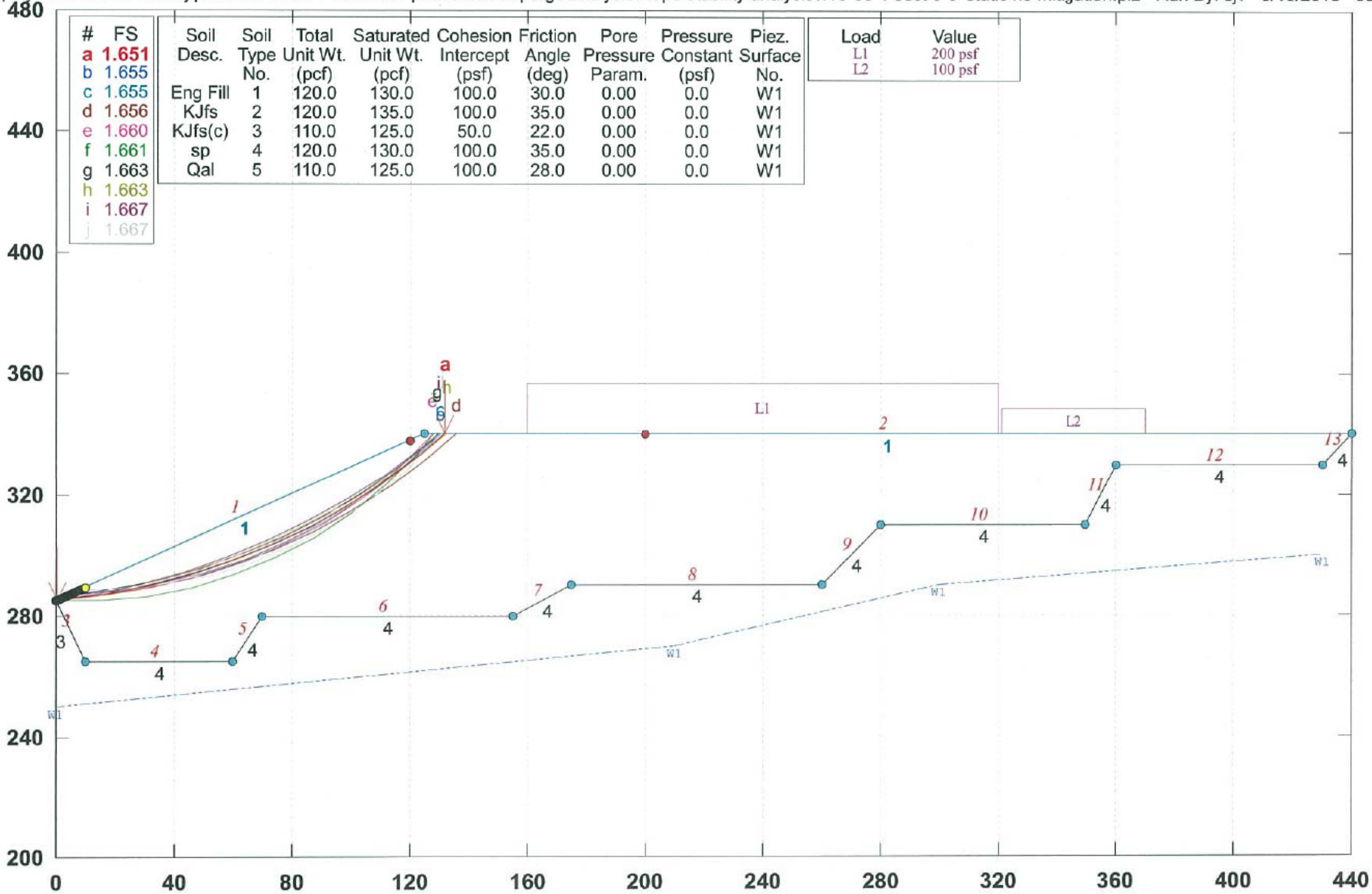


GSTABL7 v.2 FSmin=0.995

Safety Factors Are Calculated By The Modified Bishop Method

118-38-1 Comm Hill II- Section 6-6' static no mitigation

p:\projects\100\118 david j powers\118-38-1 comm hill phase 2\data-purge\analysis\slope stability analysis\118-38-1 sect 6-6' static no mitigation.pl2 Run By: sjv 6/19/2013 08:38AM



#	FS
a	1.651
b	1.655
c	1.655
d	1.656
e	1.660
f	1.661
g	1.663
h	1.663
i	1.667
j	1.667

Soil Desc.	Soil Type No.	Total Unit Wt. (pcf)	Saturated Unit Wt. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Pore Pressure Param.	Pressure Constant (psf)	Piez. Surface No.
Eng Fill	1	120.0	130.0	100.0	30.0	0.00	0.0	W1
KJfs	2	120.0	135.0	100.0	35.0	0.00	0.0	W1
KJfs(c)	3	110.0	125.0	50.0	22.0	0.00	0.0	W1
sp	4	120.0	130.0	100.0	35.0	0.00	0.0	W1
Qal	5	110.0	125.0	100.0	28.0	0.00	0.0	W1

Load	Value
L1	200 psf
L2	100 psf

GSTABL7 v.2 FSmin=1.651

Safety Factors Are Calculated By The Modified Bishop Method

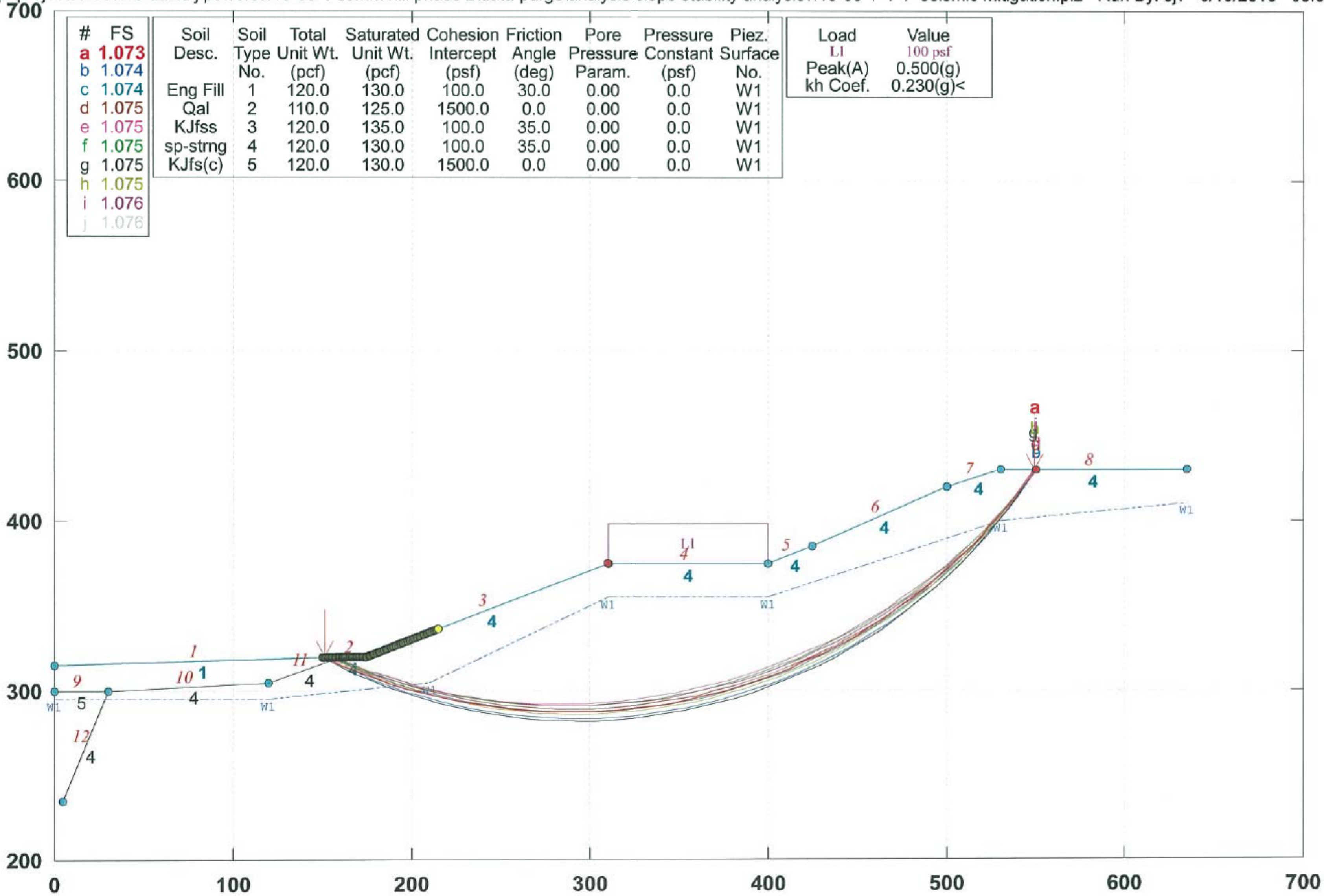
Comm Hill II Sect 7-7' seismic 2.5:1 slope mitigation

p:\projects\100\118 david j powers\118-38-1 comm hill phase 2\data-purge\analysis\slope stability analysis\118-38-1 7-7' seismic mitigation.pl2   Run By: sjv   6/19/2013   08:39AM

#	FS
a	1.073
b	1.074
c	1.074
d	1.075
e	1.075
f	1.075
g	1.075
h	1.075
i	1.076
j	1.076

Soil Desc.	Soil Type No.	Total Unit Wt. (pcf)	Saturated Unit Wt. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Pore Pressure Param.	Pressure Constant (psf)	Piez. Surface No.
Eng Fill	1	120.0	130.0	100.0	30.0	0.00	0.0	W1
Qal	2	110.0	125.0	1500.0	0.0	0.00	0.0	W1
KJfss	3	120.0	135.0	100.0	35.0	0.00	0.0	W1
sp-strng	4	120.0	130.0	100.0	35.0	0.00	0.0	W1
KJfs(c)	5	120.0	130.0	1500.0	0.0	0.00	0.0	W1

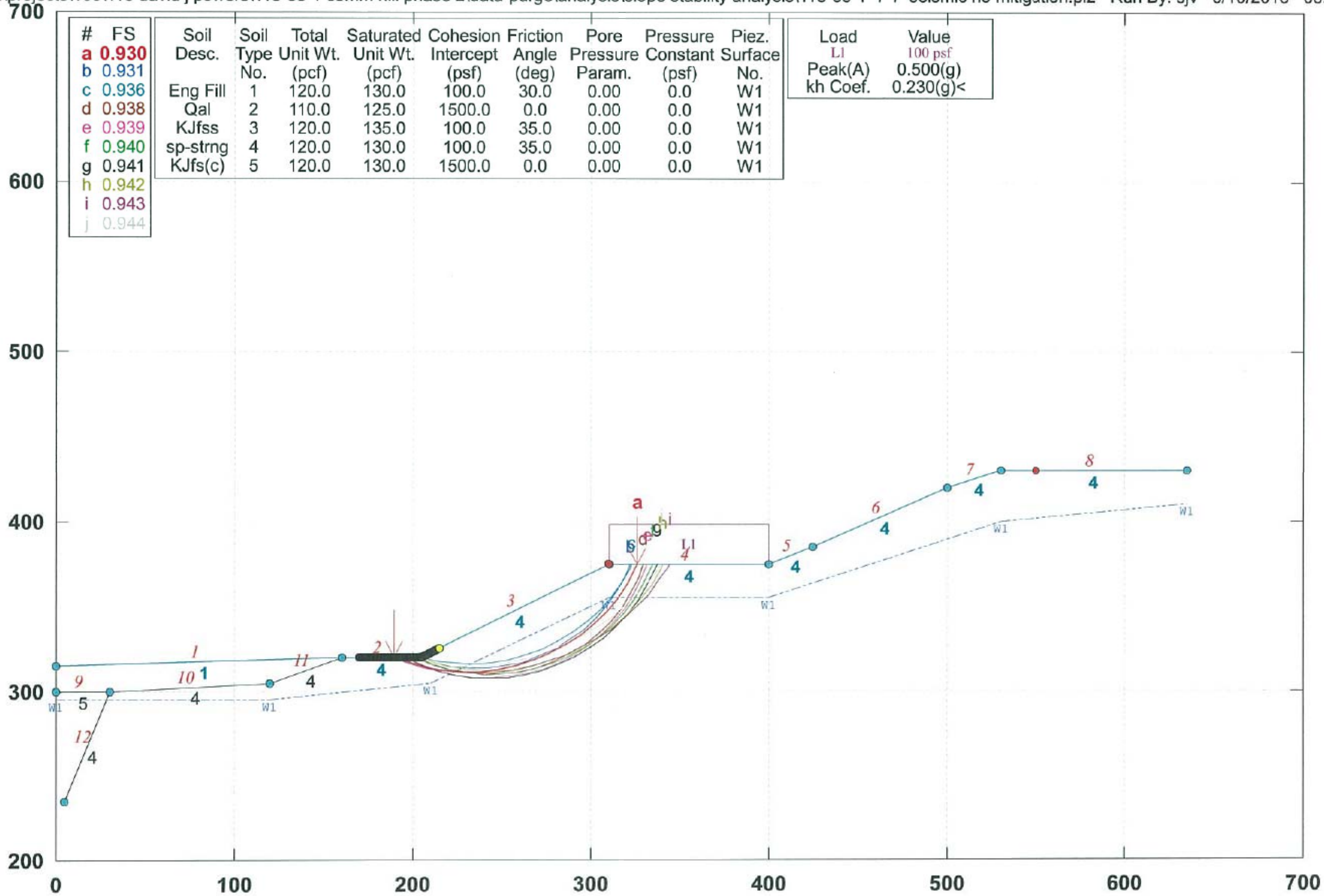
Load	Value
L1	100 psf
Peak(A)	0.500(g)
kh Coef.	0.230(g)<



GSTABL7 v.2 FSmin=1.073
Safety Factors Are Calculated By The Simplified Janbu Method

Comm Hill II Sect 7-7' no mitigation Seismic Stability - Kh = 0.23

p:\projects\100\118 david j powers\118-38-1 comm hill phase 2\data-purge\analysis\slope stability analysis\118-38-1 7-7' seismic no mitigation.pl2 Run By: sjv 6/19/2013 08:41AM

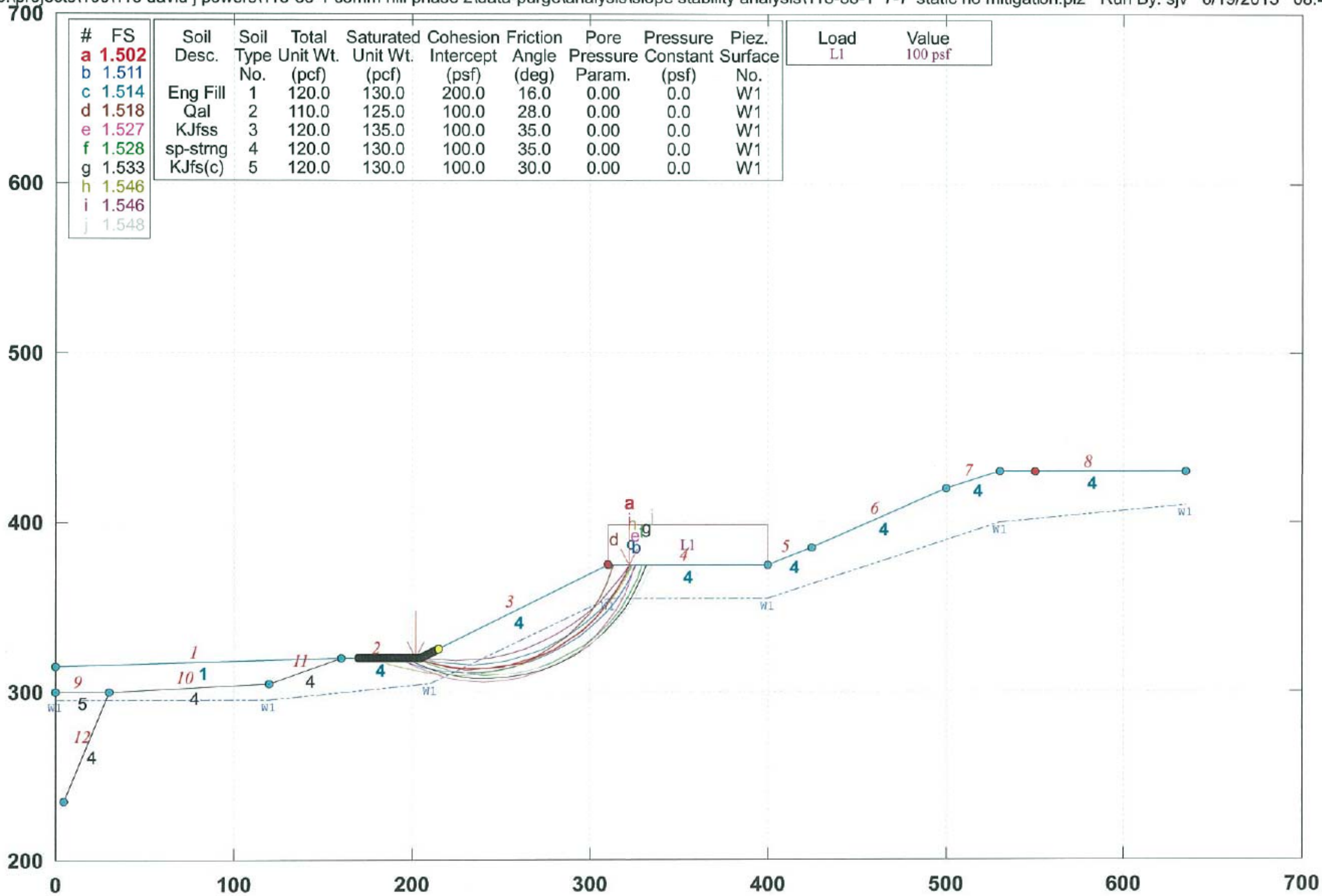


GSTABL7 v.2 FSmin=0.930

Safety Factors Are Calculated By The Simplified Janbu Method

Comm Hill II Sect 7-7' no mitigation static Stability -

p:\projects\100\118 david j powers\118-38-1 comm hill phase 2\data-purge\analysis\slope stability analysis\118-38-1 7-7' static no mitigation.pl2 Run By: sjv 6/19/2013 08:42AM



#	FS
a	1.502
b	1.511
c	1.514
d	1.518
e	1.527
f	1.528
g	1.533
h	1.546
i	1.546
j	1.548

Soil Desc.	Soil Type No.	Total Unit Wt. (pcf)	Saturated Unit Wt. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Pore Pressure Param.	Pressure Constant (psf)	Piez. Surface No.
Eng Fill	1	120.0	130.0	200.0	16.0	0.00	0.0	W1
Qal	2	110.0	125.0	100.0	28.0	0.00	0.0	W1
KJfss	3	120.0	135.0	100.0	35.0	0.00	0.0	W1
sp-strng	4	120.0	130.0	100.0	35.0	0.00	0.0	W1
KJfs(c)	5	120.0	130.0	100.0	30.0	0.00	0.0	W1

Load	Value
L1	100 psf

GSTABL7 v.2 FSmin=1.502

Safety Factors Are Calculated By The Simplified Janbu Method

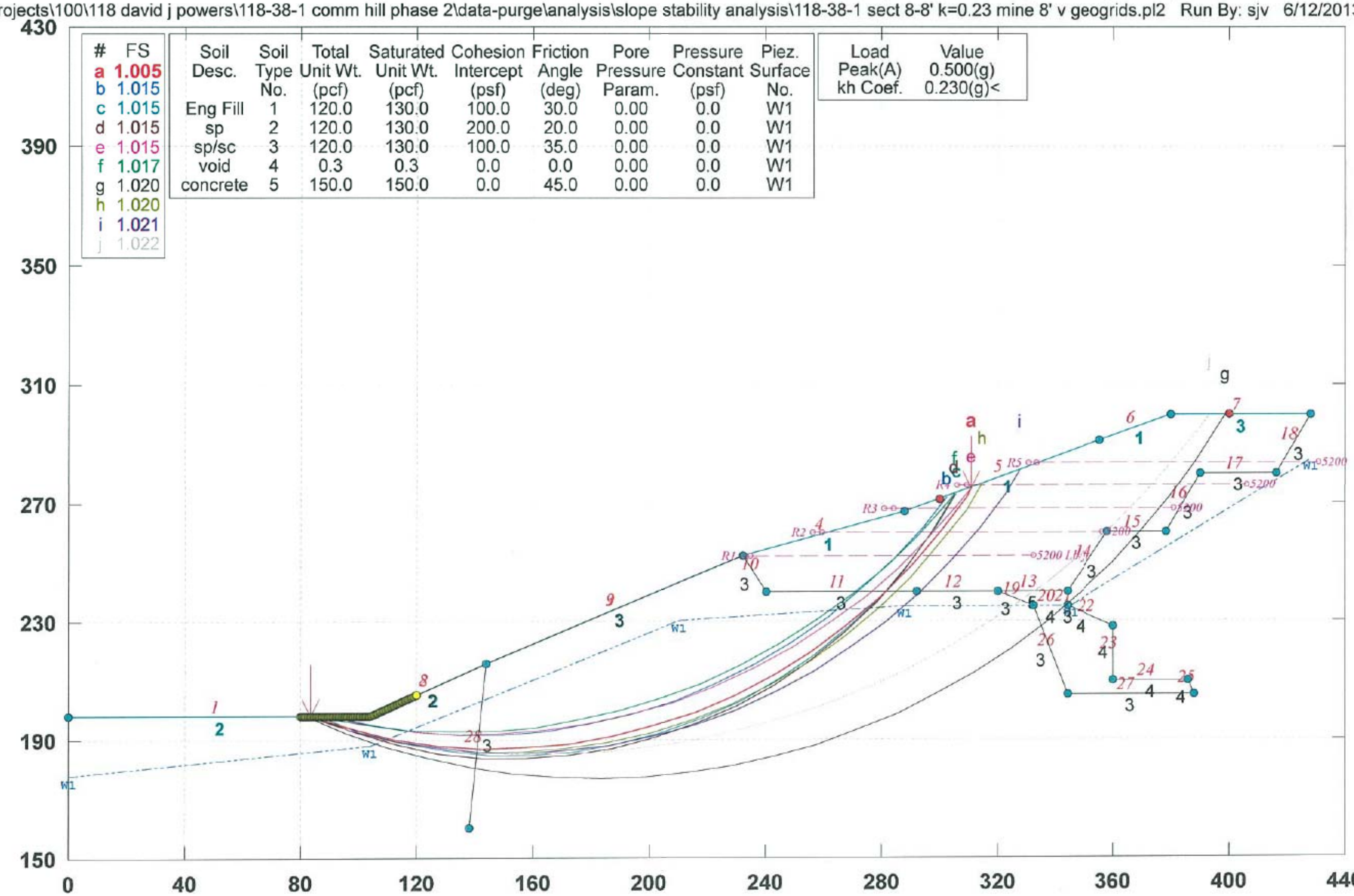
118-38-1 Comm Hill II- Section 8-8' seismic Mine (100'L Geogrids @ 8'V)

p:\projects\100\118 david j powers\118-38-1 comm hill phase 2\data-purge\analysis\slope stability analysis\118-38-1 sect 8-8' k=0.23 mine 8' v geogrids.pl2 Run By: sjv 6/12/2013 04:18PM

#	FS
a	1.005
b	1.015
c	1.015
d	1.015
e	1.015
f	1.017
g	1.020
h	1.020
i	1.021
j	1.022

Soil Desc.	Soil Type No.	Total Unit Wt. (pcf)	Saturated Unit Wt. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Pore Pressure Param.	Pressure Constant (psf)	Piez. Surface No.
Eng Fill	1	120.0	130.0	100.0	30.0	0.00	0.0	W1
sp	2	120.0	130.0	200.0	20.0	0.00	0.0	W1
sp/sc	3	120.0	130.0	100.0	35.0	0.00	0.0	W1
void	4	0.3	0.3	0.0	0.0	0.00	0.0	W1
concrete	5	150.0	150.0	0.0	45.0	0.00	0.0	W1

Load	Value
Peak(A)	0.500(g)
kh Coef.	0.230(g)<

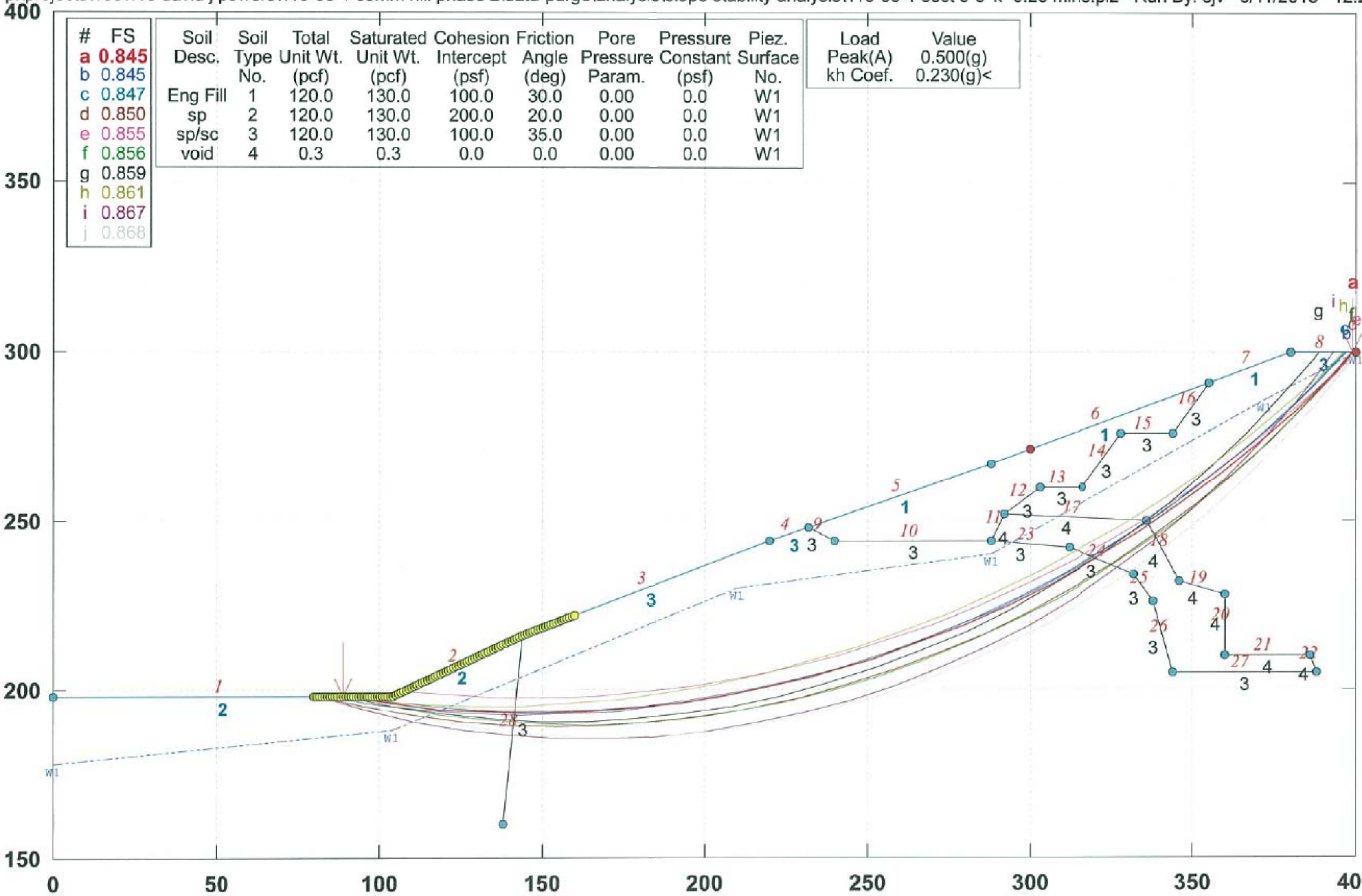


GSTABL7 v.2 FSmin=1.005

Safety Factors Are Calculated By The Modified Bishop Method

118-38-1 Comm Hill II- Section 8-8' seismic Mine no mitigation

p:\projects\100\118 david j powers\118-38-1 comm hill phase 2\data-purge\analysis\slope stability analysis\118-38-1 sect 8-8' k=0.23 mine.pl2 Run By: sjv 6/11/2013 12:26PM



#	FS
a	0.845
b	0.845
c	0.847
d	0.850
e	0.855
f	0.856
g	0.859
h	0.861
i	0.867
j	0.868

Soil Desc.	Soil Type No.	Total Unit Wt. (pcf)	Saturated Unit Wt. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Pore Pressure Param.	Pressure Constant (psf)	Piez. Surface No.
Eng Fill	1	120.0	130.0	100.0	30.0	0.00	0.0	W1
sp	2	120.0	130.0	200.0	20.0	0.00	0.0	W1
sp/sc	3	120.0	130.0	100.0	35.0	0.00	0.0	W1
void	4	0.3	0.3	0.0	0.0	0.00	0.0	W1

Load	Value
Peak(A)	0.500(g)
kh Coef.	0.230(g)<

GSTABL7 v.2 FSmin=0.845

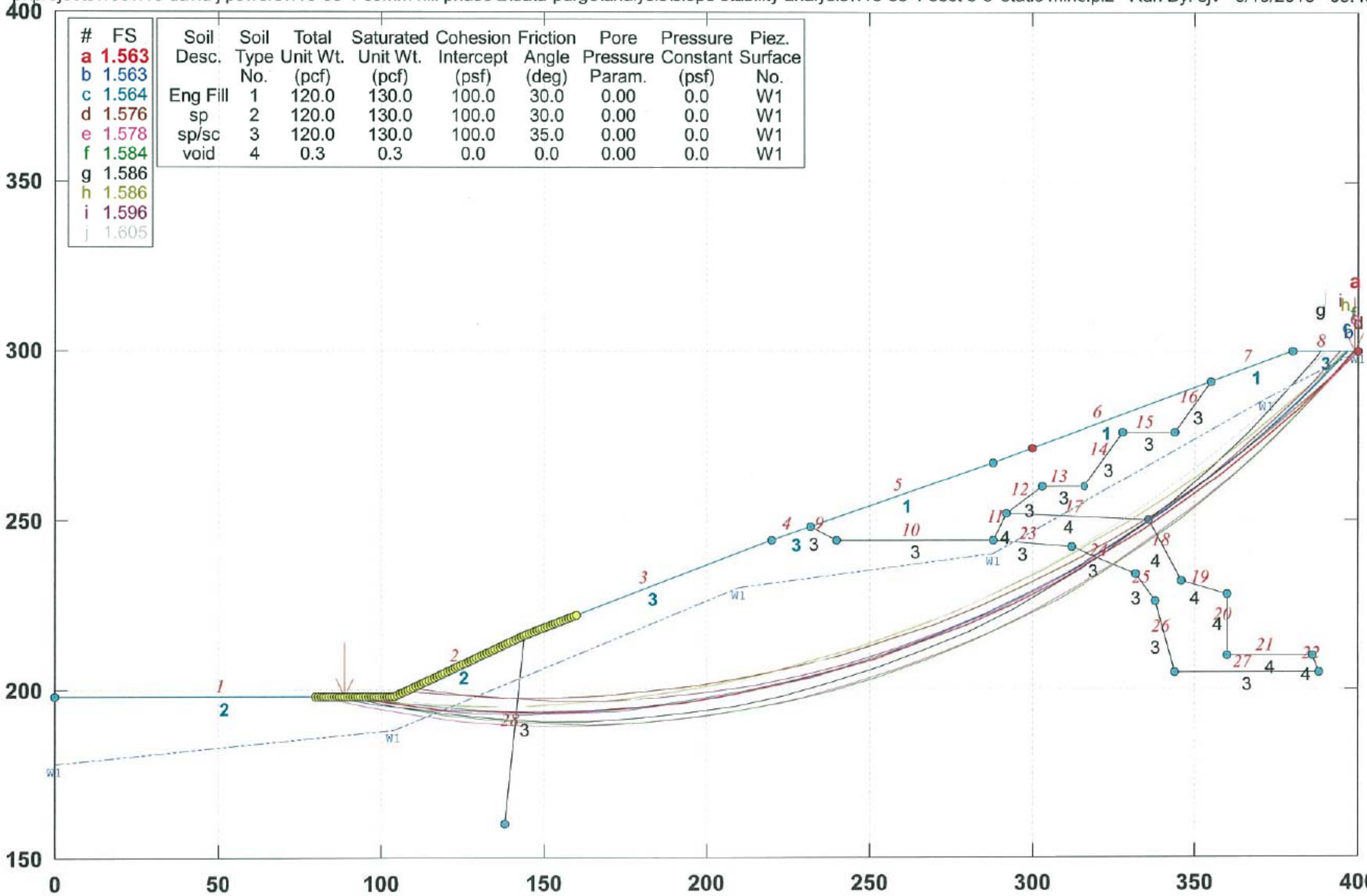
Safety Factors Are Calculated By The Modified Bishop Method

118-38-1 Comm Hill II- Section 8-8' static Mine no mitigation

p:\projects\100\118 david j powers\118-38-1 comm hill phase 2\data-purge\analysis\slope stability analysis\118-38-1 sect 8-8' static mine.pl2 Run By: sjv 6/19/2013 08:43AM

#	FS
a	1.563
b	1.563
c	1.564
d	1.576
e	1.578
f	1.584
g	1.586
h	1.586
i	1.596
j	1.605

Soil Desc.	Soil Type No.	Total Unit Wt. (pcf)	Saturated Unit Wt. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Pore Pressure Param.	Pressure Constant (psf)	Piez. Surface No.
Eng Fill	1	120.0	130.0	100.0	30.0	0.00	0.0	W1
sp	2	120.0	130.0	100.0	30.0	0.00	0.0	W1
sp/sc	3	120.0	130.0	100.0	35.0	0.00	0.0	W1
void	4	0.3	0.3	0.0	0.0	0.00	0.0	W1

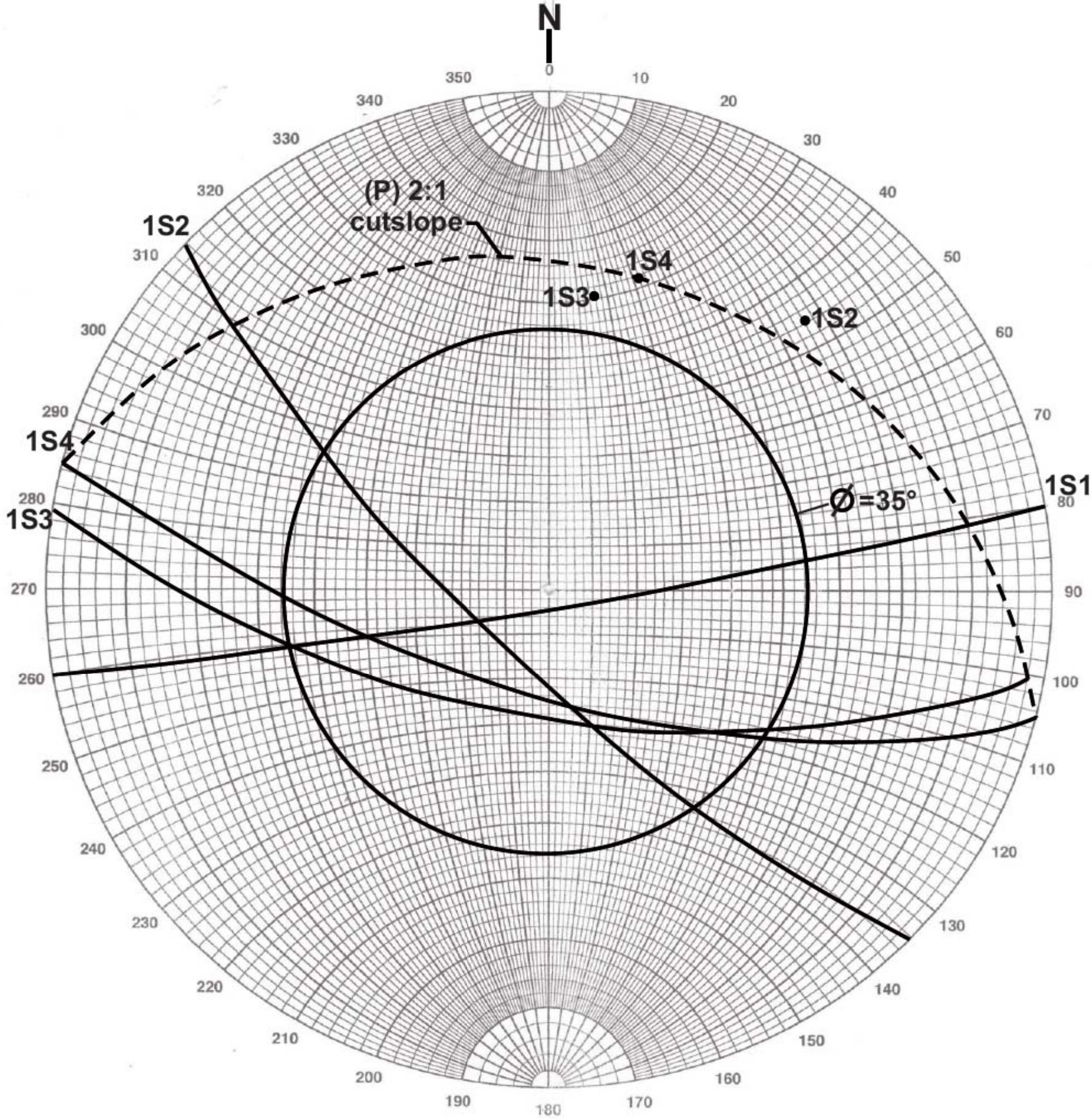


GSTABL7 v.2 FSmin=1.563

Safety Factors Are Calculated By The Modified Bishop Method

Proposed Cutslope in Region of TP-1A

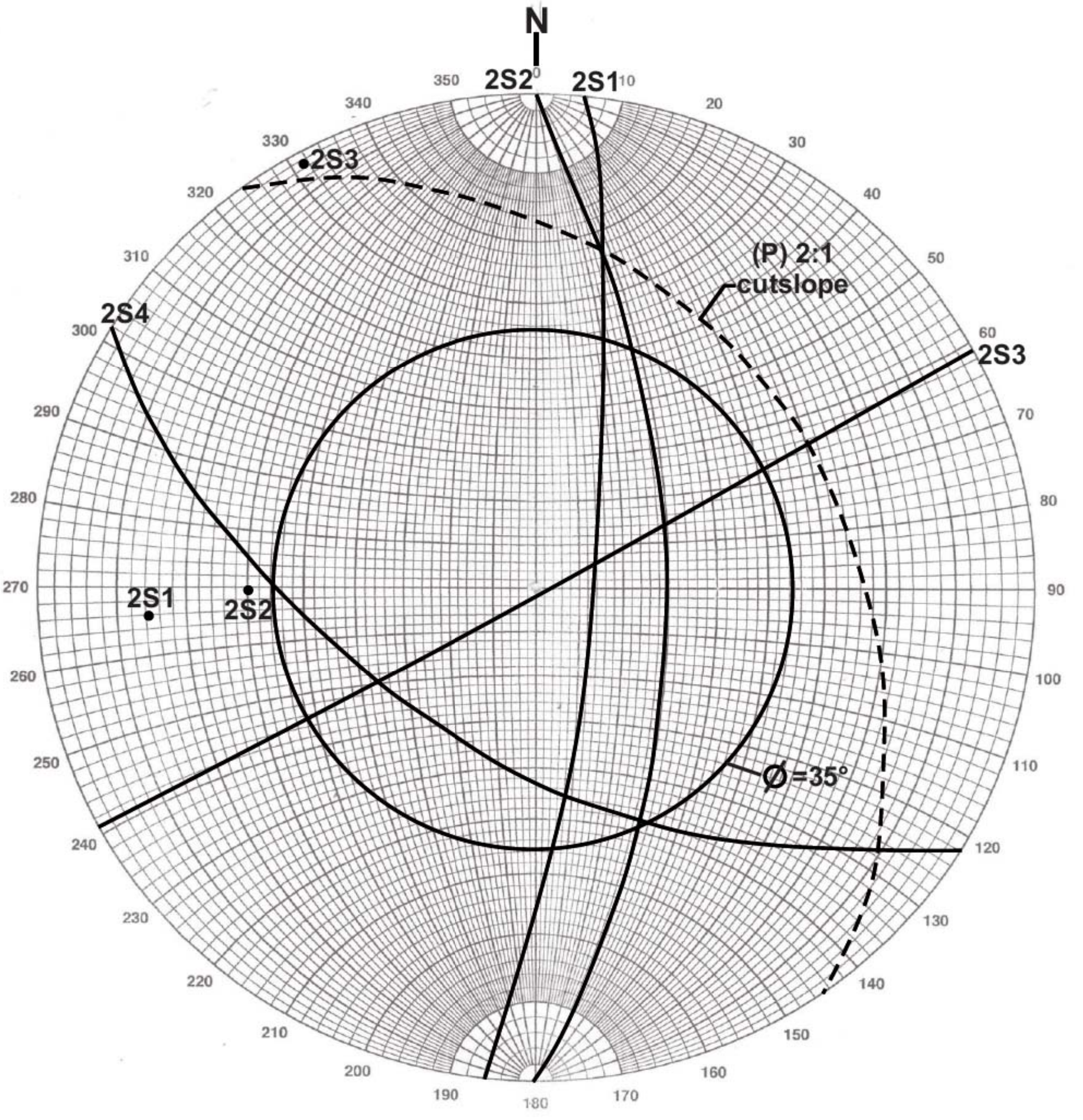
Bedrock = Silica Carbonate



CORNERSTONE EARTH GROUP	Markland Test Plots - Test Pit 1A	Project Number 118-38-1	
	Communication Hill - Phase 2 San Jose, CA	Figure Number SN-1A	
		Date April 2014	Drawn By RRN

Proposed Cutslope in Region of TP-2A

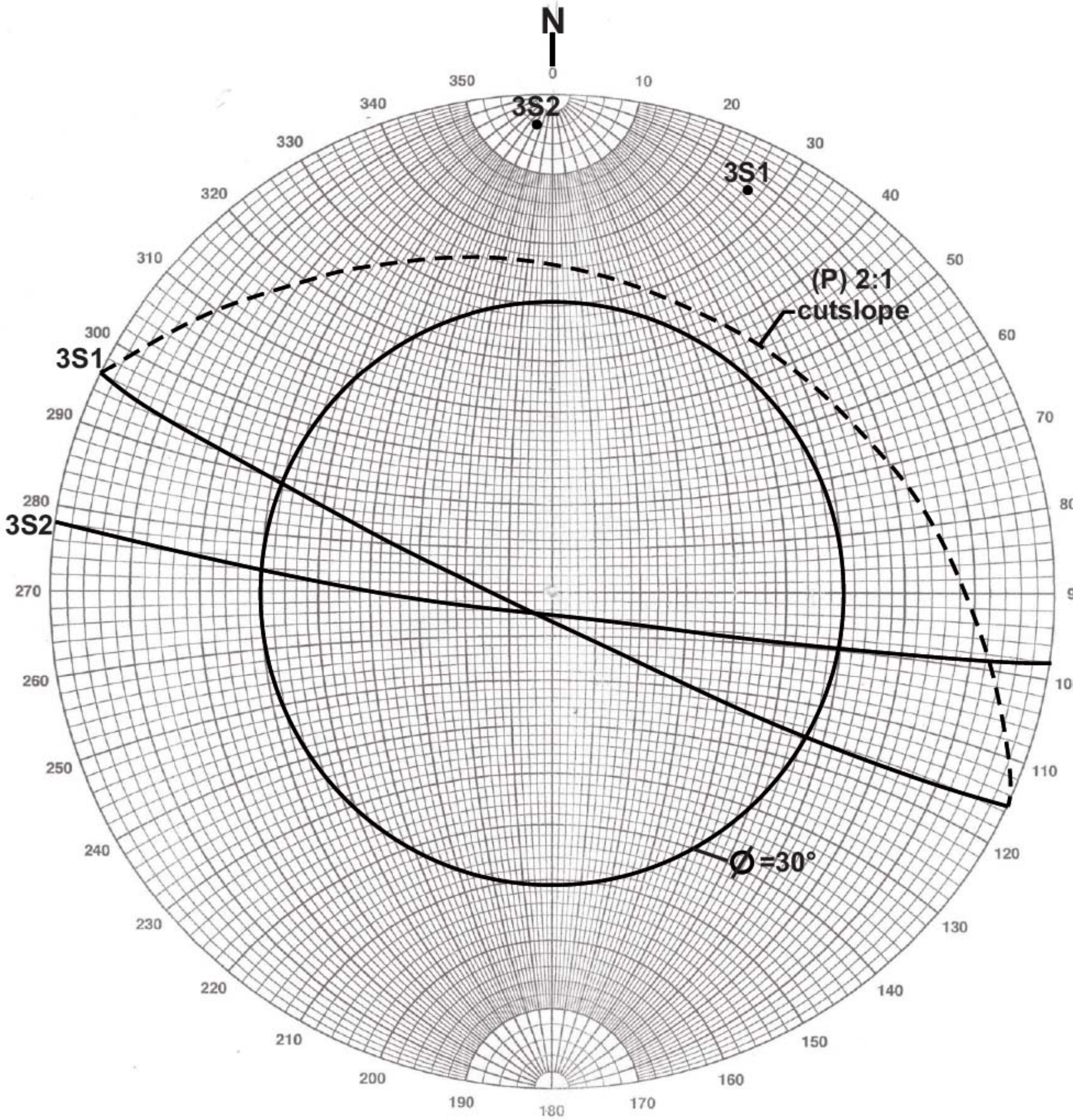
Bedrock = Silica Carbonate



CORNERSTONE EARTH GROUP	Markland Test Plots - Test Pit 2A	Project Number 118-38-1
	Communication Hill - Phase 2 San Jose, CA	Figure Number SN-2A
		Date April 2014 / Drawn By RRN

Proposed Cutslope in Region of TP-3A

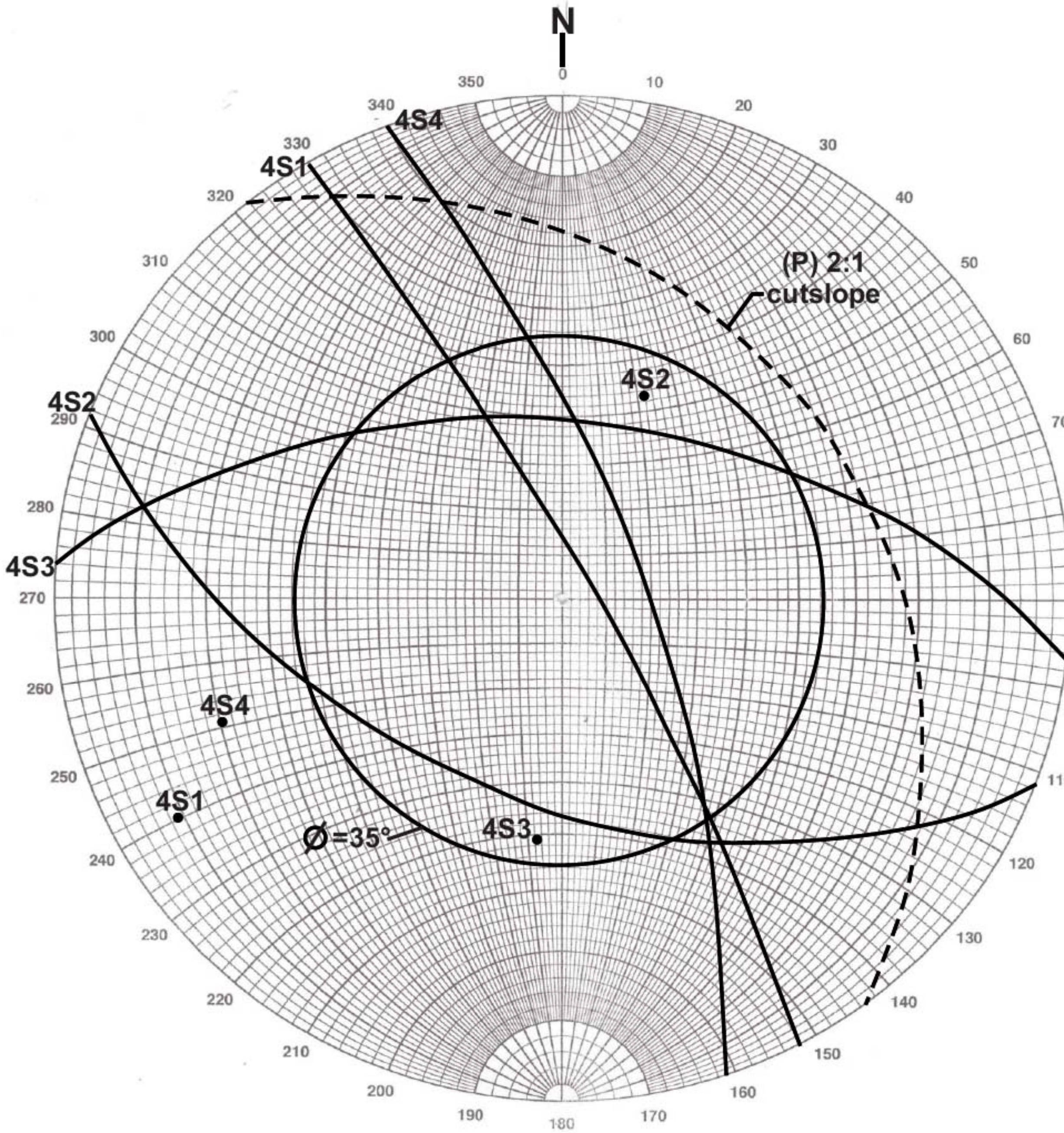
Bedrock = Claystone



CORNERSTONE EARTH GROUP	Markland Test Plots - Test Pit 3A	Project Number 118-38-1
	Communication Hill - Phase 2 San Jose, CA	Figure Number SN-3A
		Date April 2014 / Drawn By RRN

Proposed Cutslope in Region of TP-4A

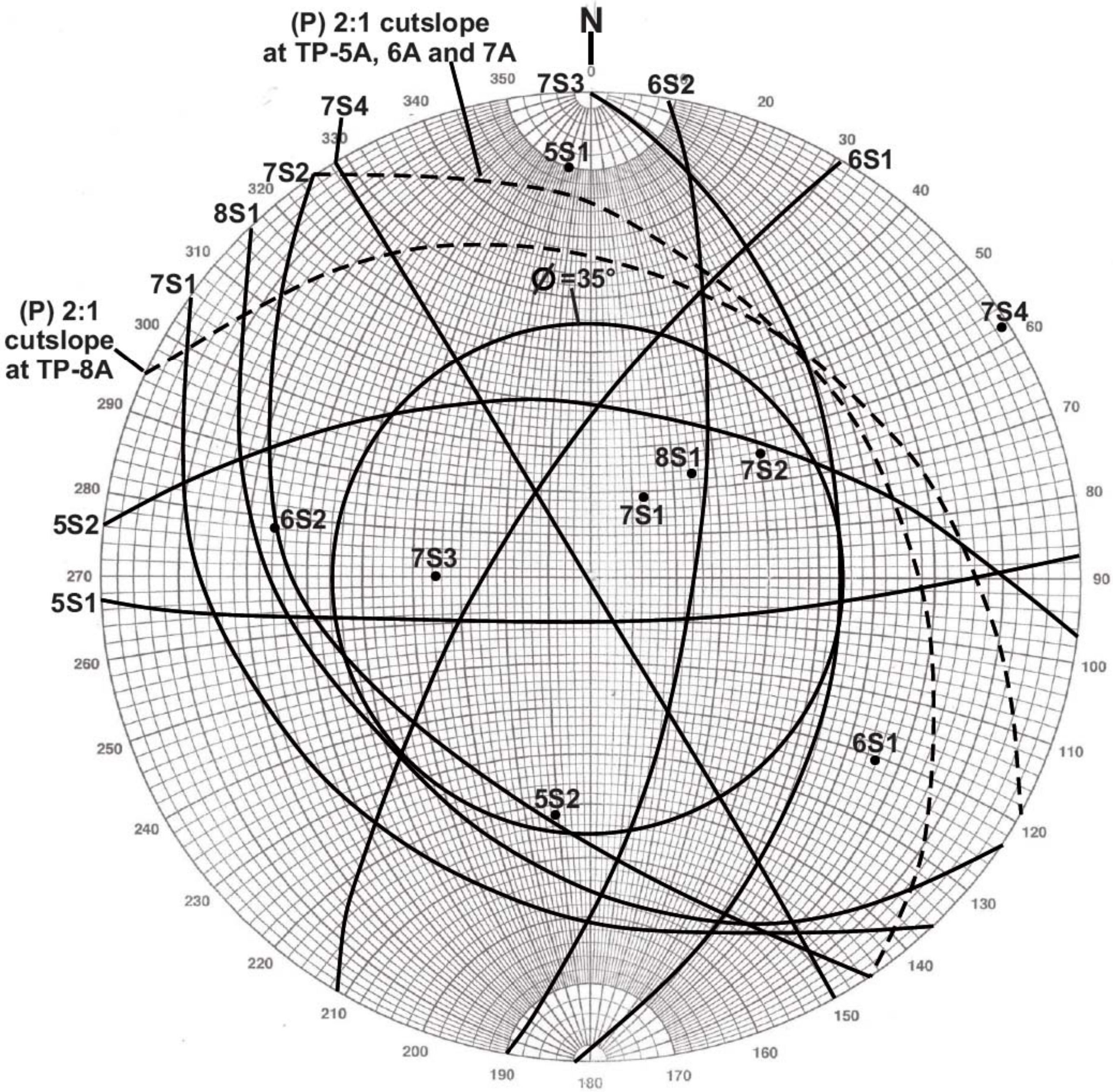
Bedrock = Silica Carbonate



CORNERSTONE EARTH GROUP	Markland Test Plots - Test Pit 4A	Project Number 118-38-1
	Communication Hill - Phase 2 San Jose, CA	Figure Number SN-4A
		Date April 2014 / Drawn By RRN

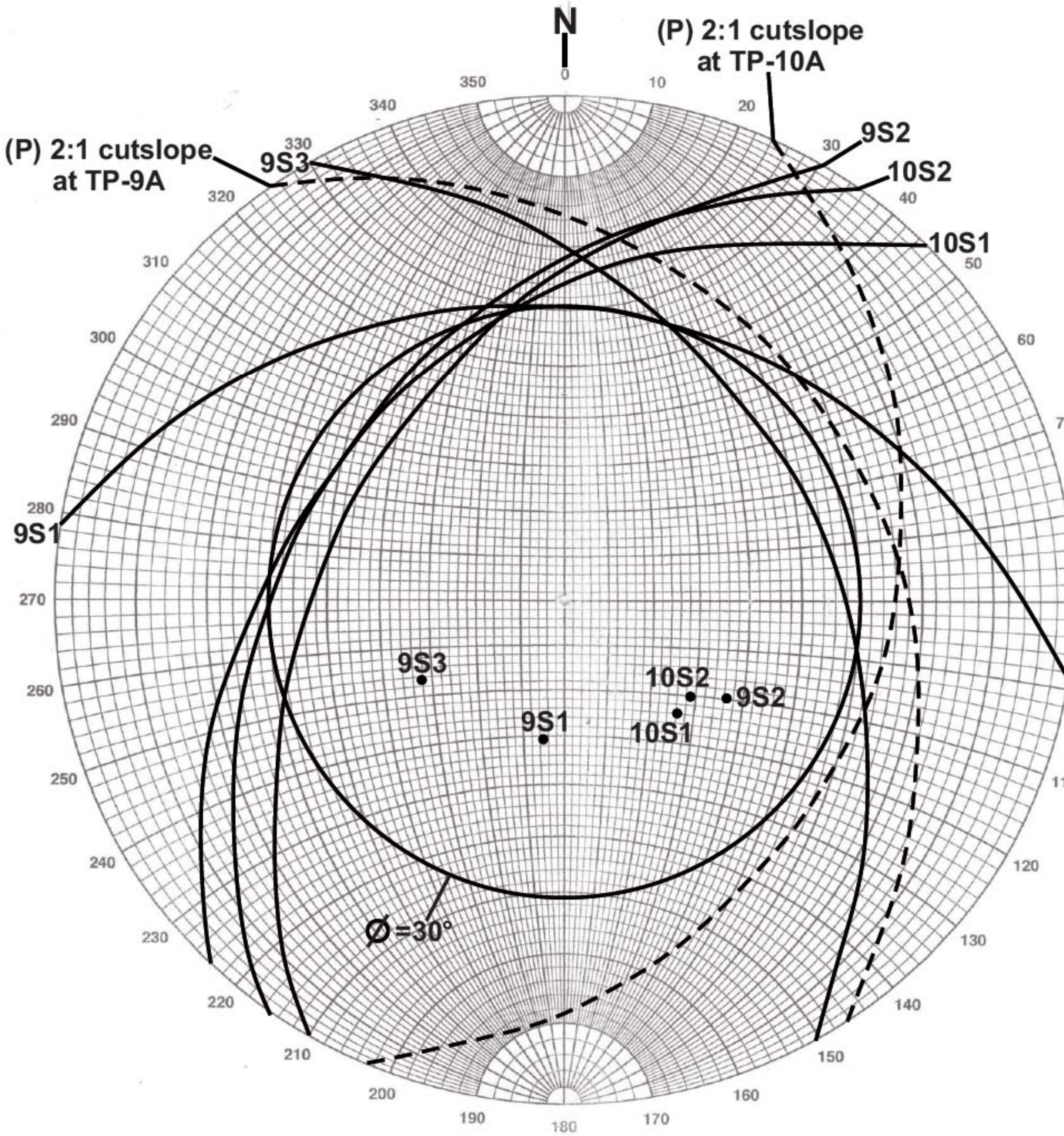
Proposed Cutslope in Region of TP-5A, TP-6A, TP-7A and TP-8A

Bedrock = Ultramafic ± Serpentenite



CORNERSTONE EARTH GROUP	Markland Test Plots TP-5A, TP-6A, TP-7A and TP-8A	Project Number 118-38-1	
	Communication Hill - Phase 2 San Jose, CA	Figure Number SN-5,6,7,&8A	
		Date April 2014	Drawn By RRN

Proposed Cutslope in Region of TP-9A and TP-10A



CORNERSTONE EARTH GROUP

Markland Test Plots - Test Pit 9A and TP-10A	Project Number	118-38-1
Communication Hill - Phase 2 San Jose, CA	Figure Number	SN-9&10A
	Date: April 2014	Drawn By: RRN

APPENDIX D: EXPLORATION LOGS AND DATA FROM PREVIOUS REPORTS

Contents:

Lowney Associates – Communications Hill Phase 1 – Field and Laboratory Data

T-1

EXPLORATORY BORING: EB-1

DRILL RIG: MOBILE B-53	PROJECT NO: 991-17A
BORING TYPE: ROTARY WASH	PROJECT: COMMUNICATIONS HILL
LOGGED BY: TNW	LOCATION: SAN JOSE, CA
START DATE: 9-1-99 FINISH DATE: 9-1-99	COMPLETION DEPTH: 20.0 FT.

This log is a part of a report by Lowney Associates, and should not be used as a stand-alone document. This description applies only to the location of the exploration at the time of drilling. Subsurface conditions may differ at other locations and may change at this location with time. The description presented is a simplification of actual conditions encountered. Transitions between soil types may be gradual.

Undrained Shear Strength (ksf): ○ Pocket Penetrometer; △ Torvane; ● Unconfined Compression; ▲ U-U Triaxial Compression (scale 1.0, 2.0, 3.0, 4.0)

ELEVATION (FT)	DEPTH (FT)	MATERIAL DESCRIPTION AND REMARKS SURFACE ELEVATION: 420.0 FT. (+/-)	SOIL TYPE	DRILL RATE (FT/MIN.)	MOISTURE CONTENT (%)	DRY DENSITY (PCF)	RQD
420.0	0	**SILTY CLAY (CH-MH)** stiff, dry to moist, dark brown, trace serpentite gravel to 2 inches, trace rootlets Plasticity Index = 46, Liquid Limit = 87	CH-MH				0, 0
416.0	4	**SERPENTINITE** dark green, completely weathered, friable, very weak, predominately weathered to clayey sand with some 2-3 inch intact, hard blocks stained with iron oxide and some carbonate coatings	Sp	5/3			0, 0, 0
	15	Rock is more competent, slightly weathered, hard, strong with 1/8" carbonate veins		5/4			0
400.0	20	Bottom of Boring at 20 feet					

GROUND WATER OBSERVATIONS:

NO FREE GROUND WATER ENCOUNTERED

LA_CORP.GDT 10/17/00 MV

LOWNEY ASSOCIATES
Environmental/Geotechnical/Engineering Services

T-2

EXPLORATORY BORING: EB-2

DRILL RIG: MOBILE B-53	PROJECT NO: 991-17A
BORING TYPE: ROTARY WASH	PROJECT: COMMUNICATIONS HILL
LOGGED BY: TNW	LOCATION: SAN JOSE, CA
START DATE: 8-31-99 FINISH DATE: 8-31-99	COMPLETION DEPTH: 35.0 FT.

This log is a part of a report by Lowney Associates, and should not be used as a stand-alone document. This description applies only to the location of the exploration at the time of drilling. Subsurface conditions may differ at other locations and may change at this location with time. The description presented is a simplification of actual conditions encountered. Transitions between soil types may be gradual.

Undrained Shear Strength (ksf): ○ Pocket Penetrometer; △ Torvane; ● Unconfined Compression; ▲ U-U Triaxial Compression (scale 1.0, 2.0, 3.0, 4.0)

SURFACE ELEVATION: 387.0 FT. (+/-)

ELEVATION (FT)	DEPTH (FT)	MATERIAL DESCRIPTION AND REMARKS	SOIL TYPE	DRILL RATE (FT/MIN.)	RQD
387.0	0	**SILTY CLAY (CH/CL)** medium stiff, dry, dark brown with few 1-2 inch clasts of serpentinite	CH/CL	1	0
382.5	5	**SERPENTINITE** dark green, slightly weathered, strong, moderately hard, closely spaced, subvertical fractures, mostly 2-3 inches apart, and stained with iron oxide, contains 1/8 inch calcite veins and minor silica carbonate alteration	Sp	5/5	0
	10			5/5	0
	15	Between 15 - 20 feet becomes highly weathered, very weak, friable, forms clayey sand sized pieces, visible fabric		5/7	0
	20	Returns to slightly weathered and strong, moderately hard, 2-3 inches spaced fractures		5/5	0
	25	Between 25-29 feet becomes highly weathered, very weak, friable, visible fabric, reddish brown and green mottling, with weathered calcite, clayey sand sized		6	0
	30	Between 29-35 feet slightly weathered, moderately hard, very strong forms 4-6 inches blocks, subvertical fractures stained by iron oxide			30
352.0	35	Bottom of Boring at 35 feet			
	40				

GROUND WATER OBSERVATIONS:

NO FREE GROUND WATER ENCOUNTERED

LA CORP GDT 10/17/00 MV*

LOWNEY ASSOCIATES
Environmental/Geotechnical/Engineering Services

T-3

EXPLORATORY BORING: EB-3

Sheet 1 of 1

DRILL RIG: MOBILE B-53	PROJECT NO: 991-17A
BORING TYPE: ROTARY WASH	PROJECT: COMMUNICATIONS HILL
LOGGED BY: TNW	LOCATION: SAN JOSE, CA
START DATE: 8-31-99 FINISH DATE: 8-31-99	COMPLETION DEPTH: 30.0 FT.

This log is a part of a report by Lowney Associates, and should not be used as a stand-alone document. This description applies only to the location of the exploration at the time of drilling. Subsurface conditions may differ at other locations and may change at this location with time. The description presented is a simplification of actual conditions encountered. Transitions between soil types may be gradual.

Undrained Shear Strength (ksf): ○ Pocket Penetrometer; △ Torvane; ● Unconfined Compression; ▲ U-U Triaxial Compression; 1.0 2.0 3.0 4.0

SURFACE ELEVATION: 386.0 FT. (+/-)

ELEVATION (FT)	DEPTH (FT)	MATERIAL DESCRIPTION AND REMARKS	SOIL TYPE	DRILL RATE (FT/MIN.)	RQD
386.0	0	**SILTY CLAY (CH)** stiff, dry, dark brown	CH		0
385.0		**SERPENTINITE** dark green, slightly weathered, hard, strong, closely spaced fractures, 2-3 inches apart, stained with iron oxide, interbedded with completely weathered, friable, very weak sections that are not recovered			
	5			5/3	0
	10	Rock sizes are predominately 1-3 inches		5/3	0
	15	Slight increase in competent rock, trace silica carbonate alteration	Sp	5/4	0
	20			5/10	0
		hole collapsing			
	25			5/8	10
358.0		**BASALT** black/dark gray, slightly weathered, hard, strong, closely spaced fractures 3-4 inches apart, trace serpentinization	Ba		
356.0	30	Bottom of Boring at 30 feet			
	35				

GROUND WATER OBSERVATIONS:

NO FREE GROUND WATER ENCOUNTERED

CORP GDT 10/17/00 MV

LOWNEY ASSOCIATES
Environmental/Geotechnical/Engineering Services

T-4

EXPLORATORY BORING: EB-4

DRILL RIG: MOBILE B-53	PROJECT NO: 991-17A
BORING TYPE: ROTARY WASH	PROJECT: COMMUNICATIONS HILL
LOGGED BY: TNW	LOCATION: SAN JOSE, CA
START DATE: 9-2-99 FINISH DATE: 9-3-99	COMPLETION DEPTH: 61.0 FT.

This log is a part of a report by Lowney Associates, and should not be used as a stand-alone document. This description applies only to the location of the exploration at the time of drilling. Subsurface conditions may differ at other locations and may change at this location with time. The description presented is a simplification of actual conditions encountered. Transitions between soil types may be gradual.

Undrained Shear Strength (ksf): ○ Pocket Penetrometer; △ Torvane; ● Unconfined Compression; ▲ U-U Triaxial Compression (scale 1.0, 2.0, 3.0, 4.0)

SURFACE ELEVATION: 388.0 FT. (+/-)

ELEVATION (FT)	DEPTH (FT)	MATERIAL DESCRIPTION AND REMARKS	SOIL TYPE	DRILL RATE (FT/MIN.)	RQD
388.0	0	**SILTY CLAY (CH)** stiff, dry, dark brown with serpentinite clast up to 2 inches	CH		
386.0		**SERPENTINITE** green, slightly weathered, hard, strong, with 3-4 inches closely spaced fractures predominately subvertical, stained with iron oxide and some carbonate			10
	5				
					10
	10	Interbedded with completely weathered zones composed of sandy clay with 2-3 inches serpentinite clasts	Sp	5/3	10
	15	25% is moderately serpentized basalt			
		Percentage of unaltered basalt increases		5./8	0
	20				
365.0		**BASALT** black, slightly weathered, hard, strong, closely spaced fractures form 4-6 inch blocks, and vary from subhorizontal to moderately inclined, slight to moderate serpentinization, and 1/4 inch fractures filled with chrysotile		5/10	40
	25				20
	30		Ba		
					30
353.0	35				

Continued Next Page

GROUND WATER OBSERVATIONS:

NO FREE GROUND WATER ENCOUNTERED

LA CORP.GDT 10/17/00 MV

LOWNEYASSOCIATES
Environmental/Geotechnical/Engineering Services

T-4

EXPLORATORY BORING: EB-4 Cont'd

DRILL RIG: MOBILE B-53	PROJECT NO: 991-17A
BORING TYPE: ROTARY WASH	PROJECT: COMMUNICATIONS HILL
LOGGED BY: TNW	LOCATION: SAN JOSE, CA
START DATE: 9-2-99 FINISH DATE: 9-3-99	COMPLETION DEPTH: 61.0 FT.

Undrained Shear Strength (ksf): O Pocket Penetrometer; △ Torvane; ● Unconfined Compression; ▲ U-U Triaxial Compression (scale 1.0, 2.0, 3.0, 4.0)

ELEVATION (FT)	DEPTH (FT)	MATERIAL DESCRIPTION AND REMARKS	SOIL TYPE	DRILL RATE (FT/MIN.)	SAMPLER	MOISTURE CONTENT (%)	DRY DENSITY (PCF)	RQD
353.0	35	**BASALT** black, slightly weathered, hard, strong, closely spaced fractures form 4-6 inch blocks, and vary from subhorizontal to moderately inclined, slight to moderate serpentinization, and 1/4 inch fractures filled with chrysotile	Ba					0
	40	increase in spacing of fractures, forms predominately 2-3 inch blocks, fractures stained with iron oxide and some carbonate						0
	45	drilled through 2 foot carbonate layer						0
	50							0
	55							0
	60							
327.0		Bottom of Boring at 61 feet						
	65							
	70							

GROUND WATER OBSERVATIONS:

NO FREE GROUND WATER ENCOUNTERED

T-5

EXPLORATORY BORING: EB-5

DRILL RIG: MOBILE B-53	PROJECT NO: 991-17A
BORING TYPE: ROTARY WASH	PROJECT: COMMUNICATIONS HILL
LOGGED BY: TNW	LOCATION: SAN JOSE, CA
START DATE: 9-2-99 FINISH DATE: 9-2-99	COMPLETION DEPTH: 70.0 FT.

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Undrained Shear Strength (ksf): ○ Pocket Penetrometer; △ Torvane; ● Unconfined Compression; ▲ U-U Triaxial Compression (scale 1.0, 2.0, 3.0, 4.0)

SURFACE ELEVATION: 407.0 FT. (+/-)

ELEVATION (FT)	DEPTH (FT)	MATERIAL DESCRIPTION AND REMARKS	SOIL TYPE	DRILL RATE (FT/MIN.)	RQD
407.0	0	**SILTY CLAY (CH)** stiff, dry, dark brown with serpentinite clasts	CH		
405.0		**SERPENTINITE** green, moderately weathered, strong hard, with iron oxide staining and carbonate coatings, closely spaced subvertical fractures form predominately 2-3 inch blocks, some completely weathered zones are poorly recovered			0
	5			5/3	0
	10			5/5	10
	15			5./8	10
	20	below 20 feet, decrease in iron oxide staining, fractures lined with 1/8 inch thick carbonate	Sp	5/7	0
	25				10
	30			5/7	0
	35	at 34 feet, recovered severely weathered zone		5/4	0
367.0	40				

Continued Next Page

GROUND WATER OBSERVATIONS:

NO FREE GROUND WATER ENCOUNTERED

LA CORP.GDT 10/17/00 MV

EXPLORATORY BORING: EB-5 Cont'd

DRILL RIG: MOBILE B-53
BORING TYPE: ROTARY WASH
LOGGED BY: TNW
START DATE: 9-2-99 FINISH DATE: 9-2-99

PROJECT NO: 991-17A
PROJECT: COMMUNICATIONS HILL
LOCATION: SAN JOSE, CA
COMPLETION DEPTH: 70.0 FT.

This log is a part of a report by Lowney Associates, and should not be used as a stand-alone document. This description applies only to the location of the exploration at the time of drilling. Subsurface conditions may differ at other locations and may change at this location with time. The description presented is a simplification of actual conditions encountered. Transitions between soil types may be gradual.

Undrained Shear Strength (ksf): ○ Pocket Penetrometer; △ Torvane; ● Unconfined Compression; ▲ U-U Triaxial Compression (scale 1.0, 2.0, 3.0, 4.0)

ELEVATION (FT)	DEPTH (FT)	MATERIAL DESCRIPTION AND REMARKS	SOIL TYPE	DRILL RATE (FT/MIN.)	RQD
367.0	40	**SERPENTINITE** green, moderately weathered, strong hard, with iron oxide staining and carbonate coatings, closely spaced subvertical fractures form predominately 2-3 inch blocks, some completely weathered zones are poorly recovered	Sp		
361.0		**BASALT** black, slightly weathered, hard, strong, closely spaced fractures 3-4 feet apart, slight serpentinzation and 1/8 inch serpentine veins	Ba		10
				5/2	10
354.0		**SERPENTINITE** green, slightly weathered, hard, strong, predominately forms 2-3 inch pieces, some up to 5 inches, includes completely weathered zones	Sp		10
		completely weathered zone at 62 feet			
337.0	70	Bottom of Boring at 70 feet			

GROUND WATER OBSERVATIONS:
NO FREE GROUND WATER ENCOUNTERED

J-6

EXPLORATORY BORING: EB-6

Sheet 1 of 1

DRILL RIG: MOBILE B-53	PROJECT NO: 991-17A
BORING TYPE: ROTARY WASH	PROJECT: COMMUNICATIONS HILL
LOGGED BY: TNW	LOCATION: SAN JOSE, CA
START DATE: 9-10-99 FINISH DATE: 9-10-99	COMPLETION DEPTH: 28.0 FT.

This log is a part of a report by Lowney Associates, and should not be used as a stand-alone document. This description applies only to the location of the exploration at the time of drilling. Subsurface conditions may differ at other locations and may change at this location with time. The description presented is a simplification of actual conditions encountered. Transitions between soil types may be gradual.

Undrained Shear Strength (ksf): ○ Pocket Penetrometer; △ Torvane; ● Unconfined Compression; ▲ U-U Triaxial Compression (scale 1.0, 2.0, 3.0, 4.0)

SURFACE ELEVATION: 344.0 FT. (+/-)

ELEVATION (FT)	DEPTH (FT)	MATERIAL DESCRIPTION AND REMARKS	SOIL TYPE	DRILL RATE (FT/MIN.)	SAMPLER	MOISTURE CONTENT (%)	DRY DENSITY (PCF)	RQD
344.0	0	**SILTY CLAY (CH)** stiff, dry, dark brown	CH					
342.0		**SANDSTONE** brown, fine grained, slightly to completely weathered zones alternating every 4-6 inches, varies from hard and strong to weak and friable in the weathered zones, trace caliche, charcoal massive with subvertical fractures stained with iron oxide	SS		○ ○ ○			0, 0, 0
327.0		**CLAYSTONE** dark gray, completely weathered, weak, friable, strong subvertical foliations	CS					0
323.0		**SANDSTONE** brown, fine grained, slightly weathered hard, strong, subvertical fractures	SS					40
321.0		**CLAYSTONE** dark gray, completely weathered, weak, friable, strong subvertical foliations Plasticity Index = 12, Liquid Limit = 31	CS		○ ○			0
316.0		Bottom of Boring at 28 feet						

Depth scale: 0, 5, 10, 15, 20, 25, 30, 35

GROUND WATER OBSERVATIONS:

NO FREE GROUND WATER ENCOUNTERED

LA CORP GDT 10/17/00 MV

LOWNEY ASSOCIATES
Environmental/Geotechnical/Engineering Services

5-7

EXPLORATORY BORING: EB-7

DRILL RIG: MOBILE B-53	PROJECT NO: 991-17A
BORING TYPE: ROTARY WASH	PROJECT: COMMUNICATIONS HILL
LOGGED BY: TNW	LOCATION: SAN JOSE, CA
START DATE: 9-15-99 FINISH DATE: 9-15-99	COMPLETION DEPTH: 20.0 FT.

This log is a part of a report by Lowney Associates, and should not be used as a stand-alone document. This description applies only to the location of the exploration at the time of drilling. Subsurface conditions may differ at other locations and may change at this location with time. The description presented is a simplification of actual conditions encountered. Transitions between soil types may be gradual.

Undrained Shear Strength (ksf): ○ Pocket Penetrometer; △ Torvane; ● Unconfined Compression; ▲ U-U Triaxial Compression (scale 1.0, 2.0, 3.0, 4.0)

SURFACE ELEVATION: 315.0 FT. (+/-)

ELEVATION (FT)	DEPTH (FT)	SOIL LEGEND	MATERIAL DESCRIPTION AND REMARKS	SOIL TYPE	DRILL RATE (FT/MIN.)	SAMPLER	MOISTURE CONTENT (%)	DRY DENSITY (PCF)	RQD
315.0	0		**SILTY CLAY (CH)** stiff, dry to moist, dark brown, with light brown mottling, trace sand, trace rootlets, trace carbonate nodules	CH					0
	5				N=6				
			color grades to light brown, trace coarse sand sized serpentinite clasts						
306.0			**CLAYSTONE** light brown, severely weathered, very closely spaced fractures, weak, friable, calcite veins 1/4 inch thick, subvertical fabric	CS					0
	10								0
	15		1-foot thick coarse sandstone interbed						
295.0	20		Bottom of Boring at 20 feet						
	25								
	30								
	35								

GROUND WATER OBSERVATIONS:

NO FREE GROUND WATER ENCOUNTERED

CORP.GDT 10/17/00 MV

LOWNEY ASSOCIATES
Environmental/Geotechnical/Engineering Services

T-10

EXPLORATORY BORING: EB-10

DRILL RIG: MOBILE B-53	PROJECT NO: 991-17A
BORING TYPE: ROTARY WASH	PROJECT: COMMUNICATIONS HILL
LOGGED BY: TNW	LOCATION: SAN JOSE, CA
START DATE: 9-15-99 FINISH DATE: 9-15-99	COMPLETION DEPTH: 15.0 FT.

This log is a part of a report by Lowney Associates, and should not be used as a stand-alone document. This description applies only to the location of the exploration at the time of drilling. Subsurface conditions may differ at other locations and may change at this location with time. The description presented is a simplification of actual conditions encountered. Transitions between soil types may be gradual.

Undrained Shear Strength (ksf): ○ Pocket Penetrometer; △ Torvane; ● Unconfined Compression; ▲ U-U Triaxial Compression (scale 1.0, 2.0, 3.0, 4.0)

ELEVATION (FT)	DEPTH (FT)	MATERIAL DESCRIPTION AND REMARKS	SOIL TYPE	DRILL RATE (FT/MIN.)	MOISTURE CONTENT (%)	DRY DENSITY (PCF)	RQD
275.0	0	SURFACE ELEVATION: 275.0 FT. (+/-) **SILTY CLAY (CH)** stiff, dry to moist, dark brown, trace roots, trace medium to coarse sand sized serpentinite fragments	CH				0
270.5	5	**CLAYSTONE** light brown, completely weathered, poorly indurated, very closely spaced fractures, weak, friable	Sp	N=68			0
260.0	15	Bottom of Boring at 15 feet					

GROUND WATER OBSERVATIONS:
NO FREE GROUND WATER ENCOUNTERED

LA_CORP.GDT 10/17/00 MV*

LOWNEY ASSOCIATES
Environmental/Geotechnical/Engineering Services

T-15

EXPLORATORY BORING: EB-15

Sheet 1 of 1

DRILL RIG: CME 750	PROJECT NO: 991-17A
BORING TYPE: ROTARY WASH	PROJECT: COMMUNICATIONS HILL
LOGGED BY: TNW	LOCATION: SAN JOSE, CA
START DATE: 9-17-99 FINISH DATE: 9-17-99	COMPLETION DEPTH: 16.0 FT.

This log is a part of a report by Lowney Associates, and should not be used as a stand-alone document. This description applies only to the location of the exploration at the time of drilling. Subsurface conditions may differ at other locations and may change at this location with time. The description presented is a simplification of actual conditions encountered. Transitions between soil types may be gradual.

ELEVATION (FT)	DEPTH (FT)	SOIL LEGEND	MATERIAL DESCRIPTION AND REMARKS	SOIL TYPE	DRILL RATE (FT/MIN.)	SAMPLER	MOISTURE CONTENT (%)	DRY DENSITY (PCF)	RQD	Undrained Shear Strength (ksf)
330.0	0		SURFACE ELEVATION: 330.0 FT. (+/-)							
			SILTY CLAY (CH) stiff, dry, dark brown, with serpentinite clasts	CH						
327.0			**SERPENTINITE** green, slightly weathered, hard, strong, with closely spaced 2-3 inches fractures subvertical, stained with iron oxide, some 1/4 inch chrysotile veins	Sp						
	5									
	10									
	15									
314.0			Bottom of Boring at 16 feet							
	20									
	25									
	30									
	35									

Undrained Shear Strength legend: ○ Pocket Penetrometer; △ Torvane; ● Unconfined Compression; ▲ U-U Triaxial Compression. Scale: 1.0 2.0 3.0 4.0

GROUND WATER OBSERVATIONS:

NO FREE GROUND WATER ENCOUNTERED

LA CORP.GDT 10/17/00 MV

LOWNEY ASSOCIATES
Environmental/Geotechnical/Engineering Services

T-18

EXPLORATORY BORING: EB-18

Sheet 1 of 1

DRILL RIG: MOBILE B-80
BORING TYPE: ROTARY WASH
LOGGED BY: TNW
START DATE: 8-23-00 FINISH DATE: 8-23-00

PROJECT NO: 991-17A
PROJECT: COMMUNICATIONS HILL
LOCATION: SAN JOSE, CA
COMPLETION DEPTH: 34.0 FT.

This log is a part of a report by Lowney Associates, and should not be used as a stand-alone document. This description applies only to the location of the exploration at the time of drilling. Subsurface conditions may differ at other locations and may change at this location with time. The description presented is a simplification of actual conditions encountered. Transitions between soil types may be gradual.

Undrained Shear Strength (ksf): ○ Pocket Penetrometer; △ Torvane; ● Unconfined Compression; ▲ U-U Triaxial Compression (scale 1.0, 2.0, 3.0, 4.0)

SURFACE ELEVATION: 302.0 FT. (+/-)

ELEVATION (FT)	DEPTH (FT)	MATERIAL DESCRIPTION AND REMARKS	SOIL TYPE	DRILL RATE (FT/MIN.)	MOISTURE CONTENT (%)	DRY DENSITY (PCF)	RQD
302.0	0	**SILTY CLAY (CH)** stiff, dry, dark brown, serpentinite gravel up to 3 inches in diameter	CH				
		Plasticity Index = 42, Liquid Limit = 73		59	35 22	71 85	0
298.5		**SERPENTINITE** green, moderately weathered, hard, strong, fracture spacing is 1 to 3 inches, iron oxide and manganese staining along fractures, fractures are at 60 degrees with sub-horizontal 1/4 inch asbestos veins	Sp				0
	5			5/9			0
	10			3/15			0
		completely weathered 6 inch section		3.5/10			0
	15	subvertical 1/4 inch calcite veins					
		fractures at 60 degrees with 1/4 inch serpentinite veins		5/14			0
	20	forms 3 1/2 inch blocks that are hard, strong					
		basalt blocks 3 1/2 inches in diameter, abundant iron oxide and manganese staining within matrix					
		completely weathered 6 inch section		4.5/22			0
	25			5/10			0
	30						30
		completely weathered 6 inch section					
268.0	35	Bottom of boring at 34.0 feet					

GROUND WATER OBSERVATIONS:
NO FREE GROUNDWATER ENCOUNTERED

T-19

EXPLORATORY BORING: EB-19

Sheet 1 of 1

DRILL RIG: MOBILE B-80	PROJECT NO: 991-17A
BORING TYPE: ROTARY WASH	PROJECT: COMMUNICATIONS HILL
LOGGED BY: TNW	LOCATION: SAN JOSE, CA
START DATE: 8-24-00 FINISH DATE: 8-24-00	COMPLETION DEPTH: 20.0 FT.

This log is a part of a report by Lowney Associates, and should not be used as a stand-alone document. This description applies only to the location of the exploration at the time of drilling. Subsurface conditions may differ at other locations and may change at this location with time. The description presented is a simplification of actual conditions encountered. Transitions between soil types may be gradual.

Undrained Shear Strength (ksf): ○ Pocket Penetrometer; △ Torvane; ● Unconfined Compression; ▲ U-U Triaxial Compression (scale 1.0, 2.0, 3.0, 4.0)

SURFACE ELEVATION: 338.0 FT. (+/-)

ELEVATION (FT)	DEPTH (FT)	MATERIAL DESCRIPTION AND REMARKS	SOIL TYPE	DRILL RATE (FT/MIN)	RQD
338.0	0	**SERPENTINITE** green, hard, strong, moderately weathered, sheared texture but competent, iron oxide and manganese staining, some 1 to 5 inch friable fragments, very weak zones, fracture spacing is less than 1/2 inch		5/15	0
	5			5/12	0
		fractures are at 60 degrees, subhorizontal foliations			
	10	decrease in fracture density	Sp		
		6 inch thick section of unfractured, hard, strong fragments		5/15	15
		some 1/8 inch thick asbestos veins, some silica carbonate			
	15	becomes highly fractured, forms 1 to 3 inch diameter blocks with some fragments of basalt		3/15	0
				2/12	0
318.0	20	Bottom of boring at 20.0 feet			
	25				
	30				
	35				

GROUND WATER OBSERVATIONS:
NO FREE GROUNDWATER ENCOUNTERED

T-29

EXPLORATORY BORING: EB-29

DRILL RIG: MOBILE B-80	PROJECT NO: 991-17A
BORING TYPE: ROTARY WASH	PROJECT: COMMUNICATIONS HILL
LOGGED BY: GAR	LOCATION: SAN JOSE, CA
START DATE: 8-22-00 FINISH DATE: 8-22-00	COMPLETION DEPTH: 30.0 FT.

This log is a part of a report by Lowney Associates, and should not be used as a stand-alone document. This description applies only to the location of the exploration at the time of drilling. Subsurface conditions may differ at other locations and may change at this location with time. The description presented is a simplification of actual conditions encountered. Transitions between soil types may be gradual.

MATERIAL DESCRIPTION AND REMARKS

SURFACE ELEVATION: 185.0 FT. (+/-)

Undrained Shear Strength (ksf): ○ Pocket Penetrometer; △ Torvane; ● Unconfined Compression; ▲ U-U Triaxial Compression (scale 1.0, 2.0, 3.0, 4.0)

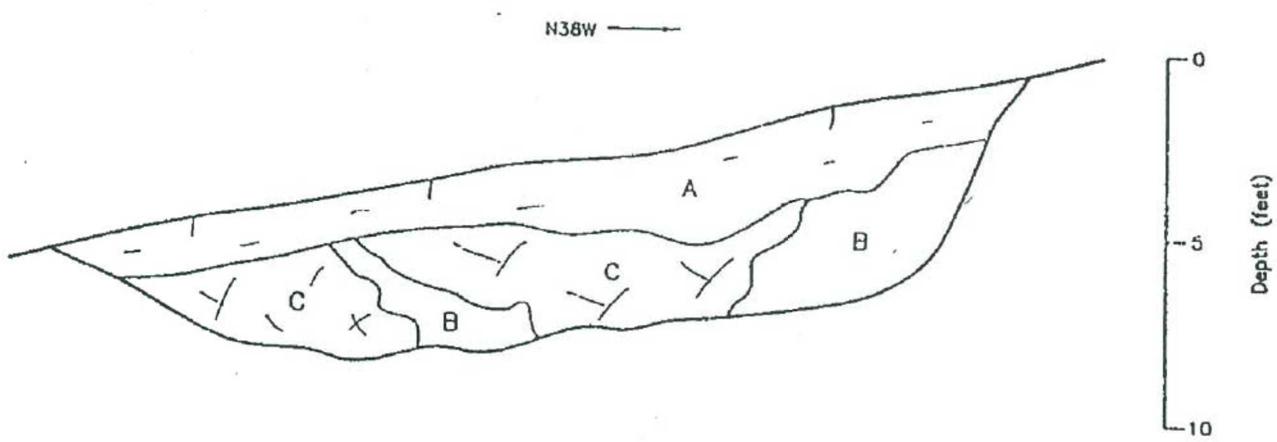
ELEVATION (FT)	DEPTH (FT)	MATERIAL DESCRIPTION AND REMARKS	SOIL TYPE	DRILL RATE (FT/MIN)	MOISTURE CONTENT (%)	DRY DENSITY (PCF)	RQD
185.0	0	**SILTY CLAY (CL)** stiff, moist, brown, some sand and gravel, rootlets	CL	15			
181.0	4	**CLAYSTONE** olive to brown, severely to completely weathered, very fine grained, some very coarse sand within clay matrix, extensive Mg/Fe staining along foliations, friable, weak, soft	CS	49	14	114	
		completely weathered at 7 feet, vertical zonations of calcium carbonate 1/2 inch in thickness, weak subhorizontal foliations, clay matrix, some 3/8 inch fragments of serpentinite green, fresh, severely weathered from 7 to 11 feet		21	26		
		near horizontal foliations at 9 feet		41			
174.0	11			26	8		
		SERPENTINITE interbedded with claystone, serpentinite is weak, soft, thin subhorizontal foliations,	Sp				0
	15	zone of sheared claystone interbedded with 3/8 inch thick veins of green serpentinite, extensive iron oxide and manganese staining along foliations, near vertical 1/8 inch thick calcite veins					0
	20	interbedded with dark brown claystone					
		visible "chrysotile" fibers					
		becomes moderately weathered, hard, extensive iron oxide and manganese staining along foliations, fractures into 1 inch fragments					0
	25	6 inch thick section of olive claystone, near vertical foliations		50/5"	15		
		green to black, slightly to moderately weathered, hard, strong, 40% serpentinite, 60% basalt					0
155.0	30	Bottom of Boring at 30 feet					
	35						

GROUND WATER OBSERVATIONS:

NO FREE GROUNDWATER ENCOUNTERED

LA CORP.GDT 10/27/00 MV

LOWNEY ASSOCIATES
Environmental/Geotechnical/Engineering Services



A: CLAY (CL–CH): Surficial Soil, many fine roots, some carbonate nodules and silica-carbonate rock float, dusky yellow brown

B: SILICA–CARBONATE ROCK: Hard, strong, moderate red brown with grayish pink carbonate-rich zones, pale yellow brown stains on fractures

C: SERPENTINITE: Crushed and weak, sandy texture, carbonate-rich seams, pale olive and pale greenish yellow, no foliations, excavation yields some hard blocks to 1.5' dia., but mostly crushed rock spoil

R-1

1"=5'

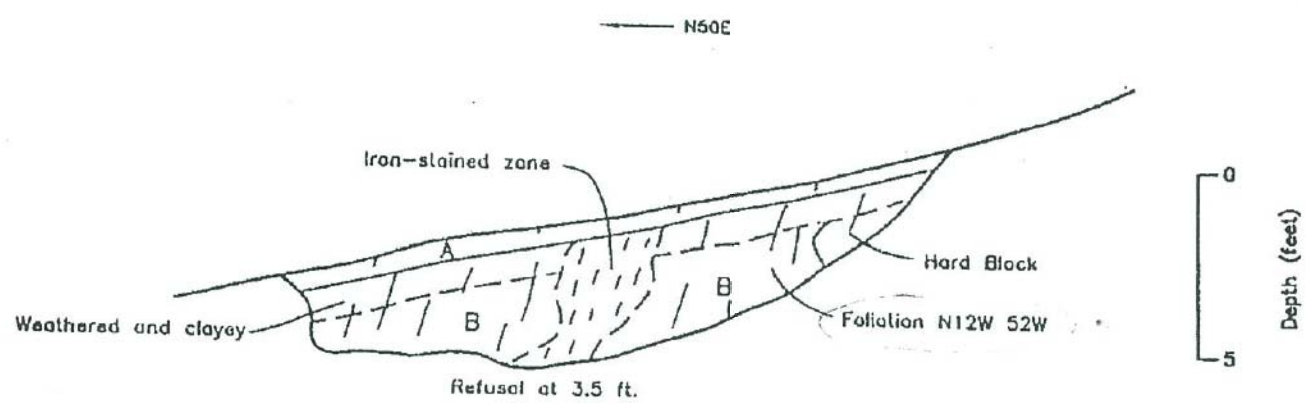
11/99-LU

EXPLORATORY TEST PIT LOG TP-1

COMMUNICATIONS HILL
San Jose, California

LOWNEY ASSOCIATES
Environmental/Geotechnical/Engineering Services

TP-1
091-17A



A: CLAY (CL-CH): Surficial Soil

B: SERPENTINITE: Hard, strong, foliation joints spaced 8", N12W 52W, dark green-gray with olive black inclusions, excavation spoils are angular chunks to 10" dia., but most are less than 6"

1"=5'

10/90-20

EXPLORATORY TEST PIT LOG TP-2

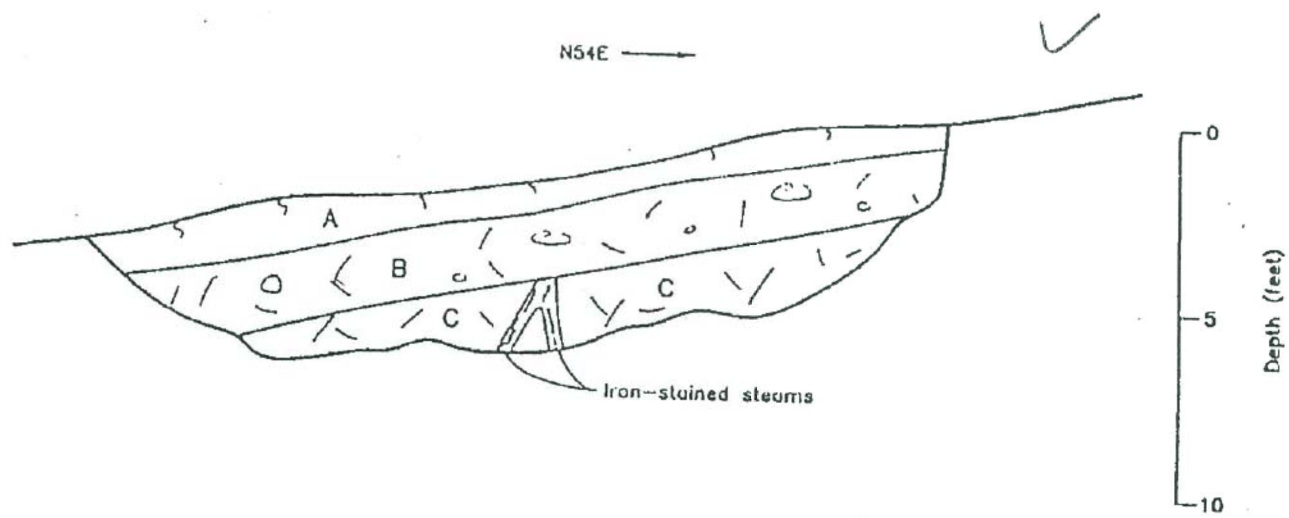
COMMUNICATIONS HILL

San Jose, California

LOWNEY ASSOCIATES
Environmental/Geotechnical/Engineering Services

TP-2

881-17A



A: CLAY (CH): Surficial Soil, minor fine sand, rare gravel, moist below 1', dusky yellow brown

B: SERPENTINITE: Severely weathered with much gray-orange clay and clay coatings, some hard, rounded facoids

C: SERPENTINITE: Hard, fresh, random fracturing, no preferred foliation, some polished surfaces and facoids, dark green-gray and olive black, excavations into angular blocks to 1.5' dia., most are less than 6"

1"=5'

/89-LB

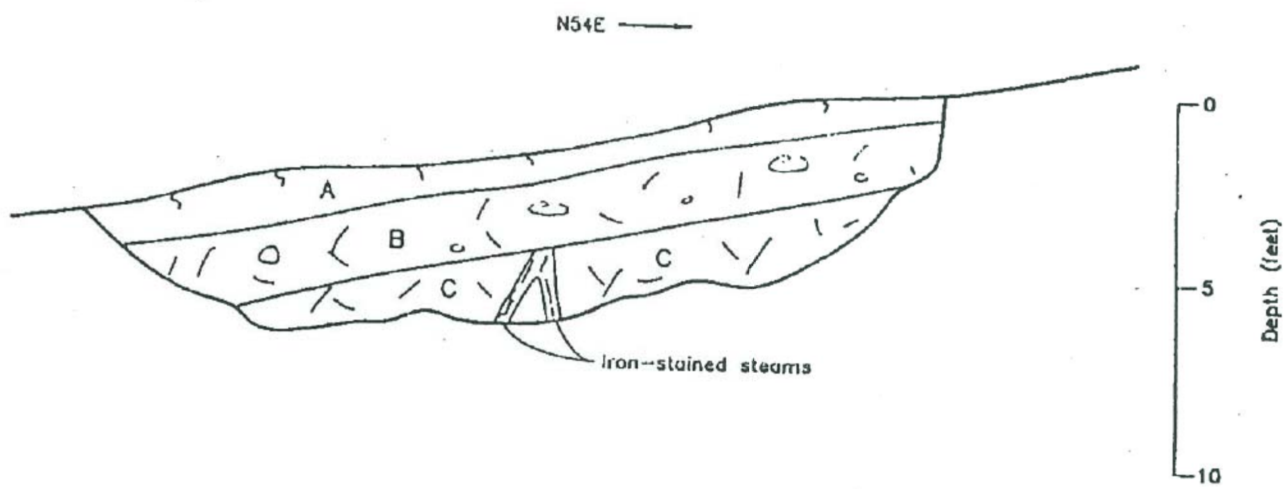
EXPLORATORY TEST PIT LOG TP-3

COMMUNICATIONS HILL

San Jose, California

LOWNEY ASSOCIATES
Environmental/Geotechnical/Engineering Services

TP-3
991-17A



A: CLAY (CH): Surficial Soil, minor fine sand, rare gravel, moist below 1', dusky yellow brown

B: SERPENTINITE: Severely weathered with much gray-orange clay and clay coatings, some hard, rounded facoids

C: SERPENTINITE: Hard, fresh, random fracturing, no preferred foliation, some polished surfaces and facoids, dark green-gray and olive black, excavations into angular blocks to 1.5' dia., most are less than 6"

1"=5'

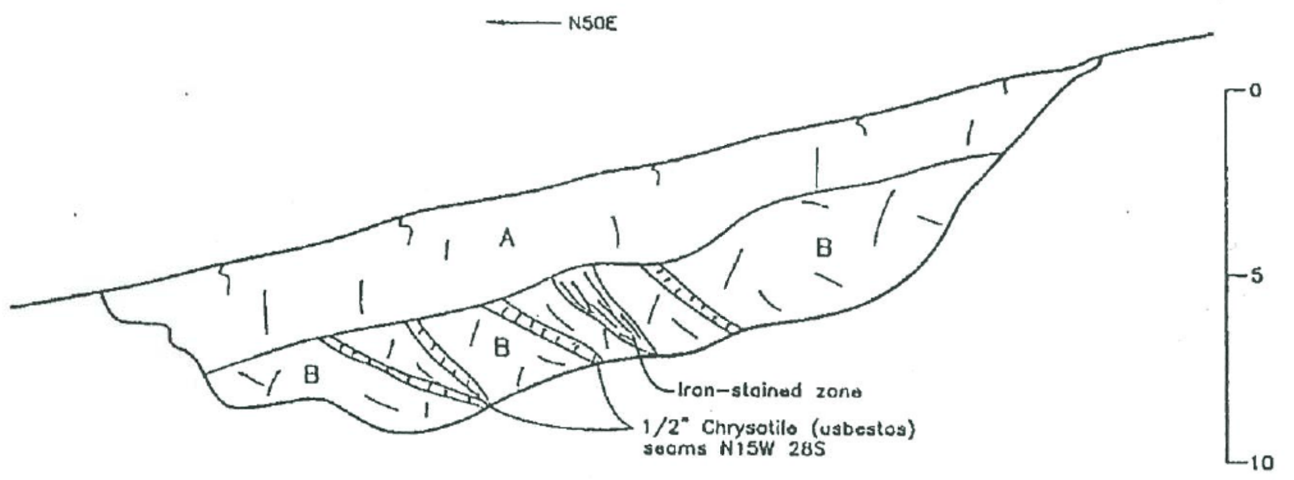
EXPLORATORY TEST PIT LOG TP-3

COMMUNICATIONS HILL

San Jose, California

LOWNEY ASSOCIATES
nvironmental/Geotechnical/Engineering Services

TP-3
981-17A



A: CLAY (CH): Surficial Soil, minor fine sand, rare gravel, moist below 1', dusky yellow brown

B: SERPENTINITE: Massive with fiberous asbestos (chrysotile) seams to 0.5", light olive brown clay coatings on fractures, excavation spoils are angular blocks to 8" dia., diffcult excavation below 2'

1"=5'

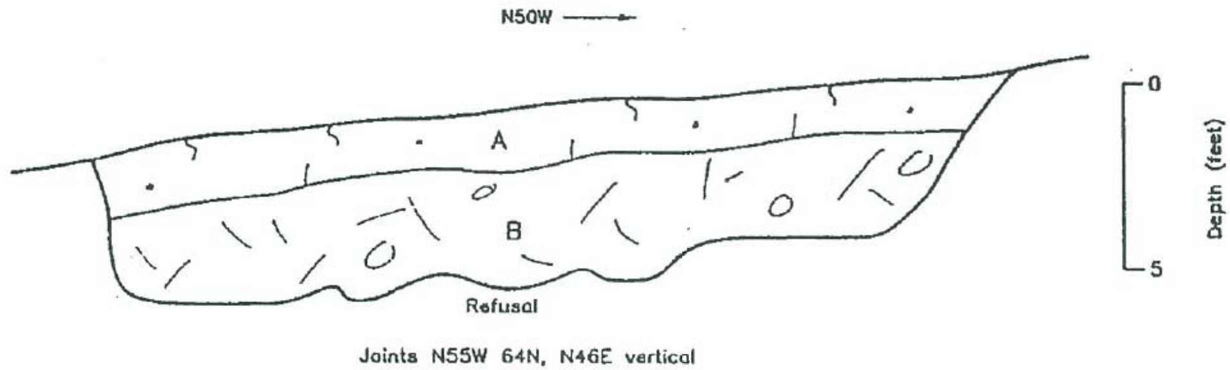
10/93-CU

EXPLORATORY TEST PIT LOG TP-4

COMMUNICATIONS HILL
San Jose, California

LOWNEY ASSOCIATES
Environmental/Geotechnical/Engineering Services

TP-4
991-17A



A: CLAY (CH): Surficial Soil, minor fine sand, rare gravel, moist below 1', dusky yellow brown

B: SERPENTINITE: Hard, strong, massive, no obvious foliation, but common joints oriented N55W 64N and N46E Vertical, occasional rounded, polished facoids in slightly softer matrix rock, olive black and dark green-gray some light olive brown clay in weathered joints

1"=5'

10/99*EB

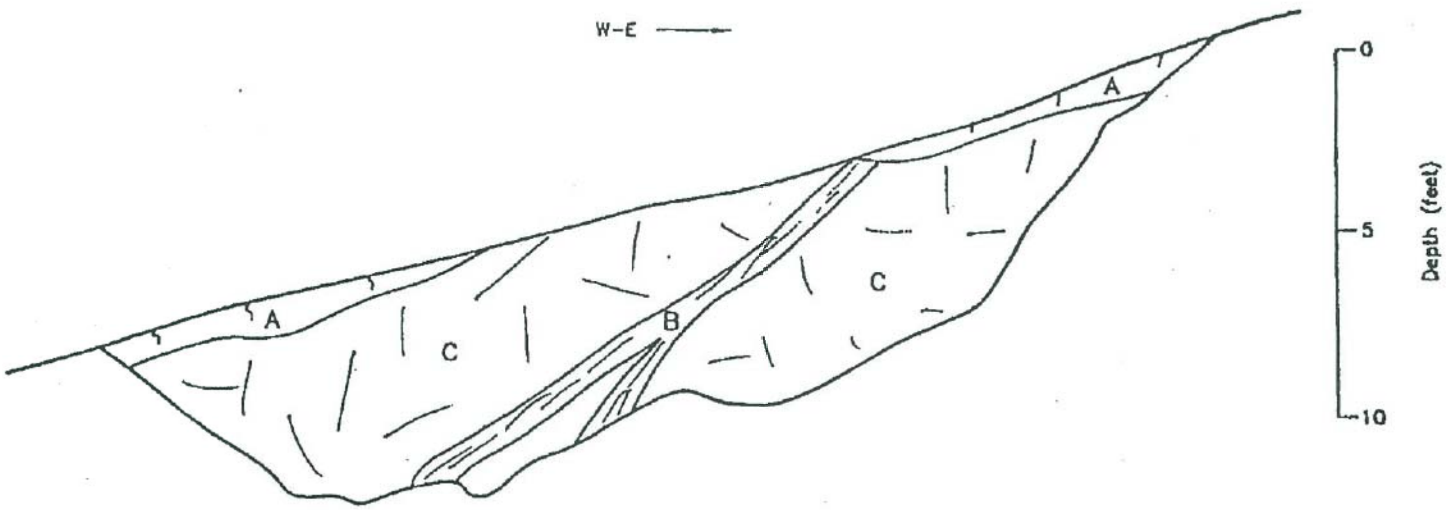
EXPLORATORY TEST PIT LOG TP-6

COMMUNICATIONS HILL

San Jose, California

LOWNEY ASSOCIATES
Environmental/Geotechnical/Engineering Services

TP-6
001-17A



A: CLAY (CH): Surficial Soil, minor fine sand, rare gravel, moist below 1', dusky yellow brown

B: Weathered, iron-rich, clayey zones, dip 21 degrees to west clay and clay coatings, some hard, rounded facoids

C: SERPENTINITE: Hard, fresh, random fracturing, no preferred foliation, basalt-like appearance, dark gray with glassy, green surfaces, interfingering zones of sandy textured serpentinite, some rounded facoids to, much soil in random fractures, hard, rocky digging, excavates into angular blocks and rounded cobbles to 2' dia.

1"=5'

10/99-EB

EXPLORATORY TEST PIT LOG TP-7

COMMUNICATIONS HILL

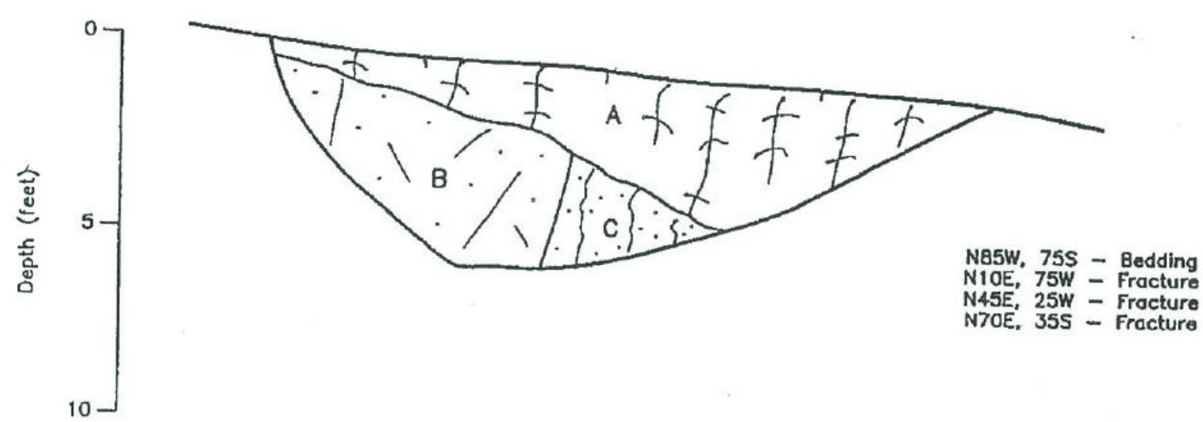
San Jose, California

LOWNEY ASSOCIATES

Environmental/Geotechnical/Engineering Services

TP-7

991-17A



A: SILTY CLAY (CH), stiff, dry, dark brown, with coarse sand and rock fragments up to 2 inch

B: SANDSTONE, Brown, moderately weathered, weak, friable, medium grained, with iron oxide staining, highly fractured, 1–5 inch spacing

C: CLAYSTONE, Gray, moderately weathered, weak, friable, with iron oxide staining, highly fractured up to 1 inch spacing

1"=5'

8/00·LB

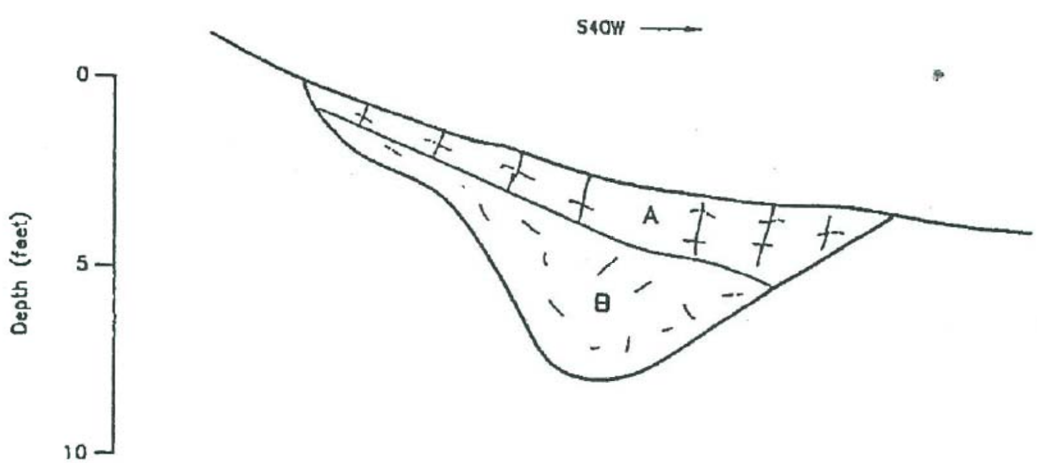
EXPLORATORY TEST PIT LOG TP–13

COMMUNICATIONS HILL

San Jose, California

LOWNEYASSOCIATES
Environmental/Geotechnical/Engineering Services

TP–13
991–17A



A: SILTY CLAY (CH), stiff, dry, dark brown, with 2 inch rock fragments, rootlets

B: SERPENTINIZED BASALT. Black to green, slightly weathered, hard, strong, no fractures, forms random surfaces when excavated

1"=5'

8/00-EB

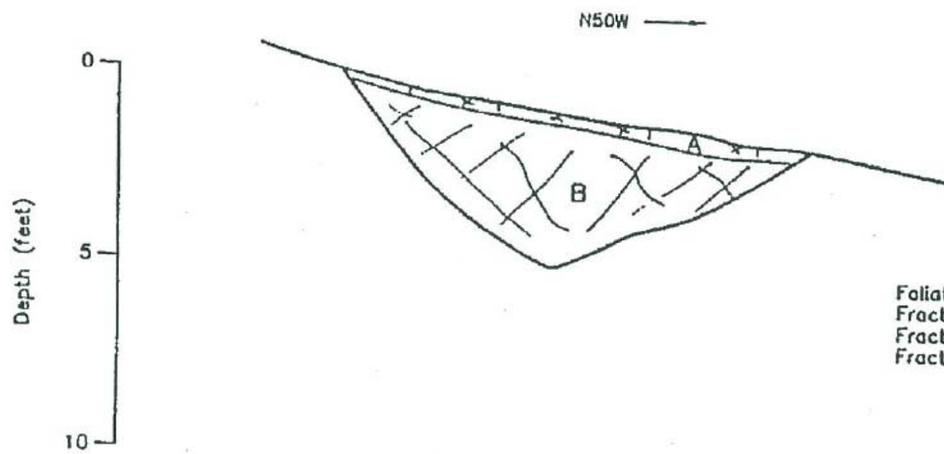
EXPLORATORY TEST PIT LOG TP-14

COMMUNICATIONS HILL

San Jose, California

LOWNEY ASSOCIATES
Environmental/Geotechnical/Engineering Services

TP-14
001-17A



Foliation: N85W, 55N
Fracture: N25E, 70S
Fracture: N50E, 60S
Fracture: N80W, 45N

A: SILTY CLAY (CH), stiff, dry, dark brown, with rock fragments up to 4 inches, rootlets

B: SERPENTINIZED BASALT, Green to black, slightly weathered, hard, strong, with veins 1 inch thick, asbestos veins 1 inch thick, abundant fractures

1"=5'

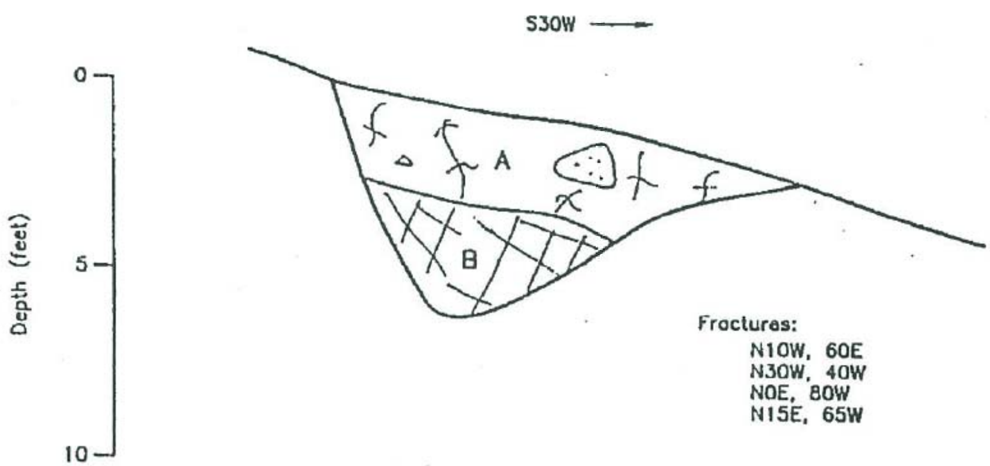
8/00-EB

EXPLORATORY TEST PIT LOG TP-15

COMMUNICATIONS HILL
San Jose, California

LOWNEY ASSOCIATES
Environmental/Geotechnical/Engineering Services

TP-15
991-17A



A: SILTY CLAY (CH), stiff, dry, dark brown, with rock fragments up to 2 feet, with rootlets

B: SERPENTINIZED BASALT, Black to green, slightly weathered, hard, strong, moderate serpentinization, 6–8 inch fracture spacing, iron oxide staining along fractures

1"=5'

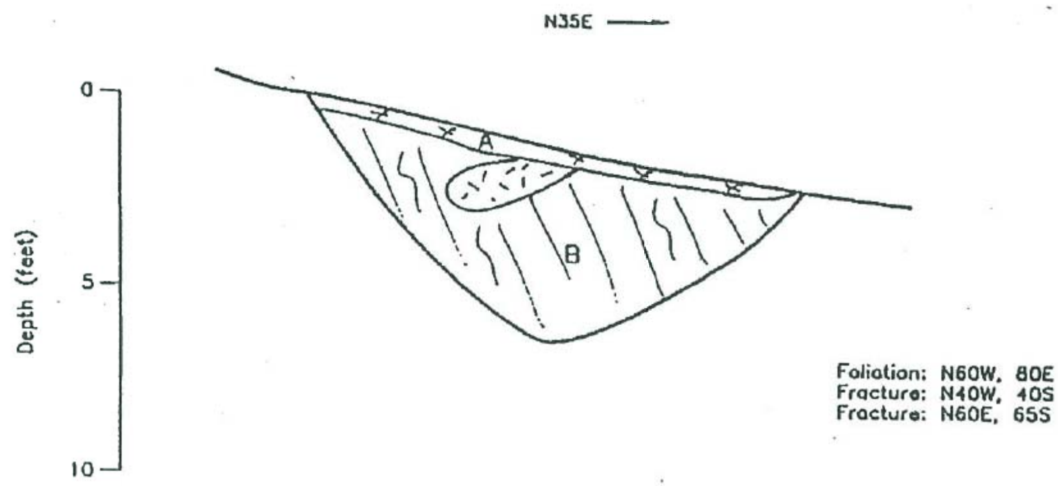
8/00-LB

EXPLORATORY TEST PIT LOG TP-18

COMMUNICATIONS HILL
San Jose, California

LOWNEY ASSOCIATES
Environmental/Geotechnical/Engineering Services

TP-18
801-17A



A: SILTY CLAY (CH), medium stiff, dry, dark brown, with serpentinite clasts up to 3 inches

B: SERPENTINITE, Green, hard, medium strong, highly foliated, 1/2 inch spacing, subvertical, some 2 foot unfractured blocks

1"=5'

10/00*La

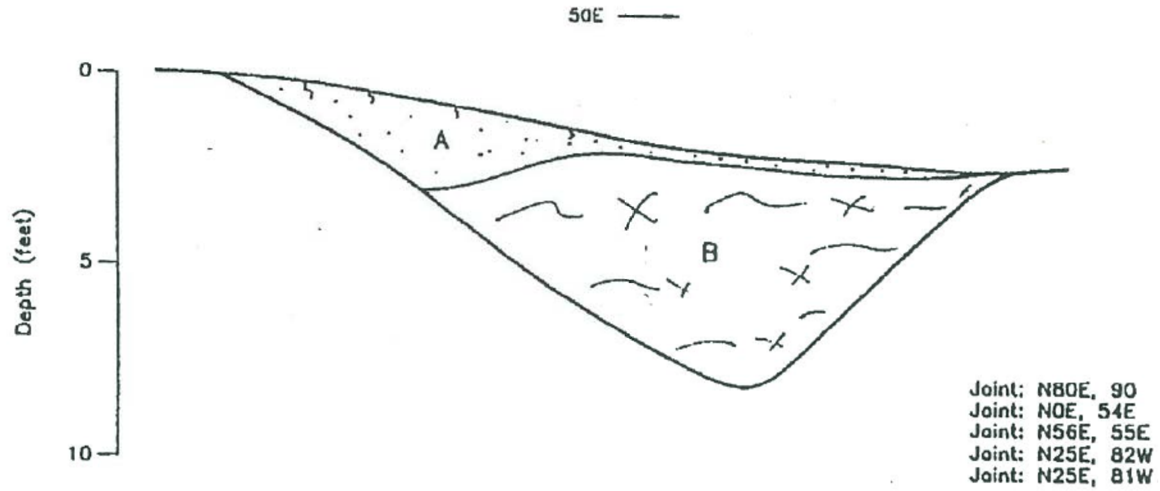
EXPLORATORY TEST PIT LOG TP-26

COMMUNICATIONS HILL

San Jose, California

LOWNEY ASSOCIATES
Environmental/Geotechnical/Engineering Services

TP-26
991-17A



A: SILTY CLAY (CL/CH), medium stiff, dry, medium brown, serpentinite (abundant) blocks up to 2 inches, medium sand, roots up to 6 inches (Fill)

B: SERPENTINITE, Green to black, hard, medium weathered, foliated, secondary carbonate veins (2 inches), chrysotile (asbestos viens (1/4 inch), joints widely spaced (~4') slightly rough, iron oxide infilling

1"=5'

10/00-E8

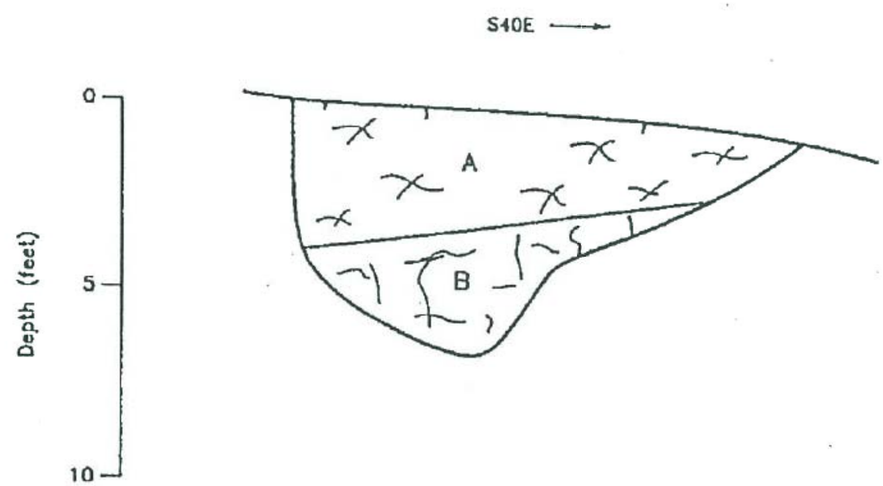
EXPLORATORY TEST PIT LOG TP-27

COMMUNICATIONS HILL

San Jose, California

LOWNEY ASSOCIATES
Environmental/Geotechnical/Engineering Services

TP-27
801-17A



Foliation: N10E, 32W
Joint: N45E, 90
Joint: N40E, 90
Joint: N25W, 62W
Joint: N45W, 68E

A: SILTY CLAY (CH), medium stiff, dry, dark brown, roots up to 1 ft, medium to coarse sand, angular serpentinite clasts up to 1 inch (Colluvium)

B: SERPENTINITE, Light green to black, hard, strong, moderate weathered, 4–5 inch joint spacing, but mostly massive, iron oxide and manganese staining, joint surfaces are rough

1"=5'

10/00-(8

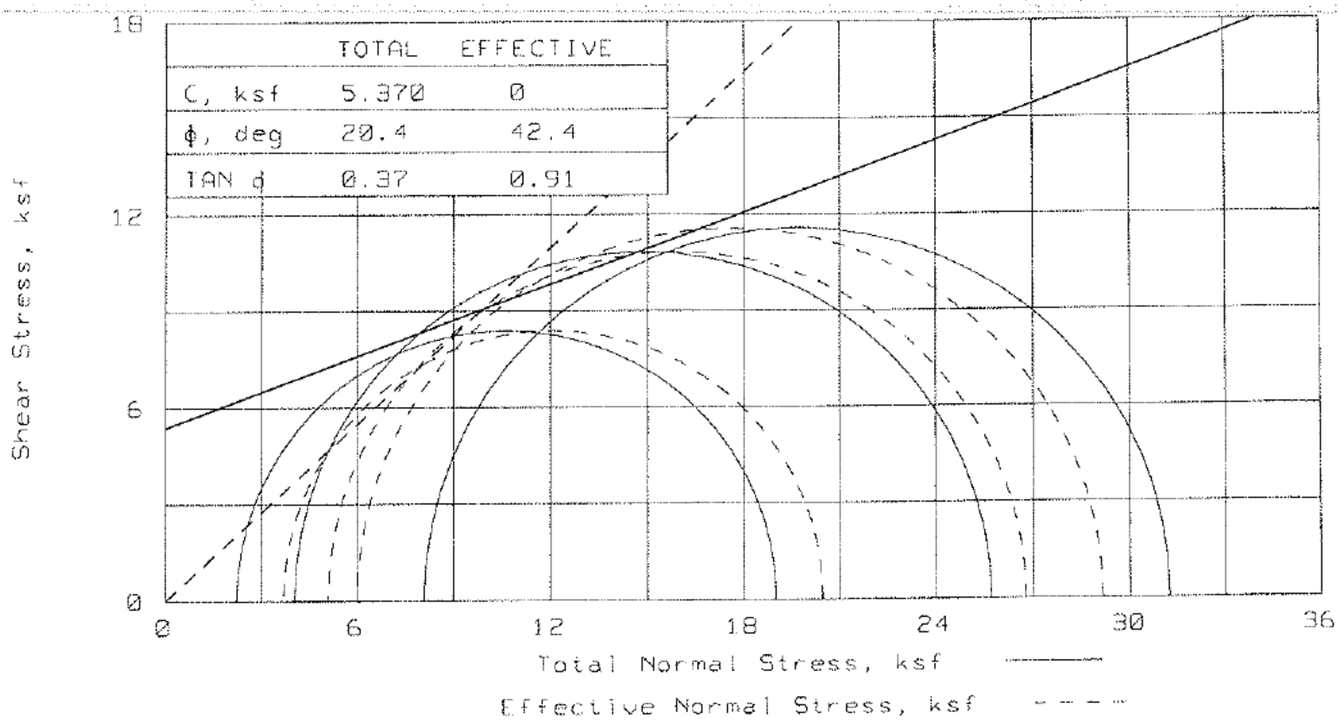
EXPLORATORY TEST PIT LOG TP-20

COMMUNICATIONS HILL
San Jose, California

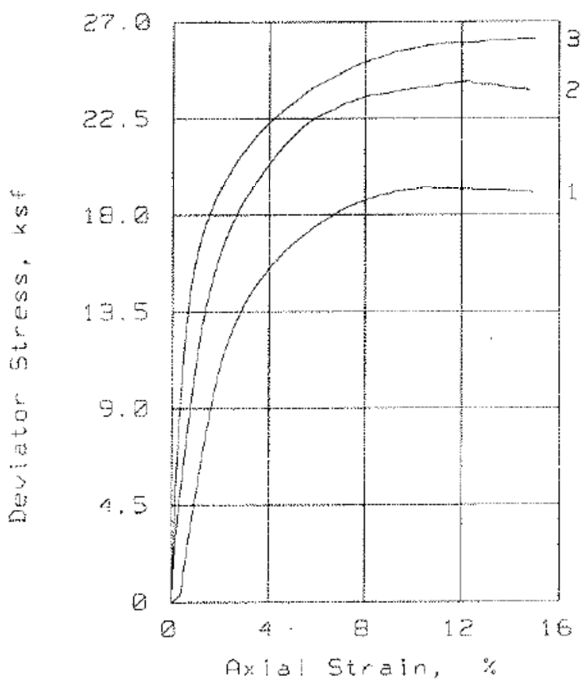
LOWNEY ASSOCIATES
Environmental/Geotechnical/Engineering Services

TP-20
001-17A

Lowney Associates – Dairy Hill – Laboratory Data (not on-site)



	TOTAL	EFFECTIVE
C, ksf	5.370	0
φ, deg	20.4	42.4
TAN φ	0.37	0.91



SAMPLE NO.:		1	2	3
INITIAL	WATER CONTENT, %	12.6	12.2	12.3
	DRY DENSITY, pcf	128.9	129.8	129.7
	SATURATION, %	99.3	98.7	98.8
	VOID RATIO	0.356	0.346	0.347
	DIAMETER, in	4.000	4.000	4.000
	HEIGHT, in	8.070	8.020	8.030
AT TEST	WATER CONTENT, %	13.4	13.3	13.0
	DRY DENSITY, pcf	127.1	127.3	128.2
	SATURATION, %	100.0	100.0	100.0
	VOID RATIO	0.375	0.373	0.364
	DIAMETER, in	4.042	4.051	4.039
	HEIGHT, in	8.014	7.972	7.970
Strain rate, %/min		0.03	0.03	0.03
EFF CELL PRESSURE, ksf		2.22	4.03	8.08
Deviator Stress, ksf		16.79	21.69	23.16
EXCESS PORE PR., ksf		-1.45	-1.05	2.09
STRAIN, %		5.1	5.0	4.9
Ultimate Stress, ksf				
EXCESS PORE PR., ksf				
STRAIN, %				
$\bar{\sigma}_1$ FAILURE, ksf		20.46	26.77	29.15
$\bar{\sigma}_3$ FAILURE, ksf		3.67	5.08	5.99

TYPE OF TEST:
CU with Pore Pressures

SAMPLE TYPE: 95% of 136pcf @13%

DESCRIPTION: Brown Sandy GRAVEL with Silt

ASSUMED SPECIFIC GRAVITY= 2.8

REMARKS: Non linear strength envelopes. The friction angle will vary at different stress ranges. Strengths @5% strain

Fig. No.: ______

CLIENT: Lowney

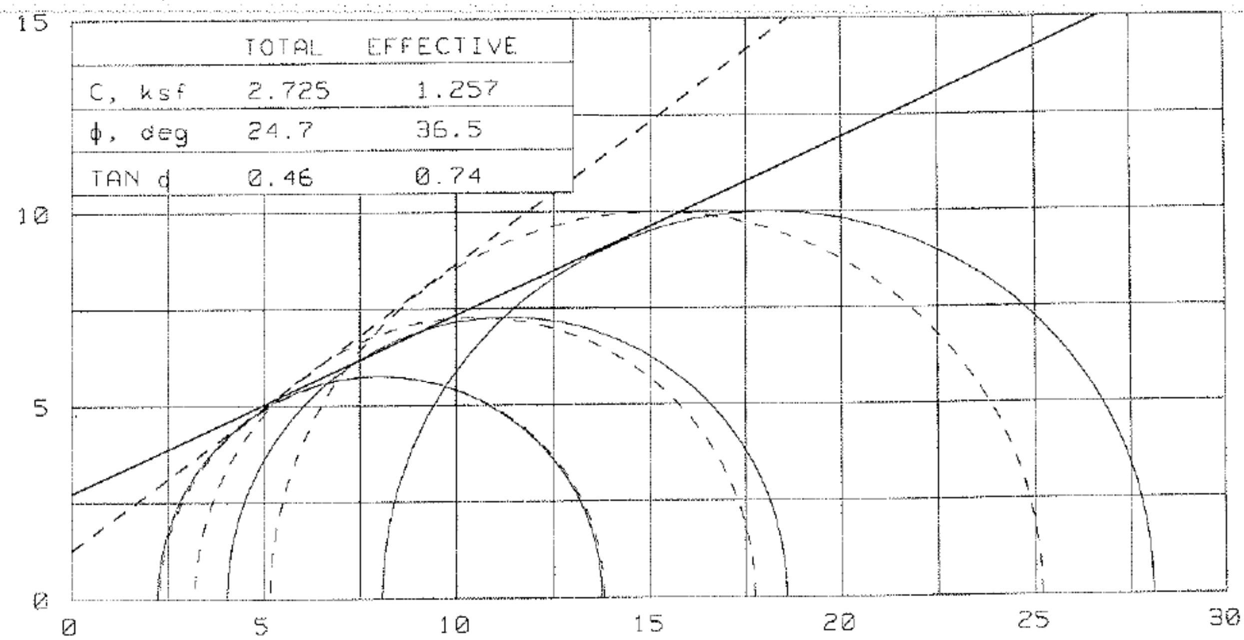
PROJECT: Dairy Hill - 568-19N

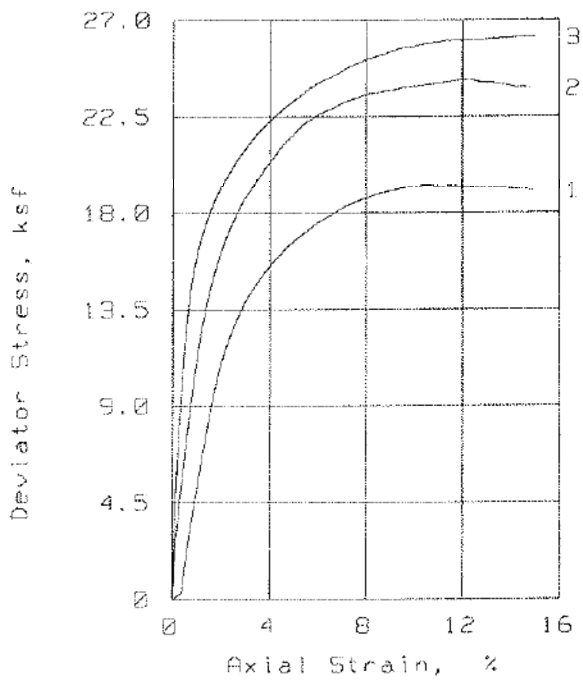
SAMPLE LOCATION: Bulk 1

PROJ. NO.: 0281274a DATE: 7/3/03

TRIAXIAL SHEAR TEST REPORT

COOPER TESTING LABORATORY





SAMPLE NO.:		1	2	3
INITIAL	WATER CONTENT, %	12.6	12.2	12.3
	DRY DENSITY, pcf	128.9	129.8	129.7
	SATURATION, %	99.3	98.7	98.8
	VOID RATIO	0.356	0.346	0.347
	DIAMETER, in	4.000	4.000	4.000
	HEIGHT, in	8.070	8.020	8.030
AT TEST	WATER CONTENT, %	13.4	13.3	13.0
	DRY DENSITY, pcf	127.1	127.3	128.2
	SATURATION, %	100.0	100.0	100.0
	VOID RATIO	0.375	0.373	0.364
	DIAMETER, in	4.042	4.051	4.039
	HEIGHT, in	8.014	7.972	7.970
Strain rate, %/min		0.03	0.03	0.03
EFF CELL PRESSURE, ksf		2.22	4.03	8.08
Deviator Stress, ksf		11.52	14.55	20.02
EXCESS PORE PR., ksf		-0.06	0.84	2.92
STRAIN, %		2.1	1.6	2.4
Ultimate Stress, ksf				
EXCESS PORE PR., ksf				
STRAIN, %				
$\bar{\sigma}_1$ FAILURE, ksf		13.80	17.74	25.17
$\bar{\sigma}_3$ FAILURE, ksf		2.28	3.20	5.16

TYPE OF TEST:
CU with Pore Pressures

SAMPLE TYPE: 95% of 136pcf @13%

DESCRIPTION: Brown Sandy GRAVEL with Silt

ASSUMED SPECIFIC GRAVITY= 2.8

REMARKS: Strengths picked at the peak stress ratios.

Fig. No.: ______

CLIENT: Lowney

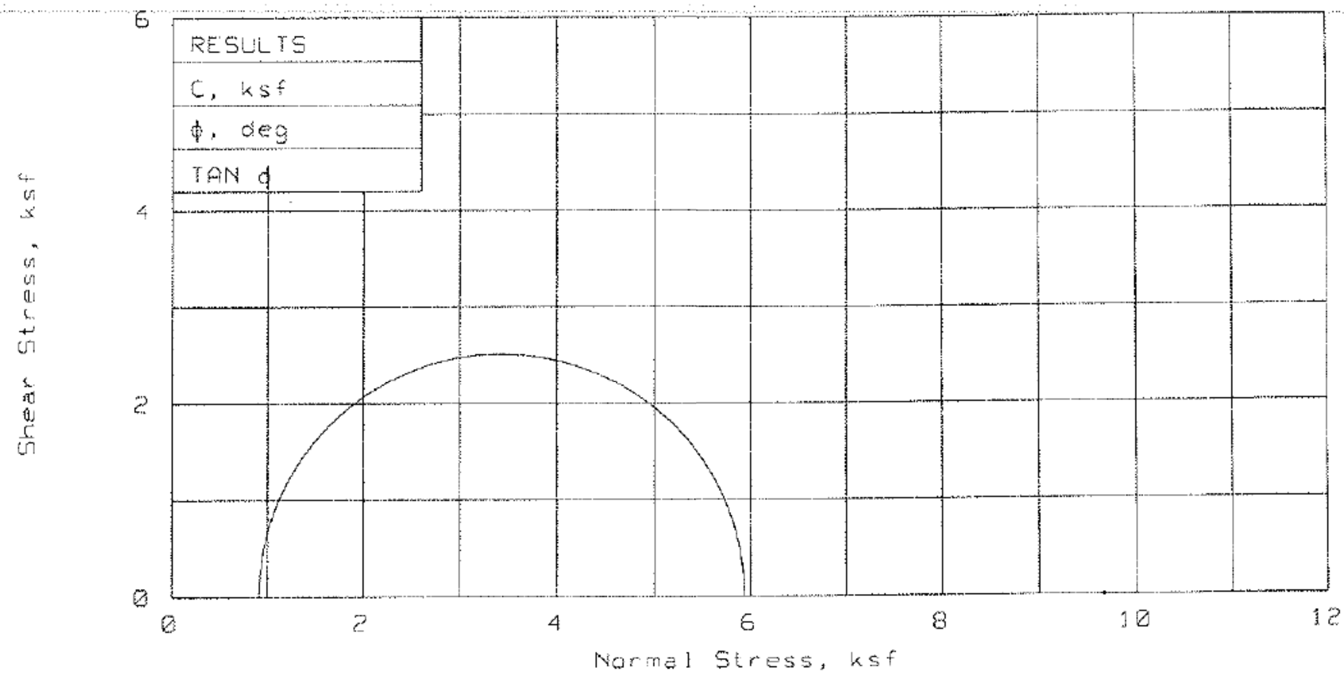
PROJECT: Dairy Hill - 568-19N

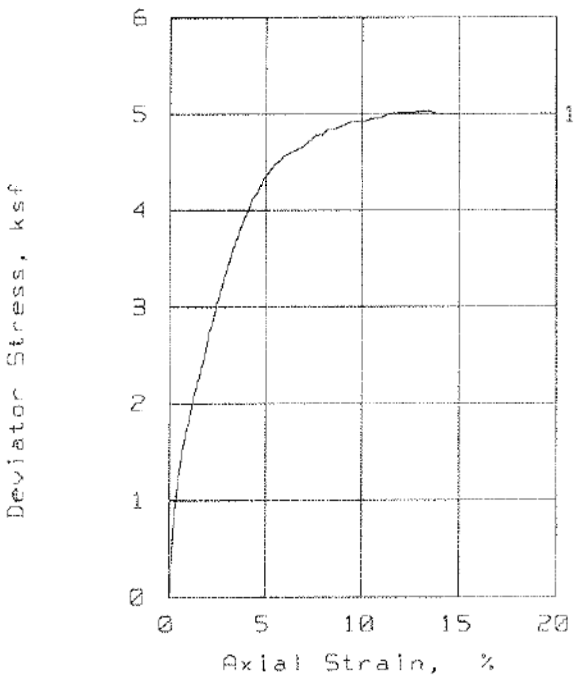
SAMPLE LOCATION: Bulk 1

PROJ. NO.: 0281274a DATE: 7/3/03

TRIAXIAL SHEAR TEST REPORT

COOPER TESTING LABORATORY





SAMPLE NO.:		1
INITIAL	WATER CONTENT, %	21.6
	DRY DENSITY, pcf	101.4
	SATURATION, %	88.3
	VOID RATIO	0.662
	DIAMETER, in	2.396
	HEIGHT, in	5.000
AT TEST	WATER CONTENT, %	21.6
	DRY DENSITY, pcf	101.4
	SATURATION, %	88.3
	VOID RATIO	0.662
	DIAMETER, in	2.396
	HEIGHT, in	5.000
Strain rate, %/min		1.00
BACK PRESSURE, ksf		0.000
CELL PRESSURE, ksf		0.907
DEVIATOR STRESS, ksf		5.029
STRAIN, %		13.5
ULT. STRESS, ksf		
STRAIN, %		
σ_1 FAILURE, ksf		5.936
σ_3 FAILURE, ksf		0.907

TYPE OF TEST:
Unconsolidated Undrained

SAMPLE TYPE: Undisturbed

DESCRIPTION: Lt. Olive Brown SILT, slightly plastic

ASSUMED SPECIFIC GRAVITY= 2.7

REMARKS:

Fig. No.: ______

CLIENT: Lowney

PROJECT: 568-19Q - Dairy Hill Storm Drain

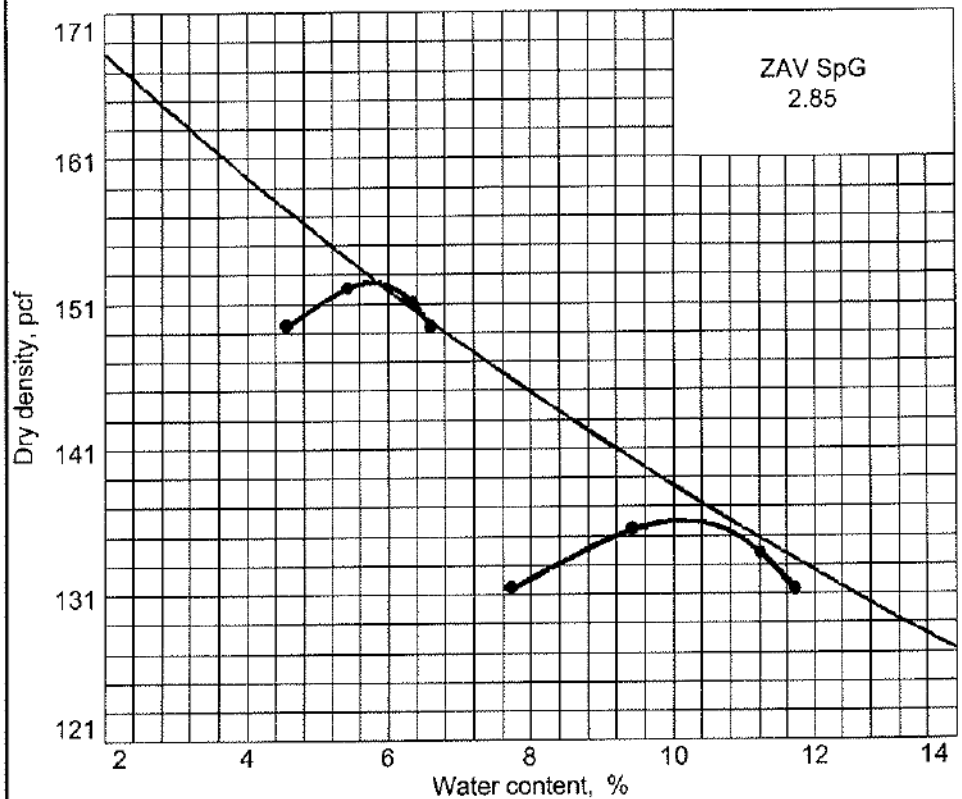
SAMPLE LOCATION: EB-5, 7A @ 16'

PROJ. NO.: 028-1321 DATE: 10/20/03

TRIAXIAL SHEAR TEST REPORT

COOPER TESTING LABORATORY

COMPACTION TEST REPORT



Curve No.

Test Specification:
ASTM D 1557-00 Procedure B Modified
Oversize correction applied to each point

Hammer Wt.: 10 lb.
Hammer Drop: 18 in.
Number of Layers: five
Blows per Layer: 25
Mold Size: .03333 cu.ft.

Test Performed on Material Passing 3/8 in. **Sieve**

Soil Data

NM ____ **Sp.G.** 2.7
LL ____ **PI** ____
%>3/8 in. 48.6 **%<#200** ____
USCS ____ **AASHTO** ____

TESTING DATA

	1	2	3	4	5	6
WM + WS	9.35	9.33	9.11	9.28		
WM	4.39	4.39	4.39	4.39		
WW + T #1	647.90	570.60	495.50	763.00		
WD + T #1	593.90	530.80	465.30	699.40		
TARE #1	113.30	108.70	74.80	157.10		
WW + T #2						
WD + T #2						
TARE #2						
MOISTURE	6.4	5.4	4.6	6.6		
DRY DENSITY	151.0	152.1	149.5	149.4		

ROCK CORRECTED TEST RESULTS	UNCORRECTED	Material Description
Maximum dry density = 152.5 pcf	136.0 pcf	brown sandy GRAVEL w/silt
Optimum moisture = 5.8 %	10.1 %	

Project No. 028-1274 **Client:** Lowney
Project: 568-19N

● **Source:** Bulk **Sample No.:** 1

Remarks:
Due to limited material the -3/4" material was tested in the 4" diameter mold. A rock correction was run but the compaction should be run again using the correct procedure when

COMPACTION TEST REPORT

COOPER TESTING LABORATORY

Plate

COOPER TESTING LABORATORY

Corrosivity Test Summary

CTL # 028-1354 **Date:** 12/17/2003 **Tested By:** PJ **Checked:** DC
Client: Lowney & Associates **Project:** Dairy Hill **Proj. No:** 991-17R
Remarks:

Sample Location or ID			Resistivity @ 15.5 °C (Ohm-cm)			Chloride	Sulfate-(water soluble)		pH	ORP	Moisture	Soil Visual Description
Boring	Sample, No.	Depth, ft.	As Rec.	Minimum	Saturated	mg/kg	mg/kg	%		(Redox)	As Received	
						Dry Wt.	Dry Wt.	Dry Wt.		mv	%	
			ASTM G57	Cal 643	ASTM G57	Cal 422-mod.	Cal 417-mod.	Cal 417-mod.	ASTM G51	SM 2580B	ASTM D2216	
pad 42,43	-	-	-	-	-	-	<5	<0.0005	-	-	23.4	Olive Brown Clayey SAND
pad 44,45	-	-	-	-	-	-	9	0.0009	-	-	24.8	Light Yellowish Brown Clayey SAND

COOPER TESTING LABORATORY

Corrosivity Test Summary

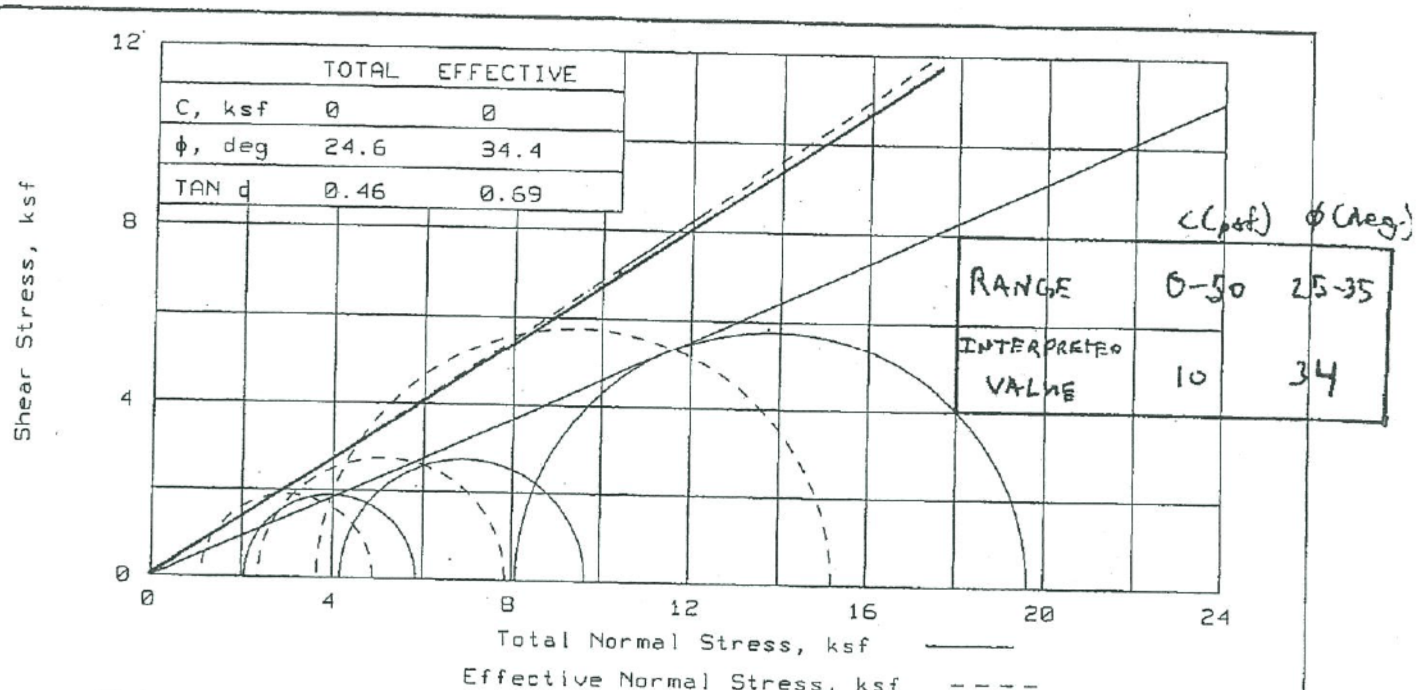
CTL # 028-1364 **Date:** 1/19/2004 **Tested By:** PJ **Checked:** PJ

Client: Lowney & Associates **Project:** Dairy Hill **Proj. No:** 56819-S

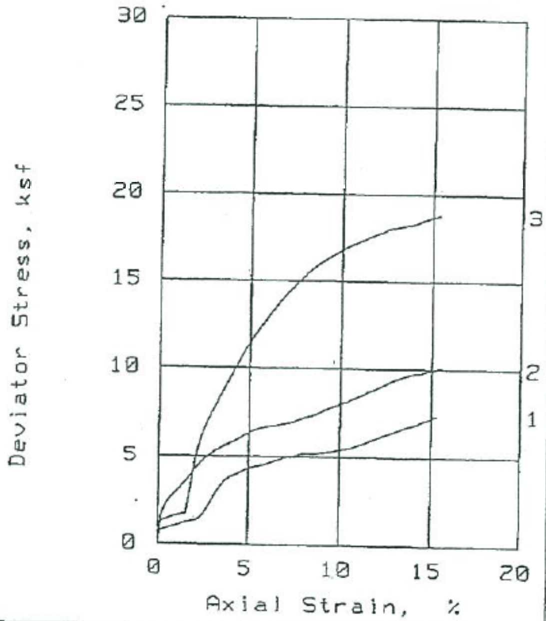
Remarks:

Sample Location or ID			Resistivity @ 15.5 °C (Ohm-cm)			Chloride	Sulfate-(water soluble)		pH	ORP	Moisture	Soil Visual Description
Boring	Sample, No.	Depth, ft.	As Rec.	Minimum	Saturated	mg/kg	mg/kg	%		(Redox)	As Received	
						Dry Wt.	Dry Wt.	Dry Wt.		mv	%	
			ASTM G57	Cal 643	ASTM G57	Cal 422-mod.	Cal 417-mod.	Cal 417-mod.	ASTM G51	SM 2580B	ASTM D2216	
A	-	Bucket	-	-	2,191	19	<5	<0.0005	7.5	-	13.0	Dark Grayish Brown SAND w/ Gravel
B	-	Bucket	-	-	3,424	3	<5	<0.0005	7.8	-	11.3	Olive Brown SAND w/ Gravel
C	-	Bucket	-	-	1,573	5	<5	<0.0005	7.6	-	14.6	Grayish Brown Clayey SAND
D	-	Bucket	-	-	2,584	32	<5	<0.0005	7.6	-	12.5	Reddish Brown Clayey SAND w/ Gravel

Lowney Associates – Villa Cortona – Laboratory Data (not on-site)



	TOTAL	EFFECTIVE
C, ksf	0	0
φ, deg	24.6	34.4
TAN φ	0.46	0.69



SAMPLE NO.:		1	2	3
INITIAL	WATER CONTENT, %	13.2	11.8	10.9
	DRY DENSITY, pcf	124.7	128.0	131.9
	SATURATION, %	96.7	95.3	99.4
	VOID RATIO	0.376	0.341	0.301
	DIAMETER, in	2.870	2.870	2.850
	HEIGHT, in	6.000	6.000	6.000
AT TEST	WATER CONTENT, %	13.8	12.7	12.3
	DRY DENSITY, pcf	124.4	127.3	128.2
	SATURATION, %	100.0	100.0	100.0
	VOID RATIO	0.380	0.349	0.339
	DIAMETER, in	2.890	2.918	2.915
	HEIGHT, in	5.935	5.838	5.902
Strain rate, %/min		0.03	0.03	0.03
EFF CELL PRESSURE, ksf		2.06	4.16	8.08
DEVIATOR STRESS, ksf		3.78	5.50	11.55
EXCESS PORE PR., ksf		0.95	1.80	4.44
STRAIN, %		3.9	3.4	5.1
ULT. STRESS, ksf				
EXCESS PORE PR., ksf				
STRAIN, %				
$\bar{\sigma}_1$ FAILURE, ksf		4.89	7.86	15.19
$\bar{\sigma}_3$ FAILURE, ksf		1.11	2.36	3.64

TYPE OF TEST:
CU with Pore Pressures
SAMPLE TYPE: Undisturbed
DESCRIPTION: Greenish Gray ROCK

ASSUMED SPECIFIC GRAVITY= 2.75
REMARKS: Strengths picked at peak stress ratios.

Fig. No.: ______

CLIENT: Lowney Associates

PROJECT: Villa Cortona - 2044-1

SAMPLE LOCATION: 1) EB-7, 6 @ 18'
2) EB-7, 7 @ 23' 3) EB-7, 8 @ 28'

PROJ. NO.: 28-1457b DATE: 7/23/04

TRIAXIAL SHEAR TEST REPORT

COOPER TESTING LABORATORY

Serpentine.

EXPLORATORY BORING: EB-7

DRILL RIG: FRASTE-MUD ROTARY
BORING TYPE: 2½-INCH
LOGGED BY: GAR
START DATE: 6-24-04 FINISH DATE: 6-24-04

PROJECT NO: 2044-1A
PROJECT: VILLA CORTONA
LOCATION: SAN JOSE, CA
COMPLETION DEPTH: 43.5 FT.

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Undrained Shear Strength (ksf): ○ Pocket Penetrometer; △ Torvane; ● Unconfined Compression; ▲ U-U Triaxial Compression (scale 1.0, 2.0, 3.0, 4.0)

ELEVATION (FT)	DEPTH (FT)	MATERIAL DESCRIPTION AND REMARKS	SOIL TYPE	PENETRATION RESISTANCE (BLOWS/FT.)	MOISTURE CONTENT (%)	DRY DENSITY (PCF)	PERCENT PASSING NO. 200 SIEVE
236.0	0	SURFACE ELEVATION: 236 FT. (+/-)					
		CLAYEY GRAVEL WITH SAND (GC) [FILL] dense, moist, brown, coarse subangular gravel clasts, fine to coarse sand, trace rootlets	GC, FILL	19			
232.0		**SERPENTINITE (Br) (fm)** olive to gray, fresh, friable, soft, weak, completetely weathered to clayey sand, carbonate coating along fractures	Br				
	5						
229.0		**GRAYWACKE (Br) (fm)** olive, moderately weathered, friable to moderately strong, moderately hard, some strong siltstone and serpentinite blocks, chaotic fabric, conglomeritic, iron staining along fractures					
	10						
		increase in serpentinite clasts	Br				
	15						
220.0		**SERPENTINITE (Br) (fm)** green, fresh, friable, low hardness, 2/16th inch thick near vertical reddish brown clay seams, highly altered, iron staining along fractures, severely weathered to clayey sand some weak/soft serpentinite					
	20						
			Br				
	25						
		some yellowish brown siltsone clasts within serpentinized matrix					
		becomes slightly silicious					
206.0	30						

Continued Next Page

GROUND WATER OBSERVATIONS:
NO FREE GROUND WATER ENCOUNTERED

EXPLORATORY BORING: EB-7 Cont'd

DRILL RIG: FRASTE-MUD ROTARY	PROJECT NO: 2044-1A
BORING TYPE: 2½-INCH	PROJECT: VILLA CORTONA
LOGGED BY: GAR	LOCATION: SAN JOSE, CA
START DATE: 6-24-04 FINISH DATE: 6-24-04	COMPLETION DEPTH: 43.5 FT.

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Undrained Shear Strength (ksf): ○ Pocket Penetrometer; △ Torvane; ● Unconfined Compression; ▲ U-U Triaxial Compression (scale 1.0, 2.0, 3.0, 4.0)

ELEVATION (FT)	DEPTH (FT)	SOIL LEGEND	MATERIAL DESCRIPTION AND REMARKS	SOIL TYPE	PENETRATION RESISTANCE (BLOWS/FT.)	SAMPLER	MOISTURE CONTENT (%)	DRY DENSITY (PCF)	PERCENT PASSING NO. 200 SIEVE	Undrained Shear Strength (ksf)
206.0	30		**SERPENTINITE (Br) (fm)** green, fresh, friable, low hardness, 2/16th inch thick near vertical reddish brown clay seams, highly altered, iron staining along fractures, severely weathered to clayey sand							
	35		becomes conglomeratic, chaotic fabric, highly altered, iron staining along fractures, some quartz fragments	Br						
	40									
192.5			Bottom of Boring at 43½ feet							
	45									
	50									
	55									
	60									

GROUND WATER OBSERVATIONS:

NO FREE GROUND WATER ENCOUNTERED

CA DOT.GDT 7/30/04 MV* EB

LOWNEYASSOCIATES

Environmental/Geotechnical/Engineering Services

EXPLORATORY BORING: EB-8

DRILL RIG: FRASTE-MUD ROTARY
BORING TYPE: 2½-INCH
LOGGED BY: NB
START DATE: 7-2-04 FINISH DATE: 7-2-04

PROJECT NO: 2044-1A
PROJECT: VILLA CORTONA
LOCATION: SAN JOSE, CA
COMPLETION DEPTH: 41.0 FT.

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MATERIAL DESCRIPTION AND REMARKS

SURFACE ELEVATION: 258 FT. (+/-)

Undrained Shear Strength (ksf): ○ Pocket Penetrometer; △ Torvane; ● Unconfined Compression; ▲ U-U Triaxial Compression (scale 1.0, 2.0, 3.0, 4.0)

ELEVATION (FT)	DEPTH (FT)	MATERIAL DESCRIPTION AND REMARKS	SOIL TYPE	PENETRATION RESISTANCE (BLOWS/FT.)	MOISTURE CONTENT (%)	DRY DENSITY (PCF)	PERCENT PASSING NO. 200 SIEVE
258.0	0	**SANDY LEAN CLAY WITH GRAVEL (CL) [FILL]** hard, moist, brown, some medium to coarse sand, fine gravel, moderate plasticity					
	~4		CL, FILL	39	11		
	~7.5	becomes very stiff		22	15	125	
250.0	8	**CLAYEY SAND WITH GRAVEL (SC) [FILL]** dense, moist, yellowish brown to brown, some fine to medium sand, coarse subangular serpentinite and siltstone clasts, trace rootlets					
	10			27	12	128	
	~13		SC, FILL	34	13	126	
242.0	16	**GRAYWACKE (Br) (fm)** dark gray, fine sandstone, with some subangular fine grained fragments		33	16	106	
	20	dark gray, highly weathered shale with orange staining in parting surfaces					
228.0	30						

Continued Next Page

GROUND WATER OBSERVATIONS:
NO FREE GROUND WATER ENCOUNTERED

CA_DOT.GDT 7/30/04 MV* EB

LOWNEYASSOCIATES
Environmental/Geotechnical/Engineering Services

EXPLORATORY BORING: EB-8 Cont'd

DRILL RIG: FRASTE-MUD ROTARY
BORING TYPE: 2½-INCH
LOGGED BY: NB
START DATE: 7-2-04 FINISH DATE: 7-2-04

PROJECT NO: 2044-1A
PROJECT: VILLA CORTONA
LOCATION: SAN JOSE, CA
COMPLETION DEPTH: 41.0 FT.

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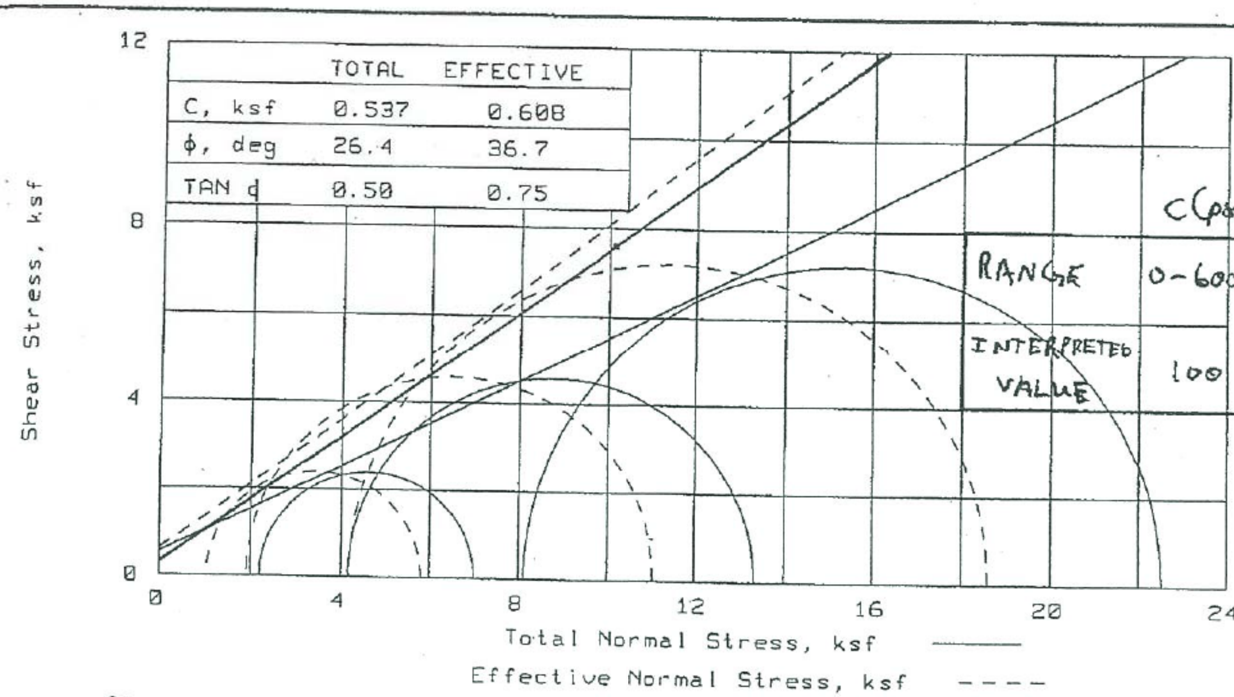
Undrained Shear Strength (ksf): ○ Pocket Penetrometer; △ Torvane; ● Unconfined Compression; ▲ U-U Triaxial Compression (scale 1.0, 2.0, 3.0, 4.0)

ELEVATION (FT)	DEPTH (FT)	SOIL LEGEND	MATERIAL DESCRIPTION AND REMARKS	SOIL TYPE	PENETRATION RESISTANCE (BLOWS/FT.)	SAMPLER	MOISTURE CONTENT (%)	DRY DENSITY (PCF)	PERCENT PASSING NO. 200 SIEVE
228.0	30		**GRAYWACKE (Br) (fm)** dark gray, fine sandstone, with some subangular fine grained fragments; with some dark orange gray, shale with yellow-orange, heavy iron staining on fracture surfaces						
223.0	35		**SANDSTONE (Br) (fm)** dark gray to gray weathered, heavy iron staining/coatings on fractured surfaces						
217.0	40		Bottom of Boring at 41 feet						
	45								
	50								
	55								
	60								

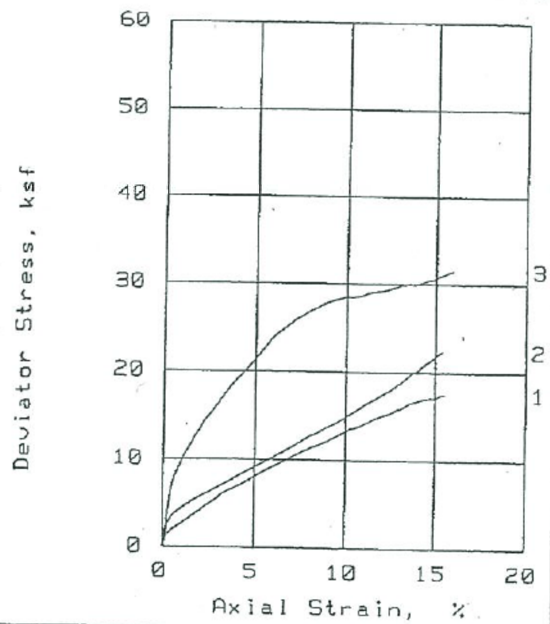
GROUND WATER OBSERVATIONS:
NO FREE GROUND WATER ENCOUNTERED

CA_DOT.GDT 7/30/04 MV" EB

LOWNEYASSOCIATES
Environmental/Geotechnical/Engineering Services



	C (psf)	φ (deg)
RANGE	0-600	26-37
INTERPRETED VALUE	100	36



	SAMPLE NO.:	1	2	3
INITIAL	WATER CONTENT, %	9.5	8.0	9.0
	DRY DENSITY, pcf	136.7	130.3	137.0
	SATURATION, %	94.9	65.6	91.9
	VOID RATIO	0.279	0.341	0.276
	DIAMETER, in	2.870	2.870	2.870
	HEIGHT, in	5.810	5.930	5.810
AT TEST	WATER CONTENT, %	10.4	12.1	8.7
	DRY DENSITY, pcf	135.4	130.5	140.6
	SATURATION, %	100.0	100.0	100.0
	VOID RATIO	0.291	0.339	0.243
	DIAMETER, in	2.891	2.884	2.855
	HEIGHT, in	5.780	5.862	5.720
Strain rate, %/min			0.03	0.03
EFF CELL PRESSURE, ksf		2.20	4.16	8.11
DEVIATOR STRESS, ksf		4.80	9.18	14.44
EXCESS PORE PR., ksf		1.18	2.26	3.93
STRAIN, %		2.4	5.0	2.3
ULT. STRESS, ksf				
EXCESS PORE PR., ksf				
STRAIN, %				
$\bar{\sigma}_1$ FAILURE, ksf		5.82	11.08	18.61
$\bar{\sigma}_3$ FAILURE, ksf		1.02	1.90	4.18

TYPE OF TEST:
CU with Pore Pressures

SAMPLE TYPE: Undisturbed

DESCRIPTION: Reddish Brown ROCK

ASSUMED SPECIFIC GRAVITY= 2.8

REMARKS: Nonlinear strength envelope. Linear best fit may overstate apparent cohesion. Strengths@peak stress ratios.

Fig. No.: ______

CLIENT: Lowney Associates

PROJECT: Villa Cortona - 2044-1

SAMPLE LOCATION: 1)& 2) EB-6, 3 @ 10'
3) EB-6, 5 @ 20'

PROJ. NO.: 28-1457a DATE: 7/23/04

TRIAXIAL SHEAR TEST REPORT

COOPER TESTING LABORATORY

Sandstone

EXPLORATORY BORING: EB-6

DRILL RIG: FRASTE-MUD ROTARY	PROJECT NO: 2044-1A
BORING TYPE: 2½-INCH	PROJECT: VILLA CORTONA
LOGGED BY: GAR	LOCATION: SAN JOSE, CA
START DATE: 6-24-04 FINISH DATE: 6-24-04	COMPLETION DEPTH: 21.0 FT.

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Undrained Shear Strength (ksf): ○ Pocket Penetrometer; △ Torvane; ● Unconfined Compression; ▲ U-U Triaxial Compression (scale 1.0, 2.0, 3.0, 4.0)

ELEVATION (FT)	DEPTH (FT)	MATERIAL DESCRIPTION AND REMARKS	SOIL TYPE	PENETRATION RESISTANCE (BLOWS/FT.)	SAMPLER	MOISTURE CONTENT (%)	DRY DENSITY (PCF)	PERCENT PASSING NO. 200 SIEVE
212.0	0	SURFACE ELEVATION: 212 FT. (+/-)						
		CLAYEY GRAVEL WITH SAND (GC) [Colluvium] dense, dry to moist, reddish brown, fine serpentine and siltstone clasts, some fine to coarse sand, trace rootlets	GC	26				
208.5		**GRAYWACKE (Br) (fm)** olive to gray, slightly to moderately weathered, strong, hard, iron staining along fractures	Br					
	5							
	10							
	15	becomes slightly weathered						
	20							
191.0		Bottom of Boring at 21 feet						
	25							
	30							

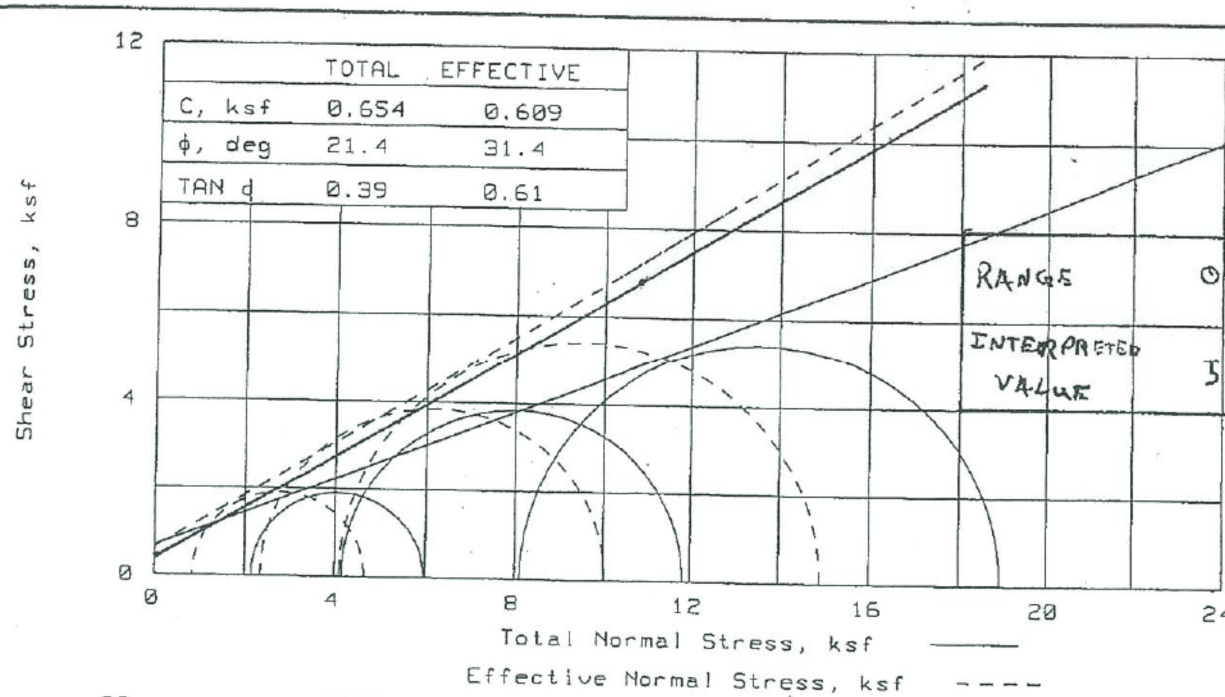
GROUND WATER OBSERVATIONS:

NO FREE GROUND WATER ENCOUNTERED

CA DOT.GDT 7/30/04 MV ER

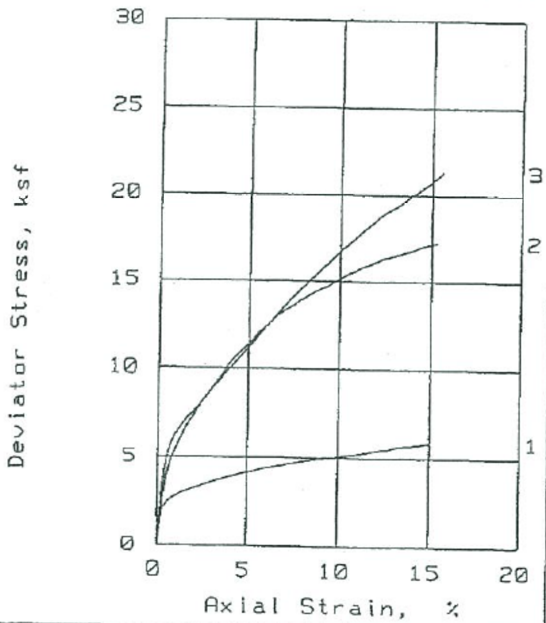
LOWNEYASSOCIATES

Environmental/Geotechnical/Engineering Services



	TOTAL	EFFECTIVE
C, ksf	0.654	0.609
ϕ, deg	21.4	31.4
TAN ϕ	0.39	0.61

	c (psf)	ϕ (deg)
RANGE	0-600	21-31
INTERPRETED VALUE	500	31



SAMPLE NO.:		1	2	3
INITIAL	WATER CONTENT, %	28.9	18.6	14.5
	DRY DENSITY, pcf	89.6	106.6	116.9
	SATURATION, %	88.4	86.2	88.4
	VOID RATIO	0.881	0.582	0.441
	DIAMETER, in	2.870	2.870	2.870
	HEIGHT, in	6.000	6.000	5.940
AT TEST	WATER CONTENT, %	27.2	18.6	16.1
	DRY DENSITY, pcf	97.2	112.2	117.5
	SATURATION, %	100.0	100.0	100.0
	VOID RATIO	0.734	0.503	0.434
	DIAMETER, in	2.767	2.810	2.899
	HEIGHT, in	5.950	5.946	5.795
Strain rate, %/min		0.03	0.03	0.03
EFF CELL PRESSURE, ksf		2.15	4.15	8.11
DEVIATOR STRESS, ksf		3.81	7.68	10.83
EXCESS PORE PR., ksf		1.30	1.80	4.02
STRAIN, %		3.6	2.2	4.7
ULT. STRESS, ksf				
EXCESS PORE PR., ksf				
STRAIN, %				
$\bar{\sigma}_1$ FAILURE, ksf		4.66	10.03	14.92
$\bar{\sigma}_3$ FAILURE, ksf		0.85	2.35	4.09

TYPE OF TEST:
CU with Pore Pressures
SAMPLE TYPE: Undisturbed
DESCRIPTION: 1)Grn-Gray weath. ROCK w/Clay 2&3)See "Remarks"

ASSUMED SPECIFIC GRAVITY= 2.7
REMARKS: 2) Greenish Gray ROCK
3) Greenish Gray weath. ROCK
Strengths @peak stress ratios
Nonlinear envelope.
Fig. No.: ______

CLIENT: Lowney Associates

PROJECT: Villa Cortona - 2044-1

SAMPLE LOCATION: 1) EB-5, 3 @ 8'
2) EB-5, 5 @ 15' 3) EB-5, 6 @ 18'

PROJ. NO.: 28-1457C DATE: 7/21/04

TRIAXIAL SHEAR TEST REPORT

COOPER TESTING LABORATORY

Serpentinite

EXPLORATORY BORING: EB-5

DRILL RIG: FRASTE-MUD ROTARY	PROJECT NO: 2044-1A
BORING TYPE: 2½-INCH	PROJECT: VILLA CORTONA
LOGGED BY: GAR	LOCATION: SAN JOSE, CA
START DATE: 6-24-04 FINISH DATE: 6-24-04	COMPLETION DEPTH: 29.5 FT.

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Undrained Shear Strength (ksf): ○ Pocket Penetrometer; △ Torvane; ● Unconfined Compression; ▲ U-U Triaxial Compression (scale 1.0, 2.0, 3.0, 4.0)

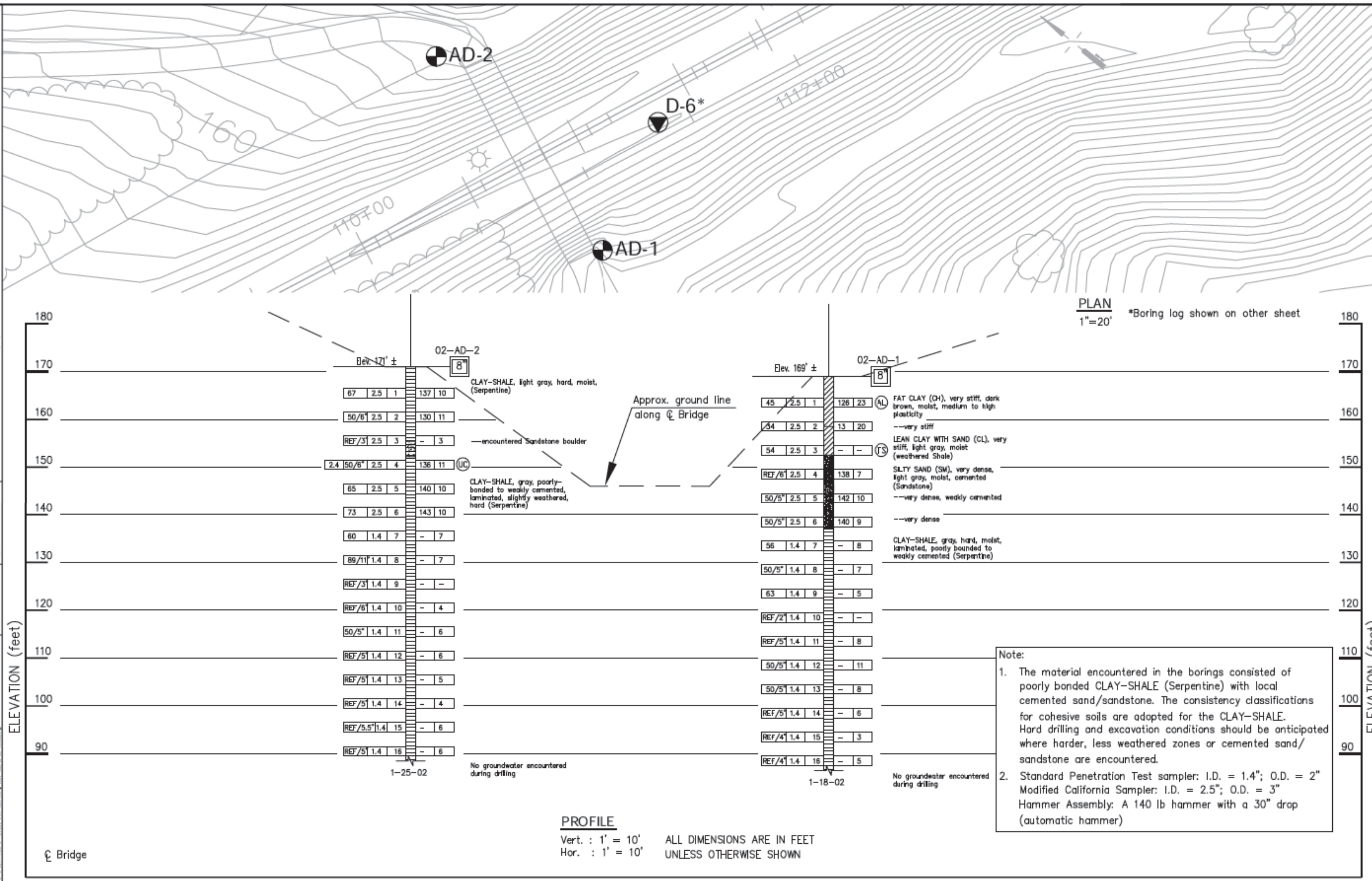
ELEVATION (FT)	DEPTH (FT)	MATERIAL DESCRIPTION AND REMARKS	SOIL TYPE	PENETRATION RESISTANCE (BLOWS/FT.)	SAMPLER	MOISTURE CONTENT (%)	DRY DENSITY (PCF)	PERCENT PASSING NO. 200 SIEVE
205.0	0	SURFACE ELEVATION: 205 FT. (+/-) **CLAYEY SAND WITH GRAVEL (SC) [FILL]** medium dense, dry, yellowish brown to brown, subangular coarse gravel, fine to coarse sand, trace rootlets, low plasticity	SC, FILL	17				
201.0	5	**LEAN CLAY (CL) [Colluvium]** stiff, moist, reddish brown, some fine sand, subangular fine gravel, trace rootlets, moderate plasticity becomes olive	CL					
196.0	10, 15, 20, 25	**SERPENTINITE (Br) (sp)** dark green, slightly weathered, strong, moderately hard to hard, tight, subvertical fractures, iron oxide staining along fractures, slightly silicious	Br					
175.5	30	Bottom of Boring at 29½ feet						

GROUND WATER OBSERVATIONS:
NO FREE GROUND WATER ENCOUNTERED

CA_DOT.GDT 7/30/04 MV" EB

LOWNEYASSOCIATES
Environmental/Geotechnical/Engineering Services

Parikh – Caltrain Track – Overhead Bridge Project – Field and Laboratory Data



02—AD—2

	67	2.5	1	137	10
	50/6"	2.5	2	130	11
	REF/3"	2.5	3	–	3
2.4	50/6"	2.5	4	136	11
	65	2.5	5	140	10
	73	2.5	6	143	10
	60	1.4	7	–	7
	89/11"	1.4	8	–	7
	REF/3"	1.4	9	–	–
	REF/6"	1.4	10	–	4
	50/5"	1.4	11	–	6
	REF/5"	1.4	12	–	6
	REF/5"	1.4	13	–	5
	REF/5"	1.4	14	–	4
	REF/5.5"	1.4	15	–	6
	REF/5"	1.4	16	–	6

02—AD—1

45	2.5	1	126	23
54	2.5	2	13	20
54	2.5	3	–	–
REF/6"	2.5	4	138	7
50/5"	2.5	5	142	10
50/5"	2.5	6	140	9
56	1.4	7	–	8
50/5"	1.4	8	–	7
63	1.4	9	–	5
REF/2"	1.4	10	–	–
REF/5"	1.4	11	–	8
50/5"	1.4	12	–	11
50/5"	1.4	13	–	8
REF/5"	1.4	14	–	6
REF/4"	1.4	15	–	3
REF/4"	1.4	16	–	5

Note:

1. The material encountered in the borings consisted of poorly bonded CLAY—SHALE (Serpentine) with local cemented sand/sandstone. The consistency classifications for cohesive soils are adopted for the CLAY—SHALE. Hard drilling and excavation conditions should be anticipated where harder, less weathered zones or cemented sand/sandstone are encountered.
2. Standard Penetration Test sampler: I.D. = 1.4"; O.D. = 2"
Modified California Sampler: I.D. = 2.5"; O.D. = 3"
Hammer Assembly: A 140 lb hammer with a 30" drop (automatic hammer)

LEGEND OF BORING OPERATIONS

IN-SITU, LAB & FIELD TEST DESIGNATIONS

TYPES OF BORINGS

LEGEND OF EARTH MATERIALS (USCS) BASED ON ASTM D2487, D2488

CONSISTENCY CLASSIFICATION FOR SOILS According to the Standard Penetration Test (ASTM D-1586)

RECORD DRAWING

The information is based on redlined drawings and data provided by project personnel, which was not personally verified by the Architect/Engineer of record. Project completion date February, 2004.

DATE 04—20—04 | DRAWING C605G009.DWG

DESIGNED DAVID WANG
DRAWN FRANK WANG
CHECKED DAVID WANG
CADD FILE NAME C605G009.DWG

SUBMITTED DMJM HARRIS
1330 BROADWAY, SUITE 1001 OAKLAND, CALIFORNIA 94612
TEL: (510) 645-4450 FAX: (510) 645-4467

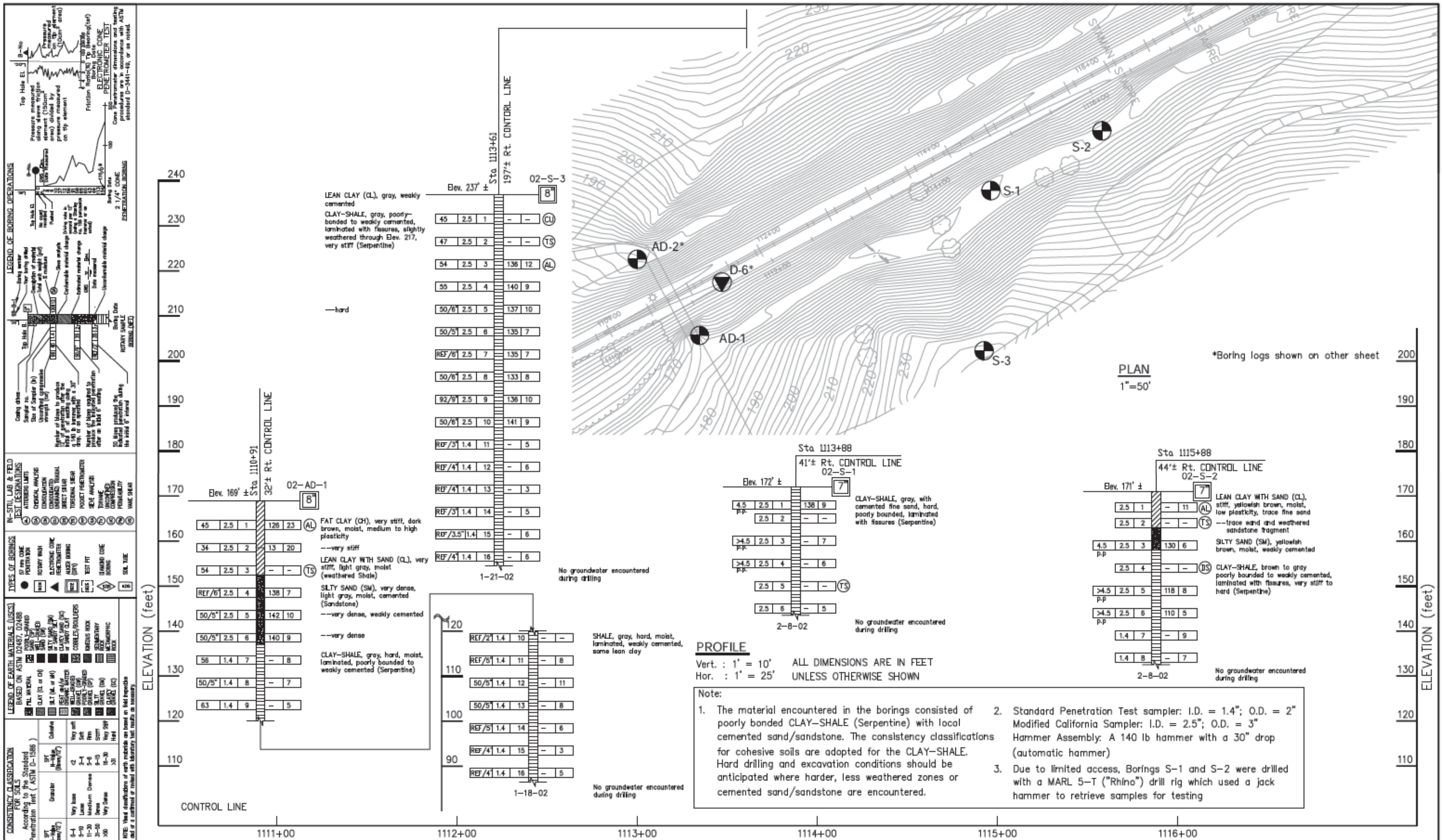
PARIKH CONSULTANTS INC.
GEOTECHNICAL CONSULTANTS AND MATERIALS TESTING
461 Valley Way, Milpitas, CA, 95035
Tel: (408) 945-1011 Fax: (408) 945-1012

SANTA CLARA Valley Transportation Authority
Caltrain
UNION PACIFIC RAILROAD

REGISTERED PROFESSIONAL ENGINEER GARY PARIKH No. G.E. 666 Exp. 12/31/05 GEOTECHNICAL STATE OF CALIFORNIA

CALTRAIN TRACK IMPROVEMENT PROJECT
TAMIEN TO LICK
AMERICAN DIARY OVERHEAD BRIDGE
LOG OF TEST BORINGS
SHEET 1 OF 1

SHEET 128 OF 140
DRAWING NO. S047
REVISION CRD
CONTRACT NO. C605



Note:

1. The material encountered in the borings consisted of poorly bonded CLAY-SHALE (Serpentine) with local cemented sand/sandstone. The consistency classifications for cohesive soils are adopted for the CLAY-SHALE. Hard drilling and excavation conditions should be anticipated where harder, less weathered zones or cemented sand/sandstone are encountered.
2. Standard Penetration Test sampler: I.D. = 1.4"; O.D. = 2" Modified California Sampler: I.D. = 2.5"; O.D. = 3" Hammer Assembly: A 140 lb hammer with a 30" drop (automatic hammer)
3. Due to limited access, Borings S-1 and S-2 were drilled with a MARL 5-T ("Rhino") drill rig which used a jack hammer to retrieve samples for testing

RECORD DRAWING

The information is based on redlined drawings and data provided by project personnel, which was not personally verified by the Architect/Engineer of record. Project completion date February, 2004.

DATE 04-21-04 | DRAWING C605I006.DWG

DESIGNED DAVID WANG
DRAWN FRANK WANG
CHECKED DAVID WANG
CADD FILE NAME C605I006.DWG

SUBMITTED DMJM HARRIS
PARIKH CONSULTANTS INC.
GEOTECHNICAL CONSULTANTS AND MATERIALS TESTING
461 Valley Way, Milpitas, CA. 95035
Tel: (408) 945-1011 Fax (408) 945-1012

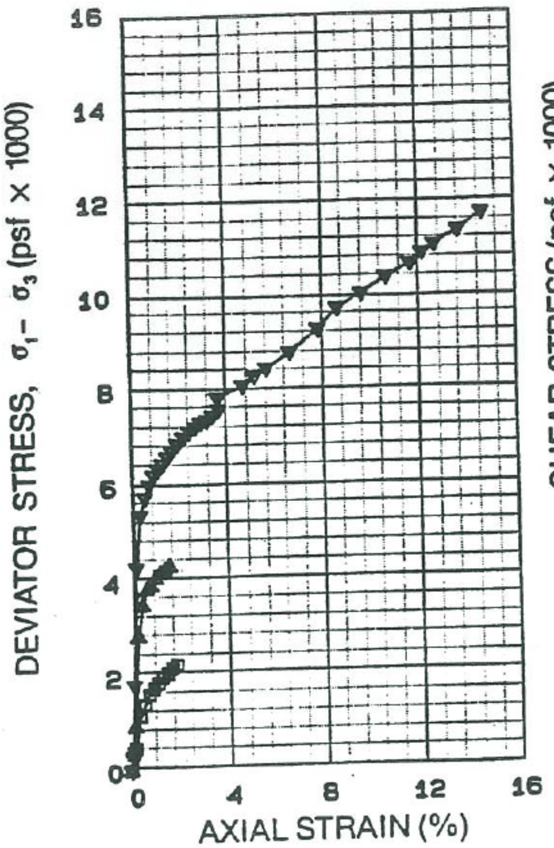
VTA Santa Clara Valley Transportation Authority
Caltrain
Union Pacific Railroad

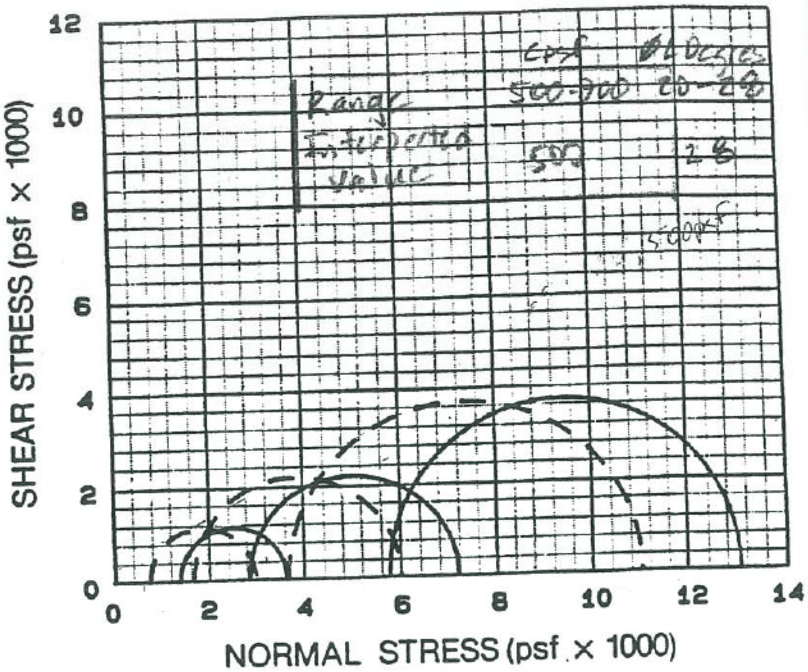
REGISTERED PROFESSIONAL ENGINEER GARY PARIKH No. G.E. 666 Exp. 12/31/05 GEOTECHNICAL STATE OF CALIFORNIA

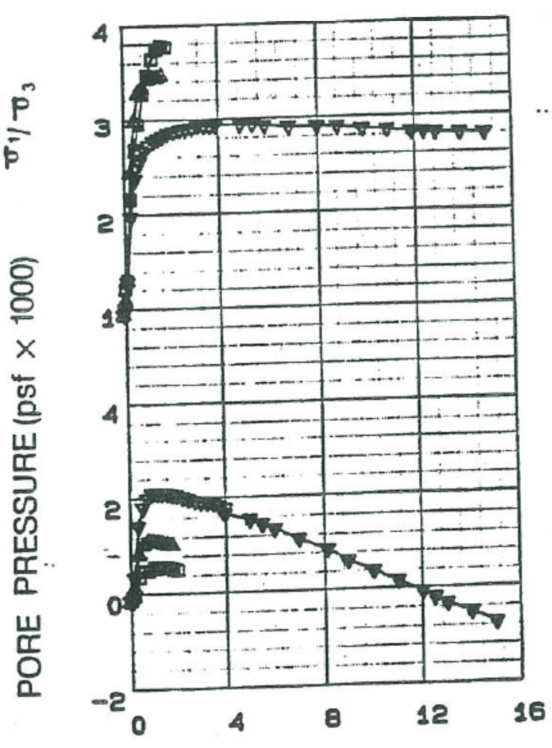
CALTRAIN TRACK IMPROVEMENT PROJECT
TAMIEN TO LICK
TIEBACK ANCHOR WALL
LOG OF TEST BORINGS
SHEET 1 OF 1

CONTRACT NO. C605
SHEET 140 OF 140
DRAWING NO. S066
REVISION CRD

Bechtel – Pullman Way Maintenance Facility – Laboratory Data (not on-site)







TEST TYPE: CONSOLIDATED UNDRAINED — Controlled STRAIN

	PHYSICAL CONDITIONS	TEST NO. A ▣	TEST NO. B ▲	TEST NO. C ▼
INITIAL	Diameter (in.)	2.88	2.88	2.88
	Height (in.)	5.86	5.86	5.86
	Water Content (%)	14.8	14.8	14.8
	Void Ratio	0.441	0.441	0.441
	Saturation (%)	90.7	90.7	90.7
	Dry Density (pcf)	117	117	117
BEFORE	Consolidation Pressure (psf)	1440	2880	5760
	Backpressure (psf)	7488	7488	7488
	Water Content (%)	16.3	15.5	14.5
	Void Ratio	0.441	0.419	0.392
FINAL	Water Content (%)	17.1	16.7	16.3
	Dry Density (pcf)	115	116	117
	Void Ratio	0.463	0.452	0.439
	Saturation (%)	100.0	100.0	100.0
FAILURE	σ_1 Major Principal Stress (psf)	3010	5998	10996
	σ_3 Minor Principal Stress (psf)	792	1714	3701
	Pore Pressure (psf)	648	1166	2059
	Axial Strain at Failure (%)	2.0	1.8	3.3
	Time to Failure (min.)	44	35	18

Sample Source: Y-11 @ 70.0 FT

Classification: GRN. CLAYEY SAND (SC) SERPINTINE — G_s 2.70

PLATE

Harding Lawson Associates
Engineers, Geologists & Geophysicists

Triaxial Compression Test

DRAWN	JOB NUMBER	APPROVED	DATE	REVISED	DATE
	21343-3684	KPC	10-22-1992		

SES – Comm Hill – Field Data

5-1

SES STRATEGIC ENGINEERING & SCIENCE

Boring Log EB-1

PROJECT NUMBER 064 DATE DRILLED May 10, 2007
PROJECT NAME Comm Hill BORING NUMBER EB-1
LOCATION San Jose SHEET 1 OF 1
DRILLING COMPANY RST DRILLING METHOD DP
SAMPLED BY CMV LOGGED BY CMV REVIEWED BY
DEPTH TO WATER TIME - DATE

PID / FID / Hnu /OVA (ppm)	Well Detail	Time, Sample Collection	Recovery (ft/ft)	Depth (feet)	Sample Interval	Soil/Rock Symbol	Graphic Log	FIELD SOIL DESCRIPTION / INTERPRETATION
				0				Silty Sand gravel, light brn, dry (fill) 2.5' Af
		10:22						
								Silty Clay, dark brn, dry, trace fine gravel some light gray material mixed in fine rootlets
				5				
		10:42		4				mottling increasing lighter brn calcium carbonate ↓ increasing trace sand + gravel
								mottling of dk brn, greenish gray + light brn calcium carbonate
				10				Clay stone bedrock
				12				12' Bottom of boring
				5				
				0				

5-2

STRATEGIC ENGINEERING & SCIENCE

Boring Log EB-2

PROJECT NUMBER 064 DATE DRILLED 5/10/07
PROJECT NAME Comm Hill BORING NUMBER EB-2
LOCATION San Jose SHEET 1 OF 1
DRILLING COMPANY RSI DRILLING METHOD DP
SAMPLED BY CMV LOGGED BY CMV REVIEWED BY
DEPTH TO WATER TIME DATE

PID / FID / Hnu /OVA (ppm)	Well Detail	Time, Sample Collection	Recovery (ft/ft)	Depth (feet)	Sample Interval	Soil/Rock Symbol	Graphic Log	FIELD SOIL DESCRIPTION / INTERPRETATION
				0				silty clay ~~dry~~ w/ gravel dry pieces of dark material (fill) light brn
		11:05						
								silty clay w/gravel, ~~dry~~ ~~fine~~ gravel (fill) Dk brn + light brn mix
								5' of Af
				5				
		11:45						reddish brn rock fragments
								Silty clay, dark brn / dark grayish brn, trace fine grav. rootlets
								8' Bottom of boring
				0				
				5				
				0				

4-3

STRATEGIC ENGINEERING & SCIENCE

Boring Log EB-3

PROJECT NUMBER 064 DATE DRILLED 5/10/07
PROJECT NAME Comm Hill BORING NUMBER EB-3
LOCATION SJ SHEET 1 OF 1
DRILLING COMPANY RSI DRILLING METHOD DP
SAMPLED BY CMV LOGGED BY CMV REVIEWED BY
DEPTH TO WATER TIME DATE

PID / FID / Hnu /OVA (ppm)	Well Detail	Time, Sample Collection	Recovery (ft/ft)	Depth (feet)	Sample Interval	Soil/Rock Symbol	Graphic Log	FIELD SOIL DESCRIPTION / INTERPRETATION
				0				silt clay w/ sands + gravel (fill) light brn to dk brn mix
								7' of fill
		12:00						Dark/Blk pieces of material 4Pcd
				5				silty clay, ~~trace~~ gravel (fill) dk brn w/ yellowish brn mottling ~~calcium~~
		12:40						
								silty clay, trace fine gravel, dk brn/dk grayish brn (N)
								8" Bottom of boring
				0				
				5				
				0				

5-4

SES STRATEGIC ENGINEERING & SCIENCE

Boring Log

EB-4

PROJECT NUMBER 064 DATE DRILLED 5/10/07
PROJECT NAME Comm Hill BORING NUMBER EB-4
LOCATION S.J. SHEET 1 OF 1
DRILLING COMPANY RSI DRILLING METHOD DP
SAMPLED BY GMW LOGGED BY GMW REVIEWED BY
DEPTH TO WATER TIME DATE

PID / FID / Hnu /OVA (ppm)	Well Detail	Time, Sample Collection	Recovery (ft/ft)	Depth (feet)	Sample Interval	Soil/Rock Symbol	Graphic Log	FIELD SOIL DESCRIPTION / INTERPRETATION
				0				Dk brn silty clay, w/gravel organics (fill)
		12:40						Silty clay w/ trace fine gravel very stiff brn increasing calcium carbonate. 6' of fill
		12:48		5 (6')				
								Clay stone bedrock
								8' Bottom of boring
				0				
				5				
				0				

SES STRATEGIC ENGINEERING & SCIENCE

Boring Log

EB-5

PROJECT NUMBER 0164 DATE DRILLED 5/10/07
PROJECT NAME Comm Hill BORING NUMBER EB-5
LOCATION S.J. SHEET 1 OF 1
DRILLING COMPANY RSI DRILLING METHOD DP
SAMPLED BY CMV LOGGED BY CMV REVIEWED BY
DEPTH TO WATER TIME DATE

PID / FID / Hnu /OVA (ppm)	Well Detail	Time, Sample Collection	Recovery (ft/ft)	Depth (feet)	Sample Interval	Soil/Rock Symbol	Graphic Log	FIELD SOIL DESCRIPTION / INTERPRETATION
		13:40		0				Silty clay w/gravel loose light brn dry
								Siltyclay. w/~~gravel~~ trace fine gravel stiff mottling (fill) dk brn Calcium carbonate
		12:57						Dk gray w/ blk material (Fill) gravel
				5				Silty clay, trace ~~[illegible]~~ sand + gravel, light brn rootlets
								Claystone bedrock reddish.brn, greenish gray
								8" Bottom of Boring
				0				
				5				
				0				

5-5

SES STRATEGIC ENGINEERING & SCIENCE

Boring Log EB-6

PROJECT NUMBER 064 DATE DRILLED 5/10/07
PROJECT NAME Comm Hill BORING NUMBER EB-6
LOCATION SJ SHEET 1 OF 1
DRILLING COMPANY RSI DRILLING METHOD DP
SAMPLED BY CMV LOGGED BY CMV REVIEWED BY
DEPTH TO WATER TIME DATE

PID / FID / Hnu /OVA (ppm)	Well Detail	Time, Sample Collection	Recovery (ft/ft)	Depth (feet)	Sample Interval	Soil/Rock Symbol	Graphic Log	FIELD SOIL DESCRIPTION / INTERPRETATION
				0				Silty clay, with gravel, dry (fill)
		14:05						
		13:58						silty sand, reddish grey (fill) w/ gravel brn
				5				Silty clay, stiff rootlets dk brn/dk gray calcium carbonate
		14:14						
								8' Bottom of boring
				0				
				5				
				0				

SES STRATEGIC ENGINEERING & SCIENCE

Boring Log

EB-7

PROJECT NUMBER 064 DATE DRILLED 5/10/07
PROJECT NAME Comm Hill BORING NUMBER EB-7
LOCATION SJ SHEET 1 OF 1
DRILLING COMPANY RSI DRILLING METHOD DP
SAMPLED BY CMV LOGGED BY CMV REVIEWED BY ______
DEPTH TO WATER ______ TIME ______ DATE ______

PID / FID / Hnu /OVA (ppm)	Well Detail	Time, Sample Collection	Recovery (ft/ft)	Depth (feet)	Sample Interval	Soil/Rock Symbol	Graphic Log	FIELD SOIL DESCRIPTION / INTERPRETATION
				0				Gravel greenish gray + light gray
								~~Brn~~ silty clay, w/gravel brn
				5				Qal = ~~7~~' Col
								sand stone, light brn fine sand/silt breaks up easily
				0				10': Bottom of boring refusal
								No odor of hydrocarbons
				5				
				0				

STRATEGIC ENGINEERING & SCIENCE

Boring Log

5-8
EB-8

PROJECT NUMBER 064 DATE DRILLED 5/10/07
PROJECT NAME Comm Hill BORING NUMBER EB-8
LOCATION SJ SHEET 1 OF 1
DRILLING COMPANY RSI DRILLING METHOD DP
SAMPLED BY CMV LOGGED BY CMV REVIEWED BY
DEPTH TO WATER TIME DATE

PID / FID / Hnu /OVA (ppm)	Well Detail	Time, Sample Collection	Recovery (ft/ft)	Depth (feet)	Sample Interval	Soil/Rock Symbol	Graphic Log	FIELD SOIL DESCRIPTION / INTERPRETATION
				0				Silty sandy gravel, mix of colors light brn, black, light gray
		14:57						- black + gray coloring (fill)
		14:48						Sandy gravelly, blk w/ reddish material
				5				Silty clay with sand + gravel mottled light brn, greenish gray + dk brn (fill)
								Silty clay w/ trace fine gravel dk brn/dk gray
								8' Bottom of boring
				0				
				5				
				0				

SES STRATEGIC ENGINEERING & SCIENCE

Boring Log

EB-9 59

PROJECT NUMBER 064 DATE DRILLED 5·10·07
PROJECT NAME Comm Hill BORING NUMBER EB-9
LOCATION SJ SHEET 1 OF 1
DRILLING COMPANY RSI DRILLING METHOD DP
SAMPLED BY cmv LOGGED BY cmv REVIEWED BY
DEPTH TO WATER TIME DATE

PID / FID / Hnu /OVA (ppm)	Well Detail	Time, Sample Collection	Recovery (ft/ft)	Depth (feet)	Sample Interval	Soil/Rock Symbol	Graphic Log	FIELD SOIL DESCRIPTION / INTERPRETATION
				0				silty clay, w/ sand + gravel light brn / light gray brick-reddish pieces (fill)
		15:20						
		15:25						
				5				silty clay, stiff blk brn & trace fine gravel
								claystone bedrock greenish gray, brn + reddish brn
								8' Bottom of boring
				0				
				5				
				0				

5-10

SES STRATEGIC ENGINEERING & SCIENCE

Boring Log

EB-10

PROJECT NUMBER 064 DATE DRILLED 5.10.07
PROJECT NAME Comm Hill BORING NUMBER EB-10
LOCATION SJ SHEET 1 OF 1
DRILLING COMPANY RSI DRILLING METHOD DP
SAMPLED BY aw LOGGED BY aw REVIEWED BY
DEPTH TO WATER TIME DATE

PID / FID / Hnu /OVA (ppm)	Well Detail	Time, Sample Collection	Recovery (ft/ft)	Depth (feet)	Sample Interval	Soil/Rock Symbol	Graphic Log	FIELD SOIL DESCRIPTION / INTERPRETATION
				0				silty clay w/ sand + gravel loose + dry (fill) small pieces of black material 2.5' fill
		15:40			▨			
								silty clay, stiff Dk brn w/ gravel + fine gravel increasing mottling w/ depth reddish brn + greenish gray mottles to ~4' trace fine gravel rootlets
		16:05		H	▨			
				5				
								8' Bottom of boring
				0				
				5				
				0				

STRATEGIC ENGINEERING & SCIENCE

Boring Log

EB-11

8-11

PROJECT NUMBER 064 DATE DRILLED 5.10.07
PROJECT NAME Comm Hill BORING NUMBER EB-11
LOCATION SJ SHEET 1 OF 1
DRILLING COMPANY RSI DRILLING METHOD DP
SAMPLED BY CMV LOGGED BY CMV REVIEWED BY
DEPTH TO WATER TIME DATE

PID / FID / Hnu /OVA (ppm)	Well Detail	Time, Sample Collection	Recovery (ft/ft)	Depth (feet)	Sample Interval	Soil/Rock Symbol	Graphic Log	FIELD SOIL DESCRIPTION / INTERPRETATION
				0				silty clay w/sand+gravel lightbrn dry (fill)
		16:45						silty sandy gravel ~~w/ black material~~ darkgrey/black w/ light grey (fill)
								silty clay, stiff light brn, greenish grey w/gravel some black pieces of material mixed in. (fill)
								silty clay lightbrn very moist. (fill)
		16:35		5				Sandy gravel blk w/red pieces (fill)
								silty clay + gravel greenish gray (fill)
								silty clay dk brn/dk gray trace fine gravel w/ rootlets
								8' Bottom of boring
				0				
				5				
				0				

6' of fill

5-12 where is 5-12?

SES STRATEGIC ENGINEERING & SCIENCE

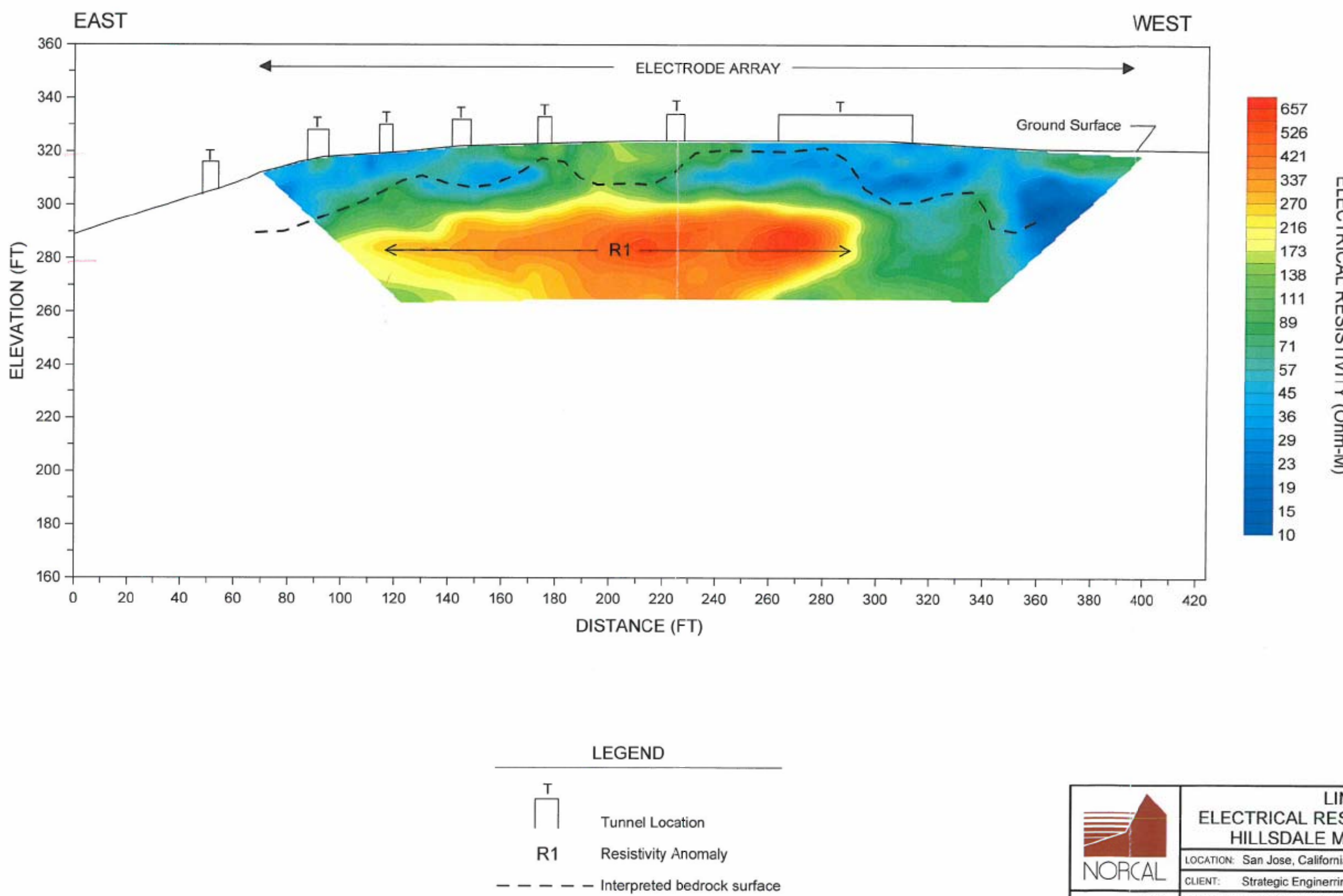
Boring Log

EB-12

PROJECT NUMBER 064 DATE DRILLED 5-10-07
PROJECT NAME Comm Hill BORING NUMBER EB-12
LOCATION San Jose SHEET 1 OF 1
DRILLING COMPANY RSI DRILLING METHOD DP
SAMPLED BY CMV LOGGED BY CMV REVIEWED BY
DEPTH TO WATER TIME DATE

PID / FID / Hnu /OVA (ppm)	Well Detail	Time, Sample Collection	Recovery (ft/ft)	Depth (feet)	Sample Interval	Soil/Rock Symbol	Graphic Log	FIELD SOIL DESCRIPTION / INTERPRETATION
				0				Silty clay, w/ fine and course gravel light brn, to brn pieces of serpentinite gravel varies in color sand increases content at times gravel varies from course to trace fine soil is consistant bedrock?
		17:00						
		17:05		H				
				5				
								8' Bottom of boring
				0				
				5				
				0				

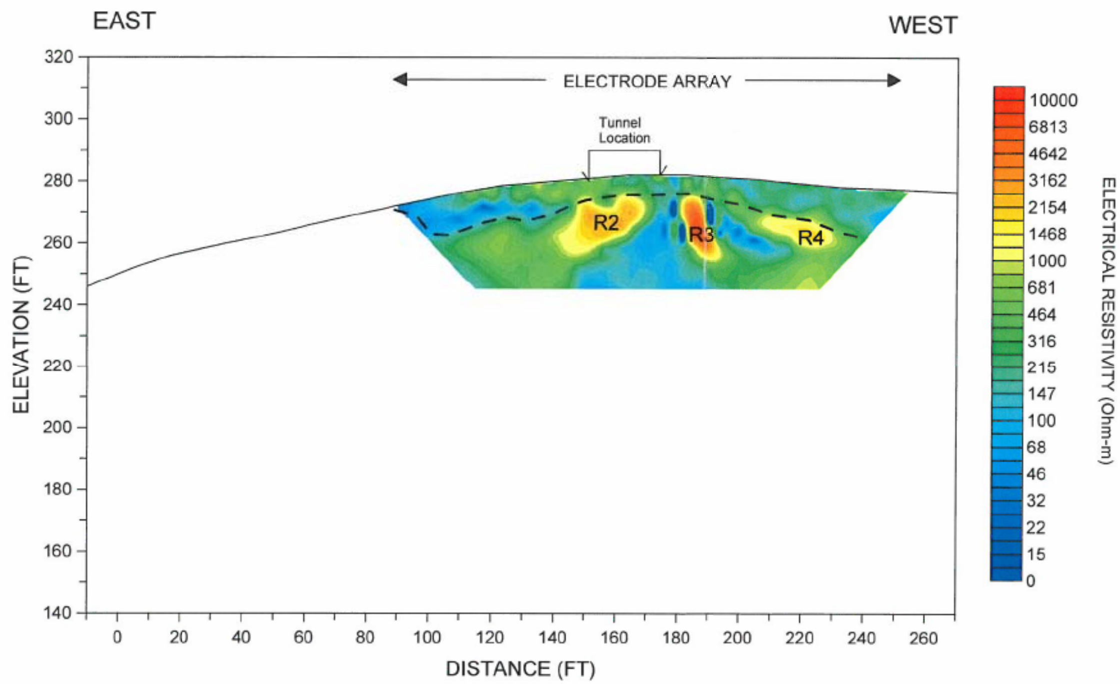
NORCAL – Geophysical Data



NORCAL

LINE 1
ELECTRICAL RESISTIVITY PROFILE
HILLSDALE MERCURY MINE

LOCATION: San Jose, California		
CLIENT: Strategic Enginerring & Science, Inc.		PLATE 2
JOB #: 07-853.02	NORCAL GEOPHYSICAL CONSULTANTS INC.	
DATE: Aug. 2007	DRAWN BY: WEB	APPROVED BY: WEB



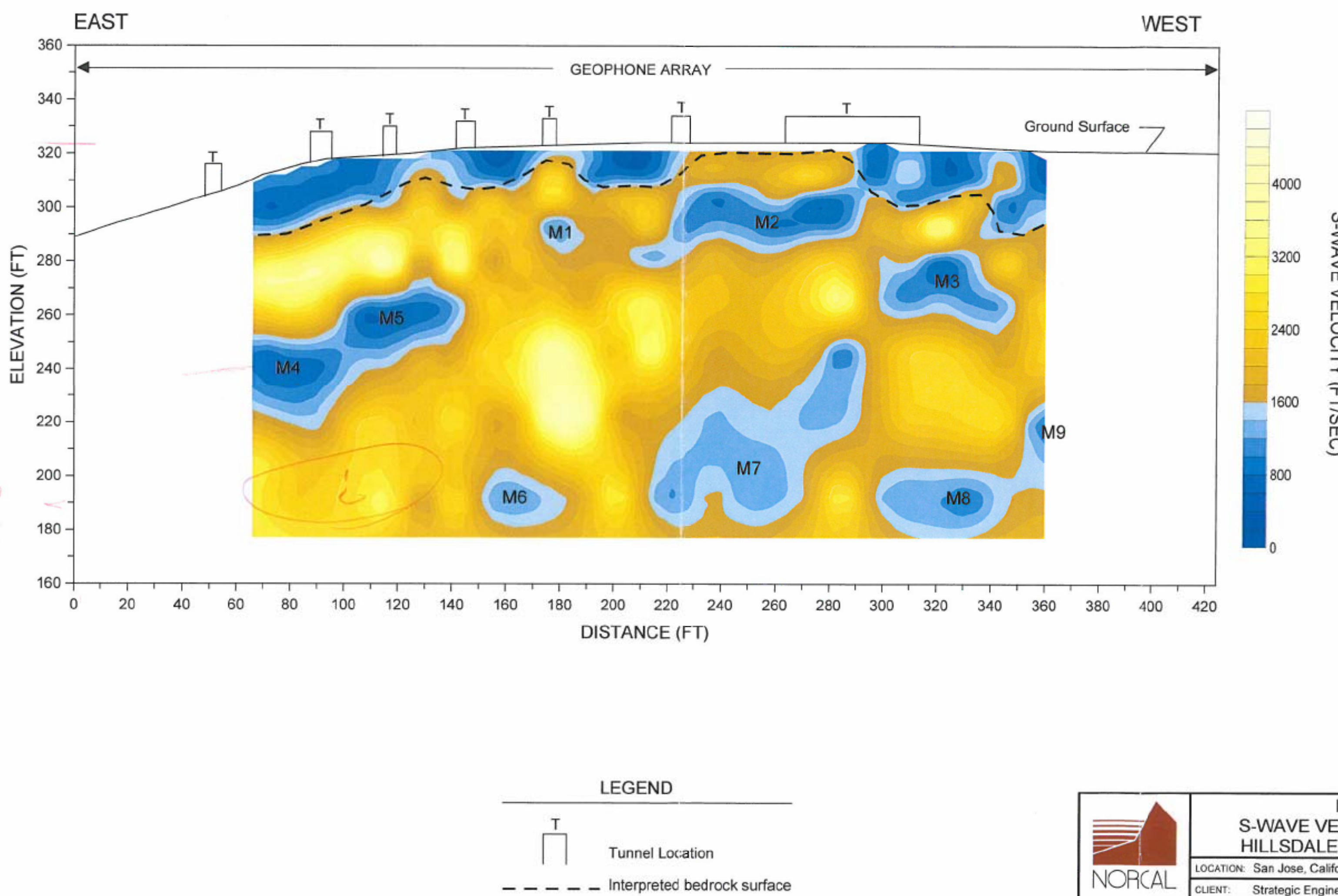
LEGEND

T	Tunnel Location
R2	Resistivity Anomaly
– – – –	Interpreted bedrock surface

NORCAL

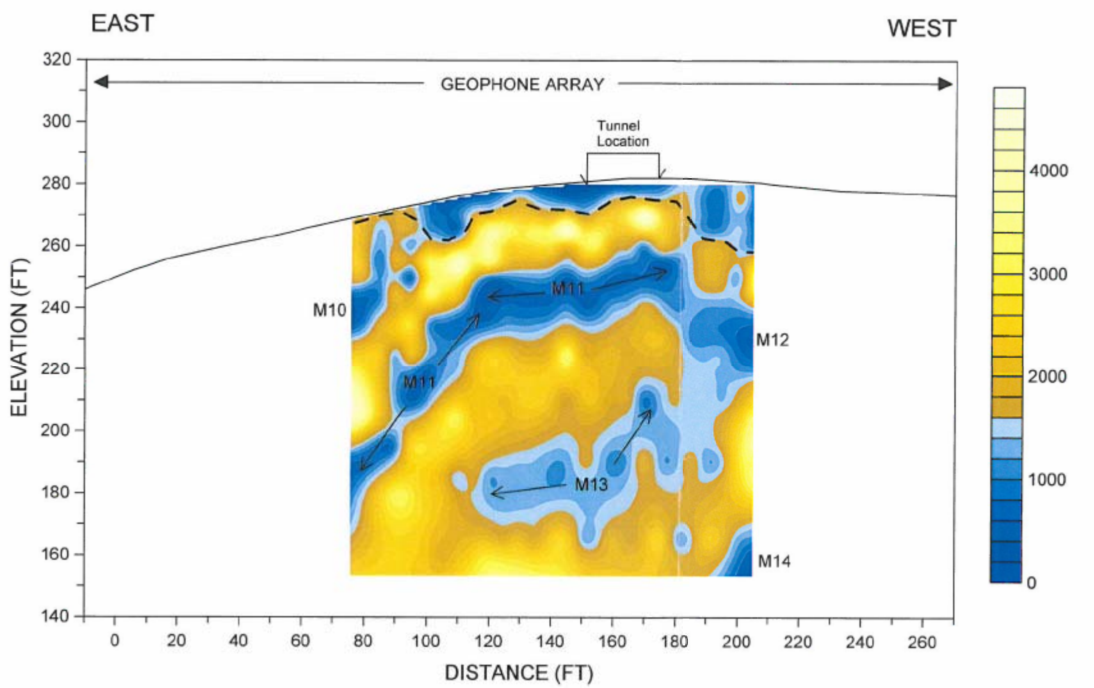
LINE 2
ELECTRICAL RESISTIVITY PROFILE
HILLSDALE MERCURY MINE

LOCATION: San Jose, California		
CLIENT: Strategic Engirnering & Science, Inc.		PLATE 3
JOB #: 07-853.02	NORCAL GEOPHYSICAL CONSULTANTS INC.	
DATE: Aug. 2007	DRAWN BY: WEB	APPROVED BY: WEB



NORCAL	LINE 1 S-WAVE VELOCITY PROFILE HILLSDALE MERCURY MINE
	LOCATION: San Jose, California
	CLIENT: Strategic Engineering & Science, Inc.
JOB #: 07-853.02	NORCAL GEOPHYSICAL CONSULTANTS INC.
DATE: Aug. 2007	DRAWN BY: WEB / APPROVED BY: WEB

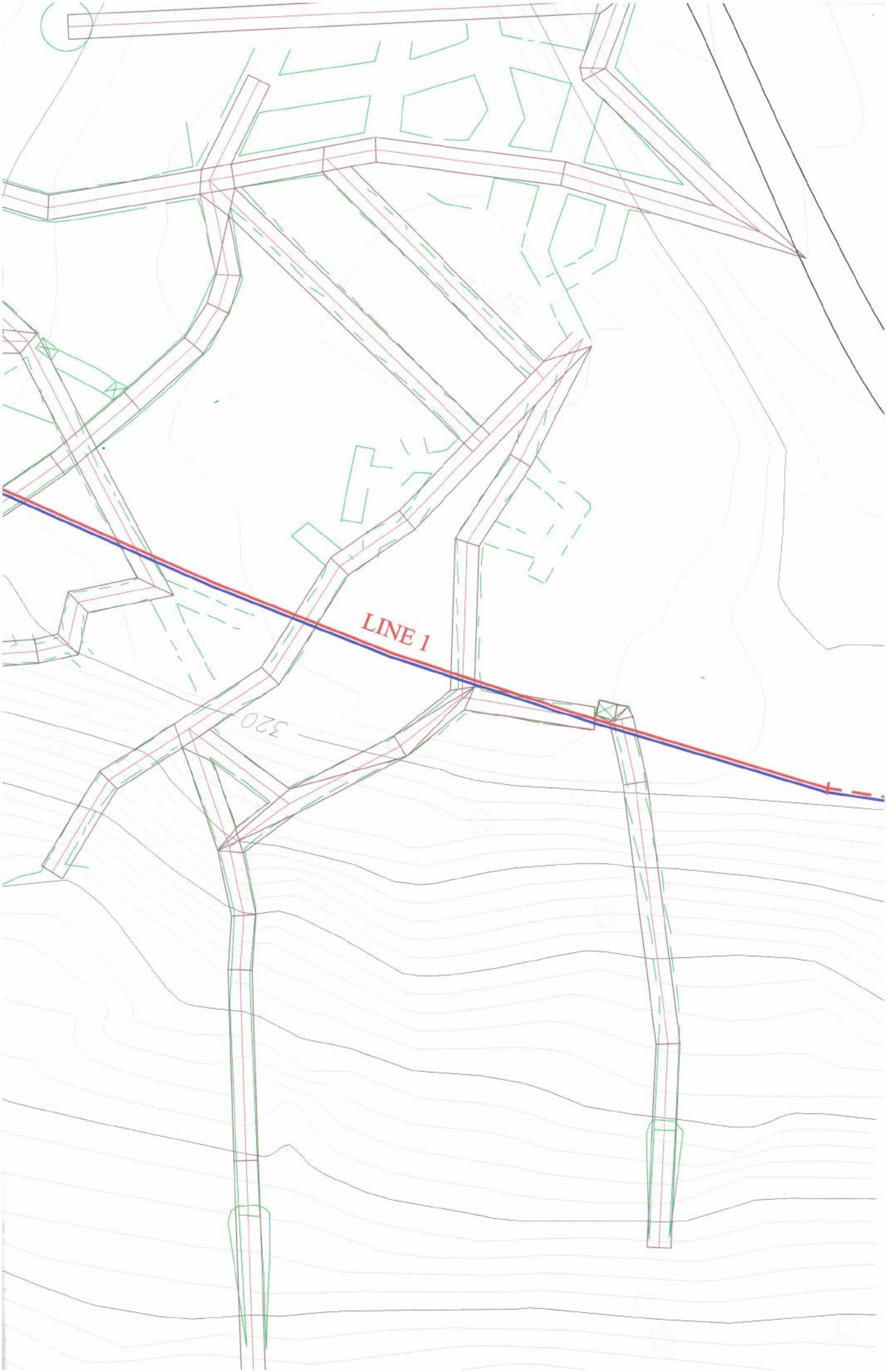
PLATE 4



LEGEND

T (symbol)	Tunnel Location
– – – – –	Interpreted bedrock surface

NORCAL	LINE 2 S-WAVE VELOCITY PROFILE HILLSDALE MERCURY MINE	
	LOCATION: San Jose, California	
	CLIENT: Strategic Enginerring & Science, Inc.	PLATE 5
JOB #: 07-853.02	NORCAL GEOPHYSICAL CONSULTANTS INC.	
DATE: Aug. 2007	DRAWN BY: WEB / APPROVED BY: WEB	


LINE 1
320

LINE 2
310
300
290
270
260
250

Vector Engineering, Inc. – Communications Hill Project – Figure 31

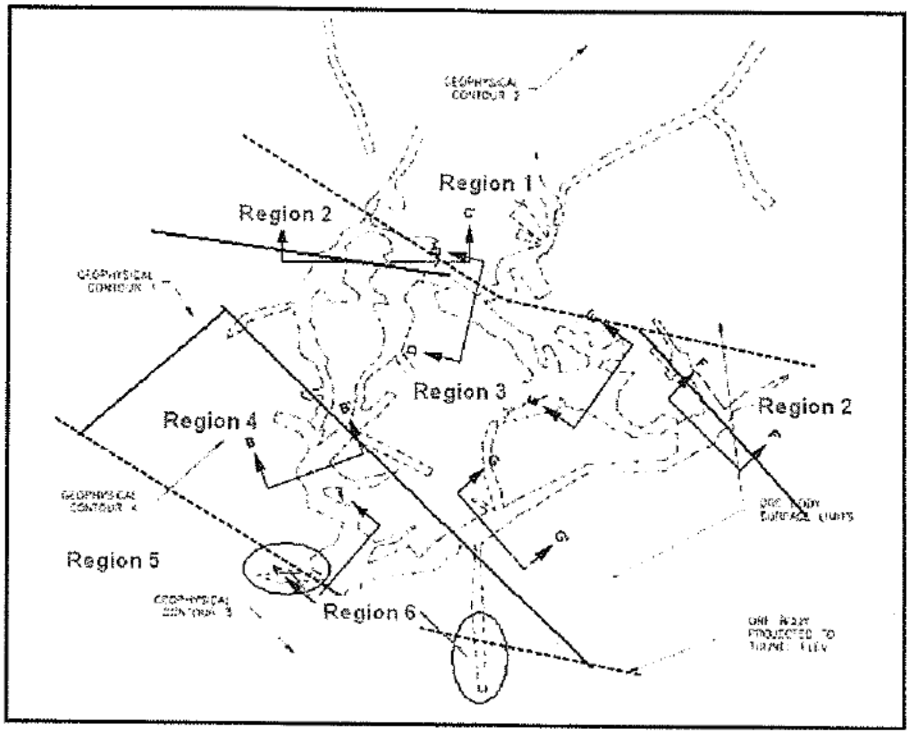


Figure 31: Proposed Remediation Regions