GEOTECHNICAL INVESTIGATION
SANTANA ROW
PARCEL 11
SAN JOSE, CALIFORNIA

PREPARED FOR: Federal Realty Investment Trust
3055 Olin Avenue, Suite 2100
San Jose, California 95128

ATTENTION: Mr. Stuart MacDonald

January 19, 2009
File No.: 91037/GEO

GEOTECHNICAL INVESTIGATION
SANTANA ROW, PARCEL 11
SAN JOSE, CALIFORNIA

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January 19, 2009
File No.: 91037/GEO

Mr. Stuart MacDonald
Federal Realty Investment Trust
3055 Olin Avenue, Suite 2100
San Jose, California 95128
(SMacDonald@federalrealty.com)

SUBJECT: Geotechnical Investigation, Proposed Developments on Parcel 11, Santana Row, San Jose, California

Dear Mr. MacDonald,

Kleinfelder is pleased to submit one electronic copy, one unbound copy, and four bound copies of our geotechnical investigation for the proposed improvements to Santana Row Parcel 11 in San Jose, California. Additional copies have been distributed as indicated below. The enclosed report provides a description of the investigation performed and presents geotechnical recommendations for shallow foundations and construction considerations, including earthwork, engineered fill, temporary excavations, wet-weather construction, and recommendations for plan review and construction observation and testing.

Based on our review of previous geotechnical studies for the site vicinity and on the results of the additional field exploration conducted by us for this study, we believe that the site may be developed as currently envisioned, provided that the recommendations presented in this report are incorporated into final design and construction. The building can be supported on a shallow foundation system with slabs-on-grade combined with drilled piers. The principal geotechnical concerns include undocumented fill and the potential for excessive settlement if unmitigated.

It should be noted that the conclusions and recommendations presented in this report are based on limited subsurface exploration, and, as a result, variations between anticipated and actual soil conditions may be found in localized areas during construction. It is recommended that Kleinfelder be retained during construction to observe earthwork and installation of foundations to make any changes in our recommendations necessary due to varying subsurface

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conditions. We should also review the project plans and specifications prior to construction bidding, to confirm that they are in compliance with the recommendations presented in this report.

We appreciate the opportunity of providing our services to you on this project and trust this report meets your needs at this time. If you have any questions concerning the information presented, please contact us at (408) 586-7611.

Sincerely,

KLEINFELDER WEST, INC.

Parham Khoshkbari, P.E. #71168
Project Professional

Catherine H. Ellis, P.E., G.E. #2650
Interim Area Manager

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PK/CHE/ ct

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GEOTECHNICAL INVESTIGATION
SANTANA ROW
PARCEL 11
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1.0 INTRODUCTION

This report presents the results of our geotechnical study for the proposed developments on Parcel 11 at Santana Row in San Jose, California. We previously conducted studies for the proposed Parcel with a different scope, the results of which were presented under our report, "Draft Geotechnical Investigation, Proposed Mixed Use Building on Lot 11 Santana Row, San Jose, California", dated June 27, 2006. Substantial details including the elimination of below grade parking levels and increased seismic and structural loading required a new investigation of the subsurface and additional engineering analysis. We provided the results of this study in our second draft after our additional soil investigation under our report, "Draft Geotechnical Investigation, Proposed Mixed Use Building on Lot 11 Santana Row, San Jose, California", dated February 21, 2008 (SJO8R083). Following the latest draft report, the building plan was changed to include fewer stories. This report includes recommendation for the new project.

A Vicinity Map showing the location of the site is presented on Plate 1. The proposed project has been coordinated with Mr. Stuart MacDonald and Ms. Ellen O'leary of Federal Reality Investment Trust (FRIT) of San Jose, California. Throughout this study, we have corresponded regularly with Mr. Sikandar Hayat of Biggs Cardosa Associates (BCA), the project structural engineer. We have also used pertinent information provided to us by FRIT.

1.1 PREVIOUS GEOTECHNICAL STUDIES

As part of this study, we were provided by FRIT previous geotechnical investigation reports prepared in August 2005 by Lowney Associates. Kleinfelder has also previously

performed geotechnical investigations for this and the other near-by parcels. A list of documents which were reviewed as a part of this study is as follows:

- Lowney Associates, "Geotechnical Investigation, Santana Row Lots 9A and 10, San Jose, California," report to Federal Investment Realty Investment Trust, dated June 6, 2005.
- Lowney Associates, "Geotechnical Investigation, Santana Row Lots 6B and 8B, San Jose, California," report to Federal Investment Realty Investment Trust, dated June 15, 2005.
- Lowney Associates, "Geotechnical Investigation, Santana Row Lot 2, San Jose, California," report to Federal Investment Realty Investment Trust, dated August 22, 2005.
- Lowney Associates, "Geotechnical Investigation, Santana Row Lot 11, San Jose, California," report to Federal Investment Realty Investment Trust, dated August 22, 2005.
- Kleinfelder, "Geotechnical Investigation, Santana Row Parcel 6B, San Jose, California," report to Federal Investment Realty Investment Trust, dated December 12, 2005.
- Kleinfelder, "Geotechnical Investigation, Santana Row Parcel 8B, San Jose, California," report to Federal Investment Realty Investment Trust, dated December 12, 2005.
- Kleinfelder, "Geotechnical Investigation, Santana Row Parcel 9/10, San Jose, California," report to Federal Investment Realty Investment Trust, dated December 12, 2005.
- Kleinfelder, "Geotechnical Investigation, Santana Row, Parcel 2, San Jose, California," report to Federal Investment Realty Investment Trust, dated January 28, 2008.
- Kleinfelder, "Geotechnical Investigation, Parcel 3B Parking Garage Expansion, Santana Row, San Jose, California," report to Federal Investment Realty Investment Trust, dated December 5, 2007.

- Kleinfelder, "Draft Geotechnical Investigation, Proposed Mixed-Use Building on Lot 11 Santana Row, San Jose, California," report to Federal Investment Realty Investment Trust, dated June 27, 2006.
- Kleinfelder, "Draft Geotechnical Investigation, Proposed Mixed Use Building on Lot 11 Santana Row, San Jose, California", report to Federal Investment Realty Investment Trust, dated February 21, 2008.

Pertinent information from these reports, including subsurface explorations and laboratory testing, was used to prepare our recommendations.

1.2 PROJECT DESCRIPTION

The proposed project consists of construction of a mixed-use structure to support the proposed expansion to the existing Santana Row Center. The new building will be located on Parcel 11 of the development, on the southeast corner of Winchester Boulevard and Olsen Drive. We understand that the current development plan includes construction of a new structure on Parcel 11. This parcel is currently covered with asphalt and serves as retail and residential parking parcel. The parcels are generally flat with perimeter landscaping that consists typically of low shrubs and small trees. General descriptions of the proposed developments, as we understand them, are provided below.

Based on the plans received from Valerio Dewalt Train Associates (VDTA), the architect, on October 30, 2008, we understand that the structures will include a six-story level building extending approximately 79 feet above existing grades. It is currently envisioned that the building will house a retail space and 69 parking stalls on ground floor, parking levels on second floor, parking and office space on third floor, and three floors of office space on the upper levels of the structure. Based on the loading data from BCA the maximum building column loads will be on the order of 650 kips for dead plus live loads. Other site improvements are anticipated to include new underground utilities, exterior flatwork and landscaping, and retaining walls in ramp areas in the

parking and for the loading dock to be located approximately 4 to 5 feet below the ground floor level. Site grading is anticipated to be minimal, being limited to cuts and fills of about 2 feet to establish finished grades. We anticipate a loading dock to be graded 4 feet below grade.

The above is our understanding of the project. Should the actual project differ from that described above, we will need to review our proposal for applicability.

1.3 PURPOSES AND SCOPE

The purposes of our study are to review available geotechnical information, conduct additional field exploration and develop geotechnical recommendations for the design and construction of the proposed new building at Santana Row. Our scope of services includes the following:

- Review geotechnical investigation reports prepared by Lowney Associates in August 2005 and Kleinfelder in July 2006 for background information
- Supplement the subsurface information with additional field exploration
- Conduct laboratory analyses on selected samples from the field exploration to assess geotechnical properties
- Evaluate the available data to develop conclusions and recommendations for the geotechnical aspects of the design and construction of the proposed building
- Prepare this report

Environmental testing and analyses, including evaluation and chemical analyses of the soil and groundwater for hazardous materials, are outside the scope of this study and report.

2.0 GEOLOGY

2.1 REGIONAL GEOLOGY

The project site is located within a broad alluvial plain that surrounds San Francisco Bay. The site is essentially level, with a regional inclination that slopes gently toward the bay, which is approximately 11 miles northeast of the site. According to published maps[1], the site is underlain by "older" Holocene alluvial fan deposits (Qhf2) that consists of medium dense to dense gravelly sand, and sandy and clayey gravel.

2.2 SEISMIC SETTING

The project site and its vicinity are in an area traditionally characterized by high seismic activity. A recent publication prepared by the USGS regarding earthquake probabilities in the Bay Area[2] concludes that there is a 70 percent chance that one of the major faults within the Bay Area will experience a major (M6.7+) earthquake during the period of 2000 through 2030, and the chance of a M6+ earthquake is estimated to be 80 percent over the same period. As has been demonstrated by the 1989 Loma Prieta earthquake (M6.9), the 1994 Northridge earthquake (M6.7) and the 1995 Kobe earthquake (M6.9), earthquakes of this magnitude can cause severe ground shaking and significant damage to modern urban areas.

The site is seismically dominated by the active San Andreas fault system. This fault system movement is distributed across a complex system of generally strike-slip, right-lateral parallel and sub-parallel faults including, among others, the San Andreas, San Gregorio, Hayward and Calaveras faults. Principal active faults in the general site vicinity and their distances from the site are listed below.

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[1] Wentworth, Carl M., M. Clark Blake, Robert J. McLaughlin, Russell W. Graymer, "Preliminary Geologic Map of the San Jose 30x60-minute Quadrangle, California," United States Geological Survey, 1999.

[2] Working Group on California Earthquake Probabilities, "Earthquake Probabilities in the San Francisco Bay Region: 2002-2031," U.S. Geological Survey, Open File Report 03-214, 2003.

TABLE 2-1
ACTIVE FAULTS NEAR THE PROJECT SITE

Fault	Distance to Site
Monte Vista – Shannon	7.5 km (southwest)
San Andreas	15.0 km (southwest)
Hayward (Southeast Extension)	14.0 km (northwest)
Hayward	18.8 km (northwest)
Calaveras	18.8 km (northwest)

3.0 SITE DESCRIPTION

Lot 11 is a paved parking lot bound by Winchester Boulevard to the west, Olsen Drive to the north, a Theatre to the east, and residential and a parking garage to the south. The theater building is as tall as a 2 to 3-story building. No basement was observed at this building, although there may be a partially below grade floor. The parking garage is 4- to 5-stories without a basement. The 8-story residential building also has an underground parking garage. The parking ramp retaining wall is adjacent to job site and is about 10 feet high. An aerial photograph of the site dated 2006 courtesy of Google Earth is provided in Figure 1.

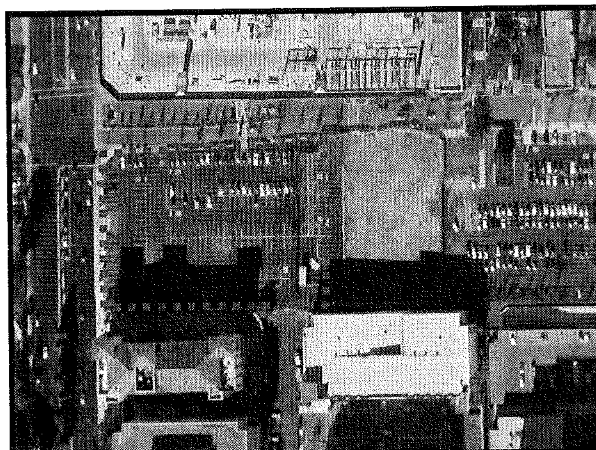

Figure 1
Aerial Photograph, site outlined in red, north is up. (Courtesy of Google Earth)

Based on the 1998 USGS topographic map of the San Jose West Quadrangle, the typical elevation for the site is about 133 feet[3]. The site is essentially flat, with an estimated total vertical relief of less than about 5 feet. The general vicinity is sloping downward toward the northwest. The vicinity topography as documented by the USGS map is shown in Figure 2. A detailed

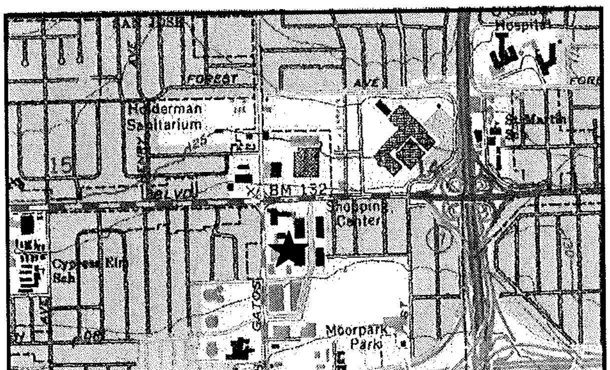

Figure 2
Vicinity Topography, site shown as black star. (Courtesy of USGS)

[3] Mean Sean Level Datum

topographic map will provide site specific information and greater detail.

4.0 FIELD EXPLORATION

Kleinfelder drilled five hollow stem borings for Parcel 11 in preparation of this study and one rotary wash boring for the previous study. Previous studies at the site by Lowney included three Cone Penetrometer Tests (CPTs) and two rotary wash borings. Discussions of the two investigations are presented below.

4.1 CURRENT FIELD INVESTIGATION

Our current field investigation was performed on January 14, 2008 at the subject site. The subsurface conditions were explored by drilling five hollow stem borings designated as KA-2 through KA-6. Boring KA-1 was drilled in 2006 and is discussed under the Previous Kleinfelder Exploration section below. The approximate locations of these borings are shown on Plate 2.

The locations of the borings were estimated by our field professional based on rough measurements from the limits of existing landmarks. The ground surface elevations at the boring locations were estimated from the USGS topographic map of the San Jose West Quadrangle. As such, the locations and elevations of the borings should be considered approximate. A description of the field investigation is presented below.

Prior to the start of drilling, Underground Services Alert (USA) was contacted to locate utilities at the boring locations. We also used a private utility locator to better identify the location of the utilities and avoid those zones for drilling. Upon completion of the drilling, the borings were backfilled with grout as required by local Santa Clara Valley Water District ordinance. The cuttings were drummed by Kleinfelder and left for removal by FRIT as requested.

Borings were drilled and sampled by Exploration GeoServices of San Jose, California and were extended to about 20 feet below the ground surface. Our field representatives specified the boring locations, boring depths, sampling intervals and observed the

drilling operations. The borings were logged by our field professionals on a full-time basis.

Relatively undisturbed samples of the subsurface materials were obtained using Shelby tubes and Modified California (MC) samplers. Shelby tubes consist of a relatively thin 3-foot long, 2.80-inch inside diameter, tube. The Shelby tube sampler was pushed into soft soils by means of the rig hydraulics. The MC sampler has a 2.0-inch inside diameter and 2.5-inch outside diameter. Liners were placed inside the sampler. The MC samplers were driven 18 inches (or less if difficulty was encountered) using a 140-pound hammer falling 30 inches, with blow counts recorded for successive 6-inch penetration intervals.

Undrained shear strengths of selected cohesive samples were estimated using a hand-held penetrometer (pocket pen). Pocket pen readings, in terms of unconfined compressive strength in tons per square foot (tsf), are noted on the boring log. After the samplers were withdrawn from the test borings, the samples were carefully removed, sealed to reduce moisture loss, and returned to our laboratory.

Soil classifications made in the field from auger cuttings and samples were modified in the laboratory, if needed, after further examination and testing. The soils were classified in general accordance with the Unified Soil Classification System presented on the "Boring Log Legend," Plate A-1. Sample descriptions, blow counts for the last 12 inches recorded or the interval achieved as noted on the boring log during sampling, and other pertinent information are presented on the soil boring logs. The logs of borings are presented on Plates A-2 through A-6 of Appendix A.

4.2 PREVIOUS KLEINFELDER EXPLORATION

Our previous investigation included one auger boring that was drilled and sampled by Pitcher Drilling of Menlo Park, California using a rotary wash drill rig. The boring extended to a maximum depth of about 47 feet below the ground surface. Our field

representative specified the boring location, boring depth, sampling intervals and observed the drilling operations. The boring was logged by our field professional on a full-time basis.

Relatively undisturbed samples of the subsurface materials were obtained using Shelby tubes, Standard Penetration Test (SPT) samplers, and Modified California (MC) samplers. The SPT and MC samplers were driven 18 inches (or less if difficulty was encountered) using a 140-pound hammer falling 30 inches, with blow counts recorded for successive 6-inch penetration intervals.

Soil classifications made in the field from auger cuttings and samples were modified in the laboratory, if needed, after further examination and testing. The soils were classified in general accordance with the Unified Soil Classification System presented on the "Boring Log Legend," Plate B-1. Sample descriptions, blow counts for the last 12 inches recorded or the interval achieved as noted on the boring log during sampling, and other pertinent information are presented on the soil boring logs. The log of boring KA-1 is presented on Plate B-2 of Appendix B.

4.3 PREVIOUS LOWNEY EXPLORATION

The August 22, 2005 Lowney report for Parcel 11 presents the logs of two soil borings and three cone penetration tests (CPTs) for the Parcel 11 site. The borings extended to depths of about 99.5 to 100 feet and the CPTs extended to about 60 feet below the ground surface. The approximate locations of the previous Lowney explorations are shown on Plate 2. Logs of the Lowney borings and CPT data are provided in Appendix C of this report.

5.0 LABORATORY TESTING

5.1 CURRENT LABORATORY TESTING

The laboratory testing program was formulated with the emphasis on evaluating the density, moisture content, strength properties and consolidation properties of the soils encountered. Classification tests included dry unit weight and natural water content. These tests aid in classifying the soils from selected samples and are used to correlate the results of other field and laboratory tests conducted on samples from different borings or different depths. Engineering properties included unconfined compression tests to evaluate strength and swell tests to evaluate compressibility parameters.

Most of the laboratory test results are presented on the boring log. The results of the unconfined compression and consolidation tests are presented graphically in Appendix D. Results of corrosion tests by others are presented in Appendix E.

5.2 PREVIOUS KLEINFELDER LABORATORY TESTING

The laboratory testing program was formulated with the emphasis on evaluating the density, moisture content, plasticity and grain size of the soils encountered. Classification tests included dry unit weight, natural water content, Atterberg liquid and plastic limits, fine sieve analysis and percent passing number 200 sieve. These tests aid in classifying the soils from selected samples and are used to correlate the results of other field and laboratory tests conducted on samples from different borings or different depths.

Most of the laboratory test results are presented on the boring log. The results of the Atterberg Limits and grain size distribution are presented graphically in Appendix F.

5.3 PREVIOUS LOWNEY TESTING

In addition to laboratory tests conducted by us, we have also considered the laboratory test data reported by Lowney in August 2005. Laboratory test data reported by Lowney, including corrosion testing for Parcel 11 is included in Appendix G of this report.

5.4 MAGNETIC SURVEY

As part of the Lowney geotechnical investigation, a subcontractor was retained to perform a geophysical magnetic survey of the site. Results of the study reflect the potential presences of a small buried tank or debris left behind after the demolition of buildings and a fence post on Parcel 11. A copy of the survey is included in Appendix H. It is recommended that these areas be pot holed prior to construction.

6.0 SUBSURFACE CONDITIONS

We have developed our conclusions related to subsurface conditions based on our review of available existing geotechnical information (by Lowney) and on the supplemental soil borings that we drilled.

6.1 SOIL CONDITIONS

Based on our explorations and Lowney's, the pavement section on Parcel 11 consist of 2 to 6 inches of asphalt concrete (AC) and underlain by about 3 to 8 inches of aggregate base (AB) material where present. Variable layers of very stiff to hard sandy lean clay with gravel and medium-dense clayey sand with gravel were encountered. The fill varied from about 3.5 to 7.0 feet. The fill is generally underlain by very stiff lean clay with sand with silty clay and sandy clay layers (up to about 35 ft thick) were encountered. Based on consolidation tests, this stratum appears to be approximately normally consolidated to slightly overconsolidated. This stratum includes silty clay and clayey sand layers that are up to 10 ft thick. The sandy layers are generally medium dense and locally loose based on blow count information. The "loose" sands generally contain clayey fines. The underlying soils at depth were generally encountered as dense to very dense, fine to coarse sand with fine to coarse gravel, gravel with sand and clay layers. Silt and clay sub-strata within the granular alluvium are up to about 20 feet thick. Most of the borings drilled at the site terminated in this stratum.

Discontinuous layers of poorly graded sand and clayey gravel were also encountered in several of the borings. These layers were generally medium dense to very dense.

The soils encountered in the current borings are consistent with the soils encountered during Kleinfelder's 2006 investigation as well as the borings performed by Lowney.

6.2 GROUNDWATER

Groundwater was not observed in our augur borings advanced for this parcel. The rotary wash methods used in our previous explorations, masked the groundwater levels for those borings. Although based on examination of the samples, we did not see indications of the presence of free water. The August 2005 Lowney reports indicated that groundwater was measured during drilling at depths of about 47.5 feet. According to the California Department of Mines and Geology (2002, now called the California Geological Survey)[4], the depth to historically high groundwater in the project area is about 50 feet. We expect variations in groundwater depth due to seasonal variations in rainfall and surface runoff. Depending on local conditions in the Stratum I fill, perched water conditions may occur, particularly in the fill. In addition, it is possible that groundwater conditions could rise in response to regional reductions in groundwater pumping that have been on-going in the Santa Clara Valley over the past few decades.

6.3 VARIATIONS IN SUBSURFACE CONDITIONS

Our interpretations of soil and groundwater conditions, as described above, are based on data from the borings and laboratory test data that we collected for this study and on the information from previous work conducted by others. The conclusions and recommendations that follow are based on these interpretations. The site has undergone previous grading and nearby development. Therefore, it is likely that undisclosed variations in subsurface conditions exist at the site. Localized areas of deep fill could exist at the site.

We recommend that we be retained to make careful observations during construction to confirm our interpretations. Should variations from our interpretations be found, we will need to evaluate whether any revisions should be made to our recommendations.

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[4] California Department of Conservation, Division of Mines and Geology, "Seismic Hazard Zone Report for the San Jose West 7.5-Minute Quadrangle, Santa Clara County, California," Seismic Hazard Zone Report 058, 2002.

7.0 GEOLOGIC HAZARDS

The following paragraphs discuss various geologic hazards, including fault ground rupture, seismic shaking, liquefaction, seismically-induced landslides and flooding.

7.1 FAULT RUPTURE

Based on published data[5], the site is not located within an Alquist-Priolo Earthquake Fault Zone. No active faults have been mapped on site or projecting toward the site. Based on this information, we believe the potential for fault-related surface rupture at the site is low.

7.2 SEISMIC SHAKING

As discussed in the Geology Section, we believe the site will be subject to seismic shaking from moderate to severe earthquakes in the future. Periodic slight to moderate earthquakes should also be expected during the design life of the proposed project.

7.3 LIQUEFACTION

Soil liquefaction is a phenomenon in which saturated, generally granular soils undergo a substantial loss in strength due to excess build-up of pore water pressure during cyclic loading such as that induced by earthquakes. The primary factors affecting the liquefaction potential of soil include: (1) intensity and duration of seismic shaking, (2) soil type and relative density, (3) overburden pressure, and (4) depth to water. Soils most susceptible to liquefaction are generally clean, loose, fine-grained sands that are saturated and uniformly graded. Under certain seismic shaking conditions, silty and clayey soils of low plasticity have also been known to liquefy. The occurrence of liquefaction is generally limited to saturated (submerged) soils located within about 50 feet of the ground surface.

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[5] Hart, E.W. and W.A. Bryant, "Fault Rupture Hazard Zones in California," California Division of Mines and Geology Special Publication 42 (revised), 1997.

The site is located within about 0.5 mile south of an area mapped by the State of California[6] as a liquefaction hazard zone. The subsurface conditions, as represented in our borings and in the geotechnical information gathered by Lowney, include cohesive alluvium, interlayered with medium dense to dense (and locally loose) granular alluvium, underlain by dense to very dense granular alluvium. Groundwater may be considered to be about 47.5 to 50 feet deep, based on field observations by Lowney and on published maps referenced in our Geology section. Based on the depth to water, the dense nature of the granular soils below the inferred groundwater level, we consider the possibility for seismically-induced liquefaction hazards, including liquefaction-induced settlement, to be low.

7.4 LATERAL SPREADING

Lateral spreading is a potential hazard commonly associated with liquefaction where extensional ground cracking and settlement occur as a response to lateral migration of subsurface liquefiable material. These phenomena typically occur adjacent to free faces such as slopes and creek channels. The site lacks any significant topographic slopes or incised channels. Therefore, we believe that the potential for lateral spreading to take place at the site is low.

7.5 DYNAMIC COMPACTION

Another type of seismically induced ground failure, which can occur as a result of seismic shaking, is dynamic compaction, or seismic settlement. Such phenomena typically occur in unsaturated, loose granular material or uncompacted fill soils. Based on the clayey sand layers above the groundwater table encountered in the borings and CPTs, the potential of settlement from dynamic compaction is low.

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[6] California Department of Conservation, Division of Mines and Geology, "State of California Seismic Hazard Zones, San Jose West Quadrangle, Official Map," released February 7, 2002.

7.6 SEISMICALLY-INDUCED LANDSLIDES AND GROUND FAILURES

Considering the relatively level terrain at the site and in surrounding areas, we consider the potential for landsliding to be low. However, during strong ground shaking during earthquakes, it is possible that the ground surface could develop randomly-oriented cracks.

7.7 FLOODING

The site is located about 11 miles southwest of San Francisco Bay and is not located adjacent to any other major bodies of water. Therefore, we consider the potential for inundation by tsunami or seiche action to be remote. However, we note that the site is mapped[7] within a zone identified as a potentially susceptible to inundation by Lexington Reservoir in the event of a major dam failure. On this map, the site is located on a contour that indicates flood waters reaching the site within about 80 minutes. Given the distance from the reservoir to the site, the broad inundation zone boundary and the site's location in the inundation zone, we suspect that any inundation depth will be less than about one-half foot.

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[7] Gill, David K. "Inundation Map of Lexington Dam," Sheet 1 of 2, Original Scale 1"=2,000', 1973.

8.0 GEOTECHNICAL CONCLUSIONS

This section presents our conclusions and recommendations for geotechnical design of the proposed mixed use development on Parcel 11 at Santana Row. Based on our review of previous geotechnical studies for the site vicinity and on the results of the additional field exploration conducted by us, we believe that the site may be developed as currently planned, provided that the recommendations presented in this report are incorporated into final design and construction.

Principal Geotechnical issues that should be considered during final design include the presence of undocumented fill and potential for excessive settlement.

8.1 UNDOCUMENTED FILL

Based on our field investigation we encountered about 3 to 7 feet of undocumented fill blanketing the site. The report prepared by Lowney indicated that substantial excavations and backfilling was performed in the center of the site. That fill was placed as engineered fill and is not of substantial concern. However, the poor quality and inconsistent nature of the fill outside of the fill observed by Lowney could result in excessive settlements of the proposed development if not mitigated. Where undocumented fill is encountered, it will need to be over-excavated so that the foundations are supported on a minimum of 2 feet of engineered fill or lean concrete.

8.2 CORROSION POTENTIAL

One sample of soil at a depth of between 3 to 4 feet below the ground surface from KA-4 was collected during our field investigation and submitted for corrosion testing. The soil in this area was selected for corrosion testing because it will likely be in direct contact with concrete or buried metal utility lines. The sample was tested by CERCO Analytical for Redox, pH, resistivity, chloride, and sulfate in accordance with ASTM test

methods, the results of which are presented in Appendix E. Also included in Appendix D is CERCO Analytical's evaluation of the corrosion test results.

As part of the Lowney geotechnical investigation, four samples of soil were submitted to Cooper Testing Laboratories of San Jose for analysis. The test program included measurement of pH, soluble sulfate and chloride content testing. The results are presented in Appendix G.

Based on resistivity measurements of 2,042 to 4,666 ohm-cm, the soils has is moderately to severely corrosive. Based on the test results, buried metallic improvements may be impacted by corrosion. Corrosivity potential based on sulfates is negligible. Concrete mixes used should comply with the requirements of the CBC based on these results.

We understand that to address some of the environmental concerns are the site, there may be a need for over-excavation of the soils. If a soil different than what was tested is imported and is in actual contact with concrete, it should be sampled and tested for sulfate content. As a minimum, it should be no more corrosive than the existing on-site soil. Consideration should also be given to soils in contact with concrete that will be imported to the site during construction, such as topsoil and landscaping materials.

It should be noted that we are not corrosion experts. We recommend that if this is a concern to FRIT or the design team a corrosion expert be retained for consultation on this project prior to and during construction.

9.0 GEOTECHNICAL RECOMMENDATIONS

The sections presented below contain our recommendations for spread foundations, slabs-on-grade, drilled piers, and construction considerations, including earthwork, engineered fill, temporary excavations, wet-weather construction. Also presented are our recommendations for plan review and construction observation and testing.

9.1 SPREAD FOUNDATIONS

Foundations should satisfy two independent criteria with respect to foundation soils. First, the foundation should have an adequate safety factor against a bearing failure with respect to shear strength of the foundation soils. Second, the vertical movements of the foundation due to consolidation settlement of the foundation soils should be within tolerable limits of the structure. Based on our analysis, we are recommending an isolated and continuous spread foundation be used to support the new mixed-use development.

9.1.1 Net Allowable Bearing Capacity

The allowable bearing values provided have been estimated assuming that all footings uniformly bear on firm native soil, existing engineered fill, or on a minimum of 2 feet of newly engineered fill. Where undocumented fill is encountered, the bottom of the foundation excavation will need to extend an additional 12 inches. The bottom of the excavation will need to be scarified and recompacted. The upper 12 inches of the over-excavation may then be backfilled with engineered fill. The fill should be compacted to a minimum of 90 percent, specific earthwork recommendations are summarized in Appendix I. Alternatively, the undocumented fill may be replaced with a minimum of 24 inches of lean concrete.

Continuous footings should be used around the entire perimeter of the building. Based on the loads provided by BCA, we have evaluated allowable bearing capacities. The

capacities vary with depth of embedment. The bearing capacities are for dead load only, dead plus live load, and dead plus live plus seismic loads.

TABLE 9-1
ALLOWABLE BEARING CAPACITY WITH DEPTH

Depth of Cut (feet) [1,2]	Allowable Bearing Capacities (psf)
	Dead Plus Live Loads[3]
2	4,000
3	4,500
4	5,000

[1] Footings must be embedded a minimum 24 inches measured from exterior grade or from the bottom of the interior slab-on-grade, which ever is lower.
[2] Depth of cut for footings is measured from the existing grade.
[3] Capacities may be increased by 50 percent for wind and seismic loading.

These pressures are net capacities and the weight of the concrete may be ignored. Isolated footings should be a minimum of 24 by 24 inches and continuous footings should have a minimum width of 12 inches wide.

The concrete should be placed neat against native soil or engineered fill. It is critical that the foundation excavation not be allowed to dry before placing concrete. If shrinkage cracks appear in the excavation, the excavation should be thoroughly moistened to close all cracks prior to concrete placement. The excavation should be monitored by a representative of Kleinfelder for compliance with appropriate moisture control and to confirm the adequacy of the bearing materials. If additional soft or loose materials are encountered at the bottom of the excavation extending beyond the 12 inches to be scarified and recompacted, they should be removed and replaced with either engineered fill or lean concrete.

9.1.2 Lateral Load Resistance

Lateral loads can be resisted with both passive pressure in front of foundation elements, and friction beneath the floor slab and foundation elements. For friction

resistance, we recommend a coefficient of friction of 0.35 be used for design. Passive resistance may be computed based on an equivalent fluid weight of 350 pounds per cubic foot (pcf) constructed against competent, native soils or engineered fill. For design purposes, the friction resistance and the passive resistance may be assumed to act simultaneously and can be increased by one-third for seismic loads.

9.1.3 Settlement

We expect settlement will occur due to a combination of elastic compression of the unsaturated soils above the groundwater level. Time-dependent consolidation settlement of the saturated soils below groundwater is not anticipated due the depth of the foundation and depth of the groundwater table. Total settlements are estimated to be about 1 inch, with about half occurring during construction. Differential settlement of about a ½ inch is anticipated between columns.

9.2 DRILLED PIERS

Drilled piers can be used in conjunction with the shallow foundation system to provide resistance to uplift loads. We recommend that drilled shafts have a minimum shaft diameter of 12 inches and a center to center spacing of at least three (3) pier diameters and be designed to derive axial capacity from skin friction. For tension (uplift), we recommend an ultimate skin friction value of 1500 psf. These values may be increased by one-half for transient loads such as wind or seismic. The weight of the shaft may be included in determining uplift resistance.

Due to the presence of undocumented fill, the walls of the shaft excavations may not stand unsupported. Temporary casing should be anticipated to support the excavation sides until the concrete is placed.

Successful completion of drilled shafts required good construction procedures. Drilled excavations should be constructed by a skilled operator using techniques that allow the excavations to be completed, the reinforcing steel placed, and the concrete poured in a continuous manner to reduce the time that excavations remain open. Drilled excavations should not remain open overnight. The contractor should not place shafts adjacent to each other until the first shaft sets. Drilled shafts placed closer than about 6 feet (clear spacing) should be placed at least 6 hours apart and preferably on alternate days.

We recommend steel reinforcement and concrete be placed within about 4 to 6 hours upon completion of each drilled hole; as a minimum, the holes should be poured the same day they are drilled. The steel reinforcement should be centered in the drilled hole. Concrete used for pier construction should be discharged vertically into the holes to reduce aggregate segregation. Under no circumstances should concrete be allowed to free-fall against either the steel reinforcement or the sides of the excavation during construction. Groundwater is not encountered in our investigation and is anticipated to be deeper than 50 feet. However, if water more than 10 inches deep is present during concrete placement, either the water needs to be pumped out or the concrete placed into the hole using tremie methods. If tremie methods are used, the end of the tremie pipe must remain below the surface of the in-place concrete at all times. In order to develop the design skin friction value previously provided, concrete used for pier construction should have a slump of 6 to 8 inches. Casing may be required where the piers extend below the groundwater level. The drilling contractor should have casing on hand during drilling operations. Unit prices for dewatering and/or tremie placement methods, and for casing should be obtained during bidding process.

The bottom of the drilled holes should be clean such that no more than 3 inches of loose soil remains in the hole prior to placement of concrete. A representative from

Kleinfelder should be present to observe drilled holes to confirm bottom conditions prior to placing steel reinforcement.

9.2.1 Lateral Resistance

Lateral resistance can be mobilized by passive earth pressure acting against shafts and foundation caps. A passive resistance based on an equivalent fluid weight of 350 pcf acting against twice the projected shaft diameter may be used to a maximum depth of 10 feet. Passive resistance should be neglected between the finished ground surface and a depth of 1 foot. Passive resistance in the upper foot of soil cover below finished grades should be neglected unless the ground surface is protected from erosion (or other disturbance that could remove this upper foot) by concrete slabs, pavements, or other such positive protection.

Shear along the sides of both pier cap that are separated by two times the width of the caps may be used to resist lateral loads. Side shear values of 15 pounds per cubic foot (pcf) may be used along the sides of the caps.

9.2.2 Settlement

If the effect of differential settlement between footings on shallow foundations and on drilled piers is a concern, we recommend including a buffer to avoid engaging the piers in compression loads. The buffer may be a structural connection or a 2-inch sand layer.

9.3 MAT FOUNDATIONS

Consideration is being given to supporting large, braced frame footings on a mat. The allowable parameters provided have been estimated assuming that the mat uniformly bear firm native soil, existing engineered fill, or on a minimum of 2 feet of newly

engineered fill. We recommend that if a mat foundation system is used for portions of the building, local maximum net allowable bearing capacities of 4,500 and 5,000 psf for areas no greater than 2,500 square feet and 500 square feet, respectively, can be used. This net allowable bearing capacity includes a safety factor of at least 3 with respect to shear failure of the foundation soils. The mat should be designed using a long term modulus of subgrade reaction of 110 pounds per square inch (psi) per inch of deflection. For transient loading conditions, such as wind and earthquake, the net allowable bearing pressure may be increased by a factor of one half.

The mat should be placed neat against native soil or engineered fill. It is critical that the mat excavation not be allowed to dry before placing concrete. If shrinkage cracks appear in the excavation, the excavation should be thoroughly moistened to close all cracks prior to concrete placement. The excavation should be monitored by a representative of Kleinfelder for compliance with appropriate moisture control and to confirm the adequacy of the bearing materials. If soft or loose materials are encountered at the bottom of the excavation, they should be removed and replaced with either engineered fill or lean concrete. Depending on the time of year of construction and the contractor's sequencing, consideration should be given to pouring a 2 to 3 inch lean concrete "rat slab". The use of lean concrete reduces the disturbance of the soils exposed at the bottom of the excavation to weather and construction activities following excavation.

9.3.1 Lateral Load Resistance

Lateral loads may be resisted by a combination of friction between the bottom of the mat and by passive pressure against the sides of the mat and below-grade walls. For friction resistance, we recommend a coefficient of friction of 0.35 be used for design. Passive resistance may be computed based on an equivalent fluid weight of 350 pounds per cubic foot (pcf) for mats and walls constructed against competent, native

soils. For design purposes, the friction resistance and the passive resistance may be assumed to act simultaneously.

9.3.2 Settlement

If a mat foundation system is selected for the entire building, a detailed settlement analysis will need to be performed. At that time, addition capacity may be derived depending on the actual soil bearing pressures. For isolated areas, total settlement should be on the order of 1 inch or less. Differential settlement should be about ½ inch over 50 feet.

9.4 UNIFORM BUILDING CODE FACTORS

9.4.1 Seismic Considerations

The seismicity of the region surrounding the site is discussed in the geologic hazard section of our report. From that discussion it is important to note that the site is in a region of high seismic activity and will likely be subjected to major shaking during the life of the project. As a result, structures to be constructed on the site should be designed in accordance with applicable seismic provisions of the building codes.

9.4.2 2007 CBC Seismic Design Parameters

The Maximum Considered Earthquake (MCE) mapped spectral accelerations for 0.2 second and 1 second periods (S_S and S_1) were estimated using Section 1613A.5 of 2007 CBC. The mapped acceleration values and associated soil amplification factors (F_a and F_v) based on 2007 CBC are presented in Table 4.4.1-1 below. Corresponding design spectral accelerations (S_{DS} and S_{D1}) are also presented in Table 9.4.2.

TABLE 9.4.2
GROUND MOTION PARAMETERS BASED ON 2007 CBC

Parameter	Value	2007 CBC Reference
S_S	1.5	Section 1613.5.1
S_1	0.6	Section 1613.5.1
Site Class	D	Table 1613.5.2
F_a	1.0	Table 1613.5.3(1)
F_v	1.5	Table 1613.5.3(2)
SM_S	1.5	Section 1613.5.3
SM_1	0.9	Section 1613.5.3
SD_S	1.0	Section 1613.5.4
SD_1	0.6	Section 1613.5.4

According to Section 1802.2.7 of 2007 CBC, PGA can be estimated either using a site-specific study or can be taken as $S_{DS}/2.5$, where S_{DS} is determined using Section 1613.5.4. Therefore a PGA of 0.4g can be used for this site.

9.5 CONCRETE SLABS-ON-GRADE

Interior and exterior concrete slabs should be supported on at least 6 inches of crushed rock or angular gravel to provide a capillary moisture break over the compacted subgrade. Where exposed to vehicle traffic or forklift loads, 6 inches of Class 2 Aggregate Base should be used over the compacted subgrade. If crushed rock is used for capillary break, then it should have a maximum size of ¾-inch with at least 90 percent be weight retained on a #4 sieve. The aggregate base or crushed rock should be supported on moisture conditioned and compacted subgrade according to the recommendations in Exhibit 1, Appendix I.

Where slabs-on-grade have moisture-sensitive surfacing, we recommend that an impermeable membrane (10 mil or thicker) be placed over the rock to reduce migration of moisture vapor through the concrete slab. In order to promote a more uniform curing of the slab and to provide protection of the vapor membrane, it is advisable to place 2 inches of fine sand on top of the membrane prior to placing the slab concrete. The

sand should be moistened slightly prior to placing concrete. The sand can replace an equivalent thickness of the capillary break material. It should be noted that although vapor barrier systems are currently the industry standard, this system may not be completely effective in preventing floor slab moisture problems. These systems typically will not necessarily assure that floor slab moisture transmission rates will meet floor-covering manufacturer standards and that indoor humidity levels be appropriate to inhibit mold growth. The design and construction of such systems are totally dependent on the proposed use and design of the proposed building and all elements of building design and function should be considered in the slab-on-grade floor design. Building design and construction may have a greater role in perceived moisture problems since sealed buildings/rooms or inadequate ventilation may produce excessive moisture in a building and affect indoor air quality.

Various factors such as surface grades, adjacent planters, the quality of slab concrete and the permeability of the on-site soils affect slab moisture can control future performance. In many cases, floor moisture problems are the result of either improper curing of floor slabs or improper application of flooring adhesives. We recommend contacting a flooring consultant experienced in the area of concrete slab-on-grade floors for specific recommendations regarding your proposed flooring applications. Special precautions must be taken during the placement and curing of all concrete slabs. Excessive slump (high water-cement ratio) of the concrete and/or improper curing procedures used during either hot or cold weather conditions could lead to excessive shrinkage, cracking or curling of the slabs. High water-cement ratio and/or improper curing also greatly increase the water vapor permeability of concrete. We recommend that all concrete placement and curing operations be performed in accordance with the American Concrete Institute (ACI) Manual.

It is emphasized that we are not floor moisture proofing experts. We make no guarantee nor provide any assurance that use of the capillary break/vapor retarder system will reduce concrete slab-on-grade floor moisture penetration to any specific

rate or level, particularly those required by floor covering manufacturers. The builder and designers should consider all available measures for slab moisture protection.

Construction activities and exposure to the environment can cause deterioration of the prepared subgrade. We recommend that a Kleinfelder representative observe the final subgrade conditions prior to placement of the concrete, and if necessary, perform additional moisture and density testing to determine the subgrade suitability.

9.6 RETAINING WALLS

There is a possibility that the perimeter wall for the ramp and loading dock may serve as retaining walls up to 10 feet high. Retaining walls and below-grade walls should be designed to resist lateral pressures caused by water, soil and external surface loads. The magnitude of the lateral pressures will depend on whether or not the walls will be allowed to move, the type of backfill and its method of placement (retaining walls), excavation and shoring procedures (below-grade walls), the magnitude of external loads, the design water level elevation, and back drainage provisions.

In addition to the static loading of the walls due to earth and surcharge pressures, the retaining walls will be subjected to short-term lateral loading during a seismic event. If selected by the structural engineer, the structural integrity of the retaining walls may be evaluated by a combination of static and seismic lateral loading. The average total (moist) unit weight of the backfill soil may be assumed to be 120 pounds per cubic foot.

TABLE 9.6-1
RECOMMENDED STATIC AND SEISMIC LATERAL EARTH AND SURCHARGE PRESSURES FOR RETAINING WALLS

Condition	Static Lateral Earth Pressure	Surcharge Lateral Pressure [1]	Seismic Lateral Earth Pressure [2]		
			Flexible Wall [3]	Stiff Wall [4]	Rigid Wall [5]
Unrestrained	Equivalent Fluid Unit Weight = 45 pcf / ft	0.35q (psf)	9H	18H (psf)	
Restrained	Equivalent Fluid Unit Weight = 65 pcf / ft	0.55q (psf)			24H
Pressure Distribution	Triangular	Uniform (rectangular)	Uniform (rectangular)		
Applied Lateral Force [6] (pounds-force / foot)	0.33H above the bottom of the wall	0.5H above the bottom of the wall	0.5H above the wall		

[1] The surcharge pressure, q, is equivalent to the applied pressure from loads (such as buildings) located within a lateral distance equivalent to H. These pressures are general, and more detailed analysis can be provided if needed.

[2] Where H is the total height of the wall.

[3] Flexible Wall = Outward movement of the top of wall > 0.2%H

[4] Stiff Wall = Outward movement of top of wall = 0 to 0.2%H

[5] Rigid Wall = Outward movement of top of wall = 0

[6] The applied lateral force resultant is equivalent to a line load applied normal to the face of the retaining wall and is equal to the area of the pressure distribution as presented above (i.e.: the applied lateral force resultant due to the static unrestrained lateral earth pressure is equal to ½ (45 pcf) (H^2) applied at a height of 1/3 from the base of the wall.)

9.6.1 Wall Drainage

Although groundwater is below the planned depth range of below-grade walls, water pressures could accumulate behind below-grade walls (if any) in response to irrigation, rainfall and runoff or other factors. If below-grade walls do not include full wall drainage, hydrostatic pressures should be included in the design. Walls may be designed without hydrostatic pressures if they are fully drained. Wall drainage should

consist of either a prefabricated drainage material or a layer of drain rock. With either system, a mechanism (such as a drain pipe) should be installed to move the water from behind the wall to a storm drain system.

Prefabricated drainage material (such as Miradrain® or an approved alternate) may be used behind below-grade and retaining walls. Prefabricated drainage material should be installed in accordance with the manufacturer's recommendations.

As an alternative to prefabricated drainage material, a drain rock layer may be used. The drain rock layer should 1 to 2 feet thick and extend to within 1 foot of the ground surface. Four-inch diameter perforated plastic pipe should be installed (with the perforations facing down) along the base of the walls on a 4 inch thick bed of drain rock. The pipe should be sloped to drain by gravity to a sump or other drainage facility. Weep holes may also be used if water seepage is permissible in the basement. The weep holes should be a minimum of 3 inches in diameter located at no more then 10 feet apart, and a screen placed at the back of the holes if drain rock is used.

Drain rock should conform to Caltrans Class 2 permeable material. Alternatively, locally available, clean, 1/2 to 3/4-inch maximum size crushed rock or gravel could be used, provided it is encapsulated in a non-woven geotextile filter fabric, such as Mirafi® 140N or an approved alternative. A 1-foot thick cap of clayey soil should be placed over the drain rock to inhibit surface water infiltration.

Even with the back drain system, localized wet spots may occur in the walls. If this is undesirable, then the wall should be waterproofed. If this is a concern, consideration should be given to consulting with a waterproofing expert.

9.6.2 Net Allowable Bearing Pressure for Retaining Walls

Foundation systems that are located above an imaginary 1 horizontal: 1 vertical line, projected from the bottom of the new footings, will produce a surcharge load on the

walls in addition to the existing static lateral earth pressures. Foundations located outside (or below) the imaginary 1:1 line projected from the base of the existing wall footing will subject a negligible amount of additional static surcharge load to the walls.

Below-grade walls such as short landscape walls may be founded in the native soils or engineered fill at the depths selected by the designer. To avoid transfer of lateral loads to the new construction on Parcel 11 below-grade walls, permanent underpinning under existing adjacent buildings, if required, should extend to a depth no shallower than the base of the proposed new retaining walls.

9.7 EARTHWORK

This section discusses general geotechnical construction considerations, including site preparation, fill placement and compaction, and shallow temporary excavations.

9.7.1 Site and Subgrade Preparation

Existing pavements, curbs, abandoned utilities, vegetation and other debris should be removed. In areas outside of the new building footprint, depressions left from removal of below-grade obstructions should be excavated to unyielding soil and backfilled with properly-compacted fill. Site drainage should also be provided.

After general site preparation as described above, the exposed subgrade to receive new foundations should be observed by us to check for loose, wet, soft or otherwise unsuitable subgrade conditions. Subgrade materials should be proof rolled to look for soft spots. Soft spots should be removed, the area scarified, and properly-prepared subgrade material should be placed according to the recommendations given below. Depending of the size and depth of the soft spots, it may be more economical replace the material with aggregate base or to chemically treat the soil, such as with lime, cement or kiln dust.

9.7.2 Fill Materials and Placement

Engineered fill should be used to bring overexcavated areas to design rough grade and as backfill against foundations. Engineered fill should consist of low-plasticity soils with a liquid limit less than 35 and a plasticity index of 15 or below. Engineered fill should be free of significant organics and other deleterious materials and have a diameter of 3 inches or less. No more than 10 percent of the material should be greater than 1 inch in diameter. In general, the native soils below existing pavements to be removed (where applicable) may be suitable for re-use as fill provided that it is processed to meet the conditions outlined above. The criteria for on-site processing are subject to Owner approval.

Except adjacent to below-grade structural elements, structural fill should be compacted to at least 90 percent of the maximum dry density per ASTM D 1557. Placement of fill should be at a moisture content near optimum using loose-lift thicknesses of no more than 8 inches; all fill should be firm and stable. The use of typical compaction equipment in placing fills against retaining walls or other below grade structures may create unacceptable stress on the walls. As such thinner lift thickness and lighter compaction may be needed. The contractor should submit for approval to the structural engineer the equipment to be used for backfill in these areas.

9.7.3 Re-Use of On-site Material

Upon approval of the Owner and potentially off-site, the existing asphalt concrete may be pulverized and mixed with the underlying base for use as engineered fill if meets the following requirements:

Sieve Size	Percentage Passing
3 inch	100 min.
1 inch	90 min.
No. 200	8 – 40

The processed asphalt concrete/base material may be used as Class 2 Aggregate Subbase if it meets the following requirements:

Gradation Requirements

Sieve Size	Percentage Passing
3 inch	100 min.
2½ inch	90 – 100
No. 4	40 - 90
No. 200	0 – 25

Quality Requirements

Sand Equivalent	18 min.
R-value	50 min.

9.7.4 Excavation

We anticipate that excavation for the foundations and utility trenches can be made with either a backhoe or trencher, or similar earthwork equipment. Where trenches or other excavations are extended deeper than 5 feet, the excavation may become unstable and should be evaluated to monitor stability prior to personnel entering the trenches. Shoring or sloping of any trench wall may be necessary to protect personnel and to provide stability. All trenches should conform to the current OSHA requirements for work safety. It is the contractor's responsibility to follow OSHA temporary excavation guidelines and grade the slopes with adequate layback or provide adequate shoring and underpinning of existing structures and improvements, as needed. Slope layback and/or shoring measures should be adjusted as necessary in the field to suit the actual conditions encountered, in order to protect personnel and equipment within excavations.

Care should be taken during construction to reduce the impact of trenching on adjacent structures and pavements (if applicable). Excavations should be located so that no

structures, foundations, and slabs, existing or new, are located above a plane projected 2:1 (horizontal to vertical) upward from any point in an excavation, regardless of whether it is shored or unshored.

At the time of this geotechnical investigation, groundwater was not encountered. However, as described in the Subsurface Conditions section, the actual depth at which groundwater may be encountered in trenches and excavations may vary. As a minimum, provisions should be made to ensure that conventional sump pumps used in typical trenching and excavation projects are available during construction in case groundwater is found to be higher than observed during our investigation, and/or if substantial runoff water accumulates within the excavations as a result of wet weather conditions.

Backfill for trenches and other small excavations beneath slabs should be compacted as noted in Exhibit 1. Special care should be taken in the control of utility trench backfilling under structures and flatwork/slab areas. Poor compaction may cause excessive settlements resulting in damage to overlying structures and slabs.

Where utility trenches extend from the exterior to the interior limits of a building, native soils or lean concrete should be used as backfill material for a distance of 2 feet laterally on each side of the footing centerline to reduce the potential for the trench to act as a conduit to exterior surface water. In addition, where utilities cross through or under exterior footings, flexible waterproof caulking should be provided between the sleeve and the pipe. Utility trenches located in landscaped areas should also be capped with a minimum of 12 inches of compacted on-site clayey soils.

We did not perform an environmental assessment of the existing fill. As with any fill, there is a potential that hazardous material may be present within the fill.

9.7.5 Wet Weather Construction

If site grading and construction is to be performed during the winter rainy months, the owner and contractors should be aware of the potential impact of wet weather. Rainstorms can cause delay to construction and damage to previously completed work by saturating compacted pads or subgrades, or flooding excavations.

The grading contractor should be responsible to protect his work to avoid damage by rainwater. Standing pools of water should be pumped out immediately. Construction during wet weather conditions should be addressed in the project construction bid documents and/or specifications. We recommend the grading contractor submit a wet weather construction plan outlining procedures they will employ to protect their work and to reduce damage to their work by rainstorms.

9.7.6 Construction Observation

Variations in soil types and conditions are possible and may be encountered during construction. To permit correlation between the soil data obtained during this investigation and the actual soil conditions encountered during construction, we recommend that Kleinfelder be retained to provide observation and testing services during site earthwork and foundation construction. This will allow us the opportunity to compare actual conditions exposed during construction with those encountered in our investigation and to provide supplemental recommendations if warranted by the exposed conditions. Earthwork should be performed in accordance with the recommendations presented in this report, or as recommended by Kleinfelder during construction. Kleinfelder should be notified at least two working days prior to the start of construction and prior to when observation and testing services are needed.

9.8 SURFACE DRAINAGE

Final site grading should provide surface drainage away from the proposed structures, slabs-on-grade and edges of pavements to reduce the percolation of water into the

underlying soils. Surface water should not be allowed to collect adjacent to structures and along edges of concrete slabs or pavements. Grades should be sloped away from the structures a minimum of 4 percent in landscaped areas and 2 percent in paved areas for a horizontal distance of at least 5 feet. Surface water should be directed away from exposed soil slopes. Rainwater on building roofs should be conveyed through gutters, downspouts and closed pipes that discharge directly into the site storm water collection system or pavement. If discharging onto the pavement, safety of pedestrian traffic should be considered.

9.8.1 Seepage Control

Where utility lines extend through or beneath perimeter footings or curbs at pavement areas, permeable backfill should be terminated at least 1 foot from the footings or curbs. Concrete or compacted clayey soil should be used around the pipes to act as a seepage cutoff; the concrete or compacted clayey soil should extend a minimum of 4 feet in length beneath the footings. Beneath footings, the pipes should be "sleeved" through concrete cutoffs, and the annular space around the pipes should be filled with waterproof caulk. This will help reduce the amount of water seeping through the pervious trench backfill and collecting under the building or pavements.

Where slabs or pavements abut against landscaped areas, the base rock and subgrade soil should be protected against saturation. If landscape water or surface runoff is allowed to seep into the pavement section or subgrade, the service life of the pavement will be reduced. Subdrains behind curbs in landscape areas or vertical cut-off structures are recommended to reduce lateral seepage under pavements or slabs from adjacent landscaped areas. Vertical cut-off structures may consist of deepened curb sections, or equivalent, extending at least 2 inches below the baserock/subgrade interface. Subdrains should discharge to a proper outlet as determined by the project civil engineer. Cut-off structures should be carefully constructed such that they extend below the base section and are poured neat against undisturbed native soil or

compacted clayey fill. The cut-off structures should be continuous. Utility trenches (irrigation lines, electrical conduit, etc.) that extend through or under the curbs should be sealed with compacted clayey soil or poured in-place concrete. In addition, care should be taken to prevent over-watering of landscaped areas.

9.9 PAVEMENTS

Although we understand that paved parking lots are not anticipated, we have been asked to provide recommendations for potential future use. Based on our laboratory testing of the surface soils results indicate that the subgrade soil has an R-value of 17. The recommended pavement sections are presented in the table below. A factor of safety of 0.2 feet was used in the methods outline in Chapter 19 of the CalTrans Design Manual.

TABLE 9.9-1
RECOMMENDED FLEXIBLE PAVEMENT SECTIONS
SUPPORTED ON COMPACTED ON-SITE SOILS (R-VALUE = 17)

Traffic Index	Asphalt Concrete Thickness (inches)	Aggregate Base Thickness (inches)
4.5	2.5	7.5
5.5	3.0	9.5
6.5	3.5	12.0

The anticipated traffic and pavement sections presented above should be reviewed by the project Civil Engineer in consultation with the owner during the development of the final grading and paving plans. We have made our pavement designs based on the pavement subgrade soil consisting of existing on-site surface material consisting of gravelly/sandy clay. If site grading exposes soil other than that utilized in our analysis, we should perform additional tests to confirm or revise the recommended pavement sections to reflect the actual field conditions.

Subgrade preparation should extend a minimum of 2 feet laterally beyond the face of the curb (or edge of pavement if there is no curb) and consist of scarifying, moisture conditioning, and compacting as recommended in Exhibit 1. Compacted pavement subgrade should be non-yielding. Removal and subsequent replacement of some material (i.e., areas of excessively wet materials, unstable subgrade, or pumping soils) may be required to obtain the minimum compaction to the recommended depth.

Asphalt concrete should comply with the specifications presented in Section 39 of the CalTrans Standard Specifications, latest edition. Class 2 Aggregate Base materials should conform to Section 26 of the CalTrans Standard Specifications, latest edition. ASTM test procedures should be used to assess the percent relative compaction of the pavement subgrade soils, aggregate base and asphalt concrete.

Pavement surface should be sloped at a minimum of 2 percent and drainage gradients maintained to carry all surface water off the site due to the slightly porous or permeable nature of asphalt concrete. Surface water ponding should not be allowed anywhere on the site during or after construction.

10.0 ADDITIONAL SERVICES AND LIMITATIONS

The scope of services was limited to drill five borings and previous investigations by Kleinfelder and by Lowney. It should be recognized that definition and evaluation of subsurface conditions are difficult. Judgments leading to conclusions and recommendations are generally made with incomplete knowledge of the subsurface conditions present due to the limitations of data from field studies. The conclusions of this assessment are based on our subsurface exploration including five borings to depths of about 20 feet below the ground surface, laboratory testing of soil plasticity, compressibility characteristics, and compressive strength, and engineering analyses.

Kleinfelder offers various levels of investigative and engineering services to suit the varying needs of different clients. Although risk can never be eliminated, more detailed and extensive studies yield more information, which may help understand and manage the level of risk. Since detailed study and analysis involves greater expense, our clients participate in determining levels of service, which provide information for their purposes at acceptable levels of risk. The client and key members of the design team should discuss the issues covered in this report with Kleinfelder, so that the issues are understood and applied in a manner consistent with the owner's budget, tolerance of risk and expectations for future performance and maintenance.

Recommendations contained in this report are based on our field observations and subsurface explorations, limited laboratory tests, and our present knowledge of the proposed construction. It is possible that soil, rock or groundwater conditions could vary between or beyond the points explored. If soil, rock or groundwater conditions are encountered during construction that differ from those described herein, the client is responsible for ensuring that Kleinfelder is notified immediately so that we may reevaluate the recommendations of this report. If the scope of the proposed construction, including the estimated building loads, and the design depths or locations of the foundations, changes from that described in this report, the conclusions and

recommendations contained in this report are not considered valid unless the changes are reviewed, and the conclusions of this report are modified or approved in writing, by Kleinfelder.

As the geotechnical engineering firm that performed the geotechnical evaluation for this project, Kleinfelder should be retained to confirm that the recommendations of this report are properly incorporated in the design of this project, and properly implemented during construction. This may avoid misinterpretation of the information by other parties and will allow us to review and modify our recommendations if variations in the soil conditions are encountered. As a minimum Kleinfelder should be retained to provide the following continuing services for the project:

- Review the project plans and specifications, including any revisions or modifications;
- Observe and evaluate the site earthwork operations to confirm subgrade soils are suitable for construction of foundations, slabs-on-grade, pavements and placement of engineered fill;
- Confirm engineered fill for the structure and other improvements is placed and compacted per the project specifications; and
- Observe foundation bearing soils to confirm conditions are as anticipated.

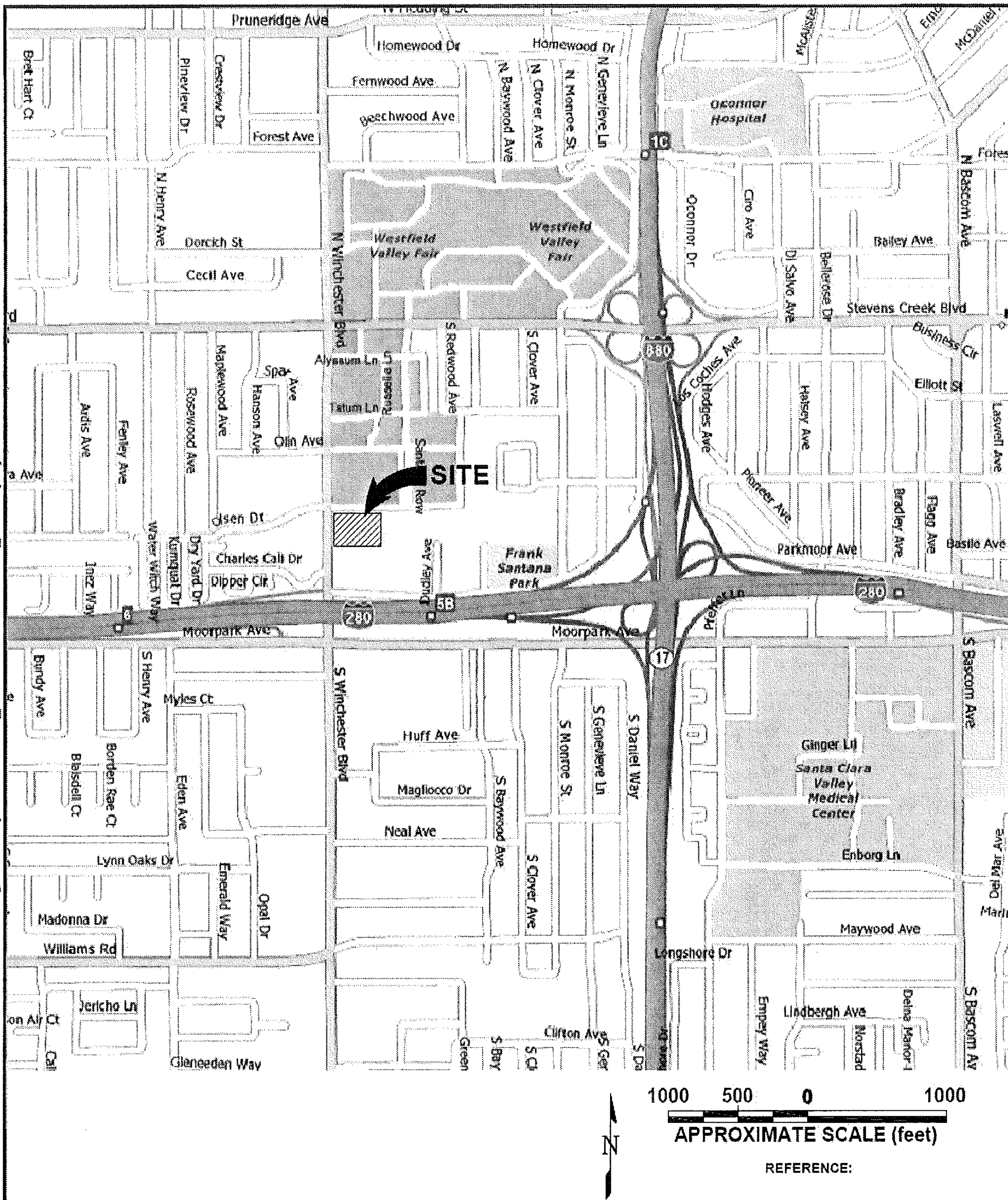
Kleinfelder cannot be responsible for interpretation by others of this report or the conditions encountered in the field.

The scope of services for this subsurface exploration and geotechnical report did not include environmental assessments or evaluations regarding the presence or absence of wetlands or hazardous substances in the soil, surface water, or groundwater at this site.

Kleinfelder cannot be responsible for interpretation by others of this report or the conditions encountered in the field. Kleinfelder must be retained so that all geotechnical aspects of construction will be monitored on a full-time basis by a representative from Kleinfelder, including site preparation, preparation of foundations, installation of piles, and placement of engineered fill and trench backfill. These services provide Kleinfelder the opportunity to observe the actual soil, rock and groundwater conditions encountered during construction and to evaluate the applicability of the recommendations presented in this report to the site conditions. If Kleinfelder is not retained to provide these services, we will cease to be the engineer of record for this project and will assume no responsibility for any potential claim during or after construction on this project. If changed site conditions affect the recommendations presented herein, Kleinfelder must also be retained to perform a supplemental evaluation and to issue a revision to our original report.

This report, and any future addenda or reports regarding this site, may be made available to bidders to supply them with only the data contained in the report regarding subsurface conditions and laboratory test results at the point and time noted. Bidders may not rely on interpretations, opinion, recommendations, or conclusions contained in the report. Because of the limited nature of any subsurface study, the contractor may encounter conditions during construction which differ from those presented in this report. In such event, the contractor should promptly notify the owner so that Kleinfelder's geotechnical engineer can be contacted to confirm those conditions. We recommend the contractor describe the nature and extent of the differing conditions in writing and that the construction contract include provisions for dealing with differing conditions. Contingency funds should be reserved for potential problems during earthwork and foundation construction. Furthermore, the contractor should be prepared to handle contamination conditions encountered at this site, which may affect the excavation, removal, or disposal of soil; dewatering of excavations; and health and safety of workers.

PLATES



REFERENCE:

KLEINFELDER *Bright People. Right Solutions.*	**SITE VICINITY MAP** SANTANA ROW - PARCEL 11 SAN JOSE, CALIFORNIA	DRAWN BY: LGS REVISED BY: CHECKED BY: PK PLATE **1**
DRAWN: JAN 2008 APPROVED BY:	PROJECT NO.91037/GEO FILE NAME:PLATES.dwg	

ATTACHED IMAGES: Images: SITE-VIC.jpg Images: SITEPLAN.jpg
ATTACHED XREFS: XRef: Style A_08x11
CAD FILE: C:\Documents and Settings\Isue\My Documents_CADD and GIS\CADD_CADD proj\91037\GEO\ LAYOUT: SITE-VIC
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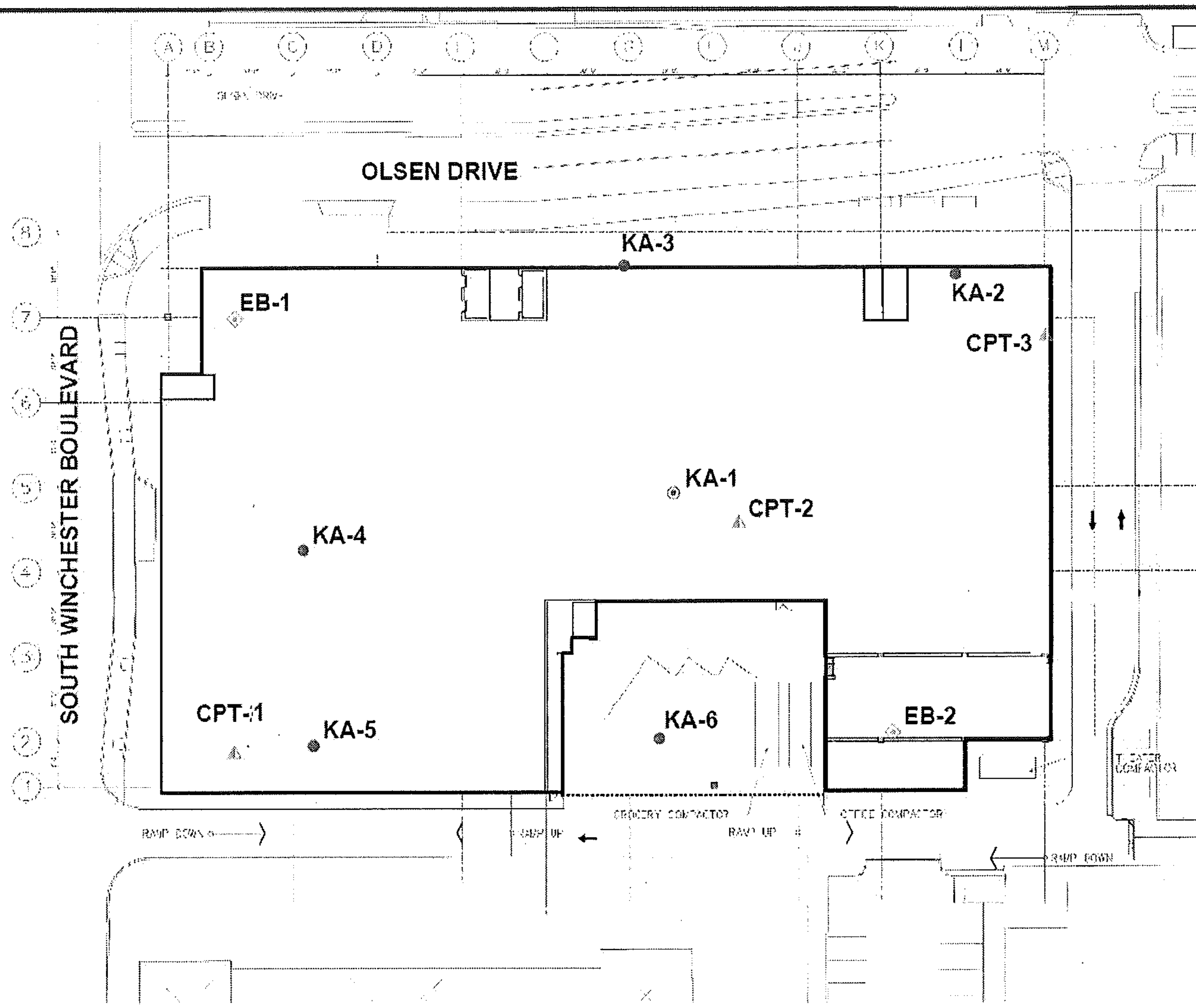

LEGEND

- ● SOIL BORING (by Kleinfelder, 2008)
- ⊙ SOIL BORING (by Kleinfelder, 2005)
- ◈ EXPLORATORY BORING (by Lowney Associates, 2005)
- ▲ CONE PENETROMETER TEST (by Lowney Associates, 2005)

REFERENCES:
maps.google.com, 2006.
Lowney Associates, "Site Plan," Feb 2002

NOTE: Locations are approximate.

ATTACHED IMAGES: Images: SITE-VIC.jpg Images: SITEPLAN.jpg
ATTACHED XREFS: XRef: Style A_08x11
Ple-L:\2007\07PROJ CAD FILE: C:\Documents and Settings\lsue\My Documents_CADD and GIS\CADD_CADD proj\91037\GEO\ LAYOUT: SITEPLAN

KLEINFELDER Bright People. Right Solutions.	**SITE PLAN** SANTANA ROW - PARCEL 11 SAN JOSE, CALIFORNIA	DRAWN BY: LGS REVISED BY: CHECKED BY: PK PLATE **2**
DRAWN: JAN 2008 / APPROVED BY:	PROJECT NO.91037/GEO / FILE NAME:PLATES.dwg	

APPENDIX A
KLEINFELDER BORING LOGS (2008)

UNIFIED SOIL CLASSIFICATION SYSTEM

MAJOR DIVISIONS		LTR	ID	DESCRIPTION
COARSE GRAINED SOILS	GRAVEL AND GRAVELLY	GW		Well-graded gravels or gravel with sand, little or no fines.
		GP		Poorly-graded gravels or gravel with sand, little or no fines.
		GM		Silty gravels, silty gravel with sand mixture.
		GC		Clayey gravels, clayey gravel with sand mixture.
	SAND AND SANDY	SW		Well-graded sands or gravelly sands, little or no fines.
		SP		Poorly-graded sands or gravelly sands, little or no fines.
		SM		Silty sand.
		SC		Clayey sand.

MAJOR DIVISIONS		LTR	ID	DESCRIPTION
FINE GRAINED SOILS	SILTS AND CLAYS	ML		Inorganic silts and very fine sands, rock flour or clayey silts with slight plasticity.
		CL		Inorganic lean clays of low to medium plasticity, gravelly clays, sandy clays, silty clays.
		OL		Organic silts and organic silt-clays of low plasticity.
	SILTS AND CLAYS	MH		Inorganic elastic silts, micaceous or diatomaceous or silty soils.
		CH		Inorganic fat clays (high plasticity).
		OH		Organic clays of medium high to high plasticity.
HIGHLY ORGANIC SOILS		Pt		Peat and other highly organic soils.

Standard Penetration Split Spoon Sampler 2.0 inch O.D., 1.4 inch I.D.

Modified California Sampler 2.5 inch O.D., 2.0 inch I.D.

Bulk Sample

California Sampler, 3.0 inch O.D., 2.5 inch I.D.

Shelby Tube 3.0 inch O.D.

0745, 5/31 Approximate water level first observed in boring. Time recorded in reference to a 24 hour clock.

0800, 5/31 Approximate water level observed in boring following drilling

PEN	Pocket Penetrometer reading, in tsf
TV:Su	Torvane shear strength, in ksf

LL	LIQUID LIMIT	TX	TRIAXIAL SHEAR
PI	PLASTICITY INDEX	CONSOL	CONSOLIDATION
%-#200	SIEVE ANALYSIS (#200 SCREEN)	R-Value	RESISTANCE VALUE
DS	DIRECT SHEAR	SE	SAND EQUIVALENT
C	COHESION (PSF)	EI	EXPANSION INDEX
PHI	FRICTION ANGLE	FS	FREE SWELL (U.S.B.R.)

Notes: Blow counts represent the number of blows a 140-pound hammer falling 30 inches required to drive a sampler through the last 12 inches of an 18 inch penetration, unless otherwise noted.

The lines separating strata on the logs represent approximate boundaries only. The actual transition may be gradual. No warranty is provided as to the continuity of soil strata between borings. Logs represent the soil section observed at the boring location on the date of drilling only.

KLEINFELDER
Bright People. Right Solutions.

PROJECT NO. 91037

BORING LOG LEGEND

Santana Row
Parcel 11
San Jose, California

PLATE A-1

1/19/2009 10:44:13 AM

Date Completed: 1/14/08

Logged By: J. Ando

Total Depth: Approximately 20.0 ft

Drilling method: 8" Hollow Stem Auger

Hammer Wt: 140 lbs., 30" drop

Notes:

Depth, ft	FIELD Sample	FIELD Blows/ft	LABORATORY Dry Density pcf	LABORATORY Moisture Content %	LABORATORY Compress. Strength tsf	LABORATORY Other Tests	Pen, tsf	DESCRIPTION (Surface Elevation: Estimated 133 feet (MSL))
								ASPHALT - approximately 3 inches thick
								AGGREGATE BASEROCK - approximately 8 inches thick
		64		8.4				**CLAYEY SAND WITH GRAVEL (SC)** - brown, moist, very dense (FILL)
		33						**POORLY GRADEDSAND WITH CLAY AND GRAVEL (SP-SC)** - brown, moist, medium dense (FILL)
5				6.0				**CLAYEY SAND WITH GRAVEL (SC)** - brown, moist, loose
		11					1.0	**SANDY LEAN CLAY WITH GRAVEL (CL)** - brown, moist, firm
		12	112	15.3	2.28 @ 6.5%		2.5 2.8 1.5	**LEAN CLAY WITH SAND (CL)** - brown, moist, firm
10		16		8.1		Passing -#200=21%		**CLAYEY SAND WITH GRAVEL (SC)** - brown, moist, medium dense, rounded to subrounded coarse gravel
15		59						**SANDY LEAN CLAY WITH GRAVEL (CL)** - brown, moist, hard, subrounded fine to coarse gravel
		14					0.8 1.3 1.0	**LEAN CLAY (CL)** - brown, moist, firm - at 18.5 feet: gravel layer
20								Boring terminated at approximately 20 feet No groundwater encountered Boring backfilled with grout
25								
30								

KLEINFELDER
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PROJECT NO. 91037

LOG OF BORING NO. KA-2

Santana Row
Parcel 11
San Jose, California

PLATE A-2

Date Completed: 1/14/08

Logged By: J. Ando

Total Depth: Approximately 20.0 ft

Drilling method: 8" Hollow Stem Auger

Hammer Wt: 140 lbs., 30" drop

Notes:

Depth, ft	FIELD Sample	FIELD Blows/ft	LABORATORY Dry Density pcf	LABORATORY Moisture Content %	LABORATORY Compress. Strength tsf	LABORATORY Other Tests	Pen, tsf	DESCRIPTION (Surface Elevation: Estimated 133 feet (MSL))
								ASPHALT - approximately 3 inches thick
								AGGREGATE BASEROCK - approximately 6 inches thick
		13				LL=27; PI=11 R-Value	>4.5	**SANDY LEAN CLAY WITH GRAVEL (CL)** - brown, moist, hard, subrounded fine grained gravel, low plasticity (FILL)
		7						**CLAYEY SAND WITH GRAVEL (SC)** - brown, moist, loose, fine to coarse gravel (FILL)
5		17		19.8			4.0	**LEAN CLAY WITH SAND (CL)** -brown, moist, firm
		13	108	13.8		Consol/Swell	4.5	
								- from 9.5 feet to end: increasing clay content
10		47				Sieve Analysis Passing -#200=4%		**POORLY GRADED SAND WITH GRAVEL (SP)** - brown, moist, dense
15		32						
		60						**POORLY GRADED SAND WITH CLAY AND GRAVEL (SP-SC)** - brown, moist, dense, subrounded to subangular, coarse and fine gravel
20								Boring terminated at approximately 20 feet No groundwater encountered Boring backfilled with grout
25								
30								

KLEINFELDER
Bright People. Right Solutions.

PROJECT NO. 91037

LOG OF BORING NO. KA-3

Santana Row
Parcel 11
San Jose, California

PLATE A-3

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1/19/2009 11:19:53 AM

Date Completed: 1/14/08

Logged By: J. Ando

Total Depth: Approximately 20.0 ft

Drilling method: 8" Hollow Stem Auger

Hammer Wt: 140 lbs., 30" drop

Notes:

Depth, ft	Sample (FIELD)	Blows/ft (FIELD)	Dry Density pcf (LABORATORY)	Moisture Content % (LABORATORY)	Compress. Strength tsf (LABORATORY)	Other Tests (LABORATORY)	Pen, tsf	DESCRIPTION
								Surface Elevation: **Estimated 133 feet (MSL)**
								ASPHALT - approximately 3 inches thick
								AGGREGATE BASEROCK - approximately 6 inches thick
		17					2.5	**LEAN CLAY WITH SAND (CL)** - brown, moist, firm, fine grained sand (FILL)
								- soft
		6					1.0	
5								- firm
		10		14.3			1.8	
								LEAN CLAY (CL) - brown, moist, firm
		26					2.5	
10								- dry, hard
		12	101	9.4	1.62 @ 0.9%		>4.5	
15		26						
20		41						Boring terminated at approximately 20 feet No groundwater encountered Boring backfilled with grout
25								
30								

KLEINFELDER
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PROJECT NO. 91037

LOG OF BORING NO. KA-4

Santana Row
Parcel 11
San Jose, California

PLATE A-4

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1/19/2009 10:44:43 AM

Date Completed: **1/14/08**

Logged By: **J. Ando**

Total Depth: **Approximately 20.0 ft**

Drilling method: **8" Hollow Stem Auger**

Hammer Wt: **140 lbs., 30" drop**

Notes:

Depth, ft	Sample (FIELD)	Blows/ft (FIELD)	Dry Density pcf (LABORATORY)	Moisture Content % (LABORATORY)	Compress. Strength tsf (LABORATORY)	Other Tests (LABORATORY)	Pen, tsf	DESCRIPTION — Surface Elevation: **Estimated 133 feet (MSL)**
								ASPHALT - approximately 3 inches thick
								AGGREGATE BASEROCK - approximately 6 inches thick
	■	18					2.0	**LEAN CLAY WITH GRAVEL (CL)** - brown, moist, firm (FILL)
	■	10					3.5	**LEAN CLAY WITH SAND (CL)** - brown, moist, hard (FILL)
5	■	13		11.5			3.5	**LEAN CLAY (CL)** - brown, moist, hard
	■	9					3.5	
10	■	14		14.9			4.0	**LEAN CLAY WITH SAND (CL)** - brown, moist, firm, fine grained sand
15	■	13		21.4		Passing -#200=77%	2.0	
	■	17	104	17.7		Consol/Swell	3.5	**LEAN CLAY (CL)** - brown, moist, hard
20								Boring terminated at approximately 20 feet No groundwater encountered Boring backfilled with grout
25								
30								

KLEINFELDER
Bright People. Right Solutions.

PROJECT NO. 91037

LOG OF BORING NO. KA-5

Santana Row
Parcel 11
San Jose, California

PLATE **A-5**

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1/19/2009 10:44:51 AM

Date Completed: 1/14/08

Logged By: J. Ando

Total Depth: Approximately 20.0 ft

Drilling method: 8" Hollow Stem Auger

Hammer Wt: 140 lbs., 30" drop

Notes:

Depth, ft	Blows/ft (Field)	Dry Density pcf (Laboratory)	Moisture Content %	Compress. Strength tsf	Other Tests	Pen, tsf	DESCRIPTION — *Surface Elevation:* **Estimated 133 feet (MSL)**
							ASPHALT - approximately 4 inches thick
							AGGREGATE BASEROCK - approximately 8 inches thick
	34					>4.5	**LEAN CLAY WITH GRAVEL (CL)** - moist, brown, hard (FILL)
	18		14.2			4.0	**LEAN CLAY WITH SAND (CL)** - brown, moist, hard, fine grained sand (FILL) - at 4 feet: gravel layer
5	10					3.0	
	16					4.0	**LEAN CLAY (CL)** - brown, moist, firm, trace fine gravel
10	9		14.1			3.5	**LEAN CLAY WITH GRAVEL (CL)** - brown, moist, hard, subangular, fine gravel
15	26						**CLAYEY SAND WITH GRAVEL (SC)** - brown, moist, medium dense
20	18					1.5	Boring terminated at approximately 20 feet No groundwater encountered Boring backfilled with grout
25							
30							

KLEINFELDER
Bright People. Right Solutions.

PROJECT NO. 91037

LOG OF BORING NO. KA-6

Santana Row
Parcel 11
San Jose, California

PLATE
A-6

APPENDIX B
KLEINFELDER BORING LOG (2006)

UNIFIED SOIL CLASSIFICATION SYSTEM

MAJOR DIVISIONS		LTR	ID	DESCRIPTION
COARSE GRAINED SOILS	GRAVEL AND GRAVELLY	GW		Well-graded gravels or gravel with sand, little or no fines.
		GP		Poorly-graded gravels or gravel with sand, little or no fines.
		GM		Silty gravels, silty gravel with sand mixture.
		GC		Clayey gravels, clayey gravel with sand mixture.
	SAND AND SANDY	SW		Well-graded sands or gravelly sands, little or no fines.
		SP		Poorly-graded sands or gravelly sands, little or no fines.
		SM		Silty sand.
		SC		Clayey sand.

MAJOR DIVISIONS		LTR	ID	DESCRIPTION
FINE GRAINED SOILS	SILTS AND CLAYS	ML		Inorganic silts and very fine sands, rock flour or clayey silts with slight plasticity.
		CL		Inorganic lean clays of low to medium plasticity, gravelly clays, sandy clays, silty clays.
		OL		Organic silts and organic silt-clays of low plasticity.
	SILTS AND CLAYS	MH		Inorganic elastic silts, micaceous or diatomaceous or silty soils.
		CH		Inorganic fat clays (high plasticity).
		OH		Organic clays of medium high to high plasticity.
HIGHLY ORGANIC SOILS		Pt		Peat and other highly organic soils.

Standard Penetration Split Spoon Sampler 2.0 inch O.D., 1.4 inch I.D.

Modified California Sampler 2.5 inch O.D., 2.0 inch I.D.

Bulk Sample

California Sampler, 3.0 inch O.D., 2.5 inch I.D.

Shelby Tube 3.0 inch O.D.

▽ 0745, 5/31 Approximate water level first observed in boring. Time recorded in reference to a 24 hour clock.

▼ 0800, 5/31 Approximate water level observed in boring following drilling

PEN	Pocket Penetrometer reading, in tsf
TV:Su	Torvane shear strength, in ksf

LL	LIQUID LIMIT	TX	TRIAXIAL SHEAR
PI	PLASTICITY INDEX	CONSOL	CONSOLIDATION
%-#200	SIEVE ANALYSIS (#200 SCREEN)	R-Value	RESISTANCE VALUE
DS	DIRECT SHEAR	SE	SAND EQUIVALENT
C	COHESION (PSF)	EI	EXPANSION INDEX
PHI	FRICTION ANGLE	FS	FREE SWELL (U.S.B.R.)

Notes: Blow counts represent the number of blows a 140-pound hammer falling 30 inches required to drive a sampler through the last 12 inches of an 18 inch penetration, unless otherwise noted.

The lines separating strata on the logs represent approximate boundaries only. The actual transition may be gradual. No warranty is provided as to the continuity of soil strata between borings. Logs represent the soil section observed at the boring location on the date of drilling only.

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BORING LOG LEGEND

Santana Row Lot 11
Santana Row
San Jose, California

PLATE **B-1**

PROJECT NO. **59959**

11/24/2008 3:39:30 PM

Date Completed: 1/6/06

Logged By: F. Mwape

Total Depth: Approximately 46.5 ft

Drilling method:

Hammer Wt: 140 lbs., 30" drop

Notes:

Depth, ft	FIELD Sample	FIELD Blows/ft	LABORATORY Dry Density pcf	LABORATORY Moisture Content %	LABORATORY Compress. Strength tsf	LABORATORY Other Tests	Pen, tsf	DESCRIPTION (Surface Elevation: Estimated 133 feet (MSL))
								ASPHALT CONCRETE- approximately 6 inches
								AGGREGATE BASE- approximately 6 inches
		48	115	4.5				**SANDY LEAN CLAY WITH GRAVEL (CL)**- dark brown, moist, very stiff, fine to coarse sand, fine to coarse gravel, (FILL)
5		50/6"	126	10.3				-hard, fragments of crushed asphalt concrete
								CLAYEY SAND (SC)- brown, moist, medium dense, fine to coarse sand, few fine gravel
10		25		16.3		Passing -#200=32%		
								CLAYEY GRAVEL WITH SAND (GC)- brown, moist, medium dense, fine to coarse sand, fine to coarse garvel
15		27				Passing -#200=15%		
20		350 psi						**LEAN CLAY WITH SAND (CL)**- brown, moist, very stiff to hard, fine to coarse sand, fine gravel
								POORLY GRADED SAND WITH CLAY AND GRAVEL (SP)- brown, moist, medium dense, fine to coarse sand, fine to coarse garvel
								CLAYEY SAND WITH GRAVEL (SC)- dark brown, moist, medium dense, fine to coarse sand, fine to coarse gravel
25		25				Passing -#200=31%		
								-grades less clay with more sand and gravel below 27 ft.
						Passing -#200=12%		**POORLY GRADED SAND WITH CLAY AND GRAVEL (SP)**- brown, moist, very dense, fine to coarse sand, fine to coarse garvel
30								

KLEINFELDER
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PROJECT NO. 59959

LOG OF BORING NO. KA-1

Santana Row Lot 11
Santana Row
San Jose, California

PLATE

B-2

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11/24/2008 3:40:23 PM

Depth, ft	Sample	Blows/ft (FIELD)	Dry Density pcf (LABORATORY)	Moisture Content %	Compress. Strength tsf	Other Tests	Pen, tsf	DESCRIPTION
								(Continued from previous plate)
	◣	60						
								LEAN CLAY WITH SAND AND GRAVEL (CL)- brown, moist, stiff, fine to coarse sand, fine to coarse gravel
35	◣	34	103	27.7		LL=31; PI=12		**LEAN CLAY WITH SAND (CL)**- brown, moist, stiff, fine to coarse sand
								POORLY GRADED GRAVEL WITH SAND AND CLAY (GP)- brown, moist, very dense, fine to coarse sand, fine to coarse gravel
40	◣	82/11"						
45	◣	11		24.5		Passing -#200=65%		**SANDY LEAN CLAY (CL)**- brown, moist, stiff, fine sand
								Bottom of boring. Boring backfilled with grout. Groundwater levels masked due to rotary wash methods.
50								
55								
60								

KLEINFELDER
Bright People. Right Solutions.

PROJECT NO. 59959

LOG OF BORING NO. KA-1

Santana Row Lot 11
Santana Row
San Jose, California

PLATE **B-2** (cont'd)

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11/24/2008 3:40:23 PM

APPENDIX C
BORING LOGS, CPT DATA BY OTHERS

FIELD INVESTIGATION

Our field investigation consisted of a surface reconnaissance and a subsurface exploration program using conventional, truck-mounted rotary-wash drilling and cone penetration test (CPT) equipment. Two 8-inch-diameter exploratory borings were drilled on June 16 and 17, 2005 to a maximum depth of 100 feet. Three CPTs were advanced to a maximum depth of 60 feet on May 26, 2005. CPT data was obtained at 0.16 feet intervals, and consisted of cone tip resistance, sleeve friction and other parameters. The data obtained was correlated using the references cited, to determine the indicated soil type, shear strength, equivalent Standard Penetration Test (SPT), N-value (blows per foot), and other parameters. The approximate locations of the borings and CPTs are shown on the Site Plan, Figure 2. The soils encountered were logged in the field by our representative and described in accordance with the Unified Soil Classification System (ASTM D2488). Our boring and CPT logs, as well as a key to the classification of the soil, are included as part of this appendix.

The locations of borings and CPTs were approximately determined by pacing from existing site boundaries and structures. The elevations of the borings were not determined. The locations of the borings and CPT should be considered accurate only to the degree implied by the method used.

Representative soil samples were obtained from the borings at selected depths. All samples were returned to our laboratory for evaluation and appropriate testing. Penetration resistance blow counts were obtained by dropping a 140-pound hammer 30 inches. Modified California 2.5-inch I.D. samples and Standard Penetration Test (SPT) 2-inch O.D. samples were obtained by driving the samplers 18 inches and recording the number of hammer blows for each 6 inches of penetration. Unless otherwise indicated, the blows per foot recorded on the boring logs represent the accumulated number of blows required to drive the samplers the last two 6-inch increments. When using the SPT sampler, the last two 6-inch increments is the uncorrected SPT measured blow count. The various samplers are denoted at the appropriate depth on the boring logs and symbolized as shown on Figure A-1.

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

The attached boring and CPT 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 CPT 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.

* * * * * * * * * * * * *

PRIMARY DIVISIONS				SOIL TYPE	SECONDARY DIVISIONS
COARSE GRAINED SOILS	MORE THAN HALF OF MATERIAL IS LARGER THAN NO. 200 SIEVE SIZE	GRAVELS MORE THAN HALF OF COARSE FRACTION IS LARGER THAN NO. 4 SIEVE	CLEAN GRAVELS (Less than 5% Fines)	GW	Well graded gravels, gravel-sand mixtures, little or no fines
				GP	Poorly graded gravels or gravel-sand mixtures, little or no fines
			GRAVEL WITH FINES	GM	Silty gravels, gravel-sand-silt mixtures, plastic fines
				GC	Clayey gravels, gravel-sand-clay mixtures, plastic fines
		SANDS MORE THAN HALF OF COARSE FRACTION IS SMALLER THAN NO. 4 SIEVE	CLEAN SANDS (Less than 5% Fines)	SW	Well graded sands, gravelly sands, little or no fines
				SP	Poorly graded sands or gravelly sands, little or no fines
			SANDS WITH FINES	SM	Silty sands, sand-silt-mixtures, non-plastic fines
				SC	Clayey sands, sand-clay mixtures, plastic fines
FINE GRAINED SOILS	MORE THAN HALF OF MATERIAL IS SMALLER THAN NO. 200 SIEVE SIZE	SILTS AND CLAYS LIQUID LIMIT IS LESS THAN 50 %		ML	Inorganic silts and very fine sands, rock flour, silty or clayey fine sands or clayey silts with slight plasticity
				CL	Inorganic clays of low to medium plasticity, gravelly clays, sandy clays, silty clays, lean clays
				OL	Organic silts and organic silty clays of low plasticity
		SILTS AND CLAYS LIQUID LIMIT IS GREATER THAN 50 %		MH	Inorganic silts, micaceous or diatomaceous fine sandy or silty soils, elastic silts
				CH	Inorganic clays of high plasticity, fat clays
				OH	Organic clays of medium to high plasticity, organic silts
HIGHLY ORGANIC SOILS				PT	Peat and other highly organic soils

DEFINITION OF TERMS

U.S. STANDARD SIEVE SIZE — CLEAR SQUARE SIEVE OPENINGS

	200	40	10	4	3/4"	3"	12"
SILTS AND CLAY	SAND			GRAVEL		COBBLES	BOULDERS
	FINE	MEDIUM	COARSE	FINE	COARSE		
	0.08	0.4	2	5	19	76mm	

GRAIN SIZES

- TERZAGHI SPLIT SPOON STANDARD PENETRATION
- MODIFIED CALIFORNIA
- D&M UNDERWATER SAMPLER
- SHELBY TUBE
- NO RECOVERY

SAMPLERS

SAND AND GRAVEL	BLOWS/FOOT*
VERY LOOSE	0-4
LOOSE	4-10
MEDIUM DENSE	10-30
DENSE	30-50
VERY DENSE	OVER 50

RELATIVE DENSITY

SILTS AND CLAYS	STRENGTH+	BLOWS/FOOT*
VERY SOFT	0-1/4	0-2
SOFT	1/4-1/2	2-4
MEDIUM STIFF	1/2-1	4-8
STIFF	1-2	8-16
VERY STIFF	2-4	16-32
HARD	OVER 4	OVER 32

CONSISTENCY

*Number of blows of 140 pound hammer falling 30 inches to drive a 2-inch O.D. (1-3/8 inch I.D.) split spoon (ASTM D-1586).
+Unconfined compressive strength in tons/sq.ft. as determined by laboratory testing or approximated by the standard penetration test (ASTM D-1586), pocket penetrometer, torvane, or visual observation.

KEY TO EXPLORATORY BORING LOGS

Unified Soil Classification System (ASTM D-2487)

LOWNEYASSOCIATES
Environmental/Geotechnical/Engineering Services

FIGURE A-1

EXPLORATORY BORING: EB-1

DRILL RIG:	PROJECT NO: 1477-1Q
BORING TYPE: ROTARY WASH	PROJECT: SANTANA ROW LOT 11
LOGGED BY: BM	LOCATION: SAN JOSE, CA
START DATE: 6-16-05 FINISH DATE: 6-16-05	COMPLETION DEPTH: 99.5 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.

Columns: 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): ○ Pocket Penetrometer, △ Torvane, ● Unconfined Compression, ▲ U-U Triaxial Compression (1.0, 2.0, 3.0, 4.0)

SURFACE ELEVATION:

MATERIAL DESCRIPTION AND REMARKS	SOIL TYPE
SANDY LEAN CLAY WITH GRAVEL (CL) [FILL] very stiff, moist, dark brown, fine sand, fine gravel, low plasticity	CL, FILL
LEAN CLAY (CL) stiff, moist, brown, some fine sand, low plasticity	CL
SANDY LEAN CLAY (CL) stiff to very stiff, moist, brown, fine sand, low plasticity	CL
CLAYEY SAND (SC) very dense, moist, brown, fine to coarse sand, fine to coarse gravel	SC
LEAN CLAY WITH SAND (CL) stiff, moist, brown, fine sand, low to moderate plasticity	CL
CLAYEY SAND (SC) very dense, moist, brown, fine to coarse sand, some fine gravel	SC
SANDY LEAN CLAY (CL) medium stiff, moist, brown, fine sand, low plasticity	CL

Approx. Depth (ft)	Penetration Resistance (blows/ft)	Moisture Content (%)	Dry Density (pcf)
1.5	25	11	113
4	9	26	86
6	21	16	100
10	19	16	99
12	27	22	103
14	31	21	98
15.5	50/6"	20	109
18	16	20	
20.5	200psi		
25	65	9	
30	15	24	100

Continued Next Page

GROUND WATER OBSERVATIONS:
NOT APPLICABLE DUE TO ROTARY WASH CIRCULATION

CA_DOT.GDT 8/8/05 MV* FLL

LOWNEYASSOCIATES
Environmental/Geotechnical/Engineering Services

EXPLORATORY BORING: EB-1 Cont'd

DRILL RIG:	PROJECT NO: 1477-1Q
BORING TYPE: ROTARY WASH	PROJECT: SANTANA ROW LOT 11
LOGGED BY: BM	LOCATION: SAN JOSE, CA
START DATE: 6-16-05 FINISH DATE: 6-16-05	COMPLETION DEPTH: 99.5 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)

DEPTH (FT)	MATERIAL DESCRIPTION AND REMARKS	SOIL TYPE	PENETRATION RESISTANCE (BLOWS/FT.)	MOISTURE CONTENT (%)	DRY DENSITY (PCF)	PERCENT PASSING NO. 200 SIEVE
30	**SANDY LEAN CLAY (CL)** medium stiff, moist, brown, fine sand, low plasticity; Plasticity Index = 12, Liquid Limit = 29	CL				
35			250psi			
	LEAN CLAY (CL) very stiff, moist, brown with gray mottles, some fine sand, low plasticity	CL				
	SANDY LEAN CLAY (CL) very stiff, moist, brown and gray mottled, fine sand, low plasticity	CL				
45			55	22	105	
50			53	21	109	
55			50/6"	22	112	
		SP-SC	50/4"	11		
60						

Continued Next Page

GROUND WATER OBSERVATIONS:
NOT APPLICABLE DUE TO ROTARY WASH CIRCULATION

CA DOT.GDT 8/8/05 MV* FLL

EXPLORATORY BORING: EB-1 Cont'd

DRILL RIG:
BORING TYPE: ROTARY WASH
LOGGED BY: BM
START DATE: 6-16-05 FINISH DATE: 6-16-05

PROJECT NO: 1477-1Q
PROJECT: SANTANA ROW LOT 11
LOCATION: SAN JOSE, CA
COMPLETION DEPTH: 99.5 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)

DEPTH (FT)	MATERIAL DESCRIPTION AND REMARKS	SOIL TYPE	PENETRATION RESISTANCE (BLOWS/FT.)	MOISTURE CONTENT (%)	DRY DENSITY (PCF)	PERCENT PASSING NO. 200 SIEVE	Undrained Shear Strength (ksf)
60–68	**POORLY GRADED SAND WITH CLAY AND GRAVEL (SP-SC)** very dense, wet, gray and brown, fine to coarse sand, fine to coarse gravel	SP-SC	50/5"	14			
68–74.5	**LEAN CLAY WITH SAND (CL)** very stiff, moist, brown with gray mottles, fine sand, low plasticity	CL	36	22			○
74.5–80	**SANDY LEAN CLAY (CL)** stiff, moist, bluish gray, fine sand, low plasticity	CL	55	18	114		○
80–90	**POORLY GRADED SAND WITH CLAY AND GRAVEL (SP-SC)** very dense, wet, gray and brown, fine to coarse sand, fine to coarse gravel	SP-SC	50/6"	14			

Continued Next Page

GROUND WATER OBSERVATIONS:
NOT APPLICABLE DUE TO ROTARY WASH CIRCULATION

CA_DOT.GDT 8/8/05 MV FLL

EXPLORATORY BORING: EB-1 Cont'd

DRILL RIG:
BORING TYPE: ROTARY WASH
LOGGED BY: BM
START DATE: 6-16-05 FINISH DATE: 6-16-05

PROJECT NO: 1477-1Q
PROJECT: SANTANA ROW LOT 11
LOCATION: SAN JOSE, CA
COMPLETION DEPTH: 99.5 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	PENETRATION RESISTANCE (BLOWS/FT.)	SAMPLER	MOISTURE CONTENT (%)	DRY DENSITY (PCF)	PERCENT PASSING NO. 200 SIEVE	Undrained Shear Strength (ksf)
	90		**POORLY GRADED SAND WITH CLAY AND GRAVEL (SP-SC)** very dense, wet, gray and brown, fine to coarse sand, fine to coarse gravel	SP-SC	50/5"	X	9			
	95									
					50/4"	X	10			
	100		Bottom of Boring at 99½ feet							
	105									
	110									
	115									
	120									

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

GROUND WATER OBSERVATIONS:
NOT APPLICABLE DUE TO ROTARY WASH CIRCULATION

CA DOT.GDT 8/8/05 MV FLL

LOWNEYASSOCIATES
Environmental/Geotechnical/Engineering Services

EXPLORATORY BORING: EB-2

DRILL RIG:	PROJECT NO: 1477-1Q
BORING TYPE: ROTARY WASH	PROJECT: SANTANA ROW LOT 11
LOGGED BY: BM	LOCATION: SAN JOSE, CA
START DATE: 6-17-05 FINISH DATE: 6-17-05	COMPLETION DEPTH: 100.0 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:

ELEVATION (FT)	DEPTH (FT)	MATERIAL DESCRIPTION AND REMARKS	SOIL TYPE	PENETRATION RESISTANCE (BLOWS/FT.)	MOISTURE CONTENT (%)	DRY DENSITY (PCF)	PERCENT PASSING NO. 200 SIEVE	Undrained Shear Strength (ksf)
	0	**SANDY LEAN CLAY WITH GRAVEL (CL)[FILL]** very stiff to hard, moist, dark brown, fine to coarse sand, fine to coarse gravel, some concrete debris. Plasticity Index = 11, Liquid Limit = 25	CL, FILL	46	7	114		○ (~2.1)
				50	7	110		○ (~4.5)
	5			21	7	106		
		CLAYEY SAND WITH GRAVEL (SC) very dense, moist, brown, fine to medium, fine to coarse gravel	SC	50/5"	4	118		
	10	**POORLY GRADED SAND WITH CLAY AND GRAVEL (SP-SC)** very dense, moist, gray and brown, fine to coarse sand, fine to coarse gravel	SP-SC	64	12			
				50/4"				
	15			50/5"	9	130		
				36	15			
		LEAN CLAY WITH SAND (CL) very stiff, moist, brown, fine sand, trace coarse gravel, low plasticity	CL	400 psi				○ (~2.4)
	20							
		POORLY GRADED SAND WITH CLAY AND GRAVEL (SP-SC) dense, moist, gray and brown, fine to coarse sand, fine to coarse gravel	SP-SC	50/5"	13	120		
	25							
	30			50/6"	13			

Continued Next Page

GROUND WATER OBSERVATIONS:
NOT APPLICABLE DUE TO ROTARY WASH CIRCULATION

CA_DOT.GDT 8/8/05 MV FLL

EXPLORATORY BORING: EB-2 Cont'd

DRILL RIG:
BORING TYPE: ROTARY WASH
LOGGED BY: BM
START DATE: 6-17-05 FINISH DATE: 6-17-05

PROJECT NO: 1477-1Q
PROJECT: SANTANA ROW LOT 11
LOCATION: SAN JOSE, CA
COMPLETION DEPTH: 100.0 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	PENETRATION RESISTANCE (BLOWS/FT.)	MOISTURE CONTENT (%)	DRY DENSITY (PCF)	PERCENT PASSING NO. 200 SIEVE	Undrained Shear Strength (ksf)
	30	**POORLY GRADED SAND WITH CLAY AND GRAVEL (SP-SC)** dense, moist, gray and brown, fine to coarse sand, fine to coarse gravel	SP-SC					
	35	**LEAN CLAY (CL)** stiff, moist, brown, some fine sand, low plasticity	CL	11	24			○ ~1.0
	40	**POORLY GRADED GRAVEL WITH CLAY AND SAND (GP-GC)** very dense, moist, brown and gray, fine to coarse gravel, fine sand	GP-GC	50/6"	7			
	45			50/5"	13			
	50			50/3"	9			
	55	**LEAN CLAY WITH SAND (CL)** medium stiff, moist, brown, some fine sand, low to moderate plasticity	CL	26	24			○ <1.0
	60		SP-SC					

Continued Next Page

GROUND WATER OBSERVATIONS:
NOT APPLICABLE DUE TO ROTARY WASH CIRCULATION

CA DOT.GDT 8/8/05 MV FLL

EXPLORATORY BORING: EB-2 Cont'd

DRILL RIG:
BORING TYPE: ROTARY WASH
LOGGED BY: BM
START DATE: 6-17-05 FINISH DATE: 6-17-05

PROJECT NO: 1477-1Q
PROJECT: SANTANA ROW LOT 11
LOCATION: SAN JOSE, CA
COMPLETION DEPTH: 100.0 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): 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	PENETRATION RESISTANCE (BLOWS/FT.)	MOISTURE CONTENT (%)	DRY DENSITY (PCF)	PERCENT PASSING NO. 200 SIEVE	Undrained Shear Strength (ksf)
	60	**POORLY GRADED SAND WITH CLAY AND GRAVEL (SP-SC)** very dense, moist, gray and brown, fine to coarse sand, fine to coarse gravel	SP-SC	50/6"	10			
	70	dense		40	17			
	72.5	**SANDY LEAN CLAY (CL)** very stiff, moist, bluish gray, fine sand, low to moderate plasticity	CL					
	78			56	22	101		O (approx. 3.5)
	85	**POORLY GRADED SAND WITH CLAY AND GRAVEL (SP-SC)** very dense, moist, gray and brown, fine to coarse sand, fine to coarse gravel	SP-SC	50/5"	16	116		O (approx. 4.0)
	90							

Continued Next Page

GROUND WATER OBSERVATIONS:
NOT APPLICABLE DUE TO ROTARY WASH CIRCULATION

CA DOT.GDT 8/8/05 MV* FLL

LOWNEY ASSOCIATES
Environmental/Geotechnical/Engineering Services

EXPLORATORY BORING: EB-2 Cont'd

DRILL RIG:
BORING TYPE: ROTARY WASH
LOGGED BY: BM
START DATE: 6-17-05 FINISH DATE: 6-17-05

PROJECT NO: 1477-1Q
PROJECT: SANTANA ROW LOT 11
LOCATION: SAN JOSE, CA
COMPLETION DEPTH: 100.0 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.

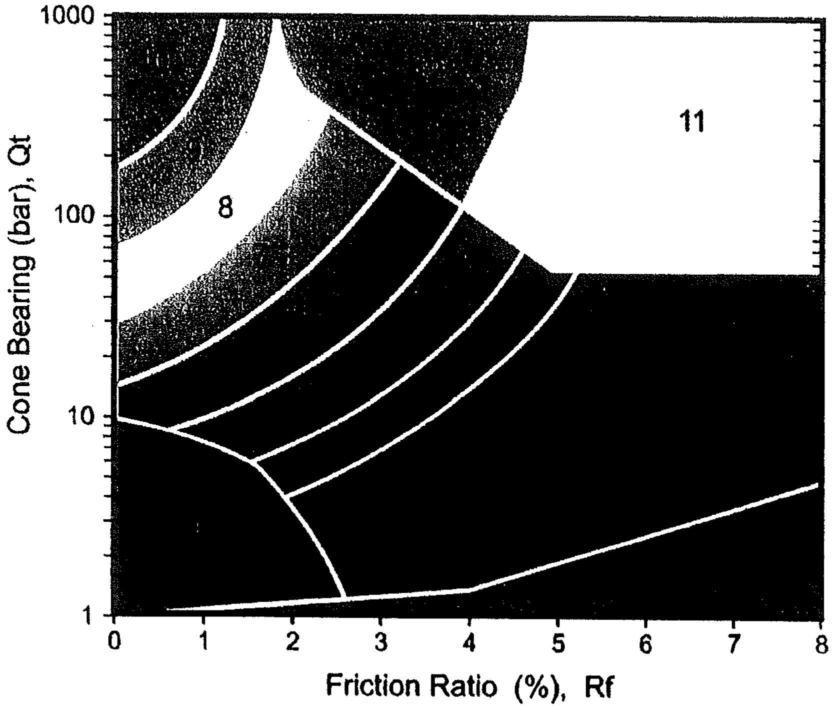
Undrained Shear Strength (ksf): ○ Pocket Penetrometer; △ Torvane; ● Unconfined Compression; ▲ U-U Triaxial Compression (scale 1.0, 2.0, 3.0, 4.0)

ELEVATION (FT)	DEPTH (FT)	SOIL LEGEND	MATERIAL DESCRIPTION AND REMARKS	SOIL TYPE	PENETRATION RESISTANCE (BLOWS/FT.)	SAMPLER	MOISTURE CONTENT (%)	DRY DENSITY (PCF)	PERCENT PASSING NO. 200 SIEVE
	90		**POORLY GRADED SAND WITH CLAY AND GRAVEL (SP-SC)** very dense, moist, gray and brown, fine to coarse sand, fine to coarse gravel	SP-SC	50/5"	☒	12		
	100		Bottom of Boring at 100 feet		50/6"	☒	9		

GROUND WATER OBSERVATIONS:
NOT APPLICABLE DUE TO ROTARY WASH CIRCULATION

CA DOT.GDT 8/8/05 MV' FLL

LOWNEY ASSOCIATES
Environmental/Geotechnical/Engineering Services

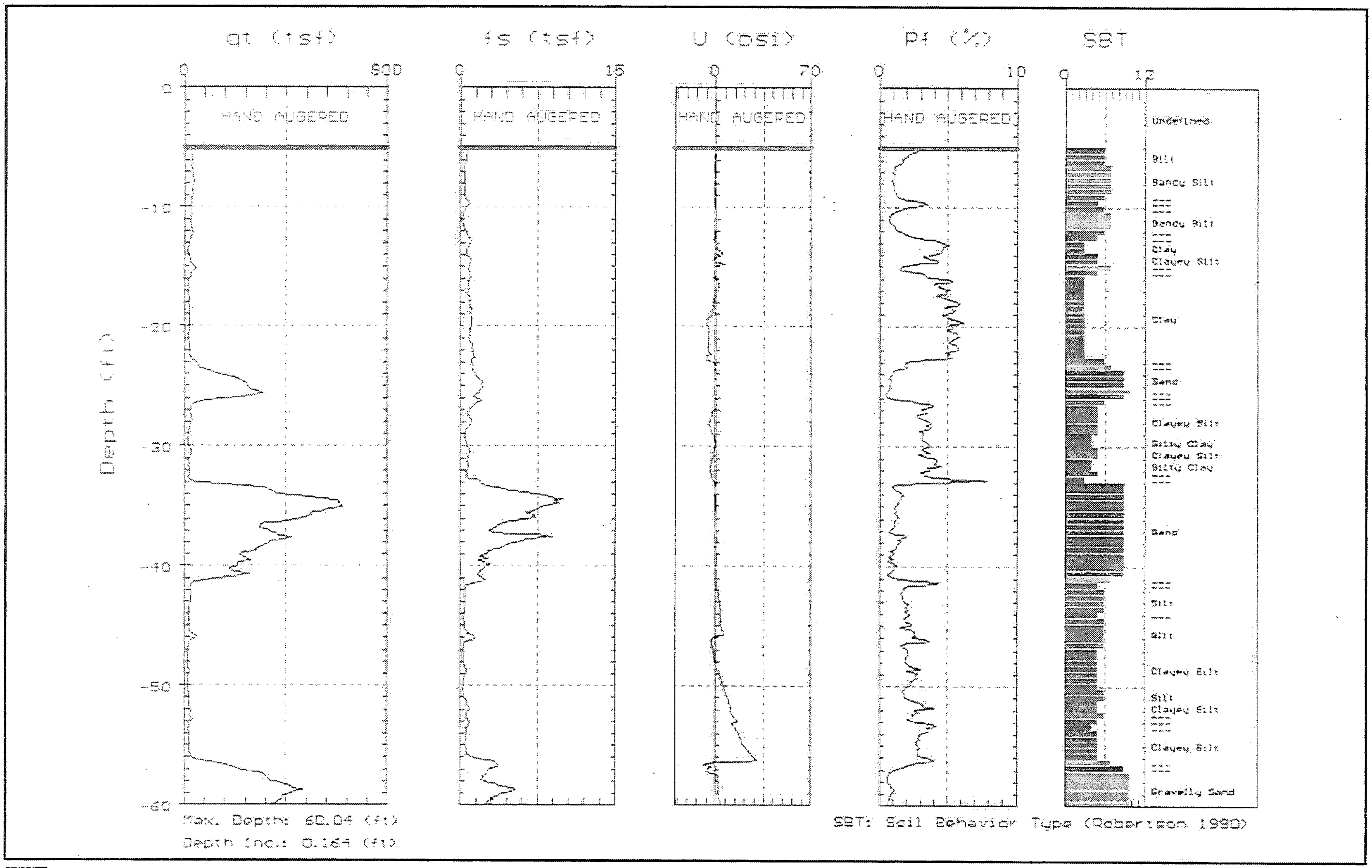


Zone	Q_t / N	Soil Behaviour Type
1	2	sensitive fine grained
2	1	organic material
3	1	clay
4	1.5	silty clay to clay
5	2	clayey silt to silty clay
6	2.5	sandy silt to clayey silt
7	3	silty sand to sandy silt
8	4	sand to silty sand
9	5	sand
10	6	gravelly sand to sand
11	1	very stiff fine grained *
12	2	sand to clayey sand *

* overconsolidated or cemented

Robertson (1990)

KEY TO CONE PENETROMETER TEST

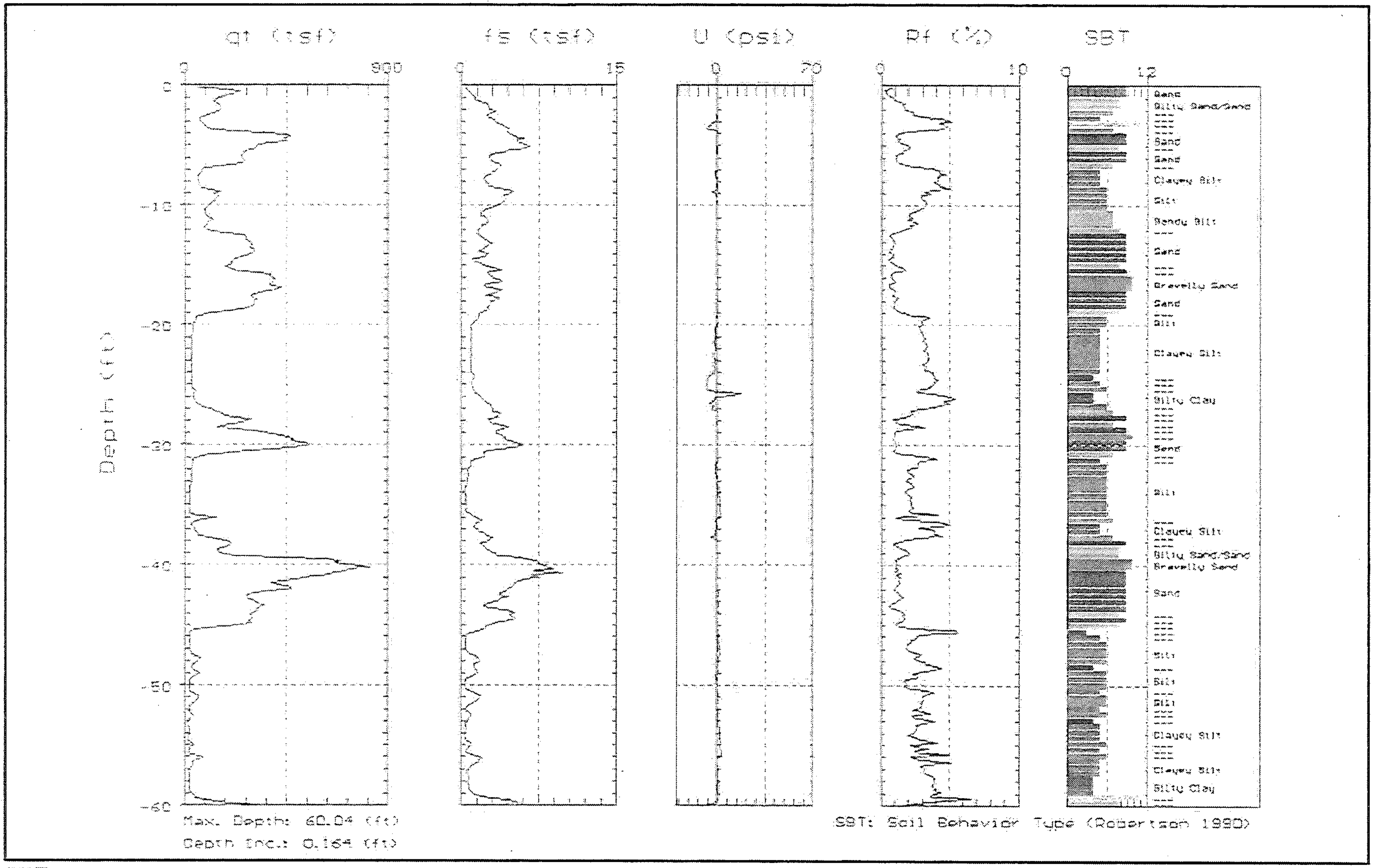


07/05 TT

CONE PENETRATION TEST - CPT-1

LOWNEYASSOCIATES
Environmental/Geotechnical/Engineering Services

CPT-1
1477-1Q

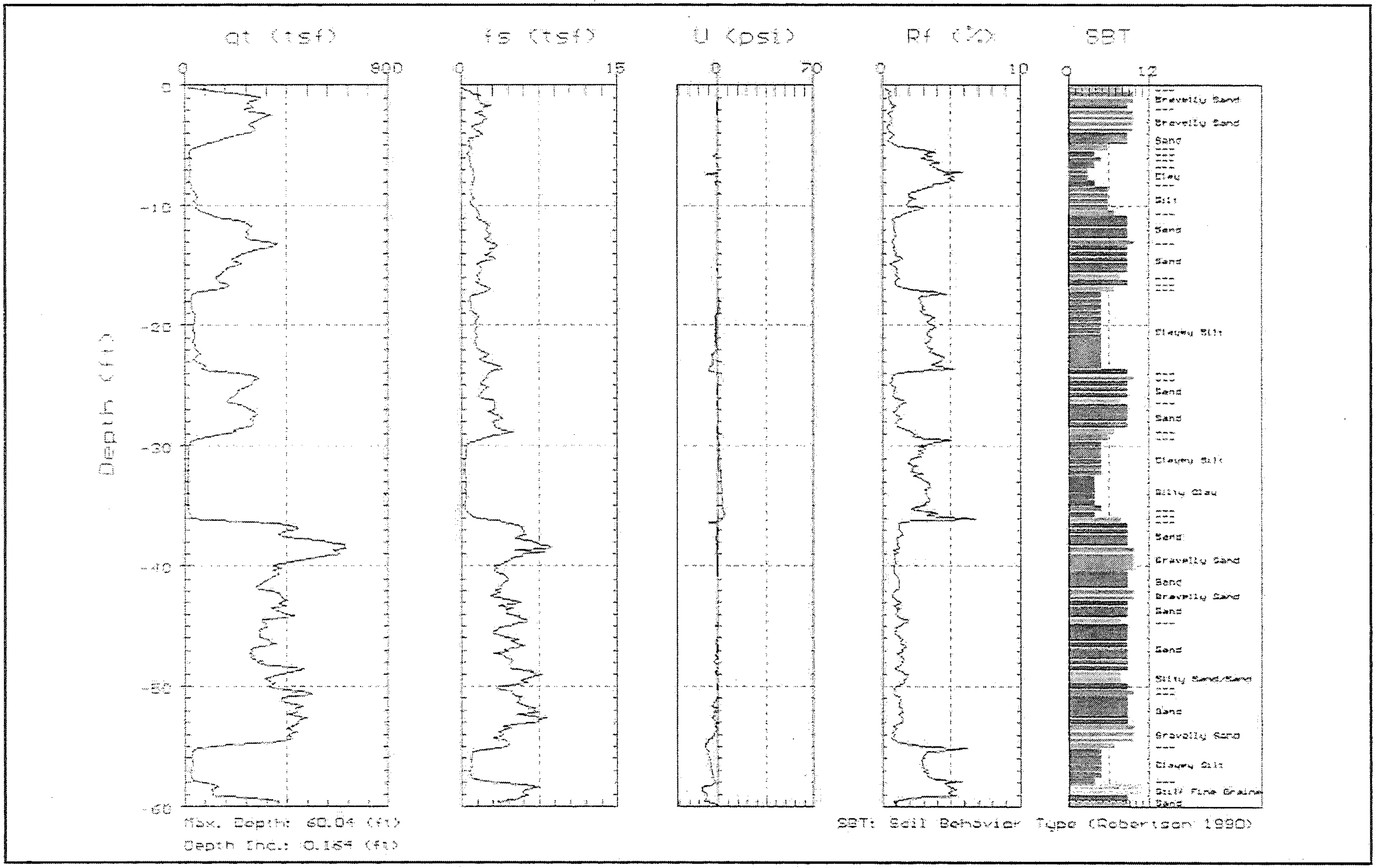


07/05"TT

CONE PENETRATION TEST - CPT-2

LOWNEYASSOCIATES
Environmental/Geotechnical/Engineering Services

CPT-2
1477-1Q



07/05·TT

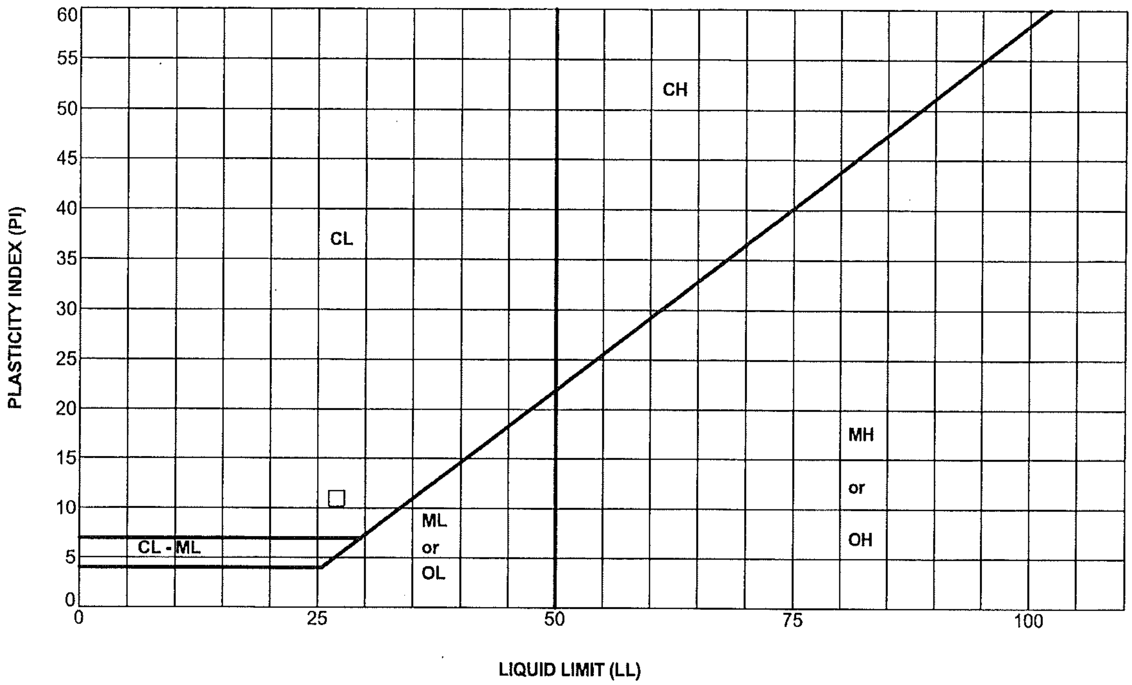
CONE PENETRATION TEST - CPT-3

LOWNEYASSOCIATES
Environmental/Geotechnical/Engineering Services

CPT-3
1477-1Q

APPENDIX D

KLEINFELDER LABORATORY TEST RESULTS (2008)



SYMBOL	BORING	DEPTH, ft	LL	PL	PI	SAMPLE DESCRIPTION
□	KA-3	1.5	27	16	11	Brown Sandy Lean Clay with Gravel (CL)

Unified Soil Classification

Fine Grained Soil Groups

Symbol	LL < 50	Symbol	LL > 50
ML	Inorganic clayey silts to very fine sands of slight plasticity	MH	Inorganic silts and clayey silts of high plasticity
CL	Inorganic clays of low to medium plasticity	CH	Inorganic clays of high plasticity
OL	Organic silts and organic silty clays of low plasticity	OH	Organic clays of medium to high plasticity, organic silts

*PERFORMED IN GENERAL ACCORDANCE WITH ASTM D 4318 (DRY PREP)

KLEINFELDER
Bright People. Right Solutions.

PROJECT NO. 91037

ATTERBERG LIMITS*

Santana Row
Parcel 11
San Jose, California

PLATE

D-1

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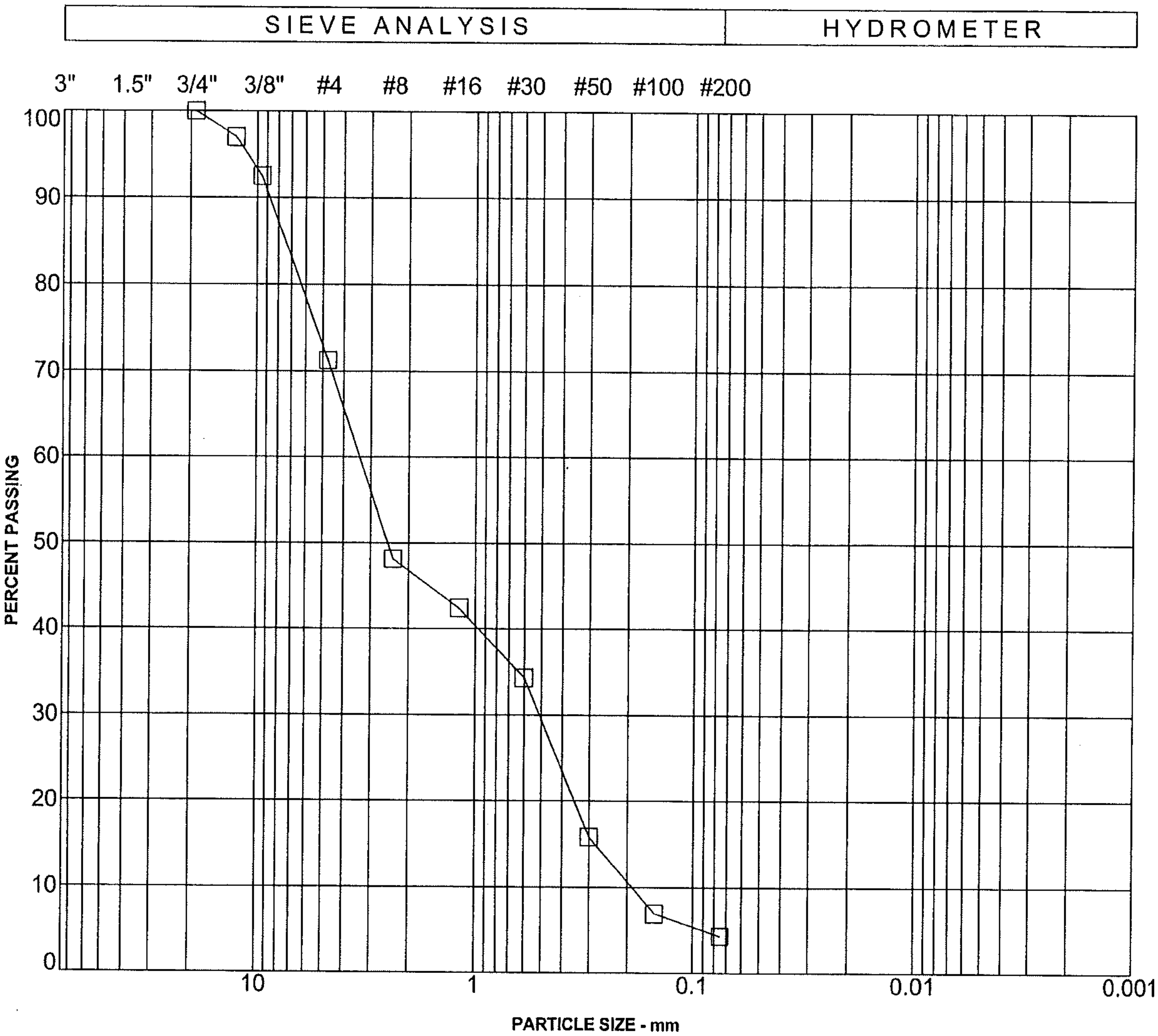

GRAVEL		SAND			SILT	CLAY
coarse	fine	coarse	medium	fine		

SYMBOL	BORING	DEPTH, ft	SAMPLE DESCRIPTION
☐	KA-3	10.5	Brown Poorly Graded Sand with Gravel (SP)

*PERFORMED IN GENERAL ACCORDANCE WITH ASTM D 422

KLEINFELDER
Bright People. Right Solutions.

PROJECT NO. *91037*

PARTICLE SIZE ANALYSIS*

Santana Row
Parcel 11
San Jose, California

PLATE

D-2

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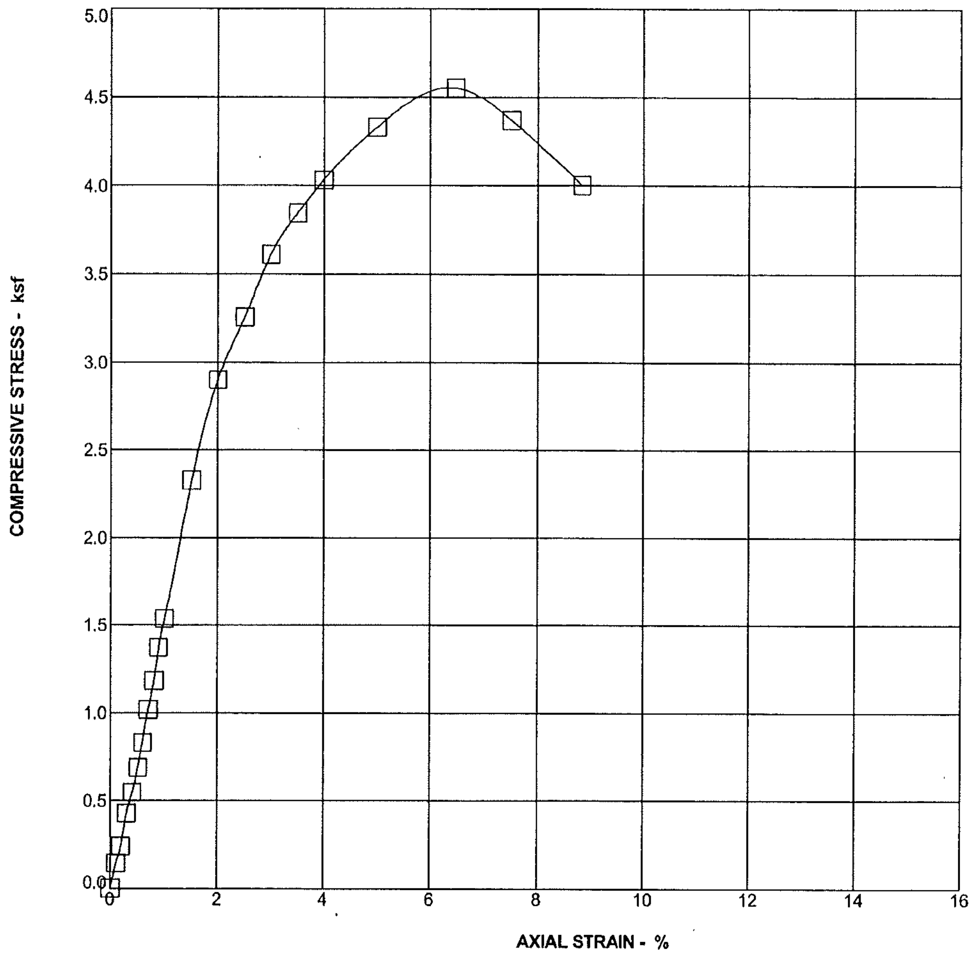

BORING NO.	KA-2	**DRY DENSITY - pcf**	112
DEPTH - ft	7.5	**WATER CONTENT - %**	15.3

SAMPLE DESCRIPTION Brown Lean Clay with Sand (CL)

MAXIMUM COMPRESSIVE STRESS= 4.55 ksf at 6.5 % STRAIN

*PERFORMED IN GENERAL ACCORDANCE WITH ASTM D 2166

KLEINFELDER
Bright People. Right Solutions.

PROJECT NO. 91037

UNCONFINED COMPRESSION*

Santana Row
Parcel 11
San Jose, California

PLATE

D-3

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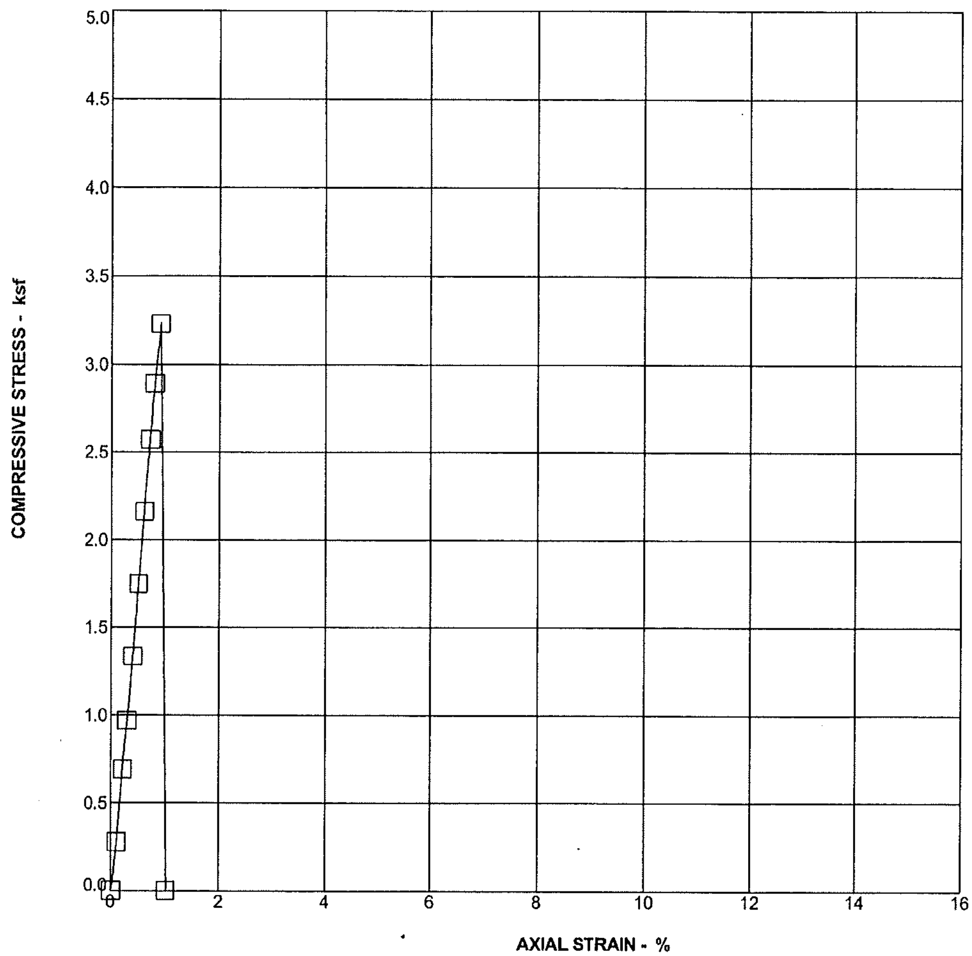

BORING NO.	KA-4	**DRY DENSITY - pcf**	101
DEPTH - ft	11	**WATER CONTENT - %**	9.4

SAMPLE DESCRIPTION Brown Lean Clay (CL)

MAXIMUM COMPRESSIVE STRESS= 3.23 ksf at 0.9 % STRAIN

*PERFORMED IN GENERAL ACCORDANCE WITH ASTM D 2166

KLEINFELDER
Bright People. Right Solutions.

PROJECT NO. *91037*

UNCONFINED COMPRESSION*

Santana Row
Parcel 11
San Jose, California

PLATE

D-4

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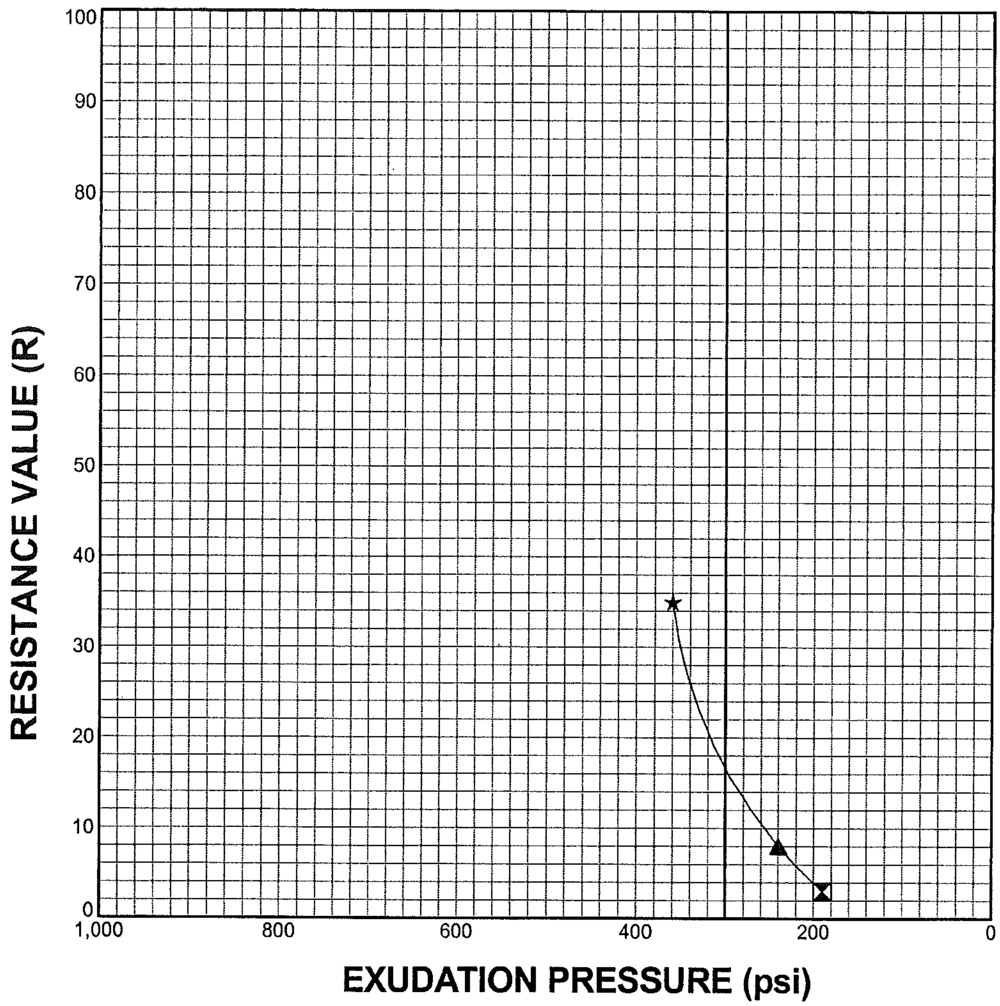

SPECIMEN NO.	⊠	▲	★
MOISTURE CONTENT (%)	12.5	10.7	9.0
DRY DENSITY (PCF)	122.4	127.5	131.9
EXUDATION PRESSURE (PSI)	190	240	360
EXPANSION PRESSURE (PSF)	0	0	48
RESISTANCE VALUE (R)	3	8	35

Date Received: 1/15/2008

SAMPLE SOURCE	CLASSIFICATION	SAND EQUIVALENT	EXPANSION PRESSURE	R-VALUE
(KA -3)	Brown Sandy Lean Clay with Gravel (CL)	---	23 psf	17

ASTM D 2844, Cal Test 301

KLEINFELDER
Bright People. Right Solutions.

PROJECT NO. 91037

RESISTANCE VALUE TEST DATA

Santana Row
Parcel 11
San Jose, California

PLATE

D-5

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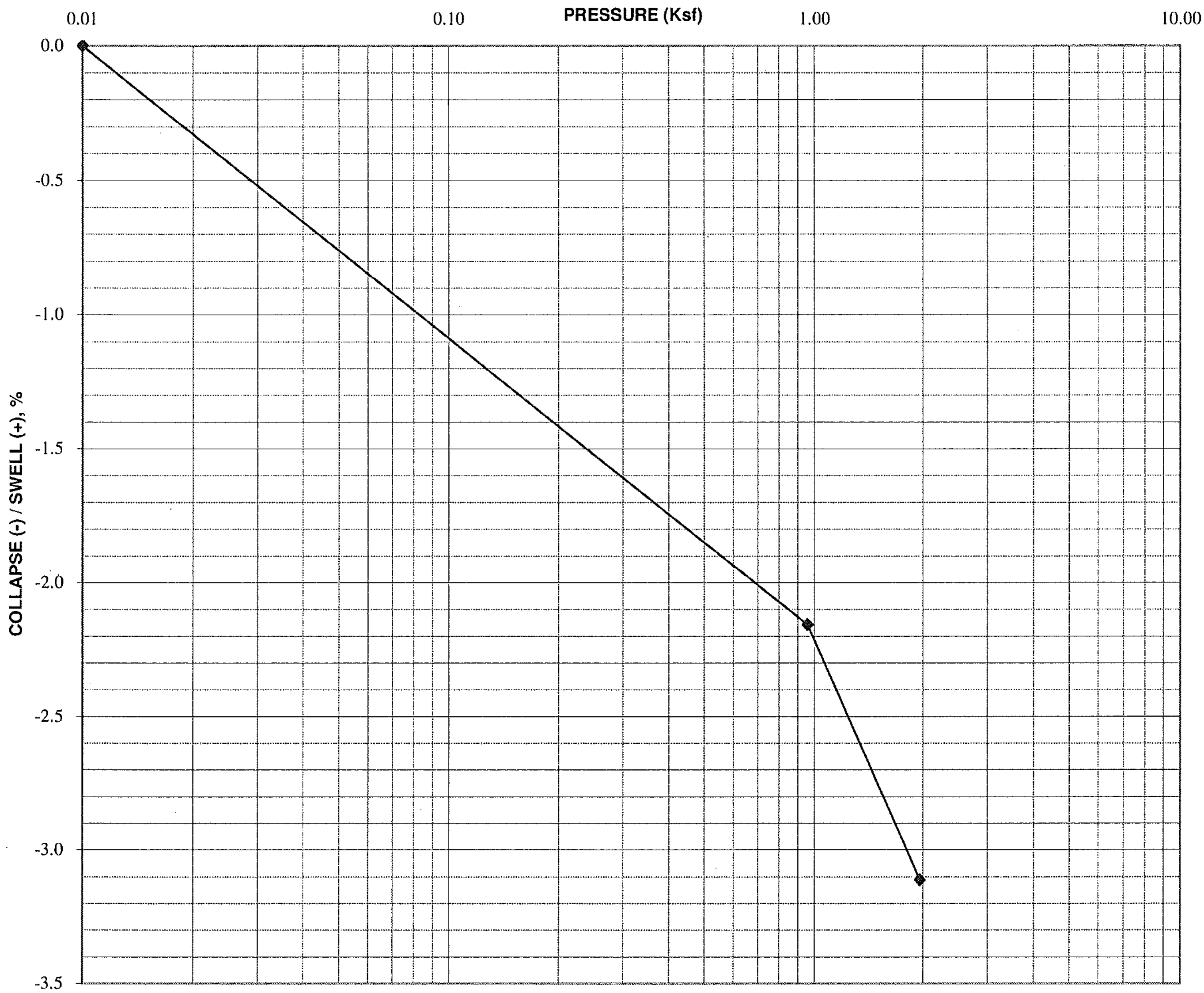


BORING NO.	KA-3
DEPTH, ft	7.5
SAMPLE DESCRIPTION	Brown Lean Clay with Sand (CL)
NET COLLAPSE (-) /SWELL (+), %	-3.1%

	INITIAL	FINAL
DRY DENSITY, psf	107.8	111.2
WATER CONTENT, %	13.8	13.0
SAMPLE HEIGHT, in.	0.6490	0.6288

*PERFORMED IN GENERAL ACCORDANCE WITH ASTM D 4546

KLEINFELDER
Bright People. Right Solutions.

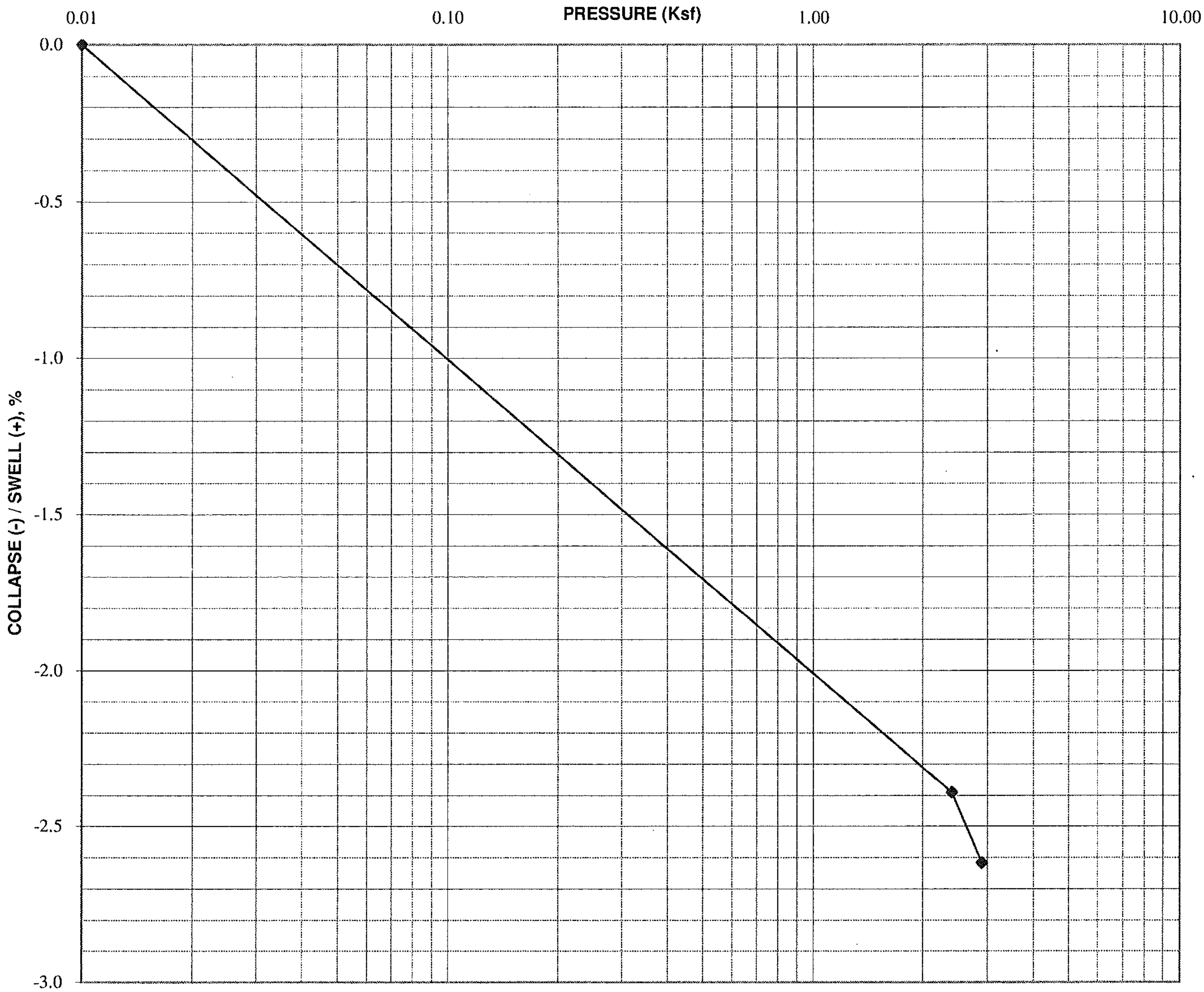
Project No.: *91037*

ONE DIMENSIONAL SWELL*

Santana Row
Parcel II
San Jose, California

PLATE

D-6



BORING NO. KA-5

DEPTH, ft 19

SAMPLE DESCRIPTION Brown Lean Clay (CL)

NET COLLAPSE (-) /SWELL (+), % -2.6%

	INITIAL	FINAL
DRY DENSITY, psf	104.3	107.1
WATER CONTENT, %	17.7	17.2
SAMPLE HEIGHT, in.	0.7530	0.7333

*PERFORMED IN GENERAL ACCORDANCE WITH ASTM D 4546

KLEINFELDER
Bright People. Right Solutions.

Project No.: *91037*

ONE DIMENSIONAL SWELL*

Santana Row
Parcel 11
San Jose, California

PLATE

D-7

APPENDIX E

CORROSIVITY ANALYSIS

LABORATORY PROGRAM

The laboratory testing program was directed toward a quantitative and qualitative evaluation of the physical and mechanical properties of the soils underlying the site and to aid in verifying soil classification.

Moisture Content: The natural water content was determined (ASTM D2216) on 39 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 20 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: Plasticity Index determinations (ASTM D4318) were performed on 2 samples of the subsurface soils to measure the range of water contents over which these materials exhibit 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 presented on Figure B-1 and on the logs of the borings at the appropriate sample depths.

Consolidation: Consolidation tests (ASTM D2435) were preformed on 1 relatively undisturbed sample of the subsurface clayey soil to assist in evaluating the compressibility properties of these soils. Result of this test is included in this appendix.

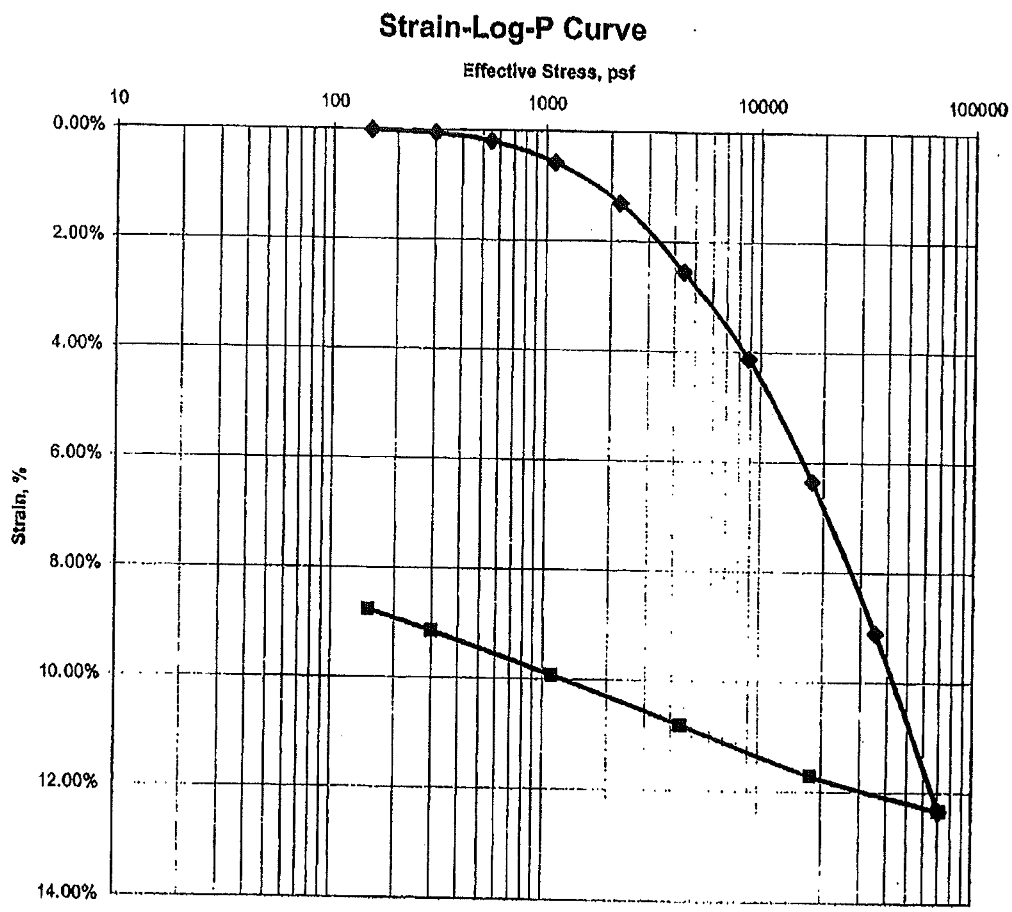
Consolidated Undrained Shear Strength (CU): Two triaxial consolidated-undrained shear tests were performed to estimate the undrained shear strength. Results of these tests are included in this appendix.

* * * * * * * * * * * * *

Consolidation Test
ASTM D2435

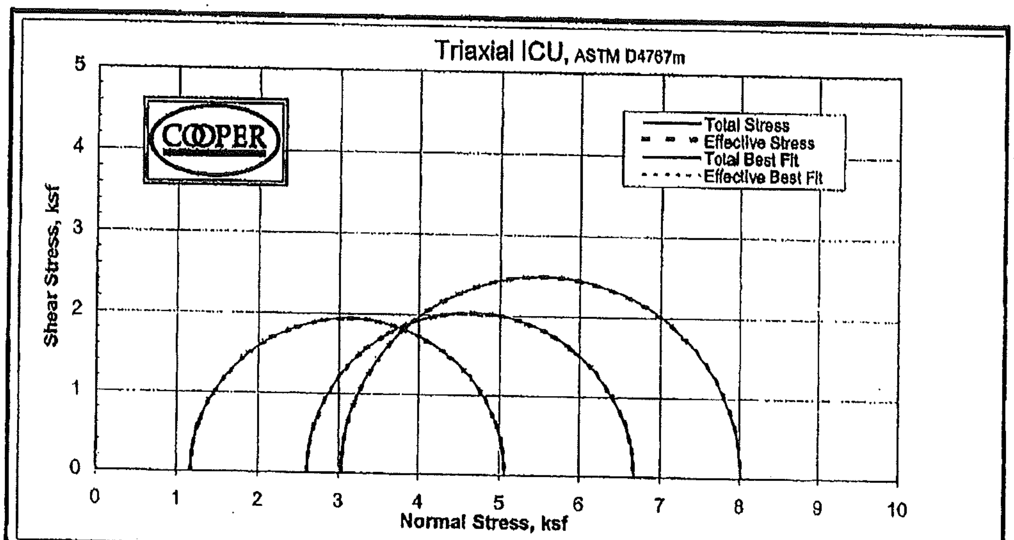
COOPER

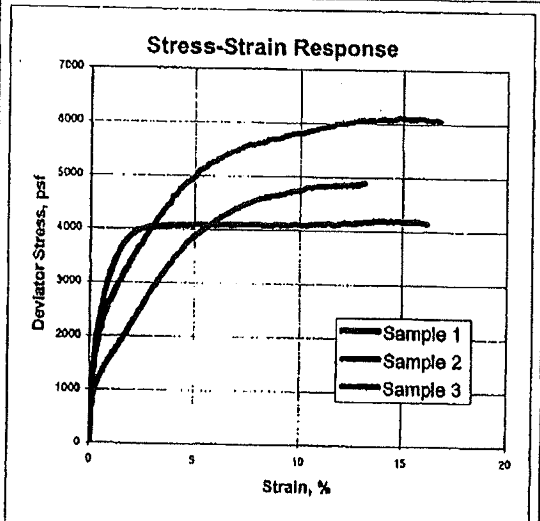
Job No.:	028-1627	Boring:	EB-1	Run By:	MD
Client:	Lowney Associates	Sample:	20B	Reduced:	MJ
Project:	Santana Row - 1477-1Q	Depth, ft.:	77.5	Checked:	PJ
Soil Type:	Gray Clayey SAND			Date:	7/19/2005



Ass. Gs = 2.75	Initial	Final
Moisture %:	19.6	15.6
Density, pcf:	110.3	120.2
Void Ratio:	0.556	0.428
% Saturation:	96.9	100

Remarks:





Sample:	1	2	3	4
MC, %	22.6	22.7	19.3	
Dry Den, pcf.	98.4	104.7	99.7	
Sat. %	85.6	100.7	75.6	
Void Ratio	0.713	0.609	0.689	
Diameter in	2.86	2.86	2.87	
Height, in	5.97	6.00	6.08	
		Final		
MC, %	21.5	23.1	24.0	
Dry Den, pcf.	106.7	103.8	102.2	
Sat. %	100.0	100.0	100.0	
Void Ratio	0.580	0.624	0.649	
Diameter, in	2.76	2.89	2.83	
Height, in	5.91	5.94	6.08	
Cell, psi	56.6	59.3	58.0	
BP, psi	38.5	38.3	49.8	
		Effective Stresses At:		
Strain, %	5.0	5.0	5.1	
Deviator ksf	4.071	4.989	3.887	
Excess PP	0.000	0.000	0.000	
Sigma 1	6.672	8.019	5.063	
Sigma 3	2.601	3.029	1.176	
P, ksf	4.636	5.524	3.119	
Q, ksf	2.035	2.495	1.943	
Stress Ratio	2.565	2.647	4.305	
Rate in/min	0.002	0.002	0.002	
Total C				
Total Phi				
Eff. C				
Eff. Phi				

Job No.: 028-1627 **Date:** 7/20/2005

Client: Lowney Associates BY:DC

Project: Santana Row - 1477-1Q

Sample 1) EB-1, 12A @ 34' (tip) Brown CLAY w/Sand

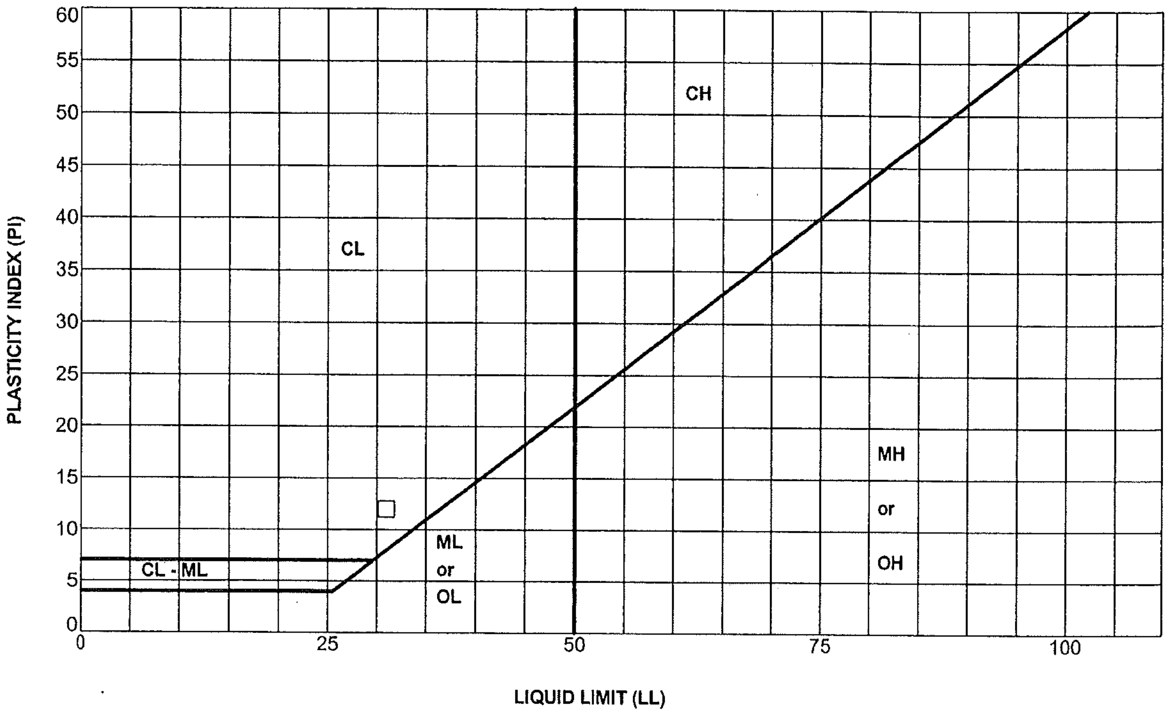
Sample 2) EB-1, 13A @ 39' (tip) Brown CLAY / CLAY with Sand

Sample 3) EB-4, 8A @ 17' (tip) Reddish Brown Sandy SILT, slightly plastic

Sample 4)

REMARKS: Values picked at 5% strain.

APPENDIX F
KLEINFELDER LABORATORY TEST RESULTS (2006)



SYMBOL	BORING	DEPTH, ft	LL	PL	PI	SAMPLE DESCRIPTION
□	KA-1	35.5	31	19	12	Brown Sandy Clay

Unified Soil Classification

Fine Grained Soil Groups

Symbol	LL < 50	Symbol	LL > 50
ML	Inorganic clayey silts to very fine sands of slight plasticity	MH	Inorganic silts and clayey silts of high plasticity
CL	Inorganic clays of low to medium plasticity	CH	Inorganic clays of high plasticity
OL	Organic silts and organic silty clays of low plasticity	OH	Organic clays of medium to high plasticity, organic silts

*PERFORMED IN GENERAL ACCORDANCE WITH ASTM D 4318 (WET PREP)

KLEINFELDER
Bright People. Right Solutions.

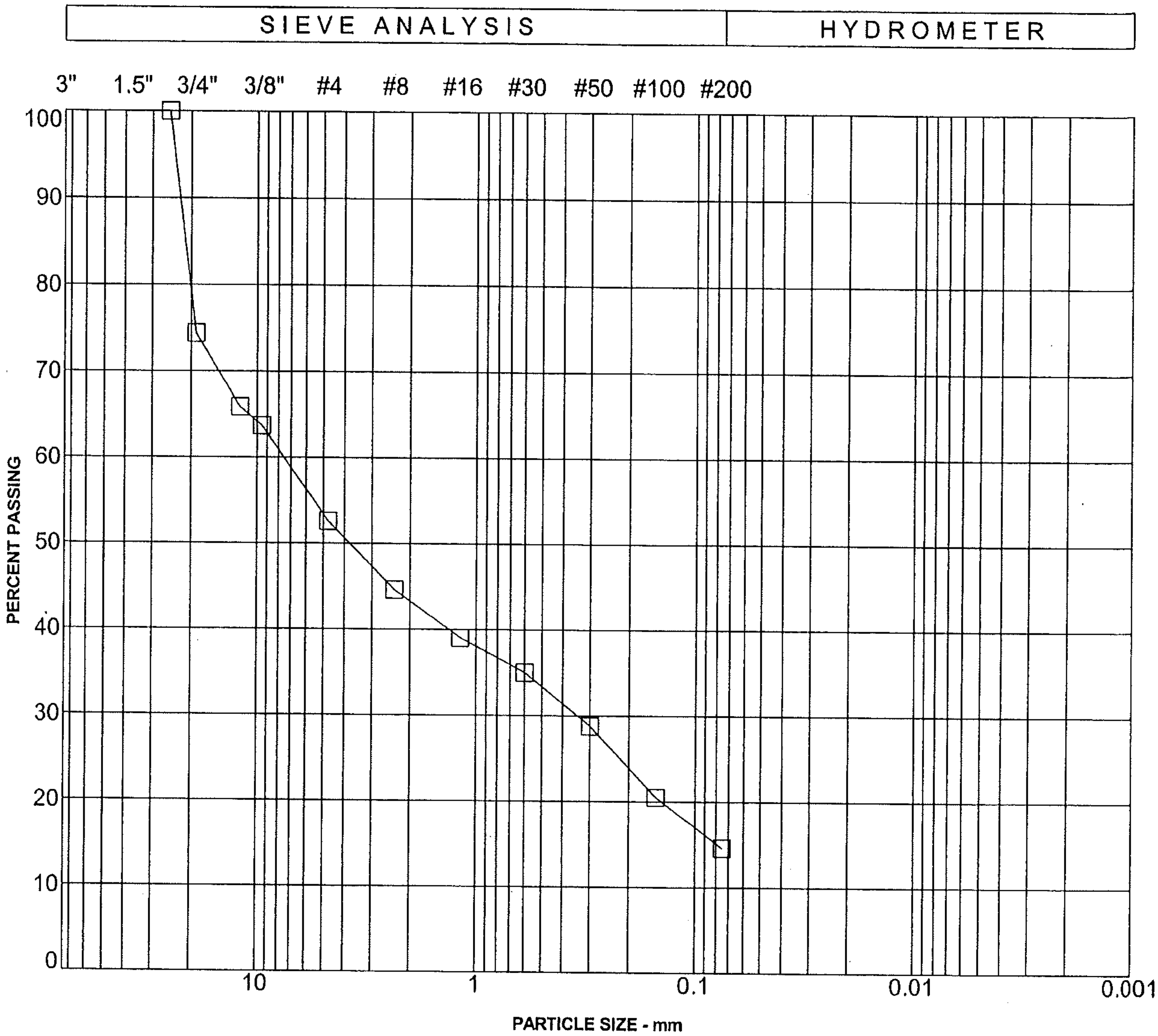
PROJECT NO. 59959

ATTERBERG LIMITS*

Santana Row Lot 11
Santana Row
San Jose, California

PLATE

F-1



GRAVEL		SAND			SILT	CLAY
coarse	fine	coarse	medium	fine		

SYMBOL	BORING	DEPTH, ft	SAMPLE DESCRIPTION
☐	KA-1	15.0	

*PERFORMED IN GENERAL ACCORDANCE WITH ASTM D 422

KLEINFELDER
Bright People. Right Solutions.

PROJECT NO. 59959

PARTICLE SIZE ANALYSIS*

Santana Row Lot 11
Santana Row
San Jose, California

PLATE

F-2

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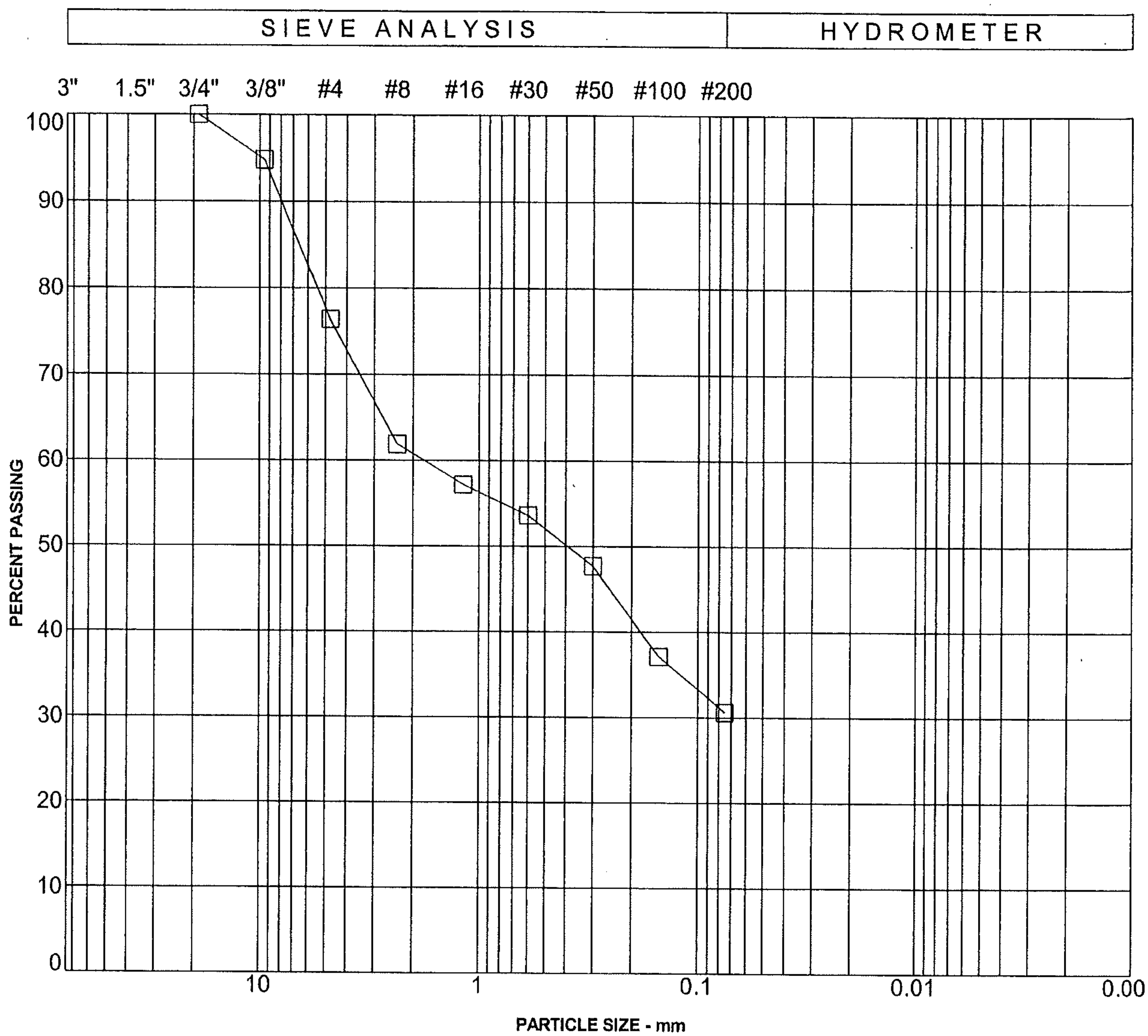

GRAVEL		SAND			SILT	CLAY
coarse	fine	coarse	medium	fine		

SYMBOL	BORING	DEPTH, ft	SAMPLE DESCRIPTION
□	KA-1	25.0	

*PERFORMED IN GENERAL ACCORDANCE WITH ASTM D 422

KLEINFELDER
Bright People. Right Solutions.

PROJECT NO. *59959*

PARTICLE SIZE ANALYSIS*

Santana Row Lot 11
Santana Row
San Jose, California

PLATE

F-3

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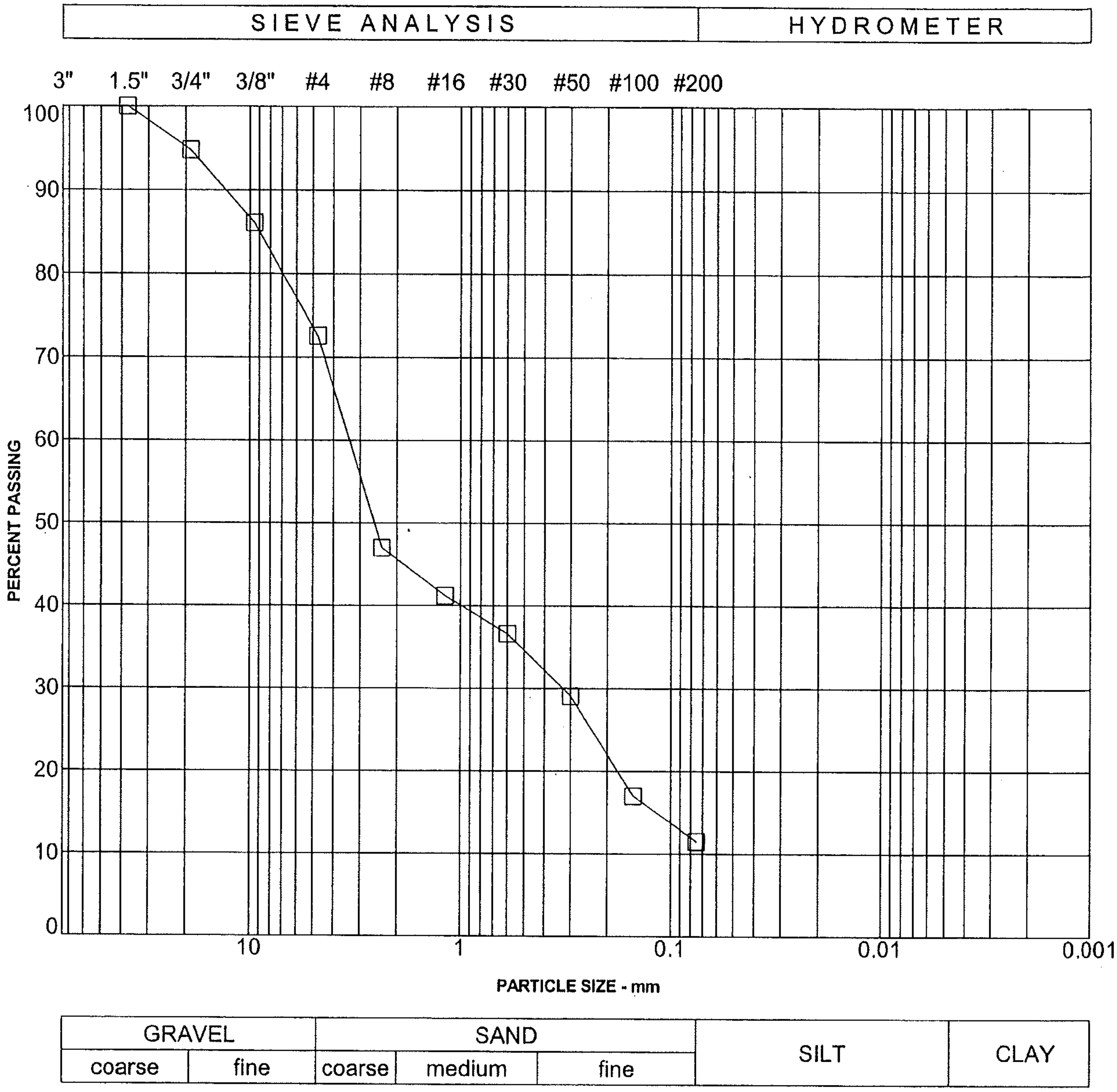

SYMBOL	BORING	DEPTH, ft	SAMPLE DESCRIPTION
☐	KA-1	28.0	

*PERFORMED IN GENERAL ACCORDANCE WITH ASTM D 422

KLEINFELDER
Bright People. Right Solutions.

PROJECT NO. 59959

PARTICLE SIZE ANALYSIS*

Santana Row Lot 11
Santana Row
San Jose, California

PLATE

F-4

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APPENDIX G

LABORATORY TEST DATA BY OTHERS

LABORATORY PROGRAM

The laboratory testing program was directed toward a quantitative and qualitative evaluation of the physical and mechanical properties of the soils underlying the site and to aid in verifying soil classification.

Moisture Content: The natural water content was determined (ASTM D2216) on 39 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 20 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.

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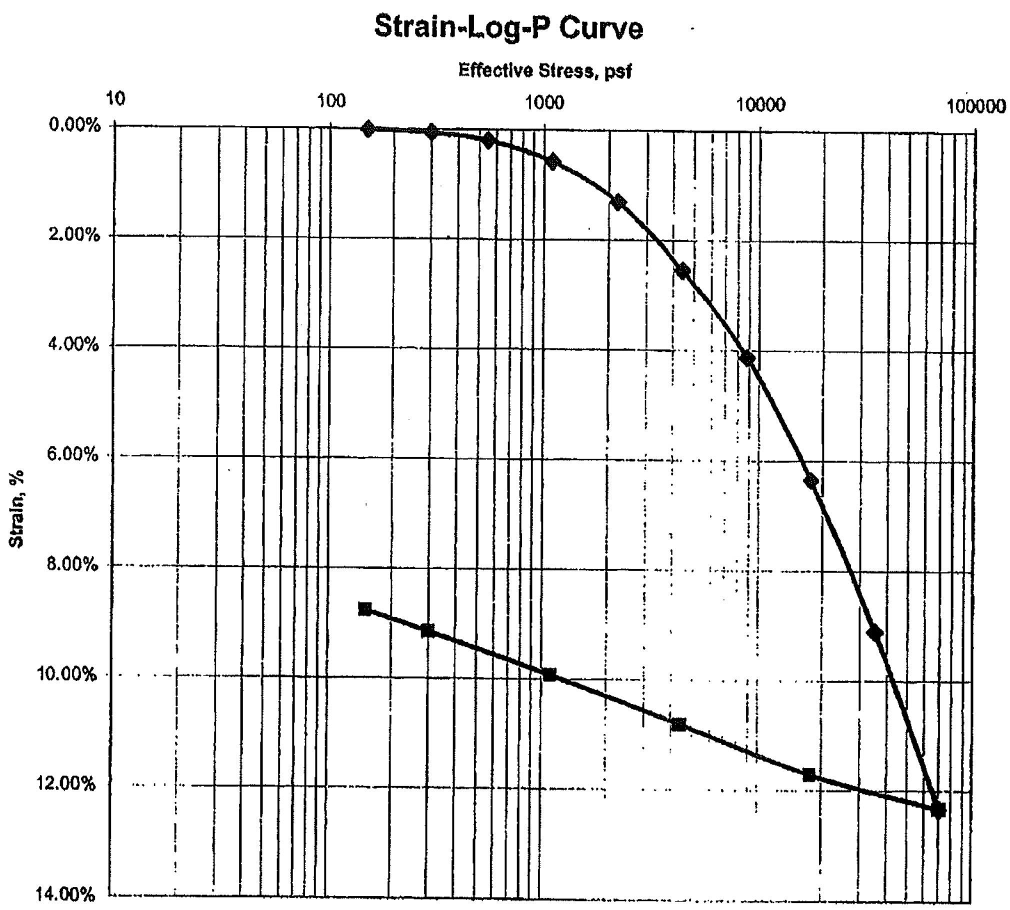
Consolidated Undrained Shear Strength (CU): Two triaxial consolidated-undrained shear tests were performed to estimate the undrained shear strength. Results of these tests are included in this appendix.

* * * * * * * * * * * * *

Consolidation Test
ASTM D2435

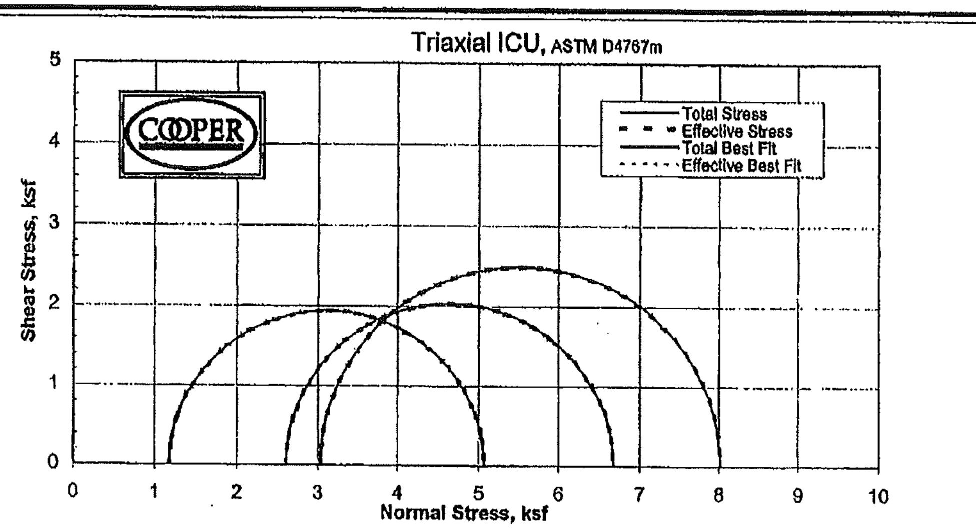
COOPER

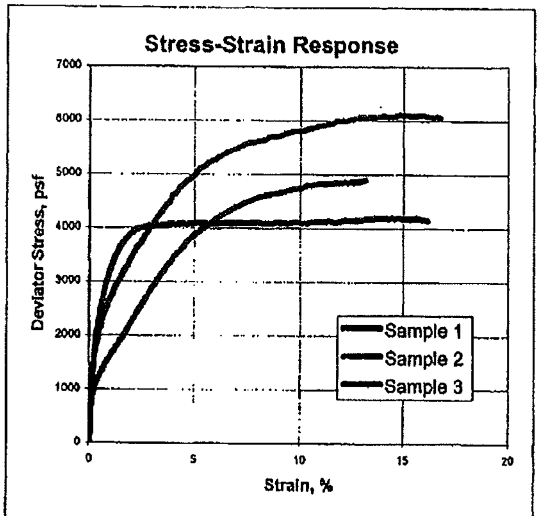
Job No.:	028-1627	**Boring:**	EB-1	**Run By:**	MD
Client:	Lowney Associates	**Sample:**	20B	**Reduced:**	MJ
Project:	Santana Row - 1477-1Q	**Depth, ft.:**	77.5	**Checked:**	PJ
Soil Type:	Gray Clayey SAND			**Date:**	7/19/2005



Ass. Gs = 2.75	Initial	Final
Moisture %:	19.6	15.6
Density, pcf:	110.3	120.2
Void Ratio:	0.556	0.428
% Saturation:	96.9	100

Remarks:





Sample:	1	2	3	4
MC, %	22.6	22.7	19.3	
Dry Den, pcf.	98.4	104.7	99.7	
Sat. %	85.6	100.7	75.6	
Void Ratio	0.713	0.609	0.689	
Diameter in	2.86	2.86	2.87	
Height, in	5.97	6.00	6.08	
		Final		
MC, %	21.5	23.1	24.0	
Dry Den, pcf.	106.7	103.8	102.2	
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Void Ratio	0.580	0.624	0.649	
Diameter, in	2.76	2.89	2.83	
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Cell, psi	56.6	59.3	58.0	
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Deviator ksf	4.071	4.989	3.887	
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Q, ksf	2.035	2.495	1.943	
Stress Ratio	2.565	2.647	4.305	
Rate in/min	0.002	0.002	0.002	
Total C				
Total Phi				
Eff. C				
Eff. Phi				

Job No.: 028-1627 Date: 7/20/2005

Client: Lowney Associates BY:DC

Project: Santana Row - 1477-1Q

Sample 1) EB-1, 12A @ 34' (tip) Brown CLAY w/Sand

Sample 2) EB-1, 13A @ 39' (tip) Brown CLAY / CLAY with Sand

Sample 3) EB-4, 8A @ 17' (tip) Reddish Brown Sandy SILT, slightly plastic

Sample 4)

REMARKS: Values picked at 5% strain.

APPENDIX H
GEOPHYSICAL SURVEY

J R ASSOCIATES

Engineering Geophysics
1886 Emory Street
San Jose, CA 95126
(408) 293-7390

GEOPHYSICAL INVESTIGATION OF LOTS 2, 11 AND 12
SANTANA ROW
SAN JOSE, CALIFORNIA

June 16, 2005

For

Lowney Associates
405 Clyde Avenue
Mountain View, CA 94043

By

James Rezowalli, GP-921

TABLE OF CONTENTS

LIST OF ILLUSTRATIONS

I INTRODUCTION

This report presents the results of a geophysical investigation performed at Santana Row in San Jose, California (Drawing 1). The investigation was performed for Lowney Associates by J R Associates. The purpose of the investigation was to look for geophysical indications of buried fuel storage tanks, buried pipes and buried metal debris. James Rezowalli, Principal Geophysicist, and Bob Wing, Technician, of J R Associates performed the field work in June of 2005.

A. Site

The geophysical investigation was performed on lots 2, 11 and 12 at Santana Row (Drawing 2). The lots are currently paved parking lots with street lights and planting strips. The parking lots were closed off during the investigation and most of the cars had been removed. The site has gone through different periods of development. Originally, it was agricultural land and more recently it was a sprawling shopping center. The shopping center was demolished when Santana Row was built. Mixed use buildings are planned for what are now the three parking lots. Buried debris, old tanks or old foundations left over from the previous uses could hinder construction of the new buildings. The purpose of our investigation was to look for geophysical indications of buried tanks and buried metal debris in the three parking lots.

II METHODS

We performed a magnetic investigation to look for magnetic anomalies indicative of buried tanks and other buried metal objects. A magnetic investigation maps the earth's magnetic field. The magnetic field is uniform throughout a site free of metal. The magnetic field at a site that contains ferrous metal is not uniform. Metal objects produce magnetic anomalies with characteristic shapes and magnitudes. For example, an anomaly caused by a buried tank consists of a strong magnetic low just south of the center of the tank and a weaker magnetic high just north of the tank's center. This type of anomaly is an indication of a buried tank.

A. Magnetic Instrumentation

We used a Geometrics model 858 cesium vapor magnetometer to collect magnetic data at the site. The magnetometer had two sensors and an electronics package. The magnetometer collected both total field data and vertical gradient data. The magnetometer can discriminate to 0.1 gammas in a total field of 40,000 to 60,000 gammas. Magnetic readings were stored in memory with the time of day, station numbers and line numbers of the readings. The data were downloaded to a computer and contoured.

B. Magnetic Field Procedures

The areas where magnetic data were collected are shown on Drawing 2. Magnetic data were collected continuously along lines spaced 10 feet apart. At the end of the field day, the magnetic data were downloaded and contoured. An anomaly is indicated by one or more concentric magnetic contours.

III RESULTS

A. Magnetic Data

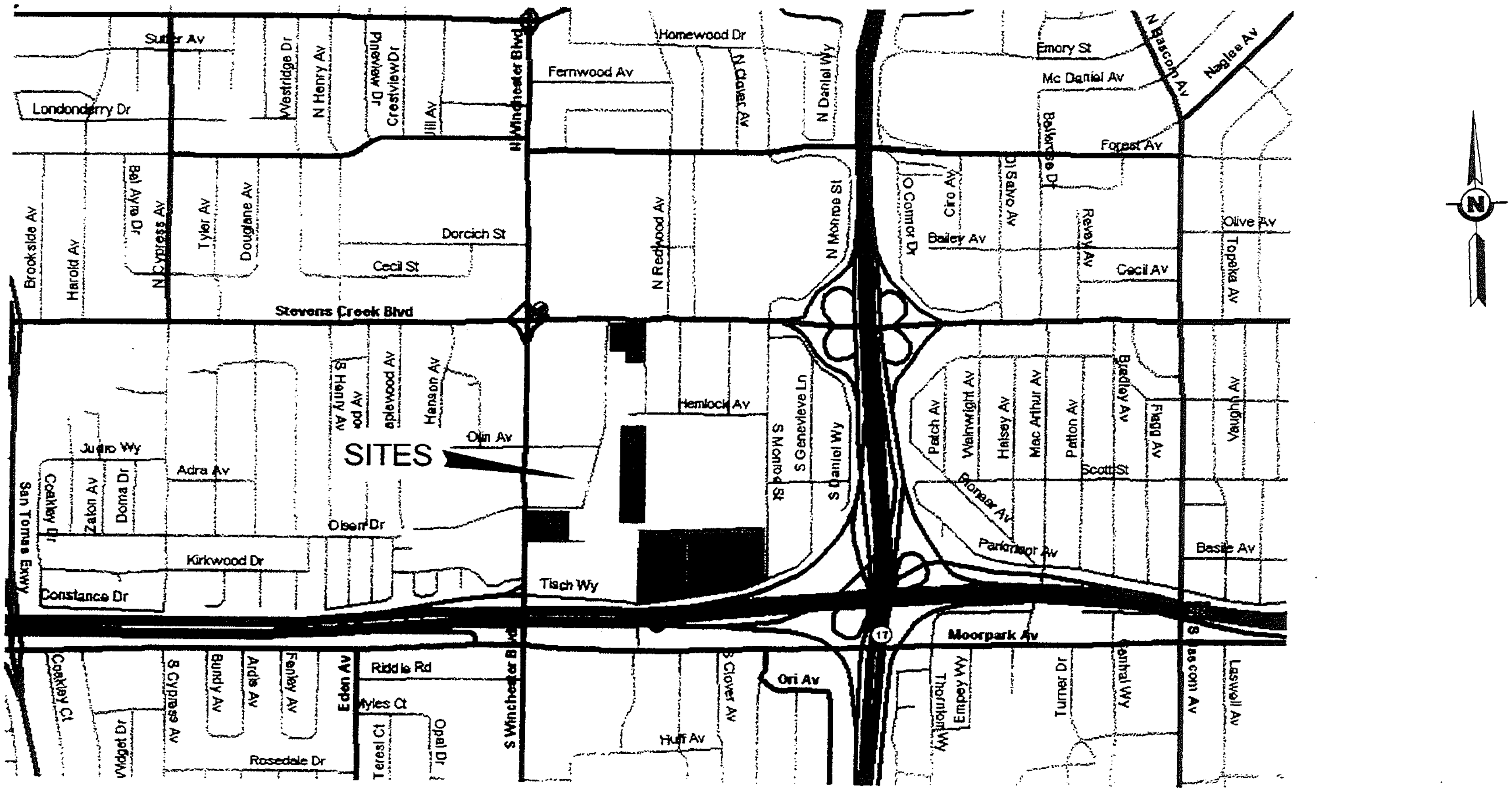
Drawing 3 shows the contour maps of the magnetic data. The maps show magnetic gradient data contoured at a 50-nT interval. There are numerous magnetic anomalies as indicated by the many closed contours in the magnetic map. Most anomalies were caused by surface metal. The surface metal included fences, a few parked cars, light fixtures, signs, storm grates and two dumpsters. Other anomalies appeared to be caused by buried pipes. Buried pipes found during the investigation were marked with paint in the field and are shown on Drawing 3. Most of the buried pipes appeared to be conduits for the street lighting.

There was one magnetic anomaly indicative of buried metal in lot 2. The anomaly is shown in red on Drawing 3. The anomaly is strongly magnetic but not very big. It is probably caused by metal debris like a fence post or a short section of pipe. There were three anomalies indicative of buried metal in lot 11. Two were on the west side near Winchester Boulevard and one was on the east side near the theaters (Drawing 3). The two on the west side are large enough to indicate small buried tanks though anomalies like these are usually caused by debris left behind after the demolition of buildings. The anomaly on the east side is probably caused by metal debris like a fence post or a section of pipe. There were three anomalies in lot 12 indicative of buried metal. The anomalies are near the fence that runs along the east side of the lot (Drawing 3). There were many steel posts sheared at ground level running north to south down the center of lot 12. We suspect the three anomalies may also be sheared posts that have been covered by dirt. Lot 12 appeared to have an abandoned pipe running parallel to its northwestern edge. We recommend potholing the anomalies indicative of buried metal to determine their cause.

B. Limitations

Magnetic methods locate ferrous objects from the anomalies they produce in the earth's magnetic field. It is possible some ferrous objects will not produce an anomaly. Some possible reasons are that the object is buried too deep, the object is too small, the object is buried under or near another ferrous object or an object is buried near a utility. It is possible there are materials buried at the site that were not detected by the magnetometer.

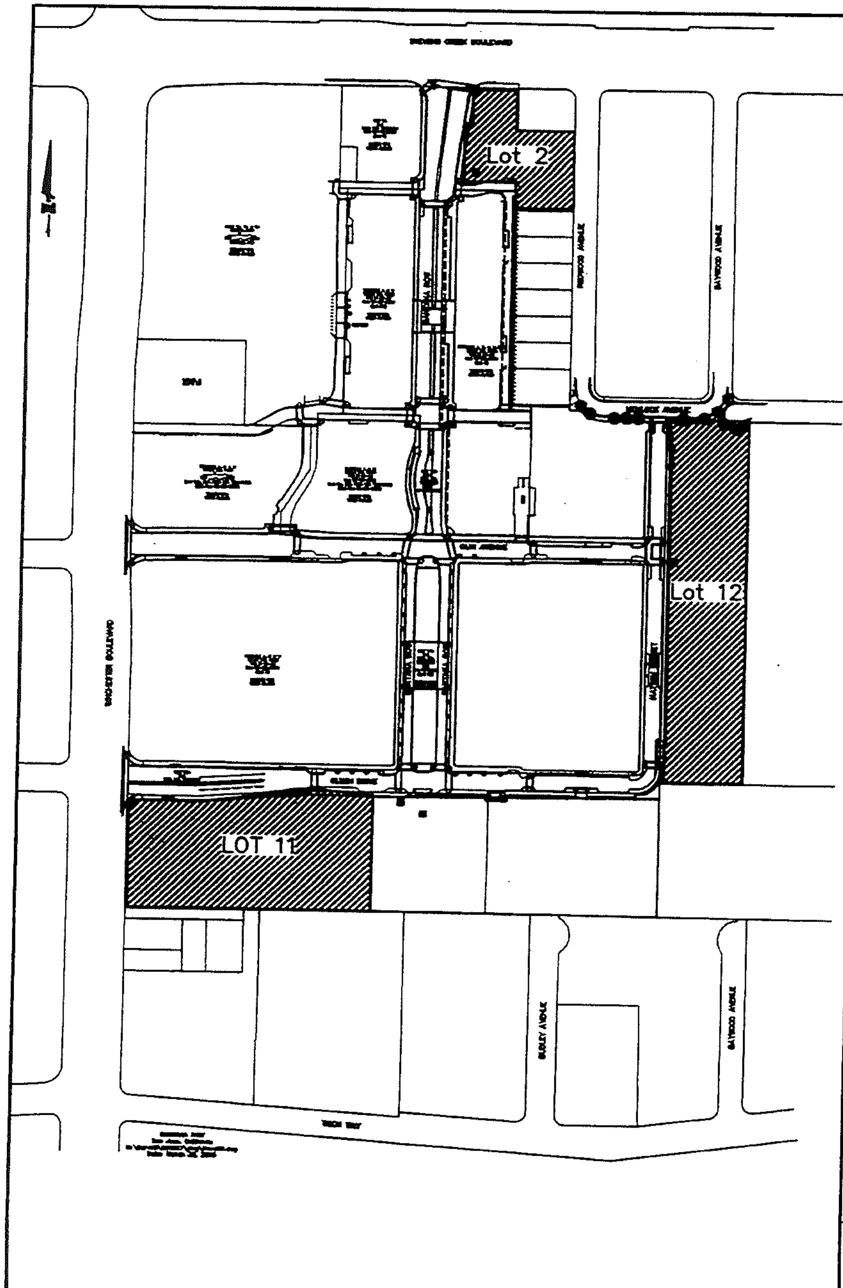
IV DRAWINGS



Vicinity Map- Santana Row Santana Row San Jose, California			
SCALE: No Scale		DRAWN BY:	J.J.R.
DATE: 6-25-05	JOB NUMBER: J126-010-05	REVISED:	

J R Associates Civil and Environmental Geophysics
1886 Emory Street, San Jose, CA (408) 293-7390

DRAWING NUMBER: 1

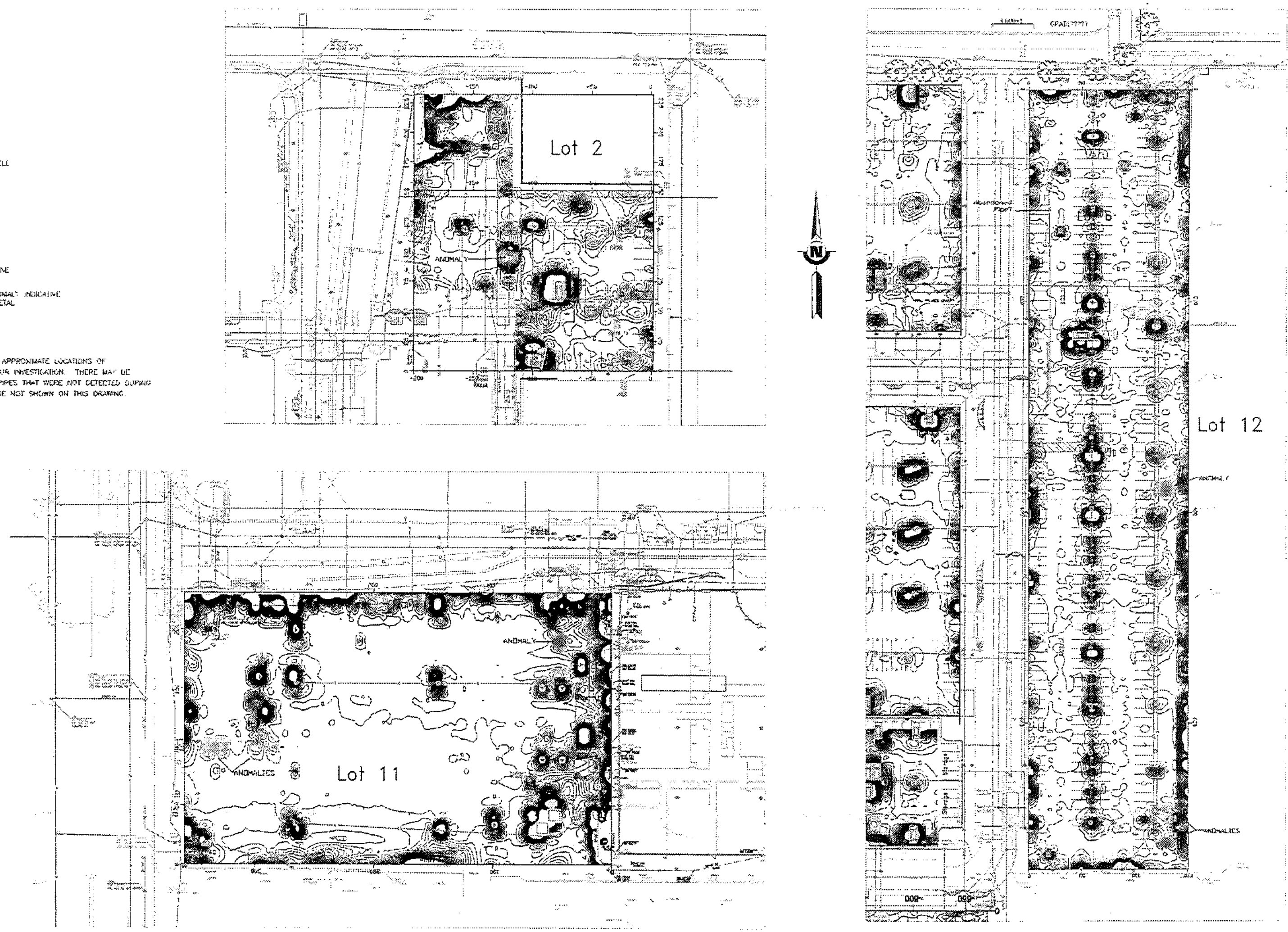


Site Map- Magnetic Investigation Santana Row San Jose, California			
SCALE: No Scale			DRAWN BY: J.J.R.
DATE: 6-25-05	JOB NUMBER:	J126-010-05	REVISED:
J R Associates Civil and Environmental Geophysics 1886 Emory Street, San Jose, CA (408) 293-7390			
			DRAWING NUMBER: 2

EXPLANATION:

- PARKED VEHICLE
- STORM GRATE
- POST
- POWER POLE
- SIGN
- STAKE
- TREE
- FENCE
- ELECTRICAL LINE
- BURIED PIPE
- MAGNETIC ANOMALY INDICATIVE OF BURIED METAL

NOTE: THIS DRAWING SHOWS THE APPROXIMATE LOCATIONS OF UTILITIES FOUND DURING OUR INVESTIGATION. THERE MAY BE ADDITIONAL UTILITIES AND PIPES THAT WERE NOT DETECTED DURING OUR INVESTIGATION AND ARE NOT SHOWN ON THIS DRAWING.



Magnetic Contour Maps- Magnetic Investigation
Santana Row
San Jose, California

1" = 40'		J.J.R.
6-25-2002	[illegible]	

J R Associates Civil and Environmental Geophysics
1885 Emory Street, San Jose, CA (408) 293-7390

3

APPENDIX I

SUMMARY OF COMPACTION RECOMMENDATIONS

EXHIBIT 1
COMPACTION RECOMMENDATIONS

Area	Compaction Recommendation [1,2,3]
General Engineered Fill	Compact to a minimum of 90 percent compaction at near the optimum moisture content.
Trenches [4]	Compact to a minimum of 90 percent compaction at near the optimum moisture content.
Exterior Flatwork [5]	Compact to a minimum of 90 percent compaction at near the optimum moisture content. Where exterior flatwork is exposed to vehicular traffic, compact upper 12 inches of subgrade to a minimum of 95 percent relative compaction at near the optimum moisture content. Compact baserock to a minimum of 95 percent compaction at near the optimum moisture content.
Parking and Access Driveways [5]	Compact upper 12 inches of subgrade to a minimum of 95 percent relative compaction at near the optimum moisture content. Compact baserock to a minimum of 95 percent compaction at near the optimum moisture content.

Notes:
(1) All compaction requirements refer to relative compaction as a percentage of the laboratory standard described by ASTM D-1557. All lifts to be compacted shall be a maximum of 8 inches loose thickness, unless otherwise recommended.
(2) All compacted surfaces should be firm, stable, and unyielding under compaction equipment.
(3) Where fills are deeper than 7 feet, the portion below 7 feet should be compacted to a minimum of 95 percent.
(4) In landscaping areas, this percent compaction in trenches may be reduced to 85 percent.
(5) Depths are below finished subgrade elevation.