



Soil, Foundation, & Geotechnical Engineers

**SOIL AND FOUNDATION INVESTIGATION
PROPOSED 4 UNIT APARTMENT
2834 EL PORTAL DRIVE,
SAN PABLO, CA 94806**

**Prepared for
Magdaleno Magana
2834 El Portal Drive,
San Pablo, CA 94806**

**May 14, 2025
File No. 25-6473-S**



Soil, Foundation, and Geotechnical Engineers
1141 Ringwood Court, Suite 130, San Jose, CA 95131
408-559-6400 • www.americansoiltesting.com

File No. 25-6473-S

May 20, 2025

Magdaleno Magana
2834 El Portal Drive,
San Pablo, CA 94806

SUBJECT: SOIL AND FOUNDATION INVESTIGATION
PROPOSED 4 UNIT APARTMENT
2834 EL PORTAL DRIVE,
SAN PABLO, CA 94806
APN: 4160410140

Dear Mr. Magana,

Per your request and authorization, our firm has performed a Soil and Foundation Investigation for the abovementioned project. The site is at 2834 El Portal Drive in San Pablo, California. Our findings indicated that the proposed 4-unit apartment might be constructed on the above property, provided the recommendations in this report are carefully followed and implemented during construction. This report presents our findings on investigating surface and subsurface soil, laboratory test results, and field and office studies.

We are pleased to have served you in this matter. Please contact our office if you have any questions or require additional information.

Respectfully submitted,
American Soil Testing and Engineering, Inc.

A handwritten signature in cursive script that reads "Bruce Emam".

Bruce Emam, P.E.
R.C.E. # C47256



California Code of Regulations, Title 16, Division 5, 400-476 Article 1. General Provisions 411. Seal and Signature. (Partial) (e) The Seal shall be capable of leaving an electronically generated representation on the documents. The signature may be applied to the documents electronically. Please contact us if Authenticity is

questionable: (408) 559-6400

TABLE OF CONTENTS

SOIL INVESTIGATION	4
Introduction	4
Site Description and Location of Project	4
Field Investigation	4
Laboratory Testing Parameters	4
Subsurface Conditions	5
SEISMIC DESIGN CRITERIA	6
Potential Geologic and Geotechnical Hazards	7
Seismic Shaking	7
Lurching	7
Liquefaction	8
Lateral Spreading	8
Groundwater	8
Earthquake Probability Map	9
GRADING SPECIFICATIONS	12
Compaction Requirements	12
FOUNDATION DESIGN CRITERIA	14
Pier & Grade Beam	14
Lateral Loads	14
Settlements	14
CONCRETE SLABS-ON-GRADE CONSTRUCTION	16
GENERAL CONSTRUCTION REQUIREMENTS	17
Site Drainage	17
Sub-drain	17
PLAN REVIEW AND OBSERVATIONS	19
Plan Review	19
CONSTRUCTION OBSERVATION AND TESTING	20
CONCLUSIONS	20
LIMITATIONS AND UNIFORMITY OF CONDITIONS	20
APPENDIX A: Physiography	22
Figure 1	23
Figure 2	23
Figure 3	24
APPENDIX B: Subsurface Data	25
Figure 1	26
Figure 2	27
Figure 3	28
Figure 4	29
Figure 5	30

SOIL INVESTIGATION

Introduction

The soil investigation aimed to gather sufficient data to provide recommendations for foundation engineering. This report explains how we conducted that investigation, the testing program results, our conclusions based on their results, and our recommendations for earthwork and foundation design that best suits the proposed development to the existing natural conditions.

Site Description and Location of Project

The site is at 2834 El Portal Drive in San Pablo, California. APN: 4160410140

In our investigation, the subject property was an undeveloped vacant lot. The lot was approximately 0.59 Acres, an irregular-shaped parcel of land, and an elevation 60 to 70 feet above sea level. The site is in a residential area bounded by El Portal Drive to the north, San Pablo Creek to the south, residences to the east, and a vacant lot to the west. The proposed structure will be constructed at a designated pad, which will be located later. During our site visit, the property was accessed through El Portal Drive.

Field Investigation

After considering the nature of the proposed development, reviewing available data on the area, and discussing it with the client, a field investigation was conducted at the project site. It included a surface site reconnaissance to detect unusual surface features and to drill two bores on 5/5/2025 to determine subsurface soil characteristics. Soil samples were collected during drilling using a 3-inch OD 'California' spoon sampler with 82½-in. Diameter brass liners or a 2-inch OD SPT sampler, driven by the standard 140-pound hammer, lifted by rope-and-cathead by the Standard Penetration Test (ASTM standard method D1586). The approximate boring locations are shown in Appendix A, Figure 2. The soil encountered was logged in the field. The boring logs in Figures 3 and 4 (Appendix B) represent the soil profile, showing the samples' depths.

Laboratory Testing Parameters

Samples and field logs were reviewed to determine which would be analyzed further. Those chosen for laboratory analysis were considered representative of soil exposed and used during grading and deemed to be within the influence of the proposed structure.

The liquid limit and plasticity index (Atterberg limits) indicate the plasticity characteristics of soil, ASTM D 4318. The estimates are based on test data from the survey area or field examination. Maximum density was performed to estimate the moisture-density relationship of typical soil materials. The tests were conducted by ASTM designation D 1557-12.

Soil classification is determined according to the Unified Soil Classification System (ASTM, D2487). American Society for Testing and Materials (ASTM). 2011. Standard classification of soils for engineering

purposes. ASTM Standard D2487.

The Unified system classifies soils according to properties that affect their use as construction material. Soils are classified according to the particle-size distribution of the fraction less than 3 inches in diameter and according to plasticity index, Liquid Limit, and organic matter content. Silty and clayey soils as CL Two groups can have a dual classification, for example, ML-CL. The results of laboratory tests are summarized in Appendix B.

Subsurface Conditions

After reviewing the laboratory test data, boring logs, and examination of the soil samples collected in different depths, the subsurface soils underlying the project site appear to be relatively uniform throughout the area. At the Boring B-1 and B-2, we encountered approximately 2 feet of fill consisting of very stiff, dark brown, gravely sandy silt with some clay. From 2 feet to 8 feet, very stiff brown, gravely sandy silt, and from 8 to 15 feet, it consists of dense dark brown silty clay with fine gravel. Based on our experience, old fills such as this were typically not placed and compacted to today's standards as engineered fill. These fill often settle over the years, particularly when subject to new structural loads, during seasonally heavy rainfall, irrigation when the fill becomes wet, or during strong seismic shaking.

SEISMIC DESIGN CRITERIA

The subject site is in the seismically active San Francisco Bay region; therefore, any Structure within this area will most likely be subjected to strong ground shaking sometime during its lifetime. Major faults like the San Andreas, Calaveras, and Hayward faults have produced large-magnitude earthquakes and can be expected to do so within the next 50 years. It is reasonable to assume that the proposed building will be subjected to at least one moderate to severe earthquake during the 50 years following construction. During such an earthquake, severe ground shaking will occur at the site.

We understand that the project's structural design will be based on the 2022 California Building Code (CBC), which provides criteria for building seismic design. The “Seismic Coefficients” used to design buildings are established based on tables and figures addressing different site factors and mapping spectral acceleration parameters based on the distance to the controlling seismic source/fault system. Based on our borings and review of local geology, we have classified the site as Soil Classification D.

Coefficient	Classification	Design Value
	Site Class	D-Stiff Soil
	Design Code Reference Document	ASCE7/SEI 7-16
	Site Latitude	37.962922
	Site Longitude	-122.33173
S _s	MCEr ground motion (for 0.2 second period)	2.259
S ₁	MCEr ground motion (for 0.1s period)	0.873
F _a	Site amplification factor at 0.2 second	1
F _v	Site amplification factor at 1.0-second	N/A
S _{ms}	The site-modified spectral acceleration value	2.259
S _{m1}	The site-modified spectral acceleration value	N/A
S _{DS}	Numeric seismic design value at 0.2 seconds SA	1.506
S _{D1}	Numeric seismic design value at 0.1 second SA	N/A
T _L	Long-period transaction period	8

The structure Engineer for this project should evaluate the applicability of the seismic design criteria presented in the CBC, 2022.

Consideration should also be given to anchoring or otherwise stabilizing freestanding appliances or home furnishings, which may be prone to toppling during seismic vibrations.

Potential Geologic and Geotechnical Hazards

The secondary effects of seismic activity are typically considered potential hazards to the site and include several types of ground failure. Ground failures might occur due to ground-shaking events, including landslides, ground subsidence, ground lurching, shallow ground rupture, and liquefaction. The probability of occurrence of each type of ground failure depends on the earthquake's severity, distance from faults, topography, subsurface conditions, groundwater elevation, and other factors.

Seismic Shaking

Ground shaking is a hazard common to all properties in California. Mitigate it by proper structural design and by following the recommendations presented in our Soil and Foundation Investigation Report. The site is in the seismically active San Francisco Bay Area. Several major earthquakes, produced by movement on one of the principal active faults, affected the region during historic times. These include the 1868 earthquake on the Hayward Fault, the 1906 San Francisco earthquake, and the 1989 Loma Prieta earthquake, which originated at the San Andreas Fault.

Considering the region's past seismic history, the site will be affected by strong seismic shaking during the expected lifetime of the proposed building. The site's distance determines the intensity of shaking to the seismic source and the material's properties along the path of the transmitted energy. To mitigate the effects, all structures should be designed using engineering judgment, the latest building code requirements, and the latest standards of practice design methods.

Seismic design provisions of current building codes generally prescribe minimum forces applied statically to the structure, combined with the gravity forces of dead and live loads. The code-prescribed lateral forces are typically considered substantially smaller than those associated with a major earthquake. Therefore, structures should be able to: (1) Resist minor earthquakes without damage. (2) Resist moderate earthquakes without structural damage but with some nonstructural damage, and (3) resist major earthquakes without collapse but with some structural and nonstructural damage. Conformance to building code recommendations does not guarantee that significant structural damage would not occur in the event of a maximum magnitude earthquake. However, it is reasonable to assume that well-designed and well-constructed structures will not collapse or cause loss of life in a major earthquake.

Lurching

Ground lurching results from the rolling imparted to the ground during energy released by an earthquake. Such a rolling motion causes ground cracks to form. The potential for creating these cracks is more significant at the contact between deep alluvium and bedrock. Such an occurrence is possible at other locations in the Bay Area, but based on the site location, we believe the offset is expected to be nil.

Liquefaction

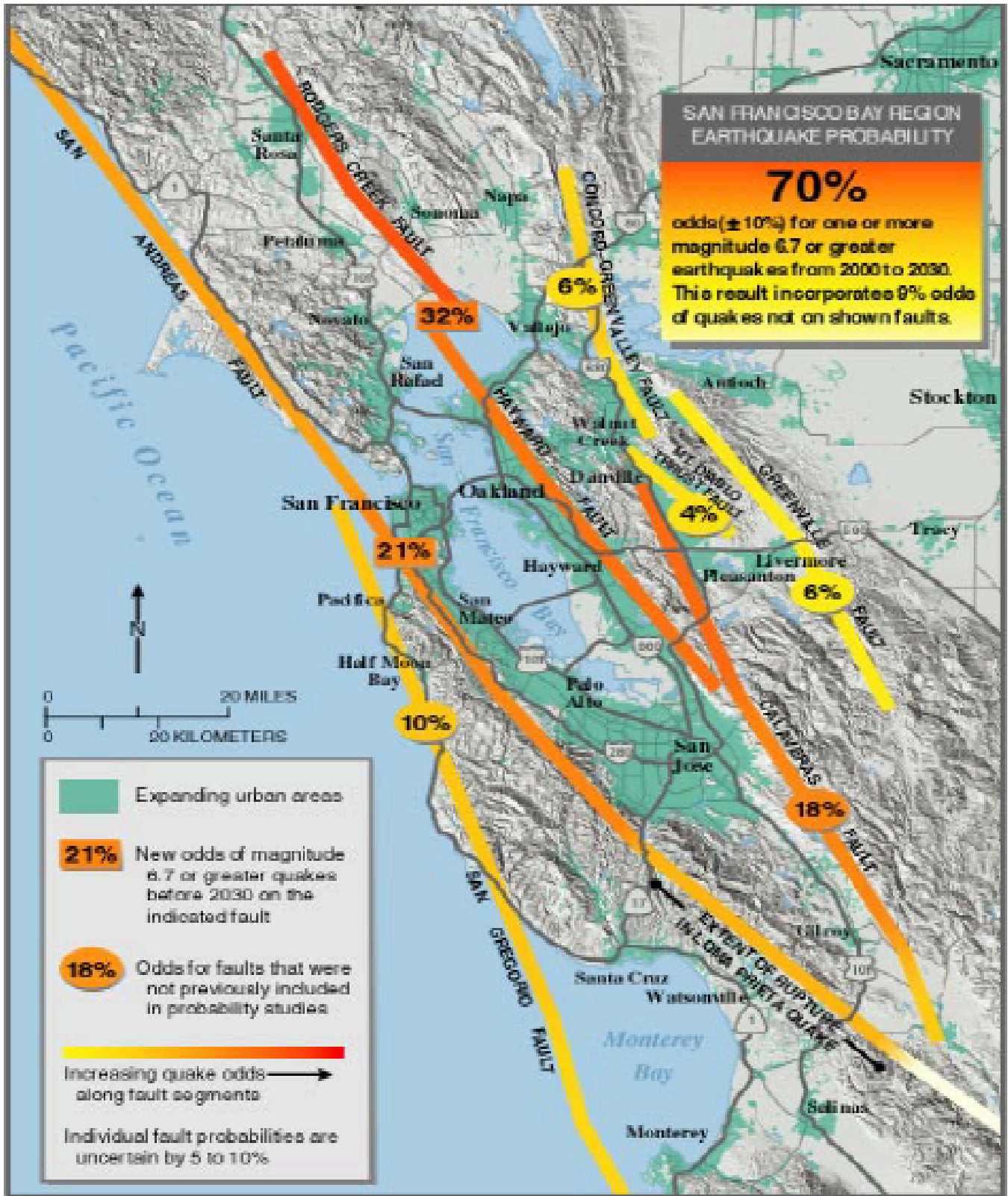
Liquefaction occurs when saturated sandy soils experience a temporary total loss of shear strength during earthquake shaking. Ground settlement often accompanies liquefaction. Soils most susceptible to liquefaction are saturated, loose, sandy silts, silty sands, and uniformly graded sands. Since loose sands and other soils prone to liquefaction were not encountered during our investigation, the likelihood of liquefaction occurring within the depth of our exploration is low.

Lateral Spreading

Such seismically generated movements are induced in areas with weak soils near open cuts or slopes or in areas of moderate to high liquefaction potential. The subject site is level ground at the building pad. Exploratory borings on the property encountered well-consolidated soil at shallow depths. The potential for ground failure from liquefaction, lateral spreading, or other seismically activated ground failure appears low.

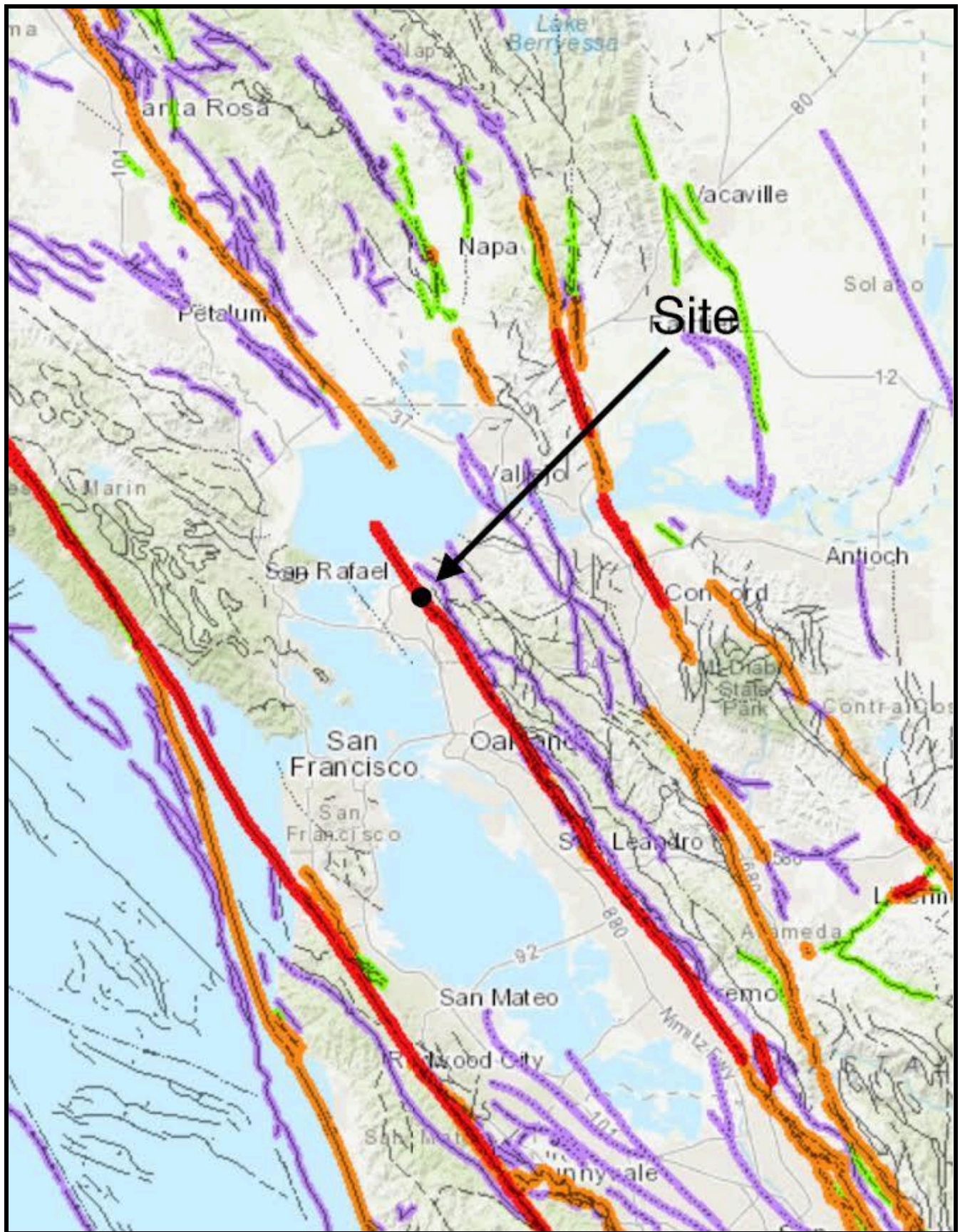
Groundwater

Groundwater or seepage was not encountered in our borings during the investigation. However, due to the general topography of the area, the groundwater level may fluctuate because of variations in seasonal rainfall, the amount of irrigation, and other unknown factors. Perched groundwater may be present during pier drilling due to surface water infiltration into the permeable soils. If ground or perched water is encountered during drilling, dewatering is required.

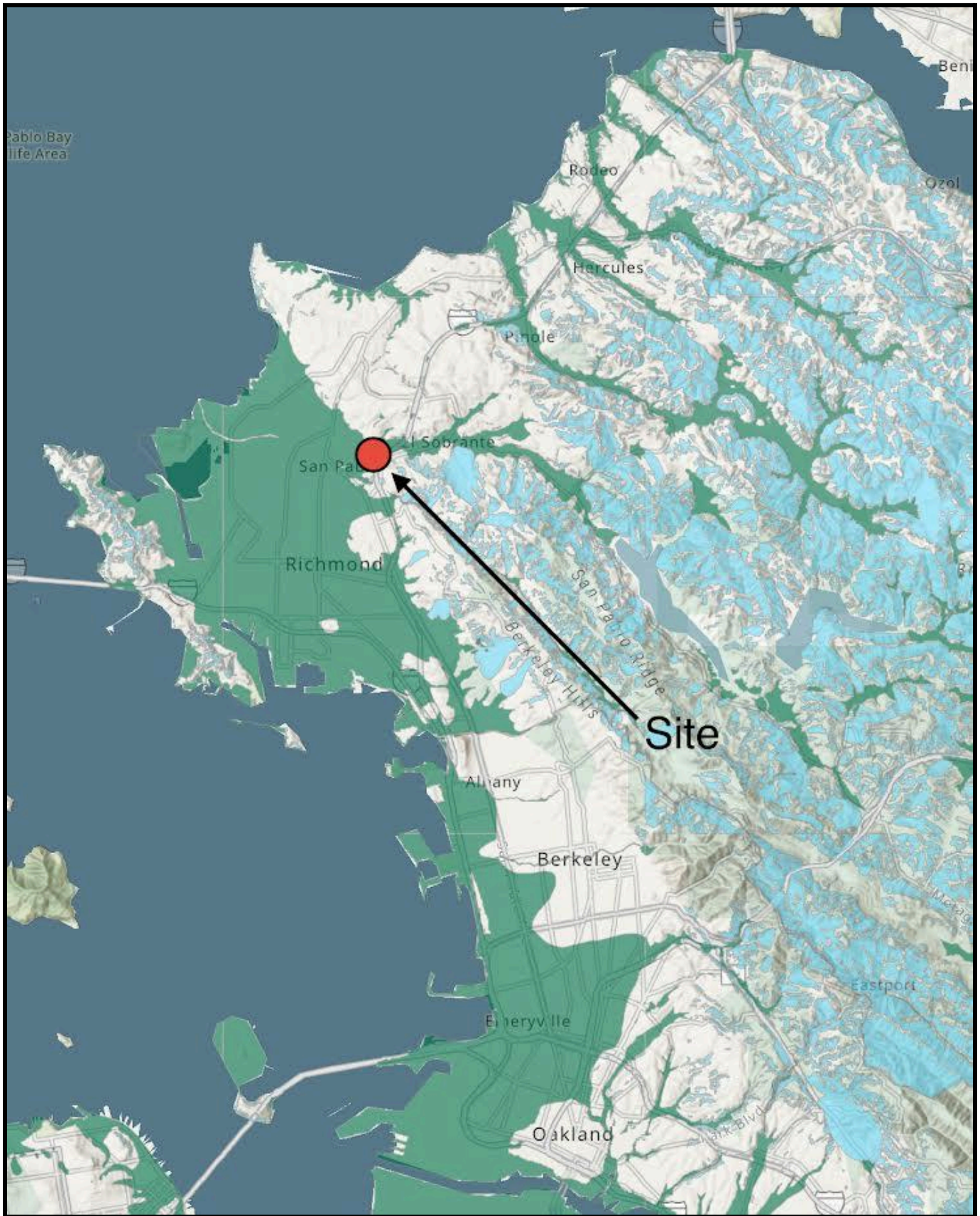


Earthquake Probability Map

Figure 1 - The threat of earthquakes extends across the entire San Francisco Bay region, and a major quake is likely before 2030. Knowing this will help people make informed decisions as they prepare for future quakes.



Fault Activity of California
California Department of Conservation



**Earthquake Zones of Required Investigation
California Department of Conservation**

GRADING SPECIFICATIONS

The recommendations of this report prepared by American Soil Testing and Engineering Inc. shall be followed for the placement of fill and control of any grading operations at the site. These recommendations set forth the minimum standards to satisfy all requirements of this report.

1. All existing surface and subsurface structures not incorporated in the final development shall be removed before grading operations. These objects shall be accurately located on the grading plans (prepared by the project Civil Engineer) to assist the Field Engineer in establishing proper control over their removal. This includes but is not limited to basements, utility lines, underground tanks, and other improvements. An American Soil Testing and Engineering Inc. representative shall be present during demolition.
2. **The top 2 feet of fill should be removed and capped with low-expansion import fill. The imported fill materials should be placed in lifts that do not exceed 8 inches in loose thickness, moisture-conditioned, and compacted to not less than 90% relative compaction by the ASTM test procedure D1557- 12. ASTM D1557-12 Standard Test Methods for Laboratory Compaction. If necessary, the Soil Engineer may provide additional field recommendations based on exposed field conditions.**
3. The depressions left by removing any surface and subsurface structures shall be cleaned of all debris and backfilled with clean, native, on-site soil. This backfill shall be compacted to not less than 90% relative compaction by the ASTM test procedure D1557- 12. ASTM D1557-12 Standard Test Methods for Laboratory Compaction.
4. Following the stripping operations, the exposed surface shall be scarified to a depth of not less than 12 inches, conditioned as necessary (3 to 4 percent above optimum moisture content), and compacted to 90% relative compaction according to ASTM test procedure D1557- 12. At this point, the pad area will be ready to receive compacted fill. If necessary, the Soil Engineer may provide additional field recommendations based on exposed field conditions.
5. All structural fill, whether imported or native soil, shall be placed in uniform horizontal lifts of not more than 6 to 8 inches in uncomplicated thickness and compacted to not less than 90% relative compaction using the STM test procedure D1557-12. Five feet around the entire perimeter of the building pad shall also be compacted to at least 90% relative compaction using the abovementioned procedure. Before compaction begins, the fill shall be brought to a water content that will permit proper compaction by either 1) Aeration of the material if it is too wet or 2) spraying it with water if it is too dry. Each lift shall be thoroughly mixed before compaction to distribute uniform water content. When the fill material includes rocks, rock nesting will not be permitted, and all voids shall be carefully filled and properly compacted; no rocks larger than 4 inches in diameter shall be used to construct the building pad.
6. The Soil Engineer shall be notified at least 48 hours before the commencement of any grading

operations so that he may coordinate the work in the field with the Grading Contractor.

7. **All imported borrow must be sampled, tested, and approved by the Soil Engineer before being brought to the site. Import soil must have a plasticity index no greater than 12) and an "R" value greater than (25).**
8. A Soil Engineer from American Soil Testing and Engineering Inc. shall observe and approve all grading work.
9. *If any unusual condition not covered by the special provisions is encountered during the grading operations, the Soil Engineer shall be immediately notified for further recommendation.*

Compaction Requirements

All fill and subgrade areas where fill, slabs-on-grade, and pavements are planned should be placed in loose lifts 8 inches thick or less and compacted by ASTM D1557 (latest version) requirements, as shown in the table below. Clayey soils should be compacted with sheep foot equipment and sandy/gravelly soils with vibratory equipment; open-graded materials such as crushed rock should be placed in lifts no thicker than 18 inches and consolidated in place with vibratory equipment. Each lift of fill and all subgrade should be firm and unyielding under construction equipment loading and meet the compaction requirements to be approved. The contractor (with input from an American Soil Testing and Engineering representative) should evaluate the in-situ moisture conditions, as using vibratory equipment on soils with high moisture can cause unstable conditions.

FOUNDATION DESIGN CRITERIA

1. The proposed structure should be supported by a drilled, cast-in-place, straight-shaft pier, and grade-beam-type foundation. The piers should be at least 16 inches in diameter and penetrate at least 12 feet below the bottom of the grade beams. The piers shall be designed based on skin friction between the soil and the piers using the design friction value of 350 p.s.f. for dead plus live loads.
The upper 24 inches of pier depth should be ignored when computing skin friction due to seasonal moisture changes in the top layer. The depth and spacing of friction piers will depend on the structure loads transmitted to the piers and on the surface friction value.
All piers should be reinforced with a minimum of four #4 bars for their entire length, with the pier's reinforcement tied at least 12 inches to the top reinforcement of the grade beam. This recommendation is not a substitute for the structural design of the friction piers; therefore, the foundation design and required reinforcing design shall be determined by the structural engineer responsible for the foundation design.
2. We recommend that grade beams be provided between piers supporting the building as the structural engineer requires. **The grade beam should extend at least 12 inches below the crawl space grade or slab subgrade elevation** to help limit the infiltration of surface runoff under the structures and should be reinforced with a minimum of four # 4 bars, two near the top and two near the bottom. The steel from the piers should extend a sufficient distance into the grade beams to develop its full strength in the bond.
3. If the grade beam is to be cast directly on the compacted pad, grade beams should be constructed on a firm, moist subgrade, and all drying cracks must be closed by sprinkling, flooding, or other methods.
4. The supporting soils should only dry after the hole is filled with concrete. The piers should have a minimum spacing of three pier diameters.
5. **Should unusual or unexpected soil conditions be encountered, the Soil Engineer may alter the depth of the piers during construction.**
6. When concrete is placed for the pier foundation, the pier tops should not be allowed to mushroom out or have spillage at the side of the grade beams; the excess concrete should be trimmed to the design size. The bottoms of the pier should be dry and reasonably free of loose soil before reinforcing steel and placing concrete.
7. The grade beam should be kept to a minimum width (preferably 8-10 inches) to minimize the effect of uplift pressures created by the expansion of the soil beneath the beams.
8. As an alternative to constructing a void beneath the grade beam, the foundation system may be designed to resist a uniform uplift force of 1,500 PSF, assumed to be acting against the base of the grade beam. This uplift force may be opposed by the dead load of the building and by uplift friction of 250 PSF, assumed to be acting on the entire length of each pier, excluding the top 2 feet. In addition to possible increased pier embedment to resist uplift, the steel reinforcing in the piers and grade beam should be designed to withstand the tensile forces generated by the uplift.

To provide additional protection against the uplift pressures, the structural engineer may consider adding pier depth to the calculation to counteract the resulting uplift pressure. It is recommended that the structural engineer appropriately reinforce the building to meet the minimum requirements of the local uniform building code and applicable Seismic Code to resist earthquakes. **Our representative should observe pier excavations to establish that the piers bear incompetent materials, extend the required depth into residual soil or weathered bedrock, and adequately clean the pier excavations. The pier depths recommended above may require adjustment if differing conditions are encountered during drilling.**

9. Passive pressure developed against the vertical shafts of friction piles can resist lateral forces. For this project, a passive pressure of 250 psf starting at 2 feet below the top of the pile to a maximum value of 2,500 psf may be used.

Settlements

Since all foundations will be extended into competent materials, total and differential settlements are expected to be within tolerable limits. Thirty-year differential settlement due to static loads is not expected to exceed 1 inch across the proposed addition and associated site improvement, provided the foundations are designed and constructed as recommended.

CONCRETE SLABS-ON-GRADE CONSTRUCTION

All slab-on-grade shall be supported on a minimum of 6 inches thick capillary break material, such as 3/4" clean crushed rock or permeable aggregate. A minimum of 15 mils thick polyethylene or its equivalent vapor membrane shall be placed between the crushed rock and the concrete slab.

The minimum reinforcement should consist of at least a #4 rebar, 18 inches on the center, for shrinkage control to minimize the impact of expansion. However, slab reinforcing could exceed the minimum requirements depending on the anticipated usage and loading conditions. Proper slab expansion and contraction joints shall be provided to minimize the cracks.

Concrete slabs around the landscaping area should be protected from water seepage. The water seepage from these areas usually creates over-saturation of the base rock and the subgrade, causing unstable conditions. Henceforth, we recommend the following:

Provide a vertical cut-off or deep vertical curb section and landscaping areas. The vertical cut-off should extend through the base rock and a minimum of six inches into the subgrade. This will limit water seepage into the adjacent concrete slabs.

Positive surface drainage (minimum 2%) shall always be provided adjacent to the building to direct water away from the foundations and slabs to a suitable discharge facility during and after the project's construction phase. If deemed necessary by the Soil Engineer, before placing the vapor membrane or pouring concrete, the subgrade shall be moistened with water to reduce the swell potential. The subgrade soils under the area of the slab should be water conditioned to raise the water content; spraying the water at least a day before the concrete is poured can do this. Minor cracking of the concrete slabs on the grade should be anticipated due to long-term differential movement of any underlying fill or natural soil. The project structural engineer should determine the exact thickness and reinforcements based on the design's live and dead loads.

For garage slab construction, the slab should be underlain by a minimum 12-inch layer of permeable aggregate base or 3/4" clean crushed rock. It should be poured structurally independent of the foundations or any fixed members. Expansion joints shall be constructed in the slab at least 10 feet from the interior face of the walls.

If deemed necessary by the Soil Engineer, the subgrade shall be moistened with water before pouring concrete to reduce the swell potential. The subgrade soils under the slab area should be water conditioned to raise the water content, spraying the water at least a day before the concrete is poured. Minor cracking of the concrete slabs on the grade should be anticipated due to long-term differential movement of any underlying fill or natural soil. **The project structural engineer should determine the exact thickness and reinforcements based on the design's live and dead loads.**

GENERAL CONSTRUCTION REQUIREMENTS

1. Where utility lines cross under or through perimeter footings, and sand is used as backfill material, the trench shall be completely sealed by at least a 3' concrete plug to prevent moisture intrusion into the areas under the slabs and/or by compacting soil material for 5 feet on both sides of the exterior footings.
2. Rainwater discharge at downspouts must be directed into a solid pipe to carry away the excess water and prevent water from collecting in the soil adjacent to the foundation. The connection could be in a closed conduit that discharges at an approved location away from the structure.
3. If utility trenches are parallel to the sides of the building, they should not extend below a line sloping down and away at a 2:1 (horizontal to vertical) slope from the bottom outside edge of all footings.
4. All trenches may be backfilled with native material, provided they are free of organic material and rocks over 4 inches in diameter or with approved imported granular material. The soil must be compacted to a minimum relative compaction of 95% in paved areas and 90% in other areas.

Site Drainage

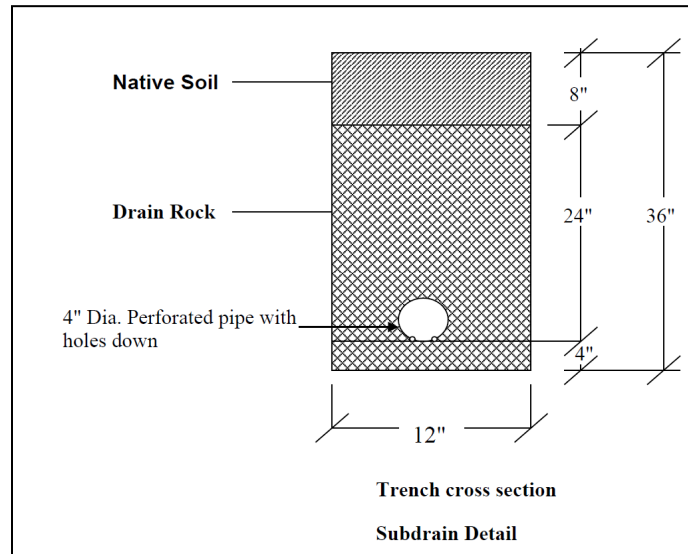
Positive surface drainage should always be provided to prevent water from seeping beneath the footings. To accomplish this, the site should be graded for positive removal and to avoid ponding during and after construction. Where area drains are required, such as in depressed planter beds adjacent to the foundation or the edges of slabs, they can be connected to a solid pipe.

Sub-drain

Extensive landscaping may seriously alter the surface drainage pattern. When landscaping, homeowners should avoid disrupting flow patterns created when the property was originally graded.

Suppose the building pad will be sub-excavated to create the crawl space beneath the structure. In that case, we recommend that the sub-drain be provided and connected to the catch basin or the nearest appropriate receptacle. The sub-drain shall have a 36-inch deep and 12-inch wide trench. A continuous minimum 4-inch diameter perforated plastic pipe (perforations down) shall be graded such that the water will flow toward the catch basin. The pipe should be encapsulated in filter fabric over a minimum of 4 inches of bedding. The trench should be backfilled using a maximum 1-inch diameter concrete aggregate or drain rock up to 18 inches; the top portion should be backfilled by on-site soil and compacted to not less than 90% relative compaction. Figure A schematically shows the installation of the recommended sub-drain. A proper outlet should be provided at the lower end of each segment of the sub-drain.

The outlet should consist of an unperforated pipe of the same diameter, connected to the perforated pipe, and extended to a protected outlet at a lower elevation on a continuous gradient of at least one percent. A cleanout pipe should be provided at the high point of the pipe. A representative of our firm should be present during the sub-drain installation; at this time, additional recommendations based on exposed field conditions and other grading adjustments may be given as deemed necessary by the Soil Engineer.



PLAN REVIEW AND OBSERVATIONS

Plan Review

American Soil Testing and Engineering, Inc. should review the completed grading and foundation plans for conformance with the recommendations contained in this report. The plans should be provided to us as soon as possible upon completion to limit potential delays in the permitting process that might otherwise be attributed to our review process.

It should be noted that many of the local building and planning departments now require “clean” geotechnical plan review letters before the acceptance of plans for their final review. Since our plan reviews usually result in recommendations for modification of the plans, our “clean” review letter often requires two additions. At a minimum, we recommend that the following note be added to the plans:

“Earthwork, foundation construction, pier drilling, car stacker pit retaining wall backfilling, slab subgrade and non-expansive fill preparation, utility trench backfill, pavement construction, and site drainage should be performed by the geotechnical report prepared by American Soil Testing and Engineering, Inc., dated Month Day, Year. American Soil Testing and Engineering should be notified at least 48 hours before any earthwork and observed and tested during earthwork and foundation construction as recommended in the geotechnical report.” American Soil Testing and Engineering should be notified at least 5 days before earthwork, trench backfill, and subgrade preparation work to allow time to sample on-site soil and laboratory compaction curve testing before on-site compaction density testing.”

Construction Observation and Testing

The earthwork and foundation phases of construction should be observed and tested by us to 1) confirm that subsurface conditions are compatible with those used in the analysis and design; 2) observe compliance with the design concepts, specifications, and recommendations; and 3) allow design changes if subsurface conditions differ from those anticipated. The recommendations presented in this report are based on limited subsurface exploration. The nature and extent of variation across the site may not become evident until construction. If variations are exposed during construction, we must reevaluate our recommendations.

American Soil Testing and Engineering Inc. is not responsible for compliance with design recommendations for grading or foundation plans controlled, inspected, and approved by others.

CONCLUSIONS

1. The site covered by this investigation is suitable for the proposed 4-unit apartment, provided the recommendations outlined in this report are incorporated into the design considerations, project plans, and specifications.
2. The native soils are unsuitable for engineered fill. The organically contaminated soil may be used for landscaping only.
3. The native surface and near-surface soil at the project site have been found to have a low to moderate expansion potential when subjected to fluctuations in moisture.

LIMITATIONS AND UNIFORMITY OF CONDITIONS

1. The recommendations presented in this report are based on the soil conditions revealed by our test borings, which were evaluated for the proposed construction plan.
If any unusual soil conditions are encountered during the construction or the proposed construction differs from that planned, American Soil Testing, Inc. should be notified immediately of the supplemental recommendations.
2. This report is issued with the understanding that it is the responsibility of the owner, or his representative, to ensure that the recommendations and information contained herein are called to the attention of the Architect, Structural Engineer, and Civil Engineer for the project and are incorporated into the project Plans and Specifications. Also, the necessary steps are to ensure that the contractors carry out the recommendations of this report in the field.
3. The findings of this report are valid as of the present time. However, the passing of time will change the conditions of the existing property due to natural processes or human work. In addition, legislation or the broadening of knowledge may require other recommendations. Accordingly, the findings of this report may be invalid, wholly or partly, due to changes outside of our control. Therefore, this report is subject to review and should not be relied upon after three years.
4. This report does not recommend whether or not to purchase the property. It is for the exclusive use of the client whose name appears above.
5. The conclusions and recommendations contained herein are professional opinions derived from the current standards of professional practice, and no warranty is intended, expressed, or implied.
6. This Report was prepared under an Agreement dated 04/24/2025 between Mr. Magana and American Soil Testing and Engineering. All uses of this Report are subject to, and deemed acceptance of, the conditions and restrictions in the Agreement. The observations and conclusions described in this Report are based solely on the Scope of Services provided under the Agreement. American Soil Testing and Engineering has not performed additional observations, investigations, studies, or tests not specified in

the Agreement and the Report. American Soil Testing and Engineering shall not be liable for the existence of any condition the discovery of which would have required the performance of services not authorized under the Agreement. This Report is prepared for Mr. Magana's exclusive use in connection with the development's design and construction. There are no intended beneficiaries other than Mr. Magana. American Soil Testing and Engineering shall owe no duty to any other person or entity on account of the Agreement or the Report. Use of this Report by any person or entity other than Mr. Magana for any purpose is forbidden unless such other person or entity obtains written authorization from Mr. Magana and American Soil Testing and Engineering. Use of this Report by such other person or entity without the written authorization of Mr. Magana and American Soil Testing and Engineering shall be at such other person's or entity's sole risk. It shall be without legal exposure or liability to American Soil Testing and Engineering.

Use of this Report by any person or entity, including by Mr. Magana, for a purpose other than for the design and construction of the proposed development is expressly prohibited unless such person or entity obtains written authorization from American Soil Testing and Engineering indicating that the report is adequate for other use. Use of this Report by any person or entity for other purposes without written authorization by American Soil Testing and Engineering shall be at such person's or entity's sole risk. It shall be without legal exposure or liability to American Soil Testing and Engineering. This report reflects site conditions observed and described by records available to American Soil Testing and Engineering as of the date of report preparation. The passage of time may result in significant changes in site conditions, technology, or economic conditions, which could alter the report's findings and/or recommendations. Accordingly, Mr. Magana and any other party to whom the report is provided recognize and agree that American Soil Testing and Engineering shall bear no liability for deviations from observed conditions or available records after report preparation. Use of this Report by any person or entity in violation of the restrictions expressed in this Report shall be deemed and accepted by the user as conclusive evidence that such use and the reliance placed on this Report, or any portions thereof, is unreasonable and that the user accepts full and exclusive responsibility and liability for any losses, damages or other liability which may result.

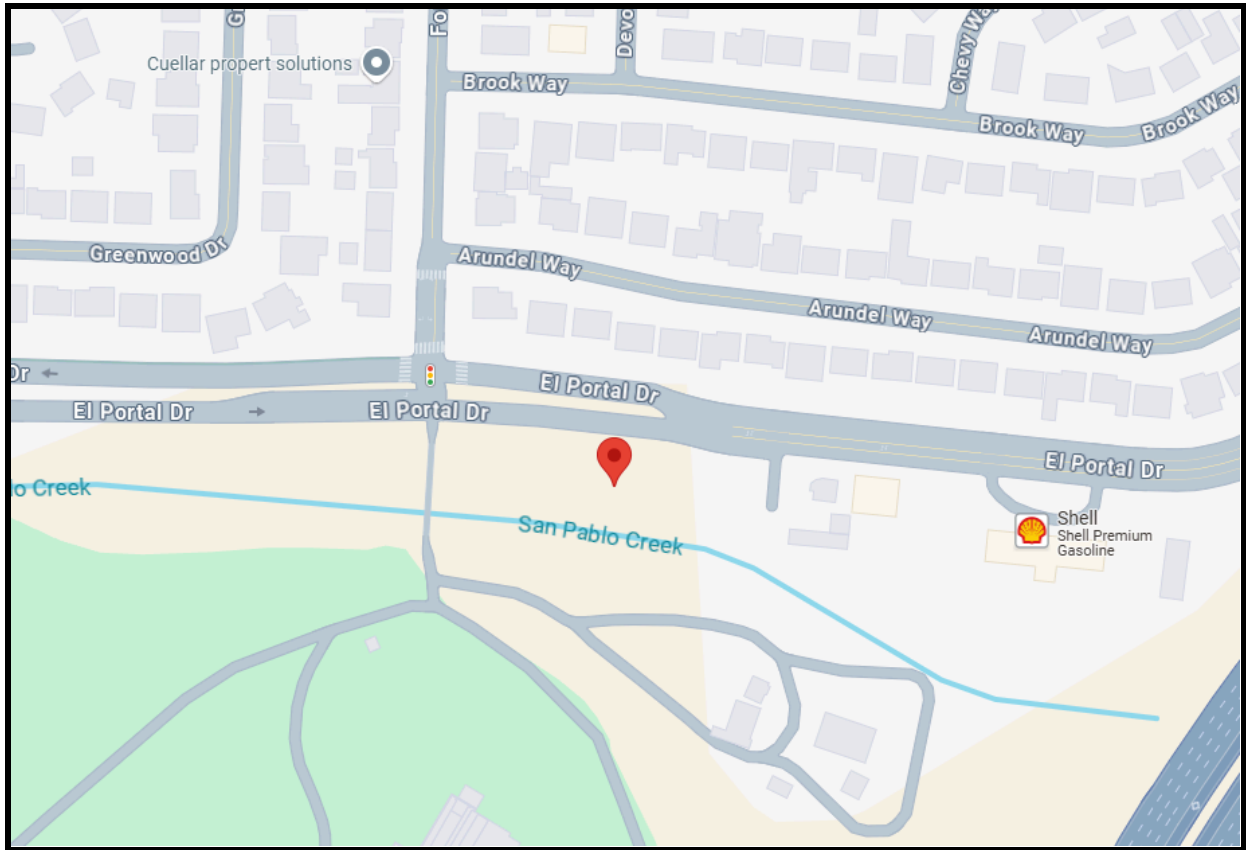


Figure 1



Figure 2

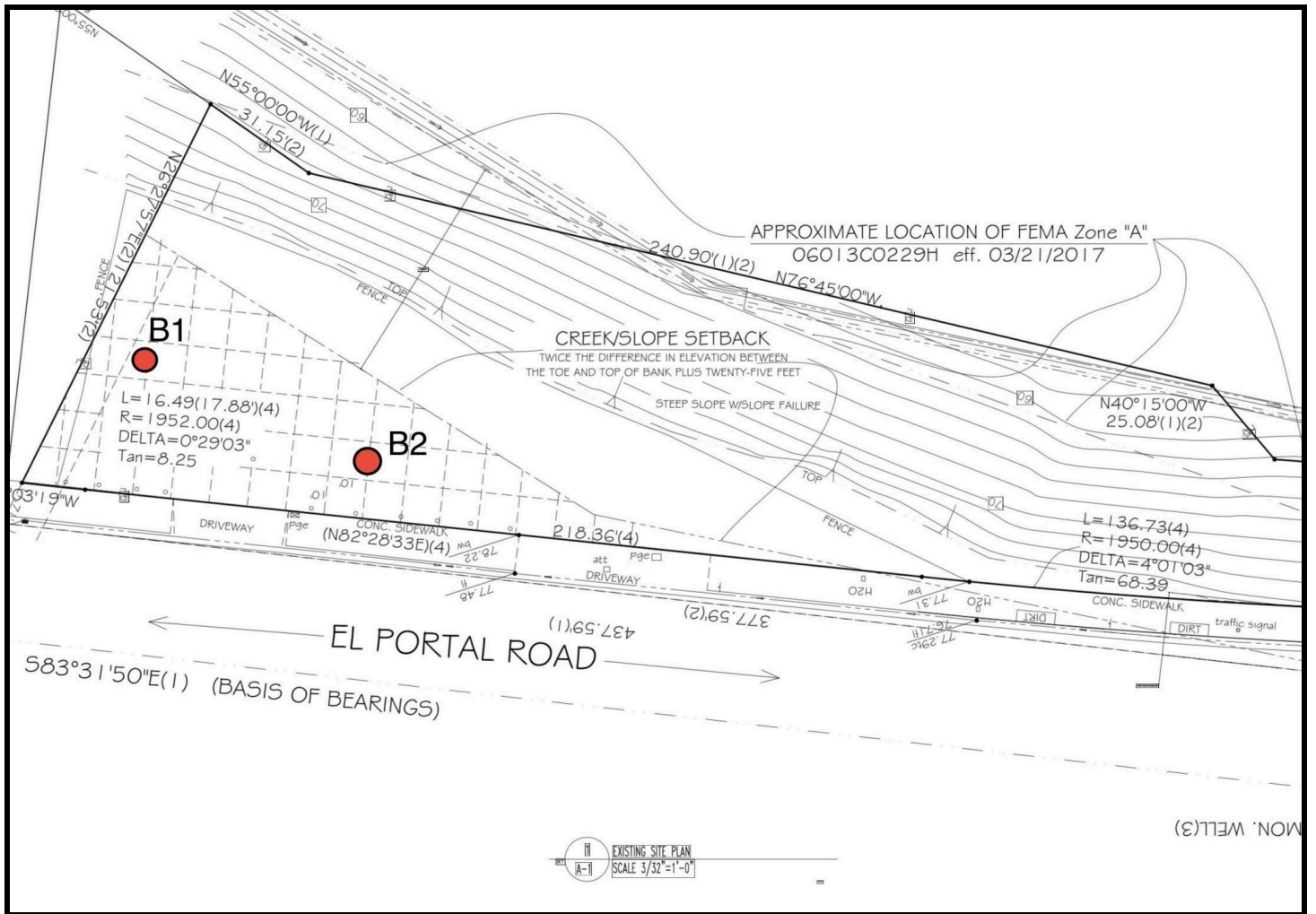
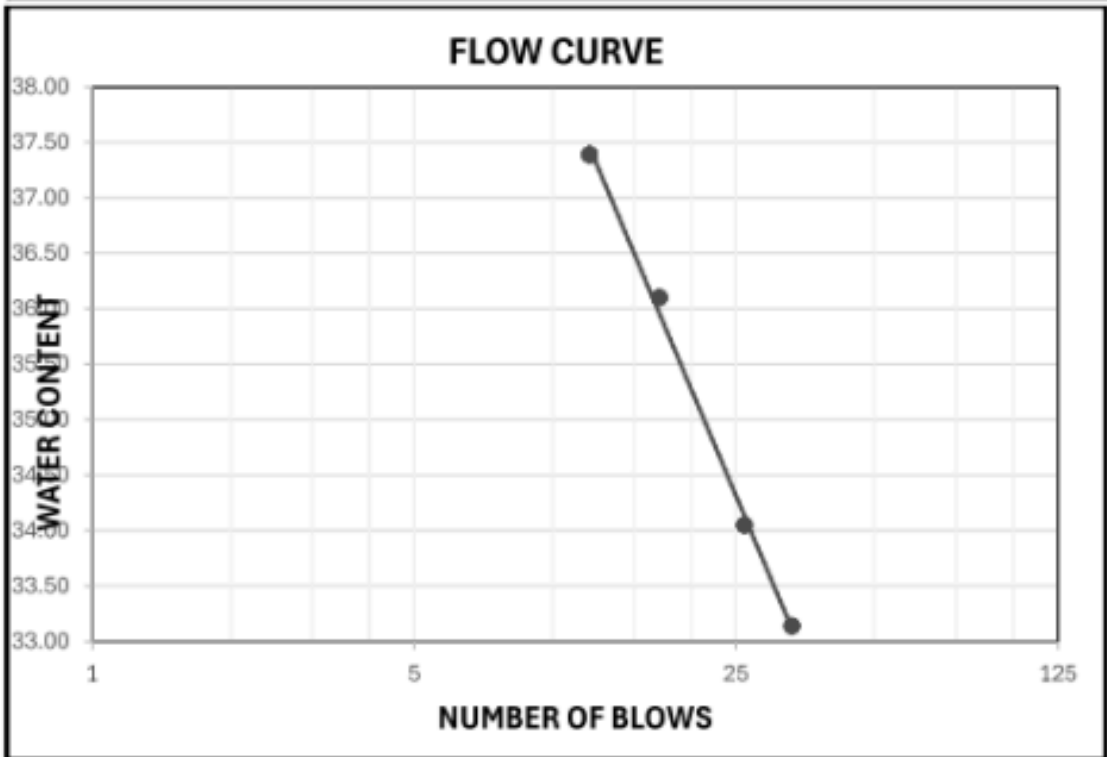
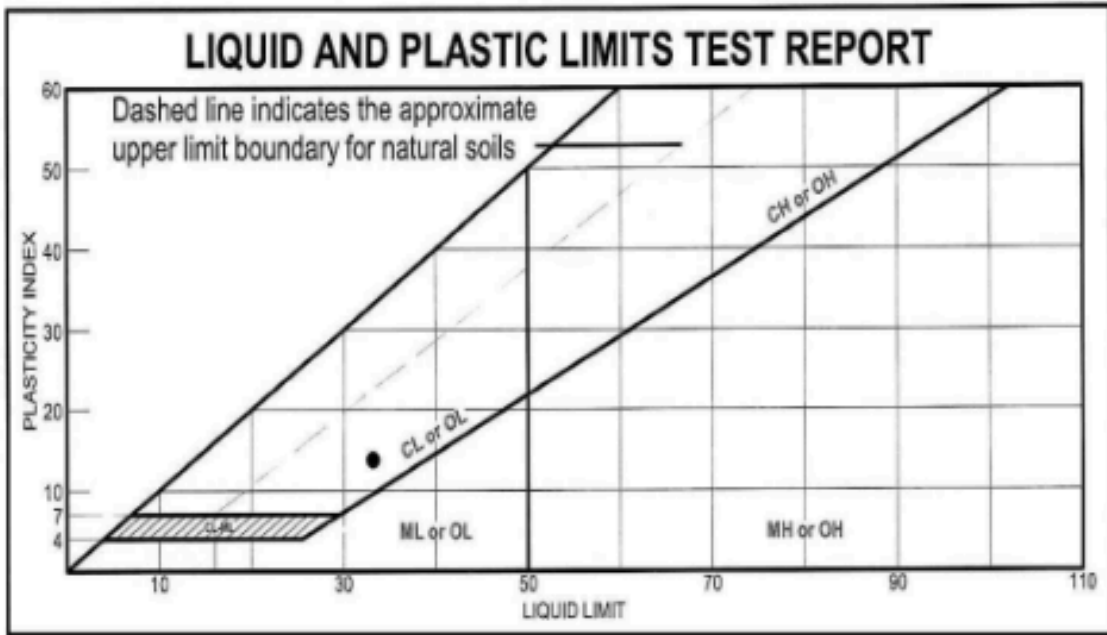


Figure 3

APPENDIX B: Subsurface Data

Figure 1	Plasticity Index
Figure 2	Moisture/Density
Figure 3-4	Logs of Test Borings
Figure 5	Key to Exploratory Boring Logs



Project Nr:	25-6473-S	LL	PL	PI	%<#40	%<#200
Address:	2834 El Portal Drive	34.31	19.44	14.87		
City:	San Pablo, CA 94806	Depth:	2'			
Material:	Soil				Source	B-1

Figure 1

Moisture Density Test Report

FILE #:	25-6473-S	ADDRESS:	2834 El Portal Drive, San Pablo, CA 94806				
LINERS							
BORING:	B1	B1					
DEPTH, FT:	2'.6"-4'	8'.6"-10'					
PROCESS:							
HT. OF SAMPLE	6.00	6.00					
TARE #	A-1	GT-3					
% MOISTURE	19.85	18.88					
GROSS WET WT.	990.80	1008.27					
DRY DENSITY, pcf	102.68	106.94					
GROSS DRY WT.	848.59	867.43					
TARE WT.	132.25	121.37					
NET DRY WT.	716.34	746.06					
WT OF WATER	142.2	140.8					
SERIES	1	2					

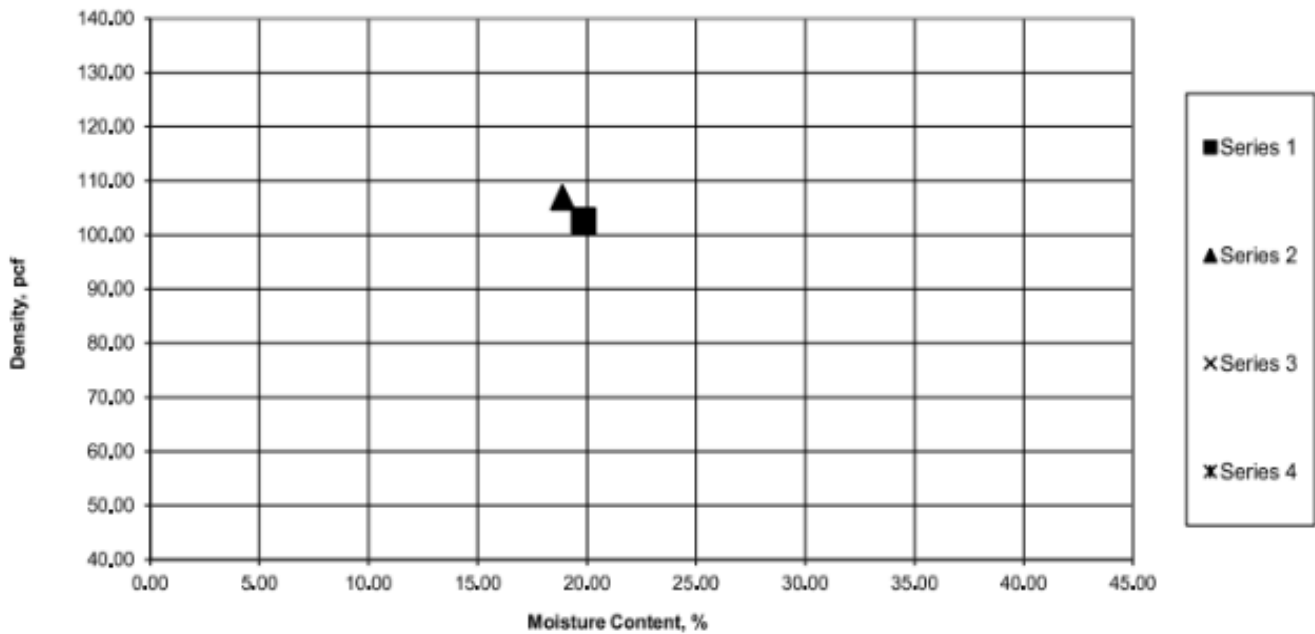


Figure 2

Date Drilled: 5/5/2025	Hole No. B - 1			Logged by B			
Project Name: 2834 El Portal Dr, San Pablo, California							
<u>SOIL DESCRIPTION</u>	Boring Log	Depth in Feet	Sample Number	Penetration Resist Blows/Foot	U.S.C.S. Soil -group	Moisture Content (%)	Dry Density P.C.F.
Gravelly sandy silty clay, dark brown, damp, firm		1					
-----FILL-----		2	1-1	20	CL	19.85	102.68
Gravelly sandy silty clay, dark brown, very moist, very stiff		3					
Gravelly sandy silt, brown, very moist, very stiff		4	1-2	28	CL		
		5					
		6					
		7					
Silty clay with fine gravel, dark brown, very moist, very stiff		8	1-3	39	CL	18.88	106.94
		9					
		10					
		11					
		12					
Boring terminated at 12' bgl		13					
		14					
		15					
		16					
No groundwater encountered		17					
		18					
		19					
		20					
		21					
		22					
		23					
		24					

Figure 3

Date Drilled: 5/5/2025	Hole No. B - 2			Logged by B			
Project Name: 2834 El Portal Dr, San Pablo, California							
<u>SOIL DESCRIPTION</u>	Boring Log	Depth in Feet	Sample Number	Penetration Resist Blows/Foot	U.S.C.S. Soil -group	Moisture Content (%)	Dry Density P.C.F.
Baserock		1					
----- Fill		2	2-1	25	CL	21.04	103.85
Gravely sandy silty clay, brown, very moist, very stiff		3					
Gravely sandy silty clay, brown, very moist, very stiff		4	2-2	24	CL		
		5					
		6					
		7					
Silty clay with fine gravel, dark brown, very moist, very stiff		8	2-3	46	CL	19.97	108.01
		9					
Boring terminated at 10' bgl		10					
		11					
		12					
		13					
No groundwater encountered		14					
		15					
		16					
		17					
		18					
		19					
		20					
		21					
		22					
		23					
		24					

Figure 4

Unified Soil Class System

MAJOR DIVISIONS			GROUP SYMBOLS	Soil Description	
COURSE GRAINED SOILS More than Half material is larger than #200 sieve	GRAVELS More than 50% material larger than #4 sieve	CLEAN GRAVEL Less than 5% fines	GW	Well graded gravel, gravel-sand mixture; little or fines	
		GRAVEL More than 12% fines	GP	Poorly graded gravel, gravel sand mixture; little or no fines	
		Sands More than 50% material smaller than #4 sieve	CLEAN SAND Less than 5% fines	GM	Silty gravel, gravel-sand-silt mixture; non-plastic fines
			SAND More than 12% fines	GC	Clayey gravels, gravel-sand-clay mixture; plastic fines
	FINE GRAINED SOILS	SILTS & GRAVELS Liquid limit is less than 50%		SW	Well graded sand, gravelly sand; little or no fines
		SILTS & GRAVELS Liquid limit is greater than 50%		SP	Poorly graded sand, gravelly sand; little or no fines
				SM	Salty sand, sand-silt mixture; non-plastic fines
				SC	Clayey sand, sand-clay mixture; no fines
HIGHLY ORGANIC SOILS			ML	Inorganic silt, sandy or clayey silt; low to medium plasticity	
			CL	Inorganic clay, sandy or silty clay; low to medium plasticity	
			OL	Organic silt or silty clay; low to medium plasticity	
			MH	Inorganic silt; diatomaceous or micaceous; fine sand or silty soil	
			CH	Inorganic clay of high plasticity, fat clay	
			OH	Organic clay of medium to high plasticity, organic silt	
HIGHLY ORGANIC SOILS			PT	Peat or other highly organic soil	

Particle Size Limits

(Sieve Openings in mm) 0 .074, 0.425, 2.00 4.17, 19.0, 75.0, 300.0

SILT OR CLAY	SAND			GRAVEL		COBBLES/ BOULDERS
	FINE	MEDIUM	COARSE	FINE	COARSE	

Relative Density Consistency

	Blows/ft*	Strength +
SANDS, GRAVELS, & NON-PLASTIC SILTS	Very Loose: 0-4 Loose: 4-10 Medium Dense: 10-30 Dense: 30-50 Very Dense: 50+	
CLAYS AND PLASTIC SILTS	Very soft: 0-2 Soft: 2-4 Firm: 4-8 Stiff: 8-16 Very Stiff: 16-32 Hard: 32+	0-¼ ¼-½ ½-1 1-2 2-4 4+

*Numbers of blows of 140lb hammer falling 30" to drive a 2" O.D. (1-3/8" I.D.). +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.

Figure 5

THE END