Appendix E

Geotechnical Report

REPORT TO

HESTIA REAL ESTATE INC.
SAN JOSE, CALIFORNIA

FOR

PROPOSED RESIDENTIAL DEVELOPMENT

1334 & 1348 MILLER AVENUE
SAN JOSE, CALIFORNIA

GEOTECHNICAL INVESTIGATION

OCTOBER 2021

PREPARED BY

SILICON VALLEY SOIL ENGINEERING
1916 O'TOOLE WAY
SAN JOSE, CALIFORNIA

SILICON VALLEY SOIL ENGINEERING
GEOTECHNICAL CONSULTANTS

File No. SV2287
October 21, 2021

Hestia Real Estate Inc.
2066 The Alameda
San Jose, CA 95126

Attention: Ms. Melanie Griswold, CEO

Subject: Proposed Residential Development
1334 & 1348 Miller Avenue
San Jose, California
GEOTECHNICAL INVESTIGATION

Dear Ms. Griswold:

Pursuant to your request, we are pleased to transmit herein the results of our geotechnical investigation for the proposed residential development. The subject site is (APN 377-25-053 & 055) located at 1334 and 1348 Miller Avenue in San Jose, California.

Our findings indicate that the site is suitable for the proposed development provided the recommendations contained in this report are carefully followed. Our field reconnaissance, drilling, sampling, and laboratory testing of the surface and subsurface material evaluate the suitability of the site. The following report details our investigation, outlines our findings, and presents our conclusions based on those findings.

If you have any questions or require additional information, please feel free to contact our office at your convenience.

Very truly yours,

SILICON VALLEY SOIL ENGINEERING

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EXP. 12/31/2022
CIVIL
STATE OF CALIFORNIA

SV2287.GI/Copies: 1 to Hestia Real Estate Inc.

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INTRODUCTION

Per your authorization, Silicon Valley Soil Engineering (SVSE) conducted a geotechnical investigation. The purpose of this investigation was to determine the nature of the surface and subsurface soil conditions at the subject site through field investigations and laboratory testing. This report presents an explanation of investigative procedures, results of the testing program, our conclusions, and our recommendations for earthwork and foundation design to adapt the proposed development to the existing soil conditions.

PROJECT LOCATION AND DESCRIPTION

The subject site is located at 1334 and 1348 Miller Avenue in San Jose, California (Figure 1 – Vicinity Map). Miller Avenue bounds the subject site to the west, existing residences to the north, and south, and warehouse building to the east. At the time of our investigation, the site is a rectangular shape, relatively flat parcels occupied by existing primary residences with detached secondary residences/garages. Based on the preliminary plan for the subject site, the development will include the demolition of the existing structures and construction of six single-family residences with associated improvements. Location of the proposed residences and our exploratory soil borings is shown on the Figure 2 – Site Plan.

FIELD INVESTIGATION

After considering the nature of the proposed development and reviewing available data on the area, a field investigation was conducted at the subject site under the direction of our geotechnical engineer. It included a site reconnaissance to detect any unusual surface features and the drilling of four exploratory test borings to determine the subsurface soil characteristics. The borings were drilled on October 14, 2021 to the depths of 5 feet and 15 feet below the existing ground surface elevation with a drill rig using 8-inch diameter hollow stem augers and a hand-held auger. The approximate location of the borings is shown on Figure 2.

The soils encountered were logged continuously in the field during the drilling operations. Relatively undisturbed soil samples were obtained by hammering a 2.5-inch outside diameter (O.D.) split-tube sampler (Modified California) into the ground at various depths. A 140-pound hammer with a free fall of 30 inches was used to drive the sampler 18 inches into the ground. Blow counts were recorded on each 6-inch increment of the sampled interval. The blows required for advancing the sampler the last 12 inches of the 18-inch sampled interval were recorded on the boring logs as penetration resistance.

In addition, disturbed bulk samples of the near-surface soil were collected for laboratory analyses. The Exploratory Boring Log(s) contained in the Appendix are a graphic representation of the encountered soil profile; and also show the depths at which the relatively undisturbed soil samples were obtained.

LABORATORY INVESTIGATION

A laboratory-testing program was performed to determine the physical and engineering properties of the soils underlying the site.

1. Water content and dry unit weight tests were performed on the relatively undisturbed soil samples in order to determine soil consistency and the moisture variation throughout the explored soil profile (Table I).

2. The strength parameters of the foundation soils were determined from direct shear tests that were performed on selected relatively undisturbed soil samples (Table I).

3. Atterberg Limits tests were also performed on the near-surface and subsurface soil to assist in the classification of these soils and to obtain an evaluation of their expansion and shrinkage potential (Figure 4).

4. Laboratory compaction tests of the native soil material were performed to determine the maximum dry density per the ASTM D1557 test procedure (Figure 5).

5. One R-Value test was performed on a near surface soil sample for pavement section design recommendations (Figure 6).

The results of the laboratory-testing program are presented in the Tables and Figures at the end of this report.

SOIL CONDITIONS

In Boring B-1, from the surface to the end of the boring at 15 feet, a light olive brown, damp, very stiff sandy silt layer was encountered. A color change of tan brown was noted at a depth of 2 feet. The soil became gravelly, and the drilling was hard at a depth of 8 feet. Similar soil profile was encountered in other borings.

Groundwater was not encountered in all borings to the maximum explored depth of 15 feet during the drilling operation. The highest expected groundwater elevation exceeds 50 feet below existing ground surface. It should be noted that the groundwater table would fluctuate as a result of seasonal changes and hydrogeologic variations such as groundwater pumping and/or recharging. A detailed description of the soil profiles encountered is presented in Exploratory Boring Log contained in the Appendix.

GEOLOGY

The site lies in the Santa Clara Valley, which is part of the Coast Ranges geological province. The Santa Clara Valley occupies the structural trough formed by two northwest trending mountain ranges; the Santa Cruz Mountains to the southwest of the valley and the Diablo Range to the northeast. The Diablo Range is predominantly composed of Franciscan Formation, which is uppermost Jurassic to lower Upper Cretaceous eugosynclinal assemblage. The Santa Cruz Mountains are predominantly composed of material formed of Cenozoic shelf and slope deposits. A thick blanket of latest Cretaceous and Tertiary clastic sedimentary rocks and isolated intrusions of serpentine covers large parts of the province. Folds, thrust faults, steep reverse faults, and strikeslip faults developed as a consequence of Cenozoic deformations that occur very often within the province and some of them are continuing today (CDMG; 1966). Earthquake probability and faults are shown on Figure 3.

Sedimentary marine strata alternating with non-marine strata record the Quaternary history of the region. The changes of the depositional environment are related to the fluctuation of sea level corresponding to the glacial and interglacial periods. Late Quaternary deposits fill the center of the Santa Clara Valley and most of the strata are of continental origin characterized as alluvial and fluvial materials. The subject site is underlain by fluvial deposits (Helley and Brabb, 1971, Rogers & Williams, 1974).

INUNDATION POTENTIAL

The subject site is located at 1334 and 1348 Miller Avenue in San Jose, California. According to the Limerinos and others, 1973 report, the site is not located in an area that has potential for inundation as the result of a 100-years flood (Limerinos; 1973).

CONCLUSIONS

1. The site covered by this investigation is suitable for the proposed development provided the recommendations set forth in this report are carefully followed.

2. Based on the laboratory testing results of the near-surface soil, the soil material at the subject site has been found to have a low expansion potential for subjected to fluctuations in moisture.

3. The proposed residential structures should be supported on either conventional spread foundation, mat slab foundation or post-tension slab foundation.

4. The final exterior grade adjacent to the proposed structures should be such that the surface drainage will flow away from the structures.

5. Reference to our report should be stated in the grading and foundation plans that includes the geotechnical investigation file number and date.

6. On the basis of the engineering reconnaissance and exploratory boring, it is our opinion that trenches excavated to depths less than 5 feet below the existing ground surface will not need shoring. However, for trenches or any excavation greater than 5 feet in depth, shoring will be required or excavated in accordance with OSHA guidelines.

7. Specific recommendations are presented in the remainder of this report.

8. All earthwork including grading, foundation excavation and backfilling shall be observed and inspected by a representative from Silicon Valley Soil Engineering (SVSE). Contact our office 48 hours prior to the commencement of any earthwork.

RECOMMENDATIONS:

GRADING

1. The placement of fill and control of any grading operations at the site should be performed in accordance with the recommendations of this report. These recommendations set forth the minimum standards to satisfy other requirements of this report.

2. All existing surface and subsurface structures, if any, which will not be incorporated in the final improvements shall be removed from the subject site prior to any grading operations.

3. The depressions left by the removal of subsurface structures, if any, should be cleaned of all debris, backfilled and compacted with clean, native or approved import soil. This backfill must be engineered fill and should be conducted under the supervision of a SVSE representative.

4. All organic surface material and debris should be stripped prior to any other grading operations and transported away from all areas that are to receive structures or structural fills. Soil containing organic material may be stockpiled for later use in landscaping areas only.

5. After removing all the subsurface structures, if any, and stripping the organic material from the soil, the subgrade should be scarified by machine to a depth of 12 inches and thoroughly cleaned of vegetation and other deleterious matter.

6. After stripping, scarifying and cleaning operations, subgrade soil material should be compacted to not less than 95% relative maximum density using ASTM D1557 procedure over the entire improved area, 5 feet beyond driveway and 3 feet beyond the edge of the driveway area.

7. All engineered fill or imported soil should be placed in uniform horizontal lifts of not more than 8 to 12 inches in un-compacted thickness and compacted to not less than 95% relative maximum density. This should extend a minimum of 5 feet beyond the perimeter of the building pad and 3 feet beyond the edge of driveway area. Before compaction begins, the fill shall be brought to a water content that will permit proper compaction by either; 1) aerating the material if it is too wet, or 2) spraying the material with water if it is too dry. Each lift should be thoroughly mixed before compaction to assure a uniform distribution of water content.

8. When fill material includes rocks, nesting of rocks will not be allowed, and all voids must be carefully filled by proper compaction. Rocks larger than 4 inches in diameter should not be used for the final 2 feet of the improved area.

9. Unstable (yielding) subgrade should be aerated or moisture conditioned as necessary. Yielding isolated area in the subgrade can be stabilized with an excavation of the subgrade to the depth of 12 to 18 inches, lined with stabilization fabric membrane (Mirafi 500X or equivalent) and backfilled with aggregate base.

10. Driveway asphalt pavement section designs are presented in Table II. Rigid concrete and paver pavement section designs are presented in Table III and IV.

11. All imported soil, if any, must be approved by SVSE before being brought to the site. Import soil must have a plasticity index no greater than 15, an R-Value greater than 25, and environmentally clean (non-hazardous).

12. SVSE should be notified at least two days prior to commencement of any grading operations so that our office may coordinate the work in the field with the contractor.

13. All grading work shall be observed and approved by a representative from SVSE. The geotechnical engineer should prepare a final report upon completion of the grading operations.

WATER WELLS

14. Any water wells and/or monitoring wells that are to be discovered and abandoned on the site shall be capped according to the requirements of the Santa Clara Valley Water District (Valley Water). The final elevation of the top of the abandoned well casing must be a minimum of 3 feet below the adjacent grade prior to any grading operation.

FOUNDATION DESIGN CRITERIA

15. The proposed residential structures should be supported on either conventional spread foundation, mat slab foundation or post-tension slab foundation. Recommendations are presented in the following paragraphs:

16. The proposed residential structures can be supported on <u>conventional continuous perimeter and isolated interior spread foundation with garage concrete slab-on-grade.</u>

17. Conventional spread foundation must be founded at a minimum depth of 18 inches below finished subgrade pad elevation. Under these conditions, the allowable bearing capacity is 2,500 psf for both continuous perimeter and isolated interior spread footings. Both perimeter and interior foundations should be founded at the same elevation below finished pad subgrade elevation.

18. The proposed residential structures can be supported on <u>mat slab foundation</u>.

19. The mat foundation should have a minimum thickness of 8 inches with a minimum total thickened edge of 14 inches and 12 inch wide.

20. Based on the laboratory testing results of the near-surface soil, the native soil on the site was found to have a low expansion potential when subjected to fluctuation in moisture. Therefore, the mat foundation should be underlain by a minimum of 5 inches of ¾-inch crushed rock (recycled crushed rock is not acceptable). The rock should be compacted in-place with vibratory plate. The subgrade should be moisture conditioned as necessary and compacted to at least 95% relative maximum density.

21. For the mat foundation, the allowable contact pressure is 1,200 psf. The modulus of subgrade reaction can be taken as 110 pci.

22. Use of a vapor barrier membrane (15-mil) under the mat slab is required. The membrane should be placed between the rock layer and concrete slab. The grade should be moistened prior to vapor barrier placement. The vapor barrier should be taped at the seams and/or mastic sealed at the protrusions.

23. The proposed residential structures can be supported on <u>post-tension slab foundation</u>.

24. The design of the post-tensioned slab should conform with the recommendations set forth in the "Design and Construction of Post-Tensioned Slab-on-Ground," Post-Tensioning Institute, 1996. The post-tensioned slab should be designed with the following soil parameters:

- Liquid Limits = 30%
- Plasticity Index = 7%
- Allowable Bearing Capacity (dead plus live load) = 1,500 psf
- Edge Moisture Variation Distance:

Edge Lift = 3.0 feet
Center Lift = 5.0 feet

- Differential movement:

Y_m (Edge Lift) = 1.3 inches
Y_m (Center Lift) = 3.9 inches

25. The post-tensioned slab should be a minimum of 12 inches thick with a minimum total of 18 inch thickened edge and 12 inch wide.

26. The aforementioned bearing values are for dead plus live loads and may be increased by one-third for short term seismic and wind loads.

27. Use of a vapor barrier membrane (15-mil) under the post-tension slab is required. The membrane should be placed between the subgrade soil and the 2-inch sand or clean washed gravel (pea-gravel) layer. The subgrade should be moisture conditioned as necessary and compacted to at least 95% relative maximum density.

28. The subgrade should be moistened prior to vapor barrier placement. The vapor barrier should be taped at the seams and/or mastic sealed at the protrusions.

29. All footing or thickened area bottoms should be moisture conditioned as necessary and compacted with jumping jack prior to wood forms and reinforcement placement.

30. The project structural engineer responsible for the foundation design shall determine the final design of the foundation and reinforcing required. The design of the structures and the foundation shall meet local building code requirements.

31. We recommend that the foundation plans be reviewed by our office prior to submitting to the appropriate local agency and/or to construction.

2019 CBC SEISMIC VALUES

32. Chapter 16 of the 2019 California Building Code (CBC) outlines the procedure for seismic design. The site categorization and site coefficients are shown in the following table.

Classification/Coefficient*	Design Value
Site Latitude	37.299737° N.
Site Longitude	122.014639° W.
Site Class (ASCE 7-16)	D
Risk Category	I,II,III
0.2-second Mapped Spectra Acceleration, S_s	2.112g
1-second Mapped Spectra Acceleration, S_1	0.756g
Short-Period Site Coefficient, F_a	1.0
Long-Period Site Coefficient, F_V	1.7
0.2-second Period, Maximum considered Earthquake Spectral Response Acceleration, S_{MS} ($S_{MS} = F_a S_S$)	2.112g
1-second Period, Maximum Considered Earthquake Spectral Response Acceleration, S_{M1} ($S_{M1} = F_V S_1$)	1.285g
0.2-second Period, Designed Spectra Acceleration, S_{DS} ($S_{DS} = 2/3 S_{MS}$)	1.408g
1-second Period, Designed Spectra Acceleration, S_{D1} ($S_{D1} = 2/3 S_{M1}$)	0.857g

*2019 CBC

CONCRETE SLAB-ON-GRADE CONSTRUCTION

33. Based on the laboratory testing results of the near-surface soil, the native soil on the site was found to have a low expansion potential when subjected to fluctuation in moisture.

34. The concrete slab-on-grade should be underlain by a minimum of 5 inches of ¾-inch clean crushed rock (recycled crushed rock is not acceptable) and should be placed on the compacted subgrade. The rock should be

compacted in-place with vibratory plate. The subgrade soil should be compacted to at least 95% relative maximum density.

35. The concrete slab should have a minimum thickness of 5 inches and reinforced with No. 4 rebar with maximum spacing of 18 inches on-center both ways. If the concrete slab would receive a floor covering or sealant, a Stego 15-mil vapor barrier should be placed between the rock layer and concrete slab. The vapor barrier membrane should be overlapped, taped at seams and/or mastic applied for protrusions.

RETAINING WALLS

36. Retaining walls, if any, should be designed for a lateral earth pressure (active) equivalent to 55 pounds equivalent fluid pressure for cantilevered condition horizontal backfill. If the retaining walls are restrained from free movement at both ends, the walls should be designed for the earth pressure resulting from 65 pounds equivalent fluid pressure, to which should be added surcharge loads. The structural engineer should discuss the surcharge loads with the geotechnical engineer prior to designing the retaining walls.

37. In designing for allowable resistive lateral earth pressure (passive) of 250 pounds equivalent fluid pressure may be used with the resultant acting at the third point. The top foot of subgrade soil should be neglected for computation of passive resistance.

38. A friction coefficient of 0.3 should be used for retaining wall design. This can be increased by 1/3 for short term seismic and wind loads.

39. The aforementioned values assume a drained condition and a moisture content compatible with those encountered during our investigation.

40. For drained condition, drainage should be provided behind the retaining wall. The drainage (subdrain) system should consist of perforated pipe (Schedule 40) placed below the base of the retaining wall and surrounded by ¾ inch drain rock wrapped in a filter fabric. The drain rock wrapped in fabric should be at least 12 inches wide and extend from the base of the wall to within 1.5 feet of the ground surface. The upper 1.5 feet of backfill should consist of compacted native soil. The retaining wall drainage system should drain to an appropriate discharge facility.

41. As an alternative to the drain rock and fabric backfill, Miradrain 2000 or 6000 or approved equivalent drain mat may be used behind the retaining wall. The drain mat should extend from the base of the wall to within 12 inches of the ground surface. A perforated pipe (subdrain system) should be placed at the base of the wall in direct contact with the drain mat. The pipe should drain to an appropriate discharge facility.

EXCAVATION

42. No difficulties due to soil conditions are anticipated in excavating the on-site material. Conventional earth moving equipment will be adequate for this project.

43. Any vertical cuts deeper than 5 feet must be properly shored or excavated in accordance with OSHA guidelines. The temporary minimum cut slope for excavation to the desired elevation is one horizontal to one vertical (1:1). The cut slope should be increased to 2:1 if the excavation is conducted during the rainy season or when the soil is highly saturated with water.

DRAINAGE

44. It is considered essential that positive drainage be provided during construction and be maintained throughout the life of the structures.

45. The final exterior grade adjacent to the structures should be such that the surface drainage will flow away from the structures. Rainwater discharge at downspouts should be directed onto pavement sections, splash blocks, or other acceptable facilities which will prevent water from collecting in the soil adjacent to the foundation.

46. Utility lines that cross under or through perimeter foundation should be completely sealed to prevent moisture intrusion into the areas under the slab and/or footings. The utility trench backfill should be of impervious material and this material should be placed at least 4 feet on either side of the exterior footings.

47. Consideration should be given to collection and diversion of roof runoff and the elimination of planted areas or other surfaces which could retain water in areas adjoining the structures. The landscape grade adjacent to the foundation should be sloped away from the structure at a minimum of 5 percent.

48. Bioretention systems should not be located within 10 feet from building foundation or 5 feet from driveway/parking edge and should not undermine parking curbs. If the bioretentions are no more than 5 feet from foundation and 3 feet from parking/driveway curb, the bioretention should be lined with impermeable liner (15 mil plastic or thicker) to above the overflow elevation and waterproofed if adjacent to building. Reinforced concrete curbs adjacent to bioretentions shall be deepened for proper

support to bottom elevation of the bioretention gravel. Biosoil mix and gravel should not be used for calculation to support curbs.

49. Based on laboratory test results of the near surface soil at the subject site, we estimated that the infiltration rate is approximately 0.5 inch per hour (K_{SAT} = $3.5x10^{-4}$ cm/sec). This rate can be used in the design of the bio-retention system for on-site storm drainage.

ON-SITE UTILITY TRENCHING

50. Utility trenches within the public right-of-way should be excavated, bedded, and backfilled in accordance with local or governing jurisdiction requirements.

51. All utility lines including plumbing should be bedded with at least 6 inches over the pipe or conduit with 1/4, 3/8 or 3/4 inch crushed rock or well graded sand conforming to pipe manufacture's requirements. Sand and gravel should be compacted in-place.

52. The remaining excavated area should be backfilled with native on-site material or imported fill and compacted to at least 90% relative maximum density and 95% for the top 12 inches. Backfill should be placed in uniform 8 to 12-inch lifts and compacted. Jetting of trench backfill is not recommended. An engineer from our firm should be notified at least 48 hours before the start of any utility trench backfilling operations.

53. The utility trenches running parallel to the building foundation should not be located in an influence zone that will undermine the stability of the foundation. The influence zone is defined as the imaginary line extending at the outer edge of the footing at a downward slope of 1:1 (one unit horizontal distance to one unit vertical distance). If the utility trenches were

encroaching the influence zone, the encroached area should be stabilized with cement sand slurry (75 psi minimum compressive strength).

54. If utility trench excavation is to encounter groundwater, our office should be notified for dewatering recommendations.

PAVEMENT DESIGN

55. Due to the uniformity of the near-surface soil at the site, one R-Value Test was performed on a representative bulk sample. The result of the R-Value test is enclosed in this report. The following alternate asphalt sections are based on our laboratory resistance R-Value test of near-surface soil samples and traffic indices (T.I.) of 4.5 and 6.0 for driveway and street including garbage truck. Alternate asphalt pavement section designs, which satisfy the State of California Standard Design Criteria, and above traffic indices, are presented in Table II. Concrete and paver pavement section designs are presented in Table III and IV.

LIMITATIONS AND UNIFORMITY OF CONDITIONS

1. The recommendations presented herein are based on the soil conditions revealed by our test boring(s) and evaluated for the proposed construction planned at the present time. If any unusual soil conditions are encountered during the construction, or if the proposed construction will differ from that planned at the present time, Silicon Valley Soil Engineering (SVSE) should be notified for 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 necessary steps are taken to see that the contractor carries 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, works of man, from legislation or the broadening of knowledge. Therefore, this report is subjected to review and should not be relied upon after a period of three years.

4. The conclusions and recommendations presented in this report are professional opinions derived from current standards of geotechnical practice and no warranty is intended, expressed, or implied, is made or should be inferred.

5. The area of the boring(s) is very small compared to the site area. As a result, buried structures such as septic tanks, storage tanks, abandoned utilities, or etc. may not be revealed in the boring(s) during our field investigation. Therefore, if buried structures are encountered during grading or construction, our office should be notified immediately for proper disposal recommendations.

6. Standard maintenance should be expected after the initial construction has been completed. Should ownership of this property change hands, the prospective owner should be informed of this report and recommendations so as not to change the grading or block drainage facilities of this subject site.

7. Stormwater management, structure, foundation design, and calculations are not part of our investigation or scope.

8. This report has been prepared solely for the purpose of geotechnical investigation and does not include investigations for toxic contamination studies of soil or groundwater of any type. If there are any environmental concerns, our firm can provide additional studies.

9. Any work related to grading and/or foundation operations during construction performed without direct observation from SVSE personnel will invalidate the recommendations of this report and, furthermore, if we are not retained for observation services during construction, SVSE will cease to be the Geotechnical Engineer of Record for this subject site.

REFERENCES

Borcherdt R.D., Gibbs J. F., Lajoie K.R., 1977 – Maps showing maximum earthquake intensity predicted in the southern San Francisco Bay Region, California, for large earthquakes on the San Andreas and Hayward faults. U.S.G.S. MF-709.

Limerinos J.T., Lee K.W., Lugo P.E.; 1973 – Flood Prone Areas in the San Francisco Bay Region, California; United States Geological Survey Open File Report.

California Geological Survey, 2002 (Updated 1/13/06), Seismic Hazard Zone Report 068, [Seismic Hazard Evaluation of the Cupertino 7.5-Minute Quadrangle, Santa Clara County, California.

OSHPD, U.S. Seismic Design Maps, https://seismicmaps.org.

2019 (CBC) California Building Code, Title 24, Part 2.

TABLES

TABLE I

SUMMARY OF LABORATORY TESTS

Sample No.	Depth (Feet)	In-Place Conditions: Water Content (% Dry Wt.)	In-Place Conditions: Dry Unit Weight (pcf)	Direct Shear Testing: Unit Cohesion (ksf)	Direct Shear Testing: Internal Friction Angle (degrees)		
1-1	3	4.9	100.6	0.5	18		
1-2	5	9.0	113.5				
1-3	10	7.4	95.1				
1-4	15	4.0	114.6				
2-1	3	7.4	104.8				
2-2	5	8.4	118.6				
2-3	10	6.6	125.2				
2-4	15	5.9	109.2				
3-1	3	4.5	101.0				
3-2	5	8.9	111.2				
3-3	10	8.3	98.9				
3-4	15	5.7	114.1				

TABLE II

PROPOSED ASPHALT PAVEMENT SECTIONS

Location: Proposed Residential Development
1334 & 1348 Miller Avenue
San Jose, California

	DRIVEWAY PARKING			DRIVEWAY STREET*		
Design R-Value	24.0			24.0		
Traffic Index	4.5			6.0		
Gravel Equivalent	14.0			18.0		
Recommended Alternate Pavement Sections:	1A	1B	1C	2A	2B	2C
Asphalt Concrete	3.0”	3.5”	4.0”	3.0”	3.5”	4.0”
Class II Baserock (R=78 min.) compacted to at least 95% relative maximum density	6.0”	5.0”	4.0”	10.0”	9.0”	8.0”
Subgrade soil scarified & compacted to at least 95% relative maximum density	12.0”	12.0”	12.0”	12.0”	12.0”	12.0”

* Support 75,000 pound fire apparatus.

TABLE III

PROPOSED CONCRETE PAVEMENT SECTIONS

Location: Proposed Residential Development
1334 & 1348 Miller Avenue
San Jose, California

	DRIVEWAY *	SIDEWALK/PATIO **
Recommended Rigid Pavement Sections:		
P.C. Concrete	6.0"	4.0"
Class II Baserock (R=78 min.) compacted to at least 95% relative maximum density	6.0"	4.0"
Subgrade soil scarified and compacted to at least 95% relative maximum density	12.0"	12.0"

* Including trash enclosures, stress pads, and valley gutters. Rebar No. 4 at 18" maximum spacing on-center both ways or as recommended by Structural Engineer. Maximum control joints at 10' by 10'. Vertical curbs should be keyed at least 3 inches into pavement subgrade. Curbs should be deepened adjacent to bioretentions.

** Rebar No. 3 at 18" maximum spacing on-center both ways with maximum control joints at 5' by 5'.

TABLE IV

PROPOSED PAVER PAVEMENT SECTIONS

Location: Proposed Residential Development
1334 & 1348 Miller Avenue
San Jose, California

	DRIVEWAY AREA*			
Recommended Paver Pavement Sections:	1A	1B	2A**	2B**
Vehicular Rated Pavers	Min. 3.25" ± Permeable Paver with Subdrain	Min. 3.25" ± Permeable Paver without Subdrain	Min. 3.25" ± Permeable Paver with Subdrain	Min. 3.25" ± Permeable Paver without Subdrain
ASTM No. 8 Bedding Course & Paver Filler	2.0"	2.0"	2.0"	2.0"
3/4" Clean Crushed Rock (ASTM No. 57 Stone)	10.0" +	4.0"	16.0"	4.0"
ASTM No. 2 Stone	---	12.0"	---	16.0"
Subgrade soil scarified and compacted to at least 90% relative maximum density	12.0"	12.0"	12.0"	12.0"

* The subgrade should be lined with filter fabric and Tensar BX1100 biaxial Geogrid or equivalent. The subgrade should be sloped at a minimum of 2% towards the subdrain system away from the building foundation. The pavers should be bordered with a concrete curb/band. Typically, minor maintenance would be required during the life of the pavers.

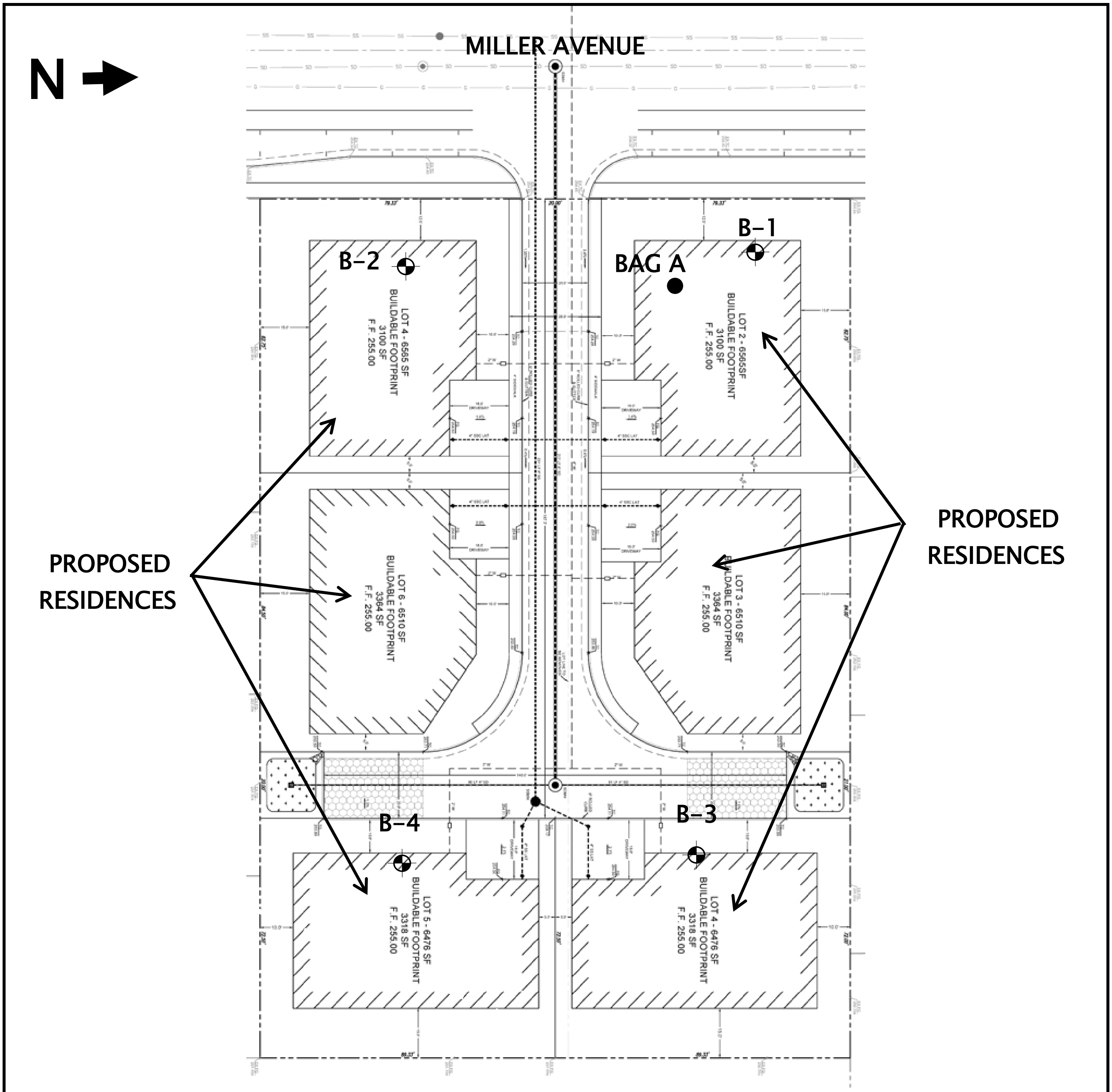
The subdrain system should consist of a 4-inch diameter perforated pipe surrounded by ¾ inch drain rock wrapped in a filter fabric. The drain rock wrapped in fabric should be at least 12 inches wide and 12 inches below the finished subgrade elevation. The drainage system should be sloped to a discharge facility.

+ or, Class II Permeable Baserock compacted to at least 92% relative maximum density

** Support 75,000 pound fire apparatus

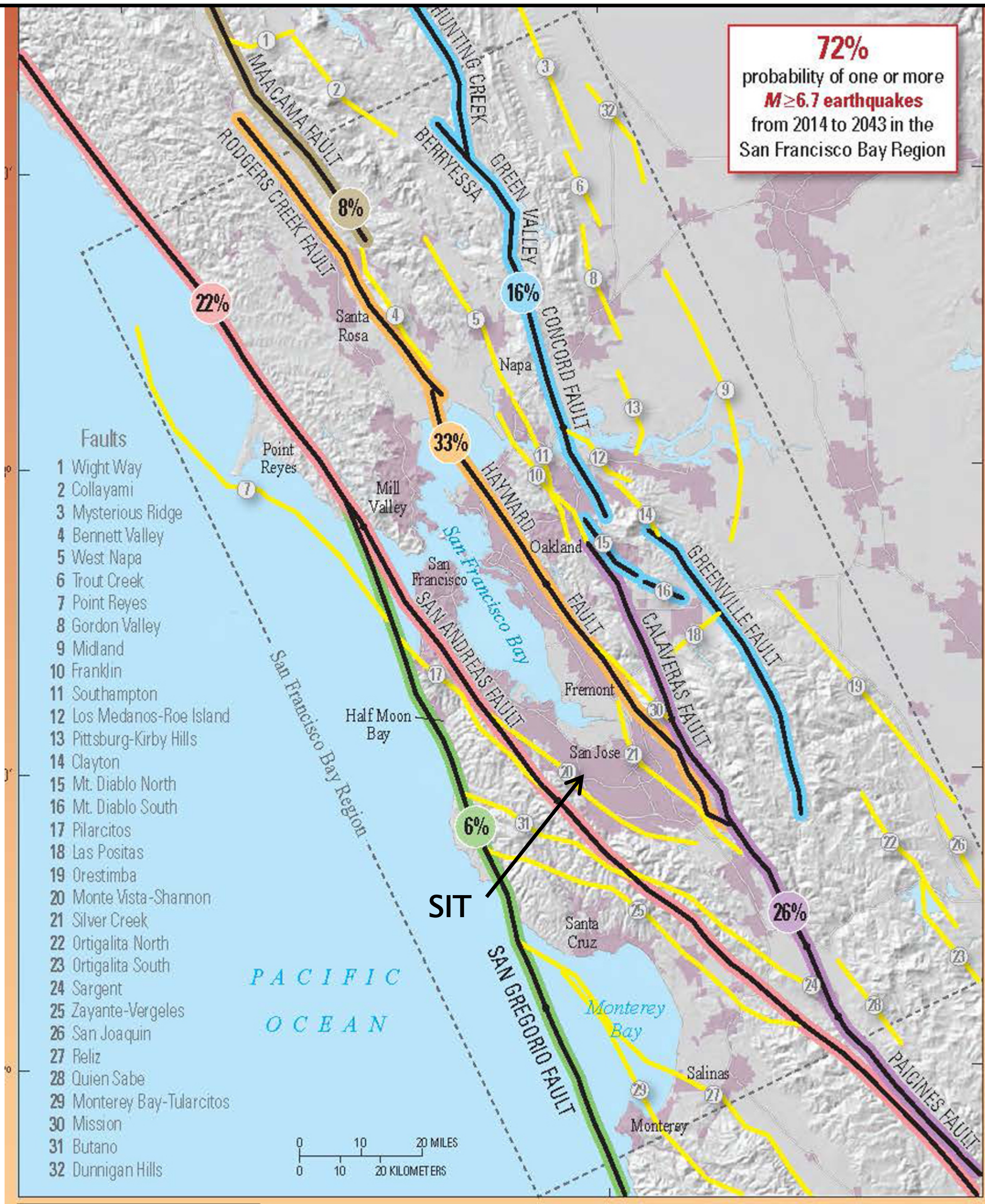
FIGURES

Silicon Valley Soil Engineering 1916 O'Toole Way San Jose, CA 95131 (408) 324-1400	**VICINITY MAP** Proposed Residential Development 1334 & 1348 Miller Avenue San Jose, California	File No.: SV2287	FIGURE
		Drawn by: V.V.	1
		Scale: NOT TO SCALE	October 2021



NOTE: ⊕ DENOTES APPROXIMATE EXPLORATORY BORING LOCATION
● DENOTES APPROXIMATE EXPLORATORY BAG SAMPLE LOCATION

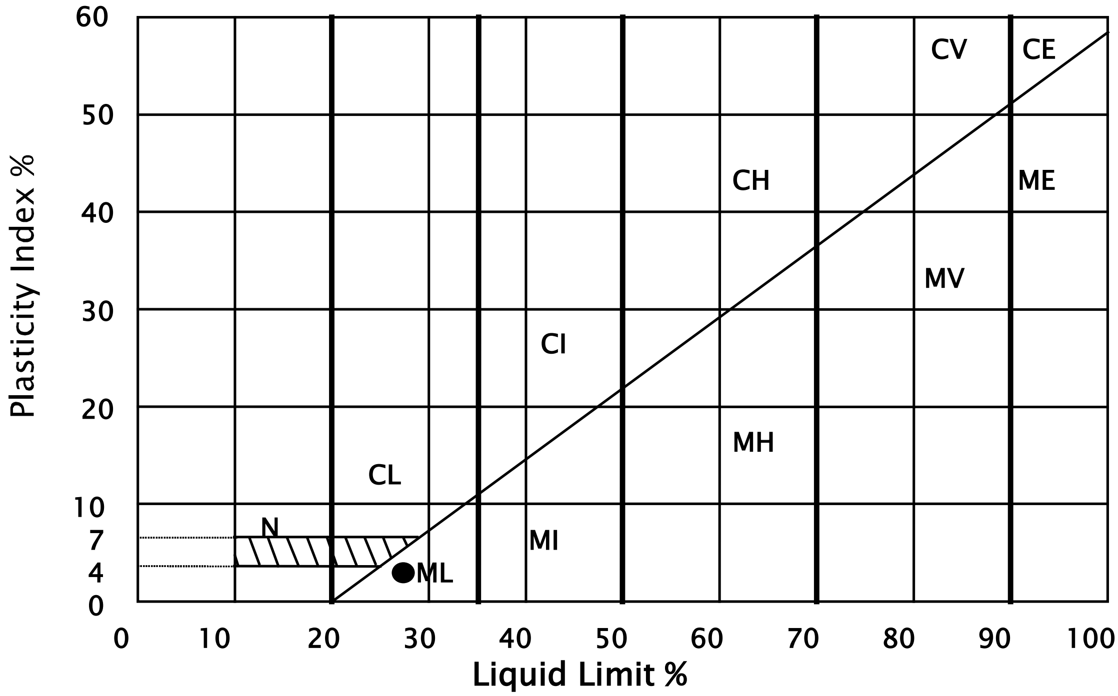
Silicon Valley Soil Engineering 1916 O'Toole Way San Jose, CA 95131 (408) 324-1400	**SITE PLAN** Proposed Residential Development 1334 & 1348 Miller Avenue San Jose, California	File No.: SV2287 Drawn by: V.V. Scale: NOT TO SCALE	FIGURE 2 October 2021



Map of known active faults in the San Francisco Bay region. The 72 percent probability of a magnitude 6.7 or greater earthquake includes the well-known major plate-boundary faults, lesser-known faults, and unknown faults. The percentage shown within each colored circle is the probability that a magnitude 6.7 or greater earthquake will occur somewhere on that fault system by the year 2043. The probability that a magnitude 6.7 or greater earthquake will involve one of the lesser-known faults is 13 percent.

Silicon Valley Soil Engineering 1916 O'Toole Way San Jose, CA 95131 (408) 324-1400	**EARTHQUAKE PROBABILITY AND FAULT MAP** Proposed Residential Development 1334 & 1348 Miller Avenue San Jose, California	File No.: SV2287 Drawn by: V.V. Scale: NOT TO SCALE	FIGURE 3 October 2021

PLASTICITY CHART

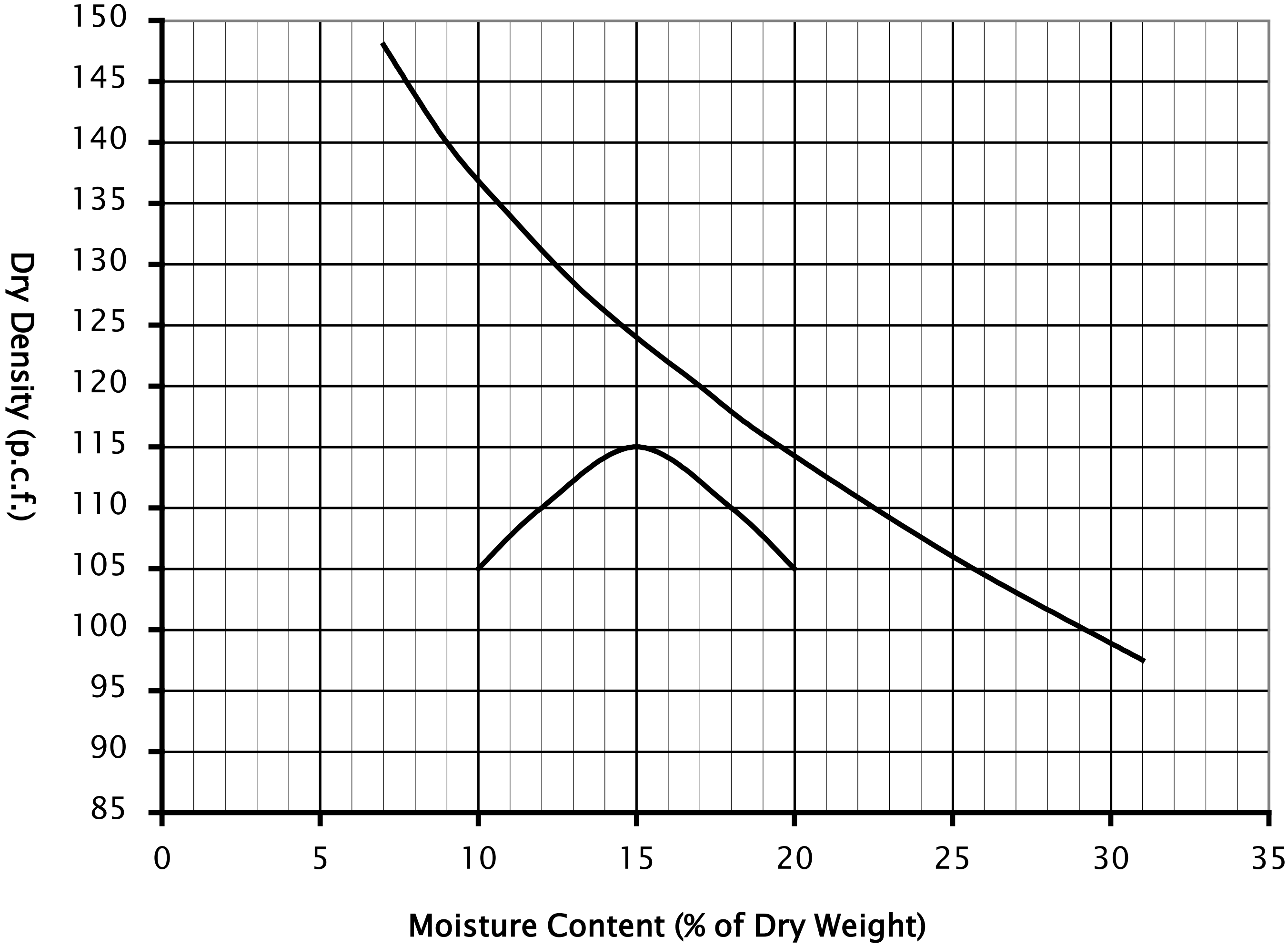


PLASTICITY DATA

Key Symbol	Hole No.	Depth ft.	Liquid Limit %	Plasticity Index %	Unified Soil Classification Symbol *
●	BAG A	0-1.0	28	4	ML

*Soil type classification Based on British suggested revisions to Unified Soil Classification System

Silicon Valley Soil Engineering 1916 O'Toole Way San Jose, CA 95131 (408) 324-1400	**PLASTICITY INDEX** Proposed Residential Development 1334 & 1348 Miller Avenue San Jose, California	File No.: SV2287 Drawn by: V.V. Scale: NOT TO SCALE	FIGURE 4 October 2021



SAMPLE: A

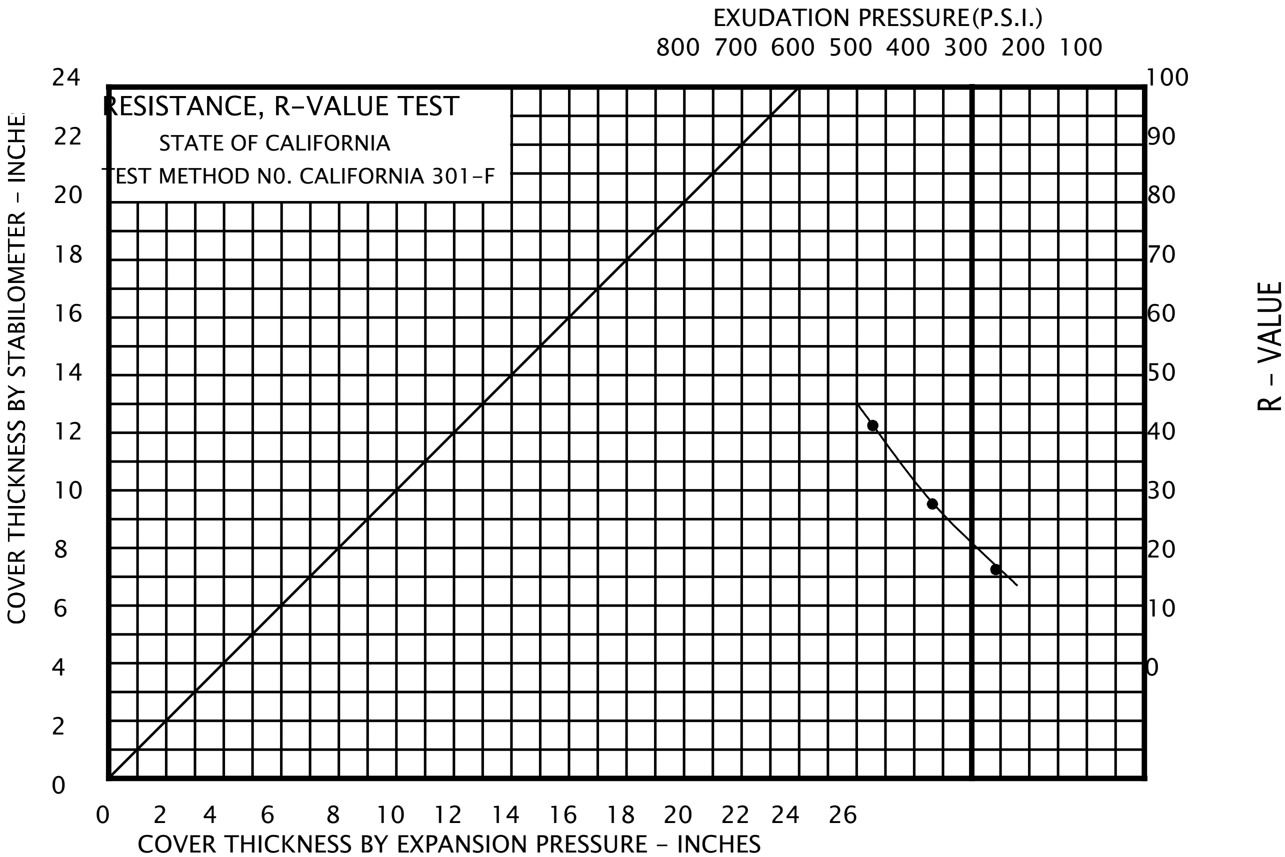
DESCRIPTION: Light Olive Brown Sandy SILT

LABORATORY TEST PROCEDURE: ASTM D1557

MAXIMUM DRY DENSITY: 115.0 p.c.f.

OPTIMUM MOISTURE CONTENT: 15.0 %

Silicon Valley Soil Engineering 1916 O'Toole Way San Jose, CA 95131 (408) 324-1400	**COMPACTION TEST A** Proposed Residential Development 1334 & 1348 Miller Avenue San Jose, California	File No. SV2287 Drawn by: V.V. Scale: NOT TO SCALE	FIGURE 5 October 2021



SAMPLE: A
DESCRIPTION: Light Olive Brown Sandy SILT

SPECIMEN	A	B	C
EXUDATION PRESSURE (P.S.I.)	216.0	329.0	431.0
EXPANSION DIAL (.0001")	33.0	60.0	85.0
EXPANSION PRESSURE (P.S.F.)	143.0	260.0	368.0
RESISTANCE VALUE, "R"	16.0	27.0	41.0
% MOISTURE AT TEST	16.3	15.3	14.4
DRY DENSITY AT TEST (P.C.F.)	110.1	112.3	115.3
R-VALUE AT 300 P.S.I. EXUDATION PRESSURE	= (24)		

Silicon Valley Soil Engineering 1916 O'Toole Way San Jose, CA 95131 (408) 324-1400	**R-VALUE TEST** Proposed Residential Development 1334 & 1348 Miller Avenue San Jose, California	File No. SV2287 Drawn by: V.V. Scale: NOT TO SCALE	FIGURE 6 October 2021

APPENDICES

MODIFIED MERCALLI SCALE

METHOD OF SOIL CLASSIFICATION

KEY TO LOG OF BORING

EXPLORATORY BORING LOGS (B-1 THROUGH B-4)

GENERAL COMPARISON BETWEEN EARTHQUAKE MAGNITUDE AND THE EARTHQUAKE EFFECTS DUE TO GROUND SHAKING

Earthquake Category	Richter Magnitude	Modified Mercalli Intensity Scale* (After Housner, 1970)	Damage to Structure
		I – Detected only by sensitive instruments.	
	2.0	II – Felt by few persons at rest, especially on upper floors; delicate suspended objects may swing.	
	3.0	III – Felt noticeably indoors, but not always recognized as an earthquake; standing cars rock slightly, vibration like passing truck.	No Damage
Minor		IV – Felt indoors by many, outdoors by a few; at night some awaken; dishes, windows, doors disturbed; cars rock noticeably.	
	4.0	V – Felt by most people; some breakage of dishes, windows, and plaster; disturbance of tall objects.	Architec-tural Damage
		VI – Felt by all; many are frightened and run outdoors; falling plaster and chimneys; damage small.	
5.3	5.0	VII – Everybody runs outdoors. Damage to building varies, depending on quality of construction; noticed by drivers of cars.	
Moderate	6.0	VIII – Panel walls thrown out of frames; fall of walls, monuments, chimneys; sand and mud ejected; drivers of cars disturbed.	
6.9		IX – Buildings shifted off foundations, cracked, thrown out of plumb; ground cracked, underground pipes broken; serious damage to reservoirs and embankments.	Structural Damage
Major	7.0	X – Most masonry and frame structures destroyed; ground cracked; rail bent slightly; landslides.	
7.7		XI – Few structures remain standing; bridges destroyed; fissures in ground; pipes broken; landslides; rails bent.	
Great	8.0	XII – Damage total; waves seen on ground surface; lines of sight and level distorted; objects thrown into the air; large rock masses displaced.	Near Total Destruction

*Intensity is a subject measure of the effect of the ground shaking, and is not engineering measure of the ground acceleration.

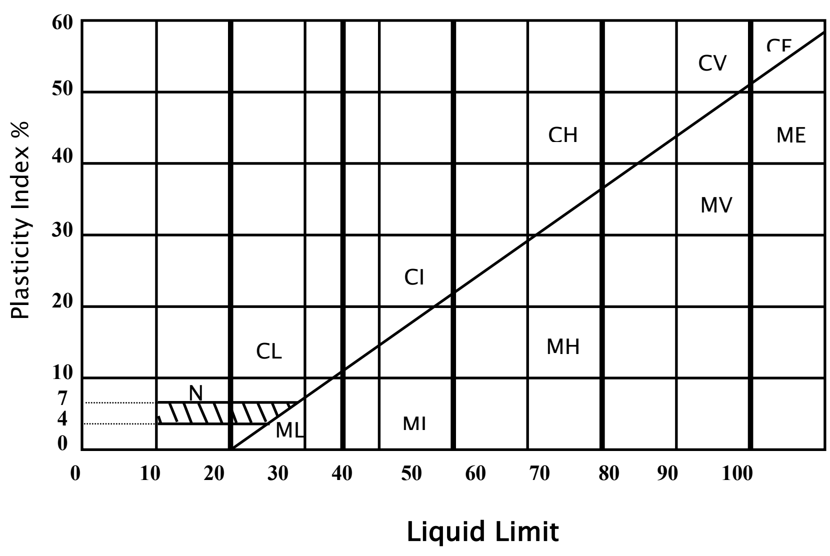
METHOD OF SOIL CLASSIFICATION CHART

MAJOR DIVISIONS		SYMBOL		TYPICAL NAMES
COARSE GRAINED SOILS (More than 1/2 of soil > no. 200 sieve size)	GRAVELS (More than 1/2 of coarse fraction > no. 4 sieve size)	GW		Well graded gravel or gravel-sand mixtures, little or no fines
		GP		Poorly graded gravel or gravel-sand moistures, little or no fines
		GM		Silty gravels, gravel-sand-silt mixtures
		GC		Clayey Gravels, gravel-sand-clay mixtures
	SANDS (More than 1/2 of coarse fraction < no. 4 sieve size	SW		Well graded sands or gravelly sands, no fines
		SP		Poorly graded sands or gravelly sands, no fines
		SM		Silty sands, sand-silt mixtures
		SC		Clayey sands, sand-clay mixtures
FINE GRAINED SOILS (More than 1/2 of soil < no. 200 sieve size)	SILTS & CLAYS LL < 50	ML		Inorganic silts and very fine sand, rock, flour, silty or clayey fine sand or clayey silt/slight plasticity
		CL		Inorganic clay of low to medium plasticity, gravelly clayes, sandy clay, silty clay, lean clays
		OL		Organic siltys and organic silty clay of low plasticity
	SILTS & CLAYS LL > 50	MH		Inorganic silts, micaceous or diatocaceous fine sandy, or silty soils, elastic silt
		CH		Inorganic clays of high plasticity, fat clays
		OH		Organic clays of medium to high plasticity, organic silty clays, organic silts
HIGHLY ORGANIC SOIL		PT		Peat and other highly organic soils

CLASSIFICATION CHART - UNIFIED SOIL CLASSIFICATION SYSTEM

CLASSIFICATION	RANGE OF GRAIN SIZES	
	U.S. Standard Sieve Size	Grain Size In Millimeters
BOULDERS	Above 12"	Above 305
COBBLES	12" to 3"	305 to 76.2
GRAVELS Coarse Fine	3" to No. 4 3" to 3/4" 3/4" to No. 4	76.2 to 4.76 76.2 to 19.1 19.1 to 4.76
SAND Coarse Medium Fine	No. 4 to No. 200 No. 4 to No. 10 No.10 to No. 40 No.40 to No. 200	4.76 to 0.074 4.76 to 2.00 2.00 to 0.420 0.420 to 0.074
SILT AND CLAY	Below No. 200	Below 0.074

PLASTICITY INDEX CHART



Project: Proposed Residential Developement **Project Location:** 1334 &1348 Miller Avenue San Jose, California **Project Number:** SV2287	**Silicon Valley Soil Engineering** **1916 O'Toole Way** **San Jose, CA 95131** **(408) 324-1400**	Key to Log of Boring **Sheet 1 of 1**

Depth (feet)	Sample Type	Sample Number	Sampling Resistance, blows/ft	Material Type	Graphic Log	MATERIAL DESCRIPTION	Water Content, %	Dry Unit Weight, pcf	Direct Shear Test - Cohesion in ksf	Direct Shear Test - Internal Friction Angle in degrees	Liquid Limit - LL, %	Plasticity Index - PI, %
1	2	3	4	5	6	7	8	9	10	11	12	13

COLUMN DESCRIPTIONS

1 Depth (feet): Depth in feet below the ground surface.
2 Sample Type: Type of soil sample collected at the depth interval shown.
3 Sample Number: Sample identification number.
4 Sampling Resistance, blows/ft: Number of blows to advance driven sampler one foot (or distance shown) beyond seating interval using the hammer identified on the boring log.
5 Material Type: Type of material encountered.
6 Graphic Log: Graphic depiction of the subsurface material encountered.
7 MATERIAL DESCRIPTION: Description of material encountered. May include consistency, moisture, color, and other descriptive text.
8 Water Content, %: Water content of the soil sample, expressed as percentage of dry weight of sample.
9 Dry Unit Weight, pcf: Dry weight per unit volume of soil sample measured in laboratory, in pounds per cubic foot.
10 Direct Shear Test - Cohesion in ksf: Cohesion is the y-axis intercept of the failure envelope tangent to the Mohr circles.
11 Direct Shear Test - Internal Friction Angle in degrees: The internal friction angle (Phi) is the angle inclination of the failure envelope.
12 Liquid Limit - LL, %: Liquid Limit, expressed as a water content.
13 Plasticity Index - PI, %: Plasticity Index, expressed as a water content.

FIELD AND LABORATORY TEST ABBREVIATIONS

CHEM: Chemical tests to assess corrosivity
COMP: Compaction test
CONS: One-dimensional consolidation test
LL: Liquid Limit, percent
PI: Plasticity Index, percent
SA: Sieve analysis (percent passing No. 200 Sieve)
UC: Unconfined compressive strength test, Qu, in ksf
WA: Wash sieve (percent passing No. 200 Sieve)

MATERIAL GRAPHIC SYMBOLS

SILT, SILT w/SAND, SANDY SILT (ML)

TYPICAL SAMPLER GRAPHIC SYMBOLS

Auger sampler
Bulk Sample
3-inch-OD California w/ brass rings
CME Sampler
Grab Sample
2.5-inch-OD Modified California w/ brass liners
Pitcher Sample
2-inch-OD unlined split spoon (SPT)
Shelby Tube (Thin-walled, fixed head)

OTHER GRAPHIC SYMBOLS

Water level (at time of drilling, ATD)
Water level (after waiting)
Minor change in material properties within a stratum
Inferred/gradational contact between strata
Queried contact between strata

GENERAL NOTES

1: Soil classifications are based on the Unified Soil Classification System. Descriptions and stratum lines are interpretive, and actual lithologic changes may be gradual. Field descriptions may have been modified to reflect results of lab tests.
2: Descriptions on these logs apply only at the specific boring locations and at the time the borings were advanced. They are not warranted to be representative of subsurface conditions at other locations or times.

Project: Proposed Residential Developement **Project Location:** 1334 &1348 Miller Avenue San Jose, California **Project Number:** SV2287	**Silicon Valley Soil Engineering** **1916 O'Toole Way** **San Jose, CA 95131** **(408) 324-1400**	Log of Boring B-1 **Sheet 1 of 1**

Date(s) Drilled **10/14/2021**	Logged By **V.V.**	Checked By
Drilling Method **Hollow Stem Auger**	Drill Bit Size/Type **8-inch**	Total Depth of Borehole **15.0 feet**
		Approximate Surface Elevation **249 feet**
Groundwater Level and Date Measured **Not encountered**	Sampling Method(s) **Modified California**	Hammer Data **140 lbs**
Borehole Backfill **Grout**	Location	

Depth (feet)	Sample Type	Sample Number	Sampling Resistance, blows/ft	Material Type	Graphic Log	MATERIAL DESCRIPTION	Water Content, %	Dry Unit Weight, pcf	Direct Shear Test - Cohesion in ksf	Direct Shear Test - Internal Friction Angle in degrees	Liquid Limit - LL, %	Plasticity Index - PI, %
0				ML		Light Olive Brown Sandy SILT Damp, very stiff						
		1-1	30			Color changed to tan brown	4.9	100.6	0.5	18		
		1-2	57				9.0	113.5				
5												
						Hard drilling Became gravelly						
		1-3	50/6"				7.4	95.1				
10												
		1-4	50/6"				4.0	114.6				
15						Boring terminated at 15.0 feet						
20												
25												
30												

Project: Proposed Residential Developement **Project Location:** 1334 &1348 Miller Avenue San Jose, California **Project Number:** SV2287	**Silicon Valley Soil Engineering** **1916 O'Toole Way** **San Jose, CA 95131** **(408) 324-1400**	Log of Boring B-2 **Sheet 1 of 1**

Date(s) Drilled **10/14/2021**	Logged By **V.V.**	Checked By
Drilling Method **Hollow Stem Auger**	Drill Bit Size/Type **8-inch**	Total Depth of Borehole **15.0 feet**
		Approximate Surface Elevation **250 feet**
Groundwater Level and Date Measured **Not encountered**	Sampling Method(s) **Modified California**	Hammer Data **140 lbs**
Borehole Backfill **Grout**	Location	

Depth (feet)	Sample Type	Sample Number	Sampling Resistance, blows/ft	Material Type	Graphic Log	MATERIAL DESCRIPTION	Water Content, %	Dry Unit Weight, pcf	Direct Shear Test - Cohesion in ksf	Direct Shear Test - Internal Friction Angle in degrees	Liquid Limit - LL, %	Plasticity Index - PI, %
0				ML		Light Olive Brown Sandy SILT Damp, very stiff						
		2-1	45				7.4	104.8				
		2-2	82			Color changed to reddish brown Became gravelly	8.4	118.6				
5												
		2-3	50/6"			Color changed to medium brown	6.6	125.2				
10												
		2-4	50/6"				5.9	109.2				
15						Boring terminated at 15.0 feet						
20												
25												
30												

Project: Proposed Residential Developement Project Location: 1334 &1348 Miller Avenue San Jose, California Project Number: SV2287	**Silicon Valley Soil Engineering** **1916 O'Toole Way** **San Jose, CA 95131** **(408) 324-1400**	Log of Boring B-3 **Sheet 1 of 1**

Date(s) Drilled **10/14/2021**	Logged By **V.V.**	Checked By
Drilling Method **Hollow Stem Auger**	Drill Bit Size/Type **8-inch**	Total Depth of Borehole **15.0 feet**
		Approximate Surface Elevation **246 feet**
Groundwater Level and Date Measured **Not encountered**	Sampling Method(s) **Modified California**	Hammer Data **140 lbs**
Borehole Backfill **Grout**	Location	

Depth (feet)	Sample Type	Sample Number	Sampling Resistance, blows/ft	Material Type	Graphic Log	MATERIAL DESCRIPTION	Water Content, %	Dry Unit Weight, pcf	Direct Shear Test - Cohesion in ksf	Direct Shear Test - Internal Friction Angle in degrees	Liquid Limit - LL, %	Plasticity Index - PI, %
0				ML		Light Olive Brown Sandy SILT Damp, very stiff						
		3-1	29			Color changed to tan brown	4.5	101.0				
		3-2	54				8.9	111.2				
5												
						Color changed to light brown Hard drilling Became gravelly						
		3-3	50/6"				8.3	98.9				
10												
		2-4	50/6"				5.7	114.1				
15						Boring terminated at 15.0 feet						
20												
25												
30												

Project: Proposed Residential Developement **Project Location:** 1334 &1348 Miller Avenue San Jose, California **Project Number:** SV2287	**Silicon Valley Soil Engineering** **1916 O'Toole Way** **San Jose, CA 95131** **(408) 324-1400**	Log of Boring B-4 **Sheet 1 of 1**

Date(s) Drilled **10/14/2021**	Logged By **V.V.**	Checked By
Drilling Method **Hand-Held Auger**	Drill Bit Size/Type **3-inch**	Total Depth of Borehole **5.0 feet**
		Approximate Surface Elevation **248 feet**
Groundwater Level and Date Measured **Not encountered**		Hammer Data **lbs**
Borehole Backfill **Grout**	Location	

Depth (feet)	Sample Type	Sample Number	Sampling Resistance, blows/ft	Material Type	Graphic Log	MATERIAL DESCRIPTION	Water Content, %	Dry Unit Weight, pcf	Direct Shear Test - Cohesion in ksf	Direct Shear Test - Internal Friction Angle in degrees	Liquid Limit - LL, %	Plasticity Index - PI, %
0				ML		Light Olive Brown Sandy SILT Damp, very stiff						
5						Boring terminated at 5.0 feet						
10												
15												
20												
25												
30												