Exhibit C

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SOIL SURVEYS GROUP INC.
103 CHURCH ST • SALINAS, CALIFORNIA 93901 • TELEPHONE (831) 757-2172

January 17, 2024
Job #8383

Tim and Connie Glass
124 Fern Canyon Road
Carmel, CA 93923

Re: Addendum to our Geotechnical and Percolation Investigation to Include the Water Storage Tank and accompanying plumbing features to be located at 124Fern Canyon Road, APN 241-131-024, near Carmel, California

Dear Mr. and Mrs. Glass:

As requested by Monterey County Housing and Community Development Department, this addendum is to provide additional design recommendation provided in our original Geotechnical and Percolation Investigation Report, dated November 15, 2023, for the proposed single family dwelling, attached garage, accessory dwelling unit (ADU) and accompanying septic system to be located at 124 Fern Canyon Road, APN 241-131-024, near Carmel, California. Following are our recommended design criteria for the water tank construction:

Spread footings may be used for the water tank foundation after the site is cleared, grubbed and the proposed building pads are graded, compacted, and properly prepared. Spread footings shall be installed to a minimum depth of 18 inches for the water tank. The minimum depths shall be measured from the **inside building pad soil subgrade or lowest adjacent grade, whichever is deeper.** The depth of the footing adjacent to a descending grade will be based on the minimum embedment beginning at the elevation of the grade measured a horizontal distance ten feet from the face of the footing. Mitigation for recompaction of any loose soil conditions must be followed.

Allowable foundation pressures after recompaction of the water tank pad areas are:
Non-Retaining footings = 1500 p.s.f.
Lateral soil passive pressure = 150 p.s.f.

Continuous footings shall be reinforced with four #4 steel reinforcement bars, two placed near the bottom of the footing and two at the top of the footing. Spread footings shall also meet the minimum requirements of the 2022 California Building Code and the County of Monterey building ordinances for width, thickness, embedment and reinforcement steel. The project buildings shall be designed in strict accordance with the requirements specified in the 2022 California Building Code, or latest approved edition, to resist seismic forces.

Please refer to the original Geotechnical and Percolation Investigation, dated November 15, 2023 and this addendum for the recommendations for the installation of the water tank.

Soil Surveys Group, Inc. shall inspect and approve the foundation footing excavations and the subgrade beneath concrete slabs for suitable soil bearing and proper penetration into competent soil. We also recommend that Soil Surveys Group, Inc. review and approve the grading, drainage and foundation plans prior to building construction.

If you have any questions regarding these recommended design criteria, please contact us.

Very truly yours,
SOIL SURVEYS GROUP, INC.

Belinda A. Taluban, P.E.
R.C.E. 44217

Jeffrey A. Taluban, P.E.
R.C.E. 94198

BAT/JAT/bt

SOIL SURVEYS GROUP INC.
103 CHURCH ST • SALINAS, CALIFORNIA 93901 • TELEPHONE (831) 757-2172

November 15, 2023
Job #8383

Tim and Connie Glass
124 Fern Canyon Road
Carmel, CA 93923

Dear Mr. and Mrs. Glass:

Submitted herewith is the report of our Geotechnical and Percolation Investigation for the proposed single family residence, attached garage, and Accessory Dwelling Unit (ADU) and accompanying septic system to be located at 124 Fern Canyon Road, APN 241-131-024, near Carmel, California. Six borings were drilled on August 14, 2023. Laboratory tests were subsequently made on driven soil core samples taken from the geotechnical borings to determine the near surface and subsurface soil conditions and suitability for the construction of the proposed single family residence, attached garage and ADU and accompanying septic system. We find that the project site is suitable for the proposed use with the recommendations made herein.

It is a pleasure working with you on this project. If you have any questions regarding our geotechnical and percolation investigation or this report, please contact us.

Very truly yours,

SOIL SURVEYS GROUP, INC.

REGISTERED PROFESSIONAL ENGINEER
BELINDA A. TALUBAN
No. 44217
Exp 6/30/25
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STATE OF CALIFORNIA

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SOIL SURVEYS GROUP INC.

103 CHURCH ST • SALINAS, CALIFORNIA 93901 • TELEPHONE (831) 757-2172

GEOTECHNICAL AND PERCOLATION INVESTIGATION

FOR THE PROPOSED

SINGLE FAMILY RESIDENCE, ATTACHED GARAGE, ACCESSORY DWELLING UNIT AND ACCOMPANYING SEPTIC SYSTEM

124 FERN CANYON ROAD

APN 241-131-024

CARMEL, CALIFORNIA

TIM AND CONNIE GLASS

NOVEMBER 15, 2023; JOB #8383

I. INTRODUCTION:

This Geotechnical and Percolation Investigation was made to determine the suitability of the soils at the project site for the proposed single family residence, attached garage and accessory dwelling unit (ADU) and accompanying septic system to be located at 124 Fern Canyon Road, APN 241-131-024, near Carmel, California. Six borings were drilled on August 14, 2023. The boring logs, our field observations, and field and laboratory test data were analyzed to determine the following:

1. **Suitability of the soils at the project site for the proposed single family residence, attached garage, attached ADU and accompanying septic system.**
2. **Unsuitable or unstable soil conditions, if any.**
3. **Foundation design criteria for the proposed structures.**
4. **Subsurface groundwater and soil moisture considerations.**
5. **Surface drainage considerations.**
6. **Analysis of seismic hazards and seismic design factors per the 2022 California Building Code.**
7. **Percolation test results and feasibility for the proposed septic system.**

II. LABORATORY TEST DATA[1]:

Seventeen moisture density and one Staged Consolidated Triaxial Compression test were made from the driven core samples. Standard Penetration Tests (SPT) were performed with a Terzaghi Split Spoon sampler. Core samples were also taken with a 2 ½-inch interior diameter (i.d.) Modified California Sampler. All samplers were driven into the soil by a 140 lb. hammer dropped a vertical distance of 30 inches at each of the sample locations. Results of these tests are shown as follows:

MOISTURE DENSITY TESTS

Boring No.	Depth/ Ft.	Water Content %	Dry Density p.c.f.	Standard penetration Tests, Blows /foot
B-1	1-1.45	11.9	68.4	*50(30)/5"
B-1	4.25-4.75	16.4	87.7	*50(30)/3"
B-1	8.5-9	8.4	93.8	50/6"
B-1	12-12.5	7.6	94.4	50/6"
B-1	17-17.5	8.1	110.8	33
B-1	21-21.5	6.8	111.3	51
B-2	1.5-2	11.1	74.4	---
B-2	2-2.5	+16.5	+97.2	*6(4)
B-2	3.5-4	22.8	95.1	---
B-2	4-4.5	21.0	104.9	20(12)
B-2	5.5-6	11.6	116	---
B-2	6-6.5	11.1	110.5	*77(46)
B-2	9-9.5	10.8	114.6	36
B-2	13-13.5	6.7	110.2	55
B-3	2-2.5	5.9	97.3	12
B-3	4-4.5	17.9	83.0	6
B-3	6-6.5	8.1	103.7	28
B-3	11-11.5	6.5	110.9	57

*= 2.5-inch mod. Cal not SPT, ( ) = value adjusted to approximate SPT values
+ from Staged Consolidated Undrained Triaxial Compression Test

[1] Boring Logs are located in Appendix A

Three Sieve Analysis tests were made on driven core samples. Results of these tests are shown as follows:

A.S.T.M. D 422 SIEVE ANALYSIS TEST-Percent Passing

Boring No.	Depth/ Ft.	Sieve No. 4	Sieve No. 10	Sieve No. 20	Sieve No. 30	Sieve No. 40	Sieve No. 100	Sieve No. 200
B-1	1-1.45	93	81	59	51	45	29	22
B-2	1.5-2	99	89	75	68	63	45	36
B-3	4-4.5	99	83	61	53	46	25	16

Three Plasticity Index (Atterberg Limit) tests were performed on driven core samples. Results of these tests are as follows:

A.S.T.M. D 4318 LIQUID LIMIT, PLASTIC LIMIT, AND PLASTICITY INDEX

Boring No.	Depth/ Feet	% Passing Sieve No. 40	% Passing Sieve No. 200	Liquid Limit	Plastic Limit	Plasticity Index
B-1	1-1.45	45	22	40	21	19
B-2	1.5-2	63	36	46	34	12
B-3	4-4.5	46	16	59	30	29

The test results for samples taken from the borings indicate that the fine fraction (material passing the #40 sieve) of the near surface silty, clayey sands encountered in Boring B-3 at 4.0 to 4.5 feet bgs (below ground surface) are highly plastic and has a high expansive potential. The fine fraction of the silty, clayey, fine to coarse grained sand encountered in Boring B-1 at 1.0 to 1.45 feet bgs Boring B-2 at 1.5 to 2.0 feet in depth are moderately plastic and has a moderate expansion potential.

One staged Consolidated Undrained Triaxial Compress Test was made from a soil sample taken from Boring B-1 at 2 to 2.5 feet bgs. Results of this test are summarized as follows (see Appendix B for full report sheet):

A.S.T.M. D 4767 CONSOLIDATED UNDRAINED TRIAXIAL COMPRESSION

Boring No.	Depth/ Ft.	Internal Frict. Angle, φ°	Cohesion, C p.s.f.	Soil Weight p.c.f.	Description of soil
B-2	2-2.5	30	0	113.2	Silty, clayey, fine to coarse grained SAND

Boring B-1/GWM was located near the southwest corner of the proposed ADU, as shown on Figure II. The near surface soil consists of loose, silty sand to depth of one foot bgs, underlain with very dense, silty, cemented clayey, fine to coarse grained sand to a depth of eight and one half feet bgs. Below this depth is a very dense, clayey, silty, fine to coarse grained sand extending to 13 feet bgs, underlain by medium dense to dense, silty, fine to coarse grained sand with decomposed granitic gravels extending to the bottom of the boring at 30 feet bgs.

Boring B-2 was located near the southern corner proposed residence, as shown on Figure II. The near surface soil consists of very loose, silty, clayey, fine to coarse grained sands to a depth of three feet underlain with medium dense, silty, clayey, fine to coarse grained sand to a depth of four and one half feet bgs. Below this depth, the soil consists of dense, slightly clayey, silty, fine to coarse decomposed granitic sand with subangular decomposed granitic gravels to depth of eight feet bgs. The soil below that depth consists of medium dense to dense, silty, fine to coarse grained sand with scattered decomposed granitic gravels to the bottom of the boring at 13.5 feet bgs.

Boring B-3 was located near the northern corner of the proposed residence, as shown on Figure II. The near surface soil consists of loose, silty sand with organics to a depth of one and one half feet bgs underlain by medium dense, silty, fine to coarse grained sand to a depth of two and one half feet bgs overlying loose, silty, clayey, fine to coarse grained sand with organics to a depth of six feet bgs. Below this depth, the soil consists of very dense, silty, fine to coarse decomposed granitic sand with decomposed granitic gravels extending to the bottom of the boring at 11.5 feet bgs.

Percolation test holes, P-1, P-2, and P-3, were located in a proposed dispersal area west of the proposed ADU, as shown on Figure II. The percolation test holes logged similarly to depths. The near surface soil consists of silty, fine to coarse grained sand to a depth of three feet bgs underlain by silty, slightly clayey, fine to coarse grained sand to a depth of five feet bgs underlain by, silty, fine to coarse grained sand to a depth of ten feet bgs.

No groundwater was observed in the borings to a maximum depth explored of 30 feet bgs on the date of drilling, prior to backfilling the borings with soil cuttings. The actual depth to groundwater is unknown, but it should be noted that groundwater fluctuations can occur due to variations in rainfall, temperature, and other factors not evident during the time of our investigation

III. SUITABILITY OF SITE FOR PROPOSED USE:

No unsuitable soil conditions were found at the boring locations with the exception of loose soils to a depth of up to five feet and potentially highly expansive soils at footing depths. In our opinion, the site is suitable for the proposed residence with attached garage and ADU with the recommendations made herein, specifically the recommendations for the recompaction of any loose and mitigations for expansive soils.

IV. RECOMMENDED FOUNDATION DESIGN CRITERIA:

Spread footings may be used for the building foundations after the site is cleared, grubbed and the proposed building pads are graded, compacted, and properly prepared. Spread footings shall be installed to a minimum depth of 18 inches for both one-story and two-story portions and 24 inches for any proposed three-story of the proposed structures. The minimum depths shall be measured from the **inside building pad soil subgrade or lowest adjacent grade, whichever is deeper.** Mitigation for recompaction of any loose soil conditions must be followed.

Allowable foundation pressures after recompaction of the building pad areas are:

Non-Retaining footings	**= 1500 p.s.f.**
Lateral soil passive pressure	**= 150 p.s.f.**

Continuous footings shall be reinforced with four #4 steel reinforcement bars, two placed near the bottom of the footing and two at the top of the footing. Spread footings shall also meet the minimum requirements

of the 2022 California Building Code and the County of Monterey building ordinances for width, thickness, embedment and reinforcement steel. The project buildings shall be designed in strict accordance with the requirements specified in the 2022 California Building Code, or latest approved edition, to resist seismic forces.

All concrete floor and garage slabs-on-grade shall be a minimum of five inches thick and shall be reinforced with a minimum of #3 steel reinforcement bars at 12 inches on center or #4 steel reinforcement bars placed 24 inches on center, each way and shall extend into perimeter foundation. *The reinforcement steel must be firmly held in the vertical center of the slabs during placement and finishing of concrete with pre-cast concrete dobies.* All new concrete floor slabs-on-grade shall be underlain by an approved 15 mil. vapor barrier installed over a minimum four inch thick open graded gravel capillary break with two inches of clean sand placed over the vapor barrier as recommended in Section VIII-C herein. ***Concrete slabs shall have weakened plane joints a maximum of fifteen feet on center, each way. All concrete shall be properly cured with an approved curing compound or wetted burlap for a minimum of 14 days.***

Soil Surveys Group, Inc. shall inspect and approve the foundation footing excavations and the subgrade beneath concrete floor slabs for suitable soil bearing and proper penetration into competent soil. We also recommend that Soil Surveys Group, Inc. review and approve the grading, drainage and foundation plans prior to building construction.

A. Concrete Sidewalks and Outside Flatwork:

We recommend that any new on-site concrete sidewalks and outside flatwork be at least five inches thick, placed over a minimum of four inches of Class II aggregate baserock, over a compacted subgrade. All concrete flatwork should be divided into as nearly square panels as possible. Frequent joints should be installed to provide articulation to the concrete panels. Landscaping and planters adjacent to concrete flatwork should be designed in such a manner that positive drainage away from the new project buildings is achieved. It is assumed that the outside concrete flatwork will be subjected only to pedestrian traffic.

V. LOOSE AND EXPANSIVE SOIL MITIGATION:

To mitigate the effects of the loose near surface soil, the following measures are recommended:

1. All loose soil within the proposed building pads and extending a minimum of five feet in all directions outside of the proposed building foundations shall be recompacted **as necessary** to 90 percent relative compaction at the direction of Soil Surveys Group, Inc. prior to placing additional building pad fills or finishing the building pad subgrades. Soil Surveys Group, Inc. shall determine the depth of recompaction, as up to six feet of loose and organic laden soils were encountered within our boring, if any, within the building perimeters after clearing, grubbing, and pad grading are completed. Subexcavation and recompaction should be extended under any proposed patios or other permanent flatwork. If no subexcavation is required, the building pads should be scarified a minimum of 12 inches, moisture conditioned and recompacted to 90 percent relative compaction.

2. Spread footings shall be constructed a minimum of 18 inches for both one-story and two-story portions and 24 inches for any three story portions of the proposed buildings as measured from **inside building pad soil subgrade or the lowest adjacent grade,** and continuous non-retaining footings shall be reinforced with four #4 reinforcement bars, two placed near the bottom of the footing and two at the top of the footing.

3. All new concrete floor slabs-on-grade shall be a minimum of five inches thick and shall be reinforced with a minimum of #3 steel reinforcement bars at 12 inches on center or #4 steel reinforcement bars at 24 inches on center, each way and shall be bent to extend a minimum of eight inches into the perimeter footing.

4. If a new building will bear on both cut and fill, the cut portion of the building pad shall be subexcavated and recompacted a minimum of two feet deep for a distance of five feet outside the building, so that the entire building overlies engineered fill, prior to excavating for the foundation footings.

5. The foundation excavations shall be flooded with three to four inches of water at least 24 hours prior to pouring concrete, and the subgrade for concrete slabs and foundations should be brought to at least three percent over optimum moisture for a depth of at least eight inches prior to pouring concrete. No free water shall remain in the footing excavations during the concrete pour. To achieve the proper moisture conditioning in the subgrade beneath concrete slabs, water should be applied each evening for several days prior to placement of reinforcing steel and concrete.

6. Roof and site rain water should be directed away from the proposed building foundations. Rainfall runoff must not be allowed to collect or flow in a downslope direction against any building foundation.

7. Soil Surveys Group, Inc. shall be retained to inspect and test the recompaction of any loose native soil and new engineered fill within the building pad perimeters and shall inspect and approve foundation footing excavations for soil bearing conditions. Soil Surveys Group, Inc. shall also inspect and approve the subgrade below concrete floor slabs prior to placement of reinforcing steel and shall inspect and approve the installation of all roof and yard drainage facilities.

VI. SURFACE AND SUBSURFACE DRAINAGE AND EROSION CONSIDERATIONS:

The near surface soil at the project site has the potential to erode, especially if protective vegetation is removed. Therefore all new cut and fill slopes, as well as disturbed soil areas, must be seeded with grass or landscape plants for erosion control and to prevent sloughing soil from blocking drainage patterns at the project site. Such erosion control measures shall be taken during and at completion of grading and during building construction operations.

Concentrated storm water runoff from the project site should not be allowed to discharge uncontrolled onto sloping ground. Suitable energy dissipation systems shall be designed where rainfall runoff is concentrated, or the drainage water should be collected and piped to flat ground or discharged onto a rocked energy dissipater down slope of the building foundations. Rock energy dissipaters consisting of four inch to six inch diameter rock or rubble rip rap should be installed at collection pipe discharge points to reduce soil erosion. Rain gutter downspouts shall discharge onto concrete splash blocks, or shall discharge into collector pipes. The building sites, any new paved areas, and ground adjacent to the buildings shall be graded so that rainfall runoff does not become trapped or flow against any building foundations.

The boring logs do not indicate the need for a shallow subsurface drain system. However, the Geotechnical engineer may recommend a system of subsurface drains should wet subsurface soil conditions be encountered during site preparation or excavations for any new building foundations.

VII. RETAINING WALL DESIGN CRITERIA:

The following design criteria are recommended for the project retaining walls:

Friction Angle	*φ = 30 p.s.f.*
Cohesion	*c =0 p.s.f*
Soil Weight,	*w =113.2 p.c.f.*
Equivalent fluid pressure, active	*= 45 pounds per square foot per foot of depth for* ***Level Grade***
Equivalent fluid pressure, active	*= 65 p.c.f. with* ***2:1 slope behind wall***
Equivalent fluid pressure, at rest,	*= 67 p.c.f., restrained condition, level grade behind wall*
Equivalent fluid pressure, passive	*= 350 p.c.f.*
Sliding friction	*f = 0.30*
Allowable Footing Toe Pressure	*= 2000 p.s.f. plus ⅓ additional for seismic force (if added)*

Retaining walls that are more than six feet high, or are part of or within ten feet of a building should include the seismic force of the soil against the retaining wall. The estimated seismically generated ground acceleration to be used for this site is:
PAGA = 0.549g

Cantilever Retaining Walls:
Dynamic Load Coefficient = 0.22g = k_h
w = 113.2 p.c.f.
The resultant seismic force is calculated by the formula: 1/2 w H^2 k_h per linear foot of retaining wall, or for this case **15.0 H^2**, ***where H is the height of the retaining wall. These forces, where needed, should be applied at a height of 0.33H above the base of the retaining wall and must be combined with the force produced by active soil pressure.***

Basement Walls:
Dynamic Load Coefficient = 0.31g = k_h
w = 113.2 p.c.f.
The resultant seismic force is calculated by the formula: 1/2 w H^2 k_h per linear foot of retaining wall, or for this case **20.3 H^2**, ***where H is the height of the retaining wall. These forces, where needed, should be applied at a height of 0.40H above the base of the retaining wall and must be combined with the force produced by at-rest soil pressure.***

Cantilever Walls with Sloped Backfill:
Dynamic Load Coefficient =0.38 g = k_h
w =113.2 p.c.f.
The resultant seismic force is calculated by the formula: 1/2 w H^2 k_h per linear foot of retaining wall, or for this case **25.1H^2**, ***where H is the height of the retaining wall. These forces, where needed, should be applied at a height of 0.40H above the base of the retaining wall and must be combined with the force produced by active soil pressure.***

This retaining wall design criteria is based on a fully drained condition. Therefore, we recommend that a four-inch diameter perforated NDS or PVC pipe be installed behind the wall and along the top of the footing, holes placed down, for all walls that retain earth. The pipe shall be covered with a 12-inch wide envelope of ¾-inch drain rock and be wrapped in a non-woven geotextile filter fabric (Mirifi140N or equivalent). The drain rock shall extend to within one foot of the level of retained soil (a minimum of one foot above the top of the pipe). The use of filter fabric wrap is not needed when Class II Permeable Material (per Caltrans Standard Specifications Section 68-1.025) is used. The remainder of the trench can be backfilled with clean

native sand. When installation of the drain rock is not physically possible, a composite filter material, eg. Miradrain, can be installed with a perforated pipe at the bottom of the material. Clean-out risers must be installed on the perforated pipe at the up-stream ends, every 100-feet, and at 90° angle points. The capped end of the cleanout riser shall be located at the ground surface outside of or behind the retaining walls.

VIII. RECOMMENDED SPECIFICATIONS:

A. GRADING:

The building pad area, extending a minimum of five feet in each direction past the foundation footings, shall be cleared and grubbed of all surface vegetation, demolition debris, and organic topsoil before recompacting the original ground, placing engineered fill, or finishing the subgrade for the new building pad. **On-site surface or subsurface grass, roots, deleterious material, or brush (if any) within the new building pad area shall be removed.** Depressions created by the removal of organic debris, shrubs, or trees shall be backfilled to design grade with suitable fill placed in eight inch loose lifts and compacted to a minimum of 90 percent relative compaction. Any existing loose native soil within the building pad shall be recompacted to 90 percent relative compaction to the depth recommended by Soil Surveys Group, Inc., prior to placing engineered fill or finishing subgrade. The native soil is suitable to be used as engineered fill after removing organics and vegetative debris. Any native soil used for fill or any imported fill soil for the new buildings shall be compacted to at least 90 percent relative compaction. ***Grading, filling, compaction operations and building foundation excavations shall be inspected and tested by Soil Surveys Group, Inc.***

Soil Surveys Group, Inc. should determine the exact depth of subexcavation necessary, if any, after clearing, grubbing, and pad grading are complete, as up to six feet of loose and organic laden soils in the near surface soils were encountered in the borings. The bottom of the subexcavation shall be scarified a minimum of 8 to 12 inches, moisture conditioned, and recompacted to 90 percent relative compaction. Any subexcavated soil shall then be backfilled in eight inch loose lifts and recompacted to 90 percent relative compaction, prior to placing engineered fill or finishing subgrade of the new building pad.

Any new cut and fill slopes shall be 2:1 or flatter unless retained. The native soil is suitable to be used as engineered fill provided any organics or debris are first removed from the soil to be used as fill. Any native soil used for fill, or any imported fill soil, for the new building pad shall be compacted to at least 90 percent relative compaction, and any cut portions of the new building pad, if located within both cut and fill, shall be subexcavated a minimum of two feet, backfilled in eight inch loose lifts and recompacted to a minimum of 90 percent relative compaction. ***Grading, filling, compaction operations and foundation excavations shall be inspected and tested by Soil Surveys Group, Inc.***

B. COMPACTION:

Laboratory soils compaction test method shall be *A.S.T.M. D 1557-12.* Subgrade *in existing soil* beneath the new building pads shall be compacted to 90 percent relative compaction. Subgrade soil below any new pavement shall also be compacted to 95 percent relative compaction, and aggregate base beneath new pavement shall be compacted to 95 percent relative compaction. Any imported sandy soil fill placed for the new building pads shall be compacted to a minimum of 95 percent relative compaction.

C. CONCRETE FLOOR SLABS-ON-GRADE:

Subgrade in recompacted soil under any new concrete floor slabs-on-grade shall be brought to at least 2% over optimum moisture prior to placing native or imported sandy soil fill, prior to placing the capillary break rock and moisture proof barrier or prior to pouring concrete. We recommend that a capillary break consisting of:

- a mat of clean, open graded rock, four inches thick, shall be placed over the finished soil subgrade,
- a minimum 15 mil. water-proof membrane (such as Stego, Moistop or equal) shall be placed over the open graded rock,
- two inches of clean, moistened sand shall be placed between the water-proof membrane and the bottom of the concrete floor slab. The moistened sand will help protect the membrane and will assist in equalizing the concrete curing rate to minimize shrinkage cracking.

Class II Aggregate Base or sand should not be used as the capillary break material. Capillary break material shall comply with and be installed according to the following:

1. MATERIAL:

The mineral aggregate for use under the floor slabs shall consist of broken stone, crushed or uncrushed gravel, quarry waste, or a combination of the above. The aggregate shall be free of adobe, vegetable matter, loam, volcanic tuff and other deleterious materials. It shall be of such quality that the absorption of water in a saturated, surface dry condition does not exceed 3% of the oven dry weight of the sample.

2. GRADING:

The mineral aggregate shall be of such size that the percentage composition by dry weight as determined by laboratory sieves (U.S. Sieves) will conform to the following grading:

Sieve Size	Percentage Passing Sieve
⅜" to ½"	100
No. 4	0-10
No. 200	0-2

3. PLACING:

Subgrade, upon which aggregate base, gravel or crushed rock is to be placed, shall be prepared by removing grass and roots. Where loose topsoil is present, it shall be removed and cleaned of debris and recompacted to 90 percent of maximum density.

4. THICKNESS AND STRENGTH:

Concrete slabs should be at least five inches thick. Concrete shall be five sack minimum (5.5 sack if pumped) and shall achieve a 28 day compressive strength of at least 2500 p.s.i., or as specified by the project engineer.

5. REINFORCEMENT:

Concrete slabs-on-grade shall be reinforced with a minimum of #3 steel reinforcement bars placed 12 inches on center, each way or #4 reinforcement bars

placed 24 inches on center, each way and shall be bent to extend a minimum of eight inches into the perimeter footings

D. UTILITY TRENCH BACKFILL:

All new on-site utility trenches shall be backfilled with a clean sand having a sand equivalent of 30 or higher. A two feet thick plug of compacted, **clayey soil backfill** or lean concrete shall be required around the pipe or conduit at places where utility trenches intersect the building perimeter. All trench backfill of imported clean sand or clean native sand shall be compacted to 95 percent relative compaction at all locations. Clean native sand shall be approved by Soil Surveys Group, Inc. prior to using for trench backfill.

IX. GEOLOGIC AND SEISMIC CONSIDERATIONS:

Monterey County is in a seismically active area of the state of California. The following table provides a list of faults that could potentially produce an earthquake that could impact the project site:

Fault Name	Approximate Distance to Site (km)	Orientation from Site	Data Source
Malpaso (certain)	0.35	Southwest	Kingsley Associates, 1981
Unnamed (inferred)	0.6	Northwest	Clark et al., 1997
Unnamed (inferred)	0.7	Northwest	Clark et al.,1997
Unnamed (concealed)	1.1	Northwest	Clark et al.,1997
Unnamed (inferred)	1.9	Southeast	Dibblee, 1973
San Gregorio	3.2	Southwest	Unified Building Code; 1997
Cypress Point (concealed)	3.6	Northeast	Clark et al., 1997
Unnamed (inferred)	4.3	Northeast	Clark et al., 1997
San Francisquito (inferred)	6.3	Southeast	Cleary Associates, 1997
Potrero (certain)	6.4	Southeast	Cleary Associates, 1997
San Jose Thrust (inferred)	6.4	Southeast	Cleary Associates, 1997
Hatton Canyon (concealed)	7.1	Northeast	Clark et al., 1997
Sylvan Thrust (inferred)	8.7	Northeast	Clark et al., 1997
Garrapata (certain)	9.1	Southeast	Clark et al., 1999
Unnamed (certain)	9.6	Northeast	Clark et al., 1997
Robinson (certain)	10.7	Southeast	Cleary Associates, 1997

Navy (inferred)	11.8	Northeast	Clark et al., 1997
Berwick Canyon (inferred)	12.1	Northeast	Clark et al., 1997
Snively (concealed)	12.2	East	Clark et al., 1997
Tularcitos (inferred)	10.6	Northeast	Unified Building Code; 1997
Laureles (certain)	15.2	Northeast	Clark et al., 1997
Vasquez (inferred)	15.3	Southeast	Rosenburg, 1993
Cachagua (inferred)	15.6	Southeast	Dibblee et al; 1972a
San Clemente Thrust (certain)	17.2	Southeast	Cleary Associates, 1997
Rinconada	24.8	Northeast	Unified Building Code; 1997

The proposed residence, garage, ADU and any future additions must be designed in strict compliance with the 2022 California Building Code to help withstand such seismically generated ground accelerations for a reasonably expected duration without suffering major damage.

The following are the project site coordinates and the seismic design criteria/coefficients per the requirements of the 2022 California Building Code (CBC):

Site Class	Latitude	Longitude	S_S	S_1	F_a	F_v
D	36.5027°	-121.9345°	1.241	0.472	1.004	1.828*

* The parameter S_{M1} shall be increased by 50% for all applications of S_{M1}. The resulting value of the parameter S_{D1} determined shall be used for all applications of S_{D1}. Per Section 11.4.8 of ASCE-16, a ground motion hazard analysis may be required for Site Class D sites with S_1 greater than or equal to 0.2. The values provided in this table assumes that the value of the seismic response coefficient C_S can be determined by the structural designer based on the Exceptions as detailed in Section 11.4.8.

Frame and semi-rigid structures with proper strengthening connections and hold-down fasteners (where needed) are recommended for the new building and any future building additions. With proper design parameters, seismic damage to the buildings can be mitigated for major earthquakes centered near the project area.

Surface rupture, liquefaction, lurch cracking, lateral spreading, and differential settlement are seismic hazards that must be considered at the project site.

Surface rupture usually occurs along fault lines, and no known faults have been mapped through the project site. Therefore, the potential for surface rupture or lurch cracking is considered to be low.

Liquefaction typically results in a loss of shear strength and potential soil volume reduction in loose to medium dense, saturated gravels, sands, and low plasticity silts and clays. The occurrence of this phenomenon depends on various factors. Lateral spreading occurs in the same material as liquefaction when the liquefied soils can move toward a slope or free face. The deeper soils underlying the project site are typically medium dense to dense, silty, clayey, fine to coarse grained sand and groundwater was not encountered in the borings to a maximum explored depth of 30 feet bgs. In our opinion, the potential for liquefaction and lateral spreading during a major seismic event is considered to be low.

Differential compaction and settlement occur generally in loose, granular or unconsolidated semi-cohesive soils during severe ground vibration. In our opinion, the risk for soil consolidation caused differential compaction and settlement during a major seismic event is considered to be low, provided that any loose soil within the proposed building pads are recompacted as recommended herein.

X. PREPARATION FOR PERCOLATION TESTS:

The selected test holes P-1, P-2 and P-3 were prepared for percolation testing by inserting three-inch diameter perforated NDS plastic pipe in the test holes and gravel packing the test holes outside the pipe walls. The test holes were then presaturated with water on August 14, 2023, the day before the percolation testing. A copy of our percolation logs can be found in Appendix C of this report.

XI. PERCOLATION TESTS[2] AND SUITABILITY FOR SEPTIC SYSTEM DRAIN FIELDS:

Percolation tests were performed in the selected test holes by the Falling Head method on August 15, 2023, within twenty-four hours of presaturation. Measurements were taken from the test hole reference points (R.P.). The final percolation rates are summarized as follows:

Boring No.	Beginning Depth Ft.	Final Perc. Rate Inches/Hour	Final Perc. Rate Minutes/Inch
P-1	10.41	<0.24	>250.00
P-2	5.17	1.20	50.00
P-3	2.99	0.96	62.50

In our opinion, the percolation test holes, P-2 and P-3 indicate an acceptable percolation rate for installation of conventional leach fields per Section 15.20.070 of the Monterey County Code. We also recommend that primary and secondary drain fields be installed with the initial drain field installation. The drain field branches shall be separated by a manual diversion valve which should be turned at least twice per year to alternate application of septic tank effluent to each drain field branch; switching effluent application and periodically resting each branch of the drain field extends the life of the system. A copy of our General Septic System Operation and Maintenance recommendations is provided for your use in Appendix D of this report.

XII. UNFORESEEN OR UNUSUAL CONDITIONS:

If any unforseen or unsuitable soils conditions are found during grading or construction of the proposed residence, garage, ADU or septic system, the Geotechnical engineer shall be notified immediately so that remedial action can be taken. Such unsuitable conditions could be:

1. Wet, soft or unsuitable pockets of sandy soil within the proposed building or septic system locations.

[2]Percolation test logs are shown in Appendix B

2. Soil with a high organic content at the finished subgrade of the building pads.
3. Any other unforeseen conditions that would require remedial action by the Geotechnical engineer, project engineer, architect or contractor.

XIII. CONCLUSIONS AND RECOMMENDATIONS:

From our field observations, analysis of the test data, and knowledge of the general area soils, the following are concluded:

1. The project soil conditions are suitable for the proposed buildings provided any loose near surface soil is recompacted prior to excavating for the new building foundations or finishing the subgrade of the building pads as recommended in Section VIII herein.

2. Design criteria for a spread footing foundation system for the project buildings are provided in Section IV. Design criteria for concrete slabs-on-grade are provided in Sections IV and VIII herein.

3. Surface storm water runoff should be carefully controlled around the proposed buildings to provide positive drainage away from new and existing building foundations as discussed in Section VI, herein.

4. The Geotechnical engineer should review the building and site grading plans for compliance with the recommendations herein and may provide additional specific recommendations for surface or subsurface drainage. The Geotechnical engineer shall inspect and approve all new foundation footing excavations.

5. Grading and compaction specifications and specifications for new concrete floor slabs-on-grade are provided in Section VIII herein.

6. Seismic considerations are discussed, and geoseismic design coefficients are provided in Section VII herein per the 2022 CBC. The potential for damaging earthquake related liquefaction is considered to be low at the project site.

7. Percolation tests results are summarized in Section XI herein. The percolation test holes P-2 and P-3 indicate an acceptable percolation rate for installation of a conventional leach field dispersal system.

XIV. LIMITATIONS:

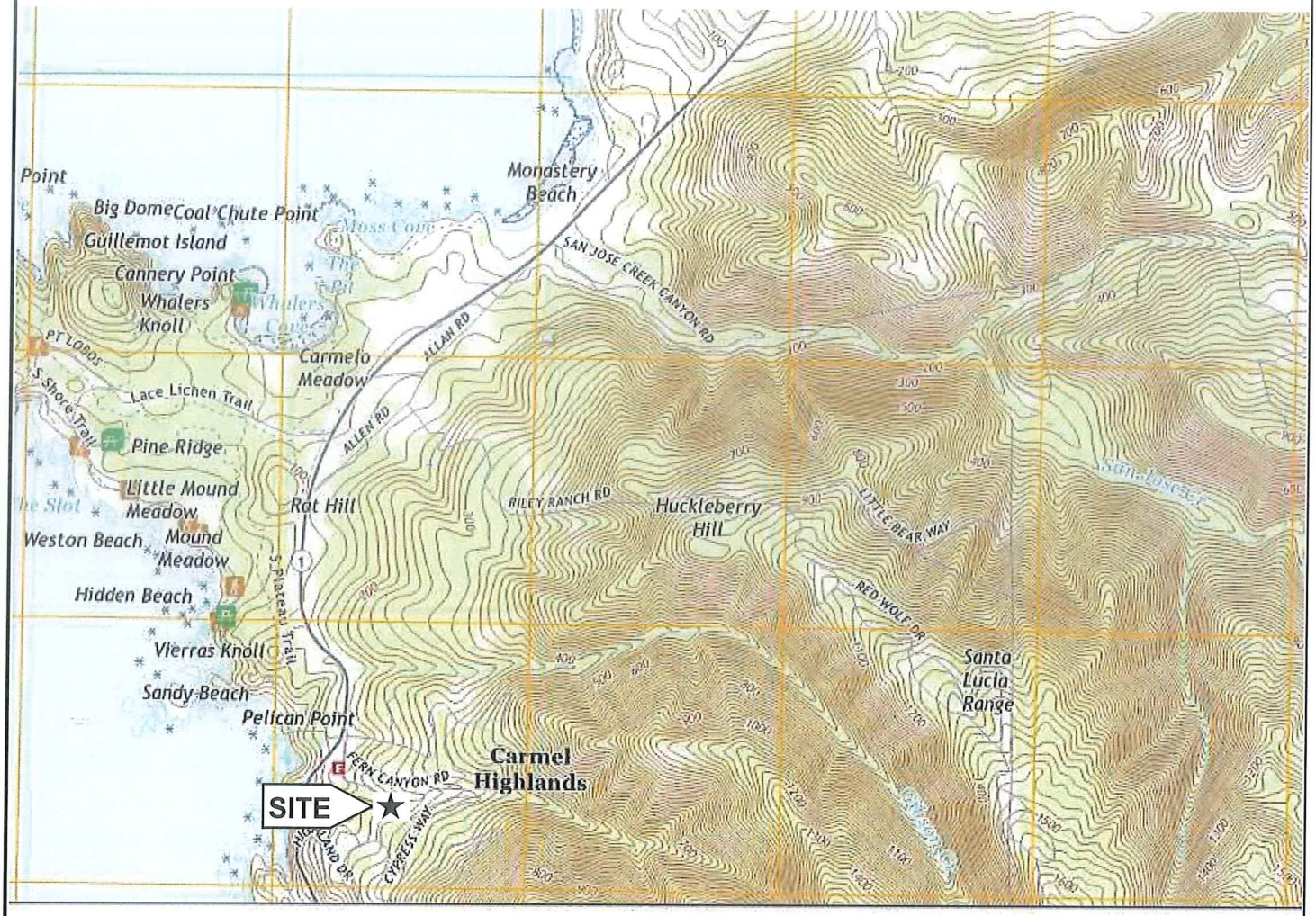
This report necessarily assumes that the subsurface conditions are as found in the borings. It should be recognized that the soil conditions described in this report are based on six borings and our knowledge of the general area soils. It must be understood that subsurface soil conditions can vary between borings and from site to site. If any unusual soil conditions are found during grading, installation of underground utilities or building construction, the Geotechnical engineer should be notified immediately so that remedial action can be taken (see Section XII).

This report is issued with the understanding that it is the responsibility of the Tim and Connie Glass or their representative to ensure that the applicable provisions of the recommendations contained herein are incorporated into the plans and specifications and that the necessary steps are taken to see that contractors and subcontractors carry out such provisions in the field. The use of this report, its contents or any part thereof, by a party or its agents, other than the Tim and Connie Glass, their engineer, architect, contractor or designated agents, is hereby disallowed unless specific permission is given to do so by Soil Surveys

Group, Inc. This investigation and report were prepared with the understanding that a residence, garage, ADU and septic system will be constructed at the project site, as shown on the Figure II map enclosed herein. The use of this report, boring logs, percolation logs, and laboratory test data shall be restricted to the original use for which they were prepared and publication by any method, in whole or in part, is prohibited without the written consent of Soil Surveys Group, Inc. Title to the designs remains with Soil Surveys Group, Inc. without prejudice. Visual contact with this report and drawings constitutes prima facie evidence of the acceptance of these restrictions.

Soil Surveys Group, Inc. will not take responsibility for or assume any liability for the recommendations made in this report unless Soil Surveys Group, Inc. performs the field inspections and testing mentioned herein.

The findings and recommendations of this report are considered valid at the present date. However, changes in the property conditions can occur with the passage of time on this or adjacent properties, whether due to natural processes or the works of man. Therefore, the findings of this report shall be considered valid for a period of not more than three years without being reviewed and updated by Soil Surveys Group, Inc.



N

BASE: U.S. Geological Survey, Monterey 7.5' Quadrangles

Carmel, CA

FIGURE I: VICINITY MAP

SCALE 1:24000

By: **Soil Surveys Group, Inc.**
103 Church Street
Salinas, CA 93901
831-757-2172

Job #8383

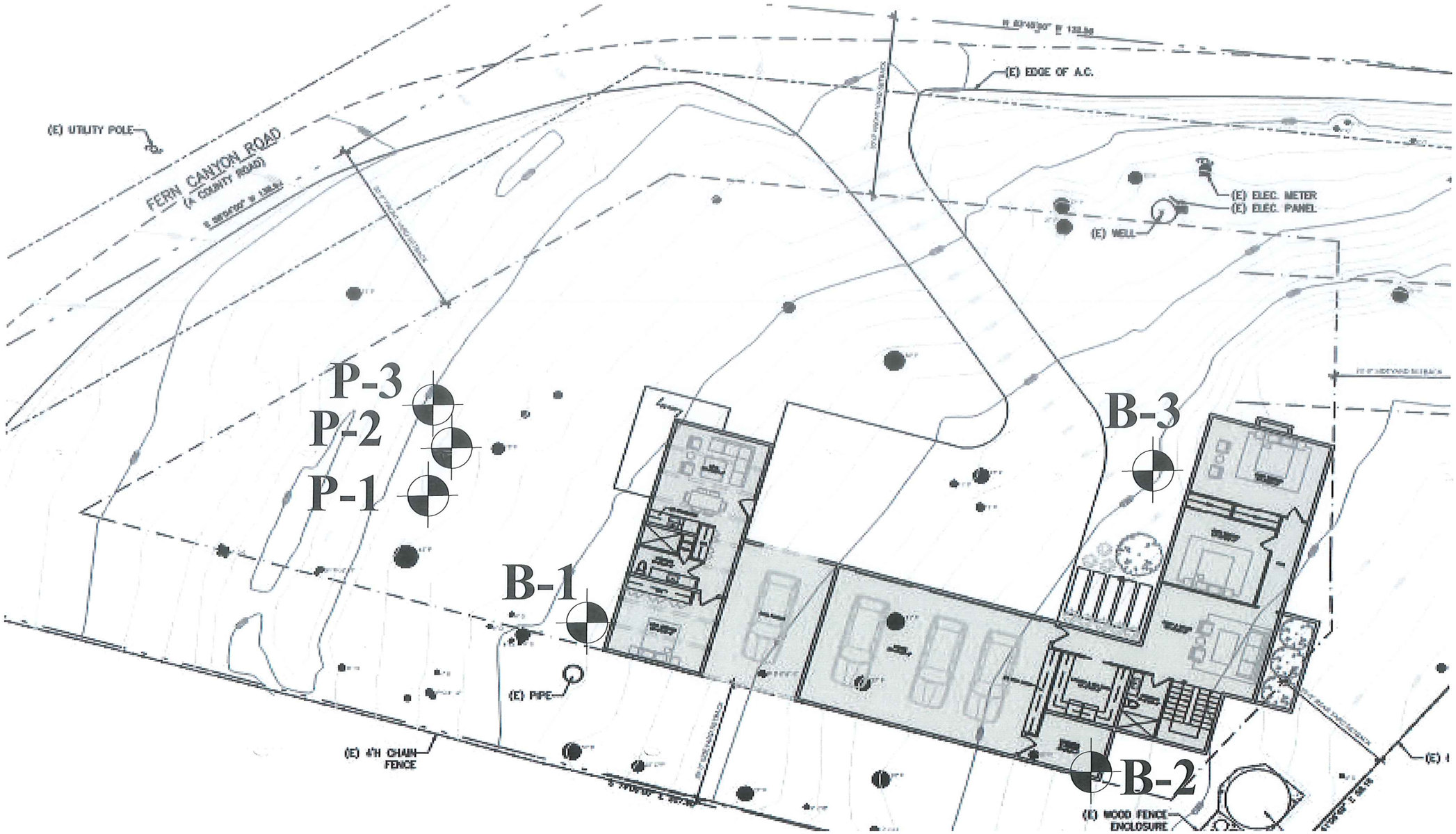


Figure II

Boring Locations (Approx.)

Base: **124 Fern Canyon Road, Carmel, California**
APN: 241-131-024
Site Plan by Samuel Pitnick - August 2023 - Job #8383

Soil Surveys Group, Inc.
103 Church Street
Salinas, CA 93901
(831)757-2172
info@soilsurveys.net

APPENDIX A

BORING LOGS

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

GRAIN SIZES

U.S STANDARD SERIES SIEVE — CLEAR SQUARE SIEVE OPENINGS

200	40	10	4	3/4"	3"	12"	
SILTS AND CLAYS	SAND			GRAVEL		COBBLES	BOULDERS
	FINE	MEDIUM	COARSE	FINE	COARSE		

RELATIVE DENSITY

SANDS AND GRAVELS	BLOWS/FT*
VERY LOOSE	0 - 4
LOOSE	4-10
MEDIUM DENSE	10 - 30
DENSE	30 - 50
VERY DENSE	OVER 50

CONSISTENCY

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

*Number of blows of 140 pound hammer falling 30 inches to drive a 2 inch O.D. (1 3/8 inch I.D) split spoon (ASTM D-1586)

** Unconfined compressive strength in tons/ft^2 as determined by laboratory testing or approximated by the standard penetration test (ASTM D-1586), pocket penetrometer, torvane, or visual observation

FIGURE NO. KEY TO LOGS

EXPLORATION DRILL LOG

BORING NO. B-1

PROJECT 124 Fern Canyon Road	Job #8383	DATE 8/14/23	LOGGED BY JG
DRILL RIG Central Coast Drilling- Tractor	HOLE DIA. 6"	SAMPLER Terzaghi Split Spoon (SPT) & 2.5" Cal	
GROUNDWATER DEPTH:	INITIAL ---	FINAL ---	HOLE ELEV.

DESCRIPTION	SOIL TYPE	DEPTH	SAMPLE	BLOWS PER FOOT	DRY DENSITY (pcf)	WATER CONTENT %	LIQUID LIMIT	PLASTIC LIMIT	POCKET PEN. (tsf)
4" woodchips, light greyish brown silty SAND with	SM								
organics; dry and loose		1							
Light to dark reddish brown iron stained, silty,	SM/SC		2.5"Cal	50/5"	68.4	11.9	40	21	---
cemented clayey, fine to coarse grained SAND;		2	1-1-1						
moist, very dense.									
		3							
			2.5"Cal	50/1"					
		4							
Light brown with reddish yellow iron staining,	SM/SC		2.5"Cal	16,50/3"					
slightly clayey, silty, fine to coarse grained		5	1-2-2	50(30)/3"	87.7	16.4			---
cemented SAND; slightly moist, very dense.									
		6							
		7							
		8							
Light brown clayey, silty fine to coarse grained	SM/SC		SPT	32,50/6"					
SAND; moist, very dense.		9	1-3-3	50/6"	9.38	8.4			---
		10							
		11							
		12							
Light brown clayey, silty fine to coarse grained	SM		SPT	50/6"	94.4	7.6			---
SAND with scattered white subangular granitic		13	1-4-4						
gravels; moist, very dense.									
		14							
		15							
		16							
Dark brown, silty, fine to coarse grained SAND	SM		SPT	15,16,17					
with subangular decomposed granitic gravels;		17							
moist, dense.			1-5-5	33	110.8	8.1			---
		18							
Light brown, white and dark grey with minimal iron		19							
staining, silty, fine to coarse SAND with									
decomposed granitic gravels; moist, very dense.	SM	20							

DEPTH 30'

SOIL SURVEYS GROUP, INC.

EXPLORATION DRILL LOG

BORING NO. B-1Continued

DESCRIPTION	SOIL TYPE	DEPTH	SAMPLE	BLOWS PER FOOT	DRY DENSITY (pcf)	WATER CONTENT %	LIQUID LIMIT	PLASTIC LIMIT	POCKET PEN. (tsf)
Light brown, white, and dark grey with minimal iron	SM		SPT	27,25,26					
staining, silty, fine to coarse SAND with		21							
decomposed granitic gravels; moist, very dense			1-6-6	51	111.3	6.8			---
		22							
		23							
		24							
White, dark grey with iron staining, silty, fine to	SM	25							
coarse decomposed granitic SAND with									
decomposed granitic gravels; moist		26							
		27							
		28							
		29							
Same as above	SM	30							
-Bottom of boring at 30'		31							
-3 inch perforated pipe and gravel pack installed for									
groundwater monitoring		32							
		33							
		34							
		35							
		36							
		37							
		38							
		39							
		40							
		41							
		42							

DEPTH 30' Job#8383 SOIL SURVEYS GROUP, INC

EXPLORATION DRILL LOG

BORING NO. B-2

PROJECT 124 Fern Canyon Road	Job #8383	DATE 8/14/23	LOGGED BY JG
DRILL RIG Central Coast Drilling- Tractor	HOLE DIA. 6"	SAMPLER Terzaghi Split Spoon (SPT) & 2.5" Cal	
GROUNDWATER DEPTH:	INITIAL ---	FINAL ---	HOLE ELEV.

DESCRIPTION	SOIL TYPE	DEPTH	SAMPLE	BLOWS PER FOOT	DRY DENSITY (pcf)	WATER CONTENT %	LIQUID LIMIT	PLASTIC LIMIT	POCKET PEN. (tsf)
2" Woodchips									
		1							
Dark olive brown, silty, clayey, fine to coarse	SC/SM		2.5"Cal	3,3,3					
SAND; moist, very loose		2	2-1-8		74.4	11.1	46	34	---
			2-2-9	6(4)	97.2	16.5			---
		3							
Reddish-yellow, silty, clayey, fine to coarse	SC/SM		2.5"Cal	7,10,10					
SAND; moist, medium dense		4	2-3-10		95.1	22.8			---
			2-4-11	20(12)	104.9	21.0			>4.5
		5							
Light yellowish-reddish brown, slightly clayey, silty,	SM		2.5"Cal	21,27,					
fine to coarse decomposed granitic SAND with sub-		6	2-5-12		116.0	11.6			---
angular decomposed granitic gravels; moist, dense			2-6-13	77(46)	110.5	11.1			---
		7							
		8							
Light brown with occasional dark iron staining silty,	SM		SPT	14,16,20					
fine to coarse SAND with scattered decomposed		9							
granitic gravels; moist, medium dense			2-7-14	36	114.6	10.8			---
		10							
		11							
		12							
Light brown with occasional dark iron staining silty,	SM		SPT	15,22,33					
fine to coarse SAND with scattered decomposed		13							
granitic gravel; moist, very dense			2-8-15	55	110.2	6.7			---
		14							
-Bottom of Boring at 13.5'									
-Backfilled with soil cuttings		15							
		16							
		17							
		18							
		19							
		20							

DEPTH 13.5'

SOIL SURVEYS GROUP, INC.

EXPLORATION DRILL LOG

BORING NO. B-3

PROJECT 124 Fern Canyon Road	Job #8383	DATE 8/14/23	LOGGED BY JG
DRILL RIG Central Coast Drilling- Tractor	HOLE DIA. 6"	SAMPLER Terzazghi Split Spoon (SPT)	
GROUNDWATER DEPTH:	INITIAL ---	FINAL ---	HOLE ELEV.

DESCRIPTION	SOIL TYPE	DEPTH	SAMPLE	BLOWS PER FOOT	DRY DENSITY (pcf)	WATER CONTENT %	LIQUID LIMIT	PLASTIC LIMIT	POCKET PEN. (tsf)
Light brown, silty, SAND with organics; moist,									
		1							
Light brown, silty, fine to coarse grained SAND;	SM		SPT	4,6,6					
moist, medium dense		2							
			3-1-16	12	97.3	5.9			---
		3							
Dark grey, silty, clayey, fine to coarse grained	SC/OL		SPT	1,2,4					
SAND with organics; wet, loose		4							
			3-2-17	6	83.0	17.9	59	30	---
		5							
			SPT	10,12,16					
Dark grey, silty, clayey, fine to coarse grained	SC/OL	6							
SAND with organics; wet, medium dense			3-3-18	28	103.7	8.1			---
		7							
		8							
		9							
		10							
White, dark grey with dark iron staining, silty, fine	SM		SPT	17,25,32					
to coarse decomposed granitic SAND with		11							
decomposed granitic gravels; heavily weathered			3-4-19	57	110.9	6.5			---
granite, moist, very dense		12							
-Bottom of boring at 11.5'		13							
-Backfilled with soil cuttings									
		14							
		15							
		16							
		17							
		18							
		19							
		20							

DEPTH 11.5'

SOIL SURVEYS GROUP, INC.

EXPLORATION DRILL LOG

BORING NO. P-1

PROJECT 124 Fern Canyon Road	Job #8383	DATE 8/14/23	LOGGED BY JG
DRILL RIG Central Coast Drilling- Tractor	HOLE DIA. 6"	SAMPLER N/A	
GROUNDWATER DEPTH:	INITIAL ---	FINAL ---	HOLE ELEV.

DESCRIPTION	SOIL TYPE	DEPTH	SAMPLE	BLOWS PER FOOT	DRY DENSITY (pcf)	WATER CONTENT %	LIQUID LIMIT	PLASTIC LIMIT	POCKET PEN. (tsf)
4" woodchips, light greyish brown silty, SAND with organics; dry loose	SM	1							
Light to dark reddish brown iron stained, silty, cemented clayey, fine to coarse grained SAND; moist	SM/SC	2							
		3							
		4							
Light brown with reddish yellow iron staining, slightly clayey, silty, fine to coarse grained cemented SAND; slightly moist	SM/SC	5							
		6							
		7							
		8							
Light brown clayey, silty, fine to coarse grained SAND; moist	SM/SC	9							
-Bottom of boring at 10' - 3inch perforated pipe and gravel pack installed for percolation testing		10							
		11							
		12							
		13							
		14							
		15							
		16							
		17							
		18							
		19							
		20							

DEPTH 10'

SOIL SURVEYS GROUP, INC.

EXPLORATION DRILL LOG

BORING NO. P-2

PROJECT 124 Fern Canyon Road	Job #8383	DATE 8/14/23	LOGGED BY JG
DRILL RIG Central Coast Drilling- Tractor	HOLE DIA. 6"	SAMPLER N/A	
GROUNDWATER DEPTH:	INITIAL ---	FINAL ---	HOLE ELEV.

DESCRIPTION	SOIL TYPE	DEPTH	SAMPLE	BLOWS PER FOOT	DRY DENSITY (pcf)	WATER CONTENT %	LIQUID LIMIT	PLASTIC LIMIT	POCKET PEN. (tsf)
4" woodchips, light greyish brown silty, SAND with organics; dry loose	SM	1							
Light to dark reddish brown iron stained, silty, cemented clayey, fine to coarse grained SAND; moist	SM/SC	2							
		3							
		4							
Light brown with reddish yellow iron staining, slightly clayey, silty, fine to coarse grained cemented SAND; slightly moist	SM/SC	5							
		6							
-Bottom of boring at 5'									
- 3inch perforated pipe and gravel pack installed for percolation testing		7							
		8							
		9							
		10							
		11							
		12							
		13							
		14							
		15							
		16							
		17							
		18							
		19							
		20							

DEPTH 5'

SOIL SURVEYS GROUP, INC.

EXPLORATION DRILL LOG

BORING NO. P-3

PROJECT 124 Fern Canyon Road	Job #8383	DATE 8/14/23	LOGGED BY JG
DRILL RIG Central Coast Drilling- Tractor	HOLE DIA. 6"	SAMPLER N/A	
GROUNDWATER DEPTH:	INITIAL ---	FINAL ---	HOLE ELEV.

DESCRIPTION	SOIL TYPE	DEPTH	SAMPLE	BLOWS PER FOOT	DRY DENSITY (pcf)	WATER CONTENT %	LIQUID LIMIT	PLASTIC LIMIT	POCKET PEN. (tsf)
4" woodchips, light greyish brown silty, SAND with organics; dry loose	SM	1							
Light to dark reddish brown iron stained, silty, cemented clayey, fine to coarse grained SAND; moist	SM/SC	2							
		3							
-Bottom of boring at 3'									
- 3inch perforated pipe and gravel pack installed for percolation testing		4							
		5							
		6							
		7							
		8							
		9							
		10							
		11							
		12							
		13							
		14							
		15							
		16							
		17							
		18							
		19							
		20							

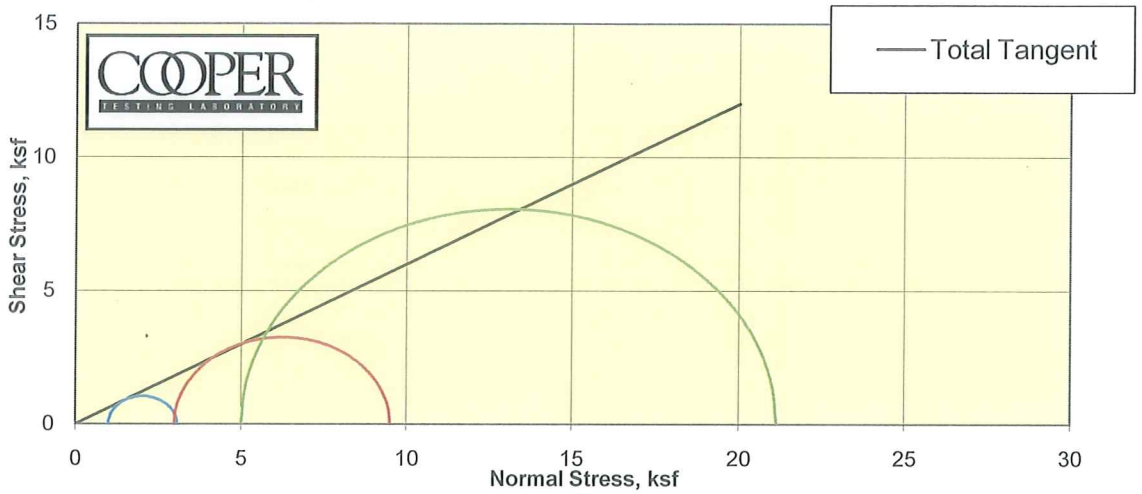
DEPTH 3'

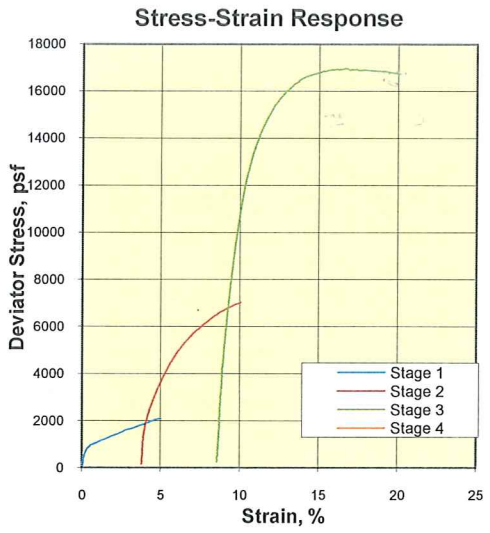
SOIL SURVEYS GROUP, INC.

APPENDIX B

STAGED CONSOLIDATED UNDRAINED TRIAXIAL COMPRESSION TEST

Staged Consolidated Undrained Triaxial Compression ASTM D4767m





CTL Number:	699-390
Client Name:	Soil Surveys Inc
Project Name:	124 Fern Canyon
Project Number:	8383
Date:	9/1/2023 By: MD/DC
Total C	0.000 ksf
Total phi	31.0 degrees
Eff. C	N/A ksf
Eff. Phi	N/A degrees ©

Stage	1	2	3	4
Boring	B-2			
Sample	2-2-8			
Depth	2-2.5			
Visual Description	Dark Brown Clayey SAND w/ organics			
MC (%)	16.5			
Dry Density (pcf)	97.2			
Saturation (%)	64.1			
Void Ratio	0.669			
Diameter (in)	2.38			
Height (in)	5.00			
	Final			
MC (%)	20.3	17.7	13.8	
Dry Density (pcf)	106.3	111.1	119.5	
Saturation (%)	100.0	100.0	100.0	
Void Ratio	0.528	0.461	0.359	
Diameter (in)	2.28	2.27	2.25	
Height (in)	4.98	4.79	4.55	
Cell Pressure (psi)	65.9	79.8	93.7	
Back Pressure (psi)	59.0	59.0	59.0	
	Total Stresses At:			
Strain (%)	5.0	5.0	5.0	
Deviator (ksf)	2.087	6.512	16.130	
Excess PP (psi)				
Sigma 1 (ksf)	3.081	9.508	21.127	
Sigma 3 (ksf)	0.994	2.995	4.997	
P (ksf)	2.037	6.251	13.062	
Q (ksf)	1.044	3.256	8.065	
Stress Ratio	3.101	3.174	4.228	
Rate (in/min)	0.0243	0.0240	0.0242	

APPENDIX C

PERCOLATION TEST LOGS

PERCOLATION TEST LOG

HOLE # P-1

Project: 124 Fern Canyon Road	Job# 8383	Date:8.15.23	Tested By: JG

Hole Depth	Initial (Ft):	10.41	R.P.= 0.10' above adjacent grade
	Final (Ft):	10.39	

Time	Status	Time INT. (Min)	Elapsed Time (Min)	R.P. to Water (FT)	Drop (Inches)	Percolation Rate ("/HR)	Percolation Rate (MIN/")
	Pre-sat	---	---	---	---	---	---
14:22	Refill	0:00	0	9.61	---	---	---
14:52	Falling	0:30	30	9.61	0.00	0.00	#DIV/0!
15:22	Falling	0:30	60	9.61	0.00	0.00	#DIV/0!
15:52	Falling	0:30	90	9.62	0.12	0.24	250.00
16:22	Falling	0:30	120	9.62	0.00	0.00	#DIV/0!
16:52	Falling	0:30	150	9.63	0.12	0.24	250.00
17:22	Falling	0:30	180	9.63	0.00	0.00	#DIV/0!
17:52	Falling	0:30	210	9.64	0.12	0.24	250.00
18:22	Falling	0:30	240	9.64	0.00	0.00	#DIV/0!

FINAL PERCOLATION RATE:	<0.24	Inches/Hour
	>250.00	Minutes/Inch

SOIL SURVEYS GROUP, INC.

PERCOLATION TEST LOG

HOLE # P-2

Project: 124 Fern Canyon Road	Job# 8383	Date:8.15.23	Tested By: JG

Hole Depth	Initial (Ft):	5.17	R.P.= 0.00' above adjacent grade
	Final (Ft):	5.16	

Time	Status	Time INT. (Min)	Elapsed Time (Min)	R.P. to Water (FT)	Drop (Inches)	Percolation Rate ("/HR)	Percolation Rate (MIN/")
	Pre-sat	---	---	---	---	---	---
14:23	Refill	0:00	0	3.46	---	---	---
14:53	Falling	0:30	30	3.55	1.08	2.16	27.78
15:23	Falling	0:30	60	3.60	0.60	1.20	50.00
15:53	Falling	0:30	90	3.65	0.60	1.20	50.00
16:23	Falling	0:30	120	3.70	0.60	1.20	50.00
16:53	Falling	0:30	150	3.77	0.84	1.68	35.71
17:23	Falling	0:30	180	3.81	0.48	0.96	62.50
17:53	Falling	0:30	210	3.86	0.60	1.20	50.00
18:23	Falling	0:30	240	3.91	0.60	1.20	50.00

FINAL PERCOLATION RATE:	1.20	Inches/Hour
	50.00	Minutes/Inch

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PERCOLATION TEST LOG

HOLE # P-3

Project: 124 Fern Canyon Road	Job# 8383	Date:08.15.23	Tested By: JG

Hole Depth	Initial (Ft):	2.99	R.P.= 0.10' above adjacent grade
	Final (Ft):	2.98	

Time	Status	Time INT. (Min)	Elapsed Time (Min)	R.P. to Water (FT)	Drop (Inches)	Percolation Rate ("/HR)	Percolation Rate (MIN/")
	Pre-sat	---	---	---	---	---	---
14:24	Refill	0:00	0	2.73	---	---	---
14:54	Falling	0:30	30	2.85	1.44	2.88	20.83
15:24	Falling	0:30	60	2.89	0.48	0.96	62.50
15:54	Falling	0:30	90	2.92	0.36	0.72	83.33
16:24	Falling	0:30	120	2.96	0.48	0.96	62.50
16:24	Refill	0:00	120	2.30	---	---	---
16:54	Falling	0:30	150	2.50	2.40	4.80	12.50
17:24	Falling	0:30	180	2.54	0.48	0.96	62.50
17:54	Falling	0:30	210	2.58	0.48	0.96	62.50
18:24	Falling	0:30	240	2.62	0.48	0.96	62.50

FINAL PERCOLATION RATE:	0.96	Inches/Hour
	62.50	Minutes/Inch

SOIL SURVEYS GROUP, INC.

APPENDIX D

GENERAL SEPTIC SYSTEM OPERATION AND MAINTENANCE

SOIL SURVEYS GROUP INC.

103 CHURCH ST • SALINAS, CALIFORNIA 93901 • TELEPHONE (831) 757-2172

GENERAL SEPTIC SYSTEM OPERATION AND MAINTENANCE

Each homeowner should use some precautions that may not have been necessary in your prior experience, especially if you have previously had municipal sewer service.

Septic tanks use anaerobic bacteria (living without oxygen) to break down and digest organic wastes. When the bacteria are killed or severely reduced in number, sludge will build up more rapidly. This can require more frequent, expensive pumping. A severe kill of the septic tank bacteria can also lead to drain field malfunctions or severe failures; these are very expensive to repair or replace. Following are my suggestions:

1. Sanitary napkins and tampons or any part of disposable diapers should never be flushed down the toilet. Younger family members and overnight guests should be judiciously reminded of this.

2. Do not flush kleenex or facial tissues down the toilet; do dispose of these tissues in a waste basket. Flushing facial tissue down the toilet can double or triple the quantity of paper in the septic tank. Paper decomposes very slowly and accounts for a high percentage of sludge buildup.

3. Do not flush hair from hair brushes, combs, showers or bath tubs down the toilet. Use the wastebasket instead. Hair does not readily decompose, and it can be surprising how much matted hair will accumulate in a septic tank.

4. No bleach stronger than household bleach (5.25% chlorine) should ever be used in wash machines or any place where it can be washed down sewer drains.

5. No more than 1/4 cup of household bleach should be used per 16 gallon load of wash. For smaller loads, use less bleach (if you use it at all). Let the bleach do its work in the wash machine, not in the septic tank where it is destructive.

6. Do not use bleach to clean toilet bowls, bath tubs, lavatories or sinks. Use toilet bowl cleaners labeled "Safe for septic tanks". Use cleansers for cleaning bath tubs and sinks, preferably those that do not contain chlorine.

7. If your cleanser contains chlorine bleach, make sure it is well used up by scrubbing before flushing down a sink or tub drain. Do not flush fresh chlorine type cleansers down the drain.

8. Use your garbage disposal sparingly if at all. Prolific use of garbage disposal places a tremendous load on septic tanks. Use your garbage disposal as a convenience for plate scrapings and cleanup or for vegetable and fruit cuttings when preparing meals at the kitchen sink. The larger part of wet garbage should be bagged and taken to the garbage can.

9. Try not to drop egg shells or onion skins down the garbage disposal; these items do not decompose readily.

10. Be sure to find and mark the locations of your septic tank, the manhole openings into your septic tank, the diversion valve, the distribution boxes, your septic system drainfield and the monitoring pipes installed in drainfield seepage pits. Also locate and mark the cleanout risers for subsurface drains that may have been

installed to protect your house and septic system from subsurface rain water flow. The septic system installer should provide you with an **As-Built Plan** of your septic system and related subsurface drain; be sure to keep that Plan in a convenient place for ready reference and to pass the Plan to the new owners if you sell your house. In addition please show the new owners (or their real estate agent) the locations of all septic system facilities on the ground.

11. Your septic tank should be inspected for sludge buildup by a septic tank pumper or qualified inspector at least once every three years and pumped regularly as necessary. If infants or teen aged children reside in the house, the inspection should be made every two years and the tank pumped as needed.

12. Anaerobic bacterial additives eg. "Robic" or other are recommended for addition to your system after pumping and at least once per year thereafter to enhance the bacterial action in your septic tank and drain field. These additives are available from the septic tank pumper, from Orchard Supply and other hardware stores.

13. If you have a diversion valve with your system we recommend that the valve be turned at least once per year at the same time each year.

14. During periods of heavy rainfall or sluggish operation of your household toilets and drains, check the water level in the drain field monitoring pipes; if the water level is within 5 feet of the ground surface, turn the diversion valve to switch drain fields immediately.

15. Check the distribution boxes at least once per year for equal distribution of effluent to the drain field outlet lines; if the box has settled so that the effluent is not being distributed equally, contact the septic system installer immediately for corrective action.

16. Flush any subsurface drains at least once per year through the cleanout risers by inserting a garden hose and turning on the water full volume until the discharge from the drain outlet is clear of silt.

17. Make sure that all silt, grass and weeds are cleared away from the outlets of any subsurface drains so that water can discharge freely.

The way you use and maintain your septic tank system does significantly affect the frequency of costly pumping and maintenance as well as costly replacement of drainfields. If you have questions regarding the location of your septic system or problems of operation and maintenance, contact the septic system installer, Soil Surveys Group, Inc. or the environmental health officer at the Monterey County Department of Health.

Prepared by:

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