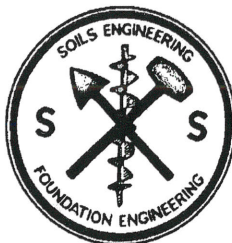


Exhibit E

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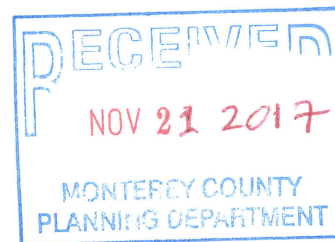
SOIL



SURVEYS GROUP INC.

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

21B170429



May 18, 2017

Job #6833

Alessia Ucelli
c/o Congleton Architect
Attn: Brian Congleton, AIA
P.O. Box 4116
Carmel, CA 93921

Dear Ms. Ucelli:

Submitted herewith is the report of our Geotechnical Investigation for a proposed new single family residence to be constructed at 25910 Canada Way, APN 015-042-004, in Carmel, California. Two borings were drilled on April 6, 2017, for geotechnical investigation purposes. Laboratory tests were subsequently made on driven soil core samples taken from the test borings to determine the near surface and subsurface soil conditions and suitability for the proposed new single family residence. 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 investigation or this report, please contact us.

Very truly yours,

SOIL SURVEYS GROUP, INC.

Belinda Taluban

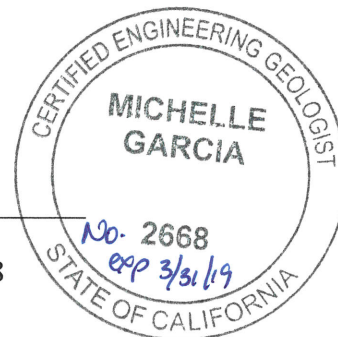
Belinda A. Taluban, P.E.
R.C.E. 44217



BAT/MMG/tr

Michelle Garcia

Michelle M. Garcia, P.G.
Engineering Geologist 2668

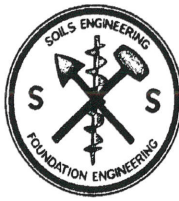


cc. Monterey County Resource Management Agency Divisions of Planning and Building Inspection

PLN 170429

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SOIL**SURVEYS
GROUP INC.**

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GEOTECHNICAL INVESTIGATION***FOR THE PROPOSED NEW SINGLE FAMILY RESIDENCE******25910 CANADA WAY******APN 015-042-004******IN CARMEL, CALIFORNIA******FOR ALESSIA UCELLI******MAY 18, 2017; JOB #6833*****I. INTRODUCTION:**

This Geotechnical Investigation was made to determine the suitability of the soils at the project site for the proposed new single family residence to be constructed at 25910 Canada Way, APN 015-042-004, in Carmel, California. Two borings were drilled on April 6, 2017 for geotechnical investigative purposes. Core samples were taken from the borings for laboratory testing. 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 new residence.**
- 2. Expansive, unsuitable or unstable soil conditions, if any.**
- 3. Foundation and retaining wall design criteria for the proposed new residence.**
- 4. Subsurface groundwater and soil moisture considerations.**
- 5. Surface drainage considerations.**
- 6. Analysis of seismic hazards and seismic design factors per the 2016 California Building Code.**

Site Setting: The project consists of a proposed new single family residence. The project is located on a 1.03 acre parcel on the west side of Canada Drive. The parcel is approximately 0.36 kilometers north of West Carmel Valley Road. The general topography of the vacant parcel is sloping from the northwest to the southeast towards Canada Drive, with a majority of these slopes being greater than 25 percent. The location of the proposed new residence is on an existing cut and fill pad. There are no obvious signs of major soil erosion, slippage or mass movement in the areas surrounding the proposed residence.

II. LABORATORY TEST DATA¹:

Nine moisture density tests 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 2½-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	Pocket Penetrometer Tons S.F.
B-1	2-2.5	24.2	78.2	19	>4.5
B-1	4-4.5	20.8	80.6	39	---
B-1	8.75-9.25	40.0	66.0	30(18)*	>4.5
B-1	9.25-9.75	48.6+	62.8+	69(41)/9"*	>4.5
B-1	9.75-10.25	34.2	77.9	50/6"	---
B-1	13.75-14.25	24.6	74.7	99/9"	---
B-2	1.75-2.25	39.2	66.1	96/9"	---
B-2	3.0-3.45	40.9	54.3	50/5.5"	---
B-2	13.83-14.25	46.5	65.7	94/9"	>4.5

* = 2.5 -inch mod. Cal, not SPT () = Blow counts adjusted to approximate SPT values

+ = Direct Shear Test - Average values shown

Four Sieve Analysis tests were made from the 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	2-2.5	97	92	83	80	76	70	68
B-1	4-4.5	87	76	64	59	56	46	42
B-1	8.75-9.25	50	43	40	38	37	30	25
B-2	1.75-2.25	97	95	93	93	92	91	91

¹Boring Logs are located in Appendix A

Four plasticity index tests were performed on driven core samples. Results of these tests are as follows:

PLASTICITY INDEX TEST						
Test Hole No.	Depth/ Feet	% Passing Sieve No. 40	% Passing Sieve No. 200	Liquid Limit	Plastic Limit	Plasticity Index
B-1	2-2.5	76	68	89	29	60
B-1	4-4.5	56	42	55	26	29
B-1	8.75-9.25	37	25	78	58	20
B-2	1.75-2.25	92	91	102	39	63

The test results for the samples taken from the borings indicate that the fine fraction of the near surface and deeper subsurface slightly clayey, silty, shale is moderately to highly expansive and slightly to moderately plastic.

One Direct Shear test was used from a nearby site. Results of these tests are summarized as follows (see Appendix B for full report sheets):

Boring No.	Depth/ Ft.	Internal Frict. Angle, ϕ°	Cohesion, C p.s.f.	Soil Weight p.c.f.	Description of soil
6772	10.5-11	30.1	60	81.9	Medium stiff, light brown sandy CLAY (CL)*

Boring 1 was located north of the southeasterly cut in the grade. The near surface soil consists of loose, silty sand with scattered, fractured shale gravels to a depth of 1.0 feet underlain by very stiff, sandy silt with scattered, fractured, shale gravels to a depth of 2.5 feet; below 2.5 feet in depth the soil consists of hard, slightly clayey, fine grained, sandy silt to a depth of 9.5 feet; and of hard, Monterey shale with thin veins of clay to a depth of 13.5 feet; below 13.5 feet in depth the soil consists of clayey, silt with traces of sand to a depth of 14.5 feet over hard, siliceous shale to the bottom of the boring at 17.0 feet.

Boring 2 was located southwest of the northwesterly cut in the grade. The near surface soil consists of firm to stiff, silt with scattered, fractured, shale gravels to a depth of one foot and of hard, siliceous shale to a depth of 2.5 feet; below 2.5 feet in depth the soil consists of hard, fractured shale to a depth of feet 9.0 feet; and of hard, slightly clayey, cemented silt to the bottom of the boring at a depth of 14.25 feet.

No groundwater was observed in the geotechnical borings to a maximum depth of 17.0 feet, prior to backfilling the holes with soil cuttings on the date of drilling. The actual depth to groundwater during rainy months 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 or unstable soil conditions were found at the proposed new residence location except for loose near surface soils to a depth of one foot and of moderately to highly expansive soils at footing depths. In our opinion, the site is suitable for the proposed building with the recommendations made herein, specifically the recommendations for recompaction of loose soil and mitigation for expansive soil.

IV. RECOMMENDED FOUNDATION DESIGN CRITERIA:

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

Allowable foundation pressures after proper compaction of the building pad areas are:

Continuous footings = 1500 p.s.f.

Isolated rectangular footings = 1800 p.s.f.

We recommend that continuous footings shall be reinforced with four #4 steel reinforcement bars, two placed near the bottom of footing and two placed at the top of the footing. Spread footings shall also meet the minimum requirements of the 2016 California Building Code and Monterey County building ordinances for width, thickness, embedment and reinforcement steel. The proposed new residence and any future additions shall be designed in strict accordance with the requirements specified in the 2016 California Building Code, or latest approved edition, to resist seismic forces.

All 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 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 IX-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 and be placed 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 and expansive near surface soil conditions, the following measures are recommended:

1. Any existing loose soil within the proposed building envelope and extending a minimum of five feet in all directions outside of the proposed building foundations shall be recompact **as necessary** to 90 percent relative compaction at the direction of Soil Surveys Group, Inc. prior to placing any additional building pad fill or finishing the building pad subgrade. Soil Surveys Group, Inc. shall determine the depth of recompaction, if any, within the building perimeter.
2. If the new building will bear on both cut and fill, the cut portion of the building pad shall be subexcavated and recompact 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.
3. Spread footings shall be constructed a minimum of 18 inches for the proposed new residence as measured from the lowest adjacent grade and continuous non-retaining footings shall be reinforced with four steel reinforcement bars, two placed near the bottom of the footing and two at the top of the footing.
4. All 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.
5. 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 new or existing building foundations.
6. Soil Surveys Group, Inc. shall be retained to inspect and test the recompact of all loose soil and engineered fill within the building pad perimeter and shall inspect and approve foundation and any retaining wall footing excavations for soil bearing conditions. Soil Surveys Group, Inc. shall also inspect and approve the subgrade below concrete floor and garage slabs-on-grade prior to placement of reinforcing steel and shall inspect and approve the installation of all roof and site 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 rock 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.

Ms. Alessia Ucelli
May 18, 2017
Job #6833

Rain gutter downspouts shall discharge onto concrete splash blocks, or shall discharge into collector pipes. The building site, any new paved areas and ground adjacent to the residence 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 subsurface drain system, but 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:

<i>Friction Angle</i>	ϕ	= 30.1 °
<i>Cohesion</i>	c	= 60 p.s.f.
<i>Soil Weight,</i>	w	= 81.9 p.c.f.
<i>Equivalent fluid pressure, active</i>		= 30 pounds per square foot per foot of depth for Level Grade
<i>Equivalent fluid pressure, active</i>		= 40 p.c.f. with 2:1 slope behind wall
<i>Equivalent fluid pressure, at rest,</i>		= 45 p.c.f., restrained condition
<i>Equivalent fluid pressure, passive</i>		= 240 p.c.f.
<i>Sliding friction</i>	f	= 0.35
<i>Allowable Footing Toe Pressure</i>		= 2700 p.s.f. plus 1/3 additional for seismic force (if added)

Retaining walls that are part of or within ten feet of a building should include the seismic force of the soil against the wall. The estimated seismically generated ground accelerations to be used for this area are:

PAGA = 0.366g

RHGA = 0.26g = k_h

w = 81.9 p.c.f.

The resultant seismic force is calculated by the formula: $3/8 w H^2 k_h$ per linear foot of retaining wall, or for this case **$8.0 H^2$, where H is the height of the retaining wall. These forces, where needed, should be applied at a height of $0.6H$ above the base of the retaining wall and must be combined with the force produced by active soil pressure.**

These retaining wall design criteria are based on a fully drained condition. Therefore, we recommend that a four-inch diameter perforated NDS or PVC pipe be installed behind or along the top of the footing, holes placed down, behind all walls that retain earth. The pipe shall be covered with a 12-inch wide envelope of 3/4-inch drain rock or Class 2 Permeable Material (per Caltrans Standard Specifications Section 68-1.025) which shall extend to within one foot of the ground surface. Filter fabric shall be installed over the top of the drain rock. No gravel shall be placed below the pipe. The remainder of the trench can be backfilled with native soil. As an alternative to installing drain rock or permeable material, 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.

III. RECOMMENDED SPECIFICATIONS:

A. GRADING:

The building pads, extending a minimum of five feet in each direction past new 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 residence. On site surface or subsurface grass, roots, deleterious material, or brush (if any) within any new building pad areas shall be removed. Soil Surveys Group, Inc. should determine if any subexcavation is necessary after clearing and grubbing are completed. 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 pads.

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 pads shall be compacted to at least 90 percent relative compaction, and any cut portions of a new building pads, 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. All fills placed on slope grades of 5:1 or greater shall be provided with a keyway excavated a minimum of two feet below grade, a minimum of 10 feet wide and at a 2% slope into the slope. The bottom of the keyway should be moisture conditioned, compacted (if necessary) and approved by Soil Surveys Group, Inc. prior to backfilling in eight inch loose lifts and compacting the backfill to 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 1557-09*. Subgrade in existing soil beneath the new building pad shall be compacted to 90 percent relative compaction unless waived by the Geotechnical engineer. Subgrade soil below any new pavement shall 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 pad 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 2 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
3/8" to 1/2"	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 recompact 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 steel 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 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 produce an earthquake that could impact the project site:

Fault Name	Approximate Distance to Site	Orientation from Site	Data Source
Hatton Canyon (Concealed)	1.11 km	Southwest	Clark & others (1997)
Sylvian Thrust (Inferred)	2.70 km	Northeast	Clark & others (1997)
Cypress Point (Concealed)	2.72 km	North	Clark & others (1997)
Monterey Bay-Tularcitos	5.0 km	Northeast	Uniform Building Code, 1997
San Gregorio (Sur Region)	9.1 km	Southwest	Uniform Building Code, 1997
Rinconada	19.0 km	Northeast	Uniform Building Code, 1997
San Andreas (Creeping Section)	31.75 km	Northeast	Uniform Building Code, 1997
Zayante-Vergeles	39.0 km	Northeast	Uniform Building Code, 1997
San Andreas (Pajaro Section)	45.9 km	Northeast	Uniform Building Code, 1997

The proposed new single family residence and any future additions must be designed in strict compliance with the 2016 California Building Code, or current edition 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 2016 California Building Code (CBC):

Site Class	Latitude	Longitude	S _s	S ₁	F _a	F _v
C	36.54724°	-121.89817°	1.539	0.572	1.00	1.30

Frame and semi-rigid structures with proper strengthening connections and hold-down fasteners (where needed) are recommended for the proposed new residence and any future building additions. With proper design parameters, seismic damage to the building 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 and lateral spreading tend to occur in loose, fine saturated sands and in places where the liquefied soils can move toward a free face (e.g. a cliff or ravine). The deeper soils underlying the project site are typically hard, slightly clayey, silts and shale. No ground water was encountered in the geotechnical borings to a maximum depth of 17.0 feet. Considering the deeper, hard, slightly clayey, silty and shale soils and lack of presence of groundwater, the potential risk for occurrence of damaging liquefaction or lateral spreading is considered to be low during a strong seismic event.

Ms. Alessia Ucelli
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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.

X. UNFORESEEN OR UNUSUAL CONDITIONS:

If any unforeseen or unsuitable soils conditions are found during grading or construction 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 clayey soil within the proposed building site.
2. Soil with a high organic content at the finished subgrade of the building pad.
3. Any other unforeseen conditions that would require remedial action by the Geotechnical engineer, project engineer, architect or contractor.

XI. 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 new residence, 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 Sections V and VIII herein.
2. Design criteria for a spread footing foundation system are provided in Sections IV and V. Design criteria for any proposed or future retaining walls are provided in Section VII. Design criteria for concrete slabs-on-grade are provided in Sections IV, V and VIII herein.
3. Surface storm water runoff should be carefully controlled around the proposed building pad and foundations to provide positive drainage away from any 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, 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 IX herein per the 2016 CBC. The potential for damaging earthquake related liquefaction is considered to be low at the project site.

Ms. Alessia Ucelli
May 18, 2017
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.II. 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 two 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 X).

This report is issued with the understanding that it is the responsibility of the Owner or her 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 Ms. Alessia Ucelli, her 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 proposed new single family residence is to be constructed as shown on the Figure II map enclosed herein. The use of this report, boring 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.



BASE: U.S. Geological Survey, Monterey 7.5' Quadrangle, Carmel, CA

FIGURE I: VICINITY MAP

SCALE
1" = 2000'

By: Soil Surveys Group, Inc.
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Salinas, CA 93901
831-757-2172

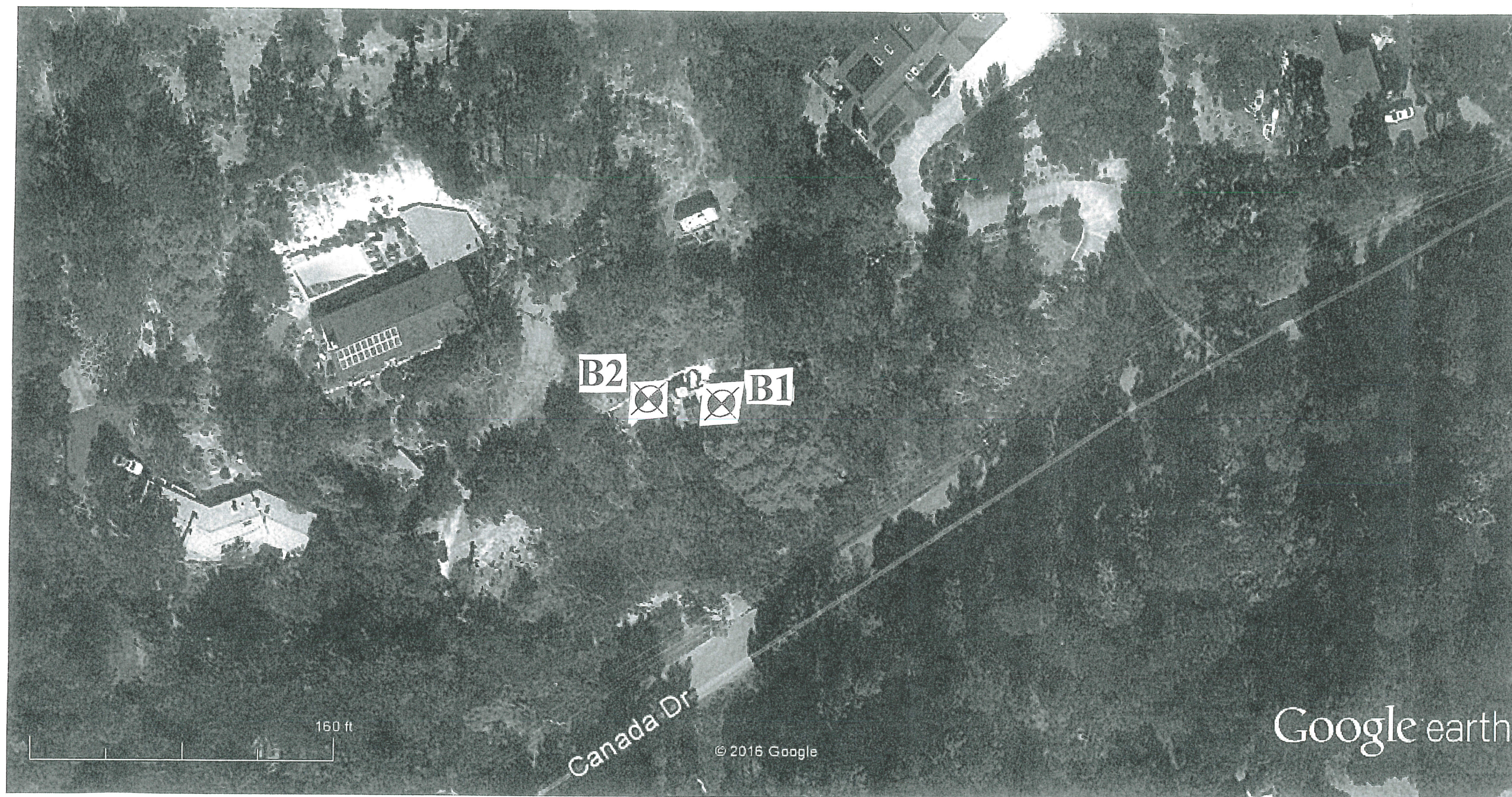


FIGURE II



Boring Locations (approx.)

By: Soil Surveys Group, Inc.
 103 Church Street
 Salinas, CA 93901
 ph. 831-757-2172
 fax 831-755-7330
 email: info@soilsurveys.net

BASE: 25950 Canada Drive, Carmel
 APN 015-042-005
 Image from Google Earth, May 2017 - Job #6833

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/ft² 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

HOLE NO. B-1

PROJECT 25950 Canada Drive, Carmel - Ucelli Residence

Job #6833

DATE 4.6.17

LOGGED BY JG

DRILL RIG Cenozoic B-24

HOLE DIA. 6" Solid Flight SAMPLER Terzaghi Split Spoon (SPT) & 2½" 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)

Light grayish-tan, silty SAND with scattered, fractured shale gravels; dry, loose

SM

1

Light gray, sandy SILT with scattered, fractured shale gravels; moist, very stiff

ML

2

SPT

XXX

19

78.2

24.2

89

29

>4.5

3

Light tan, white-tan, yellowish-white, slightly clayey, fine grained sandy SILT; slightly moist, hard

ML

4

SPT

XXX

39

80.6

20.8

55

26

5

6

7

8

9

2½" Cal

XXX

30 (18)

66.0

40.0

78

58

>4.5

10

XXX

69(41)/9"

62.8

48.6

Shear

Test

>4.5

Light yellowish-tan, Monterey SHALE with iron staining and thin veins of light gray clay; slightly moist, very hard

ML

11

SPT

50/6"

77.9

34.2

12

13

Light reddish-yellow, clayey SILT with traces of sand and light gray, siliceous shale; slightly moist, very hard

ML

14

SPT

XXX

99/9"

74.7

24.6

Light gray SHALE; slightly moist, very hard

ML

15

(Hard drilling)

16

(Auger refusal at 17.0')

17

Light whitish-yellow, light tan, SHALE; slightly moist, hard. Bottom of boring at 17.0'

ML

18

SPT

50/0"

No

sample

recovery

19

20

DEPTH 17.0'

SOIL SURVEYS GROUP, INC.

EXPLORATION DRILL LOG

HOLE NO. B-2

PROJECT 25950 Canada Drive, Carmel - Ucelli Residence

Job #6833

DATE 4.6.17

LOGGED BY JG

DRILL RIG Cenozoic B-24

HOLE DIA. 6" Solid Flight SAMPLER Terzaghi 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 gray, SILT with scattered, fractured shale
gravels; dry, firm to stiff

ML

1

Light grey, white, siliceous SHALE; slightly moist,
very hard

ML

2

SPT

XXX

96/9"

66.1

39.2

102

39

Light whitish-yellow tan, fractured SHALE; slightly
moist, hard

ML

4

SPT

50/5.5"

54.3

40.9

Light yellowish-whitish tan, fractured SHALE;
slightly moist, hard

ML

9

SPT

50/4"

No

Sample

Recovery

Light gray, slightly clayey, cemented SILT/siltstone;
slightly moist, very hard. Bottom of boring at 14.25'

ML

14

SPT

XXX

94/9"

65.7

46.5

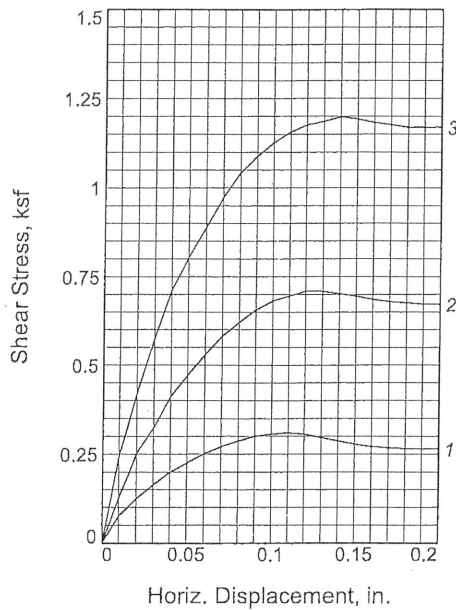
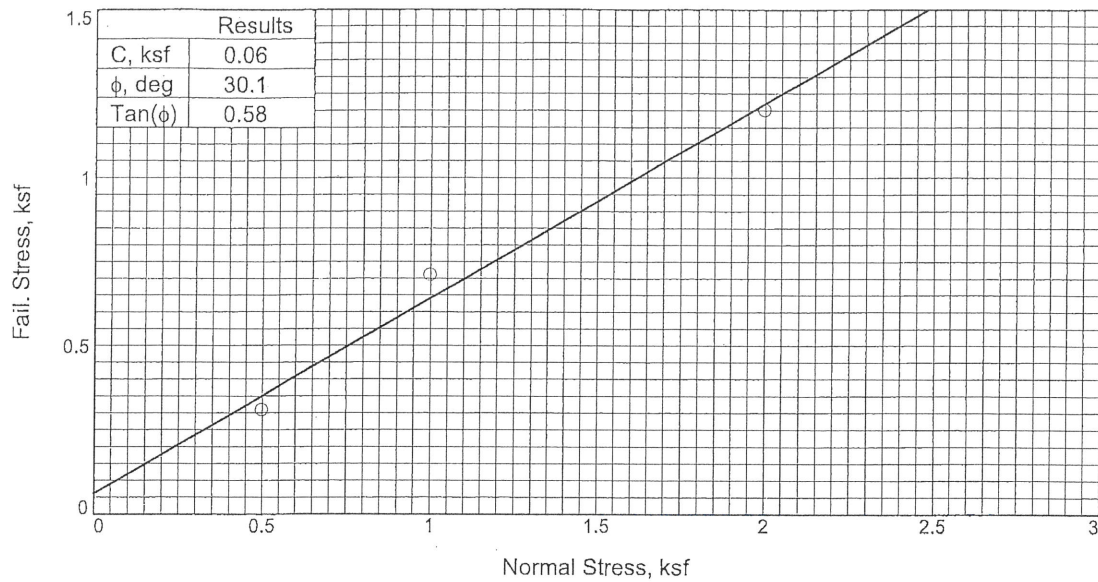
>4.5

DEPTH 14.25'

SOIL SURVEYS GROUP, INC.

APPENDIX B

DIRECT SHEAR TEST FROM NEARBY SITE



Sample No.		1	2	3
Initial	Water Content, %	47.5	47.5	47.5
	Dry Density, pcf	55.5	55.4	55.5
	Saturation, %	66.9	66.8	67.1
	Void Ratio	1.7015	1.7058	1.6972
	Diameter, in.	1.93	1.93	1.93
	Height, in.	1.00	1.00	1.00
At Test	Water Content, %	61.9	61.5	62.2
	Dry Density, pcf	55.5	55.4	55.6
	Saturation, %	87.5	86.7	88.2
	Void Ratio	1.6988	1.7026	1.6934
	Diameter, in.	1.93	1.93	1.93
	Height, in.	1.00	1.00	1.00
Normal Stress, ksf		0.50	1.00	2.00
Fail. Stress, ksf		0.31	0.71	1.20
Displacement, in.		0.10	0.12	0.14
Ult. Stress, ksf				
Displacement, in.				
Strain rate, %/min.		0.02	0.02	0.02

Sample Type: 2" Liner

Description: Med. stiff, light brown sandy
CLAY(CL)*

Assumed Specific Gravity= 2.40

Remarks: *Probably DIATOMECEUOS. Very
high moisture content and very low density.

Plate _____

Client: Soil Surveys Group, Inc.

Project:

Location: B-2

Depth: 10.5-11'

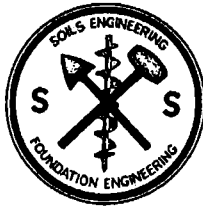
Proj. No.: 6772

Date Sampled:

DIRECT SHEAR TEST REPORT

Soil Mechanics Lab
Oakland, California

Tested By: MA _____

SOIL**SURVEYS
GROUP INC.**

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

November 17, 2017
Job #6833

Ms. Alessia Ucelli
c/o Brian Congleton, AIA
P.O. Box 4116
Carmel, CA 93921

Re: Unpermitted Grading and Slope Stability at 25910 Canada Way, APN 015-042-004, in Carmel, California

Dear Ms. Ucelli;

We have inspected the site with regards to the existing un-permitted grading in the area of the proposed house to be located at 25910 Canada Way, APN 015-042-004, in Carmel, California. Monterey County Resource Management Agency is considering a requirement that the current slope be restored to the prior original grade before the construction can commence for the proposed new single family residence. The previous grading work was accomplished prior to the design of the proposed building and our Geotechnical investigation. The residence was designed to accommodate the current slope conditions with retaining walls incorporated into the design to account for the step down in slope. The design of the residence would not change if the slope was regraded, however the slopes would then need to be cut back to their current elevations for the construction of the new residence. The proposed construction would clean up the debris on the slopes and install retaining walls to support the slope materials from any movement.

A Geotechnical investigation and report were prepared in May 2017. Our boring logs indicate a thin layer (three to four feet generally) of soil over Monterey Shale bedrock. This was observed in the ascending slope on the date of our investigation and subsequent site inspection. Monterey Shale is typically a highly fractured material that is prone to erosion and can be susceptible to sliding. There was no evidence of erosion or sliding during our site inspections.

In order to restore the slope to the assumed original ground, a keyway (the length of which would extend the entire length of the pad) would need to be excavated and backfilled downslope in order to place fill material and rebuild the slope. There are numerous trees on the descending slope between the pad and the roadway below (Canada Drive). The keyway and compactive efforts in rebuilding the slope would have a serious impact on the surrounding trees and other vegetation on this descending slope and would most likely either cause damage to the trees or the need for their removal in order to achieve the required keyway length needed to support the slope fill. The material needed to properly replace the slope "in-kind", would need to be placed in lifts and properly compacted. The backfill material generally recommended for this type of work generally consists of sands and/or gravels, which would need to be imported to the site. These materials, while they compact well, do not have comparable strength to that of the underlying original bedrock materials. During construction these materials would then be excavated out and hauled off and care would need to be taken during pad grading and the foundation installation to ensure materials are consistent across the building pad and at footing depths as recommended in our investigation report.

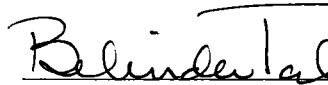
Ms. Alessia Ucelli
November 17, 2017
Job# 6833
Page 2.


Due to concern over increased erosion potential during restoration grading, the impacts of importation and subsequent removal of engineered fill, and direct impacts on native vegetation at the site, we conclude that the regrading of the subject slopes is not recommended prior to the construction of the residence.

If you have any questions regarding this letter, please contact us. It has been a pleasure working with you on this project.


Very truly yours,


SOIL SURVEYS GROUP, INC.


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



BAT/MMG/jg/mmg


Michelle Garcia, C.E.G.
Engineering Geologist 2668



cc. Monterey County Resource Management Agency Divisions of Planning and Building Inspection

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