



Geotechnical Exploration, Inc.

SOIL AND FOUNDATION ENGINEERING • GROUNDWATER • ENGINEERING GEOLOGY

16 March 2020

La Jolla Reserve, LLC
c/o Coston Architects, Inc.
8415 La Jolla Boulevard, Suite 4
La Mesa, CA 91942
Attn: Mr. Kent Coston

Job No. 16-11251

Subject: **Response to City of San Diego Cycle Review Comments LDR-Geology: Project No. 508125, Cycle Issue 11**
Proposed Foxhill Residence
7007 Country Club Drive
La Jolla, California

Dear Mr. Coston:

In accordance with your request, **Geotechnical Exploration, Inc.** herein responds to City of San Diego LDR-Geology review comments in a memo with a completion date of September 18, 2019, regarding the planned residential (guesthouse) project at the subject property. The reviewer has reviewed our "Report of Limited Geotechnical Investigation Proposed Storm Water BMPs," dated April 20, 2017; "Development Plans – Foxhill Guest Quarters, 7007 Country Club Drive, San Diego, CA 92037," prepared by Coston Architects, Inc., dated July 9, 2019 (their project no. 1575.03); and *conceptual grading plans* prepared by Snipes-Dye Associates, dated June 6, 2019.

COMMENTS AND RESPONSES

Issue No. 3: Submit an addendum geotechnical report or update letter that specifically addresses the proposed development for the purposes of environmental review and the following: (Outstanding Issue from Cycle 2)

GEI Response: We are providing this addendum update letter for the subject site that specifically addresses the proposed development for the purposes of environmental review and the following issues.

Issue No. 4: The project's geotechnical consultant must circumscribe the area of remedial grading recommended on the geologic/geotechnical map. (Outstanding Issue from Cycle 2)

GEI Response: We have included a site specific geologic/geotechnical map that circumscribes the area of recommended remedial grading on a topographic-based map with this update letter as Figure No. Ia.

Issue No. 5: Provide geologic/geotechnical cross-sections representative of the site conditions and proposed grading. (Outstanding Issue from Cycle 2)

GEI Response: We have included geologic/geotechnical cross-sections representative of the site conditions and proposed grading from the referenced architectural and grading plans with this update letter as Figure Nos. IIa-b. In addition, we have included a revised geologic cross-section D-D' from our "Report of Preliminary Geotechnical and Geologic Investigation, Copley Press Residential Project," dated November 16, 2011, of the adjacent parcel (APN 352-300-04-00) and a portion of the subject site. Please, refer to Figure Nos. Ia-b for the geologic cross-section locations on the Plot Plans with Site-Specific Geology. Refer to Figure No. IIC for the revised Geologic Cross-Section D-D'.

Issue No. 6: According to the San Diego Seismic Safety Study Geologic Hazard Maps, a portion of the access road for the guesthouse is located in geologic hazard category 22, indicating potential slope instability, possible or conjectured landslide. Clarify if the site or any portion of the site is located on or adjacent to a landslide. Provide the rationale and site-specific physical evidence used to support a determination regarding the presence or absence of landsliding at the site. (Outstanding Issue from Cycle 2)

GEI Response: We understand a portion of the proposed access road for the residence is located in Geologic Hazard Category (GHC) Zone 22. Based upon our recent and previous site exploration, downhole logging of a large diameter boring for our "Report of Preliminary Geotechnical and Geologic Investigation," dated November 16, 2011 (adjacent parcel), our geologic traverse across the site, review of the geologic map (Kennedy and Tan, 2008), review of the referenced City of San Diego Seismic Safety Study -- Geologic Hazards Map Sheet 29 and stereo-pair aerial photographs (4-11-53, AXN-8M-1 and 2), there are no known or suspected ancient landslides in the vicinity of the subject site. Please, refer to Appendix A for the Geologic Hazards Map and Legend.

Along with geologic cross-sections A-A' and B-B' provided for this update letter, we have included a revised geologic cross-section D-D' and exploratory boring (B-1) log for the adjacent parcel from our "Report of Preliminary Geotechnical and Geologic Investigation," dated November 16, 2011. Please, refer to Figure Nos. Ia-b for the geologic cross-section locations on the Plot Plans with Site-Specific Geology. Refer



to Figure Nos. IIa-c for Geologic Cross-Sections. Refer to Appendix B for details of exploratory boring B-1.

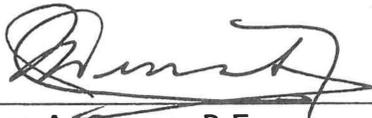
Issue No. 7: The project's geotechnical consultant must provide a professional opinion that the site will have a factor-of-safety of 1.5 or greater, for both gross and surficial, following project completion. (Outstanding Issue from Cycle 2)

GEI Response: Attached to this addendum update letter are the slope stability calculations addressing the global and surficial stability after the completion of the proposed development. We performed global and surficial stability along geologic cross-section B-B'. Refer to Appendix C for slope stability calculations. The global stability yielded a factor of safety of 1.5 or greater for static conditions, and a factor of safety of 1.5 or greater under seismic conditions. Surficial failure analysis yielded a factor of safety greater than 1.5. Please, refer to Figure Nos. Ia-b for the geologic cross-section locations on the Plot Plans with Site-Specific Geology. Refer to Figure Nos. IIa-c for Geologic Cross-Sections.

If you have further questions regarding this letter, please contact our office. Reference to our **Job No. 16-11251** will help expedite a response to your inquiry.

Respectfully submitted,

GEOTECHNICAL EXPLORATION, INC.



Jaime A. Cerros, P.E.
R.C.E. 34422/G.E. 2007
Senior Geotechnical Engineer



Leslie D. Reed, President
C.E.G. 999/P.G. 3391



Steve Osetek
Senior Staff Geologist





CONCEPTUAL GRADING PLAN
 FOXHILL TENTATIVE PARCEL MAP
 8348 CENTER DRIVE, SUITE 6, LA MESA, CA 91942-2910 (619) 697-9234, FAX (619) 460-2033
 SNIPES-DYE ASSOCIATES

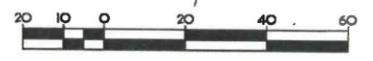
GEOLOGIC LEGEND

- Qaf** Artificial Fill
- Qvop₁₁** Very Old Paralic Deposits (unit 11)
- Tsc/Ta** Tertiary Scripps Formation/ Ardath Shale (undifferentiated)
- Approximate Geologic Contact

LOT 1263
 1M 36
 N 352-300-04

REFERENCE: This Plot Plan was prepared from an existing Conceptual Grading Plan by SNIPES-DYE ASSOCIATES dated 6-4-2019 and from on-site field reconnaissance performed by G&E.

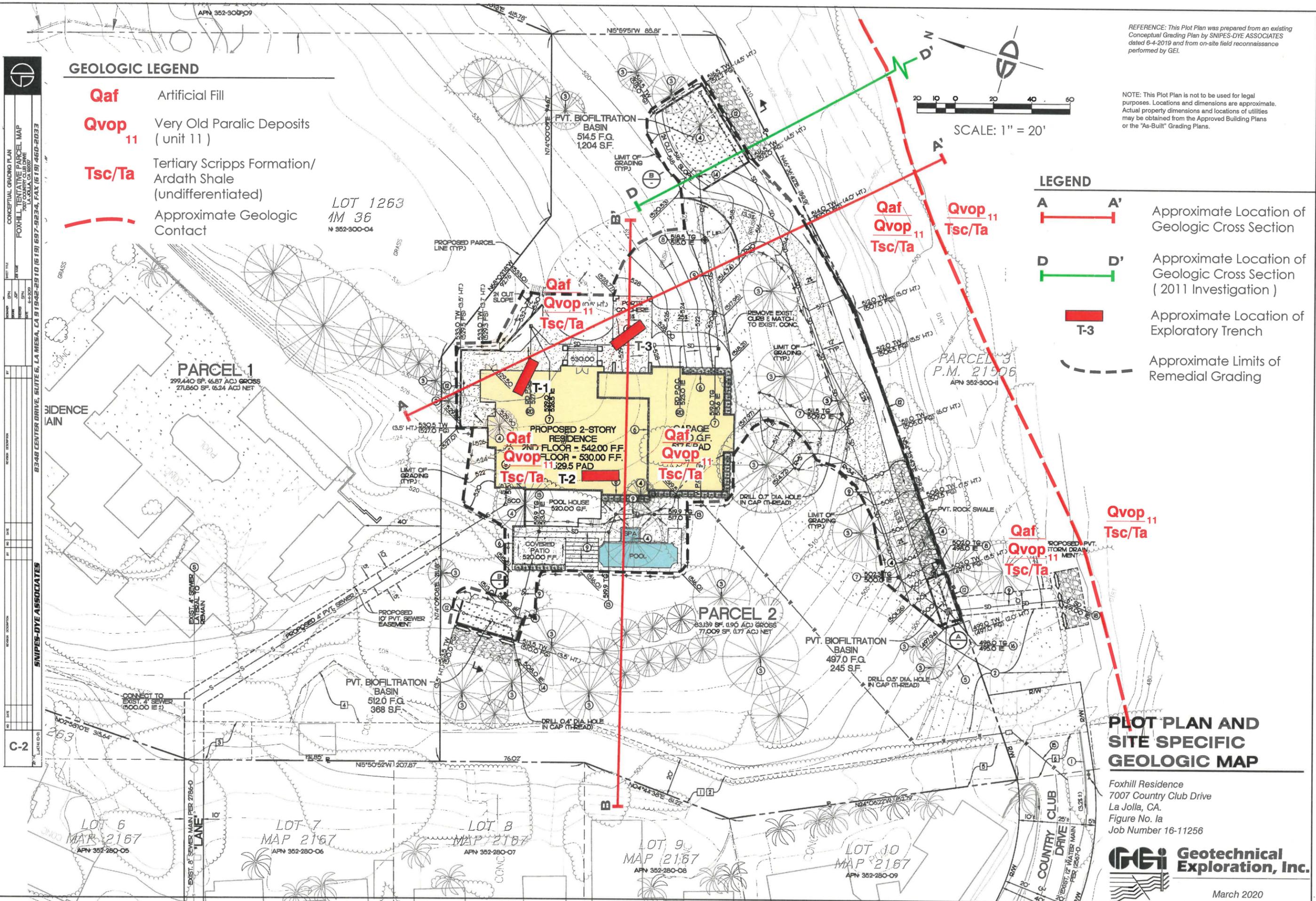
NOTE: This Plot Plan is not to be used for legal purposes. Locations and dimensions are approximate. Actual property dimensions and locations of utilities may be obtained from the Approved Building Plans or the "As-Built" Grading Plans.



SCALE: 1" = 20'

LEGEND

- Approximate Location of Geologic Cross Section
- Approximate Location of Geologic Cross Section (2011 Investigation)
- Approximate Location of Exploratory Trench
- Approximate Limits of Remedial Grading



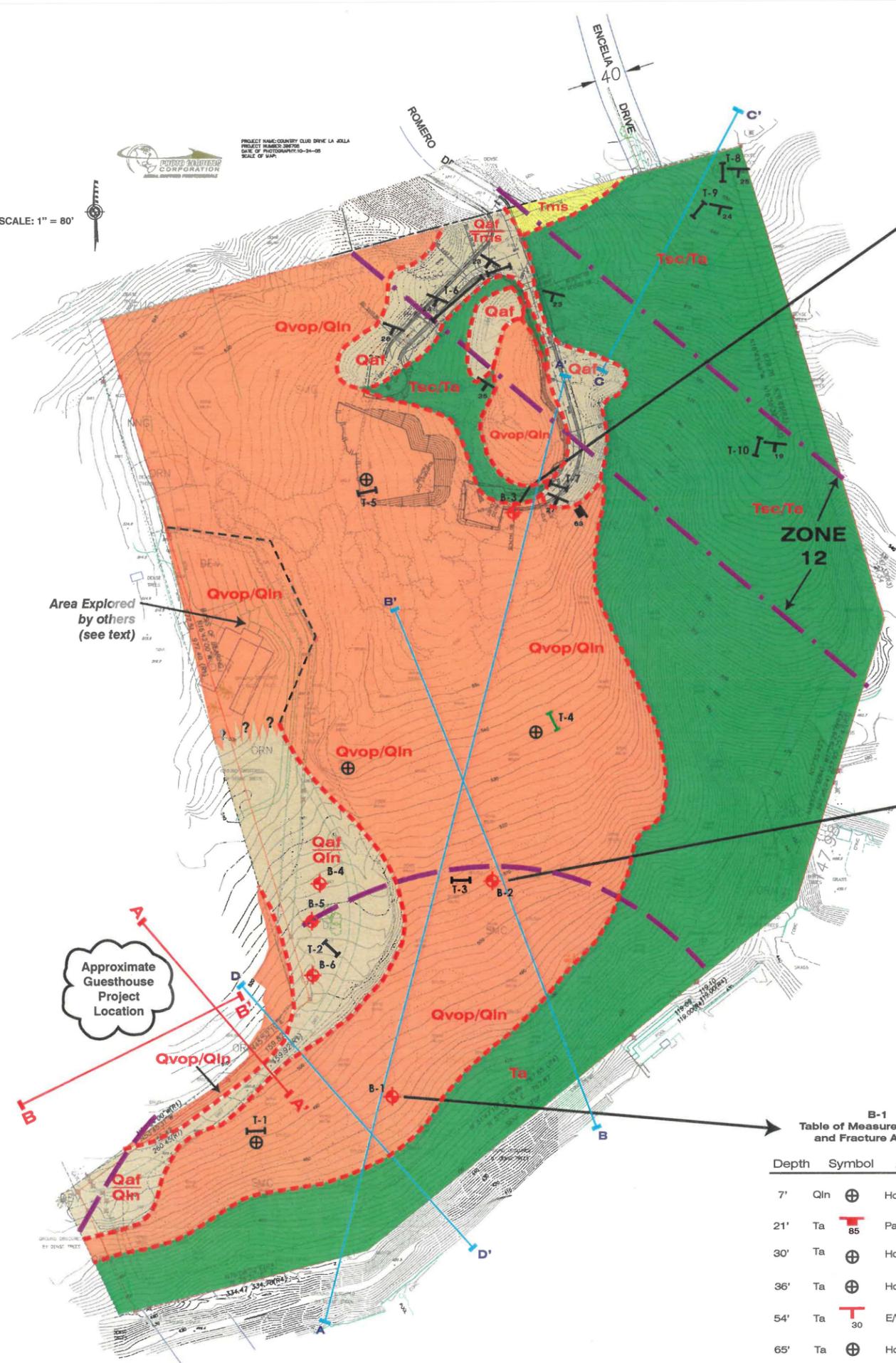
PLOT PLAN AND SITE SPECIFIC GEOLOGIC MAP

Foxhill Residence
 7007 Country Club Drive
 La Jolla, CA.
 Figure No. 1a
 Job Number 16-11256



March 2020

SCALE: 1" = 80'



B-3
Table of Measured Bedding and Fracture Attitudes

| Depth | Symbol | Attitude/Feature |
|---------|-----------|--|
| 4'3" | Qln 8 | N/S Strike 80° W Gravel Lag S80W Vertical Clay-filled Joint |
| 4'3" | Tsc/Ta 9 | N20W9°S Mineralized Band |
| 16'3" | Tsc/Ta 4 | S80W4°S N Color Band |
| 20'6" | Tsc/Ta 23 | N30W23°S Iron Mineralization/clay Module Bed |
| 25'8" | Tsc/Ta ⊕ | Horizontal Color Band |
| 26'2" | Tsc/Ta ⊕ | Horizontal Color Band |
| 29' | Tsc/Ta 28 | N60W23°S 1/2" Thick Sand-filled Fracture |
| 29'9" | Tsc/Ta ⊕ | Horizontal Color Band |
| 32' | Tsc/Ta 28 | N60W28°S Concentric Color Band |
| 36'9" | Tsc/Ta 23 | N55W23°S Band Laminæ |
| 41'4" | Tsc/Ta 10 | N60E10°N Iron Module Bed |
| 44'5" | Tsc/Ta 25 | N10W25°N Iron Mineralized Bed |
| 47'3" | Tsc/Ta 24 | E/W Strike 24°S Concentrically Banded Sands |
| 51'1" | Tsc/Ta 24 | N60W24°S Sand Bed |
| 67'2" | Tsc/Ta 20 | E/W Strike 20°S Sand Bed |
| 69'5" | Tsc/Ta 30 | E/W Strike 30°S Sand Laminæ |
| 76'2" | Tsc/Ta 25 | E/W Strike 25°S Clay Bed |
| 76'-86' | Tsc/Ta 23 | E/W Strike 23°S Clay and Sand Beds |

B-2
Table of Measured Bedding and Fracture Attitudes

| Depth | Symbol | Attitude/Feature |
|-------|--------|------------------------------------|
| 11' | Qln 10 | E/W Strike 10°S Gravel Lag |
| 15'5" | Ta 7 | E/W Strike 7°S Color Band |
| 19'3" | Ta 80 | N25E80°N Mineralized Joint Surface |
| 21' | Ta 10 | N80W10°S Color Bands |
| 23'4" | Ta 10 | N80W10°S Color Band |
| 29' | Ta 18 | N72W18°S Color Band |
| 31' | Ta 10 | N80W10°S Color Band |
| 35' | Ta 5 | E/W Strike 5°S Color Band |
| 37'2" | Ta 10 | N80W10°S Color Band |
| 41'4" | Ta 10 | N80W10°S Color Band |

B-1
Table of Measured Bedding and Fracture Attitudes

| Depth | Symbol | Attitude/Feature |
|-------|--------|---------------------------------|
| 7' | Qln ⊕ | Horizontal |
| 21' | Ta 85 | Parting Surface E/W Strike 85°S |
| 30' | Ta ⊕ | Horizontal Color Band |
| 36' | Ta ⊕ | Horizontal Color Band |
| 54' | Ta 30 | E/W Strike 30°S |
| 65' | Ta ⊕ | Horizontal Color Band |
| 74' | Ta ⊕ | Horizontal Color Band |

LEGEND

- T-1 Exploratory Trench Location
- B-3 Exploratory Boring Location
- Approximate Geologic Contact
- Qaf Artificial Fill
- Qvop = Very Old Paralic Deposits/
Qln = Quaternary Lindavista Formation
- Tertiary Scripps Formation/Ardath Shale
Undifferentiated
- Tertiary Ardath Formation
- Tertiary Mount Soledad Formation
- 65 Strike and Dip Joints
- 24 Strike and Dip of Bedding
- Vertical/Subvertical Joint
- Horizontal/Subhorizontal Bedding
- Line of Cross Section
- City of San Diego GeoHazard
Zone 22
- City of San Diego GeoHazard
Zone 12
- Line of Cross Section for Proposed
Guesthouse (updated)

(UPDATED)
SITE PLAN AND
GEOLOGIC MAP

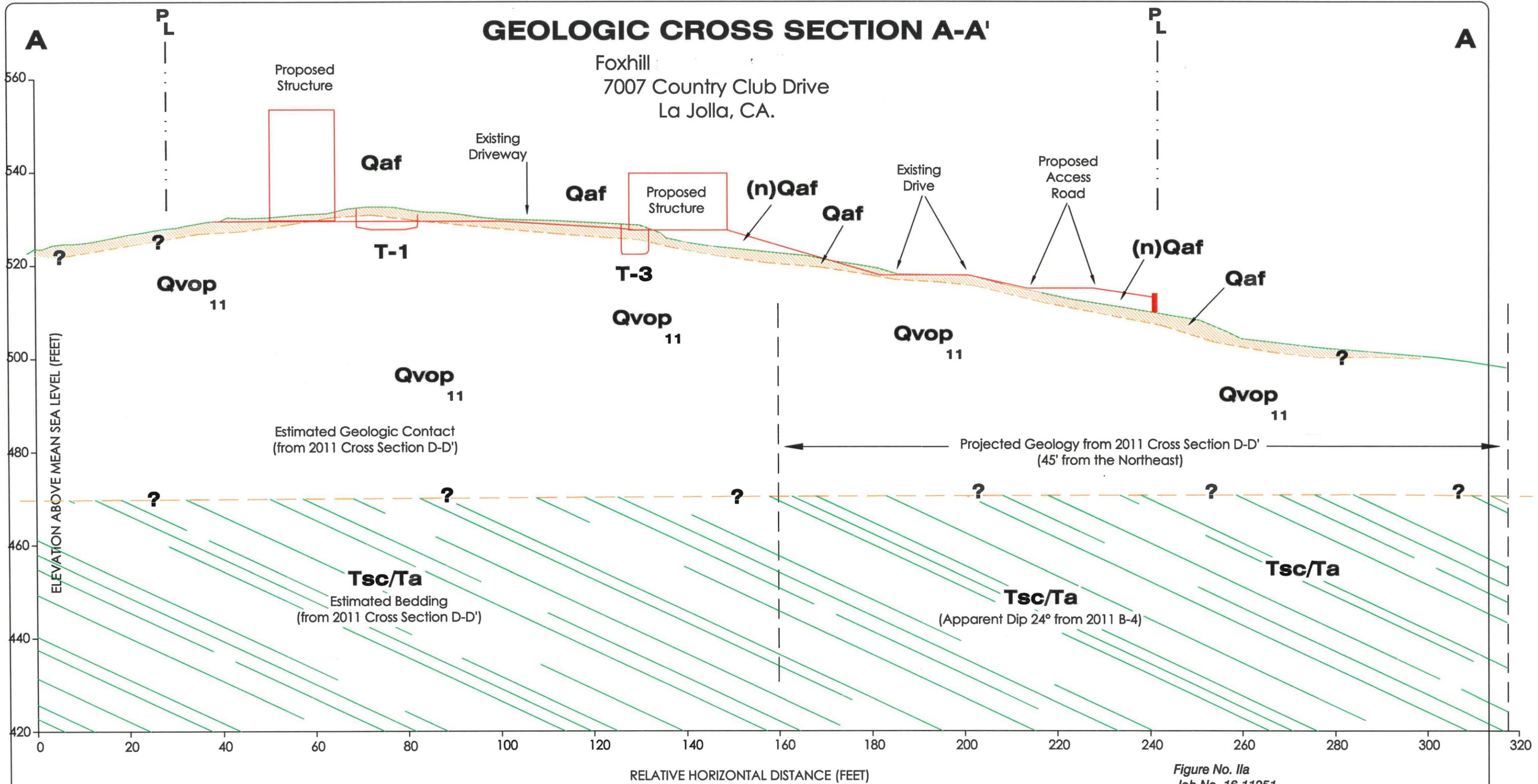
Foxhill Residence
7007 Country Club Drive
La Jolla, CA.
Figure No. 1b
Job No. 16-11251



(Revised March 2020)

GEOLOGIC CROSS SECTION A-A'

Foxhill
7007 Country Club Drive
La Jolla, CA.



- EXISTING GRADE
- PROPOSED GRADE
- - - APPROXIMATE GEOLOGIC CONTACT
- Qaf** ARTIFICIAL FILL
- (n)Qaf** NEW ARTIFICIAL FILL
- Qvop₁₁** VERY OLD PARALIC DEPOSITS (Unit 11)
- Tsc/Ta** SCRIPPS/ARDATH SHALE (undifferentiated)

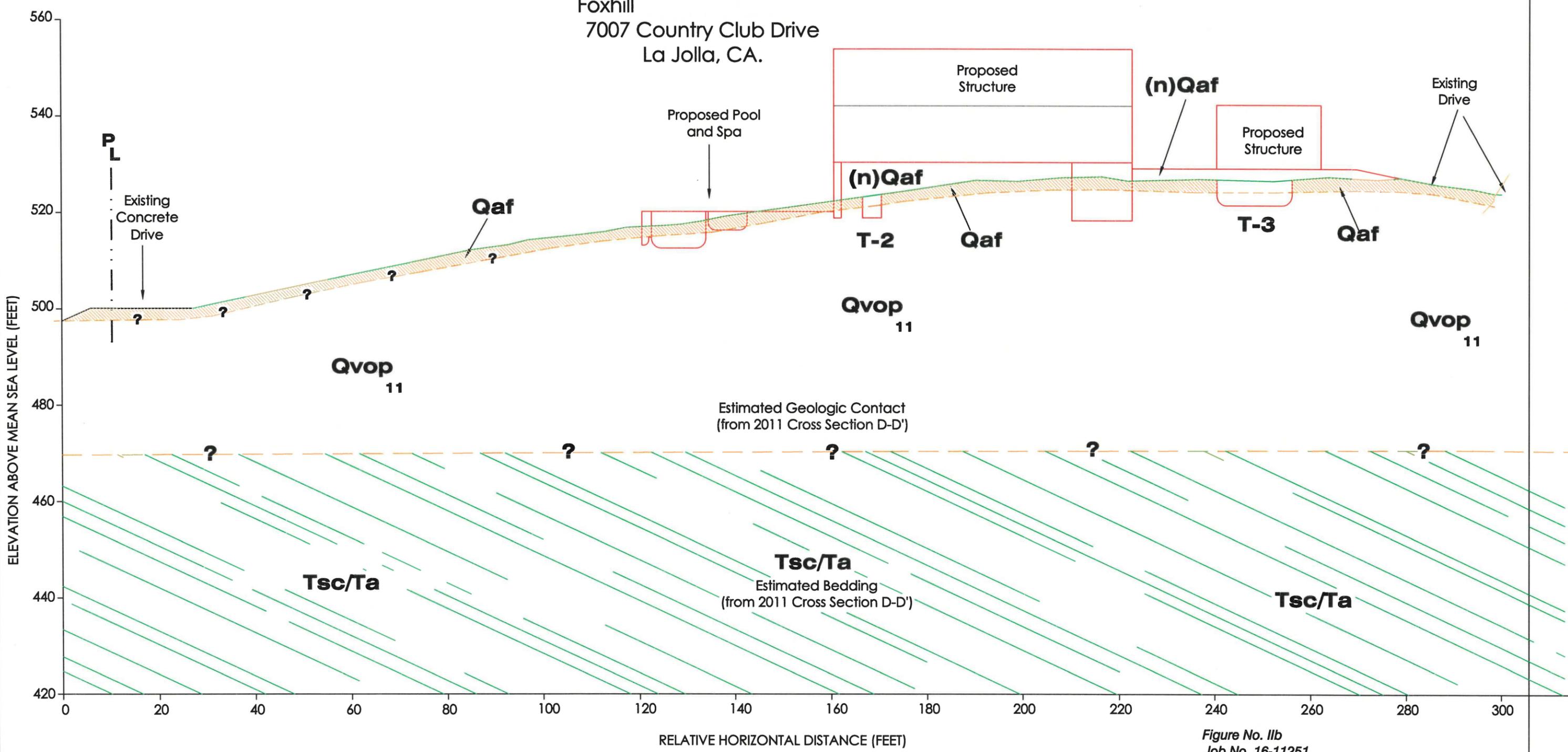
Figure No. 11a
Job No. 16-11251

B

GEOLOGIC CROSS SECTION B-B'

B'

Foxhill
7007 Country Club Drive
La Jolla, CA.



ELEVATION ABOVE MEAN SEA LEVEL (FEET)

RELATIVE HORIZONTAL DISTANCE (FEET)

SCALE: 1" = 20' (H & V)

- EXISTING GRADE
- PROPOSED GRADE
- APPROXIMATE GEOLOGIC CONTACT
- Qaf** ARTIFICIAL FILL
- (n)Qaf** NEW ARTIFICIAL FILL
- Qvop₁₁** VERY OLD PARALIC DEPOSITS (Unit 11)
- Tsc/Ta** SCRIPPS/ARDATH SHALE (undifferentiated)

Figure No. 11b
Job No. 16-11251

**Geotechnical
Exploration, Inc.**

March 2020

CROSS SECTION D-D'

Foxhill
7007 Country Club Drive
La Jolla, CA.

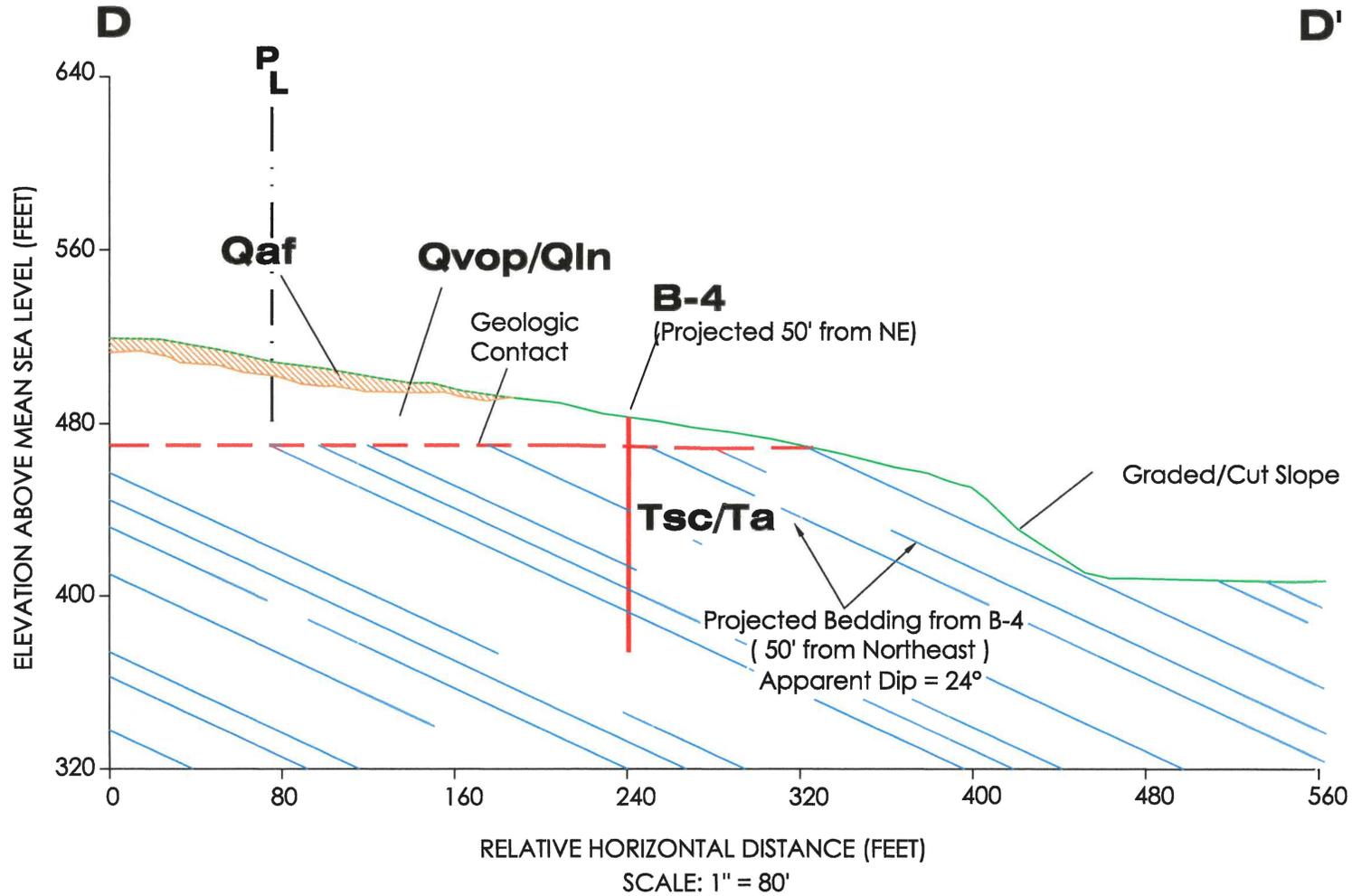


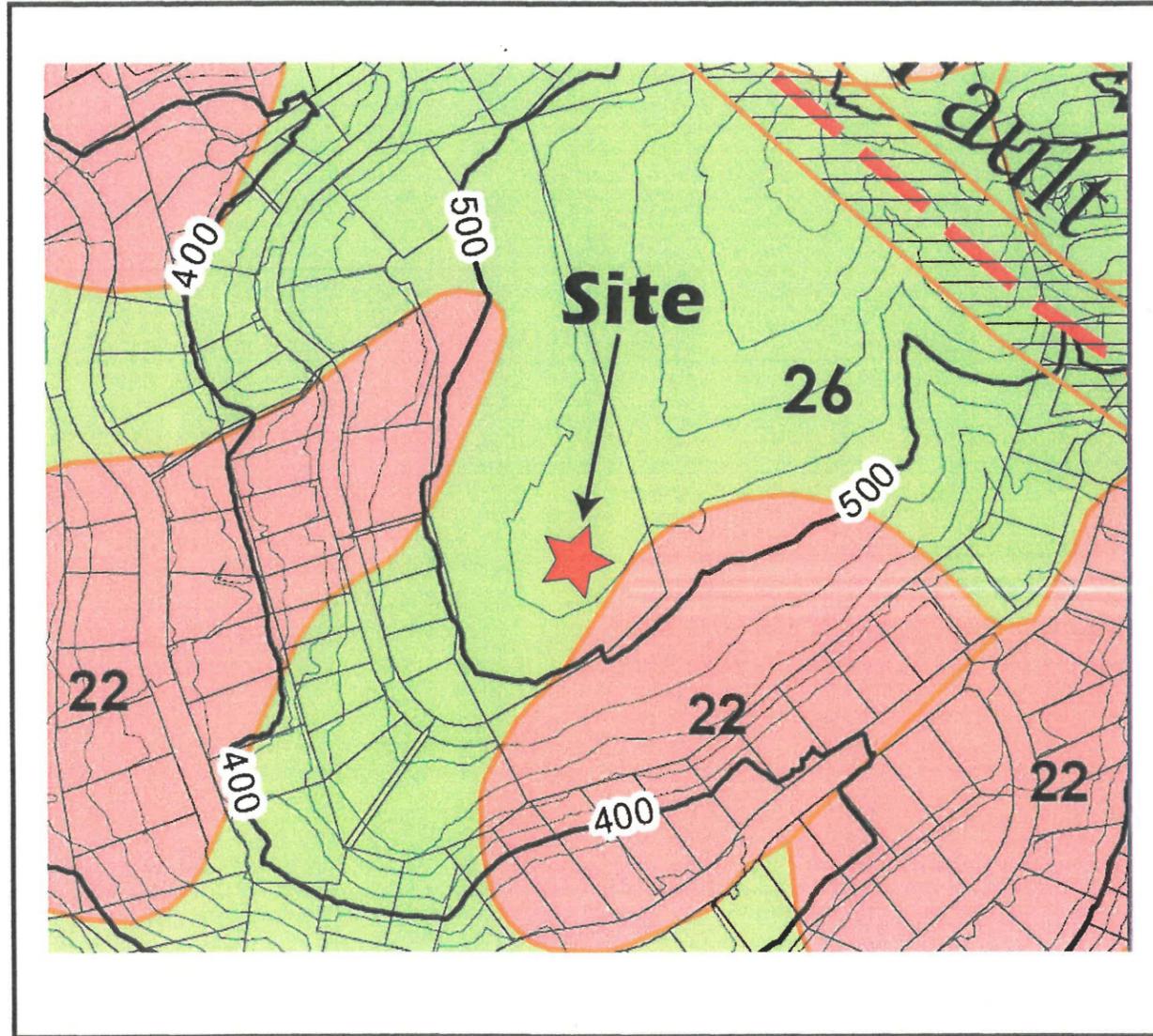
Figure No. 11c
Job No. 16-11251



APPENDIX A

*Excerpt from Geologic Hazards Map-
Sheet 29*

Excerpted from City of San Diego
 Seismic Safety Study
 Geologic/Hazards and Faults
 Sheet 29



Foxhill Residence
 7007 Country Club Drive
 La Jolla, CA.

LEGEND

Geologic Hazard Categories

FAULT ZONES

- 11 Active, Alquist-Priolo Earthquake Fault Zone
- 12 Potentially Active, Inactive, Presumed Inactive, or Activity Unknown
- 13 Downtown special fault zone

LANDSLIDES

- 21 Confirmed, known, or highly suspected
- 22 Possible or conjectured

SLIDE-PRONE FORMATIONS

- 23 Friars: neutral or favorable geologic structure
- 24 Friars: unfavorable geologic structure
- 25 Ardath: neutral or favorable geologic structure
- 26 Ardath: unfavorable geologic structure
- 27 Otay, Sweetwater, and others

LIQUEFACTION

- 31 High Potential -- shallow groundwater major drainages, hydraulic fills
- 32 Low Potential -- fluctuating groundwater minor drainages

COASTAL BLUFFS

- 41 Generally unstable Numerous landslides, high steep bluffs, severe erosion, unfavorable geologic structure
- 42 Generally unstable Unfavorable bedding plains, high erosion
- 43 Generally unstable Unfavorable jointing, local high erosion
- 44 Moderately stable Mostly stable formations, local high erosion
- 45 Moderately stable Some minor landslides, minor erosion
- 46 Moderately stable Some unfavorable geologic structure, minor or no erosion
- 47 Generally stable Favorable geologic structure, minor or no erosion, no landslides
- 48 Generally stable Broad beach areas, developed harbor

OTHER TERRAIN

- 51 Level mesas -- underlain by terrace deposits and bedrock nominal risk
- 52 Other level areas, gently sloping to steep terrain, favorable geologic structure, Low risk
- 53 Level or sloping terrain, unfavorable geologic structure, Low to moderate risk
- 54 Steeply sloping terrain, unfavorable or fault controlled geologic structure, Moderate risk
- 55 Modified terrain (graded sites) Nominal risk

Water (Bays and Lakes)

FAULTS

- Fault
- Inferred Fault
- Concealed Fault
- Shear Zone

City of San Diego
 SEISMIC SAFETY STUDY
 Geologic Hazards and Faults

Development Services Department

DATE: 4/3/2008

Job No. 16-11251



APPENDIX B

Boring Excavation Log

| | | |
|--|--|------------------------------|
| EQUIPMENT Truck-mounted Bucket/Auger Drill Rig | DIMENSION & TYPE OF EXCAVATION 30-inch diameter boring | DATE LOGGED 9-1-11 |
| SURFACE ELEVATION ± 481' Mean Sea Level | GROUNDWATER/ SEEPAGE DEPTH Not Encountered | LOGGED BY DCV/ LDR |

| DEPTH (feet) | SYMBOL | SAMPLE | FIELD DESCRIPTION AND CLASSIFICATION | | IN-PLACE MOISTURE (%) | IN-PLACE DRY DENSITY (pcf) | OPTIMUM MOISTURE (%) | MAXIMUM DRY DENSITY (pcf) | DENSITY (% of M.D.D.) | EXPAN. + CONSOL. (%) | EXPANSION INDEX | BLOW COUNTS/FT. | SAMPLE O.D. (INCHES) |
|--------------|--------|--------|--|----------|-----------------------|----------------------------|----------------------|---------------------------|-----------------------|----------------------|-----------------|-----------------|----------------------|
| | | | DESCRIPTION AND REMARKS (Grain size, Density, Moisture, Color) | U.S.C.S. | | | | | | | | | |
| 2 | | 1 | SILTY SAND. Medium dense. Moist. Medium brown. | SM | | | | | | | | | |
| | | | FILL (Qaf) | SM | 11.2 | 113.4 | | | | | | | |
| 4 | | | SILTY SAND , with roots to 1/4" in diameter. Medium dense. Dry. Pale brown. | SC | | | | | | | | | |
| | | | SLOPEWASH (Qsw) | SC | | | | | | | | | |
| 6 | | | CLAYEY SAND. Dense. Damp. Brown to yellow-brown and gold-brown. | SM | 4.3 | | | | | | 67 | | |
| 8 | | | LINDAVISTA FORMATION (Qln) -- 40% passing #200 sieve. | CL | | | | | | | | | |
| 10 | | | SILTY SAND. Medium dense. Dry. Yellow-brown. | CL | | | | | | | | | |
| 12 | | | LINDAVISTA FORMATION (Qln) COBBLE LAYER , from 8'-8'8", @ 8'4"-8'8" -- rounded large gravel/ cobble to 6" diameter in medium brown sand. | | | | | | | | | | |
| 14 | | | LINDAVISTA FORMATION (Qln) eroded surface; unconformable contact. | | | | | | | | | | |
| 16 | | | CLAYSTONE/ MUDSTONE , with minor sand. Hard. Damp to moist. Gray to light brown with dark mineral coating on parting surfaces. | | | | | | | | | | |
| 18 | | | ARDATH SHALE FORMATION (Ta) @ 13' -- extremely uniform; massive. @ 14' -- change from light brown to greenish brown; horizontal, less sand. -- 98% passing #200 sieve. @ 21' -- E-W strike, 85°S dip on parting surface; similar perpendicular set. @ 22'-23' -- cobble in spoils. | | | | | | | | | | |
| 20 | | | | | | | | | | | | | |
| 22 | | | | | | | | | | | | | |
| 24 | | | | | | | | | | | | | |
| 26 | | | | | | | | | | | | | |

EXPLORATION LOG 9877 COPLEY.GPJ GEO_EXPL.GDT 8/1/12

| | | | | |
|---|--------------------------------|-------------------------------|---|--|
| <ul style="list-style-type: none"> PERCHED WATER TABLE LOOSE BAG SAMPLE IN-PLACE SAMPLE MODIFIED CALIFORNIA SAMPLE FIELD DENSITY TEST STANDARD PENETRATION TEST | JOB NAME The Reserve | | SITE LOCATION 7007 Country Club Drive, La Jolla, CA | |
| | JOB NUMBER 10-9977 | REVIEWED BY LDR/JAC | LOG No. B-1 | |
| | FIGURE NUMBER IIIa | | | |
| | | | | |

| | | |
|--|--|------------------------------|
| EQUIPMENT Truck-mounted Bucket/Auger Drill Rig | DIMENSION & TYPE OF EXCAVATION 30-inch diameter boring | DATE LOGGED 9-1-11 |
| SURFACE ELEVATION ± 481' Mean Sea Level | GROUNDWATER/ SEEPAGE DEPTH Not Encountered | LOGGED BY DCV/ LDR |

| DEPTH (feet) | SYMBOL | SAMPLE | FIELD DESCRIPTION AND CLASSIFICATION | | IN-PLACE MOISTURE (%) | IN-PLACE DRY DENSITY (pcf) | OPTIMUM MOISTURE (%) | MAXIMUM DRY DENSITY (pcf) | DENSITY (% of M.D.D.) | EXPAN. + (%) | CONSOL. - (%) | EXPANSION INDEX | BLOW COUNTS/FT. | SAMPLE O.D. (INCHES) |
|--------------|--------|--------|---|----------|-----------------------|----------------------------|----------------------|---------------------------|-----------------------|--------------|---------------|-----------------|-----------------|----------------------|
| | | | DESCRIPTION AND REMARKS (Grain size, Density, Moisture, Color) | U.S.C.S. | | | | | | | | | | |
| 30 | | | CLAYSTONE/ MUDSTONE , with minor sand. Hard. Damp to moist. Gray to light brown with dark mineral coating on parting surfaces. | CL | | | | | | | | | | |
| 32 | | | ARDATH SHALE FORMATION (Ta) @ 30'7" -- 2" thick dark color band underlain by 1" thick light color band; horizontal. | | | | | | | | | | | |
| 34 | | | | | | | | | | | | | | |
| 36 | | | @ 36'1" -- 1" thick light brown color band; horizontal. | | | | | | | | | | | |
| 38 | | | @ 37' -- thin minor parting surfaces with gypsum coatings. | | | | | | | | | | | |
| 40 | | | | | | | | | | | | | | |
| 42 | | | -- 98% passing #200 sieve. | | 5.6 | | | | | | | | | |
| 44 | | | | | | | | | | | | | | |
| 46 | | | | | | | | | | | | | | |
| 48 | | | @ 48'9" -- 1" thick dark color band; horizontal. | | 18.8 | 111.5 | | | | | | | | |
| 50 | | | | | | | | | | | | | | |
| 52 | | | @ 51'1" -- 1" thick light color band; horizontal. | | | | | | | | | | | |
| 54 | | | -- 96% passing #200 sieve. @ 55'10" -- 1" thick light color band, E-W | | | | | | | | | | | |

EXPLORATION LOG 9977 COPLEY.GPJ GEO_EXPL.GDT 8/1/12

| | | | |
|---|--------------------------------|---|-----------------------|
| PERCHED WATER TABLE LOOSE BAG SAMPLE IN-PLACE SAMPLE MODIFIED CALIFORNIA SAMPLE FIELD DENSITY TEST STANDARD PENETRATION TEST | JOB NAME The Reserve | SITE LOCATION 7007 Country Club Drive, La Jolla, CA | |
| | JOB NUMBER 10-9977 | REVIEWED BY LDR/JAC | LOG No. B-1 |
| | FIGURE NUMBER IIIb | | |
| | | | |

| | | |
|--|--|------------------------------|
| EQUIPMENT Truck-mounted Bucket/Auger Drill Rig | DIMENSION & TYPE OF EXCAVATION 30-inch diameter boring | DATE LOGGED 9-1-11 |
| SURFACE ELEVATION ± 481' Mean Sea Level | GROUNDWATER/ SEEPAGE DEPTH Not Encountered | LOGGED BY DCV/ LDR |

| DEPTH (feet) | SYMBOL | SAMPLE | FIELD DESCRIPTION AND CLASSIFICATION | | IN-PLACE MOISTURE (%) | IN-PLACE DRY DENSITY (pcf) | OPTIMUM MOISTURE (%) | MAXIMUM DRY DENSITY (pcf) | DENSITY (% of M.D.D.) | EXPAN. + CONSOL. (%) | EXPANSION INDEX | BLOW COUNTS/FT. | SAMPLE O.D. (INCHES) |
|--------------|--------|--------|--|----------|-----------------------|----------------------------|----------------------|---------------------------|-----------------------|----------------------|-----------------|-----------------|----------------------|
| | | | DESCRIPTION AND REMARKS (Grain size, Density, Moisture, Color) | U.S.C.S. | | | | | | | | | |
| 58 | | | strike, 30°S dip. CLAYSTONE/ MUDSTONE , with minor sand. Hard. Damp to moist. Gray to light brown with dark mineral coating on parting surfaces. | CL | | | | | | | | | |
| 60 | | | ARDATH SHALE FORMATION (Ta) @ 59'-60' -- bucket auger cutting pattern change; 1' thick concretionary mass, lightly to moderately cemented; horizontal. | | | | | | | | | | |
| 62 | | ⊗ | | | | | | | | | | | |
| 64 | | 3 | @ 65' -- 2" thick light color band; horizontal. | | 16.7 | 115.5 | | | | | | | |
| 66 | | | | | | | | | | | | | |
| 68 | | ⊗ | | | | | | | | | | | |
| 70 | | 4 | -- 94% passing #200 sieve. | | 18.3 | 115.9 | | | | | | | |
| 72 | | | | | | | | | | | | | |
| 74 | | ⊗ | @ 74' -- bucket auger cutting pattern change; horizontal. | | | | | | | | | | |
| 76 | | | | | | | | | | | | | |
| 78 | | | | | | | | | | | | | |
| 80 | | ⊗ | No seeps. No caving. | | | | | | | | | | |
| 82 | | | Bottom @ 80' | | | | | | | | | | |

EXPLORATION LOG 9877 COPLEY.GPJ GEO_EXPL.GDT 8/1/12

| | | | |
|---|---|-------------------------------|-----------------------|
| <ul style="list-style-type: none"> PERCHED WATER TABLE LOOSE BAG SAMPLE IN-PLACE SAMPLE MODIFIED CALIFORNIA SAMPLE FIELD DENSITY TEST STANDARD PENETRATION TEST | JOB NAME The Reserve | | LOG No. B-1 |
| | SITE LOCATION 7007 Country Club Drive, La Jolla, CA | | |
| | JOB NUMBER 10-9977 | REVIEWED BY LDR/JAC | |
| | FIGURE NUMBER IIIc | | |

APPENDIX C

Slope Stability Analysis

APPENDIX C

SLOPE STABILITY CALCULATIONS WITH SLIDE 6 COMPUTER PROGRAM

FOXHILL ESTATES

Job No. 16-11251

We performed gross slope stability calculations using the *SLIDE 6* program by Roc Science. The program is a limit equilibrium method, slope stability program that allows the use of several slope stability methods to calculate the factors of safety against shear failure. On this project, the Bishop Simplified method was used as the basis for calculations when using circular slide surfaces for analysis through the site geologic cross sections.

The program calculates the factor of safety against shear failure for potential slide surfaces over a selected range. We chose the range of slide surfaces where failures are most likely to occur. The printout shows a block with contour lines of different colors and shades that correspond to the different factors of safety calculated that can be obtained for the analyzed range of slide surfaces for Section B-B', which includes, in our professional opinion, the most unfavorable slope conditions at the site (see attached printouts). The green circular surface displayed in the printout is the lowest possible factor of safety located within the specified search range of each analysis. Soil strength values, geometry, and water conditions (seepage was not encountered) used in the program were based on geological information at the site, obtained by our project geologist. Direct shear test results from the on-site formational soils were performed and were used for the gross slope stability analysis. Shear strength values were conservatively adjusted.

The static gross stability factors of safety were calculated and yielded a factor of safety value above 1.5 and greater with the inclusion of the basement retaining wall.

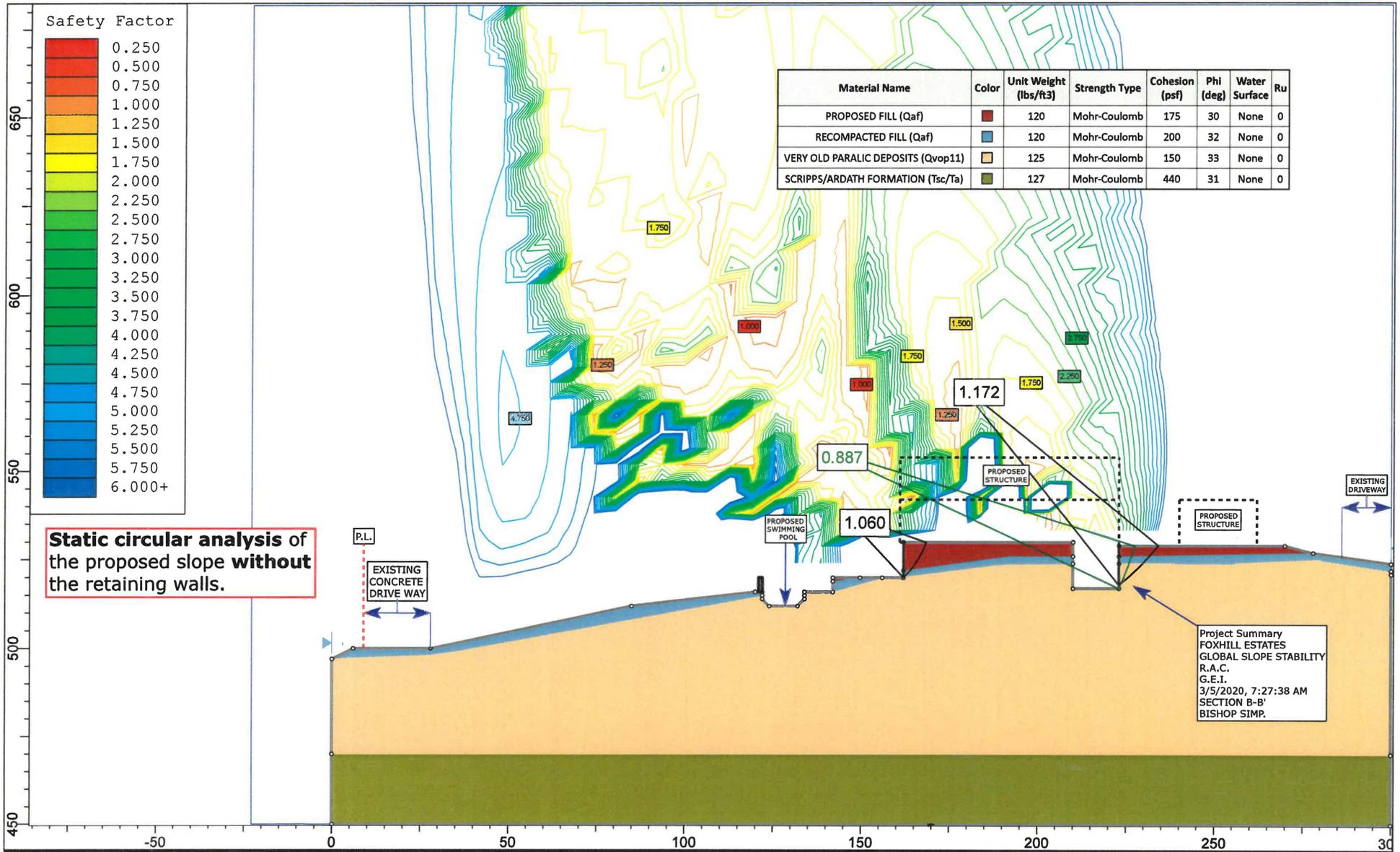
For section B-B, the analysis consisted of analyzing the existing slope excluding and including the retaining walls. In the analysis which include the retaining walls, a surcharge of 250 psf was applied to simulate the load of the building. A cantilevered equivalent lateral fluid pressure of 45 pcf was applied to the swimming pool shell and basement retaining wall, and a cantilevered pressure of 42 pcf was applied to the exterior retaining located adjacent to the swimming pool.



Once the static gross stability was determined for each section, a seismic analysis was performed for the same analyzed sections. The seismic analysis yielded a factor of safety value above 1.15 as required by the City of San Diego and the State of California.

The surficial slope stability calculations were performed on the slope face using a geotechnical accepted equation for infinite slopes with a saturated upper layer. The calculations were performed by assuming that the upper 5 feet of those soils were saturated. Based on the current existing slope, the calculations yielded the Factor of Safety against shear failure above 1.50 for a sliding block 5 feet high against the soil shear strength frictional and cohesion strength opposing the driving force. The slope is considered adequate against surficial failures.





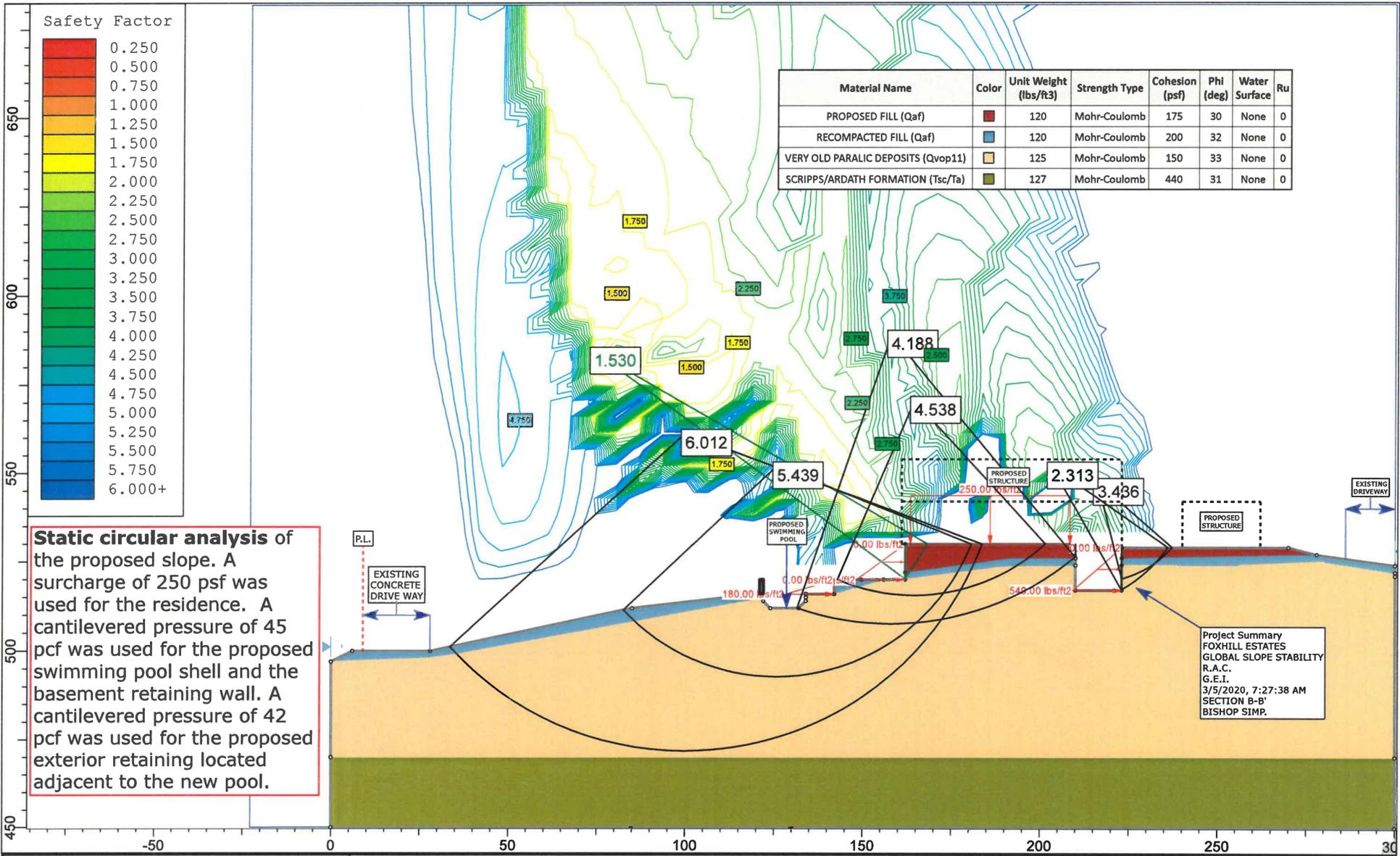
Static circular analysis of the proposed slope without the retaining walls.

Project Summary
 FOXHILL ESTATES
 GLOBAL SLOPE STABILITY
 R.A.C.
 G.E.I.
 3/5/2020, 7:27:38 AM
 SECTION B-B'
 BISHOP SIMP.



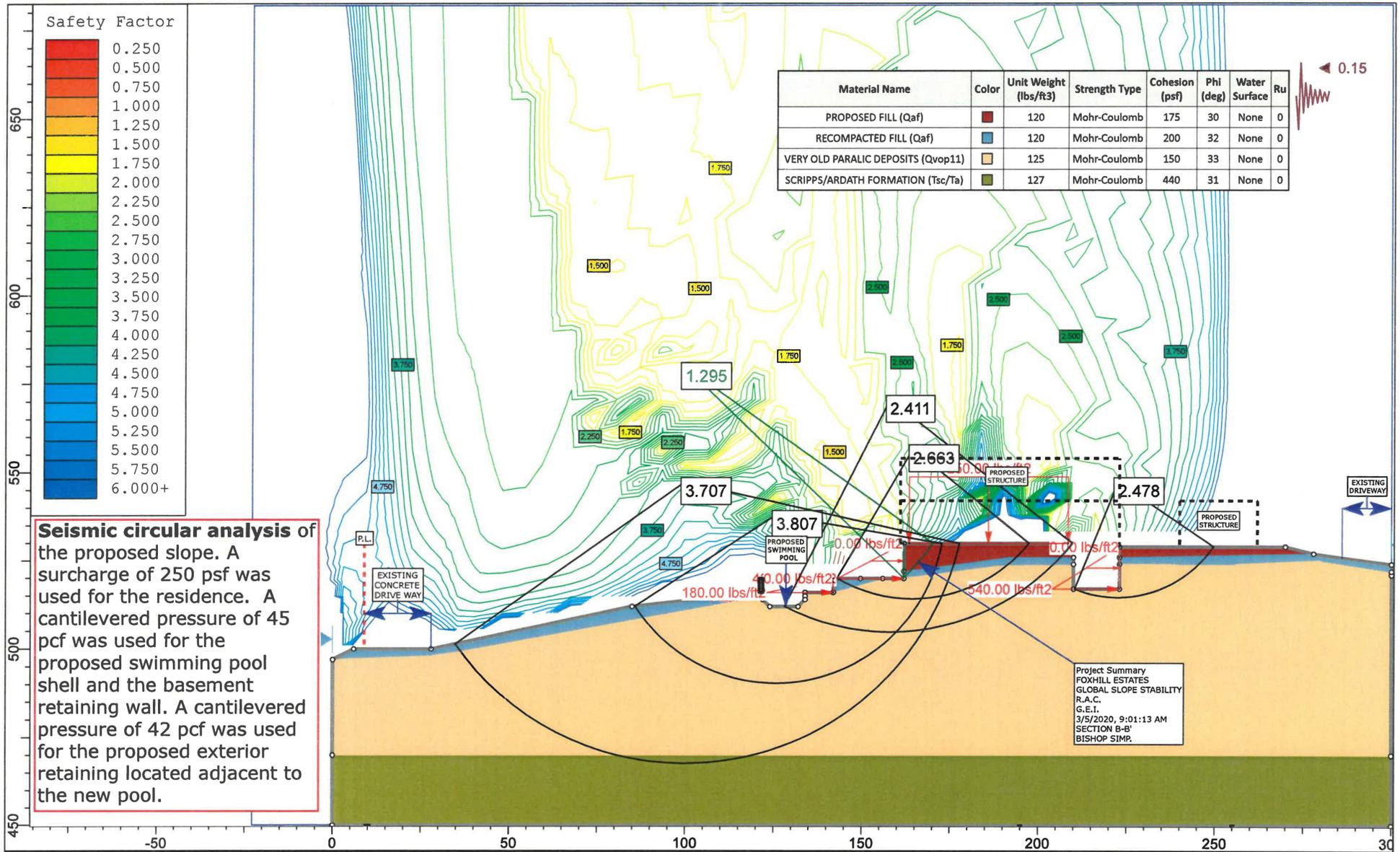
Geotechnical Exploration, Inc.

| | | | |
|----------------------|----------------------|------------------------|-------------------------------|
| Project | | FOXHILL ESTATES | |
| Analysis Description | | GLOBAL SLOPE STABILITY | |
| Drawn By | R.A.C. | Scale | 1:450 |
| Date | 3/5/2020, 7:27:38 AM | Company | G.E.I. |
| | | File Name | JOB NO. 16-11251_S(B)_01.slim |

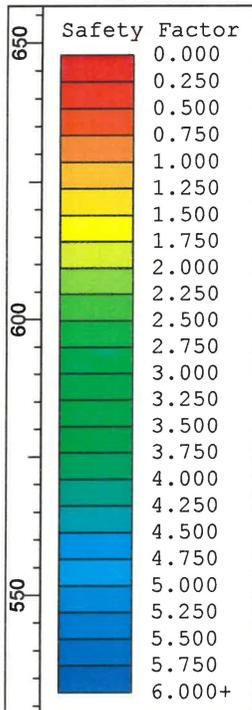


Geotechnical Exploration, Inc.

| | | | |
|----------------------|----------------------|------------------------|-------------------------------|
| Project | | FOXHILL ESTATES | |
| Analysis Description | | GLOBAL SLOPE STABILITY | |
| Drawn By | R.A.C. | Scale | 1:450 |
| Date | 3/5/2020, 7:27:38 AM | Company | G.E.I. |
| | | File Name | JOB NO. 16-11251_S(B)_02.slim |

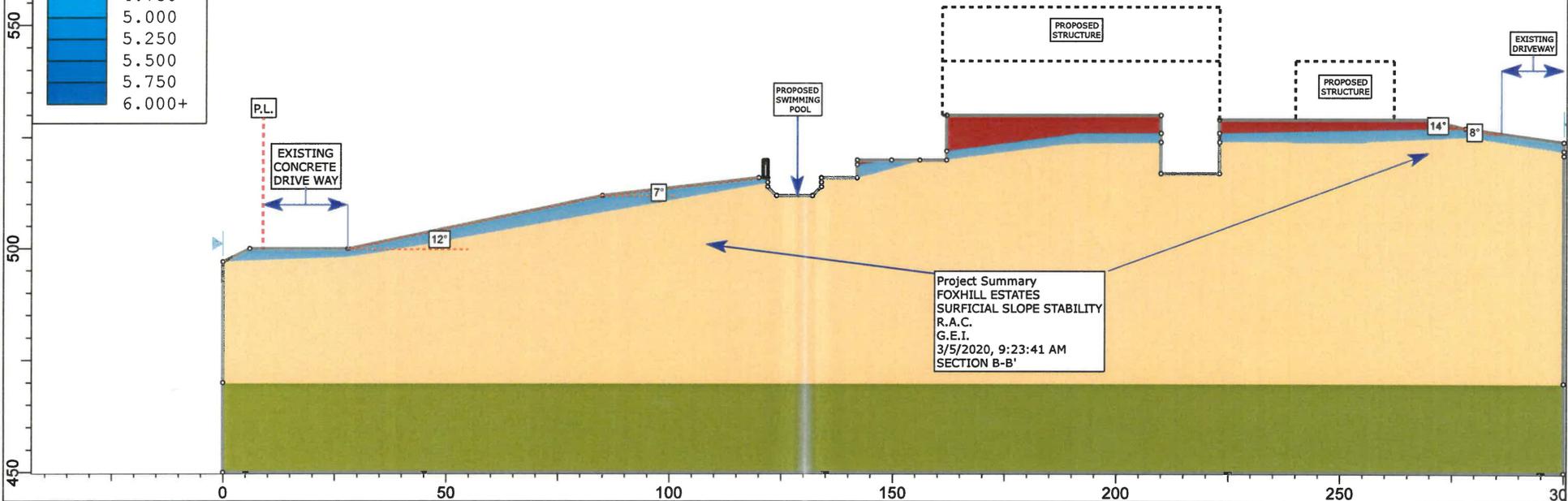


| | | | |
|----------------------|----------------------|------------------------|---|
| Project | | FOXHILL ESTATES | |
| Analysis Description | | GLOBAL SLOPE STABILITY | |
| Drawn By | R.A.C. | Scale | 1:450 |
| Date | 3/5/2020, 9:01:13 AM | Company | G.E.I. |
| | | File Name | JOB NO. 16-11251_S(B)_02w_0.15gSHAKE.slim |



This section shows the calculated inclination angle (β) used for the surficial slope stability analysis. Refer to the spreadsheet for the calculated factor of safety value.

| Material Name | Color | Unit Weight (lbs/ft ³) | Strength Type | Cohesion (psf) | Phi (deg) | Water Surface | Ru |
|------------------------------------|--------|------------------------------------|---------------|----------------|-----------|---------------|----|
| PROPOSED FILL (Qaf) | Red | 120 | Mohr-Coulomb | 175 | 30 | None | 0 |
| RECOMPACTED FILL (Qaf) | Blue | 120 | Mohr-Coulomb | 200 | 32 | None | 0 |
| VERY OLD PARALIC DEPOSITS (Qvop11) | Orange | 125 | Mohr-Coulomb | 150 | 33 | None | 0 |
| SCRIPPS/ARDATH FORMATION (Tsc/Ta) | Green | 127 | Mohr-Coulomb | 440 | 31 | None | 0 |



| | | | | | |
|----------------------|----------------------|---------------------------|-------------------------------|---------------------|--------|
| Project | | FOXHILL ESTATES | | SECTION B-B' | |
| Analysis Description | | SURFICIAL SLOPE STABILITY | | | |
| Drawn By | R.A.C. | Scale | 1:400 | Company | G.E.I. |
| Date | 3/5/2020, 9:23:41 AM | File Name | JOB NO. 16-11251_S(B)_03.slim | | |

SURFICIAL FAILURE

EQUATION 1

$$F. S. = \left(\frac{C}{\gamma_{sat} \times H \times \cos(\beta) \times \sin(\beta)} \right) + \left(\frac{\gamma' \tan(\phi)}{\gamma_{sat} \tan(\beta)} \right)$$

| | | | |
|----------------|------------------|-----------|----|
| γ_{sat} | γ_{water} | γ' | H |
| pcf | pcf | pcf | ft |
| 130 | 62.4 | 67.6 | 5 |

SURFICIAL SLOPE STABILITY ANALYSIS IS BASED ON EQUATION (1) FOR THE CALCULATED VALUES.

| SECTION B-B' | | | | |
|-------------------------------------|---------|------------|-------------|--------|
| SOIL TYPE | C (psf) | ϕ (°) | β (°) | F.O.S. |
| RECOMPACTED FILL (Q _{af}) | 200 | 32 | 12 | 3.042 |
| RECOMPACTED FILL (Q _{af}) | 200 | 32 | 7 | 5.190 |
| PROPOSED FILL (Q _{af}) | 175 | 30 | 14 | 2.351 |
| RECOMPACTED FILL (Q _{af}) | 200 | 32 | 8 | 4.545 |

| | |
|----------------|--|
| β | Slope inclination with respect to the horizontal plane |
| ϕ | Friction angle of the soil |
| C | Cohesion of the soil |
| γ_{sat} | Saturated unit weight of the soil |
| γ' | Submerged unit weight of the soil |
| H | Thickness of the saturated soil layer |
| F.O.S. | Factor of Safety |

The Factor of Safety values are **ABOVE** 1.50 and are adequate.

