Geotechnical Exploration, Inc.
SOIL AND FOUNDATION ENGINEERING ● GROUNDWATER ● ENGINEERING GEOLOGY

November 16, 2020

CT Homes **Job No. 15-10937**
909 Grand Avenue
San Diego, CA 92109
Attn: Mr. JD Esajian

Subject: **Addendum Geotechnical Report Response to City Reviewer (Cycle 3) LDR Geology City of San Diego Project No. 669302 Dated August 28, 2020**
Lotus Residential Project
5064 Lotus Street
San Diego, California

Dear Mr. Esajian:

In accordance with your request, ***Geotechnical Exploration, Inc***. (GEI) herein responds to City of San Diego LDR-Geology comments in a memo with completion date August 28, 2020 (see Appendix A attached), with respect to the planned residential project at the subject property. The LDR reviewer has reviewed our Preliminary Geotechnical Investigation report dated December 16, 2015, as well as Preliminary Grading Plans by Civil Landworks, undated.

Issue No. 4: *"Submit a geotechnical report that addresses all potential geologic hazards and the information requested herein. The geotechnical report must be prepared in accordance with the City's Guidelines for Geotechnical Reports.*

GEI Response: GEI submits this letter as an "Addendum and Update to the Preliminary Geotechnical Investigation Report" (see Appendix B attached). This addendum and update report addresses all potential geologic hazards and the information requested herein, and it is prepared in accordance with the City of San Diego Guidelines for Geotechnical Reports.

SITE DESCRIPTION

The subject site consists of a generally flat, irregularly shaped lot with site elevations ranging from approximately 10.5 to 11 feet above Mean Sea Level (MSL). The site is presently occupied by a one-story, single-family, wood frame residential structure with a detached garage. The existing structures are proposed to be demolished prior to the new construction.

The proposed construction on-site has been modified from the previous four stories (two-story with a deck and underground parking) to 4 new wood-frame, single-family, two-story residences with slab on-grade conventional footings and associated improvements.

SCOPE OF WORK

The scope of geotechnical work performed by this office remains the same as described in our previous "Report of Preliminary Geotechnical Investigation" dated December 16, 2015.

A recent site reconnaissance suggests that the existing site geotechnical conditions remain significantly similar to those described in our original investigation. Site conditions, geotechnical field work and laboratory testing are presented in the referenced report attached).

As noted in the Addendum Geotechnical Report Response to City Reviewer (Cycle 4) (Appendix A), response to issue No. 5, the site is located in a low-risk geologic hazard category 52.

CONCLUSIONS

No geologic hazards of sufficient magnitude to preclude development of the site as currently proposed are known to exist. In our professional opinion and to the best of our knowledge, the site is suitable for the proposed additions. The City of San Diego Seismic Safety Study places the site in Hazard Category 52. This classification implies low geotechnical risk.

Ground Shaking: A likely geologic hazard to affect the site is ground shaking resulting from movement along one of the major active fault zones mentioned above. Probable ground shaking levels at the site could range from slight to severe, depending on such factors as the magnitude of the seismic event and the distance to the epicenter. It is likely that the site will experience the effects of at least one moderate to large earthquake during the life of the proposed structure. Construction in accordance with the minimum requirements of the current building codes and local governing agencies should minimize potential damage due to seismic activity.

The principal seismic considerations for improvements at the subject site are surface rupture of fault traces, damage caused by ground shaking during a seismic event, and seismically-induced ground settlement. The potential for any or all of these hazards depends upon the recency of fault activity and the proximity of nearby faults to the subject site. The possibility of damage due to ground rupture is considered unlikely since no active faults are known to cross the site and no evidence of active faulting was noted during our field investigation the review of aerial photographs. did not present clear indications that a fault line crosses the subject site. Our review of the proper literature (CGS 2019) indicates that the subject site lies outside the present Earthquake Fault Zones, which are described in the Alquist-Priolo Earthquake Fault Zoning Act as being placed along active faults.

Based on the review of the available references (USGS, U.S Quaternary Faults), the site is located at approximately, 3.7 miles to the northern portion of the Silver Strand section of the Newport-Inglewood-Rose Canyon Fault Zone, located to the west-Southwest of the site. The Coronado Bank Fault Zone, located at approximately 8.8 miles to the west-southwest of the site the San Diego Trough Fault Zone, located at approximately 20.8 miles to west-southwest of the site; the Julian Section of the Elsinore Fault Zone, located at approximately 44 miles to the northeast of the fault and the San Clemente Fault Zone, located at approximately 47 miles to the west-southwest of the site. (The distances are approximate to the closest point to the fault.)

An inferred extension of the Point Loma Fault is mapped as located at approximately 0.5-mile to the east of the subject site. This fault zone is classified as Potentially Active (older than 11,000 years).

Landslide Potential and Slope Stability: A review of the geologic hazards map indicates there are no known deep or suspected ancient landslides located on the site. Due to the site's gentle topography and underlying competent materials, landslide hazards do not present a significant risk to the proposed addition. The City of San Diego Seismic Safety Study classifies the area of the subject site as Geologic Hazard Category 52"described as "Other level areas, gently sloping to steep terrain, favorable geologic structure, Low risk". The site is located in a generally flat area, landslides and other slope failures are rare within this area.

Liquefaction: Since the existing loose surficial soils will require to be removed and recompacted and the encountered formational soils increase in density with depth, it is our opinion that, the materials at the site are not subject to liquefaction, mainly due to such factors as degree of cementation and soil density. Ground water is relatively shallow at a depth of 10 to 11 ft but will not impact the proposed project. The site is underlain by very dense formational materials, and as such, potential for liquefaction and liquefaction related hazards (lateral spreading, ground lurching, surface manifestations, seismic dynamic settlement, subsidence) is considered negligible.

Soil Expansion: Based on our experience with similar soil in the vicinity of the subject site, the foundation level materials at the site are considered to possess a low expansion potential. ***Geotechnical Exploration Inc***., may provide additional recommendations if expansive soils are encountered during grading construction.

Flooding: The site is located outside the boundaries of both the 100-year and the 500-year floodplains according to the maps prepared by the Federal Emergency Management Agency, map no. 06073C1613H, effective on 12/20/2019.

Tsunamis and Seiches: Tsunamis are great sea waves produced by submarine earthquakes or volcanic eruptions. Seiches are periodic oscillations in large bodies of water such as lakes, harbors, bays or reservoirs. Based on the project's elevated location, the site is considered to possess a low risk potential from tsunamis or seiche activity.

The subject site is located in an area that is relatively flat and no slopes are present nor planned. The geologic maps of the area indicate that the subject site is underlain by formational soils consisting of Quaternary Old Paralic Deposits Unit 6 (Qop_6). Our

professional opinion that the site is located in a relatively low risk area for potential geologic hazards.

The referenced "Report of Preliminary Geotechnical Investigation" should be updated to include the following Seismic Design Recommendations based on latest edition of the California Building Code (2019 CBC), which incorporates by reference the ASCE 7-16 for seismic design and the following parameters should be utilized. We have determined the mapped spectral acceleration values for the site based on a latitude of 32.7534 degrees and longitude of 117.2471 degrees, utilizing a program titled "*Design Maps and Tools,"* provided by the USGS, which provides a solution for ASCE 7-16 (Section 1613 of the 2019 CBC) utilizing digitized files for the Spectral Acceleration maps. In addition, we have assigned a Site Classification of D. The response parameters for design are presented in the following Table I.

TABLE I
Mapped Spectral Acceleration Values and Design Parameters

S_s	S_1	F_a	F_v	S_{ms}	S_{m1}	S_{ds}	S_{d1}	PGA	PGA_M	SDC
1.263	0.437	1.0	1.427	1.263	0.624	0.842	0.416	0.569	0.626	D

Application to the criteria in Table I for seismic design does not constitute any kind of guarantee or assurance that significant structural damage or ground failure will not occur if ever seismic shaking occurs. The primary goal of seismic design is to protect life, not to avoid all damage, since such design may be economically prohibitive.

Laboratory Testing: Samples obtained from our field investigation at the subject site were subjected to the following laboratory testing:

- Maximum Density-Optimum Moisture Content
- Mechanical Sieve Analysis

Results of our laboratory testing are presented in the referenced Preliminary Geotechnical Report (2015, attached).

RECOMMENDATIONS

The recommendations presented in the Preliminary Geotechnical Investigation report (2015) remain applicable unless otherwise presented herein. The recommendations presented herein have been completed using the information provided to us regarding site development. If information concerning the proposed development is revised, or any changes in the design and location of the proposed property modified or approved in writing by this office.

Grading and earthwork should be performed in accordance with the following recommendations:

1. General: Grading should conform to the guidelines presented in the 2019 California Building Code (CBC, 2019), as well as the requirements of the City of San Diego.

   During earthwork construction, removal and reprocessing of fill materials, as well as general grading procedures of the contractor, should be observed and the fill placed selectively tested by representatives of ***Geotechnical Exploration Inc***. If any unusual or unexpected conditions are exposed in the field, they should be reviewed by the geotechnical engineer and if warranted, modified and/or additional remedial recommendations will be offered. Specific guidelines and comments pertinent to the planned development are provided herein.

2. Site Preparation: Prior to earthwork or construction operations, the site should be cleared of surface and subsurface obstructions and stripped of any vegetation in the areas proposed for development. Removed vegetation and debris should then be properly disposed of off-site. Holes resulting from removal of buried obstructions which extend below finish site grades should be backfilled with suitable fill soils compacted to a minimum 90 percent relative compaction (based on ASTM Test Method D1557).

3. Removal of Unsuitable Soils: The existing fill soils and upper formational soils are considered to be potentially compressible in their current condition. As such, they are unsuitable for the support of settlement-sensitive structures or additional fill in their current condition. As a result, we recommend the reprocessing of these existing soils in all areas to receive building additions or new buildings (where not anticipated to be removed during proposed grading operations). Based on the results of our subsurface investigation, it is anticipated that the removal depth in the vicinity of the proposed buildings will be a minimum of **3 feet** below existing grade elevations. The removal should extend to a minimum distance of 5 feet outside the building footprint. Following removal of the upper soils, the bottom of the excavation(s) should be observed and approved by a representative of this office to verify that these potentially compressible materials have been properly removed. It should be understood that based on the observations of our field representative, localized deeper removals may be recommended. The base of the removal areas should be level to avoid differential fill thicknesses under proposed improvements.

   After removal is achieved and prior to fill placement, all areas to receive fill and/or other surface improvements, should be scarified to a minimum depth of 8 inches below removal grade elevations, be moisture conditioned to 2 percent over optimum moisture content and compacted to minimum 90 percent relative compaction based on ASTM Test Method D1557. After this procedure is completed, backfill of the removal excavation should take place by moisture conditioning the removed soils prior to placement to at least optimum to 2 percent over optimum moisture content and recompaction of these soils to a minimum 92 percent relative compaction (based on ASTM Test Method D1557). These operations should be performed under the observation and testing of a representative of this office. Any removed soils should be moisture conditioned as necessary to achieve a moisture content of at least optimum to 2 percent over optimum moisture content and be recompacted to a minimum 90 percent relative compaction (based on ASTM Test Method D1557).

4. Fill Placement and Compaction: If necessary, the on-site soils are not suitable for reuse as compacted fill, and import soils should be utilized for near-surface fills. These soils should be predominately granular, possess a low or very low expansion potential, and be approved by the geotechnical engineer prior to

their transportation to the site. These import soils can be mixed with the existing soils and utilized for near-surface fills. Lift thicknesses will be dependent upon the size and type of equipment used. In general, fill should be placed in uniform lifts not exceeding 8 to 10 inches. Placement and compaction of fill should be performed in accordance with local grading ordinances under the observation and testing of the geotechnical consultant.

We recommend that, if encountered, oversize materials (materials greater than 6 inches in maximum dimension) be removed from the upper 4 feet of fill.

5. Trench Excavations and Backfill: Trenches are anticipated to be excavated with moderate effort using conventional construction equipment in good operating condition. Deep trenches may require the use of heavy equipment operations. The encountered soils at the site consisted of medium dense to very dense silty sands (SM). As such, these soils may not be subject to collapse and or cave-ins. To satisfy OSHA requirements and for worker safety, it will be necessary to shore excavations deeper than 5 feet. The proposed trenches deeper than 5 feet may also be laid back in a 1:1 horizontal to vertical (45 degrees).

   The on-site soils may be used as trench backfill, provided they are screened of rock sizes over 6 inches in maximum dimension and organic matter. Trench backfill should be compacted in uniform lifts (not exceeding 8 inches in compacted thickness) by mechanical means to at least 90 percent relative compaction (based on ASTM D1557).

6. Shrinkage and Bulking: Several factors will impact earthwork balancing on the site, including shrinkage, bulking, subsidence, trench spoils from utilities and footing excavations, as well as the accuracy of topography.

   Shrinkage, bulking and subsidence are primarily dependent upon the degree of compaction effort achieved during construction. For planning purposes, the shrinkage factor is estimated to be on the order of 10 to 15 percent for the onsite natural soils to be utilized as fill. This shrinkage factor may vary with methods employed by the contractor. Subsidence is estimated to be on the order of 0.1-foot. Losses from site clearing and removal of existing site

improvements may affect earthwork quantity calculation and should be considered.

The previous estimates are intended as an aid for the project engineers in estimating earthwork quantities. It is recommended that the site development be planned to include an area that could be raised or lowered to accommodate final site balancing.

7. Foundations and Slab Design: The recommendations presented in the referenced Preliminary Geotechnical Investigation (2015, attached) remain applicable to the new proposed structures.

Foundations and slabs should be designed in accordance with structural considerations and the following recommendations. These recommendations assume that soils exposed at finish pad grade will have a low potential for expansion. These recommendations may be verified by performing additional expansion tests after grading is completed. Localized areas of higher expansion may be possible.

It is our opinion that the existing medium dense to dense formational materials or properly compacted fill soils will provide adequate bearing strength for the proposed new structure foundations. New footings placed in the existing medium dense to dense formational soils or properly compacted fill soils can be designed for an allowable soil bearing capacity of 2,500 pounds per square foot (psf). We do recommend that the proposed footings and slabs contain at least a nominal amount of reinforcing steel to reduce the separation of cracks should they occur. The allowable soil bearing capacity may be increased one-third for structural design including seismic or wind loads.

The proposed footings should have a minimum depth of 18 inches and a width of at least 12 inches, founded in the medium dense to dense formational material or properly compacted fill soils. A minimum of steel for continuous footings should include at least two continuous No. 4 bars in the upper part of the footing, and two bars 3 inches from the bottom of the footing.

Any new concrete slabs on-grade (on properly compacted fill or dense formational soils) should be a minimum of 4 inches actual thickness and be reinforced with at least No. 3 steel bars on 18-inch centers, in both directions, placed at mid-height in the slab. The interior slab should be underlain by a 15-mil vapor barrier (15-mil StegoWrap) placed directly on properly compacted subgrade. The sand base may be waived.

We recommend that isolation joints and sawcuts be incorporated to at least one-fourth the thickness of the slab in any slab designs. The joints and cuts, if properly placed, should reduce the potential for and help control floor slab cracking. Control joints should be spaced no farther than 20 feet apart, or the width of the slab, as well as at re-entrant corners. Control joints should be placed within 12 hours after concrete placement as soon as concrete sets and no raveling of aggregate occurs. Slabs spanning any existing loose soils and supported by perimeter deepened foundations should be designed as structural slabs.

Comment No. 5: The *site is in proximity of a "State of California Tsunami Inundation Zone (2009)." (New Issue).*

***GEI Response*:** Based on the review of the available maps State of California Tsunami Inundation Map for Emergency Planning, La Jolla Quadrangle, (June 1, 2009). The site is located outside the mapped zone of tsunami inundation. An excerpt of the map presenting the site location is included herewith as an attachment (Figure IV).

Comment No. 6: Address *the risk of tsunami inundation. Clarify if a significant impact is indicated and, if so, recommend measures to mitigate the potential tsunami impact. (New Issue)*

GEI Response: As noted in the response to Comment No. 5 above, the site is located outside the mapped zone of tsunami inundation. As such, measures to mitigate the potential tsunami impact are not required. If desired by the owner/developer, the residential structure can be raised in elevation to minimize the effects of tsunami impact. Construct the residence to make it more resistant to tsunami water.

Comment No. 7: Provide *a geotechnical map on a topographic base that shows the geologic conditions, field explorations and proposed construction. Show the location of the cross section. (New Issue)*

GEI Response: Attached please find a geotechnical map on a topographic base that shows the geologic conditions, field explorations and proposed construction. The geotechnical map also presents the location of the cross section. The map is presented as an attachment (Figure No. II)

Comment No. 8*:* *Provide a geologic cross section. Depict the geologic/geotechnical conditions in relationship to the proposed development. Indicate maximum elevation of anticipated ground water. Refer to the City's "Guidelines for Geotechnical Reports" for the information typically shown on geologic cross.*

GEI Response: Attached please find a geologic cross-section (Figure No. III) presenting the geologic/geotechnical conditions in relationship to the proposed development. The cross-section also presents the depth possible groundwater level.

Review of the available references (GeoTracker) indicate that, at a site located approximately 500 feet southeast of the subject site and with ground elevations similar to those of the subject site, groundwater was encountered at a depth of approximately 14 feet below ground elevation on November 13, 2009. Although groundwater level in that area may fluctuate with tides, it is our opinion that it is a reasonable representation of the groundwater level for the general vicinity of the site.

Comment No. 9: *The Guidelines for Evaluating and Mitigating Seismic Hazards In California (CGS, Special Publication 117) indicates "the minimum level of mitigation for a project should reduce the risk of ground failure during an earthquake to a level that does not cause the collapse of buildings for human occupancy, but in most cases, not to a level of no ground failure at all." The project's geotechnical consultant should address if their recommendations are in accordance with this standard. (New Issue)*

GEI Response: Structures should be designed to resist moderate earthquakes with a low probability of structural damage. Such design should resist major or severe earthquakes with some structural damage, but with a low probability of collapse.

Comment No. 10: Address *if the proposed project will destabilize or result in settlement of the City's Right of Way or adjacent properties. (New Issue)*

GEI Response: Based on the results of our field investigation and our review of the available geologic maps, the subject site is mantled by a layer of up to 2 feet of fill (within the areas investigated) underlain by competent formational material described in the geologic maps as Quaternary (late to middle Pleistocene) Old Paralic Deposits Unit 6. These formational soils are described as poorly sorted, moderately permeable, reddish brown interfingered strand-line beach, estuarine and colluvial deposits composed of siltstone sandstone and conglomerate. Our field investigation indicates that the formational soils are composed of competent medium dense to very dense sandstone at an approximated depth of 2 to 2.5 feet. Furthermore, the proposed project does not include any deep excavations beyond the typical excavations necessary to the installation of underground utilities. As such, it is our professional opinion that the proposed project will have minimum to no effect to the adjacent properties including the City's Right of Way.

Comment No. 11: The *geotechnical consultant must indicate if the site is suitable for the proposed development with respect to geologic and geotechnical site conditions. (New Issue)*

GEI Response: Based on our geotechnical study at the site, our review of readily available reports and literature pertinent to the site (Appendix A), and our understanding of the proposed final grades, it is our opinion that development and/or improvement of the site are feasible from a geologic and geotechnical standpoint, provided the conclusions and recommendations included in the geotechnical report are properly incorporated into the design and construction of any proposed structures. There appear to be no significant geologic and geotechnical constraints on-site that cannot be mitigated by proper planning, design, and utilization of sound construction practices. The engineering properties of the underlying materials, surface drainage, and anticipated degree of seismic risk offer conditions comparable to the other sites surrounding the subject project.

Comment No. 12: The *project's geotechnical consultant should indicate whether or not there are any soils conditions which, if not corrected, would lead to structural defects. (New Issue)*

GEI Response: The soils conditions encountered during our investigation indicate that provided the removal and recompaction of the upper loose soils in the areas of the building pad and the proposed foundations, should provide with very competent subgrade to the proposed structure. It is our opinion that the existing medium dense to dense formational materials and/or properly compacted fill soils will provide adequate bearing strength for the proposed new structure foundations as to minimize the potential for structural defects.

Comment No. 13: *All geotechnical reports submitted to the City of San Diego must be signed and/or seal (stamped) by the appropriately licensed professionals as prescribed by State Law. (New Issue)*

GEI Response: Noted.

Should you have further questions regarding this matter, please contact our office. Reference to our **Job No. 15-10937** will help expedite a response to your inquiries.

Respectfully Submitted,

GEOTECHNICAL EXPLORATION INC.

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Engineering Geologist

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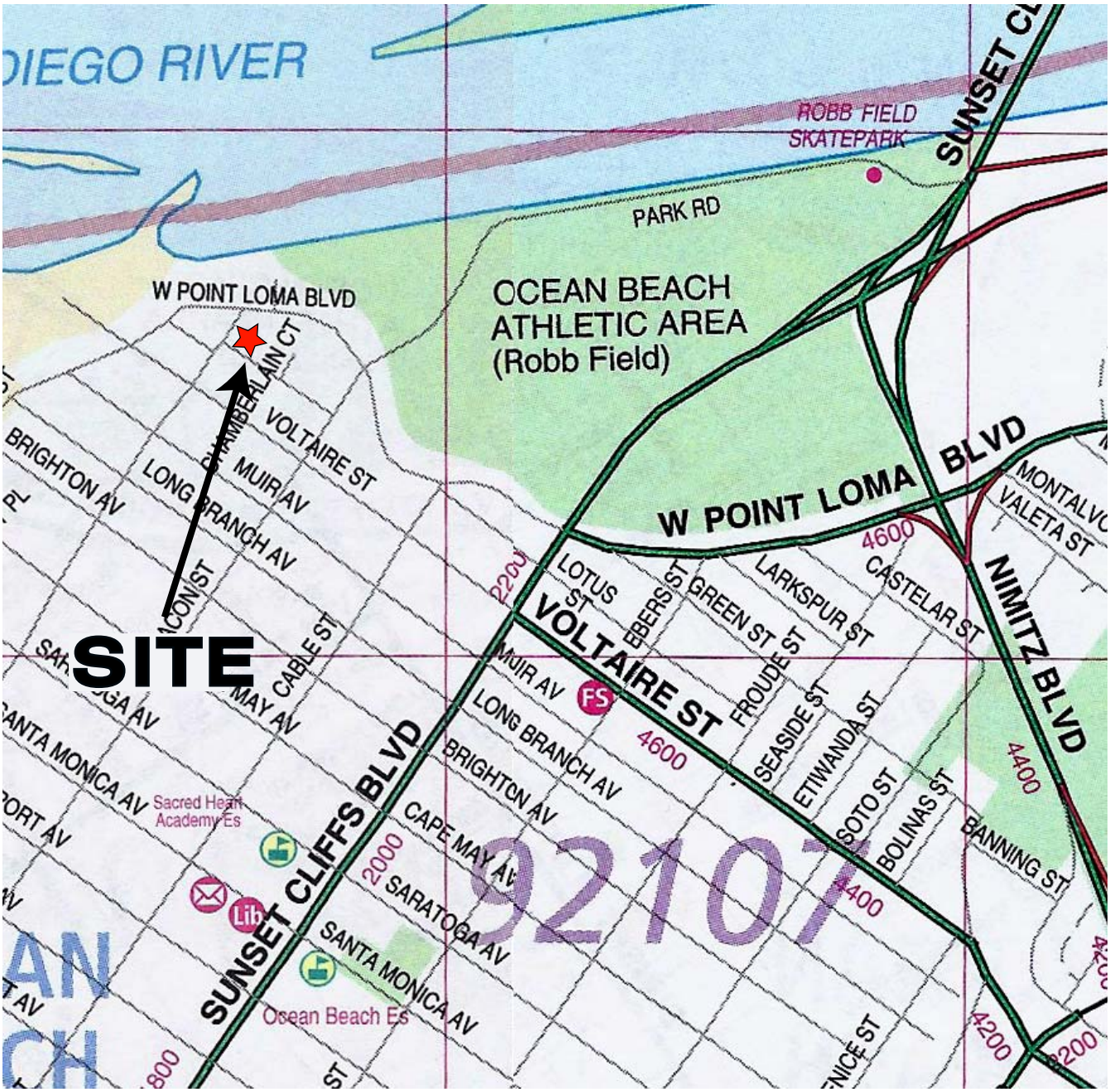
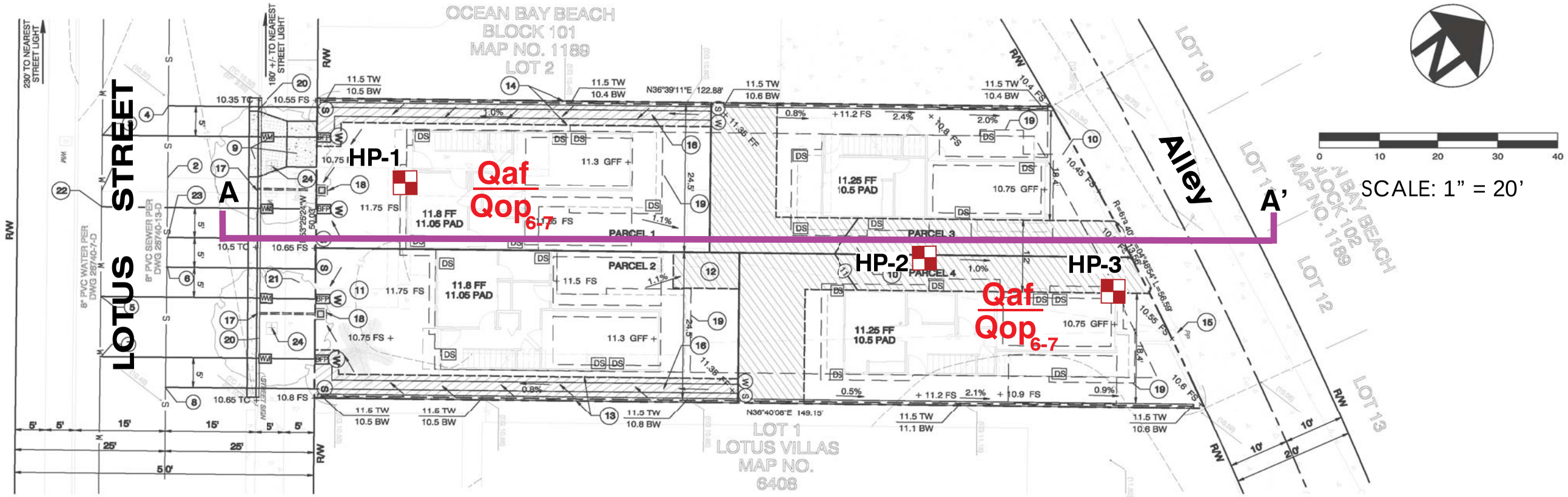
VICINITY MAP



Thomas Bros Guide San Diego County pg 1267-J5

Lotus Street Homes
5064 Lotus Street
San Diego, CA.

Figure No. I
Job No. 15-10937



LEGEND

- PROPERTY LINE/TM BNDRY
- EXISTING CONTOUR
- EXISTING ELECTRICAL LINE
- EXISTING GAS LINE
- EXISTING SEWER LINE
- EXISTING TELEPHONE LINE
- EXISTING WATER LINE
- PROPOSED 4" PVC SEWER LATERAL (PUBLIC)
- PROPOSED 1" WATER SERVICE (PUBLIC)
- PROPOSED CATCH BASIN (PRIVATE)
- PROPOSED SIDEWALK UNDERDRAIN (PRIVATE)
- PROPOSED SIDEWALK (PUBLIC) WALKWAY (PRIVATE)
- PROPOSED PUBLIC CURB/GUTTER (PUBLIC) PER SDG-151
- PRIVATE RETAINING WALL
- PROPOSED LANDSCAPE AREA
- PROPOSED DRIVEABLE GRASS AREA
- PROPOSED STAMPED CONCRETE
- PROPOPSED PRIVATE ACCESS EASEMENT (SEE ITEM 12)
- PROPOSED PRIVATE UTILITY EASEMENT (SEE ITEMS 13 & 14)
- DOWNSPOUT LOCATION
- WATER METER BOX \ BACKFLOW PREVENTER

PRELIMINARY
ANTONY K. CHRISTENSEN, RCE 54021 LS 7508
SEPTEMBER 15, 2020
Date

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Revision 5:
Revision 4:
Revision 3:
Revision 2:
Revision 1: 09-15-20 ADDRESS COMMENTS

Project Name:
LOTUS PLACE

Original Date: JULY 6, 2020

Sheet Title:
PRELIMINARY GRADING PLAN

Sheet 2 of 2 Sheets

C-2

JN A2020-53

GRADING DATA

AREA OF SITE - 0.1568 AC (6,830 SF)
AREA OF SITE TO BE GRADED 0.1568 AC
PERCENT OF SITE TO BE GRADED 100%
AREA OF SITE WITH SLOPES GREATER THEN 25% - 0.0
PERCENT OF SITE WITH SLOPES GREATER THEN 25% - 0%

NO ENVIRONMENTALLY SENSITIVE LANDS EXIST ONSITE

AMOUNT OF CUT - 20 C.Y.
AMOUNT OF FILL - 40 C.Y.
AMOUNT OF IMPORT - 20 C.Y.
MAXIMUM HEIGHT OF FILL SLOPE - N/A
MAXIMUM HEIGHT OF FILL - 1'
MAXIMUM DEPTH OF CUT SLOPE - N/A
MAXIMUM DEPTH OF CUT - 1'

EARTHWORK IS APPROXIMATE AND IS TO PAD GRADE

RETAINING WALL: 1.2 FEET MAX, HT. 260 FEET TOTAL LENGTH

EXISTING IMPERVIOUS AREA: 2,271 SF (33.3%)
PROPOSED CREATED/REPLACED IMPERVIOUS AREA: 5,632 SF (82.5%)

REFERENCE: This Plot Plan was prepared from a PRELIMINARY GRADING PLAN by CHRISTENSEN ENGINEERING dated July 6, 2020 and from on-site field reconnaissance performed by GEI.

LEGEND

HP-3 — Approximate Location of Exploratory Handpit

A — A' — Approximate Line of Cross Section

GEOLOGIC LEGEND

Qaf — Artificial Fill

Qop$_{6-7}$ — Old Paralic Deposits

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.

PLOT PLAN AND SITE SPECIFIC GEOLOGIC MAP

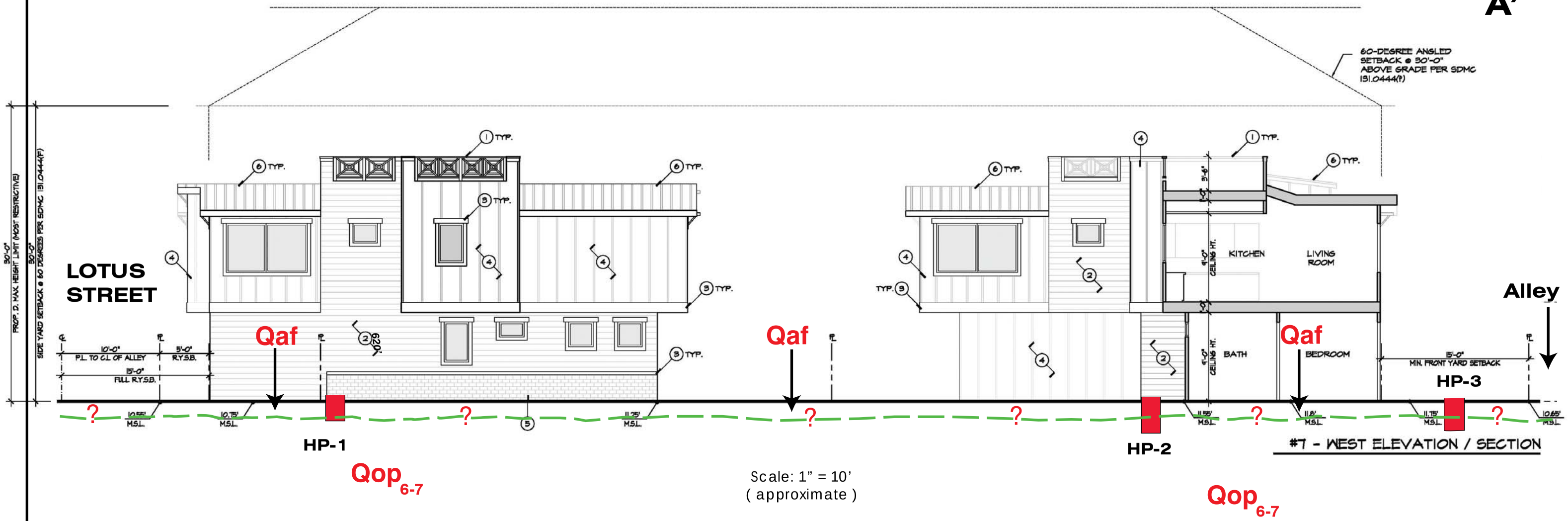
Lotus Condominium Project
5064 Lotus Street
San Diego, CA.
Figure No. II
Job No. 15-10937

Geotechnical Exploration, Inc.

(updated October 2020)

15-10937-p3.ai

GEOLOGIC CROSS SECTION A-A'



Scale: 1" = 10'
(approximate)

LEGEND

HP-3 — Approximate Location of Exploratory Handpit

Assumed Depth to Groundwater

GEOLOGIC LEGEND

Qaf — Artificial Fill

Qop_{6-7} — Old Paralic Deposits (units 6-7)

? — Approximate Geologic Contact

REFERENCE: This Cross Section was prepared from an existing WEST ELEVATION SECTION by GOLBA ARCHITECTURE dated 07/09/20 and from on-site field reconnaissance performed by GEI.

CROSS SECTION

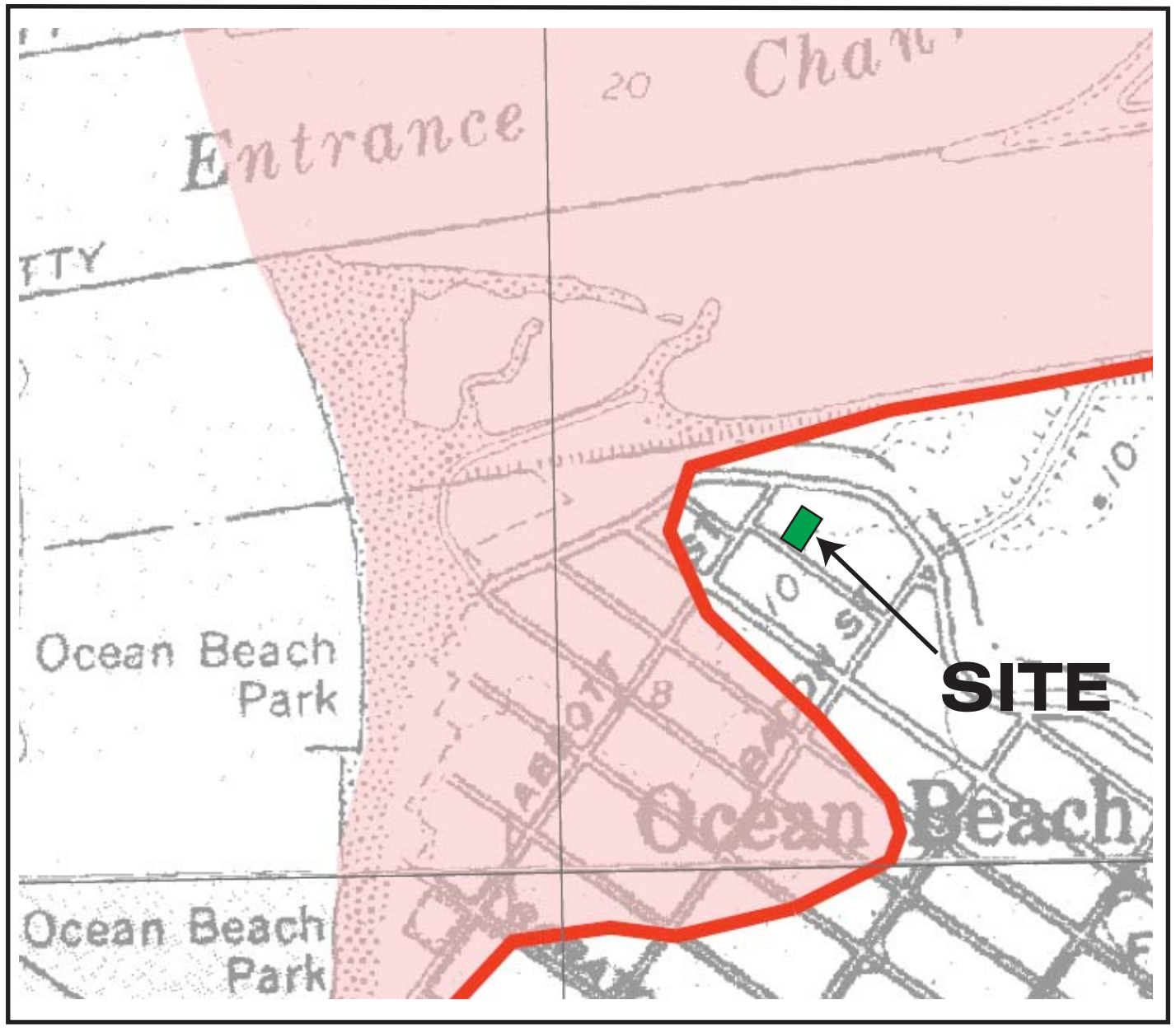
Lotus Condominium Project
5064 Lotus Street
San Diego, CA.
Figure No. III
Job No. 15-10937

Geotechnical Exploration, Inc.
October 2020

15-10937-AA.ai

EXCERT FROM

TSUNAMI INUNDATION MAP FOR EMERGENCY PLANNING



Lotus Street Homes
5064 Lotus Street
San Diego, CA.

State of California ~ County of San Diego

LA JOLLA QUADRANGLE

June 1, 2009

Table 1: Tsunami sources modeled for the San Diego County coastline.

Sources (M = moment magnitude used in modeled event)		Areas of Inundation Map Coverage and Sources Used		
		Dana Point	Oceanside	San Diego
Local Sources	Carlsbad Thrust Fault		X	X
	Catalina Fault	X	X	X
	Coronado Bank Fault			X
	Lasuen Knoll Fault	X		X
	San Clemente Fault Bend Region			X
	San Clemente Island Fault			X
	San Mateo Thrust Fault	X	X	
	Coronado Canyon Landslide #1			X
Distant Sources	Cascadia Subduction Zone #3 (M9.2)	X		X
	Central Aleutians Subduction Zone#1(M8.9)	X	X	X
	Central Aleutians Subduction Zone#2(M8.9)	X		X
	Central Aleutians Subduction Zone#3(M9.2)	X	X	X
	Chile North Subduction Zone (M9.4)	X		X
	1960 Chile Earthquake (M9.3)	X		X
	1952 Kamchatka Earthquake (M9.0)	X		
	1964 Alaska Earthquake (M9.2)	X	X	X
	Japan Subduction Zone #2 (M8.8)	X		X
	Kuril Islands Subduction Zone #2 (M8.8)	X		X
	Kuril Islands Subduction Zone #3 (M8.8)	X		X
	Kuril Islands Subduction Zone #4 (M8.8)	X		X

Cal EMA · CGS · USC University of Southern California

MAP EXPLANATION

Tsunami Inundation Line

Tsunami Inundation Area

PURPOSE OF THIS MAP

This tsunami inundation map was prepared to assist cities and counties in identifying their tsunami hazard. It is intended for local jurisdictional, coastal evacuation planning uses only. This map, and the information presented herein, is not a legal document and does not meet disclosure requirements for real estate transactions nor for any other regulatory purpose.

The inundation map has been compiled with best currently available scientific information. The inundation line represents the maximum considered tsunami runup from a number of extreme, yet realistic, tsunami sources. Tsunamis are rare events; due to a lack of known occurrences in the historical record, this map includes no information about the probability of any tsunami affecting any area within a specific period of time.

Please refer to the following websites for additional information on the construction and/or intended use of the tsunami inundation map:

State of California Emergency Management Agency, Earthquake and Tsunami Program:
http://www.oes.ca.gov/WebPage/oeswebsite.nsf/Content/B1EC51BA215931768825741F005E8D80?OpenDocument

University of Southern California – Tsunami Research Center:
http://www.usc.edu/dept/tsunamis/2005/index.php

State of California Geological Survey Tsunami Information:
http://www.conservation.ca.gov/cgs/geologic_hazards/Tsunami/index.htm

National Oceanic and Atmospheric Agency Center for Tsunami Research (MOST model):
http://nctr.pmel.noaa.gov/time/background/models.html

MAP BASE

Topographic base maps prepared by U.S. Geological Survey as part of the 7.5-minute Quadrangle Map Series (originally 1:24,000 scale). Tsunami inundation line boundaries may reflect updated digital orthophotographic and topographic data that can differ significantly from contours shown on the base map.

DISCLAIMER

The California Emergency Management Agency (CalEMA), the University of Southern California (USC), and the California Geological Survey (CGS) make no representation or warranties regarding the accuracy of this inundation map nor the data from which the map was derived. Neither the State of California nor USC shall be liable under any circumstances for any direct, indirect, special, incidental or consequential damages with respect to any claim by any user or any third party on account of or arising from the use of this map.

Figure No. IV
Job No. 15-10937

Geotechnical Exploration, Inc.

October 2020

morse-res-tsumani.ai

APPENDIX A

Review Information

Cycle Type:	3 Submitted (Multi-Discipline)	**Submitted:**	07/20/2020	Deemed Complete on 07/20/2020
Reviewing Discipline:	LDR-Geology	**Cycle Distributed:**	07/20/2020	
Reviewer:	**Thomas, Patrick**	**Assigned:**	07/21/2020	
	(619) 446-5296	**Started:**	08/14/2020	
	pathomas@sandiego.gov	**Review Due:**	08/17/2020	
Hours of Review:	3.50	**Completed:**	08/17/2020	**COMPLETED ON TIME**
Next Review Method:	Submitted (Multi-Discipline)	**Closed:**	08/27/2020	

. The review due date was changed to 08/20/2020 from 08/20/2020 per agreement with customer.
. The reviewer has indicated they want to review this project again. Reason chosen by the reviewer: New Document Required.
. We request a 2nd complete submittal for LDR-Geology on this project as: Submitted (Multi-Discipline).
. The reviewer has requested more documents be submitted.
. Your project still has 13 outstanding review issues with LDR-Geology (all of which are new).
. Last month LDR-Geology performed 68 reviews, 76.5% were on-time, and 78.5% were on projects at less than < 3 complete submittals.

669302-3 (8/17/2020)

Information

Cleared?	Issue Num	Issue Text
☐	1	The project site is located within geologic hazard zone 52 as shown on the City's Seismic Safety Study Geologic Hazards Maps. Zone 52 is characterized by other level areas, gently sloping to steep terrain with favorable geologic structure, low risk. (New Issue)
☐	2	Storm Water Requirements for the proposed development will be evaluated by LDR-Engineering review. Priority Development Projects (PDPs) may require an investigation of storm water infiltration feasibility in accordance with the Storm Water Standards (including Appendix C and D). Check with your LDR-Engineering reviewer for requirements. LDR-Engineering may determine that LDR-Geology review of a storm water infiltration evaluation is required. (New Issue)

References

Cleared?	Issue Num	Issue Text
☐	3	Site Plan, Lotus Street Homes, 5064 Lotus Street, San Diego, California, prepared by Golba Architecture, Inc., dated July 9, 2020; Preliminary Grading Plans and Tentative Map prepared by Christensen Engineering & Surveying, dated July 6, 2020 Preliminary Geotechnical Investigation, Lotus Condo Project, 5064 Lotus Street, San Diego, California; prepared by Geotechnical Exploration, Inc., undated (their project no. 15-10937). (New Issue)

Comments

Cleared?	Issue Num	Issue Text
☐	4	Submit a geotechnical report that addresses all potential geologic hazards at the site and the information requested herein. The geotechnical report must be prepared in accordance with the City's Guidelines for Geotechnical Reports. http://www.sandiego.gov/development-services/industry/pdf/geoguidelines.pdf (New Issue)
☐	5	The site is in proximity of a "State of California Tsunami Inundation Zone (2009)." http://www.conservation.ca.gov/cgs/geologic_hazards/Tsunami/Inundation_Maps/SanDiego/Pages/SanDiego.aspx (New Issue)
☐	6	Address the risk of Tsunami inundation. Clarify if a significant impact is indicated and, if so, recommend measures to mitigate the potential tsunami impact. (New Issue)
☐	7	Provide a geotechnical map on a topographic base that shows the geologic conditions, field explorations and proposed construction. Show the location of the cross section. (New Issue)
☐	8	Provide a geologic cross section. Depict the geologic/ geotechnical conditions in relationship to the proposed development. Indicate maximum elevation of anticipated ground water. Refer to the City's "Guidelines for Geotechnical Reports" for the information typically shown on geologic cross sections. (New Issue)

For questions regarding the 'LDR-Geology' review, please call Patrick Thomas at (619) 446-5296. Project Nbr: 669302 / Cycle: 3

Cleared?	Issue Num	Issue Text
☐	9	The Guidelines for Evaluating and Mitigating Seismic Hazards in California (CGS, Special Publication 117) indicates "the minimum level of mitigation for a project should reduce the risk of ground failure during an earthquake to a level that does not cause the collapse of buildings for human occupancy, but in most cases, not to a level of no ground failure at all." The project's geotechnical consultant should address if their recommendations are in accordance with this standard. (New Issue)
☐	10	Address if the proposed project will destabilize or result in settlement of the City's Right of Way or adjacent properties. (New Issue)
☐	11	The geotechnical consultant must indicate if the site is suitable for the proposed development with respect to geologic and geotechnical site conditions. (New Issue)
☐	12	The project's geotechnical consultant should indicate whether or not there are any soils conditions which, if not corrected, would lead to structural defects. (New Issue)
☐	13	All geotechnical reports submitted to the City of San Diego must be signed and/ or seal (stamped) by the appropriately licensed professionals as prescribed by State Law. (New Issue)

APPENDIX B

Geotechnical Exploration, Inc.
SOIL AND FOUNDATION ENGINEERING ● GROUNDWATER ● ENGINEERING GEOLOGY

16 December 2015

CT Homes
909 Grand Avenue
San Diego, CA 92109

Job No. 15-10937

Subject: **Preliminary Geotechnical Investigation**
Lotus Condo Project
5064 Lotus Street
San Diego, California

In accordance with your request, a representative of ***Geotechnical Exploration, Inc.*** has visited the subject site and performed an evaluation of the soil conditions in the area of the proposed new condominium project. It is our understanding that the existing structure will be removed and the site is being developed to receive a five unit condominium project and associated improvements. As part of our investigation, we observed and evaluated the shallow soil conditions at three locations within the proposed new building pad area.

In addition, we reviewed the preliminary site plan by Accurate Land Surveys, dated September 25, 2015, to show the proposed building location in accordance with the requirements of the City of San Diego Development Services Department.

The field work, conducted on November 17, 2015, consisted of logging three hand-excavated test pits in the location of the proposed new construction. The excavations revealed that the building site is underlain by approximately 2 feet of loose to medium dense, silty sand topsoil over medium dense to dense, silty sand formational materials. The on-site soils are considered to have a low expansion potential with an Expansion Index of less than 50.

Based upon our observation, probing of the on-site soils, it is our opinion that the new foundations for the proposed structure should be founded in the dense formational materials or properly compacted fill soils. The existing loose to medium dense topsoils in the proposed building pad area should be removed and/or properly compacted as part of site preparation under any new slab areas. The new fill should be compacted to at least 90 percent of Maximum Dry Density. The Maximum Dry Density of the soil has been determined per ASTM D1557-12.

1. It is our opinion that the existing medium dense to dense formational materials or properly compacted fill soils will provide adequate bearing strength for the proposed new structure foundations. New footings placed in the existing medium dense to dense formational soils or properly compacted fill soils can be designed for an allowable soil bearing capacity of 2,500 pounds per square foot (psf). We do recommend that the proposed footings and slabs contain at least a nominal amount of reinforcing steel to reduce the separation of cracks should they occur. The allowable soil bearing capacity may be increased one-third for structural design including seismic or wind loads.

2. The proposed footings should have a minimum depth of 18 inches and a width of at least 12 inches, founded in the medium dense to dense formational material or properly compacted fill soils. A minimum of steel for continuous footings should include at least two continuous No. 4 bars in the upper part of the footing, and two bars 3 inches from the bottom of the footing. Footings near any slope faces should be provided with a setback of at least 7 feet, measured from the upper edge of the footing nearest the slope face.

3. Site-specific seismic design criteria to calculate the base shear needed for the design of the residential addition are presented in the following table. The design criteria was obtained from the California Building Code (CBC) 2013 edition, and is based on the distance to the closest active fault and soil profile classification.

4. The proposed addition should be designed in accordance with Section 1613 of the 2013 CBC, which incorporates by reference the ASCE 7-10 for seismic design and the following parameters should be utilized. We have determined the mapped spectral acceleration values for the site based on a latitude of 32.7534 degrees and longitude of 117.2471 degrees, utilizing a program titled *"Design Maps and Tools,"* provided by the USGS, which provides a solution for ASCE 7-10 (Section 1613 of the 2013 CBC) utilizing digitized files for the Spectral Acceleration maps.

   In addition, we have assigned a Site Classification of D. The response parameters for design are presented in the following table. The design spectrum acceleration vs. Period T is attached.

TABLE I
Mapped Spectral Acceleration Values and Design Parameters

S_s	S_1	F_a	F_v	S_{ms}	S_{m1}	S_{ds}	S_{d1}
1.141	0.433	1.044	1.567	1.191	0.678	0.794	0.452

5. The liquefaction of saturated sands during earthquakes can be a major cause of damage to buildings. Liquefaction is the process by which soils are transformed into a viscous fluid that will flow as a liquid when unconfined. It

occurs primarily in loose, saturated sands and silts when they are sufficiently shaken by an earthquake.

On this site, the risk of liquefaction of foundation materials due to seismic shaking is considered to be remote due to the relatively shallow, medium dense to dense nature of the natural-ground material and the lack of a shallow static groundwater surface under the site. No soil liquefaction or soil strength loss is anticipated to occur due to a seismic event.

6. Any new concrete slabs on-grade (on properly compacted fill or dense formational soils) should be a minimum of 4 inches actual thickness and be reinforced with at least No. 3 steel bars on 18-inch centers, in both directions, placed at mid-height in the slab. The interior slab should be underlain by a 15-mil vapor barrier (15-mil StegoWrap) placed directly on properly compacted subgrade. The sand base may be waived.

   We recommend that isolation joints and sawcuts be incorporated to at least one-fourth the thickness of the slab in any slab designs. The joints and cuts, if properly placed, should reduce the potential for and help control floor slab cracking. Control joints should be spaced no farther than 20 feet apart, or the width of the slab, as well as at re-entrant corners. Control joints should be placed within 12 hours after concrete placement as soon as concrete sets and no raveling of aggregate occurs. Slabs spanning any existing loose soils and supported by perimeter deepened foundations should be designed as structural slabs.

7. For design of any proposed exterior retaining walls, the active earth pressure (to be utilized in the design of cantilever, non-restrained walls) should be

based on an Equivalent Fluid Weight of 38 pounds per cubic foot (for level backfill only) if on-site soils are used. Additional loads applied within the potential failure block should be added to the active soil earth pressure by multiplying the vertical surcharge load by a 0.31 lateral earth pressure coefficient.

For restrained wall (basement) conditions, we recommend an equivalent fluid weight of 56 pcf. Surcharge loads may be converted to lateral pressures by multiplying by a factor of 0.47. Should seismic soil increment be required, the unrestrained walls with level backfill should be designed for a triangular pressure of 14 pcf, in addition to the regular static loading, with zero pressure at the top and the maximum pressure at the bottom of the wall.

8. The passive earth pressure of the encountered fill soils to be used for design of shallow foundations and footings to resist the lateral forces, should be based on an Equivalent Fluid Weight of 275 pcf. This passive earth pressure is valid for design only if the ground adjacent to the foundation structure is essentially level for a distance of at least three times the total depth of the foundation and is properly compacted or dense natural soil. An allowable Coefficient of Friction of 0.40 times the dead load may be used between the bearing soils and concrete foundations, walls or floor slabs. Driveway and parking area slabs should be at least 5½ inches thick using concrete at least 3,500 psi compressive strength at 28 days.

9. Adequate measures should be taken to properly finish-grade the site after the new structure and other improvements are in place. Drainage waters from this site and adjacent properties should be directed away from perimeter foundations, floor slabs, footings and slope tops, and onto the

natural drainage direction for this area or into properly designed and approved drainage facilities. Proper subsurface and surface drainage will help minimize the potential for waters to seek the level of the bearing soils under the foundations, footings, and floor slabs. Failure to observe this recommendation could result in undermining, differential settlement of the building foundation or other improvements on the site, or moisture-related problems.

It is not within the scope of our services to provide quality control oversight for surface or subsurface drainage construction or retaining wall sealing and base of wall drain construction. It is the responsibility of the contractor and/or their retained construction inspection service provider to provide proper surface and subsurface drainage.

10. Due to the possible build-up of groundwater (derived primarily from rainfall and irrigation), excess moisture is a common problem in below-grade structures or behind retaining walls. These problems are generally in the form of water seepage through walls, mineral staining, mildew growth and high humidity. In order to minimize the potential for moisture-related problems to develop, proper cross ventilation and waterproofing must be provided for below-ground areas, in crawl spaces, and the backfill side of all structure retaining walls must be adequately waterproofed and drained.

Proper subdrains and free-draining backwall material (such as gravel or geocomposite drains such as Miradrain 6000 or equivalent) should be installed behind all retaining walls on the subject project in addition to wall waterproofing. ***Geotechnical Exploration, Inc.*** will assume no liability for damage to structures that is attributable to poor drainage.

11. Planter areas and planter boxes should be sloped to drain away from the foundations, footings, and floor slabs. Planter boxes should be constructed with a closed bottom and a subsurface drain, installed in gravel, with the direction of subsurface and surface flow away from the foundations, footings, and floor slabs, to an adequate drainage facility. The finish grade around the buildings should drain away from the perimeter walls to help reduce or prevent water accumulation. A minimum 5 percent gradient is recommended within 5 feet of the building. Exterior slabs or rigid improvements should also be built on properly compacted soils and be provided with concrete shrinkage reinforcement and adequately spaced joints.

Geotechnical Exploration, Inc. recommends that we be asked to verify the actual soil conditions revealed during site grading or in footing excavations prior to form and steel reinforcement placement. We also recommend that we be able to review foundation plans. In addition, any new fills or loose soils should be properly compacted under the observations and testing of our firm.

Should you have any questions regarding this matter, please contact our office. Reference to our **Job No. 15-10937** will help to expedite a response to your inquiries.

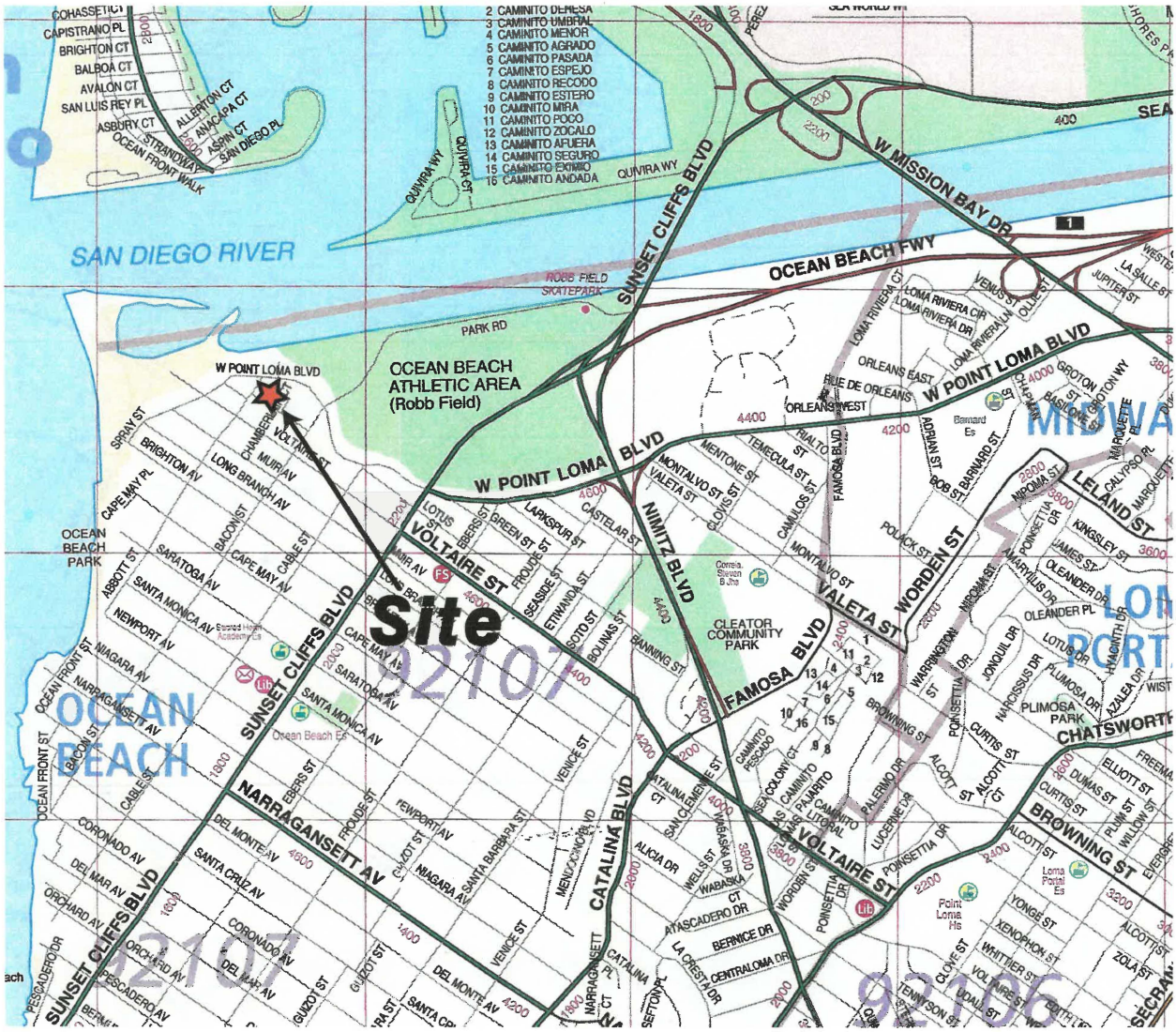
Respectfully submitted,

GEOTECHNICAL EXPLORATION, INC.

Jay K. Heiser
Senior Project Geologist

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

VICINITY MAP



Thomas Bros Guide San Diego County pg 1267-J5

Lotus Condominium Project
5064 Lotus Street
San Diego, CA.

Figure No. I
Job No. 15-10937

EQUIPMENT	DIMENSION & TYPE OF EXCAVATION	DATE LOGGED
Hand Tools	**2' X 2' X 3.5' Handpit**	**11-17-15**
SURFACE ELEVATION	GROUNDWATER/ SEEPAGE DEPTH	LOGGED BY
± 10' Mean Sea Level	**Not Encountered**	**JKH**

DEPTH (feet)	SYMBOL	SAMPLE	FIELD DESCRIPTION AND CLASSIFICATION DESCRIPTION AND REMARKS (Grain size, Density, Moisture, Color)	U.S.C.S.	IN-PLACE MOISTURE (%)	IN-PLACE DRY DENSITY (pcf)	OPTIMUM MOISTURE (%)	MAXIMUM DRY DENSITY (pcf)	DENSITY (% of M.D.D.)	EXPAN. + (%) CONSOL. -	BLOW COUNTS/FT.	SAMPLE O.D. (INCHES)
1			**SILTY SAND**, fine- to medium-grained, with some roots and animal burrows. Loose to medium dense. Dry. Light brown. **TOPSOIL**	SM								
2			**SILTY SAND**, fine- to medium-grained; moderately well cemented. Medium dense to dense. Damp. Red-brown. **OLD PARALIC DEPOSITS (Qop$_6$)**	SM								
3												
4			Bottom @ 3.5'									

EXPLORATION LOG 10937 LOTUS.GPJ GEO_EXPL.GDT 11/24/15

- PERCHED WATER TABLE
- BULK BAG SAMPLE
- [1] IN-PLACE SAMPLE
- MODIFIED CALIFORNIA SAMPLE
- [S] NUCLEAR FIELD DENSITY TEST
- STANDARD PENETRATION TEST

JOB NAME
Lotus Condominium Project

SITE LOCATION
5064 Lotus Street, San Diego, CA

JOB NUMBER
15-10937

REVIEWED BY
LDR/JAC

FIGURE NUMBER
IIIa

Geotechnical Exploration, Inc.

LOG No.
HP-1

EQUIPMENT	DIMENSION & TYPE OF EXCAVATION	DATE LOGGED
Hand Tools	**2' X 2' X 3.5' Handpit**	**11-17-15**
SURFACE ELEVATION	GROUNDWATER/ SEEPAGE DEPTH	LOGGED BY
± 10' Mean Sea Level	**Not Encountered**	**JKH**

DEPTH (feet)	SYMBOL	SAMPLE	FIELD DESCRIPTION AND CLASSIFICATION DESCRIPTION AND REMARKS (Grain size, Density, Moisture, Color)	U.S.C.S.	IN-PLACE MOISTURE (%)	IN-PLACE DRY DENSITY (pcf)	OPTIMUM MOISTURE (%)	MAXIMUM DRY DENSITY (pcf)	DENSITY (% of M.D.D.)	EXPAN. + (%) CONSOL. -	BLOW COUNTS/FT.	SAMPLE O.D. (INCHES)
1			**SILTY SAND**, fine- to medium-grained. Loose to medium dense. Dry. Light brown. **TOPSOIL**	SM								
2			**SILTY SAND**, fine- to medium-grained; moderately well cemented. Medium dense to dense. Damp. Red-brown. **OLD PARALIC DEPOSITS (Qop_6)**	SM								
3												
4			Bottom @ 3.5'									

EXPLORATION LOG 10937 LOTUS.GPJ GEO_EXPL.GDT 11/24/15

- PERCHED WATER TABLE
- BULK BAG SAMPLE
- [1] IN-PLACE SAMPLE
- MODIFIED CALIFORNIA SAMPLE
- [S] NUCLEAR FIELD DENSITY TEST
- STANDARD PENETRATION TEST

JOB NAME
Lotus Condominium Project

SITE LOCATION
5064 Lotus Street, San Diego, CA

JOB NUMBER
15-10937

REVIEWED BY
LDR/JAC

FIGURE NUMBER
IIIb

Geotechnical Exploration, Inc.

LOG No.
HP-2

EQUIPMENT	DIMENSION & TYPE OF EXCAVATION	DATE LOGGED
Hand Tools	**2' X 2' X 2.5' Handpit**	**11-17-15**
SURFACE ELEVATION	GROUNDWATER/ SEEPAGE DEPTH	LOGGED BY
± 10' Mean Sea Level	**Not Encountered**	**JKH**

DEPTH (feet)	SYMBOL	SAMPLE	FIELD DESCRIPTION AND CLASSIFICATION DESCRIPTION AND REMARKS (Grain size, Density, Moisture, Color)	U.S.C.S.	IN-PLACE MOISTURE (%)	IN-PLACE DRY DENSITY (pcf)	OPTIMUM MOISTURE (%)	MAXIMUM DRY DENSITY (pcf)	DENSITY (% of M.D.D.)	EXPAN. + (%) CONSOL. -	BLOW COUNTS/FT.	SAMPLE O.D. (INCHES)
1			**SILTY SAND**, fine- to medium-grained, with some roots. Loose to medium dense. Dry. Light brown. **TOPSOIL**	SM								
2			**SILTY SAND**, fine- to medium-grained; moderately cemented. Medium dense. Damp. Red-brown. **OLD PARALIC DEPOSITS (Qop_6)**	SM								
3			Bottom @ 2.5'									
4												

PERCHED WATER TABLE
BULK BAG SAMPLE
1 IN-PLACE SAMPLE
MODIFIED CALIFORNIA SAMPLE
S NUCLEAR FIELD DENSITY TEST
STANDARD PENETRATION TEST

JOB NAME
Lotus Condominium Project

SITE LOCATION
5064 Lotus Street, San Diego, CA

JOB NUMBER
15-10937

REVIEWED BY
LDR/JAC

FIGURE NUMBER
IIIc

Geotechnical Exploration, Inc.

LOG No.
HP-3

EXPLORATION LOG 10937 LOTUS.GPJ GEO_EXPL.GDT 11/24/15

PROJECT NUMBER : 15-10937

PROJECT NAME : Lotus

BORING/SAMPLE NO. : HP - 1

DEPTH/SOURCE : 1 - 2 '

SAMPLE DESCRIPTION : Brown SM

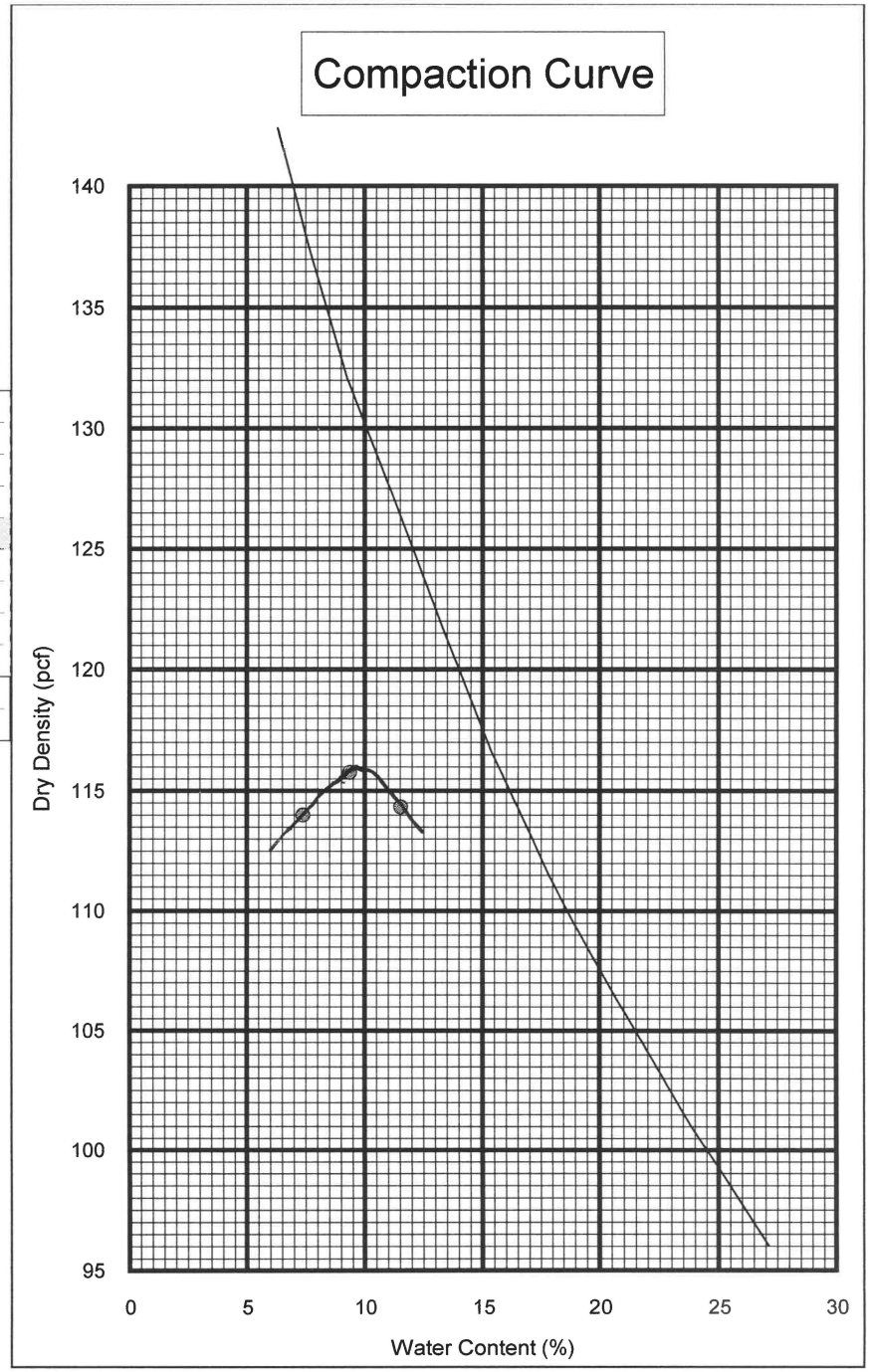
TESTED BY: AH
DATE: 11/20/15

INPUT BY : AH
DATE : 11/23/15

CHECKED BY :
DATE :

Trial Number	1	2	3	4	5	6	7	8
Weight of Wet Soil & Mold (lbs)	8.94	9.08	9.11					
Weight of Mold (lbs)	4.86	4.86	4.86					
Volume Multiplication Factor	30	30	30					
Wet Density (pcf)	**122.4**	**126.6**	**127.5**					
Can Number	11	34	52					
Wet Soil & Can weight (grams)	306.4	312.4	301.8					
Dry Soil & Can Weight (grams)	288.2	289.0	274.9					
Can weight (grams)	41.0	38.8	41.1					
WATER CONTENT (%)	**7.4**	**9.4**	**11.5**					
DRY DENSITY (pcf)	**114.0**	**115.8**	**114.3**					

Maximum Dry Density (pcf)	116.0
Optimum Water Content (%)	9.5%



WATER CONTENT AND 200 WASH

PROJECT NUMBER : 15-10937

PROJECT NAME : Lotus

TESTED BY: CH
DATE: 11/19/2015

INPUT BY : AH
DATE : 11/23/2015

CHECKED BY :
DATE :

Boring/Sample No.	**HP - 1**					
Depth	1 - 2 '					
Sample Classification	Brown					
Classification Symbol	SM					
Can No.	42					
Weight of Wet Soil & Can (grams)	Bulk					
Weight of Dry Soil & Can (grams)	208.6					
Weight of Can (grams)	41.3					
WATER CONTENT						
200 WASH						
Weight of Dry Soil & Can	173.7					
(after washing)						
PERCENT PASSING 200	**21**					

USGS Design Maps Summary Report

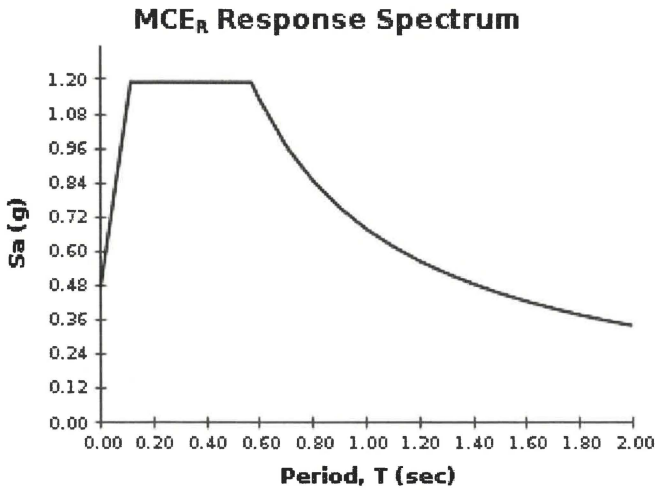
User–Specified Input

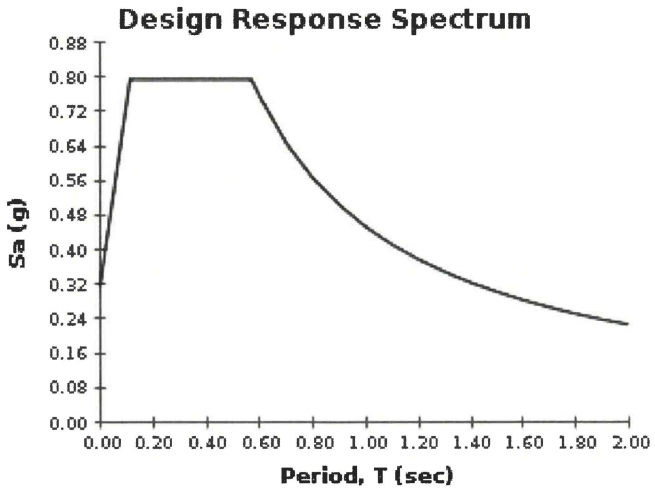
Report Title	5064 Lotus Street, San Diego, CA Wed December 16, 2015 19:55:57 UTC
Building Code Reference Document	ASCE 7-10 Standard (which utilizes USGS hazard data available in 2008)
Site Coordinates	32.7534°N, 117.2471°W
Site Soil Classification	Site Class D – "Stiff Soil"
Risk Category	I/II/III

USGS–Provided Output

S_S =	1.141 g	S_{MS} =	1.191 g	S_{DS} =	0.794 g
S_1 =	0.433 g	S_{M1} =	0.678 g	S_{D1} =	0.452 g

For information on how the SS and S1 values above have been calculated from probabilistic (risk-targeted) and deterministic ground motions in the direction of maximum horizontal response, please return to the application and select the "2009 NEHRP" building code reference document.





For PGA_M, T_L, C_{RS}, and C_{R1} values, please view the detailed report.