April 2, 2021 07-483-02

Manasseh Building Group, Inc.
212 N. Kanan Road
Oak Park, CA 91377

Attention: Mr. Stephen W. Gregorchuck, President

Subject: Supplement No. 3
Proposed Winnetka Townhome Apartments Project
Lot "A" Of PM 1595
20460 North Sherman Way
Los Angeles (Canoga Park), California 91306

Gentlemen:

## INTRODUCTION

We are pleased to submit this Supplement No. 3 report providing clarification on the subject of temporary shoring placed at the subject site in 2008. presenting additional geotechnical engineering investigation and recommendations for the subject project.
The original report of geotechnical investigation for the subject project was issued by this office on December 5, 2007. Our Supplement reports No.1 and 2 were later issued on February 6, 2008 and March 24, 2008, respectively, providing responses to the City comments.

Our original report and supplements were reviewed and approved "with conditions" by the Grading Section of the Department of Building and Safety of the City of Los Angeles. A Soils Report Approval Letter to that effect was issued on June 2, 2008 (Log #61581-02).

Subsequent to the approval of our reports, we issued an update report on February 4, 2015. Our update report was also reviewed and approved "with conditions" by the Grading Section of the Department of Building and Safety of the City of Los Angeles. A second Soils Report Approval Letter was issued on February 28, 2015 (LOG # 87245).

In addition, our office prepared an Update II on February 5, 2021. The Update II report was reviewed by the City. A Soils Report Review Letter dated March 12, 2021 (LOG #116321) was received by our office. For convenience, we have enclosed a copy of the City Review Letter to this Supplement No. 3.

For the preparation of this Supplement No. 3, our work included review of the project files and also obtained City records of inspection for shoring work performed at the subject site. Below is a response to the City comment.

## RESPONSE TO COMMENTS

**Comment 1:** *Temporary shoring, basement excavation and sub grade inspection are integral parts of the proposed construction, and therefore, the proposed construction cannot proceed without full responsibility been taken. Resolve this issue.*

**Response:** According to the LADBS certificate of compliance our office obtained, the records indicate that an independent grading deputy observed the drilling and installation of shoring piles at the subject site in November 2008. The responsible grading deputy was a former staff member of Applied Earth Sciences. On this basis, our office will take responsibility for the performance and use of shoring piles.

-oOo-

Except those presented in this Supplement No. 3, all the other recommendations presented in our original report will remain valid.

Thank you for the opportunity to be of continued service on this project. Should you have any questions regarding this Supplement No. 3, or wish to discuss the project further, please do not hesitate to call us.

Respectfully Submitted,

**APPLIED EARTH SCIENCES**

Fereidoun "Fred" Jahani
Project Engineer
RE62875

REGISTERED PROFESSIONAL ENGINEER
FEREIDOUN JAHANI
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STATE OF CALIFORNIA

Caro Minas, President
Geotechnical Engineer
EG 601

REGISTERED PROFESSIONAL ENGINEER
CARO J. MINAS
NO. 601
GEOTECHNICAL
STATE OF CALIFORNIA

FJ/CMH/se

Enclosure: City of Los Angeles Soils Report Review Letter Dated March 12, 2021 (LOG #116321).

Distribution: (3)

# CITY OF LOS ANGELES
CALIFORNIA



DEPARTMENT OF
BUILDING AND SAFETY
201 NORTH FIGUEROA STREET
LOS ANGELES, CA 90012

OSAMA YOUNAN, P.E.
GENERAL MANAGER
SUPERINTENDENT OF BUILDING

JOHN WEIGHT
EXECUTIVE OFFICER

## SOILS REPORT REVIEW LETTER

March 12, 2021

LOG # 116321
SOILS/GEOLOGY FILE - 2

Manasseh Building Group, Inc.
212 N. Kanan Road
Oak Park, CA 91377

TRACT: PM 1594
LOT(S): A
LOCATION: 20460 N. Sherman Way

| CURRENT REFERENCE REPORT/LETTER(S) | REPORT No. | DATE OF DOCUMENT | PREPARED BY |
|---|---|---|---|
| Update Report | 07-483-02 | 02/05/2021 | Applied Earth Sciences |

| PREVIOUS REFERENCE REPORT/LETTER(S) | REPORT No. | DATE OF DOCUMENT | PREPARED BY |
|---|---|---|---|
| Dept. Approval Letter | 87245 | 02/28/2015 | LADBS |
| Soils Report | 07-483-02 | 02/04/2015 | Applied Earth Sciences |
| Dept. Approval Letter | 61581-02 | 06/02/2008 | LADBS |
| Soils Report | 07-483-02 | 03/24/2008 | Applied Earth Sciences |
| Dept. Correction Letter | 61581-01 | 03/13/2008 | LADBS |
| Soils Report | 07-483-02 | 02/06/2008 | Applied Earth Sciences |
| Dept. Correction Letter | 61581 | 01/15/2008 | LADBS |
| Soils Report | 07-483-02 | 12/05/2007 | Applied Earth Sciences |

The Grading Division of the Department of Building and Safety has reviewed the referenced update report that provides supplemental recommendations for the proposed 5-story apartment building over one level of basement garage. The Department reviewed and conditionally approved the previous referenced report for the construction of a 2-story commercial building over one level of subterranean parking.

Based on the referenced update report, construction has been halted since early 2009. Temporary shoring piles are in-place and basement excavation has been made.

The review of the subject report cannot be completed at this time and will be continued upon submittal of an addendum to the report which shall include, but not be limited to, the following:

1. Temporary shoring, basement excavation and subgrade inspection are integral parts of the proposed construction, and therefore, the proposed construction cannot proceed without full responsibility been taken. Resolve this issue.

The soils engineer shall prepare a report containing an itemized response to the review items indicated in this letter. If clarification concerning the review letter is necessary, the report review engineer may be contacted. Two copies of the response report, including one unbound wet-signed original for archiving purposes, a pdf-copy of the complete report in a CD or flash drive, and the appropriate fees will be required for submittal.

YING LIU
Geotechnical Engineer II

YL/yl
Log No. 116321
213-482-0480

cc: Applied Earth Sciences, Project Consultant
VN District Office

February 5, 2021 07-483-02

Manasseh Building Group, Inc.
212 N. Kanan Road
Oak Park, CA 91377

Attention: Mr. Stephen W. Gregorchuck, President

Subject: Geotechnical Investigation Report Update II
Proposed Winnetka Townhome Apartments Project
Lot "A" Of PM 1595
20460 North Sherman Way
Los Angeles (Canoga Park), California 91306

Gentlemen:

## INTRODUCTION

We are pleased to submit this geotechnical investigation update report II for the subject project. The original report of geotechnical investigation for the subject project was issued by this office on December 5, 2007. Our Supplement reports No.1 and 2 were later issued on February 6, 2008 and March 24, 2008, respectively, providing responses to the City comments.

Our original report and supplements were reviewed and approved "with conditions" by the Grading Section of the Department of Building and Safety of the City of Los Angeles. A Soils Report Approval Letter to that effect was issued on June 2, 2008 (LOG # 61581-02).

Subsequent to the approval of our reports, we issued an update report on February 4, 2015. Our update report was also reviewed and approved "with conditions" by the Grading Section of the Department of Building and Safety of the City of Los Angeles. A second Soils Report Approval Letter was issued on February 28, 2015 (LOG # 87245). For convenience, we have enclosed copies of the City Approval Letters with this update report II.

During the course of preparation of this report update, the engineering properties of the subsurface materials (from the results of our previous investigation) were evaluated in order to provide supplemental geotechnical engineering recommendations for the proposed project. Our scope of work included review of the project files and the past report, review of the newly provided project plans, supplemental engineering evaluation and analysis, consultation, and preparation of this Update Report II.

During the course of preparation of this report update II, the most recent plans were used as reference. These plans were prepared by the offices of Pacific Planning and Design.

The enclosed Site Plan, Drawing No. 1, shows the approximate locations of original borings with respect to the site boundaries and the proposed building. This drawing also shows the approximate locations of the Cross Sections A-A' and B-B'. Drawing Nos. 2 and 3 show the profiles of the Cross Sections A-A' and B-B'.

Also enclosed with this update report II, are the following:

1. Figure No. 1 showing the Site Vicinity Map;
2. Figure No. 2 showing the Regional Topographic Map;
3. Figure No. 3 showing the Regional Geologic Map; and
4. Figure No. 4 showing the Historically Highest Groundwater Contour Map.

## SCOPE OF WORK

Our current scope of work included performing the following tasks:

1. Review the project files;
2. Revisit the site by the Geotechnical Engineer;
3. Review the new project plans;
4. Revise the original Site Plan to reflect the new structures;
5. Include Cross Sections to show existing grades;
6. Perform supplemental engineering evaluation/analysis, as necessary, to revise recommendations for foundations, and retaining walls;
7. Revise seismic risk factors based on the latest Code; and
8. Prepare this report update II.

## CURRENT SITE CONDITIONS AND PROJECT CONSIDERATIONS

At this time, the temporary shoring piles are in-place and basement garage excavation has been made. We were told that the project has been halted since early 2009.

No records of shoring pile inspection could be found in our files. City records show that the inspection for the shoring piles have been made by an Independent Deputy Grading Inspector. Therefore, this office will not take responsibility for the performance and use of the shoring piles. We will, however, make the required future geotechnical engineering inspections such as foundations, grading, etc., and assume full responsibility for the remaining portion of the project. No additional field exploration was made as part of preparation of this update report II.

It is our understanding that, although the grading concept for the proposed project is similar to those planned originally (mainly cutting operations in order to create the proposed basement grade) the number of stories of the proposed building above grade will be increased. Currently, a 5-story building over one level of basement garage is proposed. The basement and the ground floors will be used for parking. The upper floors will be used for apartment units. It is, therefore, reasonable to assume that the foundation loading will be higher than those assumed in our original report.

In our last update report, we had provided an alternative foundation support system for the proposed building to be in a form of a "thick slab" (mat) foundation. However, since we had found water at depths between 19 to 28 feet, and the base of the proposed building occurs some 11 feet below grade, the effects of water on the mat was not considered. The City now requires that, for design, historically highest water level to be used. Based on the recent State Maps, the historically highest groundwater level in the vicinity of the subject site occurs near a depth of about 5 feet. Therefore, the "mat" should be designed assuming water level at a depth of 5 feet.

Structural loading data was not available at the time of this investigation. For the propose of this update report, it is assumed that maximum concentrated loads would now be on the order of 600 kips, combined dead plus frequently applied live loads. Perimeter wall footings of the proposed building are expected to exert loads of on the order of 12 kips per lineal foot.

## GROUNDWATER

During the course of our investigation groundwater was found in our borings. Depth to the groundwater level was found to range from 19 to 28 feet below the existing grade. The latest available maps, however, indicate that the historically highest groundwater level at the site was near a depth of about 5 feet. For the purpose of calculating the magnitude of the hydrostatic uplift pressure beneath the "mat" it should now be assumed static water table to occur at a depth of 5 feet.

## SEISMIC DESIGN CONSIDERATIONS

In accordance with the ASTM7-16, corresponding to LABC 2020, the project site can be classified as site "D". The mapped spectral accelerations of $S_S$= 1.539 (short period) and $S_1$ =0.6 (1-second period) can be used for this project. These parameters correspond to site Coefficients values of $F_a$ =1.0 and $F_V$ = null (see the Note below), respectively.

The seismic design parameters would be as follows:

| | |
|---|---|
| $\mathbf{S_{MS}}$= $F_a$ ($S_S$) = 1.0 (1.539) = 1.539 | $\mathbf{S_{M1}}$=$F_V$ ($S_1$) = null (see Note below) |
| $\mathbf{S_{DS}}$=2/3 ($S_{MS}$) = 2/3 (1.539) = 1.231 | $\mathbf{S_{D1}}$=2/3 ($S_{M1}$) = null (see Note below) |

Note: Since the seismic factor $S_1$ is greater than 0.2 site-specific ground motion hazard analysis may be required. The project structural engineer shall determine if an exemption can be applied in accordance with ASCE7-16 Section 11.4.8. If an exemption applies, a long period coefficient ($F_V$) of 1.7 may be utilized for calculation of the seismic Parameters $\mathbf{S_{M1}}$ and $\mathbf{S_{D1}}$ in the above Table.

## SUPPLEMENTAL EVALUATION AND RECOMMENDATIONS

### GENERAL

Based on the results of our previous and current investigations, it is our opinion that the proposed construction can be made as planned. A thick slab (mat) foundation should be used for support of the proposed building, as recommended in our first update report. The "mat" should be designed for hydrostatic uplift forces assuming static water level at a depth of 5. The bottom of the mat should be properly waterproofed. The

waterproofing should be made by an experienced contractor familiar with typical projects.

The following sections present our revised recommendations for foundation, retaining walls and observation during construction.

## FOUNDATIONS

A thick slab "mat" foundation can be used for support of the proposed building, as recommended previously. The base of the "mat" should be properly waterproofed by an experienced contractor.

Considering that the "mat" will be established below the historically highest water level, it should be designed for hydrostatic uplift forces assuming static water level at a depth of 5 feet. For the purpose of design, the "mat" as beam-on-elastic-foundation a modulus of subgrade reaction (MSR) of 250 kips per cubic foot may be used. This is a unit value for use with a one-foot square footing. The modulus should be reduced in accordance with the following equation when used with larger foundations:

$$K_R = K\left[\frac{B+1}{2B}\right]^2$$

Where: $K_R$ = Reduced Subgrade Modulus;

$K$ = Unit Subgrade Modulus; and

$B$ = Foundation width in feet

Although the contact pressure beneath the "mat" may be in a range of about 1,000 pounds per square foot, an allowable maximum bearing value of 4,500 pounds per square foot will be available at the base of the "mat" for the corner and edge pressures which are normally higher.

The above given values for MSR and bearing values are for the total of dead, plus frequently applied live loads. For short term transient loading; wind or seismic forces, the given values may be increased by one-third.

It is anticipated that total settlements at the center, edge and corners of the mat are expected to be on the order of 1.2, 0.75 and 0.5 inch, respectively. The maximum differential settlements between the center and corners of the "mat" are expected to be

on the order of one inch. Maximum differential settlement within a typical bay of 25 feet apart is expected to be on the order of 1/4 of one inch.

**RETAINING WALLS**

Static design of basement walls (being restrained at top) should be based on an equivalent fluid density of 68 pounds per cubic foot. Cantilevered retaining walls can be designed based on an equivalent fluid density of 30 pounds per cubic foot. See the enclosed supporting engineering calculations.

The above given pressures assume that no hydrostatic pressure will occur behind the retaining walls. This will require installation of proper subdrain behind the basement garage walls.

Subdrain normally consists of 4-inch diameter perforated pipes encased in gravel (at least one cubic foot per lineal foot of the pipes). In order to reduce the chances of siltation and drain clogging, the free-draining gravel should be wrapped in filter fabric proper for the site soils. The subdrain should be installed at a depth of 5 feet. The portion of the basement wall below 5 feet (the historically highest water level) should be designed based on an equivalent fluid pressure of 95 pounds per square foot per foot of depth.

In addition to the lateral earth pressure, the basement walls should also be designed for any applicable uniform surcharge loads imposed on the adjacent grounds. For cantilevered retaining walls, the uniform surcharge effects may be computed using a coefficient of 0.30 times the assumed uniform load. For restrained walls, a coefficient of 0.57 times the assumed uniform loads should be used.

Based on the new Code requirement, the basement walls should be designed not only for static, but also for seismic lateral earth pressures. For the purpose of this project, the magnitude of seismic lateral earth pressure should be maximum at the ground surface and decrease at a rate of 23 pounds per square foot per foot of depth to a value of zero at the base of the retaining wall (see the enclosed supporting engineering calculations). This pressure should be added to the lateral earth pressure value at a rate of 30 pounds per square foot per foot of depth. If the combined pressure

(active, plus seismic) is less than "at-rest" pressure value, then the "at-rest" value should be used for design and the seismic lateral earth pressure can be omitted.

## OBSERVATION DURING CONSTRUCTION

The presented recommendations in this report assume that the proposed building will be supported through a "mat" foundation that is established on native soils that is properly prepared, as recommended in our original report. All foundation excavations should be observed and approved by a representative of this office before reinforcing is placed.

Site grading work should be conducted under observation and testing by a representative of this Firm. For proper scheduling, please notify this office at least 24 hours before any observation work is required.

## CLOSURE

The findings and recommendations presented in this update report are based on the results of our previous field and laboratory investigations combined with professional engineering experience and judgment. The report was prepared in accordance with generally accepted engineering principles and practice. We make no other warranty, either express or implied.

It is noted that the conclusions and recommendations presented are based on exploration "window" borings and excavations which is in conformance with accepted engineering practice. Some variations of subsurface conditions are common between "windows" and major variations are possible.

-o0o-

Except those presented in this report update, all the previously presented engineering recommendations in our original report will remain valid.

Thank you for the opportunity to be of continued service on this project. Should you have any questions regarding this Update report, or wish to discuss the project further, please do not hesitate to call us.

Respectfully Submitted,

**APPLIED EARTH SCIENCES**

Fereidoun "Fred" Jahani
Project Engineer
RE62875

REGISTERED PROFESSIONAL ENGINEER
FEREIDOUN JAHANI
C 62875
CIVIL
STATE OF CALIFORNIA

Caro J. Minas, President
Geotechnical Engineer
GE 601

REGISTERED PROFESSIONAL ENGINEER
CARO J. MINAS
NO. 601
GEOTECHNICAL
STATE OF CALIFORNIA

FJ/CJM/se

Enclosure: Engineering Calculations - Earth Pressure
Drawing No. 1 - Site Plan
Drawings Nos. 2 and 3 - Section A-A' & Section B-B'
Figure No. 1 - Site Vicinity Map;
Figure No. 2 - Regional Topographic Map;
Figure No. 3 - Regional Geologic Map; and
Figure No. 4 - Historically Highest Groundwater Contour Map.
Soft Copy Of The Previous Reports
City Approval Letter Dated June 2, 2008 (LOG # 61581-02)
City Approval Letter Dated February 28, 2015 (LOG # 87245)

Distribution: (3)

| Average Soil Strength Parameters: | 5-12.5' | Height of Wall | | Seismic |
|---|---|---|---|---|
| Saturated Unit Weight, γ = | 119 pcf | H= | 15 ft | PGAM |
| Cohesion, C = | 400 psf | Weight of Surcharge Load on Wedge | | 0.764 |
| Friction Angle, ϕ = | 25.5 ° | Wq= | 0.3 K | |

| | | | | | Driving Force | Resisting Force | | Factory of Safety | |
|---|---|---|---|---|---|---|---|---|---|
| SECTION | A (sf) | W (K) | L (feet) | α (degrees) | Wsinαcosα (k) | Wcos²αtanϕ (k) | CLcosα (k) | ∑ RF / ∑ DF | |
| I | 71.0 | 8.4 | 17.74 | 57.75 | 3.95 | 1.19 | 3.79 | 3.9 | 5.0 |
| | | | | ∑ | 3.95 | 4.97 | | 1.26 | |

**TEMPORARY**

FOR TEMPORARY CONDITION: FACTOR OF SAFETY = 1.25 [1.25 (DF) = (RF) + UBF]

1.25 * 3.95 = 4.97 + UBF

UBF = 4.93 - 4.97 = -0.04 k/lft.

Equivalent Fluid Density: $G_h = 2(UBF)/H^2$ $G_h$ = -0.4 PCF

**Therefore, for Cantilivered Temporary Condition, use recommended value of: 25 PCF**

**PERMANENT**

FOR PERMANENT CONDITION: FACTOR OF SAFETY = 1.5 [1.5 (DF) = (RF) + UBF]

1.5 * 3.95 = 4.97 + UBF

UBF = 5.92 - 4.97 = 0.95 k/lft.

Equivalent Fluid Density: $G_h = 2(UBF)/H^2$ $G_h$ = 8.4 PCF

**Therefore, for Cantilivered Permanent Condition, use recommended value of: 30 PCF**

**AT-REST**

FOR RESTRAINED CONDITION (AT-REST): $K_o = 1 - SIN(\phi)$

Ko = 1 - SIN 25.5

Ko = 1 - 0.43 = 0.57

Equivalent Fluid Density: $G_h = Ko * \gamma$ $G_h$ = 67.8 PCF

**Therefore, for Restrained (At-Rest) Condition, use recommended value of: 68 PCF**

**SEISMIC**

FOR SEISMIC CONDITION: $P_{AE} = {}^3/_8 \gamma H^2 (K_h)$ $K_h = ({}^2/_3 * PGA_M)/2$

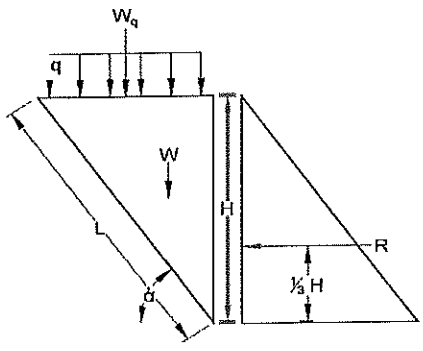
Kh= 2/3 * 0.764 / 2 = 0.25

PAE = 3/8 * 119 * 225 * 0.25 = 2557

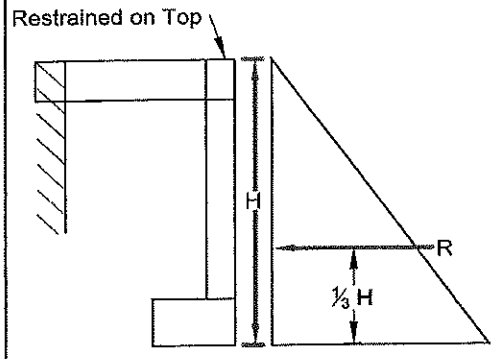
Equivalent Fluid Pressure: $EFP = 2P_{AE}/H^2$ EFP= 22.7 PCF

**Therefore, for Seismic Condition, use recommended value of: 23 PCF**

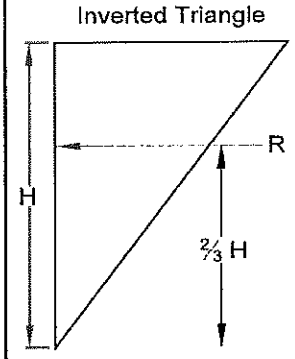
Active (Cantilevered)




Restrained (At-Rest)




Seismic




# LATERAL EARTH PRESSURE CALCULATIONS

## ACTIVE (Temporary/Permanent), RESTRAINED & SEISMIC

**Address: 20460 Sherman Way, Los Angeles** | **Wall Location: Basement Walls**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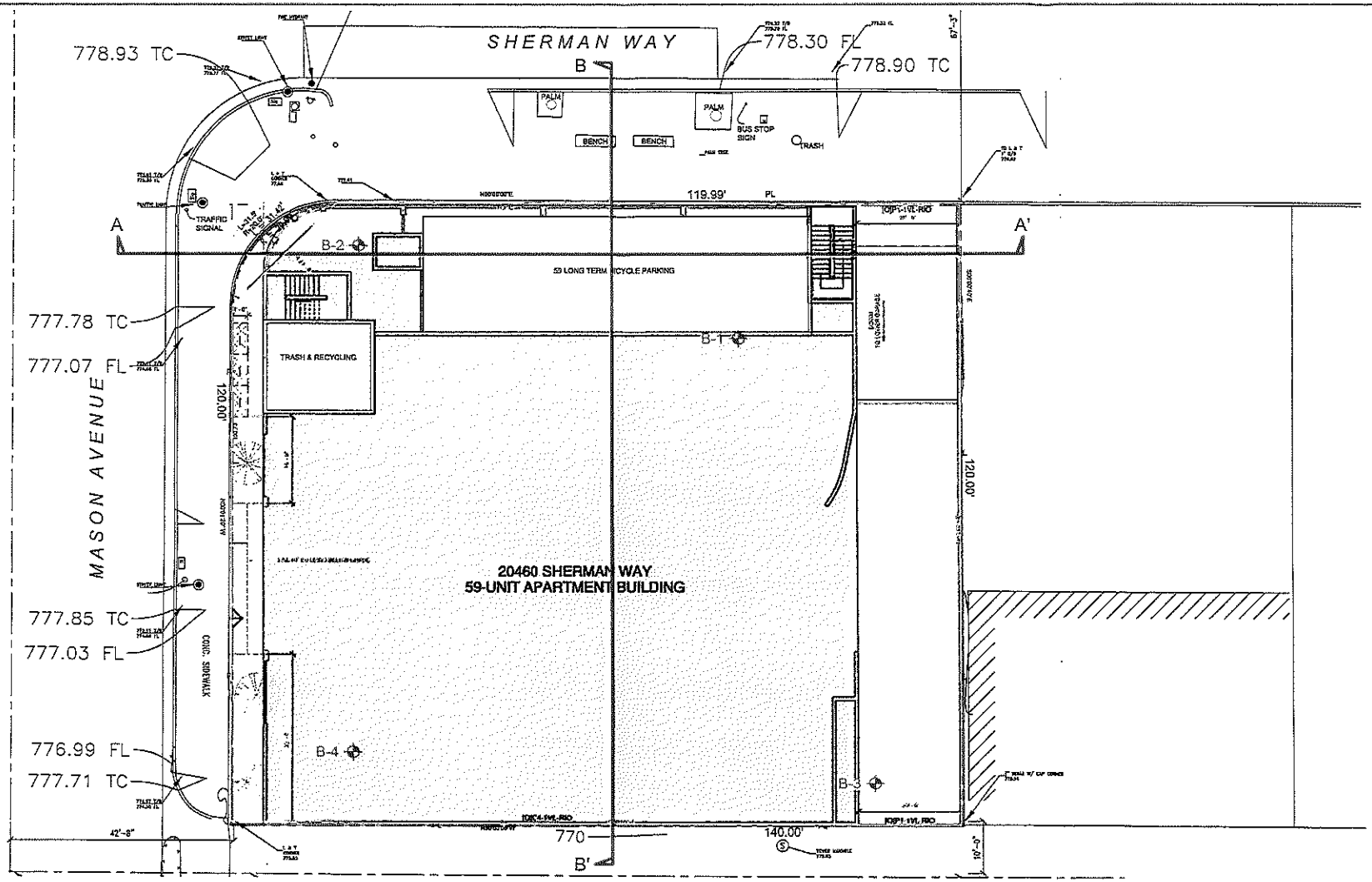
PROJECT #: 07-483-02

CALC SHEET No.: 1




LEGEND:

B-4 ⊕ = Location & Number of Boring (By: AES - 2007)

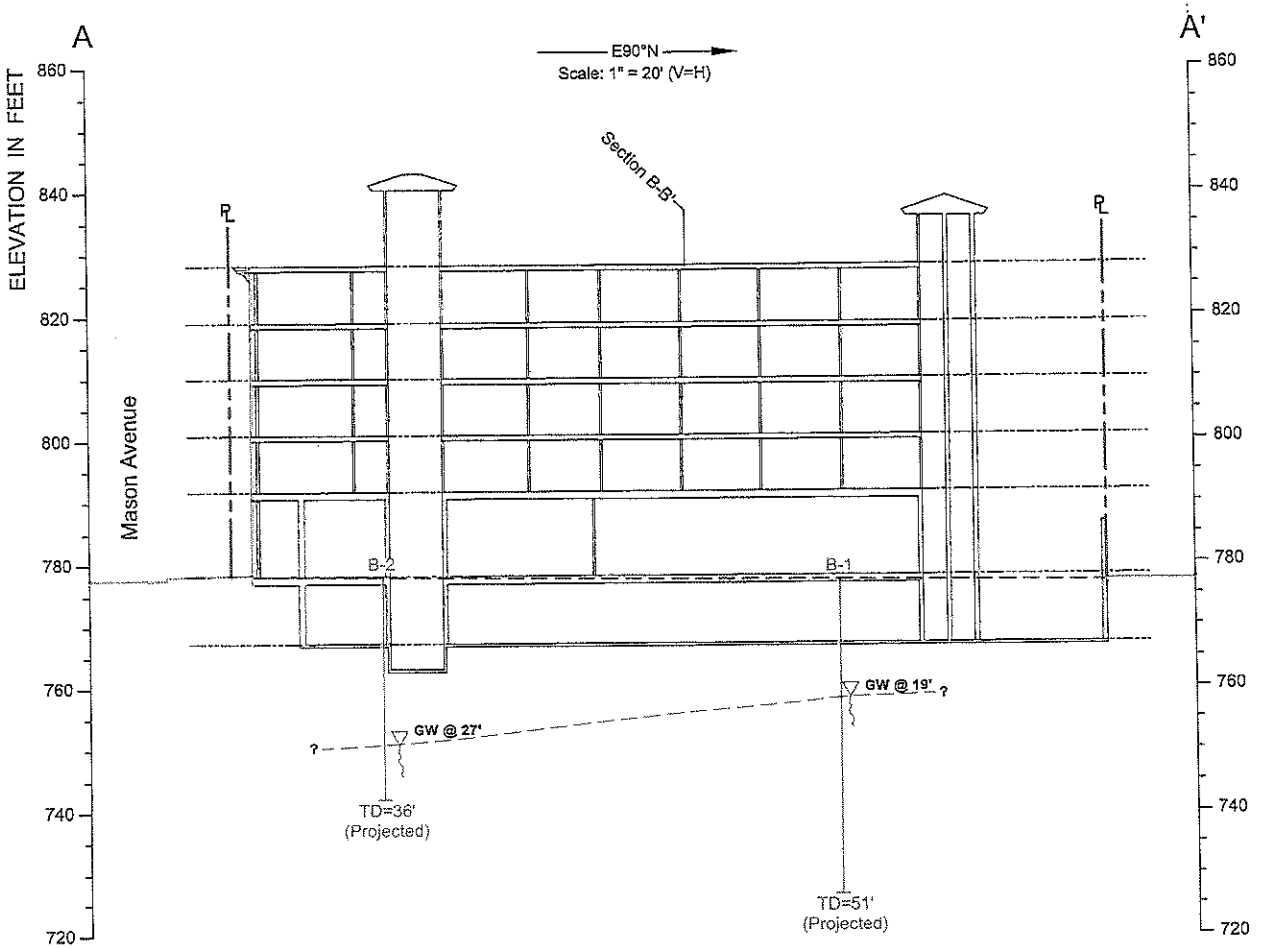
Note:

Site plan prepared by using plans drawn by:
-Pacific Planning and Design

N

Scale: 1" = 20'

| SITE PLAN | | PROJECT No: 07-483-02 | |
|---|---|---|---|
| DESCRIPTION: | Proposed Winnetka Townhome Apartments Project | DATE: | 02 / 05 / 2021 |
| FOR: | Manasseh Building Group, Inc. | DRAWN BY: | SD |
| ADDRESS: | 20460 N. Sherman Way, Los Angeles, CA 91306 | CHECKED BY: | CM |
| Applied Earth Sciences | GEOTECHNICAL , GEOLOGY , ENVIRONMENTAL ENGINEERING CONSULTANTS | www.aessoil.com (818) 552-6000 | DRAWING No: 1 / UPDATE No: 2 |

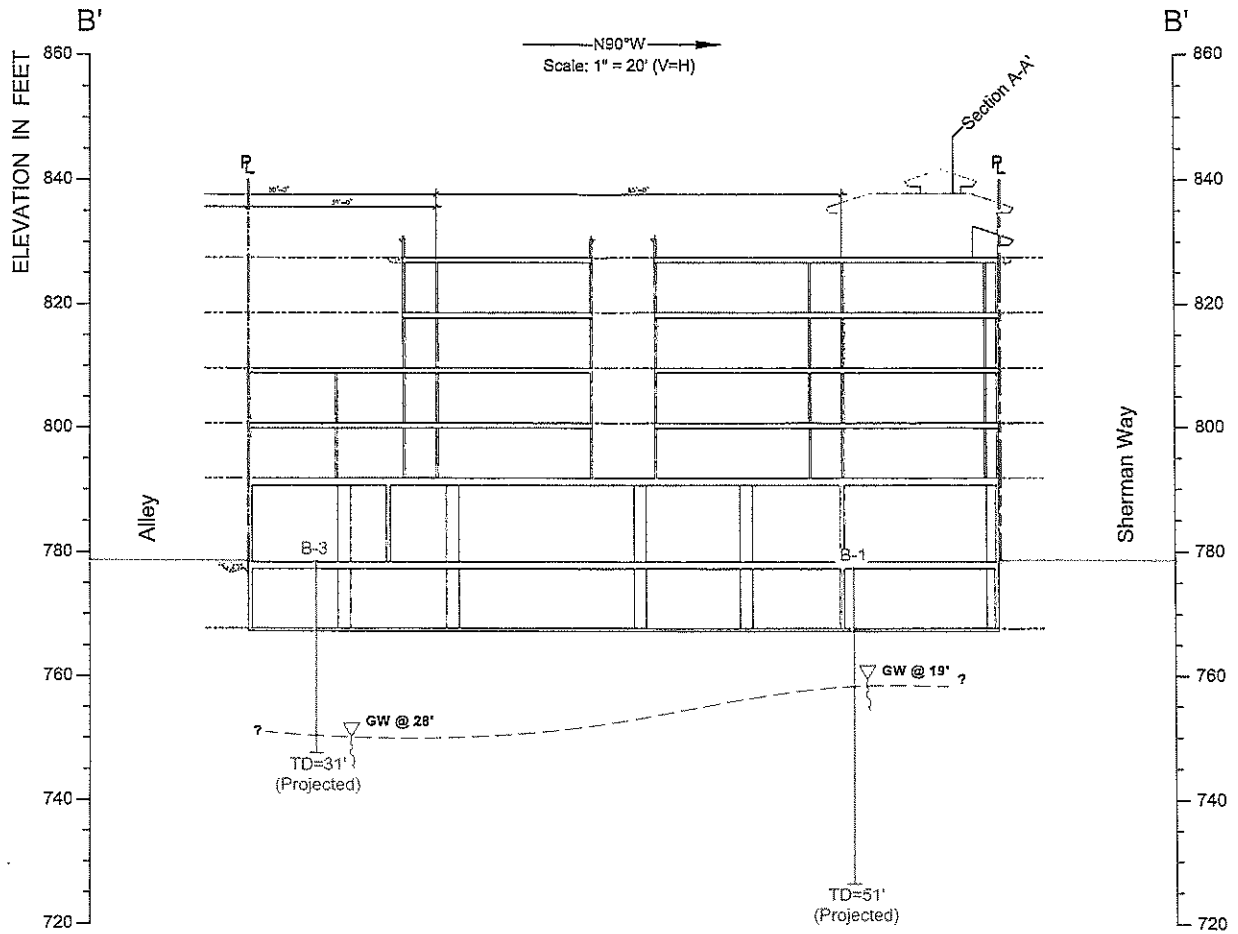



LEGEND:

B-2
|
TD=10'
(Projected)

= Location & Number of Boring
(By: AES - 2007)

| CROSS SECTION A-A' | | PROJECT No: 07-483-02 |
|---|---|---|
| DESCRIPTION: | Proposed Winnetka Townhome Apartments Project | DATE: 02 / 05 / 2021 |
| FOR: | Manasseh Building Group, Inc. | DRAWN BY: SD |
| ADDRESS: | 20460 N. Sherman Way, Los Angeles, CA 91306 | CHECKED BY: CM |
| Applied Earth Sciences | GEOTECHNICAL . GEOLOGY . ENVIRONMENTAL ENGINEERING CONSULTANTS | www.aessoil.com (818) 552-6000 |
| | | DRAWING No: 2 / UPDATE No: 2 |

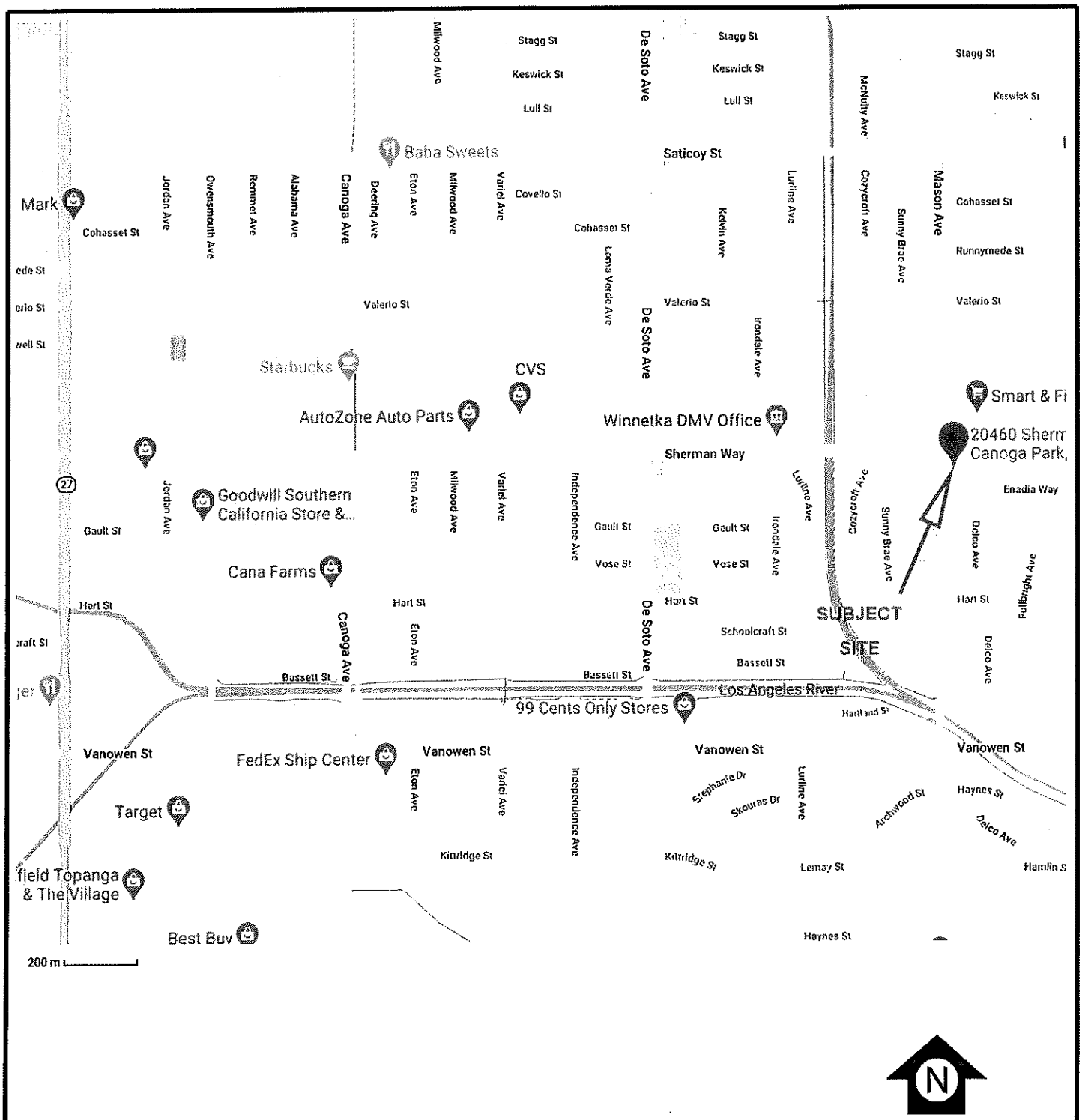



LEGEND:

B-2
|
TD=10'
(Projected)

= Location & Number of Boring
(By: AES - 2007)

| CROSS SECTION B-B' | | PROJECT No: 07-483-02 | |
|---|---|---|---|
| DESCRIPTION: | Proposed Winnetka Townhome Apartments Project | DATE: | 02 / 05 / 2021 |
| FOR: | Manasseh Building Group, Inc. | DRAWN BY: | SD |
| ADDRESS: | 20460 N. Sherman Way, Los Angeles, CA 91306 | CHECKED BY: | CM |
| Applied Earth Sciences | GEOTECHNICAL . GEOLOGY . ENVIRONMENTAL ENGINEERING CONSULTANTS | www.aessoil.com (818) 552-6000 | DRAWING No: 3 / UPDATE No: 2 |




Reference: Portion of Google Maps

# SITE VICINITY MAP

Proposed Winnetka Townhome Apartments Project

20460 N. Sherman Way, Los Angeles, CA 91306

| FOR | DATE | PROJECT No. |
|---|---|---|
| Manasseh Building Group, Inc. | 02 / 05 / 2021 | 07-483-02 |

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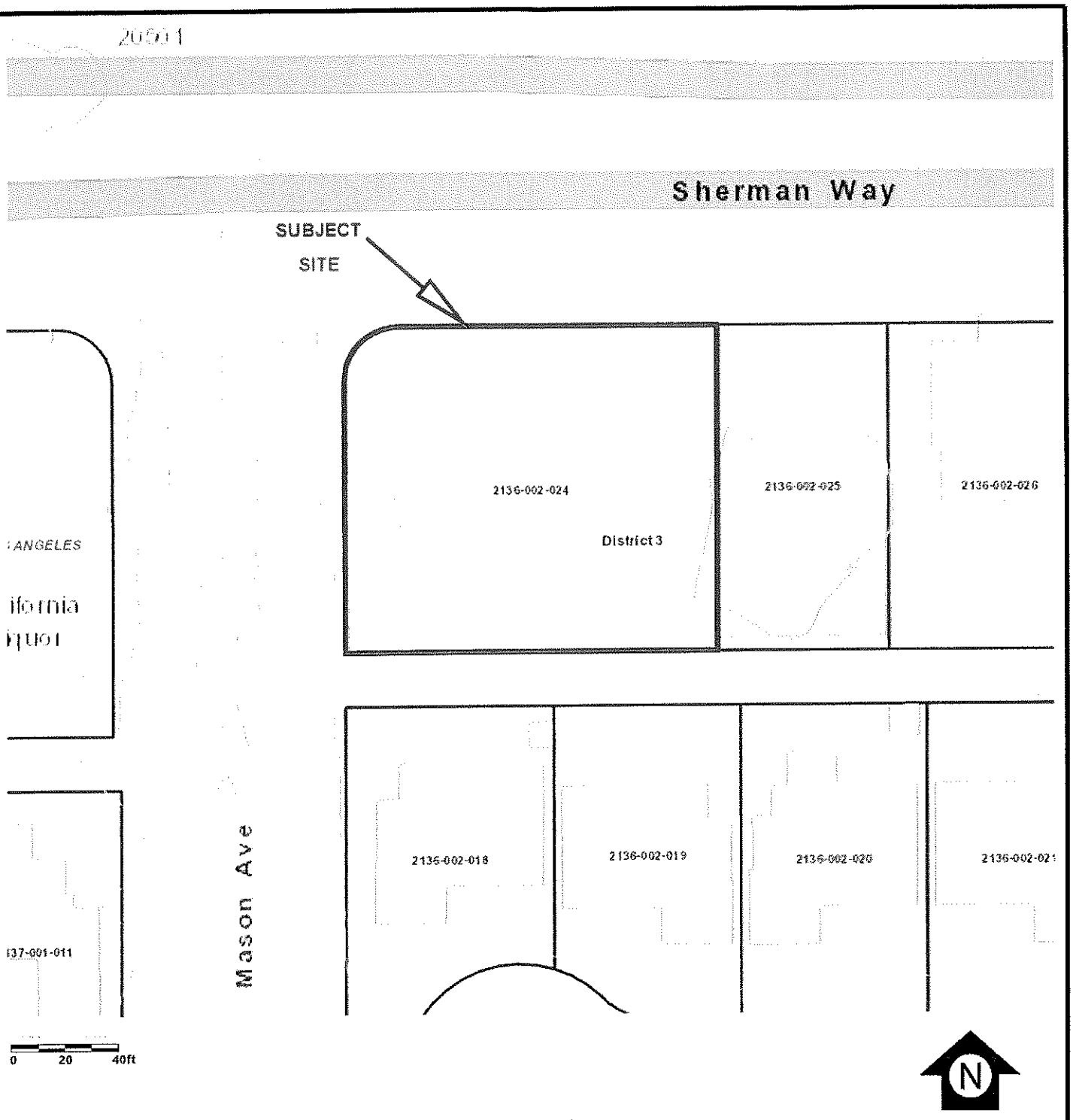
FIGURE No. 1




Reference: Los Angeles County GIS-NET Public Map

# REGIONAL TOPOGRAPHIC MAP

Proposed Winnetka Townhome Apartments Project

20460 N. Sherman Way, Los Angeles, CA 91306

| FOR | DATE | PROJECT No. |
|---|---|---|
| Manasseh Building Group, Inc. | 02 / 05 / 2021 | 07-483-02 |

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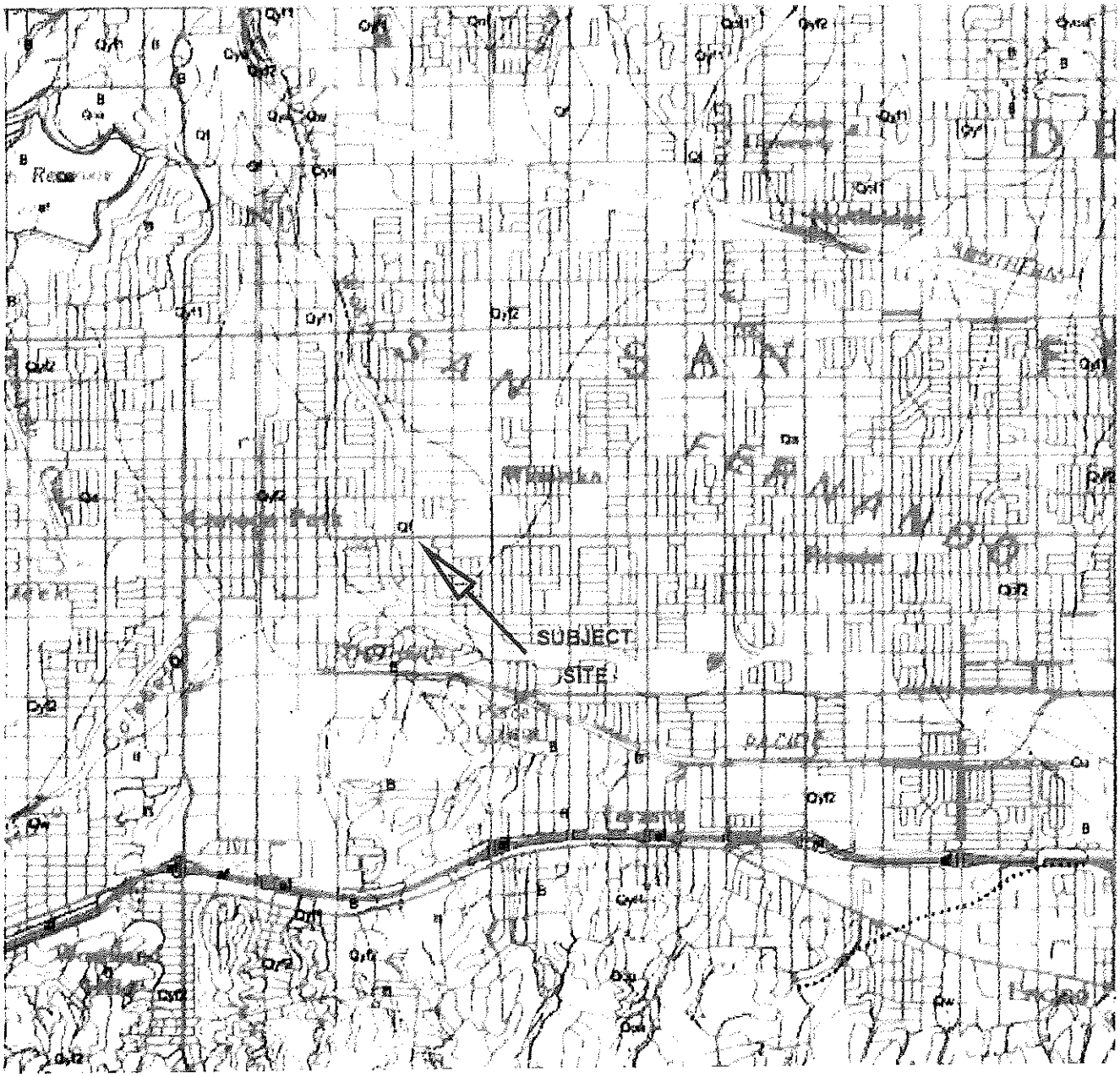
FIGURE No. 2




Reference: Dibblee Geologic Map of the Topanga & Canoga Park Quadrangle

# REGIONAL GEOLOGIC MAP

Proposed Winnetka Townhome Apartments Project

20460 N. Sherman Way, Los Angeles, CA 91306

| FOR | DATE | PROJECT No. |
|---|---|---|
| Manasseh Building Group, Inc. | 02 / 05 / 2021 | 07-483-02 |

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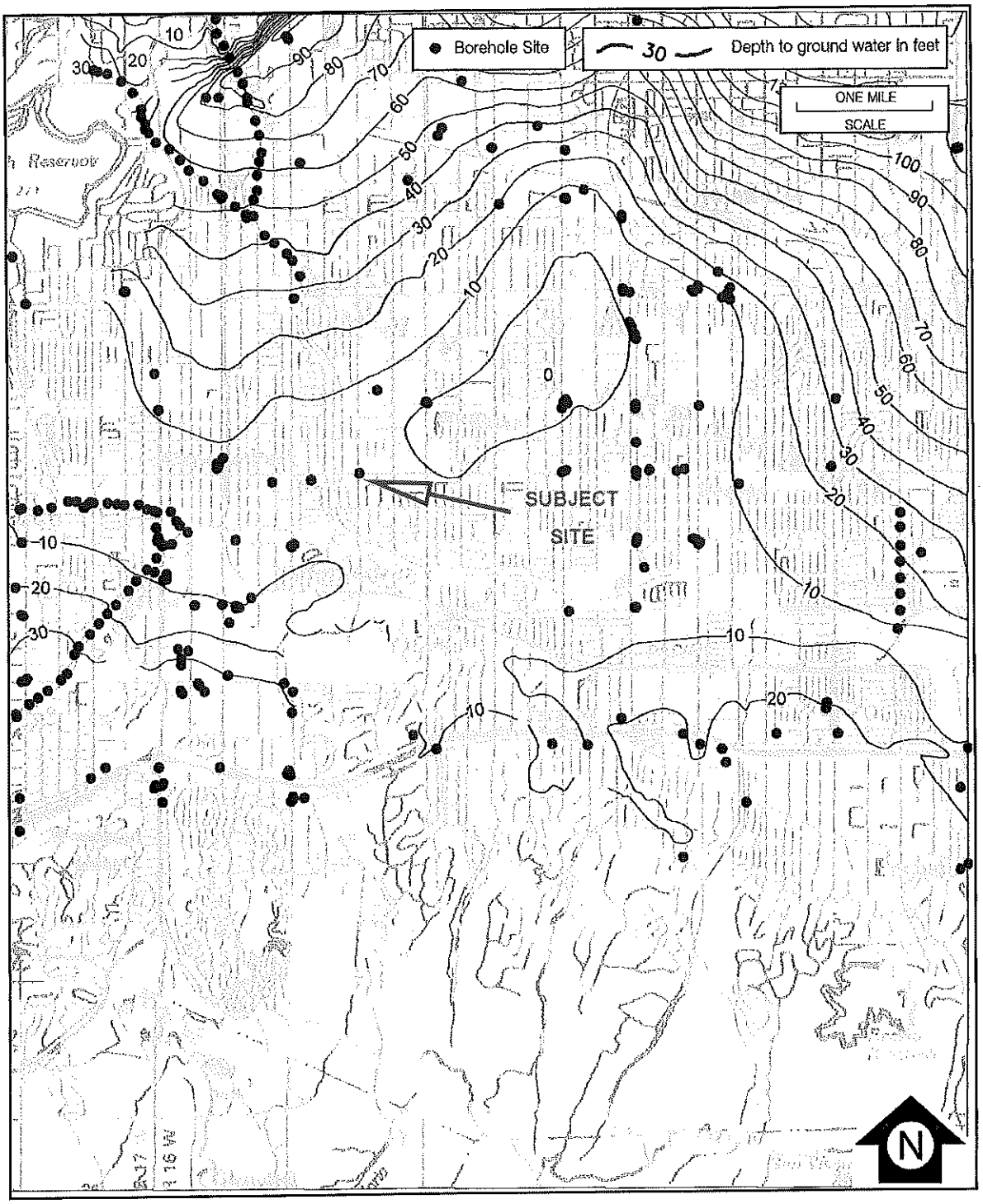
GEOTECHNICAL . GEOLOGY . ENVIRONMENTAL ENGINEERING CONSULTANTS

FIGURE No. 3




Reference: Canoga Park 7.5 Minute Quadrangle

# HISTORICALLY HIGHEST GROUNDWATER (Contour Map)

Proposed Winnetka Townhome Apartments Project

20460 N. Sherman Way, Los Angeles, CA 91306

| FOR | DATE | PROJECT No. |
|---|---|---|
| Manasseh Building Group, Inc. | 02 / 05 / 2021 | 07-483-02 |

APPLIED EARTH SCIENCES
GEOTECHNICAL . GEOLOGY . ENVIRONMENTAL ENGINEERING CONSULTANTS

FIGURE No. 4

# CITY OF LOS ANGELES
CALIFORNIA



DEPARTMENT OF
BUILDING AND SAFETY
201 NORTH FIGUEROA STREET
LOS ANGELES, CA 90012

RAYMOND S. CHAN, C.E., S.E.
GENERAL MANAGER

FRANK BUSH
EXECUTIVE OFFICER

## SOILS REPORT APPROVAL LETTER

February 28, 2015

LOG # 87245
SOILS/GEOLOGY FILE - 2

MGB
212 N. Kanan Rd.
Oak Park, CA 91377

TRACT: PM 1594
LOT(S): A
LOCATION: 20460 N. Sherman Way

| CURRENT REFERENCE REPORT/LETTER(S) | REPORT No. | DATE(S) OF DOCUMENT | PREPARED BY |
|---|---|---|---|
| Soils Report | 07-483-02 | 02/04/2015 | Applied Earth Sciences |

| PREVIOUS REFERENCE REPORT/LETTER(S) | REPORT No. | DATE(S) OF DOCUMENT | PREPARED BY |
|---|---|---|---|
| Dept. Approval Letter | 61581-02 | 06/02/2008 | LADBS |
| Soil Report | 07-483-02 | 03/24/2008 | Applied Earth Sciences |
| Dept. Correction Letter | 61581-01 | 03/13/2008 | LADBS |
| Soil Report | 07-483-02 | 02/06/2008 | Applied Earth Sciences |
| Dept. Correction Letter | 61581 | 01/15/2008 | LADBS |
| Soil Report | 07-483-02 | 12/05/2007 | Applied Earth Sciences |

The Grading Division of the Department of Building and Safety has reviewed the referenced 02/04/2015 report providing recommendations for the proposed two-story commercial building over one level of subterranean parking.

The Department previously reviewed and conditionally approved the previous referenced reports in a letter dated 06/02/2008, Log # 61581-02.

According to the current referenced report, the development remained the same. Basement excavation and temporary shoring have been completed. The current referenced report updates the foundation recommendations to include a mat foundation option.

The referenced report is acceptable, provided the following conditions are complied with during site development:

(Note: Numbers in parenthesis ( ) refer to applicable sections of the 2014 City of LA Building Code.

The seismic design parameters given in the report, except for the soil profile type, are no longer applicable under the 2008 Los Angeles Building Code.

The review will be continued upon submittal of an addendum to the reports which includes, but need not be limited to, the following:

1. Revise liquefaction study considering removal of the overburden to 10 feet below the grade and assuming ground water elevation at 4 feet below the grade.

2. Provide recommendations for design of retaining/basement wall subject to earthquake motion.

3. Provide seismic design parameters in compliance with the new code.

4. Figure 1 of the report is illegible. Provide a legible copy.

The soil engineer shall prepare a report containing the corrections indicated in this letter. The report shall be in the form of an itemized response. It is recommended that once all correction items have been addressed in a response report, to contact the report review engineer to schedule a verification appointment to demonstrate compliance with all the corrections. Do not schedule an appointment until all corrections have been addressed. Bring three copies of the response report, including one unbound wet-signed original for microfilming in the event that the report is found to be acceptable.

ANDRZEJ T. SZPIKOWSKI
Geotechnical Engineer II

ATS/ats
61581

(213) 482-0480

cc: Applied Earth Sciences
Applicant
LA District Office

# CITY OF LOS ANGELES
CALIFORNIA



ANTONIO R. VILLARAIGOSA
MAYOR

DEPARTMENT OF
BUILDING AND SAFETY
201 NORTH FIGUEROA STREET
LOS ANGELES, CA 90012

ANDREW A. ADELMAN, P.E.
GENERAL MANAGER
RAYMOND CHAN
EXECUTIVE OFFICER

## SOILS REPORT CORRECTION LETTER

January 15, 2008

LOG # 61581
SOILS FILE - 2

Avico
1260 S. La Cienega Blvd
Los Angeles, CA 90035

TRACT: PM 1594
LOT: A
LOCATION: 20460 W. Sherman Way

| CURRENT REFERENCE REPORT/LETTER(S) | REPORT NO. | DATE(S) OF DOCUMENT | PREPARED BY |
|---|---|---|---|
| Soil Report | 07-483-02 | 12/05/2007 | Applied Earth Sciences |

The referenced report providing recommendations for the proposed commercial development has have been reviewed by the Grading Division of the Department of Building and Safety. According to the report, the project will consist of a two-story structure constructed over subterranean parking garage. The garage floor is expected to be established approximately 10 feet below grade. The site soils consist of up to 3 feet of uncertified fill underlain by natural clays and sands. The existing fills are not considered adequate to support the proposed footings. Grading for the project will consist of excavating the site for the proposed basement subterranean garage. The excavations will be approximately 12 feet in vertical height. Shoring will be required for the safe excavation.

The liquefaction study included as a part of the report demonstrates that the site does not possess liquefaction potential. However, the consultants assumed that the historical ground water is 19 feet below the grade. But Canoga Park 7.5 Minute Quadrangle Map indicates, that the historically highest groundwater is approximately 4 feet below the grade.

As of January 1, 2008 the City of Los Angeles was required to adopt the new 2007 California Building Code. The new code contains several new provisions including revised seismic design requirements. Because every site in the City of Los Angeles is classified as a Seismic Design Category D or higher, those requirements include the determination of lateral pressure on basement and retaining walls due to earthquake motions. These requirements apply to all projects where the permit application submittal date is after January 1, 2008.

P/BC numbers refer the applicable Information Bulletin. Information Bulletins can be accessed on the internet at LADBS.ORG.)

1. All conditions of the above referenced Department approval letter shall apply.

2. All recommendations of the report which are in addition to or more restrictive than the conditions contained herein shall be incorporated into the plans.

3. An on-site storm water infiltration system at the subject site shall not be implemented, as recommended.

4. A mat foundation may be used, as recommended in the 02/04/2015 report.

YING LIU
Engineering Geologist Associate II

YL/yl
Log No. 87245
213-482-0480

cc: Applicant
Applied Earth Sciences, Project Consultant
VN District Office

February 4, 2015 07-483-02

MGB
212 North Kanan Road
Oak Park, California 91377

Attention: Mr. Stephen W. Gregorchuk, President

Subject: Geotechnical Investigation Report Update
Proposed Condominium Development Project
Lot "A" Of PM 1595
20460 West Sherman Way
Los Angeles, California

Gentlemen:

## INTRODUCTION

We are pleased to submit this report updating previous geotechnical investigation reports at the subject site. The original report of geotechnical investigation for the subject property was issued by this office on December 5, 2007. Our Supplement Nos. 1 and 2 were later issued providing response to the City comments.

Our previous reports were reviewed and approved "with conditions" by the Grading Section Of the Department of Building and Safety of the City of Los Angeles. A Soils Report Approval Letter to that effect was issued on June 2, 2008 (Log # 61581-02). For convenience, we have included a single copy of the original report and the City Approval Letter with this Report Update.

At this time, the temporary shoring piles are in-place and basement garage excavation has been made. We were told that the project has been halted since early 2009. City records show that the inspection for the shoring piles have been made by an Independent Deputy Grading Inspector.

This office will provide all future observation and testing services. No additional field exploration was done as part of preparation of this report update.

During the course of preparation of this report update, the conditions of the subsurface materials from the results of our previous investigations, were reviewed in order to confirm our previously presented geotechnical engineering recommendations. Our investigation included site visit, review of the project files, review of the City inspection records, review of the new project plans, supplemental engineering evaluation and analysis, consultation and preparation of this Update Report.

## PROJECT CONSIDERATIONS

Based on the results of our review of the provided plans, it seems that the grading concept has remained unchanged. Basically, the proposed building will have one level of subterranean parking garage.

On the basis of the above, therefore, the foundation design recommendations presented in our original report issued on December 5, 2007 and approved by the City on June 2, 2008 (see the enclosed Log No. 61581-01) with modifications as presented in this update report, can be used for the subject project.

The water level at the time of our original investigation occurred between depths of 18 to 28 feet. The historically highest groundwater level at the site is near a depth of about 19 feet. Considering that the base of the proposed building will occur near a depth of about 10 feet, permanent de-watering will not be required for this project.

## SCOPE OF WORK

The scope of work during preparation of this report updated included performing the following tasks:

1. Review of the project files and the previous reports;
2. Review of the provided plans and grading concept;
3. Site visit by a representative of this office;
4. Supplemental engineering evaluation and analysis;
5. Consultation and preparation of this report update.

## SITE CONDITIONS

Since the issuance of our original report, the basement garage excavation has been made. At the time of our site visit, no apparent sign of gross tilting was noted at the tops of the shoring piles. This should be verified by a licensed surveyor.

The conditions of the off-site improvements have remained unchanged.

## SEISMIC DESIGN CONSIDERATIONS

In accordance with the 2013 California Building Code (CBC 2013), the project site can be classified as site "D". The mapped spectral accelerations of $S_S$= 1.637 (short period) and $S_1$ =0.600 (1-second period) can be used for this project. These parameters corresponds to site Coefficients values of $F_a$=1.0 and $F_V$=1.5, respectively.

The seismic design parameters would be as follows:

Sms= Fa (Ss) = 1.0 (1.637) = 1.637

Sm1=Fv (S1) = 1.5 (0.600) =0.900

Sds=2/3 (Sms) = 2/3 (1.637) = 1.092 and

Sd1=2/3 (Sm1) = 2/3 (0.900) = 0.600

## SUPPLEMENTAL EVALUATION AND RECOMMENDATIONS

### GENERAL

Based on the geotechnical engineering data derived during our previous investigations, the site is considered to be suitable for the proposed development. Spread footing foundation system, as recommended in our original report, can be used for support of the proposed building. All foundations should be established in native soils. See our original report dated December 5, 2007, for detail design recommendations for foundations

### MONITORING

It is important that an accurate monitoring of the shoring system be maintained during basement construction. Both the horizontal and vertical deflections of the soldier piles should be recorded.

The vertical and horizontal movement of the shoring system should be recorded on a weekly basis and the results be submitted to Soil and Shoring Engineers for review and comment . The accuracy of the reading should be within 0.01 of a foot. The record should be produced in a readily understandable form. The surveyor should submit to the Soil Engineer, prior to the start of excavation, a plan which would indicate the method selected for monitoring of the excavation.

Monitoring of the excavation performance should be initiated from the beginning of the initial excavation. The weekly monitoring may be modified as the job progresses. Once the subterranean garage has been constructed, monitoring will no longer be required.

## DEFLECTIONS

The lateral support of the existing off-site buildings should be maintained at all times, during construction of the basement garage. Proper monitoring program should be maintained at all times to assure that the lateral deflection at the top of the piles are within tolerable limits.

It is noted that, if off-site buildings occur within an equal distance to the depth of excavation, the temporary shoring piles should be designed to allow lateral deflection at the top of the piles not to exceed ½ of one inch. In the areas where the shoring system supports public right-of-way, or where the off-site buildings occur outside a horizontal distance equal to the depth of excavation, the tolerable lateral movement at the tops of the shoring piles could be increased to one inch.

It is possible that, locally, deflections at the top of the soldier piles may exceed the anticipated values. Should this occur, the Soil and Shoring Engineers should be consulted to provide remedial measures such as installation of additional support system.

## FOUNDATIONS

Refer to our original report dated December 5, 2007, for parameters to design foundations.

## LATERAL DESIGN

Refer to our original report dated December 5, 2007 for design parameters of the lateral design.

## BASEMENT WALLS

Refer to our original report dated December 5, 2007 for the recommended lateral earth pressures for static conditions. However, based on the new Code requirement, the walls higher than 6 feet should be designed not only for static, but also for seismic lateral earth pressures. For the purpose of this project, the magnitude of seismic lateral earth pressure should be assumed zero at the base of the excavation and increased upward at a rate of 24 pounds per square foot per decreasing depth to a maximum value at the ground surface. The point of application of the lateral thrust of the seismic pressure should be assumed 0.6 time the wall height, measured from the bottom of the wall.

## OBSERVATION DURING CONSTRUCTION

The presented recommendations in this report assume that all structural foundations will be established in native soils. All foundation excavations should be observed by a representative of this office before reinforcing is placed.

Site grading work, such as wall backfilling, and subgrade preparation for basement slab support, should be conducted under observation and testing by a representative of this firm. All backfill soils should be non-expansive and granular in nature and be properly compacted to at least 90 percent relative compaction at optimum moisture content. For proper scheduling, please notify this office at least 24 hours before any observation work is required.

## PLAN REVIEW

It is recommended that this office be given the opportunity to review the final plans. The plans most frequently reviewed by the project geotechnical engineers are the following:

1. The grading/excavation plan;
2. The temporary excavation/shoring plans;
3. Foundation plan, and;
4. The foundatiog/retaining wall detail plan.

## ON-SITE STORM WATER FILTRATION CONSIDERATIONS

The City now requires that, where possible, on-site infiltration system for storm drain in installed. For the subject project, this will not be possible because of the following:

1. The historically highest groundwater level occurs near a depth of about 19 feet. Therefore, there is not enough depth for natural filtration between the base of the proposed building and the historically highest groundwater level.

2. The natural water content of the native soils below the base of the proposed building is already close to saturation;

3. As can be seen from the Log of Exploratory borings included in Appendix I of our original report, the materials below the base of the proposed building consists mainly of fine grained (silt-clay) soils. Typical materials have relatively low coefficient of permeability.

Considering the above, it is our opinion that the subject site is not a good candidate for on-site storm water infiltration system. Therefore, a "capture and use" system should be used for this project. The collected water can be diverted to the planter areas. Any excess water should than be diverted to the curb line, after going though the required filtration system.

## CLOSURE

The findings and recommendations presented in this report were based on the results of our previous field exploration and laboratory testing, combined with professional engineering experience and judgment. The report was prepared in accordance with generally accepted engineering principles and practice. We make no other warranty, either express or implied.

It is noted that the conclusions and recommendations presented are based on exploration "window" borings and excavations which is in conformance with accepted engineering practice. Some variations of subsurface conditions are common between "windows" and major variations are possible.

Except those modified by this report update, all the other recommendations presented in our original report will remain valid.

-oOo-

During the course of preparation of this report update, the conditions of the subsurface materials from the results of our previous investigations, were reviewed in order to confirm our previously presented geotechnical engineering recommendations. Our investigation included site visit, review of the project files, review of the City inspection records, review of the new project plans, supplemental engineering evaluation and analysis, consultation and preparation of this Update Report.

## PROJECT CONSIDERATIONS

Based on the results of our review of the provided plans, it seems that the grading concept has remained unchanged. Basically, the proposed building will have one level of subterranean parking garage.

In our original report, we had recommended the method of support for the proposed building to be in a form of spread footings. *Although spread footings will remain an option, it is believed that a thick slab (MAT) foundation is beng considered for the proposed project.

The water level at the time of our original investigation occurred between depths of 18 to 28 feet. The historically highest groundwater level at the site is near a depth of about 19 feet. Considering that the base of the proposed building will occur near a depth of about 10 feet, permanent de-watering will not be required for this project.

## SCOPE OF WORK

The scope of work during preparation of this report updated included performing the following tasks:

1. Review of the project files and the previous reports;
2. Review of the provided plans and grading concept;
3. Site visit by a representative of this office;
4. Supplemental engineering evaluation and analysis;
5. Consultation and preparation of this report update.

## SITE CONDITIONS

Since the issuance of our original report, the basement garage excavation has been made. At the time of our site visit, no apparent sign of gross tilting was noted at the tops of the shoring piles. This should be verified by a licensed surveyor.

The conditions of the off-site improvements have remained unchanged.

## SEISMIC DESIGN CONSIDERATIONS

In accordance with the 2013 California Building Code (CBC 2013), the project site can be classified as site "D". The mapped spectral accelerations of $S_s$= 1.637 (short period) and $S_1$ =0.600 (1-second period) can be used for this project. These parameters corresponds to site Coefficients values of $F_a$ =1.0 and $F_v$ =1.5, respectively.

The seismic design parameters would be as follows:

Sms= Fa (Ss) = 1.0 (1.637) = 1.637

Sm1=Fv (S1) = 1.5 (0.600) =0.900

Sds=2/3 (Sms) = 2/3 (1.637) = 1.092 and

Sd1=2/3 (Sm1) = 2/3 (0.900) = 0.600

## SUPPLEMENTAL EVALUATION AND RECOMMENDATIONS

### GENERAL

Based on the geotechnical engineering data derived during our previous investigations, the site is considered to be suitable for the proposed development. Spread footing foundation system, as recommended in our original report, can be used for support of the proposed building. All foundations should be established in native soils. See our original report dated December 5, 2007, for detail design recommendations for foundations

### MONITORING

It is important that an accurate monitoring of the shoring system be maintained during basement construction. Both the horizontal and vertical deflections of the soldier piles should be recorded.

The vertical and horizontal movement of the shoring system should be recorded on a weekly basis and the results be submitted to Soil and Shoring Engineers for review and comment . The accuracy of the reading should be within 0.01 of a foot. The record should be produced in a readily understandable form. The surveyor should submit to the Soil Engineer, prior to the start of excavation, a plan which would indicate the method selected for monitoring of the excavation.

Monitoring of the excavation performance should be initiated from the beginning of the initial excavation. The weekly monitoring may be modified as the job progresses. Once the subterranean garage has been constructed, monitoring will no longer be required.

## DEFLECTIONS

The lateral support of the existing off-site buildings should be maintained at all times, during construction of the basement garage. Proper monitoring program should be maintained at all times to assure that the lateral deflection at the top of the piles are within tolerable limits.

It is noted that, if off-site buildings occur within an equal distance to the depth of excavation, the temporary shoring piles should be designed to allow lateral deflection at the top of the piles not to exceed ½ of one inch. In the areas where the shoring system supports public right-of-way, or where the off-site buildings occur outside a horizontal distance equal to the depth of excavation, the tolerable lateral movement at the tops of the shoring piles could be increased to one inch.

It is possible that, locally, deflections at the top of the soldier piles may exceed the anticipated values. Should this occur, the Soil and Shoring Engineers should be consulted to provide remedial measures such as installation of additional support system.

## FOUNDATIONS

As an alternative to the use of spread footings, the proposed building can be supported through a thick slab (MAT) foundations. Considering that the base of the proposed building will be established near a depth of 10 feet and that the historically highest groundwater level at the subject site is 19 feet, it is expected that water will not rise to the base of the "MAT". However, for the purpose of this project, it should be assumed that the groundwater level will fluctuate between dry and wet seasons by some 5 feet. As such, any portion of the proposed building established below a depth of 14 feet should be designed for uplift forces. The bottom of the "mat" should be properly waterproofed in order to reduce the chances of water entry into the basement

The "mat" should be designed as "beam on elastic foundation". For this, a modulus of subgrade reaction of 250 kips per cubic foot can be used for design of the "mat".

Under the allowable maximum soil pressure, the magnitude of the settlements at the center, edges and corners of the "mat" is expected to be on the order of 1.5 inches, 1 inch and ½ of one inch, respectively. The seismic settlements associated with strong motion earthquake should be added to the above values.

## LATERAL DESIGN

Refer to our original report for design parameters.

## BASEMENT WALLS

Refer to our original report dated December 5, 2007 for the recommended lateral earth pressures for static conditions. However, based on the new Code requirement, the walls higher than 6 feet should be designed not only for static, but also for seismic lateral earth pressures. For the purpose of this project, the magnitude of seismic lateral earth pressure should be assumed zero at the base of the excavation and increased upward at a rate of 24 pounds per square foot per decreasing depth to a maximum value at the ground surface. The point of application of the lateral thrust of the seismic pressure should be assumed 0.6 time the wall height, measured from the bottom of the wall.

## OBSERVATION DURING CONSTRUCTION

The presented recommendations in this report assume that all structural foundations will be established in native soils. All foundation excavations should be observed by a representative of this office before reinforcing is placed.

Site grading work, such as wall backfilling, and subgrade preparation for basement slab support, should be conducted under observation and testing by a representative of this firm. All backfill soils should be non-expansive and granular in nature and be properly compacted to at least 90 percent relative compaction at optimum moisture content. For proper scheduling, please notify this office at least 24 hours before any observation work is required.

## PLAN REVIEW

It is recommended that this office be given the opportunity to review the final plans. The plans most frequently reviewed by the project geotechnical engineers are the following:

1. The grading/excavation plan;
2. The temporary excavation/shoring plans;
3. Foundation plan, and;
4. The foundation/retaining wall detail plan.

## ON-SITE STORM WATER FILTRATION CONSIDERATIONS

The City now requires that, where possible, on-site infiltration system for storm drain in installed. For the subject project, this will not be possible because of the following:

1. The historically highest groundwater level occurs near a depth of about 19 feet. Therefore, there is not enough depth for natural filtration between the base of the proposed building and the historically highest groundwater level.

2. The natural water content of the native soils below the base of the proposed building is already close to saturation;

3. As can be seen from the Log of Exploratory borings included in Appendix I of our original report, the materials below the base of the proposed building consists mainly of fine grained (silt-clay) soils. Typical materials have relatively low coefficient of permeability.

Considering the above, it is our opinion that the subject site is not a good candidate for on-site storm water infiltration system. Therefore, a "capture and use" system should be used for this project. The collected water can be diverted to the planter areas. Any excess water should than be diverted to the curb line, after going though the required filtration system.

## CLOSURE

The findings and recommendations presented in this report were based on the results of our previous field exploration and laboratory testing, combined with professional engineering experience and judgment. The report was prepared in accordance with generally accepted engineering principles and practice. We make no other warranty, either express or implied.

It is noted that the conclusions and recommendations presented are based on exploration "window" borings and excavations which is in conformance with accepted engineering practice. Some variations of subsurface conditions are common between "windows" and major variations are possible.

Except those modified by this report update, all the other recommendations presented in our original report will remain valid.

-oOo-

Thank you for the opportunity to be of service on this project. Should you have any questions regarding this report update, or wish to discuss the project further, please do not hesitate to call this office.

Respectfully submitted,

**APPLIED EARTH SCIENCES**

Caro J. Minas, President
Geotechnical Engineer
GE 601

CJM/DAR/SM/la

Distribution: (3)

Enclosure: Single Copy of Original Report and Supplements
City Approval Letter, Dated June 02, 2008 (Log # 61581-02)

# CITY OF LOS ANGELES

CALIFORNIA



## SOILS REPORT APPROVAL LETTER

June 02, 2008

LOG # 61581-02
SOILS FILE - 2

Avico
1260 S. La Cienega Blvd
Los Angeles, CA 90035

TRACT: PM 1594
LOT: A
LOCATION: 20460 W. Sherman Way

| CURRENT REFERENCE REPORT/LETTER(S) | REPORT NO. | DATE(S) OF DOCUMENT | PREPARED BY |
|---|---|---|---|
| Soil Report | 07-483-02 | 03/24/2008 | Applied Earth Sciences |

| PREVIOUS REFERENCE REPORT/LETTER(S) | REPORT NO. | DATE(S) OF DOCUMENT | PREPARED BY |
|---|---|---|---|
| Dept. Correction Letter | 61581-01 | 03/13/2008 | LADBS |
| Soil Report | 07-483-02 | 02/06/2008 | Applied Earth Sciences |
| Dept. Correction Letter | 61581 | 01/15/2008 | LADBS |
| Soil Report | 07-483-02 | 12/05/2007 | Applied Earth Sciences |

The current referenced report responding to the Department Correction Letter dated 03/13/2008 has been reviewed by the Grading Division of the Department of Building and Safety.

The referenced reports provide recommendations for the proposed commercial development. According to the report dated 12/05/2007, the project will consist of a two-story structure constructed over subterranean parking garage. The garage floor is expected to be established approximately 10 feet below grade. The site soils consist of up to 3 feet of uncertified fill underlain by natural clays and sands. The existing fills are not considered adequate to support the proposed footings. Grading for the project will consist of excavating the site for the proposed basement subterranean garage. The excavations will be approximately 12 feet in vertical height. Shoring will be required for the safe excavation.

The liquefaction study included as a part of the report demonstrates that the site does not possess liquefaction potential. This satisfies the requirement of the State of California Public Resources Code, Section 2690 et seq. (Seismic Hazard Mapping Act).

The reports are acceptable, provided the following conditions are complied with during site development:

1. The soils engineer shall review and approve the detailed plans prior to issuance of any permit. This approval shall be by signature on the plans which clearly indicates that the soils engineer has reviewed the plans prepared by the design engineer and that the plans included the recommendations contained in his report.

2. All recommendations of the reports - which are in addition to or more restrictive than the conditions contained herein shall be incorporated into the plans.

3. A copy of the subject and appropriate referenced reports and this approval letter shall be attached to the District Office and field set of plans. Submit one copy of the above reports to the Building Department Plan Checker prior to issuance of the permit.

4. A grading permit shall be obtained.

5. All man-made fill shall be compacted to a minimum 90 percent of the maximum dry density of the fill material per the latest version of ASTM D 1557. Where cohesionless soil having less than 15 percent finer than 0.005 millimeters is used for fill, it shall be compacted to a minimum of 95 percent relative compaction based on maximum dry density (D1556). Placement of gravel in lieu of compacted fill is allowed only if complying with Section 91.7011.3 of the Code.

6. Existing uncertified fill shall not be used for support of footings, concrete slabs or new fill.

7. Adequate temporary erosion control devices acceptable to the Department, and if applicable the Department of Public Works, shall be provided and maintained during the rainy season.
6262 Van Nuys Blvd., 2nd Floor, Van Nuys (818) 374-5090

8. Grading shall be scheduled for completion prior to the start of the rainy season, or detailed temporary erosion control plans shall be filed in a manner satisfactory to the Grading Inspection Section of the Department and the Department of Public Works, Bureau of Engineering, B-Permit Section, for any grading work in excess of 200 cu yd.
6262 Van Nuys Blvd., 2nd Floor, Van Nuys (818) 374-5090

9. The applicant is advised that the approval of this report does not waive the requirements for excavations contained in the State Construction Safety Orders enforced by the State Division of Industrial Safety.

10. Prior to the issuance of any permit which authorizes an excavation where the excavation is to be of a greater depth than are the walls or foundation of any adjoining building or structure and located closer to the property line than the depth of the excavation, the owner of the subject site shall provide the Department with evidence that the adjacent property owner has been given a 30-day written notice of such intent to make an excavation.

11. The applicant is advised that recommendations contained herein for excavated banks may also be subject to the regulations of the Department of Public Works, Bureau of Engineering. B-Permit Section. (3301)
6262 Van Nuys Blvd., 2nd Floor, Van Nuys (818) 374-5090

12. Unsurcharged temporary excavation may be cut vertical up to 4 feet. For excavations over 4 feet, the lower 4 feet may be cut vertically and the portion of the excavation above 4 feet shall be trimmed back at a gradient not exceeding 0.75:1 (horizontal to vertical), as recommended.

29. All friction pile or caisson drilling and installation shall be performed under the continuous inspection and approval of the soils engineer.

30. Prior to the pouring of concrete, a representative of the consulting soils engineer shall inspect and approve the footing excavations. He shall post a notice on the job site for the LADBS Building Inspector and the Contractor stating that the work so inspected meets the conditions of the report, but that no concrete shall be poured until the City Building Inspector has also inspected and approved the footing excavations. A written certification to this effect shall be filed with the Grading Division of the Department upon completion of the work

31. Installation of shoring shall be performed under the continuous inspection and approval of the soils engineer. A registered grading deputy inspector approved by and responsible to the geotechnical engineer shall be required to provide continuous inspection for the proposed shoring.

32. Prior to excavation, an initial inspection shall be called with LADBS Inspector at which time sequence of shoring, protection fences and dust and traffic control will be scheduled.

33. Prior to the placing of compacted fill, a representative of the soils engineer shall inspect and approve the bottom excavations. He shall post a notice on the job site for the City Grading Inspector and the Contractor stating that the soil inspected meets the conditions of the report, but that no fill shall be placed until the LADBS Grading Inspector has also inspected and approved the bottom excavations. A written certification to this effect shall be included in the final compaction report filed with the Grading Division of the Department. All fill shall be placed under the inspection and approval of the soils engineer. A compaction report together with the approved soil report and Department approval letter shall be submitted to the Grading Division of the Department upon completion of the compaction. In addition, an Engineer's Certificate of Compliance with the legal description as indicated in the permit shall be included If compacted fill is to support the slab-on-grade, no slab shall be poured until the compaction report is submitted and approved by the Grading Division of the Department.

34. If compacted fill is to support the slab-on-grade, no slab shall be poured until the compaction report is submitted and approved by the Grading Division of the Department.

ANDRZEJ T. SZPIKOWSKI
Geotechnical Engineer II

ATS/ats
61581-02
(213) 482-0480

cc: Applied Earth Sciences
Applicant
LA District Office

March 24, 2008 07-483-02

Avico, Inc.
1260 South La Cienega Boulevard
Los Angeles, California 90035

Attention: Mr. Avi Arshadnia

Subject: Supplement No. 2
Geotechnical Investigation
Proposed Commercial Development Project
20460 Sherman Way
Los Angeles, California

Gentlemen:

## INTRODUCTION

We are pleased to submit this Supplement No. 2 report presenting the results of our additional geotechnical engineering evaluation for the subject project. The original report of geotechnical investigation for the subject project was issued by this office on December 5, 2007. Our Supplement No. 1 was later issued on February 6, 2008, responding to Soils Report Correction Letter dated January 15, 2008 (Log No. 61581).

This submittal is in response to the comments in the latest Soils Report Correction Letter dated March 13, 2008 by the Grading Section Of the Department of Building and Safety of the City of Los Angeles (Log # 61581-01). For convenience, we have attached a copy of the City Correction Letter with this Supplement No. 2. Our response to the comments are in their original order.

## RESPONSE TO THE COMMENTS

Response To Comment No. 1

Based on a site coordinate of 34.3 degrees (latitude) and 118.6 degrees (longitude) the short period (Ss) and 1-second period S1, spectral response accelerations were determined to be 1.8 and 0.75, respectively (from Figure 1613.5 (3) and 1613.5 (4).

Thank you for the opportunity to be of continued service on this project. Should you have any questions regarding this Supplement No. 2, or wish to discuss the project further, please do not hesitate to call us.

-oOo-

Thank you for the opportunity to be of continued service on this project. Should you have any questions regarding this Supplement No. 2, or wish to discuss the project further, please do not hesitate to call us.

Respectfully Submitted,

**APPLIED EARTH SCIENCES**

_____

Caro J. Minas, President

Geotechnical Engineer

GE 601

Enclosure: Revised Figure No. 1
New Figure No. II-3

CJM/ra

Distribution: (4)

Based on these parameters, the corresponding values of site Coefficient $F_a$ and $F_v$ would be 1.0 and 1.5, respectively, as recommended in our Supplement No. 1 report. The maximum considered earthquake spectral response acceleration for short period (Sms) and 1-second period (Sm1) can be determined by the following formulas:

Sms=FaSs; and

Sm1=FvS1

The 5 percent damped design spectral response acceleration at short period (Sds) and 1-second period (Sd1) , can then be determined by the following formulas:

Sds=2/3Sms; and
Sd1=2/3Sm1

Using the above formulas, the values of (Sds) and (Sd1) would be 1.2 and 0.75, respectively.

Response To Comment No. 2

The supporting calculations for the previously given seismic pressure in our Supplement No. 1, is enclosed and completes this Supplement No. 2 report.

-oOo-

-oOo-

Thank you for the opportunity to be of continued service on this project. Should you have any questions regarding this Supplement No. 2, or wish to discuss the project further, please do not hesitate to call us.

Respectfully Submitted,
**APPLIED EARTH SCIENCES**

Caro J. Minas, President
Geotechnical Engineer
GE 601

Enclosure: Engineering Calculations

CJM/ra

Distribution: (4)

# CITY OF LOS ANGELES

CALIFORNIA



## SOILS REPORT CORRECTION LETTER

March 13, 2008

LOG # 61581-01
SOILS FILE - 2

Avico
1260 S. La Cienega Blvd
Los Angeles, CA 90035

34.3
118.6
150
75

TRACT: PM 1594
LOT:
LOCATION: 20460 W. Sherman Way

| CURRENT REFERENCE REPORT/LETTER(S) | REPORT NO. | DATE(S) OF DOCUMENT | PREPARED BY |
|---|---|---|---|
| Soil Report | 07-483-02 | 02/06/2008 | Applied Earth Sciences |

| PREVIOUS REFERENCE REPORT/LETTER(S) | REPORT NO. | DATE(S) OF DOCUMENT | PREPARED BY |
|---|---|---|---|
| Dept. Correction Letter | 61581 | 01/15/2008 | LADBS |
| Soil Report | 07-483-02 | 12/05/2007 | Applied Earth Sciences |

The current referenced report responding to the Department Correction Letter dated 01/15/2008 has been reviewed by the Grading Division of the Department of Building and Safety.

The referenced reports provide recommendations for the proposed commercial development. According to the report dated 12/05/2007, the project will consist of a two-story structure constructed over subterranean parking garage. The garage floor is expected to be established approximately 10 feet below grade. The site soils consist of up to 3 feet of uncertified fill underlain by natural clays and sands. The existing fills are not considered adequate to support the proposed footings. Grading for the project will consist of excavating the site for the proposed basement subterranean garage. The excavations will be approximately 12 feet in vertical height. Shoring will be required for the safe excavation.

The review will be continued upon submittal of an addendum to the reports which includes, but need not be limited to, the following:

1. Revise seismic design parameters: it appears, that as a minimum, Sds of 1.719 and

SD1 of 0.938 shall be recommended for the design.

2. Provide calculations to justify the recommended earthquake load on the proposed retaining wall.

The soil engineer shall prepare a report containing the corrections indicated in this letter. The report shall be in the form of an itemized response. It is recommended that once all correction items have been addressed in a response report, to contact the report review engineer to schedule a verification appointment to demonstrate compliance with all the corrections. Do not schedule an appointment until all corrections have been addressed. Bring three copies of the response report, including one unbound wet-signed original for microfilming in the event that the report is found to be acceptable.

For

ANDRZEJ T. SZPIKOWSKI
Geotechnical Engineer II

ATS/ats
61581-01
(213) 482-0480

cc: Applied Earth Sciences
Applicant
LA District Office

$S_A = \frac{2}{3} S_{M_S} = \frac{2}{3}(1.08) = 1.2$

$S_{D_1} = \frac{2}{3} S_{M_1}$ $\frac{2}{3}(.9375) = .625$ 1.125 .938

1.8
$S_{M_S} = F_a S_s$ Short period $= 1.8(1) = 1.80$
$S_{M_1} = F_v S_1$ Long period $= .075(1.5) = .0975$ .75(1.5) 1.125

$S_{DS} = \frac{2}{3} S_{M_S}$

$S_{D_1} = \frac{2}{3} S_{M_1}$

$S_{M_S} =$

$S_{M_1} =$

February 6, 2008 07-483-02

Avico, Inc.
1260 South La Cienega Boulevard
Los Angeles, California 90035

Attention: Mr. Joseph Bodaei

Subject: Supplement No. 1
Proposed Commercial Development Building project
20460 Sherman Way
Los Angeles, California

Gentlemen:

## INTRODUCTION

We are pleased to submit this Supplement No. 1 report presenting the results of our additional geotechnical engineering evaluation and analysis for the subject project. The original report of geotechnical investigation for the subject project was issued by this office on December 17, 2007.

This submittal is in response to comments in a Soils Report Correction Letter dated January 16, 2008, by the Grading Section Of the Department of Building and Safety of the City of Los Angeles (Log No. 61607). For convenience, we have included a copy of the City Review Sheet with this Supplement No. 1. Our responses are presented in the original order of the comments:

## RESPONSE TO THE COMMENTS

Comment No. 1

At your request, we have conducted additional liquefaction settlement calculations, assuming the historic groundwater table at 4 feet. The results of our calculations shows the soil below the historically highest groundwater level were

generally stiff to very stiff and medium dense to dense in-place, having corrected SPT values of greater than 30,

See the enclosed Log Of Exploratory Boring No. 1. And our liquefaction calculation sheet. On the basis of the above, therefore, it is our opinion that soil liquefaction will not occur at this site.

Comment No. 2

During an earthquake an additional lateral earth pressure will be applied to the wall. The magnitude of the seismic pressure was evaluated using the procedures developed by Mononobe-Okabe (Seed and Whitman, 1970). The seismic pressure is approximated using a lateral pressure coefficient of 0.75 times an effective ground acceleration equal to 0.67 times the maximum ground acceleration.

Based on a alluvium soil ground acceleration of 0.45g, the effective ground acceleration is 0.23g. Therefore, we recommend using an equivalent fluid pressure of 30 pcf to calculate the lateral seismic pressure. The resultant of this pressure should be applied at a level 0.6 times the wall height above the base of the wall. Experience has shown that walls adequately designed for static loading have generally performed well during earthquake loading. The structural engineer may want to consider the use of a lower factor of safety in evaluating the seismic design of the walls, due to temporary nature of the loading.

Comment No. 3

In accordance with the 2007 California Building code( CBC 2007), the project site can be classified as site D. The mapped spectral accelerations of $S_s$=1.5 (short period)and $S_1$ =0.6 (1-second period) can be used for this project. These parameters corresponds to site Coefficients values of $F_a$ =1.0 and $F_v$=1.5, respectively.

Comment No. 4

Our revised Figure 1 is attached.

-oOo-

Thank you for the opportunity to be of continued service on this project. Should you have any questions regarding this Supplement No. 1, or wish to discuss the project further, please do not hesitate to call us.

Respectfully Submitted,

**APPLIED EARTH SCIENCES**

Caro J. Minas
Geotechnical Engineer
GE 601

Dan Daneshfar
Senior Engineer
RCE 68377

DD/CJM/mg

Enclosure:

Distribution: (4)

# BORING No. 1

DATE EXCAVATED: 11/20/07

GROUND ELEVATION:

| DEPTH IN FEET | DRY DENSITY (PCF) | FIELD MOISTURE (%DRY WEIGHT) | % PASSING #200 | BLOWS PER FOOT | MATERIAL TYPE | MATERIAL SYMBOL | MATERIAL DESCRIPTION |
|---|---|---|---|---|---|---|---|
| | | | | | SAND (SM) | | Fill: Moderately compact, slightly moist, dark brown, silty sand |
| | 91 | 21 | 74 | *15 | SILT (ML) | | Stiff, moist, dark brown, slightly sandy with fine gravel |
| 5 | 96 | 21 | 72 | **19/37 | CLAY (CL) | | Very stiff, moist, dark brown, sandy with gravel |
| 10 | 98 | 23 | 73 | **23/39 | (CL) | | Grades to black, occasional gravel |
| | 98 | 24 | 72 | *26 | (CL) | | Grades to gray |
| 15 | 103 | 24 | 80 | **25/37 (SPT) | (CL) | | Grades to slightly sandy |
| | 106 | 21 | 70 | *30 | (CL) | | Grades to light brown, very moist, sandy |
| 20 | 108 | 23 | 51 | **20/31 (SPT) | (CL) | | Grades to wet, very sandy |
| | 99 | 22 | 71 | *12 | (CL) | | Grades to stiff, dark brown |
| 25 | 101 | 29 | 72 | **22/32 (SPT) | (CL) | | Grades to firm, orange, occacional gravel |
| | 105 | 23 | 37 | *19 | SAND (SM) | | Medium dense, wet, light brown, clayey fine grained sand, occasional fine gravel |
| 30 | 101 | 31 | 71 | **22/32 (SPT) | CLAY (CL) | | Very stiff, wet, gray, sandy |

## LOG OF BORING

JOB NAME: Mr. Joseph Bodaei

JOB No. 07-483-02

APPLIED EARTH SCIENCES
GEOTECHNICAL & ENVIRONMENTAL ENGINEERING CONSULTANTS

FIGURE NO : I-1.1

# BORING No. 1 (Continued)

DATE EXCAVATED: 11/20/07

GROUND ELEVATION:

| DEPTH IN FEET | DRY DENSITY (PCF) | FIELD MOISTURE (%DRY WEIGHT) | % PASSING #200 | BLOWS PER FOOT | MATERIAL TYPE | MATERIAL SYMBOL | MATERIAL DESCRIPTION |
|---|---|---|---|---|---|---|---|
| | | | | | (CL) | | Continued from previous page |
| 35 | 102 | 25 | 46 | **37/48 (SPT) | SAND (SAND | | Dense, wet, dark brown, clayey, fine grained sand with occasional gravel |
| 40 | 99 | 29 | 81 | **24/32 (SPT) | CLAY (CL) | | Stiff, wet, light brown, slightly sandy |
| 45 | 103 | 25 | 30 | **35/41 (SPT) | SAND (SM) | | Dense , wet, light brown, clayey, fine grained sand with occasional gravel |
| 50 | 100 | 27 | 66 | **45/50 (SPT) | CLAY (CL) | | Hard, wet, dark brown, sandy with occasional gravel |

End of Boring @ 51 feet
Water @ 19 feet
* California Sampler ** Field blow counts/Corrected blow counts including fines

## LOG OF BORING

JOB NAME: Mr Joseph Bodaei

JOB No. 07-483-02

APPLIED EARTH SCIENCES
GEOTECHNICAL & ENVIRONMENTAL ENGINEERING CONSULTANTS

FIGURE NO : I-1.2

Liquefaction Potential Analysis Based on SPT values and/or equivalent SPT values

Project Name: Sherman Way
Project Number: 07-483.03
Location:

Developed by:

Date: 2/4/2009

Liquefaction potential is analyzed in accordance with Recommended Procedures for Implementation of CDMG Special Publication 117.

| | |
|---|---|
| Borehole Diameter (inch): | 8 |
| Design Depth to Groundwater (ft): | 4 |
| Depth to groundwater at Time of Drilling (ft): | 19 |
| Earthquake Moment Magnitude: | 7.5 |
| Maximum Peak Ground Acceleration (g): | 0.37 |
| Hammer Type (Safety, Donut,Automatic Trip): | Automatic Trip |
| Sampling Method (Standard, without liners): | Standard |

Note: 1. N values for samples collected using the California Sampler can be roughly correlated to SPT N-value using a conversion factor of 0.83

2. Factor of Safety used in comments = 1.3
3. Please fill the highlighted boxes only

| Layer Number | Top of Layer (ft) | Bottom of Layer (ft) | Layer thickness (ft) | Depth to mid point of the layer (ft) | Soil Type | Estimated Percent of Fines (%) | Field Blow Count (N) | Total unit weight (pcf) | Total overburden pressure (psf) | Effective(Drilling) overburden pressure (psf) | Effective(design) overburden pressure (psf) | Overburden correction factor ($C_{N1}$) | Energy Ratio Correction Factor ($C_E$) | Borehole Dia. Correction Factor ($C_B$) | Rod length Correction Factor ($C_R$) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 0 | 5 | 5 | 2.5 | ML | 14 | 15 | 125 | 312.5 | 312.5 | 312.5 | 2 | 1.25 | 1 | 0.75 |
| 2 | 5 | 10 | 5 | 7.5 | CL | 72 | 19 | 125 | 937.5 | 937.5 | 719.1 | 1.502553709 | 1.25 | 1 | 0.75 |
| 3 | 10 | 15 | 5 | 12.5 | CL | 73 | 23 | 125 | 1562.5 | 1562.5 | 1032.1 | 1.163718179 | 1.25 | 1 | 0.85 |
| 4 | 15 | 19 | 4 | 17 | CL | 80 | 25 | 125 | 2125 | 2125 | 1313.6 | 0.997992106 | 1.25 | 1 | 0.85 |
| 5 | 19 | 23 | 4 | 22 | CL | 51 | 30 | 125 | 2750 | 2562.6 | 1656.6 | 0.908656041 | 1.25 | 1 | 0.95 |
| 6 | 23 | 30 | 5 | 27.5 | CL | 72 | 22 | 125 | 3437.5 | 2907.1 | 1971.1 | 0.853154915 | 1.25 | 1 | 0.95 |
| 7 | 30 | 35 | 5 | 32.5 | CL | 71 | 22 | 125 | 4062.5 | 3220.1 | 2284.1 | 0.810630896 | 1.25 | 1 | 1 |
| 8 | 35 | 40 | 5 | 37.5 | SM | 49 | 37 | 125 | 4687.5 | 3533.1 | 2597.1 | 0.773891128 | 1.25 | 1 | 1 |
| 9 | 40 | 45 | 5 | 42.5 | CL | 81 | 24 | 125 | 5312.5 | 3846.1 | 2910.1 | 0.741732805 | 1.25 | 1 | 1 |
| 10 | 45 | 50 | 5 | 47.5 | SM | 30 | 36 | 125 | 5937.5 | 4158.1 | 3223.1 | 0.713278865 | 1.25 | 1 | 1 |
| 11 | 50 | 55 | 5 | 47.5 | CL | 66 | 45 | 125 | 6562.5 | 4784.1 | 3848.1 | 0.686055231 | 1.25 | 1 | 1 |

| Layer Number | Sampler Correction Factor ($C_S$) | Corrected Blow Count ($N_{1,60}$) | Fines Coefficient $\alpha$ | Fines Coefficient $\beta$ | Blow Count Corrected for Fines ($N_{1,60,cs}$) | Strata Reduction Factor $r_d$ | Induced Cyclic Stress Ratio (CSR) | Cyclic Resistance Ratio (CRR) | Earthquake Mag. Scaling Factor MSF | Factor of Safety (FS) | Comments | Volumetric Strain (%) | Settlement (in) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 1 | 28 | 5.00 | 1.20 | 39 | 0.98 | 0.24 | HIGH | 1.00 | HIGH | ABOVE GW | | 0.00 |
| 2 | 1 | 27 | 5.00 | 1.20 | 37 | 0.98 | 0.31 | HIGH | 1.00 | NA | COHESIVE SOIL | | 0.00 |
| 3 | 1 | 28 | 5.00 | 1.20 | 39 | 0.97 | 0.35 | HIGH | 1.00 | NA | COHESIVE SOIL | | 0.00 |
| 4 | 1 | 27 | 5.00 | 1.20 | 37 | 0.96 | 0.37 | HIGH | 1.00 | NA | COHESIVE SOIL | | 0.00 |
| 5 | 1 | 22 | 5.00 | 1.20 | 31 | 0.95 | 0.39 | HIGH | 1.00 | NA | COHESIVE SOIL | | 0.00 |
| 6 | 1 | 22 | 5.00 | 1.20 | 32 | 0.94 | 0.39 | HIGH | 1.00 | NA | COHESIVE SOIL | | 0.00 |
| 7 | 1 | 23 | 5.00 | 1.20 | 32 | 0.91 | 0.39 | HIGH | 1.00 | NA | COHESIVE SOIL | | 0.00 |
| 8 | 1 | 35 | 5.00 | 1.20 | 48 | 0.87 | 0.38 | HIGH | 1.00 | HIGH | NO LIQUEFACTION | | 0.00 |
| 9 | 1 | 22 | 5.00 | 1.20 | 32 | 0.83 | 0.38 | HIGH | 1.00 | NA | COHESIVE SOIL | | 0.00 |
| 10 | 1 | 31 | 4.71 | 1.10 | 41 | 0.78 | 0.35 | HIGH | 1.00 | HIGH | NO LIQUEFACTION | | 0.00 |
| 11 | 1 | 31 | 5.00 | 1.20 | 50 | 0.73 | 0.32 | HIGH | 1.00 | NA | COHESIVE SOIL | | 0.00 |
| | | | | | | | | | | | | | 0.00 |
| | | | | | | | | | | | | | 0.00 |
| | | | | | | | | | | | | | 0.00 |
| | | | | | | | | | | | | | 0.00 |
| | | | | | | | | | | | | | 0.00 |
| | | | | | | | | | | | | | 0.00 |
| | | | | | | | | | | | | | 0.00 |

Total Liquefaction Induced Settlement (in) = 0.0

1. Ref.: SP 117
NCEER Workshop


Scale: 1" = 2000'

Reference: Portion of Seismic Hazard Zone Map of The Canoga Park Quadrangle

# SEISMIC HAZARD ZONES MAP

Proposed Commercial Development Building Project

20460 Sherman Way, Los Angeles, California

| FOR | Avico, Inc. | DATE | 12/5/2007 | PROJECT No. | 07-483-02 |
|---|---|---|---|---|---|
| APPLIED EARTH SCIENCES<br>GEOTECHNICAL · GEOLOGY · ENVIRONMENTAL ENGINEERING · CONSULTANTS | | | | FIGURE No. | 1 |

# CITY OF LOS ANGELES
CALIFORNIA



ANTONIO R. VILLARAIGOSA
MAYOR



## SOILS REPORT CORRECTION LETTER

January 15, 2008

LOG # 61581
SOILS FILE - 2

Avico
1260 S. La Cienega Blvd
Los Angeles, CA 90035

TRACT: PM 1594
LOT: A
LOCATION: 20460 W. Sherman Way

| CURRENT REFERENCE REPORT/LETTER(S) | REPORT NO. | DATE(S) OF DOCUMENT | PREPARED BY |
|---|---|---|---|
| Soil Report | 07-483-02 | 12/05/2007 | Applied Earth Sciences |

The referenced report providing recommendations for the proposed commercial development has have been reviewed by the Grading Division of the Department of Building and Safety. According to the report, the project will consist of a two-story structure constructed over subterranean parking garage. The garage floor is expected to be established approximately 10 feet below grade. The site soils consist of up to 3 feet of uncertified fill underlain by natural clays and sands. The existing fills are not considered adequate to support the proposed footings. Grading for the project will consist of excavating the site for the proposed basement subterranean garage. The excavations will be approximately 12 feet in vertical height. Shoring will be required for the safe excavation.

The liquefaction study included as a part of the report demonstrates that the site does not possess liquefaction potential. However, the consultants assumed that the historical ground water is 15 feet below the grade. But Canoga Park 7.5 Minute Quadrangle Map indicates, that the historically highest groundwater is approximately 4 feet below the grade.

As of January 1, 2008 the City of Los Angeles was required to adopt the new 2007 California Building Code. The new code contains several new provisions including revised seismic design requirements. Because every site in the City of Los Angeles is classified as a Seismic Design Category D or higher, those requirements include the determination of lateral pressure on basement and retaining walls due to earthquake motions. These requirements apply to all projects where the permit application submittal date is after January 1, 2008.

The seismic design parameters given in the report, except for the soil profile type, are no longer applicable under the 2008 Los Angeles Building Code.

The review will be continued upon submittal of an addendum to the reports which includes, but need not be limited to, the following:

1. Revise liquefaction study considering removal of the overburden to 10 feet below the grade and assuming ground water elevation at 4 feet below the grade.

2. Provide recommendations for design of retaining/basement wall subject to earthquake motion.

3. Provide seismic design parameters in compliance with the new code.

4. Figure 1 of the report is illegible. Provide a legible copy.

The soil engineer shall prepare a report containing the corrections indicated in this letter. The report shall be in the form of an itemized response. It is recommended that once all correction items have been addressed in a response report, to contact the report review engineer to schedule a verification appointment to demonstrate compliance with all the corrections. Do not schedule an appointment until all corrections have been addressed. Bring three copies of the response report, including one unbound wet-signed original for microfilming in the event that the report is found to be acceptable.

ANDRZEJ T. SZPIKOWSKI
Geotechnical Engineer II

ATS/ats
61581

(213) 482-0480

cc: Applied Earth Sciences
Applicant
LA District Office

# REPORT OF

# GEOTECHNICAL INVESTIGATION

# PROPOSED COMMERCIAL DEVELOPMENT BUILDING PROJECT

# 20460 SHERMAN WAY

# LOS ANGELES, CALIFORNIA

FOR

AVICO, INC.

PROJECT NO. 07-483-02

DECEMBER 5, 2007

**Applied Earth Sciences**
*a division of Applied Soil Technology, Inc.*
GEOTECHNICAL & ENVIRONMENTAL ENGINEERING CONSULTANTS

December 5, 2007 07-483-02

Avico, Inc.
1260 South La Cienega Boulevard
Los Angeles, California 90035

Attention: Mr. Joseph Bodaei

Subject: Geotechnical Investigation
Proposed Commercial Development Building project
20460 Sherman Way
Los Angeles, California

Gentlemen:

## INTRODUCTION

This report presents the results of a geotechnical investigation for the subject project. During the course of this investigation, the engineering properties of the subsurface materials were evaluated in order to provide recommendations for design and construction of foundations, grade slabs, and grading. The investigation included subsurface exploration, soil sampling, laboratory testing, engineering evaluation and analysis, consultation and preparation of this report. The scope of this geotechnical study did not include environmental issues and chemical testing of the soil samples.

The enclosed Site Plan; Drawing No. 1, shows the approximate locations of the drilled borings in relation to the site boundaries. Figure No. 1 shows the Seismic Hazard Zone Map. Figure No. 2 shows the Regional Geologic Maps. Figure Nos. 3 through 7 show the associated Site Location Maps, Seismic Hazard Maps as well as the Historically Highest Groundwater Contour Map of the site.

The attached Appendix I, describes the method of field exploration. Figure Nos. I-1 through I-4 present summaries of the materials encountered at the location of our borings. Figure No. I-5 presents the Uniform Soil Classification System Chart; a guide to the Log of Exploratory Borings.

The attached Appendix II describes the laboratory testing procedures. Figure Nos. II-1 and II-2 present the results of direct shear and consolidation tests performed on selected undisturbed samples.

It should be noted that, during the course of this investigation, the project plan and loading data was not available. Our recommendations for temporary excavation and foundation, therefore, are based on the provided verbal project data and assumed structural loading. This office should be consulted, if the actual structural loading and excavation depths (including garage wall setbacks) are significantly different from those assumed in this report. Modifications to the presented design recommendations will then be made to reflect the actual conditions.

## PROJECT CONSIDERATION

It is our understanding that the proposed project would consist of construction of a commercial building at the subject site. The proposed building is expected to be a two-story wood frame structure constructed over subterranean parking garage. The garage floor level is expected to be established at some 10 feet below grade. Therefore, total height of excavation to the perimeter wall footing levels of the basement garage are expected to be on the order of 12 feet.

It is anticipated that the perimeter walls of the basement garage of the proposed building will be extended to close proximity of the sides and rear property lines. Therefore, during the course of basement garage construction, temporary shoring in a form of cantilevered soldier piles should be used. Where adequate space is available, unsupported, open excavation slopes with gradients as recommended in this report may be used.

Structural loading data was not available at the time of this investigation. For the purpose of this report, it is assumed that maximum concentrated loads of the interior columns will be on the order of 300 kips, combined dead plus frequently applied live loads. Perimeter and interior wall footings of the structure are expected to exert loads of on the order of 6 kips per lineal foot.

## SITE GRADING

The site grading for the proposed project is expected to involve excavations in order to create the proposed basement garage grades. As part of the site grading work, some wall backfilling will also be made. The excavated site materials can be used for wall backfilling. It is expected that, after completion of the site grading work, significant amount of materials will be exported from the site.

## SITE CONDITIONS

### SURFACE CONDITIONS

The site of the proposed apartment building is located at 20460 sherman way, California. The site is rectangular in shape and covers a plan area of about 14,400 square feet.

At the time of our field investigation, an existing auto body shop was located on the site which will be removed. The site was noted to be generally level,

### SUBSURFACE CONDITIONS

Correlation of the subsoil between the borings was considered to be fair. Generally, the site, to the depths explored, was found to be covered with surficial fill underlain by natural deposits of, sandy silt, sandy clay and silty sand soils. Thickness of the surficial fill was found to be less than two feet at the location of our borings. Deeper fill, however, may be present in the areas of old buildings and in utility trenches. Such fill soils are expected to be automatically removed by the planned basement garage excavation.

The upper native soils through which the basement garage excavations will be made were found to consist of sandy silt and sandy clay soils. These soils were found to be generally stiff to very stiff in-place. The results of our laboratory investigations indicated that these materials were of moderate strengths.

The soils encountered near the planned foundation levels were found to be generally stiff sandy/silty clay soils. The results of our laboratory testing indicated that these materials were of moderate strengths and moderate compression.

The fine grained soils at the garage grade were found to be moderately expansive. The expansion index of such soils were found to be 52. Therefore, grade slabs for this project should be designed for expansive soil conditions.

During the course of our investigation groundwater was found in our borings. Depth to the groundwater level was founded to range from 19 to 28 feet below grade. The available maps, however, indicate that the historically highest groundwater level at the site was near a depth of about 19 feet. For the purpose of design, it should be assumed that the groundwater level could rise to a depth of about 19 feet below grade.

Considering that the shoring piles may be extended below the water level, casing may be required during shoring pile drilling. This should be determined during the initial drilling of the shoring piles. For displacement of any accumulated water at the bottom of shoring piles, the concrete should be placed from the bottom of the holes using "treme

**CAVING CONSIDERATIONS**

Due to method of drilling (use of continuous casing) caving was not detected below the water table. Caving, however, may be experienced within the saturated (water-carrying) sand layers. If caving is experienced, casing should be used during installation of the shoring piles. After the drilling is extended to the design depths, if water is accumulated at the bottom of the holes, the concrete should be placed from the bottom of the holes using "treme". Lagging (placed from the top ) will be required between the vertical soldier piles. This will help reduce the chances of local sloughing

## EVALUATION OF LIQUEFACTION POTENTIAL

As part of our field exploration, one boring was drilled at the subject site to a maximum depth of 51 feet. Groundwater was encountered in our Borings between depths of 19 to 28 feet. The available maps, however, indicate that the historically highest groundwater level at the site was near a depth of about 19 feet. The results of our in-situ testing indicated that the soil below the historically highest groundwater level were generally stiff to very stiff and medium dense to dense in-place, having corrected SPT values of greater than 30,

See the enclosed Log Of Exploratory Boring No. 1. On the basis of the above, therefore, it is our opinion that soil liquefaction will not occur at this site.

## SEISMIC DESIGN CONSIDERATIONS

The subject site is located within UBC Seismic Zone 4. Based on the results of our field exploration, the subject site can be assumed to have a soil profile type of Sd in accordance with Table 16-J of 1997 Uniform Building Code.

The closest active fault to the subject site is the Santa Susana faults which is designated as Type B seismic source in accordance with CDMG (California Division of Mines and Geology). The subject site occurs some 12 kilometers from this near source zone in accordance with Map M-32 of ICBO (International Conference of Building Officials February 1998). At this distance, for a seismic source B, the values of near source factors would be 1.0 for both Na and Nv, in accordance with Tables 16-S and 16-T of the 1997 UBC.

## EVALUATION AND RECOMMENDATIONS

### GENERAL

Based on the geotechnical engineering data derived from this investigation, the site is considered to be suitable for the proposed development. Spread footing foundation system can be used for support of the proposed building. The foundation bearing soils are expected to be stiff silty clay native soils.

It is anticipated that the basement garage excavations will be made through surficial fill and native soils consisting of silts and clays. Maximum height of excavation, including the footing depths, are expected to be on the order of 12 feet. Considering this, during the course of basement garage construction, temporary shoring will be required.

Groundwater was encountered in our borings between depths of 19 to 28 feet. For the purpose of the design of basement garage slab, however, it should be assumed that the groundwater level could rise to a depth of about 19 feet below grade (historic groundwater table).

The basement floor slabs can be supported on the exposed subgrade, provided that any disturbed soils would be compacted in-place to a relative compaction of at least 90 percent at some 3 percent higher than the optimum moisture content. For the purpose of the proposed project, it is recommended that the basement garage slabs to have a minimum thickness of 5 inches.

The following sections present our specific recommendations for temporary excavations, foundations, lateral design, basement grade slabs, subsurface walls, and observations during construction

## TEMPORARY EXCAVATION

**Unshored Excavations:** Where space limitations permit, unshored temporary excavation slopes could be used. Based upon the engineering characteristics of the site upper soils, it is our opinion that temporary excavation slopes in accordance with the following table should be used:

| Maximum Depth of Cut (Ft) | Maximum Slope Ratio (Horizontal:Vertical) |
|---|---|
| 0-4 | Vertical |
| >4 | 3/4:1 |

Water should not be allowed to flow over the top of the excavation in an uncontrolled manner. No surcharge should be allowed within a 45-degree line drawn from the bottom of the excavation. Excavation surfaces should be kept moist but not saturated to retard raveling and sloughing during construction.

It would be advantageous, particularly during wet season construction, to place polyethylene plastic sheeting over the slopes. This will reduce the chances of moisture changes within the soil banks and material wash into the excavation.

**Cantilevered Soldier Piles:** In the areas where adequate horizontal distance beyond the planned line of excavation is not available, cantilevered soldier

piles should be used as a means of temporary shoring. Soldier piles consist of structural steel beams encased in concrete (below the basement garage level) and slurry mix within the exposed depths of excavation.

The lateral resistance for cantilevered soldier piles may be assumed to be offered by available passive pressure below the basement level. An allowable passive pressure of 400 pounds per square foot per foot of depth may be used below the basement level for soldier piles having center-to-center spacing of at least 2-1/2 times the pile diameter. Maximum allowable passive pressure should be limited to 3,000 pounds per square foot. The maximum center-to-center spacing of the vertical shafts should be maintained no greater than 10 feet.

For temporary construction excavations, the active pressure on cantilever soldier piles may be computed using an equivalent fluid density of 27 pounds per cubic foot. Uniform surcharge may be computed using an active pressure coefficient of 0.30 times the uniform load.

When using cantilevered soldier piles for temporary shoring, the point of fixity (for the purpose of moment calculations), may be assumed to occur at some 2 feet below the base of the excavation.

In order to limit local sloughing, it is recommended that lagging be used where fill is exposed between the soldier piles. All wood members left in ground should be pressure treated.

It should be noted that the recommendations presented in the "TEMPORARY EXCAVATION" Section of this report are use in design and for cost estimating purposes prior to construction. The contractor is solely responsible for safety during construction.

## FOUNDATIONS

Conventional spread footing foundation systems could be used to support the proposed building. For improved stability during seismic event, it is recommended that spread footings be connected in both directions with tie beams.

Exterior and interior footings should be a minimum of 18 inches wide and should be placed at a minimum depth of 24 inches below the lowest adjacent final grades (in this case, basement level).

The recommended allowable maximum bearing pressure for minimum size footings placed in stiff native soils could be taken as 2,200 pounds per square foot. Due to fine grained nature of the foundation bearing materials, no increase in bearing pressure should be allowed for increase in footing depth and width. The above given values are for the total of dead and frequently applied live loads. For short duration transient loading, such as wind or seismic forces, the given values may be increased by one-third.

Under the allowable maximum soil pressure, footings carrying the assumed maximum concentrated loads of 300 kips are expected to settle on the order of one inch (static+seismic). Maximum combined (static and seismic) settlement of continuous footings, with loads of about 6 kips per linear foot are expected to settle on the order of 3/4 of one inch. Maximum differential settlements (including seismic) are expected to be on the order of 1/2 of an inch. Major portion of the settlements are expected to occur during construction.

## LATERAL DESIGN

Lateral resistance at the base of footings in contact with native soils may be assumed to be the product of the dead load forces and a coefficient of friction of 0.30. Passive pressure on the face of footings may also be used to resist lateral forces. A passive pressure of zero at the finished grades and increasing at a rate of 250 pounds per square foot per foot of depth to a maximum value of 2,200 pounds per square foot may be used for footings poured against native soils.

## GRADE SLABS

The basement floor slabs could be supported on the exposed subgrade, provided that any disturbed soils would be compacted in-place to a relative compaction of at least 90 percent at some 3 percent higher than the optimum moisture content of the soils.

All fill soils placed over the interior footings should also be compacted to a relative compaction of at least 90 percent at some 3 percent higher than the optimum moisture content. For the purpose of this project, garage slabs should have a minimum thickness of 6 inches and be reinforced with # 4 bars placed at every 18 inches on center.

**BASEMENT WALLS**

The perimeter walls of the basement garage of the proposed building are expected to be buried to maximum depths of about 6 feet. Static design of these walls (being restrained against rotation) could be based on an equivalent fluid pressure of 48 pounds per square foot per foot of depth. This assumes that no hydrostatic pressure will occur behind the retaining walls. This will require that proper subdrain be installed behind the basement garage walls.

Subdrain normally consists of 4-inch diameter perforated pipes encased in free-draining gravel (at least one cubic foot per lineal foot of the pipes). In order to reduce the chances of siltation and drain clogging, the free-draining gravel should be wrapped in filter fabric proper for the site soils.

Based on the geotechnical engineering data derived from this investigation, the site is considered to be suitable for the proposed development.

It should be noted that, if proper subdrain can not be installed due to limited and/or no space, the basement garage walls should be designed based on full hydrostatic pressure (65 pounds per square foot per foot of depth).

In addition to the lateral earth pressure, the basement garage walls should also be designed for any applicable uniform surcharge loads imposed on the adjacent grounds. Uniform surcharge effects may be computed using a coefficient of 0.30 times the assumed uniform loads.

For allowable vertical and lateral pressures refer to the preceding section.

Where adequate space is available, granular fill should be placed and compacted behind the retaining walls (after the subdrain is installed) to a relative compaction of at least 90 percent. At least one field density tests should be taken for

each 2 feet of the backfill. The degree of compaction of the wall backfill should be verified by the Soil Engineer.

Where space is limited, free-draining gravel should be placed behind the retaining walls. The gravel should then be capped with at least 18 inch thick site soils also compacted to a relative compaction of at least 90 percent. It should be noted that the backfill placed behind the basement garage walls should be made after the concrete decking is cast. All grading surrounding the building should be such to ensure that water drains freely from the site and does not pond.

**SITE GRADING**

Site grading for the proposed project is expected to include excavation in order to create the basement garage grades and backfilling behind the basement walls. Prior to placing any fill, the Soil Engineer should observe the excavation bottoms. In the areas of fill, all soils should be removed until bedrock is exposed. The areas to receive compacted fill should be scarified to a depth of about 8 inches, moistened as required to bring to approximately optimum moisture content, and compacted to at least 90 percent of the maximum dry density as determined by the ASTM Designation D 1557 Compaction Method.

General guidelines regarding site grading are presented below which may be included in the earthwork specification. It is recommended that all fill be placed under engineering observation and in accordance with the following guidelines:

1. All fill should be granular in nature. Therefore, only the excavated sandy soil from the site may be reused in the areas of compacted fill.
2. Before wall backfilling, subdrain should be installed. The subdrain system should consist of 4-inch diameter perforated pipes embedded in about 1 cubic feet of free draining gravel per foot of pipe. An approved filter fabric should then be wrapped around the free draining gravel in order to reduce the chances of siltation. Non-perforated outlet pipes should then be used to pass through the wall into an interior sump. The subdrain pipes should be laid at a minimum grade of two percent for self cleaning.

3. The excavated sandy soils from the site are considered to be satisfactory to be reused in the areas of compacted fill and wall backfill provided that rocks larger than 6 inches in diameter are removed.

4. Fill material, approved by the Soil Engineer, should be placed in controlled layers. Each layer should be compacted to at least 90 percent of the maximum unit weight as determined by ASTM designation D 1557 for the material used.

5. The fill material shall be placed in layers which, when compacted, shall not exceed 8 inches per layer. Each layer shall be spread evenly and shall be thoroughly mixed during the spreading to insure uniformity of material in each layer.

6. When moisture content of the fill material is too low to obtain adequate compaction, water shall be added and thoroughly dispersed until the moisture content is near optimum.

7. When the moisture content of the fill material is too high to obtain adequate compaction, the fill material shall be aerated by blading or other satisfactory methods until near optimum moisture condition is achieved.

8. Inspection and field density tests should be conducted by the Soil Engineer during grading work to assure that adequate compaction is attained. Where compaction of less than 90 percent is indicated, additional compactive effort should be made with adjustment of the moisture content or layer thickness, as necessary, until at least 90 percent compaction is obtained.

## SITE DRAINAGE

Site drainage should be provided to divert roof and surface waters from the property through non-erodible drainage devices to the street. In no case should the surface waters be allowed to pond adjacent to building or behind the basement garage walls. A minimum slope of one and two percent are recommended for paved and unpaved areas, respectively.

## OBSERVATION DURING CONSTRUCTION

The presented recommendations in this report assume that all structural foundations will be established in native soils. All footing excavations should be observed by a representative of this office before reinforcing is placed.

The depths of cantilevered soldier piles should be confirmed by a representative of this office before concrete is placed. It is essential to assure that soldier piles are

drilled to proper depths and diameters, and in accordance with the project plans and specifications.

Site grading work, such as wall backfilling, and subgrade preparation for basement slab support, should be conducted under observation and testing by a representative of this firm. All backfill soils should be properly compacted to at least 90 percent relative compaction. For proper scheduling, please notify this office at least 24 hours before any observation work is required.

## CLOSURE

The findings and recommendations presented in this report were based on the results of our field and laboratory investigations combined with professional engineering experience and judgment. The report was prepared in accordance with generally accepted engineering principles and practice. We make no other warranty, either express or implied.

It is noted that the conclusions and recommendations presented are based on exploration "window" borings and excavations which is in conformance with accepted engineering practice. Some variations of subsurface conditions are common between "windows" and major variations are possible.

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The following Figures and Appendixes are attached and complete this report:

Site Plan- Drawing No. 1

Figure No. 1 - Seismic Hazard Zone Map
Figure No. 2 - Regional Geologic Maps
Figure No. 3 - Site Location Map (Portion Of Thomas Bros. Maps)
Figure No. 4 -Site Location Map (Portion Of Assessor Maps)
Figure No. 5 - Seismic Hazard Zone Map (Peak Ground Acceleration For Alluvium Conditions)
Figure No. 6 - Seismic Hazard Zone Map (Predominant Earthquake Magnitude And Distance)
Figure No. 7 - Historically Highest Groundwater Contour Map
Appendix I-Method of Field Exploration
Figure Nos. I-1 through I-5
Appendix II-Methods of Laboratory Testing
Figure Nos. II-1 and II-2

Respectfully Submitted,

**Applied Earth Sciences**

| | |
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CJM/mg

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