GeoConcepts INC
Geology - Geotechnical Engineering

August 23, 2016 Project 5197

Meta Housing Corporation
Attention: Taylor Rasmussen
1640 South Sepulveda Blvd, Suite 425
Los Angeles, California 90025

Subject: **INFILTRATION TEST REPORT**
4169 and 4200 - 4224 Whittier Boulevard
Los Angeles County, California

References:

1) Preliminary Geologic and Soils Engineering report by GeoConcepts, Inc. covering the subject site, dated August 10, 2016.

Dear Mr. Rasmussen:

Pursuant to your request, presented herein is a summary of the findings from logging and performing infiltration tests for the proposed subsurface infiltration system. It is our understanding that the proposed infiltration system will be designed to infiltrate first storm runoff into the ground area as shown on the attached Plot Map. The infiltration test was performed in the boring from 25 to 35 feet.

The boring encountered alluvium at the proposed infiltration level. Encountered alluvium deposits consist predominantly of silty sand (SM) to sandy silt (ML).These soils are considered relatively homogenous in that no discernible layering, structure, fabric, texture, or changes in the soil type was encountered that would affect the rate or direction of water movement.

There is no evidence of near-surface groundwater and the subsurface exploration did not encounter groundwater. Highest historic groundwater onsite obtained from the State of California Seismic Hazard Zone maps is about (90) feet deep. The subject site is not located within a liquefaction zone on the State of California Seismic Hazard Zones Map of the Los Angeles Quadrangle.

The infiltration testing was performed using the Los Angeles County Boring Percolation Test Procedure. The results of the testing are below.

Boring No.	Corrected Infiltration Rate (in/hour)	Test Material	Tested Depth (ft)
7	2.4	Qal (SM & ML)	25 - 35
8	4.3	Qal (SM)	25 - 35

This testing was performed using metropolitan water. Therefore, the rates will vary over time. It is recommended that conventional drainage systems be incorporated into the design of the project as a backup to ensure proper drainage of the site.

The proposed infiltration trenches shall be located a minimum of ten feet from adjacent private property lines as well as any existing or proposed structures and shall contain an overflow drain that conducts the overflow drainage to the street per the requirements of Chapter 70 of the Los Angeles County Building Code.

The following infiltration design guidelines are considered as minimums:

1. Water infiltration into the ground must be a minimum of 10 feet above the groundwater table.

2. The distance between the infiltration facility and the adjacent private property line shall be a minimum of 10 feet.

3. Foundations shall be set back a minimum of 10 feet from the infiltration facility and the bottom of the footing shall be a minimum of 10 feet from expected zone of saturation.

4. No infiltration facility shall be placed to infiltrate into fill material.

5. The infiltration facility shall be designed to overflow to the street in the event that the drainage capacity is exceeded or in case of future failure to adequately infiltrate.

Findings

1. Based on the relatively homogeneous nature of the soils infiltration at the subject site does not has a potential for creating a perched water condition that may adversely affect structures.

2. Infiltration in the area depicted on the Plot Map will not saturate soils supported by retaining/basement walls.

3. Expansive soils are not present in the area of the proposed infiltration. Based on the distance between the proposed infiltration area and the structures the structures will not be adversely affected by the infiltration.

4. The soils encountered in the explorations are not subject to hydroconsolidation that may adversely affect structures.

5. The soils encountered in the explorations are not subject to ground settlement due to saturation from infiltration, possibly resulting in distress to structures.

Conclusions

1. The proposed site is suitable for storm water infiltration at or below a depth of 25-25 feet.

2. The infiltration of storm water will not result in ground settlement that could adversely affect structures, either on or adjacent to the site.

3. The infiltration of storm water will not result in soil saturation that could affect retaining/basement structures.

Should you have any questions regarding this report, please do not hesitate to contact the undersigned at your convenience.

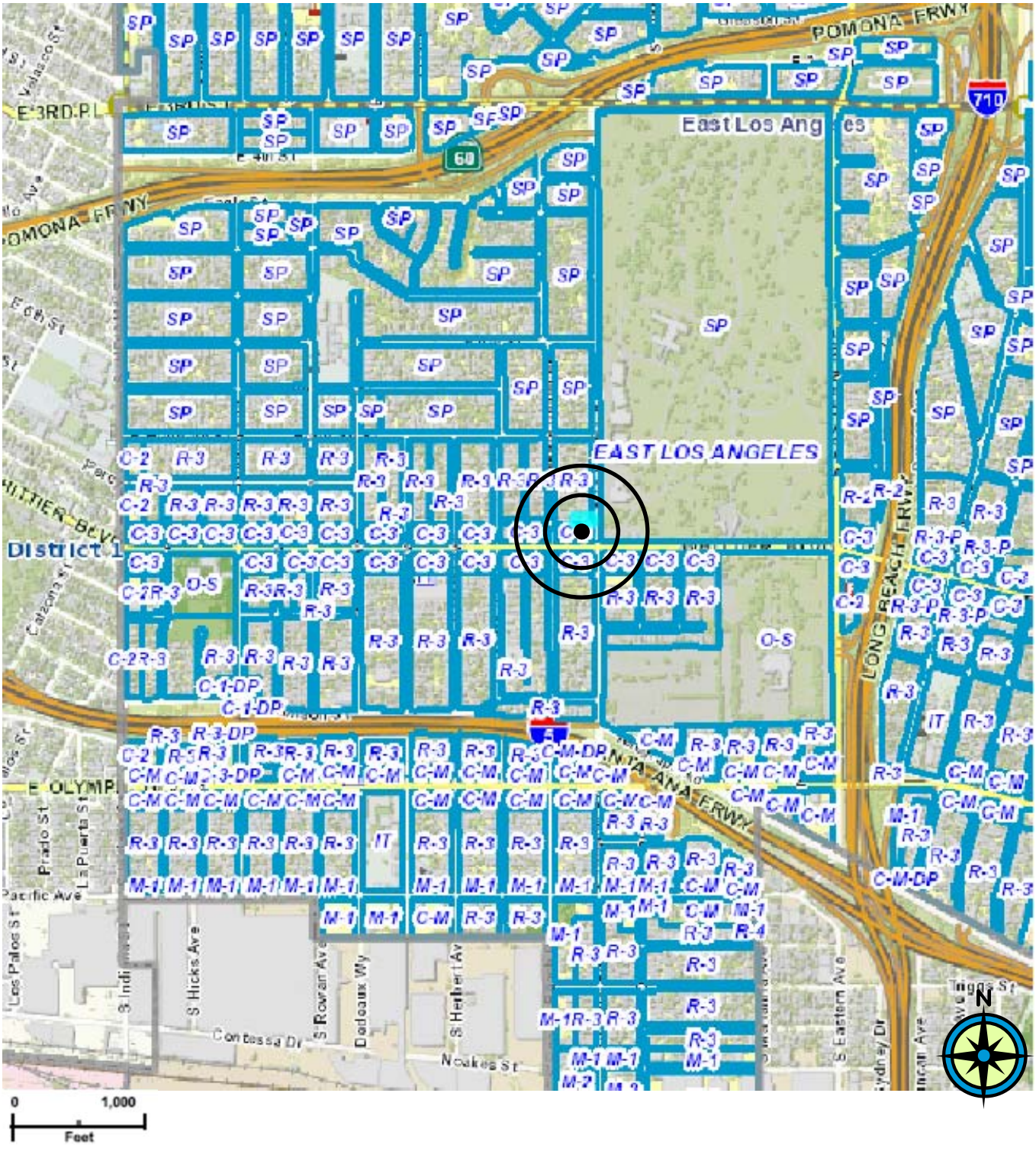
Respectfully submitted,
GeoConcepts, Inc.

Scott J. Walter
GE 2476
SJW/KNC: 5197-2

Enclosures: Location Map
Groundwater Map
Seismic Hazard Map
Boring Logs
Plot Map

Distribution: (3) Addressee

LOCATION MAP



Reference:	County of Los Angeles, GIS-Net3	Scale: As Shown

GROUNDWATER MAP

Reference:	State of California Seismic Hazard Report, Los Angeles Quadrangle	Scale: As Shown

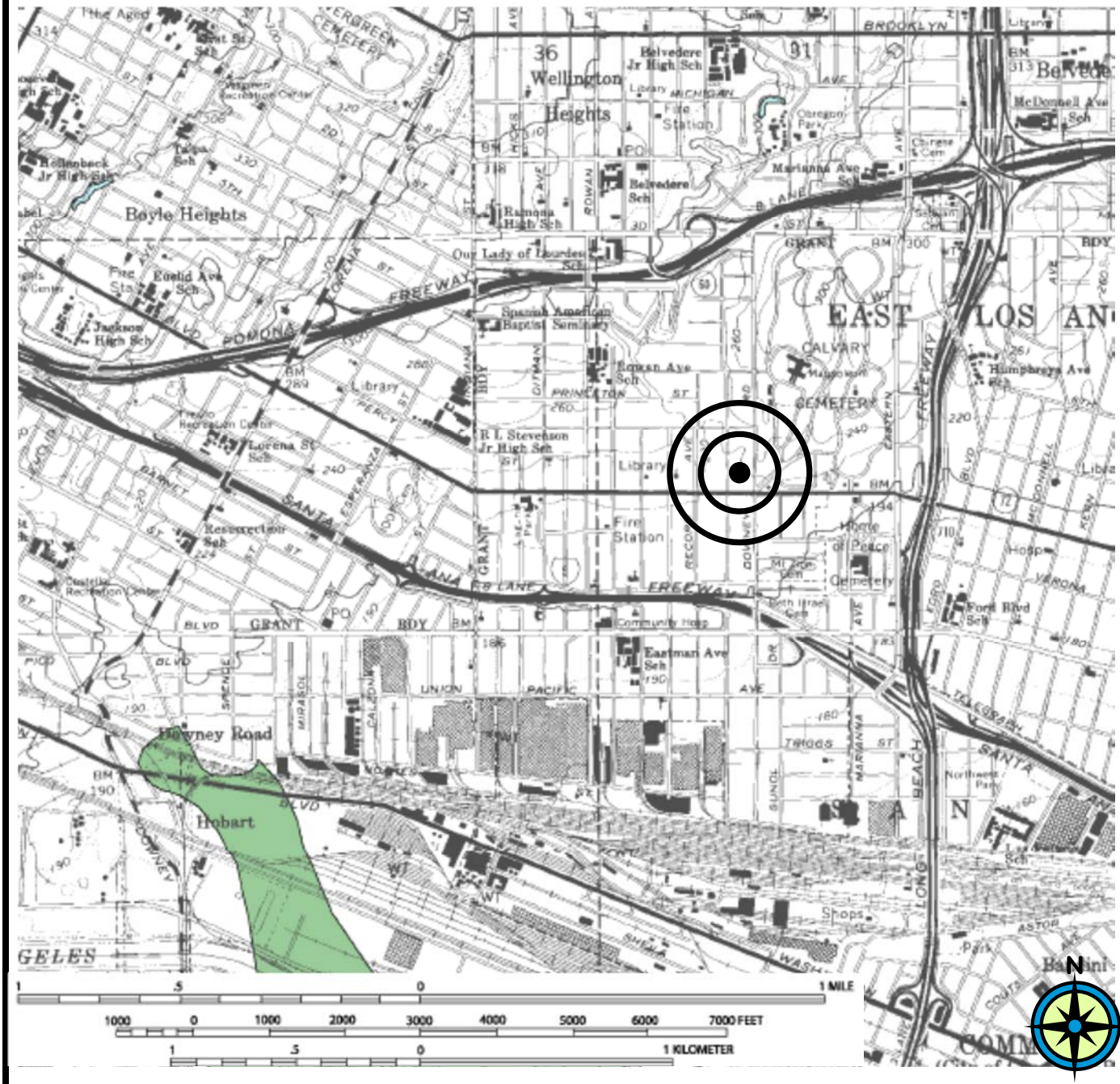
SEISMIC HAZARD MAP

Earthquake-Induced Landslides

Areas where previous occurrence of landslide movement, or local topographic, geological, geotechnical and subsurface water conditions indicate a potential for permanent ground displacements such that mitigation as defined in Public Resources Code Section 2693(c) would be required.

Liquefaction

Areas where historic occurrence of liquefaction, or local geological, geotechnical and groundwater conditions indicate a potential for permanent ground displacements such that mitigation as defined in Public Resources Code Section 2693(c) would be required.



Reference:	State of California, Seismic Hazard Map of the Los Angeles Quadrangle	Scale As Shown

BORING: B-7

ADDRESS: 4169 Whittier Blvd

PROJECT NO.: 5197

DATE LOGGED: June 21, 2016

LOGGED BY: KNC

ATTITUDES (b - bedding, j - joint, s - shear, f - fault)	WATER CONTENT, %	UNIT DRY WEIGHT, PCF	BLOWS FOOT	SAMPLES	DEPTH, FT	GRAPHIC LOG	DESCRIPTION
							0.0' - 5.0" **CONCRETE**
							5.0" - 4.0' **ARTIFICIAL FILL; Af,** sandy silt with minor clay, dark brown, slightly moist, fine to medium grained, abundant concrete fragments, roots, and rootlets
							4.0' - 36.0' **ALLUVIUM; Qal,**
	4	118	29		5		@5.0' silty sand with clay, dark brown, slightly moist, fine to medium grained, gravels up to 3/4" in length
	16	100	11		10		@10.0' silty sand to sandy silt, medium brown, slightly moist, fine to medium grained, slightly porous
	12	98	12		15		@15.0' silty sand to sandy silt, medium brown, slightly moist, fine to medium grained, less porous
	13	102	28		20		@20.0' silty sand, medium brown, slightly moist, fine to medium grained, few gravels up to 1/4" in length
	2	110	62		25		@25.0' sand, light yellowish brown, slightly moist, fine to coarse grained, few gravels up to 1/2" in length
	14	106	43		30		@30.0' sandy silt with minor clay, yellowish brown, slightly moist, fine grained

BORING: B-7

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ATTITUDES b - bedding j - joint s - shear f - fault	WATER CONTENT, %	UNIT DRY WEIGHT, PCF	BLOWS FOOT	SAMPLES	DEPTH, FT	GRAPHIC LOG	DESCRIPTION
	13	101	34				@35.0' silty sand, yellowish brown, slightly moist, fine grained
							Total Depth 36.0 Feet 8 Inch Hollow Stem Auger No Groundwater
					40		
					45		
					50		
					55		
					60		
					65		

BORING: B-8

ADDRESS: 4169 Whittier Blvd

PROJECT NO.: 5197

DATE LOGGED: June 21, 2016

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ATTITUDES (b - bedding, j - joint, s - shear, f - fault)	WATER CONTENT, %	UNIT DRY WEIGHT, PCF	BLOWS FOOT	SAMPLES	DEPTH, FT	GRAPHIC LOG	DESCRIPTION
							0.0' - 2.0" **ASPHALT**
							8.0" - 2.0' **ARTIFICIAL FILL; Af,** sandy silt with minor clay, dark brown, slightly moist, fine to medium grained, abundant concrete fragments, roots, and rootlets
							2.0' - 36.0' **ALLUVIUM; Qal**
	10	102	14		5		@5.0' silty sand with clay, medium brown, slightly moist, fine to medium grained, few gravels up to 1/2" in length
	9	103	19		10		@10.0' silty sand with minor clay, medium brown, slightly moist, fine to medium grained, few gravels up to 1/2" in length
	8	114	39		15		@15.0' silty sand to sandy silt, yellowish brown, slightly moist, fine to medium grained
	11	116	32		20		@20.0' silty sand with minor clay, medium brown, slightly moist, fine to medium grained, few gravels up to 1/4" in length
	10	120	80		25		@25.0' silty sand, medium brown, slightly moist, fine to medium grained, few gravels up to 1/2" in length
	3	118	86		30		@30.0' sand, medium brown, slightly moist, fine to coarse grained, gravels up to 1" in length

BORING: B-8

ADDRESS: 4169 Whittier Blvd

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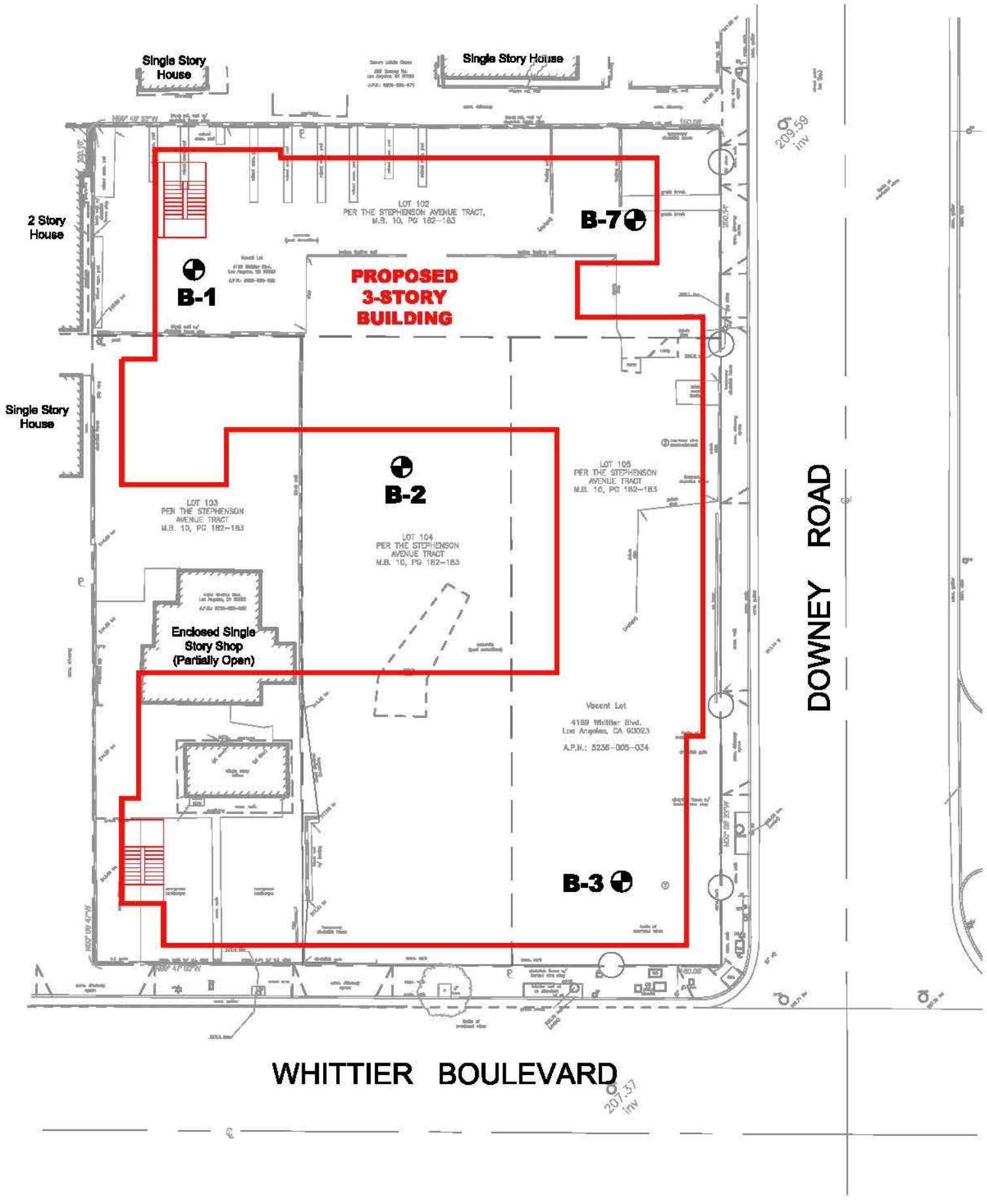
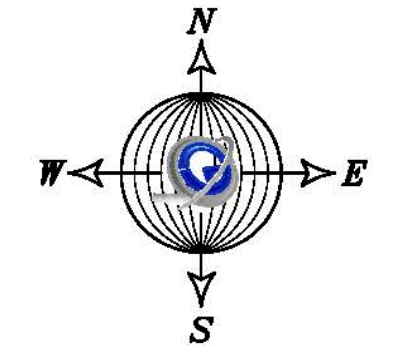
ATTITUDES b - bedding j - joint s - shear f - fault	WATER CONTENT, %	UNIT DRY WEIGHT, PCF	BLOWS FOOT	SAMPLES	DEPTH, FT	GRAPHIC LOG	DESCRIPTION
	3	118	50				@35.0' sand, medium brown, slightly moist, fine to coarse grained, gravels up to 1" in length
							Total Depth 36.0 Feet 8 Inch Hollow Stem Auger No Groundwater
					40		
					45		
					50		
					55		
					60		
					65		





Explanation	
B-7	Location of Borings

Date: August 2016
Scale: 1" = 30'
Job No. 5197-2

Project Address:
4169 Whittier Boulevard
Los Angeles, California

Description:
Plot Map "A"

Survey Provided By: Hahn and Associates, Inc.
Architectural Design By: Gonzalez/Goodale Architects

GeoConcepts INC
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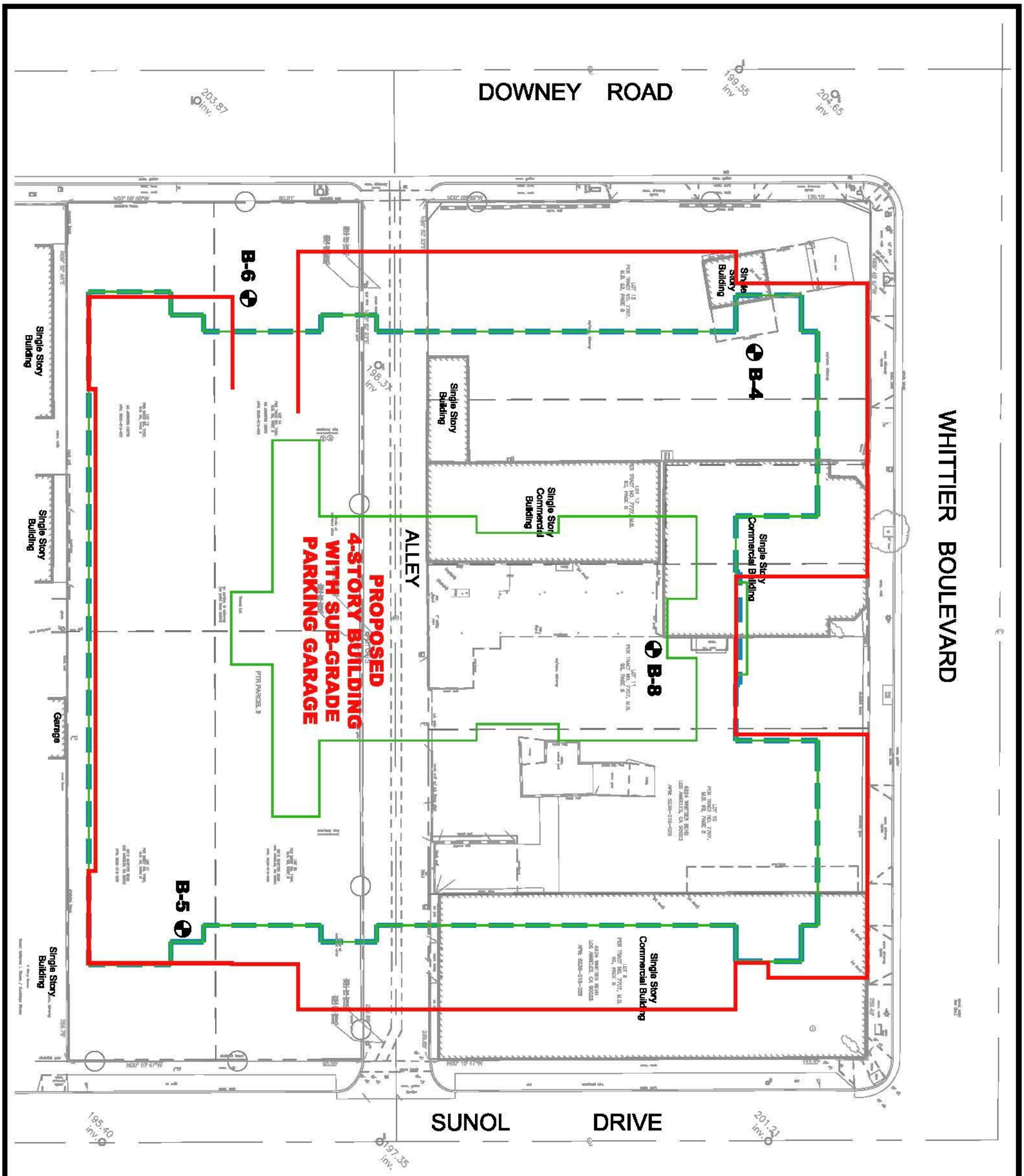

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Description: **Plot Map "B"**

Survey Provided By: **Hahn and Associates, Inc.**

Architectural Design By: **Gonzalez/Goodale Architects**

Project Address: 4200-4224 Whittier Boulevard, Los Angeles, California

Date: August 2016

Scale: 1" = 30'

Job No. 5197-2