APPENDIX E
GEOTECHNICAL INVESTIGATION

GEOTECHNICAL INVESTIGATION

Proposed Two 4-Story Apartment Buildings On-Grade
APNs: 079-0-101-395, 079-0-101-425 & 079-0-101-445
3585 Maple Street and 255 & 260 Maple Court
Ventura, California

November 24, 2021
Project No. 31-5904-00

Prepared for:

Skya Ventures, Inc.
Attn: Ms. Gelena Skya-Wasserman
18751 Ventura Blvd. 2nd Floor
Tarzana, CA 91356

A. G. I. GEOTECHNICAL, INC.
16555 Sherman Way, Suite A - Van Nuys, CA 91406 - Office: (818) 785-5244 - Facsimile: (818) 785-6251

November 24, 2021 Project No. 31-5904-00

Skya Ventures, Inc.
18751 Ventura Blvd., 2nd Floor
Tarzana, CA 91356

Attention: Ms. Gelena Skya-Wasserman

Subject: **GEOTECHNICAL INVESTIGATION**
Proposed Two 4-Story Apartment Buildings On-Grade
APNs: 079-0-101-395, 079-0-101-425 and 079-0-101-445
3585 Maple Street and 255 & 260 Maple Court
Ventura, California

Dear Ms. Skya-Wasserman:

This report presents the results of the subject investigation and our opinions regarding the soils engineering factors affecting the development of the site. This investigation was performed from August, 2021 to November, 2021 and consisted of field exploration, laboratory testing, engineering analyses of the field and laboratory data and the preparation of this report. *Determination of the presence or not of hazardous or toxic materials in the on-site soils is beyond the scope of this investigation.*

If you have any questions regarding this report, please contact this office.

Respectfully submitted,
A.G.I. GEOTECHNICAL, INC.

Bruce Smith, R.G.E. 2673
Senior Engineer

MBS:mbs



Distribution: (3) Skya Ventures, Inc.

Enclosures:
Location Map (Figure 1)
Proposed Site Plan (Figure 2)
Plot Plan (Figure 3)
CPT Location Plan (Figure 4)
Boring Logs
U.S. Seismic Design Maps
USGS Deaggregations
SPT Liquefaction Analysis
CPT Logs
CPT Liquefaction Analyses
Quadrangle Location Map
Groundwater Map

TABLE OF CONTENTS

INTRODUCTION 1
DESCRIPTION OF SITE 1
PROPOSED SITE DEVELOPMENT 1
SOIL BORINGS 1
CLASSIFICATION 2
CPT SOUNDINGS 2
SUBSURFACE CONDITIONS 2
Soil Profile 2
Groundwater 2
ON-SITE INFILTRATION FACILITIES 2
SEISMIC DESIGN CRITERIA 3

CONCLUSIONS AND RECOMMENDATIONS 4
LIQUEFACTION ANALYSES 4
SITE PREPARATION 5
FILL PLACEMENT 5
FOUNDATION DESIGN 5
Type of Foundation 5
Soil Bearing Pressures 5
Expected Settlements 6
FLOOR SLABS-ON-GRADE 6
LATERAL RESISTANCE 7
LATERAL LOADS 7
BACKFILL 7
SITE DRAINAGE 7
PLANTERS 7
CONSTRUCTION CUTS 8
RECOMMENDED INSPECTIONS 8
WORKMAN SAFETY-EXCAVATIONS 8
OBSERVATION 8
REVIEW 8
REGULATORY AGENCY REVIEW AND ADDITIONAL CONSULTING 9

COMMENTS 9

INTRODUCTION

DESCRIPTION OF SITE

The subject site is located on the north side of Maple Street, between Mills Road and College Drive in the city of Ventura, California. The site is practically level and presently occupied by four 2-story office buildings surrounded by asphalt parking lots and trees. The site is bound by developed properties on the north, west and east and by Maple Street on the south. The location of the site is shown on the enclosed Location Map, Figure 1.

PROPOSED SITE DEVELOPMENT

Based on information provided to us, we understand that development will consist of two 4-story apartment buildings on-grade. Structural loads are anticipated to be less than about 10 kips per linear foot for continuous footings and less than about 100 kips for column loads. The proposed development is shown on the Proposed Site Plan, Figure 2.

SOIL BORINGS

Subsurface conditions were explored by drilling five exploratory soil borings at the approximate locations shown on the Plot Plan, Figure 3. The borings were drilled to a maximum depth of 51.5 feet below existing grade with Standard Penetration Tests (SPT) performed at selected depths. The borings were drilled using a truck mounted 8-inch diameter hollow stem flight auger.

The drilling of the borings was supervised by our field engineer who logged the materials brought up from the borings. Undisturbed and bulk samples were collected at depths appropriate to the investigation. The undisturbed samples were sealed immediately in watertight containers for shipment to our laboratory. The soil samplers used in our investigation included a 2.50-inch I.D. split barrel sampler lined with 1-inch brass rings (Modified California Sampler, MC) and a 1.5-inch I.D. Standard Penetration Test (SPT) split barrel sampler. The samplers used in the exploratory borings were driven to a depth of 18 inches with a 140-pound hammer falling from a height of 30 inches. The number of blows to drive the samplers 18 inches in three six-inch increments is reported on the enclosed Logs. The blows for the final 12 inches of the 1.5-inch sampler are the "N" Values from the SPTs.

CLASSIFICATION

Soils were classified visually according to the Unified Soil Classification System. Unit weight and moisture determinations were performed for each undisturbed sample. Results of density and moisture determinations, together with classifications, are shown on the enclosed Boring Logs.

CPT SOUNDINGS

Because excessive liquefaction settlements were determined using the SPT results, we returned to the site and performed seven Cone Penetration Test (CPT) soundings to a depth of 50 feet. Approximate test locations are shown on the CPT Location Plan, Figure 4. The cone penetrometer is an electronic probe that is inserted into the ground to measure geotechnical soil properties. The probe includes a conical tip to measure tip resistance and a friction sleeve to measure frictional resistance. The relationships between tip and frictional resistance correlate to soil properties such as shear strength, friction angle, relative density and soil type. Graphical reports of the CPT results are included with this report.

SUBSURFACE CONDITIONS

Soil Profile

The existing soil profile, as depicted in the borings and CPTs to the depths explored, consist of alluvium comprised of sandy lean clays and clayey sands in a soft to very stiff or loose to medium dense to very dense condition. For a more detailed description of the soils encountered in the exploratory borings, please refer to the Boring Logs enclosed with this report.

Groundwater

Groundwater was encountered in Boring B-1 at a depth of 47 feet below the existing ground surface. According to the of Department of Conservation - California Geological Survey (CGS) web site, the historically highest groundwater level from the Saticoy Quadrangle has been about 10 feet below the ground surface. The groundwater level may fluctuate because of seasonal changes, injection or extraction of water, variations in temperature and other causes.

ON-SITE INFILTRATION FACILITIES

The on-site soils are low-permeability sandy lean clays and clayey sands that are **not** suitable for on-site infiltration of stormwater.

SEISMIC DESIGN CRITERIA

The proposed buildings should be designed by the structural engineer in accordance with the applicable Seismic Building Code. Based on our investigation, the subject site is classified as **Site Class D** in accordance with the 2019 California Building Code that refers to ASCE 7-16.

Per Section 11.4.8 of ASCE 7-16, structures shall be designed for the Seismic Response Coefficient C_S determined by Eq. (12.8-2) for values of $T \leq 1.5\ T_S$, as 1.5 times the value computed in accordance with Eq. (12.8-3) for $T_L \geq T > 1.5\ T_S$, or as 1.5 times the value computed in accordance with Eq. 37.5 (12.8-4) for $T > T_L$ where:

T = the fundamental period of the building
$T_S = S_{D1}/S_{DS}$
T_L = long-period transition period

The Design Spectral Response Acceleration Parameters presented on the following table generated by the U.S. Seismic Design Map Website (https://seismicmaps.org), may be utilized for seismic design:

2019 CBC Seismic Design Parameters (Site Class D)

Site Location (Latitude, Longitude): (34.2694 N, 119.2458 W)				
Spectral Period, T (Seconds)	MCE_R Ground Motion (g)	Site-Modified Spectral Acceleration (g)		Seismic Design Acceleration (g)
0.2	S_S = 1.981	F_a = 1.0	S_{MS} = 1.981	S_{DS} = 1.320
1.0	S_1 = 0.745	F_v = 1.7	S_{M1} = 1.267	S_{D1} = 0.845
Site Modified Peak Ground Acceleration PGA_M = 0.958 g				
Long-Period Transition Period T_L = 8 Seconds				
Seismic Design Category = **D**				

If the Seismic Response Coefficient C_s recommended above is not applicable for structural design, our office can perform a Site-Specific Ground Motion Hazard Analysis upon the project structural engineer's request.

Present building codes and construction practices, and the recommendations presented in this report, are intended to minimize structural damage to buildings and prevent loss of life as a result of a moderate or a major earthquake; they are not intended to totally prevent damage to structures, graded slopes and natural hillsides. While it may be possible to design structures and graded slopes to withstand strong ground motion, the construction costs associated with

such designs are usually prohibitive, and the design restrictions may be severely limiting. Earthquake insurance is often the only economically feasible form of protection for your property against major earthquake damage. Damage to sidewalks, steps, decks, patios and similar exterior improvements can be expected as these are not normally controlled by the Building Code.

CONCLUSIONS AND RECOMMENDATIONS

LIQUEFACTION ANALYSES

A liquefaction settlement analysis using SPT results was performed using the analytical procedures described in *Tokimatsu, K., and Seed, H. (1987), "Evaluation of Settlements in Sands Due to Earthquake Shaking", Youd, T.L., and Idriss, I.M. (1997) "Proceeding of the NCEER Workshop on Evaluation of Liquefaction Resistance of Soils", Technical Report NCEER-97-0022, FHWA.* The SPT method yielded more than 10 inches of liquefaction settlement. We considered this amount of settlement to be excessive for clayey soils that may not be liquefiable. We therefore returned to the site and performed seven CPT soundings to a depth of 50 feet. Liquefaction settlements were evaluated using the methods noted above plus Robertson, P.K. and Wride, C.E. (1997), "Cyclic Liquefaction and Its Evaluation Based on the SPT and CPT". The CPT results indicated that the profile soils are predominantly non-liquefiable clays. The largest settlement was 2.8 inches which is an outlier. The remaining results were 1.6 inches or less. Overall results are tabulated below:

Location	Settlement (in.)
CPT-01	0.63
CPT-03	1.38
CPT-04	2.84
CPT-05	1.57
CPT-06	1.01
CPT-07	1.05
CPT-06	0.71

Based on these results, it is our opinion that the proposed apartments may be supported on conventional footing foundations bearing on a layer of compacted engineered fill.

SITE PREPARATION

Debris from demolition, vegetation, and underground utility lines to be abandoned should be removed from the site. After site clearance the upper five feet of the on-site soils below finished pad elevation should be removed and placed back as compacted fill. The removal and compaction should extend five feet beyond the building lines in each direction. After removal, the exposed surface should be scarified to a depth of eight inches, brought to about optimum moisture content and compacted to at least 90% of the maximum dry density as determined by ASTM:D-1557. Within hardscape areas, after site clearance, the subgrade soils should be scarified, moisture conditioned and compacted to 90% relative compaction as determined by ASTM:D-1557.

All excavations resulting from removal of existing obstructions (e.g., foundations, tree roots) should be backfilled with soil compacted to at least 90% of the maximum dry density as determined by ASTM:D-1557. If any cesspools or seepage pits are encountered during grading, they should be backfilled with vibrated gravel or slurry mix to five feet below finish grade. The upper five feet should be backfilled with compacted fill.

FILL PLACEMENT

Fill soils should be cleared of deleterious debris, placed in 6- to 8-inch lifts, brought to about optimum moisture content, and compacted to at least 90% of the maximum dry density as determined by ASTM:D-1557. **The placement of the fill should be performed under our observation and testing.**

FOUNDATION DESIGN

Type of Foundation

The proposed structures may be supported on conventional shallow isolated and continuous footings. Exterior and interior footings should be founded on compacted fill with a minimum embedment of 24 inches below lowest adjacent grade. The minimum reinforcement in continuous footings should consist of four No. 4 bars: two placed about four inches from the top and two placed about four inches from the bottom.

Soil Bearing Pressures

Footings founded on compacted fill may be designed for an allowable soil bearing pressure of 3,000lb/ft^2. The recommended soil bearing pressure may be increased by 400lb/ft^2 per each additional foot of embedment over 24 inches and by 200lb/ft^2 per each

additional foot in width over 18 inches up to 4,000lb/ft^2. In addition, the recommended soil bearing pressures may be increased by one-third when designing for wind and seismic forces.

Expected Settlements

If foundations are supported on compacted fill and are sized for the recommended bearing pressures, static differential settlements are not expected to exceed ¾. inch in a 30-foot span. Total static settlements are anticipated to be less than 1.5 inches.

FLOOR SLABS-ON-GRADE

Concrete floor slabs-on-grade thickness and reinforcement should reflect the anticipated use of the slabs and should be designed by the structural engineer. They should be a minimum of four inches thick with minimum reinforcement consisting of No. 4 deformed bars spaced a maximum of 16 inches each way and should be underlain by four inches of ½ inch or larger clean aggregate base. In areas where floor coverings or equipment that are sensitive to moisture are contemplated, a 10-mil visqueen moisture barrier should be placed on the base in direct contact with the concrete slab. Cracking of reinforced concrete is a relatively common occurrence. Some cracking of reinforced concrete, including slabs, can be anticipated. Irregularities in new slabs are also common. If cracking of slabs cannot be tolerated, heavily reinforced structural slabs are an option.

The recommendations presented above are intended to reduce the potential for random cracking to which concrete flatwork is often prone. Judicious spacing of crack control joints has proven effective in further reducing random cracking. A structural engineer may recommend the desirable spacing. Usually the crack control joints are placed 12 to 15 feet apart in each direction. Factors influencing cracking of concrete flatwork, (other than expansion, settlement and creep of soils), and which should be avoided, include: poor-quality concrete, excessive time passing between the mixing and placement of the concrete (the concrete should be rejected if this time interval exceeds two hours), temperature and wind conditions at the time of placement of the concrete, curing of the concrete and workmanship. The concrete should be maintained in a moist condition (curing) for at least the first seven days after concrete placement. During hot weather, proper attention should be given to the ingredients, production methods, handling, placement, protection and curing to prevent excessive concrete temperature or water evaporation. In hot weather and windy conditions, water evaporates more rapidly from the surface of the concrete flatwork. This requires more frequent moistening of the concrete during the curing period or the use of a protective chemical film to prevent evaporation.

LATERAL RESISTANCE

An allowable lateral bearing of 250lb/ft^2 per foot of depth may be assumed up to a maximum of 3,500lb/ft^2. A coefficient of friction between soil and concrete of 0.3 may be used.

LATERAL LOADS

There are no retaining walls proposed. Any cantilevered retaining walls should be designed to resist an active pressure of 45lb/ft^3 equivalent fluid pressure (EFP). Restrained walls should be designed for an at-rest earth pressure of 60lb/ft^3 EFP. Walls subject to surcharge loads should be designed to include the additional lateral pressure. Walls should have adequate drainage to prevent build-up of hydrostatic pressure.

BACKFILL

All backfill of walls, footings or trenches should be compacted to 90% of the maximum dry density as determined by ASTM:D-1557 **and should be tested by the soils engineer.**

SITE DRAINAGE

Adequate drainage at the site is essential and it should be provided. Roof drainage should be connected to an appropriate drainage system and carried away from the buildings and to the street. Yard drainage should be kept adequate to prevent ponding of water and saturation of the soils. Water should be directed to the street in an approved manner. Future performance of the buildings and other structures will be significantly influenced by the site drainage conditions.

PLANTERS

Planters and lawns adjacent to the buildings should be avoided. If planters are planned adjacent to the buildings, they should have the bottom and walls waterproofed and a drain installed to carry irrigation water away from the footing areas.

CONSTRUCTION CUTS

If the construction cuts are to remain open for more than two weeks or if rain is expected while they are open, they should be covered by a plastic membrane kept in place by holding blocks or driven re-bars at the top and bottom of the membrane. No equipment or personnel should stand closer than ten feet from the top of the temporary cut. **We should examine the construction cuts periodically to verify performance.** All construction cuts should comply with the State of California Construction Safety Orders (CAL/OSHA).

RECOMMENDED INSPECTIONS

It is strongly recommended (and is a condition of use of this report), that the developer ensures that each phase of construction be properly inspected and approved by the local Building Department official.

WORKMAN SAFETY-EXCAVATIONS

It is essential for the contractor to provide adequate shoring and safety equipment as required by the State or Federal OSHA regulations. All regulations of the State or Federal OSHA should be followed before allowing workmen in a trench or other excavation. If excavations are to be made during the rainy season, particular care should be given to ensure that berms or other devices will prevent surface water from flowing over the top of the excavation or ponding at the top of the excavations.

OBSERVATION

Removal bottoms should be examined and approved by the City inspector and us before any fill is placed. We should examine footing excavations prior to forming or placement of reinforcement steel to confirm that the soil conditions meet the requirements set by this report. Footing excavations should be kept moist and concrete should be placed as soon as possible after excavations are completed, examined and approved by the City inspector and us.

REVIEW

The geotechnical consultant shall review and sign the plans and specifications.

REGULATORY AGENCY REVIEW AND ADDITIONAL CONSULTING

All geotechnical and/or engineering geologic aspects of the proposed development are subject to review and approval by the government reviewing agency. The government reviewing agency may approve or deny any portion of the proposed development which may require additional geotechnical services by this office. Additional geotechnical services may include review responses, supplemental letters, plan reviews, construction/site observations, meetings, etc. The fees for generating additional reports, letters, exploration, analyses, etc. will be billed on a time and material basis.

COMMENTS

The conclusions and recommendations presented in this report are based on research, site observations and limited subsurface information. The conclusions and recommendations presented are based on the supposition that subsurface conditions do not vary significantly from those indicated. Although no significant variations in subsurface conditions are anticipated, the possibility of significant variations cannot be ruled out. If such conditions are encountered, this consultant should be contacted immediately to consider the need for modification of this project.

This report was prepared for the exclusive use of Skya Ventures, Inc. and their design consultants for the specific project outlined herein. This report may not be suitable for use by other parties or other uses. This report is subject to review by regulatory agencies and these agencies may require their approval before the project can proceed. No guarantee that the regulatory public agency or agencies will approve the project is intended, expressed or implied.

One of the purposes of this report is to provide the client with advice regarding geotechnical conditions on the site. It is important to recognize that other consultants could arrive at different conclusions and recommendations. No warranties of future site performance are intended, expressed or implied.

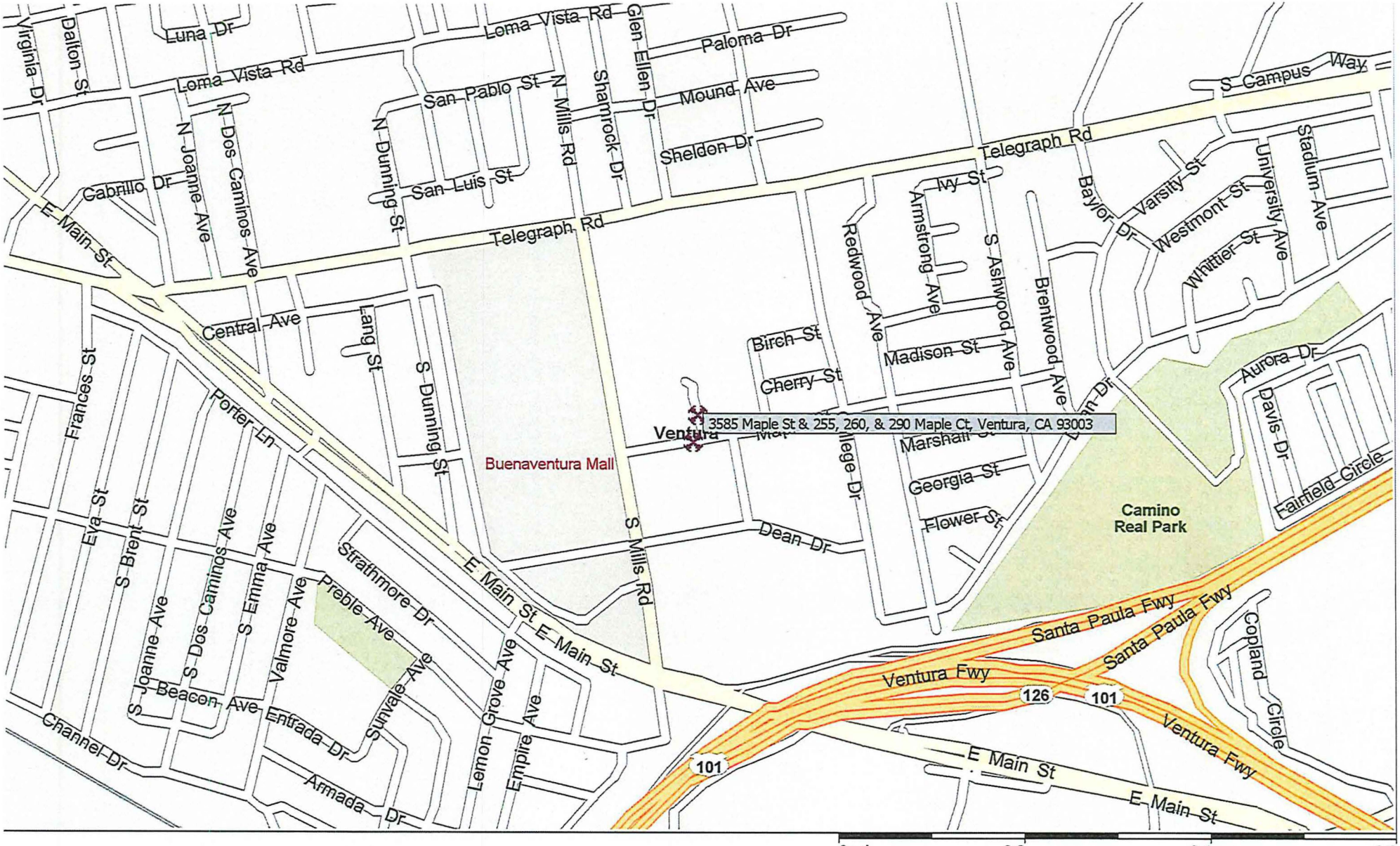


FIGURE 1

LOCATION MAP

3585 Maple St., 255 & 260 Maple Ct., Ventura

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Engineering Geology • Geotechnical Engineering
16555 Sherman Way, Ste. A • Van Nuys, CA 91406
(818) 785-5244 • Fax (818) 785-6251

PROJECT NO.	31-5904-00
DATE	11-2021
PREPARED BY	AM
APPROVED BY	MBS

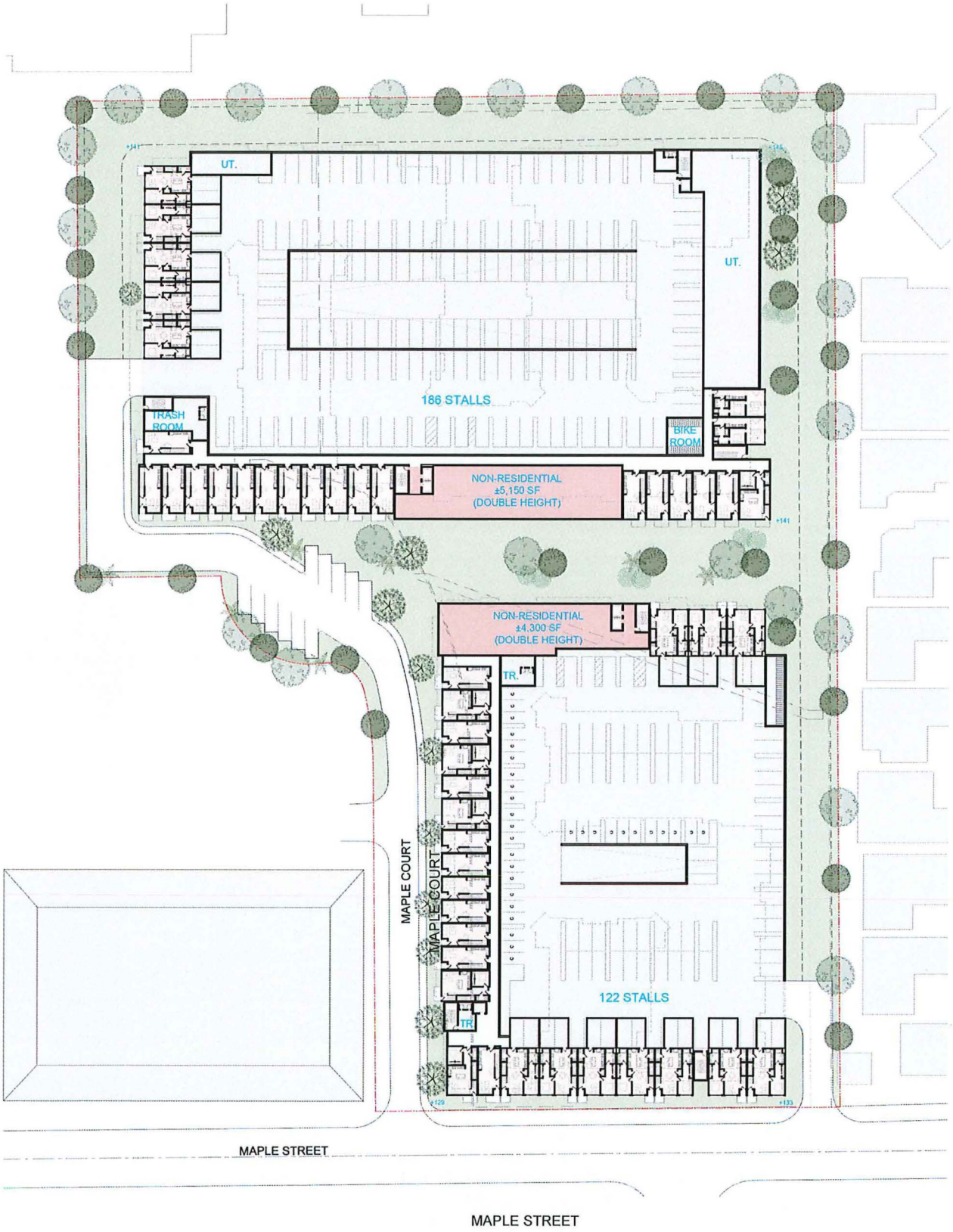
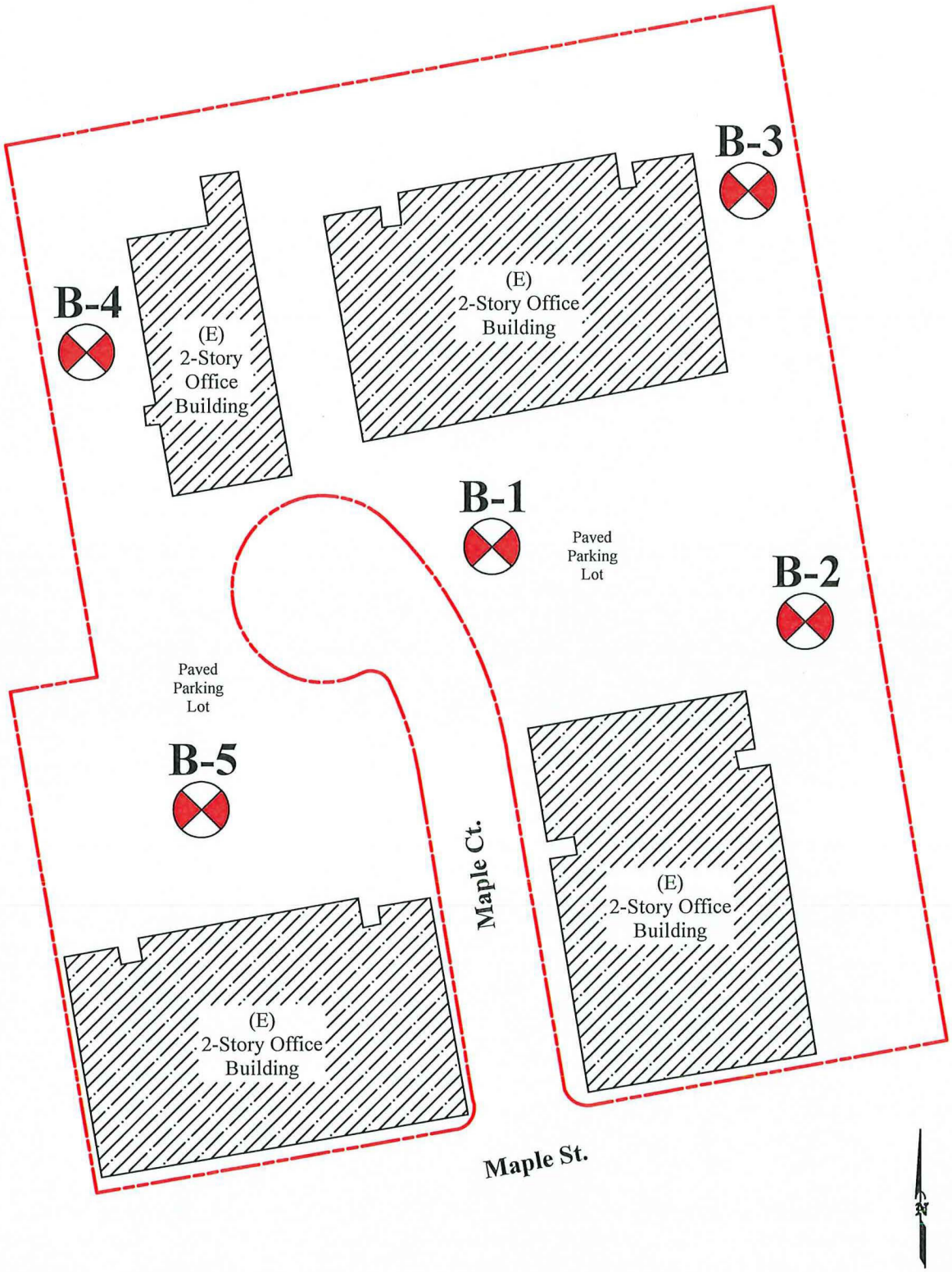


FIGURE 2

AGI A.G.I. GEOTECHNICAL, INC.
Engineering Geology • Geotechnical Engineering
7247 Hayvenhurst Avenue, Unit A-2 • Van Nuys, CA 91406
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PROPOSED SITE PLAN
Proposed Apartment Buildings
3585 Maple Street and 255 & 260 Maple Court
Ventura, California

PROJECT NO.	31-5904-00
DATE	NOVEMBER 2021
PREPARED BY	MBS
APPROVED BY	MBS



EXPLANATION

B-1 Approximate Location of Exploratory Boring

Scale 1" = 100'

FIGURE 3

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PLOT PLAN

Maple St. & Maple Ct., Ventura

PROJECT NO.	31-5904-00
DATE	09-2021
PREPARED BY	WFB
APPROVED BY	MBS

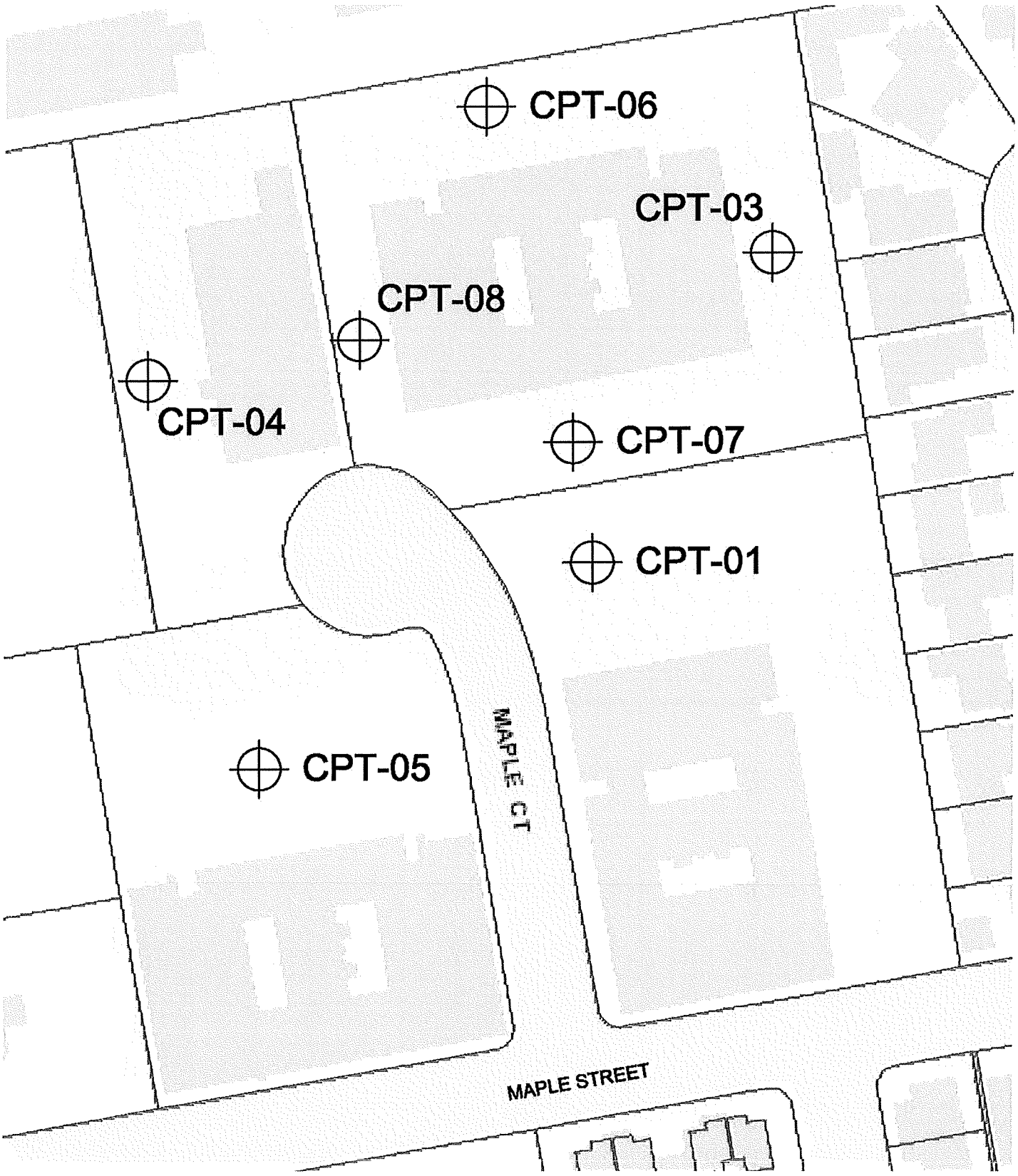


FIGURE 4

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CPT LOCATION PLAN
Proposed Apartment Buildings
3585 Maple Street and 255 & 260 Maple Court
Ventura, California

PROJECT NO.	31-5904-00
DATE	NOVEMBER 2021
PREPARED BY	MBS
APPROVED BY	MBS

BORING LOGS

LEGEND


Ring Sample, or Bulk Sample


Standard Penetration Test (SPT)


Ground Water Level

SOIL SIZE	
COMPONENT	SIZE RANGE
Boulders	Above 12"
Cobbles	3"-12"
Gravel	#4 - 3"
coarse	¾" - 3"
fine	#4 - ¾"
Sand	#200-#4
coarse	#10-#4
medium	#40-#10
fine	#200-#40
Fines (Silt or Clays)	Below #200

PLASTICITY OF FINE GRAINED SOILS	
PLASTICITY INDEX	VOLUME CHANGE POTENTIAL
0-15	Probably Low
15-30	Probably Moderate
30 or more	Probably High

WATER CONTENT
Dry: No feel of moisture
Damp: Much less than normal moisture
Moist: Normal moisture
Wet: Much greater than normal moisture
Saturated: At or near saturation

	GROUP SYMBOLS	DESCRIPTIONS	DIVISIONS
COARSE-GRAINED SOILS (Less than 50% Fines)	GW	Well-graded gravels or gravel-sand mixtures, less than 5% fines	GRAVELS More than half of coarse fraction is larger than No. 4 sieve size
	GP	Poorly-graded gravels or gravel-sand mixtures, less than 5% fines	
	GM	Silty gravels, gravel-sand silt mixtures, more than 12% fines	
	GC	Clayey gravels, gravel-sand-clay mixtures, more than 12% fines	
	SW	Well-graded sands or gravelly sands, less than 5% fines	SANDS More than half of coarse fraction is smaller than No. 4 sieve size
	SP	Poorly-graded sands or gravelly sands, less than 5% fines	
	SM	Silty sands, sand-silt mixtures, more than 12% fines	
	SC	Clayey sands, sand-clay mixtures, more than 12% fines	
FINE-GRAINED SOILS (More than 50% Fines	ML	Inorganic silt, very fine sands, rock flour, silty or clayey fine sands	SILTS AND CLAYS Liquid limit less than 50
	CL	Inorganic clays of low to medium plasticity, gravelly clays, sandy clays, silty clays, lean clays	
	OL	Organic silts or organic silt-clays of low plasticity	
	MH	Inorganic silts, micaceous or diatomaceous fine sands or silts, elastic silts	SILTS AND CLAYS Liquid limit less than 50
	CH	Inorganic clays of high plasticity, fat clays	
	OH	Organic clays of medium to high plasticity	
	PT	Peat, mulch, and other highly organic soils	HIGHLY ORGANIC SOILS

RELATIVE DENSITY	
SANDS & GRAVELS	BLOWS PER FOOT
Very loose	0-4
Loose	4-10
Medium dense	10-30
Dense	30-50
Very dense	Over 50

CONSISTENCY	
CLAYS & SILTS	BLOWS PER FOOT
Very soft	0-2
Soft	2-4
Firm	4-8
Stiff	8-15
Very stiff	15-30
Hard	Over 30

BORING NUMBER B-1

A.G.I. GEOTECHNICAL, INC.

A.G.I. Geotechnical, Inc. 16555 Sherman Way, Unit A Van Nuys, California 91406 Telephone: (818) 785-5244 Fax: (818) 785-6251

CLIENT: Skya Ventures, Inc. PROJECT NAME: Proposed 4-Story Multi-Family Complex On-Grade

PROJECT NUMBER: 31-5904-00 PROJECT LOCATION: Maple St. & Maple Ct., Ventura

DATE STARTED: 11/02/2021 COMPLETED: 11/02/2021 GROUND ELEVATION: N/A BORING DIAMETER: 8"

EXCAVATION METHOD: 8" Hollow Stem Auger GROUND WATER LEVELS: 47'

DRILLING CONTRACTOR: Choice Drilling SAMPLING METHOD: Autohammer, 140 lb., 30" Drop

LOGGED BY: CWL CHECKED BY: MBS

DEPTH (ft)	DRIVE SAMPLE	BLOW COUNT (N VALUE)	BULK SAMPLE	MOISTURE CONTENT (%)	DRY UNIT WT. (pcf)	Wet UNIT WT. (pcf)	SAT. MOISTURE CONTENT (%)	ATTERBERG LIMITS: LIQUID LIMIT	ATTERBERG LIMITS: PLASTIC LIMIT	ATTERBERG LIMITS: PLASTICITY INDEX	MATERIAL DESCRIPTION	<200	D50	Classification
0														
	X	3/5/6	X	17.2	106	124	21.9				Alluvium Brown to light brown Sandy Lean CLAY to Clayey SAND (Moist, stiff to very stiff or loose to medium dense)			CL/SC
5		2/2/3		19.6										
	X	6/11/15		18.7	110	131	19.5							
10		8/6/3		3.0							Light brown Well Graded SAND With Clay (Damp, loose)			SW-SC
	X	3/6/6		20.6	104	126	22.7				Brown Sandy Lean CLAY (Moist, stiff to firm)			CL
15		2/2/3		21.7										
	X	3/5/6		21.9	95	116	28.7							
20		3/2/3		27.4										
	X	2/2/2		27.7	96	122	28.1							
25		2/2/4		27.5										
	X	3/4/4		26.6	91	115	31.9							
30		2/3/3		26.8										

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CLIENT: Skya Ventures, Inc. PROJECT NAME: Proposed 4-Story Multi-Family Complex On-Grade
PROJECT NUMBER: 31-5904-00 PROJECT LOCATION: Maple St. & Maple Ct., Ventura
DATE STARTED: 11/02/2021 COMPLETED: 11/02/2021 GROUND ELEVATION: N/A BORING DIAMETER: 8"
EXCAVATION METHOD: 8" Hollow Stem Auger GROUND WATER LEVELS: 47'
DRILLING CONTRACTOR: Choice Drilling SAMPLING METHOD: Autohammer, 140 lb., 30" Drop
LOGGED BY: CWL CHECKED BY: MBS

DEPTH (ft)	DRIVE SAMPLE	(N VALUE)	BULK SAMPLE	MOISTURE CONTENT (%)	DRY UNIT WT. (pcf)	Wet UNIT WT. (pcf)	SAT. MOISTURE CONTENT (%)	ATTERBERG LIMITS: LIQUID LIMIT	ATTERBERG LIMITS: PLASTIC LIMIT	ATTERBERG LIMITS: PLASTICITY INDEX	MATERIAL DESCRIPTION	<200	D 50	Classification
35		1/2/3		30.4							Brown Sandy Lean CLAY (Moist to wet, firm)			CL
40		2/2/4		27.7										
45		2/3/3		28.5							WATER			
50		10/12/10		16.8							Brown Clayey SAND (Wet, medium dense)			SC
55											Total Depth: 51.5' Water @ 47'			
60														
65														

BORING NUMBER B-2

A.G.I. GEOTECHNICAL, INC.

A.G.I. Geotechnical, Inc. 16555 Sherman Way, Unit A Van Nuys, California 91406 Telephone: (818) 785-5244 Fax: (818) 785-6251

CLIENT: Skya Ventures, Inc. PROJECT NAME: Proposed 4-Story Multi-Family Complex On-Grade

PROJECT NUMBER: 31-5904-00 PROJECT LOCATION: Maple St. & Maple Ct., Ventura

DATE STARTED: 11/02/2021 COMPLETED: 11/02/2021 GROUND ELEVATION: N/A BORING DIAMETER: 8"

EXCAVATION METHOD: 8" Hollow Stem Auger GROUND WATER LEVELS: Not Encountered

DRILLING CONTRACTOR: Choice Drilling SAMPLING METHOD: Autohammer, 140 lb., 30" Drop

LOGGED BY: CWL CHECKED BY: MBS

DEPTH (ft)	DRIVE SAMPLE	BLOW COUNT (N VALUE)	BULK SAMPLE	MOISTURE CONTENT (%)	DRY UNIT WT. (pcf)	Wet UNIT WT. (pcf)	SAT. MOISTURE CONTENT (%)	ATTERBERG LIMITS: LIQUID LIMIT	ATTERBERG LIMITS: PLASTIC LIMIT	ATTERBERG LIMITS: PLASTICITY INDEX	MATERIAL DESCRIPTION	<200	D_{50}	Classification
0											Alluvium Brown to light brown Sandy Lean CLAY to Clayey SAND (Moist, stiff to very stiff or loose to medium dense)			CL/SC
	X	5/11/15		13.5	112	127	18.5							
5	X	9/10/12		11.7	112	125	18.6							
10	X	12/29/32		4.6	113	118	18.1				Light brown Clayey SAND with Gravel (Moist, dense)			SC
15	X			NR							Brown Clayey SAND (Moist, medium dense)			SC
20	X	6/6/9		10.4	107	118	21.6							
											Total Depth: 21.5' No Water			
25														
30														

BORING NUMBER B-3

A.G.I. GEOTECHNICAL, INC.

A.G.I. Geotechnical, Inc. 16555 Sherman Way, Unit A Van Nuys, California 91406 Telephone: (818) 785-5244 Fax: (818) 785-6251

CLIENT: Skya Ventures, Inc. PROJECT NAME: Proposed 4-Story Multi-Family Complex On-Grade

PROJECT NUMBER: 31-5904-00 PROJECT LOCATION: Maple St. & Maple Ct., Ventura

DATE STARTED: 11/02/2021 COMPLETED: 11/02/2021 GROUND ELEVATION: N/A BORING DIAMETER: 8"

EXCAVATION METHOD: 8" Hollow Stem Auger GROUND WATER LEVELS: Not Encountered

DRILLING CONTRACTOR: Choice Drilling SAMPLING METHOD: Autohammer, 140 lb., 30" Drop

LOGGED BY: CWL CHECKED BY: MBS

DEPTH (ft)	DRIVE SAMPLE	BLOW COUNT (N VALUE)	BULK SAMPLE	MOISTURE CONTENT (%)	DRY UNIT WT. (pcf)	Wet UNIT WT. (pcf)	SAT. MOISTURE CONTENT (%)	ATTERBERG LIMITS: LIQUID LIMIT	ATTERBERG LIMITS: PLASTIC LIMIT	ATTERBERG LIMITS: PLASTICITY INDEX	MATERIAL DESCRIPTION	<200	D 50	Classification
0											Alluvium Brown to light brown Sandy Lean CLAY to Clayey SAND (Moist, stiff to very stiff or medium dense)			CL/SC
	X	6/7/12		11.4	119	132	15.6							
5	X	5/7/8		16.5	113	131	18.3							
10	X	3/5/6		9.7	109	119	20.5							
15	X	5/9/10		26.4	94	119	29.4				Light brown Sandy Lean CLAY (Moist, stiff)			CL
20											Total Depth: 16.5' No Water			
25														
30														

BORING NUMBER B-4

A.G.I. GEOTECHNICAL, INC.

A.G.I. Geotechnical, Inc. 16555 Sherman Way, Unit A Van Nuys, California 91406 Telephone: (818) 785-5244 Fax: (818) 785-6251

CLIENT: Skya Ventures, Inc. PROJECT NAME: Proposed 4-Story Multi-Family Complex On-Grade

PROJECT NUMBER: 31-5904-00 PROJECT LOCATION: Maple St. & Maple Ct., Ventura

DATE STARTED: 11/02/2021 COMPLETED: 11/02/2021 GROUND ELEVATION: N/A BORING DIAMETER: 8"

EXCAVATION METHOD: 8" Hollow Stem Auger GROUND WATER LEVELS: 56'

DRILLING CONTRACTOR: Choice Drilling SAMPLING METHOD: Autohammer, 140 lb., 30" Drop

LOGGED BY: CWL CHECKED BY: MBS

DEPTH (ft)	DRIVE SAMPLE	BLOW COUNT (N VALUE)	BULK SAMPLE	MOISTURE CONTENT (%)	DRY UNIT WT. (pcf)	Wet UNIT WT. (pcf)	SAT. MOISTURE CONTENT (%)	ATTERBERG LIMITS: LIQUID LIMIT	ATTERBERG LIMITS: PLASTIC LIMIT	ATTERBERG LIMITS: PLASTICITY INDEX	MATERIAL DESCRIPTION	<200	D_{50}	Classification
0											Alluvium Brown to light brown Sandy Lean CLAY to Clayey SAND (Moist, stiff to very stiff or loose to medium dense)			CL/SC
	X	3/4/4		14.3	115	132	17.1							
5	X	5/6/7		14.7	111	127	19.5							
10	X	6/7/9		18.6	106	125	22.0				Brown to light brown Sandy Lean CLAY (Moist, stiff)			CL
15	X	9/10/6		18.2	103	121	23.8							
											Light brown Clayey SAND (Moist, loose)			SC
20	X	6/6/8		9.4	111	122	19.1							
											Total Depth: 21.5' No Water			
25														
30														

BORING NUMBER B-5

A.G.I. GEOTECHNICAL, INC.

A.G.I. Geotechnical, Inc. 16555 Sherman Way, Unit A Van Nuys, California 91406 Telephone: (818) 785-5244 Fax: (818) 785-6251

CLIENT: Skya Ventures, Inc. PROJECT NAME: Proposed 4-Story Multi-Family Complex On-Grade

PROJECT NUMBER: 31-5904-00 PROJECT LOCATION: Maple St. & Maple Ct., Ventura

DATE STARTED: 11/02/2021 COMPLETED: 11/02/2021 GROUND ELEVATION: N/A BORING DIAMETER: 8"

EXCAVATION METHOD: 8" Hollow Stem Auger GROUND WATER LEVELS: 55'

DRILLING CONTRACTOR: Choice Drilling SAMPLING METHOD: Autohammer, 140 lb., 30" Drop

LOGGED BY: CWL CHECKED BY: MBS

DEPTH (ft)	DRIVE SAMPLE	BLOW COUNT (N VALUE)	BULK SAMPLE	MOISTURE CONTENT (%)	DRY UNIT WT. (pcf)	Wet UNIT WT. (pcf)	SAT. MOISTURE CONTENT (%)	ATTERBERG LIMITS: LIQUID LIMIT	ATTERBERG LIMITS: PLASTIC LIMIT	ATTERBERG LIMITS: PLASTICITY INDEX	MATERIAL DESCRIPTION	<200	D50	Classification
0											Alluvium Brown to light brown Sandy Lean CLAY to Clayey SAND (Moist, stiff to very stiff or loose to medium dense)			CL/SC
	X	2/4/5		19.3	107	128	21.2							
5	X	5/9/10		19.4	115	137	19.4							
10	X	9/11/18		16.7	109	128	20.1							
15	X	6/5/3		13.4	98	111	27.0							
20	X	3/3/3		25.5							Light brown Sandy Lean CLAY (Moist, firm)			CL
25											Total Depth: 21.5' No Water			
30														

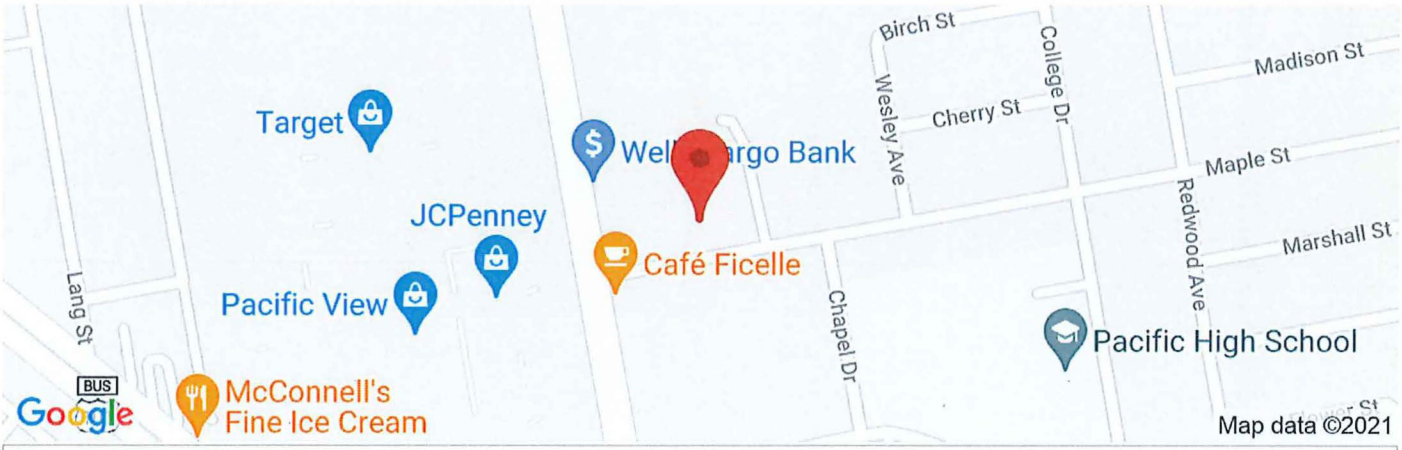
U.S. SEISMIC DESIGN MAPS
USGS DEAGGREGATIONS

A.G.I. GEOTECHNICAL, INC.

OSHPD

Maple St. & Maple Ct., Ventura; 31-5904-00

Latitude, Longitude: 34.2694, -119.2458



Date	9/10/2021, 10:08:24 AM
Design Code Reference Document	ASCE7-16
Risk Category	II
Site Class	D - Stiff Soil

Type	Value	Description
S_S	1.981	MCE_R ground motion. (for 0.2 second period)
S_1	0.745	MCE_R ground motion. (for 1.0s period)
S_{MS}	1.981	Site-modified spectral acceleration value
S_{M1}	null -See Section 11.4.8	Site-modified spectral acceleration value
S_{DS}	1.32	Numeric seismic design value at 0.2 second SA
S_{D1}	null -See Section 11.4.8	Numeric seismic design value at 1.0 second SA

Type	Value	Description
SDC	null -See Section 11.4.8	Seismic design category
F_a	1	Site amplification factor at 0.2 second
F_v	null -See Section 11.4.8	Site amplification factor at 1.0 second
PGA	0.871	MCE_G peak ground acceleration
F_{PGA}	1.1	Site amplification factor at PGA
PGA_M	0.958	Site modified peak ground acceleration
T_L	8	Long-period transition period in seconds
SsRT	1.981	Probabilistic risk-targeted ground motion. (0.2 second)
SsUH	2.247	Factored uniform-hazard (2% probability of exceedance in 50 years) spectral acceleration
SsD	2.607	Factored deterministic acceleration value. (0.2 second)
S1RT	0.745	Probabilistic risk-targeted ground motion. (1.0 second)
S1UH	0.844	Factored uniform-hazard (2% probability of exceedance in 50 years) spectral acceleration.
S1D	0.802	Factored deterministic acceleration value. (1.0 second)
PGAd	1.041	Factored deterministic acceleration value. (Peak Ground Acceleration)
C_{RS}	0.881	Mapped value of the risk coefficient at short periods
C_{R1}	0.883	Mapped value of the risk coefficient at a period of 1 s

U.S. Geological Survey - Earthquake Hazards Program

Unified Hazard Tool

Please do not use this tool to obtain ground motion parameter values for the design code reference documents covered by the U.S. Seismic Design Maps web tools (e.g., the International Building Code and the ASCE 7 or 41 Standard). The values returned by the two applications are not identical.

Input

Edition

Dynamic: Conterminous U.S. 2014 (update…

Spectral Period

Peak Ground Acceleration

Latitude

Decimal degrees

34.2694

Time Horizon

Return period in years

475

Longitude

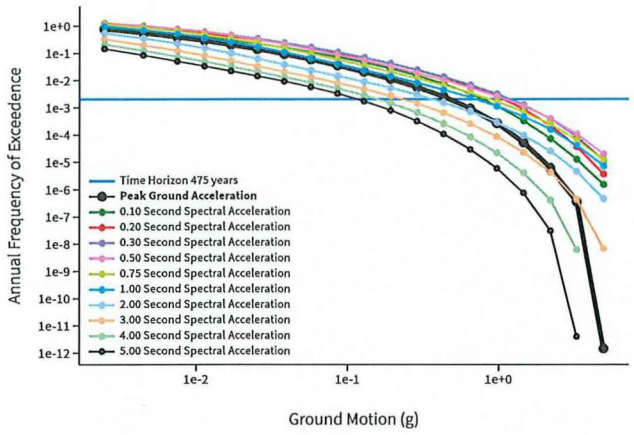
Decimal degrees, negative values for western longitudes

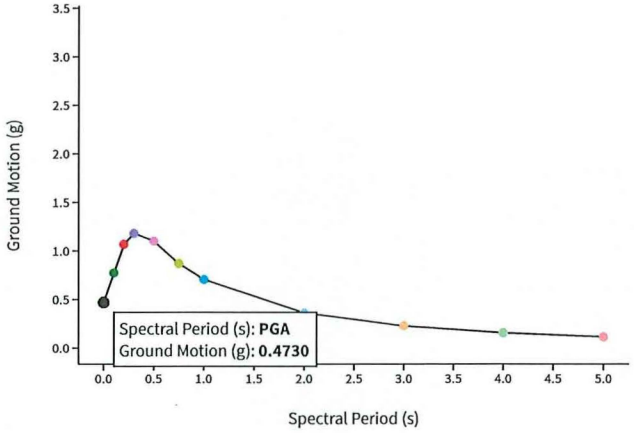
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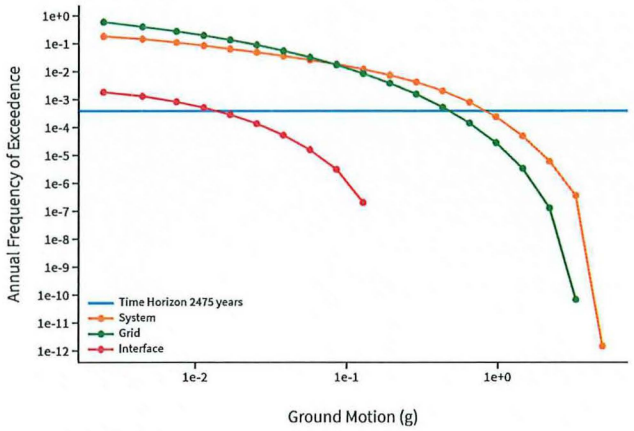
Site Class

259 m/s (Site class D)

Hazard Curve





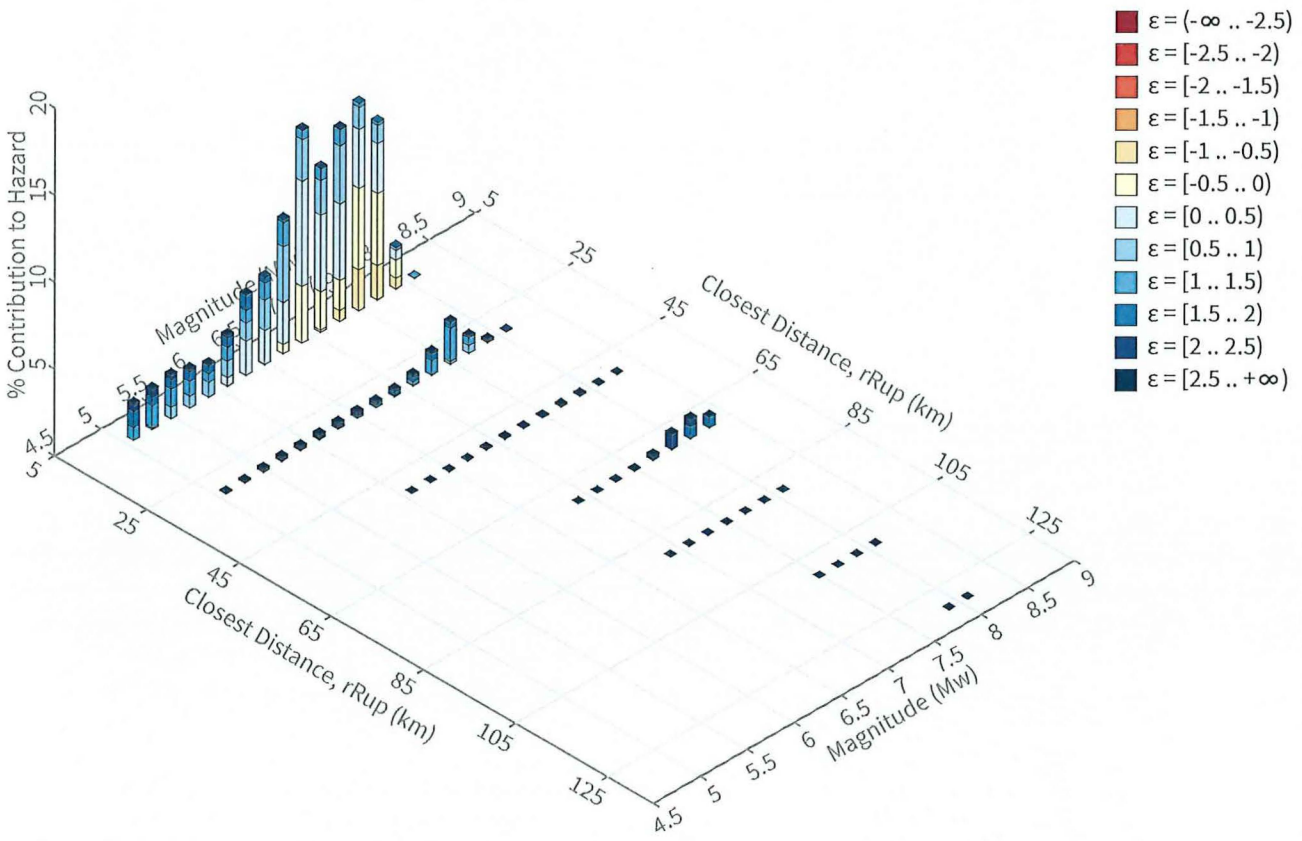


View Raw Data

Deaggregation

Component

Total



Summary statistics for, Deaggregation: Total

Deaggregation targets

Return period: 475 yrs
Exceedance rate: 0.0021052632 yr^{-1}
PGA ground motion: 0.47301461 g

Recovered targets

Return period: 497.95763 yrs
Exceedance rate: 0.002008203 yr^{-1}

Totals

Binned: 100 %
Residual: 0 %
Trace: 0.15 %

Mean (over all sources)

m: 6.95
r: 11.42 km
ε₀: 0.59 σ

Mode (largest m-r bin)

m: 6.88
r: 5.82 km
ε₀: 0.25 σ
Contribution: 12.25 %

Mode (largest m-r-ε₀ bin)

m: 6.89
r: 4.85 km
ε₀: 0.22 σ
Contribution: 6.04 %

Discretization

r: min = 0.0, max = 1000.0, Δ = 20.0 km
m: min = 4.4, max = 9.4, Δ = 0.2
ε: min = -3.0, max = 3.0, Δ = 0.5 σ

Epsilon keys

ε0: [-∞ .. -2.5)
ε1: [-2.5 .. -2.0)
ε2: [-2.0 .. -1.5)
ε3: [-1.5 .. -1.0)
ε4: [-1.0 .. -0.5)
ε5: [-0.5 .. 0.0)
ε6: [0.0 .. 0.5)
ε7: [0.5 .. 1.0)
ε8: [1.0 .. 1.5)
ε9: [1.5 .. 2.0)
ε10: [2.0 .. 2.5)
ε11: [2.5 .. +∞]

Deaggregation Contributors

Source Set ↳ Source	Type	r	m	ε_0	lon	lat	az	%
UC33brAvg_FM32	System							43.72
Oak Ridge (Offshore) [5]		4.18	6.84	0.15	119.273°W	34.240°N	217.54	7.83
Ventura-Pitas Point [3]		3.29	7.54	-0.21	119.246°W	34.290°N	0.04	7.40
Oak Ridge (Onshore) [0]		4.78	7.06	0.06	119.209°W	34.253°N	118.08	6.09
Red Mountain [0]		10.25	7.04	0.71	119.304°W	34.347°N	328.41	5.48
Sisar [0]		7.17	7.59	-0.16	119.271°W	34.372°N	348.61	2.06
Channel Islands Thrust [0]		14.64	7.39	0.34	119.265°W	34.044°N	184.05	1.49
Ventura-Pitas Point [2]		5.70	7.06	0.14	119.195°W	34.290°N	64.08	1.30
Mission Ridge-Arroyo Parida-Santa Ana [14]		17.20	7.50	0.84	119.290°W	34.427°N	346.87	1.21
San Andreas (Big Bend) [4]		65.10	8.07	2.03	119.081°W	34.839°N	13.35	1.20
Ventura-Pitas Point [4]		4.30	6.64	0.19	119.276°W	34.290°N	308.78	1.08
UC33brAvg_FM31	System							37.91
Ventura-Pitas Point [3]		3.29	7.56	-0.22	119.246°W	34.290°N	0.04	8.33
Oak Ridge (Onshore) [0]		4.78	7.14	0.03	119.209°W	34.253°N	118.08	6.32
Red Mountain [0]		10.25	7.14	0.64	119.304°W	34.347°N	328.41	5.57
Channel Islands Thrust [0]		14.64	6.98	0.49	119.265°W	34.044°N	184.05	3.96
Ventura-Pitas Point [2]		5.70	6.65	0.30	119.195°W	34.290°N	64.08	2.54
Sisar [0]		7.17	7.62	-0.17	119.271°W	34.372°N	348.61	2.03
San Andreas (Big Bend) [4]		65.10	8.07	2.03	119.081°W	34.839°N	13.35	1.20
Mission Ridge-Arroyo Parida-Santa Ana [14]		17.20	7.59	0.77	119.290°W	34.427°N	346.87	1.15
UC33brAvg_FM31 (opt)	Grid							9.33
PointSourceFinite: -119.246, 34.319		7.38	5.68	0.94	119.246°W	34.319°N	0.00	1.38
PointSourceFinite: -119.246, 34.319		7.38	5.68	0.94	119.246°W	34.319°N	0.00	1.38
UC33brAvg_FM32 (opt)	Grid							9.04
PointSourceFinite: -119.246, 34.319		7.38	5.68	0.94	119.246°W	34.319°N	0.00	1.39
PointSourceFinite: -119.246, 34.319		7.38	5.68	0.94	119.246°W	34.319°N	0.00	1.39

U.S. Geological Survey - Earthquake Hazards Program

Unified Hazard Tool

Please do not use this tool to obtain ground motion parameter values for the design code reference documents covered by the U.S. Seismic Design Maps web tools (e.g., the International Building Code and the ASCE 7 or 41 Standard). The values returned by the two applications are not identical.

Input

Edition

Dynamic: Conterminous U.S. 2014 (update…

Spectral Period

Peak Ground Acceleration

Latitude

Decimal degrees

34.2694

Time Horizon

Return period in years

2475

Longitude

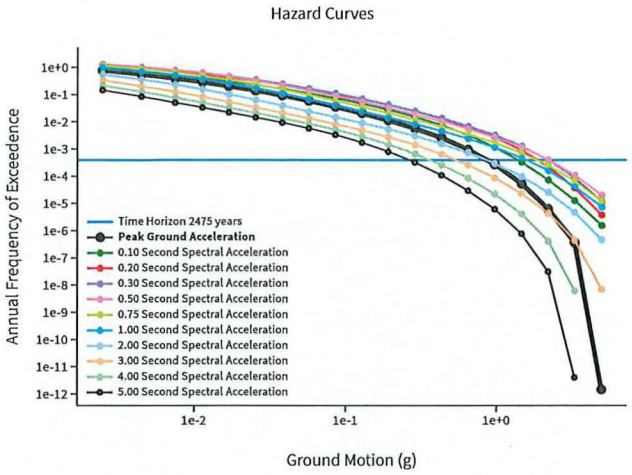
Decimal degrees, negative values for western longitudes

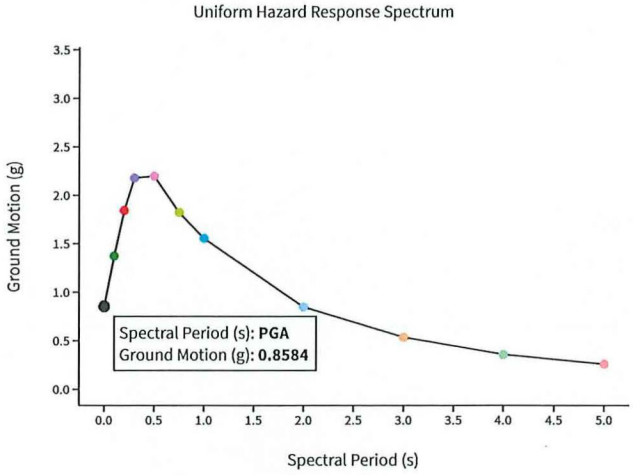
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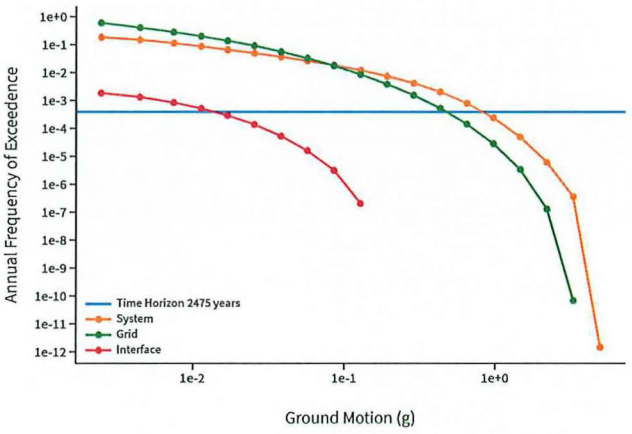
Site Class

259 m/s (Site class D)

Hazard Curve





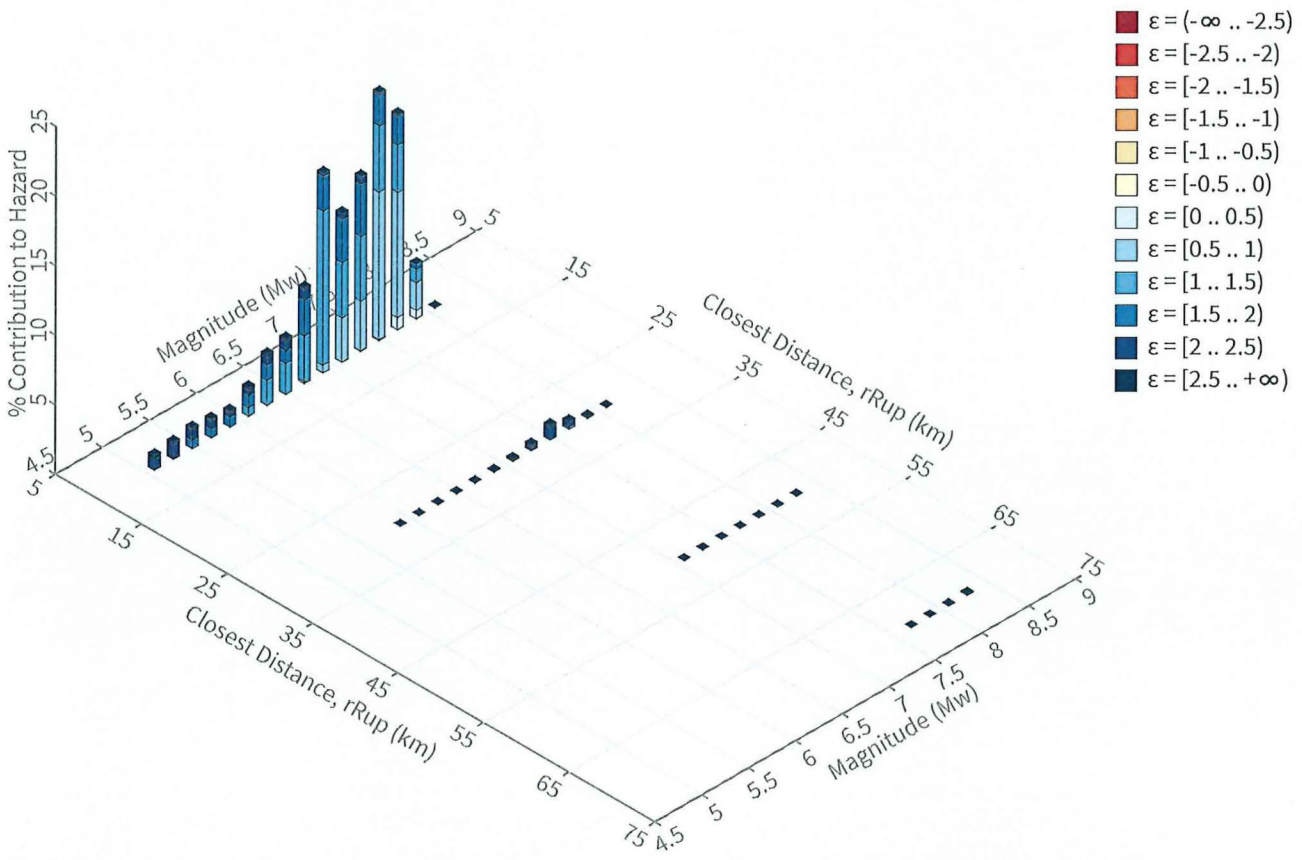


View Raw Data

Deaggregation

Component

Total



Summary statistics for, Deaggregation: Total

Deaggregation targets

Return period: 2475 yrs
Exceedance rate: 0.0004040404 yr^{-1}
PGA ground motion: 0.85842748 g

Recovered targets

Return period: 2908.162 yrs
Exceedance rate: 0.0003438598 yr^{-1}

Totals

Binned: 100 %
Residual: 0 %
Trace: 0.08 %

Mean (over all sources)

m: 7.11
r: 7.13 km
ε₀: 1.31 σ

Mode (largest m-r bin)

m: 7.53
r: 5.32 km
ε₀: 0.98 σ
Contribution: 17.81 %

Mode (largest m-r-ε₀ bin)

m: 6.89
r: 4.48 km
ε₀: 1.19 σ
Contribution: 11.08 %

Discretization

r: min = 0.0, max = 1000.0, Δ = 20.0 km
m: min = 4.4, max = 9.4, Δ = 0.2
ε: min = -3.0, max = 3.0, Δ = 0.5 σ

Epsilon keys

ε0: [-∞ .. -2.5)
ε1: [-2.5 .. -2.0)
ε2: [-2.0 .. -1.5)
ε3: [-1.5 .. -1.0)
ε4: [-1.0 .. -0.5)
ε5: [-0.5 .. 0.0)
ε6: [0.0 .. 0.5)
ε7: [0.5 .. 1.0)
ε8: [1.0 .. 1.5)
ε9: [1.5 .. 2.0)
ε10: [2.0 .. 2.5)
ε11: [2.5 .. +∞]

Deaggregation Contributors

Source Set ↳ Source	Type	r	m	ε_0	lon	lat	az	%
UC33brAvg_FM32	System							47.52
Ventura-Pitas Point [3]		3.29	7.54	0.86	119.246°W	34.290°N	0.04	12.54
Oak Ridge (Offshore) [5]		4.18	6.86	1.24	119.273°W	34.240°N	217.54	9.81
Oak Ridge (Onshore) [0]		4.78	7.08	1.16	119.209°W	34.253°N	118.08	8.19
Red Mountain [0]		10.25	7.09	1.76	119.304°W	34.347°N	328.41	4.32
Sisar [0]		7.17	7.59	0.92	119.271°W	34.372°N	348.61	3.34
Ventura-Pitas Point [2]		5.70	7.12	1.23	119.195°W	34.290°N	64.08	1.65
Channel Islands Thrust [0]		14.64	7.44	1.39	119.265°W	34.044°N	184.05	1.63
Ventura-Pitas Point [4]		4.30	6.66	1.29	119.276°W	34.290°N	308.78	1.32
UC33brAvg_FM31	System							41.56
Ventura-Pitas Point [3]		3.29	7.58	0.86	119.246°W	34.290°N	0.04	14.13
Oak Ridge (Onshore) [0]		4.78	7.16	1.13	119.209°W	34.253°N	118.08	8.70
Red Mountain [0]		10.25	7.19	1.70	119.304°W	34.347°N	328.41	4.64
Channel Islands Thrust [0]		14.64	7.03	1.54	119.265°W	34.044°N	184.05	3.81
Sisar [0]		7.17	7.63	0.90	119.271°W	34.372°N	348.61	3.33
Ventura-Pitas Point [2]		5.70	6.68	1.40	119.195°W	34.290°N	64.08	2.80
UC33brAvg_FM31 (opt)	Grid							5.54
PointSourceFinite: -119.246, 34.319		7.26	5.75	1.81	119.246°W	34.319°N	0.00	1.19
PointSourceFinite: -119.246, 34.319		7.26	5.75	1.81	119.246°W	34.319°N	0.00	1.19
UC33brAvg_FM32 (opt)	Grid							5.37
PointSourceFinite: -119.246, 34.319		7.26	5.75	1.81	119.246°W	34.319°N	0.00	1.19
PointSourceFinite: -119.246, 34.319		7.26	5.75	1.81	119.246°W	34.319°N	0.00	1.19

SPT LIQUEFACTION ANALYSIS

A.G.I. GEOTECHNICAL, INC.

SPT Liquefaction & Seismic Settlement Evaluation

A.G.I. GEOTECHNICAL, INC.
16555 Sherman Way
Van Nuys, CA 91406
(818) 785-5244 Fax (818) 785-6251

Project: Maple St. & Maple Ct.
Job No: 31-5904-00
Boring: B-1

SPT N-Value Correction Factors

Energy Ratio, C_E	1.30
Borehole Diameter, C_B	1.15
Rod Length, C_R	
Sampler Type, C_S	1.20
Overall Correction, C_{EBS}	1.79

Earthquake Magnitude, M :	6.95
Design PGA :	0.639
Magnitude Scaling Factor, r_m :	0.923
Factor, $\varepsilon_{C,N} / \varepsilon_{C,N=15}$:	0.878
Boring Water Level (Below Orig), ft :	47.0
Design Water Level (Below Orig), ft :	10.0
Removal Depth (Below Orig), ft :	5.0
Surcharge Fill Height (Above Orig), ft :	0.0
Surcharge Fill Unit Weight γ, pcf :	125.0

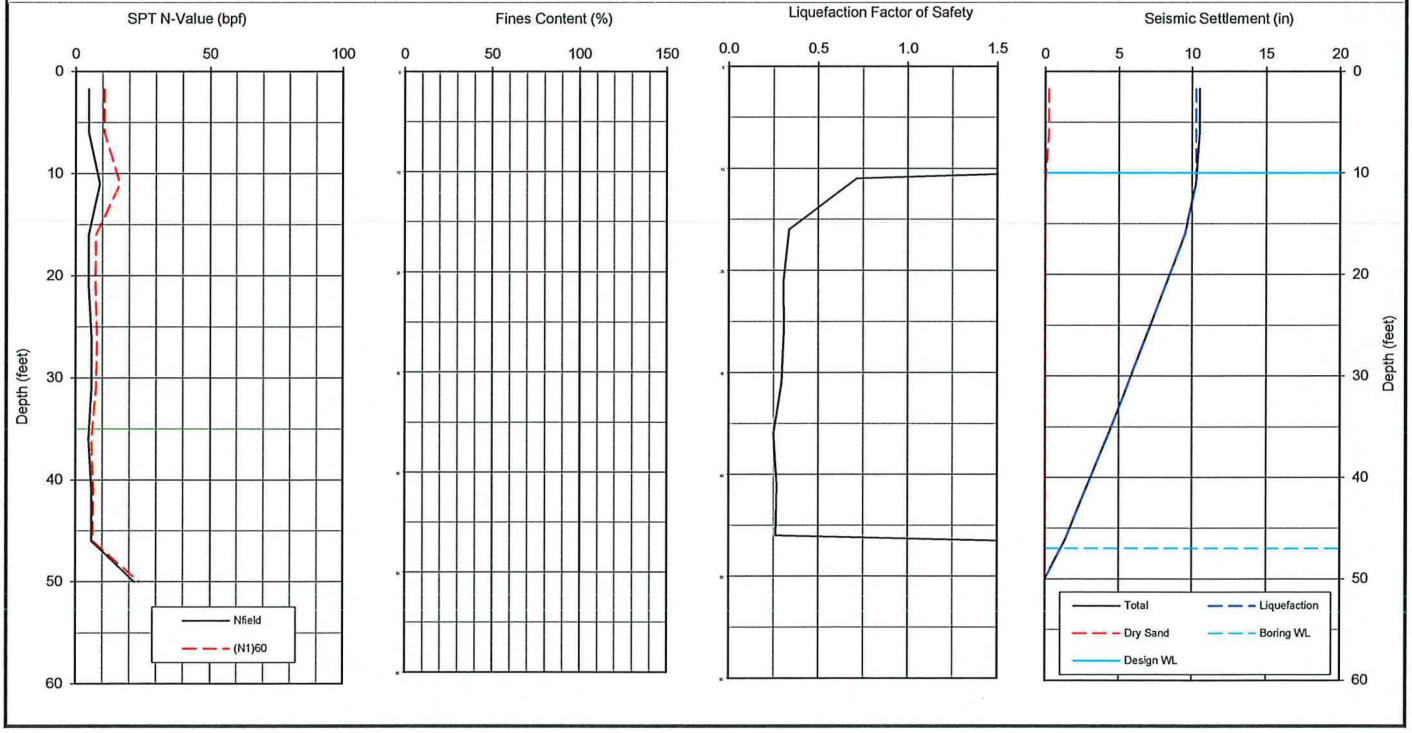
Return Period	475	years	Lat : 34.2694
PGA_M	0.958	g	Long : -119.2458
F.O.S	1.1		

LIQUEFACTION SETTLEMENT (in) : 10.27
DRY SAND SETTLEMENT (in) : 0.23
TOTAL SEISMIC SETTLEMENT (in) : 10.50

Layer	Layer Base, z (ft)	Total Unit Weight γ (pcf)	SPT N_{field}	Fines (%)	Incl? (Y/N)	Layer Thickness t (ft)	Layer Midheight z_o (ft)	Design Total Stress σ_o (psf)	Design Effective Stress σ_o' (psf)	Boring Effective Stress σ_b' (psf)	Overburden Correction C_N	Rod Length Corr. C_R	SPT Fines Corr $\delta(N_1)_{60}$	SPT $(N_1)_{60}$	Dry Sett $(N_1)_{60cs}$	r_d	CSR = τ_{ave} / σ_o'
1	3.5	125	5	100	Y	3.50	1.75	219	219	219	1.60	0.750	5.8	10.8	16.6	0.996	0.382
2	8.5	125	5	100	Y	5.00	6.00	750	750	750	1.60	0.750	5.8	10.8	16.6	0.988	0.379
3	13.5	125	9	100	Y	5.00	11.00	1,375	1,313	1,375	1.21	0.850	5.8	16.6	22.4	0.977	0.392
4	18.5	125	5	100	Y	5.00	16.00	2,000	1,626	2,000	1.00	0.850	5.8	7.6	13.5	0.964	0.455
5	23.5	125	5	100	Y	5.00	21.00	2,625	1,939	2,625	0.87	0.950	5.8	7.4	13.3	0.949	0.493
6	28.5	125	6	100	Y	5.00	26.00	3,250	2,252	3,250	0.78	0.950	5.8	8.0	13.9	0.930	0.515
7	33.5	125	6	100	Y	5.00	31.00	3,875	2,565	3,875	0.72	1.000	5.8	7.7	13.6	0.908	0.526
8	38.5	125	5	100	Y	5.00	36.00	4,500	2,878	4,500	0.67	1.000	5.8	6.0	11.8	0.881	0.528
9	43.5	125	6	100	Y	5.00	41.00	5,125	3,191	5,125	0.62	1.000	5.8	6.7	12.6	0.850	0.523
10	48.5	125	6	100	Y	5.00	46.00	5,750	3,504	5,812	0.60	1.000	5.8	6.5	12.3	0.815	0.513
11	51.5	125	22	100	Y	3.00	50.00	6,250	3,754	6,063	0.60	1.000	5.8	23.7	29.5	0.785	0.501

LYR	α	β	Liq FS SPT $(N_1)_{60cs}$	K_σ	CRR_M	Liq FS	Vol Strain (%)	Liq Sett Δs (in)	Sum Liq Sett Δs (in)	Mean Stress σ_m' (psf)	G_{max} (ksf)	$\gamma_{eff}(G_{eff}/G_{max})$		γ_{eff} (%)	$\varepsilon_{C,M=7.5}$ (%)	Dry Sett Δs (in)	Sum Dry Sett Δs (in)	Sum Total Sett (in)
1	5.00	1.20	17.9	1.000	9.999	9.999	0.00	Above WL	10.27	146	616	0.000147		0.1031	0.1433	Removed	0.23	10.50
2	5.00	1.20	17.9	1.000	9.999	9.999	0.00	Above WL	10.27	500	1,141	0.000270		0.1628	0.2224	0.23	0.23	10.50
3	5.00	1.20	24.9	1.000	0.280	0.715	1.22	0.73	10.27	917	1,706	0.000327		0.1467	0.1356	Below WL	0.00	10.27
4	5.00	1.20	14.1	1.000	0.153	0.337	2.21	1.32	9.53	1,333	1,737	0.000461		0.3068	0.5372	Below WL	0.00	9.53
5	5.00	1.20	13.9	1.000	0.151	0.306	2.23	1.34	8.21	1,750	1,981	0.000522		0.3283	0.5828	Below WL	0.00	8.21
6	5.00	1.20	14.6	1.000	0.158	0.307	2.17	1.30	6.87	2,167	2,236	0.000561		0.3141	0.5288	Below WL	0.00	6.87
7	5.00	1.20	14.3	1.000	0.155	0.294	2.20	1.32	5.57	2,583	2,424	0.000602		0.3159	0.5464	Below WL	0.00	5.57
8	5.00	1.20	12.2	1.000	0.132	0.250	2.41	1.45	4.25	3,000	2,495	0.000660		0.3527	0.7181	Below WL	0.00	4.25
9	5.00	1.20	13.1	0.992	0.140	0.268	2.32	1.39	2.80	3,417	2,717	0.000666		0.3081	0.5886	Below WL	0.00	2.80
10	5.00	1.20	12.8	0.977	0.135	0.263	2.35	1.41	1.41	3,833	2,857	0.000681		0.2896	0.5698	Below WL	0.00	1.41
11	5.00	1.20	33.4	0.965	9.999	9.999	0.00	0.00	0.00	4,167	3,990	0.000510		0.1282	0.0799	Below WL	0.00	0.00

References: 1) Tokimatsu, K., and Seed, H. (1987). "Evaluation of Settlements in Sands Due to Earthquake Shaking." Journal of Geotechnical Engineering, ASCE, 113(8), 861-878. 2) Youd, T.L., and Idriss, I.M. (1997). "Proceeding of the NCEER Workshop on Evaluation of Liquefaction Resistance of Soils". Technical Report NCEER-97-0022, FHWA.

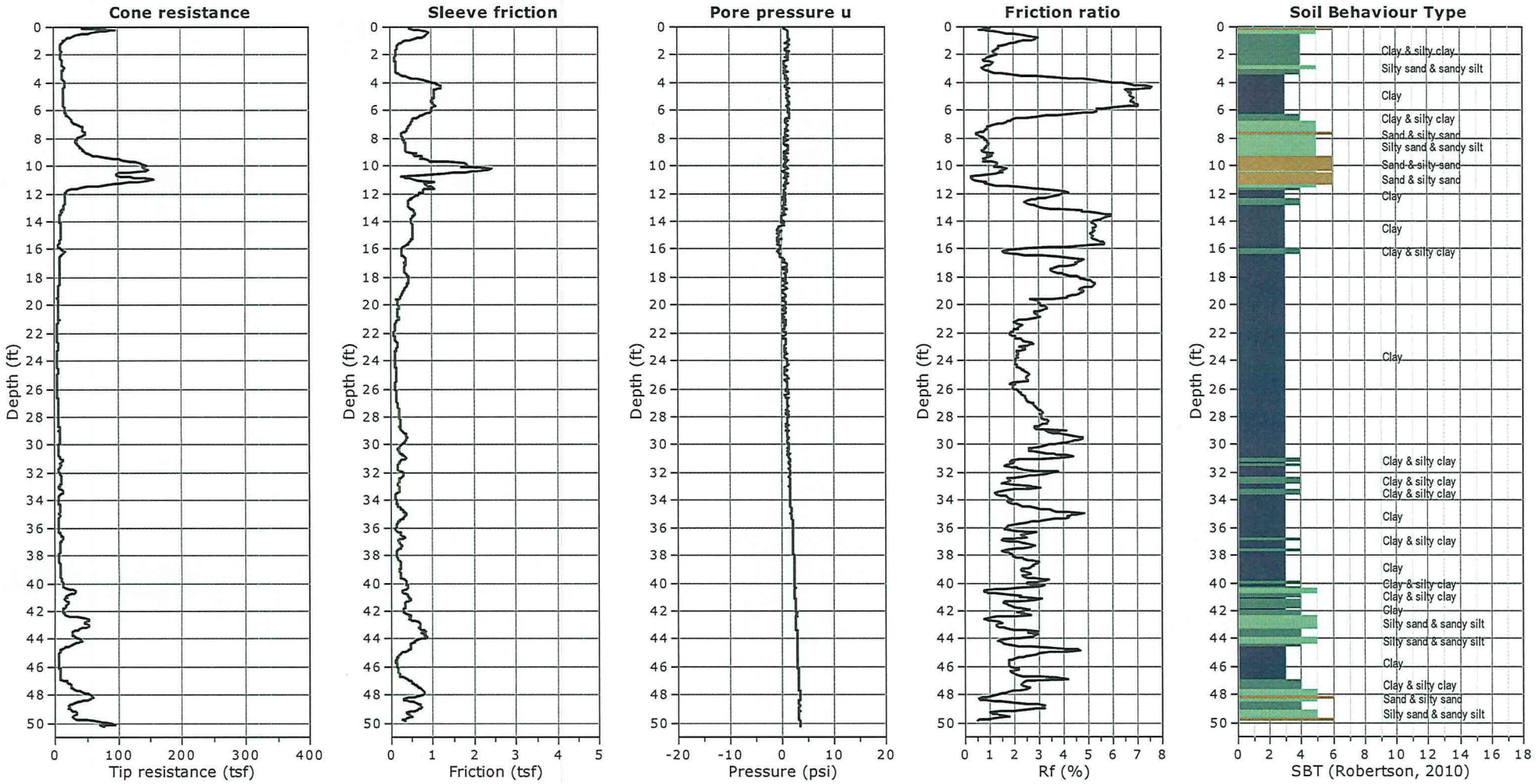


CPT LOGS

Kehoe Testing and Engineering
714-901-7270
steve@kehoetesting.com
www.kehoetesting.com

Project: AGI Geotechnical / Skya Ventures
Location: Ventura, CA

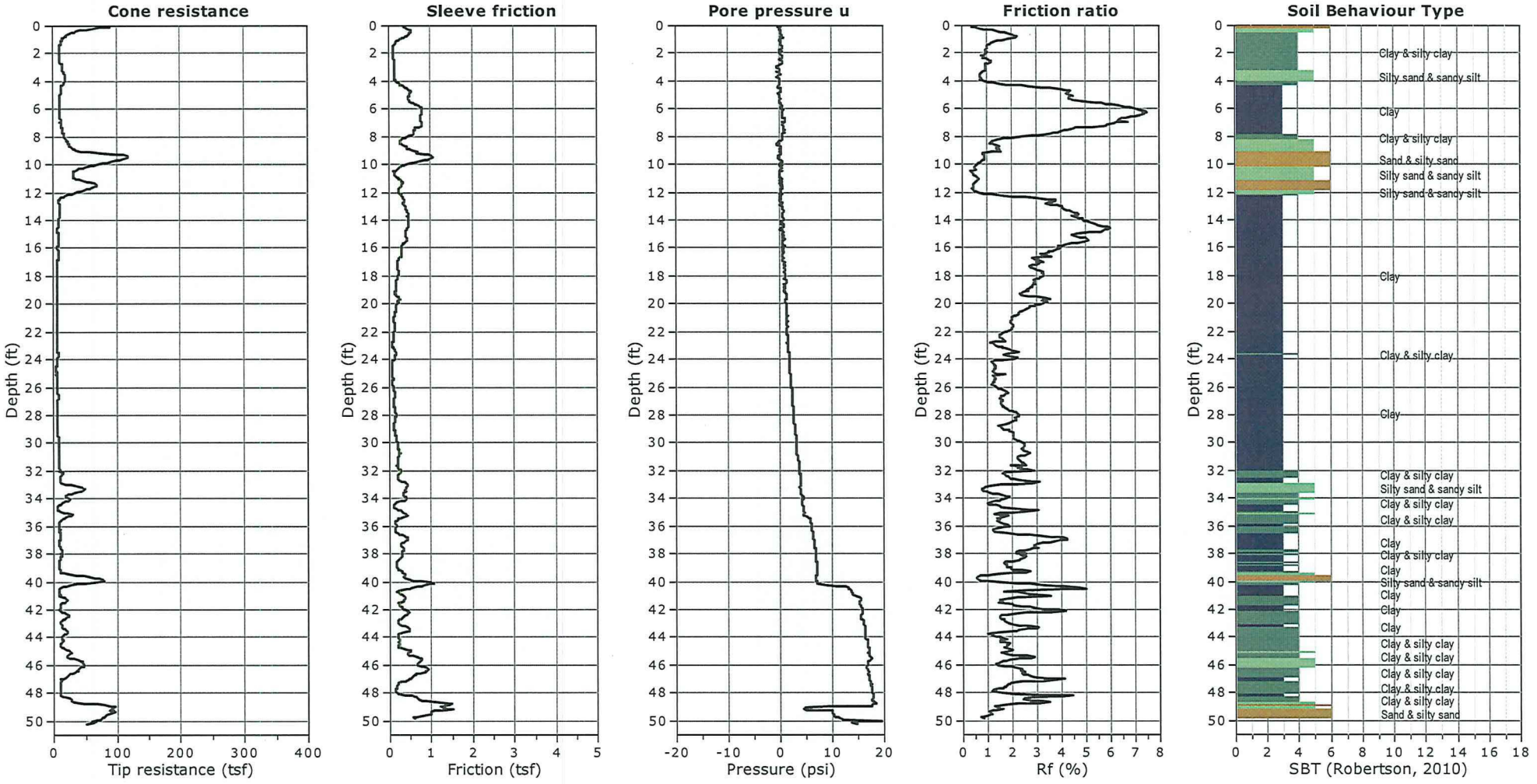
CPT-1
Total depth: 50.20 ft, Date: 11/9/2021



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Project: AGI Geotechnical / Skya Ventures
Location: Ventura, CA

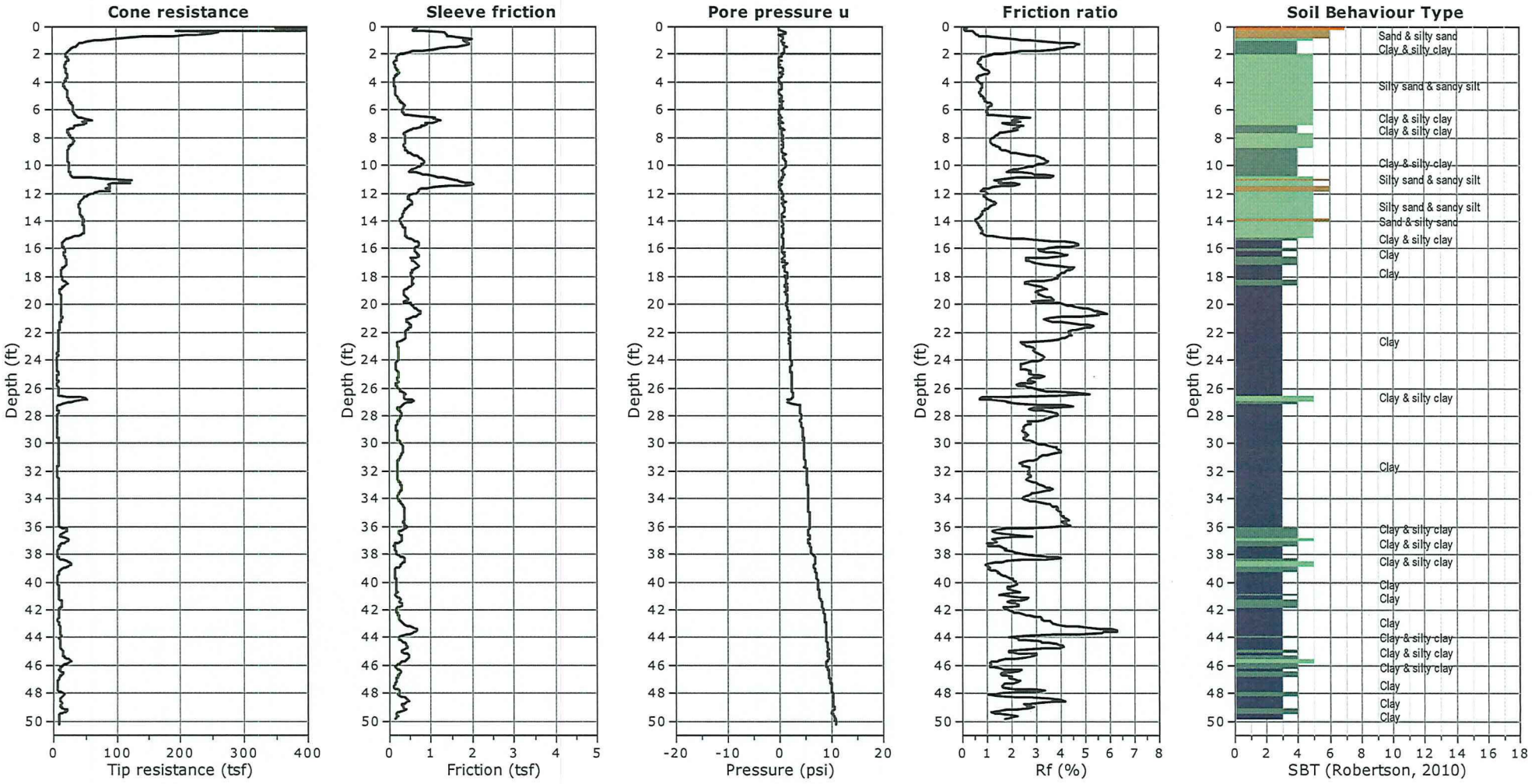
CPT-3
Total depth: 50.20 ft, Date: 11/9/2021



Kehoe Testing and Engineering
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Project: AGI Geotechnical / Skya Ventures
Location: Ventura, CA

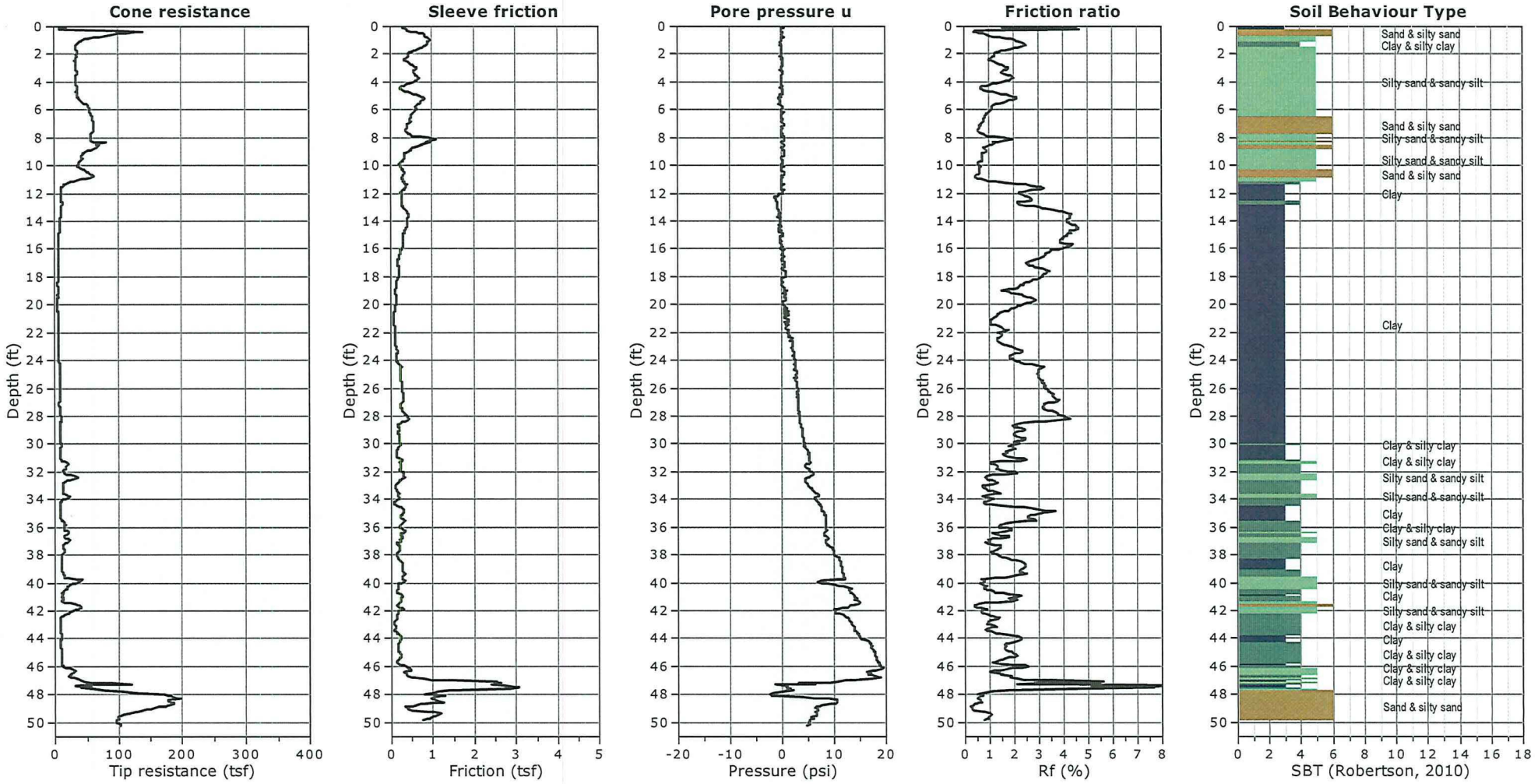
CPT-4
Total depth: 50.20 ft, Date: 11/9/2021



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www.kehoetesting.com

Project: AGI Geotechnical / Skya Ventures
Location: Ventura, CA

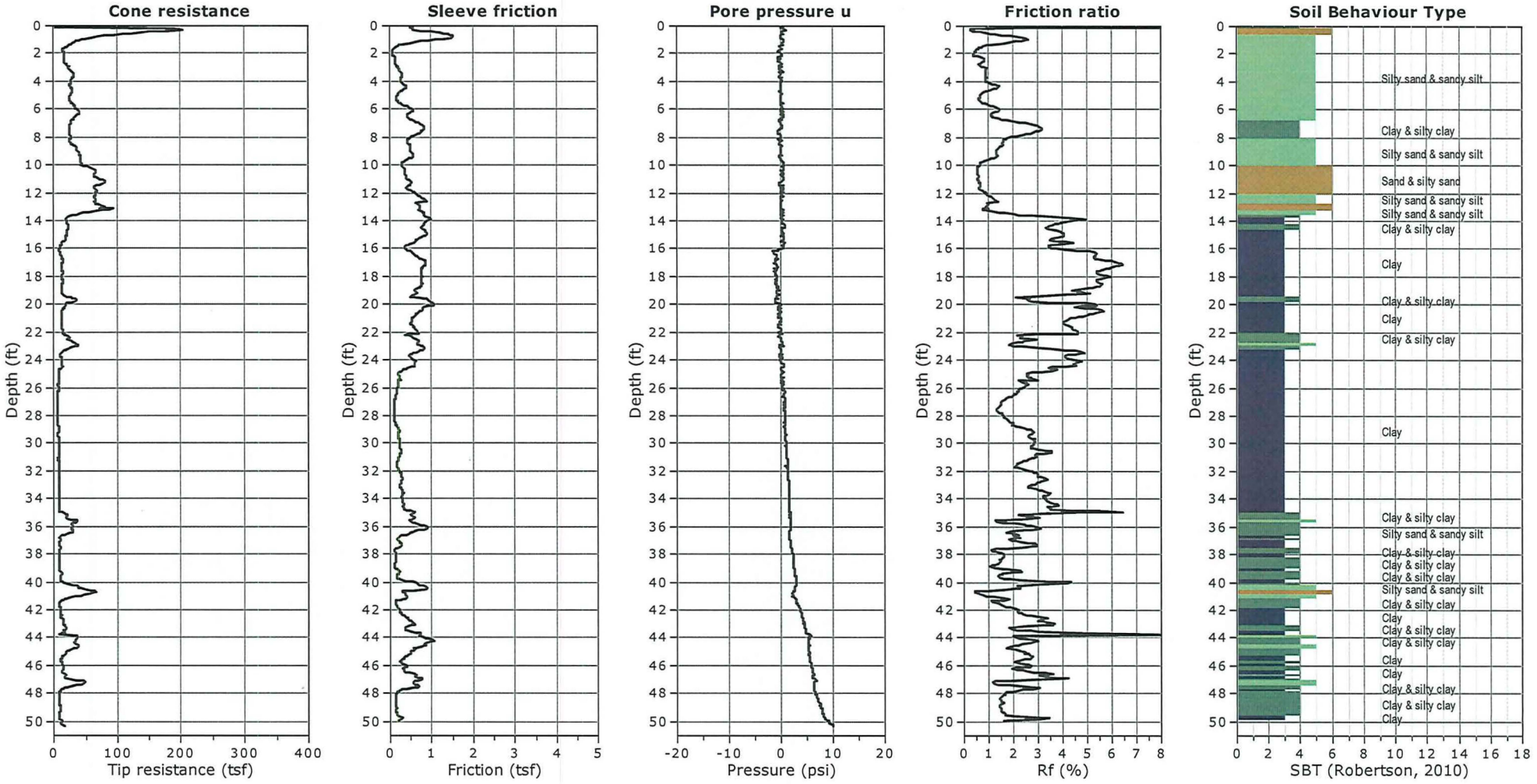
CPT-5
Total depth: 50.20 ft, Date: 11/9/2021



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www.kehoetesting.com

Project: AGI Geotechnical / Skya Ventures
Location: Ventura, CA

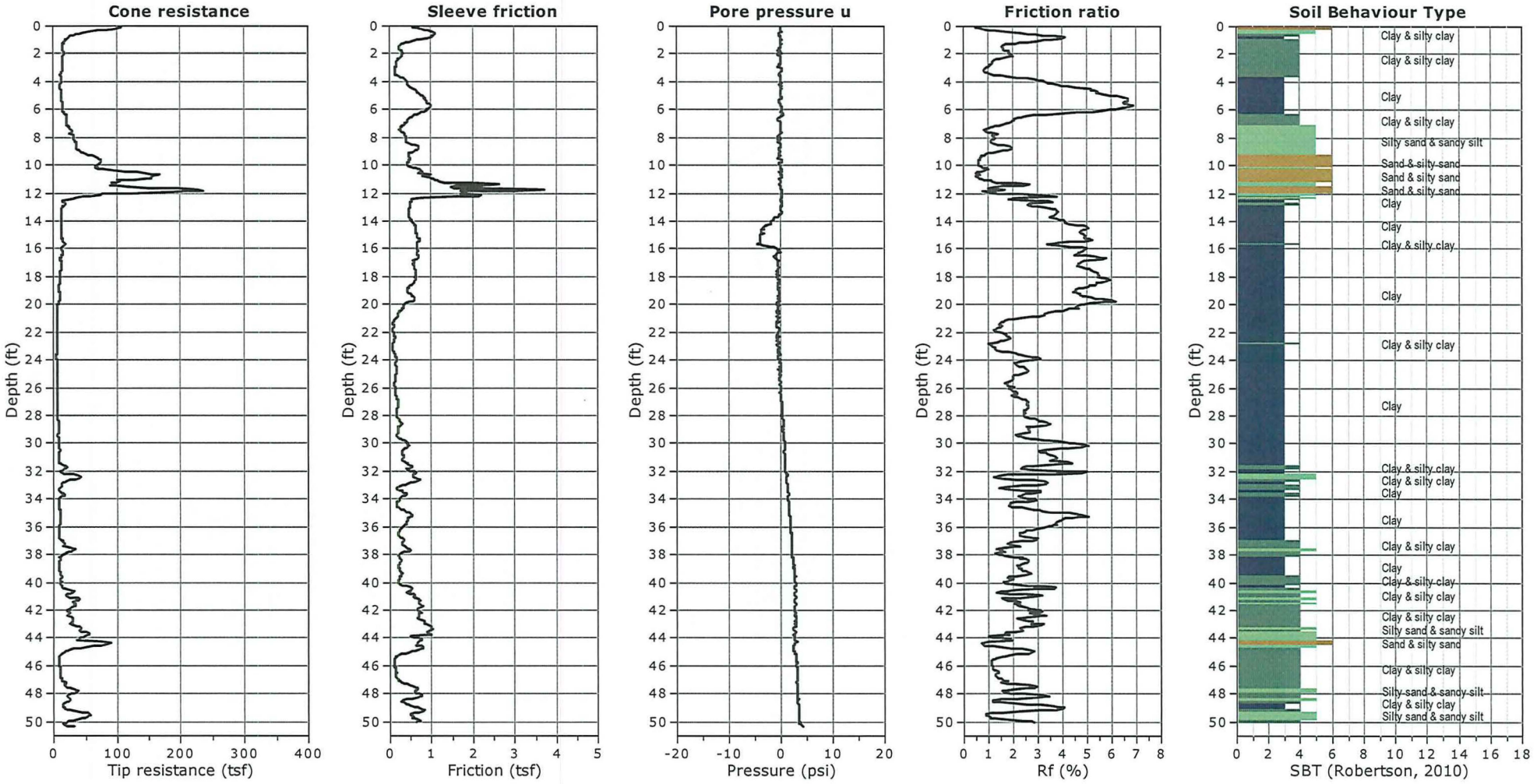
CPT-6
Total depth: 50.27 ft, Date: 11/9/2021



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Project: AGI Geotechnical / Skya Ventures
Location: Ventura, CA

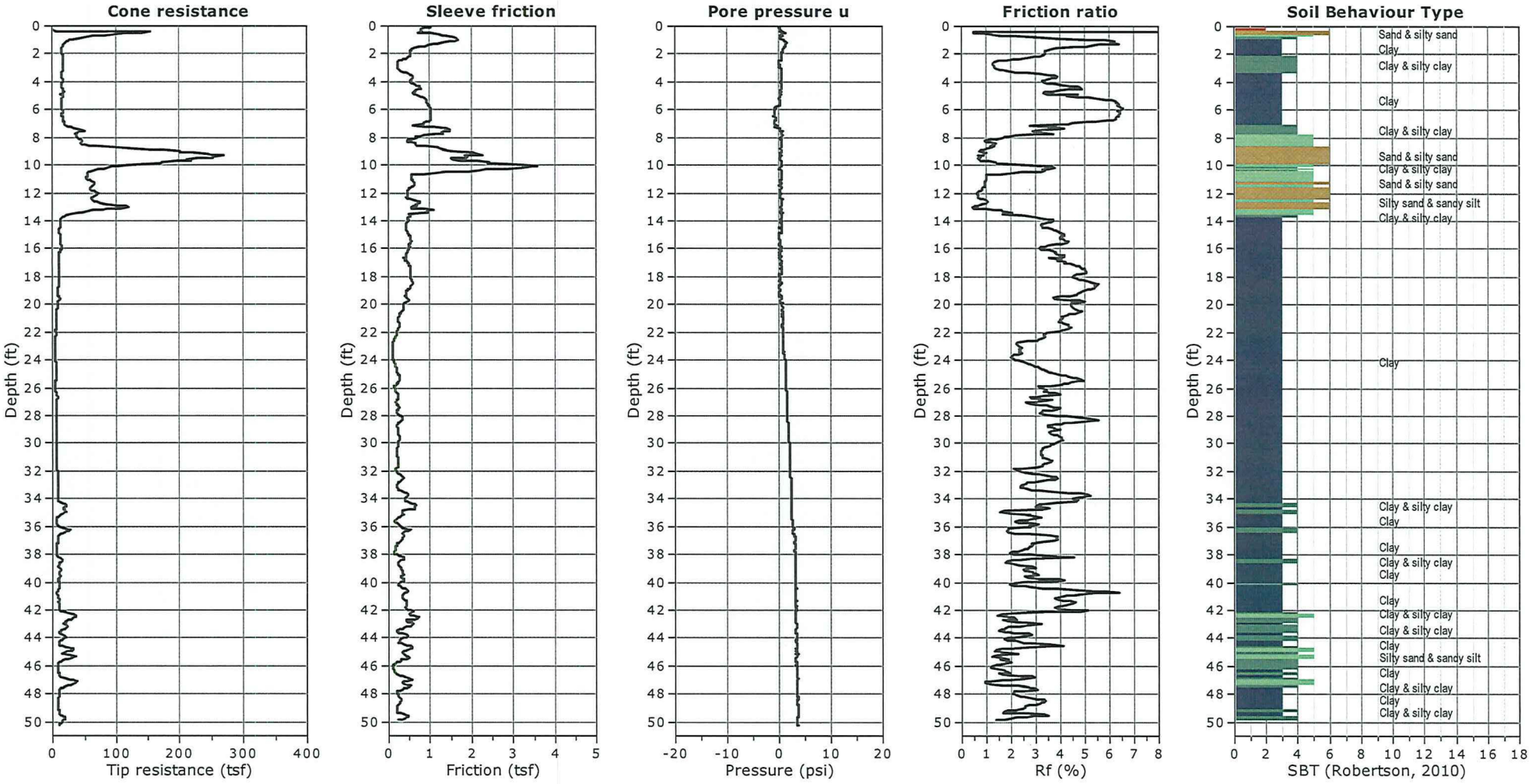
CPT-7
Total depth: 50.36 ft, Date: 11/9/2021



Kehoe Testing and Engineering
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steve@kehoetesting.com
www.kehoetesting.com

Project: AGI Geotechnical / Skya Ventures
Location: Ventura, CA

CPT-8
Total depth: 50.26 ft, Date: 11/9/2021

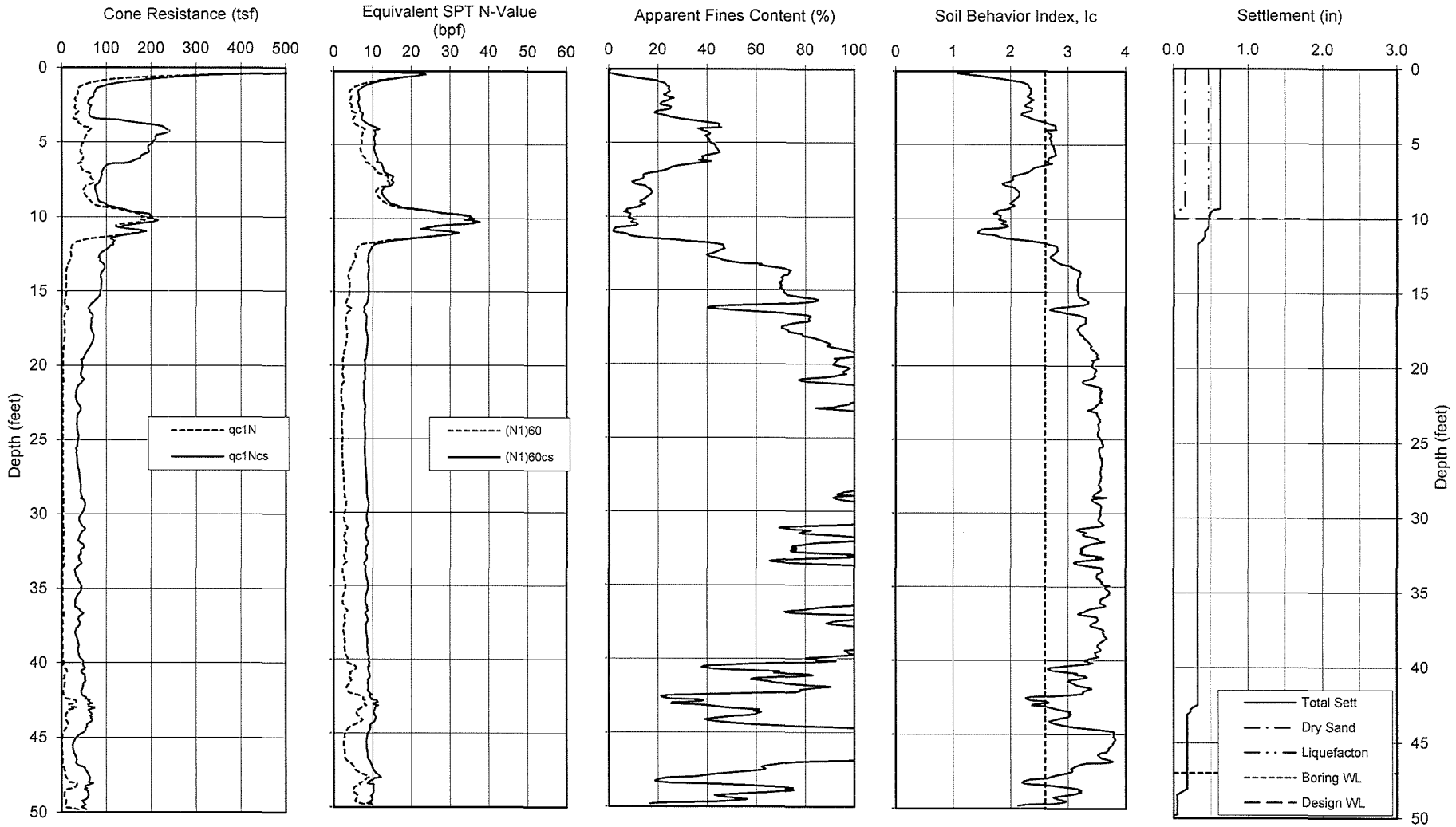


CPT LIQUEFACTION ANALYSES

A.G.I. GEOTECHNICAL, INC.

Earthquake Magnitude, M :	6.95	Boring Water Level (Below Orig), ft :	47.0	Removal Depth (Below Orig), ft :	0.0
Maximum Acceleration, a (g) :	0.958	Design Water Level (Below Orig), ft :	10.0	Surcharge Fill Height (Above Orig), ft :	0.0
Magnitude Scaling Factor, r_m :	1.215			Surcharge Fill Unit Weight, pcf :	125.0

TOTAL SEISMIC SETTLEMENT (in) : 0.63



References: 1) Robertson, P.K. and Wride, C.E. (1997), "Cyclic Liquefaction and Its Evaluation Based on the SPT and CPT", Proceeding of the NCEER Workshop on Evaluation of Liquefaction Resistance of Soils, Technical Report NCEER-97-0022, p. 41-80. 2) Tokimatsu, K., and Seed, H. (1987). "Evaluation of Settlements in Sands Due to Earthquake Shaking." Journal of Geotechnical Engineering, ASCE, 113(8), 861-878.

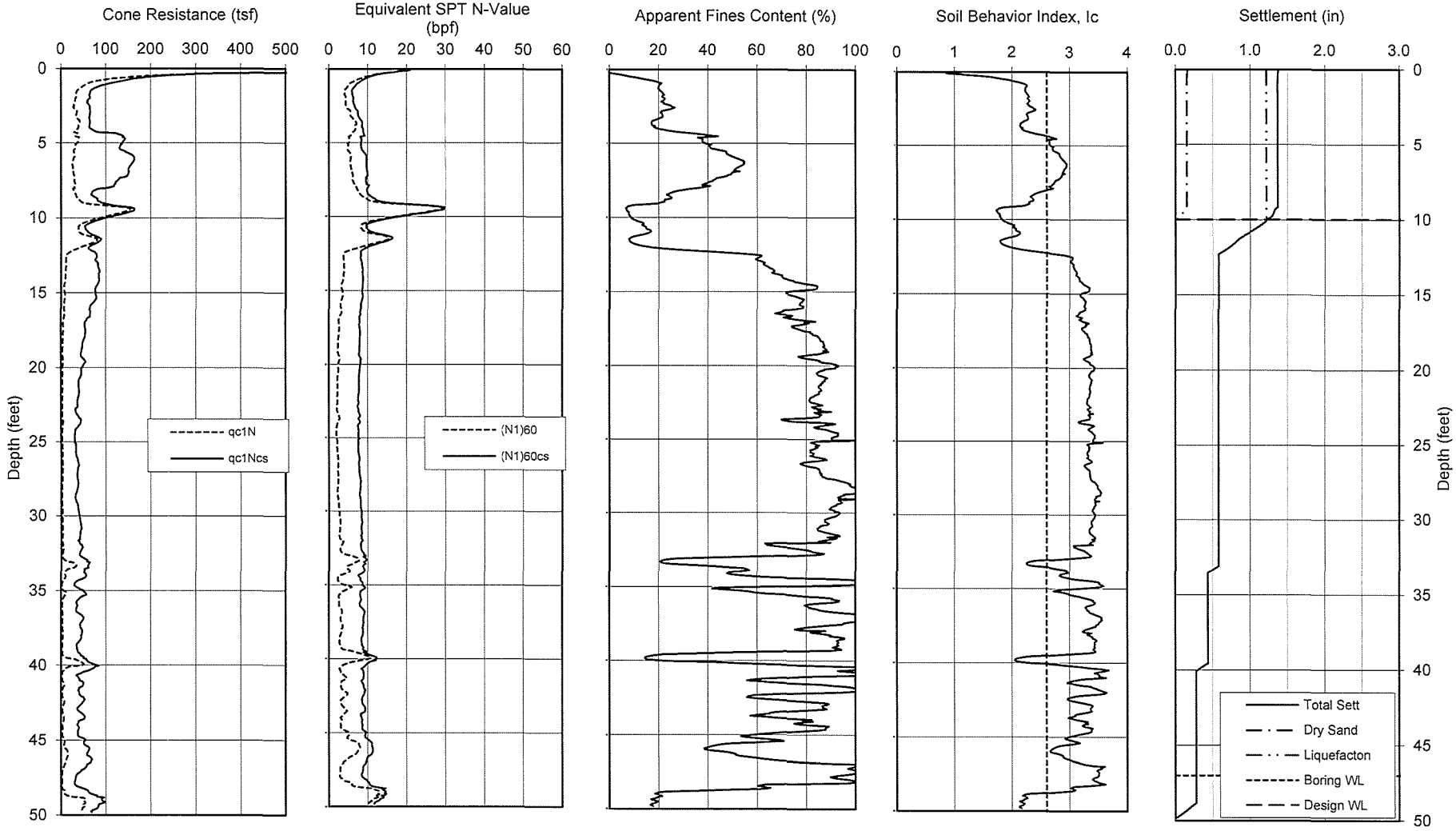
CPT LIQUEFACTION EVALUATION
CPT-01

A.G.I. GEOTECHNICAL, INC.

Proj. No.:	31-5904-00	Date: Dec. 2021	
Project:	Maple Street & Maple Court, Ventura		
Calc. By:	MBS		

Earthquake Magnitude, M :	6.95	Boring Water Level (Below Orig), ft :	47.0	Removal Depth (Below Orig), ft :	0.0
Maximum Acceleration, a (g) :	0.958	Design Water Level (Below Orig), ft :	10.0	Surcharge Fill Height (Above Orig), ft :	0.0
Magnitude Scaling Factor, r_m :	1.215			Surcharge Fill Unit Weight, pcf :	125.0

TOTAL SEISMIC SETTLEMENT (in) : 1.38



References: 1) Robertson, P.K. and Wride, C.E. (1997), "Cyclic Liquefaction and Its Evaluation Based on the SPT and CPT", Proceeding of the NCEER Workshop on Evaluation of Liquefaction Resistance of Soils, Technical Report NCEER-97-0022, p. 41-80. 2) Tokimatsu, K., and Seed, H. (1987). "Evaluation of Settlements in Sands Due to Earthquake Shaking." Journal of Geotechnical Engineering, ASCE, 113(8), 861-878.

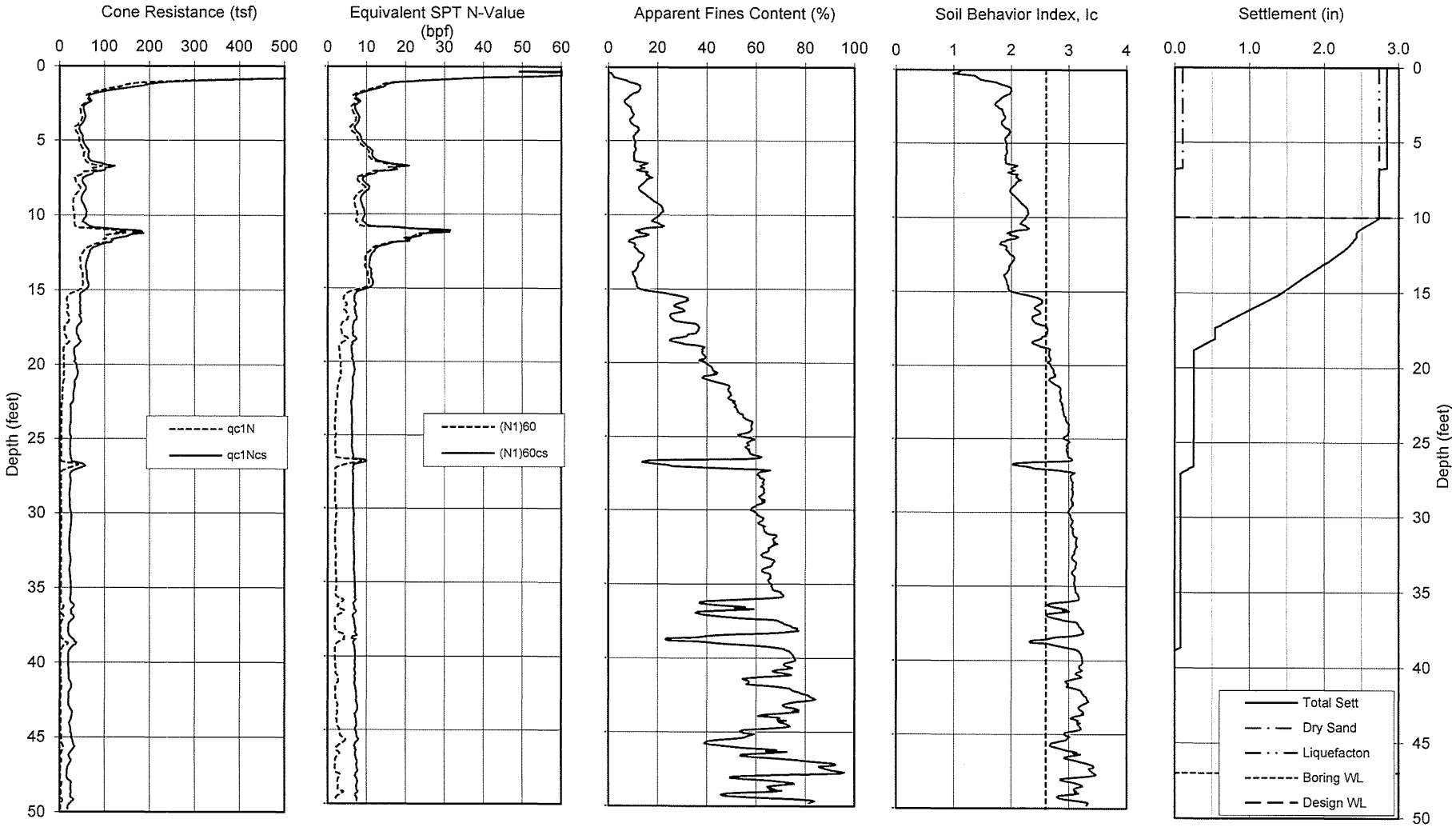
CPT LIQUEFACTION EVALUATION
CPT-03

A.G.I. GEOTECHNICAL, INC.

Proj. No.:	31-5904-00	Date: Dec. 2021	
Project:	Maple Street & Maple Court, Ventura		
Calc. By:	MBS		

Earthquake Magnitude, M :	6.95	Boring Water Level (Below Orig), ft :	47.0	Removal Depth (Below Orig), ft :	0.0
Maximum Acceleration, a (g) :	0.958	Design Water Level (Below Orig), ft :	10.0	Surcharge Fill Height (Above Orig), ft :	0.0
Magnitude Scaling Factor, r_m :	1.215			Surcharge Fill Unit Weight, pcf :	125.0

TOTAL SEISMIC SETTLEMENT (in) : 2.84



References: 1) Robertson, P.K. and Wride, C.E. (1997), "Cyclic Liquefaction and Its Evaluation Based on the SPT and CPT", Proceeding of the NCEER Workshop on Evaluation of Liquefaction Resistance of Soils, Technical Report NCEER-97-0022, p. 41-80. 2) Tokimatsu, K., and Seed, H. (1987). "Evaluation of Settlements in Sands Due to Earthquake Shaking." Journal of Geotechnical Engineering, ASCE, 113(8), 861-878.

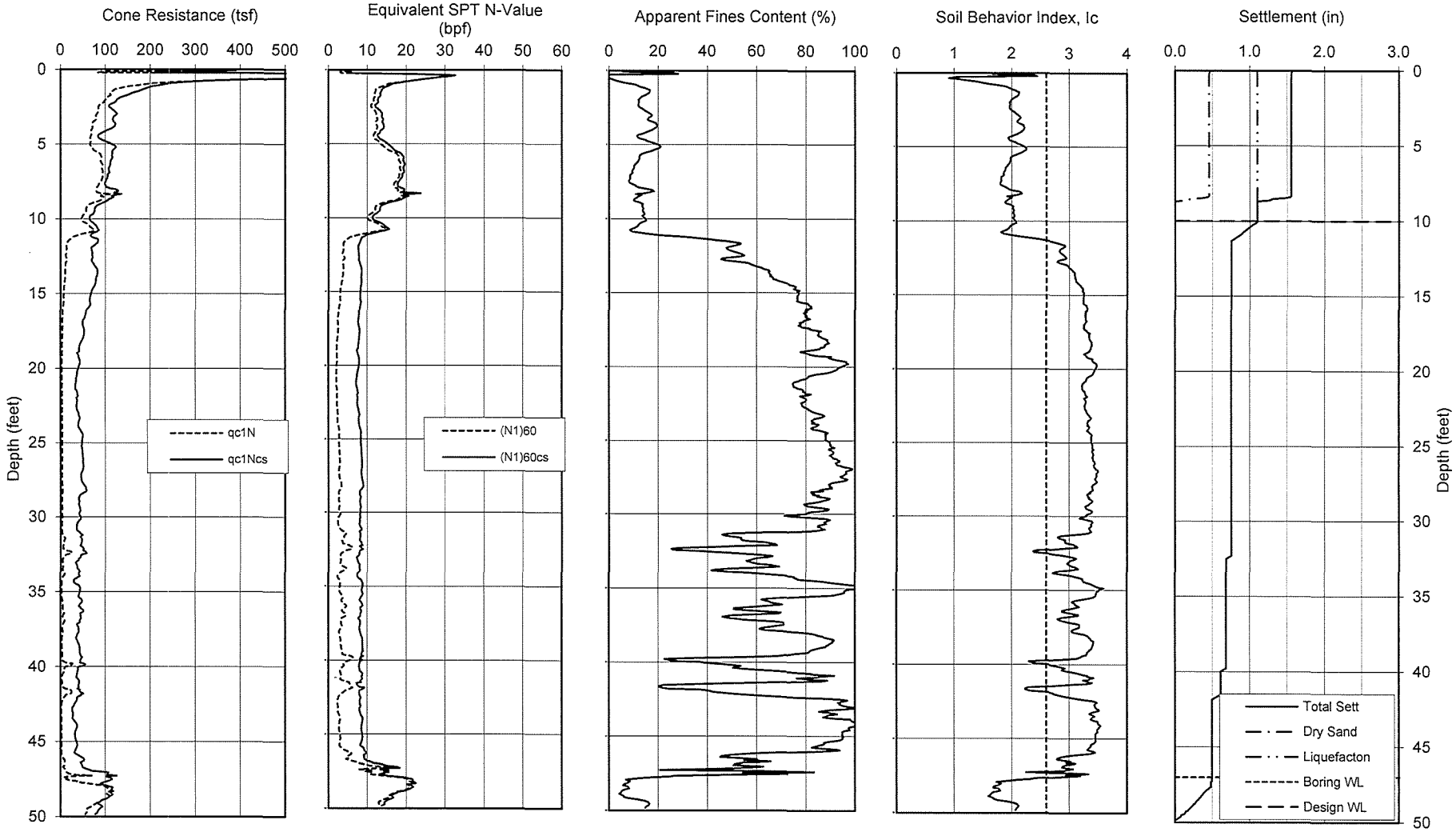
CPT LIQUEFACTION EVALUATION
CPT-04

A.G.I. GEOTECHNICAL, INC.

Proj. No.:	31-5904-00	Date: Dec. 2021
Project:	Maple Street & Maple Court, Ventura	
Calc. By:	MBS	

Earthquake Magnitude, M :	6.95	Boring Water Level (Below Orig), ft :	47.0	Removal Depth (Below Orig), ft :	0.0
Maximum Acceleration, a (g) :	0.958	Design Water Level (Below Orig), ft :	10.0	Surcharge Fill Height (Above Orig), ft :	0.0
Magnitude Scaling Factor, r_m :	1.215			Surcharge Fill Unit Weight, pcf :	125.0

TOTAL SEISMIC SETTLEMENT (in) : 1.57



References: 1) Robertson, P.K. and Wride, C.E. (1997), "Cyclic Liquefaction and Its Evaluation Based on the SPT and CPT", Proceeding of the NCEER Workshop on Evaluation of Liquefaction Resistance of Soils, Technical Report NCEER-97-0022, p. 41-80. 2) Tokimatsu, K., and Seed, H. (1987). "Evaluation of Settlements in Sands Due to Earthquake Shaking." Journal of Geotechnical Engineering, ASCE, 113(8), 861-878.

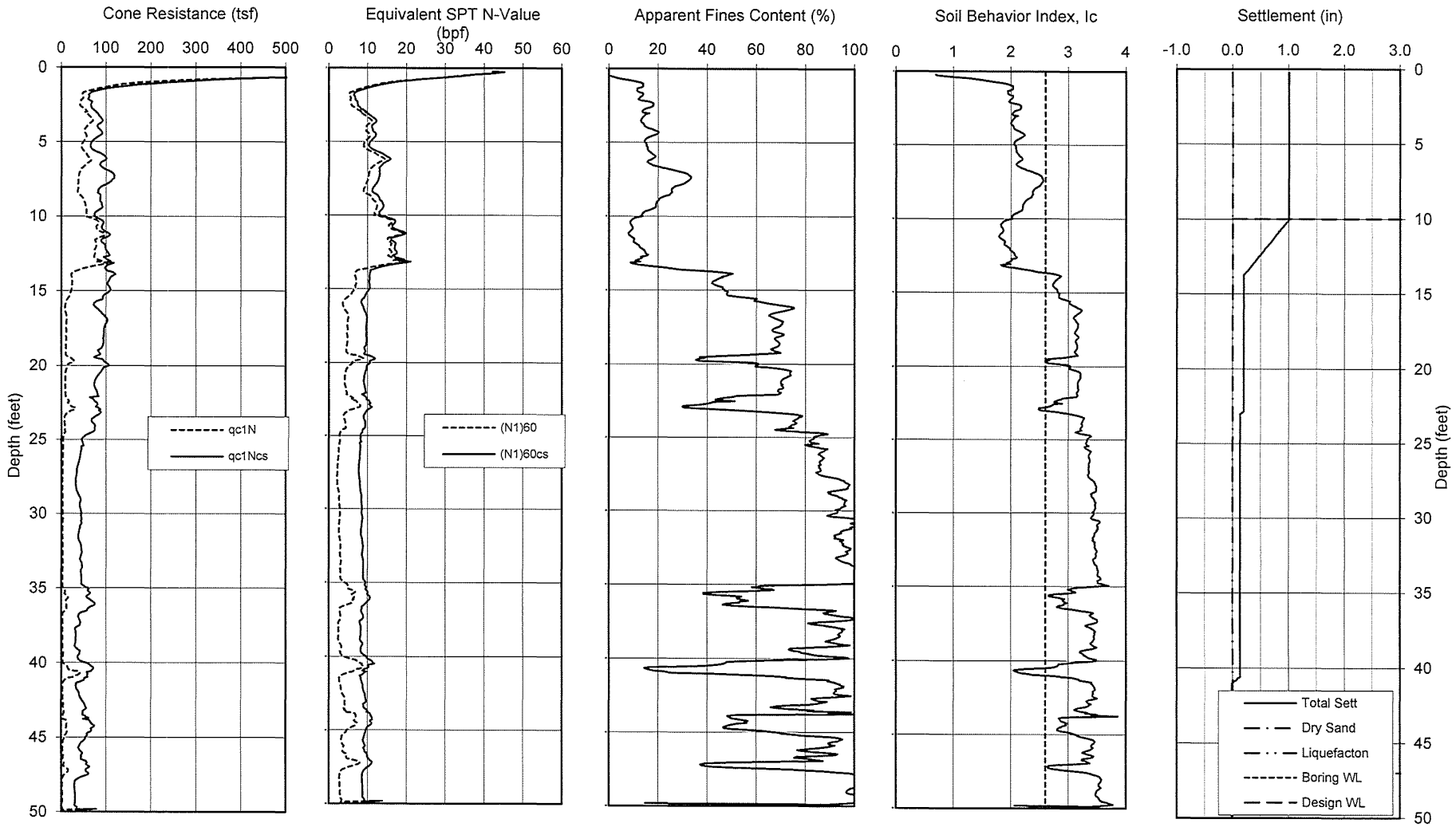
CPT LIQUEFACTION EVALUATION
CPT-05

A.G.I. GEOTECHNICAL, INC.

Proj. No.:	31-5904-00	Date: Dec. 2021	
Project:	Maple Street & Maple Court, Ventura		
Calc. By:	MBS		

Earthquake Magnitude, M :	6.95	Boring Water Level (Below Orig), ft :	47.0	Removal Depth (Below Orig), ft :	0.0
Maximum Acceleration, a (g) :	0.958	Design Water Level (Below Orig), ft :	10.0	Surcharge Fill Height (Above Orig), ft :	0.0
Magnitude Scaling Factor, r_m :	1.215			Surcharge Fill Unit Weight, pcf :	125.0

TOTAL SEISMIC SETTLEMENT (in) : 1.01



References: 1) Robertson, P.K. and Wride, C.E. (1997), "Cyclic Liquefaction and Its Evaluation Based on the SPT and CPT", Proceeding of the NCEER Workshop on Evaluation of Liquefaction Resistance of Soils, Technical Report NCEER-97-0022, p. 41-80. 2) Tokimatsu, K., and Seed, H. (1987). "Evaluation of Settlements in Sands Due to Earthquake Shaking." Journal of Geotechnical Engineering, ASCE, 113(8), 861-878.

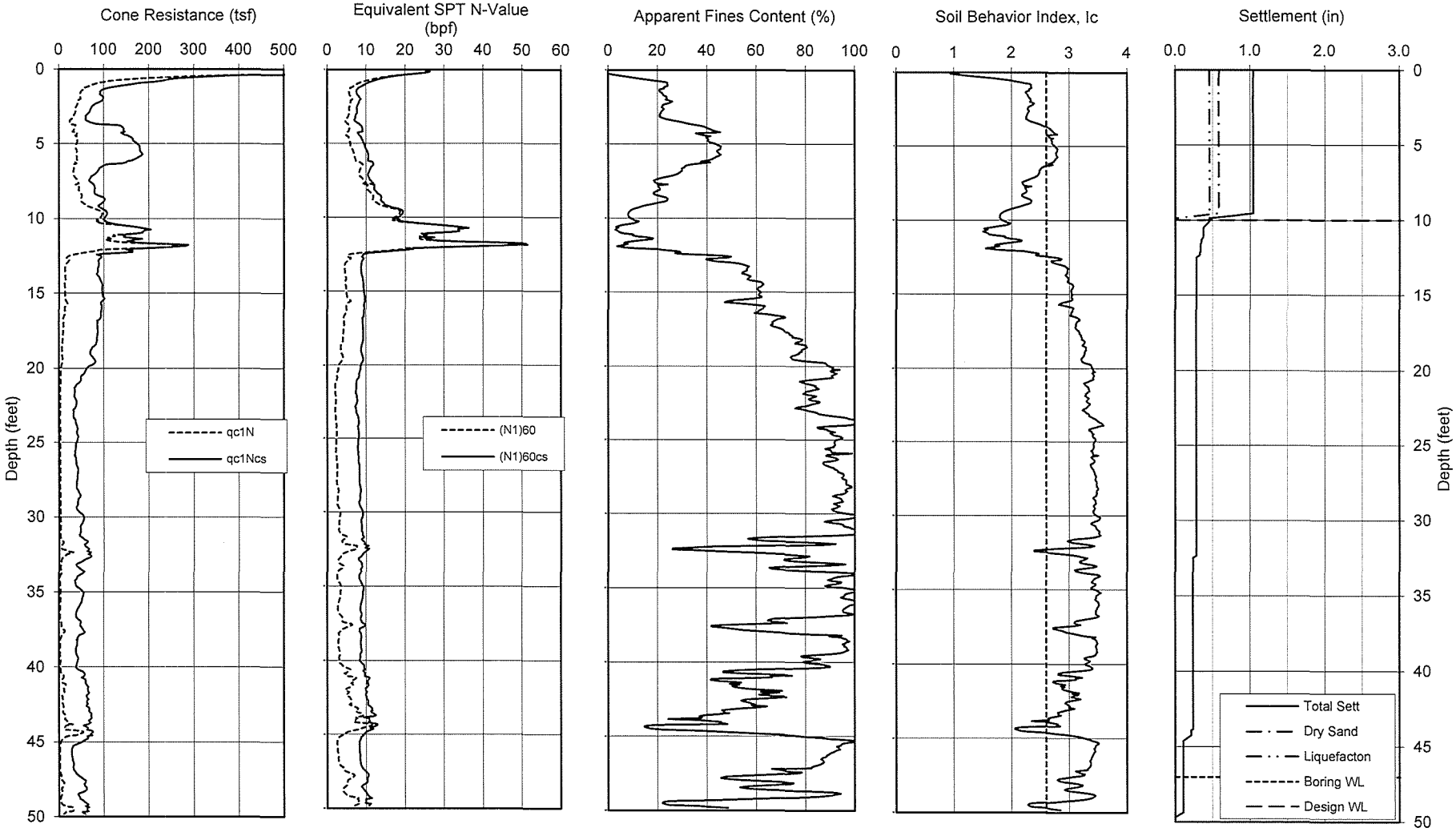
CPT LIQUEFACTION EVALUATION
CPT-06

A.G.I. GEOTECHNICAL, INC.

Proj. No.:	31-5904-00	Date: Dec. 2021	
Project:	Maple Street & Maple Court, Ventura		
Calc. By:	MBS		

Earthquake Magnitude, M :	6.95	Boring Water Level (Below Orig), ft :	47.0	Removal Depth (Below Orig), ft :	0.0
Maximum Acceleration, a (g) :	0.958	Design Water Level (Below Orig), ft :	10.0	Surcharge Fill Height (Above Orig), ft :	0.0
Magnitude Scaling Factor, r_m :	1.215			Surcharge Fill Unit Weight, pcf :	125.0

TOTAL SEISMIC SETTLEMENT (in) : 1.05



References: 1) Robertson, P.K. and Wride, C.E. (1997), "Cyclic Liquefaction and Its Evaluation Based on the SPT and CPT", Proceeding of the NCEER Workshop on Evaluation of Liquefaction Resistance of Soils, Technical Report NCEER-97-0022, p. 41-80. 2) Tokimatsu, K., and Seed, H. (1987). "Evaluation of Settlements in Sands Due to Earthquake Shaking." Journal of Geotechnical Engineering, ASCE, 113(8), 861-878.

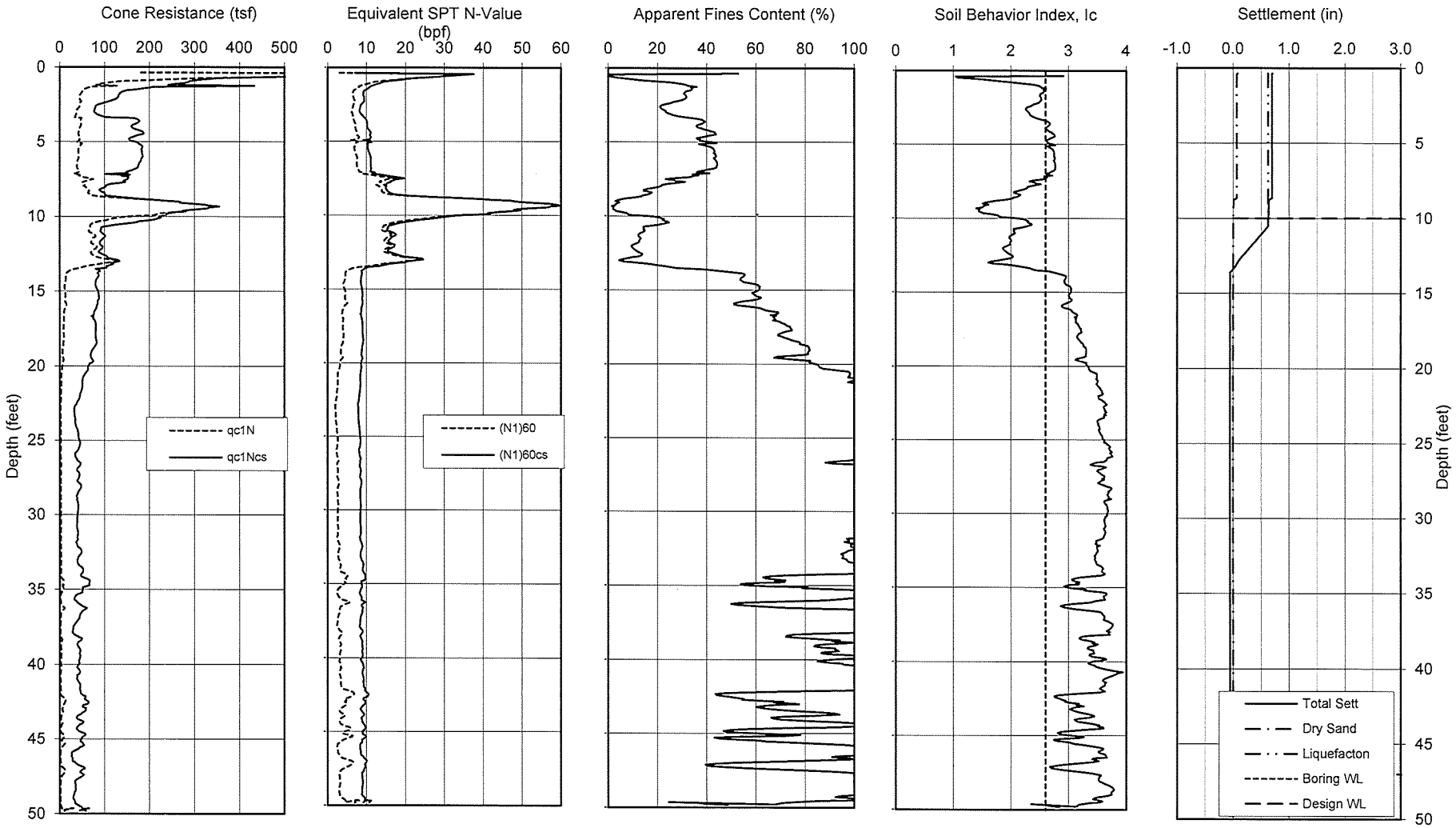
CPT LIQUEFACTION EVALUATION
CPT-07

A.G.I. GEOTECHNICAL, INC.

Proj. No.:	31-5904-00	Date: Dec. 2021
Project:	Maple Street & Maple Court, Ventura	
Calc. By:	MBS	

Earthquake Magnitude, M :	6.95	Boring Water Level (Below Orig), ft :	47.0	Removal Depth (Below Orig), ft :	0.0
Maximum Acceleration, a (g) :	0.958	Design Water Level (Below Orig), ft :	10.0	Surcharge Fill Height (Above Orig), ft :	0.0
Magnitude Scaling Factor, r_m :	1.215			Surcharge Fill Unit Weight, pcf :	125.0

TOTAL SEISMIC SETTLEMENT (in) : 0.71



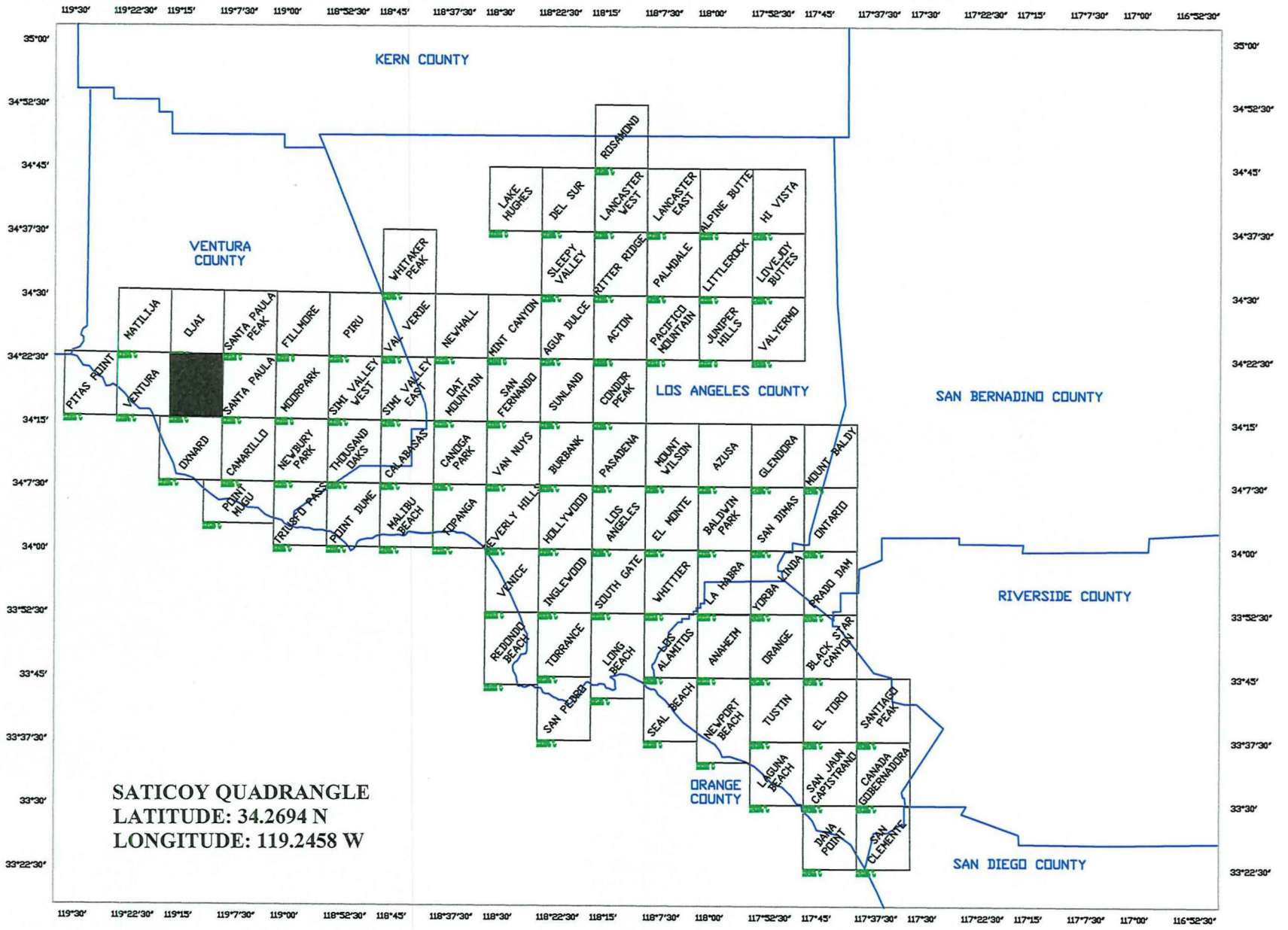
References: 1) Robertson, P.K. and Wride, C.E. (1997), "Cyclic Liquefaction and Its Evaluation Based on the SPT and CPT", Proceeding of the NCEER Workshop on Evaluation of Liquefaction Resistance of Soils, Technical Report NCEER-97-0022, p. 41-80. 2) Tokimatsu, K., and Seed, H. (1987). "Evaluation of Settlements in Sands Due to Earthquake Shaking." Journal of Geotechnical Engineering, ASCE, 113(8), 861-878.

CPT LIQUEFACTION EVALUATION
CPT-08

A.G.I. GEOTECHNICAL, INC.

Proj. No.:	31-5904-00	Date: Dec. 2021	
Project:	Maple Street & Maple Court, Ventura		
Calc. By:	MBS		

QUADRANGLE LOCATION MAP

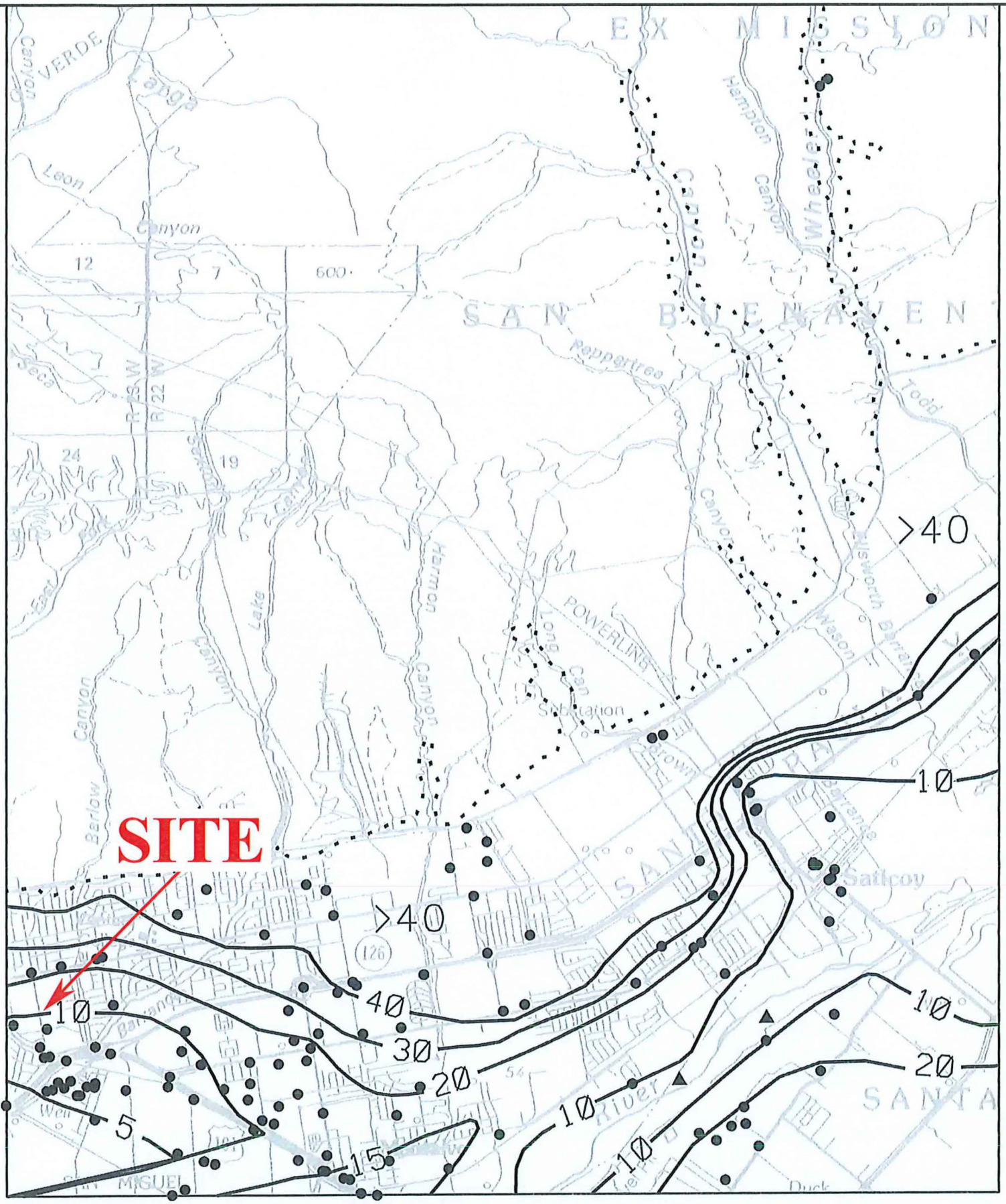


A.G.I. GEOTECHNICAL, INC.
Engineering Geology • Geotechnical Engineering
16555 Sherman Way, Unit A • Van Nuys, CA 91406
(818) 785-5244 • Fax (818) 785-6251

QUADRANGLE LOCATION MAP
Maple St. & Maple Ct., Ventura

PROJECT NO.	31-5904-00
DATE	08-2021
PREPARED BY	WFB
APPROVED BY	MBS

GROUNDWATER MAP



Base map from enlarged USGS 30x60 quadrangle series.
Base map enlarged from U.S.G.S. 30 x 60-minute series

SATICOY QUADRANGLE

AGI
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(818) 785-5244 • Fax (818) 785-6251

GROUNDWATER MAP

Maple St. & Maple Ct., Ventura

PROJECT NO.	31-5904-00
DATE	08-2021
PREPARED BY	WFB
APPROVED BY	MBS