



Fullerton Joint Union High School District

1051 W. Bastanchury Rd

Fullerton, CA 92833

714-680-5622

Bid/DSA # - 04-124966

SOHS Science Classroom Modernization

ADDENDUM # 1

Date: **February 25, 2026**

Owner: **Fullerton Joint Union High School District
Facilities and Construction
1027 S Leslie St.
La Habra, California 90631**

The following changes, additions, deletions, corrections, etc. shall become a part of the drawings, details, specifications or work project documents for the project named above and all other conditions shall remain the same. This addendum supercedes previously published information and in the event of conflict, the Addendum takes precedence. The bidding Contractor/Consultant shall be responsible for giving this information to any and all of his subcontractors/subconsultant, material suppliers, etc. prior to the closing of bids(RFQ/P) to ensure that the following addendum item(s) are incorporated into the contractor's/consultant's bid(RFQ/P) proposal:

Item No. 1.1:

- Supplemental information

ATTACHMENTS:

- 1) **Asbestos and Lead Survey Report**
- 2) **Geotechnical Report**

Item No. 2.1:

- Change of Project Allowance.
Increase project allowance from **\$100,000.00** to **\$800,000.00**.
Section 01 10 00-1.2 /A.2
 - “This prime contractor is to add an allowance of ~~\$100,000~~ **\$800,000.00** in their base bid. The allowance shall be listed as a line item in the schedule of values.”**Section 01 10 00-3.1 /A**
 - “The Contractor will provide a ~~\$100,000.00~~ **\$800,000.00** Allowance to be used for unforeseen conditions.”

END OF ADDENUM#1

ATTACHMENTS - SEE FOLLOWING PAGES



ASBESTOS & LEAD-BASED PAINT INSPECTION REPORT

**SONORA HIGH SCHOOL
SCIENCE ROOMS 421 - 428**
401 South Palm Street
La Habra, California 90631

Prepared For



FULLERTON JOINT UNION HIGH SCHOOL DISTRICT
1051 West Bastanchury Road
Fullerton, California 92833

Prepared By



16700 Valley View Avenue, Suite 100, La Mirada, California 90638
(714) 523- 9811 • Fax (714) 523-9810
www.encorp.net

November 5, 2025
ENCORP PROJECT NUMBER P25516.F31



Service, Quality, Integrity, and Commitment

TABLE OF CONTENTS

I. ASBESTOS & LEAD-BASED PAINT INSPECTION REPORT

II. SAMPLE ANALYSIS

IIA. SAMPLE ANALYSIS – ASBESTOS

IIB. SAMPLE ANALYSIS - LEAD

III. CERTIFICATIONS

IV. FIELD INSPECTION DATA

V. LIMITATIONS

I. ASBESTOS AND LEAD-BASED PAINT INSPECTION REPORT

ASBESTOS & LEAD-BASED PAINT INSPECTION REPORT

FACILITIES: **SONORA HIGH SCHOOL**
SCIENCE ROOMS 421 - 428
401 South Palm Street
La Habra, California 90631

INSPECTION DATE: November 5, 2025

INTRODUCTION

The **FULLERTON JOINT UNION HIGH SCHOOL DISTRICT** (referred to hereafter as the Client), retained **ENCORP** to conduct a limited asbestos and lead-based paint inspection of the **SCIENCE ROOMS 421 - 428** at **SONORA HIGH SCHOOL** located at 401 South Palm Street, Fullerton, California. The inspection was conducted to determine the presence of asbestos and lead that may be impacted in the renovation activities at the facility. This inspection does not constitute a full comprehensive inspection for the building and is limited to the spaces planned for renovation activities as directed by the client.

Asbestos is a general term applied to a group of naturally occurring minerals which separate into fibers. These fibrous materials (e.g., Amosite, Chrysotile, Crocidolite, Tremolite, Anthophyllite, and Actinolite) are composed of silicates of aluminum, magnesium and other metals which are incombustible and very difficult to destroy or degrade. Asbestos has a tendency to break into a dust of tiny fibers which can float in the air and be inhaled or swallowed. Asbestos inhalation exposure has been shown to increase the risk of developing lung cancer, mesothelioma (cancer of the lining of the lung and/or abdomen.) and asbestosis (chronic lung disease), as well as other damage to the lungs. Exposure occurs by breathing asbestos fibers produced as a fine dust when asbestos is handled during fabrication, installation or removal. By definition Asbestos Containing Materials (ACM) are any material or product which contains greater than 1 percent (1%) asbestos. CAL/OSHA further regulates the content of asbestos in materials or products that contain greater than 1 tenth of a percent (0.1%) of asbestos requiring work to be performed by a licensed abatement contractor, and asbestos containing material containing 0.1% or less of asbestos requiring notification and training for the purpose of worker protection.

ENCORP's Certified Asbestos Site Surveillance Technician, Angel Jimenez (CSST No. 15-5431) and Certified Lead Sampling Technician Mr. Andy Alvarado (LRC-00014653) completed the inspection under the direct supervision of Certified Asbestos Consultant (CAC No. 04-3555) and Certified Lead Inspector/ Assessor (LRC-00005443), Alexander Blankevoort. ENCORP conducted a visual investigation of the areas of impact to identify and quantify the suspect asbestos containing materials and lead painted materials. Upon completion of the visual investigation, building materials were grouped into homogeneous categories and samples were collected from the suspect materials identified.

SAMPLING METHODOLOGY – ASBESTOS

ENCORP used a modified random sampling protocol to collect the samples of the suspect ACM's. Each of the suspect samples collected for this report were given a unique sample identification number and sealed inside leak proof containers for shipment to the laboratory for analysis.

Asbestos bulk samples collected during this inspection were analyzed by ENCORP Environmental Laboratory. ENCORP Environmental Laboratory is accredited by NIST/NVLAP for analysis of asbestos fibers in bulk. PLM Bulk samples were analyzed by Polarized Light Microscopy (PLM)/Dispersion Staining (EPA/600/R-93/116), ENCORP NVLAP Lab Code 200878-0, 16170 Valley View Ave, Suite 100, La Mirada, CA 90638, 714-523-9811.

INSPECTION RESULTS – ASBESTOS

The following contains the summary of the suspect asbestos containing materials sampled during this inspection, including the location and laboratory analysis. Positive ACM's are distinguished in "**bold**". Samples collected and found not to contain asbestos are classified as being None Detected "ND".

SUMMARY OF SUSPECT MATERIALS TESTED SCIENCE ROOMS 421 - 428						
Sample No.	Building Component	Location Of Material	Condition	Friability	Estimated Quantity	% and type of Asbestos
1 2 3 4 5	Stucco	Science Rooms 421 - 428: Exterior	G	NF	4000 sq. ft.	Skim Coat = ND Stucco = ND
6 7 8	Window Sealant	Science Rooms 421 - 428: Exterior	G	NF	10 sq. ft.	Black Sealant = ND White Sealant = ND
9 10 11	Concrete	Science Rooms 421 - 428: Exterior & Interior	G	NF	13,000 sq. ft.	ND
12 13 14	4" Black Cove Base, Glue	Science Rooms 421 - 428: Interior	G	NF	700 sq. ft.	Cove Base = ND Glue = ND
15 16 17	Carpet Glue	Science Rooms 421 - 428: Interior Office, Work Room, West Entrance	G	NF	500 sq. ft.	ND
18 19 20	Carpet Glue, Mastic	Science Rooms 421 - 428: Interior Classrooms	G	NF	2200 sq. ft.	ND
21 22 23	Fume Hood Paneling	Science Rooms 421 - 428: Interior Classrooms	G	NF	100 sq. ft.	ND
24 25 26	12"x12" Blue Vinyl Floor Tile, Mastic	Science Rooms 421 - 428: Classrooms 421 - 423	G	NF	3200 sq. ft.	Tile = ND Mastic = ND
27 28 29	Black Countertop Material	Science Rooms 421 - 428: Classrooms 421 - 423	G	NF	1400 sq. ft.	ND
30 31 32	12"x12" Blue Vinyl Floor Tile, Mastic, Tile, Mastic (Layered)	Science Rooms 421 - 428: Classrooms 426 - 428	G	NF	3200 sq. ft.	Blue Tile = ND Mastic = ND White Tile = ND Mastic = ND
33 34 35	Gray Countertop Material – All Desktops/sinks	All Rooms 421 - 428: Classrooms, Labs, Storage	G	NF	1200 sq. ft.	10% Chrysotile
36 37 38 39 40	Plaster	Science Rooms 421 - 428: Interior	G	NF	4800 sq. ft.	Skim Coat = ND Plaster = ND
41 42 43	Drywall, Joint Compound	Science Rooms 421 - 428: Interior	G	F	2000 sq. ft.	Drywall = ND Joint Compound = ND
44 45 46	Brick, Mortar	Science Rooms 421 - 428: Common Area	G	NF	300 sq. ft.	Brick = ND Mortar = ND
47 48 49	Partition Curtain	Science Rooms 421 - 428: Interior Classrooms	G	NF	1000 sq. ft.	ND

**SUMMARY OF SUSPECT MATERIALS TESTED
SCIENCE ROOMS 421 - 428**

Sample No.	Building Component	Location Of Material	Condition	Friability	Estimated Quantity	% and type of Asbestos
50 51 52	2'x4' Fissured Ceiling Panel	Science Rooms 421 - 428: Interior	G	F	10,000 sq. ft.	ND
53 54 55	Gypsum, Joint Compound	Science Rooms 421 - 428: Above Suspended Ceiling	G	NF	3000 sq. ft.	Gypsum = ND Joint Compound = 2% Chrysotile
56 57 58	Ceiling Space Insulation	Science Rooms 421 - 428: Above Suspended Ceiling	G	F	12,000 sq. ft.	ND
59 60 61	HVAC Insulation	Science Rooms 421 - 428: Above Suspended Ceiling	G	F	700 sq. ft.	ND
N/A	Pipe Insulation and elbows and pipe run	Science Rooms 421 - 428: Assumed in wall/ceiling cavity runs, inside cabinetry to sinks	G	F	200 sq ft	*Assumed asbestos Containing by certified asbestos consultant

Conditions of materials are identified as follows: Good (G), Damaged (D), or Significantly Damaged (SD), Friable (F), Non-friable (NF). The quantities listed are for budgetary purposes only. Contractors completing proposals for the removal of asbestos containing materials are responsible for verifying the location, quantity, degree of difficulty and necessity for removing the identified materials. No access to the vault room. * Pipe insulation and elbows are assumed asbestos containing above 1% by Alexander Blankevoort CAC No. 04-3555.

Note 1: The TPO roof was not sampled to avoid damage and to not void any warranties. Therefore, the roofing material must be assumed asbestos containing until testing proves otherwise.

Note 2: TSI-Thermal system insulation was not observed, however, it should be assumed to be present within the wall/ceiling cavities and cabinetry to sinks, and other hidden cavities. The TSI must be assumed asbestos contained if encountered.

DISCUSSIONS AND RECOMMENDATIONS (ASBESTOS)

Asbestos containing materials were identified within the scope of the inspection.

Asbestos containing material should be removed by a licensed and trained abatement contractor. Disturbance of 100 sq ft or more of materials above 1% asbestos requires the work to be done with notifications to the SCAQMD under Rule 1403 and accordance with CAL/OSHA 1529 and 5208. Waste generated from this work is regulated as asbestos waste.

ENCORP also recommends that a California Certified Asbestos Consultant/Site Surveillance Technician oversee the project to ensure that proper methods are being utilized.

Any suspect asbestos material encountered during demolition that is not shown in this report should be sampled and analyzed prior to disturbance. Care should be taken when demolishing materials that will open wall cavities or sealed ceiling areas. If any additional known, assumed, or suspected asbestos-containing materials are discovered during renovation, remodeling or demolition activities, contact an environmental consultant to determine the proper course of action.

INSPECTION RESULTS -- LEAD

Lead-Based Paint (LBP) is a term used by Housing and Urban Development (HUD) and the EPA's Toxic Substances Control Act (TSCA) program. It defines paint with lead levels equal to or exceeding 1.0 milligram per square centimeter (1mg/cm²), 0.5 percent by weight (% Lead w/w) or 5,000 ppm. The HUD and EPA have set a lead level of 1.0 mg/cm² as being a regulated lead-containing material.

The NITON XRF Spectrum Analyzer was utilized for the analysis of suspect lead-based painted materials. In this method of analysis, the material is exposed to X-Rays or other high-energy radiation (such as gamma rays), which causes lead to emit X-Rays with a characteristic frequency. The intensity of this radiation is measured by the instrument's detector and is then converted into a number that represents the amount of lead in the material per unit area, usually milligrams per square centimeter (mg/cm²).

The HUD and OSHA have set a lead level of 1.0 mg/cm² as being a regulated lead-containing material. Analytical sensitivity of the of the XRF measurement methodology reports positive lead-based content results at or above 1.0 mg/cm², presence of lead content result between 0.1 and 0.9 mg/cm², and negative results at less than 0.1 mg/cm² which are noted as being below the level of detection. CAL/OSHA considers all lead surface levels to be of concerns.

Listed below is a summary of the materials sampled. Items found positive for lead-based paint using XRF analyses at these buildings are highlighted in **BOLD RED**, along with the location and estimated quantity. A complete listing of all components tested can be found in Section IIB of this report. Results are reported as Below Level of Detection = BLD, Lead Containing Paint = LCP, **Lead-Based Paint = LBP**.

SUMMARY OF LEAD-CONTAINING COMPONENTS TESTED SCIENCE ROOMS 421 - 428							
Sample No	Color	Substrate	Component	Location	Results	Mg/cm2	QTY
4.	Black	Metal	Roof Edge	Science 421 - 428: Exterior	BLD	0.0	-
5.	Black	Metal	Fascia	Science 421 - 428: Exterior	BLD	0.0	-
6.	White	Stucco	Wall	Science 421 - 428: Exterior	BLD	0.0	-
7.	Black	Metal	Window Frame	Science 421 - 428: Exterior	BLD	0.0	-
8.	Black	Metal	Window Board	Science 421 - 428: Exterior	BLD	0.0	-
9.	Black	Metal	Door	Science 421 - 428: Exterior	BLD	0.0	-
10.	Black	Metal	Door Frame	Science 421 - 428: Exterior	BLD	0.0	-
11.	White	Metal	Conduit	Science 421 - 428: Exterior	BLD	0.0	-
12.	White	Metal	Panel	Science 421 - 428: Exterior	BLD	0.0	-
13.	White	Stucco	Wall	Science 421 - 428: Exterior	BLD	0.0	-
14.	Black	Stucco	Wall Base	Science 421 - 428: Exterior	BLD	0.0	-
15.	Black	Metal	Vent	Science 421 - 428: Exterior	BLD	0.0	-
16.	White	Stucco	Wall	Science 421 - 428: Exterior	BLD	0.0	-
17.	White	Stucco	Wall	Science 421 - 428: Exterior	BLD	0.0	-
18.	White	Drywall	Wall	Science 421 - 428: Interior	BLD	0.0	-
19.	White	Drywall	Wall	Science 421 - 428: Interior	LCP	0.1	-
20.	White	Drywall	Wall	Science 421 - 428: Interior	BLD	0.0	-
21.	White	Drywall	Wall	Science 421 - 428: Interior	LCP	0.1	-
22.	White	Metal	Wall Partition	Science 421 - 428: Interior	BLD	0.0	-
23.	Black	Cement	Countertop	Science 421 - 428: Interior	BLD	0.0	-
24.	Gray	Cement	Countertop	Science 421 - 428: Interior	BLD	0.0	-
25.	Dark Blue	Wood	Door	Science 421 - 428: Interior	LCP	0.1	-

**SUMMARY OF LEAD-CONTAINING COMPONENTS TESTED
SCIENCE ROOMS 421 - 428**

Sample No	Color	Substrate	Component	Location	Results	Mg/cm2	QTY
26.	Dark Blue	Metal	Door Frame	Science 421 - 428: Interior	LCP	0.1	-
27.	Light Blue	Wood	Cabinets	Science 421 - 428: Interior	BLD	0.0	-
28.	Dark Blue	Metal	Door	Science 421 - 428: Interior	LCP	0.1	-
29.	White	Wood	Partition Curtain	Science 421 - 428: Interior	BLD	0.0	-
30.	White	Plastic	Wire Covers	Science 421 - 428: Interior	BLD	0.0	-
31.	White	Metal	Pipe	Science 421 - 428: Interior	BLD	0.0	-
32.	White	Metal	Panel	Science 421 - 428: Interior	BLD	0.0	-
33.	White	Metal	Window Post	Science 421 - 428: Interior	BLD	0.0	-
34.	White	Metal	Window Frame	Science 421 - 428: Interior	BLD	0.0	-
35.	Orange	Brick	Planter	Science 421 - 428: Interior	BLD	0.0	-
36.	Red	Brick	Floor	Science 421 - 428: Interior	BLD	0.0	-
37.	Yellow	Metal	Wall	Science 421 - 428: Interior	BLD	0.0	-
38.	White	Metal	Ceiling Space Beam	Science 421 - 428: Interior	BLD	0.0	-
39.	White	Metal	Fume Hood Vent	Science 421 - 428: Interior	BLD	0.0	-
40.	Black	Plastic/ Glass	Panel Window	Science 421 - 428: Interior	BLD	0.0	-
41.	White	Wood	Ceiling Trim	Science 421 - 428: Interior	BLD	0.0	-
42.	White	Metal	Vertical Beam	Science 421 - 428: Interior	BLD	0.0	-
43.	Multicolor	Wood	Cabinets	Science 421 - 428: Interior	BLD	0.0	-
44.	Blue	Ceramic	Wall Tile	Culinary Arts Restroom: Boy's/ Girl's Restroom	BLD	0.0	-
45.	White	Ceramic	Wall Tile	Culinary Arts Restroom: Boy's/ Girl's Restroom	BLD	0.0	-
46.	Gray	Ceramic	Floor Tile	Culinary Arts Restroom: Boy's/ Girl's Restroom	BLD	0.0	-
47.	White	Porcelain	Sink	Culinary Arts Restroom: Boy's/ Girl's Restroom	BLD	0.0	-
48.	White	Porcelain	Toilet	Culinary Arts Restroom: Boy's/ Girl's Restroom	BLD	0.0	-
49.	White	Porcelain	Urinal	Culinary Arts Restroom: Boy's Restroom	BLD	0.0	-
50.	Blue	Ceramic	Wall Tile	500 Staff Restroom: Men/ Women Restroom	BLD	0.0	-
51.	White	Ceramic	Wall Tile	500 Staff Restroom: Men/ Women Restroom	BLD	0.0	-
52.	Gray	Ceramic	Floor Tile	500 Staff Restroom: Men/ Women Restroom	BLD	0.0	-
53.	White	Porcelain	Sink	500 Staff Restroom: Men/ Women Restroom	BLD	0.0	-
54.	White	Porcelain	Toilet	500 Staff Restroom: Men/ Women Restroom	BLD	0.0	-
55.	White	Porcelain	Urinal	500 Staff Restroom: Men Restroom	BLD	0.0	-

Note: The quantities listed are for budgetary purposes only. Contractors completing proposals for the removal of lead containing materials are responsible for verifying the location, quantity, degree of difficulty and necessity for removing the identified materials.

DISCUSSIONS AND RECOMMENDATIONS (LEAD)

Lead-Based Paint was not identified in this scope of work. All components with results of >1.0 mg/cm² are considered lead-based paint.

Any material containing any detectable level of lead is subject to the OSHA's Lead Exposure in Construction Rule, 29 Code of Federal Regulation (CFR) 1926. All removal of lead-based painted (LBP) should be performed by a state-licensed contractor, using CDPH-certified workers with at least one CDPH-certified Supervisor.

All components with results of >1.0 mg/cm² are considered lead-based paint. A trained lead-based paint contractor should perform any disturbance, paint film stabilization, loose and flaky paint, and any preparations of lead bearing levels of surfaces for repainting.

CONCLUSION

Asbestos containing materials were identified within the scope of the inspection.

Asbestos containing material should be removed by a licensed and trained abatement contractor. Disturbance of 100 sq ft or more of materials above 1% asbestos requires the work to be done with notifications to the SCAQMD under Rule 1403 and accordance with CAL/OSHA 1529 and 5208. Waste generated from this work is regulated as asbestos waste.

ENCORP also recommends that a California Certified Asbestos Consultant/Site Surveillance Technician oversee the project to ensure that proper methods are being utilized.

Any suspect asbestos material encountered during demolition that is not shown in this report should be sampled and analyzed prior to disturbance. Care should be taken when demolishing materials that will open wall cavities or sealed ceiling areas. If any additional known, assumed, or suspected asbestos-containing materials are discovered during renovation, remodeling or demolition activities, contact an environmental consultant to determine the proper course of action.

Lead-based paint was not present in this scope of work.

Any material containing any detectable level of lead is subject to the OSHA's Lead Exposure in Construction Rule, 29 Code of Federal Regulation (CFR) 1926. All removal of lead-based painted (LBP) should be performed by a state-licensed contractor, using CDPH-certified workers with at least one CDPH-certified Supervisor.

All components with results of >1.0 mg/cm² are considered lead-based paint. A trained lead-based paint contractor should perform any disturbance, paint film stabilization, loose and flaky paint, and any preparations of lead bearing levels of surfaces for repainting.

Additional asbestos-containing and lead-based paint materials may be present at this site. Care should be taken when demolishing materials that will open wall cavities or sealed ceiling areas. If any additional known, assumed, or suspected asbestos-containing materials or lead-based painted components are discovered during renovation, remodeling or demolition activities, contact an environmental consultant to determine the proper course of action.

Should you have any questions concerning this report, please contact me at (714) 523-9811. Thank you.

Respectfully submitted,



Alexander Blankevoort
Vice President of Operations, ENCORP
Certified Asbestos Consultant No. 04-3555
CDPH Certified Lead Inspector/Risk Assessor No. 00005443

II. SAMPLE ANALYSIS

IIA. SAMPLE ANALYSIS - ASBESTOS

ENCORP ENVIRONMENTAL MANAGEMENT AND SERVICES

16700 VALLEY VIEW AVE, STE. 100 LA MIRADA, CALIFORNIA 90638
 714) 523-9811 · FAX (714) 523-9810 · MAIN@ENCORP.NET · WWW.ENCORP.NET

Client Name: FULLERTON JOINT UNION HIGH SCHOOL DISTRICT

Client Address: 1051 W. Bastanchury Road

Fullerton, California 92833

Facility Name: Sonora HS Science Classroom

Facility Address: 401 S. Palm Street

La Habra, CA 90631

Reference Batch Number: 064879

Sampled Date: 11/5/2025

Sampled By: ANGEL JIMENEZ

Analyzed By: KRISTINA MARTINEZ

Project Number: P25516 · F31

Date Received: 11/7/2025

Date Analyzed: 12/8/2025

LABORATORY TEST REPORT FOR BULK ASBESTOS FIBER ANALYSIS (PLM)

Sample Number	Field/ Client Number	SAMPLE DESCRIPTION			Friable or Non-	CVE Asbestos	Non Asbestos (%)
		Sample Location/Activity	Color	Material			
834812A	001A	SCIENCE 421-428 - EXT	BEIGE	(HOMOGENEOUS) SKIM COAT	NF	NONE DETECTED	100% MATRIX
834812B	001B	SCIENCE 421-428 - EXT	GRAY	(HOMOGENEOUS) STUCCO	NF	NONE DETECTED	100% MATRIX
834813A	002A	SCIENCE 421-428 - EXT	BEIGE	(HOMOGENEOUS) SKIM COAT	NF	NONE DETECTED	100% MATRIX
834813B	002B	SCIENCE 421-428 - EXT	GRAY	(HOMOGENEOUS) STUCCO	NF	NONE DETECTED	100% MATRIX
834814A	003A	SCIENCE 421-428 - EXT	BEIGE	(HOMOGENEOUS) SKIM COAT	NF	NONE DETECTED	100% MATRIX
834814B	003B	SCIENCE 421-428 - EXT	GRAY	(HOMOGENEOUS) STUCCO	NF	NONE DETECTED	100% MATRIX
834815A	004A	SCIENCE 421-428 - EXT	BEIGE	(HOMOGENEOUS) SKIM COAT	NF	NONE DETECTED	100% MATRIX
834815B	004B	SCIENCE 421-428 - EXT	GRAY	(HOMOGENEOUS) STUCCO	NF	NONE DETECTED	100% MATRIX

-NOTES: ND=None Detected. Asbestos is not quantifiable below the method detection limit of one (1) percent. Amphibole asbestos includes amosite, crocidolite, anthophyllite, tremolite and actinolite. (FR) = Friable, (NF) = Non-Friable. Condition of sample is as received by the laboratory. Our policy is to retain all samples for a period of thirty days. Accredited by the National Voluntary Laboratory Accreditation Program and Environmental Laboratory Certification for the specific scope of accreditation under NVLAP Lab Code 200878-0. This report applies only to the items as received. Results are representative of the samples submitted and may not represent the entire materials from which the samples were collected. This report is submitted for the exclusive use of the client to whom it is addressed. Any reproduction of this report or use of this Laboratory's name for advertising or publicity purposes without prior written authorization is prohibited. In addition, this report is not to be used to claim product endorsement by NVLAP, or any agency of the U.S. Government. Where applicable, layers or "sub-samples" are reported and the Total Asbestos % represents the composite percentage of all sample layers. These samples were quantified using a calibrated visual estimate. Bulk sample(s) submitted with the procedures EPA 600/R-93/116: Method for the Determination of Asbestos in Bulk Building Materials, EPA - 40 CFR Appendix E of Part 763, Interim Method of the Determination of Asbestos in Bulk Insulation Samples.

ENCORP ENVIRONMENTAL MANAGEMENT AND SERVICES 16700 VALLEY VIEW AVE. STE. 100 LA MIRADA, CALIFORNIA 90638
 714) 523-9811 · FAX (714) 523-9810 · MAIN@ENCORP.NET · WWW.ENCORP.NET

Client Name: FULLERTON JOINT UNION HIGH SCHOOL DISTRICT Reference Batch Number: 064879 Project Number: P25516 F31
 Client Address: 1051 W. Bastanchury Road Sampled Date: 11/5/2025 Date Received: 11/7/2025
Fullerton, California 92833 Analyzed By: ANGEL JIMENEZ Date Analyzed: 12/8/2025
 Facility Name: Sonora HS Science Classroom
 Facility Address: 401 S. Palm Street
La Habra, CA 90631

LABORATORY TEST REPORT FOR BULK ASBESTOS FIBER ANALYSIS (PLM)

Sample Number	Field/ Client Number	SAMPLE DESCRIPTION			Friable or Non-	CVE Asbestos	Non Asbestos (%)
		Sample Location/Activity	Color	Material			
834816A	005A	SCIENCE 421-428 - EXT	BEIGE	(HOMOGENEOUS) SKIM COAT	NF	NONE DETECTED	100% MATRIX
834816B	005B	SCIENCE 421-428 - EXT	GRAY	(HOMOGENEOUS) STUCCO	NF	NONE DETECTED	100% MATRIX
834817A	006A	SCIENCE 421-428 - EXT	BLACK	(HOMOGENEOUS) WINDOW SEALANT	NF	NONE DETECTED	100% MATRIX
834817B	006B	SCIENCE 421-428 - EXT	WHITE	(HOMOGENEOUS) WINDOW SEALANT	NF	NONE DETECTED	100% MATRIX
834818A	007A	SCIENCE 421-428 - EXT	BLACK	(HOMOGENEOUS) WINDOW SEALANT	NF	NONE DETECTED	100% MATRIX
834818B	007B	SCIENCE 421-428 - EXT	WHITE	(HOMOGENEOUS) WINDOW SEALANT	NF	NONE DETECTED	100% MATRIX
834819A	008A	SCIENCE 421-428 - EXT	BLACK	(HOMOGENEOUS) WINDOW SEALANT	NF	NONE DETECTED	100% MATRIX
834819B	008B	SCIENCE 421-428 - EXT	WHITE	(HOMOGENEOUS) WINDOW SEALANT	NF	NONE DETECTED	100% MATRIX

-NOTES: ND=None Detected Asbestos is not quantifiable below the method detection limit of one (1) percent. Amphibole asbestos includes amosite, crocidolite, anthophyllite, tremolite and actinolite. (FR) = Friable, (NF) = Non-Friable. Condition of sample is as received by the laboratory. Our policy is to retain all samples for a period of thirty days. Accredited by the National Voluntary Laboratory Accreditation Program and Environmental Laboratory Certification for the specific scope of accreditation under NVLAP Lab Code 200878-0. This report applies only to the items as received. Results are representative of the samples submitted and may not represent the entire materials from which the samples were collected. This report is submitted for the exclusive use of the client to whom it is addressed. Any reproduction of this report or use of this Laboratory's name for advertising or publicity purposes without prior written authorization is prohibited. In addition, this report is not to be used to claim product endorsement by NVLAP, or any agency of the U.S. Government. Where applicable, layers or "sub-samples" are reported and the Total Asbestos % represents the composite percentage of all sample layers. These samples were quantified using a calibrated visual estimate. Bulk sample(s) submitted were analyzed in accordance with the procedures EPA 600/R-93/116. Method for the Determination of Asbestos in Bulk Building Materials, EPA - 40 CFR Appendix E to Subpart E of Part 763, Interim Method of the Determination of Asbestos in Bulk Insulation Samples.

ENCORP ENVIRONMENTAL MANAGEMENT AND SERVICES 16700 VALLEY VIEW AVE. STE. 100 LA MIRADA, CALIFORNIA 90638
 714) 523-9811 · FAX (714) 523-9810 · MAIN@ENCORP.NET · WWW.ENCORP.NET

Client Name: FULLERTON JOINT UNION HIGH SCHOOL DISTRICT Reference Batch Number: 064879 Project Number: P25516 . F31
 Client Address: 1051 W. Bastanchury Road Sampled Date: 11/5/2025 Date Received: 11/7/2025
Fullerton, California 92833 Analyzed By: ANGEL JIMENEZ Date Analyzed: 12/8/2025
 Facility Name: Sonora HS Science Classroom
 Facility Address: 401 S. Palm Street
La Habra, CA 90631

LABORATORY TEST REPORT FOR BULK ASBESTOS FIBER ANALYSIS (PLM)

Sample Number	Field/ Client Number	SAMPLE DESCRIPTION			Friable or Non-	CVE Asbestos	Non Asbestos (%)
		Sample Location/Activity	Color	Material			
834820	009	SCIENCE 421-428 - EXT	TAN	(CEMENTITIOUS) CONCRETE	NF	NONE DETECTED	100% MATRIX
834821	010	SCIENCE 421-428 - EXT	TAN	(CEMENTITIOUS) CONCRETE	NF	NONE DETECTED	100% MATRIX
834822	011	SCIENCE 421-428 - EXT	TAN	(CEMENTITIOUS) CONCRETE	NF	NONE DETECTED	100% MATRIX
834823A	012A	SCIENCE 421-428 - INT	BLACK	(HOMOGENEOUS) 4" BLACK COVE BASE	NF	NONE DETECTED	100% MATRIX
834823B	012B	SCIENCE 421-428 - INT	WHITE	(HOMOGENEOUS) GLUE	NF	NONE DETECTED	100% MATRIX
834824A	013A	SCIENCE 421-428 - INT	BLACK	(HOMOGENEOUS) 4" BLACK COVE BASE	NF	NONE DETECTED	100% MATRIX
834824B	013B	SCIENCE 421-428 - INT	WHITE	(HOMOGENEOUS) GLUE	NF	NONE DETECTED	100% MATRIX
834825A	014A	SCIENCE 421-428 - INT	BLACK	(HOMOGENEOUS) 4" BLACK COVE BASE	NF	NONE DETECTED	100% MATRIX

-NOTES: ND=None Detected Asbestos is not quantifiable below the method detection limit of one (1) percent. Amphibole asbestos includes amosite, crocidolite, anthophyllite, tremolite and actinolite. (FR) = Friable, (NF) = Non-Friable. Condition of sample is as received by the laboratory. Our policy is to retain all samples for a period of thirty days. Accredited by the National Voluntary Laboratory Accreditation Program and Environmental Laboratory Certification for the specific scope of accreditation under NVLAP Lab Code 200878-0. This report applies only to the items as received. Results are representative of the samples submitted and may not represent the entire materials from which the samples were collected. This report is submitted for the exclusive use of the client to whom it is addressed. Any reproduction of this report or use of this Laboratory's name for advertising or publicity purposes without prior written authorization is prohibited. In addition, this report is not to be used to claim product endorsement by NVLAP, or any agency of the U.S. Government. Where applicable, layers or "sub-samples" are reported and the Total Asbestos % represents the composite percentage of all sample layers. These samples were quantified using a calibrated visual estimate. Bulk sample(s) submitted were analyzed in accordance with the procedures EPA 600/R-93/116: Method for the Determination of Asbestos in Bulk Building Materials, EPA - 40 CFR Appendix E to Subpart E of Part 763, Interim Method of the Determination of Asbestos in Bulk Insulation Samples.

ENCORP ENVIRONMENTAL MANAGEMENT AND SERVICES

16700 VALLEY VIEW AVE. STE. 100 LA MIRADA, CALIFORNIA 90638
 714) 523-9811 · FAX (714) 523-9810 · MAIN@ENCORP.NET · WWW.ENCORP.NET

Client Name: FULLERTON JOINT UNION HIGH SCHOOL DISTRICT Reference Batch Number: 064879 Project Number: P25516 . F31
 Client Address: 1051 W. Bastanchury Road Sampled Date: 11/5/2025 Date Received: 11/7/2025
Fullerton, California 92833 Analyzed By: ANGEL JIMENEZ Date Analyzed: 12/8/2025
 Facility Name: Sonora HS Science Classroom
 Facility Address: 401 S. Palm Street
La Habra, CA 90631

LABORATORY TEST REPORT FOR BULK ASBESTOS FIBER ANALYSIS (PLM)

Sample Number	Field/ Client Number	SAMPLE DESCRIPTION			Friable or Non-	CVE Asbestos	Non Asbestos (%)
		Sample Location/Activity	Color	Material			
834825B	014B	SCIENCE 421-428 - INT	WHITE	(HOMOGENEOUS) GLUE	NF	NONE DETECTED	100% MATRIX
834826	015	SCIENCE 421-428 - INT	WHITE	(HOMOGENEOUS) CARPET GLUE	NF	NONE DETECTED	100% MATRIX
834827	016	SCIENCE 421-428 - INT	WHITE	(HOMOGENEOUS) CARPET GLUE	NF	NONE DETECTED	100% MATRIX
834828	017	SCIENCE 421-428 - INT	WHITE	(HOMOGENEOUS) CARPET GLUE	NF	NONE DETECTED	100% MATRIX
834829	018	SCIENCE 421-428 - INT	YELLOW/BLACK	(HETEROGENEOUS) CARPET GLUE/MASTIC	NF	NONE DETECTED	100% MATRIX
834830	019	SCIENCE 421-428 - INT	YELLOW/BLACK	(HETEROGENEOUS) CARPET GLUE/MASTIC	NF	NONE DETECTED	100% MATRIX
834831	020	SCIENCE 421-428 - INT	YELLOW/BLACK	(HETEROGENEOUS) CARPET GLUE/MASTIC	NF	NONE DETECTED	100% MATRIX
834832	021	SCIENCE 421-428 - INT	BEIGE	(FIBROUS) FUME HOOD PANELING	NF	NONE DETECTED	40% CELLULOSE 60% MATRIX

-NOTES: ND=None Detected Asbestos is not quantifiable below the method detection limit of one (1) percent. Amphibole asbestos includes amosite, crocidolite, anthophyllite, tremolite and actinolite. (FR) = Friable, (NF) = Non-Friable. Condition of sample is as received by the laboratory. Our policy is to retain all samples for a period of thirty days. Accredited by the National Voluntary Laboratory Accreditation Program and Environmental Laboratory Certification for the specific scope of accreditation under NVLAP Lab Code 200878-0. This report applies only to the items as received. Results are representative of the samples submitted and may not represent the entire materials from which the samples were collected. This report is submitted for the exclusive use of the client to whom it is addressed. Any reproduction of this report or use of this Laboratory's name for advertising or publicity purposes without prior written authorization is prohibited. In addition, this report is not to be used to claim product endorsement by NVLAP, or any agency of the U.S. Government. Where applicable, layers or "sub-samples" are reported and the Total Asbestos % represents the composite percentage of all sample layers. These samples were quantified using a calibrated visual estimate. Bulk sample(s) submitted were analyzed in accordance with the procedures EPA 600/R-93/116: Method for the Determination of Asbestos in Bulk Building Materials, EPA - 40 CFR Appendix E to Subpart E of Part 763, Interim Method of the Determination of Asbestos in Bulk Insulation Samples.

ENCORP ENVIRONMENTAL MANAGEMENT AND SERVICES

16700 VALLEY VIEW AVE. STE. 100 LA MIRADA, CALIFORNIA 90638
 714) 523-9811 · FAX (714) 523-9810 · MAIN@ENCORP.NET · WWW.ENCORP.NET

Client Name: FULLERTON JOINT UNION HIGH SCHOOL DISTRICT

Client Address: 1051 W. Bastanchury Road

Fullerton, California 92833

Facility Name: Sonora HS Science Classroom

Facility Address: 401 S. Palm Street

La Habra, CA 90631

Reference Batch Number: 064879

Sampled Date: 11/5/2025

Sampled By: ANGEL JIMENEZ

Analyzed By: KRISTINA MARTINEZ

Project Number: P25516 . F31

Date Received: 11/7/2025

Date Analyzed: 12/8/2025

LABORATORY TEST REPORT FOR BULK ASBESTOS FIBER ANALYSIS (PLM)

Sample Number	Field/ Client Number	SAMPLE DESCRIPTION			Friable or Non-	CVE Asbestos	Non Asbestos (%)
		Sample Location/Activity	Color	Material			
834833	022	SCIENCE 421-428 - INT	BEIGE	(FIBROUS) FUME HOOD PANELING	NF	NONE DETECTED	40% CELLULOSE 60% MATRIX
834834	023	SCIENCE 421-428 - INT	BEIGE	(FIBROUS) FUME HOOD PANELING	NF	NONE DETECTED	40% CELLULOSE 60% MATRIX
834835A	024A	SCIENCE 421-428 - INT	BLUE	(HOMOGENEOUS) 12X12 BLUE VFT	NF	NONE DETECTED	100% MATRIX
834835B	024B	SCIENCE 421-428 - INT	BLACK	(HOMOGENEOUS) MASTIC	NF	NONE DETECTED	100% MATRIX
834836A	025A	SCIENCE 421-428 - INT	BLUE	(HOMOGENEOUS) 12X12 BLUE VFT	NF	NONE DETECTED	100% MATRIX
834836B	025B	SCIENCE 421-428 - INT	BLACK	(HOMOGENEOUS) MASTIC	NF	NONE DETECTED	100% MATRIX
834837A	026A	SCIENCE 421-428 - INT	BLUE	(HOMOGENEOUS) 12X12 BLUE VFT	NF	NONE DETECTED	100% MATRIX
834837B	026B	SCIENCE 421-428 - INT	BLACK	(HOMOGENEOUS) MASTIC	NF	NONE DETECTED	100% MATRIX

-NOTES: ND=None Detected Asbestos is not quantifiable below the method detection limit of one (1) percent. Amphibole asbestos includes amosite, crocidolite, anthophyllite, tremolite and actinolite. (FR) = Friable, (NF) = Non-Friable. Condition of sample is as received by the laboratory. Our policy is to retain all samples for a period of thirty days. Accredited by the National Voluntary Laboratory Accreditation Program and Environmental Laboratory Certification for the specific scope of accreditation under NVLAP Lab Code 200878-0. This report applies only to the items as received. Results are representative of the samples submitted and may not represent the entire materials from which the samples were collected. This report is submitted for the exclusive use of the client to whom it is addressed. Any reproduction of this report or use of this Laboratory's name for advertising or publicity purposes without prior written authorization is prohibited. In addition, this report is not to be used to claim product endorsement by NVLAP, or any agency of the U.S. Government. Where applicable, layers or "sub-samples" are reported and the Total Asbestos % represents the composite percentage of all sample layers. These samples were quantified using a calibrated visual estimate. Bulk sample(s) submitted were analyzed in accordance with the procedures EPA 600/R-93/116: Method for the Determination of Asbestos in Bulk Building Materials, EPA - 40 CFR Appendix E to Subpart E of Part 763, Interim Method of the Determination of Asbestos in Bulk Insulation Samples.

ENCORP ENVIRONMENTAL MANAGEMENT AND SERVICES 16700 VALLEY VIEW AVE. STE. 100 LA MIRADA, CALIFORNIA 90638
 714) 523-9811 · FAX (714) 523-9810 · MAIN@ENCORP.NET · WWW.ENCORP.NET

Client Name: FULLERTON JOINT UNION HIGH SCHOOL DISTRICT

Client Address: 1051 W. Bastanchury Road

Fullerton, California 92833

Facility Name: Sonora HS Science Classroom

Facility Address: 401 S. Palm Street

La Habra, CA 90631

Reference Batch Number: 064879

Sampled Date: 11/5/2025

Sampled By: ANGEL JIMENEZ

Analyzed By: KRISTINA MARTINEZ

Project Number: P25516 . F31

Date Received: 11/7/2025

Date Analyzed: 12/8/2025

LABORATORY TEST REPORT FOR BULK ASBESTOS FIBER ANALYSIS (PLM)

Sample Number	Field/ Client Number	SAMPLE DESCRIPTION			Friable or Non-	CVE Asbestos	Non Asbestos (%)
		Sample Location/Activity	Color	Material			
834838	027	SCIENCE 421-428 - INT	BLACK	(FIBROUS) BLACK COUNTERTOP MATERIAL	NF	NONE DETECTED	40% CELLULOSE 60% MATRIX
834839	028	SCIENCE 421-428 - INT	BLACK	(FIBROUS) BLACK COUNTERTOP MATERIAL	NF	NONE DETECTED	40% CELLULOSE 60% MATRIX
834840	029	SCIENCE 421-428 - INT	BLACK	(FIBROUS) BLACK COUNTERTOP MATERIAL	NF	NONE DETECTED	40% CELLULOSE 60% MATRIX
834841A	030A	SCIENCE 421-428 - INT	BLUE	(HOMOGENEOUS) 12X12 BLUE VFT	NF	NONE DETECTED	100% MATRIX
834841B	030B	SCIENCE 421-428 - INT	BLACK	(HOMOGENEOUS) MASTIC	NF	NONE DETECTED	100% MATRIX
834841C	030C	SCIENCE 421-428 - INT	WHITE	(HOMOGENEOUS) TILE	NF	NONE DETECTED	100% MATRIX
834841D	030D	SCIENCE 421-428 - INT	BLACK	(HOMOGENEOUS) MASTIC	NF	NONE DETECTED	100% MATRIX
834842A	031A	SCIENCE 421-428 - INT	BLUE	(HOMOGENEOUS) 12X12 BLUE VFT	NF	NONE DETECTED	100% MATRIX

-NOTES: ND=None Detected Asbestos is not quantifiable below the method detection limit of one (1) percent. Amphibole asbestos includes amosite, crocidolite, anthophyllite, tremolite and actinolite. (FR) = Friable, (NF) = Non-Friable. Condition of sample is as received by the laboratory. Our policy is to retain all samples for a period of thirty days. Accredited by the National Voluntary Laboratory Accreditation Program and Environmental Laboratory Certification for the specific scope of accreditation under NVLAP Lab Code 200878-0. This report applies only to the items as received. Results are representative of the samples submitted and may not represent the entire materials from which the samples were collected. This report is submitted for the exclusive use of the client to whom it is addressed. Any reproduction of this report or use of this Laboratory's name for advertising or publicity purposes without prior written authorization is prohibited. In addition, this report is not to be used to claim product endorsement by NVLAP, or any agency of the U.S. Government. Where applicable, layers or "sub-samples" are reported and the Total Asbestos % represents the composite percentage of all sample layers. These samples were quantified using a calibrated visual estimate. Bulk sample(s) submitted were analyzed in accordance with the procedures EPA 600/R-93/116: Method for the Determination of Asbestos in Bulk Building Materials, EPA - 40 CFR Appendix E to Subpart E of Part 763, Interim Method of the Determination of Asbestos in Bulk Insulation Samples.

ENCORP ENVIRONMENTAL MANAGEMENT AND SERVICES 16700 VALLEY VIEW AVE. STE. 100 LA MIRADA, CALIFORNIA 90638
 714) 523-9811 · FAX (714) 523-9810 · MAIN@ENCORP.NET · WWW.ENCORP.NET

Client Name: FULLERTON JOINT UNION HIGH SCHOOL DISTRICT
 Client Address: 1051 W. Bastanchury Road
Fullerton, California 92833
 Facility Name: Sonora HS Science Classroom
 Facility Address: 401 S. Palm Street
La Habra, CA 90631

Reference Batch Number: 064879
 Sampled Date: 11/5/2025
 Sampled By: ANGEL JIMENEZ
 Analyzed By: KRISTINA MARTINEZ

Project Number: P25516 . F31
 Date Received: 11/7/2025
 Date Analyzed: 12/8/2025

LABORATORY TEST REPORT FOR BULK ASBESTOS FIBER ANALYSIS (PLM)

Sample Number	Field/ Client Number	SAMPLE DESCRIPTION			Friable or Non-	CVE Asbestos	Non Asbestos (%)
		Sample Location/Activity	Color	Material			
834842B	031B	SCIENCE 421-428 - INT	BLACK	(HOMOGENEOUS) MASTIC	NF	NONE DETECTED	100% MATRIX
834842C	031C	SCIENCE 421-428 - INT	WHITE	(HOMOGENEOUS) TILE	NF	NONE DETECTED	100% MATRIX
834842D	031D	SCIENCE 421-428 - INT	BLACK	(HOMOGENEOUS) MASTIC	NF	NONE DETECTED	100% MATRIX
834843A	032A	SCIENCE 421-428 - INT	BLUE	(HOMOGENEOUS) 12X12 BLUE VFT	NF	NONE DETECTED	100% MATRIX
834843B	032B	SCIENCE 421-428 - INT	BLACK	(HOMOGENEOUS) MASTIC	NF	NONE DETECTED	100% MATRIX
834843C	032C	SCIENCE 421-428 - INT	WHITE	(HOMOGENEOUS) TILE	NF	NONE DETECTED	100% MATRIX
834843D	032D	SCIENCE 421-428 - INT	BLACK	(HOMOGENEOUS) MASTIC	NF	NONE DETECTED	100% MATRIX
834844	033	SCIENCE 421-428 - INT	GRAY	(FIBROUS) GRAY COUNTERTOP MATERIAL	NF	10% CHRYSOTILE	90% MATRIX

-NOTES: ND=None Detected Asbestos is not quantifiable below the method detection limit of one (1) percent. Amphibole asbestos includes amosite, crocidolite, anthophyllite, tremolite and actinolite. (FR) = Friable, (NF) = Non-Friable. Condition of sample is as received by the laboratory. Our policy is to retain all samples for a period of thirty days. Accredited by the National Voluntary Laboratory Accreditation Program and Environmental Laboratory Certification for the specific scope of accreditation under NVLAP Lab Code 200878-0. This report applies only to the items as received. Results are representative of the samples submitted and may not represent the entire materials from which the samples were collected. This report is submitted for the exclusive use of the client to whom it is addressed. Any reproduction of this report or use of this Laboratory's name for advertising or publicity purposes without prior written authorization is prohibited. In addition, this report is not to be used to claim product endorsement by NVLAP, or any agency of the U.S. Government. Where applicable, layers or "sub-samples" are reported and the Total Asbestos % represents the composite percentage of all sample layers. These samples were quantified using a calibrated visual estimate. Bulk sample(s) submitted were analyzed in accordance with the procedures EPA 600/R-93/116: Method for the Determination of Asbestos in Bulk Building Materials, EPA - 40 CFR Appendix E to Subpart E of Part 763, Interim Method of the Determination of Asbestos in Bulk Insulation Samples.

ENCORP ENVIRONMENTAL MANAGEMENT AND SERVICES 16700 VALLEY VIEW AVE. STE. 100 LA MIRADA, CALIFORNIA 90638
 714) 523-9811 · FAX (714) 523-9810 · MAIN@ENCORP.NET · WWW.ENCORP.NET

Client Name: FULLERTON JOINT UNION HIGH SCHOOL DISTRICT Reference Batch Number: 064879 Project Number: P25516 . F31
 Client Address: 1051 W. Bastanchury Road Sampled Date: 11/5/2025 Date Received: 11/7/2025
Fullerton, California 92833 Sampled By: ANGEL JIMENEZ Date Analyzed: 12/9/2025
 Facility Name: Sonora HS Science Classroom Analyzed By: KRISTINA MARTINEZ
 Facility Address: 401 S. Palm Street
La Habra, CA 90631

LABORATORY TEST REPORT FOR BULK ASBESTOS FIBER ANALYSIS (PLM)

Sample Number	Field/ Client Number	SAMPLE DESCRIPTION			Friable or Non-	CVE Asbestos	Non Asbestos (%)
		Sample Location/Activity	Color	Material			
834845	034	SCIENCE 421-428 - INT	GRAY	(FIBROUS) GRAY COUNTERTOP MATERIAL	NF	POSITIVE STOP	
834846	035	SCIENCE 421-428 - INT	GRAY	(FIBROUS) GRAY COUNTERTOP MATERIAL	NF	POSITIVE STOP	
834847A	036A	SCIENCE 421-428 - INT	OFF WHITE	(HOMOGENEOUS) SKIM COAT	NF	NONE DETECTED	100% MATRIX
834847B	036B	SCIENCE 421-428 - INT	GRAY	(HOMOGENEOUS) PLASTER	NF	NONE DETECTED	100% MATRIX
834848A	037A	SCIENCE 421-428 - INT	OFF WHITE	(HOMOGENEOUS) SKIM COAT	NF	NONE DETECTED	100% MATRIX
834848B	037B	SCIENCE 421-428 - INT	GRAY	(HOMOGENEOUS) PLASTER	NF	NONE DETECTED	100% MATRIX
834849A	038A	SCIENCE 421-428 - INT	OFF WHITE	(HOMOGENEOUS) SKIM COAT	NF	NONE DETECTED	100% MATRIX
834849B	038B	SCIENCE 421-428 - INT	GRAY	(HOMOGENEOUS) PLASTER	NF	NONE DETECTED	100% MATRIX

-NOTES: ND=None Detected Asbestos is not quantifiable below the method detection limit of one (1) percent. Amphibole asbestos includes amosite, crocidolite, anthophyllite, tremolite and actinolite. (FR) = Friable, (NF) = Non-Friable. Condition of sample is as received by the laboratory. Our policy is to retain all samples for a period of thirty days. Accredited by the National Voluntary Laboratory Accreditation Program and Environmental Laboratory Certification for the specific scope of accreditation under NVLAP Lab Code 200878-0. This report applies only to the items as received. Results are representative of the samples submitted and may not represent the entire materials from which the samples were collected. This report is submitted for the exclusive use of the client to whom it is addressed. Any reproduction of this report or use of this Laboratory's name for advertising or publicity purposes without prior written authorization is prohibited. In addition, this report is not to be used to claim product endorsement by NVLAP, or any agency of the U.S. Government. Where applicable, layers or "sub-samples" are reported and the Total Asbestos % represents the composite percentage of all sample layers. These samples were quantified using a calibrated visual estimate. Bulk sample(s) submitted were analyzed in accordance with the procedures EPA 600/R-93/116: Method for the Determination of Asbestos in Bulk Building Materials, EPA - 40 CFR Appendix E to Subpart E of Part 763, Interim Method of the Determination of Asbestos in Bulk Insulation Samples.

LABORATORY TEST REPORT FOR BULK ASBESTOS FIBER ANALYSIS (PLM)

Sample Number	Field/ Client Number	SAMPLE DESCRIPTION			Friable or Non-	CVE Asbestos	Non Asbestos (%)
		Sample Location/Activity	Color	Material			
834850A	039A	SCIENCE 421-428 - INT	OFF WHITE	(HOMOGENEOUS) SKIM COAT	NF	NONE DETECTED	100% MATRIX
834850B	039B	SCIENCE 421-428 - INT	GRAY	(HOMOGENEOUS) PLASTER	NF	NONE DETECTED	100% MATRIX
834851A	040A	SCIENCE 421-428 - INT	OFF WHITE	(HOMOGENEOUS) SKIM COAT	NF	NONE DETECTED	100% MATRIX
834851B	040B	SCIENCE 421-428 - INT	GRAY	(HOMOGENEOUS) PLASTER	NF	NONE DETECTED	100% MATRIX
834852A	041A	SCIENCE 421-428 - INT	WHITE	(HOMOGENEOUS) DRYWALL	FR	NONE DETECTED	2% CELLULOSE 2% FIBROUS GLASS 96%
834852B	041B	SCIENCE 421-428 - INT	OFF WHITE	(HOMOGENEOUS) JOINT COMPOUND	FR	NONE DETECTED	100% MATRIX
834853A	042A	SCIENCE 421-428 - INT	WHITE	(HOMOGENEOUS) DRYWALL	FR	NONE DETECTED	2% CELLULOSE 2% FIBROUS GLASS 96%
834853B	042B	SCIENCE 421-428 - INT	OFF WHITE	(HOMOGENEOUS) JOINT COMPOUND	FR	NONE DETECTED	100% MATRIX

-NOTES: ND=None Detected Asbestos is not quantifiable below the method detection limit of one (1) percent. Amphibole asbestos includes amosite, crocidolite, anthophyllite, tremolite and actinolite. (FR) = Friable, (NF) = Non-Friable. Condition of sample is as received by the laboratory. Our policy is to retain all samples for a period of thirty days. Accredited by the National Voluntary Laboratory Accreditation Program and Environmental Laboratory Certification for the specific scope of accreditation under NVLAP Lab Code 200878-0. This report applies only to the items as received. Results are representative of the samples submitted and may not represent the entire materials from which the samples were collected. This report is submitted for the exclusive use of the client to whom it is addressed. Any reproduction of this report or use of this Laboratory's name for advertising or publicity purposes without prior written authorization is prohibited. In addition, this report is not to be used to claim product endorsement by NVLAP, or any agency of the U.S. Government. Where applicable, layers or "sub-samples" are reported and the Total Asbestos % represents the composite percentage of all sample layers. These samples were quantified using a calibrated visual estimate. Bulk sample(s) submitted were analyzed in accordance with the procedures EPA 600/R-93/116: Method for the Determination of Asbestos in Bulk Building Materials, EPA - 40 CFR Appendix E to Subpart E of Part 763, Interim Method of the Determination of Asbestos in Bulk Insulation Samples.

ENCORP ENVIRONMENTAL MANAGEMENT AND SERVICES 16700 VALLEY VIEW AVE. STE. 100 LA MIRADA, CALIFORNIA 90638
 714) 523-9811 · FAX (714) 523-9810 · MAIN@ENCORP.NET · WWW.ENCORP.NET

Client Name: FULLERTON JOINT UNION HIGH SCHOOL DISTRICT Reference Batch Number: 064879 Project Number: P25516 · F31
 Client Address: 1051 W. Bastanchury Road Sampled Date: 11/5/2025 Date Received: 11/7/2025
Fullerton, California 92833 Sampled By: ANGEL JIMENEZ Date Analyzed: 12/9/2025
 Facility Name: Sonora HS Science Classroom Analyzed By: KRISTINA MARTINEZ
 Facility Address: 401 S. Palm Street
La Habra, CA 90631

LABORATORY TEST REPORT FOR BULK ASBESTOS FIBER ANALYSIS (PLM)

Sample Number	Field/ Client Number	SAMPLE DESCRIPTION			Friable or Non-	CVE Asbestos	Non Asbestos (%)
		Sample Location/Activity	Color	Material			
834854A	043A	SCIENCE 421-428 - INT	WHITE	(HOMOGENEOUS) DRYWALL	FR	NONE DETECTED	2% CELLULOSE 2% FIBROUS GLASS 96%
834854B	043B	SCIENCE 421-428 - INT	OFF WHITE	(HOMOGENEOUS) JOINT COMPOUND	FR	NONE DETECTED	100% MATRIX
834855A	044A	SCIENCE 421-428 - INT	BROWN	(HOMOGENEOUS) BRICK	NF	NONE DETECTED	100% MATRIX
834855B	044B	SCIENCE 421-428 - INT	GRAY	(HOMOGENEOUS) MORTAR	NF	NONE DETECTED	100% MATRIX
834856A	045A	SCIENCE 421-428 - INT	BROWN	(HOMOGENEOUS) BRICK	NF	NONE DETECTED	100% MATRIX
834856B	045B	SCIENCE 421-428 - INT	GRAY	(HOMOGENEOUS) MORTAR	NF	NONE DETECTED	100% MATRIX
834857A	046A	SCIENCE 421-428 - INT	BROWN	(HOMOGENEOUS) BRICK	NF	NONE DETECTED	100% MATRIX
834857B	046B	SCIENCE 421-428 - INT	GRAY	(HOMOGENEOUS) MORTAR	NF	NONE DETECTED	100% MATRIX

-NOTES: ND=None Detected Asbestos is not quantifiable below the method detection limit of one (1) percent. Amphibole asbestos includes amosite, crocidolite, anthophyllite, tremolite and actinolite. (FR) = Friable, (NF) = Non-Friable. Condition of sample is as received by the laboratory. Our policy is to retain all samples for a period of thirty days. Accredited by the National Voluntary Laboratory Accreditation Program and Environmental Laboratory Certification for the specific scope of accreditation under NVLAP Lab Code 200878-0. This report applies only to the items as received. Results are representative of the samples submitted and may not represent the entire materials from which the samples were collected. This report is submitted for the exclusive use of the client to whom it is addressed. Any reproduction of this report or use of this Laboratory's name for advertising or publicity purposes without prior written authorization is prohibited. In addition, this report is not to be used to claim product endorsement by NVLAP, or any agency of the U.S. Government. Where applicable, layers or "sub-samples" are reported and the Total Asbestos % represents the composite percentage of all sample layers. These samples were quantified using a calibrated visual estimate. Bulk sample(s) submitted were analyzed in accordance with the procedures EPA 600/R-93/116: Method for the Determination of Asbestos in Bulk Building Materials, EPA - 40 CFR, Appendix E to Subpart E of Part 763, Interim Method of the Determination of Asbestos in Bulk Insulation Samples.

ENCORP ENVIRONMENTAL MANAGEMENT AND SERVICES 16700 VALLEY VIEW AVE. STE. 100 LA MIRADA, CALIFORNIA 90638
 714) 523-9811 · FAX (714) 523-9810 · MAIN@ENCORP.NET · WWW.ENCORP.NET

Client Name: FULLERTON JOINT UNION HIGH SCHOOL DISTRICT

Client Address: 1051 W. Bastanchury Road

Fullerton, California 92833

Facility Name: Sonora HS Science Classroom

Facility Address: 401 S. Palm Street

La Habra, CA 90631

Reference Batch Number: 064879

Sampled Date: 11/5/2025

Sampled By: ANGEL JIMENEZ

Analyzed By: KRISTINA MARTINEZ

Project Number: P25516 F31

Date Received: 11/7/2025

Date Analyzed: 12/9/2025

LABORATORY TEST REPORT FOR BULK ASBESTOS FIBER ANALYSIS (PLM)

Sample Number	Field/Client Number	SAMPLE DESCRIPTION			Friable or Non-	CVE Asbestos	Non Asbestos (%)
		Sample Location/Activity	Color	Material			
834858	047	SCIENCE 421-428 - INT	BROWN/OFF WHITE/BLACK	(FIBROUS) PARTITION CURTAIN	NF	NONE DETECTED	70% CELLULOSE 20% SYNTHETIC FIBER 10% MATRIX
834859	048	SCIENCE 421-428 - INT	BROWN/OFF WHITE/BLACK	(FIBROUS) PARTITION CURTAIN	NF	NONE DETECTED	70% CELLULOSE 20% SYNTHETIC FIBER 10% MATRIX
834860	049	SCIENCE 421-428 - INT	BROWN/OFF WHITE/BLACK	(FIBROUS) PARTITION CURTAIN	NF	NONE DETECTED	70% CELLULOSE 20% SYNTHETIC FIBER 10% MATRIX
834861	050	SCIENCE 421-428 - INT	WHITE/BEIGE	(FIBROUS) 2'X4' FISSURED CEILING PANEL	FR	NONE DETECTED	50% CELLULOSE 15% FIBROUS GLASS 35% MATRIX
834862	051	SCIENCE 421-428 - INT	WHITE/BEIGE	(FIBROUS) 2'X4' FISSURED CEILING PANEL	FR	NONE DETECTED	50% CELLULOSE 15% FIBROUS GLASS 35% MATRIX
834863	052	SCIENCE 421-428 - INT	WHITE/BEIGE	(FIBROUS) 2'X4' FISSURED CEILING PANEL	FR	NONE DETECTED	50% CELLULOSE 15% FIBROUS GLASS 35% MATRIX
834864A	053A	SCIENCE 421-428 - INT	BROWN/WHITE	(FIBROUS) GYPSUM	FR	NONE DETECTED	10% CELLULOSE 2% FIBROUS GLASS 88% MATRIX
834864B	053B	SCIENCE 421-428 - INT	WHITE	(HOMOGENEOUS) JOINT COMPOUND	FR	2% CHRYSOTILE	98% MATRIX

-NOTES: ND=None Detected Asbestos is not quantifiable below the method detection limit of one (1) percent. Amphibole asbestos includes amosite, crocidolite, anthophyllite, tremolite and actinolite. (FR) = Friable, (NF) = Non-Friable. Condition of sample is as received by the laboratory. Our policy is to retain all samples for a period of thirty days. Accredited by the National Voluntary Laboratory Accreditation Program and Environmental Laboratory Certification for the specific scope of accreditation under NVLAP Lab Code 200878-0. This report applies only to the items as received. Results are representative of the samples submitted and may not represent the entire materials from which the samples were collected. This report is submitted for the exclusive use of the client to whom it is addressed. Any reproduction of this report or use of this Laboratory's name for advertising or publicity purposes without prior written authorization is prohibited. In addition, this report is not to be used to claim product endorsement by NVLAP, or any agency of the U.S. Government. Where applicable, layers or "sub-samples" are reported and the Total Asbestos % represents the composite percentage of all sample layers. These samples were quantified using a calibrated visual estimate. Bulk sample(s) submitted were analyzed in accordance with the procedures EPA 600/R-93/116; Method for the Determination of Asbestos in Bulk Building Materials, EPA - 40 CFR Appendix E to Subpart E of Part 763, Interim Method of the Determination of Asbestos in Bulk Insulation Samples.

ENCORP ENVIRONMENTAL MANAGEMENT AND SERVICES

16700 VALLEY VIEW AVE. STE. 100 LA MIRADA, CALIFORNIA 90638
714) 523-9811 · FAX (714) 523-9810 · MAIN@ENCORP.NET · WWW.ENCORP.NET

Client Name: FULLERTON JOINT UNION HIGH SCHOOL DISTRICT

Client Address: 1051 W. Bastanchury Road

Fullerton, California 92833

Facility Name: Sonora HS Science Classroom

Facility Address: 401 S. Palm Street

La Habra, CA 90631

Reference Batch Number: 064879

Sampled Date: 11/5/2025

Sampled By: ANGEL JIMENEZ

Analyzed By: KRISTINA MARTINEZ

Project Number: P25516 . F31

Date Received: 11/7/2025

Date Analyzed: 12/9/2025

LABORATORY TEST REPORT FOR BULK ASBESTOS FIBER ANALYSIS (PLM)

Sample Number	Field/ Client Number	SAMPLE DESCRIPTION			Friable or Non-	CVE Asbestos	Non Asbestos (%)
		Sample Location/Activity	Color	Material			
834865A	054A	SCIENCE 421-428 - INT	BROWN/WHITE	(FIBROUS) GYPSUM	FR	NONE DETECTED	10% CELLULOSE 2% FIBROUS GLASS 88% MATRIX
834865B	054B	SCIENCE 421-428 - INT	WHITE	(HOMOGENEOUS) JOINT COMPOUND	FR	POSITIVE STOP	
834866A	055A	SCIENCE 421-428 - INT	BROWN/WHITE	(FIBROUS) GYPSUM	FR	NONE DETECTED	10% CELLULOSE 2% FIBROUS GLASS 88% MATRIX
834866B	055B	SCIENCE 421-428 - INT	WHITE	(HOMOGENEOUS) JOINT COMPOUND	FR	POSITIVE STOP	
834867	056	SCIENCE 421-428 - INT	TAN	(FIBROUS) CEILING SPACE INSULATION	FR	NONE DETECTED	90% FIBROUS GLASS 10% MATRIX
834868	057	SCIENCE 421-428 - INT	TAN	(FIBROUS) CEILING SPACE INSULATION	FR	NONE DETECTED	90% FIBROUS GLASS 10% MATRIX
834869	058	SCIENCE 421-428 - INT	TAN	(FIBROUS) CEILING SPACE INSULATION	FR	NONE DETECTED	90% FIBROUS GLASS 10% MATRIX
834870	059	SCIENCE 421-428 - INT	SILVER/BROWN/YELLOW	(FIBROUS) HVAC INSULATION	FR	NONE DETECTED	25% CELLULOSE 60% FIBROUS GLASS 15% MATRIX

-NOTES: ND=Not Detected Asbestos is not quantifiable below the method detection limit of one (1) percent. Amphibole asbestos includes amosite, crocidolite, anthophyllite, tremolite and actinolite. (FR) = Friable, (NF) = Non-Friable. Condition of sample is as received by the laboratory. Our policy is to retain all samples for a period of thirty days. Accredited by the National Voluntary Laboratory Accreditation Program and Environmental Laboratory Certification for the specific scope of accreditation under NVLAP Lab Code 200878-0. This report applies only to the items as received. Results are representative of the samples submitted and may not represent the entire materials from which the samples were collected. This report is submitted for the exclusive use of the client to whom it is addressed. Any reproduction of this report or use of this Laboratory's name for advertising or publicity purposes without prior written authorization is prohibited. In addition, this report is not to be used to claim product endorsement by NVLAP, or any agency of the U.S. Government. Where applicable, layers or "sub-samples" are reported and the Total Asbestos % represents the composite percentage of all sample layers. These samples were quantified using a calibrated visual estimate. Bulk sample(s) submitted were analyzed in accordance with the procedures EPA 600/R-93/116: Method for the Determination of Asbestos in Bulk Building Materials, EPA - 40 CFR Appendix E to Subpart E of Part 763, Interim Method of the Determination of Asbestos in Bulk Insulation Samples.

ENCORP ENVIRONMENTAL MANAGEMENT AND SERVICES 16700 VALLEY VIEW AVE. STE. 100 LA MIRADA, CALIFORNIA 90638
 714) 523-9811 · FAX (714) 523-9810 · MAIN@ENCORP.NET · WWW.ENCORP.NET

Client Name: FULLERTON JOINT UNION HIGH SCHOOL DISTRICT

Client Address: 1051 W. Bastanchury Road

Fullerton, California 92833

Facility Name: Sonora HS Science Classroom

Facility Address: 401 S. Palm Street

La Habra, CA 90631

Reference Batch Number: 064879

Sampled Date: 11/5/2025

Sampled By: ANGEL JIMENEZ

Analyzed By: KRISTINA MARTINEZ

Project Number: P25516 · F31

Date Received: 11/7/2025

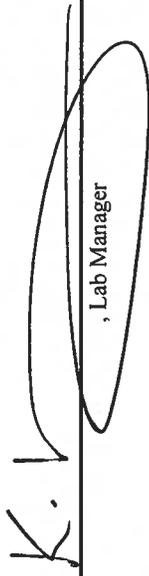
Date Analyzed: 12/9/2025

LABORATORY TEST REPORT FOR BULK ASBESTOS FIBER ANALYSIS (PLM)

Sample Number	Field/ Client Number	SAMPLE DESCRIPTION			Friable or Non-	CVE Asbestos	Non Asbestos (%)
		Sample Location/Activity	Color	Material			
834871	060	SCIENCE 421-428 - INT	SILVER/BROWN/YE LLOW	(FIBROUS) HVAC INSULATION	FR	NONE DETECTED	25% CELLULOSE 60% FIBROUS GLASS 15% MATRIX
834872	061	SCIENCE 421-428 - INT	SILVER/BROWN/YE LLOW	(FIBROUS) HVAC INSULATION	FR	NONE DETECTED	25% CELLULOSE 60% FIBROUS GLASS 15% MATRIX

Notes:

APPROVED SIGNATURE


 , Lab Manager

-NOTES: ND=None Detected Asbestos is not quantifiable below the method detection limit of one (1) percent. Amphibole asbestos includes amosite, crocidolite, anthophyllite, tremolite and actinolite. (FR) = Friable, (NF) = Non-Friable. Condition of sample is as received by the laboratory. Our policy is to retain all samples for a period of thirty days. Accredited by the National Voluntary Laboratory Accreditation Program and Environmental Laboratory Certification for the specific scope of accreditation under NVLAP Lab Code 200878-0. This report applies only to the items as received. Results are representative of the samples submitted and may not represent the entire materials from which the samples were collected. This report is submitted for the exclusive use of the client to whom it is addressed. Any reproduction of this report or use of this Laboratory's name for advertising or publicity purposes without prior written authorization is prohibited. In addition, this report is not to be used to claim product endorsement by NVLAP, or any agency of the U.S. Government. Where applicable, layers or "sub-samples" are reported and the Total Asbestos % represents the composite percentage of all sample layers. These samples were quantified using a calibrated visual estimate. Bulk sample(s) submitted were analyzed in accordance with the procedures EPA 600/R-93/116: Method for the Determination of Asbestos in Bulk Building Materials, EPA - 40 CFR Appendix E to Subpart E of Part 763, Interim Method of the Determination of Asbestos in Bulk Insulation Samples.

064879

CHAIN OF CUSTODY FORM

16700 Valley View Avenue, Suite 100
La Mirada, California 90638
Tel: (714) 523-9811
Fax: (714) 523-9810
www.encorp.net



Asbestos Bulk Analysis: PLM Bulk 1000 Point Count
Turn-around Time: RUSH 24 HRS 48 HRS 72 HRS Standard

CLIENT: FJWHSB DATE: 11/5/25 PAGE: 1 OF 7

JOB NO: P25516-F31 INSPECTORS: Angel Simeron

LOCATION: Sonora HS

SAMPLE NO.	LAB ID #	SAMPLE LOCATION	MATERIAL DESCRIPTION	CONDITION	QUANTITY	% ASBESTOS
1.	834812	Science 421-428 -Ext	Stucco			
2.	834813					
3.	834814					
4.	834815					
5.	834816					
6.	834817		Window Sealant			
7.	834818					
8.	834819					
9.	834820		Concrete			
10.	834821					

ABBREVIATIONS:

TYPES OF MATERIALS:
 S = Surface Material
 SI = Thermal Systems Insulation
 M = Miscellaneous Material
 Comments/Special Instructions

OTHER:
 SF = Square Feet
 LF = Linear Feet

CHAIN OF CUSTODY

Relinquished/Received By: Angel Simeron Date/Time: 11/6/25 1500

Relinquished/Received By: AS Baker Date/Time: 11.7.25 @ 5am

ENCORP Laboratory Services 16700 Valley View Avenue, Suite 100 La Mirada California 90638
 Office (714) 523-9811 Fax (714) 523-9810

064879



CHAIN OF CUSTODY FORM

16700 Valley View Avenue, Suite 100
La Mirada, California 90638
Tel: (714) 523-9811
Fax: (714) 523-9810
www.encorp.net

Asbestos Bulk Analysis: PLM Bulk 1000 Point Count
Turn-around Time: RUSH 24 HRS 48 HRS 72 HRS Standard

CLIENT: FJWHSB DATE: 11/5/25 PAGE: 2 OF 7

JOB NO: P25516.F31 INSPECTORS: Angel Simerer

LOCATION: Sonora HS

SAMPLE NO.	LAB ID #	SAMPLE LOCATION	MATERIAL DESCRIPTION	CONDITION	QUANTITY	% ASBESTOS
1.	834822					
2.	834823	- Int	4" Black Composite Gue			
3.	834824					
4.	834825					
5.	834826		Carpet Gue			
6.	834827					
7.	834828					
8.	834829		Carpet Gue/mastic			
9.	834830					
20.	834831					

ABBREVIATIONS: S = Surface Material, TSI = Thermal Systems Insulation, M = Miscellaneous Material, Comments/Special Instructions

OTHER: S.F. = Square Feet, L.F. = Linear Feet

CHAIN OF CUSTODY

Sampled by/Relinquished: Angel Simerer Date/Time: 11/6/25 1500

Relinquished/Received By: AS Baker Date/Time: 11.7.25 @ 8:00am

Relinquished/Received By: _____ Date/Time: _____

ENCORP Laboratory Services 16700 Valley View Avenue, Suite 100, La Mirada, California 90638 Office (714) 523-9811 Fax (714) 523-9810

064879

CHAIN OF CUSTODY FORM

16700 Valley View Avenue, Suite 100
La Mirada, California 90638
Tel: (714) 523-9811
Fax: (714) 523-9810
www.encorp.net



Asbestos Bulk Analysis: PLM Bulk 1000 Point Count
Turn-around Time: RUSH 24 HRS 48 HRS 72 HRS Standard

CLIENT: FJHSD DATE: 11/5/25 PAGE: 3 OF 7

JOB NO: P25516-F31 INSPECTORS: Angel Simeron

LOCATION: Sonoma HS

SAMPLE NO.	LAB ID #	SAMPLE LOCATION	MATERIAL DESCRIPTION	CONDITION	QUANTITY	% ASBESTOS
21	834832		Fume Hood Paneling			
22	834833					
23	834834					
24	834835		12x12 Blue VFT/Mastic			
25	834836					
26	834837					
27	834838		Black Countertop Material			
28	834839					
29	834840					
30	834841		12x12 Blue VFT/Mastic Tile/Mastic (covered)			

ABBREVIATIONS:

OTHER:

OTHER: S.F. = Square Feet, L.F. = Linear Feet

Types of Materials: S = Surface Material, TS1 = Thermal Systems Insulation, M = Miscellaneous Material

Comments/Special Instructions:

CHAIN OF CUSTODY

Sampled by/Relinquished: Angel Simeron Date/Time: 11/6/25 1500

Relinquished/Received By: AS Baker Date/Time: 11-7-25

Relinquished/Received By: [Signature] Date/Time: 11-7-25

ENCORP Laboratory Services - 16700 Valley View Avenue, Suite 100, La Mirada, California 90638

Office (714) 523-9811 - Fax (714) 523-9810



064879

CHAIN OF CUSTODY FORM

16700 Valley View Avenue, Suite 100
 La Mirada, California 90638
 Tel: (714) 523-9811
 Fax: (714) 523-9810
 www.encorp.net

Asbestos Bulk Analysis: PLM Bulk 1000 Point Count
 Turn-around Time: RUSH 24 HRS 48 HRS 72 HRS Standard

CLIENT: FJWHSB DATE: 11/5/25 PAGE: 4 OF 7

JOB NO: P25516.F31 INSPECTORS: Angel Simerer

LOCATION: Sonora HS

SAMPLE NO.	LAB ID #	SAMPLE LOCATION	MATERIAL DESCRIPTION	CONDITION	QUANTITY	% ASBESTOS
31	834842					
32	834843					
33	834844		Grey Contertop Material			
34	834845					
35	834846					
36	834847		Plaster			
37	834848					
38	834849					
39	834850					
40	834851					

ABBREVIATIONS:

OTHER:

OTHER: SF = Square Feet, LF = Linear Feet

Types of Materials: S = Surface Material, TSI = Thermal Systems Insulation, M = Miscellaneous Material, Comments/special instructions:

CHAIN OF CUSTODY

Sampled by/Relinquished: Angel Simerer Date/Time: 11/6/25 1500

Relinquished/Received By: A.S. Becker Date/Time: 11.7.25

Relinquished/Received By: [Signature] Date/Time: 8 Jan

ENCORP Laboratory Services 16700 Valley View Avenue, Suite 100, La Mirada, California 90638 Office (714) 523-9811 Fax (714) 523-9810



064879

CHAIN OF CUSTODY FORM

16700 Valley View Avenue, Suite 100
 La Mirada, California 90638
 Tel: (714) 523-9811
 Fax: (714) 523-9810
 www.encorp.net

Asbestos Bulk Analysis: PLM Bulk 1000 Point Count
 Turn-around Time: RUSH 24 HRS 48 HRS 72 HRS Standard

CLIENT: FJW/HSD DATE: 11/5/25 PAGE: 5 OF 7
 JOB NO: P255/6.F31 INSPECTORS: Angel Sinerer
 LOCATION: Sonora HS

SAMPLE NO.	LAB ID #	SAMPLE LOCATION	MATERIAL DESCRIPTION	CONDITION	QUANTITY	% ASBESTOS
4 1.	834852		drywall / JC			
4 2.	834853					
4 3.	834854					
4 4.	834855		brick/mortar			
4 5.	834856					
4 6.	834857					
4 7.	834858		partition curtain			
4 8.	834859					
4 9.	834860					
5 0.	834861		2'x4' Fissured Ceiling Panel			

ABBREVIATIONS:

OTHER:

CONDITION:

G = Good
 D = Damaged
 SD = Significantly Damaged

Types of Materials:
 S = Surface Material
 TSI = Thermal Systems Insulation
 M = Miscellaneous Material
 C = Communications/Special Instructions

Relinquished/Received By: Angel Sinerer Date/Time: 11/6/25 1500
 Relinquished/Received By: AS Baker Date/Time: 11.7.25 @ 8:00am
 Relinquished/Received By: _____ Date/Time: _____



064879 CHAIN OF CUSTODY FORM

16700 Valley View Avenue, Suite 100
 La Mirada, California 90638
 Tel: (714) 523-9811
 Fax: (714) 523-9810
 www.encorp.net

Asbestos Bulk Analysis: PLM Bulk 1000 Point Count
 Turn-around Time: RUSH 24 HRS 48 HRS 72 HRS Standard

CLIENT: FJWHSB DATE: 11/5/25 PAGE: 6 OF 7
 JOB NO: P255/6.F31 INSPECTORS: Angel Simerer
 LOCATION: Sonoma HS

SAMPLE NO.	LAB ID #	SAMPLE LOCATION	MATERIAL DESCRIPTION	CONDITION	QUANTITY	% ASBESTOS
51.	834062					
52.	834063					
53.	834064		Gypsum / JC			
54.	834065					
55.	834066					
56.	834067		ceiling space insulation			
57.	834068					
58.	834069					
59.	834070		HVAC Insulation			
60.	834071					

ABBREVIATIONS:
 S = Surface Material
 TSI = Thermal Systems Insulation
 MI = Miscellaneous Material
 Comments/Special Instructions

CHAIN OF CUSTODY

Sampled by/Retinquished: Angel Simerer Date/Time: 11/6/25 1300
 Relinquished/Received: AS Baker Date/Time: 11-7-25
 Relinquished/Received by: [Signature] Date/Time: [Signature]

OTHER:
 SF = Square Feet
 LF = Linear Feet

CONDITION:
 G = Good
 D = Damaged
 SD = Significantly Damaged

ENCORP Laboratory Services - 16700 Valley View Avenue, Suite 100 La Mirada, California 90638
 Office (714) 523-9811 - Fax (714) 523-9810

CHAIN OF CUSTODY FORM

Asbestos Bulk Analysis: PLM Bulk 1000 Point Count
Turn-around Time: RUSH 24 HRS 48 HRS 72 HRS Standard

CLIENT: FJWHSB DATE: 11/5/25 PAGE: 7 OF 7

JOB NO: P255/b.f31 INSPECTORS: Angel Simeron

LOCATION: Sonora HS

SAMPLE NO.	LAB ID #	SAMPLE LOCATION	MATERIAL DESCRIPTION	CONDITION	QUANTITY	% ASBESTOS
61.	834872					
2.						
3.						
4.						
5.						
6.						
7.						
8.						
9.						
0.						

ABBREVIATIONS:

TYPES OF MATERIALS: S = Surface Material, TSI = Thermal Systems Insulation, M = Miscellaneous Material, Comments/special instructions

CONDITION: G = Good, D = Damaged, SD = Significantly Damaged

OTHER: S.F. = Square Feet, L.F. = Linear Feet

CHAIN OF CUSTODY:

Sampled by/Relinquished: Angel Simeron Date/Time: 11/6/25 1300

Relinquished/Received By: AS Balder Date/Time: 11-7-25 @ Sonora

Relinquished/Received By: [Signature] Date/Time: _____

ENCORP Laboratory Services - 16700 Valley View Avenue, Suite 100 - La Mirada - California 90638
Office (714) 523-9811 - Fax (714) 523-9810

IIB. SAMPLE ANALYSIS - LEAD

ENCORP LEAD BASED PAINT INSPECTION WORKSHEET

CLIENT: FJUHSD	ADDRESS: Sonoma H.S.
SCOPE OF PROJECT: Lead Survey	DATE: 11-5-25
INSPECTOR: Andy Alvarado	XRF SERIAL #: _____ PROJECT NUMBER: P25616.F31

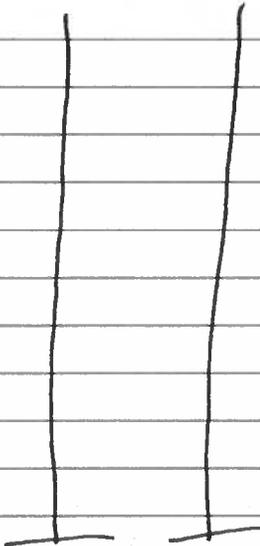
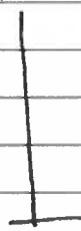
SAMPLE NUMBER	K-SHELL READING	PAINT COLOR	SUBSTRATE	COMPONENT	CONDITION	LOCATION	QUANTITY	COMMENTS	
1.	1.0	Orange	Paint	Test Sheet		Confirmation			
2.	0.9	⊥	⊥	⊥		⊥			
3.	0.9	⊥	⊥	⊥					
4.	0.0	Black	Metal	Roof Edge		Science 424-428 Ext.			
5.	0.0	⊥	⊥	Fascia					
6.	0.0	White	Stucco	Wall					
7.	0.0	Black	Metal	Window Frame					
8.	0.0	⊥	⊥	Window Board					
9.	0.0	⊥	⊥	Door					
10.	0.0	⊥	⊥	Door Frame					
11.	0.0	White	⊥	Conduit					
12.	0.0	⊥	⊥	Panel					
13.	0.0	⊥	Stucco	Wall					
14.	0.0	Black	Stucco	Wall Base					
15.	0.0	⊥	Metal	Vent					
16.	0.0	White	Stucco	Wall					
17.	0.0	⊥	⊥	⊥					
18.	0.0	White	Drywall	Wall			Interior		
19.	0.1	⊥	⊥	⊥					
20.	0.0	⊥	⊥	⊥					
21.	0.1	⊥	⊥	⊥					
22.	0.0	⊥	Metal	Wall Partition					
23.	0.0	Black	Cement	Counter Top					
24.	0.0	Grey	⊥	⊥					
25.	0.1	Dark Blue	Wood	Door					
26.	0.1	⊥	Metal	Door Frame					
27.	0.0	Light Blue	Wood	Cabinets					
28.	0.1	Dark Blue	Metal	Door Partition					
29.	0.0	White	Wood	Curtain					
30.	0.0	⊥	Plastic	Wire Covers					

By: Andy Alvarado

Title: Site Technician

ENCORP LEAD BASED PAINT INSPECTION WORKSHEET

CLIENT: FJUHSD	ADDRESS: Sonora H.S.
SCOPE OF PROJECT: Lead Survey	DATE: 11-5-25
INSPECTOR: Andy Alvarado	XRF SERIAL #: _____
PROJECT NUMBER: P25516.F31	

SAMPLE NUMBER	K-SHELL READING	PAINT COLOR	SUBSTRATE	COMPONENT	CONDITION	LOCATION	QUANTITY	COMMENTS	
31.	0.0	White	Metal	Pipe		Science 421-428 Interior 			
32.	0.0			Panel					
33.	0.0			Window Post					
34.	0.0			Window Frame					
35.	0.0	Orange	Brick	Planter					
36.	0.0	Red		Floor					
37.	0.0	Yellow	Metal	Wall				Electrical closet	
38.	0.0	White		Ceiling Space Beam					
39.	0.0	White	Metal	Fume Hood Vent					
40.	0.0	Black	Plastic Glass	Panel Window					
41.	0.0	White	Wood	Ceiling Trim					
42.	0.0	White	Metal	Vertical Beam					
43.	0.0	Multi Color	Wood	Cabinets					
44.	0.0	Blue	Ceramic	Wall Tile			Culinary Arts Restroom 	Boy's/Girl's	
45.	0.0	White	Ceramic	Tile					
46.	0.0	Grey		Floor Tile					
47.	0.0	White	Porcelain	Sink					
48.	0.0			Toilet					
49.	0.0			Urinal				Boy's Only	
50.	0.0	Blue	Ceramic	Wall Tile		500 Staff Restroom 		Men / Women	
51.	0.0	White		Wall Tile					
52.	0.0	Grey		Floor Tile					
53.	0.0	White	Porcelain	Sink					
54.	0.0			Toilet					
55.	0.0			Urinal				Men's Only	
56.	0.9	Orange	Paint	Test Sheet			Confirmation 		
57.	0.9								
58.	0.9								
59.	.								
60.	.								

By: Andy Alvarado

Title: Srte Technician

III. CERTIFICATIONS





STATE OF CALIFORNIA
DEPARTMENT OF PUBLIC HEALTH



LEAD-RELATED CONSTRUCTION CERTIFICATE

INDIVIDUAL:	CERTIFICATE TYPE:	NUMBER:	EXPIRATION DATE:
 Angel Jimenez	Lead Sampling Technician	LRC-00002763	9/15/2025

Disclaimer: This document alone should not be relied upon to confirm certification status. Compare the individual's photo and name to another valid form of government issued photo identification. Verify the individual's certification status by searching for Lead-Related Construction Professionals at www.cdph.ca.gov/programs/clppb or calling (800) 597-LEAD

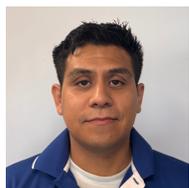


STATE OF CALIFORNIA
DEPARTMENT OF PUBLIC HEALTH



LEAD-RELATED CONSTRUCTION CERTIFICATE

INDIVIDUAL:



Andy Alvarado

CERTIFICATE TYPE:

Lead Sampling Technician

NUMBER:

LRC-00014653

EXPIRATION DATE:

9/9/2026

Disclaimer: This document alone should not be relied upon to confirm certification status. Compare the individual's photo and name to another valid form of government issued photo identification. Verify the individual's certification status by searching for Lead-Related Construction Professionals at www.cdph.ca.gov/programs/clppb or calling (800) 597-LEAD



United States Department of Commerce
National Institute of Standards and Technology



Certificate of Accreditation to ISO/IEC 17025:2017

NVLAP LAB CODE: 200878-0

ENCORP
La Mirada, CA

*is accredited by the National Voluntary Laboratory Accreditation Program for specific services,
listed on the Scope of Accreditation, for:*

Asbestos Fiber Analysis

*This laboratory is accredited in accordance with the recognized International Standard ISO/IEC 17025:2017.
This accreditation demonstrates technical competence for a defined scope and the operation of a laboratory quality
management system (refer to joint ISO-ILAC-IAF Communiqué on ISO/IEC 17025).*

2025-07-01 through 2026-06-30

Effective Dates



A handwritten signature in black ink, appearing to read "Robert Knack".

For the National Voluntary Laboratory Accreditation Program

IV. FIELD INSPECTION DATA

HOMOGENEOUS MATERIALS INSPECTION FORM

Date: 11/5/25 Project Name: AcM Project # P25516.F31

Project Address: Sunora HS

Inspector(s): Angel Jimenez Page: 1 of 3

Building: _____ Building Code: _____

Material Description	Locations	Individual Sq Ft	Total Sq Ft	Condition	Qty of Samples	Sample #'s
Stucco	Science 421-428 -ext		4000 ϕ	6	5	1-5
Window Sealant			100		3	6-8
Concrete			13000 ϕ			9-11
4" Black Concrete / Glue			700 ϕ			12-14
Carpet Glue			500 ϕ			15-17
Carpet Glue/ Mastic			2200 ϕ			18-20
Fume Hood Paneling			100 ϕ			21-23

TPO Roof to be assumed per client / AB
TSI not observed but assumed in wall cavities

HOMOGENEOUS MATERIALS INSPECTION FORM

Date: 11/5/25 Project Name: AcM Project # P25516.F31

Project Address: Sarora HS

Inspector(s): Angel Jimenez Page: 2 of 3

Building: _____ Building Code: _____

Material Description	Locations	Individual Sq Ft	Total Sq Ft	Condition	Qty of Samples	Sample #'s
12x12 Blue Vinyl Floor Tile/mastic	Science 421-428 - CR 421-423		3200 0	G	3	24-26
Black Countertop Material			1400 0			27-29
12x12 Blue vinyl Floor Tile/mastic/ Tile/mastic (Layered)	- CR 426-428		3200 0			30-32
Grey Countertop Material			1200 0			33-35
Plaster	- Int throughout		4800 0		5	36-40
Drywall/ Joint Compound			2000 0		3	41-43
Brick/ Mortar	- Common Area		300 0			44-46

HOMOGENEOUS MATERIALS INSPECTION FORM

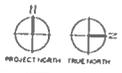
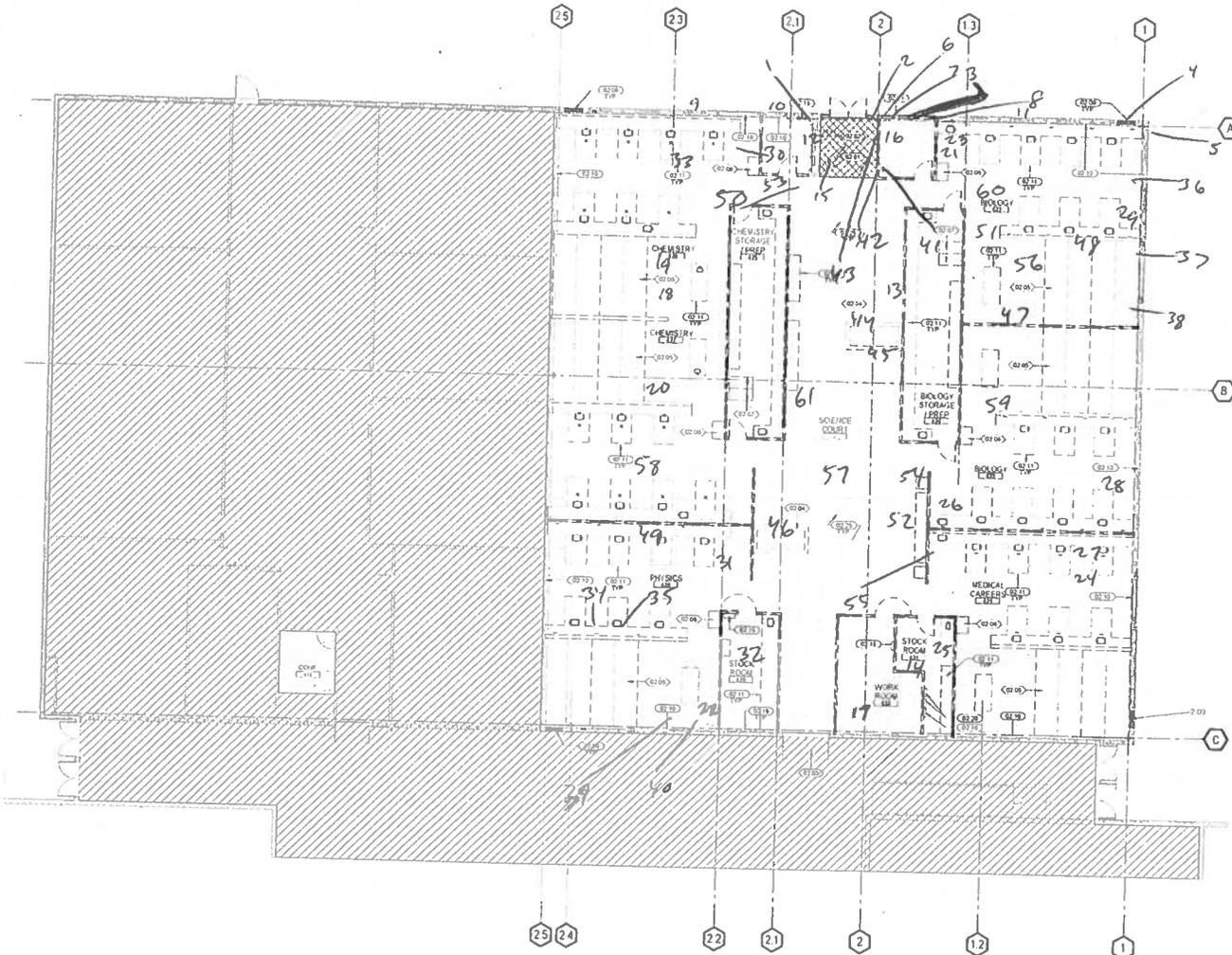
Date: 11/5/25 Project Name: AcM Project # P25516.F31

Project Address: Sarora HS

Inspector(s): Angel Jimenez Page: 3 of 3

Building: _____ Building Code: _____

Material Description	Locations	Individual Sq Ft	Total Sq Ft	Condition	Qty of Samples	Sample #'s
Partition Curtain	Science 421-428 Int - Classrooms		10004	G	3	47-49
2'x4' Fiberglass Ceiling Panel	- Int throughout		100006			50-52
Gypsum/ Joint Compound	- Throughout Above Drop Ceiling		30006			53-55
Ceiling Space Insulation			12006			56-58
HVAC Insulation			7004			59-61



01 - FLOOR DEMOLITION PLAN 11/15/05

= PCM

DESCRIPTION: Sonoma HS - Science 421-428	
JOB NAME: ACM	
JOB NUMBER: P15516-F31	
DRAWN BY: Angel Jimenez	DATE: 11 / 5 / 05

ENCORP
 Engineering our Environment
 16700 Valley View Ave., Suite 100
 La Mirada, CA 90638
 (714) 523-9811 FAX (714) 523-9810

V. LIMITATIONS

LIMITATIONS

Conditions described in this report are as found at the time of investigation, unless otherwise stated.

ENCORP analyzed only the substances, conditions, and locations described in this report at the time indicated. No inferences regarding other substances, conditions, location or time can be made unless specifically stated in this report. **ENCORP's** inspection was limited to accessible materials only for the purpose of this survey.

This report is intended for the use listed in the section of this report titled "INTRODUCTION." The use of this report in any manner other than that listed in the Introduction requires the written consent of **ENCORP** and **FULLERTON JOINT UNION HIGH SCHOOL DISTRICT**. This report must be presented in its entirety.

The conclusions and recommendations presented are based on the agreed upon scope of work outlined in this report. **ENCORP** makes no warranties or guarantees as to the accuracy or completeness of information obtained from information provided or compiled by others. Note that information exists beyond the scope of this investigation. Additional information, which was outside this scope of work, not found, or available to **ENCORP** at the time of writing this report, may result in a modification of the conclusions and recommendations presented. This report is not a legal opinion. The services performed by **ENCORP** have been conducted in a manner consistent with a level of care ordinarily exercised by members of our profession currently practicing under similar conditions. No other warranty, expressed or implied, is made.



LIMITED GEOTECHNICAL INVESTIGATION

MATH AND SCIENCE BUILDING
SEISMIC RETROFIT
SONORA HIGH SCHOOL
401 SOUTH PALM STREET
LA HABRA, CALIFORNIA

November 26, 2025
PROJECT NO. W2068-88-02

PREPARED FOR:
FULLERTON JOINT UNION SCHOOL DISTRICT
LA HABRA, CALIFORNIA



Project No. W2068-88-02
November 26, 2025

Mr. Andy Kim
Fullerton Joint Union High School District
1027 South Leslie Street
La Habra, California 90631

Subject: LIMITED GEOTECHNICAL INVESTIGATION
MATH AND SCIENCE BUILDING SEISMIC RETROFIT
SONORA HIGH SCHOOL
401 SOUTH PALM STREET
LA HABRA, CALIFORNIA

Dear Ladies and Gentlemen:

In accordance with your authorization of our revised proposal dated September 5, 2025, we have performed a limited geotechnical investigation for the Math and Science Building Seismic Retrofit project at the Sonora High School campus in La Habra, California. The accompanying report presents the findings of our study and our conclusions and recommendations pertaining to the geotechnical aspects of proposed design and construction. Based on the results of our investigation, it is our opinion that the improvements can be constructed as proposed provided the recommendations of this report are followed and implemented during design and construction.

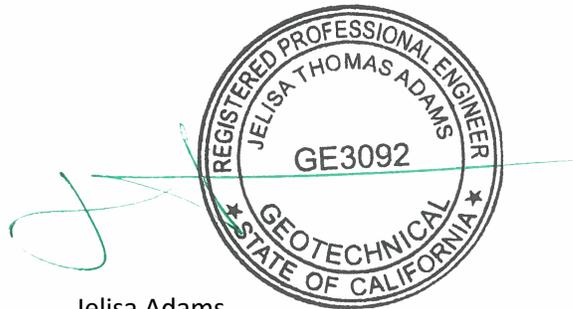
If you have any questions regarding this report, or if we may be of further service, please contact the undersigned.

Very truly yours,

GEOCON WEST, INC.

Rex Panoy
Senior Staff Engineer

(email) Addressee



Jelisa Adams
GE 3092

TABLE OF CONTENTS

1.	PURPOSE AND SCOPE	1
2.	SITE AND PROJECT DESCRIPTION	2
3.	BACKGROUND REVIEW	2
4.	SOIL AND GEOLOGIC CONDITIONS.....	3
4.1	Artificial Fill	3
4.2	Very Old Alluvial Fan Deposits	3
5.	GROUNDWATER	3
6.	SEISMIC DESIGN CRITERIA	4
7.	CONCLUSIONS AND RECOMMENDATIONS	6
7.1	General.....	6
7.2	Soil and Excavation Characteristics.....	8
7.3	Minimum Resistivity, pH, and Water-Soluble Sulfate.....	9
7.4	Grading.....	9
7.5	Existing and New Friction Pile Foundations.....	12
7.6	Pile Foundation Installation	13
7.7	Lateral Design	15
7.8	Concrete Slabs-on-Grade	15
7.9	Temporary Excavations.....	17
7.10	Surface Drainage.....	17
7.11	Plan Review	18

LIMITATIONS AND UNIFORMITY OF CONDITIONS

MAPS AND ILLUSTRATIONS

Figure 1, Vicinity Map

Figure 2, Site Plan

APPENDIX A

FIELD INVESTIGATION

Figures A1 through A4, Boring Logs

APPENDIX B

LABORATORY TESTING

Figures B1 through B9, Direct Shear Test Results

Figures B10 through B13, Consolidation Test Results

Figure B14, Compaction Characteristics Using Modified Effort Test Results

Figure B15, Corrosivity Test Results

APPENDIX C

PRIOR REPORTS

APPENDIX D

ASCE Hazard Tool Report Figure D1, Multi-Period MCE_R Spectrum

LIST OF REFERENCES

LIMITED GEOTECHNICAL INVESTIGATION

1. PURPOSE AND SCOPE

This report presents the results of a limited geotechnical investigation for the Math and Science Building Seismic Retrofit project located at the Sonora High School campus in La Habra, California (see Vicinity Map, Figure 1). The purpose of the investigation was to evaluate the subsurface soil and geologic conditions underlying the areas of proposed construction and, based on conditions encountered, to provide conclusions and recommendations pertaining to the geotechnical aspects of design and construction.

The scope of this investigation included a site reconnaissance, field exploration, laboratory testing, engineering analysis, and the preparation of this report. Exploration was performed on September 20 and 27, 2025, by excavating four 4-inch diameter borings to a maximum depth of approximately 25½ feet below the existing ground surface using hand auger equipment and digging tools. The approximate locations of the exploratory borings are depicted on the Site Plan (see Figure 2). A detailed discussion of the field investigation, including logs of the borings, is presented in Appendix A.

Laboratory tests were performed on selected soil samples obtained during the investigation to determine pertinent physical and chemical soil properties. Appendix B presents a summary of the laboratory test results.

The recommendations presented herein are based on analysis of the data obtained during the investigation and our experience with similar soil and geologic conditions. References reviewed to prepare this report are provided in the List of References section.

If project details vary significantly from those described herein, Geocon should be contacted to determine the necessity for review and possible revision of this report.

2. SITE AND PROJECT DESCRIPTION

The proposed improvements are located at the Math and Science Buildings within the Sonora High School campus in La Habra, California. Review of the available as-built plans indicates that the existing building is a steel-framed structure with stucco exterior walls constructed at-grade. The structure is supported on 18-inch-diameter concrete piles which are interconnected by reinforced concrete grade beams along the walls. The piles reportedly extend to depths ranging from approximately 16 to 26 feet below the existing ground surface.

Based on the information provided by the Client, it is our understanding that the proposed seismic retrofit to the structure will include new steel-brace framing, possible strengthening/widening of the grade beam foundations, and additional reinforcement of the roof deck (see Site Plan, Figure 2). Our scope of work did not include the verification of existing pile diameter and lengths; existing pile lengths referenced herein have been assumed based on information contained on the historic plans provided to us.

Once the design phase and foundation loading configuration proceeds to a more finalized plan, the recommendations within this report should be reviewed and revised, if necessary. Any changes in the design, location or elevation of any structure, as outlined in this report, should be reviewed by this office. Geocon should be contacted to determine the necessity for review and possible revision of this report.

3. BACKGROUND REVIEW

As a part of the preparation of this report, we reviewed the recently completed report for the proposed Track and Field Improvements Project at Sonora High School:

Geotechnical Investigation, Proposed Track and Field Improvements, Geocon Project Number W2068-88-01, dated May 2, 2025.

The scope of the geotechnical investigation included the excavation of six 8-inch diameter borings to depths ranging from approximately 15½ to 50½ feet using a truck-mounted hollow-stem auger drilling machine and four borings to depths between 10 and 20½ feet below the ground surface using hand tools and manual digging equipment. In addition, two seismic CPT (SCPT) soundings were advanced until practical refusal was encountered at depths of 44 and 68 feet below the ground surface using a CPT rig. The SCPTs measured the shear wave velocity from the ground surface to a depth of 68.7 feet below the existing ground surface. The geotechnical report, including the site-specific ground motion hazard analysis and SCPT profiles are included herein as Appendix C.

4. SOIL AND GEOLOGIC CONDITIONS

Based on our field investigation and published geologic maps of the area, the site is underlain by artificial fill and Pleistocene-age very old alluvial fan deposits consisting of interbedded silt, sand, and gravel (California Geological Survey [CGS], 2010). The local geologic conditions are shown on Figure 3, Local Geologic Map. Detailed stratigraphic profiles of the materials encountered at the site are provided on the boring logs in Appendix A.

4.1 Artificial Fill

Artificial fill was encountered in our field explorations to a maximum depth of 2 feet below the existing ground surface. The artificial fill generally consists of olive brown to brown and yellowish-brown poorly graded sand, silty sand, and clayey sand that can be characterized as dry to moist and loose to medium dense. The fill is likely the result of past grading or construction activities at the site. Deeper fill may exist between excavations and in other portions of the site that were not directly explored.

4.2 Very Old Alluvial Fan Deposits

Pleistocene-age very old alluvial fan deposits were encountered beneath the fill to the maximum depth explored of 25½ feet below existing ground surface. The deposits generally consist of sand and silty sand, clayey sand, and clay. The soils are characterized as slightly moist to wet and medium dense or soft to stiff. The deposits vary in amounts of coarse sand and may contain trace fine gravel.

5. GROUNDWATER

Review of the Seismic Hazard Zone Report for the La Habra Quadrangle (California Division of Mines and Geology [CDMG], 1998) indicates the historically highest groundwater level in the area is between 10 and 25 feet beneath the existing ground surface. Groundwater information presented in this document is generated from data collected in the early 1900's to the late 1990s. The site is located on an uplifted old alluvial terrace and is not located within a groundwater basin. Based on the geologic conditions and current groundwater basin management practices, it is unlikely that groundwater levels will ever exceed the historic high levels.

Groundwater was not encountered in the hand auger boring excavated to a maximum depth of 25½ feet. However, groundwater was encountered in boring B8 at a depth of approximately 35 feet and in CPT-2 at a depth of approximately 32 feet for the proposed Track and Field Improvements Project. The groundwater measurements were performed in a manner that is typical of geotechnical exploration and should not be interpreted as representing a fully equalized water level; the depth to water at the time of construction may be higher or lower than what was observed in the boreholes.

Considering the depth to groundwater and the depth of the proposed site improvements, static groundwater is not anticipated to be encountered during construction, nor have a detrimental effect on the project. However, it is not uncommon for groundwater levels to vary seasonally or for groundwater seepage conditions to develop where none previously existed, especially in impermeable fine-grained soils which are heavily irrigated or after seasonal rainfall. In addition, recent requirements for stormwater infiltration could result in shallower seepage conditions in the immediate site vicinity. Proper surface drainage of irrigation and precipitation will be critical for future performance of the project. Recommendations for drainage are provided in the *Surface Drainage* section 7.10 of this report.

6. SEISMIC DESIGN CRITERIA

The seismic provisions of the 2025 California Building Code (CBC) are based on the American Society of Civil Engineers (ASCE)/Structural Engineering Institute (SEI) publication: ASCE/SEI 7-22, *Minimum Design Loads and Associated Criteria for Buildings and Other Structures* (ASCE 7-22). For seismic design purposes, sites are classified based on the average shear wave velocity, \bar{v}_s , from the ground surface to a depth of 100 feet. The following table presents the Site Classifications.

SITE CLASSIFICATION

Site Class	Average Shear Wave Velocity, \bar{v}_s (Feet/Second)
A – Hard Rock	5,000+
B – Medium Hard Rock	3,000 to 5,000
BC – Soft Rock	2,100 to 3,000
C – Very Dense Sand or Hard Clay	1,450 to 2,100
CD – Dense Sand or Very Stiff Clay	1,000 to 1,450
D – Medium Dense Sand or Stiff Clay	700 to 1,000
DE – Loose Sand or Medium Stiff Clay	500 to 700
E – Very Loose Sand or Soft Clay	Less Than 500
F – Soils Requiring Site Response Analysis	n/a

The average shear wave velocity may be used to evaluate the Site Class if the shear wave velocity profile is directly measured at the site. For this project, we evaluated the shear wave velocity profile using Seismic CPT measurements. Based on the result of the SCPT, the site-specific soil shear wave velocity for the upper 30 meters feet of soil (V_{s30}) is estimated as 1,150 feet per second. The following table presents the average shear wave velocity and corresponding Site Class for the subject site.

In accordance with Table 20.2-1 Site Classification of ASCE 7-22, the estimated soil shear wave velocity falls within the boundaries of a Site Class “CD”.

SITE CLASSIFICATION

Average Measured Shear Wave Velocity, \bar{v}_s (Feet/Second)	Site Class
1,150	CD –Dense Sand or Very Stiff Clay

We used the online ASCE Hazard Tool (<https://ascehazardtool.org>) to evaluate the code-based seismic design parameters in accordance with ASCE 7-22. The results are summarized in the following table. Appendix C presents the output generated by the ASCE Hazard Tool.

SEISMIC DESIGN PARAMETERS

Parameter		Value	ASCE 7-22 Reference
Site Class		CD	Table 20.1-1
S_s	MCE _R 5% Damped Spectral Response Acceleration at a Period of 0.2 Seconds for Site Class BC	2.04g	USGS Seismic Design Geodatabase
S_1	MCE _R 5% Damped Spectral Response Acceleration at a Period of 1 Second for Site Class BC	0.72g	
S_{MS}	MCE _R 5% Damped Spectral Response Acceleration at Short Periods Adjusted for Site Class	2.17g	
S_{M1}	MCE _R 5% Damped Spectral Response Acceleration at a Period of 1 Second Adjusted for Site Class	1.3g	
S_{DS}	Design, 5% Damped Spectral Response Acceleration at Short Periods	1.45g	Equation 11.4-1
S_{D1}	Design, 5% Damped Spectral Response Acceleration at a Period of 1 Second	0.86g	Equation 11.4-2
PGA _M	Maximum Considered Earthquake Geometric Mean (MCE _G) Peak Ground Acceleration	0.87g	USGS Seismic Design Geodatabase

If required for structural design, the multi-period MCE_R response spectra is provided in the ASCE Hazard Tool report presented in Appendix D. The two-period MCE_R response spectra may be constructed based on ASCE 7-22 Section 11.4.5.2 using the values in the table above.

Conformance to the criteria in this section for seismic design does not constitute any kind of guarantee or assurance that significant structural damage or ground failure will not occur in the event of a large earthquake. The primary goal of seismic design is to protect life, not to avoid all damage, since such design may be economically prohibitive.

7. CONCLUSIONS AND RECOMMENDATIONS

7.1 General

- 7.1.1 It is our opinion that neither soil nor geologic conditions were encountered during the investigation that would preclude the construction of the proposed improvements provided the recommendations presented herein are followed and implemented during design and construction.
- 7.1.2 Up to 2 feet of existing artificial fill was encountered during the site investigation. The existing fill encountered is believed to be the result of past grading and construction activities at the site. Deeper fill may exist in other areas of the site that were not directly explored. The depth of existing artificial fill should be field verified by Geocon during construction activities, as necessary.
- 7.1.3 It is our opinion that the existing fill, in its present condition, is suitable for continued support of the existing foundations. However, the existing fill is not considered suitable for direct support of new foundations, which should penetrate through the existing fill to derive support in the underlying, competent older alluvium. The existing fill and site soils are suitable for re-use as engineered fill provided the recommendations in the *Grading* section of this report are followed (see Section 7.4).
- 7.1.4 Based on preliminary drawings provided to us for review, proposed seismic retrofit improvements will be supported on the existing pile foundations and grade beams where excess foundation capacities remain. Loads in excess of the existing capacity will be supported by new foundation improvements (i.e. new pile foundations and/or strengthened/widened grade beams).

- 7.1.5 Based on our review of the historic plans for the structure, the existing foundation system consists of 18-inch diameter piles that range in depth from 16 to 26 feet. Based on the depth of fill encountered in our borings, it is assumed that existing foundations derive support in the underlying, competent alluvium. However, our scope of work did not include the verification of existing foundation dimensions. Representative samples were taken of the alluvial soils to calculate existing foundation capacity, which is discussed in Section 7.5 of this report. The project structural engineer should evaluate the existing foundations, existing building loads, and proposed improvement loads. Where excess foundation capacity remains, the existing foundations may be utilized for support of the proposed improvements. If the required foundation capacity is not available, new foundations may be used to support proposed improvements.
- 7.1.6 Where new foundations are required for support of the proposed seismic retrofit improvements, deepened foundations consisting of drilled, cast-in-place friction piles deriving supported in the competent, undisturbed alluvial soils found at and below a depth of 3 feet may be used. Recommendations for the design and installation of drilled, cast-in-place friction piles are provided in Sections 7.5 and 7.6.
- 7.1.7 Where new foundations are constructed immediately adjacent to existing foundations, the new foundation should be deepened to match the depth of the existing foundation to prevent a surcharge on the existing foundation.
- 7.1.8 Where proposed foundations will be deeper than an existing foundation, the new foundation must be designed to resist the surcharge imposed by the existing foundation. The surcharge area may be defined by a 1:1 projection down and away from the bottom of the existing foundation.
- 7.1.9 Where proposed widening/strengthening of grade beams are required, supplemental exploration should be performed to expose the depth and dimension of the existing grade beams and verify the supporting soils. Recommendation for proposed widened/strengthened grade beams and revised excavation measures can be provided under a separate cover, if necessary.

- 7.1.10 Performing open excavations adjacent to and deeper than existing adjacent foundations could potentially remove lateral support and/or undermine the existing foundations and are not recommended. Excavation for construction of new foundations immediately adjacent to existing foundations may require special excavation measures such as hydraulic shoring in order to maintain lateral support of the existing adjacent foundation. Excavation recommendations are provided in the *Temporary Excavations* section of this report (Section 7.9).
- 7.1.11 All excavations must be observed and approved in writing by the Geotechnical Engineer (a representative of Geocon).
- 7.1.12 Where new concrete slab-on-grade is to be constructed, it is recommended that any soils disturbed during construction activities be properly compacted for slab support. Recommendations for earthwork are provided in the *Grading* section of this report (see Section 7.4).
- 7.1.13 Once the design and foundation loading configuration for the proposed structure proceeds to a more finalized plan, the recommendations within this report should be reviewed and revised, if necessary. Based on the final foundation loading configurations, the potential for settlement should be reevaluated by this office.
- 7.1.14 Any changes in the design, location, or elevation, as outlined in this report, should be reviewed by this office. Geocon should be contacted to determine the necessity for review and possible revision of this report.

7.2 Soil and Excavation Characteristics

- 7.2.1 The in-situ soils can be excavated with moderate effort using conventional excavation equipment. Due to the granular nature of the soils, moderate caving should be anticipated in vertical excavations, especially where granular soils are encountered. The contractor should be aware that formwork, shoring, and/or casing may be required to prevent caving of excavations which penetrate into granular soils.
- 7.2.2 It is the responsibility of the contractor to ensure that all excavations and trenches are properly shored and maintained in accordance with applicable OSHA rules and regulations to maintain safety and maintain the stability of existing adjacent improvements.

7.2.3 All onsite excavations must be conducted in such a manner that potential surcharges from existing structures, construction equipment, and vehicle loads are resisted. The surcharge area may be defined by a 1:1 projection down and away from the bottom of an existing foundation or vehicle load. Penetrations below this 1:1 projection will require special excavation measures such as sloping or shoring. Excavation recommendations are provided in the *Temporary Excavations* section of this report (see Section 7.9).

7.3 Minimum Resistivity, pH, and Water-Soluble Sulfate

7.3.1 Potential of Hydrogen (pH) and resistivity testing as well as chloride content testing were performed on representative samples of soil to generally evaluate the corrosion potential to surface utilities. The tests were performed in accordance with California Test Method Nos. 643 and 422 and indicate that the upper 5 feet of existing site soils are considered “corrosive” with respect to corrosion of buried ferrous metals on site. The results are presented in Appendix B (Figure B15) and should be considered for design of underground structures. Due to the corrosive potential of the soils, it is recommended that PVC, ABS or other approved plastic piping be utilized in lieu of cast-iron when in direct contact with the site soils.

7.3.2 Laboratory tests were performed on representative samples of the site materials to measure the percentage of water-soluble sulfate content. Results from the laboratory water-soluble sulfate tests are presented in Appendix B (Figure B15) and indicate that the on-site materials possess a sulfate exposure class of “S0” to concrete structures as defined by 2025 CBC Section 1904A and ACI 318 Chapter 19.

7.3.3 Geocon West, Inc. does not practice in the field of corrosion engineering and mitigation. If corrosion sensitive improvements are planned, it is recommended that a corrosion engineer be retained to evaluate corrosion test results and incorporate the necessary precautions to avoid premature corrosion of buried metal pipes and concrete structures in direct contact with the soils.

7.4 Grading

7.4.1 No substantial grading is anticipated for this project. Earthwork is anticipated to include excavation of site soils for proposed foundations and preparation of the subgrade for new slab-on-grade.

- 7.4.2 A preconstruction conference should be held at the site prior to the beginning of grading operations with the owner, contractor, civil engineer, geotechnical engineer, and building official in attendance. Special soil handling requirements can be discussed at that time.
- 7.4.3 Earthwork should be observed, and compacted fill tested by representatives of Geocon West, Inc. The existing fill and alluvium encountered during exploration are suitable for re-use as an engineered fill, provided any encountered oversized material (greater than 6 inches) and any encountered deleterious debris are removed.
- 7.4.4 Where earthwork is performed, grading should commence with the removal of existing vegetation and existing improvements from the area to be graded. Deleterious debris such as wood and root structures should be exported from the site and should not be mixed with the fill soils. Concrete should not be mixed with the fill soils unless approved by the Geotechnical Engineer. Existing underground improvements planned for removal should be completely excavated and the resulting depressions properly backfilled in accordance with the procedures described herein. Once a clean excavation bottom has been established it must be observed and approved in writing by the Geotechnical Engineer (a representative of Geocon West, Inc.).
- 7.4.5 It is recommended that proposed foundations penetrate through the existing fill and derive support exclusively in the underlying competent alluvium. The presence of existing artificial fill in proposed foundation excavations will be field verified by Geocon during construction activities. Foundations should be deepened as necessary to penetrate through the existing artificial fill at the direction of the Geotechnical Engineer. Measures to mitigate caving in excavations will likely be required.
- 7.4.6 Performing open excavations adjacent to and deeper than existing foundations could potentially remove lateral support and/or undermine the existing foundations, which is not acceptable. Excavation for grading and/or construction of new foundations adjacent to existing foundations will require special excavation measures. Recommendations for *Temporary Excavations* are provided in Section 7.14.
- 7.4.7 All excavations must be observed and approved in writing by the Geotechnical Engineer (a representative of Geocon), prior to placing fill, steel, gravel or concrete.

- 7.4.8 Where new concrete slab-on-grade is to be constructed, it is recommended that any soils disturbed during construction activities be properly compacted for slab support. The slab-on-grade subgrade should be observed and approved in writing prior to placement of rebar or concrete.
- 7.4.9 All fill and backfill soils should be placed in horizontal loose layers approximately 6 to 8 inches thick, moisture conditioned to near to slightly above optimum moisture content, and properly compacted to a minimum of 90 percent of the maximum dry density per ASTM D 1557 (latest edition).
- 7.4.10 All imported fill shall be observed, tested, and approved by Geocon West, Inc. prior to bringing soil to the site. Import fill should consist of the characteristics presented in the table below.

SUMMARY OF IMPORT FILL RECOMMENDATIONS

Soil Characteristic	Values
Expansion Potential	“Very Low” to “Low” (Expansion Index of 30 or less)
Particle Size	Maximum Dimension Less Than 6 Inches
	Free of Debris
Corrosivity	Less Detrimental Than Existing Onsite Soils

- 7.4.11 Utility trenches should be properly backfilled in accordance with the following requirements. The pipe should be bedded with clean sands (Sand Equivalent greater than 30) to a depth of at least 1 foot over the pipe, and the bedding material must be inspected and approved in writing by the Geotechnical Engineer (a representative of Geocon). The use of gravel is not acceptable unless used in conjunction with filter fabric to prevent the gravel from having direct contact with soil. The remainder of the trench backfill may be derived from onsite soil or approved import soil, compacted as necessary, until the required compaction is obtained. The use of minimum 2-sack slurry as backfill is also acceptable as backfill. Prior to placing any bedding materials or pipes, the excavation bottom must be observed and approved in writing by the Geotechnical Engineer (a representative of Geocon).
- 7.4.12 All trench and foundation excavation bottoms must be observed and approved in writing by the Geotechnical Engineer (a representative of Geocon), prior to placing bedding materials, fill, steel, gravel, or concrete.

7.5 Existing and New Friction Pile Foundations

7.5.1 Based on our review of the historic plans for the structure, the existing foundation system consists of 18-inch diameter piles that range in depth from 16 feet to 26 feet. Based on the soil conditions observed in our borings, the piles are assumed to derive support in competent alluvium. Our scope of work did not include the verification of existing pile diameters and lengths.

7.5.2 Based on the dimensions indicated on the historic plans and the laboratory test results, we have performed an evaluation of the allowable axial pile capacities that may be used to evaluate the existing foundation system. Additionally, where additional capacity is needed, drilled, cast-in-place friction piles may be used for support of the proposed seismic retrofit improvements. The allowable axial pile capacities for existing and new pile foundations are presented in the table below and are based on skin friction resistance and the depth of embedment below the slab-on-grade; end-bearing is not being considered. Foundations should derive support in competent alluvium. A factor of safety of 1.5 was used to calculate the allowable downward capacity.

PILE LENGTH (FEET)	ALLOWABLE SKIN FRICTION CAPACITY 18-INCH DIAMETER PILES (KIPS)
16	25.6
17	28.3
18	31.2
20	37.4
21	40.6
22	44.0
23	47.5
26	58.7

7.5.3 Single pile uplift capacity may be assumed to be $\frac{1}{2}$ the allowable downward capacity. The allowable axial compression and uplift capacities may be increased by one-third when considering transient wind or seismic loads.

7.5.4 The capacity presented is based on the strength of the soils. The compressive and tensile strength of the pile sections should be checked to verify the structural capacity of the piles.

- 7.5.5 The maximum expected static settlement for new friction pile foundations supported in undisturbed alluvium is estimated to be less than ½ inch. Differential settlement between adjacent pile foundations is not expected to exceed ¼-inch. A majority of the settlement of the foundation system is expected to occur on initial application of loading.
- 7.5.6 A continuous grade beam foundation and/or a structural slab may be placed across the top of the pile foundations to tie the pile in two directions, and the appropriate span between piles should be determined by a qualified structural engineer.
- 7.5.7 Based on dimensions shown on the historic plans (provided by client), the existing piles are spaced at least 3 diameters on-center. Therefore, no reduction in axial capacity for group effects is considered necessary for existing piles. However, if installation of new piles results in spacing that is closer than three pile diameters, an evaluation for group effects including appropriate reductions should be incorporated into the pile design based on pile dimension, spacing, and the direction of loading.
- 7.5.8 Lateral capacity of the existing and new foundation system may be evaluated based on information presented in the *Lateral Design* section in this report (see Section 7.7).

7.6 Pile Foundation Installation

- 7.6.1 Casing may be required if caving occurs in the granular soil layers during drilled foundation excavations. The contractor should have casing available and should be prepared to use it. If casing is used, extreme care should be employed so that the pile is not pulled apart as the casing is withdrawn. At no time should the distance between the surface of the concrete and the bottom of the casing be less than 5 feet. Continuous observation of the drilling and pouring of the piles by the Geotechnical Engineer (a representative of Geocon West, Inc.), is required.

- 7.6.2 Groundwater was not encountered in the hand auger boring excavated to a maximum depth of 25½ feet. However, groundwater was encountered in boring B8 at a depth of approximately 35 feet and in CPT-2 at a depth of approximately 32 feet for the proposed Track and Field Improvements Project. Considering the depth to groundwater and the depth of the proposed site improvements, static groundwater is not anticipated during construction. However, it is not uncommon for groundwater levels to vary seasonally or for groundwater seepage conditions to develop where none previously existed, especially in impermeable fine-grained soils which are heavily irrigated or after seasonal rainfall. If significant groundwater or seepage is encountered after heavy rains, piles placed below the water level require the use of a tremie to place the concrete into the bottom of the hole. A tremie shall consist of a water-tight tube, with a hopper at the top. The tube shall be equipped with a device that will close the discharge end and prevent water from entering the tube while it is being charged with concrete. The tremie shall be supported so as to permit free movement of the discharge end over the entire top surface of the work and to permit rapid lowering when necessary to retard or stop the flow of concrete. The discharge end shall be closed at the start of the work to prevent water entering the tube and shall be entirely sealed at all times, except when the concrete is being placed. The tremie tube shall be kept full of concrete. The flow shall be continuous until the top of pile elevation is achieved, and the resulting concrete seal shall be monolithic and homogeneous. The tip of the tremie tube shall always be kept about 5 feet below the surface of the concrete and definite steps and safeguards should be taken to ensure that the tip of the tremie tube is never raised above the surface of the concrete.
- 7.6.3 A special concrete mix should be used for concrete to be placed below water. The design shall provide for concrete with a strength of 1,000 psi over the initial job specification. An admixture that reduces the problem of segregation of paste/aggregates and dilution of paste shall be included. The slump shall be commensurate to any research report for the admixture, provided that it shall also be the minimum for a reasonable consistency for placing when water is present. Extreme care should be employed so that the pile is not pulled apart as the casing is withdrawn. At no time should the distance between the surface of the concrete and the bottom of the casing be less than 5 feet. Continuous observation of the drilling and pouring of the piles by a representative of this firm is required.
- 7.6.4 Closely spaced piles should be drilled and filled alternately, with the concrete permitted to set at least eight hours before drilling an adjacent hole. Pile excavations should be filled with concrete as soon after drilling and inspection as possible; the holes should not be left open overnight unless approved by the Geotechnical Engineer.

7.7 Lateral Design

- 7.7.1 Resistance to lateral loading may be provided by passive earth pressure against the sides of pile foundations, existing pile caps and grade beams, as well as by friction acting at the base of existing pile caps and grade beams.
- 7.7.2 Based on a factor of safety of 1.5, an allowable coefficient of friction of 0.4 may be used with the dead load forces for the existing pile caps and grade beam where in firm contact with the surrounding soils. Due to the lack of exploration within the interior of the structure, it is unknown if the slab is in firm contact with the underlying soil. Therefore, until this is verified, we do not recommend assuming lateral resistance due to friction along the slab.
- 7.7.3 Based on a factor of safety of 1.5, an allowable passive earth pressure for the sides of existing pile caps and grade beams may be computed as an equivalent fluid having a density of 250 pcf with a maximum earth pressure of 2,500 pcf. When combining passive and friction for lateral resistance, the passive component should be reduced by one-third.
- 7.7.4 Based on a factor of safety of 1.5, an allowable passive earth pressure for the sides of piles poured against undisturbed alluvial soils may be computed as an equivalent fluid having a density of 280 pounds per cubic foot (pcf) with a maximum earth pressure of 2,800 psf. To develop the full passive lateral value, provisions should be implemented to assure firm contact between the piles and the underlying soils. A one-third increase in the passive value may be used for wind or seismic loads.
- 7.7.5 The allowable passive capacity may be doubled for isolated piles spaced more than 8 diameters on-center when loaded in-line and 3 diameters on-center when loaded in parallel.

7.8 Concrete Slabs-on-Grade

- 7.8.1 It is our understanding that fiber-reinforced concrete (FRC) is being considered for non-structural pedestrian walkways. The engineer in responsible charge of flatwork design should evaluate the applicability of FRC and confirm that its use is appropriate for the intended service conditions. The FRC mix design and installation should conform to applicable building codes, standards, and project specifications, and should be submitted for review and approval by the governing agencies.

- 7.8.2 Unless specifically evaluated and designed by the project structural engineer, where interior slab-on-grade is replaced, the replacement section should be a minimum of 4 inches of concrete, or thicker to match the existing slab, and reinforced with No. 4 steel reinforcing bars placed 16 inches on center in both horizontal directions and positioned vertically near the slab midpoint. The concrete slab-on-grade may bear directly on the soils below the existing slab-on-grade. Any disturbed soils should be properly compacted for slab support.
- 7.8.3 Given the lack of exploration within the footprint of the existing structure, it is unknown if any vapor retarder is present below the existing slab-on-grade. The Owner should be aware that current practice is to place a vapor retarder directly beneath the slab where moisture-sensitive floor covers or storage of moisture-sensitive materials will occur. Once the project is under construction and the presence of a vapor retarder is confirmed, additional recommendations can be provided.
- 7.8.4 The moisture content of the slab subgrade should be maintained and sprinkled as necessary to maintain a moist condition as would be expected in any concrete placement.
- 7.8.5 Exterior slabs for walkways and flatwork, not subject to traffic loads, should be at least 4 inches thick and reinforced with No. 3 steel reinforcing bars placed 18 inches on center in both horizontal directions, positioned near the slab midpoint. Prior to construction of slabs, the upper 12 inches of subgrade should be moistened to near optimum moisture content and properly compacted to at least 95 percent relative compaction, as determined by ASTM Test Method D 1557 (latest edition). Crack control joints should be spaced at intervals not greater than 10 feet and should be constructed using saw-cuts or other methods as soon as practical following concrete placement. Crack control joints should extend a minimum depth of one-fourth the slab thickness. Construction joints should be designed by the project structural engineer.
- 7.8.6 The recommendations of this report are intended to reduce the potential for cracking of slabs due to settlement. However, even with the incorporation of the recommendations presented herein, foundations, stucco walls, and slabs-on-grade may exhibit some cracking due to minor soil movement and/or concrete shrinkage. The occurrence of concrete shrinkage cracks is independent of the supporting soil characteristics. Their occurrence may be reduced and/or controlled by limiting the slump of the concrete, proper concrete placement and curing, and by the placement of crack control joints at periodic intervals, in particular, where re-entrant slab corners occur.

7.9 Temporary Excavations

- 7.9.1 Excavations less than 5 feet in height are anticipated during foundation excavations and construction operations. The excavations are expected to expose artificial fill and alluvial soils, which may be subject to caving where granular soils are encountered. Vertical excavations up to 5 feet in height may be attempted where loose soils or caving sands are not present, and where not surcharged by adjacent traffic or structures.
- 7.9.2 Vertical excavations greater than 5 feet will require sloping and/or shoring measures in order to provide a stable excavation. Where sufficient space is available, temporary unsurcharged embankments could be sloped back at a uniform 1:1 slope gradient or flatter, up to maximum height of 10 feet. A uniform slope does not have a vertical portion.
- 7.9.3 If excavations in close proximity to an adjacent property line and/or structure are required, special excavation measures such as slot-cutting or shoring may be necessary in order to maintain lateral support of offsite improvements. Recommendations for special temporary excavation measures can be provided under separate cover once the locations and dimensions of anticipated excavations are known.
- 7.9.4 Where temporary construction slopes are utilized, the top of the slope should be barricaded to prevent vehicles and storage loads at the top of the slope within a horizontal distance equal to the height of the slope. If the temporary construction slopes are to be maintained during the rainy season, berms are suggested along the tops of the slopes where necessary to prevent runoff water from entering the excavation and eroding the slope faces. The soils exposed in the cut slopes should be inspected during excavation by our personnel and the contractor's competent person so that modifications of the slopes can be made if variations in the soil conditions occur. All excavations should be stabilized within 30 days of initial excavation.

7.10 Surface Drainage

- 7.10.1 Proper surface drainage is critical to the future performance of the project. Uncontrolled infiltration of excess irrigation and storm runoff into the soils can adversely affect the performance of the planned improvements. Saturation of a soil can cause it to lose internal shear strength and increase its compressibility, resulting in a change in the original designed engineering properties. Proper drainage should be maintained at all times.

- 7.10.2 All site drainage should be collected and controlled in non-erosive drainage devices. Drainage should not be allowed to pond anywhere on the site, and especially not against any foundation or retaining wall. The site should be graded and maintained such that surface drainage is directed away from structures in accordance with 2025 CBC 1804A.4 or other applicable standards. In addition, drainage should not be allowed to flow uncontrolled over any descending slope. Discharge from downspouts, roof drains and scuppers are not recommended onto unprotected soils within 5 feet of building perimeters. Planters which are located adjacent to foundations should be sealed to prevent moisture intrusion into the soils providing foundation support. Landscape irrigation is not recommended within 5 feet of building perimeter footings except when enclosed in protected planters.
- 7.10.3 Positive site drainage should be provided away from structures, pavement, and the tops of slopes to swales or other controlled drainage structures.
- 7.10.4 Landscaping planters immediately adjacent to paved areas are not recommended due to the potential for surface or irrigation water to infiltrate the pavement's subgrade and base course. Either a subdrain, which collects excess irrigation water and transmits it to drainage structures, or an impervious above-grade planter boxes should be used. In addition, where landscaping is planned adjacent to the pavement, it is recommended that consideration be given to providing a cutoff wall along the edge of the pavement that extends at least 12 inches below the base material.
- 7.11 Plan Review**
- 7.11.1 Grading, foundation and shoring plans should be reviewed by the Geotechnical Engineer (a representative of Geocon West, Inc.), prior to finalization to verify that the plans have been prepared in substantial conformance with the recommendations of this report and to provide additional analyses or recommendations.

LIMITATIONS AND UNIFORMITY OF CONDITIONS

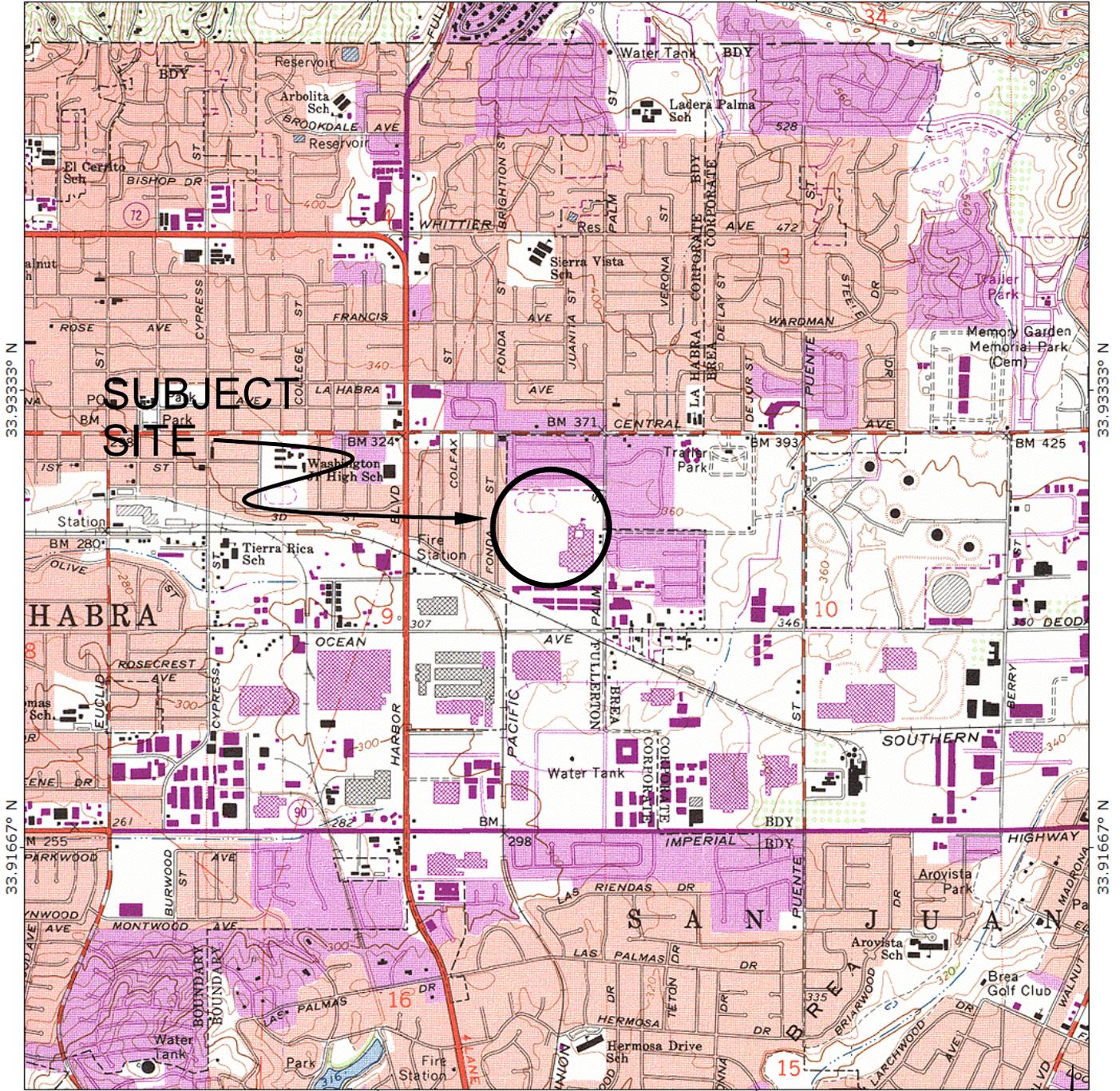
1. The firm that performed the geotechnical investigation for the project should be retained to provide testing and observation services during construction to provide continuity of geotechnical interpretation and to check that the recommendations presented for geotechnical aspects of site development are incorporated during site grading, construction of improvements, and excavation of foundations. If another geotechnical firm is selected to perform the testing and observation services during construction operations, that firm should prepare a letter indicating their intent to assume the responsibilities of project geotechnical engineer of record. A copy of the letter should be provided to the regulatory agency for their records. In addition, that firm should provide revised recommendations concerning the geotechnical aspects of the proposed development, or a written acknowledgement of their concurrence with the recommendations presented in our report. They should also perform additional analyses deemed necessary to assume the role of Geotechnical Engineer of Record.
2. The recommendations of this report pertain only to the site investigated and are based upon the assumption that the soil conditions do not deviate from those disclosed in the investigation. If any variations or undesirable conditions are encountered during construction, or if the proposed construction will differ from that anticipated herein, Geocon Incorporated should be notified so that supplemental recommendations can be given. The evaluation or identification of the potential presence of hazardous or corrosive materials was not part of the scope of services provided by Geocon Incorporated.
3. This report is issued with the understanding that it is the responsibility of the owner or his representative to ensure that the information and recommendations contained herein are brought to the attention of the architect and engineer for the project and incorporated into the plans, and the necessary steps are taken to see that the contractor and subcontractors carry out such recommendations in the field.
4. The findings of this report are valid as of the date of this report. However, changes in the conditions of a property can occur with the passage of time, whether they be due to natural processes or the works of man on this or adjacent properties. In addition, changes in applicable or appropriate standards may occur, whether they result from legislation or the broadening of knowledge. Accordingly, the findings of this report may be invalidated wholly or partially by changes outside our control. Therefore, this report is subject to review and should not be relied upon after a period of three years.

LIST OF REFERENCES

- California Geological Survey, 2025a, CGS Information Warehouse, Regulatory Map Portal, <http://maps.conservation.ca.gov/cgs/informationwarehouse/index.html?map=regulatorymaps>.
- California Geological Survey, 2025b, Earthquake Zones of Required Investigation, <https://maps.conservation.ca.gov/cgs/EQZApp/app/>.
- California Geological Survey, 2018, Earthquake Fault Zones, A Guide for Government Agencies, Property Owners/Developers, and Geoscience Practitioners for Assessing Fault Rupture Hazards in California, Special Publication 42, Revised 2018
- California Department of Water Resources, 2025, Water Data Library, Website: <https://wdl.water.ca.gov/waterdatalibrary/>
- California Geological Survey, 2012, *Geologic Compilation of Quaternary Surficial Deposits in Southern California, Soda Mountains 30' X 60' Quadrangle*, A Project for the Department of Water Resources by the California Geological Survey, Compiled from existing sources by Trinda L. Bedrossian, CEG, CGS Special Report 217, Plate 25, Scale 1:100,000.

117.93333° W

NAD27 117.91667° W



33.93333° N

SUBJECT SITE

33.93333° N

33.91667° N

HABRA

SOUTHERN

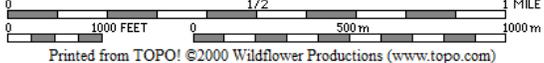
33.91667° N

117.93333° W

NAD27 117.91667° W



LATITUDE: 33.928305
 LONGITUDE: -117.926636



Printed from TOPO! ©2000 Wildflower Productions (www.topo.com)

REFERENCE: U.S.G.S. TOPOGRAPHIC MAPS, 7.5 MINUTE SERIES, LA HABRA, CA QUADRANGLE

GEOCON
 WEST, INC.



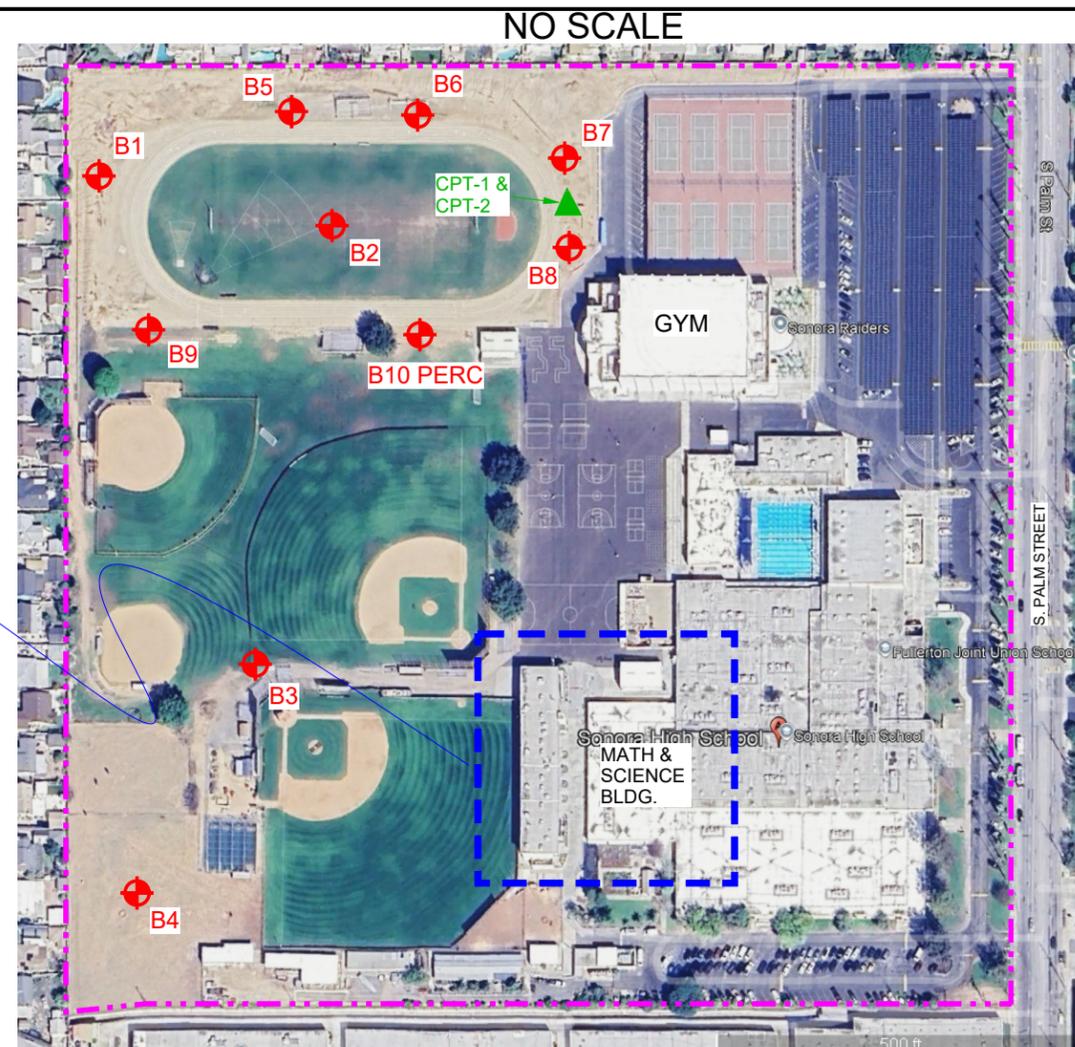
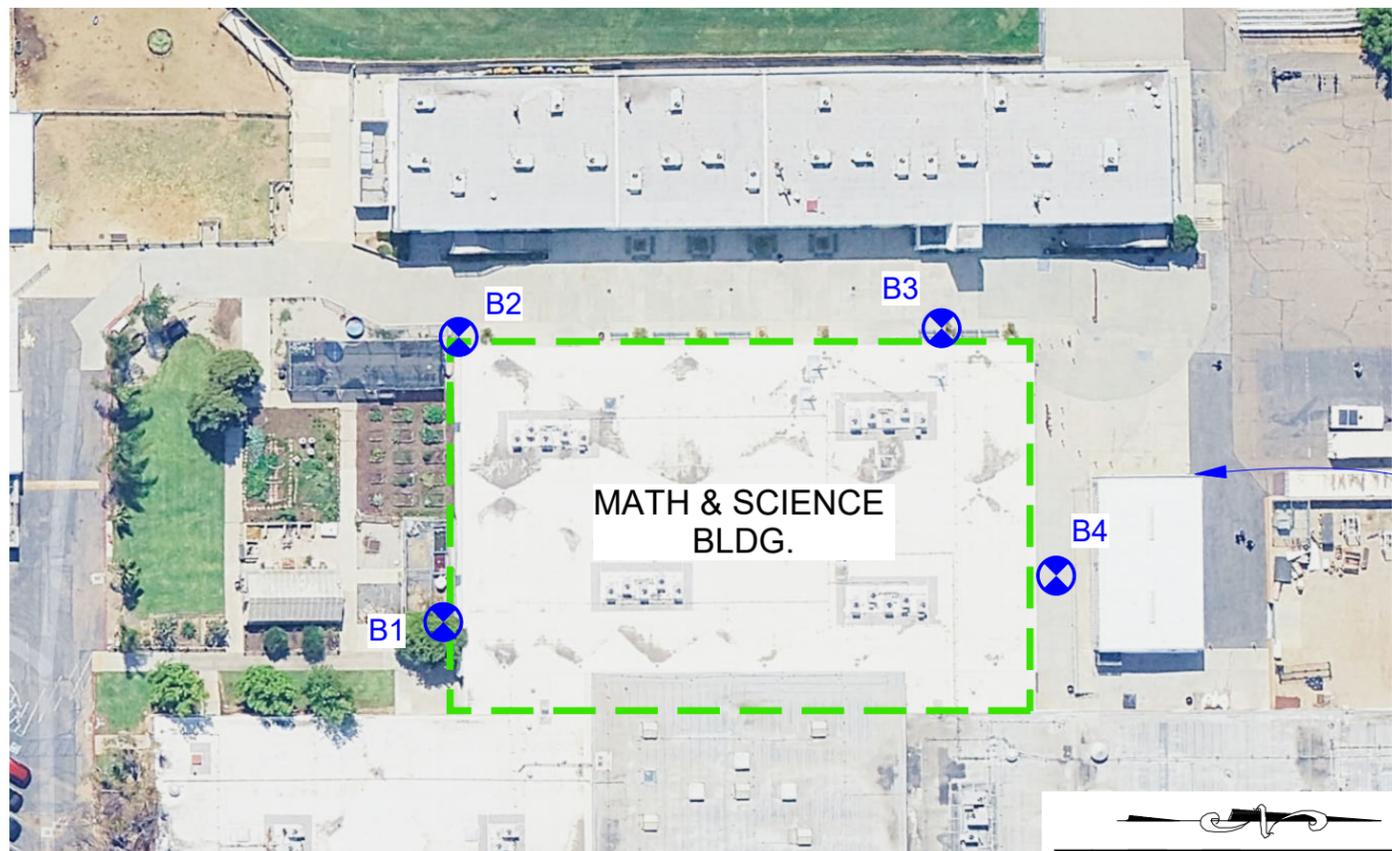
ENVIRONMENTAL GEOTECHNICAL MATERIALS
 500 N. VICTORY BLVD. - BURBANK, CA 91502
 PHONE (818) 841-8388 - FAX (818) 841-1704

DRAFTED BY: LW CHECKED BY: GAK

VICINITY MAP

SONORA HIGH SCHOOL
 401 SOUTH PALM STREET
 LA HABRA, CALIFORNIA

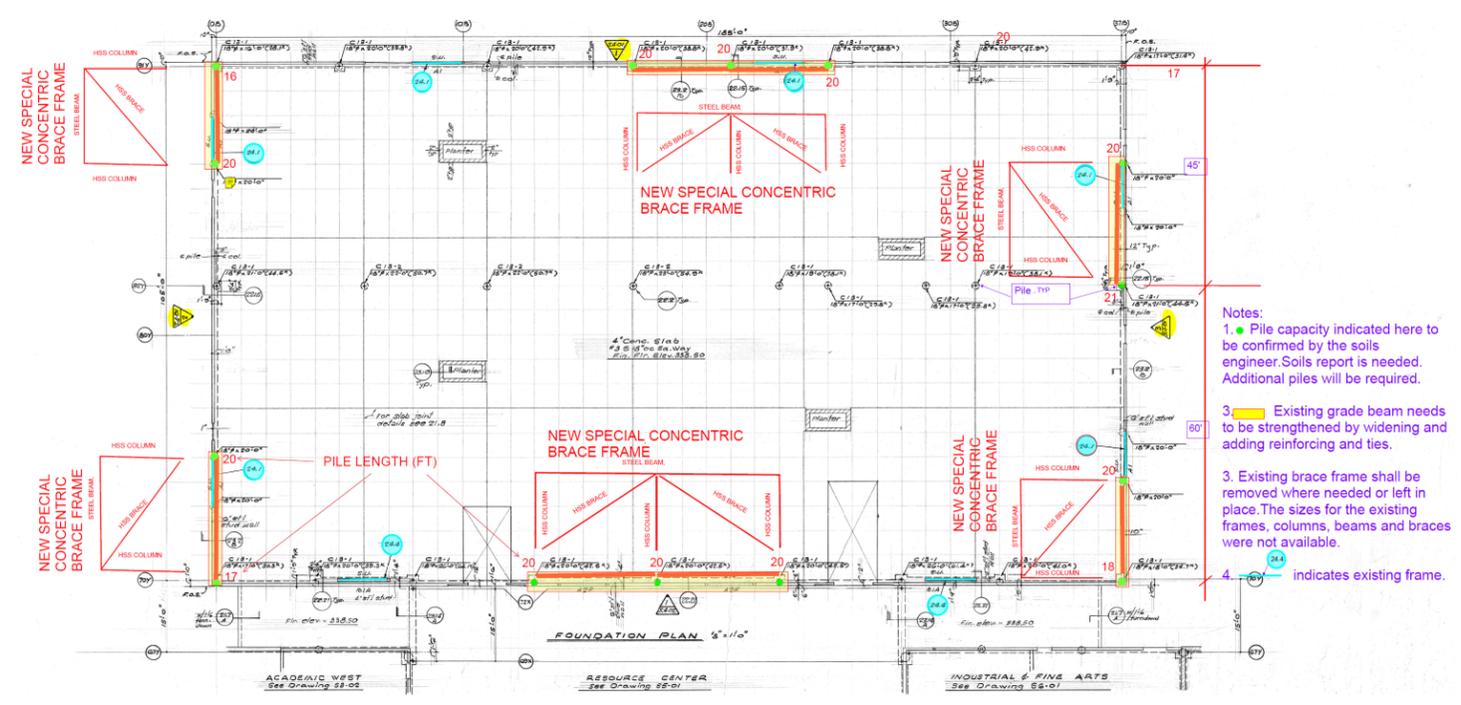
NOV. 2025 PROJECT NO. W2068-88-02 FIG. 1



LEGEND

-  B4 Number and Location of Boring
-  B10 Number and Location of Boring (W2068-88-01)
-  CPT-2 Approximate Location of CPT Soundings
-  Approximate Property Boundary
-  Location of Proposed Seismic Retrofit Improvements

PROPOSED SEISMIC RETROFIT IMPROVEMENTS



GEOCON
WEST, INC.

ENVIRONMENTAL GEOTECHNICAL MATERIALS
500 N. VICTORY BLVD. - BURBANK, CA 91502
PHONE (818) 841-8388 - FAX (818) 841-1704

SITE PLAN

SONORA HIGH SCHOOL
401 SOUTH PALM STREET
LA HABRA, CALIFORNIA

APPENDIX

A

APPENDIX A

FIELD INVESTIGATION

The site was explored on September 20 and 27, 2025, by excavating four 4-inch diameter borings to a maximum depth of approximately 25½ feet below the existing ground surface using hand auger equipment and digging tools. Representative and relatively undisturbed samples were obtained by driving a 3-inch, O. D., California Modified Sampler into the “undisturbed” soil mass with blows from a slide-hammer. The California Modified Sampler was equipped with 1-inch by 2³/₈-inch diameter brass sampler rings to facilitate soil removal and testing. Bulk samples were also obtained.

The soil conditions encountered in the borings were visually examined, classified and logged in general accordance with the Unified Soil Classification System (USCS). The logs of the borings are presented on Figures A1 through A4. The logs depict the soil and geologic conditions encountered and the depth at which samples were obtained. The logs also include our interpretation of the conditions between sampling intervals. Therefore, the logs contain both observed and interpreted data. We determined the lines designating the interface between soil materials on the logs using visual observations, penetration rates, excavation characteristics and other factors. The transition between materials may be abrupt or gradual. Where applicable, the logs were revised based on subsequent laboratory testing. The approximate locations of the exploratory borings are depicted on the Site Plan (see Figure 2).



PROJECT NAME 1344 Bloomdale Street **LOGGED BY** AH
PROJECT NUMBER W2211-06-01 **LATITUDE / LONGITUDE** 34.13725, -117.97545
BORING DATE 10/27/2025 **FIGURE NUMBER** A1 **DEPTH** 8.5' **SURFACE ELEVATION** N/A
LOCATION 1344 Bloomdale Street, Duarte, CA **CLIENT NAME** Dahlin Group, Inc.
DRILLING FIRM - **COMPLETED** 10/27/2025 **EQUIPMENT** Hand Auger -
METHOD Cal-Mod **BORING DIAMETER** 4 in **HAMMER TYPE** - **NOTES** -
HAMMER WEIGHT / DROP - / -

Depth (ft)	Water Levels	Graphic Log	USCS	Material Description	Bulk	Driven	Sample Number
0-2			Fill	ARTIFICIAL FILL Silty SAND, loose, moist, black brown to brown, fine- to medium-grained, some cobbles, trace gravel	X		BULK: 0-5'
2-4			SM	ALLUVIUM Silty SAND, loose, moist, light brown, fine- to medium-grained, some gravel			B1@2.5'
4-6							B1@5'
6-8				some gravel, trace granite			B1@7.5'
8-18				Total depth of boring: 8 feet Fill to 3 feet. No groundwater encountered. Backfilled with soil cuttings and tamped.			

NOTE: THE LOG OF SUBSURFACE CONDITIONS SHOWN HEREON APPLIES ONLY AT THE SPECIFIC BORING OR TRENCH LOCATION AND AT THE DATE INDICATED. IT IS NOT WARRANTED TO BE REPRESENTATIVE OF SUBSURFACE CONDITIONS AT OTHER LOCATIONS AND TIMES. THE STRATIFICATION LINES PRESENTED HEREIN REPRESENT THE APPROXIMATE BOUNDARY BETWEEN EARTH TYPES; THE TRANSITIONS MAY BE GRADUAL.



PROJECT NAME SOHS LOGGED BY RA

PROJECT NUMBER W2068-88-02 LATITUDE / LONGITUDE N/A

BORING DATE 09/20/2025 FIGURE NUMBER A1 DEPTH 25.5' SURFACE ELEVATION N/A

LOCATION 401 S. Palm Avenue, Fullerton, CA CLIENT NAME Fullerton Joint Union High School District

DRILLING FIRM GC Services COMPLETED 09/20/2025 EQUIPMENT Hand Auger -

METHOD Cal-Mod BORING DIAMETER 4 in HAMMER TYPE - NOTES -

HAMMER WEIGHT / DROP - / -

Depth (ft)	Water Levels	Graphic Log	USCS	Material Description	Bulk	Driven	Sample Number	Dry Density (pcf)	Moisture Content (%)
0 - 2			Fill	ARTIFICIAL FILL (CONCRETE: 6" BASE: 2") SAND, poorly graded, loose, slightly moist, olive brown, fine-grained, trace coarse-grained, trace fine gravel, trace clay	X		BULK: 0-5'		
2 - 4			SP-SM	ALLUVIUM SAND w/ Silt, poorly graded, loose to medium dense, slightly moist, brown, fine-grained, trace gravel			B1@3'	91.9	16.0
4 - 6			SM	Silty SAND , medium dense, slightly moist, brown, fine-grained, trace coarse-grained, trace clay					
6 - 8			CL	Sandy CLAY , firm to stiff, moist, reddish brown, fine-grained			B1@6'	114.1	19.7
8 - 12			CL	firm, brown, decrease in sand			B1@9'	116.9	16.5
12 - 16			CL	CLAY , stiff, slightly moist, reddish brown, trace fine-grained sand, trace fine gravel			B1@12'	108.3	17.2
16 - 18			CL				B1@15'	116.0	16.3
18 - 20			SM	Silty SAND , medium dense, slightly moist, reddish brown, fine-grained, trace fine gravel					
20 - 25.5			CL	Sandy CLAY , firm, slightly moist, reddish brown, fine-grained					

NOTE: THE LOG OF SUBSURFACE CONDITIONS SHOWN HEREON APPLIES ONLY AT THE SPECIFIC BORING OR TRENCH LOCATION AND AT THE DATE INDICATED. IT IS NOT WARRANTED TO BE REPRESENTATIVE OF SUBSURFACE CONDITIONS AT OTHER LOCATIONS AND TIMES. THE STRATIFICATION LINES PRESENTED HEREIN REPRESENT THE APPROXIMATE BOUNDARY BETWEEN EARTH TYPES; THE TRANSITIONS MAY BE GRADUAL.



SOIL BORING: B-1

Depth (ft)	Water Levels	Graphic Log	USCS	Material Description	Bulk	Driven	Sample Number	Dry Density (pcf)	Moisture Content (%)
22			CL				B1@20'	113.2	16.8
24			SC	Clayey SAND, medium dense, slightly moist, reddish brown, fine-grained, trace coarse-grained			B1@25'	114.0	13.9
26				Total depth of boring: 25.5 feet Fill to 1.5 feet. No groundwater encountered. Backfilled with soil cuttings. Concrete patched.					
28									
30									
32									
34									
36									
38									

NOTE: THE LOG OF SUBSURFACE CONDITIONS SHOWN HEREON APPLIES ONLY AT THE SPECIFIC BORING OR TRENCH LOCATION AND AT THE DATE INDICATED. IT IS NOT WARRANTED TO BE REPRESENTATIVE OF SUBSURFACE CONDITIONS AT OTHER LOCATIONS AND TIMES. THE STRATIFICATION LINES PRESENTED HEREIN REPRESENT THE APPROXIMATE BOUNDARY BETWEEN EARTH TYPES; THE TRANSITIONS MAY BE GRADUAL.



PROJECT NAME SOHS LOGGED BY RA
 PROJECT NUMBER W2068-88-02 LATITUDE / LONGITUDE N/A
 BORING DATE 09/20/2025 FIGURE NUMBER A2 DEPTH 20.5' SURFACE ELEVATION N/A
 LOCATION 401 S. Palm Avenue, Fullerton, CA CLIENT NAME Fullerton Joint Union High School District
 DRILLING FIRM GC Services COMPLETED 09/20/2025 EQUIPMENT Hand Auger -
 METHOD Cal-Mod BORING DIAMETER 4 in HAMMER TYPE - NOTES -
 HAMMER WEIGHT / DROP - / -

Depth (ft)	Water Levels	Graphic Log	USCS	Material Description	Bulk	Driven	Sample Number	Dry Density (pcf)	Moisture Content (%)
2			Fill	ARTIFICIAL FILL (CONCRETE: 4" BASE: 2") Clayey SAND, loose to medium dense, moist, brown, fine-grained, trace coarse-grained					
4			CL	ALLUVIUM CLAY, soft to firm, slightly moist, brown, trace fine-grained sand					
6							B2@5'	93.4	24.6
8									
10			SC	Clayey SAND, medium dense, slightly moist, brown to reddish brown, fine-grained, trace coarse-grained					
12			CL	CLAY, soft, slightly moist, brown, trace coarse-grained sand					
14			SC	Clayey SAND, medium dense, slightly moist, reddish brown, fine- to medium-grained, trace fine gravel					
16							B2@15'	109.7	19.8
18			SP-SC	SAND w/ Clay, loose to medium dense, slightly moist, reddish brown, fine-grained					

NOTE: THE LOG OF SUBSURFACE CONDITIONS SHOWN HEREON APPLIES ONLY AT THE SPECIFIC BORING OR TRENCH LOCATION AND AT THE DATE INDICATED. IT IS NOT WARRANTED TO BE REPRESENTATIVE OF SUBSURFACE CONDITIONS AT OTHER LOCATIONS AND TIMES. THE STRATIFICATION LINES PRESENTED HEREIN REPRESENT THE APPROXIMATE BOUNDARY BETWEEN EARTH TYPES; THE TRANSITIONS MAY BE GRADUAL.



PROJECT NAME SOHS LOGGED BY RA

PROJECT NUMBER W2068-88-02 LATITUDE / LONGITUDE N/A

BORING DATE 09/27/2025 FIGURE NUMBER A3 DEPTH 20.5' SURFACE ELEVATION N/A

LOCATION 401 S. Palm Avenue, Fullerton, CA CLIENT NAME Fullerton Joint Union High School District

DRILLING FIRM GC Services COMPLETED 09/27/2025 EQUIPMENT Hand Auger -

METHOD Cal-Mod BORING DIAMETER 4 in HAMMER TYPE - NOTES -

HAMMER WEIGHT / DROP - / -

Depth (ft)	Water Levels	Graphic Log	USCS	Material Description	Bulk	Driven	Sample Number	Dry Density (pcf)	Moisture Content (%)
0 - 2			Fill	ARTIFICIAL FILL Silty SAND, loose, slightly moist, reddish brown, fine- to medium-grained, trace fine to coarse gravel	X		BULK: 0-5'		
2 - 4			SC	ALLUVIUM Clayey SAND, loose, slightly moist, brown, fine-grained, trace fine gravel dark brown			B3@3'	97.9	19.3
4 - 6			CL	Sandy CLAY , soft, slightly moist, brown, fine-grained, trace silt			B3@6'	98.8	22.6
6 - 10				light brown to brown			B3@9'	99.2	23.6
10 - 12			SC	Clayey SAND , medium dense, slightly moist, brown to reddish brown, fine-grained, trace silt			B3@12'	108.8	19.1
12 - 16				reddish brown			B3@15'	110.5	18.3
16 - 18			SP-SC	SAND w/ Clay , poorly graded, medium dense, slightly moist, reddish brown, fine-grained					

NOTE: THE LOG OF SUBSURFACE CONDITIONS SHOWN HEREON APPLIES ONLY AT THE SPECIFIC BORING OR TRENCH LOCATION AND AT THE DATE INDICATED. IT IS NOT WARRANTED TO BE REPRESENTATIVE OF SUBSURFACE CONDITIONS AT OTHER LOCATIONS AND TIMES. THE STRATIFICATION LINES PRESENTED HEREIN REPRESENT THE APPROXIMATE BOUNDARY BETWEEN EARTH TYPES; THE TRANSITIONS MAY BE GRADUAL.



SOIL BORING: B-3

Depth (ft)	Water Levels	Graphic Log	USCS	Material Description	Bulk	Driven	Sample Number	Dry Density (pcf)	Moisture Content (%)
			SP-SC	trace fine gravel			B3@20'	111.9	16.4
22				Total depth of boring: 20.5 feet Fill to 2 feet. No groundwater encountered. Backfilled with soil cuttings. Concrete patched.					
24									
26									
28									
30									
32									
34									
36									
38									

NOTE: THE LOG OF SUBSURFACE CONDITIONS SHOWN HEREON APPLIES ONLY AT THE SPECIFIC BORING OR TRENCH LOCATION AND AT THE DATE INDICATED. IT IS NOT WARRANTED TO BE REPRESENTATIVE OF SUBSURFACE CONDITIONS AT OTHER LOCATIONS AND TIMES. THE STRATIFICATION LINES PRESENTED HEREIN REPRESENT THE APPROXIMATE BOUNDARY BETWEEN EARTH TYPES; THE TRANSITIONS MAY BE GRADUAL.



PROJECT NAME SOHS LOGGED BY RA

PROJECT NUMBER W2068-88-02 LATITUDE / LONGITUDE N/A

BORING DATE 09/27/2025 FIGURE NUMBER A4 DEPTH 20.5' SURFACE ELEVATION N/A

LOCATION 401 S. Palm Avenue, Fullerton, CA CLIENT NAME Fullerton Joint Union High School District

DRILLING FIRM GC Services COMPLETED 09/27/2025 EQUIPMENT Hand Auger -

METHOD Cal-Mod BORING DIAMETER 4 in HAMMER TYPE - NOTES -

HAMMER WEIGHT / DROP - / -

Depth (ft)	Water Levels	Graphic Log	USCS	Material Description	Bulk	Driven	Sample Number	Dry Density (pcf)	Moisture Content (%)
0 - 1			Fill	ARTIFICIAL FILL (CONCRETE: 5" BASE: NONE) SAND, poorly graded, loose to medium dense, dry, yellowish brown, fine- to medium-grained, trace fine to coarse gravel					
1 - 4			SC	ALLUVIUM Clayey SAND, loose to medium dense, moist, dark red with black mottles, fine-grained, trace fine gravel, trace silt black with red mottles, increase in clay					
4 - 6			SM	Silty SAND, loose to medium dense, slightly moist, reddish brown, fine-grained, some clay, trace fine gravel			B4@5'	106.3	22.7
6 - 10			CL	Sandy CLAY, soft, slightly moist to moist, reddish brown, some silt firm, slightly moist			B4@10'	108.6	18.4
10 - 15			CL	decrease in sand CLAY, firm, slightly moist, reddish brown, fine-grained, some sand			B4@15'	111.5	17.2
15 - 20			SC	Clayey SAND, medium dense, slightly moist, reddish brown, fine-grained					

NOTE: THE LOG OF SUBSURFACE CONDITIONS SHOWN HEREON APPLIES ONLY AT THE SPECIFIC BORING OR TRENCH LOCATION AND AT THE DATE INDICATED. IT IS NOT WARRANTED TO BE REPRESENTATIVE OF SUBSURFACE CONDITIONS AT OTHER LOCATIONS AND TIMES. THE STRATIFICATION LINES PRESENTED HEREIN REPRESENT THE APPROXIMATE BOUNDARY BETWEEN EARTH TYPES; THE TRANSITIONS MAY BE GRADUAL.

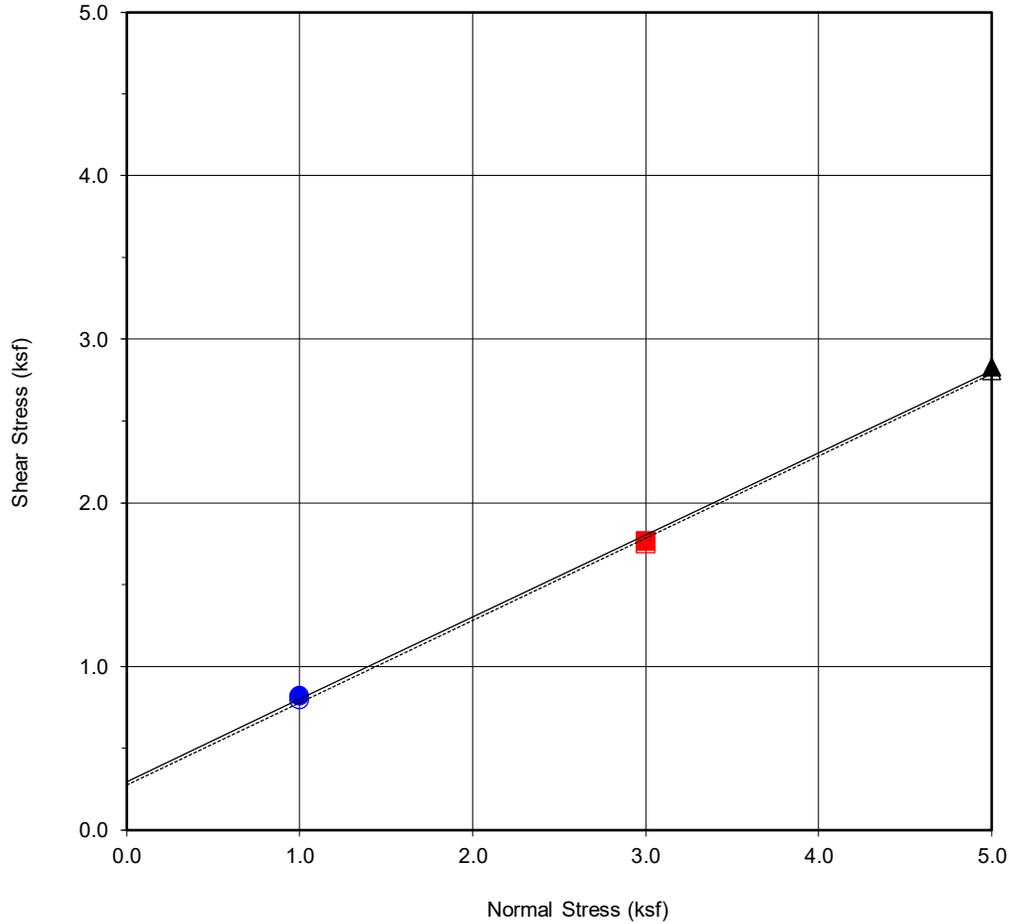
APPENDIX

B

APPENDIX B

LABORATORY TESTING

We performed laboratory tests in accordance with generally accepted test methods of the American Society for Testing and Materials (ASTM) or other suggested procedures. We tested selected soil samples for in-place dry density/moisture content, consolidation, corrosivity, modified proctor, and direct shear strength. The results of the laboratory tests are summarized in Figures B1 through B15. The in-place dry density and moisture content of the samples tested are presented on the boring logs, Appendix A.



Boring No.	B1
Sample No.	B1@0-5'
Depth (ft)	0-5'
<u>Sample Type:</u>	Bulk

<u>Soil Identification:</u>		
Sand w/ Silt (SP-SM)		
Strength Parameters		
	C (psf)	ϕ ($^{\circ}$)
Peak	296	27
Ultimate	276	27

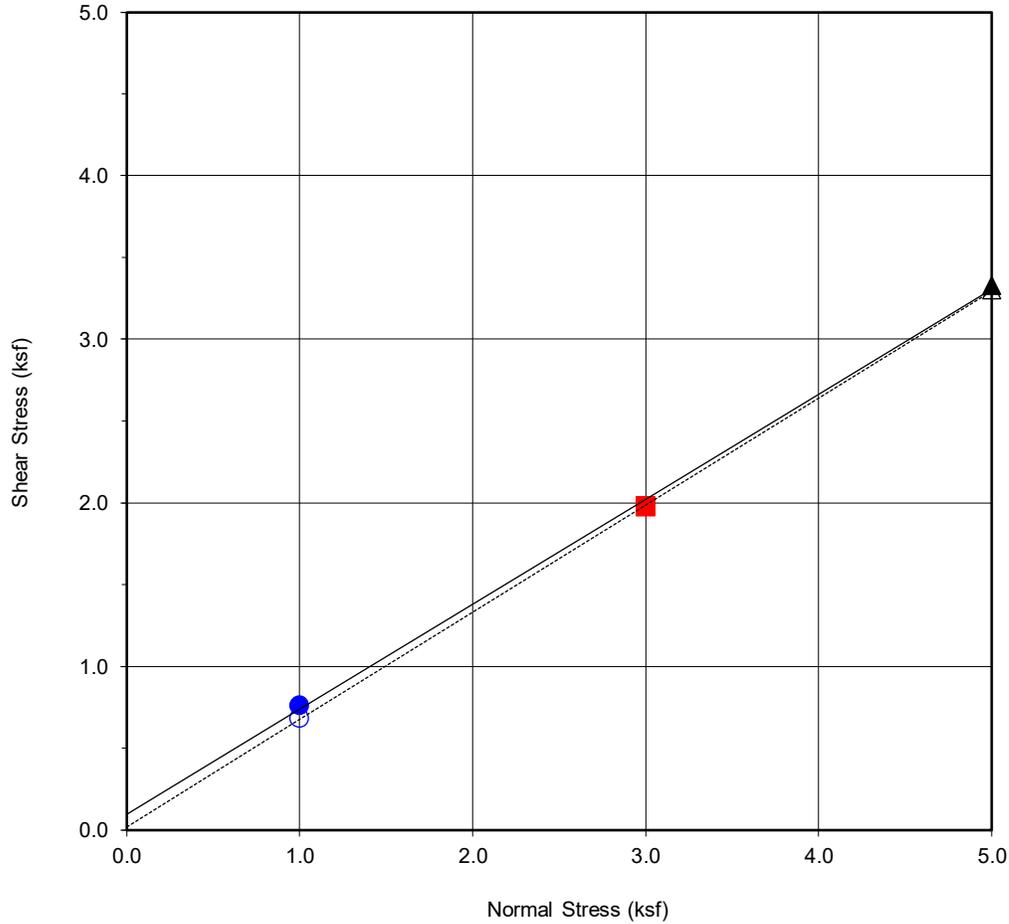
Normal Stress (kip/ft ²)	1	3	5
Peak Shear Stress (kip/ft ²)	● 0.82	■ 1.76	▲ 2.83
Shear Stress @ End of Test (ksf)	○ 0.80	□ 1.75	△ 2.81
Deformation Rate (in./min.)	0.005	0.005	0.005
Initial Sample Height (in.)	1.0	1.0	1.0
Ring Inside Diameter (in.)	2.375	2.375	2.375
Initial Moisture Content (%)	11.8	11.7	11.9
Initial Dry Density (pcf)	104.0	104.0	104.0
Initial Degree of Saturation (%)	51.4	51.0	51.8
Soil Height Before Shearing (in.)	1.2	1.2	1.2
Final Moisture Content (%)	22.1	18.3	15.0



DIRECT SHEAR TEST RESULTS
Consolidated Drained ASTM D-3080

Checked by: RP

Project No.: W2068-88-02
SONORA HIGH SCHOOL
401 SOUTH PALM STREET
LA HABRA, CALIFORNIA
NOV. 2025 Figure B1



Boring No.	B1
Sample No.	B1@3'
Depth (ft)	3'
<u>Sample Type:</u>	Ring

<u>Soil Identification:</u>		
Sand w/ Silt (SP-SM)		
Strength Parameters		
	C (psf)	ϕ ($^{\circ}$)
Peak	96	33
Ultimate	22	33

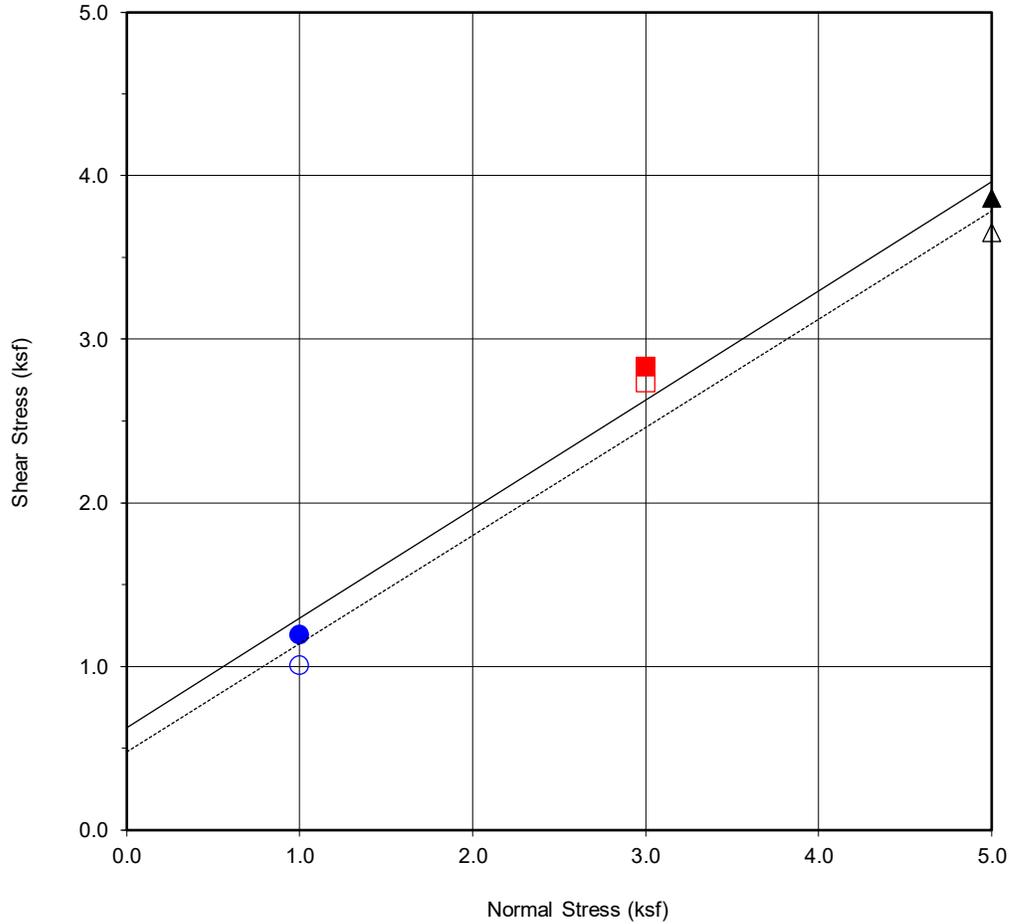
Normal Stress (kip/ft ²)	1	3	5
Peak Shear Stress (kip/ft ²)	● 0.76	■ 1.98	▲ 3.33
Shear Stress @ End of Test (ksf)	○ 0.68	□ 1.97	△ 3.30
Deformation Rate (in./min.)	0.005	0.005	0.005
Initial Sample Height (in.)	1.0	1.0	1.0
Ring Inside Diameter (in.)	2.375	2.375	2.375
Initial Moisture Content (%)	16.0	16.1	16.7
Initial Dry Density (pcf)	95.3	103.1	109.1
Initial Degree of Saturation (%)	56.3	68.4	82.6
Soil Height Before Shearing (in.)	1.2	1.2	1.2
Final Moisture Content (%)	24.0	19.7	18.1



DIRECT SHEAR TEST RESULTS
Consolidated Drained ASTM D-3080

Checked by: RP

Project No.: W2068-88-02
SONORA HIGH SCHOOL
401 SOUTH PALM STREET
LA HABRA, CALIFORNIA
NOV. 2025 Figure B2



Boring No.	B1
Sample No.	B1@9'
Depth (ft)	9'
<u>Sample Type:</u>	Ring

<u>Soil Identification:</u>		
Sandy Clay (CL)		
Strength Parameters		
	C (psf)	ϕ ($^{\circ}$)
Peak	626	34
Ultimate	478	33

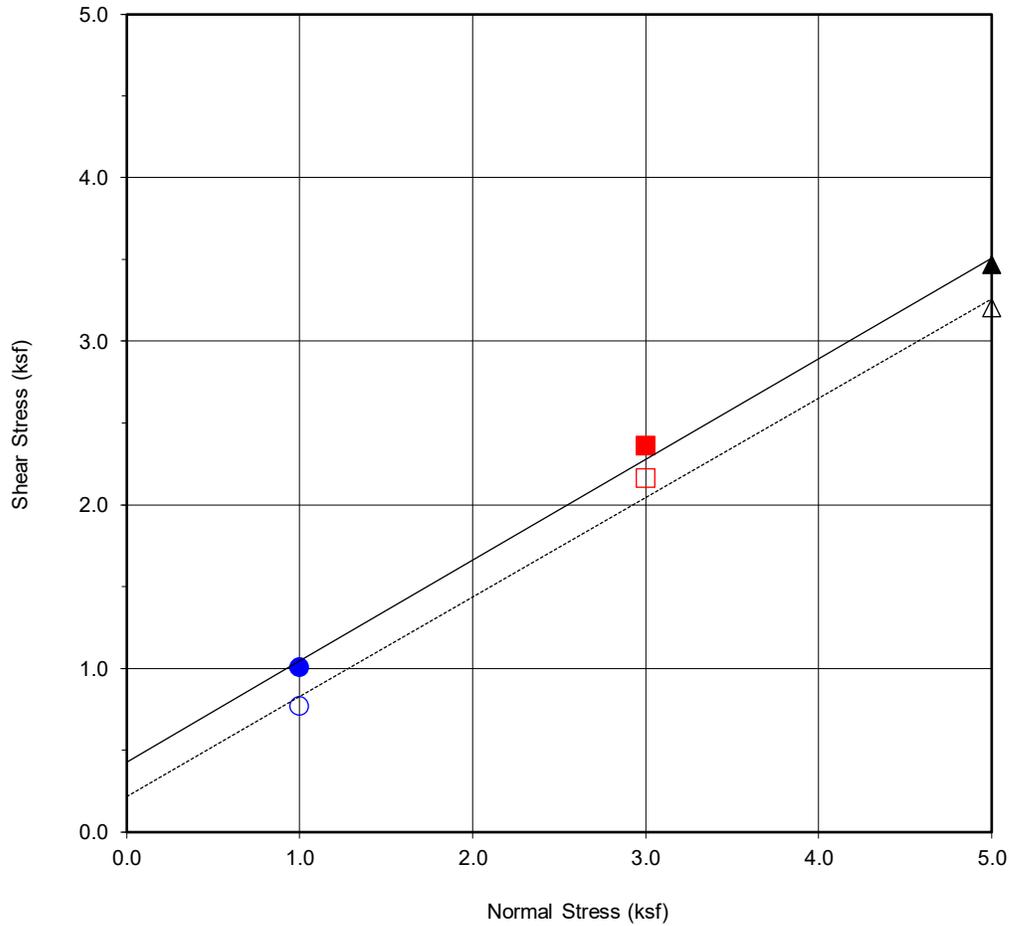
Normal Stress (kip/ft ²)	1	3	5
Peak Shear Stress (kip/ft ²)	● 1.19	■ 2.83	▲ 3.86
Shear Stress @ End of Test (ksf)	○ 1.01	□ 2.73	△ 3.65
Deformation Rate (in./min.)	0.005	0.005	0.005
Initial Sample Height (in.)	1.0	1.0	1.0
Ring Inside Diameter (in.)	2.375	2.375	2.375
Initial Moisture Content (%)	16.5	16.8	17.2
Initial Dry Density (pcf)	114.2	111.6	111.1
Initial Degree of Saturation (%)	93.7	88.9	89.8
Soil Height Before Shearing (in.)	1.2	1.2	1.2
Final Moisture Content (%)	20.4	19.6	18.8



DIRECT SHEAR TEST RESULTS
Consolidated Drained ASTM D-3080

Checked by: RP

Project No.: W2068-88-02
SONORA HIGH SCHOOL
401 SOUTH PALM STREET
LA HABRA, CALIFORNIA
NOV. 2025 Figure B3



Boring No.	B1
Sample No.	B1@25'
Depth (ft)	25'
<u>Sample Type:</u>	Ring

<u>Soil Identification:</u>		
Clayey Sand (SC)		
Strength Parameters		
	C (psf)	ϕ ($^{\circ}$)
Peak	430	32
Ultimate	219	31

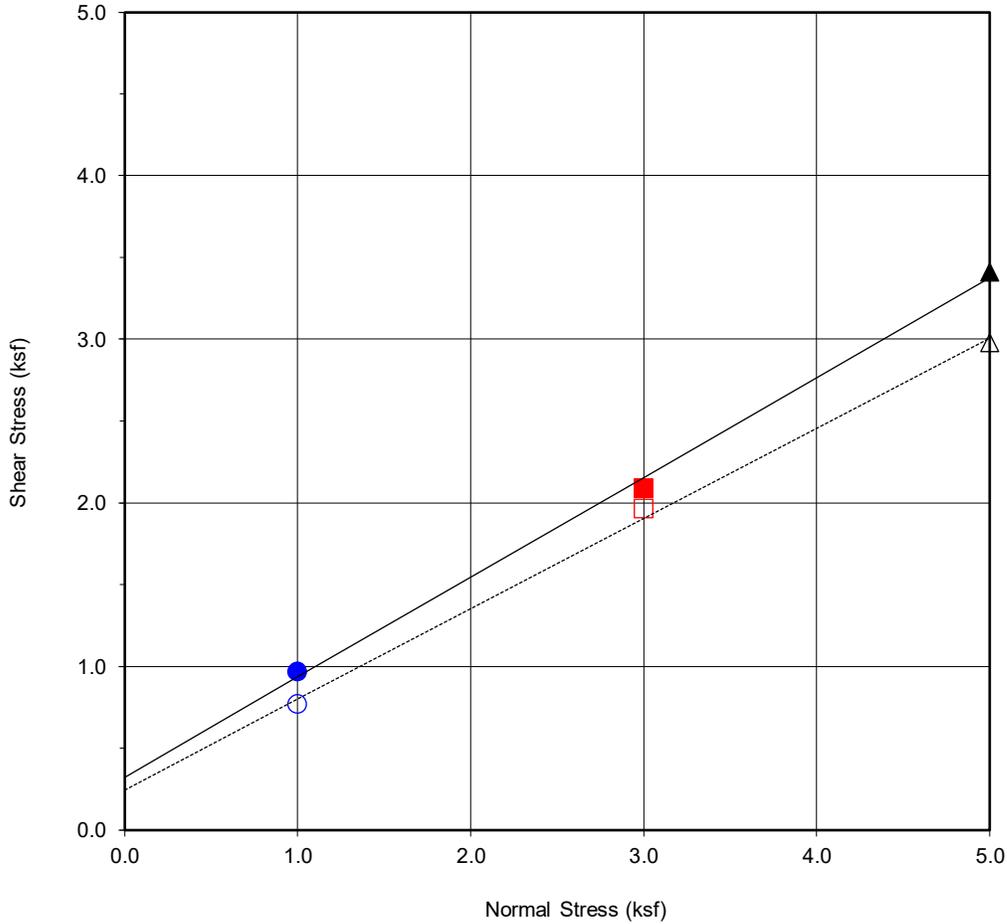
Normal Stress (kip/ft ²)	1	3	5
Peak Shear Stress (kip/ft ²)	● 1.01	■ 2.36	▲ 3.47
Shear Stress @ End of Test (ksf)	○ 0.77	□ 2.16	△ 3.20
Deformation Rate (in./min.)	0.005	0.005	0.005
Initial Sample Height (in.)	1.0	1.0	1.0
Ring Inside Diameter (in.)	2.375	2.375	2.375
Initial Moisture Content (%)	16.7	15.8	16.0
Initial Dry Density (pcf)	109.2	113.7	110.4
Initial Degree of Saturation (%)	83.1	88.6	82.0
Soil Height Before Shearing (in.)	1.2	1.2	1.2
Final Moisture Content (%)	18.1	17.0	16.4



DIRECT SHEAR TEST RESULTS
Consolidated Drained ASTM D-3080

Checked by: RP

Project No.: W2068-88-02
SONORA HIGH SCHOOL
401 SOUTH PALM STREET
LA HABRA, CALIFORNIA
NOV. 2025 Figure B4



Boring No.	B2
Sample No.	B2@10'
Depth (ft)	10'
<u>Sample Type:</u>	Ring

<u>Soil Identification:</u>		
Clayey Sand (SC)		
Strength Parameters		
	C (psf)	ϕ ($^{\circ}$)
Peak	324	31
Ultimate	246	29

Normal Stress (kip/ft ²)	1	3	5
Peak Shear Stress (kip/ft ²)	● 0.97	■ 2.09	▲ 3.41
Shear Stress @ End of Test (ksf)	○ 0.77	□ 1.96	△ 2.98
Deformation Rate (in./min.)	0.005	0.005	0.005
Initial Sample Height (in.)	1.0	1.0	1.0
Ring Inside Diameter (in.)	2.375	2.375	2.375
Initial Moisture Content (%)	17.5	17.9	19.3
Initial Dry Density (pcf)	111.4	111.0	108.6
Initial Degree of Saturation (%)	91.9	93.2	94.2
Soil Height Before Shearing (in.)	1.2	1.2	1.2
Final Moisture Content (%)	19.6	19.2	19.0

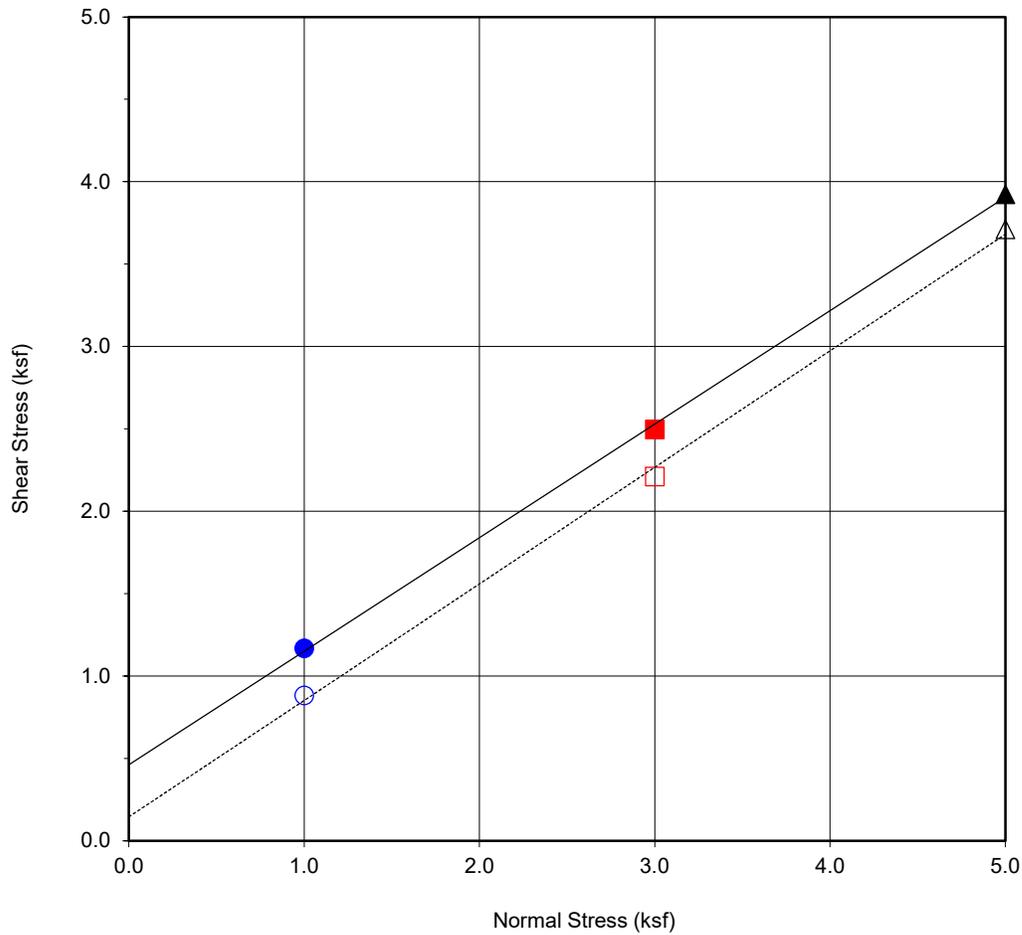


DIRECT SHEAR TEST RESULTS
 Consolidated Drained ASTM D-3080

Checked by: RP

Project No.: W2068-88-02
 SONORA HIGH SCHOOL
 401 SOUTH PALM STREET
 LA HABRA, CALIFORNIA

NOV. 2025 Figure B5



Boring No.	B2
Sample No.	B2@15'
Depth (ft)	15'
<u>Sample Type:</u>	Ring

<u>Soil Identification:</u>		
Clayey Sand (SC)		
Strength Parameters		
	C (psf)	ϕ ($^{\circ}$)
Peak	461	35
Ultimate	146	35

Normal Stress (kip/ft ²)	1	3	5
Peak Shear Stress (kip/ft ²)	● 1.17	■ 2.50	▲ 3.92
Shear Stress @ End of Test (ksf)	○ 0.88	□ 2.21	△ 3.71
Deformation Rate (in./min.)	0.005	0.005	0.005
Initial Sample Height (in.)	1.0	1.0	1.0
Ring Inside Diameter (in.)	2.375	2.375	2.375
Initial Moisture Content (%)	19.8	19.8	18.0
Initial Dry Density (pcf)	107.1	106.4	108.7
Initial Degree of Saturation (%)	93.0	91.6	88.2
Soil Height Before Shearing (in.)	1.2	1.2	1.2
Final Moisture Content (%)	22.0	21.0	18.7



DIRECT SHEAR TEST RESULTS

Consolidated Drained ASTM D-3080

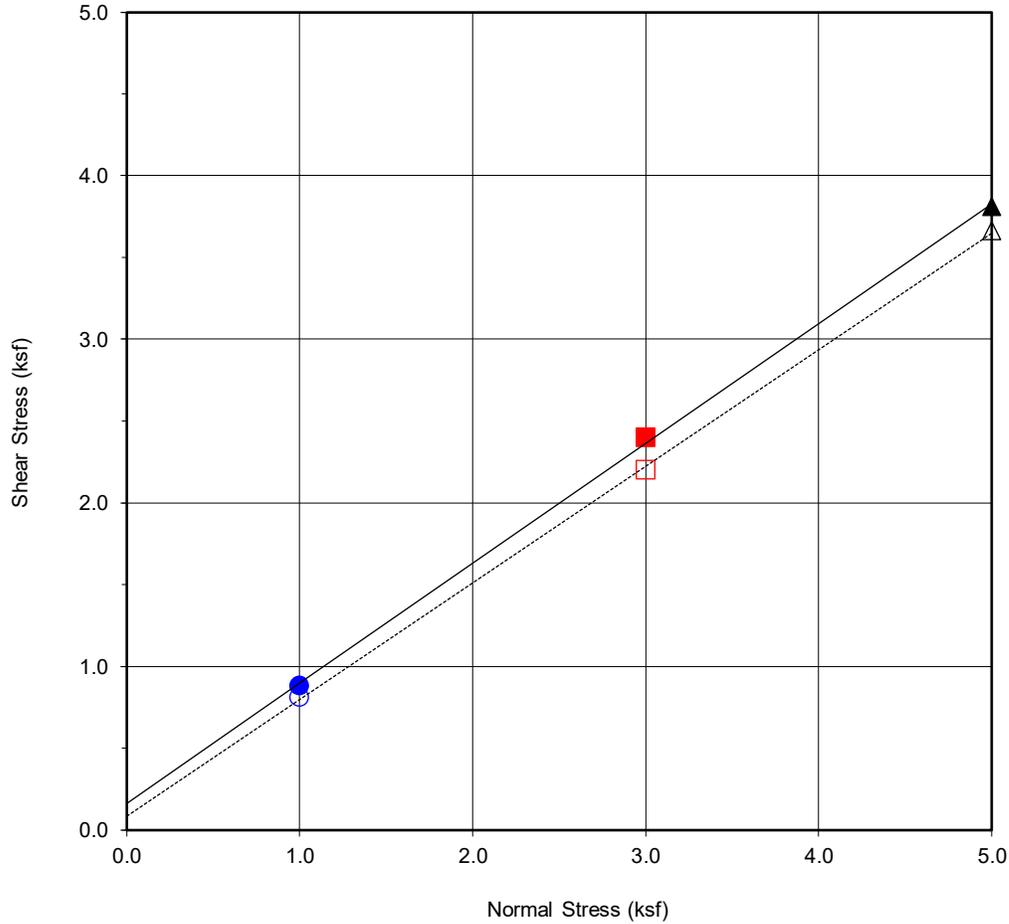
Checked by: RP

Project No.: W2068-88-02

SONORA HIGH SCHOOL
401 SOUTH PALM STREET
LA HABRA, CALIFORNIA

NOV. 2025

Figure B6



Boring No.	B2
Sample No.	B2@20'
Depth (ft)	20'
<u>Sample Type:</u>	Ring

<u>Soil Identification:</u>		
Sand w/ Clay (SP-SC)		
Strength Parameters		
	C (psf)	ϕ ($^{\circ}$)
Peak	164	36
Ultimate	85	35

Normal Stress (kip/ft ²)	1	3	5
Peak Shear Stress (kip/ft ²)	● 0.88	■ 2.40	▲ 3.81
Shear Stress @ End of Test (ksf)	○ 0.81	□ 2.20	△ 3.66
Deformation Rate (in./min.)	0.005	0.005	0.005
Initial Sample Height (in.)	1.0	1.0	1.0
Ring Inside Diameter (in.)	2.375	2.375	2.375
Initial Moisture Content (%)	19.4	20.0	17.0
Initial Dry Density (pcf)	91.7	93.6	103.6
Initial Degree of Saturation (%)	62.5	67.3	73.4
Soil Height Before Shearing (in.)	1.2	1.2	1.2
Final Moisture Content (%)	23.1	22.9	19.8



DIRECT SHEAR TEST RESULTS

Consolidated Drained ASTM D-3080

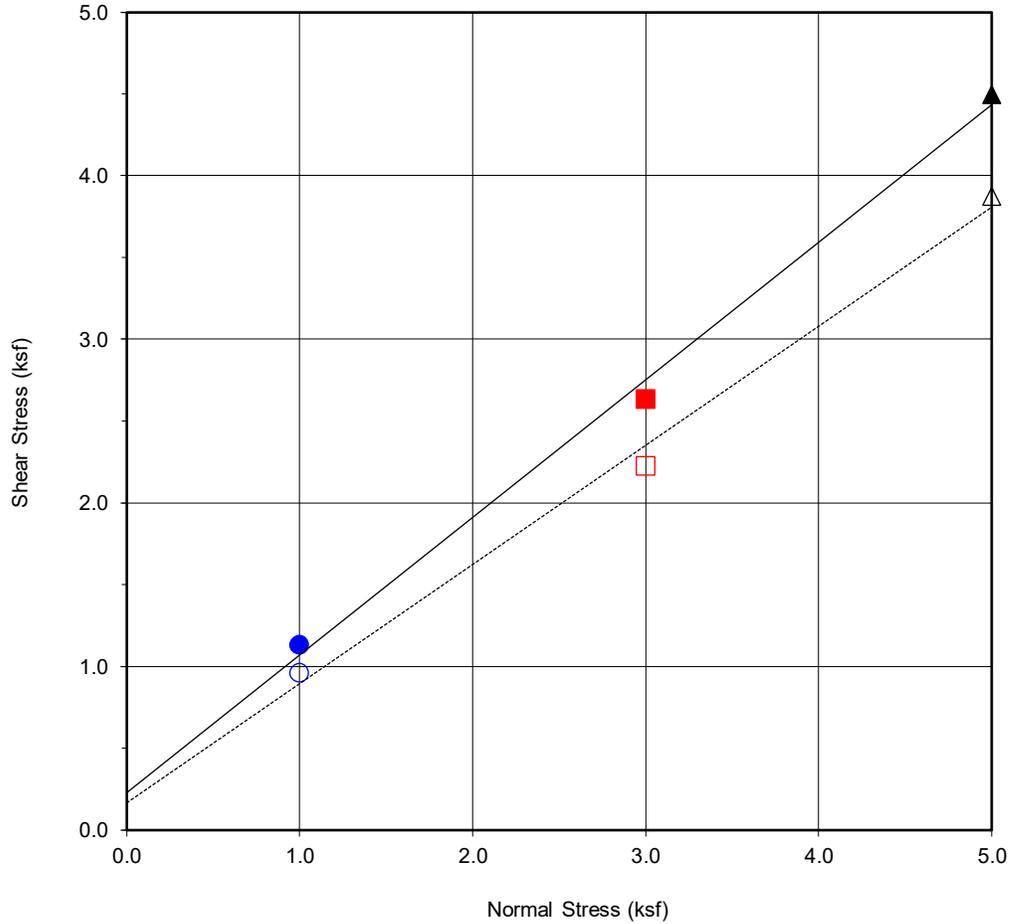
Checked by: RP

Project No.: W2068-88-02

SONORA HIGH SCHOOL
401 SOUTH PALM STREET
LA HABRA, CALIFORNIA

NOV. 2025

Figure B7



Boring No.	B3
Sample No.	B3@20'
Depth (ft)	20'
<u>Sample Type:</u>	Ring

<u>Soil Identification:</u>		
Sand w/ Clay (SP-SC)		
Strength Parameters		
	C (psf)	ϕ ($^{\circ}$)
Peak	229	40
Ultimate	167	36

Normal Stress (kip/ft ²)	1	3	5
Peak Shear Stress (kip/ft ²)	● 1.13	■ 2.63	▲ 4.50
Shear Stress @ End of Test (ksf)	○ 0.96	□ 2.22	△ 3.87
Deformation Rate (in./min.)	0.005	0.005	0.005
Initial Sample Height (in.)	1.0	1.0	1.0
Ring Inside Diameter (in.)	2.375	2.375	2.375
Initial Moisture Content (%)	15.3	17.3	14.9
Initial Dry Density (pcf)	113.3	111.8	112.3
Initial Degree of Saturation (%)	84.5	92.2	80.2
Soil Height Before Shearing (in.)	1.2	1.2	1.2
Final Moisture Content (%)	18.8	18.2	16.7



DIRECT SHEAR TEST RESULTS

Consolidated Drained ASTM D-3080

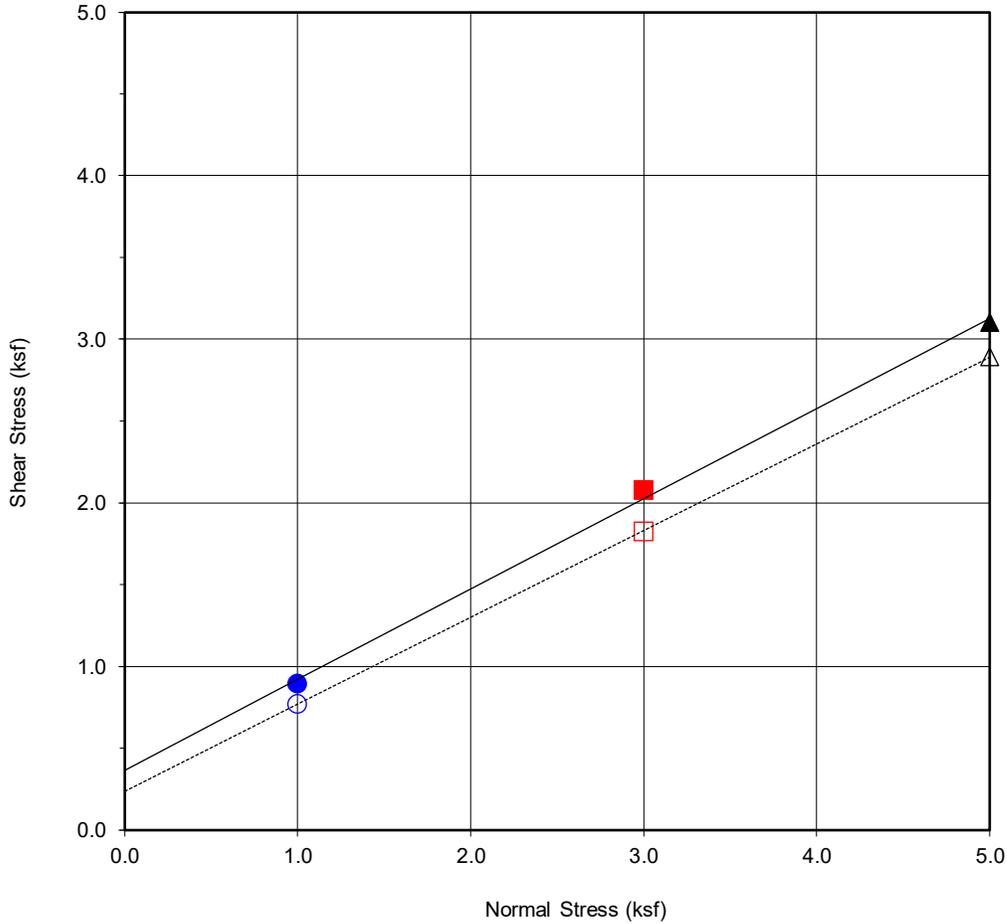
Checked by: RP

Project No.: W2068-88-02

SONORA HIGH SCHOOL
401 SOUTH PALM STREET
LA HABRA, CALIFORNIA

NOV. 2025

Figure B8



Boring No.	B4
Sample No.	B4@20'
Depth (ft)	20'
<u>Sample Type:</u>	Ring

<u>Soil Identification:</u>		
Clayey Sand (SC)		
Strength Parameters		
	C (psf)	ϕ ($^{\circ}$)
Peak	367	29
Ultimate	237	28

Normal Stress (kip/ft ²)	1	3	5
Peak Shear Stress (kip/ft ²)	● 0.89	■ 2.07	▲ 3.10
Shear Stress @ End of Test (ksf)	○ 0.77	□ 1.83	△ 2.89
Deformation Rate (in./min.)	0.005	0.005	0.005
Initial Sample Height (in.)	1.0	1.0	1.0
Ring Inside Diameter (in.)	2.375	2.375	2.375
Initial Moisture Content (%)	22.6	20.7	21.2
Initial Dry Density (pcf)	102.4	102.3	104.9
Initial Degree of Saturation (%)	94.5	86.2	94.6
Soil Height Before Shearing (in.)	1.2	1.2	1.2
Final Moisture Content (%)	22.4	20.0	20.4

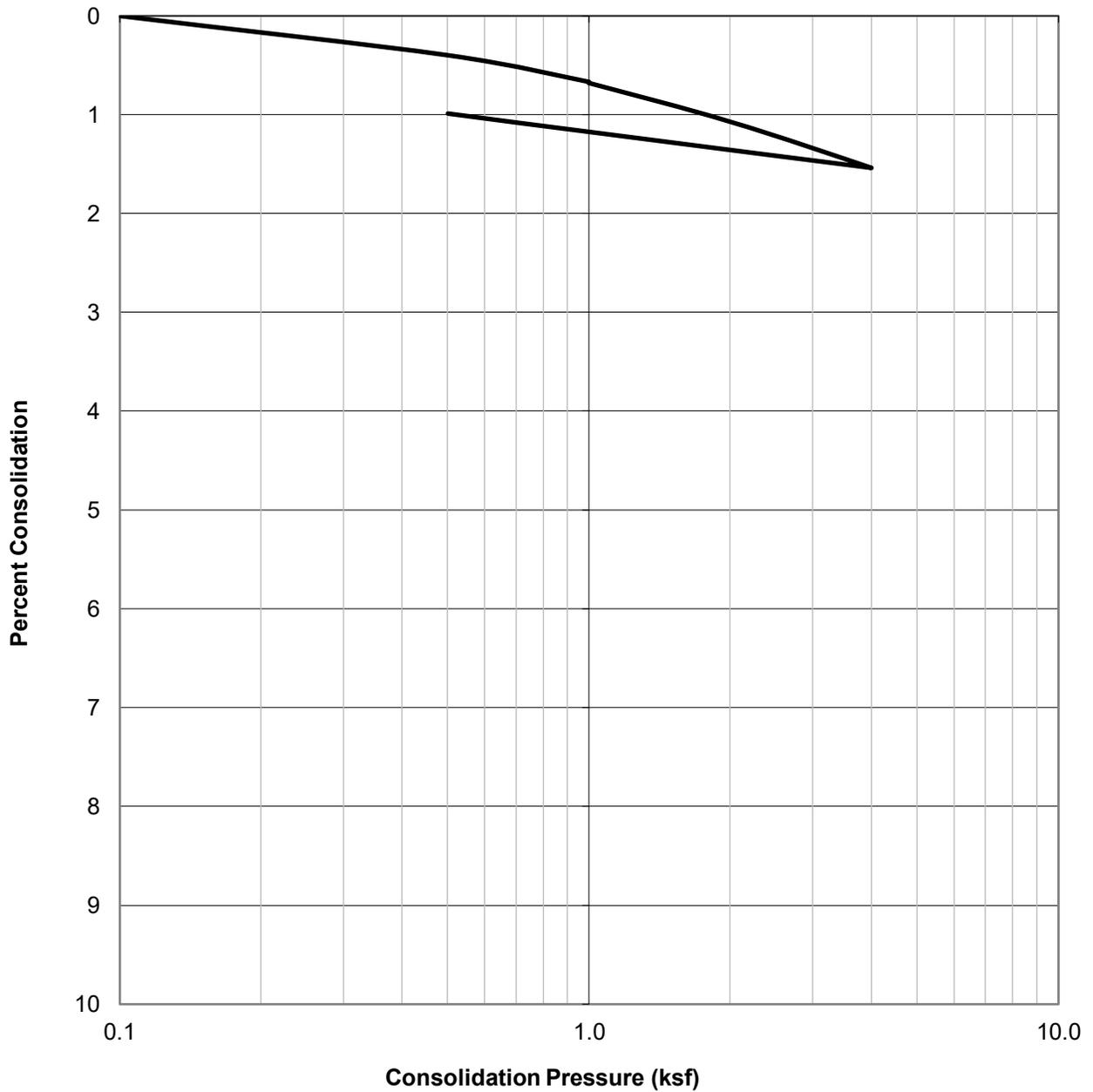


DIRECT SHEAR TEST RESULTS
Consolidated Drained ASTM D-3080

Checked by: RP

Project No.: W2068-88-02
SONORA HIGH SCHOOL
401 SOUTH PALM STREET
LA HABRA, CALIFORNIA
NOV. 2025 Figure B9

WATER ADDED AT 1.0 KSF



SAMPLE ID.	SOIL TYPE	DRY DENSITY (PCF)	INITIAL MOISTURE (%)	FINAL MOISTURE (%)
B1@25'	Clayey Sand (SC)	115.4	13.9	15.7



CONSOLIDATION TEST RESULTS

ASTM D-2435

Checked by: RP

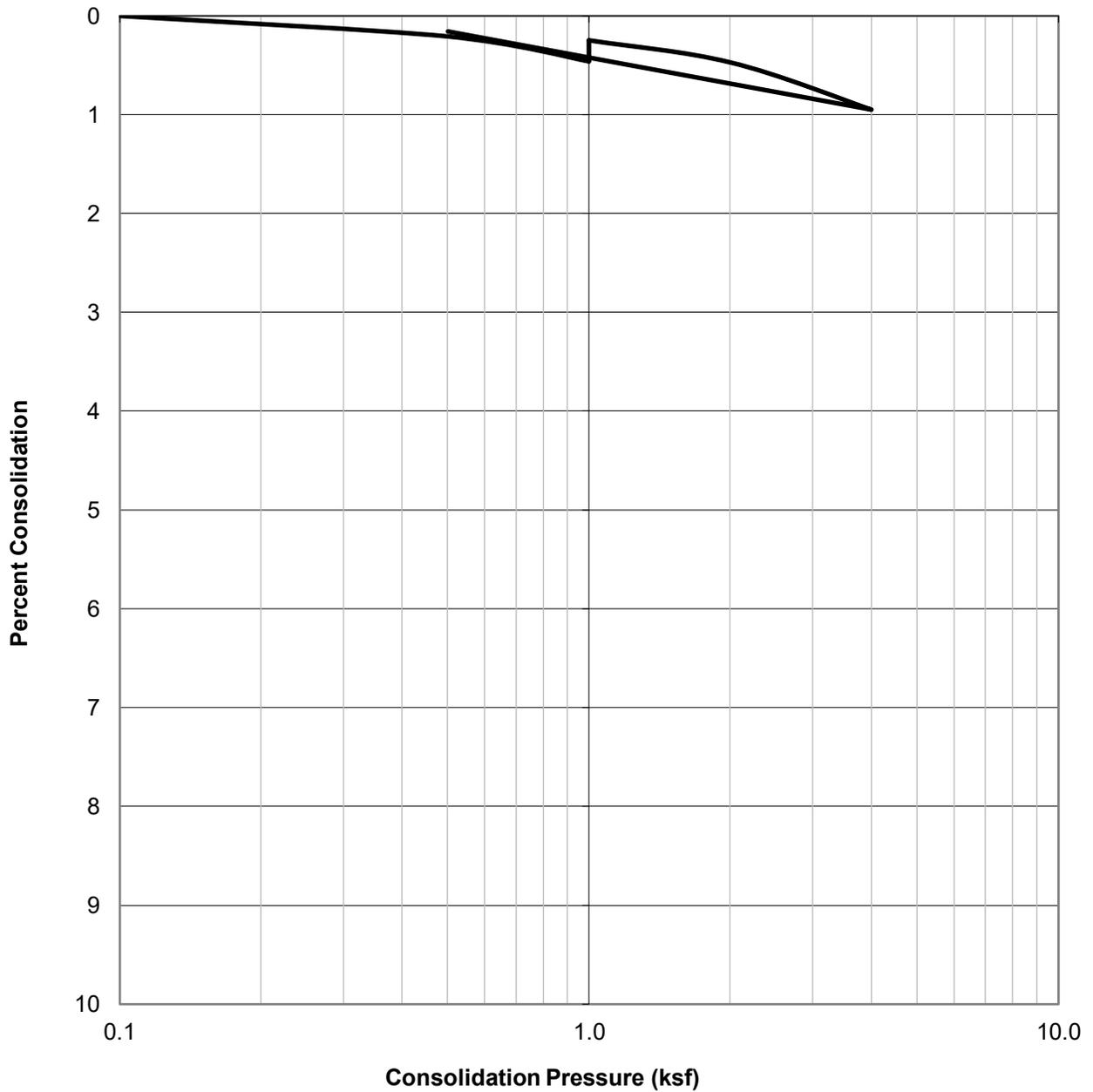
Project No.: W2068-88-02

SONORA HIGH SCHOOL
401 SOUTH PALM STREET
LA HABRA, CALIFORNIA

NOV. 2025

Figure B10

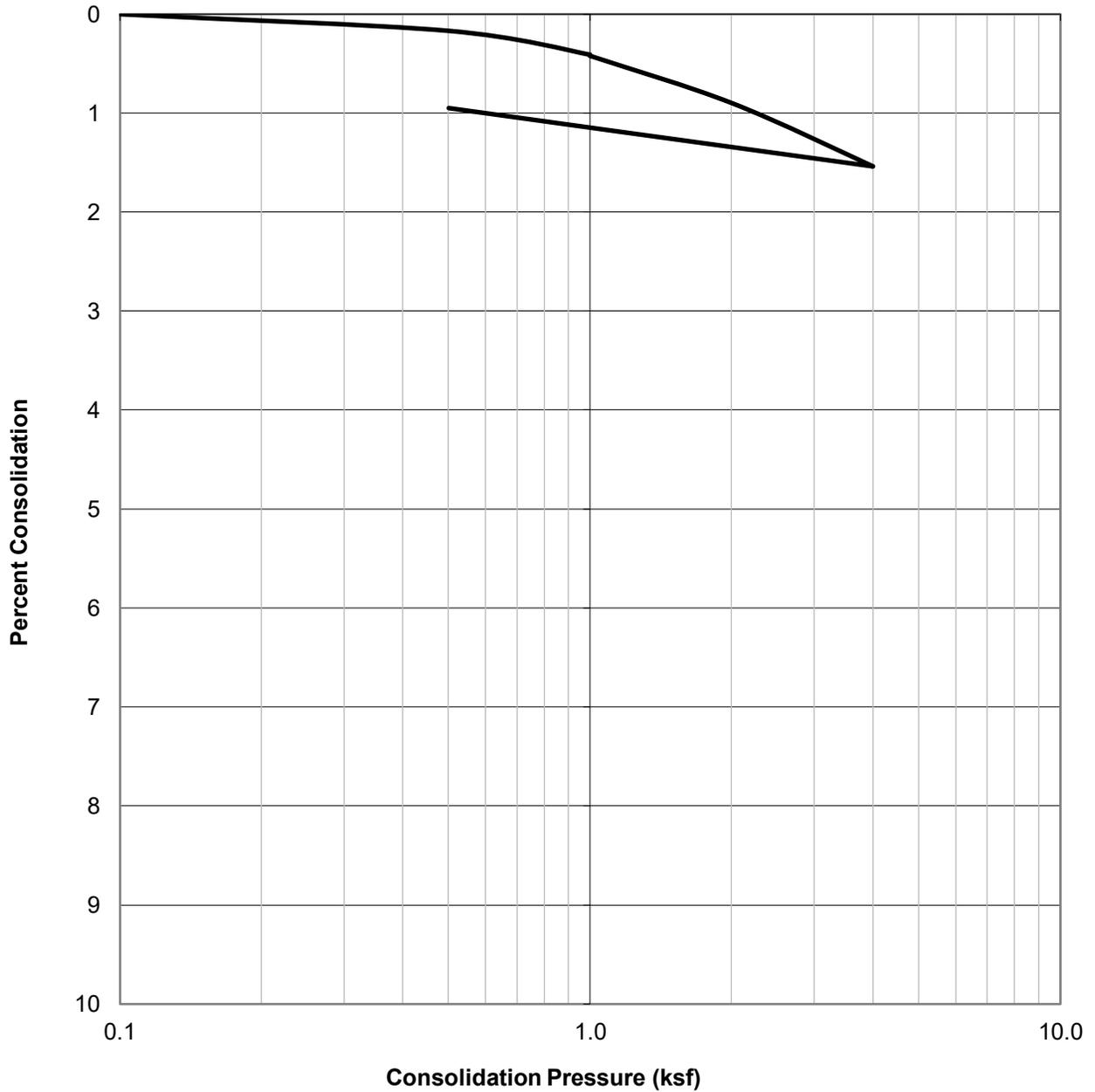
WATER ADDED AT 1.0 KSF



SAMPLE ID.	SOIL TYPE	DRY DENSITY (PCF)	INITIAL MOISTURE (%)	FINAL MOISTURE (%)
B3@3'	Clayey Sand (SC)	102.8	19.3	23.3

	CONSOLIDATION TEST RESULTS ASTM D-2435	Project No.: W2068-88-02
	Checked by: RP	SONORA HIGH SCHOOL 401 SOUTH PALM STREET LA HABRA, CALIFORNIA
		NOV. 2025 Figure B11

WATER ADDED AT 1.0 KSF



SAMPLE ID.	SOIL TYPE	DRY DENSITY (PCF)	INITIAL MOISTURE (%)	FINAL MOISTURE (%)
B3@20'	Sand w/ Clay (SP-SC)	112.0	16.4	17.4



CONSOLIDATION TEST RESULTS

ASTM D-2435

Checked by: RP

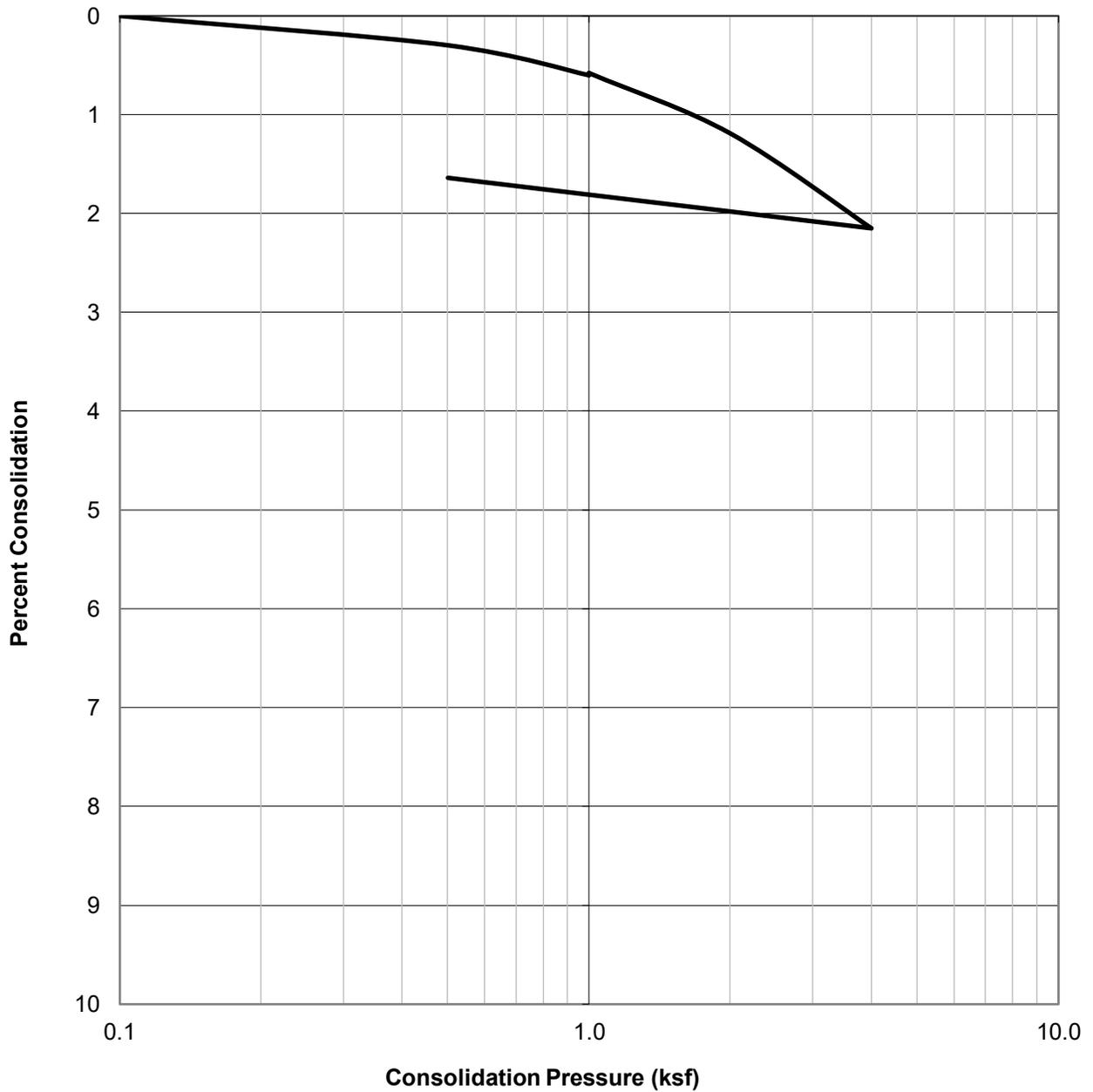
Project No.: W2068-88-02

SONORA HIGH SCHOOL
401 SOUTH PALM STREET
LA HABRA, CALIFORNIA

NOV. 2025

Figure B12

WATER ADDED AT 1.0 KSF



SAMPLE ID.	SOIL TYPE	DRY DENSITY (PCF)	INITIAL MOISTURE (%)	FINAL MOISTURE (%)
B4@20'	Clayey Sand (SC)	106.0	19.7	20.2



CONSOLIDATION TEST RESULTS

ASTM D-2435

Checked by: RP

Project No.: W2068-88-02

SONORA HIGH SCHOOL
401 SOUTH PALM STREET
LA HABRA, CALIFORNIA

NOV. 2025

Figure B13

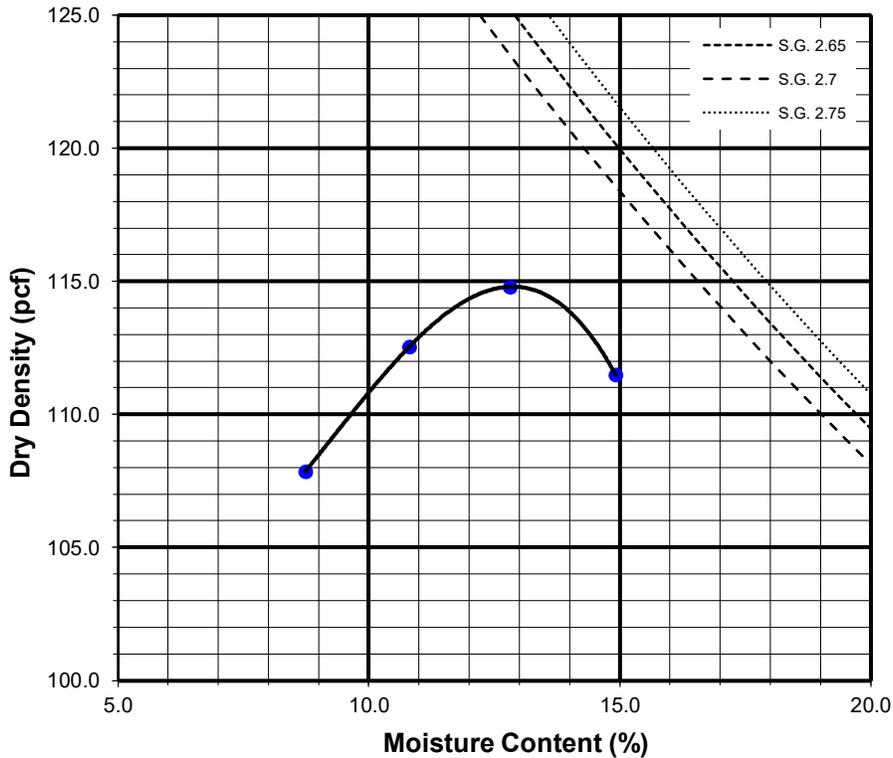
Sample No:

B1@0-5'	Sand w/ Silt (SP-SM)
----------------	----------------------

TEST NO.		1	2	3	4	5	6
Wt. Compacted Soil + Mold	(g)	6248	6227	6176	6063		
Weight of Mold	(g)	4292	4292	4292	4292		
Net Weight of Soil	(g)	1956	1935	1884	1772		
Wet Weight of Soil + Cont.	(g)	987.5	752.1	819.8	863.6		
Dry Weight of Soil + Cont.	(g)	909.5	693.6	769.2	818.3		
Weight of Container	(g)	300.6	301.5	301.2	299.8		
Moisture Content	(%)	12.8	14.9	10.8	8.7		
Wet Density	(pcf)	129.5	128.1	124.7	117.3		
Dry Density	(pcf)	114.8	111.5	112.5	107.9		

Maximum Dry Density (pcf) 115.0

Optimum Moisture Content (%) 13.0

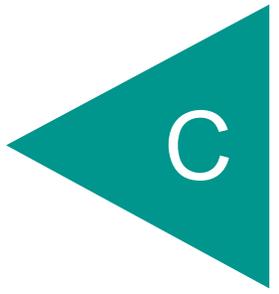


Preparation Method: A

	COMPACTION CHARACTERISTICS USING MODIFIED EFFORT TEST RESULTS <small>ASTM D-1557</small>	Project No.: W2068-88-02
	Checked by: RP	SONORA HIGH SCHOOL 401 SOUTH PALM STREET LA HABRA, CALIFORNIA NOV. 2025

Figure B14

APPENDIX



APPENDIX C

PRIOR REPORT – TRACK AND FIELD IMPROVEMENTS PROJECT



GEOCON

GEOTECHNICAL INVESTIGATION

PROPOSED TRACK AND FIELD IMPROVEMENTS
SONORA HIGH SCHOOL
401 SOUTH PALM STREET
LA HABRA, CALIFORNIA

May 2, 2025
PROJECT NO. W2068-88-01

PREPARED FOR:
FULLERTON JOINT UNION SCHOOL DISTRICT
LA HABRA, CALIFORNIA



Project No. W2037-88-01
May 2, 2025

Ms. Andy Kim
Fullerton Joint Union High School District
1027 South Leslie Street
La Habra, California 90631

Subject: GEOTECHNICAL INVESTIGATION
PROPOSED TRACK AND FIELD IMPROVEMENTS
401 SOUTH PALM STREET
LA HABRA, CALIFORNIA

Mr. Kim:

In accordance with your authorization of our proposal dated January 3, 2025, we have performed a geotechnical investigation for the proposed project located at 401 South Palm Street in the City of La Habra, California. The accompanying report presents the findings of our study and our conclusions and recommendations pertaining to the geotechnical aspects of proposed design and construction. Based on the results of our investigation, it is our opinion that the site can be developed as proposed, provided the recommendations of this report are followed and implemented during design and construction.

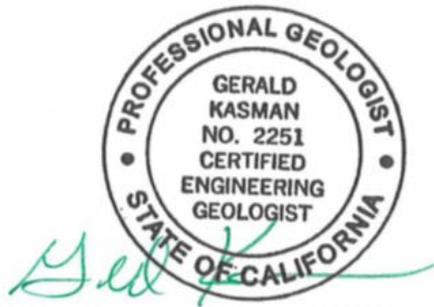
If you have any questions regarding this report, or if we may be of further service, please contact the undersigned.

Very truly yours,

GEOCON WEST, INC.

Rex Panoy
Senior Staff Engineer

(email) Addressee



Gerald A. Kasman
CEG 2251



Jelisa Adams
GE 3092

TABLE OF CONTENTS

1.	PURPOSE AND SCOPE	1
2.	SITE AND PROJECT DESCRIPTION	2
3.	GEOLOGIC SETTING	3
4.	SOIL AND GEOLOGIC CONDITIONS	3
4.1	Artificial Fill	3
4.2	Very Old Alluvial Fan Deposits	3
5.	GROUNDWATER	4
6.	GEOLOGIC HAZARDS	4
6.1	Surface Fault Rupture	4
6.2	Seismicity	5
6.3	Site-Specific Ground Motion Hazard Analysis.....	6
6.4	Deaggregated Seismic Source Parameters	12
6.5	Liquefaction Potential.....	13
6.6	Slope Stability.....	13
6.7	Earthquake-Induced Flooding.....	13
6.8	Tsunamis, Seiches, and Flooding	14
6.9	Oil Fields & Methane Potential.....	14
6.10	Subsidence	14
7.	CONCLUSIONS AND RECOMMENDATIONS	15
7.1	General.....	15
7.2	Soil and Excavation Characteristics.....	17
7.3	Minimum Resistivity, pH, and Water-Soluble Sulfate.....	18
7.4	Grading.....	18
7.5	Shrinkage	21
7.6	Conventional Foundation Design.....	21
7.7	Foundation Settlement	23
7.8	Miscellaneous Foundations	23
7.9	Lateral Design	24
7.10	Field Lighting – Friction Piles.....	24
7.11	Deepened Foundation Installation	27
7.12	Concrete Slabs-on-Grade	28
7.13	Preliminary Pavement Recommendations	30
7.14	Retaining Wall Design	32
7.15	Retaining Wall Drainage	33
7.16	Temporary Excavations.....	34
7.17	Stormwater Infiltration Recommendations.....	35
7.18	Surcharge from Adjacent Structures and Improvements.....	36
7.19	Surface Drainage.....	38
7.20	Plan Review	38

TABLE OF CONTENTS (CONTINUED)

LIMITATIONS AND UNIFORMITY OF CONDITIONS

MAPS AND ILLUSTRATIONS

- Figure 1, Vicinity Map
- Figure 2, Site Plan
- Figure 3, Local Geologic Map
- Figure 4, Regional Fault Map
- Figure 5, Regional Seismicity Map
- Figures 6 through 11, Design Response Spectrum
- Figure 12, Deterministic Scenario Events
- Figure 13, Seismic Hazard Zone Map
- Figures 14 and 15, Retaining Wall Drain Detail
- Figure 16 and 17, Percolation Test Results

APPENDIX A

FIELD INVESTIGATION

- Figures A1 through A10, Boring Logs

APPENDIX B

LABORATORY TESTING

- Figures B1 through B10, Direct Shear Test Results
- Figures B11 through B25, Consolidation Test Results
- Figure B26, Grain Size Analysis Test Results
- Figures B27 through B30, Expansion Index Test Results
- Figures B31 and B32, Compaction Characteristics Using Modified Effort Test Results
- Figure B33, Corrosivity Test Results

APPENDIX C

- Summary of Cone Penetration Test Data (Kehoe)

LIST OF REFERENCES

GEOTECHNICAL INVESTIGATION

1. PURPOSE AND SCOPE

This report presents the results of a geotechnical investigation for the proposed track and field improvements at Sonora High School located at 401 South Palm Street in the City of La Habra, California (see Vicinity Map, Figure 1). The purpose of the investigation was to evaluate the subsurface soil and geologic conditions underlying the areas of proposed construction and, based on conditions encountered, to provide conclusions and recommendations pertaining to the geotechnical aspects of design and construction.

The scope of this investigation included a site reconnaissance, field exploration, laboratory testing, engineering analysis, and the preparation of this report. Percolation testing was also performed to test the infiltration capacity of site soils. Exploration commenced on March 19, 2025, by excavating six 8-inch diameter borings (B5 through B10) to depths ranging from approximately 15½ to 50½ feet below the existing ground surface using a truck-mounted hollow-stem auger drilling machine. On March 24 and 25, 2025, four borings (B1 through B4) were advanced to depths between 10 and 20½ feet below the ground surface using hand tools and manual digging equipment. In addition, two cone penetration tests (CPT-1 and CPT-2) were advanced until practical refusal was encountered at depths of 44 and 68 feet below the ground surface using a CPT rig. The approximate locations of the exploratory borings and CPTs are depicted on the Site Plan (see Figure 2). A detailed discussion of the field investigation, including logs of the borings and CPTs, is presented in Appendix A.

Laboratory tests were performed on selected soil samples obtained during the investigation to determine pertinent physical and chemical soil properties. Appendix B presents a summary of the laboratory test results.

The recommendations presented herein are based on analysis of the data obtained during the investigation and our experience with similar soil and geologic conditions. References reviewed to prepare this report are provided in the List of References section.

If project details vary significantly from those described herein, Geocon should be contacted to determine the necessity for review and possible revision of this report.

2. SITE AND PROJECT DESCRIPTION

The Sonora High School campus is located at 401 South Palm Street in the City of La Habra, California. The proposed improvements are primarily located within and around the existing track and field; additionally, new lights are also proposed for the baseball fields south of the existing track. Exploration was also conducted for future use of a dirt parcel located southwest of the property that is currently being used as a livestock grazing area.

The school is bounded by residential homes to the north and west, by commercial buildings to the south, and by South Palm Street to the east. The site slopes very gently to the south and surface water drainage at the site appears to be by sheet flow along the existing ground contours to the city streets.

Based on the information provided by the Client, it is our understanding that the proposed improvements will consist of new synthetic track and field, an on-grade single-story restroom/storage building, bleachers, a scoreboard, and field lighting (see Site Plan, Figure 2).

Based on the preliminary nature of the design at this time, wall and column loads were not available. It is anticipated that column loads for the proposed structures will be less than 50 kips, and wall loads will be less than 1 kip per linear foot.

Once the design phase and foundation loading configuration proceeds to a more finalized plan, the recommendations within this report should be reviewed and revised, if necessary. Any changes in the design, location or elevation of any structure, as outlined in this report, should be reviewed by this office. Geocon should be contacted to determine the necessity for review and possible revision of this report.

3. GEOLOGIC SETTING

The site is located in the northern portion of the Coastal Plain of Orange County, a deep structural depression containing primarily sedimentary rocks and overlying alluvial deposits. The Coastal Plain is a relatively flat to gently sloping alluviated plain bounded by the Puente Hills and the Coastal Plain of Los Angeles on the north, the Santa Ana Mountains on the east, the San Joaquin Hills on the south, and the Pacific Ocean on the west and southwest. The prominent structural features within the Coastal Plain include the central lowland plain, the northwest trending area of low hills and mesas underlain by the Newport-Inglewood fault zone along the coast (Newport Mesa, Huntington Beach Mesa, Bolsa Chica Mesa, and Landing Hill), and the San Joaquin Hills on the southeast.

4. SOIL AND GEOLOGIC CONDITIONS

Based on our field investigation and published geologic maps of the area, the site is underlain by artificial fill and Pleistocene-age very old alluvial fan deposits consisting of interbedded silt, sand, and gravel (California Geological Survey [CGS], 2010). The local geologic conditions are shown on Figure 3, Local Geologic Map. Detailed stratigraphic profiles of the materials encountered at the site are provided on the boring and CPT logs in Appendix A.

4.1 Artificial Fill

Artificial fill was encountered in our field explorations to a maximum depth of 4 feet below the existing ground surface. The artificial fill generally consists of brown to dark brown and reddish-brown sandy silt and silty clay that can be characterized as dry to slightly moist and soft to firm. The fill is likely the result of past grading or construction activities at the site. Deeper fill may exist between excavations and in other portions of the site that were not directly explored.

4.2 Very Old Alluvial Fan Deposits

Pleistocene-age very old alluvial fan deposits were encountered beneath the fill to the maximum depth explored of 50½ feet below existing ground surface. The deposits generally consist of silt and clay, with lesser amounts of sand, whose contacts are gradational. The soils are characterized as dry to wet and medium dense to very dense or firm to hard. The deposits vary in amounts of coarse sand and may contain trace gravel. They can contain manganese stringers, leaching seams, and oxidation stains.

5. GROUNDWATER

Review of the Seismic Hazard Zone Report for the La Habra Quadrangle (California Division of Mines and Geology [CDMG], 1998) indicates the historically highest groundwater level in the area is between 10 and 25 feet beneath the existing ground surface. Groundwater information presented in this document is generated from data collected in the early 1900's to the late 1990s. The site is located on an uplifted old alluvial terrace and is not located within a groundwater basin. Based on the geologic conditions and current groundwater basin management practices, it is unlikely that groundwater levels will ever exceed the historic high levels.

Groundwater was encountered in boring B8 at a depth of approximately 35 feet and in CPT-2 at a depth of approximately 32 feet. Considering the depth to groundwater and the depth of the proposed site improvements, static groundwater is not anticipated to be encountered during construction, nor have a detrimental effect on the project. However, it is not uncommon for groundwater levels to vary seasonally or for groundwater seepage conditions to develop where none previously existed, especially in impermeable fine-grained soils which are heavily irrigated or after seasonal rainfall. In addition, recent requirements for stormwater infiltration could result in shallower seepage conditions in the immediate site vicinity. Proper surface drainage of irrigation and precipitation will be critical for future performance of the project. Recommendations for drainage are provided in the *Surface Drainage* section 7.20 of this report.

6. GEOLOGIC HAZARDS

6.1 Surface Fault Rupture

The numerous faults in Southern California include Holocene-active, pre-Holocene, and inactive faults. The criteria for these major groups are based on criteria developed by the California Geological Survey (CGS, formerly known as CDMG) for the Alquist-Priolo Earthquake Fault Zone Program (CGS, 2018). By definition, a Holocene-active fault is one that has had surface displacement within Holocene time (about the last 11,700 years). A pre-Holocene fault has demonstrated surface displacement during Quaternary time (approximately the last 1.6 million years) but has had no known Holocene movement. Faults that have not moved in the last 1.6 million years are considered inactive.

The site is not within a state-designated Alquist-Priolo Earthquake Fault Zone (CGS, 2025b; CDMG, 1986) for surface fault rupture hazards. No Holocene-active or pre-Holocene faults with the potential for surface fault rupture are known to pass directly beneath the site. Therefore, the potential for surface rupture due to faulting occurring beneath the site during the design life of the proposed development is considered low. However, the site is located in the seismically active Southern California region and could be subjected to moderate to strong ground shaking in the event of an earthquake on one of the many active Southern California faults. The faults in the vicinity of the site are shown in Figure 4, Regional Fault Map.

The closest active fault to the site is the Whittier Fault located approximately 1.4 miles to the northeast (CDMG, 1986). Other nearby active faults are the West Coyote Hills Fault, the Chino Fault, and the Newport-Inglewood Fault Zone located approximately 2 miles southwest, 13½ miles northeast, and 27 miles southwest of the site, respectively (USGS, 2006; Ziony and Jones, 1989). The active San Andreas Fault Zone is located approximately 35 miles northeast of the site (Ziony and Jones, 1989).

Several buried thrust faults, commonly referred to as blind thrusts, underlie the Los Angeles Basin at depth. These faults are not exposed at the ground surface and are typically identified at depths greater than 3.0 kilometers. The October 1, 1987, M_w 5.9 Whittier Narrows earthquake and the January 17, 1994, M_w 6.7 Northridge earthquake were a result of movement on the Puente Hills Blind Thrust and the Northridge Thrust, respectively. These thrust faults and others in the Los Angeles area are not exposed at the surface and do not present a potential surface fault rupture hazard at the site; however, these deep thrust faults are considered active features capable of generating future earthquakes that could result in moderate to significant ground shaking at the site.

6.2 Seismicity

As with all of Southern California, the site has experienced historic earthquakes from various regional faults. The seismicity of the region surrounding the site was formulated based on research of the USGS earthquake catalog. The epicenters of recorded events with earthquake magnitudes (M_w – moment magnitude) equal to or greater than 5.0 in the site vicinity are depicted in Figure 4, Regional Seismicity Map. For informational purposes, a partial list of moderate to major magnitude earthquakes that have occurred in the Southern California area within the last 100 years is included in the table on the following page.

LIST OF HISTORIC EARTHQUAKES

Earthquake (Oldest to Youngest)	Date of Earthquake	Magnitude (Mw)	Distance to Epicenter (Miles)	Direction to Epicenter
Long Beach	March 10, 1933	6.4	22	S
Tehachapi	July 21, 1952	7.5	96	NW
San Fernando	February 9, 1971	6.6	43	NW
Whittier Narrows	October 1, 1987	5.9	13	NW
Sierra Madre	June 28, 1991	5.8	23	NNW
Landers	June 28, 1992	7.3	87	ENE
Big Bear	June 28, 1992	6.4	66	ENE
Northridge	January 17, 1994	6.7	40	WNW
Hector Mine	October 16, 1999	7.1	105	ENE
Ridgecrest China Lake Fault	July 5, 2019	7.1	128	N

The site could be subjected to strong ground shaking in the event of an earthquake. However, this hazard is common in Southern California and the effects of ground shaking can be minimized if the proposed structures are designed and constructed in conformance with current building codes and engineering practices.

6.3 Site-Specific Ground Motion Hazard Analysis

A site-specific ground motion hazard analysis was performed in accordance with ASCE 7-16 Chapter 21 and Section 1613A of the 2022 CBC.

6.3.1 Site-Specific Shear Wave Velocity

On March 21, 2025, Kehoe Testing and Engineering performed seismic CPT (SCPT) soundings in CPT-1A. The SCPTs measured the shear waves generated at the ground surface to a depth of 68.7 feet below the existing ground surface. The SCPT profiles are included herein as Appendix C.

Based on the result of the SCPT, the site-specific soil shear wave velocity for the upper 30 meters feet of soil (V_{s30}) is estimated as 351 meters/second. In accordance with Section 1613A.3.2 of the 2022 California Building Code and Table 20.3-1 of ASCE 7-16, the estimated soil shear wave velocity falls within the boundaries of a Site Class “D”.

6.3.2 Probabilistic Seismic Hazard Analysis

The risk-targeted Maximum Considered Earthquake (MCE_R) probabilistic response spectrum consists of the spectral response accelerations which are expected to achieve a 1 percent probability of collapse within a 50-year period, evaluated at 5 percent damping.

The median spectral response accelerations having a 2 percent chance of exceedance in 50 years were evaluated at 5 percent damping using the USGS Hazard Curves (dynamic) tool. The NSHM Conterminous U.S. 2018 (v19.7.0) edition was used within the analysis, which is based on the UCERF-3 fault model. The soil underlying the site was modeled with the measured shear wave velocity.

The web application uses the ground motion prediction equations (GMPEs) from the NGA-West 2 project: Abrahamson-et al. (2014) NGA West 2, Boore et al. (2014) NGA West 2, Campbell-Bozorgnia (2014) NGA West 2, and Chiou-Youngs (2014) NGA West 2. Each GMPE was assigned an equal weight and the median value of the four GMPEs was evaluated. The median spectral accelerations were rotated to maximum direction using the period specific ratios from Shahi et al. (2013 & 2014).

The GMPE of Campbell and Borzorgnia requires that the depth to where the shear wave velocity reaches 2.5 kilometers per second ($Z_{2.5}$) be defined. Additionally, the GMPEs of Abrahamson-et al., Boore et al. and Chiou-Youngs require that the depth to where the shear wave velocity reaches 1 kilometer per second ($Z_{1.0}$) be defined. The values of $Z_{2.5}$ and $Z_{1.0}$ are internally calculated by the Hazard Curves (dynamic) tool.

The MCE uniform hazard response spectrum was adjusted to risk-targeted spectral accelerations corresponding to a 1 percent chance of collapse in 50 years by using the values of C_{RS} and C_{R1} obtained from Figures 22-18 and 22-19 of ASCE 7-16 Chapter 22.

The risk-targeted Maximum Considered Earthquake (MCE_R) probabilistic response spectrum is provided on Figure 6.

6.3.3 Deterministic Seismic Hazard Analysis

In order to define the deterministic scenario events, disaggregation of the uniform hazard probabilistic response spectrum was performed using the USGS Disaggregation tool. The inversion approach used by UCERF-3 allows for a large number of variations for each source scenario, including multi-fault ruptures. Therefore, disaggregation of UCERF-3 consists of the contributions from multi-fault ruptures rather than individual source contributions. To address this, the USGS Disaggregation tool aggregates the contributions on a per-fault-section basis, with rupture contributions only ever counted once. The Hazard Disaggregation tool contributor list shows the fault sections which contribute most to hazard at a site and report a mean earthquake magnitude for each section identified by a 'parent' fault name and section index. Based on the disaggregation, we have considered scenario events with the greatest contribution to the deterministic ground motions.

The magnitudes of the deterministic scenario events were based on the BSSC 2014 Scenario Event Catalog which includes the parent fault identified in the deaggregation and which has the largest earthquake magnitude. Other fault source parameters were defined by the values in the BSSC2014 Scenario Catalog. The values of $Z_{2.5}$ and $Z_{1.0}$ were estimated using data from the Community Velocity Model (CVM) Version 4 developed by Southern California Earthquake Data Center (SCEDC) accessed by the OpenSHA Site Data Application (v1.5.2).

The input values used to evaluate the deterministic scenario(s) are provided in Figure 12. The deterministic median and standard deviation (σ) for the scenario events were evaluated using the USGS Response Spectra tool. The deterministic analysis used the same four GMPEs, equally weighted, to generate the median and standard deviation of the ground motion which were then used to calculate the 84th percentile at 5% damping. The median spectral accelerations were rotated to maximum direction using the period specific ratios from Shahi et al. (2013 & 2014).

The deterministic scenarios were compared and a combination of events controls the deterministic spectrum. The fault source resulting in the highest spectral accelerations from 0 to 0.5 seconds would be a magnitude 6.82 event on the Puente Hills (Coyote Hills) fault and from 0.5 to 5 seconds would be a magnitude 7.77 event on the Elsinore: CM+J+T+s+GI+W fault.

The 84th percentile maximum rotated component deterministic response spectrum is provided on Figure 7.

6.3.4 Site-Specific Response Spectrum

The lesser of the probabilistic and deterministic MCE_R response spectra is the Site-Specific MCE_R . Two thirds of the Site-Specific MCE_R is the Design Earthquake (DE) Response Spectrum, provided the results are not less than 80 percent of the modified General Design Response Spectrum determined by ASCE 7-16 Section 11.4.6 with F_a and F_v determined as specified in Section 21.3.

Graphical representations of the analyses are presented on Figures 6 and 7. The Site-Specific Design Earthquake response spectrum at 5 percent damping is presented on Figure 7 and in tabular form on Figure 8.

6.3.5 Mapped Acceleration Parameters

The following table summarizes the site-specific design criteria obtained from the 2022 California Building Code (CBC; Based on the 2021 International Building Code [IBC] and ASCE 7-16), Chapter 16A Structural Design, Section 1613 Earthquake Loads. The data was calculated using the online application *U.S. Seismic Design Maps*, provided by the Structural Engineers Association of California (SEAOC). The short spectral response uses a period of 0.2 second. We evaluated the Site Class based on the discussion in Section 1613A.2.2 of the 2022 CBC and Table 20.3-1 of ASCE 7-16. The values presented on the following page are for the risk-targeted maximum considered earthquake (MCE_R).

MAPPED SPECTRAL ACCELERATIONS

Parameter	Value	2022 CBC Reference
Site Class	D	Section 1613A.2.2
MCE _R Ground Motion Spectral Response Acceleration – Class B (short), S _s	1.807g	Figure 1613A.2.1(1)
MCE _R Ground Motion Spectral Response Acceleration – Class B (1 sec), S ₁	0.638g	Figure 1613A.2.1(3)
Site Coefficient, F _A	1	Table 1613A.2.3(1)
Site Coefficient, F _V	1.7*	Table 1613A.2.3(2)
Site Class Modified MCE _R Spectral Response Acceleration (short), S _{MS}	1.807g	Section 1613A.2.3 (Eqn 16-20)
Site Class Modified MCE _R Spectral Response Acceleration – (1 sec), S _{M1}	1.085g*	Section 1613A.2.3 (Eqn 16-21)
5% Damped Design Spectral Response Acceleration (short), S _{DS}	1.205g	Section 1613A.2.4 (Eqn 16-22)
5% Damped Design Spectral Response Acceleration (1 sec), S _{D1}	0.723g*	Section 1613A.2.4 (Eqn 16-23)
T _s	0.6 sec	ASCE 7-16 Chapter 11
Site Latitude	33.929161	--
Site Longitude	-117.926906	--
<p>Note:</p> <p>*Per Section 11.4.8 of ASCE/SEI 7-16, a ground motion hazard analysis shall be performed for projects for Site Class “E” sites with S_s greater than or equal to 1.0g and for Site Class “D” and “E” sites with S₁ greater than 0.2g. Section 11.4.8 also provides exceptions which indicates that the ground motion hazard analysis may be waived provided the exceptions are followed. Using the code based values presented in the table above, in lieu of a performing a site-specific ground motion hazard analysis, requires the exceptions outlined in ASCE 7-16 Section 11.4.8 be followed.</p>		

6.3.6 Site-Specific Seismic Design Criteria

Based the site-specific ground motion hazard analysis performed, and in accordance with the ASCE 7-16 Section 21.4 and ASCE 41-17 Section 2.4.2, site-specific design acceleration parameters shall be derived using the results of the site-specific ground motion hazard analysis.

The parameter S_{DS} shall be taken as equal to 90 percent of the maximum spectral acceleration obtained from the site-specific analysis at any period within the range from 0.2 to 5 seconds, inclusive. The parameter S_{D1} shall be taken as the maximum value of the product of the spectral acceleration and period for periods from 1 to 5 seconds, inclusive. The values of S_{MS} and S_{M1} shall be taken as 1.5 times the site-specific values of S_{DS} and S_{D1} . The site-specific design acceleration parameters shall not be less than 80 percent of the general seismic design values determined by ASCE 7-16 Section 11.4.

The following tables presents the site-specific seismic design parameters based on the site-specific ground motion hazard analysis.

SITE-SPECIFIC DESIGN ACCELERATION PARAMETERS

Parameter	Value
Site Class Modified MCE_R Spectral Response Acceleration (short), S_{MS}	2.169g
Site Class Modified MCE_R Spectral Response Acceleration – (1 sec), S_{M1}	1.378g
5% Damped Design Spectral Response Acceleration (short), S_{DS}	1.446g
5% Damped Design Spectral Response Acceleration (1 sec), S_{D1}	0.919g

ASCE 41-17 SITE-SPECIFIC SEISMIC DESIGN PARAMETERS

Parameter	Value
Spectral Response Acceleration (short) $S_{XS, BSE-2N}$	2.169g
Spectral Response Acceleration (1 sec) $S_{X1, BSE-2N}$	1.378g
Spectral Response Acceleration (short) $S_{XS, BSE-1N}$	1.446g
Spectral Response Acceleration (1 sec) $S_{X1, BSE-1N}$	0.919g
Spectral Response Acceleration (short) $S_{XS, BSE-2E}$	1.695g
Spectral Response Acceleration (1 sec) $S_{X1, BSE-2E}$	1.012g
Spectral Response Acceleration (short) $S_{XS, BSE-1E}$	0.892g
Spectral Response Acceleration (1 sec) $S_{X1, BSE-1E}$	0.474g

6.3.7 Site-Specific Peak Ground Acceleration

The site-specific Maximum Considered Earthquake (MCE_G) peak ground acceleration was evaluated in accordance with ASCE 7-16 Section 21.5. The significant difference between the MCE_G peak ground acceleration and the analysis presented above is that the MCE_G is calculated without the risk-targeted adjustment factors.

The probabilistic and deterministic 84th percentile peak ground accelerations were analyzed using the same approaches as described above. The analysis used the same Site Class and scenario earthquake. However, within the probabilistic calculation, the risk-targeted adjustment factor was not applied.

The deterministic MCE_G shall not be less than $0.5F_{PGA}$, where F_{PGA} is determined from ASCE 7-16 Table 11.8-1 with the value of PGA taken as 0.5g. The site-specific MCE_G peak ground acceleration is taken as the lesser of the probabilistic and deterministic MCE_G , provided the value is not less than 80 percent of the value of PGA_M as determined by ASCE 7-16 Equation 11.8.1.

ASCE 7-16 SITE-SPECIFIC PEAK GROUND ACCELERATION

Parameter	Value	ASCE 7-16 Reference
Site-Specific MCE_G Peak Ground Acceleration, PGA_M	0.876g	Section 21.5

Conformance to the criteria in the above tables for seismic design does not constitute any kind of guarantee or assurance that significant structural damage or ground failure will not occur if a large earthquake occurs. The primary goal of seismic design is to protect life, not to avoid all damage, since such design may be economically prohibitive.

6.4 Deaggregated Seismic Source Parameters

Deaggregation of the MCE peak ground acceleration was performed using the USGS online Unified Hazard Tool, 2014 Conterminous U.S. Dynamic edition (v4.2.0). The result of the deaggregation analysis indicates that the predominant earthquake contributing to the MCE peak ground acceleration is characterized as a 6.78 magnitude event occurring at a hypocentral distance of 8.59 kilometers from the site.

Deaggregation was also performed for the Design Earthquake (DE) peak ground acceleration, corresponding to two-thirds of the MCE peak ground acceleration. The result of the analysis indicates that the predominant earthquake contributing to the DE peak ground acceleration is characterized as a 6.67 magnitude occurring at a hypocentral distance of 13.98 kilometers from the site.

6.5 Liquefaction Potential

Liquefaction is a phenomenon in which loose, saturated, relatively cohesionless soil deposits lose shear strength during strong ground motions. Primary factors controlling liquefaction include intensity and duration of ground motion, gradation characteristics of the subsurface soils, in-situ stress conditions, and the depth to groundwater. Liquefaction is typified by a loss of shear strength in the liquefied layers due to rapid increases in pore water pressure generated by earthquake accelerations.

The current standard of practice, as outlined in the “Recommended Procedures for Implementation of DMG Special Publication 117, Guidelines for Analyzing and Mitigating Liquefaction in California” and “Special Publication 117A, Guidelines for Evaluating and Mitigating Seismic Hazards in California” requires liquefaction analysis to a depth of 50 feet below the lowest portion of the proposed structure. Liquefaction typically occurs in areas where the soils below the water table are composed of poorly consolidated, fine to medium-grained, primarily sandy soil. In addition to the requisite soil conditions, the ground acceleration and duration of the earthquake must also be of a sufficient level to induce liquefaction.

A review of the State of California Seismic Hazard Zone La Habra Quadrangle Map (CDMG, 1998) indicates that the site is not located in an area designated as “liquefiable”. In addition, according to the City of La Habra General Plan (2014), the site is not located within an area identified as having a potential for liquefaction.

6.6 Slope Stability

The topography at the site is relatively flat with a gentle slope to the south. The site is not within an area identified as having a potential for seismic slope instability (CDMG, 1999). There are no known landslides near the site, nor is the site in the path of any known or potential landslides (USGS, 2025a). Therefore, the potential for slope stability hazards to adversely affect the proposed development is considered low.

6.7 Earthquake-Induced Flooding

Earthquake-induced flooding is inundation caused by failure of dams or other water-retaining structures due to earthquakes. The Department of Water Resources (DWR, 2024) indicates that the site is not located within a dam inundation area. Therefore, the potential for inundation at the site as a result of an earthquake-induced dam failure is considered low.

6.8 Tsunamis, Seiches, and Flooding

The site is not located within a coastal area. Therefore, tsunamis are not considered a significant hazard at the site.

Seiches are large waves generated in enclosed bodies of water in response to ground shaking. No major water-retaining structures are located immediately up gradient from the project site. Therefore, flooding resulting from a seismically induced seiche is considered unlikely.

The site is within an area of minimal flooding (Zone X) as defined by the Federal Emergency Management Agency (FEMA, 2024).

6.9 Oil Fields & Methane Potential

Based on a review of the California Geologic Energy Management Division (CalGEM) Well Finder Website, the site is not located within an oil field and there are no documented oil or gas wells in the immediate vicinity (CalGEM, 2024). However, due to the voluntary nature of record reporting by the oil well drilling companies, wells may be improperly located or not shown on the location map and undocumented wells could be encountered during construction. Any wells encountered will need to be properly abandoned in accordance with the current requirements of the CalGEM.

Since the site is not located within the boundaries of a known oil field, the potential for the presence of methane or other volatile gases at the site is considered low. However, should it be determined that a methane study is required for the proposed development it is recommended that a qualified methane consultant be retained to perform the study and provide mitigation measures as necessary.

6.10 Subsidence

Subsidence occurs when a large portion of land is displaced vertically, usually due to the withdrawal of groundwater, oil, or natural gas. Soils that are particularly subject to subsidence include those with high silt or clay content. The site is not located within an area of known ground subsidence. No large-scale extraction of groundwater, gas, oil, or geothermal energy is occurring or planned at the site or in the general site vicinity. There appears to be little or no potential for ground subsidence due to withdrawal of fluids or gases at the site.

7. CONCLUSIONS AND RECOMMENDATIONS

7.1 General

- 7.1.1 It is our opinion that neither soil nor geologic conditions were encountered during the investigation that would preclude the construction of the proposed improvements provided the recommendations presented herein are followed and implemented during design and construction.
- 7.1.2 The recommendations provided herein should be considered preliminary until building layouts are established and we are given an opportunity to provide updated recommendations, if needed. If proposed buildings will be located close to an existing structure, additional recommendations for grading, temporary excavations, and foundation design may be necessary.
- 7.1.3 As a minimum, it is recommended that the upper 4 feet of existing site soil within the footprint areas of the proposed restroom/storage building and bleachers be excavated and properly compacted for foundation and slab support. Deeper excavations should be conducted as needed to remove any existing artificial fill or soft soils as necessary at the direction of the Geotechnical Engineer (a representative of Geocon). As a minimum, proposed foundations should be underlain by 2 feet of newly placed engineered fill. The excavation should extend laterally a minimum distance of 2 feet beyond the structure footprint areas, including structure appurtenances, or a distance equal to the depth of fill below the foundation, whichever is greater. The limits of existing fill and/or soft soil removal will be verified by the Geocon representative during site grading activities. Recommendations for earthwork are provided in the *Grading* section of this report (see Section 7.4).
- 7.1.4 Subsequent to the recommended grading, the proposed restroom and bleacher structures may be supported on a conventional foundation system deriving support in the newly placed engineered fill. Recommendations for the design of conventional foundations are provided in Section 7.6.
- 7.1.5 It is recommended that proposed scoreboard and field lighting be supported on deepened foundations consisting of drilled cast-in-place friction piles deriving support in undisturbed alluvial soils. Foundations should be deepened as necessary to penetrate through any encountered unsuitable soils and existing fill and must be observed and approved in writing by a Geocon representative. Recommendations for deepened foundations are provided in sections 7.10 and 7.11 of this report.

- 7.1.6 All excavations must be observed and approved in writing by the Geotechnical Engineer (a representative of Geocon). Prior to placing any fill, the excavation bottom must be scarified, moistened, and proof-rolled with heavy equipment in the presence of the Geotechnical Engineer (a representative of Geocon West, Inc.).
- 7.1.7 It is anticipated that stable excavations for the recommended grading associated with the proposed structure improvements can be achieved with sloping measures. However, if excavations in close proximity to an adjacent property line and/or structure are required, special excavation measures, such as slot-cuts, may be necessary in order to maintain lateral support of offsite improvements. Excavation recommendations are provided in the *Temporary Excavations* section of this report (Section 7.16).
- 7.1.8 Foundations for small outlying structures, such as non-retaining block walls up to 6 feet in height, planter walls or trash enclosures, which will not be tied to proposed structures, may be supported on conventional foundations bearing on a minimum of 12 inches of newly placed engineered fill which extends laterally at least 12 inches beyond the foundation area. Where excavation and proper compaction cannot be performed, foundations may derive support directly in the undisturbed alluvial soils and should be deepened as necessary to maintain a minimum 12-inch embedment into the recommended bearing materials. If the soils exposed in the excavation bottom are soft or loose, compaction of the soils will be required prior to placing steel or concrete. Compaction of the foundation excavation bottom is typically accomplished with a compaction wheel or mechanical whacker and must be observed and approved by a Geocon representative.
- 7.1.9 Where new paving is to be placed, it is recommended that all existing fill soils and soft alluvial soils be excavated and properly compacted for paving support. The client should be aware that excavation and compaction of all existing fill in the area of new paving is not required; however, paving constructed over existing uncertified fill or unsuitable soils may experience increased settlement and/or cracking, and may therefore have a shorter design life and increased maintenance costs. As a minimum, the upper 12 inches of soil should be scarified and properly compacted. Paving recommendations are provided in the *Preliminary Pavement Recommendations* section of this report (see Section 7.13).
- 7.1.10 During the field exploration, percolation testing was performed in borings B7 and B10 and the results indicate that onsite infiltration at the tested locations and depths is not feasible. A detailed discussion of the results is provided in the *Stormwater Infiltration Recommendations* section of this report (see Section 7.17).

- 7.1.11 Once the design and foundation loading configuration for the proposed structures proceeds to a more finalized plan, the recommendations within this report should be reviewed and revised, if necessary. Based on the final foundation loading configurations, the potential for settlement should be reevaluated by this office.
- 7.1.12 Any changes in the design, location, or elevation, as outlined in this report, should be reviewed by this office. Geocon should be contacted to determine the necessity for review and possible revision of this report.
- 7.1.13 The most recent ASTM standards apply to this project and must be utilized, even if older ASTM standards are referenced in this report.

7.2 Soil and Excavation Characteristics

- 7.2.1 The in-situ soils can be excavated with moderate effort using conventional excavation equipment. Due to the granular nature of the soils, moderate to excessive caving should be anticipated in vertical excavations.
- 7.2.2 It is the responsibility of the contractor to ensure that all excavations and trenches are properly shored and maintained in accordance with applicable OSHA rules and regulations to maintain safety and maintain the stability of adjacent existing improvements.
- 7.2.3 All onsite excavations must be conducted in such a manner that potential surcharges from existing structures, construction equipment, and vehicle loads are resisted. The surcharge area may be defined by a 1:1 projection down and away from the bottom of an existing foundation or vehicle load. Penetrations below this 1:1 projection will require special excavation measures such as sloping and shoring. Excavation recommendations are provided in the *Temporary Excavations* section of this report (see Section 7.16).
- 7.2.4 The upper 5 feet of existing site soils encountered during this investigation are considered to have a “low” to “medium” expansive potential (EI = 26, 46, 60, and 65), and the soils are classified as “expansive” based on the 2022 California Building Code (CBC) Section 1803A.5.3. Recommendations presented herein assume that proposed foundations and slabs will derive support in these materials.

7.3 Minimum Resistivity, pH, and Water-Soluble Sulfate

- 7.3.1 Potential of Hydrogen (pH) and resistivity testing as well as chloride content testing were performed on representative samples of soil to generally evaluate the corrosion potential to surface utilities. The tests were performed in accordance with California Test Method Nos. 643 and 422 and indicate that the soils are considered “severely corrosive” with respect to corrosion of buried ferrous metals on site. The results are presented in Appendix B (Figure B34) and should be considered for design of underground structures. Due to the corrosive potential of the soils, it is recommended that PVC, ABS or other approved plastic piping be utilized in lieu of cast-iron when in direct contact with the site soils.
- 7.3.2 Laboratory tests were performed on representative samples of the site materials to measure the percentage of water-soluble sulfate content. Results from the laboratory water-soluble sulfate tests are presented in Appendix B (Figure B35) and indicate that the on-site materials possess a sulfate exposure class of “S0” to concrete structures as defined by 2022 CBC Section 1904A and ACI 318-19 Chapter 19.
- 7.3.3 Geocon West, Inc. does not practice in the field of corrosion engineering and mitigation. If corrosion sensitive improvements are planned, it is recommended that a corrosion engineer be retained to evaluate corrosion test results and incorporate the necessary precautions to avoid premature corrosion of buried metal pipes and concrete structures in direct contact with the soils.

7.4 Grading

- 7.4.1 Grading is anticipated to include preparation of building pads, excavation of site soils for proposed foundations and utility trenches, as well as placement of backfill for walls, ramps, and trenches.
- 7.4.2 A preconstruction conference should be held at the site prior to the beginning of grading operations with the owner, contractor, civil engineer and soil engineer in attendance. Special soil handling requirements can be discussed at that time.
- 7.4.3 Earthwork should be observed, and compacted fill tested by representatives of Geocon West, Inc. The existing fill and alluvial soil encountered during exploration are suitable for re-use as an engineered fill, provided any encountered oversized material (greater than 6 inches) and any encountered deleterious debris are removed.

- 7.4.4 Grading should commence with the removal of all existing vegetation and existing improvements from the area to be graded. Deleterious debris such as wood and root structures should be exported from the site and should not be mixed with the fill soils. Asphalt and concrete should not be mixed with the fill soils unless approved by the Geotechnical Engineer. All existing underground improvements planned for removal should be completely excavated and the resulting depressions properly backfilled in accordance with the procedures described herein. Once a clean excavation bottom has been established it must be observed and approved in writing by the Geotechnical Engineer (a representative of Geocon West, Inc.).
- 7.4.5 As a minimum, it is recommended that the upper 4 feet of existing site soil within the footprint areas of the proposed restroom/storage building and bleachers be excavated and properly compacted for foundation and slab support. Deeper excavations should be conducted as needed to remove any existing artificial fill or soft soils as necessary at the direction of the Geotechnical Engineer (a representative of Geocon). As a minimum, proposed foundations should be underlain by 2 feet of newly placed engineered fill. The excavation should extend laterally a minimum distance of 2 feet beyond the structure footprint areas, including structure appurtenances, or a distance equal to the depth of fill below the foundation, whichever is greater. The limits of existing fill and/or soft soil removal will be verified by the Geocon representative during site grading activities.
- 7.4.6 All excavations must be observed and approved in writing by the Geotechnical Engineer (a representative of Geocon) prior to placing any fill or foundation construction. Prior to placing any new fill, the excavation bottom must be scarified to a depth of 12 inches, moistened, and proof-rolled with heavy equipment in the presence of the Geotechnical Engineer (a representative of Geocon West, Inc.).
- 7.4.7 All fill and backfill soils should be placed in horizontal loose layers approximately 6 to 8 inches thick, moisture conditioned to near to slightly above optimum moisture content, and properly compacted to a minimum of 90 percent of the maximum dry density per ASTM D 1557 (latest edition).

- 7.4.8 Foundations for small outlying structures, such as non-retaining block walls up to 6 feet in height, planter walls or trash enclosures, which will not be tied to proposed buildings, may be supported on conventional foundations deriving support on a minimum of 12 inches of newly placed engineered fill which extends laterally at least 12 inches beyond the foundation area. Where excavation and proper compaction cannot be performed, foundations may derive support directly in the undisturbed alluvial soils and should be deepened as necessary to maintain a minimum 12-inch embedment into the recommended bearing materials. If the soils exposed in the excavation bottom are soft or loose, compaction of the soils will be required prior to placing steel or concrete. Compaction of the foundation excavation bottom is typically accomplished with a compaction wheel or mechanical whacker and must be observed and approved by a Geocon representative.
- 7.4.9. Where new paving is to be placed, it is recommended that all existing fill and soft alluvium be excavated and properly compacted for paving support. As a minimum, the upper 12 inches of soil should be scarified, moisture conditioned to near to slightly above optimum moisture content, and compacted to at least 92 percent relative compaction, as determined by ASTM D 1557 (latest edition). Paving recommendations are provided in *the Preliminary Pavement Recommendations* section of this report (see section 7.13).
- 7.4.10 Although not anticipated for this project, all imported fill shall be observed, tested, and approved by Geocon West, Inc. prior to bringing soil to the site. Import fill should consist of the characteristics presented in the table below.

SUMMARY OF IMPORT FILL RECOMMENDATIONS

Soil Characteristic	Values
Expansion Potential	“Low” (Expansion Index of 40 or less)
Particle Size	Maximum Dimension Less Than 6 Inches
	Free of Debris
Corrosivity	Less Detrimental Than Existing Onsite Soils

- 7.4.11 Utility trenches should be properly backfilled in accordance with the following requirements. The pipe should be bedded with clean sands (Sand Equivalent greater than 30) to a depth of at least 1 foot over the pipe, and the bedding material must be inspected and approved in writing by the Geotechnical Engineer (a representative of Geocon). The use of gravel is not acceptable unless used in conjunction with filter fabric to prevent the gravel from having direct contact with soil. The remainder of the trench backfill may be derived from onsite soil or approved import soil, compacted as necessary, until the required compaction is obtained. The use of minimum 2-sack slurry as backfill is also acceptable as backfill. Prior to placing any bedding materials or pipes, the excavation bottom must be observed and approved in writing by the Geotechnical Engineer (a representative of Geocon).
- 7.4.12 All trench and foundation excavation bottoms must be observed and approved in writing by the Geotechnical Engineer (a representative of Geocon), prior to placing bedding materials, fill, steel, gravel, or concrete.

7.5 Shrinkage

- 7.5.1 Shrinkage results when a volume of material removed at one density is compacted to a higher density. A shrinkage factor between 10 and 20 percent should be anticipated when excavating and compacting the upper few feet of existing earth materials on the site to an average relative compaction of 92 percent.
- 7.4.2 If import soils will be utilized in the building pads, the soils must be placed uniformly and at equal thickness at the direction of the Geotechnical Engineer (a representative of Geocon West, Inc.). Soils can be borrowed from non-building pad areas and later replaced with imported soils.

7.6 Conventional Foundation Design

- 7.6.1 Subsequent to the recommended grading, a conventional foundation system deriving support in newly placed engineered fill may be utilized for support of proposed restroom/storage building and bleachers. As a minimum, proposed foundations should be underlain by 2 feet of newly placed engineered fill.
- 7.6.2 Conventional shallow spread foundations for the proposed structures should consist of continuous strip footings and/or isolated spread footings and should be designed using the parameters in the table following page.

SUMMARY OF FOUNDATION RECOMMENDATIONS

Parameter	Value
Minimum Continuous Foundation Width	12 Inches
Minimum Isolated Foundation Width	24 Inches
Minimum Foundation Depth	24 Inches Below Lowest Adjacent Grade & 12 inches into Recommended Bearing Material
Minimum Steel Reinforcement	4 No. 4 Bars, 2 Top and 2 Bottom
Allowable Bearing Capacity – Continuous Foundation	2,200 psf
Allowable Bearing Capacity – Isolated Foundation	2,400 psf
Bearing Capacity Increase	250 psf per Foot of Width
	500 psf per Foot of Depth
Maximum Allowable Bearing Capacity	3,400 psf
Estimated Total Settlement	¾ Inch
Estimated Differential Settlement	½ Inch over 30 Feet

- 7.6.3 The above foundation dimensions and minimum reinforcement recommendations are based on soil conditions and building code requirements only, and are not intended to be used in lieu of those required for structural purposes.
- 7.6.4 The allowable bearing pressures may be increased by one-third for transient loads due to wind or seismic forces.
- 7.6.5 If depth increases are utilized for the exterior wall footings, this office should be provided a copy of the final construction plans so that the excavation recommendations presented herein could be properly reviewed and revised if necessary. Additional grading should be performed as-needed in order to maintain the required 2-foot-thick blanket of engineered fill below proposed foundations.
- 7.6.6 No special subgrade presaturation is required prior to placement of concrete. However, the moisture in the foundation subgrade should be sprinkled as necessary to maintain a moist condition at the time of concrete placement.

- 7.6.7 Foundation excavations should be observed and approved in writing by the Geotechnical Engineer (a representative of Geocon West, Inc.), prior to the placement of reinforcing steel and concrete to verify that the excavations and exposed soil conditions are consistent with those anticipated. If unanticipated soil conditions are encountered, foundation modifications may be required.
- 7.6.8 This office should be provided a copy of the final construction plans so that the excavation recommendations presented herein could be properly reviewed and revised if necessary.

7.7 Foundation Settlement

- 7.7.1 The maximum settlement for structures support on a conventional foundation system in the recommended bearing materials and designed with a maximum bearing pressure of 3,400 psf is estimated to be less than $\frac{3}{4}$ inch and occur below the heaviest loaded structural element. Settlement of the foundation system is expected to occur on initial application of loading. Differential settlement is not expected to exceed $\frac{1}{2}$ inch over a distance of 30 feet.
- 7.7.2 Once the design and foundation loading configuration for the proposed structures proceeds to a more finalized plan, the estimated settlements presented in this report should be reviewed and revised, if necessary. If the final foundation loading configurations are greater than the assumed loading conditions, the potential for settlement should be reevaluated by this office.

7.8 Miscellaneous Foundations

- 7.8.1 Foundations for small outlying structures, such as non-retaining block walls up to 6 feet in height, planter walls or trash enclosures which will not be tied to the proposed structures may be supported on conventional foundations bearing on a minimum of 12 inches of newly placed engineered fill which extends laterally at least 12 inches beyond the foundation area. Where excavation and compaction cannot be performed, such as adjacent to property lines, foundations may derive support in the undisturbed alluvial soils and should be deepened as necessary to maintain a minimum 12-inch embedment into undisturbed alluvial soils and must be observed and approved by a Geocon representative.

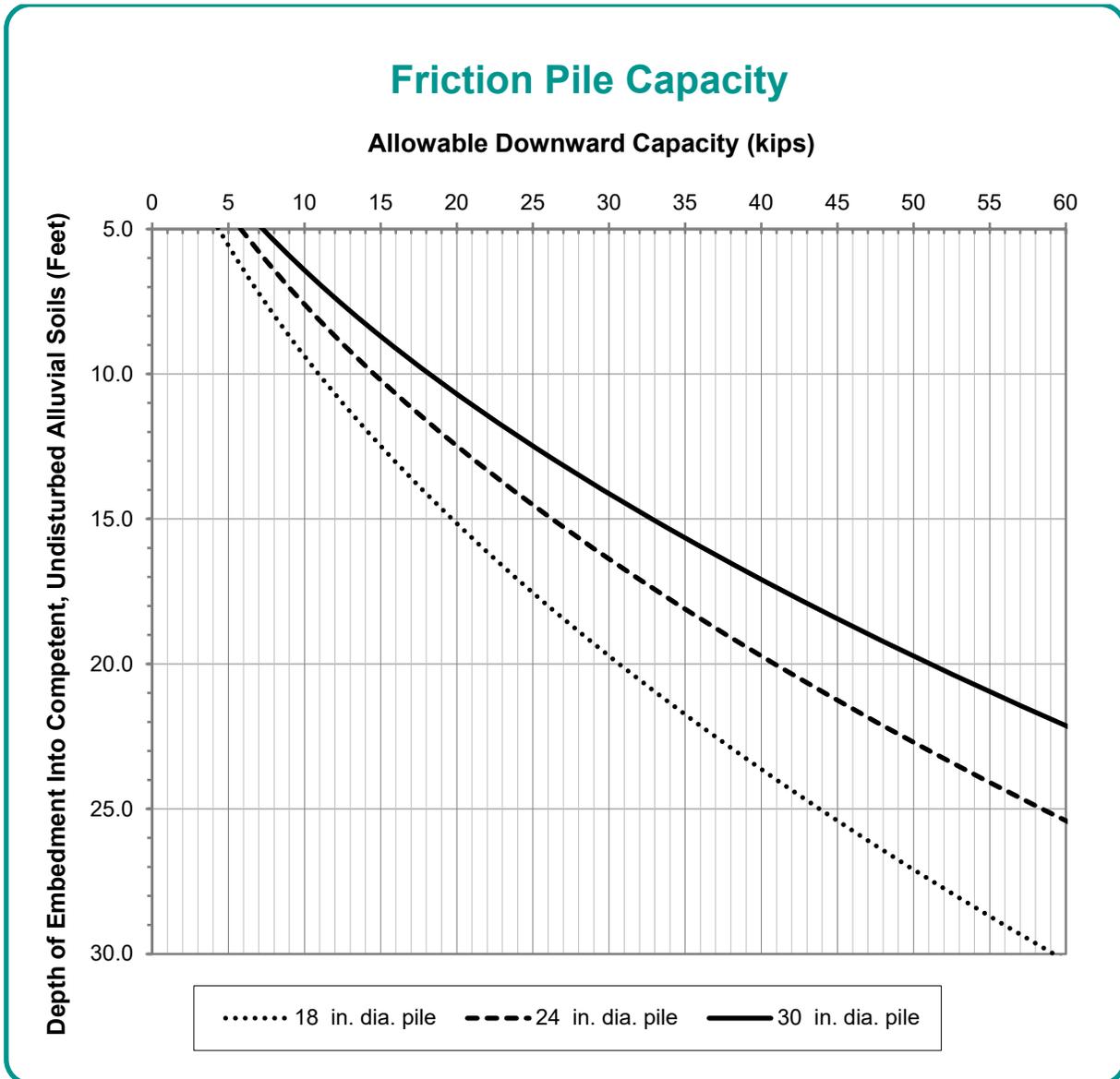
- 7.8.2 If the soils exposed in the excavation bottom are soft, compaction of the soft soils will be required prior to placing steel or concrete. Compaction of the foundation excavation bottom is typically accomplished with a compaction wheel or mechanical whacker and must be observed and approved by a Geocon representative. Miscellaneous foundations may be designed for a bearing value of 1,500 psf, and should be a minimum of 12 inches in width, 24 inches in depth below the lowest adjacent grade, and 12 inches into the recommended bearing material. The allowable bearing pressure may be increased by up to one-third for transient loads due to wind or seismic forces.
- 7.8.3 Foundation excavations should be observed and approved in writing by the Geotechnical Engineer (a representative of Geocon West, Inc.), prior to the placement of reinforcing steel and concrete to verify that the excavations and exposed soil conditions are consistent with those anticipated.

7.9 Lateral Design

- 7.9.1 Resistance to lateral loading may be provided by friction acting at the base of foundations, slabs and by passive earth pressure. An allowable coefficient of friction of 0.35 may be used with the dead load forces in newly placed engineered fill or the undisturbed alluvial soils.
- 7.9.2 Passive earth pressure for the sides of foundations and slabs poured against newly placed engineered fill or the undisturbed alluvial soils may be computed as an equivalent fluid having a density of 240 pounds per cubic foot (pcf) with a maximum earth pressure of 2,400 psf. When combining passive and friction for lateral resistance, the passive component should be reduced by one-third.

7.10 Field Lighting – Friction Piles

- 7.10.1 Cast-in-place friction piles may be utilized for support of the proposed light poles provided foundations derive support in competent alluvium.
- 7.10.2 Friction piles should be a minimum of 18 inches in diameter and should be embedded at least 10 feet below the existing ground surface. Where not protected by pavement, the upper two feet of soil should be ignored when calculating lateral capacity. Piles may be assumed fixed at an embedment depth of 10 feet. The allowable axial capacities for embedment below the ground surface for 18-, 24-, and 30-inch diameter piles is provided in the following chart.



7.10.3 All drilled pile excavations should be continuously observed by personnel of this firm to verify adequate penetration into the recommended bearing materials. The capacity presented is based on the strength of the soils. The compressive and tensile strength of the pile sections should be checked to verify the structural capacity of the piles.

7.10.4 Uplift capacity may be assumed to be $\frac{2}{3}$ the allowable downward capacity. The allowable axial compression and uplift capacities may be increased by one-third when considering transient wind or seismic loads.

- 7.10.5 The maximum expected static settlement for deepened foundations supported in undisturbed alluvium is estimated to be less than ½ inch. Differential settlement between adjacent caisson foundations is not expected to exceed ¼-inch. A majority of the settlement of the foundation system is expected to occur on initial application of loading.
- 7.10.6 Ultimate lateral capacities for ¼ inch deflection of fixed and free-head drilled cast-in place piles are presented in the table below. No factors of safety have been applied to the lateral load values calculated to induce ¼-inch lateral deflection. Lateral capacities provided are for 18-, 24-, and 30-inch diameter drilled cast-in-place concrete piles, penetrating the earth materials encountered during the course of this investigation. Assumed as part of these lateral capacity calculations are a concrete modulus of elasticity of at least 3,000,000 psi.

LATERAL LOAD CAPACITIES OF DRILLED CAST-IN-PLACE PILES								
FIXED HEAD (NO HEAD ROTATION)								
PILE NUMBER	PILE DIAMETER (INCHES)	Lateral Load Capacity "P" (KIPS)	Maximum Positive Moment "Mp" (LAT FORCE =P)	Maximum Negative Moment "Mp" (LAT FORCE =P)	Depth to Max Pos. Moment (Feet)	Depth to Zero Moment (Feet)	Depth to Inflection Point (Feet)	MINIMUM PILE LENGTH FOR APPLICABILITY OF LATERAL DESIGN DATA (FEET)
1	18	13	1.3 P	-5.1 P	12	21	6.3	21
2	24	16	0.8 P	-6.6 P	13	20	8.8	20
3	30	28	0.5 P	-8.1 P	15	20	12.8	20

FREE HEAD (HINGED)					
PILE NUMBER	PILE DIAMETER (INCHES)	Lateral Load Capacity "P" (KIPS)	Maximum Moment "Mp" (LAT FORCE =P)	Depth to Zero Moment (Feet)	Depth to Maximum Moment (Feet)
1	18	5	4.3 P	22	7
2	24	8	4.9 P	21	8
3	30	11	5.0 P	21	8

Lateral capacities are based on 1/4-inch deflection.

Moment magnitudes are presented as a function of the applied lateral load "P".

"P" is entered in units of kips and the moment magnitude will be in units of kip-feet.

The maximum negative moment is at the rigid, pile to pile cap or grade beam connection at the top of the pile.

- 7.10.7 Drilled pile excavation should be continuously observed by personnel of this firm to verify adequate penetration into the recommended bearing materials.

7.11 Deepened Foundation Installation

- 7.11.1 Casing may be required if caving occurs in the granular soil layers during deep drilled excavation. The contractor should have casing available and should be prepared to use it. If casing is used, extreme care should be employed so that the pile is not pulled apart as the casing is withdrawn. At no time should the distance between the surface of the concrete and the bottom of the casing be less than 5 feet. Continuous observation of the drilling and pouring of the piles by the Geotechnical Engineer (a representative of Geocon West, Inc.), is required.
- 7.11.2 Friction piles do not require the complete removal of all loose earth materials from the bottom of the excavation since the end-bearing capacity is not being considered for design. However, a cleanout of the excavation bottom will be required.
- 7.11.3 Groundwater was encountered at the depths of approximately 32 and 35 feet below the existing ground surface in our field explorations. Should groundwater or seepage be encountered during construction, pile excavations with more than 6 inches of standing water level require the use of a tremie to place the concrete into the bottom of the hole. A tremie shall consist of a water-tight tube, with a hopper at the top. The tube shall be equipped with a device that will close the discharge end and prevent water from entering the tube while it is being charged with concrete. The tremie shall be supported so as to permit free movement of the discharge end over the entire top surface of the work and to permit rapid lowering when necessary to retard or stop the flow of concrete. The discharge end shall be closed at the start of the work to prevent water entering the tube and shall be entirely sealed at all times, except when the concrete is being placed. The tremie tube shall be kept full of concrete. The flow shall be continuous until the work is completed, and the resulting concrete seal shall be monolithic and homogeneous. The tip of the tremie tube shall always be kept about 5 feet below the surface of the concrete and definite steps and safeguards should be taken to ensure that the tip of the tremie tube is never raised above the surface of the concrete.

- 7.11.4 A special concrete mix should be used for concrete to be placed below water. The design shall provide for concrete with a strength of 1,000 psi over the initial job specification. An admixture that reduces the problem of segregation of paste/aggregates and dilution of paste shall be included. The slump shall be commensurate to any research report for the admixture, provided that it shall also be the minimum for a reasonable consistency for placing when water is present. Extreme care should be employed so that the pile is not pulled apart as the casing is withdrawn. At no time should the distance between the surface of the concrete and the bottom of the casing be less than 5 feet. Continuous observation of the drilling and pouring of the piles by a representative of this firm is required.
- 7.11.5 Closely spaced piles should be drilled and filled alternately, with the concrete permitted to set at least eight hours before drilling an adjacent hole. Pile excavations should be filled with concrete as soon after drilling and inspection as possible; the holes should not be left open overnight unless approved by the Geotechnical Engineer.

7.12 Concrete Slabs-on-Grade

- 7.12.1 Concrete slabs-on-grade subject to vehicle loading should be designed in accordance with the recommendations in the *Preliminary Pavement Recommendations* section of this report (Section 7.12).
- 7.12.2 Subsequent to the recommended grading, concrete slabs-on-grade for structures, not subject to vehicle loading, should be a minimum of 4 inches thick and minimum slab reinforcement should consist of No. 3 steel reinforcing bars placed 18 inches on center in both horizontal directions. Steel reinforcing should be positioned vertically near the slab midpoint.

- 7.12.3 Slabs-on-grade at the ground surface that may receive moisture-sensitive floor coverings or may be used to store moisture-sensitive materials should be underlain by a vapor retarder placed directly beneath the slab. The vapor retarder and acceptable permeance should be specified by the project architect or developer based on the type of floor covering that will be installed. The vapor retarder design should be consistent with the guidelines presented in Section 9.3 of the American Concrete Institute's (ACI) Guide for Concrete Slabs that Receive Moisture-Sensitive Flooring Materials (ACI 302.2R-06) as well as ASTM E1745 and should be installed in general conformance with ASTM E 1643 (latest edition) and the manufacturer's recommendations. A minimum thickness of 15 mils extruded polyolefin plastic is recommended; vapor retarders which contain recycled content or woven materials are not recommended. The vapor retarder should have a permeance of less than 0.01 perms demonstrated by testing before and after mandatory conditioning. The vapor retarder should be installed in direct contact with the concrete slab with proper perimeter seal. If the California Green Building Code requirements apply to this project, the vapor retarder should be underlain by 4 inches of clean aggregate. It is important that the vapor retarder be puncture resistant since it will be in direct contact with angular gravel. As an alternative to the clean aggregate suggested in the Green Building Code, it is our opinion that the concrete slab-on-grade may be underlain by a vapor retarder over 4 inches of clean sand (sand equivalent greater than 30), since the sand will serve a capillary break and will minimize the potential for punctures and damage to the vapor barrier.
- 7.12.4 For seismic design purposes, a coefficient of friction of 0.35 may be utilized between concrete slabs and subgrade soils without a moisture barrier, and 0.15 for slabs underlain by a moisture barrier.
- 7.12.5 Exterior slabs for walkways or flatwork, not subject to traffic loads, should be at least 4 inches thick and reinforced with No. 3 steel reinforcing bars placed 18 inches on center in both horizontal directions, positioned near the slab midpoint. Prior to construction of slabs, the upper 12 inches of subgrade should be moisture conditioned to near to slightly above optimum moisture content and properly compacted to at least 92 percent relative compaction, as determined by ASTM Test Method D 1557 (latest edition). Crack control joints should be spaced at intervals not greater than 8 feet and should be constructed using saw-cuts or other methods as soon as practical following concrete placement. Crack control joints should extend a minimum depth of one-fourth the slab thickness. Construction joints should be designed by the project structural engineer.

7.12.6 The recommendations of this report are intended to reduce the potential for cracking of slabs due to settlement. However, even with the incorporation of the recommendations presented herein, foundations, stucco walls, and slabs-on-grade may exhibit some cracking due to minor soil movement and/or concrete shrinkage. The occurrence of concrete shrinkage cracks is independent of the supporting soil characteristics. Their occurrence may be reduced and/or controlled by limiting the slump of the concrete, proper concrete placement and curing, and by the placement of crack control joints at periodic intervals, in particular, where re-entrant slab corners occur.

7.13 Preliminary Pavement Recommendations

7.13.1 Where new paving is to be placed, it is recommended that all existing fill and soft alluvium materials be excavated and properly compacted for paving support. The client should be aware that excavation and compaction of all existing artificial fill and soft alluvium in the area of new paving is not required; however, paving constructed over existing uncertified fill or unsuitable alluvium material may experience increased settlement and/or cracking, and may therefore have a shorter design life and increased maintenance costs. As a minimum, the upper 12 inches of paving subgrade should be scarified, moisture conditioned to near to slightly above optimum moisture content, and properly compacted to at least 92 percent relative compaction, as determined by ASTM Test Method D 1557 (latest edition).

7.13.2 The following pavement sections are based on an assumed R-Value of 20. Once site grading activities are complete an R-Value should be obtained by laboratory testing to confirm the properties of the soils serving as paving subgrade, prior to placing pavement.

7.13.3 The Traffic Indices listed below are estimates. Geocon does not practice in the field of traffic engineering. The actual Traffic Index for each area should be determined by the project civil engineer. If pavement sections for Traffic Indices other than those listed below are required, Geocon should be contacted to provide additional recommendations. Pavement thicknesses were determined following procedures outlined in the *California Highway Design Manual* (Caltrans). It is anticipated that the majority of traffic will consist of automobile and large truck traffic.

NEW FLEXIBLE PAVEMENT SECTION

Locations	Traffic Index (TI)	Minimum Asphalt Concrete Thickness (inches)	Minimum Aggregate Subbase Thickness (inches)	Full Asphalt Section Thickness – No Aggregate Subbase (inches)
Playground, Automobile Parking, and Drive Aisles	4.0	3	4	5
Trash Truck & Fire Lanes	6.0	4	8½	8

- 7.13.4 Asphalt concrete should conform to Section 203-6 of the “*Standard Specifications for Public Works Construction*” (Green Book). Class 2 aggregate base materials should conform to Section 26-1.02A of the “*Standard Specifications of the State of California, Department of Transportation*” (Caltrans). The use of Crushed Miscellaneous Base in lieu of Class 2 aggregate base is acceptable. Crushed Miscellaneous Base should conform to Section 200-2.4 of the “*Standard Specifications for Public Works Construction*” (Green Book).
- 7.13.5 Unless specifically designed and evaluated by the project structural engineer, where exterior concrete paving will be utilized for support of vehicles, it is recommended that the concrete be a minimum of 5 inches of concrete reinforced with No. 3 steel reinforcing bars placed 18 inches on center in both horizontal directions. Concrete paving supporting vehicular traffic should be underlain by a minimum of 4 inches of aggregate base and a properly compacted subgrade. The subgrade and base material should be compacted to 92 and 95 percent relative compaction, respectively, as determined by ASTM Test Method D 1557 (latest edition).
- 7.13.6 The performance of pavements is highly dependent upon providing positive surface drainage away from the edge of pavements. Ponding of water on or adjacent to the pavement will likely result in saturation of the subgrade materials and subsequent cracking, subsidence and pavement distress. If planters are planned adjacent to paving, it is recommended that the perimeter curb be extended at least 12 inches below the bottom of the aggregate base to minimize the introduction of water beneath the paving.

7.14 Retaining Wall Design

7.14.1 The recommendations presented below are generally applicable to the design of rigid concrete or masonry retaining walls having a maximum height of 6 feet. In the event that walls significantly higher than 6 feet are planned, Geocon should be contacted for additional recommendations. At this time, the location of any retaining walls are unknown. Once retaining wall locations are known, they should be provided to Geocon to review and provide updated recommendations, if necessary.

7.14.2 Retaining walls which are appurtenant to the proposed restroom/storage building or improvements may be supported on foundations designed in accordance with the recommendations provided in the *Conventional Foundation Design* section of this report (see Section 7.6). If retaining walls which are independent of the proposed restroom/storage building are proposed, Geocon should be contacted to provide additional recommendations for earthwork and foundation design.

7.14.3 Retaining walls with a level backfill surface that are not restrained at the top should be designed utilizing a triangular distribution of pressure (active pressure). Restrained walls are those that are not allowed to rotate more than $0.001H$ (where H equals the height of the retaining portion of the wall in feet) at the top of the wall. Where walls are restrained from movement at the top, walls may be designed utilizing a triangular distribution of pressure (at-rest pressure). The table below presents recommended pressures to be used in retaining wall design.

RETAINING WALL WITH LEVEL BACKFILL SURFACE

HEIGHT OF RETAINING WALL (Feet)	ACTIVE PRESSURE EQUIVALENT FLUID PRESSURE (Pounds Per Cubic Foot)	AT-REST PRESSURE EQUIVALENT FLUID PRESSURE (Pounds Per Cubic Foot)
Up to 6	30	65

7.14.4 The wall pressures provided above assume that the retaining wall will be properly drained preventing the buildup of hydrostatic pressure. If retaining wall drainage is not implemented, an at-rest equivalent fluid pressure of 95 pcf should be used in design of undrained, restrained walls for the full height of the wall. The value includes hydrostatic pressures plus buoyant lateral earth pressures.

- 7.14.5 The wall pressures provided above assume that the proposed retaining walls will support relatively undisturbed alluvial soils or engineered fill derived from onsite soils. If import soil will be used to backfill proposed retaining walls, revised earth pressures may be required to account for the geotechnical properties of the import soil used as engineered fill. This should be evaluated once the use of import soil is established. All imported fill shall be observed, tested, and approved by Geocon West, Inc. prior to bringing soil to the site.
- 7.14.6 Additional pressure should be added for a surcharge condition due to sloping ground, vehicular traffic or adjacent structures and should be designed for each condition as the project progresses. Surcharges may be evaluated using Section 7.18 of this report. Once the design becomes more finalized, an addendum letter can be prepared revising recommendations and addressing specific surcharge conditions throughout the project, if necessary.
- 7.14.7 In addition to the recommended earth pressure, walls adjacent to the street or driveway areas should be designed to resist a uniform lateral pressure of 100 psf, acting as a result of an assumed 300 psf surcharge behind the wall due to normal street traffic. If the traffic is kept back at least 10 feet from the wall, the traffic surcharge may be neglected.

7.15 Retaining Wall Drainage

- 7.15.1 Retaining walls not designed for hydrostatic pressure should be provided with a drainage system. At the base of the drain system, a subdrain covered with a minimum of 12 inches of gravel should be installed, and a compacted fill blanket or other seal placed at the surface (see Figure 31). The clean bottom and subdrain pipe, behind a retaining wall, should be observed by the Geotechnical Engineer (a representative of Geocon), prior to placement of gravel or compacting backfill.
- 7.15.2 As an alternative, a plastic drainage composite such as Miradrain or equivalent may be installed in continuous, 4-foot wide columns along the entire back face of the wall, at 8 feet on center. The top of these drainage composite columns should terminate approximately 18 inches below the ground surface, where either hardscape or a minimum of 18 inches of relatively cohesive material should be placed as a cap (see Figure 32). These vertical columns of drainage material would then be connected at the bottom of the wall to a 4-inch subdrain pipe.

- 7.15.3 Subdrainage pipes at the base of the retaining wall drainage system should outlet to an acceptable location via controlled drainage structures. Drainage should not be allowed to flow uncontrolled over descending slopes.
- 7.15.4 Moisture affecting below grade walls is one of the most common post-construction complaints. Poorly applied or omitted waterproofing can lead to efflorescence or standing water. Particular care should be taken in the design and installation of waterproofing to avoid moisture problems, or actual water seepage into the structure through any normal shrinkage cracks which may develop in the concrete walls, floor slab, foundations and/or construction joints. The design and inspection of the waterproofing is not the responsibility of the geotechnical engineer. A waterproofing consultant should be retained in order to recommend a product or method, which would provide protection to subterranean walls, floor slabs and foundations.

7.16 Temporary Excavations

- 7.16.1 Excavations on the order of less than 5 feet in height may be required during grading and construction operations. The excavations are expected to expose artificial fill and alluvial soils, which may be subject to caving where granular soils are encountered. Vertical excavations up to 5 feet in height may be attempted where loose soils or caving sands are not present, and where not surcharged by adjacent traffic or structures.
- 7.16.2 Vertical excavations greater than 5 feet will require sloping and/or shoring measures in order to provide a stable excavation. Where sufficient space is available, temporary unsurcharged embankments could be sloped back at a uniform 1:1 slope gradient or flatter, up to maximum height of 8 feet. A uniform slope does not have a vertical portion.
- 7.16.3 If excavations in close proximity to an adjacent property line and/or structure are required, special excavation measures such as slot-cutting or shoring may be necessary in order to maintain lateral support of offsite improvements. Recommendations for slot cutting or shoring can be provided under separate cover, if necessary.

7.16.4 Where temporary construction slopes are utilized, the top of the slope should be barricaded to prevent vehicles and storage loads at the top of the slope within a horizontal distance equal to the height of the slope. If the temporary construction slopes are to be maintained during the rainy season, berms are suggested along the tops of the slopes where necessary to prevent runoff water from entering the excavation and eroding the slope faces. The soils exposed in the cut slopes should be inspected during excavation by our personnel and the contractor's competent person so that modifications of the slopes can be made if variations in the soil conditions occur. All excavations should be stabilized within 30 days of initial excavation.

7.17 Stormwater Infiltration Recommendations

7.17.1 During site exploration, borings B7 and B10 were used to perform percolation testing to determine the feasibility of stormwater infiltration at the site. Percolation testing was conducted at the depths listed in the table below. Slotted casings were placed in the borings, and the annular space between the casings and excavations were filled with filter pack. The borings were then filled with water to pre-saturate the soils. The casings were refilled with water and percolation test readings were performed after repeated flooding of the cased excavations. Based on the test results, the measured percolation rates and design infiltration rates, for the earth materials encountered, are provided in the following table. The field-measured percolation rate has been adjusted to infiltration rates in accordance with the County of Orange *Technical Guidance Document for the Preparation of Conceptual/Preliminary and/or Project Water Quality Management Plans* (December 2013). Percolation test field data and calculation of the measured percolation rates and design infiltration rates are provided on Figures 16 and 17.

Boring	Soil Type	Infiltration Depth (ft)	Average Infiltration Rate (in / hour)
B7	Sandy Clay (CL)	5-10	0.1
B10	Sandy Clay and Clayey Sand (CL and SC)	10-15	0.2

7.17.2 The results of the percolation testing indicates that the average infiltration rate within the alluvium for borings B7 and B10 are less than the generally accepted minimally required infiltration rate of 0.3 inches per hour. Therefore, based on these considerations, a stormwater infiltration system is not recommended for this project. It is suggested that stormwater be retained, filtered and discharged in accordance with the requirements of the local governing agency.

7.18 Surcharge from Adjacent Structures and Improvements

7.18.1 Additional pressure should be added for a surcharge condition due to sloping ground, vehicular traffic or adjacent structures and should be designed for each condition as the project progresses.

7.18.2 It is recommended that line-load surcharges from adjacent wall footings, use horizontal pressures generated from NAV-FAC DM 7.2. The governing equations are:

For $x/H \leq 0.4$

$$\sigma_H(z) = \frac{0.20 \times \left(\frac{z}{H}\right)}{\left[0.16 + \left(\frac{z}{H}\right)^2\right]^2} \times \frac{Q_L}{H}$$

and

For $x/H > 0.4$

$$\sigma_H(z) = \frac{1.28 \times \left(\frac{x}{H}\right)^2 \times \left(\frac{z}{H}\right)}{\left[\left(\frac{x}{H}\right)^2 + \left(\frac{z}{H}\right)^2\right]^2} \times \frac{Q_L}{H}$$

where x is the distance from the face of the excavation or wall to the vertical line-load, H is the distance from the bottom of the footing to the bottom of excavation or wall, z is the depth at which the horizontal pressure is desired, Q_L is the vertical line-load and $\sigma_H(z)$ is the horizontal pressure at depth z .

- 7.18.3 It is recommended that vertical point-loads, from construction equipment outriggers or adjacent building columns use horizontal pressures generated from NAV-FAC DM 7.2. The governing equations are:

$$\text{For } x/H \leq 0.4$$

$$\sigma_H(z) = \frac{0.28 \times \left(\frac{z}{H}\right)^2}{\left[0.16 + \left(\frac{z}{H}\right)^2\right]^3} \times \frac{Q_P}{H^2}$$

and

$$\text{For } x/H > 0.4$$

$$\sigma_H(z) = \frac{1.77 \times \left(\frac{x}{H}\right)^2 \times \left(\frac{z}{H}\right)^2}{\left[\left(\frac{x}{H}\right)^2 + \left(\frac{z}{H}\right)^2\right]^3} \times \frac{Q_P}{H^2}$$

then

$$\sigma'_H(z) = \sigma_H(z) \cos^2(1.1\theta)$$

where x is the distance from the face of the excavation/wall to the vertical point-load, H is distance from the outrigger/bottom of column footing to the bottom of excavation, z is the depth at which the horizontal pressure is desired, Q_p is the vertical point-load, $\sigma_H(z)$ is the horizontal pressure at depth z , θ is the angle between a line perpendicular to the excavation/wall and a line from the point-load to location on the excavation/wall where the surcharge is being evaluated, and $\sigma_H(z)$ is the horizontal pressure at depth z .

- 7.18.4 In addition to the recommended earth pressure, the upper 10 feet of the wall adjacent to the street or driveway areas should be designed to resist a uniform lateral pressure of 100 psf, acting as a result of an assumed 300 psf surcharge behind the wall due to normal street traffic. If the traffic is kept back at least 10 feet from the wall, the traffic surcharge may be neglected.

7.19 Surface Drainage

- 7.19.1 Proper surface drainage is critical to the future performance of the project. Uncontrolled infiltration of excess irrigation and storm runoff into the soils can adversely affect the performance of the planned improvements. Saturation of a soil can cause it to lose internal shear strength and increase its compressibility, resulting in a change in the original designed engineering properties. Proper drainage should be maintained at all times.
- 7.19.2 All site drainage should be collected and controlled in non-erosive drainage devices. Drainage should not be allowed to pond anywhere on the site, and especially not against any foundation or retaining wall. The site should be graded and maintained such that surface drainage is directed away from structures in accordance with 2022 CBC 1804A.4 or other applicable standards. In addition, drainage should not be allowed to flow uncontrolled over any descending slope. Discharge from downspouts, roof drains and scuppers are not recommended onto unprotected soils within 5 feet of the building perimeter. Planters which are located adjacent to foundations should be sealed to prevent moisture intrusion into the soils providing foundation support. Landscape irrigation is not recommended within 5 feet of the building perimeter footings except when enclosed in protected planters.
- 7.19.3 Positive site drainage should be provided away from structures, pavement, and the tops of slopes to swales or other controlled drainage structures. The building pad and pavement areas should be fine graded such that water is not allowed to pond.
- 7.19.4 Landscaping planters immediately adjacent to paved areas are not recommended due to the potential for surface or irrigation water to infiltrate the pavement's subgrade and base course. Either a subdrain, which collects excess irrigation water and transmits it to drainage structures, or an impervious above-grade planter boxes should be used. In addition, where landscaping is planned adjacent to the pavement, it is recommended that consideration be given to providing a cutoff wall along the edge of the pavement that extends at least 12 inches below the base material.

7.20 Plan Review

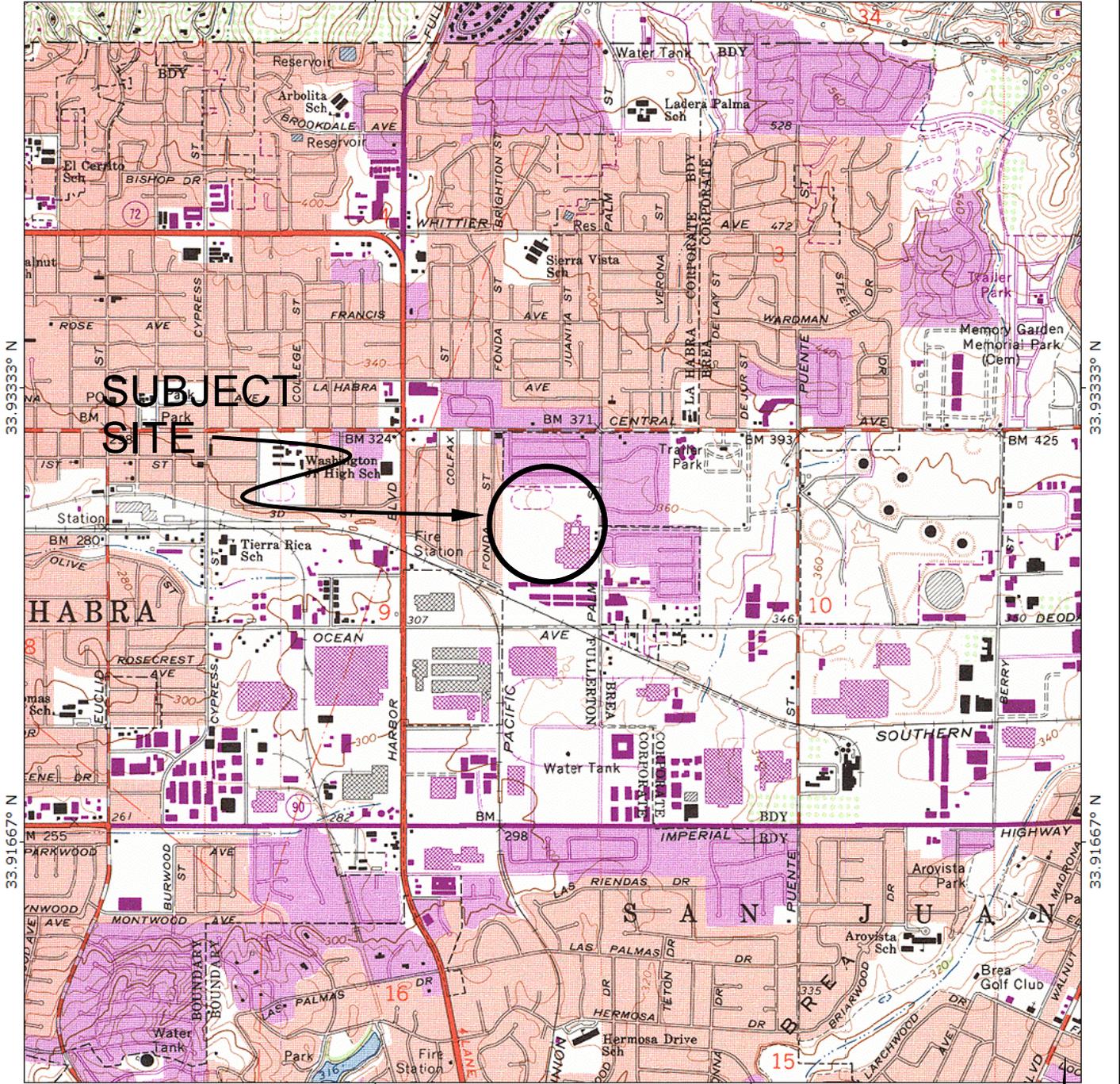
- 7.20.1 Grading, foundation, and, if applicable, shoring plans should be reviewed by the Geotechnical Engineer (a representative of Geocon West, Inc.), prior to finalization to verify that the plans have been prepared in substantial conformance with the recommendations of this report and to provide additional analyses or recommendations.

LIMITATIONS AND UNIFORMITY OF CONDITIONS

1. The firm that performed the geotechnical investigation for the project should be retained to provide testing and observation services during construction to provide continuity of geotechnical interpretation and to check that the recommendations presented for geotechnical aspects of site development are incorporated during site grading, construction of improvements, and excavation of foundations. If another geotechnical firm is selected to perform the testing and observation services during construction operations, that firm should prepare a letter indicating their intent to assume the responsibilities of project geotechnical engineer of record. A copy of the letter should be provided to the regulatory agency for their records. In addition, that firm should provide revised recommendations concerning the geotechnical aspects of the proposed development, or a written acknowledgement of their concurrence with the recommendations presented in our report. They should also perform additional analyses deemed necessary to assume the role of Geotechnical Engineer of Record.
2. The recommendations of this report pertain only to the site investigated and are based upon the assumption that the soil conditions do not deviate from those disclosed in the investigation. If any variations or undesirable conditions are encountered during construction, or if the proposed construction will differ from that anticipated herein, Geocon Incorporated should be notified so that supplemental recommendations can be given. The evaluation or identification of the potential presence of hazardous or corrosive materials was not part of the scope of services provided by Geocon Incorporated.
3. This report is issued with the understanding that it is the responsibility of the owner or his representative to ensure that the information and recommendations contained herein are brought to the attention of the architect and engineer for the project and incorporated into the plans, and the necessary steps are taken to see that the contractor and subcontractors carry out such recommendations in the field.
4. The findings of this report are valid as of the date of this report. However, changes in the conditions of a property can occur with the passage of time, whether they be due to natural processes or the works of man on this or adjacent properties. In addition, changes in applicable or appropriate standards may occur, whether they result from legislation or the broadening of knowledge. Accordingly, the findings of this report may be invalidated wholly or partially by changes outside our control. Therefore, this report is subject to review and should not be relied upon after a period of three years.

117.93333° W

NAD27 117.91667° W



33.93333° N

SUBJECT SITE

33.93333° N

33.91667° N

HABRA

SOUTHERN

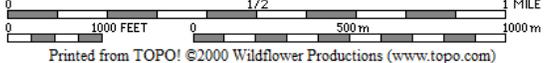
33.91667° N

117.93333° W

NAD27 117.91667° W



LATITUDE: 33.928305
 LONGITUDE: -117.926636



Printed from TOPO! ©2000 Wildflower Productions (www.topo.com)

REFERENCE: U.S.G.S. TOPOGRAPHIC MAPS, 7.5 MINUTE SERIES, LA HABRA, CA QUADRANGLE

GEOCON
 WEST, INC.

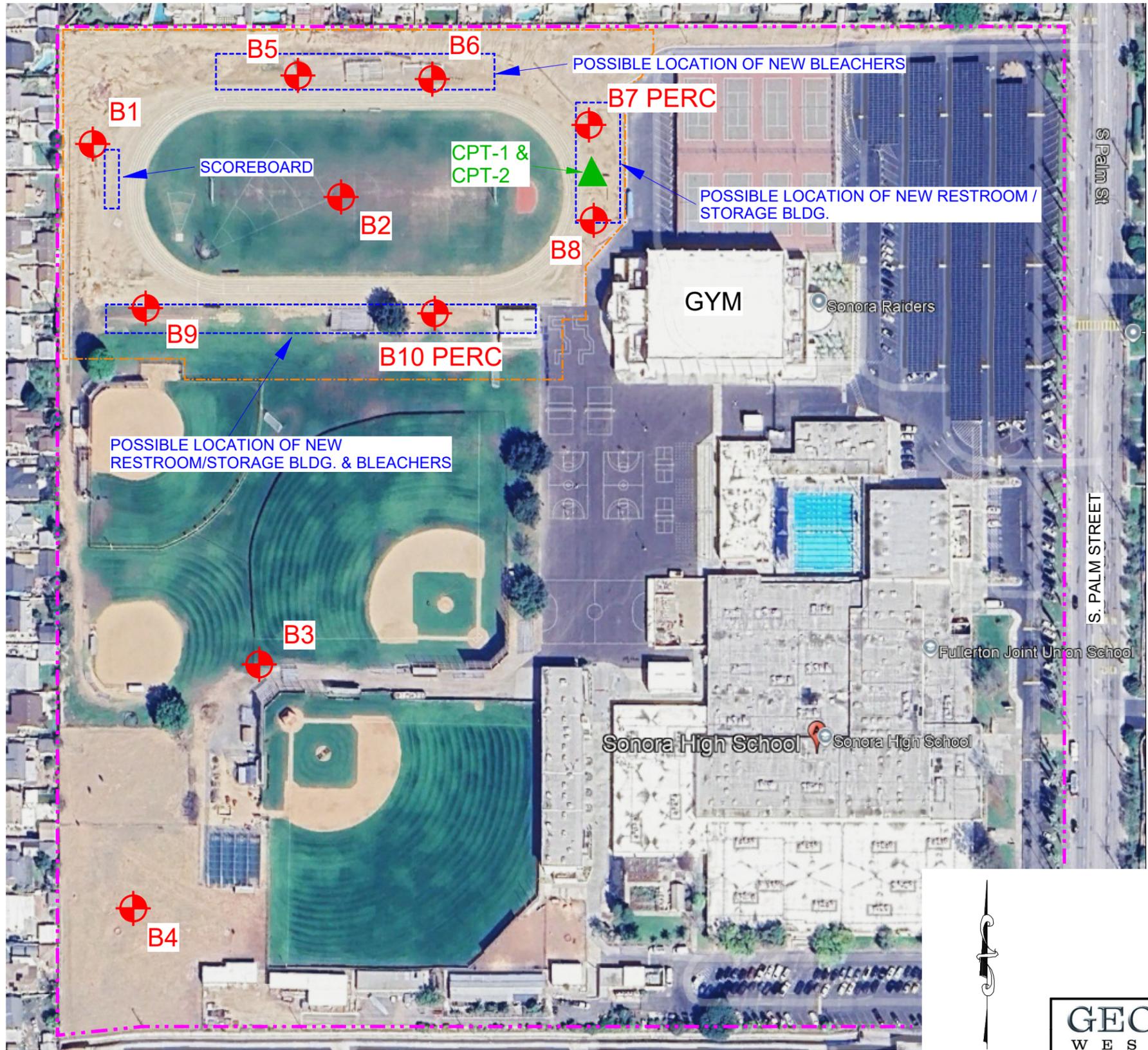
ENVIRONMENTAL GEOTECHNICAL MATERIALS
 500 N. VICTORY BLVD. - BURBANK, CA 91502
 PHONE (818) 841-8388 - FAX (818) 841-1704

DRAFTED BY: LW CHECKED BY: GAK

VICINITY MAP

SONORA HIGH SCHOOL
 401 SOUTH PALM STREET
 LA HABRA, CALIFORNIA

MAY 2025 PROJECT NO. W2068-88-01 FIG. 1



LEGEND

-  B10 Number and Location of Boring
-  CPT-2 Approximate Location of CPT Soundings
-  Approximate Property Boundary
-  Preliminary Location of Proposed Improvements
-  Preliminary Limits of Work



GEOCON
WEST, INC.

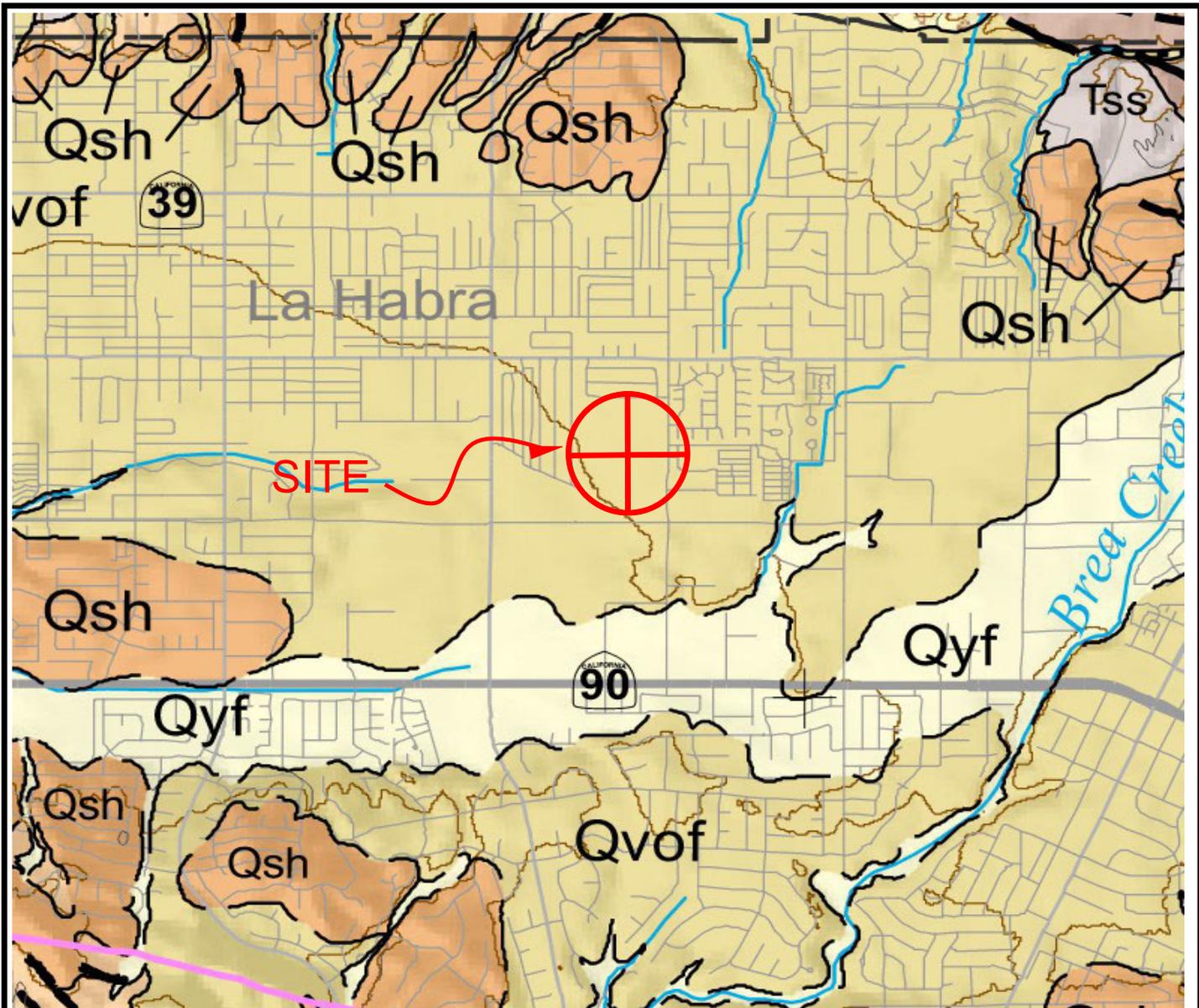
ENVIRONMENTAL GEOTECHNICAL MATERIALS
500 N. VICTORY BLVD. - BURBANK, CA 91502
PHONE (818) 841-8388 - FAX (818) 841-1704

DRAFTED BY: RP CHECKED BY: JTA/NDB

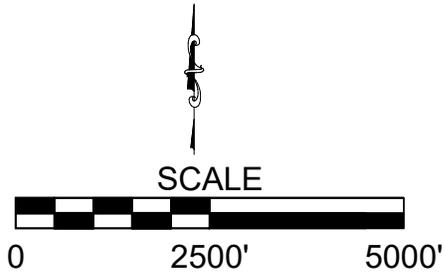
SITE PLAN

SONORA HIGH SCHOOL
401 SOUTH PALM STREET
LA HABRA, CALIFORNIA

MAY 2025 PROJECT NO. W2068-88-01 FIG. 2



- Qyf - Holocene to Late Pleistocene Age Alluvial Fan Deposits
- Qvof - Pleistocene Age Very Old Alluvial Fan Deposits
- Qsh - Pleistocene Age Fine-grained Bedrock
- Tss - Tertiary Age Coarse-grained Bedrock



REFERENCE: CALIFORNIA GEOLOGICAL SURVEY 2010, GEOLOGIC COMPILATION OF QUATERNARY SURFICIAL DEPOSITS IN SOUTHERN CALIFORNIA SANTA ANA 30'x60' QUADRANGLE, CGS SPECIAL REPORT 217, PLATE 16.

GEOCON
WEST, INC.



ENVIRONMENTAL GEOTECHNICAL MATERIALS
500 N. VICTORY BLVD. - BURBANK, CA 91502
PHONE (818) 841-8388 - FAX (818) 841-1704

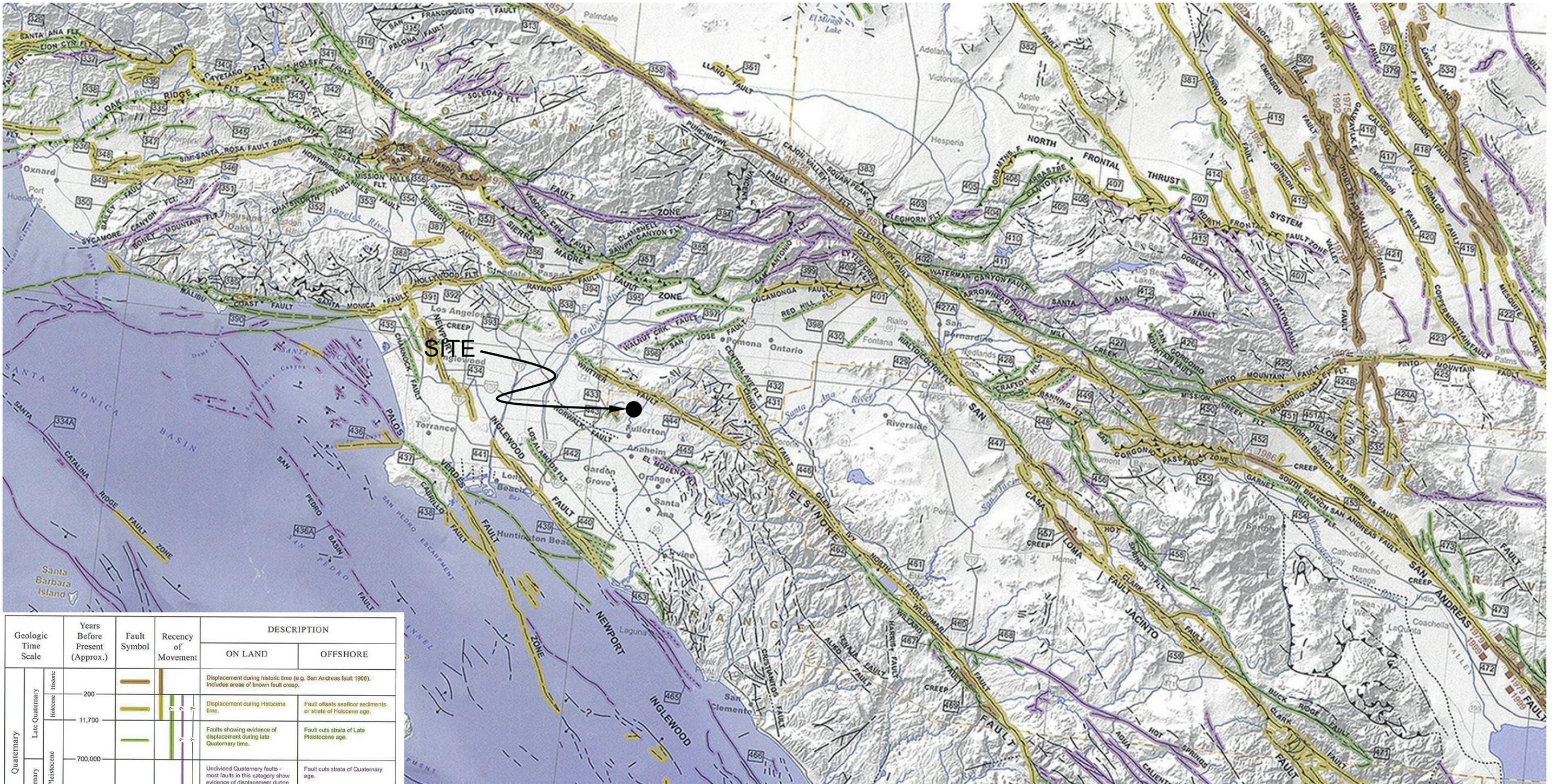
DRAFTED BY: LW	CHECKED BY: GAK
----------------	-----------------

LOCAL GEOLOGIC MAP

SONORA HIGH SCHOOL
401 SOUTH PALM STREET
LA HABRA, CALIFORNIA

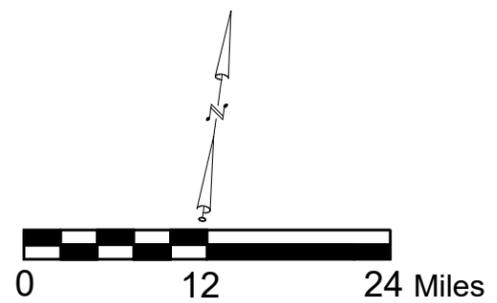
MAY 2025	PROJECT NO. W2068-88-01	FIG. 3
----------	-------------------------	--------

Reference: Jennings, C.W. and Bryant, W. A., 2010, Fault Activity Map of California, California Geological Survey Geologic Data Map No. 6.



Geologic Time Scale	Years Before Present (Approx.)	Fault Symbol	Recency of Movement	DESCRIPTION	
				ON LAND	OFFSHORE
Quaternary	Holocene / Historic			Displacement during historic time (e.g. San Andreas fault 1906). Includes areas of known fault creep.	
	Late Quaternary			Displacement during Holocene time.	Fault offsets seafloor sediments or strata of Holocene age.
Quaternary	Pleistocene			Faults showing evidence of displacement during late Quaternary time.	Fault cuts strata of Late Pleistocene age.
	Early Quaternary			Undivided Quaternary faults—most faults in this category show evidence of displacement during the last 1,600,000 years; possible exceptions are faults which displace rocks of undifferentiated Plio-Pleistocene age.	Fault cuts strata of Quaternary age.
Pre-Quaternary	1,600,000+ 4.5 billion (Age of Earth)			Faults without recognized Quaternary displacement or showing evidence of no displacement during Quaternary time. Not necessarily inactive.	Fault cuts strata of Pliocene or older age.

* Quaternary now recognized as extending to 2.6 Ma (Walker and Geissman, 2009). Quaternary faults in this map were established using the previous 1.6 Ma criterion.



GEOCON
WEST, INC.

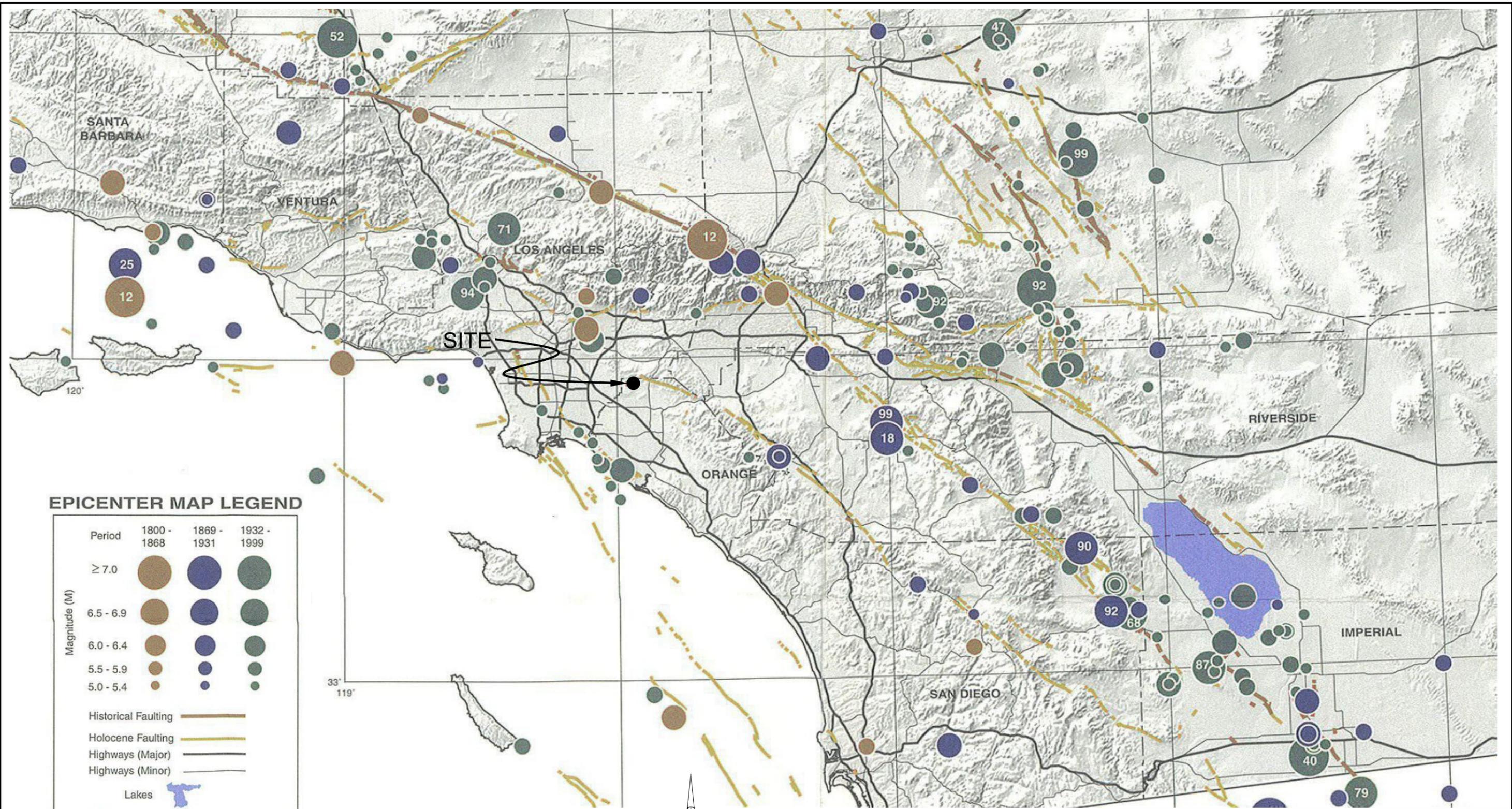
ENVIRONMENTAL GEOTECHNICAL MATERIALS
500 NORTH VICTORY BOULEVARD BURBANK, CA 91502
PHONE (818) 841-8388 - FAX (818) 841-1704

DRAFTED BY: LW CHECKED BY: GAK

REGIONAL FAULT MAP

SONORA HIGH SCHOOL
401 SOUTH PALM STREET
LA HABRA, CALIFORNIA

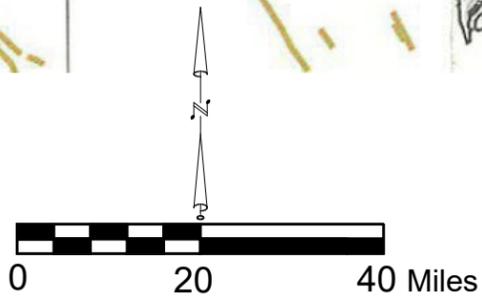
MAY 2025 PROJECT NO. W2068-88-01 FIG. 4



EPICENTER MAP LEGEND

Period	1800 - 1868	1869 - 1931	1932 - 1999
Magnitude (M)			
≥ 7.0			
6.5 - 6.9			
6.0 - 6.4			
5.5 - 5.9			
5.0 - 5.4			
Historical Faulting			
Holocene Faulting			
Highways (Major)			
Highways (Minor)			
Lakes			
	Last two digits of M ≥ 6.5 earthquake year		

Reference: Topozada, T., Branum, D., Petersen, M., Hallstrom, C., Cramer, C., and Reichle, M., 2000, Epicenters and Areas Damaged by M≥5 California Earthquakes, 1800 - 1999, California Geological Survey, Map Sheet 49.



GEOCON
WEST, INC.

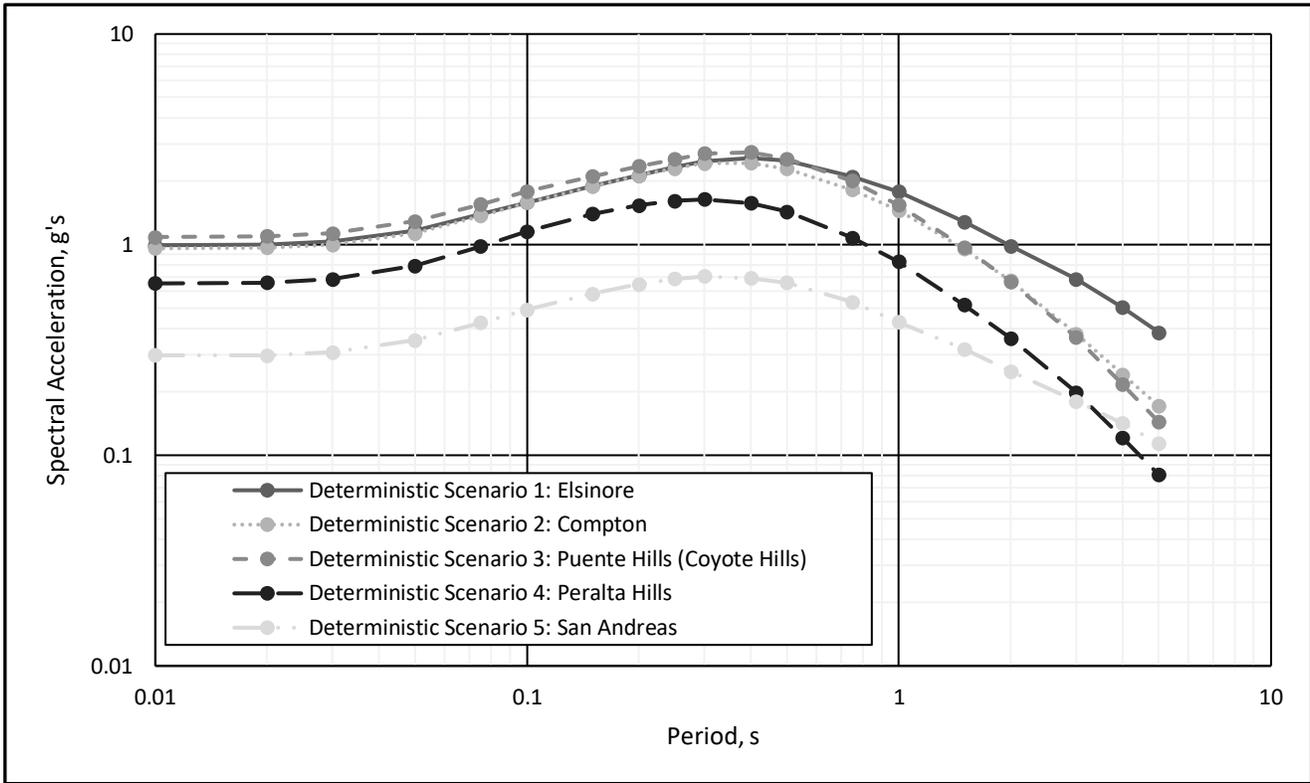
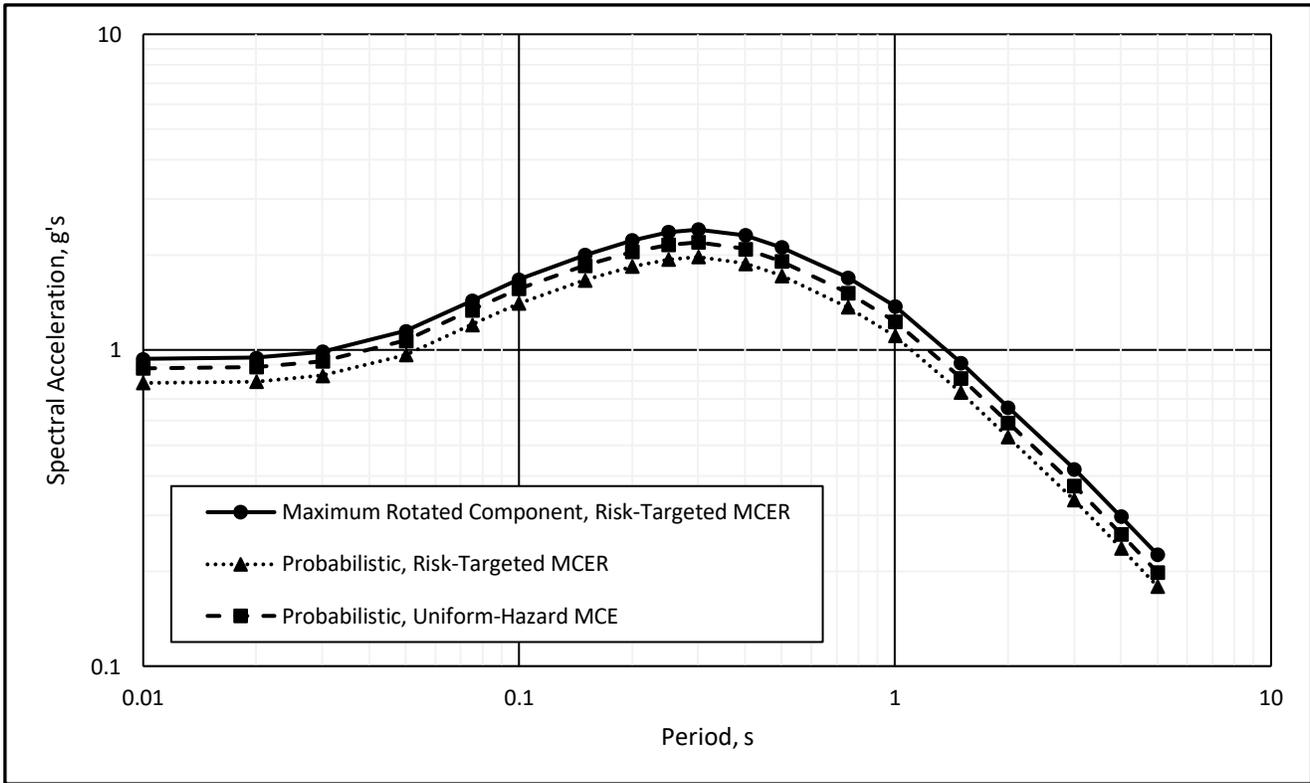
ENVIRONMENTAL GEOTECHNICAL MATERIALS
500 NORTH VICTORY BOULEVARD BURBANK, CA 91502
PHONE (818) 841-8388 - FAX (818) 841-1704

DRAFTED BY: LW CHECKED BY: GAK

REGIONAL SEISMICITY MAP

SONORA HIGH SCHOOL
401 SOUTH PALM STREET
LA HABRA, CALIFORNIA

MAY 2025 PROJECT NO. W2068-88-01 FIG.5



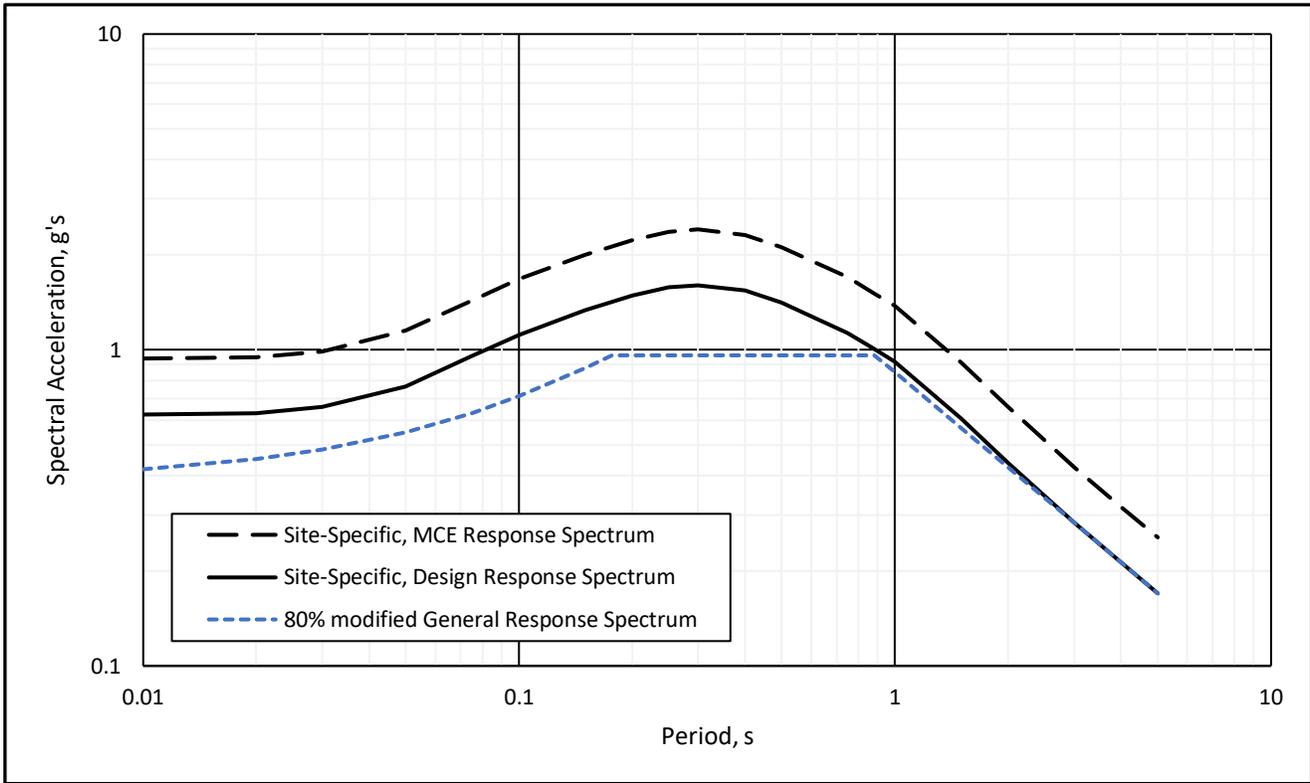
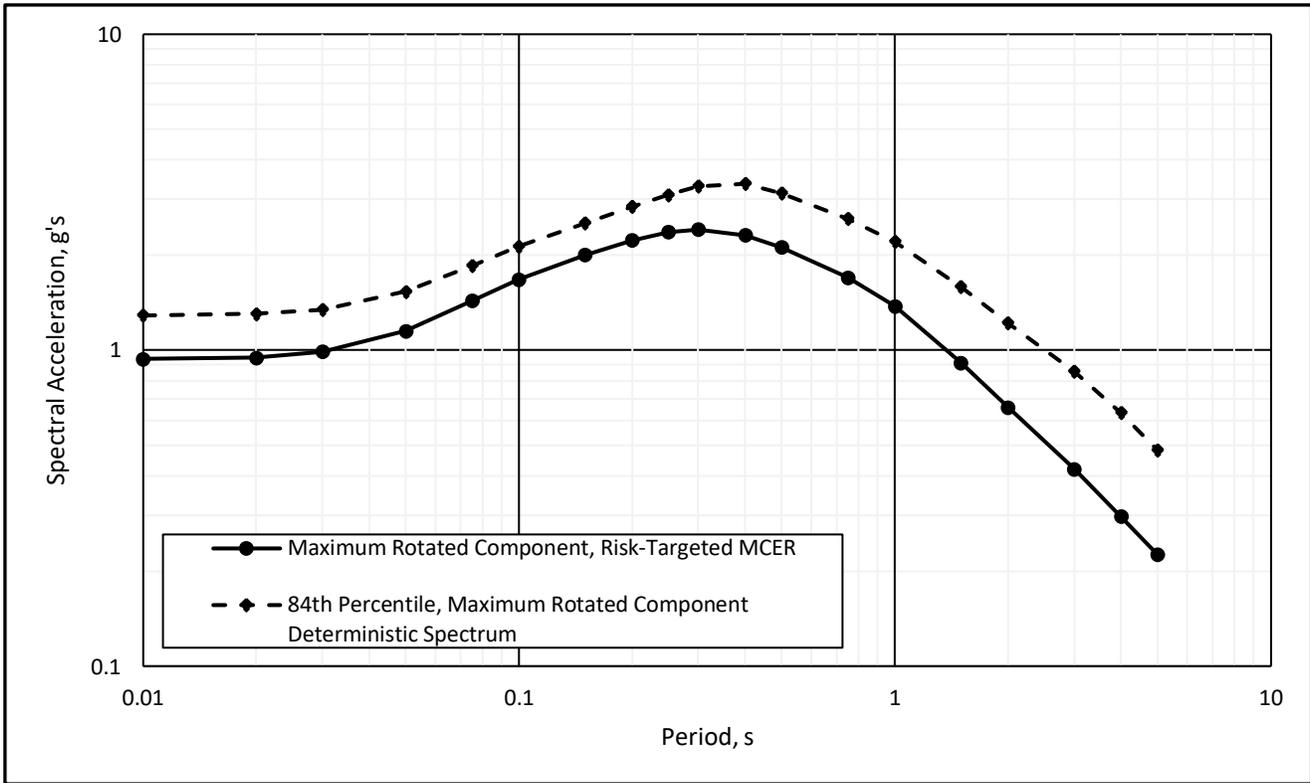
RESPONSE SPECTRUM

Checked by: JTA

Project No.: W2068-88-01

SONORA HIGH SCHOOL
401 SOUTH PALM STREET
LA HABRA, FULLERTON

MAY 2025 Figure 6



RESPONSE SPECTRUM

Checked by: JTA

Project No.: W2068-88-01

SONORA HIGH SCHOOL
401 SOUTH PALM STREET
LA HABRA, FULLERTON

MAY 2025

Figure 7

Spectral Period (seconds)	Probabilistic Uniform-Hazard	Risk-Targeted, Probabilistic	Risk Factor, Cr	Maximum-Rotated Component Scale Factor	MRC, Risk-Targeted Probabilistic	84th Percentile, Deterministic	Site-Specific Design Earthquake	80% Modified General Response Spectrum	Site-Specific Maximum Considered Earthquake
0.01	0.876	0.788	0.899	1.19	0.938	1.289	0.625	0.418	0.938
0.02	0.885	0.795	0.899	1.19	0.947	1.303	0.631	0.451	0.947
0.03	0.924	0.830	0.899	1.19	0.988	1.345	0.659	0.484	0.988
0.05	1.074	0.966	0.899	1.19	1.149	1.533	0.766	0.549	1.149
0.08	1.339	1.204	0.899	1.19	1.432	1.848	0.955	0.631	1.432
0.10	1.564	1.406	0.899	1.19	1.673	2.129	1.115	0.713	1.673
0.15	1.854	1.667	0.899	1.20	2.000	2.525	1.333	0.877	2.000
0.18	--	--	--	--	--	--	1.417	0.964	2.125
0.20	2.047	1.840	0.899	1.21	2.227	2.845	1.484	0.964	2.227
0.25	2.155	1.938	0.899	1.22	2.364	3.102	1.576	0.964	2.364
0.30	2.196	1.975	0.899	1.22	2.410	3.305	1.606	0.964	2.410
0.40	2.090	1.880	0.900	1.23	2.313	3.375	1.542	0.964	2.313
0.50	1.911	1.720	0.900	1.23	2.116	3.142	1.411	0.964	2.116
0.75	1.519	1.369	0.901	1.24	1.697	2.604	1.131	0.964	1.697
0.88	--	--	--	--	--	--	1.006	0.964	1.508
1.0	1.232	1.111	0.902	1.24	1.378	2.207	0.919	0.851	1.378
1.5	0.815	0.735	0.902	1.24	0.912	1.588	0.608	0.567	0.912
2.0	0.589	0.532	0.902	1.24	0.659	1.218	0.439	0.425	0.659
3.0	0.373	0.336	0.902	1.25	0.420	0.856	0.284	0.284	0.425
4.0	0.262	0.237	0.902	1.26	0.298	0.633	0.213	0.213	0.319
5.0	0.198	0.179	0.902	1.26	0.225	0.482	0.170	0.170	0.255

$$SM_5 = \frac{2.169}{1.5} \text{ g}$$

$$SM_1 = \frac{1.378}{1.5} \text{ g}$$

$$SD_5 = \frac{1.446}{1.5} \text{ g}$$

$$SD_1 = \frac{0.919}{1.5} \text{ g}$$

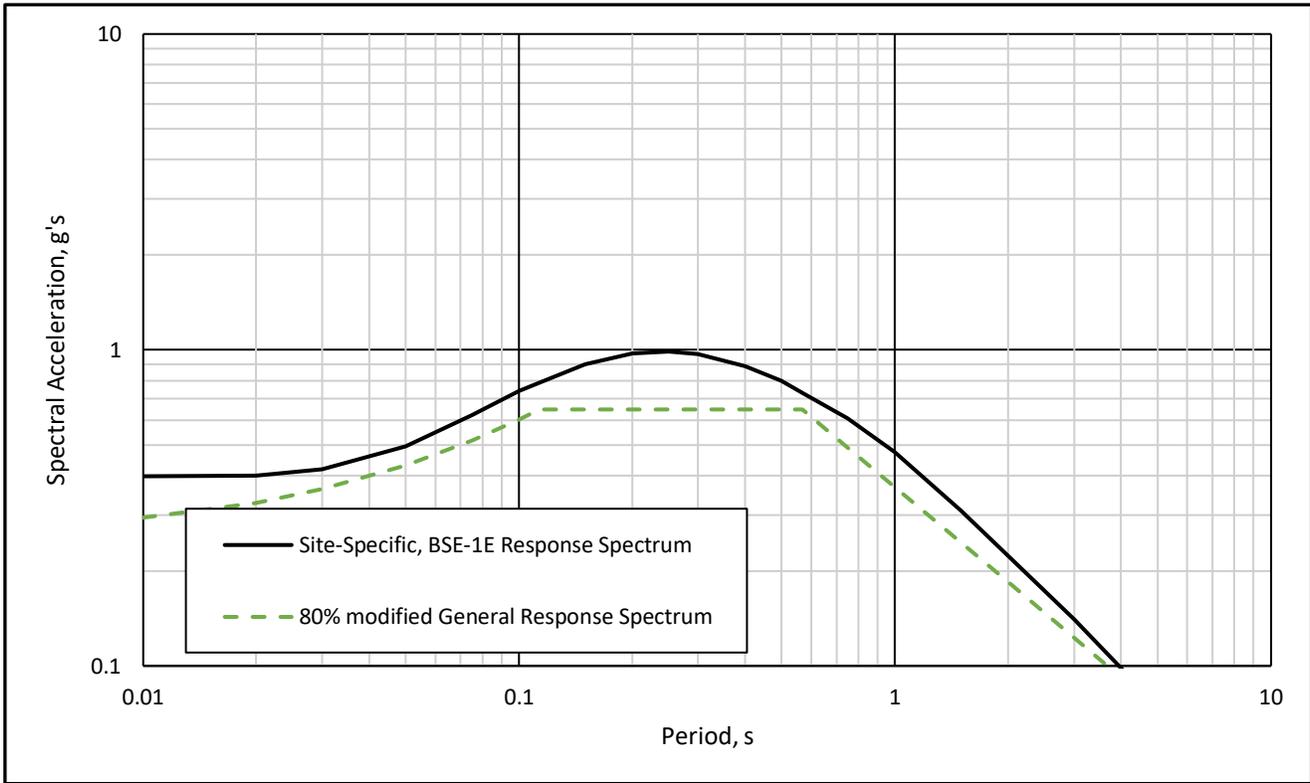
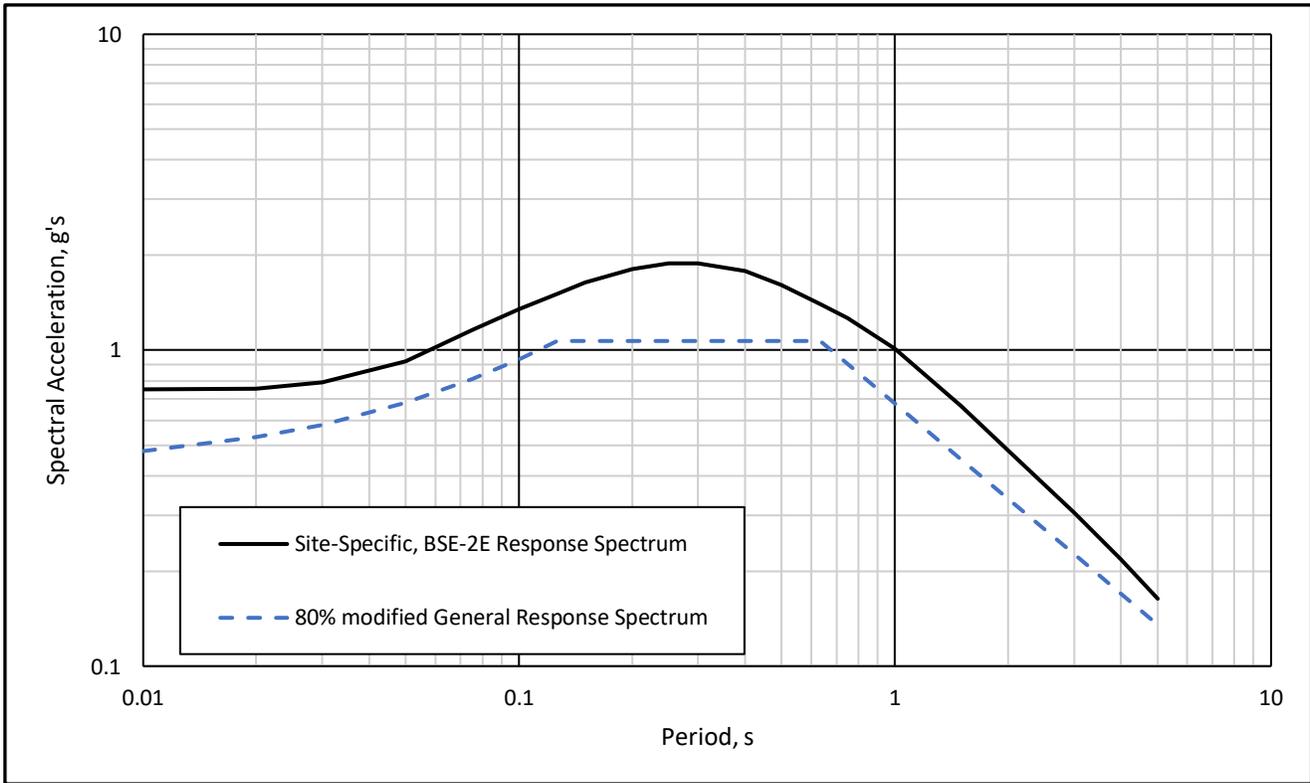
Reference: ASCE 7-16 21.4 DESIGN ACCELERATION PARAMETERS

Where the site-specific procedure is used to determine the design ground motion in accordance with Section 21.3, the parameter S_{DS} shall be taken as 90% of the maximum spectral acceleration, S_a , obtained from the site-specific spectrum, at any period within the range from 0.2 to 5 s, inclusive. The parameter S_{D1} shall be taken as the maximum value of the product, TS_a , for periods from 1 to 2 s for sites with $V_{s,30} > 1,200$ ft/s ($v_{s,30} > 365.76$ m/s) and for periods from 1 to 5 s for sites with $V_{s,30} \leq 1,200$ ft/s ($v_{s,30} \leq 365.76$ m/s). The parameters S_{MS} and S_{M1} shall be taken as 1.5 times S_{DS} and S_{D1} , respectively. The values so obtained shall not be less than 80% of the values determined in accordance with Section 11.4.3 for S_{MS} and S_{M1} and Section 11.4.5 for S_{DS} and S_{D1} .

Spectral acceleration values reported in units of "g".

"--" Indicates that spectral period was not used at that calculation step

	RESPONSE SPECTRUM	Project No.: W2068-88-01
		SONORA HIGH SCHOOL 401 SOUTH PALM STREET LA HABRA, FULLERTON
	Checked by: JTA	MAY 2025



RESPONSE SPECTRUM

Checked by: JTA

Project No.: W2068-88-01

SONORA HIGH SCHOOL
401 SOUTH PALM STREET
LA HABRA, FULLERTON

MAY 2025

Figure 9

Spectral Period (seconds)	Probabilistic Uniform-Hazard	Maximum-Rotated Component Scale Factor	MRC, Probabilistic	80% Modified General Response Spectrum	Site-Specific BSE-2E Earthquake
0.010	0.633	1.190	0.753	0.480	0.753
0.020	0.634	1.190	0.755	0.530	0.755
0.030	0.666	1.190	0.793	0.581	0.793
0.050	0.773	1.190	0.920	0.682	0.920
0.075	0.973	1.190	1.158	0.809	1.158
0.100	1.134	1.190	1.349	0.935	1.349
0.127	--	--	--	1.070	1.509
0.150	1.363	1.200	1.636	1.070	1.636
0.200	1.492	1.210	1.805	1.070	1.805
0.250	1.540	1.220	1.879	1.070	1.879
0.300	1.544	1.220	1.884	1.070	1.884
0.400	1.448	1.230	1.781	1.070	1.781
0.500	1.310	1.230	1.611	1.070	1.611
0.633	--	--	--	1.070	1.399
0.750	1.020	1.240	1.265	0.904	1.265
1.000	0.816	1.240	1.012	0.678	1.012
1.500	0.538	1.240	0.667	0.452	0.667
2.000	0.388	1.240	0.481	0.339	0.481
3.000	0.244	1.250	0.306	0.226	0.306
4.000	0.173	1.260	0.218	0.169	0.218
5.000	0.130	1.260	0.164	0.136	0.164

$$\text{BSE-2E } SX_5 = \frac{1.695}{1} \text{ g}$$

$$\text{BSE-2E } SX_1 = \frac{1.012}{1} \text{ g}$$

Spectral acceleration values reported in units of "g"

"--" Indicates that spectral period was not used at that calculation step

	RESPONSE SPECTRUM	Project No.: W2068-88-01
		SONORA HIGH SCHOOL 401 SOUTH PALM STREET LA HABRA, FULLERTON
	Checked by: JTA	MAY 2025

Spectral Period (seconds)	Probabilistic Uniform-Hazard	Maximum-Rotated Component Scale Factor	MRC, Probabilistic	80% Modified General Response Spectrum	Site-Specific BSE-1E Earthquake
0.01	0.335	1.190	0.398	0.294	0.398
0.02	0.336	1.190	0.400	0.328	0.400
0.03	0.351	1.190	0.418	0.363	0.418
0.05	0.416	1.190	0.495	0.431	0.495
0.08	0.523	1.190	0.622	0.517	0.622
0.10	0.624	1.190	0.743	0.602	0.743
0.11	--	--	--	0.648	0.788
0.15	0.749	1.200	0.899	0.648	0.899
0.20	0.804	1.210	0.973	0.648	0.973
0.25	0.813	1.220	0.991	0.648	0.991
0.30	0.796	1.220	0.972	0.648	0.972
0.40	0.721	1.230	0.887	0.648	0.887
0.50	0.648	1.230	0.797	0.648	0.797
0.57	--	--	--	0.648	0.731
0.75	0.49	1.24	0.606	0.491	0.606
1.00	0.38	1.24	0.474	0.368	0.474
1.50	0.25	1.24	0.309	0.245	0.309
2.00	0.18	1.24	0.223	0.184	0.223
3.00	0.11	1.25	0.140	0.123	0.140
4.00	0.08	1.26	0.099	0.092	0.099
5.00	0.06	1.26	0.073	0.074	0.074

$$\text{BSE-1E } SX_5 = \frac{0.892}{1} \text{ g}$$

$$\text{BSE-1E } SX_1 = \frac{0.474}{1} \text{ g}$$

Spectral acceleration values reported in units of "g"

"--" Indicates that spectral period was not used at that calculation step

	RESPONSE SPECTRUM	Project No.: W2068-88-01
		SONORA HIGH SCHOOL 401 SOUTH PALM STREET LA HABRA, FULLERTON
	Checked by: JTA	MAY 2025

Parameter	Scenario 1	Scenario 2	Scenario 3	Scenario 4	Scenario 5	Reference
Parent Fault Name	Elsinore	Compton	Puente Hills (Coyote Hills)	Peralta Hills	San Andreas	--
Scenario Name	Elsinore: CM+J+T+s+GI+W	Compton	Puente Hills (Coyote Hills)	Peralta Hills	S. San Andreas: PK+CH+CC+BB+NM+ SM+NSB+SSB+CO	BSSC Online Scenario Catalog
Earthquake Magnitude	7.77	7.45	6.82	6.55	8.18	BSSC Online Scenario Catalog
Fault Mechanism	Right Lateral	Thrust	Thrust	Thrust	Strike Slip	--
Fault Dip (°)	83.8	20	26	50	86.4	BSSC 2014 ¹
Fault Width	14.2	27.37	24.23	16.1	13.1	BSSC 2014 ¹
Rake (°)	174.6	90	90	90	180	BSSC 2014 ¹
Z_{TOR} (km)	0	5.2	2.8	0.3	0	BSSC 2014 ¹
Rrup (km)	2.37	14.94	5.06	8.84	54.12	--
Rjb (km)	2.37	3.67	0	6.32	54.12	--
Rx (km)	2.37	29.39	5.8	7.81	54.12	--
V_{s30} (m/s)	351	351	351	351	351	Site-Specific Measurement
Z_{1.0} (km)	0.6	0.6	0.6	0.6	0.6	SCEC Community Velocity Model Version 4, Iteration 26, Basin Depth
Z_{2.5} (km)	3.9	3.9	3.9	3.9	3.9	SCEC Community Velocity Model Version 4, Iteration 26, Basin Depth

1 - BSSC 2014, aka. UCERF3_EventSet_All on GitHub



DETERMINISTIC SCENARIO EVENTS

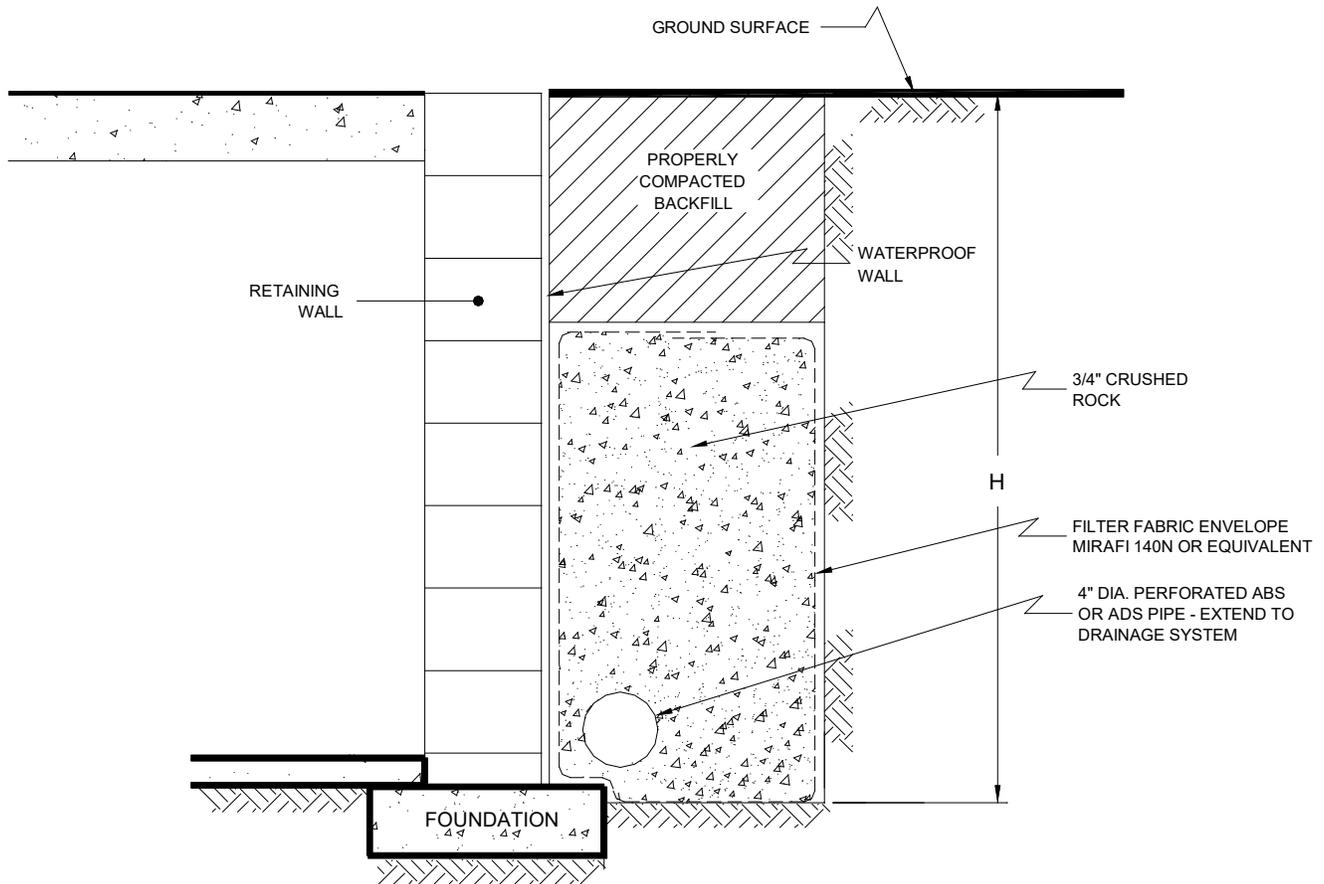
Checked by: JTA

Project No.: W2068-88-01

SONORA HIGH SCHOOL
401 SOUTH PALM STREET
LA HABRA, FULLERTON

MAY 2025

Figure 12



NO SCALE

GEOCON
WEST, INC.



ENVIRONMENTAL GEOTECHNICAL MATERIALS
500 N. VICTORY BLVD. - BURBANK, CA 91502
PHONE (818) 841-8388 - FAX (818) 841-1704

DRAFTED BY: RP

CHECKED BY: JTA/NDB

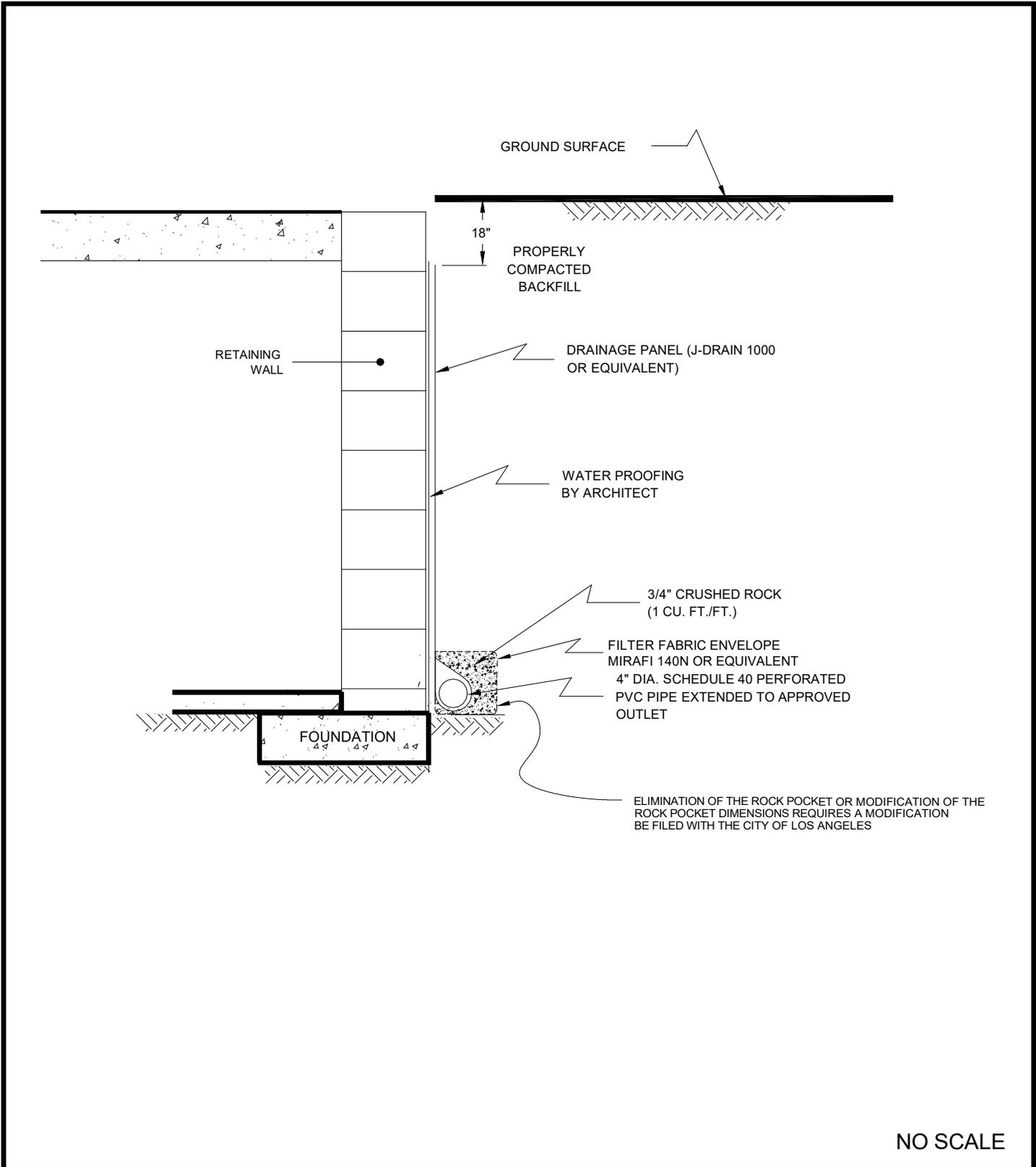
RETAINING WALL DRAIN DETAIL

SONORA HIGH SCHOOL
401 SOUTH PALM STREET
LA HABRA, CALIFORNIA

MAY 2025

PROJECT NO. W2068-88-01

FIG. 14



GEOCON
WEST, INC.



ENVIRONMENTAL GEOTECHNICAL MATERIALS
500 N. VICTORY BLVD. - BURBANK, CA 91502
PHONE (818) 841-8388 - FAX (818) 841-1704

DRAFTED BY: RP CHECKED BY: JTA/NDB

RETAINING WALL DRAIN DETAIL

SONORA HIGH SCHOOL
401 SOUTH PALM STREET
LA HABRA, CALIFORNIA

MAY 2025 PROJECT NO. W2068-88-01 FIG. 15

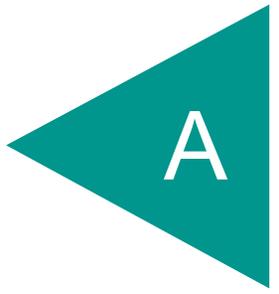
PERCOLATION TEST DATA SHEET							
Project:	SONORA HS		Project No:	W2068-88-01		Date:	3/20/2025
Test Hole No:	B7		Tested By:	RP			
Depth of Test Hole, D _T :	10		USCS Soil Classification:	CL			
Test Hole Dimensions (inches)				Length	Width		
Diameter (if round) =	8		Sides (if rectangular) =	---	---		
Sandy Soil Criteria Test*							
Trial No.	Start Time	Stop Time	Δt Time Interval (min)	D ₀ Initial Depth to Water (in)	D _f Final Depth to Water (in)	ΔD Change in Water Level (in)	Greater than or Equal to 6"? (y/n)
1	7:00	7:25	25	60.0	63.6	3.6	N
2	7:30	7:55	25	60.0	63.5	3.5	N
*If two consecutive measurements show that six inches of water seeps away in less than 25 minutes, the test shall be run for an additional hour with measurements, taken every 10 minutes. Otherwise, pre-soak (fill) overnight. Obtain at least twelve measurements per hole over at least six hours (approximately 30 minute intervals) with a precision of at least 0.25".							
Trial No.	Start Time	Stop Time	Δt Time Interval (min)	D ₀ Initial Depth to Water (in)	D _f Final Depth to Water (in)	ΔD Change in Water Level (in)	Percolation Rate (min/in)
1	8:00	8:30	30	60.0	64.0	4.0	7.58
2	8:35	9:05	30	60.0	63.6	3.6	8.33
3	9:10	9:40	30	60.0	63.4	3.4	8.93
4	9:45	10:15	30	60.0	63.0	3.0	10.00
5	10:20	10:50	30	60.0	62.8	2.8	10.87
6	10:55	11:25	30	60.0	62.6	2.6	11.36
7	11:30	12:00	30	60.0	62.4	2.4	12.50
8	12:05	12:35	30	60.0	62.4	2.4	12.50
9	12:40	13:10	30	60.0	62.2	2.2	13.89
10	13:15	13:45	30	60.0	62.0	2.0	14.71
11	13:50	14:20	30	60.0	62.0	2.0	14.71
12	14:25	14:55	30	60.0	62.0	2.0	14.71
Infiltration Rate Calculation:							
Time Interval, Δt =	30	minutes		Ho =	60.0	inches	
Final Depth to Water, D _f =	62.0	inches		H _f =	58.0	inches	
Test Hole Radius, r =	4	inches		ΔH =	2.0	inches	
Initial Depth to Water, D ₀ =	60.0	inches		H _{avg} =	59.0	inches	
Total Depth of Test Hole, D _T =	120.0	inches					
				$I_t = \frac{\Delta H(60r)}{\Delta t(r + 2H_{avg})}$			
				Infiltration Rate, I _t = 0.1 inches/hour			

Figure 16

PERCOLATION TEST DATA SHEET							
Project:	SONORA HS	Project No:	W2068-88-01	Date:	3/25/2025		
Test Hole No:	B10	Tested By:	IA				
Depth of Test Hole, D _T :	15	USCS Soil Classification:	CL and SC				
Test Hole Dimensions (inches)				Length	Width		
Diameter (if round) =	4	Sides (if rectangular) =	---	---			
Sandy Soil Criteria Test*							
Trial No.	Start Time	Stop Time	Δt Time Interval (min)	D ₀ Initial Depth to Water (in)	D _f Final Depth to Water (in)	ΔD Change in Water Level (in)	Greater than or Equal to 6"? (y/n)
1	7:00	7:25	25	120.0	125.2	5.2	N
2	7:30	7:55	25	120.0	125.0	5.0	N
*If two consecutive measurements show that six inches of water seeps away in less than 25 minutes, the test shall be run for an additional hour with measurements, taken every 10 minutes. Otherwise, pre-soak (fill) overnight. Obtain at least twelve measurements per hole over at least six hours (approximately 30 minute intervals) with a precision of at least 0.25".							
Trial No.	Start Time	Stop Time	Δt Time Interval (min)	D ₀ Initial Depth to Water (in)	D _f Final Depth to Water (in)	ΔD Change in Water Level (in)	Percolation Rate (min/in)
1	8:00	8:30	30	120.0	125.8	5.8	5.21
2	8:35	9:05	30	120.0	125.5	5.5	5.43
3	9:10	9:40	30	120.0	125.4	5.4	5.56
4	9:45	10:15	30	120.0	125.0	5.0	5.95
5	10:20	10:50	30	120.0	124.9	4.9	6.10
6	10:55	11:25	30	120.0	124.9	4.9	6.10
7	11:30	12:00	30	120.0	124.6	4.6	6.58
8	12:05	12:35	30	120.0	124.3	4.3	6.94
9	12:40	13:10	30	120.0	124.2	4.2	7.14
10	13:15	13:45	30	120.0	123.8	3.8	7.81
11	13:50	14:20	30	120.0	123.7	3.7	8.06
12	14:25	14:55	30	120.0	123.6	3.6	8.33
Infiltration Rate Calculation:							
Time Interval, Δt =	30	minutes	Ho =	60.0	inches		
Final Depth to Water, D _f =	123.6	inches	H _f =	56.4	inches		
Test Hole Radius, r =	2	inches	ΔH =	3.6	inches		
Initial Depth to Water, D ₀ =	120.0	inches	H _{avg} =	58.2	inches		
Total Depth of Test Hole, D _T =	180.0	inches					
$I_t = \frac{\Delta H(60r)}{\Delta t(r + 2H_{avg})}$							
Infiltration Rate, I _t =						0.1	inches/hour

Figure 17

APPENDIX



APPENDIX A

FIELD INVESTIGATION

The site was explored on March 19, 2025, by excavating six 8-inch diameter borings (B5 through B10) to depths ranging from approximately 15½ to 50½ feet below the existing ground surface using a truck-mounted hollow-stem auger drilling machine. On March 24 and 25, 2025, four borings (B1 through B4) were advanced to depths between 10 and 20½ feet below the ground surface using hand tools and manual digging equipment. In addition, percolation testing was performed on site to test the infiltration capacity of site soils. Representative and relatively undisturbed samples were obtained by driving a 3-inch, O. D., California Modified Sampler into the “undisturbed” soil mass with blows from a 140-pound auto-hammer falling 30 inches (hollow-stem auger borings) and a slide hammer (hand auger borings). The California Modified Sampler was equipped with 1-inch by 2³/₈-inch diameter brass sampler rings to facilitate soil removal and testing. Bulk samples were also obtained.

The soil conditions encountered in the borings were visually examined, classified and logged in general accordance with the Unified Soil Classification System (USCS). The logs of the borings are presented on Figures A1 through A10. The logs depict the soil and geologic conditions encountered and the depth at which samples were obtained. The logs also include our interpretation of the conditions between sampling intervals. Therefore, the logs contain both observed and interpreted data. We determined the lines designating the interface between soil materials on the logs using visual observations, penetration rates, excavation characteristics and other factors. The transition between materials may be abrupt or gradual. Where applicable, the logs were revised based on subsequent laboratory testing.

Additionally, two cone penetration tests (CPT-1 and CPT-2) were advanced until practical refusal was encountered at depths of 44 and 68 feet below the ground surface using a CPT rig. The approximate locations of the exploratory borings and CPTs are depicted on the Site Plan (see Figure 2).



PROJECT NAME Fullerton Joint Union High School District
LOGGED BY IA
PROJECT NUMBER W2068-88-01
LATITUDE / LONGITUDE 33.92935, -117.92852
BORING DATE 03/25/2025 **FIGURE NUMBER** A1
DEPTH 15.5' **SURFACE ELEVATION** N/A
LOCATION 401 S. Palm Street, Fullerton, CA
CLIENT NAME SOHS
DRILLING FIRM Gold Construction **COMPLETED** -
EQUIPMENT Hand Auger -
METHOD Cal-Mod **BORING DIAMETER** 4 in **HAMMER TYPE** - **NOTES** -
HAMMER WEIGHT / DROP - / -

Depth (ft)	Water Levels	Graphic Log	USCS	Material Description	Bulk	Driven	Sample Number	Dry Density (pcf)	Moisture Content (%)
0-1			Fill	ARTIFICIAL FILL (GRASS) Sandy SILT, soft to firm, slightly moist, brown, some fine gravel	X	X	BULK 0-5'		
1-10			CL	ALLUVIUM Sandy CLAY, firm, slightly moist, dark brown, some fine-grained trace fine gravel increase in sand					B1@3'
10-15.5			CL-ML	Sandy Silty CLAY, stiff, slightly moist, brown, fine-grained, some medium-grained brown, decrease in clay increase in clay			B1@6'	112.4	19.1
							B1@9'	102.7	19.6
							B1@15'	112.7	17.7
				Total depth of boring: 15.5 feet Fill to 1 foot. No groundwater encountered. Backfilled with soil cuttings and tamped. No patch.					

NOTE: THE LOG OF SUBSURFACE CONDITIONS SHOWN HEREON APPLIES ONLY AT THE SPECIFIC BORING OR TRENCH LOCATION AND AT THE DATE INDICATED. IT IS NOT WARRANTED TO BE REPRESENTATIVE OF SUBSURFACE CONDITIONS AT OTHER LOCATIONS AND TIMES. THE STRATIFICATION LINES PRESENTED HEREIN REPRESENT THE APPROXIMATE BOUNDARY BETWEEN EARTH TYPES; THE TRANSITIONS MAY BE GRADUAL.



PROJECT NAME Fullerton Joint Union High School District
LOGGED BY IA
PROJECT NUMBER W2068-88-01
LATITUDE / LONGITUDE 33.92934, -117.92746
BORING DATE 03/25/2025 **FIGURE NUMBER** A2
DEPTH 10.0' **SURFACE ELEVATION** N/A
LOCATION 401 S. Palm Street, Fullerton, CA
CLIENT NAME SOHS
DRILLING FIRM Gold Construction **COMPLETED** -
EQUIPMENT Hand Auger -
METHOD Cal-Mod **BORING DIAMETER** 4 in **HAMMER TYPE** - **NOTES** -
HAMMER WEIGHT / DROP - / -

Depth (ft)	Water Levels	Graphic Log	USCS	Material Description	Bulk	Driven	Sample Number	Dry Density (pcf)	Moisture Content (%)
0 - 1			Fill	ARTIFICIAL FILL (GRASS) Sandy SILT, soft to firm, dry to slightly moist, brown, fine-grained, some medium-grained			BULK 0-5'		
1 - 10			CL-ML	ALLUVIUM Sandy Silty CLAY, firm, slightly moist, brown, some fine-grained sand reddish brown some fine gravel, slate fragment			B2@3'	108.0	14.6
6 - 7							B2@6'	118.5	13.9
9 - 10							B2@9.5'		
10 - 12				Total depth of boring: 10 feet Fill to 1 foot. No groundwater encountered. Backfilled with soil cuttings and tamped. No patch.					

NOTE: THE LOG OF SUBSURFACE CONDITIONS SHOWN HEREON APPLIES ONLY AT THE SPECIFIC BORING OR TRENCH LOCATION AND AT THE DATE INDICATED. IT IS NOT WARRANTED TO BE REPRESENTATIVE OF SUBSURFACE CONDITIONS AT OTHER LOCATIONS AND TIMES. THE STRATIFICATION LINES PRESENTED HEREIN REPRESENT THE APPROXIMATE BOUNDARY BETWEEN EARTH TYPES; THE TRANSITIONS MAY BE GRADUAL.



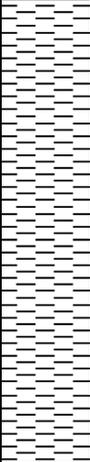
PROJECT NAME Fullerton Joint Union High School District
LOGGED BY IA
PROJECT NUMBER W2068-88-01
LATITUDE / LONGITUDE 33.92764, -117.92786
BORING DATE 03/24/2025 **FIGURE NUMBER** A3
DEPTH 15.5' **SURFACE ELEVATION** N/A
LOCATION 401 S. Palm Street, Fullerton, CA
CLIENT NAME SOHS
DRILLING FIRM Gold Construction **COMPLETED** -
EQUIPMENT Hand Auger -
METHOD Cal-Mod **BORING DIAMETER** 4 in **HAMMER TYPE** - **NOTES** -
HAMMER WEIGHT / DROP - / -

Depth (ft)	Water Levels	Graphic Log	USCS	Material Description	Bulk	Driven	Sample Number	Dry Density (pcf)	Moisture Content (%)
0 - 1			Fill	ARTIFICIAL FILL (GRASS) Clayey SILT, firm, slightly moist, dark brown			BULK 0-5'		
1 - 8			CL-ML	ALLUVIUM Sandy Silty CLAY, firm to stiff, slightly moist, reddish brown, fine-grained					
3.5 - 4.5							B3@3'	106.4	16.6
5.5 - 6.5				stiff to hard			B3@6'	112.4	19.1
8 - 12			SM	Silty SAND, medium dense, slightly moist, reddish brown, fine-grained, some medium-grained					
9 - 10				some clay			B3@9'	102.7	19.6
11 - 12			CL-ML	Silty CLAY, firm to stiff, slightly moist, reddish brown, some fine-grained sand					
12.5 - 13.5							B3@12.5'	112.7	17.7
15 - 15.5				trace sand			B3@15'	105.2	19.1
15.5 - 18				Total depth of boring: 15.5 feet Fill to 1 foot. No groundwater encountered. Backfilled with soil cuttings and tamped. No patch.					

NOTE: THE LOG OF SUBSURFACE CONDITIONS SHOWN HEREON APPLIES ONLY AT THE SPECIFIC BORING OR TRENCH LOCATION AND AT THE DATE INDICATED. IT IS NOT WARRANTED TO BE REPRESENTATIVE OF SUBSURFACE CONDITIONS AT OTHER LOCATIONS AND TIMES. THE STRATIFICATION LINES PRESENTED HEREIN REPRESENT THE APPROXIMATE BOUNDARY BETWEEN EARTH TYPES; THE TRANSITIONS MAY BE GRADUAL.



PROJECT NAME Fullerton Joint Union High School District
LOGGED BY IA
PROJECT NUMBER W2068-88-01
LATITUDE / LONGITUDE 33.92688, -117.9284
BORING DATE 03/24/2025 **FIGURE NUMBER** A4
DEPTH 20.5' **SURFACE ELEVATION** N/A
LOCATION 401 S. Palm Street, Fullerton, CA
CLIENT NAME SOHS
DRILLING FIRM Gold Construction **COMPLETED** -
EQUIPMENT Hand Auger -
METHOD Cal-Mod **BORING DIAMETER** 4 in **HAMMER TYPE** - **NOTES** -
HAMMER WEIGHT / DROP - / -

Depth (ft)	Water Levels	Graphic Log	USCS	Material Description	Bulk	Driven	Sample Number	Dry Density (pcf)	Moisture Content (%)
			Fill	ARTIFICIAL FILL (GRASS) Silty CLAY, firm, dry to slightly moist, reddish brown			BULK 0-5'		
2			CL	ALLUVIUM Sandy CLAY, firm to stiff, dry, brown, some fine-grained sand					
4							B4@3'	108.0	14.6
6				light brown			B4@6'	118.5	13.9
8									
10			SC	some medium-grained sand, trace coarse-grained sand Clayey SAND, medium dense, slightly moist, light brown, fine-grained, some medium-grained, trace coarse-grained			B4@9'	117.9	12.7
12				no coarse-grained sand			B4@12'	106.2	15.0
14									
16				reddish brown, decrease in clay			B4@15'	120.5	12.7
18									

NOTE: THE LOG OF SUBSURFACE CONDITIONS SHOWN HEREON APPLIES ONLY AT THE SPECIFIC BORING OR TRENCH LOCATION AND AT THE DATE INDICATED. IT IS NOT WARRANTED TO BE REPRESENTATIVE OF SUBSURFACE CONDITIONS AT OTHER LOCATIONS AND TIMES. THE STRATIFICATION LINES PRESENTED HEREIN REPRESENT THE APPROXIMATE BOUNDARY BETWEEN EARTH TYPES; THE TRANSITIONS MAY BE GRADUAL.



PROJECT NAME Fullerton Joint Union High School District
LOGGED BY LW
PROJECT NUMBER W2068-88-01
LATITUDE / LONGITUDE 33.92967, -117.92763
BORING DATE 03/19/2025 **FIGURE NUMBER** A5
DEPTH 15.5' **SURFACE ELEVATION** N/A
LOCATION 401 S. Palm Street, Fullerton, CA
CLIENT NAME SOHS
DRILLING FIRM - **COMPLETED** - **EQUIPMENT** Hollow Stem Auger -
METHOD Cal-Mod **BORING DIAMETER** - **HAMMER TYPE** Auto **NOTES** -
HAMMER WEIGHT / DROP 140 / 30

Depth (ft)	Water Levels	Graphic Log	USCS	Material Description	Bulk	Driven	Sample Number	Blow Counts/6"	Dry Density (pcf)	Moisture Content (%)
0 - 2			ML	ARTIFICIAL FILL (AC: 2") SILT, loose to firm, dark brown, some fine- to medium-grained			BULK 0-5'			
2 - 4			ML	ALLUVIUM Sandy SILT, stiff, moist, reddish brown, slightly oxidized						
4 - 6			CL	Sandy CLAY, stiff, moist, reddish brown, some silt, trace medium-grained sand			B5@6'	7 14 18	284.2	13.9
6 - 12			SC	Clayey SAND, medium dense, moist, reddish brown, fine- to coarse-grained, trace gravel, slightly oxidized			B5@12'	8 14 17	117.1	17.5
12 - 14			CL	Sandy CLAY, stiff, moist, reddish brown, some fine- to medium-grained sand, manganese			B5@9'	18 20 21	118.1	12.9
14 - 16			CL	Sandy CLAY, stiff, moist, reddish brown, some fine- to medium-grained sand, manganese			B5@15'	8 13 16	114.8	17.0
16 - 18				Total depth of boring: 15.5 feet Fill to 4 feet. No groundwater encountered. Backfilled with soil cuttings and tamped. Capped with concrete.						

NOTE: THE LOG OF SUBSURFACE CONDITIONS SHOWN HEREON APPLIES ONLY AT THE SPECIFIC BORING OR TRENCH LOCATION AND AT THE DATE INDICATED. IT IS NOT WARRANTED TO BE REPRESENTATIVE OF SUBSURFACE CONDITIONS AT OTHER LOCATIONS AND TIMES. THE STRATIFICATION LINES PRESENTED HEREIN REPRESENT THE APPROXIMATE BOUNDARY BETWEEN EARTH TYPES; THE TRANSITIONS MAY BE GRADUAL.



PROJECT NAME Fullerton Joint Union High School District
LOGGED BY LW
PROJECT NUMBER W2068-88-01
LATITUDE / LONGITUDE 33.92968, -117.92713
BORING DATE 03/19/2025 **FIGURE NUMBER** A6
DEPTH 15.5' **SURFACE ELEVATION** N/A
LOCATION 401 S. Palm Street, Fullerton, CA
CLIENT NAME SOHS
DRILLING FIRM - **COMPLETED** - **EQUIPMENT** Hollow Stem Auger -
METHOD Cal-Mod **BORING DIAMETER** - **HAMMER TYPE** Auto **NOTES** -
HAMMER WEIGHT / DROP 140 / 30

Depth (ft)	Water Levels	Graphic Log	USCS	Material Description	Bulk	Driven	Sample Number	Blow Counts/6"	Dry Density (pcf)	Moisture Content (%)
0 - 2			Fill	ARTIFICIAL FILL SILT, loose to firm, slightly moist, dark brown, some medium-grained						
2 - 8			ML	ALLUVIUM Sandy SILT, stiff, moist, dark reddish brown, some fine- to medium-grained, trace coarse-grained trace clay			B6@6'	15 25 35	118.5	15.2
8 - 15.5			SC	Clayey SAND , dense, moist, reddish brown, trace gravel, slightly oxidized abundant clay, manganese fine-grained, very silty			B6@9' B6@12' B6@15'	14 21 33 15 30 42 20 32 40	116.5 111.5 121.4	12.9 17.9 13.6
15.5 - 18				Total depth of boring: 15.5 feet Fill to 2 feet. No groundwater encountered. Backfilled with soil cuttings and tamped. No patch.						

NOTE: THE LOG OF SUBSURFACE CONDITIONS SHOWN HEREON APPLIES ONLY AT THE SPECIFIC BORING OR TRENCH LOCATION AND AT THE DATE INDICATED. IT IS NOT WARRANTED TO BE REPRESENTATIVE OF SUBSURFACE CONDITIONS AT OTHER LOCATIONS AND TIMES. THE STRATIFICATION LINES PRESENTED HEREIN REPRESENT THE APPROXIMATE BOUNDARY BETWEEN EARTH TYPES; THE TRANSITIONS MAY BE GRADUAL.



PROJECT NAME Fullerton Joint Union High School District
LOGGED BY LW
PROJECT NUMBER W2068-88-01
LATITUDE / LONGITUDE 33.92949, -117.92647
BORING DATE 03/19/2025 **FIGURE NUMBER** A7
DEPTH 25.5' **SURFACE ELEVATION** N/A
LOCATION 401 S. Palm Street, Fullerton, CA **CLIENT NAME** SOHS
DRILLING FIRM - **COMPLETED** - **EQUIPMENT** Hollow Stem Auger -
METHOD Cal-Mod **BORING DIAMETER** - **HAMMER TYPE** Auto **NOTES** -
HAMMER WEIGHT / DROP 140 / 30

Depth (ft)	Water Levels	Graphic Log	USCS	Material Description	Bulk	Driven	Sample Number	Blow Counts/6"	Dry Density (pcf)	Moisture Content (%)
0 - 2			Fill	ARTIFICIAL FILL SILT, loose to firm, slightly moist, dark brown, some medium-grained			BULK 0-5'			
2 - 6			SM	ALLUVIUM Silty SAND, medium dense, moist, reddish brown, fine- to medium-grained, trace coarse-grained, clay lenses						
6 - 12			CL	Sandy CLAY, stiff, moist, reddish brown, some silt, trace coarse-grained sand, manganese			B7@6'	13 22 32	116.3	14.7
12 - 16				some fine-grained, trace medium-grained, no coarse-grained			B7@9'	17 30 42	118.3	14.2
16 - 18				very silty			B7@12'	10 20 26	115.1	18.1
18 - 25.5				trace gravel, weakened, rounded			B7@15'	10 12 19	109.5	18.8

NOTE: THE LOG OF SUBSURFACE CONDITIONS SHOWN HEREON APPLIES ONLY AT THE SPECIFIC BORING OR TRENCH LOCATION AND AT THE DATE INDICATED. IT IS NOT WARRANTED TO BE REPRESENTATIVE OF SUBSURFACE CONDITIONS AT OTHER LOCATIONS AND TIMES. THE STRATIFICATION LINES PRESENTED HEREIN REPRESENT THE APPROXIMATE BOUNDARY BETWEEN EARTH TYPES; THE TRANSITIONS MAY BE GRADUAL.



SOIL BORING: B-7

Depth (ft)	Water Levels	Graphic Log	USCS	Material Description	Bulk	Driven	Sample Number	Blow Counts/6"	Dry Density (pcf)	Moisture Content (%)
22			CL	poorly graded sand lenses			B7@20'	6 10 38	113.2	17.4
24				few coarse-grained sand, gravel			B7@25'	20 23 42	115.4	13.8
26				Total depth of boring: 25.5 feet Fill to 2 feet. No groundwater encountered. Backfilled with soil cuttings and tamped. No patch.						
28										
30										
32										
34										
36										
38										

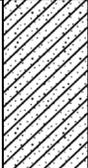
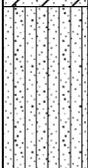
NOTE: THE LOG OF SUBSURFACE CONDITIONS SHOWN HEREON APPLIES ONLY AT THE SPECIFIC BORING OR TRENCH LOCATION AND AT THE DATE INDICATED. IT IS NOT WARRANTED TO BE REPRESENTATIVE OF SUBSURFACE CONDITIONS AT OTHER LOCATIONS AND TIMES. THE STRATIFICATION LINES PRESENTED HEREIN REPRESENT THE APPROXIMATE BOUNDARY BETWEEN EARTH TYPES; THE TRANSITIONS MAY BE GRADUAL.



PROJECT NAME Fullerton Joint Union High School District
LOGGED BY LW
PROJECT NUMBER W2068-88-01
LATITUDE / LONGITUDE 33.92917, -117.92648
BORING DATE 03/19/2025 **FIGURE NUMBER** A8
DEPTH 50.5' **SURFACE ELEVATION** N/A
LOCATION 401 S. Palm Street, Fullerton, CA **CLIENT NAME** SOHS
DRILLING FIRM - **COMPLETED** - **EQUIPMENT** Hollow Stem Auger -
METHOD Cal-Mod **BORING DIAMETER** - **HAMMER TYPE** Auto **NOTES** -
HAMMER WEIGHT / DROP 140 / 30

Depth (ft)	Water Levels	Graphic Log	USCS	Material Description	Bulk	Driven	Sample Number	Blow Counts/6"	Dry Density (pcf)	Moisture Content (%)
0 - 2			Fill	ARTIFICIAL FILL SILT, soft, slightly moist to moist, brown, trace sand						
2 - 10			CL-ML	ALLUVIUM Sandy Silty CLAY, moist, reddish brown, fine- to medium-grained, some silt, trace coarse-grained sand stiff, trace manganese			B8@6'	9 19 22	93.7	19.0
10 - 16			CL	Sandy CLAY, moist, reddish brown, fine- to medium-grained, some coarse-grained sand, slightly expansive clay seams on parting surfaces			B8@9'	11 21 36	117.7	16.9
16 - 18			SC	Clayey SAND, very dense, slightly moist, reddish brown, fine- to medium-grained, some coarse-grained, leaching seams, trace silt			B8@12'	9 22 40	120.1	15.7
				some clay, increase in sand, leaching seams			B8@15'	16 28 50/5"	115.1	18.1

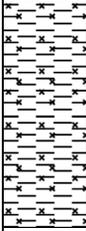
NOTE: THE LOG OF SUBSURFACE CONDITIONS SHOWN HEREON APPLIES ONLY AT THE SPECIFIC BORING OR TRENCH LOCATION AND AT THE DATE INDICATED. IT IS NOT WARRANTED TO BE REPRESENTATIVE OF SUBSURFACE CONDITIONS AT OTHER LOCATIONS AND TIMES. THE STRATIFICATION LINES PRESENTED HEREIN REPRESENT THE APPROXIMATE BOUNDARY BETWEEN EARTH TYPES; THE TRANSITIONS MAY BE GRADUAL.

Depth (ft)	Water Levels	Graphic Log	USCS	Material Description	Bulk	Driven	Sample Number	Blow Counts/6"	Dry Density (pcf)	Moisture Content (%)
22			SC				B8@20'	14 32 50/4"	115.9	9.6
24				no coarse-grained, increase in fines, no leaching, manganese			B8@24.5'	38 50/6"	124.5	11.8
28			CL	Sandy CLAY , stiff, moist, reddish brown, some medium-grained sand, trace manganese						
30				sand lamination			B8@30'	12 24 30	110.2	18.2
32			SM	Silty SAND , medium dense, wet, reddish brown, medium-grained, some fine-grained						
34							B8@35'	30 31 15	112.6	13.4
38			CL	Sandy CLAY , stiff, moist, reddish brown, trace fine-grained, trace manganese						

NOTE: THE LOG OF SUBSURFACE CONDITIONS SHOWN HEREON APPLIES ONLY AT THE SPECIFIC BORING OR TRENCH LOCATION AND AT THE DATE INDICATED. IT IS NOT WARRANTED TO BE REPRESENTATIVE OF SUBSURFACE CONDITIONS AT OTHER LOCATIONS AND TIMES. THE STRATIFICATION LINES PRESENTED HEREIN REPRESENT THE APPROXIMATE BOUNDARY BETWEEN EARTH TYPES; THE TRANSITIONS MAY BE GRADUAL.



SOIL BORING: B-8

Depth (ft)	Water Levels	Graphic Log	USCS	Material Description	Bulk	Driven	Sample Number	Blow Counts/6"	Dry Density (pcf)	Moisture Content (%)
			CL				B8@40'	10 18 21	103.3	22.1
42			SM	Silty SAND , medium dense, wet, reddish brown, medium-grained, low cohesion						
44										
46							B8@45'	20 18 16	109.9	16.9
48			CL-ML	Silty CLAY , stiff, moist to wet, reddish brown, very silty						
50							B8@50'	10 17 25	116.5	18.0
52				Total depth of boring: 50.5 feet Fill to 3 feet. Groundwater encountered at 34.9 feet. Backfilled with soil cuttings and tamped. Grouted.						
54										
56										
58										

NOTE: THE LOG OF SUBSURFACE CONDITIONS SHOWN HEREON APPLIES ONLY AT THE SPECIFIC BORING OR TRENCH LOCATION AND AT THE DATE INDICATED. IT IS NOT WARRANTED TO BE REPRESENTATIVE OF SUBSURFACE CONDITIONS AT OTHER LOCATIONS AND TIMES. THE STRATIFICATION LINES PRESENTED HEREIN REPRESENT THE APPROXIMATE BOUNDARY BETWEEN EARTH TYPES; THE TRANSITIONS MAY BE GRADUAL.



PROJECT NAME Fullerton Joint Union High School District
LOGGED BY LW
PROJECT NUMBER W2068-88-01
LATITUDE / LONGITUDE 33.92888, -117.92835
BORING DATE 03/19/2025 **FIGURE NUMBER** A9
DEPTH 15.5' **SURFACE ELEVATION** N/A
LOCATION 401 S. Palm Street, Fullerton, CA
CLIENT NAME SOHS
DRILLING FIRM - **COMPLETED** - **EQUIPMENT** Hollow Stem Auger -
METHOD Cal-Mod **BORING DIAMETER** - **HAMMER TYPE** Auto **NOTES** -
HAMMER WEIGHT / DROP 140 / 30

Depth (ft)	Water Levels	Graphic Log	USCS	Material Description	Bulk	Driven	Sample Number	Blow Counts/6"	Dry Density (pcf)	Moisture Content (%)
			Fill	ARTIFICIAL FILL			BULK 0-5'			
2			SM	ALLUVIUM Silty SAND, medium dense, dry to slightly moist, brown, fine- to medium-grained, trace coarse-grained, trace gravel						
4										
6				dense, leaching seams			B9@6'	13 30 34	94.5	10.6
8			SC	Clayey SAND , medium dense, slightly moist, dark brown, fine- to medium-grained, trace gravel			B9@9'	10 16 16	110.3	12.1
10										
12			CL	Sandy CLAY , stiff, moist, reddish brown, some fine- to medium-grained sand, trace oxidized coarse-grained sand			B9@12'	8 22 38	118.1	16.1
14										
16				leaching seams, manganese			B9@15'	11 22 29	121.7	13.9
18				Total depth of boring: 15.5 feet Fill to 1 foot. No groundwater encountered. Backfilled with soil cuttings and tamped.						

NOTE: THE LOG OF SUBSURFACE CONDITIONS SHOWN HEREON APPLIES ONLY AT THE SPECIFIC BORING OR TRENCH LOCATION AND AT THE DATE INDICATED. IT IS NOT WARRANTED TO BE REPRESENTATIVE OF SUBSURFACE CONDITIONS AT OTHER LOCATIONS AND TIMES. THE STRATIFICATION LINES PRESENTED HEREIN REPRESENT THE APPROXIMATE BOUNDARY BETWEEN EARTH TYPES; THE TRANSITIONS MAY BE GRADUAL.

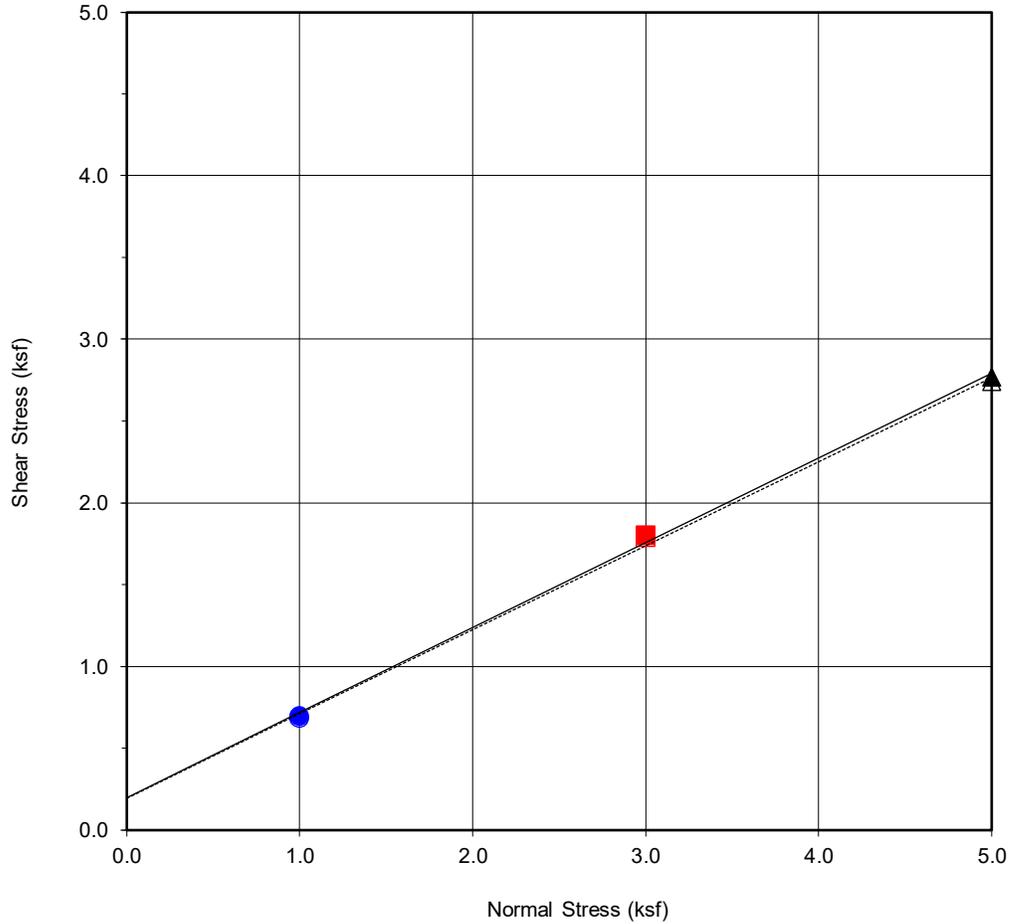
APPENDIX

B

APPENDIX B

LABORATORY TESTING

We performed laboratory tests in accordance with generally accepted test methods of the American Society for Testing and Materials (ASTM) or other suggested procedures. We tested selected soil samples for in-place dry density/moisture content, expansion index, grain size analysis, consolidation, corrosivity, and direct shear strength. The results of the laboratory tests are summarized in Figures B1 through B33. The in-place dry density and moisture content of the samples tested are presented on the boring logs, Appendix A.



Boring No.	B5
Sample No.	B5@0-5'
Depth (ft)	0-5'
<u>Sample Type:</u>	Ring

<u>Soil Identification:</u>		
Sandy Silt (ML)		
Strength Parameters		
	C (psf)	ϕ ($^{\circ}$)
Peak	200	27
Ultimate	196	27

Normal Stress (kip/ft ²)	1	3	5
Peak Shear Stress (kip/ft ²)	● 0.70	■ 1.80	▲ 2.77
Shear Stress @ End of Test (ksf)	○ 0.68	□ 1.79	△ 2.74
Deformation Rate (in./min.)	0.05	0.05	0.05
Initial Sample Height (in.)	1.0	1.0	1.0
Ring Inside Diameter (in.)	2.375	2.375	2.375
Initial Moisture Content (%)	11.9	11.9	11.8
Initial Dry Density (pcf)	102.0	102.0	102.0
Initial Degree of Saturation (%)	49.3	49.1	48.9
Soil Height Before Shearing (in.)	1.2	1.2	1.2
Final Moisture Content (%)	22.0	19.6	18.0



DIRECT SHEAR TEST RESULTS

Consolidated Drained ASTM D-3080

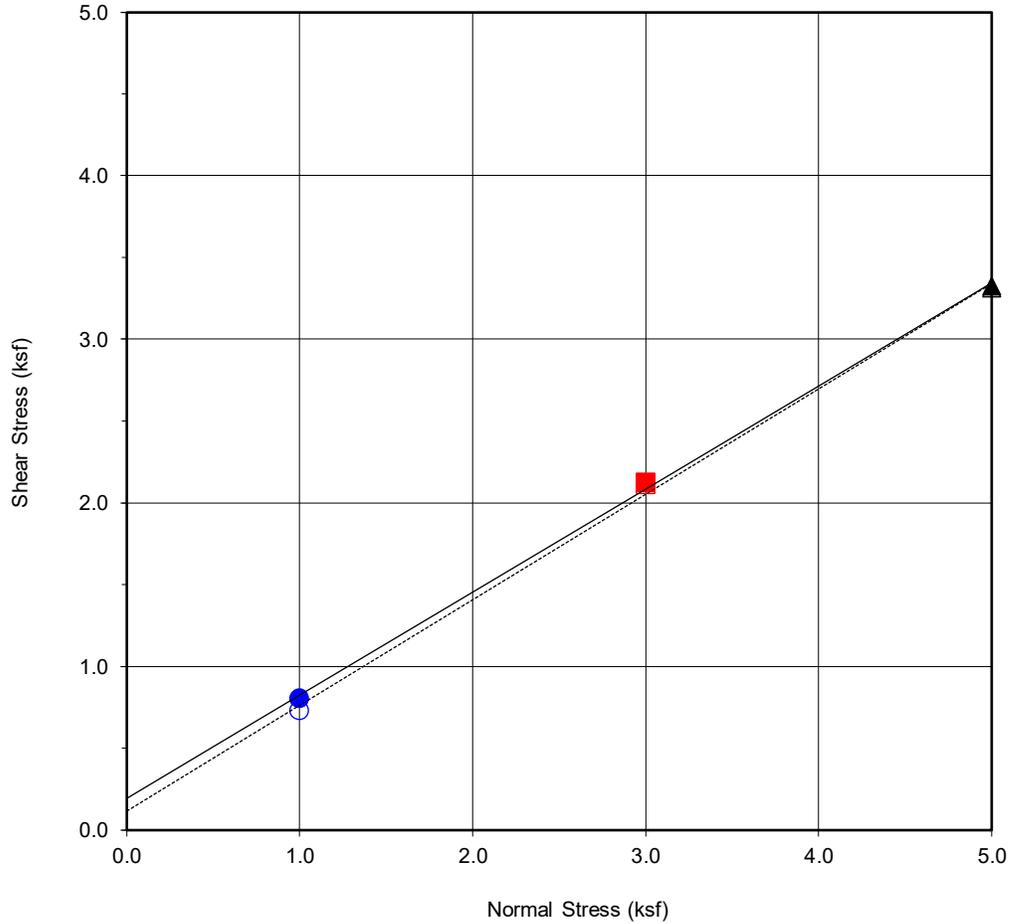
Checked by: RP

Project No.: W2068-88-01

SONORA HIGH SCHOOL
401 SOUTH PALM STREET
LA HABRA, CALIFORNIA

MAY 2025

Figure B1



Boring No.	B7
Sample No.	B7 @ 0-5'
Depth (ft)	0-5'
<u>Sample Type:</u>	Ring

<u>Soil Identification:</u>		
Silty Sand (SM)		
Strength Parameters		
	C (psf)	ϕ ($^{\circ}$)
Peak	194	32
Ultimate	117	33

Normal Stress (kip/ft ²)	1	3	5
Peak Shear Stress (kip/ft ²)	● 0.80	■ 2.12	▲ 3.32
Shear Stress @ End of Test (ksf)	○ 0.73	□ 2.11	△ 3.31
Deformation Rate (in./min.)	0.05	0.05	0.05
Initial Sample Height (in.)	1.0	1.0	1.0
Ring Inside Diameter (in.)	2.375	2.375	2.375
Initial Moisture Content (%)	10.7	10.7	10.6
Initial Dry Density (pcf)	108.0	108.0	108.0
Initial Degree of Saturation (%)	51.6	51.4	51.3
Soil Height Before Shearing (in.)	1.2	1.2	1.2
Final Moisture Content (%)	19.7	18.3	17.0

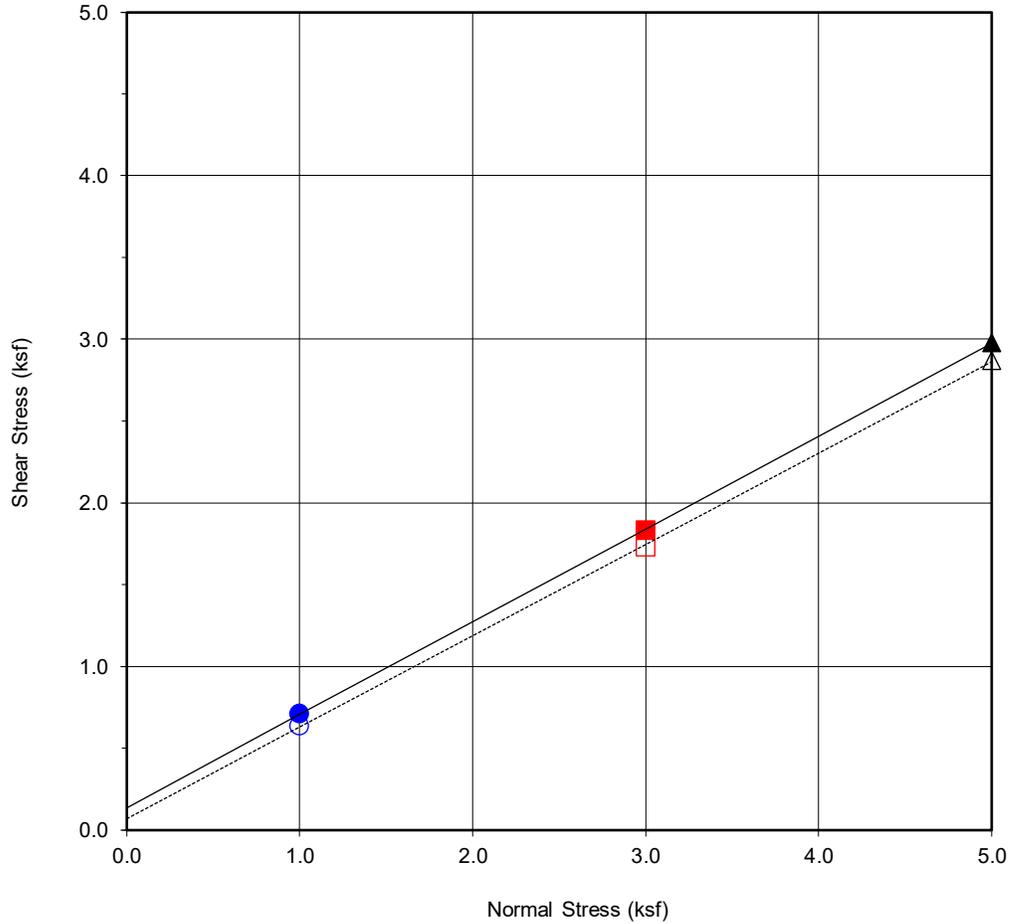


DIRECT SHEAR TEST RESULTS
Consolidated Drained ASTM D-3080

Checked by: RP

Project No.: W2068-88-01
SONORA HIGH SCHOOL
401 SOUTH PALM STREET
LA HABRA, CALIFORNIA

MAY 2025 Figure B2



Boring No.	B10
Sample No.	B10@0-5'
Depth (ft)	0-5'
<u>Sample Type:</u>	Ring

<u>Soil Identification:</u>		
Silty Sand (SM)		
Strength Parameters		
	C (psf)	ϕ ($^{\circ}$)
Peak	138	30
Ultimate	69	29

Normal Stress (kip/ft ²)	1	3	5
Peak Shear Stress (kip/ft ²)	● 0.71	■ 1.83	▲ 2.98
Shear Stress @ End of Test (ksf)	○ 0.64	□ 1.73	△ 2.87
Deformation Rate (in./min.)	0.05	0.05	0.05
Initial Sample Height (in.)	1.0	1.0	1.0
Ring Inside Diameter (in.)	2.375	2.375	2.375
Initial Moisture Content (%)	11.9	11.9	12.0
Initial Dry Density (pcf)	102.0	102.0	102.0
Initial Degree of Saturation (%)	49.1	49.2	49.4
Soil Height Before Shearing (in.)	1.2	1.2	1.2
Final Moisture Content (%)	24.0	21.8	20.3



DIRECT SHEAR TEST RESULTS

Consolidated Drained ASTM D-3080

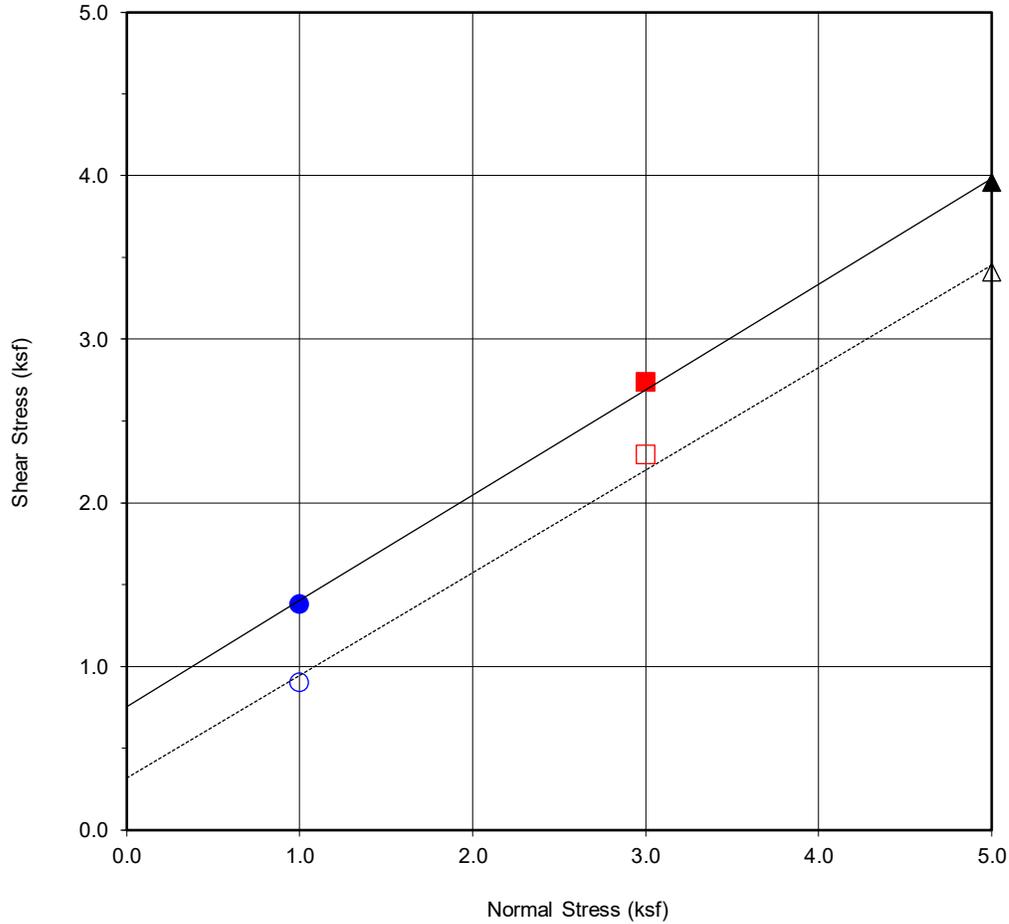
Checked by: RP

Project No.: W2068-88-01

SONORA HIGH SCHOOL
401 SOUTH PALM STREET
LA HABRA, CALIFORNIA

MAY 2025

Figure B3



Boring No.	B1
Sample No.	B1@6'
Depth (ft)	6'
<u>Sample Type:</u>	Ring

<u>Soil Identification:</u>		
Sandy Clay (CL)		
Strength Parameters		
	C (psf)	ϕ ($^{\circ}$)
Peak	757	33
Ultimate	318	32

Normal Stress (kip/ft ²)	1	3	5
Peak Shear Stress (kip/ft ²)	● 1.38	■ 2.74	▲ 3.96
Shear Stress @ End of Test (ksf)	○ 0.90	□ 2.29	△ 3.41
Deformation Rate (in./min.)	0.05	0.05	0.05
Initial Sample Height (in.)	1.0	1.0	1.0
Ring Inside Diameter (in.)	2.375	2.375	2.375
Initial Moisture Content (%)	19.1	17.7	17.3
Initial Dry Density (pcf)	108.8	112.2	117.1
Initial Degree of Saturation (%)	93.7	95.2	106.4
Soil Height Before Shearing (in.)	1.2	1.2	1.2
Final Moisture Content (%)	20.9	18.8	17.5



DIRECT SHEAR TEST RESULTS

Consolidated Drained ASTM D-3080

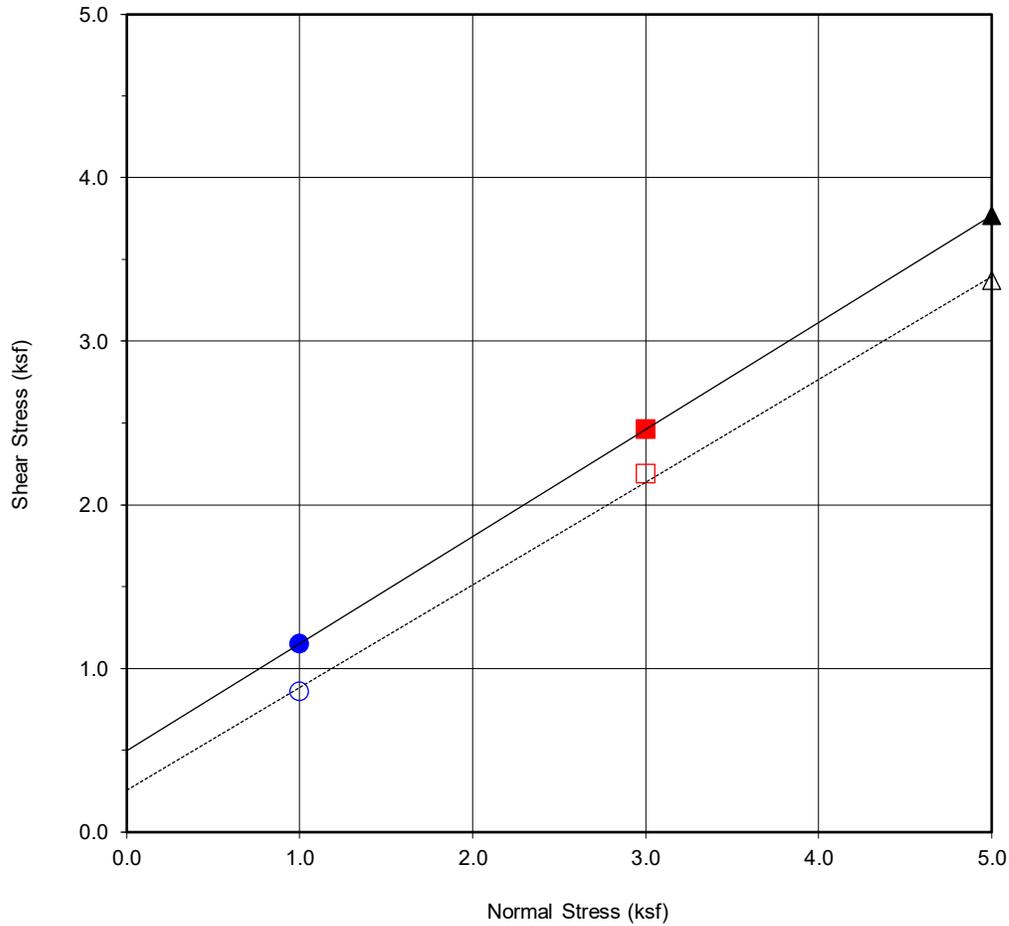
Checked by: RP

Project No.: W2068-88-01

SONORA HIGH SCHOOL
401 SOUTH PALM STREET
LA HABRA, CALIFORNIA

MAY 2025

Figure B4



Boring No.	B1
Sample No.	B1@15'
Depth (ft)	15'
<u>Sample Type:</u>	Ring

<u>Soil Identification:</u>		
Sandy Silty Clay (CL-ML)		
Strength Parameters		
	C (psf)	ϕ ($^{\circ}$)
Peak	498	33
Ultimate	256	32

Normal Stress (kip/ft ²)	1	3	5
Peak Shear Stress (kip/ft ²)	● 1.15	■ 2.46	▲ 3.77
Shear Stress @ End of Test (ksf)	○ 0.86	□ 2.19	△ 3.37
Deformation Rate (in./min.)	0.05	0.05	0.05
Initial Sample Height (in.)	1.0	1.0	1.0
Ring Inside Diameter (in.)	2.375	2.375	2.375
Initial Moisture Content (%)	17.7	17.1	18.5
Initial Dry Density (pcf)	113.1	113.3	110.9
Initial Degree of Saturation (%)	97.1	94.8	96.2
Soil Height Before Shearing (in.)	1.2	1.2	1.2
Final Moisture Content (%)	21.3	19.6	20.0



DIRECT SHEAR TEST RESULTS

Consolidated Drained ASTM D-3080

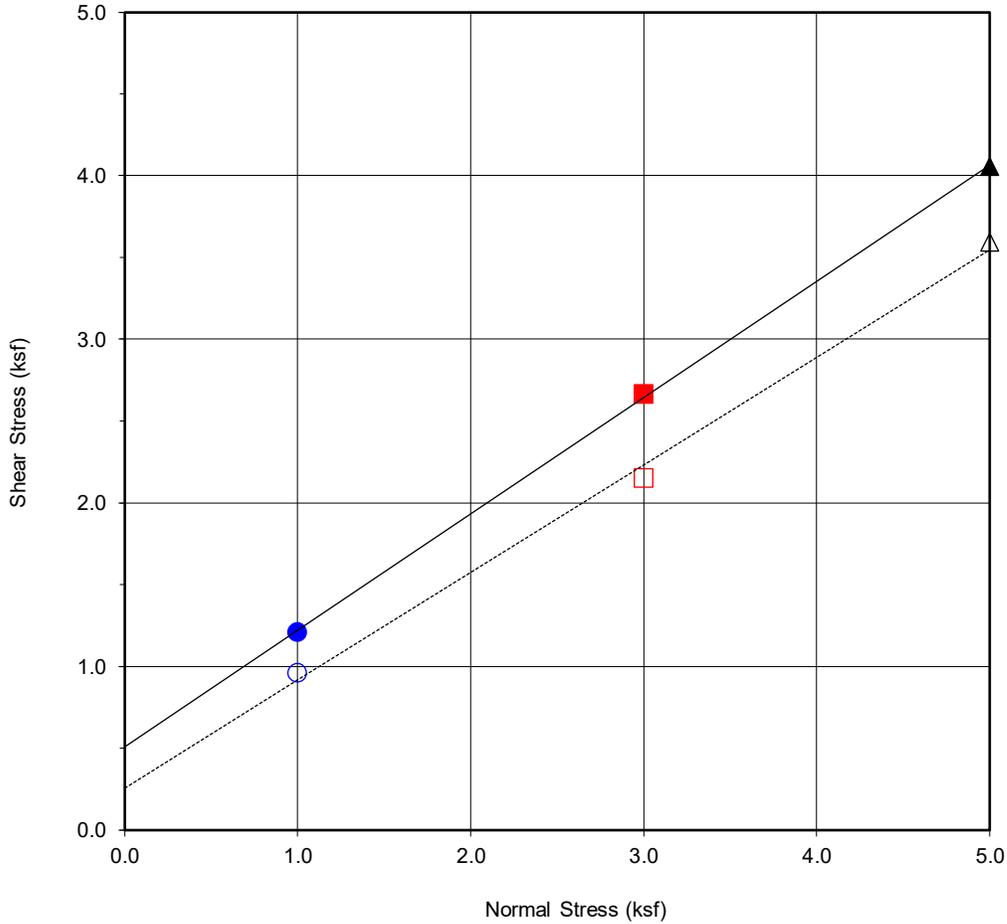
Checked by: RP

Project No.: W2068-88-01

SONORA HIGH SCHOOL
401 SOUTH PALM STREET
LA HABRA, CALIFORNIA

MAY 2025

Figure B5



Boring No.	B3
Sample No.	B3@3'
Depth (ft)	3'
<u>Sample Type:</u>	Ring

<u>Soil Identification:</u>		
Sandy Silty Clay (CL)		
Strength Parameters		
	C (psf)	ϕ ($^{\circ}$)
Peak	509	35
Ultimate	259	33

Normal Stress (kip/ft ²)	1	3	5
Peak Shear Stress (kip/ft ²)	● 1.21	■ 2.66	▲ 4.06
Shear Stress @ End of Test (ksf)	○ 0.96	□ 2.15	△ 3.59
Deformation Rate (in./min.)	0.05	0.05	0.05
Initial Sample Height (in.)	1.0	1.0	1.0
Ring Inside Diameter (in.)	2.375	2.375	2.375
Initial Moisture Content (%)	14.4	14.2	14.8
Initial Dry Density (pcf)	116.8	117.1	117.8
Initial Degree of Saturation (%)	87.9	87.2	92.5
Soil Height Before Shearing (in.)	1.2	1.2	1.2
Final Moisture Content (%)	16.2	16.0	15.6



DIRECT SHEAR TEST RESULTS

Consolidated Drained ASTM D-3080

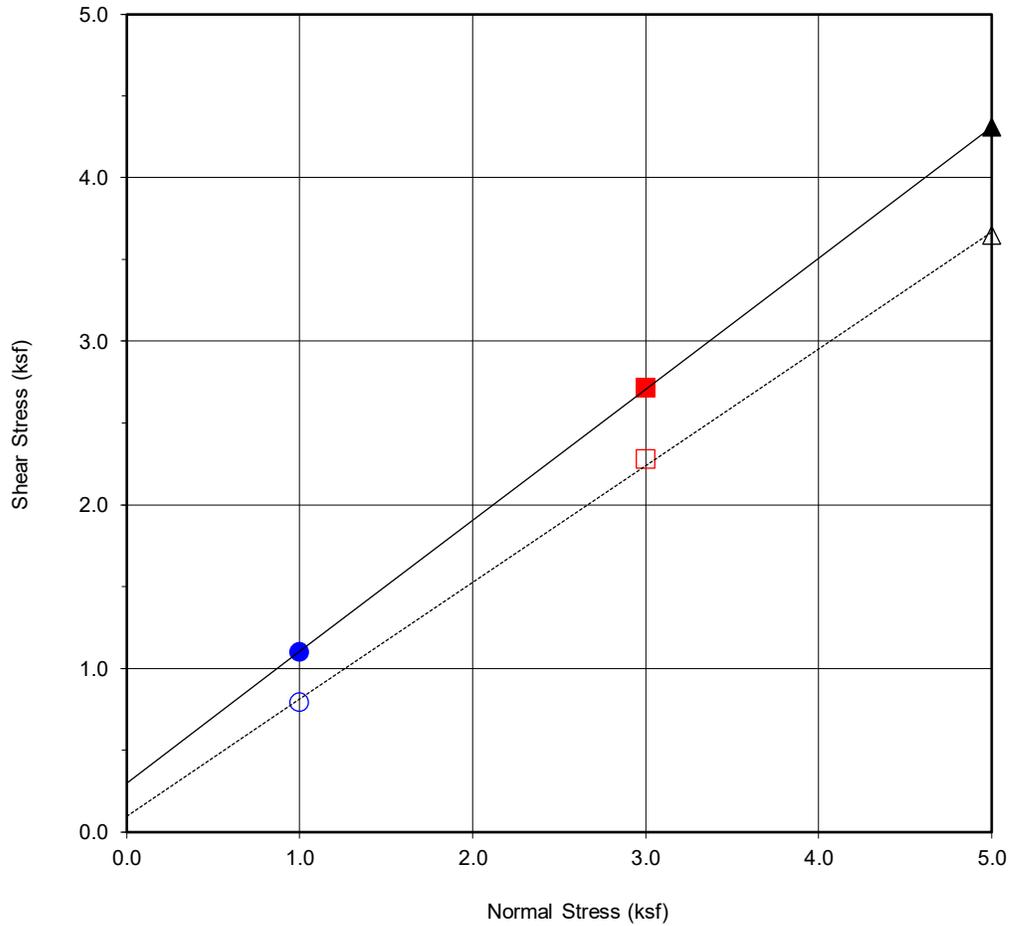
Checked by: RP

Project No.: W2068-88-01

SONORA HIGH SCHOOL
401 SOUTH PALM STREET
LA HABRA, CALIFORNIA

MAY 2025

Figure B6



Boring No.	B3
Sample No.	B3@9'
Depth (ft)	6'
Sample Type:	Ring

Soil Identification:		
Silty Sand (SM)		
Strength Parameters		
	C (psf)	ϕ ($^{\circ}$)
Peak	301	39
Ultimate	98	36

Normal Stress (kip/ft ²)	1	3	5
Peak Shear Stress (kip/ft ²)	● 1.10	■ 2.71	▲ 4.31
Shear Stress @ End of Test (ksf)	○ 0.79	□ 2.28	△ 3.65
Deformation Rate (in./min.)	0.05	0.05	0.05
Initial Sample Height (in.)	1.0	1.0	1.0
Ring Inside Diameter (in.)	2.375	2.375	2.375
Initial Moisture Content (%)	13.6	13.9	14.8
Initial Dry Density (pcf)	113.4	114.7	114.2
Initial Degree of Saturation (%)	75.8	79.9	84.2
Soil Height Before Shearing (in.)	1.2	1.2	1.2
Final Moisture Content (%)	16.7	15.9	15.6



DIRECT SHEAR TEST RESULTS

Consolidated Drained ASTM D-3080

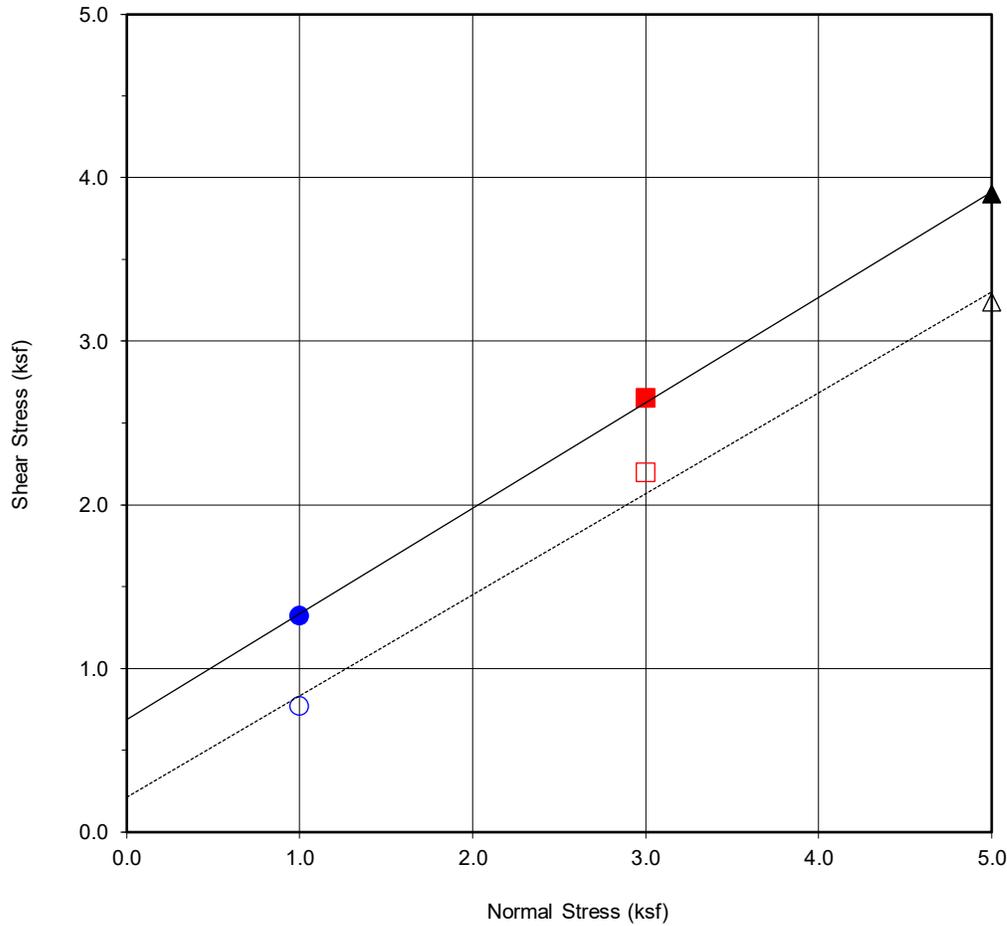
Checked by: RP

Project No.: W2068-88-01

SONORA HIGH SCHOOL
401 SOUTH PALM STREET
LA HABRA, CALIFORNIA

MAY 2025

Figure B7



Boring No.	B3
Sample No.	B3@15'
Depth (ft)	15'
<u>Sample Type:</u>	Ring

<u>Soil Identification:</u>		
Silty Clay (CL-ML)		
Strength Parameters		
	C (psf)	ϕ ($^{\circ}$)
Peak	689	33
Ultimate	214	32

Normal Stress (kip/ft ²)	1	3	5
Peak Shear Stress (kip/ft ²)	● 1.32	■ 2.65	▲ 3.90
Shear Stress @ End of Test (ksf)	○ 0.77	□ 2.20	△ 3.24
Deformation Rate (in./min.)	0.05	0.05	0.05
Initial Sample Height (in.)	1.0	1.0	1.0
Ring Inside Diameter (in.)	2.375	2.375	2.375
Initial Moisture Content (%)	19.7	18.5	16.7
Initial Dry Density (pcf)	113.7	110.9	113.4
Initial Degree of Saturation (%)	110.1	96.2	92.7
Soil Height Before Shearing (in.)	1.2	1.2	1.2
Final Moisture Content (%)	18.4	18.2	17.0



DIRECT SHEAR TEST RESULTS

Consolidated Drained ASTM D-3080

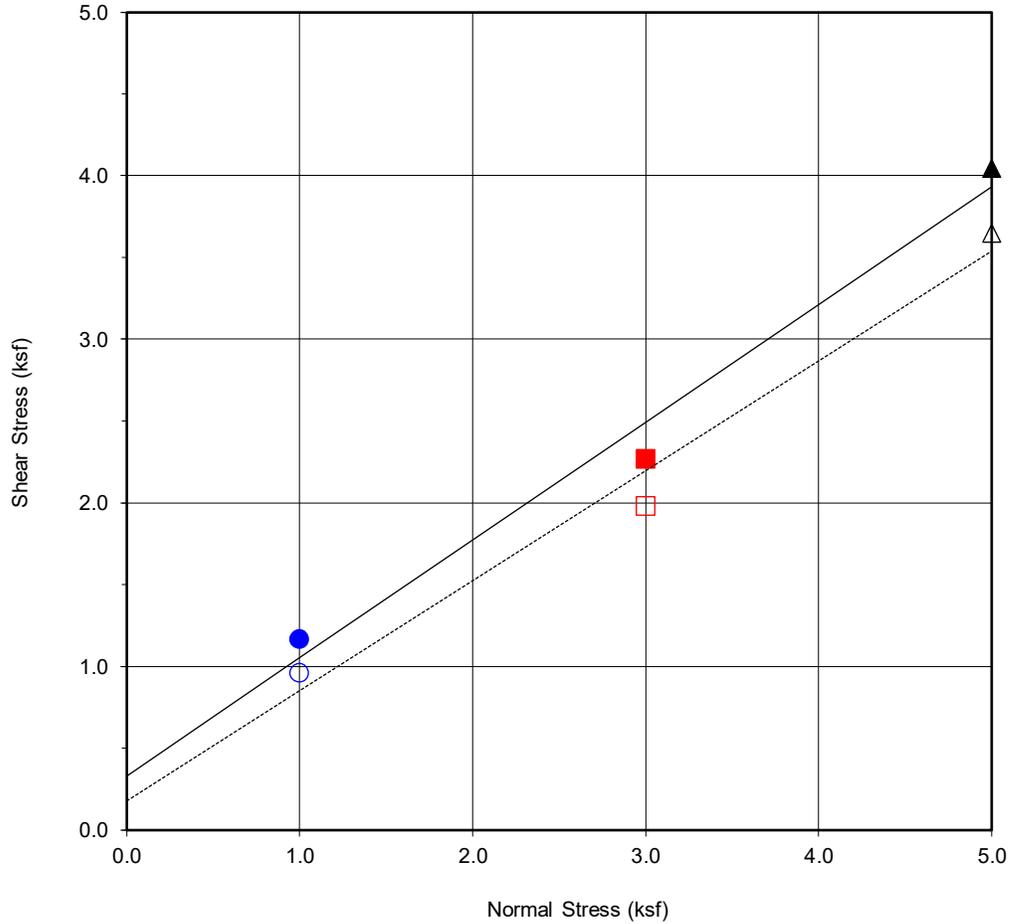
Checked by: RP

Project No.: W2068-88-01

SONORA HIGH SCHOOL
401 SOUTH PALM STREET
LA HABRA, CALIFORNIA

MAY 2025

Figure B8



Boring No.	B7
Sample No.	B7@6'
Depth (ft)	6'
<u>Sample Type:</u>	Ring

<u>Soil Identification:</u>		
Sandy Clay (CL)		
Strength Parameters		
	C (psf)	ϕ ($^{\circ}$)
Peak	332	36
Ultimate	180	34

Normal Stress (kip/ft ²)	1	3	5
Peak Shear Stress (kip/ft ²)	● 1.16	■ 2.27	▲ 4.04
Shear Stress @ End of Test (ksf)	○ 0.96	□ 1.98	△ 3.65
Deformation Rate (in./min.)	0.05	0.05	0.05
Initial Sample Height (in.)	1.0	1.0	1.0
Ring Inside Diameter (in.)	2.375	2.375	2.375
Initial Moisture Content (%)	17.5	17.9	21.5
Initial Dry Density (pcf)	112.0	110.7	114.4
Initial Degree of Saturation (%)	93.5	92.3	122.7
Soil Height Before Shearing (in.)	1.2	1.2	1.2
Final Moisture Content (%)	21.5	20.6	17.8

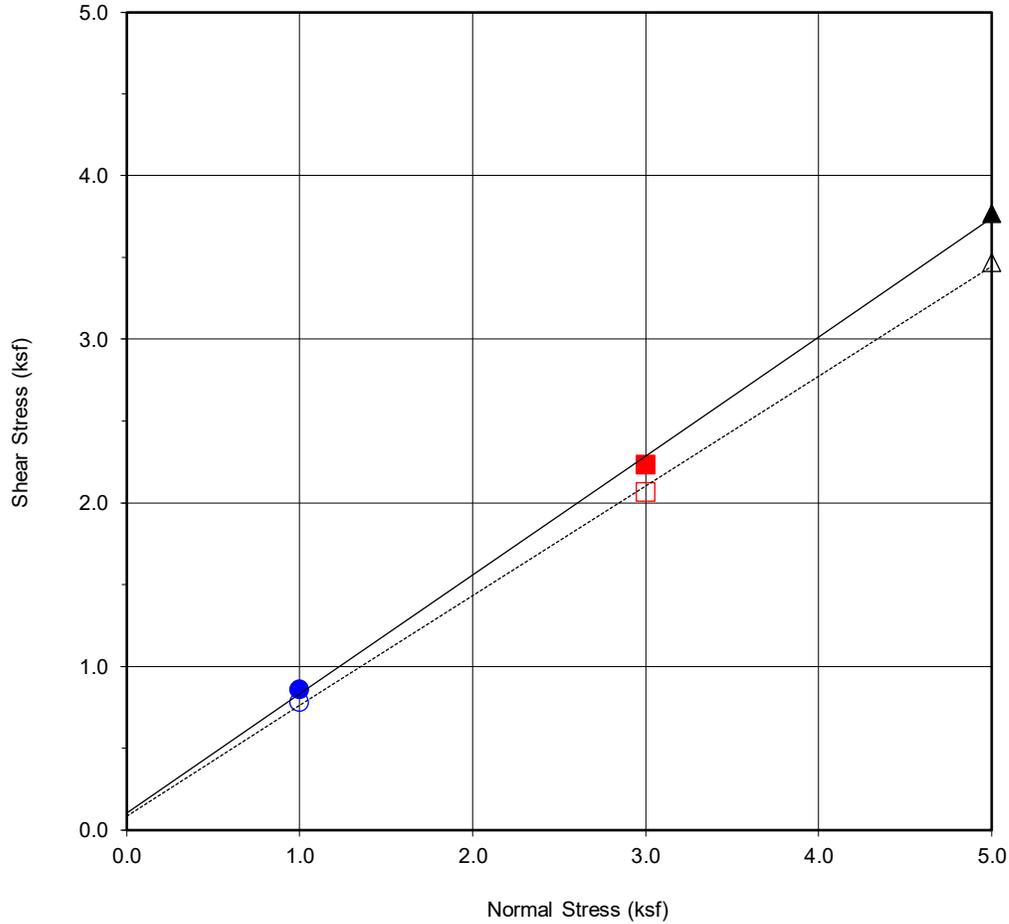


DIRECT SHEAR TEST RESULTS
Consolidated Drained ASTM D-3080

Checked by: RP

Project No.: W2068-88-01
SONORA HIGH SCHOOL
401 SOUTH PALM STREET
LA HABRA, CALIFORNIA

MAY 2025 Figure B9



Boring No.	B10
Sample No.	B10@6'
Depth (ft)	6'
<u>Sample Type:</u>	Ring

<u>Soil Identification:</u>		
Silty Sand (SM)		
Strength Parameters		
	C (psf)	ϕ ($^{\circ}$)
Peak	106	36
Ultimate	88	34

Normal Stress (kip/ft ²)	1	3	5
Peak Shear Stress (kip/ft ²)	● 0.86	■ 2.23	▲ 3.77
Shear Stress @ End of Test (ksf)	○ 0.78	□ 2.06	△ 3.47
Deformation Rate (in./min.)	0.05	0.05	0.05
Initial Sample Height (in.)	1.0	1.0	1.0
Ring Inside Diameter (in.)	2.375	2.375	2.375
Initial Moisture Content (%)	13.0	11.3	11.4
Initial Dry Density (pcf)	102.4	106.0	106.5
Initial Degree of Saturation (%)	54.5	51.5	52.7
Soil Height Before Shearing (in.)	1.2	1.2	1.2
Final Moisture Content (%)	24.1	19.4	18.2



DIRECT SHEAR TEST RESULTS

Consolidated Drained ASTM D-3080

Checked by: RP

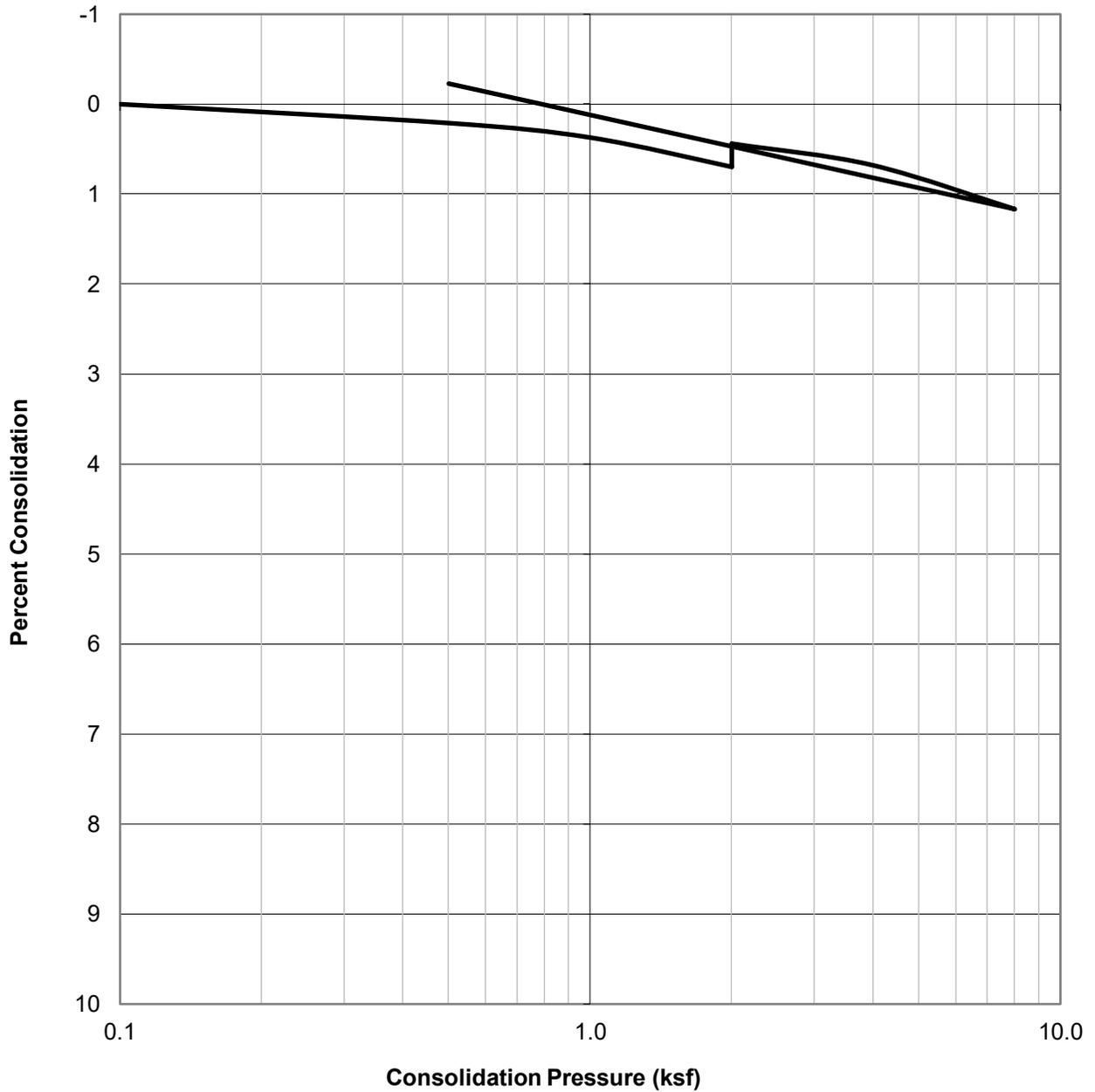
Project No.: W2068-88-01

SONORA HIGH SCHOOL
401 SOUTH PALM STREET
LA HABRA, CALIFORNIA

MAY 2025

Figure B10

WATER ADDED AT 2.0 KSF



SAMPLE ID.	SOIL TYPE	DRY DENSITY (PCF)	INITIAL MOISTURE (%)	FINAL MOISTURE (%)
B7 @ 6'	Sandy Clay (CL)	115.6	14.7	16.6



CONSOLIDATION TEST RESULTS

ASTM D-2435

Checked by: RP

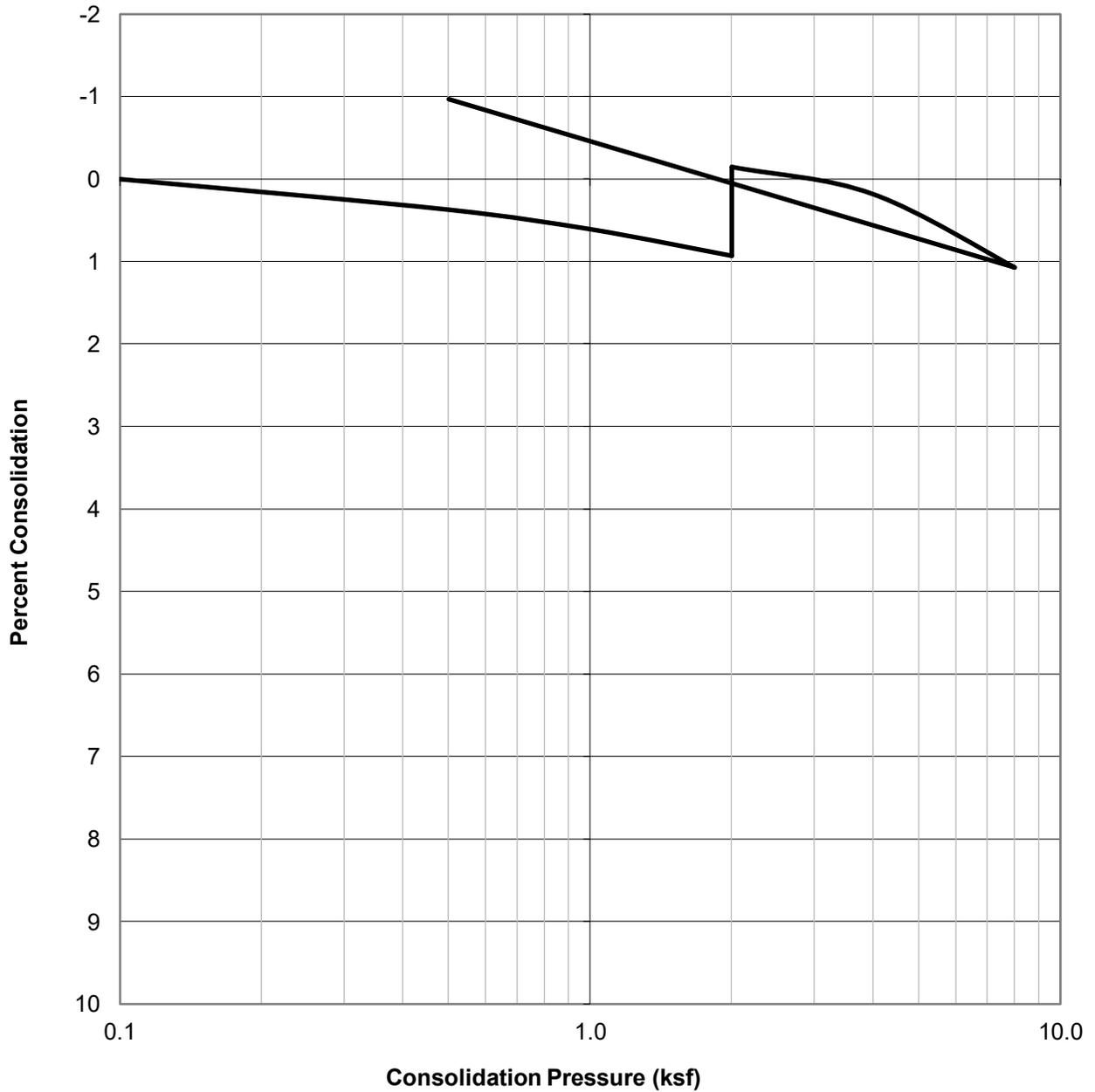
Project No.: W2068-88-01

SONORA HIGH SCHOOL
401 SOUTH PALM STREET
LA HABRA, CALIFORNIA

MAY 2025

Figure B11

WATER ADDED AT 2.0 KSF



SAMPLE ID.	SOIL TYPE	DRY DENSITY (PCF)	INITIAL MOISTURE (%)	FINAL MOISTURE (%)
B7 @ 9'	Sandy Clay (CL)	118.4	14.2	16.6



CONSOLIDATION TEST RESULTS

ASTM D-2435

Checked by: RP

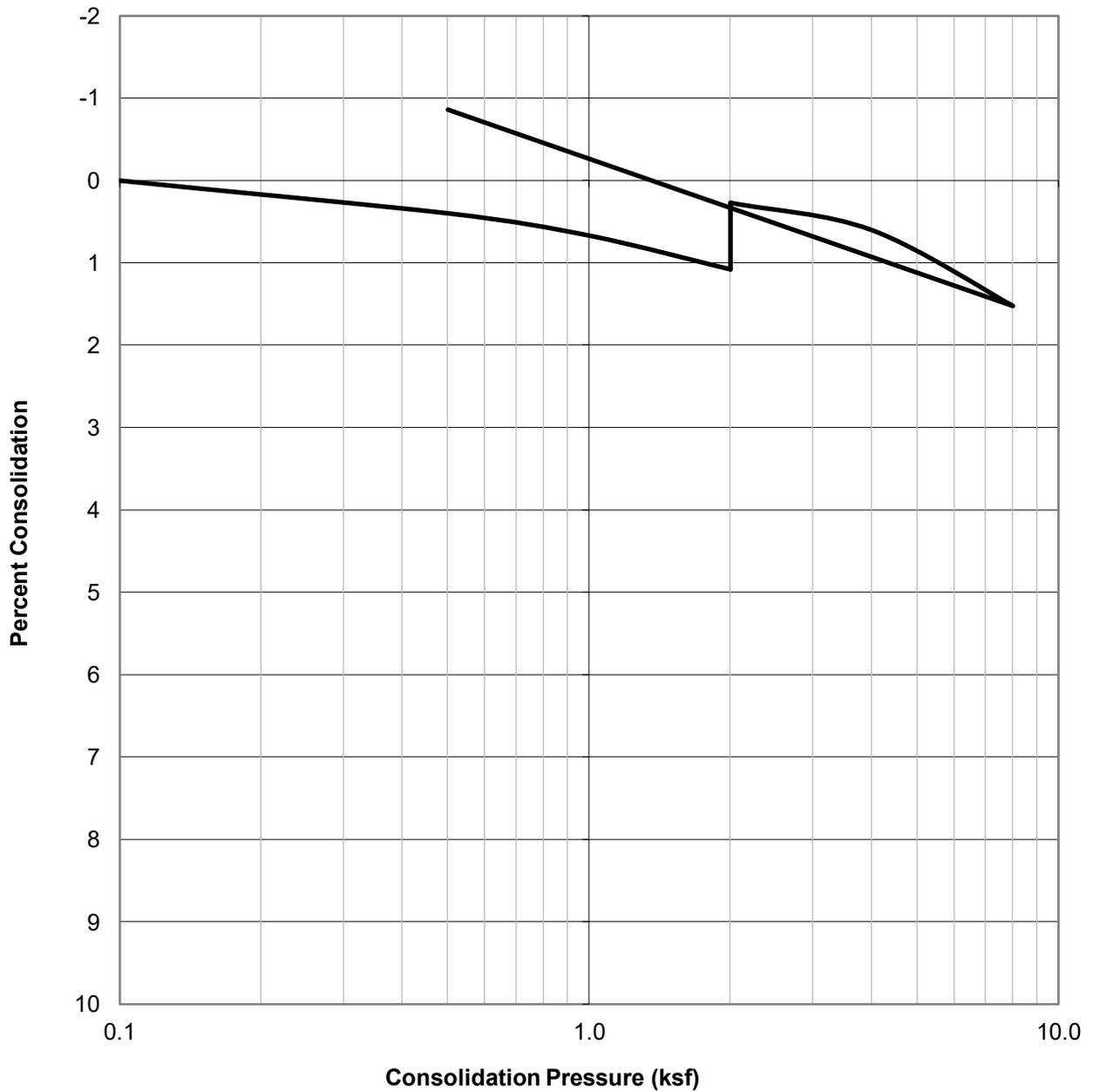
Project No.: W2068-88-01

SONORA HIGH SCHOOL
401 SOUTH PALM STREET
LA HABRA, CALIFORNIA

MAY 2025

Figure B12

WATER ADDED AT 2.0 KSF



SAMPLE ID.	SOIL TYPE	DRY DENSITY (PCF)	INITIAL MOISTURE (%)	FINAL MOISTURE (%)
B7 @ 12'	Sandy Clay (CL)	112.6	18.1	19.8



CONSOLIDATION TEST RESULTS

ASTM D-2435

Checked by: RP

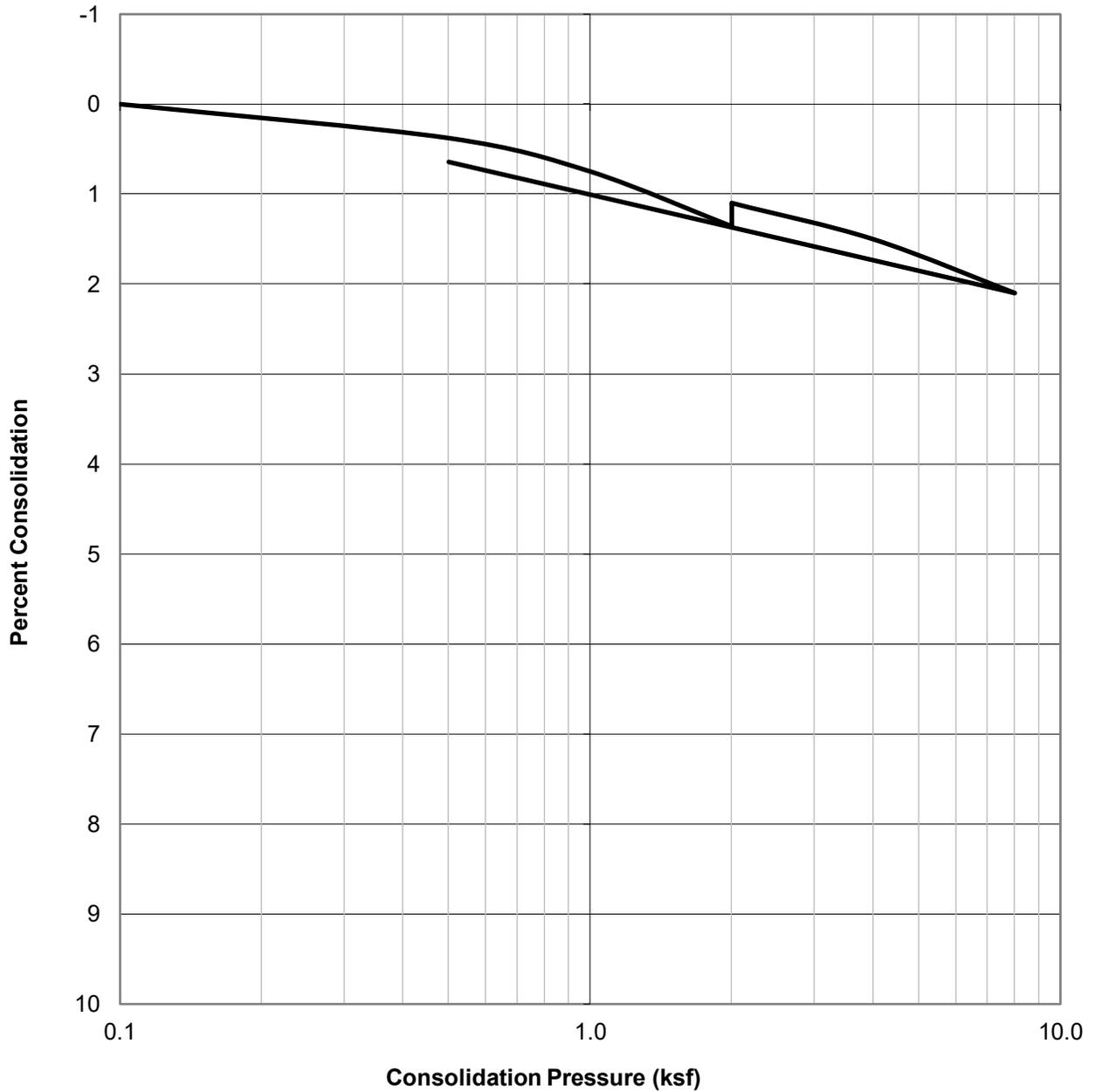
Project No.: W2068-88-01

SONORA HIGH SCHOOL
401 SOUTH PALM STREET
LA HABRA, CALIFORNIA

MAY 2025

Figure B13

WATER ADDED AT 2.0 KSF



SAMPLE ID.	SOIL TYPE	DRY DENSITY (PCF)	INITIAL MOISTURE (%)	FINAL MOISTURE (%)
B7 @ 15'	Sandy Clay (CL)	109.2	18.8	20.2



CONSOLIDATION TEST RESULTS

ASTM D-2435

Checked by: RP

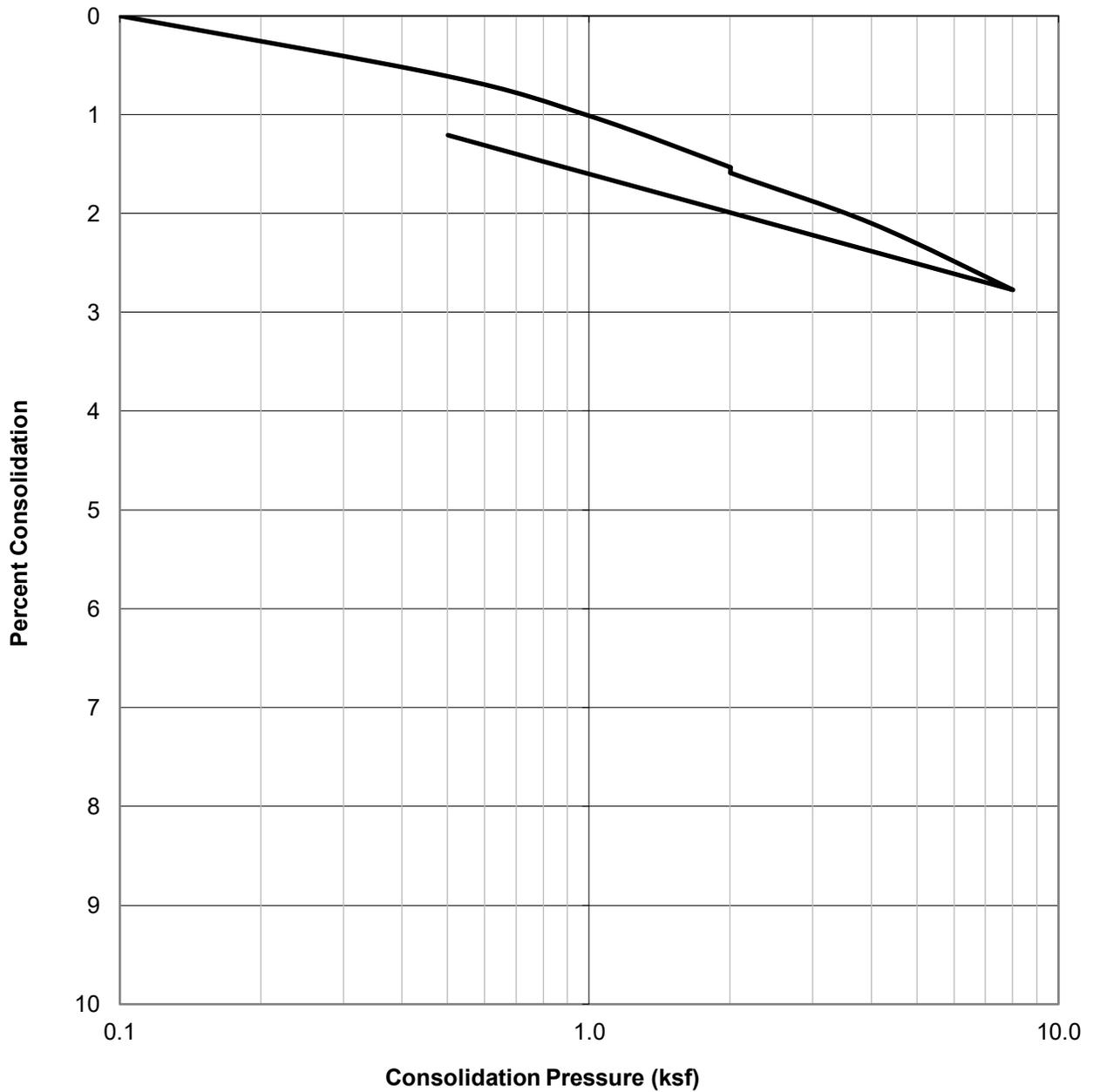
Project No.: W2068-88-01

SONORA HIGH SCHOOL
401 SOUTH PALM STREET
LA HABRA, CALIFORNIA

MAY 2025

Figure B14

WATER ADDED AT 2.0 KSF



SAMPLE ID.	SOIL TYPE	DRY DENSITY (PCF)	INITIAL MOISTURE (%)	FINAL MOISTURE (%)
B7 @ 20'	Sandy Clay (CL)	112.0	17.4	18.5



CONSOLIDATION TEST RESULTS

ASTM D-2435

Checked by: RP

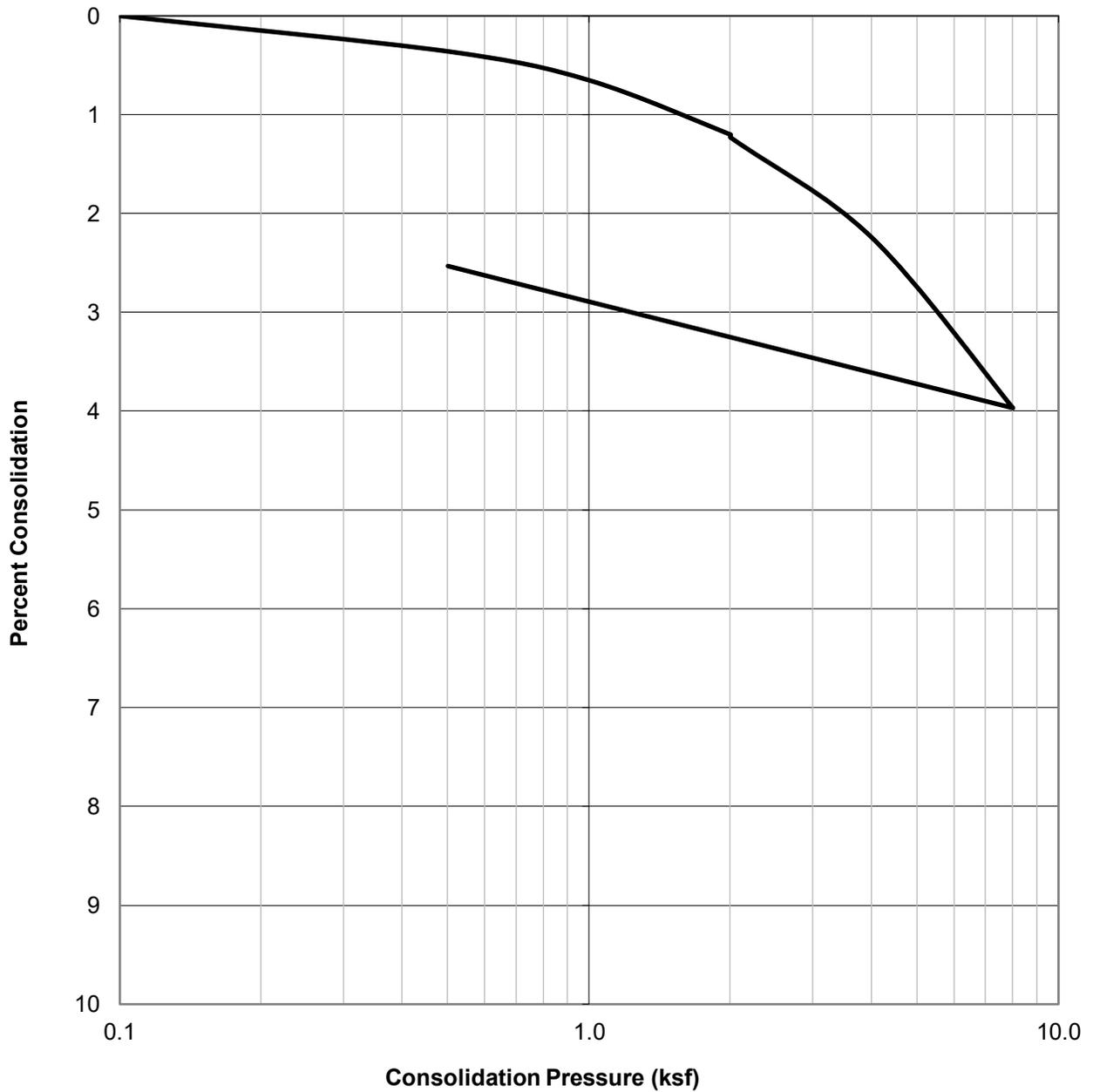
Project No.: W2068-88-01

SONORA HIGH SCHOOL
401 SOUTH PALM STREET
LA HABRA, CALIFORNIA

MAY 2025

Figure B15

WATER ADDED AT 2.0 KSF



SAMPLE ID.	SOIL TYPE	DRY DENSITY (PCF)	INITIAL MOISTURE (%)	FINAL MOISTURE (%)
B8 @ 6'	Sandy Silty Clay (CL-ML)	91.2	39.0	22.8



CONSOLIDATION TEST RESULTS

ASTM D-2435

Checked by: RP

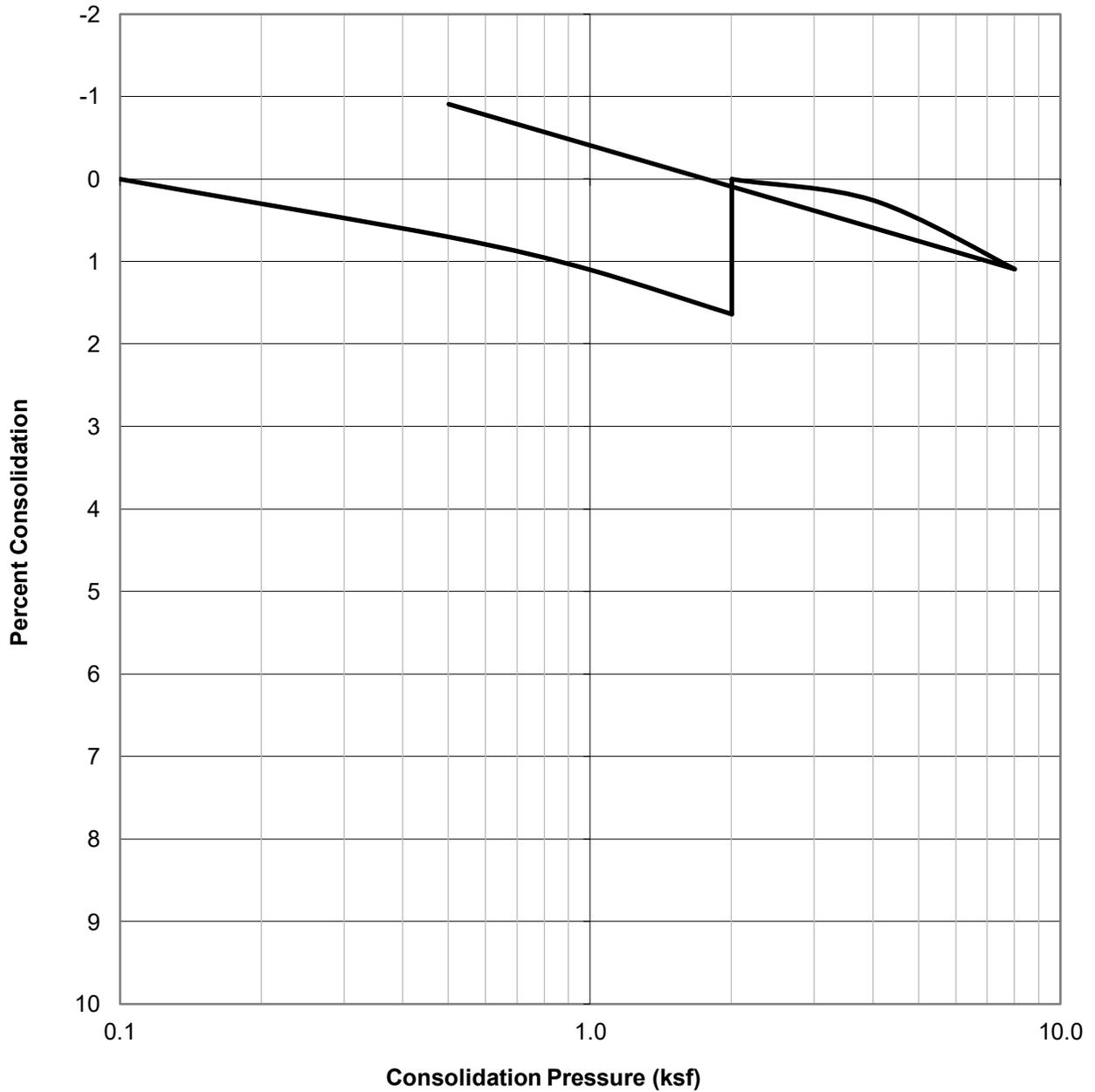
Project No.: W2068-88-01

SONORA HIGH SCHOOL
401 SOUTH PALM STREET
LA HABRA, CALIFORNIA

MAY 2025

Figure B16

WATER ADDED AT 2.0 KSF



SAMPLE ID.	SOIL TYPE	DRY DENSITY (PCF)	INITIAL MOISTURE (%)	FINAL MOISTURE (%)
B8 @ 9'	Sandy Clay (CL)	114.6	16.9	19.1



CONSOLIDATION TEST RESULTS

ASTM D-2435

Checked by: RP

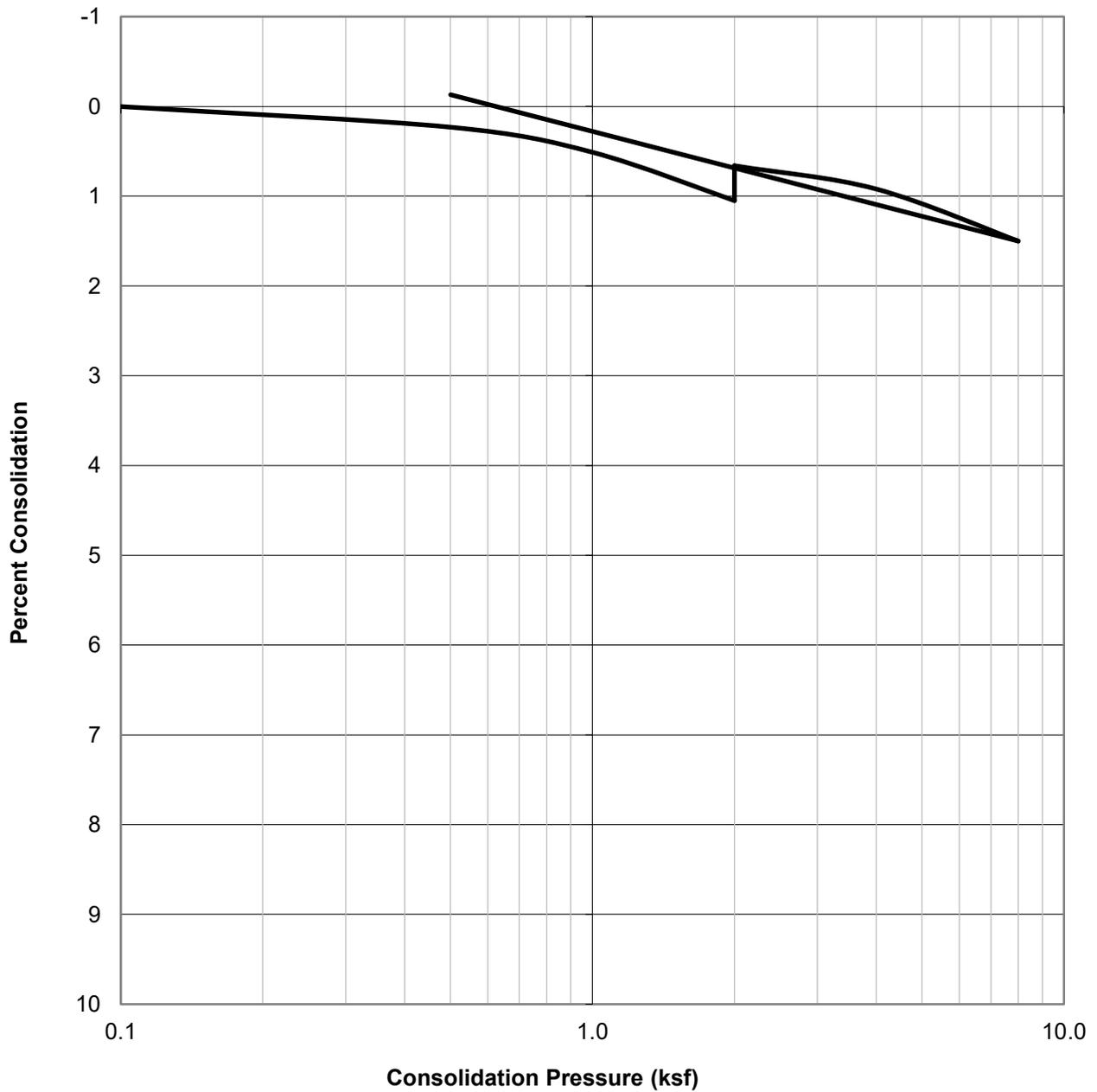
Project No.: W2068-88-01

SONORA HIGH SCHOOL
401 SOUTH PALM STREET
LA HABRA, CALIFORNIA

MAY 2025

Figure B17

WATER ADDED AT 2.0 KSF



SAMPLE ID.	SOIL TYPE	DRY DENSITY (PCF)	INITIAL MOISTURE (%)	FINAL MOISTURE (%)
B8 @ 12'	Sandy Clay (CL)	116.0	15.7	17.1



CONSOLIDATION TEST RESULTS

ASTM D-2435

Checked by: RP

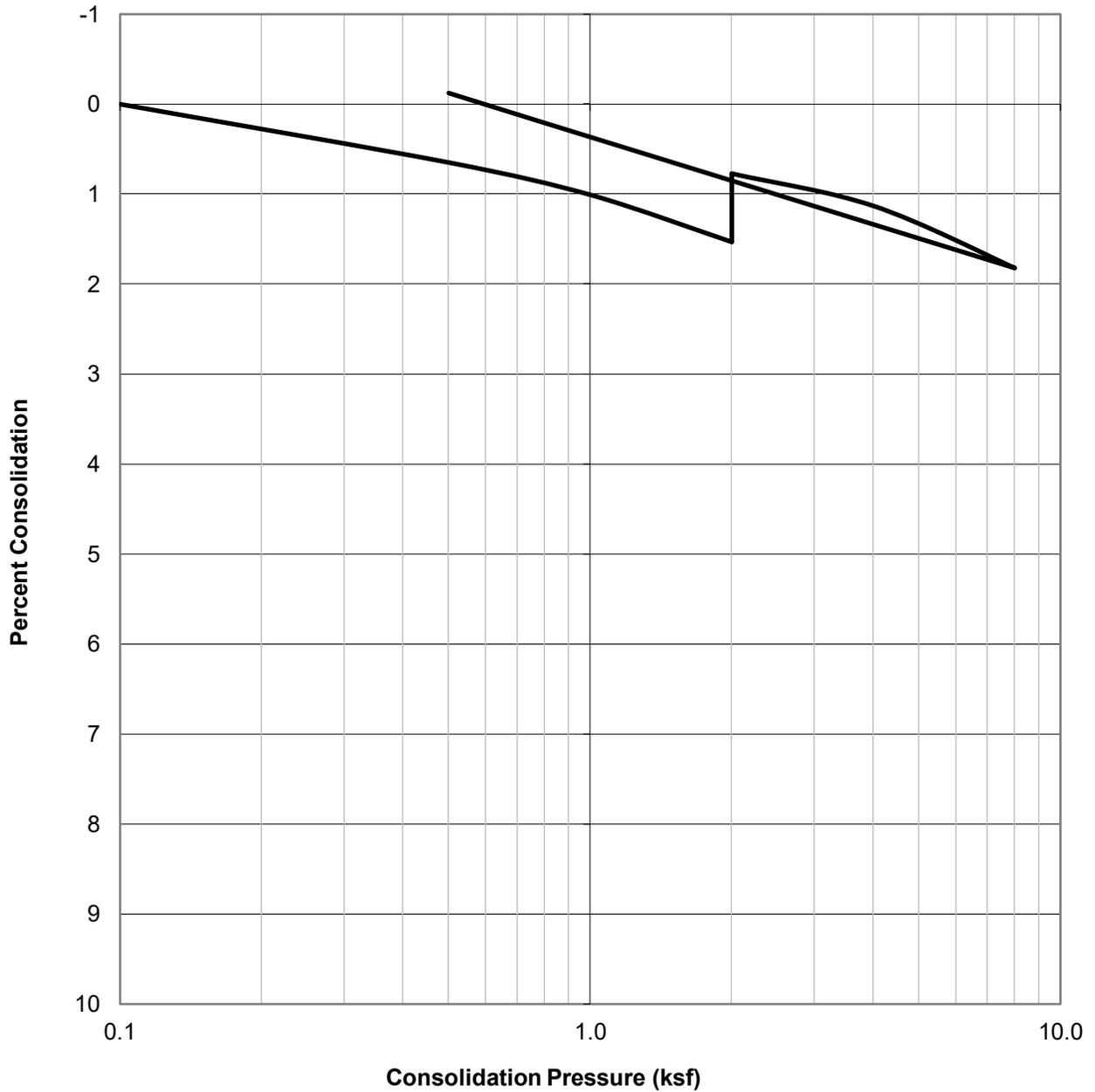
Project No.: W2068-88-01

SONORA HIGH SCHOOL
401 SOUTH PALM STREET
LA HABRA, CALIFORNIA

MAY 2025

Figure B18

WATER ADDED AT 2.0 KSF



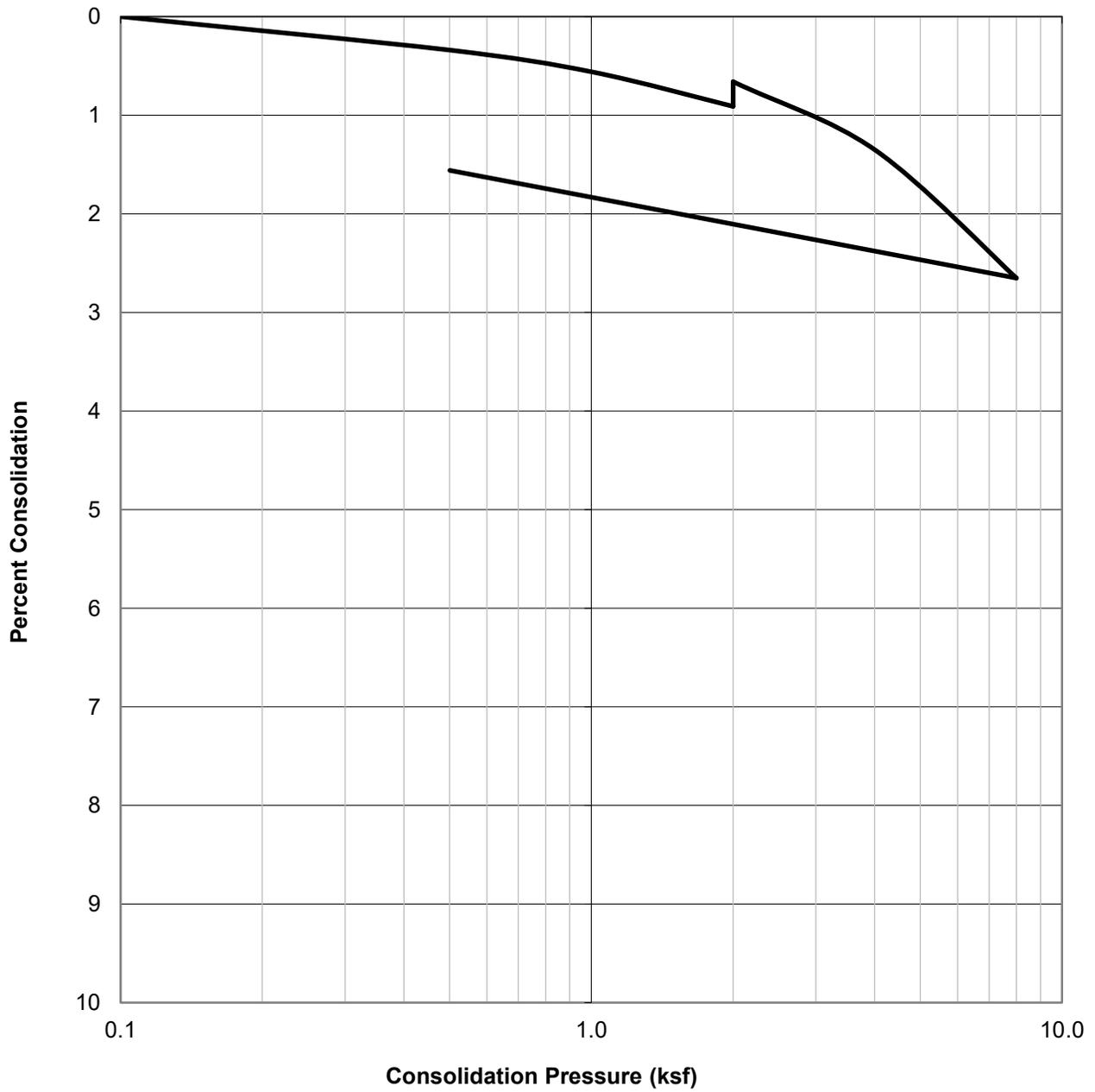
SAMPLE ID.	SOIL TYPE	DRY DENSITY (PCF)	INITIAL MOISTURE (%)	FINAL MOISTURE (%)
B8 @ 15'	Sandy Clay (CL)	114.6	15.4	17.9



CONSOLIDATION TEST RESULTS
 ASTM D-2435
 Checked by: RP

Project No.: W2068-88-01
 SONORA HIGH SCHOOL
 401 SOUTH PALM STREET
 LA HABRA, CALIFORNIA
 MAY 2025 Figure B19

WATER ADDED AT 2.0 KSF



SAMPLE ID.	SOIL TYPE	DRY DENSITY (PCF)	INITIAL MOISTURE (%)	FINAL MOISTURE (%)
B10 @6'	Sandy Clay (CL)	104.3	14.4	19.4



CONSOLIDATION TEST RESULTS

ASTM D-2435

Checked by: RP

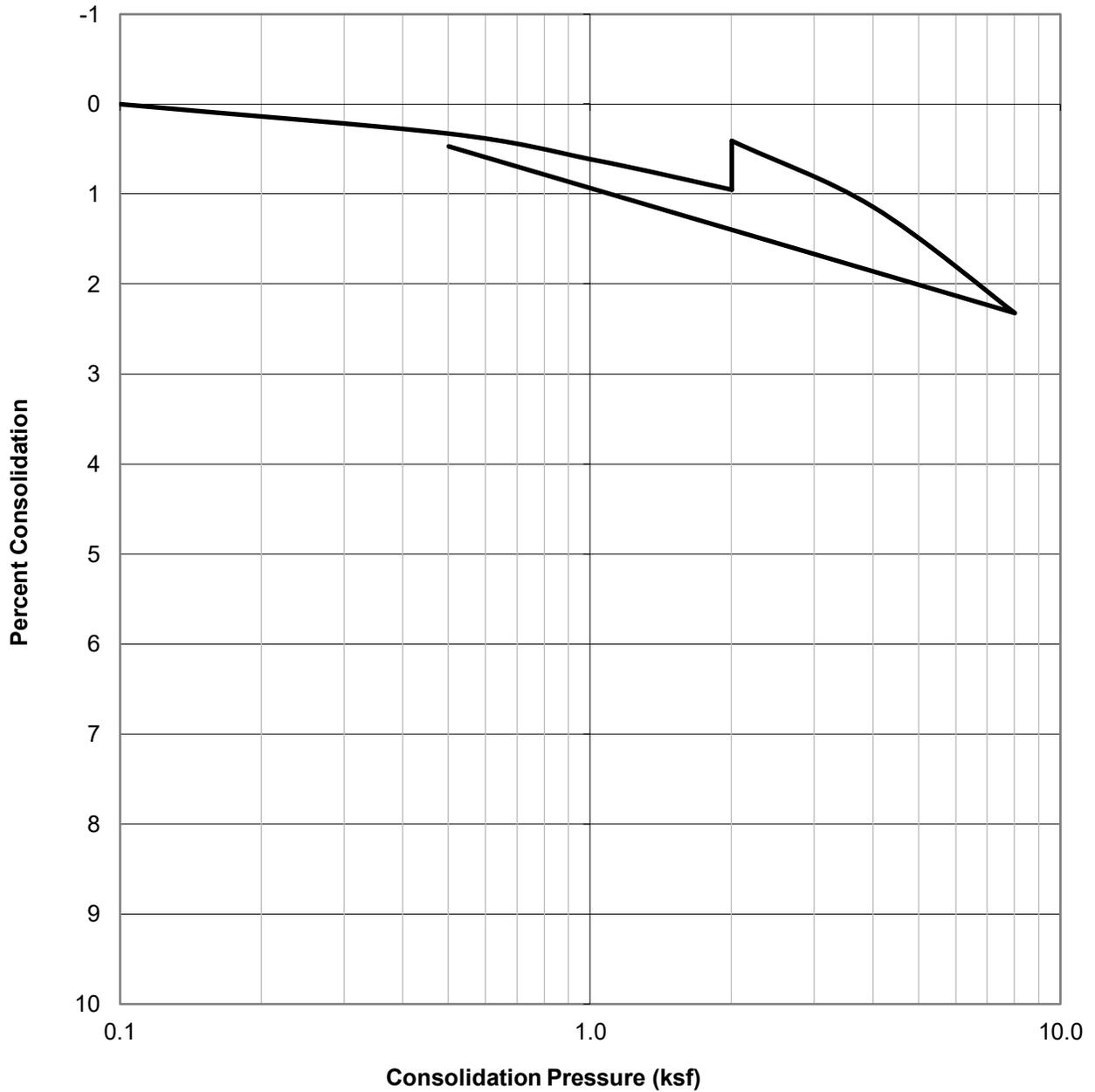
Project No.: W2068-88-01

SONORA HIGH SCHOOL
401 SOUTH PALM STREET
LA HABRA, CALIFORNIA

MAY 2025

Figure B20

WATER ADDED AT 2.0 KSF



SAMPLE ID.	SOIL TYPE	DRY DENSITY (PCF)	INITIAL MOISTURE (%)	FINAL MOISTURE (%)
B10 @ 9'	Sandy Clay (CL)	113.6	12.1	17.1



CONSOLIDATION TEST RESULTS

ASTM D-2435

Checked by: RP

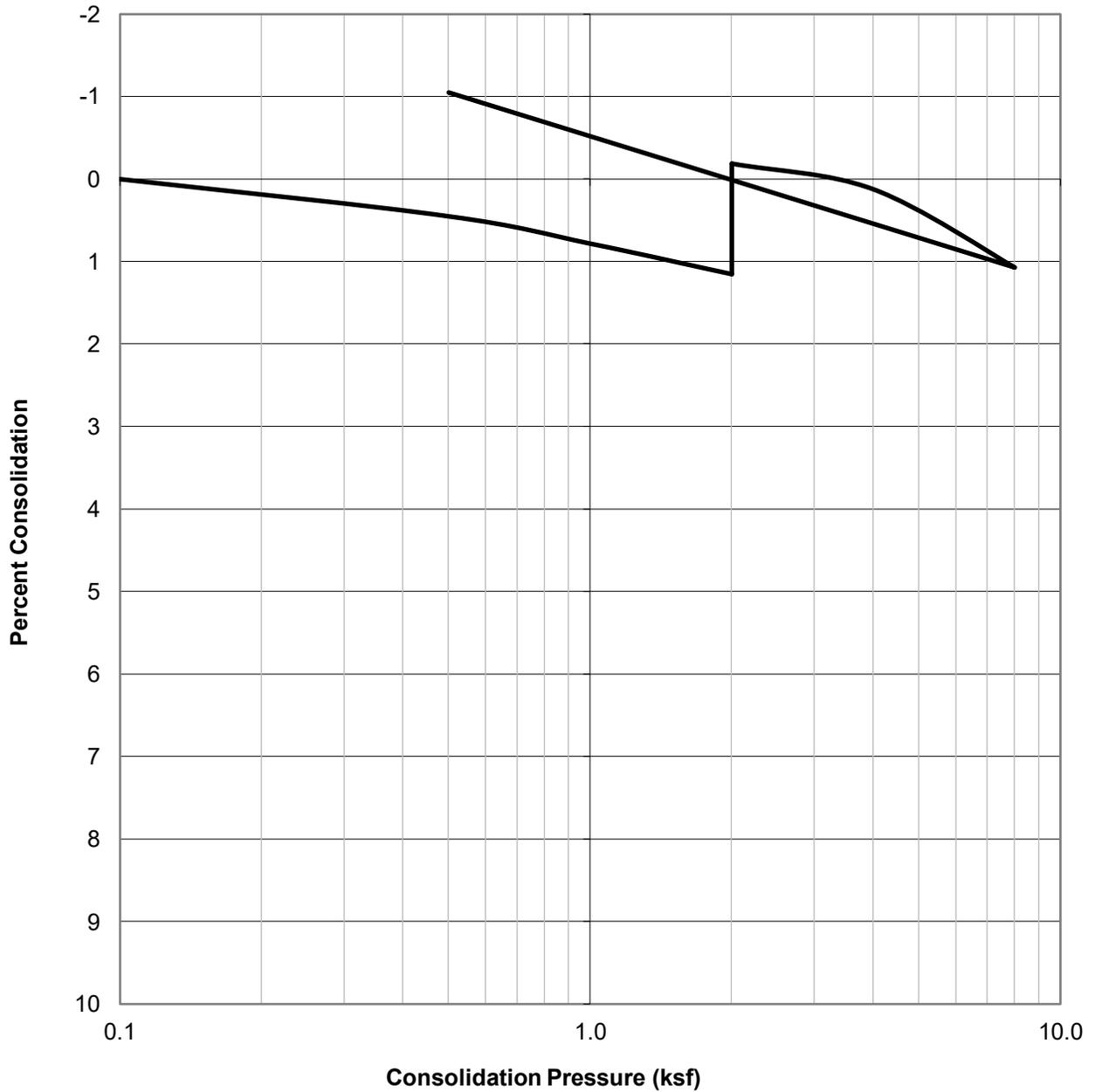
Project No.: W2068-88-01

SONORA HIGH SCHOOL
401 SOUTH PALM STREET
LA HABRA, CALIFORNIA

MAY 2025

Figure B21

WATER ADDED AT 2.0 KSF



SAMPLE ID.	SOIL TYPE	DRY DENSITY (PCF)	INITIAL MOISTURE (%)	FINAL MOISTURE (%)
B10 @ 12'	Sandy Clay (CL)	114.0	15.8	18.7



CONSOLIDATION TEST RESULTS

ASTM D-2435

Checked by: RP

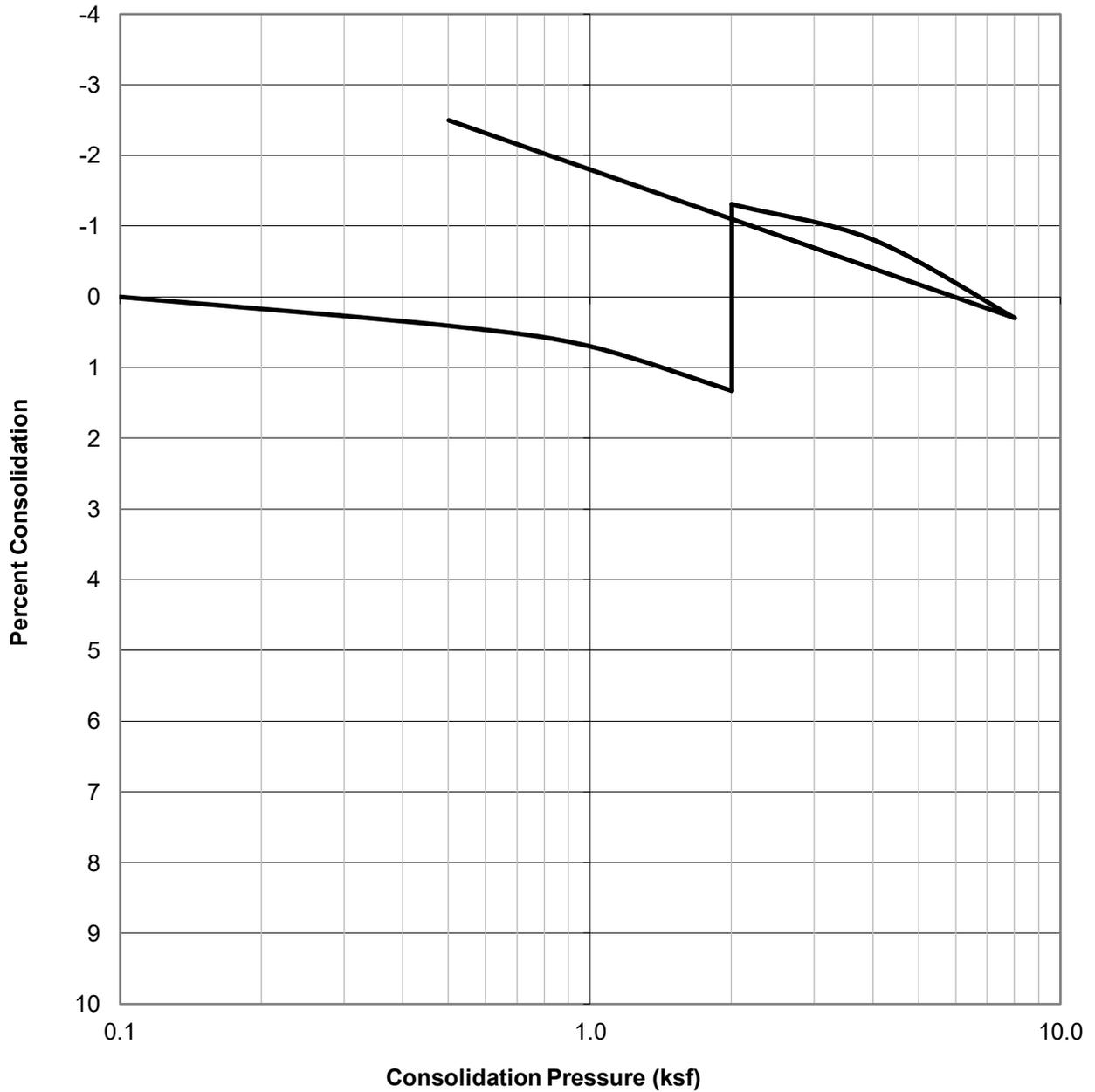
Project No.: W2068-88-01

SONORA HIGH SCHOOL
401 SOUTH PALM STREET
LA HABRA, CALIFORNIA

MAY 2025

Figure B22

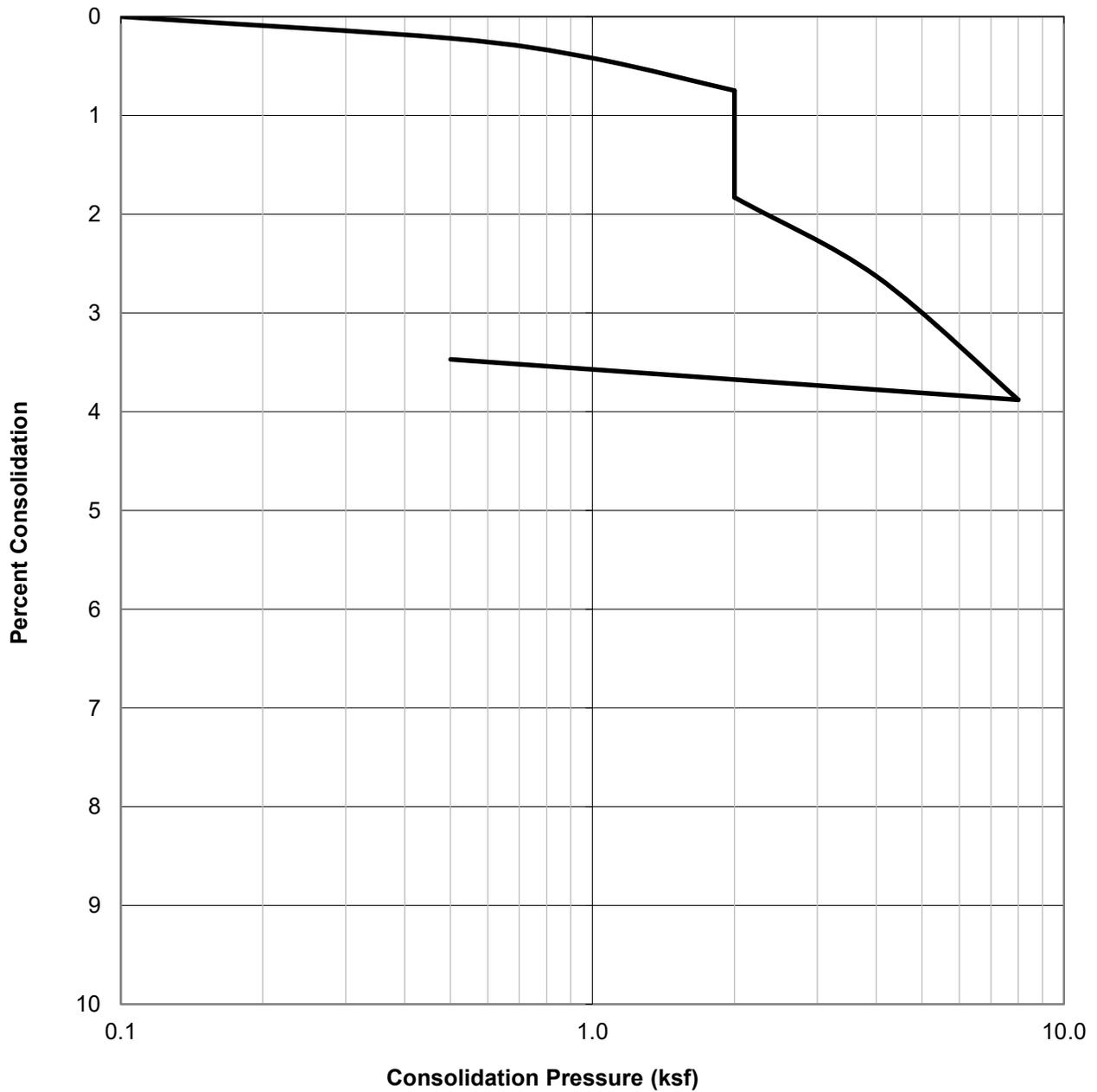
WATER ADDED AT 2.0 KSF



SAMPLE ID.	SOIL TYPE	DRY DENSITY (PCF)	INITIAL MOISTURE (%)	FINAL MOISTURE (%)
B4@3	Sandy Clay (CL)	107.4	14.6	21.8

	CONSOLIDATION TEST RESULTS ASTM D-2435	Project No.: W2068-88-01
	Checked by: RP	SONORA HIGH SCHOOL 401 SOUTH PALM STREET LA HABRA, CALIFORNIA
	MAY 2025	Figure B23

WATER ADDED AT 2.0 KSF



SAMPLE ID.	SOIL TYPE	DRY DENSITY (PCF)	INITIAL MOISTURE (%)	FINAL MOISTURE (%)
B4@9	Clayey Sand (SC)	86.0	12.7	23.4



CONSOLIDATION TEST RESULTS

ASTM D-2435

Checked by: RP

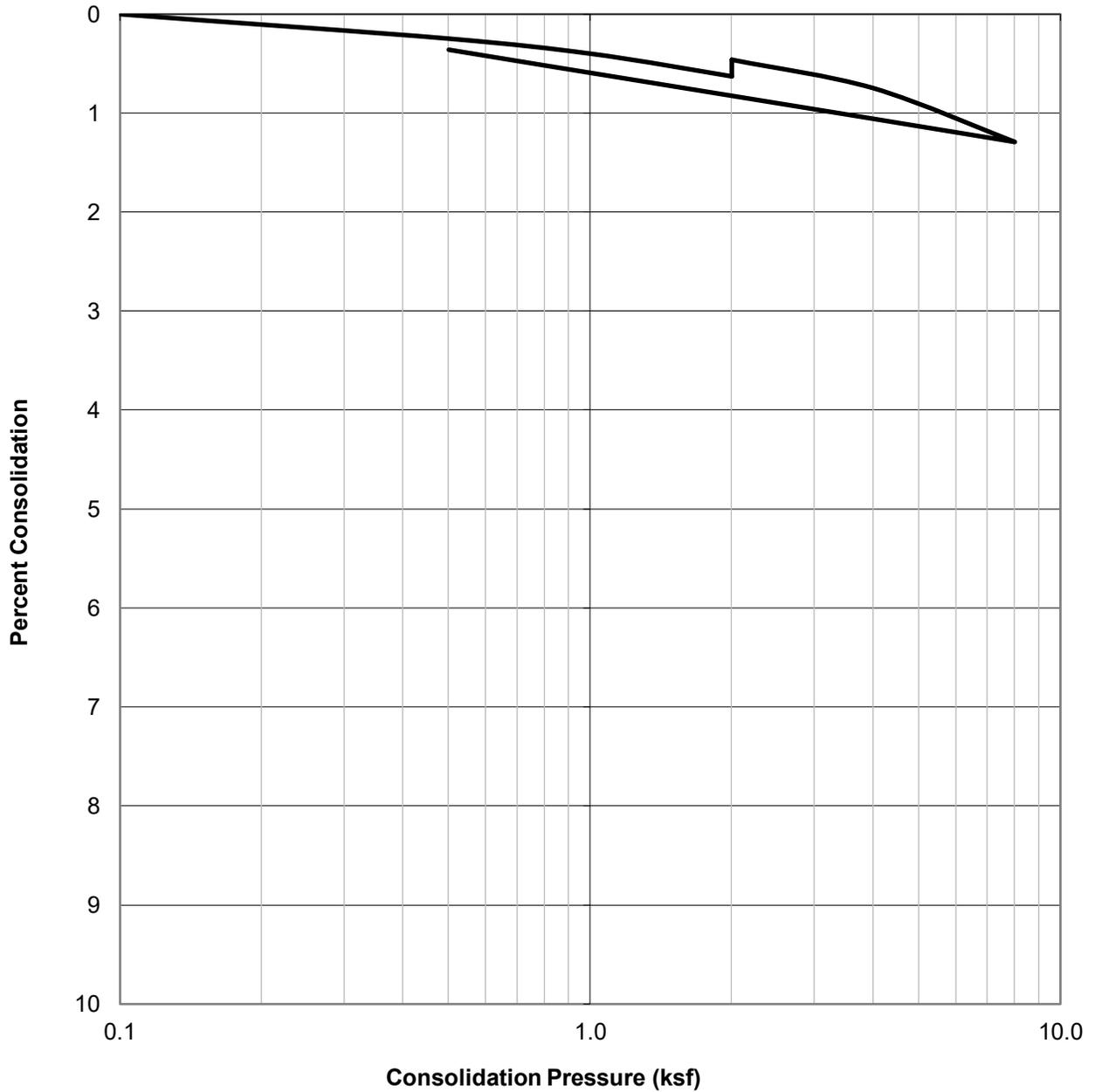
Project No.: W2068-88-01

SONORA HIGH SCHOOL
401 SOUTH PALM STREET
LA HABRA, CALIFORNIA

MAY 2025

Figure B24

WATER ADDED AT 2.0 KSF



SAMPLE ID.	SOIL TYPE	DRY DENSITY (PCF)	INITIAL MOISTURE (%)	FINAL MOISTURE (%)
B4@15	Clayey Sand (SC)	86.0	12.7	23.4



CONSOLIDATION TEST RESULTS

ASTM D-2435

Checked by: RP

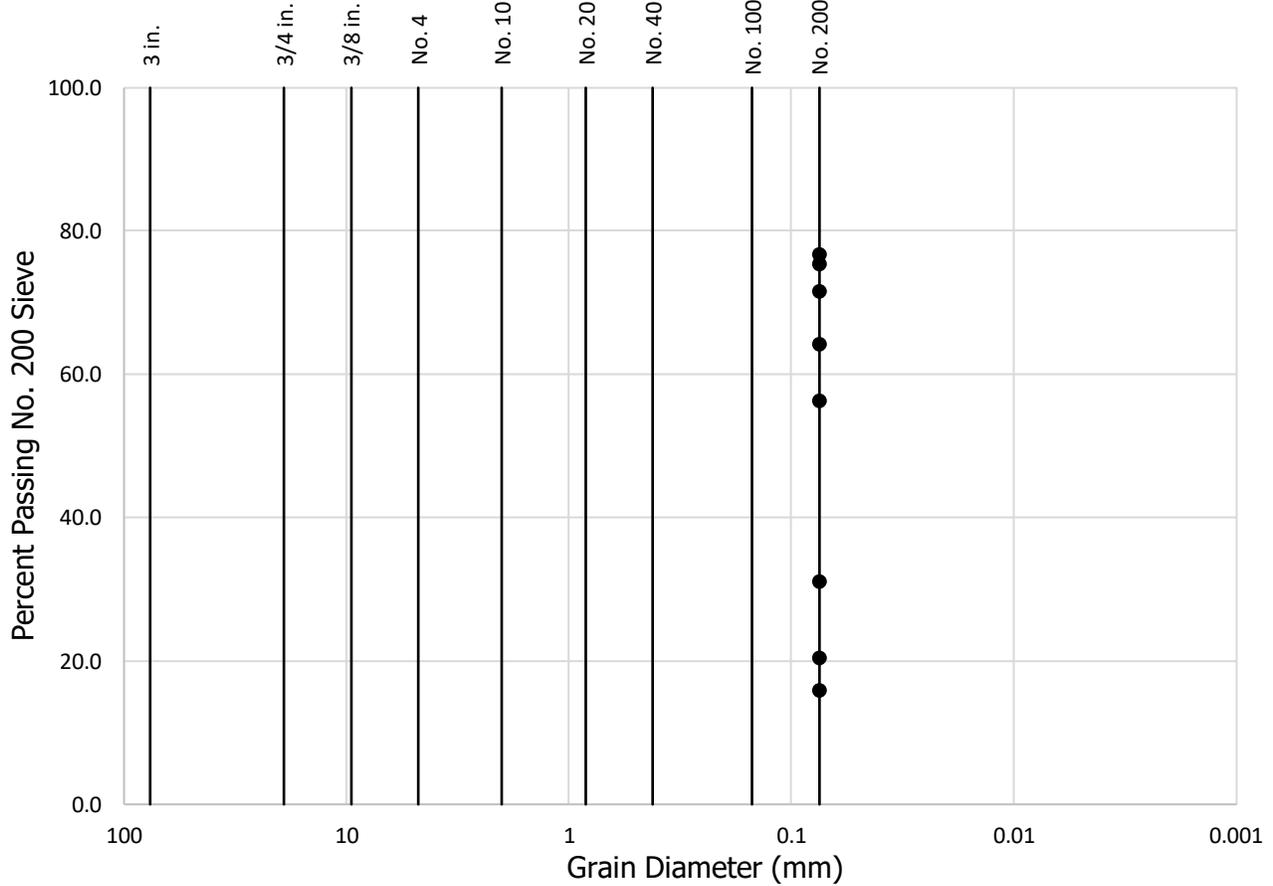
Project No.: W2068-88-01

SONORA HIGH SCHOOL
401 SOUTH PALM STREET
LA HABRA, CALIFORNIA

MAY 2025

Figure B25

GRAVEL		SAND			SILT AND CLAY
COARSE	FINE	COARSE	MEDIUM	FINE	



Sample No.	Percent Passing No. 200 Sieve
B8 @ 6'	64.2
B8 @ 9'	75.4
B8 @ 12'	76.7
B8 @ 15'	56.3
B8 @ 20'	31.1
B8 @ 24.5'	20.4
B8 @ 30'	71.5
B8 @ 35'	15.9



GRAIN SIZE ANALYSIS

ASTM D-1140

Checked by: RP

Project No.: W2068-88-01

SONORA HIGH SCHOOL
401 SOUTH PALM STREET
LA HABRA, CALIFORNIA

MAY 2025

Figure B26

B7 @ 0-5'

MOLDED SPECIMEN		BEFORE TEST	AFTER TEST
Specimen Diameter	(in.)	4.0	4.0
Specimen Height	(in.)	1.0	1.0
Wt. Comp. Soil + Mold	(gm)	757.8	797.6
Wt. of Mold	(gm)	367.8	367.8
Specific Gravity	(Assumed)	2.7	2.7
Wet Wt. of Soil + Cont.	(gm)	491.8	797.6
Dry Wt. of Soil + Cont.	(gm)	461.1	350.1
Wt. of Container	(gm)	191.8	367.8
Moisture Content	(%)	11.4	22.8
Wet Density	(pcf)	117.6	129.5
Dry Density	(pcf)	105.6	105.5
Void Ratio		0.6	0.6
Total Porosity		0.4	0.4
Pore Volume	(cc)	77.3	82.7
Degree of Saturation	(%) [S_{meas}]	52.0	96.4

Date	Time	Pressure (psi)	Elapsed Time (min)	Dial Readings (in.)
4/10/2025	10:00	1.0	0	0.318
4/10/2025	10:10	1.0	10	0.3175
Add Distilled Water to the Specimen				
4/11/2025	10:00	1.0	1430	0.3435
4/11/2025	11:00	1.0	1490	0.3435

Expansion Index (EI meas) =	26
Expansion Index (Report) =	26

Expansion Index, EI_{50}	CBC CLASSIFICATION *	UBC CLASSIFICATION **
0-20	Non-Expansive	Very Low
21-50	Expansive	Low
51-90	Expansive	Medium
91-130	Expansive	High
>130	Expansive	Very High

* Reference: 2022 California Building Code, Section 1803.5.3

** Reference: 1997 Uniform Building Code, Table 18-I-B.

	EXPANSION INDEX TEST RESULTS	Project No.: W2068-88-01
	ASTM D-4829	SONORA HIGH SCHOOL 401 SOUTH PALM STREET LA HABRA, CALIFORNIA
	Checked by: RP	MAY 2025 Figure B27

B5 @ 0-5'

MOLDED SPECIMEN		BEFORE TEST	AFTER TEST
Specimen Diameter	(in.)	4.0	4.0
Specimen Height	(in.)	1.0	1.0
Wt. Comp. Soil + Mold	(gm)	738.8	789.3
Wt. of Mold	(gm)	368.1	368.1
Specific Gravity	(Assumed)	2.7	2.7
Wet Wt. of Soil + Cont.	(gm)	491.8	789.3
Dry Wt. of Soil + Cont.	(gm)	458.7	329.8
Wt. of Container	(gm)	191.8	368.1
Moisture Content	(%)	12.4	27.7
Wet Density	(pcf)	111.8	126.9
Dry Density	(pcf)	99.5	99.4
Void Ratio		0.7	0.8
Total Porosity		0.4	0.4
Pore Volume	(cc)	84.8	94.3
Degree of Saturation	(%) [S_{meas}]	48.6	96.9

Date	Time	Pressure (psi)	Elapsed Time (min)	Dial Readings (in.)
4/10/2025	10:00	1.0	0	0.3035
4/10/2025	10:10	1.0	10	0.303
Add Distilled Water to the Specimen				
4/11/2025	10:00	1.0	1430	0.3485
4/11/2025	11:00	1.0	1490	0.3485

Expansion Index (EI meas) =	45.5
Expansion Index (Report) =	46

Expansion Index, EI_{50}	CBC CLASSIFICATION *	UBC CLASSIFICATION **
0-20	Non-Expansive	Very Low
21-50	Expansive	Low
51-90	Expansive	Medium
91-130	Expansive	High
>130	Expansive	Very High

* Reference: 2022 California Building Code, Section 1803.5.3

** Reference: 1997 Uniform Building Code, Table 18-I-B.

	EXPANSION INDEX TEST RESULTS	Project No.: W2068-88-01
	ASTM D-4829	SONORA HIGH SCHOOL 401 SOUTH PALM STREET LA HABRA, CALIFORNIA
	Checked by: RP	MAY 2025 Figure B28

B4 @ 0-5'

MOLDED SPECIMEN		BEFORE TEST	AFTER TEST
Specimen Diameter	(in.)	4.0	4.0
Specimen Height	(in.)	1.0	1.1
Wt. Comp. Soil + Mold	(gm)	729.3	784.8
Wt. of Mold	(gm)	367.4	367.4
Specific Gravity	(Assumed)	2.7	2.7
Wet Wt. of Soil + Cont.	(gm)	491.8	784.8
Dry Wt. of Soil + Cont.	(gm)	457.1	320.0
Wt. of Container	(gm)	191.8	367.4
Moisture Content	(%)	13.1	30.4
Wet Density	(pcf)	109.2	125.7
Dry Density	(pcf)	96.5	96.4
Void Ratio		0.7	0.9
Total Porosity		0.4	0.5
Pore Volume	(cc)	88.5	100.8
Degree of Saturation	(%) [S_{meas}]	47.8	96.6

Date	Time	Pressure (psi)	Elapsed Time (min)	Dial Readings (in.)
4/10/2025	10:00	1.0	0	0.3315
4/10/2025	10:10	1.0	10	0.3305
Add Distilled Water to the Specimen				
4/11/2025	10:00	1.0	1430	0.39
4/11/2025	11:00	1.0	1490	0.39

Expansion Index (EI meas) =	59.5
Expansion Index (Report) =	60

Expansion Index, EI_{50}	CBC CLASSIFICATION *	UBC CLASSIFICATION **
0-20	Non-Expansive	Very Low
21-50	Expansive	Low
51-90	Expansive	Medium
91-130	Expansive	High
>130	Expansive	Very High

* Reference: 2022 California Building Code, Section 1803.5.3

** Reference: 1997 Uniform Building Code, Table 18-I-B.

	EXPANSION INDEX TEST RESULTS <small>ASTM D-4829</small>	Project No.: W2068-88-01
	Checked by: RP	SONORA HIGH SCHOOL 401 SOUTH PALM STREET LA HABRA, CALIFORNIA MAY 2025 Figure B29

B10 @ 0-5'

MOLDED SPECIMEN		BEFORE TEST	AFTER TEST
Specimen Diameter	(in.)	4.0	4.0
Specimen Height	(in.)	1.0	1.1
Wt. Comp. Soil + Mold	(gm)	745.2	798.2
Wt. of Mold	(gm)	367.4	367.4
Specific Gravity	(Assumed)	2.7	2.7
Wet Wt. of Soil + Cont.	(gm)	491.8	798.2
Dry Wt. of Soil + Cont.	(gm)	460.4	338.2
Wt. of Container	(gm)	191.8	367.4
Moisture Content	(%)	11.7	27.4
Wet Density	(pcf)	114.0	129.8
Dry Density	(pcf)	102.0	101.9
Void Ratio		0.7	0.8
Total Porosity		0.4	0.4
Pore Volume	(cc)	81.7	95.2
Degree of Saturation	(%) [S_{meas}]	48.8	97.3

Date	Time	Pressure (psi)	Elapsed Time (min)	Dial Readings (in.)
4/10/2025	10:00	1.0	0	0.3575
4/10/2025	10:10	1.0	10	0.3555
Add Distilled Water to the Specimen				
4/11/2025	10:00	1.0	1430	0.4205
4/11/2025	11:00	1.0	1490	0.4205

Expansion Index (EI meas) =	65
Expansion Index (Report) =	65

Expansion Index, EI_{50}	CBC CLASSIFICATION *	UBC CLASSIFICATION **
0-20	Non-Expansive	Very Low
21-50	Expansive	Low
51-90	Expansive	Medium
91-130	Expansive	High
>130	Expansive	Very High

* Reference: 2022 California Building Code, Section 1803.5.3

** Reference: 1997 Uniform Building Code, Table 18-I-B.

	EXPANSION INDEX TEST RESULTS <small>ASTM D-4829</small>	Project No.: W2068-88-01 SONORA HIGH SCHOOL 401 SOUTH PALM STREET LA HABRA, CALIFORNIA
	Checked by: RP	MAY 2025 Figure B30

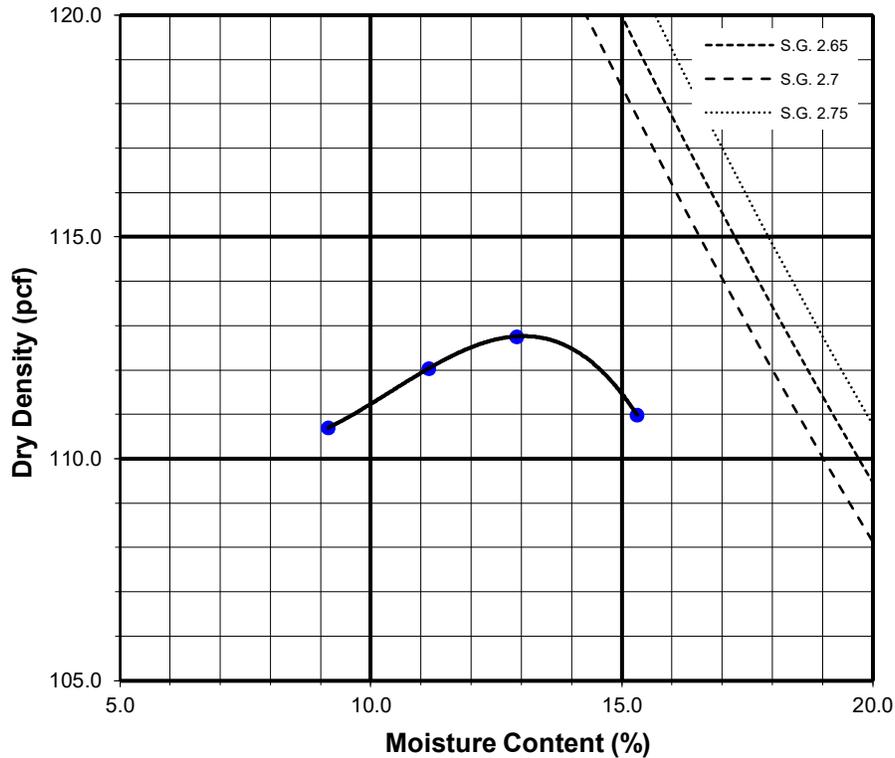
Sample No:

B5 @ 0-5'	Sandy Silt (ML)
------------------	-----------------

TEST NO.		1	2	3	4	5	6
Wt. Compacted Soil + Mold	(g)	6019	6075	6117	6127		
Weight of Mold	(g)	4194	4194	4194	4194		
Net Weight of Soil	(g)	1825	1881	1923	1933		
Wet Weight of Soil + Cont.	(g)	713.2	661.1	653.4	754.9		
Dry Weight of Soil + Cont.	(g)	665.0	608.9	595.3	672.5		
Weight of Container	(g)	138.0	140.9	145.1	133.9		
Moisture Content	(%)	9.1	11.2	12.9	15.3		
Wet Density	(pcf)	120.8	124.5	127.3	128.0		
Dry Density	(pcf)	110.7	112.0	112.8	111.0		

Maximum Dry Density (pcf) 113.0

Optimum Moisture Content (%) 12.5



Preparation Method: A



COMPACTION CHARACTERISTICS USING MODIFIED EFFORT TEST RESULTS

ASTM D-1557

Checked by: RP

Project No.: W2068-88-01

SONORA HIGH SCHOOL
401 SOUTH PALM STREET
LA HABRA, CALIFORNIA

MAY 2025

Figure B31

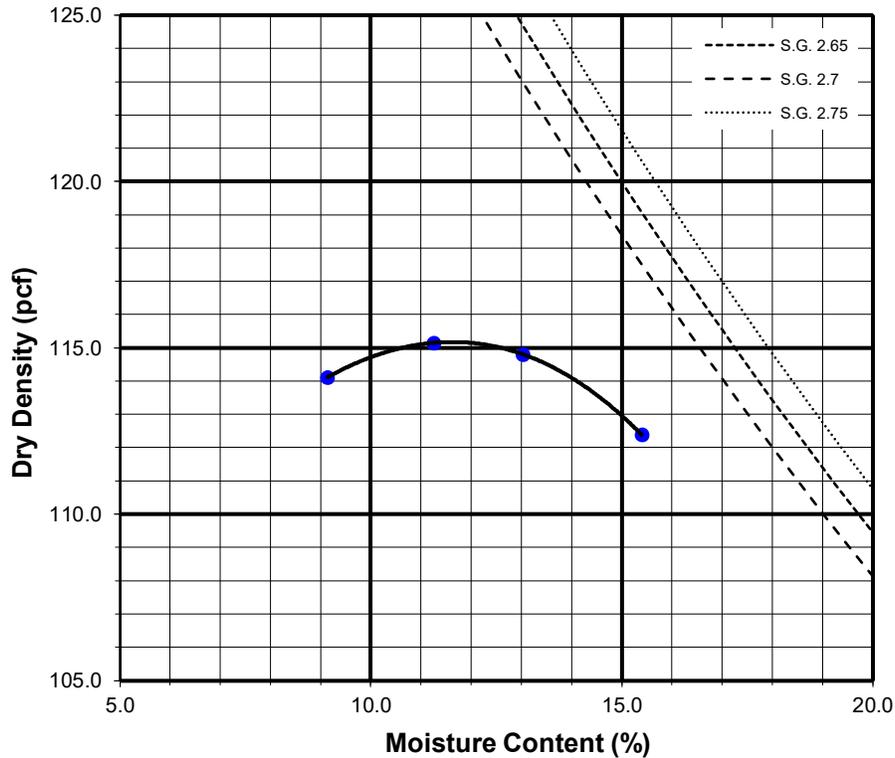
Sample No:

B10 @ 0-5'	Silty Sand (SM)
-------------------	-----------------

TEST NO.		1	2	3	4	5	6
Wt. Compacted Soil + Mold	(g)	6075	6129	6154	6153		
Weight of Mold	(g)	4194	4194	4194	4194		
Net Weight of Soil	(g)	1881	1935	1960	1959		
Wet Weight of Soil + Cont.	(g)	724.3	692.4	661.3	740.4		
Dry Weight of Soil + Cont.	(g)	674.2	637.4	600.8	659.9		
Weight of Container	(g)	125.5	148.5	136.2	137.1		
Moisture Content	(%)	9.1	11.2	13.0	15.4		
Wet Density	(pcf)	124.5	128.1	129.8	129.7		
Dry Density	(pcf)	114.1	115.2	114.8	112.4		

Maximum Dry Density (pcf) 113.0

Optimum Moisture Content (%) 12.5



Preparation Method: A



**COMPACTION CHARACTERISTICS USING
MODIFIED EFFORT TEST RESULTS**

ASTM D-1557

Checked by: RP

Project No.: W2068-88-01

SONORA HIGH SCHOOL
401 SOUTH PALM STREET
LA HABRA, CALIFORNIA

MAY 2025

Figure B32

SUMMARY OF LABORATORY
POTENTIAL OF HYDROGEN (pH) AND RESISTIVITY TEST RESULTS
AASHTO T289 ASTM D4972 and AASHTO T288 ASTM G187

Sample No.	pH	Resistivity (ohm centimeters)
B7@0-5'	7.6	850 (Severely Corrosive)
B10@0-5'	7.5	650 (Severely Corrosive)

SUMMARY OF LABORATORY CHLORIDE CONTENT TEST RESULTS
AASHTO T291 ASTM C1218

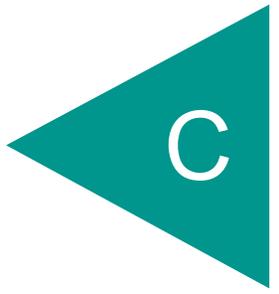
Sample No.	Chloride Ion Content (%)
B7@0-5'	0.011
B10@0-5'	0.024

SUMMARY OF LABORATORY WATER SOLUBLE SULFATE TEST RESULTS
AASHTO T290 ASTM C1580

Sample No.	Water Soluble Sulfate (% SO ₄)	Sulfate Exposure
B7@0-5'	0.032	S0
B10@0-5'	0.015	S0

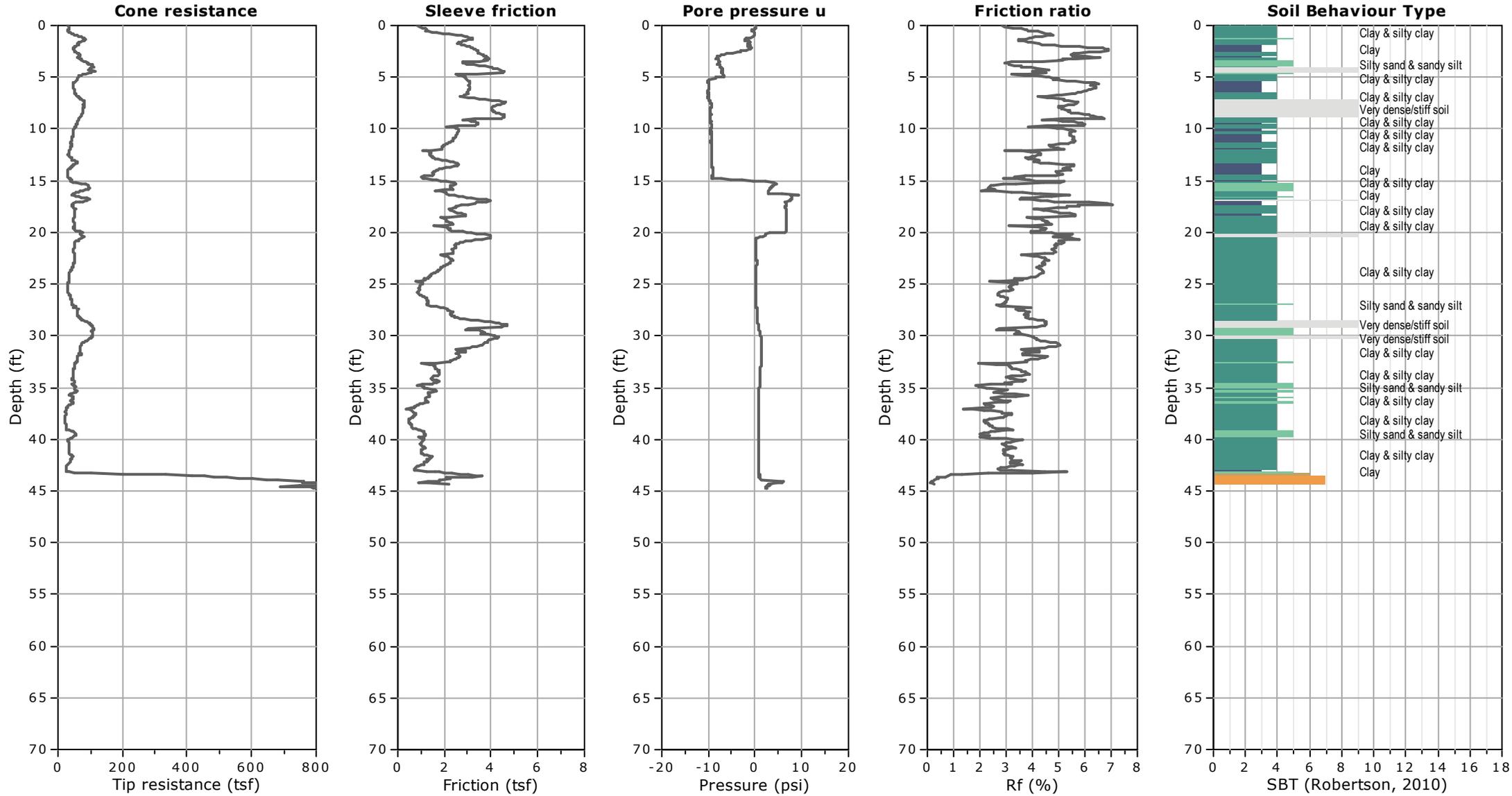
 GEOCON	CORROSIVITY TEST RESULTS	Project No.: W2068-88-01
	Checked by: RP	SONORA HIGH SCHOOL 401 SOUTH PALM STREET LA HABRA, CALIFORNIA
		MAY 2025 Figure B34

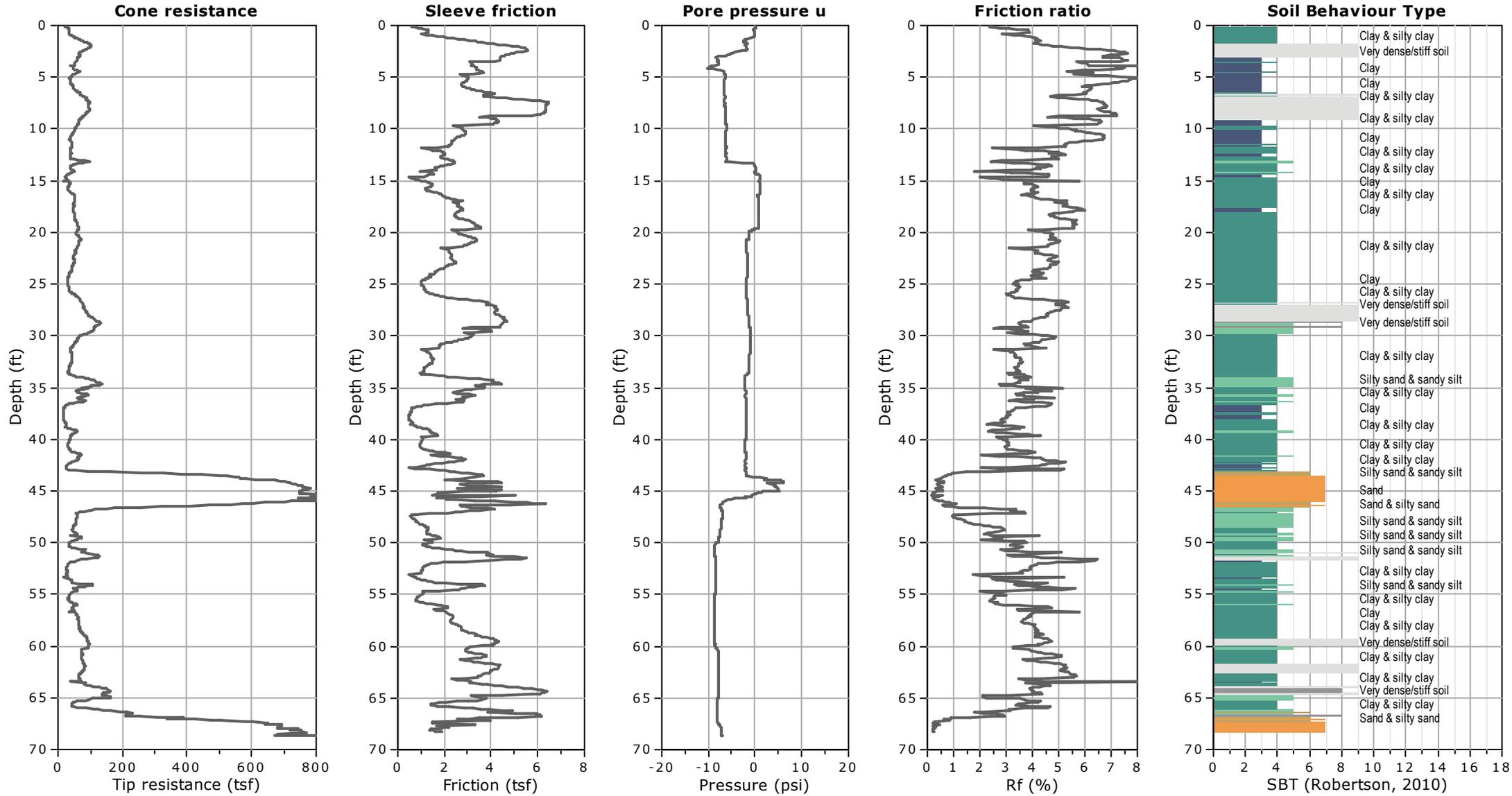
APPENDIX



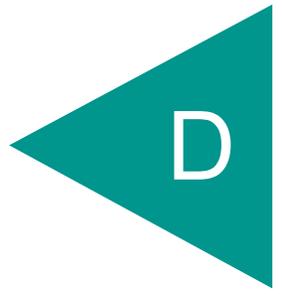
APPENDIX C

SUMMARY OF CONE PENETRATION TEST DATA (KEHOE)





APPENDIX



APPENDIX D

ASCE HAZARD TOOL REPORT

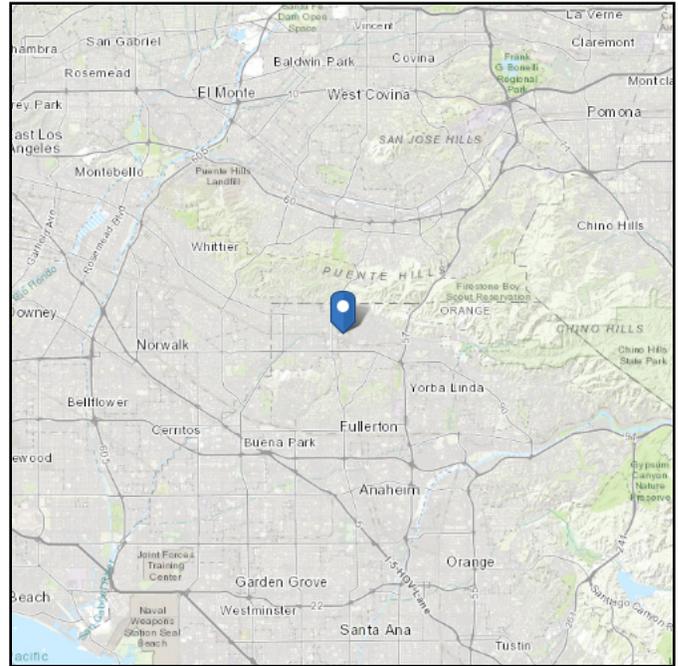
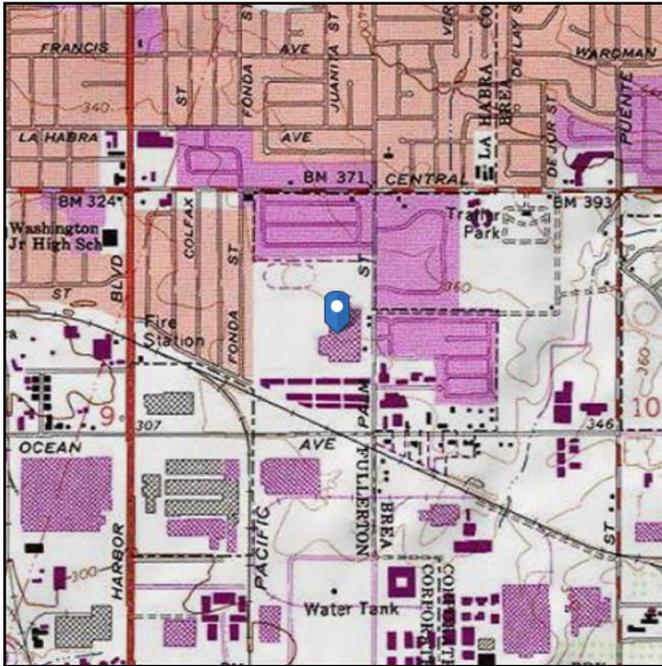


ASCE Hazards Report

Address:
401 S Palm St
La Habra, California
90631

Standard: ASCE/SEI 7-22
Risk Category: I
Soil Class: CD

Latitude: 33.927499
Longitude: -117.92559
Elevation: 341.94719602761177 ft
(NAVD 88)

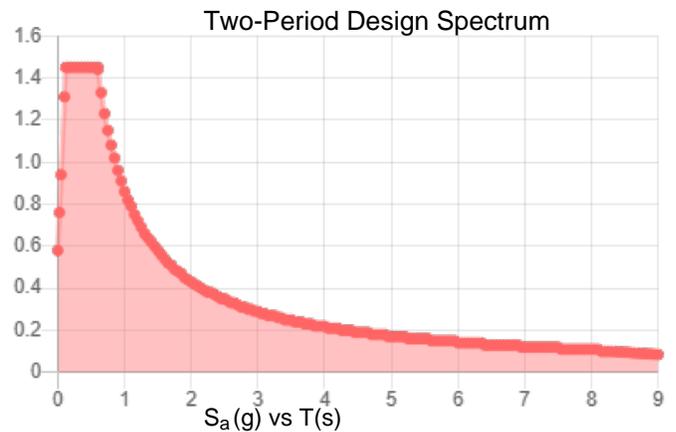
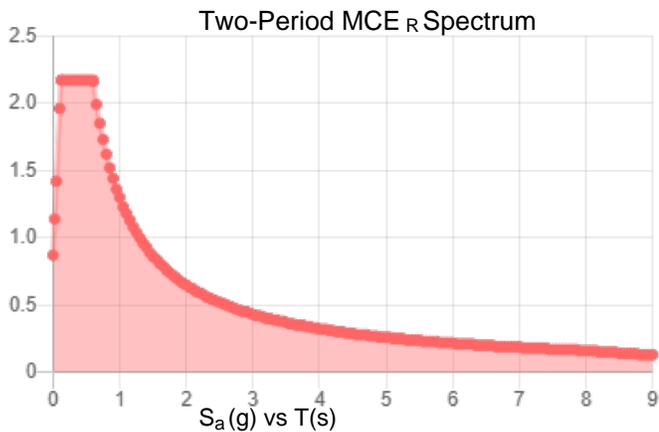
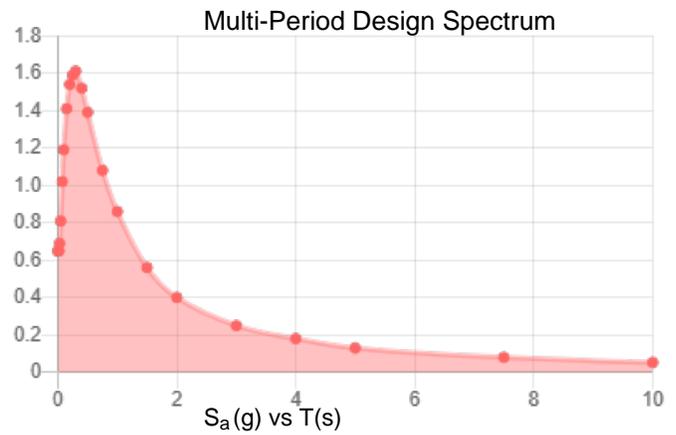
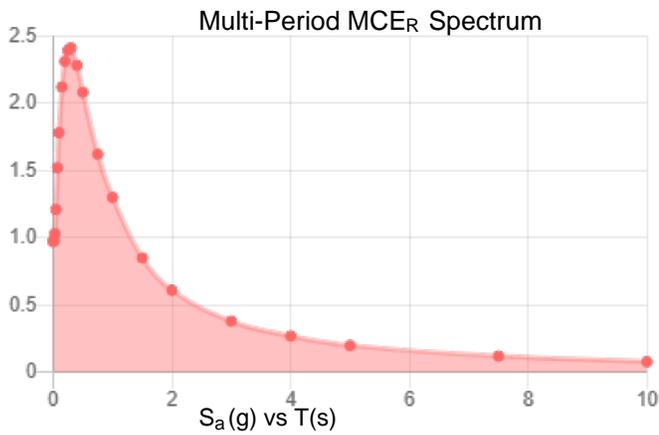


Site Soil Class: CD

Results:

PGA _M :	0.87	T _L :	8
S _{MS} :	2.17	S _s :	2.04
S _{M1} :	1.3	S ₁ :	0.72
S _{DS} :	1.45	V _{S30} :	365
S _{D1} :	0.86		

Seismic Design Category: D



MCE_R Vertical Response Spectrum

Vertical ground motion data has not yet been made available by USGS.

Design Vertical Response Spectrum

Vertical ground motion data has not yet been made available by USGS.



Data Accessed: Wed Nov 05 2025

Date Source:

USGS Seismic Design Maps based on ASCE/SEI 7-22 and ASCE/SEI 7-22 Table 1.5-2. Additional data for site-specific ground motion procedures in accordance with ASCE/SEI 7-22 Ch. 21 are available from USGS.

The ASCE Hazard Tool is provided for your convenience, for informational purposes only, and is provided “as is” and without warranties of any kind. The location data included herein has been obtained from information developed, produced, and maintained by third party providers; or has been extrapolated from maps incorporated in the ASCE standard. While ASCE has made every effort to use data obtained from reliable sources or methodologies, ASCE does not make any representations or warranties as to the accuracy, completeness, reliability, currency, or quality of any data provided herein. Any third-party links provided by this Tool should not be construed as an endorsement, affiliation, relationship, or sponsorship of such third-party content by or from ASCE.

ASCE does not intend, nor should anyone interpret, the results provided by this Tool to replace the sound judgment of a competent professional, having knowledge and experience in the appropriate field(s) of practice, nor to substitute for the standard of care required of such professionals in interpreting and applying the contents of this Tool or the ASCE standard.

In using this Tool, you expressly assume all risks associated with your use. Under no circumstances shall ASCE or its officers, directors, employees, members, affiliates, or agents be liable to you or any other person for any direct, indirect, special, incidental, or consequential damages arising from or related to your use of, or reliance on, the Tool or any information obtained therein. To the fullest extent permitted by law, you agree to release and hold harmless ASCE from any and all liability of any nature arising out of or resulting from any use of data provided by the ASCE Hazard Tool.

Period	Site Class CD	Controlling
0.00	0.97	0.97
0.01	0.98	0.98
0.02	0.98	0.98
0.03	1.03	1.03
0.05	1.21	1.21
0.08	1.52	1.52
0.10	1.78	1.78
0.15	2.12	2.12
0.20	2.31	2.31
0.25	2.39	2.39
0.30	2.41	2.41
0.40	2.28	2.28
0.50	2.08	2.08
0.75	1.62	1.62
1.00	1.30	1.30
1.50	0.85	0.85
2.00	0.61	0.61
3.00	0.38	0.38
4.00	0.27	0.27
5.00	0.20	0.20
7.50	0.12	0.12
10.00	0.08	0.08

Values are from <https://ascehazardtool.org/>



GEOCON

MULTI-PERIOD MCER SPECTRUM

Checked by: RP

Project No.: W2068-88-02

SONORA HIGH SCHOOL
401 SOUTH PALM STREET
LA HABRA, CALIFORNIA

NOV. 2025

Figure D1

LIST OF REFERENCES

- California Department of Water Resources, 1961, *Planned Utilization of Groundwater Basins of the Coastal Plain of Los Angeles County*, Bulletin 104, Appendix A.
- California Division of Mines and Geology, 1998; State of California Seismic Hazard Zones, La Habra Quadrangle, Official Map, Released: March 25, 1998.
- California Division of Mines and Geology, 1997, Seismic Hazard Zone Report for the La Habra 7.5-Minute Quadrangle, Los Angeles County, California, Open-File Report 97-163.
- California Division of Mines and Geology, 1986, State of California, Special Studies Zones, La Habra Quadrangle, Revised Official Map, Effective: July 1, 1986.
- California Geologic Energy Management Division, 2025, CalGEM Resources Well Finder, <http://maps.conservation.ca.gov.doggr/index.html#close>.
- California Geological Survey, 2025a, CGS Information Warehouse, Regulatory Map Portal, <http://maps.conservation.ca.gov/cgs/informationwarehouse/index.html?map=regulatorymaps>.
- California Geological Survey, 2025b, Earthquake Zones of Required Investigation, <https://maps.conservation.ca.gov/cgs/EQZApp/app/>.
- California Geological Survey, 2018, Earthquake Fault Zones, A Guide for Government Agencies, Property Owners/Developers, and Geoscience Practitioners for Assessing Fault Rupture Hazards in California, Special Publication 42, Revised 2018.
- California Geological Survey, 2010, *Geologic Compilation of Quaternary Surficial Deposits in Southern California, On-Shore Portion of the Santa Ana 30' X 60' Quadrangle*, A Project for the Department of Water Resources by the California Geological Survey, Compiled from existing sources by Trinda L. Bedrossian, CEG and Peter D. Roffers, CGS Special Report 217, Plate 8, Scale 1:100,000.
- FEMA, 2025, Online Flood Hazard Maps, Flood Insurance Rate Map, <http://www.esri.com/hazards/index.html>.
- La Habra, City of, 2022, *Community Safety Element, General Plan*, dated September 19.
- Jennings, C. W. and Bryant, W. A., 2010, *Fault Activity Map of California*, California Geological Survey Geologic Data Map No. 6.
- Topozada, T., Branum, D., Petersen, M, Hallstrom, C., and Reichle, M., 2000, Epicenters and Areas Damaged by M> 5 California Earthquakes, 1800 – 1999, California Geological Survey, Map Sheet 49.
- USGS, Unified Hazard Tool, <https://earthquake.usgs.gov/nshmp/hazard>, accessed April 2025.

LIST OF REFERENCES (CONTINUED)

- U.S. Geological Survey Landslide Hazard Program, 2025a, U.S. Landslide Inventory, <https://usgs.maps.arcgis.com/apps/webappviewer/index.html?id=ae120962f459434b8c904b456c82669d>.
- U.S. Geological Survey, 2025b, Areas of Land Subsidence in California Website, https://ca.water.usgs.gov/land_subsidence/california-subsidence-areas.html.
- U.S. Geological Survey and California Geological Survey, 2006, Quaternary Fault and Fold Database for the United States, from USGS web site: <http://earthquake.usgs.gov/hazards/qafaults/>.
- Ziony, J. I. and Jones, L. M., 1989, Map Showing Late Quaternary Faults and 1978–1984 Seismicity of the Los Angeles Region, California, U.S. Geological Survey Miscellaneous Field Studies Map MF-1964.
- Abrahamson, N.A, Silva, W.J, and Kamai, R., 2014, *Summary of the ASK14 Ground Motion Relation for Active Crustal Regions*, Earthquake Spectra, Volume 30, No. 3, pages 1025-1055, August 2014.
- Boore, D.M., Stewart, J.P., Seyhan, E., and Atkinson, G.M., 2014, *NGA-West2 Equations for Predicting PGA, PGV, and 5% Damped PSA for Shallow Crustal Earthquakes*, Earthquake Spectra, Volume 30, No. 3, pages 1057-1085, August 2014.
- Campbell, K.W. and Bozorgnia, Y., 2014, *NGA-West2 Ground Motion Model for the Average Horizontal Components of PGA, PGV, and 5% Damped Linear Acceleration Response Spectra*, Earthquake Spectra, Volume 30, No. 3, pages 1087-1115, August 2014.
- Chiou, B. S.-J., and Youngs, R.R., 2014, *Update of the Chiou and Youngs NGA Model for the Average Horizontal Component of Peak Ground Motion and Response Spectra*, Earthquake Spectra, Volume 30, No. 3, pages 1117-1153, August 2014.
- OpenSha, Site Data Application, Version 1.5.2, <http://opensha.org/apps>, accessed March 2025.
- OSHPD Seismic Design Maps Web Application, <https://seismicmaps.org/>, accessed March 2025.
- Powers, P.M., Clayton, B.S., and Altekrose, J.M., 2022, nshmp-haz: National Seismic Hazard Model Project hazard applications and web services. U.S. Geological Survey software release, doi: [10.5066/P9STF5GK](https://doi.org/10.5066/P9STF5GK).
- Shahi, S.K., Baker, J.W., 2013, *NGA-West2 Models for Ground-Motion Directionality*, Pacific Earthquake Engineering Research Center, PEER 2013/10.
- Shahi, S.K., Baker, J.W., 2014, *NGA-West2 Models for Ground-Motion Directionality*, Earthquake Spectra, Volume 30, o.3, paged 1285-1300, August 2014.
- USGS, BSSC2014 (Scenario Catalog), <https://earthquake.usgs.gov/scenarios/catalog/bssc2014/>, accessed March 2025.
- USGS Earthquake Hazards Toolbox, <https://earthquake.usgs.gov/nshmp/>, accessed March 2025.