COUNTY OF LOS ANGELES

DEPARTMENT OF PUBLIC WORKS

"To Enrich Lives Through Effective and Caring Service"

MARK PESTRELLA, Director

900 SOUTH FREMONT AVENUE
ALHAMBRA, CALIFORNIA 91803-1331
Telephone: (626) 458-5100
http://dpw.lacounty.gov

ADDRESS ALL CORRESPONDENCE TO:
P.O. BOX 1460
ALHAMBRA, CALIFORNIA 91802-1460

IN REPLY PLEASE
REFER TO FILE: BRC-2

February 29, 2024

MEDICAL EXAMINER – HIGH DESERT FACILITY REPLACEMENT
SPECS. NO. 7883; C.P. NO. 87890

NOTICE TO BIDDERS "A"

This Notice to Bidders "A" extends the bid due date, adds an additional pre-bid conference, and clarifies certain portions of the bid documents and provides responses to questions received, all of which are hereby made part of the contract documents.

BID EXTENSION DUE DATE

This Notice to Bidders extends the bid deadline from March 6, 2024, at 10:00 a.m., to **March 27, 2024, at 10:00 a.m.** All bids must be submitted via BidExpress. Bids will be publicly opened, examined and declared by the Department of Public Works using Microsoft Teams Meeting, or County accepted platform. Bidders may participate in the public bid opening by visiting the Los Angeles County Public Works Business Opportunities website at dpw.lacounty.gov/contracts/opportunities.com, selecting the project, and clicking on the bid opening link.

SECOND PRE-BID CONFERENCE:

. There will be a second optional pre-bid conference and site visitation held on **March 5, 2024, at 11:00 a.m.,** at the job site to answer questions concerning the project. Interested parties are requested to meet at the following address: 5300 West Avenue I, Lancaster, CA 93536. Attendance is strongly encouraged.

PROJECT MANUAL:

1. Refer to Section 00 03 00, Form of Bid. **Delete** the Section in its entirety and **replace** with the attached revised Section 00 03 00 (Attachment 1).

QUESTIONS:

Question 1: Will the new generator be provided by the owner for contractor to install or is it Contractor furnished?

Answer: The contractor will purchase and install the generator. The contractor is also responsible for the Air Quality Management District (AQMD) permit.

Question 2: Are there any specifications for electrical, plumbing, mechanical, wet utilities?

Answer: Refer to Mechanical Specification: M-0.02, M-0.03, and M-0.04
Plumbing Specification: P-0.02 and P-0.03
Electrical Specification: E-4.01, E-4.02, and E-4.03
Wet Utility Plan: C6.00

Question 3: Does the LA County have a preferred communications vendor?

Answer: There is no preferred communications vendor.

Question 4: Please provide a specification for the toilet compartments in the men’s and women’s restrooms.

Answer: Refer to attached Specifications Section 102113.13 HEADRAIL BRACED TOILET PARTITION SPECIFICATIONS (POWER COATED – STANDARD) (Attachment 2)

Question 6: Please confirm the existing manufacturer and model numbers of the existing electrical equipment, which includes panelboards, fused disconnects, and load switches.

Answer: Existing 5KV switch: Square D
Existing Panel-MB: Eaton PRL2A
Existing panes A to E: Eaton-Cutler-Hammer

Question 7: Please confirm the operation mode, voltage, amps, and channels.

Answer: Provide Intermatic #ET2152C or approved equal Digital time clock.

Question 8: What is the existing exit sign manufacturer and model number?

Answer: Refer to photo of the existing exit sign (Attachment 3).

Question 9: Please confirm the shutdown requirements to remove electrical equipment.

Answer: The awarded contractor will coordinate efforts with County Project Manager. Note: The building is unoccupied.

Question 10: Please confirm if there are specialty badges for our construction crews onsite.

Answer: Specialty badges are not required. However, each crew member must bring a form of identification. The project site has a security officer who will provide access to each crew member after check in.

Question 11: What is the brand name of the existing fire alarm system?

Answer: Refer to Sheet E-2.4o, Detail #1 on for the existing fire alarm manufacturer, DMP#XR5FC (Attachment 4).

Question 12: What is the existing roof system, and is it still under warranty on the existing building?

Answer: Per project As-builts, existing roof is hot mop Class A (contractor shall confirm and notify Owner if different). Patch and repair shall match existing unless noted otherwise. In addition, there is no existing roof warranty.

Question 13: Is there any Haz-mat report for the existing building?

Answer: The Haz-mat report will be issued in approximately 2-3 weeks.

Question 14: Is there a soil report?

Answer: Refer to Limited Geotechnical Investigation for Antelope Valley Coroner Office Relocation prepared by Geocon West, Inc., dated September 9, 2022. (Attachment 5)

Question 15: Please confirm that the pre-fabricated metal building is Owner Furnished Contractor Installed.

Answer: The pre-fabricated building shall be contractor furnished and installed.

Kindly notify your subcontractors to this effect. If you have any questions, please contact Mr. Joseph Chang at (626) 300-2346 or jochang@pw.lacounty.gov.

Very truly yours,

MARK PESTRELLA, PE
Director of Public Works

for Brian Soria
SOO KIM
Division Chief
Business Relations and Contracts Division

BS:jc

Attach.

ATTACHMENT 1

_____ _____

Name of Bidder (Firm Name) Vendor Identification Number

SECTION 00 03 00

FORM OF BID TO BE USED BY BIDDERS

The undersigned proposes to furnish all materials, labor, and equipment required for the construction to complete the Medical Examiner – High Desert Facility Replacement, in accordance with Drawings and Specifications 7883, including addenda thereto, if any, adopted by the Board of Supervisors, and on file in the office of the Board of Supervisors, as follows:

The lowest bid price shall be determined by adding the following items: Lump Sum Bid in Words (1) + [Extended Overhead Daily Rate (3) x Multiplied by 30 days] = Total Lump Sum Bid. Preference as stated in Section 00 01 00, 1.30, will be applied to the Total Lump Sum Bid, if applicable, to determine the final total bid amount.

1. LUMP SUM BID:

The lump sum bid for the work, including Best Management Practices (BMP) and Construction and Demolition Debris Recycling, and Mandatory Jobs Coordinator requirements complete according to the Drawings and Specifications, will be:

($_____) (_____)

Lump sum bid in figures Lump sum bid in words

2. EXTENDED OVERHEAD DAILY RATE:

The daily rate for the sum of the Contractor's field office and home office overhead applicable to this project, for each day of compensable delay will be:

($_____) (_____)

Daily rate in figures Daily rate in words

3. COUNTY PROGRAM PREFERENCE:

The Local Small Business Enterprise Program Preference, Social Enterprise Program Preference, and Disabled Veterans Business Enterprise Program Preference are provided by the County for purposes of bid evaluation only, as specified in Article 1.30 of Section 00 01 00. If Bidder is a qualifying Local Small Business Enterprise, Social Enterprise Preference, and/or Disabled Veterans Business Enterprise check "yes" in the box below. Section 00 04 38 Request for County Program Preference Consideration must be submitted at the time of bid with a copy of the certification letter issued by the County of Los Angeles Department of Consumer and Business Affairs. If non-qualifying, check "no" in the appropriate box.

LSBE	Yes	☐	No	☐
SE	Yes	☐	No	☐
DVBE	Yes	☐	No	☐

4. RECEIPT OF NOTICE TO BIDDERS:

I hereby certify and declare that I have received, reviewed and incorporated Notice to Bidders A dated February 29, 2024, into my Bid.

Executed this day of _____ (Month and Year)

By: _____
(Authorized Signature of a Principal Owner, Officer, or Manager)

_____

NOTE: Any alteration or addition to the Form of Bid may invalidate same. All blank spaces shall be filled out completely. Line out nonapplicable blanks. An incomplete form may invalidate bid. The County reserves the right to waive any informalities or to reject any or all bids or to accept any alternatives when called for.

I (We) certify that on _____, 20____, License No. _____, license classification(s) _____, was issued to me (us), in the name of _____, by the Contractors' State License Board, pursuant to California Statutes of 1929, as amended, and that said license has not been revoked.

Firm Ownership Information
Check where applicable:

1. ( ) Minority-Owned
   ( ) Woman-Owned
   ( ) Disadvantaged-Owned
   ( ) Disabled Veteran-Owned
   ( ) LGBTQQ-Owned

2. ( ) An individual
   ( ) A corporation. Name state or territory of Incorporation
   _____
   ( ) A copartnership
   ( ) A joint venture

Race/Ethnic Composition
For statistical purposes only.
( ) Black/African American
( ) Hispanic/Latino
( ) Asian or Pacific Islander
( ) Native Americans
( ) Subcontinent Asian
( ) White

If a copartnership or joint venture, list names of individuals comprising same below

_____
_____
_____

Date signed _____, 20_____

Place _____
City and State

Respectfully submitted,

_____
Firm Name (if applicable)

Bidder's address, E-mail address, and telephone:

_____
Number and Street

_____
City and State Zip Code

_____
Telephone

_____
Fax

_____
Signature and Print Name

_____
Title and E-mail Address

_____
Signature and Print Name

_____
Title and E-mail Address

HEADRAIL BRACED TOILET PARTITION SPECIFICATIONS (POWDER COATED - STANDARD) SECTION 10 21 13.13

PART 1 GENERAL

1.01 SUMMARY

A. Section Includes
Furnish, deliver and install all Toilet Partitions as indicated on the drawings and as required by actual conditions at the building. The Toilet Partitions shall include the furnishing of all necessary screws, special screws, bolts, special bolts, expansion shields and all other devices necessary for the proper installation and application of the Toilet Partitions.

1.02 REFERENCES

A. Standard
All Toilet Partitions must be scheduled, supplied and installed in accordance with: Local Building Code, ANSI (American National Standards Institute), ADA (Americans with Disabilities Act). In all cases the above references shall be taken to mean the latest edition of that particular standard including all revisions.

1.03 SUBMITTALS

A. General Requirements
Make all submittals in accordance with Section: 01300

B. Schedules
1. Submit (4) copies of detailed shop drawings for the Consultant's/Owner's review within (2) weeks of being awarded this subcontract.

C. Product Data
1. Submit (2) copies of product sheets and/or catalogue cuts, of all products listed in the shop drawings.

D. Samples
1. Upon request, a returnable sample of the Toilet Partitions shall be submitted to the Consultant/Owner for approval not later than (10) days after requested. All samples must be properly identified including: name of supplier, and name of manufacturer.

E. Operations and Maintenance Data
1. At completion of the job, furnish to the owner (2) copies of an Owners Operation and Maintenance Manual. The Manual shall consist of a hard cover three ring binder with the project name in the front. Include in the manual the following information: Maintenance instructions, Catalogue pages for each product, Name/Address and phone number of the Manufacturer and their Sales Agent, Copy of the final shop drawings.

1.04 QUALITY ASSURANCE

A. Substitutions

1. Manufacturers and model number listed are to establish a standard of quality. Similar items by approved manufacturers that are equal in design, function, quality and finish may be accepted upon prior written approval from the Architect/Owner.

2. All requests for acceptable substitutions must be made in writing and submitted to the Architect at least 14 days prior to tender closing. If requested, all requests for substitutions must be accompanied by product literature and actual product samples.

B. Supplier Qualifications

1. Toilet Partition shop drawings and Toilet Partitions shall be procured from a source of supply approved by the Consultant/Owner/Architect. Supplier is responsible for the complete Toilet Partition subcontract.

1.05 DELIVERY, STORAGE AND HANDLING

A. Marking and Packaging

1. Toilet Partitions must be delivered to the job site in the manufacturers' original packages and marked to correspond with the approved shop drawings.

B. Delivery

1. Toilet Partitions must be delivered in an amount of time deemed appropriate by the Consultant/Owner.

1.06 WARRANTY

A. Written Guarantee

1. The Toilet Partition manufacturer shall guarantee all Toilet Partitions by written certification, for a period of (3) years from date of receipt by customer, against any defects in design, materials and workmanship.

1.07 MAINTENANCE

A. Maintenance

1. Upon request, at completion of the project, the Toilet Partition supplier may be required to brief Owner's maintenance staff regarding proper care of Toilet Partitions, such as: required lubrications, adjustments, cleaning, etc.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Approved Manufacturers

Only those manufacturers names and product numbers listed herein, are approved for use on this project. All other manufacturers must request approval as per section (1.04 - A - Substitutions). Absolutely no variations from listed and preapproved items will be permitted.

Approved manufacturer(s):

1. Hadrian Manufacturing Inc.
2. Bobrick.

2.02 MATERIALS

A. Construction: Doors, Panels and Pilasters shall be constructed of two sheets of panel flatness zinc-coated steel, Galvanneal ASTM A653 GR33, laminated under pressure to a honeycomb core for sound deadening and rigidity. Formed edges to be welded together and inter-locked under tension with a roll-formed oval crown locking bar, mitred, welded and ground smooth at the corners. Honeycomb to have a maximum 25mm (1") cell size.

B. Doors: Shall be 25mm (1") thick with cover sheets not less than 22-gauge (0.8mm).

C. Panels: Shall be 25mm (1") thick with cover sheets not less than 22-gauge (0.8mm).

D. Pilasters: Shall be 32mm (1.25") thick with cover sheets not less than 22-gauge (0.8mm). Pilaster tops shall be reinforced with a 20-gauge channel to create extra strength and twist-free rigidity along with minimizing damage by handling and/or shipping.

E. Headrail: Shall be 25mm (1") by 41mm (1.625") extruded anodized aluminum with double-ridge anti-grip design. Wall thickness to be 1.5mm (0.060") and shall be securely attached to wall and pilasters with manufacturer's fittings in such a way as to make a strong and rigid installation. All joints in headrails shall be made at pilaster.

F. Hardware and Fittings: All panel and pilaster brackets and all door hardware shall be chrome plated zinc die castings. Fasteners are zinc plated 12 x 1-3/4” and 12 x 5/8” TR-27 6-lobe security screws. Doors shall be equipped with a gravity type hinge mounted on the lower pilaster hinge bracket. Door hinges shall be fully concealed within the thickness of the door and adjustable to permit the door to come to rest at any position when not latched. Each door to be fitted with a combined coat hook and bumper and a concealed latch, with face mortised flush with edge strip of door. Barrier-free doors shall include thumbturn lever to activate latch without fingertip grip application. Both standard and barrier-free latches shall have a turn slot designed to allow emergency access from exterior. The combined stop and keeper shall have a 19mm (0.75") diameter bumper locked in place. Threaded upper hinge pin shall have a metal core and self-lubricating nylon sleeve to ensure smooth, quiet operation. Pilaster shoes shall be a welded one-piece design made from polished stainless steel. Two-piece shoes that can disassemble when kicked are unacceptable.

2.03 FINISH

A. All sheet metal to be thoroughly cleaned, phosphated and finished with a high performance powder coating, electrostatically applied and oven cured to provide a uniform, smooth protective finish. Color shall be as selected from Hadrian’s color card.

PART 3 EXECUTION

3.01 EXAMINATION

A. Site Preparation
1. The contractor must examine all site conditions that would prevent the proper application and installation of Toilet Partitions. Any defect must be immediately identified and corrected, prior to the installation of the Toilet Partitions.

3.02 INSTALLATION

A. Mounting Locations

1. All Toilet Partitions must be mounted according Manufacturers standard locations and those specified on the drawings.

3.03 FIELD QUALITY CONTROL

A. Inspection

1. After installation has been completed, provide for a site inspection of all Toilet Partitions to determine that all items have been supplied and installed as per the enclosed details. Also, check the operation and adjustment of all Toilet Partitions. Any discrepancies, or malfunctioning product, must be reported to the Architect immediately.

3.04 ADJUSTMENT AND CLEANING

A. Final Preparation

1. At final completion, Toilet Partitions shall be left clean and free from disfigurement. Make all final adjustments. Where Toilet Partitions are found defective, repair or replace or otherwise correct as directed.

3.05 PROTECTION

A. Site Protection

1. The Contractor must provide for the proper protection of all Toilet Partitions until the owner accepts the project as complete.

3.06 TOILET PARTITION SCHEDULE

A. Schedule

1. Provide Toilet Partitions as specified in all above sections and as per the detailed Architectural Drawings.

End Section

Attachment 3

Attachment 4

ME HD RFI 5.1 Reviewed by iMEG2-27-24

Model XR5FC Wiring Diagram

Refer to the XR5FC Installation Guide (LT-0299) for a complete description of wiring connections.
Refer to the XR5FC Programming Guide (LT-0312) for complete programming instructions.

Digital Monitoring Products, Inc.

SIGNALING UL LISTED 3NTL

Fire Alarm Equipment

Keypads

Model 630F LCD Keypad
92mA at 8.5 to 14 VDC.

Model 692F LED Keypad
70mA at 8 to 16 VDC.

The XR5FC supports two supervised addresses for alpha-numeric keypads and supports multiple unsupervised LCD and LED keypads.

Use Marking
Commercial Protected
Premises Control Unit

DMP TRANSFORMER
16.5 VAC 40VA Wire-In
Direct connect to unswitched
120 VAC 60 Hz

16 to 18 gauge wire

Maximum AC wire distance
With 16 gauge wire: 70 feet
With 18 gauge wire: 40 feet

Cold Water Pipe
Earth Ground

Intended Installation
Environment - Indoor/Dry

TYPES OF SERVICE

Central Station DACT, Remote Station Signaling Service, Suitable for manual fire alarm, automatic fire alarm, sprinkler supervisory or waterflow alarm.

Ⓢ = Supervised Circuit

WARNING

THIS UNIT MAY BE PROGRAMMED TO USE AN ALARM VERIFICATION FEATURE THAT RESULTS IN DELAY OF THE SYSTEM ALARM SIGNAL FROM THE INDICATED CIRCUITS. THE TOTAL DELAY (CONTROL UNIT PLUS SMOKE DETECTORS) SHALL NOT EXCEED 60 SECONDS. NO OTHER SMOKE DETECTOR SHALL BE CONNECTED TO THESE CIRCUITS UNLESS APPROVED BY THE LOCAL AUTHORITY HAVING JURISDICTION (AHJ).

FCC IDENTIFICATION
Command Processor
Model XR5

This unit complies with Part 68, FCC Rules as of date of manufacture.
FCC Registration No:
CCKUSA-18660-AL-R
Ringer Equivalence: 1.1B
Digital Monitoring Products, Inc.
Engineered and Assembled in USA
Use standard jack: USOC RJ31X

POWER LIMITED

This unit has been tested by Underwriters Laboratories and found to comply with the requirements for inherent power limitation.

Date of Manufacture: 0710

LISTING STATE OF CALIFORNIA STATE FIRE MARSHAL SERVICE

CSFM
7165-1157:104

NYC MEA
168-93-E

MAIN BACKUP
J4 J5
Telephone Connections

J13 Silence/Reset Header
J14 Bell Monitor
Silence/Reset Push for One Second
Silence/Reset Button
Panel Reset

Model XR5

377 Trouble Annunciator Module
Refer to the 377 Installation Sheet (LT-0314).

J10 Trouble Annunciator Header

Relay Sockets for Optional Form C Outputs on J11

Output 1 Output 2

J12

J11 NC COM NO NC COM NO

Wiring on terminals 7 through 22 must exit to the right and maintain a 1/4" separation from the AC and battery positive wiring.

AC AC B+ B- BELL SMK RED YEL GRN BLK Z1A+ Z1A- Z1B+ Z1B- Z2+ Z2- Z3+ Z3- Z4+ Z4- Z5+ Z5-

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22

RED BLACK — 22 GA. Min — YELLOW GREEN BLACK

Zone 1
For Sprinkler supervision, Normally Open devices must be used.

Up to 400mA Auxiliary Current at 12 VDC from terminal 7.

3.3k Ohm **Zone 2**
3.3k Ohm **Zone 3**
3.3k Ohm **Zone 5**

All outputs must be connected to devices located within the same room as the panel.

Output header J12
Four Open Collector Outputs. 50mA at 30 VDC resistive.

Up to 100mA auxiliary current is available for 4-wire smoke detectors from terminal 6.

Smoke Detector
Smoke Detector
Power Supervision Relay
3.3k

Zones 2 to 5 compatibility identifier: **A**

Maximum operating range: 8.8 VDC to 14.2 VDC

Bell Circuit
.6 Amps at 12 VDC
Minimum cutoff time 5 minutes.

Heat detectors, pull stations, or other contact devices listed for Fire Protective Signaling can be connected to zones 1 to 5.

S = Smoke Detector

8513

MADE IN U.S.A.

ME HD RFI 5.1 Reviewed by iMEG2-27-24

PRI.

SEC.

ANNUNCIATOR PANEL FOR STAFF ANNEX 3 BUILDING

5300 WEST AVENUE I
LANCASTER, CA. 93536

In The Event Of An Emergency, Call:

Sheriff's Dispatch
(661) 940-7883

MK101

Fire Alarm Control Panel

SERVICED BY
TROY ALARM Inc.
951.352.7589
877.876.9252
CENTRAL STATION
800.746.0831

Primary Power Disconnect Location
Circuit #
Panel # B
Room # OUTSIDE · BACK OF BLDG

FIRE ALARM CIRCUIT CONTROL

ALARM OPERATING INSTRUCTIONS

SILENCE AUDIBLE AFTER VERIFYING CAUSE-PRESS THE SILENCE KEY AND ER 1234

ET ALARMED DEVICE-PULL STATION, WATERFLOW, SMOKE DETECTOR

SILENCE TROUBLE CONDITIONS-PRESS THE SILENCE KEY AND ENTER 1234

RESET SMOKE DETECTOR-PRESS COMMAND 47

RESET ANNUNCIATOR-PRESS COMMAND 47

NORMAL CONDITION THE KEYPAD SHOULD SHOW THE GREEN POWER LIGHT LY

OLID RED LIGHT INDICATES A FIRE ALARM HAS OCCURRED ZN-1 THRU 5

ULSING RED LIGHT INDICATES A SUPERVISORY ALARM OCCURRED ON ZN-1 THRU 5

OLID YELLOW LIGHT INDICATES A FIRE TROUBLE HAS URRED ON ZN-1 THRU 5

1 WATERFLOW
2 SMOKE DETECTOR ELECTRICAL ROOM
3 MANUAL PULLS
4 PIV VALVE TAMPER
5 DBL DET CHK VALVE TAMPER

CONTRACTOR:
ALARM, INC
PUBLIC STREET
IDE, CA 92504-1138
2-7589

FOR CENTRAL STATION CALL:
LOCAL ALARM ONLY CALL 911

XR5

User's Guide

FIRE COMMAND

SILENCE RESET TEST CODE

1 2 3 4
5 6 7 8
9 0 SPECIAL COMMAND

Attachment 5

LIMITED GEOTECHNICAL INVESTIGATION

ANTELOPE VALLEY CORONER OFFICE RELOCATION
5300 WEST AVENUE I
LANCASTER, CALIFORNIA

APN: 3203-014-901

GEOCON
WEST, INC.

GEOTECHNICAL
ENVIRONMENTAL
MATERIALS

PREPARED FOR

SWA ARCHITECTS

PASADENA, CALIFORNIA

PROJECT NO. W1339-06-02A

SEPTEMBER 9, 2022

Project No. W1339-06-02A
September 9, 2022

VIA E-MAIL

Daniel Bise
SWA Architects
48 E. Holly Street
Pasadena, CA 91103

Subject: LIMITED GEOTECHNICAL INVESTIGATION
ANTELOPE VALLEY CORONER OFFICE RELOCATION
5300 WEST AVENUE I, LANCASTER, CALIFORNIA
APN: 3203-014-901

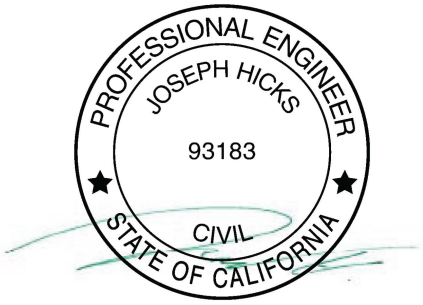
Dear Mr. Bise:

In accordance with your authorization of our proposal dated May 23, 2022, we have performed a limited geotechnical investigation for the Antelope Valley Coroner Office relocation in the City of Lancaster, California. The accompanying report presents the findings of our study and our conclusions and recommendations pertaining to the geotechnical aspects of the proposed project. Based on the results of our investigation, it is our opinion that the proposed 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.



Joe Hicks, M.S.
PE 93183

Harry Derkalousdian
PE 79694

(Email) Addressee

TABLE OF CONTENTS

LIMITED GEOTECHNICAL INVESTIGATION

1. PURPOSE AND SCOPE

This report presents the results of a limited geotechnical investigation for the Antelope Valley Coroner Office relocation located at 5300 West Avenue I, in the City of Lancaster, California (see Vicinity Map, Figure 1). The purpose of the investigation was to evaluate subsurface soil and geologic conditions underlying the area of the proposed improvements and, based on conditions encountered, to provide conclusions and recommendations pertaining to the geotechnical aspects of the proposed earthwork and grading activities.

The scope of this investigation included a site reconnaissance, field exploration, laboratory testing, engineering analysis, and the preparation of this report. The site was explored on July 27, 2022, by excavating three 4-inch-diameter borings to depths of 10½ feet below the ground surface using hand auger and manual 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 boring logs, 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 analyses of the data obtained during our 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 subject site is located in the City of Lancaster, California. The area of proposed improvement is located within the LA County Challenger Youth Center and is bound by Access roads to the north, west and south, and by a parking lot to the east. The site is currently occupied by three vacant single story modular structures and associated landscaped areas. The site is relatively level, with no pronounced highs or lows. Surface water drainage at the site appears to be by sheet flow along the existing ground contours which flow towards the city streets. Vegetation onsite consists of mature trees, bushes and shrubs scattered across the site within landscaped areas.

Based on the information provided to us, it is our understanding that the proposed project scope includes refurbishing the existing structures, demolishing miscellaneous exterior structures, and paving and constructing new exterior improvements consisting of:

- New asphalt for parking spaces
- New gravel area for storage of shipping containers
- Concrete slab on grade for pre-fab storage shed with 10-body crypt
- Concrete pad at grade for new exterior emergency generator
- Fence post footings, light pole footings (passive pressure recommendation)
- Miscellaneous concrete flatwork for new walkways

The proposed site conditions are depicted on the Site Plans (see Figure 2).

Based on the preliminary nature of the design at the time this report is being prepared, foundation loads are not available. It is assumed that light pole foundations may support up to 10 kips, and equipment pad and storage unit foundations may support up to 100 kip loads.

Once the design phase 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 improvement, 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. SOIL AND GEOLOGIC CONDITIONS

Based on our field investigation and published geologic maps of the area, the site is underlain by Pleistocene age Older Paralic Deposits (playa deposits) consisting primarily of fine-grained sand, silt and clay (CGS, 2021). Detailed stratigraphic profiles of the materials encountered at the site are provided on the boring logs in Appendix A.

3.1 Older Paralic Deposits

Pleistocene age Older Paralic Deposits, associated with the Pleistocene age Lake Thompson, were encountered within our borings. The Older Paralic Deposits generally consist of light brown to brown, yellowish brown, olive brown or light gray, interbedded poorly graded sand, clayey sand, silty sand, silt and clay. The Older Paralic Deposits are characterized as soft to stiff or medium dense, and dry to moist.

4. GROUNDWATER

Review of the "Preliminary" Seismic Hazard Zone Report for the West Lancaster Quadrangle (California Division of Mines and Geology [CDMG], 2003) indicates the historically highest groundwater level in the area is approximately 10 feet beneath the ground surface. This historic high groundwater level was reportedly based on local groundwater data from the Armagosa Wash area (CDMG, 2003). However, review of the "Official" Seismic Hazard Zone Report for the West Lancaster Quadrangle (California Division of Mines and Geology [CDMG], 2005) indicates that the CDMG evaluated a larger, updated groundwater database for this official publication. Based on the 2005 publication, groundwater levels in the area are reported to be approximately 130 feet beneath the ground surface (CDMG, 2005). The discrepancy between the reported historic high groundwater depths was further evaluated with available data from local groundwater monitoring wells (California Department of Water Resources [CDWR], 2021). Based on the available groundwater level data, the depth to groundwater in nearby wells is reported to range between 85 and 100 feet below the ground surface for the monitoring period between 1909 and 1985 (CDWR, 2021). Based on current groundwater basin management practices, it is unlikely that groundwater levels will ever exceed the historic high levels.

Groundwater was not encountered in our borings to a maximum depth of 10½ feet. Considering the lack of groundwater in our borings, the historic depth to groundwater in nearby groundwater monitoring wells, and the depth of the proposed grading activities, static groundwater is neither expected to be encountered during construction, nor have a detrimental effect on the project. However, it is not uncommon for groundwater levels to vary seasonally when subjected to excessive irrigation or heavy precipitation. Proper surface drainage of irrigation and precipitation will be critical to future performance of the project. Recommendations for drainage are provided in the S*urface Drainage* section of this report (see Section 6.13).

5. SEISMIC DESIGN CRITERIA

The following table summarizes the site-specific design criteria obtained from the 2019 California Building Code (CBC; Based on the 2018 International Building Code [IBC] and ASCE 7-16), Chapter 16 Structural Design, Section 1613 Earthquake Loads. The data was calculated using the online application *Seismic Design Maps*, provided by OSHPD. The short spectral response uses a period of 0.2 second. We evaluated the Site Class based on the discussion in Section 1613.2.2 of the 2019 CBC and Table 20.3-1 of ASCE 7-16. The values presented below are for the risk-targeted maximum considered earthquake (MCE_R).

2019 CBC SEISMIC DESIGN PARAMETERS

Parameter	Value	2019 CBC Reference
Site Class	D	Section 1613.2.2
MCE_R Ground Motion Spectral Response Acceleration – Class B (short), S_S	1.500g	Figure 1613.2.1(1)
MCE_R Ground Motion Spectral Response Acceleration – Class B (1 sec), S_1	0.600g	Figure 1613.2.1(2)
Site Coefficient, F_A	1.2	Table 1613.2.3(1)
Site Coefficient, F_V	1.7	Table 1613.2.3(2)
Site Class Modified MCE_R Spectral Response Acceleration (short), S_{MS}	1.800g	Section 1613.2.3 (Eqn 16-36)
Site Class Modified MCE_R Spectral Response Acceleration – (1 sec), S_{M1}	1.530g*	Section 1613.2.3 (Eqn 16-37)
5% Damped Design Spectral Response Acceleration (short), S_{DS}	1.200g	Section 1613.2.4 (Eqn 16-38)
5% Damped Design Spectral Response Acceleration (1 sec), S_{D1}	1.020g*	Section 1613.2.4 (Eqn 16-39)

*Per Supplement 3 of ASCE 7-16, a ground motion hazard analysis (GMHA) shall be performed for projects on Site Class "D" sites with 1-second spectral acceleration (S_1) greater than or equal to 0.2g, which is true for this site. However, Supplement 3 of ASCE 7-16 provides an exception stating that that the GMHA may be waived provided that the parameter S_{M1} is increased by 50% for all applications of S_{M1}. The values for parameters S_{M1} and S_{D1} presented above have been increased in accordance with Supplement 3 of ASCE 7-16.

The table below presents the mapped maximum considered geometric mean (MCE_G) seismic design parameters for projects located in Seismic Design Categories of D through F in accordance with ASCE 7-16.

ASCE 7-16 PEAK GROUND ACCELERATION

Parameter	Value	ASCE 7-16 Reference
Mapped MCE_G Peak Ground Acceleration, PGA	0.631g	Figure 22-7
Site Coefficient, F_{PGA}	1.2	Table 11.8-1
Site Class Modified MCE_G Peak Ground Acceleration, PGA_M	0.757g	Section 11.8.3 (Eqn 11.8-1)

6. CONCLUSIONS AND RECOMMENDATIONS

6.1 General

6.1.1 It is our opinion that neither soil nor geologic conditions were encountered during the investigation that would preclude the construction of the proposed development provided the recommendations presented herein are followed and implemented during design and construction.

6.1.2 This statement is made in accordance with the County of Los Angeles, Section 111. It is the opinion of this office that, provided our recommendations are followed and properly maintained, (1) the proposed grading and structures will be safe for its intended use against hazard from landslide, settlement, or slippage and (2) the proposed grading and structures will have no adverse effect on the stability of the site or adjoining properties.

6.1.3 Based on laboratory testing (see Figures B4 through B7), the upper alluvial soils may be subject to hydro-collapse upon saturation. Hydro-consolidation is the tendency of a soil structure to collapse upon saturation, resulting in the overall settlement of the effected soils and any overlying soils, foundations, or improvements supported therein. The recommendations in this report are intended to reduce the effects of collapsible soils beneath the foundation systems.

6.1.4 Artificial fill was not encountered during the site investigation; however, artificial fill may exist in areas of the site that were not directly explored. The upper alluvial soils, in their present condition, are not considered suitable for direct support of proposed foundations, slabs or new fill. The alluvial soils are suitable for re-use as engineered fill provided the recommendations in the *Grading* section of this report are followed (see Section 6.4).

6.1.5 As a minimum, it is recommended that the upper 3 feet of existing site soils within the footprint of the proposed storage units and equipment pads should be excavated and properly compacted for foundation support. Deeper excavations should be conducted as necessary to remove deeper artificial fill or soft alluvial soil at the direction of the Geotechnical Engineer (a representative of Geocon). The excavation should extend laterally a minimum distance of 3 feet beyond the pad footprint area, or a distance equal to the depth of fill below the foundation, whichever is greater. The limits of existing fill and/or soft alluvial soils removal will be verified by the Geocon representative during site grading activities.

6.1.6 Prior to the placement of any fill, excavation bottoms should be densified by proof-rolling with heavy equipment in the presence of the Geotechnical Engineer (a representative of Geocon). During the compaction procedure, compression and shrinkage should be expected as the soils densify. All excavation bottoms must be approved in writing by the Geotechnical Engineer (a representative of Geocon) prior to placing fill or construction materials.

6.1.7 Once the recommended grading has been completed, the proposed storage unit and equipment units may be supported on reinforced mat foundation systems deriving support in newly placed engineered fill. All foundation excavations must be observed and approved in writing by the Geotechnical Engineer prior to placement of steel or concrete. Recommendations for the design of a mat foundation system are provided in Section 6.6.

6.1.8 Light poles may be supported by drilled, cast-in-place end bearing caissons deriving support in undisturbed alluvial soils. Recommendations for end bearing caissons are provided in Section 6.7.

6.1.9 It is anticipated that stable excavations can be achieved with sloping measures. Excavation recommendations are provided in the *Temporary Excavations* section of this report (Section 6.12).

6.1.10 Foundations for small outlying structures, such as 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 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 compaction cannot be performed, such as adjacent to property lines, miscellaneous foundations may be deepened as necessary to maintain a minimum 24-inch embedment below the ground surface, and a minimum 12-inch embedment into the undisturbed alluvial soils. 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.

6.1.11 Where new paving is to be placed, it is recommended that all existing fill 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 and soft alluvial soils in the area of new paving is not required; however, paving constructed over existing uncertified fill or unsuitable alluvial soil 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 subgrade soil should be scarified and properly compacted for paving support. *Preliminary Pavement Recommendations* section of this report (see Section 6.11).

6.1.12 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.

6.1.13 Any changes in the design, location or elevation of improvements, 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.

6.2 Soil and Excavation Characteristics

6.2.1 The in-situ soils can be excavated with moderate effort using conventional excavation equipment. Caving should be anticipated in unshored excavations, especially where loose or granular soils are exposed.

6.2.2 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.

6.2.3 All onsite excavations must be conducted in such a manner that potential surcharges from existing improvements, 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 improvement 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 6.12).

6.2.4 The existing upper site soils encountered during this investigation are considered to have a "low" expansive potential (EI = 32) and are classified as "expansive" based on the 2019 California Building Code (CBC) Section 1803.5.3. Recommendations presented herein assume that the foundations and slabs will derive support in these materials.

6.3 Minimum Resistivity, pH, and Water-Soluble Sulfate

6.3.1 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 "corrosive" with respect to corrosion of buried ferrous metals on site. The results are presented in Appendix B (Figure B10) 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.

6.3.2 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 B10) and indicate that the on-site materials possess "S0" sulfate exposure to concrete structures as defined by 2019 CBC Section 1904 and ACI 318-14 Table 19.3.1.1.

6.3.3 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.

6.4 Grading

6.4.1 A preconstruction conference should be held at the site prior to the beginning of demolition and 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.

6.4.2 Earthwork should be observed, and compacted fill tested by representatives of Geocon West, Inc. The existing fill and native soil encountered during exploration are suitable for re-use as engineered fill, provided any encountered oversize material (greater than 6 inches) and any encountered deleterious debris are removed.

6.4.3 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 structure 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 in writing by the Geotechnical Engineer. All existing underground improvement 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.).

6.4.4 As a minimum, it is recommended that the upper 3 feet of existing site soils within the footprint of the proposed storage units and equipment pads should be excavated and properly compacted for slab support. Deeper excavations should be conducted as necessary to completely remove all artificial fill and unsuitable soils at the direction of the Geotechnical Engineer (a representative of Geocon). The excavation should extend laterally a minimum distance of 3 feet beyond the pad footprint area, 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.

6.4.5 Prior to the placement of any fill, excavation bottoms should be densified by proof-rolling with heavy equipment in the presence of the Geotechnical Engineer (a representative of Geocon). During the compaction procedure, compression and shrinkage should be expected as the soils densify. All excavation bottoms must be approved in writing by the Geotechnical Engineer (a representative of Geocon) prior to placing fill or construction materials.

6.4.6 All fill and backfill soils should be placed in horizontal loose layers approximately 6 to 8 inches thick, moisture conditioned to optimum moisture content, and properly compacted to a minimum 90 percent of the maximum dry density in accordance with ASTM D 1557 (latest edition).

6.4.7 All imported fill shall be observed, tested, and approved by Geocon West, Inc. prior to bringing soil to the site. Rocks larger than 6 inches in diameter shall not be used in the fill. Import soils used as structural fill should have an expansion index less than 50 and corrosivity properties that are equally or less detrimental to that of the existing onsite soils (see Figure B10).

6.4.8 Depressions resulting from existing utility line removal should be properly backfilled in accordance with the recommendations provided above. It is recommended that all existing utility line removals be observed by the Geotechnical Engineer to document the placement and location of engineered backfill.

6.4.9 Trenches for new utility lines 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 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).

6.4.10 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.

6.5 Shrinkage

6.5.1 Shrinkage results when a volume of material removed at one density is compacted to a higher density. A shrinkage factor of between 5 and 20 percent should be anticipated when excavating and compacting the existing earth materials on the site to an average relative compaction of 92 percent.

6.6 Mat Foundation Design – Storage Unit & Equipment Pads

6.6.1 It is recommended that a reinforced concrete mat foundation be utilized for support of the proposed storage unit and equipment pads. The reinforced concrete mat foundation may derive support in newly placed engineered fill subsequent to the recommended grading.

6.6.2 The recommended maximum allowable bearing value is 2,000 pounds per square foot (psf). The allowable bearing pressure may be increased by up to one-third for transient loads due to wind or seismic forces.

6.6.3 It is recommended that a modulus of subgrade reaction of 150 pounds per cubic inch (pci) be utilized for the design of the mat foundation bearing in the newly placed engineered fill. These values are unit values for use with a 1-foot square footing. The modulus should be reduced in accordance with the following equation when used with larger foundations:

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

where: K_R = reduced subgrade modulus
K = unit subgrade modulus
B = foundation width (in feet)

6.6.4 The thickness of and reinforcement for the mat foundation should be designed by the project structural engineer.

6.6.5 For seismic design purposes, a coefficient of friction of 0.45 may be utilized between the concrete mat and subgrade soils without a moisture barrier, and 0.15 for slabs underlain by a moisture barrier.

6.6.6 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 exposed soil conditions are consistent with those anticipated. If unanticipated soil conditions are encountered, foundation modifications may be required.

6.6.7 The maximum settlement for a reinforced concrete mat foundation with a maximum allowable bearing pressure of 2,000 psf deriving support in the recommended bearing materials is expected to be less than ¾ 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 expected to be less than ½ inch between the center and corner of the mat foundation.

6.6.8 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 selection and 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 is recommended. 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.

6.7 End-Bearing Caissons - Light Pole Foundations

6.7.1 Light pole foundations may may be supported on a cast-in-drilled-hole, end-bearing caisson foundation system deriving support in undisturbed alluvial soils.

6.7.2 End-bearing caisson foundations may be designed for an allowable bearing capacity of 1,500 psf, and should be a minimum of 24 inches in diameter, 5 feet in depth below the ground surface, and a minimum of 24 inches into the undisturbed alluvial soils.

6.7.3 The allowable soil bearing pressure above may be increased by 250 psf and 500 psf for each additional foot of foundation width and depth, respectively, up to a maximum allowable soil bearing pressure of 2,000 psf. The allowable bearing pressures may be increased by one-third for transient loads due to wind or seismic forces.

6.7.4 All loose soils must be completely removed from the bottom of all end-bearing foundation excavations. All drilled caisson excavations must be continuously observed by personnel of this firm to verify adequate depth and penetration into the recommended bearing materials. 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.

6.7.5 The maximum expected settlement for a caisson foundation system deriving support in the recommended bearing materials and designed with a maximum bearing pressure of 2,000 psf is estimated to be less than ½ 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 ¼ inch over a distance of 20 feet.

6.8 Deepened Foundation Installation (Caissons)

6.8.1 Casing will be required to prevent excessive caving in drilled excavations where granular soils are encountered. 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 caisson 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 caissons by the Geotechnical Engineer (a representative of Geocon West, Inc.), is required.

6.8.2 Caissons will require the complete removal of all loose earth materials from the bottom of the excavation since the end-bearing capacity is utilized for foundation support.

6.8.3 Groundwater seepage was not encountered in the borings excavated to depths up to 10½ feet beneath the existing ground surface. Although not anticipated, caissons 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 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.

6.8.4 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.

6.8.5 Closely spaced caissons should be drilled and filled alternately, with the concrete permitted to set at least eight hours before drilling an adjacent hole. Caisson excavations should be filled with concrete as soon after drilling and inspection as possible; the holes should not be left open overnight.

6.9 Miscellaneous Foundations

6.9.1 Foundations for small outlying structures, such as block walls up to 6 feet in height, planter walls or trash enclosures which will not be tied to the existing 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 or is undesirable, such as adjacent to property lines, foundations may be deepened as necessary to maintain a minimum 24-inch embedment below the ground surface, and should be deepened as necessary to maintain a minimum 12-inch embedment into the recommended bearing materials.

6.9.2 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.

6.9.3 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.

6.10 Lateral Design

6.10.1 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 the undisturbed alluvial soils and 0.45 may be used with the dead load forces in properly compacted engineered fill.

6.10.2 Based on a factor of safety of 1.5, the passive earth pressure for the sides of foundations and slabs poured against undisturbed alluvial soils or properly compacted engineered fill may be computed as an equivalent fluid having a density of 240 pcf with a maximum earth pressure of 2,400 pcf. When combining passive and friction for lateral resistance, the passive component should be reduced by one-third.

6.11 Preliminary Pavement Recommendations

6.11.1 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 optimum moisture content, and properly compacted to at least 95 percent relative compaction, as determined by ASTM Test Method D 1557 (latest edition).

6.11.2 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.

6.11.3 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.

PRELIMINARY PAVEMENT DESIGN SECTIONS

Location	Estimated Traffic Index (TI)	Asphalt Concrete (inches)	Class 2 Aggregate Base (inches)
Automobile Parking and Driveways	4.0	3.0	4.0
Trash Truck & Fire Lanes	7.0	4.0	12.0

6.11.4 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 (CMB) 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).

6.11.5 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 6 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 95 percent relative compaction as determined by ASTM Test Method D 1557 (latest edition).

6.11.6 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.

6.12 Temporary Excavations

6.12.1 Excavations up to 5 feet in height may be required during construction activities. The excavations are expected to expose alluvial soils, which may not be suitable for vertical excavations. Where loose soils or caving sands are not present, and where not surcharged by adjacent traffic or structures, vertical excavations up to 5 feet may be attempted.

6.12.2 Excavations exposing loose soils or caving sands will require sloping and/or shoring measures in order to provide a stable excavation. Where sufficient space is available, temporary unsurcharged embankments up to 8 feet high may be sloped back at a uniform 1:1 slope gradient or flatter. A uniform slope does not have a vertical portion. Where space is limited and sloping cannot be achieved, shoring measures will be required. Recommendations for shoring can be provided under separate cover as the design progresses.

6.12.3 Where sloped embankments 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 embankments 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. Geocon personnel should inspect the soils exposed in the cut slopes during excavation 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.

6.13 Surface Drainage

6.13.1 Proper surface drainage is critical to the future performance of the project. Uncontrolled infiltration of irrigation excess and storm runoff into the soils can adversely affect the performance of the future and adjacent 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.

6.13.2 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 2019 CBC 1804.4 or other applicable standards. In addition, drainage should not be allowed to flow uncontrolled over any descending slope.

6.13.3 Positive site drainage should be provided away from the tops of slopes to swales or other controlled drainage structures.

6.14 Plan Review

6.14.1 Grading and foundation 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 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 West, Inc. 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 West, Inc.

2. This report is issued with the understanding that it is the responsibility of the owner, or of 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.

3. 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 are 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.

4. 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.

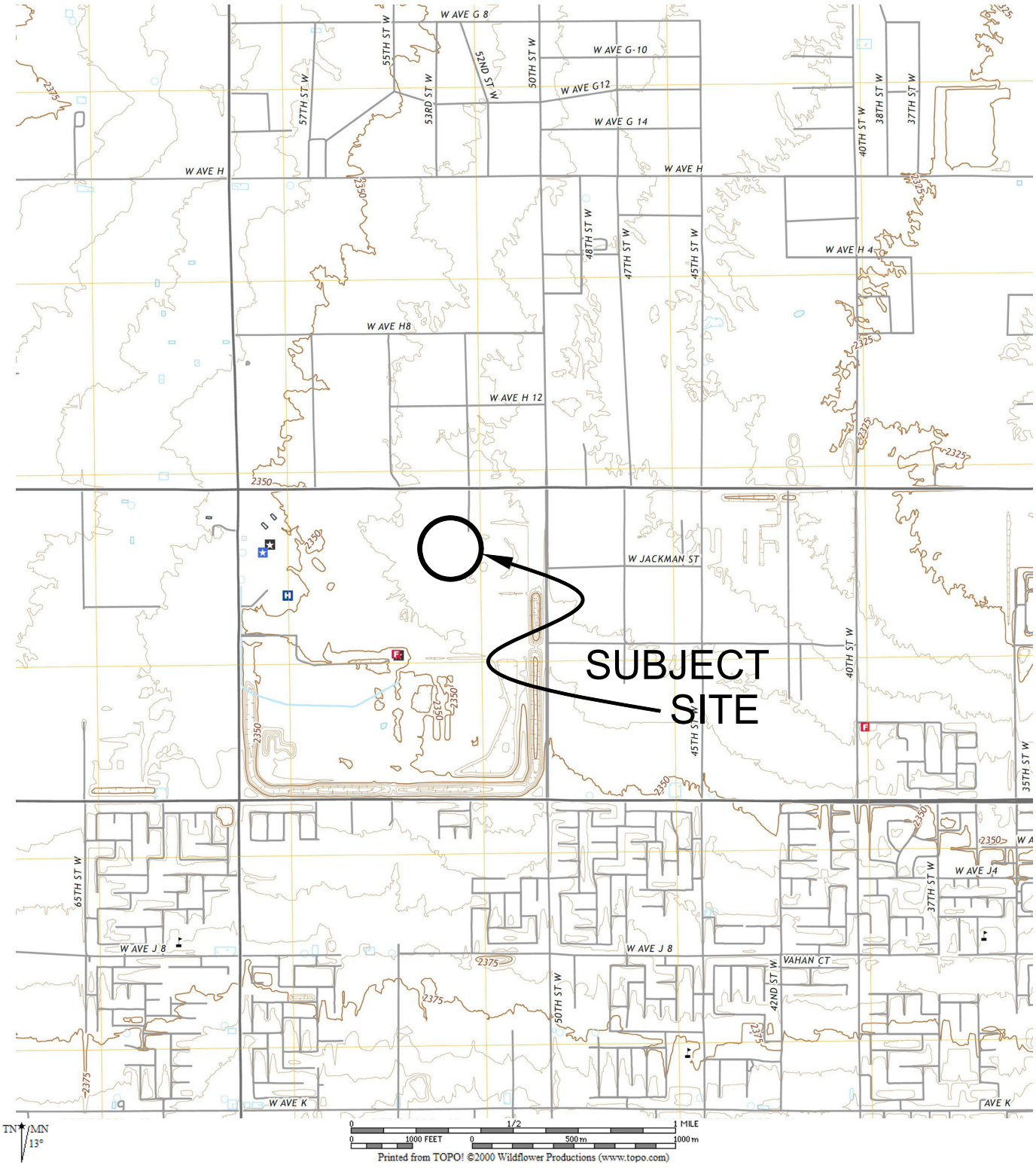
LIST OF REFERENCES

California Division of Water Resources, 2021, Division of Water Resources Water Data Library, http://wdl.water.ca.gov/waterdatalibrary/

California Geological Survey, 2021, *Compilation of Quaternary Surficial Deposits, California Geological Survey Special Report 217,* https://maps.conservation.ca.gov/cgs/qsd/app/.

California Geological Survey, 2005a, *State of California Seismic Hazard Zones, Lancaster West Quadrangle, Official Map,* Released: February 11, 2005.

California Geological Survey, 2005b, *Seismic Hazard Zone Report for the Lancaster West Quadrangle, Los Angeles County, California, Seismic Hazard Zone Report 095.*



REFERENCE:U.S.G.S. TOPOGRAPHIC MAPS, 7.5 MINUTE SERIES, LANCASTER WEST, CA QUADRANGLE

GEOCON
W E S T, I N C.

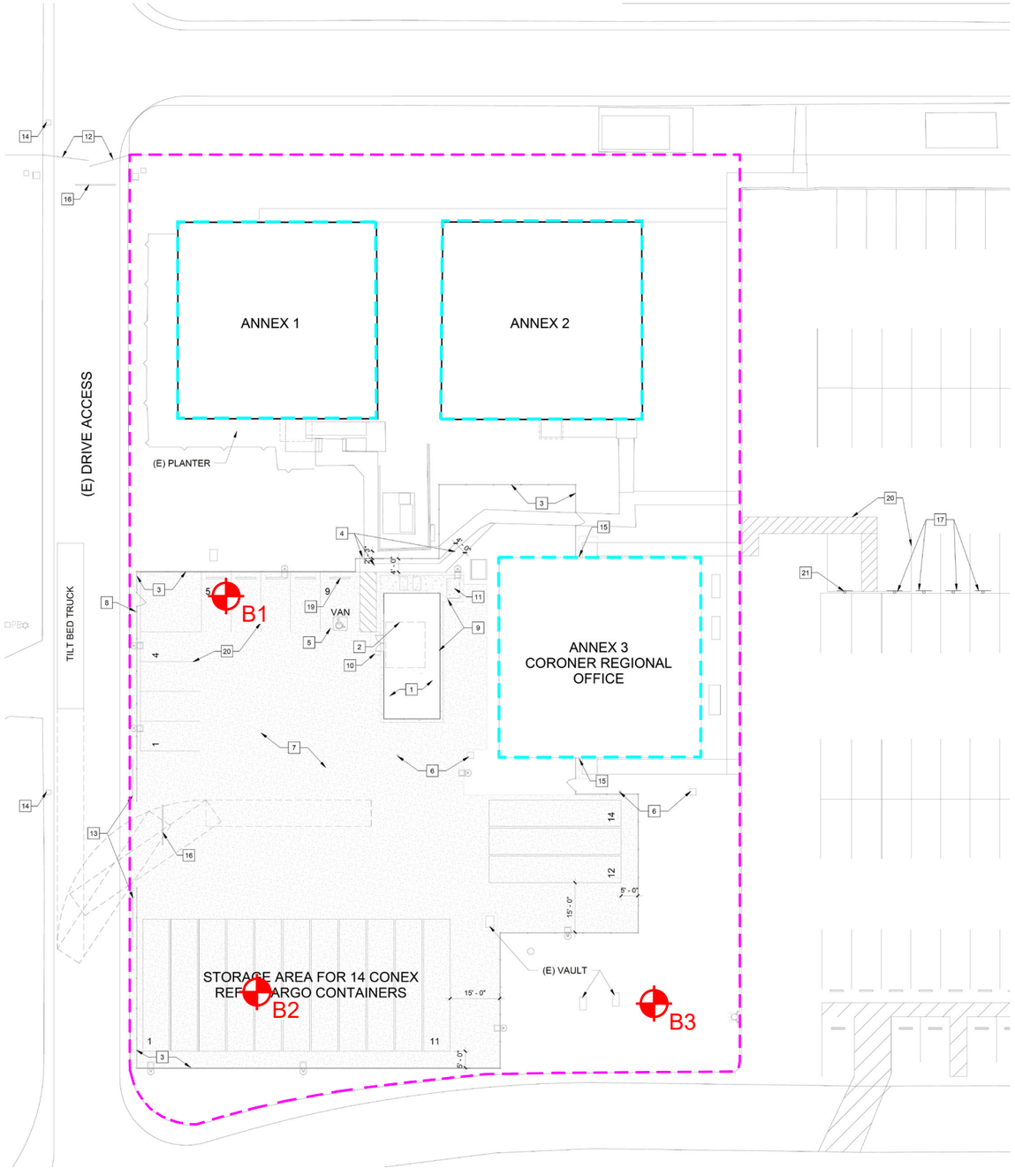
ENVIRONMENTAL GEOTECHNICAL MATERIALS
3303 N. SAN FERNANDO BLVD. - SUITE 100 - BURBANK, CA 91504
PHONE (818) 841-8388 - FAX (818) 841-1704

DRAFTED BY: JH	CHECKED BY: JH

VICINITY MAP

5300 WEST AVENUE I
LANCASTER, CALIFORNIA

SEP. 2022	PROJECT NO. W1339-06-02A	FIG. 1



LEGEND

B3 APPROXIMATE BORING LOCATION AND NUMBER

PROJECT LIMITS

LOCATION OF CONVERTED STRUCTURE

0 40' 80'

GEOCON
WEST, INC.
ENVIRONMENTAL GEOTECHNICAL MATERIALS
3303 N. SAN FERNANDO BLVD. - SUITE 100 - BURBANK, CA 91504
PHONE (818) 841-8388 - FAX (818) 841-1704

DRAFTED BY: JMH	CHECKED BY: HHD

SITE PLAN

5300 WEST AVENUE I
LANCASTER, CALIFORNIA

SEP. 2022	PROJECT NO. W1339-06-02A	FIG. 2

APPENDIX A

APPENDIX A

FIELD INVESTIGATION

The site was explored on July 27, 2022, by excavating three 4-inch-diameter borings to depths 10½ feet beneath the existing ground surface using hand auger equipment and hand tools. Representative and relatively undisturbed samples were obtained from the borings and test pits 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 high by 2⅜-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 A3. 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 locations of the borings are shown on Figure 2.

PROJECT NO. W1339-06-02A

BORING 1

ELEV. (MSL.) -- DATE COMPLETED **07/27/2022**

EQUIPMENT **HAND AUGER** BY: **CB**

DEPTH IN FEET	SAMPLE NO.	LITHOLOGY	GROUNDWATER	SOIL CLASS (USCS)	MATERIAL DESCRIPTION	PENETRATION RESISTANCE (BLOWS/FT*)	DRY DENSITY (P.C.F.)	MOISTURE CONTENT (%)
0	BULK 0-5'			ML	**ALLUVIAL DEPOSITS** Silt with some Sand, firm, slightly moist, light brown, fine- to medium-grained, porous.			
2	B1@1.5'						111.0	16.0
4								
6	B1@5'			ML	Silt with Sand, firm, slightly moist, light gray.		82.1	16.8
8	B1@7'			CL	Clay with Sand, firm, slightly moist, yellowish brown, fine- to coarse-grained, some porosity and silt.		111.0	18.7
10	B1@10'				- moist		79.0	33.5

Total depth of boring: 10.5 feet
No fill.
No groundwater encountered.
Backfilled with soil cuttings and tamped.

NOTE: The stratification lines presented herein represent the approximate boundary between earth types; the transitions may be gradual.

W1339-06-02A BORING LOGS.GPJ

Figure A1,
Log of Boring 1, Page 1 of 1

SAMPLE SYMBOLS

- ☐ ... SAMPLING UNSUCCESSFUL
- ◧ ... STANDARD PENETRATION TEST
- ■ ... DRIVE SAMPLE (UNDISTURBED)
- ⊠ ... DISTURBED OR BAG SAMPLE
- ◪ ... CHUNK SAMPLE
- ▼ ... WATER TABLE OR SEEPAGE

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.

GEOCON

PROJECT NO. W1339-06-02A

BORING 2

ELEV. (MSL.) -- DATE COMPLETED **07/27/2022**

EQUIPMENT **HAND AUGER** BY: **CB**

DEPTH IN FEET	SAMPLE NO.	LITHOLOGY	GROUNDWATER	SOIL CLASS (USCS)	MATERIAL DESCRIPTION	PENETRATION RESISTANCE (BLOWS/FT*)	DRY DENSITY (P.C.F.)	MOISTURE CONTENT (%)
0	BULK 0-5'				**ALLUVIAL DEPOSITS** Silt, stiff, dry, light brown, fine-grained, some medium- to coarse-grained.			
2	B2@2'			ML			75.8	21.3
4								
6	B2@5'			ML	Silt with Sand, moist, light gray, fine-grained.		80.5	15.9
8	B2@7'			CL	Clay with Sand, firm, slightly moist, yellowish brown, fine- to medium-grained, some coarse-grained.		116.0	11.5
10	B2@10'						111.1	14.3

Total depth of boring: 10.5 feet
No fill.
No groundwater encountered.
Backfilled with soil cuttings and tamped.

NOTE: The stratification lines presented herein represent the approximate boundary between earth types; the transitions may be gradual.

W1339-06-02A BORING LOGS.GPJ

Figure A2,
Log of Boring 2, Page 1 of 1

SAMPLE SYMBOLS

- ☐ ... SAMPLING UNSUCCESSFUL
- ◧ ... STANDARD PENETRATION TEST
- ■ ... DRIVE SAMPLE (UNDISTURBED)
- ⊠ ... DISTURBED OR BAG SAMPLE
- ◥ ... CHUNK SAMPLE
- ▼ ... WATER TABLE OR SEEPAGE

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.

GEOCON

PROJECT NO. W1339-06-02A

BORING 3

ELEV. (MSL.) -- DATE COMPLETED **07/27/2022**

EQUIPMENT **HAND AUGER** BY: **CB**

DEPTH IN FEET	SAMPLE NO.	LITHOLOGY	GROUNDWATER	SOIL CLASS (USCS)	MATERIAL DESCRIPTION	PENETRATION RESISTANCE (BLOWS/FT*)	DRY DENSITY (P.C.F.)	MOISTURE CONTENT (%)
0	BULK 0-5'			SM	**ALLUVIAL DEPOSITS** Silt with some Sand, firm, slightly moist, light brown, fine- to medium-grained, porous.			
2	B3@2'						80.6	19.0
4								
6	B3@5'				- medium dense		85.9	14.1
8	B3@7'			CL	Clay with Sand, stiff, dry, yellowish brown, fine- to medium-grained, some coarse-grained.		115.7	11.8
10	B3@10'						114.8	6.5

Total depth of boring: 10.5 feet
No fill.
No groundwater encountered.
Backfilled with soil cuttings and tamped.

NOTE: The stratification lines presented herein represent the approximate boundary between earth types; the transitions may be gradual.

W1339-06-02A BORING LOGS.GPJ

Figure A3,
Log of Boring 3, Page 1 of 1

SAMPLE SYMBOLS

☐ ... SAMPLING UNSUCCESSFUL
◧ ... STANDARD PENETRATION TEST
■ ... DRIVE SAMPLE (UNDISTURBED)
⊠ ... DISTURBED OR BAG SAMPLE
◪ ... CHUNK SAMPLE
▼ ... WATER TABLE OR SEEPAGE

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.

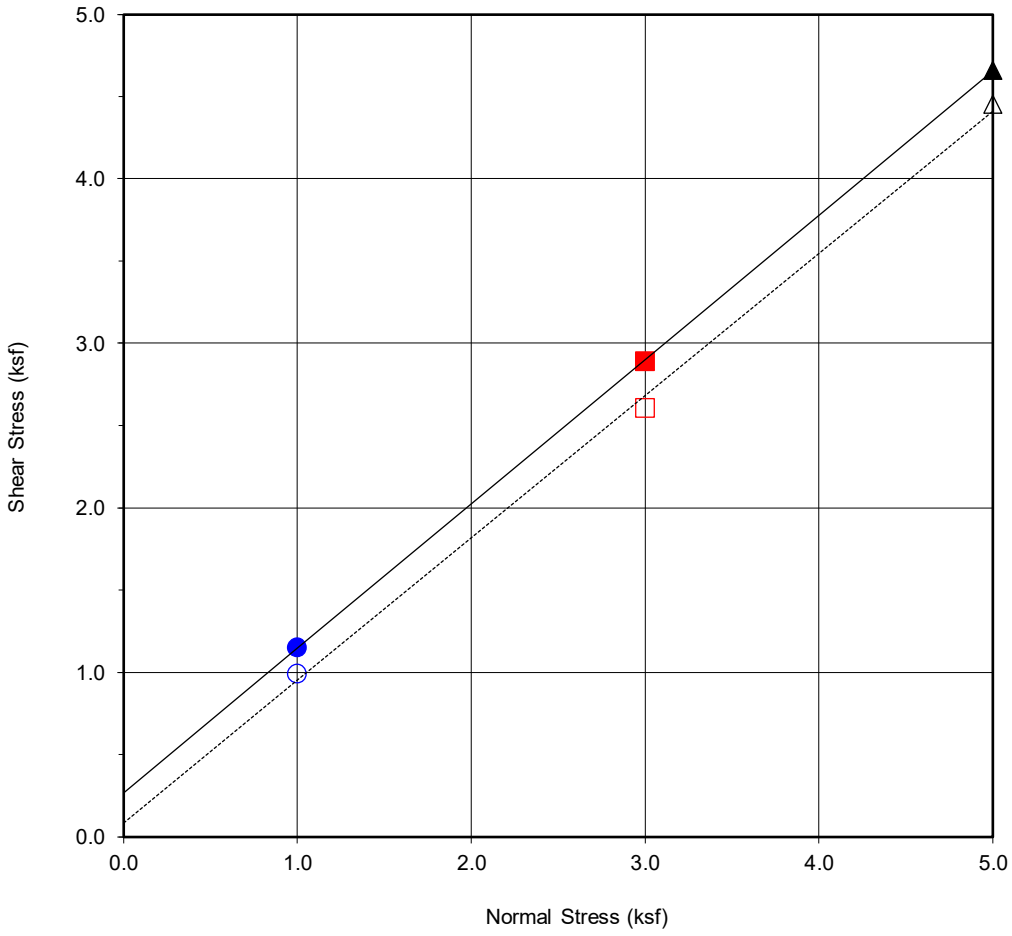
GEOCON

APPENDIX B

APPENDIX B

LABORATORY TESTING

Laboratory tests were performed in accordance with generally accepted test methods of the "American Society for Testing and Materials (ASTM)", or other suggested procedures. . Selected samples were tested for direct shear strength, consolidation, and expansion characteristics, corrosivity, compaction, and in-place dry density and moisture content. The results of the laboratory tests are summarized in Figures B1 through B10. 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@1.5'**
Depth (ft)	**1.5**
Sample Type:	Ring

Soil Identification:		
Silt with Some Sand (ML)		
Strength Parameters		
	C (psf)	ϕ (^{o})
Peak	270	41.3
Ultimate	85	40.9

Normal Strest (kip/ft2)	1	3	5
Peak Shear Stress (kip/ft²)	● 1.15	■ 2.89	▲ 4.66
Shear Stress @ End of Test (ksf)	○ 0.99	□ 2.60	△ 4.45
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 (%)	18.5	15.9	16.0
Initial Dry Density (pcf)	67.0	74.1	76.1
Initial Degree of Saturation (%)	33.0	33.7	35.5
Soil Height Before Shearing (in.)	1.2	1.2	1.2
Final Moisture Content (%)	43.0	37.7	35.7

GEOCON

DIRECT SHEAR TEST RESULTS

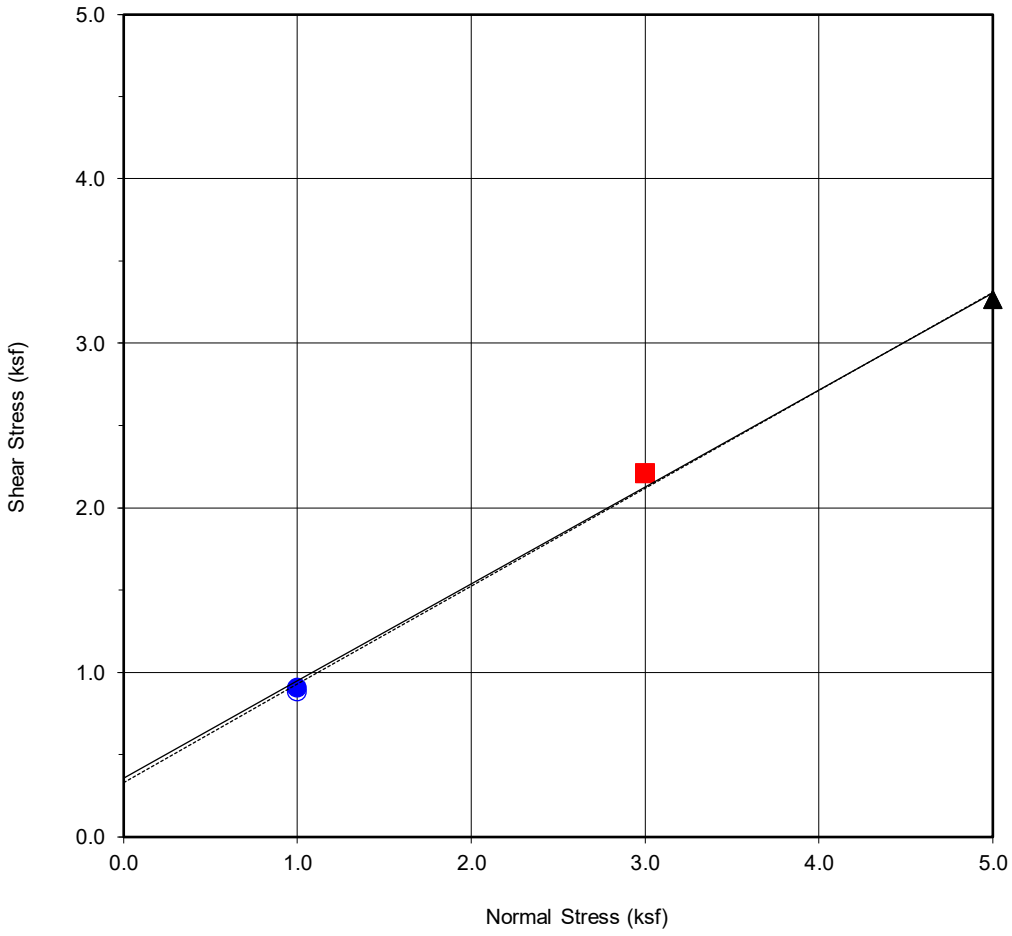
Consolidated Drained ASTM D-3080

Checked by: JMH

Project No.: W1339-06-02A

5300 WEST AVENUE I
LANCASTER, CALIFORNIA

Sep 22 Figure B1



Boring No.	**B3**
Sample No.	**B3@5'**
Depth (ft)	**5**
Sample Type:	Ring

Soil Identification:

Silt with Some Sand (ML)

Strength Parameters

	C (psf)	ϕ (^{o})
Peak	357	30.5
Ultimate	331	30.8

Normal Strest (kip/ft2)	1	3	5
Peak Shear Stress (kip/ft²)	● 0.91	■ 2.21	▲ 3.27
Shear Stress @ End of Test (ksf)	○ 0.88	□ 2.21	△ 3.27
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 (%)	13.7	14.1	14.6
Initial Dry Density (pcf)	86.1	86.7	84.3
Initial Degree of Saturation (%)	38.7	40.3	39.3
Soil Height Before Shearing (in.)	1.2	1.2	1.2
Final Moisture Content (%)	27.5	26.0	25.9

GEOCON

DIRECT SHEAR TEST RESULTS

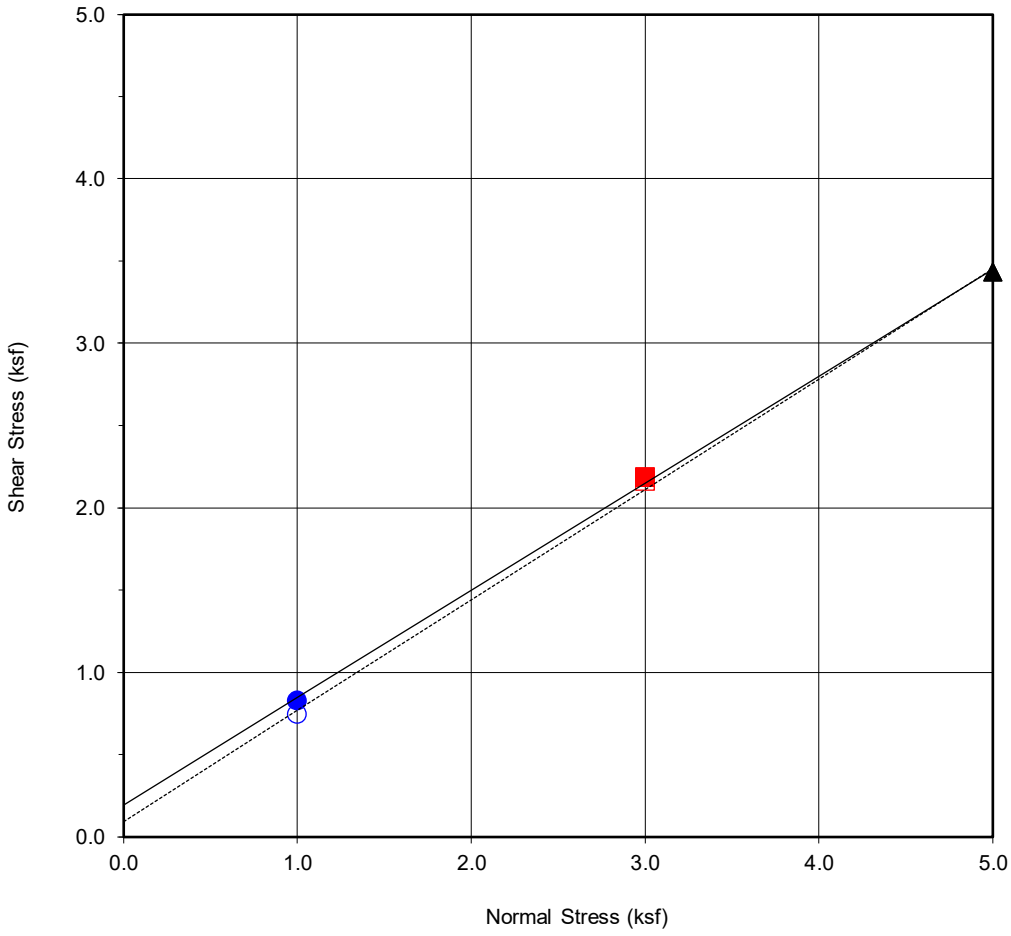
Consolidated Drained ASTM D-3080

Checked by: JMH

Project No.: W1339-06-02A

5300 WEST AVENUE I
LANCASTER, CALIFORNIA

Sep 22 Figure B2



Boring No.	**Mix B1 & B2**
Sample No.	**Mix B1&B2@0-5'**
Depth (ft)	**0-5'**
Sample Type:	Bulk

Soil Identification:		
Silt with Sand (ML)		
Strength Parameters		
	C (psf)	ϕ (^{o})
Peak	195	33.1
Ultimate	96	33.9

Normal Strest (kip/ft2)	1	3	5
Peak Shear Stress (kip/ft²)	● 0.83	■ 2.18	▲ 3.43
Shear Stress @ End of Test (ksf)	○ 0.74	□ 2.16	△ 3.43
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 (%)	20.5	20.6	20.6
Initial Dry Density (pcf)	91.0	91.0	91.0
Initial Degree of Saturation (%)	64.8	65.3	65.2
Soil Height Before Shearing (in.)	1.2	1.2	1.2
Final Moisture Content (%)	30.4	29.9	28.8

GEOCON

DIRECT SHEAR TEST RESULTS

Consolidated Drained ASTM D-3080

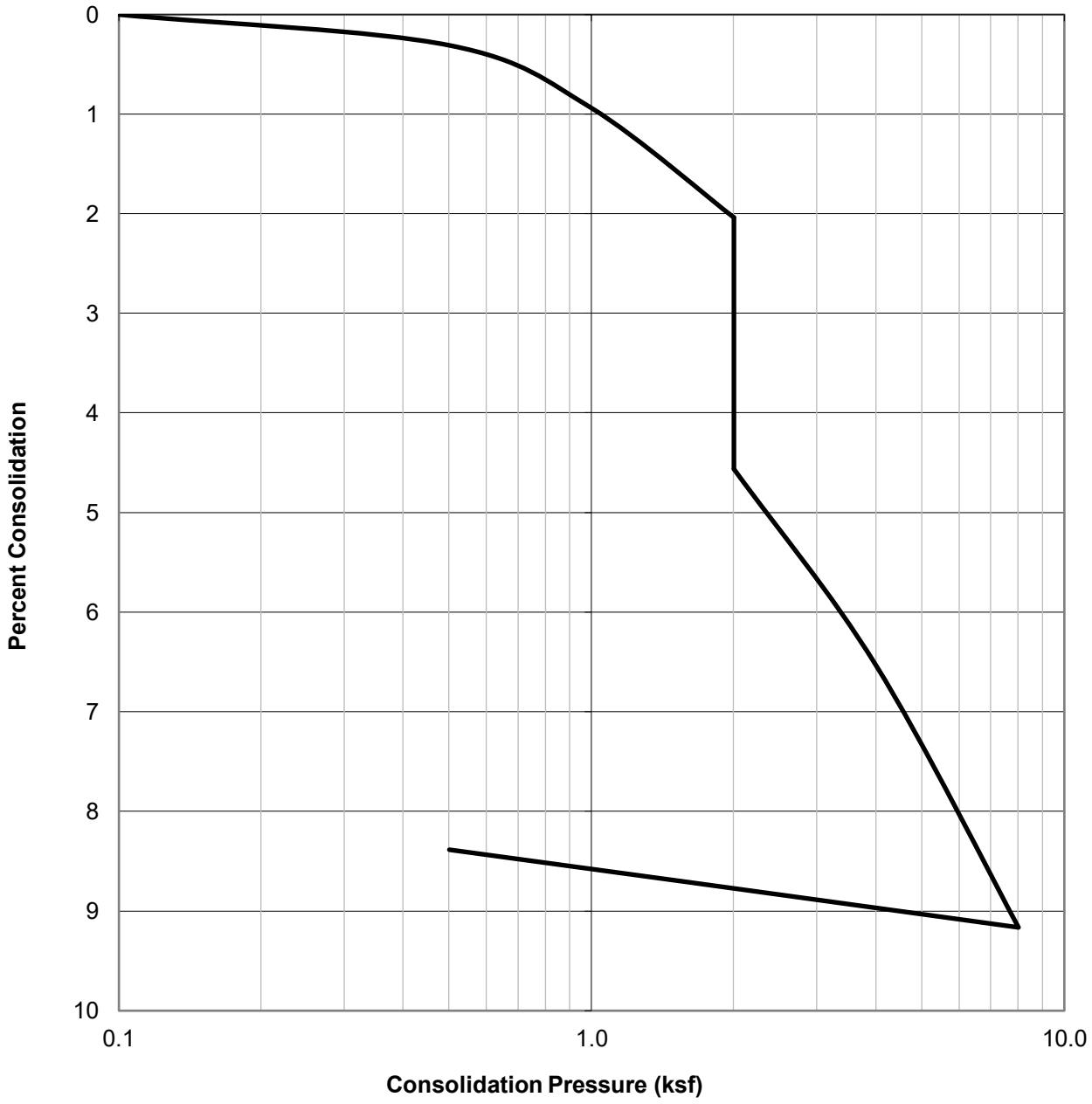
Checked by: JMH

Project No.: W1339-06-02A

5300 WEST AVENUE I
LANCASTER, CALIFORNIA

Sep 22 Figure B3

WATER ADDED AT 2.0 KSF



SAMPLE ID.	SOIL TYPE	DRY DENSITY (PCF)	INITIAL MOISTURE (%)	FINAL MOISTURE (%)
B1@1.5	Silt with Some Sand (ML)	111.0	16.0	25.0

GEOCON

CONSOLIDATION TEST RESULTS

ASTM D-2435

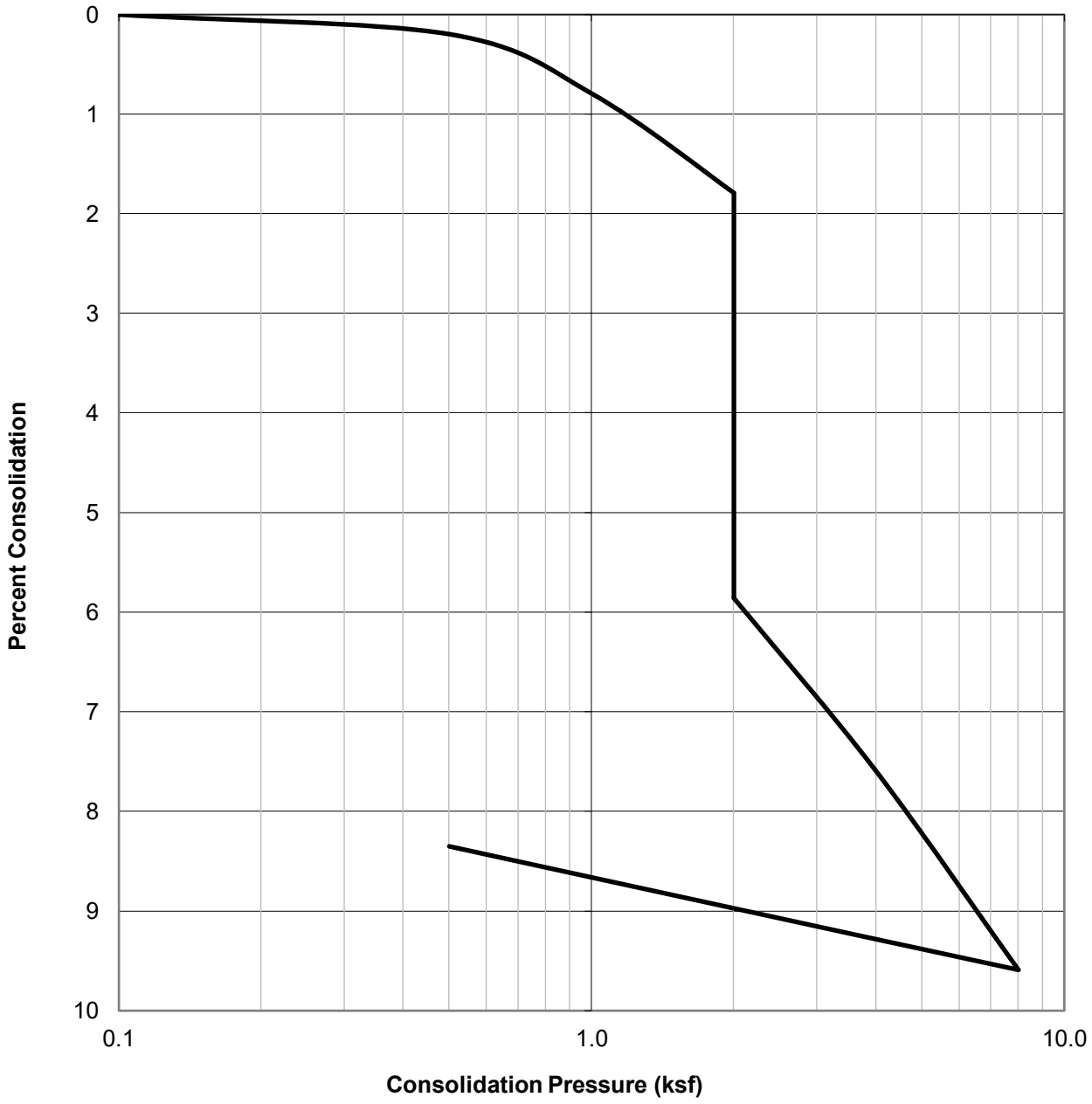
Checked by: JMH

Project No.: W1339-06-02A

5300 WEST AVENUE I
LANCASTER, CALIFORNIA

Sep 22 Figure B4

WATER ADDED AT 2.0 KSF



SAMPLE ID.	SOIL TYPE	DRY DENSITY (PCF)	INITIAL MOISTURE (%)	FINAL MOISTURE (%)
B3@2	Silt with Some Sand (ML)	91.5	18.5	25.9

GEOCON

CONSOLIDATION TEST RESULTS

ASTM D-2435

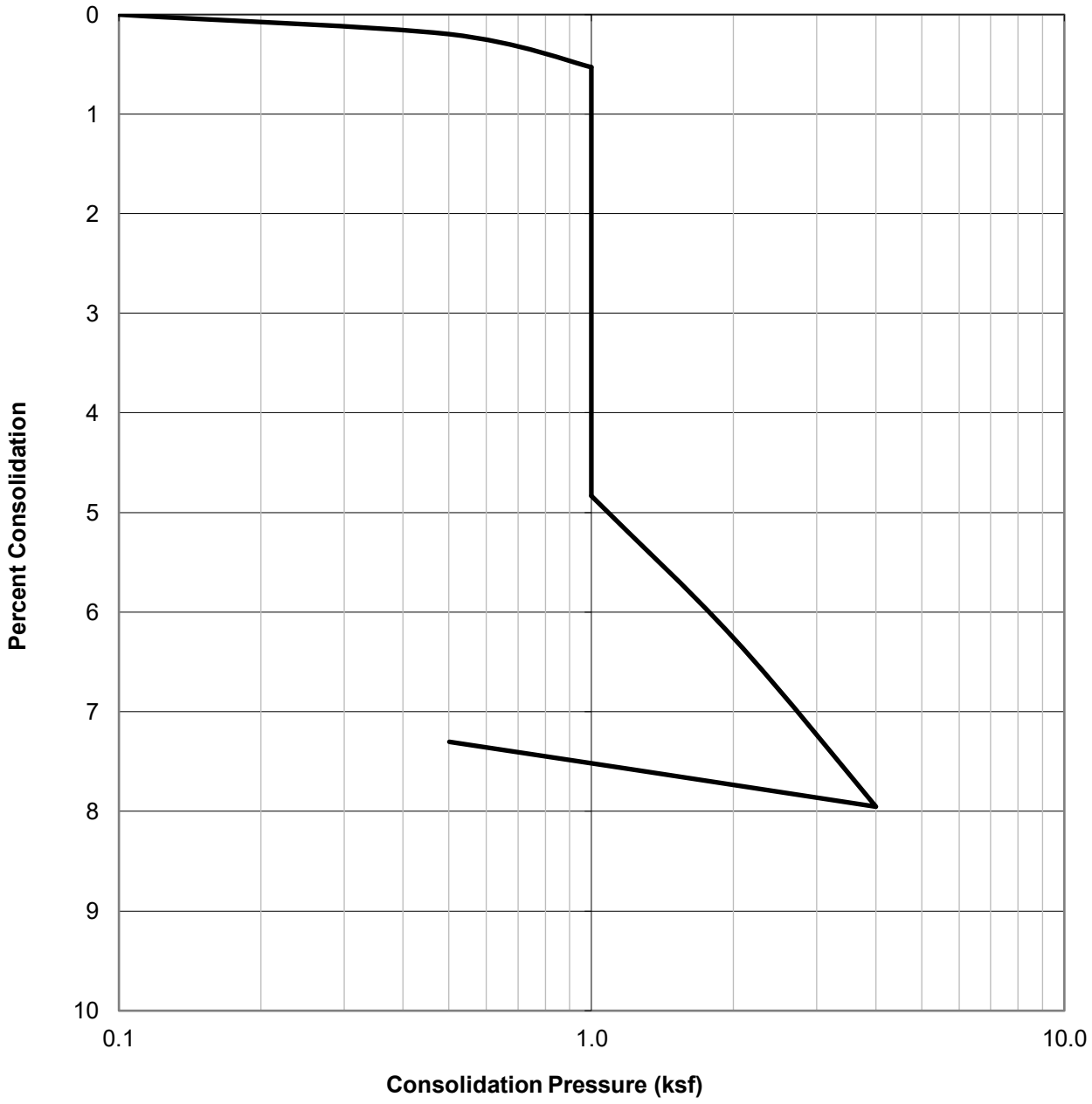
Checked by: JMH

Project No.: W1339-06-02A

5300 WEST AVENUE I
LANCASTER, CALIFORNIA

Sep 22 Figure B5

WATER ADDED AT 1.0 KSF



SAMPLE ID.	SOIL TYPE	DRY DENSITY (PCF)	INITIAL MOISTURE (%)	FINAL MOISTURE (%)
B2@5	Silt with Sand (ML)	137.9	14.5	26.7

GEOCON

CONSOLIDATION TEST RESULTS

ASTM D-2435

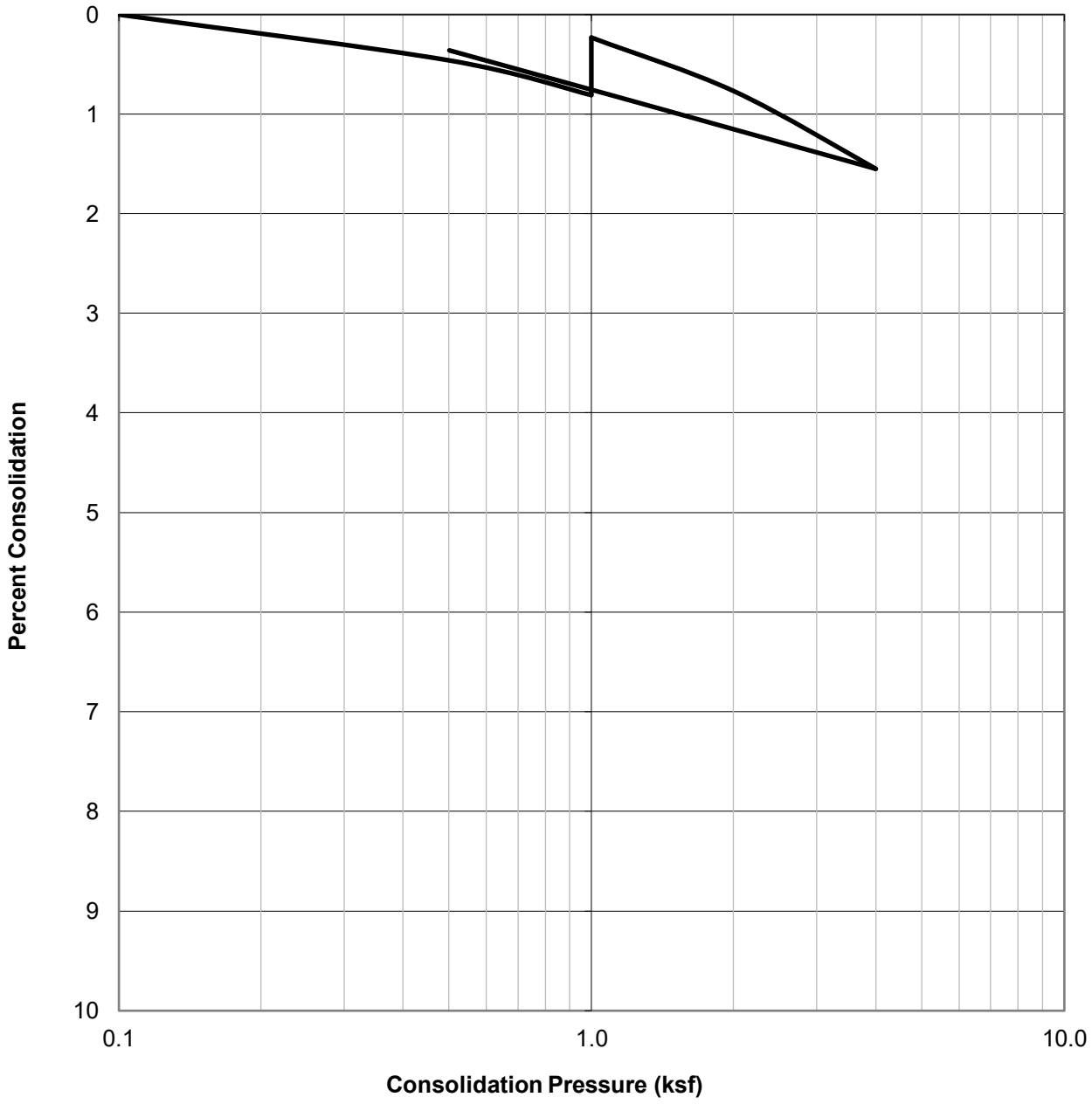
Checked by: JMH

Project No.: W1339-06-02A

5300 WEST AVENUE I
LANCASTER, CALIFORNIA

Sep 22 Figure B6

WATER ADDED AT 1.0 KSF



SAMPLE ID.	SOIL TYPE	DRY DENSITY (PCF)	INITIAL MOISTURE (%)	FINAL MOISTURE (%)
B2@10	Clay with Sand (CL)	105.4	14.3	21.2

GEOCON

CONSOLIDATION TEST RESULTS

ASTM D-2435

Checked by: JMH

Project No.: W1339-06-02A

5300 WEST AVENUE I
LANCASTER, CALIFORNIA

Sep 22 Figure B7

B1B2@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)	710.9	751.3
Wt. of Mold	(gm)	367.6	367.6
Specific Gravity	(Assumed)	2.7	2.7
Wet Wt. of Soil + Cont.	(gm)	487.4	751.3
Dry Wt. of Soil + Cont.	(gm)	442.9	292.4
Wt. of Container	(gm)	187.4	367.6
Moisture Content	(%)	17.4	31.2
Wet Density	(pcf)	103.6	115.6
Dry Density	(pcf)	88.2	88.1
Void Ratio		0.9	1.0
Total Porosity		0.5	0.5
Pore Volume	(cc)	98.7	105.3
Degree of Saturation	(%) [S_{meas}]	52.0	86.6

Date	Time	Pressure (psi)	Elapsed Time (min)	Dial Readings (in.)
8/3/2022	10:00	1.0	0	0.27
8/3/2022	10:10	1.0	10	0.27
Add Distilled Water to the Specimen				
8/4/2022	10:00	1.0	1430	0.302
8/4/2022	11:00	1.0	1490	0.302

Expansion Index (EI meas) =	32
Expansion Index (Report) =	**32**

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: 2019 California Building Code, Section 1803.5.3

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

GEOCON

EXPANSION INDEX TEST RESULTS

ASTM D-4829

Checked by: JMH

Project No.: W1339-06-02A

5300 WEST AVENUE I
LANCASTER, CALIFORNIA

Sep 22 Figure B8

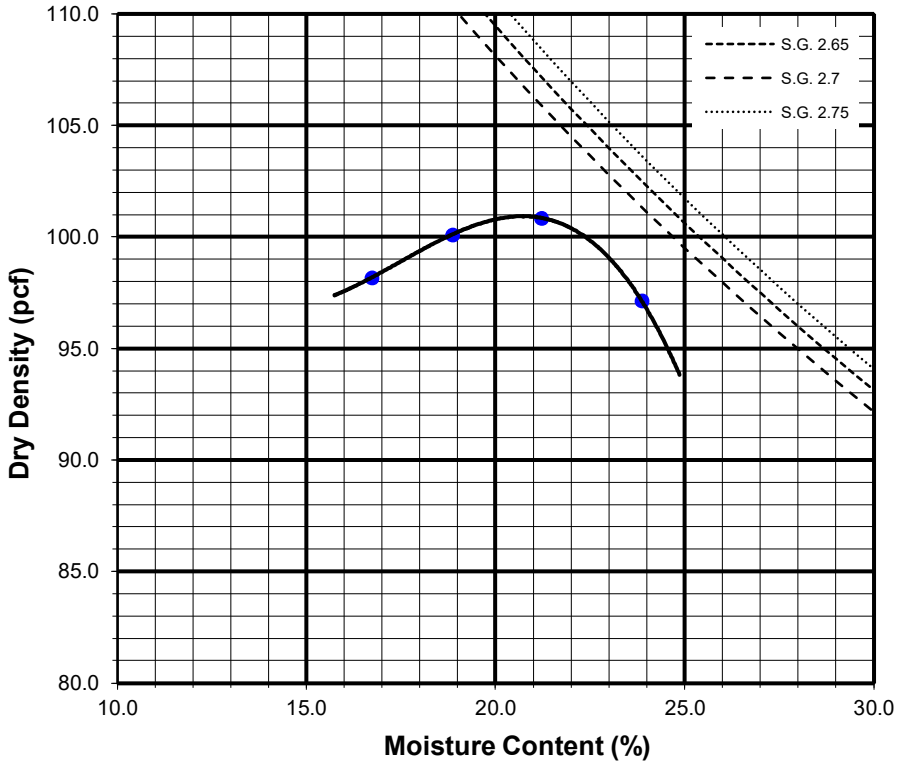
Sample No:

B1B2@0-5'	Light Brown Silt (ML)

TEST NO.		1	2	3	4	5	6
Wt. Compacted Soil + Mold	(g)	5830	5896	5945	5916		
Weight of Mold	(g)	4099	4099	4099	4099		
Net Weight of Soil	(g)	1731	1797	1847	1817		
Wet Weight of Soil + Cont.	(g)	658.4	640.1	629.0	622.6		
Dry Weight of Soil + Cont.	(g)	582.3	562.0	544.4	531.2		
Weight of Container	(g)	127.4	147.7	145.5	148.2		
Moisture Content	(%)	16.7	18.9	21.2	23.9		
Wet Density	(pcf)	114.6	119.0	122.2	120.3		
Dry Density	(pcf)	98.2	100.1	100.9	97.1		

Maximum Dry Density (pcf)	**101.0**

Optimum Moisture Content (%)	**21.0**



Preparation Method: A

GEOCON

COMPACTION CHARACTERISTICS USING MODIFIED EFFORT TEST RESULTS

ASTM D-1557

Checked by: JMH

Project No.: W1339-06-02A

5300 WEST AVENUE I
LANCASTER, CALIFORNIA

Sep 22 Figure B9

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)
B1B2@0-5'	9.1	1400 (Corrosive)

SUMMARY OF LABORATORY CHLORIDE CONTENT TEST RESULTS
AASHTO T291 ASTM C1218

Sample No.	Chloride Ion Content (%)
B1B2@0-5'	0.063

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

Sample No.	Water Soluble Sulfate (% SO_4)	Sulfate Exposure
B1B2@0-5'	0.000	S0

GEOCON

CORROSIVITY TEST RESULTS

Checked by: JMH

Project No.: W1339-06-02A

5300 WEST AVENUE I
LANCASTER, CALIFORNIA

Sep 22 Figure B10