Exhibit E – Consultant Reports

Table of Contents

REPORTS

DSA 103-22: LISTING OF STRUCTURAL TESTS & SPECIAL INSPECTIONS, 2022 CBC

Application Number:	**School Name:**	**School District:**
04-122251	Orange Grove High School	Corona Unified School District
DSA File Number:	**Increment Number:**	**Date Created:**
33-H4		2023-10-16 11:05:17

2022 CBC

IMPORTANT: This form is only a summary list of structural tests and some of the special inspections required for the project. Generally, the structural tests and special inspections noted on this form are those that will be performed by the Geotechnical Engineer of Record, Laboratory of Record, or Special Inspector. The actual complete test and inspection program must be performed as detailed on the DSA approved documents. The appendix at the bottom of this form identifies work NOT subject to DSA requirements for special inspection or structural testing. The project inspector is responsible for providing inspection of all facets of construction, including but not limited to, special inspections not listed on this form such as structural wood framing, high-load wood diaphragms, cold-formed steel framing, anchorage of non-structural components, etc., per Title 24, Part 2, Chapter 17A (2022 CBC).

****NOTE:** Undefined section and table references found in this document are from the CBC, or California Building Code.

KEY TO COLUMNS

1. TYPE	2. PERFORMED BY
Continuous – Indicates that a continuous special inspection is required **Periodic** – Indicates that a periodic special inspection is required **Test** – Indicates that a test is required	**GE (Geotechnical Engineer)** – Indicates that the special inspection shall be performed by a registered geotechnical engineer or his or her authorized representative. **LOR (Laboratory of Record)** – Indicates that the test or special inspection shall be performed by a testing laboratory accepted in the DSA Laboratory Evaluation and Acceptance (LEA) Program. See CAC Section 4-335. **PI (Project Inspector) –** Indicates that the special inspection may be performed by a project inspector when specifically approved by DSA. **SI (Special Inspection)** – Indicates that the special inspection shall be performed by an appropriately qualified/approved special inspector.

DSA 103-22: LISTING OF STRUCTURAL TESTS & SPECIAL INSPECTIONS (SOILS), 2022 CBC

Table 1705A.6, Table 1705A.7, Table 1705A.8

Application Number:	**School Name:**	**School District:**
04-122251	Orange Grove High School	Corona Unified School District
DSA File Number:	**Increment Number:**	**Date Created:**
33-H4		2023-10-16 11:05:17

Geotechnical Reports: Project has a geotechnical report, or CDs indicate soils special inspection is required by GE

	S1. GENERAL:			
	Test or Special Inspection	**Type**	**Performed By**	**Code References and Notes**
☑	**a.** Verify that: • Site has been prepared properly prior to placement of controlled fill and/or excavations for foundations. • Foundation excavations are extended to proper depth and have reached proper material. • Materials below footings are adequate to achieve the design bearing capacity.	**Periodic**	**GE***	* By geotechnical engineer or his or her qualified representative. (See Appendix (end of this form) form for exemptions.)

	S2. SOIL COMPACTION AND FILL:			
	Test or Special Inspection	**Type**	**Performed By**	**Code References and Notes**
☐	**a.** Perform classification and testing of fill materials.	**Test**	**LOR***	* Under the supervision of the geotechnical engineer.
☑	**b.** Verify use of proper materials, densities and inspect lift thicknesses, placement and compaction during placement of fill.	**Continuous**	**GE***	* By geotechnical engineer or his or her qualified representative. (Refer to specific items identified in the Appendix (end of this form) form for exemptions where soils SI and testing may be conducted under the supervision of a geotechnical engineer or LOR's engineering manager. In such cases, the LOR's form DSA 291 shall satisfy the soil SI and test reporting requirements for the exempt items.)
☑	**c.** Compaction testing.	**Test**	**LOR***	* Under the supervision of the geotechnical engineer. (Refer to specific items identified in the Appendix (end of this form) for exemptions where soils testing may be conducted under the supervision of a geotechnical engineer or LOR's engineering manager. In such cases, the LOR's form DSA 291 shall satisfy the soil test reporting requirements for the exempt items.)

DSA 103-22: LISTING OF STRUCTURAL TESTS & SPECIAL INSPECTIONS (SOILS), 2022 CBC

Table 1705A.6, Table 1705A.7, Table 1705A.8

Application Number:	**School Name:**	**School District:**
04-122251	Orange Grove High School	Corona Unified School District
DSA File Number:	**Increment Number:**	**Date Created:**
33-H4		2023-10-16 11:05:17

	S3. DRIVEN DEEP FOUNDATIONS (PILES):			
	Test or Special Inspection	**Type**	**Performed By**	**Code References and Notes**
☐	**a.** Verify pile materials, sizes and lengths comply with the requirements.	**Continuous**	**GE***	* By geotechnical engineer or his or her qualified representative.
☐	**b.** Determine capacities of test piles and conduct additional load tests as required.	**Test**	**LOR***	* Under the supervision of the geotechnical engineer.
☐	**c.** Inspect driving operations and maintain complete and accurate records for each pile.	**Continuous**	**GE***	* By geotechnical engineer or his or her qualified representative.
☐	**d.** Verify locations of piles and their plumbness, confirm type and size of hammer, record number of blows per foot of penetration, determine required penetrations to achieve design capacity, record tip and butt elevations and record any pile damage.	**Continuous**	**GE***	* By geotechnical engineer or his or her qualified representative.
☐	**e.** Steel piles.	Provide tests and inspections per STEEL section below.		
☐	**f.** Concrete piles and concrete filled piles.	Provide tests and inspections per CONCRETE section below.		
☐	**g.** For specialty piles, perform additional inspections as determined by the registered design professional in responsible charge.	*	*	* As defined on drawings or specifications.

	S4. CAST-IN-PLACE DEEP FOUNDATIONS (PIERS):			
	Test or Special Inspection	**Type**	**Performed By**	**Code References and Note**
☐	**a.** Inspect drilling operations and maintain complete and accurate records for each pier.	**Continuous**	**GE***	* By geotechnical engineer or his or her qualified representative. (See Appendix (end of this form) for exemptions.)

DSA 103-22: LISTING OF STRUCTURAL TESTS & SPECIAL INSPECTIONS (SOILS), 2022 CBC

Table 1705A.6, Table 1705A.7, Table 1705A.8

Application Number:	**School Name:**	**School District:**
04-122251	Orange Grove High School	Corona Unified School District
DSA File Number:	**Increment Number:**	**Date Created:**
33-H4		2023-10-16 11:05:17

	Test or Special Inspection	**Type**	**Performed By**	**Code References and Note**
☐	**b.** Verify pier locations, diameters, plumbness, bell diameters (if applicable), lengths and embedment into bedrock (if applicable); record concrete or grout volumes.	**Continuous**	**GE***	* By geotechnical engineer or his or her qualified representative. (See Appendix (end of this form) for exemptions.)
☐	**c.** Confirm adequate end strata bearing capacity.	**Continuous**	**GE***	* By geotechnical engineer or his or her qualified representative. (See Appendix (end of this form) for exemptions.)
☐	**d.** Concrete piers.	Provide tests and inspections per CONCRETE section below.		

	S5. RETAINING WALLS:			
	Test or Special Inspection	**Type**	**Performed By**	**Code References and Notes**
☐	**a.** Placement, compaction and inspection of backfill.	**Continuous**	**GE***	**1705A.6.1.** * By geotechnical engineer or his or her qualified representative. (See section S2 above).
☐	**b.** Placement of soil reinforcement and/or drainage devices.	**Continuous**	**GE***	* By geotechnical engineer or his or her qualified representative.
☐	**c.** Segmental retaining walls; inspect placement of units, dowels, connectors, etc.	**Continuous**	**GE***	* By geotechnical engineer or his or her qualified representative. See DSA IR 18-2.
☐	**d.** Concrete retaining walls.	Provide tests and inspections per CONCRETE section below.		
☐	**e.** Masonry retaining walls.	Provide tests and inspections per MASONRY section below.		

DSA 103-22: LISTING OF STRUCTURAL TESTS & SPECIAL INSPECTIONS (SOILS), 2022 CBC

Table 1705A.6, Table 1705A.7, Table 1705A.8

Application Number:	**School Name:**	**School District:**
04-122251	Orange Grove High School	Corona Unified School District
DSA File Number:	**Increment Number:**	**Date Created:**
33-H4		2023-10-16 11:05:17

	S6. OTHER SOILS:			
	Test or Special Inspection	**Type**	**Performed By**	**Code References and Notes**
☐	**a.** Soil Improvements	**Test**	**GE***	Submit a comprehensive report documenting final soil improvements constructed, construction observation and the results of the confirmation testing and analysis to CGS (California Geological Survey) for final acceptance. * By geotechnical engineer or his or her qualified representative.
☐	**b.** Inspection of Soil Improvements	**Continuous**	**GE***	* By geotechnical engineer or his or her qualified representative.
☐	**c.**			

DSA 103-22: LISTING OF STRUCTURAL TESTS & SPECIAL INSPECTIONS (CONCRETE), 2022 CBC

Table 1705A.3; ACI 318-19 Sections 26.12 & 26.13

Application Number:	**School Name:**	**School District:**
04-122251	Orange Grove High School	Corona Unified School District
DSA File Number:	**Increment Number:**	**Date Created:**
33-H4		2023-10-16 11:05:17

	C1. CAST-IN-PLACE CONCRETE			
	Test or Special Inspection	**Type**	**Performed By**	**Code References and Notes**
☑	**a.** Verify use of required design mix.	**Periodic**	**SI**	**Table 1705A.3 Item 5, 1910A.1.**
☑	**b.** Identifiy, sample, and test reinforcing steel.	**Test**	**LOR**	**1910A.2;** ACI 318-19 Ch.20 and Section 26.6.1.2; DSA IR 17-10. (See Appendix (end of this form) for exemptions.)
☑	**c.** During concrete placement, fabricate specimens for strength tests, perform slump and air content tests, and determine the temperature of the concrete.	**Test**	**LOR**	**Table 1705A.3 Item 6**; ACI 318-19 Sections 26.5 & 26.12.
☑	**d.** Test concrete (f'_c).	**Test**	**LOR**	**1905A.1.17;** ACI 318-19 Section 26.12.
☑	**e.** Batch plant inspection: **Eliminated**	**See Notes**	**SI**	Default of **'Continuous'** per **1705A.3.3**. If approved by DSA, batch plant inspection may be reduced to **'Periodic'** subject to requirements in Section **1705A.3.3.1,** or eliminated per **1705A.3.3.2.** See IR 17-13. (See Appendix (end of this form) for exemptions.)
☐	**f.** Welding of reinforcing steel.	Provide special inspection per STEEL, Category S/A4(d) & (e) and/or S/A5(g) & (h) below.		

	C2. PRESTRESSED / POST-TENSIONED CONCRETE (IN ADDITION TO SECTION C1):			
	Test or Special Inspection	**Type**	**Performed By**	**Code References and Notes**
☐	**a.** Sample and test prestressing tendons and anchorages.	**Test**	**LOR**	**1705A.3.4, 1910A.3**
☐	**b.** Inspect placement of prestressing tendons.	**Periodic**	**SI**	**1705A.3.4, Table 1705A.3 Items 1 & 9.**

	Test or Special Inspection	Type	Performed By	Code References and Notes
☐	**c.** Verify in-situ concrete strength prior to stressing of post-tensioning tendons.	**Periodic**	**SI**	**Table 1705A.3 Item 13.** Special inspector to verify specified concrete strength test prior to stressing.
☐	**d.** Inspect application of post-tensioning or prestressing forces and grouting of bonded prestressing tendons.	**Continuous**	**SI**	**1705A.3.4, Table 1705A.3 Item 9;** ACI 318-14 Section 26.13

	C3. PRECAST CONCRETE (IN ADDITION TO SECTION C1):			
	Test or Special Inspection	**Type**	**Performed By**	**Code References and Notes**
☐	**a.** Inspect fabrication of precast concrete members.	**Continuous**	**SI**	ACI 318-19 Section 26.13.
☐	**b.** Inspect erection of precast concrete members.	**Periodic**	**SI***	**Table 1705A.3 Item 10.** * May be performed by PI when specifically approved by DSA.
☐	**c.** For precast concrete diaphragm connections or reinforcement at joints classified as moderate or high deformability elements (MDE or HDE) in structures assigned to Seismic Design Category D, E or F, inspect such connections and reinforcement in the field for: 1. Installation of the embedded parts 2. Completion of the continuity of reinforcement across joints. 3. Completion of connections in the field.	**Continuous**	**SI**	Table 1705A.3; ACI 318-19 Section 26.13.1.3; ACI 550.5
☐	**d.** Inspect installation tolerances of precast concrete diaphragm connections for compliance with ACI 550.5.	**Periodic**	**SI**	Table 1705A.3; ACI 318-19 Section 26.13.1.3; ACI 550.5

DSA 103-22: LISTING OF STRUCTURAL TESTS & SPECIAL INSPECTIONS (CONCRETE), 2022 CBC

Table 1705A.3; ACI 318-19 Sections 26.12 & 26.13

Application Number:	**School Name:**	**School District:**
04-122251	Orange Grove High School	Corona Unified School District
DSA File Number:	**Increment Number:**	**Date Created:**
33-H4		2023-10-16 11:05:17

	C4. SHOTCRETE (IN ADDITION TO SECTION C1):			
	Test or Special Inspection	**Type**	**Performed By**	**Code References and Notes**
☐	**a.** Inspect shotcrete placement for proper application techniques.	**Continuous**	**SI**	**1705A.3.9, Table 1705A.3 Item 7, 1908A.1, 1908A.2, 1908A.3.** See ACI 506.2-13 Section 3.4, ACI 506R-16.
☐	**b.** Sample and test shotcrete (f'_c).	**Test**	**LOR**	**1908A.2, 1705A.3.9**

	C5. POST-INSTALLED ANCHORS:			
	Test or Special Inspection	**Type**	**Performed By**	**Code References and Notes**
☑	**a.** Inspect installation of post-installed anchors	**See Notes**	**SI***	**1617A.1.19, Table 1705A.3 Item 4a (Continuous) & 4b (Periodic), 1705A.3.8** (See Appendix (end of this form) for exemptions). ACI 318-14 Sections 17.8 & 26.13. * May be performed by the project inspector when specifically approved by DSA.
☑	**b.** Test post-installed anchors.	**Test**	**LOR**	**1910A.5.** (See Appendix (end of this form) for exemptions.)

	C6. OTHER CONCRETE:			
	Test or Special Inspection	**Type**	**Performed By**	**Code References and Notes**
☐	**a.**			

DSA 103-22: LISTING OF STRUCTURAL TESTS & SPECIAL INSPECTIONS (STEEL AND ALUMNINUM), 2022 CBC

1705A.2.1, Table 1705A.2.1; AISC 303-16, AISC 341-16, AISC 358-16, AISC 360-16; AISI S100-20; RCSC 2014; AWS D1.1, AWS D1.2, AWS D1.3, AWS D1.4, AWS D1.8

Application Number:	**School Name:**	**School District:**
04-122251	Orange Grove High School	Corona Unified School District
DSA File Number:	**Increment Number:**	**Date Created:**
33-H4		2023-10-16 11:05:17

	S/A1. STRUCTURAL STEEL, COLD-FORMED STEEL AND ALUMINUM USED FOR STRUCTURAL PURPOSES			
	Test or Special Inspection	**Type**	**Performed By**	**Code References and Notes**
☑	**a.** Verify identification of all materials and: • Mill certificates indicate material properties that comply with requirements. • Material sizes, types and grades comply with requirements.	**Periodic**	*	**Table 1705A.2.1 Item 3a–3c.** 2202A.1**;** AISI S100-20 Section A3.1 & A3.2, AISI S240-20 Section A3 & A5, AISI S220-20 Sections A4 & A6. * By special inspector or qualified technician when performed off-site.
☑	**b.** Test unidentified materials	**Test**	**LOR**	**2202A.1.**
☐	**c.** Examine seam welds of HSS shapes	**Periodic**	**SI**	DSA IR 17-3.
☑	**d.** Verify and document steel fabrication per DSA-approved construction documents.	**Periodic**	**SI**	Not applicable to cold-formed steel light-frame construction, except for trusses (**1705A.2.4**).
☐	**e.** Buckling restrained braces.	**Test**	**LOR**	Testing and special inspections in accordance with IR 22-4.

	S/A2. HIGH-STRENGTH BOLTS:			
	Test or Special Inspection	**Type**	**Performed By**	**Code References and Notes**
☐	**a.** Verify identification markings and manufacturer's certificates of compliance conform to ASTM standards specified in the DSA-approved documents.	**Periodic**	**SI**	**Table 1705A.2.1 Items 1a & 1b, 2202A.1;** AISC 360-16 Section A3.3, J3.1, and N3.2; RCSC 2014 Section 1.5 & 2.1; DSA IR 17-8 & DSA IR 17-9.
☐	**b.** Test high-strength bolts, nuts and washers.	**Test**	**LOR**	**Table 1705A.2.1 Item 1c, 2213A.1**; RCSC 2014 Section 7.2; DSA IR 17-8.
☐	**c.** Bearing-type ("snug tight") connections.	**Periodic**	**SI**	**Table 1705A.2.1 Item 2a, 1705A.2.6, 2204A.2**; AISC 360-16 J3.1, J3.2, M2.5 & N5.6; RCSC 2014 Section 9.1; DSA IR 17-9.
☐	**d.** Pretensioned and slip-critical connections.	*	**SI**	**Table 1705A.2.1 Items 2b & 2c, 1705A.2.6, 2204A.2;** AISC 360-16 J3.1, J3.2, M2.5 & N5.6; RCSC 2014 Sections 9.2 & 9.3; DSA IR 17-9. *"Continuous" or "Periodic" depends on the tightening method used.

	S/A3. WELDING:			
	Test or Special Inspection	**Type**	**Performed By**	**Code References and Notes**
☑	**a.** Verify weld filler material identification markings per AWS designation listed on the DSA-approved documents and the WPS.	**Periodic**	**SI**	**1705A.2.5, Table 1705A.2.1 Items 4 & 5**; AWS D1.1 and AWS D1.8 for structural steel; AWS D1.2 for Aluminum; AWS D1.3 for cold-formed steel; AWS D1.4 for reinforcing steel; DSA IR 17-3.
☑	**b.** Verify weld filler material manufacturer's certificate of compliance.	**Periodic**	**SI**	DSA IR 17-3.
☑	**c.** Verify WPS, welder qualifications and equipment.	**Periodic**	**SI**	DSA IR 17-3.

	S/A4. SHOP WELDING (IN ADDITION TO SECTION S/A3):			
	Test or Special Inspection	**Type**	**Performed By**	**Code References and Notes**
☐	**a.** Inspect groove welds, multi-pass fillet welds, single pass fillet welds > 5/16", plug and slot welds.	**Continuous**	**SI**	**Table 1705A.2.1 Items 5a.1–4;** AISC 360-16 (and AISC 341-16 as applicable); DSA IR 17-3.
☐	**b.** Inspect single-pass fillet welds ≤ 5/16", floor and roof deck welds.	**Periodic**	**SI**	**1705A.2.2, Table 1705A.2.1 Items 5a.5 & 5a.6;** AISC 360-16 (and AISC 341-16 as applicable); DSA IR 17-3.
☐	**c.** Inspect welding of stairs and railing systems.	**Periodic**	**SI**	**1705A.2.1**; AISC 360-16 (and AISC 341-16 as applicable); AWS D1.1 & D1.3; DSA IR 17-3.
☐	**d.** Verification of reinforcing steel weldability other than ASTM A706.	**Periodic**	**SI**	**1705A.3.1**; AWS D1.4; DSA IR 17-3. Verify carbon equivalent reported on mill certificates.
☐	**e.** Inspect welding of reinforcing steel.	**Continuous**	**SI**	**Table 1705A.2.1 Item 5b, 1705A.3.1, Table 1705A.3 Item 2, 1903A.8;** AWS D1.4; DSA IR 17-3.

	Test or Special Inspection	Type	Performed By	Code References and Notes
	S/A5. FIELD WELDING (IN ADDITION TO SECTION S/A3):			
	Test or Special Inspection	**Type**	**Performed By**	**Code References and Notes**
☐	**a.** Inspect groove welds, multi-pass fillet welds, single pass fillet welds > 5/16", plug and slot welds.	**Continuous**	**SI**	**Table 1705A.2.1 Items 5a.1–4;** AISC 360-16 (AISC 341-16 as applicable); DSA IR 17-3.
☑	**b.** Inspect single-pass fillet welds ≤ 5/16".	**Periodic**	**SI**	**Table 1705A.2.1 Item 5a.5;** AISC 360-16 (AISC 341-16 as applicable); DSA IR 17-3.
☐	**c.** Inspect end-welded studs (ASTM A-108) installation (including bend test).	**Periodic**	**SI**	**2213A.2**; AISC 360-16 (AISC 341-16 as applicable); AWS D1.1; DSA IR 17-3.
☐	**d.** Inspect floor and roof deck welds.	**Periodic**	**SI**	**1705A.2.2, Table 1705A.2.1 Item 5a.6;** AISC 360-16 (AISC 341-16 as applicable); AWS D1.3; DSA IR 17-3.
☐	**e.** Inspect welding of structural cold-formed steel.	**Periodic**	**SI***	**1705A.2.5; AWS D1.3; DSA IR 17-3.** The quality control provisions of AISI S240-20 Chapter D shall also apply. * May be performed by the project inspector when specifically approved by DSA.
☐	**f.** Inspect welding of stairs and railing systems.	**Periodic**	**SI***	**1705A.2.1;** AISC 360-16 (AISC 341-16 as applicable); AWS D1.1 & D1.3; DSA IR 17-3. * May be performed by the project inspector when specifically approved by DSA.
☐	**g.** Verification of reinforcing steel weldability.	**Periodic**	**SI**	**1705A.3.1**; AWS D1.4; DSA IR 17-3. Verify carbon equivalent reported on mill certificates.
☐	**h.** Inspect welding of reinforcing steel.	**Continuous**	**SI**	**Table 1705A.2.1 Item 5b, 1705A.3.1, Table 1705A.3 Item 2, 1903A.8;** AWS D1.4; DSA IR 17-3.

	Test or Special Inspection	Type	Performed By	Code References and Notes
	S/A6. NONDESTRUCTIVE TESTING:			
	Test or Special Inspection	**Type**	**Performed By**	**Code References and Notes**
☐	**a.** Ultrasonic	**Test**	**LOR**	**1705A.2.1, 1705A.2.5;** AISC 341-16 J6.2, AISC 360-16 N5.5; AWS D1.1, AWS D1.8; DSA IR 17-2.
☐	**b.** Magnetic Particle	**Test**	**LOR**	**1705A.2.1, 1705A.2.5;** AISC 341-16 J6.2, AISC 360-16 N5.5; AWS D1.1, AWS D1.8; DSA IR 17-2.
☐	**c.**	**Test**	**LOR**	

	S/A7. STEEL JOISTS AND TRUSSES:			
	Test or Special Inspection	**Type**	**Performed By**	**Code References and Notes**
☐	**a.** Verify size, type and grade for all chord and web members as well as connectors and weld filler material; verify joist profile, dimensions and camber (if applicable); verify all weld locations, lengths and profiles; mark or tag each joist.	**Continuous**	**SI**	**1705A.2.3, Table 1705A.2.3;** AWS D1.1; DSA IR 22-3 for steel joists only. **1705A.2.4;** AWS D1.3 for cold-formed steel trusses.

	Test or Special Inspection	Type	Performed By	Code References and Notes
	S/A8. SPRAYED FIRE-RESISTANT MATERIALS:			
	Test or Special Inspection	**Type**	**Performed By**	**Code References and Notes**
☐	**a.** Examine structural steel surface conditions, inspect application, take samples, measure thickness and verify compliance of all aspects of application with DSA-approved documents.	**Periodic**	**SI**	**1705A.15, 1705A.1, 1705A.2, 1705A.3, 1705A.4.**
☐	**b.** Test density.	**Test**	**LOR**	**1705A.15.1, 1705A.15.5, ASTM E736**
☐	**c.** Bond strength adhesion/cohesion.	**Test**	**LOR**	**1705A.15.1, 1705A.15.4, ASTM E605**

	Test or Special Inspection	Type	Performed By	Code References and Notes
	S/A9. ANCHOR BOLTS AND ANCHOR RODS:			
	Test or Special Inspection	**Type**	**Performed By**	**Code References and Notes**
☑	**a.** Anchor Bolts and Anchor Rods	**Test**	**LOR**	Sample and test anchor bolts and anchor rods not readily identifiable per procedures noted in DSA IR 17-11.
☐	**b.** Threaded rod not used for foundation anchorage.	**Test**	**LOR**	Sample and test threaded rods not readily identifiable per procedures noted in DSA IR 17-11.

	Test or Special Inspection	Type	Performed By	Code References and Notes
	S/A10. STORAGE RACK SYSTEMS:			
	Test or Special Inspection	**Type**	**Performed By**	**Code References and Notes**
☐	**a.** Materials used, to verify compliance with one or more of the material test reports in accordance with the approved construction documents.	**Periodic**	**SI**	Table 1705A.13.7
☐	**b.** Fabricated storage rack elements.	**Periodic**	**SI**	1704A.2.5; Table 1705A.13.7

	Test or Special Inspection	Type	Performed By	Code References and Notes
☐	**c.** Storage rack anchorage installation.	**Periodic**	**SI**	ANSI/MH16.1 Section 7.3.2; Table 1705A.13.7
☐	**d.** Completed storage rack system to indicate compliance with the approved construction documents.	**Periodic**	**SI***	Table 1705A.13.7; * May be preformed by the project inspector when specifically approved by DSA.

	S/A11. Other Steel			
	Test or Special Inspection	**Type**	**Performed By**	**Code References and Notes**
☐	**a.**			

Appendix: Work Exempt from DSA Requirements for Structural Tests / Special Inspections

Application Number:	School Name:	School District:
04-122251	Orange Grove High School	Corona Unified School District
DSA File Number:	**Increment Number:**	**Date Created:**
33-H4		2023-10-16 11:05:17

Exempt items given in DSA IR A-22 or the 2019 CBC (including DSA amendments) and those items identified below with a check mark by the design professional are NOT subject to DSA requirements for the structural tests **/** special inspections noted. **Items marked as exempt shall be identified on the approved construction documents**. The project inspector shall verify all construction complies with the approved construction documents.

	SOILS:
☐	1. Deep foundations acting as a cantilever footing with a design based on minimum allowable pressures per CBC Table 1806A.2 and without a geotechnical report for the following cases: A) free standing sign or scoreboard, B) cell or antenna towers and poles less than 35'-0" tall (e.g., lighting poles, flag poles, poles supporting open mesh fences, etc.), C) single-story structure with dead load less than 5 psf (e.g., open fabric shade structure), or D) covered walkway structure with an apex height less than 10'-0" above adjacent grade.
☐	2. Shallow foundations, etc. are exempt from special inspections and testing by a Geotechnical Engineer for the following cases: A) buildings without a geotechnical report and meeting the exception item #1 criteria in CBC Section 1803A.2 supported by native soil (any excavation depth) or fill soil (not exceeding 12" depth per CBC Section 1804A.6), B) soil scarification/recompaction not exceeding 12" depth, C) native or fill soil supporting exterior non-structural flatwork (e.g., sidewalks, site concrete ramps, site stairs, parking lots, driveways, etc.), D) unpaved landscaping and playground areas, or E) utility trench backfill.

	CONCRETE/MASONRY:
☐	1. Post-installed anchors for the following: A) exempt non-structural components (e.g., mechanical, electrical, plumbing equipment - see item 7 for "Welding" in the Appendix below) given in CBC Section 1617A.1.18 (which replaces ASCE 7-16, Section 13.1.4) or B) interior nonstructural wall partitions meeting criteria listed in exempt item 3 for "Welding" in the Appendix below
☑	2. Concrete batch plant inspection is not required for items given in CBC Section 1705A.3.3.2 subject to the requirements and limitations in that section.
☐	3. Non-bearing non-shear masonry walls may be exempt from certain DSA masonry testing and special inspection items as allowed per DSA IR 21-1. Refer to construction documents for specific exemptions accordingly for each applicable wall condition.
☐	4. Epoxy shear dowels in site flatwork and/or other non-structural concrete.

Appendix: Work Exempt from DSA Requirements for Structural Tests / Special Inspections

Application Number:	**School Name:**	**School District:**
04-122251	Orange Grove High School	Corona Unified School District
DSA File Number:	**Increment Number:**	**Date Created:**
33-H4		2023-10-16 11:05:17

	CONCRETE/MASONRY:
☐	5. Testing of reinforcing bars is not required for items given in CBC Section 1910A.2 subject to the requirements and limitations in that section.

	WELDING:
☐	1. Solid-clad and open-mesh fences, gates with maximum leaf span of 10', and gates with a maximum rolling section of 10' all having an apex height less than 8'-0" above lowest adjacent grade. When located above circulation or occupied space below, these gates/fences are not located within 1.5x gate/fence height (max 8'-0") to the edge of floor or roof.
☐	2. Handrails, guardrails, and modular or relocatable ramps associated with walking surfaces less than 30" above adjacent grade (excluding post base connections per the 'Exception' language in Section 1705A.2.1); fillet welds shall not be ground flush.
☐	3. Non-structural interior cold-formed steel framing spanning less than 15'-0", such as in interior partitions, interior soffits, etc. supporting only self weight and light-weight finishes or adhered tile, masonry, stone, or terra cotta veneer no more than 5/8" thickness and apex less than 20'-0" in height and not over an exit way. Maximum tributary load to a member shall not exceed the equivalent of that occurring from a 10'x10' opening in a 15' tall wall for a header or king stud.
☐	4. Manufactured support frames and curbs using hot rolled or cold-formed steel (i.e., light gauge) for mechanical, electrical, or plumbing equipment weighing less than 2000# (equipment only) (connections of such frames to superstructure elements using welding will require special inspection as noted in selected item(s) for Sections S/A3, S/A4 and/or S/A5 of listing above).
☐	5. Manufactured components (e.g., Tolco, B-Line, Afcon, etc.) for mechanical, electrical, or plumbing hanger support and bracing (connections of such components to superstructure elements using welding will require special inspection as noted in selected item(s) for Sections S/A3, S/A4 and/or S/A5 of listing above).
☐	6. TV Brackets, projector mounts with a valid listing (see DSA IR A-5) and recreational equipment (e.g., playground structures, basketball backstops, etc.) (connections of such elements to superstructure elements using welding will require special inspection as noted in selected item(s) for sections S/A3, S/A4 and/or S/A5 located in the Steel/Aluminum category of listing above).
☐	7. Any support for exempt non-structural components given in CBC Section 1617A.1.18 (which replaces ASCE 7-16, Section 13.1.4) meeting the following: A) when supported on a floor/roof, <400# and resulting composite center of mass (including component's center of mass) ≤4' above supporting floor/roof, B) when hung from a wall or roof/floor, <20# for discrete units or <5 plf for distributed systems.

DSA 103-22: LISTING OF STRUCTURAL TESTS & SPECIAL INSPECTIONS(SIGNATURE), 2022 CBC

Application Number:
04-122251

School Name:
Orange Grove High School

School District:
Corona Unified School District

DSA File Number:
33-H4

Increment Number:

Date Created:
2023-10-16 11:05:17

Name of Architect or Engineer in general responsible charge:

Yong Yoo

Name of Structural Engineer (When structural design has been delegated):

Leslie Tso

Signature of Architect or Structural Engineer:

Date:

10/16/23

Note: To facilitate DSA electronic mark-ups and identification stamp application, DSA recommends against using secured electronic or digital signatures.

DSA STAMP

IDENTIFICATION STAMP
DIV. OF THE STATE ARCHITECT
APP: 04-122251 INC:
REVIEWED FOR
SS ☑ FLS ☑ ACS ☑
DATE: 10/24/2023

DSA 103-22: LIST OF REQUIRED VERIFIED REPORTS, CBC 2022

Application Number:	School Name:	School District:
04-122251	Orange Grove High School	Corona Unified School District
DSA File Number:	**Increment Number:**	**Date Created:**
33-H4		2023-10-16 11:05:17

1. Soils Testing and Inspection: Geotechnical Verified Report Form DSA 293
2. Structural Testing and Inspection: Laboratory Verified Report Form DSA 291
3. Concrete Batch Plant Inspection: Laboratory Verified Report Form DSA 291
4. Shop Welding Inspection: Laboratory Verified Report Form DSA 291, or, for independently contracting SI, Special Inspection Verified Report Form DSA 292
5. Field Welding Inspection: Laboratory Verified Report Form DSA 291, or, for independently contracting SI, Special Inspection Verified Report Form DSA 292

Converse Consultants
Geotechnical Engineering, Environmental & Groundwater Science, Inspection & Testing Services

January 30, 2023

Ms. Jacquelyn Roberts
Construction Director – Facilities Division
Corona-Norco Unified School District
2820 Clark Avenue
Norco, California 92860

Subject: **ASBESTOS & LEAD-BASED PAINT SURVEY REPORT**
Portion of Auburndale Middle School
1255 River Road
Corona, California 92880
Converse Project No. 22-16-164-01

Ms. Roberts:

Provided is our report of the *Asbestos & Lead-Based Paint (LBP) Survey* completed on December 21 and 22, 2022, for the referenced site. Our work, which was a non-destructive survey, was completed in general accordance with our proposal dated November 11, 2022 and the Scope of Services revisions received on December 13, 2022. The revised Scope of Services that was completed during this survey included the following:

- Survey of eight (8) portable buildings and
- Asphalt and concrete in various areas.

The Scope of Services was completed by, or under the supervision, of the following Converse employees:

Name	Asbestos Cert. No.	CDPH Cert. No.	Project Responsibility	Contact Number
Norman Eke (NSE)	CAC #96-2093	--	Contract Management	626-930-1260
Rodney Stansfield (RDS)	CAC #97-2309	Inspector/Assessor #4397	ASB and LBP Inspection & Sampling Report Generation	714-333-8222
Laura Tanaka (LAT)	CAC #11-4708	Inspector/Assessor #7879	Project Management Report QA/QC	626-807-3422

All bulk asbestos samples were submitted and analyzed by following the laboratory:

- LA Testing
  5431 Industrial Drive, Huntington Beach, California 92649
  714-828-4999
  NVLAP #101384-0

Copies of applicable staff and laboratory certifications have been attached to this letter.

ASBESTOS

Prior to sampling, Converse visually surveyed the proposed project area (as noted in CNUSD Addendum No.1 to Limited RFP) for suspect asbestos-containing materials (ACMs) and homogeneous areas (areas that have uniform color, texture, and appearance). Suspect materials were divided into friable (crushable to dust) and non-friable materials, and placed in one of the following Environmental Protection Agency (EPA) categories:

- Surfacing Materials (sprayed or troweled-on materials)
- Thermal Systems Insulations (materials generally applied to various mechanical systems)
- Miscellaneous Materials (any materials which do not fit in the above categories)

The strategy for the collection of asbestos samples was in general accordance with the EPA guidance document *"Asbestos in Buildings: Simplified Sampling Scheme for Friable Surfacing Materials"*, EPA 560/5-85-030a, October 1985, 40 CFR 763 (AHERA); *National Exposure Standards for Hazardous Air Pollutants (NESHAP)*, 40 CFR Part 61; and South Coast Air Quality Management District, *Rule 1403, Asbestos Emissions From Demolition/Renovation Activities*, Amended October 5, 2007.

The bulk samples were analyzed by Polarized Light Microscopy (PLM) in accordance with EPA Test Method 600/R-93/116. A summary of the types of suspect materials sampled along with the analytical results is presented in the following table.

Table 1 – Suspect Materials Sampled & Analytical Results

Sample Number	Suspect Material	% Asb Detected	Fri or NF Material	I or D Condition	Comments
1227-01 – 1227-03	Plasticized roof felt	None Detected	NF	I	Roof of Building B8, over Styrofoam and wood base.
1227-04 – 1227-06	Roof core (includes silver paint)	None Detected	NF	I	Roof of Building B1/B3, over a wood base.
1227-07 – 1227-09	Penetration mastic (includes silver paint)	None Detected	NF	I	Roof of Building B1/B3.
1227-10 – 1227-12	Roof core (includes silver paint)	None Detected	NF	I	Roof of Building B4/B6, over a wood base.
1227-13 – 1227-15	Light grey penetration mastic (includes silver paint)	None Detected	NF	I	Edges of Building B4/B6 roof.

Table 1 – Suspect Materials Sampled & Analytical Results

Sample Number	Suspect Material	% Asb Detected	Fri or NF Material	I or D Condition	Comments
1227-16 – 1227-18	Dark grey penetration mastic (includes silver paint)	None Detected	NF	I	South edge of roof, Building B4/B6.
1227-19 – 1227-21	Roof core	None Detected	NF	I	Roof of Building B7, over a wood base.
1227-22 – 1227-24	Black penetration mastic	None Detected	NF	I	Roof of Building B7.
1227-25 – 1227-27	Exterior concrete slab	None Detected	NF	I	Sidewalks and porches in the Portable bldg. area.
1227-28 – 1227-30	Carpet mastic	None Detected	NF	I	Bldg. B8, Room B8, on a wood base.
1227-31 – 1227-33	Baseboard mastic	None Detected	NF	I	Bldg. B8, Room B8. Baseboard is not suspect.
1227-34 – 1227-38	Drywall walls	None Detected	NF	I	Bldg. B8, Room B8. No joint compound observed.
1229-01 – 1229-03	Concrete slab	None Detected	NF	I	Southwest parking lot.
1229-04 – 1229-06	Asphalt	None Detected	NF	I	Southwest parking lot, and south of Portable bldgs.
1229-07 – 1227-09	Coated concrete slab	None Detected	NF	I	North Tennis Courts.
1229-10 – 1229-12	Concrete slab	None Detected	NF	I	North Bicycle Racks area.
1229-13 – 1229-15	Pink concrete slab	None Detected	NF	I	Southeast of Tennis Courts.
1229-16 – 1229-18	Concrete slab with skim coat	None Detected	NF	I	Building B1/B3. Skim coat on exterior perimeter only.
1229-19 – 1229-21	Concrete slab with skim coat	None Detected	NF	I	Building B4/B6. Skim coat on exterior perimeter only.
1229-22 – 1229-24	2x4 Fissured ceiling panels	None Detected	F	I	Building B1/B3. No suspect ACM observed above.
1229-25 – 1229-29	Drywall walls	None Detected	NF	I	Building B1/B3, behind cellulose wallboard. No joint compound observed.
1229-30 – 1229-32	Baseboard mastic	None Detected	NF	I	Building B1/B3. Baseboard is not suspect.
1229-33 – 1229-35	Carpet backing and mastic	None Detected	NF	I	Building B1/B3, throughout, on wood base.
1229-36A – 1229-37	2x Fissured ceiling panels	None Detected	F	I	Building B4/B6. No suspect ACM observed above.
1229-38 – 1229-42	Drywall walls	None Detected	NF	I	Building B1/B3, behind cellulose wallboard. No joint compound observed.
1229-43 – 1229-45	Baseboard mastic	None Detected	NF	I	Building B4/B6. Baseboard is not suspect.
1229-46 – 1229-48	Carpet mastic	None Detected	NF	I	Building B4/B6, throughout. On wood base.
1229-49 – 1229-51	2x4 Fissured ceiling panels	None Detected	F	I	Building B7. No suspect ACM observed above.

Table 1 – Suspect Materials Sampled & Analytical Results

Sample Number	Suspect Material	% Asb Detected	Fri or NF Material	I or D Condition	Comments
1229-52 – 1229-56	Drywall/joint compound on walls	None Detected	NF	I	Building B7, behind cellulose wallboard. Joint compound observed on east wall only.
1229-57 – 1229-59	Carpet mastic	None Detected	NF	I	Building B7, Room B7, on a wood base.
1229-60 – 1229-62	Baseboard mastic	None Detected	NF	I	Building B7. Baseboard is not suspect.
1229-63 – 1229-65	Sink undercoat	None Detected	NF	I	Building B7, underside of two (2) metal sinks.

Additional Comments:
The buildings were occupied at the time of the survey; therefore, this was a non-destructive survey. Suspect materials not sampled included wallboard mastic, and void spaces within walls.

LEGEND
Fri: Friable Material
NF: Non-Friable Material
I: Intact Condition
D: Damaged Condition

The laboratory may have identified additional layers or compounds within a sample under microscopic analysis that were not observed by the naked eye when the material was sampled in the field.

All materials were generally in good condition at the time of the survey. No obvious vandalism, fire, renovation, demolition or structural damage was observed.

The sampled suspect materials did not contain asbestos. This was a non-destructive survey so the following suspect materials were not sampled:

- Wallboard mastic, and
- Void spaces behind walls.

These materials will need to be considered ACMs until they are sampled and analyzed for asbestos content.

In the event that other suspect ACMs are uncovered during renovation activities, those suspect materials should be inspected, sampled, and analyzed for asbestos content. If not sampled and analyzed, these new suspect materials will need to be assumed positive for asbestos.

The analytical report and chain of custody documentation are attached to this letter report. A sample location map is also attached to this letter report.

LEAD-BASED PAINTS (LBPs)

Prior to sampling, Converse visually surveyed the interior and exterior of each building in the proposed project area for painted or ceramic building components. Our sampling methodology generally followed the “Guidelines for the Evaluation and Control of Lead-Based Paint Hazards in Housing” published by the Department of Housing and Urban

Development (HUD) in 1995. However, similarly painted building components were treated as homogenous throughout each building.

The LBP Survey was conducted using a Viken Pb200i X-ray fluorescence (XRF) device. The detection level for lead was set at the CDPH definition of lead-based paint, which is 1.0 milligrams per square centimeter (mg/cm^2). Suspect components surveyed included:

Interior Components	Exterior Components
• Walls	• Painted roof felt
• Beams	• Walls
• Windows and associated components	• Vents and pipes
• Doors and associated components	• Metal and wood fascia and trim
• Cabinets	• Porticos and beams
	• Rain gutters and downspouts
	• Doors and associated components
	• Stairs and associated components
	• Electrical boxes and conduits
	• Parking lot stripes
	• Painted curbs and parking stops
	• Metal railing
	• Goal posts
	• Tennis court slab coating
	• Light posts

Provided in Table 2 is a summary of the LBPs detected during this survey. All materials were observed to be in intact condition at the time of the survey.

Table 2 – Summary of LBPs and LCMs

Building Component	Paint Color	Lead Conc. (mg/cm^2)	Comments
Wood cabinets	Orange	1.6	Building B4/B6, Room B4
Large wood cabinets	Blue	1.6	Building B4/B6, Room B5
Short wood cabinets	Blue	1.7	Building B4/B6, Room B5
Wood cabinets	Orange	1.7	Building B4/B6, Room B6
Parking lot stripes	Yellow	2.2	Southwest parking lot and curbs

The XRF Summary Table and field notes are attached to this letter report. This table provides a complete list of the components surveyed.

If LBPs are damaged at the time of the renovation/demolition activities, the LBPs will need to be stabilized first. The stabilization will need to be completed by a CDPH licensed lead abatement contractor using workers that have undergone the necessary lead training

Although other painted and/or ceramic materials did not meet the criteria for LBP or LCM, concentrations of lead were detected in these materials. Title 8 CCR 1532.1 (Cal/OSHA Lead regulation) may require workers that perform work that disturbs the LBPs or LCMs such as manual demolition, manual scraping, sanding of painted surfaces, etc. to undergo an exposure assessment including, but not limited to, air monitoring of the breathing zone. Other requirements including training and medical surveillance may be necessary per the lead regulation. Employers are responsible for worker exposure in relation to lead.

In the event that suspect LBPs are observed during the demolition activities that were not previously sampled, these materials should be assumed to contain lead in concentrations exceeding 1.0 mg/cm^2, until such time that they can be sampled and evaluated for lead content.

CLOSURE

This report is for the sole benefit and exclusive use of the Corona-Norco Unified School District (herein referred to as Client) in accordance with the terms and conditions of our contract under which these services have been provided. Its preparation has been in accordance with generally accepted environmental practices. No other warranty, either express or implied, is made. The Scope of Services associated with the report was designed solely in accordance with the objectives, schedule, budget, and risk-management preferences of Client.

This letter report should not be regarded as a guarantee that no further ACMs or LBPs, beyond that which could be detected within the scope of this survey, are present at the property. Converse makes no warranties or guarantees as to the accuracy or completeness of information provided or compiled by others. It is not possible to absolutely confirm that no ACMs or LBPs exist at the property. If none are identified as part of a limited scope of work, such a conclusion should not be construed as a guaranteed absence of such materials, but merely the results of the evaluation of the property at the time of the survey. Also, events may occur after the survey, which may result in contamination of the property. Additional information, which was not found or available to Converse at the time of report preparation, may result in a modification of the conclusions and recommendations presented.

Any reliance on this report by Third Parties shall be at the Third Party's sole risk.

We appreciate the opportunity to be of service to you. If you should have any questions or comments regarding the results, please contact Laura Tanaka at (626) 930-1261 or Norman Eke at (626) at 930-1260.

Sincerely,

CONVERSE CONSULTANTS

Rodney Stansfield
CDPH LRC #4397 & CAC 97-2309
Sr. Staff Environmental Scientist

Laura Tanaka
CDPH LRC #474 & CAC #11-4708
Principal Environmental Scientist

Attached: Certifications
Asbestos - Analytical Report & Sample Location Maps
LBPs – XRF Summary Table & Field Notes

Certifications

Converse Staff & Laboratory

Converse Project No. 22-16-164-01

STATE OF CALIFORNIA Gavin Newsom, Governor

DEPARTMENT OF INDUSTRIAL RELATIONS
Division of Occupational Safety and Health-Asbestos Certification
1750 Howe Avenue, Suite 460
Sacramento, CA 95825
(916) 574-2993 Office http://www.dir.ca.gov/dosh/asbestos.html actu@dir.ca.gov

612162093C 138

Converse Consultants
Norman S Eke
717 S. Myrtle Drive
Monrovia CA 91016

December 27, 2022

Dear Certified Asbestos Consultant or Technician:

Enclosed is your certification card. **To maintain your certification, you must abide by the rules printed on the back of the certification card.**

Your certification is valid for a period of one year. If you wish to renew your certification, you must apply for renewal at least 60 days before the expiration date shown on your card. [8 CCR 341.15(h)(1)].

Please hold and do not send copies of your required AHERA refresher renewal certificates to our office until you apply for renewal of your certification.

Certificates must be kept current if you are actively working as a CAC or CSST. The grace period is only for those who are not actively working as an asbestos consultant or site surveillance technician.

Please contact our office at the above address or email w any changes in your contact/mailing information within 15 days of the change.

Sincerely,

Eric Berg

Eric Berg
Deputy Chief of Health

Attachment: Certification Card

cc: File

Renewal – Card Attached

California Department of PublicHealth

STATE OF CALIFORNIA
DEPARTMENT OF PUBLIC HEALTH

LEAD-RELATED CONSTRUCTION CERTIFICATE

INDIVIDUAL:	CERTIFICATE TYPE:	NUMBER:	EXPIRATION DATE:
	Lead Project Monitor	LRC-00004396	12/17/2023
	Lead Inspector/Assessor	LRC-00004397	12/17/2023

Rodney Stansfield

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
Division of Occupational Safety and Health
Certified Asbestos Consultant

Rodney Dean Stansfield
Name

Certification No. **97-2309**

Expires on **12/08/23**

This certification was issued by the Division of Occupational Safety and Health as authorized by Sections 7180 et seq. of the Business and Professions Code.

California Department of PublicHealth

STATE OF CALIFORNIA
DEPARTMENT OF PUBLIC HEALTH

LEAD-RELATED CONSTRUCTION CERTIFICATE

INDIVIDUAL:	CERTIFICATE TYPE:	NUMBER:	EXPIRATION DATE:
	Lead Inspector/Assessor	LRC-00007879	4/27/2023
	Lead Project Designer	LRC-00007880	4/27/2023
	Lead Project Monitor	LRC-00007878	4/27/2023

Laura Tanaka

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
Division of Occupational Safety and Health
Certified Asbestos Consultant

Laura A Tanaka
Name

Certification No. **11-4708**

Expires on **01/19/24**

This certification was issued by the Division of Occupational Safety and Health as authorized by Sections 7180 et seq. of the Business and Professions Code.

United States Department of Commerce
National Institute of Standards and Technology

Certificate of Accreditation to ISO/IEC 17025:2017

NVLAP LAB CODE: 101384-0

LA Testing-Huntington Beach

Huntington Beach, 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 Communique dated January 2009).

2022-07-01 through 2023-06-30

Effective Dates

For the National Voluntary Laboratory Accreditation Program

National Voluntary Laboratory Accreditation Program

SCOPE OF ACCREDITATION TO ISO/IEC 17025:2017

LA Testing-Huntington Beach
5431 Industrial Drive
Huntington Beach, CA 92649
Mr. Christopher Miranda
Phone: 714-828-4999
Email: cmiranda@latesting.com
http://www.latesting.com

ASBESTOS FIBER ANALYSIS **NVLAP LAB CODE 101384-0**

Bulk Asbestos Analysis

Code	*Description*
18/A01	EPA -- 40 CFR Appendix E to Subpart E of Part 763, Interim Method of the Determination of Asbestos in Bulk Insulation Samples
18/A03	EPA 600/R-93/116: Method for the Determination of Asbestos in Bulk Building Materials

Airborne Asbestos Analysis

Code	*Description*
18/A02	U.S. EPA's "Interim Transmission Electron Microscopy Analytical Methods-Mandatory and Nonmandatory-and Mandatory Section to Determine Completion of Response Actions" as found in 40 CFR, Part 763, Subpart E, Appendix A.

For the National Voluntary Laboratory Accreditation Program

Asbestos

Analytical Report & Chain of Custody
Sample Location Maps

Converse Project No. 22-16-164-01

LA Testing

5431 Industrial Drive Huntington Beach, CA 92649

Tel/Fax: (714) 828-4999 / (714) 828-4944

http://www.LATesting.com / gardengrovelab@latesting.com

LA Testing Order:	332225689
Customer ID:	32CONV56
Customer PO:	221616401
Project ID:	

Attention:	Laura Tanaka	**Phone:**	(626) 930-1260
	Converse Consultants	**Fax:**	(626) 930-1212
	717 S Myrtle Avenue	**Received Date:**	12/28/2022 8:00 AM
	Monrovia, CA 91016	**Analysis Date:**	01/04/2023 - 01/05/2023
		Collected Date:	12/27/2022
Project:	22-16-164-01		

Test Report: Asbestos Analysis of Bulk Materials via AHERA Method 40CFR 763 Subpart E Appendix E supplemented with EPA 600/R-93/116 using Polarized Light Microscopy

			Non-Asbestos		Asbestos
Sample	**Description**	**Appearance**	**% Fibrous**	**% Non-Fibrous**	**% Type**
1227-01-Roofing *332225689-0001*	BLDG B8, ROOF, NORTH - PLASTICIZED ROOF FELT	Gray/White Fibrous Homogeneous	10% Synthetic	90% Non-fibrous (Other)	None Detected
1227-01-Adhesive *332225689-0001A*	BLDG B8, ROOF, NORTH - PLASTICIZED ROOF FELT	Brown Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
1227-01-Tar *332225689-0001B*	BLDG B8, ROOF, NORTH - PLASTICIZED ROOF FELT	Black Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
1227-01-Felt *332225689-0001C*	BLDG B8, ROOF, NORTH - PLASTICIZED ROOF FELT	Gray Fibrous Homogeneous	75% Cellulose 10% Glass	15% Non-fibrous (Other)	None Detected
1227-01-Foam *332225689-0001D*	BLDG B8, ROOF, NORTH - PLASTICIZED ROOF FELT	Yellow Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
1227-02-Roofing *332225689-0002*	BLDG B8, ROOF, SE - PLASTICIZED ROOF FELT	Gray/White Fibrous Homogeneous	10% Synthetic	90% Non-fibrous (Other)	None Detected
1227-02-Adhesive *332225689-0002A*	BLDG B8, ROOF, SE - PLASTICIZED ROOF FELT	Brown Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
1227-02-Tar *332225689-0002B*	BLDG B8, ROOF, SE - PLASTICIZED ROOF FELT	Black Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
1227-02-Felt *332225689-0002C*	BLDG B8, ROOF, SE - PLASTICIZED ROOF FELT	Gray Fibrous Homogeneous	75% Cellulose 10% Glass	15% Non-fibrous (Other)	None Detected
1227-02-Foam *332225689-0002D*	BLDG B8, ROOF, SE - PLASTICIZED ROOF FELT	Yellow Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
1227-03-Roofing *332225689-0003*	BLDG B8, ROOF, WEST - PLASTICIZED ROOF FELT	Gray/White Fibrous Homogeneous	10% Synthetic	90% Non-fibrous (Other)	None Detected
1227-03-Adhesive *332225689-0003A*	BLDG B8, ROOF, WEST - PLASTICIZED ROOF FELT	Brown Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
1227-03-Felt *332225689-0003B*	BLDG B8, ROOF, WEST - PLASTICIZED ROOF FELT	Gray Fibrous Homogeneous	60% Cellulose 12% Glass	28% Non-fibrous (Other)	None Detected

Initial report from: 01/05/2023 12:23:44

LA Testing

5431 Industrial Drive Huntington Beach, CA 92649

Tel/Fax: (714) 828-4999 / (714) 828-4944

http://www.LATesting.com / gardengrovelab@latesting.com

LA Testing Order:	332225689
Customer ID:	32CONV56
Customer PO:	221616401
Project ID:	

Test Report: Asbestos Analysis of Bulk Materials via AHERA Method 40CFR 763 Subpart E Appendix E supplemented with EPA 600/R-93/116 using Polarized Light Microscopy

			Non-Asbestos		Asbestos
Sample	**Description**	**Appearance**	**% Fibrous**	**% Non-Fibrous**	**% Type**
1227-03-Foam *332225689-0003C*	BLDG B8, ROOF, WEST - PLASTICIZED ROOF FELT	Yellow Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
1227-04-Roofing *332225689-0004*	BLDG B1/B3, ROOF, NORTH - ROOF CORE	Black Fibrous Heterogeneous	10% Glass	90% Non-fibrous (Other)	None Detected
1227-04-Mastic *332225689-0004A*	BLDG B1/B3, ROOF, NORTH - ROOF CORE	Black Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
1227-04-Silver Paint *332225689-0004B*	BLDG B1/B3, ROOF, NORTH - ROOF CORE	Black/Silver Non-Fibrous Heterogeneous		100% Non-fibrous (Other)	None Detected
Result includes a small amount of inseparable attached mastic material					
1227-05-Roofing *332225689-0005*	BLDG B1/B3, ROOF, SE - ROOF CORE	Gray/Black Fibrous Heterogeneous	12% Glass	88% Non-fibrous (Other)	None Detected
1227-05-Mastic *332225689-0005A*	BLDG B1/B3, ROOF, SE - ROOF CORE	Black Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
1227-05-Silver Paint *332225689-0005B*	BLDG B1/B3, ROOF, SE - ROOF CORE	Silver Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
1227-06-Roofing *332225689-0006*	BLDG B1/B3, ROOF, SW - ROOF CORE	Black Fibrous Heterogeneous	5% Cellulose 12% Glass	83% Non-fibrous (Other)	None Detected
1227-06-Mastic *332225689-0006A*	BLDG B1/B3, ROOF, SW - ROOF CORE	Black Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
1227-06-Silver Paint *332225689-0006B*	BLDG B1/B3, ROOF, SW - ROOF CORE	Silver Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
1227-07-Mastic *332225689-0007*	BLDG B1/B3, ROOF, NORTH EDGE - PENETRATION MASTIC	Black Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
1227-07-Silver Paint *332225689-0007A*	BLDG B1/B3, ROOF, NORTH EDGE - PENETRATION MASTIC	Silver Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
1227-08-Mastic *332225689-0008*	BLDG B1/B3, ROOF, SE - PENETRATION MASTIC	Black Fibrous Heterogeneous	3% Glass	97% Non-fibrous (Other)	None Detected
1227-08-Silver Paint *332225689-0008A*	BLDG B1/B3, ROOF, SE - PENETRATION MASTIC	Silver Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
1227-09-Mastic *332225689-0009*	BLDG B1/B3, ROOF, SW - PENETRATION MASTIC	Black Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
1227-09-Silver Paint *332225689-0009A*	BLDG B1/B3, ROOF, SW - PENETRATION MASTIC	Silver Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
1227-10-Roofing *332225689-0010*	BLDG B4/B6, ROOF, EAST - ROOF CORE	Gray/Tan/Black Fibrous Heterogeneous	10% Glass	90% Non-fibrous (Other)	None Detected
1227-10-Mastic *332225689-0010A*	BLDG B4/B6, ROOF, EAST - ROOF CORE	Black Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected

Initial report from: 01/05/2023 12:23:44

LA Testing
5431 Industrial Drive Huntington Beach, CA 92649
Tel/Fax: (714) 828-4999 / (714) 828-4944
http://www.LATesting.com / gardengrovelab@latesting.com

LA Testing Order: 332225689
Customer ID: 32CONV56
Customer PO: 221616401
Project ID:

Test Report: Asbestos Analysis of Bulk Materials via AHERA Method 40CFR 763 Subpart E Appendix E supplemented with EPA 600/R-93/116 using Polarized Light Microscopy

			Non-Asbestos		Asbestos
Sample	**Description**	**Appearance**	**% Fibrous**	**% Non-Fibrous**	**% Type**
1227-10-Silver Paint *332225689-0010B*	BLDG B4/B6, ROOF, EAST - ROOF CORE	Silver Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
1227-11-Roofing *332225689-0011*	BLDG B4/B6, ROOF, CENTER - ROOF CORE	Gray/Black Fibrous Heterogeneous	10% Glass	90% Non-fibrous (Other)	None Detected
1227-11-Mastic *332225689-0011A*	BLDG B4/B6, ROOF, CENTER - ROOF CORE	Black Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
1227-11-Silver Paint *332225689-0011B*	BLDG B4/B6, ROOF, CENTER - ROOF CORE	Silver Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
1227-12-Roofing *332225689-0012*	BLDG B4/B6, ROOF, WEST - ROOF CORE	Black Fibrous Homogeneous	8% Synthetic 10% Glass	82% Non-fibrous (Other)	None Detected
1227-12-Mastic *332225689-0012A*	BLDG B4/B6, ROOF, WEST - ROOF CORE	Black Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
1227-12-Silver Paint *332225689-0012B*	BLDG B4/B6, ROOF, WEST - ROOF CORE	Silver Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
1227-13-Mastic *332225689-0013*	BLDG B4/B6, ROOF, EAST - LIGHT GREY PENETRATION MASTIC	Black Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
1227-13-Silver Paint *332225689-0013A*	BLDG B4/B6, ROOF, EAST - LIGHT GREY PENETRATION MASTIC	Silver Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
1227-14-Mastic *332225689-0014*	BLDG B4/B6, ROOF, SOUTH - LIGHT GREY PENETRATION MASTIC	Black Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
1227-14-Silver Paint *332225689-0014A*	BLDG B4/B6, ROOF, SOUTH - LIGHT GREY PENETRATION MASTIC	Silver Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
1227-15-Mastic *332225689-0015*	BLDG B4/B6, ROOF, NORTH - LIGHT GREY PENETRATION MASTIC	Black Fibrous Heterogeneous	5% Glass	95% Non-fibrous (Other)	None Detected
1227-15-Silver Paint *332225689-0015A*	BLDG B4/B6, ROOF, NORTH - LIGHT GREY PENETRATION MASTIC	Silver Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
1227-16-Mastic 1 *332225689-0016*	BLDG B4/B6, ROOF, SE - DARK GREY PENETRATION MASTIC	Gray/Black Fibrous Homogeneous	8% Cellulose	92% Non-fibrous (Other)	None Detected
1227-16-Silver Paint *332225689-0016A*	BLDG B4/B6, ROOF, SE - DARK GREY PENETRATION MASTIC	Silver Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected

Initial report from: 01/05/2023 12:23:44

LA Testing
5431 Industrial Drive Huntington Beach, CA 92649
Tel/Fax: (714) 828-4999 / (714) 828-4944
http://www.LATesting.com / gardengrovelab@latesting.com

LA Testing Order: 332225689
Customer ID: 32CONV56
Customer PO: 221616401
Project ID:

Test Report: Asbestos Analysis of Bulk Materials via AHERA Method 40CFR 763 Subpart E Appendix E supplemented with EPA 600/R-93/116 using Polarized Light Microscopy

			Non-Asbestos		Asbestos
Sample	**Description**	**Appearance**	**% Fibrous**	**% Non-Fibrous**	**% Type**
1227-16-Mastic 2 *332225689-0016B*	BLDG B4/B6, ROOF, SE - DARK GREY PENETRATION MASTIC	Black Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
1227-17-Mastic 1 *332225689-0017*	BLDG B4/B6, ROOF, SOUTH - DARK GREY PENETRATION MASTIC	Gray/Black Fibrous Homogeneous	10% Cellulose	90% Non-fibrous (Other)	None Detected
1227-17-Silver Paint *332225689-0017A*	BLDG B4/B6, ROOF, SOUTH - DARK GREY PENETRATION MASTIC	Silver Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
1227-17-Mastic 2 *332225689-0017B*	BLDG B4/B6, ROOF, SOUTH - DARK GREY PENETRATION MASTIC	Black Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
1227-18-Mastic 1 *332225689-0018*	BLDG B4/B6, ROOF, SW - DARK GREY PENETRATION MASTIC	Gray/Black Fibrous Homogeneous	8% Cellulose	92% Non-fibrous (Other)	None Detected
1227-18-Silver Paint *332225689-0018A*	BLDG B4/B6, ROOF, SW - DARK GREY PENETRATION MASTIC	Silver Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
1227-18-Mastic 2 *332225689-0018B*	BLDG B4/B6, ROOF, SW - DARK GREY PENETRATION MASTIC	Black Fibrous Heterogeneous	5% Glass	95% Non-fibrous (Other)	None Detected
1227-19-Shingle *332225689-0019*	BLDG B7, ROOF, NORTH - ROOF CORE	Gray/Black Fibrous Heterogeneous	20% Glass	80% Non-fibrous (Other)	None Detected
1227-19-Tar Felt *332225689-0019A*	BLDG B7, ROOF, NORTH - ROOF CORE	Black Fibrous Homogeneous	15% Glass	85% Non-fibrous (Other)	None Detected
1227-20-Shingle *332225689-0020*	BLDG B7, ROOF, EAST - ROOF CORE	Gray/Black Fibrous Heterogeneous	35% Glass	65% Non-fibrous (Other)	None Detected
1227-20-Tar Felt *332225689-0020A*	BLDG B7, ROOF, EAST - ROOF CORE	Black Fibrous Homogeneous	45% Glass	55% Non-fibrous (Other)	None Detected
1227-20-Insulation *332225689-0020B*	BLDG B7, ROOF, EAST - ROOF CORE	Brown Fibrous Homogeneous	90% Cellulose	10% Non-fibrous (Other)	None Detected
1227-21-Shingle *332225689-0021*	BLDG B7, ROOF, SW - ROOF CORE	Gray/Black Fibrous Heterogeneous	15% Glass	85% Non-fibrous (Other)	None Detected
1227-21-Tar Felt *332225689-0021A*	BLDG B7, ROOF, SW - ROOF CORE	Black Fibrous Homogeneous	25% Glass	75% Non-fibrous (Other)	None Detected
1227-22-Penetration Mastic *332225689-0022*	BLDG B7, ROOF, EAST - BLACK PENETRATION MASTIC	Gray/Black Non-Fibrous Heterogeneous	5% Cellulose	95% Non-fibrous (Other)	None Detected

Initial report from: 01/05/2023 12:23:44

LA Testing
5431 Industrial Drive Huntington Beach, CA 92649
Tel/Fax: (714) 828-4999 / (714) 828-4944
http://www.LATesting.com / gardengrovelab@latesting.com

LA Testing Order: 332225689
Customer ID: 32CONV56
Customer PO: 221616401
Project ID:

Test Report: Asbestos Analysis of Bulk Materials via AHERA Method 40CFR 763 Subpart E Appendix E supplemented with EPA 600/R-93/116 using Polarized Light Microscopy

			Non-Asbestos		Asbestos
Sample	**Description**	**Appearance**	**% Fibrous**	**% Non-Fibrous**	**% Type**
1227-22-Shingle *332225689-0022A*	BLDG B7, ROOF, EAST - BLACK PENETRATION MASTIC	Gray/Black Fibrous Heterogeneous	5% Cellulose 35% Glass	60% Non-fibrous (Other)	None Detected
1227-23 *332225689-0023*	BLDG B7, ROOF, CENTER - BLACK PENETRATION MASTIC	Gray/Black Non-Fibrous Heterogeneous	5% Cellulose	95% Non-fibrous (Other)	None Detected
1227-24 *332225689-0024*	BLDG B7, ROOF, CENTER - BLACK PENETRATION MASTIC	Gray/Black Fibrous Heterogeneous	8% Cellulose 2% Glass	90% Non-fibrous (Other)	None Detected
1227-25 *332225689-0025*	BETWEEN BLDG B7 AND B8 - EXTERIOR CONCRETE SLAB	Gray Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
1227-26 *332225689-0026*	COURTYARD, CENTER - EXTERIOR CONCRETE SLAB	Gray Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
1227-27 *332225689-0027*	PORCH, IN FRONT OF ROOM B2 - EXTERIOR CONCRETE SLAB	Gray Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
1227-28-Mastic *332225689-0028*	BLDG B8, SE DOORWAY - CARPET MASTIC	Yellow Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
1227-28-Leveler 1 *332225689-0028A*	BLDG B8, SE DOORWAY - CARPET MASTIC	White Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
1227-28-Leveler 2 *332225689-0028B*	BLDG B8, SE DOORWAY - CARPET MASTIC	Gray Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
1227-29-Mastic *332225689-0029*	BLDG B8, NW DOORWAY - CARPET MASTIC	Yellow Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
1227-29-Leveler *332225689-0029A*	BLDG B8, NW DOORWAY - CARPET MASTIC	Gray Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
1227-30 *332225689-0030*	BLDG B8, NW DOORWAY - CARPET MASTIC	Yellow Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
1227-31 *332225689-0031*	BLDG B8, SOUTH WALL, EAST - BASEBOARD MASTIC	Beige Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
1227-32 *332225689-0032*	BLDG B8, WEST WALL - BASEBOARD MASTIC	Beige Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
1227-33 *332225689-0033*	BLDG B8, NORTH WALL - BASEBOARD MASTIC	Beige Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
1227-34 *332225689-0034*	BLDG B8, EAST WALL, SOUTH - DRYWALL WALLS	Brown/White Fibrous Heterogeneous	10% Cellulose	90% Non-fibrous (Other)	None Detected

Initial report from: 01/05/2023 12:23:44

LA Testing

5431 Industrial Drive Huntington Beach, CA 92649

Tel/Fax: (714) 828-4999 / (714) 828-4944

http://www.LATesting.com / gardengrovelab@latesting.com

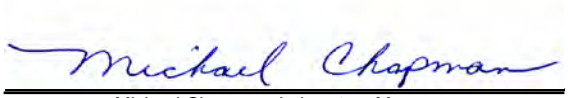
LA Testing Order:	332225689
Customer ID:	32CONV56
Customer PO:	221616401
Project ID:	

Test Report: Asbestos Analysis of Bulk Materials via AHERA Method 40CFR 763 Subpart E Appendix E supplemented with EPA 600/R-93/116 using Polarized Light Microscopy

			Non-Asbestos		Asbestos
Sample	**Description**	**Appearance**	**% Fibrous**	**% Non-Fibrous**	**% Type**
1227-35 *332225689-0035*	BLDG B8, EAST WALL - DRYWALL WALLS	Brown/White Fibrous Heterogeneous	10% Cellulose	90% Non-fibrous (Other)	None Detected
1227-36 *332225689-0036*	BLDG B8, NE CORNER - DRYWALL WALLS	Brown/White Fibrous Heterogeneous	10% Cellulose	90% Non-fibrous (Other)	None Detected
1227-37 *332225689-0037*	BLDG B8, NW CORNER - DRYWALL WALLS	Brown/White Fibrous Heterogeneous	10% Cellulose	90% Non-fibrous (Other)	None Detected
1227-38 *332225689-0038*	BLDG B8, WEST WALL - DRYWALL WALLS	Brown/White Fibrous Heterogeneous	10% Cellulose	90% Non-fibrous (Other)	None Detected

Analyst(s)

Alexis Rodriguez (36)
Irene Chang (20)
Kaylin Luciani (3)
Mindy Le (5)
Thanh Nguyen (17)



Michael Chapman, Laboratory Manager
or Other Approved Signatory

Initial report from: 01/05/2023 12:23:44

LA Testing

5431 Industrial Drive Huntington Beach, CA 92649

Tel/Fax: (714) 828-4999 / (714) 828-4944

http://www.LATesting.com / gardengrovelab@latesting.com

LA Testing Order:	332225714
Customer ID:	32CONV56
Customer PO:	221616401
Project ID:	

Attention:	Laura Tanaka	**Phone:**	(626) 930-1260
	Converse Consultants	**Fax:**	(626) 930-1212
	717 S Myrtle Avenue	**Received Date:**	12/30/2022 8:00 AM
	Monrovia, CA 91016	**Analysis Date:**	01/06/2023 - 01/09/2023
		Collected Date:	12/29/2022
Project:	22-16-164-01		

Test Report: Asbestos Analysis of Bulk Materials via AHERA Method 40CFR 763 Subpart E Appendix E supplemented with EPA 600/R-93/116 using Polarized Light Microscopy

			Non-Asbestos		Asbestos
Sample	**Description**	**Appearance**	**% Fibrous**	**% Non-Fibrous**	**% Type**
1229-01 *332225714-0001*	SW PARKING, WEST - CONCRETE SLAB	Gray Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
1229-02 *332225714-0002*	SW PARKING, SE - CONCRETE SLAB	Gray Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
1229-03 *332225714-0003*	SW PARKING, NORTH - CONCRETE SLAB	Gray/Tan Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
1229-04 *332225714-0004*	SW PARKING, SOUTH - ASPHALT	Black Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
1229-05 *332225714-0005*	SW PARKING, WEST - ASPHALT	Black Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
1229-06 *332225714-0006*	SOUTH OF BLDGS B4/B6 + B7 - ASPHALT	Gray/Black Non-Fibrous Heterogeneous		100% Non-fibrous (Other)	None Detected
1229-07-Coating *332225714-0007*	TENNIS COURTS, WEST - COATED CONCRETE SLAB	Red Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
1229-07-Concrete *332225714-0007A*	TENNIS COURTS, WEST - COATED CONCRETE SLAB	Tan Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
1229-08-Coating *332225714-0008*	TENNIS COURTS, NORTH - COATED CONCRETE SLAB	Green Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
1229-08-Concrete *332225714-0008A*	TENNIS COURTS, NORTH - COATED CONCRETE SLAB	Tan Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
1229-09-Coating *332225714-0009*	TENNIS COURTS, WEST - COATED CONCRETE SLAB	Red Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
1229-09-Concrete *332225714-0009A*	TENNIS COURTS, WEST - COATED CONCRETE SLAB	Gray/Black Non-Fibrous Heterogeneous		100% Non-fibrous (Other)	None Detected
1229-10 *332225714-0010*	BIKE RACKS, S - CONCRETE SLAB	Gray Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
1229-11 *332225714-0011*	BIKE RACKS, SW - CONCRETE SLAB	Gray Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
1229-12 *332225714-0012*	BIKE RACKS, CENTER - CONCRETE SLAB	Gray/Tan Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
1229-13 *332225714-0013*	PATCHES NEAR TENNIS COURTS SE - PINK CONCRETE SLAB	Tan Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected

Initial report from: 01/09/2023 11:28:26

LA Testing

5431 Industrial Drive Huntington Beach, CA 92649

Tel/Fax: (714) 828-4999 / (714) 828-4944

http://www.LATesting.com / gardengrovelab@latesting.com

LA Testing Order:	332225714
Customer ID:	32CONV56
Customer PO:	221616401
Project ID:	

Test Report: Asbestos Analysis of Bulk Materials via AHERA Method 40CFR 763 Subpart E Appendix E supplemented with EPA 600/R-93/116 using Polarized Light Microscopy

			Non-Asbestos		Asbestos
Sample	**Description**	**Appearance**	**% Fibrous**	**% Non-Fibrous**	**% Type**
1229-14 *332225714-0014*	PATCHES NEAR TENNIS COURTS SE - PINK CONCRETE SLAB	Tan Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
1229-15 *332225714-0015*	PATCHES NEAR TENNIS COURTS SE - PINK CONCRETE SLAB	Brown Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
1229-16-Skim Coat *332225714-0016*	BLDG B1/B3, FOUNDATION, EAST, N - CONCRETE SLAB WITH SKIM COAT	Beige Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
1229-16-Concrete *332225714-0016A*	BLDG B1/B3, FOUNDATION, EAST, N - CONCRETE SLAB WITH SKIM COAT	Gray Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
1229-17-Skim Coat *332225714-0017*	BLDG B1/B3, FOUNDATION, EAST, S - CONCRETE SLAB WITH SKIM COAT	Beige Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
1229-17-Concrete *332225714-0017A*	BLDG B1/B3, FOUNDATION, EAST, S - CONCRETE SLAB WITH SKIM COAT	Gray Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
1229-18-Skim Coat *332225714-0018*	BLDG B1/B3, FOUNDATION, SOUTH - CONCRETE SLAB WITH SKIM COAT	White Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
1229-18-Concrete *332225714-0018A*	BLDG B1/B3, FOUNDATION, SOUTH - CONCRETE SLAB WITH SKIM COAT	Gray/Tan Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
1229-19-Skim Coat *332225714-0019*	BLDG B4/B6, FOUNDATION, SOUTH, W - CONCRETE SLAB WITH SKIM COAT	Black/Beige Non-Fibrous Heterogeneous		100% Non-fibrous (Other)	None Detected
1229-19-Concrete *332225714-0019A*	BLDG B4/B6, FOUNDATION, SOUTH, W - CONCRETE SLAB WITH SKIM COAT	Gray Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
1229-20-Skim Coat *332225714-0020*	BLDG B4/B6, FOUNDATION, SOUTH, E - CONCRETE SLAB WITH SKIM COAT	Beige Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
1229-20-Concrete *332225714-0020A*	BLDG B4/B6, FOUNDATION, SOUTH, E - CONCRETE SLAB WITH SKIM COAT	Gray Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected

Initial report from: 01/09/2023 11:28:26

LA Testing

5431 Industrial Drive Huntington Beach, CA 92649

Tel/Fax: (714) 828-4999 / (714) 828-4944

http://www.LATesting.com / gardengrovelab@latesting.com

LA Testing Order:	332225714
Customer ID:	32CONV56
Customer PO:	221616401
Project ID:	

Test Report: Asbestos Analysis of Bulk Materials via AHERA Method 40CFR 763 Subpart E Appendix E supplemented with EPA 600/R-93/116 using Polarized Light Microscopy

			Non-Asbestos		Asbestos
Sample	**Description**	**Appearance**	**% Fibrous**	**% Non-Fibrous**	**% Type**
1229-21-Skim Coat *332225714-0021*	BLDG B4/B6, FOUNDATION, EAST - CONCRETE SLAB WITH SKIM COAT	Beige Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
1229-21-Concrete *332225714-0021A*	BLDG B4/B6, FOUNDATION, EAST - CONCRETE SLAB WITH SKIM COAT	Gray Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
1229-22 *332225714-0022*	BLDG B1/B3, RM B1, WEST - 2 X 4 FISSURED CEILING PANELS	Tan/White Fibrous Heterogeneous	60% Cellulose 15% Min. Wool 10% Glass	15% Non-fibrous (Other)	None Detected
1229-23 *332225714-0023*	BLDG B1/B3, RM B2, NORTH - 2 X 4 FISSURED CEILING PANELS	Tan/White Fibrous Heterogeneous	60% Cellulose 10% Glass	15% Mica 15% Non-fibrous (Other)	None Detected
1229-24 *332225714-0024*	BLDG B1/B3, RM B3, EAST - 2 X 4 FISSURED CEILING PANELS	Tan/White Fibrous Heterogeneous	50% Cellulose 20% Min. Wool	30% Non-fibrous (Other)	None Detected
1229-25 *332225714-0025*	BLDG B1/B3, RM B1, WEST WALL - DRYWALL WALLS	Brown/Beige Fibrous Heterogeneous	9% Cellulose	91% Non-fibrous (Other)	None Detected
1229-26 *332225714-0026*	BLDG B1/B3, RM B1, SOUTH WALL - DRYWALL WALLS	Brown/Beige Fibrous Heterogeneous	7% Cellulose	93% Non-fibrous (Other)	None Detected
1229-27 *332225714-0027*	BLDG B1/B3, RM B2, NORTH WALL - DRYWALL WALLS	Brown/Beige Fibrous Heterogeneous	11% Cellulose	89% Non-fibrous (Other)	None Detected
1229-28 *332225714-0028*	BLDG B1/B3, RM B3, EAST WALL - DRYWALL WALLS	Brown/White/Yellow Fibrous Heterogeneous	7% Cellulose	93% Non-fibrous (Other)	None Detected
Result includes inseparable attached yellow mastic-like material.					
1229-29 *332225714-0029*	BLDG B1/B3, RM B3, NORTH, WEST - DRYWALL WALLS	Brown/White/Yellow Fibrous Heterogeneous	7% Cellulose	93% Non-fibrous (Other)	None Detected
Result includes inseparable attached yellow mastic-like material.					
1229-30 *332225714-0030*	BLDG B1/B3, RM B1, WEST - BASEBOARD MASTIC	Tan Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
1229-31-Mastic 1 *332225714-0031*	BLDG B1/B3, RM B2, EAST - BASEBOARD MASTIC	Tan Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
1229-31-Mastic 2 *332225714-0031A*	BLDG B1/B3, RM B2, EAST - BASEBOARD MASTIC	Yellow Non-Fibrous Homogeneous	2% Fibrous (Other)	98% Non-fibrous (Other)	None Detected
1229-32-Mastic 1 *332225714-0032*	BLDG B1/B3, RM B3, EAST, S - BASEBOARD MASTIC	Beige Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
1229-32-Mastic 2 *332225714-0032A*	BLDG B1/B3, RM B3, EAST, S - BASEBOARD MASTIC	Brown Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
1229-33 *332225714-0033*	BLDG B1/B3, RM B1, SW - CARPET BACKING + MASTIC	Tan Fibrous Heterogeneous	2% Synthetic	98% Non-fibrous (Other)	None Detected

Initial report from: 01/09/2023 11:28:26

LA Testing

5431 Industrial Drive Huntington Beach, CA 92649

Tel/Fax: (714) 828-4999 / (714) 828-4944

http://www.LATesting.com / gardengrovelab@latesting.com

LA Testing Order:	332225714
Customer ID:	32CONV56
Customer PO:	221616401
Project ID:	

Test Report: Asbestos Analysis of Bulk Materials via AHERA Method 40CFR 763 Subpart E Appendix E supplemented with EPA 600/R-93/116 using Polarized Light Microscopy

			Non-Asbestos		Asbestos
Sample	**Description**	**Appearance**	**% Fibrous**	**% Non-Fibrous**	**% Type**
Result includes inseparable attached carpet backing material.					
1229-34 *332225714-0034*	BLDG B1/B3, RM B2, EAST - CARPET BACKING + MASTIC	Tan Fibrous Heterogeneous	15% Cellulose 2% Synthetic	83% Non-fibrous (Other)	None Detected
Result includes inseparable attached carpet backing material.					
1229-35 *332225714-0035*	BLDG B1/B3, RM B3, SE - CARPET BACKING + MASTIC	Yellow Fibrous Heterogeneous	15% Cellulose	85% Non-fibrous (Other)	None Detected
Result includes inseparable attached carpet backing material.					
1229-36A *332225714-0036*	BLDG B4/B6, RM B4, NE - 2 X 4 FISSURED CEILING PANELS	Tan/White Fibrous Heterogeneous	60% Cellulose 10% Min. Wool 5% Glass	25% Non-fibrous (Other)	None Detected
1229-36B *332225714-0037*	BLDG B4/B6, RM B5, SOUTH - 2 X 4 FISSURED CEILING PANELS	Tan/White Fibrous Heterogeneous	60% Cellulose 10% Min. Wool 5% Glass	25% Non-fibrous (Other)	None Detected
1229-37 *332225714-0038*	BLDG B4/B6, RM B6, SOUTH - 2 X 4 FISSURED CEILING PANELS	Tan/White Fibrous Heterogeneous	40% Cellulose 20% Min. Wool	40% Non-fibrous (Other)	None Detected
1229-38 *332225714-0039*	BLDG B4/B6, RM B4, EAST WALL, N - DRYWALL WALLS	Brown/White Fibrous Heterogeneous	10% Cellulose	90% Non-fibrous (Other)	None Detected
1229-39 *332225714-0040*	BLDG B4/B6, RM B4, SOUTH WALL - DRYWALL WALLS	Brown/White Fibrous Heterogeneous	10% Cellulose	90% Non-fibrous (Other)	None Detected
1229-40 *332225714-0041*	BLDG B4/B6, RM B5, SOUTH WALL - DRYWALL WALLS	Brown/White Fibrous Heterogeneous	10% Cellulose	90% Non-fibrous (Other)	None Detected
1229-41 *332225714-0042*	BLDG B4/B6, RM B6, SOUTH WALL - DRYWALL WALLS	Brown/White Fibrous Heterogeneous	10% Cellulose	90% Non-fibrous (Other)	None Detected
1229-42-Mastic *332225714-0043*	BLDG B4/B6, RM B6, EAST WALL - DRYWALL WALLS	Yellow/Clear Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
1229-42-Drywall *332225714-0043A*	BLDG B4/B6, RM B6, EAST WALL - DRYWALL WALLS	Brown/White Fibrous Heterogeneous	10% Cellulose	90% Non-fibrous (Other)	None Detected
1229-43-Mastic 1 *332225714-0044*	BLDG B4/B6, RM B4, SOUTH - BASEBOARD MASTIC	Tan Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
1229-43-Mastic 2 *332225714-0044A*	BLDG B4/B6, RM B4, SOUTH - BASEBOARD MASTIC	Yellow Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
1229-43-Mastic 3 *332225714-0044B*	BLDG B4/B6, RM B4, SOUTH - BASEBOARD MASTIC	Beige Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
1229-44-Mastic 1 *332225714-0045*	BLDG B4/B6, RM B5, SOUTH - BASEBOARD MASTIC	Beige Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected

Initial report from: 01/09/2023 11:28:26

LA Testing

5431 Industrial Drive Huntington Beach, CA 92649

Tel/Fax: (714) 828-4999 / (714) 828-4944

http://www.LATesting.com / gardengrovelab@latesting.com

LA Testing Order:	332225714
Customer ID:	32CONV56
Customer PO:	221616401
Project ID:	

Test Report: Asbestos Analysis of Bulk Materials via AHERA Method 40CFR 763 Subpart E Appendix E supplemented with EPA 600/R-93/116 using Polarized Light Microscopy

			Non-Asbestos		Asbestos
Sample	**Description**	**Appearance**	**% Fibrous**	**% Non-Fibrous**	**% Type**
1229-44-Mastic 2 *332225714-0045A*	BLDG B4/B6, RM B5, SOUTH - BASEBOARD MASTIC	White Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
1229-45-Mastic 1 *332225714-0046*	BLDG B4/B6, RM B6, NORTH - BASEBOARD MASTIC	Beige Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
1229-45-Mastic 2 *332225714-0046A*	BLDG B4/B6, RM B6, NORTH - BASEBOARD MASTIC	Tan Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
1229-46-Mastic 1 *332225714-0047*	BLDG B4/B6, RM B4, SOUTH - CARPET MASTIC	Yellow Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
1229-46-Mastic 2 *332225714-0047A*	BLDG B4/B6, RM B4, SOUTH - CARPET MASTIC	Brown Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
1229-47-Carpet *332225714-0048*	BLDG B4/B6, RM B5, SE - CARPET MASTIC	White/Various/Black Fibrous Homogeneous	90% Synthetic	10% Non-fibrous (Other)	None Detected
1229-47-Mastic *332225714-0048A*	BLDG B4/B6, RM B5, SE - CARPET MASTIC	Yellow Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
1229-48-Carpet *332225714-0049*	BLDG B4/B6, RM B6, EAST - CARPET MASTIC	Blue Fibrous Homogeneous	90% Synthetic	10% Non-fibrous (Other)	None Detected
1229-48-Mastic *332225714-0049A*	BLDG B4/B6, RM B6, EAST - CARPET MASTIC	Yellow Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
1229-49 *332225714-0050*	BLDG B7, NORTH - 2 X 4 FISSURED CEILING PANELS	Brown/White Fibrous Heterogeneous	65% Cellulose	35% Non-fibrous (Other)	None Detected
1229-50 *332225714-0051*	BLDG B7, EAST - 2 X 4 FISSURED CEILING PANELS	Brown/White Fibrous Heterogeneous	65% Cellulose	35% Non-fibrous (Other)	None Detected
1229-51 *332225714-0052*	BLDG B7, SOUTH - 2 X 4 FISSURED CEILING PANELS	Tan/White Fibrous Heterogeneous	40% Cellulose	60% Non-fibrous (Other)	None Detected
1229-52-Joint Compound *332225714-0053*	BLDG B7, NORTH WALL - DRYWALL WALL WITH JOINT COMPOUND				Layer Not Present
1229-52-Drywall *332225714-0053A*	BLDG B7, NORTH WALL - DRYWALL WALL WITH JOINT COMPOUND	Brown/White Fibrous Heterogeneous	10% Cellulose	90% Non-fibrous (Other)	None Detected
1229-53-Joint Compound *332225714-0054*	BLDG B7, EAST WALL - DRYWALL WALL WITH JOINT COMPOUND	White Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
1229-53-Tape *332225714-0054A*	BLDG B7, EAST WALL - DRYWALL WALL WITH JOINT COMPOUND	Beige Fibrous Homogeneous	90% Cellulose	10% Non-fibrous (Other)	None Detected

Initial report from: 01/09/2023 11:28:26

LA Testing

5431 Industrial Drive Huntington Beach, CA 92649

Tel/Fax: (714) 828-4999 / (714) 828-4944

http://www.LATesting.com / gardengrovelab@latesting.com

LA Testing Order:	332225714
Customer ID:	32CONV56
Customer PO:	221616401
Project ID:	

Test Report: Asbestos Analysis of Bulk Materials via AHERA Method 40CFR 763 Subpart E Appendix E supplemented with EPA 600/R-93/116 using Polarized Light Microscopy

			Non-Asbestos		Asbestos
Sample	**Description**	**Appearance**	**% Fibrous**	**% Non-Fibrous**	**% Type**
1229-53-Mastic *332225714-0054B*	BLDG B7, EAST WALL - DRYWALL WALL WITH JOINT COMPOUND	Yellow Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
1229-53-Insulation *332225714-0054C*	BLDG B7, EAST WALL - DRYWALL WALL WITH JOINT COMPOUND	Yellow Fibrous Homogeneous	95% Glass	5% Non-fibrous (Other)	None Detected
1229-53-Drywall *332225714-0054D*	BLDG B7, EAST WALL - DRYWALL WALL WITH JOINT COMPOUND	Brown/White Fibrous Heterogeneous	10% Cellulose 2% Glass	88% Non-fibrous (Other)	None Detected
1229-54-Joint Compound *332225714-0055*	BLDG B7, EAST WALL, S - DRYWALL WALL WITH JOINT COMPOUND	White Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
1229-54-Tape *332225714-0055A*	BLDG B7, EAST WALL, S - DRYWALL WALL WITH JOINT COMPOUND	Beige Fibrous Homogeneous	90% Cellulose	10% Non-fibrous (Other)	None Detected
1229-54-Drywall *332225714-0055B*	BLDG B7, EAST WALL, S - DRYWALL WALL WITH JOINT COMPOUND	Brown/White Fibrous Heterogeneous	10% Cellulose 2% Glass	88% Non-fibrous (Other)	None Detected
1229-55-Mastic *332225714-0056*	BLDG B7, SOUTH WALL - DRYWALL WALL WITH JOINT COMPOUND	Yellow/Clear Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
1229-55-Joint Compound *332225714-0056A*	BLDG B7, SOUTH WALL - DRYWALL WALL WITH JOINT COMPOUND				Layer Not Present
1229-55-Drywall *332225714-0056B*	BLDG B7, SOUTH WALL - DRYWALL WALL WITH JOINT COMPOUND	Brown/White Fibrous Heterogeneous	10% Cellulose <1% Glass	90% Non-fibrous (Other)	None Detected
1229-56-Joint Compound *332225714-0057*	BLDG B7, EAST WALL, N - DRYWALL WALL WITH JOINT COMPOUND	White Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
1229-56-Tape *332225714-0057A*	BLDG B7, EAST WALL, N - DRYWALL WALL WITH JOINT COMPOUND	Beige Fibrous Homogeneous	90% Cellulose	10% Non-fibrous (Other)	None Detected
1229-56-Drywall *332225714-0057B*	BLDG B7, EAST WALL, N - DRYWALL WALL WITH JOINT COMPOUND	Brown/White Fibrous Heterogeneous	10% Cellulose 2% Glass	88% Non-fibrous (Other)	None Detected
1229-57-Mastic 1 *332225714-0058*	BLDG B7, NORTH - CARPET MASTIC	Yellow Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
1229-57-Leveler *332225714-0058A*	BLDG B7, NORTH - CARPET MASTIC	Gray Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
1229-57-Mastic 2 *332225714-0058B*	BLDG B7, NORTH - CARPET MASTIC	Clear Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected

Initial report from: 01/09/2023 11:28:26

LA Testing

5431 Industrial Drive Huntington Beach, CA 92649

Tel/Fax: (714) 828-4999 / (714) 828-4944

http://www.LATesting.com / gardengrovelab@latesting.com

LA Testing Order:	332225714
Customer ID:	32CONV56
Customer PO:	221616401
Project ID:	

Test Report: Asbestos Analysis of Bulk Materials via AHERA Method 40CFR 763 Subpart E Appendix E supplemented with EPA 600/R-93/116 using Polarized Light Microscopy

			Non-Asbestos		Asbestos
Sample	**Description**	**Appearance**	**% Fibrous**	**% Non-Fibrous**	**% Type**
1229-58-Mastic *332225714-0059*	BLDG B7, NE DOORWAY - CARPET MASTIC	Yellow/Clear Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
1229-58-Leveler *332225714-0059A*	BLDG B7, NE DOORWAY - CARPET MASTIC	Gray Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
1229-59-Mastic *332225714-0060*	BLDG B7, SW DOORWAY - CARPET MASTIC	Yellow/Clear Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
1229-59-Leveler 1 *332225714-0060A*	BLDG B7, SW DOORWAY - CARPET MASTIC	Gray Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
1229-59-Leveler 2 *332225714-0060B*	BLDG B7, SW DOORWAY - CARPET MASTIC	White Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
1229-60-Mastic 1 *332225714-0061*	BLDG B7, WEST WALL - BASEBOARD MASTIC	Beige Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
1229-60-Mastic 2 *332225714-0061A*	BLDG B7, WEST WALL - BASEBOARD MASTIC	Tan Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
1229-61-Mastic 1 *332225714-0062*	BLDG B7, NORTH WALL - BASEBOARD MASTIC	Beige Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
1229-61-Mastic 2 *332225714-0062A*	BLDG B7, NORTH WALL - BASEBOARD MASTIC	Tan Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
1229-62 *332225714-0063*	BLDG B7, EAST WALL - BASEBOARD MASTIC	Beige Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
1229-63 *332225714-0064*	BLDG B7, SE METAL SINK - SINK UNDERCOAT	Gray Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
1229-64 *332225714-0065*	BLDG B7, SE METAL SINK - SINK UNDERCOAT	Gray Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
1229-65-Sink Undercoat *332225714-0066*	BLDG B7, SW METAL SINK - SINK UNDERCOAT	Gray Non-Fibrous Homogeneous	3% Cellulose	97% Non-fibrous (Other)	None Detected
1229-65-Sealant *332225714-0066A*	BLDG B7, SW METAL SINK - SINK UNDERCOAT	Beige Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected

Initial report from: 01/09/2023 11:28:26

LA Testing

5431 Industrial Drive Huntington Beach, CA 92649

Tel/Fax: (714) 828-4999 / (714) 828-4944

http://www.LATesting.com / gardengrovelab@latesting.com

LA Testing Order:	332225714
Customer ID:	32CONV56
Customer PO:	221616401
Project ID:	

Analyst(s)

Alexis Rodriguez (25)
Irene Chang (17)
Kaylin Luciani (14)
Mindy Le (28)
Rammy Nasry (18)

Michael Chapman, Laboratory Manager
or Other Approved Signatory

Initial report from: 01/09/2023 11:28:26

OrderID: 332225689

Asbestos Chain of Custody

LA Testing Order Number *(Lab Use Only)*:
#332225689

LA TESTING
520 MISSION STREET
S. PASADENA, CA 91030
PHONE: (323) 254-9960
FAX: (323) 254-9982

Company : Converse Consultants		**LA Testing-Bill to:** ☒ Same ☐ Different If Bill to is Different note instructions in Comments** *Third Party Billing requires written authorization from third party*	
Street: 717 S. Myrtle Avenue			
City: Monrovia	**State/Province: CA**	**Zip/Postal Code: 91016**	**Country: USA**
Report To (Name): Laura Tanaka		**Fax #:**	
Telephone #: (626) 807-3422		**Email Address: ltanaka@converseconsultants.com**	
Project Name/Number: 22-16-164-01			
Please Provide Results: ☐ Fax ☒ Email	**Purchase Order: 221616401**	**U.S. State Samples Taken: CA**	

Turnaround Time (TAT) Options* – Please Check

☐ 3 Hour ☐ 6 Hour ☐ 24 Hour ☐ 48 Hour ☐ 72 Hour ☐ 96 Hour ☒ 1 Week ☐ 2 Week

**For TEM Air 3 hours through 6 hours, please call ahead to schedule.*There is a premium charge for 3 Hour TEM AHERA or EPA Level II TAT. You will be asked to sign an authorization form for this service. Analysis completed in accordance with LA Testing's Terms and Conditions located in the Analytical Price Guide.*

PCM - Air
- ☐ NIOSH 7400
- ☐ w/ OSHA 8hr. TWA

PLM - Bulk (reporting limit)
- ☒ PLM EPA 600/R-93/116 (<1%)
- ☐ PLM EPA NOB (<1%)

Point Count
- ☐ 400 (<0.25%) ☐ 1000 (<0.1%)

Point Count w/Gravimetric
- ☐ 400 (<0.25%) ☐ 1000 (<0.1%)
- ☐ NYS 198.1 (friable in NY)
- ☐ NYS 198.6 NOB (non-friable-NY)
- ☐ NIOSH 9002 (<1%)

TEM – Air ☐ **4-4.5hr TAT (AHERA only)**
- ☐ AHERA 40 CFR, Part 763
- ☐ NIOSH 7402
- ☐ EPA Level II
- ☐ ISO 10312

TEM - Bulk
- ☐ TEM EPA NOB
- ☐ NYS NOB 198.4 (non-friable-NY)
- ☐ Chatfield SOP
- ☐ TEM Mass Analysis-EPA 600 sec. 2.5

TEM – Water: EPA 100.2
- Fibers >10µm ☐ Waste ☐ Drinking
- All Fiber Sizes ☐ Waste ☐ Drinking

TEM- Dust
- ☐ Microvac - ASTM D 5755
- ☐ Wipe - ASTM D6480
- ☐ Carpet Sonication (EPA 600/J-93/167)

Soil/Rock/Vermiculite
- ☐ PLM CARB 435 - A (0.25% sensitivity)
- ☐ PLM CARB 435 - B (0.1% sensitivity)
- ☐ TEM CARB 435 - B (0.1% sensitivity)
- ☐ TEM CARB 435 - C (0.01% sensitivity)
- ☐ EPA Protocol (Semi-Quantitative)
- ☐ EPA Protocol (Quantitative)

Other:
- ☐

☐ **Check For Positive Stop – Clearly Identify Homogenous Group**

Samplers Name: Rodney Stansfield | **Samplers Signature:** Rodney Stansfield

Sample #	Sample Description	Volume/Area (Air) HA # (Bulk)	Date/Time Sampled
	SEE ATTACHED	SEE ATTACHED	12/27/22

Client Sample # (s): - **Total # of Samples:**

Relinquished (Client): Rod Stansfield **Date:** 12/27/22 **Time:** 2040

Received (Lab): Jonathan Santos (OB) **Date:** 12/28/22 **Time:** 8a

Comments/Special Instructions:

Page 1 of 13 pages

Controlled Document – Asbestos COC – R2 – 1/12/2010

OrderID: 332225689

#332225689

Converse Consultants

☐ Monrovia Office
717 S. Myrtle Avenue
Monrovia, CA 91016
(626) 930-1200

☐ Costa Mesa Office
3176 Pullman St., Suite 108
Costa Mesa, CA 92626
(714) 444-9660

☒ Rancho Office
8333 Foothill Blvd. Suite 104
Rancho Cuca, CA 91730
(909) 796-0544

BULK SAMPLE LOG

Project Name: Auburndale MS

Collected By: RDS

Project No.: ~~16-22~~ 22-16-164-01

Date: 12/27/22

HOMOGENEOUS MATERIAL: Plasticized Roof Felt

Sample Number	Sample Location/Description	Approx. Area (Sq Ft or LF)	Friable or Non-friable	Intact or Damaged
1227-01	Bldg B8, Roof, North	2000	NF	Int
1227-02	" , " , SE	"	"	"
1227-03	" , " , West	"	"	"

Additional Comments: Felt over styrofoam over wood base. Edge mastic is silicone.

50x40'

OrderID: 332225689

#332225689

Converse Consultants

☐ Monrovia Office
717 S. Myrtle Avenue
Monrovia, CA 91016
(626) 930-1200

☐ Costa Mesa Office
3176 Pullman St., Suite 108
Costa Mesa, CA 92626
(714) 444-9660

☒ Rancho Office
8333 Foothill Blvd. Suite 104
Rancho Cuca, CA 91730
(909) 796-0544

BULK SAMPLE LOG

Project Name: Auburndale MS Collected By: RDS

Project No.: ~~E~~22-16-164-01 Date: 12/27/22

HOMOGENEOUS MATERIAL: Roof Core

Sample Number	Sample Location/Description	Approx. Area (Sq Ft or LF)	Friable or Non-friable	Intact or Damaged
1227-04	Bldg B1/B3, Roof, North	3,600	NF	Int
1227-05	↓ , ↓ , SE	↓	↓	↓
1227-06	↓ , ↓ , SW	↓	↓	↓

Additional Comments: on wood base.

90 X 40

OrderID: 332225689

#332225689

Converse Consultants

☐ Monrovia Office
717 S. Myrtle Avenue
Monrovia, CA 91016
(626) 930-1200

☐ Costa Mesa Office
3176 Pullman St., Suite 108
Costa Mesa, CA 92626
(714) 444-9660

☒ Rancho Office
8333 Foothill Blvd. Suite 104
Rancho Cuca, CA 91730
(909) 796-0544

BULK SAMPLE LOG

Project Name: Auberndale MS Collected By: RDS

Project No.: 22-16-164-01 Date: 12/27/22

HOMOGENEOUS MATERIAL: Penetration Mastic

Sample Number	Sample Location/Description	Approx. Area (Sq Ft or LF)	Friable or Non-friable	Intact or Damaged
227-07	Bldg B1/B3, Roof, North Edge	130	NF	Int
1227-08	↓ , ↓ , SE	↓	↓	↓
227-09	↓ , ↓ , SW	↓	↓	↓

Additional Comments:

OrderID: 332225689

#332225689

Converse Consultants

☐ Monrovia Office
717 S. Myrtle Avenue
Monrovia, CA 91016
(626) 930-1200

☐ Costa Mesa Office
3176 Pullman St., Suite 108
Costa Mesa, CA 92626
(714) 444-9660

☒ Rancho Office
8333 Foothill Blvd. Suite 104
Rancho Cuca, CA 91730
(909) 796-0544

BULK SAMPLE LOG

Project Name: Auburndale MS Collected By: RDS

Project No.: 22-16-164-01 Date: 12/27/22

HOMOGENEOUS MATERIAL: Roof Core

Sample Number	Sample Location/Description	Approx. Area (Sq Ft or LF)	Friable or Non-friable	Intact or Damaged
1227-10	Bldg B4/B6, Roof, East	3,600	NF	Int
1227-11	, , Center	↓	↓	↓
1227-12	, , West	↓	↓	↓

Additional Comments:

OrderID: 332225689

#332225689

Converse Consultants

☐ Monrovia Office
717 S. Myrtle Avenue
Monrovia, CA 91016
(626) 930-1200

☐ Costa Mesa Office
3176 Pullman St., Suite 108
Costa Mesa, CA 92626
(714) 444-9660

☒ Rancho Office
8333 Foothill Blvd. Suite 104
Rancho Cuca, CA 91730
(909) 796-0544

BULK SAMPLE LOG

Project Name: Auburndale MS Collected By: RDS

Project No.: 22-16-164-01 Date: 12/27/22

HOMOGENEOUS MATERIAL: Light Grey Penetration Mastic

Sample Number	Sample Location/Description	Approx. Area (Sq Ft or LF)	Friable or Non-friable	Intact or Damaged
1227-13	Bldg B4/B6, Roof, East	130	NF	Int
1227-14	, , South	↓	↓	↓
1227-15	, , North	↓	↓	↓

Additional Comments: Roof edges

OrderID: 332225689

Converse Consultants

☐ Monrovia Office
717 S. Myrtle Avenue
Monrovia, CA 91016
(626) 930-1200

☐ Costa Mesa Office
3176 Pullman St., Suite 108
Costa Mesa, CA 92626
(714) 444-9660

☒ Rancho Office
8333 Foothill Blvd. Suite 104
Rancho Cuca, CA 91730
(909) 796-0544

BULK SAMPLE LOG

Project Name: Auburndale MS Collected By: RDS

Project No.: 22-16-164-01 Date: 12/27/22

HOMOGENEOUS MATERIAL: Dark Grey Penetration Mastic

Sample Number	Sample Location/Description	Approx. Area (Sq Ft or LF)	Friable or Non-friable	Intact or Damaged
1227-16	Bldg B4/B6, Roof, SE	20	NF	Int
1227-17	" , " , South	"	"	"
1227-18	" , " , SW	"	"	"

Additional Comments: South Roof Edge, With gravel

OrderID: 332225689

#332225689

Converse Consultants

☐ Monrovia Office
717 S. Myrtle Avenue
Monrovia, CA 91016
(626) 930-1200

☐ Costa Mesa Office
3176 Pullman St., Suite 108
Costa Mesa, CA 92626
(714) 444-9660

☒ Rancho Office
8333 Foothill Blvd. Suite 104
Rancho Cuca, CA 91730
(909) 796-0544

BULK SAMPLE LOG

Project Name: Auburndale MS Collected By: RDS

Project No.: 22-16-164-01 Date: 12/27/22

HOMOGENEOUS MATERIAL: Roof Core

Sample Number	Sample Location/Description	Approx. Area (Sq Ft or LF)	Friable or Non-friable	Intact or Damaged
1227-19	Bldg B7, Roof, North	1,575	NF	Int
1227-20	, , East	↓	↓	↓
1227-21	↓ , ↓ , SW			

Additional Comments: Rolled Roofing on wood base.
Most mastic is non-suspect "hot mop".

45 x 35

OrderID: 332225689

#332225689

Converse Consultants

☐ Monrovia Office
717 S. Myrtle Avenue
Monrovia, CA 91016
(626) 930-1200

☐ Costa Mesa Office
3176 Pullman St., Suite 108
Costa Mesa, CA 92626
(714) 444-9660

☒ Rancho Office
8333 Foothill Blvd. Suite 104
Rancho Cuca, CA 91730
(909) 796-0544

BULK SAMPLE LOG

Project Name: Auburndale MS Collected By: RDS

Project No.: 22-16-164-01 Date: 12/27/22

HOMOGENEOUS MATERIAL: Black Penetration Mastic

Sample Number	Sample Location/Description	Approx. Area (Sq Ft or LF)	Friable or Non-friable	Intact or Damaged
1227-22	Bldg B7, Roof, East	30	NF	Int
1227-23	, , Center	↓	↓	↓
1227-24	, , Center	↓	↓	↓

Additional Comments: with gravel. Sporadic

#332225689

Converse Consultants

☐ Monrovia Office
717 S. Myrtle Avenue
Monrovia, CA 91016
(626) 930-1200

☐ Costa Mesa Office
3176 Pullman St., Suite 108
Costa Mesa, CA 92626
(714) 444-9660

☒ Rancho Office
8333 Foothill Blvd. Suite 104
Rancho Cuca, CA 91730
(909) 796-0544

BULK SAMPLE LOG

Project Name: Auburndale MS Collected By: RDS

Project No.: 22-16-164-01 Date: 12/27/22

HOMOGENEOUS MATERIAL: Exterior Concrete Slab

Sample Number	Sample Location/Description	Approx. Area (Sq Ft or LF)	Friable or Non-friable	Intact or Damaged
1227-25	Between Bldg B7 and B8	11,000	NF	Int
1227-26	Courtyard, center	↓	↓	↓
1227-27	Porch, in front of Room B2	↓	↓	↓

Additional Comments: Sidewalks and porches appear to be similar concrete.

204 x 108 - overall footprint

OrderID: 332225689

#332225689

Converse Consultants

☐ Monrovia Office
717 S. Myrtle Avenue
Monrovia, CA 91016
(626) 930-1200

☐ Costa Mesa Office
3176 Pullman St., Suite 108
Costa Mesa, CA 92626
(714) 444-9660

☒ Rancho Office
8333 Foothill Blvd. Suite 104
Rancho Cuca, CA 91730
(909) 796-0544

BULK SAMPLE LOG

Project Name: Auburndale MS Collected By: RDS

Project No.: 22-16-164-01 Date: 12/27/22

HOMOGENEOUS MATERIAL: Carpet Mastic

Sample Number	Sample Location/Description	Approx. Area (Sq Ft or LF)	Friable or Non-friable	Intact or Damaged
1227-28	Bldg B8, SE Doorway	35	NF	Int
1227-29	, NW Doorway	↓	↓	↓
1227-30	, NW Doorway	↓	↓	↓

Additional Comments: Under carpet squares, on wood base. Remainder of carpet has non-suspect clear adhesive on wood.

OrderID: 332225689

#332225689

Converse Consultants

☐ Monrovia Office
717 S. Myrtle Avenue
Monrovia, CA 91016
(626) 930-1200

☐ Costa Mesa Office
3176 Pullman St., Suite 108
Costa Mesa, CA 92626
(714) 444-9660

☒ Rancho Office
8333 Foothill Blvd. Suite 104
Rancho Cuca, CA 91730
(909) 796-0544

BULK SAMPLE LOG

Project Name: Auburndale MS Collected By: RDS

Project No.: 22-16-164-01 Date: 12/27/22

HOMOGENEOUS MATERIAL: Baseboard Mastic

Sample Number	Sample Location/Description	Approx. Area (Sq Ft or LF)	Friable or Non-friable	Intact or Damaged
1227-31	Bldg B8, South Wall, East	45	NF	Int
1227-32	, West Wall	↓	↓	↓
1227-33	, North Wall	↓	↓	↓

Additional Comments: On fabric wall-board. Baseboard is non-suspect vinyl.

OrderID: 332225689

#332225689

Converse Consultants

☐ Monrovia Office
717 S. Myrtle Avenue
Monrovia, CA 91016
(626) 930-1200

☐ Costa Mesa Office
3176 Pullman St., Suite 108
Costa Mesa, CA 92626
(714) 444-9660

☒ Rancho Office
8333 Foothill Blvd. Suite 104
Rancho Cuca, CA 91730
(909) 796-0544

BULK SAMPLE LOG

Project Name: Auburndale MS Collected By: RDS

Project No.: 22-16-164-01 Date: 12/27/22

HOMOGENEOUS MATERIAL: Drywall Walls

Sample Number	Sample Location/Description	Approx. Area (Sq Ft or LF)	Friable or Non-friable	Intact or Damaged
1227-34	Bldg B8, East wall, South	1,800	NF	Int
1227-35	, East wall	↓	↓	↓
1227-36	, NE corner			
1227-37	, NW corner			
1227-38	, West wall			

Additional Comments: Behind woven fiberboard. No joint compound observed.
- Suspended ceiling is fiberglass panels
- Above suspended ceiling - fiberglass insulation, wood deck, plastic HVAC and conduits.

RD

OrderID: 332225714

Asbestos Chain of Custody

LA Testing Order Number (*Lab Use Only*):

#332225714

LA TESTING
520 MISSION STREET
S. PASADENA, CA 91030
PHONE: (323) 254-9960
FAX: (323) 254-9982

Company : Converse Consultants	**LA Testing-Bill to:** ☒ Same ☐ Different If Bill to is Different note instructions in Comments** *Third Party Billing requires written authorization from third party*
Street: 717 S. Myrtle Avenue	
City: Monrovia / **State/Province: CA**	**Zip/Postal Code: 91016** / **Country: USA**
Report To (Name): Laura Tanaka	**Fax #:**
Telephone #: (626) 807-3422	**Email Address: ltanaka@converseconsultants.com**
Project Name/Number: 22-16-164-01	
Please Provide Results: ☐ Fax ☒ Email	**Purchase Order: 221616401** / **U.S. State Samples Taken: CA**

Turnaround Time (TAT) Options* – Please Check

☐ 3 Hour ☐ 6 Hour ☐ 24 Hour ☐ 48 Hour ☐ 72 Hour ☐ 96 Hour ☒ 1 Week ☐ 2 Week

**For TEM Air 3 hours through 6 hours, please call ahead to schedule.*There is a premium charge for 3 Hour TEM AHERA or EPA Level II TAT. You will be asked to sign an authorization form for this service. Analysis completed in accordance with LA Testing's Terms and Conditions located in the Analytical Price Guide.*

PCM - Air
- ☐ NIOSH 7400
- ☐ w/ OSHA 8hr. TWA

PLM - Bulk (reporting limit)
- ☒ PLM EPA 600/R-93/116 (<1%)
- ☐ PLM EPA NOB (<1%)

Point Count
- ☐ 400 (<0.25%) ☐ 1000 (<0.1%)

Point Count w/Gravimetric
- ☐ 400 (<0.25%) ☐ 1000 (<0.1%)
- ☐ NYS 198.1 (friable in NY)
- ☐ NYS 198.6 NOB (non-friable-NY)
- ☐ NIOSH 9002 (<1%)

TEM – Air ☐ **4-4.5hr TAT** (AHERA only)
- ☐ AHERA 40 CFR, Part 763
- ☐ NIOSH 7402
- ☐ EPA Level II
- ☐ ISO 10312

TEM - Bulk
- ☐ TEM EPA NOB
- ☐ NYS NOB 198.4 (non-friable-NY)
- ☐ Chatfield SOP
- ☐ TEM Mass Analysis-EPA 600 sec. 2.5

TEM – Water: EPA 100.2
- Fibers >10µm ☐ Waste ☐ Drinking
- All Fiber Sizes ☐ Waste ☐ Drinking

TEM- Dust
- ☐ Microvac - ASTM D 5755
- ☐ Wipe - ASTM D6480
- ☐ Carpet Sonication (EPA 600/J-93/167)

Soil/Rock/Vermiculite
- ☐ PLM CARB 435 - A (0.25% sensitivity)
- ☐ PLM CARB 435 - B (0.1% sensitivity)
- ☐ TEM CARB 435 - B (0.1% sensitivity)
- ☐ TEM CARB 435 - C (0.01% sensitivity)
- ☐ EPA Protocol (Semi-Quantitative)
- ☐ EPA Protocol (Quantitative)

Other:
- ☐

☐ **Check For Positive Stop – Clearly Identify Homogenous Group**

Samplers Name: Rodney Stansfield / **Samplers Signature:** Rod Stansfield

Sample #	Sample Description	Volume/Area (Air) HA # (Bulk)	Date/Time Sampled
	SEE ATTACHED	SEE ATTACHED	12/29/22

Client Sample # (s): - **Total # of Samples:**

Relinquished (Client): Rod Stansfield **Date:** 12/29/22 **Time:** 1915

Received (Lab): Emily Mendoza (DB) **Date:** 12/30/22 **Time:** 8AM

Comments/Special Instructions:

Page 1 of 21 pages

Controlled Document – Asbestos COC – R2 – 1/12/2010

OrderID: 332225714

Converse Consultants

☐ Monrovia Office
717 S. Myrtle Avenue
Monrovia, CA 91016
(626) 930-1200

☐ Costa Mesa Office
3176 Pullman St., Suite 108
Costa Mesa, CA 92626
(714) 444-9660

☒ Rancho Office
8333 Foothill Blvd. Suite 104
Rancho Cuca, CA 91730
(909) 796-0544

#332225714

BULK SAMPLE LOG

Project Name: Auburndale MS

Collected By: RDS

Project No.: 22-16-164-01

Date: 12/29/22

HOMOGENEOUS MATERIAL: Concrete Slab

Sample Number	Sample Location/Description	Approx. Area (Sq Ft or LF)	Friable or Non-friable	Intact or Damaged
1229-01	SW Parking, West	21,900	NF	Int
1229-02	↓ , SE	↓	↓	↓
1229-03	↓ , North	↓	↓	↓

Additional Comments:

186 x 118

OrderID: 332225714

Converse Consultants
#332225714

☐ Monrovia Office
717 S. Myrtle Avenue
Monrovia, CA 91016
(626) 930-1200

☐ Costa Mesa Office
3176 Pullman St., Suite 108
Costa Mesa, CA 92626
(714) 444-9660

☒ Rancho Office
8333 Foothill Blvd. Suite 104
Rancho Cuca, CA 91730
(909) 796-0544

BULK SAMPLE LOG

Project Name: Auburndale MS
Collected By: RDS
Project No.: 22-16-164-01
Date: 12/29/22

HOMOGENEOUS MATERIAL: Asphalt

Sample Number	Sample Location/Description	Approx. Area (Sq Ft or LF)	Friable or Non-friable	Intact or Damaged
1229-04	SW Parking, South	11,200	NF	Int
1229-05	↓ , West	↓	↓	↓
1229-06	South of Bldgs B4/B6 + B7	↓	↓	↓

Additional Comments: No fabric layer observed.

(118×80)+(120×15)

OrderID: 332225714

Converse Consultants
#3322257 14

☐ Monrovia Office
717 S. Myrtle Avenue
Monrovia, CA 91016
(626) 930-1200

☐ Costa Mesa Office
3176 Pullman St., Suite 108
Costa Mesa, CA 92626
(714) 444-9660

☒ Rancho Office
8333 Foothill Blvd. Suite 104
Rancho Cuca, CA 91730
(909) 796-0544

BULK SAMPLE LOG

Project Name: Auburndale MS Collected By: RDS

Project No.: 22-16-164-01 Date: 12/29/22

HOMOGENEOUS MATERIAL: Coated Concrete Slabs

Sample Number	Sample Location/Description	Approx. Area (Sq Ft or LF)	Friable or Non-friable	Intact or Damaged
1229-07	Tennis Courts, West	22,080	NF	Int
1229-08	, North	↓	↓	↓
1229-09	, West	↓	↓	↓

Additional Comments: Red or green coating - same consistency

184 x 120

OrderID: 332225714

Converse Consultants

☐ Monrovia Office
717 S. Myrtle Avenue
Monrovia, CA 91016
(626) 930-1200

☐ Costa Mesa Office
3176 Pullman St., Suite 108
Costa Mesa, CA 92626
(714) 444-9660

☒ Rancho Office
8333 Foothill Blvd. Suite 104
Rancho Cuca, CA 91730
(909) 796-0544

#332225714

BULK SAMPLE LOG

Project Name: Auburndale MS Collected By: RDS

Project No.: 22-16-164-01 Date: 12/29/22

HOMOGENEOUS MATERIAL: Concrete Slab

Sample Number	Sample Location/Description	Approx. Area (Sq Ft or LF)	Friable or Non-friable	Intact or Damaged
1229-10	Bike Racks, S	3,560	NF	Int
1229-11	, SW	↓	↓	↓
1229-12	, Center	↓	↓	↓

Additional Comments: Adjacent to Tennis Courts

120 X 33

OrderID: 332225714

Converse Consultants

#332225714

☐ Monrovia Office
717 S. Myrtle Avenue
Monrovia, CA 91016
(626) 930-1200

☐ Costa Mesa Office
3176 Pullman St., Suite 108
Costa Mesa, CA 92626
(714) 444-9660

☒ Rancho Office
8333 Foothill Blvd. Suite 104
Rancho Cuca, CA 91730
(909) 796-0544

BULK SAMPLE LOG

Project Name: Auburndale MS Collected By: RDS

Project No.: 22-16-164-01 Date: 12/29/22

HOMOGENEOUS MATERIAL: Pink Concrete Slab

Sample Number	Sample Location/Description	Approx. Area (Sq Ft or LF)	Friable or Non-friable	Intact or Damaged
1229-13	Patches near Tennis Courts SE	380	NF	Int
1229-14	↓	↓	↓	↓
1229-15	↓	↓	↓	↓

Additional Comments: Next to Bike Racks

33X12

OrderID: 332225714

Converse Consultants

#332225714

☐ Monrovia Office
717 S. Myrtle Avenue
Monrovia, CA 91016
(626) 930-1200

☐ Costa Mesa Office
3176 Pullman St., Suite 108
Costa Mesa, CA 92626
(714) 444-9660

☒ Rancho Office
8333 Foothill Blvd. Suite 104
Rancho Cuca, CA 91730
(909) 796-0544

BULK SAMPLE LOG

Project Name: Auburndale MS Collected By: RDS

Project No.: 22-16-164-01 Date: 12/29/22

HOMOGENEOUS MATERIAL: Concrete Slab with Skim Coat *

Sample Number	Sample Location/Description	Approx. Area (Sq Ft or LF)	Friable or Non-friable	Intact or Damaged
1229-16	Bldg B1/B3, Foundation, East, N	2700*	NF	Int
1229-17	" , " , East, S	"	"	"
1229-18	" , " , South	"	"	"

Additional Comments: * 60 sq ft on east and south perimeter only. Rest is bare ~~Co~~ concrete

90x30

OrderID: 332225714

Converse Consultants

#332225714

☐ Monrovia Office
717 S. Myrtle Avenue
Monrovia, CA 91016
(626) 930-1200

☐ Costa Mesa Office
3176 Pullman St., Suite 108
Costa Mesa, CA 92626
(714) 444-9660

☒ Rancho Office
8333 Foothill Blvd. Suite 104
Rancho Cuca, CA 91730
(909) 796-0544

BULK SAMPLE LOG

Project Name: Auburndale MS Collected By: RDS

Project No.: 22-16-164-01 Date: 12/29/22

HOMOGENEOUS MATERIAL: Concrete slab with Skim Coat *

Sample Number	Sample Location/Description	Approx. Area (Sq Ft or LF)	Friable or Non-friable	Intact or Damaged
1229-19	Bldg B4/B6, Foundation, South, W	2700*	NF	Int
1229-20	, , South, E	↓	↓	↓
1229-21	↓ , ↓ , East	↓	↓	↓

Additional Comments: * 60 sq. ft. of skim coat on south and east perimeter only. Remainder is bare concrete.

90 X 30

OrderID: 332225714

Converse Consultants

☐ Monrovia Office
717 S. Myrtle Avenue
Monrovia, CA 91016
(626) 930-1200

☐ Costa Mesa Office
3176 Pullman St., Suite 108
Costa Mesa, CA 92626
(714) 444-9660

☒ Rancho Office
8333 Foothill Blvd. Suite 104
Rancho Cuca, CA 91730
(909) 796-0544

#332225714

BULK SAMPLE LOG

Project Name: Auburndale MS Collected By: RDS

Project No.: 22-16-164-01 Date: 12/29/22

HOMOGENEOUS MATERIAL: 2x4 Fissured ceiling panels

Sample Number	Sample Location/Description	Approx. Area (Sq Ft or LF)	Friable or Non-friable	Intact or Damaged
1229-22	Bldg B1/B3, Rm B1, west	2700	F	Int
1229-23	, Rm B3, ~~South~~ North RS	↓	↓	↓
1229-24	, Rm B3, East	↓	↓	↓

Additional Comments: Above ceiling: wood deck, fiberglass blanket insulation, fbrgls HVAC duct covers, plastic conduits

90x30

OrderID: 332225714

Converse Consultants
#332225714

☐ Monrovia Office
717 S. Myrtle Avenue
Monrovia, CA 91016
(626) 930-1200

☐ Costa Mesa Office
3176 Pullman St., Suite 108
Costa Mesa, CA 92626
(714) 444-9660

☒ Rancho Office
8333 Foothill Blvd. Suite 104
Rancho Cuca, CA 91730
(909) 796-0544

BULK SAMPLE LOG

Project Name: Auburndale MS Collected By: RDS

Project No.: 22-16-164-01 Date: 12/29/22

HOMOGENEOUS MATERIAL: Drywall Walls

Sample Number	Sample Location/Description	Approx. Area (Sq Ft or LF)	Friable or Non-friable	Intact or Damaged
1229-25	Bldg B1/B3, Rm B1, West Wall	3,600	NF	Int
1229-26	, ↓ , South Wall	↓	↓	↓
1229-27	, Rm B2, North Wall			
1224-28	, Rm B3, East Wall			
1229-29	↓ , ↓ , North, West	↓	↓	↓

Additional Comments: No joint compound observed. Behind wood cellulose fabric wall-board.

OrderID: 332225714

Converse Consultants

☐ Monrovia Office
717 S. Myrtle Avenue
Monrovia, CA 91016
(626) 930-1200

☐ Costa Mesa Office
3176 Pullman St., Suite 108
Costa Mesa, CA 92626
(714) 444-9660

☒ Rancho Office
8333 Foothill Blvd. Suite 104
Rancho Cuca, CA 91730
(909) 796-0544

#332225714

BULK SAMPLE LOG

Project Name: Auberndale MS Collected By: RDS

Project No.: 22-16-164-01 Date: 12/29/22

HOMOGENEOUS MATERIAL: Baseboard Mastic

Sample Number	Sample Location/Description	Approx. Area (Sq Ft or LF)	Friable or Non-friable	Intact or Damaged
1229-30	Bldg B1/B3, Rm B1, West	120	NF	Int
1229-31	, Rm B2, East	↓	↓	↓
1229-32	, Rm B3, East, S	↓	↓	↓

Additional Comments: on fabric (cellulose) wall board. Baseboard is non-suspect vinyl.

OrderID: 332225714

Converse Consultants

#332225714

☐ Monrovia Office
717 S. Myrtle Avenue
Monrovia, CA 91016
(626) 930-1200

☐ Costa Mesa Office
3176 Pullman St., Suite 108
Costa Mesa, CA 92626
(714) 444-9660

☒ Rancho Office
8333 Foothill Blvd. Suite 104
Rancho Cuca, CA 91730
(909) 796-0544

BULK SAMPLE LOG

Project Name: Auburndale MS Collected By: RDS

Project No.: 22-16-164-01 Date: 12/29/22

HOMOGENEOUS MATERIAL: Carpet Backing & Mastic

Sample Number	Sample Location/Description	Approx. Area (Sq Ft or LF)	Friable or Non-friable	Intact or Damaged
1229-33	Bldg B1/B3, Rm B1, SW	2700	NF	Int
1229-34	, Rm B2, East			
1229-35	, Rm B3, SE			

Additional Comments: on wood floor base

Converse Consultants

☐ Monrovia Office
717 S. Myrtle Avenue
Monrovia, CA 91016
(626) 930-1200

☐ Costa Mesa Office
3176 Pullman St., Suite 108
Costa Mesa, CA 92626
(714) 444-9660

☒ Rancho Office
8333 Foothill Blvd. Suite 104
Rancho Cuca, CA 91730
(909) 796-0544

#332225714

BULK SAMPLE LOG

Project Name: Auburndale MS Collected By: RDS

Project No.: 22-16-164-01 Date: 12/29/22

HOMOGENEOUS MATERIAL: 2 x 4 Fissured Ceiling ~~Tiles~~ Panels

Sample Number	Sample Location/Description	Approx. Area (Sq Ft or LF)	Friable or Non-friable	Intact or Damaged
1229-35	Bldg B4/B6, Rm B4, NE	2700	F	Int
1229-36	, Rm B5, South	↓	↓	↓
1229-37	, Rm B6, South	↓	↓	↓

Additional Comments: Above ceiling: wood deck, fiberglass blanket insulation and HVAC covers, plastic conduits

OrderID: 332225714

Converse Consultants

#332225714

☐ Monrovia Office
717 S. Myrtle Avenue
Monrovia, CA 91016
(626) 930-1200

☐ Costa Mesa Office
3176 Pullman St., Suite 108
Costa Mesa, CA 92626
(714) 444-9660

☒ Rancho Office
8333 Foothill Blvd. Suite 104
Rancho Cuca, CA 91730
(909) 796-0544

BULK SAMPLE LOG

Project Name: Auburndale MS Collected By: RDS

Project No.: 22-16-164-01 Date: 12/29/22

HOMOGENEOUS MATERIAL: Drywall walls

Sample Number	Sample Location/Description	Approx. Area (Sq Ft or LF)	Friable or Non-friable	Intact or Damaged
1229-38	Bldg B4/B6, Rm B4, East wall, N	3,600	NF	Int
1229-39	" ↓ , South Wall	"	"	"
1229-40	, Rm B5, South Wall	"	"	"
1229-41	, Rm B6, South wall	"	"	"
1229-42	↓ , ↓ , East wall	↓	↓	↓

Additional Comments:

OrderID: 332225714

Converse Consultants

#332225714

☐ Monrovia Office
717 S. Myrtle Avenue
Monrovia, CA 91016
(626) 930-1200

☐ Costa Mesa Office
3176 Pullman St., Suite 108
Costa Mesa, CA 92626
(714) 444-9660

☒ Rancho Office
8333 Foothill Blvd. Suite 104
Rancho Cuca, CA 91730
(909) 796-0544

BULK SAMPLE LOG

Project Name: Auburndale MS Collected By: RDS

Project No.: 22-16-164-01 Date: 12/29/22

HOMOGENEOUS MATERIAL: Baseboard Mastic

Sample Number	Sample Location/Description	Approx. Area (Sq Ft or LF)	Friable or Non-friable	Intact or Damaged
1229-43	Bldg B4/B6, Rm B4, South	120	NF	Int
1229-44	↓ , Rm B5, South	↓	↓	↓
1229-45	↓ , Rm B6, ~~East~~ North Rd	↓	↓	↓

Additional Comments: on fabric (cellulose) wallboard. Baseboard is non-suspect vinyl.

OrderID: 332225714

Converse Consultants

#332225714

☐ Monrovia Office
717 S. Myrtle Avenue
Monrovia, CA 91016
(626) 930-1200

☐ Costa Mesa Office
3176 Pullman St., Suite 108
Costa Mesa, CA 92626
(714) 444-9660

☒ Rancho Office
8333 Foothill Blvd. Suite 104
Rancho Cuca, CA 91730
(909) 796-0544

BULK SAMPLE LOG

Project Name: Auburndale MS Collected By: RDS

Project No.: 22-16-164-01 Date: 12/29/22

HOMOGENEOUS MATERIAL: Carpet Mastic

Sample Number	Sample Location/Description	Approx. Area (Sq Ft or LF)	Friable or Non-friable	Intact or Damaged
1229-46	Bldg B4/B6, RmB4, South	2700	NF	Int
1229-47	" , RmB5, SE	"	"	"
1229-48	" , RmB6, East	"	"	"

Additional Comments: on wood base

OrderID: 332225714

Converse Consultants
#3322257 14

☐ Monrovia Office
717 S. Myrtle Avenue
Monrovia, CA 91016
(626) 930-1200

☐ Costa Mesa Office
3176 Pullman St., Suite 108
Costa Mesa, CA 92626
(714) 444-9660

☒ Rancho Office
8333 Foothill Blvd. Suite 104
Rancho Cuca, CA 91730
(909) 796-0544

BULK SAMPLE LOG

Project Name: Auburndale MS Collected By: RDS

Project No.: 22-16-164-01 Date: 12/29/22

HOMOGENEOUS MATERIAL: 2x4 Fissured Ceiling Panels

Sample Number	Sample Location/Description	Approx. Area (Sq Ft or LF)	Friable or Non-friable	Intact or Damaged
1229-49	Bldg B7, North	1,400	~~NF~~ F	Int
1229-50	, East			
1229-51	, South			

Additional Comments: Above ceiling: Wood deck, Fiberglass blanket insulation and HVAC covers, plastic conduits.

40x35

OrderID: 332225714

Converse Consultants

#332225714

☐ Monrovia Office
717 S. Myrtle Avenue
Monrovia, CA 91016
(626) 930-1200

☐ Costa Mesa Office
3176 Pullman St., Suite 108
Costa Mesa, CA 92626
(714) 444-9660

☒ Rancho Office
8333 Foothill Blvd. Suite 104
Rancho Cuca, CA 91730
(909) 796-0544

BULK SAMPLE LOG

Project Name: Auburndale MS Collected By: RDS

Project No.: 22-16-164-01 Date: 12/29/22

HOMOGENEOUS MATERIAL: Drywall Wall with Joint Compound

Sample Number	Sample Location/Description	Approx. Area (Sq Ft or LF)	Friable or Non-friable	Intact or Damaged
1229-52	Bldg B7, North Wall	1,200	NF	Int
1229-53	, East Wall			
1229-54	, ~~South~~ East Wall, S			
1229-55	, South Wall			
1229-56	, East Wall, N			

Additional Comments: Behind cellulose fabric wall board.

OrderID: 332225714

Converse Consultants

#332225714

☐ Monrovia Office
717 S. Myrtle Avenue
Monrovia, CA 91016
(626) 930-1200

☐ Costa Mesa Office
3176 Pullman St., Suite 108
Costa Mesa, CA 92626
(714) 444-9660

☒ Rancho Office
8333 Foothill Blvd. Suite 104
Rancho Cuca, CA 91730
(909) 796-0544

BULK SAMPLE LOG

Project Name: Auburndale MS Collected By: RDS

Project No.: 22-16-164-01 Date: 12/29/22

HOMOGENEOUS MATERIAL: Carpet Mastic

Sample Number	Sample Location/Description	Approx. Area (Sq Ft or LF)	Friable or Non-friable	Intact or Damaged
1229-57	Bldg B7, North	1,400	NF	Int
1229-58	, NE Doorway	↓	↓	↓
1229-59	, SW Doorway	↓	↓	↓

Additional Comments:

Converse Consultants
#332225714

☐ Monrovia Office
717 S. Myrtle Avenue
Monrovia, CA 91016
(626) 930-1200

☐ Costa Mesa Office
3176 Pullman St., Suite 108
Costa Mesa, CA 92626
(714) 444-9660

☒ Rancho Office
8333 Foothill Blvd. Suite 104
Rancho Cuca, CA 91730
(909) 796-0544

BULK SAMPLE LOG

Project Name: Auburndale MS Collected By: RDS

Project No.: ~~22~~-16-164-01 Date: 12/29/22

HOMOGENEOUS MATERIAL: Baseboard Mastic

Sample Number	Sample Location/Description	Approx. Area (Sq Ft or LF)	Friable or Non-friable	Intact or Damaged
1229-60	Bldg 87, West wall	50	NF	Int
1229-61	↓ , North wall	↓	↓	↓
1229-62	↓ , East wall	↓	↓	↓

Additional Comments: on fabric cellulose wall board. Baseboard is non-suspect vinyl.

OrderID: 332225714

Converse Consultants

#3322257 14

☐ Monrovia Office
717 S. Myrtle Avenue
Monrovia, CA 91016
(626) 930-1200

☐ Costa Mesa Office
3176 Pullman St., Suite 108
Costa Mesa, CA 92626
(714) 444-9660

☒ Rancho Office
8333 Foothill Blvd. Suite 104
Rancho Cuca, CA 91730
(909) 796-0544

BULK SAMPLE LOG

Project Name: Auburndale MS Collected By: RDS

Project No.: 22-16-164-01 Date: 12/29/22

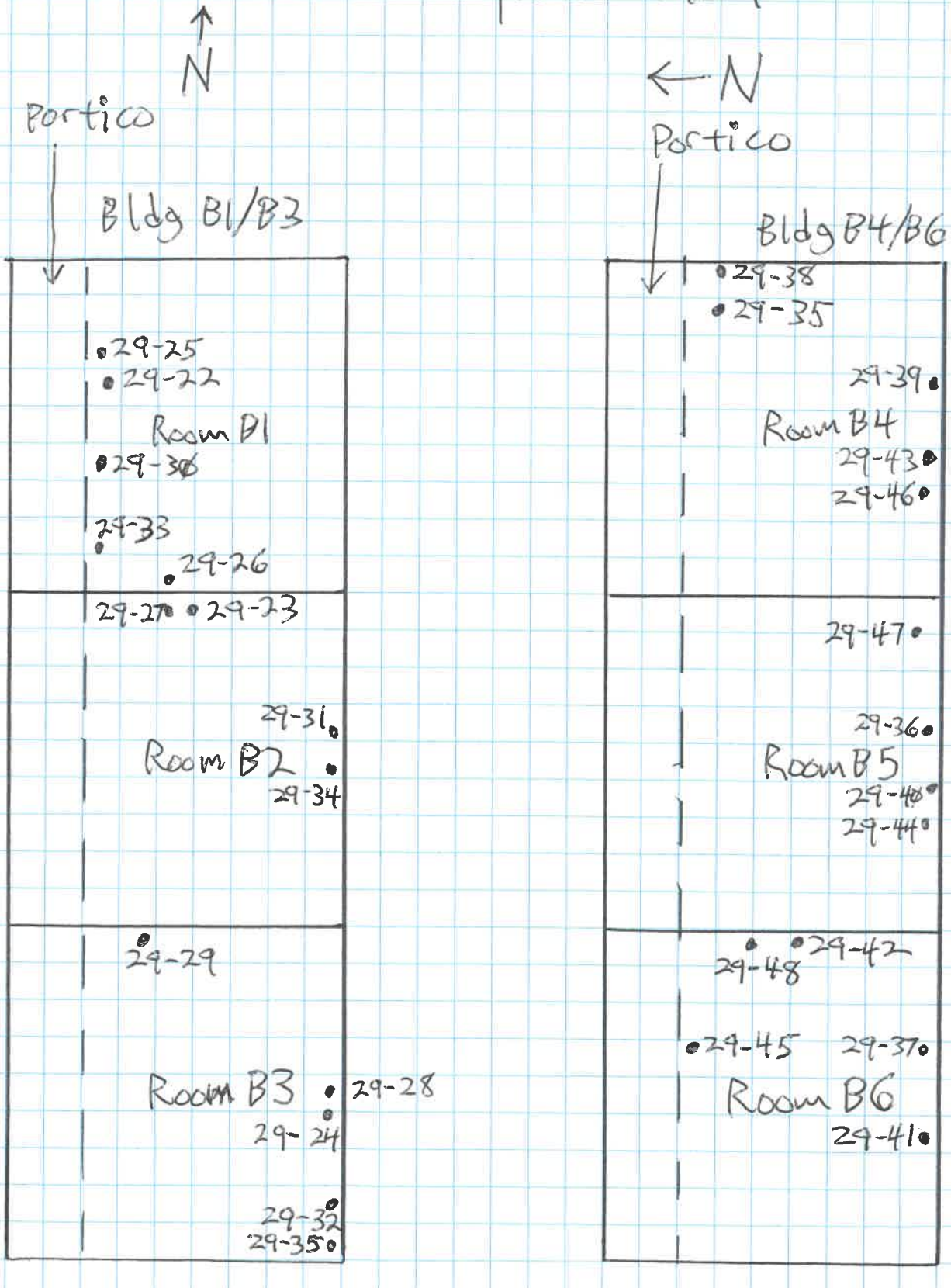
HOMOGENEOUS MATERIAL: Sink Undercoat

Sample Number	Sample Location/Description	Approx. Area (Sq Ft or LF)	Friable or Non-friable	Intact or Damaged
1229-63	Bldg 87, SE Metal Sink	16	NF	Int
1229-64	, SE	↓	↓	↓
1229-65	, SW Metal Sink	↓	↓	↓

Additional Comments:

Auburndale Middle School
Portable Buildings
22-16-164-001

• = Interior Bulk Sample Location

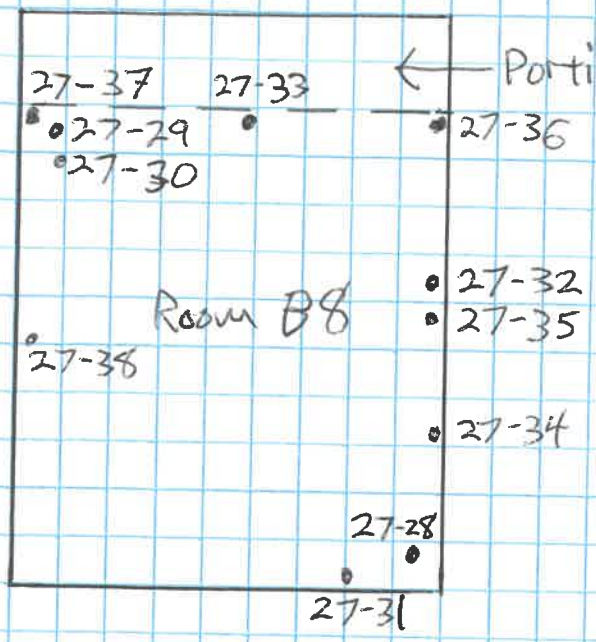


Auburndale
Middle School
22-16-164-01

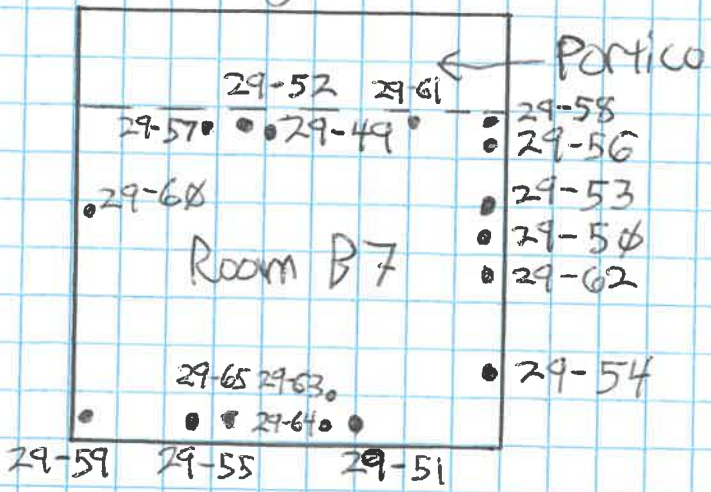
• = Interior Bulk
Sample Location

N

Bldg B8

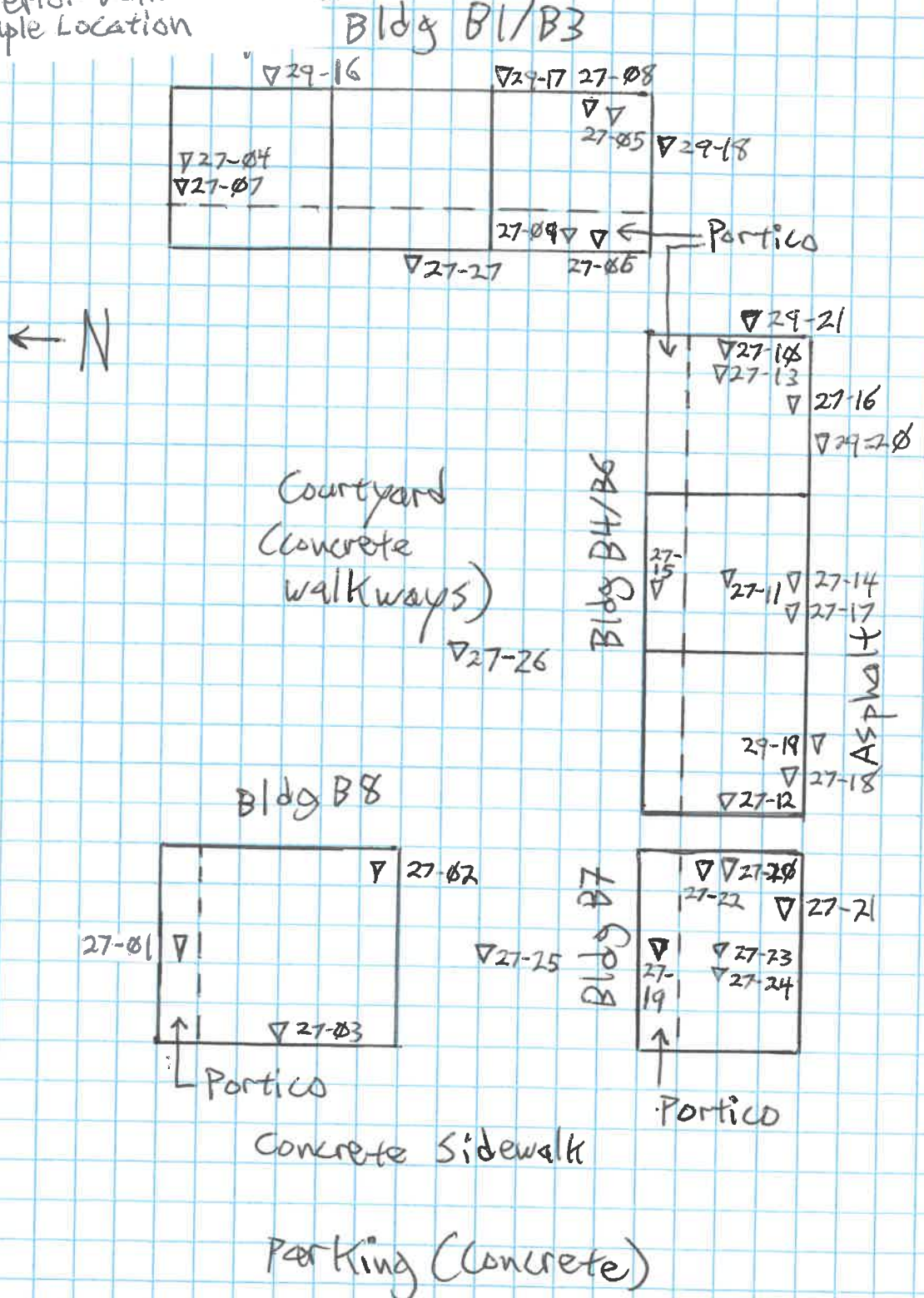


Bldg B7

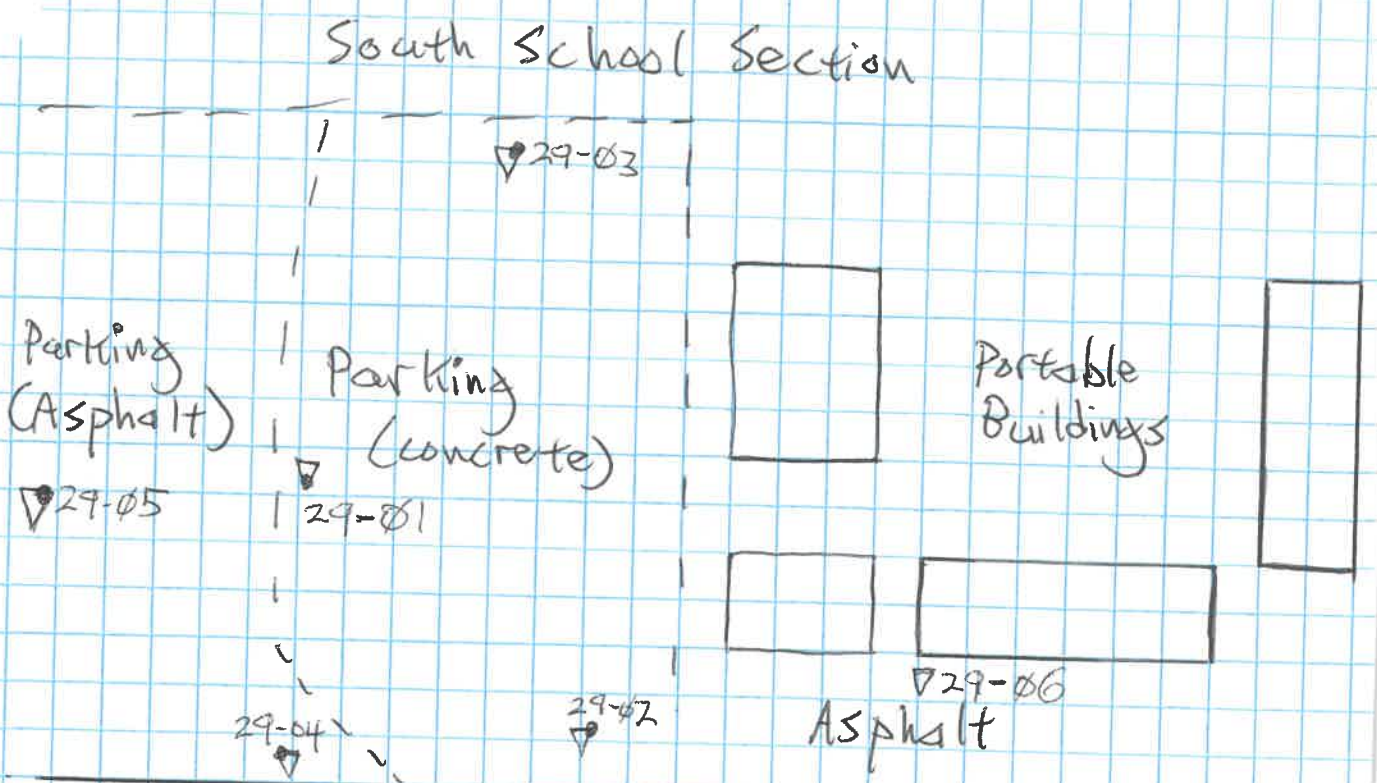


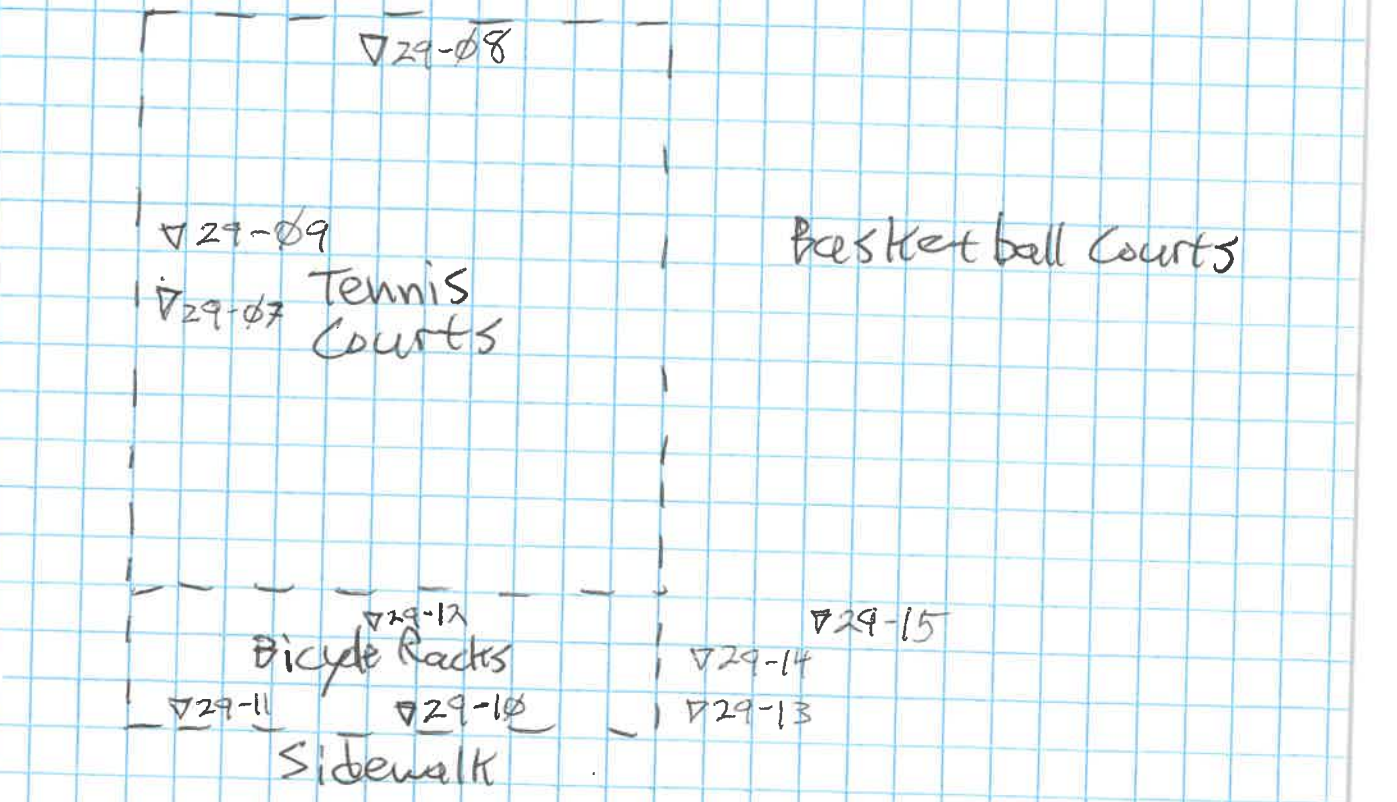
Auburndale Middle School
Portable Buildings
22-16-164-01

▽ = Exterior Bulk Sample Location



Auburndale Middle School
22-16-164-01
▽= Exterior Bulk Sample Location





LBP / LCM

XRF Summary Table
Field Notes

Converse Project No. 22-16-164-01

Dates of Inspection: 12/23, 27 2022
Inspector: R. Stansfield
CDPH #4397

XRF Summary Table
Auburndale Middle School

Analyzer: Viken Pb200i
Action Lvl: 1.0 mg/cm^2

Reading No.	Location	Location Detail	Component	Component Comment	Substrate	Side	Color	Condition	Pb Conc. (mg/cm^2)	Result
40	Calibration Check								1.2	Positive
41	Calibration Check								1.2	Positive
42	Calibration Check								1.2	Positive
43	Bldg B8	Exterior	Gutter		Metal	North	Blue	Intact	-0.1	Negative
44	Bldg B8	Exterior	Downspout		Metal	North	Beige	Intact	0.1	Negative
45	Bldg B8	Exterior	Beam		Metal	North	Beige	Intact	0.1	Negative
46	Bldg B8	Exterior	Misc	Portico	Metal	North	Beige	Intact	0	Negative
47	Bldg B8	Exterior	Trim		Metal	North	Beige	Intact	0	Negative
48	Bldg B8	Exterior	Trim		Metal	North	Beige	Intact	0	Negative
49	Bldg B8	Exterior	Room	Wall	Wood	North	Beige	Intact	0.1	Negative
50	Bldg B8	Exterior	Pipe	Horizontal	Metal	North	Beige	Intact	0.1	Negative
51	Bldg B8	Exterior	Pipe	Vertical	Metal	North	Beige	Intact	-0.1	Negative
52	Bldg B8	Exterior	Pipe	Vertical	Metal	North	Beige	Intact	0.1	Negative
53	Bldg B8	Exterior	Window	Casing	Wood	North	Blue	Intact	-0.4	Negative
54	Bldg B8	Exterior	Pipe	Vertical	Metal	East	Beige	Intact	0.2	Negative
55	Bldg B8	Exterior	Trim		Metal	East	Beige	Intact	0.1	Negative
56	Bldg B8	Exterior	Fascia		Metal	East	Blue	Intact	0.2	Negative
57	Bldg B8	Exterior	Trim		Metal	East	Blue	Intact	0	Negative
58	Bldg B8	Exterior	Misc	Portico	Metal	East	Blue	Intact	0.1	Negative
59	Bldg B8	Exterior	Door		Metal	East	Blue	Intact	0	Negative
60	Bldg B8	Exterior	Door	Frame	Metal	East	Blue	Intact	0.1	Negative
61	Bldg B8	Exterior	Door	Casing	Wood	East	Blue	Intact	0	Negative
62	Bldg B8	Exterior	Fascia		Metal	South	Blue	Intact	0.2	Negative
63	Bldg B8	Exterior	Beam		Metal	South	Blue	Intact	0	Negative
64	Bldg B8	Exterior	Trim		Metal	South	Beige	Intact	0	Negative
65	Bldg B8	Exterior	I-Beam		Metal	South	Beige	Intact	0.2	Negative
66	Bldg B8	Exterior	Misc	Portico	Wood	South	Beige	Intact	-0.2	Negative
67	Bldg B8	Exterior	Room	Wall	Wood	South	Beige	Intact	0.2	Negative
68	Bldg B8	Exterior	Room	Wall	Metal	South	Beige	Intact	0	Negative
69	Bldg B8	Exterior	Vent		Metal	South	Beige	Intact	0	Negative
70	Bldg B8	Exterior	Misc	Portico	Metal	West	Blue	Intact	0	Negative
71	Bldg B8	Exterior	Misc	Portico	Metal	West	Beige	Intact	0	Negative

XRF Summary Table
Auburndale Middle School

Reading No.	Location	Location Detail	Component	Component Comment	Substrate	Side	Color	Condition	Pb Conc. (mg/cm^2)	Result
72	Bldg B8	Exterior	Door		Metal	West	Blue	Intact	0	Negative
73	Bldg B8	Exterior	Door	Frame	Metal	West	Blue	Intact	0.2	Negative
74	Bldg B8	Exterior	Door	Frame	Wood	West	Blue	Intact	0	Negative
75	Bldg B8	Room B8	Beam		Metal		Black	Intact	-0.1	Negative
76	Bldg B8	Room B8	I-Beam		Metal		Black	Intact	0.1	Negative
77	Bldg B8	Room B8	Window	Casing	Metal	North	White	Intact	-0.1	Negative
78	Bldg B8	Room B8	Door	Frame	Metal	East	Blue	Intact	0	Negative
79	Bldg B8	Room B8	Window	Casing	Metal	South	White	Intact	0	Negative
80	Bldg B1/B3	Exterior	Fascia		Metal	North	Blue	Intact	0	Negative
81	Bldg B1/B3	Exterior	Trim		Metal	North	Blue	Intact	0.1	Negative
82	Bldg B1/B3	Exterior	Room	Wall	Wood	North	Beige	Intact	0	Negative
83	Bldg B1/B3	Exterior	Room	Wall	Wood	North	Brown	Intact	0.1	Negative
84	Bldg B1/B3	Exterior	Misc	Roof	Plastic		Gray	Intact	0.1	Negative
85	Bldg B1/B3	Exterior	Trim		Metal	North	Brown	Intact	0	Negative
86	Bldg B1/B3	Exterior	Room	Wall	Wood	North	Beige	Intact	0	Negative
87	Bldg B1/B3	Exterior	Room	Wall	Wood	North	Brown	Intact	0	Negative
88	Bldg B1/B3	Exterior	Gutter		Metal	East	Beige	Intact	-0.1	Negative
89	Bldg B1/B3	Exterior	Downspout		Metal	East	Beige	Intact	0.1	Negative
90	Bldg B1/B3	Exterior	Beam		Metal	East	Beige	Intact	0.1	Negative
91	Bldg B1/B3	Exterior	Misc	Portico	Wood	East	Beige	Intact	0	Negative
92	Bldg B1/B3	Exterior	Room	Wall	Wood	East	Beige	Intact	0	Negative
93	Bldg B1/B3	Exterior	Window	Casing	Wood	East	Beige	Intact	0.1	Negative
94	Bldg B1/B3	Exterior	Electric Panel	Frame	Metal	East	Beige	Intact	0	Negative
95	Bldg B1/B3	Exterior	Pipe	Vertical	Metal	East	Beige	Intact	0.1	Negative
96	Bldg B1/B3	Exterior	Pipe	Vertical	Metal	East	Beige	Intact	0	Negative
97	Bldg B1/B3	Exterior	Electric Panel	Frame	Metal	East	Beige	Intact	0.1	Negative
98	Bldg B1/B3	Exterior	Pipe	Vertical	Metal	South	Beige	Intact	0	Negative
99	Bldg B1/B3	Exterior	Trim		Metal	South	Beige	Intact	0	Negative
100	Bldg B1/B3	Exterior	Vent		Metal	South	Beige	Intact	0.1	Negative
101	Bldg B1/B3	Exterior	Trim		Metal	West	Blue	Intact	0	Negative
102	Bldg B1/B3	Exterior	Beam		Metal	West	Beige	Intact	0	Negative
103	Bldg B1/B3	Exterior	Misc	Portico	Wood	West	Beige	Intact	-0.3	Negative

XRF Summary Table
Auburndale Middle School

Reading No.	Location	Location Detail	Component	Component Comment	Substrate	Side	Color	Condition	Pb Conc. (mg/cm^2)	Result
104	Bldg B1/B3	Exterior	Room	Wall	Wood	West	Beige	Intact	0.1	Negative
105	Bldg B1/B3	Exterior	Room	Wall	Wood	West	Brown	Intact	0.1	Negative
106	Bldg B1/B3	Exterior	Door		Metal	West	Blue	Intact	-0.1	Negative
107	Bldg B1/B3	Exterior	Door	Frame	Metal	West	Blue	Intact	0.1	Negative
108	Bldg B1/B3	Exterior	Door	Casing	Wood	West	Beige	Intact	0	Negative
109	Bldg B1/B3	Exterior	Window	Casing	Wood	West	Blue	Intact	0	Negative
110	Bldg B1/B3	Exterior	Railing		Metal	West	Blue	Intact	0.3	Negative
111	Bldg B1/B3	Room B1	Window	Casing	Wood	East	Brown	Intact	-0.1	Negative
112	Bldg B1/B3	Room B1	I-Beam		Metal	South	Black	Intact	0.1	Negative
113	Bldg B1/B3	Room B1	I-Beam		Metal	South	Black	Intact	-0.1	Negative
114	Bldg B1/B3	Exterior	Stair	Treads	Concrete	West	Yellow	Intact	0.4	Negative
115	Bldg B4/B6	Exterior	Misc	Roof	Plastic		Gray	Intact	0.1	Negative
116	Bldg B4/B6	Exterior	Fascia		Metal	North	Blue	Intact	-0.1	Negative
117	Bldg B4/B6	Exterior	Beam		Metal	North	Blue	Intact	0.1	Negative
118	Bldg B4/B6	Exterior	Beam		Metal	North	Beige	Intact	-0.2	Negative
119	Bldg B4/B6	Exterior	Misc	Portico	Wood	North	Beige	Intact	-0.2	Negative
120	Bldg B4/B6	Exterior	Room	Wall	Wood	North	Beige	Intact	0	Negative
121	Bldg B4/B6	Exterior	Room	Wall	Wood	North	Brown	Intact	0.1	Negative
122	Bldg B4/B6	Exterior	Door		Metal	North	Blue	Intact	0	Negative
123	Bldg B4/B6	Exterior	Door	Frame	Metal	North	Blue	Intact	0	Negative
124	Bldg B4/B6	Exterior	Railing		Metal	North	Blue	Intact	0.1	Negative
125	Bldg B4/B6	Exterior	Stair	Treads	Concrete	North	Yellow	Intact	0.3	Negative
126	Bldg B4/B6	Exterior	Room	Wall	Wood	East	Beige	Intact	0	Negative
127	Bldg B4/B6	Exterior	Room	Wall	Metal	East	Beige	Intact	0.1	Negative
128	Bldg B4/B6	Exterior	Trim		Metal	East	Beige	Intact	0	Negative
129	Bldg B4/B6	Exterior	Electric Panel	Frame	Metal	East	Beige	Intact	0	Negative
130	Bldg B4/B6	Exterior	Electric Panel	Frame	Concrete	East	Beige	Intact	0.4	Negative
131	Bldg B4/B6	Exterior	Electric Panel	Frame	Metal	East	Beige	Intact	0.1	Negative
132	Bldg B4/B6	Exterior	Pipe	Vertical	Metal	East	Beige	Intact	0.1	Negative
133	Bldg B4/B6	Exterior	Room	Wall	Concrete	East	Beige	Intact	0.3	Negative
134	Bldg B4/B6	Exterior	Electric Panel	Frame	Wood	East	Beige	Intact	-0.1	Negative
135	Bldg B4/B6	Exterior	Gutter		Metal	South	Beige	Intact	0.1	Negative

Dates of Inspection: 12/23, 27 2022
Inspector: R. Stansfield
CDPH #4397

XRF Summary Table
Auburndale Middle School

Analyzer: Viken Pb200i
Action Lvl: 1.0 mg/cm^2

Reading No.	Location	Location Detail	Component	Component Comment	Substrate	Side	Color	Condition	Pb Conc. (mg/cm^2)	Result
136	Bldg B4/B6	Exterior	Trim		Metal	South	Beige	Intact	0	Negative
137	Bldg B4/B6	Exterior	Downspout		Metal	South	Beige	Intact	0.1	Negative
138	Bldg B4/B6	Exterior	Pipe	Vertical	Metal	South	Beige	Intact	0.3	Negative
139	Bldg B4/B6	Exterior	A/C	Cover	Metal	South	Beige	Intact	0.1	Negative
140	Bldg B4/B6	Exterior	Room	Wall	Wood	South	Beige	Intact	0.1	Negative
141	Bldg B4/B6	Exterior	Room	Wall	Stucco	South	Beige	Intact	0.1	Negative
142	Bldg B4/B6	Room B4	Beam		Metal	West	Brown	Intact	0	Negative
143	Bldg B4/B6	Room B4	Window	Casing	Wood	North	Brown	Intact	-0.1	Negative
144	Bldg B4/B6	Room B4	Shelf		Wood	North	Yellow	Intact	0.3	Negative
145	Bldg B4/B6	Room B4	Window	Casing	Wood	South	Brown	Intact	0	Negative
146	***Bldg B4/B6***	***Room B5***	***Cabinets***		***Wood***	***West***	***Blue***	***Intact***	***1.6***	***Positive***
147	***Bldg B4/B6***	***Room B5***	***Cabinets***		***Wood***	***West***	***Blue***	***Intact***	***1.7***	***Positive***
148	***Bldg B4/B6***	***Room B4***	***Cabinets***		***Wood***	***West***	***Orange***	***Intact***	***1.6***	***Positive***
149	Bldg B4/B6	Room B6	Room	Wall	Wood	North	Black	Intact	-0.1	Negative
150	Bldg B4/B6	Room B6	Room	Wall	Wood	West	Red	Intact	-0.1	Negative
151	***Bldg B4/B6***	***Room B6***	***Cabinets***		***Wood***	***West***	***Orange***	***Intact***	***1.7***	***Positive***
152	Bldg B7	Exterior	Fascia		Metal	North	Blue	Intact	0.2	Negative
153	Bldg B7	Exterior	Trim		Metal	North	Blue	Intact	0.1	Negative
154	Bldg B7	Exterior	Beam		Metal	North	Beige	Intact	0.2	Negative
155	Bldg B7	Exterior	Beam		Metal	North	Beige	Intact	0	Negative
156	Bldg B7	Exterior	Trim		Metal	North	Beige	Intact	0.1	Negative
157	Bldg B7	Exterior	Misc	Portico	Wood	North	Beige	Intact	0	Negative
158	Bldg B7	Exterior	Room	Wall	Wood	North	Beige	Intact	-0.1	Negative
159	Bldg B7	Exterior	Room	Wall	Metal	North	Beige	Intact	0.2	Negative
160	Bldg B7	Exterior	Pipe	Vertical	Metal	North	Beige	Intact	0.1	Negative
161	Bldg B7	Exterior	Trim		Metal	North	Brown	Intact	0.2	Negative
162	Bldg B7	Exterior	Room	Wall	Wood	East	Beige	Intact	0.1	Negative
163	Bldg B7	Exterior	Room	Wall	Wood	East	Brown	Intact	-0.1	Negative
164	Bldg B7	Exterior	Misc	Portico	Metal	East	Blue	Intact	0.1	Negative
165	Bldg B7	Exterior	Door		Metal	East	Blue	Intact	0	Negative
166	Bldg B7	Exterior	Door	Frame	Metal	East	Blue	Intact	0.1	Negative
167	Bldg B7	Exterior	Door	Casing	Wood	East	Blue	Intact	0	Negative

Dates of Inspection: 12/23, 27 2022
Inspector: R. Stansfield
CDPH #4397

XRF Summary Table
Auburndale Middle School

Analyzer: Viken Pb200i
Action Lvl: 1.0 mg/cm^2

Reading No.	Location	Location Detail	Component	Component Comment	Substrate	Side	Color	Condition	Pb Conc. (mg/cm^2)	Result
168	Bldg B7	Exterior	Trim		Metal	East	Brown	Intact	0.1	Negative
169	Bldg B7	Exterior	Railing		Metal	East	Blue	Intact	0.1	Negative
170	Bldg B7	Exterior	Gutter		Metal	South	Beige	Intact	0.1	Negative
171	Bldg B7	Exterior	Beam		Metal	South	Beige	Intact	0.1	Negative
172	Bldg B7	Exterior	Room	Wall	Wood	South	Beige	Intact	0.1	Negative
173	Bldg B7	Exterior	Room	Wall	Metal	South	Beige	Intact	0.1	Negative
174	Bldg B7	Exterior	Pipe	Vertical	Metal	South	Beige	Intact	-0.1	Negative
175	Bldg B7	Exterior	Downspout		Metal	South	Beige	Intact	0.1	Negative
176	Bldg B7	Office	Window	Casing	Wood	North	White	Intact	-0.1	Negative
177	Bldg B7	Office	Door	Frame	Metal	East	Blue	Intact	0.1	Negative
178	Bldg B7	Office	Cabinets		Wood	South	Blue	Intact	0.1	Negative
179	Bldg B7	Office	Beam		Metal		Black	Intact	-0.1	Negative
180	SW Parking	Exterior	Misc	Parking Lines	Concrete		White	Intact	0.3	Negative
181	SW Parking	Exterior	Misc	Parking Lines	Concrete		Blue	Intact	0.3	Negative
182	***SW Parking***	***Exterior***	***Misc***	***Parking Lines***	***Concrete***		***Yellow***	***Intact***	***2.2***	***Positive***
183	SW Parking	Exterior	Misc	Curb	Concrete		Red	Intact	0.2	Negative
184	SW Parking	Exterior	Misc	Curb	Concrete		Blue	Intact	0.2	Negative
185	SW Parking	Exterior	Misc	Parking Stops	Concrete		Blue	Intact	0.2	Negative
186	SW Parking	Exterior	Misc	Light Post	Metal		White	Intact	0.2	Negative
187	Calibration Check								1	Positive
188	Calibration Check								1	Positive
189	Calibration Check								1	Positive
190	Calibration Check								1.2	Positive
191	Calibration Check								1.1	Positive
192	Calibration Check								1.2	Positive
193	Tennis Courts	Exterior	Misc	Goal Post	Metal	North	White	Intact	0.2	Negative
194	Tennis Courts	Exterior	Misc	Goal Post	Metal	East	White	Intact	0.2	Negative
195	Tennis Courts	Exterior	Misc	Court	Concrete		White	Intact	0.3	Negative
196	Tennis Courts	Exterior	Misc	Court	Concrete		Blue	Intact	0.3	Negative
197	Tennis Courts	Exterior	Misc	Court	Concrete		Green	Intact	0.3	Negative
198	Tennis Courts	Exterior	Misc	Court	Concrete		Red	Intact	0.3	Negative

XRF Summary Table
Auburndale Middle School

Reading No.	Location	Location Detail	Component	Component Comment	Substrate	Side	Color	Condition	Pb Conc. (mg/cm^2)	Result
199	Tennis Courts	Exterior	Misc	Court	Concrete		Blue	Intact	0.3	Negative
200	Tennis Courts	Exterior	Misc	Curb	Concrete	South	Red	Intact	0.2	Negative
201	Calibration Check								0.8	Negative
202	Calibration Check								1.1	Positive
203	Calibration Check								1.1	Positive

XRF SAMPLE LOG

Converse Consultants

717 S. Myrtle Avenue
Monrovia, CA 91016
Tel.: 626.930.1200
Fax: 626.930.1212

Project Name: Auburndale MS
Project No.: 22-16-164-01
Date: 12/23/22
Sampled By: RDS

Project Address: 1255 River Road

Client Contact: Maria Morena

Sample No.	Interior	Exterior	Paint Color	Substrate	Sample Location & Comments	Condition	Lead Conc. (mg/cm²)	LBP Yes	LBP No
43		X	Blue	Metal	Bldg B8(72). North Side rain gutter	Int	-0.1		X
75	X		Black	↓	72 - Above fiberglass suspended ceiling *	↓	-0.1		X
80		X	Blue	↓	73 = Bldg B1/B3. North upper fascia	↓	0.0		X
113	X		Black	↓	73, above South wall of Rm B1. Beam **	↓	-0.1		X
115		X	Gray	Plastic	74 = Bldg B4/B6. Roof Sheet	↓	0.1		X
142	X		Brown	Metal	74. Beam above west wall, Room B4	↓	0.0		X
146	X		Blue	Wood	74. Large cabinets, Room B5	↓	1.6	X	
147	X		↓	↓	74. Short cabinets, Room B5	↓	1.7	X	
148	X		Orange	↓	74. Cabinets in Room B4	↓	1.6	X	
149	X		Black	↓	74. North wall in Room B6	↓	-0.1		X
151	X		Orange	↓	74. Cabinets in Room B6	↓	1.7	X	
152		X	Blue	Metal	75 = Bldg B7. North upper fascia	↓	0.2		X

Additional Comments: * deck is un-painted wood. Roof is un-painted rubber
** Windows and beams in Rooms B2 + B3 similar to B1.

XRF SAMPLE LOG

Converse Consultants

717 S. Myrtle Avenue
Monrovia, CA 91016
Tel.: 626.930.1200
Fax: 626.930.1212

Project Name: Auburndale MS
Project No.: 22-16-164-01
Date: 12/23/22
Sampled By: RDS

Project Address:

Client Contact:

Sample No.	Interior	Exterior	Paint Color	Substrate	Sample Location & Comments	Condition	Lead Conc. (mg/cm²)	LBP Yes	LBP No
180		X	White	Concrete	76 = SW Parking. Lines	Int	0.3		X
182		X	Yellow	↓	76. Yellow Parking Lot lines	↓	2.2	X	

Additional Comments:

XRF SAMPLE LOG

Converse Consultants

717 S. Myrtle Avenue
Monrovia, CA 91016
Tel.: 626.930.1200
Fax: 626.930.1212

Project Name: Auburndale MS
Project No.: 22-16-164-01
Date: 12/27/22
Sampled By: RDS

Project Address: _____

Client Contact: _____

Sample No.	Interior	Exterior	Paint Color	Substrate	Sample Location & Comments	Condition	Lead Conc. (mg/cm²)	LBP Yes	LBP No
193		X	White	Metal	77= Tennis Courts. North Goal Posts	Int	0.2		X

Additional Comments: _____

GEOTECHNICAL INVESTIGATION
PROPOSED TRANSPORTATION OFFICE EXPANSION PROJECT
ORANGE GROVE HIGH SCHOOL
300 SOUTH BUENA VISTA AVENUE
CORONA, CALIFORNIA 92882

Prepared For **CORONA-NORCO UNIFIED SCHOOL DISTRICT**
2820 CLARK AVENUE
NORCO, CALIFORNIA 92860

Prepared By **LEIGHTON CONSULTING, INC.**
10532 ACACIA STREET, SUITE B-6
RANCHO CUCAMONGA, CALIFORNIA 91730

Project No. 13847.001

April 25, 2023

Leighton Consulting, Inc.
A Leighton Group Company

April 25, 2023

Project No. 13847.001

Corona-Norco Unified School District
2820 Clark Avenue
Norco, California 92860

Attention: Ms. Jacquelyn Roberts
Construction Director – Facilities

Subject: Geotechnical Investigation
Proposed Transportation Office Expansion
Orange Grove High School
300 South Buena Vista Avenue
Corona, California 92882

In accordance with your request and authorization, Leighton Consulting, Inc. (Leighton) has conducted a geotechnical investigation for the proposed Corona-Norco Unified School District (CNUSD) Transportation Office Expansion project, located at 300 South Buena Vista Avenue in the City of Corona, California. The purpose of this study has been to evaluate geologic and geotechnical conditions (including potential geologic hazards) within the area of the proposed improvements, explore subsurface conditions, and provide geotechnical recommendations for design and constructions for the proposed improvements.

We understand based on the provided Site Plan that the District is proposing to expand the transportation office by installing a new approximately 1,440 square foot relocatable building to the east side of their existing transportation office at Orange Grove High School. Along with the building addition, minor flat work improvements associated with the office expansion area and proposed infiltration facilities are also proposed.

This report presents our findings and conclusions regarding this project. Based upon our study, the proposed improvements are feasible from a geotechnical viewpoint, provided our recommendations presented herein are incorporated into the design and construction of the project. The most significant geotechnical issues for this project were found to be the potential for strong seismic shaking and shallow compressible soils underlying the site. These and other geotechnical issues are discussed in this report.

We appreciate the opportunity to work with Corona-Norco Unified School District on this project. If you have any questions, or if we can be of further service, please call us at your convenience at (909) 484-2205.

Respectfully submitted,

LEIGHTON CONSULTING, INC.

Jose Tapia, PE 91630
Project Engineer

Jason D. Hertzberg, GE 2711
Principal Engineer

Steven G. Okubo, CEG 2706
Associate Geologist

JAT/SGO/JDH/rsm

Distribution: (1) Addressee

TABLE OF CONTENTS

Attachments and Figures (rear of text)

References
Figure 1 - Site Location Map
Figure 2 - Geotechnical Map
Figure 3 - Regional Geology Map
Figure 4 - Geotechnical Cross Section A-A' and B-B'
Figure 5 - Regional Fault and Historical Seismicity Map
Figure 6 - Liquefaction Hazards Map
Figure 7 - Flood Hazard Map
Figure 8 - Dam Breach Inundation Map
Figure 9 - Retaining Wall Backfill and Subdrain Detail

Appendices
Appendix A - Geotechnical Exploration Logs
Appendix B - Geotechnical Laboratory Test Results
Appendix C - Summary of Seismic Analysis
Appendix D - Earthwork and Grading Guide Specifications
Appendix E - CGS Note 48 Checklist with References to this Report

1.0 INTRODUCTION

1.1 Site Location and Description

The Corona-Norco Unified School District Transportation Office is located within the northern portion of the Orange Grove High School campus at 300 South Buena Vista Ave, in the City of Corona, California. The transportation office is attached to the eastern end of the Corona-Norco Adult Education School building. Orange Grove High School is bounded to the east by Buena Vista Avenue with Corona City Hall just beyond, to the north by a vacant lot, to the west by the CNUSD printshop and bus storage yard, and to the south by a parking lot and multifamily residential developments. The approximate project site location and surrounding areas are shown on Figure 1, *Site Location Map*.

The proposed transportation office expansion location options are located on the northeastern portion of the existing Orange Grove High School campus, bordered to the north by the CNUSD facilities parking lot, to the west by five existing relocatable buildings and the 7,000 SF building that houses the current transportation office for proposed additions, to the south by the Adult School main office building, and to the east by the landscaped front campus entrance area with Buena Vista Avenue just beyond. Based on the provided *Topographic Survey Map* prepared by Salazar Surveying, Inc., the site is relatively flat and generally drains gently to the northeast. The ground elevation at the proposed Transportation Office Expansion project improvement area ranges in elevation from approximately 648 to 643 feet above mean sea level (msl).

1.2 Proposed Improvements

Based on the provided Accessibility Site Plan prepared by PBK Architects, plotted on April 7, 2023, we understand that the proposed project includes expanding the existing transportation office by constructing a proposed 36 foot by 40 foot relocatable office building. The location of the proposed relocatable building will be on the east side of the current transportation office location. The project will also contain ancillary flatwork, landscaping, and proposed infiltration facilities improvements.

Grading plans and architectural renderings were not available at the time of this study. However, based on the relatively flat and level existing topography onsite, we

anticipate the majority of grading to consist of minor cuts and fills (less than 5 feet) to achieve design grades for the proposed improvements. This is a public school project under the jurisdiction of the Division of the State Architect (DSA), to be designed and constructed in accordance with the 2022 California Building Code (CBC).

1.3 Purpose of Investigation

The purpose of this study has been to evaluate the geologic and geotechnical conditions and provide geotechnical recommendations for design and construction of the proposed improvements.

1.4 Scope

The scope of our geotechnical investigation has included the following tasks:

- Geologic Hazards Review - We reviewed pertinent, readily available geologic and geotechnical literature covering the site. Our review included regional geologic maps and reports available from our library and online sources. Documents reviewed are listed in the attached *References*.

- Pre-field Investigation Activities - We coordinated with District representatives and Underground Service Alert to have existing underground utilities located and marked prior to our subsurface investigation. We performed a site visit with a District representative to specifically mark and review the boring locations. We also retained the services of a private utility locator to mark existing shallow buried utilities in the boring location areas.

- Field Exploration - Our field investigation included drilling, logging, and sampling of four hollow-stem auger borings (LB-1, LB-2, IT-1 and IT-2) at representative locations in the area of the proposed improvements. Collectively, these borings were drilled to a maximum depth of approximately 50.5 feet below the existing ground surface (bgs).

  Encountered earth materials were logged in the field by our field representative and described in accordance with the Unified Soil Classification System (ASTM D2488). Relatively undisturbed soil samples were obtained at selected intervals within these borings using both a ring-lined Modified California split-

barrel sampler and an unlined, 2-inch outside diameter Standard Penetration Test (SPT) split-spoon sampler was also used in collecting samples, which had room for a liner, but no liner was used, as is customary in this area. Sampling resistance blow counts were obtained by dropping a 140-pound, automatic-trip hammer through a 30-inch free fall onto a sampling rod anvil. Modified California and SPT samplers were driven 18 inches and the number of blows was recorded for each 6 inches of penetration. Both sampling methods generally followed respective ASTM D3550 and ASTM D1586 procedures. Representative bulk soil samples were also collected at shallow depths.

Infiltration tests were conducted within borings IT-1 and IT-2, which were both located in the northeastern side of the project based on the existing drainage pattern at the site. Testing was conducted at IT-1 and IT-2 at depths of approximately 10 and 15 feet bgs, respectively, to estimate infiltration characteristics of the soil tested at those locations and depths. These infiltration tests were conducted in general accordance with Riverside County Guidelines.

Boring logs and infiltration measurements collected in the field are presented in Appendix A, *Geotechnical Exploration Logs*. The approximate boring locations are shown on the accompanying Figure 2, *Geotechnical Map*.

- Laboratory Tests - Laboratory tests were conducted on selected relatively undisturbed and bulk soil samples obtained during our field investigation. The laboratory testing program was designed to evaluate engineering characteristics of the onsite soil. Laboratory tests conducted include:

  - In situ moisture content and dry density
  - Atterberg Limits
  - Sieve analysis for grain-size distribution
  - Expansion Index
  - Swell/Settlement Potential
  - Maximum dry density and optimum moisture content
  - Corrosion Series (pH, electrical resistivity, chloride ion, sulfate ion)

  Results of in situ dry density and moisture content tests are presented on the boring logs in Appendix A. Results of the remaining laboratory tests conducted for this study are provided in Appendix B.

- Engineering Analysis - Data obtained from our background review and field exploration was evaluated and analyzed to provide the geotechnical conclusions and preliminary recommendations presented in the following sections.

- Report Preparation - Results of our geotechnical investigation have been summarized in this report, presenting our findings, conclusions and preliminary recommendations for design and construction of the project.

2.0 FINDINGS

2.1 Geologic Hazards Review

We have reviewed pertinent, readily available geologic and geotechnical literature covering the site. Our review included regional geologic maps and reports available from our library. Documents reviewed are listed in *References*. Potential geologic hazards are discussed in the following sections. Our review has considered California Geological Survey's Note 48, *Checklist of the Review of Engineering Geology and Seismology Reports for California Public Schools, Hospitals, and Essential Services Buildings*. A copy of the Note 48 checklist is included in Appendix E of this report and has been annotated indicating the applicable sections of this report that address each checklist item.

2.2 Regional Geologic Setting

The site is located in the northern Peninsular Ranges geomorphic province of southern California, on the Perris Block near the junction where the Chino section diverges from the Whittier section of the Elsinore fault zone. The Perris Block is a relatively unfaulted mass of Mesozoic plutonic rocks of the southern California Batholith and metasedimentary bedrock. The Perris Block is bounded by the Elsinore fault zone to the west, San Jacinto fault zone to the east, the Sierra Madre fault zone to the north, and the San Felipe fault zone to the south. The site is located approximately 2.0 miles northeast of the Chino section and approximately 6.7 miles east of the Whittier section of the Elsinore fault zone. The site is also located approximately 20.1 miles southwest of the closest section of the San Jacinto fault zone. *Figure 5*, *Regional Fault and Historical Seismicity Map* shows regional active and potentially active fault traces with respect to the site location.

The site has been regionally mapped as being underlain by Holocene and Late Pleistocene-aged young alluvial fan deposits consisting of unconsolidated silt, sand, cobbles, and boulders. The regional geology of the area is depicted on Figure 3, *Regional Geology Map*.

2.3 Subsurface Soil Conditions

During our field exploration, we encountered a mantle of artificial fill (afu) underlain by native Quaternary Young Alluvial Fan Deposits (Qyf). Artificial fill was

encountered within our borings underlying existing pavement sections at the site, and typically extended to 4 to 5 feet below the existing ground surface. We have presumed that the onsite artificial fill was associated with past grading and development. Because documentation regarding the engineering and placement of artificial fill encountered was not available to us for our investigation, we have characterized it as undocumented.

Young Alluvial Fan Deposits encountered underlying undocumented artificial fill within the exploratory borings drilled onsite generally consisted of soft to very stiff sandy clays with varying amounts of gravels generally in the upper 20 feet underlain by medium dense to dense clayey sands and clayey gravel, each with varying amounts of gravel. These soils were visually described as moist to the maximum depths explored. During drilling, we also encountered cobbles over 4 inches in dimension; as such we believe the high sampling blow counts generally encountered below 20 feet were influenced by the presence of gravel and cobbles and not necessarily representative of the interstitial soil matrix.

Laboratory testing indicated that near-surface soils are expected to be generally low to medium plasticity. The laboratory-measured in situ dry density of soil samples ranged from approximately 100 to 118 pcf and moisture contents ranged from approximately 15 and 22 percent in the upper 10 feet. The laboratory maximum dry density of a near-surface soil sample obtained from boring LB-1 was 116.7 pcf with a 13.3 percent optimum moisture content as determined by ASTM D1557.

More detailed descriptions of the subsurface conditions are presented on the boring logs in Appendix A. Cross-sectional illustrations of encountered subsurface soil conditions are included as Figures 4A and 4B.

2.3.1 Compressible and Collapsible Soil

Soil compressibility refers to a soil's potential for settlement when subjected to increased loads, as from a new structure or fill surcharge. Based on our investigation and laboratory testing, the near-surface alluvial soils in the proposed structure locations are considered slightly compressible, becoming less compressible with depth. Partial removal and recompaction of this material will further reduce the potential for adverse total and differential settlement of the proposed improvements.

Collapse potential (moisture sensitivity, sometimes referred to as 'hydrocollapse') refers to the potential settlement of a soil under existing stresses upon being wetted. Based on the clayey nature of the near-surface soil and our removal and recompaction recommendations, soils are expected to have a low collapse potential.

2.3.2 Expansive Soils

Expansive soils contain significant amounts of clay particles that swell considerably when wetted and shrink when dried. Structures constructed on these soils are subjected to large uplifting forces caused by the swelling. Without proper measures taken, heaving and cracking of building foundations and slabs-on-grade could result.

Based on laboratory test results of the recovered near surface soils during our current investigation, onsite soils are expected to have a low to medium expansion potential. Based on laboratory testing of near surface soils, soils are expected to generally be of low to medium plasticity.

2.3.3 Sulfate Content

Water-soluble sulfates in soil can react adversely with concrete. However, concrete in contact with soil containing sulfate concentrations of less than 0.1 percent by weight is considered to have negligible sulfate exposure based on the American Concrete Institute (ACI) publication 318-14, Section 19.3 (ACI, 2014), adopted by the 2022 CBC (Section 1904A.2).

A representative near-surface soil sample was tested for soluble sulfate content. The result of this test indicated a sulfate content of less than 0.1 percent by weight. As such, the soils exposed at grade are expected to pose negligible potential (Exposure Class S0) for sulfate reaction with concrete.

2.3.4 Resistivity, Chloride and pH

Soil corrosivity to ferrous metals can be estimated by the soil's electrical resistivity, chloride content and pH. In general, soil having a minimum resistivity between 1,000 and 2,000 ohm-cm is considered corrosive, and soil

having a minimum resistivity less than 1,000 ohm-cm is considered severely corrosive. Soil with a chloride content of 500 parts-per-million (ppm) or more is considered corrosive to ferrous metals.

As a screening for potentially corrosive soil, a near surface soil sample was tested during this investigation to determine their minimum resistivity, chloride content, and pH. These tests indicated a minimum resistivity of 1,750 ohm-cm, a chloride content of 240 ppm, and pH of 6.69. Based on the minimum resistivity, the onsite soil is considered to be corrosive to ferrous metals.

2.4 Groundwater

Groundwater was not encountered in our borings drilled onsite to a maximum explored depth of 51½ feet bgs. Historical data from groundwater elevation contour maps dating back to 1933 (CDWR, 1970) indicate groundwater levels in the area of the site on the order of approximately 523 feet above mean sea level, which correlates to a depth of about 121 feet bgs from the lowest elevation at the site. Recent groundwater data from the Western Municipal Water District (CDWR, 2023a) indicated the shallowest groundwater historically measured from State Well No. 03S07W26J003S, located approximately 790 feet southwest from the site, was approximately 115 feet below ground surface (bgs) in 2011. Based on these, groundwater levels at this project site are expected to be deeper than 50 feet bgs.

2.5 Faulting and Seismicity

In general, the primary seismic hazards for sites in the region include surface rupture along active faults and strong ground shaking. The potential for fault rupture and seismic shaking are discussed below.

2.5.1 Surface Faulting

One of the primary seismic hazards for this region is surface fault rupture. Our assessment of the possible presence of active faulting through the proposed improvement project site included a review of available literature, maps, and aerial photographs.

The California Geological Survey (CGS) and Riverside County have both mapped the site to be outside of an Earthquake Fault Zone. Additionally, published geologic mapping has not indicated any faults transecting or trending towards the site. No mapped faults or AP zones transect or project through the project site.

The closest mapped active or potentially active fault traces are the Chino section (located approx. 2.0 miles from the site), the Glen Ivy (located approx. 3.2 miles from site) and Whittier sections (located approx. 6.7 miles from the site) of the Elsinore fault zone. Figure 5, *Regional Fault Map and Historic Seismicity Map*, shows the locations of known traces of significant faults relative to the location of the project.

2.5.2 Seismic Design Parameters

Based on current understanding of local faulting, the principal seismic hazard that could affect the site is ground shaking resulting from an earthquake occurring along several major active or potentially active faults in southern California. The project should be designed in accordance with applicable current building codes and standards utilizing appropriate seismic design parameters intended to reduce seismic risk as defined by California Geological Survey (CGS) Chapter 2 of Special Publication 117A (CGS, 2008). The following are seismic design parameters for new structures based on the 2022 California Building Code (CBC). The map-based seismic parameters presented were obtained from United States Geological Survey in accordance with American Society of Civil Engineers (ASCE) Publication ASCE 7-16 and the 2022 CBC, Chapter 16A.

We assume that the proposed buildings will have a period of 0.5 second or less. As such, Site Class F is not required, and Site Class may be determined in accordance with ASCE 7-16 Section 20.3. If the building period is greater than 0.5 second, site class should be reevaluated.

Based on our evaluation of subsurface data, we have selected Site Class D. A summary of Site Class evaluation is included in Appendix C.

Table 1 – 2022 CBC Seismic Design Parameters

2022CBC Parameters (CBC or ASCE 7-16 reference)	**Value 2022 CBC**
Site Latitude and Longitude (degrees): 33.8793, -117.5777	
Site Class Definition (1613A.2.2, ASCE 7-16 Ch 20)	D**
Mapped Spectral Response Acceleration at 0.2s Period (1613A.2.1), S_s	2.071 g
Mapped Spectral Response Acceleration at 1s Period (1613A.2.1), S_1	0.778 g
Short Period Site Coefficient at 0.2s Period (T1613A.2.3(1)), F_a	*1.000*
Long Period Site Coefficient at 1s Period (T1613A.2.3(2)), F_v	*1.700**
Adjusted Spectral Response Acceleration at 0.2s Period (1613A.2.3), S_{MS}	2.071 g
Adjusted Spectral Response Acceleration at 1s Period (1613A.2.3), S_{M1}	1.323* g
Design Spectral Response Acceleration at 0.2s Period (1613A.2.4), S_{DS}	1.381 g
Design Spectral Response Acceleration at 1s Period (1613A.2.4), S_{D1}	0.882* g
Mapped *MCE_G* peak ground acceleration (11.8.3.2, Fig 22-9 to 13), *PGA*	0.869 g
Site Coefficient for Mapped *MCE_G PGA* (11.8.3.2), F_{PGA}	1.100
Peak Ground Acceleration, mod w/ site effects (1803A.5.12; 11.8.3.2), PGA_M	0.956 g

* See Section 11.4.8 of ASCE 7-16. A site-specific ground motion hazard analysis in accordance with Section 21.2 of ASCE 7-16 is required for this site. **Per Supplement 3 to ASCE 7-16, a site-specific ground motion hazard analysis is not required where the value of the parameters SM_1 and SD_1 in the table are increased by 50%.**

** Site Class D, and all of the resulting parameters in this table, may only be used for structures without seismic isolation or seismic damping systems.

Based on ASCE 7-16 Equation 11.8-1, the F_{PGA} is 1.1, the PGA is 0.869g, and the PGA_M is 0.956g. As an added check, PGA and hazard deaggregation were also estimated using the United States Geological Survey's (USGS) 2008 Interactive Deaggregations utility. The results of this analysis indicate that the predominant modal earthquake has a PGA of 0.93g with a magnitude of approximately 6.5 (M_W) at a distance on the order of 5.9 kilometers for the Maximum Considered Earthquake (2% probability of exceedance in 50 years); 2/3 of this value is 0.62g. Deaggregation results are included in Appendix C.

Until reviewed and accepted by the California Geologic Survey (CGS), these parameters may be subject to change. Changes may be required as part of the CGS review process.

2.5.3 Historical Seismicity

The *Regional Fault and Historical Seismicity Map* (Figure 5) shows recorded historical regional seismic events (those that have been recorded since the mid-1700s) with respect to the site. Based on this map, it appears that the site has been exposed to relatively significant seismic events; however, this site does not appear to have experienced more severe seismicity than compared to much of southern California in general. We are unaware of documentation that indicates that past earthquake damage in the site vicinity has been significantly worse than for the majority of southern California. In addition, we are unaware of damage in the site vicinity as the result of liquefaction, lateral spreading, or other related phenomena.

2.6 Secondary Seismic Hazards

In general, secondary seismic hazards for sites in the region could include soil liquefaction, earthquake-induced settlement, lateral displacement, surface manifestations of liquefaction, landsliding, seiches, and tsunamis. The potential for secondary seismic hazards at the site is discussed below.

2.6.1 Liquefaction and Lateral Spreading

Liquefaction is the loss of soil strength or stiffness due to a buildup of pore-water pressure during severe ground shaking. Liquefaction is associated primarily with loose (low density), saturated, fine- to medium-grained, cohesionless soils. Effects of liquefaction can include sand boils, settlement, and bearing capacity failures below structural foundations.

The site has not been evaluated by the State of California for liquefaction hazards. Riverside County (2023) has mapped the site to be in an area with a low liquefaction susceptibility (see Figure 6, *Liquefaction Hazards Map*).

Historical groundwater levels have been estimated to have been no shallower than about 115 feet bgs based on available groundwater data from nearby water monitoring wells. Although we do not anticipate groundwater levels at the site to be this shallow, we have analyzed the potential for liquefaction using a historic high groundwater level of 115 feet bgs.

Our analysis was based on the modified Seed Simplified Procedure as detailed by Youd et al. (2001) and Martin and Lew (1999), which compares the seismic demand on a soil layer (Cyclic Stress Ratio, or CSR) to the capacity of the soil to resist liquefaction (Cyclic Resistance Ratio, or CRR), (Youd et al., 2001). A minimum required factor of safety of 1.3 was used in our analysis, with factor of safety defined as CRR/CSR. As required, our analysis assumes that the design earthquake would occur while the groundwater is at its estimated historically highest level. In the SPT method, soil resistance to liquefaction is estimated based on several factors, including SPT sampling blow counts normalized and corrected for several factors including fines content, and overburden pressure. Soil plasticity and moisture content are also considered in an evaluation of liquefaction. Parameters utilized in our analysis include Standard Penetration Test (SPT) results from the borings, visual descriptions of soil samples retrieved, and geotechnical laboratory test results.

Based on our analysis, potentially liquefiable layers were not encountered at the project site. Due to the relatively dense nature of the underlying soils and deep historic groundwater elevations, the potential for liquefaction onsite (including effects of liquefaction, such as lateral spreading) is considered very low. A summary of our liquefaction analyses is included in Appendix C.

2.6.2 Seismically Induced Settlement

Seismically induced settlement consists of dry dynamic settlement (above groundwater) and liquefaction-induced settlement (below groundwater). During a strong seismic event, seismically induced settlement can occur within loose to moderately dense sandy soil due to reduction in volume during and shortly after an earthquake event. Settlement caused by ground shaking is often nonuniformly distributed, which can result in differential settlement.

We have performed analyses to estimate the potential for seismically induced settlement using the method of Tokimatsu and Seed, and based on Martin and Lew (1999), considering the maximum considered earthquake (MCE) peak ground acceleration (PGA_M). Design/historic high groundwater levels of 115 feet below ground surface were used in the analysis. Based on our analysis, a potential for approximately 2.1 inches of seismic settlement is

estimated at the site; however, based on our overexcavation recommendations presented later in this report, the maximum estimated potential seismic settlement is reduced to approximately 1.2 inches. Results of our seismic settlement analysis is presented in Appendix D.

If the potential differential settlement is estimated as half of the total seismic settlement over a horizontal distance of 30 feet, this would result in a maximum 0.6 inches differential settlement in 30 feet, or angular distortion of 0.0017L, considering the recommended overexcavation. The structural engineer should determine Structure Type and Risk Category and evaluate whether the differential settlement estimates described above are tolerable. A copy of ASCE 7-16 Table 12.13-3 is provided as follows for reference.

Table 12.13-3 Differential Settlement Threshold

Structure Type	Risk Category		
	I or II	III	IV
Single-story structures with concrete or masonry wall systems	0.0075L	0.005L	0.002L
Other single-story structures	0.015L	0.010L	0.002L
Multistory structures with concrete or masonry wall systems	0.005L	0.003L	0.002L
Other multistory structures	0.010L	0.006L	0.002L

2.6.3 Seiches and Tsunamis

Seiches are large waves generated in enclosed bodies of water in response to ground shaking. Tsunamis are waves generated in large bodies of water by fault displacement or major ground movement. Based on the location of the site and its distance from contained water facilities, seiches and tsunamis are not a hazard to the site.

2.7 Slope Stability and Landslides

No significant slopes are present or planned near the planned improvements. As such, slope stability evaluation (including development of static and dynamic strength parameters, pseudostatic slope stability coefficients, dynamic site

conditions evaluation, and slope stability mitigation) is not warranted for this project.

2.8 Flooding and Dam Breach Inundation Potential

The Transportation Expansion Areas are mapped within a "Zone X, 0.2% Annual Chance Flood Hazard, Areas of 1% annual chance flood with average depths less than one foot or with drainage areas of less than one square mile" designation within FEMA's Flood Map Service Center (FEMA, 2023). The 0.2% Annual Chance Flood Hazards is also referred to as a 500-year flood hazard zone as shown on Figure 7, *Flood Hazard Zone Map*. A regional drainage channel is located west of Lincoln Avenue, approximately 1,800 feet west of the site. This should be reviewed during civil design.

Flooding can also result from the failure of dams. Based on our review of dam breach inundation data by the California Office of Emergency Services (OES), and the California Department of Water Resource's Dam Breach Inundation Map Web Publisher (CDWR, 2023b) the site is not located near dams or in an area shown as susceptible to dam breach inundation (see Figure 8, *Dam Breach inundation Map*).

2.9 Other Potential Hazards Listed on CGS Note 48

The following naturally occurring hazards are not believed to exist at the site nor in the region: methane gas, hydrogen-sulfide gas, tar seeps, volcanic eruption, radon-22 gas, and naturally occurring asbestos in geologic formations associated with serpentine.

The Transportation Expansion locations are not located within an area of land subsidence due to groundwater pumping, peat loss, or oil extraction as identified by the U.S. Geological Survey (USGS, 2023b). We are unaware of significant subsidence or damage from subsidence near the site due to groundwater withdrawal.

2.10 Infiltration Testing

Infiltration testing was conducted within two of our borings onsite (IT-1 and IT-2) to estimate the infiltration characteristics of the onsite soils at the depths and

locations tested. The infiltration testing was conducted at a bottom test zone depth of approximately 10 and 15 feet bgs, respectively.

Well permeameter tests are useful for field measurements of soil infiltration rates, and are suited for testing when the design depth of the basin or chamber is deeper than current existing grades. It should be noted that this is a clean-water, small-scale test, and that correction factors need to be applied. A test consists of excavating a boring to the depth of the test (or deeper as long as it is partially backfilled with soil and a bentonite plug with a thin soil covering is placed just below the design test elevation). A layer of clean sand or gravel is then placed in the boring bottom to temporarily support a perforated well casing pipe system. Once the well casing pipe has been installed, coarse sand or gravel is poured in the annular space outside of the well casing within the test zone to prevent the boring from caving/collapsing or spalling when water is added. Water is added into the boring to an initial water height, as water within the boring infiltrates into the soil, measurements are taken of the height of the water column within the boring at equally timed intervals (known as a falling head test). The infiltration rate as measured during intervals of the test is defined as the flow rate of water infiltrated, divided by the surface area of the infiltration interface. The test was conducted based on the USBR 7300-89 test method.

Results of the infiltration testing are summarized below and are provided in Appendix A.

Infiltration Test Rates

Boring	Soil Type	Approx. Test Zone (ft), bgs	Percent Fines (%)	Unfactored Infiltration Rate (in/hr)
IT-1	Clay	5 to 10	74	0.06
IT-2	Sandy Clay with Gravel and Clayey Sand with Gravel	10 to 15	13 to 75	0.07

3.0 CONCLUSIONS AND RECOMMENDATIONS

3.1 General Conclusions

Based on this investigation, construction of the proposed improvements, with the exception of stormwater infiltration systems (see Section 3.12 below), is feasible from a geotechnical standpoint. No severe geological or geotechnical issues were identified that would preclude construction of the proposed building addition improvements. The most significant geotechnical issues at the site are the potential for strong seismic shaking and potentially compressible near surface soils. Recommendations for design and construction of proposed improvements are provided in the following sections.

The proposed building addition structure will be located within a developed site, and therefore, existing utilities may be encountered during grading. We assume these utilities will be avoided or rerouted; if so, these will then pose no special consideration, provided the excavations are properly backfilled in accordance with our recommendations below. If any existing utilities within or immediately adjacent to the proposed structures (such as within the limits of overexcavation as recommended below) are to remain, these should be further evaluated on a case-by-case basis.

3.2 Earthwork and Grading

Grading should be performed in accordance with the General Earthwork and Grading Specifications presented in Appendix D, unless specifically revised or amended below or by future recommendations based on final development plans.

3.2.1 Site Preparation

Prior to construction, the areas of the proposed improvements should be cleared of existing pavement, vegetation, trash, and debris. Any underground obstructions onsite that interfere with the proposed foundations should be removed. Trees should be removed and grubbed out. Efforts should be made to locate any existing utility lines. Those lines should be removed or rerouted if they interfere with the proposed construction, and the resulting cavities should be backfilled and compacted as recommended in Sections 3.2.3 and 3.10.

3.2.2 Overexcavation and Recompaction

To reduce the potential for adverse total and differential settlement of the proposed structures, the underlying subgrade soil should be prepared in such a manner that a uniform response to the applied loads is achieved.

For the proposed building expansion, and any retaining walls over 4 feet tall, we recommend that the onsite soils be excavated to a minimum depth of 5 feet below existing ground surface or 3 feet below the bottom of the proposed footing depth, whichever is greater. Where possible, the removal bottoms should extend horizontally beyond the proposed structures a minimum of 5 feet from the outside edges of the footings (including columns connected to the buildings), or a distance equal to the depth of overexcavation below the footings, whichever is farther. During overexcavation, the soil conditions should be observed by Leighton to further evaluate these recommendations based on actual field conditions encountered. A firm removal bottom should be established across the overexcavation footprint to provide uniform foundation support for the proposed structure. Leighton should observe the removal bottom prior to placing fill. Deeper overexcavation and recompaction may be recommended locally until a firm removal bottom is achieved.

Areas outside of the proposed structures planned for new asphalt or concrete pavement (such as parking areas or fire lanes), flatwork (such as sidewalks), site walls and low retaining walls, areas to receive fill, and other improvements, should be overexcavated to a minimum depth of 18 inches below existing grade or 12 inches below proposed subgrade (including the footing subgrade for walls), whichever is deeper.

After completion of the overexcavation, and prior to fill placement, the exposed surfaces should be scarified to a minimum depth of 6 inches, moisture conditioned to or slightly above optimum moisture content, and recompacted to a minimum 90 percent relative compaction, relative to the ASTM D1557 laboratory maximum density.

3.2.3 Fill Placement and Compaction

The onsite soil is suitable for use as compacted structural fill, provided it is free of debris, organic material and oversized material (greater than

8 inches in largest dimension). Any soil to be placed as fill, whether onsite or imported material, should be accepted by Leighton.

All fill soil should be placed in thin, loose lifts, moisture-conditioned, as necessary, with moisture contents of at least optimum, and compacted to a minimum 90 percent relative compaction as determined by ASTM Test Method D1557. Aggregate base for pavements, and the upper 8 inches of pavement subgrade should be compacted to a minimum of 95 percent relative compaction.

3.2.4 Import Fill Soil

If import soil is to be placed as fill, it should be geotechnically accepted by Leighton. Preferably at least 3 working days prior to proposed import to the site, the contractor should provide Leighton pertinent information of the proposed import soil, such as location of the soil, whether stockpiled or native in place, and pertinent geotechnical reports if available. We recommend that a Leighton representative visit the proposed import site to observe the soil conditions and obtain representative soil samples. Potential issues may include soil that is more expansive than onsite soil, soil that is too wet, soil that is too rocky or too dissimilar to onsite soils, oversize material, organics, debris, etc.

The owner should require proper documentation that soils imported to the project site are suitable for use at the school site from an environmental standpoint. The import soils should be evaluated and/or tested, as appropriate, for environmental suitability based on the *Information Advisory – Clean Imported Fill* (Department of Toxic Substances Control, October 2001 or more current edition). The documentation indicating the soils are suitable for use should be provided to the project construction manager prior to intended import to the site. Leighton can provide these services to the District, but the contractor must give Leighton adequate time to properly evaluate the material prior to import–a minimum of 5 working days (laboratory rush charges would apply), but preferably 7 working days or more. The contractor should provide Leighton pertinent information, such as the amount and location of the soil, whether stockpiled or native in place, soil owner contact information, and pertinent environmental reports, if available

3.2.5 Shrinkage and Subsidence

The change in volume of excavated and recompacted soil varies according to soil type and location. This volume change is represented as a percentage increase (bulking) or decrease (shrinkage) in volume of fill after removal and recompaction. Field and laboratory data used in our calculations included laboratory-measured maximum dry densities for soil types encountered at the subject site and the measured in-place densities of soils encountered. We preliminarily estimate the following earth volume changes will occur during grading. These are rough estimates:

Shrinkage (Approximate)	5% ± 3%
Subsidence (Approximate)	0.1 foot

The level of fill compaction, variations in the dry density of the existing soils and other factors influence the amount of volume change.

It should be noted that subsidence, as referred to above, is settlement of in-place earth materials due to heavy equipment processing. It does not refer to potential settlement due to placement of additional loads from new fill (i.e., rising of grades).

These shrinkage values are general guide values. Actual values will vary, due to the varying soil conditions and varying construction techniques. It is not possible to estimate exact values. Therefore, as with any grading project, some earthwork volume adjustments should be anticipated during grading.

3.2.6 Excavations in Proximity to Existing Structures

Excavations planned adjacent to existing structures should be conducted with care. Trench excavations, overexcavations, and utilities should not be allowed approximately parallel to and within close proximity to footings, as described in 2022 CBC 1809A.14 (i.e., within a 2:1 horizontal to vertical projection from 9 inches above the bottom of an existing or proposed foundation), unless such case is reviewed by the Geotechnical Engineer. In areas where an excavation is planned adjacent to other surface improvements, excavations should not come closer than a 1.5:1 projection

extending from the ground surface at the location of the existing improvement, unless such case is reviewed by the Geotechnical Engineer. Temporary excavations above such projections are anticipated to be acceptable.

If a portion of an excavation is planned to extend below the projections described above, this should be reviewed on a case-by-case basis. Depending on the actual conditions (such as depth of planned excavation, horizontal distance from the structure, depth of the as-built foundation conditions, etc.), the excavation may be possible by making a series of adjacent slot cut excavations perpendicular to the buildings in a sequential 'ABC' method, limiting the width of excavation adjacent to existing buildings at any given time and reducing the potential for undermining the existing structure. The maximum width and depth of the slot cuts should be based on the specific conditions of the planned excavations and the soil conditions. The excavations should be no deeper than necessary and should be left open for as short a period as feasible. For slot cuts up to five feet in depth, the maximum allowable width shall be limited to 8 feet. Cuts deeper than 5 feet should be reviewed by Leighton prior to excavations. Backfill of these slot cut excavations should be compacted to a minimum of 95 percent relative compaction as determined by ASTM Test Method D1557.

3.3 Foundations

Conventional shallow foundations may be used to support the loads of the proposed structure expansion. Overexcavation and recompaction of the footing subgrade soil should be performed as detailed in Section 3.2.2.

The following recommendations are based on the onsite soil conditions and soils with a low expansion potential.

3.3.1 Minimum Embedment and Width

Based on our investigation, conventional footings for the proposed one-story structures should have a minimum embedment of 12 inches, with a minimum width of 24 and 15 inches for isolated and continuous footings, respectively.

3.3.2 Allowable Bearing

An allowable bearing pressure of 1,800 pounds-per-square-foot (psf) may be used, based on the minimum embedment depth and width above. This allowable bearing value may be increased by 250 psf per foot increase in depth or width to a maximum allowable bearing pressure of 2,500 psf. These allowable bearing pressures are for total dead load and sustained live loads. Footing reinforcement should be designed by the structural engineer.

3.3.3 Lateral Load Resistance

Soil resistance available to withstand lateral loads on a shallow foundation is a function of the frictional resistance along the base of the footing and the passive resistance that may develop as the face of the structure tends to move into the soil. The frictional resistance between the base of the foundation and the subgrade soil may be computed using an allowable coefficient of friction of 0.30. The passive resistance may be computed using an allowable (factor of safety of 1.5 applied) equivalent fluid pressure of 240 pounds per cubic foot (pcf), assuming there is constant contact between the footing and undisturbed soil. Friction and passive pressure may be combined without reduction, provided it is acceptable that the footings move laterally sufficiently to develop passive pressure (approximately ¼ inch); otherwise, friction alone should be assumed.

3.3.4 Increase in Bearing and Friction – Short Duration Loads

For the case of short term loading (seismic and wind loading), an increase of 1/3 would apply to the bearing pressure and friction values. The ultimate bearing pressure is assumed to be roughly three times the allowable bearing pressure. However, this ultimate pressure only considers structural failure/collapse (life safety) and not structural damage or significant cosmetic damage. Excessive settlement is anticipated to occur well before the ultimate bearing pressure is attained.

3.3.5 Settlement Estimates

The recommended overexcavation, relative compaction and allowable bearing pressure are based on a total allowable, post construction settlement

of 1 inch. Differential settlement due to static loading is estimated at approximately ½ inch over a horizontal distance of 40 feet between or along similarly loaded footings. Since settlement is a function of footing sustained load, size and contact bearing pressure, differential settlement can be expected between adjacent columns or walls where a large differential loading condition exists.

Seismic differential settlement is estimated to be approximately 0.6 inch in 30 feet, or angular distortion of 0.0016L for the design earthquake.

3.4 Recommendations for Slabs-On-Grade

Concrete slabs-on-grade should be designed by the structural engineer in accordance with the current CBC for a soil with a low expansion potential. An effective PI value of 13 should be used for conventional foundation and slab design. Observation and possibly testing to confirm the expansion potential of the near surface soil should be conducted during site grading.

The following minimum slab recommendations should be used. More stringent requirements may be required by agencies, the structural engineer, the architect, or the CBC. Slabs-on-grade should have the following minimum recommended components:

- Subgrade Moisture Conditioning: The subgrade soil should be moisture conditioned to at least 32 percentage points above optimum moisture content to a minimum depth of 12 inches prior to placing steel or concrete.
- Concrete Thickness and Structural Design: Slabs-on-grade should be designed by the structural engineer, but should be at least 5 inches thick (this is referring to the actual minimum thickness, not the nominal thickness). Reinforcing steel should be designed by the structural engineer, but as a minimum (for conventionally reinforced slabs) should be No. 4 rebar placed at 12 inches on center, each direction, mid-depth in the slab. A modulus of subgrade reaction (k) as a linear spring constant, of 175 pounds per square inch per inch deflection (pci) can be used for design of heavily loaded slabs-on-grade, assuming a linear response up to deflections on the order of ¾ inch.

Minor cracking of the concrete as it cures, due to drying and shrinkage is normal and should be expected. However, cracking is often aggravated by a high water/cement ratio, high concrete temperature at the time of placement, small

nominal aggregate size, aggregate that is not sufficiently clean, and rapid moisture loss due to hot, dry, and/or windy weather conditions during placement and curing. Cracking due to temperature and moisture fluctuations can also be expected. Low slump concrete can reduce the potential for shrinkage cracking. Additionally, reinforcement in slabs and foundations can generally reduce the potential for shrinkage cracking. The structural engineer should consider these and other pertinent concrete design and construction considerations in slab design and specifications.

3.4.1 Slab Underlayment for Moisture Vapor Retarding

Because moisture vapor from the underlying soils will be transmitted through slabs-on-grade without preventive measures, slab underlayment for moisture vapor retarding should be designed by qualified professionals (such as the structural engineer and/or architect) where control of moisture vapor transmission through slabs is considered important to this project (such as where moisture-sensitive floor coverings or equipment are planned). Slab underlayment typically includes a moisture vapor retarder membrane (such as 15-mil thick or greater), and provisions for protection of the vapor retarder during construction. The structural engineer and/or architect should specify pertinent slab and concrete design parameters, such as whether a sand blotter layer should be placed over the vapor retarder.

Moisture retarders can reduce, but not eliminate moisture vapor rise from the underlying soils up through the slab. Moisture retarders should be designed and constructed in accordance with applicable American Concrete Institute, Portland Cement Association, Post-Tensioning Institute, ASTM International, and California Building Code requirements and guidelines.

Leighton does not practice in the field of moisture vapor transmission evaluation/mitigation, since this does not fall under the geotechnical discipline. Therefore, we recommend that a qualified person, such as the flooring subcontractor, structural engineer, and/or architect, be consulted to evaluate the general and specific moisture vapor transmission paths and any impact on the proposed construction. That person (or persons) should provide recommendations for mitigation of potential adverse impact of moisture vapor transmission on various components of the structures as deemed appropriate. In addition, the recommendations in this report and our

services in general are not intended to address mold prevention, since we, along with geotechnical consultants in general, do not practice in the area of mold prevention. If specific recommendations are desired, a professional mold prevention consultant should be contacted.

3.5 Seismic Design Parameters

In order to reduce the effects of ground shaking produced by regional seismic events, seismic design should be performed in accordance with the current CBC. The seismic design parameters listed in Table 1 of Section 2.5.2 of this report should be considered for the seismic analysis of the subject site.

3.6 Lateral Earth Pressures

The following retaining wall recommendations are included for design consideration of walls with a height less than 12 feet. We recommend that retaining walls be backfilled with very low expansive soil and constructed with a backdrain in accordance with the recommendations provided on Figure 9, *Retaining Wall Backfill and Subdrain Detail*. Using expansive soil as retaining wall backfill will result in higher lateral earth pressures exerted on the wall and are, therefore, not recommended. Retaining wall locations and configurations are unknown at the time of this report.

Table 2 – Retaining Wall Design Parameters

Static Equivalent Fluid Pressure (pcf)	
Condition	Level Backfill
Active	60
At-Rest (drained, compacted-fill backfill)	80
Passive (ultimate)	240 (Max. 2,500 psf)

The above values do not contain an appreciable factor of safety, so the structural engineer should apply the applicable factors of safety and/or load factors during design.

Cantilever walls that are designed to yield at least 0.001H, where H is equal to the wall height, may be designed using the active condition. Rigid walls and walls braced at the top should be designed using the at-rest condition.

Passive pressure is used to compute soil resistance to lateral structural movement. In addition, for sliding resistance, a frictional resistance coefficient of 0.30 may be used at the concrete and soil interface. The lateral passive resistance should be taken into account only if it is ensured that the soil providing passive resistance, embedded against the foundation elements, will remain intact with time. A soil unit weight of 120 pcf may be assumed for calculating the actual weight of the soil over the wall footing.

In addition to the above lateral forces due to retained earth, surcharge due to improvements, such as an adjacent structure or traffic loading, should be considered in the design of the retaining wall. Loads applied within a 1:1 projection from the surcharging structure on the stem of the wall should be considered in the design. A third of uniform vertical surcharge-loads should be applied at the surface as a horizontal pressure on cantilever (active) retaining walls, while half of uniform vertical surcharge-loads should be applied as a horizontal pressure on braced (at-rest) retaining walls. To account for automobile parking surcharge, we suggest that a uniform horizontal pressure of 100 psf (for restrained walls) or 70 psf (for cantilever walls) be added for design, where autos are parked within a horizontal distance behind the retaining wall less than the height of the retaining wall stem.

For walls with a retained height over 6 feet, or where otherwise required by Code or deemed appropriate by the structural engineer, we recommend that the wall designs be checked seismically using an additive seismic Equivalent Fluid Pressure (EFP) of 28 pcf, which is added to the active EFP. Such walls that are to be designed in the static case assuming the at-rest condition should be checked seismically using this additive seismic EFP added to the active condition (i.e., the additive seismic EFP is not added to the at-rest EFP value shown in Table 2 above). The additive seismic EFP should be applied with a standard EFP pressure distribution (i.e., it is not an inverted triangle).

Conventional retaining wall footings should have a minimum width of 24 inches and a minimum embedment of 12 inches below the lowest adjacent grade. An allowable bearing pressure of 1,800 psf may be used for retaining wall footing

design, based on the minimum footing width and depth. This bearing value may be increased by 250 psf per foot increase in width or depth to a maximum allowable bearing pressure of 2,500 psf.

3.7 Cement Type and Corrosion Protection

Based on the results of laboratory testing, concrete structures in contact with the onsite soil will have negligible exposure to water-soluble sulfates in the soil. Therefore, common Type II cement may be used for concrete construction. Concrete should be designed in accordance with ACI 318-14, Section 4.2 (ACI, 2014), adopted by the 2022 CBC (Section 1904A.2).

Based on our laboratory testing, the onsite soil is considered corrosive to ferrous metals. Metallic utilities should be avoided, or typical corrosion protection of underground metallic utilities should be provided. Corrosion information presented in this report should be provided to your underground utility contractors.

3.8 Pavement Design

Based on the design procedures outlined in the current Caltrans Highway Design Manual, and an R-value of 25 for compacted subgrade soils, preliminary flexible pavement sections may consist of the following for the Traffic Indices (TI) indicated.

Table 3 – Asphalt Pavement Section Thickness

Traffic Index	Asphaltic Concrete (AC) Thickness (inches)	Class 2 Aggregate Base (AB) Thickness (inches)
5 or less (auto access)	4.0	4.0
7 (bus/truck access)	5.0	9.0

If asphalt pavement is to be constructed prior to construction, the full pavement thickness should be placed to support heavy construction traffic.

In areas where rigid concrete pavement is planned and trucks may drive on this pavement, we recommend 7 inches of Portland Cement Concrete (PCC) with a 28-day compressive strength of 4,000 psi over 4 inches of aggregate base placed on prepared subgrade soil (see Section 3.2.2). Reinforcement should be specified

by the structural engineer, but should be a minimum of #3 rebar at 18 inches on center each way. The PCC pavement sections should be provided with crack-control joints spaced no more than 12 feet on center each way. If sawcuts are used, they should have a minimum depth of ¼ of the slab thickness and made within 24 hours of concrete placement. We recommend that sections be as nearly square as possible.

PCC sidewalks should be at least 4 inches thick over prepared subgrade soil, with construction joints no more than 8 feet on center each way, with sections as nearly square as possible. Use of reinforcing will help reduce severity of cracking.

All pavement construction should be performed in accordance with the Standard Specifications for Public Works Construction. Field observations and periodic testing, as needed during placement of the base course materials, should be undertaken to ensure that the requirements of the standard specifications are fulfilled. Prior to placement of aggregate base, the subgrade soil should be processed to a minimum depth of 6 inches, moisture-conditioned, as necessary, and recompacted to a minimum of 95 percent relative compaction. Aggregate base should be moisture conditioned, as necessary, and compacted to a minimum of 95 percent relative compaction.

3.9 Temporary Excavations

All temporary excavations, including utility trenches, retaining wall excavations and other excavations should be performed in accordance with project plans, specifications and all OSHA requirements, and the current edition of the California Construction Safety Orders, latest edition.

No surcharge loads should be permitted within a horizontal distance equal to the height of cut or 5 feet, whichever is greater from the top of the slope, unless the cut is shored appropriately. Excavations that extend below an imaginary plane inclined at 45 degrees below the edge of any adjacent existing site foundation should be properly shored to maintain support of the adjacent structures.

Cantilever shoring should be designed based on the active fluid pressure presented in the retaining wall section. If excavations are braced at the top and at specific design intervals, the active pressure may then be approximated by a

rectangular soil pressure distribution with the pressure per foot of width equal to 26H, where H (feet) is equal to the depth of the excavation being shored.

During construction, the soil conditions should be regularly evaluated to verify that conditions are as anticipated. The contractor should be responsible for providing the "competent person" required by OSHA, standards to evaluate soil conditions. Close coordination between the competent person and Leighton Consulting should be maintained to facilitate construction while providing safe excavations.

3.10 Trench Backfill

Utility-type trenches onsite can be backfilled with onsite material, provided it is free of debris, significant organic material and oversized material (greater than 3 inches for trench backfill within 3 feet of a pipe, and 6 inches for trench backfill above).

Prior to backfilling the trench, pipes should be bedded and shaded in a granular material that has a sand equivalent of 40 or greater. We recommend that open-graded crushed rock or similar material not be used as bedding material, unless special provisions are implemented to limit the migration of surrounding soil into the open-graded material, including surrounding the open-graded material with filter fabric (Mirafi 140N or equivalent), or mixing sand with the open-graded material. The bedding material should extend 12 inches above the top of the pipe. The bedding/shading sand should be densified in-place by mechanical means. Due to the clayey nature and low permeability of the near surface soils, bedding/shading should not be jetted. Bedding sand should be placed in accordance with the Standard Specifications for Public Works Construction – Greenbook (Public Works Standard, Inc.), current edition.

The native soil fill should be placed in loose layers, moisture conditioned, as necessary, and mechanically compacted using a minimum standard of 90 percent relative compaction based on ASTM D1557. The thickness of layers should be based on the compaction equipment used in accordance with the current Greenbook.

3.11 Surface Drainage

Water should not be allowed to pond or accumulate anywhere except in approved drainage areas, which should be set back at least 15 feet from proposed

structures. Pad drainage should be designed to collect and direct surface water away from structures to approved drainage facilities. Hardscape drains should be installed and drain to storm water disposal systems. Drainage patterns and drainpipes approved at the time of fine grading should be maintained throughout the life of proposed structures. Percolation or stormwater infiltration should not be allowed within at least horizontal 15 feet of the proposed building addition.

3.12 Infiltration Recommendations

Based on our onsite observations, laboratory testing, and infiltration test results summarized in Section 2.10 and presented in Appendix B, reliance of infiltration into onsite native soils is not recommended. Soils within the upper 20 feet contained high amounts of fines (silt and clay), which yielded low infiltration rates during our testing. The soils encountered deeper than 20 feet consisted of clayey sands, gravels with clay, and sandy clays with high variation of fines. Based on the infiltration tests, infiltration of storm water at the site is generally considered not feasible.

3.13 Limitations and Additional Geotechnical Services

The geotechnical recommendations presented in this report are based on subsurface conditions as interpreted from limited subsurface explorations and limited laboratory testing. Our geotechnical recommendations provided in this report are based on information available at the time the report was prepared and may change as plans are developed. However, additional geotechnical study and analysis may be required based on final development plans. Leighton Consulting should review the site and grading plans when available and comment further on the geotechnical aspects of the project. Geotechnical observation and testing should be conducted during excavation and all phases of grading operations. Our conclusions and preliminary recommendations should be reviewed and verified by Leighton Consulting during construction and revised accordingly if geotechnical conditions encountered vary from our findings and interpretations. Changes in subsurface conditions can and do occur over time. Therefore, our findings, conclusions, and recommendations presented in this report are based on the assumption that Leighton Consulting will provide geotechnical observation and testing during construction. Please refer to the GBC “Important Information about This Geotechnical Engineering Report” presented at the end of this report.

Environmental services were not included as part of this study. This report was prepared for the sole use of Corona-Norco Unified School District for application to the design of the proposed project in accordance with generally accepted geotechnical engineering practices at this time in California.

Geotechnical observation and testing should be provided:

- After completion of site demo/clearing.
- During overexcavation of compressible soil.
- During compaction of all fill materials.
- After excavation of all footings and prior to placement of concrete.
- During utility trench backfilling and compaction.
- During pavement subgrade and base preparation.
- When any unusual conditions are encountered.

Until reviewed and accepted by the California Geologic Survey (CGS), this report may be subject to change. Changes may be required as part of the CGS review process. Leighton Consulting, Inc. assumes no risk or liability for consequential damages that may arise due to design work progressing before this report is reviewed and accepted by CGS.

REFERENCES

American Concrete Institute (ACI), 2014, Building Code Requirements for Structural Concrete (ACI 318-14) and Commentary (ACI 318-14), an ACI Standard.

California Building Standards Commission, 2022, 2022 California Building Code, California Code of Regulations, Title 24, Part 2, Volume 2 of 2, Based on 2021 International Building Code, Effective January 1, 2023.

California Department of Water Resources (CDWR) 2023a, Sustainable Groundwater Management Act Data Viewer Tool, Website: https://sgma.water.ca.gov/webgis/?appid=SGMADataViewer#gwlevels; accessed March 31 20223.

California Department of Water Resources (CDWR) 2023b, Dam Breach Inundation Map Web Publisher Tool, Website: https://sgma.water.ca.gov/webgis/?appid=SGMADataViewer#gwlevels, accessed March 31, 2023.

California Geologic Survey (CGS), 2008, Guidelines for Evaluating and Mitigating Seismic Hazards in California, Special Publication 117A, Revised and Re-Adopted on September 11, 2008, Laguna Beach, California.

California Geologic Survey (CGS), 2023, Earthquake Zones of Required Investigation, website: https://maps.conservation.ca.gov/cgs/EQZApp/app, accessed March 31, 2023.

Federal Emergency Management Agency (FEMA), 2023, Flood Map Service Center Tool, Website: https://msc.fema.gov/portal/home; accessed April 5, 2023.

Gray, C.H., Morton, D.M., Weber, F.H., Bovard, K.R., Dawson, M., 2002, Geologic Map of the Corona North 7.5' Quadrangle, Riverside and San Bernardino Counties, California, U.S. Geological Survey Open-File Report OF-2022-02, scale 1:24,000.

Martin, G. R., and Lew, M., ed., 1999, “Recommended Procedures for Implementation of DMG Special Publication 117, Guidelines for Analyzing and Mitigating Liquefaction Hazards in California,” Southern California Earthquake Center, dated March 1999.

Morton, D.M., Miller, F.K., 2006, Geologic Map of the San Bernardino and Santa Ana 30' x 60' Quadrangles, California, U.S. Geological Survey Open-File Report OF-2006-1217, scale 1:100,000.

Office of Statewide Health Planning and Development (OSHPD) and Structural Engineers Association of California (SEAOC), 2023, Seismic Design Maps web tool, https://seismicmaps.org, accessed March 22, 2023.

Public Works Standard, Inc., 2018, Greenbook, Standard Specifications for Public Works Construction: BNI Building News, Anaheim, California.

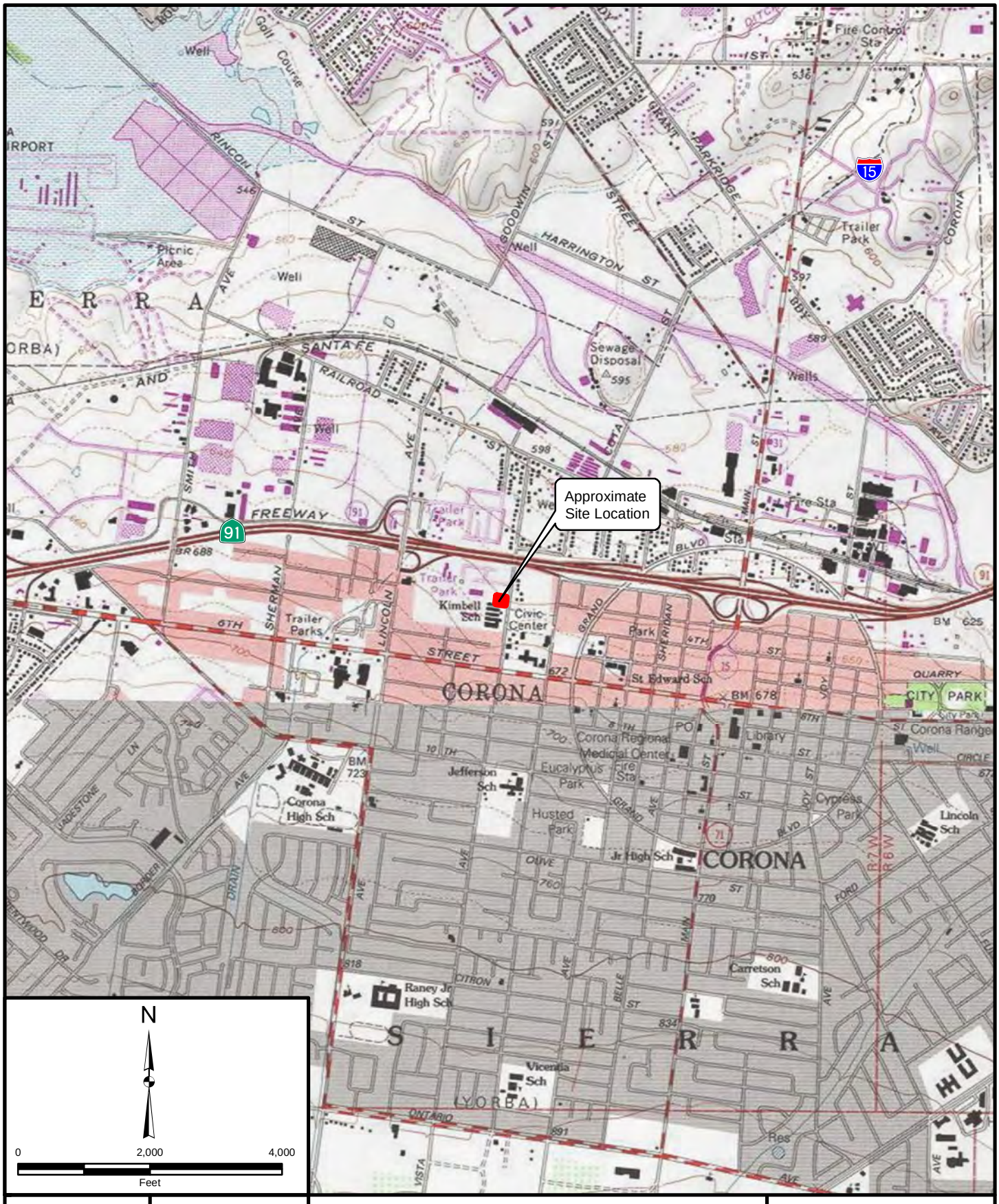
Riverside County, 2023, Riverside County Information Technology (RCIT) Riverside County Map My County web tool, website: https://gis1.countyofriverside.us/Html5Viewer/index.html?viewer=MMC_Public, accessed on March 22. 2023.

Tokimatsu, K., Seed, H. B., 1987, "Evaluation of Settlements in Sands Due to Earthquake Shaking," *Journal of the Geotechnical Engineering*, American Society of Civil Engineers, Vol. 113, No. 8, pp. 861-878.

United States Geologic Survey (USGS), 2023a, Earthquake Hazards Program, Unified Hazard Tool, website: https://earthquake.usgs.gov/hazards/interactive, accessed March 22, 2023.

United States Geologic Survey (USGS), 2023b, Areas of Land Subsidence in California, website: https://ca.water.usgs.gov/land_subsidence/california-subsidence-areas.html, accessed March 22, 2023

Youd, T.L, Idriss, I.M., Andrus, R.D., Arango, I., Castro, G., Christian, J.T., Dobry, R., Finn, L., Harder, L.F., Hynes, M.E., Ishihara, K., Koester, J.P., Liao, S.C., Marcuson, W.F. III, Martin, G.R., Mitchell, J.K., Moriwaki, Y., Power, M.S., Robertson, P.K., Seed, R.B., Stokoe, K.H. II, 2001, "Liquefaction Resistance of Soils: Summary Report from the 1996 NCEER and 1998 NCEER/NSF Workshops on Evaluation of Liquefaction Resistance of Soils", Journal of Geotechnical and Geoenvironmental Engineering, Vol. 127, No. 10, October 2001.



Project: 13847.001	Eng/Geol: JDH/SGO
Scale: 1 " = 2,000 '	Date: April 2023

SITE LOCATION MAP

Proposed Transportation Office Expansion
Corona-Norco Unified School District
300 South Buena Vista Avenue
Corona, California

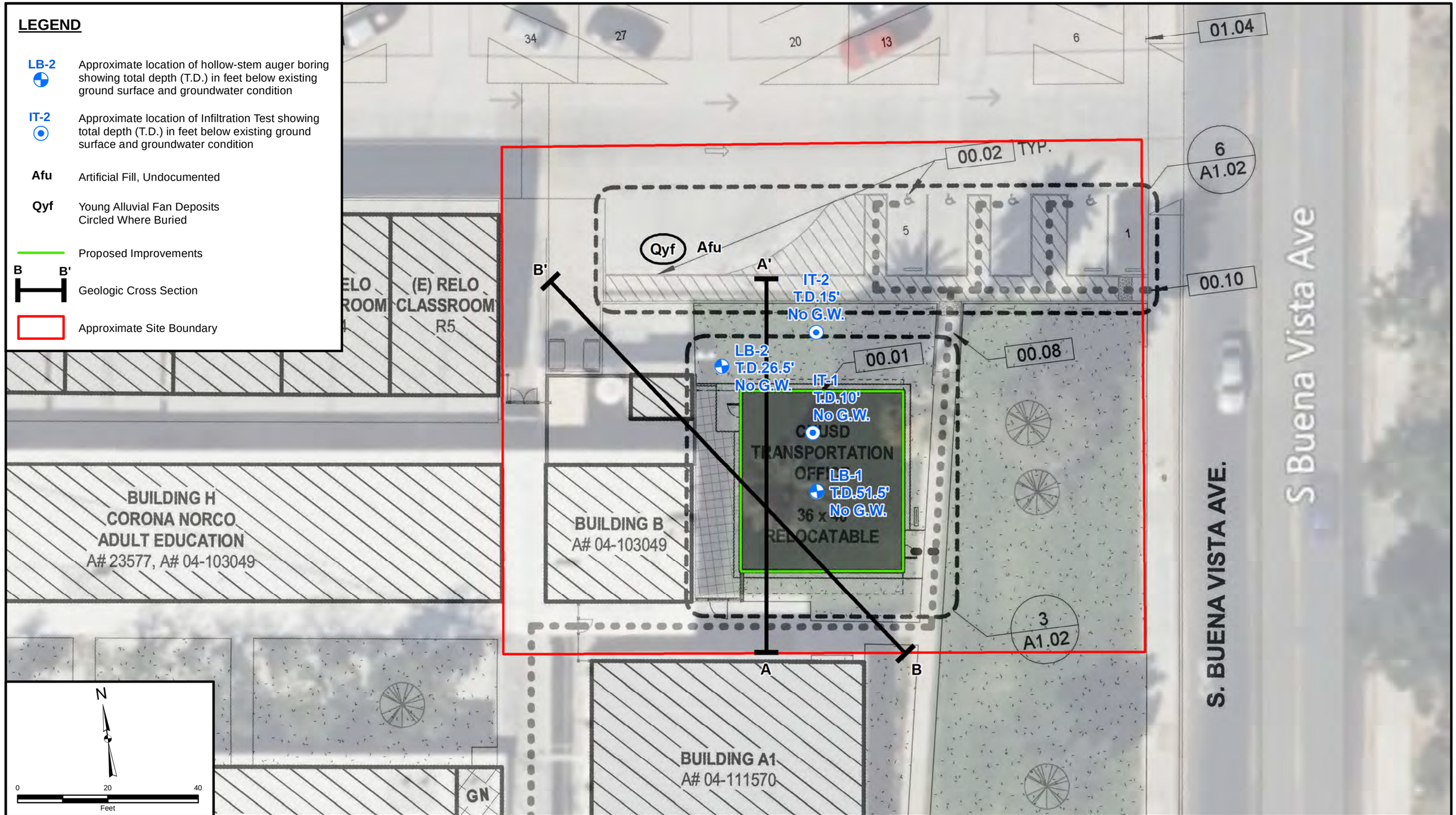
FIGURE 1

Leighton

Map Saved as J:\Drafting\13847\001\Maps\13847-001_F01_SLM_2023-04-14.mxd on 3/20/2023 10:20:42 AM Author: KVM (btran)

LEGEND

LB-2	Approximate location of hollow-stem auger boring showing total depth (T.D.) in feet below existing ground surface and groundwater condition
IT-2	Approximate location of Infiltration Test showing total depth (T.D.) in feet below existing ground surface and groundwater condition
Afu	Artificial Fill, Undocumented
Qyf	Young Alluvial Fan Deposits Circled Where Buried
	Proposed Improvements
B B'	Geologic Cross Section
	Approximate Site Boundary



Project: 13847.001	Eng/Geol: JDH/SGO
Scale: 1 " = 20 '	Date: April 2023

Reference: Site Accessibility Plan, Sheet G0.02
Dated: 05/19/03 by PBK Architects, Inc.

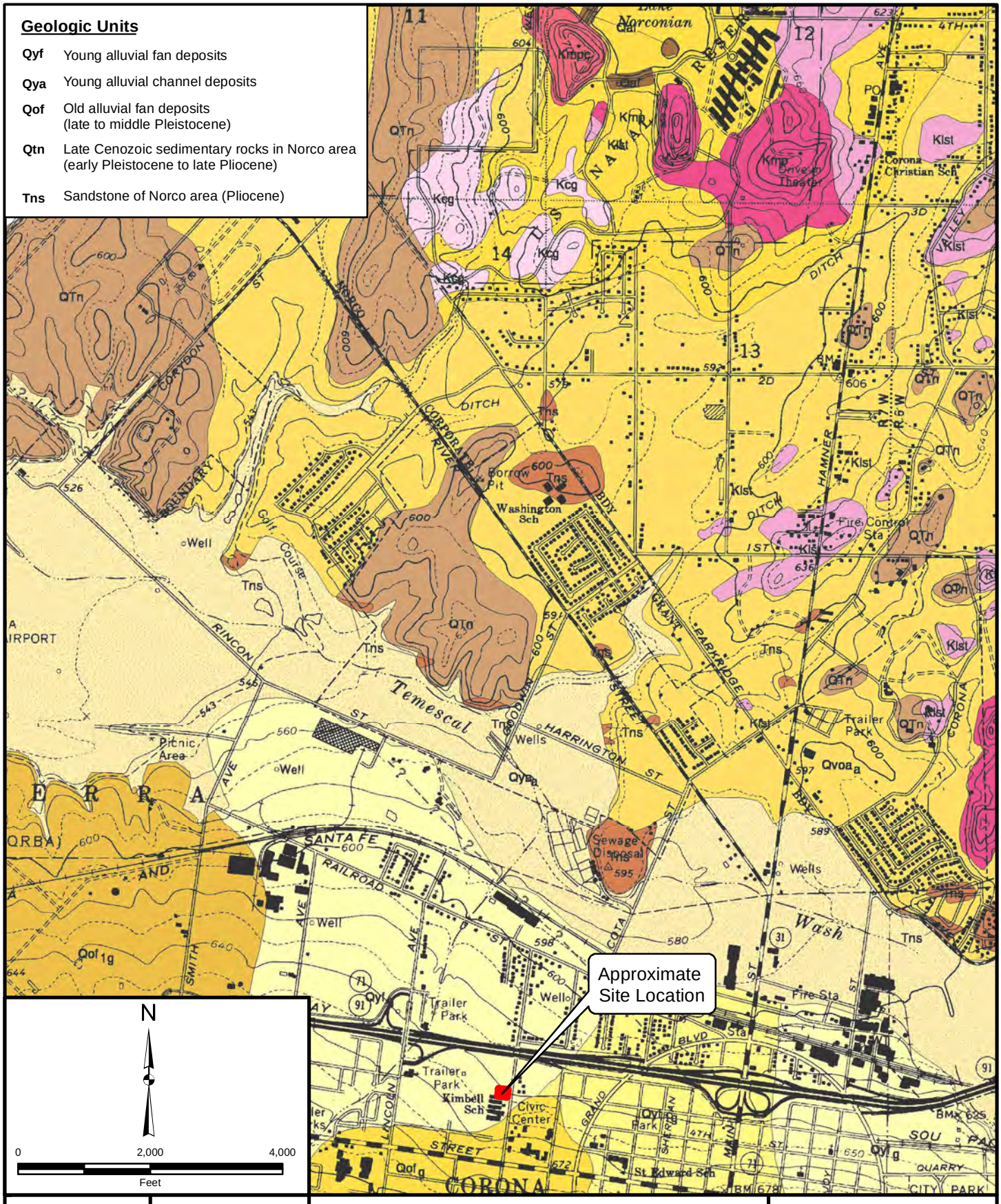
GEOTECHNICAL MAP

Proposed Transportation Office Expansion
Corona-Norco Unified School District
300 South Buena Vista Avenue, Corona, California

FIGURE 2

Leighton

Map Saved as J:\Drafting\13847\001\Maps\13847-001_F02_ELM_2023-04-24.mxd on 4/24/2023 4:12:57 PM(btran)



Project: 13847.001	Eng/Geol: JDH/SGO
Scale: 1 " = 2,000 '	Date: April 2023

Reference:
Geologic Map of the Corona North Quandrangle, Riverside and San Bernardino Counties, Calfiornia
by Douglas M. Morton and C. H. Gray, Jr.

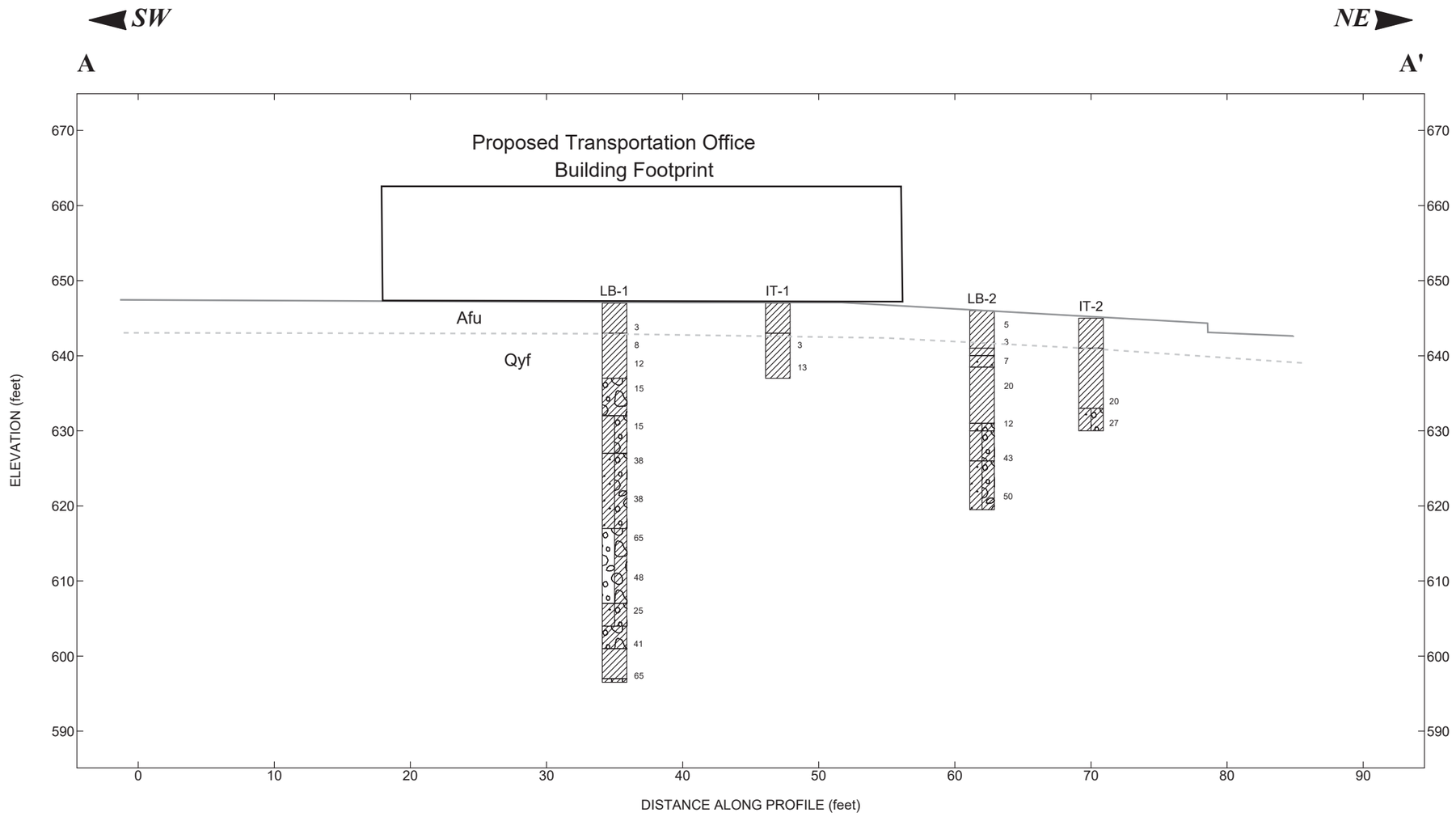
REGIONAL GEOLOGY MAP

Proposed Transportation Office Expansion
Corona-Norco Unified School District
300 South Buena Vista Avenue
Corona, California

FIGURE 3

Leighton

Map Saved as J:\Drafting\13847\001\Maps\13847-001_F03_RGM_2023-04-13.mxd on 3/20/2023 10:39:03 AM Author: KVM (btran)

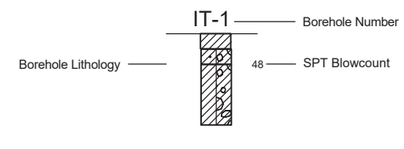


Lithology Graphics

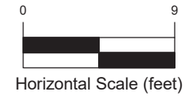
- USCS Low Plasticity Clay
- USCS Clayey Sand
- USCS Clayey Gravel
- USCS Low Plasticity Clay
- USCS Poorly-graded Gravel with Clay
- USCS Clayey Sand

See Figure 2 for Cross-Section Location

Explanation:



- Water Level Reading at time of drilling.
- Approximate Existing Grade
- Existing Structure
- Proposed Building
- Approximate Geologic Contact



Horizontal Scale (feet)

Vertical Exaggeration: 0.5x

Leighton Consulting Inc.,

Section A-A'
GEOLOGIC CROSS SECTION

Transport office Expansion
Corona, CA

JOB NUMBER	FIGURE NUMBER
13847.001	Figure 4A

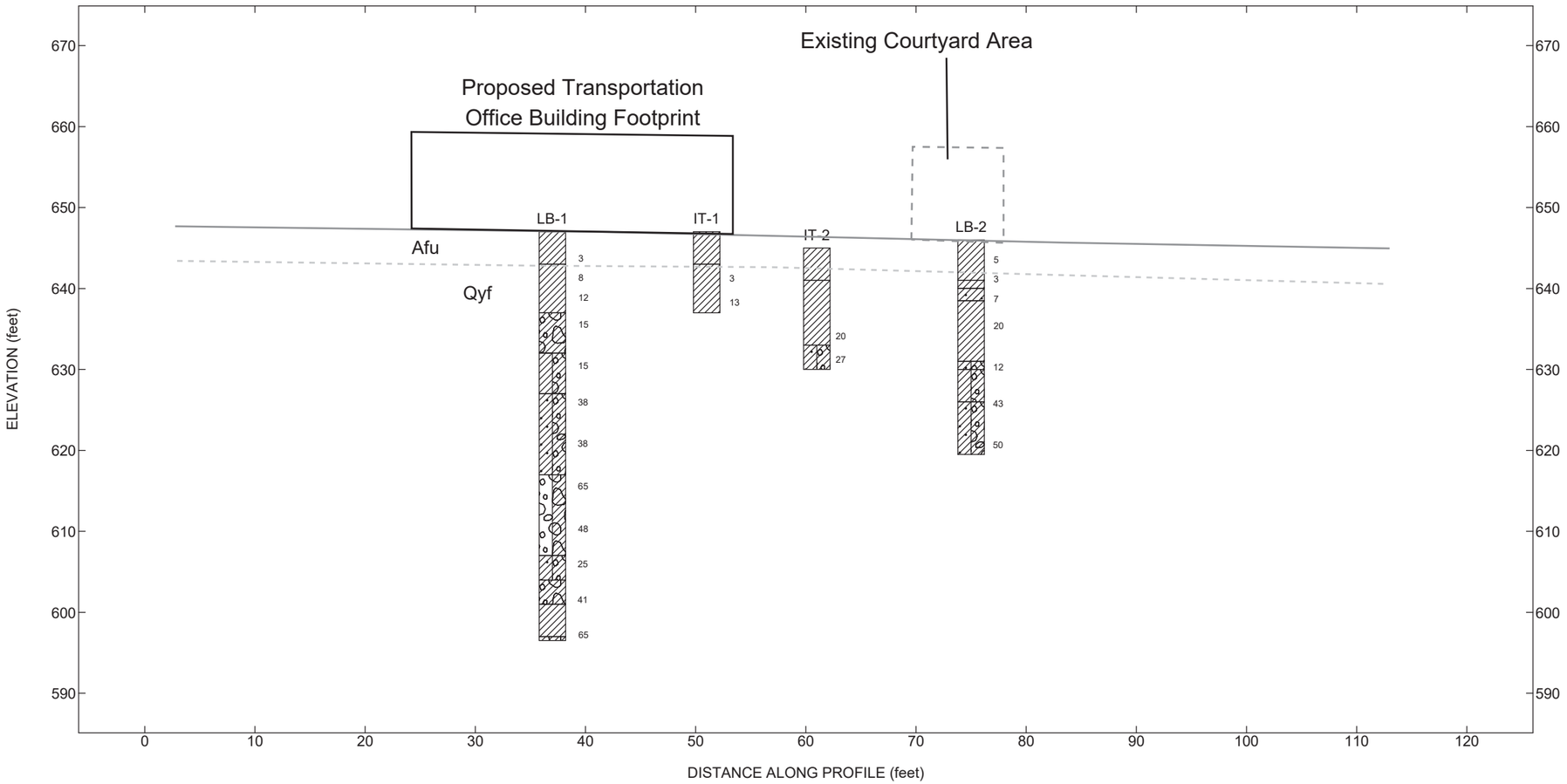
FNC AB NWNL01 - B SIZE 13847.001 FIELD BORING LOGS.GPJ ROCKLOG2012.GDT 4/14/23

◄ SE

SW ►

B

B'

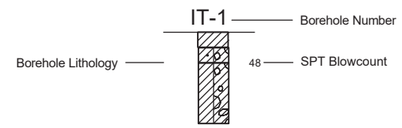


Lithology Graphics

- USCS Low Plasticity Clay
- USCS Clayey Sand
- USCS Clayey Gravel
- USCS Low Plasticity Clay
- USCS Poorly-graded Gravel with Clay
- USCS Clayey Sand

See Figure 2 for Cross-Section Location

Explanation:



- Water Level Reading at time of drilling.
- Approximate Existing Grade
- Existing Structure
- Proposed Building
- Approximate Geologic Contact

0 12

Horizontal Scale (feet)

Vertical Exaggeration: 0.5x

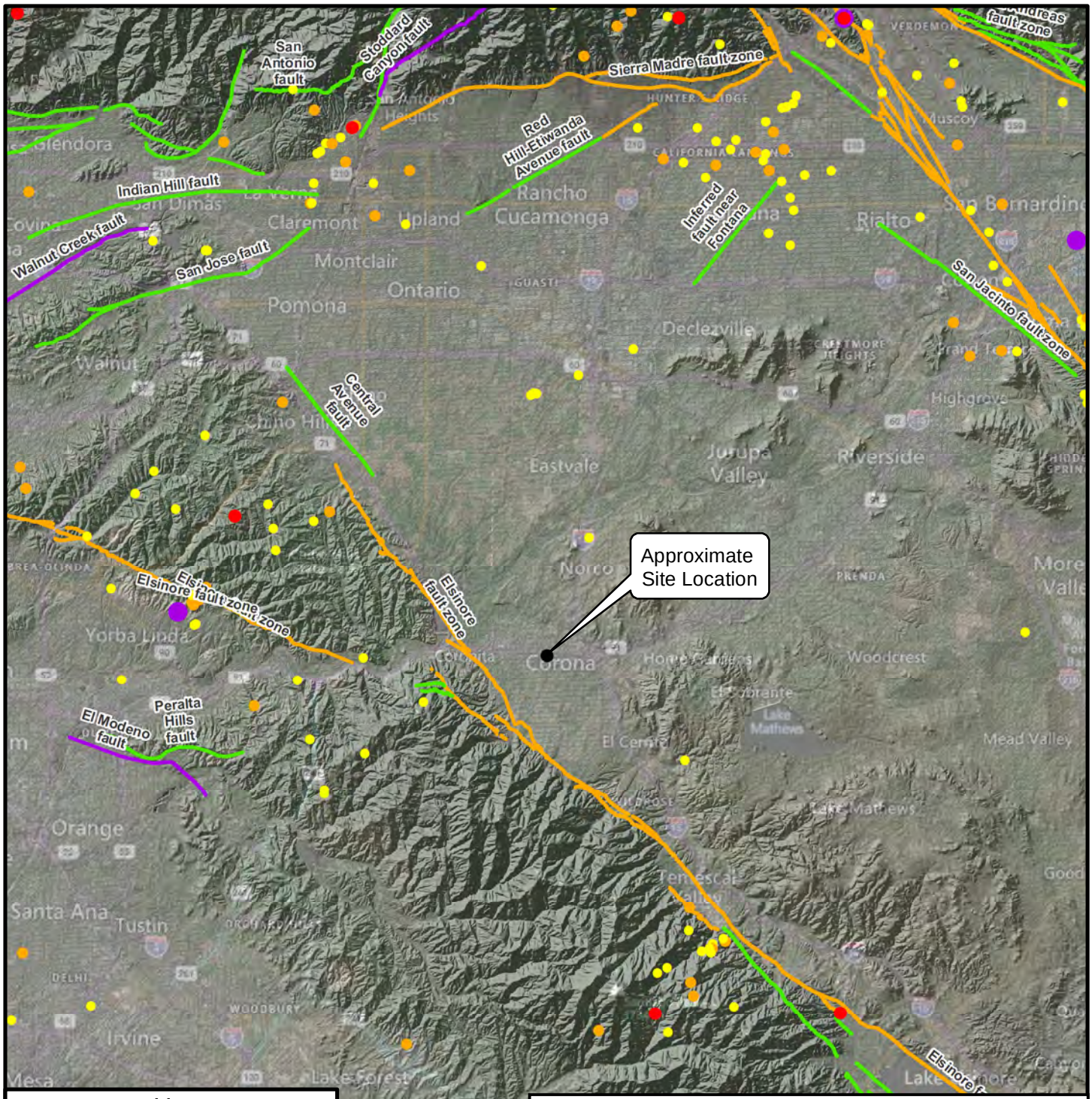
Leighton Consulting Inc.,

Section A-A'
GEOLOGIC CROSS SECTION

Transport office Expansion
Corona, CA

JOB NUMBER	FIGURE NUMBER
13847.001	Figure 4B

FNC AB NWNL01 - B SIZE 13847.001 FIELD BORING LOGS.GPJ ROCKLOG2012.GDT 4/14/23



LEGEND

Fault activity

Recency of Movement

- Holocene (<11,700 years)
- Late Quaternary (last 700,000 years)
- Quaternary (<1.6M years)

Historical Earthquakes (≥M3.5)

- 3.5 - 3.99
- 4.0 - 4.99
- 5.0 - 5.99
- 6.0 - 6.99

Project: 13847.001	Eng/Geol: JDH/SGO
Scale: 1 " = 5 miles	Date: April 2023

Basemap Reference: © 2023 Microsoft Corporation
Earthstar Geographics SIO © 2023 TomTom
Seismicity Data Reference: maps.conservation.ca.gov

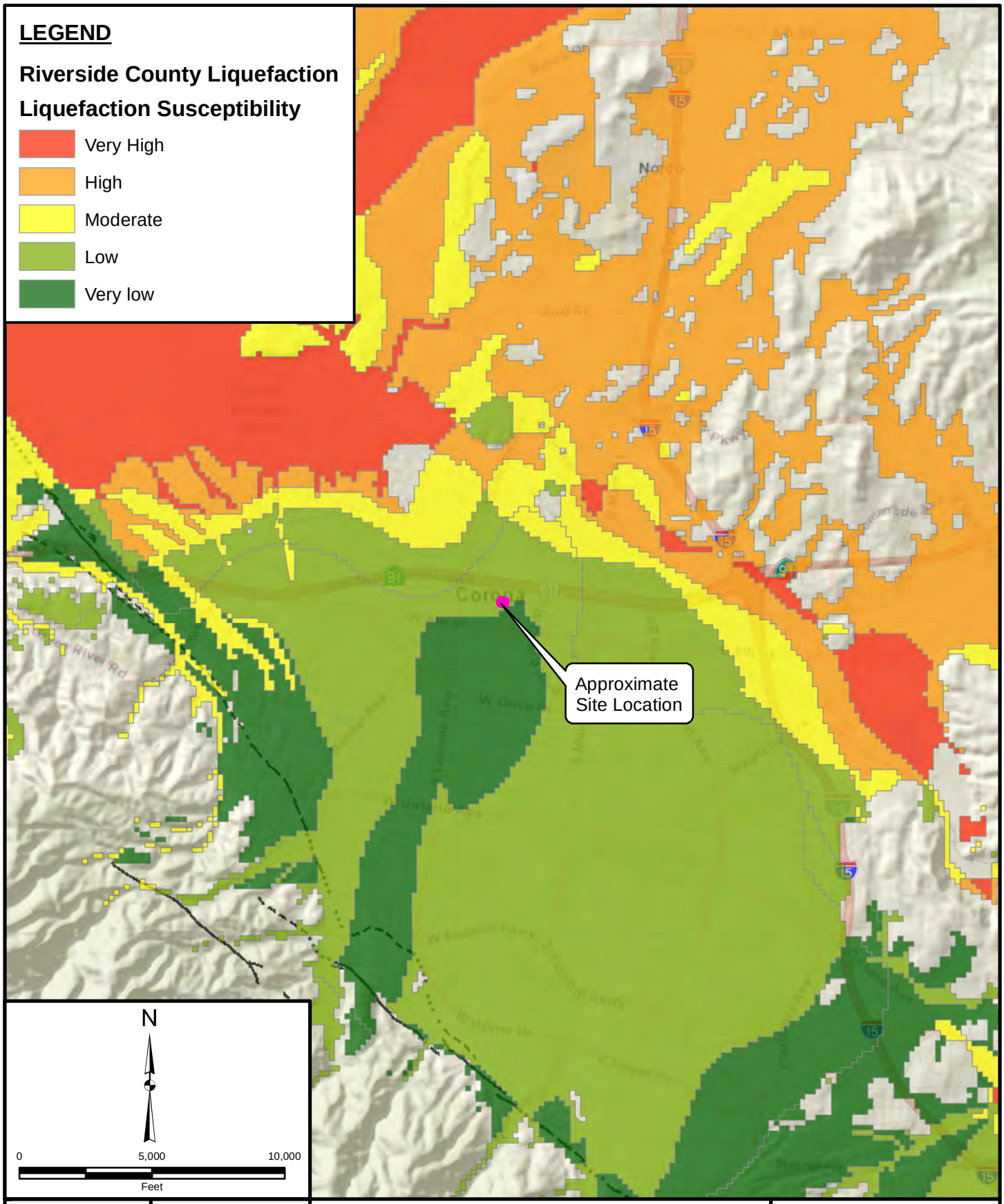
REGIONAL FAULT AND HISTORICAL SEISMICITY MAP

Proposed Transportation Office Expansion
Corona-Norco Unified School District
300 South Buena Vista Avenue, Corona, California

FIGURE 5

Leighton

Map Saved as J:\Drafting\13847\001\Maps\13847-001_F05_RFHSM_2023-04-13.mxd on 3/20/2023 10:40:30 AM (btran)



Project: 13847.001	Eng/Geol: JDH/SGO
Scale: 1 " = 5,000 '	Date: April 2023

Base Map: ESRI ArcGIS Online 2023
Reference: Riverside County Mapping Portal

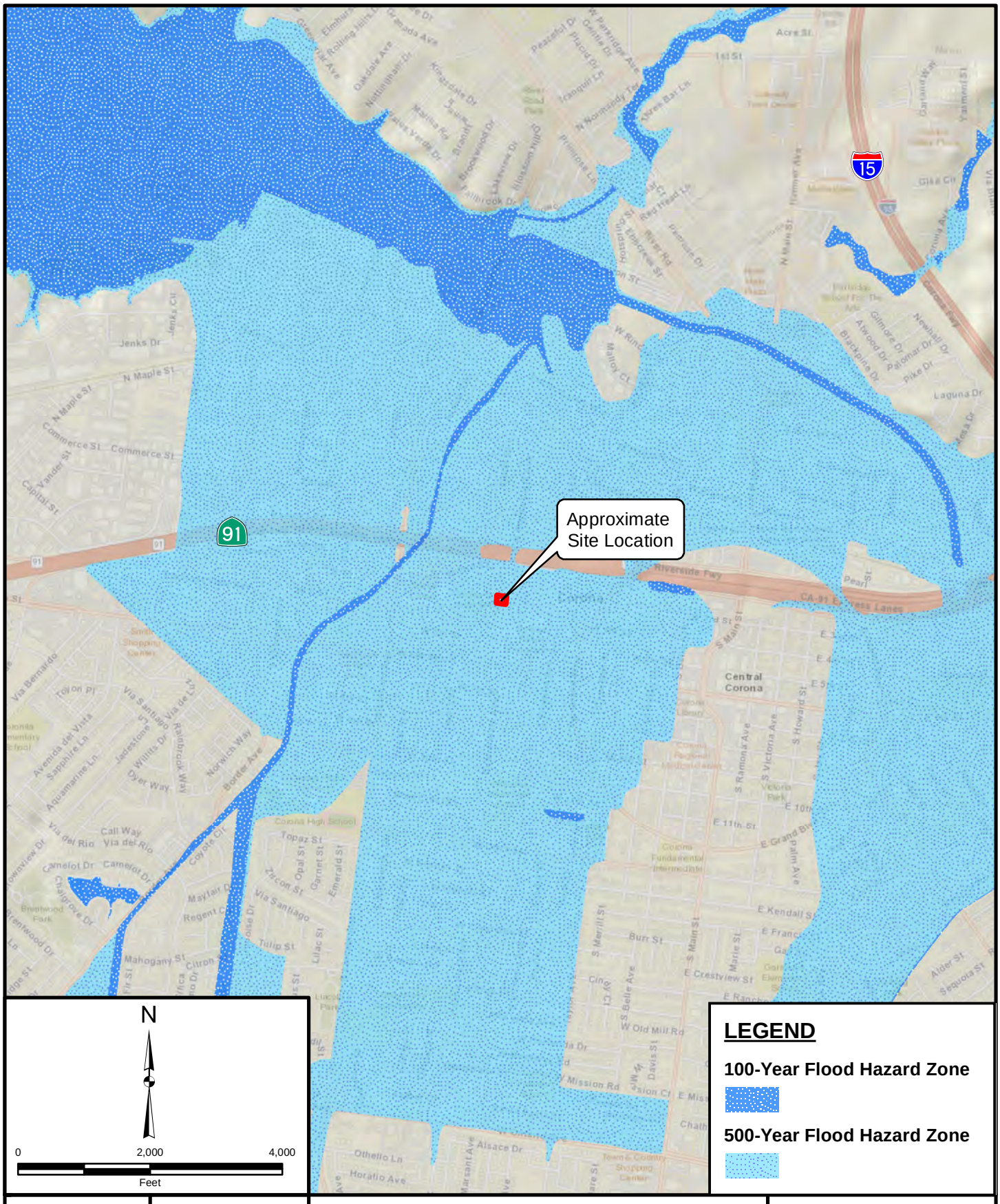
LIQUEFACTION **HAZARDS** MAP

Propsed Transportation Office Expansion Corona-Norco Unified School District
300 South Buena Vista Avenue, Corona, California

FIGURE 6

Leighton

Map Saved as J:\Drafting\13847\001\Maps\13847-001_F06_LM_2023-04-13.mxd on 4/13/2023 8:04:31 AM Author: KVM (btran)



Project: 13847.001	Eng/Geol: JDH/SGO
Scale: 1 " = 2,000 '	Date: April 2023

Reference: Sources: Esri, HERE, Garmin, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), NGCC, (c) OpenStreetMap contributors, and the GIS User Community
FEMA (http://www.fema.gov/index.shtm), DWR (http://www.dwr.ca.gov)

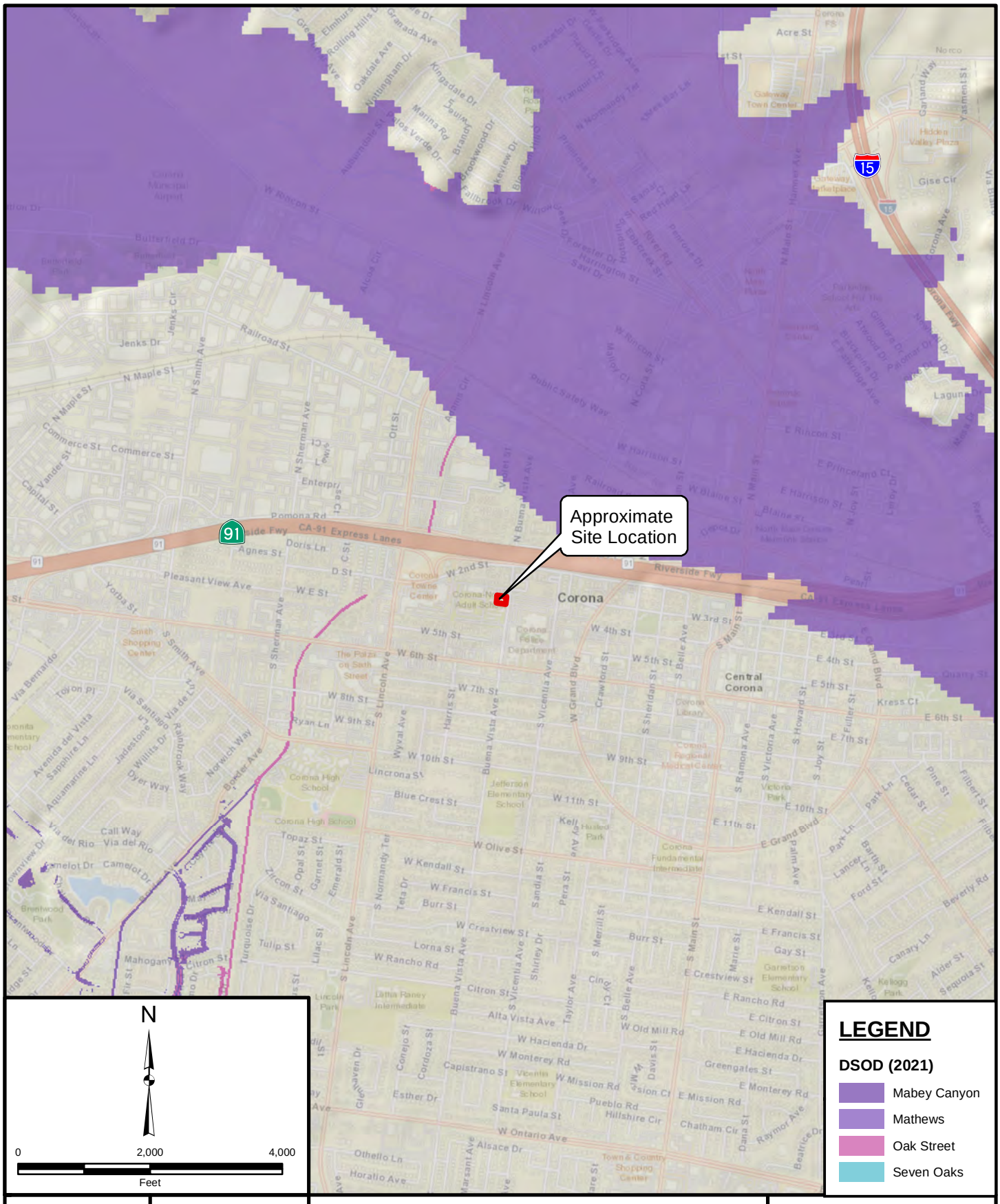
FLOOD HAZARD ZONE MAP

Proposed Transportation Office Expansion
Corona-Norco Unified School District
300 South Buena Vista Avenue
Corona, California

FIGURE 7

Leighton

Map Saved as J:\Drafting\13847\001\Maps\13847-001_F07_FHZM_2023-04-13.mxd on 3/20/2023 11:01:56 AM Author: KVM (btran)



LEGEND

DSOD (2021)

- Mabey Canyon
- Mathews
- Oak Street
- Seven Oaks

Project: 13847.001	Eng/Geol: JDH/SGO
Scale: 1 " = 2,000 '	Date: April 2023

Base Map: ESRI ArcGIS Online 2023
Reference: Office of Emergency Services (2007),
Dept of Safety of Dams (2021)
National Inventory of Dams, Army Corps of Engrs (2021)

DAM **BREACH** INUNDATION MAP

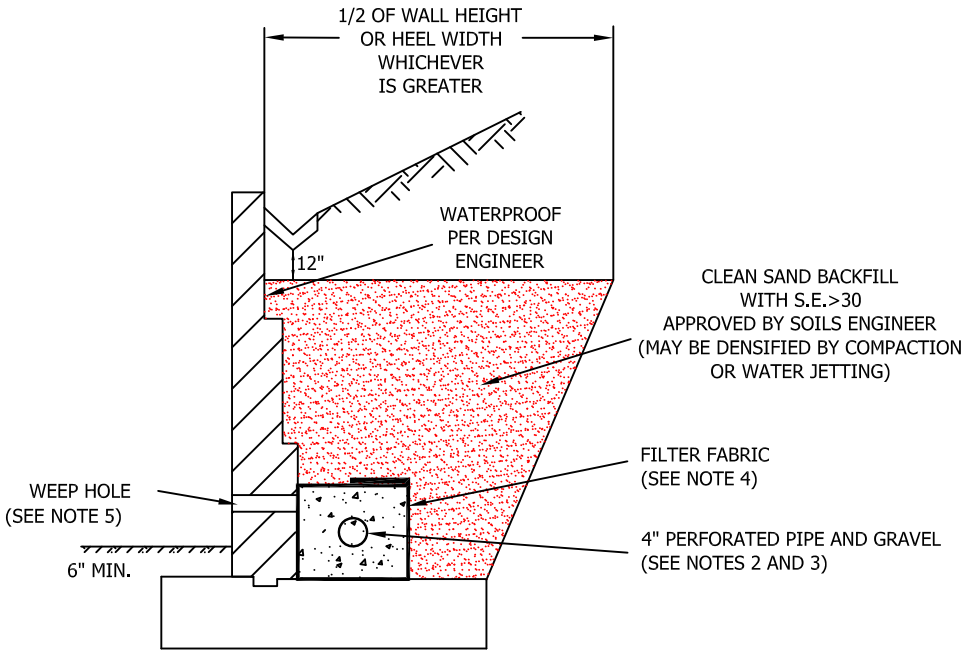
Proposed Transportation Office Expansion
Corona-Norco Unified School District
300 South Buena Vista Avenue
Corona, California

FIGURE 8

Leighton

Map Saved as J:\Drafting\13847\001\Maps\13847-001_F08_DIM_2023-04-13.mxd on 3/20/2023 11:04:08 AM (btran)

SUBDRAIN OPTIONS AND BACKFILL WHEN NATIVE MATERIAL HAS EXPANSION INDEX OF >50



NOTE: AS AN ALTERNATE TO CLEAN SAND BACKFILL, CLEAN GRAVEL MAY BE UTILIZED WITH APPROVED FILTER FABRIC. A SECOND ALTERNATE IS TO UTILIZE AN AGGREGATE BASE MATERIAL COMPACTED TO 90% RELATIVE COMPACTION. A SAMPLE OF THE PROPOSED BASE MUST BE APPROVED BY THE GEOTECHNICAL CONSULTANT PRIOR TO BACKFILL FOR SUITABILITY. COMPACTION SHOULD BE ACHIEVED WITHOUT DAMAGING THE WALL.

GENERAL NOTES:

* Waterproofing should be provided where moisture nuisance problem through the wall is undesirable.
* Water proofing of the walls is not under purview of the geotechnical engineer
* All drains should have a gradient of 1 percent minimum
*Outlet portion of the subdrain should have a 4-inch diameter solid pipe discharged into a suitable disposal area designed by the project engineer. The subdrain pipe should be accessible for maintenance (rodding)
*Other subdrain backfill options are subject to the review by the geotechnical engineer and modification of design parameters.

Notes:
1) Sand should have a sand equivalent of 30 or greater and may be densified by water jetting.
2) 1 Cu. ft. per ft. of 1/4- to 1 1/2-inch size gravel wrapped in filter fabric
3) Pipe type should be ASTM D1527 Acrylonitrile Butadiene Styrene (ABS) SDR35 or ASTM D1785 Polyvinyl Chloride plastic (PVC), Schedule 40, Armco A2000 PVC, or approved equivalent. Pipe should be installed with perforations down. Perforations should be 3/8 inch in diameter placed at the ends of a 120-degree arc in two rows at 3-inch on center (staggered)
4) Filter fabric should be Mirafi 140NC or approved equivalent.
5) Weephole should be 3-inch minimum diameter and provided at 10-foot maximum intervals. If exposure is permitted, weepholes should be located 12 inches above finished grade. If exposure is not permitted such as for a wall adjacent to a sidewalk/curb, a pipe under the sidewalk to be discharged through the curb face or equivalent should be provided. For a basement-type wall, a proper subdrain outlet system should be provided.
6) Retaining wall plans should be reviewed and approved by the geotechnical engineer.
7) Walls over six feet in height are subject to a special review by the geotechnical engineer and modifications to the above requirements.

RETAINING WALL BACKFILL AND SUBDRAIN DETAIL

WHEN NATIVE MATERIAL HAS EXPANSION INDEX OF >50

Leighton

Figure 9

APPENDIX A

GEOTECHNICAL EXPLORATION LOGS

APPENDIX A

GEOTECHNICAL BORING LOGS

The field investigation consisted of a surface reconnaissance and a subsurface exploration program. Encountered soils were continuously logged in the field by our representative and described in accordance with the Unified Soil Classification System (ASTM D2488). Logs of these subsurface explorations are included as part of this appendix.

Borings were drilled with a truck-mounted hollow-stem drill rig. Relatively undisturbed soil samples were obtained at selected intervals within the borings using a California Ring Sampler and a Standard Penetration Test (SPT) split-spoon sampler. Bulk samples of representative soil types were also obtained from the borings. These samples were transported to our geotechnical laboratory for evaluation and appropriate testing. Borings were backfilled with the excavated earth materials after logging and sampling was completed.

The attached subsurface exploration logs and related information depict subsurface conditions only at the locations indicated and at the particular date designated on the logs. Subsurface conditions at other locations may differ from conditions occurring at these locations. The passage of time may result in altered subsurface conditions due to environmental changes. In addition, any stratification lines on the logs represent the approximate boundary between soil types and the transition may be gradual.

GEOTECHNICAL BORING LOG LB-1

Project No.	13847.001	**Date Drilled**	3-16-23
Project	CNUSD Transport office Expansion	**Logged By**	BTM
Drilling Co.	Martini Drilling	**Hole Diameter**	8"
Drilling Method	Hollow Stem Auger - Autohammer	**Ground Elevation**	647'
Location	See Figure 2 - *Geotechnical Map*	**Sampled By**	BTM

Elevation Feet	Depth Feet	Graphic Log (N S)	Attitudes	Sample No.	Blows Per 6 Inches	Dry Density pcf	Moisture Content, %	Soil Class. (U.S.C.S.)	SOIL DESCRIPTION	Type of Tests
									This Soil Description applies only to a location of the exploration at the time of sampling. Subsurface conditions may differ at other locations and may change with time. The description is a simplification of the actual conditions encountered. Transitions between soil types may be gradual.	
	0			B-1				CL	**Undocumented Artificial Fill (afu)** @Surface: Grass over SANDY CLAY (CL), dark brown, moist, fine to coarse sand, rootlets, medium plasticity, 64% fines (lab)	SA, MD, EI, CR
645				R-1	2 2 3	101	21	CL	@2.5': Lean CLAY with SAND (CL), soft , dark brown, moist, low to medium plasticity, rootlets, 65% fines (field estimate)	
									Young Alluvial Fan Deposits (Qyf)	
	5			R-2	push 4 8	101	22	CL	@5': Lean CLAY with SAND (CL), medium stiff, moist, fine to coarse sand, medium plasticity, slightly laminated, roots in sample, 85%fines (field estimate)	
640				R-3	5 8 11	118	15	CL	@7.5': SANDY CLAY (CL), stiff, orange brown, moist, fine to coarse sand, trace fine gravel, low to medium plasticity, some small discolored inclusions, 60-70%fines (field estimate)	
	10			R-4	7 12 11	113	8	GC	@10': CLAYEY GRAVEL with SAND (GC), medium dense, orange brown, moist, fine to coarse sand, some fine to coarse gravel, low plasticity, 18% fines (lab)	-200, AL
635										
	15			S-5	2 5 10			(CL)g	@15': SANDY CLAY with GRAVEL (CL)g, stiff, orange brown, moist, fine to coarse sand, few fine gravel, low plasticity, 50%-60% fines (Field estimate)	
630										
	20			R-6	8 29 30	126	5	(SC)g	@20': CLAYEY SAND with GRAVEL (SC)g, dense, medium brown, moist, fine to coarse sand, significant amount of fine to coarse gravel, low plasticity, 25%-35% fines (field estimate) @21': Rig Chatter	
625										
	25			S-7	11 18 20			(SC)g	@25': CLAYEY SAND with GRAVEL (SC)g, medium dense, olive brown, moist, low plasticity, approximate 4" interbed of GRAVELLY SANDY CLAY	
620										
	30									

SAMPLE TYPES:

B	BULK SAMPLE
C	CORE SAMPLE
G	GRAB SAMPLE
R	RING SAMPLE
S	SPLIT SPOON SAMPLE
T	TUBE SAMPLE

TYPE OF TESTS:

-200	% FINES PASSING	DS	DIRECT SHEAR	SA	SIEVE ANALYSIS
AL	ATTERBERG LIMITS	EI	EXPANSION INDEX	SE	SAND EQUIVALENT
CN	CONSOLIDATION	H	HYDROMETER	SG	SPECIFIC GRAVITY
CO	COLLAPSE	MD	MAXIMUM DENSITY	UC	UNCONFINED COMPRESSIVE STRENGTH
CR	CORROSION	PP	POCKET PENETROMETER		
CU	UNDRAINED TRIAXIAL	RV	R VALUE		

Leighton

*** * * This log is a part of a report by Leighton and should not be used as a stand-alone document. * * ***

GEOTECHNICAL BORING LOG LB-1

Project No.	13847.001	**Date Drilled**	3-16-23
Project	CNUSD Transport office Expansion	**Logged By**	BTM
Drilling Co.	Martini Drilling	**Hole Diameter**	8"
Drilling Method	Hollow Stem Auger - Autohammer	**Ground Elevation**	647'
Location	See Figure 2 - *Geotechnical Map*	**Sampled By**	BTM

Elevation Feet	Depth Feet	Graphic Log (N S)	Attitudes	Sample No.	Blows Per 6 Inches	Dry Density pcf	Moisture Content, %	Soil Class. (U.S.C.S.)	SOIL DESCRIPTION	Type of Tests
									This Soil Description applies only to a location of the exploration at the time of sampling. Subsurface conditions may differ at other locations and may change with time. The description is a simplification of the actual conditions encountered. Transitions between soil types may be gradual.	
	30			R-8	30 50/5"			GP-GC	@30': Poorly-graded GRAVEL with CLAY and SAND (GP-GC), very dense, moist, 7% fines (lab)	-200
615										
	35			S-9	15 29 19			GP-GC	@35':Poorly-graded GRAVEL with CLAY and SAND (GP-GC) dense, medium brown to reddish brown, moist, fine to coarse sand, fine gravel, low plasticity, 10% fines (field estimate) approximate 4" of SANDY CLAY with GRAVEL at bottom of sample	
610										
	40			R-10	5 12 26			(SC)g	@40': CLAYEY SAND with GRAVEL (SC)g, medium dense, medium brown, moist, low plasticity, fine to coarse sand, few fine gravel, 36% fines (lab) (bottom 6") higher concentration of gravel in matrix	-200, AL
605										
	45			S-11	26 27 14			GC CL	@45': CLAYEY GRAVEL with SAND (GC), dense, brown, moist, fine to coarse sand, 15%-25% fines (field estimate) @46': SILTY CLAY with SAND (CL), hard, medium brown, moist, low plasticity, few fine to coarse sand, 90% fines (field estimate)	
600										
	50			R-12	50/6"			GC	@50': CLAYEY GRAVEL with SAND (GC), very dense, brown, moist, fine to coarse sand, some fine gravel, low plasticity, 20%-30% fines (field estimate)	
595									**TOTAL DEPTH = 50.5 FEET** **NO GROUND WATER ENCOUNTERED TO EXPLORED DEPTHS** **BACKFILLED WITH SOIL CUTTINGS**	
	55									
590										
	60									

SAMPLE TYPES:

- B BULK SAMPLE
- C CORE SAMPLE
- G GRAB SAMPLE
- R RING SAMPLE
- S SPLIT SPOON SAMPLE
- T TUBE SAMPLE

TYPE OF TESTS:

- -200 % FINES PASSING
- AL ATTERBERG LIMITS
- CN CONSOLIDATION
- CO COLLAPSE
- CR CORROSION
- CU UNDRAINED TRIAXIAL
- DS DIRECT SHEAR
- EI EXPANSION INDEX
- H HYDROMETER
- MD MAXIMUM DENSITY
- PP POCKET PENETROMETER
- RV R VALUE
- SA SIEVE ANALYSIS
- SE SAND EQUIVALENT
- SG SPECIFIC GRAVITY
- UC UNCONFINED COMPRESSIVE STRENGTH

Leighton

GEOTECHNICAL BORING LOG LB-2

Project No.	13847.001	**Date Drilled**	3-16-23
Project	CNUSD Transport office Expansion	**Logged By**	BTM
Drilling Co.	Martini	**Hole Diameter**	8"
Drilling Method	Martini Drilling - Autohammer	**Ground Elevation**	646'
Location	See Figure 2 - *Geotechnical Map*	**Sampled By**	BTM

Elevation Feet	Depth Feet	Graphic Log (N S)	Attitudes	Sample No.	Blows Per 6 Inches	Dry Density pcf	Moisture Content, %	Soil Class. (U.S.C.S.)	SOIL DESCRIPTION	Type of Tests
									This Soil Description applies only to a location of the exploration at the time of sampling. Subsurface conditions may differ at other locations and may change with time. The description is a simplification of the actual conditions encountered. Transitions between soil types may be gradual.	
645	0			B-1				CL	**Undocumented Artificial Fill (afu)** @Surface: grass over SANDY CLAY (CL), dark brown, moist, fine to coarse sand, rootlets, medium plasticity, 70%-80% fines (field estimate)	
				R-1	3 3 4	100	22	CL	@2.5': SANDY CLAY (CL), medium stiff, dark brown, moist, fine to medium sand, rootlets, medium plasticity, 80%-90% fines (field estimate)	
640	5			R-2	1 2 3			CL SC	**Young Alluvial Fan Deposits (Qyf)** @5': SANDY CLAY (CL), soft, dark brown, moist, fine to medium sand, rootlets, medium plasticity, 80%-90% fines (field estimate) grades to CLAYEY SAND, loose, dark brown, moist, fine to coarse sand, few fine gravel, low plasticity, 25%-35% fines (field estimate)	
				R-3	3 4 6	105	20	CL	@7.5': Lean CLAY with SAND (CL), medium stiff, brown, moist, fine sand, roots and rootlets, low plasticity, 85%-95% fines (field estimate)	CO
635	10			R-4	6 12 19	118	15	CL	@10': SANDY CLAY (CL), very stiff, brown, moist, fine to coarse sand, few subangular fine gravel, medium plasticity, 75%-85% fines (field estimate)	
630	15			R-5	11 10 9			(SC)g (CL)g	@15': CLAYEY SAND with GRAVEL (SC)g, medium dense, brown to reddish brown, moist, fine to coarse sand, significant amount of fine gravel, low plasticity, 46% fines (lab) grades back to SANDY CLAY with GRAVEL (CL)g, brown to reddish brown, moist, low to medium plasticity, 65%-75% fines (field estimate)	-200
625	20			S-6	11 21 22			(SC)g	@20': CLAYEY SAND with GRAVEL (SC)g, medium dense, brown, moist, fine to coarse sand, 20%-30% fine gravel, low plasticity, 20%-30% fines (field estimate)	
620	25			R-7	12 33 44			(SC)g	@25': CLAYEY SAND (SC)g, very dense, brown, moist, fine to coarse sand, 20%-30% fine gravel, low plasticity, 20%-35% fines (field estimate)	
	30								**TOTAL DEPTH = 26.5 FEET** **NO GROUND WATER ENCOUNTERED TO EXPLORED DEPTHS** **BACKFILLED WITH SOIL CUTTINGS**	

SAMPLE TYPES:

- B BULK SAMPLE
- C CORE SAMPLE
- G GRAB SAMPLE
- R RING SAMPLE
- S SPLIT SPOON SAMPLE
- T TUBE SAMPLE

TYPE OF TESTS:

- -200 % FINES PASSING
- AL ATTERBERG LIMITS
- CN CONSOLIDATION
- CO COLLAPSE
- CR CORROSION
- CU UNDRAINED TRIAXIAL
- DS DIRECT SHEAR
- EI EXPANSION INDEX
- H HYDROMETER
- MD MAXIMUM DENSITY
- PP POCKET PENETROMETER
- RV R VALUE
- SA SIEVE ANALYSIS
- SE SAND EQUIVALENT
- SG SPECIFIC GRAVITY
- UC UNCONFINED COMPRESSIVE STRENGTH

Leighton

GEOTECHNICAL BORING LOG IT-1

Project No.	13847.001	**Date Drilled**	3-16-23
Project	CNUSD Transport office Expansion	**Logged By**	BTM
Drilling Co.	Martini Drilling	**Hole Diameter**	8"
Drilling Method	Hollow Stem Auger - Autohammer	**Ground Elevation**	647'
Location	See Figure 2 - *Geotechnical Map*	**Sampled By**	BTM

Elevation Feet	Depth Feet	Graphic Log (N S)	Attitudes	Sample No.	Blows Per 6 Inches	Dry Density pcf	Moisture Content, %	Soil Class. (U.S.C.S.)	SOIL DESCRIPTION	Type of Tests
									This Soil Description applies only to a location of the exploration at the time of sampling. Subsurface conditions may differ at other locations and may change with time. The description is a simplification of the actual conditions encountered. Transitions between soil types may be gradual.	
645	0							CL	**Undocumented Artificial Fill (afu)** @Surface: grass over SANDY CLAY(CL), dark brown, moist, fine to coarse sand, rootlets, moderate plasticity, 70%-80% fines (field estimate)	
									Young Alluvial Fan Deposits (Qyf)	
640	5			S-1	push 1 2			CL	@5': Lean CLAY with SAND (CL), soft, dark brown, moist, fine sand, low plasticity, 70%-80% fines (field estimate)	
				S-2	3 5 8			CL	@8.5': CLAY with SAND (CL), stiff, brown, moist, fine to coarse sand, rootlets, medium plasticity, 74% fines (lab)	-200, AL
635	10								**TOTAL DEPTH = 10 FEET** **NO GROUND WATER ENOUNTERED TO EXPLORED DEPTH** **CONVERTED BORING TO WELL PERMEAMETER TESTING** **BACKFILLED WITH SOIL CUTTINGS AFTER COMPLETION OF TESTING**	
630	15									
625	20									
620	25									
	30									

SAMPLE TYPES:
- B BULK SAMPLE
- C CORE SAMPLE
- G GRAB SAMPLE
- R RING SAMPLE
- S SPLIT SPOON SAMPLE
- T TUBE SAMPLE

TYPE OF TESTS:
- -200 % FINES PASSING
- AL ATTERBERG LIMITS
- CN CONSOLIDATION
- CO COLLAPSE
- CR CORROSION
- CU UNDRAINED TRIAXIAL
- DS DIRECT SHEAR
- EI EXPANSION INDEX
- H HYDROMETER
- MD MAXIMUM DENSITY
- PP POCKET PENETROMETER
- RV R VALUE
- SA SIEVE ANALYSIS
- SE SAND EQUIVALENT
- SG SPECIFIC GRAVITY
- UC UNCONFINED COMPRESSIVE STRENGTH

Leighton

*** * * This log is a part of a report by Leighton and should not be used as a stand-alone document. * * ***

GEOTECHNICAL BORING LOG IT-2

Project No.	13847.001	**Date Drilled**	3-16-23
Project	CNUSD Transport office Expansion	**Logged By**	BTM
Drilling Co.	Martini Drilling	**Hole Diameter**	8"
Drilling Method	Hollow Stem Auger - Autohammer	**Ground Elevation**	645'
Location	See Figure 2 - *Geotechnical Map*	**Sampled By**	BTM

Elevation Feet	Depth Feet	Graphic Log (N S)	Attitudes	Sample No.	Blows Per 6 Inches	Dry Density pcf	Moisture Content, %	Soil Class. (U.S.C.S.)	SOIL DESCRIPTION	Type of Tests
645	0							CL	**Undocumented Artificial Fill (afu)** @Surface: Grass over SANDY CLAY (CL), moist, fine to coarse sand, rootlets, medium plasticity, 70%-80%fines (field estimate)	
640	5							CL	**Young Alluvial Fan Deposits (Qyf)** @5': Lean CLAY with SAND (CL), soft, dark brown, moist, fine sand, low plasticity, 70%-80% fines (field estimate)	
635	10			S-1	4 7 13			(CL)g	@10': SANDY CLAY with GRAVEL (CL)g, very stiff, reddish brown, moist, fine to coarse sand, few fine gravel, low to medium plasticty, 75%-85% fines (field estimate)	
								(SC)g	@12': CLAYEY SAND with GRAVEL (SC)g, 15% fines (field estimate)	
				S-2	8 12 15			(SC)g	@13.5': CLAYEY SAND with GRAVEL (SC)g, medium dense, brown, moist, fine to coarse sand, low plasticity, 15% gravel, 13% fines (lab)	-200
630	15								**TOTAL DEPTH =15 FEET** **NO GROUND WATER ENCOUNTERED AT EXPLORED DEPTHS** **CONVERTED BORING TO WELL PERMEAMETER TESTING** **BACKFILLED WITH SOIL CUTTINGS AFTER COMPLETION OF TESTING**	
625	20									
620	25									
615	30									

SAMPLE TYPES:

- B BULK SAMPLE
- C CORE SAMPLE
- G GRAB SAMPLE
- R RING SAMPLE
- S SPLIT SPOON SAMPLE
- T TUBE SAMPLE

TYPE OF TESTS:

- -200 % FINES PASSING
- AL ATTERBERG LIMITS
- CN CONSOLIDATION
- CO COLLAPSE
- CR CORROSION
- CU UNDRAINED TRIAXIAL
- DS DIRECT SHEAR
- EI EXPANSION INDEX
- H HYDROMETER
- MD MAXIMUM DENSITY
- PP POCKET PENETROMETER
- RV R VALUE
- SA SIEVE ANALYSIS
- SE SAND EQUIVALENT
- SG SPECIFIC GRAVITY
- UC UNCONFINED COMPRESSIVE STRENGTH

Leighton

Results of Falling Head Infiltration Test

Project:	13847.001	Initial estimated Depth to Water Surface (in.):	67
Exploration #/Location:	*IT-1*	Average depth of water in well, "h" (in.):	49
Depth Boring drilled, bgs (ft):	10	approx. h/r:	12.3
Tested by:	BTM	Tu (Fig. 8) (ft):	94.4
USCS Soil Type in test zone:	CL	Tu>3h?:	yes, OK
Weather (start to finish):	Sunny		
Water Source/pH:	H2O		
Measured boring diameter:	8 in.	4 in. Well Radius	
Depth to GW or aquitard, bgs:	100 ft		
Well Prep:	Drilled to 10', place sand at bottom, slotted 2" pipe for bottom 5 feet, sand around slotted section		

Cross-sectional area for flow calcs based on Δh

Well pack sand porosity	0.3
Casing outer diameter, in.	2.3
Casing inner diameter, in.	2.1
Cross-sectional area, in.^2	17.3

	ft	*in.*	*Total (in.)*	
Depth to bottom of well measured from top of auger (or ground surfa	10. ft	0. in.	120	Depth of well bottom below top of casing (in): 124
Casing stickup measured above top of auger (or ground surface) (+ i	0. ft	3.5 in.	3.5	
Depth to top of sand from top of casing		4. in.		

Use of Barrels:	No
Use of Flow Meter:	No
Test Type:	Falling Head

Field Data **Calculations**

Date	Time	Data from Flow Meter		Depth to WL in Boring (measured from top of casing)		Water Temp (deg F)	Refilled?	Δt (min)	Total Elapsed Time (min)	Depth to WL in well (in.)	h, Height of Water in Well (in.)	Δh (in.)	Avg. h	Vol Change (in.^3)			Flow (in^3/ min)	q, Flow (in^3/ hr)	Average Infiltration Surface Area, (in^2)	V (Fig 9)	K20, Coef. Of Perme-ability at 20 deg C (in./hr)	**Infiltration Rate [flow/surf area] (in./hr) (FS=1)**
		Reading (gallons)	Interval Pulse Count				(or Comments)							from supply	from Δh	Total						
Start Date	Start time:	Gallons		ft	in.																	
3/16/23	15:20																					
3/16/23	15:30			5.54					10	63.0	57.0											
3/16/23	15:35			5.75				5	15	65.5	54.5	-2.52	56	0	44	44	9	523		0.9	0.06	0.33
3/16/23	15:40			5.85				5	20	66.7	53.3	-1.2	54	0	21	21	4	249		0.9	0.03	0.16
3/16/23	15:45			5.93				5	25	67.7	52.3	-0.96	53	0	17	17	3	199		0.9	0.03	0.13
3/16/23	15:50			5.99				5	30	68.4	51.6	-0.72	52	0	12	12	2	149		0.9	0.02	0.10
3/16/23	15:55			6.05				5	35	69.1	50.9	-0.72	51	0	12	12	2	149		0.9	0.02	0.10
3/16/23	16:00			6.09				5	40	69.6	50.4	-0.48	51	0	8	8	2	100		0.9	0.01	0.07
3/16/23	16:10			6.2				10	50	70.9	49.1	-1.32	50	0	23	23	2	137		0.9	0.02	0.10
3/16/23	16:20			6.26				10	60	71.6	48.4	-0.72	49	0	12	12	1	75		0.9	0.01	0.05
3/16/23	16:30			6.32				10	70	72.3	47.7	-0.72	48	0	12	12	1	75		0.9	0.01	0.05
3/16/23	16:40			6.38				10	80	73.1	46.9	-0.72	47	0	12	12	1	75		0.9	0.01	0.06
3/16/23	16:50			6.44				10	90	73.8	46.2	-0.72	47	0	12	12	1	75		0.9	0.01	0.06
3/16/23	17:00			6.5				10	100	74.5	45.5	-0.72	46	0	12	12	1	75		0.9	0.01	0.06
3/16/23	17:10			6.55				10	110	75.1	44.9	-0.6	45	0	10	10	1	62		0.9	0.01	0.05
3/16/23	17:20			6.59				10	120	75.6	44.4	-0.48	45	0	8	8	1	50		0.9	0.01	0.04
3/16/23	17:30			6.63				10	130	76.1	43.9	-0.48	44	0	8	8	1	50		0.9	0.01	0.04
				Concluded Test Poor Infiltration																		
																			Minimum Rate:			0.04
														Raw Rate for design, prior to application of adjustment factors:								**0.06**

Results of Falling Head Infiltration Test

Project:	13847.001	Initial estimated Depth to Water Surface (in.):	125
Exploration #/Location:	IT-1	Average depth of water in well, "h" (in.):	50
Depth Boring drilled, bgs (ft):	15	approx. h/r:	12.4
Tested by:	BTM	Tu (Fig. 8) (ft):	89.5
USCS Soil Type in test zone:	CL/SC	Tu>3h?:	yes, OK
Weather (start to finish):	Sunny		
Water Source/pH:	H2O		
Measured boring diameter:	8 in.	4 in. Well Radius	
Depth to GW or aquitard, bgs:	100 ft		
Well Prep:	Drilled to 15', place sand at bottom, slotted 2" pipe for bottom 5 feet, sand around slotted section		

Cross-sectional area for flow calcs based on Δh

Well pack sand porosity	0.3
Casing outer diameter, in.	2.3
Casing inner diameter, in.	2.1
Cross-sectional area, in.^2	17.3

	ft	in.	Total (in.)
Depth to bottom of well measured from top of auger (or ground surfa	15. ft	0. in.	180
Casing stickup measured above top of auger (or ground surface) (+ i	0. ft	5. in.	5
Depth to top of sand from top of casing		4. in.	

Depth of well bottom below top of casing (in): 185

Use of Barrels:	No
Use of Flow Meter:	No
Test Type:	Falling Head

Field Data / **Calculations**

Date	Time	Data from Flow Meter: Reading (gallons)	Interval Pulse Count	Depth to WL in Boring (measured from top of casing) ft	in.	Water Temp (deg F)	Refilled? (or Comments)	Δt (min)	Total Elapsed Time (min)	Depth to WL in well (in.)	h, Height of Water in Well (in.)	Δh (in.)	Avg. h	Vol Change (in.^3) from supply	from Δh	Total	Flow (in^3/ min)	q, Flow (in^3/ hr)	Average Infiltration Surface Area, (in^2)	V (Fig 9)	K20, Coef. Of Perme-ability at 20 deg C (in./hr)	Infiltration Rate [flow/surf area] (in./hr) (FS=1)
Start Date 3/16/2023	Start time: 15:20	Gallons																				
3/16/23	15:23			10.75					3	124.0	56.0											
3/16/23	15:28			10.87				5	8	125.4	54.6	-1.44	55	0	25	25	5	299	1440	0.9	0.04	0.19
3/16/23	15:33			10.94				5	13	126.3	53.7	-0.84	54	0	15	15	3	174	1411	0.9	0.02	0.11
3/16/23	15:38			10.99				5	18	126.9	53.1	-0.6	53	0	10	10	2	125	1393	0.9	0.02	0.08
3/16/23	15:43			11.05				5	23	127.6	52.4	-0.72	53	0	12	12	2	149	1376	0.9	0.02	0.10
3/16/23	15:48			11.09				5	28	128.1	51.9	-0.48	52	0	8	8	2	100	1361	0.9	0.01	0.07
3/16/23	15:53			11.14				5	33	128.7	51.3	-0.6	52	0	10	10	2	125	1348	0.9	0.02	0.09
3/16/23	16:03			11.22				10	43	129.6	50.4	-0.96	51	0	17	17	2	100	1328	0.9	0.01	0.07
3/16/23	16:13			11.29				10	53	130.5	49.5	-0.84	50	0	15	15	1	87	1305	0.9	0.01	0.06
3/16/23	16:23			11.39				10	63	131.7	48.3	-1.2	49	0	21	21	2	125	1280	0.9	0.02	0.09
3/16/23	16:33			11.47				10	73	132.6	47.4	-0.96	48	0	17	17	2	100	1253	0.9	0.01	0.07
3/16/23	16:43			11.54				10	83	133.5	46.5	-0.84	47	0	15	15	1	87	1230	0.9	0.01	0.07
3/16/23	16:53			11.61				10	93	134.3	45.7	-0.84	46	0	15	15	1	87	1209	0.9	0.01	0.07
3/16/23	17:03			11.68				10	103	135.2	44.8	-0.84	45	0	15	15	1	87	1188	0.9	0.01	0.07
3/16/23	17:13			11.75				10	113	136.0	44.0	-0.84	44	0	15	15	1	87	1167	0.9	0.01	0.07
3/16/23	17:23			11.81				10	123	136.7	43.3	-0.72	44	0	12	12	1	75	1147	0.9	0.01	0.06
				Concluded Test	Poor Infiltration																	
																			Minimum Rate:			0.06
													Raw Rate for design, prior to application of adjustment factors:									**0.07**

APPENDIX B

GEOTECHNICAL LABORATORY TEST RESULTS

MODIFIED PROCTOR COMPACTION TEST

ASTM D 1557

Project Name:	CNUSD Transportation Office Expansion	Tested By:	O. Figueroa	Date:	03/29/23
Project No.:	13847.001	Checked By:	J. Ward	Date:	04/11/23
Boring No.:	LB-1	Depth (ft.):	0-5		
Sample No.:	B-1				
Soil Identification:	Dark yellowish brown sandy lean clay s(CL)				

Note: Corrected dry density calculation assumes specific gravity of 2.70 and moisture content of 1.0% for oversize particles

Preparation Method:	X	Moist	
		Dry	
Compaction Method	X	Mechanical Ram	
		Manual Ram	

Scalp Fraction (%)	
#3/4	
#3/8	
#4	5.2

Rammer Weight (lb.) = 10.0

Height of Drop (in.) = 18.0

Mold Volume (ft³) 0.03320

TEST NO.	1	2	3	4	5	6
Wt. Compacted Soil + Mold (g)	3691	3777	3775			
Weight of Mold (g)	1808	1808	1808			
Net Weight of Soil (g)	1883	1969	1967			
Wet Weight of Soil + Cont. (g)	394.9	480.8	479.6			
Dry Weight of Soil + Cont. (g)	358.4	427.0	417.0			
Weight of Container (g)	39.6	38.7	39.2			
Moisture Content (%)	11.45	13.86	16.57			
Wet Density (pcf)	125.0	130.7	130.6			
Dry Density (pcf)	112.2	114.8	112.0			

Maximum Dry Density (pcf) 114.8

Corrected Dry Density (pcf) 116.7

Optimum Moisture Content (%) 14.0

Corrected Moisture Content (%) 13.3

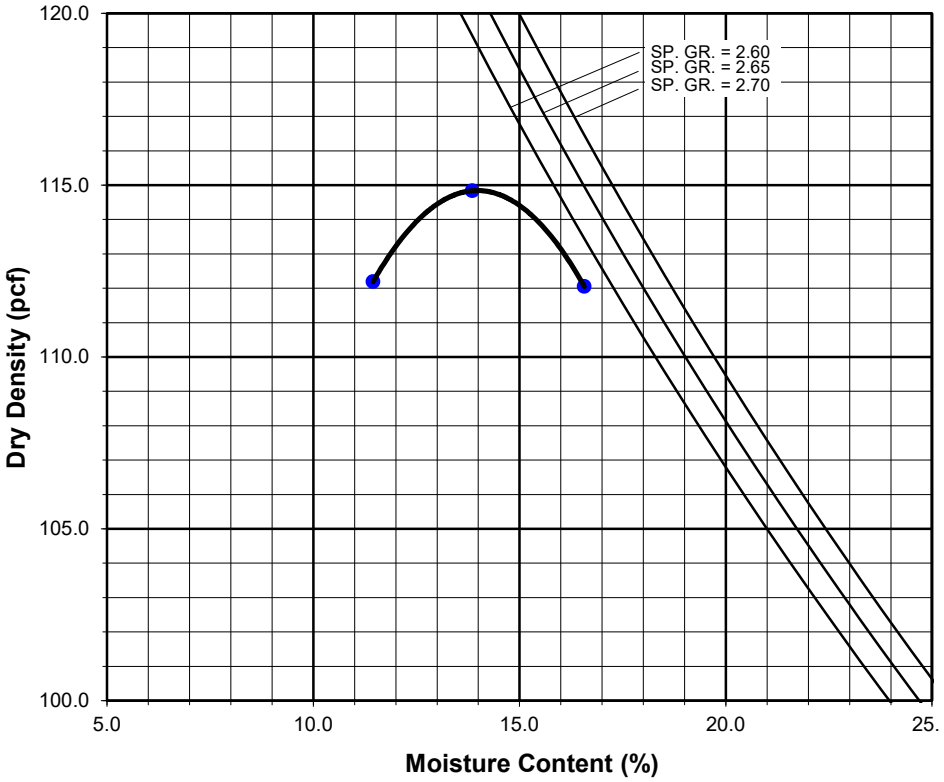
[X] **Procedure A**
Soil Passing No. 4 (4.75 mm) Sieve
Mold : 4 in. (101.6 mm) diameter
Layers : 5 (Five)
Blows per layer : 25 (twenty-five)
May be used if +#4 is 20% or less

[ ] **Procedure B**
Soil Passing 3/8 in. (9.5 mm) Sieve
Mold : 4 in. (101.6 mm) diameter
Layers : 5 (Five)
Blows per layer : 25 (twenty-five)
Use if +#4 is >20% and +3/8 in. is 20% or less

[ ] **Procedure C**
Soil Passing 3/4 in. (19.0 mm) Sieve
Mold : 6 in. (152.4 mm) diameter
Layers : 5 (Five)
Blows per layer : 56 (fifty-six)
Use if +3/8 in. is >20% and +¾ in. is <30%

Particle-Size Distribution:
5:31:64
GR:SA:FI

Atterberg Limits:
LL,PL,PI



PARTICLE-SIZE DISTRIBUTION (GRADATION) of SOILS USING SIEVE ANALYSIS

ASTM D 6913

Project Name:	CNUSD Transportation Office Expansion	Tested By:	O. Figueroa	Date:	03/25/23
Project No.:	13847.001	Checked By:	J. Ward	Date:	04/11/23
Boring No.:	LB-1	Depth (feet):	0-5		
Sample No.:	B-1				
Soil Identification:	Dark yellowish brown sandy lean clay s(CL)				

		Moisture Content of Total Air - Dry Soil	
Container No.:	R-201	Wt. of Air-Dry Soil + Cont. (g)	0.0
Wt. of Air-Dried Soil + Cont.(g)	1536.0	Wt. of Dry Soil + Cont. (g)	0.0
Wt. of Container (g)	218.4	Wt. of Container No._____ (g)	1.0
Dry Wt. of Soil (g)	1317.6	Moisture Content (%)	0.0

After Wet Sieve	Container No.	R-201
	Wt. of Dry Soil + Container (g)	695.4
	Wt. of Container (g)	218.4
	Dry Wt. of Soil Retained on # 200 Sieve (g)	477.0

U. S. Sieve Size (in.)	U. S. Sieve Size (mm.)	Cumulative Weight Dry Soil Retained (g)	Percent Passing (%)
1 1/2"	37.5		
1"	25.0	0.0	100.0
3/4"	19.0	11.9	99.1
1/2"	12.5	23.8	98.2
3/8"	9.5	43.9	96.7
#4	4.75	68.2	94.8
#8	2.36	108.3	91.8
#16	1.18	151.7	88.5
#30	0.600	202.1	84.7
#50	0.300	273.0	79.3
#100	0.150	361.3	72.6
#200	0.075	470.9	64.3
PAN			

GRAVEL: **5 %**

SAND: **31 %**

FINES: **64 %**

GROUP SYMBOL: **s(CL)**

Cu = D60/D10 = _____

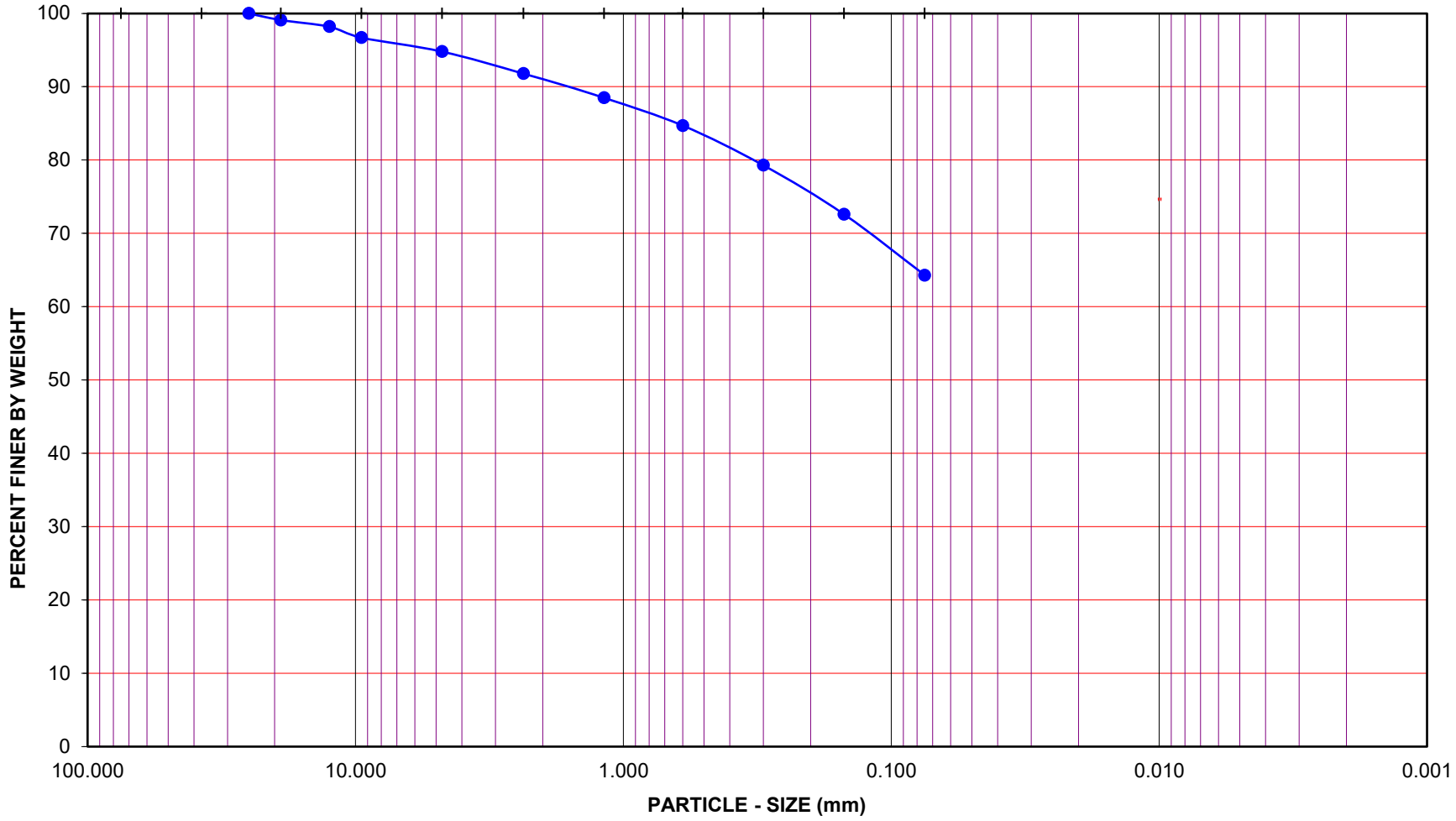
Cc = $(D30)^2/(D60*D10)$ = _____

Remarks: _____

GRAVEL		SAND			FINES	
COARSE	FINE	COARSE	MEDIUM	FINE	SILT	CLAY

U.S. STANDARD SIEVE OPENING | U.S. STANDARD SIEVE NUMBER | HYDROMETER

3.0" 1 1/2" 3/4" 3/8" #4 #8 #16 #30 #50 #100 #200



Project Name: CNUSD Transportation Office Expansion

Project No.: 13847.001

Boring No.: LB-1 Sample No.: B-1

Depth (feet): 0-5 Soil Type : s(CL)

Soil Identification: Dark yellowish brown sandy lean clay s(CL)

GR:SA:FI : (%) 5 : 31 : 64

Leighton

PARTICLE - SIZE DISTRIBUTION ASTM D 6913

Apr-23

Boring No.	LB-1	LB-1	LB-2	IT-1	IT-2			
Sample No.	R-4	R-8	R-5	S-2	S-2			
Depth (ft.)	10.0	30.0	15.0	8.5	13.5			
Sample Type	Ring	Ring	Ring	SPT	SPT			
Soil Identification	Yellowish brown clayey gravel with sand (GC)s	Yellowish brown poorly-graded gravel with clay and sand (GP-GC)s	Brown clayey sand with gravel (SC)g	Yellowish brown lean clay with sand (CL)s	Brown clayey sand with gravel (SC)g			
Moisture Correction								
Wet Weight of Soil + Container (g)	0.0	0.0	0.0	0.0	0.0			
Dry Weight of Soil + Container (g)	0.0	0.0	0.0	0.0	0.0			
Weight of Container (g)	1.0	1.0	1.0	1.0	1.0			
Moisture Content (%)	0.0	0.0	0.0	0.0	0.0			
Sample Dry Weight Determination								
Weight of Sample + Container (g)	965.7	938.7	796.0	573.6	752.5			
Weight of Container (g)	108.0	82.5	108.6	111.0	106.2			
Weight of Dry Sample (g)	857.7	856.2	687.4	462.6	646.3			
Container No.:								
After Wash								
Method (A or B)	A	A	A	A	A			
Dry Weight of Sample + Cont. (g)	807.7	877.2	478.0	233.1	666.8			
Weight of Container (g)	108.0	82.5	108.6	111.0	106.2			
Dry Weight of Sample (g)	699.7	794.7	369.4	122.1	560.6			
% Passing No. 200 Sieve	**18.4**	**7.2**	**46.3**	**73.6**	**13.3**			
% Retained No. 200 Sieve	81.6	92.8	53.7	26.4	86.7			

Leighton

PERCENT PASSING
No. 200 SIEVE
ASTM D 1140

Project Name: CNUSD Transportation Office Expansion

Project No.: 13847.001

Tested By: ACS/JD Date: 03/27/23

Boring No.	LB-1							
Sample No.	R-10							
Depth (ft.)	40.0							
Sample Type	Ring							
Soil Identification	Yellowish brown clayey sand (SC)							
No Moisture Correction; ASTM D 1140 modified to include splitting the sample on the #4 sieve								
Total Sample Dry Weight Determination								
Dry Weight of Soil + Container (g)	1042.1							
Weight of Container (g)	294.3							
Dry Weight of Soil (g)	747.8							
Sample Dry Weight Determination, Retained on Sieve #4								
Dry Weight of Sample + Cont. (g)	141.8							
Weight of Container (g)	75.9							
Weight of Dry Sample (g)	65.9							
Sample Dry Weight Determination, Passing Sieve #4								
Dry Weight of Sample + Cont. (g)	543.4							
Weight of Container (g)	76.6							
Weight of Dry Sample (g)	466.8							
After Wash								
Method (A or B)	A							
Dry Weight of Sample + Cont. (g)	360.9							
Weight of Container (g)	76.6							
Weight of Dry Sample (g)	284.3							
% Passing No. 4 Sieve	91.2							
% Retained No. 4 Sieve	8.8							
% Passing No. 200 Sieve	**35.7**							

Leighton

PERCENT PASSING
No. 200 SIEVE
ASTM D 1140

Project Name: CNUSD Transportation Office Expansion
Project No.: 13847.001

Tested By: ACS/JD Date: 03/27/23

ATTERBERG LIMITS
ASTM D 4318

Project Name:	CNUSD Transporation Office Expansion	Tested By:	J. Domingo	Date:	03/29/23
Project No. :	13847.001	Input By:	J. Ward	Date:	04/11/23
Boring No.:	IT-1	Checked By:	J. Ward		
Sample No.:	S-2	Depth (ft.)	8.5		
Soil Identification:	Yellowish brown lean clay with sand (CL)s				

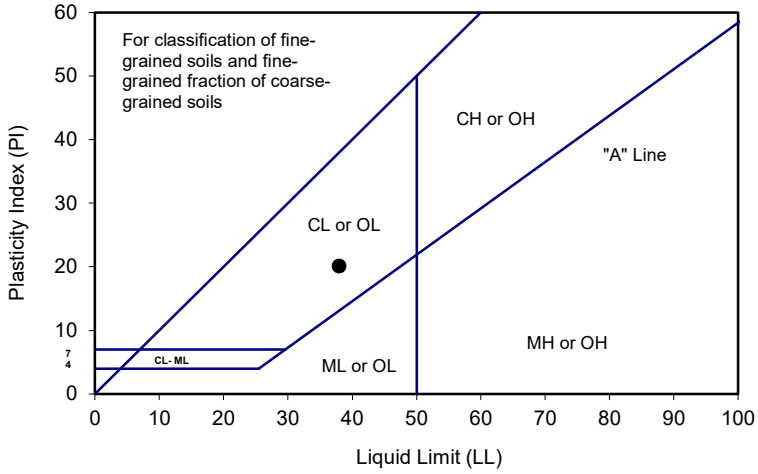
TEST	PLASTIC LIMIT		LIQUID LIMIT			
NO.	1	2	1	2	3	4
Number of Blows [N]			32	26	20	
Wet Wt. of Soil + Cont. (g)	10.11	10.10	22.46	22.16	22.55	
Dry Wt. of Soil + Cont. (g)	8.74	8.73	16.67	16.35	16.48	
Wt. of Container (g)	1.10	1.05	1.01	1.10	1.00	
Moisture Content (%) [Wn]	17.93	17.84	36.97	38.10	39.21	

Liquid Limit	**38**
Plastic Limit	**18**
Plasticity Index	**20**
Classification	**CL**

PI at "A" - Line = 0.73(LL-20) 13.14

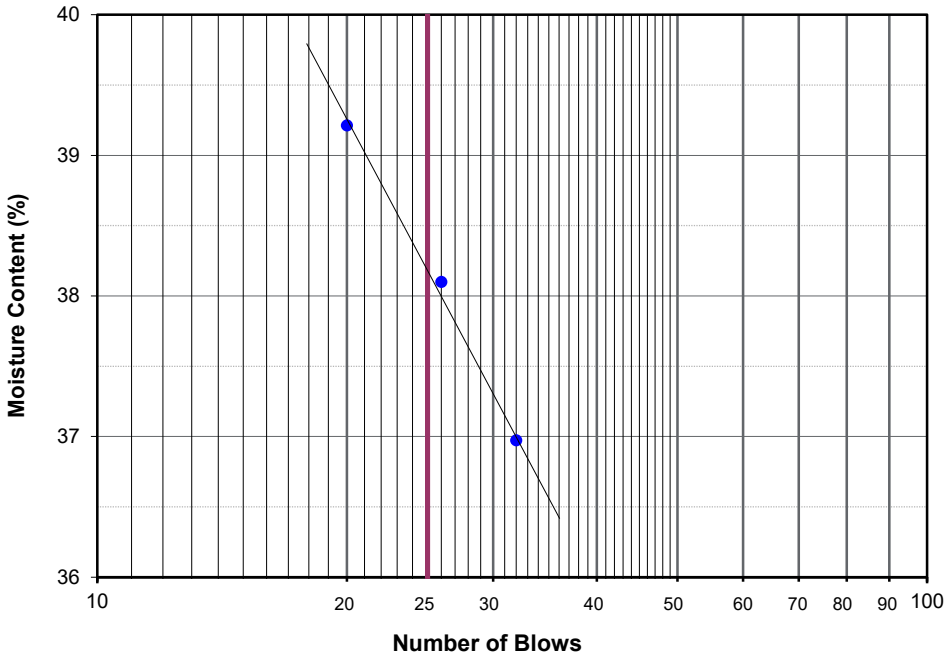
One - Point Liquid Limit Calculation

$LL = Wn(N/25)^{0.121}$



PROCEDURES USED

- [ ] Wet Preparation
  Multipoint - Wet
- [X] Dry Preparation
  Multipoint - Dry
- [X] Procedure A
  Multipoint Test
- [ ] Procedure B
  One-point Test



ATTERBERG LIMITS
ASTM D 4318

Project Name:	CNUSD Transporation Office Expansion	Tested By:	J. Domingo	Date:	03/28/23
Project No. :	13847.001	Input By:	J. Ward	Date:	04/11/23
Boring No.:	LB-1	Checked By:	J. Ward		
Sample No.:	R-4	Depth (ft.)	10.0		
Soil Identification:	Yellowish brown clayey gravel with sand (GC)s				

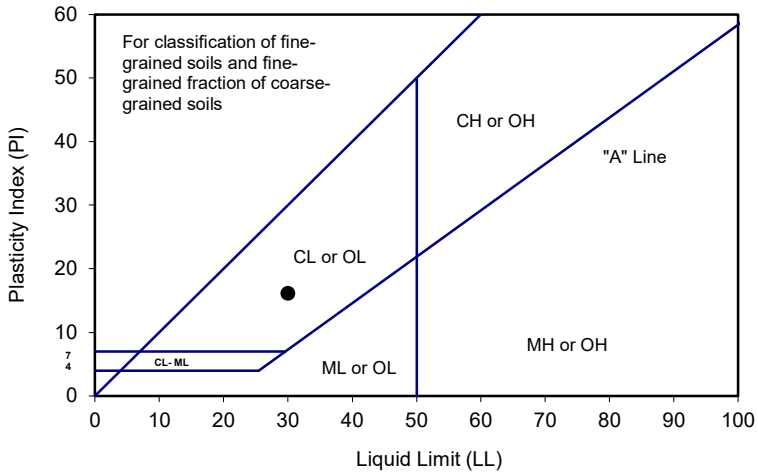
TEST	PLASTIC LIMIT		LIQUID LIMIT			
NO.	1	2	1	2	3	4
Number of Blows [N]			30	23	15	
Wet Wt. of Soil + Cont. (g)	10.32	10.38	21.31	21.58	21.27	
Dry Wt. of Soil + Cont. (g)	9.18	9.26	16.82	16.84	16.28	
Wt. of Container (g)	1.00	1.13	1.08	1.04	1.11	
Moisture Content (%) [Wn]	13.94	13.78	28.53	30.00	32.89	

Liquid Limit	**30**
Plastic Limit	**14**
Plasticity Index	**16**
Classification	**CL**

PI at "A" - Line = 0.73(LL-20) 7.3

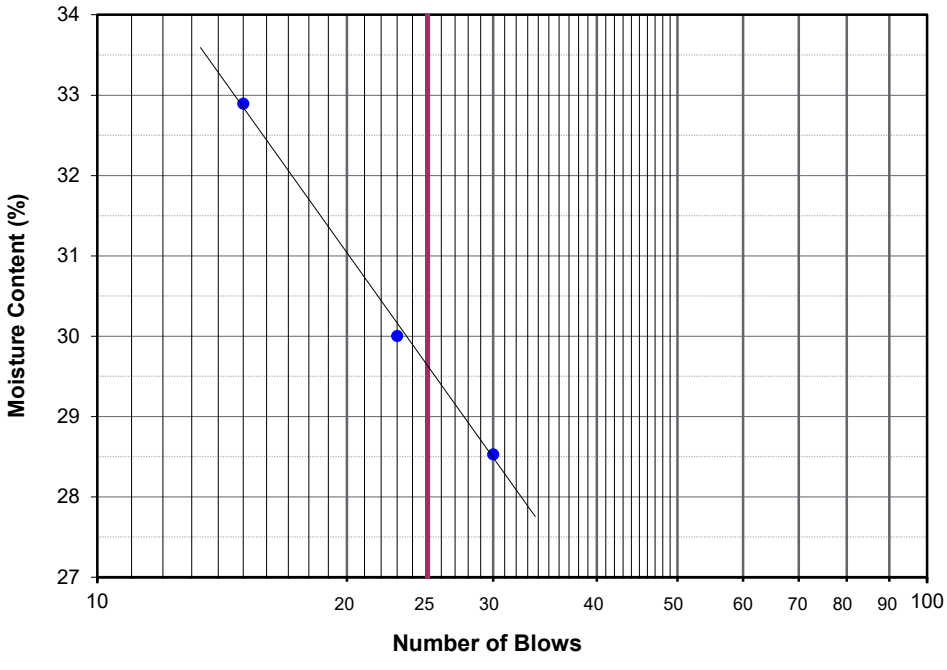
One - Point Liquid Limit Calculation

$LL = Wn(N/25)^{0.121}$



PROCEDURES USED

	Wet Preparation
	Multipoint - Wet
X	Dry Preparation
	Multipoint - Dry
X	Procedure A
	Multipoint Test
	Procedure B
	One-point Test



ATTERBERG LIMITS
ASTM D 4318

Project Name:	CNUSD Transporation Office Expansion	Tested By:	J. Domingo	Date:	03/29/23
Project No. :	13847.001	Input By:	J. Ward	Date:	04/11/23
Boring No.:	LB-1	Checked By:	J. Ward		
Sample No.:	R-10	Depth (ft.)	40.0		
Soil Identification:	Yellowish brown clayey sand (SC)				

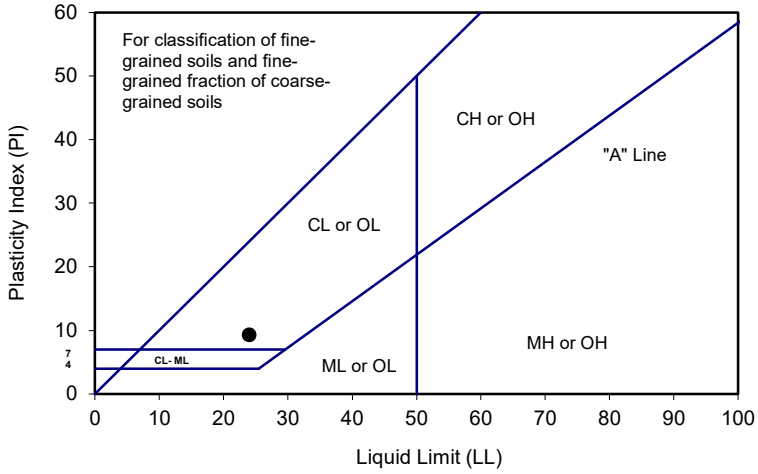
TEST	PLASTIC LIMIT		LIQUID LIMIT			
NO.	1	2	1	2	3	4
Number of Blows [N]			35	26	17	
Wet Wt. of Soil + Cont. (g)	9.11	9.18	22.11	22.21	22.53	
Dry Wt. of Soil + Cont. (g)	8.08	8.13	18.25	18.16	18.28	
Wt. of Container (g)	1.09	1.01	1.07	1.06	1.07	
Moisture Content (%) [Wn]	14.74	14.75	22.47	23.68	24.69	

Liquid Limit	**24**
Plastic Limit	**15**
Plasticity Index	**9**
Classification	**CL**

PI at "A" - Line = 0.73(LL-20) 2.92

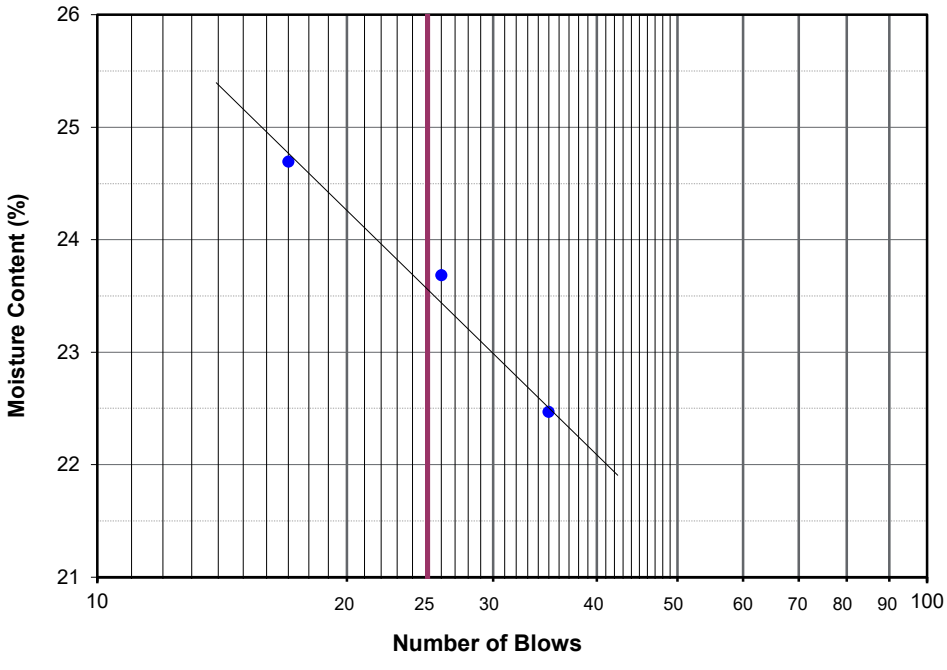
One - Point Liquid Limit Calculation

$LL = Wn(N/25)^{0.121}$



PROCEDURES USED

- [ ] Wet Preparation
  Multipoint - Wet
- [X] Dry Preparation
  Multipoint - Dry
- [X] Procedure A
  Multipoint Test
- [ ] Procedure B
  One-point Test



EXPANSION INDEX of SOILS
ASTM D 4829

Project Name:	CNUSD Transportation Office Expansion	Tested By:	G. Berdy	Date:	03/30/23
Project No.:	13847.001	Checked By:	J. Ward	Date:	04/11/23
Boring No.:	LB-1	Depth (ft.):	0-5		
Sample No.:	B-1				
Soil Identification:	Dark yellowish brown sandy lean clay s(CL)				

Dry Wt. of Soil + Cont.	(g)	1000.00
Wt. of Container No.	(g)	0.00
Dry Wt. of Soil	(g)	1000.00
Weight Soil Retained on #4 Sieve		0.00
Percent Passing # 4		100.00

MOLDED SPECIMEN	Before Test	After Test
Specimen Diameter (in.)	4.01	4.01
Specimen Height (in.)	1.0000	1.0340
Wt. Comp. Soil + Mold (g)	596.30	433.20
Wt. of Mold (g)	208.10	0.00
Specific Gravity (Assumed)	2.70	2.70
Container No.	O	O
Wet Wt. of Soil + Cont. (g)	778.10	641.30
Dry Wt. of Soil + Cont. (g)	701.00	557.80
Wt. of Container (g)	0.00	208.10
Moisture Content (%)	11.00	23.88
Wet Density (pcf)	117.1	126.4
Dry Density (pcf)	105.5	102.0
Void Ratio	0.598	0.653
Total Porosity	0.374	0.395
Pore Volume (cc)	77.5	84.5
Degree of Saturation (%) [S_{meas}]	**49.7**	98.8

SPECIMEN INUNDATION in distilled water for the period of 24 h or expansion rate < 0.0002 in./h

Date	Time	Pressure (psi)	Elapsed Time (min.)	Dial Readings (in.)
03/30/23	11:32	1.0	0	0.5030
03/30/23	11:42	1.0	10	0.5015
Add Distilled Water to the Specimen				
03/30/23	12:17	1.0	35	0.5275
03/31/23	6:20	1.0	1118	0.5370
03/31/23	9:00	1.0	1278	0.5370

Expansion Index (EI_{meas}) = ((Final Rdg - Initial Rdg) / Initial Thick.) x 1000	**36**

ONE-DIMENSIONAL SWELL OR SETTLEMENT POTENTIAL OF COHESIVE SOILS

ASTM D 4546

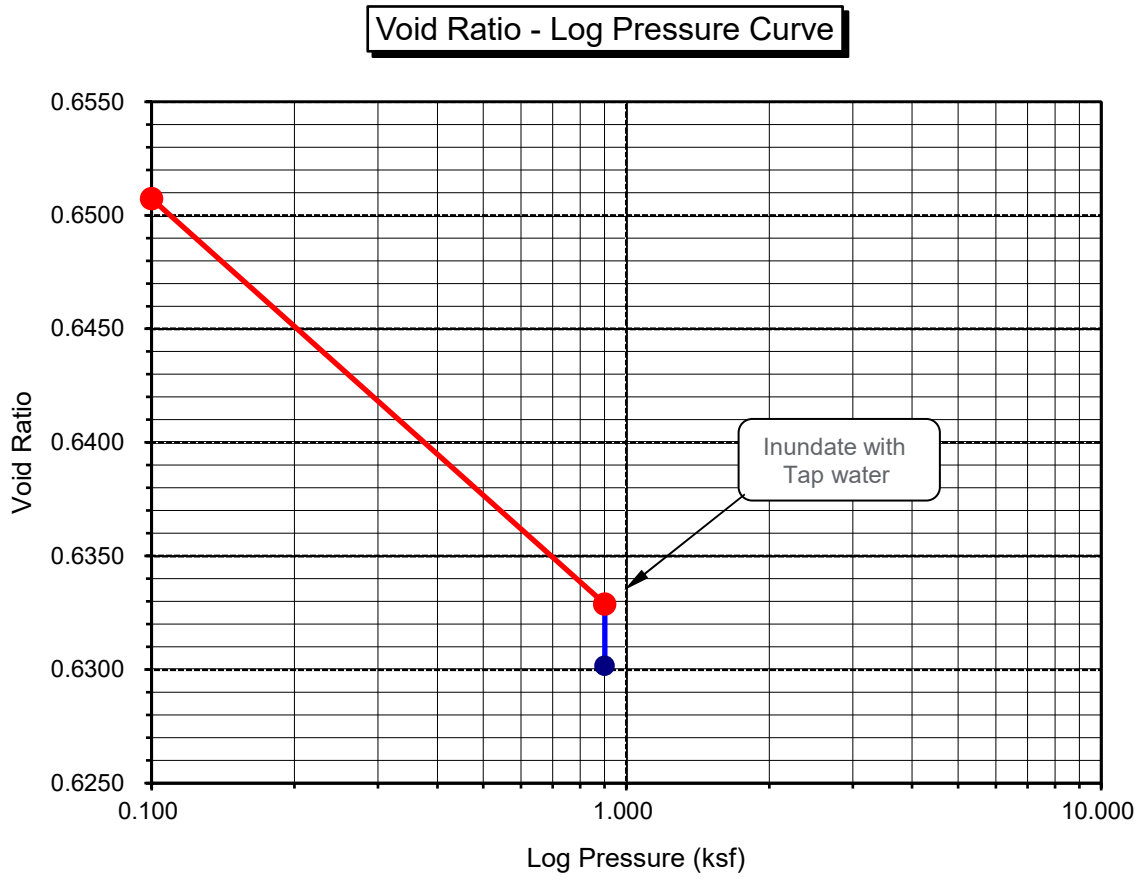
Project Name:	CNUSD Transportation Office Expansion	Tested By:	G. Bathala	Date:	03/29/23
Project No.:	13847.001	Checked By:	J. Ward	Date:	04/11/23
Boring No.:	LB-2	Sample Type:	Ring		
Sample No.:	R-3	Depth (ft.)	7.5		
Sample Description:	Brown lean clay (CL)				

Initial Dry Density (pcf):	102.0
Initial Moisture (%):	20.19
Initial Length (in.):	1.0000
Initial Dial Reading:	0.1351
Diameter(in):	2.415

Final Dry Density (pcf):	103.8
Final Moisture (%) :	21.9
Initial Void ratio:	0.6529
Specific Gravity(assumed):	2.70
Initial Saturation (%)	83.5

Pressure (p) (ksf)	Final Reading (in)	Apparent Thickness (in)	Load Compliance (%)	Swell (+) Settlement (-) % of Sample Thickness	Void Ratio	Corrected Deformation (%)
0.100	0.1364	0.9987	0.00	-0.13	0.6507	-0.13
0.900	0.1490	0.9861	0.18	-1.39	0.6329	-1.21
H2O	0.1507	0.9845	0.18	-1.56	0.6302	-1.38

Percent Swell (+) / Settlement (-) After Inundation = -0.17



TESTS for SULFATE CONTENT
CHLORIDE CONTENT and pH of SOILS

Project Name: CNUSD Transportation Office Expansion Tested By : G. Berdy Date: 03/28/23

Project No. : 13847.001 Checked By: J. Ward Date: 04/11/23

Boring No.	LB-1			
Sample No.	B-1			
Sample Depth (ft)	0-5			
Soil Identification:	Dark yellowish brown s(CL)			
Wet Weight of Soil + Container (g)	0.00			
Dry Weight of Soil + Container (g)	0.00			
Weight of Container (g)	1.00			
Moisture Content (%)	0.00			
Weight of Soaked Soil (g)	100.49			

SULFATE CONTENT, DOT California Test 417, Part II

Beaker No.	4			
Crucible No.	7			
Furnace Temperature (°C)	860			
Time In / Time Out	8:00/8:45			
Duration of Combustion (min)	45			
Wt. of Crucible + Residue (g)	22.7090			
Wt. of Crucible (g)	22.7069			
Wt. of Residue (g) (A)	0.0021			
PPM of Sulfate (A) x 41150	86.41			
PPM of Sulfate, Dry Weight Basis	**86**			

CHLORIDE CONTENT, DOT California Test 422

ml of Extract For Titration (B)	15			
ml of AgNO3 Soln. Used in Titration (C)	1.4			
PPM of Chloride (C -0.2) * 100 * 30 / B	240			
PPM of Chloride, Dry Wt. Basis	**240**			

pH TEST, DOT California Test 643

pH Value	**6.69**			
Temperature °C	19.6			

SOIL RESISTIVITY TEST

DOT CA TEST 643

Project Name:	CNUSD Transportation Office Expansion		Tested By :	G. Berdy	Date: 03/30/23
Project No. :	13847.001		Checked By:	J. Ward	Date: 04/11/23
Boring No.:	LB-1		Depth (ft.) :	0-5	
Sample No. :	B-1				

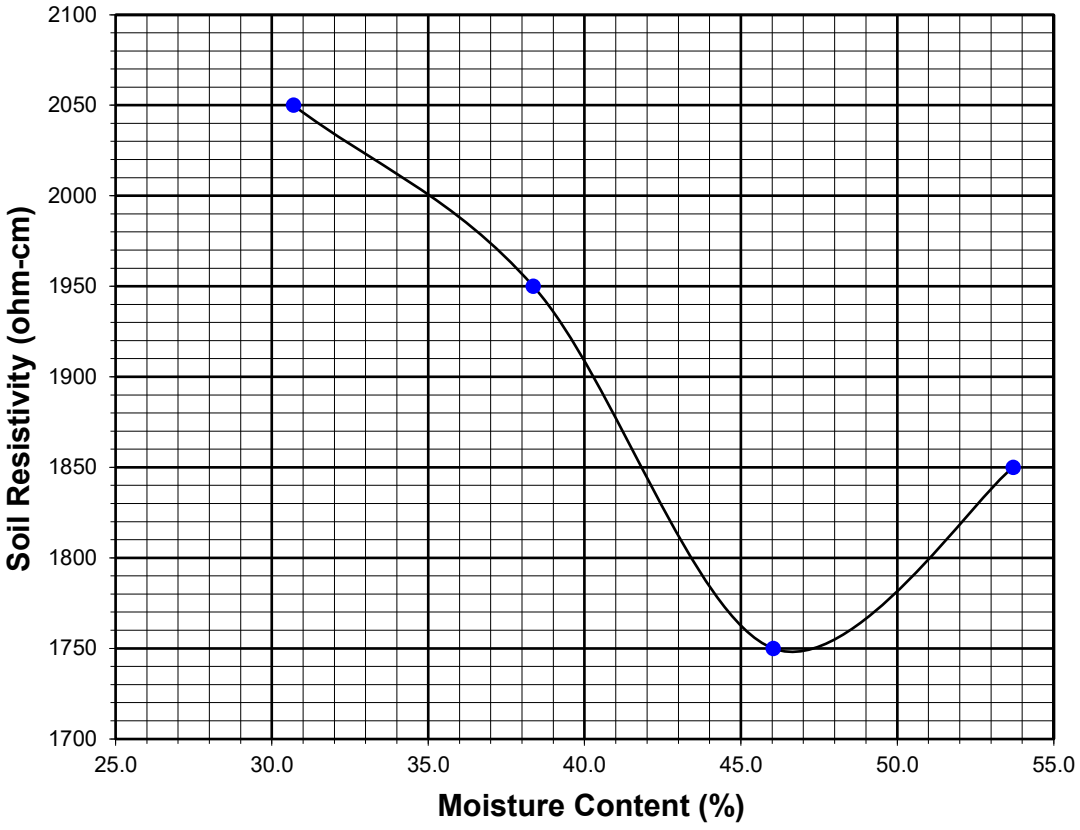
Soil Identification:* Dark yellowish brown s(CL)

*California Test 643 requires soil specimens to consist only of portions of samples passing through the No. 8 US Standard Sieve before resistivity testing. Therefore, this test method may not be representative for coarser materials.

Specimen No.	Water Added (ml) (Wa)	Adjusted Moisture Content (MC)	Resistance Reading (ohm)	Soil Resistivity (ohm-cm)
1	40	30.69	2050	2050
2	50	38.36	1950	1950
3	60	46.03	1750	1750
4	70	53.71	1850	1850
5				

Moisture Content (%) (MCi)	0.00
Wet Wt. of Soil + Cont. (g)	0.00
Dry Wt. of Soil + Cont. (g)	0.00
Wt. of Container (g)	1.00
Container No.	
Initial Soil Wt. (g) (Wt)	130.34
Box Constant	1.000
MC =(((1+Mci/100)x(Wa/Wt+1))-1)x100	

Min. Resistivity (ohm-cm)	Moisture Content (%)	Sulfate Content (ppm)	Chloride Content (ppm)	Soil pH	
				pH	Temp. (°C)
DOT CA Test 643		DOT CA Test 417 Part II	DOT CA Test 422	DOT CA Test 643	
1750	**46.6**	**86**	**240**	**6.69**	**19.6**



APPENDIX C

SUMMARY OF SEISMIC ANALYSIS

Determination of Site Class and Estimation of Shear Wave Velocity

Project: 13847.001 Transportation Office Expansion

Depth (ft)	di, Layer Thick (ft)	Field Blow Counts, Ni Corrected for Cs and sampler type Blows per foot (bpf) LB-1	LB-2		Average Ni (bpf)	Ni Hammer Corr: 1.3	di / Ni
5	7.5	7	3		5	7	1.15
10	5	19	19		19	25	0.20
15	5	15	11		13	17	0.30
20	5	35	43		39	51	0.10
25	5	38	46		42	55	0.09
30	5	60			60	78	0.06
35	5	48			48	62	0.08
40	5	23			23	30	0.17
45	5	41			41	53	0.09
50	7.5	60			60	78	0.10
60	10	60	*Assumed based on blowcount at 50'		60	78	0.13
70	10	60			60	78	0.13
80	10	60			60	78	0.13
90	10	60			60	78	0.13
100	5	60			60	78	0.06
Summatio	100						2.92
						Navg = Sum(di) / Sum(di / Ni) =	**34**

Extract of ASCE 7-16 Table 20.3-1 Site Classification (2019 CBC 1613A.2.2):

Site Class	Soil Profile Name	Avg. N upper 100' from	to	Vs30 (ft/sec) from	to	Vs30 (m/s) from	to	Site Avg N	Interpolated vs30 (ft/s)
A	Hard Rock	-		5000	10000	1524	3048		
B	Rock	-		2500	5000	762	1524		
C	VD soil & soft rock	50.001	100	1200	2500	366	762		
D	Stiff Soil	**15**	**50**	600	1200	183	366	34	930
E	Soft Soil	0	14.999	0	600	0	183		
F		-	-			0	0		

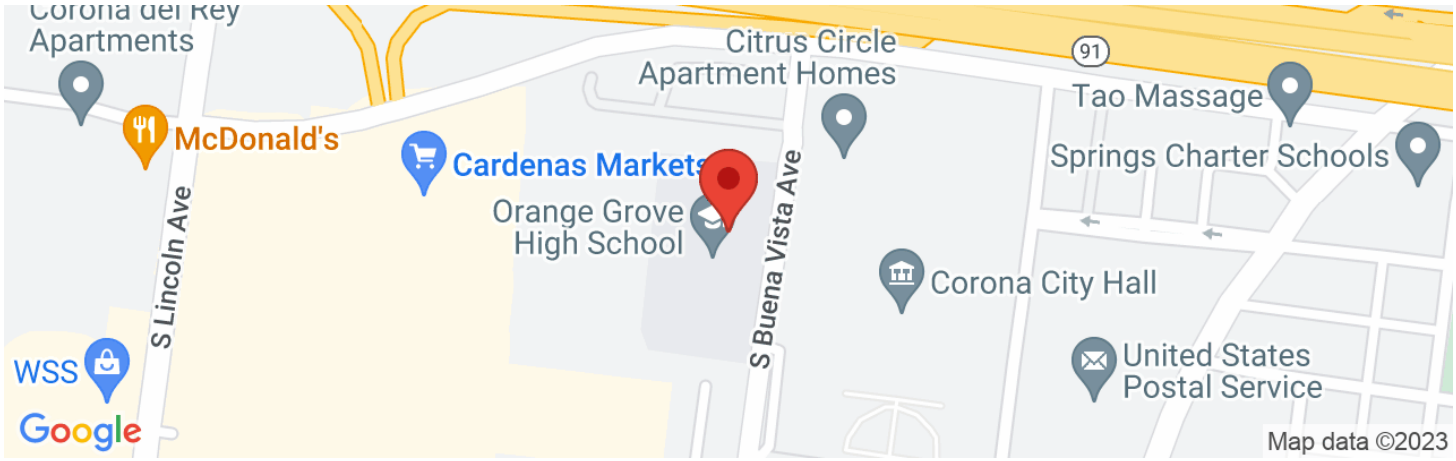
SITE CLASS, Table 20.3-1: D

Estimation of Average Shear Wave Velocity in upper 100 ft (Vs30):

	ft/s	m/s
Approx. Vs30 (interpolation of Table 20.3-1) =	930	283
Approx. Vs30 sands (Imai and Tonouchi, 1982) =	1061	324
Approx. Vs30 sands (Sykora and Stokoe, 1983) =	909	277
Approx. Vs30 (Maheswari, Boominathan, Dodagoudar, 2009) =	872	266

CNUSD Transportation Office Expansion

Latitude, Longitude: 33.8793, -117.5777



Date	3/22/2023, 4:54:06 PM
Design Code Reference Document	ASCE7-16
Risk Category	II
Site Class	D - Stiff Soil

Type	Value	Description
S_S	2.071	MCE_R ground motion. (for 0.2 second period)
S_1	0.778	MCE_R ground motion. (for 1.0s period)
S_{MS}	2.071	Site-modified spectral acceleration value
S_{M1}	null -See Section 11.4.8	Site-modified spectral acceleration value
S_{DS}	1.381	Numeric seismic design value at 0.2 second SA
S_{D1}	null -See Section 11.4.8	Numeric seismic design value at 1.0 second SA

Type	Value	Description
SDC	null -See Section 11.4.8	Seismic design category
F_a	1	Site amplification factor at 0.2 second
F_v	null -See Section 11.4.8	Site amplification factor at 1.0 second
PGA	0.869	MCE_G peak ground acceleration
F_{PGA}	1.1	Site amplification factor at PGA
PGA_M	0.956	Site modified peak ground acceleration
T_L	8	Long-period transition period in seconds
SsRT	2.201	Probabilistic risk-targeted ground motion. (0.2 second)
SsUH	2.406	Factored uniform-hazard (2% probability of exceedance in 50 years) spectral acceleration
SsD	2.071	Factored deterministic acceleration value. (0.2 second)
S1RT	0.778	Probabilistic risk-targeted ground motion. (1.0 second)
S1UH	0.859	Factored uniform-hazard (2% probability of exceedance in 50 years) spectral acceleration.
S1D	0.812	Factored deterministic acceleration value. (1.0 second)
PGAd	0.869	Factored deterministic acceleration value. (Peak Ground Acceleration)
PGA_{UH}	0.924	Uniform-hazard (2% probability of exceedance in 50 years) Peak Ground Acceleration
C_{RS}	0.915	Mapped value of the risk coefficient at short periods

Type	Value	Description
C_{R1}	0.906	Mapped value of the risk coefficient at a period of 1 s
C_V	1.5	Vertical coefficient

DISCLAIMER

While the information presented on this website is believed to be correct, SEAOC /OSHPD and its sponsors and contributors assume no responsibility or liability for its accuracy. The material presented in this web application should not be used or relied upon for any specific application without competent examination and verification of its accuracy, suitability and applicability by engineers or other licensed professionals. SEAOC / OSHPD do not intend that the use of this information replace the sound judgment of such competent professionals, having experience and knowledge in the field of practice, nor to substitute for the standard of care required of such professionals in interpreting and applying the results of the seismic data provided by this website. Users of the information from this website assume all liability arising from such use. Use of the output of this website does not imply approval by the governing building code bodies responsible for building code approval and interpretation for the building site described by latitude/longitude location in the search results of this website.

U.S. Geological Survey - Earthquake Hazards Program

Unified Hazard Tool

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

Please also see the new NSHM Hazard Tool for access to the most recent NSHMs for the conterminous U.S. and Hawaii.

Input

Edition

Dynamic: Conterminous U.S. 2014 (u…

Spectral Period

Peak Ground Acceleration

Latitude

Decimal degrees

33.8793

Time Horizon

Return period in years

2475

Longitude

Decimal degrees, negative values for western longitudes

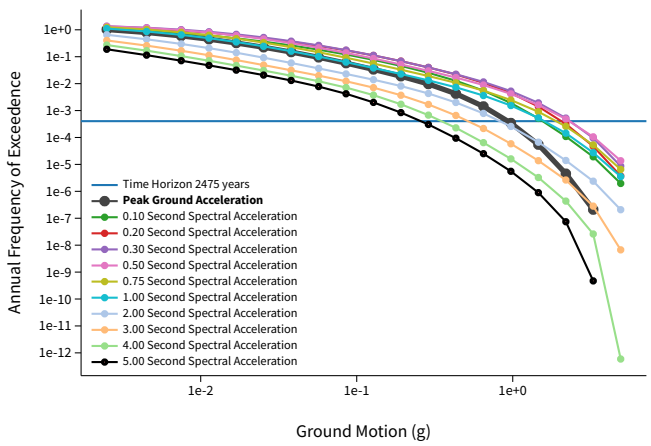
-117.5777

Site Class

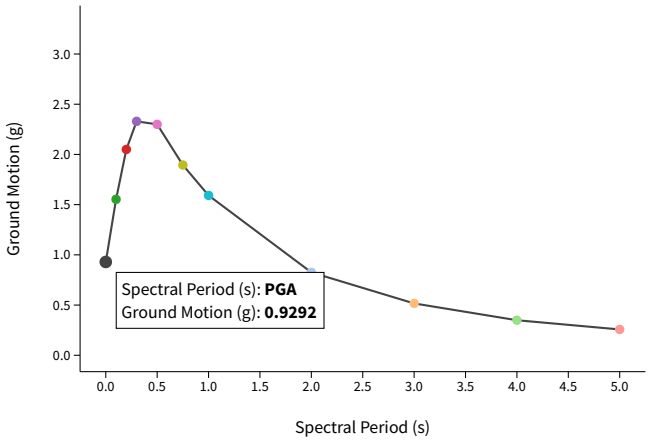
259 m/s (Site class D)

Hazard Curve

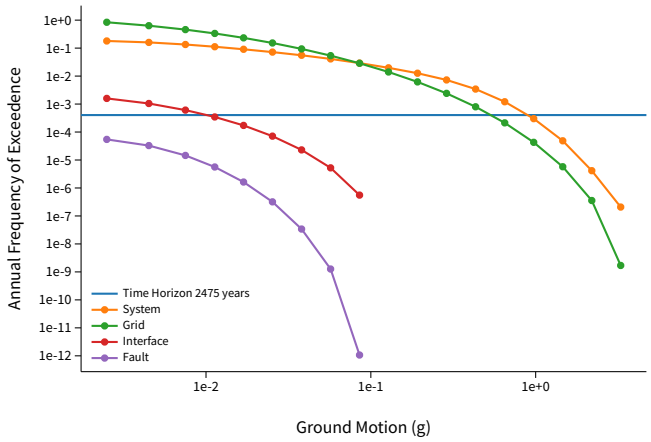
Hazard Curves



Uniform Hazard Response Spectrum



Component Curves for Peak Ground Acceleration

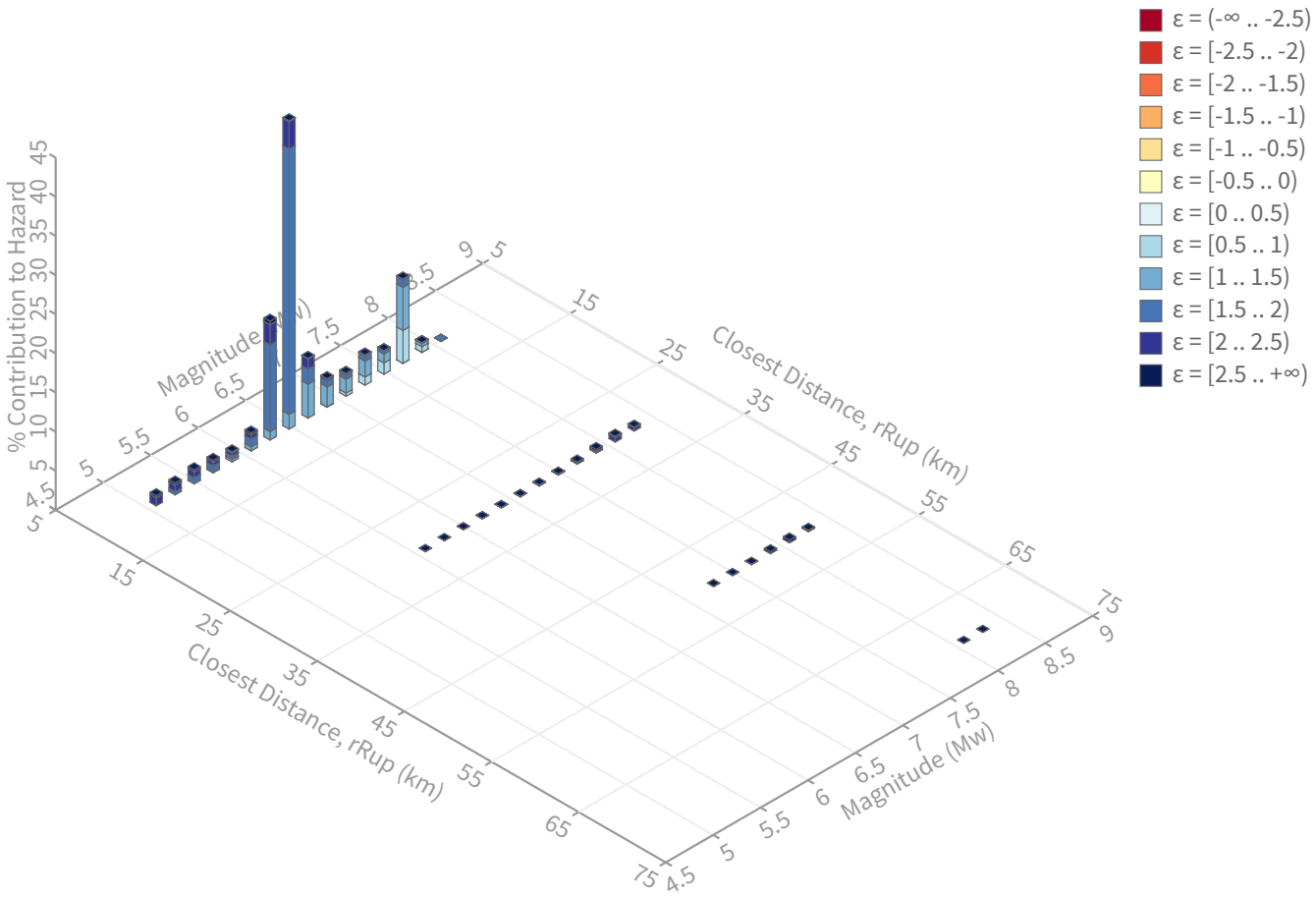


View Raw Data

Deaggregation

Component

Total


ε = (-∞ .. -2.5)
ε = [-2.5 .. -2)
ε = [-2 .. -1.5)
ε = [-1.5 .. -1)
ε = [-1 .. -0.5)
ε = [-0.5 .. 0)
ε = [0 .. 0.5)
ε = [0.5 .. 1)
ε = [1 .. 1.5)
ε = [1.5 .. 2)
ε = [2 .. 2.5)
ε = [2.5 .. +∞)
% Contribution to Hazard
Closest Distance, rRup (km)
Magnitude (Mw)

Summary statistics for, Deaggregation: Total

Deaggregation targets

Return period: 2475 yrs
Exceedance rate: 0.0004040404 yr^{-1}
PGA ground motion: 0.92918767 g

Recovered targets

Return period: 2982.2883 yrs
Exceedance rate: 0.00033531299 yr^{-1}

Totals

Binned: 100 %
Residual: 0 %
Trace: 0.06 %

Mean (over all sources)

m: 6.67
r: 6.82 km
ε_0: 1.66 σ

Mode (largest m-r bin)

m: 6.47
r: 5.85 km
ε_0: 1.74 σ
Contribution: 39.36 %

Mode (largest m-r-ε_0 bin)

m: 6.47
r: 5.82 km
ε_0: 1.71 σ
Contribution: 33.89 %

Discretization

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

Epsilon keys

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

Deaggregation Contributors

Source Set ↳ Source	Type	r	m	ε_0	lon	lat	az	%
UC33brAvg_FM31	System							45.33
Elsinore (Glen Ivy) rev [0]		5.87	6.46	1.76	117.590°W	33.829°N	191.46	23.46
Whittier alt 1 [0]		5.12	7.31	1.15	117.606°W	33.841°N	211.83	11.03
Chino alt 1 [4]		4.13	6.73	1.47	117.610°W	33.855°N	227.99	6.57
UC33brAvg_FM32	System							43.28
Elsinore (Glen Ivy) rev [0]		5.87	6.45	1.76	117.590°W	33.829°N	191.46	24.09
Whittier alt 2 [0]		5.23	7.49	1.13	117.606°W	33.841°N	211.26	9.45
Chino alt 2 [3]		3.98	6.91	1.39	117.609°W	33.858°N	230.47	5.60
UC33brAvg_FM31 (opt)	Grid							5.77
PointSourceFinite: -117.578, 33.911		6.06	5.72	1.76	117.578°W	33.911°N	0.00	1.69
PointSourceFinite: -117.578, 33.911		6.06	5.72	1.76	117.578°W	33.911°N	0.00	1.69
UC33brAvg_FM32 (opt)	Grid							5.62
PointSourceFinite: -117.578, 33.911		6.16	5.66	1.79	117.578°W	33.911°N	0.00	1.59
PointSourceFinite: -117.578, 33.911		6.16	5.66	1.79	117.578°W	33.911°N	0.00	1.59

Liquefaction Susceptibility Analysis: SPT Method

Leighton

Youd and Idriss (2001), Martin and Lew (1999)

Description: CNUSD Transportation Office Expansion; Case 1; PGAm 0.956; design GW 115; No overex 0

Project No.: 13847.001

Mar 2023

General Boring Information:

Boring No.	Existing GW Depth (ft)	Design GW Depth (ft)	Design Fill Height (ft)	Overex. depth bgs (ft)	Ground Surface Elev (ft)	design gw elve
LB-1	115	115		0	647	532
LB-2	115	115		0	645	530
						0
						0
						0
						0
						0
						0
						0
						0
						0
						0
						0
						0
						0
						0

Boring Location Coordinates	
X (ft)	Y (ft)
-6.297	32.394
-23.65	61.616

General Parameters:

a_{max} = 0.96g

M_W = 6.5

MSF eq: 1

MSF = 1.44

Hammer Efficiency = 84

C_E = 1.40

C_B = 1

C_S for SPT? TRUE

Unlined, but room for liner

Rod Stickup (feet) = 3

Ring sample correction = 0.65

Summary of Liquefaction Susceptibility Analysis: SPT Method

Leighton

Liquefaction Method: Youd and Idriss (2001). Seismic Settlement Method: Tokimatsu and Seed (1987) and Martin and Lew (1999).

Project: CNUSD Transportation Office Expansion; Case 1; PGAm 0.956; design GW 115; No overex 0

Project No.: 13847.001

Boring No.	Approx. Layer Depth (ft)	SPT Depth (ft)	Approx Layer Thick-ness (ft)	Plasticity ("n"=non susc. to liq.)	Estimated Fines Cont (%)	γ_t (pcf)	N_m or B (blows/ft)	Sampler Type (enter 2 if mod CA Ring)	Cs	N_m (corrected for Cs and ring->SPT) (blows/ft)	Exist σ_{vo}' (psf)	$(N_1)_{60}$	$(N_1)_{60CS}$	**$CRR_{7.5}$**	Design σ_{vo}' (psf)	$CSR_{7.5}$	CSR_M	**Liquefaction Factor of Safety**	$(N_1)_{60CS}$ (for Settle-ment) (blows/ft)	Dry Sand Strain (%) (Tok/ Seed 87) (%)	Sat Sand Strain (%) (Tok/ Seed 87) (%)	Seismic Sett. of Layer (in.)	**Cummulative Seismic Settlement** (in.)
LB-1	0 to 3.8	2.5	3.8		65	120	5	2	1	3.3	300	5.8	**12.0**	0.131	300	0.62	0.43	**NonLiq**	12.0	1.61		0.72	2.1
LB-1	3.8 to 6.3	5	2.5		85	120	12	2	1	7.8	600	13.9	21.7	0.238	600	0.61	0.43	**NonLiq**	21.7	0.84		0.25	1.3
LB-1	6.3 to 8.8	7.5	2.5		65	120	19	2	1	12.4	900	21.1	30.3	>Range	900	0.61	0.42	**NonLiq**	30.3	0.27		0.08	1.1
LB-1	8.8 to 12.5	10	3.8		**18**	120	23	2	1	15.0	1200	23.5	28.3	0.379	1200	0.61	0.42	**NonLiq**	28.3	0.78		0.35	1.0
LB-1	12.5 to 17.5	15	5.0		55	120	15	1	1.24	18.6	1800	23.8	33.5	>Range	1800	0.60	0.42	**NonLiq**	33.5	0.29		0.17	0.6
LB-1	17.5 to 22.5	20	5.0		30	120	59	2	1	38.4	2400	47.6	59.6	>Range	2400	0.59	0.41	**NonLiq**	59.6	0.07		0.04	0.5
LB-1	22.5 to 27.5	25	5.0		30	120	38	1	1.3	49.4	3000	54.8	68.0	>Range	3000	0.59	0.41	**NonLiq**	68.0	0.10		0.06	0.4
LB-1	27.5 to 32.5	30	5.0		**7**	120	100	2	1	65.0	3600	69.3	70.0	>Range	3600	0.58	0.40	**NonLiq**	70.0	0.04		0.03	0.4
LB-1	32.5 to 37.5	35	5.0		10	120	48	1	1.3	62.4	4200	61.6	63.8	>Range	4200	0.55	0.38	**NonLiq**	63.8	0.05		0.03	0.3
LB-1	37.5 to 42.5	40	5.0		**36**	120	38	2	1	24.7	4800	22.8	32.4	>Range	4800	0.53	0.37	**NonLiq**	32.4	0.41		0.25	0.3
LB-1	42.5 to 47.5	45	5.0		90	120	41	1	1.3	53.3	5400	46.4	60.7	>Range	5400	0.50	0.35	**NonLiq**	60.7	0.06		0.04	0.1
LB-1	47.5 to 52.0	50	4.5		25	120	100	2	1	65.0	6000	53.7	64.1	>Range	6000	0.48	0.33	**NonLiq**	64.1	0.06		0.03	0.0
LB-2	0 to 3.8	2.5	3.8		85	120	7	2	1	4.6	300	8.1	**14.7**	0.158	300	0.62	0.43	**NonLiq**	14.7	1.41		0.64	2.1
LB-2	3.8 to 6.3	5	2.5		85	120	5	2	1	3.3	600	5.8	**12.0**	0.131	600	0.61	0.43	**NonLiq**	12.0	1.95		0.59	1.4
LB-2	6.3 to 8.8	7.5	2.5		90	120	10	2	1	6.5	900	11.1	18.3	0.195	900	0.61	0.42	**NonLiq**	18.3	1.09		0.33	0.9
LB-2	8.8 to 12.5	10	3.8		80	120	31	2	1	20.2	1200	31.6	43.0	>Range	1200	0.61	0.42	**NonLiq**	43.0	0.10		0.04	0.5
LB-2	12.5 to 17.5	15	5.0		**46**	120	19	2	1	12.4	1800	15.8	24.0	0.273	1800	0.60	0.42	**NonLiq**	24.0	0.68		0.41	0.5
LB-2	17.5 to 22.5	20	5.0		25	120	43	1	1.3	55.9	2400	69.3	81.6	>Range	2400	0.59	0.41	**NonLiq**	81.6	0.05		0.03	0.1
LB-2	22.5 to 27.0	25	4.5		25	120	77	2	1	50.1	3000	55.5	66.2	>Range	3000	0.59	0.41	**NonLiq**	66.2	0.10		0.05	0.1

Liquefaction Susceptibility Analysis: SPT Method

Leighton

Youd and Idriss (2001), Martin and Lew (1999)

Description: CNUSD Transportation Office Expansion; Case 3; PGAm 0.956; design GW 115; Overex./scarify 5

Project No.: 13847.001

Mar 2023

General Boring Information:

Boring No.	Existing GW Depth (ft)	Design GW Depth (ft)	Design Fill Height (ft)	Overex. depth bgs (ft)	Ground Surface Elev (ft)	design gw elve
LB-1	115	115		5	647	532
LB-2	115	115		5	645	530
						0
						0
						0
						0
						0
						0
						0
						0
						0
						0
						0
						0
						0
						0

Boring Location Coordinates	
X (ft)	Y (ft)
-6.297	32.394
-23.65	61.616

General Parameters:

a_{max} = 0.96g

M_W = 6.5

MSF eq: 1

MSF = 1.44

Hammer Efficiency = 84

C_E = 1.40

C_B = 1

C_S for SPT? TRUE

Unlined, but room for liner

Rod Stickup (feet) = 3

Ring sample correction = 0.65

Summary of Liquefaction Susceptibility Analysis: SPT Method

Leighton

Liquefaction Method: Youd and Idriss (2001). Seismic Settlement Method: Tokimatsu and Seed (1987) and Martin and Lew (1999).

Project: CNUSD Transportation Office Expansion; Case 3; PGAm 0.956; design GW 115; Overex./scarify 5

Project No.: 13847.001

Boring No.	Approx. Layer Depth (ft)	SPT Depth (ft)	Approx Layer Thick-ness (ft)	Plasticity ("n"=non susc. to liq.)	Estimated Fines Cont (%)	γ_t (pcf)	N_m or B (blows/ft)	Sampler Type (enter 2 if mod CA Ring)	Cs	N_m (corrected for Cs and ring->SPT) (blows/ft)	Exist σ_{vo}' (psf)	$(N_1)_{60}$	$(N_1)_{60CS}$	**$CRR_{7.5}$**	Design σ_{vo}' (psf)	$CSR_{7.5}$	CSR_M	**Liquefaction Factor of Safety**	$(N_1)_{60CS}$ (for Settle-ment) (blows/ft)	Dry Sand Strain (%) (Tok/ Seed 87) (%)	Sat Sand Strain (%) (Tok/ Seed 87) (%)	Seismic Sett. of Layer (in.)	**Cummulative Seismic Settlement** (in.)
LB-1	0 to 3.8	2.5	3.8	OX	65	120	50	1	1.3	65.0	300	116.0	144.2	>Range	300	0.62	0.43	**NonLiq**	144.2	0.00		0.00	1.2
LB-1	3.8 to 5.0	5	1.3	OX	85	120	50	1	1.3	65.0	600	116.0	144.2	>Range	600	0.61	0.43	**NonLiq**	144.2	0.00		0.00	1.2
LB-1	5.0 to 6.3	5	1.3		85	120	12	2	1	7.8	600	13.9	21.7	0.238	600	0.61	0.43	**NonLiq**	21.7	0.84		0.13	1.2
LB-1	6.3 to 8.8	7.5	2.5		65	120	19	2	1	12.4	900	21.1	30.3	>Range	900	0.61	0.42	**NonLiq**	30.3	0.27		0.08	1.1
LB-1	8.8 to 12.5	10	3.8		**18**	120	23	2	1	15.0	1200	23.5	28.3	0.379	1200	0.61	0.42	**NonLiq**	28.3	0.78		0.35	1.0
LB-1	12.5 to 17.5	15	5.0		55	120	15	1	1.24	18.6	1800	23.8	33.5	>Range	1800	0.60	0.42	**NonLiq**	33.5	0.29		0.17	0.6
LB-1	17.5 to 22.5	20	5.0		30	120	59	2	1	38.4	2400	47.6	59.6	>Range	2400	0.59	0.41	**NonLiq**	59.6	0.07		0.04	0.5
LB-1	22.5 to 27.5	25	5.0		30	120	38	1	1.3	49.4	3000	54.8	68.0	>Range	3000	0.59	0.41	**NonLiq**	68.0	0.10		0.06	0.4
LB-1	27.5 to 32.5	30	5.0		**7**	120	100	2	1	65.0	3600	69.3	70.0	>Range	3600	0.58	0.40	**NonLiq**	70.0	0.04		0.03	0.4
LB-1	32.5 to 37.5	35	5.0		10	120	48	1	1.3	62.4	4200	61.6	63.8	>Range	4200	0.55	0.38	**NonLiq**	63.8	0.05		0.03	0.3
LB-1	37.5 to 42.5	40	5.0		**36**	120	38	2	1	24.7	4800	22.8	32.4	>Range	4800	0.53	0.37	**NonLiq**	32.4	0.41		0.25	0.3
LB-1	42.5 to 47.5	45	5.0		90	120	41	1	1.3	53.3	5400	46.4	60.7	>Range	5400	0.50	0.35	**NonLiq**	60.7	0.06		0.04	0.1
LB-1	47.5 to 52.0	50	4.5		25	120	100	2	1	65.0	6000	53.7	64.1	>Range	6000	0.48	0.33	**NonLiq**	64.1	0.06		0.03	0.0
LB-2	0 to 3.8	2.5	3.8	OX	85	120	50	1	1.3	65.0	300	116.0	144.2	>Range	300	0.62	0.43	**NonLiq**	144.2	0.00		0.00	1.2
LB-2	3.8 to 5.0	5	1.3	OX	85	120	50	1	1.3	65.0	600	116.0	144.2	>Range	600	0.61	0.43	**NonLiq**	144.2	0.00		0.00	1.2
LB-2	5.0 to 6.3	5	1.3		85	120	5	2	1	3.3	600	5.8	**12.0**	0.131	600	0.61	0.43	**NonLiq**	12.0	1.95		0.29	1.2
LB-2	6.3 to 8.8	7.5	2.5		90	120	10	2	1	6.5	900	11.1	18.3	0.195	900	0.61	0.42	**NonLiq**	18.3	1.09		0.33	0.9
LB-2	8.8 to 12.5	10	3.8		80	120	31	2	1	20.2	1200	31.6	43.0	>Range	1200	0.61	0.42	**NonLiq**	43.0	0.10		0.04	0.5
LB-2	12.5 to 17.5	15	5.0		**46**	120	19	2	1	12.4	1800	15.8	24.0	0.273	1800	0.60	0.42	**NonLiq**	24.0	0.68		0.41	0.5
LB-2	17.5 to 22.5	20	5.0		25	120	43	1	1.3	55.9	2400	69.3	81.6	>Range	2400	0.59	0.41	**NonLiq**	81.6	0.05		0.03	0.1
LB-2	22.5 to 27.0	25	4.5		25	120	77	2	1	50.1	3000	55.5	66.2	>Range	3000	0.59	0.41	**NonLiq**	66.2	0.10		0.05	0.1

APPENDIX D

EARTHWORK AND GRADING GUIDE SPECIFICATIONS

Leighton

LEIGHTON CONSULTING, INC.

GENERAL EARTHWORK AND GRADING SPECIFICATIONS FOR ROUGH GRADING

Table of Contents

1.0 General

1.1 Intent: These General Earthwork and Grading Specifications are for the grading and earthwork shown on the approved grading plan(s) and/or indicated in the geotechnical report(s). These Specifications are a part of the recommendations contained in the geotechnical report(s). In case of conflict, the specific recommendations in the geotechnical report shall supersede these more general Specifications. Observations of the earthwork by the project Geotechnical Consultant during the course of grading may result in new or revised recommendations that could supersede these specifications or the recommendations in the geotechnical report(s).

1.2 The Geotechnical Consultant of Record: Prior to commencement of work, the owner shall employ the Geotechnical Consultant of Record (Geotechnical Consultant). The Geotechnical Consultants shall be responsible for reviewing the approved geotechnical report(s) and accepting the adequacy of the preliminary geotechnical findings, conclusions, and recommendations prior to the commencement of the grading.

Prior to commencement of grading, the Geotechnical Consultant shall review the "work plan" prepared by the Earthwork Contractor (Contractor) and schedule sufficient personnel to perform the appropriate level of observation, mapping, and compaction testing.

During the grading and earthwork operations, the Geotechnical Consultant shall observe, map, and document the subsurface exposures to verify the geotechnical design assumptions. If the observed conditions are found to be significantly different than the interpreted assumptions during the design phase, the Geotechnical Consultant shall inform the owner, recommend appropriate changes in design to accommodate the observed conditions, and notify the review agency where required. Subsurface areas to be geotechnically observed, mapped, elevations recorded, and/or tested include natural ground after it has been cleared for receiving fill but before fill is placed, bottoms of all "remedial removal" areas, all key bottoms, and benches made on sloping ground to receive fill.

The Geotechnical Consultant shall observe the moisture-conditioning and processing of the subgrade and fill materials and perform relative compaction testing of fill to determine the attained level of compaction. The Geotechnical Consultant shall provide the test results to the owner and the Contractor on a routine and frequent basis.

1.3 The Earthwork Contractor: The Earthwork Contractor (Contractor) shall be qualified, experienced, and knowledgeable in earthwork logistics, preparation and processing of ground to receive fill, moisture-conditioning and processing of fill, and compacting fill. The Contractor shall review and accept the plans, geotechnical report(s), and these Specifications prior to commencement of grading. The

Contractor shall be solely responsible for performing the grading in accordance with the plans and specifications.

The Contractor shall prepare and submit to the owner and the Geotechnical Consultant a work plan that indicates the sequence of earthwork grading, the number of "spreads" of work and the estimated quantities of daily earthwork contemplated for the site prior to commencement of grading. The Contractor shall inform the owner and the Geotechnical Consultant of changes in work schedules and updates to the work plan at least 24 hours in advance of such changes so that appropriate observations and tests can be planned and accomplished. The Contractor shall not assume that the Geotechnical Consultant is aware of all grading operations.

The Contractor shall have the sole responsibility to provide adequate equipment and methods to accomplish the earthwork in accordance with the applicable grading codes and agency ordinances, these Specifications, and the recommendations in the approved geotechnical report(s) and grading plan(s). If, in the opinion of the Geotechnical Consultant, unsatisfactory conditions, such as unsuitable soil, improper moisture condition, inadequate compaction, insufficient buttress key size, adverse weather, etc., are resulting in a quality of work less than required in these specifications, the Geotechnical Consultant shall reject the work and may recommend to the owner that construction be stopped until the conditions are rectified.

2.0 Preparation of Areas to be Filled

2.1 Clearing and Grubbing: Vegetation, such as brush, grass, roots, and other deleterious material shall be sufficiently removed and properly disposed of in a method acceptable to the owner, governing agencies, and the Geotechnical Consultant.

The Geotechnical Consultant shall evaluate the extent of these removals depending on specific site conditions. Earth fill material shall not contain more than 1 percent of organic materials (by volume). No fill lift shall contain more than 5 percent of organic matter. Nesting of the organic materials shall not be allowed.

If potentially hazardous materials are encountered, the Contractor shall stop work in the affected area, and a hazardous material specialist shall be informed immediately for proper evaluation and handling of these materials prior to continuing to work in that area.

As presently defined by the State of California, most refined petroleum products (gasoline, diesel fuel, motor oil, grease, coolant, etc.) have chemical constituents that are considered to be hazardous waste. As such, the indiscriminate dumping or spillage of these fluids onto the ground may constitute a misdemeanor, punishable by fines and/or imprisonment, and shall not be allowed.

2.2 Processing: Existing ground that has been declared satisfactory for support of fill by the Geotechnical Consultant shall be scarified to a minimum depth of 6 inches. Existing ground that is not satisfactory shall be overexcavated as specified in the following section. Scarification shall continue until soils are broken down and free of large clay lumps or clods and the working surface is reasonably uniform, flat, and free of uneven features that would inhibit uniform compaction.

2.3 Overexcavation: In addition to removals and overexcavations recommended in the approved geotechnical report(s) and the grading plan, soft, loose, dry, saturated, spongy, organic-rich, highly fractured or otherwise unsuitable ground shall be overexcavated to competent ground as evaluated by the Geotechnical Consultant during grading.

2.4 Benching: Where fills are to be placed on ground with slopes steeper than 5:1 (horizontal to vertical units), the ground shall be stepped or benched. Please see the Standard Details for a graphic illustration. The lowest bench or key shall be a minimum of 15 feet wide and at least 2 feet deep, into competent material as evaluated by the Geotechnical Consultant. Other benches shall be excavated a minimum height of 4 feet into competent material or as otherwise recommended by the Geotechnical Consultant. Fill placed on ground sloping flatter than 5:1 shall also be benched or otherwise overexcavated to provide a flat subgrade for the fill.

2.5 Evaluation/Acceptance of Fill Areas: All areas to receive fill, including removal and processed areas, key bottoms, and benches, shall be observed, mapped, elevations recorded, and/or tested prior to being accepted by the Geotechnical Consultant as suitable to receive fill. The Contractor shall obtain a written acceptance from the Geotechnical Consultant prior to fill placement. A licensed surveyor shall provide the survey control for determining elevations of processed areas, keys, and benches.

3.0 Fill Material

3.1 General: Material to be used as fill shall be essentially free of organic matter and other deleterious substances evaluated and accepted by the Geotechnical Consultant prior to placement. Soils of poor quality, such as those with unacceptable gradation, high expansion potential, or low strength shall be placed in areas acceptable to the Geotechnical Consultant or mixed with other soils to achieve satisfactory fill material.

3.2 Oversize: Oversize material defined as rock, or other irreducible material with a maximum dimension greater than 8 inches, shall not be buried or placed in fill unless location, materials, and placement methods are specifically accepted by the Geotechnical Consultant. Placement operations shall be such that nesting of oversized material does not occur and such that oversize material is completely surrounded by compacted or densified fill. Oversize material shall not be placed within 10 vertical feet of finish grade or within 2 feet of future utilities or underground construction.

3.3 Import: If importing of fill material is required for grading, proposed import material shall meet the requirements of Section 3.1. The potential import source shall be given to the Geotechnical Consultant at least 48 hours (2 working days) before importing begins so that its suitability can be determined and appropriate tests performed.

4.0 Fill Placement and Compaction

4.1 Fill Layers: Approved fill material shall be placed in areas prepared to receive fill (per Section 3.0) in near-horizontal layers not exceeding 8 inches in loose thickness. The Geotechnical Consultant may accept thicker layers if testing indicates the grading procedures can adequately compact the thicker layers. Each layer shall be spread evenly and mixed thoroughly to attain relative uniformity of material and moisture throughout.

4.2 Fill Moisture Conditioning: Fill soils shall be watered, dried back, blended, and/or mixed, as necessary to attain a relatively uniform moisture content at or slightly over optimum. Maximum density and optimum soil moisture content tests shall be performed in accordance with the American Society of Testing and Materials (ASTM Test Method D1557-91).

4.3 Compaction of Fill: After each layer has been moisture-conditioned, mixed, and evenly spread, it shall be uniformly compacted to not less than 90 percent of maximum dry density (ASTM Test Method D1557-91). Compaction equipment shall be adequately sized and be either specifically designed for soil compaction or of proven reliability to efficiently achieve the specified level of compaction with uniformity.

4.4 Compaction of Fill Slopes: In addition to normal compaction procedures specified above, compaction of slopes shall be accomplished by backrolling of slopes with sheepsfoot rollers at increments of 3 to 4 feet in fill elevation, or by other methods producing satisfactory results acceptable to the Geotechnical Consultant. Upon completion of grading, relative compaction of the fill, out to the slope face, shall be at least 90 percent of maximum density per ASTM Test Method D1557-91.

4.5 Compaction Testing: Field tests for moisture content and relative compaction of the fill soils shall be performed by the Geotechnical Consultant. Location and frequency of tests shall be at the Consultant's discretion based on field conditions encountered. Compaction test locations will not necessarily be selected on a random basis. Test locations shall be selected to verify adequacy of compaction levels in areas that are judged to be prone to inadequate compaction (such as close to slope faces and at the fill/bedrock benches).

4.6 Frequency of Compaction Testing: Tests shall be taken at intervals not exceeding 2 feet in vertical rise and/or 1,000 cubic yards of compacted fill soils embankment. In addition, as a guideline, at least one test shall be taken on slope faces for each 5,000 square feet of slope face and/or each 10 feet of vertical height of slope. The Contractor shall assure that fill construction is such that the testing schedule can be accomplished by the Geotechnical Consultant. The Contractor shall stop or slow down the earthwork construction if these minimum standards are not met.

4.7 Compaction Test Locations: The Geotechnical Consultant shall document the approximate elevation and horizontal coordinates of each test location. The Contractor shall coordinate with the project surveyor to assure that sufficient grade stakes are established so that the Geotechnical Consultant can determine the test locations with sufficient accuracy. At a minimum, two grade stakes within a horizontal distance of 100 feet and vertically less than 5 feet apart from potential test locations shall be provided.

5.0 Subdrain Installation

Subdrain systems shall be installed in accordance with the approved geotechnical report(s), the grading plan, and the Standard Details. The Geotechnical Consultant may recommend additional subdrains and/or changes in subdrain extent, location, grade, or material depending on conditions encountered during grading. All subdrains shall be surveyed by a land surveyor/civil engineer for line and grade after installation and prior to burial. Sufficient time should be allowed by the Contractor for these surveys.

6.0 Excavation

Excavations, as well as over-excavation for remedial purposes, shall be evaluated by the Geotechnical Consultant during grading. Remedial removal depths shown on geotechnical plans are estimates only. The actual extent of removal shall be determined by the Geotechnical Consultant based on the field evaluation of exposed conditions during grading. Where fill-over-cut slopes are to be graded, the cut portion of the slope shall be made, evaluated, and accepted by the Geotechnical Consultant prior to placement of materials for construction of the fill portion of the slope, unless otherwise recommended by the Geotechnical Consultant.

7.0 Trench Backfills

7.1 Safety: The Contractor shall follow all OHSA and Cal/OSHA requirements for safety of trench excavations.

7.2 Bedding and Backfill: All bedding and backfill of utility trenches shall be done in accordance with the applicable provisions of Standard Specifications of Public Works Construction. Bedding material shall have a Sand Equivalent greater than 30 (SE>30). The bedding shall be placed to 1 foot over the top of the conduit and densified by jetting. Backfill shall be placed and densified to a minimum of 90 percent of maximum from 1 foot above the top of the conduit to the surface.

The Geotechnical Consultant shall test the trench backfill for relative compaction. At least one test should be made for every 300 feet of trench and 2 feet of fill.

7.3 Lift Thickness: Lift thickness of trench backfill shall not exceed those allowed in the Standard Specifications of Public Works Construction unless the Contractor can demonstrate to the Geotechnical Consultant that the fill lift can be compacted to the minimum relative compaction by his alternative equipment and method.

7.4 Observation and Testing: The jetting of the bedding around the conduits shall be observed by the Geotechnical Consultant.

APPENDIX E

CGS NOTE 48 CHECKLIST
WITH REFERENCES TO THIS REPORT

California Geological Survey - Note 48

Checklist for the Review of Engineering Geology and Seismology Reports for California Public Schools, Hospitals, and Essential Services Buildings
October 2013

Note 48 is used by the California Geological Survey (CGS) to review the geology, seismology, and geologic hazards evaluated in reports that are prepared under California Code of Regulations (CCR), Title 24, California Building Code. CCR Title 24 applies to California Public Schools, Hospitals, Skilled Nursing Facilities, and Essential Services Buildings. The Building Official for public schools is the Division of the State Architect (DSA). Hospitals and Skilled Nursing Facilities in California are under the jurisdiction of the Office of Statewide Health Planning & Development (OSHPD). The California Geological Survey serves under contract with these two state agencies.

Project Name:
OSHPD or DSA File #: N/A
Date Reviewed:
Location:
Reviewed By:
California Certified Engineering Geologist #:

Checklist Item or Topic Within Consulting Report NA = not applicable NR = not addressed by consultant and therefore not reviewed at this time	Section of this Report Addressed in	
Project Location		
1. Site Location Map, Street Address, County Name: Correctly plot site on a 7½-minute USGS quadrangle base-map.	Figure 1, Cover letter	
2. Plot Plan with Exploration Data and Building Footprint: One boring or exploration shaft per 5000 ft^2, with minimum of two for any one building. Exploratory trench locations.	Figure 2; Sec 1.2	
3. Site Coordinates (Latitude & Longitude):	Sec 2.5.2	
Engineering Geology/Site Characterization		
4. Regional Geology and Regional Fault Maps: Concise page-sized illustrations with site plotted.	Figure 3; Figure 5	
5. Geologic Map of Site: Detailed (large-scale) geologic map with proper symbols and geologic legend.	Figure 3	
6. Subsurface Geology: Engineering geologic description summarized from boreholes or trench logs. Summarize ground water conditions.	Sec. 2.3; 2.4	
7. Geologic Cross Sections: Two or more detailed geologic sections with pertinent foundations and site grading.	Figure 4a; Figure 4b	
8. Active Faulting & Coseismic Deformation Across Site: Show proposed structures in relation to Alquist-Priolo Earthquake Fault Zones and/or any potential fault rupture hazard identified from the Safety Element of the local agency (city or county); show location of fault investigation trenches; 50-foot setbacks perpendicular from fault plane and proposed building footprints.	Sec. 2.5.1	
9. Geologic Hazard Zones (Liquefaction & Landslides): (*If applicable*) Show proposed structures in relation to CGS official map showing zones of required investigation for liquefaction and landslide, and/or any pertinent geologic hazard map from the Safety Element of the local agency (city or county).	Sec. 2.6	
10. Geotechnical Testing of Representative Samples: Broad suite of appropriate geotechnical tests.	Appendix A, Appendix B	
11. Consideration of Geology in Geotechnical Engineering Recommendations: Discuss engineering geologic aspects of excavation/grading/fill activities, foundation and support of structures. Include geologic and geotechnical inspections and problems anticipated during grading. Special design and construction provisions for bearing capacity failure and/or footings or foundations founded on weak or expansive soils. Consideration of seismic compression of fills; cut/fill differential settlement.	Sec. 3.2; 3.3	
Seismology & Calculation of Earthquake Ground Motion		
12. Evaluation of Historical Seismicity: Prepare a short description of how historical earthquakes have affected the site.	Sec. 2.5.3; Figure 5	
13. Classify the Geologic Subgrade (Site Class): ASCE 7, Chapter 20.	Sec. 2.5.2	
14. General Procedure Ground Motion Analysis: Follows CBC §1613A.5. Report parameters S_S, S_1, S_{DS} and S_{D1}. Recommended method for establishing map values found at: http://earthquake.usgs.gov/designmaps/us/application.php.	Sec. 2.5.2, 3.5	
15. Seismic Design Category: Report if $S_1 > 0.75$	Sec. 2.5.2	
16. Site-Specific Ground Motion Analysis: (*If applicable*) Required for sites where Seismic Design Category is E or F (CBC §1616A.1.3), and where required by ASCE 7 §11.47. See requirements in CBC §1803A.6.2. CGS suggests a table showing (a) 2%-in-50-years probabilistic spectrum, (b) risk coefficients if using ASCE 7 §21.2.1, Method 1), (c) probabilistic MCE_R, (d) 84% deterministic spectrum, (e) deterministic lower limit, (f) site-specific MCE_R (ASCE 7 §21.2.3), (g) 80% of map-based General Response Spectrum, (h) design response spectrum (ASCE 7 §21.3). Also	Sec. 2.5.2	

Leighton

Checklist Item or Topic Within Consulting Report NA = not applicable NR = not addressed by consultant and therefore not reviewed at this time	Section of this Report Addressed in	
17. Deaggregated Seismic Source Parameters: (*If applicable*) If needed for liquefaction, slope stability analysis or for earthquake record selection, provide controlling magnitude (M) and fault distance (R). Might be either deterministic or deaggregate for modal M and R.	Sec. 2.5.2	
18. Time Histories of Earthquake Ground Motion: (*If applicable*) Identify target spectra (MCE or design); justify selected earthquake records; scale to target to meet ASCE 7 §16.1.3 or §17.3 and CBC §1616A.1.32; and show initial and scaled time histories and response spectra.	NA	

Liquefaction/Seismic Settlement Analysis

19. Geologic Setting for Occurrence of Liquefaction: Perform screening analysis to identify where the following conditions apply: depth of highest historical ground water surface <50 ft. low-density, non-plastic alluvium, typically *SPT* $(N_1)_{60}$<30.	Sec. 2.4; 2.6.1	
20. Seismic Settlement Calculations: (*If applicable*) Evaluate both saturated and unsaturated layers of the entire soil column; based on several detailed geologic cross sections. Provide calculations (no estimates) including all input parameters. Evaluate liquefaction using highest historical ground water elevation. Evaluate using PGA_M (CBC §1803A.5.12), and calculate liquefaction settlement for each layer where FS<1.3 (CGS SP117A).	Sec. 2.6.2	
21. Other Liquefaction Effects (*If applicable*) Bearing capacity failure and/or lateral spread	Sec. 2.6.1	
22. Mitigation Options for Liquefaction: (*If applicable*) Discuss effectiveness of options to mitigate liquefaction effects. Acceptance criteria for ground-improvement schemes.	Sec. 2.6.1	

Slope Stability Analysis

23. Geologic Setting for Occurrence of Landslides: Characterize the potential for landsliding both on and off-site affecting proposed project.	Sec. 2.7	
24. Determination of Static And Dynamic Strength Parameters: (*If applicable*) Conduct appropriate laboratory tests to determine material strength for both static and dynamic conditions.	Sec. 2.7	
25. Determination of Pseudo-Static Coefficient (K_{eq}): (*If applicable*) Recommended procedure available from http://www.conservation.ca.gov/cgs/shzp/webdocs/Documents/sp117.pdf. Recommend using design-level ground motion based on geometric mean and without risk coefficient (ie, $(PGA_M)/1.5$), or discuss with CGS.	Sec. 2.7	
26. Identify Critical Slip Surfaces for Static and Dynamic Analyses: (*If applicable*) Failure surfaces should be modeled to include existing slip surfaces, discontinuities, geologic structure and stratigraphy; include appropriate ground water conditions.	Sec. 2.7	
27. Dynamic Site Conditions: (*If applicable*) Site response analysis and topographic effects should be considered, if appropriate.	Sec. 2.7	
28. Mitigation Options for Landsliding/Other Slope Failure: (*If applicable*) Discuss effectiveness of options to mitigate landsliding/slope failure effects. Acceptance criteria for ground-improvement schemes.	Sec. 2.7	

Other Geologic Hazards or Adverse Site Conditions

These exceptional geologic hazards do not occur statewide; however, they may be pertinent to a particular site. Where these conditions exist relevant information should be communicated to the design team.

29. Expansive Soils	Sec. 2.3.2, 3.4	
30. Corrosive/Reactive Geochemistry of Geologic Subgrade: soluble sulfates and corrosive soils.	Sec. 2.3.3, 2.3.4	
31. Conditional Geologic Assessment: Including but not limited to - **A. Hazardous materials** methane gas, hydrogen-sulfide gas, tar seeps; **B. Volcanic eruption**; **C. Flooding** Riverine (FEMA FIRMs or local zoning for 100-year flood); see CBC §1612A. Also consider alluvial fan and dam inundation. Is the site elevated or protected from hazard; **D. Tsunami and seiche inundation**; **E. Radon-222 gas**; **F. Naturally occurring asbestos** in geologic formations associated with serpentine; refer to CGS SP 124; **G. Hydrocollapse** of alluvial fan soils due to anthropic use of water; **H. Regional subsidence**; **I. Clays and cyclic softening**.	Sec. 2.3.1 (hydrocollapse), 2.6.3 (seiches/tsunamis), 2.8 (flooding/dam inundation), 2.9 (others)	

Report Documentation

32. Geology, Seismology, and Geotechnical References	References	
33. Certified Engineering Geologist: (CBC §1803A.1)	Cover Letter	
34. Registered Geotechnical Engineer: (CBC §1803A.1)	Cover Letter	