Shannon Soto, Ed. D.
Chief Administrative Officer
Compton Unified School District
501 S. Santa Fe Avenue,
Compton, CA 90221

February 20, 2026

Subject: **Engineering Geology and Seismology Review for Centennial High School – School Reconstruction 2606 N. Central Avenue, Compton, CA CGS Application No. 03-CGS7215**

Dear Dr. Soto:

In accordance with your request and transmittal of documents received on November 18, 2025, the California Geological Survey (CGS) has reviewed the engineering geology and seismology aspects of the consulting report prepared for the subject project at Centennial High School in Compton. It is our understanding that this project involves demolition of all existing buildings and construction six new single-story buildings, one new two-story building, and a swimming pool. This review was performed in accordance with Title 24, California Code of Regulations, 2022 California Building Code (CBC) and followed CGS Note 48 guidelines. We reviewed the following report:

> **Geotechnical and Geohazard Investigation, Proposed Whole Site Modernization, Centennial High School, Compton Unified School District, 2606 N. Central Ave, Compton, California:** Fenagh Engineering and Testing, 9070 Center Avenue, Rancho Cucamonga, California 91730; company Report No. J8696-01R, report dated July 30, 2025, 29 pages, 4 appendices.

Based on our review, the consultants provide a thorough and well-documented assessment of engineering geology and seismology issues with respect to the proposed improvements. The principal concerns identified by the consultants are the potential for strong ground shaking and liquefaction related hazards including surface manifestations and lateral spreading. The consultants recommend design spectral acceleration parameters of **S_{DS} = 1.393g** and **S_{D1} = 1.055g**. Their evaluation indicates surface fault rupture and deep-seated slope instability are not design concerns for the project.

In conclusion, ***the engineering geology and seismology issues at this site are adequately assessed in the referenced reports, and no further information is requested***. If you have any further questions about this review letter, please contact the primary reviewer at Justin.LaForge@conservation.ca.gov.

Respectfully submitted,

Justin LaForge
Engineering Geologist
PG 9796, CEG 2831



Concur:

Jennifer Thornburg
Senior Engineering Geologist
PG 5476, CEG 2240



Enclosures:

Note 48 Checklist Review Comments
Keyed to: *Note 48 - Checklist for the Review of Engineering Geology and Seismology Reports for California Public Schools, Hospitals, and Essential Services Buildings*

Copies to:

Jonathan Goodmacher, *Certified Engineering Geologist*, and Emil Rudolph, *Registered Geotechnical Engineer*
Fenagh Engineering & Testing, 9070 Center Avenue, Rancho Cucamonga, CA 91730

Beryl Christine L. Mensonides, *Architect*
DLR Group, Inc., 700 S. Flower Street, 22nd Floor, Los Angeles, CA 90017

Douglas Humphrey, *Regional Manager*
Division of State Architect, 355 South Grand Avenue, Suite 2100, Los Angeles, CA 90071

Note 48 Checklist Review Comments

In the numbered paragraphs below, this review is keyed to the paragraph numbers of California Geological Survey Note 48 (November 2022 edition), *Checklist for the Review of Engineering Geology and Seismology Reports for California Public Schools, Hospitals, and Essential Services Buildings.*

Project Location

1. Site Location Map, Street Address, County Name: Adequately addressed.
2. Plot Plan with Exploration Data and Building Footprint: Adequately addressed.
3. Site Coordinates: Adequately addressed. Latitude and Longitude provided in report: 33.9146°N, 118.2526°W

Engineering Geology/Site Characterization

4. Regional Geology and Regional Fault Maps: Adequately addressed.
5. Geologic Map of Site: Not addressed by the consultants, and therefore not reviewed.
6. Geologic Hazard Zones: Adequately addressed.
7. Subsurface Geology: Adequately addressed. The consultants report the site is underlain by undocumented fill overlying Alluvium. The consultants note that fill extends to depths ranging from 2 to 4 feet below ground surface(bgs). The consultants utilized information from 16 exploratory borings drilled to a maximum depth of 51½ feet and 21 cone-penetration tests (CPTs) advanced to depths of up to 75 feet. The consultants report that static groundwater was not encountered during their subsurface exploration, but perched groundwater was encountered between 43 and 47 feet bgs in five borings.
8. Geologic Cross Sections: Adequately addressed.
9. Geotechnical Testing of Representative Samples: Adequately addressed.
10. Consideration of Geology in Geotechnical Engineering Recommendations: Adequately addressed. Based on the Site Data Report submitted, **the project will be utilizing shallow foundations with tie beams bearing on a compacted soil mat with two layers of geogrid**. The consultants have provided recommendations for the proposed earthwork and foundations selected which appear to address the geologic conditions at the site. However, the CGS reviewers are not geotechnical engineers, and cannot review the foundation design recommendations.
11. Conditional Geotechnical Topics: Not applicable.

Seismology & Calculation of Earthquake Ground Motion

12. Evaluation of Historic Seismicity: Adequately addressed. The consultants provide a summary of historical seismicity in the region.
13. Classify the Geologic Subgrade (Site Class): Adequately addressed. The consultants classify the site soil profile as Site Class D, Stiff Soil, based on shear wave velocity measurements from CPT soundings and a refraction microtremor (ReMi) seismic survey.
14. General Procedure Ground Motion Analysis: Adequately addressed. The consultants report the following parameters derived from a map-based analysis:
    S_S = 1.783 and S_1 = 0.634

15. Site-Specific Ground Motion Hazard Analysis: Adequately addressed. The consultants' deterministic and probabilistic MCE spectra appear reasonable based on comparison with results from the National Seismic Hazard Model (from Petersen and others, 2014). The consultants report their site-specific seismic design parameters are: **S_{DS} = 1.393g** and **S_{D1} = 1.055g**. Alternatively, S_a values presented in Table 5-6b may be used with the equivalent lateral force procedure, per ASCE 7, Section 21.4. The site-specific ground motion analysis presented appears to be reasonable and in accordance with ASCE 7-16.
16. Deaggregated Seismic Source Parameters: Adequately addressed.
17. Time Histories of Earthquake Ground Motion: Not applicable.

Fault Rupture Hazard Evaluation

18. Active Faulting & Coseismic Deformation Across Site: Adequately addressed.

Liquefaction/Seismic Settlement Analysis

19. Geologic Setting for Occurrence of Liquefaction: Adequately addressed. The consultants performed a liquefaction hazard analysis using data obtained from CPT soundings and exploratory borings.
20. Seismic Settlement Calculations: Adequately addressed. The consultants' liquefaction analysis utilizes a historic high ground water depth of 10 feet below ground surface, a ground acceleration value of 0.83 g, and a modal magnitude of 7.3. The consultants' input parameters appear to be reasonable. The consultants' liquefaction analysis indicates that the soils underlying the site would be susceptible to liquefaction during a design based seismic event. The consultants report that based on their analysis, they anticipate up to **2.2 inches of total seismic settlement and approximately 1-inch of differential settlement over a span of 30 feet**. The data presented appear to support this conclusion.
21. Other Liquefaction Effects: Adequately addressed. The consultants report the **liquefaction analysis indicates a likelihood of surface manifestations** in discrete locations due to the existence of liquefiable layers near ground surface. The consultants also evaluated liquefaction-induced lateral spread potential for the project site. They note the project site and surrounding area are relatively flat lying with very moderate topography, but a concrete lined waterway designated as "Compton Creek" is located along the eastern perimeter of the site. The consultants modelled an open-face depth of 15 feet at a proximity of 800 feet for the lateral spread evaluation in the liquefaction analysis. The consultants report up to **6.6 inches of lateral spread displacement** would likely occur during a maximum considered seismic event.
22. Mitigation Options for Liquefaction/Seismic Settlement: Adequately addressed. The consultants recommend that structures for the proposed development **should be designed to mitigate the potential effects of surface manifestation and shear failure (of soils) which could occur due to liquefaction**. The consultants also report that buildings in proximity to CPT soundings which exceed 3 inches of lateral spread displacement should include enhanced foundation design (i.e. tie beams or mat foundation).

Slope Stability Analysis

23. Geologic Setting for Occurrence of Landslides: Adequately addressed. The consultants report that no significant slopes are present or planned near the proposed development and as such, slope stability evaluation is not warranted for this project.
24. Determination of Static and Dynamic Strength Parameters: Not applicable.
25. Determination of Pseudo-Static Coefficient (K_{eq}): Not applicable.
26. Identify Critical Slip Surfaces for Static and Dynamic Analyses: Not applicable.
27. Dynamic Site Conditions: Not applicable.
28. Mitigation Options for Landsliding/Other Slope Failure: Not applicable.

Other Geologic Hazards or Adverse Site Conditions

29. Expansive Soils: Adequately addressed. The consultants report that expansion index testing indicates low to moderate expansion potential for samples obtained during the site exploration.
30. Corrosive/Reactive Geochemistry of the Geologic Subgrade: Adequately addressed. The consultants report that based on laboratory testing, the on-site soils would not be classified as corrosive. The consultants note that if corrosion sensitive improvements are planned, they recommend that a corrosion engineer be retained to evaluate corrosion potential at the project site and incorporate the necessary precautions to avoid premature corrosion of buried metal pipes and utilities in direct contact with site soil.
31. Conditional Geologic Assessment: Selected geologic hazards addressed by the consultant are listed below:
    A. Hazardous Materials: Adequately addressed. The consultants included a review of the Department of Conservation Oil and Gas Well Finder Map (DOGGR, Well Finder, 2025) and note that wells are shown in the immediate area of the school site. The consultants recommend a study to evaluate the potential for the site to be impacted by methane. CGS notes that **if any oil and gas wells are discovered during construction, the developer should contact CalGEM's Southern District Office** at (562) 637-4400 or CalGEMSouthern@conservation.ca.gov.

Report Documentation

32. Geology, Seismology, and Geotechnical References: Adequately addressed.
33. Certified Engineering Geologist: Adequately addressed.
    Jonathan Goodmacher, Certified Engineering Geologist #2136
34. Registered Geotechnical Engineer: Adequately addressed.
    Emil Rudolph, Registered Geotechnical Engineer #2767

FENAGH
ENGINEERING AND TESTING

GEOTECHNICAL AND GEOHAZARD INVESTIGATION

JUNE 2, 2025



PROJECT
WHOLE SITE MODERNIZATION
CENTENNIAL HIGH SCHOOL
2606 N. CENTRAL AVENUE
COMPTON, CALIFORNIA 90222

PREPARED FOR
COMPTON UNIFIED SCHOOL DISTRICT
501 S. SANTA FE AVENUE
COMPTON, CALIFORNIA 90221-3814

REPORT NO.:
J8696-01

9070 CENTER AVENUE, RANCHO CUCAMONGA, CA 91730 – (909) 587-6374
WWW.FENAGHENGINEERING.COM

June 2, 2025

Nathaniel Holt
Compton Unified School District
501 S. Santa Fe Avenue
Compton, California 90221-3814

Subject: **Geotechnical and Geohazard Investigation**
Proposed Whole Site Modernization
Centennial High School, Compton Unified School District
2606 N. Central Ave
Compton, California

Dear Mr. Holt,

Fenagh Engineering and Testing (Fenagh) is pleased to present the following Geotechnical and Geohazard Investigation for the proposed development located in the Centennial High School Campus at 2606 N. Central Avenue, Compton, California. The purpose of this investigation was to evaluate the subsurface conditions at the site and develop geotechnical engineering conclusions and recommendations for project design and construction as well as provide an assessment of potential geohazards within the project site and surrounding area.

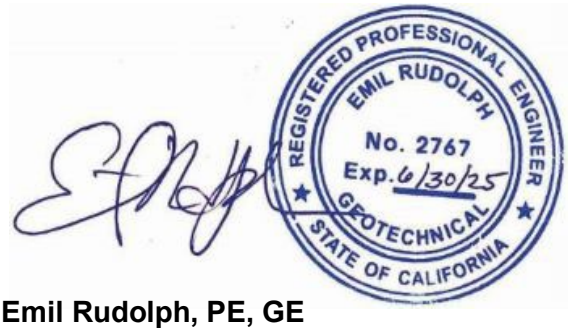
Based on site exploration and analysis, we conclude that the proposed development is feasible for design and construction from a geotechnical engineering perspective. Due to the presence of undocumented fill and the potential for strong ground shaking, design and construction details related to the geotechnical engineering aspects will be needed to accommodate such effects. A discussion of the subsurface conditions, conclusions, and recommendations for geotechnical and geohazard-related aspects of design and construction for the planned development are presented in the following report.

We appreciate the opportunity to be of service to you over the course of this project. If you have any questions regarding the contents of this report, or if we could provide further assistance, please contact the undersigned.

Sincerely,
FENAGH INC., dba FENAGH ENGINEERING & TESTING



Scott T. Prince, PE
Senior Engineer



Emil Rudolph, PE, GE
Principal Engineer

ME:SP:ER:JG:TL:
cc: Nathaniel Holt, nholt@compton.k12.ca.us

Table Of Contents

1 INTRODUCTION 1
1.1 GENERAL 1
1.2 PROJECT DESCRIPTION 1
1.3 SCOPE OF SERVICES 2
1.4 SITE DESCRIPTION 2
2 FIELD EXPLORATIONS AND LABORATORY TESTING 3
2.1 FIELD EXPLORATION 3
2.2 LABORATORY TEST RESULTS 4
3 FINDINGS 5
3.1 REGIONAL GEOLOGIC SETTING 5
3.2 SITE GEOLOGY 5
3.3 SUBSURFACE CONDITIONS 5
3.3.1 Undocumented Fill 5
3.3.2 Alluvium 5
3.4 GROUNDWATER 6
4 GEOLOGIC HAZARDS 6
5 CONCLUSIONS AND RECOMMENDATIONS 6
5.1 GENERAL 6
5.2 EARTHWORK 7
5.2.1 Site Preparation 7
5.2.2 Temporary Excavations 8
5.2.3 Remedial Grading 8
5.2.4 Engineered Fill Material 8
5.2.5 Compaction Criteria - Engineered Fill 9
5.2.6 Construction Considerations 9
5.2.7 Wet Weather Construction and/or Unstable Soil Conditions 9
5.3 FOUNDATION RECOMMENDATIONS & DESIGN PARAMETERS 10
5.3.1 Allowable Bearing Capacity - Conventional Foundations 11
5.3.2 Allowable Bearing Capacity - Mat Foundations 11
5.3.3 Estimated Settlement of Conventional and Mat Foundations 12
5.3.4 Lateral Resistance of Conventional and Mat Foundations 12
5.3.5 Tie Beams for Conventional Foundation Design 12
5.3.6 Construction Considerations – Conventional and Mat Foundations 13
5.3.7 Foundation Surcharge of Undocumented Fill 13
5.3.8 Foundation Surcharge of Utilities 13
5.3.9 Controlled Low Strength Material (CLSM) 9
5.3.10 Slot Cut Method for Excavations 10
5.4 DRILLED PIER FOUNDATIONS 13
5.4.1 Design Parameters for Drilled Pier Foundations 13
5.4.2 Group Reduction Factors for Lateral Resistance 13
5.4.3 Construction Considerations for Drilled Pier Foundations 14
5.5 RETAINING WALLS 15
5.5.1 Active and At-Rest Pressure 15
5.5.2 Seismic Design for Retaining Walls 15
5.5.3 Retaining Wall Drainage 16
5.5.4 Wall Backfill 16
5.6 SPORTS FIELD AND RUNNING TRACK 16
5.6.1 Subgrade Preparation 16
5.6.2 Impermeable Layer 16
5.6.3 Drainage Considerations 17

5.6.4 Aggregate Base Layer....17
5.6.5 Running Track – Pavement Section Recommendations....17
5.7 SEISMIC DESIGN PARAMETERS....17
5.7.1 Seismic Parameters - Mapped Values....17
5.7.2 Site Specific Ground Motions....19
5.8 CORROSIVITY....22
5.9 CONCRETE....22
5.10 INTERIOR CONCRETE SLAB-ON-GRADE....22
5.10.1 Vapor Barrier for Foundations or Concrete Slab-On-Grade....23
5.11 POOL SHELL DESIGN RECOMMENDATIONS....23
5.11.1 Introduction....23
5.11.2 Lateral Earth Pressures & Hydrostatic Uplift for Pool Shell....23
5.11.3 Grading for Support of Pool Shell....23
5.12 EXTERIOR FLATWORK....24
5.13 DRAINAGE....24
5.14 BURIED SHALLOW EXISTING UTILITIES....24
5.15 FLEXIBLE AND RIGID PAVEMENTS....24
5.15.1 Pavement Section Design Parameters....24
5.15.2 Construction Considerations for Vehicular and Loaded Pavements....25
6 ADDITIONAL SERVICES....26
6.1 PLAN AND SPECIFICATIONS REVIEW....26
6.2 EARTHWORK OBSERVATION, SPECIAL INSP, & MATER. TESTING....26
7 LIMITATIONS....26
8 REFERENCES....27
4.1 SEISMIC HAZARDS....1
4.1.1 Faulting and Ground Rupture....1
4.1.2 Liquefaction....1
4.1.3 Surface Manifestation and Shear Failure....4
4.1.3 Lateral Spreading....4
4.1.4 Dynamic Dry Settlement....5
4.1.5 Tsunamis and Seiches....5
4.1.6 Historic Seismicity....5
4.2 FLOODING AND DAM INUNDATION....6
4.3 SLOPE STABILITY AND LANDSLIDING....6
4.4 SUBSIDENCE DUE TO FLUID WITHDRAWAL....6
4.5 UNDOCUMENTED FILL....6
4.6 EXPANSIVE SOILS....6

Maps and Plates

Plate 1	Vicinity Map
Plate 2	Site Map
Plate 3	Exploration Map
Plate 3A	Cross Section A-A'
Plate 3B	Cross Section B-B'
Plate 4	Regional Geology Map
Plate 5	Local Geology Map
Plate 6	Historically Highest Groundwater
Plate 7	Local Fault Map
Plate 8	Seismic Hazard Zone Map
Plate 9	Significant Seismic Events Map
Plate 10	Flood Insurance Rate Map
Plate 11	Oil and Gas Location Map

Appendix A Exploration Data

A-1	Key to Logs
A-2	Boring Logs B-1 through B-16
A-3	CPT Soundings and Shear Wave Velocity Measurement by CPT
A-4	Shear Wave Velocity Measurement by ReMi Survey

Appendix B Laboratory Test Data

B-1	Direct Shear
B-2	Consolidation
B-3	Expansion Index
B-4	Atterberg Limits
B-5	Materials Finer than No. 200 Sieve
B-6	Dry Density and Water Content
B-7	Corrosion Testing

Appendix C Liquefaction Analysis Results

C-1	Liquefaction Settlement Analysis (B-1 through B-4, B-7, B-8, B-10, B-11, B-12)
C-2	Liquefaction Settlement and Lateral Spread Analysis (CPT-1 through CPT-21)

Appendix D Geohazards Assessment Report

1 INTRODUCTION

1.1 GENERAL

The following Geotechnical and Geohazard Report is presented as follows for the proposed development located at 2606 N Central Avenue in Compton, California. The purpose of this investigation was to explore and evaluate the subsurface conditions at the site and develop geotechnical engineering conclusions and recommendations for project design and construction along with providing an assessment of potential engineering, geologic and seismic hazards within the project site and surrounding area.

1.2 PROJECT DESCRIPTION

Based on the review of the Compton Unified School District for Centennial High School proposal and scope of services contract, we understand that Compton Unified School plans to renovate and modernize the Centennial High School campus. The proposed development will consist of the demolition of existing school buildings and replacement with several single-story to 2-story classroom buildings including additional miscellaneous structures. The proposed development also includes new athletic fields (play fields, basketball and tennis courts, a new pool) and is also assumed to include site improvements which may consist of stormwater infiltration system, underground utilities, landscaping, as well as miscellaneous flatwork and hardscape features. No below grade basements are anticipated for the proposed development scope.

The project site in relation to local developments and cityscape features is shown on the attached Vicinity Map, Plate 1. Details and features of the existing and planned development are indicated on the attached Site and Exploration Maps, Plates 2 and 3, respectively.

The approximate footprint areas of the proposed school buildings and other miscellaneous structures are provided as follows:

- PAC Building (37,400 sq. ft.)
- Administration Building (22,600 sq. ft.)
- Academic Building (43,500 sq. ft.)
- Dining and CTE Building (25,500 sq. ft.)
- Gym Building (31,300 sq. ft.)
- Innovation Center (4,000 sq. ft.)
- Pool Building (2,900 sq. ft)
- Field Houses (2,200 sq. ft)
- Car Booth (1,000 sq. ft)

Structural loading calculations were not available at the time this report was finalized. The following load conditions are estimated as follows for single-story and 2-story structures:

Single-Story School Buildings -
- o 2 to 3 kips per lineal foot wall loads for dead plus live load conditions
- o 150-kip column loads for dead plus live load conditions

2-Story School Buildings -
- o 3 to 6 kips per lineal foot wall loads for dead plus live load conditions
- o 300-kip column loads for dead plus live load conditions

9070 Center Avenue, Rancho Cucamonga, CA 91730 – (909) 587-6374
California | Seattle | Arizona | Texas | New England | New York | Miami

The load conditions should be verified by the structural engineer. We should be informed if the load conditions increase significantly from that assumed. If the load conditions increase significantly from that assumed, additional analysis may be recommended.

1.3 SCOPE OF SERVICES

The scope of services is outlined in the proposal dated February 27, 2025. The scope of services generally includes the following:

- Review of available background materials, including geologic maps, aerial photographs, topographic maps, and hazard maps;
- Site reconnaissance to observe and evaluate site features including geologic conditions;
- Coordination with Underground Service Alert (USA) and a private utility locator to locate underground utility conflicts in the vicinity of subsurface explorations;
- Subsurface exploration consisting of a total of 37 borings and 30 test pits: 16 borings advanced using hollow-stem auger drilling methodologies to depths of up to 51-1/2 feet below ground surface, and 21 borings advanced using cone-penetration (CPT) methodologies to depths of up to 75 feet. The test pits were excavated by hand tools to depths of up to 10 feet below ground surface. Excavations were logged to characterize subsurface conditions and samples collected for laboratory testing;
- Laboratory testing on selected samples to evaluate the in-situ moisture content, dry density, grain size distribution, Atterberg limits, expansion potential, R-value, soil corrosion potential, consolidation and shear strength parameters;
- Review of compliance with the California Geologic Survey – Note 48, Check List for the Review of Engineering Geology and Seismology Reports for California Public Schools, Hospitals and Essential Services Buildings;
- Engineering and Geologic analysis, compilation of field and laboratory data collected, including findings from background research;
- Preparation of this report presenting findings, conclusions, recommendations and design parameters related to the geologic hazards and geotechnical conditions observed at the project site including mitigation of geologic and seismic hazards as necessary.

1.4 SITE DESCRIPTION

The Centennial High School Campus is located at 2606 N Central Avenue in Compton, California. The school property is bound by W. El Segundo Blvd to the north, N. Central Ave to the west, W. 131st St to the south, and N. Parmalee Ave to the east. The school campus is located on a property identified by Los Angeles County Assessor's ID Number 6145-001-900, with a land area of approximately 33.12 acres. According to available online aerial photographs (NETRonline: Historic Aerials) the main buildings of the Centennial High School Campus were built prior to 1952. The project site ranges in elevation from approximately 93 feet above MSL in the southwest to approximately 81 feet in the northeast.

The coordinates near the center of the project site and area of planned improvements as referenced from Google Earth are:

34.914732 N Latitude
-118.252048 W Longitude

9070 Center Avenue, Rancho Cucamonga, CA 91730 – (909) 587-6374
California | Seattle | Arizona | Texas | New England | New York | Miami

2 FIELD EXPLORATIONS AND LABORATORY TESTING

2.1 FIELD EXPLORATION

Prior to initiating onsite field exploration, the planned boring locations were checked for underground utilities by contacting Underground Service Alert (USA) and a private utility locator which located underground utilities within the vicinity of the proposed excavations.

The boring exploration program consisted of advancing a total of 37 borings identified as Borings B-1 through B-16 and CPT-1 to CPT-21 to depths ranging from approximately 10 feet to 75 feet below the ground surface (bgs). In addition to these borings, explorations also included 30 hand-excavated test pits to depths ranging from approximately 3 to 10 bgs.

Borings B-1 through B-16 were drilled using a truck-mounted CME-75 drill rig equipped with 8-inch diameter hollow-stem augers with a carbide tooth and blade drill bit. CPTs were advanced using a truck-mounted CPT (Cone Penetrometer Testing) rig. Table 2-1 below summarizes the boring, CPT, and test pit depths and approximate locations. The boring logs indicating subsurface geologic conditions observed during site exploration are presented in Appendix A.

Table 2-1: Exploration Depths and Locations

Building / Location	Exploration ID	Depth of Exploration (ft)	Approximate Latitude[1]	Approximate Longitude[1]
PAC BLDG	B-1	50	33.915814°	-118.253221°
	B-2	50	33.915973°	-118.253873°
	CPT-1	50	33.915990°	-118.253431°
	CPT-2[2]	20	33.915503°	-118.253649°
	CPT-4	75	33.915329°	-118.253444°
	CPT-5	50	33.915403°	-118.252907°
	TP-1	10	33.915860°	-118.253605°
	TP-2	10	33.915669°	-118.253604°
ADMIN BLDG	B-3	50	33.914962°	-118.253629°
	CPT-2[2]	20	33.915503°	-118.253649°
	CPT-3	50	33.915309°	-118.253649°
	CPT-6	50	33.914969°	-118.253401°
	TP-3	10	33.915531°	-118.253947°
ACADEMIC BLDG	B-7	50	33.914296°	-118.253417°
	B-12	50	33.913941°	-118.254201°
	CPT-11	75	33.914541°	-118.253323°
	CPT-12	12	33.914668°	-118.253616°
	CPT-16	75	33.913787°	-118.254203°
	TP-7	10	33.914404°	-118.253800°
	TP-8	10	33.914291°	-118.253640°
	TP-9	10	33.914100°	-118.253629°
	TP-10	10	33.913902°	-118.253771°
GYM BLDG	B-4	50	33.915106°	-118.252598°
	B-5	20	33.915028°	-118.252217°
	CPT-7	50	33.914969°	-118.252732°
	CPT-9	75	33.914498°	-118.252225°
	CPT-10	50	33.914528°	-118.252950°
	TP-17	10	33.914648°	-118.252225°
	TP-29	10	33.914782°	-118.252229°

9070 Center Avenue, Rancho Cucamonga, CA 91730 – (909) 587-6374
California | Seattle | Arizona | Texas | New England | New York | Miami

DINING BLDG	B-10	50	33.913441°	-118.253144°
	CPT-13[3]	50	33.914311°	-118.253118°
	CPT-14	50	33.913896°	-118.253250°
	CPT-15	75	33.913389°	-118.252816°
	TP-13	10	33.914007°	-118.253131°
	TP-30	10	33.913716°	-118.253062°
POOL BLDG	B-6	30	33.914457°	-118.251884°
	CPT-8	75	33.914759°	-118.251914°
INNOVATION CENTER	B-11	50	33.913275°	-118.253535°
	CPT-17	50	33.913530°	-118.253869°
WEST BLEACHERS	B-8	50	33.913677°	-118.251933°
	CPT-18	20	33.914097°	-118.251926°
EAST BLEACHERS	B-14	20	33.914458°	-118.250710°
	TP-26	10	33.913346°	-118.250698°
NORTH FIELD HOUSE	CPT-19	50	33.914608°	-118.250690°
	TP-25	10	33.914702°	-118.250771°
SOUTH FIELD HOUSE	B-13	20	33.913300°	-118.251759°
	TP-27	5	33.913193°	-118.251717°
CAR BOOTH	B-9	30	33.913399°	-118.252583°
	TP-15	10	33.913479°	-118.252585°
NE PLAY FIELD	B-15	30	33.915011°	-118.250514°
	B-16	16	33.915224°	-118.249792°
	CPT-20	50	33.915443°	-118.250920°
	CPT-21	20	33.915949°	-118.250383°
	TP-23	5	33.915046°	-118.250930°
	TP-24	10	33.915794°	-118.250047°
S PARKING	TP-12	5	33.913141°	-118.253555°
	TP-28	5	33.912986°	-118.252328°
W PARKING	TP-4	5	33.915329°	-118.254216°
	TP-5	5	33.914866°	-118.254032°
E OF ADMIN BLDG	TP-6	5	33.915055°	-118.253266°
SW FLATWORK	TP-11	5	33.913445°	-118.254198°
SOUTH PRACTICE FIELD	TP-14	5	33.914049°	-118.252584°
	TP-16	5	33.914209°	-118.251983°
BASKETBALL COURTS	TP-18	5	33.915322°	-118.252574°
N PARKING	TP-19	5	33.915616°	-118.252670°
TENNIS COURTS	TP-20	5	33.915769°	-118.252243°
	TP-21	5	33.916014°	-118.251613°
N PLAYFIELD	TP-22	5	33.915309°	-118.251421°

Notes:

1. Latitude and longitude were estimated from Google Maps.
2. CPT-2 was used to satisfy Note 48 requirements for both the PAC and Admin buildings.
3. CPT-13 hit early refusal due to complex underground utilities. The exploration team was unable to reposition.

2.2 LABORATORY TEST RESULTS

Laboratory testing was performed to quantify and evaluate the geotechnical characteristics of the soil samples obtained at the project site. The following laboratory tests were performed on selected samples from the exploratory borings:

- Moisture Content (ASTM D2216)
- In-Place Density and Moisture (ASTM D7263)

9070 Center Avenue, Rancho Cucamonga, CA 91730 – (909) 587-6374
California | Seattle | Arizona | Texas | New England | New York | Miami

- Particle Size Analysis and Amount of Material Finer than 75-mm (ASTM D1140 and D6913)
- Expansion Index of Soils (ASTM D4829)
- Direct Shear Test of Soils under Consolidated Drained Conditions (ASTM D3080)
- Consolidation Properties of Soils – Incremental Loading (ASTM D2435)
- Liquid Limit, Plastic Limit, and Plasticity Index of Soils (ASTM D4318)
- pH and Electrical Resistivity (ASTM G51 and ASTM G187)
- Sulfate and Chloride Content (ASTM D4327)

The general results of the tests performed above, and characterization of site soils are discussed in the Subsurface Conditions section of this report. Laboratory test results are provided in Appendix B.

3 FINDINGS

3.1 REGIONAL GEOLOGIC SETTING

The project site is located in Los Angeles physiographic basin, which is part of the Peninsular Range geomorphic province of California. The Peninsular Ranges are bounded by the Transverse Ranges (San Gabriel and San Bernardino Mountains) to the north and the Colorado Desert Geomorphic Province to the east. The province extends westward into the Pacific Ocean and southward to the tip of Baja California. This is an area of complex geology as the relatively northwestward-moving Peninsular Range Province collides with Transverse Range Province (San Gabriel Mountains) to the north. Several active or potentially active faults have been mapped in the region and are believed to accommodate compression associated with this collision. Regional geology for the project site is indicated on the attached Regional Geologic Map. (Plate 4).

3.2 SITE GEOLOGY

The Geologic Map of the Long Beach 30’ x 60’ Quadrangle indicates the site is underlain by younger Holocene undivided alluvial fans and valley deposits, unconsolidated silts (Qaf). Geologic materials obtained from the onsite subsurface investigation by this firm were consistent with research findings. Alluvial soils were encountered to a maximum explored depth of 75 feet beneath existing ground surface. Regional and local geology for the project site is indicated on Plates 4 and 5, respectively. Details of the subsurface conditions encountered during onsite exploration are provided in the following sections.

3.3 SUBSURFACE CONDITIONS

All borings, CPT soundings, and test pits were advanced between April 21 and April 25 in and around the footprints of proposed buildings, existing structures, and flatwork as indicated by the attached Exploration Map Plate 3.

3.3.1 Undocumented Fill

Near-surface layers observed during onsite exploration consisted of fill. Fill depths were observed to extend to depths ranging from 2 feet to 4 feet below ground surface. The fill consists primarily of lean Clay and Clayey Sand, which is dark brown in color, moist, and medium dense to dense.

3.3.2 Alluvium

Alluvium underlying fill consisted primarily of lean Clay (CL) and Silt (ML and MH) to depths of approximately 20 feet then transitions to Poorly Graded Sand with gravel (SP) interlayered with

9070 Center Avenue, Rancho Cucamonga, CA 91730 – (909) 587-6374
California | Seattle | Arizona | Texas | New England | New York | Miami

Silty Sand (SM) and Lean Clay (CL) to an approximate depth of 51-1/2 feet. The alluvium was observed to be predominantly brown in color, moist, and fine to coarse grained with occasional gravel. The blowcount values indicate loose to very dense soil conditions which were verified by laboratory testing. Locations of drilled borings, CPT soundings, and test pits are indicated on the Exploration Map, Plate 3, and Cross Sections Plates 3A and 3B. Graphical presentations of the boring logs are provided in Appendix A.

3.4 GROUNDWATER

Perched groundwater was encountered during site exploration in the following boring excavations: B-1 at 45 feet, B-3 at 43 feet, B-8 at 45 feet, B-10 at 47 feet, and B-11 at 47 feet bgs. Static groundwater was not encountered to a maximum explored depth of 51-1/2 feet bgs. The historical high groundwater level was established by review of California Survey Seismic Hazard Evaluation Reports 027 and 034 (Plate 1.2) entitled “Historically Highest Ground Water Contours”. Review of these plates indicates that the historically highest groundwater level for the project site is on the order of 10 feet bgs. A copy of the Historically Highest Groundwater Map (Plate 6) is appended.

Variations in groundwater levels may occur due to variations in ground surface topography, subsurface geologic conditions and structure, seasonal rainfall, local irrigation practices, new construction, and/or other factors.

4 GEOLOGIC HAZARDS

See Appendix D for a comprehensive geologic hazards assessment for the project site.

5 CONCLUSIONS AND RECOMMENDATIONS

5.1 GENERAL

Based on the results of onsite explorations including findings and analysis, the proposed Centennial High School redevelopment project is considered feasible for design and construction from a geotechnical engineering perspective provided the recommendations presented herein are implemented during construction.

Subsurface exploration of the project site indicates the near-surface soils are composed of undocumented fill consisting of Silty to Clayey Sand (SM or SC) and Lean Clay (CL) up to an observed depth of 4 feet bgs. The fill is underlain by alluvial soils consisting of Silty Sand (SM) to Sandy Silt (ML), Silty Lean Clay (CL) and with occasional layers of Poorly Graded Sand (SP) to an explored depth of up 51-1/2 feet bgs for hollow stem auger excavations. CPT soundings indicated similar geologic materials to a maximum explored sounding depth of 75 feet bgs.

Onsite liquefaction analysis indicates that the soils underlying the site would be susceptible to liquefaction and seismic settlement ranging from 1 to 2 inches during a design based seismic event. Seismic settlement calculations performed by Fenagh are provided in Appendix C, and further discussion of the geologic hazard is provided in Appendix D.

Based on site exploration, laboratory testing, and engineering analysis, two foundation options are considered feasible for support of the proposed school buildings:

- Conventional foundations are suitable for support of the newly proposed school buildings provided that undocumented fill and near-surface Alluvium are removed and replaced with

9070 Center Avenue, Rancho Cucamonga, CA 91730 – (909) 587-6374
California | Seattle | Arizona | Texas | New England | New York | Miami

compacted engineered fill in accordance with the recommendations provided herein. The engineered fill pad should be geogrid-reinforced to mitigate potential surface manifestation of liquefaction features. Tie beams may be utilized as a foundation element to secure isolated foundations in the x and y direction for enhanced stability and mitigation of differential settlement and lateral spread displacement.

- Alternatively, the proposed school buildings may be supported by a mat foundation provided that undocumented fill and near surface alluvium are removed and replaced with compacted engineered fill in accordance with recommendations provided.

Complete removal of undocumented fill soils (if encountered) beneath outdoor flatwork such as walkways or hardscape features is not considered necessary. However, due to the low to moderate expansive potential of the underlying site soils and rigid nature of concrete, some mitigation measures such as moisture conditioning of the subgrade are recommended.

5.2 EARTHWORK

5.2.1 Site Preparation

Prior to site grading, existing flatwork, pavements, or existing structures and associated foundations requiring demolition should be removed from the construction limits. Demolition debris may be crushed onsite to use in the ongoing grading operations subject to the following limitations (the environmental ramifications of this option, if any, should be considered by the team). The demolition debris should be limited to concrete and other non-deleterious materials. Deleterious materials should be removed including, but not limited to, paper, garbage, ceramic materials, and wood. For structural fill applications, materials should be crushed to 2 inches in maximum dimension or smaller. The crushed materials should be thoroughly blended and mixed with onsite soils prior to placement as compacted fill and the amount of blended crushed material should not exceed 20 percent by volume of placed fill. The blended and mixed materials should be tested by this office prior to placement to ensure the fill is suitable for compaction purposes. In addition, the blended and mixed materials should be tested by this firm (Fenagh) during placement and grading to ensure that the engineered fill has been compacted in a suitable manner.

The site should also be stripped of vegetation, organics, debris, and topsoil. Where roots are less than 1/4-inch diameter, they may remain in place provided they do not comprise more than 3 percent by weight of organics in the surrounding native soil. Where trees are removed, the tree root ball should also be removed and backfilled with compacted engineered fill.

After site stripping and recommended over-excavation of undocumented fills to the target depth, the exposed subgrade to receive engineered fill or to be used for future support of site developments (i.e., foundations or slabs-on-grade), should be scarified to a depth of at least 8 inches. The exposed alluvial subgrade should be moisture conditioned to slightly above optimum moisture content and then compacted to no less than 90 percent relative compaction based on the ASTM D1557 test method, latest edition.

Excavations should be observed by the project Geotechnical Engineer or their designated representative to verify the fill has been removed and the subgrade meets the general recommendations provided in this report.

9070 Center Avenue, Rancho Cucamonga, CA 91730 – (909) 587-6374
California | Seattle | Arizona | Texas | New England | New York | Miami

5.2.2 Temporary Excavations

Excavations for foundations, placement of fill, and miscellaneous hardscape features including pool shell construction can be performed with typical conventional excavating machines generally in use for such projects. During construction, temporary vertical excavations should not exceed 5 feet in height. Temporary cuts deeper/higher than 5 feet should be sloped back at maximum gradient of 1 horizontal to 1 vertical (1:1), or stabilized by shoring in accordance with OSHA regulations (Note: Soils within 12 feet of the ground surface exhibit OSHA Type B). The contractor is responsible for providing suitable shoring systems, if required, based on the soils encountered. Temporary excavations should not exceed a depth deeper than 12 feet bgs and proceed under observation by a representative of this firm. Deeper excavations beyond 20 feet require a shoring system designed by an experienced and licensed civil engineer.

5.2.3 Remedial Grading

Undocumented fill and near surface alluvium should be removed, evaluated and tested by this firm, and recompacted in areas of planned development which may require compacted fill. The presence of undocumented fill would likely cause non-uniform bearing support which could result in intolerable settlement for foundations or building slabs placed thereon.

The building pad removals should extend a minimum of 5 feet below the existing grade and a minimum of 3 feet below the bottom surface of foundations, whichever is greater for conventional foundations and 4 feet below existing grade and a minimum of 2 feet below bottom surface of foundations for mat foundation design. In addition, the recompacted fill pad should be over-excavated a minimum of 5 feet horizontally beyond the outer edge of the foundation face, or a distance equal to the depth of fill below the foundations, whichever is greater.

Geogrid reinforcement layers (Tensar Triax TX160 or equivalent) should be placed at the excavation subgrade before compacted fill is placed and once again after 1 to 1-1/2 foot of compacted fill has been placed for support of conventional foundations. Special consideration should be given for placement of utilities so that the integrity of the Geogrid layers are preserved.

The Geotechnical Engineer of Record (or representative) should be present during grading operations to verify the undocumented fill materials are removed to the target depth prior to placing backfill.

5.2.4 Engineered Fill Material

On-site or imported materials may be used as engineered fill material provided they meet the following criteria. Fill should be nearly free of organic or other deleterious debris and less than 6 inches in maximum dimension; except that in the upper 2 feet of subgrade material, the maximum size should be limited to approximately 3 inches.

If fill is to be imported from off-site, it should meet the requirements of engineered fill as well as those for Class 3 Subbase in the State of California Standard Specifications, Chapter 25 (latest edition). Imported fill should be sampled by the project geotechnical engineer prior to being imported to evaluate its suitability for its intended use and to perform confirmatory testing, if necessary. In addition, import material should comply with the general environmental sampling and testing guidelines as recommended by the Department of Toxic Substances Control (DTSC). Specific Recommendations are provided in the “DTSC Information Advisory Clean Imported Fill Material Fact Sheet”.

9070 Center Avenue, Rancho Cucamonga, CA 91730 – (909) 587-6374
California | Seattle | Arizona | Texas | New England | New York | Miami

5.2.5 Compaction Criteria - Engineered Fill

Engineered fill within the proposed school buildings, trench or retaining wall backfill, flatwork, including paved areas should be placed uniformly in horizontal loose lifts not exceeding 6 inches. Exposed subgrades and subsequent engineered fill should be uniformly compacted, and moisture conditioned in accordance with the recommendations presented in Table 5-1 as follows:

Table 5-1: Recommended Compaction & Moisture Conditioning: Subgrade & Eng. Fills

Material Type and Location	Compaction and Moisture Content per Modified Proctor ASTM D1557		
	Minimum Compaction Requirement, %	Range of Moisture Contents Relative to Optimum	
		Minimum	Maximum
Subgrade to Receive Fill	90	Optimum	+3%
Trench Backfill	90	Optimum	+3%
Structural Fill for Support Foundations	90	Optimum	+3%
Retaining Wall Backfill	90	Optimum	+3%
Pool Shell Subgrade and Wall Backfill	90	Optimum	+3%
Subgrade for Pavement (No Vehicular Loading)	90	Optimum	+3%
Subgrade for Pavement (W/ Vehicular Loading)	95	Optimum	+3%
Subgrade for Athletic Playfield	95	Optimum	+3%
Aggregate Base for Athletic Playfield	92 to 95	Optimum	+3%

5.2.6 Construction Considerations

Based on results of exploration and laboratory testing of onsite materials, it is anticipated that excavations may generally be accomplished with typical earthwork grading equipment in good operating condition. Moisture content of subgrade soils should be maintained until they are covered with aggregate base or concrete slabs.

5.2.7 Wet Weather Construction and/or Unstable Soil Conditions

The in-situ moisture content of site soils may increase after long periods of rainfall and soil subgrades may become saturated due to exposure to wet weather conditions. When wet soils are encountered, they should be remediated by the following mitigation methods: Aeration, removing and replacing saturated material with drier material, subgrade stabilization with crushed angular gravel driven into subgrade soil medium, or chemically treated with lime or cement combinations. Although not anticipated, deeper excavations may encounter perched groundwater seepage during the wet season. These conditions may be addressed with localized sump pumps to temporarily facilitate construction. Fenagh should be contacted if these conditions are encountered for assurance of method selection, specifications, acceptance criteria, and quality assurance.

5.2.8 Controlled Low Strength Material (CLSM)

Deepened foundations may be required to bear in alluvial soils or to prevent surcharge of adjacent foundations, utilities, etc. The deepened portion of the foundation may be backfilled with 3-sack Controlled Low Strength Material (CLSM) as permitted under CBC Chapter 18. The bottom of the excavation should be cleaned of loose materials and observed by a representative of this firm prior to placement of CLSM. Once the CLSM has cured, the proposed foundations may then be formed and poured thereon. The interface between the CLSM and bottom foundation surface should be dowelled to improve stability during lateral loading conditions.

9070 Center Avenue, Rancho Cucamonga, CA 91730 – (909) 587-6374
California | Seattle | Arizona | Texas | New England | New York | Miami

Compressive strength of CLSM samples should be tested by this firm in accordance with ASTM D4832, “Standard Test Method for Preparation and Testing of Controlled Low Strength Material Test Cylinders” or equivalent. The CLSM test results should indicate a 28-day strength of 100 pounds per square inch or higher.

5.2.9 Slot Cut Method for Excavations

Where grading and foundation excavations will leave an existing building foundation or property line unsupported, the foundation excavation should be trench shored or slot cut. The slot cutting method employs the earth as a buttress and allows the excavation to proceed in phases as discussed below.

Slot Cut Method for Support of Existing Foundations or Property Line During Grading

The slot cutting method employs the earth as a buttress and allows the excavation to proceed in phases. The initial excavation is made at a uniform 2:1 slope (horizontal to vertical) descending down and away from an existing foundation. Alternating "A" slots of 8 feet in width may excavated and backfilled. Note: The remaining earth buttresses ("B" and "C" slots) should each be 8 feet in width for a combined intervening width of 16 feet. The backfill and grading should proceed to a point where support for the existing foundation is restored in “A” slots before the “B” slots are excavated. Once backfill and grading of "A" slots are complete, "B" slots can be excavated and backfilled. After completing the grading in the "B" slots, finally the "C" slots may be excavated and graded. The maximum vertical height of slot cut excavations should not exceed 5 feet.

Slot Cut Method for Construction of Deepened Foundations

The following slot cut sequence is generally recommended for foundations which must be constructed adjacent to existing foundations and will be deepened to bear in alluvial soils: “A” slots of 8 feet in width should be excavated into alluvial soils. The “B” and “C” slots which are 8 feet in width each for a total combined width of 16 feet, should remain as a buttress to support the existing foundations. A representative of this firm should observe and verify subgrade conditions – proof rolling of subgrade may be recommended. 3-sack CLSM may then be used to backfill the "A" slots to match the bottom of the existing adjacent foundations and allowed to set overnight before the "B" slots are excavated. After excavating and placing CLSM backfill in the "B" slots, finally the "C" slots may be excavated and backfilled with CLSM slurry. Once CLSM has been sufficiently backfilled in slots A, B and C, foundation reinforcement may then be placed thereon, and structural concrete may be poured. Vertically placed dowels are recommended to transfer lateral loading of newly constructed foundations to the underlying CLSM slurry sections. Slot cut excavations should not exceed a depth of 5 feet.

5.3 FOUNDATION RECOMMENDATIONS & DESIGN PARAMETERS

Conventional foundations are suitable for support of the newly proposed school buildings provided that undocumented fill and near-surface Alluvium are removed and replaced with geogrid-reinforced engineered fill within the building footprint in accordance with our remedial grading recommendations for mitigation of surface manifestation and liquefaction induced shear failure.

Mat foundations may also be utilized for support of the proposed school buildings provided that undocumented fill and near-surface Alluvium are removed and replaced with certified engineered fill within the building footprint in accordance with our remedial grading recommendations. Geogrid reinforcement is not considered needed under mat foundations.

9070 Center Avenue, Rancho Cucamonga, CA 91730 – (909) 587-6374
California | Seattle | Arizona | Texas | New England | New York | Miami

5.3.1 Allowable Bearing Capacity - Conventional Foundations

Conventional spread footing foundations may be utilized for support of the proposed school buildings. An allowable bearing capacity of 2,500 pounds per square foot (psf) should be used for the design of spread footings founded in compacted engineered fill. The minimum recommended width and embedment depths of conventional foundations are indicated as follows:

Table 5-2: Minimum Footing Dimensions - Conventional Foundations in Eng. Fill

Proposed School Buildings			
Foundation Type	Minimum Foundation Depth BGS (inches)[1]	Minimum Embedment Depth in Bearing Materials (inches)	Minimum Foundation Width (Inches)
Continuous	18	18	18
Isolated	18	18	24

1 – The embedment depth shown is the vertical distance between the base of the foundation and the ground surface or lowest

The bearing capacity increase for each additional foot of foundation width is 100 pounds per square foot. The bearing capacity increase for each additional foot of foundation depth is 400 pounds per square foot. The maximum allowable bearing capacity due to increases in footing width and depth is 3,000 pounds per square foot for foundations supported by compacted engineered fill. The allowable bearing capacity is based on a factor of safety of 3 and applies to dead plus live load conditions. The allowable bearing capacity may be increased by 1/3 for short-term loading due to wind or seismic forces. The weight of foundation concrete may be neglected in sizing computations.

5.3.2 Allowable Bearing Capacity - Mat Foundations

The bottom of the mat foundation should be a minimum of 18 inches in depth below the lowest adjacent grade at the perimeter of the structure. For design purposes, an average allowable bearing pressure of 1,500 pounds per square foot, with locally higher pressures up to 3,000 pounds per square foot may be utilized in the mat foundation design.

The allowable bearing capacity is a net value so the weight of the slab extending below grade may be disregarded when computing dead loads. The allowable bearing capacity is based on a factor of safety of 3 and applies to dead plus live load conditions. The allowable bearing capacity may be increased by 1/3 for short-term loading due to wind or seismic forces.

The concrete mat foundation for support of the proposed school buildings and miscellaneous structures may be designed utilizing a modulus of subgrade reaction of 150 pounds per cubic inch. This value is a unit value for use with a one-foot square slab. The modulus should be reduced in accordance with the following equation when used with larger mat foundations:

$$K = K1 * [(B + 1) / (2 * B)]^2$$

where K = Reduced Subgrade Modulus
K1 = Unit Subgrade Modulus
B = Slab Width (feet)

9070 Center Avenue, Rancho Cucamonga, CA 91730 – (909) 587-6374
California | Seattle | Arizona | Texas | New England | New York | Miami

5.3.3 Estimated Settlement of Conventional and Mat Foundations

Conventional Foundations

Static settlement may vary depending on the plan dimensions of the conventional foundation and the actual load supported. Total static settlement of conventional foundations designed in accordance with the recommendations of this report is estimated to be less than 1/2 inch for structural elements in support of the proposed school buildings. Based on the results of a seismic settlement analysis conducted for the project site, an average seismic settlement of less than 2 inches is anticipated for a combined static and seismic settlement of less than 2-1/2 inches. A total static and seismic differential settlement of approximately 1-inch is anticipated over a span of 30 feet for conventional foundations.

Mat Foundations

Static settlement may vary depending on the plan dimensions of the mat foundation and the actual load supported. Total static settlement of mat foundations designed in accordance with the recommendations of this report are estimated to be less than 0.5 inch. Based on the results of a seismic settlement analysis conducted for the project site, an average seismic settlement of less than 2 inches is anticipated for a combined static and seismic settlement of less than 2-1/2 inches. A total static and seismic differential settlement of approximately 1-inch is anticipated over a span of 30 feet for mat foundations.

5.3.4 Lateral Resistance of Conventional and Mat Foundations

Resistance to lateral forces may be provided from frictional forces between the bottom of the conventional or mat foundation and the underlying compacted fill soils, and by passive soil resistance against the sides of the foundations. A coefficient of friction equal to 0.30 may be used for dead load forces between the recommended cast-in-place foundations and compacted engineered fill. If a vapor barrier is utilized between the bottom of foundation surface and underlying subgrade, a coefficient of friction of 0.15 should be used. Allowable passive pressure from certified engineered fill or alluvial soil may be taken as equivalent to the pressure exerted by a fluid pressure of 250 pounds per square foot, per foot of depth, (psf/ft or pcf) with a maximum earth pressure of 1,500 pounds per square foot. Additional safety factors may be applied by the project structural engineer.

When combining passive pressure and coefficient of friction for lateral resistance, the passive component should be reduced by one-half. A one-third increase in passive value may be used for wind or seismic loads.

5.3.5 Tie Beams for Conventional Foundation Design

Tie beams may be utilized to unify and secure foundations to improve stability of conventional foundations and for mitigation of differential settlement or lateral spread displacement effects. Tie beams should be supported by certified compacted fill in accordance with the Earthwork section of this report. Building slabs may be supported by tie beams as required.

Lateral Resistance of Tie Beams

Lateral loads may be resisted by passive pressure of certified fill placed against side of tie beams. The allowable passive resistance may be assumed as an equivalent fluid having a density of 250 pounds per cubic foot with a maximum earth pressure of 1,500 pounds per square foot. Additional safety factors may be determined and applied by the project structural engineer. Note: Friction coefficient should not be utilized for bottom surface of tie beam in contact with site soils for resistance to lateral loads.

9070 Center Avenue, Rancho Cucamonga, CA 91730 – (909) 587-6374
California | Seattle | Arizona | Texas | New England | New York | Miami

5.3.6 Construction Considerations – Conventional and Mat Foundations

Foundation excavations should be firm, neat, and clean of debris, loose, soft soil, or water prior to placing reinforcement. Foundation excavations should be observed by the project geotechnical engineer or their designated representative just prior to placing reinforcing steel or concrete to verify the recommendations presented herein are implemented during construction.

5.3.7 Foundation Surcharge of Undocumented Fill

Foundations for the proposed school buildings should not be allowed to surcharge existing foundations, retaining walls, or existing undocumented fill. The surcharge zone of a proposed foundation is defined as a line drawn down and away at a descending slope of 1 to 1 (horizontal to vertical) from the outer bottom surface of the foundation. Where necessary, the proposed conventional or mat foundations in near proximity to existing foundations, retaining walls, or undocumented fill should be deepened such that the existing foundations, retaining walls, or undocumented fills do not fall within the surcharge zone of the proposed foundation. Where new foundations are proposed immediately adjacent to an existing foundation, new foundations should be deepened to match the depth of the adjacent foundation.

5.3.8 Foundation Surcharge of Utilities

Additionally, conventional footings may experience an overall loss of bearing capacity or an increased potential for settlement when located near existing or future utility trenches. Stresses imposed by the conventional foundations on the utility lines may cause cracking, collapse, and/or a loss of serviceability. To reduce this risk, open or backfilled trenches parallel with a foundation should not be below a plane having a downward slope of 2 horizontal to 1 vertical (2:1) slope from a line 9 inches above the bottom edge of the foundation and not closer than 18 inches from the face of the foundation. When pipes cross under conventional foundations, the footings should be specially designed. Pipe sleeves should be provided where pipes cross through foundations or foundation walls and sleeve clearances should provide for possible footing settlement of not less than one (1) inch all around the pipe.

5.4 DRILLED PIER FOUNDATIONS

Drilled cast-in-place pier foundations may be utilized for support of light poles located in the parking lot and playfield areas which are anticipated as part of the proposed development.

5.4.1 Design Parameters for Drilled Pier Foundations

The depth of drilled piers needed to resist lateral loads may be evaluated using the design criteria established in Section 1807A.3.2 of the California Building Code and an allowable passive resistance of the existing soils of 300 psf/ft. For areas where no lateral constraint is provided at the ground surface, such as by rigid floor or pavement, the non-constrained formula (Equation 18A-1) may be used. For areas where lateral constraint is provided at the ground surface, such as by rigid floor or pavement, the constraint formula (Equation 18A-2 or 18A-3) may be used. The allowable axial resistance may be evaluated based on a unit frictional resistance of 250 psf for drilled piers spaced a minimum of 3 diameters on center.

5.4.2 Group Reduction Factors for Lateral Resistance

The lateral resistance computed is based on an isolated, single pier. Where drilled piers are spaced at least 6 pier diameters center-to-center perpendicular to the direction of the load, the piers may be assumed to act as single isolated piers and no reduction will be required. Lateral resistance should be reduced by a multiplier to account for group action effects where spacing is less than 6 pier diameters. The pile spacing in the direction perpendicular to the direction of the

9070 Center Avenue, Rancho Cucamonga, CA 91730 – (909) 587-6374
California | Seattle | Arizona | Texas | New England | New York | Miami

load should be at least 3 times the pile diameter. In general, the group reduction factor for center-to-center spacing can be determined as recommended below.

Table 5-3: Group Reduction Factors – Lateral Capacity

	Lateral Capacity Reduction Factor			
Pier Spacing (c-c)	3D	4D	5D	≥6D
Lead Row	0.70	0.85	1.00	1.00
2nd Row	0.50	0.65	0.85	1.00
3rd and Higher Row	0.35	0.50	0.70	1.00

Where D = diameter of piers
Ref: U.S. Department of Transportation, Federal Highway Administration, Pub. FHWA-NHI-10-016.

5.4.3 Construction Considerations for Drilled Pier Foundations

Drilled piers may be subject to caving of the near surface soils. Consideration should be given to casing the upper 5 feet or more of the holes. Drilled piers may encounter layers of very dense sand and gravel, making drilling slow or require special drilling tools. The contractor should be prepared for such conditions so that the holes are not left open longer than one shift prior to concrete placement.

Drilled pier foundation excavations should be firm, neat, plumb, and clean of debris, loose or soft soil, or water prior to placing reinforcement. Pier excavations should be observed by the project Geotechnical Engineer's representative just prior to placing reinforcing steel or concrete to verify the recommendations presented herein are implemented during construction. The inspections should also verify that excessive sloughing and/or caving has not reduced the required hole depth. This may be accomplished by using a weighted tape measure or similar measuring device. Steel reinforcement should be placed the same day the concrete will be placed. Additionally, drilled pier excavations should be scheduled to allow concrete in each pier to set overnight before drilling adjacent holes which are closer than 4 diameters center to center.

Concrete used for drilled pier construction should be discharged vertically into the drilled holes to reduce aggregate segregation. The pier concrete should not be allowed to free fall against the steel reinforcement or sides of the excavation. Sufficient space should be provided in the pier reinforcement cage during fabrication to allow insertion of a pump hose or tremie tube for concrete placement. The pier reinforcement cage should be installed and the concrete pumped and vibrated during placement immediately after drilling is completed.

To develop skin friction values, concrete used for drilled pier construction should have a slump of 4 to 6 inches for dry placement methods or at least 8 inches if slurry drilling is used. The concrete mix should be designed by a registered design professional to include admixtures and/or water cement ratios to achieve the recommended slumps. It is not recommended to add water to achieve slump.

If slurry methods are used for pier construction, tremie concrete should be performed in accordance with American Concrete Institute (ACI) 204R requirements. The tremie pipe should be rigid and remain several feet below the surface of the in-place concrete. This will allow for a seal to be formed between the water or slurry and the fresh concrete. The upper concrete seal will likely be contaminated with water and should be pumped out until fresh concrete is exposed at the top of the pier.

9070 Center Avenue, Rancho Cucamonga, CA 91730 – (909) 587-6374
California | Seattle | Arizona | Texas | New England | New York | Miami

If casing is considered, it should be removed from the hole as concrete is being placed. The bottom of the casing should be maintained at least 5 feet below the top of the concrete during casing withdrawal and concrete placement operations.

5.5 RETAINING WALLS

Miscellaneous retaining walls may be required for the proposed development. Retaining walls up to 8 feet in height may be designed for lateral earth pressures in accordance with recommendations presented in this section.

5.5.1 Active and At-Rest Pressure

It is recommended the retaining structures be designed for active pressure for cantilever conditions or at-rest pressure if it is braced at the top (as in a roof connection). These earth pressures are presented in Tables 5-4A and 5-4B for alluvial soils and typical granular soils and are expressed in terms of equivalent fluid pressures.

Table 5-4A: Lateral Earth Pressures – Alluvial Soils (For Wall Height <= 8 Feet)

Condition	Drained Case[1] (pcf)
Active Case	30
At – Rest Case	65

[1]Drained case assumes fully drained conditions and level backfill.

Table 5-4B: Lateral Earth Pressures – Import Granular Soils (For Wall Height <= 8 Feet)

Condition	Drained Case[1] (pcf)
Active Case	35
At – Rest Case	55

[1]Drained case assumes fully drained conditions and level backfill.

No additional surcharge stresses were included in the pressures noted above. Surcharge pressures will depend on the load conditions (i.e., equipment and construction loads such as material or soil stockpiles, and distance from wall where load is applied, etc.). If specific surcharge pressures need to be considered, additional analysis will likely be recommended with the load conditions given.

In general, walls subject to surcharge loads should be designed for an additional uniform lateral load pressure equal to one-third the anticipated surcharge loads for unrestrained walls and one-half the anticipated surcharge loads for restrained walls. The project engineer should be consulted to confirm applicable values.

5.5.2 Seismic Design for Retaining Walls

The maximum dynamic active pressure is equal to the sum of the initial static pressure and the dynamic (seismic) pressure increment. Under the most recent building code, seismic earth pressure is required in the design of restraining walls which support over 6 feet of earth. The majority of retaining walls anticipated for the proposed development are less than 6 feet in height, and therefore the dynamic earth pressure may be omitted.

Retaining walls exceeding 6 feet in height should be designed to resist the additional earth pressure caused by seismic ground shaking. A triangular pressure distribution should be utilized

9070 Center Avenue, Rancho Cucamonga, CA 91730 – (909) 587-6374
California | Seattle | Arizona | Texas | New England | New York | Miami

for additional seismic loads, with an equivalent fluid pressure of 24 pounds per cubic foot. When using the load combination equations from the building code, the seismic earth pressure should be combined with the lateral active earth pressure for analyses of restrained retaining walls under seismic loading conditions.

5.5.3 Retaining Wall Drainage

Where retaining walls are designed to be drained, drainage may be provided using a 4-inch-diameter perforated pipe embedded in free-draining gravel surrounded by synthetic filter fabric. The thickness of the drain blanket should be at least 12 inches. As an alternative, prefabricated synthetic wall drain panels may be used. The drain blanket should extend from the bottom of the wall to about 2 feet below the finished grade at the top of the wall. The upper 2 feet of wall backfill should consist of onsite compacted soils. Drainage should be collected by a perforated pipe and directed to an outlet approved by the civil engineer. Subdrain pipe, drain blanket and synthetic filter fabric should meet the minimum requirements presented herein. Expansive clay soils should not be utilized as retaining wall backfill.

5.5.4 Wall Backfill

Backfill should be mechanically compacted in layers not more than 6 inches thick, to at least 90 percent of the maximum laboratory density obtainable by the most recent revision of ASTM D1557 method of compaction. Flooding is not permitted. Compaction within 5 feet, measured horizontally, behind a retaining structure should be achieved by use of light weight, hand operated compaction equipment.

Proper compaction of the backfill will be necessary to reduce settlement of overlying walkways and paving. Some settlement of required backfill should be anticipated and utilities supported therein should be designed to accommodate differential settlement, particularly at points of entry to a structure.

5.6 SPORTS FIELD AND RUNNING TRACK

General grading and drainage recommendations for support of the proposed sports field and running track are provided in the following sections. Specific grading, drainage and aggregate base section details, geogrid, etc., may be specified by the specialty designer and contractor retained for the project provided this firm can review, evaluate, and verify recommendations included therein.

5.6.1 Subgrade Preparation

Subgrade preparation for support of aggregate base associated with sports field and running track should consist of 24 inches of removal and recompaction to create an engineered fill pad for uniform support of the proposed development features. In addition, the engineered fill pad should extend 2 feet beyond the outside limits of the field or running track. Compacted fill should be placed in loose layers not to exceed 6 inches in thickness and compacted to a minimum of 95 percent relative compaction based on ASTM D1557 specifications. Prior to construction of the engineered fill pad, the subgrade of fill should be scarified 8 inches and compacted to at least 95 percent relative compaction as determined by ASTM D1557. Clayey or expansive soil should not be utilized as subgrade support for sports field or running track. Grading should proceed in general accordance with recommendations provided in the Earthwork section of this report.

5.6.2 Impermeable Layer

It is recommended that the engineered fill pad is overlain by an impermeable liner followed by aggregate base layer (including drainage system constructed within base layer section).

9070 Center Avenue, Rancho Cucamonga, CA 91730 – (909) 587-6374
California | Seattle | Arizona | Texas | New England | New York | Miami

Placement of an impermeable liner would serve to protect the underlying engineered fill pad and alluvial soils from saturation which could lead to expansion bulging and ponding at playfield surface.

5.6.3 Drainage Considerations

Drainage of the sports field and running track is anticipated to consist of an aggregate base layer integrated with flat drain collectors or perforated piping as specified by the civil engineer or specialty consultant retained for sports field and track design. Drainage pipes are normally designed so that the drain collectors are placed at the perimeter of the field and lateral piping is installed at an angle across the slope of the field (herringbone pattern). Lateral drains are normally 15 feet apart with a consistent slope gradient to the outlet of approximately 0.5 percent.

5.6.4 Aggregate Base Layer

Aggregate may fragment during transportation and construction operations which may result in higher fines content. In addition, excessive processing of aggregate base including loading, unloading, spreading and compacting, including stockpiling of aggregate can lead to fines migration and settlement. Moisture conditioning of aggregate during transportation and processing can mitigate fines migration and settlement effects. Gradation testing per ASTM C136 may be periodically performed for verification purposes at the discretion of the project team.

Aggregate should be compacted to between 92 and 95 percent relative compaction as evaluated by ASTM D1557. Note: Under-compaction may lead to unfavorable settlement or ponding and compromise subgrade modulus while over-compaction may cause reduction in infiltration rate. Test strips may be constructed outside the area of planned development for testing purposes to verify gradation and infiltration performance prior to full-scale production grading.

5.6.5 Running Track – Pavement Section Recommendations

Pavement and aggregate base section recommendations may be obtained from section 5.15 “Flexible and Rigid Pavements” as needed based on performance criteria required for running track. Note: A separate synthetic force-reduction and wear layers with enough cross section to shed water should cover the underlying asphalt or concrete (if selected). Proper drainage adjacent to the track is essential to prevent soil settlement due to water penetration below the ground surface. Curbs should extend a minimum of 12 inches below finish grade to serve as a barrier for water migration below the proposed running track.

5.7 SEISMIC DESIGN PARAMETERS

5.7.1 Seismic Parameters - Mapped Values

Design of the proposed school buildings should be performed in accordance with the requirements of governing jurisdictions and applicable building codes. The structural engineer should confirm the appropriate values to use for the development. Map-based design criteria presented in this section are based on entering the site coordinates (latitude and longitude), the risk category, and Site Class.

According to Table 1613.5.2 of the 2022 California Building Code, the subject site is classified as Site Class F if loss of support of foundations is not mitigated during liquefaction. Section 1613 of the 2022 California Building Code is developed based on the standards found in ASCE 7-16. According to Section 20.3.1 (site class definition for Site Class F) found in Chapter 20, titled Site Classification Procedure for Seismic Design, of ASCE 7-16, Minimum Design Loads for Buildings and Other Structures, an exception is provided under Site Classification F.

9070 Center Avenue, Rancho Cucamonga, CA 91730 – (909) 587-6374
California | Seattle | Arizona | Texas | New England | New York | Miami

EXCEPTION: For structures having fundamental periods of vibration equal to or less than 0.5s, site-response analysis is not required to determine spectral accelerations for liquefiable soils. Rather, a site class is permitted to be determined in accordance with Section 20.3 and the corresponding values of F_a and F_v determined from Tables 11.4-1 and 11.4-2.

The proposed school buildings are not expected to exceed two stories in height. Based on discussion with the project structural engineer, the structure's fundamental period of vibration is anticipated to be less than 0.5 second. In addition, the shear wave velocity recorded from CPT soundings and ReMi survey were measured at greater than 600 feet per second for soils extending to a depth of 100 feet bgs. Based on these conditions, the soils underlying the subject site does not fall under other characteristics of Site Class E but falls within the characteristics of Site Class D which corresponds to a "Stiff Soil" Profile, in accordance with the ASCE 7-16 design standard. A copy of the shear wave velocity measurement data are provided in Appendix A.

Based on the shear wave velocity measurements, building period assessment by the design team, and data from the interpreted blow counts observed during onsite exploration and subsequent laboratory testing, the generalized profile for the project site may be classified as Site Class D corresponding to "Stiff Soil" in accordance with Table 20.3-1 of ASCE 7-16. Table 5-5 presents the seismic design parameters for the site in accordance with the CBC (2022) and ASCE 7-16 guidelines using the SEAOC/OSHPD Seismic Design Maps Tool based on Site Class D site classification:

Table 5-5: Seismic Design Criteria per 2022 California Building Code and ASCE 7-16

Reference		Seismic Parameter	Value
ASCE 7-16	Google Earth	North Latitude	33.9146
	Google Earth	West Longitude	-118.2526
	Table 20.3-1	Site Class	D
	Table 1.5-1	Risk Category	I, II, III
	Table 11.4-1	Site Coefficient for Short Period, F_a	1.0
	Table 11.4-2	Site Coefficient for Long Period, F_v	1.7*
	Figure 22-7	Peak Ground Acceleration, PGA	0.767g
	Table 11.8-1	Site Amplification Factor, F_{PGA}	1.1
	Equation 11.8-1	Peak Ground Acceleration, PGA_M	0.844g
	Figure 22-1	Mapped MCE_R Spectral Response Acceleration at 0.2-second period, S_s	1.783g
	Figure 22-2	Mapped MCE_R Spectral Response Acceleration at 1.0-second period, S_1	0.634g
	Equation 11.4-1	Site-Adjusted MCE_R Spectral Acceleration at 0.2-second period, S_{MS}	1.783g
	Equation 11.4-2	Site-Adjusted MCE_R Spectral Acceleration at 1.0-second period, S_{M1}	1.078g*
	Equation 11.4-3	Design Spectral Response Acceleration at 0.2-second period, S_{DS}	1.189g
	Equation 11.4-4	Design Spectral Response Acceleration at 1.0-second period, S_{D1}	0.719g*
	Table 11.6-1	Seismic Design Category for Short Period Response Acceleration	Section 11.4.8[1]

9070 Center Avenue, Rancho Cucamonga, CA 91730 – (909) 587-6374
California | Seattle | Arizona | Texas | New England | New York | Miami

	Table 11.6-2	Seismic Design Category for 1-s Period Response Acceleration	Section 11.4.8[1]

[*]According to ASCE 7-16, a Long Period Site Coefficient (F_v) of 1.7 may be utilized provided that the value of the Seismic Response Coefficient (C_s) is determined by Equation 12.8-2 for values of $T \leq 1.5T_s$ and taken as equal to 1.5 times the value computed in accordance with either Equation 12.8-3 for $T_L \geq T > 1.5T_s$ or equation 12.8-4 for $T > T_L$. Alternatively, a site-specific ground motion hazard analysis may be performed in accordance with ASCE 7-16 Section 21.1 and/or a ground motion hazard analysis in accordance with ASCE 7-16 Section 21.2 to determine ground motions for a structure – see Section 5.7.2.

[1]The values presented in the table assume the structural engineer will utilize the exceptions allowed in ASCE 7-16, Section 11.4.8 for the Site Class D structure. The structural engineer is responsible for the selection of the appropriate spectral acceleration values used in design.

5.7.2 Site Specific Ground Motions

Probabilistic seismic hazards mapping by the United States Geological Survey (USGS) and interpretations according to the American Society of Civil Engineers (ASCE) 7-16 standard indicate that the peak ground acceleration produced by maximum credible earthquakes with a two percent probability of exceedance in 50 years is likely to be on the order of 0.85g at the site (latitude/longitude 33.91557901, -118.25359507). The controlling earthquakes considered in developing this acceleration appear to be events of magnitude 6.4 to 7.3 occurring along the Newport-Inglewood fault zone about 2.7 kilometers to the southwest, events of magnitude 7.0 to 7.3 occurring along the Compton fault about 9.7 kilometers to the southwest, events of magnitude 7.1 to 7.2 occurring along the Puente Hills fault system about 9.7 kilometers to the east, and events of magnitude 7.3 to 7.4 occurring along the Palos Verdes fault zone about 15.9 kilometers to the southwest.

A 1-D refraction microtremor (ReMi) seismic survey was performed by others to assess the site class at the subject site. The seismic survey measured an average shear wave velocity V_{S100} of 883 feet per second. Based on Chapter 20 of ASCE 7-16, the measured velocity indicates that Site Class D would be appropriate for this site.

Site-specific ground motion hazard analyses have been performed in accordance with Chapter 18 of the 2022 California Building Code (CBC) and Chapter 21 of ASCE 7-16. The probabilistic ground motion spectrum has been determined in accordance with Method 2 outlined in Chapter 21.2.1.2 of ASCE 7-16 using a Python script which incorporates the USGS Hazard Tool, Dynamic: Conterminous US 2014 dataset, Risk-Targeted Ground Motion Calculator, and geometric mean to maximum direction scaling factors in Chapter 21.2 of ASCE 7-16. The Python script is attached.

A deaggregation was performed using the USGS Unified Hazard Tool to determine the characteristic earthquakes on all known active faults with a two percent probability of exceedance in 50 years. Based on the deaggregation, the Newport-Inglewood Fault Zone about 2.7 kilometers to the southwest, Compton fault about 9.7 kilometers to the southwest, and Puente Hills Fault Zone about 9.7 kilometers to the east appear to be the controlling fault sources. We used the Building Seismic Safety Council (BSSC) 2014 database which captures the Unified California Earthquake Rupture Forecast Version 3 (UCERF3) and the ShakeMap repository to obtain the magnitude and fault characteristics of the indicated controlling earthquakes. The combined weighted model [equally weighted from the ground motion models by Abrahamson, Silva and Kamai (2014); Boore, Stewart, Seyhan and Atkinson (2014); Campbell and Bozorgnia (2014); and Chiou and Youngs (2014)], including basin effects, was computed using the USGS Response Spectra Tool (NSHMP-HAZ) for each of the indicated controlling fault sources. The deterministic ground motion spectrum was determined using the largest 84th percentile acceleration for the

9070 Center Avenue, Rancho Cucamonga, CA 91730 – (909) 587-6374
California | Seattle | Arizona | Texas | New England | New York | Miami

indicated characteristic earthquakes by scaling the 84th percentile acceleration by the geometric mean to maximum direction scaling factors.

The site-specific risk-targeted maximum considered earthquake (MCE_R) ground motion spectrum was taken as the lesser of the special response accelerations from the probabilistic and deterministic ground motion spectra at each period. The design response spectrum was taken as two-thirds of the MCE_R ground motion spectrum but not less than 80 percent of the modified 2022 CBC design spectrum in accordance with Chapter 21.3 of ASCE 7-16.

The site-specific maximum considered earthquake geometric mean (MCE_G) peak ground acceleration (PGA_M) was determined as the lesser of the probabilistic and deterministic geometric mean peak ground accelerations but not less than 80 percent of the PGA_M determined by Chapter 11.8 of ASCE 7-16. The site-specific PGA_M was calculated as 0.834g.

The site-specific seismic design parameters are tabulated in Table 5.7. The associated site-specific design response spectrum values in Table 2 may be used in design. The data tabulated on Table 2 is presented graphically on Figure 3.

TABLE 5-6b
2022 CBC/ASCE 7-16 SEISMIC DESIGN PARAMETERS

Period (sec)	Mapped Spectral Response Accelerations (g)	Site Class	Site Coefficients	Maximum Considered Earthquake Spectral Response Accelerations (g)	Design Spectral Response Accelerations (g)	Site Period, Ts (sec)	
						S_{D1}/S_{DS}	$4H/V_S^*$
0.2	S_S 1.785	D	F_a 1.171	S_{MS} 2.089	S_{DS} 1.393	0.757	0.453
1.0	S_1 0.634		F_v 2.495	S_{M1} 1.582	S_{D1} 1.055		

*Based on measured V_{S30} and H=100 feet

TABLE 5-6b
TABULATED SITE-SPECIFIC DESIGN RESPONSE SPECTRUM VALUES

Period (sec)	Design Sa (g)
0	0.612
0.1	1.040
0.2	1.369
0.3	1.548
0.5	1.479
0.75	1.208
1	1.008
2	0.527
3	0.330
4	0.224
5	0.169

9070 Center Avenue, Rancho Cucamonga, CA 91730 – (909) 587-6374
California | Seattle | Arizona | Texas | New England | New York | Miami

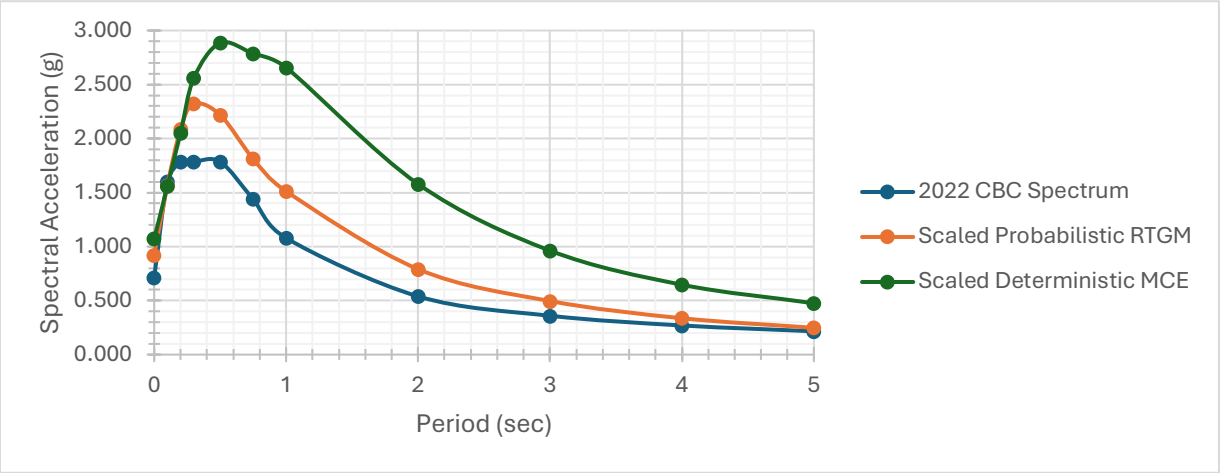


Figure 1: Site-Specific CBC, Probabilistic, and Deterministic Spectra

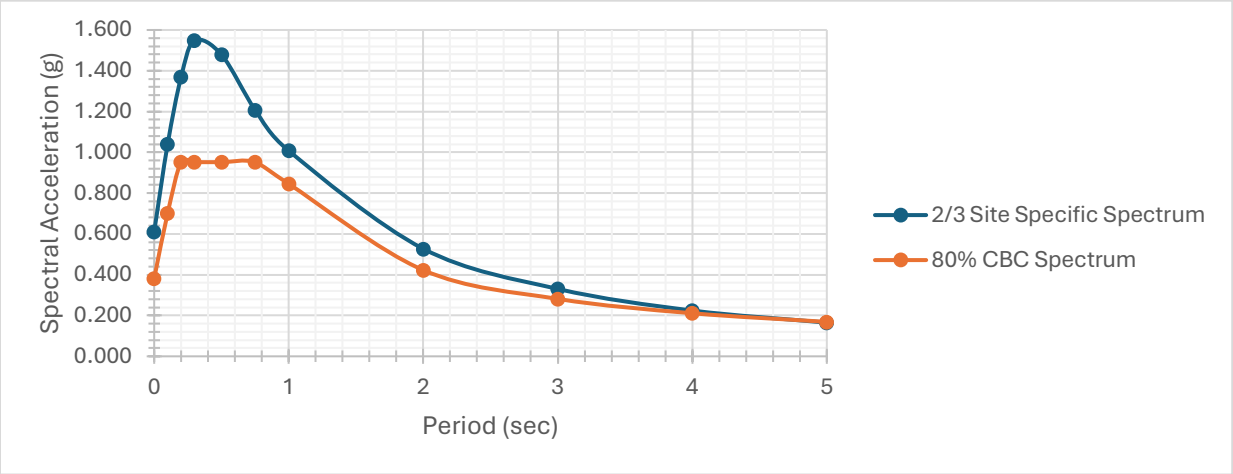


Figure 2: Site-Specific Spectrum and 80% Modified CBC Spectrum

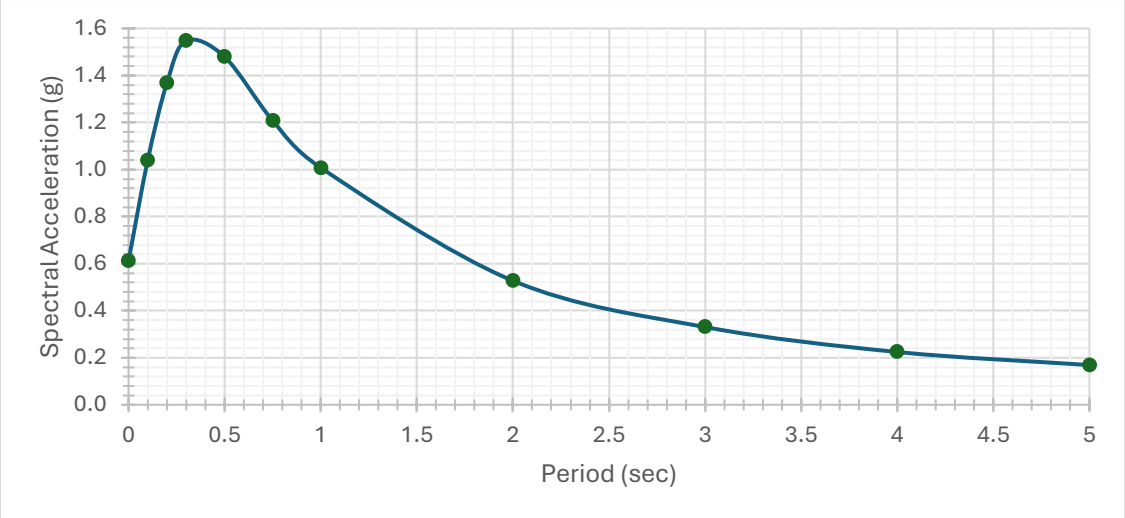


Figure 3: Site-Specific Design Response Spectrum

9070 Center Avenue, Rancho Cucamonga, CA 91730 – (909) 587-6374
California | Seattle | Arizona | Texas | New England | New York | Miami

5.8 CORROSIVITY

Laboratory testing was performed on a representative sample of near surface, on-site earth materials to evaluate pH and electrical resistivity, as well as chloride and sulfate contents. These laboratory test results are summarized below in Table 5-7.

Table 5-7: Evaluation of Soil Corrosion

Corrosion Property	Test Result	Test Method
Soil pH	6.6 to 8.0	ASTM G51
Minimum Resistivity	3,484 ohm-cm	ASTM G187
Chloride	31.7 to 67.0 ppm	ASTM D4327
Sulfate	24.2 to 97.0 ppm	ASTM D4327

Based on the Caltrans Highway Design Manual corrosion criteria (Caltrans, 2020, 2022), corrosive soils are defined as soils with an electrical resistivity of 1,500 ohm-cm or less, more than 500 ppm chlorides, more than 0.2 percent sulfates, and a pH less than 5.5. Based on laboratory testing results included herein (Appendix B), the on-site soils would not be classified as corrosive.

Fenagh Engineering and Testing does not practice in the field of corrosion engineering and mitigation. If corrosion sensitive improvements are planned, it is recommended that a corrosion engineer be retained to evaluate corrosion potential at the project site and incorporate the necessary precautions to avoid premature corrosion of buried metal pipes and utilities in direct contact with site soils.

5.9 CONCRETE

Concrete in contact with soil or water that contains high concentrations of water-soluble sulfates can be subject to premature chemical and/or physical deterioration. The soil samples tested in this evaluation indicate water-soluble sulfate content ranging from 0.00242 percent by weight (24.2 ppm) to 0.0097 percent by weight (97.0 ppm). According to American Concrete Institute (ACI) 318, the potential for sulfate attack is negligible for water-soluble sulfate contents in soil ranging from 0.00 (zero) to 0.10 percent by weight (i.e., 0 to 1,000 ppm). Therefore, the soils tested may be considered to have negligible potential for sulfate attack. However, due to the potential variability of site soils, we recommend using Type II/V cement for concrete structures in contact with soil with a water-cement ratio no higher than 0.45 by weight for normal-weight aggregate concrete for the project.

5.10 INTERIOR CONCRETE SLAB-ON-GRADE

Interior concrete slabs-on-grade should be at least 5 inches thick for slabs not subject to vehicular traffic or concentrated heavy equipment loading. The slab reinforcing and thickness should be designed and verified by the structural engineer. As a minimum, the slab reinforcement should consist of No. 4 bars spaced 16 inches on-center each way. The subgrade should be prepared in accordance with the earthwork recommendations included herein.

Frequent control joints should be provided to control concrete cracking. As a general guideline, control joints should be spaced at distances equal to 24 to 36 times the slab thickness. Joint spacing that is greater than 15 feet requires the use of load transfer devices (dowels or diamond plates). Added steel or slab thickness would also serve to improve the performance of the slabs. Subgrade materials should not be allowed to desiccate between grading and the construction of

9070 Center Avenue, Rancho Cucamonga, CA 91730 – (909) 587-6374
California | Seattle | Arizona | Texas | New England | New York | Miami

concrete slabs. Moisture content of subgrade soils shall be maintained until they are covered with aggregate base or concrete slabs.

5.10.1 Vapor Barrier for Foundations or Concrete Slab-On-Grade

Where any dampness would be objectionable, a vapor retarding membrane with a minimum of 15 mils in thickness and in conformance with ASTM E1745 Class A requirements should be utilized. Placement of the vapor retarder and "welding" of overlaps should follow the manufacturer's guidelines and is the responsibility of the foundation contractor. A qualified waterproofing consultant should be engaged to evaluate products and/or methods which would provide protection from unwanted moisture.

Based on ACI 302.2, the concrete slab may be poured directly upon the vapor barrier. Additionally, where humidity-controlled areas are proposed and the base materials and slabs will not be within a water-tight system, the barrier may be covered with a 4-inch layer of dry granular material. ACI notes that the decision whether to locate the barrier in direct contact with the slab or beneath a layer of granular fill should be made on a case-by-case basis. Changes to the concrete used, such as slump, mix or admixtures are also discussed. The necessity of a vapor barrier as well as the use of a granular material layer should be evaluated and confirmed by qualified members of the design team in accordance with ACI 302.2 design specifications.

Fenagh does not practice in the field of moisture vapor transmission evaluation and mitigation. As previously mentioned, it is recommended that a qualified consultant should be engaged to evaluate the general and specific moisture vapor transmission paths and any impact on the proposed development. The qualified consultant should provide recommendations for mitigation of potential adverse impacts of moisture vapor on various components of the structure.

5.11 POOL SHELL DESIGN RECOMMENDATIONS

5.11.1 Introduction

A swimming pool extending to a depth of 8 feet bgs is anticipated as part of the proposed high school development. The pool shell is anticipated to consist of walls consisting of approximately 8-inch thick gunite or concrete.

5.11.2 Lateral Earth Pressures & Hydrostatic Uplift for Pool Shell

The proposed swimming pool (shell structure) should be designed free-standing and should derive support a compacted fill pad. Lateral earth pressure design parameters for pool shell walls are provided in Section 5.5. A hydrostatic relief valve is recommended to mitigate the effects of hydrostatic uplift, should such conditions arise.

If buildings are planned in near proximity to the pool, the pool shell walls should be designed to accommodate the surcharge pressure. Alternatively, the proposed building foundations should deepened such that the pool shell is not surcharged as discussed in Section 5.3.7.

5.11.3 Grading for Support of Pool Shell

The pool shell bottom should be supported on a compacted fill pad extending 3 feet below the bottom surface of the pool shell and 5 feet laterally beyond the pool footprint. The engineered fill pad created in support of the proposed pool shell should be reinforced with Geogrid (Tensar BX1200 or equivalent) for mitigation of surface manifestation and liquefaction induced shear failure. Geogrid reinforcement layers should be placed at the excavation subgrade before compacted fill is placed and once again after 1 foot to 1-1/2 foot of compacted fill has been placed.

9070 Center Avenue, Rancho Cucamonga, CA 91730 – (909) 587-6374
California | Seattle | Arizona | Texas | New England | New York | Miami

5.12 EXTERIOR FLATWORK

Exterior flatwork (not subject to vehicular loading) should be at least 4 inches thick and placed over a subgrade prepared in accordance with the recommendations of this report. The design professional should determine the final slab thickness, reinforcing, and joint spacing based upon the anticipated loads. The upper 12 inches of soil should be prepared per the earthwork recommendations presented in this report. This may require removal of expansive soils in the upper 12 inches and replacement with low to non-expansive soil or aggregate base. Slab reinforcement should be supported on dobie blocks or similar. Due to potentially expansive soils, slabs should be provided with contraction joints on a rectangular pattern, no greater than 12 feet square and with a length-to-width ratio not exceeding 3. Tee joints should be avoided.

5.13 DRAINAGE

To minimize moisture intrusion into foundation and building slab subgrades, we recommend the ground surface should slope away from building pad and pavement areas in accordance with jurisdictional and/or California Building Code requirements toward the appropriate drop inlets or other surface drainage devices. These grades should be maintained for the life of the project. Building pads should also be designed such that the lowest adjacent grade surrounding the building is at or below the elevation of the building pad surface (at or below the bottom of the capillary break material beneath the floor slab. Downspouts should be directed to discharge away from the building to an appropriate catch basin.

Landscaping after construction should not promote ponding of water adjacent to structures. Landscaping adjacent to foundations should include vegetation with low water demands and irrigation should be limited to that which is needed to sustain the plants. Trees should be restricted from areas adjacent to foundations a distance equivalent to the canopy radius of the mature tree.

5.14 BURIED SHALLOW EXISTING UTILITIES

Existing shallow buried utilities may be present near the upper 12 to 18 inches of subgrades that may impact site grading. Provisions should be considered to allow for a modified section over the pipe to allow for protection during construction. A suitable means to protect pipes in place during pavement subgrade preparation would be to encase the pipe with CLSM or utilize geotextile (i.e., Tensar Triax TX160, or approved equivalent) over the pipe to provide additional stability to the pavement section. A separate line-item unit price should be provided by the contractor to allow for such conditions should they occur.

5.15 FLEXIBLE AND RIGID PAVEMENTS

5.15.1 Pavement Section Design Parameters

Pavements required for construction of parking lots and driveways in support of vehicular loading (i.e. passenger cars and light duty trucks) should use the following paving recommendations. Asphalt and base course materials should meet the requirements of the Caltrans Standard Specifications, latest edition. The following pavement sections are based on an assumed subgrade R-value equal to 9.

9070 Center Avenue, Rancho Cucamonga, CA 91730 – (909) 587-6374
California | Seattle | Arizona | Texas | New England | New York | Miami

Table 5-8: Recommended Paving Sections				
Service Level (Traffic Index)	Flexible Asphalt Pavement		Rigid Concrete Pavement	
	Asphalt Pavement Thickness (Inches)	Aggregate Base Course (Inches)	Concrete Pavement Thickness (Inches)	Aggregate Base Course (Inches)
Passenger Cars (5)	3	6	6	4
Moderate Trucks (5.5)	4	10	6	4
Heavy Trucks / Firelane (7)	5	13	8	4

If adverse conditions are encountered during the preparation of subgrade materials, special construction methods may need to be employed. Subgrade materials should be removed to a minimum depth of 12 inches below the Class II aggregate base and recompacted to a minimum 95 percent of ASTM D1557 laboratory maximum dry density at or above the optimum moisture content. Class II Aggregate Base material should be placed upon the certified fill layer and compacted to 95 percent of ASTM D1557 laboratory maximum dry density at or near optimum moisture content. The base should meet the quality requirements outlined in Section 26 of the Caltrans Standard Specifications.

Where rigidity of pavement is desired for areas designed for, high volume vehicular traffic, heavy maintenance or equipment traffic, entry driveways, and trash enclosure slab, we recommend using Portland cement concrete paving as indicated in Table 5-8. Concrete pavement should be reinforced with a minimum of #4 steel bars at a spacing of 16 inches on center (each way) and designed with an assumed subgrade modulus of 75 pounds per cubic inch. In addition, the driveway slabs should be designed with thickened edges at least twice the slab thickness. The design and thickness of rigid pavement slabs should be confirmed by the design professional.

The performance of pavement is highly dependent upon providing positive surface drainage away from the edges. Ponding of water on or adjacent to pavement can result in saturation of the subgrade materials and subsequent pavement distress. If planter islands are planned, the perimeter curb should extend a recommended of 12 inches below the bottom of the aggregate base layer.

If the traffic service level increases beyond that intended, as reflected by the assumed traffic designation, increased maintenance could be required for the pavement section. The project civil engineer should determine the traffic service levels appropriate for the project.

5.15.2 Construction Considerations for Vehicular and Loaded Pavements

Additional recommendations and/or assumptions for pavements are outlined as follows:

- Prior to construction, existing pavements, foundations, underground irrigation, tanks, drainage, utility lines, etc., within the construction area should be identified and removed prior to grading and construction.
- The exposed subgrade within the construction area should be scarified and proof-rolled with a fully loaded water truck, or equivalent, should be performed under observation of our field representatives to detect for instabilities of pavement subgrade and aggregate

9070 Center Avenue, Rancho Cucamonga, CA 91730 – (909) 587-6374
California | Seattle | Arizona | Texas | New England | New York | Miami

base following final grading. Subgrade areas should be compacted to a minimum of 95 percent relative compaction based on ASTM D1557 test method.

- Observations should be made by a representative of this firm during subgrade proof-rolling to help identify areas of soft-yielding soils which may require over-excavation and replacement.
- Compacted fill may be placed following satisfactory completion of proof-rolling. Fill should be tested and verified by this firm prior to placement and grading. Approved fill should be placed in lifts not to exceed 6 inches in thickness and compacted to a minimum of 95 percent of the modified proctor maximum dry density as determined by ASTM D1557. Grading should proceed under observation by a representative of this firm which includes density testing to verify minimum compaction criteria of compacted fill has been achieved.
- Aggregate base layer should be placed with lifts not to exceed 6 inches and should be compacted to a minimum relative compaction of 95 percent based on ASTM D1557 test method under observation by a representative of this firm.

6 ADDITIONAL SERVICES

6.1 PLAN AND SPECIFICATIONS REVIEW

The preparation of the geotechnical investigation for design purposes is a portion of the services Fenagh. It is essential that Fenagh be requested to perform a general review of the plans and specifications to evaluate if the recommendations contained in this report are properly interpreted and implemented during the design phase. Fenagh will not be responsible for any misinterpretation of our recommendations if we are not retained to perform this recommended task.

6.2 EARTHWORK OBSERVATION, SPECIAL INSP, & MATER. TESTING

To provide project continuity, it is essential that Fenagh be retained to observe earthwork construction, to evaluate exposed foundation soils for appropriate bearing capacity, and provide special inspections and materials testing. Construction services of Fenagh are essential to observe grading operations during site preparation, test trench backfill, engineered fill, and other related construction, observe surface and subsurface conditions during foundation excavation, evaluate the applicability of the recommendations contained in this report, and recommend appropriate changes in construction procedures if conditions are found to differ from those encountered during this investigation.

Separate proposals and estimates can be provided for each of the additional services described above when requested. Fenagh can also prepare a master agreement for providing these services.

7 LIMITATIONS

The conclusions and recommendations provided in this report are based on our understanding of the proposed improvements, data developed from the results of our field and laboratory testing, including engineering assessment and analyses. The field explorations were located in the field by pacing from available landmarks as surveying was not part of our work scope. It is possible that actual subsurface conditions can vary between the points of exploration provided during this investigation. If this is found to be the case, Fenagh should be notified and requested to review the changes and provide appropriate modifications to our recommendations if needed.

9070 Center Avenue, Rancho Cucamonga, CA 91730 – (909) 587-6374
California | Seattle | Arizona | Texas | New England | New York | Miami

We have prepared this report in substantial accordance with generally accepted geotechnical engineering practice as it exists in the local area at the time of the work. No warranty, express or implied, is made. This report may be used by the Client, for the purposes stated, for a maximum of three years from the date of the report. If construction is delayed, or if the final construction varies from that stated herein, and land use or other factors modify site and subsurface conditions beyond our control, additional field explorations, laboratory testing, and an updated analysis and report may be required. Fenagh shall be released from any liability resulting from any misuse of the report by the authorized party or our inability to observe the construction and verify our assumptions.

8 REFERENCES

American Society of Civil Engineers (ASCE), 2017, Minimum Design Loads and Associated Criteria for Buildings and Other Structures (7-16).

Boore, D. M., Stewart, J. P., Seyhan, E., & Atkinson, G. M. (2014). NGA-West2 equations for predicting PGA, PGV, and 5% damped PSA for shallow crustal earthquakes. Earthquake Spectra, 30(3), 1057-1085.

Boulanger, R.W. and Idriss, I.M., 2008, “Soil Liquefaction during Earthquakes,” Earthquake Engineering Research Institute, MNO.

Bray, J. D., Sancio, R. B., 2006, Assessment of the Liquefaction Susceptibility of Fine-Grained Soils, Journal of Geotechnical and Geoenvironmental Engineering, ASCE, Vol. 132, No. 9, pp. 1165-1177.

California Building Standards Commission. (2022). California Building Code, Title 24, Part 2, Volumes 1 & 2. Retrieved from https://codes.iccsafe.org/s/CABC2022P1/chapter-12-interior-environment/CABC2022P1-Ch12-Sec1226.8.5.1.1

California Department of Transportation (Caltrans); Highway Design Manual; Seventh Edition; 2023.

California Geological Survey, California Department of Conservation, Fault Activity Map of California, 2025a, https://maps.conservation.ca.gov/cgs/fam/; accessed May 2025.

California Geological Survey, California Department of Conservation, Earthquake Zones of Required Investigation, 2025b, https://maps.conservation.ca.gov/cgs/informationwarehouse/eqzapp/; accessed May 2025.

California Geological Survey, California Department of Conservation, California Tsunami Maps, 2025c, https://maps.conservation.ca.gov/cgs/informationwarehouse/ts_evacuation/, accessed May 2025.

California Geological Survey, California Department of Conservation, CGS Information Warehouse, Landslides, 2025d, https://maps.conservation.ca.gov/cgs/lsi/, accessed May 2025.

California Department of Conservation, Well Finder, 2025, https://maps.conservation.ca.gov/doggr/wellfinder/; accessed May 2025.

California Department of Water Resources, Dam Breach Inundation Map, 2025, https://fmds.water.ca.gov/webgis/?appid=dam_prototype_v2, May 2025.

California Geological Survey, 2008, Guidelines for Evaluation and Mitigation of Seismic Hazards in California, Special Publication 117A.

9070 Center Avenue, Rancho Cucamonga, CA 91730 – (909) 587-6374
California | Seattle | Arizona | Texas | New England | New York | Miami

California Geologic Survey, California Department of Conservation, Geologic Compilation of Quaternary Surficial Deposits in Southern California, La Habra 7.5' Quadrangle, https://maps.conservation.ca.gov/cgs/qsd/app/, accessed May 2025.

California Institute of Technology, Southern California Earthquake Data Center – Significant Earthquake and Faults, https://scedc.caltech.edu/earthquake/significant.html, accessed May 2025.

Campbell, K. W., & Bozorgnia, Y. (2014). NGA-West2 ground motion model for the average horizontal components of PGA, PGV, and 5% damped linear acceleration response spectra. Earthquake Spectra, 30(3), 1087-1115.

Chiou, B. S. J., & Youngs, R. R. (2014). Update of the Chiou and Youngs NGA model for the average horizontal component of peak ground motion and response spectra. Earthquake Spectra, 30(3), 1117-1153.

Department of Toxic Substance Control, DTSC Information Advisory Clean Imported Fill Material Fact Sheet, https://dtsc.ca.gov/information-advisory-clean-imported-fill-material-fact-sheet/, accessed May 2025.

Ishihara, K. 1985. Stability of natural deposits during earthquakes. Proc. 11th International Conference on Soil Mechanics and Foundation Engineering, San Francisco, CA, A.A. Balkema, Rotterdam 1: 321-376.

Office of Statewide Health Planning and Development (California), 2025, SEAOC/OSHPD Seismic Design Map Tool. https://seismicmaps.org., accessed May 2025.

O'Rourke, T.D. and Pease, J.W. 1997. Mapping liquefiable layer thickness for seismic hazard assessment, Journal of Geotechnical Engineering, ASCE, New York, NY, Vol. 123, No. 1, January, pp 46-56.

Robertson, P.K., 2009, Interpretation of cone penetration tests – a unified approach, Canadian Geotechnical Journal, 46 (11), 1337-1355.

Tokimatsu, K. and Seed, H. B., 1987, Evaluation of Settlements in Sands Due to Earthquake Shaking, Journal of Geotechnical Engineering, ASCE, Vol. 113, No. 8.

United States Federal Emergency Management Agency (FEMA), 2025, https://msc.fema.gov/portal// accessed May 2025.

United States Geological Survey (USGS), 2025a, U.S. Quaternary Faults, https://usgs.maps.arcgis.com /apps/webappviewer/index.html?id=5a6038b3a1684561a9b0aadf88412fcf, accessed May 2025.

United States Geological Survey (USGS), 2025, Areas of Land Subsidence in California, Interactive Tool, website: https://ca.water.usgs.gov/land_subsidence/california-subsidence-areas.html, accessed May 2025.

United States Environmental Protection Agency; EPA Map of Radon Zones Including State Radon Information and Contacts; Website: https://geopub.epa.gov/Radon/, accessed May 2025.

United States Geological Survey (USGS); Quaternary Fault and Fold Database of the United States;(https://earthquake.usgs.gov/cfusion/qfault/show_report_AB_archive.cfm?fault_id=1&section_id=c), accessed May 2025.

United States Geological Survey, 2025, U.S.G.S. Interactive Deaggregation Program. http://earthquake.usgs.gov/hazards/interactive/., accessed May 2025.

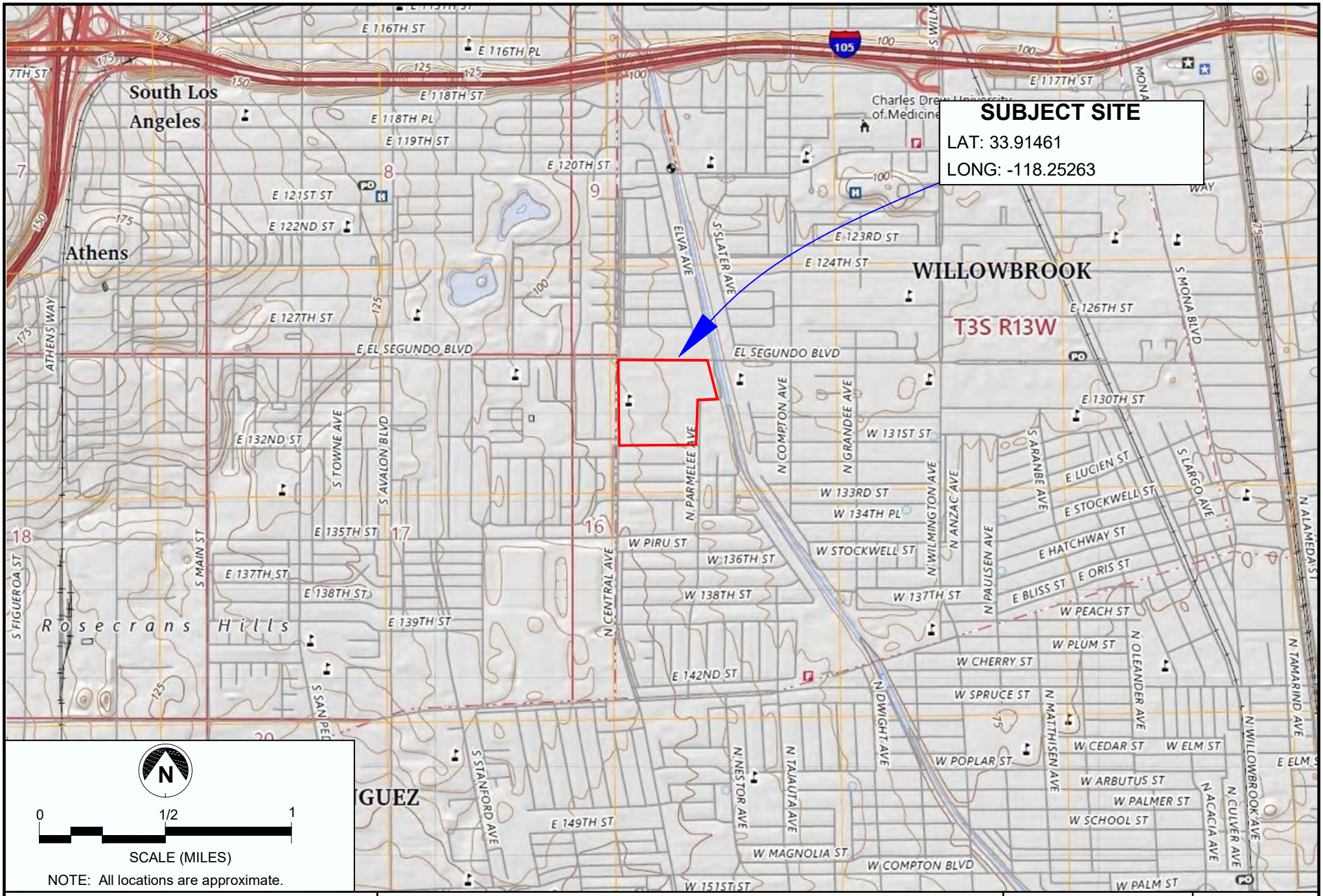
9070 Center Avenue, Rancho Cucamonga, CA 91730 – (909) 587-6374
California | Seattle | Arizona | Texas | New England | New York | Miami

Youd, T.L. & Garris, C.T. 1995. Liquefaction-induced ground surface disruption. Journal of Geotechnical Engineering, ASCE 121(11): 805-809.

Youd, T.L., Hansen, C.M., and Bartlett, S.F. 2002. Revised multilinear regression equations for prediction of lateral spread displacement, Journal of Geotechnical and Geo-environmental Engineering, 128(12), 1007-1017.

9070 Center Avenue, Rancho Cucamonga, CA 91730 – (909) 587-6374
California | Seattle | Arizona | Texas | New England | New York | Miami

PLATES



NOTE: All locations are approximate.

FENAGH ENGINEERING AND TESTING

VICINITY MAP

CENTENNIAL HIGH SCHOOL - MODERNIZATION

COMPTON, CALIFORNIA

REFERENCE:HTTPS://TOPOBUILDER.NATIONALMAP.GOV/

Date: June, 2025
By: LM
Job No.: J8696

PLATE: 1



LEGEND:

Project Site

N

0 350 700

SCALE (feet)

NOTE: All locations are approximate.

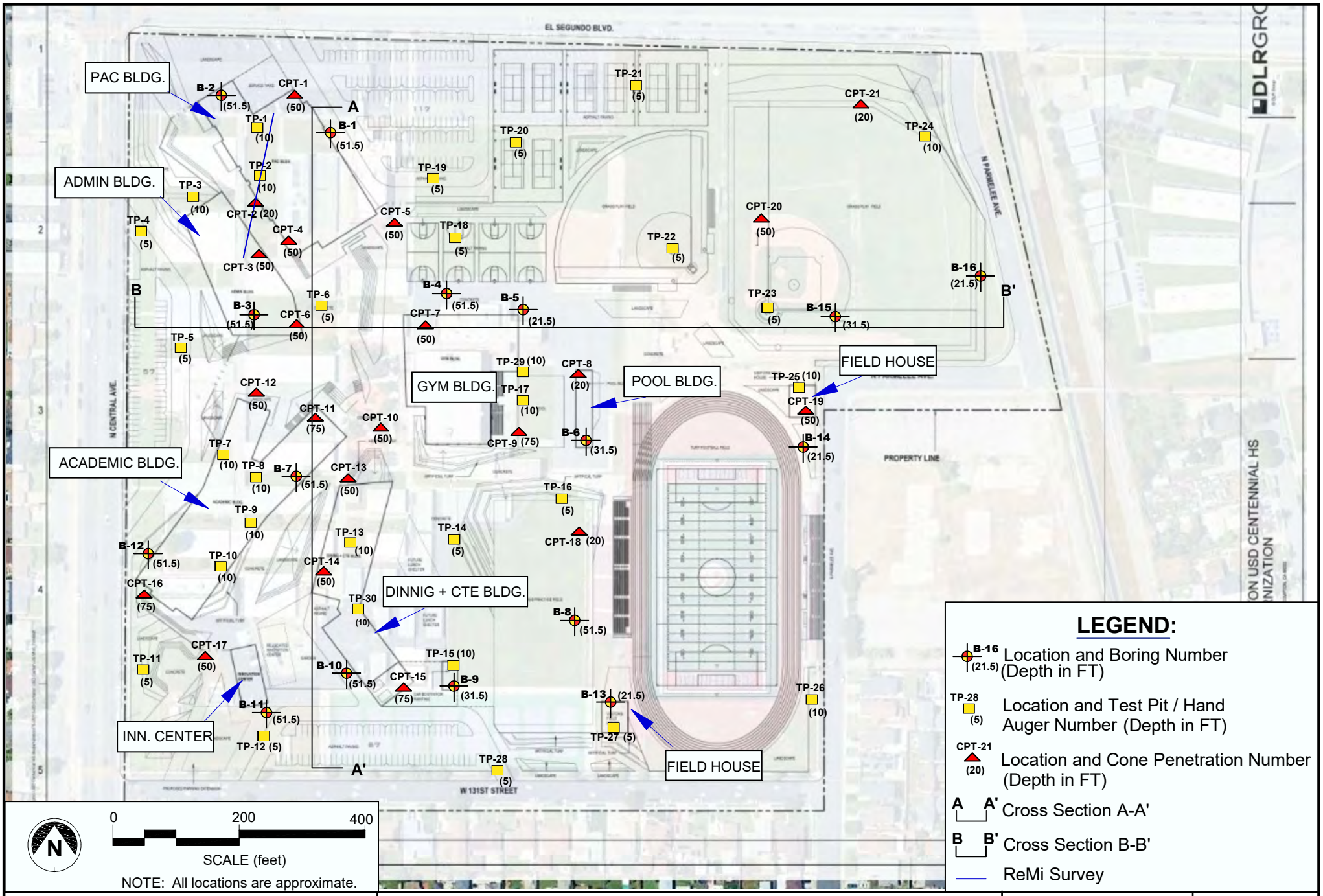
FENAGH ENGINEERING AND TESTING

SITE MAP
CENTENNIAL HIGH SCHOOL - MODERNIZATION
COMPTON, CALIFORNIA

REFERENCE: GOOGLE EARTH (2025)

Date: June, 2025
By: LM
Job No.: J8696

PLATE: 2



NOTE: All locations are approximate.

LEGEND:

- B-16 (21.5) — Location and Boring Number (Depth in FT)
- TP-28 (5) — Location and Test Pit / Hand Auger Number (Depth in FT)
- CPT-21 (20) — Location and Cone Penetration Number (Depth in FT)
- A A' — Cross Section A-A'
- B B' — Cross Section B-B'
- ReMi Survey

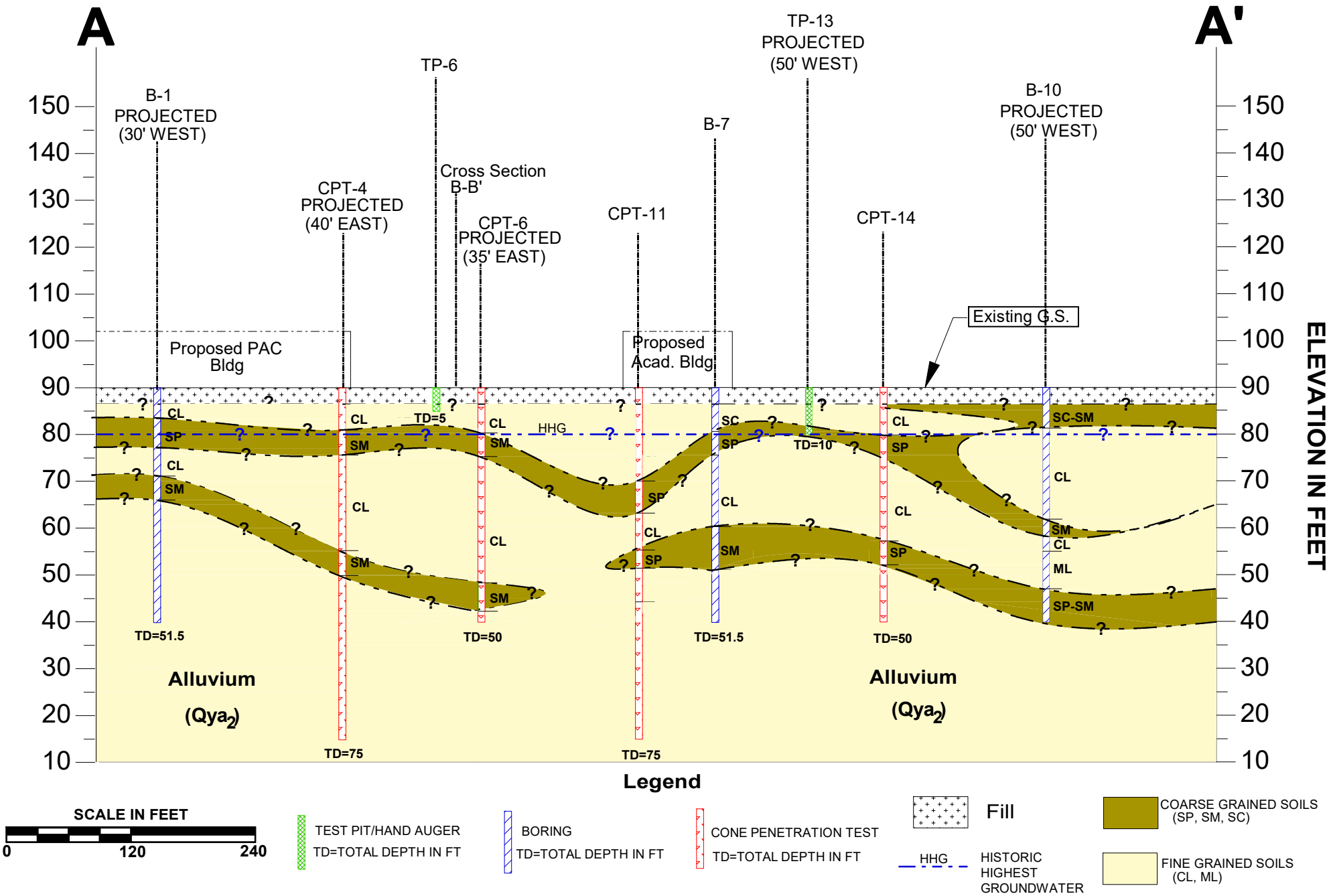
FENAGH ENGINEERING AND TESTING

EXPLORATION MAP
CENTENNIAL HIGH SCHOOL - MODERNIZATION
COMPTON, CALIFORNIA

REFERENCE: GOOGLE EARTH (2025) AND SITE PLAN PREPARED BY DLR GROUP

Date: June, 2025
By: LM
Job No.: J8696

PLATE: 3



Legend

SCALE IN FEET

0 120 240

TEST PIT/HAND AUGER
TD=TOTAL DEPTH IN FT

BORING
TD=TOTAL DEPTH IN FT

CONE PENETRATION TEST
TD=TOTAL DEPTH IN FT

Fill

HHG HISTORIC HIGHEST GROUNDWATER

COARSE GRAINED SOILS (SP, SM, SC)

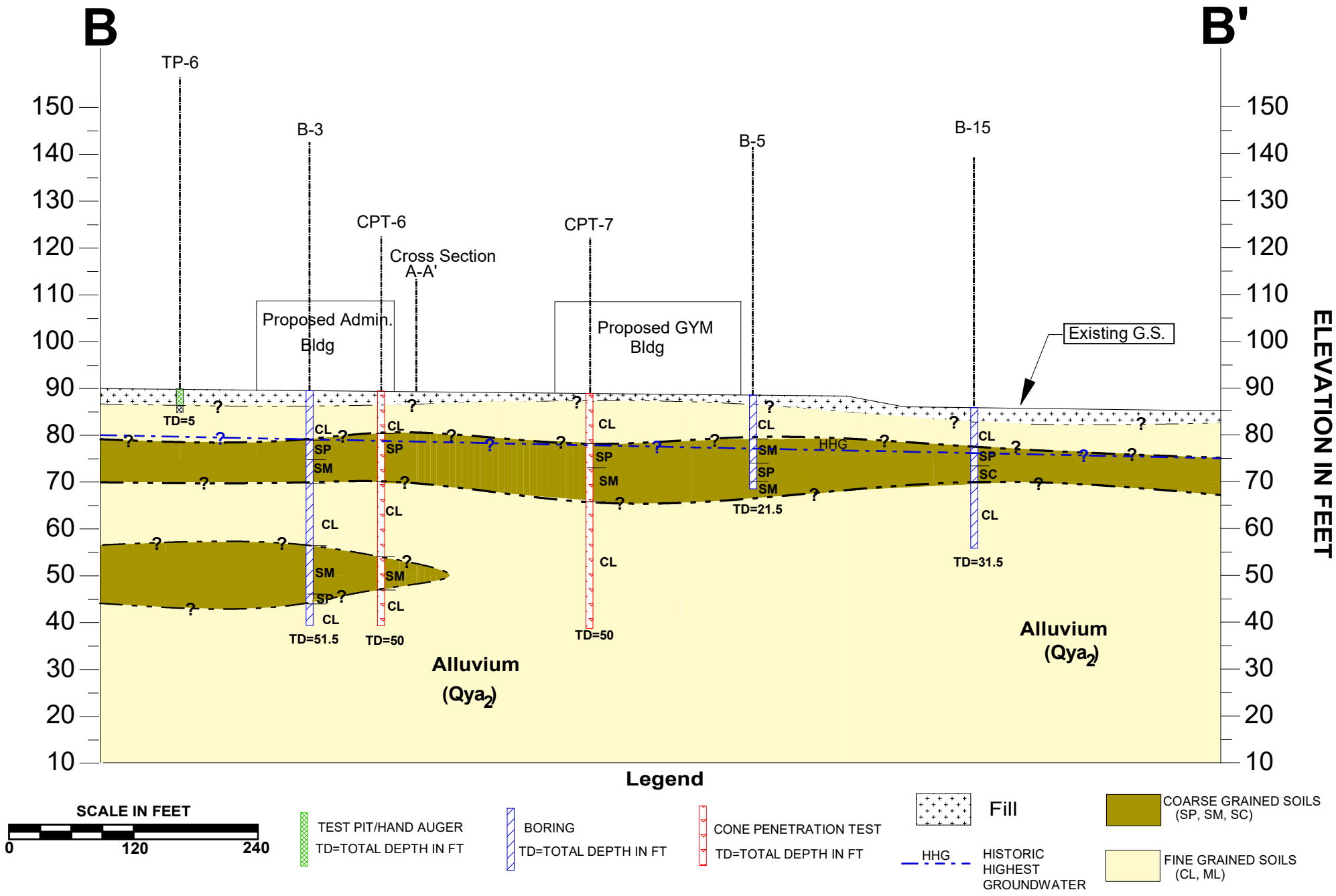
FINE GRAINED SOILS (CL, ML)

FENAGH ENGINEERING AND TESTING

CROSS SECTION A-A'
CENTENNIAL HIGH SCHOOL - MODERNIZATION
COMPTON, CALIFORNIA

Date: June, 2025
By: LM
Job No.: J8696

PLATE: 3A



Legend

SCALE IN FEET

0 120 240

TEST PIT/HAND AUGER
TD=TOTAL DEPTH IN FT

BORING
TD=TOTAL DEPTH IN FT

CONE PENETRATION TEST
TD=TOTAL DEPTH IN FT

Fill

HHG HISTORIC HIGHEST GROUNDWATER

COARSE GRAINED SOILS (SP, SM, SC)

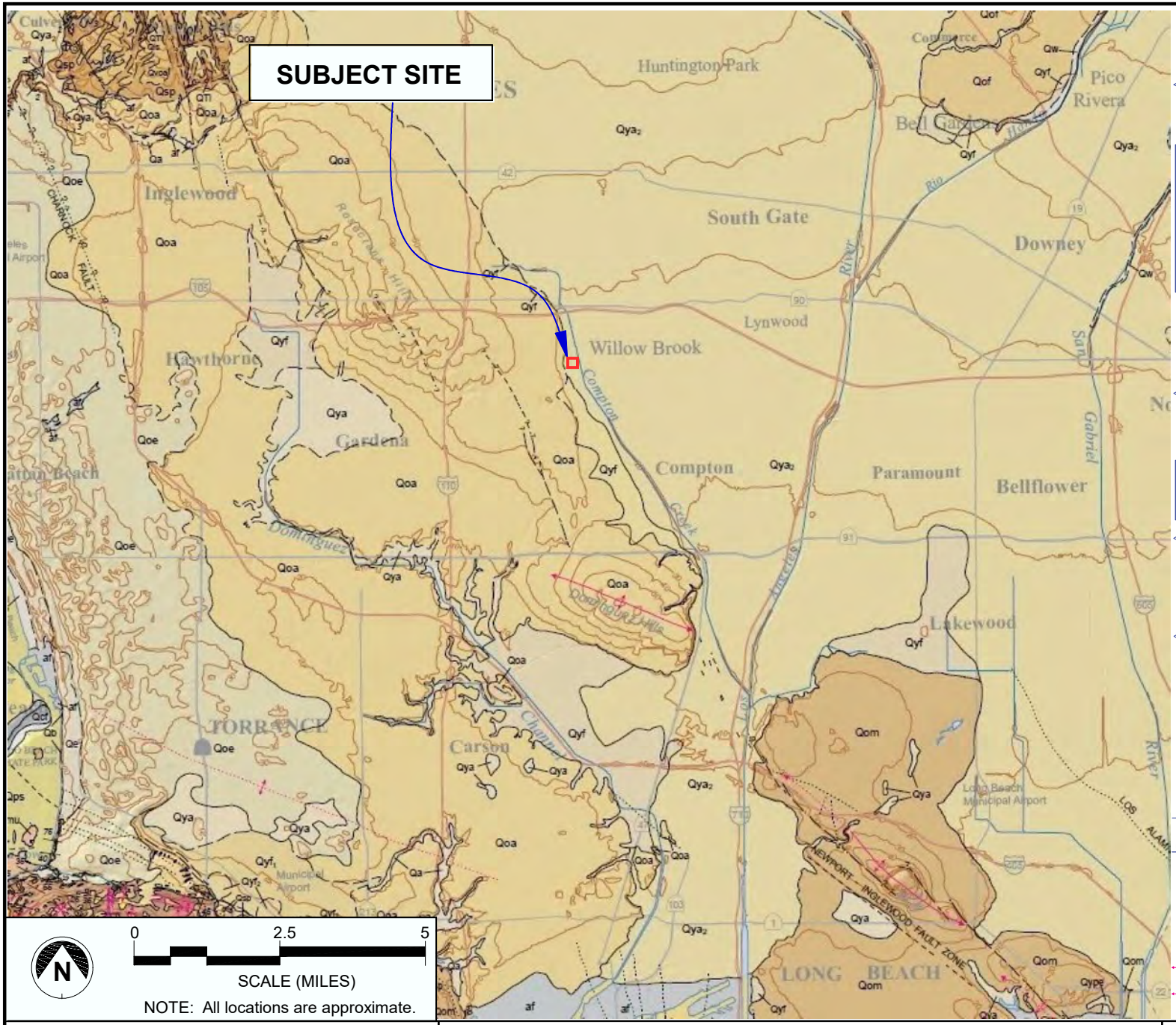
FINE GRAINED SOILS (CL, ML)

FENAGH ENGINEERING AND TESTING

CROSS SECTION B-B'
CENTENNIAL HIGH SCHOOL - MODERNIZATION
COMPTON, CALIFORNIA

Date: June, 2025
By: LM
Job No.: J8696

PLATE: 3B



NOTE: All locations are approximate.

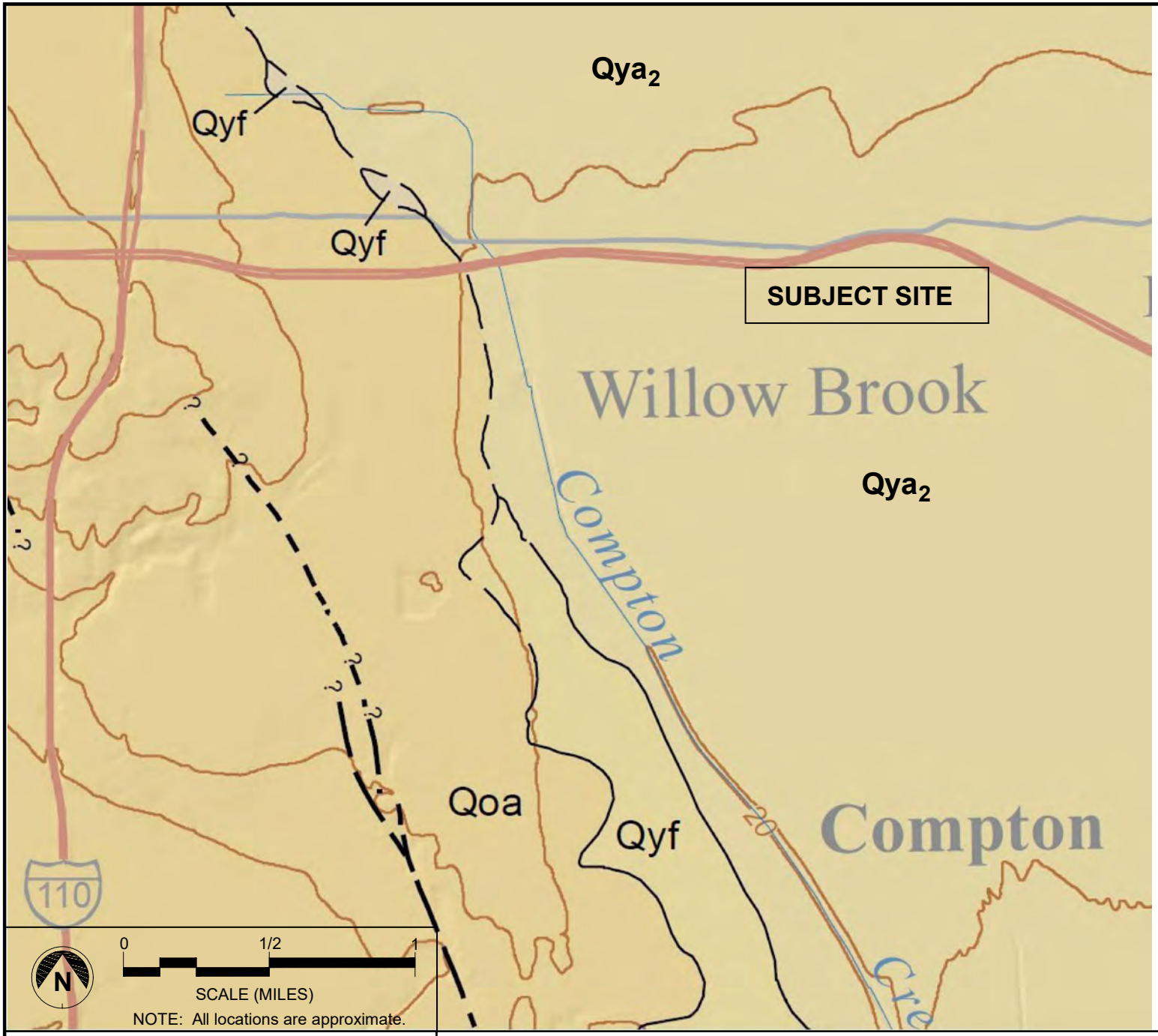
FENAGH
ENGINEERING AND TESTING

REGIONAL GEOLOGY MAP
CENTENNIAL HIGH SCHOOL - MODERNIZATION
COMPTON, CALIFORNIA

REFERENCE: GEOLOGIC MAP OF LONG BEACH 30' X 60' QUADRANGLE, CALIFORNIA

Date: June, 2025
By: LM
Job No.: J8696

PLATE: 4



Artificial fill *(only selected larger fills shown)*
Alluvium
Wash deposits
Beach deposits
Eolian deposits
Paralic estuarine deposits
Young alluvium, undivided
Young alluvium, Unit 3
Young alluvium, Unit 2
Young alluvium, Unit 1
Young alluvial fan deposits, undivided
Young alluvial fan deposits, Unit 2
Young alluvial fan deposits, Unit 1
Young eolian deposits
Young paralic estuarine deposits
Landslide deposits *(only selected larger landslides shown)*
Old alluvium, undivided
Old alluvial fan deposits, undivided
Old eolian deposits
Old shallow marine deposits on wave-cut surface
Very old alluvium, undivided
Very old alluvial fan deposits, undivided
La Habra Formation
San Pedro Formation
San Pedro Formation, undivided
Timms Point Silt Member
Lomita Marl Member
Inglewood Formation
Fernando Formation
Upper Member
Lower Member
QTfc QTfc = conglomerate
Puente Formation
Sycamore Canyon Member
Tpnscc Tpnscc = conglomerate
Yorba Member
Soquel Member
La Vida Member
Monterey Formation
Malaga Mudstone Member
Valmonte Diatomite Member
Volcanic rocks within the Monterey Formation
Altamira Shale Member
Catalina Schist

OFFSHORE REGION
Unconsolidated shelf sediment
Unconsolidated flank sediment
Unconsolidated basin sediment
Unconsolidated ridge sediment
Unconsolidated canyon sediment
Gully fill
Canyon fill
Overbank levee deposits
Fan deposits
Landslide deposits
Pleistocene sedimentary deposits, undivided
Plio-Pleistocene terrace deposits
Pliocene sedimentary rocks, undivided*
Tertiary sedimentary and volcanic rocks, undivided*
Miocene plutonic and hypabyssal rocks, undivided*
Miocene sedimentary rocks, undivided*
Miocene volcanic rocks*
Metamorphic rocks of pre- Late Cretaceous age*

* Q/ = Map unit overlain by more than 3 meters of unconsolidated Quaternary sediment (i.e. Q/Tmms).

SYMBOL EXPLANATION

Contact between map units - Accuracy of location ranges from well located to inferred; dotted where concealed. All offshore contacts are considered approximately located

U D

Fault - Solid where accurately located; long dash where approximately located; short dash where inferred; dotted where concealed; queried where continuation, identity, or existence is uncertain. Where age was determined in offshore area, age symbol is shown astride fault and relative offset is shown by U on upthrown side and D on downthrown side (relative or apparent). Age of fault is indicated as follows:

- cuts strata of Holocene age
- cuts strata of Pleistocene age
- cuts strata of Quaternary age
- cuts strata of Pliocene age
- cuts Miocene or older strata

Anticline - Solid where accurately located; long dash where approximately located; short dash where inferred; dotted where concealed. Plunge direction indicated by arrowhead on fold axis

Synclinal Fold - Solid where accurately located; long dash where approximately located; dotted where concealed. Plunge direction indicated by arrowhead on fold axis

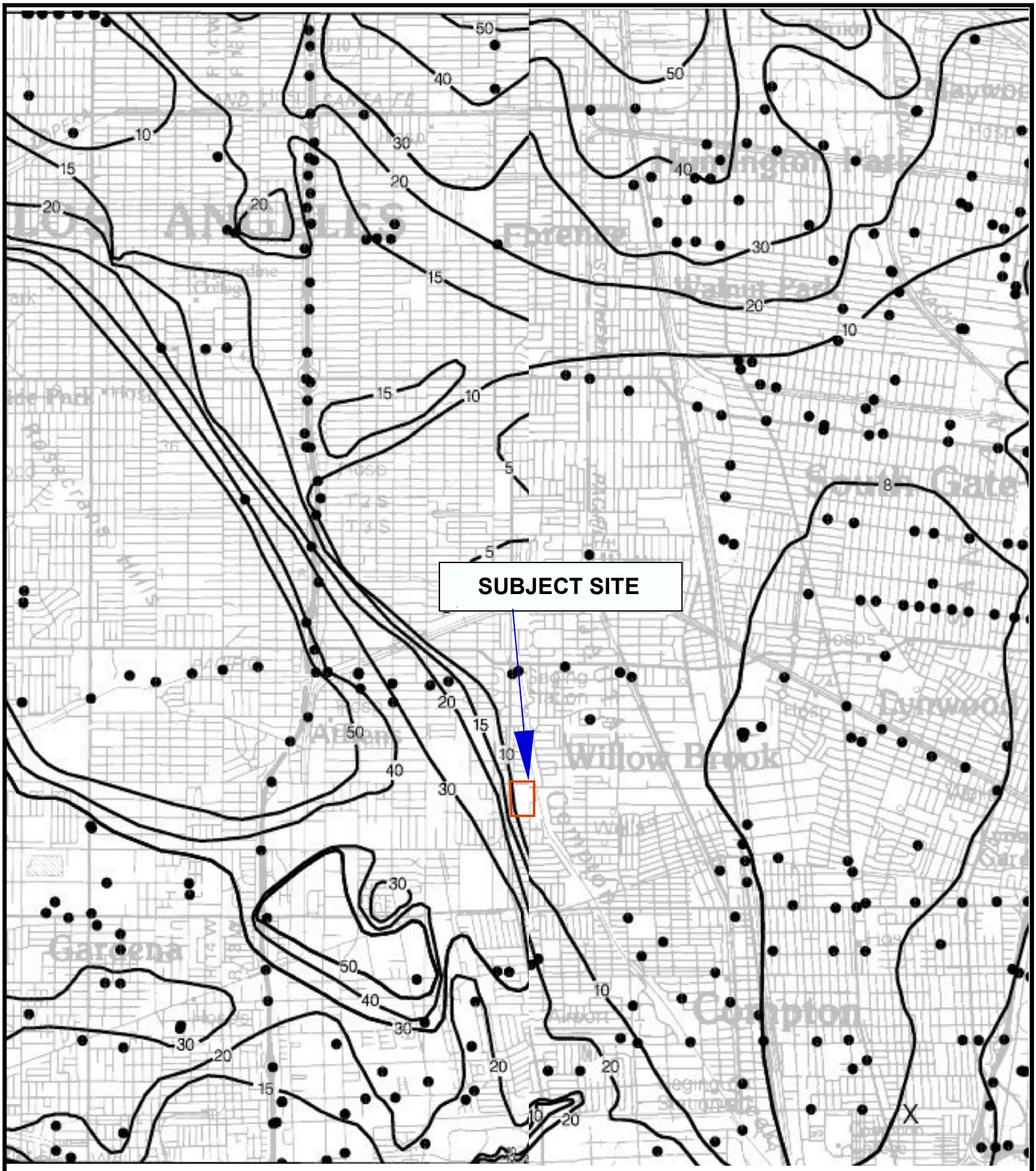
FENAGH
ENGINEERING AND TESTING

LOCAL GEOLOGY MAP
CENTENNIAL HIGH SCHOOL - MODERNIZATION
COMPTON, CALIFORNIA

REFERENCE: GEOLOGIC MAP OF LONG BEACH 30' X 60' QUADRANGLE, CALIFORNIA

Date: June, 2025
By: LM
Job No.: J8696

PLATE: 5



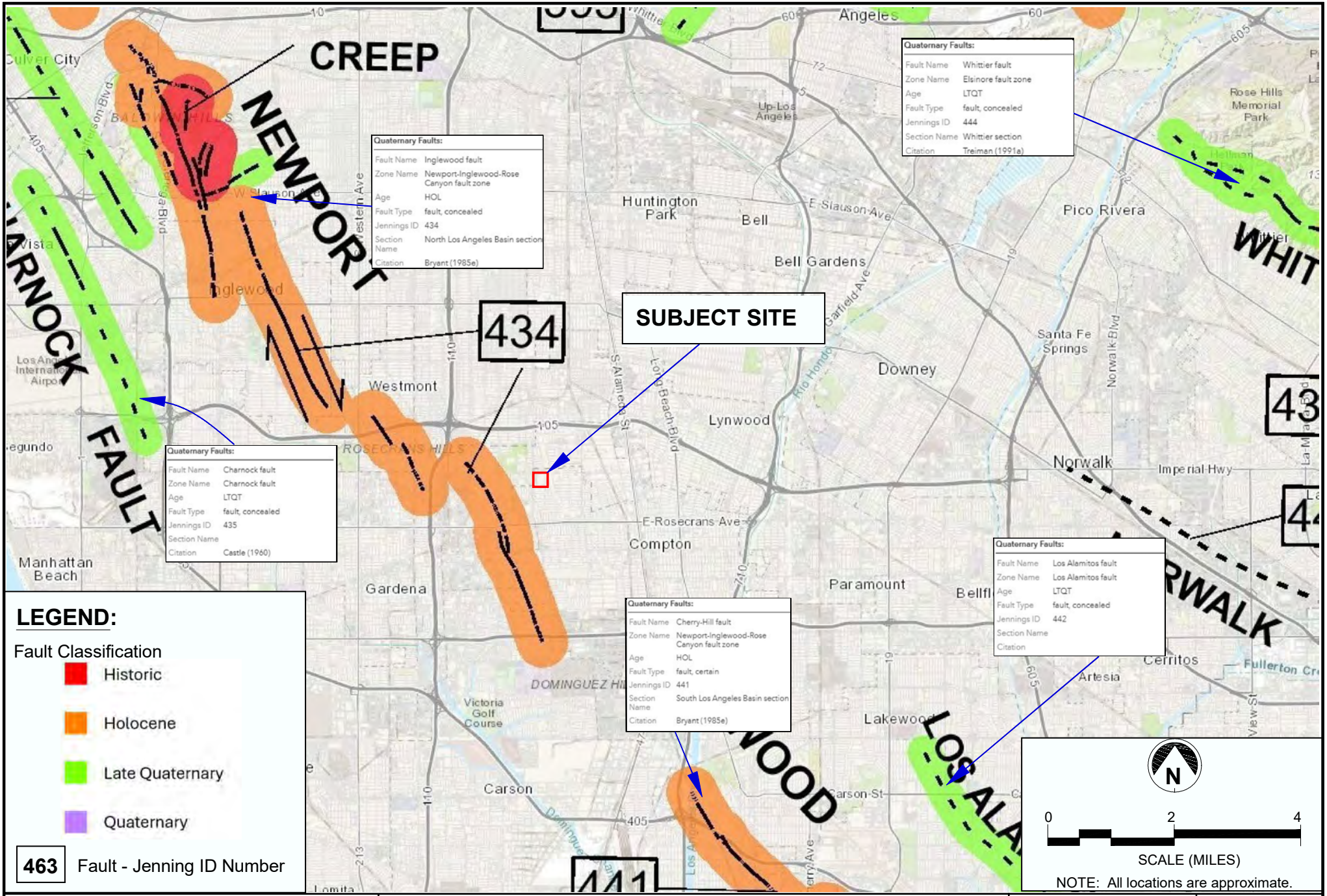
FENAGH
ENGINEERING AND TESTING

HISTORICALLY HIGHEST GROUNDWATER
CENTENNIAL HS - MODERNIZATION
COMPTON, CALIFORNIA

REFERENCE: SEISMIC HAZARD ZONE REPORT INGLEWOOD AND SOUTH GATE 7.5 MINUTES QUADRANGLE

Date: June, 2025
By: LM
Job No.: J8696

PLATE: 6



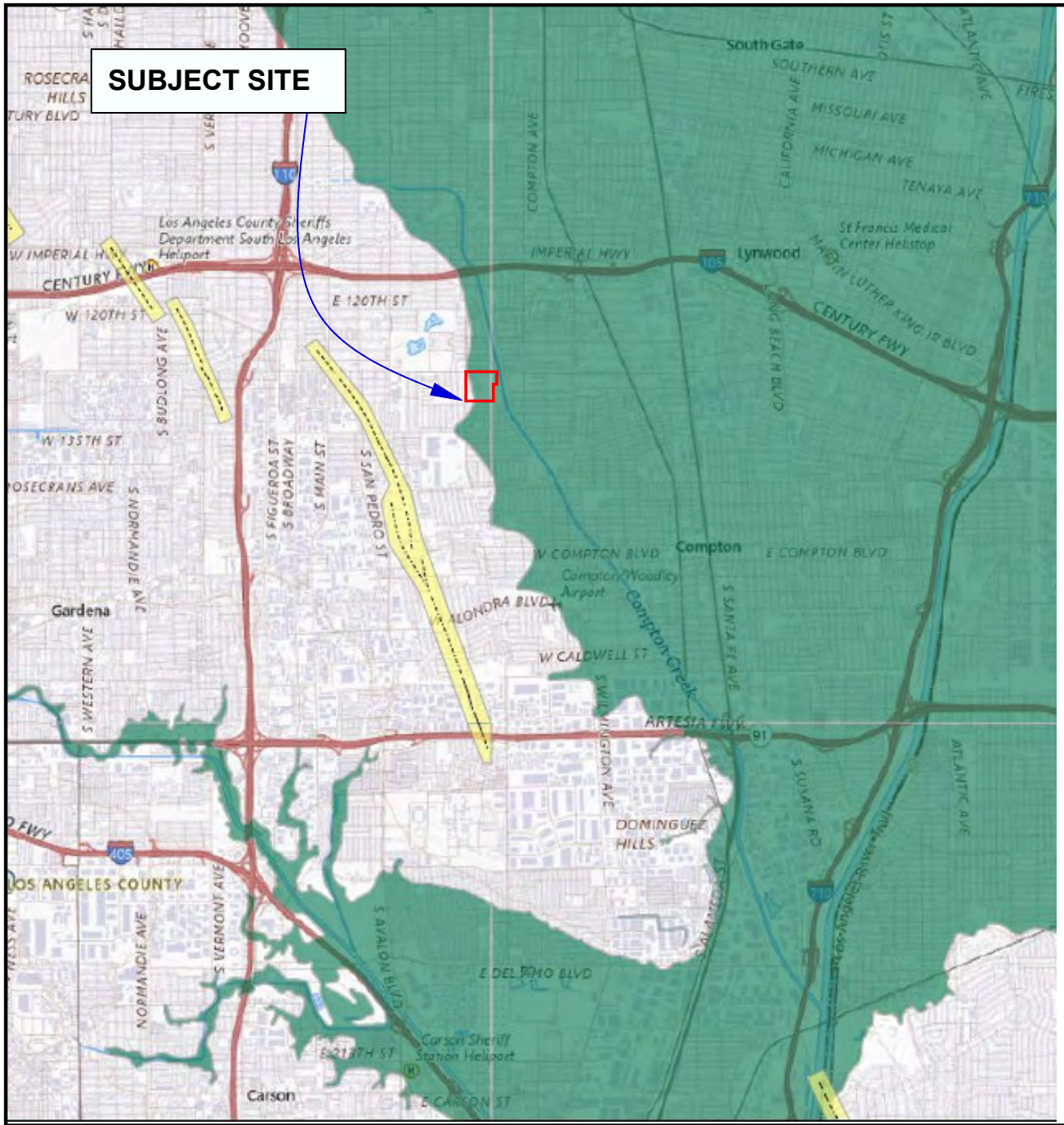
FENAGH ENGINEERING AND TESTING

LOCAL FAULT MAP
CENTENNIAL HIGH SCHOOL - MODERNIZATION
COMPTON, CALIFORNIA

REFERENCE: FAULT ACTIVITY MAP - CALIFORNIA DEPARTMENT OF CONSERVATION

Date: June, 2025
By: LM
Job No.: J8696

PLATE: 7



Earthquake Zones of Required Investigation

California Geological Survey

MAP EXPLANATION

SEISMIC HAZARD ZONES

Liquefaction Zones

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

Earthquake-Induced Landslide Zones

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

Earthquake Fault Zones

Zone boundaries are delineated by straight-line segments; the boundaries define the zone encompassing active faults that constitue a potential hazard to structures from surface faulting or fault creep such that avoidance as described in Public Resources Code Section 2621.5(a) would be required

N

0 2.5 5

SCALE (MILES)

NOTE: All locations are approximate.

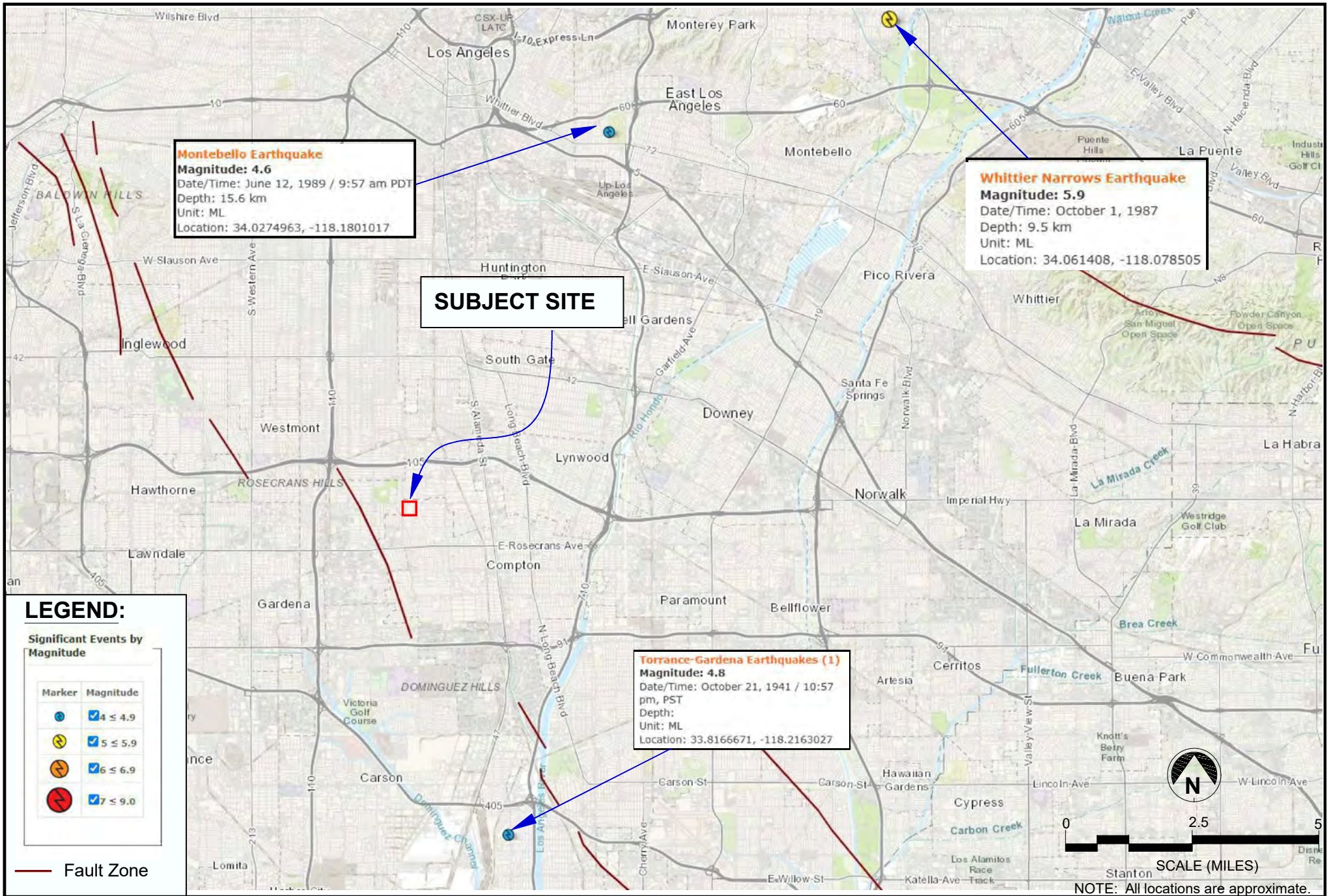
FENAGH ENGINEERING AND TESTING

SEISMIC HAZARD ZONE MAP
CENTENNIAL HIGH SCHOOL - MODERNIZATION
COMPTON, CALIFORNIA

REFERENCE: WWW.CONSERVATION.CA.GOV/CGS/

Date: June, 2025
By: LM
Job No.: J8696

PLATE: 8



FENAGH ENGINEERING AND TESTING

SIGNIFICANT SEISMIC EVENTS MAP - LOCAL CENTENNIAL HIGH SCHOOL - MODERNIZATION COMPTON, CALIFORNIA

REFERENCE: SIGNIFICANT EARTHQUAKE AND FAULTS. SOUTHERN CALIFORNIA EARTHQUAKE DATA CENTER, CALTECH

Date: June, 2025
By: LM
Job No.: J8696

PLATE: 9



0 250 500 1,000 1,500 2,000 Feet 1:6,000

Legend

SEE FIS REPORT FOR DETAI LED LEGEND AND INDEX MAP FOR FIRM PANEL LAYOUT

SPECIAL FLOOD HAZARD AREAS
- Without Base Flood Elevation(BFE) *ZoneA,V,A99*
- With BFE or Depth *ZoneAE,AO,AH,VE,AR*
- Regulatory Floodway

OTHER AREAS OF FLOOD HAZARD
- 0.2% Annual Chance Flood Hazard, Areas of 1% annual chance flood with average depth less than one foot or with drainage areas of less than one square mile *ZoneX*
- Future Conditions 1% Annual Chance Flood Hazard *ZoneX*
- Area with Reduced Flood Risk due to Levee.SeeNotes. *ZoneX*
- Area with Flood Risk due to Levee *ZoneD*

OTHERAREAS
- NOSCREEN AreaofMinimalFloodHazard *ZoneX*
- EffectiveLOMRs
- AreaofUndeterminedFloodHazard *ZoneD*

GENERAL STRUCTURES
- Channel,Culvert,orStormSewer
- Levee,Dike,orFloodwall

OTHER FEATURES
- 20.2 Cross Sections with 1% Annual Chance
- 17.5 Water Surface Elevation
- 8 Coastal Transect
- Base Flood Elevation Line (BFE)
- Limit of Study
- Jurisdiction Boundary
- Coastal Transect Baseline
- Profile Baseline
- Hydrographic Feature

MAP PANELS
- Digital Data Available
- No Digital Data Available
- Unmapped

N

The pin displayed on the map is an approximate points elected by the user and does not represent an authoritative property location.

This map complies with FEMA's standards for the use of digital flood maps if it is not void as described below. The basemap shown complies with FEMA's basemap accuracy standards

The flood hazard information is derived directly from the authoritative NFHL web services provided by FEMA. This map was exported on 4/22/2025 at 5:59AM and does not reflect changes or amendments subsequent to this date and time. The NFHL and effective information may change or become superseded by new data over time.

This map image is void if the one or more of the following map elements do not appear: basemap imagery, flood zone labels, legend, scalebar, map creation date, community identifiers, FIRM panel number, and FIRM effective date. Map images for unmapped and unmodernized areas can not be used for regulatory purposes.

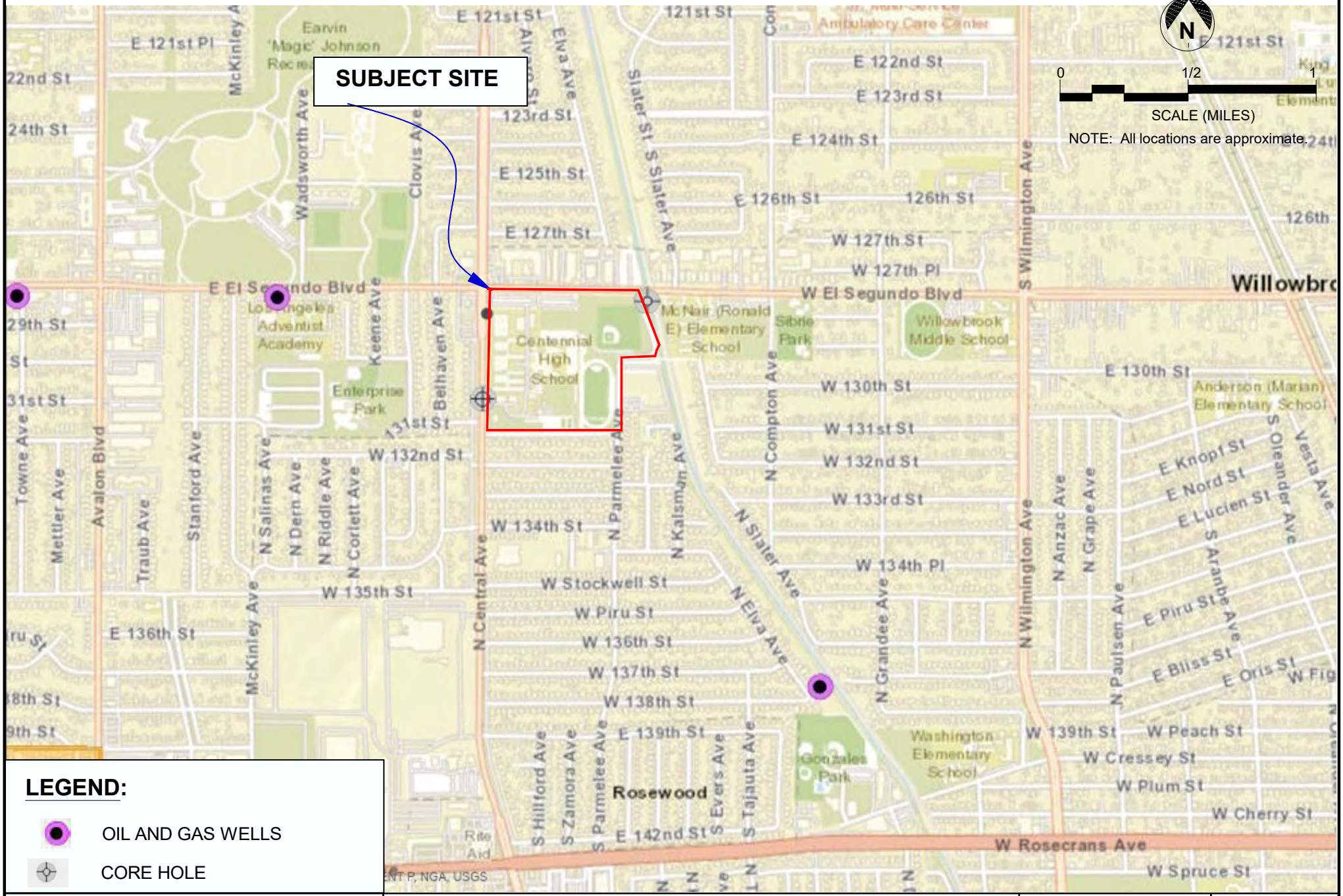
FENAGH ENGINEERING AND TESTING

FLOOD INSURANCE RATE MAP
CENTENNIAL HIGH SCHOOL - MODERNIZATION
COMPTON, CALIFORNIA

REFERENCE: FEMA - BASEMAP IMAGERY SOURCE: USGS NATIONAL MAP 2023

Date: June, 2025
By: LM
Job No.: J8696

PLATE: 10



FENAGH ENGINEERING AND TESTING

OIL AND GAS WELL LOCATION MAP
CENTENNIAL HIGH SCHOOL - MODERNIZATION
COMPTON, CALIFORNIA

REFERENCE: https://maps.conservation.ca.gov/oilgas/

Date: June, 2025
By: LM
Job No.: J8696

PLATE: 12

APPENDIX A
FIELD EXPLORATION

Collection of Field Samples and In-Situ Performance Testing

Bulk Samples

Bulk samples of representative earth materials were obtained from the exploratory borings.

The Standard Penetration Test (SPT) Sampler

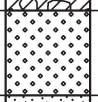
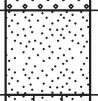
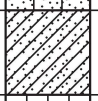
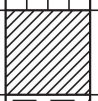
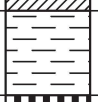
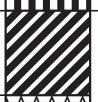
Disturbed drive soil samples were obtained by means of a Standard Penetration Test sampler. The sampler is composed of a split barrel with an external diameter of 2 inches and an unlined internal diameter of 1-3/8 inches. The sampler was driven into the ground 6 to 18 inches with a 140-pound hammer free-falling from a height of 30 inches in general accordance with ASTM D1586. The blow counts were recorded for every 6 inches of penetration; the blow counts reported on the logs are those for the last 12 inches of penetration.

Modified Split Barrel Samplers

Relatively undisturbed soil samples were obtained using split barrel soil samplers with external diameters of 3.0 inches, and 2.5 inches both lined with 1-inch tall thin brass rings with inside diameters of approximately 2.4 inches. The sample barrels were driven into the ground with the weight of a hammer in general accordance with ASTM D3550.

Cone Penetration Test (CPT Soundings), Shear Wave Velocity Measurement and ReMi Survey

Cone penetration testing (CPT soundings) and shear wave velocity measurements were performed by Kehoe Testing & Engineering. The summary report which includes test parameters and findings of CPT soundings and shear wave velocity measurements by Kehoe are provided herein including a ReMi Survey by GeoCon Consultants.

MAJOR DIVISIONS					TYPICAL NAMES
COARSE-GRAINED SOILS MORE THAN HALF IS COARSER THAN NO. 200 SIEVE	GRAVELS MORE THAN HALF COARSE FRACTION IS LARGER THAN NO. 4 SIEVE	CLEAN GRAVELS WITH LESS THAN 15% FINES	GW		WELL-GRADED GRAVELS WITH OR WITHOUT SAND
			GP		POORLY GRADED GRAVELS WITH OR WITHOUT SAND
		GRAVELS WITH 15% OR MORE FINES	GM		SILTY GRAVELS WITH OR WITHOUT SAND
			GC		CLAYEY GRAVELS WITH OR WITHOUT SAND
	SANDS MORE THAN HALF COARSE FRACTION IS FINER THAN NO. 4 SIEVE SIZE	CLEAN SANDS WITH LESS THAN 15% FINES	SW		WELL-GRADED SANDS WITH OR WITHOUT GRAVEL
			SP		POORLY GRADED SANDS WITH OR WITHOUT GRAVEL
		SANDS WITH 15% OR MORE FINES	SM		SILTY SANDS WITH OR WITHOUT GRAVEL
			SC		CLAYEY SANDS WITH OR WITHOUT GRAVEL
FINE-GRAINED SOILS MORE THAN HALF IS FINER THAN NO. 200 SIEVE	SILTS AND CLAYS LIQUID LIMIT 50% OR LESS		ML		INORGANIC SILTS OF LOW TO MEDIUM PLASTICITY WITH OR WITHOUT SAND OR GRAVEL
			CL		INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY WITH OR WITHOUT SAND OR GRAVEL
			OL		ORGANIC SILTS OR CLAYS OF LOW TO MEDIUM PLASTICITY WITH OR WITHOUT SAND OR GRAVEL
	SILTS AND CLAYS LIQUID LIMIT GREATER THAN 50%		MH		INORGANIC SILTS OF HIGH PLASTICITY WITH OR WITHOUT SAND OR GRAVEL
			CH		INORGANIC CLAYS OF HIGH PLASTICITY WITH OR WITHOUT SAND OR GRAVEL
			OH		ORGANIC SILTS OR CLAYS OF HIGH PLASTICITY WITH OR WITHOUT SAND OR GRAVEL
HIGHLY ORGANIC SOILS			PT		PEAT AND OTHER HIGHLY ORGANIC SOILS

SAMPLE SYMBOLS

SAMPLE TYPES

- Bulk Sample
- Modified California Sampler
- Standard Penetration Test
- Split Spoon Sampler
- NR — No Recovery

LABORATORY SYMBOLS

- AL - ATTERBERG LIMITS
- CON - CONSOLIDATION
- COR - CORROSIVITY TESTING
- DS - DIRECT SHEAR
- EI - EXPANSION INDEX
- MAX - MAXIMUM DENSITY
- RV - R-VALUE
- PD - PARTICLE-SIZE DISTRIBUTION
- UC - UNCONFINED COMPRESSIVE STRENGTH
- WA - No. 200 WASH (% PASSING No. 200 SIEVE)

GROUNDWATER SYMBOLS

WATER LEVEL AT TIME OF EXCAVATION OR AS INDICATED

RELATIVE DENSITY OF COHESIONLESS SOILS		CONSISTENCY OF COHESIVE SOILS		
RELATIVE DENSITY	SPT N60 BLOWS/FOOT	CONSISTENCY	SPT N60 BLOWS/FOOT	POCKET PENETROMETER MEASUREMENT (TSF)
VERY LOOSE	0 - 4	VERY SOFT	0 - 2	0 - 0.25
LOOSE	4 - 10	SOFT	2 - 4	0.25 - 0.50
MEDIUM DENSE	10 - 30	MEDIUM STIFF	4 - 8	0.50 - 1.0
DENSE	30 - 50	STIFF	8 - 15	1.0 - 2.0
VERY DENSE	OVER 50	VERY STIFF	15 - 30	2.0 - 4.0
		HARD	OVER 30	OVER 4.0

NUMBER OF BLOWS OF 140 LB HAMMER FALLING 30 INCHES TO DRIVE A 2 INCH O.D. (1-3/8 INCH I.D.) SPLIT-BARREL SAMPLER THE LAST 12 INCHES OF AN 18-INCH DRIVE (ASTM-1586 STANDARD PENETRATION TEST).
IF THE SEATING INTERVAL (1st 6 INCH INTERVAL) IS NOT ACHEIVED, N IS REPORTED AS REF.

FENAGH ENGINEERING AND TESTING

SUBSURFACE EXPLORATION LEGEND

FENAGH ENGINEERING AND TESTING

Client: **Compton Unified School District**
Project: **Centennial HS WSM**
Location: **2606 N Central Avenue, Compton, CA**

BORING LOG
B-1

Start Date:	**04/21/2025**	Ground Surface Elevation (ft):	**89 ft** **MSL**
End Date:	**04/25/2025**	Hole Diameter (in):	**8 in**
Drilled by:	**Baja Exploration**	Location:	**33.915728** **-118.253182**
Drilling Method:	**Hollow-Stem Auger**	DTW During Drilling (ft):	**-**
Logged By:	**RW**	DTW After Drilling (ft):	**-**
Checked By:	**ER**	DTW At Completion (ft):	**-**

Elevation (ft)	Depth (ft)	GW Level (ft)	Lithology	Description	Sample Type	Blow-Count (N)	N60	Dry Unit Weight (pcf)	Moisture (%)	Fines (%)	Atterberg Limits LL (%)	PL (%)	PI (%)
88	0			FILL: SILTY SAND (SM), dark brown, moist, medium dense to dense, nonplastic.									
				YOUNG ALLUVIAL DEPOSITS, undivided (Qya): Lean CLAY (CL), light brown to brown, white and black spots, moist, stiff, low plasticity.									
83	5					15	14	112.3	15.9				
				SILTY SAND (SM), light brown to tan, moist, medium dense, nonplastic.									
78	10					15	21			17			
				Lean CLAY (CL), light brown to brown, moist, stiff, low to medium plasticity.									
73	15					23	21	104.2	16.8				
				SILTY SAND (SM), light brown, moist, medium dense, nonplastic.									
68	20					21	30			36			
				Lean CLAY (CL), light brown to brown, moist, hard, low plasticity, some thinly bedded sand lenses.									
63	25					37	52						
	30												

Elevation (ft)	Depth (ft)	GW Level (ft)	Lithology	Description	Sample Type	Blow-Count (N)	N60	Dry Unit Weight (pcf)	Moisture (%)	Fines (%)	Atterberg Limits		
											LL (%)	PL (%)	PI (%)
58	30			Lean CLAY (CL), light brown to tan, moist, very stiff, low plasticity, some fine SAND.		18	26			68	28	21	7
53	35			brown.		18	26	101.3	15.9				
48	40			with SILT, hard, less plastic.		41	58						
43	45			some SILT, very stiff, thinly bedded wet SAND lens.		27	38			51			
38	50			stiff.		16	23						

Bottom of Boring B-1 at 51.50 ft
Groundwater was not encountered during drilling.

FENAGH ENGINEERING AND TESTING

Client: **Compton Unified School District**
Project: **Centennial HS WSM**
Location: **2606 N Central Avenue, Compton, CA**

BORING LOG
B-2

Start Date:	**04/21/2025**	Ground Surface Elevation (ft):	**89 ft** **MSL**
End Date:	**04/25/2025**	Hole Diameter (in):	**8 in**
Drilled by:	**Baja Exploration**	Location:	**33.916094** **-118.253656**
Drilling Method:	**Hollow-Stem Auger**	DTW During Drilling (ft):	**-**
Logged By:	**RW**	DTW After Drilling (ft):	**-**
Checked By:	**ER**	DTW At Completion (ft):	**-**

Elevation (ft)	Depth (ft)	GW Level (ft)	Lithology	Description	Sample Type	Blow-Count (N)	N60	Dry Unit Weight (pcf)	Moisture (%)	Fines (%)	Atterberg Limits LL (%)	Atterberg Limits PL (%)	Atterberg Limits PI (%)
	0			ASPHALT CONCRETE									
88				FILL: Lean CLAY (CL), dark brown, moist, medium stiff, low to medium plasticity.									
				YOUNG ALLUVIAL DEPOSITS, undivided (Qya): Lean CLAY (CL), light brown to yellow brown, moist, stiff, low plasticity, some fine SAND.									
	5					11	16			53	30	20	10
83													
				SILT (ML), tan, moist, medium dense, nonplastic.									
	10					16	23						
78													
	15					22	31			74			NP
73													
	20					20	28						
68													
	25			Lean CLAY (CL), brown, moist, very stiff, low to medium plasticity.		29	41						
63													
	30												

Elevation (ft)	Depth (ft)	GW Level (ft)	Lithology	Description	Sample Type	Blow-Count (N)	N60	Dry Unit Weight (pcf)	Moisture (%)	Fines (%)	Atterberg Limits LL (%)	Atterberg Limits PL (%)	Atterberg Limits PI (%)
	30					23	33						
58													
	35					28	40						
53				SILTY SAND (SM), light brown, moist, dense, nonplastic, interbedded thinly bedded lenses of medium to coarse sand.									
	40					43	61						
48													
	45			dark gray, medium dense, strong hydrocarbon odor.		25	35						
43													
				Lean CLAY (CL), gray to dark gray, moist, very stiff, low plasticity, strong hydrocarbon odor									
	50					25	35						
38													

Bottom of Boring B-2 at 51.50 ft
Groundwater was not encountered during drilling.

FENAGH ENGINEERING AND TESTING

Client: **Compton Unified School District**
Project: **Centennial HS WSM**
Location: **2606 N Central Avenue, Compton, CA**

BORING LOG
B-3

Start Date:	**04/21/2025**	Ground Surface Elevation (ft):	**91 ft** **MSL**
End Date:	**04/25/2025**	Hole Diameter (in):	**8 in**
Drilled by:	**Baja Exploration**	Location:	**33.914492** **-118.252184**
Drilling Method:	**Hollow-Stem Auger**	DTW During Drilling (ft):	**-**
Logged By:	**RW**	DTW After Drilling (ft):	**-**
Checked By:	**ER**	DTW At Completion (ft):	**-**

Elevation (ft)	Depth (ft)	GW Level (ft)	Lithology	Description	Sample Type	Blow-Count (N)	N60	Dry Unit Weight (pcf)	Moisture (%)	Fines (%)	Atterberg Limits LL (%)	PL (%)	PI (%)
	0			FILL: CLAYEY SAND (SC), dark brown, moist, medium dense to dense, low plasticity, trace organics- grass roots.									
87	5			YOUNG ALLUVIAL DEPOSITS, undivided (Qya): Lean CLAY (CL), light brown to brown, moist, very stiff, medium plasticity		21	19	117.3	13.3				
82	10			Poorly-graded SAND (SP), light brown to tan, moist, medium dense, fine grained.		15	21			57.8			
77	15			Lean CLAY (CL), brown, moist, stiff, medium plasticity.		22	20	107.7	20				
72	20					13	18						
67	25			very stiff.		17	24			54	30	17	13
62	30												

Elevation (ft)	Depth (ft)	GW Level (ft)	Lithology	Description	Sample Type	Blow-Count (N)	N60	Dry Unit Weight (pcf)	Moisture (%)	Fines (%)	Atterberg Limits		
											LL (%)	PL (%)	PI (%)
	30			trace gravel, yellow-green tint.		20	28			78	37	24	13
57				SILTY SAND (SM), brown, some orange oxidation spots, moist, medium dense, nonplastic.									
	35					48	68						
52													
	40			thinly bedded medium grained sand lenses.		42	60						
47				Poorly-graded SAND (SP), tan to brown, wet, medium dense, possible perched aquifer.									
	45					23	33			31			
42				CLAYEY SAND (SC), brown, some black and yellow spots, moist, very stiff, medium plasticity.									
	50			grayish-green tint, mild hydrocarbon odor.		12	17						

Bottom of Boring B-3 at 51.50 ft
Groundwater was not encountered during drilling.

FENAGH ENGINEERING AND TESTING

Client: **Compton Unified School District**
Project: **Centennial HS WSM**
Location: **2606 N Central Avenue, Compton, CA**

BORING LOG
B-4

Start Date:	**04/21/2025**	Ground Surface Elevation (ft):	**89 ft** **MSL**
End Date:	**04/25/2025**	Hole Diameter (in):	**8 in**
Drilled by:	**Baja Exploration**	Location:	**33.914886** **-118.253087**
Drilling Method:	**Hollow-Stem Auger**	DTW During Drilling (ft):	**-**
Logged By:	**RW**	DTW After Drilling (ft):	**-**
Checked By:	**ER**	DTW At Completion (ft):	**-**

Elevation (ft)	Depth (ft)	GW Level (ft)	Lithology	Description	Sample Type	Blow-Count (N)	N60	Dry Unit Weight (pcf)	Moisture (%)	Fines (%)	Atterberg Limits LL (%)	PL (%)	PI (%)
	0			ASPHALT CONCRETE									
88				FILL: CLAYEY SAND (SC), reddish brown, moist, medium dense, medium plasticity.									
				YOUNG ALLUVIAL DEPOSITS, undivided (Qya): CLAYEY SAND (SC), reddish brown, some orange oxide spots, trace light gray spots, moist, medium dense, medium plasticity.									
	5			trace GRAVEL.		12	17						
83				SILTY SAND (SM), reddish brown, moist, medium dense, nonplastic.									
	10					31	29	123.5	9.7				
78				Poorly-graded SAND (SP), tan, moist, medium dense.									
	15					27	38			73			
73				Lean CLAY (CL), brown, moist, very stiff, low to medium plasticity.									
	20			stiff.		22	20	111.1	18.1				
68													
	25					26	37						
63				SILTY SAND, trace gravel (SM), dark brown, moist, medium dense, nonplastic.									
	30			Lean CLAY (CL), brown with light gray streaks, trace orange oxidation spots, moist, very stiff, medium plasticity.									

FENAGH ENGINEERING AND TESTING

Client: **Compton Unified School District**
Project: **Centennial HS WSM**
Location: **2606 N Central Avenue, Compton, CA**

BORING LOG
B-4

Elevation (ft)	Depth (ft)	GW Level (ft)	Lithology	Description	Sample Type	Blow-Count (N)	N60	Dry Unit Weight (pcf)	Moisture (%)	Fines (%)	Atterberg Limits LL (%)	Atterberg Limits PL (%)	Atterberg Limits PI (%)
	30					20	28			73	33	23	10
58				SILTY SAND (SM), brown, trace orange oxidation spots, moist, medium dense, nonplastic.									
	35					27	38						
53				Lean CLAY (CL), brown, some light gray spots, trace orange oxidation spots, moist, very stiff, medium plasticity.									
	40					18	26						
48													
	45					17	24			64			
43													
	50					17	24						
38													

Bottom of Boring B-4 at 51.50 ft
Groundwater was not encountered during drilling.

Start Date:	04/21/2025	Ground Surface Elevation (ft):	90 ft MSL
End Date:	04/25/2025	Hole Diameter (in):	8 in
Drilled by:	Baja Exploration	Location:	33.914835 -118.252327
Drilling Method:	Hollow-Stem Auger	DTW During Drilling (ft):	-
Logged By:	RW	DTW After Drilling (ft):	-
Checked By:	ER	DTW At Completion (ft):	-

Elevation (ft)	Depth (ft)	GW Level (ft)	Lithology	Description	Sample Type	Blow-Count (N)	N60	Dry Unit Weight (pcf)	Moisture (%)	Fines (%)	Atterberg Limits LL (%)	Atterberg Limits PL (%)	Atterberg Limits PI (%)
90	0			ASPHALT CONCRETE									
				FILL: Lean CLAY (CL), brown to dark brown, moist, medium stiff to stiff, medium plasticity.									
				YOUNG ALLUVIAL DEPOSITS, undivided (Qya): Lean CLAY (CL), dark brown, trace orange oxidation spots, moist, stiff, medium plasticity.									
85	5					19	18	121.0	9.7				
				SILTY SAND (SM), tan with orange tint, moist, medium dense, nonplastic.									
80	10					19	27						
				Poorly-graded SAND (SP), tan, moist, dense.									
75	15					59	54	113.4	7.9				
				SILTY SAND (SM), brown, moist, medium dense, nonplastic.									
70	20					23	33						

Bottom of Boring B-5 at 21.50 ft
Groundwater was not encountered during drilling.

FENAGH ENGINEERING AND TESTING

Client: **Compton Unified School District**
Project: **Centennial HS WSM**
Location: **2606 N Central Avenue, Compton, CA**

BORING LOG
B-6

Start Date:	**04/21/2025**	Ground Surface Elevation (ft):	**86 ft** **MSL**
End Date:	**04/25/2025**	Hole Diameter (in):	**8 in**
Drilled by:	**Baja Exploration**	Location:	**33.913869** **-118.251243**
Drilling Method:	**Hollow-Stem Auger**	DTW During Drilling (ft):	**-**
Logged By:	**RW**	DTW After Drilling (ft):	**-**
Checked By:	**ER**	DTW At Completion (ft):	**-**

Elevation (ft)	Depth (ft)	GW Level (ft)	Lithology	Description	Sample Type	Blow-Count (N)	N60	Dry Unit Weight (pcf)	Moisture (%)	Fines (%)	Atterberg Limits LL (%)	Atterberg Limits PL (%)	Atterberg Limits PI (%)
	0			ASPHALT CONCRETE									
				FILL: Lean CLAY (CL), brown to dark brown, moist, medium stiff to stiff, medium plasticity.									
				YOUNG ALLUVIAL DEPOSITS, undivided (Qya): Lean CLAY (CL), brown, moist, medium stiff, medium plasticity.									
82													
	5			SILTY SAND (SM), reddish brown, moist, medium dense, low plasticity.		12	17						
				Lean CLAY (CL), brown, moist, stiff, medium plasticity.									
77													
	10			Poorly-graded SAND (SP), reddish orange, moist, medium dense, nonplastic.		15	14	117.1	14.0				
72													
	15			SILTY SAND (SM), brown with gray-green tint, trace orange oxide spots, moist, medium dense, nonplastic.		11	16						
67													
	20			Lean CLAY (CL), brown, trace orange oxide spots, moist, stiff, medium plasticity.		14	20						
62													
	25			Poorly-graded SAND (SP), tan, moist, medium dense.		18	26						
				Lean CLAY (CL), brown, trace orange oxide and light gray spots, moist, very stiff, medium plasticity, trace GRAVEL.									
57													
	30					25	35						

Bottom of Boring B-6 at 31.50 ft
Groundwater was not encountered during drilling.

FENAGH ENGINEERING AND TESTING

Client: **Compton Unified School District**
Project: **Centennial HS WSM**
Location: **2606 N Central Avenue, Compton, CA**

BORING LOG
B-7

Start Date:	**04/21/2025**	Ground Surface Elevation (ft):	**92 ft MSL**
End Date:	**04/25/2025**	Hole Diameter (in):	**8 in**
Drilled by:	**Baja Exploration**	Location:	**33.914251 -118.253516**
Drilling Method:	**Hollow-Stem Auger**	DTW During Drilling (ft):	**-**
Logged By:	**RW**	DTW After Drilling (ft):	**-**
Checked By:	**ER**	DTW At Completion (ft):	**-**

Elevation (ft)	Depth (ft)	GW Level (ft)	Lithology	Description	Sample Type	Blow-Count (N)	N60	Dry Unit Weight (pcf)	Moisture (%)	Fines (%)	Atterberg Limits LL (%)	Atterberg Limits PL (%)	Atterberg Limits PI (%)
	0			FILL: CLAYEY SAND (SC), dark brown, moist, medium dense to dense, low to medium plasticity.									
89				YOUNG ALLUVIAL DEPOSITS, undivided (Qya): CLAYEY SAND, trace GRAVEL (SC), light brown, some light gray spots, moist, medium dense, low to medium plasticity.									
	5					22	31						
84													
	10			Poorly-graded SAND (SP), light gray to tan, moist, medium dense.		46	42	109.4	3.4				
79													
	15			Lean CLAY (CL), brown, some yellow-brown spots, moist, stiff, medium plasticity.		12	17				47	21	26
74													
	20					20	18	77.0	14.6				
69													
	25			hard.		33	47						
64													
	30												

FENAGH ENGINEERING AND TESTING

Client: **Compton Unified School District**
Project: **Centennial HS WSM**
Location: **2606 N Central Avenue, Compton, CA**

BORING LOG
B-7

Elevation (ft)	Depth (ft)	GW Level (ft)	Lithology	Description	Sample Type	Blow-Count (N)	N60	Dry Unit Weight (pcf)	Moisture (%)	Fines (%)	Atterberg Limits LL (%)	Atterberg Limits PL (%)	Atterberg Limits PI (%)
	30					28	40				29	17	12
59													
	35			very stiff.		21	30						
54													
	40					20	28				31	21	10
49													
	45					15	21				41	23	18
44													
	50					15	21						

Bottom of Boring B-7 at 51.50 ft
Groundwater was not encountered during drilling.

FENAGH ENGINEERING AND TESTING

Client: **Compton Unified School District**
Project: **Centennial HS WSM**
Location: **2606 N Central Avenue, Compton, CA**

BORING LOG
B-8

Start Date:	**04/21/2025**	Ground Surface Elevation (ft):	**86 ft** **MSL**
End Date:	**04/25/2025**	Hole Diameter (in):	**8 in**
Drilled by:	**Baja Exploration**	Location:	**33.913562** **-118.252541**
Drilling Method:	**Hollow-Stem Auger**	DTW During Drilling (ft):	**-**
Logged By:	**RW**	DTW After Drilling (ft):	**-**
Checked By:	**ER**	DTW At Completion (ft):	**-**

Elevation (ft)	Depth (ft)	GW Level (ft)	Lithology	Description	Sample Type	Blow-Count (N)	N60	Dry Unit Weight (pcf)	Moisture (%)	Fines (%)	Atterberg Limits LL (%)	PL (%)	PI (%)
	0			FILL: CLAYEY SAND trace GRAVEL (SC), dark brown, moist, medium dense, medium plasticity, trace organics - grass roots.									
				YOUNG ALLUVIAL DEPOSITS, undivided (Qya): CLAYEY S-AND (SC), brown, some orange oxide and light gray spots, moist, medium dense, medium plasticity.									
82	5					12	17						
				Lean CLAY (CL), brown, some light gray spots, moist, very stiff, medium plasticity.									
77	10					27	25	107.1	13.1				
72	15			trace orange oxide spots.		22	31			73			
67	20					17	24						
62	25			Poorly-graded SAND (SP), tan to light brown, trace orange oxide spots, moist, medium dense, nonplastic.		19	27			27			
57	30												

FENAGH ENGINEERING AND TESTING

Client: **Compton Unified School District**
Project: **Centennial HS WSM**
Location: **2606 N Central Avenue, Compton, CA**

BORING LOG
B-8

Elevation (ft)	Depth (ft)	GW Level (ft)	Lithology	Description	Sample Type	Blow-Count (N)	N60	Dry Unit Weight (pcf)	Moisture (%)	Fines (%)	Atterberg Limits		
											LL (%)	PL (%)	PI (%)
	30			Poorly-graded SAND (SP), tan to brown, moist, dense.		40	57						
52	35			SILT (ML), brown, some orange oxide, black, and light gray spots, moist, very stiff, low plasticity, some SAND.		24	34			57	31	24	7
47	40			SILTY SAND (SM), brown, moist, very dense, non plasticity.		53	75						
42	45			Poorly-graded SAND (SP), tan to gray, trace orange oxide spots, moist, very dense.		49	69						
37	50			dark tan to tan, wet, dense, perched aquifer, standing water at 44.5'.		44	62			6.0			

Bottom of Boring B-8 at 51.50 ft
Groundwater was not encountered during drilling.

FENAGH ENGINEERING AND TESTING

Client: **Compton Unified School District**
Project: **Centennial HS WSM**
Location: **2606 N Central Avenue, Compton, CA**

BORING LOG
B-9

Start Date:	**04/21/2025**	Ground Surface Elevation (ft):	**88 ft MSL**
End Date:	**04/25/2025**	Hole Diameter (in):	**8 in**
Drilled by:	**Baja Exploration**	Location:	**33.913717 -118.252697**
Drilling Method:	**Hollow-Stem Auger**	DTW During Drilling (ft):	**-**
Logged By:	**RW**	DTW After Drilling (ft):	**-**
Checked By:	**ER**	DTW At Completion (ft):	**-**

Elevation (ft)	Depth (ft)	GW Level (ft)	Lithology	Description	Sample Type	Blow-Count (N)	N60	Dry Unit Weight (pcf)	Moisture (%)	Fines (%)	Atterberg Limits LL (%)	Atterberg Limits PL (%)	Atterberg Limits PI (%)
	0			FILL: CLAYEY SAND, trace GRAVEL (SC), dark brown, moist, medium dense, low to medium plasticity.									
86				YOUNG ALLUVIAL DEPOSITS, undivided (Qya): CLAYEY SAND (SC), brown, some light gray spots, moist, medium dense, medium plasticity.									
	5					19	18	121.9	16.2				
81													
				Poorly-graded SAND (SP), light brown to brown, moist, medium dense.									
	10					25	35						
76													
				CLAYEY SAND (SC), brown, moist, medium dense, low plasticity.									
	15					26	37						
71													
				Lean CLAY (CL), brown to dark brown, some orange oxide spots, moist, very stiff, medium plasticity.									
	20					29	27	113.9	17.5				
66													
	25			increased SAND.		22	31						
61													
				CLAYEY SAND (SC), brown, trace orange oxide spots, moist, dense, low plasticity.									
	30					34	48						

Bottom of Boring B-9 at 31.50 ft
Groundwater was not encountered during drilling.

FENAGH ENGINEERING AND TESTING

Client: **Compton Unified School District**
Project: **Centennial HS WSM**
Location: **2606 N Central Avenue, Compton, CA**

BORING LOG
B-10

Start Date:	**04/21/2025**	Ground Surface Elevation (ft):	**89 ft** **MSL**
End Date:	**04/25/2025**	Hole Diameter (in):	**8 in**
Drilled by:	**Baja Exploration**	Location:	**33.9139199845918 -118.252548916886**
Drilling Method:	**Hollow-Stem Auger**	DTW During Drilling (ft):	**-**
Logged By:	**RW**	DTW After Drilling (ft):	**-**
Checked By:	**ER**	DTW At Completion (ft):	**-**

Elevation (ft)	Depth (ft)	GW Level (ft)	Lithology	Description	Sample Type	Blow-Count (N)	N60	Dry Unit Weight (pcf)	Moisture (%)	Fines (%)	Atterberg Limits LL (%)	Atterberg Limits PL (%)	Atterberg Limits PI (%)
88	0			FILL: Lean CLAY (CL), dark brown, moist, stiff, low to medium plasticity.									
				YOUNG ALLUVIAL DEPOSITS, undivided (Qya): SILTY SAND (SM), brown to orange-brown, moist, loose, nonplastic.									
83	5					10	14						
				Lean CLAY (CL), light brown to brown, trace orange oxide spots, moist, very stiff, low to medium plasticity.									
78	10					24	22	120.2	13.8				
				with SAND.									
73	15					19	27			55	26	15	11
				decreasing SAND.									
68	20					21	19	109.0	16.4		29	20	9
				olive green tint, some orange oxide and light gray spots, hard.									
63	25					35	50			70			
				SILTY SAND (SM), brown, with orange oxide spots, moist, dense, nonplastic.									
	30												

Elevation (ft)	Depth (ft)	GW Level (ft)	Lithology	Description	Sample Type	Blow-Count (N)	N60	Dry Unit Weight (pcf)	Moisture (%)	Fines (%)	Atterberg Limits LL (%)	Atterberg Limits PL (%)	Atterberg Limits PI (%)
	30					34	48						
58				Lean CLAY (CL), light brown to brown with gray-green tint, some orange oxide spots, moist, hard, low to medium plasticity.									
				SILT (ML), brown to dark brown, trace orange oxide spots, moist, stiff, low plasticity.									
	35					15	21						
53													
	40			trace GRAVEL, very stiff.		27	38			63			
48													
				SILTY SAND (SM), dark brown, moist, medium dense, nonplastic.									
	45					30	43						
43													
				Poorly-graded SAND (SP), brown to tan, wet, medium dense, possible perched aquifer, unable to measure a stablized water level.									
	50					26	37			5			
38													

Bottom of Boring B-10 at 51.50 ft
Groundwater was not encountered during drilling.

FENAGH ENGINEERING AND TESTING

Client: **Compton Unified School District**
Project: **Centennial HS WSM**
Location: **2606 N Central Avenue, Compton, CA**

BORING LOG
B-11

Start Date:	**04/21/2025**	Ground Surface Elevation (ft):	**92 ft** **MSL**
End Date:	**04/25/2025**	Hole Diameter (in):	**8 in**
Drilled by:	**Baja Exploration**	Location:	**33.913703** **-118.253373**
Drilling Method:	**Hollow-Stem Auger**	DTW During Drilling (ft):	**-**
Logged By:	**RW**	DTW After Drilling (ft):	**-**
Checked By:	**ER**	DTW At Completion (ft):	**-**

Elevation (ft)	Depth (ft)	GW Level (ft)	Lithology	Description	Sample Type	Blow-Count (N)	N60	Dry Unit Weight (pcf)	Moisture (%)	Fines (%)	Atterberg Limits LL (%)	Atterberg Limits PL (%)	Atterberg Limits PI (%)
	0			FILL: CLAYEY SAND (SC), light brown, moist, medium dense, low plasticity, trace organics - grass roots.									
89				YOUNG ALLUVIAL DEPOSITS, undivided (Qya): CLAYEY SAND (SC), light brown, some light gray spots, moist, medium dense, medium plasticity.									
	5					18	26						
84													
	10					24	22	114.6	11.8	37	33	18	15
79				Lean CLAY (CL), brown to light brown, moist, very stiff, medium plasticity.									
	15					18	26						
74													
	20			trace GRAVEL, some SAND, trace light gray spots.		32	30	97.1	17.0				
69													
	25			trace SAND.		28	40			66	30	19	11
64													
	30			SILTY SAND (SM), light brown to brown, moist, medium de-									

Elevation (ft)	Depth (ft)	GW Level (ft)	Lithology	Description	Sample Type	Blow-Count (N)	N60	Dry Unit Weight (pcf)	Moisture (%)	Fines (%)	Atterberg Limits LL (%)	Atterberg Limits PL (%)	Atterberg Limits PI (%)
	30			(fine, nonplastic, trace GRAVEL.		21	30						
59				Lean CLAY (CL), brown, moist, very stiff, medium plasticity, thinly bedded sand lenses.									
	35					26	37			85			
54				SILT (ML), brown, moist, hard, nonplastic, thinly bedded SAND lenses.									
	40					26	37			67			
49													
	45					13	18						
44				Poorly-graded SAND (SP), brown, wet, very dense, perched aquifer, unable to measure a stablized water level.									
	50					51	72						

Bottom of Boring B-11 at 51.50 ft
Groundwater was not encountered during drilling.

FENAGH ENGINEERING AND TESTING

Client: **Compton Unified School District**
Project: **Centennial HS WSM**
Location: **2606 N Central Avenue, Compton, CA**

BORING LOG
B-12

Start Date:	**04/21/2025**	Ground Surface Elevation (ft):	**92 ft** **MSL**
End Date:	**04/25/2025**	Hole Diameter (in):	**8 in**
Drilled by:	**Baja Exploration**	Location:	**33.914214** **-118.253568**
Drilling Method:	**Hollow-Stem Auger**	DTW During Drilling (ft):	**-**
Logged By:	**RW**	DTW After Drilling (ft):	**-**
Checked By:	**ER**	DTW At Completion (ft):	**-**

Elevation (ft)	Depth (ft)	GW Level (ft)	Lithology	Description	Sample Type	Blow-Count (N)	N60	Dry Unit Weight (pcf)	Moisture (%)	Fines (%)	Atterberg Limits LL (%)	Atterberg Limits PL (%)	Atterberg Limits PI (%)
	0			FILL: CLAYEY SAND (SC), dark brown, moist, medium dense, low to medium plasticity, trace organics - grass roots									
89				YOUNG ALLUVIAL DEPOSITS, undivided (Qya): CLAYEY SAND (SC), dark brown to brown, trace light gray spots, moist, medium dense, medium plasticity.									
	5					25	23						
84													
	10			SILTY SAND (SM), brown to tan, some orange oxide spots, moist, medium dense, nonplastic.		9	13			37			
79													
	15			Lean CLAY (CL), dark brown, moist, stiff, medium plasticity.		15	14	93.3	26.3				
74													
	20			thinly bedded lenses of SANDY SILT, very stiff.		17	24			59	26	18	8
69													
	25			trace GRAVEL, with light gray spots, trace orange oxide spots.		18	26						
64													
	30			SILTY SAND (SM), dark brown, some orange oxide spots, moist, medium dense, nonplastic.									

Elevation (ft)	Depth (ft)	GW Level (ft)	Lithology	Description	Sample Type	Blow-Count (N)	N60	Dry Unit Weight (pcf)	Moisture (%)	Fines (%)	Atterberg Limits		
											LL (%)	PL (%)	PI (%)
	30					29	41			38			
59				Lean CLAY (CL), dark brown with green tint, trace orange oxide spots, moist, very stiff, low to medium plasticity, thinly bedded sand lenses.									
	35					26	37				35	25	10
54													
	40					18	26						
				SILTY SAND (SM), brown to dark brown, moist, medium dense, nonplastic.									
49				Lean CLAY (CL), brown, some orange oxide spots, moist, stiff, medium plasticity.									
	45					14	20			55	29	16	13
				SILTY SAND (SM), brown to grayish brown, some light gray spots, moist, medium dense, nonplastic.									
44													
	50					19	27						

Bottom of Boring B-12 at 51.50 ft
Groundwater was not encountered during drilling.

FENAGH ENGINEERING AND TESTING

Client: **Compton Unified School District**
Project: **Centennial HS WSM**
Location: **2606 N Central Avenue, Compton, CA**

BORING LOG
B-13

Start Date:	**04/21/2025**	Ground Surface Elevation (ft):	**86 ft** **MSL**
End Date:	**04/25/2025**	Hole Diameter (in):	**8 in**
Drilled by:	**Baja Exploration**	Location:	**33.91341** **-118.251804**
Drilling Method:	**Hollow-Stem Auger**	DTW During Drilling (ft):	**-**
Logged By:	**RW**	DTW After Drilling (ft):	**-**
Checked By:	**ER**	DTW At Completion (ft):	**-**

Elevation (ft)	Depth (ft)	GW Level (ft)	Lithology	Description	Sample Type	Blow-Count (N)	N60	Dry Unit Weight (pcf)	Moisture (%)	Fines (%)	Atterberg Limits LL (%)	PL (%)	PI (%)
	0			FILL: CLAYEY SAND (SC), dark brown, moist, medium dense, low to medium plasticity, trace organics - grass roots.									
82	5			YOUNG ALLUVIAL DEPOSITS, undivided (Qya): Lean CLAY (CL), light brown to brown, some light gray spots, moist, very stiff, medium plasticity.		26	24	114.3	11.8				
77	10			SILTY SAND (SM), light tan to orangish tan, moist, medium dense, nonplastic.		13	18						
72	15			Lean CLAY (CL), brown, trace orange oxide spots, moist, stiff, low to medium plasticity.		23	21	103.0	21.7				
67	20			very stiff.		23	33						

Bottom of Boring B-13 at 21.50 ft
Groundwater was not encountered during drilling.

Start Date:	04/21/2025	Ground Surface Elevation (ft):	85 ft MSL
End Date:	04/25/2025	Hole Diameter (in):	8 in
Drilled by:	Baja Exploration	Location:	33.914867 -118.250684
Drilling Method:	Hollow-Stem Auger	DTW During Drilling (ft):	-
Logged By:	RW	DTW After Drilling (ft):	-
Checked By:	ER	DTW At Completion (ft):	-

Elevation (ft)	Depth (ft)	GW Level (ft)	Lithology	Description	Sample Type	Blow-Count (N)	N60	Dry Unit Weight (pcf)	Moisture (%)	Fines (%)	Atterberg Limits LL (%)	Atterberg Limits PL (%)	Atterberg Limits PI (%)
85	0			FILL: Lean CLAY (CL), dark brown, moist, stiff, medium plasticity.									
80	5			YOUNG ALLUVIAL DEPOSITS, undivided (Qya): SILTY SAND (SM), light brown, with orange oxide and light gray lines, moist, medium dense, nonplastic.		10	14						
75	10			decreased SAND, brown to greenish brown, low plasticity.		15	21	98.1	16.9				
70	15			increased SAND, medium dense, nonplastic.		30	28	116.4	9.0				
65	20			Lean CLAY (CL), brown to dark brown, moist, stiff, low plasticity.		12	17						

Bottom of Boring B-14 at 21.50 ft
Groundwater was not encountered during drilling.

FENAGH ENGINEERING AND TESTING

Client: **Compton Unified School District**
Project: **Centennial HS WSM**
Location: **2606 N Central Avenue, Compton, CA**

BORING LOG
B-15

Start Date:	**04/21/2025**	Ground Surface Elevation (ft):	**84 ft** **MSL**
End Date:	**04/25/2025**	Hole Diameter (in):	**8 in**
Drilled by:	**Baja Exploration**	Location:	**33.915139** **-118.250494**
Drilling Method:	**Hollow-Stem Auger**	DTW During Drilling (ft):	**-**
Logged By:	**RW**	DTW After Drilling (ft):	**-**
Checked By:	**ER**	DTW At Completion (ft):	**-**

Elevation (ft)	Depth (ft)	GW Level (ft)	Lithology	Description	Sample Type	Blow-Count (N)	N60	Dry Unit Weight (pcf)	Moisture (%)	Fines (%)	Atterberg Limits LL (%)	Atterberg Limits PL (%)	Atterberg Limits PI (%)
83	0			FILL: Lean CLAY (CL), dark brown, moist, medium stiff, medium plasticity, trace organics - grass roots.									
				YOUNG ALLUVIAL DEPOSITS, undivided (Qya): Lean CLAY (CL), brown, with light gray lines, moist, stiff, medium plasticity.									
78	5					9	13						
				Poorly-graded SAND (SP), tan to orangish tan, moist, loose.									
73	10					14	13	98.1	16.9				
				CLAYEY SAND (SC), brown, moist, medium dense, low plasticity.									
68	15			Lean CLAY (CL), brown, moist, stiff, medium plasticity.		16	23						
63	20			trace orange oxide spots and black spots.		13	18						
58	25			some light gray spots.		14	20						
53	30					14	20						

Bottom of Boring B-15 at 31.50 ft
Groundwater was not encountered during drilling.

FENAGH ENGINEERING AND TESTING

Client: **Compton Unified School District**
Project: **Centennial HS WSM**
Location: **2606 N Central Avenue, Compton, CA**

BORING LOG
B-16

Start Date:	**04/21/2025**	Ground Surface Elevation (ft):	**81 ft MSL**
End Date:	**04/25/2025**	Hole Diameter (in):	**8 in**
Drilled by:	**Baja Exploration**	Location:	**33.915109 -118.250032**
Drilling Method:	**Hollow-Stem Auger**	DTW During Drilling (ft):	**-**
Logged By:	**RW**	DTW After Drilling (ft):	**-**
Checked By:	**ER**	DTW At Completion (ft):	**-**

Elevation (ft)	Depth (ft)	GW Level (ft)	Lithology	Description	Sample Type	Blow-Count (N)	N60	Dry Unit Weight (pcf)	Moisture (%)	Fines (%)	Atterberg Limits LL (%)	PL (%)	PI (%)
	0			FILL: CLAYEY SAND (SC), dark brown, moist, medium dense, low to medium plasticity, trace organics - grass roots.									
				YOUNG ALLUVIAL DEPOSITS, undivided (Qya): CLAYEY SAND (SC), brown, moist, medium dense, low to medium plasticity.									
77	5			increased SAND, reddish brown, low plasticity.		14	20						
				decreased SAND, brown, low to medium plasticity.									
72	10			Poorly-graded SAND (SP), reddish brown, moist, medium dense.		26	37						
67	15			SILTY SAND (SM), brown to greenish brown, moist, medium dense, low plasticity.		24	34						
62	20			Lean CLAY (CL), brown, some light gray spots, moist, medium stiff, medium plasticity.		12	11	94.6	26.1				

Bottom of Boring B-16 at 21.50 ft
Groundwater was not encountered during drilling.

FENAGH ENGINEERING AND TESTING

Client: **Compton Unified School District**
Project: **Centennial HS WSM**
Location: **2606 N Central Avenue, Compton, CA**

TEST PIT LOG
TP-1

Start Date:	**04/21/2025**	Ground Surface Elevation (ft):	**87 ft** **MSL**
End Date:	**04/25/2025**	Hole Diameter (in):	**3 in**
Drilled by:	**Fenagh Engineering**	Location:	**33.91586** **-118.253605**
Drilling Method:	**Hand Auger**	DTW During Drilling (ft):	**-**
Logged By:	**ME**	DTW After Drilling (ft):	**-**
Checked By:	**ER**	DTW At Completion (ft):	**-**

Elevation (ft)	Depth (ft)	GW Level (ft)	Lithology	Description	Sample Type	Blow-Count (N)	N60	Dry Unit Weight (pcf)	Moisture (%)	Fines (%)	Atterberg Limits LL (%)	PL (%)	PI (%)
	0			YOUNG ALLUVIAL DEPOSITS, undivided (Qya): SANDY Lean CLAY (CL), greyish brown, slightly moist, soft to stiff, medium plasticity.									
84				CLAYEY SAND (SC), yellow brown, moist, medium dense to dense, low plasticity.									
	5												
79													

Bottom of Test Pit TP-1 at 10 ft
Groundwater was not encountered during drilling.

FENAGH ENGINEERING AND TESTING

Client: **Compton Unified School District**
Project: **Centennial HS WSM**
Location: **2606 N Central Avenue, Compton, CA**

TEST PIT LOG
TP-2

Start Date:	**04/21/2025**	Ground Surface Elevation (ft):	**87 ft** **MSL**
End Date:	**04/25/2025**	Hole Diameter (in):	**3 in**
Drilled by:	**Fenagh Engineering**	Location:	**33.915669** **-118.253604**
Drilling Method:	**Hand Auger**	DTW During Drilling (ft):	**-**
Logged By:	**ME**	DTW After Drilling (ft):	**-**
Checked By:	**ER**	DTW At Completion (ft):	**-**

Elevation (ft)	Depth (ft)	GW Level (ft)	Lithology	Description	Sample Type	Blow-Count (N)	N60	Dry Unit Weight (pcf)	Moisture (%)	Fines (%)	Atterberg Limits LL (%)	PL (%)	PI (%)
	0			YOUNG ALLUVIAL DEPOSITS, undivided (Qya): SANDY Lean CLAY (CL), greyish brown, slightly moist, soft to stiff, medium plasticity.									
84				CLAYEY SAND (SC), yellow brown, moist, medium dense to dense, low plasticity.									
	5												
79													

Bottom of Test Pit TP-2 at 10 ft
Groundwater was not encountered during drilling.

FENAGH ENGINEERING AND TESTING

Client: **Compton Unified School District**
Project: **Centennial HS WSM**
Location: **2606 N Central Avenue, Compton, CA**

TEST PIT LOG
TP-3

Start Date:	**04/21/2025**	Ground Surface Elevation (ft):	**87 ft** **MSL**
End Date:	**04/25/2025**	Hole Diameter (in):	**3 in**
Drilled by:	**Fenagh Engineering**	Location:	**33.915531** **-118.253947**
Drilling Method:	**Hand Auger**	DTW During Drilling (ft):	**-**
Logged By:	**ME**	DTW After Drilling (ft):	**-**
Checked By:	**ER**	DTW At Completion (ft):	**-**

Elevation (ft)	Depth (ft)	GW Level (ft)	Lithology	Description	Sample Type	Blow-Count (N)	N60	Dry Unit Weight (pcf)	Moisture (%)	Fines (%)	Atterberg Limits LL (%)	PL (%)	PI (%)
	0			YOUNG ALLUVIAL DEPOSITS, undivided (Qya): SILTY Lean CLAY (CL-ML), dark brown, moist, soft to stiff, medium plasticity.									
84				LEAN CLAY (CL), brown, slightly moist, stiff to very stiff, medium plasticity.									
	5			carbonate nodules, apx 1" diameter, practical refusal at 6'.									

Bottom of Test Pit TP-3 at 6 ft
Groundwater was not encountered during drilling.

FENAGH ENGINEERING AND TESTING

Client: **Compton Unified School District**
Project: **Centennial HS WSM**
Location: **2606 N Central Avenue, Compton, CA**

TEST PIT LOG
TP-4

Start Date:	**04/21/2025**	Ground Surface Elevation (ft):	**87 ft** **MSL**
End Date:	**04/25/2025**	Hole Diameter (in):	**3 in**
Drilled by:	**Fenagh Engineering**	Location:	**33.915329** **-118.254216**
Drilling Method:	**Hand Auger**	DTW During Drilling (ft):	**-**
Logged By:	**ME**	DTW After Drilling (ft):	**-**
Checked By:	**ER**	DTW At Completion (ft):	**-**

Elevation (ft)	Depth (ft)	GW Level (ft)	Lithology	Description	Sample Type	Blow-Count (N)	N60	Dry Unit Weight (pcf)	Moisture (%)	Fines (%)	Atterberg Limits LL (%)	PL (%)	PI (%)
	0			YOUNG ALLUVIAL DEPOSITS, undivided (Qya): SANDY Lean CLAY (CL), greyish brown, slightly moist, soft to stiff, medium plasticity.									

Bottom of Test Pit TP-4 at 3 ft
Groundwater was not encountered during drilling.

FENAGH ENGINEERING AND TESTING

Client: **Compton Unified School District**
Project: **Centennial HS WSM**
Location: **2606 N Central Avenue, Compton, CA**

TEST PIT LOG
TP-5

Start Date:	**04/21/2025**	Ground Surface Elevation (ft):	**87 ft** **MSL**
End Date:	**04/25/2025**	Hole Diameter (in):	**3 in**
Drilled by:	**Fenagh Engineering**	Location:	**33.914866** **-118.254032**
Drilling Method:	**Hand Auger**	DTW During Drilling (ft):	**-**
Logged By:	**ME**	DTW After Drilling (ft):	**-**
Checked By:	**ER**	DTW At Completion (ft):	**-**

Elevation (ft)	Depth (ft)	GW Level (ft)	Lithology	Description	Sample Type	Blow-Count (N)	N60	Dry Unit Weight (pcf)	Moisture (%)	Fines (%)	Atterberg Limits LL (%)	Atterberg Limits PL (%)	Atterberg Limits PI (%)
	0			YOUNG ALLUVIAL DEPOSITS, undivided (Qya): SANDY Lean CLAY (CL), greyish brown, slightly moist, soft to stiff, medium plasticity.				90.0	8.6				

Bottom of Test Pit TP-5 at 3 ft
Groundwater was not encountered during drilling.

FENAGH ENGINEERING AND TESTING

Client: **Compton Unified School District**
Project: **Centennial HS WSM**
Location: **2606 N Central Avenue, Compton, CA**

TEST PIT LOG
TP-6

Start Date:	**04/21/2025**	Ground Surface Elevation (ft):	**87 ft** **MSL**
End Date:	**04/25/2025**	Hole Diameter (in):	**3 in**
Drilled by:	**Fenagh Engineering**	Location:	**33.915055** **-118.253266**
Drilling Method:	**Hand Auger**	DTW During Drilling (ft):	**-**
Logged By:	**ME**	DTW After Drilling (ft):	**-**
Checked By:	**ER**	DTW At Completion (ft):	**-**

Elevation (ft)	Depth (ft)	GW Level (ft)	Lithology	Description	Sample Type	Blow-Count (N)	N60	Dry Unit Weight (pcf)	Moisture (%)	Fines (%)	Atterberg Limits LL (%)	Atterberg Limits PL (%)	Atterberg Limits PI (%)
	0			YOUNG ALLUVIAL DEPOSITS, undivided (Qya): Lean CLAY (CL), brown, slightly moist, stiff, medium plasticity, trace sand.				114.5	11.3				

Bottom of Test Pit TP-6 at 3 ft
Groundwater was not encountered during drilling.

FENAGH ENGINEERING AND TESTING

Client: **Compton Unified School District**
Project: **Centennial HS WSM**
Location: **2606 N Central Avenue, Compton, CA**

TEST PIT LOG
TP-7

Start Date:	**04/21/2025**	Ground Surface Elevation (ft):	**87 ft** **MSL**
End Date:	**04/25/2025**	Hole Diameter (in):	**3 in**
Drilled by:	**Fenagh Engineering**	Location:	**33.914404** **-118.2538**
Drilling Method:	**Hand Auger**	DTW During Drilling (ft):	**-**
Logged By:	**ME**	DTW After Drilling (ft):	**-**
Checked By:	**ER**	DTW At Completion (ft):	**-**

Elevation (ft)	Depth (ft)	GW Level (ft)	Lithology	Description	Sample Type	Blow-Count (N)	N60	Dry Unit Weight (pcf)	Moisture (%)	Fines (%)	Atterberg Limits LL (%)	PL (%)	PI (%)
	0			YOUNG ALLUVIAL DEPOSITS, undivided (Qya): SILTY Lean CLAY (CL), dark reddish brown, moist, soft to stiff, medium plasticity.									
84				trace fine SAND, yellowish brown.									
	5												
79				yellowish brown with orange and dark gray streaks.									

Bottom of Test Pit TP-7 at 10 ft
Groundwater was not encountered during drilling.

FENAGH ENGINEERING AND TESTING

Client: **Compton Unified School District**
Project: **Centennial HS WSM**
Location: **2606 N Central Avenue, Compton, CA**

TEST PIT LOG
TP-8

Start Date:	**04/21/2025**	Ground Surface Elevation (ft):	**87 ft** **MSL**
End Date:	**04/25/2025**	Hole Diameter (in):	**3 in**
Drilled by:	**Fenagh Engineering**	Location:	**33.914291** **-118.25364**
Drilling Method:	**Hand Auger**	DTW During Drilling (ft):	**-**
Logged By:	**ME**	DTW After Drilling (ft):	**-**
Checked By:	**ER**	DTW At Completion (ft):	**-**

Elevation (ft)	Depth (ft)	GW Level (ft)	Lithology	Description	Sample Type	Blow-Count (N)	N60	Dry Unit Weight (pcf)	Moisture (%)	Fines (%)	Atterberg Limits LL (%)	PL (%)	PI (%)
84	0 5			YOUNG ALLUVIAL DEPOSITS, undivided (Qya): Lean CLAY (CL), grayish brown, slightly moist, stiff to very stiff, medium plasticity.									
79				SANDY Lean CLAY (CL), yellowish brown, moist, soft to stiff, medium plasticity.									

Bottom of Test Pit TP-8 at 10 ft
Groundwater was not encountered during drilling.

FENAGH ENGINEERING AND TESTING

Client: **Compton Unified School District**
Project: **Centennial HS WSM**
Location: **2606 N Central Avenue, Compton, CA**

TEST PIT LOG
TP-9

Start Date:	**04/21/2025**	Ground Surface Elevation (ft):	**87 ft** **MSL**
End Date:	**04/25/2025**	Hole Diameter (in):	**3 in**
Drilled by:	**Fenagh Engineering**	Location:	**33.9141** **-118.253629**
Drilling Method:	**Hand Auger**	DTW During Drilling (ft):	**-**
Logged By:	**ME**	DTW After Drilling (ft):	**-**
Checked By:	**ER**	DTW At Completion (ft):	**-**

Elevation (ft)	Depth (ft)	GW Level (ft)	Lithology	Description	Sample Type	Blow-Count (N)	N60	Dry Unit Weight (pcf)	Moisture (%)	Fines (%)	Atterberg Limits LL (%)	Atterberg Limits PL (%)	Atterberg Limits PI (%)
	0			YOUNG ALLUVIAL DEPOSITS, undivided (Qya): SILT (ML), brown, slightly moist, soft, low plasticity, with SAND.									

Bottom of Test Pit TP-9 at 3 ft
Groundwater was not encountered during drilling.

FENAGH ENGINEERING AND TESTING

Client: **Compton Unified School District**
Project: **Centennial HS WSM**
Location: **2606 N Central Avenue, Compton, CA**

TEST PIT LOG
TP-10

Start Date:	**04/21/2025**	Ground Surface Elevation (ft):	**87 ft** **MSL**
End Date:	**04/25/2025**	Hole Diameter (in):	**3 in**
Drilled by:	**Fenagh Engineering**	Location:	**33.913902** **-118.253771**
Drilling Method:	**Hand Auger**	DTW During Drilling (ft):	**-**
Logged By:	**ME**	DTW After Drilling (ft):	**-**
Checked By:	**ER**	DTW At Completion (ft):	**-**

Elevation (ft)	Depth (ft)	GW Level (ft)	Lithology	Description	Sample Type	Blow-Count (N)	N60	Dry Unit Weight (pcf)	Moisture (%)	Fines (%)	Atterberg Limits LL (%)	PL (%)	PI (%)
84	0			YOUNG ALLUVIAL DEPOSITS, undivided (Qya): SILTY Lean CLAY (CL), brown, moist, soft to stiff, medium plasticity.									
79	5												

Bottom of Test Pit TP-10 at 10 ft
Groundwater was not encountered during drilling.

FENAGH ENGINEERING AND TESTING

Client: **Compton Unified School District**
Project: **Centennial HS WSM**
Location: **2606 N Central Avenue, Compton, CA**

TEST PIT LOG
TP-11

Start Date:	**04/21/2025**	Ground Surface Elevation (ft):	**87 ft** **MSL**
End Date:	**04/25/2025**	Hole Diameter (in):	**3 in**
Drilled by:	**Fenagh Engineering**	Location:	**33.913445** **-118.254198**
Drilling Method:	**Hand Auger**	DTW During Drilling (ft):	**-**
Logged By:	**ME**	DTW After Drilling (ft):	**-**
Checked By:	**ER**	DTW At Completion (ft):	**-**

Elevation (ft)	Depth (ft)	GW Level (ft)	Lithology	Description	Sample Type	Blow-Count (N)	N60	Dry Unit Weight (pcf)	Moisture (%)	Fines (%)	Atterberg Limits		
											LL (%)	PL (%)	PI (%)
	0			YOUNG ALLUVIAL DEPOSITS, undivided (Qya): Lean CLAY (CL), dark brown, slightly moist,stiff, medium plasticity.									

Bottom of Test Pit TP-11 at 3 ft
Groundwater was not encountered during drilling.

FENAGH ENGINEERING AND TESTING

Client: **Compton Unified School District**
Project: **Centennial HS WSM**
Location: **2606 N Central Avenue, Compton, CA**

TEST PIT LOG
TP-12

Start Date:	**04/21/2025**	Ground Surface Elevation (ft):	**87 ft** **MSL**
End Date:	**04/25/2025**	Hole Diameter (in):	**3 in**
Drilled by:	**Fenagh Engineering**	Location:	**33.913141** **-118.253555**
Drilling Method:	**Hand Auger**	DTW During Drilling (ft):	**-**
Logged By:	**ME**	DTW After Drilling (ft):	**-**
Checked By:	**ER**	DTW At Completion (ft):	**-**

Elevation (ft)	Depth (ft)	GW Level (ft)	Lithology	Description	Sample Type	Blow-Count (N)	N60	Dry Unit Weight (pcf)	Moisture (%)	Fines (%)	Atterberg Limits LL (%)	PL (%)	PI (%)
	0			YOUNG ALLUVIAL DEPOSITS, undivided (Qya): SANDY Lean CLAY (CL), greyish brown, slightly moist, soft to stiff, medium plasticity.				119.4	7.6				

Bottom of Test Pit TP-12 at 3 ft
Groundwater was not encountered during drilling.

FENAGH ENGINEERING AND TESTING

Client: **Compton Unified School District**
Project: **Centennial HS WSM**
Location: **2606 N Central Avenue, Compton, CA**

TEST PIT LOG
TP-13

Start Date:	**04/21/2025**	Ground Surface Elevation (ft):	**90 ft** **MSL**
End Date:	**04/25/2025**	Hole Diameter (in):	**3 in**
Drilled by:	**Fenagh Engineering**	Location:	**33.91403** **-118.253104**
Drilling Method:	**Hand Auger**	DTW During Drilling (ft):	**-**
Logged By:	**ME**	DTW After Drilling (ft):	**-**
Checked By:	**ER**	DTW At Completion (ft):	**-**

Elevation (ft)	Depth (ft)	GW Level (ft)	Lithology	Description	Sample Type	Blow-Count (N)	N60	Dry Unit Weight (pcf)	Moisture (%)	Fines (%)	Atterberg Limits LL (%)	PL (%)	PI (%)
90	0			YOUNG ALLUVIAL DEPOSITS, undivided (Qya): SANDY Lean CLAY (CL), greyish brown, slightly moist, soft to stiff, medium plasticity.									
				CLAYEY SAND (SC), light brown, moist, medium dense to dense, low plasticity.									
85	5												

Bottom of Test Pit TP-13 at 10 ft
Groundwater was not encountered during drilling.

FENAGH ENGINEERING AND TESTING

Client: **Compton Unified School District**
Project: **Centennial HS WSM**
Location: **2606 N Central Avenue, Compton, CA**

TEST PIT LOG
TP-14

Start Date:	**04/21/2025**	Ground Surface Elevation (ft):	**87 ft** **MSL**
End Date:	**04/25/2025**	Hole Diameter (in):	**3 in**
Drilled by:	**Fenagh Engineering**	Location:	**33.914049** **-118.252584**
Drilling Method:	**Hand Auger**	DTW During Drilling (ft):	**-**
Logged By:	**ME**	DTW After Drilling (ft):	**-**
Checked By:	**ER**	DTW At Completion (ft):	**-**

Elevation (ft)	Depth (ft)	GW Level (ft)	Lithology	Description	Sample Type	Blow-Count (N)	N60	Dry Unit Weight (pcf)	Moisture (%)	Fines (%)	Atterberg Limits LL (%)	Atterberg Limits PL (%)	Atterberg Limits PI (%)
	0			YOUNG ALLUVIAL DEPOSITS, undivided (Qya): SILTY SAND (SM), light brown, slightly moist, medium dense, medium plasticity.				111.7	12.4				

Bottom of Test Pit TP-14 at 3 ft
Groundwater was not encountered during drilling.

FENAGH ENGINEERING AND TESTING

Client: **Compton Unified School District**
Project: **Centennial HS WSM**
Location: **2606 N Central Avenue, Compton, CA**

TEST PIT LOG
TP-15

Start Date:	**04/21/2025**	Ground Surface Elevation (ft):	**87 ft** **MSL**
End Date:	**04/25/2025**	Hole Diameter (in):	**3 in**
Drilled by:	**Fenagh Engineering**	Location:	**33.913717** **-118.252698**
Drilling Method:	**Hand Auger**	DTW During Drilling (ft):	**-**
Logged By:	**RW**	DTW After Drilling (ft):	**-**
Checked By:	**ER**	DTW At Completion (ft):	**-**

Elevation (ft)	Depth (ft)	GW Level (ft)	Lithology	Description	Sample Type	Blow-Count (N)	N60	Dry Unit Weight (pcf)	Moisture (%)	Fines (%)	Atterberg Limits LL (%)	PL (%)	PI (%)
	0			FILL: CLAYEY SAND (SC), dark brown, moist, medium dense, low to medium plasticity, trace organics - grass roots.									
84				YOUNG ALLUVIAL DEPOSITS, undivided (Qya): CLAYEY SAND (SC), brown, with light gray spots, moist, medium dense, medium plasticity.									
	5			increased SAND, trace light gray spots, low plasticity.									
79				SILTY SAND (SM), brown to reddish brown, moist, medium dense, nonplastic.									

Bottom of Test Pit TP-15 at 10 ft
Groundwater was not encountered during drilling.

FENAGH ENGINEERING AND TESTING

Client: **Compton Unified School District**
Project: **Centennial HS WSM**
Location: **2606 N Central Avenue, Compton, CA**

TEST PIT LOG
TP-16

Start Date:	**04/21/2025**	Ground Surface Elevation (ft):	**87 ft** **MSL**
End Date:	**04/25/2025**	Hole Diameter (in):	**3 in**
Drilled by:	**Fenagh Engineering**	Location:	**33.914209** **-118.251983**
Drilling Method:	**Hand Auger**	DTW During Drilling (ft):	**-**
Logged By:	**ME**	DTW After Drilling (ft):	**-**
Checked By:	**ER**	DTW At Completion (ft):	**-**

Elevation (ft)	Depth (ft)	GW Level (ft)	Lithology	Description	Sample Type	Blow-Count (N)	N60	Dry Unit Weight (pcf)	Moisture (%)	Fines (%)	Atterberg Limits LL (%)	PL (%)	PI (%)
	0			YOUNG ALLUVIAL DEPOSITS, undivided (Qya): SANDY SILTY CLAY (CL-ML), brown, slightly moist, stiff, medium plasticity.				119.6	9.4				

Bottom of Test Pit TP-16 at 3 ft
Groundwater was not encountered during drilling.

FENAGH ENGINEERING AND TESTING

Client: **Compton Unified School District**
Project: **Centennial HS WSM**
Location: **2606 N Central Avenue, Compton, CA**

TEST PIT LOG
TP-17

Start Date:	**04/21/2025**	Ground Surface Elevation (ft):	**90 ft** **MSL**
End Date:	**04/25/2025**	Hole Diameter (in):	**3 in**
Drilled by:	**Fenagh Engineering**	Location:	**33.914648** **-118.252225**
Drilling Method:	**Hand Auger**	DTW During Drilling (ft):	**-**
Logged By:	**ME**	DTW After Drilling (ft):	**-**
Checked By:	**ER**	DTW At Completion (ft):	**-**

Elevation (ft)	Depth (ft)	GW Level (ft)	Lithology	Description	Sample Type	Blow-Count (N)	N60	Dry Unit Weight (pcf)	Moisture (%)	Fines (%)	Atterberg Limits LL (%)	PL (%)	PI (%)
90	0			YOUNG ALLUVIAL DEPOSITS, undivided (Qya): SANDY Lean CLAY (CL), greyish brown, slightly moist, soft to stiff, medium plasticity.									
				CLAYEY SAND (SC), light brown, moist, medium dense to dense, low plasticity.									
85	5												

Bottom of Test Pit TP-17 at 10 ft
Groundwater was not encountered during drilling.

FENAGH ENGINEERING AND TESTING

Client: **Compton Unified School District**
Project: **Centennial HS WSM**
Location: **2606 N Central Avenue, Compton, CA**

TEST PIT LOG
TP-18

Start Date:	**04/21/2025**	Ground Surface Elevation (ft):	**87 ft** -
End Date:	**04/25/2025**	Hole Diameter (in):	**3 in**
Drilled by:	**Fenagh Engineering**	Location:	**33.915322** **-118.252574**
Drilling Method:	**Hand Auger**	DTW During Drilling (ft):	**-**
Logged By:	**ME**	DTW After Drilling (ft):	**-**
Checked By:	**ER**	DTW At Completion (ft):	**-**

Elevation (ft)	Depth (ft)	GW Level (ft)	Lithology	Description	Sample Type	Blow-Count (N)	N60	Dry Unit Weight (pcf)	Moisture (%)	Fines (%)	Atterberg Limits LL (%)	PL (%)	PI (%)
	0			YOUNG ALLUVIAL DEPOSITS, undivided (Qya): SANDY Lean CLAY (CL), greyish brown, slightly moist, soft to stiff, medium plasticity.				123.0	12.4				

Bottom of Test Pit TP-18 at 3 ft
Groundwater was not encountered during drilling.

FENAGH ENGINEERING AND TESTING

Client: **Compton Unified School District**
Project: **Centennial HS WSM**
Location: **2606 N Central Avenue, Compton, CA**

TEST PIT LOG
TP-19

Start Date:	**04/21/2025**	Ground Surface Elevation (ft):	**87 ft** **MSL**
End Date:	**04/25/2025**	Hole Diameter (in):	**3 in**
Drilled by:	**Fenagh Engineering**	Location:	**33.915616** **-118.25267**
Drilling Method:	**Hand Auger**	DTW During Drilling (ft):	**-**
Logged By:	**ME**	DTW After Drilling (ft):	**-**
Checked By:	**ER**	DTW At Completion (ft):	**-**

Elevation (ft)	Depth (ft)	GW Level (ft)	Lithology	Description	Sample Type	Blow-Count (N)	N60	Dry Unit Weight (pcf)	Moisture (%)	Fines (%)	Atterberg Limits LL (%)	PL (%)	PI (%)
	0			YOUNG ALLUVIAL DEPOSITS, undivided (Qya): SANDY Lean CLAY (CL), greyish brown, slightly moist, soft to stiff, medium plasticity.				113.5	15.7				

Bottom of Test Pit TP-19 at 3 ft
Groundwater was not encountered during drilling.

FENAGH ENGINEERING AND TESTING

Client: **Compton Unified School District**
Project: **Centennial HS WSM**
Location: **2606 N Central Avenue, Compton, CA**

TEST PIT LOG
TP-20

Start Date:	**04/21/2025**	Ground Surface Elevation (ft):	**87 ft** **MSL**
End Date:	**04/25/2025**	Hole Diameter (in):	**3 in**
Drilled by:	**Fenagh Engineering**	Location:	**33.915769** **-118.252243**
Drilling Method:	**Hand Auger**	DTW During Drilling (ft):	**-**
Logged By:	**ME**	DTW After Drilling (ft):	**-**
Checked By:	**ER**	DTW At Completion (ft):	**-**

Elevation (ft)	Depth (ft)	GW Level (ft)	Lithology	Description	Sample Type	Blow-Count (N)	N60	Dry Unit Weight (pcf)	Moisture (%)	Fines (%)	Atterberg Limits LL (%)	PL (%)	PI (%)
	0			YOUNG ALLUVIAL DEPOSITS, undivided (Qya): SANDY Lean CLAY (CL), greyish brown, slightly moist, soft to stiff, medium plasticity.				111.7	16.4				

Bottom of Test Pit TP-20 at 3 ft
Groundwater was not encountered during drilling.

FENAGH ENGINEERING AND TESTING

Client: **Compton Unified School District**
Project: **Centennial HS WSM**
Location: **2606 N Central Avenue, Compton, CA**

TEST PIT LOG
TP-21

Start Date:	**04/21/2025**	Ground Surface Elevation (ft):	**87 ft** **MSL**
End Date:	**04/25/2025**	Hole Diameter (in):	**3 in**
Drilled by:	**Fenagh Engineering**	Location:	**33.916014** **-118.251613**
Drilling Method:	**Hand Auger**	DTW During Drilling (ft):	**-**
Logged By:	**ME**	DTW After Drilling (ft):	**-**
Checked By:	**ER**	DTW At Completion (ft):	**-**

Elevation (ft)	Depth (ft)	GW Level (ft)	Lithology	Description	Sample Type	Blow-Count (N)	N60	Dry Unit Weight (pcf)	Moisture (%)	Fines (%)	Atterberg Limits LL (%)	PL (%)	PI (%)
	0			YOUNG ALLUVIAL DEPOSITS, undivided (Qya): SANDY Lean CLAY (CL), greyish brown, slightly moist, soft to stiff, medium plasticity.									

Bottom of Test Pit TP-21 at 3 ft
Groundwater was not encountered during drilling.

FENAGH ENGINEERING AND TESTING

Client: **Compton Unified School District**
Project: **Centennial HS WSM**
Location: **2606 N Central Avenue, Compton, CA**

TEST PIT LOG
TP-22

Start Date:	**04/21/2025**	Ground Surface Elevation (ft):	**87 ft** **MSL**
End Date:	**04/25/2025**	Hole Diameter (in):	**3 in**
Drilled by:	**Fenagh Engineering**	Location:	**33.915309** **-118.251421**
Drilling Method:	**Hand Auger**	DTW During Drilling (ft):	**-**
Logged By:	**ME**	DTW After Drilling (ft):	**-**
Checked By:	**ER**	DTW At Completion (ft):	**-**

Elevation (ft)	Depth (ft)	GW Level (ft)	Lithology	Description	Sample Type	Blow-Count (N)	N60	Dry Unit Weight (pcf)	Moisture (%)	Fines (%)	Atterberg Limits LL (%)	PL (%)	PI (%)
	0			YOUNG ALLUVIAL DEPOSITS, undivided (Qya): SILTY SAND (ML), brown, slightly moist, soft, medium plasticity.									

Bottom of Test Pit TP-22 at 3 ft
Groundwater was not encountered during drilling.

FENAGH ENGINEERING AND TESTING

Client: **Compton Unified School District**
Project: **Centennial HS WSM**
Location: **2606 N Central Avenue, Compton, CA**

TEST PIT LOG
TP-23

Start Date:	**04/21/2025**	Ground Surface Elevation (ft):	**87 ft** **MSL**
End Date:	**04/25/2025**	Hole Diameter (in):	**3 in**
Drilled by:	**Fenagh Engineering**	Location:	**33.915046** **-118.25093**
Drilling Method:	**Hand Auger**	DTW During Drilling (ft):	**-**
Logged By:	**ME**	DTW After Drilling (ft):	**-**
Checked By:	**ER**	DTW At Completion (ft):	**-**

Elevation (ft)	Depth (ft)	GW Level (ft)	Lithology	Description	Sample Type	Blow-Count (N)	N60	Dry Unit Weight (pcf)	Moisture (%)	Fines (%)	Atterberg Limits LL (%)	Atterberg Limits PL (%)	Atterberg Limits PI (%)
	0			YOUNG ALLUVIAL DEPOSITS, undivided (Qya): SILT (ML), dark brown, slightly moist, soft, medium plasticity.									

Bottom of Test Pit TP-23 at 3 ft
Groundwater was not encountered during drilling.

FENAGH ENGINEERING AND TESTING

Client: **Compton Unified School District**
Project: **Centennial HS WSM**
Location: **2606 N Central Avenue, Compton, CA**

TEST PIT LOG
TP-24

Start Date:	**04/21/2025**	Ground Surface Elevation (ft):	**87 ft** **MSL**
End Date:	**04/25/2025**	Hole Diameter (in):	**3 in**
Drilled by:	**Fenagh Engineering**	Location:	**33.915723** **-118.250285**
Drilling Method:	**Hand Auger**	DTW During Drilling (ft):	**-**
Logged By:	**RW**	DTW After Drilling (ft):	**-**
Checked By:	**ER**	DTW At Completion (ft):	**-**

Elevation (ft)	Depth (ft)	GW Level (ft)	Lithology	Description	Sample Type	Blow-Count (N)	N60	Dry Unit Weight (pcf)	Moisture (%)	Fines (%)	Atterberg Limits LL (%)	PL (%)	PI (%)
	0			FILL: Lean CLAY (CL), dark brown, moist, stiff, low to medium plasticity, trace organics - grass roots.									
84				YOUNG ALLUVIAL DEPOSITS, undivided (Qya): CLAYEY SAND (SC), reddish brown to brown, moist, medium dense, low plasticity.									
	5												
79				SILTY SAND (SM), brown, moist, medium dense, nonplastic.									

Bottom of Test Pit TP-24 at 10 ft
Groundwater was not encountered during drilling.

FENAGH ENGINEERING AND TESTING

Client: **Compton Unified School District**
Project: **Centennial HS WSM**
Location: **2606 N Central Avenue, Compton, CA**

TEST PIT LOG
TP-25

Start Date:	**04/21/2025**	Ground Surface Elevation (ft):	**87 ft** **MSL**
End Date:	**04/25/2025**	Hole Diameter (in):	**3 in**
Drilled by:	**Fenagh Engineering**	Location:	**33.914887** **-118.2507**
Drilling Method:	**Hand Auger**	DTW During Drilling (ft):	**-**
Logged By:	**RW**	DTW After Drilling (ft):	**-**
Checked By:	**ER**	DTW At Completion (ft):	**-**

Elevation (ft)	Depth (ft)	GW Level (ft)	Lithology	Description	Sample Type	Blow-Count (N)	N60	Dry Unit Weight (pcf)	Moisture (%)	Fines (%)	Atterberg Limits LL (%)	PL (%)	PI (%)
	0			FILL: Lean CLAY (CL), dark brown, moist, stiff, medium plasticity, trace organics - grass roots.									
84				YOUNG ALLUVIAL DEPOSITS, undivided (Qya): Lean CLAY (CL), brown to dark brown, trace orange oxide and light gray spots, moist, stiff, medium plasticity.									
	5												
79				increased SAND.									

Bottom of Test Pit TP-25 at 10 ft
Groundwater was not encountered during drilling.

FENAGH ENGINEERING AND TESTING

Client: **Compton Unified School District**
Project: **Centennial HS WSM**
Location: **2606 N Central Avenue, Compton, CA**

TEST PIT LOG
TP-26

Start Date:	**04/21/2025**	Ground Surface Elevation (ft):	**87 ft** **MSL**
End Date:	**04/25/2025**	Hole Diameter (in):	**3 in**
Drilled by:	**Fenagh Engineering**	Location:	**33.914677** **-118.251554**
Drilling Method:	**Hand Auger**	DTW During Drilling (ft):	**-**
Logged By:	**RW**	DTW After Drilling (ft):	**-**
Checked By:	**ER**	DTW At Completion (ft):	**-**

Elevation (ft)	Depth (ft)	GW Level (ft)	Lithology	Description	Sample Type	Blow-Count (N)	N60	Dry Unit Weight (pcf)	Moisture (%)	Fines (%)	Atterberg Limits LL (%)	PL (%)	PI (%)
	0			FILL: CLAYEY SAND (SC), brown, moist, medium dense, medium plasticity, trace organics - grass roots.									
				YOUNG ALLUVIAL DEPOSITS, undivided (Qya): CLAYEY SAND (SC), brown to dark brown, trace light gray spots, moist, medium dense, medium plasticity.									
84													
				SILTY SAND (SM), brown to dark brown, moist, medium dense, nonplastic.									
	5												
				light brown to tan, trace light gray spots.									
79													

Bottom of Test Pit TP-26 at 10 ft
Groundwater was not encountered during drilling.

FENAGH ENGINEERING AND TESTING

Client: **Compton Unified School District**
Project: **Centennial HS WSM**
Location: **2606 N Central Avenue, Compton, CA**

TEST PIT LOG
TP-27

Start Date:	**04/21/2025**	Ground Surface Elevation (ft):	**87 ft** **MSL**
End Date:	**04/25/2025**	Hole Diameter (in):	**3 in**
Drilled by:	**Fenagh Engineering**	Location:	**33.913193** **-118.251717**
Drilling Method:	**Hand Auger**	DTW During Drilling (ft):	**-**
Logged By:	**ME**	DTW After Drilling (ft):	**-**
Checked By:	**ER**	DTW At Completion (ft):	**-**

Elevation (ft)	Depth (ft)	GW Level (ft)	Lithology	Description	Sample Type	Blow-Count (N)	N60	Dry Unit Weight (pcf)	Moisture (%)	Fines (%)	Atterberg Limits LL (%)	PL (%)	PI (%)
	0			YOUNG ALLUVIAL DEPOSITS, undivided (Qya): SANDY SILT (ML), brown, moist, soft, medium plasticity.									

Bottom of Test Pit TP-27 at 3 ft
Groundwater was not encountered during drilling.

FENAGH ENGINEERING AND TESTING

Client: **Compton Unified School District**
Project: **Centennial HS WSM**
Location: **2606 N Central Avenue, Compton, CA**

TEST PIT LOG
TP-28

Start Date:	**04/21/2025**	Ground Surface Elevation (ft):	**87 ft** **MSL**
End Date:	**04/25/2025**	Hole Diameter (in):	**3 in**
Drilled by:	**Fenagh Engineering**	Location:	**33.912986** **-118.252328**
Drilling Method:	**Hand Auger**	DTW During Drilling (ft):	**-**
Logged By:	**ME**	DTW After Drilling (ft):	**-**
Checked By:	**ER**	DTW At Completion (ft):	**-**

Elevation (ft)	Depth (ft)	GW Level (ft)	Lithology	Description	Sample Type	Blow-Count (N)	N60	Dry Unit Weight (pcf)	Moisture (%)	Fines (%)	Atterberg Limits LL (%)	PL (%)	PI (%)
	0			YOUNG ALLUVIAL DEPOSITS, undivided (Qya): SANDY Lean CLAY (CL), greyish brown, slightly moist, soft to stiff, medium plasticity.				120.6	12.5				

Bottom of Test Pit TP-28 at 3 ft
Groundwater was not encountered during drilling.

FENAGH ENGINEERING AND TESTING

Client: **Compton Unified School District**
Project: **Centennial HS WSM**
Location: **2606 N Central Avenue, Compton, CA**

TEST PIT LOG
TP-29

Start Date:	**04/21/2025**	Ground Surface Elevation (ft):	**90 ft** **MSL**
End Date:	**04/25/2025**	Hole Diameter (in):	**3 in**
Drilled by:	**Fenagh Engineering**	Location:	**33.914782** **-118.252229**
Drilling Method:	**Hand Auger**	DTW During Drilling (ft):	**-**
Logged By:	**ME**	DTW After Drilling (ft):	**-**
Checked By:	**ER**	DTW At Completion (ft):	**-**

Elevation (ft)	Depth (ft)	GW Level (ft)	Lithology	Description	Sample Type	Blow-Count (N)	N60	Dry Unit Weight (pcf)	Moisture (%)	Fines (%)	Atterberg Limits LL (%)	PL (%)	PI (%)
90	0			YOUNG ALLUVIAL DEPOSITS, undivided (Qya): SANDY Lean CLAY (CL), greyish brown, slightly moist, soft to stiff, medium plasticity.									
				CLAYEY SAND (SC), light brown, moist, medium dense to dense, low plasticity.									
85	5												

Bottom of Test Pit TP-29 at 10 ft
Groundwater was not encountered during drilling.

FENAGH ENGINEERING AND TESTING

Client: **Compton Unified School District**
Project: **Centennial HS WSM**
Location: **2606 N Central Avenue, Compton, CA**

TEST PIT LOG
TP-30

Start Date:	**04/21/2025**	Ground Surface Elevation (ft):	**87 ft** **MSL**
End Date:	**04/25/2025**	Hole Diameter (in):	**3 in**
Drilled by:	**Fenagh Engineering**	Location:	**33.914493** **-118.252184**
Drilling Method:	**Hand Auger**	DTW During Drilling (ft):	**-**
Logged By:	**RW**	DTW After Drilling (ft):	**-**
Checked By:	**ER**	DTW At Completion (ft):	**-**

Elevation (ft)	Depth (ft)	GW Level (ft)	Lithology	Description	Sample Type	Blow-Count (N)	N60	Dry Unit Weight (pcf)	Moisture (%)	Fines (%)	Atterberg Limits LL (%)	Atterberg Limits PL (%)	Atterberg Limits PI (%)
	0			FILL: Lean CLAY (CL), dark brown, moist, soft to medium stiff, medium plasticity, trace organics - grass roots.									
84				YOUNG ALLUVIAL DEPOSITS, undivided (Qya): CLAYEY SAND, trace GRAVEL (SC), brown, moist, medium dense, medium plasticity.									
	5												
79				increasing SAND, tan to light brown, low to medium plasticity.									

Bottom of Test Pit TP-30 at 10 ft
Groundwater was not encountered during drilling.

SUMMARY

OF

CONE PENETRATION TEST DATA

Project:

Centennial High School WSM GI
2606 N. Central Avenue
Compton, CA
April 22-24, 2025

Prepared for:

Mr. Mohammad El-Najjar
Fenagh Engineering & Testing
9474 Chesapeake Drive, Ste 906
San Diego, CA 92123
Office (858) 427-2200

Prepared by:

KEHOE TESTING & ENGINEERING
5415 Industrial Drive
Huntington Beach, CA 92649-1518
Office (714) 901-7270 / Fax (714) 901-7289
www.kehoetesting.com

TABLE OF CONTENTS

1. **INTRODUCTION**
2. **SUMMARY OF FIELD WORK**
3. **FIELD EQUIPMENT & PROCEDURES**
4. **CONE PENETRATION TEST DATA & INTERPRETATION**

APPENDIX

- CPT Plots
- CPT Classification/Soil Behavior Chart
- Summary of Shear Wave Velocities
- Pore Pressure Dissipation Graphs
- CPT Data Files (sent via email)

SUMMARY

OF

CONE PENETRATION TEST DATA

1. INTRODUCTION

This report presents the results of a Cone Penetration Test (CPT) program carried out for the Centennial High School WSM GI project located at 2606 N. Central Avenue in Compton, California. The work was performed by Kehoe Testing & Engineering (KTE) on April 22-24, 2025. The scope of work was performed as directed by Fenagh Engineering & Testing personnel.

2. SUMMARY OF FIELD WORK

The fieldwork consisted of performing CPT soundings at 21 locations to determine the soil lithology. A summary is provided in **TABLE 2.1**.

LOCATION	DEPTH OF CPT (ft)	COMMENTS/NOTES:
CPT-1	50	
CPT-2	20	
CPT-3	50	
CPT-4	75	
CPT-5	50	
CPT-6	50	
CPT-7	50	
CPT-8	20	
CPT-9	12	Refusal
CPT-10	50	
CPT-11	75	
CPT-12	50	
CPT-13	50	
CPT-14	50	
CPT-15	62	Refusal
CPT-16	75	

LOCATION	DEPTH OF CPT (ft)	COMMENTS/NOTES:
CPT-17	50	
CPT-18	20	
CPT-19	50	
CPT-20	50	
CPT-21	20	

TABLE 2.1 - Summary of CPT Soundings

3. FIELD EQUIPMENT & PROCEDURES

The CPT soundings were carried out by **KTE** using an integrated electronic cone system manufactured by Vertek. The CPT soundings were performed in accordance with ASTM standards (D5778). The cone penetrometers were pushed using a 30-ton CPT rig. The cone used during the program was a 15 cm^2 cone with a cone net area ratio of 0.83. The following parameters were recorded at approximately 2.5 cm depth intervals:

- Cone Resistance (qc)
- Sleeve Friction (fs)
- Dynamic Pore Pressure (u)
- Inclination
- Penetration Speed
- Pore Pressure Dissipation (at selected depths)

At locations CPT-17 & CPT-19, shear wave measurements were obtained at approximately 10-foot intervals. The shear wave is generated using an air-actuated hammer, which is located inside the front jack of the CPT rig. The cone has a triaxial geophone, which recorded the shear wave signal generated by the air hammer.

The above parameters were recorded and viewed in real time using a laptop computer. Data is stored at the KTE office for up to 2 years for future analysis and reference. A complete set of baseline readings was taken prior to each sounding to determine temperature shifts and any zero load offsets. Monitoring base line readings ensures that the cone electronics are operating properly.

4. CONE PENETRATION TEST DATA & INTERPRETATION

The Cone Penetration Test data is presented in graphical form in the attached Appendix. These plots were generated using the CPeT-IT program. Penetration depths are referenced to ground surface. The soil behavior type on the CPT plots is derived from the attached CPT SBT plot (Robertson, “Interpretation of Cone Penetration Test…”, 2009) and presents major soil lithologic changes. The stratigraphic interpretation is based on relationships between cone resistance (qc), sleeve friction (fs), and penetration pore pressure (u). The friction ratio (Rf), which is sleeve friction divided by cone resistance, is a calculated parameter that is used along with cone resistance to infer soil behavior type. Generally, cohesive soils (clays) have high friction ratios, low cone resistance and generate excess pore water pressures. Cohesionless soils (sands) have lower friction ratios, high cone bearing and generate little (or negative) excess pore water pressures.

The CPT data files have also been provided. These files can be imported in CPeT-IT (software by GeoLogismiki) and other programs to calculate various geotechnical parameters.

It should be noted that it is not always possible to clearly identify a soil type based on qc, fs and u. In these situations, experience, judgement and an assessment of the pore pressure data should be used to infer the soil behavior type.

If you have any questions regarding this information, please do not hesitate to call our office at (714) 901-7270.

Sincerely,

KEHOE TESTING & ENGINEERING



Steven P. Kehoe
President

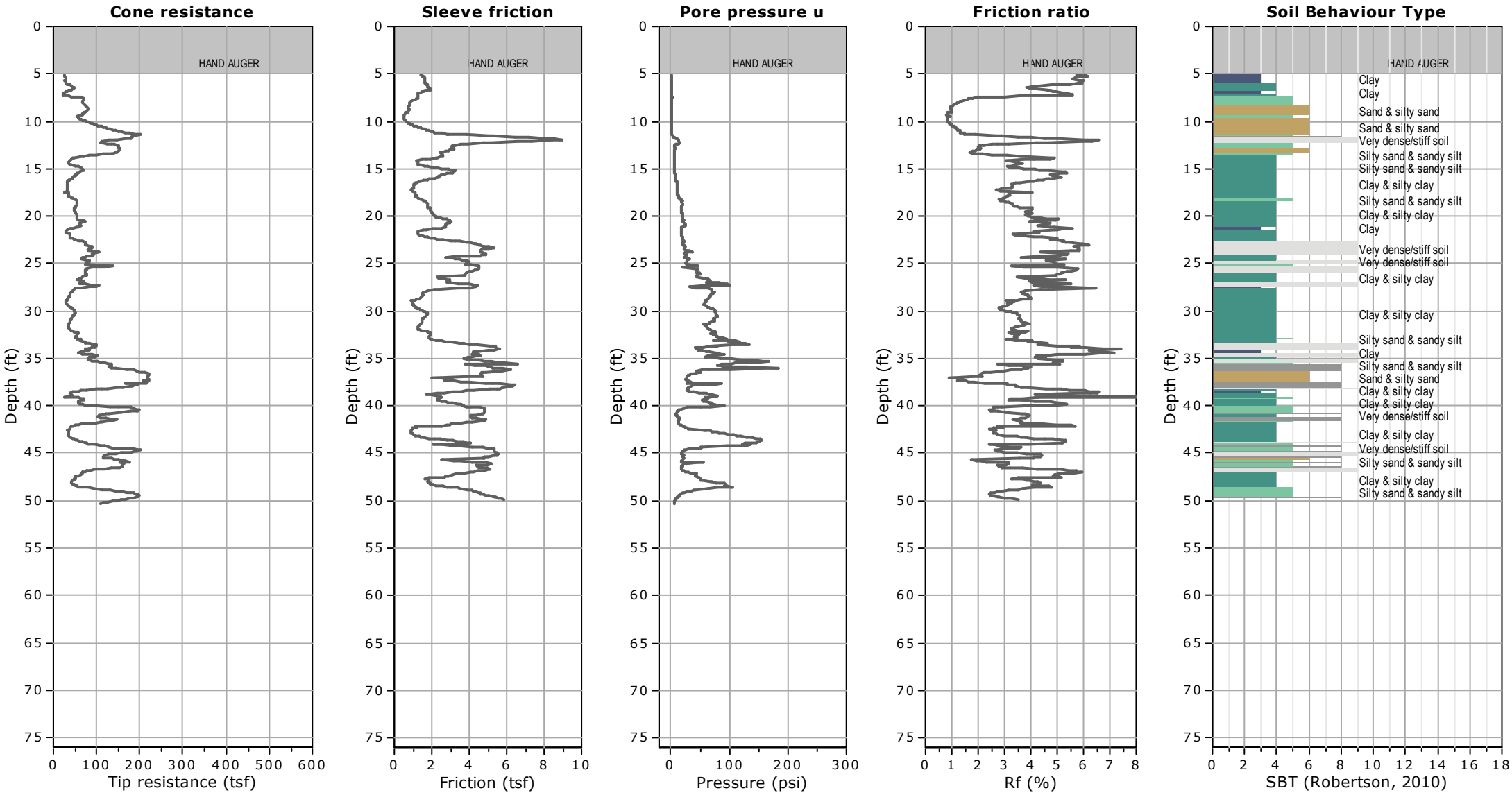
05/01/25-eb-7510

APPENDIX

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

Project: **Fenagh Engineering & Testing / Centennial High School WSM GI**
Location: **2606 N. Central Ave, Compton, CA**

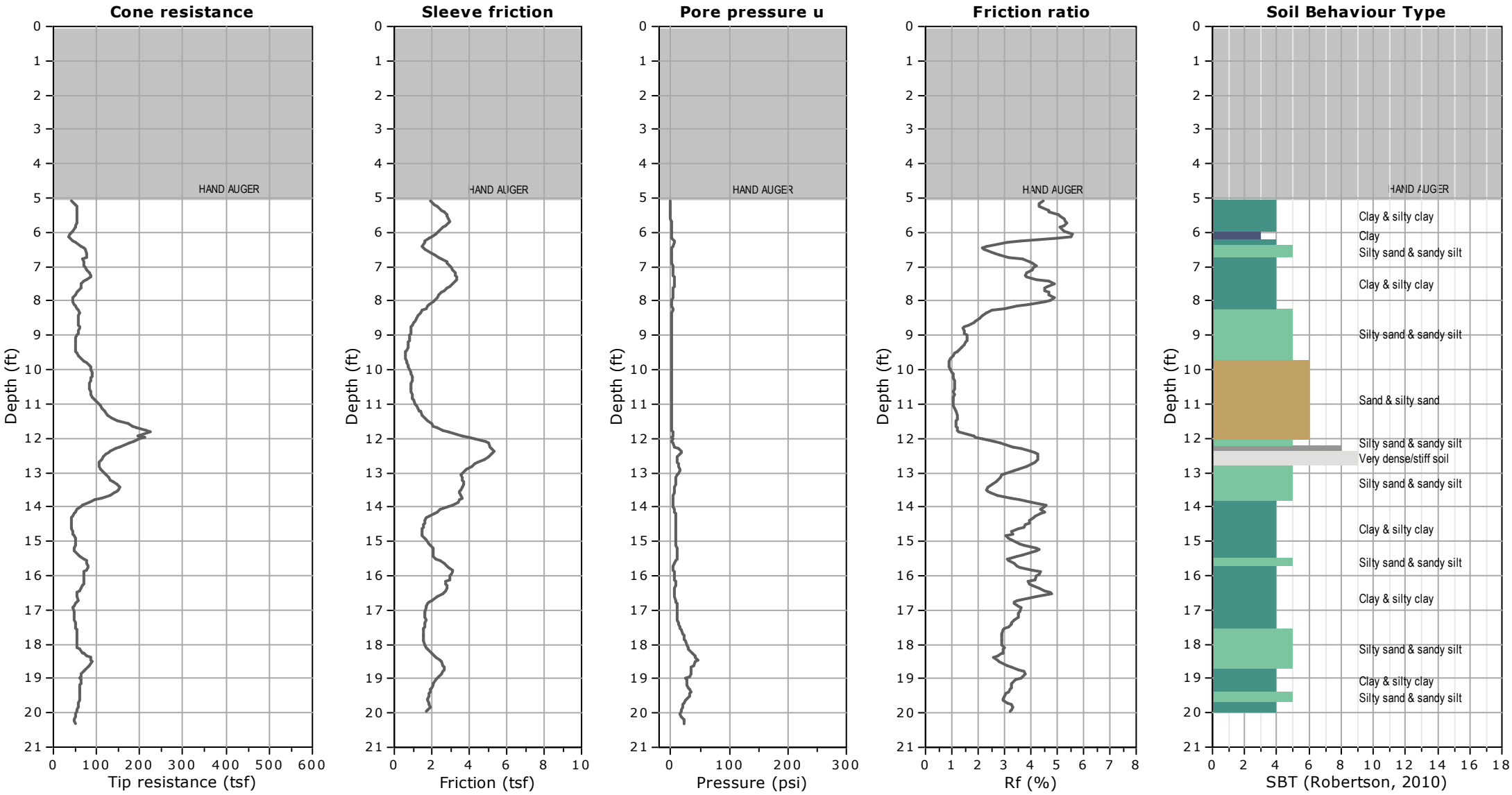
CPT-1
Total depth: 50.27 ft, Date: 4/22/2025



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

Project: **Fenagh Engineering & Testing / Centennial High School WSM GI**
Location: **2606 N. Central Ave, Compton, CA**

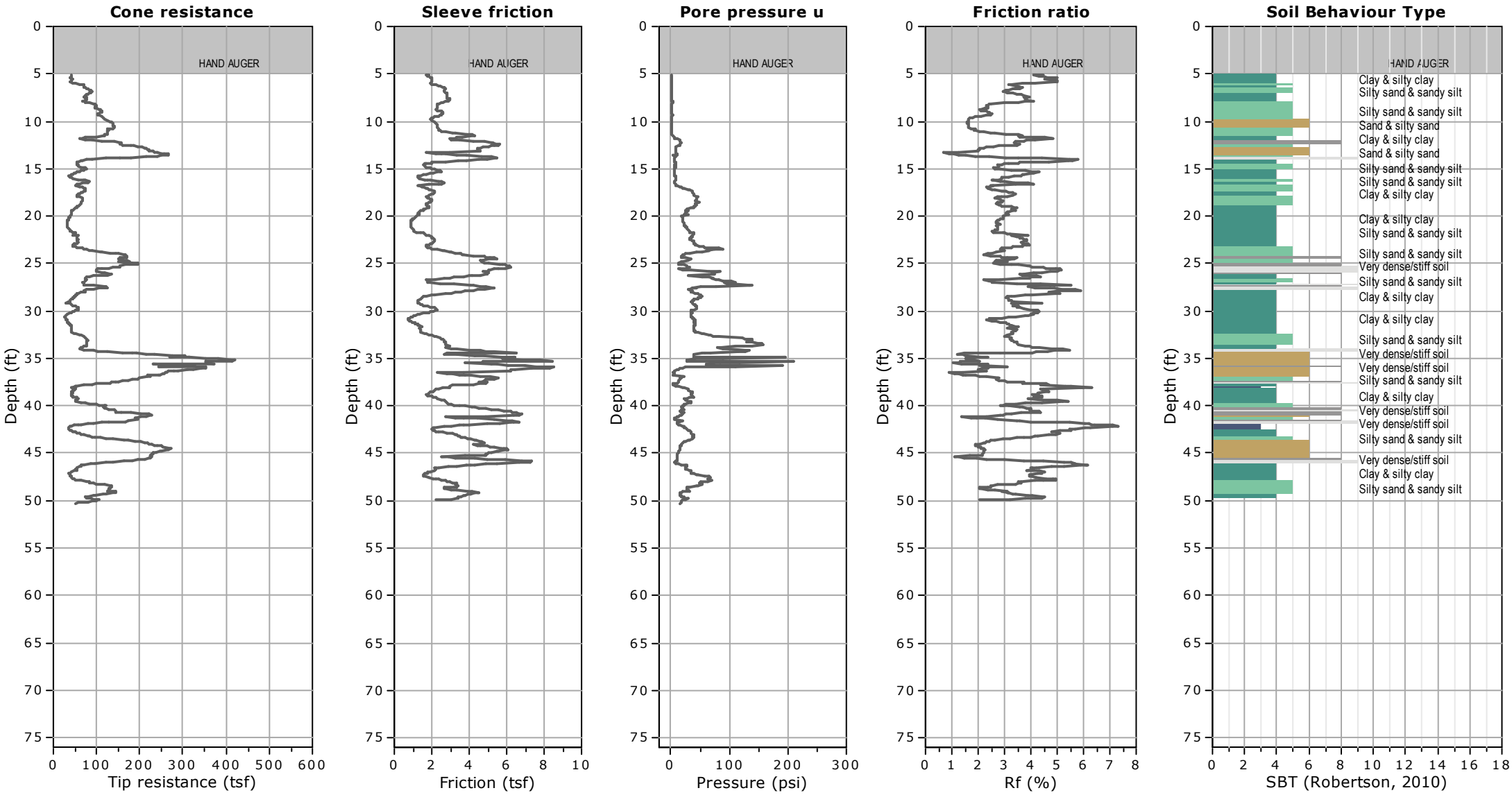
CPT-2
Total depth: 20.32 ft, Date: 4/22/2025



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

Project: **Fenagh Engineering & Testing / Centennial High School WSM GI**
Location: **2606 N. Central Ave, Compton, CA**

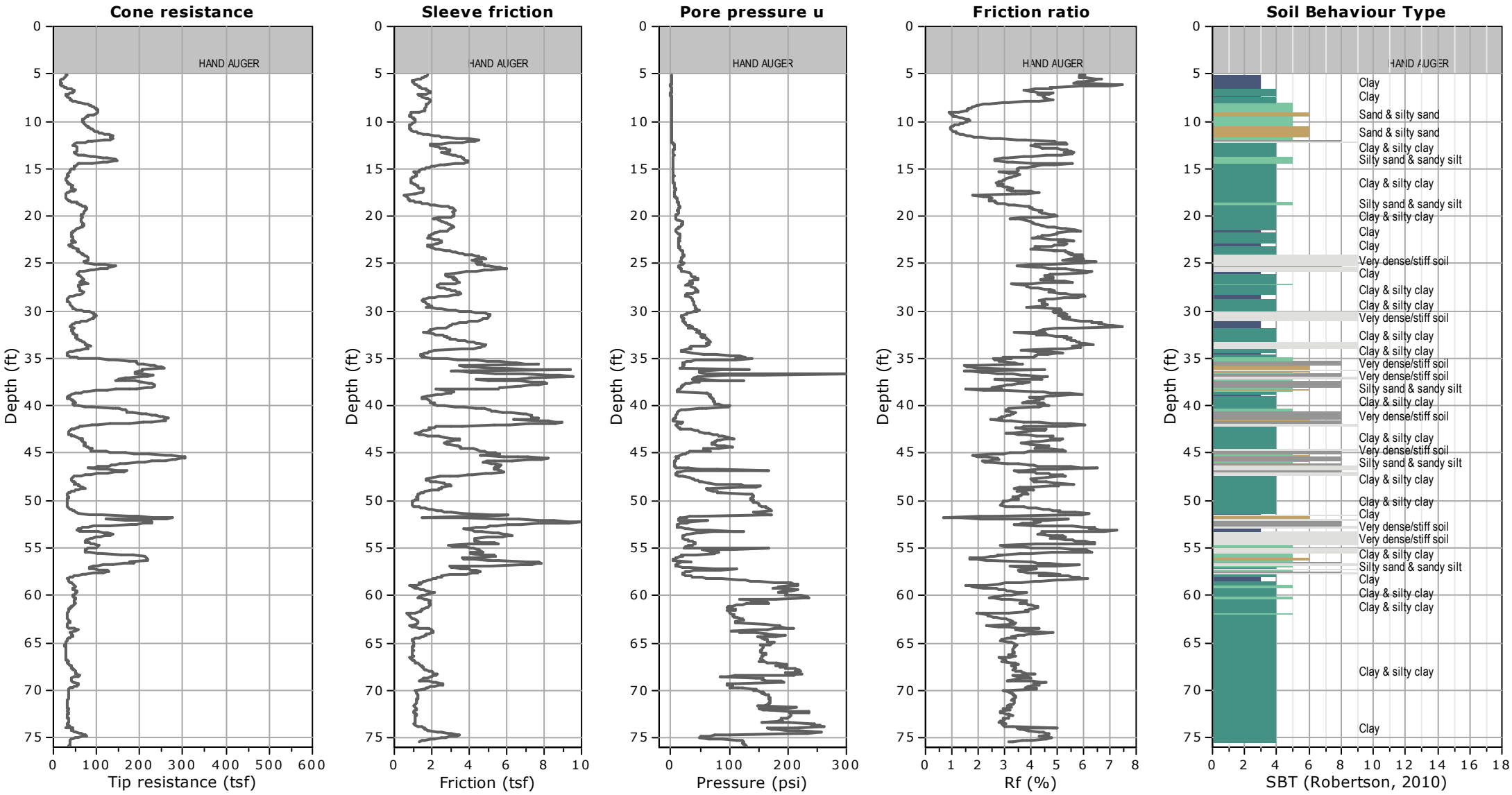
CPT-3
Total depth: 50.28 ft, Date: 4/22/2025



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

Project: **Fenagh Engineering & Testing / Centennial High School WSM GI**
Location: **2606 N. Central Ave, Compton, CA**

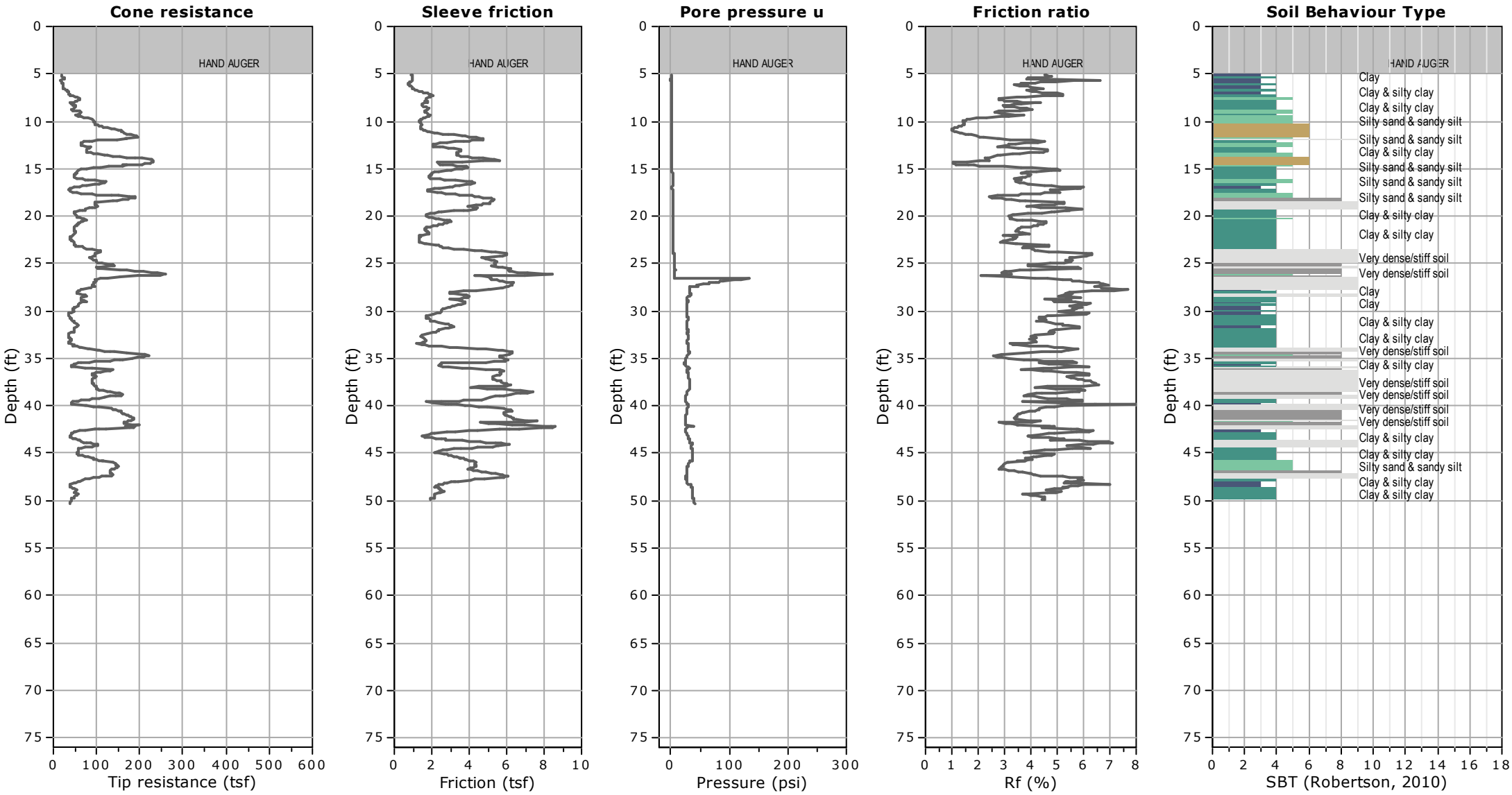
CPT-4
Total depth: 75.86 ft, Date: 4/23/2025



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

Project: **Fenagh Engineering & Testing / Centennial High School WSM GI**
Location: **2606 N. Central Ave, Compton, CA**

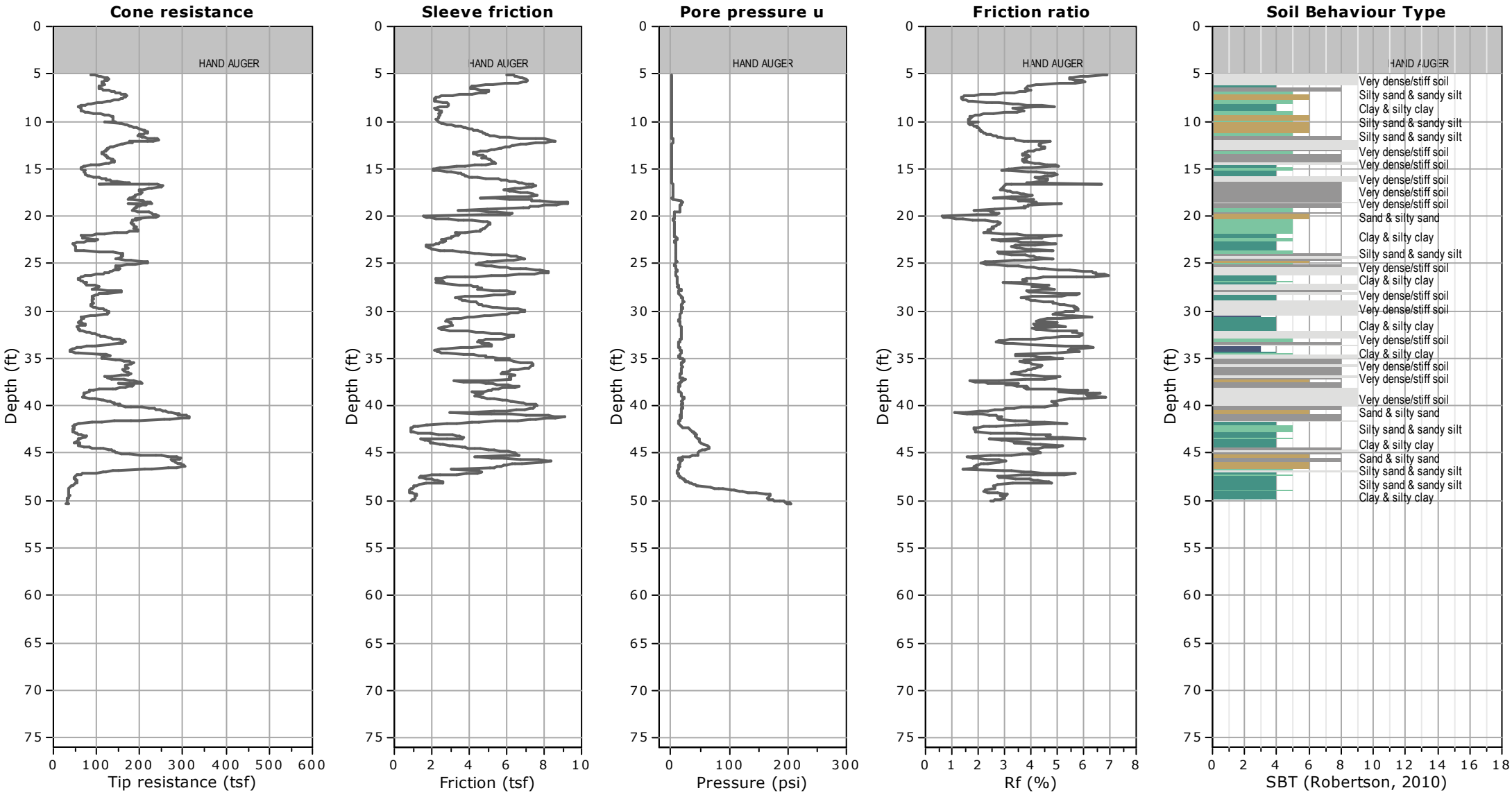
CPT-5
Total depth: 50.30 ft, Date: 4/22/2025



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

Project: **Fenagh Engineering & Testing / Centennial High School WSM GI**
Location: **2606 N. Central Ave, Compton, CA**

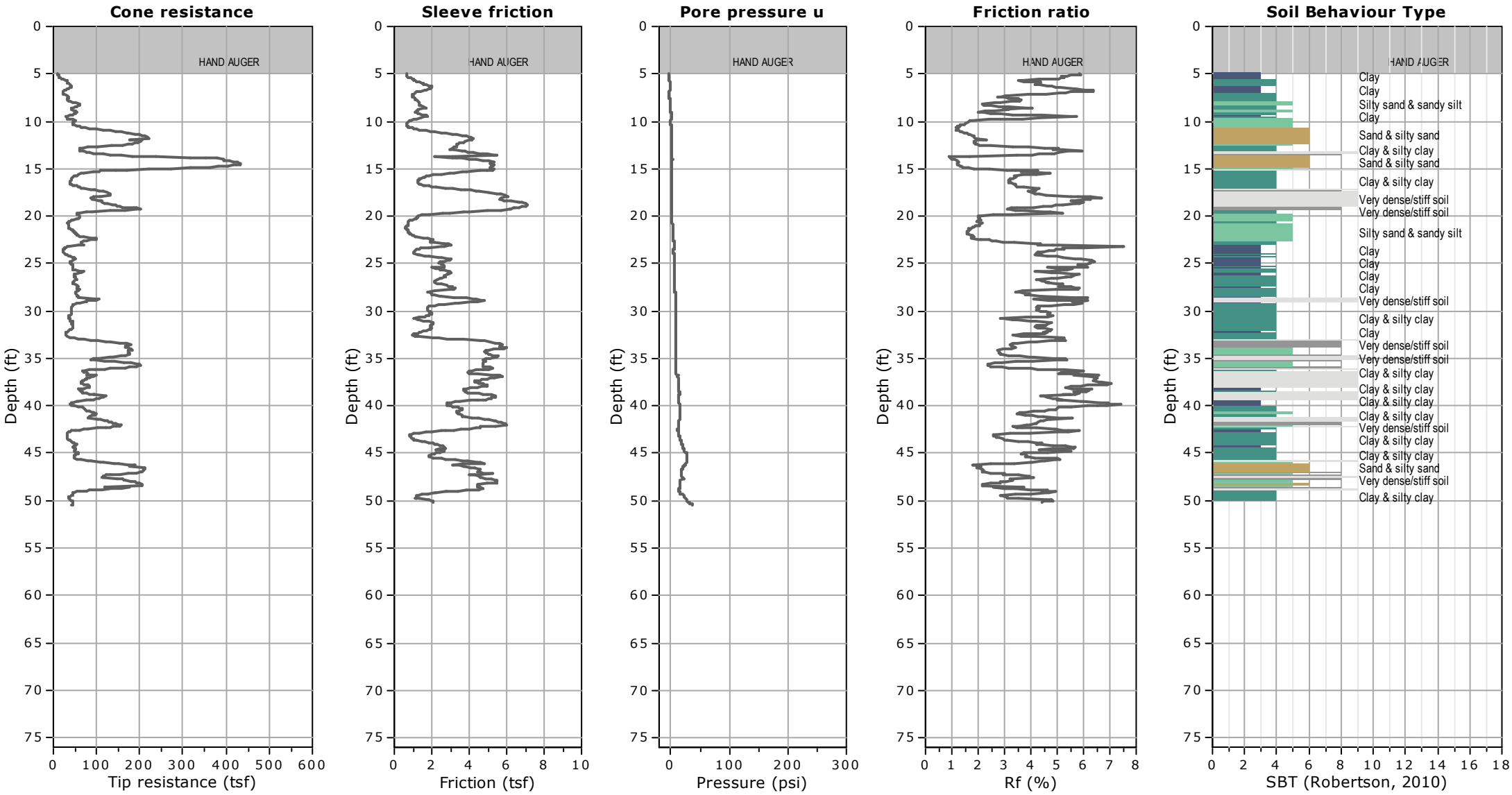
CPT-6
Total depth: 50.40 ft, Date: 4/22/2025



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

Project: **Fenagh Engineering & Testing / Centennial High School WSM GI**
Location: **2606 N. Central Ave, Compton, CA**

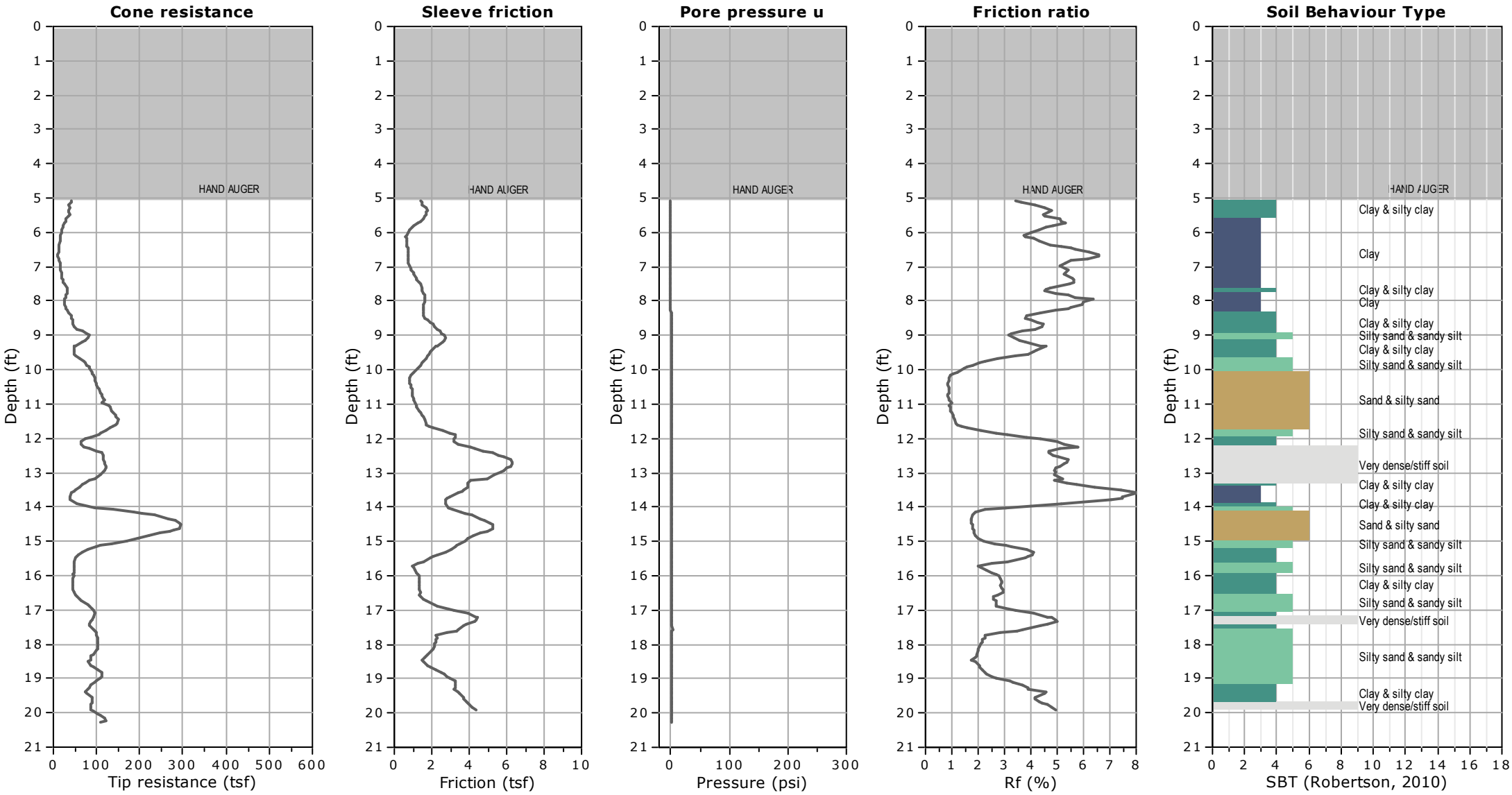
CPT-7
Total depth: 50.50 ft, Date: 4/22/2025



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

Project: **Fenagh Engineering & Testing / Centennial High School WSM GI**
Location: **2606 N. Central Ave, Compton, CA**

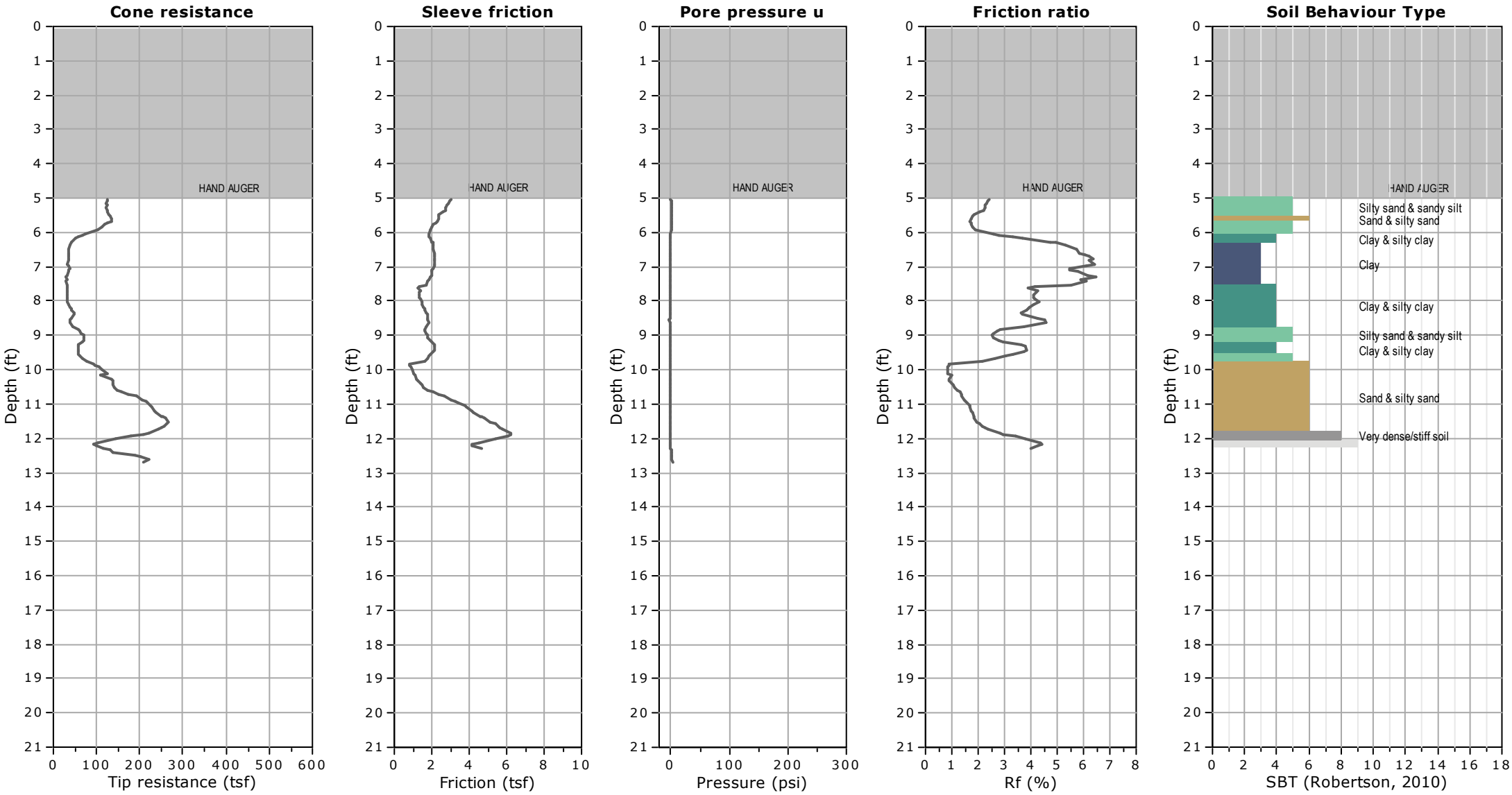
CPT-8
Total depth: 20.29 ft, Date: 4/22/2025



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

Project: **Fenagh Engineering & Testing / Centennial High School WSM GI**
Location: **2606 N. Central Ave, Compton, CA**

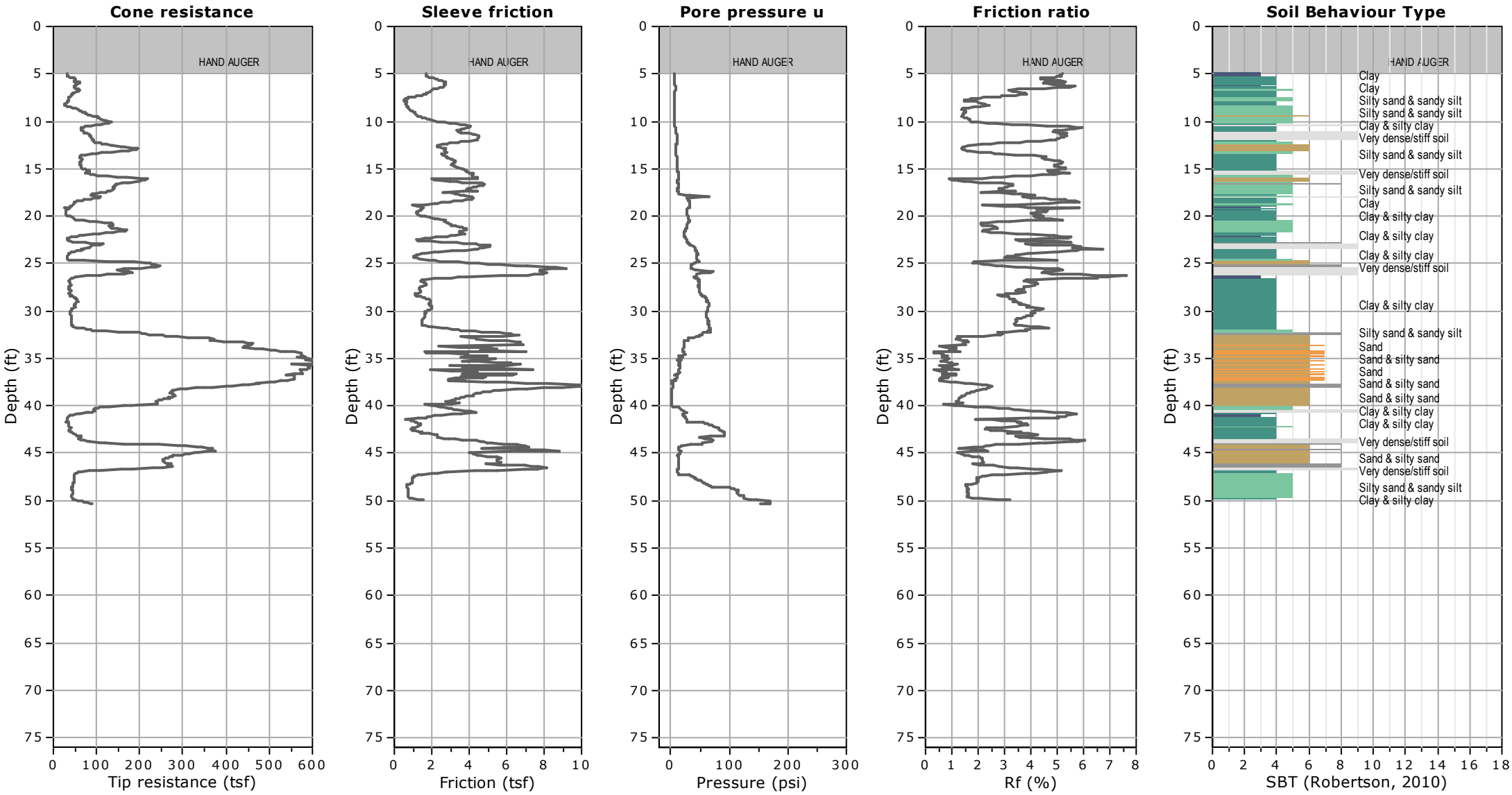
CPT-9
Total depth: 12.68 ft, Date: 4/22/2025



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

Project: **Fenagh Engineering & Testing / Centennial High School WSM GI**
Location: **2606 N. Central Ave, Compton, CA**

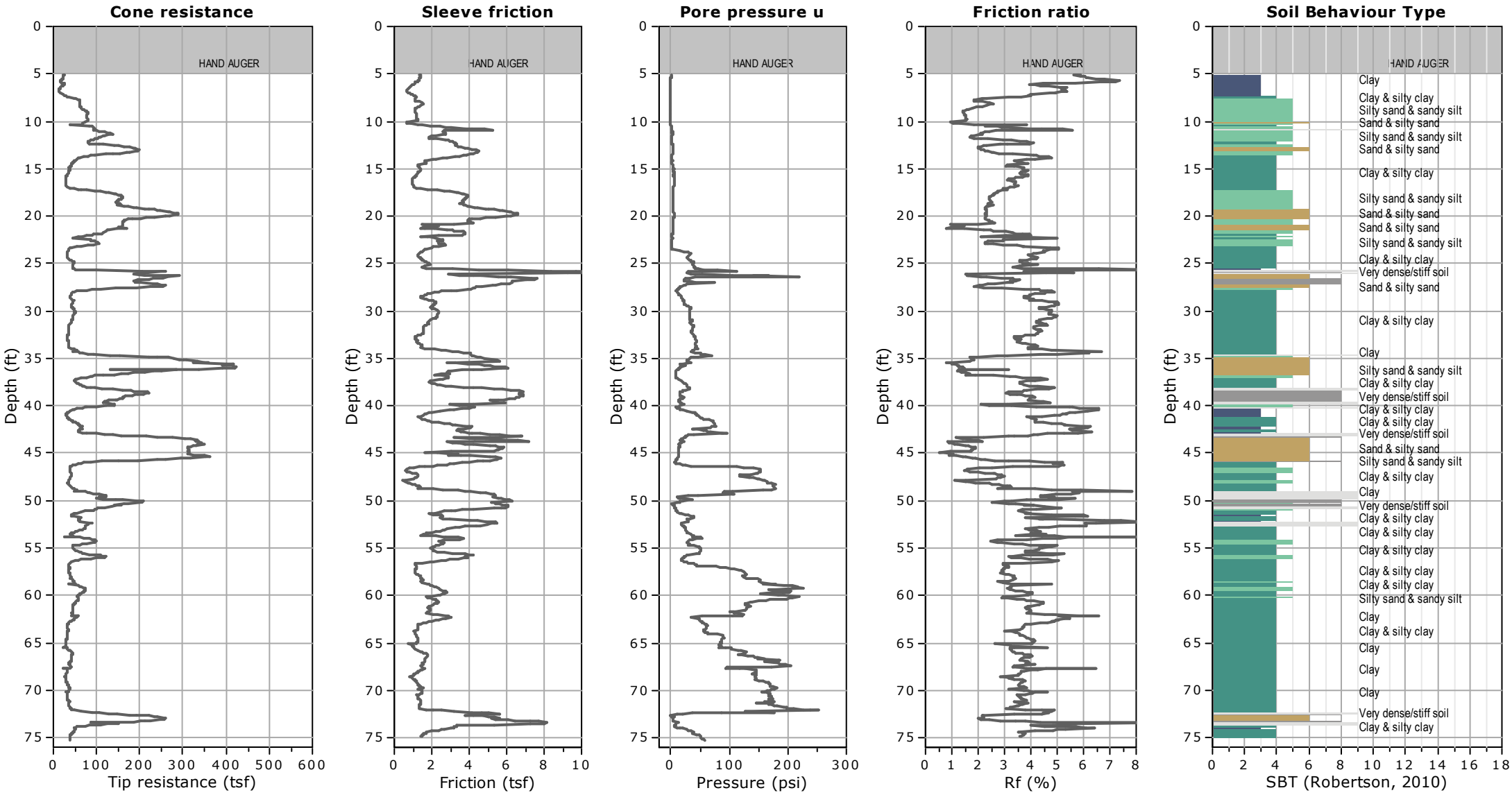
CPT-10
Total depth: 50.35 ft, Date: 4/22/2025



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

Project: **Fenagh Engineering & Testing / Centennial High School WSM GI**
Location: **2606 N. Central Ave, Compton, CA**

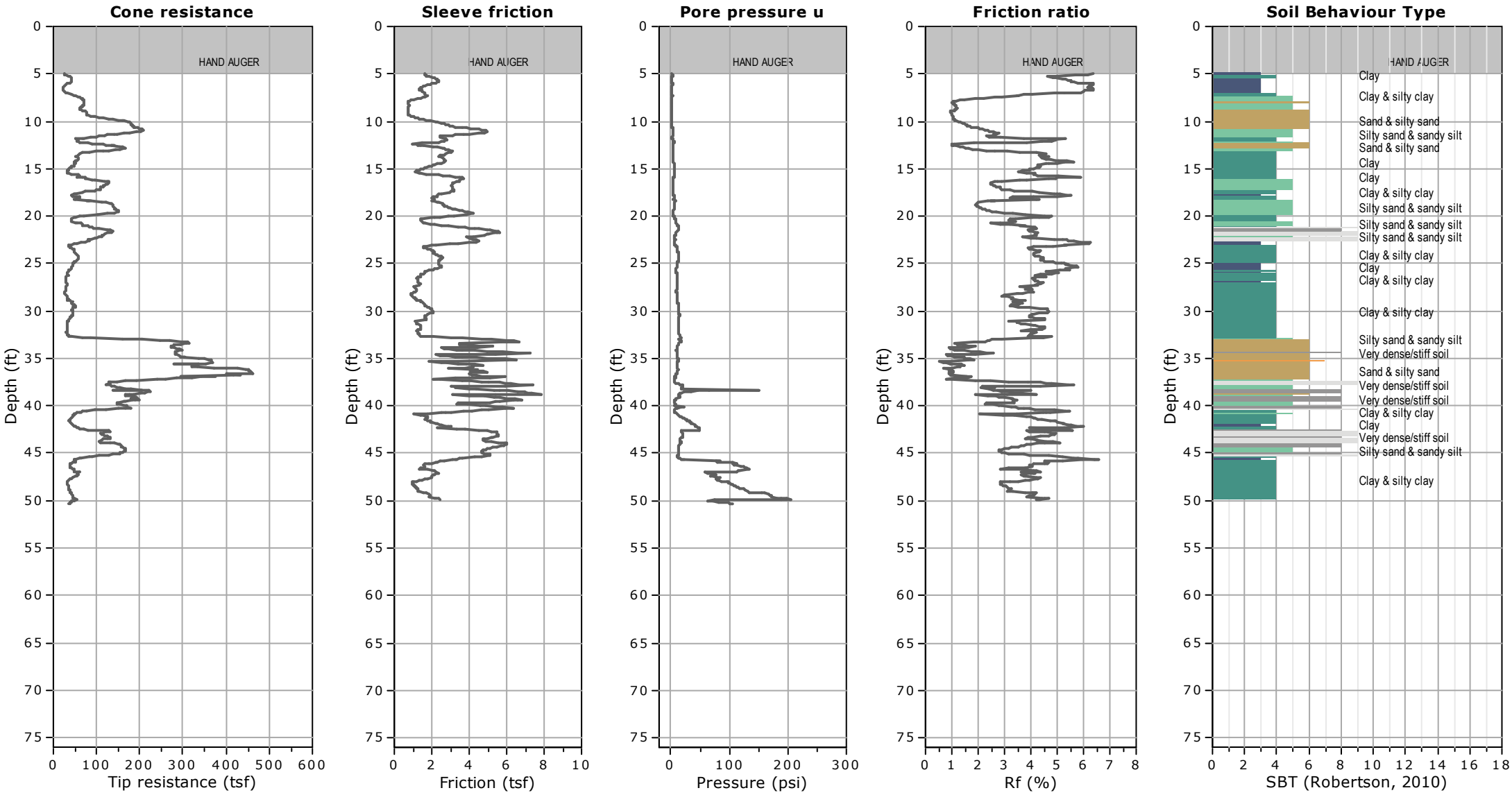
CPT-11
Total depth: 75.28 ft, Date: 4/23/2025



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

Project: **Fenagh Engineering & Testing / Centennial High School WSM GI**
Location: **2606 N. Central Ave, Compton, CA**

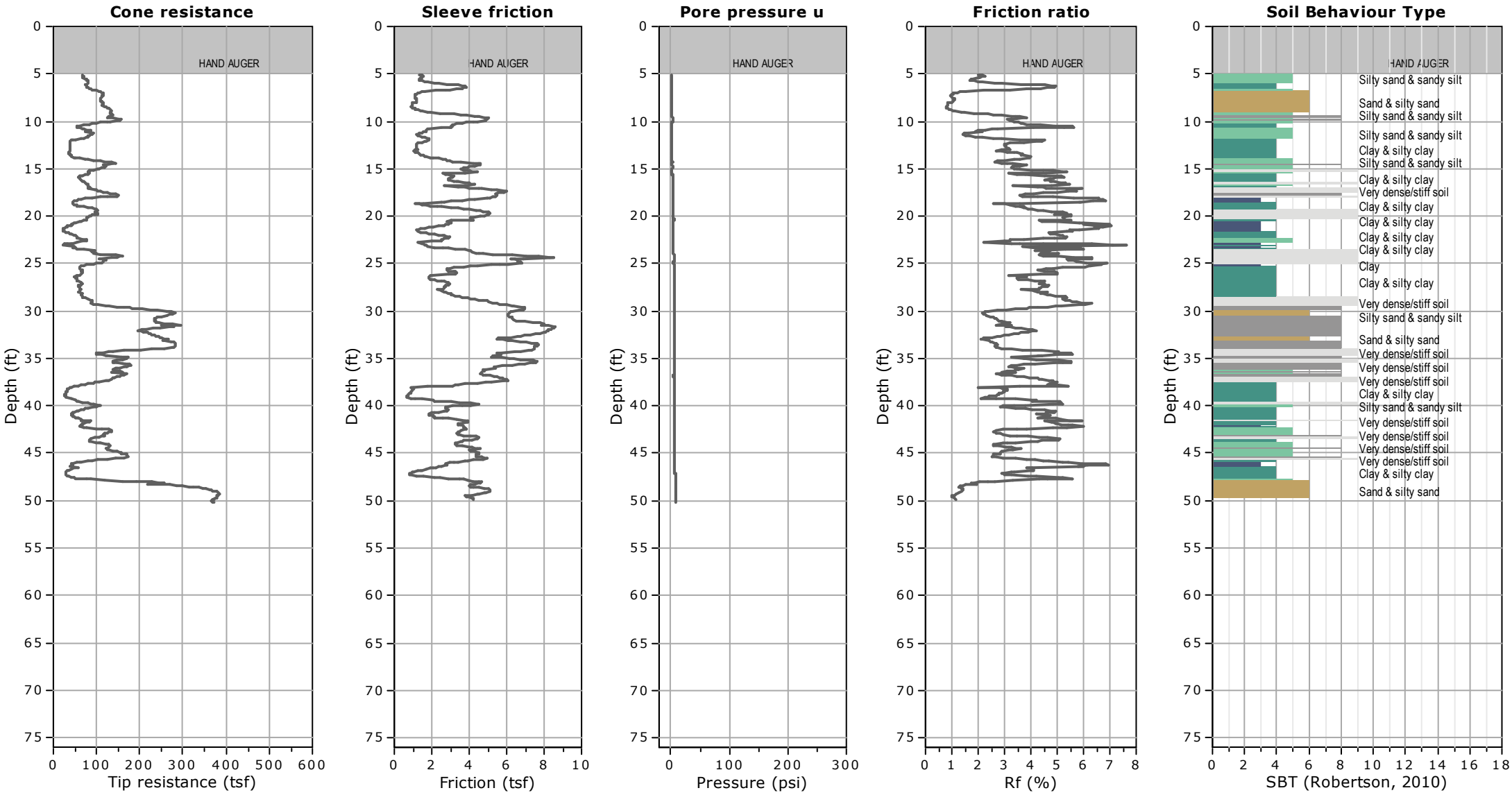
CPT-12
Total depth: 50.34 ft, Date: 4/23/2025



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

Project: **Fenagh Engineering & Testing / Centennial High School WSM GI**
Location: **2606 N. Central Ave, Compton, CA**

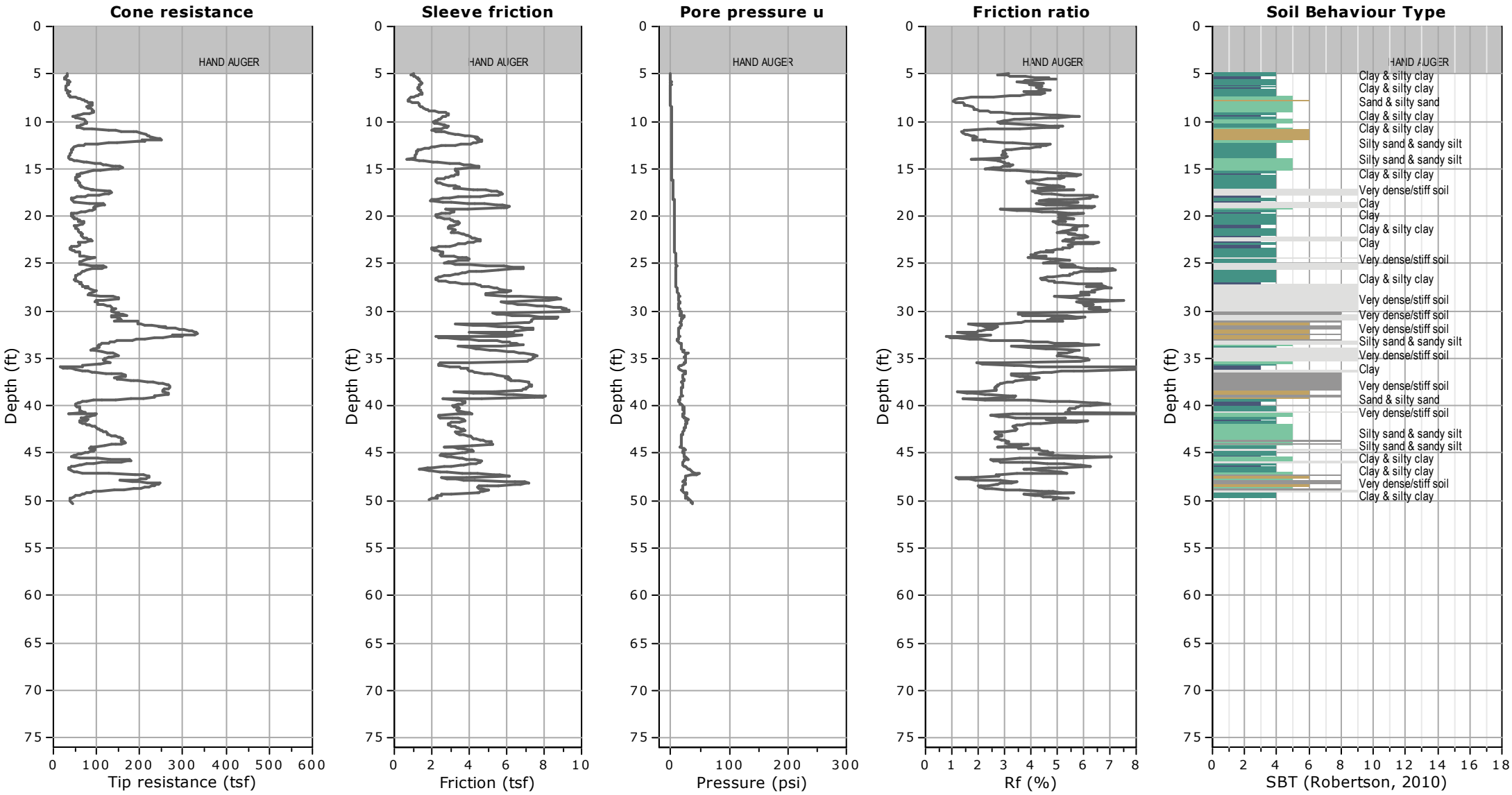
CPT-13
Total depth: 50.24 ft, Date: 4/24/2025



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

Project: **Fenagh Engineering & Testing / Centennial High School WSM GI**
Location: **2606 N. Central Ave, Compton, CA**

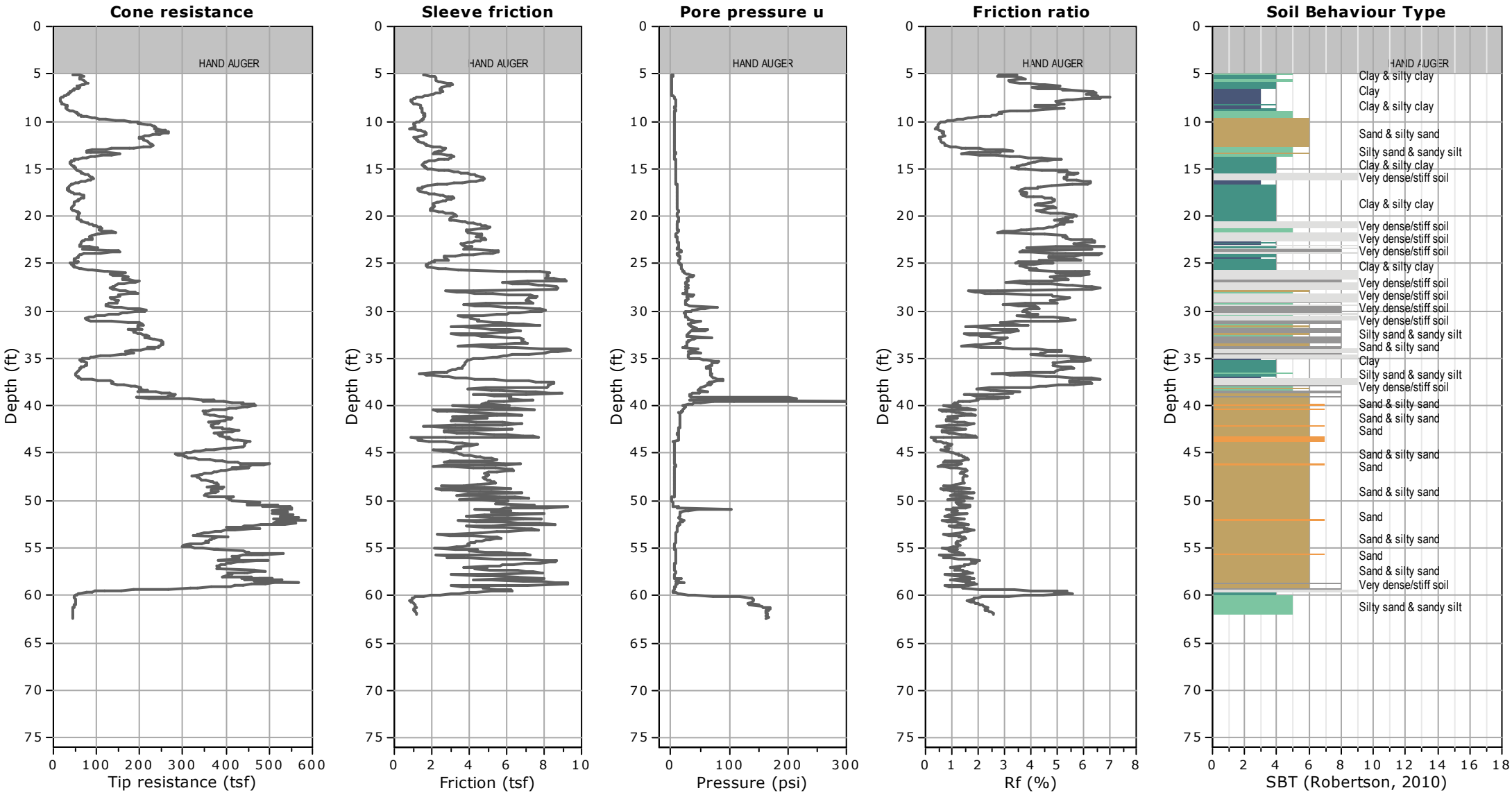
CPT-14
Total depth: 50.27 ft, Date: 4/22/2025



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

Project: **Fenagh Engineering & Testing / Centennial High School WSM GI**
Location: **2606 N. Central Ave, Compton, CA**

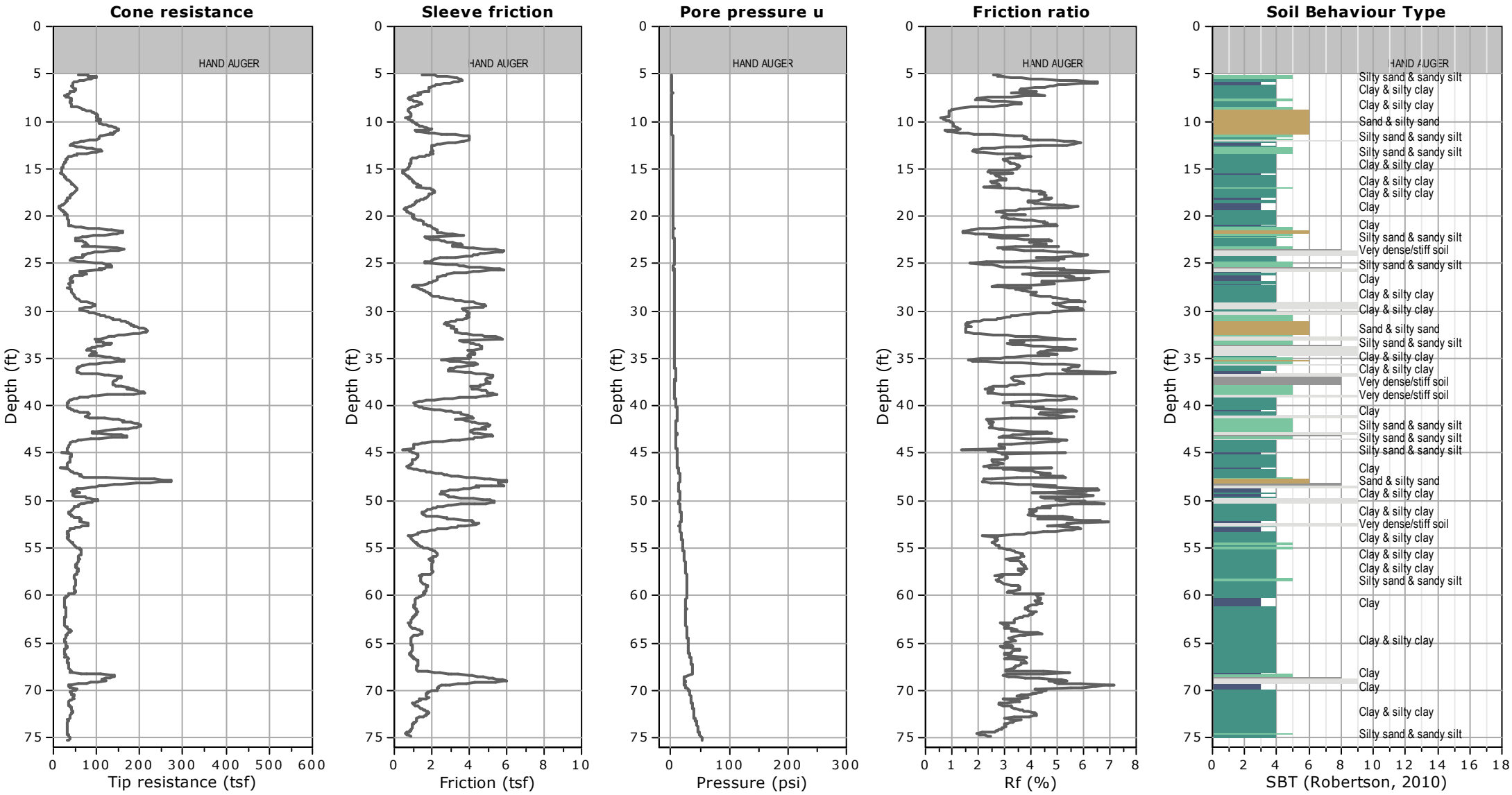
CPT-15
Total depth: 62.44 ft, Date: 4/23/2025



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

Project: **Fenagh Engineering & Testing / Centennial High School WSM GI**
Location: **2606 N. Central Ave, Compton, CA**

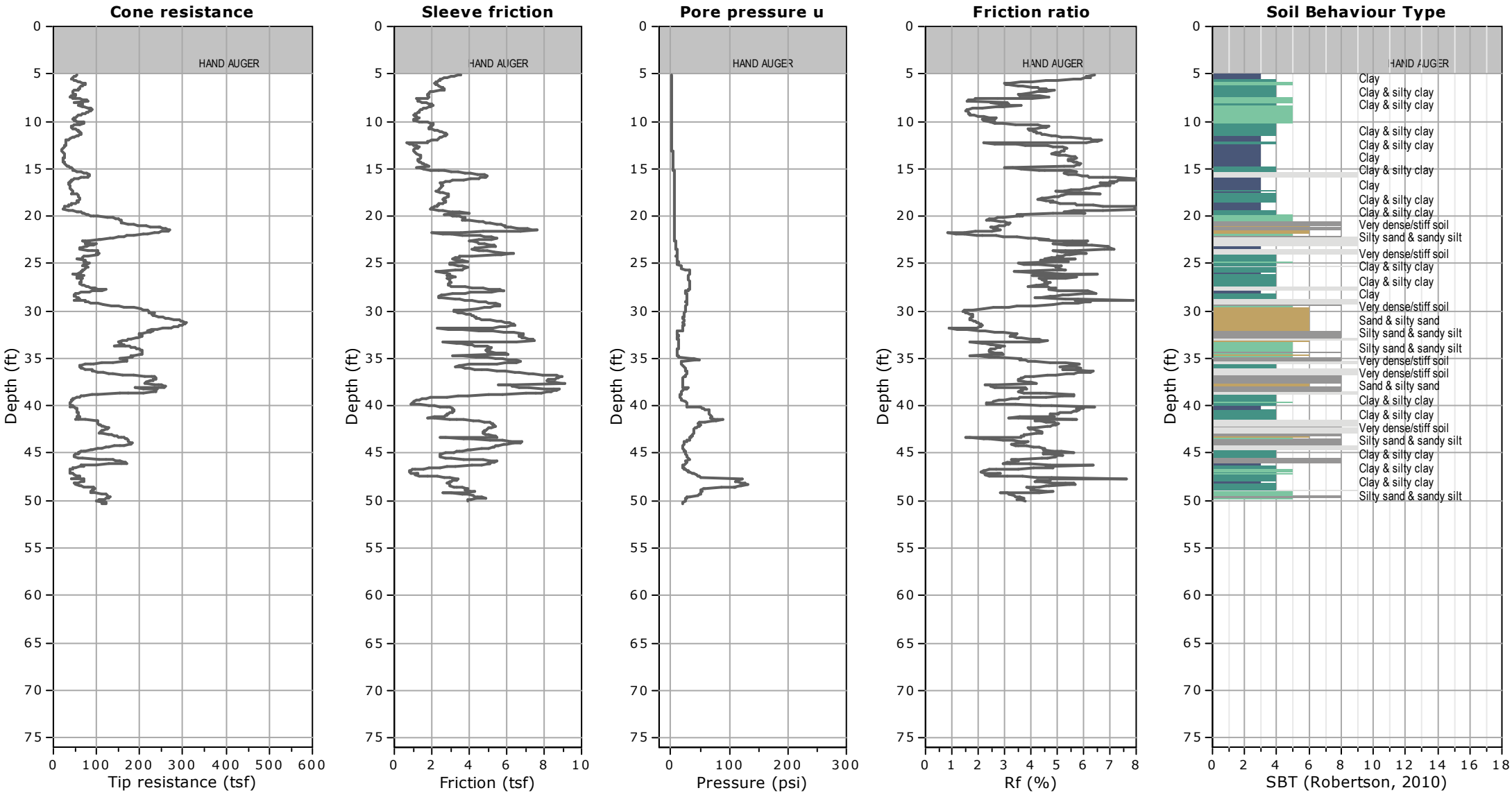
CPT-16
Total depth: 75.27 ft, Date: 4/24/2025



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

Project: **Fenagh Engineering & Testing / Centennial High School WSM GI**
Location: **2606 N. Central Ave, Compton, CA**

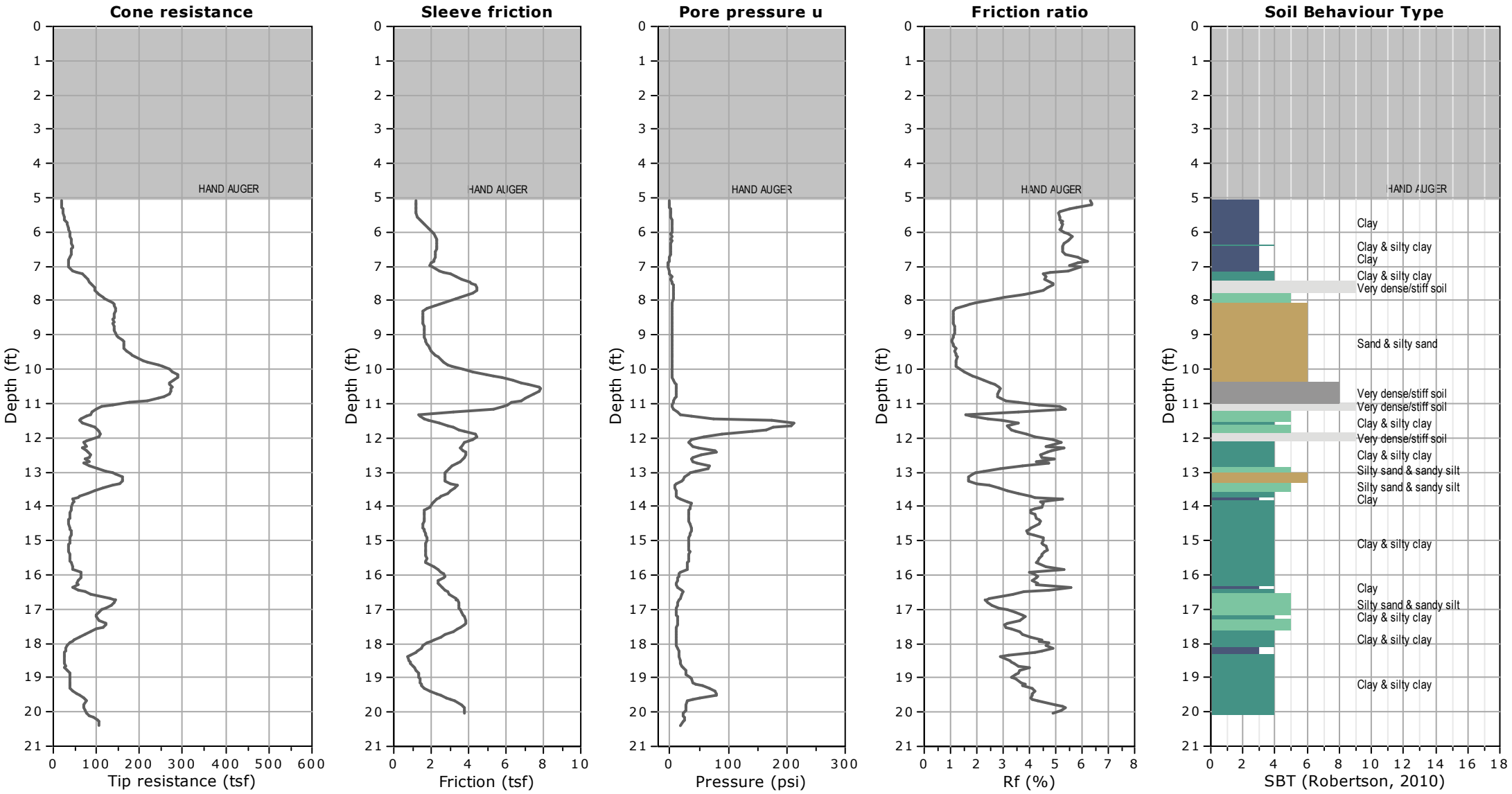
CPT-17
Total depth: 50.36 ft, Date: 4/22/2025



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

Project: **Fenagh Engineering & Testing / Centennial High School WSM GI**
Location: **2606 N. Central Ave, Compton, CA**

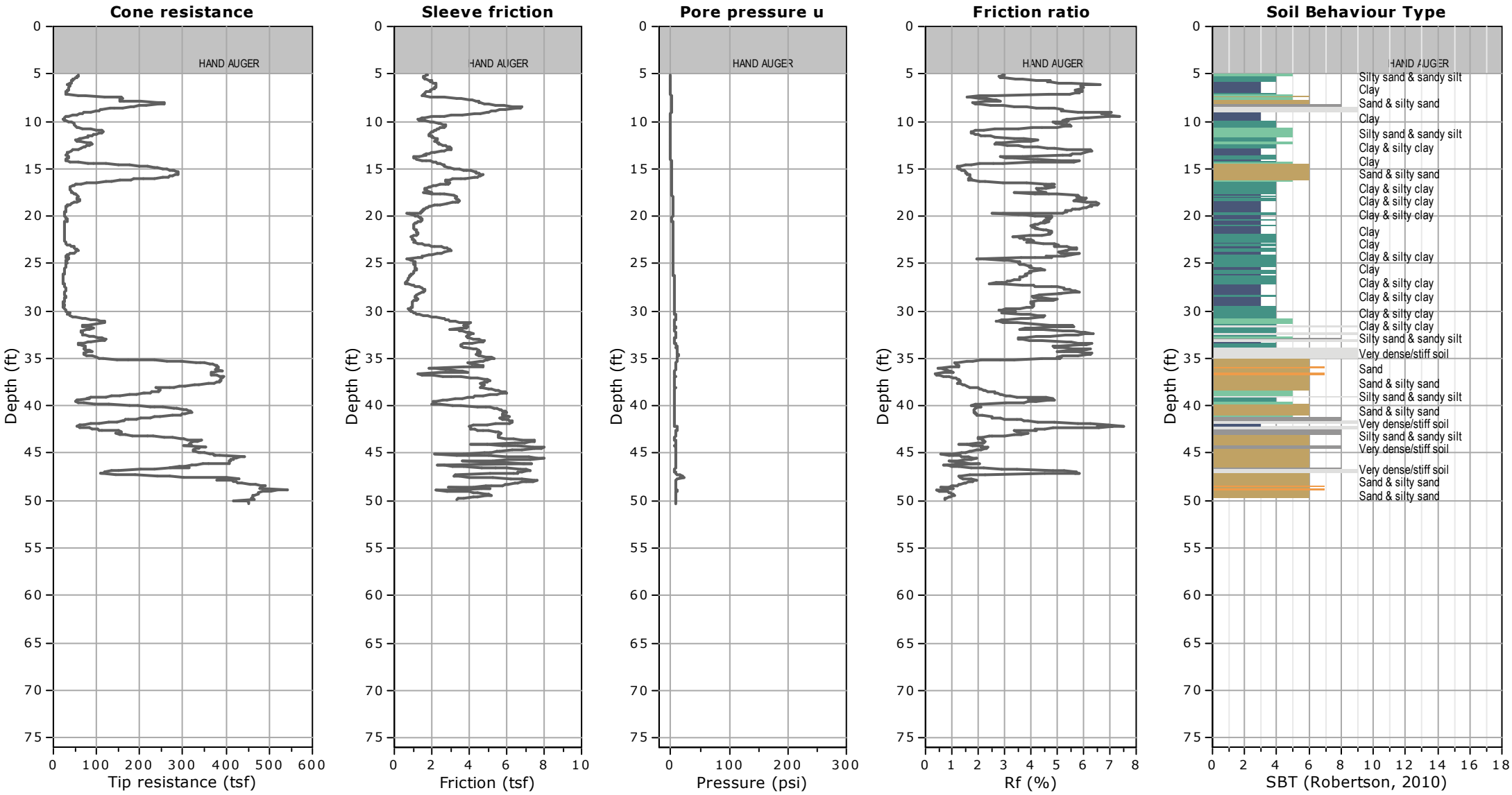
CPT-18
Total depth: 20.38 ft, Date: 4/23/2025



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

Project: **Fenagh Engineering & Testing / Centennial High School WSM GI**
Location: **2606 N. Central Ave, Compton, CA**

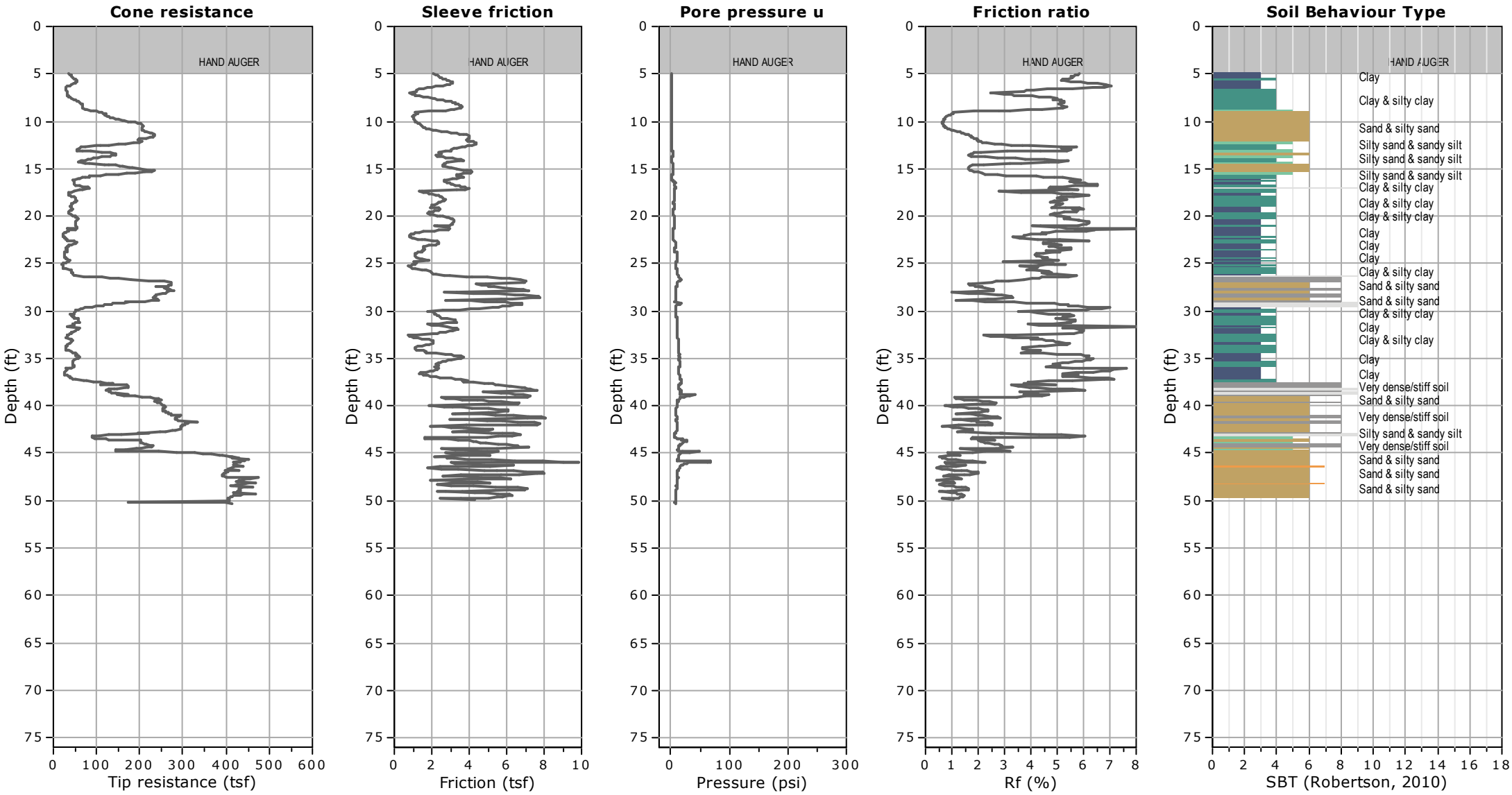
CPT-19
Total depth: 50.27 ft, Date: 4/23/2025



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

Project: **Fenagh Engineering & Testing / Centennial High School WSM GI**
Location: **2606 N. Central Ave, Compton, CA**

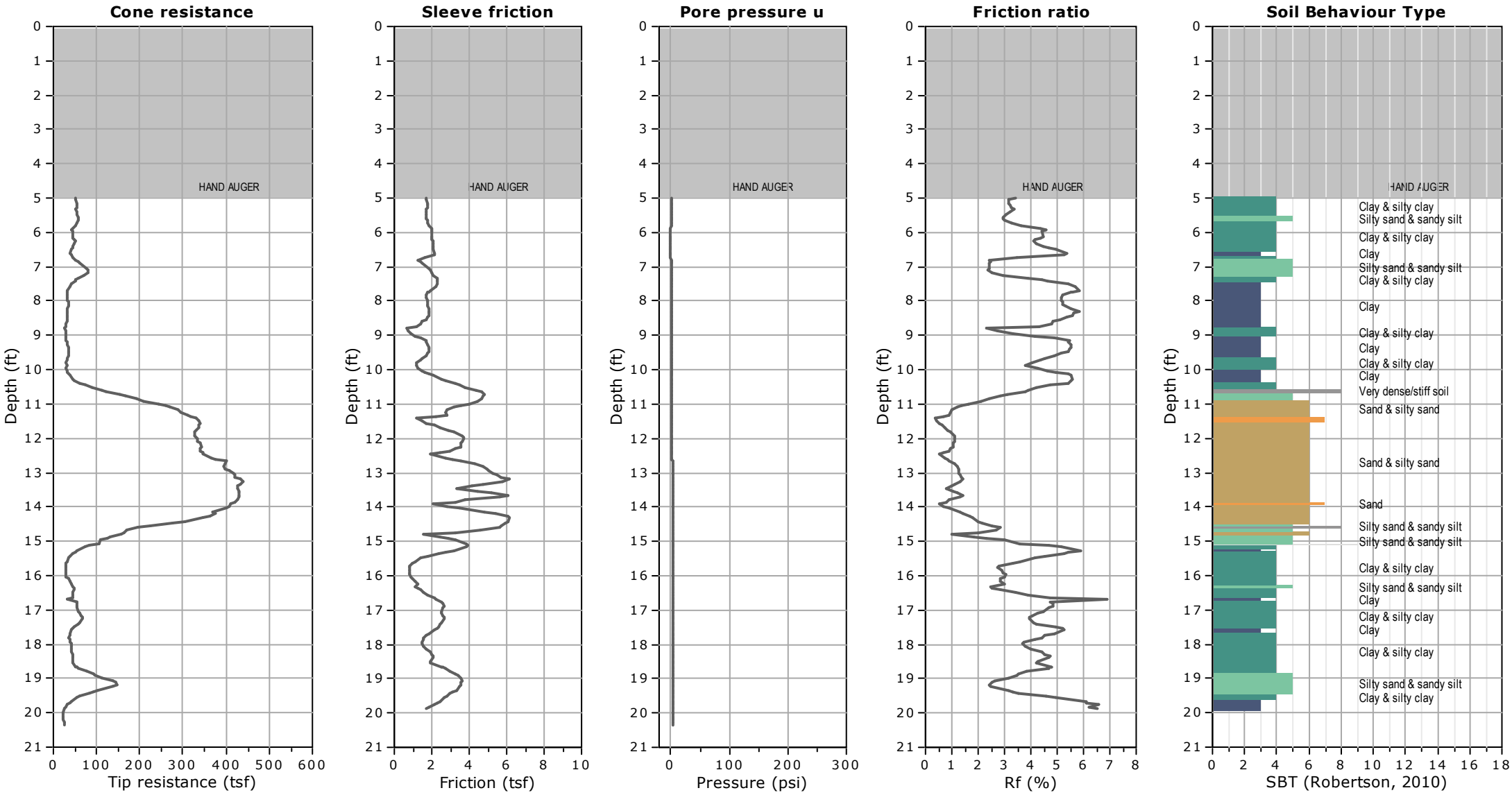
CPT-20
Total depth: 50.28 ft, Date: 4/23/2025



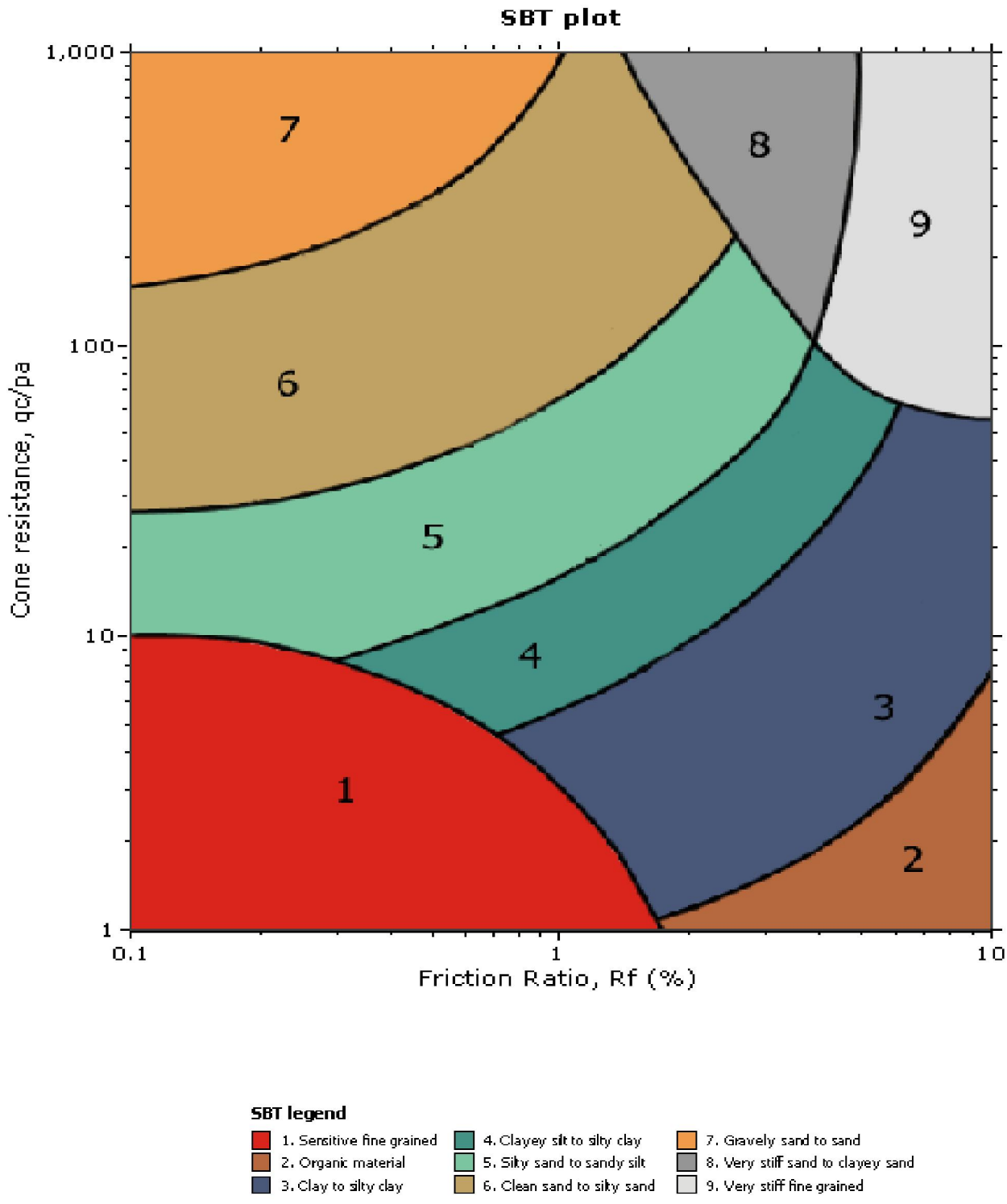
Kehoe Testing and Engineering
714-901-7270
steve@kehoetesting.com
www.kehoetesting.com

Project: **Fenagh Engineering & Testing / Centennial High School WSM GI**
Location: **2606 N. Central Ave, Compton, CA**

CPT-21
Total depth: 20.35 ft, Date: 4/23/2025



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



Fenagh Engineering & Testing
Centennial High School WSM Gi
Compton, CA

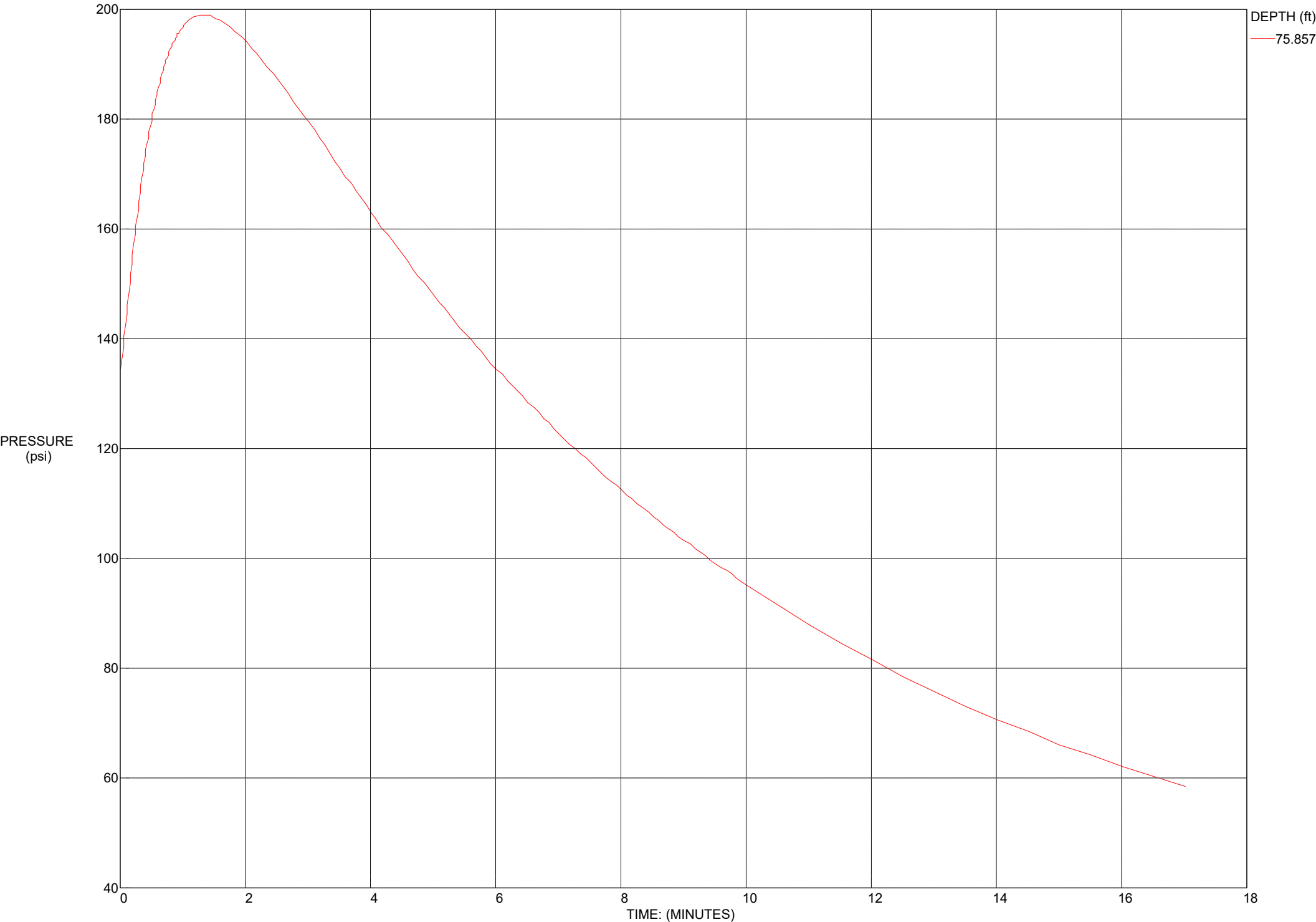
CPT Shear Wave Measurements

Location	Tip Depth (ft)	Geophone Depth (ft)	Travel Distance (ft)	S-Wave Arrival (msec)	S-Wave Velocity from Surface (ft/sec)	Interval S-Wave Velocity (ft/sec)
CPT-17	10.04	9.04	9.26	9.96	930	
	20.08	19.08	19.18	21.08	910	893
	30.05	29.05	29.12	29.20	997	1223
	40.06	39.06	39.11	37.14	1053	1258
	50.10	49.10	49.14	45.26	1086	1235
CPT-19	10.07	9.07	9.29	11.88	782	
	20.05	19.05	19.15	23.44	817	854
	30.09	29.09	29.16	35.12	830	857
	40.06	39.06	39.11	45.10	867	997
	50.00	49.00	49.04	53.74	913	1149

Shear Wave Source Offset - 2 ft

S-Wave Velocity from Surface = Travel Distance/S-Wave Arrival
Interval S-Wave Velocity = (Travel Dist2-Travel Dist1)/(Time2-Time1)

TEST ID: CPT-4


DEPTH (ft)
75.857
PRESSURE (psi)
200
180
160
140
120
100
80
60
40
0
2
4
6
8
10
12
14
16
18
TIME: (MINUTES)

GEOCON
INCORPORATED

GEOPHYSICAL REPORT

2606 NORTH CENTRAL AVENUE COMPTON, CALIFORNIA

PREPARED FOR

FENAGH ENGINEERING AND TESTING
9474 CHESEPEAKE DRIVE, SUITE 906
SAN DIEGO, CA 92123

APRIL 15, 2025

PROJECT NO. G3530-52-01

S-WAVE SEISMIC SURVEY REPORT

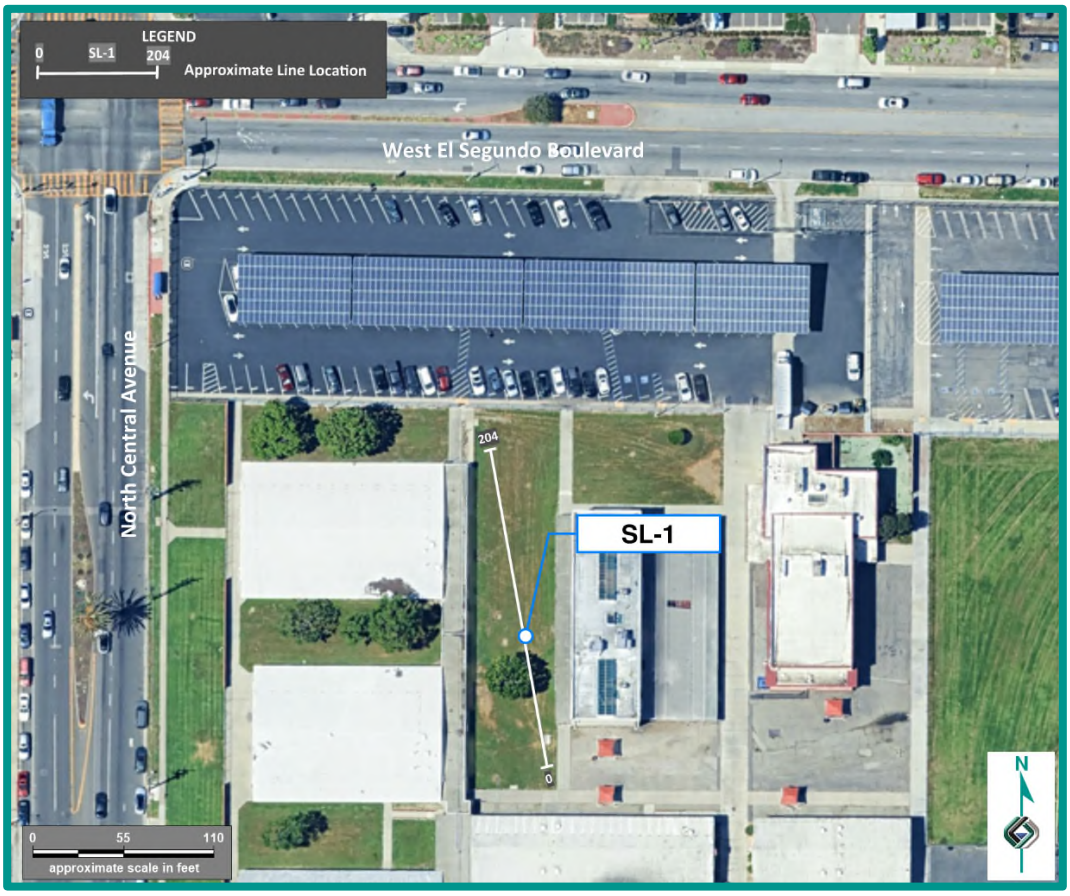
INTRODUCTION

We performed 1-D refraction microtremor (ReMi) seismic survey line to help evaluate the seismic site class and design efforts for construction at the project site located southeast of North Central Avenue and West El Segundo Boulevard in Compton California (See Vicinity Map).



Vicinity Map

The survey included one seismic traverse (SL-1) at designated areas within the project site, as shown in the Site Map and Site Layout figures.



Site Map



Site Layout

METHODOLOGY

S-Wave Refraction Microtremor (ReMi)

The ReMi method uses surface waves (Rayleigh waves) contained in background noise (such as ambient noise generated by nearby vehicle traffic and construction) to produce a shear-wave (S-wave) velocity profile of the subsurface geologic conditions. Like the primary wave (P-wave) refraction method, the ReMi method uses a seismograph and vertical component geophones and makes it convenient to collect ReMi data along the same line where P-wave refraction data is collected. The effective depth of investigation for ReMi is related to the length of the geophone array and the frequency response of the measurement system. During the data collection, we record unfiltered data for each ReMi line uploaded to a field computer where the S-wave dispersion curves are derived from and used to model subsurface the 1-D, S-wave velocities at depth. Unlike P-wave refraction, the ReMi method is capable of detecting velocity inversions (lower velocity layers underlying higher velocity layers). In addition, the ReMi method is not as sensitive to the presence of a water table as the P-wave refraction method.

We positioned 18 vertical-component 4.5-Hertz geophones approximately 12 feet apart along the seismic line to capture the ReMi data. A total of 21 records, each 30 seconds in duration, were recorded using a sample interval of 2 microseconds, with 15 of the files utilizing passive data collection of ambient ground vibration noise and 6 files utilizing an active source generated by a 16-pound sledgehammer and an HDPE plastic strike plate. The active source data included conducting hammer blows at locations on each end of the seismic spread at approximately 20 feet off both ends of the geophone array. Three active source files were collected at each end of the line to supplement the passive data collection. Using off-end active source supplemental data reduces the chances for indeterminate dominant phase angle of energy arriving at the seismic spread, which typically increases the accuracy of the recorded dispersion curve and model results. The data was downloaded in the field to a portable computer for post-processing. We used Terēan's 2ds and Disper software to analyze the collected ReMi data.

During processing, the software generates phase-velocity dispersion curves for each record with an interactive dispersion modeling tool allowing us to help refine and select the best-fitting model for the subsurface conditions. This approach helps to provide detailed and representative S-wave velocity profiles and help evaluate subsurface geologic layers (including layering and/or velocity inversions). The final models yield an interpretation of site conditions to help evaluate site classification and other geotechnical assessments. The results include 1-D shear-wave velocity models of the site which, based

on published studies, is typically 85 to 95 percent of the velocity of shear waves and results in a relatively conservative estimate of shear wave velocities.

RESULTS

The following table shows the Site Classification and corresponding shear wave velocities in accordance with Table 20.3-1 of ASCE 7-16 that are in conformance with the 2022 California Building Code (CBC).

SEISMIC SITE CLASS DEFINITIONS

Site Class	Site Class Description	Shear Wave Velocity, Vs 100 (ft/s)
A	Hard Rock	5,000+
B	Rock	2,500 to 5,000
C	Very Dense Soil and Soft Rock	1,200 to 2,500
D	Stiff Soil	600 to 1,200
E	Soft Clay Soil	Below 600
F	Soils Requiring Site Response Analysis	--

The following table shows the Vs100 values calculated from the ReMi 1-D S-wave velocity model for seismic line performed on the subject project.

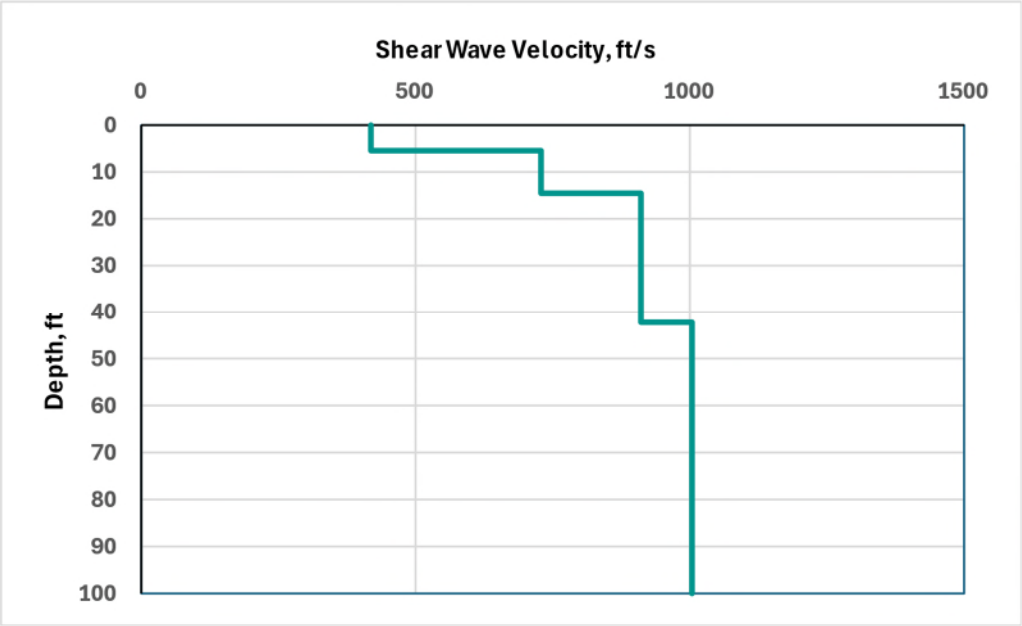
SUMMARY OF S-WAVE REMI RESULTS

Seismic Line No.	Depth (Feet)	Shear Wave Velocity (feet/second)	Average Shear Wave Velocity, Vs 100 (ft/s)	Site Class
SL-1 (SE-NW)	0-5.4	420	883	D
	5.4-14.3	732		
	14.3-42.0	913		
	42.0-100	1,006		

The ReMi results represent the average condition across the length of the line. When the 1-D ReMi surface wave velocity results (analogous to shear wave velocity) show Vs100 velocity values that are close to the "border line" boundary between Site Classes, the geotechnical data should be closely reviewed and the geotechnical engineer of record should also consider other existing available site information and whether obtaining additional new geotechnical evaluation data such as boreholes, the surface to downhole seismic (ASTM D7400), cross-hole seismic (ASTM D4428), and/or additional 1-D ReMi data collections would be needed concerning the site's subsurface geologic stratigraphy and

structure, soil mechanics and soil modulus, along with the initial 1-D ReMi evaluation results when assessing the "borderline" Vs100 Seismic Site Class.

The following figures show the ReMi 1-D S-wave velocity model for seismic line on the subject project.



SL-1 ReMi Survey Results

LIMITATIONS

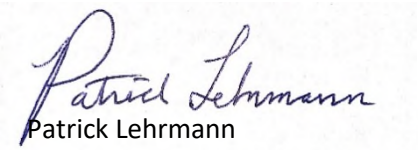
We performed the geophysical field investigation and evaluation in this report in general accordance with the current practice and standard of care exercised by consultants performing similar tasks in the project area. Evaluations are not detailed enough to reveal every subsurface feature or condition, and no warranty (expressed or implied) is made regarding the conclusions and opinions in this report. Variations and conditions not observed or described in this report may be present.

Even though care was taken during the geophysical survey, results have been evaluated by computer modeling that may not result unique solutions for a given dataset. Therefore, results should be considered interpretive and approximate, and only provide information at the locations of geophysical data collection.

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

Very truly yours,

GEOCON INCORPORATED



Patrick Lehrmann
Geologist/Geophysicist No. 1043





Orion Adah
Geophysical Services Manager

PL:OA:kv

(e-mail) Addressee

APPENDIX B
LABORATORY TESTING

Classification
Soils were classified in accordance with the Unified Soil Classification System (USCS) in general accordance with ASTM D2488 and modified as necessary in general accordance with ASTM D2487 based on laboratory results. Soil classifications are indicated on the boring logs in Appendix A.

Particle Size Distribution and Amount of Material Finer than 75-µm
Gradation analysis testing was performed on selected representative soil samples in general accordance with ASTM C136. No. 200 sieve testing was performed on selected representative soil samples in accordance with ASTM C117. Test results for No. 200 sieve are indicated on boring logs provided in Appendix A.

Atterberg Limits
The plasticity of the materials was assessed on representative samples. Tests were performed in accordance with ASTM D4318. Test results for Atterberg testing are indicated on the boring logs provided in Appendix A.

Direct Shear Test
Direct single-shear tests were performed on representative undisturbed and remolded samples to determine strength properties. Loads are applied in increasing load increments and results recorded. Soil samples were inundated to replicate saturated soil conditions. Results are plotted and provided on lab results sheets. Shear Tests were performed in accordance with the latest version of ASTM D3080.

Consolidation Test
Consolidation tests were performed on undisturbed samples to predict the soils compressive properties under specific load conditions. Confinement loads are applied in increasing increments and results recorded. Samples are inundated at 2,000 pounds per square foot to evaluate saturation response of soils. Results of test are provided on consolidation curve sheets. Tests are performed in accordance with the latest version of ASTM D2435.

Expansion Index
Expansion Index testing was performed on selected representative soil samples in general accordance with ASTM D4829.

In-Place Moisture and Density Tests
The moisture content and dry density of relatively undisturbed samples obtained from the exploratory borings were evaluated in accordance with ASTM D2937 test methods. The test results are indicated on boring logs located in Appendix A.

R-Value
Resistance Value (R-Value) testing by Stabilometer was performed on a select representative soil sample in accordance with ASTM D2844 test methods.

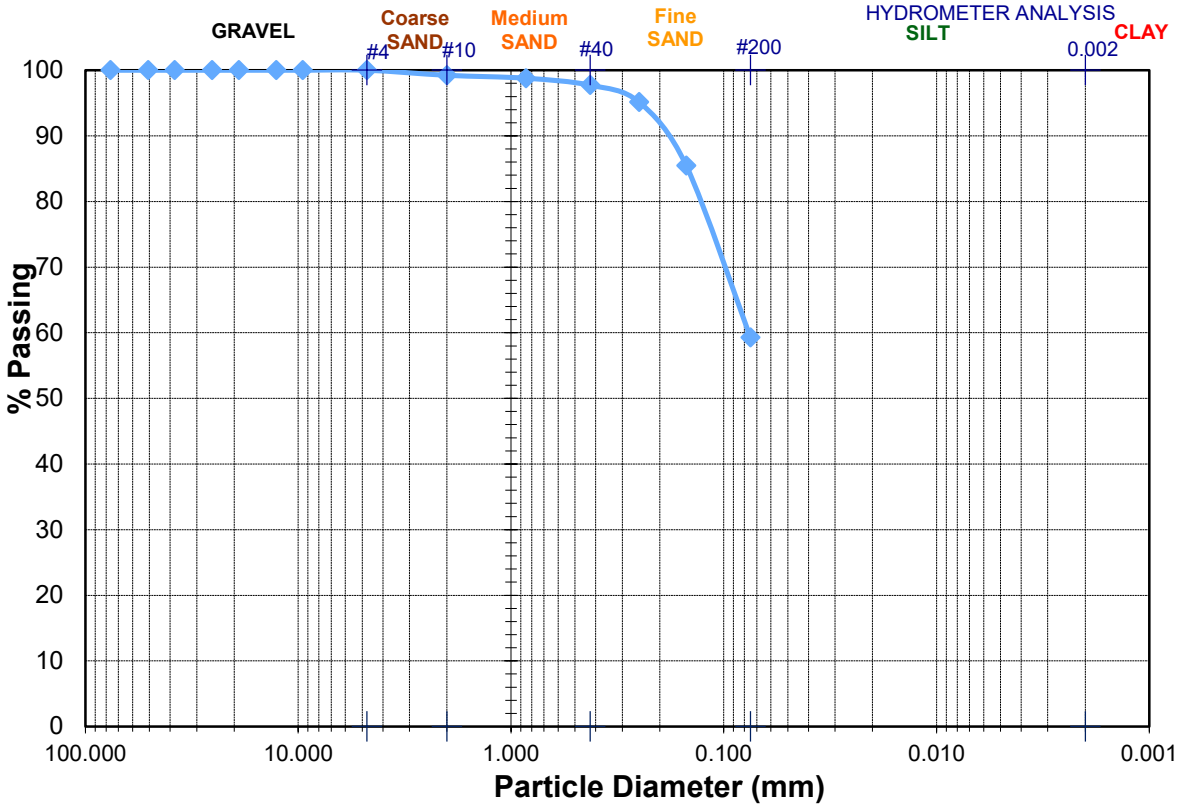
Corrosion Testing
Corrosive potential was evaluated on a representative soil sample in general accordance with ASTM G51, G187, and D4327.

FENAGH
ENGINEERING AND TESTING

Soils Test Report

Tested in General Accordance with ASTM D1140, D4318, D6913, D7928

Project Name: Centennial HS WSM GI	Sample ID: B-12 at 20 to 21.5 ft	
Project No.: 8696	Sampled by: M. Elnajjar	Report Date: 05/14/2025
Client: Compton Unified School District	Date Received: 4/28/2025	Lab Log No.: 54165



Sieve	Diameter (mm)	% Passing
3"	76.20	100
2"	50.80	100
1-1/2"	38.10	100
1"	25.40	100
3/4"	19.05	100
1/2"	12.70	100
3/8"	9.53	100
#4	4.750	100
#10	2.000	99
#20	0.850	99
#40	0.425	98
#60	0.250	95
#100	0.150	85
#200	0.075	59

Atterberg Limits

ASTM D4318

Sample Prep:	
Liquid Limit:	
Plastic Limit:	
Plasticity Index:	Not Tested
Soil Classification:	ML

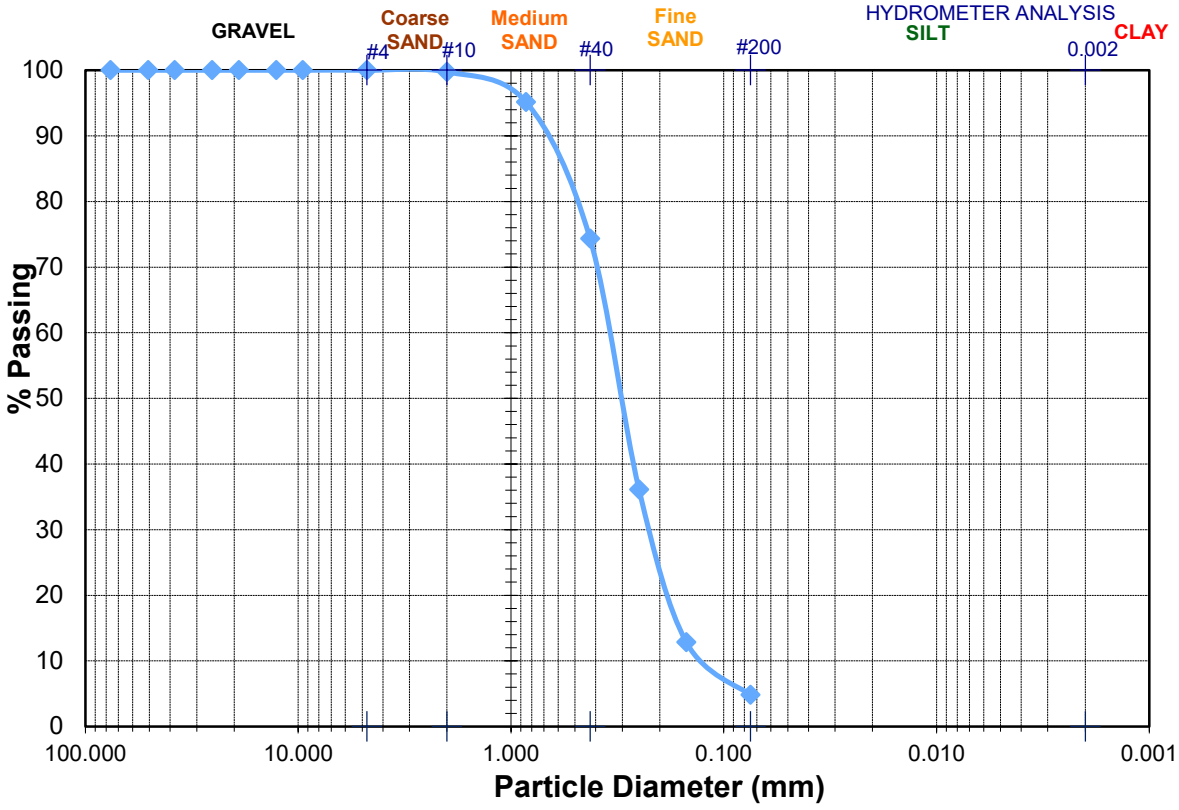
Tested By:	P. Heidari	Date:	5/14/2025
Calculated By:	S. Reynoso	Date:	5/14/2025
Checked By:	M. Elnajjar		

FENAGH
ENGINEERING AND TESTING

Soils Test Report

Tested in General Accordance with ASTM D1140, D4318, D6913, D7928

Project Name: Centennial HS WSM GI	Sample ID: B-10 at 48.5 to 50 ft	
Project No.: 8696	Sampled by: M. Elnajjar	Report Date: 05/14/2025
Client: Compton Unified School District	Date Received: 4/28/2025	Lab Log No.: 54418



Sieve	Diameter (mm)	% Passing
3"	76.20	100
2"	50.80	100
1-1/2"	38.10	100
1"	25.40	100
3/4"	19.05	100
1/2"	12.70	100
3/8"	9.53	100
#4	4.750	100
#10	2.000	100
#20	0.850	95
#40	0.425	74
#60	0.250	36
#100	0.150	13
#200	0.075	5

Atterberg Limits

ASTM D4318

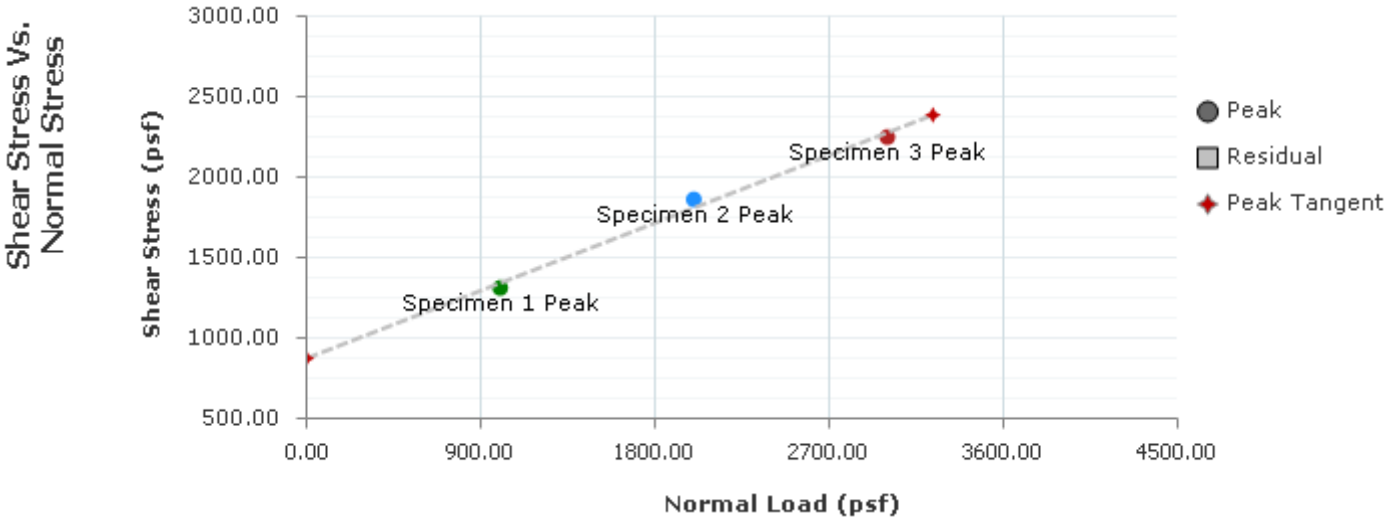
Sample Prep:	
Liquid Limit:	
Plastic Limit:	
Plasticity Index:	Not Tested
Soil Classification:	SP

Tested By:	S. Reynoso	Date:	5/14/2025
Calculated By:	S. Reynoso	Date:	5/14/2025
Checked By:	M. Elnajjar		

Direct Shear Test

ASTM D3080

Project: Centennial High School
Project Number: 8696
Location: TP-12@2.5'
Client Name: Compton Unified School District



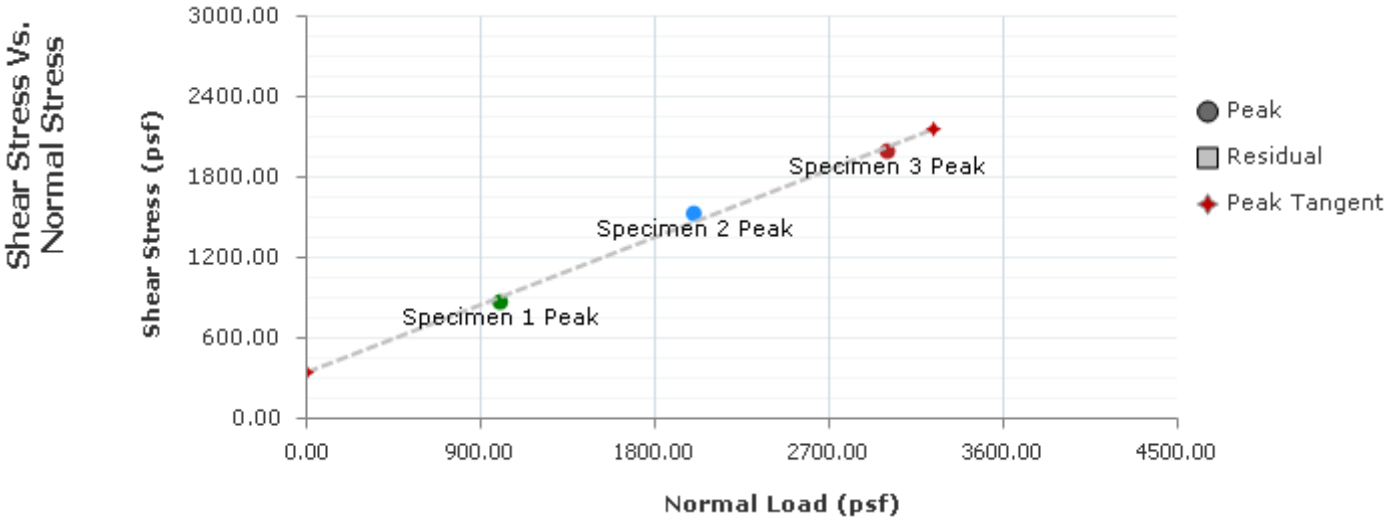
C (psf): 874.20
Phi (°): 25.0
Residual C (psf): NA
Residual Phi (°): NA

Initial	Specimen Number 1	2	3	4	5	6	7	8
Moisture (%):	11.7	11.7	11.7					
Dry Density (pcf):	122.5	124.8	123.1					
Void Ratio:	0.386	0.360	0.379					
Saturation (%):	82.7	88.6	84.2					
Diameter (in):	2.4200	2.4200	2.4200					
Height (in):	1.0000	1.0000	1.0000					
Final	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**
Moisture (%):	19.0	20.5	18.3					
Dry Density (pcf):	125.7	125.9	122.8					
Void Ratio:	0.351	0.349	0.383					
Saturation (%):	147.2	159.6	129.8					
Height (in):	0.9969	0.9640	0.9924					
Normal Stress (psf):	1000.00	2000.00	3000.00					
Peak Shear Stress (psf):	1312.76	1861.22	2244.82					
Residual Stress (psf):	NA	NA	NA					
Horizontal Deformation (%):	3.9	5.2	6.7					
Rate (in/min):	0.005000	0.005000	0.005000					

Direct Shear Test

ASTM D3080

Project: Centennial High School
Project Number: 8696
Location: B-1@5'
Client Name: Compton Unified School District



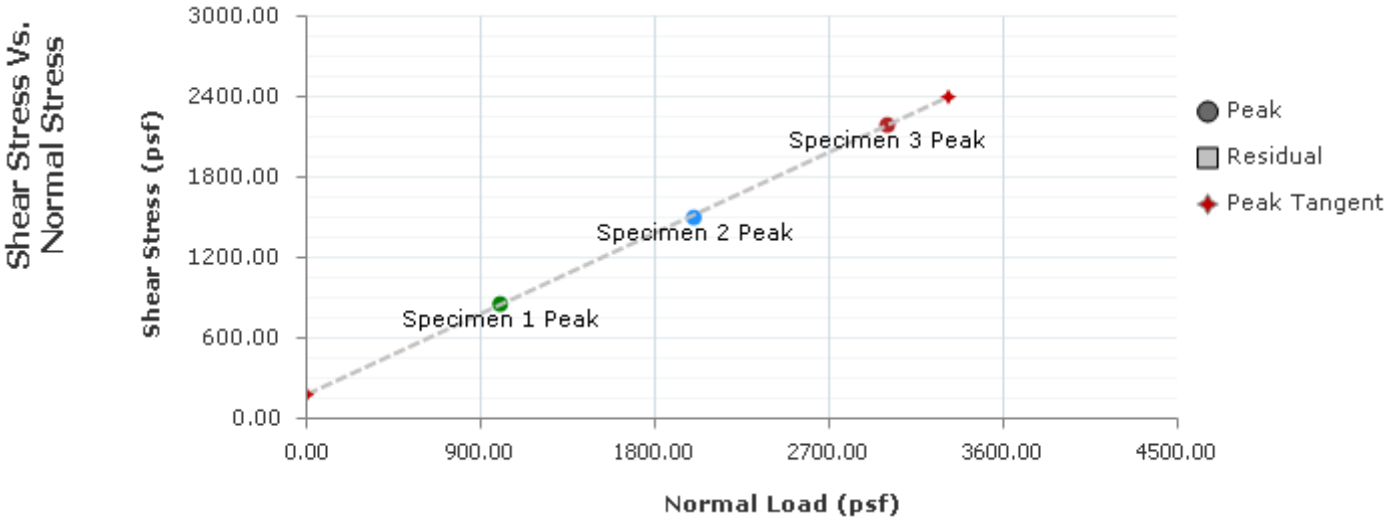
C (psf): 339.68
Phi (°): 29.3
Residual C (psf): NA
Residual Phi (°): NA

Initial	Specimen Number 1	2	3	4	5	6	7	8
Moisture (%):	13.6	13.6	13.6					
Dry Density (pcf):	118.1	116.5	121.6					
Void Ratio:	0.438	0.458	0.396					
Saturation (%):	84.7	81.0	93.7					
Diameter (in):	2.4200	2.4200	2.4200					
Height (in):	1.0000	1.0000	1.0000					
Final	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**
Moisture (%):	23.5	22.9	21.2					
Dry Density (pcf):	118.4	116.7	120.7					
Void Ratio:	0.434	0.455	0.407					
Saturation (%):	147.4	137.1	142.0					
Height (in):	0.9781	1.0000	1.0000					
Normal Stress (psf):	1000.00	2000.00	3000.00					
Peak Shear Stress (psf):	869.56	1524.81	1992.00					
Residual Stress (psf):	NA	NA	NA					
Horizontal Deformation (%):	2.4	7.2	5.2					
Rate (in/min):	0.005000	0.005000	0.005000					

Direct Shear Test

ASTM D3080

Project: Centennial High School
Project Number: 8696
Location: B-7@10'
Client Name: Compton Unified School District

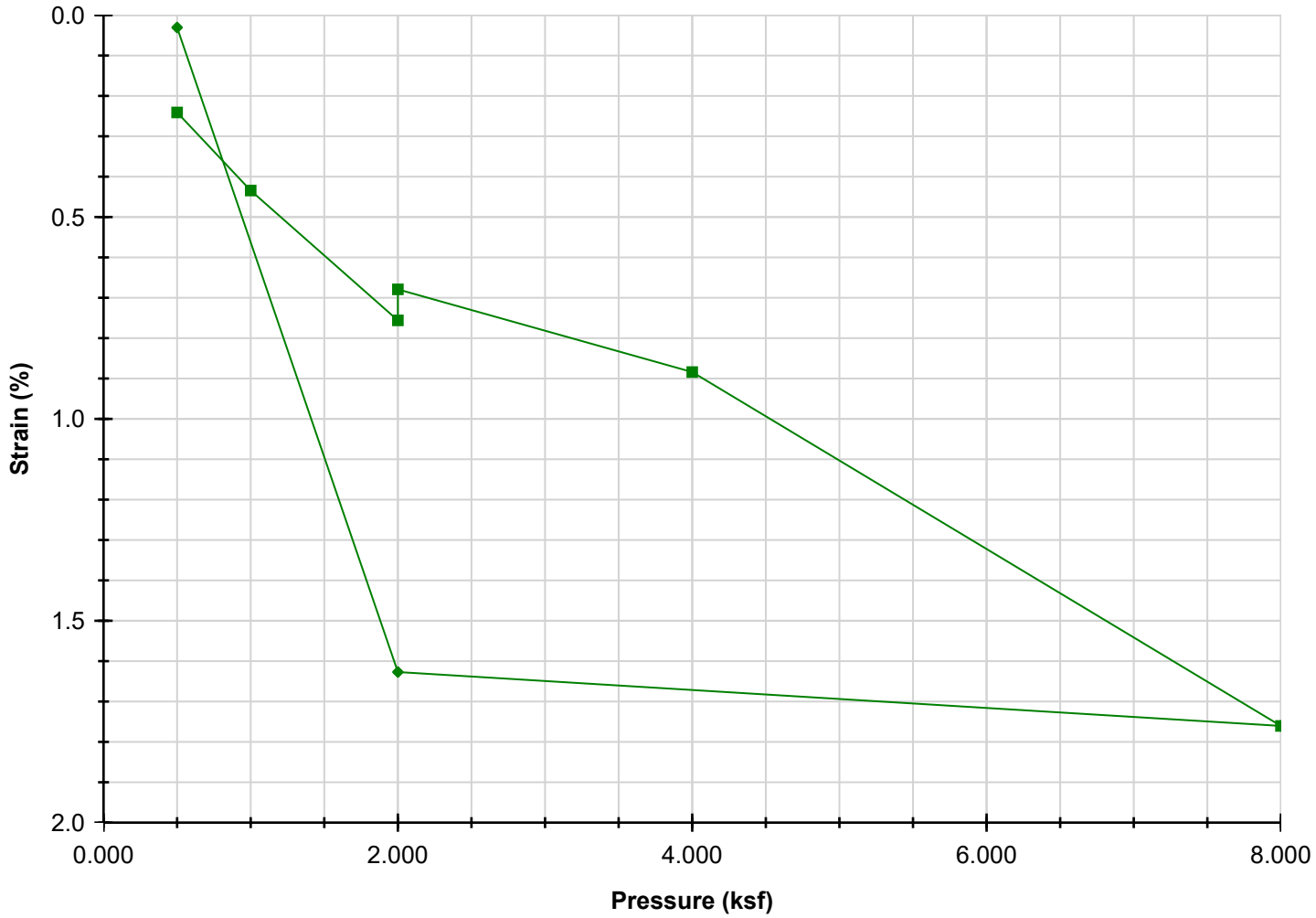


C (psf): 175.61
Phi (°): 33.8
Residual C (psf): NA
Residual Phi (°): NA

Initial	Specimen Number 1	2	3	4	5	6	7	8
Moisture (%):	3.1	3.1	3.1					
Dry Density (pcf):	118.5	121.9	117.5					
Void Ratio:	0.433	0.393	0.446					
Saturation (%):	19.4	21.4	18.9					
Diameter (in):	2.4200	2.4200	2.4200					
Height (in):	1.0000	1.0000	1.0000					
Final	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**
Moisture (%):	19.6	17.7	18.3					
Dry Density (pcf):	117.4	121.5	117.3					
Void Ratio:	0.446	0.398	0.447					
Saturation (%):	119.8	120.8	111.3					
Height (in):	0.9987	1.0000	1.0000					
Normal Stress (psf):	1000.00	2000.00	3000.00					
Peak Shear Stress (psf):	854.79	1497.98	2195.17					
Residual Stress (psf):	NA	NA	NA					
Horizontal Deformation (%):	3.2	1.8	4.2					
Rate (in/min):	0.005000	0.005000	0.005000					

Percent Strain

ASTM D2435

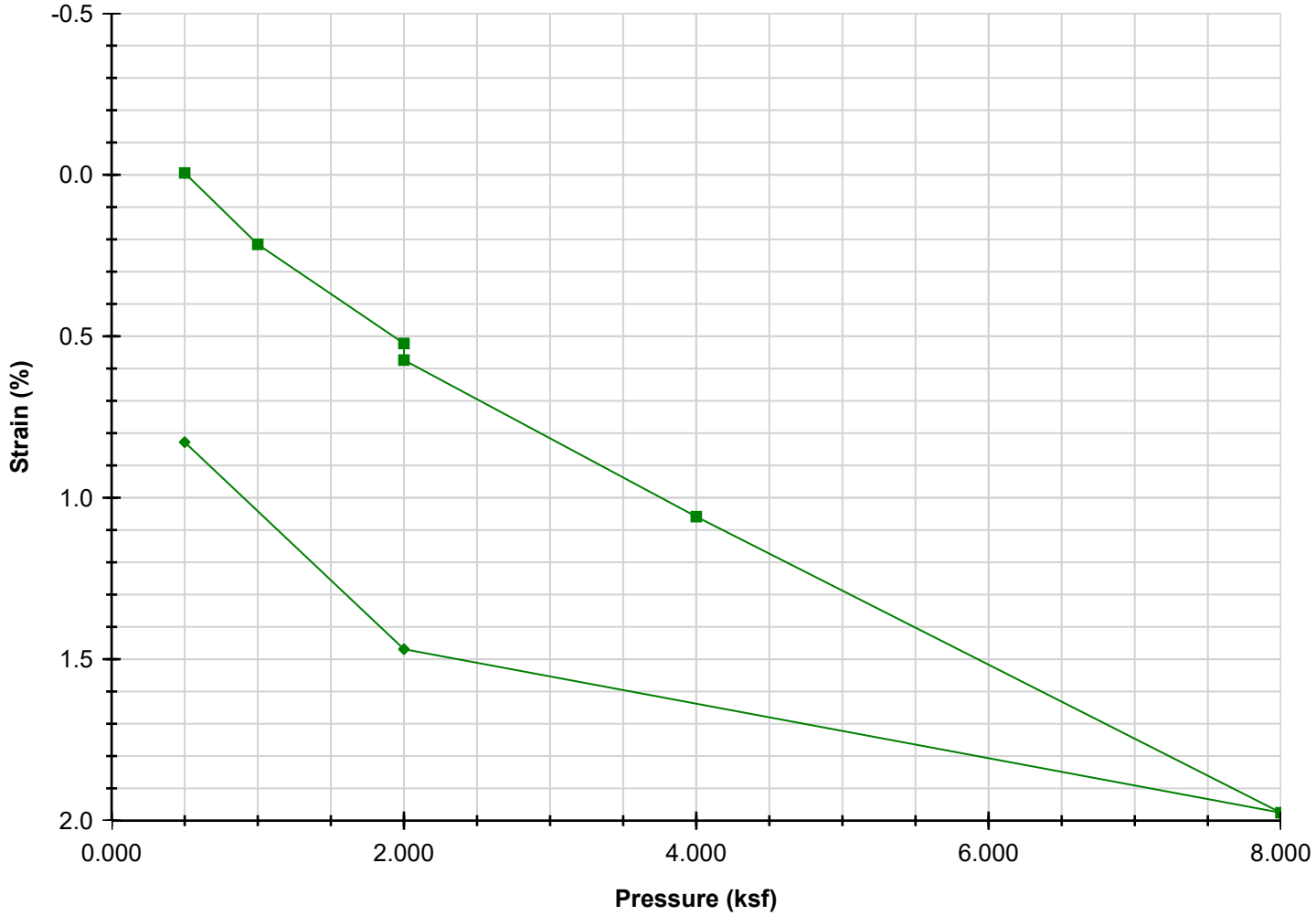


	BEFORE	AFTER			
			Liquid Limits	0	**Test Date** 5/5/2025
Moisture (%)	14.2	21.3	**Plastic Limits**	0	
Dry Density (pcf)	120.1	114.0			
Saturation (%)	93.2	118.3			
Void Ratio	0.41	0.49	**Specific Gravity**	2.72	ASSUMED

Sample Description				
Project Number	8696	**Depth (ft)**	5	**Remarks**
Sample Number	S-1701	**Boring Number**	B-5	
Project	Centennial High School			
Client	Compton Unified School District			
Location	B-5@5'			

Percent Strain

ASTM D2435

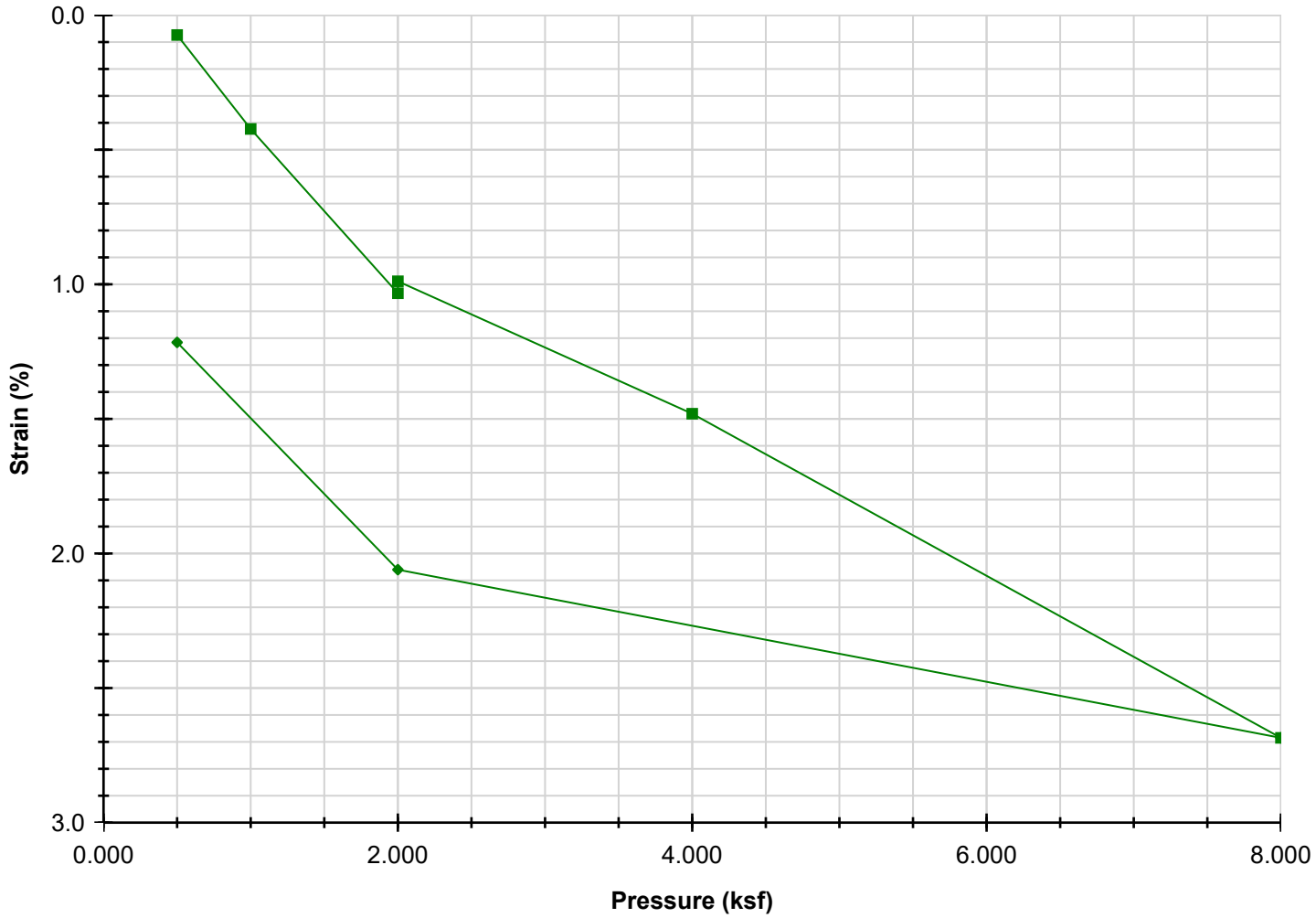


	BEFORE	AFTER			
			Liquid Limits	0	**Test Date** 5/7/2025
Moisture (%)	6.0	13.4	**Plastic Limits**	0	
Dry Density (pcf)	128.9	125.3			
Saturation (%)	51.9	102.5			
Void Ratio	0.32	0.36	**Specific Gravity**	2.72	ASSUMED

Sample Description				
Project Number	8696	**Depth (ft)**	10	**Remarks**
Sample Number	S-1701	**Boring Number**	B-11	
Project	Centennial High School			
Client	Compton Unified School District			
Location	B-11@10'			

Percent Strain

ASTM D2435



	BEFORE	AFTER			
			Liquid Limits	0	**Test Date** 5/12/2025
Moisture (%)	14.5	19.6	**Plastic Limits**	0	
Dry Density (pcf)	119.7	115.8			
Saturation (%)	94.6	114.4			
Void Ratio	0.42	0.47	**Specific Gravity**	2.72	ASSUMED

Sample Description				
Project Number	8696	**Depth (ft)**	15.5	**Remarks**
Sample Number	S-1701	**Boring Number**	B-1	
Project	Centennial High School			
Client	Compton Unified School District			
Location	B-1@15.5'			

FENAGH
ENGINEERING AND TESTING

Expansion Index

Test Performed in General Accordance with ☑ ASTM D 4829 ☐ UBC 29-2

Project Name:	Centennial HS WSM GI	**Fenagh Job No.**	8696
Project Location:	Centennial HS	**Log No.:**	54242
Date Sampled:	4/21/2025	**Sample Location:**	B-5 @ 1'-2'
Date Tested:	5/13/2025	**Sampled by:**	E. Robles
Lab Log:	S-1701	**Description:**	Existing

Measured		**Specified**	
Expansion Index (EI)	**31**	Expansion Index (EI)	**N/A** MAX
Molding Water Content (%)	7.6		
**Final Water Content (%)			

☐ Results Within Specification Limits ☐ Results Outside Specification Limits ☑ N/A

Comments

Classification of Potentially Expansive Soil

Expansion Index, EI	Potential Expansion
0-20	Very Low
21-50	Low
51-90	Medium
91-130	High
>130	Very High

Limitations

Testing results presented are for samples collected by Fenagh personnel at the times and location(s) shown.

Testing was performed in accordance with the applicable test methods by qualified personnel.

Pursuant to applicable building codes and/or specifications, the results presented in this report are for the items listed herein and for the exclusive use of the Client and the registered design professional in responsible charge. The results apply only to the samples tested and are not to be considered as a guarantee or warranty, express or implied.

Tested by: Mark Tabb	Reviewed by: Luis Mondragon
Title: Sr. Lab Technician	Title: Staff Engineer
Date: 5/13/2025	Date: 5/13/2025

FENAGH
ENGINEERING AND TESTING

Expansion Index

Test Performed in General Accordance with ☑ ASTM D 4829 ☐ UBC 29-2

Project Name:	Centennial HS WSM GI	**Fenagh Job No.**	8696
Project Location:	Centennial HS	**Log No.:**	54242
Date Sampled:	4/21/2025	**Sample Location:**	TP-1 @ 1'-2'
Date Tested:	5/14/2025	**Sampled by:**	E. Robles
Lab Log:	S-1701	**Description:**	Existing

Measured		**Specified**	
Expansion Index (EI)	**66**	Expansion Index (EI)	**N/A** MAX
Molding Water Content (%)	8.5		
**Final Water Content (%)			

☐ Results Within Specification Limits ☐ Results Outside Specification Limits ☑ N/A

Comments

Classification of Potentially Expansive Soil

Expansion Index, EI	Potential Expansion
0-20	Very Low
21-50	Low
51-90	Medium
91-130	High
>130	Very High

Limitations

Testing results presented are for samples collected by Fenagh personnel at the times and location(s) shown.

Testing was performed in accordance with the applicable test methods by qualified personnel.

Pursuant to applicable building codes and/or specifications, the results presented in this report are for the items listed herein and for the exclusive use of the Client and the registered design professional in responsible charge. The results apply only to the samples tested and are not to be considered as a guarantee or warranty, express or implied.

Tested by: Mark Tabb	Reviewed by: Luis Mondragon
Title: Sr. Lab Technician	Title: Staff Engineer
Date: 5/14/2025	Date: 5/14/2025

9070 Center Ave., Rancho Cucamonga, CA 91730 | (909) 587.6374 office
9474 Chesapeake Dr. Suite 906, San Diego, CA 92123 | (858) 427-2200 office

FENAGH
ENGINEERING AND TESTING

Expansion Index

Test Performed in General Accordance with ☑ ASTM D 4829 ☐ UBC 29-2

Project Name:	Centennial HS WSM GI	**Fenagh Job No.**	8696
Project Location:	Centennial HS	**Log No.:**	54242
Date Sampled:	4/21/2025	**Sample Location:**	TP-10 @ 1'-2'
Date Tested:	5/15/2025	**Sampled by:**	E. Robles
Lab Log:	S-1701	**Description:**	Existing

Measured		**Specified**		
Expansion Index (EI)	**31**	Expansion Index (EI)	**N/A**	MAX
Molding Water Content (%)	7.8			
**Final Water Content (%)				

☐ Results Within Specification Limits ☐ Results Outside Specification Limits ☑ N/A

Comments

Classification of Potentially Expansive Soil

Expansion Index, EI	Potential Expansion
0-20	Very Low
21-50	Low
51-90	Medium
91-130	High
>130	Very High

Limitations

Testing results presented are for samples collected by Fenagh personnel at the times and location(s) shown.

Testing was performed in accordance with the applicable test methods by qualified personnel.

Pursuant to applicable building codes and/or specifications, the results presented in this report are for the items listed herein and for the exclusive use of the Client and the registered design professional in responsible charge. The results apply only to the samples tested and are not to be considered as a guarantee or warranty, express or implied.

Tested by: Mark Tabb	Reviewed by: Luis Mondragon
Title: Sr. Lab Technician	Title: Staff Engineer
Date: 5/15/2025	Date: 5/15/2025

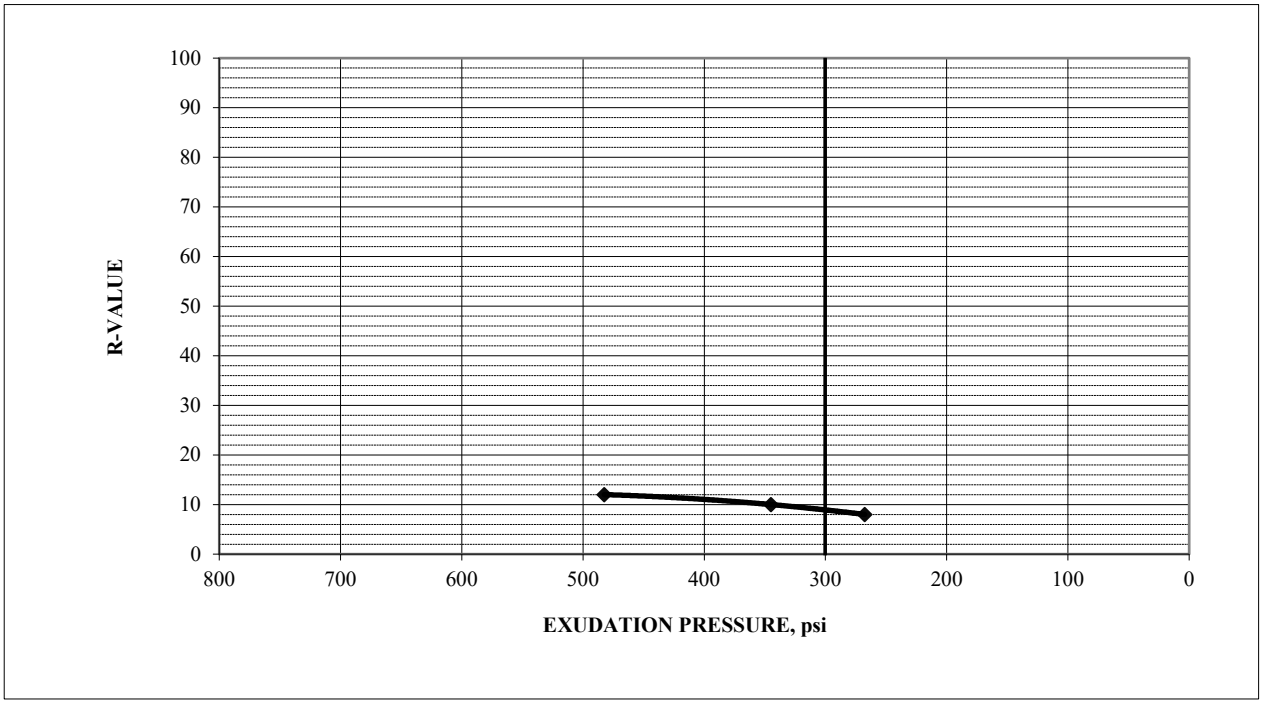
9070 Center Ave., Rancho Cucamonga, CA 91730 | (909) 587.6374 office
9474 Chesapeake Dr. Suite 906, San Diego, CA 92123 | (858) 427-2200 office

CONSTRUCTION
TESTING SERVICES

Laboratory Test Report

Project Name: Centennial HS WSM GI
Project No.: 8696
Lab No.: 54241
Sample Date: April 21, 2025
Sample No.: S-1701
Sample Location: Sample #1
Material Description: Native
Report Date: May 5, 2025

Resistance R-Value and Expansion Pressure of Compacted Soils (ASTM D2844/AASHTO T190)



Briquette No.	A	B	C
Moisture at Test, %	14.4	14.9	15.4
Dry Unit Weight at Test, pcf	118.3	118.2	115.4
Expansion Pressure, psf	35	43	52
Exudation Pressure, psi	482	345	268
Resistance Value	12	10	8
R - Value at 300 psi Exudation Pressure:			9

Reviewed By: _____

Song-Hiang Lim
Laboratory Manager

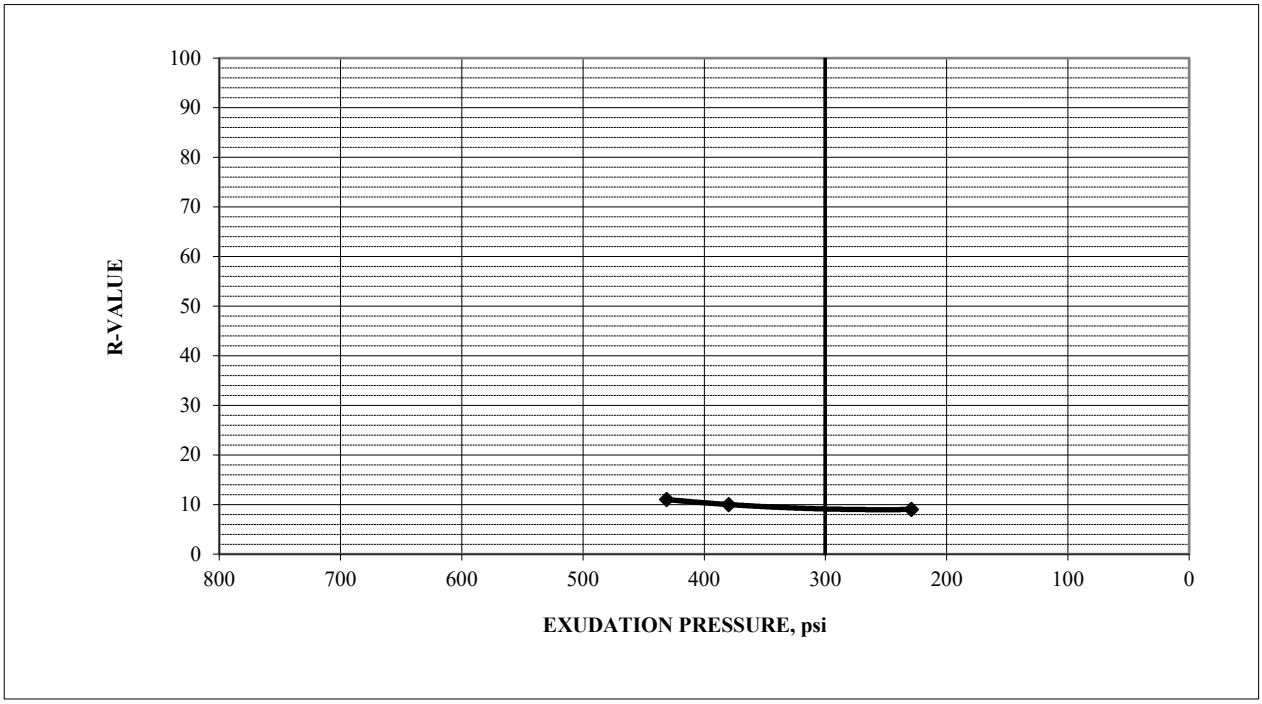
3842 E. Post Road, Las Vegas, NV 89120 p: 702.257.4747 f:702.257.4718

CONSTRUCTION
TESTING SERVICES

Laboratory Test Report

Project Name: Centennial HS WSM GI
Project No.: 8696
Lab No.: 54241
Sample Date: April 21, 2025
Sample No.: S-1701
Sample Location: Sample #2
Material Description: Native
Report Date: May 5, 2025

Resistance R-Value and Expansion Pressure of Compacted Soils (ASTM D2844/AASHTO T190)



Briquette No.	A	B	C
Moisture at Test, %	14.1	14.6	15.0
Dry Unit Weight at Test, pcf	118.4	118.3	117.4
Expansion Pressure, psf	69	61	52
Exudation Pressure, psi	431	380	229
Resistance Value	11	10	9
R - Value at 300 psi Exudation Pressure:			9

Reviewed By: _____

Song-Hiang Lim
Laboratory Manager

3842 E. Post Road, Las Vegas, NV 89120 p: 702.257.4747 f:702.257.4718

Results Only Soil Testing for Centennial HS

May 7, 2025

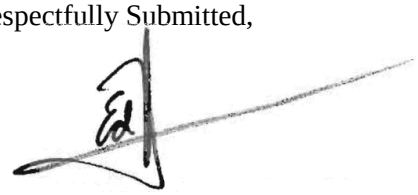
Prepared for:

Edgar Robles
Fenagh Engineering & Testing
9070 Center Avenue
Rancho Cucamonga, CA 91730
erobles@fenaghengineering.com

Project X Job#: S250506B
Client Job or PO#: 8696

Prepared by:
M. Williams

Respectfully Submitted,



Eduardo Hernandez, M.Sc., P.E.
Sr. Corrosion Consultant
NACE Corrosion Technologist #16592
Professional Engineer
California No. M37102
ehernandez@projectxcorrosion.com



Soil Analysis Lab Results

Job Name: Centennial HS WSM GI
Job Number: 8696
Sample Date: April 21, 2025
Test Date: May 7, 2025

	Method	ASTM D4327		ASTM D4327		ASTM G187		ASTM G51
Bore# / Description	**Depth**	**Sulfates** SO_4^{2-}		**Chlorides** Cl^-		**Resistivity** As Rec'd | Minimum		**pH**
	(ft)	**(mg/kg)**	**(wt%)**	**(mg/kg)**	**(wt%)**	**(Ω-cm)**	**(Ω-cm)**	
CPT-9	1-2	84.8	0.0085	66.2	0.0066	160,800	4,824	8.0
CPT-17	1-2	24.2	0.0024	31.7	0.0032	46,230	3,484	6.6
TP-2	1-2	97.0	0.0097	67.0	0.0067	46,900	4,690	7.8

Cations and Anions, except Sulfide and Bicarbonate, tested with Ion Chromatography
mg/kg = milligrams per kilogram (parts per million) of dry soil weight
ND = 0 = Not Detected | NT = Not Tested | Unk = Unknown
Chemical Analysis performed on 1:3 Soil-To-Water extract
PPM = mg/kg (soil) = mg/L (Liquid)

For AWWA 105C: 0-3mg/kg sulfide = Negative; 3-6mg/kg = trace; >6mg/kg = Positive

Note: Sometimes a bad sulfate hit is a contaminated spot. Typical fertilizers are Potassium chloride, ammonium sulfate or ammonium sulfate nitrate (ASN). So this is another reason why testing full corrosion series is good because we then have the data to see if those other ingredients are present meaning the soil sample is just fertilizer-contaminated soil. This can happen often when the soil samples collected are simply surface scoops. This is why it's best to dig in a foot, throw away the top and test the deeper stuff. Dairy farms are also notorious for these items.

If one sample pops up much more corrosive than all others, we would recommend collecting more samples surrounding the problem sample location to determine if the peak is isolated to it. This allows us to conclude it was a contaminated sample and able to declare it an outlier.

Try out our new online forms: SOIL CORROSIVITY & THERMAL RESISTIVITY LAB REQUEST FORM & IN-SITU WENNER 4 PIN QUOTE REQUEST FORM

APPENDIX C
CALCULATIONS SHEETS

1. Liquefaction Settlement Analysis (B-1 through B-4, B-7, B-8, B-10, B-11, B-12)
2. Liquefaction Settlement and Lateral Spread Analysis (CPT-1, CPT-3 through CPT-7, CPT-10 through CPT-17, CPT-19, and CPT-20)

Fenagh Engineering & Testing

Project: Centennial High School
File No.: 8696
Description Liquefaction Analysis (PGA_M)
Boring No: B-1

LIQUEFACTION EVALUATION (Idriss & Boulanger, EERI NO 12)

EARTHQUAKE INFORMATION:

Earthquake Magnitude (M):	7.3
Peak Ground Horizontal Acceleration, PGA (g):	0.83
Calculated Mag.Wtg.Factor:	1.068

GROUNDWATER INFORMATION:

Current Groundwater Level (ft):	45.0
Historically Highest Groundwater Level* (ft):	10.0
Unit Weight of Water (pcf):	62.4

* Based on California Geological Survey Seismic Hazard Evaluation Report

BOREHOLE AND SAMPLER INFORMATION:

Borehole Diameter (inches):	5
SPT Sampler with room for Liner (Y/N):	N

LIQUEFACTION BOUNDARY:

Plastic Index Cut Off (PI):	12
Minimum Liquefaction FS:	1.3

Depth to Base Layer (feet)	Total Unit Weight (pcf)	Current Water Level (feet)	Historical Water Level (feet)	Field SPT Blowcount N	Depth of SPT Blowcount (feet)	Fines Content #200 Sieve (%)	Plastic Index (PI)	Vetical Stress σ_{vc}, (psf)	Effective Vert. Stress σ_{vc}', (psf)	Fines Corrected $(N_1)_{60\text{-}cs}$	Stress Reduction Coeff, r_d	Cyclic Shear Ratio CSR	Cyclic Resistance Ratio (CRR)	Factor of Safety CRR/CSR (F.S.)	Liquefaction Settlment ΔS_i (inches)
1	121.7	Unsaturated	Unsaturated	10	5	0.0	0	121.7	121.7	20.8	1.00	0.539	0.253	Non-Liq.	0.00
2	121.7	Unsaturated	Unsaturated	10	5	0.0	0	243.4	243.4	20.8	1.00	0.537	0.253	Non-Liq.	0.00
3	121.7	Unsaturated	Unsaturated	10	5	0.0	0	365.1	365.1	20.8	1.00	0.536	0.253	Non-Liq.	0.00
4	121.7	Unsaturated	Unsaturated	10	5	0.0	0	486.8	486.8	20.8	1.00	0.534	0.253	Non-Liq.	0.00
5	121.7	Unsaturated	Unsaturated	10	5	0.0	0	608.5	608.5	22.1	0.99	0.533	0.275	Non-Liq.	0.00
6	121.7	Unsaturated	Unsaturated	10	5	0.0	0	730.2	730.2	20.7	0.99	0.531	0.252	Non-Liq.	0.00
7	121.7	Unsaturated	Unsaturated	10	5	0.0	0	851.9	851.9	19.5	0.99	0.530	0.235	Non-Liq.	0.00
8	121.7	Unsaturated	Unsaturated	10	5	0.0	0	973.6	973.6	18.5	0.98	0.528	0.222	Non-Liq.	0.00
9	121.7	Unsaturated	Unsaturated	10	5	0.0	0	1095.3	1095.3	18.6	0.98	0.526	0.220	Non-Liq.	0.00
10	121.7	Unsaturated	Unsaturated	15	10	17.1	0	1217.0	1217.0	29.7	0.98	0.524	0.547	Non-Liq.	0.00
11	121.7	Unsaturated	Saturated	15	10	17.1	0	1338.7	1276.3	28.8	0.97	0.548	0.487	0.9	0.11
12	121.7	Unsaturated	Saturated	15	10	17.1	0	1460.4	1335.6	28.0	0.97	0.569	0.438	0.8	0.15
13	121.7	Unsaturated	Saturated	15	10	17.1	0	1582.1	1394.9	27.3	0.97	0.588	0.400	0.7	0.18
14	121.7	Unsaturated	Saturated	15	10	17.1	0	1703.8	1454.2	26.6	0.96	0.605	0.369	0.6	0.20
15	121.7	Unsaturated	Saturated	15	15	17.1	0	1825.5	1513.5	28.5	0.96	0.620	0.444	0.7	0.14
16	121.7	Unsaturated	Saturated	15	15	17.1	0	1947.2	1572.8	27.9	0.96	0.634	0.410	0.6	0.16
17	121.7	Unsaturated	Saturated	15	15	17.1	0	2068.9	1632.1	27.3	0.95	0.647	0.382	0.6	0.17
18	121.7	Unsaturated	Saturated	15	15	17.1	0	2190.6	1691.4	26.7	0.95	0.658	0.358	0.5	0.19
19	121.7	Unsaturated	Saturated	15	15	17.1	0	2312.3	1750.7	26.2	0.94	0.668	0.338	0.5	0.21
20	121.7	Unsaturated	Saturated	21	20	35.6	0	2434.0	1810.0	36.4	0.94	0.677	1.550	2.3	0.00
21	121.7	Unsaturated	Saturated	21	20	35.6	0	2555.7	1869.3	35.8	0.93	0.685	1.346	2.0	0.00
22	121.7	Unsaturated	Saturated	21	20	35.6	0	2677.4	1928.6	35.3	0.93	0.692	1.184	1.7	0.00
23	121.7	Unsaturated	Saturated	21	20	35.6	0	2799.1	1987.9	34.8	0.93	0.699	1.054	1.5	0.00
24	121.7	Unsaturated	Saturated	21	20	35.6	0	2920.8	2047.2	34.3	0.92	0.705	0.947	1.3	0.00
25	117.4	Unsaturated	Saturated	37	25	35.6	0	3038.2	2102.2	57.5	0.92	0.710	1.907	2.7	0.00
26	117.4	Unsaturated	Saturated	37	25	35.6	0	3155.6	2157.2	57.0	0.91	0.715	1.883	2.6	0.00
27	117.4	Unsaturated	Saturated	37	25	35.6	0	3273.0	2212.2	56.5	0.91	0.720	1.860	2.6	0.00
28	117.4	Unsaturated	Saturated	37	25	35.6	0	3390.4	2267.2	58.7	0.90	0.724	1.838	2.5	0.00
29	117.4	Unsaturated	Saturated	37	25	35.6	0	3507.8	2322.2	58.2	0.90	0.727	1.816	2.5	0.00
30	117.4	Unsaturated	Saturated	18	30	68.4	7	3625.2	2377.2	29.0	0.89	0.730	0.412	0.6	0.13
31	117.4	Unsaturated	Saturated	18	30	68.4	7	3742.6	2432.2	28.7	0.89	0.733	0.394	0.5	0.14
32	117.4	Unsaturated	Saturated	18	30	68.4	7	3860.0	2487.2	28.4	0.88	0.735	0.378	0.5	0.15
33	117.4	Unsaturated	Saturated	18	30	68.4	7	3977.4	2542.2	28.0	0.88	0.737	0.363	0.5	0.15
34	117.4	Unsaturated	Saturated	18	30	68.4	7	4094.8	2597.2	27.7	0.87	0.738	0.350	0.5	0.16
35	117.4	Unsaturated	Saturated	18	35	68.4	0	4212.2	2652.2	27.4	0.87	0.740	0.338	Clay	0.00
36	117.4	Unsaturated	Saturated	18	35	68.4	0	4329.6	2707.2	27.1	0.86	0.740	0.327	Clay	0.00
37	117.4	Unsaturated	Saturated	18	35	68.4	0	4447.0	2762.2	26.9	0.86	0.741	0.317	Clay	0.00
38	117.4	Unsaturated	Saturated	18	35	68.4	0	4564.4	2817.2	26.6	0.85	0.741	0.308	Clay	0.00
39	117.4	Unsaturated	Saturated	18	35	68.4	0	4681.8	2872.2	26.3	0.85	0.741	0.300	Clay	0.00
40	117.4	Unsaturated	Saturated	41	40	68.4	0	4799.2	2927.2	59.4	0.84	0.741	1.618	2.2	0.00
41	117.4	Unsaturated	Saturated	41	40	68.4	0	4916.6	2982.2	59.0	0.84	0.741	1.603	2.2	0.00
42	117.4	Unsaturated	Saturated	41	40	68.4	0	5034.0	3037.2	58.7	0.83	0.740	1.588	2.1	0.00
43	117.4	Unsaturated	Saturated	41	40	68.4	0	5151.4	3092.2	58.4	0.83	0.740	1.574	2.1	0.00
44	117.4	Unsaturated	Saturated	41	40	68.4	0	5268.8	3147.2	58.1	0.82	0.739	1.560	2.1	0.00
45	117.4	Unsaturated	Saturated	27	45	51.3	0	5386.2	3202.2	37.2	0.82	0.738	1.435	1.9	0.00
46	117.4	Saturated	Saturated	27	45	51.3	0	5503.6	3257.2	37.1	0.81	0.736	1.379	1.9	0.00
47	117.4	Saturated	Saturated	27	45	51.3	0	5621.0	3312.2	37.0	0.81	0.735	1.327	1.8	0.00
48	117.4	Saturated	Saturated	27	45	51.3	0	5738.4	3367.2	36.8	0.80	0.734	1.281	1.7	0.00
49	117.4	Saturated	Saturated	27	45	51.3	0	5855.8	3422.2	36.7	0.80	0.732	1.238	1.7	0.00
50	117.4	Saturated	Saturated	16	50	51.3	0	5973.2	3477.2	21.9	0.79	0.730	0.213	Clay	0.00
											Total Liquefaction Settlement, S =				**2.23 inches**

Fenagh Engineering & Testing

Project: Centennial High School
File No.: 8696
Description Liquefaction Analysis (PGA_M)
Boring No: B-2

LIQUEFACTION EVALUATION (Idriss & Boulanger, EERI NO 12)

EARTHQUAKE INFORMATION:

Earthquake Magnitude (M):	7.3
Peak Ground Horizontal Acceleration, PGA (g):	0.83
Calculated Mag.Wtg.Factor:	1.068

GROUNDWATER INFORMATION:

Current Groundwater Level (ft):	51.0
Historically Highest Groundwater Level* (ft):	10.0
Unit Weight of Water (pcf):	62.4

* Based on California Geological Survey Seismic Hazard Evaluation Report

BOREHOLE AND SAMPLER INFORMATION:

Borehole Diameter (inches):	5
SPT Sampler with room for Liner (Y/N):	N

LIQUEFACTION BOUNDARY:

Plastic Index Cut Off (PI):	12
Minimum Liquefaction FS:	1.3

Depth to Base Layer (feet)	Total Unit Weight (pcf)	Current Water Level (feet)	Historical Water Level (feet)	Field SPT Blowcount N	Depth of SPT Blowcount (feet)	Fines Content #200 Sieve (%)	Plastic Index (PI)	Vetical Stress σ_{vc} (psf)	Effective Vert. Stress σ_{vc}' (psf)	Fines Corrected $(N_1)_{60\text{-}cs}$	Stress Reduction Coeff, r_d	Cyclic Shear Ratio CSR	Cyclic Resistance Ratio (CRR)	Factor of Safety CRR/CSR (F.S.)	Liquefaction Settlment ΔS_i (inches)
1	130.0	Unsaturated	Unsaturated	11	5	0.0	10	130.0	130.0	22.8	1.00	0.539	0.290	Non-Liq.	0.00
2	130.0	Unsaturated	Unsaturated	11	5	0.0	10	260.0	260.0	22.8	1.00	0.537	0.290	Non-Liq.	0.00
3	130.0	Unsaturated	Unsaturated	11	5	0.0	10	390.0	390.0	22.8	1.00	0.536	0.290	Non-Liq.	0.00
4	130.0	Unsaturated	Unsaturated	11	5	0.0	10	520.0	520.0	22.8	1.00	0.534	0.290	Non-Liq.	0.00
5	130.0	Unsaturated	Unsaturated	11	5	0.0	10	650.0	650.0	23.3	0.99	0.533	0.300	Non-Liq.	0.00
6	130.0	Unsaturated	Unsaturated	11	5	0.0	10	780.0	780.0	21.9	0.99	0.531	0.272	Non-Liq.	0.00
7	130.0	Unsaturated	Unsaturated	11	5	0.0	10	910.0	910.0	20.7	0.99	0.530	0.252	Non-Liq.	0.00
8	130.0	Unsaturated	Unsaturated	11	5	0.0	10	1040.0	1040.0	19.6	0.98	0.528	0.235	Non-Liq.	0.00
9	130.0	Unsaturated	Unsaturated	11	5	0.0	10	1170.0	1170.0	19.8	0.98	0.526	0.234	Non-Liq.	0.00
10	130.0	Unsaturated	Unsaturated	16	10	53.0	10	1300.0	1300.0	32.3	0.98	0.524	0.798	Non-Liq.	0.00
11	130.0	Unsaturated	Saturated	16	10	53.0	10	1430.0	1367.6	31.4	0.97	0.546	0.685	1.3	0.05
12	130.0	Unsaturated	Saturated	16	10	53.0	10	1560.0	1435.2	30.6	0.97	0.566	0.597	1.1	0.07
13	130.0	Unsaturated	Saturated	16	10	53.0	10	1690.0	1502.8	29.9	0.97	0.583	0.531	0.9	0.10
14	130.0	Unsaturated	Saturated	16	10	53.0	10	1820.0	1570.4	29.2	0.96	0.599	0.480	0.8	0.13
15	130.0	Unsaturated	Saturated	22	15	74.0	0	1950.0	1638.0	40.5	0.96	0.612	2.000	3.3	0.00
16	130.0	Unsaturated	Saturated	22	15	74.0	0	2080.0	1705.6	39.8	0.96	0.625	2.000	3.2	0.00
17	130.0	Unsaturated	Saturated	22	15	74.0	0	2210.0	1773.2	39.1	0.95	0.636	2.000	3.1	0.00
18	130.0	Unsaturated	Saturated	22	15	74.0	0	2340.0	1840.8	38.4	0.95	0.646	2.000	3.1	0.00
19	130.0	Unsaturated	Saturated	22	15	74.0	0	2470.0	1908.4	37.8	0.94	0.654	2.000	3.1	0.00
20	130.0	Unsaturated	Saturated	20	20	74.0	0	2600.0	1976.0	34.2	0.94	0.662	0.955	1.4	0.00
21	130.0	Unsaturated	Saturated	20	20	74.0	0	2730.0	2043.6	33.6	0.93	0.669	0.853	1.3	0.04
22	130.0	Unsaturated	Saturated	20	20	74.0	0	2860.0	2111.2	33.1	0.93	0.676	0.769	1.1	0.06
23	130.0	Unsaturated	Saturated	20	20	74.0	0	2990.0	2178.8	32.6	0.93	0.681	0.701	1.0	0.07
24	130.0	Unsaturated	Saturated	20	20	74.0	0	3120.0	2246.4	32.2	0.92	0.686	0.643	0.9	0.08
25	130.0	Unsaturated	Saturated	29	25	74.0	0	3250.0	2314.0	45.0	0.92	0.690	1.864	2.7	0.00
26	130.0	Unsaturated	Saturated	29	25	74.0	0	3380.0	2381.6	44.4	0.91	0.694	1.840	2.7	0.00
27	130.0	Unsaturated	Saturated	29	25	74.0	0	3510.0	2449.2	43.9	0.91	0.697	1.816	2.6	0.00
28	130.0	Unsaturated	Saturated	29	25	74.0	0	3640.0	2516.8	45.7	0.90	0.700	1.793	2.6	0.00
29	130.0	Unsaturated	Saturated	29	25	74.0	0	3770.0	2584.4	45.3	0.90	0.702	1.771	2.5	0.00
30	130.0	Unsaturated	Saturated	23	30	74.0	0	3900.0	2652.0	35.5	0.89	0.704	1.106	1.6	0.00
31	130.0	Unsaturated	Saturated	23	30	74.0	0	4030.0	2719.6	35.1	0.89	0.706	1.007	1.4	0.00
32	130.0	Unsaturated	Saturated	23	30	74.0	0	4160.0	2787.2	34.7	0.88	0.707	0.922	1.3	0.00
33	130.0	Unsaturated	Saturated	23	30	74.0	0	4290.0	2854.8	34.3	0.88	0.708	0.850	1.2	0.05
34	130.0	Unsaturated	Saturated	23	30	74.0	0	4420.0	2922.4	34.0	0.87	0.708	0.788	1.1	0.05
35	130.0	Unsaturated	Saturated	28	35	74.0	0	4550.0	2990.0	41.1	0.87	0.709	1.652	2.3	0.00
36	130.0	Unsaturated	Saturated	28	35	74.0	0	4680.0	3057.6	40.7	0.86	0.709	1.634	2.3	0.00
37	130.0	Unsaturated	Saturated	28	35	74.0	0	4810.0	3125.2	40.3	0.86	0.708	1.617	2.3	0.00
38	130.0	Unsaturated	Saturated	28	35	74.0	0	4940.0	3192.8	39.9	0.85	0.708	1.600	2.3	0.00
39	130.0	Unsaturated	Saturated	28	35	74.0	0	5070.0	3260.4	39.5	0.85	0.707	1.584	2.2	0.00
40	130.0	Unsaturated	Saturated	43	40	74.0	0	5200.0	3328.0	60.8	0.84	0.706	1.568	2.2	0.00
41	130.0	Unsaturated	Saturated	43	40	74.0	0	5330.0	3395.6	60.5	0.84	0.705	1.552	2.2	0.00
42	130.0	Unsaturated	Saturated	43	40	74.0	0	5460.0	3463.2	60.1	0.83	0.704	1.537	2.2	0.00
43	130.0	Unsaturated	Saturated	43	40	74.0	0	5590.0	3530.8	59.8	0.83	0.703	1.522	2.2	0.00
44	130.0	Unsaturated	Saturated	43	40	74.0	0	5720.0	3598.4	59.4	0.82	0.701	1.508	2.1	0.00
45	130.0	Unsaturated	Saturated	25	45	74.0	0	5850.0	3666.0	33.2	0.82	0.700	0.636	0.9	0.06
46	130.0	Unsaturated	Saturated	25	45	74.0	0	5980.0	3733.6	32.9	0.81	0.698	0.603	0.9	0.07
47	130.0	Unsaturated	Saturated	25	45	74.0	0	6110.0	3801.2	32.6	0.81	0.696	0.574	0.8	0.07
48	130.0	Unsaturated	Saturated	25	45	74.0	0	6240.0	3868.8	32.3	0.80	0.694	0.548	0.8	0.07
49	130.0	Unsaturated	Saturated	25	45	74.0	0	6370.0	3936.4	32.1	0.80	0.692	0.524	0.8	0.08
50	130.0	Unsaturated	Saturated	25	50	74.0	0	6500.0	4004.0	31.8	0.79	0.690	0.502	0.7	0.08
														Total Liquefaction Settlement, S =	**1.13 inches**

Fenagh Engineering & Testing

Project: Centennial High School
File No.: 8696
Description Liquefaction Analysis (PGA_M)
Boring No: B-3

LIQUEFACTION EVALUATION (Idriss & Boulanger, EERI NO 12)

EARTHQUAKE INFORMATION:

Earthquake Magnitude (M):	7.3
Peak Ground Horizontal Acceleration, PGA (g):	0.83
Calculated Mag.Wtg.Factor:	1.068

GROUNDWATER INFORMATION:

Current Groundwater Level (ft):	43.0
Historically Highest Groundwater Level* (ft):	10.0
Unit Weight of Water (pcf):	62.4

* Based on California Geological Survey Seismic Hazard Evaluation Report

BOREHOLE AND SAMPLER INFORMATION:

Borehole Diameter (inches):	5
SPT Sampler with room for Liner (Y/N):	N

LIQUEFACTION BOUNDARY:

Plastic Index Cut Off (PI):	12
Minimum Liquefaction FS:	1.3

Depth to Base Layer (feet)	Total Unit Weight (pcf)	Current Water Level (feet)	Historical Water Level (feet)	Field SPT Blowcount N	Depth of SPT Blowcount (feet)	Fines Content #200 Sieve (%)	Plastic Index (PI)	Vetical Stress σ_{vc}, (psf)	Effective Vert. Stress σ_{vc}', (psf)	Fines Corrected $(N_1)_{60\text{-}cs}$	Stress Reduction Coeff, r_d	Cyclic Shear Ratio CSR	Cyclic Resistance Ratio (CRR)	Factor of Safety CRR/CSR (F.S.)	Liquefaction Settlment ΔS_i (inches)
1	132.9	Unsaturated	Unsaturated	14	5	0.0	0	132.9	132.9	29.1	1.00	0.539	0.509	Non-Liq.	0.00
2	132.9	Unsaturated	Unsaturated	14	5	0.0	0	265.8	265.8	29.1	1.00	0.537	0.509	Non-Liq.	0.00
3	132.9	Unsaturated	Unsaturated	14	5	0.0	0	398.7	398.7	29.1	1.00	0.536	0.509	Non-Liq.	0.00
4	132.9	Unsaturated	Unsaturated	14	5	0.0	0	531.6	531.6	28.6	1.00	0.534	0.482	Non-Liq.	0.00
5	132.9	Unsaturated	Unsaturated	14	5	0.0	0	664.5	664.5	28.2	0.99	0.533	0.460	Non-Liq.	0.00
6	132.9	Unsaturated	Unsaturated	14	5	0.0	0	797.4	797.4	26.6	0.99	0.531	0.392	Non-Liq.	0.00
7	132.9	Unsaturated	Unsaturated	14	5	0.0	0	930.3	930.3	25.3	0.99	0.530	0.349	Non-Liq.	0.00
8	132.9	Unsaturated	Unsaturated	14	5	0.0	0	1063.2	1063.2	24.1	0.98	0.528	0.318	Non-Liq.	0.00
9	132.9	Unsaturated	Unsaturated	14	5	0.0	0	1196.1	1196.1	24.4	0.98	0.526	0.322	Non-Liq.	0.00
10	132.9	Unsaturated	Unsaturated	15	10	57.8	0	1329.0	1329.0	30.6	0.98	0.524	0.615	Non-Liq.	0.00
11	132.9	Unsaturated	Saturated	15	10	57.8	0	1461.9	1399.5	29.7	0.97	0.546	0.537	1.0	0.09
12	132.9	Unsaturated	Saturated	15	10	57.8	0	1594.8	1470.0	28.9	0.97	0.565	0.479	0.8	0.12
13	132.9	Unsaturated	Saturated	15	10	57.8	0	1727.7	1540.5	28.2	0.97	0.581	0.434	0.7	0.15
14	132.9	Unsaturated	Saturated	15	10	57.8	0	1860.6	1611.0	27.5	0.96	0.596	0.399	0.7	0.17
15	129.2	Unsaturated	Saturated	14	15	57.8	0	1989.8	1677.8	27.8	0.96	0.610	0.406	Clay	0.00
16	129.2	Unsaturated	Saturated	14	15	57.8	0	2119.0	1744.6	27.2	0.96	0.622	0.378	Clay	0.00
17	129.2	Unsaturated	Saturated	14	15	57.8	0	2248.2	1811.4	26.7	0.95	0.633	0.355	Clay	0.00
18	129.2	Unsaturated	Saturated	14	15	57.8	0	2377.4	1878.2	26.2	0.95	0.643	0.336	Clay	0.00
19	129.2	Unsaturated	Saturated	14	15	57.8	0	2506.6	1945.0	25.7	0.94	0.652	0.319	Clay	0.00
20	129.2	Unsaturated	Saturated	13	20	54.3	13	2635.8	2011.8	23.8	0.94	0.660	0.272	Non-Liq.	0.00
21	129.2	Unsaturated	Saturated	13	20	54.3	13	2765.0	2078.6	23.4	0.93	0.667	0.262	Non-Liq.	0.00
22	129.2	Unsaturated	Saturated	13	20	54.3	13	2894.2	2145.4	23.0	0.93	0.673	0.254	Non-Liq.	0.00
23	129.2	Unsaturated	Saturated	13	20	54.3	13	3023.4	2212.2	22.6	0.93	0.678	0.246	Non-Liq.	0.00
24	129.2	Unsaturated	Saturated	13	20	54.3	13	3152.6	2279.0	22.3	0.92	0.683	0.239	Non-Liq.	0.00
25	129.2	Unsaturated	Saturated	17	25	0.0	13	3281.8	2345.8	21.8	0.92	0.688	0.230	Clay	0.00
26	129.2	Unsaturated	Saturated	17	25	0.0	13	3411.0	2412.6	21.4	0.91	0.691	0.224	Clay	0.00
27	129.2	Unsaturated	Saturated	17	25	0.0	13	3540.2	2479.4	21.0	0.91	0.695	0.217	Clay	0.00
28	129.2	Unsaturated	Saturated	17	25	0.0	13	3669.4	2546.2	21.9	0.90	0.697	0.228	Clay	0.00
29	129.2	Unsaturated	Saturated	17	25	0.0	13	3798.6	2613.0	21.5	0.90	0.700	0.222	Clay	0.00
30	129.2	Unsaturated	Saturated	20	30	0.0	13	3927.8	2679.8	25.5	0.89	0.702	0.289	Clay	0.00
31	129.2	Unsaturated	Saturated	20	30	0.0	13	4057.0	2746.6	25.1	0.89	0.703	0.279	Clay	0.00
32	129.2	Unsaturated	Saturated	20	30	0.0	13	4186.2	2813.4	24.7	0.88	0.705	0.270	Clay	0.00
33	129.2	Unsaturated	Saturated	20	30	0.0	13	4315.4	2880.2	24.4	0.88	0.706	0.262	Clay	0.00
34	129.2	Unsaturated	Saturated	20	30	0.0	13	4444.6	2947.0	24.1	0.87	0.706	0.254	Clay	0.00
35	129.2	Unsaturated	Saturated	48	35	0.0	0	4573.8	3013.8	63.8	0.87	0.707	1.649	2.3	0.00
36	129.2	Unsaturated	Saturated	48	35	0.0	0	4703.0	3080.6	63.3	0.86	0.707	1.631	2.3	0.00
37	129.2	Unsaturated	Saturated	48	35	0.0	0	4832.2	3147.4	62.9	0.86	0.707	1.614	2.3	0.00
38	129.2	Unsaturated	Saturated	48	35	0.0	0	4961.4	3214.2	62.4	0.85	0.706	1.598	2.3	0.00
39	129.2	Unsaturated	Saturated	48	35	0.0	0	5090.6	3281.0	62.0	0.85	0.706	1.581	2.2	0.00
40	129.2	Unsaturated	Saturated	42	40	0.0	0	5219.8	3347.8	53.9	0.84	0.705	1.566	2.2	0.00
41	129.2	Unsaturated	Saturated	42	40	0.0	0	5349.0	3414.6	53.6	0.84	0.704	1.550	2.2	0.00
42	129.2	Unsaturated	Saturated	42	40	0.0	0	5478.2	3481.4	53.2	0.83	0.703	1.535	2.2	0.00
43	129.2	Unsaturated	Saturated	42	40	0.0	0	5607.4	3548.2	52.9	0.83	0.702	1.520	2.2	0.00
44	129.2	Saturated	Saturated	42	40	0.0	0	5736.6	3615.0	52.7	0.82	0.700	1.513	2.2	0.00
45	129.2	Saturated	Saturated	23	45	31.0	0	5865.8	3681.8	30.5	0.82	0.699	0.440	0.6	0.10
46	129.2	Saturated	Saturated	23	45	31.0	0	5995.0	3748.6	30.4	0.81	0.697	0.431	0.6	0.10
47	129.2	Saturated	Saturated	23	45	31.0	0	6124.2	3815.4	30.2	0.81	0.695	0.423	0.6	0.11
48	129.2	Saturated	Saturated	23	45	31.0	0	6253.4	3882.2	30.1	0.80	0.693	0.414	0.6	0.11
49	129.2	Saturated	Saturated	23	45	31.0	0	6382.6	3949.0	30.0	0.80	0.691	0.407	0.6	0.11
50	129.2	Saturated	Saturated	12	50	31.0	0	6511.8	4015.8	16.6	0.79	0.689	0.159	Clay	0.00
														Total Liquefaction Settlement, S =	**1.05 inches**

Fenagh Engineering & Testing

Project: Centennial High School
File No.: 8696
Description Liquefaction Analysis (PGA_M)
Boring No: B-4

LIQUEFACTION EVALUATION (Idriss & Boulanger, EERI NO 12)

EARTHQUAKE INFORMATION:

Earthquake Magnitude (M):	7.3
Peak Ground Horizontal Acceleration, PGA (g):	0.83
Calculated Mag.Wtg.Factor:	1.068

GROUNDWATER INFORMATION:

Current Groundwater Level (ft):	51.0
Historically Highest Groundwater Level* (ft):	10.0
Unit Weight of Water (pcf):	62.4

* Based on California Geological Survey Seismic Hazard Evaluation Report

BOREHOLE AND SAMPLER INFORMATION:

Borehole Diameter (inches):	5
SPT Sampler with room for Liner (Y/N):	N

LIQUEFACTION BOUNDARY:

Plastic Index Cut Off (PI):	12
Minimum Liquefaction FS:	1.3

Depth to Base Layer (feet)	Total Unit Weight (pcf)	Current Water Level (feet)	Historical Water Level (feet)	Field SPT Blowcount N	Depth of SPT Blowcount (feet)	Fines Content #200 Sieve (%)	Plastic Index (PI)	Vetical Stress σ_{vc}, (psf)	Effective Vert. Stress σ_{vc}', (psf)	Fines Corrected $(N_1)_{60\text{-}cs}$	Stress Reduction Coeff, r_d	Cyclic Shear Ratio CSR	Cyclic Resistance Ratio (CRR)	Factor of Safety CRR/CSR (F.S.)	Liquefaction Settlment ΔS_i (inches)
1	135.5	Unsaturated	Unsaturated	12	5	0.0	0	135.5	135.5	24.9	1.00	0.539	0.339	Non-Liq.	0.00
2	135.5	Unsaturated	Unsaturated	12	5	0.0	0	271.0	271.0	24.9	1.00	0.537	0.339	Non-Liq.	0.00
3	135.5	Unsaturated	Unsaturated	12	5	0.0	0	406.5	406.5	24.9	1.00	0.536	0.339	Non-Liq.	0.00
4	135.5	Unsaturated	Unsaturated	12	5	0.0	0	542.0	542.0	24.9	1.00	0.534	0.339	Non-Liq.	0.00
5	135.5	Unsaturated	Unsaturated	12	5	0.0	0	677.5	677.5	24.7	0.99	0.533	0.333	Non-Liq.	0.00
6	135.5	Unsaturated	Unsaturated	12	5	0.0	0	813.0	813.0	23.2	0.99	0.531	0.297	Non-Liq.	0.00
7	135.5	Unsaturated	Unsaturated	12	5	0.0	0	948.5	948.5	22.0	0.99	0.530	0.273	Non-Liq.	0.00
8	135.5	Unsaturated	Unsaturated	12	5	0.0	0	1084.0	1084.0	20.9	0.98	0.528	0.253	Non-Liq.	0.00
9	135.5	Unsaturated	Unsaturated	12	5	0.0	0	1219.5	1219.5	21.1	0.98	0.526	0.252	Non-Liq.	0.00
10	135.5	Unsaturated	Unsaturated	20	10	73.4	0	1355.0	1355.0	37.9	0.98	0.524	2.000	Non-Liq.	0.00
11	135.5	Unsaturated	Saturated	20	10	73.4	0	1490.5	1428.1	36.9	0.97	0.545	1.999	3.7	0.00
12	135.5	Unsaturated	Saturated	20	10	73.4	0	1626.0	1501.2	36.0	0.97	0.564	1.573	2.8	0.00
13	135.5	Unsaturated	Saturated	20	10	73.4	0	1761.5	1574.3	35.2	0.97	0.580	1.280	2.2	0.00
14	135.5	Unsaturated	Saturated	20	10	73.4	0	1897.0	1647.4	34.4	0.96	0.595	1.072	1.8	0.00
15	135.5	Unsaturated	Saturated	27	15	8.0	0	2032.5	1720.5	42.6	0.96	0.608	2.000	3.3	0.00
16	135.5	Unsaturated	Saturated	27	15	8.0	0	2168.0	1793.6	41.8	0.96	0.619	2.000	3.2	0.00
17	135.5	Unsaturated	Saturated	27	15	8.0	0	2303.5	1866.7	41.1	0.95	0.629	2.000	3.2	0.00
18	131.2	Unsaturated	Saturated	27	15	8.0	0	2434.7	1935.5	40.4	0.95	0.639	2.000	3.1	0.00
19	131.2	Unsaturated	Saturated	27	15	8.0	0	2565.9	2004.3	39.8	0.94	0.647	2.000	3.1	0.00
20	131.2	Unsaturated	Saturated	14	20	0.0	0	2697.1	2073.1	19.4	0.94	0.655	0.206	Clay	0.00
21	131.2	Unsaturated	Saturated	14	20	0.0	0	2828.3	2141.9	19.0	0.93	0.662	0.200	Clay	0.00
22	131.2	Unsaturated	Saturated	14	20	0.0	0	2959.5	2210.7	18.6	0.93	0.668	0.194	Clay	0.00
23	131.2	Unsaturated	Saturated	14	20	0.0	0	3090.7	2279.5	18.2	0.93	0.673	0.189	Clay	0.00
24	131.2	Unsaturated	Saturated	14	20	0.0	0	3221.9	2348.3	17.8	0.92	0.678	0.184	Clay	0.00
25	131.2	Unsaturated	Saturated	26	25	63.9	0	3353.1	2417.1	40.1	0.92	0.682	1.845	2.7	0.00
26	131.2	Unsaturated	Saturated	26	25	63.9	0	3484.3	2485.9	39.6	0.91	0.685	1.820	2.7	0.00
27	131.2	Unsaturated	Saturated	26	25	63.9	0	3615.5	2554.7	39.1	0.91	0.688	1.797	2.6	0.00
28	131.2	Unsaturated	Saturated	26	25	63.9	0	3746.7	2623.5	40.7	0.90	0.691	1.775	2.6	0.00
29	131.2	Unsaturated	Saturated	26	25	63.9	0	3877.9	2692.3	40.2	0.90	0.693	1.753	2.5	0.00
30	131.2	Unsaturated	Saturated	20	30	63.9	10	4009.1	2761.1	30.8	0.89	0.695	0.500	0.7	0.10
31	131.2	Unsaturated	Saturated	20	30	63.9	10	4140.3	2829.9	30.5	0.89	0.697	0.473	0.7	0.10
32	131.2	Unsaturated	Saturated	20	30	63.9	10	4271.5	2898.7	30.1	0.88	0.698	0.449	0.6	0.11
33	131.2	Unsaturated	Saturated	20	30	63.9	10	4402.7	2967.5	29.8	0.88	0.699	0.428	0.6	0.12
34	131.2	Unsaturated	Saturated	20	30	63.9	10	4533.9	3036.3	29.4	0.87	0.699	0.409	0.6	0.12
35	131.2	Unsaturated	Saturated	27	35	63.9	10	4665.1	3105.1	39.2	0.87	0.700	1.636	2.3	0.00
36	131.2	Unsaturated	Saturated	27	35	63.9	10	4796.3	3173.9	38.8	0.86	0.700	1.619	2.3	0.00
37	131.2	Unsaturated	Saturated	27	35	63.9	10	4927.5	3242.7	38.5	0.86	0.699	1.602	2.3	0.00
38	131.2	Unsaturated	Saturated	27	35	63.9	10	5058.7	3311.5	38.1	0.85	0.699	1.585	2.3	0.00
39	131.2	Unsaturated	Saturated	27	35	63.9	10	5189.9	3380.3	37.7	0.85	0.698	1.569	2.2	0.00
40	131.2	Unsaturated	Saturated	18	40	63.9	0	5321.1	3449.1	25.0	0.84	0.698	0.263	Clay	0.00
41	131.2	Unsaturated	Saturated	18	40	63.9	0	5452.3	3517.9	24.8	0.84	0.697	0.257	Clay	0.00
42	131.2	Unsaturated	Saturated	18	40	63.9	0	5583.5	3586.7	24.5	0.83	0.695	0.252	Clay	0.00
43	131.2	Unsaturated	Saturated	18	40	63.9	0	5714.7	3655.5	24.3	0.83	0.694	0.247	Clay	0.00
44	131.2	Unsaturated	Saturated	18	40	63.9	0	5845.9	3724.3	24.1	0.82	0.693	0.242	Clay	0.00
45	131.2	Unsaturated	Saturated	17	45	65.0	0	5977.1	3793.1	22.6	0.82	0.691	0.220	0.3	0.25
46	131.2	Unsaturated	Saturated	17	45	65.0	0	6108.3	3861.9	22.4	0.81	0.689	0.216	0.3	0.25
47	131.2	Unsaturated	Saturated	17	45	65.0	0	6239.5	3930.7	22.2	0.81	0.688	0.213	0.3	0.25
48	131.2	Unsaturated	Saturated	17	45	65.0	0	6370.7	3999.5	22.0	0.80	0.686	0.209	0.3	0.25
49	131.2	Unsaturated	Saturated	17	45	65.0	0	6501.9	4068.3	21.8	0.80	0.684	0.206	0.3	0.26
50	131.2	Unsaturated	Saturated	17	50	65.0	0	6633.1	4137.1	21.6	0.79	0.681	0.204	Clay	0.00
											Total Liquefaction Settlement, S =				**1.81 inches**

Fenagh Engineering & Testing

Project: Centennial High School
File No.: 8696
Description Liquefaction Analysis (PGA_M)
Boring No: B-7

LIQUEFACTION EVALUATION (Idriss & Boulanger, EERI NO 12)

EARTHQUAKE INFORMATION:

Earthquake Magnitude (M):	7.3
Peak Ground Horizontal Acceleration, PGA (g):	0.83
Calculated Mag.Wtg.Factor:	1.068

GROUNDWATER INFORMATION:

Current Groundwater Level (ft):	51.0
Historically Highest Groundwater Level* (ft):	10.0
Unit Weight of Water (pcf):	62.4

* Based on California Geological Survey Seismic Hazard Evaluation Report

BOREHOLE AND SAMPLER INFORMATION:

Borehole Diameter (inches):	5
SPT Sampler with room for Liner (Y/N):	N

LIQUEFACTION BOUNDARY:

Plastic Index Cut Off (PI):	12
Minimum Liquefaction FS:	1.3

Depth to Base Layer (feet)	Total Unit Weight (pcf)	Current Water Level (feet)	Historical Water Level (feet)	Field SPT Blowcount N	Depth of SPT Blowcount (feet)	Fines Content #200 Sieve (%)	Plastic Index (PI)	Vetical Stress σ_{vc}, (psf)	Effective Vert. Stress σ_{vc}', (psf)	Fines Corrected $(N_1)_{60\text{-}cs}$	Stress Reduction Coeff, r_d	Cyclic Shear Ratio CSR	Cyclic Resistance Ratio (CRR)	Factor of Safety CRR/CSR (F.S.)	Liquefaction Settlment ΔS_i (inches)
1	113.1	Unsaturated	Unsaturated	22	5	0.0	0	113.1	113.1	45.7	1.00	0.539	2.000	Non-Liq.	0.00
2	113.1	Unsaturated	Unsaturated	22	5	0.0	0	226.2	226.2	45.7	1.00	0.537	2.000	Non-Liq.	0.00
3	113.1	Unsaturated	Unsaturated	22	5	0.0	0	339.3	339.3	44.3	1.00	0.536	2.000	Non-Liq.	0.00
4	113.1	Unsaturated	Unsaturated	22	5	0.0	0	452.4	452.4	41.8	1.00	0.534	2.000	Non-Liq.	0.00
5	113.1	Unsaturated	Unsaturated	22	5	0.0	0	565.5	565.5	41.8	0.99	0.533	2.000	Non-Liq.	0.00
6	113.1	Unsaturated	Unsaturated	22	5	0.0	0	678.6	678.6	40.2	0.99	0.531	2.000	Non-Liq.	0.00
7	113.1	Unsaturated	Unsaturated	22	5	0.0	0	791.7	791.7	38.7	0.99	0.530	2.000	Non-Liq.	0.00
8	113.1	Unsaturated	Unsaturated	22	5	0.0	0	904.8	904.8	37.4	0.98	0.528	2.000	Non-Liq.	0.00
9	113.1	Unsaturated	Unsaturated	22	5	0.0	0	1017.9	1017.9	38.2	0.98	0.526	2.000	Non-Liq.	0.00
10	113.1	Unsaturated	Unsaturated	30	10	0.0	0	1131.0	1131.0	48.9	0.98	0.524	2.000	Non-Liq.	0.00
11	113.1	Unsaturated	Saturated	30	10	0.0	0	1244.1	1181.7	47.7	0.97	0.550	2.000	3.6	0.00
12	113.1	Unsaturated	Saturated	30	10	0.0	0	1357.2	1232.4	46.7	0.97	0.573	2.000	3.5	0.00
13	113.1	Unsaturated	Saturated	30	10	0.0	0	1470.3	1283.1	45.7	0.97	0.594	2.000	3.4	0.00
14	113.1	Unsaturated	Saturated	30	10	0.0	0	1583.4	1333.8	44.9	0.96	0.613	2.000	3.3	0.00
15	113.1	Unsaturated	Saturated	12	15	0.0	26	1696.5	1384.5	20.4	0.96	0.630	0.232	Clay	0.00
16	113.1	Unsaturated	Saturated	12	15	0.0	26	1809.6	1435.2	19.9	0.96	0.646	0.223	Clay	0.00
17	113.1	Unsaturated	Saturated	12	15	0.0	26	1922.7	1485.9	19.4	0.95	0.660	0.214	Clay	0.00
18	113.1	Unsaturated	Saturated	12	15	0.0	26	2035.8	1536.6	18.9	0.95	0.673	0.207	Clay	0.00
19	113.1	Unsaturated	Saturated	12	15	0.0	26	2148.9	1587.3	18.4	0.94	0.685	0.200	Clay	0.00
20	88.2	Unsaturated	Saturated	13	20	0.0	26	2237.1	1613.1	19.6	0.94	0.698	0.213	Clay	0.00
21	88.2	Unsaturated	Saturated	13	20	0.0	26	2325.3	1638.9	19.3	0.93	0.711	0.208	Clay	0.00
22	88.2	Unsaturated	Saturated	13	20	0.0	26	2413.5	1664.7	18.9	0.93	0.723	0.203	Clay	0.00
23	88.2	Unsaturated	Saturated	13	20	0.0	26	2501.7	1690.5	18.6	0.93	0.734	0.199	Clay	0.00
24	88.2	Unsaturated	Saturated	13	20	0.0	26	2589.9	1716.3	18.3	0.92	0.745	0.195	Clay	0.00
25	88.2	Unsaturated	Saturated	33	25	0.0	0	2678.1	1742.1	48.0	0.92	0.756	1.986	2.6	0.00
26	88.2	Unsaturated	Saturated	33	25	0.0	0	2766.3	1767.9	47.6	0.91	0.765	1.966	2.6	0.00
27	88.2	Unsaturated	Saturated	33	25	0.0	0	2854.5	1793.7	47.2	0.91	0.774	1.946	2.5	0.00
28	88.2	Unsaturated	Saturated	33	25	0.0	0	2942.7	1819.5	49.3	0.90	0.783	1.927	2.5	0.00
29	88.2	Unsaturated	Saturated	33	25	0.0	0	3030.9	1845.3	48.9	0.90	0.791	1.908	2.4	0.00
30	88.2	Unsaturated	Saturated	28	30	0.0	0	3119.1	1871.1	40.7	0.89	0.798	1.890	2.4	0.00
31	88.2	Unsaturated	Saturated	28	30	0.0	0	3207.3	1896.9	40.3	0.89	0.805	1.873	2.3	0.00
32	88.2	Unsaturated	Saturated	28	30	0.0	0	3295.5	1922.7	39.9	0.88	0.812	1.855	2.3	0.00
33	88.2	Unsaturated	Saturated	28	30	0.0	0	3383.7	1948.5	39.6	0.88	0.818	1.839	2.2	0.00
34	88.2	Unsaturated	Saturated	28	30	0.0	0	3471.9	1974.3	39.2	0.87	0.824	1.823	2.2	0.00
35	88.2	Unsaturated	Saturated	21	35	0.0	10	3560.1	2000.1	28.1	0.87	0.829	0.373	0.5	0.15
36	88.2	Unsaturated	Saturated	21	35	0.0	10	3648.3	2025.9	27.8	0.86	0.834	0.361	0.4	0.16
37	88.2	Unsaturated	Saturated	21	35	0.0	10	3736.5	2051.7	27.5	0.86	0.838	0.349	0.4	0.17
38	88.2	Unsaturated	Saturated	21	35	0.0	10	3824.7	2077.5	27.2	0.85	0.842	0.339	0.4	0.18
39	88.2	Unsaturated	Saturated	21	35	0.0	10	3912.9	2103.3	27.0	0.85	0.846	0.329	0.4	0.18
40	88.2	Unsaturated	Saturated	20	40	0.0	10	4001.1	2129.1	25.3	0.84	0.850	0.283	0.3	0.23
41	88.2	Unsaturated	Saturated	20	40	0.0	10	4089.3	2154.9	25.0	0.84	0.853	0.277	0.3	0.23
42	88.2	Unsaturated	Saturated	20	40	0.0	10	4177.5	2180.7	24.8	0.83	0.856	0.270	0.3	0.23
43	88.2	Unsaturated	Saturated	20	40	0.0	10	4265.7	2206.5	24.5	0.83	0.858	0.265	0.3	0.23
44	88.2	Unsaturated	Saturated	20	40	0.0	10	4353.9	2232.3	24.3	0.82	0.861	0.259	0.3	0.23
45	88.2	Unsaturated	Saturated	15	45	0.0	18	4442.1	2258.1	17.3	0.82	0.863	0.172	Clay	0.00
46	88.2	Unsaturated	Saturated	15	45	0.0	18	4530.3	2283.9	17.1	0.81	0.865	0.170	Clay	0.00
47	88.2	Unsaturated	Saturated	15	45	0.0	18	4618.5	2309.7	16.9	0.81	0.866	0.168	Clay	0.00
48	88.2	Unsaturated	Saturated	15	45	0.0	18	4706.7	2335.5	16.8	0.80	0.867	0.166	Clay	0.00
49	88.2	Unsaturated	Saturated	15	45	0.0	18	4794.9	2361.3	16.6	0.80	0.869	0.164	Clay	0.00
50	88.2	Unsaturated	Saturated	15	50	0.0	18	4883.1	2387.1	16.4	0.79	0.869	0.163	Clay	0.00
											Total Liquefaction Settlement, S =				**1.99 inches**

Fenagh Engineering & Testing

Project: Centennial High School
File No.: 8696
Description Liquefaction Analysis (PGA_M)
Boring No: B-8

LIQUEFACTION EVALUATION (Idriss & Boulanger, EERI NO 12)

EARTHQUAKE INFORMATION:

Earthquake Magnitude (M):	7.3
Peak Ground Horizontal Acceleration, PGA (g):	0.83
Calculated Mag.Wtg.Factor:	1.068

GROUNDWATER INFORMATION:

Current Groundwater Level (ft):	45.0
Historically Highest Groundwater Level* (ft):	10.0
Unit Weight of Water (pcf):	62.4

* Based on California Geological Survey Seismic Hazard Evaluation Report

BOREHOLE AND SAMPLER INFORMATION:

Borehole Diameter (inches):	5
SPT Sampler with room for Liner (Y/N):	N

LIQUEFACTION BOUNDARY:

Plastic Index Cut Off (PI):	12
Minimum Liquefaction FS:	1.3

Depth to Base Layer (feet)	Total Unit Weight (pcf)	Current Water Level (feet)	Historical Water Level (feet)	Field SPT Blowcount N	Depth of SPT Blowcount (feet)	Fines Content #200 Sieve (%)	Plastic Index (PI)	Vetical Stress σ_{vc}, (psf)	Effective Vert. Stress σ_{vc}', (psf)	Fines Corrected $(N_1)_{60\text{-}cs}$	Stress Reduction Coeff, r_d	Cyclic Shear Ratio CSR	Cyclic Resistance Ratio (CRR)	Factor of Safety CRR/CSR (F.S.)	Liquefaction Settlment ΔS_i (inches)
1	121.1	Unsaturated	Unsaturated	12	5	0.0	0	121.1	121.1	24.9	1.00	0.539	0.339	Non-Liq.	0.00
2	121.1	Unsaturated	Unsaturated	12	5	0.0	0	242.2	242.2	24.9	1.00	0.537	0.339	Non-Liq.	0.00
3	121.1	Unsaturated	Unsaturated	12	5	0.0	0	363.3	363.3	24.9	1.00	0.536	0.339	Non-Liq.	0.00
4	121.1	Unsaturated	Unsaturated	12	5	0.0	0	484.4	484.4	24.9	1.00	0.534	0.339	Non-Liq.	0.00
5	121.1	Unsaturated	Unsaturated	12	5	0.0	0	605.5	605.5	25.6	0.99	0.533	0.359	Non-Liq.	0.00
6	121.1	Unsaturated	Unsaturated	12	5	0.0	0	726.6	726.6	24.1	0.99	0.531	0.318	Non-Liq.	0.00
7	121.1	Unsaturated	Unsaturated	12	5	0.0	0	847.7	847.7	22.9	0.99	0.530	0.290	Non-Liq.	0.00
8	121.1	Unsaturated	Unsaturated	12	5	0.0	0	968.8	968.8	21.8	0.98	0.528	0.270	Non-Liq.	0.00
9	121.1	Unsaturated	Unsaturated	12	5	0.0	0	1089.9	1089.9	22.0	0.98	0.526	0.272	Non-Liq.	0.00
10	121.1	Unsaturated	Unsaturated	18	10	73.4	0	1211.0	1211.0	36.0	0.98	0.524	1.622	Non-Liq.	0.00
11	121.1	Unsaturated	Saturated	18	10	73.4	0	1332.1	1269.7	35.1	0.97	0.548	1.321	2.4	0.00
12	121.1	Unsaturated	Saturated	18	10	73.4	0	1453.2	1328.4	34.2	0.97	0.569	1.105	1.9	0.00
13	121.1	Unsaturated	Saturated	18	10	73.4	0	1574.3	1387.1	33.4	0.97	0.588	0.933	1.6	0.00
14	121.1	Unsaturated	Saturated	18	10	73.4	0	1695.4	1445.8	32.7	0.96	0.606	0.806	1.3	0.00
15	121.1	Unsaturated	Saturated	22	15	73.4	0	1816.5	1504.5	41.3	0.96	0.621	2.000	3.2	0.00
16	121.1	Unsaturated	Saturated	22	15	73.4	0	1937.6	1563.2	40.6	0.96	0.635	2.000	3.1	0.00
17	121.1	Unsaturated	Saturated	22	15	73.4	0	2058.7	1621.9	39.9	0.95	0.647	2.000	3.1	0.00
18	121.1	Unsaturated	Saturated	22	15	73.4	0	2179.8	1680.6	39.2	0.95	0.659	2.000	Clay	0.00
19	121.1	Unsaturated	Saturated	22	15	73.4	0	2300.9	1739.3	38.6	0.94	0.669	2.000	Clay	0.00
20	121.1	Unsaturated	Saturated	11	20	0.0	0	2422.0	1798.0	15.9	0.94	0.678	0.173	Clay	0.00
21	121.1	Unsaturated	Saturated	11	20	0.0	0	2543.1	1856.7	15.6	0.93	0.686	0.168	Clay	0.00
22	121.1	Unsaturated	Saturated	11	20	0.0	0	2664.2	1915.4	15.2	0.93	0.694	0.164	Clay	0.00
23	121.1	Unsaturated	Saturated	11	20	0.0	0	2785.3	1974.1	14.9	0.93	0.700	0.161	Clay	0.00
24	121.1	Unsaturated	Saturated	11	20	0.0	0	2906.4	2032.8	14.5	0.92	0.706	0.157	Clay	0.00
25	121.1	Unsaturated	Saturated	19	25	27.0	0	3027.5	2091.5	30.7	0.92	0.711	0.525	0.7	0.10
26	121.1	Unsaturated	Saturated	19	25	27.0	0	3148.6	2150.2	30.3	0.91	0.716	0.493	0.7	0.11
27	121.1	Unsaturated	Saturated	19	25	27.0	0	3269.7	2208.9	29.9	0.91	0.720	0.464	0.6	0.11
28	121.1	Unsaturated	Saturated	19	25	27.0	0	3390.8	2267.6	30.9	0.90	0.724	0.524	0.7	0.10
29	121.1	Unsaturated	Saturated	19	25	27.0	0	3511.9	2326.3	30.5	0.90	0.727	0.494	0.7	0.10
30	121.1	Unsaturated	Saturated	40	30	27.0	0	3633.0	2385.0	61.7	0.89	0.729	1.794	2.5	0.00
31	121.1	Unsaturated	Saturated	40	30	27.0	0	3754.1	2443.7	61.2	0.89	0.732	1.773	2.4	0.00
32	121.1	Unsaturated	Saturated	40	30	27.0	0	3875.2	2502.4	60.7	0.88	0.733	1.753	2.4	0.00
33	121.1	Unsaturated	Saturated	40	30	27.0	0	3996.3	2561.1	60.3	0.88	0.735	1.734	2.4	0.00
34	121.1	Unsaturated	Saturated	40	30	27.0	0	4117.4	2619.8	59.9	0.87	0.736	1.715	2.3	0.00
35	121.1	Unsaturated	Saturated	24	35	57.0	7	4238.5	2678.5	36.0	0.87	0.737	1.190	1.6	0.00
36	121.1	Unsaturated	Saturated	24	35	57.0	7	4359.6	2737.2	35.6	0.86	0.737	1.092	1.5	0.00
37	121.1	Unsaturated	Saturated	24	35	57.0	7	4480.7	2795.9	35.3	0.86	0.738	1.007	1.4	0.00
38	121.1	Unsaturated	Saturated	24	35	57.0	7	4601.8	2854.6	35.0	0.85	0.738	0.933	1.3	0.04
39	121.1	Unsaturated	Saturated	24	35	57.0	7	4722.9	2913.3	34.6	0.85	0.737	0.869	1.2	0.05
40	121.1	Unsaturated	Saturated	43	40	0.0	0	4844.0	2972.0	56.3	0.84	0.737	1.613	2.2	0.00
41	121.1	Unsaturated	Saturated	43	40	0.0	0	4965.1	3030.7	55.9	0.84	0.736	1.597	2.2	0.00
42	121.1	Unsaturated	Saturated	43	40	0.0	0	5086.2	3089.4	55.6	0.83	0.735	1.582	2.2	0.00
43	121.1	Unsaturated	Saturated	43	40	0.0	0	5207.3	3148.1	55.2	0.83	0.734	1.567	2.1	0.00
44	121.1	Unsaturated	Saturated	43	40	0.0	0	5328.4	3206.8	54.9	0.82	0.733	1.553	2.1	0.00
45	121.1	Unsaturated	Saturated	49	45	0.0	0	5449.5	3265.5	62.2	0.82	0.732	1.538	2.1	0.00
46	121.1	Saturated	Saturated	49	45	0.0	0	5570.6	3324.2	62.0	0.81	0.730	1.532	2.1	0.00
47	121.1	Saturated	Saturated	49	45	0.0	0	5691.7	3382.9	61.8	0.81	0.729	1.525	2.1	0.00
48	121.1	Saturated	Saturated	49	45	0.0	0	5812.8	3441.6	61.7	0.80	0.727	1.518	2.1	0.00
49	121.1	Saturated	Saturated	49	45	0.0	0	5933.9	3500.3	61.5	0.80	0.725	1.512	2.1	0.00
50	121.1	Saturated	Saturated	44	50	6.0	0	6055.0	3559.0	55.1	0.79	0.723	1.505	2.1	0.00
														Total Liquefaction Settlement, S =	**0.61 inches**

Fenagh Engineering & Testing

Project: Centennial High School
File No.: 8696
Description Liquefaction Analysis (PGA_M)
Boring No: B-10

LIQUEFACTION EVALUATION (Idriss & Boulanger, EERI NO 12)

EARTHQUAKE INFORMATION:

Earthquake Magnitude (M):	7.3
Peak Ground Horizontal Acceleration, PGA (g):	0.83
Calculated Mag.Wtg.Factor:	1.068

GROUNDWATER INFORMATION:

Current Groundwater Level (ft):	47.0
Historically Highest Groundwater Level* (ft):	10.0
Unit Weight of Water (pcf):	62.4

* Based on California Geological Survey Seismic Hazard Evaluation Report

BOREHOLE AND SAMPLER INFORMATION:

Borehole Diameter (inches):	5
SPT Sampler with room for Liner (Y/N):	N

LIQUEFACTION BOUNDARY:

Plastic Index Cut Off (PI):	12
Minimum Liquefaction FS:	1.3

Depth to Base Layer (feet)	Total Unit Weight (pcf)	Current Water Level (feet)	Historical Water Level (feet)	Field SPT Blowcount N	Depth of SPT Blowcount (feet)	Fines Content #200 Sieve (%)	Plastic Index (PI)	Vetical Stress σ_{vc}, (psf)	Effective Vert. Stress σ_{vc}', (psf)	Fines Corrected $(N_1)_{60\text{-}cs}$	Stress Reduction Coeff, r_d	Cyclic Shear Ratio CSR	Cyclic Resistance Ratio (CRR)	Factor of Safety CRR/CSR (F.S.)	Liquefaction Settlment ΔS_i (inches)
1	136.7	Unsaturated	Unsaturated	10	5	0.0	0	136.7	136.7	20.8	1.00	0.539	0.253	Non-Liq.	0.00
2	136.7	Unsaturated	Unsaturated	10	5	0.0	0	273.4	273.4	20.8	1.00	0.537	0.253	Non-Liq.	0.00
3	136.7	Unsaturated	Unsaturated	10	5	0.0	0	410.1	410.1	20.8	1.00	0.536	0.253	Non-Liq.	0.00
4	136.7	Unsaturated	Unsaturated	10	5	0.0	0	546.8	546.8	20.8	1.00	0.534	0.253	Non-Liq.	0.00
5	136.7	Unsaturated	Unsaturated	10	5	0.0	0	683.5	683.5	21.2	0.99	0.533	0.260	Non-Liq.	0.00
6	136.7	Unsaturated	Unsaturated	10	5	0.0	0	820.2	820.2	19.8	0.99	0.531	0.239	Non-Liq.	0.00
7	136.7	Unsaturated	Unsaturated	10	5	0.0	0	956.9	956.9	18.6	0.99	0.530	0.224	Non-Liq.	0.00
8	136.7	Unsaturated	Unsaturated	10	5	0.0	0	1093.6	1093.6	17.6	0.98	0.528	0.208	Non-Liq.	0.00
9	136.7	Unsaturated	Unsaturated	10	5	0.0	0	1230.3	1230.3	17.7	0.98	0.526	0.206	Non-Liq.	0.00
10	136.7	Unsaturated	Unsaturated	16	10	0.0	0	1367.0	1367.0	26.2	0.98	0.524	0.371	Non-Liq.	0.00
11	136.7	Unsaturated	Saturated	16	10	0.0	0	1503.7	1441.3	25.3	0.97	0.545	0.337	Clay	0.00
12	136.7	Unsaturated	Saturated	16	10	0.0	0	1640.4	1515.6	24.5	0.97	0.563	0.310	Clay	0.00
13	136.7	Unsaturated	Saturated	16	10	0.0	0	1777.1	1589.9	23.8	0.97	0.579	0.289	Clay	0.00
14	136.7	Unsaturated	Saturated	16	10	0.0	0	1913.8	1664.2	23.1	0.96	0.594	0.272	Clay	0.00
15	136.7	Unsaturated	Saturated	19	15	55.0	11	2050.5	1738.5	35.3	0.96	0.607	1.278	2.1	0.00
16	136.7	Unsaturated	Saturated	19	15	55.0	11	2187.2	1812.8	34.6	0.96	0.618	1.087	1.8	0.00
17	136.7	Unsaturated	Saturated	19	15	55.0	11	2323.9	1887.1	34.0	0.95	0.628	0.942	1.5	0.00
18	136.7	Unsaturated	Saturated	19	15	55.0	11	2460.6	1961.4	33.3	0.95	0.637	0.830	1.3	0.00
19	136.7	Unsaturated	Saturated	19	15	55.0	11	2597.3	2035.7	32.8	0.94	0.645	0.741	1.1	0.06
20	126.8	Unsaturated	Saturated	17	20	70.0	9	2724.1	2100.1	29.3	0.94	0.653	0.449	0.7	0.13
21	126.8	Unsaturated	Saturated	17	20	70.0	9	2850.9	2164.5	28.8	0.93	0.660	0.422	0.6	0.14
22	126.8	Unsaturated	Saturated	17	20	70.0	9	2977.7	2228.9	28.4	0.93	0.666	0.398	0.6	0.15
23	126.8	Unsaturated	Saturated	17	20	70.0	9	3104.5	2293.3	27.9	0.93	0.672	0.378	0.6	0.16
24	126.8	Unsaturated	Saturated	17	20	70.0	9	3231.3	2357.7	27.5	0.92	0.677	0.360	0.5	0.17
25	126.8	Unsaturated	Saturated	35	25	70.0	0	3358.1	2422.1	53.5	0.92	0.681	1.844	2.7	0.00
26	126.8	Unsaturated	Saturated	35	25	70.0	0	3484.9	2486.5	53.0	0.91	0.685	1.820	2.7	0.00
27	126.8	Unsaturated	Saturated	35	25	70.0	0	3611.7	2550.9	52.6	0.91	0.689	1.798	2.6	0.00
28	126.8	Unsaturated	Saturated	35	25	70.0	0	3738.5	2615.3	54.6	0.90	0.692	1.776	2.6	0.00
29	126.8	Unsaturated	Saturated	35	25	70.0	0	3865.3	2679.7	54.2	0.90	0.694	1.755	2.5	0.00
30	126.8	Unsaturated	Saturated	34	30	70.0	0	3992.1	2744.1	52.4	0.89	0.697	1.735	2.5	0.00
31	126.8	Unsaturated	Saturated	34	30	70.0	0	4118.9	2808.5	52.0	0.89	0.698	1.715	2.5	0.00
32	126.8	Unsaturated	Saturated	34	30	70.0	0	4245.7	2872.9	51.7	0.88	0.700	1.696	2.4	0.00
33	126.8	Unsaturated	Saturated	34	30	70.0	0	4372.5	2937.3	51.2	0.88	0.701	1.677	2.4	0.00
34	126.8	Unsaturated	Saturated	34	30	70.0	0	4499.3	3001.7	50.8	0.87	0.702	1.659	2.4	0.00
35	126.8	Unsaturated	Saturated	15	35	63.0	0	4626.1	3066.1	22.5	0.87	0.703	0.228	0.3	0.25
36	126.8	Unsaturated	Saturated	15	35	63.0	0	4752.9	3130.5	22.3	0.86	0.703	0.224	0.3	0.25
37	126.8	Unsaturated	Saturated	15	35	63.0	0	4879.7	3194.9	22.0	0.86	0.703	0.219	0.3	0.25
38	126.8	Unsaturated	Saturated	15	35	63.0	0	5006.5	3259.3	21.8	0.85	0.703	0.215	0.3	0.26
39	126.8	Unsaturated	Saturated	15	35	63.0	0	5133.3	3323.7	21.6	0.85	0.703	0.212	0.3	0.26
40	126.8	Unsaturated	Saturated	27	40	63.0	0	5260.1	3388.1	37.5	0.84	0.702	1.561	2.2	0.00
41	126.8	Unsaturated	Saturated	27	40	63.0	0	5386.9	3452.5	37.2	0.84	0.701	1.427	2.0	0.00
42	126.8	Unsaturated	Saturated	27	40	63.0	0	5513.7	3516.9	36.9	0.83	0.700	1.306	1.9	0.00
43	126.8	Unsaturated	Saturated	27	40	63.0	0	5640.5	3581.3	36.6	0.83	0.699	1.207	1.7	0.00
44	126.8	Unsaturated	Saturated	27	40	63.0	0	5767.3	3645.7	36.3	0.82	0.698	1.120	1.6	0.00
45	126.8	Unsaturated	Saturated	30	45	63.0	0	5894.1	3710.1	40.4	0.82	0.697	1.489	2.1	0.00
46	126.8	Unsaturated	Saturated	30	45	63.0	0	6020.9	3774.5	40.1	0.81	0.695	1.475	2.1	0.00
47	126.8	Unsaturated	Saturated	30	45	63.0	0	6147.7	3838.9	39.7	0.81	0.694	1.462	2.1	0.00
48	126.8	Saturated	Saturated	30	45	63.0	0	6274.5	3903.3	39.6	0.80	0.692	1.456	2.1	0.00
49	126.8	Saturated	Saturated	30	45	63.0	0	6401.3	3967.7	39.4	0.80	0.690	1.449	2.1	0.00
50	126.8	Saturated	Saturated	36	50	5.0	0	6528.1	4032.1	43.1	0.79	0.688	1.443	2.1	0.00
												Total Liquefaction Settlement, S =			**2.06 inches**

Fenagh Engineering & Testing

Project: Centennial High School
File No.: 8696
Description Liquefaction Analysis (PGA_M)
Boring No: B-11

LIQUEFACTION EVALUATION (Idriss & Boulanger, EERI NO 12)

EARTHQUAKE INFORMATION:

Earthquake Magnitude (M):	7.3
Peak Ground Horizontal Acceleration, PGA (g):	0.83
Calculated Mag.Wtg.Factor:	1.068

GROUNDWATER INFORMATION:

Current Groundwater Level (ft):	47.0
Historically Highest Groundwater Level* (ft):	10.0
Unit Weight of Water (pcf):	62.4

* Based on California Geological Survey Seismic Hazard Evaluation Report

BOREHOLE AND SAMPLER INFORMATION:

Borehole Diameter (inches):	5
SPT Sampler with room for Liner (Y/N):	N

LIQUEFACTION BOUNDARY:

Plastic Index Cut Off (PI):	12
Minimum Liquefaction FS:	1.3

Depth to Base Layer (feet)	Total Unit Weight (pcf)	Current Water Level (feet)	Historical Water Level (feet)	Field SPT Blowcount N	Depth of SPT Blowcount (feet)	Fines Content #200 Sieve (%)	Plastic Index (PI)	Vetical Stress σ_{vc}, (psf)	Effective Vert. Stress σ_{vc}', (psf)	Fines Corrected $(N_1)_{60\text{-}cs}$	Stress Reduction Coeff, r_d	Cyclic Shear Ratio CSR	Cyclic Resistance Ratio (CRR)	Factor of Safety CRR/CSR (F.S.)	Liquefaction Settlment ΔS_i (inches)
1	128.1	Unsaturated	Unsaturated	18	5	0.0	0	128.1	128.1	37.4	1.00	0.539	2.000	Non-Liq.	0.00
2	128.1	Unsaturated	Unsaturated	18	5	0.0	0	256.2	256.2	37.4	1.00	0.537	2.000	Non-Liq.	0.00
3	128.1	Unsaturated	Unsaturated	18	5	0.0	0	384.3	384.3	37.4	1.00	0.536	2.000	Non-Liq.	0.00
4	128.1	Unsaturated	Unsaturated	18	5	0.0	0	512.4	512.4	35.0	1.00	0.534	1.316	Non-Liq.	0.00
5	128.1	Unsaturated	Unsaturated	18	5	0.0	0	640.5	640.5	34.8	0.99	0.533	1.251	Non-Liq.	0.00
6	128.1	Unsaturated	Unsaturated	18	5	0.0	0	768.6	768.6	33.1	0.99	0.531	0.913	Non-Liq.	0.00
7	128.1	Unsaturated	Unsaturated	18	5	0.0	0	896.7	896.7	31.7	0.99	0.530	0.722	Non-Liq.	0.00
8	128.1	Unsaturated	Unsaturated	18	5	0.0	0	1024.8	1024.8	30.4	0.98	0.528	0.603	Non-Liq.	0.00
9	128.1	Unsaturated	Unsaturated	18	5	0.0	0	1152.9	1152.9	30.9	0.98	0.526	0.645	Non-Liq.	0.00
10	128.1	Unsaturated	Unsaturated	16	10	37.0	15	1281.0	1281.0	32.4	0.98	0.524	0.807	Non-Liq.	0.00
11	128.1	Unsaturated	Saturated	16	10	37.0	15	1409.1	1346.7	31.5	0.97	0.547	0.694	Non-Liq.	0.00
12	128.1	Unsaturated	Saturated	16	10	37.0	15	1537.2	1412.4	30.7	0.97	0.566	0.605	Non-Liq.	0.00
13	128.1	Unsaturated	Saturated	16	10	37.0	15	1665.3	1478.1	29.9	0.97	0.584	0.537	Non-Liq.	0.00
14	128.1	Unsaturated	Saturated	16	10	37.0	15	1793.4	1543.8	29.2	0.96	0.600	0.485	Non-Liq.	0.00
15	128.1	Unsaturated	Saturated	18	15	0.0	0	1921.5	1609.5	28.8	0.96	0.614	0.458	Clay	0.00
16	128.1	Unsaturated	Saturated	18	15	0.0	0	2049.6	1675.2	28.2	0.96	0.627	0.419	Clay	0.00
17	128.1	Unsaturated	Saturated	18	15	0.0	0	2177.7	1740.9	27.5	0.95	0.638	0.388	Clay	0.00
18	128.1	Unsaturated	Saturated	18	15	0.0	0	2305.8	1806.6	26.9	0.95	0.648	0.362	Clay	0.00
19	128.1	Unsaturated	Saturated	18	15	0.0	0	2433.9	1872.3	26.3	0.94	0.657	0.340	Clay	0.00
20	128.1	Unsaturated	Saturated	21	20	66.3	0	2562.0	1938.0	35.9	0.94	0.665	1.357	2.0	0.00
21	128.1	Unsaturated	Saturated	21	20	66.3	0	2690.1	2003.7	35.3	0.93	0.673	1.186	1.8	0.00
22	128.1	Unsaturated	Saturated	21	20	66.3	0	2818.2	2069.4	34.8	0.93	0.679	1.050	1.5	0.00
23	128.1	Unsaturated	Saturated	21	20	66.3	0	2946.3	2135.1	34.3	0.93	0.685	0.939	1.4	0.00
24	128.1	Unsaturated	Saturated	21	20	66.3	0	3074.4	2200.8	33.8	0.92	0.690	0.848	1.2	0.05
25	128.1	Unsaturated	Saturated	28	25	66.3	11	3202.5	2266.5	43.7	0.92	0.694	1.874	2.7	0.00
26	128.1	Unsaturated	Saturated	28	25	66.3	11	3330.6	2332.2	43.1	0.91	0.698	1.849	2.6	0.00
27	128.1	Unsaturated	Saturated	28	25	66.3	11	3458.7	2397.9	42.6	0.91	0.702	1.825	2.6	0.00
28	128.1	Unsaturated	Saturated	28	25	66.3	11	3586.8	2463.6	44.4	0.90	0.705	1.802	2.6	0.00
29	128.1	Unsaturated	Saturated	28	25	66.3	11	3714.9	2529.3	43.9	0.90	0.707	1.780	2.5	0.00
30	128.1	Unsaturated	Saturated	21	30	66.3	0	3843.0	2595.0	32.8	0.89	0.709	0.671	0.9	0.07
31	128.1	Unsaturated	Saturated	21	30	66.3	0	3971.1	2660.7	32.4	0.89	0.711	0.626	0.9	0.07
32	128.1	Unsaturated	Saturated	21	30	66.3	0	4099.2	2726.4	32.0	0.88	0.712	0.586	0.8	0.08
33	128.1	Unsaturated	Saturated	21	30	66.3	0	4227.3	2792.1	31.6	0.88	0.713	0.552	0.8	0.08
34	128.1	Unsaturated	Saturated	21	30	66.3	0	4355.4	2857.8	31.3	0.87	0.714	0.521	0.7	0.09
35	128.1	Unsaturated	Saturated	26	35	86.4	0	4483.5	2923.5	38.2	0.87	0.714	1.661	2.3	0.00
36	128.1	Unsaturated	Saturated	26	35	86.4	0	4611.6	2989.2	37.8	0.86	0.714	1.644	2.3	0.00
37	128.1	Unsaturated	Saturated	26	35	86.4	0	4739.7	3054.9	37.4	0.86	0.714	1.586	2.2	0.00
38	128.1	Unsaturated	Saturated	26	35	86.4	0	4867.8	3120.6	37.1	0.85	0.714	1.431	2.0	0.00
39	128.1	Unsaturated	Saturated	26	35	86.4	0	4995.9	3186.3	36.7	0.85	0.713	1.306	1.8	0.00
40	128.1	Unsaturated	Saturated	26	40	86.4	0	5124.0	3252.0	36.4	0.84	0.712	1.199	1.7	0.00
41	128.1	Unsaturated	Saturated	26	40	86.4	0	5252.1	3317.7	36.0	0.84	0.711	1.106	1.6	0.00
42	128.1	Unsaturated	Saturated	26	40	86.4	0	5380.2	3383.4	35.7	0.83	0.710	1.025	1.4	0.00
43	128.1	Unsaturated	Saturated	26	40	86.4	0	5508.3	3449.1	35.4	0.83	0.709	0.954	1.3	0.00
44	128.1	Unsaturated	Saturated	26	40	86.4	0	5636.4	3514.8	35.1	0.82	0.708	0.891	1.3	0.04
45	128.1	Unsaturated	Saturated	13	45	0.0	0	5764.5	3580.5	12.7	0.82	0.706	0.132	Clay	0.00
46	128.1	Unsaturated	Saturated	13	45	0.0	0	5892.6	3646.2	12.5	0.81	0.704	0.130	Clay	0.00
47	128.1	Unsaturated	Saturated	13	45	0.0	0	6020.7	3711.9	12.4	0.81	0.703	0.129	Clay	0.00
48	128.1	Saturated	Saturated	13	45	0.0	0	6148.8	3777.6	12.3	0.80	0.701	0.128	Clay	0.00
49	128.1	Saturated	Saturated	13	45	0.0	0	6276.9	3843.3	12.2	0.80	0.699	0.128	Clay	0.00
50	128.1	Saturated	Saturated	51	50	0.0	0	6405.0	3909.0	62.5	0.79	0.696	1.455	2.1	0.00
														Total Liquefaction Settlement, S =	**0.48 inches**

Fenagh Engineering & Testing

Project: Centennial High School
File No.: 8696
Description Liquefaction Analysis (PGA_M)
Boring No: B-12

LIQUEFACTION EVALUATION (Idriss & Boulanger, EERI NO 12)

EARTHQUAKE INFORMATION:

Earthquake Magnitude (M):	7.3
Peak Ground Horizontal Acceleration, PGA (g):	0.83
Calculated Mag.Wtg.Factor:	1.068

GROUNDWATER INFORMATION:

Current Groundwater Level (ft):	51.0
Historically Highest Groundwater Level* (ft):	10.0
Unit Weight of Water (pcf):	62.4

* Based on California Geological Survey Seismic Hazard Evaluation Report

BOREHOLE AND SAMPLER INFORMATION:

Borehole Diameter (inches):	5
SPT Sampler with room for Liner (Y/N):	N

LIQUEFACTION BOUNDARY:

Plastic Index Cut Off (PI):	12
Minimum Liquefaction FS:	1.3

Depth to Base Layer (feet)	Total Unit Weight (pcf)	Current Water Level (feet)	Historical Water Level (feet)	Field SPT Blowcount N	Depth of SPT Blowcount (feet)	Fines Content #200 Sieve (%)	Plastic Index (PI)	Vetical Stress σ_{vc}, (psf)	Effective Vert. Stress σ_{vc}', (psf)	Fines Corrected $(N_1)_{60\text{-}cs}$	Stress Reduction Coeff, r_d	Cyclic Shear Ratio CSR	Cyclic Resistance Ratio (CRR)	Factor of Safety CRR/CSR (F.S.)	Liquefaction Settlment ΔS_i (inches)
1	117.8	Unsaturated	Unsaturated	16	5	0.0	0	117.8	117.8	33.2	1.00	0.539	0.929	Non-Liq.	0.00
2	117.8	Unsaturated	Unsaturated	16	5	0.0	0	235.6	235.6	33.2	1.00	0.537	0.929	Non-Liq.	0.00
3	117.8	Unsaturated	Unsaturated	16	5	0.0	0	353.4	353.4	33.2	1.00	0.536	0.929	Non-Liq.	0.00
4	117.8	Unsaturated	Unsaturated	16	5	0.0	0	471.2	471.2	32.8	1.00	0.534	0.856	Non-Liq.	0.00
5	117.8	Unsaturated	Unsaturated	16	5	0.0	0	589.0	589.0	32.4	0.99	0.533	0.813	Non-Liq.	0.00
6	117.8	Unsaturated	Unsaturated	16	5	0.0	0	706.8	706.8	30.8	0.99	0.531	0.637	Non-Liq.	0.00
7	117.8	Unsaturated	Unsaturated	16	5	0.0	0	824.6	824.6	29.4	0.99	0.530	0.532	Non-Liq.	0.00
8	117.8	Unsaturated	Unsaturated	16	5	0.0	0	942.4	942.4	28.2	0.98	0.528	0.462	Non-Liq.	0.00
9	117.8	Unsaturated	Unsaturated	16	5	0.0	0	1060.2	1060.2	28.6	0.98	0.526	0.484	Non-Liq.	0.00
10	117.8	Unsaturated	Unsaturated	9	10	37.0	0	1178.0	1178.0	22.0	0.98	0.524	0.269	Non-Liq.	0.00
11	117.8	Unsaturated	Saturated	9	10	37.0	0	1295.8	1233.4	21.3	0.97	0.549	0.254	0.5	0.26
12	117.8	Unsaturated	Saturated	9	10	37.0	0	1413.6	1288.8	20.7	0.97	0.571	0.242	0.4	0.27
13	117.8	Unsaturated	Saturated	9	10	37.0	0	1531.4	1344.2	20.1	0.97	0.591	0.231	0.4	0.28
14	117.8	Unsaturated	Saturated	9	10	37.0	0	1649.2	1399.6	19.6	0.96	0.609	0.222	0.4	0.28
15	117.8	Unsaturated	Saturated	10	15	0.0	0	1767.0	1455.0	16.8	0.96	0.625	0.188	Clay	0.00
16	117.8	Unsaturated	Saturated	10	15	0.0	0	1884.8	1510.4	16.3	0.96	0.639	0.181	Clay	0.00
17	117.8	Unsaturated	Saturated	10	15	0.0	0	2002.6	1565.8	15.9	0.95	0.652	0.176	Clay	0.00
18	117.8	Unsaturated	Saturated	10	15	0.0	0	2120.4	1621.2	15.4	0.95	0.664	0.171	Clay	0.00
19	117.8	Unsaturated	Saturated	10	15	0.0	0	2238.2	1676.6	15.0	0.94	0.675	0.166	Clay	0.00
20	117.8	Unsaturated	Saturated	17	20	59.0	8	2356.0	1732.0	30.8	0.94	0.685	0.562	0.8	0.10
21	117.8	Unsaturated	Saturated	17	20	59.0	8	2473.8	1787.4	30.3	0.93	0.693	0.520	0.7	0.11
22	117.8	Unsaturated	Saturated	17	20	59.0	8	2591.6	1842.8	29.8	0.93	0.701	0.484	0.7	0.11
23	117.8	Unsaturated	Saturated	17	20	59.0	8	2709.4	1898.2	29.4	0.93	0.708	0.454	0.6	0.12
24	117.8	Unsaturated	Saturated	17	20	59.0	8	2827.2	1953.6	28.9	0.92	0.715	0.428	0.6	0.13
25	117.8	Unsaturated	Saturated	18	25	0.0	0	2945.0	2009.0	24.3	0.92	0.720	0.278	Clay	0.00
26	117.8	Unsaturated	Saturated	18	25	0.0	0	3062.8	2064.4	23.9	0.91	0.725	0.268	Clay	0.00
27	117.8	Unsaturated	Saturated	18	25	0.0	0	3180.6	2119.8	23.5	0.91	0.730	0.259	Clay	0.00
28	117.8	Unsaturated	Saturated	18	25	0.0	0	3298.4	2175.2	24.5	0.90	0.734	0.276	Clay	0.00
29	117.8	Unsaturated	Saturated	18	25	0.0	0	3416.2	2230.6	24.1	0.90	0.737	0.267	Clay	0.00
30	117.8	Unsaturated	Saturated	29	30	38.0	0	3534.0	2286.0	46.1	0.89	0.740	1.811	2.4	0.00
31	117.8	Unsaturated	Saturated	29	30	38.0	0	3651.8	2341.4	45.7	0.89	0.743	1.791	2.4	0.00
32	117.8	Unsaturated	Saturated	29	30	38.0	0	3769.6	2396.8	45.2	0.88	0.745	1.771	2.4	0.00
33	117.8	Unsaturated	Saturated	29	30	38.0	0	3887.4	2452.2	44.8	0.88	0.747	1.751	2.3	0.00
34	117.8	Unsaturated	Saturated	29	30	38.0	0	4005.2	2507.6	44.4	0.87	0.748	1.733	2.3	0.00
35	117.8	Unsaturated	Saturated	26	35	38.0	10	4123.0	2563.0	39.3	0.87	0.749	1.714	2.3	0.00
36	117.8	Unsaturated	Saturated	26	35	38.0	10	4240.8	2618.4	39.0	0.86	0.750	1.696	2.3	0.00
37	117.8	Unsaturated	Saturated	26	35	38.0	10	4358.6	2673.8	38.6	0.86	0.750	1.679	2.2	0.00
38	117.8	Unsaturated	Saturated	26	35	38.0	10	4476.4	2729.2	38.2	0.85	0.751	1.662	2.2	0.00
39	117.8	Unsaturated	Saturated	26	35	38.0	10	4594.2	2784.6	37.9	0.85	0.750	1.646	2.2	0.00
40	117.8	Unsaturated	Saturated	18	40	0.0	0	4712.0	2840.0	20.7	0.84	0.750	0.204	Clay	0.00
41	117.8	Unsaturated	Saturated	18	40	0.0	0	4829.8	2895.4	20.4	0.84	0.750	0.200	Clay	0.00
42	117.8	Unsaturated	Saturated	18	40	0.0	0	4947.6	2950.8	20.2	0.83	0.749	0.197	Clay	0.00
43	117.8	Unsaturated	Saturated	18	40	0.0	0	5065.4	3006.2	19.9	0.83	0.748	0.193	Clay	0.00
44	117.8	Unsaturated	Saturated	18	40	0.0	0	5183.2	3061.6	19.7	0.82	0.747	0.190	Clay	0.00
45	117.8	Unsaturated	Saturated	14	45	55.0	13	5301.0	3117.0	20.1	0.82	0.746	0.194	Non-Liq.	0.00
46	117.8	Unsaturated	Saturated	14	45	55.0	13	5418.8	3172.4	19.9	0.81	0.744	0.192	Non-Liq.	0.00
47	117.8	Unsaturated	Saturated	14	45	55.0	13	5536.6	3227.8	19.8	0.81	0.743	0.189	Non-Liq.	0.00
48	117.8	Unsaturated	Saturated	14	45	55.0	13	5654.4	3283.2	19.6	0.80	0.741	0.187	Non-Liq.	0.00
49	117.8	Unsaturated	Saturated	14	45	55.0	13	5772.2	3338.6	19.4	0.80	0.739	0.185	Non-Liq.	0.00
50	117.8	Unsaturated	Saturated	19	50	55.0	13	5890.0	3394.0	25.2	0.79	0.738	0.263	Non-Liq.	0.00
											Total Liquefaction Settlement, S =				**1.66 inches**

Fenagh Engineering and Testing
9070 Center Avenue
Rancho Cucamonga, CA 91730
www.fenaghengineering.com

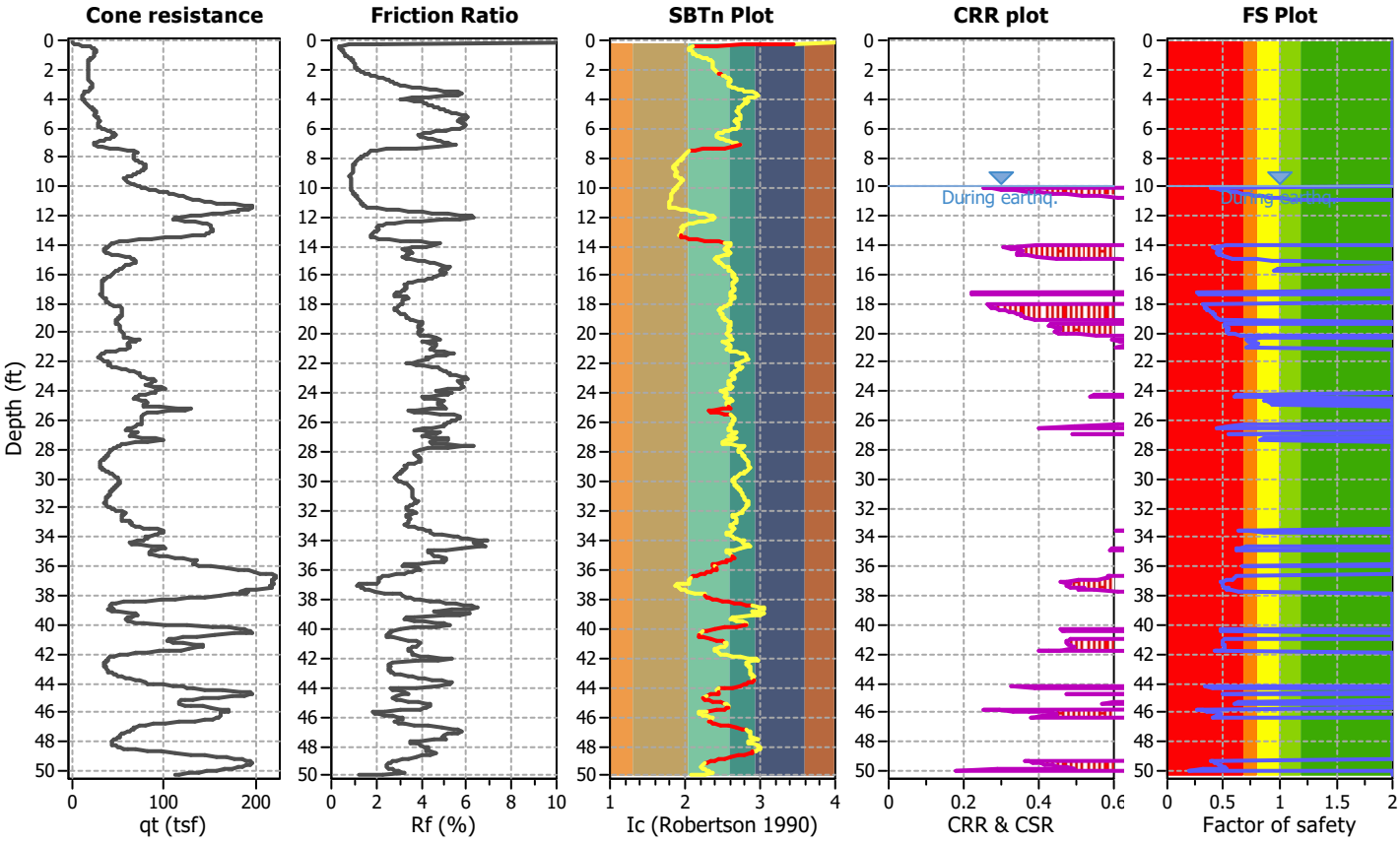
LIQUEFACTION ANALYSIS REPORT

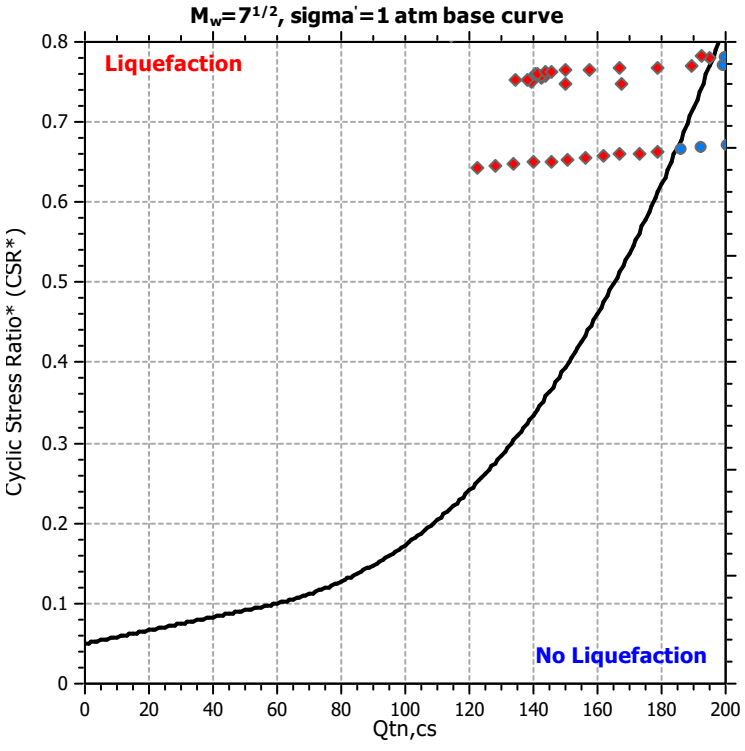
Project title : Centennial High School **Location : 2606 N. Central Ave, Compton, CA 90222**

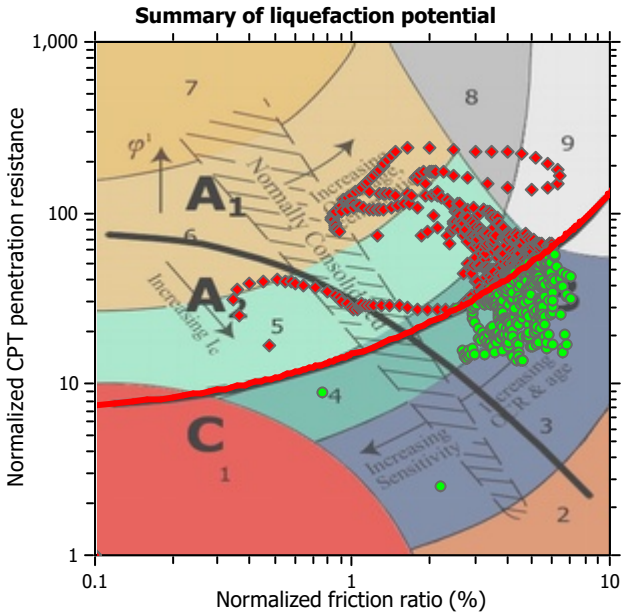
CPT file : CPT-1

Input parameters and analysis data

Analysis method:	NCEER (1998)	G.W.T. (in-situ):	50.00 ft	Use fill:	No	Clay like behavior applied:	Sands only
Fines correction method:	NCEER (1998)	G.W.T. (earthq.):	10.00 ft	Fill height:	N/A	Limit depth applied:	No
Points to test:	Based on Ic value	Average results interval:	3	Fill weight:	N/A	Limit depth:	N/A
Earthquake magnitude M_w:	7.30	Ic cut-off value:	2.60	Trans. detect. applied:	Yes	MSF method:	Method based
Peak ground acceleration:	0.83	Unit weight calculation:	Based on SBT	K_σ applied:	Yes		

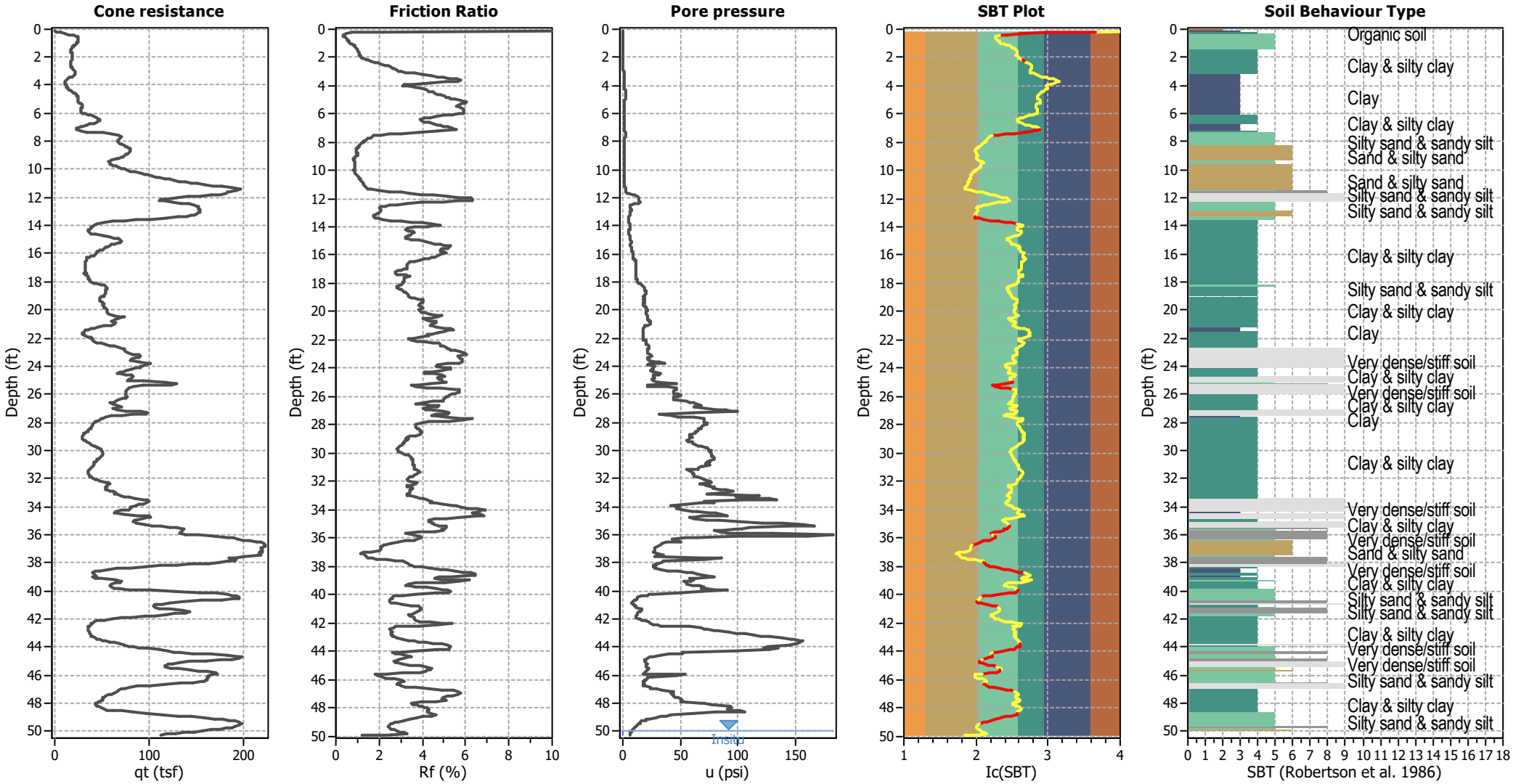






Zone A_1: Cyclic liquefaction likely depending on size and duration of cyclic loading
Zone A_2: Cyclic liquefaction and strength loss likely depending on loading and ground geometry
Zone B: Liquefaction and post-earthquake strength loss unlikely, check cyclic softening
Zone C: Cyclic liquefaction and strength loss possible depending on soil plasticity, brittleness/sensitivity, strain to peak undrained strength and ground geometry

CPT basic interpretation plots



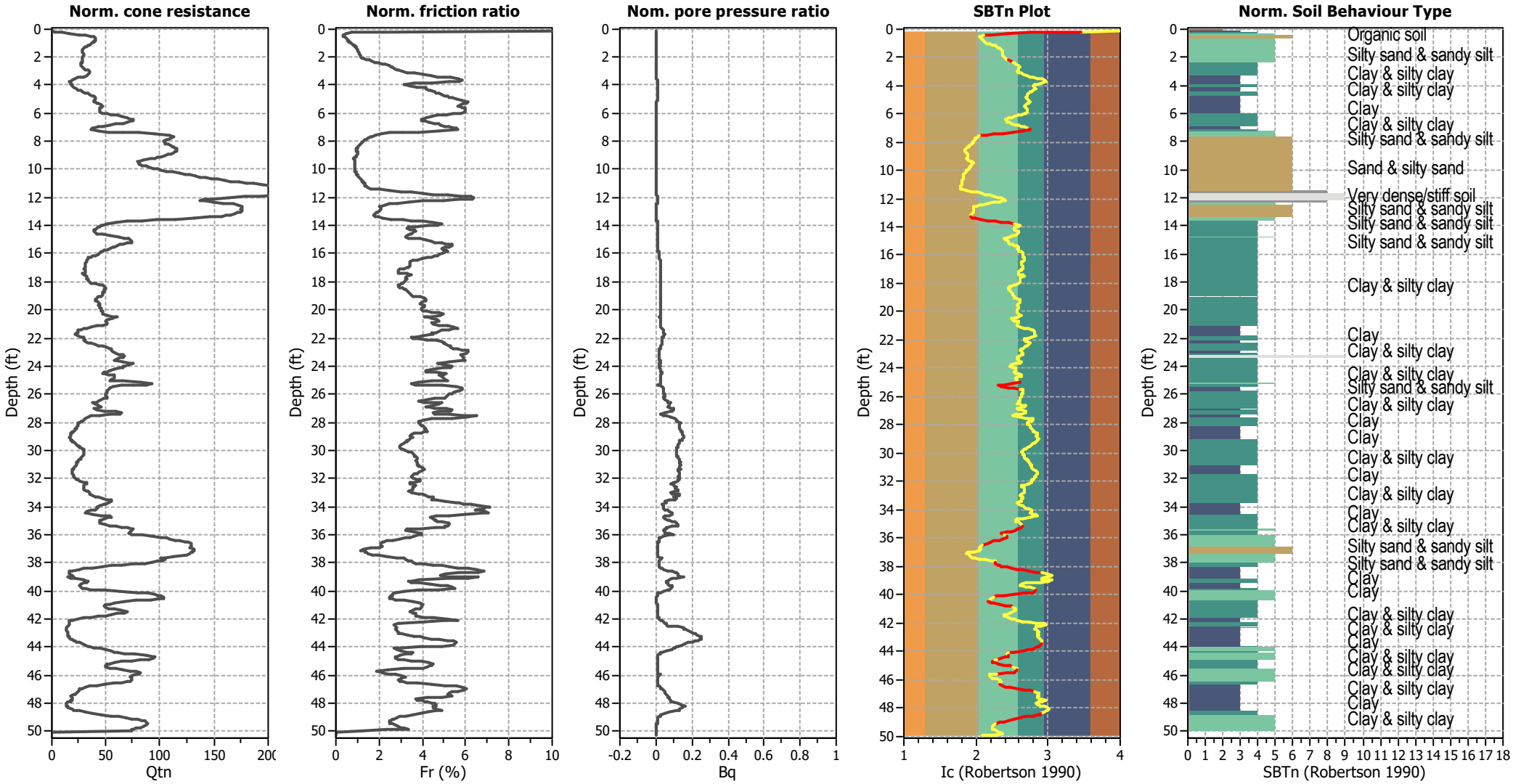
Input parameters and analysis data

Analysis method:	NCEER (1998)	Depth to water table (erthq.):	10.00 ft	Fill weight:	N/A
Fines correction method:	NCEER (1998)	Average results interval:	3	Transition detect. applied:	Yes
Points to test:	Based on Ic value	Ic cut-off value:	2.60	K_σ applied:	Yes
Earthquake magnitude M_w:	7.30	Unit weight calculation:	Based on SBT	Clay like behavior applied:	Sands only
Peak ground acceleration:	0.83	Use fill:	No	Limit depth applied:	No
Depth to water table (insitu):	50.00 ft	Fill height:	N/A	Limit depth:	N/A

SBT legend

1. Sensitive fine grained
2. Organic material
3. Clay to silty clay
4. Clayey silt to silty
5. Silty sand to sandy silt
6. Clean sand to silty sand
7. Gravely sand to sand
8. Very stiff sand to
9. Very stiff fine grained

CPT basic interpretation plots (normalized)



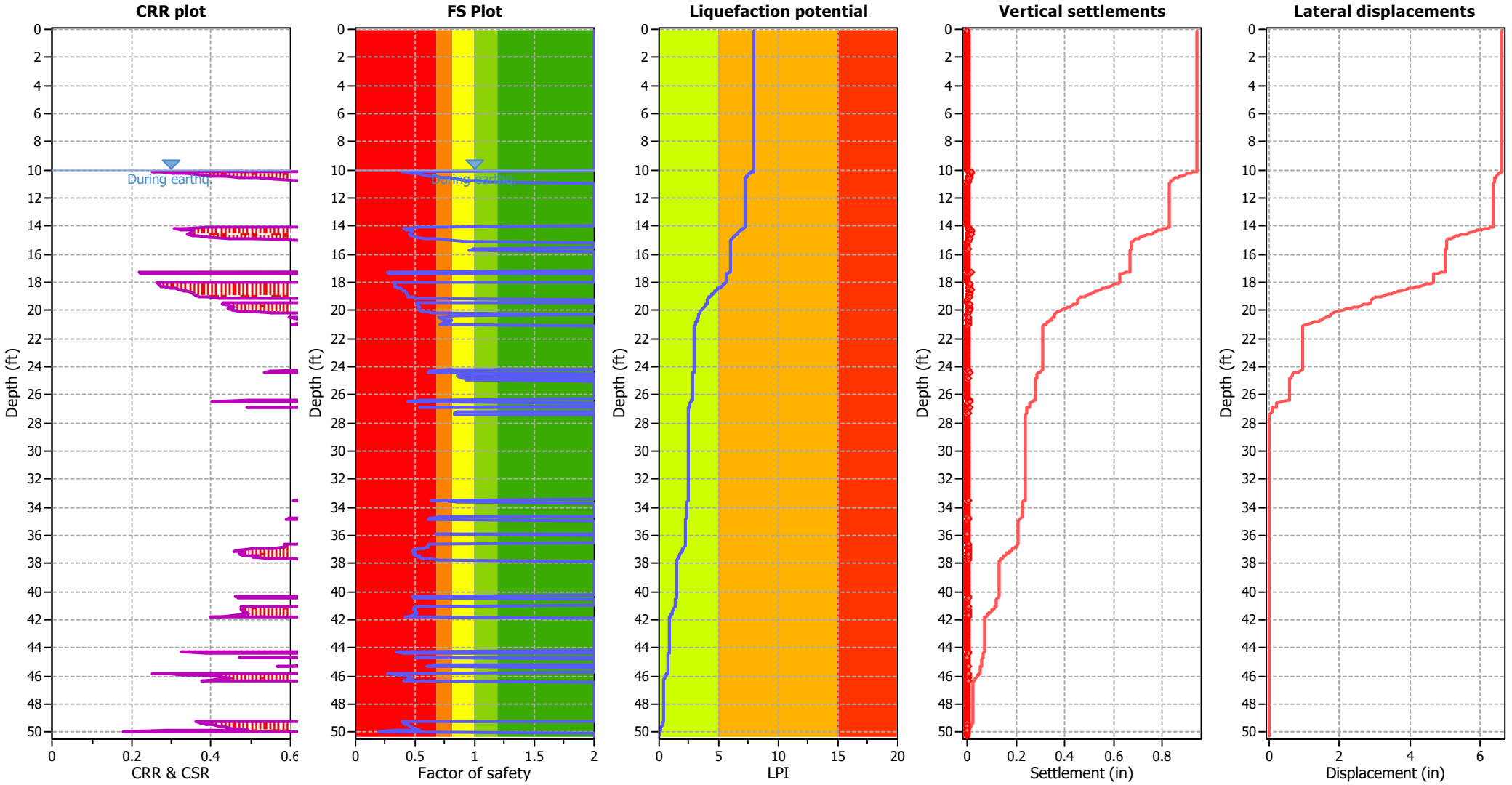
Input parameters and analysis data

Analysis method:	NCEER (1998)	Depth to water table (erthq.):	10.00 ft	Fill weight:	N/A
Fines correction method:	NCEER (1998)	Average results interval:	3	Transition detect. applied:	Yes
Points to test:	Based on Ic value	Ic cut-off value:	2.60	K_σ applied:	Yes
Earthquake magnitude M_w:	7.30	Unit weight calculation:	Based on SBT	Clay like behavior applied:	Sands only
Peak ground acceleration:	0.83	Use fill:	No	Limit depth applied:	No
Depth to water table (insitu):	50.00 ft	Fill height:	N/A	Limit depth:	N/A

SBTn legend

1. Sensitive fine grained
2. Organic material
3. Clay to silty clay
4. Clayey silt to silty
5. Silty sand to sandy silt
6. Clean sand to silty sand
7. Gravely sand to sand
8. Very stiff sand to
9. Very stiff fine grained

Liquefaction analysis overall plots



Input parameters and analysis data

Analysis method:	NCEER (1998)	Depth to water table (erthq.):	10.00 ft	Fill weight:	N/A
Fines correction method:	NCEER (1998)	Average results interval:	3	Transition detect. applied:	Yes
Points to test:	Based on Ic value	Ic cut-off value:	2.60	K_σ applied:	Yes
Earthquake magnitude M_w:	7.30	Unit weight calculation:	Based on SBT	Clay like behavior applied:	Sands only
Peak ground acceleration:	0.83	Use fill:	No	Limit depth applied:	No
Depth to water table (insitu):	50.00 ft	Fill height:	N/A	Limit depth:	N/A

F.S. color scheme

- Almost certain it will liquefy
- Very likely to liquefy
- Liquefaction and no liq. are equally likely
- Unlike to liquefy
- Almost certain it will not liquefy

LPI color scheme

- Very high risk
- High risk
- Low risk

:: Field input data ::

Point ID	Depth (ft)	q_c (tsf)	f_s (tsf)	u (tsf)	Fines content (%)	Unit weight (pcf)
1	0.09	0.00	0.02	0.00	N/A	120.90
2	0.14	-0.09	0.03	0.00	100.00	87.36
3	0.22	0.77	0.03	0.00	94.48	87.36
4	0.28	3.95	0.04	0.00	43.66	91.19
5	0.36	11.67	0.05	0.09	27.26	93.96
6	0.41	15.54	0.06	0.17	5.00	95.97
7	0.46	19.91	0.06	0.35	5.00	97.73
8	0.54	22.83	0.08	0.44	5.00	99.27
9	0.59	24.12	0.09	0.53	5.00	100.90
10	0.69	25.15	0.11	0.61	5.00	102.02
11	0.73	25.23	0.13	0.61	15.28	103.09
12	0.82	24.98	0.14	0.53	15.84	103.58
13	0.87	24.55	0.14	0.53	16.31	103.84
14	0.92	24.29	0.14	0.53	16.76	103.95
15	1.01	23.69	0.15	0.53	17.37	104.21
16	1.05	23.26	0.16	0.53	18.63	104.65
17	1.15	21.54	0.18	0.53	20.05	104.91
18	1.19	20.26	0.18	0.44	21.32	104.96
19	1.27	20.00	0.17	0.44	22.14	104.82
20	1.32	19.14	0.17	0.44	22.83	104.68
21	1.39	18.28	0.17	0.44	23.83	104.53
22	1.46	17.42	0.17	0.44	24.73	104.45
23	1.55	17.08	0.17	0.44	25.26	104.46
24	1.59	17.25	0.18	0.44	25.48	104.59
25	1.64	17.34	0.18	0.44	25.42	104.84
26	1.73	17.77	0.19	0.44	25.24	105.10
27	1.78	18.28	0.19	0.44	25.01	105.36
28	1.84	18.45	0.20	0.44	25.02	105.53
29	1.92	18.20	0.20	0.44	25.39	105.65
30	1.99	17.85	0.21	0.44	25.88	105.83
31	2.05	17.94	0.22	0.44	26.42	106.11
32	2.11	17.85	0.23	0.44	27.00	106.61
33	2.19	18.02	0.25	0.44	27.79	107.11
34	2.24	17.77	0.27	0.44	28.71	107.69
35	2.33	17.68	0.29	0.44	29.80	108.16
36	2.38	17.34	0.31	0.44	31.02	108.62
37	2.43	16.91	0.33	0.44	32.30	109.12
38	2.52	16.91	0.36	0.44	33.42	109.62
39	2.56	16.91	0.38	0.44	34.48	110.24
40	2.65	16.91	0.42	0.44	35.16	110.74
41	2.70	17.25	0.44	0.44	35.44	111.22
42	2.76	17.77	0.46	0.44	35.31	111.76
43	2.84	18.63	0.51	0.53	34.92	112.37
44	2.89	19.66	0.54	0.61	34.69	113.13
45	2.98	20.51	0.60	0.70	34.26	113.84
46	3.03	21.72	0.64	0.79	34.32	114.69
47	3.12	22.49	0.73	0.88	34.77	115.44
48	3.16	22.40	0.79	0.96	36.48	116.14

:: Field input data :: (continued)

Point ID	Depth (ft)	q_c (tsf)	f_s (tsf)	u (tsf)	Fines content (%)	Unit weight (pcf)
49	3.25	21.11	0.87	0.96	38.37	116.53
50	3.30	20.51	0.88	0.88	41.24	116.64
51	3.39	18.11	0.89	0.88	43.28	116.46
52	3.44	17.51	0.86	0.88	45.97	116.04
53	3.48	15.71	0.82	0.88	48.62	115.48
54	3.54	13.48	0.78	0.88	52.21	114.73
55	3.62	12.10	0.71	0.96	55.75	113.67
56	3.72	10.47	0.60	1.31	57.18	112.64
57	3.76	10.47	0.55	1.31	56.39	111.50
58	3.85	10.64	0.47	1.49	53.14	110.43
59	3.90	10.90	0.37	1.58	49.19	109.28
60	3.98	11.42	0.34	1.75	46.58	108.58
61	4.00	11.50	0.35	1.75	45.81	108.74
62	4.08	11.84	0.39	1.75	46.39	109.76
63	4.18	12.79	0.48	1.75	46.90	110.87
64	4.22	13.22	0.53	1.84	47.84	111.91
65	4.28	13.13	0.58	1.84	46.57	112.76
66	4.34	15.88	0.63	1.93	45.54	113.76
67	4.42	16.74	0.73	1.93	43.85	114.72
68	4.47	17.68	0.79	2.02	43.42	115.77
69	4.56	19.48	0.91	2.02	42.24	116.67
70	4.60	21.29	0.98	2.02	41.41	117.65
71	4.69	22.40	1.09	2.02	40.85	118.41
72	4.74	23.26	1.17	2.02	40.59	119.17
73	4.83	24.81	1.27	2.02	40.38	119.69
74	4.88	24.98	1.30	2.02	40.22	120.07
75	4.93	25.23	1.33	2.02	40.55	120.25
76	4.99	24.98	1.37	1.93	41.17	120.44
77	5.06	24.63	1.41	1.84	42.13	120.67
78	5.16	24.46	1.48	1.75	42.93	120.89
79	5.20	24.46	1.51	1.75	42.80	121.18
80	5.30	26.18	1.56	1.67	42.06	121.41
81	5.32	26.95	1.58	1.67	40.77	121.71
82	5.39	28.50	1.62	1.49	39.70	121.94
83	5.48	29.70	1.65	1.49	38.91	122.15
84	5.52	29.87	1.66	1.49	39.04	122.22
85	5.62	28.58	1.66	1.40	39.69	122.18
86	5.66	27.98	1.66	1.40	40.67	122.06
87	5.76	27.12	1.63	1.40	40.80	122.00
88	5.78	27.98	1.63	1.40	40.93	121.95
89	5.85	27.47	1.63	1.23	40.69	122.01
90	5.94	27.98	1.66	0.70	40.47	122.13
91	5.99	29.10	1.69	0.70	39.24	122.41
92	6.08	31.67	1.74	0.70	36.99	122.74
93	6.12	35.45	1.76	0.70	34.80	123.06
94	6.17	37.17	1.78	0.79	32.27	123.35
95	6.26	41.71	1.79	0.79	30.52	123.56
96	6.30	43.26	1.80	0.88	28.64	123.78

:: Field input data :: (continued)

Point ID	Depth (ft)	q_c (tsf)	f_s (tsf)	u (tsf)	Fines content (%)	Unit weight (pcf)
97	6.40	46.35	1.80	0.96	27.68	123.91
98	6.44	46.95	1.82	0.88	27.12	124.07
99	6.54	47.21	1.87	0.88	27.25	124.17
100	6.56	46.61	1.88	0.88	27.82	124.23
101	6.63	44.89	1.89	0.88	29.18	124.15
102	6.72	40.60	1.90	0.88	30.67	123.88
103	6.77	38.54	1.79	0.88	32.79	123.21
104	6.86	32.53	1.58	0.88	34.46	122.39
105	6.91	30.21	1.50	0.88	36.95	121.45
106	6.96	26.52	1.38	0.88	39.02	120.68
107	7.04	23.95	1.28	0.88	41.16	120.06
108	7.09	23.09	1.28	0.96	42.39	119.76
109	7.16	23.05	1.29	1.40	42.87	119.74
110	7.24	23.00	1.28	1.84	37.50	120.07
111	7.33	35.02	1.25	2.28	31.30	120.48
112	7.38	41.20	1.24	2.45	25.48	120.92
113	7.42	46.78	1.24	2.63	20.63	121.40
114	7.51	63.34	1.24	2.80	17.06	121.78
115	7.57	69.35	1.22	2.19	14.50	121.95
116	7.66	71.24	1.17	1.93	13.61	121.77
117	7.71	70.21	1.11	1.84	13.18	121.41
118	7.75	69.52	1.05	1.75	12.80	120.80
119	7.84	67.89	0.92	1.75	12.55	120.20
120	7.90	66.69	0.88	1.67	12.23	119.61
121	7.98	66.69	0.84	1.67	12.13	119.34
122	8.03	66.69	0.83	1.67	11.97	119.14
123	8.07	66.69	0.82	1.58	11.64	119.04
124	8.17	69.69	0.79	1.67	11.30	118.96
125	8.20	70.64	0.79	1.58	10.78	118.92
126	8.30	73.21	0.78	1.67	10.39	118.91
127	8.39	75.62	0.77	1.58	10.04	118.93
128	8.40	76.39	0.77	1.67	9.71	118.90
129	8.49	77.93	0.75	1.58	9.46	118.85
130	8.54	79.22	0.74	1.67	9.23	118.81
131	8.62	79.99	0.75	1.67	9.17	118.86
132	8.67	80.17	0.76	1.67	9.25	118.97
133	8.73	79.82	0.78	1.75	9.41	119.07
134	8.81	79.14	0.78	1.75	9.65	119.08
135	8.90	77.08	0.77	1.67	9.88	118.99
136	8.95	76.05	0.76	1.67	10.12	118.82
137	8.99	73.81	0.75	1.58	10.01	118.23
138	9.08	71.75	0.61	1.58	9.92	117.52
139	9.13	69.78	0.59	1.58	9.73	116.73
140	9.19	67.98	0.56	1.49	9.89	116.34
141	9.27	65.83	0.54	1.58	10.14	115.91
142	9.36	62.57	0.51	1.49	11.03	115.41
143	9.41	53.22	0.50	1.58	11.56	115.10
144	9.46	57.59	0.50	1.40	11.93	114.99

:: Field input data :: (continued)

Point ID	Depth (ft)	q_c (tsf)	f_s (tsf)	u (tsf)	Fines content (%)	Unit weight (pcf)
145	9.52	58.11	0.50	1.31	11.49	115.07
146	9.61	58.71	0.50	1.31	11.44	115.14
147	9.65	59.31	0.51	1.31	11.26	115.33
148	9.75	61.97	0.53	1.31	11.12	115.57
149	9.79	63.09	0.54	1.31	10.76	115.93
150	9.88	67.12	0.56	1.31	10.39	116.38
151	9.98	71.58	0.60	1.31	10.01	116.80
152	9.99	73.13	0.61	1.31	9.73	117.31
153	10.07	76.82	0.66	1.31	9.61	117.75
154	10.12	79.05	0.70	1.31	9.38	118.47
155	10.20	85.83	0.77	1.40	9.14	119.18
156	10.26	90.64	0.84	1.40	8.88	119.95
157	10.32	95.10	0.90	1.40	8.76	120.64
158	10.39	99.05	0.98	1.40	8.68	121.26
159	10.44	102.65	1.04	1.40	8.72	121.96
160	10.53	106.43	1.15	1.49	8.69	122.57
161	10.57	111.15	1.21	1.49	8.60	123.15
162	10.63	115.79	1.27	1.49	8.49	123.73
163	10.71	120.85	1.40	1.49	8.37	124.30
164	10.77	126.34	1.46	1.58	8.37	125.01
165	10.85	131.75	1.62	1.58	8.27	125.59
166	10.90	137.42	1.70	1.67	8.27	126.29
167	10.99	143.77	1.87	1.75	8.15	126.85
168	11.04	150.20	1.95	1.75	8.03	127.45
169	11.12	157.50	2.08	1.75	7.79	127.94
170	11.17	166.43	2.18	1.84	7.76	128.77
171	11.23	176.73	2.57	1.93	7.72	129.65
172	11.31	187.80	2.80	2.10	7.70	130.45
173	11.36	196.30	2.91	2.28	8.11	131.60
174	11.45	203.42	3.82	2.28	9.70	133.14
175	11.54	188.74	5.02	2.63	11.61	134.42
176	11.56	182.56	5.28	2.72	13.76	135.57
177	11.64	183.08	6.42	4.12	15.27	136.42
178	11.69	180.67	7.18	5.61	16.92	137.28
179	11.78	178.79	8.07	8.41	18.59	137.28
180	11.83	166.94	8.50	9.64	20.76	137.28
181	11.92	149.09	9.00	12.97	22.77	137.28
182	11.96	142.91	8.81	13.58	24.70	137.28
183	12.02	128.92	8.46	14.28	25.70	137.28
184	12.11	115.61	7.31	13.85	26.44	136.62
185	12.15	110.72	6.60	13.58	25.50	135.32
186	12.24	109.86	5.15	14.46	23.81	134.22
187	12.27	111.92	4.71	15.07	20.75	133.03
188	12.35	124.11	3.95	13.76	18.09	132.37
189	12.43	134.84	3.68	10.43	15.71	131.83
190	12.47	140.51	3.56	8.06	14.07	131.53
191	12.55	149.17	3.27	6.31	12.96	131.21
192	12.61	151.49	3.11	6.13	12.08	130.86

:: Field input data :: (continued)

Point ID	Depth (ft)	q_c (tsf)	f_s (tsf)	u (tsf)	Fines content (%)	Unit weight (pcf)
193	12.67	152.01	3.02	6.13	11.85	130.73
194	12.73	151.49	3.08	6.57	11.97	130.82
195	12.84	151.66	3.22	7.54	12.14	130.98
196	12.89	153.47	3.22	7.36	12.16	131.08
197	12.93	154.32	3.20	6.83	11.89	130.90
198	13.03	153.64	2.98	6.31	11.67	130.63
199	13.07	152.09	2.89	6.13	11.39	130.21
200	13.16	149.69	2.72	6.05	11.27	129.86
201	13.21	147.54	2.62	5.87	11.12	129.44
202	13.29	144.54	2.47	5.61	11.27	129.17
203	13.35	139.13	2.49	5.61	11.60	129.01
204	13.39	136.04	2.52	5.61	12.72	128.88
205	13.49	116.90	2.51	5.61	14.57	128.71
206	13.54	101.02	2.57	5.43	17.62	128.43
207	13.62	84.46	2.62	5.17	21.14	128.07
208	13.67	70.55	2.56	5.08	24.45	127.59
209	13.72	64.63	2.46	5.26	28.40	126.82
210	13.81	47.89	2.29	6.13	31.84	126.07
211	13.85	44.63	2.19	5.96	35.44	125.10
212	13.95	40.94	1.94	5.78	35.67	124.24
213	14.01	40.68	1.68	6.05	34.89	123.25
214	14.04	40.43	1.52	6.05	33.11	122.03
215	14.13	38.88	1.18	5.87	32.24	121.11
216	14.18	37.85	1.19	5.78	32.35	120.47
217	14.27	36.05	1.24	5.70	33.57	120.56
218	14.31	35.62	1.26	5.61	34.82	120.66
219	14.40	34.59	1.28	5.34	35.32	120.70
220	14.44	35.02	1.27	5.52	34.91	120.70
221	14.55	36.99	1.24	5.17	34.21	120.81
222	14.59	37.77	1.30	5.43	33.01	121.27
223	14.65	42.06	1.43	5.78	31.34	122.20
224	14.72	49.95	1.63	5.96	28.92	123.35
225	14.78	57.94	1.80	5.96	26.92	124.64
226	14.87	65.06	2.10	5.96	26.31	125.70
227	14.92	65.40	2.32	5.96	26.61	126.57
228	14.96	66.18	2.49	5.96	27.54	127.38
229	15.04	68.75	2.86	7.01	28.18	128.12
230	15.10	70.55	3.06	7.01	28.86	128.78
231	15.19	70.21	3.22	6.97	29.51	129.06
232	15.23	68.41	3.22	6.97	30.92	129.07
233	15.33	61.80	3.21	6.92	32.39	128.92
234	15.36	60.17	3.19	6.92	33.92	128.68
235	15.43	57.42	3.10	6.92	34.43	128.28
236	15.51	55.10	2.81	7.10	34.64	127.78
237	15.57	54.25	2.69	7.27	34.41	127.19
238	15.65	52.87	2.51	7.80	34.56	126.79
239	15.70	50.81	2.45	7.89	35.25	126.39
240	15.79	47.64	2.38	7.97	36.53	126.09

:: Field input data :: (continued)

Point ID	Depth (ft)	q_c (tsf)	f_s (tsf)	u (tsf)	Fines content (%)	Unit weight (pcf)
241	15.84	45.23	2.34	8.32	37.53	125.81
242	15.89	44.72	2.28	8.50	37.78	125.46
243	15.98	44.03	2.12	8.94	37.56	125.09
244	16.02	43.43	2.04	8.94	37.56	124.49
245	16.11	40.25	1.84	8.94	37.94	123.95
246	16.14	39.05	1.76	8.94	38.58	123.10
247	16.24	35.62	1.53	8.94	39.11	122.31
248	16.30	33.90	1.40	9.38	39.36	121.44
249	16.34	33.30	1.31	9.73	38.86	120.78
250	16.44	33.30	1.20	10.69	38.05	120.28
251	16.48	33.47	1.14	10.78	37.37	119.77
252	16.58	32.44	1.08	10.87	37.22	119.46
253	16.62	32.27	1.07	10.95	37.30	119.24
254	16.68	32.19	1.06	10.95	37.36	119.23
255	16.76	32.36	1.07	10.78	37.50	119.24
256	16.81	32.10	1.07	10.78	37.67	119.20
257	16.90	31.67	1.05	10.78	37.72	119.13
258	16.95	32.06	1.04	10.78	37.79	119.03
259	17.03	31.50	1.03	10.87	37.37	118.85
260	17.09	32.02	0.97	11.04	36.83	118.57
261	17.13	32.19	0.93	11.04	35.89	118.27
262	17.22	32.53	0.90	11.13	35.31	118.07
263	17.28	32.79	0.89	11.30	35.12	118.12
264	17.36	33.13	0.94	11.39	35.26	118.30
265	17.41	33.22	0.96	11.30	38.31	118.60
266	17.47	26.35	1.08	11.30	38.57	119.10
267	17.53	35.10	1.13	11.83	38.51	119.53
268	17.62	35.71	1.13	11.92	35.94	119.86
269	17.67	35.53	1.13	11.74	35.89	119.88
270	17.76	35.53	1.13	11.74	36.07	119.91
271	17.80	35.53	1.14	12.09	36.01	119.97
272	17.86	36.13	1.15	12.79	35.72	120.00
273	17.94	36.74	1.14	12.97	35.40	120.08
274	17.99	37.17	1.16	13.23	34.49	120.36
275	18.07	40.77	1.23	13.93	33.38	120.81
276	18.13	43.69	1.29	14.81	31.75	121.49
277	18.21	48.24	1.41	15.95	30.12	122.14
278	18.26	52.87	1.47	17.44	28.97	122.71
279	18.31	53.99	1.53	18.14	28.55	123.16
280	18.40	54.50	1.62	19.28	28.74	123.48
281	18.45	55.02	1.65	19.19	29.07	123.74
282	18.55	54.85	1.70	18.66	29.41	123.87
283	18.59	54.25	1.71	18.93	29.95	123.99
284	18.65	53.47	1.75	19.72	30.42	124.08
285	18.72	53.56	1.78	20.07	30.76	124.17
286	18.77	53.56	1.78	20.07	30.89	124.21
287	18.86	53.39	1.78	19.63	31.14	124.22
288	18.91	52.61	1.79	19.10	31.59	124.19

:: Field input data :: (continued)

Point ID	Depth (ft)	q_c (tsf)	f_s (tsf)	u (tsf)	Fines content (%)	Unit weight (pcf)
289	19.01	51.33	1.79	18.49	32.27	124.18
290	19.05	50.47	1.81	18.14	33.33	124.27
291	19.10	48.75	1.90	18.49	34.56	124.37
292	19.18	47.12	1.92	18.05	35.69	124.43
293	19.23	46.61	1.91	18.49	36.14	124.42
294	19.32	47.04	1.92	18.66	36.07	124.44
295	19.39	47.81	1.92	18.31	35.61	124.52
296	19.43	49.27	1.93	18.93	34.75	124.66
297	19.53	51.84	1.97	18.93	34.20	124.80
298	19.58	51.67	1.99	18.31	34.04	124.93
299	19.62	51.24	2.01	18.31	34.58	125.01
300	19.71	50.30	2.05	19.28	35.04	125.08
301	19.75	50.55	2.06	19.98	34.76	125.17
302	19.83	53.30	2.06	20.24	34.13	125.24
303	19.90	53.99	2.06	20.50	33.61	125.38
304	20.00	54.42	2.13	21.12	33.68	125.56
305	20.04	54.93	2.19	20.94	33.86	125.80
306	20.08	55.53	2.26	20.59	34.29	126.12
307	20.14	55.62	2.41	20.59	34.99	126.53
308	20.22	55.79	2.57	20.16	36.20	127.10
309	20.31	55.79	2.84	20.86	36.76	127.56
310	20.36	57.94	2.88	21.03	35.10	128.08
311	20.45	69.35	2.95	21.82	32.49	128.40
312	20.50	74.07	2.95	21.12	30.34	128.66
313	20.54	74.84	2.95	21.03	30.96	128.66
314	20.64	65.49	3.00	20.94	32.48	128.54
315	20.68	63.51	2.96	22.26	34.60	128.24
316	20.77	59.48	2.82	22.96	35.23	127.98
317	20.82	59.65	2.78	24.10	35.19	127.79
318	20.89	61.71	2.77	24.27	34.34	127.81
319	20.96	64.29	2.77	23.84	33.64	127.86
320	21.01	64.12	2.77	23.92	34.25	127.82
321	21.09	58.19	2.77	21.03	35.82	127.61
322	21.14	54.50	2.69	19.02	39.09	127.07
323	21.23	44.46	2.49	18.58	42.03	126.28
324	21.28	40.68	2.25	18.05	44.75	125.33
325	21.33	38.71	2.04	17.88	46.01	124.16
326	21.43	33.22	1.67	17.88	46.87	123.12
327	21.46	32.36	1.59	17.88	47.25	121.75
328	21.60	30.30	1.26	17.88	47.07	120.96
329	21.61	29.78	1.26	17.79	47.14	120.21
330	21.71	28.58	1.24	17.79	47.88	120.12
331	21.74	28.58	1.24	17.79	47.93	120.08
332	21.79	29.53	1.24	17.79	44.54	120.30
333	21.92	36.91	1.24	18.31	41.46	120.55
334	21.93	37.59	1.25	17.88	38.95	120.94
335	22.02	38.80	1.34	17.35	39.02	121.41
336	22.08	39.83	1.46	17.26	39.84	122.13

:: Field input data :: (continued)

Point ID	Depth (ft)	q_c (tsf)	f_s (tsf)	u (tsf)	Fines content (%)	Unit weight (pcf)
337	22.14	39.78	1.64	19.80	41.08	122.83
338	22.19	39.74	1.77	20.07	42.95	123.51
339	22.26	38.97	1.96	20.07	43.40	124.21
340	22.34	43.34	2.12	20.59	42.51	125.06
341	22.40	48.67	2.33	20.59	40.59	125.97
342	22.45	52.87	2.57	21.47	39.51	127.07
343	22.54	57.25	3.02	22.26	38.69	128.06
344	22.59	62.06	3.24	23.31	37.68	129.01
345	22.64	67.81	3.52	23.13	36.55	129.81
346	22.72	72.61	3.86	22.78	36.04	130.45
347	22.77	73.30	4.01	21.29	36.38	130.99
348	22.86	73.17	4.29	21.29	37.05	131.30
349	22.90	73.17	4.38	21.29	37.81	131.60
350	23.00	73.04	4.55	21.29	37.63	131.82
351	23.05	77.59	4.61	22.00	36.70	132.14
352	23.14	83.43	4.76	24.01	35.44	132.40
353	23.16	85.40	4.81	24.45	34.59	132.72
354	23.23	88.49	5.03	24.89	34.40	133.06
355	23.32	90.64	5.32	22.52	34.38	133.31
356	23.37	90.21	5.25	22.00	34.62	133.30
357	23.43	86.69	5.04	22.34	35.29	132.86
358	23.52	78.88	4.63	22.00	36.05	132.44
359	23.56	78.88	4.63	22.43	36.59	132.15
360	23.65	78.88	4.62	28.22	36.09	132.17
361	23.69	82.57	4.60	31.72	32.97	132.39
362	23.78	104.20	4.58	36.37	30.24	132.64
363	23.83	106.00	4.65	24.54	29.51	132.84
364	23.92	93.30	4.83	21.82	31.29	132.87
365	23.97	89.35	4.87	28.22	33.14	132.86
366	24.02	90.90	4.89	27.95	33.19	132.78
367	24.11	91.75	4.70	26.46	32.96	132.64
368	24.16	89.09	4.59	24.89	32.71	131.68
369	24.25	77.25	3.36	26.20	32.17	130.27
370	24.29	74.76	2.74	23.84	32.12	128.89
371	24.39	70.38	2.98	25.94	32.83	128.54
372	24.42	68.58	3.05	27.69	35.24	128.87
373	24.51	64.80	3.29	33.21	37.03	129.16
374	24.57	64.37	3.46	31.02	36.67	129.68
375	24.62	76.90	3.62	27.08	34.89	130.24
376	24.68	82.66	3.82	27.16	33.35	130.79
377	24.77	82.23	4.00	28.30	33.32	131.08
378	24.80	81.80	4.02	27.78	33.93	131.14
379	24.90	79.39	3.95	25.15	34.25	131.00
380	24.94	78.54	3.85	24.97	34.88	130.78
381	25.03	74.67	3.79	26.99	35.49	130.81
382	25.08	76.22	4.05	29.79	30.21	131.69
383	25.18	130.21	4.47	46.44	25.61	132.58
384	25.22	137.24	4.49	44.16	23.13	133.11

:: Field input data :: (continued)

Point ID	Depth (ft)	q_c (tsf)	f_s (tsf)	u (tsf)	Fines content (%)	Unit weight (pcf)
385	25.32	119.65	4.49	20.94	24.55	133.00
386	25.36	109.78	4.51	20.99	28.21	132.69
387	25.40	90.21	4.53	21.03	32.14	132.36
388	25.47	78.28	4.51	39.08	35.98	132.04
389	25.54	76.65	4.49	46.27	37.54	131.84
390	25.68	77.25	4.39	46.44	37.88	131.67
391	25.73	74.24	4.28	44.25	37.77	131.44
392	25.80	74.29	4.12	43.73	37.74	131.19
393	25.86	74.29	4.02	43.90	37.22	130.96
394	25.95	74.33	3.89	44.60	36.93	130.79
395	26.00	73.90	3.84	48.55	36.69	130.64
396	26.06	73.81	3.79	50.21	36.39	130.60
397	26.14	75.70	3.81	47.84	36.05	130.60
398	26.19	76.30	3.81	44.69	35.85	130.58
399	26.27	74.93	3.74	44.25	35.96	130.48
400	26.32	73.90	3.67	44.25	35.17	129.33
401	26.41	66.09	2.33	43.81	34.71	128.09
402	26.51	62.57	2.39	55.91	34.14	126.84
403	26.55	62.74	2.48	58.71	35.87	127.11
404	26.60	59.91	2.67	62.13	37.33	127.48
405	26.64	59.40	2.83	62.92	39.88	127.78
406	26.71	54.16	2.94	64.58	38.53	128.13
407	26.77	69.87	2.93	67.91	36.67	128.27
408	26.87	70.21	2.83	64.67	34.23	128.34
409	26.92	68.75	2.83	61.60	35.37	128.20
410	26.98	61.80	2.87	71.50	37.22	128.17
411	27.05	60.08	2.93	82.28	39.78	128.51
412	27.11	59.91	3.37	90.26	39.49	129.53
413	27.20	74.42	4.01	95.43	37.29	130.74
414	27.24	87.12	4.28	100.25	32.73	131.83
415	27.33	107.12	4.41	61.87	30.79	132.22
416	27.38	98.11	4.35	35.49	31.13	132.19
417	27.43	84.89	4.28	31.98	35.62	131.60
418	27.52	64.20	4.05	42.50	40.48	130.82
419	27.57	59.14	3.74	47.49	45.23	129.89
420	27.63	52.19	3.44	62.22	45.46	128.48
421	27.73	49.10	2.36	70.98	44.61	127.00
422	27.76	48.75	2.16	70.94	42.01	125.21
423	27.84	46.18	1.79	70.89	41.40	124.20
424	27.93	43.43	1.62	70.54	41.36	123.28
425	27.98	42.23	1.58	71.07	42.16	122.81
426	28.02	40.34	1.55	73.78	42.83	122.54
427	28.09	39.65	1.49	73.00	43.40	122.35
428	28.16	39.40	1.50	71.94	43.68	122.24
429	28.23	39.05	1.50	70.10	44.16	122.26
430	28.30	38.62	1.52	68.88	44.73	122.31
431	28.35	38.28	1.54	68.53	45.32	122.27
432	28.44	37.34	1.50	67.91	45.98	122.12

:: Field input data :: (continued)

Point ID	Depth (ft)	q_c (tsf)	f_s (tsf)	u (tsf)	Fines content (%)	Unit weight (pcf)
433	28.49	36.22	1.46	65.46	46.73	121.88
434	28.55	35.10	1.44	65.20	47.62	121.64
435	28.62	33.90	1.39	64.50	48.52	121.32
436	28.68	32.53	1.33	63.44	48.97	120.77
437	28.76	31.33	1.19	63.09	49.05	120.11
438	28.81	30.56	1.10	59.67	48.34	119.15
439	28.88	29.44	0.92	58.27	48.55	118.58
440	28.95	28.50	0.98	58.01	48.98	118.21
441	29.04	28.15	0.97	60.20	49.80	118.30
442	29.09	28.41	0.97	58.45	49.68	118.26
443	29.14	28.58	0.96	57.84	48.78	118.30
444	29.25	30.13	0.97	57.44	47.93	118.43
445	29.28	30.90	0.99	55.29	46.85	118.70
446	29.34	32.10	1.03	57.05	45.92	119.02
447	29.41	33.73	1.06	60.11	44.78	119.31
448	29.48	35.02	1.08	61.25	43.06	119.61
449	29.57	37.94	1.11	63.35	41.31	120.02
450	29.66	40.77	1.17	66.25	39.83	120.42
451	29.70	41.89	1.20	68.00	38.92	120.87
452	29.75	43.60	1.27	71.59	38.44	121.22
453	29.80	44.72	1.31	73.00	37.74	121.68
454	29.88	47.55	1.39	74.57	37.37	122.10
455	29.94	48.15	1.45	74.75	37.20	122.54
456	30.00	48.75	1.53	76.67	37.63	122.98
457	30.08	49.52	1.64	75.27	38.06	123.39
458	30.12	49.87	1.70	76.24	38.45	123.75
459	30.20	50.30	1.76	77.29	38.69	123.95
460	30.26	50.38	1.78	77.64	39.01	124.00
461	30.35	49.18	1.74	77.77	39.37	123.95
462	30.39	48.67	1.74	76.85	39.96	123.84
463	30.45	47.46	1.74	77.90	40.57	123.73
464	30.53	46.18	1.70	79.65	41.19	123.57
465	30.58	45.40	1.66	79.65	41.75	123.31
466	30.68	43.77	1.60	76.32	42.24	123.06
467	30.72	43.00	1.57	75.36	42.81	122.76
468	30.82	41.63	1.51	73.17	43.43	122.55
469	30.86	40.68	1.51	75.62	44.07	122.39
470	30.91	40.17	1.50	72.21	44.44	122.27
471	31.00	39.83	1.46	75.89	44.71	122.20
472	31.04	39.65	1.48	75.80	44.85	122.13
473	31.14	39.40	1.47	69.84	45.29	122.12
474	31.18	38.88	1.47	67.91	46.03	122.02
475	31.27	37.25	1.45	65.98	47.39	121.88
476	31.32	35.28	1.43	66.16	48.48	121.66
477	31.38	35.23	1.39	56.08	48.89	121.43
478	31.45	35.19	1.35	58.62	48.68	121.17
479	31.52	34.50	1.30	60.29	48.17	120.94
480	31.61	35.15	1.26	60.64	48.01	120.72

:: Field input data :: (continued)

Point ID	Depth (ft)	q_c (tsf)	f_s (tsf)	u (tsf)	Fines content (%)	Unit weight (pcf)
481	31.66	34.42	1.24	61.52	47.51	120.61
482	31.70	35.10	1.24	61.43	47.04	120.54
483	31.79	35.96	1.22	62.22	46.29	120.57
484	31.84	36.48	1.23	62.39	45.53	120.67
485	31.89	37.59	1.26	64.84	44.93	120.96
486	31.98	39.14	1.33	68.17	44.59	121.52
487	32.03	40.77	1.48	70.89	44.56	122.46
488	32.12	43.69	1.74	74.22	44.02	123.32
489	32.17	46.69	1.81	76.32	42.39	124.02
490	32.23	51.16	1.84	77.38	39.29	124.46
491	32.30	58.71	1.90	75.36	37.18	124.82
492	32.35	58.88	1.94	66.77	37.01	124.98
493	32.43	53.56	1.95	76.41	38.19	124.97
494	32.49	53.64	1.94	71.59	39.23	124.86
495	32.55	53.64	1.92	77.46	38.94	124.74
496	32.62	53.73	1.85	80.18	39.06	124.61
497	32.72	52.01	1.85	77.99	39.27	124.50
498	32.75	52.01	1.86	84.74	39.15	124.54
499	32.82	54.42	1.86	89.29	38.63	124.65
500	32.90	55.02	1.91	95.69	36.77	124.97
501	32.95	63.00	1.98	90.08	35.91	125.54
502	33.04	64.37	2.22	73.52	35.84	126.13
503	33.08	61.97	2.34	77.20	37.52	126.70
504	33.15	60.51	2.53	111.46	37.75	127.30
505	33.22	69.27	2.76	118.56	37.27	128.09
506	33.28	73.13	3.04	98.67	36.90	129.06
507	33.37	74.50	3.52	115.06	36.56	129.93
508	33.41	82.66	3.73	127.32	35.43	130.77
509	33.48	91.93	4.01	133.55	33.70	131.56
510	33.55	99.56	4.42	103.14	33.56	132.49
511	33.64	100.68	5.10	70.89	34.71	133.21
512	33.69	96.56	5.33	79.57	36.77	133.61
513	33.73	91.41	5.41	68.61	37.55	133.72
514	33.82	97.16	5.40	56.26	38.71	133.67
515	33.87	88.41	5.40	42.06	40.18	133.65
516	33.96	81.63	5.56	44.16	42.35	133.63
517	34.01	83.69	5.63	48.46	44.65	133.55
518	34.06	74.16	5.54	49.42	43.89	133.48
519	34.14	84.89	5.33	46.88	44.01	133.18
520	34.20	78.79	5.07	53.28	43.38	132.61
521	34.29	69.52	4.44	60.81	45.66	131.82
522	34.34	62.83	4.25	64.76	48.32	131.18
523	34.43	59.22	4.33	76.41	49.55	130.95
524	34.47	61.88	4.19	80.71	48.42	130.96
525	34.52	67.29	4.16	86.14	43.03	131.45
526	34.61	89.61	4.55	90.69	37.87	132.07
527	34.65	101.02	4.60	69.31	33.95	132.51
528	34.72	103.34	4.40	62.39	32.66	132.33

:: Field input data :: (continued)

Point ID	Depth (ft)	q_c (tsf)	f_s (tsf)	u (tsf)	Fines content (%)	Unit weight (pcf)
529	34.80	97.59	4.10	58.36	33.12	131.91
530	34.85	90.21	4.03	61.60	34.54	131.45
531	34.93	84.80	3.89	72.82	36.06	131.13
532	34.98	81.80	3.80	83.69	36.20	130.85
533	35.05	84.63	3.67	102.61	36.94	130.87
534	35.12	79.82	3.99	120.84	37.48	131.33
535	35.20	84.46	4.48	138.63	38.28	132.05
536	35.26	89.78	4.82	157.12	36.90	132.90
537	35.35	102.48	5.22	166.67	35.36	133.61
538	35.40	109.01	5.53	143.71	33.51	134.31
539	35.44	120.08	5.86	110.59	32.60	135.07
540	35.53	128.32	6.60	104.10	30.28	135.07
541	35.58	134.41	5.12	99.90	27.26	134.24
542	35.64	136.21	3.77	87.80	24.67	133.09
543	35.72	134.24	4.29	80.09	24.71	132.93
544	35.81	130.38	4.87	84.12	26.18	133.61
545	35.86	134.07	5.07	92.10	27.50	134.01
546	35.90	126.94	5.17	129.60	27.56	134.24
547	35.96	133.90	5.28	183.32	27.38	134.63
548	36.04	145.31	5.77	160.80	25.56	135.34
549	36.13	171.23	6.23	100.25	23.67	135.97
550	36.19	184.54	6.21	65.11	22.06	136.30
551	36.23	187.03	6.13	53.89	20.95	136.21
552	36.31	191.06	5.80	42.85	19.50	135.73
553	36.41	198.79	4.92	48.28	17.79	135.17
554	36.46	205.99	4.71	50.21	16.28	134.68
555	36.51	210.46	4.65	48.63	15.39	134.60
556	36.55	219.81	4.61	38.56	14.88	134.62
557	36.64	221.79	4.64	34.53	14.56	134.66
558	36.69	221.79	4.64	32.77	14.47	134.65
559	36.78	222.65	4.58	30.76	14.44	134.62
560	36.83	222.05	4.58	30.50	14.62	134.66
561	36.92	218.18	4.74	28.22	14.23	134.25
562	36.96	218.01	3.85	27.87	12.30	132.65
563	37.01	218.78	2.02	28.04	10.25	130.86
564	37.10	218.44	2.43	27.82	9.49	130.12
565	37.15	217.67	3.05	27.78	10.53	131.12
566	37.24	219.81	3.11	26.11	10.69	131.32
567	37.28	220.84	2.66	26.46	11.03	131.41
568	37.38	209.86	3.20	30.32	11.51	131.76
569	37.42	217.07	3.56	35.31	12.79	132.73
570	37.47	217.75	4.02	31.20	13.98	133.81
571	37.56	215.95	4.87	28.39	16.89	134.53
572	37.61	166.17	5.22	67.74	19.22	135.22
573	37.67	187.88	5.66	86.40	21.01	135.74
574	37.75	196.64	6.24	72.29	21.01	136.35
575	37.84	188.23	6.47	38.21	21.71	136.59
576	37.89	183.16	6.32	35.49	22.52	136.49

:: Field input data :: (continued)

Point ID	Depth (ft)	q_c (tsf)	f_s (tsf)	u (tsf)	Fines content (%)	Unit weight (pcf)
577	37.93	178.19	6.19	34.00	23.32	136.13
578	38.03	161.71	5.86	30.93	24.72	135.74
579	38.07	148.23	5.80	29.00	27.50	135.24
580	38.17	123.77	5.66	26.64	30.65	134.77
581	38.20	112.44	5.45	29.09	34.28	134.12
582	38.26	98.36	5.09	26.90	37.75	133.08
583	38.35	76.99	4.25	29.18	42.39	131.81
584	38.40	63.77	3.88	28.30	47.47	130.45
585	38.46	56.73	3.56	32.69	52.41	129.29
586	38.53	46.43	3.10	39.61	58.30	128.00
587	38.60	39.83	2.64	48.11	61.57	126.78
588	38.67	38.88	2.48	55.12	62.12	125.92
589	38.72	39.22	2.32	61.08	59.32	124.95
590	38.79	40.08	1.71	64.76	56.30	124.37
591	38.85	42.49	1.92	70.45	52.26	124.46
592	38.97	44.89	2.30	80.09	52.85	125.38
593	39.00	44.98	2.42	79.13	62.87	125.69
594	39.05	24.55	2.54	64.67	58.95	126.13
595	39.12	57.59	2.50	58.10	51.28	126.38
596	39.18	63.00	2.36	62.39	40.05	126.74
597	39.27	69.35	2.26	59.59	37.10	126.67
598	39.32	71.33	2.27	53.19	36.07	126.64
599	39.37	68.32	2.27	55.03	37.24	126.69
600	39.45	63.94	2.37	55.12	40.00	126.76
601	39.51	58.88	2.48	56.26	43.44	127.04
602	39.59	56.31	2.71	60.20	46.25	127.43
603	39.64	56.65	2.88	67.12	47.40	128.00
604	39.72	60.00	3.13	70.28	47.56	128.62
605	39.78	61.80	3.38	68.53	46.94	129.26
606	39.83	65.83	3.58	72.38	45.10	129.83
607	39.90	74.07	3.68	81.06	40.30	130.36
608	39.96	92.27	3.66	91.40	32.29	131.14
609	40.05	132.27	3.84	68.00	26.29	131.94
610	40.10	149.35	4.07	50.12	22.01	133.02
611	40.19	178.70	4.62	26.46	20.45	133.81
612	40.24	182.82	4.79	22.70	19.49	134.39
613	40.30	187.24	4.85	21.82	19.14	134.55
614	40.37	191.66	4.83	16.04	18.59	134.63
615	40.46	197.93	4.83	13.14	18.27	134.66
616	40.51	196.21	4.83	12.88	18.25	134.67
617	40.55	192.43	4.83	12.53	19.03	134.59
618	40.62	178.36	4.85	11.57	20.63	134.42
619	40.68	158.27	4.81	10.60	23.71	134.05
620	40.78	129.09	4.73	8.24	26.97	133.65
621	40.82	123.00	4.68	7.80	30.13	133.12
622	40.92	110.21	4.37	8.50	31.58	132.68
623	40.97	106.09	4.22	9.55	32.57	132.23
624	41.01	105.49	4.11	9.99	32.76	132.00

:: Field input data :: (continued)

Point ID	Depth (ft)	q_c (tsf)	f_s (tsf)	u (tsf)	Fines content (%)	Unit weight (pcf)
625	41.11	104.29	4.04	11.04	32.84	131.88
626	41.15	103.60	4.06	11.39	32.58	131.93
627	41.24	108.58	4.14	15.42	31.47	132.25
628	41.30	120.51	4.38	16.74	29.48	132.88
629	41.38	135.96	4.77	16.56	27.41	133.51
630	41.43	146.69	4.87	15.16	26.19	133.93
631	41.48	146.69	4.91	13.85	26.25	133.98
632	41.56	136.56	4.84	12.36	27.12	133.82
633	41.61	131.67	4.73	12.36	28.80	133.24
634	41.71	113.21	4.18	12.09	30.01	132.50
635	41.75	108.23	3.86	12.01	31.76	131.50
636	41.81	96.05	3.50	12.01	33.70	130.55
637	41.89	81.11	3.13	12.01	37.42	129.57
638	41.94	68.66	3.02	13.85	42.30	128.74
639	42.01	59.31	2.94	15.60	47.92	128.08
640	42.07	50.47	2.80	17.00	55.34	127.27
641	42.14	43.86	2.50	19.37	56.15	125.12
642	42.21	40.51	1.11	22.17	52.16	122.74
643	42.26	39.14	1.16	24.19	47.42	119.83
644	42.35	38.02	0.99	26.90	47.70	119.43
645	42.40	37.59	0.96	30.14	46.80	118.86
646	42.49	38.11	0.93	32.95	48.11	118.60
647	42.53	33.22	0.92	58.45	48.87	118.41
648	42.62	34.42	0.91	68.17	50.04	118.28
649	42.67	34.50	0.91	71.07	49.52	118.27
650	42.73	34.08	0.91	73.52	49.64	118.25
651	42.81	33.99	0.91	79.83	49.74	118.25
652	42.85	34.25	0.91	81.84	49.66	118.42
653	42.92	34.85	0.96	91.75	49.55	118.70
654	42.99	35.45	1.00	98.67	49.33	119.06
655	43.05	36.31	1.03	106.82	49.72	119.53
656	43.13	36.22	1.14	113.22	50.96	120.30
657	43.22	36.65	1.34	119.70	52.28	121.13
658	43.27	37.77	1.43	128.29	52.74	121.97
659	43.32	39.74	1.57	139.24	52.25	122.96
660	43.41	43.60	1.87	146.16	52.39	124.06
661	43.45	44.55	2.12	149.32	52.58	125.23
662	43.51	47.38	2.41	154.05	52.83	126.35
663	43.59	51.50	2.80	156.24	52.11	127.43
664	43.64	55.70	3.09	154.49	50.79	128.41
665	43.70	60.77	3.35	151.77	48.96	129.30
666	43.77	67.29	3.70	150.72	46.83	130.06
667	43.84	73.21	3.88	145.20	45.19	130.70
668	43.91	76.56	4.06	126.27	42.13	130.56
669	44.01	81.54	3.24	122.59	37.43	129.41
670	44.05	84.89	2.10	131.00	32.16	128.30
671	44.10	95.79	2.54	135.82	28.73	128.43
672	44.17	110.64	3.11	128.29	27.77	129.84

:: Field input data :: (continued)

Point ID	Depth (ft)	q_c (tsf)	f_s (tsf)	u (tsf)	Fines content (%)	Unit weight (pcf)
673	44.23	118.79	3.42	96.74	27.46	131.23
674	44.33	127.46	4.13	51.88	28.08	132.37
675	44.40	129.61	4.72	52.58	28.34	133.34
676	44.43	138.45	4.93	51.61	26.78	134.16
677	44.52	167.28	5.27	40.75	24.21	134.75
678	44.56	184.02	5.36	33.12	21.78	135.22
679	44.66	195.78	5.36	26.03	20.34	135.39
680	44.70	202.48	5.32	23.84	19.93	135.40
681	44.77	193.72	5.30	21.64	20.25	135.37
682	44.85	188.23	5.36	19.80	21.27	135.30
683	44.88	179.39	5.37	18.84	23.15	135.20
684	44.98	155.78	5.46	18.49	25.65	135.07
685	45.03	144.20	5.55	18.40	29.08	134.89
686	45.12	128.06	5.59	20.42	31.54	134.70
687	45.16	122.91	5.47	20.42	33.35	134.44
688	45.21	119.65	5.32	21.73	33.92	134.13
689	45.30	115.96	5.07	20.42	34.01	133.83
690	45.35	116.09	4.94	20.59	33.78	133.55
691	45.41	116.09	4.78	20.86	33.44	133.40
692	45.48	116.22	4.78	22.26	31.73	133.45
693	45.54	133.72	4.80	22.26	27.28	132.37
694	45.61	140.68	2.55	21.03	22.39	131.15
695	45.68	151.41	2.62	20.59	18.68	130.01
696	45.77	164.11	3.17	18.58	18.55	130.96
697	45.81	168.40	3.52	18.75	19.01	132.19
698	45.91	177.93	4.13	17.35	20.29	133.08
699	45.97	166.38	4.55	54.94	22.25	133.78
700	46.02	154.32	4.87	46.88	23.94	134.26
701	46.11	164.37	5.18	25.24	24.71	134.54
702	46.16	163.08	5.15	22.00	24.44	134.60
703	46.20	160.93	4.93	21.38	23.91	134.18
704	46.29	160.76	4.38	19.98	23.46	133.82
705	46.34	160.08	4.47	19.28	23.36	133.68
706	46.39	158.87	4.69	18.66	23.80	133.72
707	46.47	155.18	4.50	18.14	24.79	133.81
708	46.52	148.06	4.76	18.23	26.61	133.80
709	46.59	133.30	4.94	18.40	29.75	133.89
710	46.66	119.05	5.10	18.05	34.34	133.70
711	46.75	97.50	5.04	17.35	38.98	133.30
712	46.80	88.23	4.81	19.54	43.69	132.61
713	46.87	77.25	4.44	23.57	46.34	131.97
714	46.93	73.90	4.25	24.45	48.87	131.37
715	47.00	68.32	4.10	29.27	49.84	130.83
716	47.07	66.52	3.73	34.53	50.35	130.31
717	47.12	65.75	3.58	43.20	49.71	129.78
718	47.19	64.89	3.36	44.25	49.29	129.33
719	47.25	63.34	3.15	42.15	49.41	128.73
720	47.35	59.05	2.88	44.08	50.44	128.15

:: Field input data :: (continued)

Point ID	Depth (ft)	q_c (tsf)	f_s (tsf)	u (tsf)	Fines content (%)	Unit weight (pcf)
721	47.40	55.53	2.80	42.67	52.12	127.64
722	47.47	52.87	2.72	43.90	56.23	127.35
723	47.53	51.41	2.69	45.57	52.56	126.36
724	47.63	50.81	1.82	48.02	50.29	125.13
725	47.67	49.95	1.64	50.74	48.10	124.03
726	47.76	49.52	1.85	51.61	48.76	124.05
727	47.77	49.01	1.85	50.82	50.32	124.28
728	47.86	47.04	1.85	51.17	51.50	124.19
729	47.90	45.58	1.83	52.40	55.94	124.01
730	48.00	42.66	1.80	67.82	57.52	123.86
731	48.04	41.54	1.81	70.45	58.61	123.88
732	48.10	42.49	1.88	77.73	59.00	124.02
733	48.19	42.31	1.91	91.75	58.46	124.20
734	48.23	43.95	1.91	93.94	56.74	124.53
735	48.33	49.27	2.04	94.64	55.42	125.08
736	48.38	50.30	2.25	90.87	51.81	126.04
737	48.47	54.33	2.62	96.65	51.67	126.96
738	48.51	57.51	2.83	102.88	49.26	127.94
739	48.56	67.64	3.07	106.56	45.29	128.90
740	48.64	80.94	3.38	80.53	40.39	129.81
741	48.70	94.24	3.52	62.48	36.04	130.83
742	48.83	111.67	3.96	41.62	31.84	131.74
743	48.92	131.92	4.17	38.56	28.44	132.49
744	48.97	145.23	4.20	33.47	25.69	132.93
745	49.02	156.21	4.26	28.66	23.81	133.33
746	49.11	169.69	4.52	23.22	22.45	133.70
747	49.16	178.10	4.58	20.86	21.32	134.01
748	49.22	185.74	4.57	20.07	20.51	134.15
749	49.28	190.16	4.62	16.21	19.95	134.30
750	49.36	194.58	4.72	15.60	19.73	134.53
751	49.43	198.27	4.90	14.72	19.75	134.76
752	49.48	198.36	5.02	13.58	20.21	135.04
753	49.57	194.92	5.30	12.09	20.86	135.25
754	49.62	192.35	5.40	11.48	21.87	135.45
755	49.70	185.48	5.58	10.43	22.73	135.56
756	49.76	182.48	5.67	9.90	23.80	135.64
757	49.80	175.70	5.74	8.59	24.99	135.66
758	49.89	166.17	5.84	8.41	21.09	132.63
759	49.94	157.50	0.00	7.54	15.15	127.48
760	50.01	147.89	0.00	7.10	N/A	87.36
761	50.08	137.07	0.00	6.40	N/A	87.36
762	50.17	126.69	0.00	5.96	N/A	87.36
763	50.21	116.22	0.00	6.13	N/A	87.36
764	50.27	109.86	0.00	6.40	N/A	87.36

:: Field input data :: (continued)

Point ID	Depth (ft)	q_c (tsf)	f_s (tsf)	u (tsf)	Fines content (%)	Unit weight (pcf)

Abbreviations

Depth:	Depth from free surface, at which CPT was performed (ft)
q_c:	Measured cone resistance (tsf)
f_s:	Sleeve friction resistance (tsf)
u:	Pore pressure (tsf)
Fines content:	Percentage of fines in soil (%)
Unit weight:	Bulk soil unit weight (pcf)

Fenagh Engineering and Testing
9070 Center Avenue
Rancho Cucamonga, CA 91730
www.fenaghengineering.com

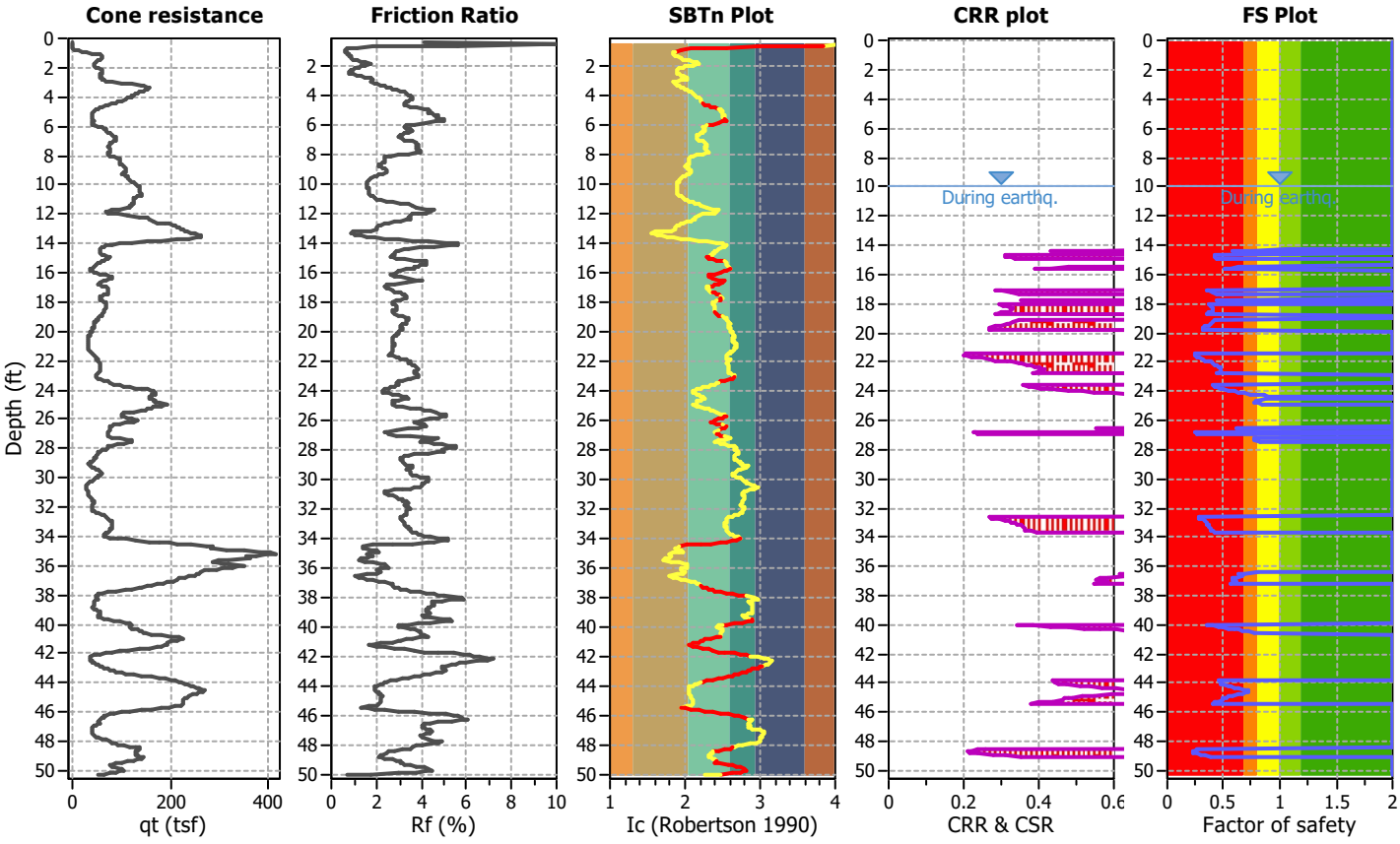
LIQUEFACTION ANALYSIS REPORT

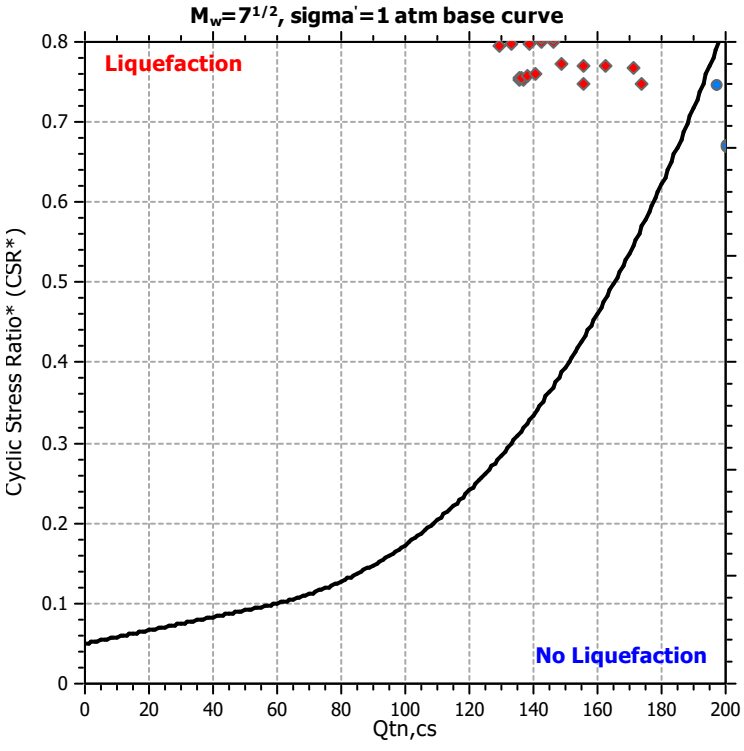
Project title : Centennial High School **Location : 2606 N. Central Ave, Compton, CA 90222**

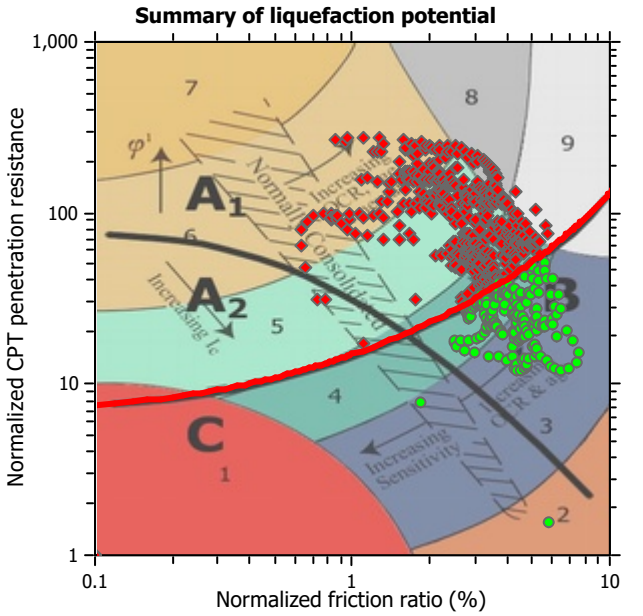
CPT file : CPT-3

Input parameters and analysis data

Analysis method:	NCEER (1998)	G.W.T. (in-situ):	50.00 ft	Use fill:	No	Clay like behavior applied:	Sands only
Fines correction method:	NCEER (1998)	G.W.T. (earthq.):	10.00 ft	Fill height:	N/A	Limit depth applied:	No
Points to test:	Based on Ic value	Average results interval:	3	Fill weight:	N/A	Limit depth:	N/A
Earthquake magnitude M_w:	7.30	Ic cut-off value:	2.60	Trans. detect. applied:	Yes	MSF method:	Method based
Peak ground acceleration:	0.83	Unit weight calculation:	Based on SBT	K_σ applied:	Yes		

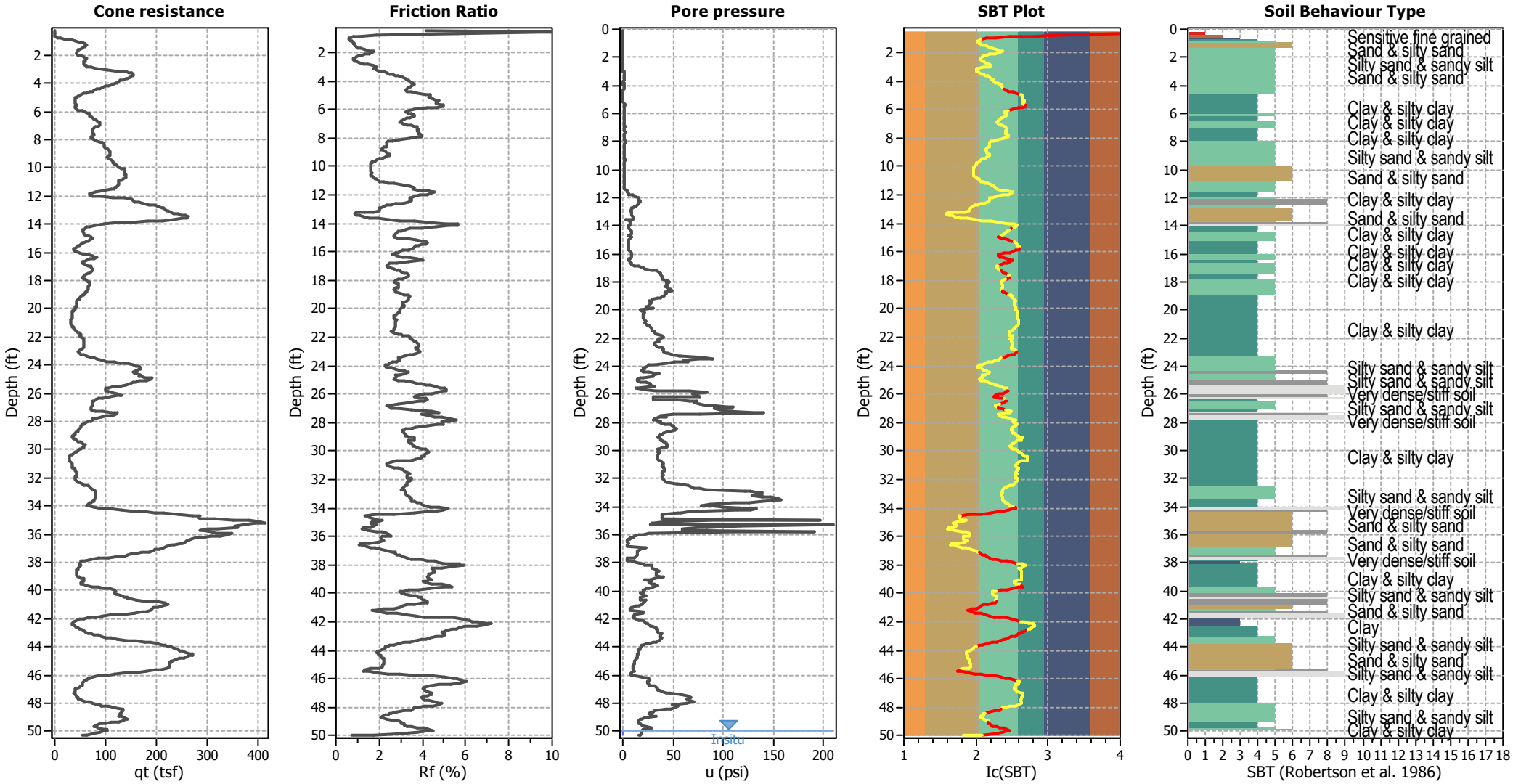






Zone A_1: Cyclic liquefaction likely depending on size and duration of cyclic loading
Zone A_2: Cyclic liquefaction and strength loss likely depending on loading and ground geometry
Zone B: Liquefaction and post-earthquake strength loss unlikely, check cyclic softening
Zone C: Cyclic liquefaction and strength loss possible depending on soil plasticity, brittleness/sensitivity, strain to peak undrained strength and ground geometry

CPT basic interpretation plots



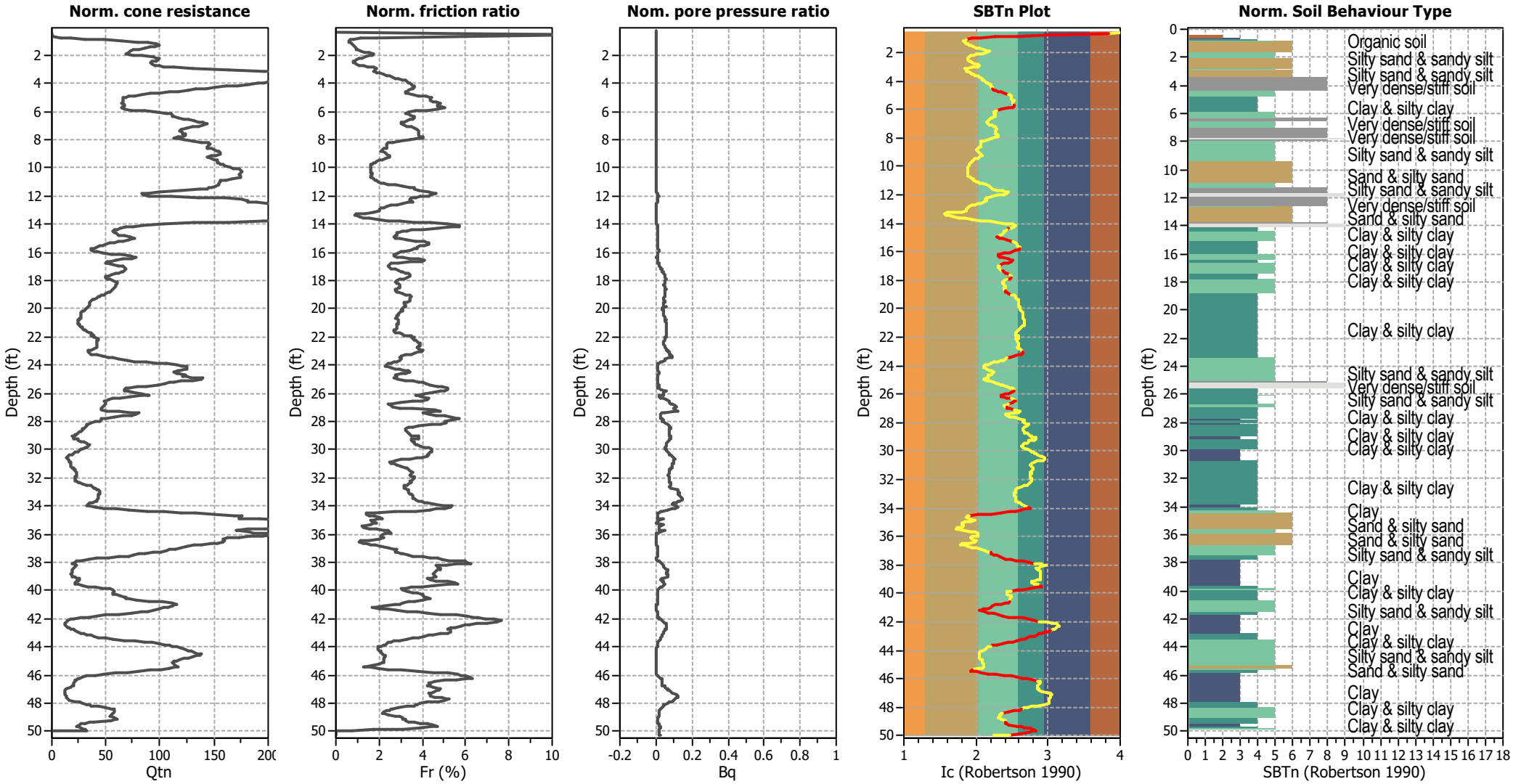
Input parameters and analysis data

Analysis method:	NCEER (1998)	Depth to water table (erthq.):	10.00 ft	Fill weight:	N/A
Fines correction method:	NCEER (1998)	Average results interval:	3	Transition detect. applied:	Yes
Points to test:	Based on Ic value	Ic cut-off value:	2.60	K_σ applied:	Yes
Earthquake magnitude M_w:	7.30	Unit weight calculation:	Based on SBT	Clay like behavior applied:	Sands only
Peak ground acceleration:	0.83	Use fill:	No	Limit depth applied:	No
Depth to water table (insitu):	50.00 ft	Fill height:	N/A	Limit depth:	N/A

SBT legend

1. Sensitive fine grained
2. Organic material
3. Clay to silty clay
4. Clayey silt to silty
5. Silty sand to sandy silt
6. Clean sand to silty sand
7. Gravely sand to sand
8. Very stiff sand to
9. Very stiff fine grained

CPT basic interpretation plots (normalized)



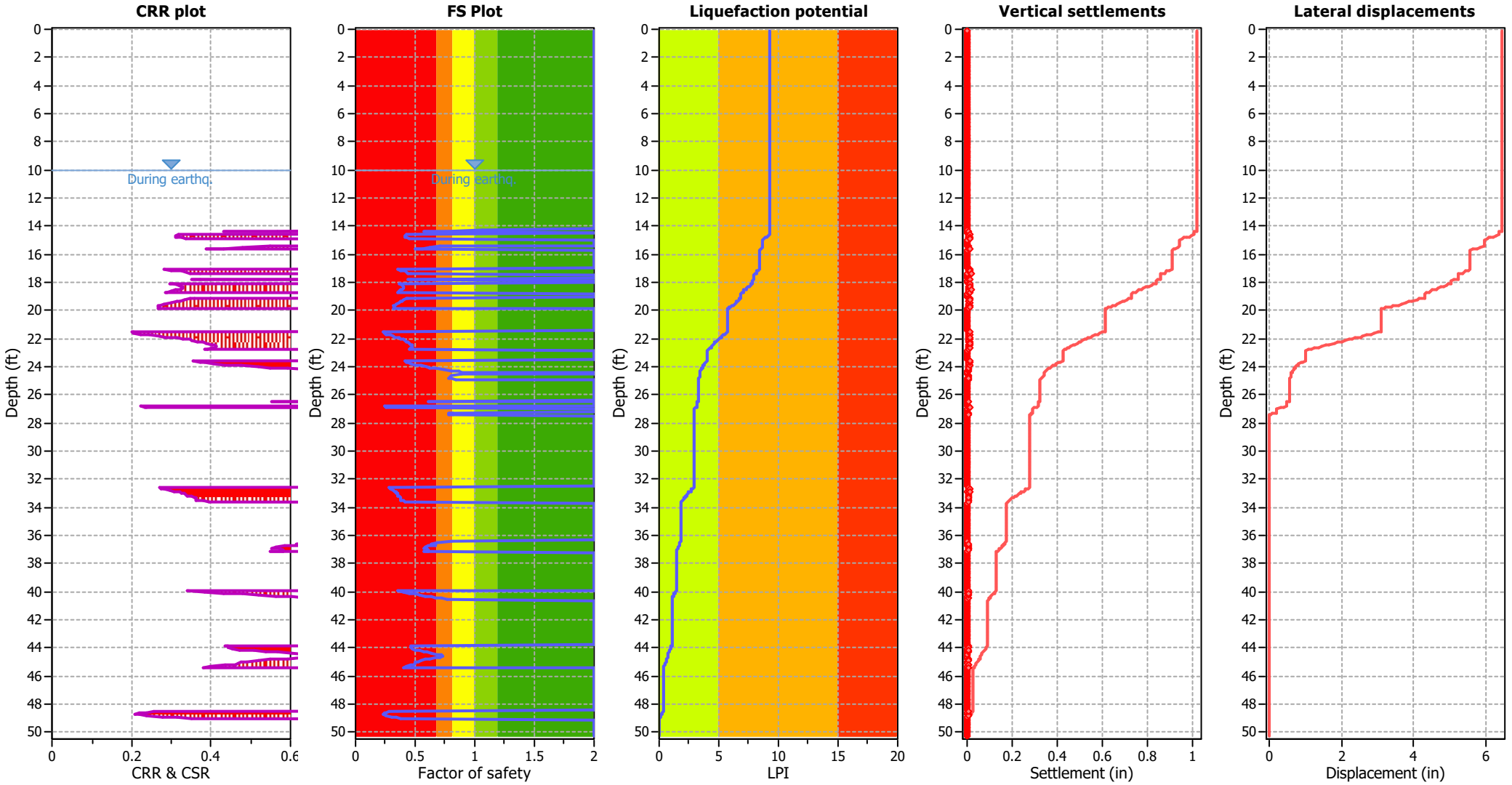
Input parameters and analysis data

Analysis method:	NCEER (1998)	Depth to water table (erthq.):	10.00 ft	Fill weight:	N/A
Fines correction method:	NCEER (1998)	Average results interval:	3	Transition detect. applied:	Yes
Points to test:	Based on Ic value	Ic cut-off value:	2.60	K_σ applied:	Yes
Earthquake magnitude M_w:	7.30	Unit weight calculation:	Based on SBT	Clay like behavior applied:	Sands only
Peak ground acceleration:	0.83	Use fill:	No	Limit depth applied:	No
Depth to water table (insitu):	50.00 ft	Fill height:	N/A	Limit depth:	N/A

SBTn legend

1. Sensitive fine grained
2. Organic material
3. Clay to silty clay
4. Clayey silt to silty
5. Silty sand to sandy silt
6. Clean sand to silty sand
7. Gravely sand to sand
8. Very stiff sand to
9. Very stiff fine grained

Liquefaction analysis overall plots



Input parameters and analysis data

Analysis method:	NCEER (1998)	Depth to water table (erthq.):	10.00 ft	Fill weight:	N/A
Fines correction method:	NCEER (1998)	Average results interval:	3	Transition detect. applied:	Yes
Points to test:	Based on Ic value	Ic cut-off value:	2.60	K_σ applied:	Yes
Earthquake magnitude M_w:	7.30	Unit weight calculation:	Based on SBT	Clay like behavior applied:	Sands only
Peak ground acceleration:	0.83	Use fill:	No	Limit depth applied:	No
Depth to water table (insitu):	50.00 ft	Fill height:	N/A	Limit depth:	N/A

F.S. color scheme

- Almost certain it will liquefy
- Very likely to liquefy
- Liquefaction and no liq. are equally likely
- Unlike to liquefy
- Almost certain it will not liquefy

LPI color scheme

- Very high risk
- High risk
- Low risk

:: Field input data ::

Point ID	Depth (ft)	q_c (tsf)	f_s (tsf)	u (tsf)	Fines content (%)	Unit weight (pcf)
1	0.09	0.00	0.00	0.00	N/A	120.90
2	0.14	0.00	0.00	0.00	N/A	120.90
3	0.23	0.00	0.00	0.00	N/A	120.90
4	0.27	0.00	0.00	0.00	N/A	87.36
5	0.38	0.09	0.00	0.00	N/A	87.36
6	0.42	0.09	0.00	0.00	N/A	87.36
7	0.46	0.09	0.00	0.00	100.00	87.36
8	0.55	0.09	0.01	0.00	100.00	87.36
9	0.60	0.17	0.03	0.00	100.00	87.36
10	0.69	0.77	0.06	0.00	100.00	89.24
11	0.74	2.06	0.08	0.09	57.31	96.46
12	0.82	11.67	0.13	0.17	33.51	100.64
13	0.88	19.05	0.15	0.17	21.28	103.87
14	0.93	28.23	0.18	0.26	14.83	106.74
15	1.01	42.99	0.26	0.26	11.65	109.11
16	1.06	48.31	0.31	0.35	9.73	111.24
17	1.13	57.06	0.37	0.26	9.08	112.78
18	1.20	61.18	0.43	0.61	8.77	114.09
19	1.25	63.07	0.49	0.61	9.08	114.95
20	1.34	61.44	0.52	0.61	9.50	115.34
21	1.39	60.07	0.51	0.61	9.97	115.31
22	1.45	57.49	0.50	0.53	10.42	115.00
23	1.52	53.97	0.48	0.44	11.26	114.67
24	1.60	49.08	0.48	0.44	12.23	114.44
25	1.64	47.20	0.48	0.35	13.33	114.33
26	1.71	44.62	0.49	0.35	14.41	114.73
27	1.78	44.45	0.58	0.26	15.87	115.51
28	1.85	43.25	0.67	0.35	17.23	116.60
29	1.94	44.28	0.77	0.17	18.57	117.26
30	1.97	41.62	0.79	0.35	17.27	117.90
31	2.06	55.69	0.80	0.17	15.58	118.24
32	2.11	58.52	0.80	0.17	13.26	118.33
33	2.20	61.35	0.72	0.17	12.22	117.99
34	2.25	62.13	0.67	0.17	11.12	117.35
35	2.32	63.24	0.60	0.17	10.57	116.55
36	2.39	59.21	0.52	0.26	10.12	115.57
37	2.44	57.58	0.46	0.53	10.03	114.80
38	2.53	57.15	0.46	0.61	10.10	114.57
39	2.57	56.38	0.48	0.44	10.55	115.00
40	2.64	56.89	0.55	0.44	11.14	115.88
41	2.71	59.12	0.64	0.44	11.76	117.09
42	2.79	61.61	0.77	0.44	12.56	118.60
43	2.85	64.27	0.96	0.44	13.46	120.15
44	2.89	66.85	1.16	0.44	14.00	122.16
45	2.98	79.80	1.57	0.70	13.47	124.03
46	3.04	95.76	1.82	0.96	11.44	126.13
47	3.12	131.03	2.21	1.31	9.99	127.65
48	3.17	139.70	2.47	1.40	9.22	128.96

:: Field input data :: (continued)

Point ID	Depth (ft)	q_c (tsf)	f_s (tsf)	u (tsf)	Fines content (%)	Unit weight (pcf)
49	3.22	146.74	2.77	1.67	9.48	129.95
50	3.30	152.23	3.14	1.75	9.80	130.80
51	3.35	156.52	3.39	1.67	10.25	131.51
52	3.42	156.60	3.64	1.49	10.80	132.00
53	3.49	153.17	3.85	1.31	11.51	132.31
54	3.55	147.94	3.92	1.05	12.21	132.45
55	3.63	144.33	3.97	0.79	12.84	132.47
56	3.68	139.10	4.00	0.53	13.59	132.51
57	3.77	133.35	4.14	0.74	14.38	132.54
58	3.81	129.06	4.16	0.44	15.15	132.53
59	3.91	124.51	4.14	0.70	15.64	132.46
60	3.95	122.79	4.13	0.79	16.05	132.36
61	4.01	119.71	4.10	0.79	16.43	132.20
62	4.09	114.21	3.97	0.88	16.99	131.94
63	4.14	108.12	3.88	0.88	17.77	131.50
64	4.23	98.60	3.64	0.88	18.41	131.00
65	4.28	95.51	3.44	0.79	18.98	130.24
66	4.37	86.41	3.04	0.70	19.17	129.52
67	4.42	83.66	2.87	0.70	19.52	128.75
68	4.46	78.95	2.69	0.70	19.70	128.03
69	4.55	73.37	2.38	0.61	20.10	127.17
70	4.60	67.45	2.16	0.53	20.65	126.26
71	4.66	62.13	2.01	0.44	21.52	125.44
72	4.74	56.89	1.86	0.35	22.68	124.72
73	4.80	51.66	1.76	0.35	24.47	124.32
74	4.88	47.54	1.87	0.35	26.34	124.04
75	4.92	44.62	1.80	0.26	28.48	124.07
76	4.99	42.05	1.90	0.35	29.73	123.90
77	5.06	41.02	1.84	0.26	30.22	123.69
78	5.15	41.10	1.70	0.35	30.10	123.47
79	5.20	40.85	1.75	0.35	30.10	123.49
80	5.29	41.15	1.85	0.88	30.68	123.80
81	5.34	41.19	1.92	1.93	30.96	124.08
82	5.38	41.88	1.95	2.28	31.68	124.19
83	5.46	39.30	1.97	1.84	31.35	124.29
84	5.53	43.25	1.97	1.14	31.07	124.34
85	5.58	43.33	1.97	0.96	30.87	124.38
86	5.67	40.42	1.98	0.79	31.65	124.38
87	5.72	40.25	2.01	0.79	32.46	124.36
88	5.78	40.25	2.01	0.79	32.51	124.34
89	5.85	40.07	1.97	1.05	30.91	124.35
90	5.91	46.34	1.92	1.23	28.29	124.46
91	5.99	52.09	1.92	1.14	24.69	124.89
92	6.07	62.13	2.02	1.14	22.20	125.47
93	6.13	67.96	2.14	1.14	20.80	126.05
94	6.17	69.25	2.23	1.14	20.60	126.53
95	6.27	69.85	2.37	1.31	20.93	126.87
96	6.31	69.76	2.44	1.40	21.38	127.24

:: Field input data :: (continued)

Point ID	Depth (ft)	q_c (tsf)	f_s (tsf)	u (tsf)	Fines content (%)	Unit weight (pcf)
97	6.39	70.54	2.58	1.49	21.57	127.55
98	6.45	72.51	2.66	1.67	21.38	127.88
99	6.52	75.94	2.72	1.84	20.70	128.13
100	6.59	79.98	2.74	1.67	19.92	128.27
101	6.63	81.78	2.71	1.67	19.08	128.30
102	6.72	84.69	2.66	1.67	18.36	128.29
103	6.78	87.27	2.65	1.75	17.64	128.31
104	6.87	90.02	2.65	2.02	17.27	128.38
105	6.92	90.19	2.68	2.19	17.32	128.47
106	6.97	88.13	2.72	1.67	17.91	128.55
107	7.05	84.69	2.80	1.40	18.82	128.58
108	7.10	81.01	2.82	1.58	19.82	128.58
109	7.16	77.92	2.84	1.75	20.68	128.50
110	7.24	75.34	2.81	2.02	21.58	128.37
111	7.37	71.22	2.80	2.19	21.76	128.33
112	7.42	75.64	2.81	2.02	21.91	128.32
113	7.51	74.05	2.82	1.58	21.61	128.47
114	7.56	75.94	2.91	1.49	21.69	128.63
115	7.61	77.32	2.98	1.49	21.52	128.77
116	7.69	77.66	2.95	1.49	21.40	128.84
117	7.75	78.00	2.97	1.58	21.85	128.71
118	7.84	71.48	2.90	1.67	22.59	128.52
119	7.88	68.73	2.84	1.93	22.84	128.29
120	7.94	72.81	2.77	2.98	22.13	128.07
121	8.03	74.14	2.61	2.54	20.28	127.93
122	8.08	83.06	2.51	3.07	17.99	127.74
123	8.17	94.13	2.34	1.75	16.13	127.62
124	8.21	95.34	2.29	1.58	14.95	127.52
125	8.31	97.91	2.29	1.49	14.72	127.50
126	8.35	98.00	2.29	1.40	14.57	127.52
127	8.41	98.34	2.29	1.40	14.62	127.50
128	8.49	97.14	2.28	1.67	14.75	127.50
129	8.55	96.88	2.30	1.84	14.78	127.52
130	8.63	98.94	2.31	1.75	14.63	127.57
131	8.67	100.83	2.29	1.58	14.04	127.57
132	8.76	106.32	2.23	1.23	13.53	127.58
133	8.81	108.21	2.25	1.31	13.15	127.63
134	8.86	108.81	2.28	1.31	13.34	127.99
135	8.96	110.87	2.54	1.31	13.72	128.38
136	9.00	110.78	2.62	1.31	14.14	128.71
137	9.10	108.81	2.62	1.31	14.56	128.71
138	9.14	104.77	2.59	1.58	15.01	128.58
139	9.22	101.51	2.55	1.93	15.34	128.44
140	9.28	101.51	2.52	2.63	15.12	128.34
141	9.33	106.58	2.48	2.54	14.37	128.23
142	9.42	111.64	2.36	1.84	13.50	128.06
143	9.47	113.27	2.27	1.49	12.76	127.73
144	9.54	113.44	2.12	1.49	12.27	127.40

:: Field input data :: (continued)

Point ID	Depth (ft)	q_c (tsf)	f_s (tsf)	u (tsf)	Fines content (%)	Unit weight (pcf)
145	9.60	114.39	2.05	1.49	11.79	127.08
146	9.67	116.10	1.97	1.49	11.38	126.91
147	9.74	118.59	1.95	1.49	11.07	126.85
148	9.79	119.79	1.96	1.49	10.79	126.94
149	9.88	124.34	2.00	1.67	10.64	127.08
150	9.92	125.80	2.03	1.67	10.43	127.33
151	10.01	130.86	2.12	1.67	10.28	127.58
152	10.06	134.46	2.15	1.75	10.12	127.80
153	10.11	135.67	2.17	1.75	10.00	127.95
154	10.20	138.07	2.21	1.84	9.99	128.06
155	10.25	138.41	2.23	1.84	10.00	128.18
156	10.34	138.93	2.26	1.93	10.10	128.26
157	10.38	138.33	2.28	1.93	10.18	128.32
158	10.47	138.33	2.29	1.93	10.24	128.32
159	10.50	138.33	2.27	1.93	10.23	128.36
160	10.57	139.87	2.31	1.93	10.13	128.37
161	10.66	142.02	2.28	1.93	10.11	128.46
162	10.71	141.76	2.33	1.93	10.24	128.52
163	10.80	138.58	2.37	2.02	11.00	128.52
164	10.86	124.34	2.38	1.40	11.55	128.48
165	10.91	128.97	2.37	1.23	12.11	128.46
166	11.00	126.57	2.42	1.31	12.30	128.63
167	11.04	125.20	2.54	1.31	12.90	128.98
168	11.11	125.37	2.75	1.31	13.68	129.57
169	11.18	125.80	3.08	1.31	14.46	130.20
170	11.23	126.23	3.29	1.31	15.59	131.01
171	11.32	124.77	3.83	1.49	17.04	131.67
172	11.37	117.39	4.12	2.10	18.48	132.24
173	11.45	117.13	4.31	3.77	19.31	132.45
174	11.51	117.82	4.27	4.38	19.35	132.44
175	11.55	116.87	4.11	4.29	19.70	131.91
176	11.65	100.40	3.61	5.08	21.77	130.99
177	11.73	73.97	3.37	5.61	25.05	129.95
178	11.77	67.10	3.25	6.04	27.18	129.22
179	11.83	73.11	3.02	9.46	28.16	128.76
180	11.88	61.27	2.96	11.39	27.22	128.65
181	11.97	72.25	3.03	15.33	26.03	129.17
182	12.02	89.41	3.45	16.30	22.81	130.60
183	12.09	113.18	4.23	15.51	19.98	132.28
184	12.17	140.47	4.82	15.68	18.09	133.66
185	12.25	153.94	5.21	17.61	17.01	134.43
186	12.29	156.17	5.28	17.70	16.86	134.76
187	12.34	154.03	5.38	16.47	17.08	134.95
188	12.43	155.83	5.59	16.47	17.16	135.10
189	12.48	160.29	5.59	14.54	16.23	135.23
190	12.57	178.83	5.37	12.70	14.96	135.20
191	12.61	186.21	5.21	12.27	13.51	135.11
192	12.66	196.93	5.05	9.55	12.40	134.93

:: Field input data :: (continued)

Point ID	Depth (ft)	q_c (tsf)	f_s (tsf)	u (tsf)	Fines content (%)	Unit weight (pcf)
193	12.75	205.43	4.75	8.23	11.45	134.74
194	12.80	210.66	4.62	8.28	10.64	134.49
195	12.89	215.21	4.42	7.88	10.21	134.35
196	12.94	216.93	4.43	8.32	9.90	134.28
197	13.03	219.93	4.42	8.59	9.76	134.30
198	13.07	222.59	4.42	8.50	9.62	134.45
199	13.17	229.46	4.60	8.76	8.44	133.66
200	13.21	235.81	2.95	8.94	6.36	131.82
201	13.26	239.58	1.69	9.20	4.30	129.70
202	13.35	251.60	2.21	9.46	3.69	129.25
203	13.40	255.89	2.49	9.72	4.15	130.45
204	13.45	264.98	2.73	10.25	4.79	131.54
205	13.54	264.90	3.36	10.60	5.76	132.62
206	13.59	250.22	3.87	3.50	7.27	133.83
207	13.67	242.24	4.65	7.53	9.21	134.69
208	13.73	214.87	5.15	7.27	11.71	135.26
209	13.82	178.91	5.51	6.83	14.65	135.30
210	13.86	155.57	5.49	6.57	18.27	134.94
211	13.91	120.99	5.38	6.75	22.41	134.17
212	14.01	90.53	4.97	6.13	27.20	133.13
213	14.05	78.17	4.52	6.13	30.86	131.84
214	14.14	68.48	3.84	6.13	32.46	130.64
215	14.19	62.98	3.43	6.13	32.71	129.24
216	14.26	59.21	2.76	6.66	31.67	127.61
217	14.37	56.12	2.02	7.97	30.14	126.08
218	14.37	55.52	1.98	7.97	28.65	124.79
219	14.46	54.40	1.73	7.97	28.04	124.28
220	14.51	54.75	1.65	8.23	27.18	123.72
221	14.59	55.18	1.59	8.23	26.33	123.59
222	14.65	58.18	1.60	6.48	25.82	123.58
223	14.73	57.92	1.61	8.10	25.51	123.74
224	14.79	58.95	1.66	7.18	25.14	123.98
225	14.83	63.16	1.72	7.97	23.87	124.63
226	14.93	73.71	1.92	7.01	22.74	125.30
227	14.97	75.86	2.01	6.48	22.35	125.95
228	15.04	75.00	2.13	5.87	23.41	126.34
229	15.11	70.28	2.28	5.34	25.50	126.70
230	15.20	64.70	2.45	5.91	27.81	126.92
231	15.24	62.21	2.50	5.43	29.86	126.96
232	15.29	58.27	2.48	5.96	31.34	126.69
233	15.37	53.80	2.33	6.04	32.58	126.07
234	15.43	49.94	2.07	5.87	33.50	125.25
235	15.49	46.68	1.90	6.13	33.68	124.34
236	15.57	45.39	1.70	6.31	33.97	123.55
237	15.62	42.73	1.58	6.22	34.38	122.68
238	15.71	38.79	1.41	5.78	35.47	121.90
239	15.75	36.38	1.33	6.48	35.90	121.16
240	15.82	36.73	1.23	7.45	35.14	120.84

:: Field input data :: (continued)

Point ID	Depth (ft)	q_c (tsf)	f_s (tsf)	u (tsf)	Fines content (%)	Unit weight (pcf)
241	15.89	39.30	1.23	8.06	33.14	120.81
242	15.96	43.08	1.24	8.85	31.39	121.24
243	16.03	46.34	1.36	8.85	29.05	122.23
244	16.12	57.24	1.61	8.59	26.26	123.50
245	16.17	69.51	1.76	8.76	23.96	124.68
246	16.21	74.23	1.92	8.06	22.71	125.91
247	16.30	82.46	2.33	6.75	22.74	126.90
248	16.36	83.41	2.50	5.78	23.52	127.72
249	16.42	79.29	2.66	6.13	25.50	127.91
250	16.51	68.82	2.68	7.10	28.11	127.68
251	16.58	61.44	2.52	7.27	30.58	127.16
252	16.63	57.92	2.39	7.62	31.29	126.11
253	16.67	53.80	1.85	8.06	30.12	124.51
254	16.77	51.92	1.29	9.29	28.33	122.93
255	16.81	52.86	1.36	10.86	26.14	122.41
256	16.90	60.93	1.49	15.86	24.75	123.10
257	16.95	67.10	1.57	19.10	23.44	123.81
258	17.00	69.42	1.67	20.41	22.60	124.37
259	17.07	73.80	1.75	21.99	22.51	124.90
260	17.15	74.48	1.88	29.26	22.66	125.33
261	17.19	73.80	1.95	32.68	23.55	125.80
262	17.32	72.60	2.13	36.97	24.35	126.08
263	17.34	72.17	2.14	36.93	25.13	126.31
264	17.42	70.79	2.18	36.93	25.74	126.33
265	17.47	68.56	2.18	36.88	26.77	126.28
266	17.52	64.53	2.17	38.02	27.87	126.02
267	17.61	60.67	2.07	39.34	29.07	125.64
268	17.66	57.32	1.97	39.38	29.84	125.12
269	17.74	54.92	1.85	39.38	30.31	124.72
270	17.79	54.58	1.82	39.42	29.99	124.41
271	17.88	56.03	1.75	43.72	29.01	124.31
272	17.93	59.38	1.73	44.94	27.64	124.26
273	17.98	61.87	1.72	45.56	26.11	124.49
274	18.07	68.05	1.80	45.03	25.33	124.79
275	18.11	68.22	1.86	43.72	25.08	125.18
276	18.19	68.31	1.95	45.12	25.42	125.39
277	18.25	68.48	1.97	43.89	25.76	125.52
278	18.35	67.53	1.97	41.44	26.08	125.53
279	18.39	66.59	1.97	44.33	26.41	125.40
280	18.51	64.87	1.90	46.78	26.57	125.25
281	18.53	65.04	1.87	48.10	26.38	125.04
282	18.58	65.56	1.82	49.32	26.12	124.83
283	18.67	64.36	1.74	42.23	26.04	124.63
284	18.71	63.76	1.74	41.53	26.39	124.44
285	18.81	61.44	1.72	43.80	27.00	124.38
286	18.86	60.15	1.74	41.70	27.68	124.33
287	18.90	59.30	1.75	41.35	28.84	124.41
288	19.00	55.78	1.84	40.21	30.11	124.47

:: Field input data :: (continued)

Point ID	Depth (ft)	q_c (tsf)	f_s (tsf)	u (tsf)	Fines content (%)	Unit weight (pcf)
289	19.04	54.23	1.84	38.55	31.69	124.42
290	19.13	51.06	1.80	37.06	32.55	124.25
291	19.16	50.46	1.77	35.39	32.96	123.88
292	19.26	49.34	1.63	28.30	33.28	123.49
293	19.31	46.85	1.58	28.60	33.90	123.04
294	19.36	44.45	1.53	25.93	34.73	122.62
295	19.45	42.99	1.44	28.91	35.02	122.19
296	19.51	42.82	1.37	26.98	34.86	121.75
297	19.59	42.13	1.31	25.49	34.61	121.48
298	19.64	42.22	1.29	25.76	34.64	121.43
299	19.73	42.48	1.34	24.62	34.80	121.46
300	19.77	42.05	1.33	23.65	35.12	121.49
301	19.82	41.36	1.32	22.87	35.33	121.32
302	19.89	40.63	1.27	30.84	35.40	121.00
303	19.99	39.90	1.19	17.17	35.48	120.64
304	20.03	39.04	1.16	18.31	35.71	120.29
305	20.08	37.93	1.13	19.80	36.36	119.97
306	20.17	35.87	1.07	21.38	37.04	119.64
307	20.21	35.18	1.05	21.46	37.58	119.20
308	20.31	33.98	0.98	20.59	37.70	118.88
309	20.35	33.98	0.96	20.54	37.66	118.54
310	20.45	33.55	0.93	20.54	37.61	118.39
311	20.48	33.47	0.92	20.50	37.48	118.24
312	20.59	33.64	0.91	20.85	37.41	118.19
313	20.63	33.64	0.90	21.11	37.40	118.13
314	20.68	33.29	0.90	21.73	37.79	118.10
315	20.77	32.44	0.90	23.39	38.52	118.04
316	20.82	31.58	0.90	23.13	39.16	117.92
317	20.89	31.15	0.88	22.34	39.29	117.79
318	20.96	31.62	0.86	22.78	39.29	117.70
319	21.05	31.24	0.87	24.09	39.13	117.69
320	21.09	31.66	0.88	24.53	39.04	117.80
321	21.14	32.35	0.89	26.37	38.58	117.98
322	21.20	33.38	0.92	27.60	37.92	118.35
323	21.32	35.35	0.98	28.30	37.35	118.68
324	21.33	35.87	0.99	28.47	36.78	119.01
325	21.42	36.90	1.02	29.44	36.08	119.22
326	21.46	38.79	1.04	29.87	35.32	119.48
327	21.55	39.90	1.06	31.71	34.29	119.64
328	21.60	41.45	1.05	31.63	33.49	120.04
329	21.66	44.28	1.16	33.20	33.08	120.98
330	21.74	48.05	1.43	35.31	32.81	122.04
331	21.79	50.54	1.53	38.72	32.86	122.88
332	21.88	50.89	1.60	39.60	32.99	123.26
333	21.93	50.80	1.64	40.04	35.00	123.43
334	21.98	43.59	1.71	37.32	34.63	123.94
335	22.07	56.81	1.88	36.75	34.52	124.45
336	22.13	56.03	1.96	35.22	33.02	125.02

:: Field input data :: (continued)

Point ID	Depth (ft)	q_c (tsf)	f_s (tsf)	u (tsf)	Fines content (%)	Unit weight (pcf)
337	22.21	55.95	2.01	36.18	33.56	125.18
338	22.25	55.95	2.03	35.39	33.91	125.32
339	22.34	55.86	2.08	32.24	34.26	125.44
340	22.39	55.69	2.11	32.28	34.61	125.59
341	22.48	55.95	2.16	32.33	34.78	125.69
342	22.53	56.29	2.17	33.90	34.85	125.76
343	22.62	56.03	2.16	36.36	34.79	125.73
344	22.67	56.12	2.13	39.69	34.64	125.66
345	22.71	56.38	2.10	40.04	34.32	125.59
346	22.77	56.89	2.09	39.16	34.51	125.44
347	22.85	53.97	2.03	39.95	35.63	125.06
348	22.94	48.05	1.89	40.65	37.24	124.59
349	22.99	46.34	1.84	40.56	38.38	124.17
350	23.03	46.21	1.80	42.75	38.34	123.91
351	23.10	46.21	1.73	44.94	38.05	123.74
352	23.17	46.08	1.72	48.45	36.64	123.73
353	23.27	51.40	1.73	55.98	35.12	123.95
354	23.31	54.23	1.79	57.82	31.90	124.55
355	23.41	66.07	1.93	81.65	29.77	125.17
356	23.43	69.16	2.01	89.62	27.89	126.02
357	23.49	75.68	2.27	75.25	26.98	126.94
358	23.59	84.78	2.58	60.10	26.10	127.83
359	23.63	89.24	2.69	65.18	24.17	128.73
360	23.73	107.69	2.94	52.39	22.70	129.35
361	23.77	111.64	3.04	42.84	20.67	130.14
362	23.86	130.00	3.29	32.24	19.09	130.78
363	23.91	145.36	3.45	26.11	17.63	131.40
364	23.95	151.71	3.57	24.27	16.49	131.83
365	24.05	163.38	3.64	21.81	15.93	132.11
366	24.09	165.70	3.71	20.94	15.87	132.60
367	24.19	167.76	4.20	21.29	16.70	133.34
368	24.28	168.96	4.82	19.10	17.55	133.98
369	24.29	168.45	4.86	19.01	18.44	134.42
370	24.37	163.55	5.10	19.62	19.53	134.58
371	24.42	152.66	5.30	25.67	20.32	134.84
372	24.49	161.92	5.49	33.47	20.87	134.74
373	24.56	150.94	5.02	35.57	20.11	134.54
374	24.62	160.29	4.78	30.31	19.09	134.11
375	24.69	168.53	4.56	30.14	17.68	134.05
376	24.79	177.80	4.65	20.68	18.03	133.96
377	24.81	150.94	4.68	17.61	17.63	134.16
378	24.89	183.38	4.81	14.19	17.28	134.44
379	24.94	195.30	5.04	14.24	16.34	135.09
380	25.03	196.16	5.61	14.28	17.22	135.51
381	25.09	177.80	5.79	17.87	18.83	135.77
382	25.16	168.19	5.91	23.74	20.87	135.75
383	25.22	154.46	6.02	27.77	22.22	135.77
384	25.27	154.46	6.12	27.33	23.17	135.84

:: Field input data :: (continued)

Point ID	Depth (ft)	q_c (tsf)	f_s (tsf)	u (tsf)	Fines content (%)	Unit weight (pcf)
385	25.35	154.46	6.26	27.60	24.17	135.83
386	25.41	138.67	6.20	32.33	25.54	135.60
387	25.48	128.29	5.91	27.86	27.77	135.06
388	25.54	112.50	5.57	15.07	29.66	134.45
389	25.59	104.09	5.32	13.49	31.52	133.87
390	25.68	98.42	5.10	19.62	32.33	133.52
391	25.73	98.68	5.05	33.64	32.50	133.33
392	25.79	98.68	5.01	66.06	32.02	133.18
393	25.86	98.94	4.76	84.45	30.67	133.29
394	25.93	112.67	5.05	69.39	28.82	133.40
395	26.00	118.93	4.91	70.26	26.45	133.75
396	26.10	133.09	4.99	73.42	24.75	133.80
397	26.14	135.41	4.85	75.95	24.17	133.69
398	26.19	124.77	4.62	29.87	25.18	133.10
399	26.28	107.01	4.18	30.05	27.51	132.30
400	26.33	93.36	3.96	30.23	30.14	131.44
401	26.39	84.01	3.71	53.09	31.88	130.55
402	26.47	78.52	3.20	66.49	32.62	129.69
403	26.52	75.08	2.99	73.24	32.30	128.76
404	26.60	73.20	2.65	71.05	31.11	127.75
405	26.64	73.20	2.12	76.48	28.51	126.42
406	26.74	75.60	1.69	82.79	26.59	125.41
407	26.79	74.14	1.81	89.45	26.07	125.06
408	26.85	72.34	1.86	104.34	27.01	125.15
409	26.93	69.68	1.80	110.39	27.70	125.07
410	26.97	68.39	1.80	109.16	27.97	125.10
411	27.04	71.22	1.89	91.55	29.56	125.90
412	27.10	69.16	2.45	97.33	32.03	127.42
413	27.18	71.44	3.18	105.57	35.80	129.28
414	27.26	71.65	4.05	133.60	35.18	130.75
415	27.32	92.25	4.19	139.91	31.73	132.03
416	27.40	117.39	4.60	77.27	28.04	132.87
417	27.43	123.14	4.86	50.11	26.67	133.64
418	27.50	125.63	5.25	37.15	27.86	133.95
419	27.60	111.64	5.34	43.45	29.60	134.01
420	27.64	106.23	5.24	35.74	32.14	133.54
421	27.73	92.16	4.78	31.10	34.77	132.82
422	27.78	77.66	4.44	30.05	37.93	131.96
423	27.82	71.39	4.22	33.64	39.33	131.17
424	27.92	73.02	3.74	37.58	38.48	130.61
425	27.96	75.17	3.56	34.17	37.87	129.89
426	28.05	65.56	3.23	38.02	39.12	129.18
427	28.10	58.09	3.00	42.14	41.37	128.29
428	28.17	54.83	2.75	47.22	41.70	127.21
429	28.24	53.46	2.18	48.88	40.73	126.11
430	28.28	51.83	1.99	50.46	39.00	124.89
431	28.38	50.89	1.73	50.81	38.32	124.14
432	28.43	49.86	1.65	53.70	37.60	123.46

:: Field input data :: (continued)

Point ID	Depth (ft)	q_c (tsf)	f_s (tsf)	u (tsf)	Fines content (%)	Unit weight (pcf)
433	28.51	49.08	1.54	51.86	37.60	123.02
434	28.56	47.54	1.48	50.02	37.86	122.65
435	28.61	46.25	1.46	47.13	38.54	122.42
436	28.70	45.05	1.44	45.38	39.43	122.16
437	28.75	42.91	1.38	40.21	40.53	121.74
438	28.84	39.90	1.28	39.25	41.91	121.29
439	28.89	38.19	1.26	36.88	43.16	120.93
440	28.96	37.33	1.25	36.18	43.96	120.79
441	29.02	37.07	1.24	35.39	44.56	120.68
442	29.07	36.13	1.23	36.45	48.22	120.42
443	29.14	27.29	1.23	37.32	47.59	120.62
444	29.23	39.56	1.31	37.67	46.73	121.01
445	29.29	40.42	1.39	38.72	42.60	121.71
446	29.33	42.48	1.45	40.65	41.78	122.23
447	29.40	45.48	1.54	41.61	40.56	123.06
448	29.50	50.37	1.80	42.84	39.41	123.96
449	29.56	53.72	1.94	43.98	38.19	124.80
450	29.61	57.49	2.03	44.42	37.41	125.32
451	29.67	58.52	2.12	44.94	37.15	125.74
452	29.74	59.04	2.23	43.54	38.00	126.00
453	29.83	56.46	2.28	38.98	39.52	126.05
454	29.89	52.77	2.24	35.74	41.24	125.89
455	29.92	50.89	2.20	34.87	42.86	125.50
456	30.01	47.20	2.05	35.61	44.03	125.01
457	30.07	44.96	1.93	34.17	45.33	124.40
458	30.13	42.22	1.82	35.48	46.32	123.73
459	30.21	39.64	1.65	36.09	47.61	123.03
460	30.26	36.98	1.54	35.39	48.93	122.14
461	30.35	33.64	1.36	34.25	50.95	121.31
462	30.39	30.63	1.27	34.43	52.76	120.34
463	30.47	28.57	1.13	34.17	55.75	119.57
464	30.53	27.37	1.06	34.60	55.92	118.72
465	30.62	26.77	0.94	35.31	53.67	118.05
466	30.67	27.20	0.87	36.80	51.98	117.39
467	30.72	27.55	0.81	37.67	49.28	116.87
468	30.80	29.35	0.73	38.46	47.10	116.49
469	30.85	29.78	0.73	38.72	44.76	116.39
470	30.94	31.84	0.75	40.56	43.80	116.60
471	30.97	32.44	0.77	40.56	43.30	117.04
472	31.04	32.95	0.84	39.69	43.98	117.48
473	31.13	32.52	0.89	40.65	45.03	118.00
474	31.18	32.69	0.95	39.42	45.66	118.67
475	31.27	34.92	1.08	40.74	45.72	119.36
476	31.31	36.04	1.15	41.44	45.00	120.17
477	31.40	38.87	1.25	41.53	44.41	120.68
478	31.44	39.47	1.28	41.09	43.84	121.12
479	31.50	40.33	1.33	39.34	43.79	121.54
480	31.59	41.79	1.45	38.90	43.99	121.99

:: Field input data :: (continued)

Point ID	Depth (ft)	q_c (tsf)	f_s (tsf)	u (tsf)	Fines content (%)	Unit weight (pcf)
481	31.64	41.96	1.51	39.51	43.66	122.19
482	31.73	42.65	1.42	39.77	43.05	121.98
483	31.77	42.39	1.32	39.07	43.00	121.84
484	31.91	41.19	1.43	39.20	43.66	121.83
485	31.91	40.93	1.44	39.20	44.67	122.00
486	31.98	40.59	1.44	39.34	44.91	121.94
487	32.06	40.25	1.41	40.65	44.86	121.86
488	32.10	40.67	1.39	40.12	44.32	121.78
489	32.20	41.62	1.38	42.40	43.76	121.82
490	32.25	42.22	1.41	43.19	43.33	121.94
491	32.28	42.65	1.44	45.20	42.54	122.40
492	32.38	47.11	1.59	53.18	41.39	122.98
493	32.42	50.03	1.68	55.63	38.71	123.92
494	32.52	59.72	1.89	65.70	36.54	124.69
495	32.56	63.07	1.98	68.51	34.25	125.51
496	32.67	69.25	2.12	71.49	33.33	125.93
497	32.70	69.33	2.14	76.04	32.89	126.26
498	32.74	69.16	2.20	82.26	32.87	126.71
499	32.88	74.14	2.48	121.86	32.63	127.17
500	32.90	76.03	2.50	127.56	32.11	127.67
501	32.98	78.09	2.60	134.21	31.81	127.86
502	33.03	78.60	2.63	138.51	31.69	128.02
503	33.07	79.03	2.64	134.56	31.80	128.10
504	33.16	78.52	2.68	138.51	32.06	128.16
505	33.21	77.92	2.70	129.22	32.59	128.24
506	33.30	76.63	2.75	138.51	32.98	128.28
507	33.35	76.63	2.74	147.79	33.17	128.31
508	33.43	76.80	2.74	155.41	33.21	128.33
509	33.48	76.63	2.77	157.60	33.28	128.35
510	33.53	76.46	2.77	157.69	33.87	128.50
511	33.62	75.43	2.93	139.21	34.71	128.59
512	33.67	73.28	2.92	125.36	35.89	128.56
513	33.76	69.76	2.82	110.30	37.10	128.28
514	33.81	66.16	2.74	86.99	38.65	128.03
515	33.89	63.07	2.78	78.67	40.59	128.12
516	33.95	61.95	3.04	89.18	42.42	128.56
517	33.99	62.56	3.32	99.26	43.07	129.57
518	34.08	70.71	3.98	127.91	40.31	130.96
519	34.17	92.76	4.62	133.34	36.78	132.25
520	34.21	103.32	4.86	127.47	32.55	133.38
521	34.26	124.51	5.30	114.33	28.97	134.71
522	34.37	159.52	6.53	66.58	24.33	135.31
523	34.41	183.12	5.20	58.17	19.20	134.48
524	34.45	191.44	2.83	54.40	13.89	132.46
525	34.52	216.33	2.65	38.72	10.78	131.28
526	34.59	235.38	3.36	38.90	10.05	132.70
527	34.68	275.97	4.29	38.90	9.81	134.38
528	34.73	305.91	4.82	39.07	10.54	135.74

:: Field input data :: (continued)

Point ID	Depth (ft)	q_c (tsf)	f_s (tsf)	u (tsf)	Fines content (%)	Unit weight (pcf)
529	34.81	273.18	5.69	39.07	11.86	136.71
530	34.87	270.39	6.42	39.07	12.49	137.28
531	34.91	313.21	6.35	196.15	11.01	137.28
532	34.98	354.31	5.76	88.22	9.06	137.28
533	35.05	381.34	5.91	42.23	8.05	137.28
534	35.12	410.17	6.82	30.66	8.12	137.28
535	35.19	419.78	7.78	28.21	8.70	137.28
536	35.24	414.12	8.46	26.90	8.58	137.28
537	35.32	351.39	4.73	209.64	8.07	137.28
538	35.39	355.25	4.66	117.66	6.92	135.80
539	35.44	355.25	4.47	83.23	6.42	135.26
540	35.51	353.02	3.74	75.34	6.51	135.57
541	35.60	371.13	5.16	59.84	8.72	135.82
542	35.65	231.00	5.50	59.84	10.96	136.78
543	35.71	295.27	6.11	59.84	12.72	137.28
544	35.79	328.40	6.99	191.42	13.51	137.28
545	35.84	243.19	7.57	109.86	13.50	137.28
546	35.93	352.51	8.53	26.02	13.66	137.28
547	35.97	352.77	8.28	20.41	11.84	137.28
548	36.02	343.16	7.32	16.03	11.46	137.28
549	36.10	323.76	6.45	12.18	11.27	137.28
550	36.16	310.63	6.26	9.64	11.70	137.28
551	36.25	288.41	6.19	7.18	12.44	137.28
552	36.30	278.45	6.18	6.66	13.30	137.28
553	36.36	267.04	6.16	5.78	12.49	136.20
554	36.44	262.24	3.73	4.91	10.38	134.11
555	36.48	261.21	2.28	4.73	8.09	131.72
556	36.57	257.26	2.80	5.52	7.78	131.18
557	36.62	253.31	3.14	5.08	9.02	132.12
558	36.69	246.88	3.45	4.64	10.06	132.77
559	36.76	243.19	3.75	3.77	11.61	133.28
560	36.81	217.10	4.07	4.47	13.07	133.90
561	36.90	223.62	4.59	23.83	14.80	134.56
562	36.95	217.10	5.09	21.11	16.46	135.24
563	37.05	198.65	5.56	17.52	17.92	135.59
564	37.09	200.28	5.52	16.03	18.85	135.61
565	37.14	196.33	5.33	15.16	18.97	135.25
566	37.24	183.29	4.91	14.72	19.51	134.82
567	37.28	174.11	4.84	14.19	20.63	134.41
568	37.34	160.81	4.82	14.19	22.04	134.11
569	37.42	149.57	4.65	13.76	23.32	133.79
570	37.47	144.68	4.51	13.76	25.07	133.73
571	37.56	133.95	5.00	13.05	26.47	133.74
572	37.61	131.80	4.88	10.86	29.87	133.46
573	37.70	98.94	4.52	4.82	32.92	132.75
574	37.74	90.70	4.23	4.38	37.52	131.24
575	37.83	71.65	3.13	4.73	41.62	129.76
576	37.88	55.43	2.96	8.15	46.57	128.31

:: Field input data :: (continued)

Point ID	Depth (ft)	q_c (tsf)	f_s (tsf)	u (tsf)	Fines content (%)	Unit weight (pcf)
577	37.93	52.60	2.93	12.70	52.53	127.81
578	38.02	46.51	2.97	19.19	53.22	127.71
579	38.06	52.47	2.89	20.59	57.18	127.25
580	38.13	42.73	2.58	22.16	52.05	126.81
581	38.19	52.34	2.36	29.17	50.86	126.12
582	38.26	50.46	2.22	29.17	48.27	125.76
583	38.33	47.80	2.16	29.17	49.50	125.41
584	38.40	45.91	2.14	29.17	51.10	125.12
585	38.48	43.76	2.06	33.64	52.03	124.81
586	38.54	43.08	1.96	36.18	51.95	124.43
587	38.59	43.42	1.86	36.45	51.68	124.15
588	38.68	42.65	1.86	33.64	51.73	123.97
589	38.72	41.88	1.84	33.47	52.14	123.84
590	38.82	41.58	1.79	33.90	52.03	123.61
591	38.85	41.58	1.71	33.90	52.15	123.56
592	38.96	41.27	1.81	37.41	52.04	123.84
593	39.01	43.76	1.97	37.85	51.64	124.42
594	39.05	46.51	2.08	39.86	49.12	125.14
595	39.14	53.80	2.23	31.54	46.89	125.70
596	39.18	55.52	2.29	27.95	44.48	126.15
597	39.25	59.30	2.32	21.73	44.73	126.48
598	39.34	56.03	2.52	28.34	46.33	126.79
599	39.39	52.69	2.64	26.20	49.65	127.04
600	39.47	50.11	2.73	28.73	51.92	127.15
601	39.53	49.86	2.73	32.50	52.38	127.20
602	39.57	51.74	2.72	33.55	49.05	127.47
603	39.66	63.07	2.81	34.17	43.76	127.91
604	39.72	74.48	2.85	30.57	38.29	128.45
605	39.80	84.44	2.90	25.41	33.64	129.01
606	39.85	99.37	3.04	22.78	30.52	129.56
607	39.90	106.75	3.18	21.99	27.87	130.32
608	39.97	121.68	3.49	20.68	27.22	131.03
609	40.03	119.96	3.81	19.62	27.72	131.74
610	40.12	116.27	4.16	19.93	29.20	132.19
611	40.17	115.67	4.28	17.35	30.24	132.60
612	40.26	118.08	4.54	20.24	30.58	133.07
613	40.31	122.79	4.92	20.68	30.42	133.65
614	40.36	129.83	5.22	23.65	29.62	134.30
615	40.45	142.02	5.58	18.14	29.02	134.84
616	40.49	143.22	5.84	16.91	28.99	135.34
617	40.58	143.22	6.21	16.64	29.52	135.63
618	40.63	143.22	6.28	17.78	28.91	135.90
619	40.69	158.32	6.31	22.43	26.88	136.22
620	40.77	180.89	6.55	21.11	24.05	136.66
621	40.82	203.20	6.66	20.59	21.65	137.10
622	40.91	220.96	6.78	20.15	19.98	137.28
623	40.95	228.08	6.69	18.66	19.12	137.28
624	41.03	223.45	6.38	15.68	18.21	136.55

:: Field input data :: (continued)

Point ID	Depth (ft)	q_c (tsf)	f_s (tsf)	u (tsf)	Fines content (%)	Unit weight (pcf)
625	41.09	213.41	4.92	12.88	16.34	134.63
626	41.16	200.71	2.74	9.72	14.84	132.68
627	41.22	191.19	3.28	8.50	14.50	131.72
628	41.28	189.13	3.69	7.18	16.36	132.87
629	41.34	194.19	4.44	6.75	18.03	134.11
630	41.42	195.30	5.36	6.92	20.54	135.18
631	41.50	172.65	5.98	20.94	22.82	135.90
632	41.55	174.54	6.26	20.15	25.24	136.30
633	41.65	166.47	6.69	12.00	28.16	136.22
634	41.73	126.83	6.37	11.13	32.35	135.87
635	41.74	113.70	6.25	11.56	37.94	134.98
636	41.81	93.36	5.65	9.81	41.99	134.03
637	41.88	79.72	4.97	9.72	46.73	132.51
638	41.97	63.33	4.00	12.44	50.66	131.08
639	42.01	57.84	3.72	13.58	57.46	129.77
640	42.06	48.83	3.50	15.77	61.69	128.81
641	42.14	41.62	3.06	20.24	66.29	127.68
642	42.20	37.50	2.69	21.99	68.71	126.26
643	42.30	34.41	2.17	23.48	69.32	125.11
644	42.34	33.90	2.07	25.14	68.34	124.28
645	42.43	34.84	2.00	26.46	66.88	124.16
646	42.48	36.56	2.03	27.95	65.43	124.24
647	42.52	37.24	2.08	28.73	63.11	124.58
648	42.61	41.62	2.16	32.59	60.40	124.95
649	42.67	45.14	2.19	33.82	57.68	125.52
650	42.75	48.14	2.41	34.34	55.89	126.12
651	42.79	51.23	2.57	34.52	52.32	126.90
652	42.85	55.26	2.82	33.99	50.84	127.69
653	42.93	59.81	3.09	35.04	49.01	128.46
654	43.02	65.04	3.26	37.06	46.74	129.06
655	43.07	70.45	3.34	39.07	43.49	129.55
656	43.16	80.15	3.44	38.11	40.85	129.90
657	43.19	83.15	3.47	37.85	38.49	130.26
658	43.26	88.99	3.58	37.85	36.51	130.57
659	43.32	97.65	3.65	38.20	33.96	131.02
660	43.39	108.89	3.81	38.63	31.05	131.52
661	43.44	122.71	3.95	38.02	28.09	132.08
662	43.53	138.84	4.10	35.83	24.79	132.72
663	43.62	164.41	4.30	32.59	22.27	133.23
664	43.64	174.19	4.35	30.84	20.24	133.74
665	43.71	189.98	4.56	26.02	18.94	134.12
666	43.77	203.46	4.68	22.60	17.89	134.50
667	43.85	211.44	4.78	20.94	17.16	134.75
668	43.90	217.19	4.83	19.45	16.46	134.75
669	43.99	221.82	4.55	18.66	15.60	134.53
670	44.03	226.37	4.26	18.05	14.78	134.39
671	44.13	235.72	4.46	17.17	14.33	134.48
672	44.17	239.24	4.59	16.56	14.20	134.93

:: Field input data :: (continued)

Point ID	Depth (ft)	q_c (tsf)	f_s (tsf)	u (tsf)	Fines content (%)	Unit weight (pcf)
673	44.27	250.22	4.95	15.59	14.23	135.31
674	44.31	252.28	5.11	15.33	14.35	135.73
675	44.37	254.17	5.33	15.95	14.37	136.12
676	44.47	267.99	5.67	15.42	14.30	136.50
677	44.51	273.65	5.82	15.16	14.26	136.85
678	44.56	273.48	6.02	14.46	14.53	137.00
679	44.65	266.10	6.04	14.63	14.84	136.97
680	44.70	261.89	5.85	14.54	15.14	136.71
681	44.79	250.82	5.55	13.76	15.26	136.40
682	44.83	247.82	5.45	13.58	15.54	136.02
683	44.92	235.98	5.19	12.62	15.78	135.74
684	44.98	231.17	5.07	12.00	16.01	135.46
685	45.02	229.54	4.99	11.74	16.06	135.29
686	45.08	227.74	4.91	11.21	16.05	135.18
687	45.16	227.05	4.87	11.30	16.08	135.09
688	45.25	225.51	4.84	10.95	15.29	134.48
689	45.29	225.68	3.76	10.51	13.44	133.09
690	45.39	226.20	2.53	10.60	11.70	131.67
691	45.43	226.28	2.89	10.51	11.24	131.28
692	45.48	226.11	3.28	10.51	12.97	132.61
693	45.58	221.56	4.28	9.81	15.13	133.88
694	45.62	212.64	4.95	9.99	18.19	135.16
695	45.68	195.90	5.90	11.04	21.59	136.12
696	45.76	181.83	6.79	9.64	25.60	136.83
697	45.80	163.04	7.33	7.97	29.89	137.02
698	45.88	136.95	7.23	6.92	34.06	136.66
699	45.94	121.08	6.70	8.15	38.32	135.58
700	46.03	96.88	5.50	8.23	41.46	134.28
701	46.08	87.35	4.89	12.27	45.64	132.74
702	46.17	70.28	4.31	18.84	48.91	131.68
703	46.22	66.07	4.08	25.84	51.68	130.85
704	46.27	65.47	3.87	26.46	51.59	130.16
705	46.36	62.98	3.34	26.28	50.78	129.25
706	46.40	59.64	2.86	25.32	49.82	127.95
707	46.46	56.12	2.38	24.88	49.16	126.80
708	46.54	54.75	2.22	24.44	48.95	126.02
709	46.59	53.55	2.18	24.79	49.23	125.79
710	46.68	53.29	2.21	25.84	49.69	125.73
711	46.73	52.86	2.19	26.46	49.00	125.74
712	46.79	55.86	2.16	32.41	50.07	125.57
713	46.85	48.40	2.12	33.90	52.39	125.09
714	46.95	42.13	1.92	34.17	58.82	124.40
715	47.02	40.33	1.81	34.78	60.74	123.80
716	47.05	39.82	1.78	35.04	61.28	123.48
717	47.11	38.96	1.73	36.01	61.86	123.10
718	47.18	36.81	1.59	38.98	61.38	122.76
719	47.25	38.87	1.55	43.28	61.14	122.46
720	47.32	37.76	1.55	46.78	60.20	122.47

:: Field input data :: (continued)

Point ID	Depth (ft)	q_c (tsf)	f_s (tsf)	u (tsf)	Fines content (%)	Unit weight (pcf)
721	47.42	38.79	1.57	57.12	59.99	122.66
722	47.47	40.25	1.66	65.62	59.08	123.19
723	47.55	42.91	1.84	67.63	58.78	124.04
724	47.65	44.88	2.10	65.53	59.06	124.84
725	47.69	45.05	2.23	62.99	59.21	125.54
726	47.74	47.45	2.38	65.44	58.83	126.05
727	47.78	49.77	2.50	66.14	55.85	126.78
728	47.88	59.90	2.72	70.70	49.59	127.37
729	47.90	64.87	2.74	69.65	44.53	127.98
730	47.97	75.94	2.81	63.34	40.84	128.49
731	48.06	83.75	3.00	51.25	38.46	128.98
732	48.10	84.78	3.09	49.06	37.01	129.54
733	48.20	92.93	3.31	53.97	35.78	129.96
734	48.24	98.25	3.37	54.40	32.08	130.40
735	48.34	120.31	3.29	52.39	28.47	130.73
736	48.38	132.92	3.37	47.40	25.56	130.97
737	48.43	135.84	3.36	44.07	24.71	131.12
738	48.52	134.55	3.37	32.06	24.47	130.97
739	48.57	133.18	3.17	30.05	23.91	130.42
740	48.63	130.95	2.68	28.56	23.27	129.85
741	48.70	130.43	2.70	26.63	22.88	129.44
742	48.75	129.75	2.73	26.28	23.62	129.73
743	48.84	127.77	3.03	26.81	24.77	130.23
744	48.89	127.09	3.33	30.05	26.71	131.08
745	48.98	125.20	3.89	33.12	26.99	131.96
746	49.03	144.25	4.18	21.29	27.21	132.81
747	49.12	144.33	4.54	18.31	26.67	133.21
748	49.16	142.45	4.44	17.96	27.31	133.24
749	49.22	136.78	4.31	16.56	28.32	132.83
750	49.31	122.54	4.04	15.77	33.73	132.38
751	49.35	115.59	3.96	16.03	36.55	131.77
752	49.45	96.62	3.75	16.38	39.26	131.32
753	49.48	91.65	3.70	16.82	43.06	130.72
754	49.59	78.69	3.53	18.84	45.60	130.29
755	49.63	75.08	3.42	21.64	47.55	129.92
756	49.67	75.94	3.39	23.57	45.85	129.88
757	49.77	87.53	3.35	28.82	42.49	129.79
758	49.82	94.31	3.03	25.58	36.83	129.13
759	49.91	106.92	2.21	20.68	29.00	125.64
760	49.96	104.17	0.00	19.36	20.72	119.37
761	50.00	98.85	0.00	18.66	N/A	87.36
762	50.09	88.38	0.00	19.10	N/A	87.36
763	50.14	79.72	0.00	18.22	N/A	87.36
764	50.23	58.52	0.00	17.08	N/A	87.36
765	50.28	49.86	0.00	15.51	N/A	87.36

:: Field input data :: (continued)

Point ID	Depth (ft)	q_c (tsf)	f_s (tsf)	u (tsf)	Fines content (%)	Unit weight (pcf)

Abbreviations

Depth:	Depth from free surface, at which CPT was performed (ft)
q_c:	Measured cone resistance (tsf)
f_s:	Sleeve friction resistance (tsf)
u:	Pore pressure (tsf)
Fines content:	Percentage of fines in soil (%)
Unit weight:	Bulk soil unit weight (pcf)

Fenagh Engineering and Testing
9070 Center Avenue
Rancho Cucamonga, CA 91730
www.fenaghengineering.com

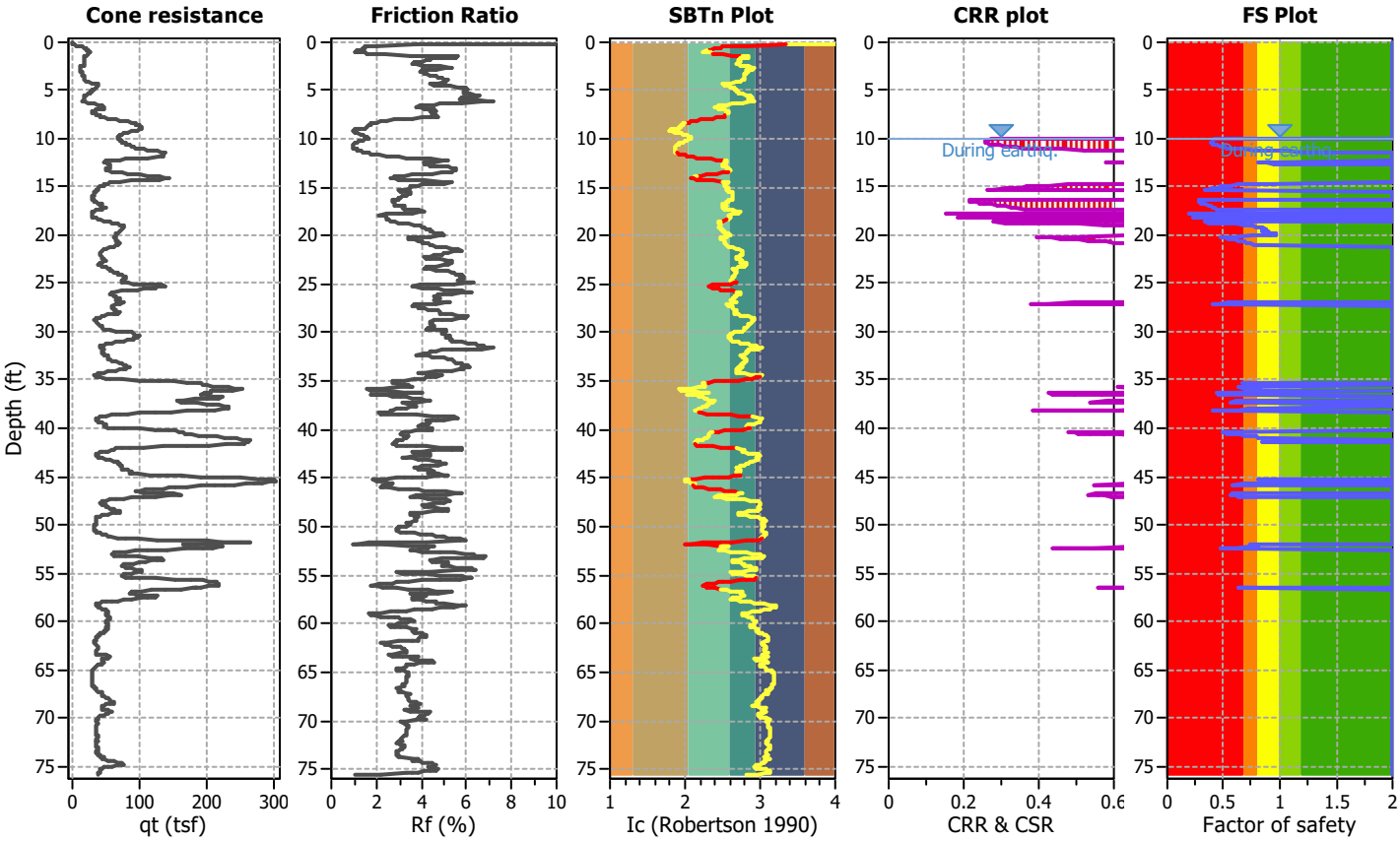
LIQUEFACTION ANALYSIS REPORT

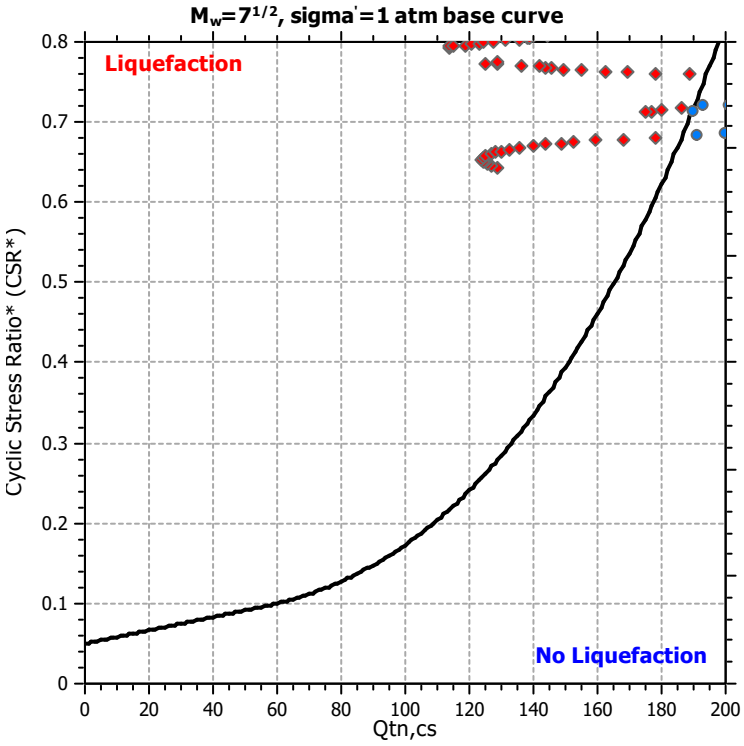
Project title : Centennial High School **Location : 2606 N. Central Ave, Compton, CA 90222**

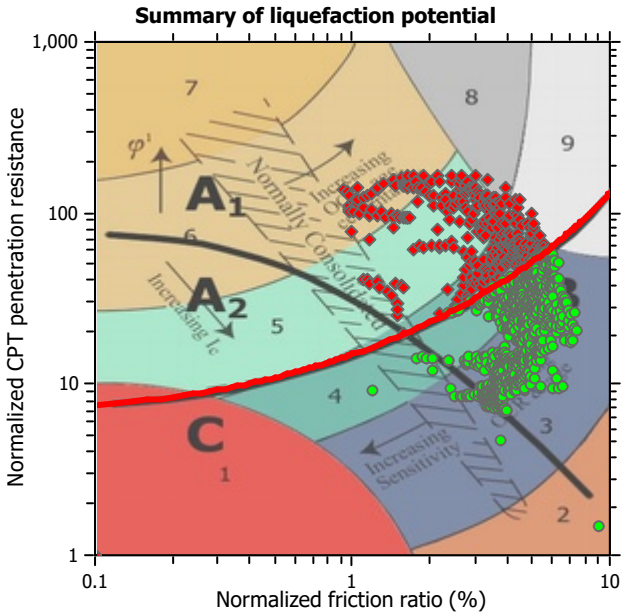
CPT file : CPT-4

Input parameters and analysis data

Analysis method:	NCEER (1998)	G.W.T. (in-situ):	50.00 ft	Use fill:	No	Clay like behavior applied:	Sands only
Fines correction method:	NCEER (1998)	G.W.T. (earthq.):	10.00 ft	Fill height:	N/A	Limit depth applied:	No
Points to test:	Based on Ic value	Average results interval:	3	Fill weight:	N/A	Limit depth:	N/A
Earthquake magnitude M_w:	7.30	Ic cut-off value:	2.60	Trans. detect. applied:	Yes	MSF method:	Method based
Peak ground acceleration:	0.83	Unit weight calculation:	Based on SBT	K_σ applied:	Yes		

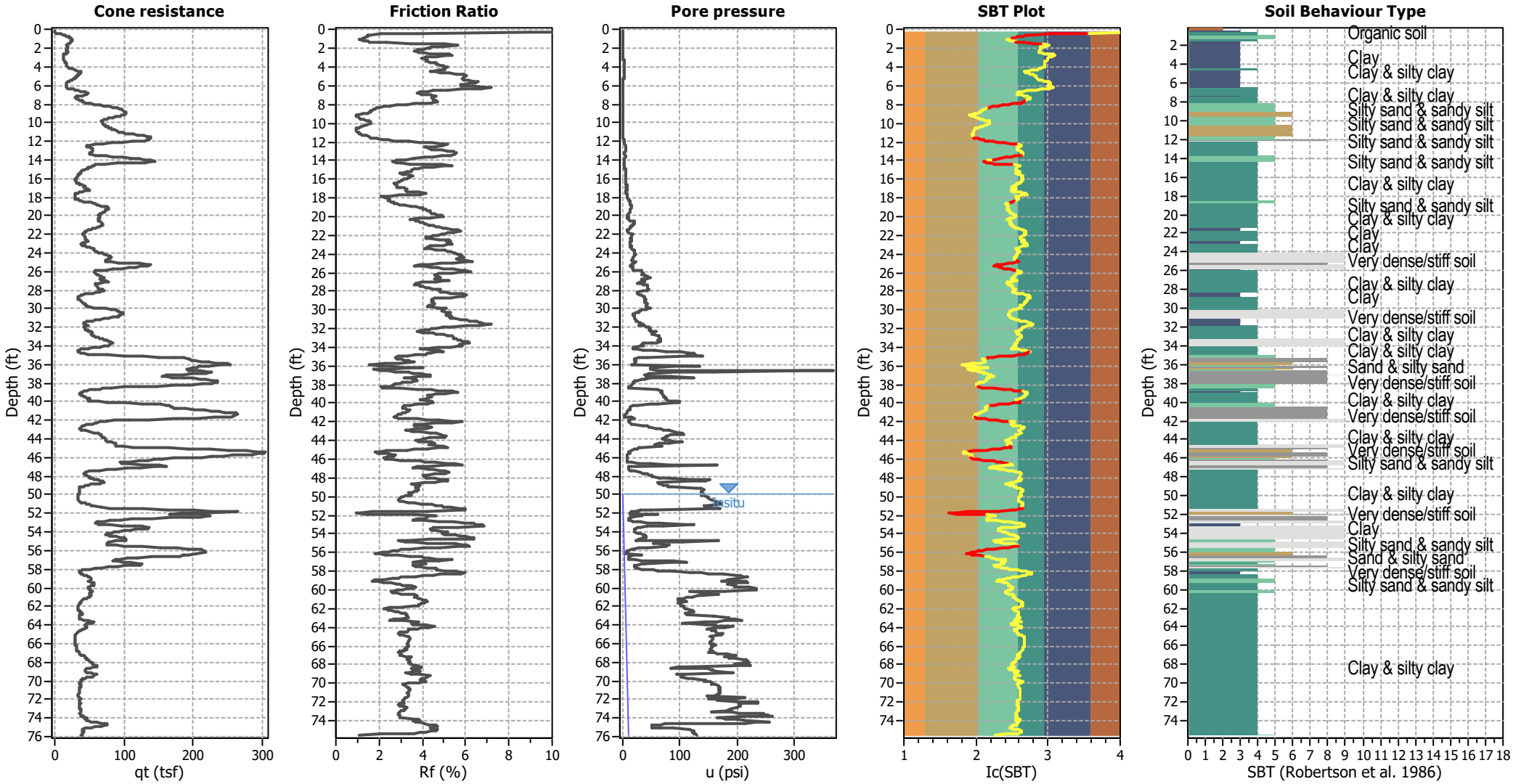






Zone A_1: Cyclic liquefaction likely depending on size and duration of cyclic loading
Zone A_2: Cyclic liquefaction and strength loss likely depending on loading and ground geometry
Zone B: Liquefaction and post-earthquake strength loss unlikely, check cyclic softening
Zone C: Cyclic liquefaction and strength loss possible depending on soil plasticity, brittleness/sensitivity, strain to peak undrained strength and ground geometry

CPT basic interpretation plots



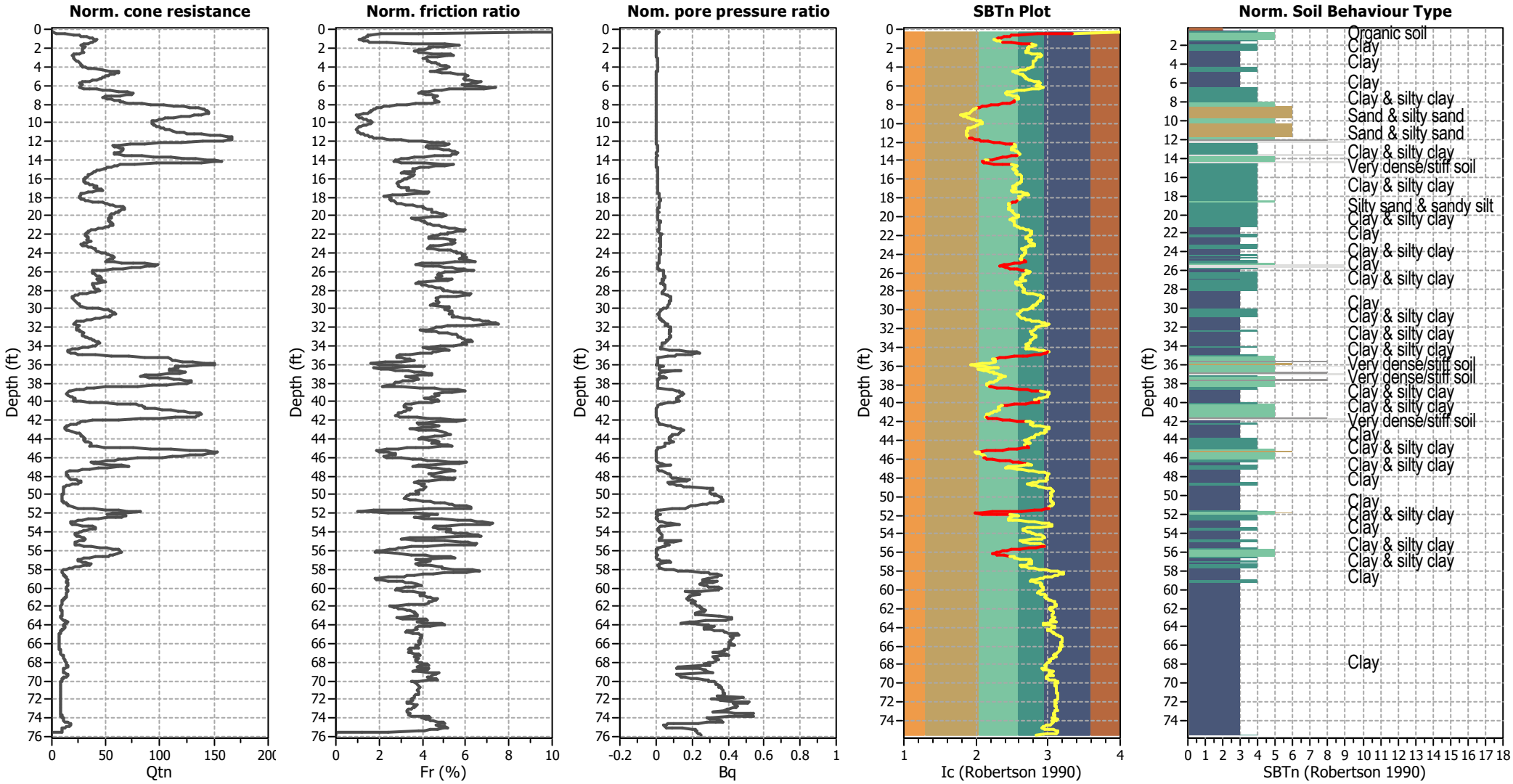
Input parameters and analysis data

Analysis method:	NCEER (1998)	Depth to water table (erthq.):	10.00 ft	Fill weight:	N/A
Fines correction method:	NCEER (1998)	Average results interval:	3	Transition detect. applied:	Yes
Points to test:	Based on Ic value	Ic cut-off value:	2.60	K_σ applied:	Yes
Earthquake magnitude M_w:	7.30	Unit weight calculation:	Based on SBT	Clay like behavior applied:	Sands only
Peak ground acceleration:	0.83	Use fill:	No	Limit depth applied:	No
Depth to water table (insitu):	50.00 ft	Fill height:	N/A	Limit depth:	N/A

SBT legend

1. Sensitive fine grained
2. Organic material
3. Clay to silty clay
4. Clayey silt to silty
5. Silty sand to sandy silt
6. Clean sand to silty sand
7. Gravely sand to sand
8. Very stiff sand to
9. Very stiff fine grained

CPT basic interpretation plots (normalized)



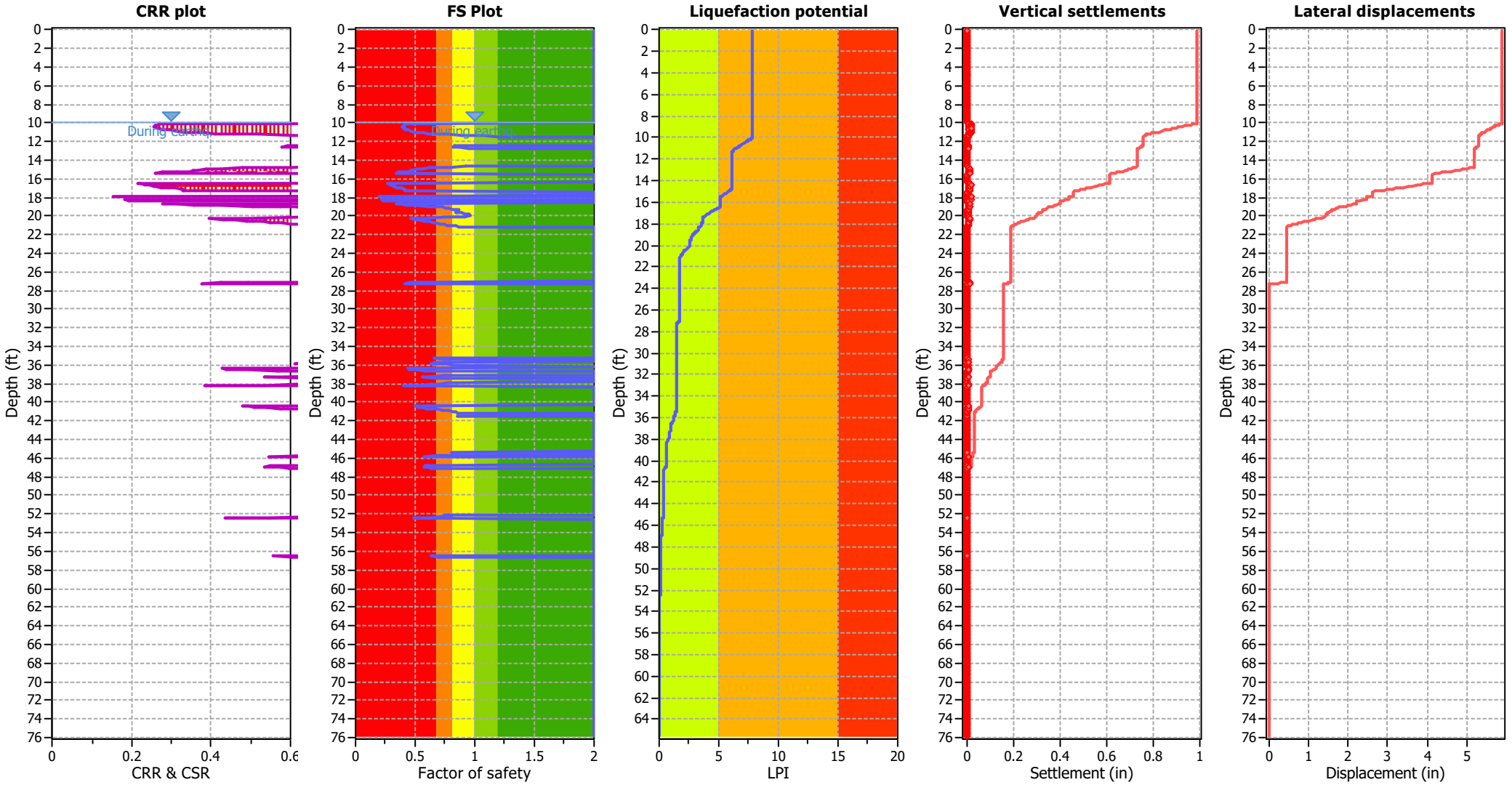
Input parameters and analysis data

Analysis method:	NCEER (1998)	Depth to water table (erthq.):	10.00 ft	Fill weight:	N/A
Fines correction method:	NCEER (1998)	Average results interval:	3	Transition detect. applied:	Yes
Points to test:	Based on Ic value	Ic cut-off value:	2.60	K_σ applied:	Yes
Earthquake magnitude M_w:	7.30	Unit weight calculation:	Based on SBT	Clay like behavior applied:	Sands only
Peak ground acceleration:	0.83	Use fill:	No	Limit depth applied:	No
Depth to water table (insitu):	50.00 ft	Fill height:	N/A	Limit depth:	N/A

SBTn legend

1. Sensitive fine grained
2. Organic material
3. Clay to silty clay
4. Clayey silt to silty
5. Silty sand to sandy silt
6. Clean sand to silty sand
7. Gravely sand to sand
8. Very stiff sand to
9. Very stiff fine grained

Liquefaction analysis overall plots



Input parameters and analysis data

Analysis method:	NCEER (1998)	Depth to water table (erthq.):	10.00 ft	Fill weight:	N/A
Fines correction method:	NCEER (1998)	Average results interval:	3	Transition detect. applied:	Yes
Points to test:	Based on Ic value	Ic cut-off value:	2.60	K_σ applied:	Yes
Earthquake magnitude M_w:	7.30	Unit weight calculation:	Based on SBT	Clay like behavior applied:	Sands only
Peak ground acceleration:	0.83	Use fill:	No	Limit depth applied:	No
Depth to water table (insitu):	50.00 ft	Fill height:	N/A	Limit depth:	N/A

F.S. color scheme

- Almost certain it will liquefy
- Very likely to liquefy
- Liquefaction and no liq. are equally likely
- Unlike to liquefy
- Almost certain it will not liquefy

LPI color scheme

- Very high risk
- High risk
- Low risk

:: Field input data ::

Point ID	Depth (ft)	q_c (tsf)	f_s (tsf)	u (tsf)	Fines content (%)	Unit weight (pcf)
1	0.09	0.09	0.03	0.00	100.00	87.36
2	0.15	0.00	0.04	0.00	100.00	87.36
3	0.21	0.17	0.06	0.00	100.00	87.36
4	0.27	0.60	0.08	0.26	100.00	91.80
5	0.35	1.98	0.11	0.35	84.08	96.58
6	0.40	6.01	0.14	0.44	48.64	101.35
7	0.50	14.17	0.21	0.44	35.33	104.35
8	0.54	16.49	0.24	0.53	30.42	106.41
9	0.63	16.58	0.26	0.53	29.19	107.25
10	0.68	18.21	0.27	0.53	27.86	107.90
11	0.73	20.61	0.29	0.53	25.93	108.52
12	0.82	22.33	0.31	0.44	24.58	108.89
13	0.86	22.50	0.30	0.44	23.16	108.96
14	0.95	24.48	0.28	0.44	21.66	108.86
15	1.01	26.20	0.28	0.44	20.47	108.87
16	1.05	26.20	0.28	0.44	20.81	109.21
17	1.14	24.65	0.32	0.44	21.97	109.61
18	1.18	24.14	0.34	0.44	23.96	110.34
19	1.26	23.28	0.40	0.44	24.96	110.59
20	1.33	22.93	0.36	0.44	25.31	110.40
21	1.39	22.59	0.32	0.44	30.34	113.05
22	1.46	21.13	0.88	0.44	36.87	115.24
23	1.55	18.12	0.96	0.44	44.26	116.91
24	1.60	16.75	0.96	0.44	48.28	116.80
25	1.65	15.63	0.94	0.53	48.14	116.56
26	1.74	17.61	0.88	0.44	44.57	116.47
27	1.78	20.96	0.85	0.61	42.01	116.24
28	1.88	18.47	0.81	0.61	41.23	116.01
29	1.93	18.04	0.79	0.61	42.59	115.59
30	1.97	17.69	0.77	0.61	42.57	115.18
31	2.07	17.26	0.69	0.53	42.07	114.67
32	2.11	17.26	0.65	0.53	41.19	114.12
33	2.21	17.26	0.61	0.79	40.68	113.87
34	2.26	17.26	0.63	0.70	40.30	113.90
35	2.30	17.87	0.65	0.61	40.26	114.32
36	2.40	18.55	0.71	0.61	40.47	114.64
37	2.45	17.95	0.71	0.53	41.91	114.71
38	2.53	16.06	0.70	0.53	44.95	114.41
39	2.59	13.91	0.69	0.53	48.67	114.07
40	2.63	13.06	0.69	0.53	51.99	113.75
41	2.72	12.20	0.67	0.61	53.39	113.45
42	2.76	12.11	0.64	0.70	52.89	112.91
43	2.85	12.37	0.56	0.79	50.97	112.37
44	2.90	12.71	0.53	0.88	48.68	111.86
45	2.99	13.06	0.51	0.96	47.62	111.73
46	3.05	13.06	0.52	0.96	47.29	111.74
47	3.09	13.06	0.53	1.05	47.75	111.95
48	3.17	13.06	0.55	1.23	47.90	112.21

:: Field input data :: (continued)

Point ID	Depth (ft)	q_c (tsf)	f_s (tsf)	u (tsf)	Fines content (%)	Unit weight (pcf)
49	3.23	13.49	0.57	1.31	47.48	112.54
50	3.30	14.17	0.59	1.58	46.36	112.95
51	3.36	15.12	0.62	1.67	45.54	113.62
52	3.46	15.98	0.70	1.58	45.32	114.22
53	3.50	15.98	0.73	1.49	45.66	114.69
54	3.56	15.98	0.75	1.49	45.65	114.94
55	3.62	16.66	0.77	1.49	45.28	115.21
56	3.69	17.18	0.79	1.49	45.43	115.48
57	3.78	16.58	0.83	1.58	45.43	115.75
58	3.82	17.44	0.85	1.67	45.82	116.04
59	3.91	17.52	0.88	1.84	45.57	116.36
60	3.96	17.87	0.92	2.02	45.66	116.74
61	4.01	18.47	0.97	2.10	44.32	117.33
62	4.10	21.22	1.05	2.37	42.59	118.02
63	4.14	22.85	1.12	2.37	40.84	118.96
64	4.22	25.00	1.28	2.54	39.88	119.72
65	4.28	26.20	1.34	2.63	36.25	120.95
66	4.39	36.68	1.57	2.54	33.37	121.90
67	4.43	38.14	1.65	2.46	31.24	122.78
68	4.47	38.74	1.72	2.46	31.64	123.33
69	4.57	39.17	1.91	1.93	32.56	123.78
70	4.61	38.14	1.98	1.84	34.34	124.03
71	4.70	34.62	2.00	1.40	35.81	124.08
72	4.75	34.96	2.03	1.49	36.99	124.07
73	4.79	34.62	2.04	1.49	37.62	124.00
74	4.88	32.38	1.98	1.40	38.36	123.78
75	4.93	31.61	1.92	1.40	38.89	123.47
76	4.99	31.44	1.86	1.40	38.90	123.19
77	5.05	30.75	1.79	1.31	39.27	122.91
78	5.12	29.12	1.76	1.31	39.71	122.60
79	5.21	28.69	1.68	1.31	40.24	122.29
80	5.26	27.92	1.63	1.23	40.56	121.88
81	5.34	26.37	1.54	1.05	41.66	121.44
82	5.40	24.31	1.48	0.88	43.74	120.82
83	5.49	21.22	1.38	0.53	46.31	120.19
84	5.54	19.58	1.31	0.53	48.41	119.55
85	5.58	18.90	1.25	0.53	49.97	118.69
86	5.67	16.32	1.04	0.53	50.88	117.86
87	5.72	15.98	1.00	0.53	51.04	117.17
88	5.81	16.75	0.99	0.70	50.06	117.12
89	5.86	17.26	1.00	0.88	48.81	117.21
90	5.94	17.69	1.00	1.05	48.34	117.30
91	5.99	17.61	1.02	1.05	48.88	117.35
92	6.04	16.75	1.03	0.79	51.02	117.61
93	6.13	15.98	1.14	0.35	53.42	117.91
94	6.18	15.89	1.19	0.00	53.76	118.45
95	6.26	17.95	1.26	0.00	50.13	119.03
96	6.32	21.99	1.30	0.00	44.15	119.77

:: Field input data :: (continued)

Point ID	Depth (ft)	q_c (tsf)	f_s (tsf)	u (tsf)	Fines content (%)	Unit weight (pcf)
97	6.40	27.14	1.34	0.17	39.27	120.47
98	6.46	29.98	1.42	0.35	36.58	121.07
99	6.50	31.01	1.49	0.44	33.47	122.01
100	6.63	40.80	1.70	0.88	30.70	122.76
101	6.64	43.98	1.71	0.96	27.93	123.48
102	6.73	47.24	1.76	0.61	26.87	123.73
103	6.77	47.67	1.79	0.53	26.71	124.03
104	6.87	47.24	1.88	0.44	27.22	124.21
105	6.91	46.47	1.91	0.35	28.04	124.38
106	6.96	45.35	1.95	0.26	29.74	124.19
107	7.06	38.39	1.86	0.09	31.53	123.66
108	7.10	35.56	1.67	0.09	33.56	122.35
109	7.19	29.81	1.27	0.09	34.44	121.23
110	7.24	29.29	1.31	0.09	34.91	120.64
111	7.33	31.09	1.40	0.26	34.79	121.03
112	7.38	32.21	1.45	0.35	34.18	121.47
113	7.42	33.41	1.50	0.44	33.31	122.10
114	7.53	37.36	1.70	0.70	32.48	122.70
115	7.57	38.65	1.74	0.35	31.79	123.27
116	7.62	39.68	1.81	0.17	31.69	123.64
117	7.71	40.37	1.92	0.17	31.92	123.93
118	7.76	39.94	1.94	0.17	31.05	124.19
119	7.85	44.84	1.93	0.26	29.54	124.31
120	7.89	47.33	1.91	0.26	27.51	124.43
121	7.94	49.90	1.90	0.26	24.97	124.55
122	8.04	58.75	1.85	0.26	22.65	124.65
123	8.07	61.93	1.82	0.26	19.60	124.76
124	8.17	72.58	1.75	0.26	17.40	124.85
125	8.22	79.11	1.73	0.26	15.43	124.92
126	8.30	84.43	1.70	0.26	14.36	124.95
127	8.35	86.84	1.67	0.26	13.54	124.98
128	8.40	90.96	1.67	0.17	12.97	125.03
129	8.46	93.80	1.67	0.26	12.47	125.07
130	8.54	95.60	1.65	0.17	12.05	125.04
131	8.63	98.00	1.62	0.26	11.71	125.00
132	8.71	99.55	1.61	0.26	11.42	124.99
133	8.77	100.93	1.61	0.26	11.26	125.00
134	8.81	101.53	1.61	0.26	11.16	125.01
135	8.86	102.04	1.61	0.26	11.09	124.99
136	8.96	102.21	1.58	0.35	10.62	124.52
137	9.00	102.30	1.31	0.35	9.51	123.29
138	9.08	101.27	0.91	0.35	8.44	121.87
139	9.14	99.64	0.92	0.35	7.87	120.88
140	9.19	98.18	0.92	0.35	8.26	120.79
141	9.28	92.16	0.91	0.35	8.66	120.64
142	9.32	90.19	0.89	0.35	9.42	120.28
143	9.40	79.45	0.85	1.23	10.00	119.97
144	9.46	78.94	0.85	1.23	10.74	119.79

:: Field input data :: (continued)

Point ID	Depth (ft)	q_c (tsf)	f_s (tsf)	u (tsf)	Fines content (%)	Unit weight (pcf)
145	9.52	77.13	0.88	1.23	11.43	120.08
146	9.62	73.87	0.98	1.14	12.31	120.44
147	9.66	72.67	1.01	1.14	13.36	120.81
148	9.75	69.23	1.06	1.14	14.08	120.97
149	9.79	68.37	1.07	1.14	14.73	121.11
150	9.84	67.51	1.09	1.14	15.04	121.26
151	9.93	68.11	1.13	1.14	15.20	121.39
152	9.99	68.72	1.13	1.14	15.14	121.43
153	10.07	68.97	1.11	1.14	14.93	121.32
154	10.12	69.49	1.07	1.05	14.48	121.03
155	10.21	70.43	0.99	1.05	13.92	120.70
156	10.25	71.64	0.95	1.05	13.32	120.35
157	10.30	72.41	0.92	1.05	12.60	119.99
158	10.40	74.90	0.84	1.05	11.95	119.62
159	10.44	75.84	0.80	1.05	11.16	119.28
160	10.54	78.85	0.78	1.05	10.69	119.18
161	10.58	80.83	0.78	1.05	10.28	119.23
162	10.68	82.72	0.80	1.05	10.12	119.36
163	10.72	83.57	0.81	1.05	9.98	119.53
164	10.77	85.64	0.82	1.05	9.82	119.80
165	10.86	89.33	0.87	1.14	9.63	120.20
166	10.95	93.02	0.91	1.14	9.62	120.83
167	11.04	95.86	1.02	1.14	9.68	121.38
168	11.07	97.58	1.06	1.14	9.76	122.03
169	11.14	102.21	1.16	1.14	9.75	122.55
170	11.17	105.22	1.22	1.14	9.69	123.29
171	11.22	112.26	1.37	1.14	9.68	124.22
172	11.31	120.25	1.59	1.23	9.70	125.27
173	11.36	127.04	1.77	1.23	9.90	126.57
174	11.50	136.91	2.17	1.23	10.13	127.50
175	11.53	138.12	2.24	1.23	10.46	128.22
176	11.59	137.43	2.35	1.23	10.89	128.58
177	11.64	136.23	2.51	1.23	11.69	129.09
178	11.69	132.96	2.78	1.23	12.79	129.96
179	11.77	135.84	3.33	1.84	13.97	130.86
180	11.84	135.46	3.64	1.75	14.86	131.71
181	11.88	137.86	3.93	1.75	16.14	132.42
182	11.97	130.39	4.50	1.75	17.67	132.84
183	12.02	119.91	4.53	1.67	20.68	132.73
184	12.11	89.67	4.31	1.67	23.67	132.03
185	12.16	80.23	3.94	1.49	26.95	131.04
186	12.21	72.24	3.61	1.58	29.10	129.77
187	12.29	55.57	2.95	2.81	31.68	128.28
188	12.35	46.98	2.51	3.95	33.14	126.43
189	12.47	46.68	1.95	4.91	32.82	125.21
190	12.49	46.68	1.94	5.17	31.52	124.46
191	12.57	46.38	1.90	5.26	31.26	124.46
192	12.60	48.10	1.93	5.35	30.81	125.08

:: Field input data :: (continued)

Point ID	Depth (ft)	q_c (tsf)	f_s (tsf)	u (tsf)	Fines content (%)	Unit weight (pcf)
193	12.76	54.20	2.34	5.88	30.59	125.82
194	12.80	54.89	2.44	5.88	30.55	126.48
195	12.80	54.89	2.46	5.61	31.23	126.87
196	12.89	54.63	2.73	5.17	32.07	127.24
197	12.94	54.84	2.84	5.00	32.99	127.67
198	13.03	54.80	2.94	4.65	33.49	127.86
199	13.08	54.46	2.95	4.12	34.01	127.90
200	13.17	53.00	2.93	3.68	34.55	127.79
201	13.21	51.62	2.87	3.42	35.29	127.53
202	13.26	48.70	2.74	3.64	35.49	127.13
203	13.32	48.62	2.55	3.16	35.63	127.06
204	13.40	50.68	2.82	3.60	34.27	127.53
205	13.50	59.35	3.08	5.17	32.90	128.27
206	13.54	63.39	3.18	5.44	30.49	128.90
207	13.59	71.55	3.27	5.88	27.81	129.48
208	13.67	85.04	3.44	4.47	25.07	130.05
209	13.73	94.57	3.53	4.03	21.77	130.72
210	13.87	116.82	3.65	3.77	19.61	131.15
211	13.88	121.63	3.66	3.60	18.03	131.46
212	13.92	124.63	3.67	3.51	16.79	131.69
213	14.05	142.93	3.73	3.42	15.86	131.98
214	14.14	147.31	3.87	3.42	15.24	132.24
215	14.18	144.90	3.89	3.33	16.11	132.25
216	14.29	126.09	3.90	3.25	17.60	132.02
217	14.33	115.53	3.82	3.25	20.51	131.56
218	14.37	91.05	3.74	3.07	24.78	130.73
219	14.47	62.27	3.42	2.98	30.22	129.75
220	14.51	57.98	3.25	2.89	33.89	128.53
221	14.61	55.14	2.70	3.16	33.52	127.60
222	14.65	54.80	2.43	3.25	32.56	126.46
223	14.74	51.45	2.14	3.42	32.34	125.63
224	14.79	48.70	2.01	3.60	32.27	124.87
225	14.84	48.44	1.86	3.68	31.96	124.29
226	14.93	47.93	1.72	3.77	31.38	123.72
227	14.97	46.81	1.62	3.95	31.63	123.03
228	15.03	41.92	1.47	4.21	32.58	122.31
229	15.11	38.82	1.37	4.47	33.82	121.67
230	15.20	38.05	1.34	4.82	34.39	121.36
231	15.25	38.14	1.34	4.82	33.72	120.88
232	15.30	38.14	1.12	4.82	32.76	120.26
233	15.39	37.54	1.04	4.56	32.52	119.81
234	15.43	36.42	1.15	4.30	33.78	119.91
235	15.52	34.70	1.20	4.30	35.62	120.16
236	15.57	33.58	1.20	4.30	36.81	120.17
237	15.62	33.16	1.19	4.30	37.00	120.08
238	15.68	33.76	1.16	5.44	36.81	119.91
239	15.77	33.33	1.13	4.82	36.70	119.72
240	15.81	32.64	1.11	4.82	36.92	119.37

:: Field input data :: (continued)

Point ID	Depth (ft)	q_c (tsf)	f_s (tsf)	u (tsf)	Fines content (%)	Unit weight (pcf)
241	15.91	31.35	1.03	4.82	37.16	119.02
242	15.96	31.09	1.00	4.82	37.23	118.51
243	16.05	29.98	0.92	4.74	37.30	118.14
244	16.09	29.55	0.90	4.65	37.29	117.79
245	16.19	29.55	0.88	4.47	37.25	117.69
246	16.22	29.81	0.89	4.47	36.90	117.69
247	16.28	30.49	0.89	4.56	36.28	117.73
248	16.37	31.44	0.88	4.74	35.50	117.77
249	16.42	32.21	0.88	4.82	34.69	117.84
250	16.49	33.16	0.89	5.00	34.15	118.07
251	16.56	34.36	0.94	5.35	33.61	118.49
252	16.61	36.25	1.00	5.96	33.14	119.27
253	16.70	39.17	1.15	6.49	31.95	120.05
254	16.74	43.46	1.20	6.75	31.10	120.73
255	16.83	44.15	1.25	6.75	30.85	121.04
256	16.88	42.60	1.27	6.31	31.69	121.19
257	16.96	41.32	1.29	6.14	32.83	121.33
258	17.02	41.06	1.36	6.40	32.91	121.89
259	17.11	46.38	1.54	7.45	32.20	122.53
260	17.16	49.13	1.59	7.80	30.85	123.08
261	17.20	51.36	1.59	7.98	30.65	123.17
262	17.29	48.19	1.58	6.93	31.31	123.10
263	17.34	45.87	1.58	6.23	33.86	122.82
264	17.43	38.82	1.55	5.44	36.61	122.48
265	17.47	36.16	1.51	5.26	39.83	121.90
266	17.52	32.47	1.40	5.26	41.26	120.98
267	17.62	29.89	1.14	5.88	41.84	120.03
268	17.66	29.98	1.09	6.40	41.13	119.16
269	17.72	29.89	1.02	7.01	38.41	117.59
270	17.80	28.86	0.52	7.01	36.42	116.15
271	17.89	28.34	0.63	7.19	34.55	114.81
272	17.94	28.77	0.67	7.72	35.67	115.47
273	17.98	29.03	0.69	7.89	36.02	115.86
274	18.08	29.29	0.74	8.07	36.06	116.20
275	18.14	30.32	0.75	10.44	35.87	116.49
276	18.18	30.92	0.76	10.26	35.17	116.73
277	18.27	32.30	0.79	10.35	34.36	117.11
278	18.31	34.62	0.84	10.61	33.49	117.99
279	18.41	38.22	1.00	11.49	32.79	118.98
280	18.45	40.46	1.09	11.93	31.27	120.34
281	18.55	48.96	1.30	12.98	29.67	121.45
282	18.60	53.34	1.42	13.24	28.35	122.47
283	18.64	55.32	1.52	13.07	28.07	123.35
284	18.73	58.58	1.75	12.98	28.35	124.19
285	18.78	60.21	1.92	13.33	28.65	125.14
286	18.84	63.48	2.15	14.03	29.24	126.16
287	18.92	66.22	2.53	14.56	29.43	127.30
288	19.01	72.58	2.88	14.73	29.42	128.19

:: Field input data :: (continued)

Point ID	Depth (ft)	q_c (tsf)	f_s (tsf)	u (tsf)	Fines content (%)	Unit weight (pcf)
289	19.05	74.81	2.96	14.56	29.05	128.75
290	19.11	76.36	3.06	14.12	28.91	129.01
291	19.18	77.39	3.14	14.03	28.89	129.23
292	19.24	78.25	3.19	13.07	29.37	129.37
293	19.33	75.24	3.26	11.93	29.98	129.42
294	19.38	74.04	3.24	13.02	30.71	129.39
295	19.43	73.01	3.22	11.93	30.94	129.26
296	19.52	72.15	3.14	12.98	31.09	129.16
297	19.56	72.07	3.14	13.24	31.26	129.10
298	19.66	71.29	3.18	12.63	31.64	129.12
299	19.69	70.26	3.19	12.36	32.44	129.10
300	19.79	67.08	3.19	10.35	33.43	129.04
301	19.84	65.02	3.19	9.29	34.48	128.96
302	19.93	63.56	3.19	8.68	35.10	128.90
303	19.96	63.30	3.18	8.77	35.23	128.84
304	20.02	63.82	3.14	8.77	34.56	128.76
305	20.12	66.40	3.04	9.03	32.83	128.17
306	20.16	66.31	2.41	9.21	30.93	127.16
307	20.25	63.30	2.04	8.77	29.74	126.21
308	20.29	62.96	2.16	8.86	29.92	126.00
309	20.35	63.13	2.26	9.38	30.74	126.38
310	20.44	62.87	2.39	10.52	31.17	126.70
311	20.48	64.25	2.45	12.72	31.67	126.97
312	20.55	63.30	2.53	19.91	31.80	127.19
313	20.62	64.68	2.58	20.52	32.05	127.46
314	20.69	65.97	2.71	20.52	31.84	127.75
315	20.74	68.11	2.78	19.73	31.82	128.10
316	20.83	69.23	2.92	18.94	31.91	128.36
317	20.87	68.97	2.97	19.29	32.24	128.61
318	20.96	69.32	3.06	17.54	32.65	128.75
319	21.01	68.89	3.10	17.27	33.16	128.89
320	21.09	67.86	3.16	16.22	33.97	128.92
321	21.15	65.28	3.16	14.29	34.82	128.89
322	21.20	63.91	3.13	13.94	36.14	128.64
323	21.29	58.24	3.00	12.28	37.50	128.36
324	21.33	55.92	2.97	11.57	39.64	127.99
325	21.47	50.76	2.90	9.56	41.71	127.64
326	21.56	47.16	2.79	7.89	43.61	127.13
327	21.61	44.92	2.59	7.89	44.24	126.60
328	21.66	44.49	2.44	7.89	43.89	125.98
329	21.75	43.46	2.21	10.61	43.41	125.48
330	21.79	42.86	2.15	11.14	43.44	125.00
331	21.89	40.89	2.06	14.29	43.84	124.69
332	21.93	40.20	2.00	15.52	43.80	124.38
333	21.98	40.80	1.92	16.57	43.08	124.11
334	22.06	41.23	1.84	16.05	42.26	123.96
335	22.11	41.83	1.87	15.96	41.37	123.93
336	22.21	43.46	1.86	15.70	40.64	123.92

:: Field input data :: (continued)

Point ID	Depth (ft)	q_c (tsf)	f_s (tsf)	u (tsf)	Fines content (%)	Unit weight (pcf)
337	22.25	43.63	1.79	15.70	39.80	123.92
338	22.35	44.75	1.83	14.91	39.88	124.06
339	22.39	44.49	1.95	14.21	40.61	124.51
340	22.44	44.66	2.13	12.80	42.13	125.14
341	22.53	44.58	2.36	14.12	43.85	125.64
342	22.59	43.03	2.44	15.87	43.52	126.15
343	22.68	49.73	2.53	14.03	42.67	126.41
344	22.72	49.82	2.54	13.77	41.73	126.55
345	22.77	47.67	2.50	13.15	42.99	126.21
346	22.87	42.60	2.30	12.89	44.63	125.71
347	22.91	40.89	2.21	12.98	46.28	124.94
348	23.00	37.45	1.98	12.98	46.88	124.23
349	23.09	36.42	1.80	12.98	46.89	123.61
350	23.14	37.11	1.78	13.42	44.69	123.48
351	23.19	42.52	1.81	14.38	42.60	123.68
352	23.23	43.81	1.84	14.47	40.97	124.08
353	23.33	45.09	1.96	13.94	40.20	124.49
354	23.37	48.36	2.04	14.82	38.41	125.20
355	23.46	56.26	2.25	14.64	36.84	125.84
356	23.50	57.38	2.36	15.61	37.27	126.66
357	23.62	54.29	2.74	17.63	38.25	127.22
358	23.64	57.64	2.82	18.41	39.87	127.70
359	23.69	55.14	2.94	19.38	39.89	128.06
360	23.78	57.89	3.11	20.43	40.24	128.43
361	23.84	60.04	3.23	20.70	39.86	128.98
362	23.92	62.70	3.52	20.43	39.14	129.50
363	23.97	67.34	3.66	19.82	38.62	130.01
364	24.02	68.63	3.81	20.43	38.44	130.51
365	24.11	69.92	4.16	21.84	38.50	131.03
366	24.19	73.87	4.39	21.48	38.06	131.53
367	24.25	77.91	4.49	20.08	37.11	131.85
368	24.29	80.31	4.55	19.64	36.53	132.09
369	24.38	81.08	4.69	18.77	36.65	132.26
370	24.43	79.97	4.77	18.50	37.03	132.42
371	24.50	80.40	4.86	18.59	36.89	132.28
372	24.57	80.23	4.44	16.84	36.24	131.96
373	24.61	79.62	4.18	18.64	37.30	131.68
374	24.75	70.00	4.55	16.05	38.80	131.71
375	24.85	72.24	4.65	18.68	40.01	131.86
376	24.89	75.24	4.55	21.66	38.87	131.84
377	24.94	76.02	4.37	23.33	35.55	131.97
378	25.04	94.74	4.46	19.64	32.26	132.26
379	25.07	104.28	4.60	20.17	28.59	132.84
380	25.13	119.22	4.79	18.59	25.58	133.32
381	25.23	138.03	4.78	15.70	23.45	133.78
382	25.27	143.19	5.00	14.29	23.38	134.20
383	25.36	131.25	5.50	12.80	24.81	134.54
384	25.41	127.30	5.66	13.15	26.73	134.81

:: Field input data :: (continued)

Point ID	Depth (ft)	q_c (tsf)	f_s (tsf)	u (tsf)	Fines content (%)	Unit weight (pcf)
385	25.47	125.15	5.86	17.89	28.03	134.94
386	25.55	118.96	6.00	15.96	29.55	134.88
387	25.59	109.00	5.79	17.54	31.80	134.34
388	25.68	91.65	5.17	17.19	33.79	133.56
389	25.73	87.35	4.82	17.10	36.90	132.51
390	25.82	69.23	4.37	16.93	39.64	131.51
391	25.87	61.24	3.89	22.98	43.01	130.33
392	25.94	56.35	3.46	32.09	43.10	129.13
393	26.06	56.00	2.84	33.41	42.19	128.25
394	26.07	56.26	2.81	34.02	40.58	127.66
395	26.15	57.21	2.74	35.25	39.88	127.61
396	26.19	58.58	2.74	35.43	38.99	127.59
397	26.28	60.13	2.74	34.20	38.34	127.81
398	26.38	62.62	2.90	37.80	38.07	128.12
399	26.41	63.39	3.02	39.29	37.99	128.56
400	26.47	65.37	3.19	40.60	38.04	128.86
401	26.51	65.79	3.23	42.27	37.55	128.99
402	26.61	67.51	3.13	47.00	36.48	129.07
403	26.65	72.15	3.18	47.53	35.95	129.18
404	26.74	70.26	3.31	40.43	36.50	129.31
405	26.79	66.40	3.32	35.16	38.26	129.34
406	26.84	63.48	3.37	32.18	40.05	129.34
407	26.93	61.59	3.45	32.71	38.72	129.49
408	26.98	74.90	3.38	37.18	35.95	129.61
409	27.07	80.14	3.27	37.27	32.62	128.96
410	27.11	73.78	2.43	30.34	32.86	127.83
411	27.25	59.18	2.27	25.52	34.20	126.63
412	27.28	59.18	2.30	29.73	36.43	126.30
413	27.30	59.18	2.29	33.76	36.47	126.32
414	27.39	59.18	2.29	35.16	36.55	126.36
415	27.43	59.27	2.33	34.81	36.76	126.50
416	27.50	59.65	2.43	42.09	37.13	126.76
417	27.57	60.13	2.53	42.09	37.48	127.09
418	27.63	61.07	2.64	42.09	37.87	127.52
419	27.73	62.44	2.84	42.09	38.43	127.94
420	27.78	62.19	2.97	43.23	39.09	128.30
421	27.82	61.93	3.05	43.58	39.36	128.64
422	27.91	64.94	3.22	45.86	38.59	129.01
423	27.96	70.35	3.32	45.25	37.71	129.42
424	28.05	71.55	3.45	42.27	37.76	129.65
425	28.10	67.94	3.50	35.78	38.89	129.76
426	28.18	66.14	3.55	26.48	40.67	129.61
427	28.23	61.33	3.41	24.38	43.04	129.21
428	28.29	53.08	3.20	26.22	46.05	128.38
429	28.38	46.21	2.82	24.73	48.87	127.54
430	28.42	44.66	2.70	25.96	50.92	126.56
431	28.51	39.51	2.37	29.55	52.40	125.73
432	28.56	36.50	2.15	33.94	53.62	124.58

:: Field input data :: (continued)

Point ID	Depth (ft)	q_c (tsf)	f_s (tsf)	u (tsf)	Fines content (%)	Unit weight (pcf)
433	28.65	34.36	1.83	35.43	53.65	123.58
434	28.71	33.58	1.66	36.92	52.81	122.69
435	28.74	33.33	1.55	37.01	51.75	122.13
436	28.84	33.58	1.48	37.88	51.25	121.85
437	28.88	33.24	1.48	37.88	51.10	121.83
438	28.96	33.58	1.53	38.50	51.09	122.06
439	29.02	34.96	1.60	39.64	50.36	122.44
440	29.11	37.02	1.67	39.29	49.44	122.76
441	29.16	37.71	1.69	39.11	48.67	123.01
442	29.21	38.39	1.72	39.11	48.68	123.23
443	29.29	38.48	1.80	39.11	48.65	123.48
444	29.34	39.43	1.84	40.34	48.11	123.75
445	29.43	41.57	1.87	42.27	47.37	123.99
446	29.48	42.17	1.93	42.53	46.63	124.25
447	29.53	43.29	1.98	42.09	45.46	124.09
448	29.61	43.98	1.72	40.95	44.76	124.10
449	29.66	44.49	1.91	41.39	45.02	124.54
450	29.75	45.78	2.28	41.39	45.96	125.55
451	29.80	48.87	2.52	43.06	45.70	126.69
452	29.88	54.63	2.86	45.78	43.43	127.84
453	29.94	64.42	3.24	48.58	40.77	128.94
454	29.99	71.89	3.51	44.55	38.21	130.15
455	30.07	82.29	4.09	39.55	36.48	131.12
456	30.13	88.47	4.36	33.15	35.67	131.99
457	30.22	90.79	4.69	29.38	35.50	132.49
458	30.27	91.99	4.85	27.80	35.74	132.89
459	30.35	93.62	5.06	26.92	35.49	133.16
460	30.41	97.58	5.12	24.11	34.84	133.35
461	30.50	100.58	5.10	19.47	34.36	133.39
462	30.54	98.61	5.05	18.06	34.44	133.35
463	30.58	96.46	5.05	17.45	35.36	133.26
464	30.68	91.91	5.07	17.98	35.95	133.18
465	30.73	93.02	4.98	20.26	36.17	133.03
466	30.81	92.51	4.82	21.48	35.96	132.87
467	30.85	90.96	4.77	20.61	36.70	132.63
468	30.91	84.00	4.66	21.44	38.47	132.29
469	31.00	75.59	4.46	19.99	40.51	131.86
470	31.05	72.84	4.31	21.40	43.01	131.28
471	31.14	63.22	4.03	23.68	44.91	130.73
472	31.18	60.21	3.84	23.77	48.01	129.92
473	31.28	51.45	3.47	24.03	50.03	129.23
474	31.33	49.39	3.28	23.94	52.43	128.49
475	31.37	46.13	3.12	24.20	55.30	128.01
476	31.46	43.20	3.02	27.62	56.93	127.66
477	31.51	42.26	3.00	30.34	58.12	127.48
478	31.57	41.66	2.99	32.36	59.52	127.30
479	31.65	38.39	2.90	35.78	56.89	127.22
480	31.73	48.53	2.76	28.94	52.72	126.95

:: Field input data :: (continued)

Point ID	Depth (ft)	q_c (tsf)	f_s (tsf)	u (tsf)	Fines content (%)	Unit weight (pcf)
481	31.78	47.33	2.57	34.11	48.99	126.56
482	31.83	46.21	2.33	37.36	48.27	125.71
483	31.92	43.98	1.99	41.83	47.98	124.91
484	31.97	42.26	1.93	43.32	47.39	124.37
485	32.03	43.98	1.92	45.34	48.04	124.16
486	32.11	40.71	1.87	47.79	47.23	124.07
487	32.20	43.98	1.83	46.56	46.44	123.75
488	32.24	44.15	1.68	45.16	43.95	123.45
489	32.30	46.13	1.59	48.49	43.12	123.86
490	32.43	49.65	2.04	49.90	44.30	124.40
491	32.44	44.58	2.08	49.55	44.43	125.31
492	32.48	52.74	2.25	58.93	44.55	125.99
493	32.57	54.89	2.59	54.55	43.99	126.73
494	32.62	53.25	2.68	51.21	45.63	127.22
495	32.72	51.36	2.79	51.48	46.66	127.41
496	32.76	53.13	2.83	53.32	47.46	127.62
497	32.89	52.31	2.93	59.89	47.42	127.77
498	32.90	53.00	2.94	61.38	47.42	127.91
499	32.95	54.29	2.97	62.88	46.62	128.25
500	33.03	58.32	3.23	63.75	45.89	128.71
501	33.08	60.38	3.40	64.37	45.01	129.46
502	33.17	65.62	3.78	66.03	44.36	130.07
503	33.22	68.03	3.95	67.17	43.62	130.75
504	33.31	71.89	4.26	65.24	43.10	131.21
505	33.36	74.21	4.40	61.03	42.94	131.62
506	33.41	74.21	4.54	65.64	43.25	131.94
507	33.49	74.73	4.80	63.40	43.22	132.23
508	33.54	78.42	4.86	66.03	41.92	132.50
509	33.64	85.29	4.84	58.84	40.44	132.62
510	33.66	85.55	4.82	51.65	40.05	132.59
511	33.73	80.91	4.77	34.90	40.96	132.39
512	33.82	77.30	4.61	33.24	41.85	132.15
513	33.87	77.65	4.53	35.60	41.38	131.86
514	33.95	79.54	4.25	35.60	40.40	131.29
515	34.00	75.24	3.64	30.17	39.60	129.59
516	34.10	60.21	2.21	19.73	39.78	127.59
517	34.13	56.00	2.14	18.41	41.79	125.45
518	34.23	46.21	1.96	18.33	45.46	124.77
519	34.28	41.92	1.88	19.29	49.70	124.11
520	34.32	38.91	1.85	21.75	53.45	123.62
521	34.42	33.67	1.77	36.13	57.85	123.13
522	34.47	32.81	1.66	37.45	59.38	122.48
523	34.52	31.87	1.51	56.04	58.52	121.89
524	34.61	31.87	1.41	76.47	57.25	121.50
525	34.65	32.55	1.41	102.42	55.84	121.61
526	34.74	34.53	1.52	118.21	52.13	122.20
527	34.79	38.74	1.66	123.65	46.56	122.69
528	34.88	49.13	1.51	126.54	41.50	123.20

:: Field input data :: (continued)

Point ID	Depth (ft)	q_c (tsf)	f_s (tsf)	u (tsf)	Fines content (%)	Unit weight (pcf)
529	34.93	53.86	1.63	121.81	37.94	124.00
530	34.98	59.09	1.99	111.46	31.66	126.35
531	35.06	105.74	2.79	139.08	26.63	128.86
532	35.11	129.18	3.43	110.84	23.26	131.33
533	35.20	145.93	4.36	42.79	21.56	133.12
534	35.25	176.51	4.98	35.60	20.55	134.59
535	35.30	191.54	5.63	27.45	20.05	135.70
536	35.39	193.18	6.31	21.57	20.46	136.41
537	35.44	193.61	6.53	20.26	21.14	136.94
538	35.53	197.21	6.97	21.13	21.41	137.24
539	35.56	199.02	7.08	22.01	21.55	137.28
540	35.67	208.64	7.71	22.89	18.82	136.78
541	35.76	223.67	4.09	22.36	15.31	135.35
542	35.81	234.75	3.45	21.31	11.63	133.30
543	35.85	240.76	3.80	20.17	11.08	133.46
544	35.90	250.98	4.20	19.12	11.80	134.57
545	35.99	257.85	5.18	17.10	12.90	135.62
546	36.04	249.95	5.78	16.14	15.99	136.86
547	36.13	204.26	7.36	133.99	19.45	137.28
548	36.18	206.83	8.46	104.00	23.00	137.28
549	36.22	207.61	9.42	88.66	20.54	137.28
550	36.32	205.37	3.05	53.58	17.50	135.43
551	36.36	199.79	3.37	48.49	13.89	132.32
552	36.45	187.94	4.04	48.41	15.75	133.19
553	36.50	188.28	4.49	47.62	17.57	134.32
554	36.59	195.67	5.39	61.12	18.89	135.30
555	36.63	188.62	6.00	369.01	19.83	136.41
556	36.68	204.17	6.89	316.66	20.48	137.28
557	36.77	225.04	8.20	158.11	20.76	137.28
558	36.81	229.85	8.80	92.87	21.84	137.28
559	36.91	217.31	9.56	52.18	23.31	137.28
560	36.96	204.34	9.45	47.00	24.66	137.28
561	37.05	176.51	7.20	39.90	25.61	137.28
562	37.09	168.35	7.30	38.67	26.60	137.01
563	37.14	149.28	6.62	37.88	25.07	135.92
564	37.23	167.24	4.39	52.62	24.45	134.82
565	37.28	145.59	5.00	83.57	22.93	134.61
566	37.35	166.12	5.96	124.35	23.58	135.73
567	37.41	190.77	6.64	39.64	22.69	136.90
568	37.47	201.08	7.36	49.11	22.48	137.28
569	37.56	203.91	8.03	38.85	22.23	137.28
570	37.61	220.32	8.17	32.09	21.57	137.28
571	37.69	229.34	8.04	24.73	20.38	137.28
572	37.75	233.37	7.67	22.98	19.48	137.28
573	37.80	233.29	7.27	21.40	18.63	137.28
574	37.89	233.72	6.73	19.29	18.05	137.28
575	37.94	233.20	6.59	18.33	17.35	137.09
576	38.02	227.28	5.75	17.36	17.19	136.60

:: Field input data :: (continued)

Point ID	Depth (ft)	q_c (tsf)	f_s (tsf)	u (tsf)	Fines content (%)	Unit weight (pcf)
577	38.07	217.74	5.63	16.93	17.81	136.03
578	38.17	194.03	5.59	15.61	18.67	135.19
579	38.21	175.05	4.33	14.91	18.84	133.04
580	38.28	143.27	2.21	12.63	19.14	130.71
581	38.35	124.20	2.73	11.14	21.77	129.09
582	38.39	99.47	2.97	11.40	28.70	129.43
583	38.49	75.84	3.16	10.96	35.66	129.26
584	38.54	69.83	3.13	11.22	41.34	128.92
585	38.62	63.05	3.02	59.98	44.15	128.53
586	38.67	57.98	2.92	62.09	47.55	128.02
587	38.72	50.59	2.82	60.51	51.95	127.27
588	38.81	41.66	2.52	65.94	57.68	126.40
589	38.85	40.37	2.30	67.96	59.49	125.20
590	38.94	37.79	1.88	66.30	58.98	124.20
591	38.99	36.68	1.74	68.22	59.13	122.99
592	39.09	33.07	1.51	68.49	58.13	122.39
593	39.13	36.72	1.49	69.19	58.64	121.93
594	39.18	33.16	1.50	69.19	57.91	122.31
595	39.27	36.76	1.70	71.03	58.14	122.74
596	39.31	38.65	1.74	71.38	56.33	123.36
597	39.40	41.06	1.82	72.43	52.54	123.74
598	39.45	43.46	1.88	72.96	50.80	124.07
599	39.53	45.44	1.89	73.14	48.91	124.32
600	39.59	48.10	1.91	74.71	46.72	124.56
601	39.64	51.97	1.95	75.24	47.10	124.94
602	39.73	47.24	2.17	75.33	48.31	125.18
603	39.77	46.30	2.13	75.42	50.18	125.18
604	39.87	46.38	2.04	82.26	50.34	125.35
605	39.91	48.01	2.31	89.45	48.39	126.13
606	39.96	58.24	2.67	100.32	44.52	127.75
607	40.05	75.33	3.29	98.30	39.71	129.40
608	40.10	89.50	3.72	93.22	32.39	131.29
609	40.20	136.57	4.36	60.59	27.93	132.61
610	40.25	145.07	4.64	53.84	24.86	133.59
611	40.29	152.20	4.81	48.76	24.03	134.06
612	40.38	162.00	5.02	24.47	23.36	134.40
613	40.45	165.86	5.10	17.10	22.88	134.66
614	40.52	168.61	5.19	13.07	22.81	134.87
615	40.57	170.16	5.38	12.89	23.13	135.20
616	40.66	170.50	5.76	11.84	23.45	135.58
617	40.71	175.48	6.00	11.84	23.59	136.00
618	40.76	181.32	6.25	11.84	22.73	136.60
619	40.84	206.58	6.87	11.49	21.82	137.14
620	40.89	214.05	7.03	11.05	20.72	137.28
621	40.98	227.19	7.29	7.89	19.95	137.28
622	41.03	237.41	7.36	8.07	19.10	137.28
623	41.12	245.66	7.34	8.07	18.38	137.28
624	41.15	252.27	7.35	8.07	17.69	137.28

:: Field input data :: (continued)

Point ID	Depth (ft)	q_c (tsf)	f_s (tsf)	u (tsf)	Fines content (%)	Unit weight (pcf)
625	41.21	262.84	7.44	7.54	17.28	137.28
626	41.27	267.47	7.68	5.88	17.04	137.28
627	41.35	261.46	7.32	5.17	17.17	137.28
628	41.41	259.06	7.47	3.51	16.73	137.28
629	41.48	257.77	6.34	3.68	17.05	137.28
630	41.58	258.63	7.77	3.51	17.66	137.28
631	41.63	252.61	8.25	3.86	19.69	137.28
632	41.67	228.22	8.58	15.26	21.97	137.28
633	41.77	207.69	8.94	21.05	25.08	137.28
634	41.81	177.80	8.60	17.98	29.06	137.28
635	41.91	130.73	7.21	11.57	34.17	136.83
636	41.95	101.78	6.15	9.91	39.55	135.05
637	42.00	89.42	5.30	9.47	43.64	132.95
638	42.09	67.51	3.60	9.73	45.10	130.87
639	42.13	65.54	3.01	9.73	45.17	128.36
640	42.23	60.13	2.25	11.75	43.82	126.91
641	42.27	58.41	2.13	13.15	43.27	125.53
642	42.36	54.54	1.86	14.64	45.00	124.90
643	42.42	48.36	1.87	16.66	47.79	124.41
644	42.46	45.27	1.90	17.63	52.01	124.24
645	42.52	40.97	1.90	34.73	57.30	123.85
646	42.62	37.71	1.73	42.79	59.06	123.24
647	42.66	37.02	1.57	45.34	58.76	122.37
648	42.73	36.50	1.38	48.06	57.51	121.37
649	42.85	34.87	1.16	57.70	55.78	120.54
650	42.86	36.46	1.14	58.93	55.32	120.14
651	42.93	35.22	1.19	66.21	55.44	120.51
652	42.99	36.42	1.32	71.56	55.96	121.46
653	43.08	40.20	1.59	79.80	56.10	122.60
654	43.13	41.40	1.80	81.73	55.94	124.26
655	43.22	47.24	2.35	90.06	52.07	125.82
656	43.31	55.57	2.69	99.44	49.80	127.40
657	43.40	61.67	3.09	104.88	47.76	128.41
658	43.45	64.25	3.26	107.16	47.15	129.18
659	43.54	66.22	3.51	93.92	47.02	129.50
660	43.59	66.14	3.46	83.83	46.66	129.45
661	43.67	65.71	3.17	80.06	45.47	129.03
662	43.72	67.08	2.94	75.77	43.94	128.51
663	43.77	67.34	2.79	76.38	41.83	128.25
664	43.90	72.75	2.77	73.57	40.46	128.15
665	43.91	72.92	2.74	69.72	39.33	128.11
666	43.97	72.75	2.67	73.71	39.97	128.13
667	44.05	69.83	2.83	70.15	40.41	128.28
668	44.11	72.58	2.92	73.84	41.82	128.79
669	44.18	71.81	3.30	80.50	42.52	129.30
670	44.23	72.41	3.44	92.08	43.08	129.80
671	44.32	75.50	3.54	105.14	41.87	130.00
672	44.37	80.57	3.45	99.53	40.21	130.21

:: Field input data :: (continued)

Point ID	Depth (ft)	q_c (tsf)	f_s (tsf)	u (tsf)	Fines content (%)	Unit weight (pcf)
673	44.46	84.52	3.56	80.85	39.25	130.64
674	44.51	87.96	4.00	63.49	39.35	131.19
675	44.56	88.90	4.20	55.95	40.34	131.76
676	44.65	87.35	4.47	56.08	41.41	132.00
677	44.69	85.38	4.47	56.21	42.40	132.18
678	44.78	85.64	4.59	68.40	38.42	132.66
679	44.85	121.20	4.81	33.32	33.97	133.29
680	44.89	132.96	4.99	29.38	28.32	134.20
681	44.99	165.95	5.38	27.80	24.90	134.87
682	45.02	187.08	5.49	24.91	21.10	135.56
683	45.08	222.38	5.60	19.99	17.08	135.58
684	45.18	260.60	4.61	16.22	14.19	135.55
685	45.22	272.71	4.82	15.26	12.65	135.88
686	45.32	294.19	5.83	10.70	12.91	136.89
687	45.37	303.55	6.57	8.95	13.51	137.28
688	45.41	303.59	7.10	10.61	14.45	137.28
689	45.50	303.64	8.08	12.28	15.39	137.28
690	45.54	296.51	8.20	10.52	16.25	137.28
691	45.63	281.13	7.83	8.86	16.49	137.28
692	45.68	275.46	7.17	8.51	16.48	137.28
693	45.73	258.88	6.33	7.98	16.15	137.26
694	45.82	240.85	5.33	7.45	16.08	136.20
695	45.87	229.08	4.97	7.19	16.42	135.30
696	45.95	210.78	4.74	6.75	17.57	134.90
697	46.01	195.41	4.86	6.67	20.05	134.76
698	46.09	167.75	5.19	6.67	23.26	134.82
699	46.15	152.98	5.41	6.67	26.86	134.95
700	46.22	143.53	5.70	6.67	29.38	134.92
701	46.28	134.08	5.53	7.01	31.29	134.78
702	46.33	127.38	5.43	7.19	34.73	134.48
703	46.42	101.78	5.61	8.15	38.72	134.22
704	46.46	95.08	5.57	8.59	41.53	134.03
705	46.56	103.42	5.43	15.61	43.88	133.75
706	46.60	81.60	5.35	28.85	42.16	133.72
707	46.68	105.05	5.30	49.11	39.29	133.94
708	46.74	126.69	5.48	80.41	32.83	134.53
709	46.79	148.42	5.60	166.09	28.42	135.11
710	46.88	170.76	5.74	26.13	26.47	135.44
711	46.93	164.32	5.81	15.43	27.24	135.51
712	46.99	141.81	5.88	11.14	29.82	135.04
713	47.07	124.29	5.21	10.08	33.69	134.25
714	47.11	103.93	4.86	9.47	37.20	133.00
715	47.21	86.84	4.13	9.47	41.80	131.88
716	47.25	74.47	3.90	9.47	45.93	130.58
717	47.34	64.08	3.38	12.01	50.07	129.43
718	47.39	55.75	2.96	14.47	56.02	127.93
719	47.48	47.50	2.43	21.31	58.26	126.43
720	47.53	44.32	2.04	31.13	58.94	124.84

:: Field input data :: (continued)

Point ID	Depth (ft)	q_c (tsf)	f_s (tsf)	u (tsf)	Fines content (%)	Unit weight (pcf)
721	47.67	42.09	1.70	35.78	58.53	123.82
722	47.70	41.83	1.70	37.62	58.21	123.30
723	47.72	41.74	1.70	39.73	58.34	123.34
724	47.80	41.92	1.73	42.71	58.44	123.53
725	47.86	42.78	1.82	46.21	58.00	123.90
726	47.94	45.18	1.92	49.81	57.11	124.29
727	47.97	46.90	1.95	51.30	56.60	124.92
728	48.04	48.62	2.25	54.28	56.61	125.76
729	48.13	51.28	2.57	63.05	57.01	126.54
730	48.18	51.71	2.63	65.68	58.51	126.97
731	48.23	47.16	2.72	77.78	57.29	127.42
732	48.33	58.06	2.93	120.23	56.36	127.85
733	48.39	57.81	3.01	124.17	50.82	128.18
734	48.43	59.44	2.91	152.94	48.76	127.98
735	48.52	63.30	2.61	146.27	45.33	127.72
736	48.56	68.97	2.54	118.12	42.07	127.47
737	48.66	72.67	2.49	61.91	40.72	127.37
738	48.71	70.00	2.44	60.77	41.54	127.14
739	48.76	63.30	2.38	62.44	44.33	126.83
740	48.84	57.12	2.38	63.75	47.49	126.15
741	48.90	51.36	2.03	66.47	49.70	125.08
742	48.98	46.64	1.65	71.91	51.57	123.90
743	49.03	42.52	1.64	78.40	56.33	123.00
744	49.12	39.68	1.55	79.80	58.84	122.57
745	49.16	37.45	1.48	83.57	60.14	122.02
746	49.21	36.25	1.38	86.82	62.01	121.50
747	49.29	32.12	1.33	129.08	62.80	121.08
748	49.35	32.98	1.29	138.47	63.29	120.82
749	49.45	33.24	1.27	141.45	62.50	120.79
750	49.49	33.50	1.29	140.75	61.70	120.70
751	49.59	34.19	1.23	138.29	60.93	120.64
752	49.63	34.62	1.22	140.31	60.17	120.53
753	49.72	34.70	1.23	136.19	60.67	120.55
754	49.81	33.33	1.25	136.27	61.52	120.52
755	49.85	32.90	1.23	136.36	62.23	120.30
756	49.91	32.12	1.14	141.36	62.12	119.97
757	49.95	31.95	1.10	141.10	61.66	119.58
758	50.00	31.95	1.06	140.66	61.08	119.24
759	50.08	31.78	1.00	138.03	60.87	118.92
760	50.14	30.92	0.98	141.97	60.80	118.67
761	50.22	30.92	0.97	146.53	60.90	118.55
762	50.28	30.92	0.96	149.60	60.75	118.51
763	50.37	30.92	0.96	149.60	60.70	118.48
764	50.42	30.88	0.95	149.60	60.65	118.41
765	50.47	30.75	0.93	149.60	60.96	118.54
766	50.55	30.84	1.01	155.04	61.74	118.90
767	50.60	31.01	1.10	156.09	62.86	119.80
768	50.69	32.55	1.30	162.84	63.41	120.68

:: Field input data :: (continued)

Point ID	Depth (ft)	q_c (tsf)	f_s (tsf)	u (tsf)	Fines content (%)	Unit weight (pcf)
769	50.74	33.93	1.41	163.37	63.62	121.71
770	50.82	35.65	1.61	165.48	63.24	122.67
771	50.88	38.48	1.82	168.98	62.90	123.62
772	50.92	40.11	1.99	170.39	61.63	124.70
773	51.01	45.35	2.30	171.97	60.84	125.64
774	51.06	47.07	2.52	168.90	59.57	126.51
775	51.15	50.42	2.66	147.06	59.24	127.04
776	51.19	51.02	2.78	142.06	59.28	127.58
777	51.25	51.79	3.06	142.24	59.73	128.46
778	51.33	56.43	3.63	156.09	56.06	130.57
779	51.43	84.61	5.18	171.53	52.34	132.36
780	51.47	90.02	5.47	169.42	47.12	134.01
781	51.52	111.92	6.05	159.51	37.32	134.44
782	51.61	177.29	4.67	49.02	29.02	134.36
783	51.65	195.84	4.06	31.31	19.83	132.18
784	51.75	226.67	1.51	23.41	15.10	130.45
785	51.78	252.53	2.21	26.83	12.73	130.29
786	51.84	275.38	3.61	14.73	15.33	133.64
787	51.92	264.47	5.57	12.19	22.28	135.61
788	51.98	122.31	6.65	12.19	29.57	136.86
789	52.04	168.09	7.70	12.19	34.78	137.28
790	52.10	205.46	8.52	62.00	31.26	137.28
791	52.18	217.91	9.28	35.34	29.86	137.28
792	52.24	226.67	9.95	32.80	29.42	137.28
793	52.30	226.59	9.32	28.50	28.98	137.28
794	52.40	209.41	7.69	14.38	28.68	137.28
795	52.45	192.49	6.76	12.80	28.82	137.19
796	52.50	178.83	6.07	11.66	31.31	136.00
797	52.59	130.39	5.49	10.08	35.37	135.00
798	52.64	111.83	5.39	11.75	42.01	134.01
799	52.73	91.48	5.10	10.52	47.12	133.35
800	52.77	81.17	4.92	11.84	52.34	132.45
801	52.87	68.03	4.38	17.36	55.93	131.52
802	52.91	62.62	3.93	25.69	59.05	130.53
803	52.96	57.55	3.71	30.25	60.01	130.31
804	53.04	61.93	4.14	44.11	61.93	130.34
805	53.10	55.75	4.11	64.63	61.67	130.74
806	53.19	61.24	4.26	108.56	60.35	131.01
807	53.24	68.29	4.43	123.56	51.63	131.85
808	53.29	103.59	4.64	70.50	45.29	132.85
809	53.37	114.67	5.24	50.16	40.56	133.83
810	53.42	123.86	5.57	43.41	38.78	134.61
811	53.51	137.00	5.87	30.52	37.53	135.10
812	53.56	138.89	6.02	26.66	37.50	135.44
813	53.65	132.62	6.28	22.62	38.68	135.53
814	53.70	126.69	6.26	22.10	40.60	135.43
815	53.75	117.50	6.11	21.05	42.38	135.09
816	53.81	109.09	5.81	19.47	43.79	134.37

:: Field input data :: (continued)

Point ID	Depth (ft)	q_c (tsf)	f_s (tsf)	u (tsf)	Fines content (%)	Unit weight (pcf)
817	53.89	100.93	4.97	21.18	44.89	133.35
818	53.97	91.22	4.33	19.99	46.08	132.36
819	54.02	85.04	4.28	21.31	48.09	131.80
820	54.08	80.14	4.29	25.08	50.33	131.62
821	54.16	76.10	4.27	28.76	52.03	131.53
822	54.20	75.07	4.31	30.78	53.55	131.52
823	54.30	72.49	4.41	36.66	54.65	131.67
824	54.34	72.67	4.59	38.94	55.02	132.15
825	54.44	79.19	5.12	41.22	54.36	132.73
826	54.48	83.15	5.34	41.74	53.30	133.33
827	54.53	86.24	5.57	41.39	49.60	132.95
828	54.62	94.57	4.01	39.99	44.03	131.79
829	54.67	101.36	2.88	36.13	38.35	130.25
830	54.76	104.36	3.00	29.46	36.07	129.63
831	54.80	103.76	3.12	27.89	37.49	130.37
832	54.90	101.70	3.84	25.87	39.45	131.11
833	54.95	100.84	4.10	23.68	43.43	131.64
834	54.99	80.57	4.24	168.37	47.24	131.78
835	55.08	77.82	4.42	104.62	51.55	131.77
836	55.13	75.93	4.49	65.16	53.41	131.85
837	55.20	73.95	4.55	53.32	54.51	131.91
838	55.27	73.91	4.61	62.44	55.20	132.01
839	55.36	73.91	4.72	74.98	55.09	131.98
840	55.40	73.87	4.49	79.63	52.50	131.82
841	55.45	84.18	4.11	82.61	47.32	131.73
842	55.54	101.53	4.09	68.40	41.83	131.83
843	55.58	112.78	4.08	75.85	35.39	132.67
844	55.68	158.05	4.65	43.32	30.54	133.69
845	55.73	184.84	5.04	27.36	27.88	134.67
846	55.78	182.44	5.35	18.50	26.04	135.27
847	55.85	211.39	5.43	19.73	25.08	135.50
848	55.93	212.42	5.29	14.38	23.45	135.35
849	55.98	213.45	4.75	10.87	21.91	134.45
850	56.05	216.20	3.62	8.24	20.47	133.57
851	56.11	216.97	3.71	7.37	19.94	133.31
852	56.18	218.34	4.31	4.30	21.04	134.16
853	56.25	218.60	5.04	4.30	22.43	135.13
854	56.30	218.26	5.55	4.12	25.99	136.22
855	56.43	176.94	7.08	33.85	29.05	136.93
856	56.45	183.13	7.20	24.03	31.87	137.28
857	56.52	190.00	7.71	17.27	32.01	137.28
858	56.57	184.59	7.87	12.98	33.35	137.28
859	56.66	163.80	7.66	10.44	36.08	137.28
860	56.71	139.41	7.30	9.82	40.21	136.78
861	56.79	115.01	6.71	9.47	43.46	135.49
862	56.85	103.42	5.12	9.29	44.08	133.28
863	56.90	92.59	2.98	11.22	43.16	130.96
864	56.99	83.92	3.07	20.70	42.65	129.39

:: Field input data :: (continued)

Point ID	Depth (ft)	q_c (tsf)	f_s (tsf)	u (tsf)	Fines content (%)	Unit weight (pcf)
865	57.04	84.00	3.19	32.18	44.66	129.76
866	57.11	84.09	3.55	73.75	44.68	130.40
867	57.18	91.73	3.84	89.36	44.51	131.03
868	57.25	93.02	3.99	112.77	42.47	131.54
869	57.29	106.08	4.06	84.97	39.61	132.13
870	57.37	125.15	4.40	38.15	37.06	132.75
871	57.42	129.53	4.63	32.01	36.19	133.12
872	57.50	123.60	4.55	25.87	37.20	133.08
873	57.56	114.24	4.45	22.98	39.50	132.72
874	57.62	101.10	4.33	21.48	42.43	132.28
875	57.68	91.65	4.18	20.52	46.61	131.58
876	57.77	74.47	3.83	20.52	49.79	130.37
877	57.83	66.83	2.95	22.10	53.06	128.81
878	57.88	58.24	2.54	25.43	56.48	127.43
879	57.97	47.67	2.60	33.67	61.44	126.70
880	58.01	44.75	2.52	37.27	67.30	126.12
881	58.11	38.39	2.29	53.32	70.44	125.50
882	58.16	36.42	2.19	61.47	74.22	124.81
883	58.21	32.73	2.09	86.29	74.14	124.35
884	58.29	35.22	1.93	117.33	73.17	123.89
885	58.34	34.87	1.83	125.93	69.97	123.34
886	58.43	35.04	1.62	137.59	68.21	122.86
887	58.48	35.65	1.57	149.69	65.16	122.40
888	58.57	37.88	1.47	176.44	61.90	122.15
889	58.62	39.94	1.39	199.50	58.62	121.93
890	58.67	41.49	1.37	205.20	55.52	121.83
891	58.76	45.01	1.33	210.29	53.60	121.94
892	58.81	46.04	1.39	217.83	51.02	121.67
893	58.90	47.50	1.16	217.56	47.85	120.64
894	58.95	48.79	0.80	203.80	44.78	119.44
895	58.99	49.13	0.87	202.66	43.18	118.92
896	59.09	50.59	0.95	183.54	43.50	119.41
897	59.13	51.02	0.96	201.30	45.07	120.02
898	59.23	47.84	1.13	173.28	48.12	120.59
899	59.28	43.38	1.25	199.94	51.12	121.42
900	59.34	46.47	1.40	216.86	52.38	122.24
901	59.41	48.87	1.56	217.74	51.81	123.09
902	59.47	51.36	1.68	204.15	51.56	123.80
903	59.52	53.17	1.80	190.82	51.57	124.53
904	59.61	55.23	2.02	183.54	52.41	125.12
905	59.70	53.34	2.12	197.66	53.43	125.51
906	59.71	52.74	2.13	197.22	54.12	125.26
907	59.79	50.59	1.87	197.22	54.27	124.55
908	59.89	47.24	1.62	196.78	54.06	123.65
909	59.93	46.55	1.54	208.09	53.93	122.95
910	59.98	45.61	1.46	220.72	53.32	122.47
911	60.07	45.27	1.34	233.53	52.55	122.03
912	60.11	45.78	1.30	226.16	51.03	121.70

:: Field input data :: (continued)

Point ID	Depth (ft)	q_c (tsf)	f_s (tsf)	u (tsf)	Fines content (%)	Unit weight (pcf)
913	60.21	48.01	1.25	235.10	49.95	121.83
914	60.25	49.99	1.37	229.23	49.65	122.46
915	60.35	52.14	1.60	178.10	50.23	123.20
916	60.39	52.57	1.66	170.47	51.32	123.74
917	60.44	51.97	1.73	117.07	53.24	124.16
918	60.53	49.13	1.93	152.32	55.31	124.48
919	60.58	48.79	1.95	135.75	56.58	124.64
920	60.67	48.53	1.89	165.04	56.12	124.58
921	60.77	49.99	1.87	167.14	55.63	124.48
922	60.81	49.73	1.86	130.22	55.55	124.46
923	60.85	49.13	1.87	130.27	56.44	124.44
924	60.90	47.67	1.89	130.31	57.27	124.51
925	61.00	47.84	1.94	122.77	58.22	124.57
926	61.04	47.07	1.95	112.51	59.51	124.49
927	61.13	43.72	1.88	106.81	61.27	124.25
928	61.18	41.92	1.84	99.27	62.93	123.96
929	61.22	41.23	1.81	96.81	64.24	123.65
930	61.31	38.82	1.72	97.78	65.09	123.18
931	61.40	37.19	1.57	104.70	65.73	122.64
932	61.46	36.68	1.51	110.84	65.72	122.22
933	61.50	36.42	1.48	109.88	65.48	121.99
934	61.55	36.42	1.44	108.91	65.59	121.85
935	61.63	35.90	1.43	96.90	65.96	121.73
936	61.68	35.22	1.43	101.99	66.69	121.55
937	61.78	34.19	1.36	101.46	66.21	120.91
938	61.82	33.67	1.11	101.02	63.31	119.30
939	61.91	33.16	0.68	100.67	60.76	117.73
940	62.01	32.04	0.77	105.67	59.45	116.73
941	62.05	31.87	0.79	106.90	60.76	117.11
942	62.10	32.12	0.80	107.42	61.12	117.18
943	62.15	31.69	0.80	106.19	61.69	117.39
944	62.23	31.69	0.86	108.48	62.55	117.68
945	62.28	31.69	0.90	112.77	63.35	118.22
946	62.37	32.38	0.99	120.84	63.84	118.74
947	62.42	32.90	1.05	123.30	63.90	119.42
948	62.51	34.53	1.15	123.65	63.67	119.91
949	62.56	35.22	1.18	121.02	63.07	120.33
950	62.60	36.25	1.22	118.82	62.82	120.60
951	62.69	36.68	1.27	111.02	62.65	120.83
952	62.74	36.93	1.28	110.67	62.09	121.02
953	62.84	38.65	1.30	111.24	62.08	121.06
954	62.86	36.93	1.28	111.24	62.75	120.94
955	62.93	34.87	1.24	111.81	64.41	120.60
956	63.02	32.81	1.18	158.46	65.46	120.24
957	63.06	32.47	1.15	159.69	64.11	119.37
958	63.16	32.38	0.85	179.68	62.03	118.47
959	63.20	32.38	0.81	186.26	60.77	118.04
960	63.30	32.64	0.98	187.05	62.14	118.76

:: Field input data :: (continued)

Point ID	Depth (ft)	q_c (tsf)	f_s (tsf)	u (tsf)	Fines content (%)	Unit weight (pcf)
961	63.34	32.90	1.12	188.28	64.16	119.95
962	63.39	33.84	1.31	196.96	65.88	121.39
963	63.48	36.08	1.68	209.67	62.97	122.88
964	63.52	47.59	1.85	177.75	58.16	124.21
965	63.62	55.57	1.98	164.25	53.84	124.91
966	63.66	56.26	1.99	144.69	53.60	125.18
967	63.76	51.79	2.03	103.21	55.52	125.20
968	63.80	49.39	2.06	145.22	59.70	125.06
969	63.85	42.60	2.06	117.60	63.50	124.81
970	63.92	39.17	1.99	145.75	65.28	124.44
971	63.99	42.39	1.86	163.99	64.38	123.99
972	64.08	41.40	1.72	160.83	62.03	123.64
973	64.12	42.17	1.68	185.12	60.54	123.37
974	64.17	44.06	1.64	194.59	58.71	123.18
975	64.26	44.84	1.55	179.33	57.83	122.99
976	64.31	43.72	1.54	159.78	58.40	122.62
977	64.39	40.80	1.45	148.03	60.31	122.14
978	64.45	37.28	1.35	160.43	61.98	121.26
979	64.53	34.87	1.14	156.36	63.08	120.35
980	64.59	33.50	1.06	161.09	63.54	119.44
981	64.66	31.87	0.98	163.90	63.98	118.96
982	64.72	31.69	0.97	163.90	64.42	118.64
983	64.77	31.27	0.96	163.81	65.81	118.63
984	64.86	29.29	1.00	165.21	67.61	118.70
985	64.90	28.77	1.02	175.91	69.70	118.79
986	64.99	28.09	1.03	173.10	70.63	118.81
987	65.03	27.83	1.02	173.10	71.51	118.75
988	65.13	27.31	1.02	168.90	72.15	118.70
989	65.16	27.27	1.02	152.76	72.57	118.64
990	65.24	27.27	1.01	155.39	72.68	118.61
991	65.33	27.23	1.01	156.71	72.46	118.57
992	65.39	27.40	1.00	158.28	72.25	118.55
993	65.43	27.49	1.00	158.55	72.11	118.53
994	65.52	27.40	1.00	156.71	72.14	118.53
995	65.56	27.40	1.00	156.97	71.92	118.54
996	65.66	27.92	1.00	155.65	71.66	118.56
997	65.69	27.92	1.00	154.51	71.49	118.57
998	65.75	27.74	1.00	155.48	71.56	118.56
999	65.83	27.83	0.99	153.29	71.69	118.54
1000	65.89	27.74	0.99	152.23	71.89	118.52
1001	65.98	27.40	0.99	153.81	72.18	118.52
1002	66.02	27.40	1.00	156.53	72.26	118.49
1003	66.11	27.40	0.99	161.97	71.79	118.49
1004	66.16	28.00	0.98	161.71	70.98	118.47
1005	66.21	28.60	0.98	156.79	70.20	118.47
1006	66.30	28.69	0.97	155.65	70.00	118.51
1007	66.35	28.60	1.00	157.41	70.50	118.66
1008	66.43	28.43	1.04	155.39	70.71	118.70

:: Field input data :: (continued)

Point ID	Depth (ft)	q_c (tsf)	f_s (tsf)	u (tsf)	Fines content (%)	Unit weight (pcf)
1009	66.48	28.60	0.99	154.69	69.96	118.31
1010	66.56	28.26	0.84	155.74	69.00	117.96
1011	66.62	28.60	0.90	153.72	68.44	117.78
1012	66.67	28.86	0.92	152.32	68.35	118.24
1013	66.76	30.23	0.99	156.71	67.69	118.61
1014	66.81	31.18	1.02	158.64	66.38	119.09
1015	66.90	33.16	1.08	157.06	64.84	119.37
1016	66.96	34.53	1.08	149.95	63.55	119.59
1017	67.00	34.70	1.08	160.83	63.99	119.73
1018	67.10	32.90	1.14	164.60	65.13	120.05
1019	67.16	33.41	1.23	182.22	65.96	120.56
1020	67.23	35.13	1.32	193.71	65.40	121.07
1021	67.28	36.08	1.36	198.54	63.62	121.50
1022	67.33	39.25	1.40	197.75	61.81	121.82
1023	67.40	41.23	1.43	178.72	60.31	122.08
1024	67.46	41.32	1.46	196.69	59.97	122.27
1025	67.53	41.49	1.49	186.61	60.14	122.46
1026	67.60	41.74	1.54	195.64	60.17	122.64
1027	67.65	42.43	1.56	195.03	59.81	122.84
1028	67.74	43.38	1.59	211.78	58.88	123.03
1029	67.79	45.18	1.61	217.13	57.75	123.35
1030	67.88	47.50	1.71	219.76	56.52	123.84
1031	67.97	50.42	1.85	220.90	56.04	124.41
1032	68.01	51.11	1.97	211.69	55.64	124.94
1033	68.06	52.91	2.05	218.53	55.83	125.22
1034	68.14	52.40	2.05	195.38	56.04	125.40
1035	68.20	51.88	2.11	216.16	57.08	125.60
1036	68.28	51.02	2.25	224.41	56.84	125.90
1037	68.34	55.49	2.28	214.85	55.52	126.15
1038	68.39	58.67	2.24	208.88	52.95	126.11
1039	68.47	62.02	2.11	111.11	52.42	125.83
1040	68.53	56.78	2.04	96.81	54.28	125.34
1041	68.61	49.22	1.95	83.48	58.60	124.59
1042	68.70	41.57	1.75	146.71	62.05	123.84
1043	68.75	41.23	1.66	155.48	63.22	123.21
1044	68.78	41.23	1.59	157.67	62.09	122.82
1045	68.84	41.83	1.48	155.57	60.84	122.34
1046	68.94	41.40	1.36	162.23	59.89	122.07
1047	68.98	42.00	1.42	161.62	60.89	122.70
1048	69.07	42.69	1.85	188.28	62.42	123.77
1049	69.12	43.89	2.05	194.41	63.53	124.90
1050	69.17	46.21	2.24	188.63	60.61	125.88
1051	69.25	59.09	2.49	111.11	58.20	126.65
1052	69.31	59.27	2.59	95.23	56.41	127.10
1053	69.36	57.81	2.56	96.29	56.91	126.96
1054	69.43	56.09	2.38	106.55	57.14	126.46
1055	69.53	54.11	2.17	104.70	58.13	125.63
1056	69.63	47.67	1.92	100.67	59.36	124.79

:: Field input data :: (continued)

Point ID	Depth (ft)	q_c (tsf)	f_s (tsf)	u (tsf)	Fines content (%)	Unit weight (pcf)
1057	69.67	46.04	1.81	101.99	61.93	124.02
1058	69.72	41.40	1.73	114.97	64.32	123.53
1059	69.78	38.31	1.68	121.28	67.10	123.11
1060	69.86	36.76	1.63	140.04	68.47	122.80
1061	69.89	36.42	1.58	145.83	67.43	121.88
1062	70.03	35.22	1.14	142.15	65.77	120.85
1063	70.09	34.79	1.08	147.15	64.56	120.03
1064	70.15	34.70	1.19	153.37	64.95	120.07
1065	70.22	34.44	1.17	158.46	65.72	120.30
1066	70.29	34.27	1.20	158.99	65.93	120.35
1067	70.37	34.53	1.22	155.65	66.23	120.48
1068	70.41	34.44	1.23	162.23	66.27	120.58
1069	70.50	34.62	1.25	168.28	66.36	120.66
1070	70.54	34.62	1.25	167.93	66.38	120.74
1071	70.64	34.70	1.26	167.84	66.57	120.76
1072	70.69	34.44	1.26	167.76	66.85	120.72
1073	70.78	33.84	1.24	170.12	67.12	120.63
1074	70.82	33.76	1.23	169.95	67.16	120.50
1075	70.88	33.76	1.20	167.14	67.05	120.35
1076	71.01	33.41	1.17	169.86	67.04	120.24
1077	71.05	33.33	1.18	169.16	67.28	120.22
1078	71.10	33.16	1.19	169.77	67.56	120.25
1079	71.14	33.07	1.19	169.34	67.84	120.24
1080	71.20	32.81	1.18	169.51	68.07	120.19
1081	71.28	32.55	1.17	168.19	68.34	120.12
1082	71.34	32.30	1.17	169.69	68.52	120.03
1083	71.42	32.12	1.15	167.93	68.69	119.91
1084	71.47	31.78	1.13	165.13	68.59	119.74
1085	71.54	31.78	1.09	165.21	68.28	119.56
1086	71.61	32.04	1.07	159.16	67.98	119.43
1087	71.65	32.04	1.07	148.29	68.03	119.47
1088	71.74	31.18	1.11	213.71	67.55	119.64
1089	71.79	32.90	1.13	214.67	66.90	119.88
1090	71.88	33.67	1.16	198.19	65.01	120.08
1091	71.93	36.76	1.16	151.27	64.97	120.18
1092	72.02	34.27	1.17	158.20	64.80	120.18
1093	72.11	34.36	1.15	176.88	65.82	120.10
1094	72.13	34.19	1.14	166.35	65.58	119.79
1095	72.20	32.64	1.03	200.20	65.47	119.46
1096	72.26	32.21	1.02	235.63	64.78	119.29
1097	72.34	33.76	1.06	236.51	64.57	119.43
1098	72.39	33.76	1.08	202.66	64.52	119.73
1099	72.47	34.19	1.13	204.06	65.32	119.93
1100	72.52	33.63	1.16	205.46	66.20	120.15
1101	72.58	33.07	1.19	205.38	66.93	120.27
1102	72.66	33.41	1.20	205.90	66.98	120.24
1103	72.71	33.41	1.15	206.25	66.84	120.08
1104	72.79	32.64	1.12	202.92	66.96	119.88

:: Field input data :: (continued)

Point ID	Depth (ft)	q_c (tsf)	f_s (tsf)	u (tsf)	Fines content (%)	Unit weight (pcf)
1105	72.85	32.30	1.12	201.69	67.27	119.78
1106	72.94	32.55	1.11	197.31	66.33	119.79
1107	72.98	34.70	1.11	188.98	65.48	119.80
1108	73.04	34.19	1.10	189.24	64.55	119.81
1109	73.11	34.57	1.10	189.50	64.61	119.75
1110	73.17	34.44	1.09	184.42	64.10	119.73
1111	73.26	35.13	1.08	189.94	63.47	119.72
1112	73.31	36.33	1.08	156.44	63.65	119.68
1113	73.36	33.84	1.08	190.38	64.00	119.65
1114	73.44	34.10	1.08	203.10	65.39	119.59
1115	73.50	32.12	1.08	239.66	65.46	119.50
1116	73.58	32.47	1.04	246.06	65.69	119.48
1117	73.63	33.07	1.08	240.98	64.77	119.67
1118	73.72	34.62	1.14	254.66	63.60	120.20
1119	73.77	37.45	1.24	256.15	62.54	121.12
1120	73.86	39.94	1.46	262.81	67.60	121.65
1121	73.90	27.31	1.52	213.09	66.87	122.39
1122	74.00	44.24	1.61	164.86	66.72	122.72
1123	74.04	43.46	1.64	173.10	61.68	123.25
1124	74.08	42.95	1.68	180.47	62.83	123.41
1125	74.18	41.83	1.74	201.34	63.75	123.57
1126	74.22	41.57	1.77	217.13	63.82	123.81
1127	74.31	43.81	1.84	218.71	62.76	124.70
1128	74.41	49.73	2.31	257.90	61.46	125.77
1129	74.44	52.57	2.53	253.87	59.75	127.07
1130	74.50	59.44	2.88	233.96	58.43	127.92
1131	74.55	62.62	3.07	213.79	56.49	128.88
1132	74.64	71.64	3.43	100.50	55.20	129.47
1133	74.67	73.61	3.48	74.71	53.56	129.76
1134	74.78	75.50	3.30	66.56	52.85	129.63
1135	74.80	74.30	3.22	50.77	53.21	129.17
1136	74.87	67.00	2.97	50.34	55.83	128.51
1137	74.95	57.38	2.75	50.34	59.69	127.59
1138	75.01	51.11	2.49	49.90	63.52	126.52
1139	75.09	45.87	2.15	65.07	66.30	125.40
1140	75.15	41.32	1.93	89.01	67.95	124.13
1141	75.24	38.14	1.61	113.65	68.57	123.16
1142	75.29	38.14	1.54	118.12	67.80	122.43
1143	75.33	38.48	1.48	121.19	66.04	122.08
1144	75.42	39.77	1.37	124.87	64.36	121.74
1145	75.47	39.94	1.32	124.70	56.70	118.56
1146	75.56	39.25	0.00	125.05	47.51	113.32
1147	75.61	38.39	0.00	121.81	N/A	87.36
1148	75.66	37.97	0.00	125.40	N/A	87.36
1149	75.75	37.88	0.00	127.94	N/A	87.36
1150	75.80	37.97	0.00	129.52	N/A	87.36
1151	75.86	35.65	0.00	129.78	N/A	87.36

:: Field input data :: (continued)

Point ID	Depth (ft)	q_c (tsf)	f_s (tsf)	u (tsf)	Fines content (%)	Unit weight (pcf)

Abbreviations

Depth:	Depth from free surface, at which CPT was performed (ft)
q_c:	Measured cone resistance (tsf)
f_s:	Sleeve friction resistance (tsf)
u:	Pore pressure (tsf)
Fines content:	Percentage of fines in soil (%)
Unit weight:	Bulk soil unit weight (pcf)

Fenagh Engineering and Testing
9070 Center Avenue
Rancho Cucamonga, CA 91730
www.fenaghengineering.com

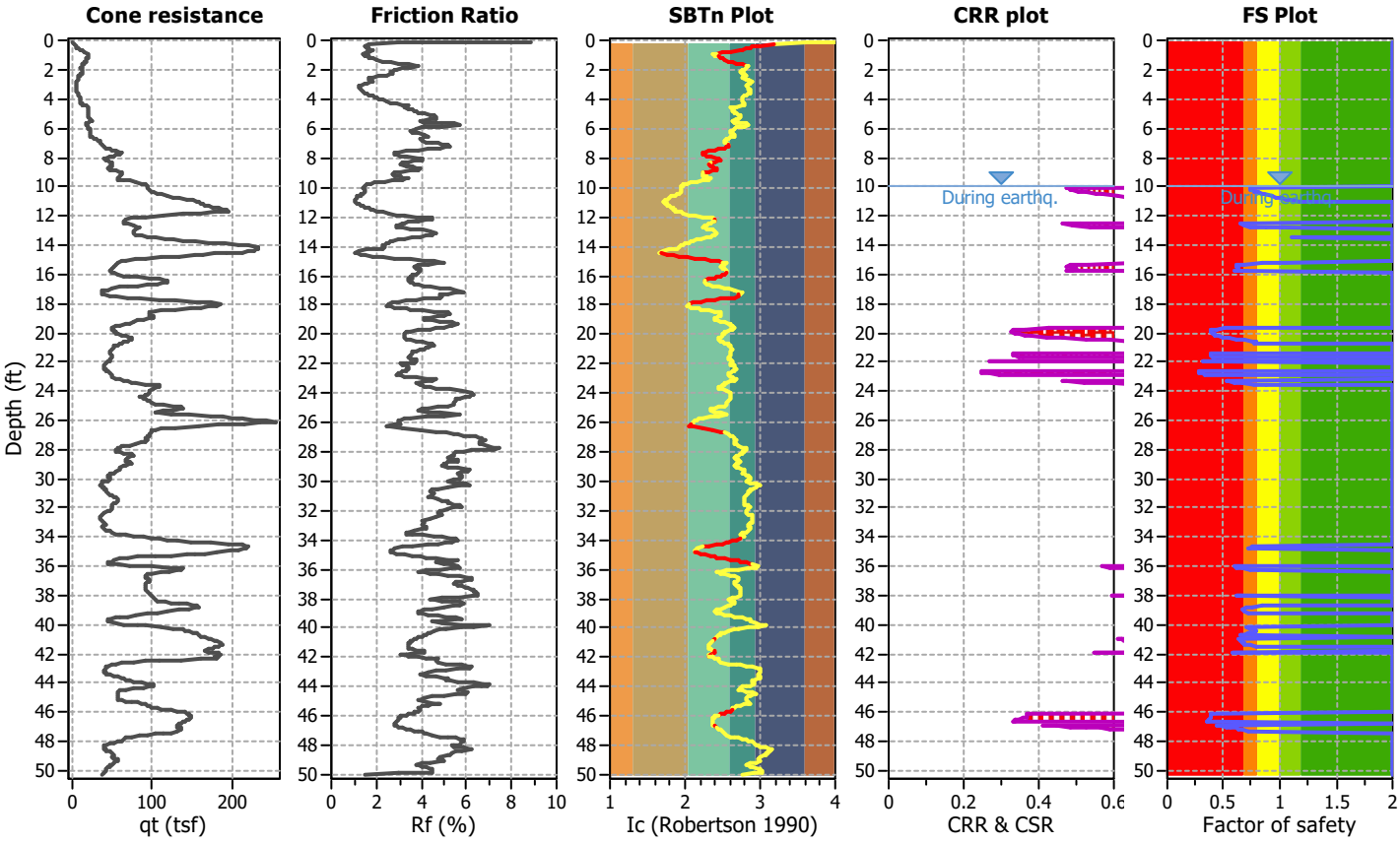
LIQUEFACTION ANALYSIS REPORT

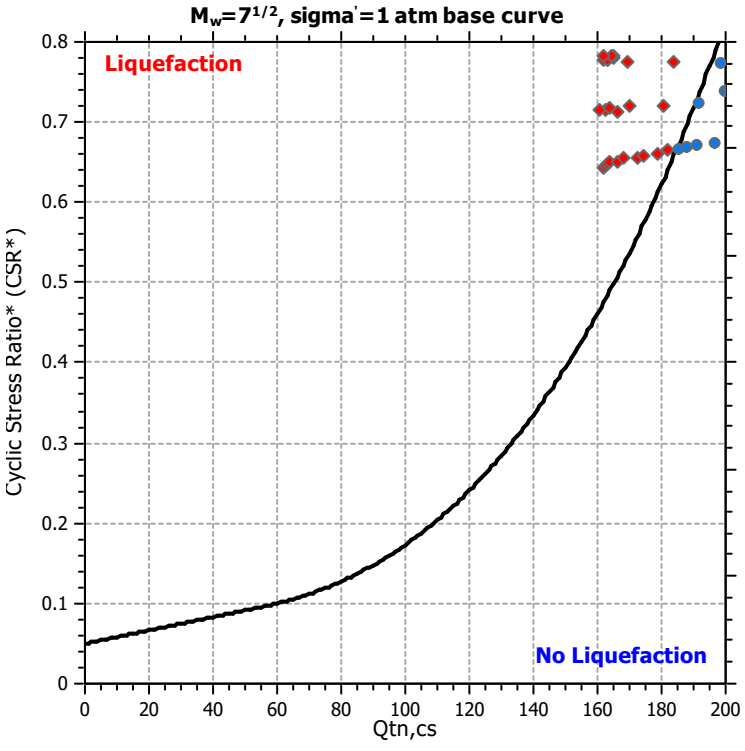
Project title : Centennial High School **Location : 2606 N. Central Ave, Compton, CA 90222**

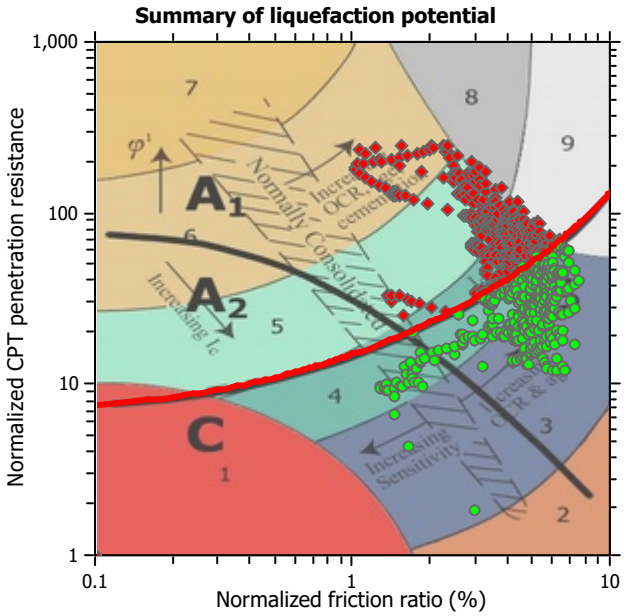
CPT file : CPT-5

Input parameters and analysis data

Analysis method:	NCEER (1998)	G.W.T. (in-situ):	50.00 ft	Use fill:	No	Clay like behavior applied:	Sands only
Fines correction method:	NCEER (1998)	G.W.T. (earthq.):	10.00 ft	Fill height:	N/A	Limit depth applied:	No
Points to test:	Based on Ic value	Average results interval:	3	Fill weight:	N/A	Limit depth:	N/A
Earthquake magnitude M_w:	7.30	Ic cut-off value:	2.60	Trans. detect. applied:	Yes	MSF method:	Method based
Peak ground acceleration:	0.83	Unit weight calculation:	Based on SBT	K_σ applied:	Yes		

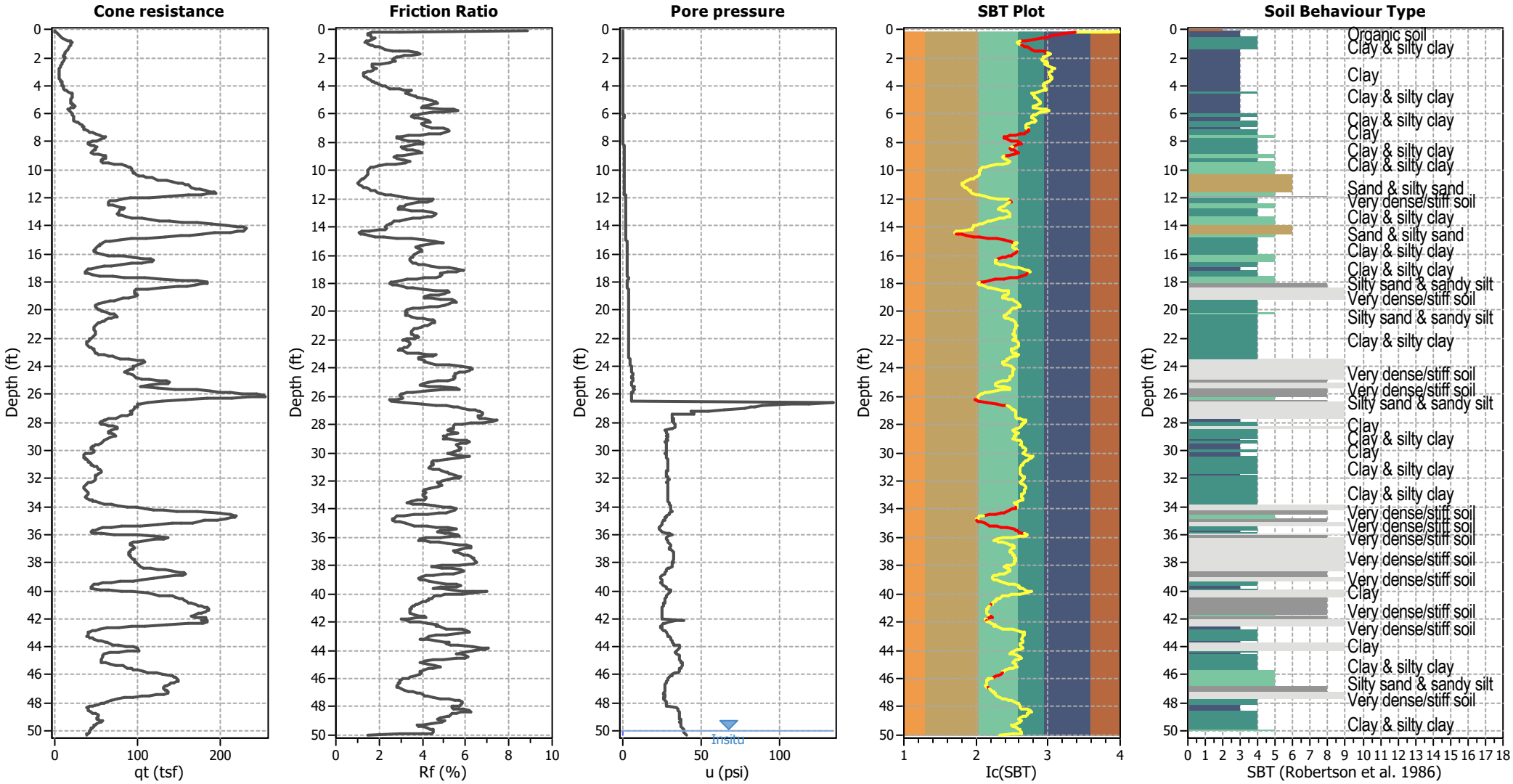






Zone A_1: Cyclic liquefaction likely depending on size and duration of cyclic loading
Zone A_2: Cyclic liquefaction and strength loss likely depending on loading and ground geometry
Zone B: Liquefaction and post-earthquake strength loss unlikely, check cyclic softening
Zone C: Cyclic liquefaction and strength loss possible depending on soil plasticity, brittleness/sensitivity, strain to peak undrained strength and ground geometry

CPT basic interpretation plots



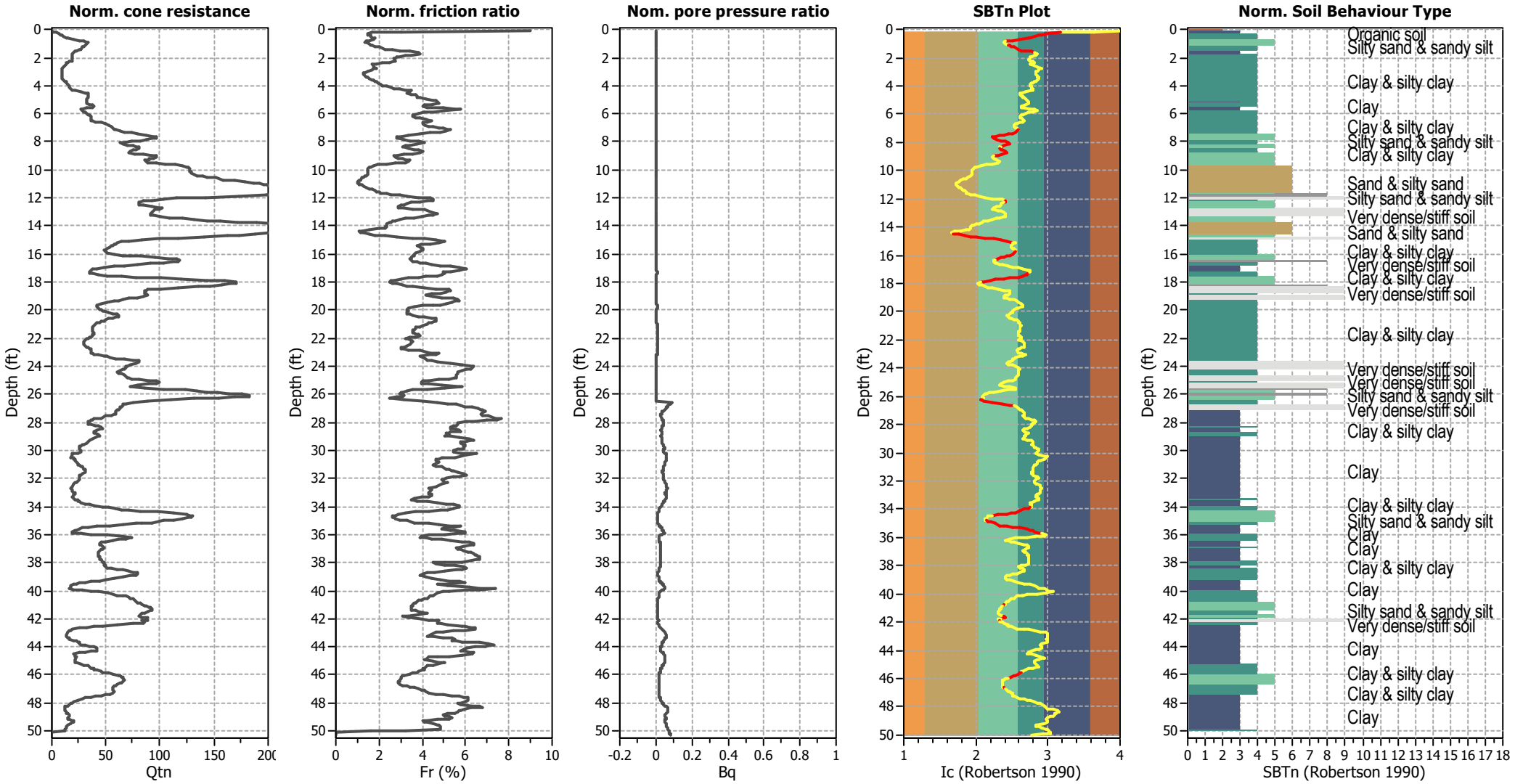
Input parameters and analysis data

Analysis method:	NCEER (1998)	Depth to water table (erthq.):	10.00 ft	Fill weight:	N/A
Fines correction method:	NCEER (1998)	Average results interval:	3	Transition detect. applied:	Yes
Points to test:	Based on Ic value	Ic cut-off value:	2.60	K_σ applied:	Yes
Earthquake magnitude M_w:	7.30	Unit weight calculation:	Based on SBT	Clay like behavior applied:	Sands only
Peak ground acceleration:	0.83	Use fill:	No	Limit depth applied:	No
Depth to water table (insitu):	50.00 ft	Fill height:	N/A	Limit depth:	N/A

SBT legend

1. Sensitive fine grained
2. Organic material
3. Clay to silty clay
4. Clayey silt to silty
5. Silty sand to sandy silt
6. Clean sand to silty sand
7. Gravely sand to sand
8. Very stiff sand to
9. Very stiff fine grained

CPT basic interpretation plots (normalized)



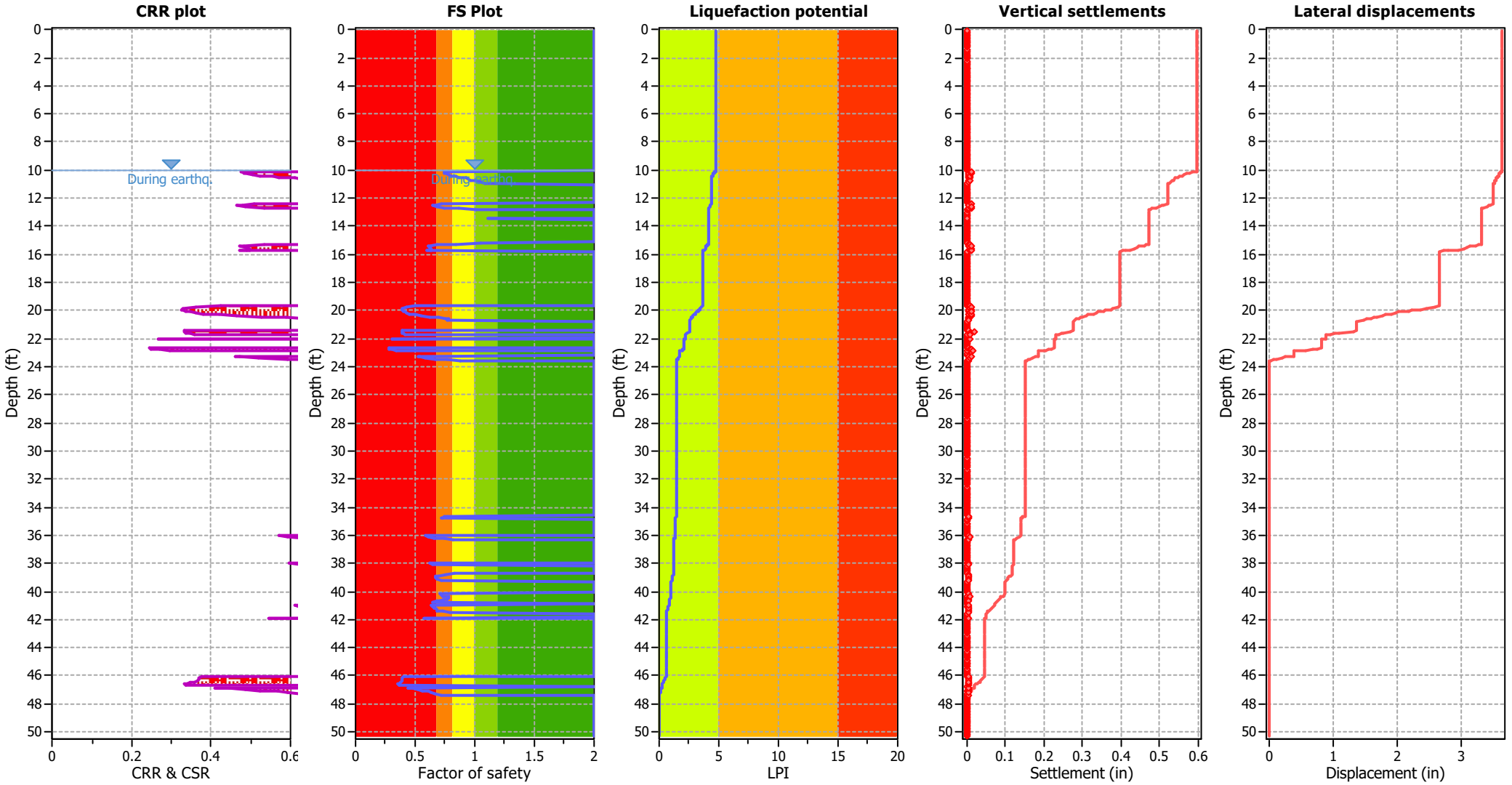
Input parameters and analysis data

Analysis method:	NCEER (1998)	Depth to water table (erthq.):	10.00 ft	Fill weight:	N/A
Fines correction method:	NCEER (1998)	Average results interval:	3	Transition detect. applied:	Yes
Points to test:	Based on Ic value	Ic cut-off value:	2.60	K_σ applied:	Yes
Earthquake magnitude M_w:	7.30	Unit weight calculation:	Based on SBT	Clay like behavior applied:	Sands only
Peak ground acceleration:	0.83	Use fill:	No	Limit depth applied:	No
Depth to water table (insitu):	50.00 ft	Fill height:	N/A	Limit depth:	N/A

SBTn legend

1. Sensitive fine grained
2. Organic material
3. Clay to silty clay
4. Clayey silt to silty
5. Silty sand to sandy silt
6. Clean sand to silty sand
7. Gravely sand to sand
8. Very stiff sand to
9. Very stiff fine grained

Liquefaction analysis overall plots



Input parameters and analysis data

Analysis method:	NCEER (1998)	Depth to water table (erthq.):	10.00 ft	Fill weight:	N/A
Fines correction method:	NCEER (1998)	Average results interval:	3	Transition detect. applied:	Yes
Points to test:	Based on Ic value	Ic cut-off value:	2.60	K_σ applied:	Yes
Earthquake magnitude M_w:	7.30	Unit weight calculation:	Based on SBT	Clay like behavior applied:	Sands only
Peak ground acceleration:	0.83	Use fill:	No	Limit depth applied:	No
Depth to water table (insitu):	50.00 ft	Fill height:	N/A	Limit depth:	N/A

F.S. color scheme

- Almost certain it will liquefy
- Very likely to liquefy
- Liquefaction and no liq. are equally likely
- Unlike to liquefy
- Almost certain it will not liquefy

LPI color scheme

- Very high risk
- High risk
- Low risk

:: Field input data ::

Point ID	Depth (ft)	q_c (tsf)	f_s (tsf)	u (tsf)	Fines content (%)	Unit weight (pcf)
1	0.08	0.00	0.03	0.00	100.00	87.36
2	0.14	0.94	0.03	0.00	100.00	87.36
3	0.24	2.41	0.04	0.00	71.51	89.91
4	0.33	4.72	0.06	0.00	58.17	93.00
5	0.38	5.07	0.08	0.00	52.47	95.42
6	0.42	5.67	0.09	0.00	50.11	97.30
7	0.47	7.04	0.11	0.00	46.75	99.10
8	0.56	8.25	0.14	0.00	43.73	100.99
9	0.61	9.45	0.17	0.00	41.87	103.03
10	0.69	10.91	0.22	0.00	35.98	105.08
11	0.80	16.92	0.25	0.09	31.04	106.69
12	0.84	19.15	0.27	0.09	27.11	107.73
13	0.89	20.36	0.28	0.09	25.59	108.32
14	0.92	21.82	0.29	0.09	25.84	108.73
15	1.02	19.84	0.31	0.09	26.62	108.97
16	1.08	19.41	0.32	0.09	28.18	109.07
17	1.16	18.90	0.32	0.09	29.07	109.13
18	1.21	18.30	0.33	0.09	30.15	109.28
19	1.25	17.87	0.35	0.09	32.07	109.67
20	1.39	16.66	0.39	0.17	34.56	110.05
21	1.48	15.46	0.41	0.09	37.32	110.43
22	1.53	14.95	0.43	0.09	40.26	110.67
23	1.57	13.57	0.46	0.09	43.84	110.93
24	1.66	12.11	0.49	0.09	47.12	110.95
25	1.72	11.85	0.47	0.09	48.84	110.48
26	1.80	11.17	0.40	0.09	47.36	109.66
27	1.85	11.85	0.35	0.09	46.26	108.77
28	1.92	11.17	0.34	0.09	44.66	108.38
29	1.99	11.85	0.33	0.09	43.71	108.24
30	2.04	12.45	0.32	0.09	42.74	108.12
31	2.10	11.85	0.32	0.09	42.48	107.98
32	2.21	11.85	0.31	0.09	43.80	107.78
33	2.23	10.91	0.31	0.17	45.49	106.67
34	2.34	8.59	0.21	0.17	46.53	105.03
35	2.41	8.68	0.17	0.17	45.91	103.00
36	2.45	8.68	0.16	0.17	44.37	102.02
37	2.50	8.42	0.14	0.09	43.60	101.06
38	2.59	8.07	0.12	0.09	46.66	99.88
39	2.64	5.58	0.11	0.09	48.76	99.04
40	2.73	6.53	0.11	0.00	52.17	98.75
41	2.78	6.27	0.11	0.00	50.59	98.84
42	2.82	6.36	0.11	0.00	50.39	98.62
43	2.92	6.44	0.10	0.00	49.33	98.23
44	2.96	6.44	0.10	0.00	48.09	97.41
45	3.06	6.27	0.08	0.00	47.46	96.60
46	3.10	6.10	0.08	0.00	47.33	95.97
47	3.17	6.01	0.08	0.00	47.99	95.79
48	3.24	5.84	0.08	0.00	48.68	95.84

:: Field input data :: (continued)

Point ID	Depth (ft)	q_c (tsf)	f_s (tsf)	u (tsf)	Fines content (%)	Unit weight (pcf)
49	3.33	5.84	0.08	0.00	49.20	95.90
50	3.37	5.84	0.08	0.00	49.45	96.04
51	3.43	5.84	0.08	0.00	49.81	96.47
52	3.52	6.01	0.09	0.00	49.79	97.22
53	3.56	6.44	0.10	0.00	49.06	98.38
54	3.65	7.13	0.12	0.00	47.56	99.53
55	3.70	7.82	0.14	0.00	46.33	100.57
56	3.75	8.16	0.15	0.00	45.11	101.61
57	3.84	9.02	0.17	0.00	44.14	102.64
58	3.89	9.71	0.19	0.00	43.68	103.76
59	4.00	9.96	0.22	0.00	43.68	104.49
60	4.03	10.05	0.22	0.00	44.02	105.31
61	4.16	10.65	0.26	0.00	44.60	106.16
62	4.20	10.82	0.30	0.00	44.88	107.00
63	4.22	11.17	0.31	0.00	45.40	108.18
64	4.31	12.20	0.40	0.00	45.45	109.29
65	4.34	12.80	0.44	0.09	44.15	111.26
66	4.45	16.41	0.60	0.09	40.14	112.91
67	4.52	20.96	0.65	0.09	37.04	114.25
68	4.55	21.30	0.67	0.09	35.63	114.96
69	4.62	21.22	0.74	0.09	36.36	115.40
70	4.67	21.22	0.77	0.17	37.21	115.77
71	4.76	21.13	0.79	0.26	37.55	115.92
72	4.81	21.13	0.78	0.26	37.78	115.93
73	4.86	20.87	0.78	0.26	38.56	116.03
74	4.95	20.19	0.84	0.26	39.95	116.36
75	5.03	20.01	0.91	0.26	41.31	116.69
76	5.11	19.84	0.91	0.26	41.77	116.96
77	5.17	20.44	0.94	0.26	41.81	117.08
78	5.21	20.36	0.95	0.26	41.98	117.23
79	5.27	20.10	0.96	0.26	41.61	117.29
80	5.36	21.22	0.95	0.26	39.52	117.46
81	5.41	24.48	0.96	0.26	37.18	117.67
82	5.49	25.25	0.97	0.17	36.48	117.81
83	5.54	23.19	0.97	0.09	37.65	117.79
84	5.59	22.08	0.98	0.09	42.99	117.41
85	5.65	14.77	0.98	0.09	46.66	117.13
86	5.72	17.18	0.96	0.26	48.92	116.74
87	5.81	18.21	0.90	0.35	44.97	116.60
88	5.88	19.24	0.84	0.35	42.53	116.26
89	5.92	19.50	0.81	0.35	40.06	115.97
90	6.03	20.96	0.76	0.44	38.39	115.81
91	6.07	21.39	0.76	0.44	36.89	115.78
92	6.11	21.99	0.77	0.53	36.01	115.92
93	6.17	23.11	0.78	0.53	35.59	116.23
94	6.25	23.36	0.84	0.53	35.89	116.63
95	6.30	22.93	0.89	0.44	36.66	117.08
96	6.38	23.41	0.94	0.35	38.09	117.46

:: Field input data :: (continued)

Point ID	Depth (ft)	q_c (tsf)	f_s (tsf)	u (tsf)	Fines content (%)	Unit weight (pcf)
97	6.52	22.16	1.00	0.26	38.50	117.78
98	6.53	23.45	1.01	0.26	38.36	118.13
99	6.57	25.08	1.06	0.26	36.26	118.65
100	6.64	28.60	1.13	0.26	34.23	119.33
101	6.70	31.35	1.21	0.26	32.81	120.13
102	6.79	32.90	1.34	0.35	32.26	120.94
103	6.89	34.79	1.47	0.35	32.42	121.64
104	6.94	35.04	1.56	0.35	32.76	122.18
105	6.98	35.22	1.64	0.44	33.54	122.61
106	7.03	35.13	1.75	0.44	34.16	123.11
107	7.12	36.33	1.89	0.44	34.54	123.55
108	7.16	36.93	1.93	0.44	34.28	124.02
109	7.25	39.17	2.05	0.44	32.96	124.36
110	7.34	43.20	2.04	0.44	31.29	124.65
111	7.36	45.27	2.03	0.44	28.65	124.70
112	7.45	50.59	1.92	0.44	26.36	124.65
113	7.49	53.68	1.86	0.44	23.26	124.51
114	7.60	60.99	1.74	0.35	21.34	124.38
115	7.63	61.50	1.71	0.35	20.14	124.23
116	7.71	60.38	1.69	0.35	20.36	124.17
117	7.74	58.84	1.72	0.35	20.95	124.04
118	7.81	55.92	1.67	0.35	22.41	123.98
119	7.91	50.33	1.75	0.35	24.15	123.88
120	7.96	47.76	1.77	0.35	27.03	123.78
121	8.04	40.54	1.78	0.35	28.88	123.43
122	8.09	39.51	1.64	0.35	29.65	122.84
123	8.14	40.28	1.46	0.35	28.06	122.46
124	8.23	43.98	1.49	0.53	26.26	122.34
125	8.28	46.21	1.49	0.88	24.48	122.56
126	8.36	50.42	1.49	0.79	23.42	122.76
127	8.41	51.19	1.53	0.79	23.34	123.12
128	8.49	49.95	1.68	0.70	24.22	123.54
129	8.56	49.48	1.77	0.61	25.46	123.95
130	8.61	48.44	1.85	0.61	26.60	124.03
131	8.70	45.01	1.80	0.61	27.71	123.89
132	8.74	43.12	1.75	0.61	27.60	123.56
133	8.85	46.21	1.64	0.70	25.42	123.55
134	8.93	55.23	1.67	0.88	22.70	123.69
135	8.96	59.44	1.66	0.96	20.64	123.97
136	9.02	63.39	1.67	0.88	19.83	124.11
137	9.06	63.48	1.70	0.79	19.94	124.26
138	9.15	60.47	1.75	0.79	20.65	124.38
139	9.20	59.87	1.79	0.79	21.93	124.51
140	9.29	55.75	1.86	0.79	22.43	124.70
141	9.34	59.57	1.90	0.79	23.78	124.78
142	9.39	52.05	1.93	0.88	23.36	124.84
143	9.48	59.27	1.87	0.96	22.73	124.74
144	9.53	63.22	1.79	0.96	19.94	124.63

:: Field input data :: (continued)

Point ID	Depth (ft)	q_c (tsf)	f_s (tsf)	u (tsf)	Fines content (%)	Unit weight (pcf)
145	9.60	72.07	1.66	0.96	17.45	124.45
146	9.66	79.97	1.57	0.88	14.91	124.24
147	9.75	88.30	1.46	0.96	13.35	124.03
148	9.80	89.85	1.42	0.88	12.36	123.85
149	9.85	91.65	1.39	0.96	11.92	123.70
150	9.93	93.11	1.35	0.96	11.61	123.61
151	9.98	93.97	1.35	0.96	11.43	123.59
152	10.07	94.57	1.37	0.88	11.41	123.66
153	10.12	95.34	1.38	0.88	11.46	123.78
154	10.21	95.51	1.41	0.88	11.53	123.91
155	10.26	96.20	1.43	0.88	11.57	124.04
156	10.30	97.40	1.45	0.88	11.29	124.18
157	10.40	102.90	1.46	0.96	10.91	124.27
158	10.44	105.13	1.44	0.96	10.19	124.29
159	10.54	111.83	1.40	0.96	9.62	124.24
160	10.58	114.24	1.38	0.96	8.72	124.28
161	10.72	126.26	1.38	0.96	8.00	124.45
162	10.77	134.25	1.41	0.96	7.25	124.78
163	10.86	142.76	1.46	0.96	6.77	125.15
164	10.91	150.66	1.52	0.96	6.46	125.58
165	10.97	155.98	1.60	0.96	6.45	126.13
166	11.05	158.82	1.76	0.96	6.64	126.70
167	11.10	160.71	1.87	1.05	7.09	127.45
168	11.19	162.34	2.14	1.05	7.50	128.10
169	11.23	165.00	2.28	1.05	7.98	128.92
170	11.32	169.90	2.57	1.05	8.40	129.74
171	11.37	175.14	2.90	1.14	8.80	130.62
172	11.45	180.89	3.17	1.14	9.21	131.58
173	11.55	190.34	3.67	1.23	9.48	132.30
174	11.59	193.00	3.79	1.31	9.73	132.93
175	11.64	196.27	4.02	1.31	10.07	133.37
176	11.69	196.01	4.33	1.31	11.26	133.71
177	11.75	166.81	4.57	1.31	12.54	133.99
178	11.83	168.87	4.75	1.67	14.40	133.96
179	11.89	147.22	4.73	1.67	16.66	133.39
180	12.02	101.70	4.15	1.67	20.11	132.48
181	12.04	91.13	4.03	1.67	23.68	131.36
182	12.07	82.20	3.71	1.67	25.41	130.48
183	12.15	70.86	3.22	1.67	26.45	129.39
184	12.22	66.91	2.84	1.67	26.68	128.21
185	12.28	65.11	2.48	1.67	25.83	127.24
186	12.35	65.15	2.24	1.67	24.71	126.41
187	12.44	65.15	2.05	1.75	23.99	125.95
188	12.49	65.19	2.06	1.75	23.47	125.76
189	12.53	67.08	2.06	1.75	22.29	125.93
190	12.63	76.45	2.08	1.75	21.01	126.60
191	12.72	85.55	2.44	1.67	20.25	127.40
192	12.76	86.58	2.62	1.67	21.00	128.26

:: Field input data :: (continued)

Point ID	Depth (ft)	q_c (tsf)	f_s (tsf)	u (tsf)	Fines content (%)	Unit weight (pcf)
193	12.81	82.54	2.91	1.67	22.54	128.86
194	12.86	80.14	3.19	1.67	24.77	129.51
195	12.99	76.79	3.57	1.84	26.31	129.92
196	13.09	76.49	3.55	1.84	27.18	130.10
197	13.13	76.49	3.50	1.84	27.07	129.99
198	13.23	76.19	3.41	1.84	26.66	129.91
199	13.27	79.11	3.40	1.84	25.61	129.91
200	13.32	85.21	3.37	1.84	23.92	130.03
201	13.41	93.54	3.35	1.93	22.00	130.22
202	13.46	102.30	3.37	1.93	19.62	130.49
203	13.55	118.96	3.37	1.93	17.87	130.79
204	13.60	124.80	3.44	1.93	16.23	131.16
205	13.65	137.86	3.56	2.02	15.24	131.74
206	13.73	152.46	3.90	2.02	14.06	132.48
207	13.79	171.53	4.18	2.10	13.08	133.31
208	13.88	189.23	4.51	2.10	12.09	134.02
209	13.92	206.92	4.73	2.10	11.36	134.76
210	14.03	225.04	5.17	2.10	10.94	135.30
211	14.06	228.65	5.30	2.10	10.87	135.80
212	14.15	232.43	5.59	2.19	10.53	135.64
213	14.20	232.26	4.78	2.19	9.56	134.83
214	14.24	231.48	3.64	2.28	7.68	132.87
215	14.33	226.50	2.33	2.28	6.14	130.96
216	14.38	224.01	2.34	2.28	5.48	129.63
217	14.47	210.70	2.34	2.28	5.95	129.64
218	14.52	204.17	2.42	2.28	7.41	129.67
219	14.58	161.55	2.61	2.10	9.08	130.19
220	14.65	168.61	3.09	2.02	11.13	130.76
221	14.70	161.22	3.33	2.02	13.38	131.56
222	14.79	128.93	3.88	2.02	16.69	131.78
223	14.84	107.71	3.91	2.02	20.94	131.64
224	14.93	93.80	3.82	2.02	24.61	131.06
225	14.98	76.53	3.62	2.19	27.98	130.20
226	15.06	64.59	3.24	2.37	31.16	129.25
227	15.11	59.35	3.03	2.46	32.59	128.39
228	15.16	58.24	2.80	2.46	32.45	127.51
229	15.25	56.00	2.35	2.46	31.43	126.59
230	15.30	55.49	2.12	2.46	30.43	125.64
231	15.39	54.03	1.96	2.54	30.08	125.15
232	15.43	53.43	1.97	2.54	30.44	124.91
233	15.49	51.54	1.97	2.54	31.20	124.85
234	15.57	49.99	1.97	2.54	32.17	124.73
235	15.67	48.10	1.94	2.54	32.77	124.59
236	15.72	48.06	1.91	2.54	32.96	124.44
237	15.76	48.06	1.88	2.54	32.71	124.29
238	15.86	48.01	1.82	2.54	32.32	124.19
239	15.90	49.22	1.82	2.63	30.90	124.34
240	15.99	55.92	1.89	2.63	29.19	125.37

:: Field input data :: (continued)

Point ID	Depth (ft)	q_c (tsf)	f_s (tsf)	u (tsf)	Fines content (%)	Unit weight (pcf)
241	16.09	66.91	2.42	2.72	27.56	126.59
242	16.13	72.58	2.63	2.72	26.28	127.74
243	16.15	79.19	2.77	2.72	24.66	128.79
244	16.22	94.91	3.27	2.72	22.78	130.10
245	16.32	112.61	3.83	2.72	21.54	131.25
246	16.36	115.96	4.00	2.81	20.75	131.99
247	16.41	121.28	4.13	2.98	20.78	132.28
248	16.52	118.96	4.23	3.07	21.16	132.44
249	16.55	114.93	4.28	3.07	22.13	132.32
250	16.63	105.91	4.10	2.98	23.29	131.93
251	16.68	97.23	3.85	2.81	25.51	131.11
252	16.78	76.27	3.46	2.54	28.16	130.22
253	16.82	68.89	3.29	2.54	31.56	129.29
254	16.87	60.64	3.10	2.46	34.89	128.54
255	16.93	49.05	2.94	2.46	38.34	127.44
256	17.07	42.43	2.43	2.46	41.73	126.42
257	17.08	39.94	2.36	2.46	43.06	125.44
258	17.13	37.71	2.18	2.46	43.26	124.65
259	17.22	36.59	1.82	2.89	42.46	123.92
260	17.27	37.58	1.79	2.89	41.41	123.40
261	17.36	37.45	1.79	2.89	41.14	123.49
262	17.39	38.22	1.87	2.98	40.48	124.31
263	17.50	45.09	2.30	3.07	37.81	125.53
264	17.55	56.09	2.55	3.16	34.73	126.83
265	17.59	62.79	2.74	3.16	29.58	128.27
266	17.68	89.76	3.24	3.33	26.13	129.52
267	17.73	99.72	3.52	3.33	21.68	131.03
268	17.82	135.54	3.98	3.33	18.99	132.04
269	17.87	150.23	4.14	3.25	16.13	132.97
270	17.91	176.77	4.32	3.25	14.61	133.55
271	18.00	188.62	4.54	3.25	13.82	134.04
272	18.05	188.02	4.72	3.25	14.42	134.48
273	18.15	176.86	5.15	3.16	15.48	134.76
274	18.19	172.39	5.25	3.16	16.86	134.92
275	18.27	161.31	5.31	3.07	18.16	134.82
276	18.33	146.45	5.26	3.07	19.72	134.60
277	18.38	137.00	5.20	3.07	22.75	134.17
278	18.46	101.87	5.13	3.33	25.96	133.78
279	18.52	97.06	5.13	3.68	29.16	133.44
280	18.60	97.49	5.12	3.68	29.59	133.33
281	18.66	96.37	5.01	3.60	29.40	133.15
282	18.74	95.69	4.77	3.60	29.16	132.92
283	18.79	95.77	4.69	3.60	28.27	132.60
284	18.84	98.86	4.35	3.60	26.85	132.18
285	18.91	101.87	3.92	3.60	25.88	131.93
286	18.98	101.10	4.17	3.60	25.93	131.87
287	19.04	97.49	4.26	3.60	27.55	132.06
288	19.11	89.93	4.43	3.60	29.59	132.03

:: Field input data :: (continued)

Point ID	Depth (ft)	q_c (tsf)	f_s (tsf)	u (tsf)	Fines content (%)	Unit weight (pcf)
289	19.17	82.89	4.40	3.60	32.40	131.86
290	19.23	73.01	4.36	3.60	33.80	131.43
291	19.33	74.13	3.95	3.51	34.98	130.85
292	19.38	67.86	3.70	3.51	35.29	129.97
293	19.47	60.13	3.22	3.51	36.80	128.61
294	19.59	50.94	2.48	3.51	37.84	127.21
295	19.61	49.39	2.36	3.68	37.96	126.00
296	19.65	48.70	2.15	3.77	37.10	125.34
297	19.70	48.79	1.91	3.86	35.28	124.57
298	19.79	50.33	1.70	3.86	33.65	123.98
299	19.84	50.85	1.69	3.86	32.19	123.76
300	19.93	53.51	1.70	3.86	31.55	123.87
301	19.97	54.46	1.73	3.86	31.09	124.13
302	20.06	55.57	1.82	3.86	30.97	124.42
303	20.10	57.12	1.88	3.86	30.44	124.88
304	20.16	61.76	2.00	3.86	29.36	125.55
305	20.25	68.72	2.22	3.95	28.40	126.27
306	20.29	71.38	2.34	3.95	27.85	127.15
307	20.39	76.36	2.67	3.86	28.08	127.80
308	20.43	75.93	2.81	3.86	28.96	128.36
309	20.48	72.67	2.95	3.86	30.53	128.56
310	20.55	68.46	3.01	3.86	32.34	128.55
311	20.62	64.68	2.95	3.86	33.84	128.33
312	20.70	61.67	2.84	3.86	34.79	127.94
313	20.76	59.27	2.69	3.68	35.36	127.50
314	20.82	57.21	2.56	3.68	35.62	126.96
315	20.90	55.06	2.36	3.68	35.87	126.45
316	20.94	53.34	2.27	3.68	36.18	125.81
317	21.03	49.99	2.06	3.86	36.52	125.27
318	21.08	49.05	1.96	3.86	36.34	124.60
319	21.17	48.44	1.78	3.77	36.02	124.12
320	21.22	47.59	1.72	3.77	35.70	123.72
321	21.27	47.24	1.69	3.77	35.62	123.54
322	21.36	47.41	1.66	3.77	35.45	123.46
323	21.40	47.84	1.66	3.86	35.03	123.49
324	21.55	49.30	1.70	3.77	34.85	123.63
325	21.59	49.56	1.73	3.77	34.72	123.79
326	21.63	49.82	1.76	3.77	34.89	123.96
327	21.68	50.16	1.81	3.77	35.13	124.13
328	21.72	50.08	1.84	3.77	35.99	124.26
329	21.82	47.50	1.88	3.77	36.71	124.15
330	21.90	46.64	1.77	3.86	36.71	123.53
331	21.95	45.44	1.45	3.77	35.66	122.62
332	22.00	44.58	1.32	3.77	35.14	121.91
333	22.05	43.46	1.38	3.77	36.09	121.81
334	22.14	41.40	1.44	3.77	37.60	121.79
335	22.23	39.51	1.36	3.77	38.70	121.65
336	22.25	39.21	1.35	3.77	38.77	121.38

:: Field input data :: (continued)

Point ID	Depth (ft)	q_c (tsf)	f_s (tsf)	u (tsf)	Fines content (%)	Unit weight (pcf)
337	22.34	39.47	1.31	3.95	39.00	121.25
338	22.38	38.22	1.31	3.86	38.78	121.17
339	22.48	39.43	1.30	3.95	38.55	121.17
340	22.51	40.37	1.30	3.86	37.21	121.27
341	22.61	43.20	1.31	3.95	36.02	121.39
342	22.65	44.41	1.31	3.95	34.59	121.59
343	22.71	47.07	1.34	4.03	33.86	121.90
344	22.77	48.44	1.43	4.03	34.24	122.56
345	22.89	48.10	1.66	4.03	35.05	123.12
346	22.90	48.49	1.68	4.12	37.27	124.20
347	23.02	48.53	2.19	4.03	38.66	125.14
348	23.08	50.76	2.37	4.12	39.74	126.04
349	23.12	52.14	2.44	4.03	38.33	126.46
350	23.16	58.06	2.46	4.12	35.56	126.81
351	23.26	66.65	2.49	4.03	32.86	127.20
352	23.31	70.60	2.59	4.03	31.72	127.74
353	23.39	71.21	2.86	4.03	31.41	128.47
354	23.45	77.99	3.17	4.38	30.79	129.55
355	23.52	89.59	3.69	4.56	29.29	130.87
356	23.59	103.24	4.31	4.38	28.12	132.04
357	23.63	109.17	4.64	4.38	27.92	133.01
358	23.72	110.55	5.16	4.38	28.68	133.61
359	23.77	107.97	5.43	4.38	30.97	134.15
360	23.90	98.01	6.00	4.82	33.27	134.39
361	23.95	95.17	6.00	5.35	35.16	134.53
362	24.04	95.21	6.01	5.70	35.48	134.49
363	24.09	95.21	5.97	5.70	35.31	134.41
364	24.18	95.26	5.81	5.70	35.27	134.22
365	24.23	92.42	5.61	5.70	35.18	133.67
366	24.32	86.50	4.88	5.70	35.22	133.03
367	24.36	84.52	4.63	5.53	35.21	132.51
368	24.41	84.43	4.73	5.79	34.99	132.54
369	24.52	88.56	4.89	6.14	34.71	132.74
370	24.55	90.27	4.94	6.14	34.29	133.03
371	24.64	92.25	5.16	6.05	33.58	133.33
372	24.70	99.55	5.31	5.88	33.27	133.64
373	24.79	98.69	5.46	6.05	32.93	133.85
374	24.81	99.21	5.48	5.96	32.76	133.91
375	24.89	102.21	5.40	6.05	31.34	133.97
376	24.94	112.78	5.35	6.31	28.84	134.13
377	25.03	127.30	5.37	6.40	26.26	134.36
378	25.08	137.17	5.38	6.14	24.58	134.56
379	25.18	139.92	5.42	5.79	23.99	134.59
380	25.22	136.83	5.31	5.70	24.20	134.47
381	25.26	131.16	5.19	5.61	26.37	134.34
382	25.36	108.74	5.58	5.88	29.60	134.30
383	25.40	99.98	5.78	6.49	32.92	134.51
384	25.49	103.85	6.14	7.01	33.21	134.79

:: Field input data :: (continued)

Point ID	Depth (ft)	q_c (tsf)	f_s (tsf)	u (tsf)	Fines content (%)	Unit weight (pcf)
385	25.53	112.01	6.19	6.93	28.86	135.31
386	25.64	155.30	6.10	7.28	24.51	135.69
387	25.68	171.19	6.09	7.10	20.63	136.07
388	25.77	189.91	6.14	6.40	18.84	136.29
389	25.82	200.91	6.14	6.14	17.60	136.54
390	25.86	210.10	6.29	5.96	16.71	136.87
391	25.94	226.50	6.61	5.70	16.05	137.28
392	26.00	242.14	7.10	5.70	15.64	137.28
393	26.09	259.66	8.05	5.88	15.76	137.28
394	26.14	257.25	8.44	5.70	15.63	137.28
395	26.18	245.49	6.98	5.70	15.21	137.28
396	26.28	202.80	4.30	5.70	14.66	135.54
397	26.32	195.24	4.57	5.70	16.26	134.21
398	26.41	152.89	5.03	5.79	20.18	134.29
399	26.51	124.89	5.19	5.79	25.40	134.09
400	26.60	108.91	5.14	134.70	29.56	133.81
401	26.65	98.01	5.21	119.09	32.19	133.76
402	26.74	97.75	5.50	106.90	33.72	133.91
403	26.79	99.47	5.63	89.27	34.35	134.16
404	26.87	98.26	5.79	84.10	35.03	134.37
405	26.92	96.72	6.01	81.64	36.28	134.58
406	26.97	93.97	6.28	78.13	37.12	134.79
407	27.06	95.94	6.35	64.81	37.81	134.88
408	27.11	93.88	6.32	64.98	38.06	134.88
409	27.20	92.51	6.30	54.90	38.76	134.80
410	27.24	90.10	6.28	44.02	38.97	134.73
411	27.34	91.82	6.22	45.86	38.58	134.68
412	27.38	94.74	6.11	45.95	38.39	134.55
413	27.43	89.50	5.97	31.66	38.67	134.32
414	27.52	86.41	5.79	31.83	39.61	134.06
415	27.56	84.61	5.71	31.83	41.65	133.48
416	27.70	68.11	5.10	32.01	44.20	132.90
417	27.71	64.94	5.02	32.27	46.93	131.95
418	27.80	59.95	4.34	31.31	47.30	131.26
419	27.85	58.92	4.01	32.27	46.82	130.39
420	27.89	57.72	3.69	31.22	45.97	129.53
421	27.98	54.46	3.10	32.27	45.27	128.73
422	28.03	53.94	2.99	32.71	44.48	128.10
423	28.12	54.80	2.94	33.32	44.20	128.19
424	28.17	56.52	3.17	33.41	42.83	128.92
425	28.26	66.83	3.70	33.50	41.14	129.74
426	28.28	71.64	3.78	33.41	39.40	130.41
427	28.35	73.35	3.87	33.41	38.07	130.73
428	28.44	78.51	3.99	31.92	37.80	130.91
429	28.49	76.02	4.01	30.52	39.05	130.84
430	28.58	65.45	3.89	27.01	40.80	130.51
431	28.64	65.41	3.70	27.54	41.88	130.05
432	28.68	65.41	3.49	27.80	40.38	129.41

:: Field input data :: (continued)

Point ID	Depth (ft)	q_c (tsf)	f_s (tsf)	u (tsf)	Fines content (%)	Unit weight (pcf)
433	28.76	65.37	2.97	27.97	40.34	129.35
434	28.81	65.02	3.62	28.32	39.28	129.44
435	28.90	71.81	3.50	28.68	38.87	130.08
436	28.99	75.67	3.73	27.97	37.77	130.26
437	29.02	73.53	3.74	28.76	39.13	130.38
438	29.10	65.97	3.79	28.85	41.52	130.28
439	29.15	62.36	3.81	28.24	44.15	130.16
440	29.24	60.13	3.81	28.32	45.50	129.90
441	29.29	57.72	3.56	28.41	45.58	129.60
442	29.33	59.01	3.42	28.06	45.08	129.13
443	29.42	57.46	3.19	27.27	44.49	128.82
444	29.47	57.12	3.15	27.45	45.40	128.35
445	29.59	51.02	2.97	27.89	46.98	128.00
446	29.61	48.79	2.91	27.80	48.45	127.46
447	29.69	47.59	2.68	27.54	49.40	127.01
448	29.74	44.58	2.58	27.45	49.83	126.62
449	29.79	44.54	2.56	27.62	50.41	126.43
450	29.89	44.54	2.54	28.06	50.37	126.38
451	29.93	44.49	2.53	28.15	48.75	126.42
452	30.02	49.65	2.52	28.06	47.41	126.46
453	30.08	49.13	2.49	27.80	47.58	126.33
454	30.16	43.03	2.42	27.80	50.71	125.96
455	30.21	37.88	2.35	27.54	55.80	125.53
456	30.25	36.68	2.31	27.27	58.28	125.01
457	30.34	34.10	2.11	27.45	57.11	124.31
458	30.48	36.51	1.76	28.15	55.65	123.54
459	30.52	35.73	1.71	28.24	52.01	123.06
460	30.54	36.33	1.71	28.32	51.62	122.98
461	30.58	36.93	1.70	28.50	50.53	122.99
462	30.65	38.39	1.68	28.76	49.47	123.09
463	30.71	39.60	1.73	28.85	48.76	123.40
464	30.79	40.71	1.86	28.94	48.49	123.80
465	30.85	41.83	1.93	28.85	48.23	124.11
466	30.91	42.43	1.92	28.76	47.28	124.23
467	31.04	44.32	1.90	28.59	46.10	124.35
468	31.08	46.30	1.96	28.41	45.29	124.71
469	31.13	47.59	2.14	28.41	45.33	125.29
470	31.18	48.79	2.33	28.50	45.23	126.26
471	31.31	54.63	2.74	28.50	45.10	127.00
472	31.33	54.63	2.78	28.50	44.83	127.61
473	31.41	55.40	2.91	28.50	44.96	127.82
474	31.45	56.26	2.95	28.41	44.87	128.03
475	31.50	57.12	2.99	28.24	45.02	128.18
476	31.57	56.35	3.07	28.06	46.03	128.31
477	31.64	53.86	3.16	27.89	47.72	128.13
478	31.73	49.48	2.90	27.80	49.19	127.79
479	31.78	48.62	2.80	27.80	49.78	127.32
480	31.82	48.10	2.71	28.15	49.18	126.87

:: Field input data :: (continued)

Point ID	Depth (ft)	q_c (tsf)	f_s (tsf)	u (tsf)	Fines content (%)	Unit weight (pcf)
481	31.91	47.76	2.44	28.41	48.33	126.49
482	31.96	48.36	2.40	29.20	47.11	126.15
483	32.05	49.30	2.35	29.29	46.60	126.04
484	32.10	48.62	2.31	29.11	46.47	125.86
485	32.19	47.41	2.24	28.94	47.53	125.56
486	32.24	43.81	2.16	28.24	48.93	125.15
487	32.28	41.57	2.06	28.89	51.19	124.40
488	32.42	36.25	1.78	28.50	52.00	123.40
489	32.55	35.73	1.51	28.85	52.26	122.27
490	32.65	34.62	1.39	28.94	51.52	121.60
491	32.70	34.27	1.40	28.68	51.81	121.44
492	32.74	34.36	1.44	28.68	51.78	121.73
493	32.84	36.33	1.54	28.76	51.30	122.09
494	32.88	37.45	1.57	28.76	50.00	122.48
495	32.97	39.68	1.62	28.68	48.71	122.77
496	33.02	41.40	1.66	28.68	48.16	123.04
497	33.12	40.63	1.70	28.59	48.35	123.15
498	33.16	40.03	1.69	28.59	49.33	123.06
499	33.22	38.39	1.64	28.59	50.10	122.74
500	33.30	36.85	1.54	28.59	50.45	122.21
501	33.34	36.16	1.40	28.59	49.12	121.48
502	33.44	37.36	1.22	29.03	46.45	121.54
503	33.55	43.89	1.49	29.20	43.98	121.95
504	33.57	45.70	1.53	29.11	42.81	122.79
505	33.62	46.73	1.63	29.03	43.43	123.35
506	33.67	46.04	1.83	29.03	44.36	124.85
507	33.77	54.20	2.54	29.38	44.70	126.52
508	33.82	59.78	2.96	29.90	44.08	128.15
509	33.86	63.91	3.34	30.17	42.85	129.91
510	33.96	78.68	4.46	30.60	41.75	131.38
511	34.00	83.92	4.88	30.60	39.13	132.93
512	34.09	102.04	5.55	30.69	37.26	133.78
513	34.13	106.25	5.75	30.78	34.88	134.60
514	34.23	118.62	6.13	30.60	32.91	135.09
515	34.28	130.90	6.24	30.95	30.56	135.54
516	34.32	141.47	6.30	31.39	27.25	135.91
517	34.39	169.73	6.33	31.92	23.19	136.25
518	34.50	204.69	6.16	29.82	20.11	136.50
519	34.52	211.04	6.14	29.38	17.94	136.49
520	34.65	220.40	5.80	28.15	17.21	136.37
521	34.69	219.72	5.73	27.80	16.68	136.20
522	34.74	218.43	5.66	27.71	16.74	136.09
523	34.79	214.82	5.60	27.36	17.09	136.01
524	34.87	207.18	5.65	26.83	17.86	135.95
525	34.92	197.04	5.71	26.48	19.15	135.93
526	35.01	183.73	5.84	25.87	21.32	135.90
527	35.14	161.05	6.05	25.17	23.70	135.84
528	35.16	152.81	6.07	25.08	26.09	135.70

:: Field input data :: (continued)

Point ID	Depth (ft)	q_c (tsf)	f_s (tsf)	u (tsf)	Fines content (%)	Unit weight (pcf)
529	35.20	142.58	6.03	24.99	27.76	135.49
530	35.25	132.28	5.92	24.82	31.30	134.84
531	35.34	95.43	5.33	24.38	35.56	133.92
532	35.38	84.61	4.89	24.20	41.22	132.08
533	35.48	63.13	3.41	23.59	43.16	130.01
534	35.51	58.41	2.54	23.50	45.04	127.75
535	35.57	52.48	2.48	23.50	46.48	126.63
536	35.66	47.67	2.44	23.85	49.88	126.30
537	35.71	44.84	2.43	24.55	52.29	126.00
538	35.80	43.29	2.34	25.43	56.54	126.05
539	35.86	41.40	2.60	28.32	55.71	126.59
540	35.90	51.02	2.87	29.46	48.13	128.22
541	36.00	75.07	3.63	31.22	41.16	129.91
542	36.04	89.59	4.04	31.75	33.11	132.00
543	36.13	134.17	4.91	29.20	29.23	133.37
544	36.18	138.63	5.29	28.24	27.15	134.44
545	36.23	139.23	5.60	28.24	28.22	134.84
546	36.31	130.82	5.84	28.24	29.86	134.95
547	36.37	122.31	5.79	28.24	32.44	134.79
548	36.43	108.14	5.69	28.41	35.26	134.49
549	36.50	98.52	5.66	28.76	38.48	134.21
550	36.56	91.48	5.69	28.94	40.57	134.06
551	36.64	91.00	5.68	29.64	41.62	134.01
552	36.69	91.00	5.70	30.34	41.72	133.99
553	36.77	90.53	5.65	30.78	40.99	133.95
554	36.83	95.34	5.50	30.78	39.65	133.82
555	36.92	98.09	5.28	30.17	38.41	133.71
556	36.95	97.58	5.27	29.99	38.19	133.60
557	37.01	95.08	5.26	30.08	38.79	133.54
558	37.08	92.94	5.24	30.60	39.71	133.46
559	37.15	90.10	5.24	31.57	40.55	133.47
560	37.24	89.76	5.37	32.45	41.21	133.55
561	37.28	90.27	5.48	32.45	41.75	133.74
562	37.38	89.85	5.67	32.53	42.18	133.88
563	37.42	89.67	5.70	32.62	42.47	133.98
564	37.47	90.10	5.70	32.62	42.63	134.07
565	37.57	90.45	5.87	32.62	42.70	134.18
566	37.61	91.39	5.94	32.71	42.64	134.35
567	37.69	93.28	6.03	32.71	42.47	134.48
568	37.75	93.88	6.11	32.71	42.44	134.62
569	37.82	94.23	6.24	32.62	41.75	134.61
570	37.93	97.83	5.90	32.01	39.62	133.98
571	37.98	97.92	4.54	32.01	36.76	133.00
572	38.02	97.92	4.08	32.09	34.90	132.23
573	38.07	98.78	4.45	31.83	35.14	132.52
574	38.16	101.10	5.00	31.48	36.21	133.28
575	38.21	103.50	5.48	31.39	37.81	133.93
576	38.26	98.35	5.83	31.57	38.84	134.56

:: Field input data :: (continued)

Point ID	Depth (ft)	q_c (tsf)	f_s (tsf)	u (tsf)	Fines content (%)	Unit weight (pcf)
577	38.35	105.22	6.40	29.29	38.75	135.16
578	38.40	115.79	6.73	28.85	37.41	135.89
579	38.49	124.37	7.28	28.15	35.79	136.43
580	38.53	132.19	7.42	27.80	33.82	136.73
581	38.61	143.19	7.10	27.54	31.34	136.71
582	38.68	152.38	6.75	27.36	29.14	136.53
583	38.72	155.21	6.54	27.27	27.44	136.28
584	38.81	159.93	6.21	26.57	26.54	135.95
585	38.89	155.98	5.83	25.34	26.42	135.52
586	38.95	144.99	5.60	24.73	27.47	135.05
587	39.00	132.79	5.44	24.38	29.43	134.51
588	39.09	118.53	5.12	24.29	31.90	133.94
589	39.18	105.99	4.92	24.99	35.33	133.36
590	39.27	90.62	4.87	25.17	38.72	132.87
591	39.32	84.69	4.68	25.34	43.30	131.84
592	39.46	62.62	3.73	24.55	46.95	130.70
593	39.47	58.58	3.51	25.34	49.67	128.87
594	39.51	54.20	2.55	24.73	49.30	126.96
595	39.57	46.30	1.73	25.34	50.40	125.22
596	39.64	41.32	2.11	26.31	55.62	125.34
597	39.77	46.38	2.77	27.54	59.33	126.51
598	39.80	44.75	2.91	27.89	59.90	127.43
599	39.83	46.47	3.04	28.15	63.23	127.79
600	39.90	40.37	3.35	29.82	56.52	128.94
601	39.98	73.27	3.80	30.34	48.86	130.09
602	40.03	78.08	4.08	30.43	41.46	131.37
603	40.09	91.56	4.49	30.60	38.35	132.32
604	40.16	107.11	4.93	29.90	34.19	133.68
605	40.32	134.85	5.86	28.15	31.68	134.68
606	40.35	137.52	5.98	28.06	30.16	135.38
607	40.39	141.12	6.11	28.06	29.78	135.57
608	40.44	144.39	6.19	28.06	29.08	135.78
609	40.53	151.86	6.29	27.27	28.39	135.89
610	40.58	153.66	6.23	27.10	27.65	135.93
611	40.62	155.64	6.13	27.01	27.03	135.79
612	40.72	156.93	5.88	26.75	26.53	135.65
613	40.76	157.19	5.84	26.57	25.94	135.56
614	40.85	161.82	5.83	26.48	25.53	135.57
615	40.90	163.97	5.83	26.39	24.91	135.69
616	41.00	170.41	5.95	26.22	24.50	135.82
617	41.03	172.91	6.02	26.05	24.08	136.01
618	41.08	177.11	6.13	25.61	23.78	136.15
619	41.14	180.64	6.20	25.52	23.46	136.32
620	41.22	184.16	6.31	25.43	23.19	136.44
621	41.29	186.56	6.33	25.34	23.06	136.54
622	41.36	186.91	6.40	25.17	23.18	136.63
623	41.43	185.27	6.54	24.99	23.96	136.87
624	41.53	180.46	7.03	24.73	24.90	137.09

:: Field input data :: (continued)

Point ID	Depth (ft)	q_c (tsf)	f_s (tsf)	u (tsf)	Fines content (%)	Unit weight (pcf)
625	41.55	178.23	7.13	24.82	26.21	137.28
626	41.64	173.42	7.60	24.82	26.70	137.28
627	41.67	170.67	6.97	24.73	25.67	136.35
628	41.77	163.46	4.57	25.08	24.20	135.26
629	41.82	163.89	5.04	25.17	23.19	134.53
630	41.87	165.78	5.45	25.26	23.80	135.42
631	41.96	180.38	6.33	25.52	23.60	136.36
632	42.01	197.90	6.93	25.52	25.28	137.28
633	42.10	167.75	8.00	38.76	26.27	137.28
634	42.15	187.76	8.39	34.81	28.51	137.28
635	42.20	175.05	8.60	29.64	27.83	137.28
636	42.28	186.13	8.43	27.01	28.10	137.28
637	42.33	176.51	7.83	26.31	29.96	137.28
638	42.45	120.51	6.69	25.26	33.80	136.35
639	42.48	106.94	6.13	24.99	39.31	134.98
640	42.52	96.20	5.61	24.55	42.69	133.64
641	42.61	73.27	4.44	24.47	46.87	132.19
642	42.67	62.36	4.00	24.64	52.02	130.34
643	42.75	52.22	3.26	25.52	57.20	128.91
644	42.80	48.87	2.82	25.87	58.39	127.16
645	42.89	44.15	2.18	27.10	58.31	125.77
646	42.93	42.26	1.99	27.54	57.85	124.52
647	42.98	41.57	1.83	27.71	57.70	123.55
648	43.17	38.39	1.52	28.85	57.51	122.83
649	43.21	38.57	1.54	29.11	57.33	122.36
650	43.22	39.25	1.55	29.38	57.21	122.59
651	43.26	40.03	1.64	29.55	57.46	123.38
652	43.35	42.78	2.02	30.25	58.17	124.40
653	43.40	44.06	2.26	30.43	58.40	125.53
654	43.45	47.07	2.50	30.95	57.58	126.42
655	43.53	51.62	2.74	31.13	52.82	127.05
656	43.58	56.69	2.71	31.31	51.60	128.22
657	43.67	61.24	3.61	31.48	51.08	129.33
658	43.72	64.33	3.98	31.75	52.57	130.65
659	43.81	65.19	4.57	32.09	52.97	131.50
660	43.86	69.23	4.92	32.97	52.67	132.39
661	43.92	76.02	5.43	36.39	50.16	133.14
662	43.97	85.81	5.67	36.57	47.43	133.85
663	44.03	93.11	5.99	36.57	44.30	134.40
664	44.11	103.07	6.16	35.87	41.96	134.49
665	44.24	102.82	5.55	34.55	40.98	134.31
666	44.25	97.06	5.48	34.20	41.64	133.80
667	44.29	89.67	5.25	33.94	44.13	133.05
668	44.38	75.33	4.45	33.67	47.43	132.05
669	44.43	65.62	4.13	33.41	51.18	130.73
670	44.51	57.21	3.56	34.38	55.52	129.71
671	44.56	57.03	3.20	35.78	52.73	128.65
672	44.66	57.03	2.81	36.48	50.70	127.86

:: Field input data :: (continued)

Point ID	Depth (ft)	q_c (tsf)	f_s (tsf)	u (tsf)	Fines content (%)	Unit weight (pcf)
673	44.70	56.86	2.59	36.48	48.67	127.10
674	44.76	57.12	2.35	36.48	46.94	126.48
675	44.87	57.64	2.17	35.95	46.60	126.02
676	44.89	54.11	2.19	36.30	46.42	125.95
677	44.98	57.16	2.29	37.01	48.45	126.41
678	45.11	54.71	2.64	37.62	49.41	127.05
679	45.15	56.69	2.80	37.71	50.24	127.59
680	45.16	59.35	2.85	37.80	48.47	128.08
681	45.24	65.79	3.04	37.97	45.38	128.65
682	45.30	75.16	3.19	37.88	42.49	129.24
683	45.35	79.71	3.31	37.71	39.47	129.87
684	45.49	90.36	3.54	37.01	37.72	130.25
685	45.50	91.56	3.51	36.66	36.60	130.62
686	45.58	92.68	3.67	36.30	36.61	130.81
687	45.62	93.54	3.79	36.04	36.37	131.12
688	45.67	98.18	3.88	36.13	35.29	131.44
689	45.75	106.17	4.01	35.87	33.23	131.81
690	45.81	116.73	4.09	35.08	32.39	132.13
691	45.87	111.75	4.24	33.06	30.07	132.55
692	45.96	137.26	4.36	31.22	28.62	132.84
693	46.01	139.15	4.36	31.13	26.48	133.06
694	46.10	142.84	4.30	30.34	26.01	133.08
695	46.15	144.04	4.31	30.08	25.55	133.10
696	46.20	145.93	4.32	29.64	25.30	133.16
697	46.27	147.91	4.36	29.20	25.06	133.23
698	46.33	149.37	4.39	28.76	24.91	133.22
699	46.42	148.17	4.29	28.32	24.81	133.12
700	46.47	146.97	4.19	28.06	24.81	132.92
701	46.52	144.39	4.08	27.71	24.93	132.68
702	46.61	140.69	3.96	27.54	25.32	132.49
703	46.66	137.17	3.96	27.36	25.97	132.42
704	46.75	134.51	4.07	27.18	26.81	132.53
705	46.79	133.05	4.21	27.01	27.81	132.79
706	46.88	131.42	4.47	26.83	28.74	133.08
707	46.93	130.73	4.64	26.66	29.62	133.43
708	47.00	131.33	4.88	26.48	30.38	133.82
709	47.07	132.02	5.21	26.48	30.84	134.20
710	47.12	134.85	5.38	26.48	31.20	134.60
711	47.21	137.00	5.67	26.48	31.33	134.87
712	47.25	137.17	5.74	26.39	31.86	135.09
713	47.35	134.51	5.90	26.13	33.57	135.15
714	47.44	120.34	6.04	26.75	35.83	135.07
715	47.47	113.72	5.93	26.66	38.53	134.85
716	47.51	106.34	5.82	26.57	41.06	134.46
717	47.58	93.62	5.60	25.87	43.80	133.74
718	47.64	82.89	4.85	26.53	46.73	132.74
719	47.72	74.30	4.33	26.05	49.21	131.67
720	47.78	67.08	4.06	26.48	51.37	130.60

:: Field input data :: (continued)

Point ID	Depth (ft)	q_c (tsf)	f_s (tsf)	u (tsf)	Fines content (%)	Unit weight (pcf)
721	47.94	60.99	3.44	27.71	55.21	129.71
722	47.98	60.04	3.24	27.80	55.57	128.99
723	47.99	58.58	3.20	27.97	55.77	128.64
724	48.04	56.86	3.05	27.97	56.69	128.20
725	48.11	52.91	2.81	27.97	58.66	127.61
726	48.18	47.07	2.70	27.97	63.77	126.91
727	48.23	37.02	2.62	28.94	67.57	126.29
728	48.33	39.51	2.40	34.46	69.70	125.75
729	48.37	39.25	2.31	34.64	67.48	125.36
730	48.44	39.25	2.19	34.99	66.68	125.05
731	48.51	39.43	2.12	35.16	65.71	124.87
732	48.56	40.37	2.13	35.52	64.82	125.10
733	48.65	42.69	2.34	35.78	63.35	125.52
734	48.70	45.70	2.39	36.04	61.18	125.98
735	48.78	49.13	2.42	36.13	58.30	126.30
736	48.88	53.34	2.48	36.13	56.42	126.54
737	48.91	53.60	2.51	36.13	56.22	126.73
738	48.97	51.36	2.58	36.13	57.43	126.84
739	49.02	50.42	2.64	36.30	58.55	126.72
740	49.11	49.30	2.46	36.66	58.39	126.47
741	49.15	49.99	2.34	36.83	55.47	126.10
742	49.25	56.69	2.17	37.01	49.57	125.92
743	49.28	57.98	2.17	36.74	47.64	125.81
744	49.38	55.66	2.17	36.96	48.35	125.77
745	49.41	54.03	2.17	36.57	50.25	125.66
746	49.48	50.85	2.16	36.92	52.38	125.53
747	49.57	48.10	2.15	37.27	57.04	125.42
748	49.62	47.50	2.17	37.45	58.13	125.32
749	49.71	46.90	2.13	37.53	58.87	125.15
750	49.76	44.92	2.05	37.80	59.64	124.80
751	49.81	43.03	1.94	38.23	60.66	124.48
752	49.87	42.17	1.94	38.59	60.94	124.27
753	49.94	42.86	1.91	38.94	54.02	121.26
754	50.01	42.35	0.00	39.02	44.18	116.13
755	50.08	41.40	0.00	39.46	N/A	87.36
756	50.17	39.43	0.00	39.73	N/A	87.36
757	50.21	38.91	0.00	39.99	N/A	87.36
758	50.30	37.36	0.00	40.86	N/A	87.36

Abbreviations

Depth:	Depth from free surface, at which CPT was performed (ft)
q_c:	Measured cone resistance (tsf)
f_s:	Sleeve friction resistance (tsf)
u:	Pore pressure (tsf)
Fines content:	Percentage of fines in soil (%)
Unit weight:	Bulk soil unit weight (pcf)

Fenagh Engineering and Testing
9070 Center Avenue
Rancho Cucamonga, CA 91730
www.fenaghengineering.com

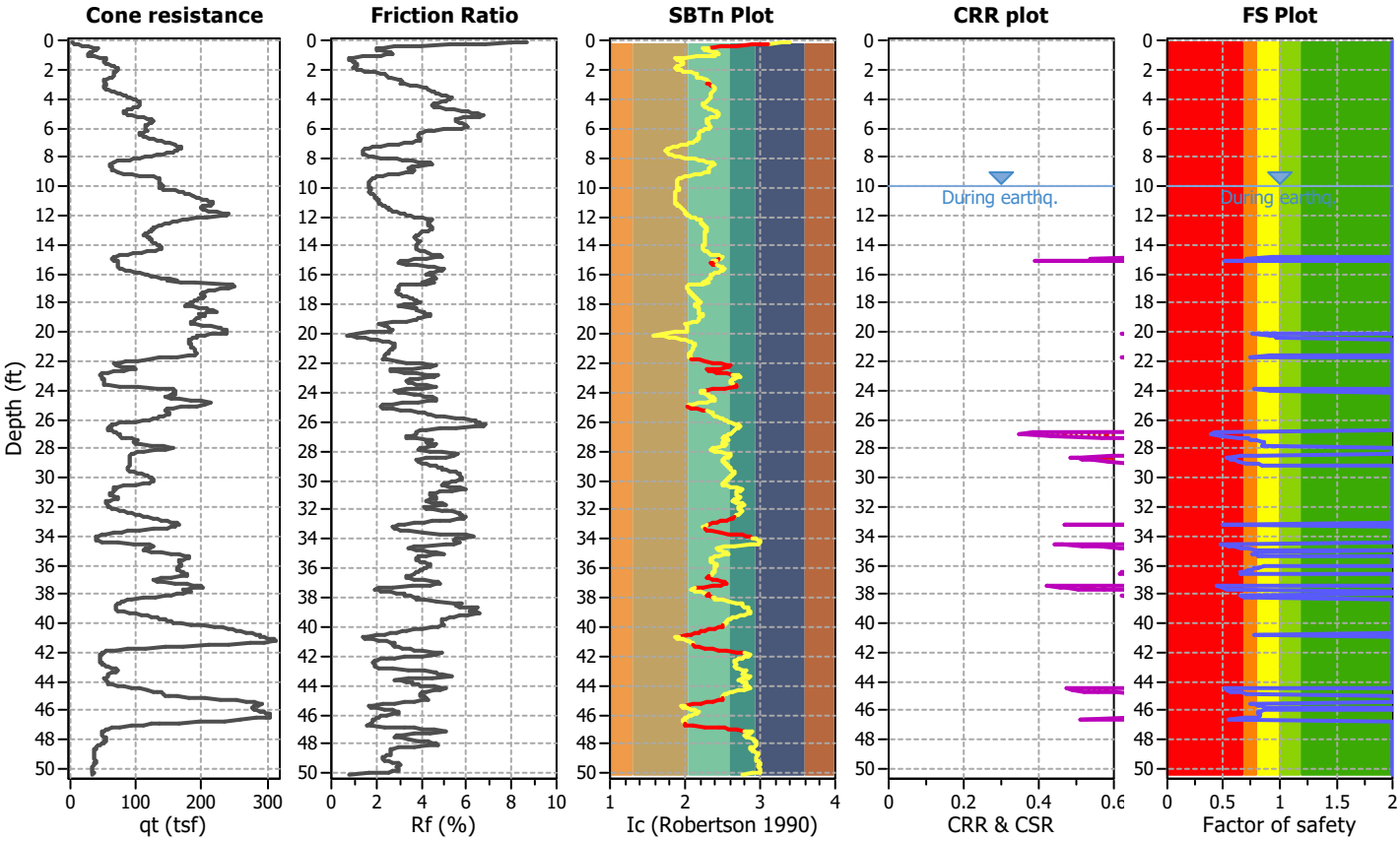
LIQUEFACTION ANALYSIS REPORT

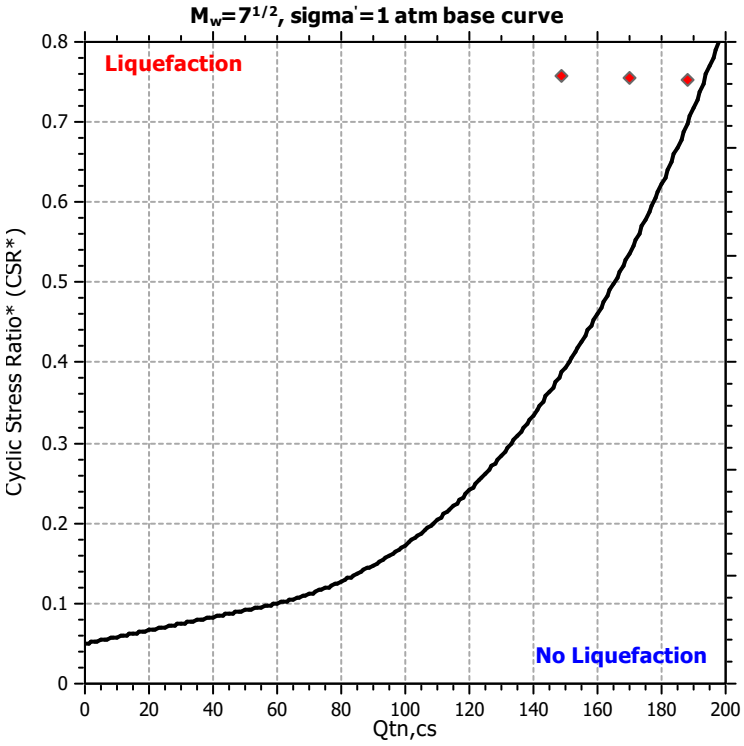
Project title : Centennial High School **Location : 2606 N. Central Ave, Compton, CA 90222**

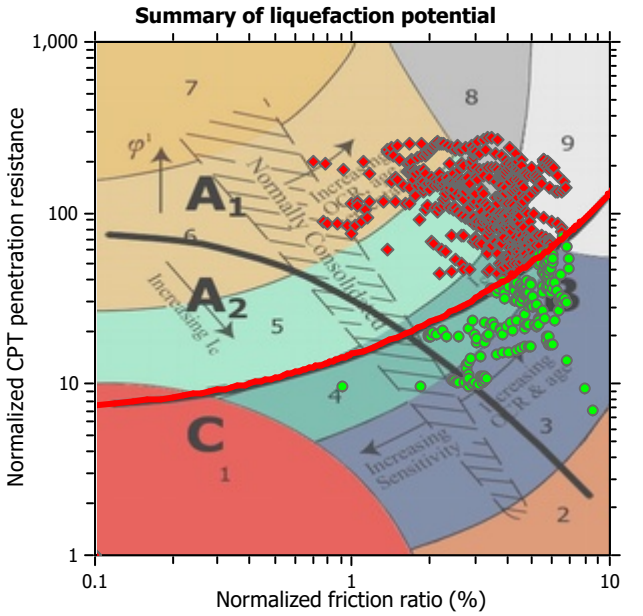
CPT file : CPT-6

Input parameters and analysis data

Analysis method:	NCEER (1998)	G.W.T. (in-situ):	50.00 ft	Use fill:	No	Clay like behavior applied:	Sands only
Fines correction method:	NCEER (1998)	G.W.T. (earthq.):	10.00 ft	Fill height:	N/A	Limit depth applied:	No
Points to test:	Based on Ic value	Average results interval:	3	Fill weight:	N/A	Limit depth:	N/A
Earthquake magnitude M_w:	7.30	Ic cut-off value:	2.60	Trans. detect. applied:	Yes	MSF method:	Method based
Peak ground acceleration:	0.83	Unit weight calculation:	Based on SBT	K_σ applied:	Yes		

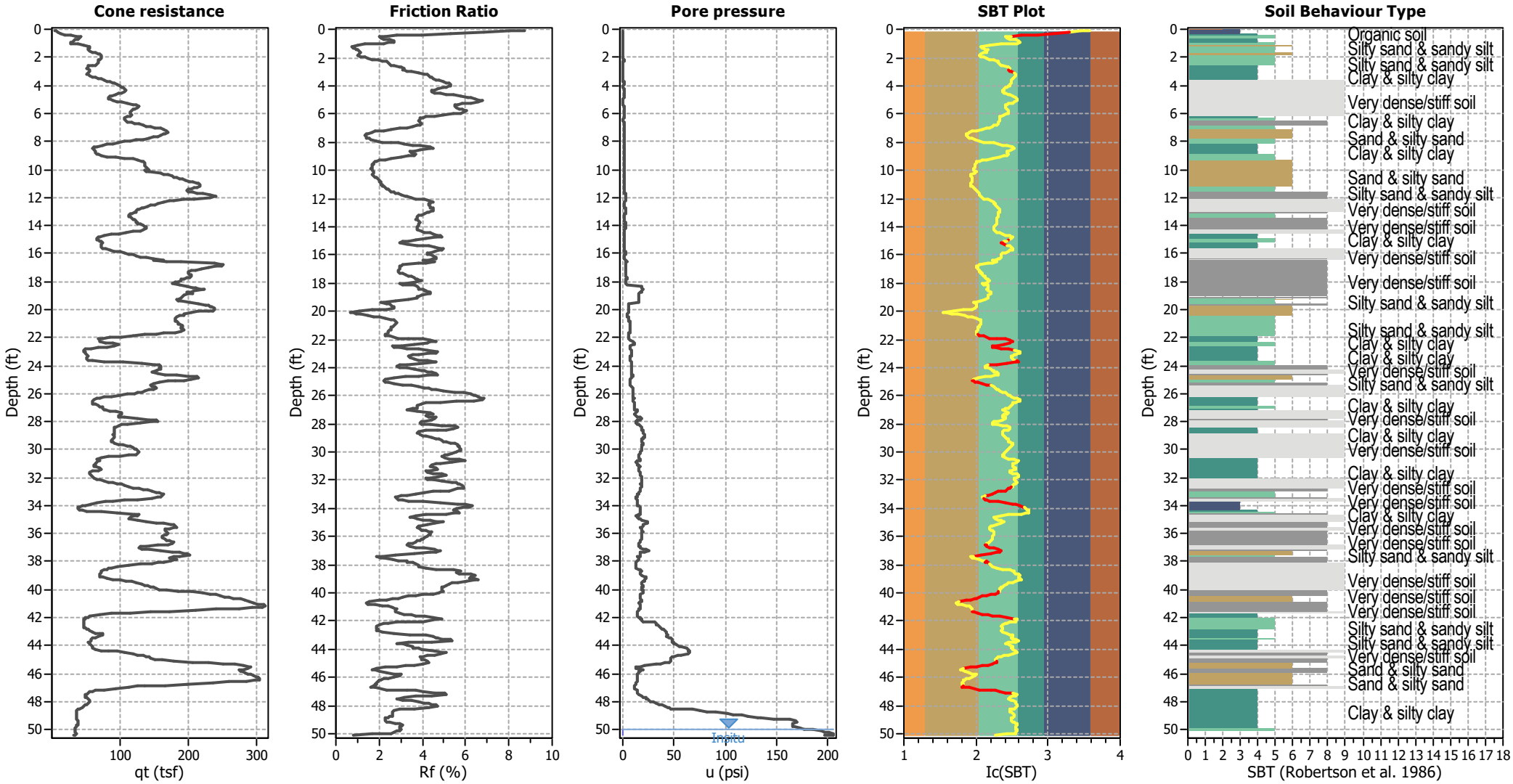






Zone A_1: Cyclic liquefaction likely depending on size and duration of cyclic loading
Zone A_2: Cyclic liquefaction and strength loss likely depending on loading and ground geometry
Zone B: Liquefaction and post-earthquake strength loss unlikely, check cyclic softening
Zone C: Cyclic liquefaction and strength loss possible depending on soil plasticity, brittleness/sensitivity, strain to peak undrained strength and ground geometry

CPT basic interpretation plots



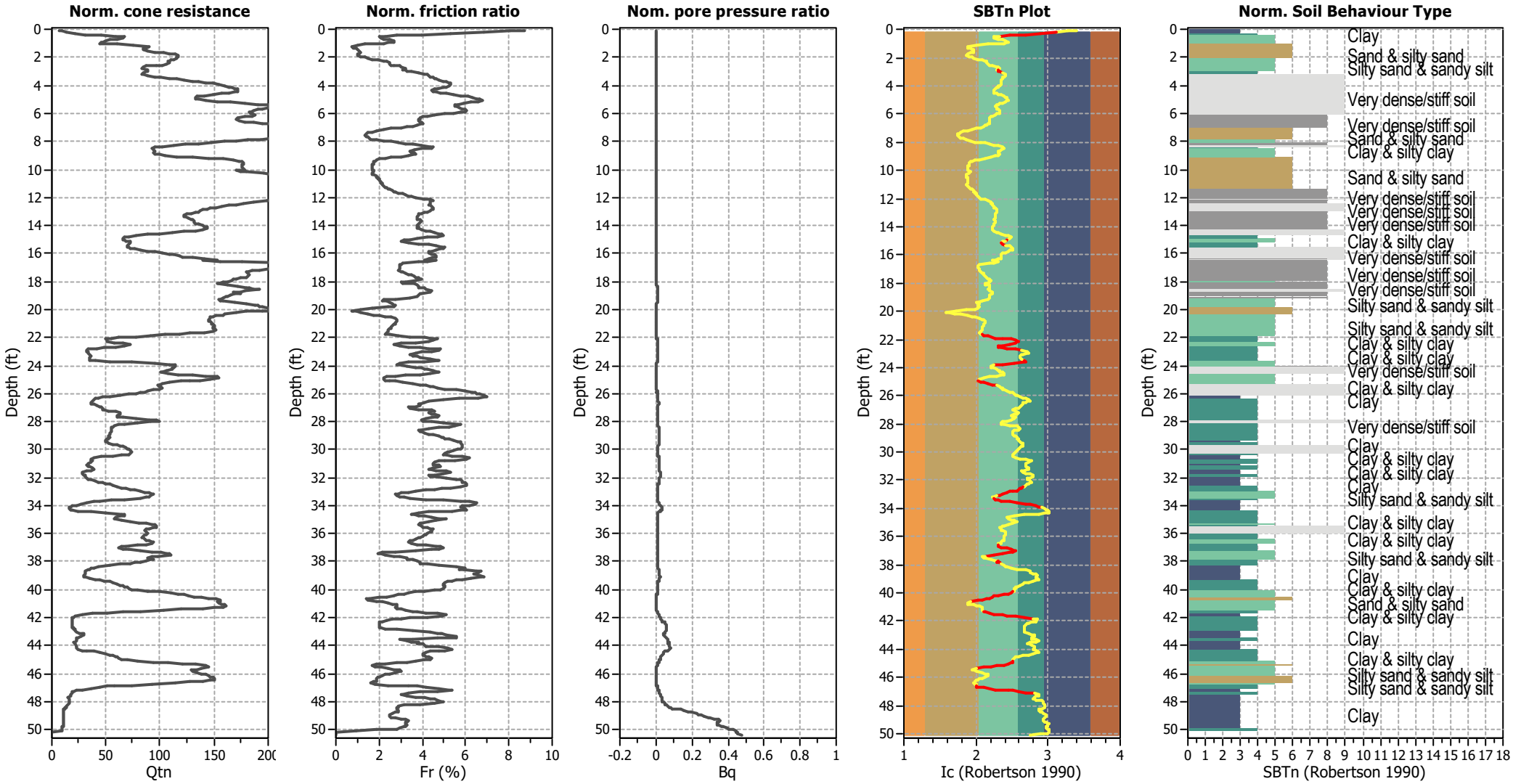
Input parameters and analysis data

Analysis method:	NCEER (1998)	Depth to water table (erthq.):	10.00 ft	Fill weight:	N/A
Fines correction method:	NCEER (1998)	Average results interval:	3	Transition detect. applied:	Yes
Points to test:	Based on Ic value	Ic cut-off value:	2.60	K_σ applied:	Yes
Earthquake magnitude M_w:	7.30	Unit weight calculation:	Based on SBT	Clay like behavior applied:	Sands only
Peak ground acceleration:	0.83	Use fill:	No	Limit depth applied:	No
Depth to water table (insitu):	50.00 ft	Fill height:	N/A	Limit depth:	N/A

SBT legend

1. Sensitive fine grained
2. Organic material
3. Clay to silty clay
4. Clayey silt to silty
5. Silty sand to sandy silt
6. Clean sand to silty sand
7. Gravely sand to sand
8. Very stiff sand to
9. Very stiff fine grained

CPT basic interpretation plots (normalized)



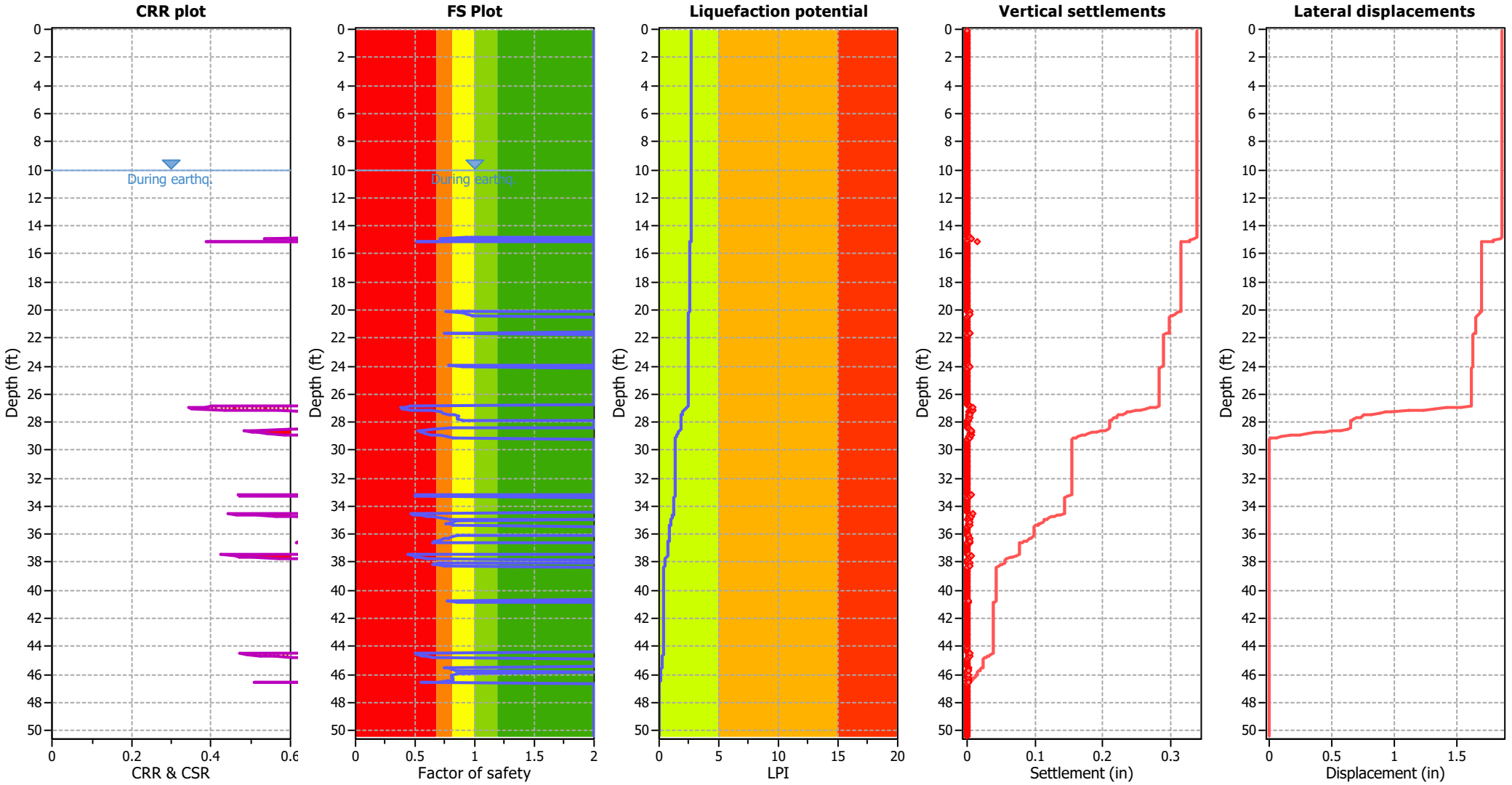
Input parameters and analysis data

Analysis method:	NCEER (1998)	Depth to water table (erthq.):	10.00 ft	Fill weight:	N/A
Fines correction method:	NCEER (1998)	Average results interval:	3	Transition detect. applied:	Yes
Points to test:	Based on Ic value	Ic cut-off value:	2.60	K_σ applied:	Yes
Earthquake magnitude M_w:	7.30	Unit weight calculation:	Based on SBT	Clay like behavior applied:	Sands only
Peak ground acceleration:	0.83	Use fill:	No	Limit depth applied:	No
Depth to water table (insitu):	50.00 ft	Fill height:	N/A	Limit depth:	N/A

SBTn legend

1. Sensitive fine grained
2. Organic material
3. Clay to silty clay
4. Clayey silt to silty clay
5. Silty sand to sandy silt
6. Clean sand to silty sand
7. Gravely sand to sand
8. Very stiff sand to
9. Very stiff fine grained

Liquefaction analysis overall plots



Input parameters and analysis data

Analysis method:	NCEER (1998)	Depth to water table (erthq.):	10.00 ft	Fill weight:	N/A
Fines correction method:	NCEER (1998)	Average results interval:	3	Transition detect. applied:	Yes
Points to test:	Based on Ic value	Ic cut-off value:	2.60	K_σ applied:	Yes
Earthquake magnitude M_w:	7.30	Unit weight calculation:	Based on SBT	Clay like behavior applied:	Sands only
Peak ground acceleration:	0.83	Use fill:	No	Limit depth applied:	No
Depth to water table (insitu):	50.00 ft	Fill height:	N/A	Limit depth:	N/A

F.S. color scheme

- Almost certain it will liquefy
- Very likely to liquefy
- Liquefaction and no liq. are equally likely
- Unlike to liquefy
- Almost certain it will not liquefy

LPI color scheme

- Very high risk
- High risk
- Low risk

:: Field input data ::

Point ID	Depth (ft)	q_c (tsf)	f_s (tsf)	u (tsf)	Fines content (%)	Unit weight (pcf)
1	0.09	3.95	0.35	0.18	89.74	106.76
2	0.13	5.15	0.43	0.18	79.83	108.90
3	0.21	8.16	0.61	0.18	66.31	111.54
4	0.26	12.19	0.71	0.26	51.49	113.96
5	0.36	19.41	0.78	0.35	39.68	115.58
6	0.40	26.62	0.81	0.35	29.04	117.02
7	0.47	40.36	0.87	0.53	23.39	117.85
8	0.55	43.11	0.86	0.53	20.47	118.26
9	0.60	42.68	0.84	0.44	20.88	118.01
10	0.69	36.58	0.81	0.53	22.58	117.82
11	0.73	34.09	0.86	0.44	25.45	117.61
12	0.82	30.23	0.87	0.53	27.18	117.34
13	0.88	29.28	0.78	0.53	28.22	116.74
14	0.92	27.91	0.72	0.53	27.49	115.66
15	1.02	27.14	0.57	0.53	26.35	114.71
16	1.05	28.17	0.53	0.44	17.92	114.28
17	1.14	57.53	0.45	0.26	13.05	114.03
18	1.20	55.04	0.41	0.26	9.87	113.84
19	1.29	54.53	0.42	0.26	10.27	113.92
20	1.33	54.10	0.47	0.26	11.03	114.48
21	1.39	52.47	0.52	0.26	11.68	114.94
22	1.46	52.43	0.52	0.26	12.30	115.38
23	1.52	52.38	0.57	0.26	12.20	116.29
24	1.61	61.14	0.70	0.26	12.00	117.32
25	1.66	63.89	0.75	0.26	11.21	118.09
26	1.73	68.36	0.73	0.26	10.25	118.06
27	1.80	71.70	0.65	0.26	9.54	118.13
28	1.84	73.59	0.73	0.35	9.72	118.63
29	1.95	71.96	0.87	0.35	10.44	119.42
30	1.98	72.05	0.91	0.35	11.39	120.31
31	2.07	72.91	1.06	0.35	12.30	121.02
32	2.12	70.16	1.17	1.05	13.62	121.83
33	2.17	67.58	1.30	0.96	15.23	122.66
34	2.26	66.98	1.52	0.88	16.41	123.35
35	2.30	67.67	1.58	0.61	17.28	123.95
36	2.38	67.15	1.68	0.44	17.57	124.22
37	2.44	67.75	1.69	0.44	18.02	124.21
38	2.54	63.63	1.61	0.44	18.54	123.99
39	2.58	60.37	1.60	0.44	19.65	123.70
40	2.63	55.90	1.60	0.44	21.87	123.43
41	2.70	46.03	1.60	0.44	22.52	123.39
42	2.77	56.03	1.61	0.26	23.26	123.51
43	2.87	52.81	1.71	0.35	22.19	123.90
44	2.90	56.16	1.76	0.35	22.57	124.16
45	2.98	56.33	1.79	0.35	22.76	124.40
46	3.02	54.10	1.88	0.35	23.90	124.74
47	3.09	52.73	2.05	0.35	25.28	125.08
48	3.19	51.95	2.12	0.35	26.52	125.41